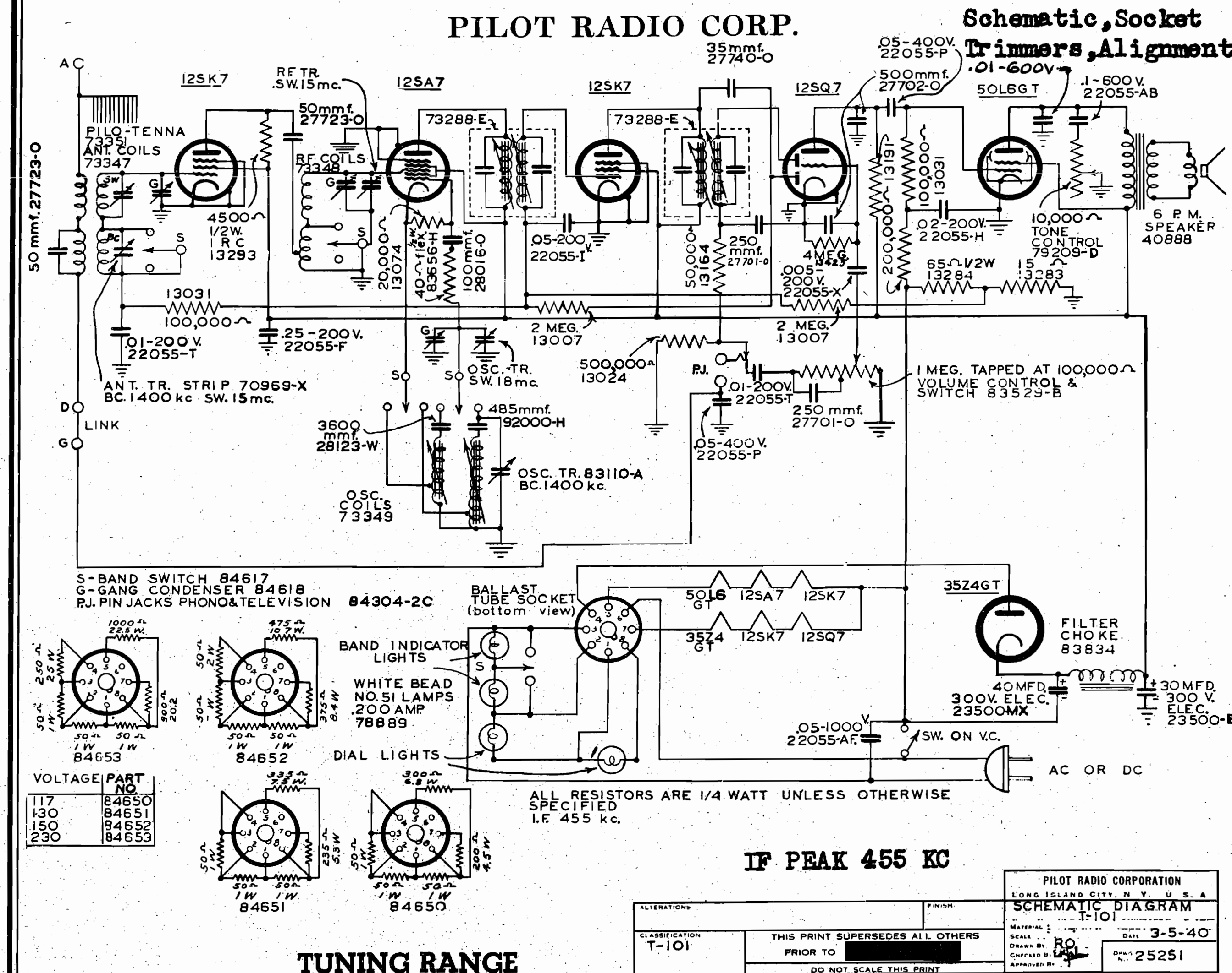
MODEL T-101
Schematic, Socket Trimmers, Alignment



TUNING RANGE

Broadcast Band 535 to 1720 kc.; or 561 to 174 meters
Short Wave Band 5.6 to 19.8 kc.; or 53.6 to 15.2 meters

ANTENNA

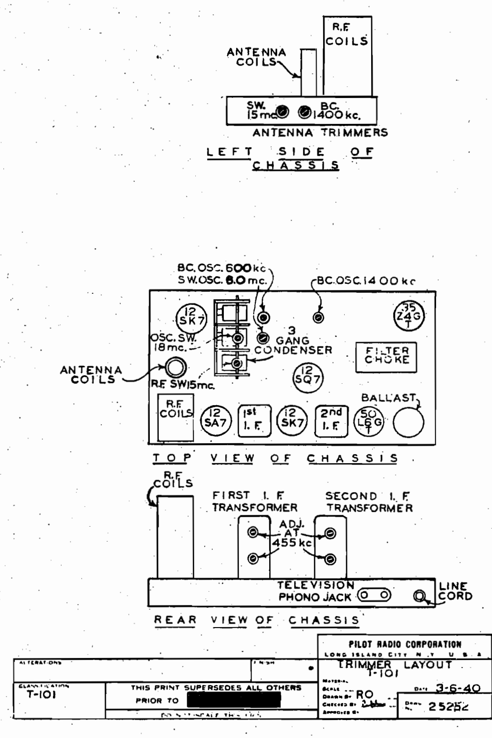
While this receiver is equipped with the new "Pilo-tenna" for the reception of local stations with good tone quality, it is recommended that a good outside antenna of the doublet type be installed for short wave or distant broadcast band reception and for the reduction of interfering noises due to other electrical devices.

When using a doublet antenna, connect one lead-in wire to terminal "A" at the rear of the chassis, and the other lead-in wire to terminal "D". Remove the connecting link from terminals "D" and "G" and connect terminal "G" to a ground such as a cold water pipe or radiator. If an ordinary single wire antenna is used, connect the lead-in wire to Terminal "A" on the rear of the chassis. Leave the link between "D" and "G" terminals and connect a ground wire under terminal "G".

SERVICE NOTES

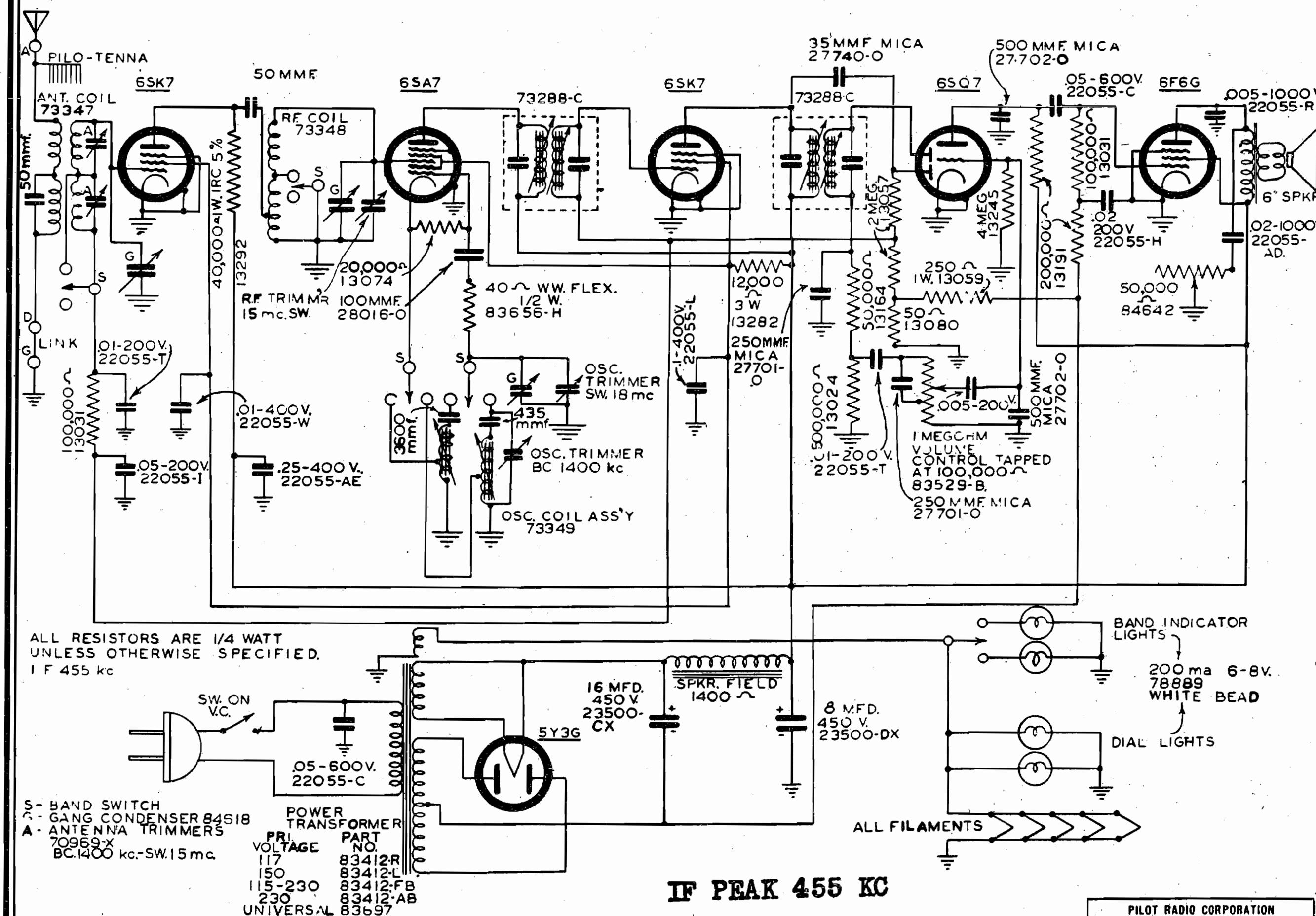
The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 12SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the short wave band use a 400 ohm carbon resistor.



MODEL T-102
Schematic, Socket
Alignment, Trimmers

PILOT RADIO CORP.



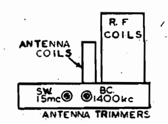
IF PEAK 455 KC

Broadcast Band 535 to 1720 kc.; or 561 to 174.0 meters
Short Wave Band 5.6 to 19.8 mc.; or 53.6 to 15.2 meters

PILOT RADIO CORPORATION
LONG ISLAND CITY N. Y. U. S. A.
SCHEMATIC DIAGRAM T-102
ALTERATIONS | FINISH
CLASSIFICATION T-102
THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO [redacted]
DO NOT SCALE THIS PRINT
DATE 2-20-40
DWG. NO. 2524S

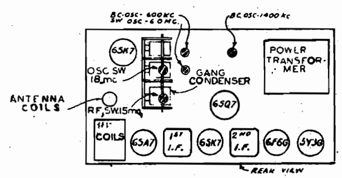
SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.



LEFT SIDE OF CHASSIS

When aligning the I. F. amplifier, the generator must be connected to the grid of the 6SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the short wave band use a 400 ohm carbon resistor.

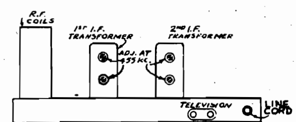


TOP VIEW OF CHASSIS

ANTENNA

While this receiver is equipped with the new "Pilo-tenna" for the reception of local stations with good tone quality, it is recommended that a good outside antenna of the doublet type be installed for short wave or distant broadcast band reception and for the reduction of interfering noises due to other electrical devices.

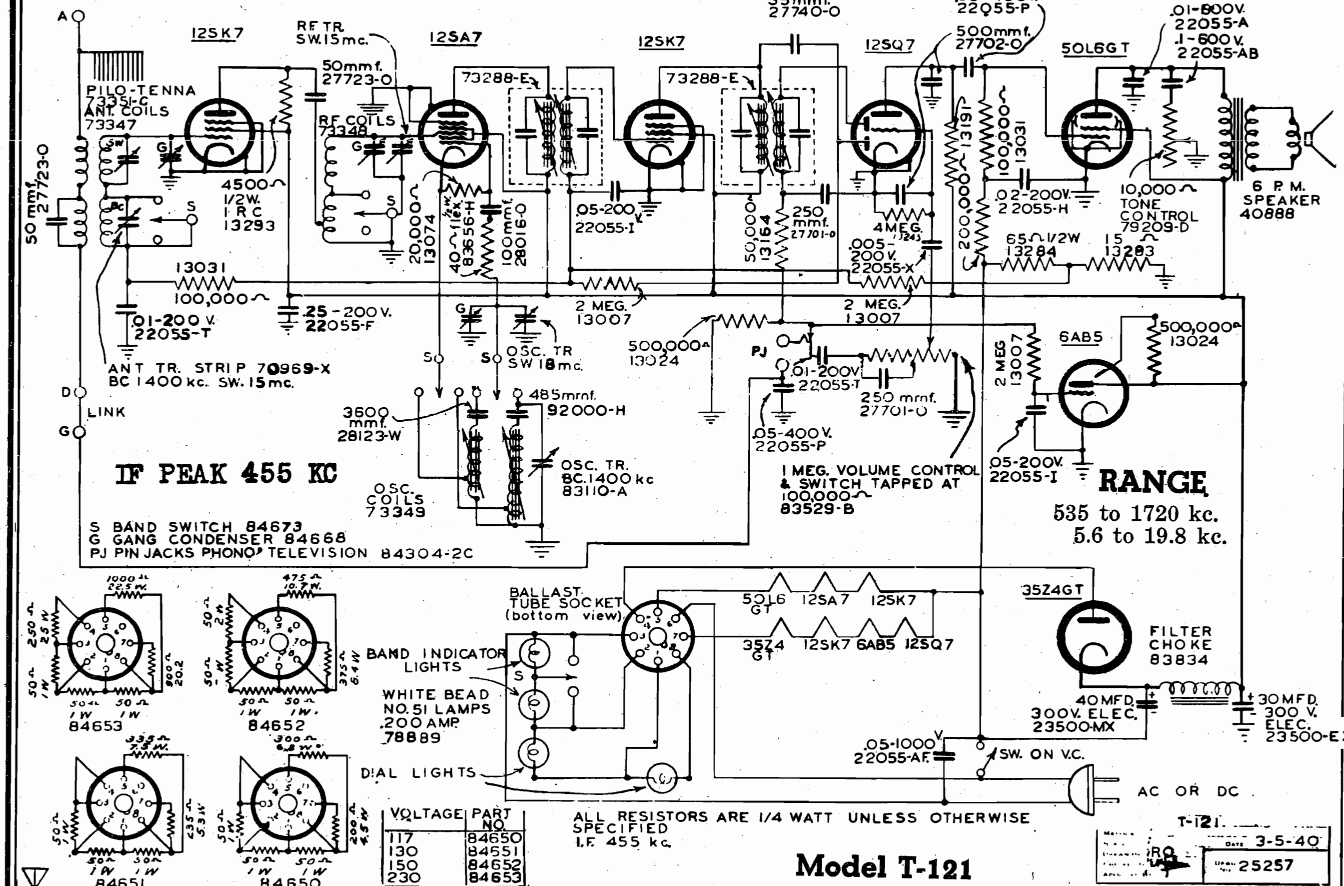
When using a doublet antenna, connect one lead-in wire to terminal "A" at the rear of the cabinet, and the other lead-in wire to terminal "D". Remove the connecting link from terminals "D" and "G" and connect terminal "G" to a ground such as a cold water pipe or radiator. If an ordinary single wire antenna is used, connect the lead-in wire to Terminal "A" on the rear of the cabinet. Leave the link between "D" and "G" terminals and connect a ground wire under terminal "G".



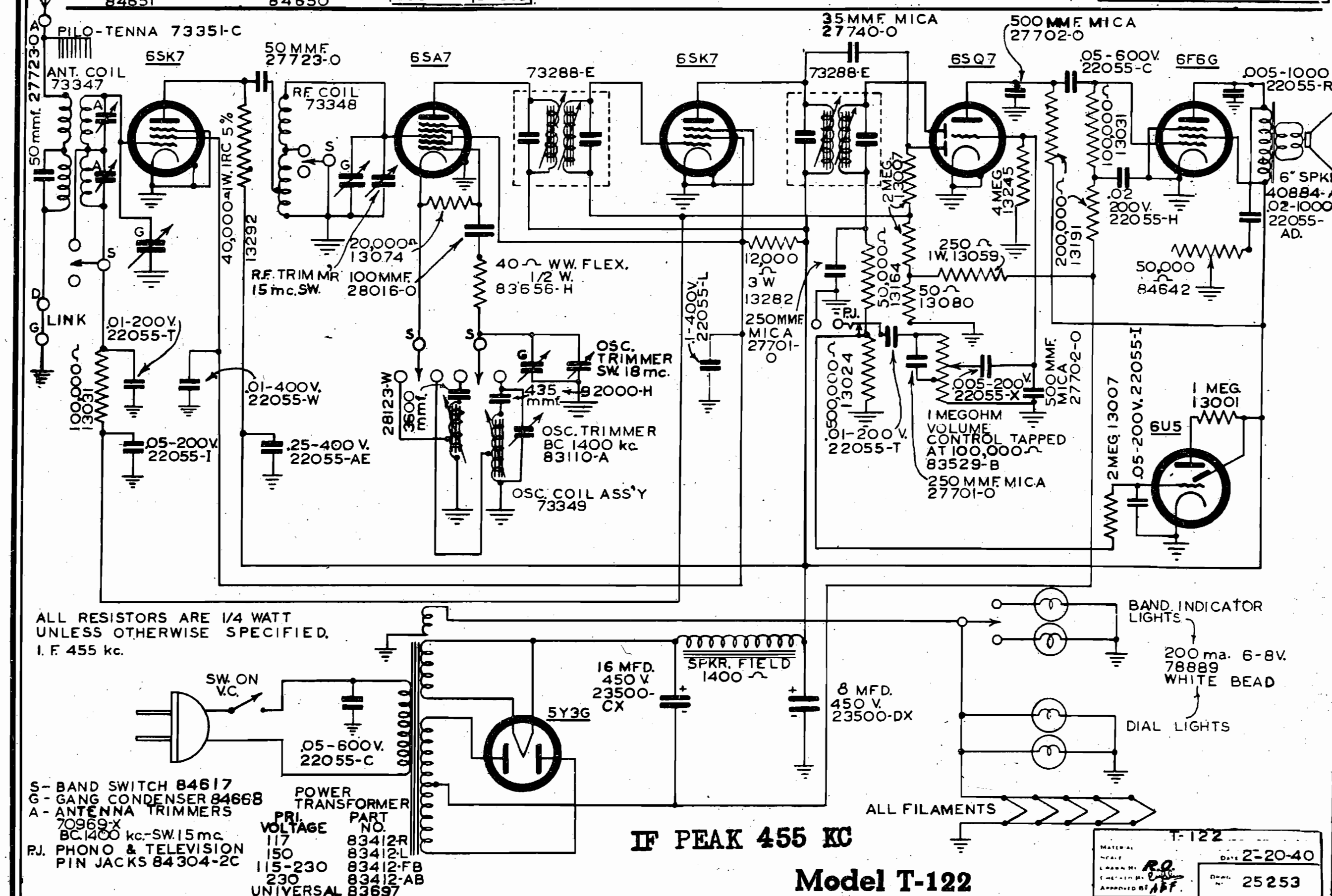
REAR VIEW OF CHASSIS

MODEL T-121
MODEL T-122
Schematics

PILOT RADIO CORP.



Model T-121

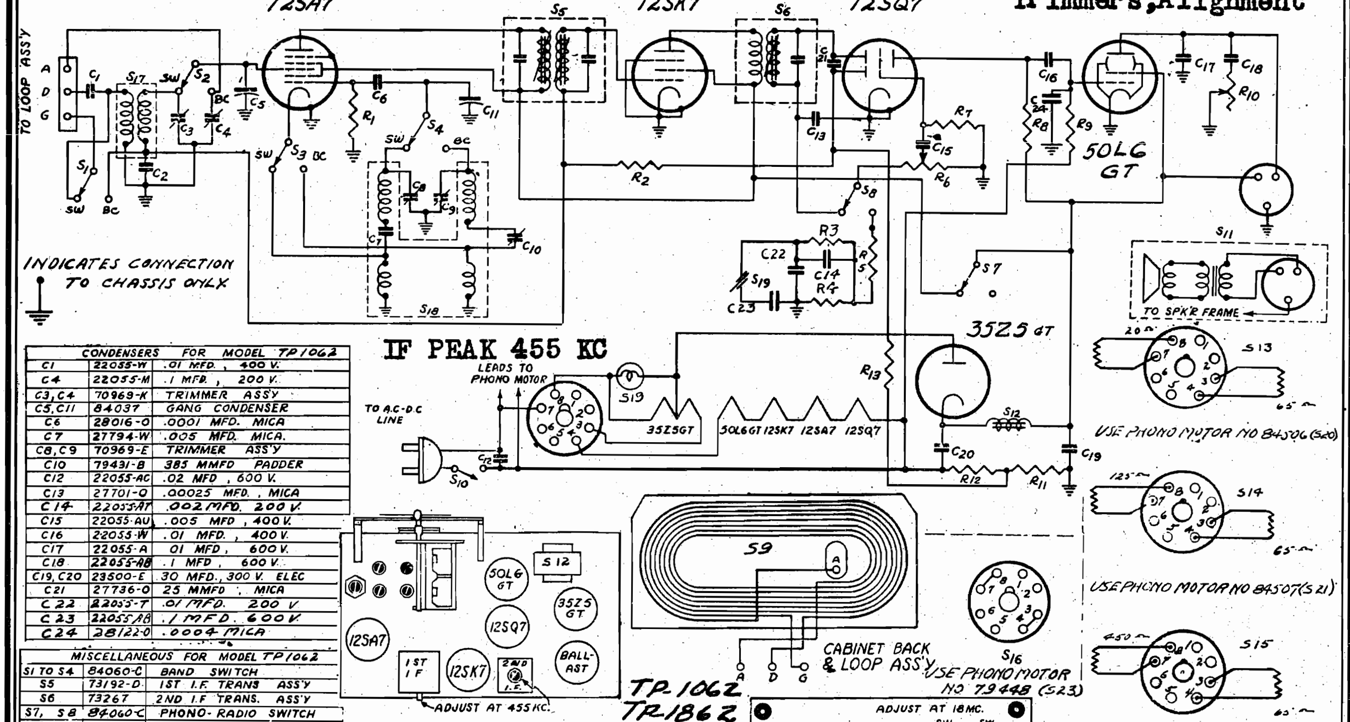


Model T-122

MODEL T-121
MODEL T-122
Alignment, Trimmers

PILOT RADIO CORP.

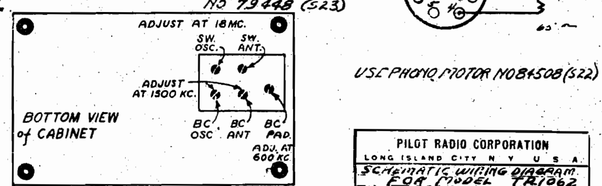
MODELS TP1062, TP1862
Schematic, Socket
Trimmers, Alignment



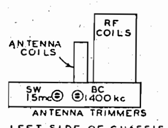
CONDENSERS FOR MODEL TP1062		
C1	22055-W	.01 MFD., 400 V.
C4	22055-M	.1 MFD., 200 V.
C3, C4	70969-K	TRIMMER ASS'Y
C5, C11	84037	GANG CONDENSER
C6	28016-O	.0001 MFD. MICA
C7	27794-W	.005 MFD. MICA.
C8, C9	70969-E	TRIMMER ASS'Y
C10	79431-B	385 MMFD PADDER
C12	22055-AC	.02 MFD, 600 V.
C13	27701-O	.00025 MFD., MICA
C14	22055-AT	.002 MFD. 200 V.
C15	22055-AU	.005 MFD, 400 V.
C16	22055-W	.01 MFD., 400 V.
C17	22055-A	.01 MFD, 600 V.
C18	22055-AB	.1 MFD, 600 V.
C19, C20	23500-E	30 MFD., 300 V. ELEC
C21	27736-O	25 MMFD., MICA
C22	22055-T	.01 MFD. 200 V
C23	22055 AB	.1 MFD. 600 V.
C24	28122-O	.0004 MICA

MISCELLANEOUS FOR MODEL TP1062		
S1 TO S4	84060-C	BAND SWITCH
S5	73192-D	1ST I.F. TRANS ASS'Y
S6	73267	2ND I.F. TRANS. ASS'Y
S7, S8	84060-C	PHONO-RADIO SWITCH
S10		SWITCH ON VOL. CONTROL
S11	40880	8" P.M. SPEAKER
S12	83834	FILTER CHOKE
S13	84429	BALLAST TUBE 130 V.
S14	84430	BALLAST TUBE 150 V.
S15	84431	BALLAST TUBE 230 V
S16	84428	BALLAST TUBE 117 V.
S17	73268	S.W. ANT. COIL + WIRE ASSY.
S18	73266	BC. + S.W. OSC COIL ASSY.
S19	72151	DIAL LAMP (BROWN BEAD 115 MA)
S9	84034-B	CABINET BACK-LOOP ASSY.
S20	84506	PHONO MOTOR FOR 130V.
S21	84507	PHONO MOTOR FOR 150V.
S22	84508	PHONO MOTOR FOR 230V.
S23	79448	PHONO MOTOR FOR 117V.

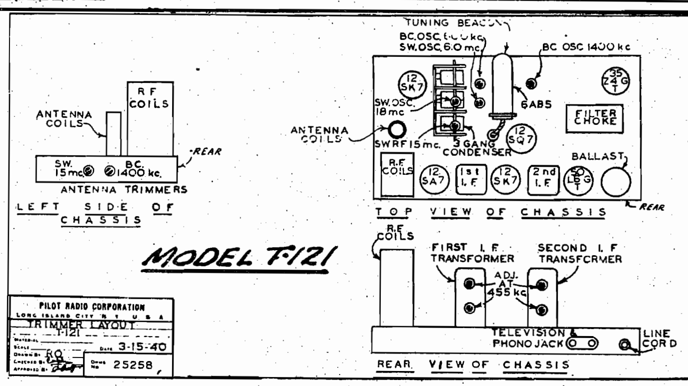
RESISTORS FOR MODEL TP1062		
R1	13074	20,000 OHMS, 1/4 WATT
R2, R13	13007	2 MEGOHMS, 1/4 WATT
R3	13031	100,000 OHMS, 1/4 WATT
R4	13117	15,000 OHMS 1/4 WATT
R5	13028	1000 OHM 1/4 WATT.
R6	79429-B	500,000 OHMS, VOL. CONT.
R7	13245	4 MEGOHMS, 1/4 WATT
R8	13147	300,000 OHMS, 1/4 WATT
R9	13024	500,000 OHMS, 1/4 WATT
R10	83447F	100,000 OHMS, TONE CONT.
R11	13283	15 OHMS, 1/4 WATT
R12	13284	65 OHMS. 1/2 WATT



PILOT RADIO CORPORATION
LONG ISLAND CITY N.Y. U.S.A.
SCHEMATIC WIRING DIAGRAM. FOR MODEL TP1062
Date NOV. 4. 39
Drwg No. 25236
CLASSIFICATION TP1062
THIS PRINT SUPERSEDES ALL OTHERS
PRIOR TO [redacted]
DO NOT SCALE THIS PRINT

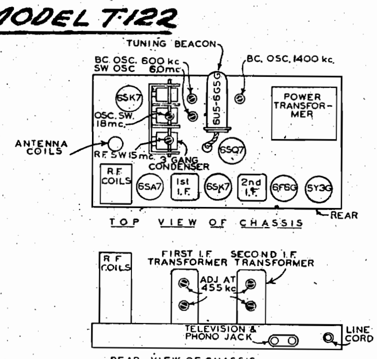


Broadcast Band:
535 to 1720 kc.
Short Wave Band:
5.6 to 19.8 mc.



PILOT RADIO CORPORATION
LONG ISLAND CITY N.Y. U.S.A.
TRIMMER LAYOUT T-121
Date 3-15-40
Drwg No. 25258

MODEL T-122



T-122
THIS PRINT SUPERSEDES ALL OTHERS
PRIOR TO [redacted]
DO NOT SCALE THIS PRINT
PILOT RADIO CORPORATION
LONG ISLAND CITY N.Y. U.S.A.
TRIMMER LAYOUT T-122
Date 3-11-40
Drwg No. 25254

MODEL T-121 ANTENNA MODEL T-122

When using a doublet antenna, connect one lead-in wire to terminal "A" at the rear of the chassis, and the other lead-in wire to terminal "D". Remove the connecting link from terminals "D" and "G" and connect terminal "G" to a ground such as a cold water pipe or radiator. If an ordinary single wire antenna is used, connect the lead-in wire to Terminal "A" on the rear of the chassis. Leave the link between "D" and "G" terminals and connect a ground wire under terminal "G".

SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

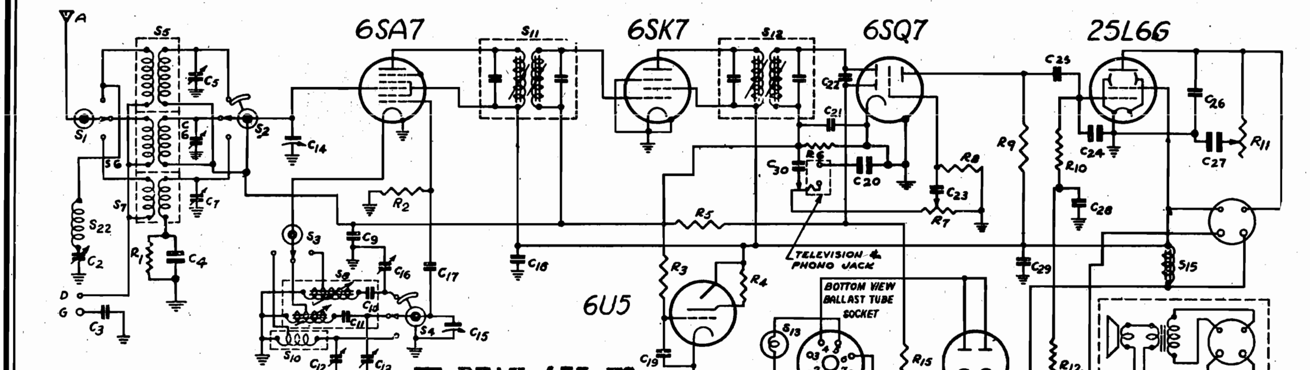
When aligning the I. F. amplifier, the generator must be connected to the grid of the* 12SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the short wave band use a 400 ohm carbon resistor.

* 6SA7 tube—MODEL T-122

Schematics, Socket
Alignment, Trimmers

PILOT RADIO CORP.

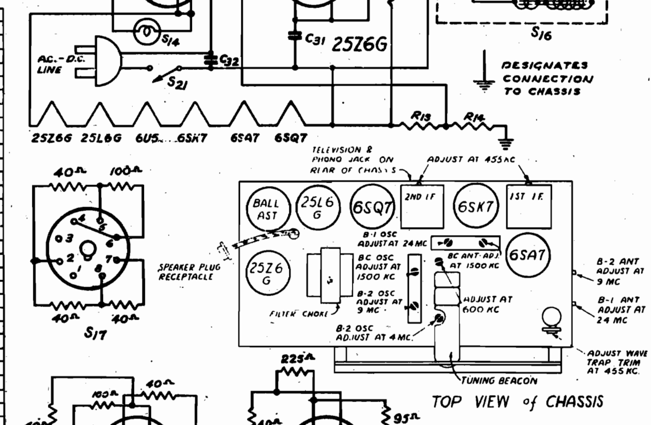
MODEL T1264
MODEL T1351



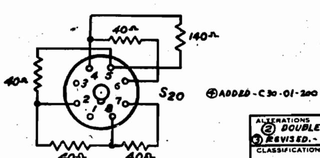
IF PEAK 455 KC

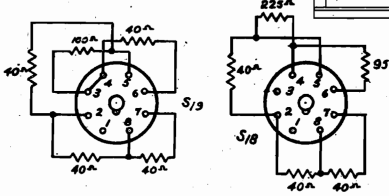
CONDENSENSERS FOR MODEL T-1264		
C3	22055-R	.005 MFD, 1000 V.
C5, C12	70969-J	TRIMMER ASS'Y
C6, C7	70969-E	TRIMMER ASS'Y
C13, C16	70969-E	TRIMMER ASS'Y
C21	27786-0	150 MMF. MICA
C4	28120-W	.005 MFD., MICA ±5%
C9	22055-I	.05 MFD., 200 V.
C11	28103-W	.0021 MFD, MICA
C10	92000-C	430 MMF., MICA
C17	28016-0	.0001 MFD. MICA
C18	22055-L	.1 MFD., 400 V.
C19, C30	22055-T	.01 MFD., 200 V.
C20	22055-P	.05 MFD., 400 V.
C22	27740-0	35 MMF., MICA
C23	22055-X	.005 MFD., 200 V.
C24	27702-0	500 MMF. MICA
C25,	22055-Z	.02 MFD., 400 V.
C28	22055-AU	.005 MFD. 400 V.
C26	22055-A	.01 MFD., 600 V
C27	22055-AB	.1 MFD., 600 V.
C29	23500-EX	30 MFD., 300 V. ELEC.
C31	23500-EX	30 MFD, 300 V. ELEC.
C32	22055-U	.01 MFD., 1000 V.
C14, C15	84125	2 GANG COND.
C2	79455	WAVE TRAP TRIM.

RESISTORS FOR MODEL T-1264		
R4	13024	500,000 OHMS, 1/4 WATT
R2	13074	20,000 OHMS, 1/4 WATT
R3	13007	2 MEGOHMS, 1/4 WATT
R13	13284	65 OHMS, 1/2 WATT
R6	13205	650,000 OHMS, 1/4 WATT
R7	83529-D	1 MEGOHM. VOL. CONT.
R8	13245	4 MEGOHMS, 1/4 WATT
R9	13191	200,000 OHMS, 1/4 WATT
R12	13171	250,000 OHMS, 1/4 WATT
R11	83447-D	100,000 OHMS, TONE CONT.
R10	13031	100,000 OHMS, 1/4 WATT
R1	13241	60,000 OHMS, 1/4 WATT
R15, R5	13007	2 MEGOHMS, 1/4 WATT
R14	13283	15 OHMS, 1/4 WATT
MISCELLANEOUS FOR MODEL T-1264		
S1 TO S4	84246	BAND SWITCH
S5	73306	B.C. ANT. COIL ASS'Y
S6	73307	ANT. COIL ASS'Y B-2
S7	73327	ANT COIL ASS'Y B-1
S8	73309	OSC. COIL ASS'Y BC., B-2
S10	73310	OSC. COIL ASS'Y, B-1
S11	73288-C	1ST. I.F. TRANS. ASS'Y
S12	73288-C	2ND I.F. TRANS. ASS'Y
S13, S14	71282	PILOT LIGHT, .25A. BLUE
S15	83834	FILTER CHOKE, 170 Ω
S16	40855	SPEAKER, 2500 Ω FIELD
S17	81971	BALLAST TUBE 110/125 V.
S18	81972	BALLAST TUBE 220/240 V
S20	81976	BALLAST TUBE, 150 V.
S19	84152	BALLAST TUBE, 130 V.
S21	83529-D	SWITCH ON VOL. CONT.



TOP VIEW of CHASSIS

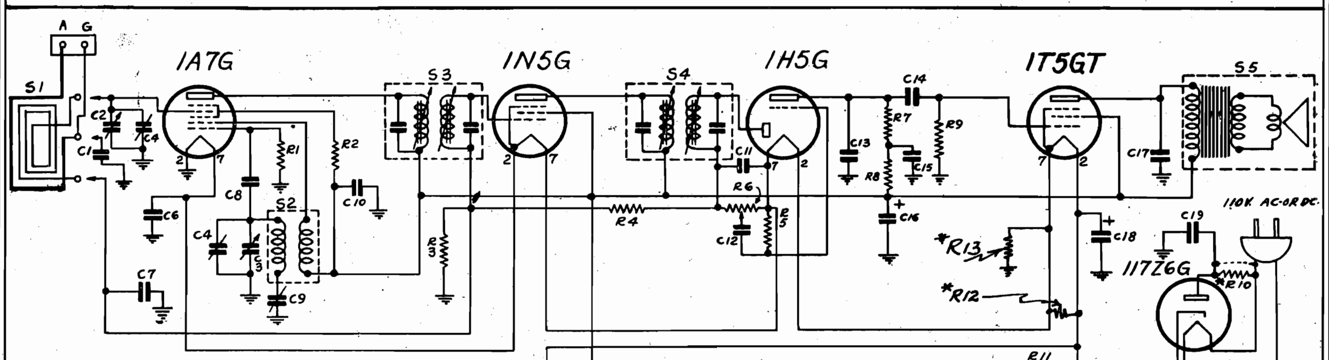




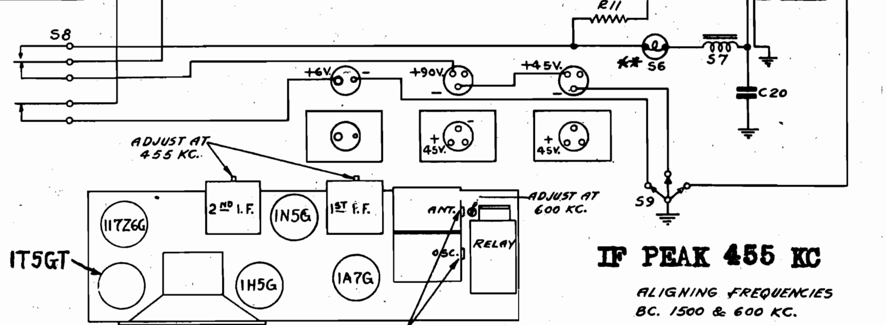
④ ADDED - C30 - .01 - 200. - CO. 3136 - BR. - 10-23-39.

ALTERATIONS	FINISH
② DOUBLET ANT. CONN. ADDED HM 10-12-39	
③ REVISED. - C.O: BR. - 10-18-39.	
CLASSIFICATION T-1264	THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO [redacted]

PILOT RADIO CORPORATION
LONG ISLAND CITY N. Y. U. S. A.
SCHEMATIC WIRING DIAGRAM
MODEL T-1264
MATERIAL
SCALE DATE
DRAWN BY HM.
CHECKED BY
APPROVED BY
DRWG. NO. 25230-4



CONDENSERS FOR T-1351		
C1	22055-W	.01-MFD. 400V. PAPER COND.
C2 C3	84178	2 GANG COND.
C4 C5		TRIMMERS ON GANG COND.
C6	22055-F	.25-MFD. 200V. PAPER COND.
C7	22055-I	.05-MFD. 200V. PAPER COND.
C8 C13	28016-0	100 MMFD. MICA. COND.
C9	79431-B	385-MMFD. PADDER COND.
C10 C14	22055-T	.01-MFD. 200V. PAPER COND.
C11	27701-0	250-MMFD. MICA COND.
C12	22055-AT	.002-MFD. 200V. PAPER COND.
C15	22055-M	.1-MFD. 200V. PAPER COND.
C16 C20	23500-J	40-MFD. 150V. ELEC. COND.
C17	22055-AU	.005-MFD. 400V. PAPER COND.
C18	23500-G	30-MFD. 25V. ELEC. COND.
C19	22055-R	.005-MFD. 1000V. PAPER COND.
*R13	13003	300 OHMS 1/4 WATT
*R12	13203	200 OHMS 1/4 WATT



IF PEAK 455 KC

ALIGNING FREQUENCIES
BC. 1500 & 600 KC.

ADJUST AT 1500 KC.

RESISTORS FOR T-1351			MISCELLANEOUS FOR T-1351		
R1	13191	200,000-OHMS 1/4W. CARBON	S1	73282	ANT. LOOP ASS'Y.
R2	13241	60,000-OHMS 1/4W. CARBON	S2	73271	OSC. COIL ASS'Y.
R3 R7	13001	1-MEGOHM 1/4W. CARBON	S3	73288	1ST I.F. TRANS. ASS'Y.
R4 R9	13007	2-MEGOHMS 1/4W. CARBON	S4	73289	2ND. I.F. TRANS. ASS'Y.
R5	13244	15-MEGOHMS 1/4W. CARBON	S5	40874	5" P.M. SPEAKER.
R6	84209	1-MEGOHM VOL. CONT. & SW.	**S6	72127	60 MIL. 2V. PILOT LIGHT
R8	13031	100,000-OHMS 1/4W. CARBON	S7		400-OHM COIL ON RELAY
R10	83656-K	75-OHMS 1 1/2W. FLEX. RES.	S8	84216	RELAY
R11	83039	1700-OHMS 5W. WIRE WOUND.	S9		SWITCH ON VOL. CONT.

*R12, R13 ADDED TO LATE SETS.
R10 NOT USED ON LATE SETS.
**S6 - 72151 - 150 MIL. 2 V. ON LATE SETS.

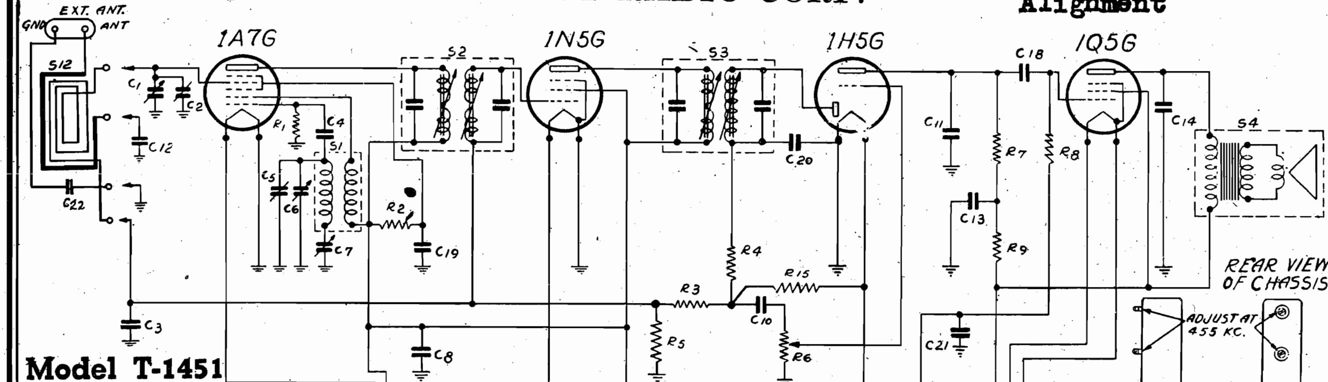
ALTERATIONS	FINISH
CLASSIFICATION T-1351	THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO [redacted]
	DO NOT SCALE THIS PRINT

PILOT RADIO CORPORATION
LONG ISLAND CITY, N. Y. U. S. A.
SCHEMATIC WIRING DIAGRAM
MATERIAL
SCALE DATE 7-20-39
DRAWN BY E.F.
CHECKED BY
APPROVED BY
DRWG. NO. 25225

MODEL T1451
MODELS T1664, T1764

PILOT RADIO CORP.

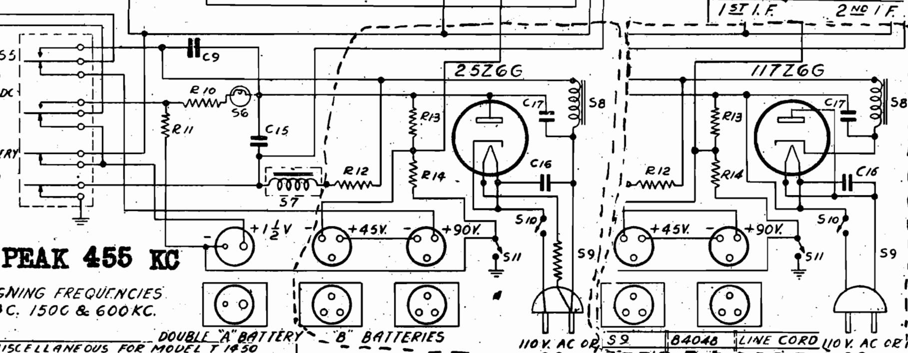
Schematics, Trimmers Alignment



Model T-1451

RESISTORS FOR MODEL T-1451		
R1	13191	200,000 OHMS 1/4 W CARBON
R2	13241	60,000 OHMS 1/4 W CARBON
R3 R5 R8	13223	3.3 MEGS. 1/4 W CARBON
R4	13164	50,000 OHMS 1/4 W. CARBON
R6	84105	2 MEGS VOL. CONT & SWITCH
R7	13001	1-MEG. 1/4 W CARBON
R9	13031	100,000 OHMS 1/4 W CARBON
R10	83656-J	50 OHMS 1 W FLEXIBLE
R11	83656-G	25-OHMS .5 W. FLEXIBLE
R12	84116	700-OHMS 8W. W.W. IRONCLAD
R13	13019	2000-OHMS 1/4 W CARBON
R14	13048	800-OHMS 1/4 W. CARBON
R15	13007	2 MEGS. 1/4 W. CARBON

CONDENSERS FOR MODEL T 1451		
C1 C6	84125	2 GANG COND
C2 C5	70969-J	ANT. & OSC TRIMMER ASS'Y.
C3	22055-I	.05 MFD. 200V PAPER COND.
C4 C11	28016-0	100 MMFD MICA COND.
C7	79431-B	385 MMFD. PADDING COND.
C16	22055-P	.05 MFD. 400V. PAPER COND
C9 C17	23500 J	40 MFD 150V ELEC. COND
C10	22491-E	.01 MFD. 200V. COND.
C12	22055 W	.01 MFD. 400V. PAPER COND.
C13	22055-M	.1 MFD 200V. PAPER COND.
C14	22055-K	.002 MFD 600V PAPER COND.
C15	23500-G	30 MFD. 25V. ELEC. COND.
C18 C19	22055-T	.01 MFD. 200V PAPER COND.
C20	27701-0	250 MMFD. MICA COND.
C8	22055AK	1.0 MFD. 200V PAPER COND.
C21	23500-B	10 MFD 25V. ELEC COND.
C22	22055-A	.01 MFD 600 V



IF PEAK 455 KC

ALIGNING FREQUENCIES BC. 1500 & 600 KC.

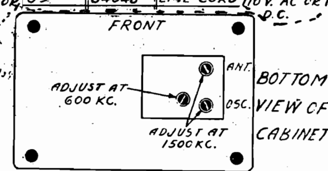
MISCELLANEOUS FOR MODEL T 1450		
S1	73271	OSC. COIL ASS'Y
S2	73277	1ST I.F. TRANS. ASSY
S3	73274	2ND. I.F. TRANS ASS'Y.
S4	40877	5 1/4 P.M. SPEAKER
S5 S7	84110	RELAY
S6	72151	DIAL LIGHT .15 AMPS.
S8	84115	CHOKE 5 HS 200Ω 100 MA.
S9	84106	LINE CORD 310Ω
S10 S11		SWITCHES ON VOL CONT.
S12	73264	ANT. LOOP ASSY

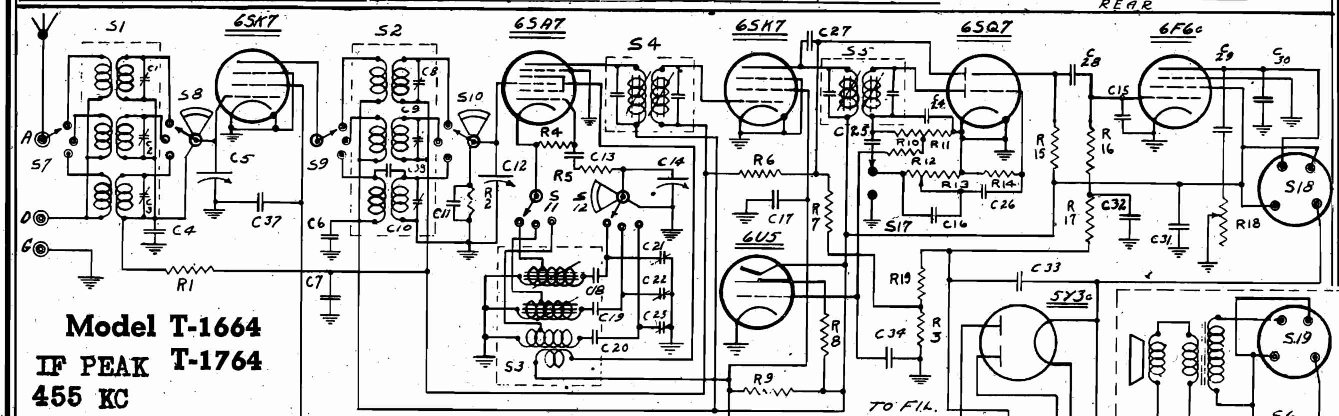
S9	84046	LINE CORD

ALTERATIONS & DATE

2. C2 C5 WAS 70969-E E.F. 5/16/39
4. R-14 WAS 1200Ω 1056 WAS 1C5G E.F. 6 .1 31
5. C_{22} ADDED, AND NEW ANT GND CKT HH 10/11/39
6. DROPPED RESISTOR LINE CORD AND 25Z6G TUBE CO #3298 LBCF 11-15-39

Material
Scale
Drawn By E.F.
Checked By
Approved By
Date 5-11-39
Dwg No 25221-5





Model T-1664 T-1764

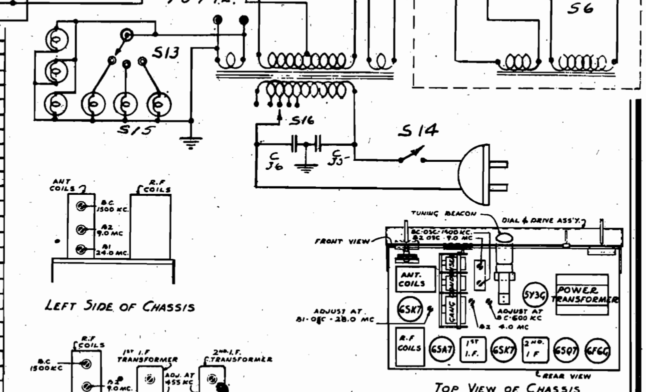
IF PEAK 455 KC

RESISTORS FOR MODEL 1660		
R1, R16	13031	100,000 OHMS 1/4 WATT
R2, R8	13001	1 MEGOHM 1/4 WATT
R3	13080	50 OHMS 1/4 WATT
R4	13074	20000 OHMS 1/4 WATT.
R5	83656-H	40 OHMS W W FLEX
R6, R7, R12	13007	2 MEGOHMS 1/4 WATT
R9	13282	12000 OHMS 3 WATT
R10, R11	13227	330,000 OHM 1/4 WATT.
R13	83529F	1 MEGOHM. VOL. CONTROL
R14	13245	4 MEGOHMS. 1/4 WATT.
R15	13191	200 000 OHMS 1/4 WATT.
R17	13171	250 000 OHMS 1/4 WATT.
R18	83447E	100 000 OHMS, TONE CONTROL
R19	13036	200, OHMS 1 WATT
MISCELLANEOUS FOR MODEL 1660		
S1	73312	ANT. COIL AND CAN ASSY.
S2	73317	INT. STAGE COIL AND CAN ASSY
S3	73322	OSC. COIL AND CAN ASSY.
S4	73192	1ST I.F. TRANSFORMER ASSY
S5	73193	2ND IF TRANSFORMER ASSY
S6	40849	8 IN SPEAKER
S6	40856B	12 IN SPEAKER
S7 To S13	84393	BAND SWITCH ASSY
S14		LINE SWITCH ON VOL. CONTROL
S15	78889	DIAL LAMPS (WHITE BEAD)
S16	83697	PWR. TRANSFORMER - UNIV.
S16	83412-R	PWR. TRANS. 117 VOLT 50/60 ~
S16	83412-AB	PWR. TRANS. 230 VOLT 50/60 ~
S16	83412-FB	PWR. TRANS. 115V-230V. 50/60 ~

ALTERATIONS & DATE

2. C2 C5 WAS 70969-E E.F. 5/16/39
4. R-14 WAS 1200Ω 1056 WAS 1C5G E.F. 6 .1 39
5. C_{22} ADDED, AND NEW ANT GND CKT HH 10/11/39

CONDENSERS FOR MODEL 1660		
C1, C2, C3		TRIMMERS
C4, C7	22055I	.05 MFD. 200 VOLT
C5, C12, C14	84407	3 GANG CONDENSER
C8, C9, C10		TRIMMERS
C11	22055AY	.001 MFD. 200 VOLT
C13	27723-0	50 MMF MICA
C15	27702-0	500 MMF MICA
C16	27701-0	250 MMF MICA
C17, C37	22055 A	.01 MFD. 600 V
C18	92000-C	450 MMF SILVER MICA
C19	27732	.0016 MFD. MICA
C20	28023W	.0038 MFD MICA
C21, C22	70969-E	TRIMMERS
C24	28105	150 MMF MICA
C25, C32	22055T	.01 MFD 200 V
C26	22055X	.005 MFD. 200 V
C27	28114-0	20 MMF MICA
C28	22055AC	.02 MFD 600V
C29	22055V	.03 MFD 1000 V.
C30	22055R	.005 MFD. 1000 V
C31	23500D	8 MFD. 450 V ELECT
C33	23500C	16 MFD. 450V. ELECT
C34	22055T	.01 MFD. 200 V
C35, C36	22055U	.01 MFD 1000 V.
C38	28120-0	5 MMF. MICA
C23	83110-B	TRIMMER
C6	22055-C	.05 MFD. 600 VOLT.
MISCELLANEOUS FOR MODEL 1660		
S16	83412 L	PWR. TRANS. 150 V 50/60 ~
S17	84304	PHONO JACK.
S18	FRONT VIEW OF PLUG	
S19	REAR VIEW OF SPEAKER PLUG	



T1660

THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO [redacted]

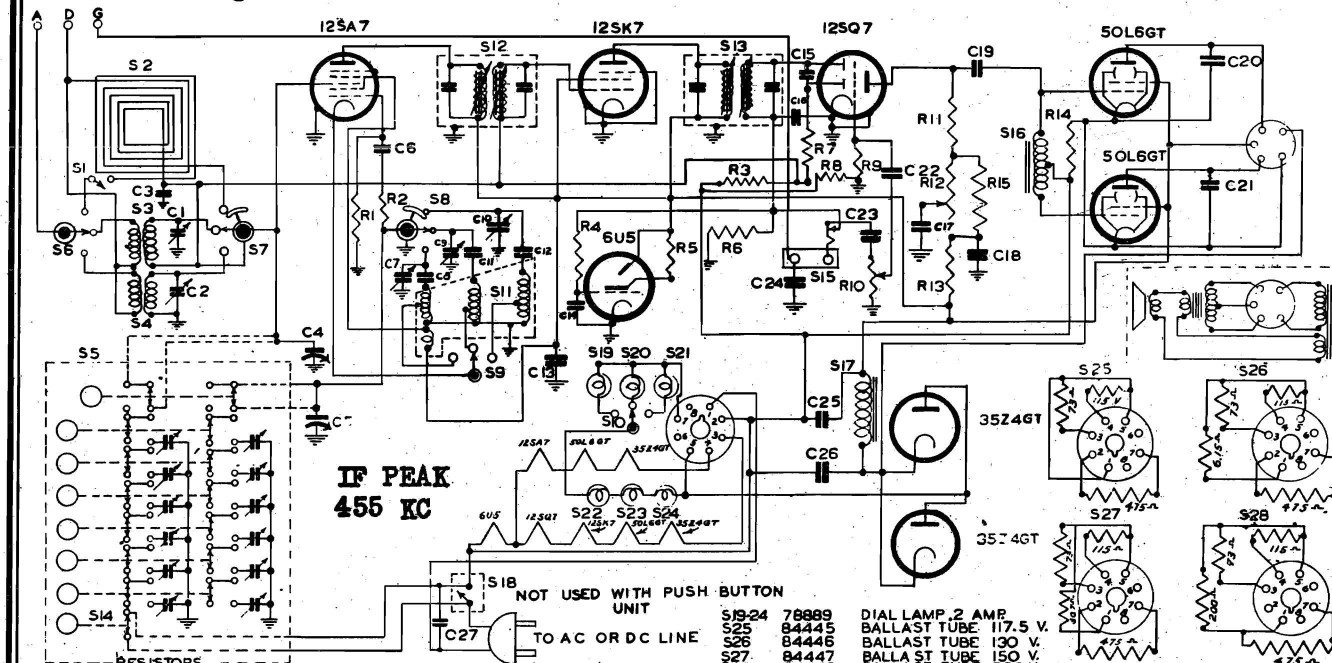
DO NOT SCALE THIS PRINT

PILOT RADIO CORPORATION
LONG ISLAND CITY N Y U S A
SCHEMATIC WIRING DIAGRAM MODEL T-1660
Material
Scale
Drawn By
Checked By
Approved By
Date NOV-2-39
Dwg No 25234

Schematics, Socket Trimmers, Alignment

PILOT RADIO CORP.

MODELS X1584, X1684
MODEL T1854



RESISTORS

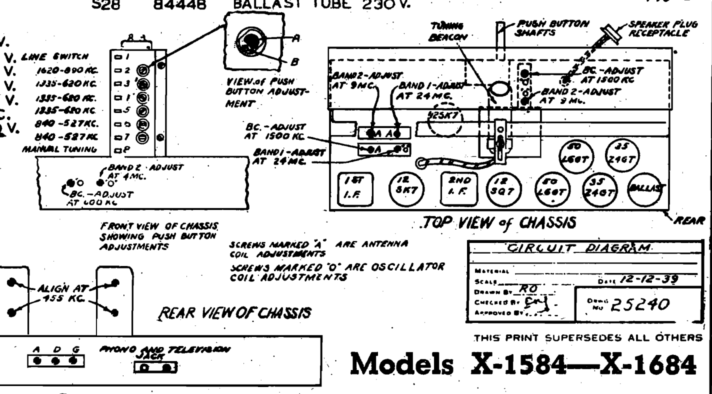
R1	13074	20,000 OHMS 1/4 W
R2	83656-H	40 OHMS 1/2W WW
R3,4,7	13007	2 MEGOHMS 1/4 W
R5	13024	500,000 OHMS 1/4 W
R6	13205	650,000 OHMS 1/4 W
R8	13288	65 OHMS 1/4 W
R9	13245	4 MEGOHMS 1/4 W
R10	83529-D	1 MEGOHM VOL.C. & SW
R11	13149	6,000 OHMS 1/4 W
R12	83447-D	100,000 OHM TONE C
R13	13043	150,000 OHMS 1/4 W
R14	13076	50 OHMS 1 W
R15	13031	100,000 OHMS 1/4 W

CONDENSERS

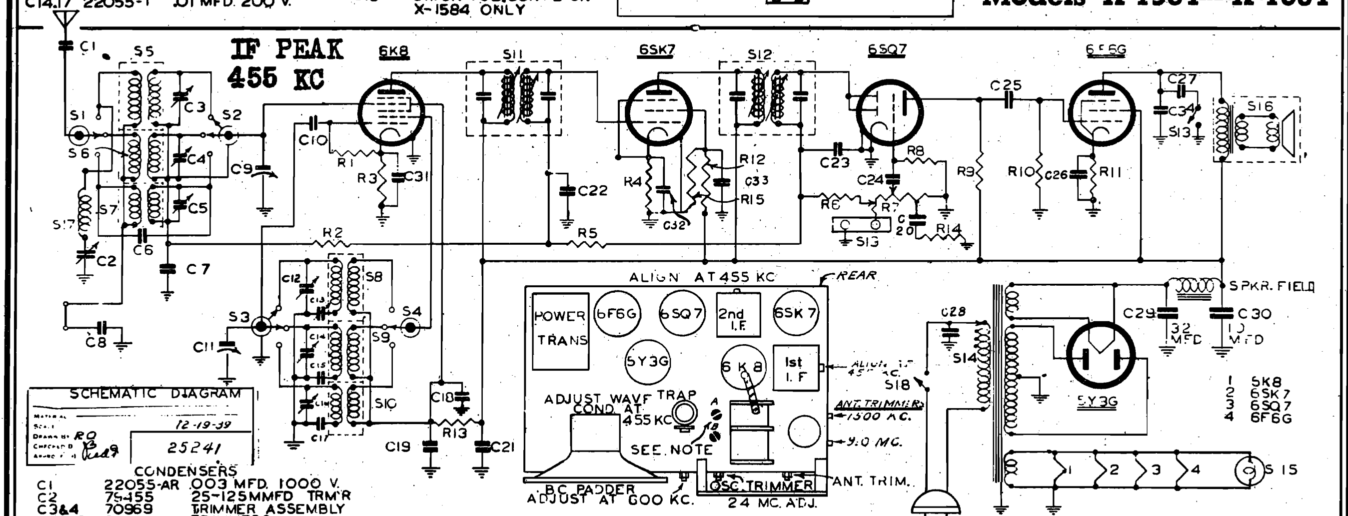
C1,2	70969-X	TRIMMER STRIP ASS'Y
C3	22055-I	.05 MFD. 200 V.
C4,5	84270	2 GANG CONDENSER
C6	27723 O	50 MFD. MICA
C7	70969-M	TRIMMER STRIP ASS'Y
C8	28023-W	.0038 MICA
C9,10	70969-B	TRIMMER STRIP ASS'Y
C11	27732	.0016 MFD. MICA
C12	92000-C	450 MMFD. SLVR MICA
C13,18	22055-M	.1 MFD. 200 V.
C14,17	22055-T	.01 MFD. 200 V.
C15	27740-O	35 MMFD. MICA
C16	27786-O	150 MMFD. MICA
C19	22055-P	.05 MFD. 400 V.
C20,21	22055-R	.005 MFD. 1000 V.
C22	22055-X	.005 MFD. 200 V.
C23,24	22055-I	.05 MFD. 200 V.
C25,26	23500-E	30 MFD. 300 V. TUBULAR ELEC.
C27	22055-AF	.05 MFD. 1000 V.

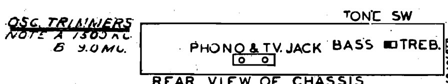
MISCELLANEOUS

S1	72049-2	ANT. SEL. SW.
S2	84252	ANT. L.P. ASS'Y
S3	73315	B-2 ANT. C
S4	73333	B-1 ANT. C
S5	84260	8 P.B. UNIT
S6-10	84246	BAND SW.
S11	73332	OSC. C. ASS'Y
S12	73290	1st I.F. TRFMR
S13	73291	2nd I.F. TRFMR
S14		SW. USED ON X-1684 only
S15	84304 C	PHONO & TV. JK.
S16	84538	C.T. AUDIO CH.
S17	84540	FILTER CHOKE
S18		SW. ON VOL. CONT'L ON X-1584 ONLY



Models X-1584—X-1684





CONDENSERS

C1	22055-AR	.003 MFD. 1000 V.
C2	79455	25-125 MMFD TRM'R
C3&4	70969	TRIMMER ASSEMBLY
C5 16	83110	TRIMMERS
C6	27737	.00001 MFD. MICA
C7&22	22055-I	.05 MFD. 200 V.
C8& 34	22055-R	.005 MFD. 1000 V.
C9&11	79664	2 GANG CONDENSER
C10	27723-O	50 MMFD. MICA
C12&14	70969-E	TRIMMER ASSEMBLY
C13	79431-B	PADDER 300-500 MMFD.
C15	27704-W	.002 MICA
C17	27734 W	.006 MICA
C18	22055 P	.05 MICA 400 V.
C19	23500D	8 MFD. 450 V. ELEC.
C20&31	22055-I	.05 MFD. 200 V.
C21	22055-L	.1 MFD 400 V.
C23	27701-C	.00025 MFD. MICA
C24&25	22055-W	.01 MFD. 400 V.
C26	23500-B	10 MFD. 25 V. ELEC.
C27	22055-AD	.02 MFD. 1000 V.
C28&33	22055-P	.05 MFD. 400 V.
C29 & 30	85044	32-10 MFD 450 V. ELEC.
C32	22055-I	.05 MFD. 200 V.

RESISTORS

R1&6	13164	50000 OHMS 1/4 WATT
R2	13031	100,000 OHMS 1/4 WATT
R5	13007	2 MEGOHMS 1/4 WATT
R3 & 4	13003	300 OHMS 1/4 WATT
R7	83529-E	1 MEGOHM VOLUME CONTROL
R8	13245	4 MEGOHMS 1/4 WATT
R9	13171	250,000 OHMS 1/4 WATT
R10	13024	500,000 OHMS 1/4 WATT
R11	13214	500 OHMS 1 WATT
R12	13062	50,000 OHMS 1/2 WATT
R13	13289	30,000 OHMS 2 WATT
R14	13074	20,000 OHMS 1/4 WATT
R15	13164	50,000 OHMS 1/4 WATT

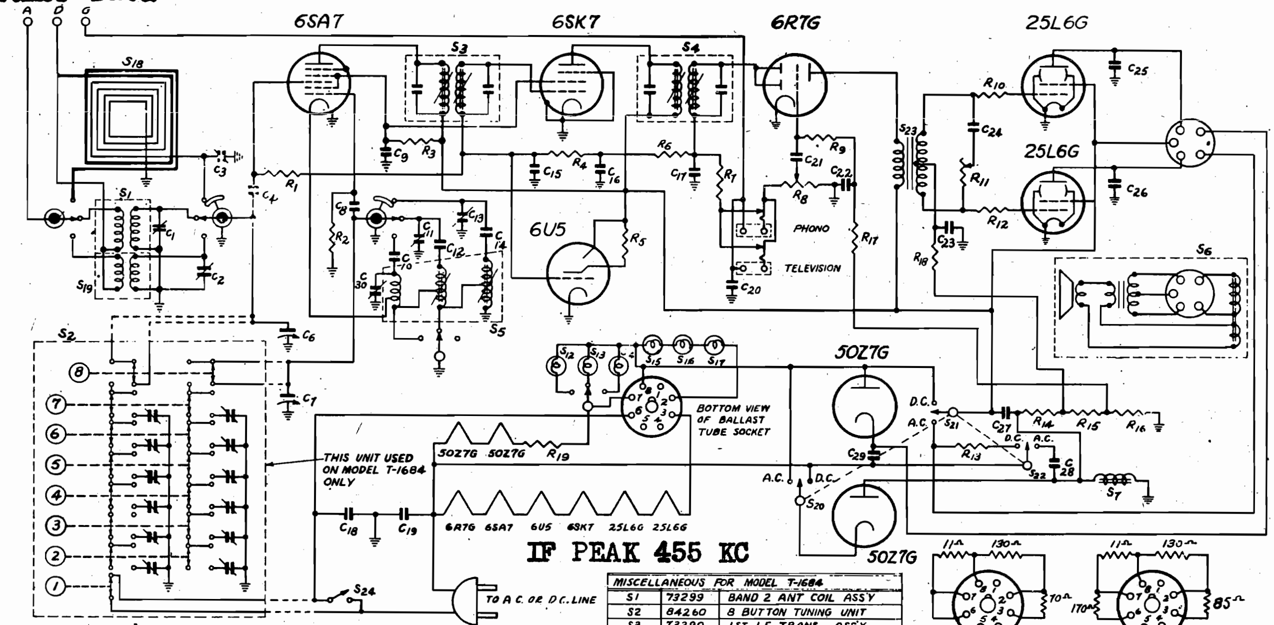
Model T-1854

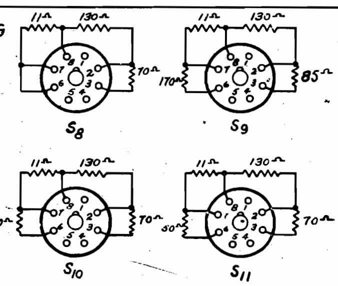
MISCELLANEOUS

S1,2,3,4	83104	BAND SWITCH
S5,7	73175	ANTENNA COIL ASSEMBLY BC & B1
S6	73154	ANTENNA COIL ASSEMBLY B2
S8,10	73176	OSCILLATOR COIL ASSEMBLY BC & B1
S9	73156-B	OSCILLATOR COIL ASSEMBLY B2
S11	73288-B	1st I.F. TRANSFORMER ASSEMBLY
S12	73288-B	2nd I.F. TRANSFORMER ASSEMBLY
S13	72049	TONE CONTROL SWITCH
S14	83412-R	POWER TRANSF. 117 VOLTS (50-60 CYCLES)
S14	83412-AB	POWER TRANSF. 230 VOLTS (50-60 CYCLES)
S14	83412-FB	POWER TRANSF. 115-230 V. (50-60 CYCLES)
S14	83412-L	POWER TRANSF. 150 VOLTS (50-60 CYCLES)
S14	83697	POWER TRANSF. UNIVERSAL (50-60 CYCLES)
S15	71282	PILOT LIGHT BLUE BEAD
S16	40884	6 INCH SPEAKER 1400 OHM FIELD
S17	71119	WAVE TRAP COIL ASSEMBLY
S18	83529-E	SWITCH ON VOLUME CONTROL
S19	84304-C	PHONO. & TELEV JACK

MODELS T1584, T1684
Schematic, Socket
Alignment, Trimmers
Tuner Data

PILOT RADIO CORP.





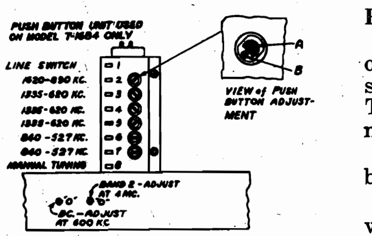
CONDENSERS FOR MODELS T-158, T-1684		
C1, C2	70969-X	TRIMMER STRIP ASSY
C3, C30	70969-J	TRIMMER STRIP ASS'Y
C11, C13	70969-B	TRIMMER STRIP ASS'Y
C4	27701-0	250 MMF MICA
C6, C7	84270	GANG CONDENSER
C8, C17	28016-0	100 MMF. MICA
C9, C20	22055-I	.05 - 200 VOLTS PAPER
C10	28023-W	.0038 MMF. MICA
C12	27732	.0016 MMF. MICA
C14	92000-C	450 MMF. SILVER CAP. MICA
C15, C16	22055-M	.1 MFD. - 200 VOLTS PAPER
C18, C19	78503-B	.01-.01. MFD. 1000 VOLTS SHIELDED
C21	22055AU	.005 MFD 400 VOLTS PAPER
C25, C26	22055-R	.005 MFD 1000 VOLTS PAPER
C22, C23	22055-F	.25 MFD. - 200 VOLTS PAPER
C27	23500-E	30 MFD. - 300 VOLTS SMALL TUB.
C28, C29	23500-J	40 MFD - 160 VOLTS ELECTRO.
C24	22055-W	.01 400 VOLTS PAPER

RESISTORS FOR MODELS T-1584, T-1684		
R1, R5, R9	13024	1/2 MEGOHM, 1/4 WATT
R2, R7	13074	20,000 OHMS, 1/4 WATT
R3	13082	2,000 OHMS, 1 WATT
R4	13001	1 MEGOHM, 1/4 WATT
R6	13007	2 MEGOHMS, 1/4 WATT
R8	78986-B	1/2 MEGOHM VOL CONTROL
R10, R12	13012	500 OHMS, 1/4 WATT
R12	83447-D	750,000 OHMS, TONE CONTROL
R13	83039-B	500 OHMS, 10 WATTS
R14	19204	120,000 OHMS, 1/4 WATT
R15	13043	150,000 OHMS, 1/4 WATT
R16	13200	75,000 OHMS, 1/4 WATT
R17, R18	13171	250,000 OHMS, 1/4 WATT
R19	83656 M	110 OHMS 2 WATTS
RESISTORS FOR MODEL T-1584		
R8	83529-D	1 MEGOHM VOL. CONTROL WITH SWITCH S24

MISCELLANEOUS FOR MODEL T-1684		
S1	73299	BAND 2 ANT COIL ASS'Y
S2	84260	8 BUTTON TUNING UNIT
S3	73290	1ST I.F. TRANS. ASS'Y
S4	73291	2ND I.F. TRANS. ASS'Y
S5	73292	OSCILLATOR COIL ASS'Y
S6	40875	8" A.C.-D.C. SPEAKER, 700 Ω FIELD
S7	84115-B	FILTER CHOKE
S8	81988	BALLAST TUBE 115 V.
S9	81991	BALLAST TUBE 230 V
S10	81989	BALLAST TUBE 130 V.
S11	81990	BALLAST TUBE 150 V.
S12 TO S17	72151	DIAL LAMP, BROWN BEAD BULB
S18	84252	ANTENNA LOOP ASS'Y
S19	73298	BAND 1 ANT. COIL ASS'Y
S20 TO S22	84262	POWER SELECTOR SWITCH
S23	83877	PUSH PULL INPUT TRANS. ASS'Y
MISCELLANEOUS FOR MODEL T-1580 SAME AS FOR MODEL T-1680 EXCEPT FOLLOWING		
S2		NOT USED

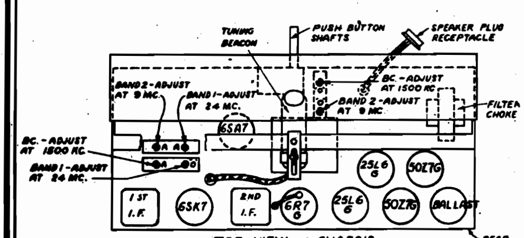
ALTERATIONS
FINISH
CLASSIFICATION T-1584 T-1684
THIS PRINT SUPERSEDES ALL OTHERS PRIOR TO [redacted]
DO NOT SCALE THIS PRINT

PILOT RADIO CORPORATION
LONG ISLAND CITY, N. Y. U. S. A.
SCHEMATIC CIRCUIT DIAGRAM MODEL T-1584, MODEL T-1684
MATERIAL
SCALE
DATE 9-19-39
DRAWN BY HM
CHECKED BY
APPROVED BY
DRWG No. 25226

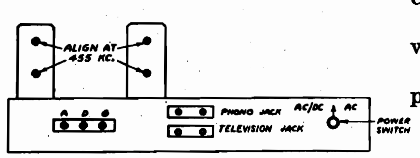


FRONT VIEW OF CHASSIS SHOWING PUSH BUTTON ADJUSTMENTS

SCREWS MARKED "A" ARE ANTENNA COIL ADJUSTMENTS
SCREWS MARKED "O" ARE OSCILLATOR COIL ADJUSTMENTS



TOP VIEW of CHASSIS



REAR VIEW of CHASSIS

PUSH BUTTON CONTROLS:

The purpose of the topmost button (No. 1) is to shut off the power of the receiver. The following 6 push buttons are available for any 6 stations on the broadcast band in the tuning ranges designated below. The lowest button (No. 8) is to be pressed when you wish to operate the manual tuning control.

To set the 6 station buttons (No. 2 to 7) to various stations of the broadcast band, the operations noted below should be followed.

1. Remove the two screws above and below the push buttons in the wooden cover plate and lift off the plate. This will disclose the adjusting screws.

2. With a screw driver inserted in the larger of the two screws opposite the buttons, turn either right or left until the desired station is tuned in. Then make the final adjustment with the small screw.

The limiting wave lengths between which the various buttons can be adjusted are as follows: (buttons numbered from top to bottom).

Button No. 1—"OFF" power switch
Button No. 2—from 1620 kc. to 890 kc. and "ON" power switch
Button No. 3—from 1335 kc. to 620 kc. and "ON" power switch
Button No. 4—from 1335 kc. to 620 kc. and "ON" power switch
Button No. 5—from 1335 kc. to 620 kc. and "ON" power switch
Button No. 6—from 840 kc. to 527 kc. and "ON" power switch
Button No. 7—from 840 kc. to 527 kc. and "ON" power switch
Button No. 8—Manual Tuning and "ON" power switch

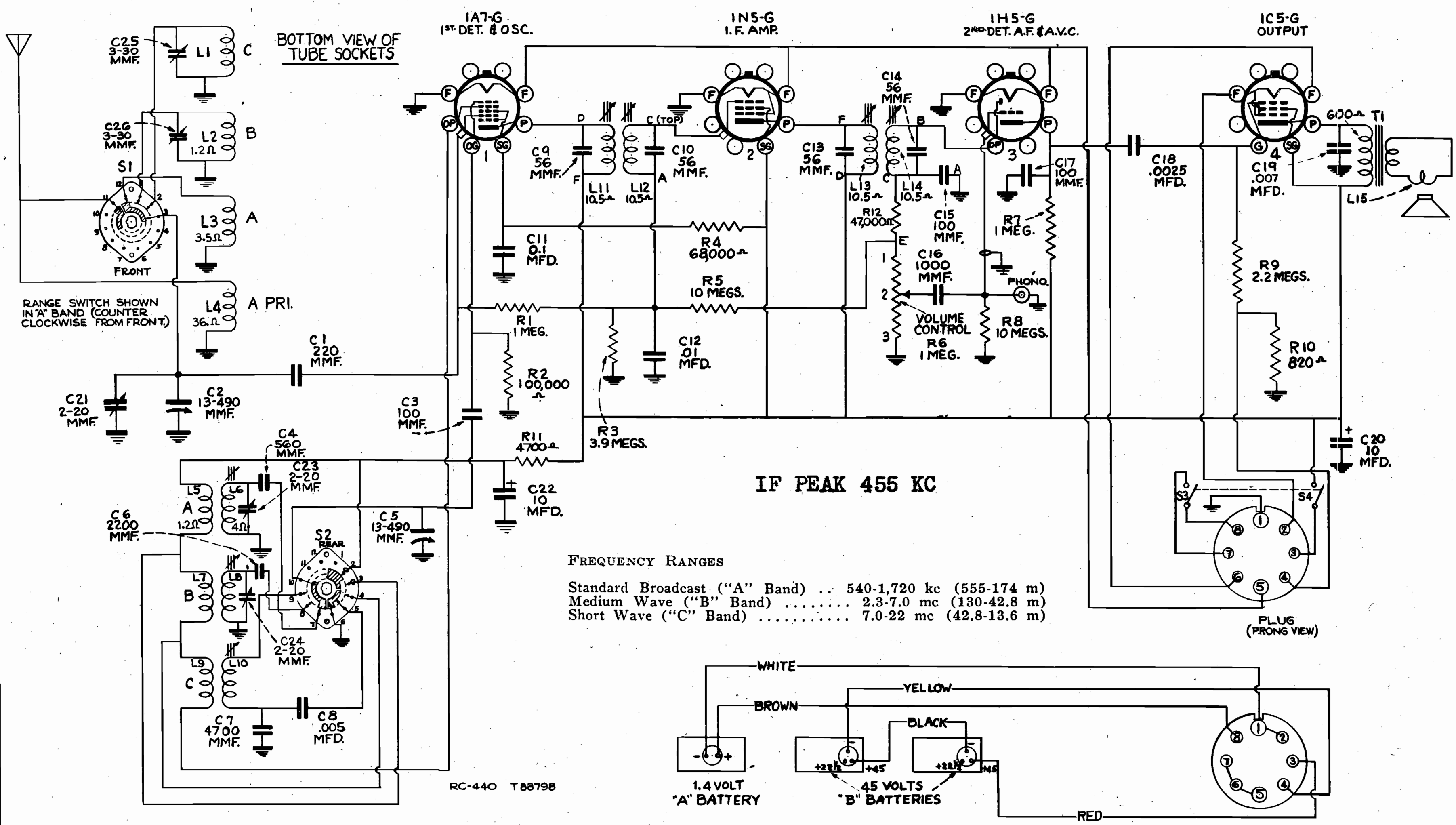
3. In the instruction envelope you will find a card with perforated call letters for most of the broadcasting stations.

Remove the desired one and insert it in the head of the push button whose shaft is next to the screw which has been adjusted to that station.

4. After all push buttons have been set, replace the front wooden plate.

MODEL 4QB, Ch. RC440
Schematic, Lead Dress

RCA MFG. CO., INC.



Frequency Ranges

Standard Broadcast ("A" Band) .. 540-1,720 kc (555-174 m)
Medium Wave ("B" Band) .... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band) .... 7.0-22 mc (42.8-13.6 m)

Model 4QB Schematic Diagram

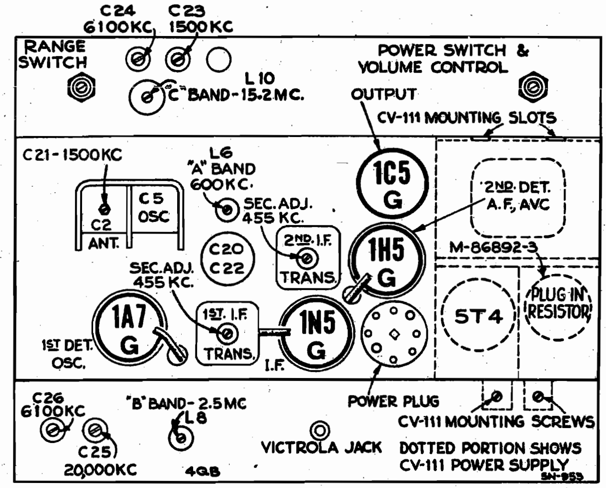
Precautionary Lead Dress:

1. Dress C3 (100 mmfd.) edgewise to chassis.
2. Dress the 1A7-G grid cap lead clear of chassis.
3. Dress green wire from C2 (antenna section of gang) to range switch away from chassis and other wires.
4. Dress blue lead from terminal "E" of 2nd I-F transformer around terminal "D", away from the 1H5-G and 1C5-G sockets, and close to the chassis.
5. Dress C16 (1,000 mmfd.) from grid of 1H5-G tube to volume control, and the green lead to the 1H5-G grid cap away from other wires.
6. Dress the red wire from the power plug to the power switch on the volume control away from the 1H5-G socket.
7. Blue lead from "C" band oscillator coil to 1A7-G No. 6 contact must be dressed away from chassis.
8. All tube shields must be tight.

MODEL 4QB
Alignment, Socket
Trimmers, Voltage
Chassis Wiring

RCA MFG. CO., INC.
Model 4QB Alignment Procedure

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	1N5-G I-F grid cap, in series with .01 mfd.	455 kc	"A" band, quiet point at high-frequency end	L14 and L13 (2nd I-F Trans.)
2	1A7-G 1st-Det. grid cap, in series with .01 mfd.			L12 and L11† (1st I-F Trans.)
3	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc (152.5°) "A" band	Preset L6 (osc.) core 5/16-in. out. Peak C23 (osc.) and C21 (ant.)
4		600 kc	600 kc (33°) "A" band	L6 (osc.)**
5		Repeat steps 3 and 4		
6		6.1 mc	6.1 mc (151°) "B" band	Preset L8 (osc.) core ⅜-in. out. Peak C24 (osc.)* and C26 (ant.)
7		2.5	2.5 mc (29.5°) "B" band	L8 (osc.)**
8		Repeat steps 6 and 7		
9	Antenna lead, in series with 300 ohms	15.2 mc	15.2 mc (122°) "C" band	L10 (osc.)
10		20 mc	20 mc (155.5°) "C" band	C25 (ant.)†† Rock gang
11	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc (152.5 kc) "A" band	C23 (osc.)



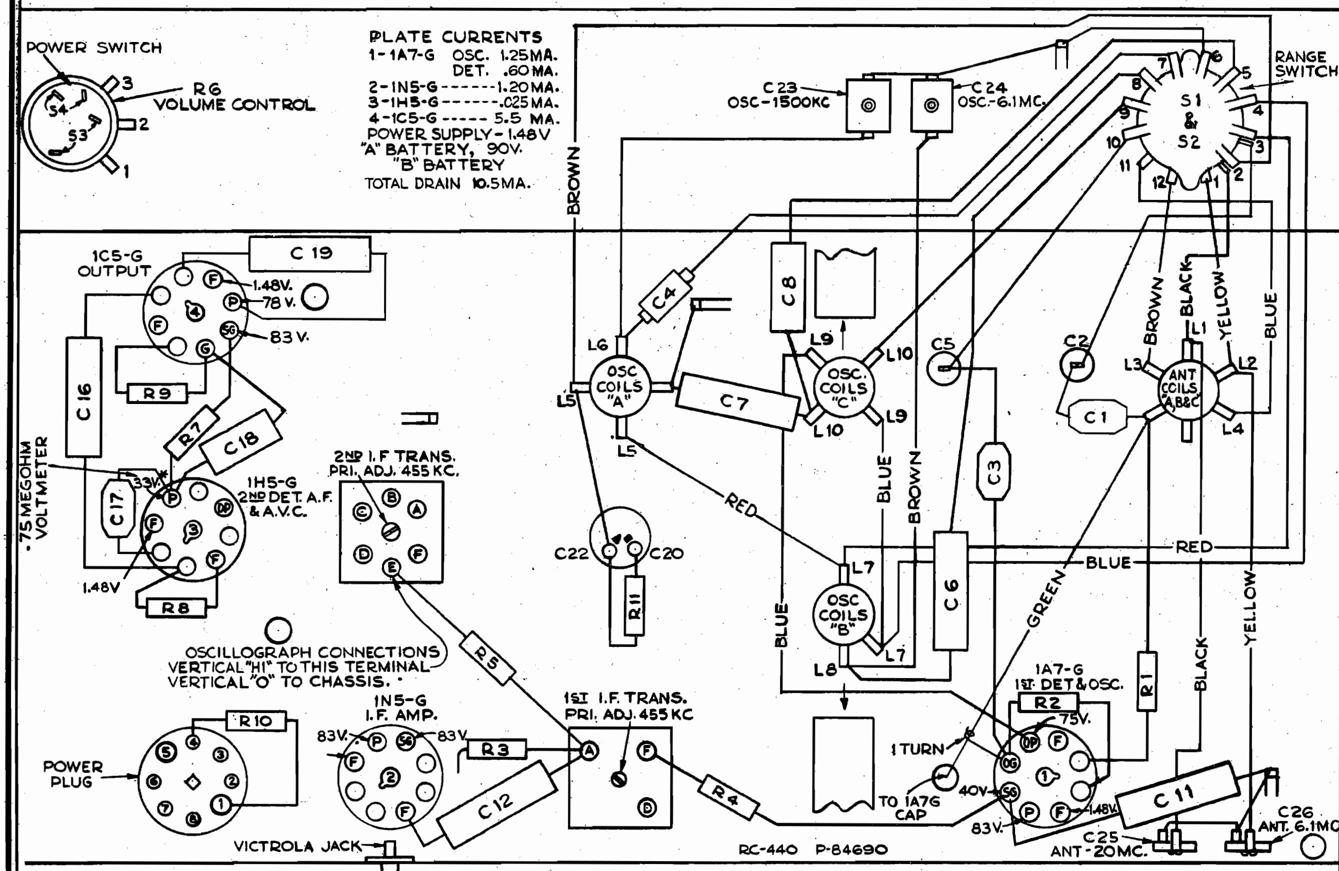
Model 4QB Top View

*Use minimum capacity peak if two peaks can be obtained.

**Rock gang slightly for peak output.

†Do not readjust L13 or L14 when test-osc. is applied to 1A7-G grid.

††Use maximum capacity peak if two peaks can be obtained.



BOTTOM VIEW - REAR OF CHASSIS

Model 4QB R-F Wiring Diagram and Socket Voltages

Voltages shown above are for battery operation.

MODEL 4QB4 MODEL 4QB
Alignment Notes, Drive Cord
MODEL CV-111 Power Supply
Schematic, Voltage, Notes

RCA MFG. CO., INC.

General Alignment Data for Models 4QB and 4QB4

(Refer to specific "Alignment Procedure" for each model)

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

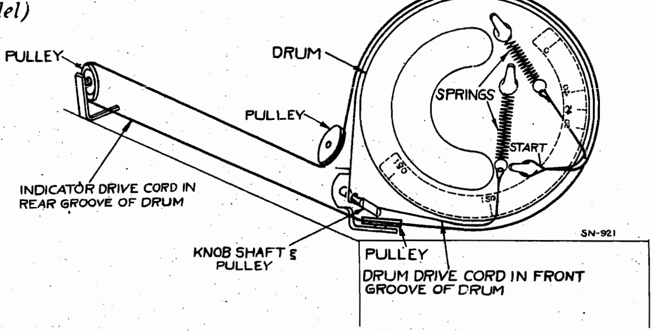
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45 degree mark on drum scale should be in an approximately horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, (last mark at end of "A" scale) and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator
(Drum shown with gang in maximum-capacity position)

CV-111 A-C POWER SUPPLY UNIT

Power Rating	105-125/200-250 volts, 50-60 cycles, 65 watts
Rectifier Tube	RCA-5T4
Ballast Resistor Tube	Type 86892-3
Dial Lamp	Mazda 44, 6.3 volts, 0.25 amp.
Dimensions (inches)	5 x 3¼ x 6⅝
Net Weight	5 lbs.

POWER OUTPUT RATING

	Undistorted	Maximum
With Battery Supply	0.13 watt	0.23 watt
With A-C Supply	0.20 watt	0.46 watt

LOUDSPEAKER
Type .... 5-inch permanent-magnet dynamic
Voice-coil Impedance .... 3 ohms at 400 cycles

BATTERIES REQUIRED
One 1½-volt "A" battery, and
Two 45-volt "B" batteries. or
One 1½-90-volt battery pack.

BATTERY DRAIN
"A" .... .25 amp.
"B" .... 10.5 ma.

Miscellaneous Data

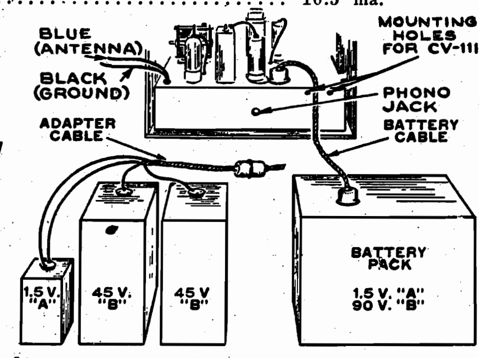
Battery Connections:

A four-wire cable with a plug at each end is provided for making connection from the 8-prong connector on chassis to a plug-in 1½-90 volt "A-B" battery pack.

When separate "A" and "B" batteries are used, it is necessary to use an adapter cable with a socket on one end and three plugs on the other end, connected as shown in the accompanying sketch.

With separate "A" and "B" batteries that have terminals instead of plug-in connectors, remove the three plugs on the adapter cable and connect the leads to the battery terminals, following the color code shown in the schematic diagram.

Separate "A" and "B" batteries or an "A-B" battery pack may be used.



SEPARATE "A" & "B" BATTERIES (ALTERNATIVE) — "A-B" PACK BATTERY

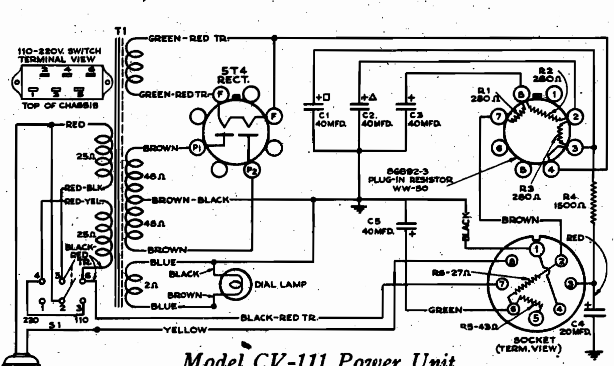
Victrola Attachment:

A jack is provided on the rear of chassis for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

CV-111 A-C Power Supply Unit

Models 4QB and 4QB4 may be operated on 105-125/200-250 volts, 50-60 cycle a-c power supply, by installing a CV-111 power supply unit on the chassis, as follows:

1. Remove the battery cable plug from the power plug on chassis.
2. Set the line power switch (on side of CV-111) to the correct position for the a-c voltage that is to be used.
3. Place the CV-111 on top of the radio chassis as shown in dotted lines in the top view. Press the dial light clip on the projection at low-frequency end of dial assembly. Insert the 8-prong socket (on cable from CV-111) into the power plug on chassis.
4. Fasten the power unit to the chassis. The front of the unit has two projections which fit into slots on the front of the chassis. Two projections on the rear of the unit have holes for fastening to the rear of the chassis with self-tapping screws.
5. Caution: Before connecting to the a-c supply, make certain that all tubes are firmly seated in their sockets. Always disconnect the a-c supply before removing or replacing tubes.
6. Reverse the a-c power plug for minimum hum.



Model CV-111 Power Unit

Socket Voltages, with CV-111 Power Supply Unit
(Line Supply Voltage, 117, or 234 volts)

Tube	1A7-G		1N5-G	1H5-G	1C5-G
Function	1st-Det.	Osc.	I. F.	2nd Det., A. F.	Output
Filament Voltage	1.3		1.3	1.3	1.28
Plate Voltage	95	85	95	40**	92
Screen Voltage	45		95		95
Plate Mils.	0.4	1.5	1.5	.03	9
Screen Mils.	.7		.35		1.75
Bias					6.1

Total "B" current, 15 mils. Total filament current, 146 mils.
**With 750,000 ohm voltmeter.

First Edition

MODEL 6Q4
MODEL 6Q4X
MODEL 6Q8

RCA MFG. CO., INC.

MODEL 8Q1
Parts Lists

Model 6Q4

STOCK No.	6Q4 DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC 441-A)	
34502	Arm—Operating arm between knob shaft and range switch shaft	.25
10194	Ball—Steel ball	.02
31767	Board—Antenna-Ground board	.20
33821	Capacitor—Trimmer capacitor—4 sections, 3 of 2-10 mmfd. and 1 of 3-30 mmfd. (C18, C19, C20, C21)	.70
12714	Capacitor—Adjustable trimmer—2-12 mmfd. (C9, C11)	.50
33818	Capacitor—Trimmer capacitor—2 sections of 2-20 mmfd. each (C12, C15)	.30
33822	Capacitor—Trimmer capacitor—4 sections, of 3-30 mmfd each (C1, C2, C3, C44)	.90
33762	Coil—Antenna coil A-B-C Band (L1, L2, L3, L4)	1.20
32823	Coil—Antenna coil X Band (L5, L6)	1.00
33763	Coil—Detector coil A-B-C Band (L11, L12, L13, L14)	1.60
33765	Coil—Detector coil X Band (L15)	.65
33764	Coil—Oscillator coil A-B-C Band (L7, L8, L9)	.80
32931	Coil—Oscillator coil X Band (L10)	.75
33756	Condenser—Variable tuning condenser (C4, C8, C23)	5.50
33816	Control—Tone control (S7, S8)	2.50
33814	Control—Volume control and power switch (R9, S9)	2.00
32634	Cord—Condenser drive cord	.10
32635	Cord—Indicator drive cord	.24
32713	Core—Core and stud for oscillator coils	.35
33770	Drive—Planetary tuning drive less balls, shafts, and shaft retainer	.90
33773	Drum—Variable tuning condenser drum and hub	.90
33185	Gear—Gear and hub for volume control and switch	.50
11891	Lamp—Pilot Lamp Mazda No. 44	.17
33767	Link—Operating link between knob shaft and range switch	.60
12471	Plate—Cushion socket mounting plate assembly less socket	.15
14281	Resistor—68 ohms, ¼ watt (R1, R17)	.20
31388	Resistor—390 ohms, 1 watt (R10)	.22
13716	Resistor—2,200 ohms, ¼ watt (R8)	.20
33489	Resistor—15,000 ohms 2½ watt (R5)	.55
13908	Resistor—22,000 ohms, ¼ watt (R7)	.20
12454	Resistor—33,000 ohms, ¼ watt (R3)	.20
17440	Resistor—56,000 ohms, 1 watt (R16)	.22
12285	Resistor—470,000 ohms, ¼ watt (R12, R13)	.20
13730	Resistor—1 meg., ¼ watt (R2, R4)	.20
12679	Resistor—2.2 meg., ¼ watt (R6)	.20
13601	Resistor—10 meg., ¼ watt (R11)	.20
34037	Retainer—Retaining washer for range switch shaft	.02
33772	Shaft—Range switch shaft	.35
33768	Shaft—Shaft and gear for tone control	.55
33771	Shaft—Tuning shaft	.15
14278	Socket—Single contact socket and plate for phonograph input	.25
12896	Capacitor—15 mmfd. (C43)	.35
13545	Capacitor—39 mmfd. (C16)	.35
12723	Capacitor—56 mmfd. (C24)	.35
12720	Capacitor—100 mmfd. (C42)	.35
32239	Capacitor—110 mmfd. (C26)	.30
30232	Capacitor—200 mmfd. (C6)	.35
12694	Capacitor—220 mmfd. (C5, C17, C22, C32)	.35
33760	Capacitor—220 mmfd. (C25, C27, C28)	.30
33235	Capacitor—580 mmfd. (C13)	.40
12811	Capacitor—3,600 mmfd. (C10)	.60
31405	Capacitor—6,000 mmfd. (C7)	.75
5107	Capacitor—.0025 mfd. (C34, C36)	.20
33584	Capacitor—.005 mfd. (C35, C38, C39)	.25
32787	Capacitor—.05 mfd. (C30)	.20
4839	Capacitor—0.1 mfd. (C29, C33, C45)	.30
33014	Capacitor—Comprising 3 sections of 10 mfd. and 1 section of 20 mfd. (C37, C40, C41, C46)	1.90
31251	Socket—Tube socket	.25
31418	Spring—Condenser drive cord spring	.05
13638	Spring—Indicator drive cord spring	.08
33769	Spring—Planetary tuning drive spring	.15
33758	Switch—Range switch (S1, S2, S3, S4, S5, S6)	2.45
33759	Transformer—First i-f transformer (L16, L17, C25, C26)	2.25
33761	Transformer—Second i-f transformer (L18, L19, C27, C28, R7)	2.50
31734	Transformer—Power transformer 110 volts, 25 cycle (T1)	10.35
31733	Transformer—Power transformer 110 volts, 60 cycle (T1)	4.75
31735	Transformer—Power transformer 105/130-140/160-200/250 volts, 50/60 cycle (T1)	10.80
	SPEAKER ASSEMBLIES (RL 79A-2)	
32907	Cap—Dust cap	.02
33966	Coil—Field coil (L23)	1.70
32906	Coil—Neutralizing coil (L22)	.25
33777	Cone—Cone complete with voice coil, suspension and dust cap (L21)	1.00
5118	Plug—3 prong male speaker plug	.25
32905	Transformer—Output transformer (T2)	1.35
	MISCELLANEOUS ASSEMBLIES	
33799	Dial—Dial scale	1.65
34295	Dial—Glass dial scale (Greek)	1.50
33797	Frame—Dial frame assembly complete less dial scale	2.20
34571	Knob—Range switch knob	.25
34570	Knob—Tone control knob	.25
34136	Knob—Tuning or volume control knob	.30
33774	Mounting—Speaker mounting hardware	.30
4982	Spring—Retaining spring for knob Stock No. 34136	.05
14270	Spring—Retaining spring for knob Stock No. 34570	.05
34138	Spring—Retaining spring for knob Stock No. 34571	.05

Model 6Q8

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC—414—B)	
32830	Capacitor—2-gang trimmer, each section 2-20 mmfd. (C26, C27)	.40
32829	Capacitor—3-gang trimmer, each section 5-60 mmfd. (C5, C6, C8)	.55
12948	Capacitor—33 mmfd. (C28)	.35
30949	Capacitor—56 mmfd. (C14, C15)	.25
12723	Capacitor—56 mmfd. (C4)	.35
14262	Capacitor—109 mmfd. (C12, C13)	.30
32238	Capacitor—110 mmfd. (C18)	.30
30232	Capacitor—200 mmfd. (C9)	.35
12694	Capacitor—220 mmfd. (C3)	.35
12952	Capacitor—330 mmfd. (C19)	.35
32853	Capacitor—580 mmfd. (C7)	.35
13895	Capacitor—5600 mmfd. (C10)	.70
4838	Capacitor—.005 mfd. (C20, C21, C29)	.25
5148	Capacitor—.007 mfd. (C22)	.20
14393	Capacitor—.01 mfd. (C16)	.30
4839	Capacitor—0.1 mfd. (C17)	.30
32240	Capacitor—Electrolytic, 2 sections 10 mfd., one section 20 mfd. (C23, C24, C25)	1.45
32822	Coil—Antenna coil—A,C bands (L1, L2, L3, L4)	1.35
32823	Coil—Antenna coil—X band (L5, L6)	1.00
32707	Coil—Oscillator coil—A,C bands (L7, L8)	.95
32931	Coil—Oscillator coil—X band (L9)	.75
32817	Condenser—2-gang variable (C1, C2, C11)	2.60
32634	Cord—Drive cord	.10
32713	Core—Adjustable core and stud assembly for oscillator coil	.35
32838	Dial—Glass dial scale	.65
32835	Drum—Variable condenser drive drum complete	.55
11891	Lamp—Dial lamp	.17
32953	Plate—Dial back plate and pointer—less dial scale	1.60
5119	Plug—3-contact female for speaker cable	.25
32834	Pulley—Drive cord pulley and mounting bracket (1 pulley)	.25
32951	Pulley—Drive cord pulleys and mtg. bracket (3 pulleys)	.45
30681	Resistor—470 ohms, 1 watt (R10)	.22
31389	Resistor—12,000 ohms, 3½ watts (R3)	.50
12454	Resistor—33,000 ohms, ¼ watt (R2)	.20
5132	Resistor—47,000 ohms, 1/10 watt (R5)	.15
12285	Resistor—470,000 ohms, ¼ watt (R7)	.20
12013	Resistor—1 meg., 1/10 watt (R11)	.15
13730	Resistor—1 meg., ¼ watt (R1)	.20
11668	Resistor—5.6 meg., ¼ watt (R4)	.20
13601	Resistor—10 meg., ¼ watt (R8)	.20
14343	Retainer—Retaining ring for holding tuning knob shaft	.03
32932	Shaft—Tuning knob shaft	.30
31365	Socket—Dial lamp socket	.30
32950	Socket—Magic Eye socket and bracket	.50
31251	Socket—Octal base tube socket	.25
14278	Socket—Phonograph input socket	.25
31418	Spring—Tension spring for drive cord	.05
32930	Switch—Range switch	1.20
32827	Switch—Voltage changeover switch (S4)	.35
14376	Transformer—First i. f. transformer (L10, L11, C12, C13)	2.45
32825	Transformer—Second i. f. transformer (R5, L12, L13, C14, C15, C18)	2.50
32910	Transformer—Power transformer 105-120 volts, 25-50 cycles (T1)	6.20
32911	Transformer—Power transformer 105-120 volts, 50-60 cycles (T1)	4.10
32852	Transformer—Power transformer 105-120, and 200-240 volts, 50-60 cycles (T1)	4.50
32928	Volume control and power switch (R6, S1)	2.50
	SPEAKER ASSEMBLIES (RL—79—2)	
32907	Cap—Speaker cone center dust cap	.02
32903	Coil—Speaker field coil (L14)	1.25
32906	Coil—Speaker hum neutralizing coil (L15)	.25
32934	Cone—Speaker cone and voice coil (L16)	1.65
5118	Plug—3-prong male for speaker	.25
32933	Speaker complete	5.50
32905	Transformer—Output transformer (T2)	1.35
	MISCELLANEOUS ASSEMBLIES	
32838	Dial—Dial scale and crystal	.65
32937	Knob—Range switch knob (small)	.20
33029	Knob—Tone control and switch knob (small)	.15
32935	Knob—Tuning knob (large)	.25
32936	Knob—Volume control knob (large)	.25
4982	Spring—Retaining spring for knob Stk. 32935	.05
14270	Spring—Retaining spring for knob Stk. Nos. 32936 or 32937	.05
30330	Spring—Retaining spring for knob Stk. 33029	.03

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Model 6Q4X

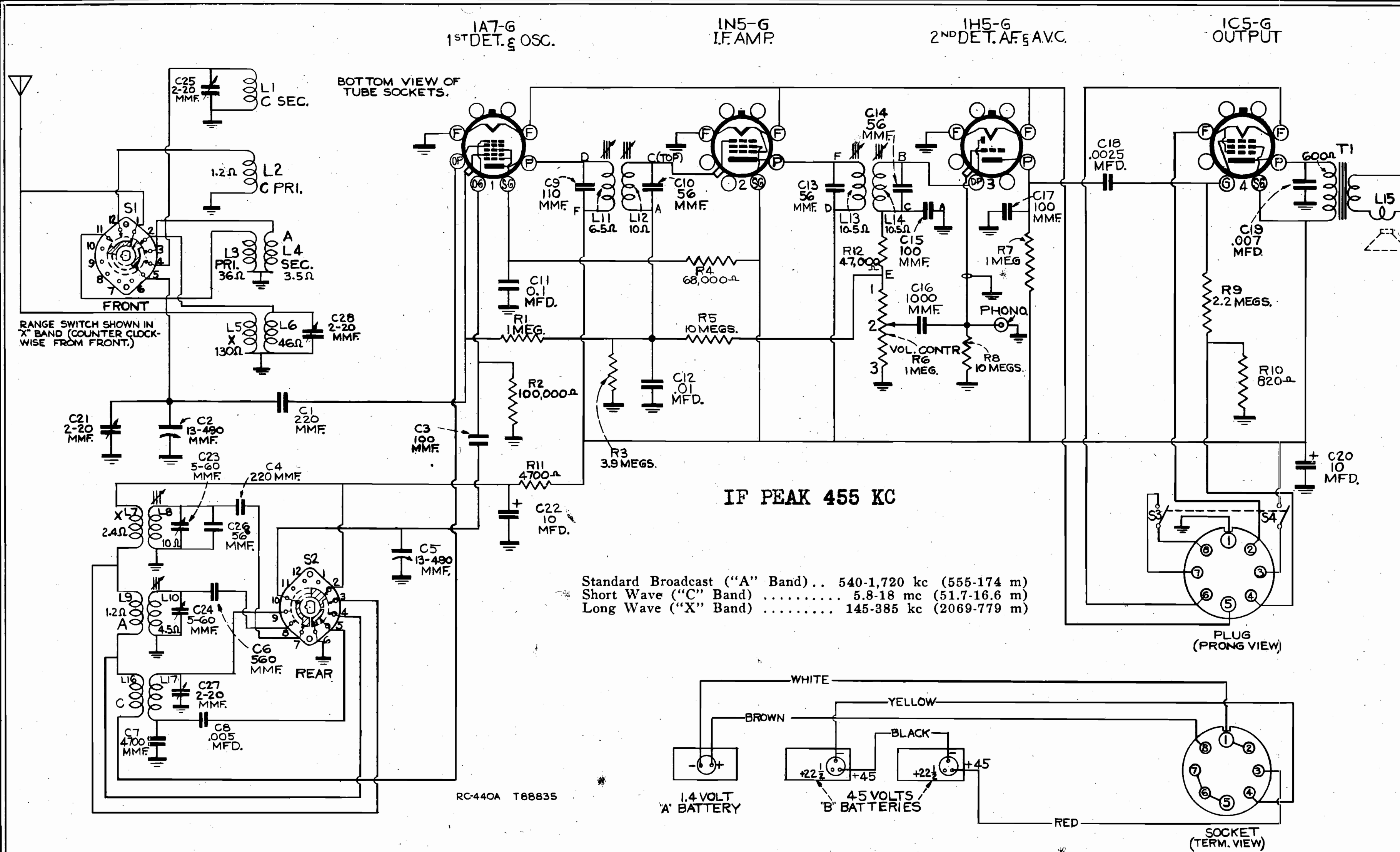
STOCK No.	6Q4X DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-442)	
10194	Ball—Steel ball	.02
33947	Ballast—Ballast resistor tube—Type 86892-4	2.50
12896	Capacitor—15 mmfd. (C43)	.35
13545	Capacitor—39 mmfd. (C16)	.35
12723	Capacitor—56 mmfd. (C24)	.35
12720	Capacitor—100 mmfd. (C31, C42)	.35
32239	Capacitor—110 mmfd. (C26)	.30
30232	Capacitor—200 mmfd. (C6)	.35
12694	Capacitor—220 mmfd. (C5, C17, C22, C32)	.35
33760	Capacitor—220 mmfd. (C25, C27, C28)	.30
33235	Capacitor—580 mmfd. (C13)	.40
12811	Capacitor—3,600 mmfd. (C10)	.60
31405	Capacitor—6,000 mmfd. (C7)	.75
33816	Capacitor—Trimmer capacitor—2 sections of 2-20 mmfd. each (C12, C15)	.30
33822	Capacitor—Trimmer capacitor—4 sections of 3-30 mmfd. each (C1, C2, C3, C44)	.90
33821	Capacitor—Trimmer capacitor—4 sections, of 3 2-10 mmfd. each and 1 of 3-30 mmfd. (C18, C19, C20, C21)	.70
5107	Capacitor—.0025 mfd. (C36)	.20
33584	Capacitor—.005 mfd. (C34, C35)	.25
4937	Capacitor—.01 mfd. (C38, C47, C48)	.25
4870	Capacitor—.025 mfd. (C39)	.20
32787	Capacitor—.05 mfd. (C30, C33, C46, C51)	.20
4839	Capacitor—0.1 mfd. (C29, C45, C49)	.30
12714	Capacitor—Trimmer capacitor—2-12 mfd. (C9, C11)	.50
33824	Capacitor—Comprising 2 sections of 40 mfd., 1 of 10 mfd. and 1 of 20 mfd. (C37, C40, C41, C50)	2.30
33762	Coil—Antenna coil—A-B-C bands (L1, L2, L3, L4)	1.20
32823	Coil—Antenna coil—X band (L5, L6)	1.00
33764	Coil—Oscillator coil—A-B-C bands (L7, L8, L9)	.80
32931	Coil—Oscillator coil—X band (L10)	.75
33763	Coil—Detector coil—A-B-C bands (L11, L12, L13, L14)	1.60
33765	Coil—Detector coil—X band (L15)	.65
33756	Condenser—Variable tuning condenser (C4, C8, C23)	5.50
33961	Control—Volume control and power switch (R9, S10)	2.00
32634	Cord—Variable tuning condenser drive cord	.10
32635	Cord—Indicator drive cord	.24
32713	Core—Core and stud assembly for oscillator coils	.35
33770	Drive—Planetary tuning drive complete, less shafts	.90
33773	Drum—Variable tuning condenser drum	.90
33185	Gear—Gear and hub for volume control and power switch	.50
33768	Gear—Shaft and gear for tone control	.55
31480	Lamp—Pilot lamp	.20
33767	Link—Operating link between knob, shaft and range switch	.60
33825	Plug—2-prong male plug for power input	.10
32709	Reactor—Filter reactor (L23)	1.40
33947	Resistor—Ballast resistor tube—Type 86892-4	2.50
33953	Resistor—Flexible resistor (R18, R19)	.20
14281	Resistor—68 ohms, ¼ watt (R1)	.20
30880	Resistor—150 ohms, ¼ watt (R10)	.20
14076	Resistor—820 ohms, ¼ watt (R17)	.20
12194	Resistor—1,800 ohms, ¼ watt (R16)	.20
13714	Resistor—5,600 ohms, ¼ watt (R8)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R7)	.15
12454	Resistor—33,000 ohms, ¼ watt (R3)	.20
12264	Resistor—220,000 ohms, ¼ watt (R12, R13)	.20
13730	Resistor—1 megohm, ¼ watt (R2, R4)	.20
12679	Resistor—2.2 megohm, ¼ watt (R6)	.20
13601	Resistor—10 megohm, ¼ watt (R11)	.20
33180	Retainer—Planetary drive retaining ring	.02
33771	Shaft—Tuning knob shaft	.15
33772	Shaft—Range switch shaft	.35
31365	Socket—Lamp socket	.30
33742	Socket—Phonograph input socket	.30
30956	Socket—Speaker socket	.30
31251	Socket—Tube socket	.25
13638	Spring—Indicator drive cord spring	.08
33769	Spring—Planetary tuning drive spring	.15
33758	Switch—Range switch (S1, S2, S3, S4, S5, S6)	2.45
33818	Switch—Tone control, and phono. switch (S7, S8)	2.50
33759	Transformer—First i-f transformer (L16, L17, C25, C26)	2.25
33761	Transformer—Second i-f transformer (L18, L19, C27, C28, C31, R7)	2.50
33826	Transformer—Output transformer (T2)	1.80
33947	Tube—Ballast resistor tube—Type 86892-4	2.50
	SPEAKER ASSEMBLIES (84669-1)	
33962	Cone—Cone, voice coil and center suspension assembled in metal housing (L21)	2.10
33828	Speaker—Speaker complete	5.25
	MISCELLANEOUS ASSEMBLIES	
32836	Cord—Power cord complete with male and female connectors	1.00
34296	Dial—Glass dial scale (English)	1.50
34503	Dial—Glass dial scale (Arabic)	1.65
33797	Frame—Dial frame assembly complete, less dial	2.20
34136	Knob—Tuning or volume control knob	.30
34570	Knob—Tone control knob	.25
34571	Knob—Range switch knob	.25
33774	Mounting—Speaker hardware mounting	.30
4982	Spring—Retaining spring for knob, Stock No. 34136	.05
14270	Spring—Retaining spring for knob, Stock No. 34570	.05
34138	Spring—Retaining spring for knob, Stock No. 34571	.05

Model 8Q1

STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES (RC337)	
13216	Board—Antenna and ground terminal board	.25
12717	Board—Phonograph input terminal board	.22
13303	Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord	.40
31785	Cable—Indicator pointer drive cable	.50
30766	Cap—Rubber cap for Magic Eye	.15
12714	Capacitor—Trimmer 2-12 mmfd. (C3, C5, C8, C14, C40)	.50
14392	Capacitor—4.7 mmfd. (C39)	.35
13200	Capacitor—10 mmfd. (C7, C18)	.35
31791	Capacitor—16 mmfd. (C2)	.35
31270	Capacitor—100 mmfd. (C22, C23, C26, C27)	.35
12724	Capacitor—120 mmfd. (C20, C33)	.35
13003	Capacitor—180 mmfd. (C28)	.35
12694	Capacitor—220 mmfd. (C12)	.35
12952	Capacitor—330 mmfd. (C1, C15)	.35
31790	Capacitor—430 mmfd. (C21)	.40
31792	Capacitor—4,000 mmfd. (C41)	.60
31405	Capacitor—6,000 mmfd. (C17)	.75
4838	Capacitor—.005 mfd. (C34, C37)	.25
14393	Capacitor—.01 mfd. (C29, C35)	.30
4870	Capacitor—.025 mfd. (C30)	.20
4886	Capacitor—.05 mfd. (C24)	.20
4839	Capacitor—0.1 mfd. (C11, C16)	.30
12484	Capacitor—0.25 mfd. (C25, C31, C36)	.30
5212	Capacitor—16 mfd. (C32)	1.35
31818	Clip—Magic Eye mounting clip	.15
31780	Coil—Antenna coil (L1, L2, L3, L4)	1.90
31782	Coil—Oscillator coil—"A" band only (L7)	.80
31783	Coil—Oscillator coil—"B" and "C" bands only (L5, L6)	1.05
31781	Coil—R-f coil (L8, L9, L10, L11)	2.15
31774	Condenser—3-gang variable tuning condenser (C4, C13, C19)	5.80
31278	Cord—Band indicator cord	.12
31786	Cord—Variable condenser drive cord	.25
31787	Drive—Two-speed drive and mounting bracket	1.95
31808	Drum—Variable condenser drive cord drum	.80
31304	Indicator—Band indicator strip	.15
11891	Lamp—Dial lamp	.17
31817	Plate—Cushion socket mounting plate—less socket	.10
5040	Plug—4-contact female plug for speaker cable	.30
14404	Plug—7-contact male plug for power input	.35
31788	Pulley—Two-speed drive pulley	.20
31280	Pulley—Indicator pointer drive cord pulley (large)	.10
31373	Pulley—Indicator pointer drive cord pulley (small)	.08
31272	Pulley—Range switch pulley	.20
14680	Resistor—18 ohms, ¼ watt (R15)	.20
14526	Resistor—200 ohms, wire wound, 2½ watt (R16)	.30
31430	Resistor—8,200 ohms, 1½ watt (R13)	.22
13302	Resistor—10,000 ohms, 1/10 watt (R21)	.15
13045	Resistor—18,000 ohms, ¼ watt (R7)	.20
14167	Resistor—27,000 ohms, 2 watt (R22)	.25
11300	Resistor—33,000 ohms, 1/10 watt (R4)	.15
12719	Resistor—82,000 ohms, 1/10 watt (R20)	.15
14560	Resistor—100,000 ohms, ¼ watt (R11, R12)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R10)	.15
12199	Resistor—270,000 ohms, ¼ watt (R18)	.20
13005	Resistor—390,000 ohms, 1/10 watt (R19)	.15
12013	Resistor—1 meg., 1/10 watt (R1, R2, R5)	.15
5131	Resistor—2.2 meg., 1/10 watt (R6)	.15
14887	Retainer—Indicator drive cord pulley retainer	.01
4669	Screw—No. 8-32 x ⅛-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808	.03
31364	Socket—Dial lamp socket	.20
13871	Socket—Magic Eye socket	.45
31251	Socket—Octal base tube socket	.25
31279	Spring—Band indicator tension spring	.03
13638	Spring—Tension spring for pointer drive cable, or variable condenser drive cord	.08
31775	Switch—Range switch (S1, S2, S3, S4)	1.65
31807	Tone Control and power switch (R17, S5, S6)	1.50
31267	Transformer—First i-f transformer (L12, L13, C22, C23)	2.20
31268	Transformer—Second i-f transformer (L14, L15, C26, C27)	2.05
31450	Volume Control (R9)	1.50
	SPEAKER ASSEMBLIES (RL63H-3)	
31825	Cap—Speaker cone center dust cap	.05
11469	Coil—Hum neutralizing coil (L17)	.30
12012	Coil—Speaker field coil (L18)	2.90
31310	Cone—Speaker cone and voice coil (L16)	1.75
13302	Plug—4-contact male plug for speaker	.25
31824	Speaker complete	10.45
14355	Transformer—Output transformer (T1)	2.00
	MISCELLANEOUS ASSEMBLIES	
31800	Dial—Dial scale and crystal	.90
31831	Escutcheon—Dial scale escutcheon—less dial scale and crystal	2.00
31801	Indicator—Indicator pointer and carriage	.45
31802	Knob—Station selector, tone control, volume control or range switch knob	.15
31287	Rod—Pointer carriage slide rod	.15
31306	Screen—Dial color screen and light diffuser	.45
14270	Spring—Retaining spring for knob Stock No. 31802	.05
31558	Spring—Stop spring for pointer slide rod	.02

MODEL 4QB4, Ch. RC440A
Schematic, Lead Dress

RCA MFG. CO., INC.



Standard Broadcast ("A" Band).. 540-1,720 kc (555-174 m)
Short Wave ("C" Band) .... 5.8-18 mc (51.7-16.6 m)
Long Wave ("X" Band) .... 145-385 kc (2069-779 m)

Model 4QB4 Schematic Diagram

Precautionary Lead Dress:

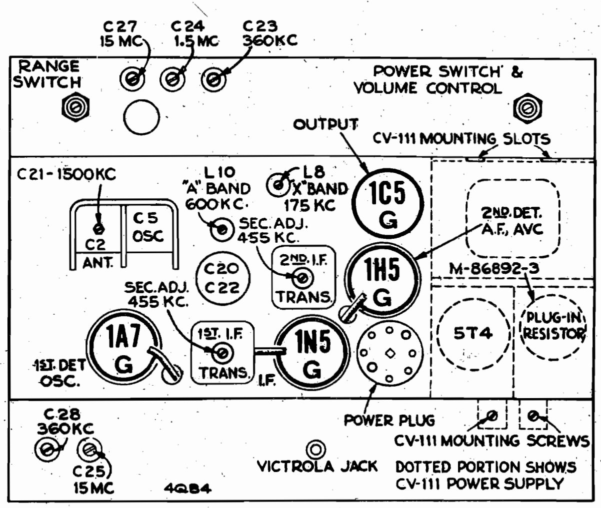
1. Dress C3 (100 mmfd.) edgewise to chassis.
2. Dress the 1A7-G grid cap lead clear of chassis.
3. Dress green wire from C2 (antenna section of gang) to range switch away from chassis and other wires.
4. Dress blue lead from terminal "E" of 2nd I-F transformer around terminal "D", away from the 1H5-G and 1C5-G sockets, and close to the chassis.
5. Dress C16 (1,000 mmfd.) from grid of 1H5-G tube to volume control, and the green lead to the 1H5-G grid cap away from other wires.
6. Dress the red wire from the power plug to the power switch on the volume control away from the 1H5-G socket.
7. Blue lead from "C" band oscillator coil to 1A7-G No. 6 contact must be dressed away from chassis.
8. All tube shields must be tight.

MODEL 4QB4
Alignment, Trimmers
Chassis Wiring, Socket
Voltage

RCA MFG. CO., INC.

Model 4QB4 Alignment Procedure

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	1N5-G I-F grid cap, in series with .01 mfd.	455 kc	"A" Band, Quiet Point at high-frequency end	L14 and L13 (2nd I-F Trans.)
2	1A7-G 1st-Det. grid cap, in series with .01 mfd.			L12 and L11 (1st I-F Trans.)†
3	Antenna lead, in series with 200 mmfd.	1,500 kc (200 m)	1,500 kc (152.5°) "A" Band	Preset L10 (osc.) core 5/16-in. out Peak C24 (osc.) and C21 (ant.)
4		600 kc (500 m)	600 kc (33°)	L10 (osc.)**
5		Repeat steps 3 and 4.		
6		360 kc (833 m)	360 kc (161°) "X" Band	Preset L8 (osc.) core ⅜-in. out Peak C23 (osc.) and C28 (ant.)
7		175 kc (1,710 m)	175 kc (55°) "X" Band	L8 (osc.)**
8		Repeat steps 6 and 7.		
9	Antenna lead, in series with 300 ohms	15 mc	15 mc (146°) "C" Band	C27 (osc.)* C25 (ant.)††
10	Antenna lead, in series with 200 mmfd.	1,500 kc (200 m)	1,500 kc (152.5°) "A" Band	C24 (osc.)



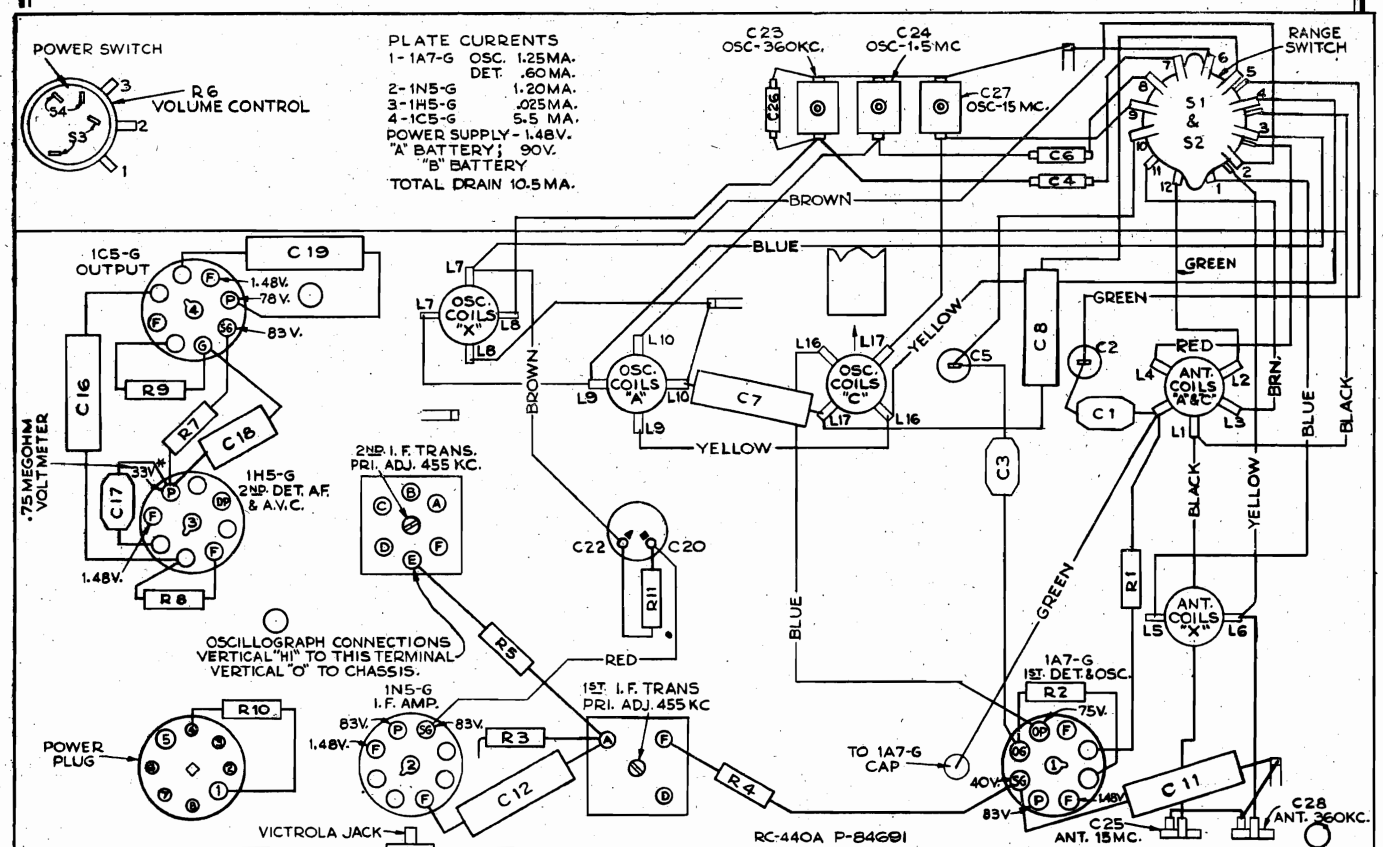
Model 4QB4 Top View

*Use minimum capacity peak if two peaks can be obtained.

**Rock gang slightly for peak output.

†Do not readjust L13 or L14 when test-osc. is applied to 1A7-G grid.

††Use maximum capacity peak if two peaks can be obtained.



BOTTOM VIEW - REAR OF CHASSIS

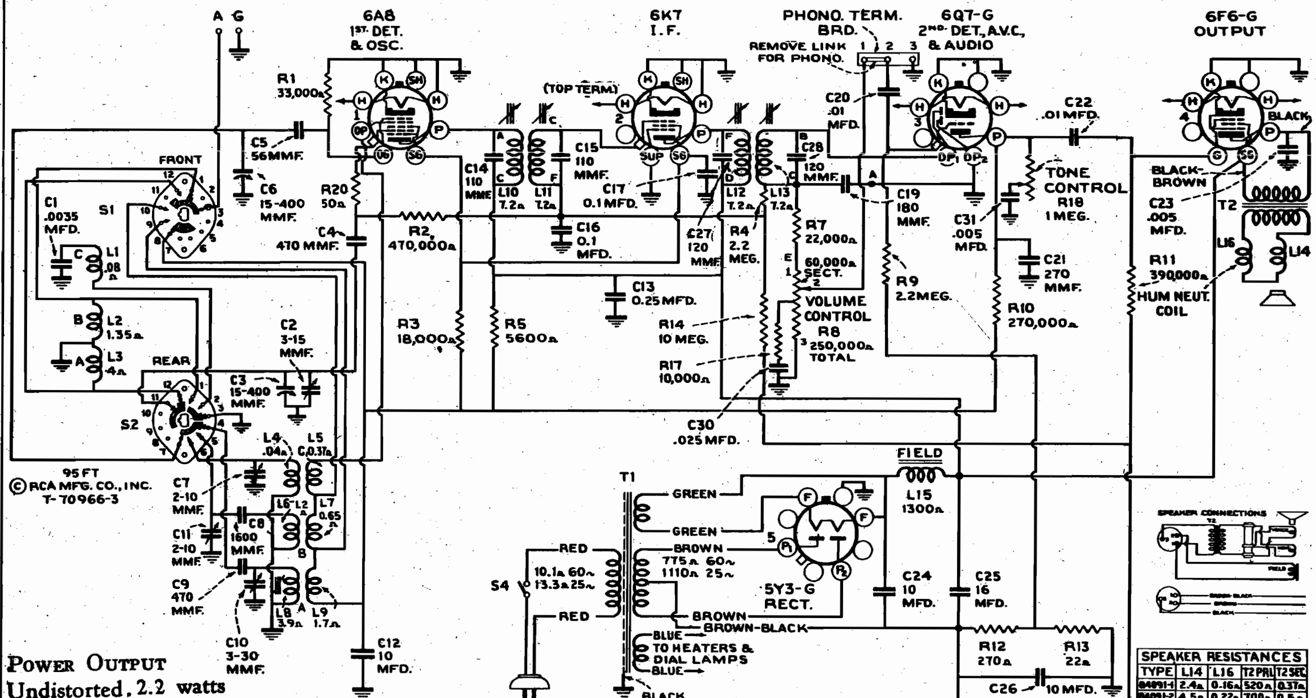
Model 4QB4 R-F Wiring Diagram and Socket Voltages

Voltages shown above are for battery operation.

Schematic
Chassis Wiring

RCA MFG. CO., INC.

MODEL 5Q1
(Formerly 95FT)



SPEAKER RESISTANCES				
TYPE	L14	L16	T2 PRI.	T2 SEC.
84091-1	2.4Ω	0.16Ω	520Ω	0.37Ω
84091-2	4.5Ω	0.22Ω	700Ω	0.5Ω

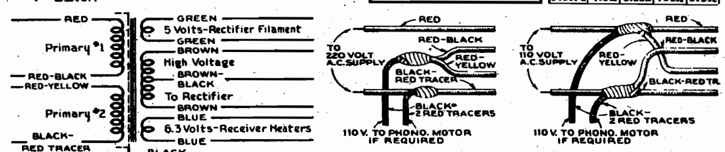
Power Output
Undistorted . 2.2 watts
Maximum . . 4.5 watts

Power Supply Ratings
Rating A . . . . . . 105-125 volts, 50-60 cycles, 75 watts.
Rating B . . . . 105-125 volts, 25-60 cycles, 75 watts.
Rating C 105-125/200-250 volts, 50-60 cycles, 75 watts.

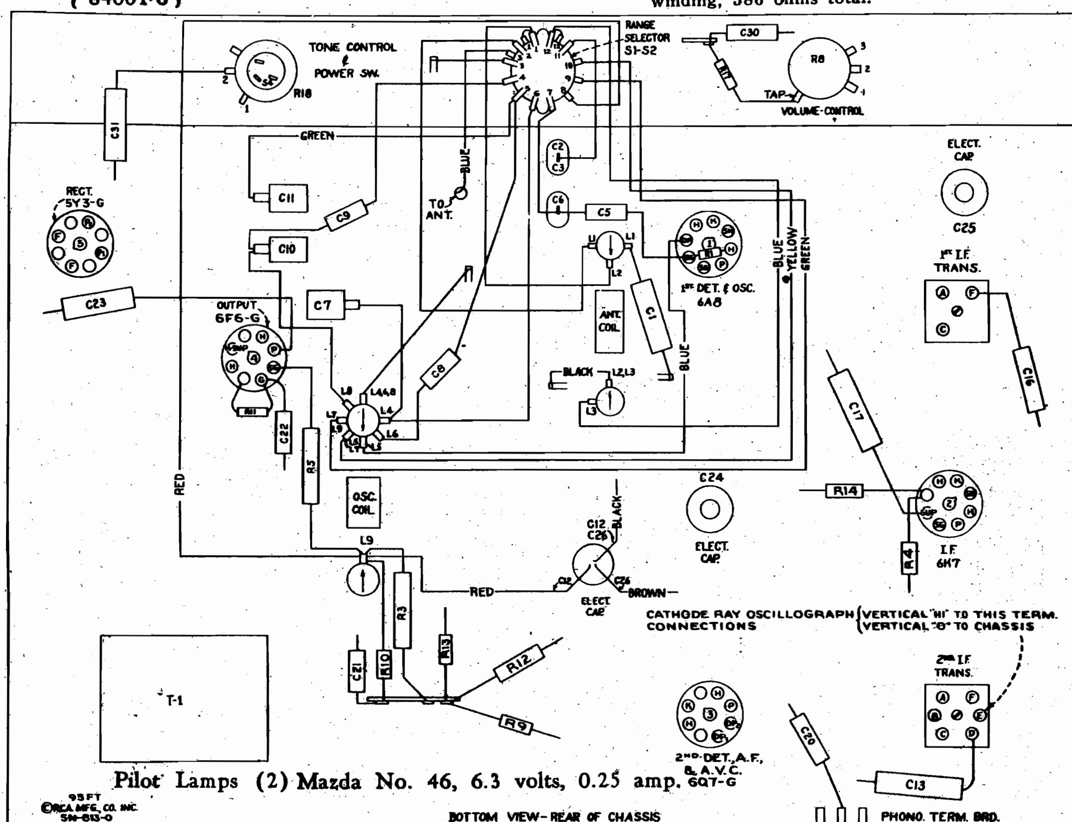
Loudspeaker . . . . 6-inch electrodynamic

Type . . . . { 84091-1, 84001-3 } 2.6 ohms at 400 cycles
V. C. Impedance { 84091-2, 84001-6 } 4.7 ohms at 400 cycles

IF PEAK 455 KC



Schematic and primary lead connections for 110-220 volt power transformer (Stock No. 30607). Resistance of each primary winding, 10 ohms: High-voltage secondary winding, 386 ohms total.



Pilot Lamps (2) Mazda No. 46, 6.3 volts, 0.25 amp.

1938
First Edition

MODEL 5Q1
Voltage, Alignment
Socket, Trimmers, Notes

RCA MFG. CO., INC.

General Description and Service Data

This receiver uses a three-band superheterodyne circuit in a table-type cabinet. Features of design include magnetite-core adjusted i-f transformers and low frequency "A" oscillator tracking; automatic volume control; phonograph terminal board; aural-compensated volume control; continuously variable tone control; dustproof electrodynamic loudspeaker and an edge-illuminated, straight-line dial.

Loudspeaker.—Centering of the loudspeaker voice coil is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Precautionary Lead Dress.—(1) Keep leads from C1 as short as possible. (2) Dress yellow and green leads from range selector to oscillator coil between front apron and range selector. (3) Dress blue lead from oscillator coil to oscillator plate away from other parts. Maintain original length and size of the following: (4) bus lead from antenna coil L1 to range selector and (5) lead from oscillator coil to chassis.

Phonograph Attachment.—A terminal board is provided for connecting a phonograph into the audio amplifying circuit. RCA Victor Models R-93, R-93-A, R-93-B, R-93-C, R-93-2, or R-94 Record Players should be connected as follows: Open link between terminals 1 and 2 on terminal board. Connect yellow wire in Radio-Record switch cable to terminal 1, green to terminal 2, and shield extension to terminal 3. Tape unused red and blue leads separately. Connect a 2-conductor twisted cable between the Record Player binding posts and the screw terminals on Radio-Record switch.

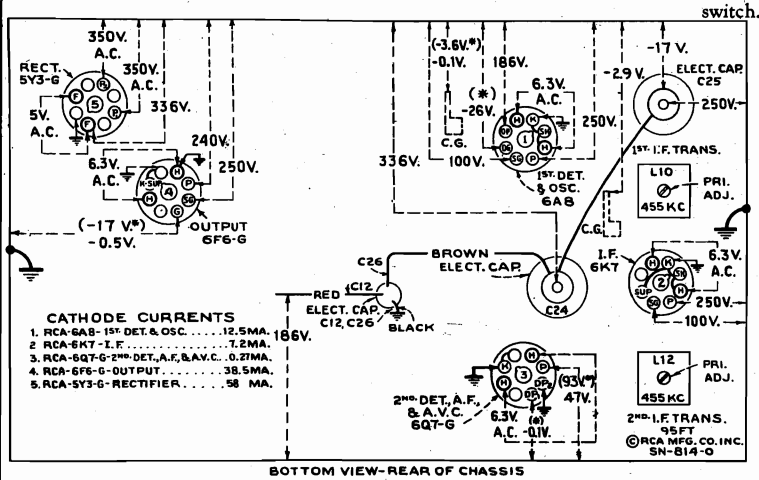
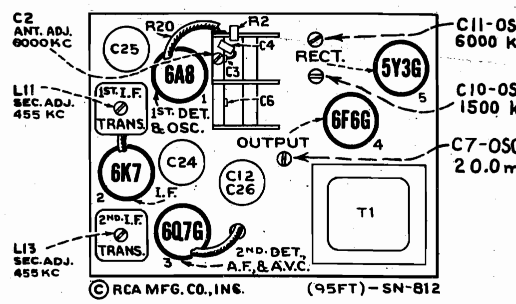


Figure 4—Radiotron Socket Voltages and Trimmer Locations



L8, 600 kc osc. adjustment is accessible through hole in rear apron

Figure 1—Radiotron, Component Part, and Trimmer Locations

* **Note:** Values with star (*) are operating voltages. Values not starred are actual measured voltages.
Measurements made to chassis unless otherwise indicated.
Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.

Alignment Procedure

With the gang tuning-condenser plates in full-mesh position, adjust the pointer to the low-frequency (end) calibration mark on the dial scale. The pointer is soldered in place on the drive cable.

Perform alignment in proper order, tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 4.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figure 3. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver "G" (ground) terminal for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator.

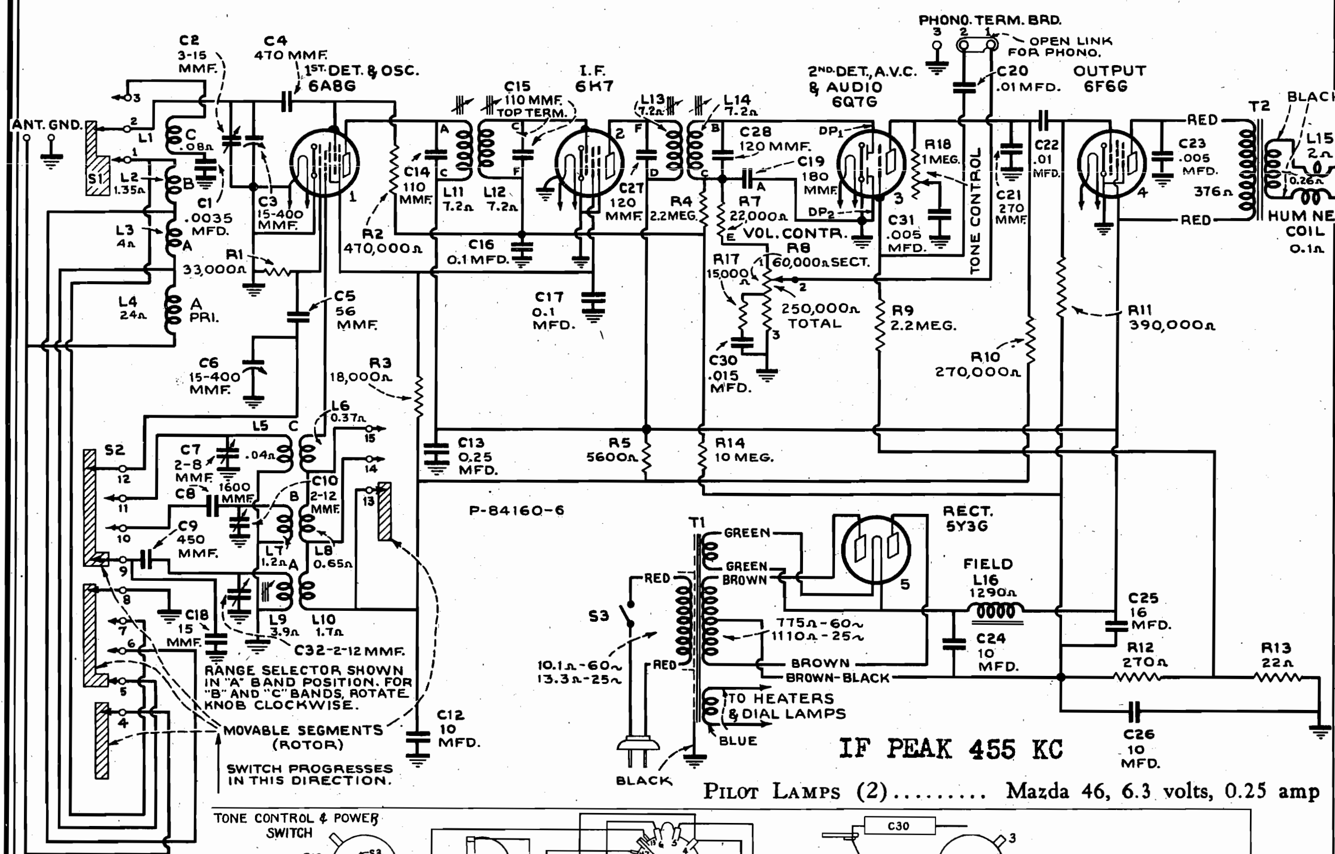
Order of Align-ment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting					
1	6K7 I-F Grid Cap	.001 Mfd.	455 kc	"A" Left	No Signal 550-750 kc	2nd I-F Trans.	L12 and L13	Max. (peak)
2	6A8 Det. Grid Cap	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	1st I-F Trans.	L10 and L11	Max. (peak)
3	Ant. Term.	300 Ohms	6,000 kc	"B" Center	6,000 kc	"B" Osc.	C11	Max. (peak)*
4	Ant. Term.	300 Ohms	6,000 kc	"B"	6,000 kc	"B" Ant.	C2	Max. (peak)†
5	Ant. Term.	300 Ohms	20,000 kc	"C" Right	20,000 kc	"C" Osc.	C7	Max. (peak)‡
6	Ant. Term.	200 Mmfd.	600 kc	"A" Left	600 kc	"A" L-F Osc.	L8	Max. (peak)
7	Ant. Term.	200 Mmfd.	1,500 kc	"A"	1,500 kc	"A" H-F Osc.	C10	Max. (peak)
8	Ant. Term.	200 Mmfd.	600 kc	"A"	600 kc	"A" L-F Osc.	L8	Max. (peak)
9	Ant. Term.	200 Mmfd.	1,500 kc	"A"	1,500 kc	"A" H-F Osc.	C10	Max. (peak)

*** Use minimum capacity peak if two peaks can be obtained.**
† After this adjustment, check for image signal by shifting receiver dial to 5.09 mc.
‡ Use maximum capacity peak if two peaks can be obtained. After this adjustment, check for image signal by shifting receiver dial to 20.91 mc.
Note that the heterodyne oscillator tracks above the signal frequency on bands "A" and "B," and **below** the signal frequency on band "C."

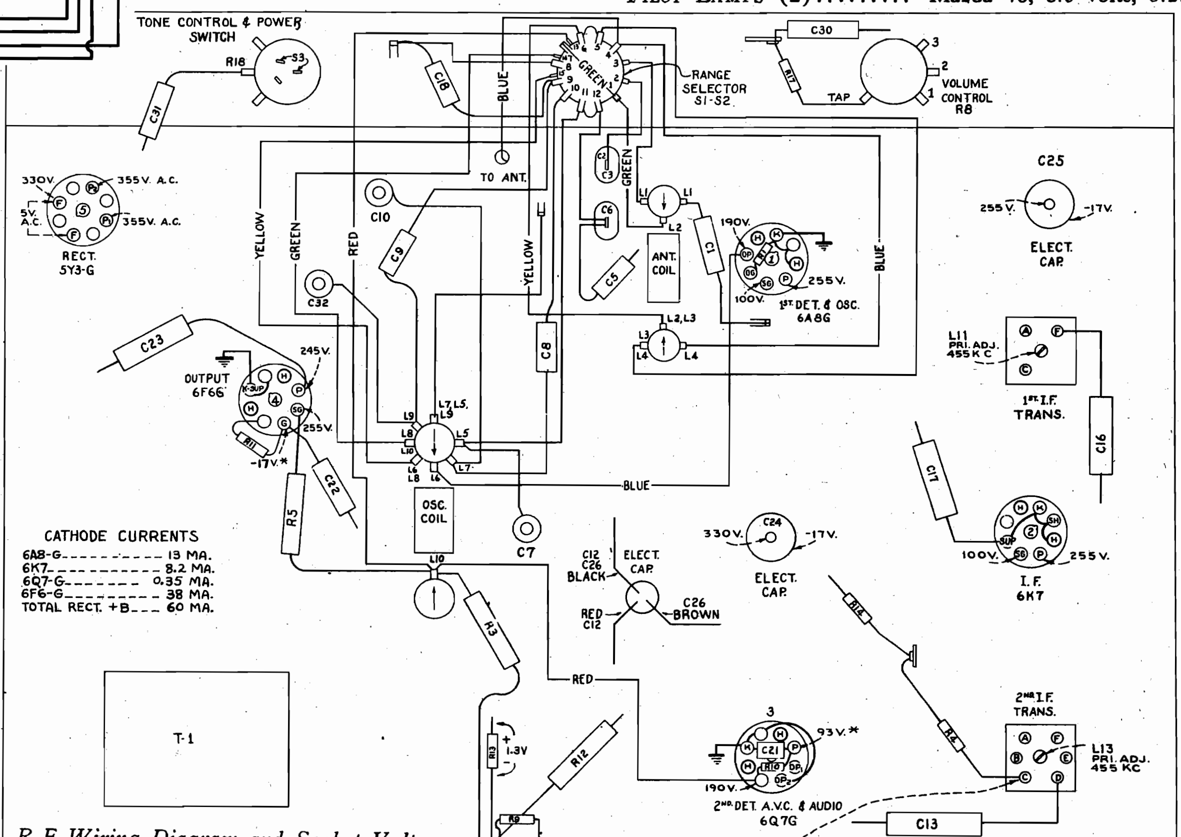
Schematic, Voltage
Chassis Wiring

RCA MFG. CO., INC.

MODEL 5Q2
Chassis RC325C



Pilot Lamps (2)......... Mazda 46, 6.3 volts, 0.25 amp



R-F Wiring Diagram and Socket Voltages

HEATER VOLTAGE, 6.3V., A.C.

BOTTOM VIEW - REAR OF CHASSIS

CATHODE RAY OSCILLOGRAPH CONNECTIONS (VERTICAL "HI" TO THIS TERM. VERTICAL "0" TO CHASSIS) REMOVE LINK FOR PHONO.

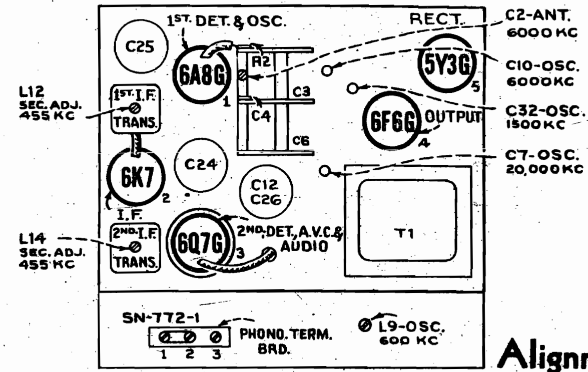
First Edition

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 115-volt a-c supply.

*NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODEL 5Q2
Alignment, Socket
Trimmers, Phono. Data

RCA MFG. CO., INC.



Power Output Rating
Undistorted .... 2.5 watts
Maximum .... 4.5 watts
Loudspeaker (RL-63F-1)
Type .... 8-inch Electrodynamic
V.C. Impedance .... 2.2 ohms at 400 cycles
Power Supply Ratings
Rating A .... 105-125 volts, 50-60 cycles, 75 watts
Rating B .... 105-125 volts, 25-60 cycles, 75 watts
Rating C .... 105-125/200-250 volts, 50-60 cycles, 75 watts
Frequency Ranges
"Standard Broadcast" (A) ..... 540-1,720 kc (555-174 m)
"Medium Wave" (B) .... 2.3-7.0 mc (130-42.8 m)
"Short Wave" (C) .... 7.0-22.0 mc (42.8-13.6 m)
Intermediate Frequency .... 455 kc

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With the gang condenser in full mesh, the dial pointer should be in line with the left-hand end of the dial scales. The pointer is soldered to the drive cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L13 and L14 (2nd I-F Trans.)
2	6A8-G det. grid cap, in series with .01 mfd.	455 kc		L11 and L12 (1st I-F Trans.)
3	Antenna Terminal in series with 300 ohms	6 mc	6 mc "B" band	C10 (osc.) * C2 (ant.) †
4	Antenna Terminal in series with 300 ohms	20 mc	20 mc "C" band	C7 (osc.) **
5	Antenna Terminal in series with 200 mmf.	600 kc	600 kc "A" band	L9 (osc.)
6	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc "A" band	C32 (osc.) *
7	Repeat steps 5 and 6.			

* Use **minimum** capacity peak if two peaks can be obtained.

† After adjusting C2, check to determine that C10 has been adjusted to the correct peak by tuning the receiver to approximately 5.09 mc, where a weaker signal should be received.

** Use **maximum** capacity peak if two peaks can be obtained. Check to determine that C7 has been adjusted to the correct peak by tuning the receiver to approximately 20.91 mc, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on "A" and "B" bands, and 455 kc **below** the signal on "C" band.

Miscellaneous Service Data

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover by applying acetone sparingly, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.

Victrola Attachment.—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment, such as R-93, R-93A, R-93B, R-93C, R-94, R-94-B. A Stock No. 9824 switch is required to change from radio to Victrola. The connections for this switch are as follows:

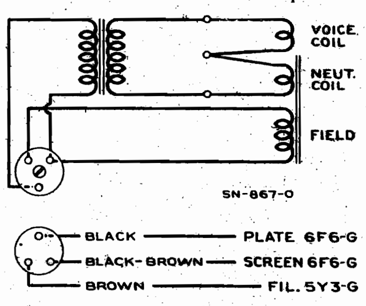
Connect the yellow lead in the switch cable to terminal No. 1.

Connect the green lead in the switch cable to terminal No. 2.

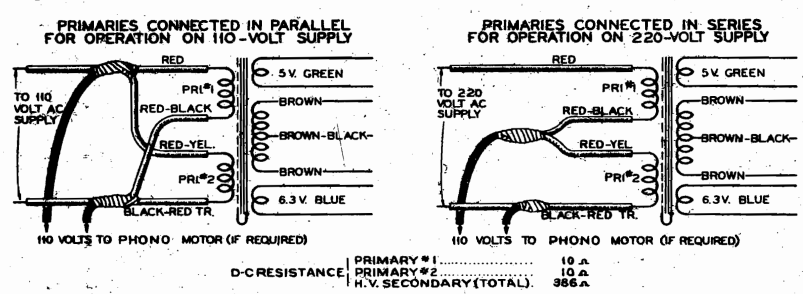
Connect the shielding of the cable to terminal No. 3.

Tape the ends of the blue and the red leads separately.

Connect the Victrola Attachment to the two clip-type connectors on the switch.



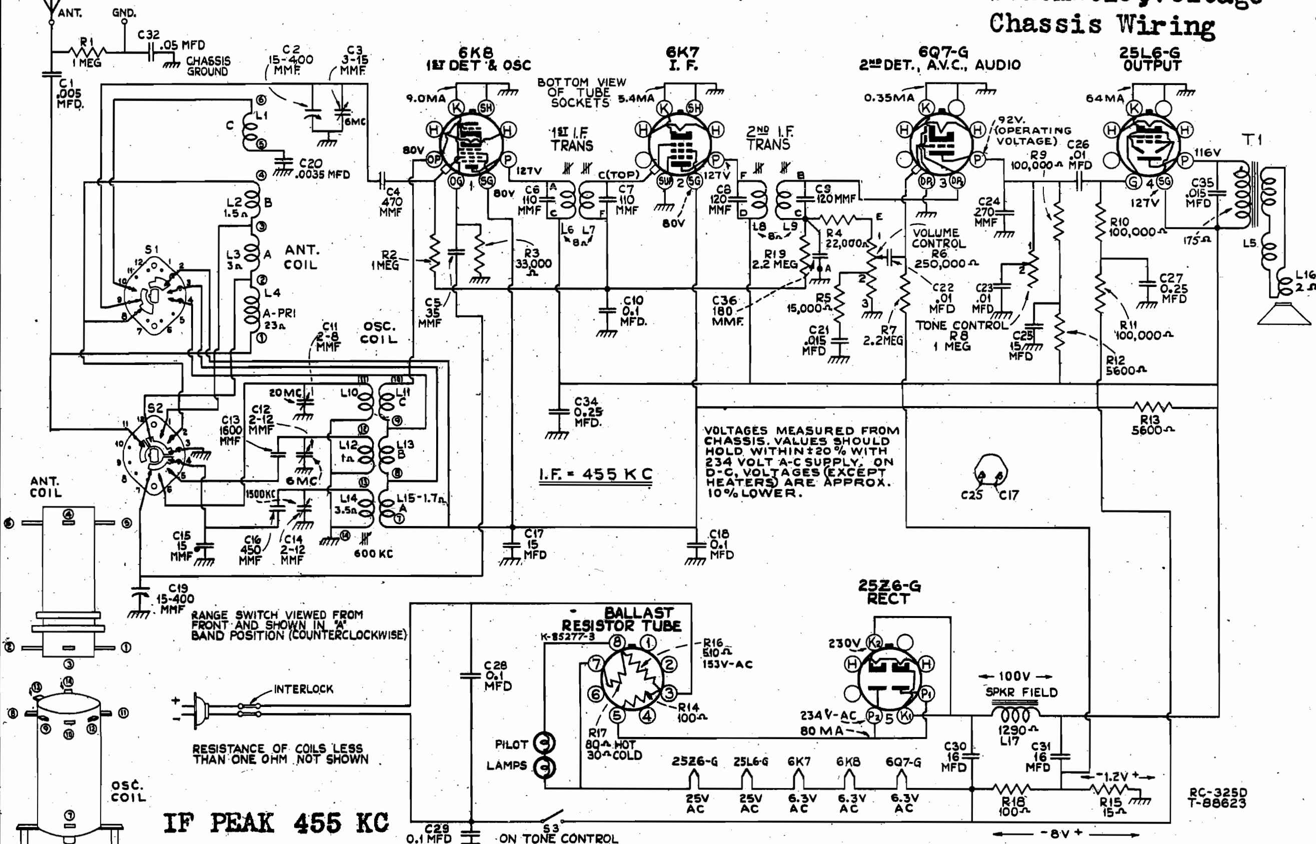
Connections and Colors of Speaker and Cable



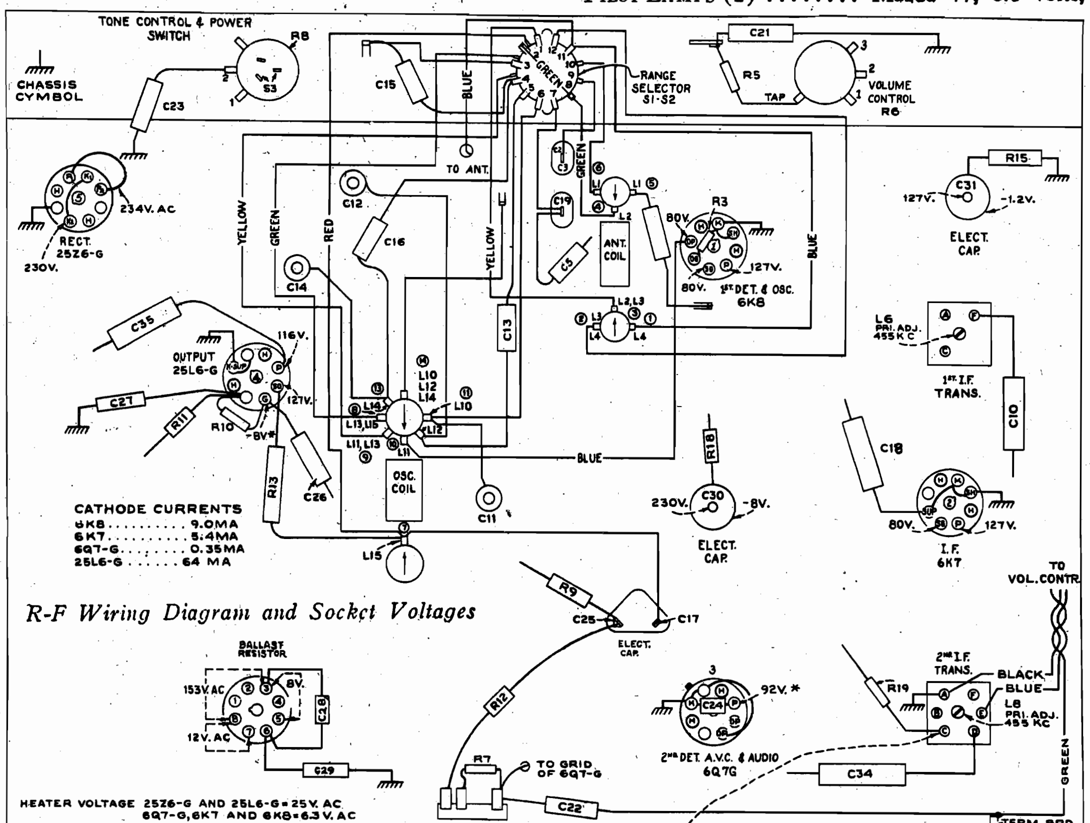
Connections of Universal Power Transformer Primary for 220 and 110 Volts

RCA MFG. CO., INC.

MODEL 5Q2X, Ch. RC325D
Schematic, Voltage
Chassis Wiring



Pilot Lamps (2) .... Mazda 47, 6.3 volts, 0.15 amp.



R-F Wiring Diagram and Socket Voltages

—1938— **First Edition** BOTTOM VIEW - REAR OF CHASSIS

CATHODE RAY OSCILLOGRAPH CONNECTIONS | VERTICAL "HI" TO THIS TERM. VERTICAL "O" TO CHASSIS

RC-325D SN-894

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 234-volt a-c supply.

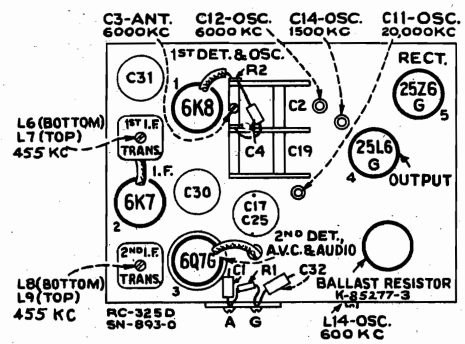
*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODEL 5Q2X
Alignment, Socket, Trimmers
Lead Dress

RCA MFG. CO., INC.

Precautionary Lead Dress.—

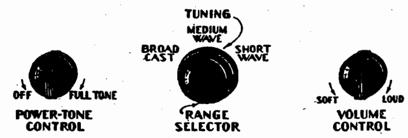
1. Leads on C20 ("C" band tracking condenser) must be as short as possible.
2. Dress blue lead from oscillator plate away from all parts.
3. Dress speaker cable away from ballast tube.
4. Dress C22 (1st A.F. coupling condenser) against rear apron.



CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.

Power Supply Polarity.—

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.



Location of Controls

POWER OUTPUT RATING
(A-C Operation)
Undistorted .... 1.7 watts
Maximum .... 2.7 watts
(D-C Operation)
Undistorted .... 1.4 watts
Maximum .... 2.3 watts

LOUDSPEAKER
Type .... 8-inch Electrodynamic
V.C. Impedance .... 2.2 ohms at 400 cycles

POWER SUPPLY RATINGS
A-C Rating .... 200-250 volts 50/60 cycles, 115 watts
D-C Rating .... 200-250 volts direct current, 105 watts

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With the gang condenser in full mesh, the dial pointer should be in line with the left-hand end of the dial scales. The pointer is soldered to the drive cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L8 and L9 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L6 and L7 (1st I-F Trans.)
3	Antenna Terminal in series with 300 ohms	6 mc	6 mc "B" band	C12 (osc.)* C3 (ant.)†
4	Antenna Terminal in series with 300 ohms	20 mc	20 mc "C" band	C11 (osc.)** (Rock In)
5	Antenna Terminal in series with 200 mmf.	600 kc	600 kc "A" band	L14 (osc.)
6	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc "A" band	C14 (osc.) (Rock In)
7	Repeat steps 5 and 6.			

* Use **minimum** capacity peak if two peaks can be obtained.

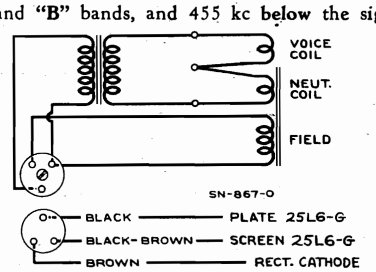
† After adjusting C3, check to determine that C12 has been adjusted to the correct peak by tuning the receiver to approximately 5.09 mc, where a weaker signal should be received.

** Use **maximum** capacity peak if two peaks can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning the receiver to approximately 20.91 mc, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on "A" and "B" bands, and 455 kc **below** the signal on "C" band.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.

At Right—Connections and Colors of Speaker and Cable

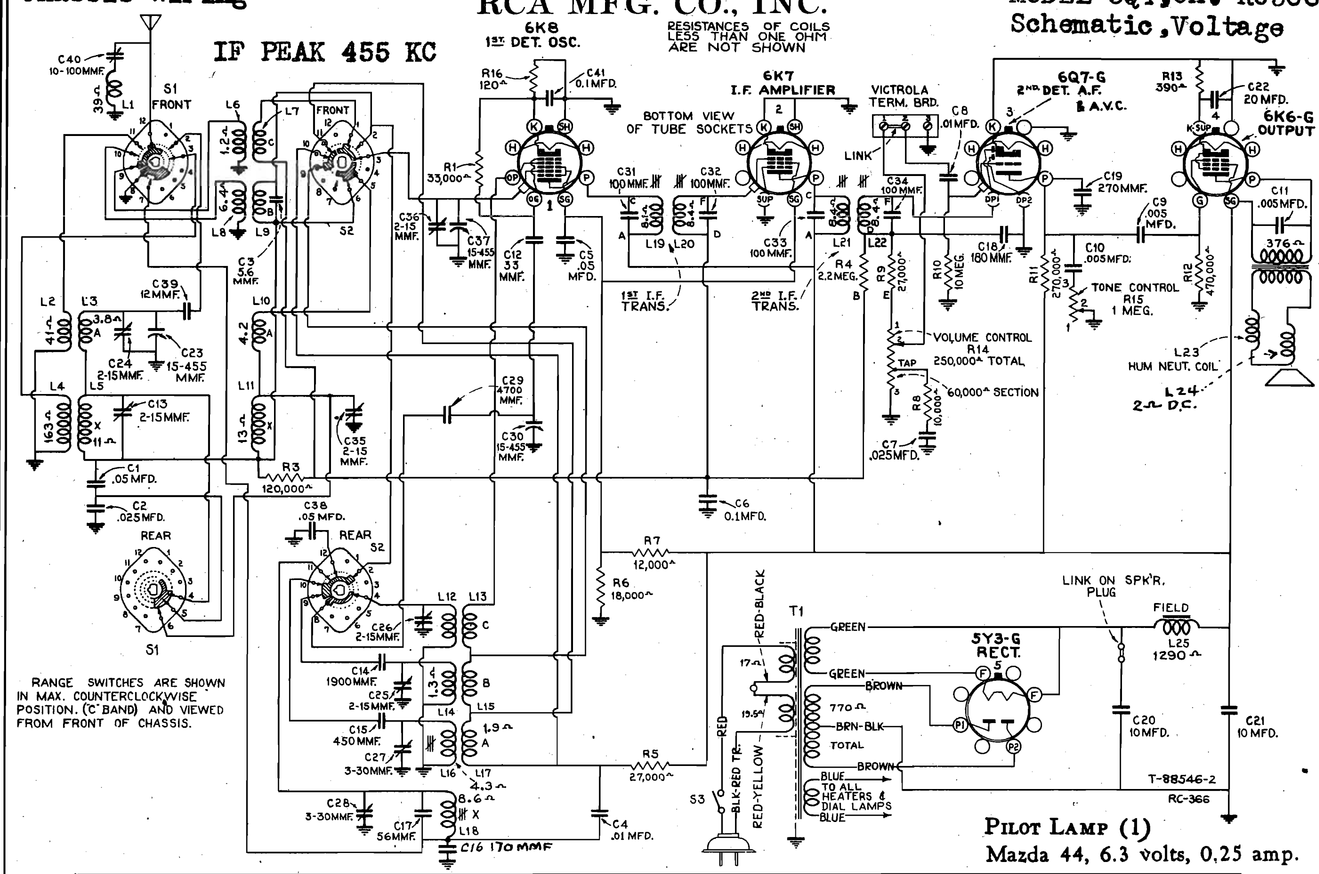


Chassis Wiring

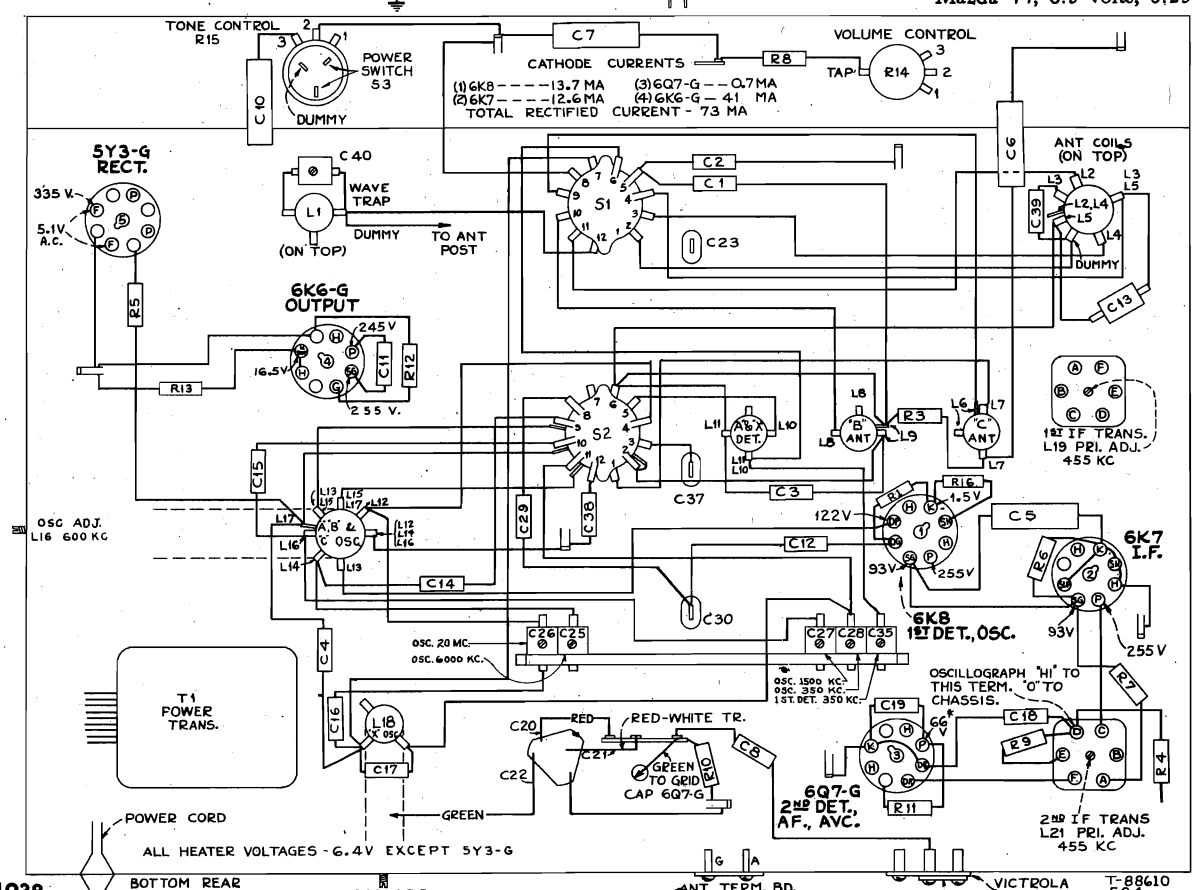
RCA MFG. CO., INC.

MODEL 5Q4, Ch. RC366
Schematic, Voltage

IF PEAK 455 KC



Pilot Lamp (1)
Mazda 44, 6.3 volts, 0.25 amp.



OSC. ADJ. L18 175 KC

R-F Wiring Diagram and Socket Voltages

— 1938 —
First Edition

Measurements made to chassis unless otherwise indicated, set tuned to quiet point, volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODEL 5Q4
Alignment, Trimmers
Socket, Lead Dress

RCA MFG. CO., INC.

Power Output Rating
Undistorted...... 2.5 watts
Maximum....... 4.5 watts

Loudspeaker (RL-63H-3)
Type.......... 8-inch Electrodynamic
V.C. Impedance. 2.2 ohms at 400 cycles

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the spider screws, insert three narrow feelers at equal distances in the gap, and tighten the spider screws. Remove the feelers, and fasten a dust cover in place with loudspeaker cement.

Power Supply Ratings
Rating A.............................. 105-125 volts, 50-60 cycles, 75 watts
Rating B.............................. 105-125 volts, 25-60 cycles, 75 watts
Rating C.............................. 105-125/200-250 volts, 50-60 cycles, 75 watts

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a.v.c. action.

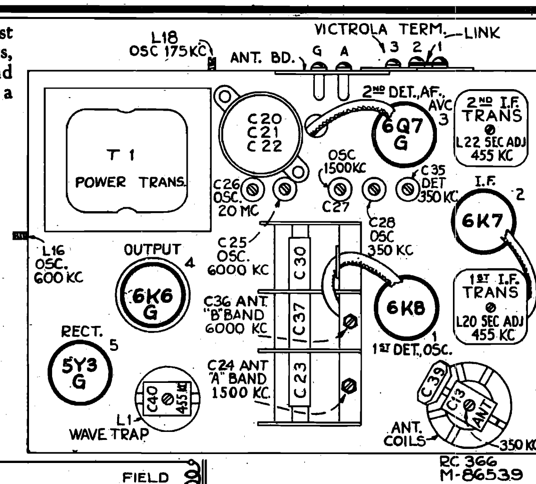
Pre-setting Dial.—With the gang condenser in full mesh, the dial pointer should be in line with the left end of the dial scales. The pointer is soldered to the drive cable.

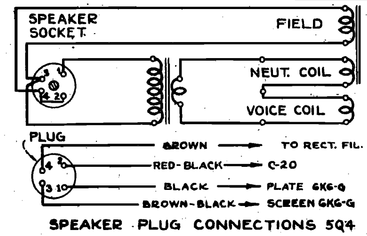
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following to obtain maximum output
1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A" band No Station Point between 550-750 kc	L21 and L22 (2nd I-F transformer)
2	6K8 det. grid cap in series with .01 mfd.	455 kc		L19 and L20 (1st I-F transformer)
3	Antenna Terminal in series with 200 mmfd.	455 kc		C40 (wave trap) MINIMUM OUTPUT
4	Antenna Terminal in series with 300 ohms.	6 mc	6 mc "B" band	C25 (osc.) use MINIMUM capacity peak C36 (antenna) use MAXIMUM capacity peak*
5	Antenna Terminal in series with 300 ohms.	20 mc	20 mc "C" band	C26 (osc.) use MINIMUM capacity peak*
6	Antenna Terminal in series with 200 mmfd.	600 kc	600 kc "A" band	L16 (osc.) Rock Gang
7		1,500 kc	1,500 kc "A" band	C27 (oscillator) C24 (antenna)
8		600 kc	600 kc "A" band	L16 (osc.) Rock Gang
9		175 kc	175 kc "X" band	L18 (osc.) Rock Gang
10		350 kc	350 kc "X" band	C28 (oscillator) C35 (1st det.) C13 (antenna)
11		175 kc	175 kc "X" band	L18 (osc.) Rock Gang

* Check to determine that trimmer has been adjusted to correct peak by tuning receiver approximately 910 kc lower, where a weaker signal should be heard.

Note: Oscillator tracks **above** the signal on all bands.

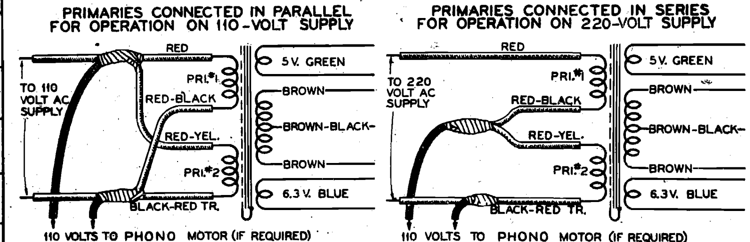
Precautionary Lead Dress.—
1. Dress blue lead from L7 to terminal 1 on range switch S2 clear of coils and other wires.
2. Dress bus from L12 to contact 4 on range switch S2 clear of other wiring.
3. Dress leads on C29 from gang to range switch short and clear of bus wires.
4. Dress leads from X and A band antenna coil close to underside of chassis.
5. Dress all plus B leads to terminal board under electrolytic between the board and the rear apron.
6. Dress blue lead from 6Q7-G plate to terminal 6 on 6K6-G close to chassis and in front of terminal board (under electrolytic).
7. Dress blue lead from antenna terminal close to top of chassis and clear of gang rotor.
8. Twisted leads from volume control must be dressed clear of self-tapping screws in corners of chassis.



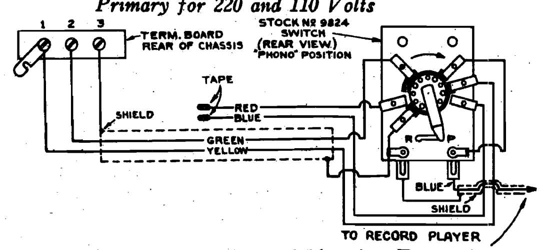


Connections of Loudspeaker and Cable

D-C RESISTANCE
PRIMARY #1 .... 17 Ω
PRIMARY #2 .... 19.5 Ω
H.V. SECONDARY (TOTAL) .... 770 Ω



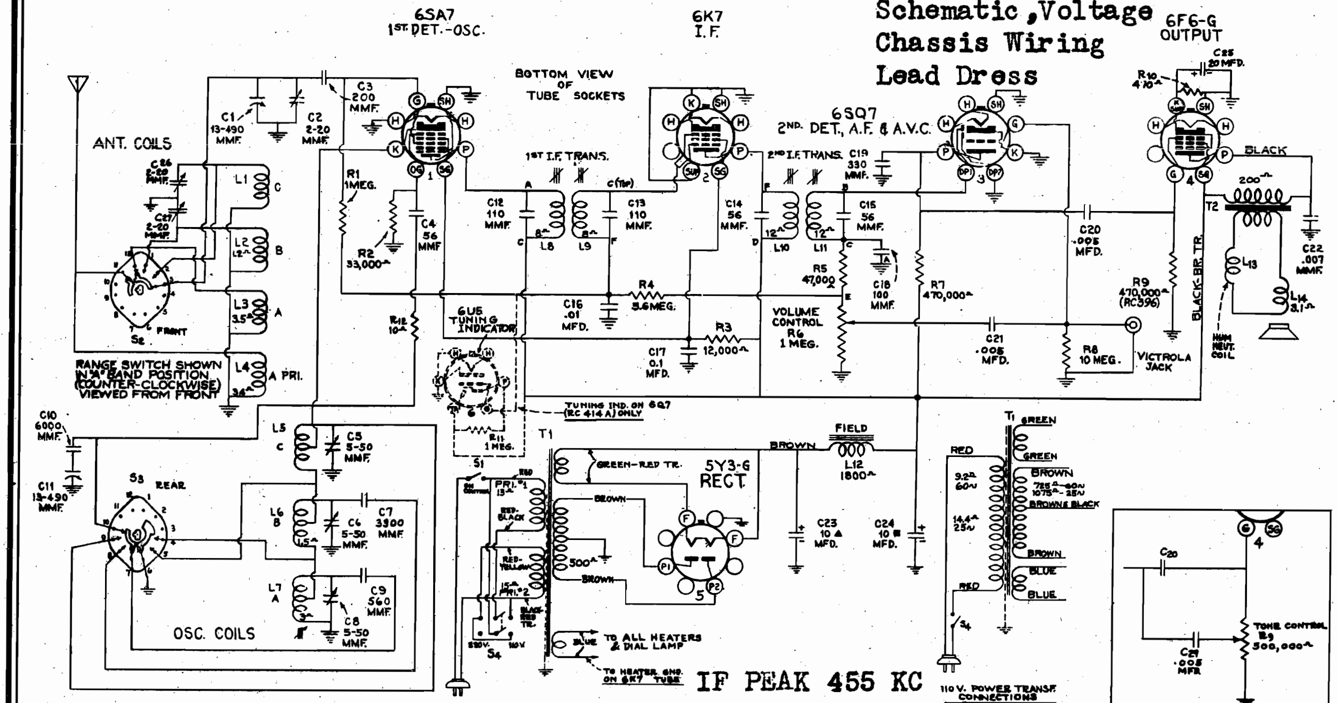
Connections of Universal Power Transformer Primary for 220 and 110 Volts



Victrola Attachment (Record Player).—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R-93 and R-94 series. A stock No. 9824 switch may be used to change from radio to record player as shown at right.

RCA MFG. CO.. INC.

MODELS 5Q5, 5Q5A to 5Q5E incl. 5Q55, 5Q56. Chassis RC-396 6Q7 Chassis RC-414A Schematic, Voltage Chassis Wiring Lead Dress



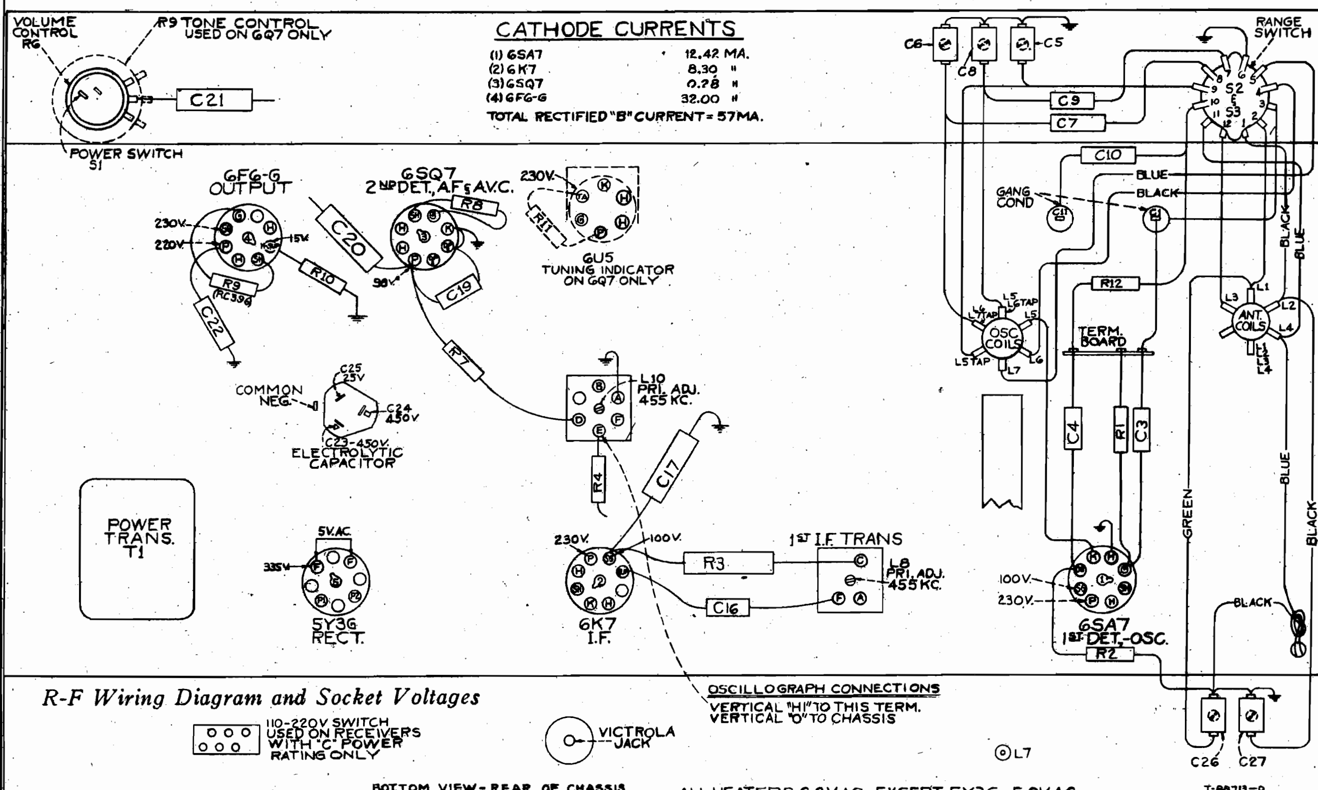
Pilot Lamp (1)..................Mazda 44, 6.3 volts, 0.25 amp.

Precautionary Lead Dress

1. Lead from 2nd I.F. (E) to volume control should be kept close to chassis.
2. R.F. coil leads should be kept short and away from coil.
3. Leads to 6,000 mmf. (C10) should be as short as possible and condenser dressed away from chassis, bearing against 10 ohm (R12) resistor.

Victrola Attachment.—A jack is provided on the rear of chassis for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.



R-F Wiring Diagram and Socket Voltages

110-220V SWITCH USED ON RECEIVERS WITH "C" POWER RATING ONLY

VICTROLA JACK

OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERM.
VERTICAL "O" TO CHASSIS

BOTTOM VIEW - REAR OF CHASSIS

ALL HEATERS 6.3V.AC., EXCEPT 5Y3G, 5.0V.AC.

T-88713-D RC396, RC414A

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

*NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

First Edition

MODELS 5Q5,5Q5A to 5Q5E
5Q55,5Q56,6Q7

RCA MFG. CO., INC.

Alignment,Trimmers,Socket
Drive Cords,Notes

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45 degree mark on the drum scale (see "Drum Drive and Indicator Cord Assembly" drawings) must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead (blue) in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C2 (ant.) C8 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead (blue) in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C5 (osc.) * C26 (ant.)
7		6 mc	6 mc (149°) "B" Band	C6 (osc.) * C27 (ant.)
8	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C8 (osc.)

* Use minimum capacity peak if two peaks can be obtained.
† Rock gang condenser slightly while adjusting L7.
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

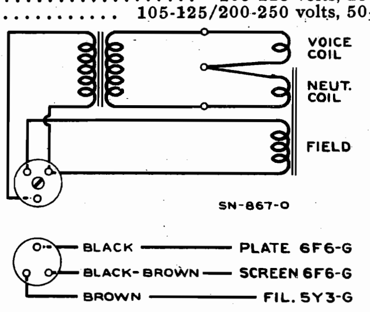
Note.—Oscillator tracks 455 kc above signal on all bands.

Loudspeaker

Type (5Q5, 5Q55, 5Q56) RL-78-2........ 5-inch Electrodynamic
(6Q7).............RL-79-2........ 6-inch Electrodynamic
Voice-Coil Impedance.................. 3.4 ohms at 400 cycles

Power Supply Ratings

Rating A.................. 105-125 volts, 50-60 cycles, 70 watts
Rating B.................. 105-125 volts, 25-60 cycles, 70 watts
Rating C........... 105-125/200-250 volts, 50-60 cycles, 70 watts



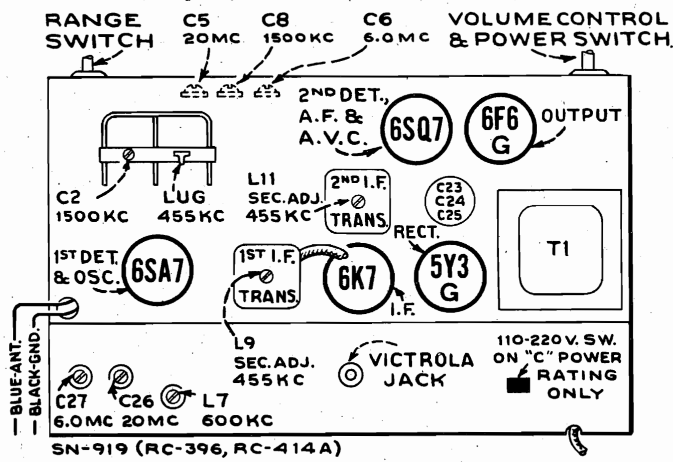
Connections and Colors of Speaker and Cable

Power Output Rating

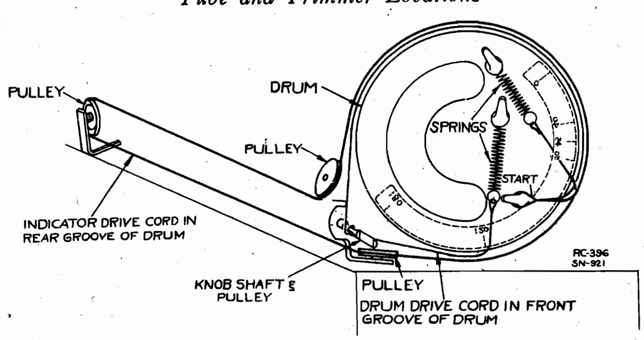
Undistorted.. 1.5 watts
Maximum.. 3.3 watts

Frequency Ranges

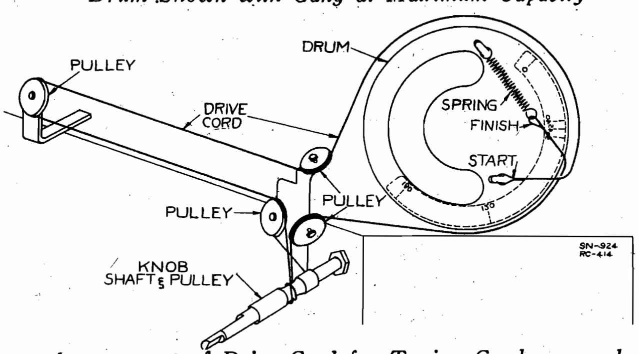
"Standard Broadcast" (A)............ 540-1,720 kc (555-174 m)
"Medium Wave" (B).................. 2.3-7.0 mc (130-42.8 m)
"Short Wave" (C).................. 7.0-22.0 mc (42.8-13.6 m)
Intermediate Frequency .... 455 kc



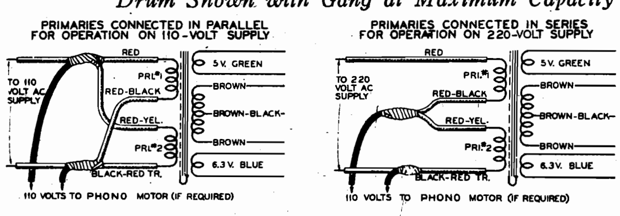
Tube and Trimmer Locations



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator (Models 5Q5, 5Q55 and 5Q56) Drum Shown with Gang at Maximum Capacity



Arrangement of Drive Cord for Tuning Condenser and Dial Indicator (Model 6Q7) Drum Shown with Gang at Maximum Capacity

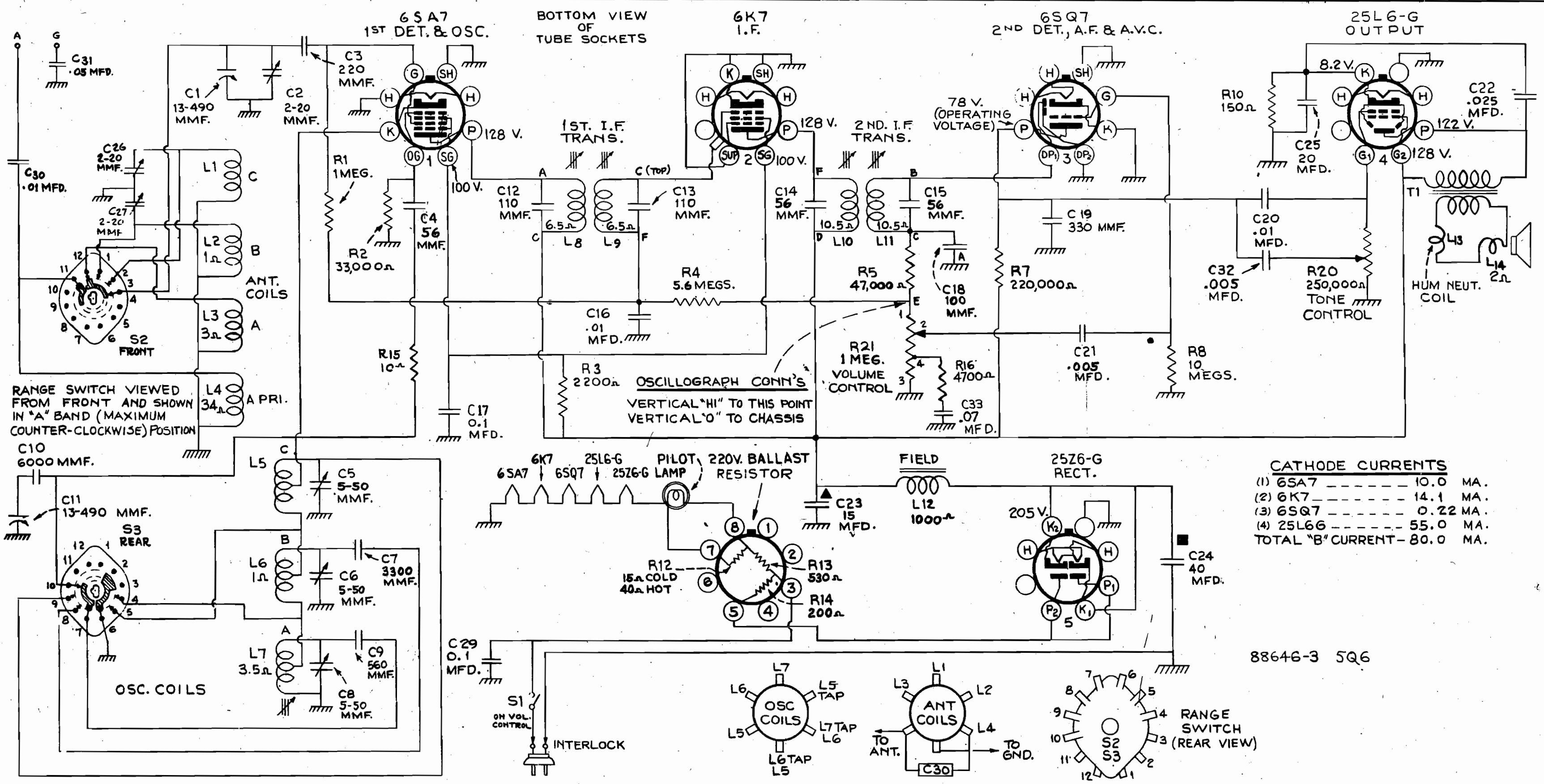


D-C Resistance:
- Primary No. 1...................... 13 ohms
- Primary No. 2...................... 15 ohms
- H. V. Secondary (Total)............ 500 ohms

Connections of Universal Power Transformer Primary for 220 and 110 Volts

MODEL 5Q6, Chassis RC-477A
Schematic, Voltage

RCA MFG. CO., INC.



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1939

Frequency Ranges
Standard Broadcast ("A" Band) .... 540-1,720 kc (555-174 m)
Medium Wave ("B" Band) .... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band) .... 7.0-22 mc (42.8-13.6 m)

Intermediate Frequency .... 455 kc

General Description

Model 5Q6 is a three-band, table-type superheterodyne receiver housed in a plastic cabinet. It is designed for operation on 210-250 volts, 50-60 cycles AC, or 210-250 volts DC.

Features of design include: New type single-ended tubes (6SA7 and 6SQ7); magnetite core I-F transformers; magnetite core oscillator adjustment for "A" band; automatic volume control; bass compensation; electrodynamic loudspeaker; high-frequency tone control; straight-line dial; tropic-proof construction; streamline moulded cabinet.

Power Supply Polarity:

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.

Tube Complement
(1) RCA-6SA7 .... Detector-Oscillator
(2) RCA-6K7 .... I-F Amplifier
(3) RCA-6SQ7 ... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-25L6-G .... Power Output
(5) RCA-25Z6-G .... Rectifier

Pilot Lamp .... Mazda No. 47, 6.3 volts, 0.15 amp.
Ballast Tube .... RCA Stock No. 32849 for 210-250 volt operation.

Power Output Rating
(210-250 Volt Operation)
Undistorted .... 1.5 watts
Maximum .... 2.7 watts

Loudspeaker (84557-2)
Type 5-inch
V. C. Impedance .... 2.2 ohms at 400 cycles

Power Supply Ratings
210-250 volts, 50-60 cycles .... 125 watts
210-250 volts, direct current .... 125 watts

MODEL 5Q6, Chassis RC-477A
Alignment, Trimmers, Socket
Drive Cord, Notes

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground lead (black), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

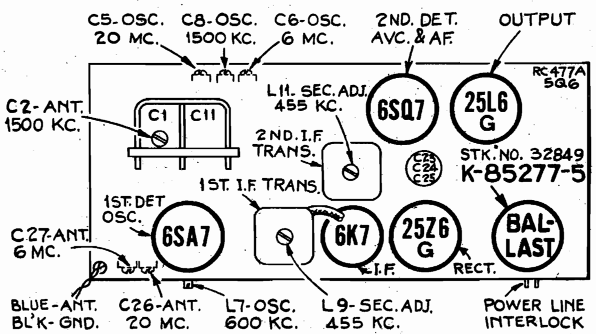
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C2 (ant.) C8 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C5 (osc.)* C26 (ant.)
7		6 mc	6 mc (148°) "B" Band	C6 (osc.)* C27 (ant.)
8	Antenna lead in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C8 (osc.)

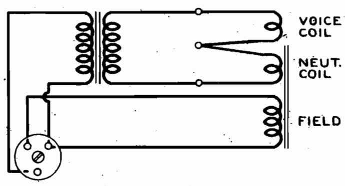
* Use minimum capacity peak if two peaks can be obtained.

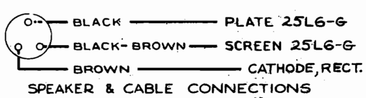
† Rock gang condenser slightly while adjusting L7.

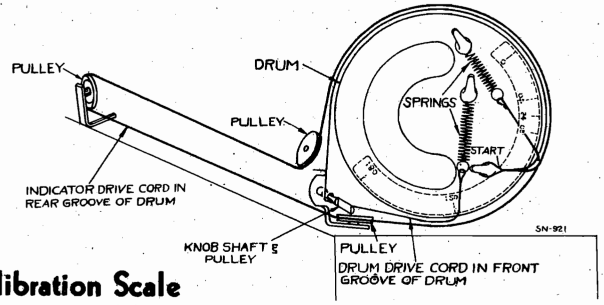
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

Note.—Oscillator tracks 455 kc above signal on all bands.

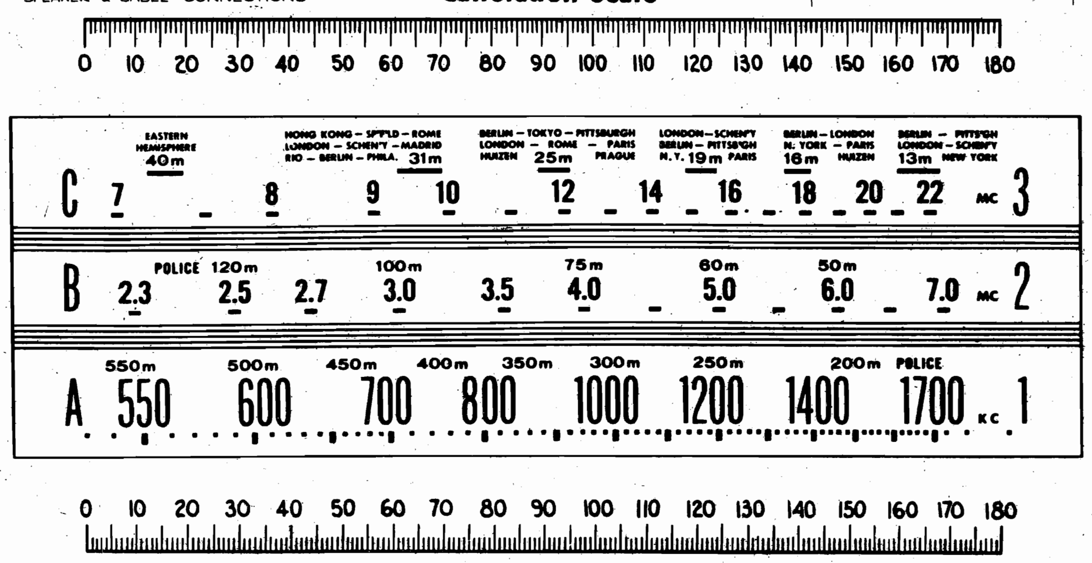








Calibration Scale



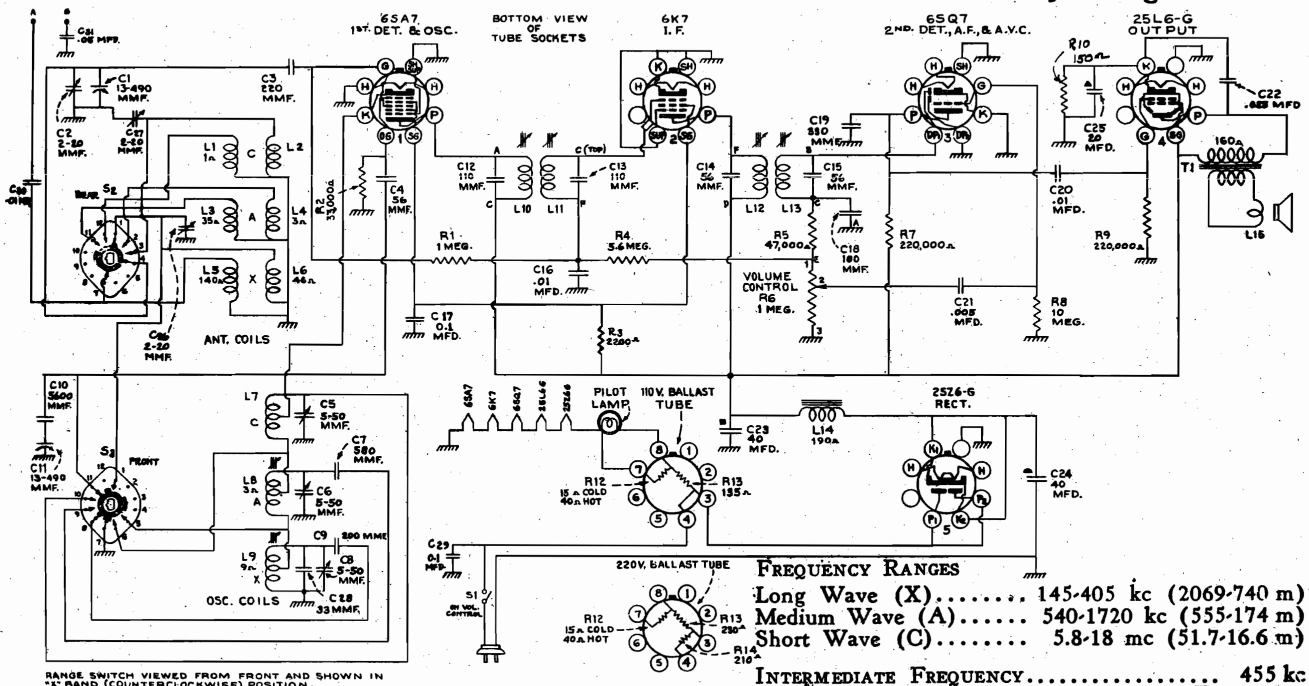
Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

Chassis Wiring, Lead Dress

RCA MFG. CO. INC.

MODEL 5Q8, Chassis RC-396B
Schematic, Voltage



Frequency Ranges
Long Wave (X)........ 145-405 kc (2069-740 m)
Medium Wave (A)...... 540-1720 kc (555-174 m)
Short Wave (C)........ 5.8-18 mc (51.7-16.6 m)

Intermediate Frequency................. 455 kc

(5) RCA-25Z6-G.......................... Rectifier

Ballast Tubes...... RCA Stock No. 32544 for 105-125 volt operation; RCA Stock No. 32850 for 210-250 volt operation.

Pilot Lamp........... Mazda No. 47, 6.3 volts, 0.15 amp.

Power Output Rating

(210-250 Volt Operation)	
Undistorted..............................	1.5 watts
Maximum..................................	2.7 watts
(105-125 Volt Operation)	
Undistorted..............................	1.7 watts
Maximum..................................	2.9 watts

Loudspeaker

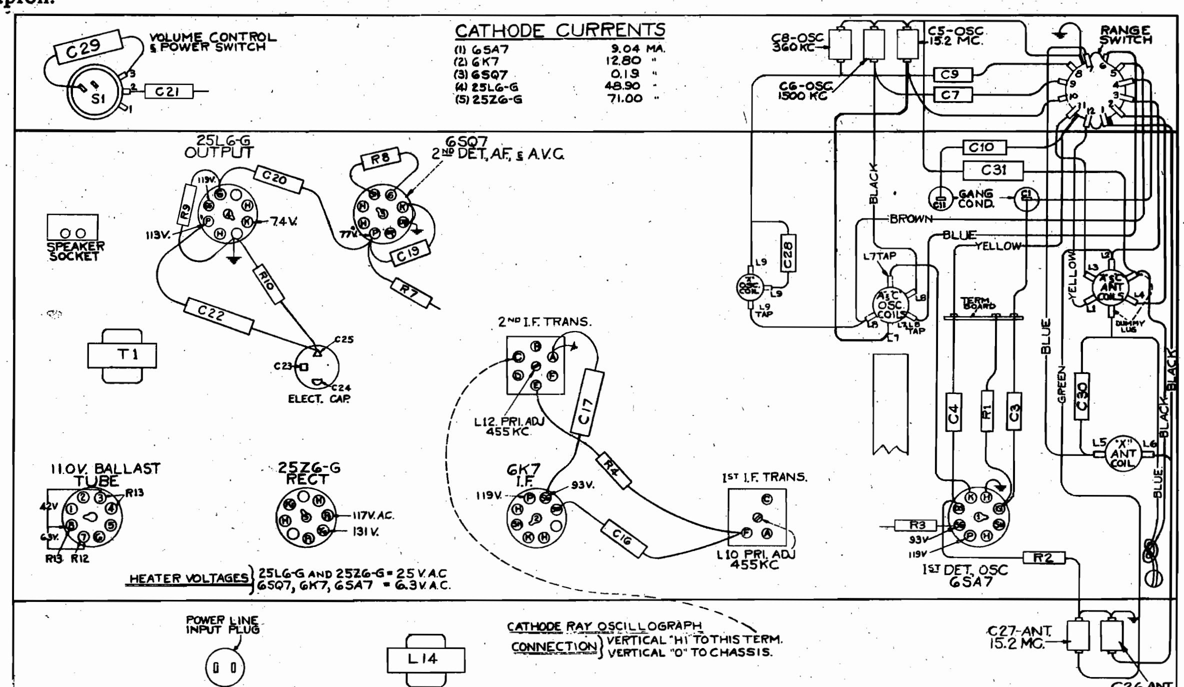
Type..	5-inch
V. C. Impedance................	3.0 ohms at 400 cycles

Power Supply Ratings

105-125 volts, AC-DC........................	65 watts
210-250 volts, AC-DC........................	125 watts

Precautionary Lead Dress:

1. Lead from 2nd I-F transformer to volume control should be kept close to the chassis and dressed against front apron.
2. C-10 should be dressed away from the antenna section of the variable condenser (C-1).



R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

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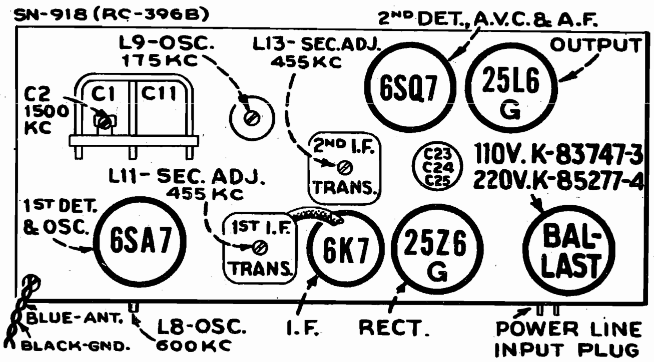
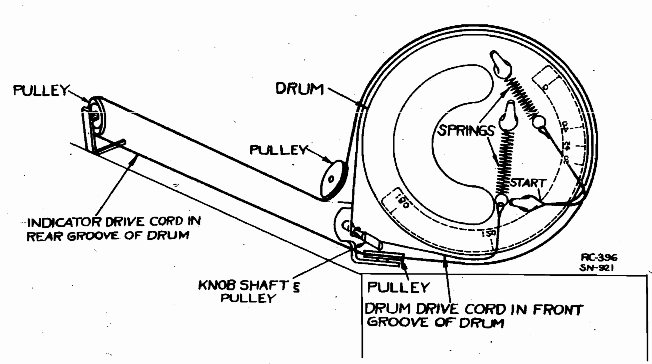
MODEL 5Q8, Chassis RC-396B
Alignment, Trimmers
Drive Cord, Socket

RCA MFG. CO., INC.



Tube and Trimmer Locations



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of one set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

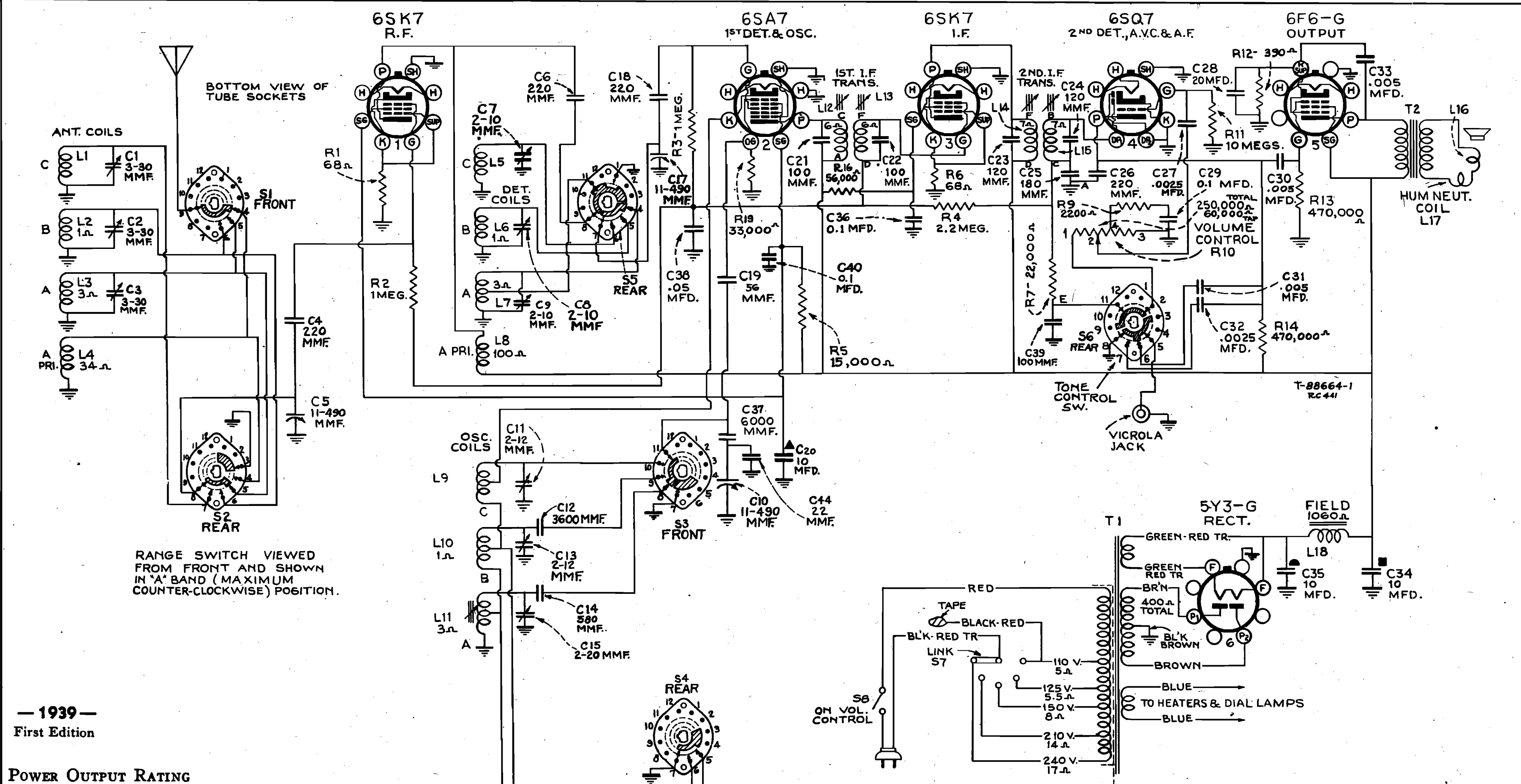
Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6SA7 det. grid in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Ant. terminal in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C6 (osc.) C2 (ant.)
4	Ant. terminal in series with 200 mmf.	600 kc	600 kc (33°) "A" Band	L8 (osc.)
5	Repeat steps 3 and 4			
6	Ant. terminal in series with 200 mmf.	360 kc	360 kc (151.5°) "X" Band	C8 (osc.) C26 (ant.)
7	Ant. terminal in series with 200 mmf.	175 kc	175 kc (53.3°) "X" Band	L9 (osc.)
8	Repeat steps 6 and 7			
9	Ant. terminal in series with 300 ohms	15.2 mc	15.2 mc (147.2°) "C" Band	C5 (osc.)* C27 (ant.)
10	Ant. terminal in series with 200 mmf.	360 kc	360 kc (151.5°) "X" Band	C8 (osc.)
11	Ant. terminal in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C6 (osc.)

*Use minimum capacity peak if two can be obtained. Check to determine that C5 is adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

NOTE: Oscillator tracks **above** signal on all bands.

MODEL 6Q1, Chassis RC-441
Schematic

RCA MFG. CO. INC.



— 1939 —
First Edition

Power Output Rating

Undistorted .... 2.5 watts
Maximum .... 4.5 watts

Loudspeaker (RL-79A-2)

Type .... 6-inch electrodynamic
V.C. Impedance .... 3.4 ohms at 400 cycles

Power Supply Ratings

Rating A .... 105-125 volts, 50-60 cycles, 75 watts
Rating B .... 105-125 volts, 25-60 cycles, 75 watts
Rating C .... 105-130, 140-160, 200-250 volts, 40-60 cycles, 75 watts

Frequency Ranges

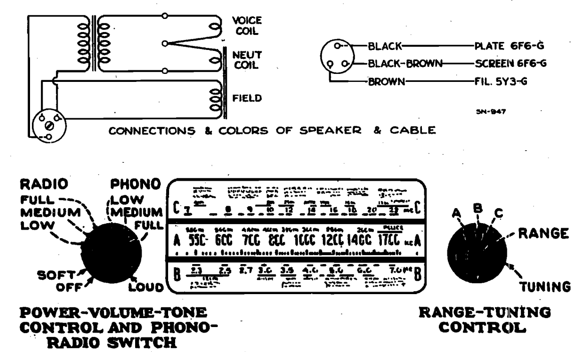
Standard Broadcast ("A" Band) 540-1,720 kc (555-174 m)
Medium Wave ("B" Band) ...... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band) ...... 7.0-22.0 mc (42.8-13.6 m)

Intermediate Frequency .... 455 kc

Tube Complement

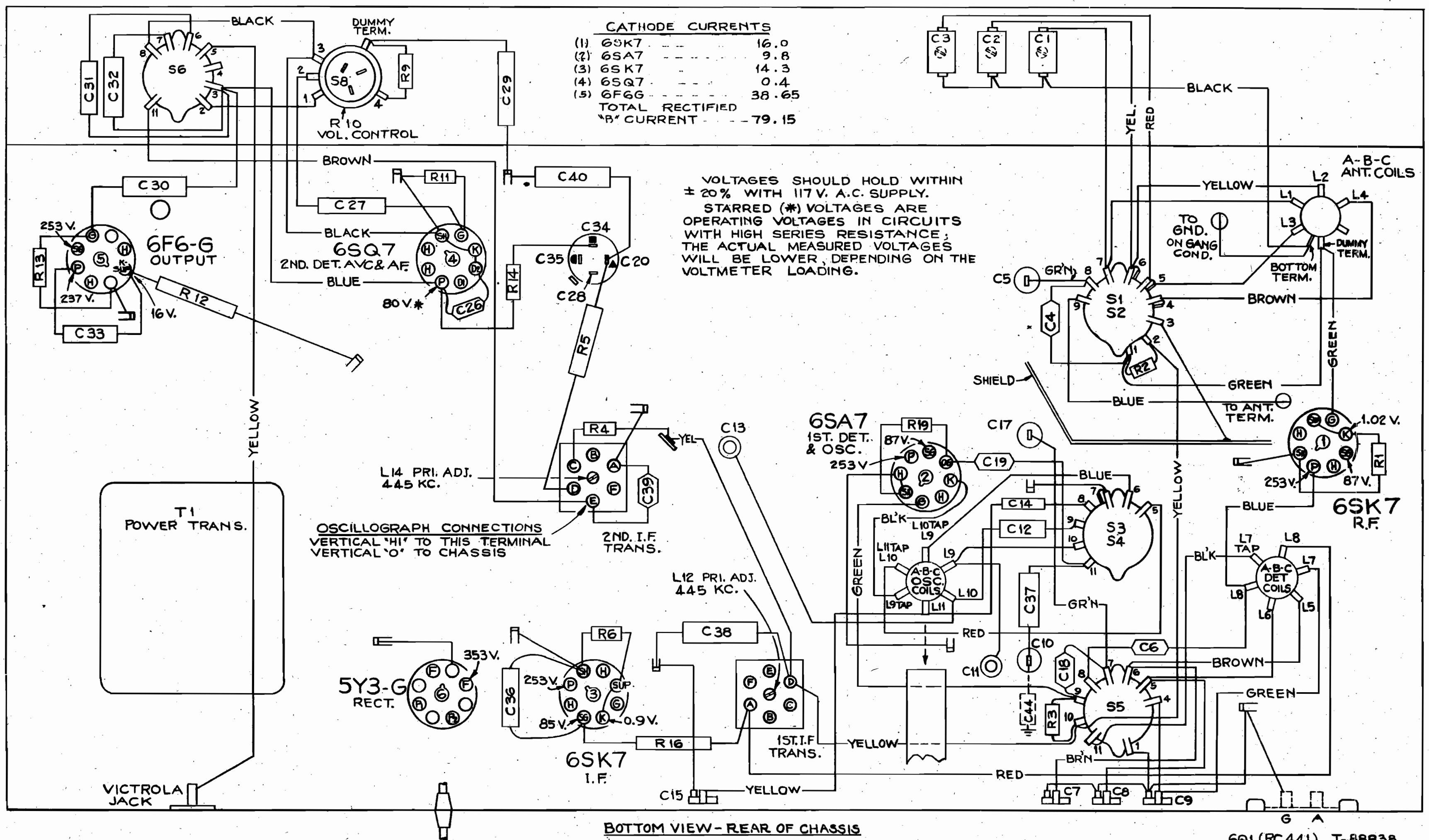
(1) RCA-6SK7 .... R-F Amplifier
(2) RCA-6SA7 .... 1st Detector-Oscillator
(3) RCA-6SK7 .... I-F Amplifier
(4) RCA-6SQ7 .... 2nd Detector, A.V.C., and A-F Amplifier
(5) RCA-6F6-G .... Output
(6) RCA-5Y3-G .... Rectifier

Pilot Lamps (2) ...... Mazda No. 44, 6.3 volts, 0.25 amp.



MODEL 6Q1, Chassis RC-441
Chassis Wiring, Voltage
Lead Dress

RCA MFG. CO. INC.



BOTTOM VIEW - REAR OF CHASSIS
R-F WIRNG AND SOCKET VOLTAGES

Precautionary Lead Dress:

1. Dress yellow lead from antenna coil to first section of range switch away from adjoining wires.
2. Dress green lead from middle section of gang and green lead from 6SA7 to the rear section of the range switch away from chassis, ground leads, other wires and capacitors.
3. Dress brown lead from detector coil to rear section of the range switch away from the detector coil; loop brown lead toward rear apron.
4. Dress black lead from 2nd I. F. transformer "B" to 6SQ7 socket against chassis.
5. Twist power leads together, and dress away from 6SQ7 socket.
6. Dress blue lead from 6SK7 (R-F) socket to detector coil away from chassis, ground shields and other wires.
7. Dress black lead from antenna trimmer (C1) to antenna coil away from range switch link action.
8. Dress black speaker lead around output socket toward power transformer, against base.
9. Keep green lead of 6SK7 R-F grid circuit away from blue antenna lead.

RCA MFG. CO., INC.

MODEL 6Q1, Chassis RC-441
Alignment, Trimmers, Socket
Drive Cord and Controls

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

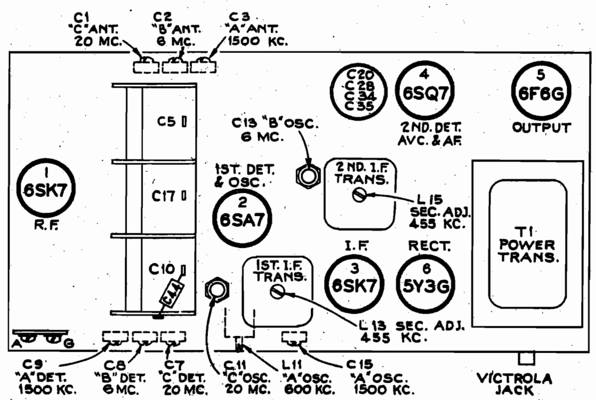
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.

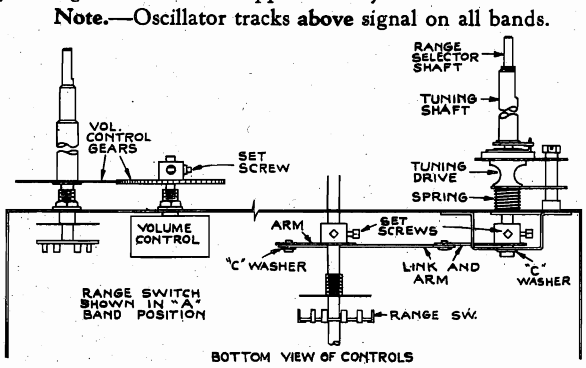


Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" Band Quiet point between 550-750 kc	L14 and L15 (2nd I-F trans.)
2	6SA7 grid in series with .01 mfd.			L12 and L13 (1st I-F trans.)
3	Ant. terminal in series with 200 mmfd.	600 kc	600 kc (148°) "A" Band	L11 (osc.) Rock gang
4		1,500 kc	1,500 kc (28°) "A" Band	C15 (osc.) C9 (det.) C3 (ant.)
5	Repeat steps 3 and 4.			
6	Ant. terminal in series with 300 ohms	6 mc	6 mc (31°) "B" Band	C13 (osc.)* C8 (det.) C2 (ant.)
7		20 mc	20 mc (23°) "C" Band	C11 (osc.)** C7 (det.) C1 (ant.)

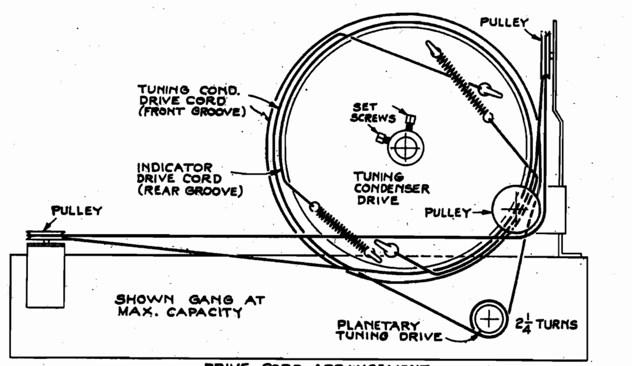
* Use **minimum** capacity peak if two can be obtained. Check to determine that C13 has been adjusted to the correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning the receiver to approximately 19.09 mc where a weaker signal should be received.

Note.—Oscillator tracks **above** signal on all bands.



BOTTOM VIEW OF CONTROLS



DRIVE CORD ARRANGEMENT

MODEL 6Q4, Chassis RC-441A
Alignment, Trimmers
Drive Cord, Socket

RCA MFG. CO., INC.
Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

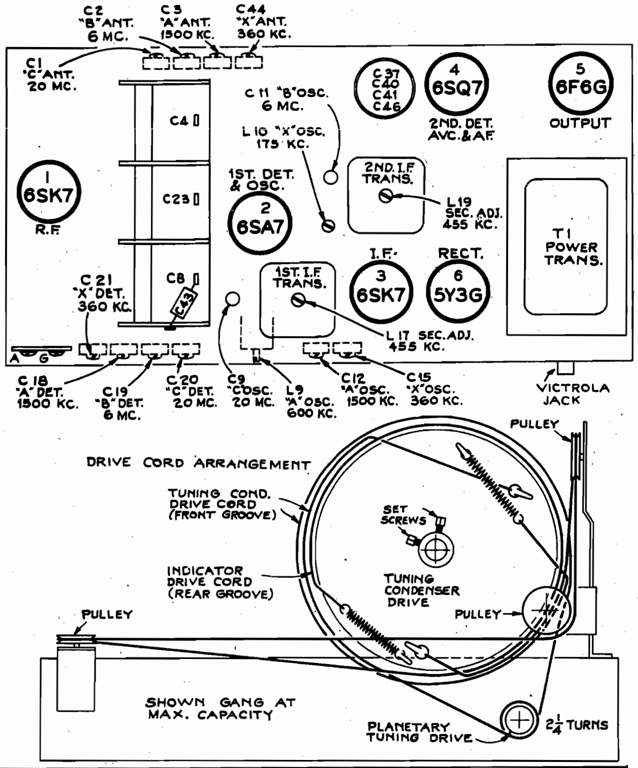
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.



Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Turn tone control to 3rd position (sharp) from maximum counter-clockwise.			
2	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" Band Quiet point between 550-750 kc	L18 and L19 (2nd I-F trans.)
3	6SA7 grid in series with .01 mfd.			L16 and L17 (1st I-F trans.)
4	Turn tone control to 4th position (broad) from maximum counter-clockwise and check I-F response which should be a slightly double-peaked curve. Leave tone control in 3rd position (sharp) for the following steps.			
5	Ant. terminal in series with 200 mmfd.	360 kc	360 kc (31.5°) "X" Band	C15 (osc.)† C21 (det.) C44 (ant.)
6		175 kc	175 kc (127.2°) "X" Band	L10 (osc.) Rock gang
7		1,500 kc	1,500 kc (28°) "A" Band	C12 (osc.)†† C18 (det.) C3 (ant.)
8		600 kc	600 kc (148°) "A" Band	L9 (osc.) Rock gang
9	Repeat steps 5, 6, 7, and 8.			
10	Ant. terminal in series with 300 ohms	6 mc	6 mc (30°) "B" Band	C11 (osc.)* C19 (det.) C2 (ant.)
11		20 mc	20 mc (23°) "C" Band	C9 (osc.)** C20 (det.) C1 (ant.)

* Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to the correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

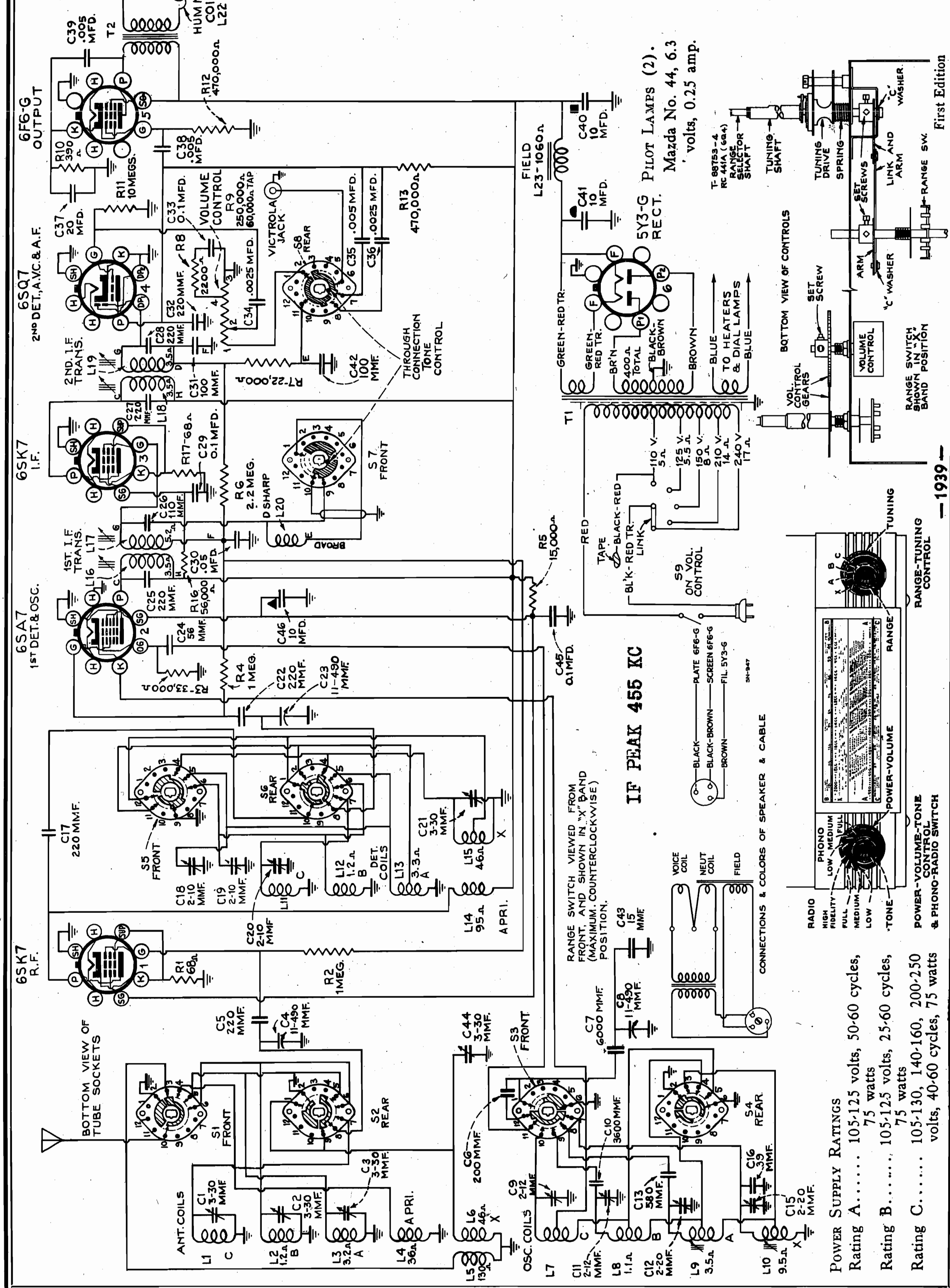
† Preset L10 core approximately ½-inch out before adjusting C15.

†† Preset L9 core screw flush with apron before adjusting C12.

Note.—Oscillator tracks **above** signal on all bands.

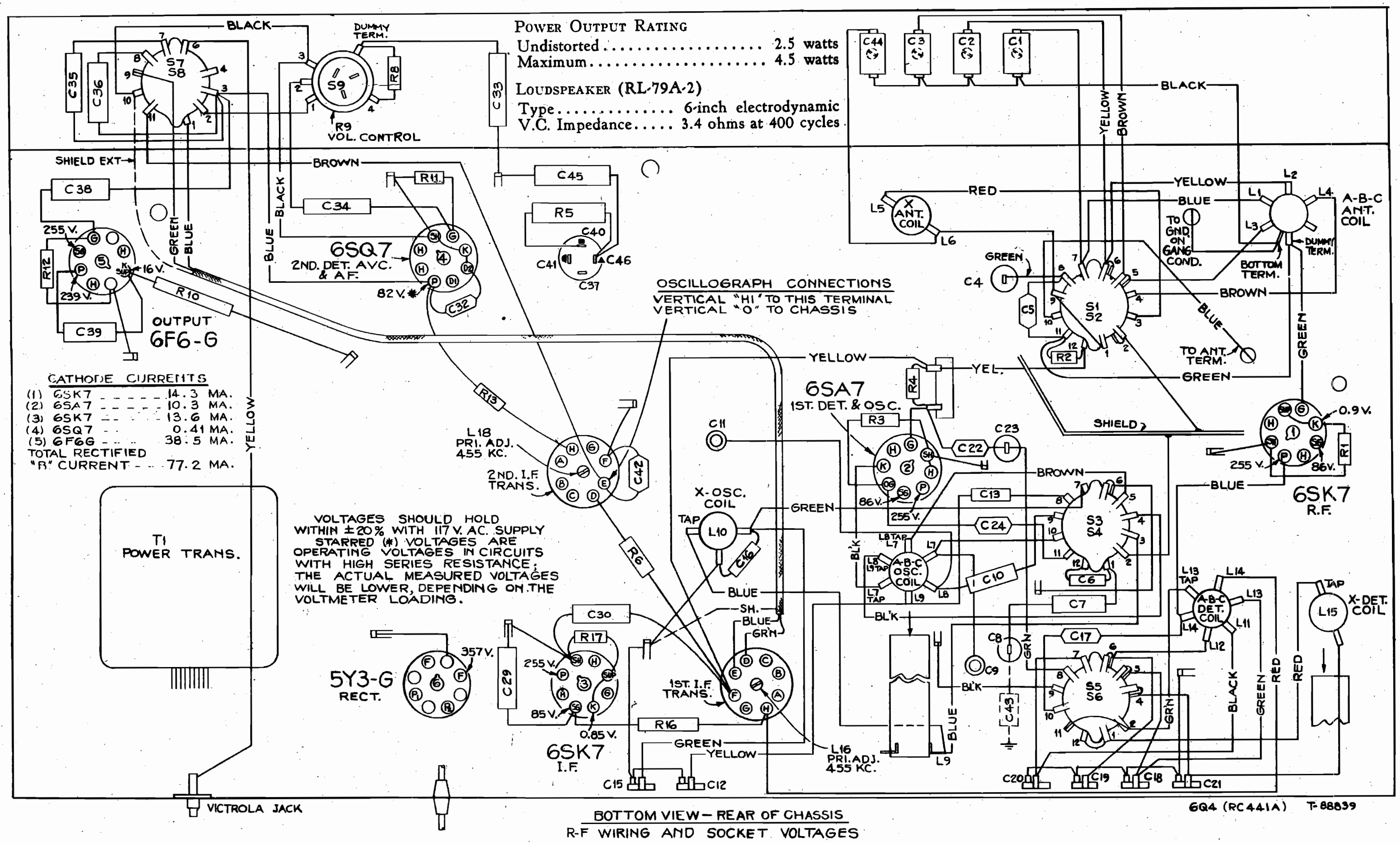
RCA MFG. CO., INC.

MODEL 6Q4, Chassis RC-441A
Schematic, Controls



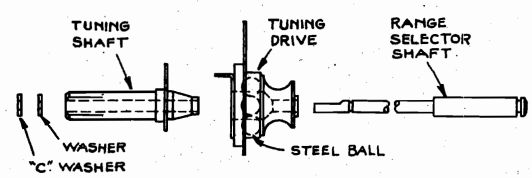
MODEL 6Q4, Chassis RC-441A
Chassis Wiring, Voltage
Lead Dress

RCA MFG. CO., INC.



BOTTOM VIEW – REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

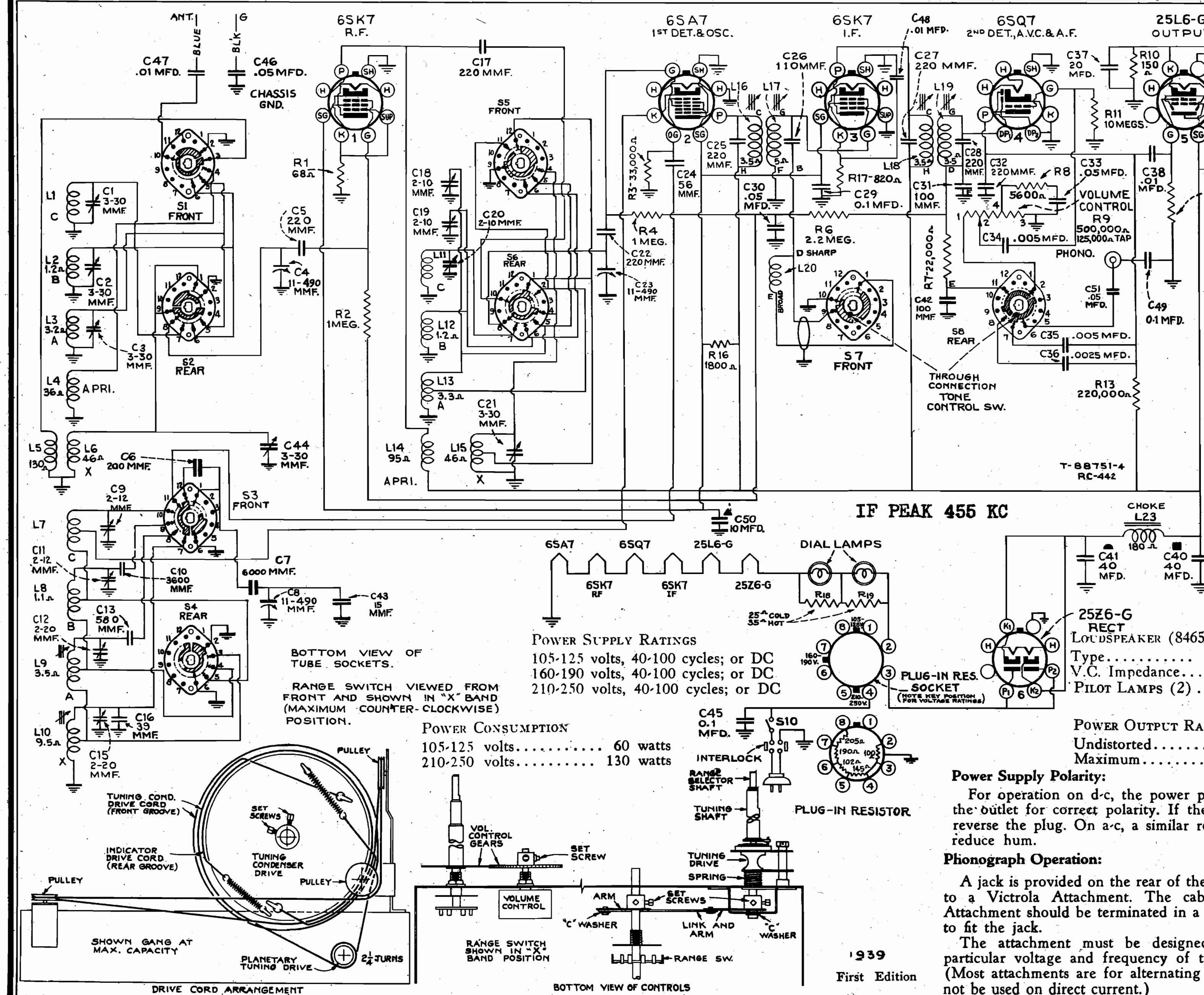
Precautionary Lead Dress:
1. Dress black lead from L11 to C20 against terminals 6 and 7 of S6.
2. Dress the green lead from the middle section of the gang away from any other leads, parts, or chassis.
3. Dress the black diode lead running between the 6SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.
4. Twist the power leads together and dress them away from the 6SQ7 socket.
5. Dress the brown lead from terminal E on the 2nd I-F transformer to terminal 11 on S8 close to chassis.
6. Dress the black lead from trimmer (C1) to antenna coil away from the range switch link section.
7. Dress black speaker lead around the output socket toward the power transformer.
8. Keep green lead of 6SK7 R-F grid circuit away from blue antenna lead.



PLANETARY TUNING DRIVE ASS'Y

MODEL 6Q4X, Chassis RC-442
Schematic, Drive Cord Controls, Phono. Data

RCA MFG. CO., INC.



Power Supply Ratings

105-125 volts, 40-100 cycles; or DC
160-190 volts, 40-100 cycles; or DC
210-250 volts, 40-100 cycles; or DC

Power Consumption

105-125 volts.......... 60 watts
210-250 volts.......... 130 watts

Loudspeaker (84659-1)

Type.......... 6-inch permanent-magnet
V.C. Impedance.... 3.4 ohms at 400 cycles
Pilot Lamps (2)...... Mazda No. 47, 6.3 volts, .15 amp.

Power Output Rating (125 volts, a-c)

Undistorted.................. 1.4 watts
Maximum.................. 2.5 watts

Power Supply Polarity:

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.

Phonograph Operation:

A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

The attachment must be designed to operate on the particular voltage and frequency of the power supply line. (Most attachments are for alternating current only, and can not be used on direct current.)

1939
First Edition

MODEL 6Q4X, Chassis RC-442
Alignment, Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

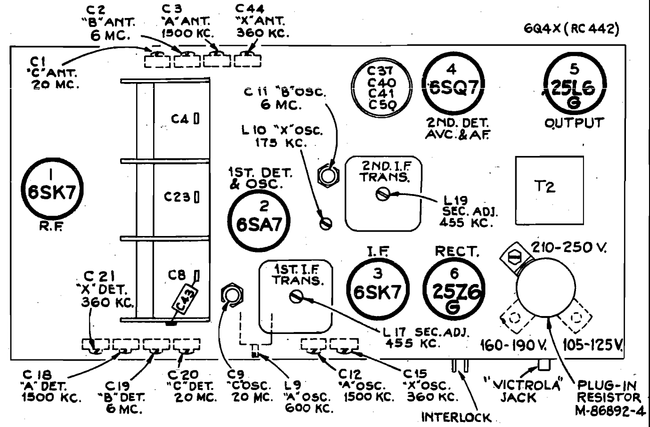
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the black lead and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

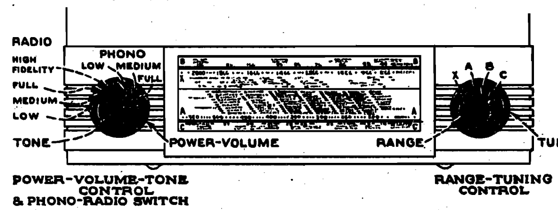
As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.



SEE 6Q4 FOR PLANETARY TUNING DRIVE ASS'Y



Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Turn tone control to 3rd position (sharp) from maximum counter-clockwise.			
2	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" Band Quiet point between 550-750 kc	L18 and L19 (2nd I-F trans.)
3	6SA7 grid in series with .01 mfd.			L16 and L17 (1st I-F trans.)
4	Turn tone control to 4th position (broad) from maximum counter-clockwise and check I-F response which should be a slightly double-peaked curve. Leave tone control in 3rd position (sharp) for the following steps.			
5	Ant. terminal in series with 200 mmfd.	360 kc	360 kc (31.5°) "X" Band	C15 (osc.)† C21 (det.) C44 (ant.)
6		175 kc	175 kc (127.2°) "X" Band	L10 (osc.) Rock gang
7		1,500 kc	1,500 kc (28°) "A" Band	C12 (osc.)†† C18 (det.) C3 (ant.)
8		600 kc	600 kc (148°) "A" Band	L9 (osc.) Rock gang
9	Repeat steps 5, 6, 7, and 8.			
10	Ant. terminal in series with 300 ohms	6 mc	6 mc (30°) "B" Band	C11 (osc.)* C19 (det.) C2 (ant.)
11		20 mc	20 mc (23°) "C" Band	C9 (osc.)** C20 (det.) C1 (ant.)

* Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to the correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

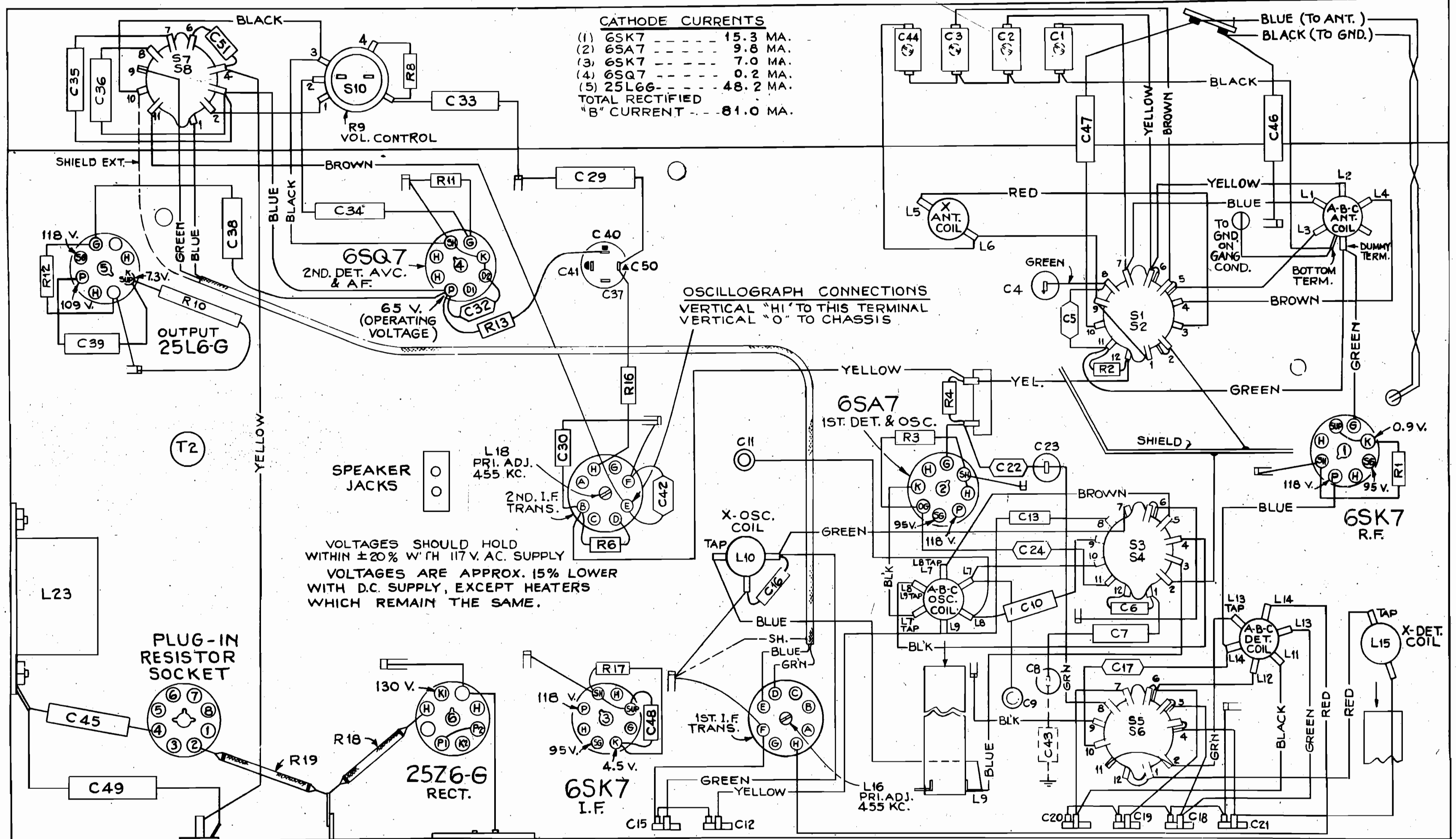
† Preset L10 core approximately ½-inch out before adjusting C15.

†† Preset L9 core screw flush with apron before adjusting C12.

Note.—Oscillator tracks **above** signal on all bands.

RCA MFG. CO., INC.

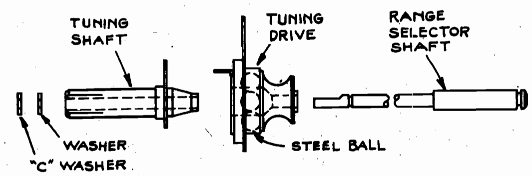
MODEL 6Q4X, Chassis RC-442
Chassis Wiring, Voltage Lead Dress



BOTTOM VIEW–REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

Precautionary Lead Dress:

1. Dress black lead from L11 to C20 against terminals 6 and 7 of S6.
2. Dress the green lead from the middle section of the gang away from any other leads, parts, or chassis.
3. Dress the black diode lead running between the 6SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.
4. Twist the power leads together and dress them away from the 6SQ7 socket.
5. Dress the brown lead from terminal E on the 2nd I-F transformer to terminal 11 on S8 against the chassis.
6. Dress the black lead from trimmer (C1) to antenna coil away from the range switch link action.

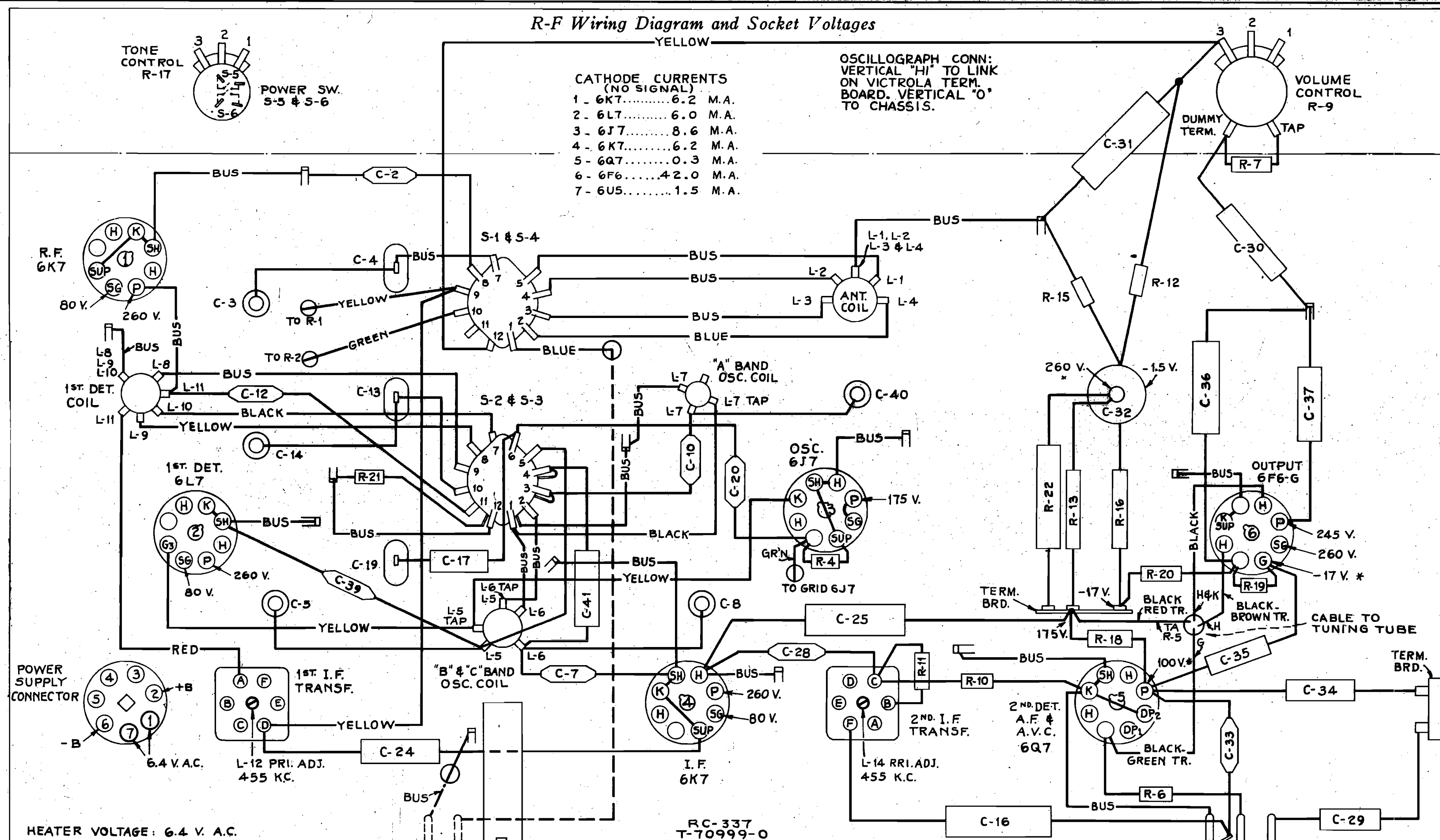


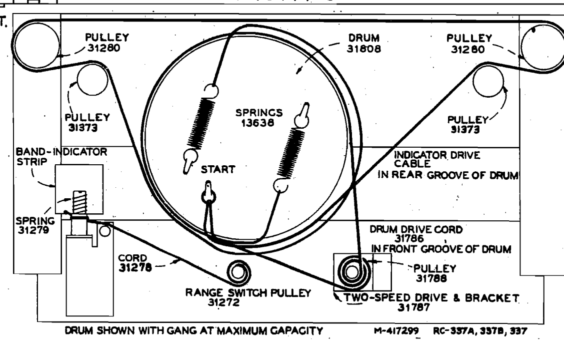
PLANETARY TUNING DRIVE ASS'Y

MODEL 8Q1, Chassis RC-337
Chassis Wiring, Voltage
Lead Dress

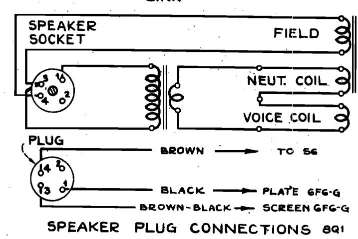
RCA MFG. CO., INC.

R-F Wiring Diagram and Socket Voltages





Arrangement of Drive Cords for Tuning Condenser and Dial Indicator



Connections of Loudspeaker and Cable

* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

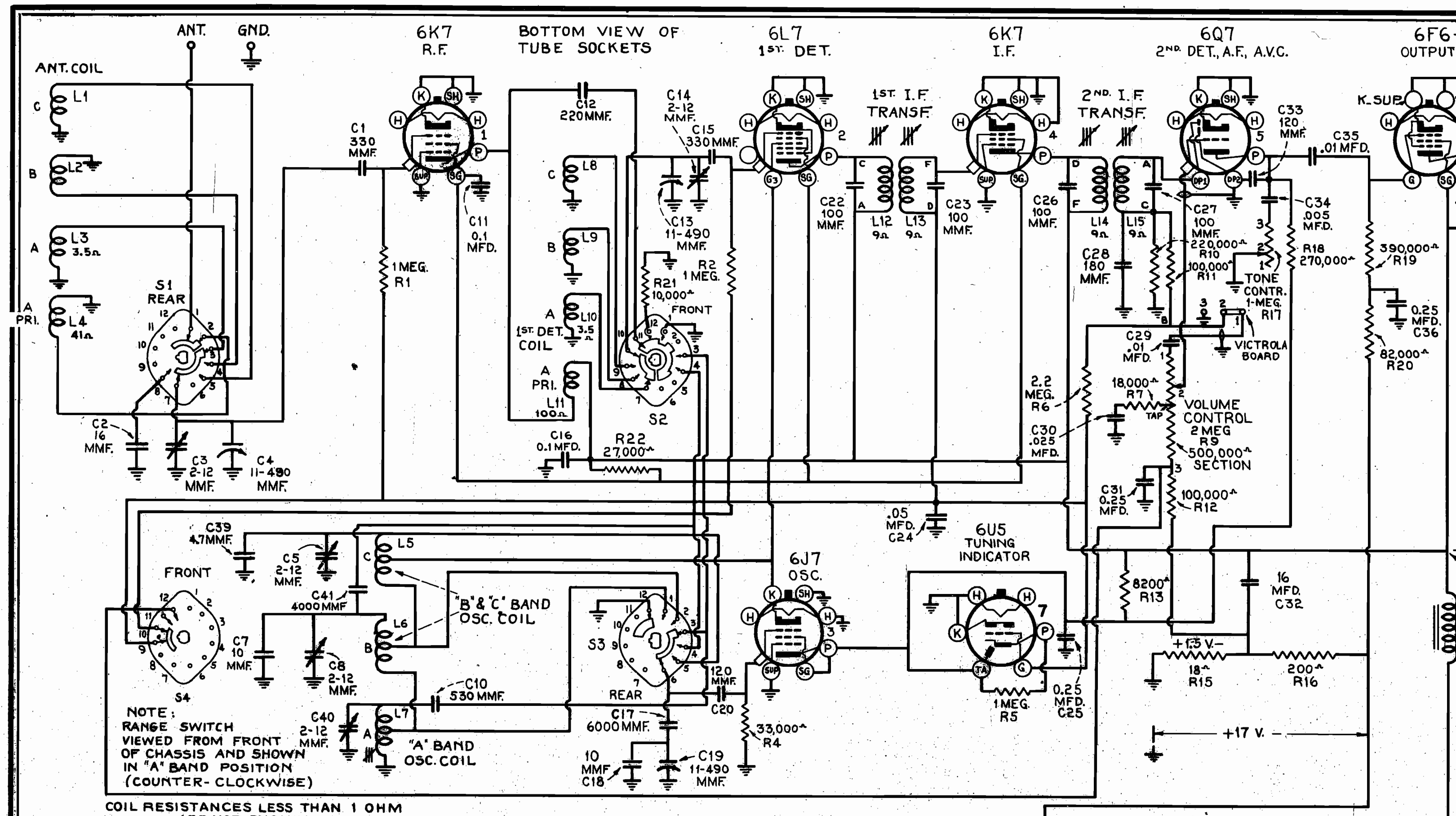
Precautionary Lead Dress.—

1. Dress the leads from the 1st-detector coil to the range switch away from the trimmer C14.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to the chassis.

RCA MFG. CO., INC.

MODEL 8Q1, Chassis RC-337 Schematic

FOR POWER SUPPLY DATA SEE INDEX



IF PEAK 455 KC

First Edition

Loudspeaker (RL-63H-3)

Type........................... 8-inch Electrodynamic
Voice-coil Impedance at 400 ohms.............. 2.2 ohms

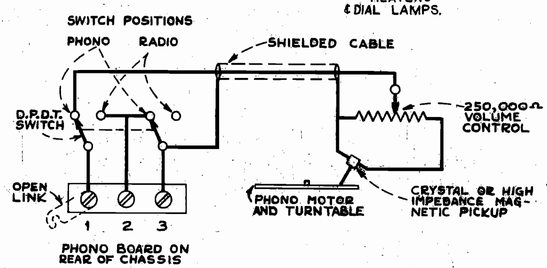
Power Output Rating

Undistorted.............................. 2.5 watts
Maximum.................................. 4.5 watts

Pilot Lamps (2)....... Mazda No. 44, 6.3 volts, 0.25 amp.

Power Supply Ratings

	Volts	Cycles
A-C Ratings		
With PSU 8A Power Supply Unit....	105-125........	50-60
With PSU 8B Power Supply Unit....	105-125........	25-60
With PSU 8C Power Supply Unit....	105-130, 140-160, ... 200-225, 225-250	50-60
D-C Ratings		
With PSU 8E Power Supply Unit....	105-125, 210-250	D-C



Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch

MODEL 8Q1, Chassis RC-337
Alignment, Trimmers,
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

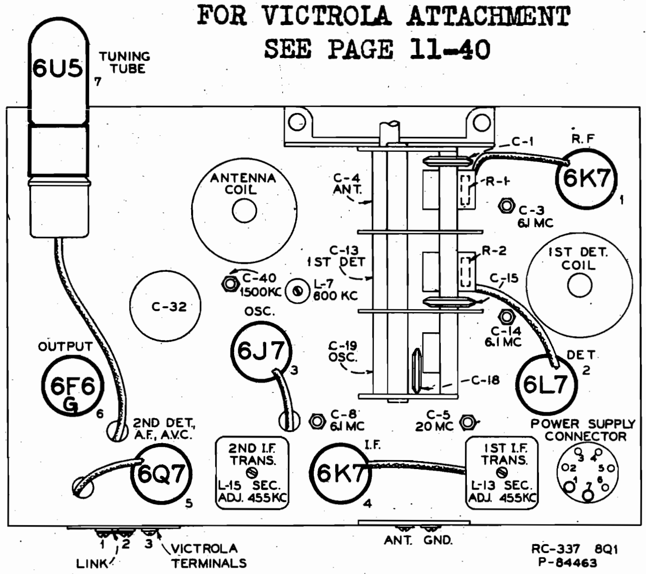
Calibration Scale on Indicator-Drive-Cord drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

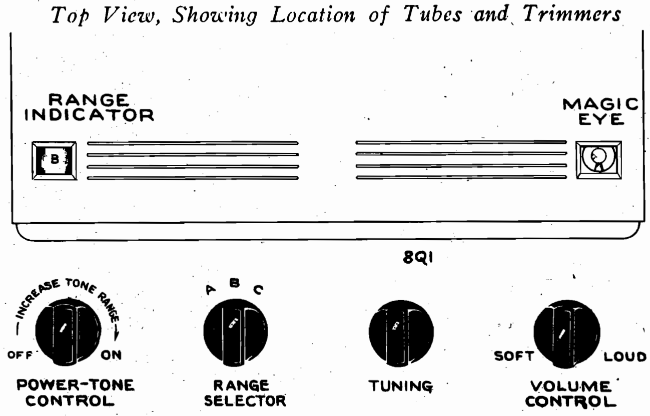
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end marked on the dial scales, and gang-condenser fully meshed. The indicator has a spring clip for attachment to the cable.

FOR VICTROLA ATTACHMENT
SEE PAGE 11-40



Top View, Showing Location of Tubes and Trimmers



At Right—*Location of Controls*

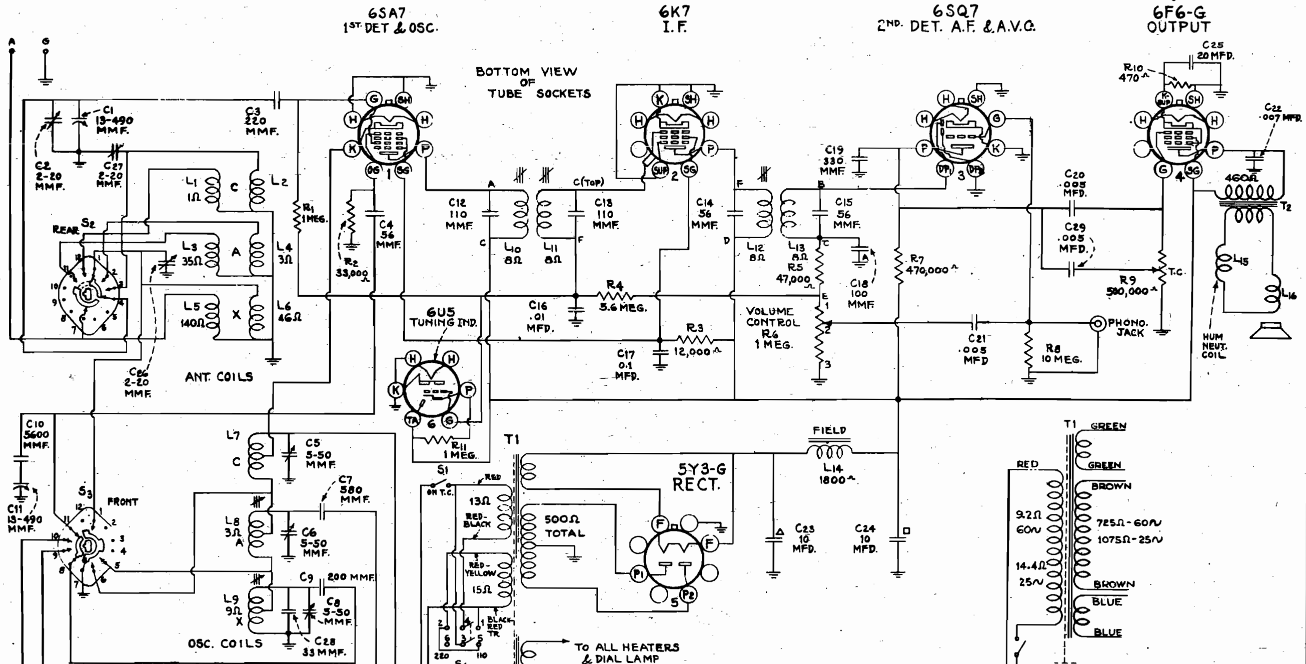
To turn on the set, turn the power-tone control fully clockwise, past the snap of the switch. This is the full-range tone position. To switch off the set, turn this knob fully counter-clockwise.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"C" band, Quiet Point.	L14 and L15 (2nd I-F Trans.)
2	6L7 1st-Det. grid cap, in series with .01 mfd.			L12 and L13 (1st I-F Trans.)
3	Antenna Terminal, in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" band	C8 (osc.)* C14 (det.)** C3 (ant.)
3A	Check to determine that C8 has been adjusted to the correct peak by turning radio to 5.19 mc (50°) where a weaker signal should be received.			
4	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23.5°) "C" band	C5 (osc.)*
4A	Check to determine that C5 has been adjusted to the correct peak by turning radio to 19.09 mc (29.5°) where a weaker signal should be received.			
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (31°) "A" band	C40 (osc.)
6	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (144.5°) "A" band	L7 (osc.)†
7	Repeat Step No. 5			

* Use **minimum** capacity peak (plunger out) if two peaks can be obtained.
** Rock gang condenser slightly while peaking C14, and use **maximum** capacity peak if two peaks can be obtained.
† Rock gang condenser slightly while peaking L7 for maximum output.
NOTE: The oscillator tracks 455 kc **above** the signal on all bands.

RCA MFG. CO., INC.

MODEL 6Q8, Chassis 414B
Schematic, Voltage
Chassis Wiring



RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "X" BAND (MAX. COUNTER CLOCKWISE) POSITION.

First Edition
—1939—

Pilot Lamp .... Mazda No. 44, 6.3 volts, 0.25 amp.

Power Output Rating
(105-125 Volt Operation)

Undistorted .... 1.5 watts
Maximum .... 3.3 watts

Power Supply Ratings

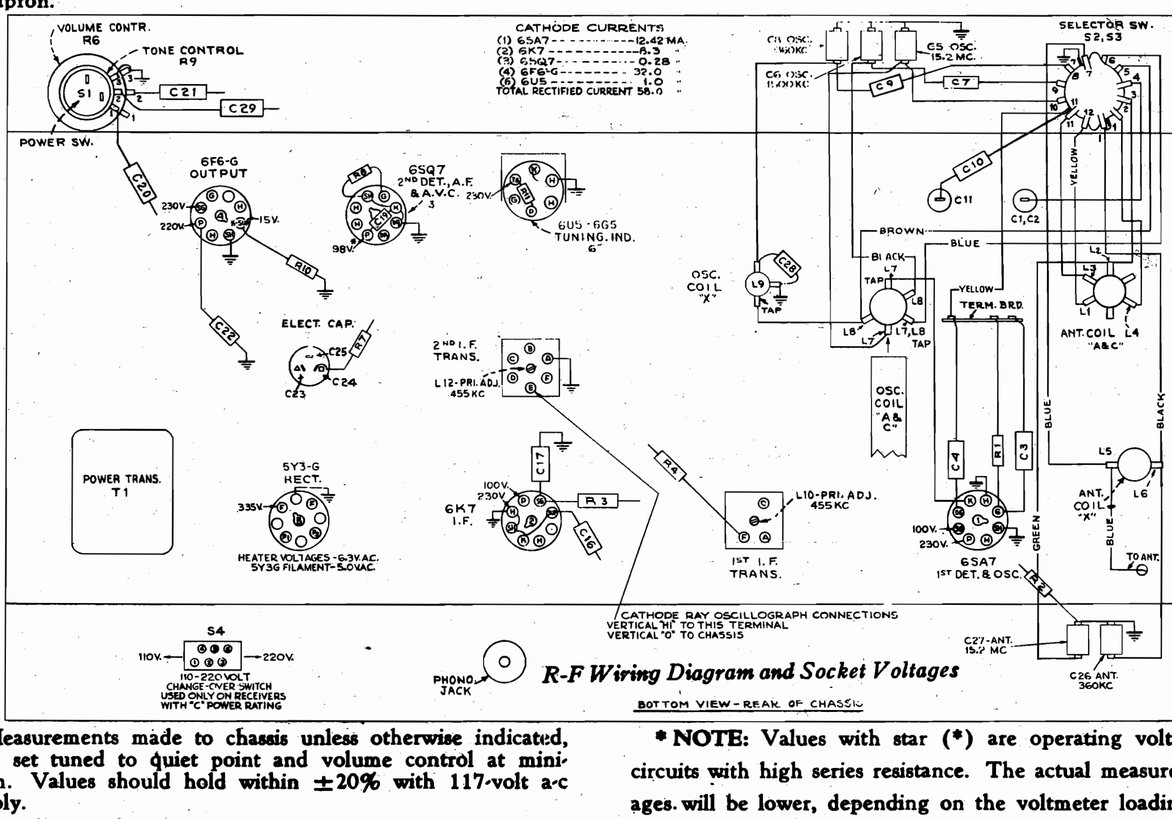
Rating A.................... 105-125 volts, 50-60 cycles
Rating B.............. 105-125 volts, 25 cycles, 75 watts
Rating C..... 105-125; 200-250 volts, 50-60 cycles, 75 watts

Loudspeaker

Type.............................. 6-inch electrodynamic
V. C. Impedance................. 3.4 ohms at 400 cycles

Precautionary Lead Dress:

1. Lead from 2nd I-F transformer to volume control should be kept close to the chassis and dressed against front apron.
2. C-10 should be dressed away from the antenna section of the variable condenser (C-1).



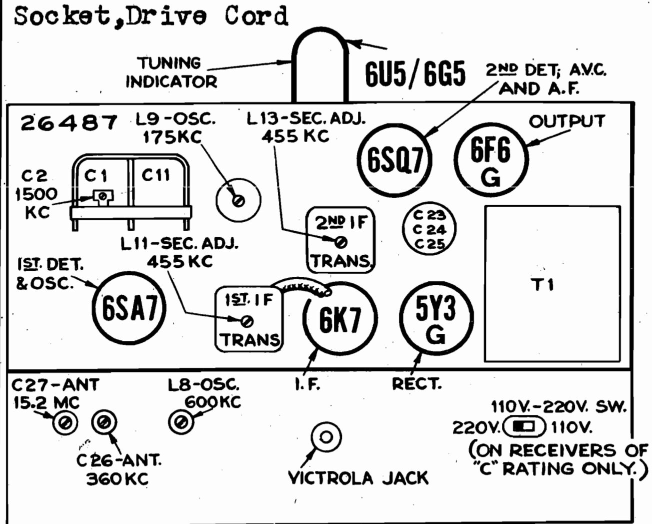
R-F Wiring Diagram and Socket Voltages

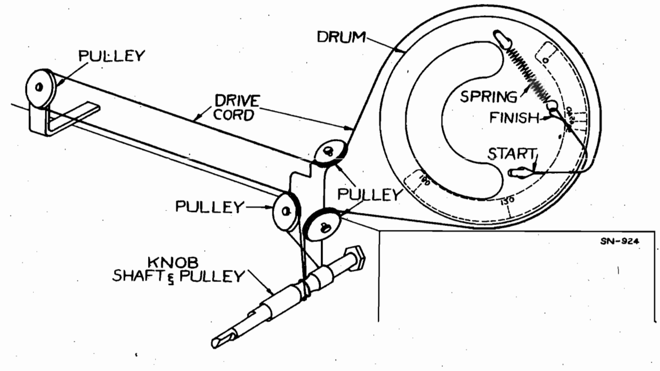
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODEL 6Q8, Chassis RC-414B
Alignment, Trimmers
Socket, Drive Cord

RCA MFG. CO., INC.





Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

At Left—Tube and Trimmer Locations

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of one set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

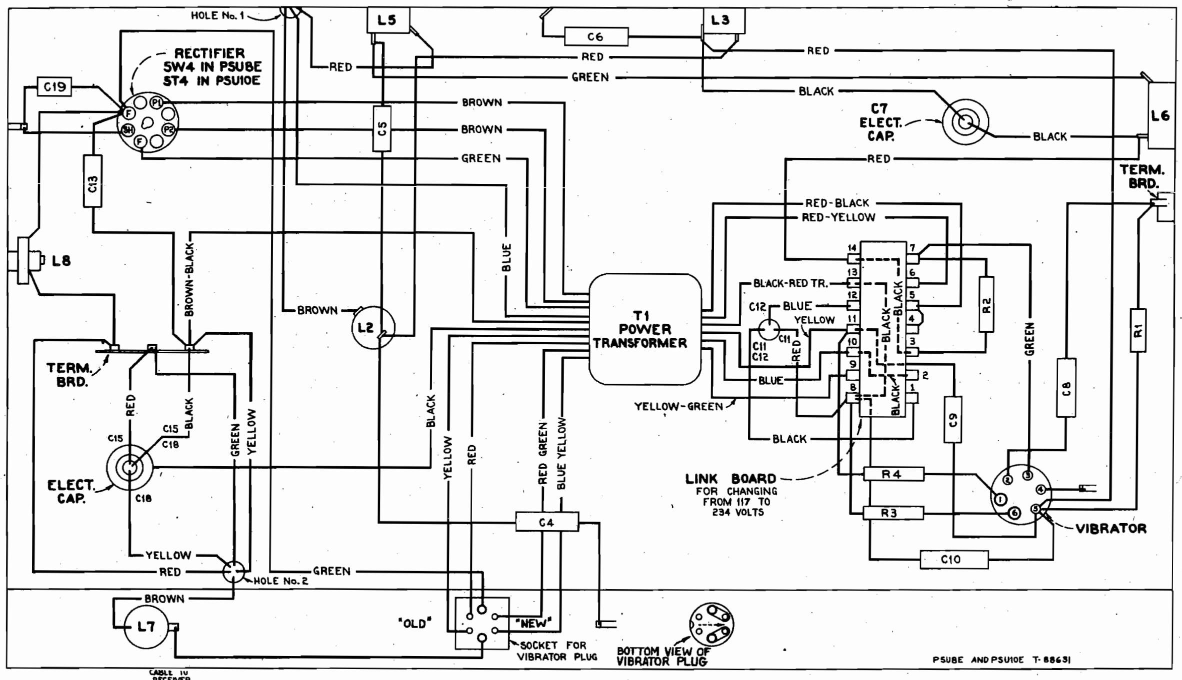
Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6SA7 det. grid in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Ant. terminal in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C6 (osc.) C2 (ant.)
4	Ant. terminal in series with 200 mmf.	600 kc	600 kc (33°) "A" Band	L8 (osc.) Rock Gang
5	Repeat steps 3 and 4			
6	Ant. terminal in series with 200 mmf.	360 kc	360 kc (151.5°) "X" Band	C8 (osc.) C26 (ant.)
7	Ant. terminal in series with 200 mmf.	175 kc	175 kc (53.3°) "X" Band	L9 (osc.) Rock Gang
8	Repeat steps 6 and 7			
9	Ant. terminal in series with 300 ohms	15.2 mc	15.2 mc (147.2°) "C" Band	C5 (osc.)* C27 (ant.)
10	Ant. terminal in series with 200 mmf.	360 kc	360 kc (151.5°) "X" Band	C8 (osc.)
11	Ant. terminal in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C6 (osc.)

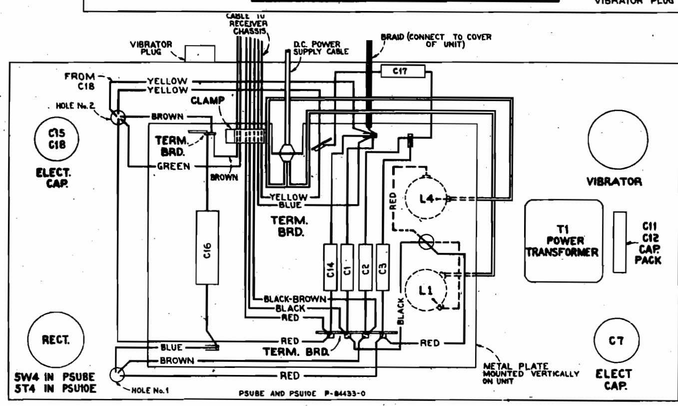
*Use minimum capacity peak if two can be obtained. Check to determine that C5 is adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

NOTE: Oscillator tracks above signal on all bands.

RCA MFG. CO., INC.

MODELS PSU 8E, 10E
Schematic, Chassis Wiring

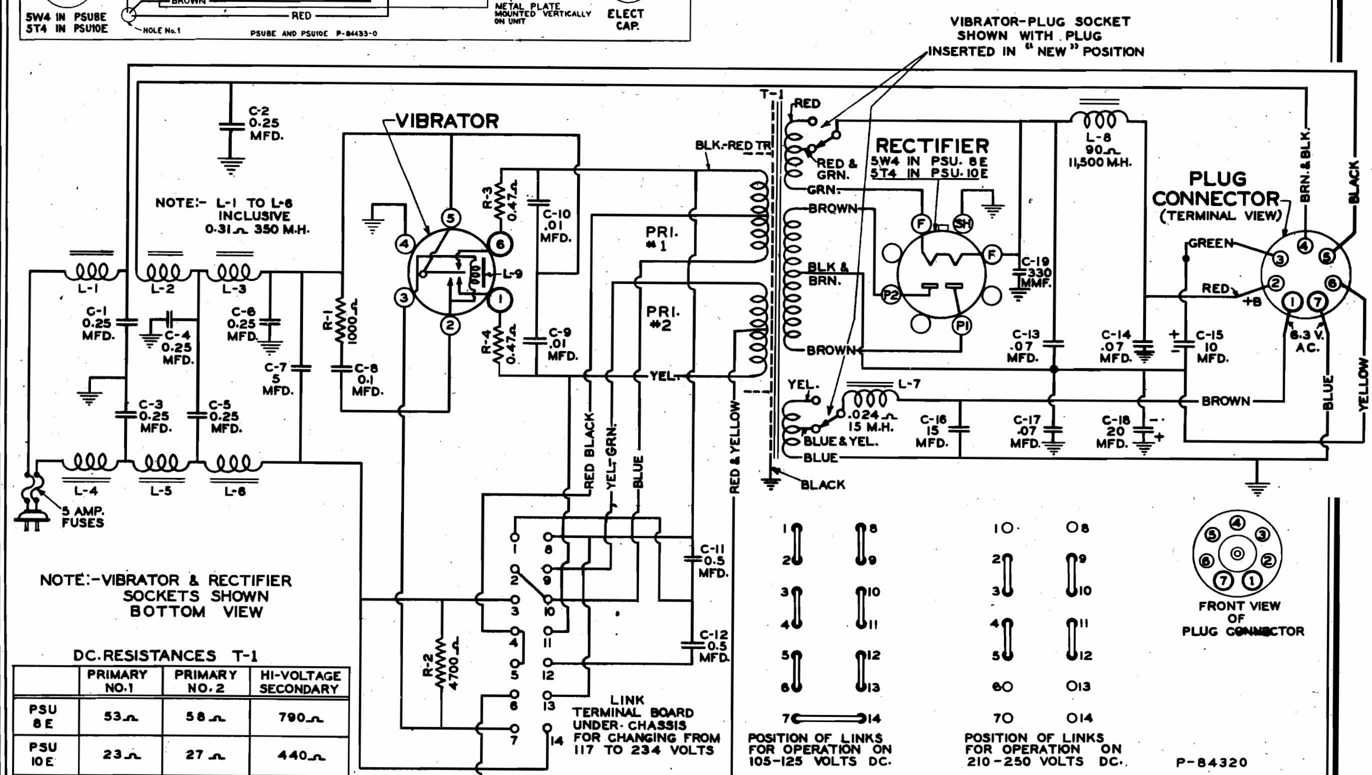




Above—
Bottom View of D-C Power Unit

At Left—
Top View of D-C Power Unit

Below—
Schematic Diagram



DC. RESISTANCES T-1

	PRIMARY NO. 1	PRIMARY NO. 2	HI-VOLTAGE SECONDARY
PSU 8E	53Ω	58Ω	790Ω
PSU 10E	23Ω	27Ω	440Ω

—1938—

RCA MFG. CO., INC.

PSU 8E and 10E D-C Power Supply Units

Each d-c unit is equipped with an 18-inch 7-wire cable, with a 7-contact female receptacle which plugs into a 7-prong male connector on the receiver chassis. The d-c power cord (double conductor) is 6-feet long and is provided with a fused plug. The units are approximately 12½-inches long, 5½-inches wide, and 8½-inches high.

GOOD GROUND IS ESSENTIAL.—It is necessary to provide a good ground connection to the receiver chassis. The ground lead should be heavy wire, as short as possible, connected to a water pipe by means of an approved ground clamp. If a water pipe ground is not available, a buried metal plate or screen may be used. This should have an area of approximately 20 square feet and should be buried one or two feet in moist ground. The connection to the plate should be electrically good, mechanically solid, and permanent.

Grounding Power Supply Unit.—A flexible metal braid is connected from the PSU chassis to the case of the unit, and another length of braid extends from the case for connection to the receiver chassis. Loosen one of the self-tapping screws on the rear of the chassis, and attach the braid under this screw. It is important to see that these connections are made correctly at the time of installation.

Magic Wave Antenna Recommended.—In cases where the line or vibrator interference is found to be objectionable, the use of an RCA Magic Wave Antenna (Stock No. 9812) is recommended in conjunction with a good ground as specified above.

Link Board for Changing from 117 to 234 Volts.—A link board is mounted under the chassis of the PSU for making connections to permit operation on 105-125 volts d.c., or on 210-250 volts d.c. The correct position of the links for each voltage range is shown in the schematic diagram. **The links must be arranged correctly in the link board for the particular voltage range on which the unit is to be operated, otherwise damage to the receiver may result.**

Vibrator Plug.—The heater windings on the power transformer are tapped and connected to a six-contact socket on the rear of the PSU chassis. A plug fits into this socket in two positions only. An arrow on the plug points to markings "NEW" or "OLD" on the case of the unit. When the vibrator is new, the plug is inserted with the arrow pointing to "NEW." In the course of time, when the vibrator is worn to an extent where the dial lights burn dull or red instead of with their usual brilliancy, the plug should be removed and re-inserted with the arrow pointing to "OLD." (In this position, all the turns of the heater windings are connected, thus bringing the heater voltage up to normal.)

The number of operating hours to the time when it is necessary to turn the plug to "OLD" is not an indication of the ultimate life of the vibrator: For example, with high line voltage, the plug may usually be left at "NEW" for practically the entire useful life of the vibrator; but with low line voltage, it may be necessary to turn the plug to "OLD" after a time corresponding to a small fraction of the total life of the vibrator.

Testing.—The simplest way to check PSU 8E or 10E is to plug it into a receiver for which it is designed. (First check the position of the links for the particular line voltage.) Note whether the dial lamps in the receiver light with normal brilliancy, and measure the rectified "B" voltage at the receiver to determine whether it is normal.

If a receiver is not available, dummy loads may be connected to the unit as specified in the table below.

The supply current must be measured with a d-c ammeter, not a meter of the ac-dc type, inasmuch as the r.m.s. value of the current is considerably higher than the d-c current. The heater voltage must be measured with an r.m.s. meter (thermo-coupled), not with an average meter (rectifier type), on account of the square wave shape. If an accurate thermo-coupled meter is not available, the heater voltage may be checked by observing the brilliancy of the dial lamps in the receiver. They will glow dull or red if the heater voltage is low.

Precautionary Lead Dress. — (1) Dress all leads on the power transformer primary and the buffer capacitors away from the line chokes. (2) Leads to C19 must be as short as possible. (3) The rectifier filament leads should be run close to each other, and dressed away from the filter chokes. (4) D-C power cord must not touch power transformer. (5) Keep antenna and ground leads away from PSU and PSU cables.

PSU	Supply Volts DC	Heater Load (ohms)	Rectifier Load (ohms)	Supply Current D-C amps.	Heater Voltage (A.C.)		Rectified Voltage (D.C.)		Used With Models
					Max.	Min.	Max.	Min.	
8E	117	2.2	4,900	0.90	7.85	7.1	400	360	8Q1, and 8Q4
	234	2.2	4,900	0.50	7.85	7.1	400	360	
10E	117	1.4	3,400	1.10	7.4	6.6	400	360	10Q1, 12Q4, 12QK
	234	1.4	3,400	.65	7.4	6.6	400	360	

NOTE: The heater and rectifier dummy load resistors should be capable of handling 50 watts. Connect the heater load across terminals 1 and 7 on the 7-contact plug. Connect the rectifier load resistor across terminals 2 and 6 on the 7-contact plug. Connect a jumper from terminal 2 to 3, and from 4 to 5 on this plug. Check position of links before turning power on.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

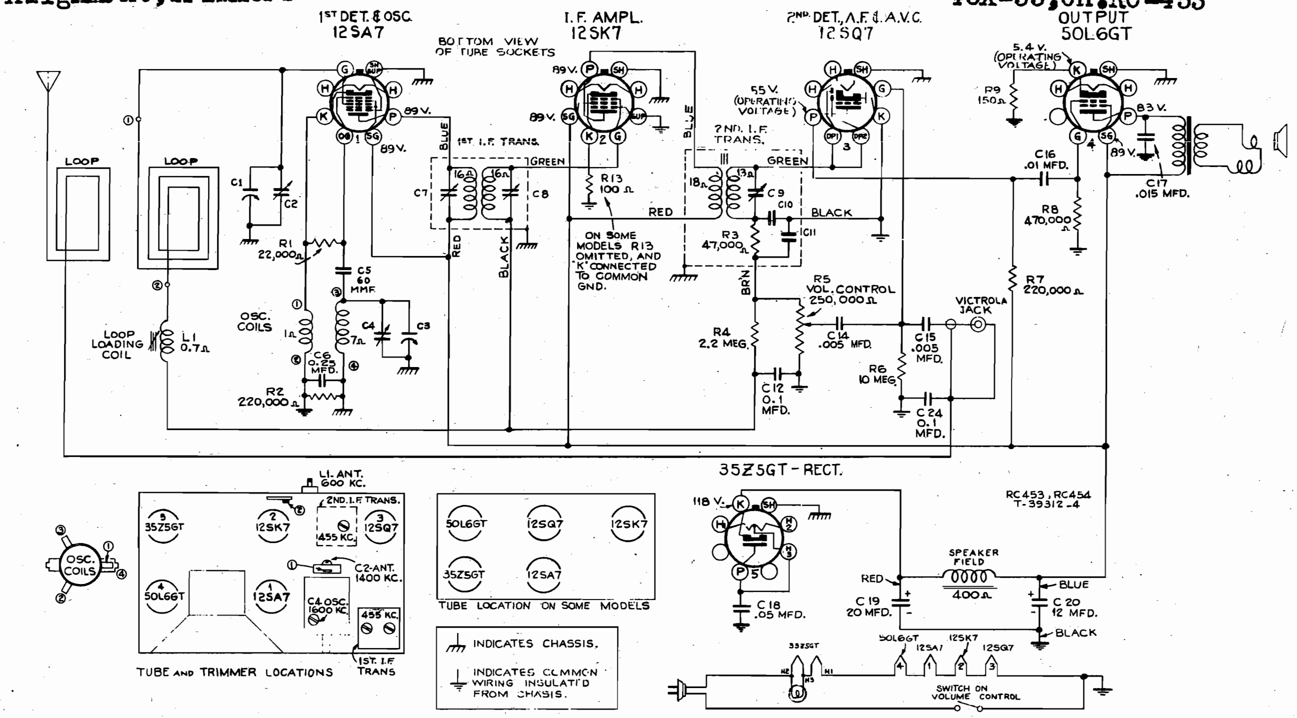
STOCK No.	DESCRIPTION	Unit List Price
	DC POWER SUPPLY (PSU-8E and PSU-10E)	
12952	Capacitor—330 mmfd. (C19)	.35
4937	Capacitor—.01 mfd. (C9, C10)	.25
14626	Capacitor—.07 mfd. (C13, C14, C17)	.25
4839	Capacitor—0.1 mfd. (C8)	.30
12484	Capacitor—0.25 mfd. (C1, C2, C3, C4, C5, C6)	.30
32049	Capacitor—Comprising two sections of 0.5 mfd. each (C11, C12)	3.20
32048	Capacitor—5 mfd. (C7)	1.50
32047	Capacitor—Comprising one section 10 mfd. and one section 20 mfd. (C15, C18)	1.55
32045	Capacitor—15 mfd. (C16)	.70
32046	Coil—Choke coil (L1, L2, L3, L4, L5, L6)	.80
31794	Coil—Choke coil (L7)	.65
32053	Coil—Choke coil (L8)	.60
5140	Fuse—5 amp. fuse	.10
30557	Plug—Fused plug less fuses and power cord	.55
32052	Plug—6-contact power change plug	.30
14409	Plug—7-contact female plug for power supply cable	.45
32064	Resistor—0.47 ohms, flexible type (R3, R4)	.15
4687	Resistor—1,000 ohms, ½ watt (R1)	.20
11768	Resistor—4,700 ohms, 2 watt (R2)	.25
32051	Socket—6-contact power change socket	.20
31251	Socket—Tube socket	.25
14312	Socket—Vibrator socket	.25
32062	Transformer—Power transformer (PSU-8E only)	11.90
32063	Transformer—Power transformer (PSU-10E only)	18.50
32050	Vibrator	10.40

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

2nd Production
Schematic, Socket, Voltage
Alignment, Trimmers

RCA MFG. CO., INC.

MODELS 9TX-50, 9TX-50M
Chassis RC454; 40X-52,
40X-55, Ch. RC-453



Steps	Connect the test oscillator to—	Tune test-osc. to—	Turn Radio Dial to—	Adjust the following for maximum peak output
1	Tuning Condenser stator (ant.) in series with .1 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C7, C8, C9 (1st and 2nd I-F transformers)
2	Radiation Loop consisting of 2 turns of wire 18 in. in diameter located 4' to 6 feet from receiver	1,650 kc	Full clockwise (out of mesh)	C4 (oscillator)
3		600 kc	Resonance on 600 kc signal	L1 (Loop inductance)
4		1,400 kc	Resonance on 1,400 kc signal	C2 (Antenna)

Precautionary Lead Dress:

1. Green and blue leads from 1st I.F. transformer must be kept separated.

2. Dress yellow lead from loudspeaker under green lead from hum bucking coil to prevent it from touching the 50L6GT.

POWER SUPPLY RATINGS
A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted .... .6 watts
Maximum .... 2.0 watts

LOUDSPEAKER
Type .... 5-inch Electrodynamic

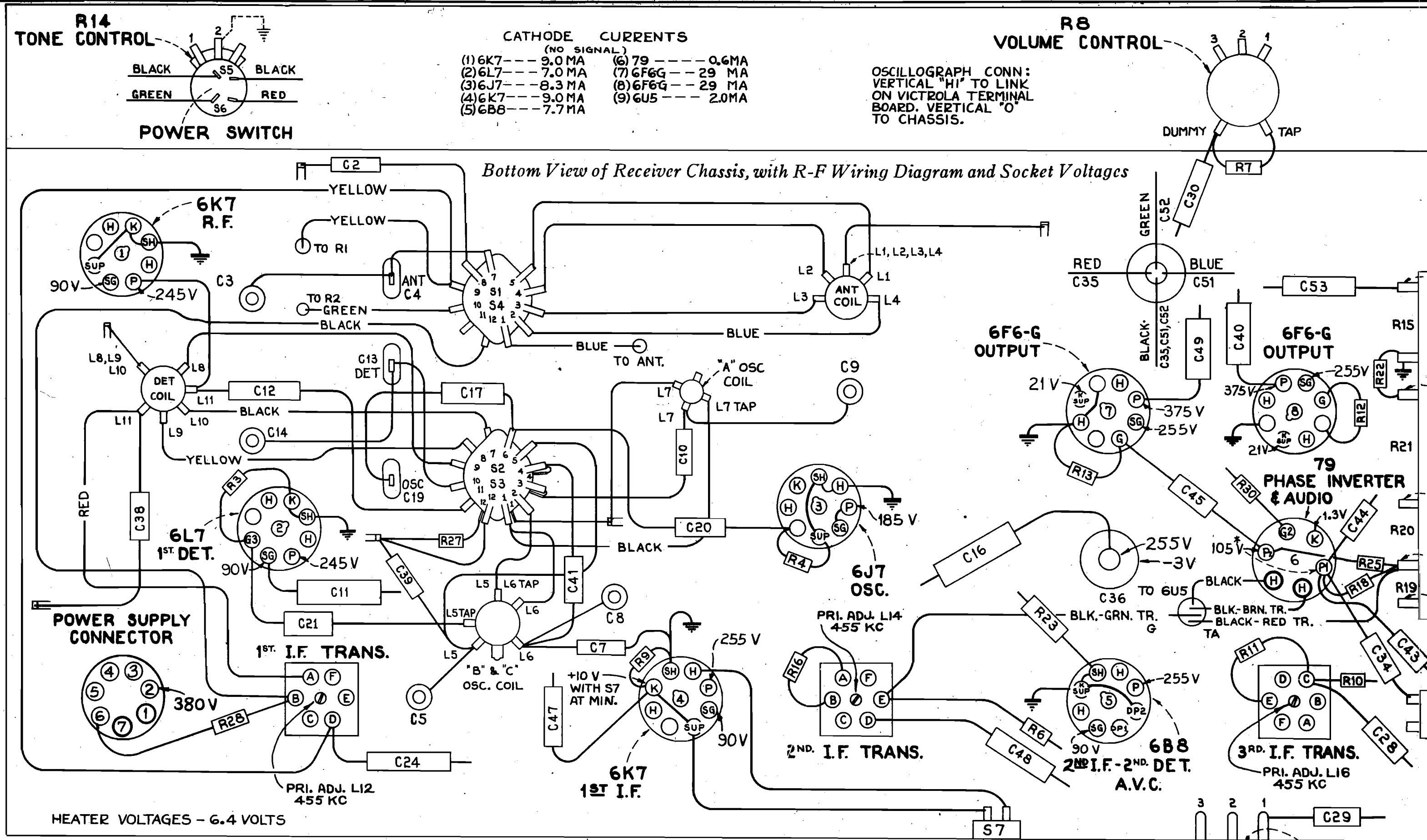
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-453, RC-454)	
34444	Bracket—Dial and lamp support (9TX-50, 50M)	.30
34447	Capacitor—Mica trimmer, 2.5 to 30 mmfd. (C1)	XX
13057	Capacitor—60 mmfd. (C5)	.35
4838	Capacitor—.005 mfd. (C14, C15)	.25
4937	Capacitor—.01 mfd. (C16)	.25
11315	Capacitor—.015 mfd. (C17)	.20
32787	Capacitor—.05 mfd. (C18)	.20
4839	Capacitor—0.1 mfd. (C12, C24)	.30
12484	Capacitor—0.25 mfd. (C6)	.30
34597	Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd. (C19, C20)	.90
34592	Coil—Loop loading coil	XX
34443	Coil—Oscillator coil	XX
34448	Condenser—Variable tuning condenser (40X-52, 55)	XX
34440	Condenser—Variable tuning condenser (9TX-50, 50M)	XX
32545	Control—Volume control and power switch (40X-52, 55)	1.50
33291	Control—Volume control and power switch (9TX-50, 50M)	1.50
32634	Cord—Tuning condenser drive cord	.10
34567	Drum—Variable tuning condenser drive drum (40X-52, 55)	.35
34446	Eyelet—Used as pulley for drive cord (9TX-50, 50M)	XX
11765	Lamp—Dial lamp	.15
34445	Pointer—Dial pointer (9TX-50, 50M)	XX
14439	Resistor—100 ohms, ¼ watt (R13)	.20
13428	Resistor—150 ohms, ¼ watt (R9)	.20
13998	Resistor—22,000 ohms, ¼ watt (R1)	.20
12264	Resistor—220,000 ohms, ¼ watt (R2, R7)	.20
34332	Shaft—Tuning condenser drive shaft (9TX-50, 50M)	XX
34449	Socket—Dial lamp socket	XX
31319	Socket—Tube socket	.25
30585	Spring—Tuning condenser drive cord spring (40X52, 55)	.06
31615	Spring—Drive cord spring (9TX-50, 50M)	.06
34441	Transformer—1st I.F. transformer	XX
34442	Transformer—2nd I.F. transformer	XX
12285	Resistor—470,000 ohms, ¼ watt (R8)	.20
12679	Resistor—2.2 megohm, ¼ watt (R4)	.20
13601	Resistor—10 megohm, ¼ watt (R6)	.20
33061	Shaft—Tuning condenser drive shaft (40X-52, 55)	.20
	SPEAKER ASSEMBLIES 40X-55 (RL86-1)	
32907	Cap—Dust cap	.02
35066	Cone—Cone complete with voice coil	XX
34450	Speaker—5" dynamic speaker complete with cone and voice coil less output transformer	XX
35056	Transformer—Output transformer	XX
	SPEAKER ASSEMBLIES (40X-52, 9TX-50 and 9TX-50M) (39223-1)	
35065	Cone—Cone complete with voice coil	XX
34450	Speaker—5" dynamic speaker complete with cone and voice coil less output transformer	XX
34174	Transformer—Output transformer	1.25
	MISCELLANEOUS	
33744	Dial—Dial scale—glass (40X-52, 55)	.50
33289	Dial—Dial scale (9TX-50, 50M)	.40
34016	Knob—Walnut tuning or volume control knob (40X-52, 55)	.15
34015	Knob—Tuning or volume control knob (9TX-50, 50M)	.15

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

XX Price upon application to your RCA Victor Parts Distributor.

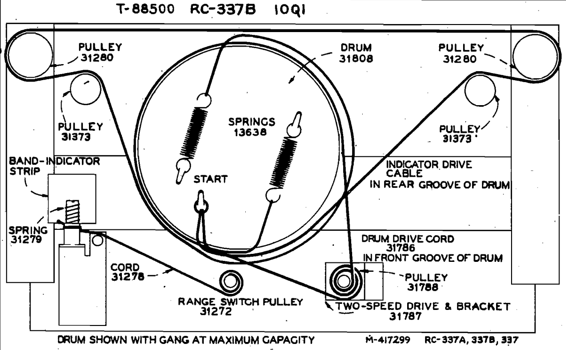
MODEL 10Q1, Chassis RC-337B
Chassis Wiring, Voltage
Drive Cord, Notes

RCA MFG. CO., INC.



Bottom View of Receiver Chassis, with R-F Wiring Diagram and Socket Voltages

BOTTOM VIEW - REAR OF CHASSIS



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at maximum, and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

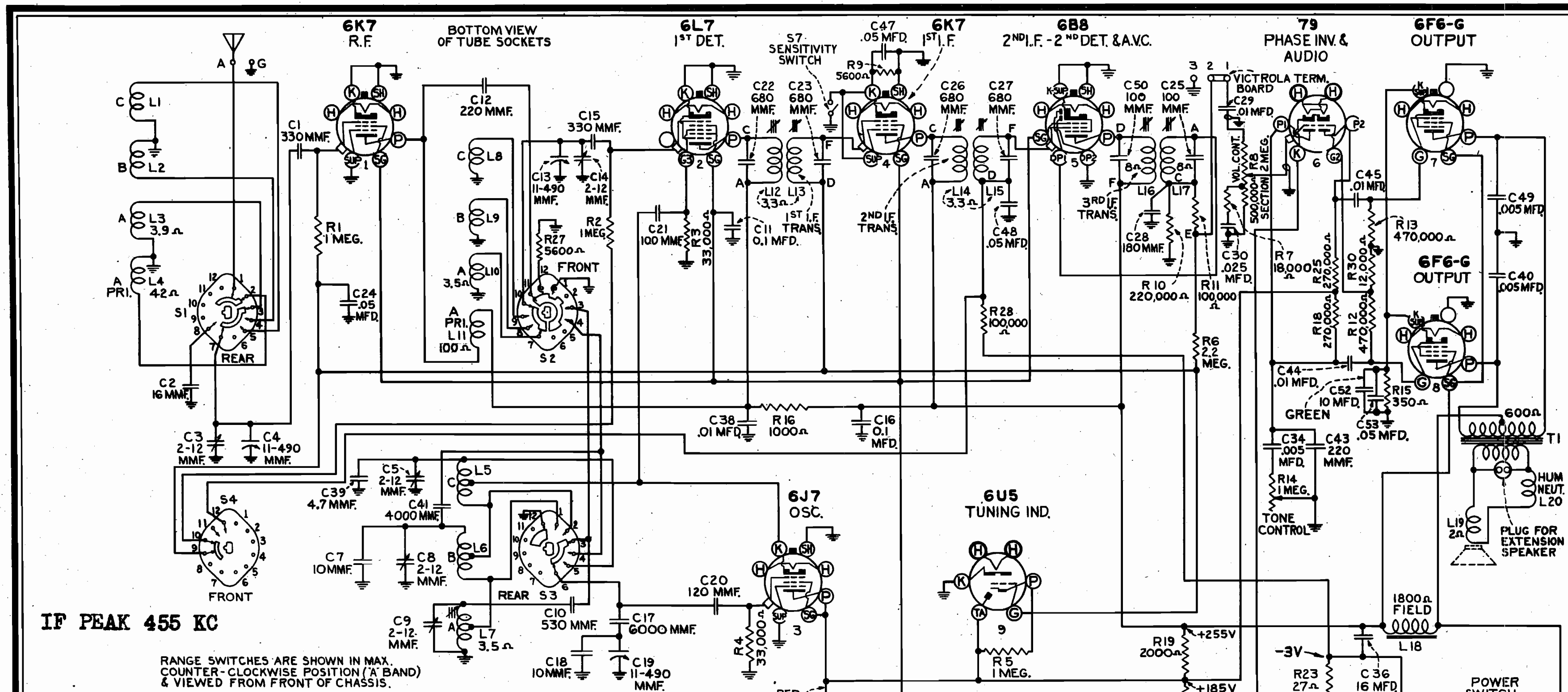
*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired. A permanent-magnet dynamic speaker, with voice-coil impedance of **not less than 2 ohms** is recommended. The voice coil of the extension speaker should be connected by means of two-conductor cable (such as is used on electric appliances) to the male plug. This cable may be any desired length up to several hundred feet. With a long run, it is advisable to use heavier cable. An extension speaker with 2-ohm voice coil will receive approximately half the power output of the receiver. With a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased. (A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.) The RCA MI-6248 Alnico 8-inch diameter permanent-magnet dynamic loudspeaker with 2-ohm voice coil, and 5-watt power-handling capacity is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished-wood housing.

MODEL 10Q1, Chassis RC-377B
Schematic, Lead Dress
Phono. Connections

RCA MFG. CO., INC.

FOR POWER SUPPLY
DATA SEE INDEX

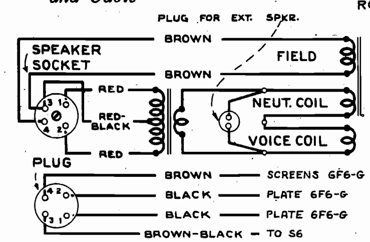


IF PEAK 455 KC

RANGE SWITCHES ARE SHOWN IN MAX. COUNTER-CLOCKWISE POSITION (A BAND) & VIEWED FROM FRONT OF CHASSIS.

Precautionary Lead Dress.—
1. Dress the leads from the 1st-detector coil to the range switch away from the trimmer C14.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to the chassis.

Connections of Loudspeaker and Cable



SPEAKER PLUG CONNECTIONS 10Q1

Victrola Attachment (record player).
SEE NEXT PAGE

LOUDSPEAKER (RL-63H-4)
Type........................ 8-inch electrodynamic
Voice-coil Impedance at 400 cycles.............2.2 ohms

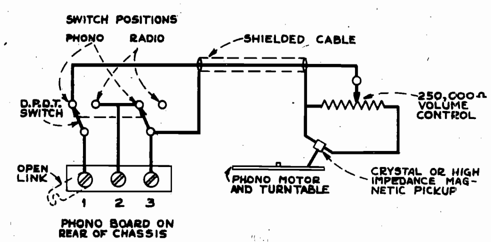
POWER OUTPUT RATING
Undistorted.................................. 10 watts
Maximum...................................... 12 watts

Pilot Lamps (2)......... Mazda No. 44, 6.3 volts, 0.25 amp.

RCA-5U4-G (In PSU 10A, 10B, 10C A-C power supply unit).......................... Rectifier
RCA-5T4 (In PSU 10E D-C power supply unit) .... Rectifier

Stock No. 9824 switch

In the event that a Stock No. 9824 switch is not available, a double-pole, double-throw toggle switch may be used, connecting it as shown in the second diagram below.



POWER SUPPLY RATINGS

	Volts	Cycles
A-C Ratings		
With PSU 10A Power Supply Unit	105-125	50-60
With PSU 10B Power Supply Unit	105-125	25-60
With PSU 10C Power Supply Unit	105-130, 140-160, 200-225, 225-250	50-60
D-C Ratings		
With PSU 10E Power Supply Unit	105-125, 210-250	D-C

MODEL 10Q1, Chassis RC-377B
Alignment, Trimmers, Socket
Victrola Attachment

RCA MFG. CO., INC.

MODEL 8Q1
Record Player

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end marked on the dial scales, and gang-condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
Leave sensitivity switch open (minimum sensitivity) for all alignment operations.				
1	6B8 2nd I-F grid cap, in series with .01 mfd.	455 kc	"C" band Quiet Point.	L16 and L17 (3rd I-F Trans.)
2	6K7 1st I-F grid cap, in series with .01 mfd.			L14 and L15 (2nd I-F Trans.)
3	6L7 1st Det. grid cap, in series with .01 mfd.			L12 and L13 (1st I-F Trans.)
4	Antenna Terminal, in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" band	C8 (osc.)* C14 (det.)† C3 (ant.)
5	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23.5°) "C" band	C5 (osc.)††
6	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (31°) "A" band	C9 (osc.)
7	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (144.5°) "A" band	L7 (osc.)‡
8	Repeat Step No. 6			

* Use **minimum** capacity peak if two peaks can be obtained.

† Rock the gang condenser slightly, and use the **maximum** capacity peak if two peaks can be obtained with trimmer C14. Check to determine that C8 has been adjusted to the correct peak by turning the receiver to 5.19 mc (50°), where a weaker signal should be received.

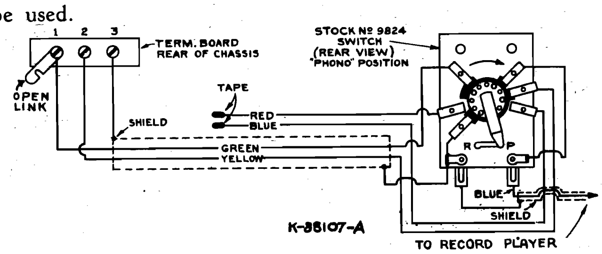
†† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C5 has been adjusted to the correct peak by turning the receiver dial to 19.09 mc (29.5°), where a weaker signal should be received.

‡ Rock gang condenser slightly while peaking L7 for maximum output.

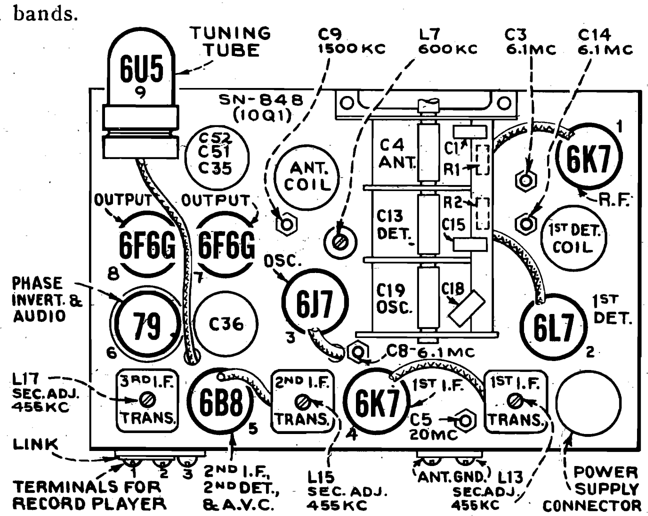
NOTE: Oscillator tracks 455 kc **above** the signal on all bands.

USED ALSO WITH MODEL 8Q1

Victrola Attachment (Record Player).—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R93 and R94 series. A stock No. 9824 switch may be used to change from radio to record player. The connections of this switch are shown. In the event that a No. 9824 switch is not available, a double-pole double-throw toggle switch may be used.



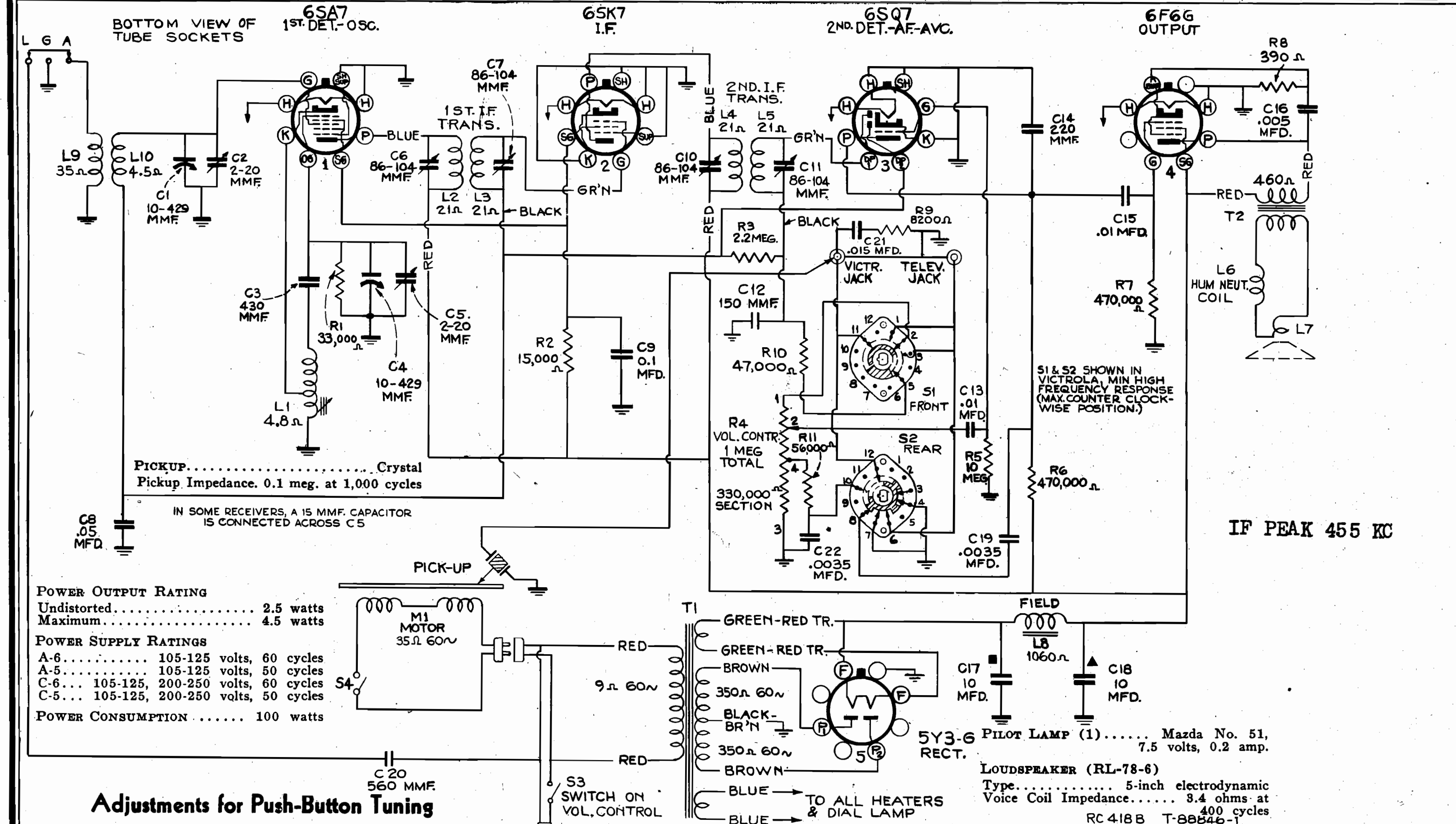
K-88107-A



Top View, Showing Location of Tubes and Trimmers

MODEL U10, Chassis RC-418B
Schematic, Alignment, Tuner

RCA MFG. CO., INC.



Pickup .... Crystal
Pickup Impedance. 0.1 meg. at 1,000 cycles

Power Output Rating
Undistorted .... 2.5 watts
Maximum .... 4.5 watts

Power Supply Ratings
A-6 .... 105-125 volts, 60 cycles
A-5 .... 105-125 volts, 50 cycles
C-6 ... 105-125, 200-250 volts, 60 cycles
C-5 ... 105-125, 200-250 volts, 50 cycles

Power Consumption ...... 100 watts

Pilot Lamp (1) ...... Mazda No. 51, 7.5 volts, 0.2 amp.

Loudspeaker (RL-78-6)
Type .... 5-inch electrodynamic
Voice Coil Impedance ...... 3.4 ohms at 400 cycles
RC 418B T-88846-1

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.
2. Turn the accessory switch to "Radio" position and accurately tune in the station for which the first button is to be set.
3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.
4. Replace the push-button on its shaft.
5. Proceed in a similar manner for the remainder of the push-buttons.
6. Insert the station marker tabs in the recesses above the push-buttons.

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Antenna Terminal	455 kc	Quiet Point between 1,720-1,500 kc	C10 and C11 (2nd I-F trans.)
2				C6 and C7 (1st I-F trans.)
3	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc calibration mark	C5 (osc.) C2 (ant.)
4		600 kc	600 kc calibration mark	L1 (osc.)*
5	Repeat step 3			

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

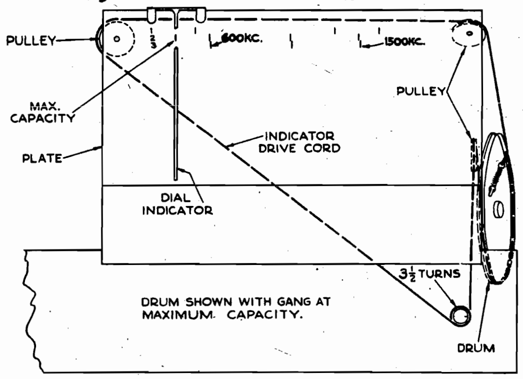
Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

Note.—Oscillator tracks above signal.

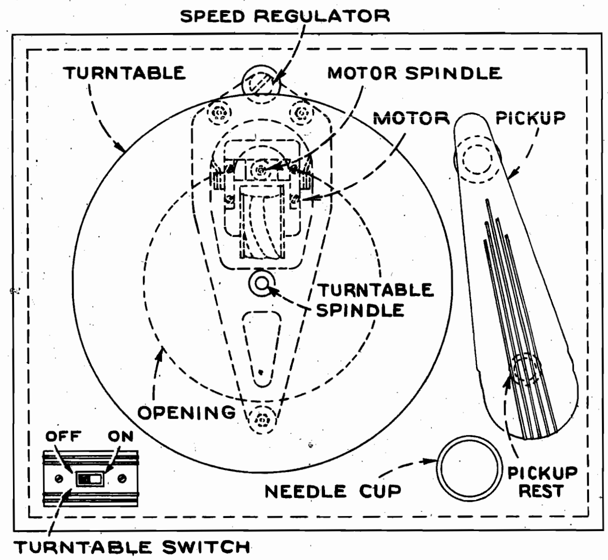
* Rock gang condenser slightly while adjusting L1.

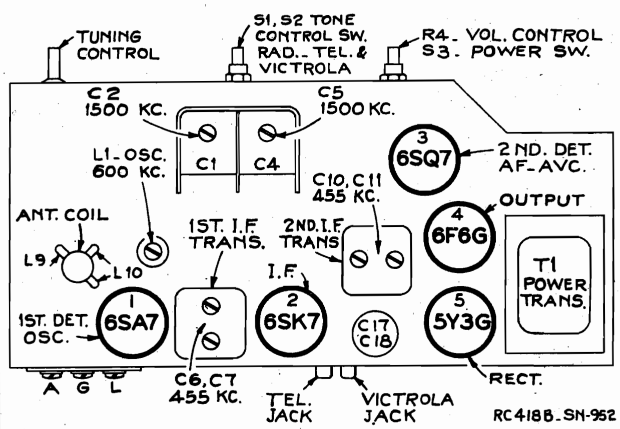
MODEL U10, Chassis RC-418B
Chassis Wiring, Voltage Socket, Trimmers, Lead Dress Phono., Drive Cord Data

RCA MFG. CO., INC.



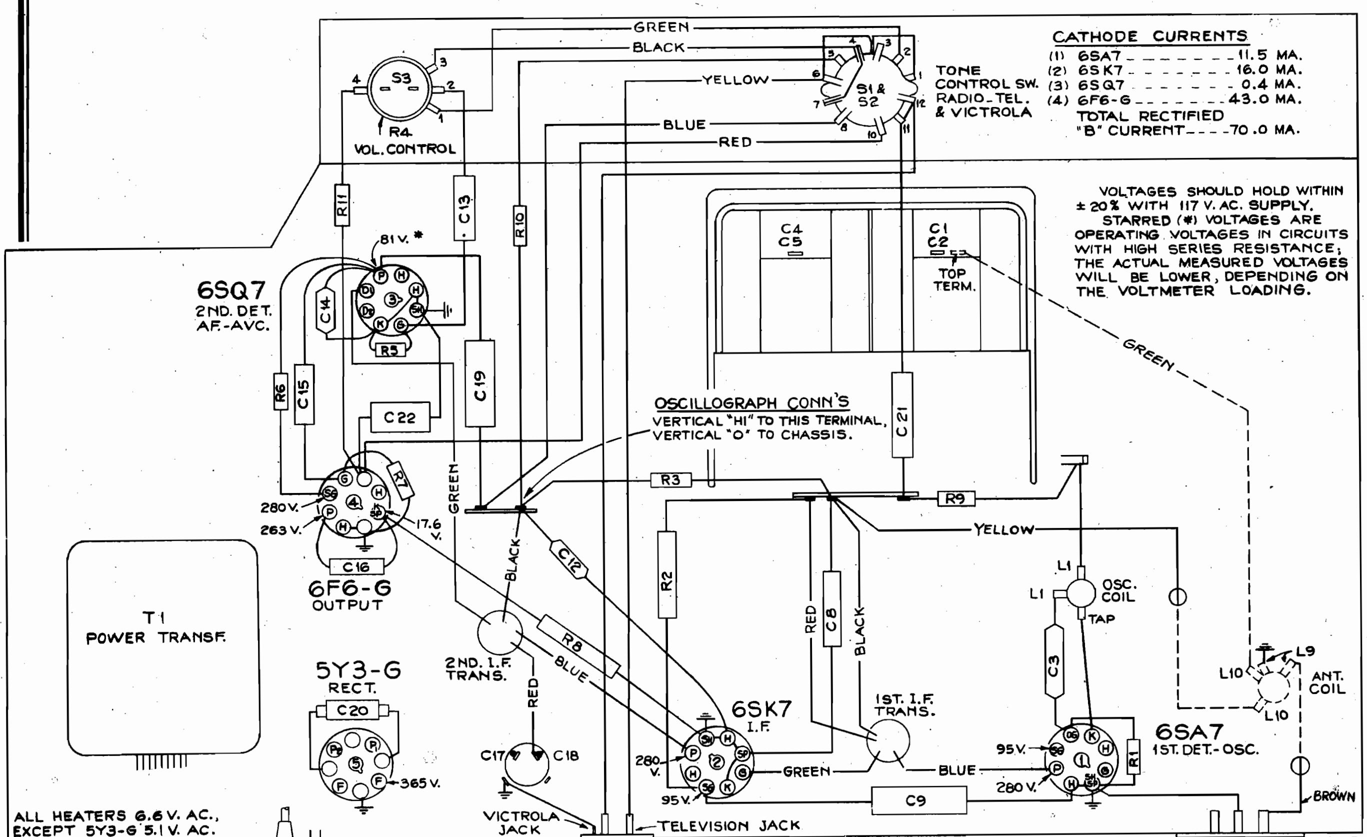
DIAL MECHANISM AND CALIBRATION MARKS.





PRECAUTIONARY LEAD DRESS.—

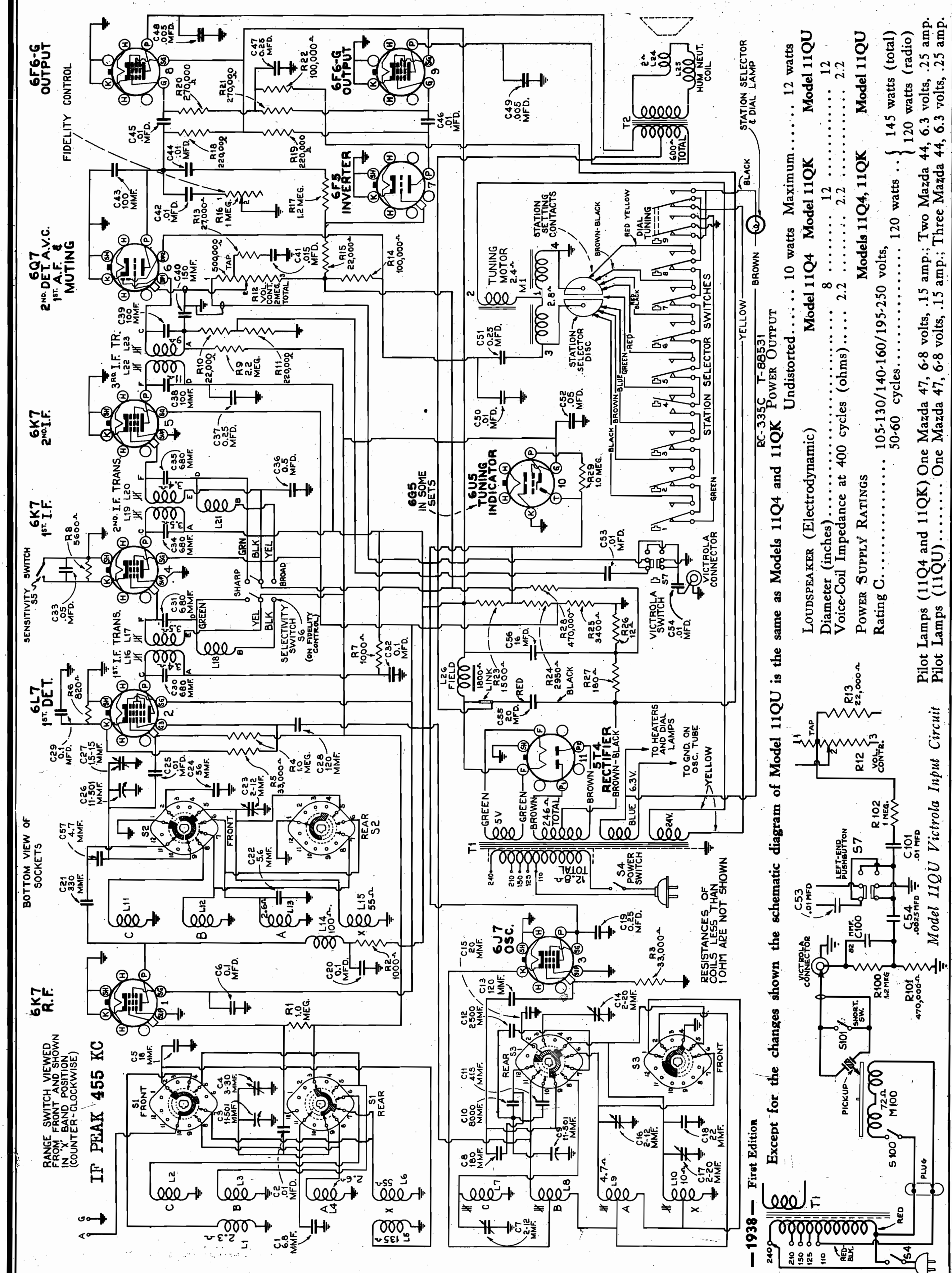
1. Power cord leads must be dressed up away from 6SQ7 socket, and toward end of chassis.
2. Green lead 2nd I.F. to 6SQ7 must be dressed against base.
3. Blue lead 2nd I.F. to 6SK7 must be dressed close to base.
4. Green and blue leads from 1st I.F. transformer must be dressed close to base.
5. Red lead from "L" terminal on antenna board to 5Y3G socket must be dressed against base.
6. Green lead from gang to 6SA7 socket must be dressed toward side apron away from other parts.



BOTTOM VIEW- REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

RCA MFG. CO., INC.

MODELS 11Q4, 11QK Chassis RC-335C
11QU, Chassis RC-335E
Schematic, Changes

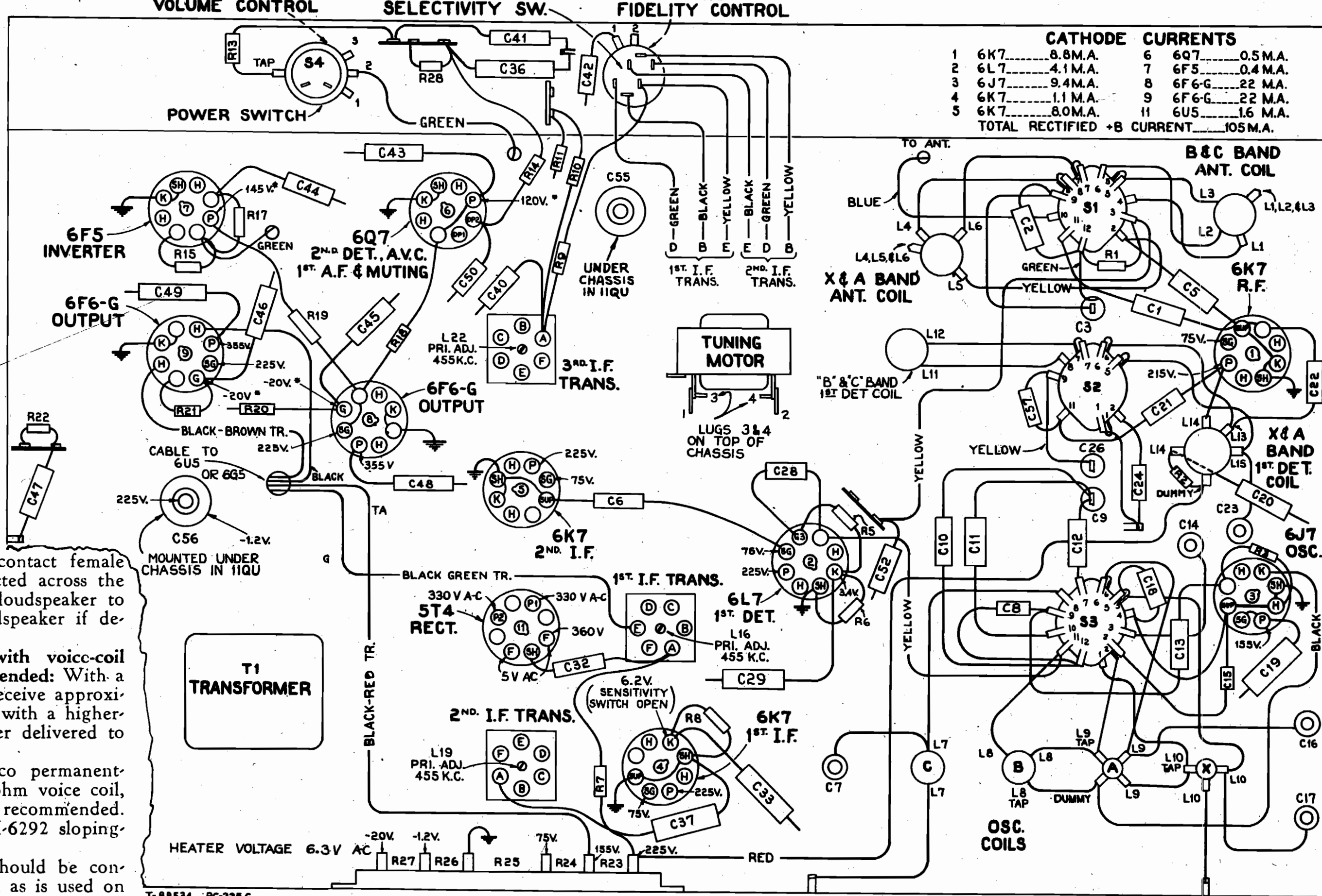


MODELS 11Q4, 11QK, 11QU
Chassis Wiring, Voltage
Lead Dress, Drive Cord
Speaker Notes

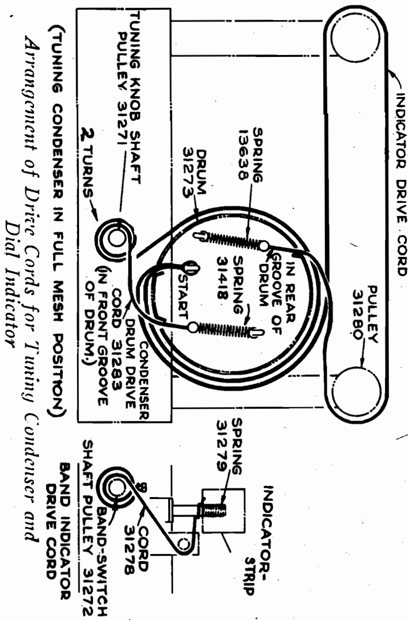
RCA MFG. CO., INC.

R-F Wiring Diagram and Socket Voltages, Models 11Q4 and 11QK

Model 11QU is the same, except for the Victrola connections, which are shown in a separate diagram



A sensitivity switch is mounted at the rear of the receiver.



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired.

A permanent-magnet dynamic speaker, with voice-coil impedance of not less than 2 ohms is recommended: With a 2-ohm voice coil, the extension speaker will receive approximately half the power output of the receiver; with a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased.

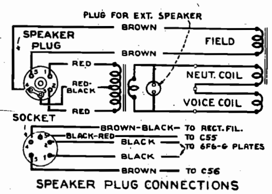
The RCA MI-6248 8-inch diameter Alnico permanent-magnet dynamic loudspeaker, which has a 2-ohm voice coil, and a power-handling capacity of 5 watts, is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished wood housing.

The voice coil of the extension speaker should be connected by means of two-conductor cable, such as is used on electrical appliances, to the male plug. The cable may be any desired length, but with a long run, when using a low-impedance extension speaker, it is advisable to use heavy cable.

A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.

*** NOTE: Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.**

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at minimum (opened), and volume control at minimum. Values should hold within approximately ±20% with 110-volt a-c supply.

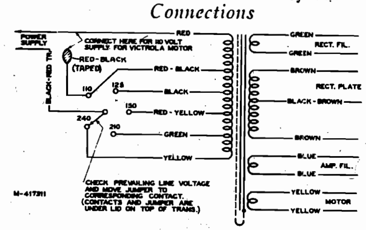


Connections of Loudspeaker and Cable

Precautionary Lead Dress.—

1. Dress grid lead of 6K7 R-F away from detector section of gang to prevent oscillation.
2. Observe the following points to permit alignment of "C" band at 20 mc: C10, C11, and C12 from oscillator section of gang must have short leads and be dressed away from the chassis and from the range-switch shield.
3. The ground braids from gang condenser must be flexible to prevent microphonic howling.
4. R10 and R11 should be soldered as close as possible to "A" lug on 3rd I-F transformer.
5. Power cord leads must be dressed away from the volume-control wiring.

Universal Power Transformer Connections



MODELS 11Q4,11QK,11QU
Alignment,Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

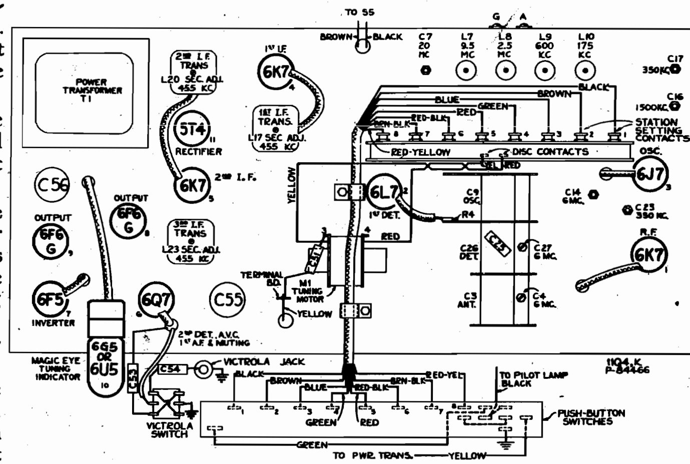
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.



Top View, Showing Location of Tubes and Trimmers

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

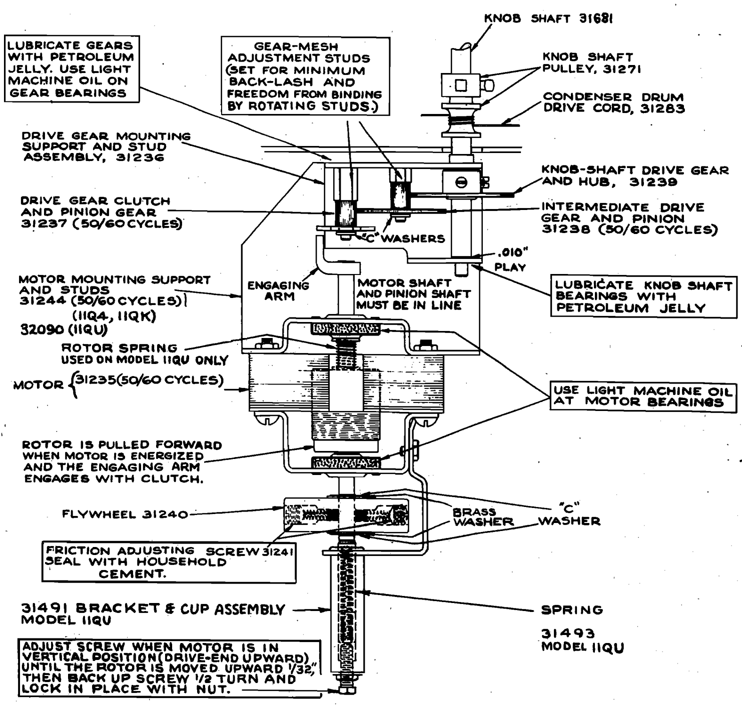
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following to obtain maximum output
1	Turn fidelity control counter-clockwise (sharp), and sensitivity switch at minimum (open).			
2	6K7 2nd I-F grid cap in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L22 and L23 (3rd I-F Trans.)
3	6K7 1st I-F grid cap in series with .01 mfd.			L19 and L20 (2nd I-F Trans.)
4	6L7 1st-det. grid cap in series with .01 mfd.			L16 and L17 (1st I-F Trans.)
5	Turn fidelity switch clockwise (broad) and check I-F response which should be a double-peaked curve. Leave fidelity counter-clockwise (sharp) for all of the following steps.			
6	Antennna Terminal in series with 300 ohms	2.5 mc	2.5 mc ("B") 24½°	L8 (osc.)
7		6.0 mc	6.0 mc ("B") 147°	C14 (osc.) Use minimum capacity peak C27 (det.) Use maximum capacity peak C4 (ant.) Use maximum capacity peak*
8		9.5 mc	9.5 mc ("C") 55°	L7 (osc.)
9		20 mc	20 mc ("C") 153°	C7 (osc.) Use minimum capacity peak*
10	Antennna Terminal in series with 200 mmf.	600 kc	600 kc ("A") 24½°	L9 (osc.) Rock gang
11		1,500 kc	1,500 kc ("A") 151½°	C16 (osc.)
12	Repeat steps 10 and 11.			
13	Antennna Terminal in series with 200 mmf.	175 kc	175 kc ("X") 53½°	L10 (osc.)
14		350 kc	350 kc ("X") 145½°	C17 (osc.) C23 (det.)
15	Repeat steps 13 and 14.			

* Check to determine that the oscillator trimmer has been adjusted to the correct peak by tuning the receiver approximately 910 kc lower, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.

RCA MFG. CO., INC.

Electric Tuning Mechanism



Motor and Gear Mechanism

There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated below.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Oscillation of Tuning Mechanism

The principal of operation necessitates that the mechanism go through several quick reversals on arriving at the desired station frequency and before reaching a dead stop. Three of four reversals are normal. The number of reversals and consistency of operation depends mainly on the flywheel friction adjustment, however, in some cases the selector disc and station setting contacts are involved. The following suggestions may be helpful where excessive pointer oscillation is experienced.

Oscillation on Certain Buttons Only

(1) Check contact tip of selector assembly for loose fit in body. See that nose of contact is not burned nor distorted out of correct shape. Replace tip if necessary; do not attempt to file the tips.

(2) Clean the insulating gap of selector disc, being sure to remove all metal particles and metallic fragments from beveled edges of the brass. Each contact should be checked to assure that clearance exists **(approx.** .010-in) between it and the disc when stopped in position on the station.

(3) Inspect the insulating gap to see that it has not changed shape due to bending or warping. Replace the disc if cleaning and adjustment fail to give correct operation.

Oscillation On All Buttons

(1) Slow oscillation indicates friction adjustment of flywheel is too tight. Loosen set screw in flywheel slightly.

(2) Rapid oscillation indicates friction adjustment is too loose. Tighten set screw in flywheel slightly.

(3) If definite adjustment cannot be reached, remove spring from behind flywheel set screw and increase its length by stretching; replace and make the necessary adjustments. Install a new spring if necessary.

(4) See that leather friction pad is not binding in its hole, and that it is saturated with lubricant. "Neats-Foot" oil should be used for this purpose.

(5) Incorrect balance of the flywheel sometimes prevents correct adjustment. The standard service replacement flywheel Stock No. 31240 may be used to definitely eliminate this cause.

(6) The number of oscillations varies somewhat with line voltage.

(7) Stability of adjustment is slightly better if made after a brief run-in period.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the beveled operating end at the left (viewed from rear).

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

Lubrication

Motor bearings and **gear bearings**; use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum **jelly**.

Dial-indicator pulleys and **rails**; use "Castordag" or petroleum jelly.

Selector disc; apply **thin** film of petroleum jelly.

Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

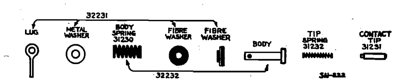
Muting Circuit

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Armchair Control Unit

When a Model G8A Armchair Control is connected to the receiver it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. If desired one of the other seven station buttons on the set may be used in place of No. 1 button.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged instantaneously causing the motor to be inoperative and overheated.



Component Parts of Station Setting Contact

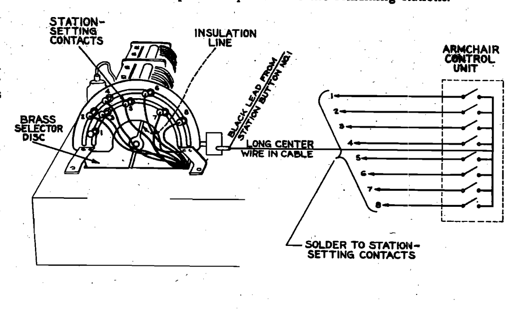
ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). **Both buttons** will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go completely out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 **again**. The electric tuning mechanism will function **to tune in the station**, and the central dial lamp **will stay on**.
7. Repeat this process for the remaining **stations**.

Station-Setting Contacts and Selector Disc

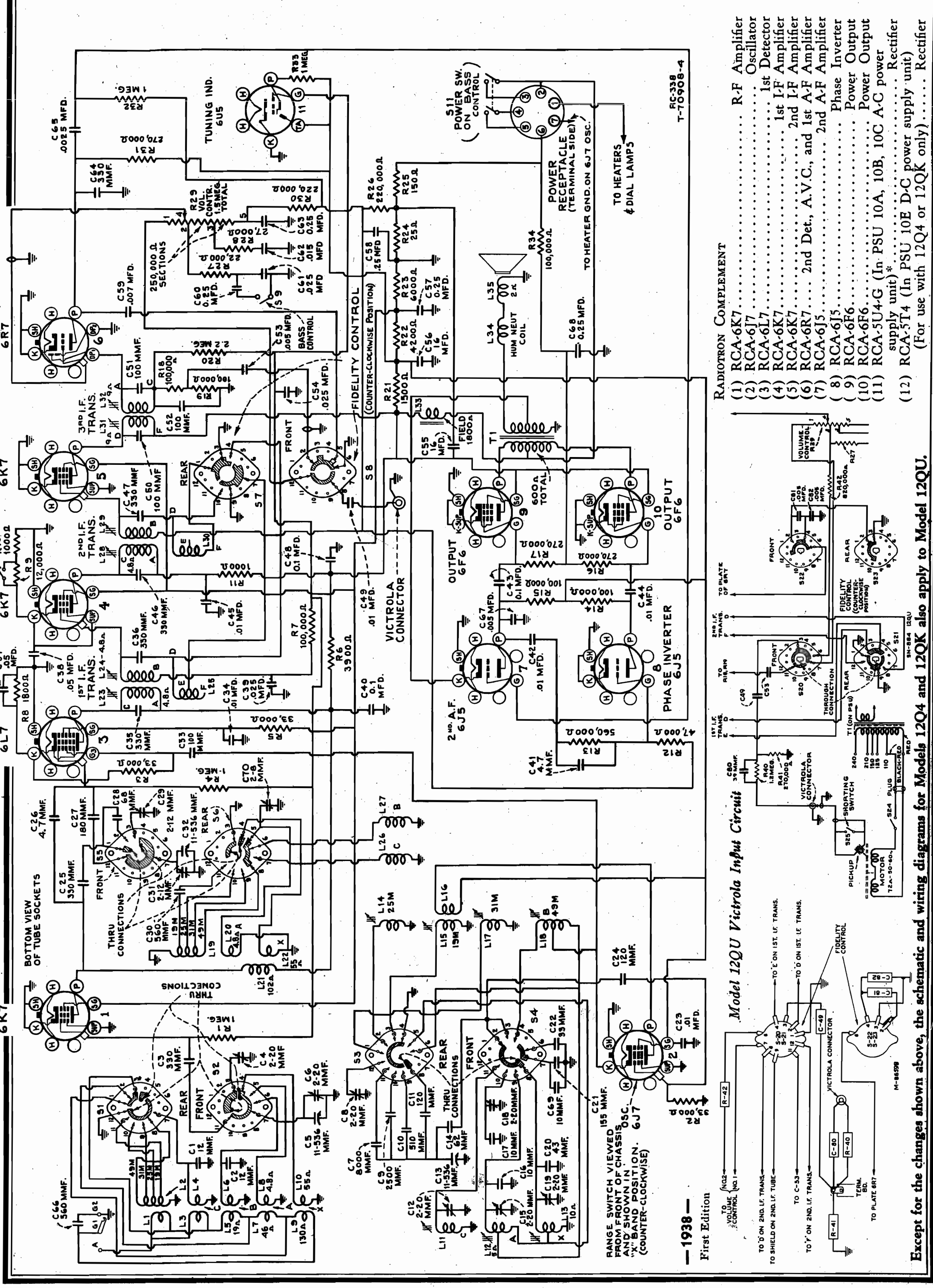
This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow



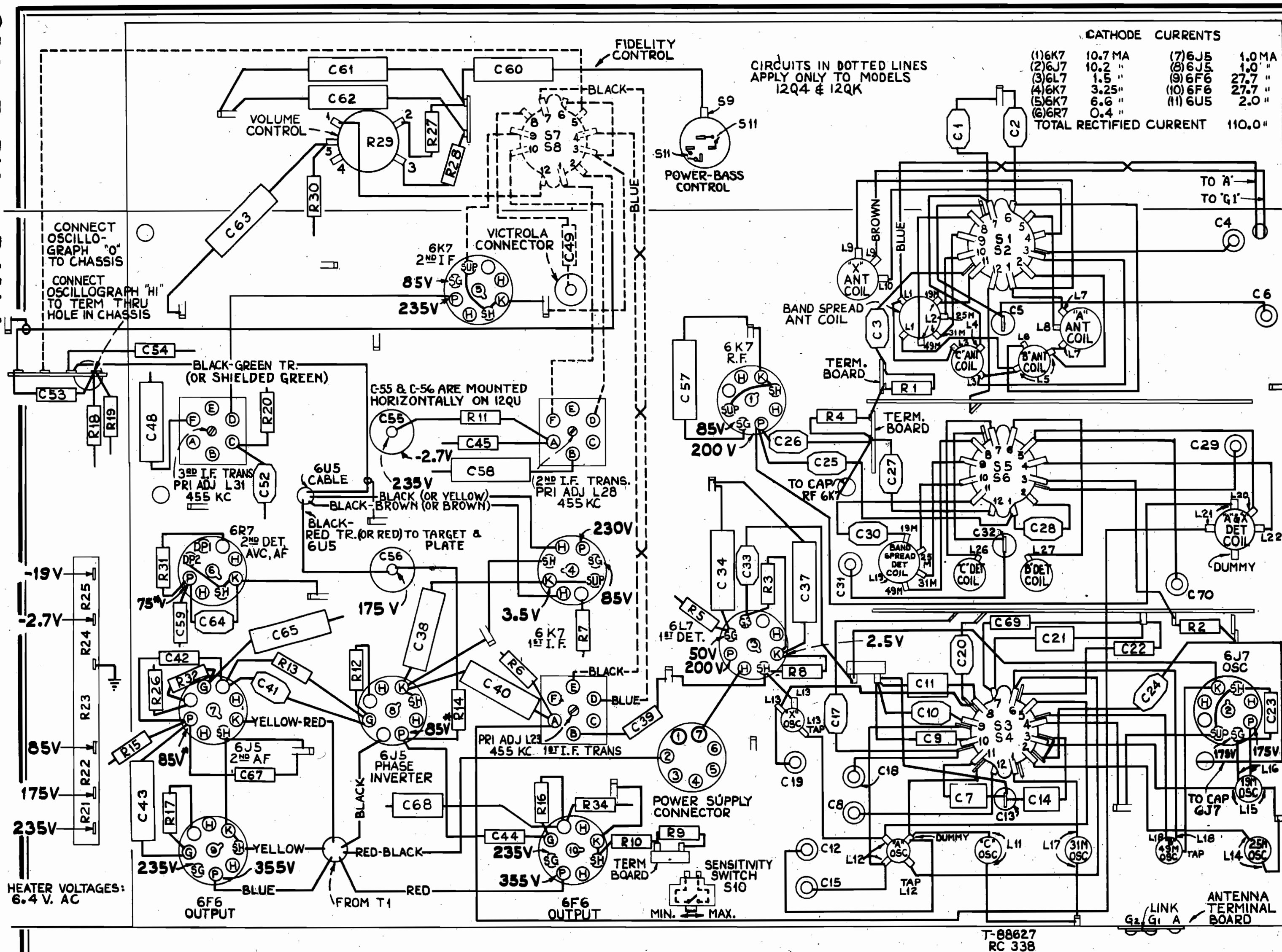
RCA MFG. CO., INC.

MODELS 12Q4, 12QK, Chassis RC-338
12QU, Chassis RC-338A
Schematic, Changes



MODELS 12Q4, 12QK, 12QU
Chassis Wiring, Voltage

RCA MFG. CO., INC.



R-F Wiring Diagram and Socket Voltages, Models 12Q4 and 12QK

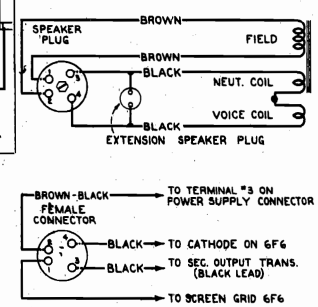
Model 12QU is the same except for the Victrola connections, which are shown in a separate diagram.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at maximum (closed), and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

Precautionary Lead Dress.—

1. The following leads should be dressed away from other parts and chassis:
   a. All leads to the bottom of the tuning gang.
   b. All capacitor leads to oscillator section of range switch.
   c. Yellow lead from lug No. 10 on S4 to dummy lug on "A" oscillator coil.
   d. Yellow lead from pin No. 8 on 6J7 oscillator socket to terminal board.
   e. Yellow and green leads from "X" detector coil (should be dressed away from each other as well as other parts).
2. Dress all leads away from phono jack and C49.
3. Twisted leads of "B" oscillator coil must be soldered together within 1/4-inch of coil tube.
4. The brown, black, and blue leads in back of the oscillator coils should be dressed away from coil windings.
5. R13 and C41 must be dressed away from pin No. 7 of 6J5 (tube No. 7).



Connections of Loudspeaker and Cable

Lead Dress

MODELS 12Q4,12QK,12QU
Socket,Trimmers
Drive Cord Data
Power Supply Notes

RCA MFG. CO., INC.

FOR POWER SUPPLY
DATA SEE INDEX

Specifications

Frequency Ranges

Long Wave ("X" Band) .... 150-400 kc (2,000-750 m)
Medium Wave ("A" Band) .... 530-1,625 kc (566-184.6 m)
Short Wave 1 ("B" Band) .... 2.3-7.0 mc (130-42.8 m)
Short Wave 2 ("C" Band) .... 7.0-22 mc (42.8-13.6 m)

49 Meter Spread Band .... 5.92-6.23 mc
31 Meter Spread Band .... 9.48-9.70 mc
25 Meter Spread Band .... 11.68-11.94 mc
19 Meter Spread Band .... 15.08-15.39 mc

Intermediate Frequency .... 455 kc

Phonograph (Model 12QU only)

Type .... Automatic
Record Capacity .... Eight 10-inch or seven 12-inch
Turntable Speed .... 78 r.p.m. (adjustable)
Type Pickup .... Crystal
Pickup Impedance .... 100,000 ohms at 1,000 cycles

Pilot Lamps

Models 12Q4 and 12QK .... One 6.3-volt, 0.15-amp., Mazda No. 47; two 6.3-volt, 0.25 amp., Mazda No. 44
Model 12QU .... One 6.3-volt, 0.15-amp., Mazda No. 47; three 6.3-volt, 0.25 amp., Mazda No. 44

Power Output Rating

Undistorted .... 10 watts
Maximum .... 12 watts

Loudspeaker (RL-70H-3)

Type .... 12-inch electrodynamic
Voice Coil Impedance at 400 cycles .... 2.2 ohms

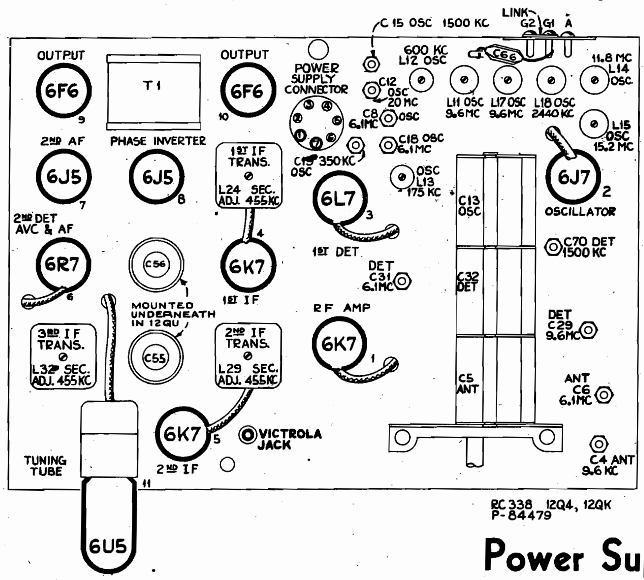
Power Supply Ratings

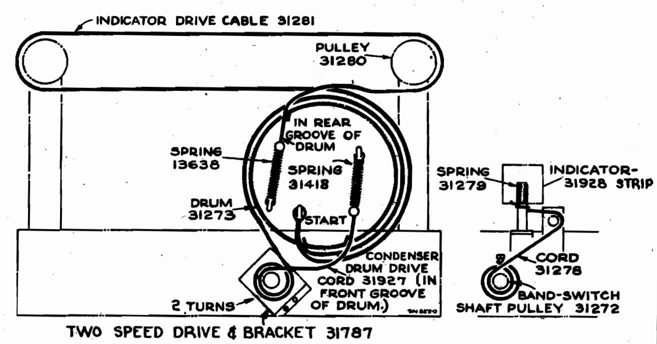
A-C Ratings		12Q4, 12QK	12QU * Radio	12QU * Total
With PSU 10A Power Supply Unit	105-125 volts, 50-60 cycles	125 watts	125 watts	150 watts
With PSU 10B Power Supply Unit	105-125 volts, 25-60 cycles	125 watts		
With PSU 10C Power Supply Unit	105-130, 140-160, 200-250 volts, 50-60 cycles	125 watts	125 watts	150 watts

D-C Ratings

With PSU 10E Power Supply Unit .... 105-125, 210-250 volts D-C .... (See text for current consumption ratings)

* Model 12QU may be used with PSU 10A or 10C *only.*





(TUNING CONDENSER IN FULL MESH POSITION)

Above—*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

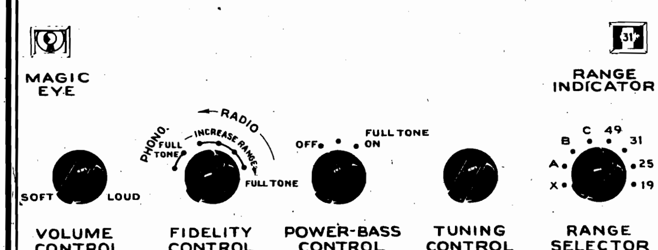
At Left—*Location of Tubes and Trimmers*

Power Supply Units

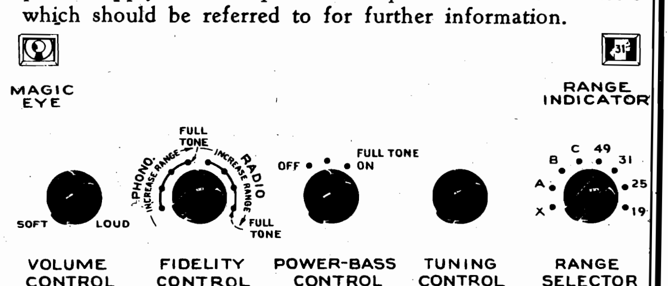
Models 12Q4, 12QK, and 12QU have seven-prong connectors for connection to a separate power supply unit. Units are available in different ratings for a.c. and d.c. operation, as listed under "Power Supply Ratings" in the electrical specifications. It should be noted, however, that Model 12QU may be used with a.c. units PSU 10A or 10C **only.**

When Model 12Q4 or Model 12QK is used with a d.c. Power Supply Unit, the measured current drain is 0.7 amperes from a 234 volt supply, and 1.4 amperes from a 117 volt supply. These current values may vary as much as 30% when measured by various types of ammeters, due to the rectangular wave-shape of the vibrator current.

Service data, diagrams, and replacement parts lists for the power supply units are printed in separate service data sheets which should be referred to for further information.



Location of Controls, Models 12Q4 and 12QK



Location of Controls, Model 12QU

RCA MFG. CO., INC.

Purpose and Function of Fidelity Control

MODELS 12QK AND 12Q4

Position	For Use On	I-F Channel	Audio Channel
1 (Extreme Counter-clockwise)	Record Player	———	Min. highs
2	Record Player	———	Max. highs
3	Distant Stations	Sharp	Min. highs
4	Distant Stations	Sharp	Max. highs
5	Local and Medium Distant Stations	Medium	Max. highs
6 (Extreme Clockwise)	Local Stations	Broad	Max. highs

MODEL 12QU

Position	For Use On	I-F Channel	Audio Channel
1 (Extreme Counter-clockwise)	Victrola	———	Min. highs
2	Victrola	———	Medium No. 1
3	Victrola	———	Medium No. 2
4	Victrola	———	Max. highs
5	Distant Stations	Sharp	Min. highs
6	Distant Stations	Sharp	Max. highs
7	Local and Medium Distant Stations	Medium	Max. highs
8 (Extreme Clockwise)	Local Stations	Broad	Max. highs

Miscellaneous Service Data

Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the output circuit on the loudspeaker to facilitate the connection of an extension loudspeaker if desired.

A permanent-magnet dynamic speaker, with voice-coil impedance of not less than 2 ohms is recommended: With a 2-ohm voice coil, the extension speaker will receive approximately half the power output of the receiver; with a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased.

The RCA MI-6248 8-inch diameter Alnico permanent-magnet dynamic loudspeaker, which has a 2-ohm voice coil, and a power-handling capacity of 5 watts, is recommended. This speaker may be housed in the RCA MI-6292 sloping-front, walnut-finished wood housing.

The voice coil of the extension speaker should be connected by means of two-conductor cable, such as is used on electrical appliances, to the male plug. The cable may be any desired length, but with a long run, when using a low-impedance extension speaker, it is advisable to use heavy cable.

A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.

Victrola Attachment (record player).—A jack located on the top near the front of the chassis is provided for connecting a Victrola Attachment (record player) into the audio amplifying circuit on Models 12Q4 and 12QK. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Antenna Connections.—Three terminals ("A," "G1," and "G2") are provided on the rear of the chassis. Connect the antenna to "A." Connect "G1" to a nearby ground. A link connects "G1" and "G2." In case of electrical interference (especially on "X" band) open the link and connect "G2" separately to ground. This also applies when a d.c. power supply is used.

ALIGNMENT PROCEDURE

Alignment using the Cathode Ray Oscillograph is much the preferable method because of the variable selectivity features of these instruments. The curves shown illustrate the general shape of the i-f selectivity curves for different settings of the fidelity control, when i-f channel is properly aligned. Connections for the oscillograph are shown in the bottom view of the receiver chassis. Use short, unshielded leads to oscillograph, and well-shielded leads from test oscillator. If possible, use 30 or 40 kc sweep frequency for i-f alignment.

Output Meter Alignment.—If this method is used, connect meter across voice coil, and turn receiver volume control to maximum. Disregard steps 5 and 5A of alignment table. However, a listening check should be made to check operation of fidelity control, after receiver has been aligned.

Test Oscillator.—For all alignment operations connect the "Gnd" side of test oscillator to chassis, the high side as indicated in table, and keep output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end calibration marks on the dial scales, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

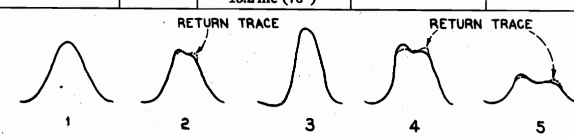
When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

Using RCA Stock No. 150 Test Oscillator.—When using this oscillator for spread-band alignment, insert an open-circuit plug in the "EXT. MOD." jack, and set the test-oscillator dial 800 kc lower than the desired frequency for the four lower frequency ranges, and 800 kc higher than the desired frequency for the two high ranges. This provides an unmodulated signal of the desired frequency and the magic eye may be used as an output indicator for this unmodulated signal.

Alignment Table

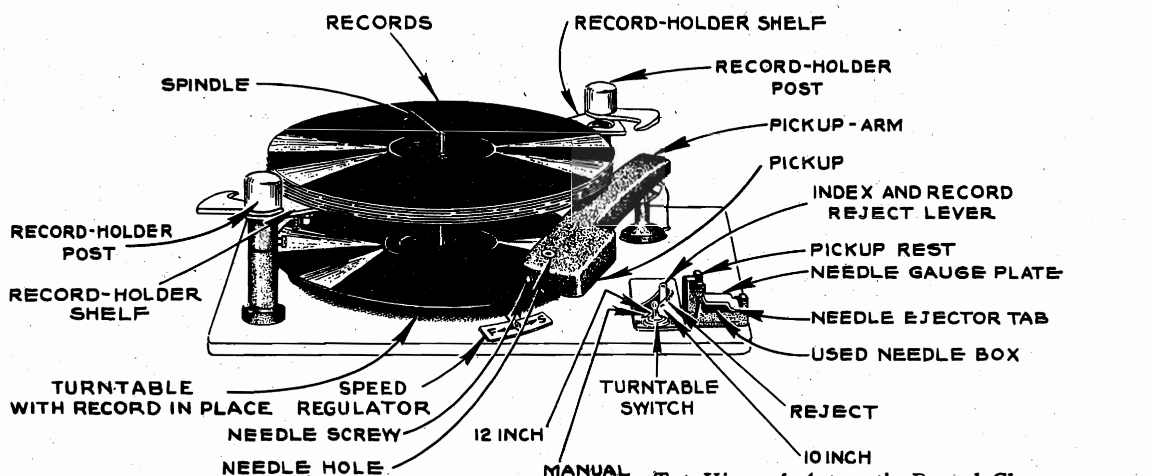
Step	Connect high side of test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust following for maximum peak output	Check Selectivity Curve No.
1	Turn fidelity control to 3rd position from maximum clockwise, sensitivity switch min. (open)				
2	6K7 2nd I.F. grid cap in series with .01 mfd.	455 kc	"A" band Quiet Point between 550-750 kc	L31 and L32 3rd I-F Trans.	1
3	6K7 1st I.F. grid cap in series with .01 mfd.	455 kc	"A" band Quiet Point between 550-750 kc	L28 and L29 2nd I-F Trans.	2
4	6L7 1st-det. grid cap in series with .01 mfd.	455 kc	"A" band Quiet Point between 550-750 kc	L23 and L24 1st I-F Trans.	3
5	Turn fidelity control one position back from full clockwise				4
5A	Turn fidelity control full clockwise				5
6	Turn fidelity control to 3rd position from maximum clockwise for the following operations				
7	Antenna Terminal, in series with 200 mmf.	2,440 kc	"B" band 2.44 mc (16°)	L18 (osc.) †	
8	Antenna Terminal, in series with 300 ohms	6,100 kc	"B" band 6.1 mc (150°)	C18 (osc.) C31 (det.) ** C6 (ant.) **	* NOTE: In step 18 only, the oscillator tracks on low side of signal; use maximum capacity peak (plunger in) if two peaks can be obtained. All other oscillator adjustments use minimum inductance or capacity peak (plunger out), if two peaks can be obtained.
9	Antenna Terminal, in series with 200 mmfd.	600 kc	"A" band 600 kc (36°)	L12 (osc.) Rock Gang	
10	Antenna Terminal, in series with 200 mmfd.	1,500 kc	"A" band 1,500 kc (158°)	C15 (osc.) C70 (det.)	
11	Antenna Terminal, in series with 200 mmfd.	600 kc	"A" band 600 kc (36°)	L12 (osc.) Rock Gang	
12	Antenna Terminal, in series with 200 mmfd.	175 kc	"X" band 175 kc (54°)	L13 (osc.) Rock Gang	
13	Antenna Terminal, in series with 200 mmfd.	350 kc	"X" band 350 kc (147°)	C19 (osc.)	** Use maximum capacity peak if two can be obtained.
14	Antenna Terminal, in series with 200 mmfd.	175 kc	"X" band 175 kc (54°)	L13 (osc.) Rock Gang	
15	Antenna Terminal, in series with 300 ohms	9,600 kc	"C" band 9.6 mc (58.5°)	L11 (osc.) ††	
16	Antenna Terminal, in series with 300 ohms	20,000 kc	"C" band 20 mc (157°)	C12 (osc.)	† Before adjusting L18, set C18 so it projects approximately 2 inches above top of chassis.
17	Antenna Terminal, in series with 300 ohms	9,600 kc	"31M" band 9.6 mc (100°)	L17 (osc.) C29 (det.) C4 (ant.)	
18*	Antenna Terminal, in series with 300 ohms	6,100 kc	"49M" band 6.1 mc (106°)	C8 (osc.)	†† Before adjusting L11, set C12 so it projects approximately 2 inches above top of chassis.
19	Antenna Terminal, in series with 300 ohms	11,800 kc	"25M" band 11.8 mc (90°)	L14 (osc.)	
20	Antenna Terminal, in series with 300 ohms	15,200 kc	"19M" band 15.2 mc (78°)	L15 (osc.)	



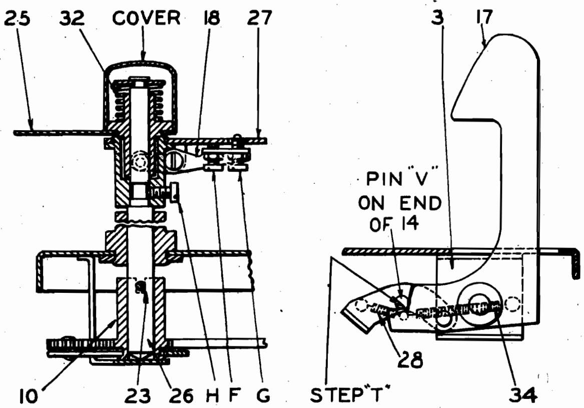
I-F Selectivity Curves

RCA MFG. CO., INC.

MODEL 11QU
MODEL 12QU
Record Changer Assembly

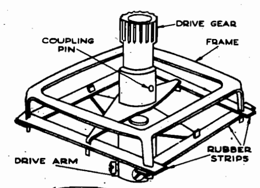


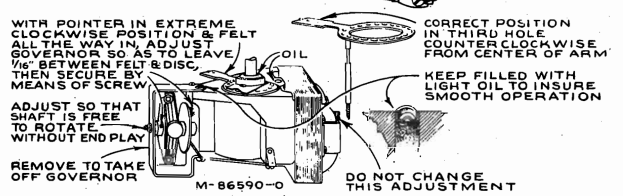
Top View of Automatic Record Changer



Details of Record Shelf Posts, and Locating Lever Assemblies

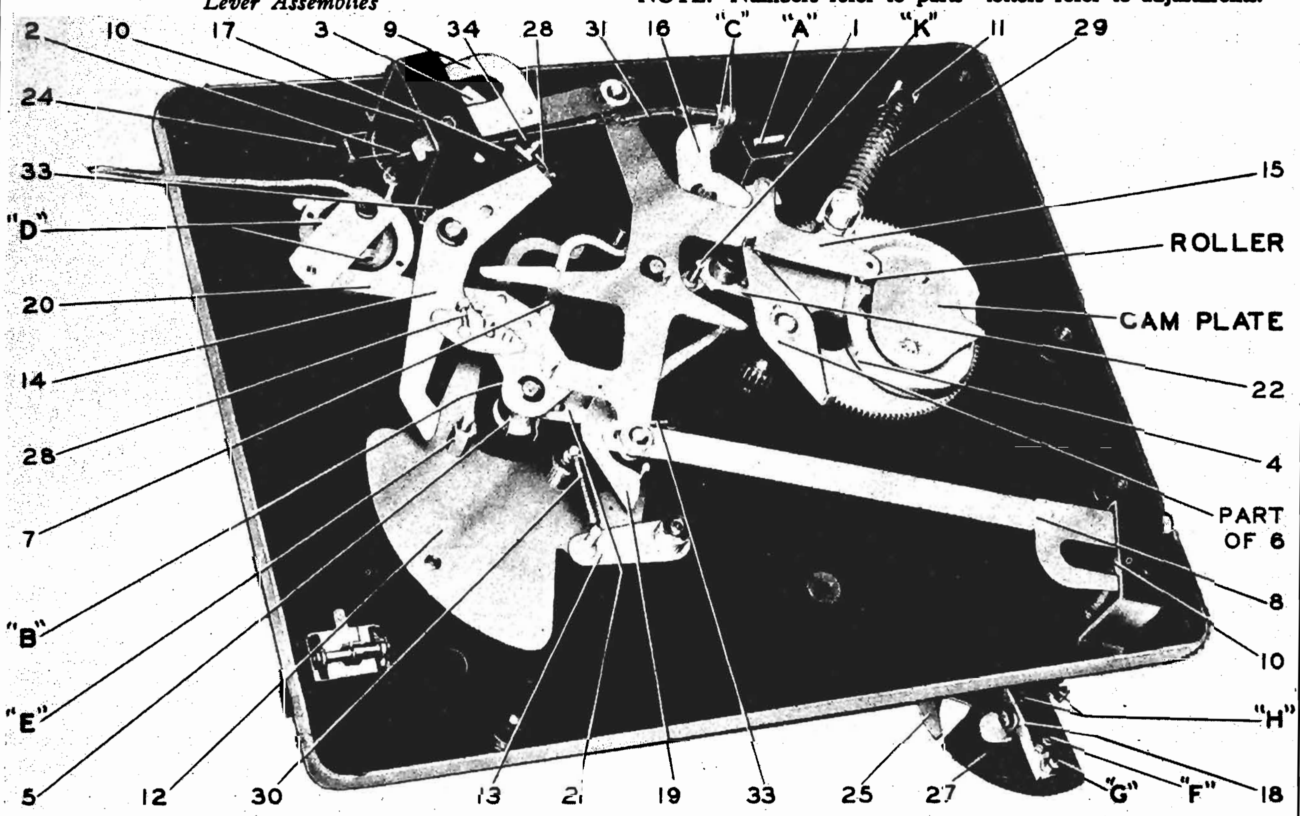
Motor Data and Coupling





Bottom View of Automatic Record Changer

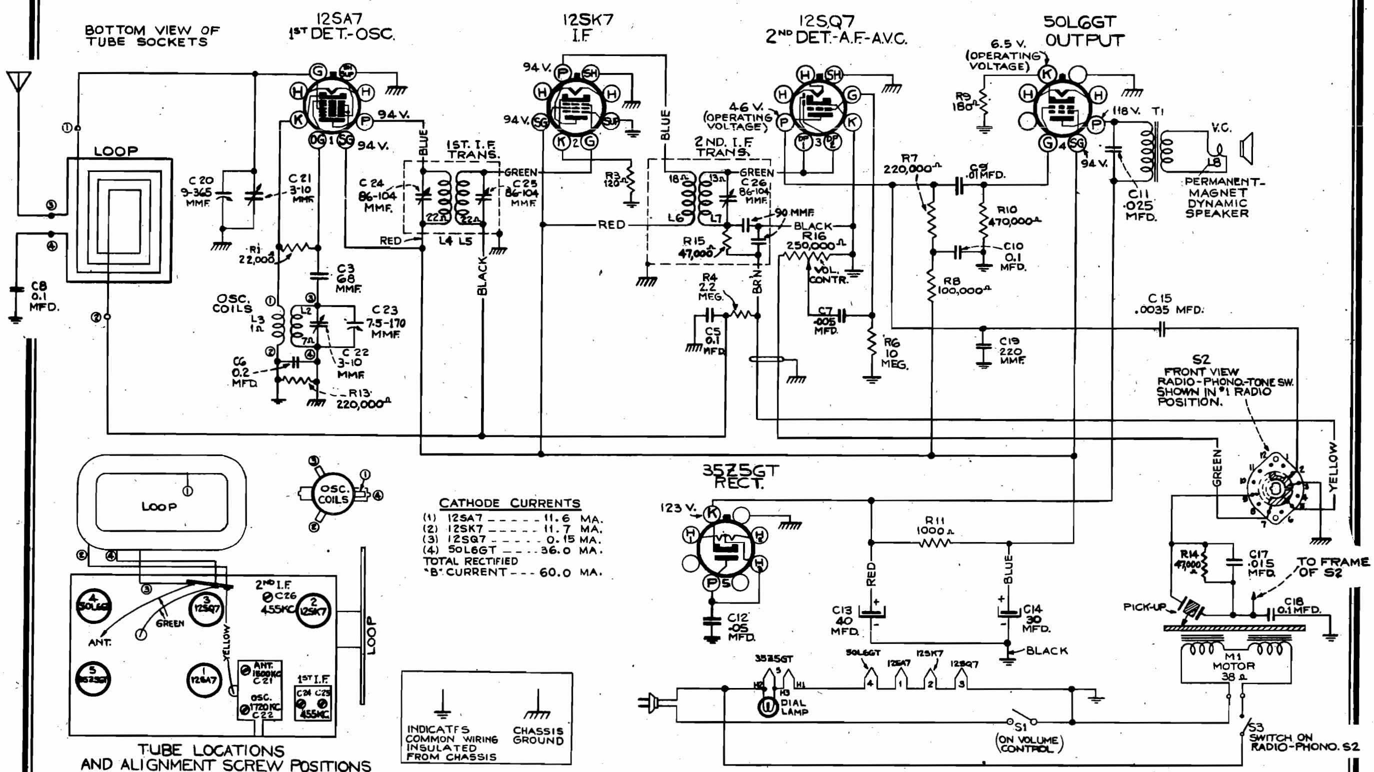
NOTE: Numbers refer to parts—letters refer to adjustments.



See Model RP-139-A for MISCELLANEOUS SERVICE HINTS ADJUSTMENTS

MODEL U9, Chassis RC482B
Schematic, Voltage, Socket
Alignment, Trimmers, Phono.

RCA MFG. CO., INC.



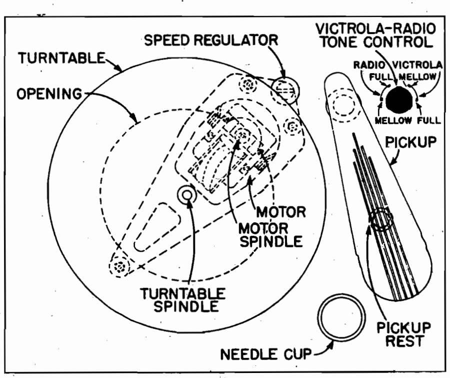
FREQUENCY RANGE

Standard Broadcast and one Police Band .... 540-1,720 kc
INTERMEDIATE FREQUENCY .... 455 kc
PILOT LAMP (1) .... Mazda No. 51, 7.5 volts, 0.2 amp.

LOUDSPEAKER (84843-1 or RL81-2)
Type .... 5-inch P M Dynamic
Voice Coil Impedance ..... { (84843-1) .... 3.4 ohms at 400 cycles; (RL81-2) .... 4.5 ohms at 400 cycles }
PICKUP .... Crystal
Pickup Impedance .... 0.1 meg. at 1,000 cycles

POWER OUTPUT RATING
Undistorted .... 0.71 watts
Maximum .... 1.36 watts

POWER SUPPLY RATINGS
A-6 .... 105-125 volts, 60 cycles
A-5 .... 105-125 volts, 50 cycles
POWER CONSUMPTION .... 55 watts



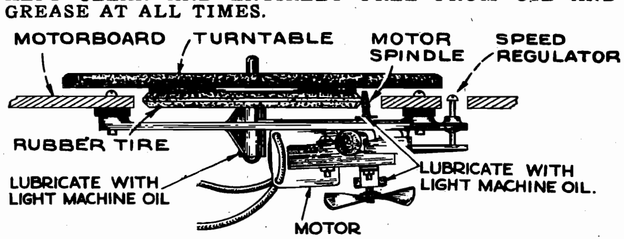
PHONOGRAPH MECHANISM.—

The phonograph motor is self-starting and operates the turntable through friction drive between the motor spindle and the rubber tire on the underside of the turntable.

The rubber driving tire on the turntable should never be removed since it is ground in to be concentric with the spindle. If replacement is required, the entire turntable should be replaced.

The speed regulator raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

Lubrication.—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.



Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—Connect the low side of the test oscillator to the receiver chassis through a 0.01 mfd capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should coincide with the left hand mark stamped in the dial back-plate.

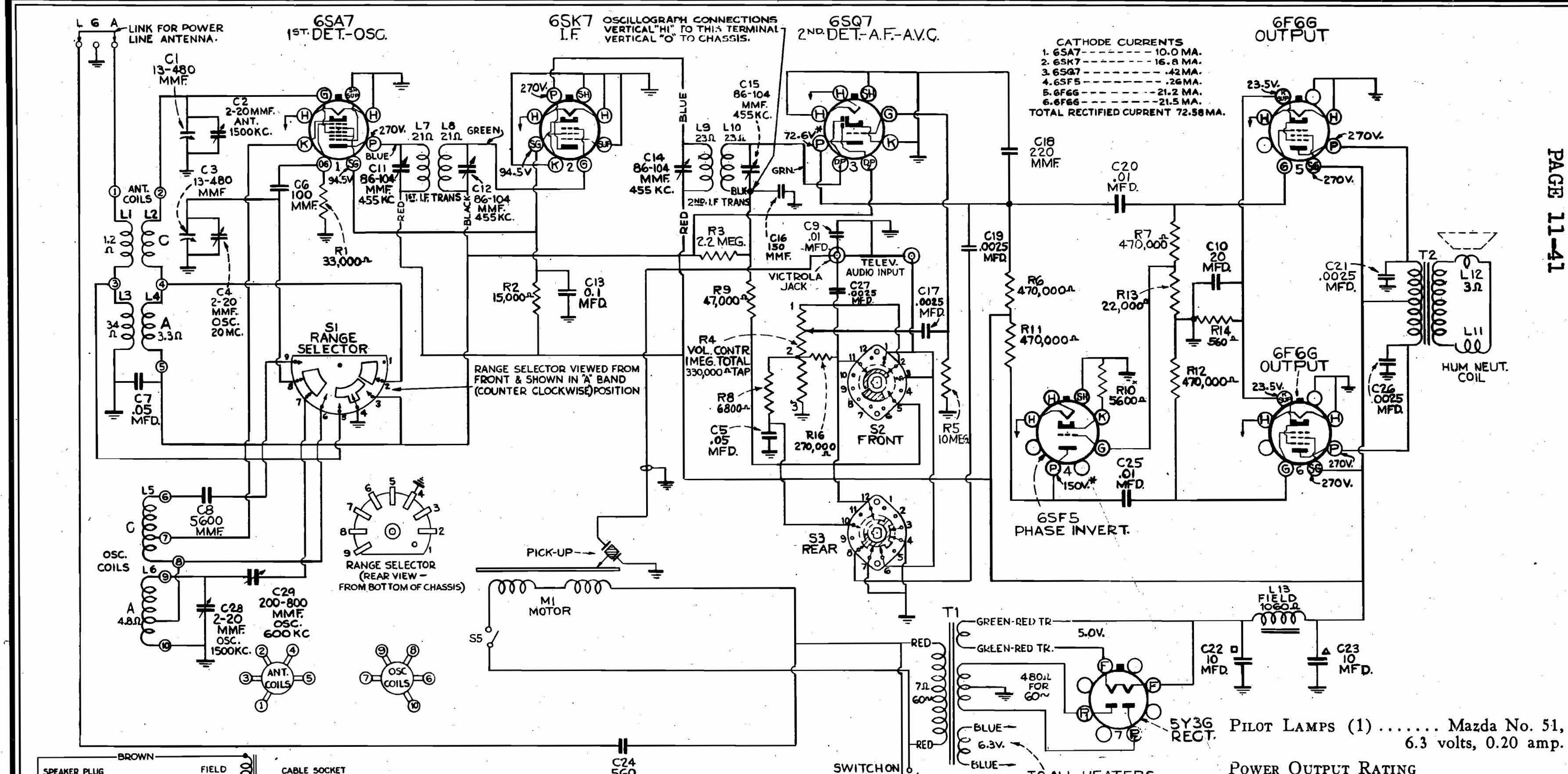
Antenna.—This set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the green antenna lead, stapled to the base of the cabinet. The antenna should not be longer than 100 feet including the lead-in. If it is longer, connect a 100 mmfd. capacitor in series with the lead-in.

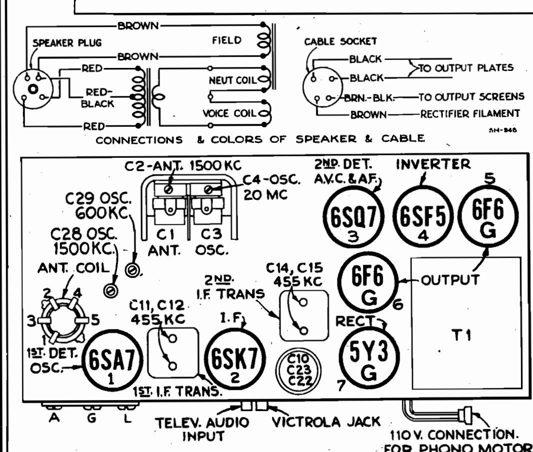
Steps	Connect the high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for max. output—
1	Tuning Cond. stator (det.) in series with 0.01 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C24, C25, C26 (1st and 2nd I-F transformers)
2	Antenna lead (green) in series with 100 mmfd.	1,720 kc	Full Clockwise (out of mesh)	C22 (osc.)
3		1,500 kc	Resonance on 1,500 kc signal	C21 (ant.)

MODEL U12, Chassis RC425A
Schematic, Socket, Trimmers Lead Dress, Voltage

RCA MFG. CO., INC.

FOR TUNER SEE PAGE 11-41





Phonograph

Crystal Pickup . 100,000 ohms Impedance at 1,000 c.p.s.

Average Output of Pickup .. 1½ volts at 1,000 c.p.s. across 250,000 ohms load

Motor ... Self-starting, Rim drive, Adjustable speed

Power Supply Ratings

Rating A-6 ... 105-125 volts, 60 cycles, 110 watts

Rating A-5 .... 105-125 volts, 50 cycles, 110 watts

Rating C-6 ... 105-125, 210-250 volts, 60 cycles, 110 watts

Rating C-5 .... 105-125, 210-250 volts, 50 cycles, 110 watts

Frequency Ranges

Standard Broadcast 540-1,720 kc

Short Wave .... 5.6-20 mc

Intermediate Frequency . 455 kc

Pilot Lamps (1) .... Mazda No. 51, 6.3 volts, 0.20 amp.

Power Output Rating

Undistorted .... 5.0 watts

Maximum .... 6.0 watts

Loudspeaker (RL-79A-1)

Type .... 6-inch electrodynamic

V.C. Impedance ... 3.4 ohms at 400 cycles

Power Line Antenna:

This instrument is equipped with a built-in power line antenna. To use this antenna the link on the antenna terminal board should be connected between "A" and "L," thus connecting the antenna input of the receiver through a capacitor to the power line. If an external antenna is used, it should be connected to "A," a ground connection made to "G," and the link removed.

Precautionary Lead Dress.—

1. Dress the Power Line Antenna lead close to the chassis base and near to the back flange.
2. Heater lead from 6F6-G to the 6SQ7-G must be dressed away from the 10 meg. grid leak (R5).
3. AC leads to the power switch must be dressed away from R8 and C5.
4. C17 should be kept as far away from the power switch as possible.

MODEL U12, Chassis RC425A
Alignment, Phono. Data
Parts List, Dial Data

RCA MFG. CO., INC.

CHASSIS ASSEMBLIES
(RC-425A)

33719	Belt—Tuning unit push arm belt	.05
33718	Board—Antenna-ground board	.20
33629	Capacitor—Trimmer capacitor, one section 2-20 mmfd., and one section 300-800 mmfd. (C9, C10)	.60
12720	Capacitor—100 mmfd. (C6)	.35
12725	Capacitor—150 mmfd. (C16)	.35
12694	Capacitor—220 mmfd. (C18)	.35
12537	Capacitor—560 mmfd. (C24)	.35
13895	Capacitor—5,600 mmfd. (C8)	.70
5107	Capacitor—.0025 mfd. (C19, C21, C26)	.20
34459	Capacitor—.0025 mfd. (C17, C27)	.40
4937	Capacitor—.01 mfd. (C9, C20, C25)	.25
32787	Capacitor—.05 mfd. (C7)	.20
4839	Capacitor—0.1 mfd. (C13)	.30
32240	Capacitor—Comprising 2 sections of 10 mfd., and 1 section of 20 mfd. (C10, C22, C23)	1.45
33732	Coil—Antenna coil (L1, L2, L3, L4)	1.45
33733	Coil—Oscillator coil (L5, L6)	.70
33776	Control—Volume control and power switch (R4, S4)	2.00
32634	Cord—Braided silk drive cord	.10
33633	Indicator—Station selector indicator pointer	.20
11765	Lamp—Pilot lamp	.15
33727	Plate—Dial plate assembly—less dial	.90
5119	Plug—4-contact female plug for speaker cable	.25
14439	Resistor—100 ohms, ¼ watt (R15)	.20
17214	Resistor—560 ohms, 2 watts (R14)	.22
13714	Resistor—5,600 ohms, ¼ watt (R10)	.20
12265	Resistor—6,800 ohms, ¼ watt (R8)	.20
33489	Resistor—15,000 ohms, 2½ watts (R2)	.55
13998	Resistor—22,000 ohms, ¼ watt (R13)	.20
12454	Resistor—33,000 ohms, ¼ watt (R1)	.20
12412	Resistor—47,000 ohms, ¼ watt (R9)	.20
12199	Resistor—270,000 ohms, ¼ watt (R16)	.20
12285	Resistor—470,000 ohms, ¼ watt (R6, R7, R11, R12)	.20
12679	Resistor—2.2 meg., ¼ watt (R3)	.20
13601	Resistor—10 meg., ¼ watt (R5)	.20
33735	Screw—Push button lock screw	.05
33725	Shaft—Tuning drive shaft	.30
33514	Socket—Phonograph input socket	.25
31364	Socket—Pilot lamp socket	.20
31319	Socket—Tube base socket	.25
31418	Spring—Indicator drive cord spring	.05
33720	Spring—Push arm return spring	.02
33946	Switch—Range switch	.75
33894	Switch—Tone control, phono. or television switch (S2, S3)	1.00
33722	Transformer—First i-f transformer (L7, L8, C11, C12)	1.60
33895	Transformer—Second i-f transformer (L9, L10, C14, C15)	1.50
33619	Transformer—Power transformer—105-125 volts, 25-60 cycles (T1)	6.40
34261	Transformer—Power transformer — 110 volts, 60 cycles	4.00
31575	Transformer—Power transformer—105-125, 200-250 volts, 50-60 cycles (T1)	8.35

MOTOR ASSEMBLIES

33897	Base—Motor base and ball assembled	.80
33902	Motor—Complete motor 105-125 volts, 60 cycle (M1)	3.70
34496	Motor—Complete motor 105-125 volts, 50 cycle (M1)	4.60
33896	Mounting—Motor cradle mounting hardware and retainer	.10

SPEAKER ASSEMBLIES
(RL-79A-1)

32907	Cap—Dust cap	.02
33601	Coil—Field coil (L13)	1.25
32906	Coil—Neutralizing coil (L11)	.25
32934	Cone—Cone complete with voice coil, center suspension and rim gaskets (L12)	1.65
5039	Plug—4-prong male speaker plug	.30
33599	Transformer—Output transformer (T2)	1.35

AUTOMATIC SWITCH ASSEMBLIES

32863	Cam—Cam assembly comprising main and auxiliary cam, hub and set screws	.65
32864	Lever—Actuating lever with roller and mercury switch clip	.45
31118	Screw—No. 10-32 x 5/16 fillister head cone pointed set screw	.06
32868	Spring—Actuating lever tension spring	.05
32867	Spring—Cam tension spring	.05
32865	Support—Switch support and terminal board	.40
32866	Switch—Mercury tube with leads (S5)	1.75
31608	Washer—"C" washer for holding actuating lever	.01

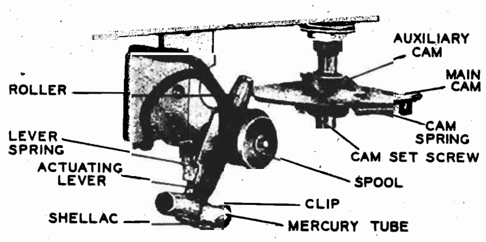
PICKUP ASSEMBLIES

33906	Arm—Pickup arm—shell only	.45
33908	Base—Pickup support arm base and retainer	.35
33905	Crystal—Pickup crystal cartridge	4.25
33907	Support—Pickup support arm complete — less base	.80

MISCELLANEOUS ASSEMBLIES

33731	Button—Push button assembly	.15
31456	Cover—8-protective covers for push button marker	.08
33910	Cup—New needle cup	.30
33909	Cup—Used needle cup	1.00
34270	Dial—Glass dial scale	1.50
33637	Escutcheon—Dial glass escutcheon	.80
13085	Hinge—Cabinet lid hinge	.22
33942	Knob—Tone control or range switch knob	.25
30863	Knob—Tuning or volume control knob	.15
33973	Marker—Push button markers	.45
33901	Mounting—1 set motor mounting hardware	.30
33530	Mounting—Pickup mounting hardware	.10
30870	Plug—2-prong male connectors	.35
31048	Plug—2-conductor male plug for pickup lead	.15
30900	Spring—Retaining spring for knobs, Stock Nos. 30863, 33942 and button No. 33731	.05
31164	Support—Cabinet lid support	.45
33899	Turntable—Complete with rubber drive ring	3.70

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.



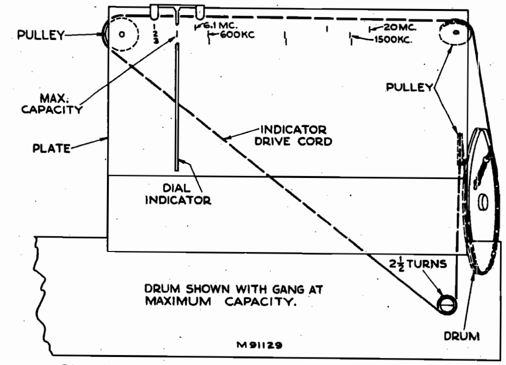
MERCURY SWITCH MECHANISM
(VIEWED FROM FRONT
SHOWN WITH PICKUP IN REST POSITION)

The speed regulator raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1½ inches from the center line of the turntable shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.

Lubrication.—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. **CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.**

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, 6.1 mc, and 20 kc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.



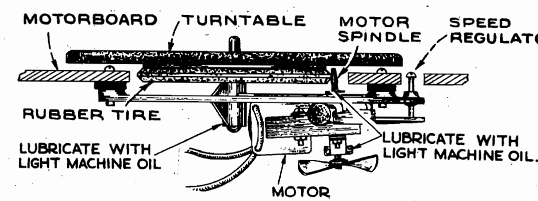
DIAL MECHANISM AND CALIBRATION MARKS.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the mark at the extreme left (low frequency) end of the dial scale.

Step	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Antenna terminal	455 kc	"A" Band Quiet Point between 550-750 kc	C14 and C15 (2nd I-F Trans.)
2				C11 and C12 (1st I-F Trans.)
3	Ant. terminal in series with 300 ohms	20 mc	"C" Band 20 mc calibration mark	C4 (osc.)*
4	Ant. terminal in series with 200 mmf.	1,500 kc	"A" Band 1,500 kc calibration mark	C28 (osc.) C2 (ant.)
5		600 kc	"A" Band 600 kc calibration mark	C29 (osc.) Rock Gang
6	Repeat step 4			

* Use minimum peak if two can be obtained. Check to determine that C4 has been adjusted properly by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

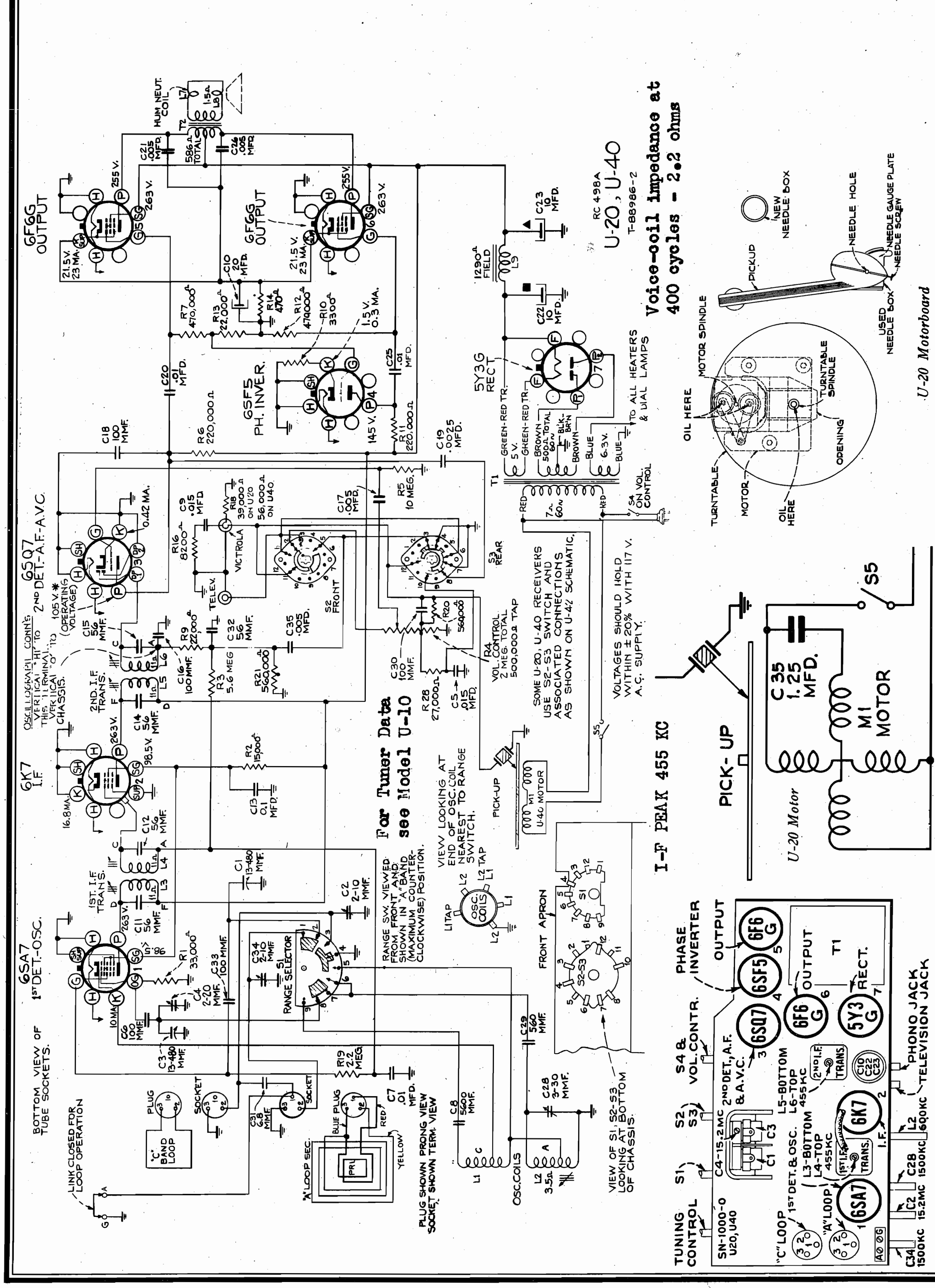
Note: Oscillator tracks above signal on both bands.



Trimmers, Pickup
Voltage, Motorboard

RCA MFG. CO., INC.

MODELS U20, Chassis RC498
U40, Chassis RC498A
Schematic, Socket



MODELS U20, Ch. RC498, U40 Ch. RC498A, U42, Ch. RC498B Alignment, Phono. Speaker Parts List

RCA MFG. CO., INC.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
33719	Belt—Push button station setting belt (Models U-40, U-42)	.05
34724	Board—"Antenna-Ground" board	.25
30766	Cap—Rubber cap for "Magic Eye" (Model U-42)	.15
34725	Capacitor—Trimmer comprising 1 section of 3-30 mmfd. and 2 sections of 2-10 mmfd. (Models U-20, U-42) (C2, C4, C28)	.60
34852	Capacitor—Trimmer comprising 1 section of 3-30 mmfd. and 2 sections of 2-10 mmfd. (Model U-40) (C2, C4, C28)	.60
14079	Capacitor—6.8 mmfd. (C31)	.35
12723	Capacitor—56 mmfd. (C32)	.35
30949	Capacitor—56 mmfd. (C11, C12, C14, C15)	.25
12720	Capacitor—100 mmfd. (C6, C16, C18, C30, C33)	.35
12537	Capacitor—560 mmfd. (C29)	.35
13895	Capacitor—5,600 mmfd. (C8)	.70
34459	Capacitor—.0025 mfd. (C19)	.20
33584	Capacitor—.005 mfd. (C17, C21, C35)	.25
4937	Capacitor—.01 mfd. (C7, C20, C25)	.25
11315	Capacitor—.015 mfd. (C5, C9) (C9 Models U-20 and U-40 only)	.20
32785	Capacitor—.02 mfd. (C9) model U-42 only	.20
4839	Capacitor—0.1 mfd. (C13)	.30
32240	Capacitor—Electrolytic comprising 2 sections of 10 mfd. and 1 section of 20 mfd. (C10, C22, C23)	1.45
34285	Clip—"Magic Eye" clip (Model U-42)	.25
32707	Coil—Oscillator coil (L1, L2)	.95
34721	Control—Volume control and power switch (R4, S4)	2.00
32634	Cord—Tuning condenser drive cord	.10
32713	Core—Adjustable core and stud for oscillator coil (Models U-20, U-42)	.35
34853	Core—Adjustable core and stud for oscillator coil (Model U-40)	.20
33633	Indicator—Station selector indicator	.20
11891	Lamp—Dial lamp	.17
34407	Plate—Dial plate less condenser (Models U-40, U-20)	1.75
34798	Plate—Dial plate complete less tuner and push button (Model U-42)	.35
30868	Plug—2-contact female plug for motor lead (Models U-20, U-40)	.35
34723	Plug—3-contact plug for antenna loop	.15
5040	Plug—4-contact female plug for speaker leads	.30
14404	Plug—7-contact female plug for battery cable (Model U-42)	.35
30546	Resistor—470 ohms, ¼ watt (R14)	.20
12312	Resistor—3,300 ohms, ¼ watt (R10)	.20
13714	Resistor—5,600 ohms, ¼ watt (R16) (Model U-42 only)	.20
14075	Resistor—8,200 ohms, ¼ watt (R16) (Model U-20 and U-40 only)	.20
33489	Resistor—15,000 ohms, 2½ watts (R2)	.55
13998	Resistor—22,000 ohms, ¼ watt (R9, R13)	.20
12738	Resistor—27,000 ohms, ¼ watt (R8, R18) (some models U-42 only)	.20
12454	Resistor—33,000 ohms, ¼ watt (R1)	.20
12266	Resistor—39,000 ohms, ¼ watt (R18) (Model U-20 only)	.20
12286	Resistor—56,000 ohms, ¼ watt (R18) (Model U-40 only)	.20
12264	Resistor—220,000 ohms, ¼ watt (R6, R11)	.20
12285	Resistor—470,000 ohms, ¼ watt (R7, R12)	.20
12486	Resistor—560,000 ohms, ¼ watt (R20, R21)	.20
12013	Resistor—1 megohm, 1/10 watt (R22) (U-42 only)	.15
12679	Resistor—2.2 megohm, ¼ watt (R19)	.20
11668	Resistor—5.6 megohm, ¼ watt (R3)	.20
13601	Resistor—10 megohm, ¼ watt (R5)	.20
33735	Screw—Push arm adjusting screw	.05
34411	Shaft—Tuning condenser drive shaft	.20
31364	Socket—Dial lamp socket	.20
34799	Socket—"Magic Eye" socket (Model U-42)	.30
33514	Socket—Phonograph input socket	.25
31319	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
34726	Spring—Push arm return spring .018 dia. wire.	.05
33720	Spring—Push arm return spring (Model U-42)	.02
34720	Switch—Radio, Phono, Television, Tone switch (S2, S3)	1.50
34722	Switch—Range switch (S1)	.95
32263	Transformer—1st i.f. transformer (L3, L4, C11, C12)	2.30
34719	Transformer—2nd i.f. transformer (L5, L6, C14, C15)	1.75
32144	Transformer—Power transformer, 105-120 volts, 50-60 cycles (Models U-40, U-20) (T1)	4.75
33726	Washer—Retaining washer for shaft, Stock No. 34411	.02
	PICKUP AND ARM ASSEMBLIES U-20	
33906	Arm—Pickup arm—shell only	.45
33908	Base—Pickup support arm base and retainer	.35
33905	Crystal—Pickup crystal cartridge	4.25
33907	Support—Pickup support arm complete—less base	.80
	MOTOR ASSEMBLIES U-20	
34416	Arm—Drive wheel support arm (long)	xx
34415	Arm—Idler wheel support arm (short)	.50
34516	Armature—Motor armature complete	xx
34515	Bushing—Motor mounting rubber bushings	xx
34413	Capacitor—1.25 mfd., 60 cycle motor starting capacitor for motor, Stock No. 34412 (C35)	1.65
34514	Cover—Bakelite top end shell for motor	xx
34414	Idler—Rubber tired idler or drive wheel	1.20
34412	Motor—105-125 volt, 60 cycle phono. motor—less pulleys, capacitor and motor cradle (M1)	xx
34418	Plate—Motor support plate complete with turntable bearing	1.00
14887	Retainer—Idler wheel retainer spring	.01
34437	Spindle—Turntable spindle	xx
34417	Spring—Idler arm tension spring	xx
	AUTOMATIC SWITCH ASSEMBLIES U-20	
34419	Base—Pickup arm mounting base	.35
32865	Bracket—Switch bracket and terminal board	.40
34308	Cam—Switch cam assembly with spring	.55
32864	Lever—Switch actuating lever, roller, and clip.	.45
34309	Mounting—Pickup arm base mounting (rubber grommet, washers, and nut)	.20
34311	Ring—Retaining ring for pickup arm pivot shaft	.05
14195	Screw—No. 10-32 x 5/16 set screw for switch cam hub	.05
34314	Shaft—Pickup arm pivot shaft—for crystal pickup	.65
34310	Spool—Insulating spool for switch leads	.10
32868	Spring—Switch lever spring	.05
32867	Spring—Tension spring for switch cam	.05
32866	Switch—Mercury tube and leads (S5)	1.75
31608	Washer—Retaining washer for switch lever	.01
	POWER SUPPLY ASSEMBLIES U-42	
30868	Plug—2-contact female plug for motor leads	.35
14409	Plug—7-contact plug for power supply cable	.45
31319	Socket—Tube socket	.25
32144	Transformer—Power transformer, 105-120 volts, 50-60 cycles	4.75
	SPEAKER ASSEMBLIES (RL-70K1)	
31825	Cap—Dust cap	.02
34705	Cone—Cone complete with voice coil (L8)	1.35
34728	Diffuser—Speaker diffuser	.80
5039	Plug—4-prong speaker plug	.30
34727	Speaker—12-inch dynamic complete with cone and voice coil—less output transformer and plug	9.55
33444	Transformer—Output transformer (T2)	2.00
	MISCELLANEOUS ASSEMBLIES	
33731	Button—Push button	.15
33730	Clamp—Dial clamp (Model U-20)	.15
31456	Cover—Protective cover for markers (Models U-20, U-42)	.08
33910	Cup—Needle cup (Model U-20)	.30
33909	Cup—Used needle cup (Model U-20)	1.00
34730	Dial—Glass dial scale (Models U-40, U-20)	1.50
34867	Dial—Glass dial scale (Model U-42)	1.50
34420	Escutcheon—Dial scale and push button escutcheon	1.80
34583	Frame—"C" band antenna loop frame	.30
34792	Gasket—Rubber gasket for motorboard (Model U-42)	1.10
30698	Hinge—Lid hinge (Model U-20)	.95
34871	Hinge—Door hinge—L.H. for 1 door (Model U-42)	.45
34870	Hinge—Door hinge—R.H. for 1 door (Model U-42)	.45
13103	Jewel—Pilot lamp jewel (Models U-40, U-42)	.15
33434	Knob—Tuning tone control, range switch or volume control and power switch knob	.30
31480	Lamp—Dial lamp (Model U-42)	.20
34800	Loop—"A" band loop antenna (Model U-20)	6.00
34729	Loop—Antenna loop (Model U-40)	5.25
34868	Loop—Antenna loop for "A" band (Model U-42)	5.50
33973	Marker—Station selector push button markers (Model U-20)	.45
34866	Marker—Station markers (Model U-42)	.50
34872	Pin—Complete set of dowel pins for antenna loop (Model U-42)	.25
30870	Plug—2-prong male connector for motor lead (Model U-20)	.35
32641	Plug—3-prong plugs for antenna loops (Model U-20)	.10
32641	Plug—3-prong male plug for loops (Models U-40, U-42)	.10
31048	Plug—Phono plug for pickup lead (Model U-20)	.15
34869	Pull—Door pull (Model U-42)	.35
35172	Rubber—Sponge rubber strip for doors	xx
32870	Screen—Compartment lamp screen (Models U-40, U-42)	1.00
31364	Socket—Dial lamp socket (Model U-42)	.20
14270	Spring—Retaining spring for knob, Stock No. 33434	.05
31470	Spring—Motorboard spring mounting hardware (Models U-40, U-42)	.10
30900	Spring—Retaining spring for button, Stock No. 33731	.05
34423	Support—Lid support (Model U-20)	1.35
34422	Turntable—Phonograph turntable less spindle (Model U-20)	.75

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

xx Price upon application to your RCA Victor Parts Distributor.

POWER OUTPUT
Undistorted......... 5 watts, Maximum.........6 watts

POWER SUPPLY RATINGS (U-20)
A-6.............. 105-125 volts, 60 cycles, 110 watts total
A-5.............. 105-125 volts, 50 cycles, 110 watts total
B-2.............. 105-125 volts, 25 cycles, 110 watts total
C-6........ 105-125/210-250 volts, 60 cycles, 110 watts total
C-5........ 105-125/210-250 volts, 50 cycles, 110 watts total

POWER SUPPLY RATINGS (U-40, U-42)
A-6.............. 105-125 volts, 60 cycles, 110 watts total
A-5.............. 105-125 volts, 50 cycles, 110 watts total
B-2.............. 105-125 volts, 25 cycles, 110 watts total
C-6........... 105-130/140-160/200-250 volts, 60 cycles, 110 watts total
C-5........... 105-130/140-160/200-250 volts, 50 cycles, 110 watts total

Alignment Procedure

Before proceeding with alignment the following lead dress should be carefully checked.

1. Dress AC switch leads away from 6SF5 tube socket.

2. Do not twist loop leads together or around each other. Spacing between leads from "C" band loop to chassis is important—see alignment step "5" below.

3. "High side" leads from loop sockets, range switch, oscillator coil, and trimmers must be dressed away from chassis and each other.

4. Dress C-6 and C-33 away from each other.

5. Dress C-17 away from power switch leads.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis schematics.

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	I-F grid through 0.1 mfd capacitor and ground	455 kc	Quiet point between 1,720-1,500 kc	L5 and L6 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd capacitor and ground	455 kc	Quiet point between 1,720-1,500 kc	L3 and L4 (1st I-F trans.)
3	1st det. grid through 0.1 mfd capacitor and ground	15.2 mc	15.2 mc	C-4 oscillator*
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
5	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	6.1 mc	6.1 mc	Spacing between leads from "C" band loop to chassis
6	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
7	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	1,500 kc	C-34 antenna C-28 oscillator
8	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	600 kc	Rock at 600 kc	L-2 oscillator while rocking
9	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	1,500 kc	C-34 antenna C-28 oscillator

When making adjustments 4 to 9 inclusive the chassis must be in the cabinet, both loops connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.

Phonograph Information

The U-20 phonograph motor has its bearing filled with oil and sealed at the factory and hence should not require lubrication in the field. However the two rubber tired idler pulleys should have their bearings lubricated occasionally with S.A.E. 10 oil. Care should be taken not to get any oil, grease, or other foreign matter on the rubber tires. These tires and the motor spindle should be cleaned occasionally with quick drying naphtha.

The turntable spindle bearing should also be lubricated occasionally with S.A.E. 10 oil.

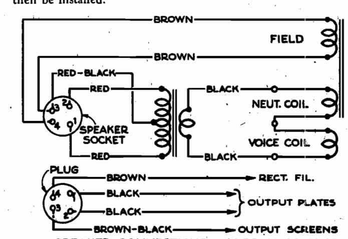
For information regarding the automatic record changers used in models U-40 and U-42 refer to service note No. 41 covering these mechanisms.

Antennas

Each of these receivers is equipped with two loop antennas ("C" band horizontal and fixed, and "A" band vertical and rotatable). During installation the "A" band loop should be rotated to the position giving maximum signal strength and freedom from noise. If desired, an outside antenna and ground can be connected to the terminals provided and when this is done the link between these terminals must be opened. However for loop operation this link must be closed.

Centering Loudspeaker Cone

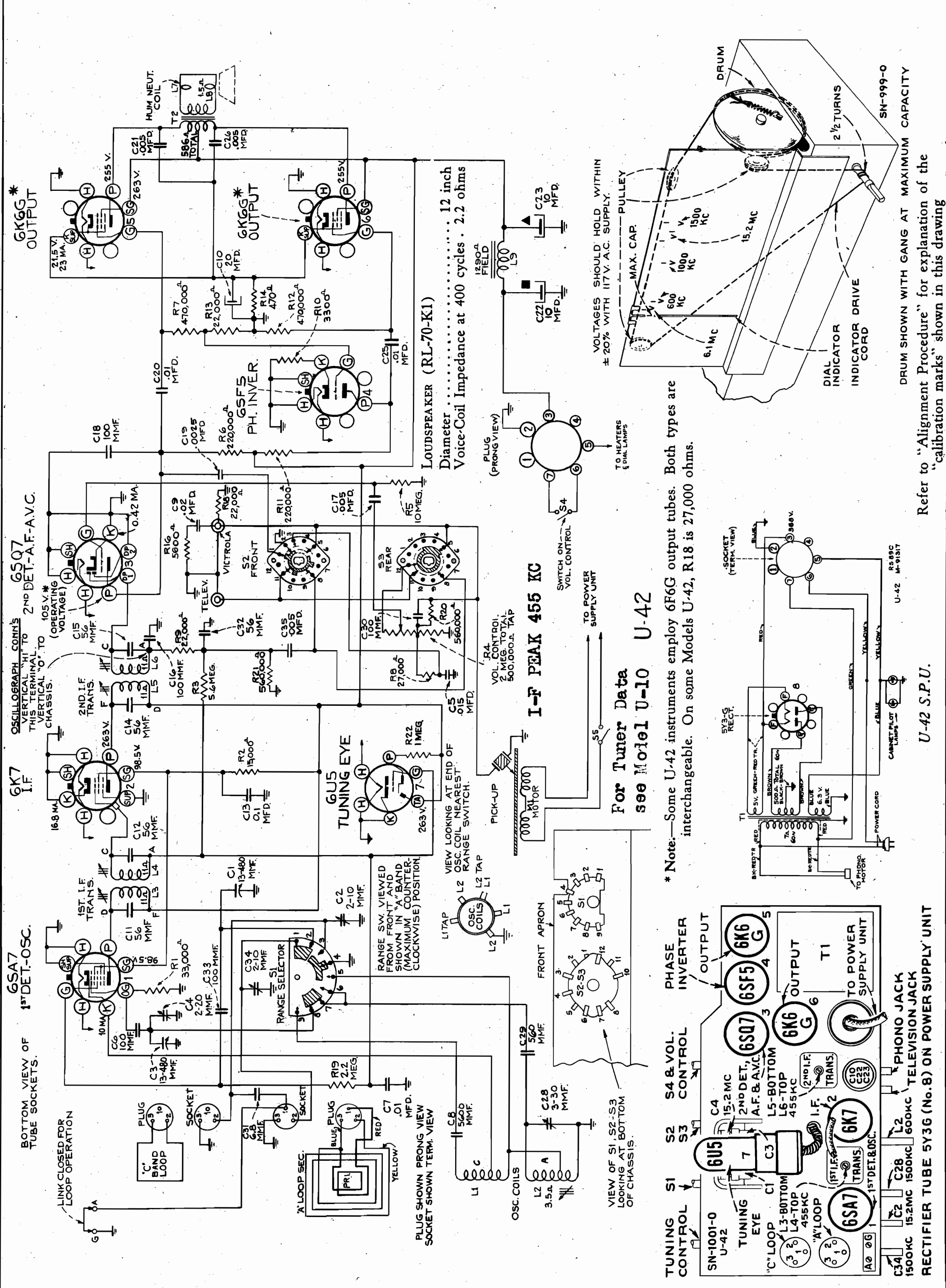
The loudspeaker cone centering support is fastened to the field frame by two screws accessible from the rear of the speaker. The cone can usually be recentered by loosening these screws and moving the support around until the proper position is found without disturbing the dust cover. However, in some cases it may be necessary to remove the front dust cover and insert spacers between the voice coil and pole piece in order to obtain proper centering. A new dust cover should then be installed.



SPEAKER CONNECTIONS U-20, U-40, U-42

RCA MFG. CO., INC.

MODEL U42, Chassis RC498B
Schematic, Trimmers
Socket, SPU Schematic



MODELS U25,U26
Chassis RC386B
Alignment,Parts

RCA MFG. CO., INC.

Pilot Lamps (4) .... 1 Mazda 44, 6.3 volts, 0.25 amp.; 3 Mazda 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS
A-6 .... 105-125 volts, 60 cycles, 115 watts
A .... 105-125 volts, 50-60 cycles, 115 watts
B-2 .... 105-125 volts, 25 cycles, 115 watts
C-6 .... 100-130/140-160/200-250 volts, 60 cycles, 115 watts
C .... 100-130/140-160/200-250 volts, 50-60 cycles, 115 watts

POWER OUTPUT
Undistorted .... 5 watts
Maximum .... 5.5 watts

PHONOGRAPH
Type .... Automatic
Record Capacity .... Eight 10-inch or seven 12-inch
Turntable Speed .... 78 r.p.m. adjustable

LOUDSPEAKER (RL-70-H5)
Type .... 12-inch Electrodynamic
Voice Coil Impedance .... 2.2 ohms at 400 cycles

PICKUP
Type .... Crystal
Impedance .... 100,000 ohms at 1,000 cycles
Average Output .... 1.5 volts at 1,000 cycles across 500,000 ohm load

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio-dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Transformer)
2	6A8G det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Transformer)
3	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (150.5°) "A" band	L9
4		1,500 kc	1,500 kc (28°) "A" band	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms.	6 mc	6 mc (26.5°) "B" band	C23 (osc.)*
7		20 mc	20 mc (22°) "C" band	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

*Use minimum capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

Note.—Oscillator tracks 455 kc above signal on all bands.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, move the dial indicator on the drive cable to the left-hand end mark on dial, with gang condenser fully meshed.

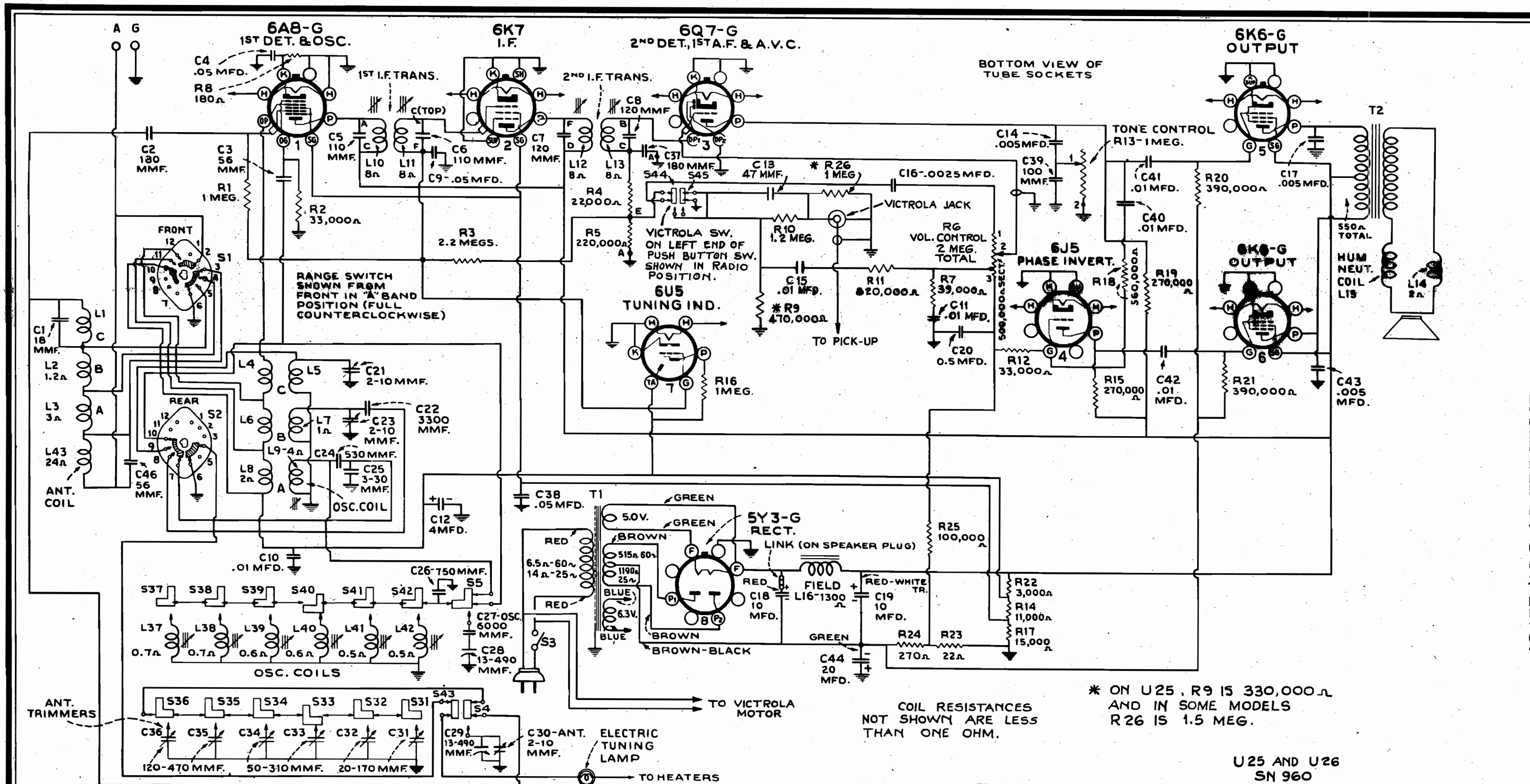
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-386-B)	
14517	Board—Antenna ground terminal board	.25
30752	Bracket—Magic Eye mounting bracket	.25
31400	Capacitor—Triple adjustable trimmer, two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25)	.50
32486	Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36)	1.40
12722	Capacitor—18 mmfd. (C1)	.35
13141	Capacitor—47 mmfd. (C13)	.35
12723	Capacitor—56 mmfd. (C3, C46)	.35
12720	Capacitor—100 mmfd. (C39)	.35
14262	Capacitor—109 mmfd. (C5, C6)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
13003	Capacitor—180 mmfd. (C37)	.35
14712	Capacitor—180 mmfd. (C2)	.30
32492	Capacitor—530 mmfd. (C24)	.40
31435	Capacitor—750 mmfd. (C26)	.40
4881	Capacitor—3,300 mmfd. (C22)	.60
31405	Capacitor—6,000 mmfd. (C27)	.75
5107	Capacitor—.0025 mfd. (C16)	.20
4838	Capacitor—.005 mfd. (C14, C17, C43)	.25
4858	Capacitor—.01 mfd. (C10, C40, C41, C42)	.25
14398	Capacitor—.01 mfd. (C11, C15)	.30
30882	Capacitor—.05 mfd. (C4, C9, C38)	.20
30867	Capacitor—0.5 mfd. (C20)	.30
32145	Capacitor—4 mfd. (C12)	.70
32142	Capacitor—Comprising two 10 mfd., one 20 mfd. sections (C18, C19, C44)	1.90
31382	Clip—Oscillator coil and core mounting clip	.04
32493	Coil—Antenna coil—A, B, and C bands (L1, L2, L3, L43)	1.35
31951	Coil—Oscillator coil—A, B, and C bands (L4, L5, L7, L9)	1.40
31383	Coil—Oscillator coil—A band (L41, L42)	.30
32487	Coil—Oscillator coil—A band (L39, L40)	.35
31385	Coil—Oscillator coil—A band (L37, L38)	.30
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	2.65
31366	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	3.00
32635	Cord—Indicator pointer drive cord	.24
32634	Cord—Variable condenser drum drive cord	.10
30905	Core—Adjustable core and stud for i-f transformer	.35
31386	Core—Adjustable core and stud for oscillator coil, Stock Nos. 31383, 32487, and 31385	.15
12800	Core—Adjustable core for oscillator coil, Stock No. 31951	.35
31372	Drum—Variable condenser drive cord drum and calibration dial	.65
11891	Lamp—Phono. compartment lamp	.17
31480	Lamp—Dial and "Electric Tuning" lamp	.20
30868	Plug—2-contact female plug for motor cable	.35
5040	Plug—4-contact female plug for speaker cable	.30
31373	Pulley—Drive cord pulley	.08
32143	Resistor—Voltage divider comprising one 11,000 ohm, one 3,000 ohm, one 22 ohm, and one 270 ohm sections (R14, R22, R23, R24)	.90
30545	Resistor—180 ohms, ½ watt (R8)	.20
5114	Resistor—15,000 ohms, 1 watt (R17)	.22
14284	Resistor—22,000 ohms, 1/10 watt (R4)	.15
12454	Resistor—33,000 ohms, ½ watt (R2, R12)	.20
12266	Resistor—39,000 ohms, ½ watt (R7)	.20
14560	Resistor—100,000 ohms, ½ watt (R25)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R5)	.15
12199	Resistor—270,000 ohms, ½ watt (R15, R19)	.20
14983	Resistor—330,000 ohms, ½ watt (R9)	.20
13479	Resistor—390,000 ohms, ½ watt (R20, R21)	.20
12486	Resistor—560,000 ohms, ½ watt (R18)	.20
30963	Resistor—820,000 ohms, ½ watt (R11)	.20
12013	Resistor—1 meg., 1/10 watt (R16)	.15
13730	Resistor—1 meg., ½ watt (R1, R26)	.20
30208	Resistor—1.2 meg., ½ watt (R10)	.20
12679	Resistor—2.2 meg., ½ watt (R3)	.20
14343	Retainer—Retaining spring for station selector knob shaft	.03
14887	Retainer—Drive cord pulley retainer	.01
4669	Screw—No. 8-32 square head set screw for drum, Stock No. 31372	.03
31368	Shaft—Station selector knob shaft and pulley	.30
3682	Shield—Tube shield	.22
30868	Socket—2-contact female socket for motor power cable	.35
12493	Socket—5-contact female socket for speaker cable	.30
13871	Socket—Magic Eye socket	.45
14278	Socket—Pickup input socket	.25
31251	Socket—Tube socket	.25
31418	Spring—Indicator or drum drive cord tension spring	.05
32491	Switch—Range switch (S1, S2)	1.15
32498	Switch—Station selector push-button switch and Radio-Record switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	3.85
14376	Transformer—First i-f transformer (L10, L11, C5, C6)	2.45
14283	Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5)	3.80

STOCK No.	DESCRIPTION	Unit List Price
31445	Transformer—Power transformer 105-125 volts, 25-60 cycles (T1)	7.80
31446	Transformer—Power transformer 100-130/140-160/200-250 volts, 50-60 cycles (T1)	8.05
32144	Transformer—Power transformer 105-125 volts, 50-60 cycles (T1)	4.75
	OPERATING MECHANISM	
31134	Bracket—Pickup locating lever mounting bracket (3)	.30
32878	Cam—Cam and gear assembly (4)	2.80
6808	Clutch—Trip lever friction clutch assembly (5)	.35
31146	Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6)	1.80
31129	Cover—Cap for top of record post	.45
31116	Finger—Trip lever friction finger assembly (7)	.45
31119	Gear—Long arm and rack gear for front left-hand record post (8)	.60
31120	Gear—Short arm and rack gear for rear right-hand record post (9)	.55
31121	Gear—Record post gear (10)	.90
31123	Guide—Main lever spring guide (11)	.40
31114	Lever—Index lever assembly (12)	.75
31137	Lever—Index lever tension spring lever (13)	.30
31138	Lever—Locating lever and pawl assembly (14)	.70
31113	Lever—Main lever assembly (15)	1.35
31140	Lever—Pickup lift cable lever and spring assembly (16)	.55
31135	Lever—Pickup locating lever assembly (17)	.85
31130	Lever—Record separator elevating lever complete with adjustment screws (18)	.80
31132	Lever—Trip detaining lever (19)	.30
31115	Lever—Trip lever assembly (20)	1.85
31131	Lever—Trip regulator lever (21)	.25
31133	Pawl—Trip pawl assembly (22)	.80
31124	Pin—Record post drive pin (23)	.04
14207	Roller—Pickup lift cable roller and bracket assembly (24)	.55
31118	Screw—Cone pointed set screw for trip lever hub or record post shelf	.06
4563	Screw—Pickup lift cable screw and nuts	.04
14195	Screw—Set screw for flexible coupling	.05
31117	Screw—Special screw to adjust friction clutch tension	.03
31126	Separator—Record separator knife (25)	.75
31122	Shaft—Record separator post shaft (26)	.40
31125	Shelf—Record post shelf assembly (27)	1.25
31141	Spindle—Turntable spindle shaft	1.40
3676	Spring—Cam pawl tension spring on main gear	.04
14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (28)	.08
32882	Spring—Main lever tension spring (29)	.05
31136	Spring—Index lever tension spring (30)	.05
3666	Spring—Pickup lift cable tension spring (31)	.04
31127	Spring—Record separator pressure spring (32)	.02
14191	Spring—Trip detaining lever tension spring (33)	.04
31875	Spring—Pickup locating lever tension spring (34)	.04
32436	Spring—Locating lever tension spring (35)	.05
31147	Strip—Complete set of rubber strips for flexible coupling	.40
31139	Turntable Assembly—less spindle	3.35
31128	Washers—"C" washer for top of record post	.04
31143	Washers—Turntable thrust washers (1 steel, 1 bronze, 1 felt)	.15
	MOTORBOARD ASSEMBLIES	
31149	Base—Tone arm mounting base	.35
32927	Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts	6.30
14209	Bumper—Main lever rubber bumper (1)	.08
9848	Cup—Used needle cup, rest, and lid complete	.75
32877	Escutcheon—Index escutcheon	.40
31151	Guide—Pickup lift cable guide (coil spring) (2)	.10
31150	Mounting—Pickup arm base rubber mounting complete	.45
31155	Spring—Needle cup lid tension spring	.04
	MOTOR ASSEMBLIES	
31626	Field—Complete coil and laminations for 25 cycle motor	9.30
31619	Field—Complete coil and lamination for 50-60 cycle motor	7.80
31618	Field—Complete coil and laminations for 60 cycle motor	5.50
31624	Governor—Governor complete for 25 cycle motor	3.05
11703	Governor—Governor complete for 50-60 cycle motor	3.05
31623	Governor—Governor complete for 60 cycle motor	2.80
31448	Motor—105-125 volts, 25 cycles (M1)	23.70
31163	Motor—105-125 volts, 50-60 cycles (M1)	20.50
31157	Motor—105-125 volts, 60 cycles (M1)	17.75
30870	Plug—2-contact male plug for motor power cable	.35
31447	Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only	.40
31158	Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only	.25
31636	Shaft—Turntable spindle shaft and gear for 25 cycle motor	1.90
31634	Shaft—Turntable spindle shaft and gear for 50-60 and 60 cycle motor	1.70
32913	Spring—Governor weight and spring for 25 cycle motor	.25
32914	Spring—Governor weight and spring for 50-60 cycle motor	.30
32912	Spring—Governor weight and spring for 60 cycle motor	.25
32875	Switch—Motor control switch (S6)	.30
	PICKUP AND ARM ASSEMBLIES	
33096	Arm—Pickup arm, less crystal and cable	2.60
32635	Cable—Pickup arm lift cable and clips	.24
32556	Cable—Shielded cable and plug	.75
31156	Crystal—Pickup crystal cartridge and needle screw	4.25
33114	Damper—Viscoloid damper for armature	.15
31160	Screw—Pickup needle screw	.12
31161	Shaft—Pickup pivot arm and shaft assembly	.45
	SPEAKER ASSEMBLIES (RL-70H-5)	
13866	Cap—Dust cap for cone center	.03
12012	Coil—Field coil (L16)	2.90
11469	Coil—Neutralizing coil (L15)	.30
31275	Cone—Speaker cone and voice coil (L14)	1.75
31539	Plug—5-contact male plug for speaker	.25
32146	Speaker complete	12.10
14534	Transformer—Output transformer (T2)	2.10
14357	Washer—Spring washer to hold field coil securely	.06
	MISCELLANEOUS ASSEMBLIES	
12038	Band—Rubber band for Magic Eye	.02
31397	Button—Station selector push-button	.15
13103	Cap—Pilot light jewel	.15
31456	Cover—8 protective covers for push-button markers	.08
31541	Cushion—Motor plate mounting cushions and clamps sufficient for one instrument	.50
32495	Dial—Glass dial scale (Model U25 only)	.75
32494	Dial—Glass dial scale (Model U26 only)	.75
31407	Escutcheon—Magic Eye or Electric Tuning indicator escutcheon	.25
31395	Escutcheon—Tuning dial escutcheon only, less push-buttons and dial scale	1.15
30698	Hinge—Lid hinge complete with screws	.95
4585	Hinge—One upper and one lower door hinge (Model U26 only)	.60
31564	Holder—Needle card holder	.50
31543	Indicator—Electric tuning indicator disc	.25
31392	Indicator—Indicator pointer, carriage and clip	.30
31355	Knob—Range switch knob	.12
14359	Knob—Station selector knob	.20
31391	Knob—Tone control knob	.15
30773	Knob—Volume control knob	.15
31460	Marker—"Dial Tuning" push-button marker (Model U25 only)	.04
31458	Marker—"Dial Tuning" push-button marker (Model U26 only)	.01
31459	Marker—"Victrola" push-button marker (Model U25 only)	.04
31457	Marker—"Victrola" push-button marker (Model U26 only)	.01
31590	Markers—1 set station call letter markers (Model U25 only)	.40
31589	Markers—1 set station call letter markers (Model U26 only)	.35
11210	Screw—Chassis mounting, screws, washers, and lockwashers	.05
31393	Screen—Dial color screen	.40
32870	Screen—Phono. compartment lamp screen	1.00
33063	Spring—Actuating spring for lid support (Model U26 only)	.50
30330	Spring—Retaining spring for knob, Stock No. 31391	.03
14270	Spring—Retaining spring for knob, Stock Nos. 30773 and 31355	.05
4982	Spring—Retaining spring for knob, Stock No. 14359	.05
31470	Spring—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 req'd)	.10
33081	Support—Right-hand lid support (Model U26 only)	1.90
33082	Support—Left-hand lid support (Model U26 only)	1.90
31478	Support—Lid support (Model U25)	2.20

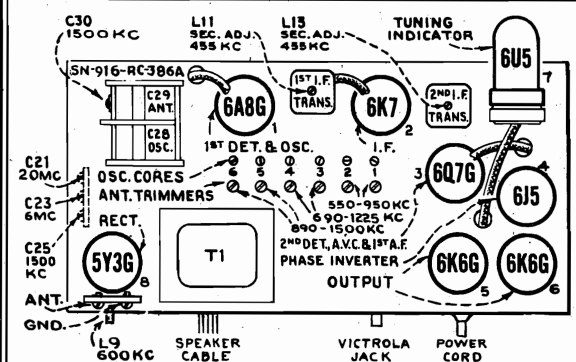
ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODELS U25,U26
Chassis RC386B
Schematic, Socket
Trimmers, Tuner
Lead Dress

RCA MFG. CO., INC.



U25 AND U26
SN 960



Adjustments for Electric Tuning

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

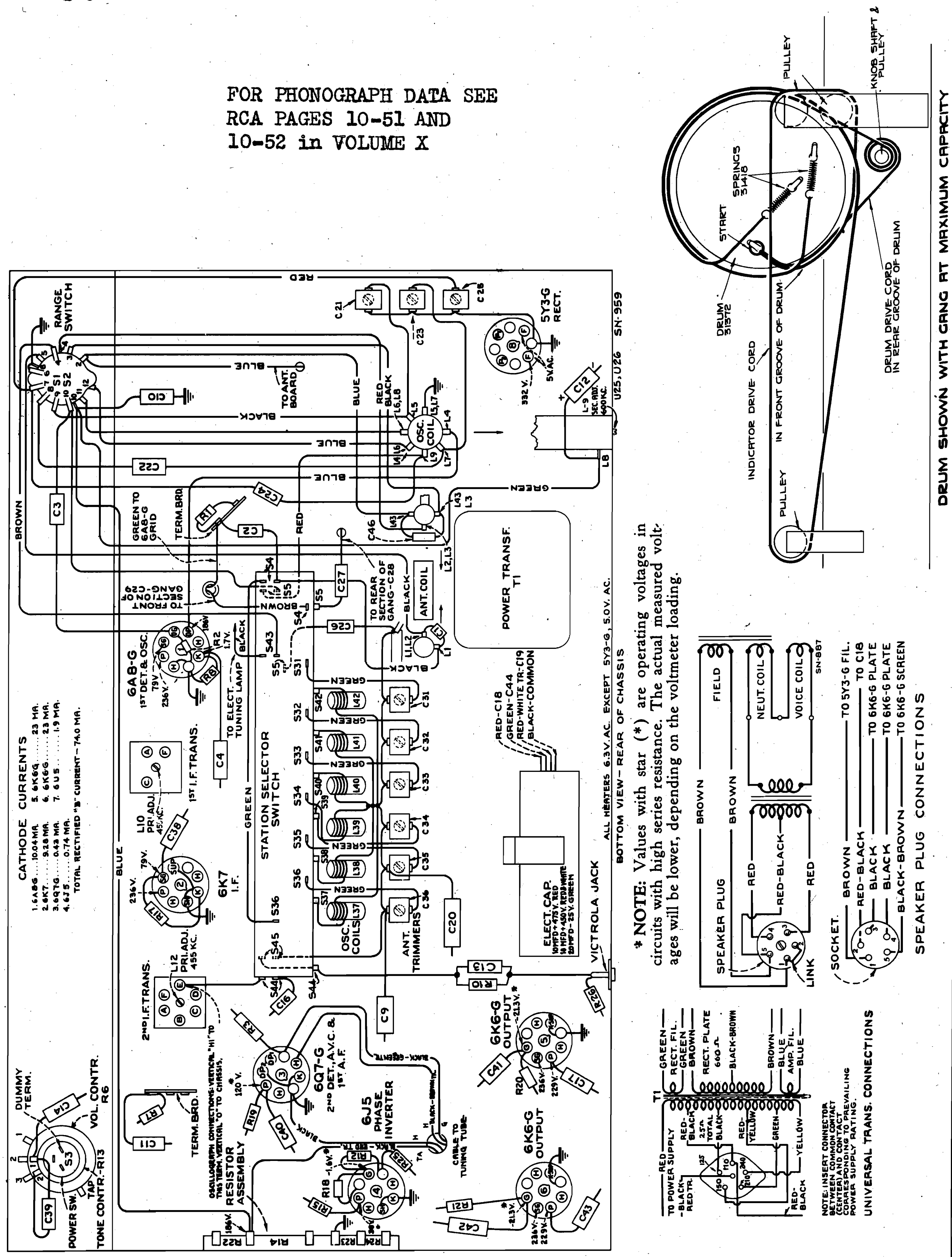
Precautionary Lead Dress.—

1. Dress red leads from power transformer to power switch (S3), in corner of chassis and away from volume control terminals.
2. Dress brown lead from push-button switch to gang over end of switch, and away from C27 and bus between S5 and range switch.
3. Leads to C27 must be as short as possible.
4. Blue lead from range switch to oscillator coil must be as short as possible and dressed away from other leads. All leads should be dressed away from antenna coil.
5. Leads across back of chassis must be dressed under electrolytic away from Victrola jack.
6. Parts and leads should be dressed away from R22-R14 as it becomes heated.
7. Leads from oscillator coil to trimmers must be dressed away from coil.
8. Green lead from S4 to range switch must be clear of other leads and away from front edge of chassis.

MODELS U25, U26
Chassis RC386B
Chassis Wiring
Voltage, Dial Drive

RCA MFG. CO., INC.

FOR PHONOGRAPH DATA SEE
RCA PAGES 10-51 AND
10-52 in VOLUME X



Installation, Operation
Lead Dress, Parts

RCA MFG. CO., INC.

MODEL OSC-22
Wireless Oscillator
Schematic, Voltage

Specifications OSC-22

—1939 No. 28—
First Edition

Wireless Oscillator

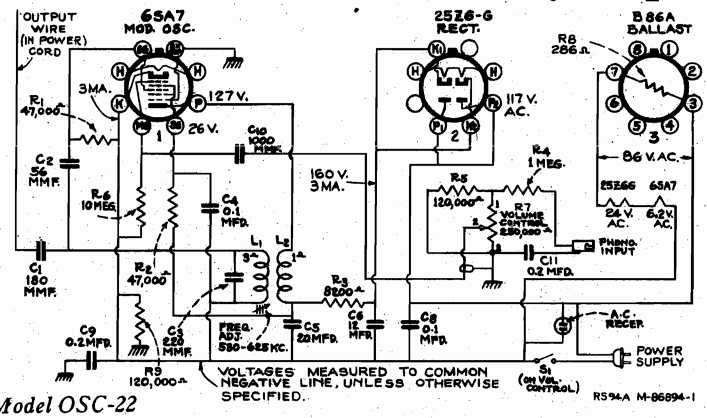
FREQUENCY RANGE........... Approx. 530-625 kc

TUBE COMPLEMENT
(1) RCA-6SA7............. Modulator—Oscillator
(2) RCA-25Z6-G............ Half-Wave Rectifier
(3) Type B-86-A............... Ballast Resistor

POWER SUPPLY RATINGS
A-C Rating.... 105-125 volts, 25-60 cycles, 35 watts
D-C Rating.............. 105-125 volts, 35 watts

DIMENSIONS
Chassis Base............. 7½-in. x 4½-in x 2½-in.

Precautionary Lead Dress.—
1. Keep 110-volt leads away from oscillator coil.
2. Leads to oscillator coil must be short and direct.



Model OSC-22
Schematic Diagram

The RCA Victor Wireless Oscillator is an adapter unit used to convert your Victrola Attachment, such as the RCA Victor Model VA-22, into a wireless record player. This permits you to play phonograph records through your radio receiver without any connecting wires from the Victrola Attachment to the Radio Receiver.

INSTALLATION

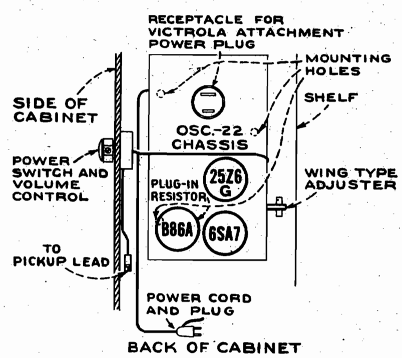
Certain RCA Victrola Attachments such as the VA-22 are provided with a side shelf inside the cabinet for mounting the Wireless Oscillator. Three holes are drilled in the shelf correctly spaced for the oscillator mounting bolts to go through and screw into the holes in the OSC-22 chassis base. To install the OSC-22 first detach the VA-22 power cord from the electric outlet, then:

1. Look in the back of the VA-22 or similar Victrola cabinet and locate the connection from the pickup to the volume control on the side of the cabinet. This is a length of wire with a connector plug on one end. Disconnect the plug from the bayonet socket and then loosen the set screw and remove the knob and the volume control on the other end of the wire, together with the wire, from the VA-22 cabinet. It is attached to the cabinet by a nut and washer.
2. Mount the OSC-22 on the cabinet shelf with the three mounting screws and washers provided.
3. Mount the OSC-22 Power Switch and Volume Control unit in the location from which the VA-22 volume control was removed, using the washer and nut taken from the VA-22 volume control. Be sure that the locating pin on the new control is in the correct position. Attach knob on shaft of Power Switch and Volume Control unit and tighten up the set screw.
4. Insert the pickup plug into the connector on the cable of the newly installed Volume Control of the OSC-22.
5. Insert the plug on the end of the VA-22 power cord into the power receptacle on the OSC-22 chassis base.
6. Insert the plug on the end of the OSC-22 power cord into the electric outlet.

OPERATION

CONTROLS AND MOVING MECHANISM

In order to obtain best reproduction, the



newly installed Volume Control should first be turned on about 2/3 full and the Volume Control on your radio receiver turned to the point that gives the greatest volume you are likely to require. Then all control of volume may be made with the knob on the Wireless Victrola Attachment. In particularly noisy locations it may be preferable to set the Volume Control of the Wireless Victrola Attachment at about 2/3 full and regulate with the volume control knob on the receiver.

The Victrola Adjustment.—On the back of the OSC-22 chassis is a small adjusting rod to give reproduction at the most convenient point on your radio receiver dial. With your radio receiver in operation, set the Tuning Control to bring the pointer on the Standard Broadcast Scale to a point at the low frequency end between 530 and about 630 kilocycles, 530 is preferable, at which no station can be obtained. Then set your Wireless Victrola Attachment in operation and turn the adjusting rod on the OSC-22 slowly and carefully until the record reproduction is heard at its best.

Antenna Modification.—If, due to your particular special conditions, insufficient volume or excessive noise interference affects record reproduction, a simple remedy is to connect a wire from the Wireless Victrola Attachment to your radio antenna lead. This is easily accomplished by means of a length of wire to cover the distance between the Victrola Attachment and Radio Receiver. One end of this should be wound 3 or 4 turns around the outside of the short wire projecting from the OSC-22 plug on the power cord. The other end of the wire should be wound 3 or 4 turns around the outside of the receiver antenna lead. When an RCA Master Antenna is used, the wire should be wound around the counterpoise lead where it is attached to the A-3 terminal of your radio receiver antenna terminal board.

Radio Receiver Controls.—Your radio receiver picks up the record selection as it does a broadcast program. So after the Victrola Adjustment is made, you must tune your radio receiver to the signal from the Wireless Victrola Attachment between 530 and about 630 kilocycles. Do this according to the instructions for operating your particular receiver and turn the Tuning Control to bring the pointer on the dial scale to the low frequency end of the Standard Broadcast band, about 530 to 630 kilocycles, and tune in accurately with the Wireless Victrola Attachment playing a selection. This point is your "Victrola" station. If you have a radio with Push Button Tuning you can set a push button and label it "Victrola." *The push button or switch labeled "Victrola," "Record Player" or "Phono" on RCA Victor Radio Receivers previous to 1939 is of no use with the Wireless Victrola Attachment.*

PLAYING

Plug the power cord from the OSC-22 into a convenient house outlet, then to play records proceed as follows:

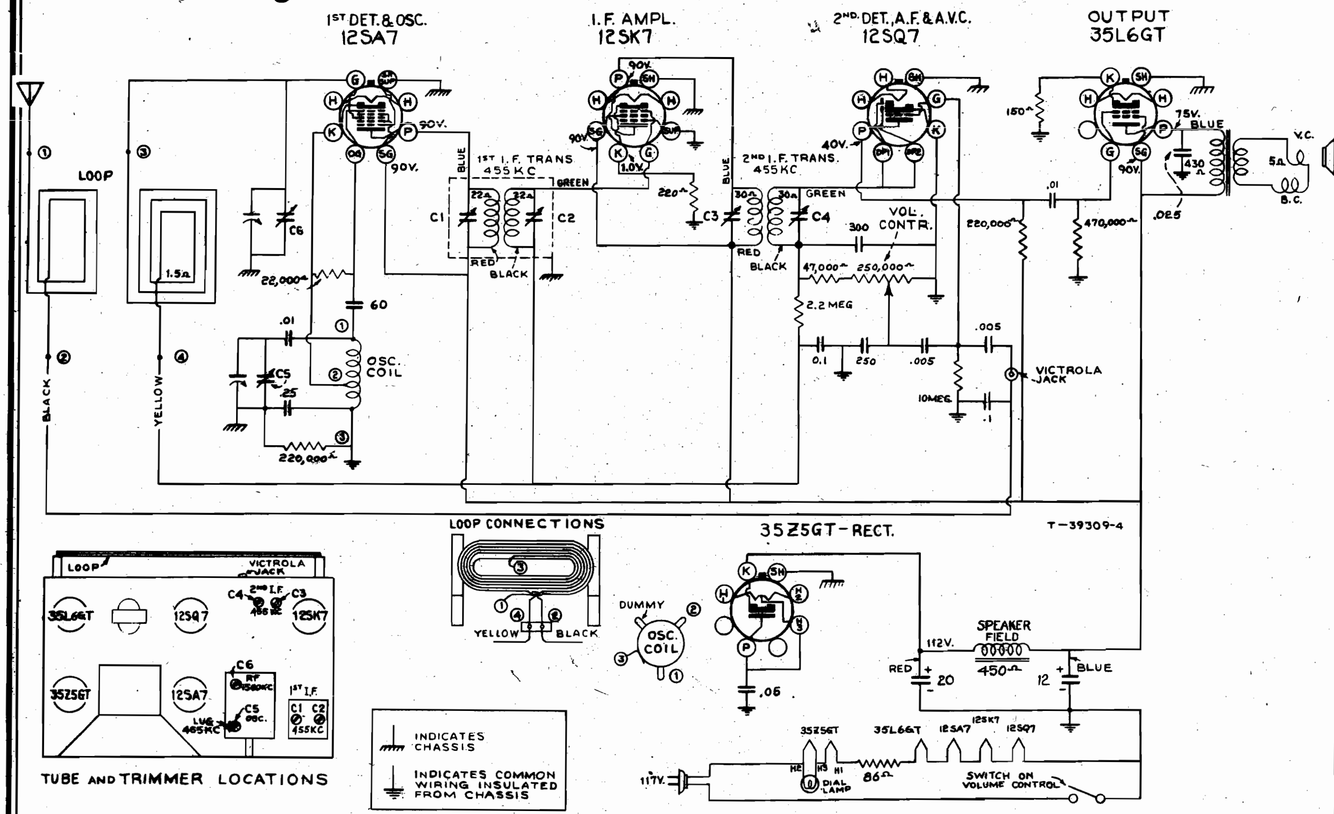
1. Turn on the power to your radio receiver.
2. Set the tuning knob to your new "Victrola" station (530 to 630 kilocycles), or if you have specially adjusted a push button, press it.
3. Turn on power to the Wireless Victrola Attachment.
4. Make the set-up for playing records in accordance with the original instructions accompanying the Victrola Attachment.
5. Turn the Wireless Victrola Attachment Volume Control about 2/3 fully clockwise.
6. Adjust radio receiver Tuning knob to accurately tune in the phonograph selection.
7. Turn Radio Receiver Volume Control to give the loudest reproduction you are likely to require.
8. Adjust the Wireless Victrola Attachment Volume Control to suit.
9. Adjust radio receiver Tone Control if desirable.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
	ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.				
33793	Ballast—Ballast resistor tube—Type B86A (R8)	.80	33792	Receptacle—A.C. receptacle	.45
12723	Capacitor—56 mmfd. (C2)	.35	33793	Resistor—Ballast resistor tube—Type B86A (R8)	.80
13003	Capacitor—180 mmfd. (C1)	.35	14075	Resistor—8,200 ohms, ¼ watt (R3)	.20
12694	Capacitor—220 mmfd. (C3)	.35	12412	Resistor—47,000 ohms, ¼ watt (R1, R2)	.20
4839	Capacitor—0.1 mfd. (C4, C8)	.30	13734	Resistor—120,000 ohms, ¼ watt (R5, R9)	.20
33834	Capacitor—0.2 mfd. (C9, C11)	.30	13730	Resistor—1 meg., ¼ watt (R4)	.20
32576	Capacitor—Electrolytic, one section 20 mfd., and one section 12 mfd. (C5, C6)	.90	13601	Resistor—10 meg., ¼ watt (R6)	.20
			31251	Socket—Tube socket	.25
12635	Capacitor—1,000 mfd. (C10)	.50	33793	Tube—Ballast resistor tube—Type B86A (R8)	.80
32501	Coil—Oscillator coil (L1, L2)	1.00	33794	Volume control and switch (R7, S1)	1.50

MODELS 40X-30,Ch.RC405C
40X-31,Chassis 405D
Schematic,Voltage

RCA MFG. CO., INC.

Alignment,Trimmers
Socket,Lead Dress



—1939 No. 34—

Features of design include: New Type single-ended tubes (12SA7, 12SK7, and 12SQ7); edge-lighted dial; dust proof electrodynamic loudspeaker; "Magic Loop"; Television-Victrola Jack; and Beam Power Output.

First Edition

Electrical and Mechanical Specifications

FREQUENCY RANGE .... 540-1,680 kc
Intermediate Frequency .... 455 kc

TUBE COMPLEMENT
(1) RCA-12SA7 .... 1st-Detector-Oscillator
(2) RCA-12SK7 .... I-F Amplifier
(3) RCA-12SQ7 .... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-35L6GT .... Power Output
(5) RCA-35Z5GT .... Half-Wave Rectifier
Dial Lamp (1) .... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS
A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted .... .6 watts
Maximum .... 2.0 watts

LOUDSPEAKER
Type .... 4-inch Electrodynamic
Cabinet Dimensions (inches) .. Height 5-1/16, Width 8½, Depth 4¼
Weight (net) .... 4¾ pounds

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT." terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Victrola Attachment.—A jack is provided on the rear of cabinet for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. loop in series with 100 mmfd.	1,680 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

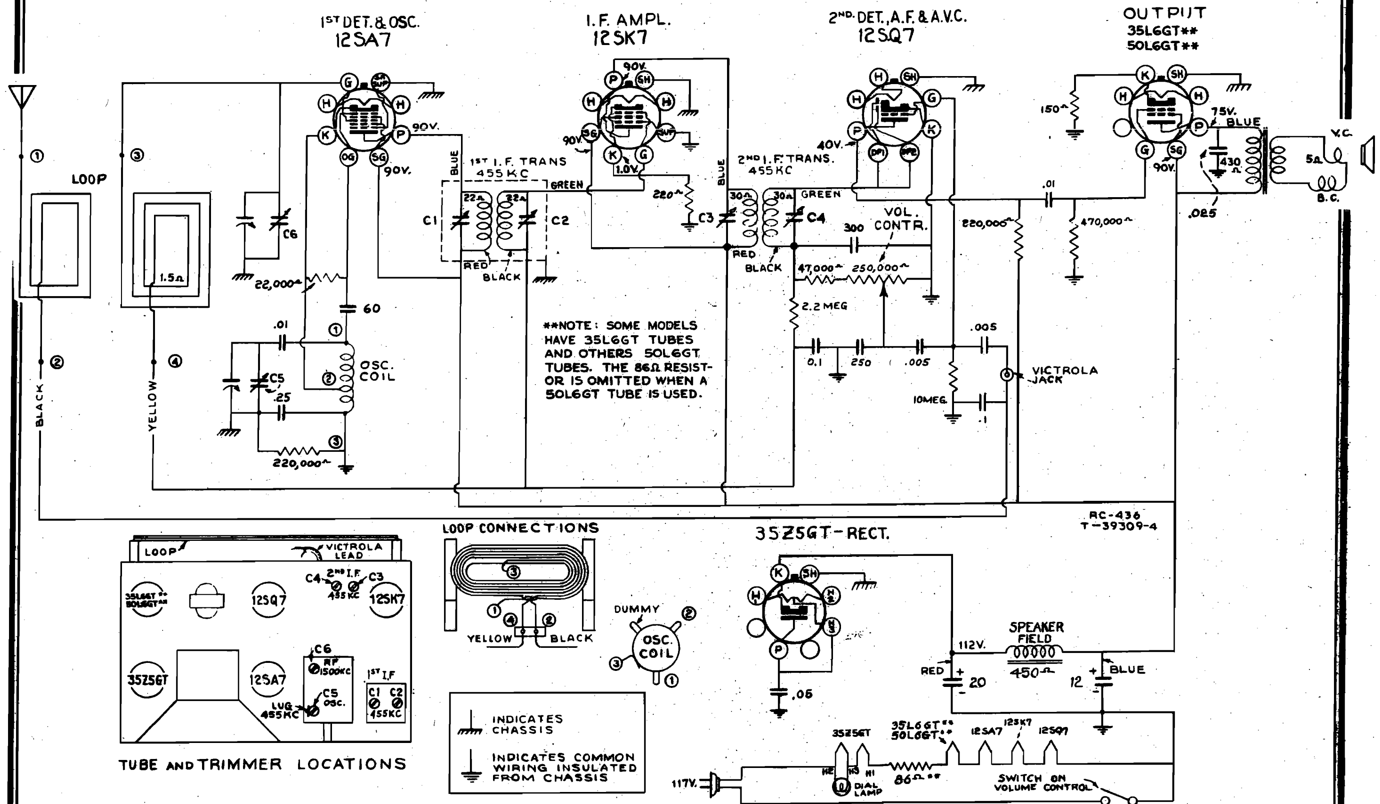
Precautionary Lead Dress

1. Dress 2nd I-F green lead close to chassis and under other parts.
2. Dress lead from gang condenser to grid of 12SA7 close to chassis and away from 12SQ7 socket.
3. Dress blue 1st I-F lead under volume control close to chassis.
4. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

Alignment, Trimmers
Socket, Lead Dress

RCA MFG. CO., INC.

MODELS 40X-50 to 40X-57
Chassis RC-436
Schematic, Voltage



NOTE: Output cathode resistor is 120 ohm when 50L6GT tube is used.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. loop in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-436)	
33745	Cable—Phono. cable	.30
13057	Capacitor—60 mmfd.	.35
12488	Capacitor—250 mmfd.	.35
12952	Capacitor—300 mmfd.	.35
4838	Capacitor—.005 mfd.	.25
4870	Capacitor—.025 mfd.	.20
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—.1 mfd.	.30
12484	Capacitor—.25 mfd.	.30
32576	Capacitor—Electrolytic, 20-12 mfd.	.90
32968	Capacitor—Variable tuning	2.25
32962	Coil—Oscillator coil	.60
32634	Cord—Drive cord	.10
33743	Drum—Drive drum	.40
31480	Lamp—Pilot lamp	.20
33663	Loop—Complete antenna loop	1.20
33558	Resistor—86 ohms	.15
12071	Resistor—120 ohms, ½ watt	.20
13428	Resistor—150 ohms, ½ watt	.20
14561	Resistor—220 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
33061	Shaft—Drive shaft	.20
30585	Spring—Drive cord spring	.06
33557	Socket—Dial light socket	.30
32537	Socket—Tube socket	.20
32966	Transformer—I-F input transformer	1.25

Precautionary Lead Dress

1. Dress 2nd I-F green lead close to chassis and under other parts.
2. Dress lead from gang condenser to grid of 12SA7 close to chassis and away from 12SQ7 socket.
3. Dress blue 1st I-F lead under volume control close to chassis.
4. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

POWER SUPPLY RATINGS
A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted .... .6 watts
Maximum .... 2.0 watts

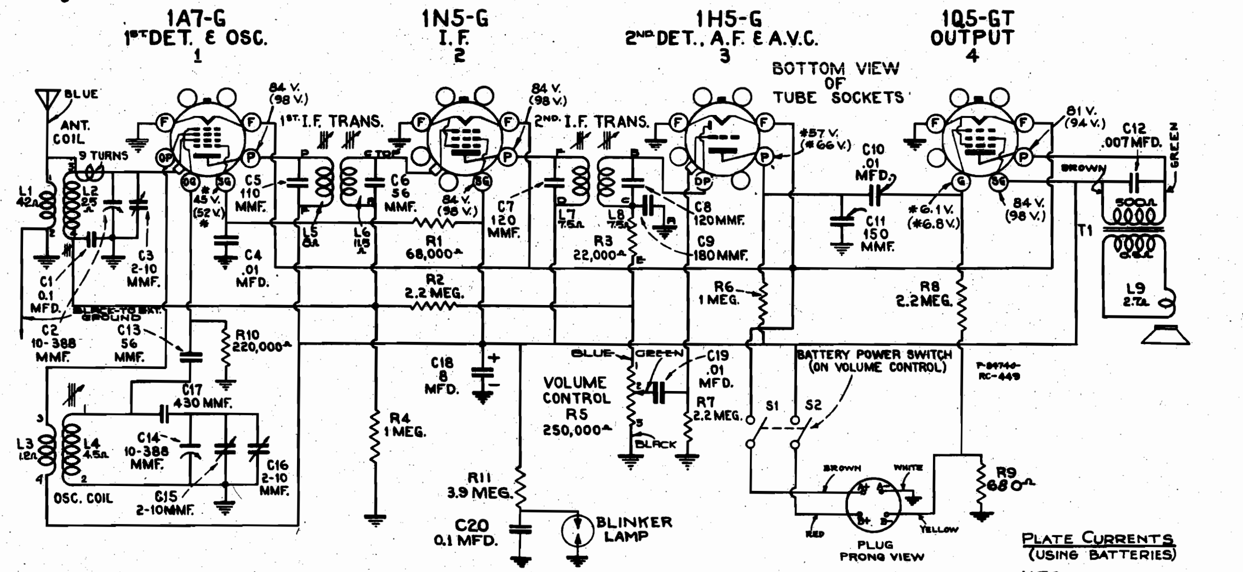
STOCK No.	DESCRIPTION	Unit List Price
32967	Transformer—I-F output transformer	1.05
32545	Volume control	1.50
	SPEAKER ASSEMBLIES (39105-2)	
32963	Speaker—Complete with transformer	3.95
32964	Transformer—Output transformer	1.25

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODELS BK41,BT41
Chassis RC-449
Schematic,Voltage
Alignment,Trimmers
Socket,Lead Dress

RCA MFG. CO., INC.

MODEL CV40, S.P.U.
Schematic

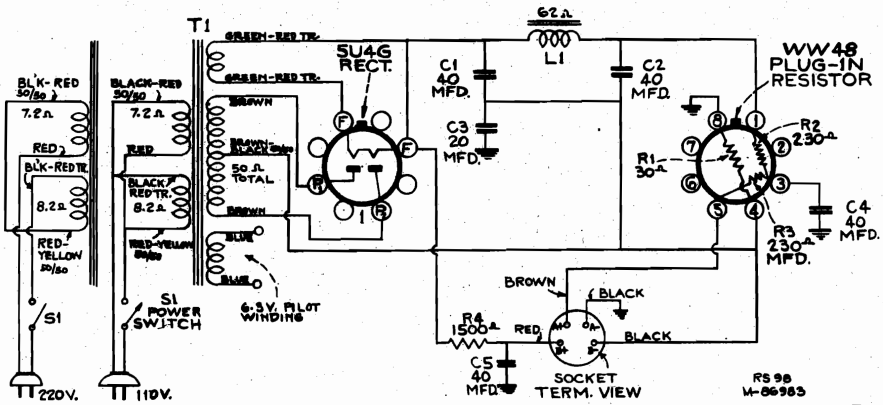


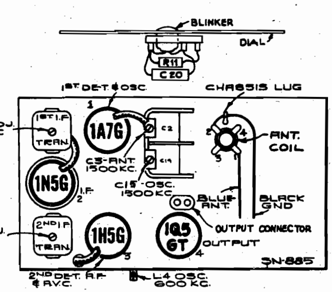
STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.

VOLTAGES IN PARENTHESES ARE THOSE OBTAINED BY USING POWER SUPPLY CV-40. WHEN BATTERIES ARE USED VOLTAGES NOT IN PARENTHESES APPLY.

PLATE CURRENTS (USING BATTERIES)

1A7G	
OSC.	0.85 MA.
DET.	0.49 MA.
1N5G	1.2 MA.
1H5G	.026 MA.
1Q5GT	6.0 MA.





Schematic Diagram—Model CV-40

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
No. 1	1N5-G I-F grid cap, in series with 0.01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F transformer)
No. 2	1A7-G 1st-det. grid cap in series with 0.01 mfd.	455 kc		L5 and L6 (1st I-F transformer)
No. 3	Antenna lead, in series with 200 mmfd.	600 kc	600 kc	L4 (oscillator) L2 (antenna)
No. 4	Antenna lead, in series with 200 mmfd.	1,500 kc	1,500 kc	C15† (oscillator) C3 (antenna)

† Trimmer C16 on gang condenser should be unscrewed one complete turn from tight, before adjusting C15.

Cathode-ray Alignment is the preferable method. Connections for the oscillograph are as follows: Vertical "Hi" to E on the 2nd I-F transformer, Vertical "O" to chassis.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Precautionary Lead Dress

1. Red lead from second i-f transformer to screen terminal of 1N5-G must be dressed close to and along edge of chassis.
2. Twisted green wire from antenna coil to gang must be 9 turns and kept clear of rotor.
3. Blue and green leads to volume control must be dressed close to chassis and between gang and front apron.
4. The opening in the shield of the 1N5-G should be turned away from the chassis and the i-f transformers.
5. Antenna and ground wires shoud be twisted together.

CV-40
Rectifier RCA-5U4-G
Plug-in Resistor .... WW48, Stock No. 34563

POWER OUTPUT (Battery Operation)
Undistorted .... 0.125 watt
Maximum .... 0.300 watt

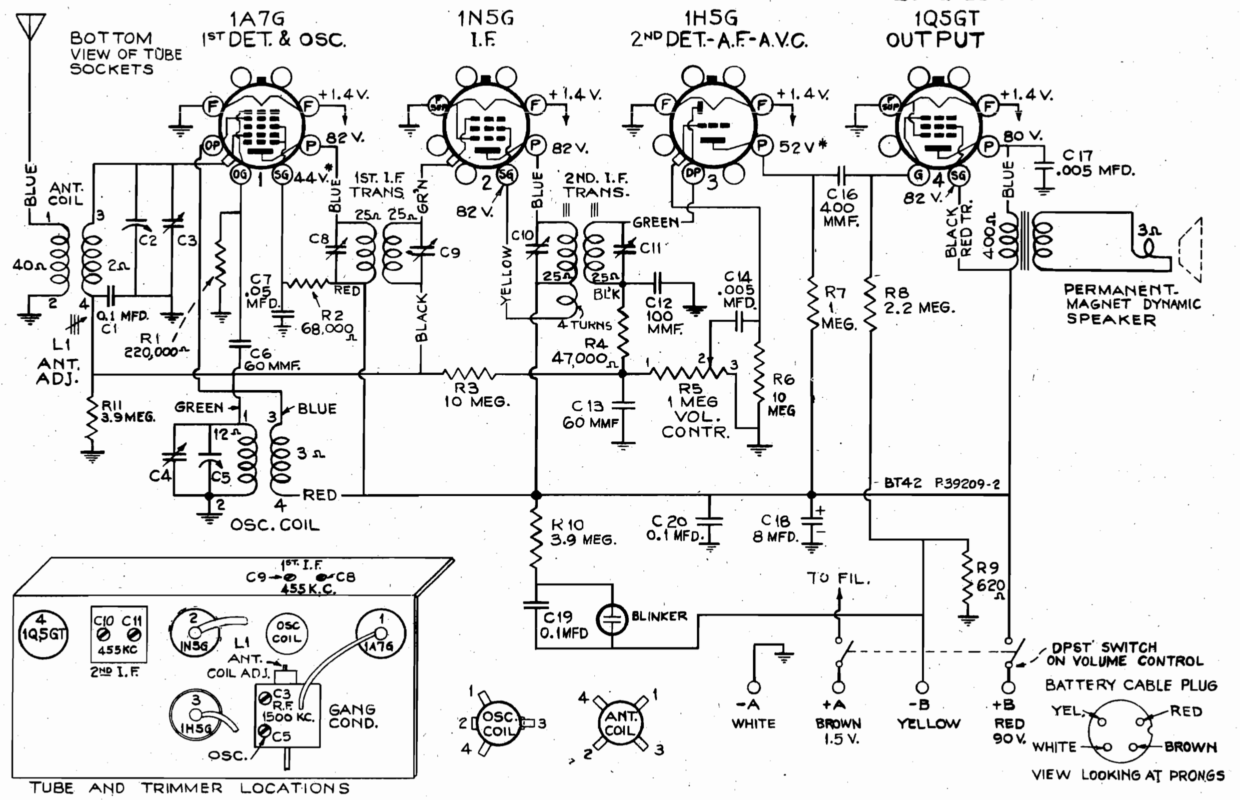
LOUDSPEAKER
Type .... Permanent Magnet Dynamic
Diameter .... BK41, 8 inches; BT41, 5 inches
Voice Coil-Impedance BK41, 2.2 ohms; BT41, 3.0 ohms at 400 cycles

BATTERY REQUIRED
Combination 1½ volt-90 volt A-B Pack

CURRENT CONSUMPTION
"A" at 1.4 volts, 0.25 amp.
"B" at 90 volts, 9.4 ma.
A-C Operation
Use of power unit CV-40 with either Model BK41 or BT41 adapts that receiver for A-C operation.

MODEL BT42, Chassis RC408A
Schematic, Voltage, Socket
Alignment, Trimmers
Lead Dress

RCA MFG. CO., INC.



— 1939 No. 32 —

General Description

The RCA Victor Model BT-42 is a table type battery operated radio receiver.

Features of design include: On and off "Economy" Blinker; 4 RCA 1.4 volt low drain tubes; large horizontal dial; magnetite core transformers; automatic volume control; 16 to 1 tuning ratio; 5" permanent magnet speaker, and an available converter unit (CV40) to convert the receiver to 110 volt AC operation.

Electrical and Mechanical Specifications

Frequency Range .... 540-1,720 kc
Intermediate Frequency .... 455 kc

RCA TUBE COMPLEMENT
(1) RCA-1A7-G .... 1st-Det.—Osc.
(2) RCA-1N5-G .... I-F Amplifier
(3) RCA-1H5-G .... 2nd-Det., A-F, and A.V.C.
(4) RCA-1Q5-G .... Output

BATTERIES REQUIRED
1 "A"—"B" Pack (Eveready No. 748 or equivalent).

CURRENT CONSUMPTION
"A," 0.24 ampere—"B," 10 milliamperes.

POWER OUTPUT
Undistorted .... 0.15 watt
Maximum .... 0.25 watt

LOUDSPEAKER
Type .... 5-inch permanent-magnet dynamic
Voice-coil Impedance .... 3.3 ohms at 400 cycles

Cabinet Dimensions (inches) ..... Height 9¾, Width 17¾, Depth 9¾
Weight—Shipping weight .... 16 pounds
Tuning Drive Ratio .... 16 to 1

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With the gang condenser fully out of mesh, the indicator should point to the extreme right (high frequency) mark on the dial scale.

CAUTION.—When ready to install or replace batteries or tubes or to make any repairs or changes, be sure to turn off power switch.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn Radio Dial to—	Adjust the following for max. peak output—
1	1A7G 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 550 kc End of Dial	C8, C9, C10, C11 (1st and 2nd I-F transformers)
2	Antenna lead (blue) in series with 100 mmfd.	1,500 kc	1,500 kc	C5 (oscillator)
3		600 kc	600 kc	L1 (antenna)*
4		1,500 kc	1,500 kc	C3 (antenna)

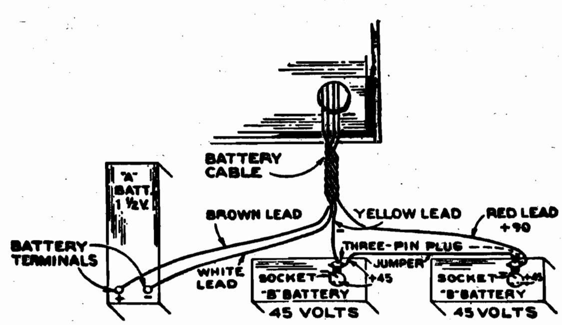
* When adjusting L1 (antenna), trimmer C3 should be in a minimum capacity position (unscrewed).

Precautionary Lead Dress.—

1. All filament (brown) and B+ (red) leads must be dressed away from unshielded I.F. coil.

2. Green grid lead of 1A7G tube to be twisted around antenna (blue) lead for capacity coupling.

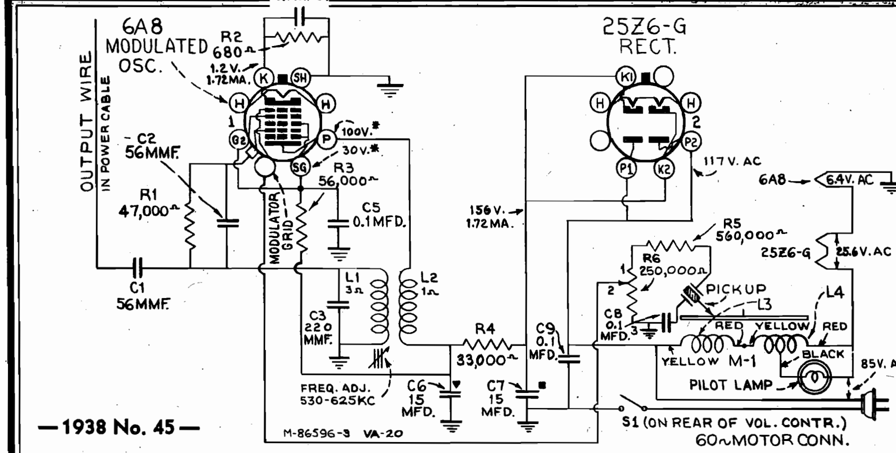
3. Red and brown battery cable leads to be dressed and held against front apron with tape.

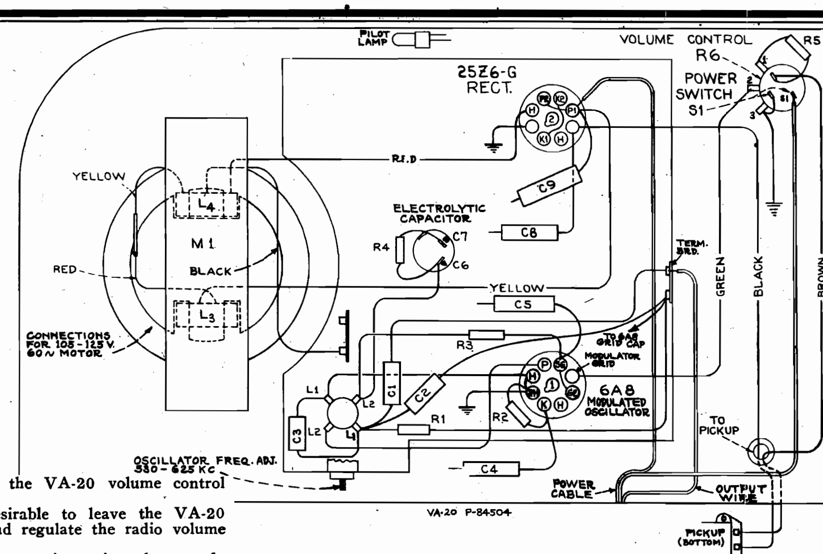


SEPARATE "A" AND "B" BATTERIES

MODEL VA-20, Wireless Record Player Schematic
Set-up Procedure, Notes
Chassis Wiring

RCA MFG. CO., INC.





—1938 No. 45—

General Description

The crystal pickup in Model VA-20 is connected through a volume control to grid No. 1 in an RCA-6A8 tube which functions as a modulated r-f oscillator. The oscillator frequency can be adjusted from 530 to 625 kc by means of a magnetite core in the oscillator transformer, L1-L2. (This is a screwdriver adjustment at the rear of the cabinet.) An output wire is connected to the grid circuit of the oscillator, and is run parallel with the power cable. The output is sufficient to permit operation within approximately 20 feet of a radio receiver.

Electrical and Mechanical Specifications

Frequency Range .... 530-625 kc

Tube Complement

(1) RCA-6A8.......................... Modulator-Oscillator
(2) RCA-25Z6-G....................... Half-Wave Rectifier
Dial Lamp.................... Mazda 47, 6-8 volts, .15 amp.

Power Supply Ratings

A-6...................... 105-125 volts, 60 cycles, 50 watts
A-5...................... 105-125 volts, 50 cycles, 50 watts

Motor

Type.......................... Synchronous (Manual Starting)
Turntable Speed.................................. 78 r.p.m.

Pickup

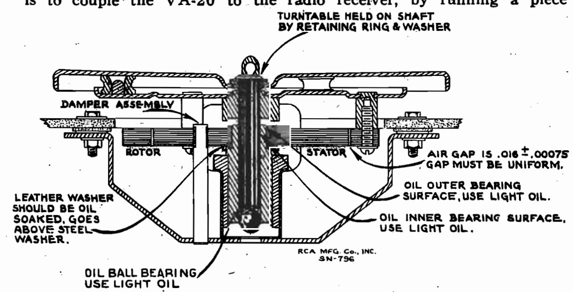
Type.. Crystal
Pickup Impedance................ 100,000 ohms at 1000 cycles
Average Output Voltage............... 1½ volts at 1000 cycles with 250,000 ohm load.

Cabinet Dimensions

Height .... 3⅜ inches
Width .... 12½ inches
Depth .... 8¼ inches
Over-All Height .... 5 inches
Turntable Diameter .... 7 inches
Weight 7¼ lbs. (net), 9½ lbs. (shipping)

Set-Up Procedure

1. Insert plug in power supply outlet, and turn the power-switch—volume control knob on top of VA-20 to full clockwise position. Start a record on the VA-20. The motor is a synchronous manual-starting type, and requires a clockwise spin to start.
2. Tune the radio receiving set to a quiet point between 530-625 kc.
3. Tune the oscillator in the VA-20 to this frequency by adjusting the button on the rear of the VA-20 cabinet to obtain peak output on the receiver. Clockwise rotation decreases the frequency; counter-clockwise rotation increases the frequency.
4. Adjust the radio volume control for the highest volume that is likely to be required, and then use the VA-20 volume control for further adjustment.
5. In noisy locations, it may be desirable to leave the VA-20 volume control turned full clockwise, and regulate the radio volume control for the desired level.
6. If there is insufficient volume, or excessive noise, the remedy is to couple the VA-20 to the radio receiver, by running a piece of insulated wire between the two units: Wrap one end (three or four turns) around the antenna lead-in on the radio, and wrap the other end (three or four turns) around the short wire that projects from the plug on the power cord of the VA-20. With an RCA Master Antenna, wrap the wire around the counter-poise lead where it attaches to the receiver (terminal A3) or to the coupling unit (terminal B).
7. If the radio receiver has push-button tuning, one of the buttons may be set up to tune in the VA-20 oscillator frequency. This button should be marked "Record Player."



Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.

Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

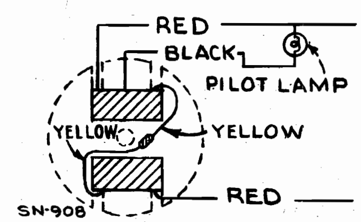
Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

*Note: Voltages with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading. Voltages are measured to chassis, unless otherwise indicated. Values should hold within approximately ± 20% with 117-volt a-c supply.

Precautionary Lead Dress

1. The power supply cord must be dressed between chassis and top of cabinet, away from grid of 6A8, and entirely away from 25Z6-G.
2. All leads to oscillator coil must be as short as possible.
3. All motor leads must be dressed away from rotor.
4. Pickup leads must be dressed away from the top grid of 6A8, and kept away from the 25Z6-G.

Caution: Do not remove turntable from motor while power is turned on, as damage to the tubes will result.



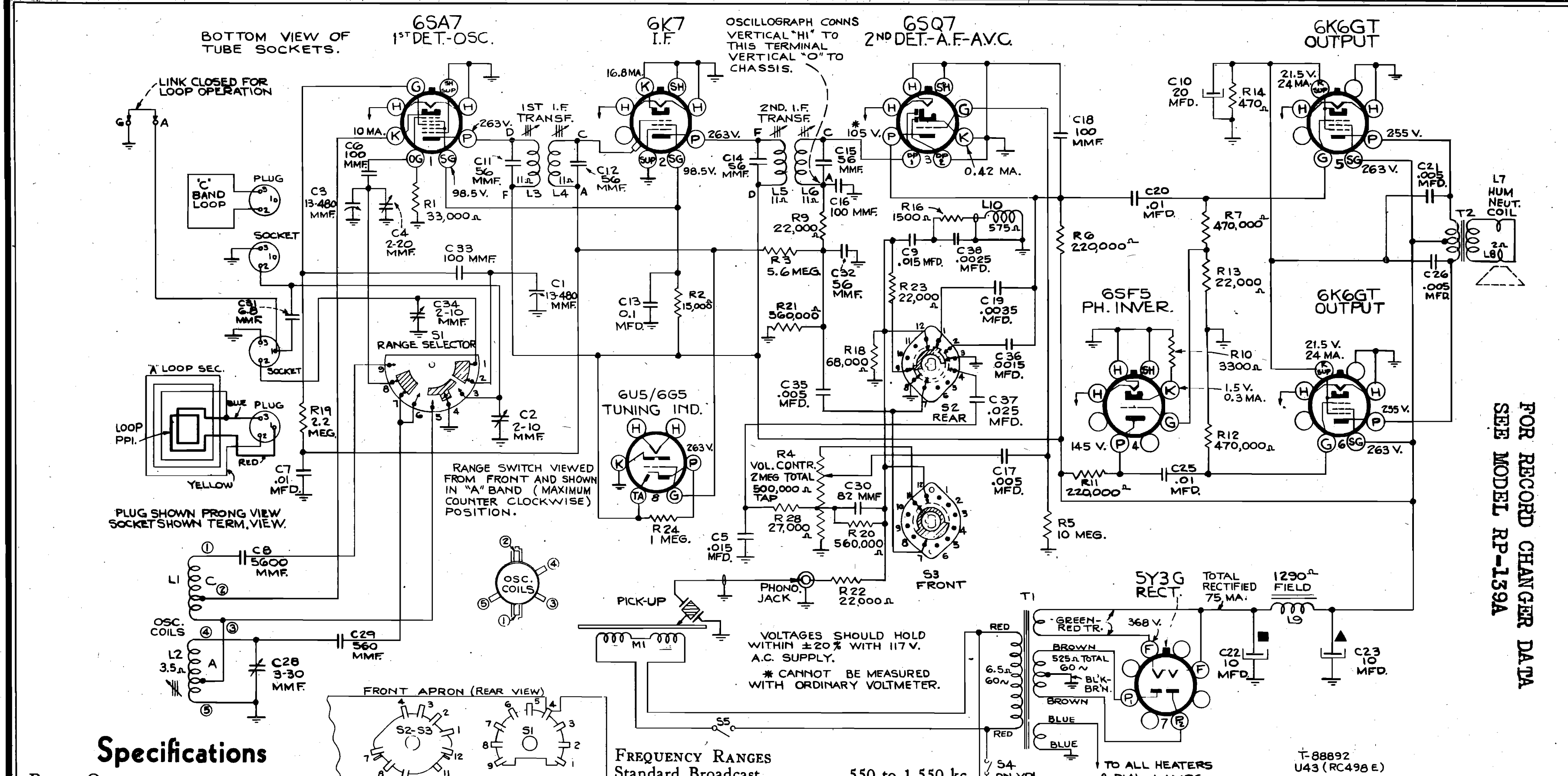
50-Cycle Motor Coil Assembly and Connections
D-C resistance of each coil:

105-125 volts, 60 cycles............................ 36 ohms
105-125 volts, 50 cycles............................ 40 ohms

MODEL U-43, Chassis RC498E
Schematic, Voltage, Tuner

RCA MFG. CO., INC.

FOR RECORD CHANGER DATA
SEE MODEL RP-139A



—1940 No. 7—

First Edition

Specifications

Power Output

Undistorted .... 5 watts
Maximum .... 6 watts

Pilot Lamps (2)... Mazda No. 44 6.3 volts, 0.25 amps.

Power Supply Ratings

A6 ..... 105-125 volts, 60 cycles, 110 watts
A5 ..... 105-125 volts, 50 cycles, 110 watts
B2 ..... 105-125 volts, 25 cycles, 110 watts
C6 ..... 105-130/140-160/200-250 volts, 60 cycles, 110 watts
C5 ..... 105-130/140-160/200-250 volts, 50 cycles, 110 watts

Frequency Ranges

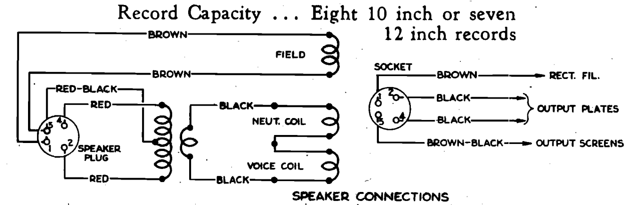
Standard Broadcast .... 550 to 1,550 kc
Short Wave .... 6 to 18 mc
I-F Frequency .... 455 kc

Loudspeaker (RL70L1)

Type .... 12 inch electrodynamic
Voice Coil Impedance at 400 cycles . 2.2 ohms

Automatic Phonograph

Pickup .... Crystal
Record Capacity ... Eight 10 inch or seven 12 inch records



SPEAKER CONNECTIONS

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Set the radio-phono switch to "radio" position and accurately tune in the station for which the first button is to be set.

3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than 1/4 turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Insert the station marker tabs in the recesses above the push-buttons.

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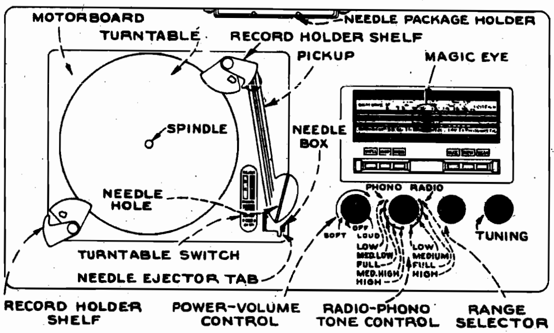
MODEL U-43,Ch.RC498E
Alignment,Trimmers
Socket,Dial Mechanism

RCA MFG. CO., INC.

Alignment Procedure



Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis schematic.

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

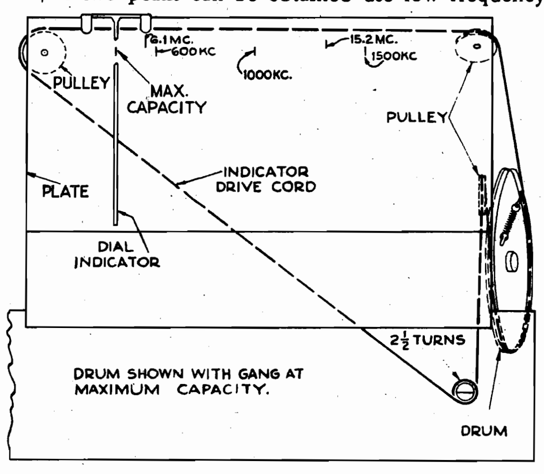
Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	I-F grid through 0.1 mfd capacitor and ground	455 kc	Quiet point between 1,720-1,500 kc	L5 and L6 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd capacitor and ground			L3 and L4 (1st I-F trans.)
3		15.2 mc	15.2 mc	C-4 oscillator*
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
5		6.1 mc	6.1 mc	Spacing between leads from "C" band loop to chassis
6		15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
7		1,500 kc	1,500 kc	C-34 antenna C-28 oscillator
8		600 kc	Rock at 600 kc	L-2 oscillator while rocking
9		1,500 kc	1,500 kc	C-34 antenna C-28 oscillator

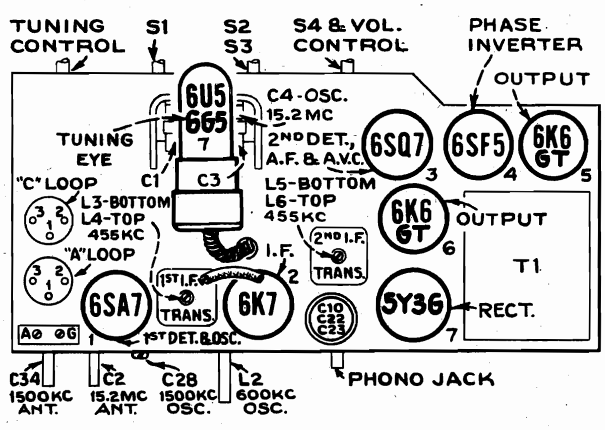
When making adjustments 4 to 9 inclusive the chassis must be in the cabinet, both loops connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.



Dial-Indicator and Drive Mechanism

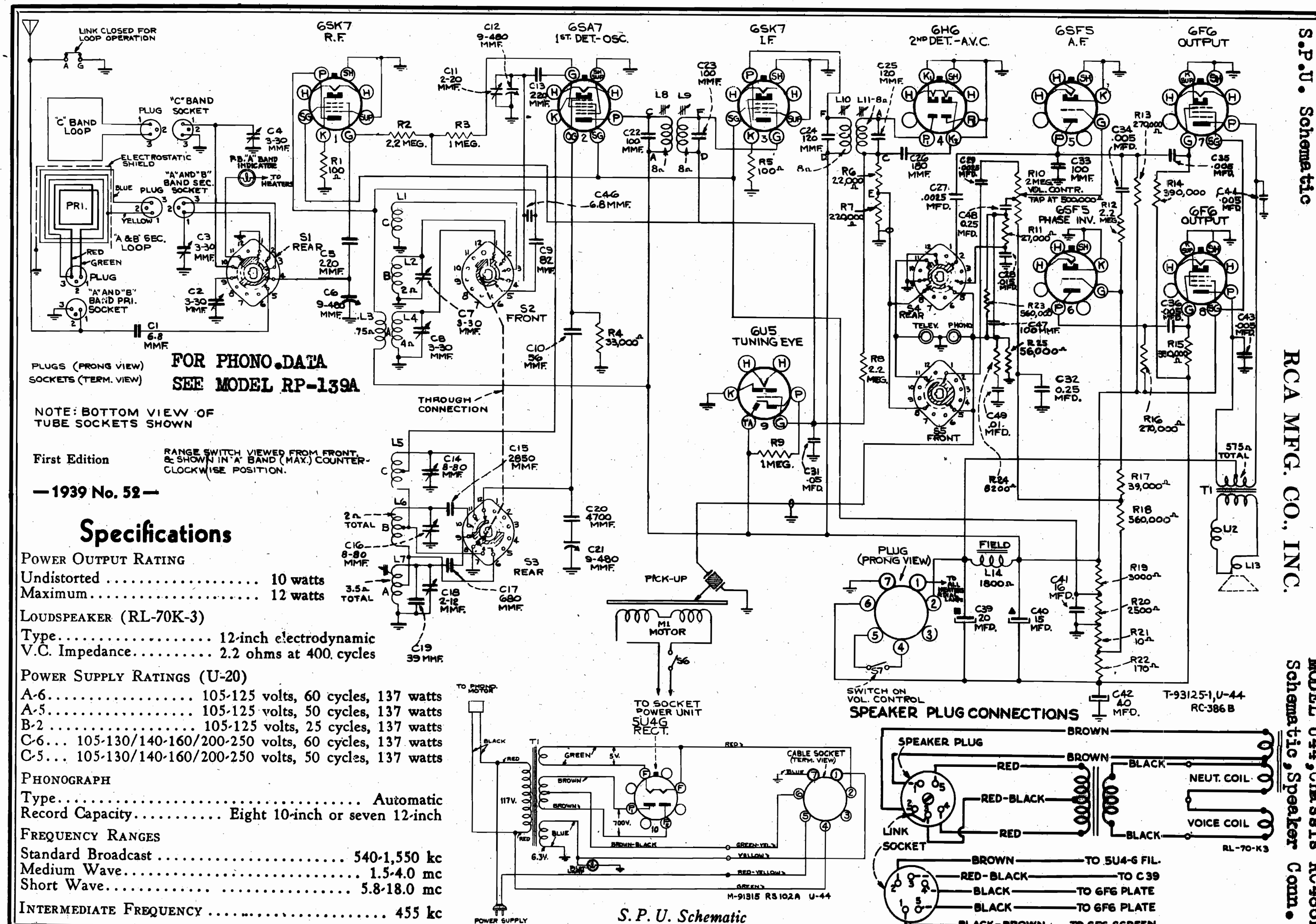


Tube and Trimmer Locations

MODEL U44, Chassis RC486B
Schematic, Speaker Conn.

S.P.U. Schematic

RCA MFG. CO., INC.



First Edition

—1939 No. 52—

Specifications

Power Output Rating

Undistorted .... 10 watts
Maximum .... 12 watts

Loudspeaker (RL-70K-3)

Type .... 12-inch electrodynamic
V.C. Impedance .... 2.2 ohms at 400 cycles

Power Supply Ratings (U-20)

A-6 .... 105-125 volts, 60 cycles, 137 watts
A-5 .... 105-125 volts, 50 cycles, 137 watts
B-2 .... 105-125 volts, 25 cycles, 137 watts
C-6 ... 105-130/140-160/200-250 volts, 60 cycles, 137 watts
C-5 ... 105-130/140-160/200-250 volts, 50 cycles, 137 watts

Phonograph

Type .... Automatic
Record Capacity .... Eight 10-inch or seven 12-inch

Frequency Ranges

Standard Broadcast .... 540-1,550 kc
Medium Wave .... 1.5-4.0 mc
Short Wave .... 5.8-18.0 mc

Intermediate Frequency .... 455 kc

MODEL U44, Chassis RC486B
Chassis Wiring, Voltage

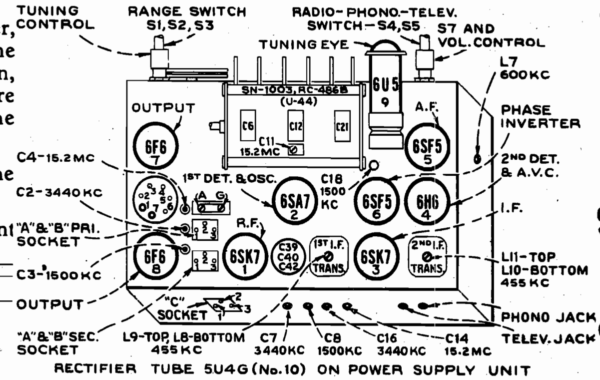
RCA MFG. CO., INC.

Tuner, Trimmers, Socket

Adjustments for Push-Button Tuning

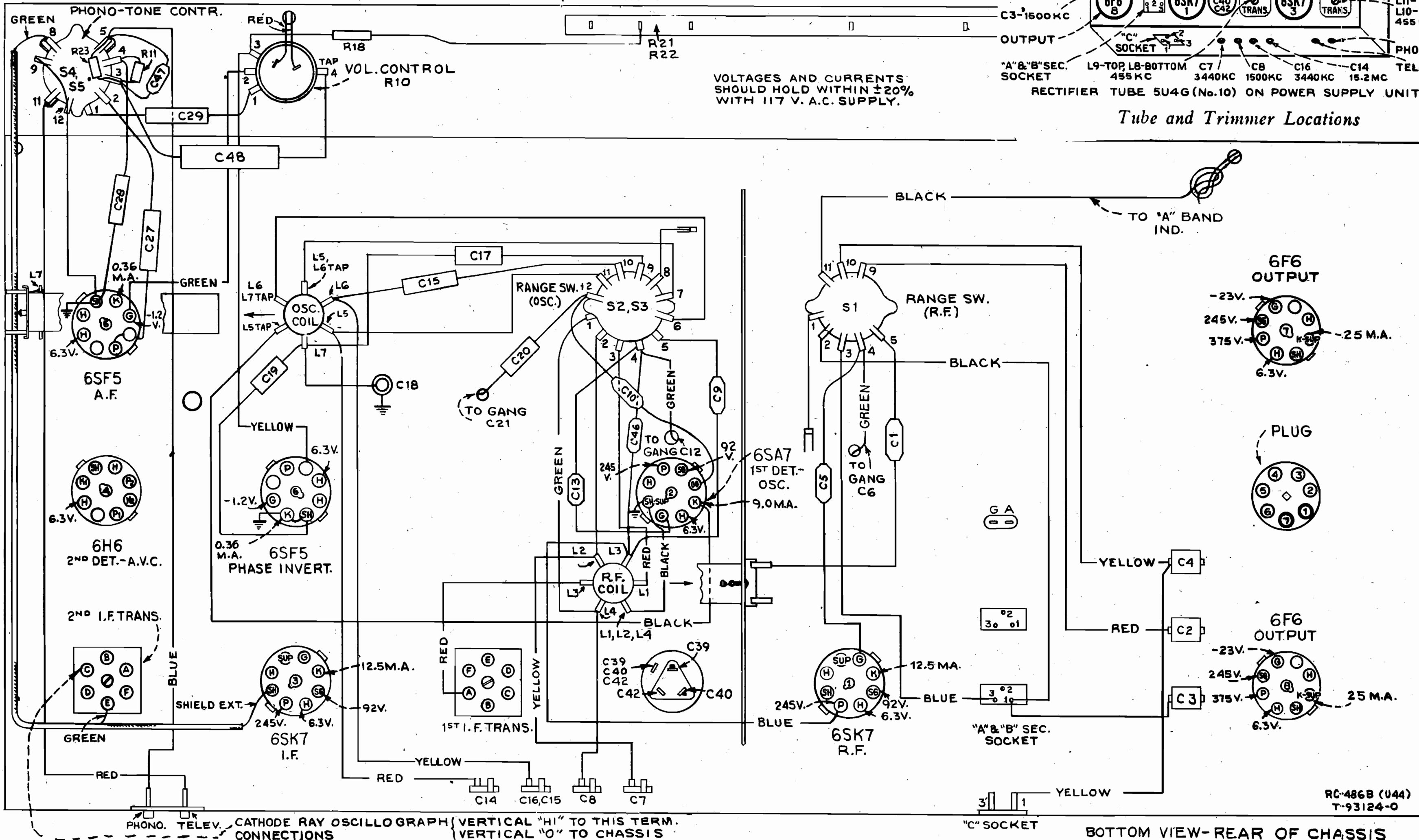
The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Remove station marker tabs; reach through tab holes in escutcheon with small screwdriver and loosen push-button rods.
2. Set the radio-phono-television switch to "radio" position and accurately tune in the station for which the first button is to be set.
3. Press in push-button rod No. 1 with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than 1/4 turn after the rod begins to grip or damage to the mechanism may result.
4. Proceed in a similar manner for the remainder of the push-buttons.
5. Insert the station marker tabs in the recesses adjacent to the push-buttons.



Tube and Trimmer Locations

VOLTAGES AND CURRENTS SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY.



BOTTOM VIEW-REAR OF CHASSIS

RCA MFG. CO., INC.

MODEL U44, Chassis RC486B
Alignment, Lead Dress

Antennas

This receiver is equipped with two loop antennas ("C" band horizontal and fixed, and "A" and "B" band vertical, shielded, and rotatable). During installation the "A" and "B" band loop should be rotated to the position giving maximum signal strength and freedom from noise. If desired, an outside antenna and ground can be connected to the terminals provided and when this is done the link between these terminals must be opened. However, for loop operation this link must be closed. If such an antenna is used it should be approximately 100 feet long.

Centering Loudspeaker Cone

The loudspeaker cone centering support is fastened to the field frame by two screws accessible from the rear of the speaker. The cone can usually be recentered by loosening these screws and moving the support around until the proper position is found without disturbing the dust cover. However, in some cases it may be necessary to remove the front dust cover and insert spacers between the voice coil and pole piece in order to obtain proper centering. A new dust cover should then be installed.

Alignment Procedure

Before proceeding with alignment the following lead dress should be carefully checked:

1. A.C. leads at volume control dressed away from audio leads.
2. C-29 dressed close to chassis.
3. C-48 dressed under volume control.
4. Dress C-44 and 6F6 plate leads away from antenna leads.
5. Leads to phono and television jacks dressed close to end of chassis.
6. Red lead from R.F. coil to range switch short and direct as possible.
7. Leads to loop sockets dressed away from chassis and other leads.
8. Green lead from volume control arm to A.F. grid close to chassis.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis wiring drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — For all alignment operations, keep the six steps in alignment the low side of the test-oscillator should output as low as possible to avoid a-v-c action. For the first be connected to the receiver chassis. Following step 6, the signal must be radiated (see alignment table).

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 240° mark on the calibration scale when the plates are fully meshed.

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" band Quiet point near 600 kc	L10 and L11 (2nd I-F trans.)
2	6SA7 det. grid in series with .01 mfd.			L8 and L9 (1st I-F trans.)
3	6SK7 R-F grid in series with 0.1 mfd.	15.2 mc	15.2 mc (47°) "C" band	C14 (osc.)* C11 (det.)***
4		3.44 mc	3.44 mc (57°) "B" band	C16 (osc.)** C7 (det.)
5		600 kc	600 kc (200°) "A" band	L7 (osc.) Rock gang
6		1,500 kc	1,500 kc (22°) "A" band	C18 (osc.) C8 (det.)
7	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	15.2 mc "C" band	C4 (ant.)
8		6.1 mc	6.1 mc "C" band	Inductance of "C" band loop†
9		Repeat step 7		
10		3.44 mc	3.44 mc "B" band	C2 (ant.)
11		1,500 kc	1,500 kc "A" band	C3 (ant.)
12		600 kc	600 kc "A" band	L7 (osc.) Rock gang
13		1,500 kc	1,500 kc "A" band	C18 (osc.) C8 (det.)

Note.—For steps 7 to 13 inclusive the chassis must be in the cabinet, all loop leads connected and in their normal positions. The dial indicator pointer must be fastened to the drive cord in such a position that it is at the 530 kc mark on "A" scale when the gang condenser plates are fully meshed.

* Use **minimum** capacity peak if two can be obtained. Check to determine that C14 has been adjusted to the correct peak by tuning the receiver to approximately 14.29 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C16 has been adjusted to the correct peak by tuning the receiver to approximately 2.53 mc where a weaker signal should be received.

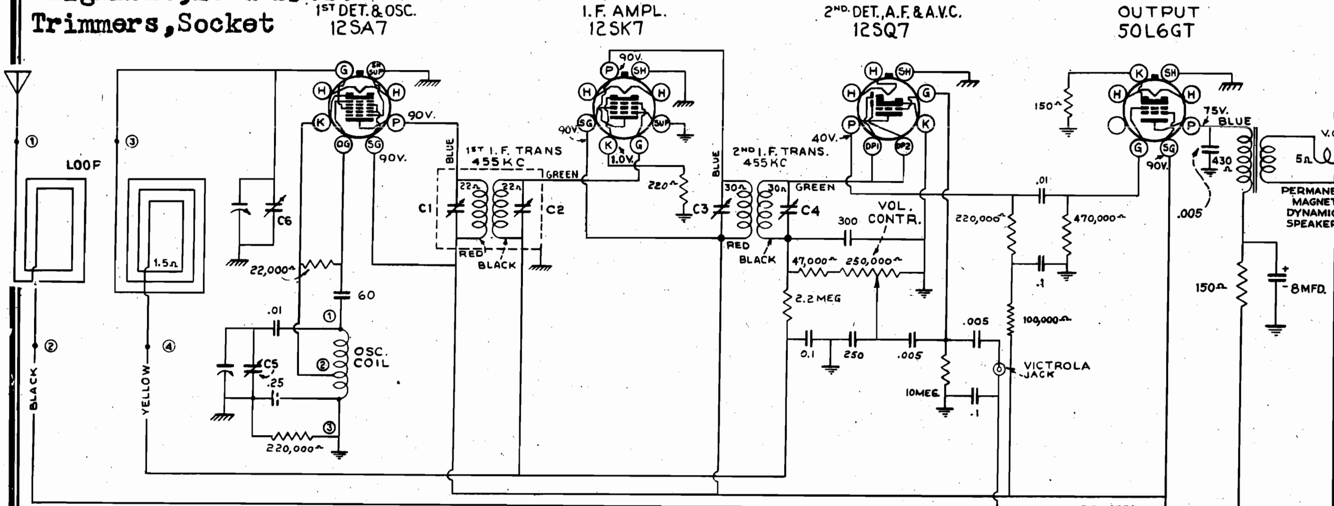
*** Use **maximum** capacity peak if two peaks can be obtained and rock gang condenser while adjusting.

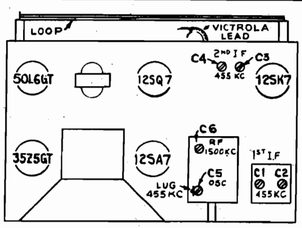
† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

Important.—The oscillator tracks **above** the signal on all bands.

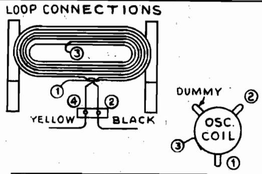
MODELS 45E, 45E-m, 45E-W
Chassis RC-435A
Schematic, Voltage
Alignment, Lead Dress
Trimmers, Socket

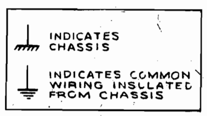
RCA MFG. CO., INC.

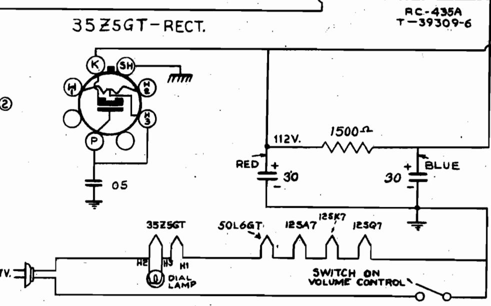




TUBE AND TRIMMER LOCATIONS







POWER SUPPLY RATINGS

A-C Rating . . . . 105-125 volts, 50-60 cycles, 30 watts
D-C Rating . . . . 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted . . . . .6 watts
Maximum . . . . 2.0 watts

LOUDSPEAKER

Type . . . . 5-inch permanent magnet dynamic

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that top edge of pointer just touches rivet in dial plate.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. loop in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Precautionary Lead Dress

1. Dress 2nd I-F green lead close to chassis and under other parts.
2. Dress lead from gang condenser to grid of 12SA7 close to chassis and away from 12SQ7 socket.
3. Dress blue 1st I-F lead under volume control close to chassis.
4. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

STOCK No.	DESCRIPTION	Unit List Price
33296	Spring—Retaining spring for drum	.06
32966	Transformer—First I-F transformer	1.25
32967	Transformer—Second I-F transformer	1.05
33291	Volume control and switch	1.50
	SPEAKER ASSEMBLIES (39213-1)	
33853	Cone—Speaker cone and voice coil	1.75
33851	Speaker complete	4.50
33854	Transformer—Output transformer	1.20
	CHASSIS ASSEMBLIES	
13057	Capacitor—60 mmfd.	.35
12488	Capacitor—250 mmfd.	.35
12952	Capacitor—300 mmfd.	.35
4838	Capacitor—.005 mfd.	.25
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
12484	Capacitor—0.25 mfd.	.30
33952	Capacitor—Electrolytic, 8 mfd.	.50
33850	Capacitor—Electrolytic, 2 sections 30 mfd. each	1.00
34259	Coil—Oscillator coil	.60
32968	Condenser—Variable tuning condenser	2.25
32634	Cord—Drive cord	.10
33662	Drum—Drive drum	.25
33295	Indicator—Dial pointer	.25

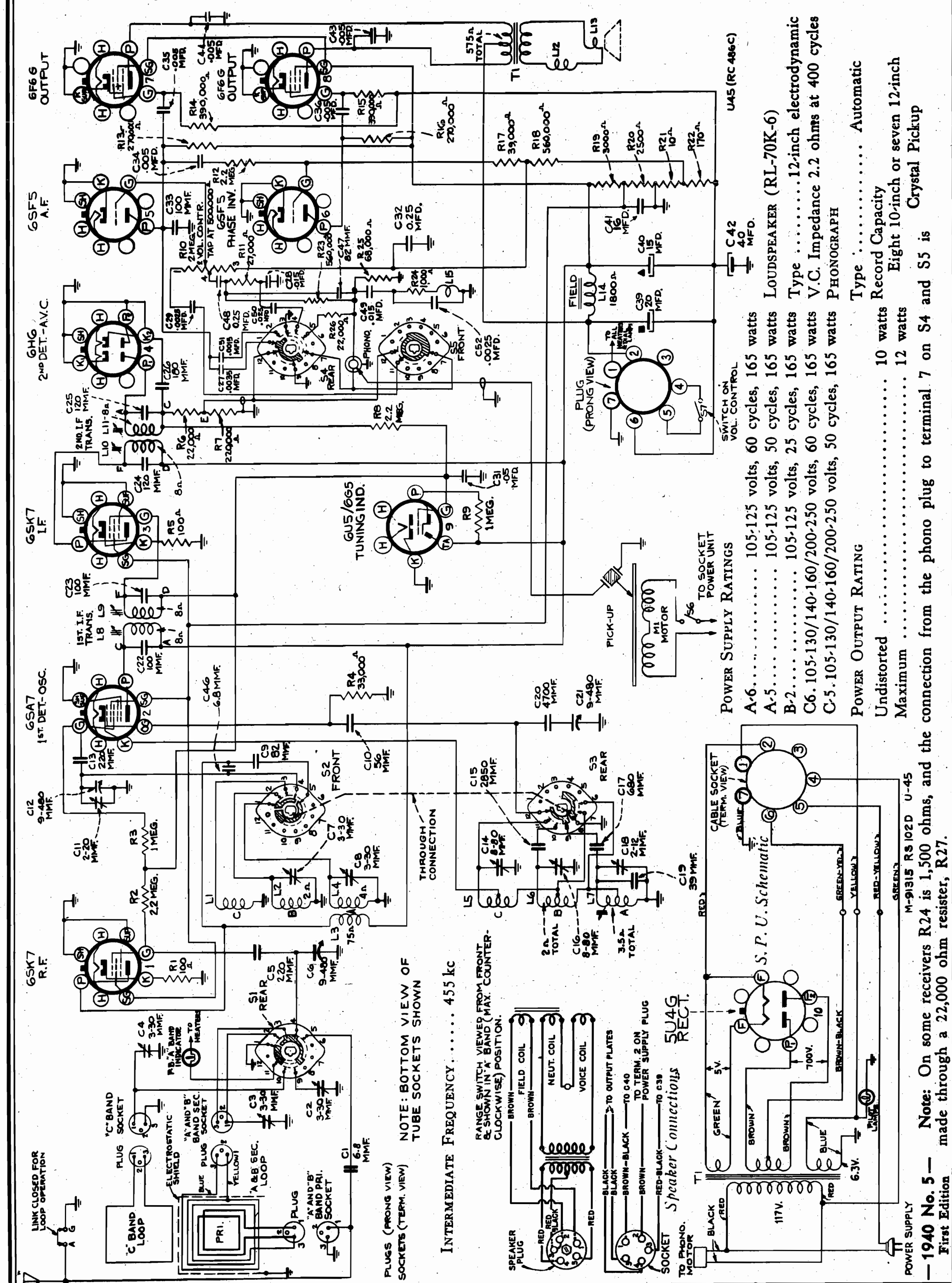
Stock No.	DESCRIPTION	Unit List Price
11765	Lamp—Dial lamp	.15
33663	Loop—Antenna loop complete	1.20
33294	Pulley—Drive cord pulley	.02
13428	Resistor—150 ohms, ¼ watt	.20
14561	Resistor—220 ohms, ¼ watt	.20
3153	Resistor—1,500 ohms, 1 watt	.22
13998	Resistor—22,000 ohms, ¼ watt	.20
12412	Resistor—47,000 ohms, ¼ watt	.20
14560	Resistor—100,000 ohms, ¼ watt	.20
12264	Resistor—220,000 ohms, ¼ watt	.20
12199	Resistor—270,000 ohms, ¼ watt	.20
12679	Resistor—2.2 meg., ¼ watt	.20
33293	Shaft—Tuning knob shaft and bushing	.30
33557	Socket—Dial lamp socket	.30
32537	Socket—Tube socket	.20
31615	Spring—Drive cord spring	.02

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

FOR PHONO. DATA SEE MODEL RP-139A

RCA MFG. CO., INC.

MODEL U45, Chassis RC-486C Schematic



INTERMEDIATE FREQUENCY ...... 455 kc

POWER SUPPLY RATINGS

A-6 .... 105-125 volts, 60 cycles, 165 watts
A-5 .... 105-125 volts, 50 cycles, 165 watts
B-2 .... 105-125 volts, 25 cycles, 165 watts
C6. 105-130/140-160/200-250 volts, 60 cycles, 165 watts
C-5. 105-130/140-160/200-250 volts, 50 cycles, 165 watts

POWER OUTPUT RATING

Undistorted .... 10 watts
Maximum .... 12 watts

LOUDSPEAKER (RL-70K-6)

Type .... 12-inch electrodynamic
V.C. Impedance 2.2 ohms at 400 cycles

PHONOGRAPH

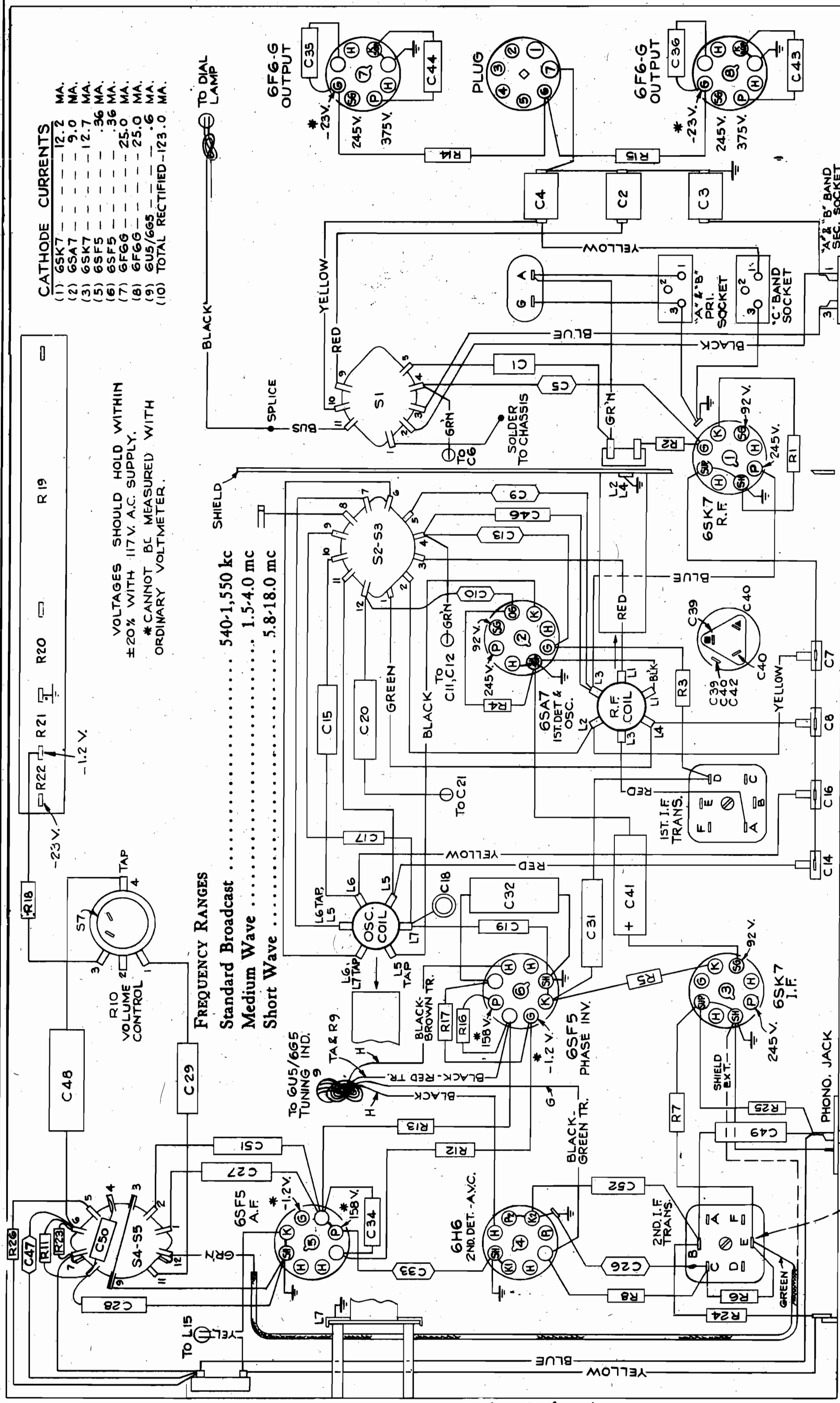
Type .... Automatic
Record Capacity Eight 10-inch or seven 12-inch
Crystal Pickup

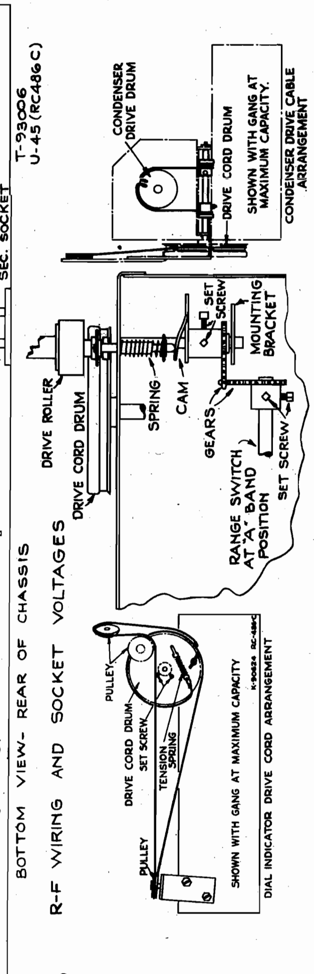
Note: On some receivers R24 is 1,500 ohms, and the connection from the phono plug to terminal 7 on S4 and S5 is made through a 22,000 ohm resister, R27.

MODEL U45, Chassis RC486C
Chassis Wiring, Voltage

RCA MFG. CO., INC.

Lead Dress, Tuner





Note: Adjustment of the cam should be such that in "A" band position when push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

Precautionary Lead Dress:

1. A.C. leads at volume control dressed away from audio leads.
2. C-29 dressed close to chassis.
3. C-48 dressed under volume control.
4. Dress C-44 and 6F6-G plate leads away from antenna leads.
5. Leads to phono jack dressed close to end of chassis.
6. Red lead from R.F. coil to range switch short and direct as possible.
7. Leads to loop sockets dressed away from chassis and other leads.
8. Green lead from volume control arm to A.F. grid close to chassis.

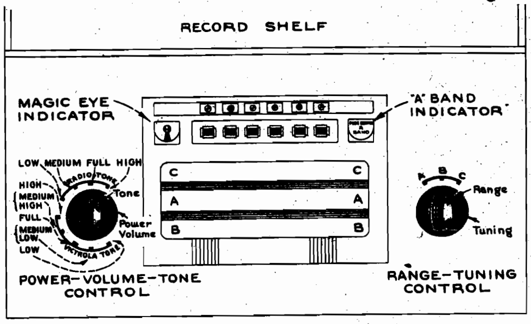
Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Remove station marker tabs; reach through tab holes in escutcheon with small screwdriver and loosen push-button rods.
2. Set the radio-phono switch to "radio" position and accurately tune in the station for which the first button is to be set.
3. Press in push-button rod No. 1 with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than 1/4 turn after the rod begins to grip or damage to the mechanism may result.
4. Proceed in a similar manner for the remainder of the push-buttons.
5. Insert the station marker tabs in the recesses adjacent to the push-buttons.

MODEL U45, Chassis RC486C
Alignment, Trimmers
Socket

RCA MFG. CO., INC.



Controls

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis wiring drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — For all alignment operations, keep the output as low as possible to avoid a-v-c action. For the first six steps in alignment the low side of the test-oscillator should be connected to the receiver chassis. Following step 6, the signal must be radiated (see alignment table).

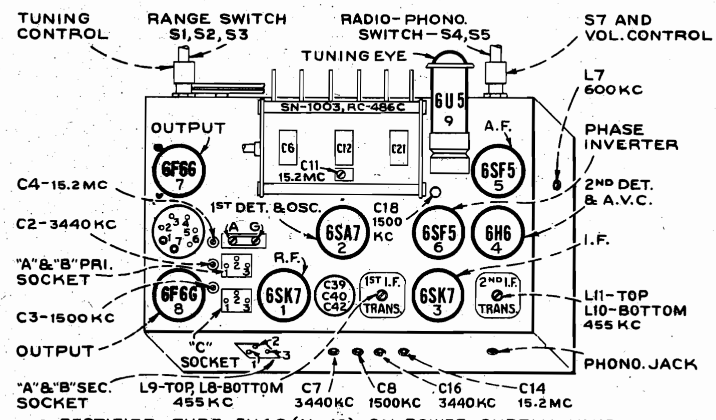
Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

Alignment Procedure

As the first step in r-f alignment, check the position of the drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 240° mark on the calibration scale when the plates are fully meshed.



RECTIFIER TUBE 5U4G (No.10) ON POWER SUPPLY UNIT

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" band Quiet point near 600 kc	L10 and L11 (2nd I-F trans.)
2	6SA7 det. grid in series with .01 mfd.			L8 and L9 (1st I-F trans.)
3	6SK7 R-F grid in series with 0.1 mfd.	15.2 mc	15.2 mc (47°) "C" band	C14 (osc.)* C11 (det.)***
4		3.44 mc	3.44 mc (57°) "B" band	C16 (osc.)** C7 (det.)
5		600 kc	600 kc (200°) "A" band	L7 (osc.) Rock gang
6		1,500 kc	1,500 kc (22°) "A" band	C18 (osc.) C8 (det.)
7	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	15.2 mc "C" band	C4 (ant.)
8		6.1 mc	6.1 mc "C" band	Inductance of "C" band loop†
9		Repeat step 7		
10		3.44 mc	3.44 mc "B" band	C2 (ant.)
11		1,500 kc	1,500 kc "A" band	C3 (ant.)
12		600 kc	600 kc "A" band	L7 (osc.) Rock gang
13		1,500 kc	1,500 kc "A" band	C18 (osc.) C8 (det.)

Note.—For steps 7 to 13 inclusive the chassis must be in the cabinet, all loop leads connected and in their normal positions. The dial indicator pointer must be fastened to the drive cord in such a position that it is at the 530 kc mark on "A" scale when the gang condenser plates are fully meshed.

* Use **minimum** capacity peak if two can be obtained. Check to determine that C14 has been adjusted to the correct peak by tuning the receiver to approximately 14.29 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C16 has been adjusted to the correct peak by tuning the receiver to approximately 2.53 mc where a weaker signal should be received.

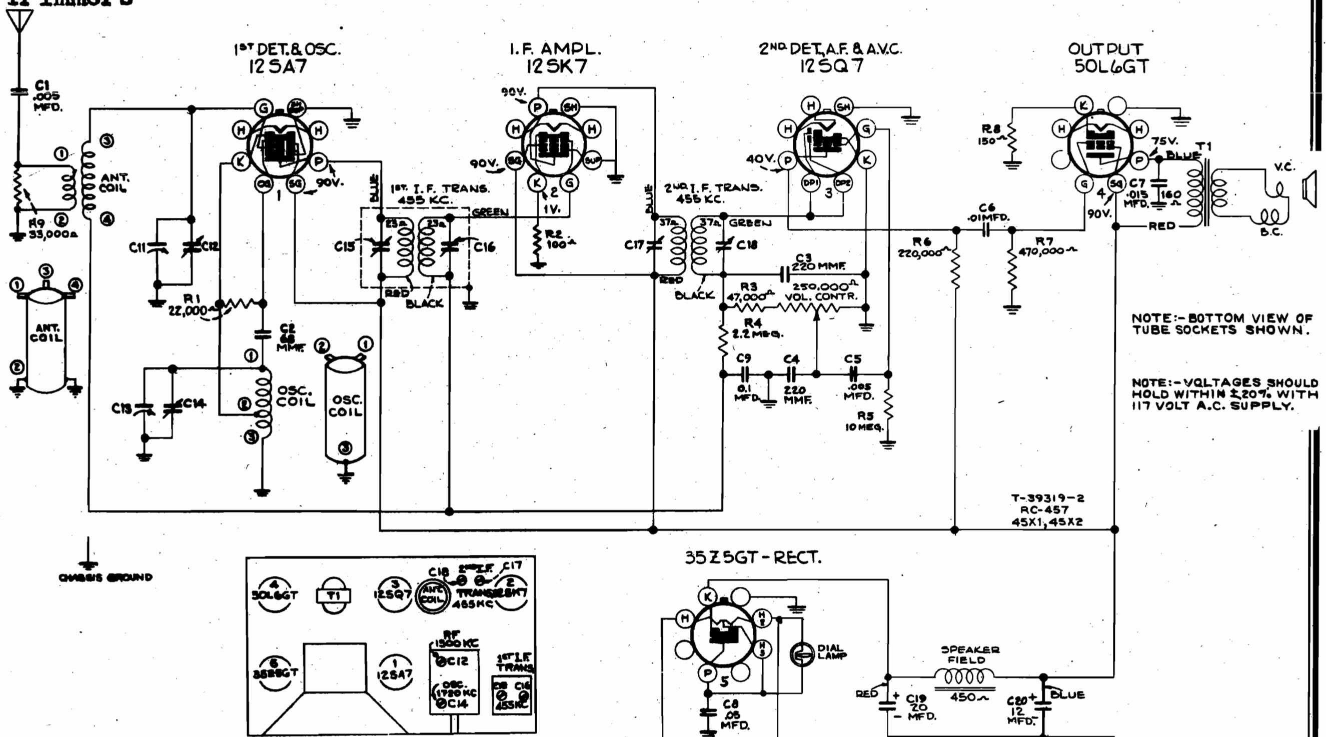
*** Use **maximum** capacity peak if two peaks can be obtained and rock gang condenser while adjusting.

† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

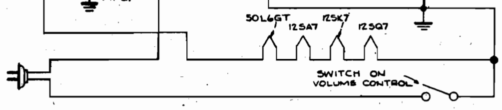
Important.—The oscillator tracks **above** the signal on all bands.

MODELS 45X1, 45X2
Chassis RC457
Schematic, Voltage
Alignment, Socket
Trimmers

RCA MFG. CO., INC.



TUBE LOCATIONS AND ALIGNMENT SCREW POSITIONS



POWER SUPPLY RATINGS

A-C Rating.............. 105-125 volts, 50-60 cycles, 30 watts
D-C Rating.............. 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted.. .6 watts
Maximum.. 2.0 watts

LOUDSPEAKER

Type .... 4-inch Electrodynamic

Output Meter Alignment. — Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Power-Supply Polarity. — For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C15, C16, C17, C18 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C14 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C12 (antenna)

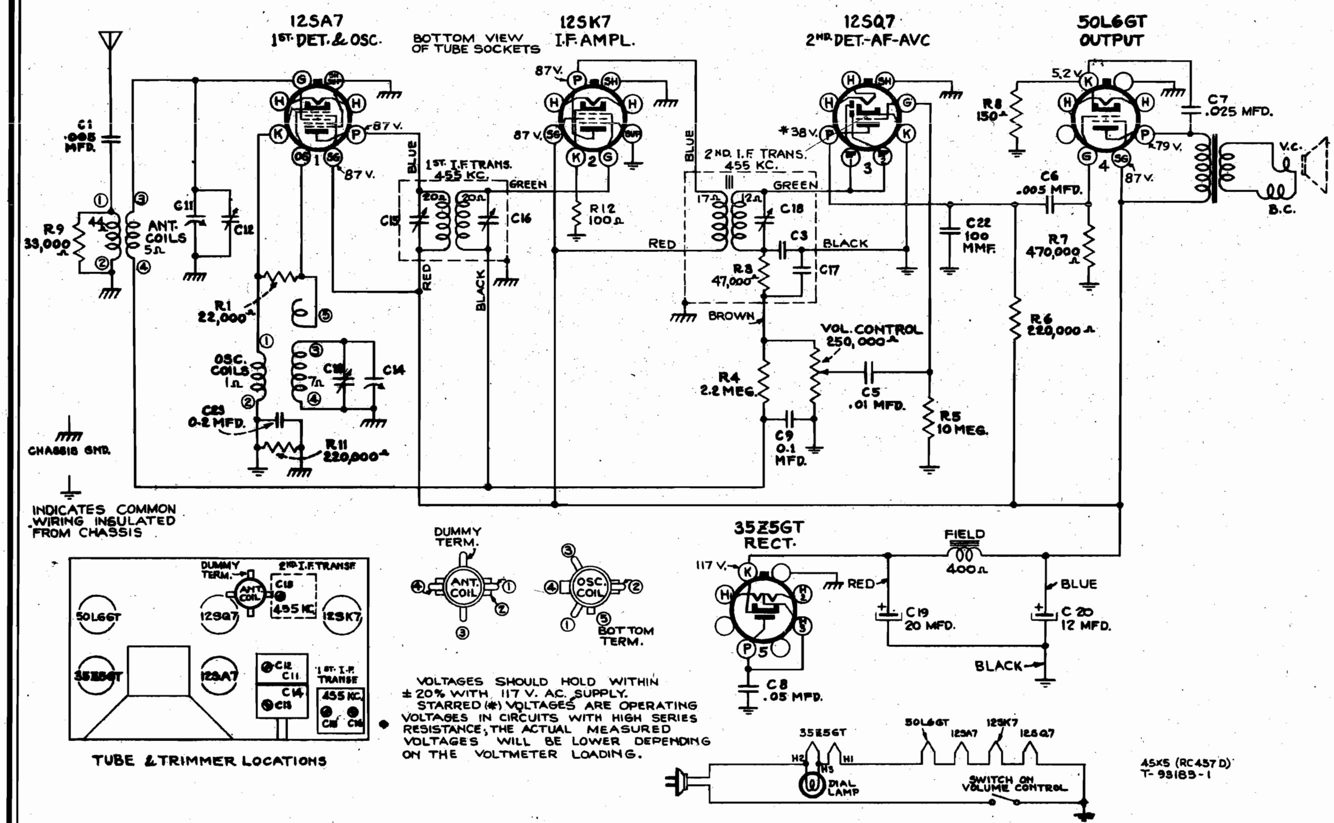
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
13057	Capacitor—68 mmfd. (C2)	.35
12694	Capacitor—220 mmfd. (C3, C4)	.35
33584	Capacitor—.005 mfd. (C1, C5)	.25
4937	Capacitor—.01 mfd. (C6)	.25
30856	Capacitor—.015 mfd. (C7)	.90
32787	Capacitor—.05 mfd. (C8)	.20
4839	Capacitor—0.1 mfd. (C9)	.30
32576	Capacitor—Electrolytic comprising 1 section of 20 mfd and 1 section of 12 mfd.	.90
35115	Coil—Antenna coil	.80
35116	Coil—Oscillator coil	.60
34843	Condenser—Variable tuning condenser	2.20
35113	Control—Volume control and power switch	1.50
32634	Cord—Drive cord	.10
35117	Drum—Tuning condenser drive drum	.40
11765	Lamp—Dial lamp	.15
31193	Lead—Antenna lead	.50
14439	Resistor—100 ohms, ½ watt (R2)	.20
30880	Resistor—150 ohms, ½ watt (R8)	.20
13998	Resistor—22,000 ohms, ½ watt (R1)	.20
12412	Resistor—47,000 ohms, ½ watt (R3)	.20
12264	Resistor—220,000 ohms, ½ watt (R6)	.20
12285	Resistor—470,000 ohms, ½ watt (R7)	.20
12679	Resistor—2.2 megohms, ½ watt (R4)	.20
13601	Resistor—10 megohms, ½ watt (R5)	.20
33305	Shaft—Condenser drive shaft	.25
35118	Shield—Shield can for I.F. transformer Stock No. 35114	.35
32969	Socket—Dial lamp socket	.25
31319	Socket—Tube socket	.25
30585	Spring—Drive cord tension spring	.06
34846	Transformer—Audio transformer	1.25
35114	Transformer—1st I.F. transformer	1.20
33301	Transformer—2nd I.F. transformer	1.20
	SPEAKER ASSEMBLIES (39105-505)	
35120	Cone—Cone complete with voice coil	1.50
35119	Speaker—4-inch dynamic speaker complete	2.85
	MISCELLANEOUS ASSEMBLIES (RR-572)	
35122	Back—Cabinet back for Model 45X1	.25
35125	Back—Cabinet back for Model 45X2	.25
35124	Dial—Glass dial scale	1.00
33317	Fastener—Push on fastener	.02
35123	Knob—Ivory tuning or volume control knob for Model 45X2	.10
35121	Knob—Walnut tuning or volume control knob for Model 45X1	.10
35126	Spring—Retaining spring for knobs Stock No. 35121 and 35123	.03

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Alignment, Trimmers
Socket, Lead Dress

RCA MFG. CO., INC.

MODELS 45X5, 45X6
Chassis RC457D
Schematic, Voltage



—1940 No. 1—

Features of design include: New Type single-ended tubes (12SA7, 12SK7, and 12SQ7); edge-lighted dial; dust proof electrodynamic loudspeaker; and Beam Power Output.

First Edition

Electrical and Mechanical Specifications

Frequency Range .... 540-1,680 kc
Intermediate Frequency .... 455 kc

Tube Complement
(1) RCA-12SA7 .... 1st-Detector-Oscillator
(2) RCA-12SK7 .... I-F Amplifier
(3) RCA-12SQ7 .... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT .... Power Output
(5) RCA-35Z5GT .... Half-Wave Rectifier

Dial Lamp (1) .... Mazda 51, 7.5 volts, 0.2 amp.

Power Supply Ratings
A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

Power Output (125 volt, 60 cycle supply)
Undistorted .... 1.0 watts
Maximum .... 1.25 watts

Loudspeaker
Type .... 4-inch Electrodynamic
Cabinet Dimensions (inches) .. Height 5-1/16, Width 8½, Depth 4¼
Weight (net) .... 4 pounds

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 I-F grid in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C18 (2nd I-F trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C15 and C16 (1st I-F trans.)
3	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C13 (oscillator)
4	Antenna term. of ant. trans. in series with 100 mmfd.	1,400 kc	Resonance on 1,400 kc signal	C12 (antenna)

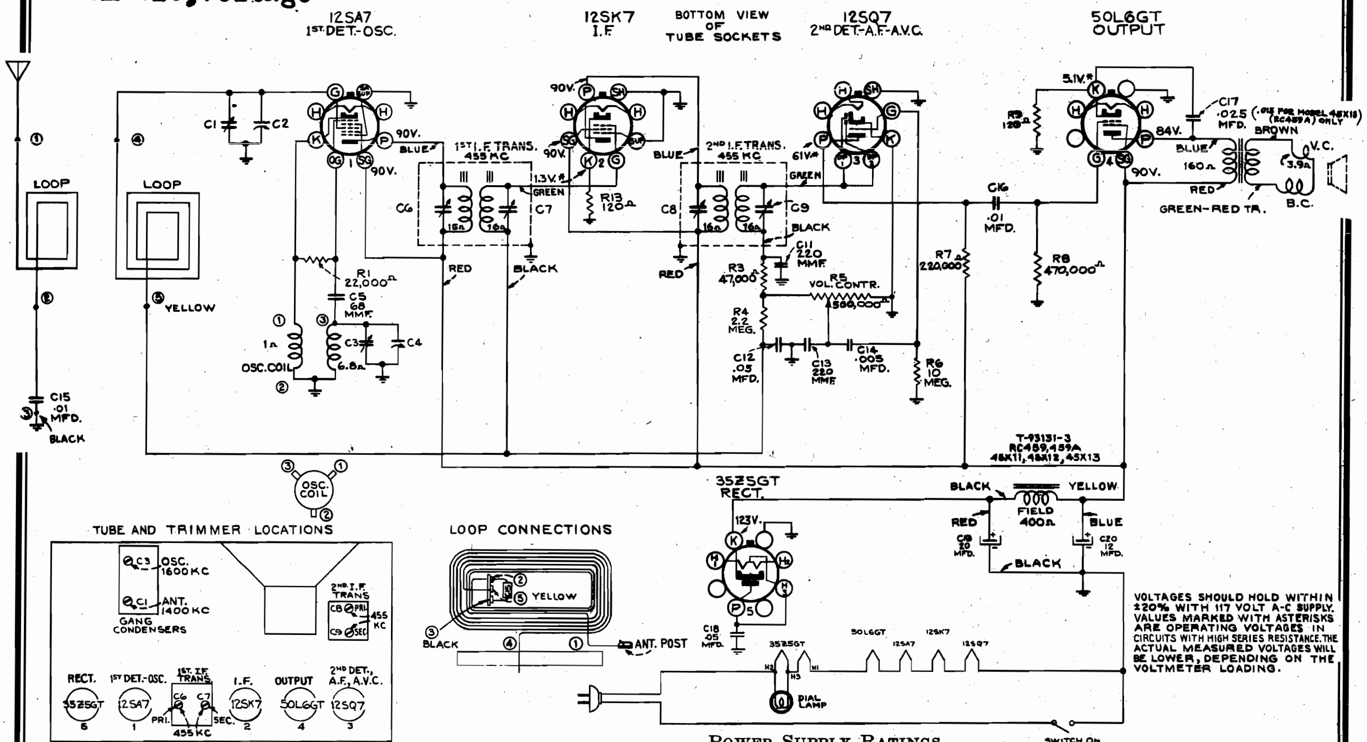
Precautionary Lead Dress

1. Green and blue leads from 1st I.F. transformer should be dressed apart and against chassis.
2. Blue lead of the 2nd I.F. transformer must be dressed against the shield and down between the tube socket and chassis.
3. Dress green diode lead away from 12SQ7 grid resistor and condenser.

MODELS 45X11, 45X12
Chassis RC-459
Schematic, Voltage

RCA MFG. CO., INC.

Alignment, Trimmers
Socket, lead Dress



VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT A-C SUPPLY. VALUES MARKED WITH ASTERISKS ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE. THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that pointer is vertical.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 (I-F) grid in series with .01 mfd.	455 kc	Quiet point at 600 kc end of dial	C8, C9 (2nd I-F trans.)
2	Tuning condenser stator (ant.) in series with .01 mfd.			C6, C7 (1st I-F trans.)
3	Radiation loop consisting of two turns of wire 18 inches in diameter	1,600 kc	Full clockwise (out of mesh)	C3 (oscillator)
4		1,400 kc	Resonance on 1,400 kc signal	C1 (antenna)

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-459) (RC-459A)	
13057	Capacitor—68 mmfd. (C5)	.35
12694	Capacitor—220 mmfd. (C11, C13)	.35
33584	Capacitor—.005 mfd. (C14)	.25
4937	Capacitor—.01 mfd. (C15, C16)	.25
11315	Capacitor—.015 mfd. (C17) (RC-459A)	.20
30938	Capacitor—.025 mfd. (C17) (RC-459)	.20
32787	Capacitor—.05 mfd. (C12)	.20
32576	Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd.	.90
34443	Coil—Oscillator coil	.60
35053	Condenser—Variable tuning condenser less drive drum	2.00

Power Supply Ratings

A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

Power Output (125 volt, 60 cycle supply)

Undistorted .... 1.0 watts
Maximum .... 1.5 watts

Precautionary Lead Dress

1. Audio coupling capacitor to volume control must be dressed under the terminal board and down against the corner of the chassis.

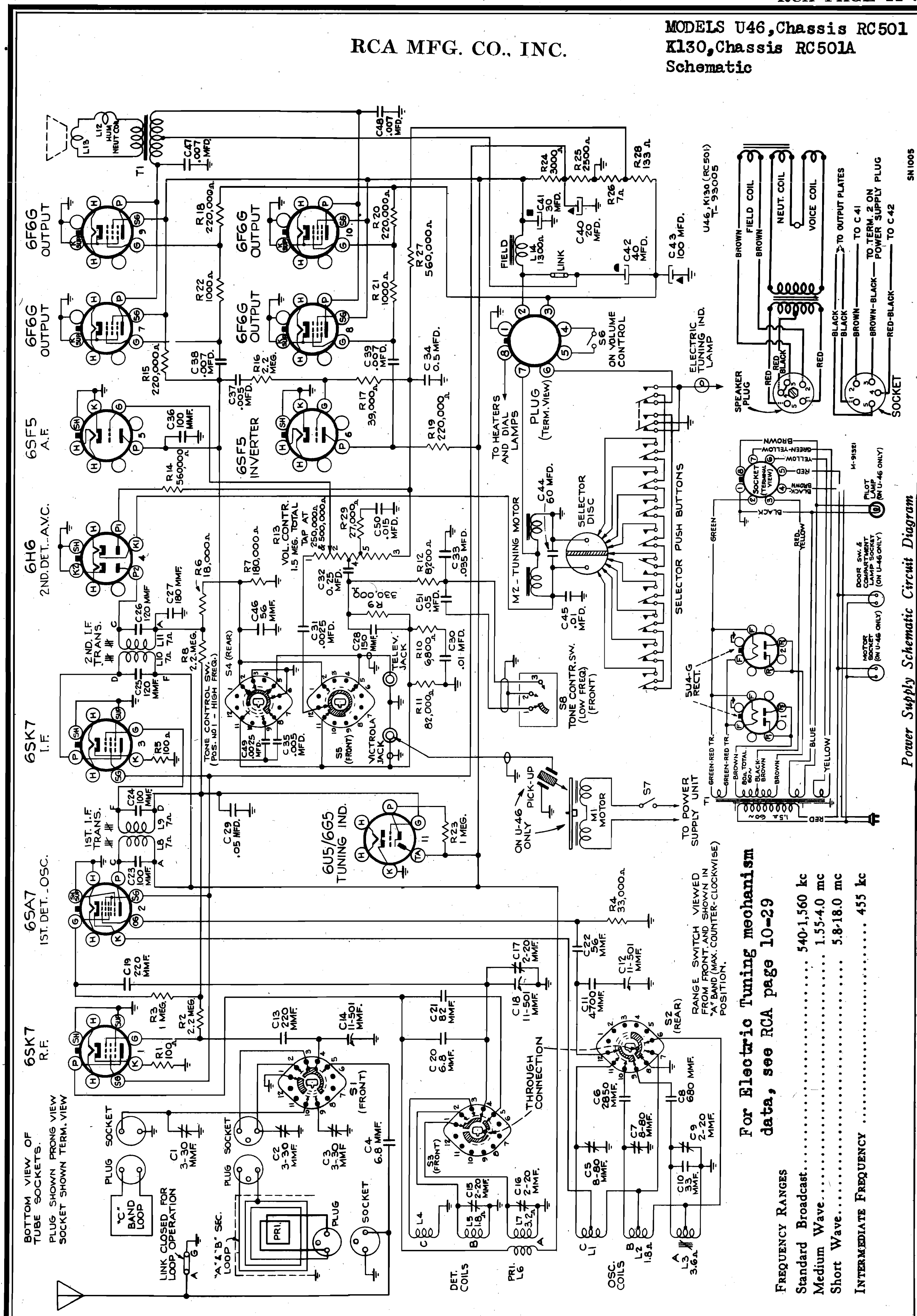
2. The voice coil leads from the output transformer to the speaker must be dressed away from the terminal on the terminal-board to which the above audio coupling capacitor is connected.

3. The output tube bypass condenser must be dressed away from the 12SQ7 tube.

STOCK No.	DESCRIPTION	Unit List Price
35058	Shaft—Tuning condenser drive shaft	.20
34449	Socket—Dial lamp socket	.30
31319	Socket—Tube socket	.25
30585	Spring—Drive cord tension spring	.06
35056	Transformer—Output transformer	1.30
35054	Transformer—1st I.F. transformer	1.75
35055	Transformer—2nd I.F. transformer	1.75
	SPEAKER ASSEMBLIES (39223-2)	
35065	Cone—Cone complete with voice coil	1.20
34174	Transformer—Output transformer	1.25
	SPEAKER ASSEMBLIES (RL 86-2)	
32907	Cap—Dust cap	.02
35066	Cone—Cone complete with voice coil	1.30
34450	Speaker—5-inch dynamic speaker complete with cone and voice coil less output transformer	3.25
35057	Control—Volume control and power switch	1.50
32634	Cord—Tuning condenser drive cord	.10
35063	Drum—Tuning condenser drive drum	.30
35062	Indicator—Station selector indicator	.20
11765	Lamp—Dial lamp	.15
35061	Loop—Antenna loop complete	1.95
12071	Resistor—120 ohms, ¼ watt (R13)	.20
32535	Resistor—120 ohms, ½ watt (R9)	.20
13998	Resistor—22,000 ohms, ¼ watt (R1)	.20
12412	Resistor—47,000 ohms, ¼ watt (R3)	.20
12264	Resistor—220,000 ohms, ¼ watt (R7)	.20
12285	Resistor—470,000 ohms, ¼ watt (R8)	.20
12679	Resistor—2.2 megohms, ¼ watt (R4)	.20
13601	Resistor—10 megohms, ¼ watt (R6)	.20
35059	Scale—Dial scale	.65

MODELS U46, Chassis RC501
K130, Chassis RC501A
Schematic

RCA MFG. CO., INC.



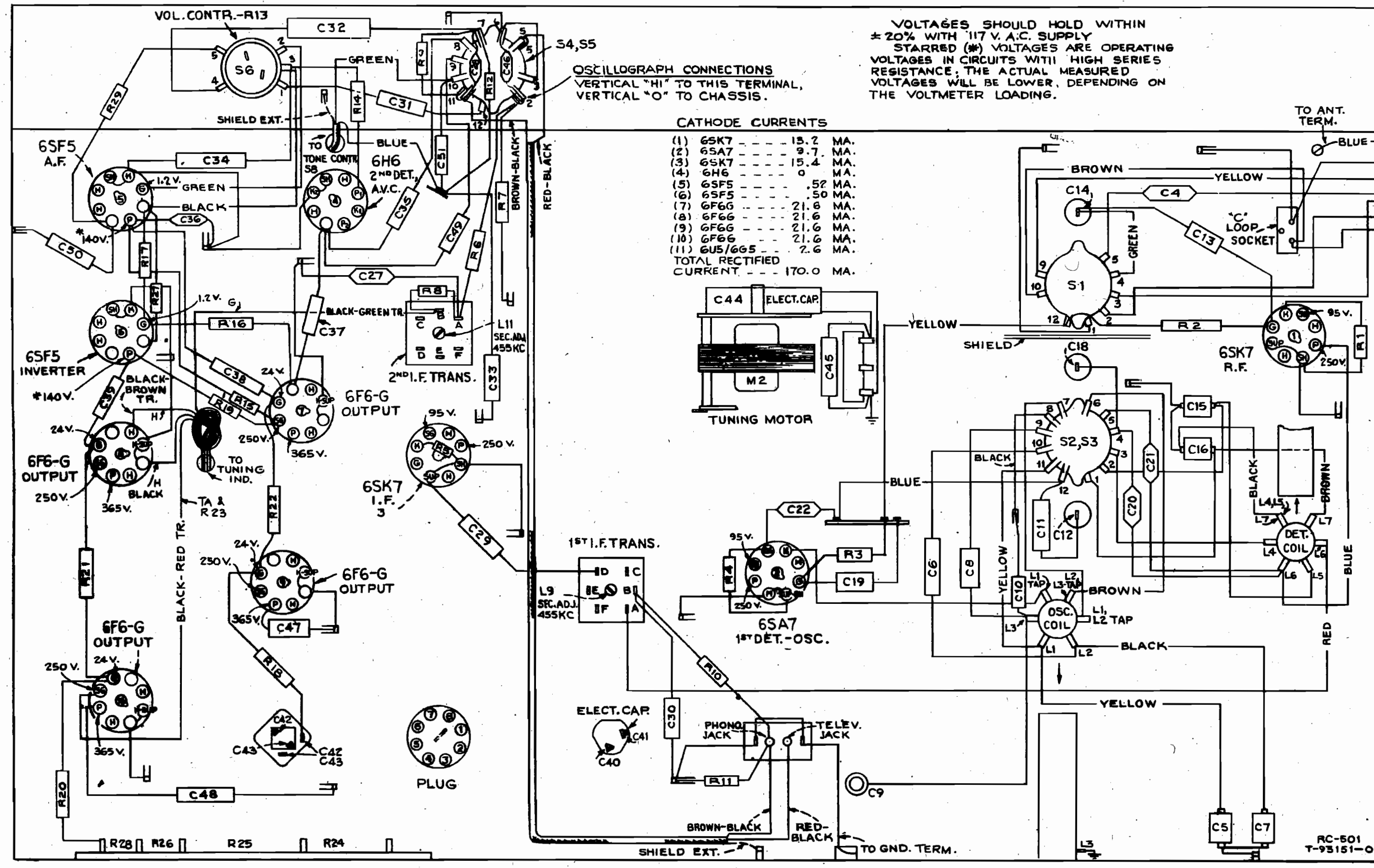
For Electric Tuning mechanism data, see RCA page 10-29

FREQUENCY RANGES

Standard Broadcast	540-1,560 kc
Medium Wave	1.55-4.0 mc
Short Wave	5.8-18.0 mc
INTERMEDIATE FREQUENCY	455 kc

MODELS U46, K130
Chassis Wiring, Voltage

RCA MFG. CO., INC.



R-F Wiring Diagram and Socket Voltages

Loudspeaker (RL-76B-5)

Type .... 12-inch electrodynamic
V.C. Impedance .... 11.5 ohms at 400 cycles

Power Supply Ratings K-130 (U-46, 50 watts additional)

Rating A .... 105-125 volts, 50-60 cycles, 200 watts
Rating B .... 105-125 volts, 25-60 cycles, 200 watts
Rating C .... 105-130, 140-160, 200-250 volts, 40-60 cycles, 200 watts

Pilot Lamps .... Mazda No. 44, 6.3 volts, 0.25 amp.; Mazda No. 47, 6.3 volts, 0.15 amp.

Power Output Rating

Undistorted .... 20 watts
Maximum .... 22 watts

Phonograph (Model U-46 only)

Type .... Automatic
Record Capacity .... Eight 10-inch or Seven 12-inch
Turntable Speed .... 78 r.p.m. (Adjustable)
Type Pickup .... Crystal
Pickup Impedance .... 100,000 ohms at 1,000 cycles

MODEL K50, 2nd Production
Alignment, Lead Dress, Parts

RCA MFG. CO., INC.

MODELS U46, K130
Alignment, Trimmers
Socket

MODELS U-46, K-130

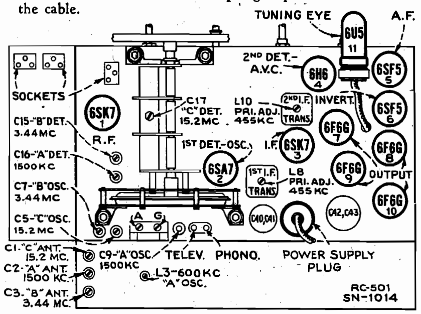
Test-Oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action. For the first eight steps in alignment the low side of the test-oscillator should be connected to the receiver chassis. Following step 8, the signal must be radiated.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during the first eight steps of alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.



Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" band quiet point	L10 and L11 (2nd I-F trans.)
2	6SA7 det. grid in series with .01 mfd.			L8 and L9 (1st I-F trans.)
2A	With input to 6SA7 grid, do not re-adjust 2nd I-F trans. after 1st I-F trans. has been adjusted.			
3	Front section of gang in series with .01 mfd.	15.2 mc	"C" band 15.2 mc (144°)	C5 (osc.)* C17 (det.)** Rock gang
4		3.44 mc	"B" band 3.44 mc (136°)	C7 (osc.)* C15 (det.)**
5		600 kc	"A" band 600 kc (29.5°)	L3 (osc.)
6		1,500 kc	"A" band 1,500 kc (165°)	C9 (osc.) C16 (det.)
7		600 kc	"A" band 600 kc (295°)	L3 (osc.) Rock gang
8		Repeat step 6		
9	Following step 8, a radiated signal must be used for the remainder of the alignment. One or two turns of wire forming a loop approximately 18 inches in diameter connected across the output of a test-oscillator such as RCA Model 153, or Stock No. 9595 (TMV-97C), etc., will be suitable. For the adjustments using the radiated signal, the chassis must be placed in the cabinet and the receiver loops connected.	15.2 mc	"C" band; 15.2 mc	C1 (ant.)
10		6.1 mc	"C" band; 6.1 mc	Inductance of "C" band loop†
11		Repeat step 9		
12		3.44 mc	"B" band; 3.44 mc	C3 (ant.)
13		1,500 kc	"A" band; 1,500 kc	C2 (ant.)
14		600 kc	"A" band; 600 kc	L3 (osc.) Rock gang
15		1,500 kc	"A" band; 1,500 kc	C9 (osc.) C16 (det.)

* Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver approximately 910 kc lower where a weaker signal should be received.

** Use maximum capacity peak if two can be obtained.

† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

Important.—The oscillator tracks above the signal on all bands.

MODEL K-50, 2nd Production

Precautionary Lead Dress:

Before proceeding with alignment dress power cord leads away from 6SQ7 socket and close as possible to end of chassis; dress ground wire to volume control between power leads and audio grid; and dress lead from phono switch to volume control as far away from power leads as possible.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis schematics.

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid through 0.1 mfd. capacitor and ground	455 kc	Quiet point between 600-700 kc	L4 and L5 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd. capacitor and ground			L2 and L3 (1st I-F trans.)
3	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	1,500 kc	C2 antenna C5 oscillator*
4		600 kc	Rock at 600 kc	L1 oscillator while rocking
5		1,500 kc	1,500 kc	C2 antenna C5 oscillator*

When making adjustments 3 to 5 inclusive the chassis must be in the cabinet, the loop connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal.

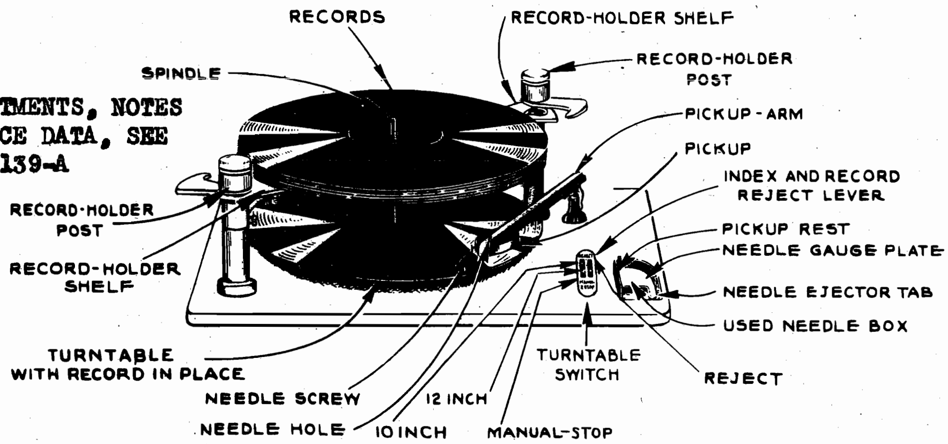
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-497)	
33719	Belt—Adjusting belt for push button arms	.05
34724	Board—Antenna-Ground board	.25
33817	Capacitor—Mica trimmer comprising 1 section of 2-20 mmfd. (C2, C5)	.30
12948	Capacitor—33 mmfd. (C26)	.35
30949	Capacitor—56 mmfd. (C6, C7, C10, C11)	.25
12723	Capacitor—56 mmfd. (C23)	.35
12720	Capacitor—100 mmfd. (C12, C24)	.35
12694	Capacitor—220 mmfd. (C14)	.35
12537	Capacitor—560 mmfd. (C3)	.35
30303	Capacitor—.0035 mfd. (C22)	.40
33584	Capacitor—.005 mfd. (C13, C16, C27)	.25
4937	Capacitor—.01 mfd. (C8, C15, C21)	.25
4839	Capacitor—0.1 mfd. (C9)	.30
32240	Capacitor—Electrolytic comprising 2 sections of 10 mfd. and 1 section of 20 mfd.	1.45
33724	Coil—Oscillator coil	.75
33635	Condenser—6 button tuning condenser	5.15
33630	Control—Tone control	1.00
34796	Control—Volume control and power switch	2.00
32634	Cord—Drive cord	.10
33633	Indicator—Station selector indicator	.20
11765	Lamp—Dial lamp	.15
34795	Plate—Dial plate complete less tuner and dial	1.00
5119	Plug—3 contact female plug for speaker cable	.25
31388	Resistor—390 ohms, 1 watt (R8)	.22
33489	Resistor—15,000 ohms, 2½ watt (R2)	.55
13998	Resistor—22,000 ohms, ¼ watt (R12)	.20
12738	Resistor—27,000 ohms, ¼ watt (R10)	.20
12454	Resistor—33,000 ohms, ¼ watt (R1)	.20
12285	Resistor—470,000 ohms, ¼ watt (R6, R7)	.20
12486	Resistor—560,000 ohms, ¼ watt (R13)	.20
12679	Resistor—2.2 megohms, ¼ watt (R11)	.20
11668	Resistor—5.6 megohms, ¼ watt (R3)	.20
13601	Resistor—10 megohms, ¼ watt (R5)	.20
33735	Screw—Push button adjusting and locking screw	.05
33725	Shaft—Drive shaft	.30
34411	Shaft—Drive shaft	.20
34723	Socket—Antenna loop socket	.15
31364	Socket—Dial lamp socket	.20
14278	Socket—Phonograph input socket and jack	.25
31319	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
33720	Spring—Push button arm return spring	.02
33634	Switch—"Radio-Phono" switch	.30
31575	Transformer—Power transformer (100-120 and 200-240) volt 50-60 cycle	8.35
33112	Transformer—Power transformer 105-125 volt, 50-60 cycle	4.30
33618	Transformer—Power transformer 110 volt, 25-60 cycle	6.40
32263	Transformer—1st I.F. transformer	2.30
34719	Transformer—2nd I.F. transformer	1.75
33726	Washer—"C" washer for drive shaft	.02
	SPEAKER ASSEMBLIES (RL-70J2)	
31825	Cap—Dust cap	.02
11469	Coil—Neutralizing coil (L6)	.30
33116	Coil—Speaker field coil (L8)	2.10
31275	Cone—Speaker cone and voice coil (L7)	1.75
5118	Plug—3 contact male connector plug	.25
33779	Transformer—Output transformer (T2)	1.50
	MISCELLANEOUS ASSEMBLIES	
33731	Button—Push button	.15
31456	Cover—Protective cover for push button markers	.08
34801	Dial—Glass dial scale	1.50
33637	Escutcheon—Dial and push button escutcheon	.80
30863	Knob—Tuning, tone control, or volume control knob	.15
34800	Loop—Antenna loop	6.00
33973	Marker—Station markers	.45
32641	Plug—3 prong male plug for antenna loop	.10
30900	Spring—Retaining spring for knob Stock 30863 and Button Stock 33731	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

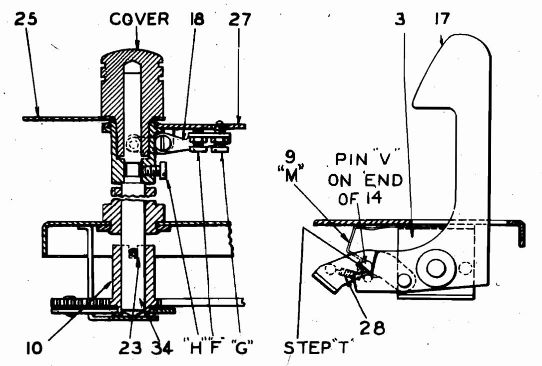
MODELS U46, K130
Record Changer
Assembly

RCA MFG. CO., INC.

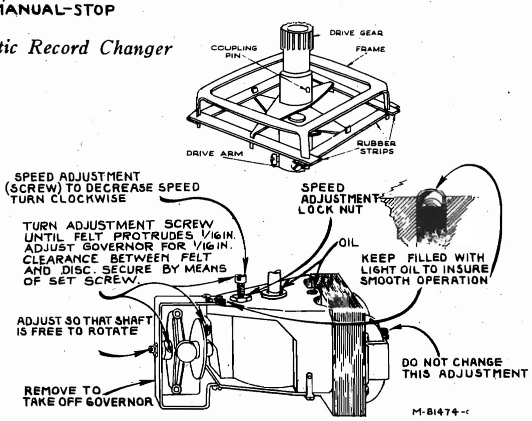
FOR ADJUSTMENTS, NOTES AND SERVICE DATA, SEE MODEL RP-139-A



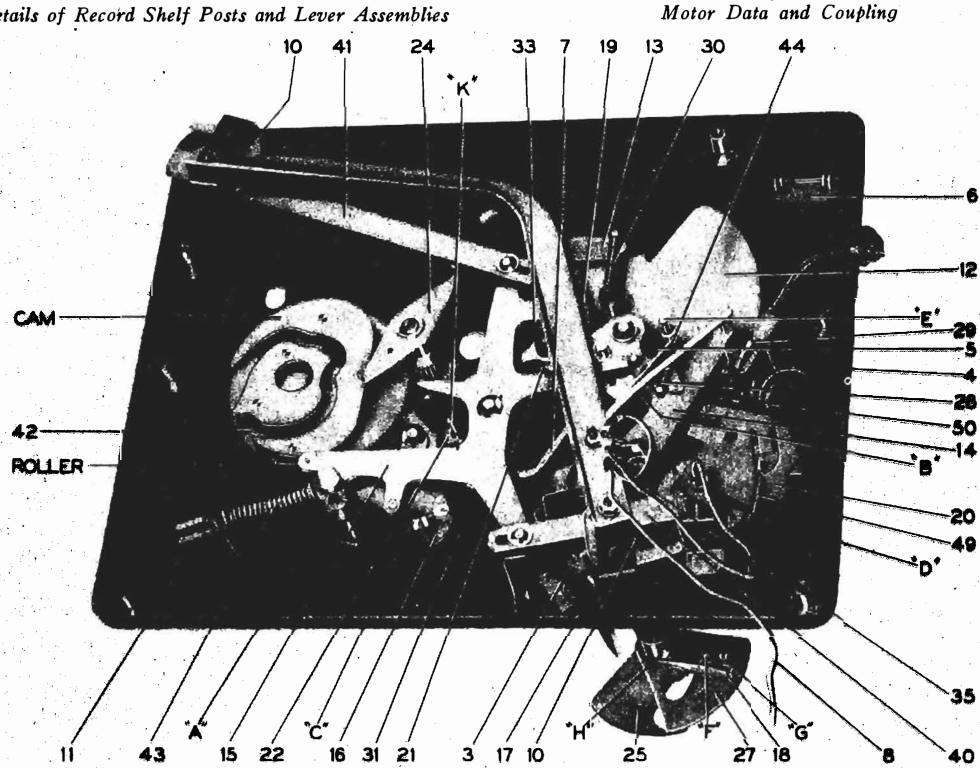
Top View of Automatic Record Changer



Details of Record Shelf Posts and Lever Assemblies



Motor Data and Coupling



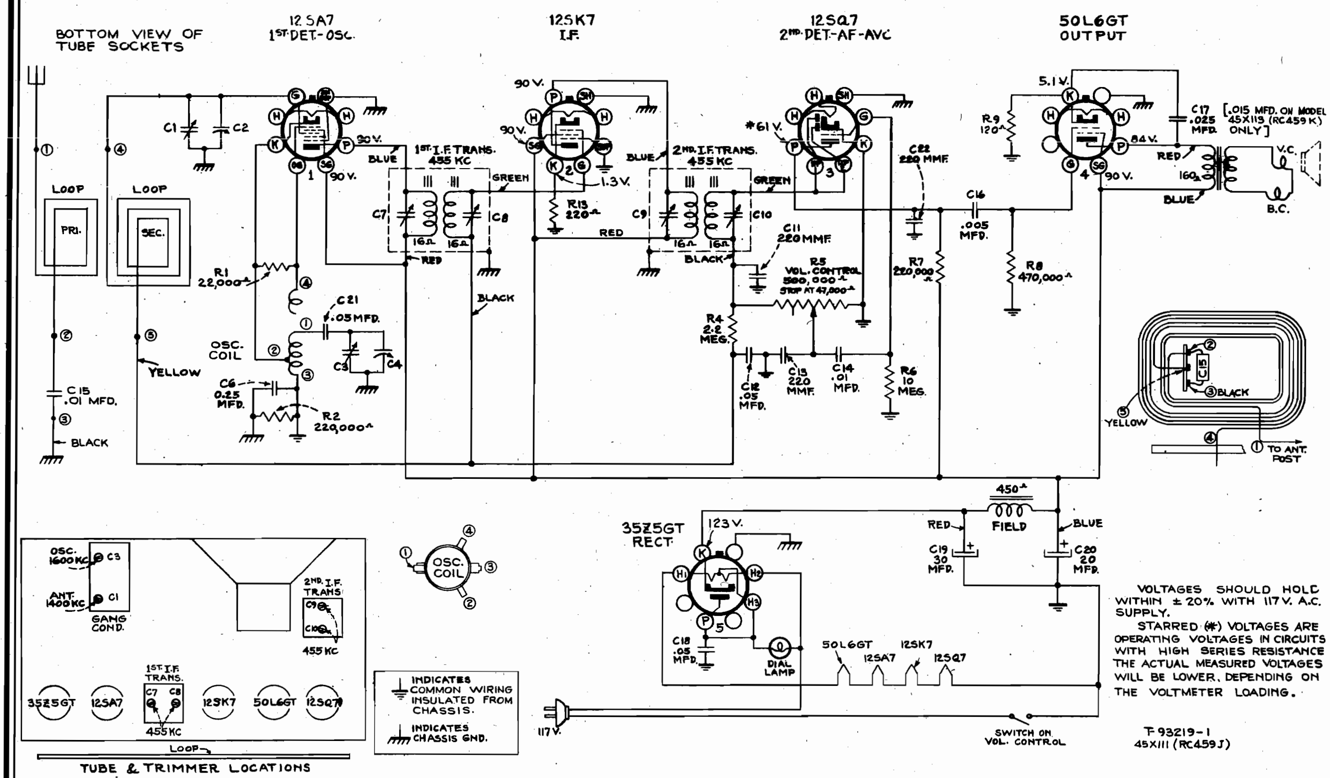
Bottom View of Automatic Record Changer

NOTE: Numbers refer to parts—letters refer to adjustments.

Schematic, Voltage
Alignment, Trimmers
Socket, Lead Dress

RCA MFG. CO., INC.

MODELS 45X111, 45X112
Ch. RC459J, 45X113
Chassis RC459K



—1940 No. 2—

Features of design include: New type single-ended tubes (12SA7, 12SK7, and 12SQ7); clock-type dial; dust-proofed electrodynamic loudspeaker; "Magic Loop"; and Beam Power Output.

First Edition

Electrical and Mechanical Specifications

Frequency Range .... 550-1,600 kc

Intermediate Frequency .... 455 kc

Tube Complement
(1) RCA-12SA7 .... 1st-Detector—Oscillator
(2) RCA-12SK7 .... I-F Amplifier
(3) RCA-12SQ7 .... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT .... Power Output
(5) RCA-35Z5GT .... Rectifier
Dial Lamp (1) .... Mazda 51, 7.5 volts, .20 amp.

Power Supply Ratings
A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

Power Output (125 volt, 60 cycle supply)
Undistorted .... .8 watts
Maximum .... 1.3 watts

Loudspeaker
Type .... 5-inch electrodynamic

Model	Weight (shipping)	Description	Cabinet Dimensions (inches)
45X111	8½ lbs.	Mahogany plastic finish	6 19/32 x 9 25/32 x 5⅞
45X112	8½ lbs.	Antique-ivory plastic finish	6 19/32 x 9 25/32 x 5⅞
45X113	10 lbs.	Walnut finish	8⅛ x 13⅛ x 6 5/16

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

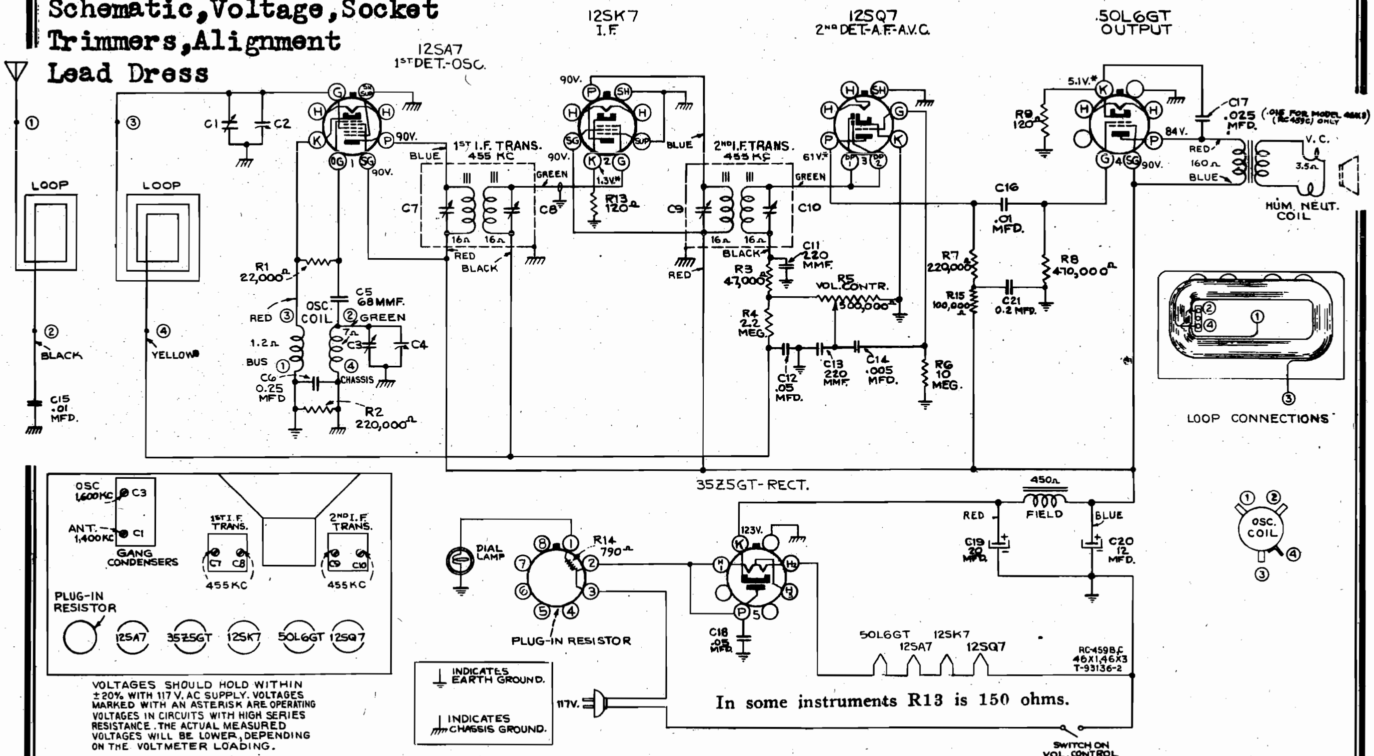
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 I-F grid in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C9 and C10 (2nd I-F trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd.			C7 and C8 (1st I-F trans.)
3	Radiation loop consisting of two turns of wire 18 inches in diameter	1,600 kc	Full clockwise (out of mesh)	C3 (oscillator)
4		1,400 kc	Resonance on 1,400 kc signal	C1 (antenna)

Precautionary Lead Dress

1. Dress grid lead of 12SK7 close to chassis under condenser (C12).
2. Dress green and blue leads from i-f transformers close to chassis and away from each other.
3. Dress leads from terminal board on loop support away from loop.

MODELS 46X1, 46X2, Ch. RC459B, 46X3, Chassis RC459C
Schematic, Voltage, Socket Trimmers, Alignment Lead Dress

RCA MFG. CO., INC.



VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC SUPPLY. VOLTAGES MARKED WITH AN ASTERISK ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE. THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.

In some instruments R13 is 150 ohms.

POWER SUPPLY RATINGS

A-C Rating .... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating .... 105-125 volts, direct current, 50 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted .... .6 watts
Maximum .... 2.0 watts

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 I-F grid in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C9 and C10 (2nd I-F trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C7 and C8 (1st I-F trans.)
3	Radiation loop consisting of two turns of wire 18 inches in diameter	1,600 kc	Full clockwise (out of mesh)	C3 (oscillator)
4	Radiation loop consisting of two turns of wire 18 inches in diameter	1,400 kc	Resonance on 1,400 kc signal	C1 (antenna)

Precautionary Lead Dress

1. Dress grid lead of 12SK7 close to chassis under condenser (C12).
2. Dress green and blue leads from i-f transformers close to chassis and away from each other.
3. Dress leads from terminal board on loop support away from loop.

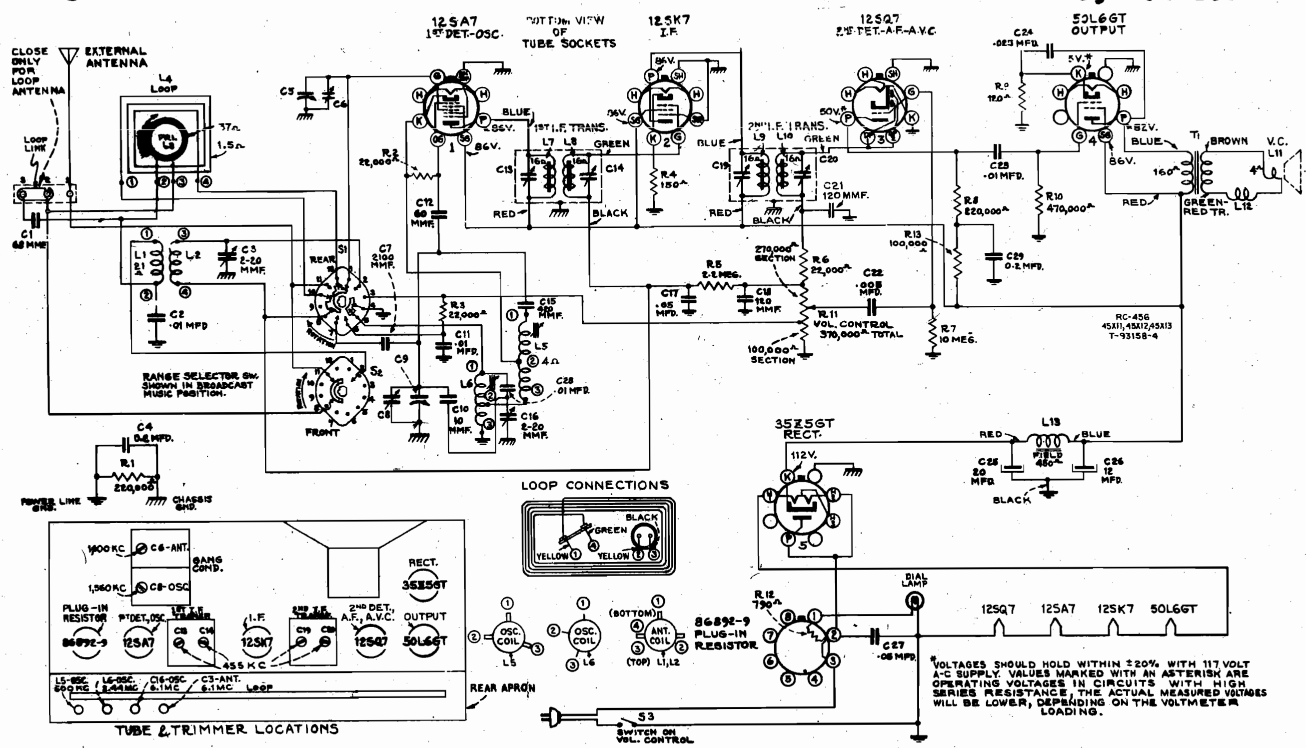
STOCK No.	DESCRIPTION	Unit List Price
	SPEAKER ASSEMBLIES (39223-2)	
35065	Cone—Cone complete with voice coil	1.20
34174	Transformer—Output transformer	1.25
	SPEAKER ASSEMBLIES (RL 86-5)	
32907	Cap—Dust cap	.02
35066	Cone—Cone complete with voice coil	1.30
34450	Speaker 5" dynamic speaker complete with cone and voice coil less output transformer	3.25
	CHASSIS ASSEMBLIES (RC-459B and RC-459C)	
35000	Ballast—Ballast tube resistor	.80
13057	Capacitor—68 mmfd. (C5)	.35
12694	Capacitor—220 mmfd. (C11, C13)	.35
33584	Capacitor—.005 mfd. (C14)	.25
4937	Capacitor—.01 mfd. (C15, C16)	.25
11315	Capacitor—.015 mfd. (C17)	.20
30938	Capacitor—.025 mfd. (C17)	.20
32787	Capacitor—.05 mfd. (C12, C18)	.20
34505	Capacitor—.2 mfd. (C21)	.30
12484	Capacitor—0.25 mfd. (C6)	.30
35064	Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd.	.75
34443	Coil—Oscillator coil	.60
35053	Condenser—Variable tuning condenser *less drive drum*	2.00
35057	Control—Volume control and power switch	1.50
32634	Cord—Tuning condenser drive cord	.10
35063	Drum—Tuning condenser drive drum	.30
35062	Indicator—Station selector indicator	.20

STOCK No.	DESCRIPTION	Unit List Price
31480	Lamp—Dial lamp	.20
35061	Loop—Antenna loop complete	1.95
12071	Resistor—120 ohms, ¼ watt (R13)	.20
32535	Resistor—120 ohms, ¼ watt (R9)	.20
13998	Resistor—22,000 ohms, ¼ watt (R1)	.20
12412	Resistor—47,000 ohms, ¼ watt (R3)	.20
11281	Resistor—100,000 ohms, 1/10 watt (R15)	.15
12264	Resistor—220,000 ohms, ¼ watt (R2)	.20
12285	Resistor—470,000 ohms, ¼ watt (R8)	.20
12679	Resistor—2.2 megohms, ¼ watt (R4)	.20
13601	Resistor—10 megohms, ¼ watt (R6)	.20
35000	Resistor—Ballast tube resistor	.80
35060	Scale—Dial scale	.65
35058	Shaft—Tuning condenser drive shaft	.20
34449	Socket—Dial lamp socket	.30
31319	Socket—Tube socket	.25
30585	Spring—Drive cord tension spring	.06
35056	Transformer—Output transformer	1.30
35054	Transformer—1st I.F. transformer	1.75
35055	Transformer—2nd I.F. transformer	1.75
35000	Tube—Ballast tube resistor	.80

Schematic, Voltage Socket, Trimmers Alignment

RCA MFG. CO., INC.

MODELS 46X11, 46X12 Chassis RC-456 46X13, Ch. RC456A



Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with .01 mfd.	455 kc	"Standard Broadcast" band quiet point with gang nearly open	L9 and L10 (2nd I-F Trans.)
2	12SA7 grid in series with .01 mfd.	455 kc	"Standard Broadcast" band quiet point with gang nearly open	L7 and L8 (1st I-F Trans.)
3	Ant. terminal 1 in series with 200 mmfd. Link closed	600 kc	600 kc "Standard Broadcast" band	L5 (osc.)
4	Ant. terminal 1 in series with 200 mmfd. Link closed	1,560 kc	Pointer at second from bottom mark at extreme right edge of dial plate* "Standard Broadcast" band	C8 (osc.)
5	Ant. terminal 1 in series with 200 mmfd. Link closed	1,400 kc	Resonance on 1,400 kc signal "Standard Broadcast" band	C6 (ant.)
6	Ant. terminal 1 in series with 200 mmfd. Link closed	600 kc	Resonance on 600 kc signal "Standard Broadcast" band	L5 (osc.) Rock gang
7	Repeat steps 4, 5, and 6			
8	Ant. terminal 1 in series with 200 mmfd. Link closed	6.1 mc	Pointer on dot at extreme right edge of dial* "Short Wave" band	C16 (osc.)** C3 (ant.) Rock gang
9	Ant. terminal 1 in series with 200 mmfd. Link closed	2.44 mc	Resonance on 2.44 mc signal "Short Wave" band	L6 (osc.) Rock gang
10	Repeat steps 8 and 9			

*These calibration marks are concealed when chassis is in cabinet.
**Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver to approximately 5.19 mc where a weaker signal should be received.

Pre-Setting Pointer.—With gang condenser in full mesh, the pointer should be adjusted to a horizontal position.

Antenna.—The set is equipped with a built-in loop antenna. If the loop antenna is used, the antenna terminal board link should be closed. This link should be open when an external antenna is used. Connect the external antenna to terminal 1. If an antenna longer than 100 feet (including lead-in) is used, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Loudspeaker

Type .... 5-inch electrodynamic
V.C. Impedance .... 4 ohms at 400 cycles

Power Supply Ratings

A-C Rating .... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating .... 105-125 volts, direct current, 50 watts

Power Output Rating

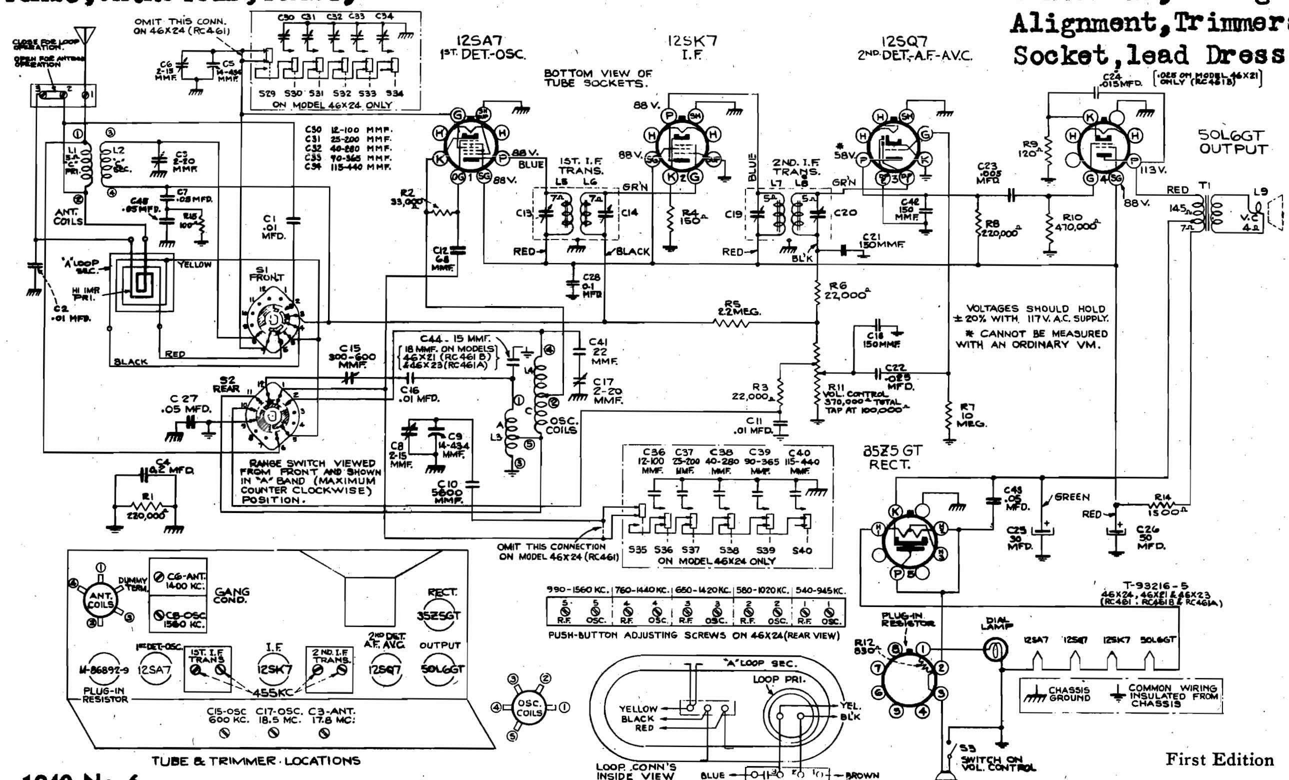
Undistorted .... 1 watt
Maximum .... 2 watts

32830	Capacitor—Mica trimmer comprising 2 sections of 2-20 mmfd. (C3, C16)	.40
13200	Capacitor—10 mmfd. (C10)	.35
12724	Capacitor—120 mmfd. (C18, C21)	.35
31870	Capacitor—415 mmfd. (C15)	.30
35099	Capacitor—2,100 mmfd. (C7)	.45
33584	Capacitor—.005 mfd. (C22)	.25
4937	Capacitor—.01 mfd. (C2, C11, C23, C28)	.25
4870	Capacitor—.025 mfd. (C24)	.20
32787	Capacitor—.05 mfd. (C17, C27)	.20
34505	Capacitor—0.2 mfd. (C4, C29)	.30
32576	Capacitor—Electrolytic, comprising 1 section of 20 mfd., and 1 section of 12 mfd. (C25, C26)	.90
31296	Coil—"A" band oscillator coil (L5)	1.05
35090	Coil—Antenna coil—"B" band (L1, L2)	.80
35096	Coil—Loop loading coil (L3)	.50
35251	Coil—Oscillator coil—"B" band (L6)	.70
35082	Condenser—Variable tuning condenser—less drum	2.10
35086	Control—Volume control and power switch	2.00
32634	Cord—Drive cord	.10
35093	Dial—Dial scale	.50
35083	Drum—Tuning condenser drive drum	.35
35091	Indicator—Station selector indicator	.25
31480	Lamp—Dial lamp	.20
35095	Loop—Antenna loop complete	2.50
35092	Plate—Dial plate—less dial scale	.30
35000	Resistor—Ballast tube resistor	.80
30936	Resistor—120 ohms, 1 watt (R9)	.22
13428	Resistor—150 ohms, ¼ watt (R4)	.20
13998	Resistor—22,000 ohms, ¼ watt (R2, R3, R6)	.20
14560	Resistor—100,000 ohms, ¼ watt (R13)	.20
12264	Resistor—220,000 ohms, ¼ watt (R1, R8)	.20
12285	Resistor—470,000 ohms, ¼ watt (R10)	.20
12679	Resistor—2.2 meg., ¼ watt (R5)	.20
13601	Resistor—10 meg., ¼ watt (R7)	.20

MODELS 46X21, Ch. RC461A
46X23, Ch. RC461B, 46X24,

RCA MFG. CO., INC.

Chassis RC461
Schematic, Voltage
Alignment, Trimmers
Socket, Lead Dress



First Edition

—1940 No. 6—

Specifications

Frequency Ranges 550-1,550 kc and 6-18 mc

Push Button Ranges (Model 46X24 only)

(1) Approximately 540- 945 kc
(2) Approximately 580-1,020 kc
(3) Approximately 650-1,320 kc
(4) Approximately 760-1,440 kc
(5) Approximately 990-1,560 kc

Intermediate Frequency . . . . 455 kc

Power Output Rating

Undistorted . . . . 1.1 watts
Maximum . . . . 1.4 watts

Loudspeaker (RL81A1)

Type . . . . 5-inch permanent magnet dynamic
Voice Coil Impedance at 400 Cycles . . . . 4.5 ohms

Power Supply Ratings

A-C Rating . . . . 105-125 volts, 50-60 cycles, 50 watts
D-C Rating . . . . 105-125 volts, direct current, 50 watts

Adjustments for Electric Tuning:

The push buttons and corresponding frequency ranges are given in the schematic diagram. Allow the set to warm up for about 15 minutes and proceed as follows:

(1) List five desired stations in order of the push button ranges.

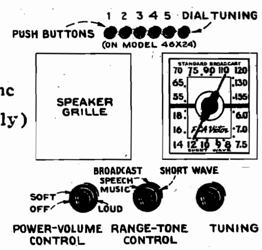
(2) Push in the dial tuning (right hand) button and manually tune in the first station on the list.

(3) Press button No. 1. Turn R-F screw half way in; next turn the oscillator screw entirely in and then gradually back out until the station is heard.

(4) Adjust the R-F trimmer for maximum output. (Clockwise adjustment of oscillator and R-F trimmers tunes the circuits to lower frequencies.)

(5) By turning the set to a position in which reception is weak a final more accurate adjustment may be made.

(6) Adjust for each of the remaining stations in a similar manner and place corresponding station tabs in recesses above buttons. A "Dial Tuning" tab should be above button No. 6.



Dial and Controls

Precautionary Lead Dress:

(1) Dress all leads away from oscillator and antenna coils.
(2) Dress cathode resistor (R4) and B+ lead across 12SK7 socket between plate and grid terminals.
(3) (46X24 only) Dress leads to push button switch straight up and parallel so that they do not touch each other.
(4) Dress black lead from 1st I-F transformer over green lead.
(5) Keep plate-cathode bypass (C43) of rectifier tube away from volume control.

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Pointer.—With gang condenser in full mesh, the pointer should be adjusted to a horizontal position.

Antenna.—The set is equipped with a built-in loop antenna. If the loop antenna is used, the antenna terminal board link should be closed. This link should be open when an external antenna is used. Connect the external antenna to terminal 1. If an antenna longer than 100 feet (including lead-in) is used, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not operate, reverse the plug. On a-c, reversal of the plug may reduce hum.

Step	Connect high side of test oscillator to—	Tune test oscillator to—	Turn radio dial to—	Adjust following for max. output—
1	Grid 12SK7 in series with 0.01 mfd.	455 kc	"A" Band Quiet Point at 1,550 kc end of dial	C19 and C20 (2nd I-F Trans.)
2	Grid 12SA7 in series with 0.01 mfd.			C13 and C14 (1st I-F Trans.)
3	Antenna in series with 200 mmfd.	600 kc	"A" Band 600 kc	C15 (osc.)
4		1,560 kc	"A" Band Full Clockwise	C8 (osc.)
5		1,400 kc	Resonance on 1,400 kc "A" Band	C6 (ant.)
6	Repeat steps 3 (rock in), 4 and 5			
7	Antenna in series with 300 ohms	18.5 kc	"C" Band Full Clockwise	C17 (osc.)*
8		17.8 kc	"C" Band Resonance on 17.8 kc Signal	C3 (ant.)
9	Repeat steps 7 and 8			

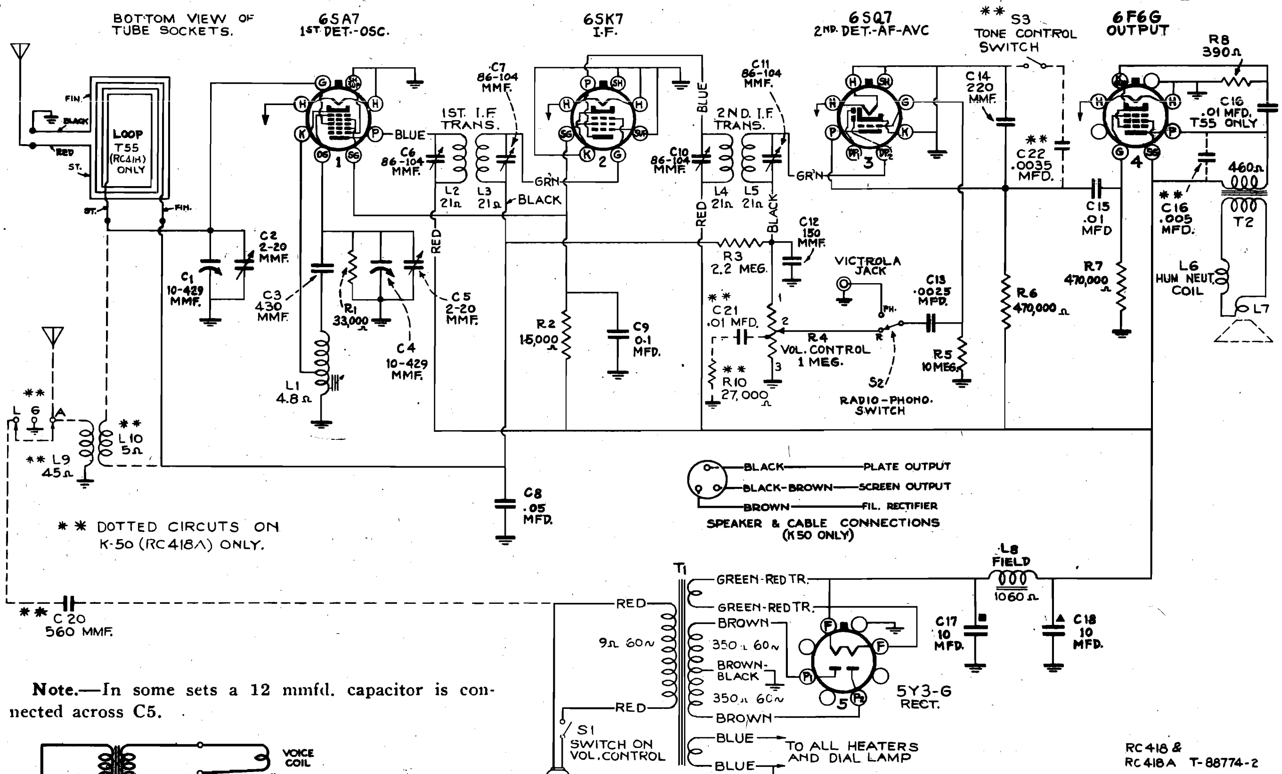
* Use minimum capacity peak if two can be obtained.

Note: Oscillator tracks above signal on all bands.

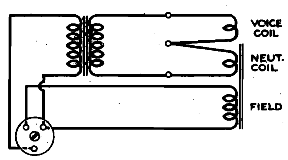
MODELS K50, Ch. RC418A
T55, T56, Ch. RC418
Schematic, Voltage
Chassis Wiring

RCA MFG. CO., INC.

FOR TUNER DATA
SEE PAGE 11-41

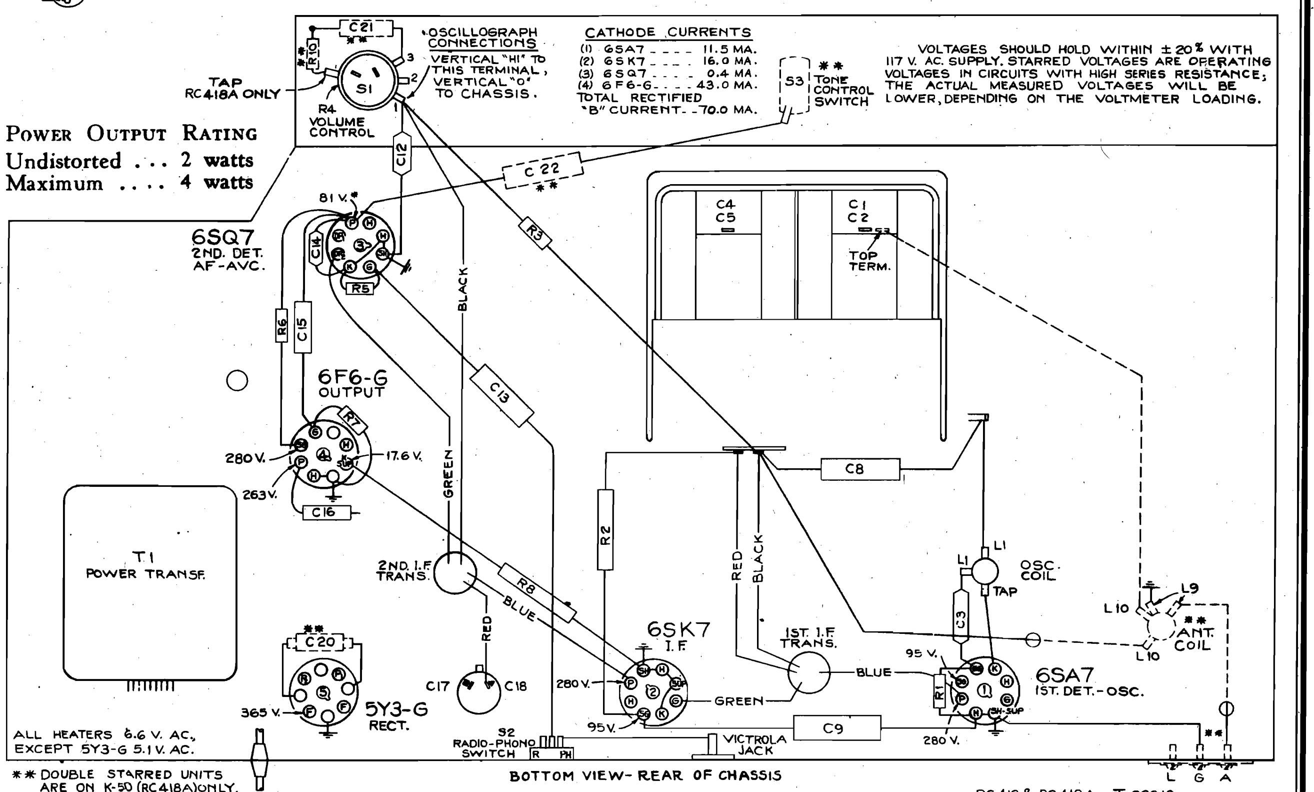


Note.—In some sets a 12 mmfd. capacitor is connected across C5.



LOUDSPEAKER	T55	K50
Type	5 inch electrodynamic	12 inch electrodynamic
V. C. impedance at 400 cycles	3.4 ohms	2.2 ohms

POWER OUTPUT RATING
Undistorted . . . 2 watts
Maximum . . . . 4 watts



R-F Wiring Diagram and Socket Voltages

MODELS K50, T55, T56
Alignment, Trimmers
Socket, Dial Data
Lead Dress, Parts

RCA MFG. CO., INC.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
	Model T-55 (RC-418) Model K-50 (RC-418A)	
33719	Belt—Tuning unit push arm belt	.05
33718	Board—Antenna-Ground terminal board	.20
12725	Capacitor—150 mmfd. (C12)	.35
12694	Capacitor—220 mmfd. (C14)	.35
32599	Capacitor—430 mmfd. (C3)	.35
12537	Capacitor—560 mmfd. (C20) Model K50	.35
5107	Capacitor—.0025 mfd. (C13)	.20
30303	Capacitor—.0035 mfd. (C22) Model K50	.40
33584	Capacitor—.005 mfd. (C16) Model K50	.25
4937	Capacitor—.01 mfd. (C15, C16, C21) (C16 in Model T55 only) (C21 in Model K50 only)	.25
32787	Capacitor—.05 mfd. (C8)	.20
4839	Capacitor—0.1 mfd. (C9)	.30
33775	Coil—Antenna coil (L9, L10) Model K50	.90
33724	Coil—Oscillator coil (L1)	.75
32342	Condenser—Electrolytic, 2 sections 10 mfd. each (C17, C18)	1.20
33630	Control—Tone control (S3) Model K50	1.00
32634	Cord—Drive cord	.10
33633	Indicator—Dial scale pointer	.20
11765	Lamp—Dial lamp	.15
33431	Link—Antenna terminal board link	.02
33721	Loop—Antenna loop Model T55	1.00
33727	Plate—Dial plate assembly	.90
31388	Resistor—390 ohms, 1 watt (R8)	.22
33489	Resistor—15,000 ohms, 2½ watts (R2)	.55
12738	Resistor—27,000 ohms, ¼ watt (R10) Model K50	.20
12454	Resistor—33,000 ohms, ¼ watt (R1)	.20
12285	Resistor—470,000 ohms, ¼ watt (R6, R7)	.20
12679	Resistor—2.2 meg., ¼ watt (R3)	.20
13601	Resistor—10 meg., ¼ watt (R5)	.20
33725	Shaft—Tuning knob shaft	.30
31364	Socket—Dial lamp socket	.20
14278	Socket—Phono-input socket	.25
5119	Socket—3 contact female for speaker cable—Model K50	.25
31319	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
33720	Spring—Push arm return spring	.02
33634	Switch—Radio-Phono switch (S2)	.30
33722	Transformer—First i-f transformer (L2, L3, C6, C7)	1.60
33723	Transformer—Second i-f transformer (L4, L5, C10, C11)	1.60
31575	Transformer—Power transformer 110-220 volts, 60 cycle (T1)	8.35
33619	Transformer—Power transformer 105-120 volts, 25-60 cycle (T1)	7.75
33112	Transformer—Power transformer 105-120 volts, 50-60 cycle (T1)	4.30
33631	Volume control and power switch (R4, S1) Model T55	1.50
33776	Volume control and power switch (R4, S1) Model K50	2.00
33726	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (Model T55) (RL-78-6)	
32907	Cap—Cone center dust cap	.02
32906	Coil—Hum neutralizing coil (L6)	.25
33601	Coil—Speaker field coil (L8)	1.25
32904	Cone—Speaker cone and voice coil (L7)	1.20
32905	Transformer—Output transformer (T2)	1.35
	SPEAKER ASSEMBLIES (Model K50) (RL-70J-2)	
31825	Cap—Cone center dust cap	.05
11469	Coil—Hum neutralizing coil (L6)	.30
33116	Coil—Speaker field coil (L8)	2.10
31275	Cone—Speaker cone and voice coil (L7)	1.75
5118	Plug—3 contact male for speaker	.25
33779	Transformer—Output transformer (T2)	

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

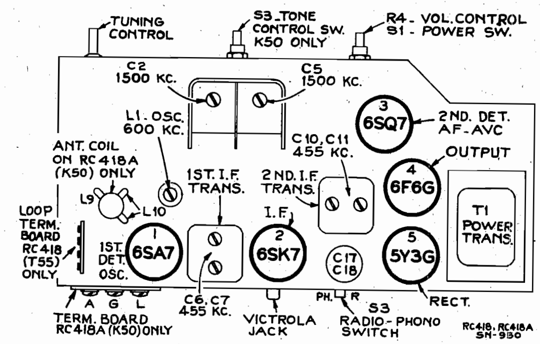
Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	Antenna terminal	455 kc	Quiet Point between 1,720-1,500 kc	C10 and C11 (2nd I-F trans.)
2	Antenna terminal			C6 and C7 (1st I-F trans.)
3	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc calibration mark	C5 (osc.) C2 (ant.)
4		600 kc	600 kc calibration mark	L1 (osc.) (Rock in)
5	Repeat step 3			

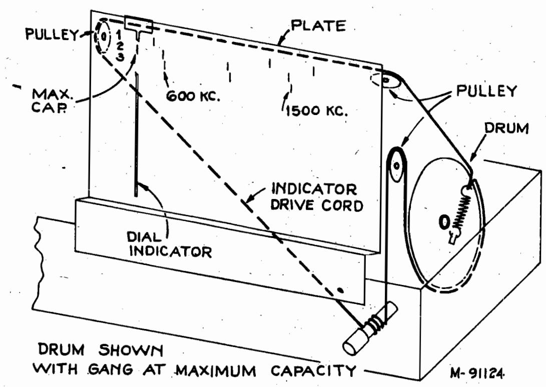
Note.—Oscillator tracks above signal.

To center the loudspeaker voice coil, first remove the front dust cover then loosen the spider screws, insert three narrow feelers in the gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

Precautionary Lead Dress.—

1. Power cord leads must be dressed up away from 6SQ7 socket, and toward end of chassis.
2. Green lead 2nd I.F. to 6SQ7 must be dressed against base.
3. Blue lead 2nd I.F. to 6SK7 must be dressed close to base.
4. Green and blue leads from 1st I.F. transformer must be dressed close to base.
5. Capacitor from volume control center tap to 6SQ7 socket must be dressed so that its body is between AC terminal on control and opening in chassis for gang condenser.
6. Red lead from "L" terminal on antenna board to 5Y3G socket must be dressed against base.
7. Green lead from gang to 6SA7 socket must be dressed toward side apron away from other parts.



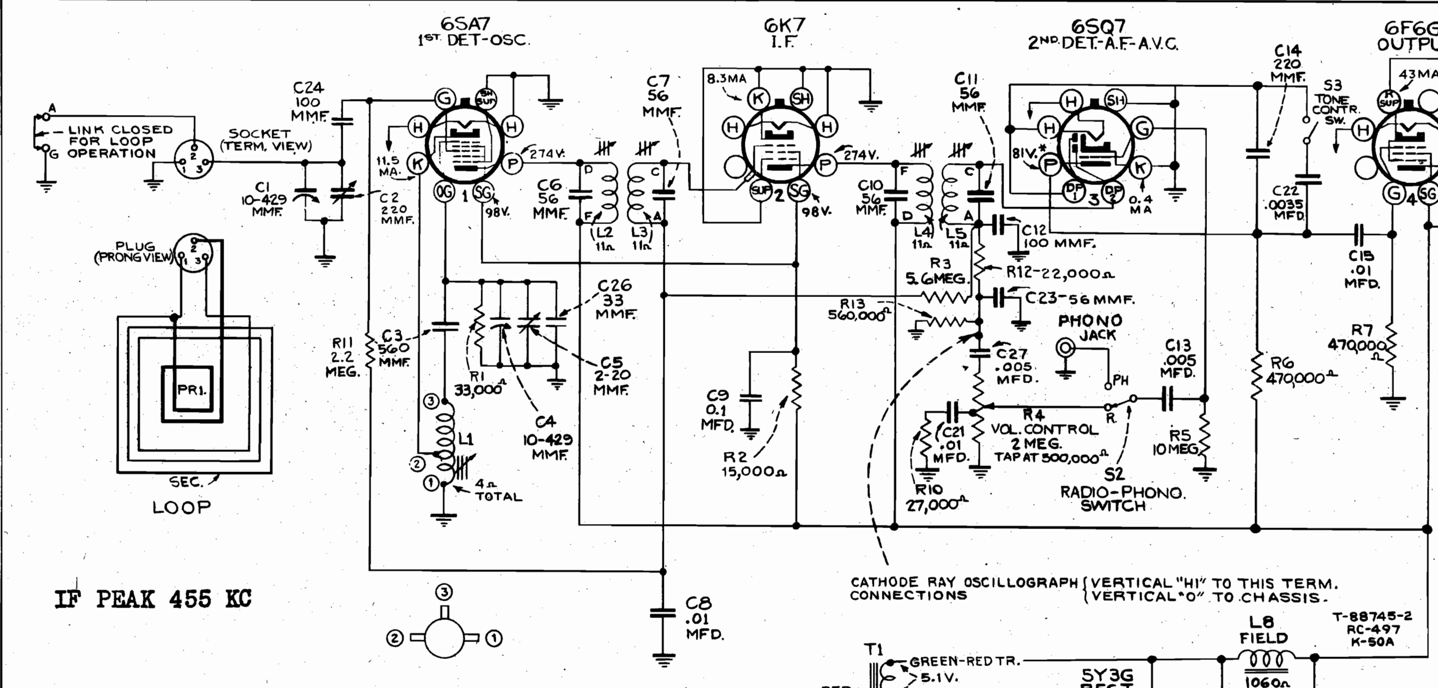


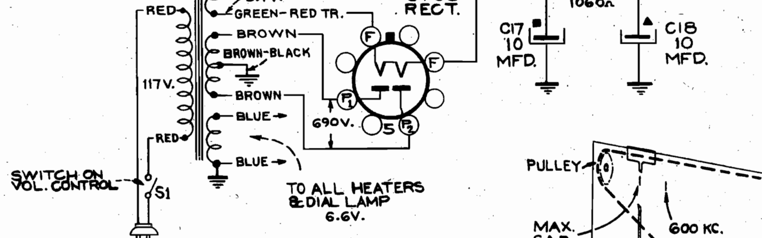
Dial-Indicator and Drive Mechanism

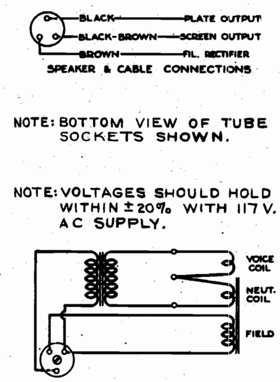
Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

MODEL K50, Chassis RC497
2nd Production
Schematic, Voltage Socket, Trimmers, Dial

RCA MFG. CO., INC.

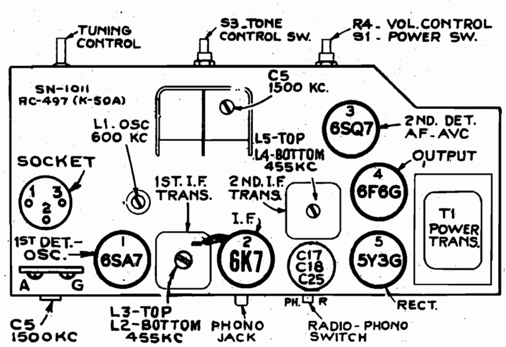




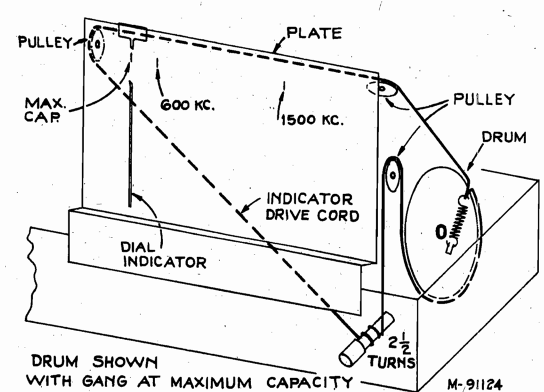


Loudspeaker Connections

FOR ALIGNMENT SEE INDEX



FOR TUNER DATA SEE PAGE 11-41



Dial Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

Centering Loudspeaker Cone

To center the loudspeaker voice coil, first remove the front dust cover, then loosen the spider screws, insert three narrow feelers in the gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement

Power Output Rating

Undistorted .... 2 watts
Maximum .... 4 watts

Power Supply Ratings

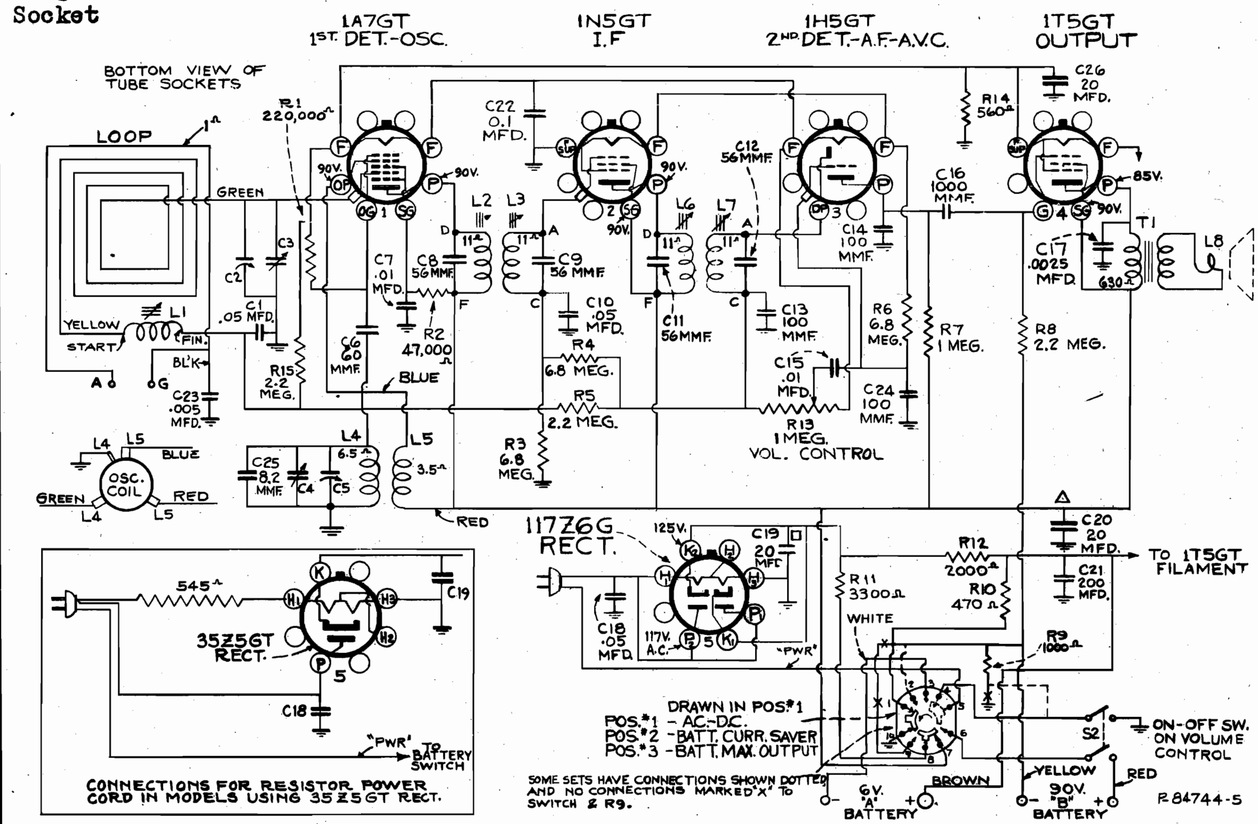
Rating A............ 105-125 volts, 50-60 cycles, 75 watts
Rating B............ 105-125 volts, 25-60 cycles, 75 watts
Rating C..... 105-125, 200-250 volts, 50-60 cycles, 75 watts

Loudspeaker

Type .... 12-inch electrodynamic
V C. impedance at 400 cycles .... 2.2 ohms

MODELS BP55, BP56, BP85
Chassis RC-455
Schematic, Voltage
Alignment, Trimmers
Socket

RCA MFG. CO., INC.



Schematic Circuit Diagram

Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately 20% with rated battery voltage.

LINE CURRENT SUPPLY
110 to 125 volts, AC 50 or 60 cycles, or DC

BATTERIES REQUIRED
"A" one 6 volt dry plug-in type (Eveready No. 747 or equivalent)
"B" two 45 volt dry plug-in type (Eveready No. 482 or equivalent)

Frequency Range .... 540-1,600 kc
Intermediate Frequency .... 455 kc

CURRENT CONSUMPTION
"A," 0.05 ampere—"B," 10.5 milliamperes full power; 6.0 milliamperes save power.

POWER OUTPUT
Undistorted .... 0.125 watt
Maximum .... 0.17 watt

LOUDSPEAKER
Type .... 5-inch permanent-magnet dynamic
Voice-coil Impedance .... 4.5 ohms at 400 cycles

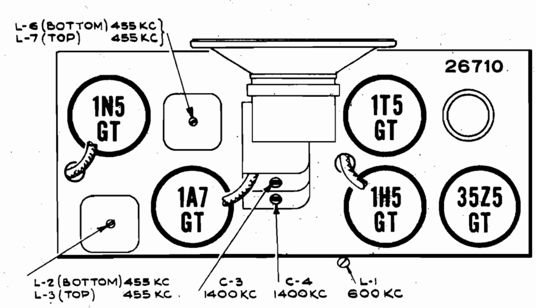
Alignment Procedure

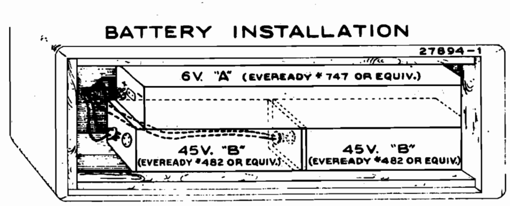
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1A7GT 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	L2, L3, L6, L7 (1st and 2nd I-F transformers)
2		1,600 kc	1,600 kc	C4 osc.
3	radiated signal near 600 kc		signal frequency	L1
4	radiated signal near 1,400 kc		signal frequency	C3
5	radiated signal near 600 kc		signal frequency	L1

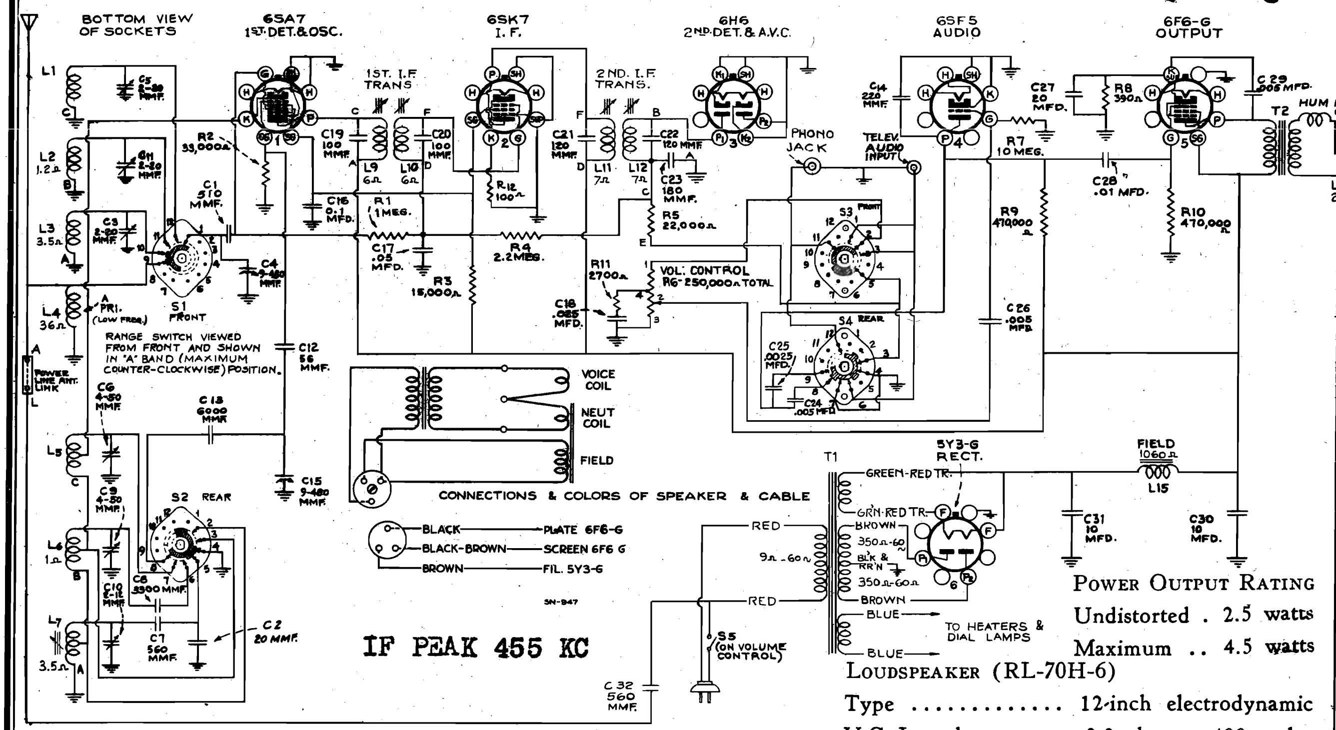
For steps 3, 4, and 5 the chassis must be in the cabinet and the batteries in place and connected. L-1 is then reached through the small hole in the cabinet which is normally covered with a small plug located farthest away from C-3 and C-3 is reached through an eyelet in the speaker-grille. If a broadcast signal is used it should be weak to avoid a-v-c action. Turning loop to minimum pickup position will sometimes be helpful. If no broadcast signal is available connect test oscillator output to a suitable radiation loop located several feet away from receiver.





RCA MFG. CO., INC.

MODEL K60, Chassis RC415 Schematic, Voltage Chassis Wiring, Changes



Power Output Rating

Undistorted . 2.5 watts

Maximum .. 4.5 watts

Loudspeaker (RL-70H-6)

Type .... 12-inch electrodynamic

V.C. Impedance ......2.2 ohms at 400 cycles

Note: On some receivers the following circuit modifications are in effect:

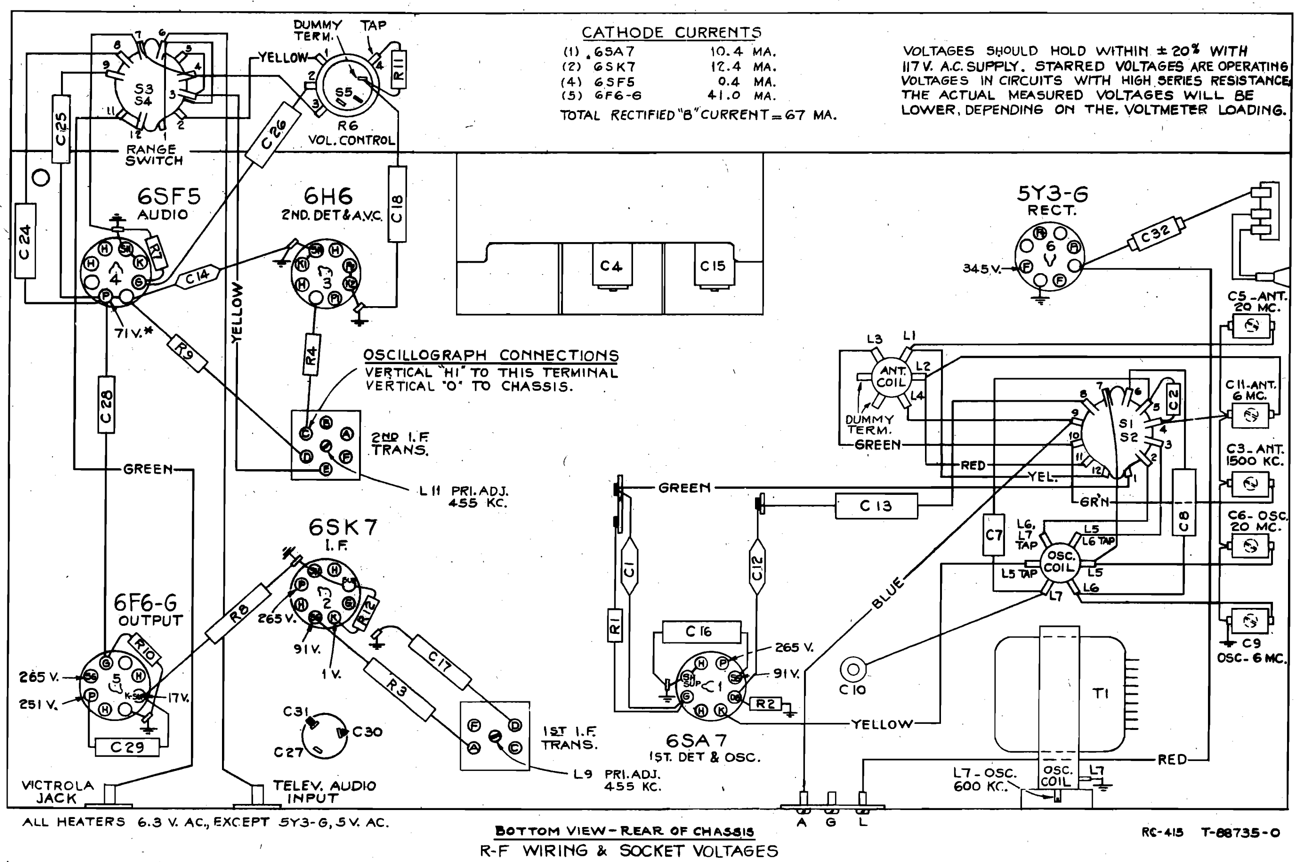
1. R11 is 4,700 ohms, and C18 is .05 mfd.
2. C1 is 470 mmfd.
3. There are three types of 2nd I-F transformers in use.

a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown above.

b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.

c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the above diagram.

Important: Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the diagram.



BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING & SOCKET VOLTAGES

MODEL K60, Chassis RC415
MODEL K80, Chassis RC415A
Alignment, Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

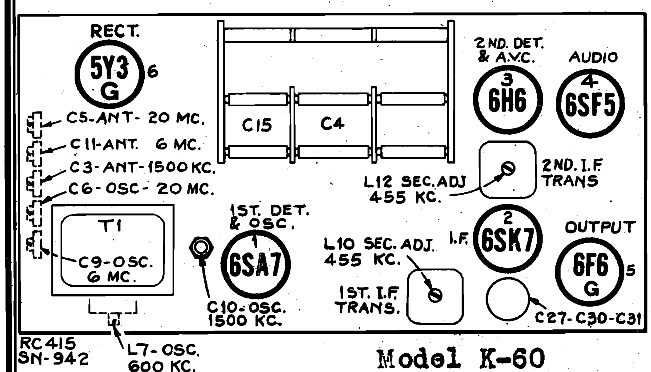
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 grid in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L11 and L12 (2nd I-F Trans.)
2	6SA7 grid in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L9 and L10 (1st I-F Trans.)
3	Ant. terminal in series with 300 ohms	20 mc	20 mc (200°) "C" Band	C6 (osc.)* C5 (ant.)
4	Ant. terminal in series with 300 ohms	6 mc	6 mc (187.5°) "B" Band	C9 (osc.)** C11 (ant.)
5	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc (198.25°) "A" Band	C10 (osc.) C3 (ant.)
6	Ant. terminal in series with 200 mmfd.	600 kc	600 kc (39.75°) "A" Band	L7 (osc.) Rock Gang
7	Repeat step 5.			

* Use minimum capacity peak if two can be obtained. Check to determine that C6 has been adjusted to correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

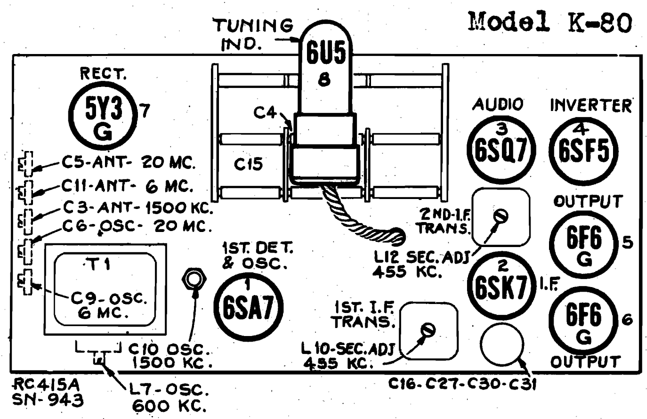
** Use minimum capacity peak if two can be obtained. Check to determine that C9 has been adjusted to correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

Note: Oscillator tracks above signal on all bands.

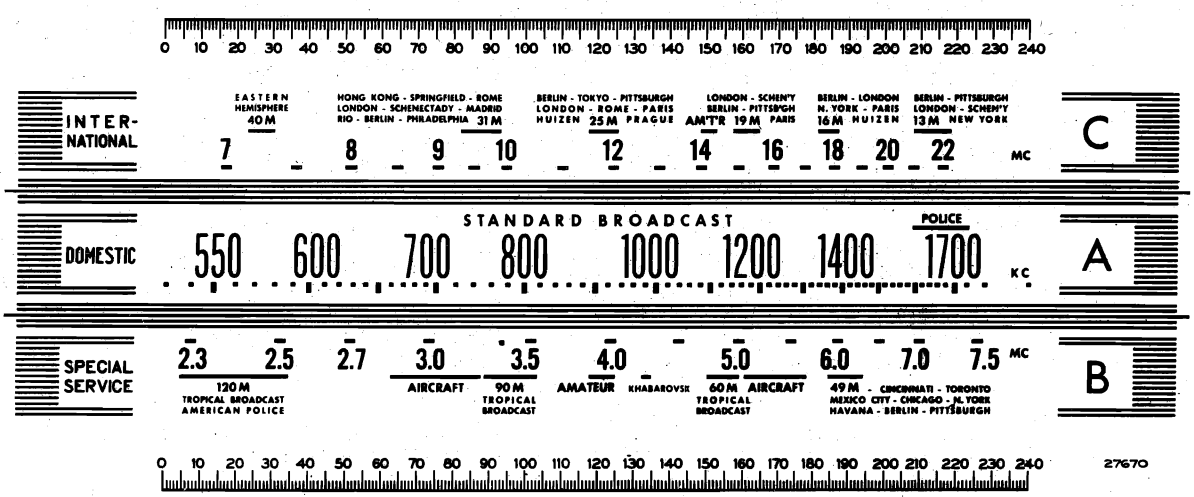


Model K-60

Model K-80



Calibration Scale



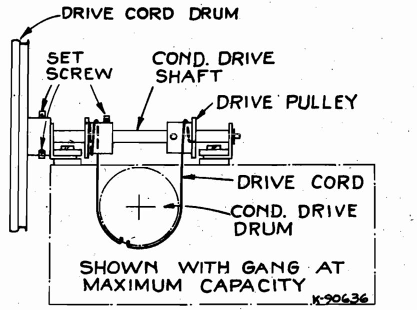
Receiver Dial Scales, and Corresponding 0-240° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example 39.75° on the calibration scale corresponds to 600 kc on "A" band. Read instructions under "Alignment Procedure."

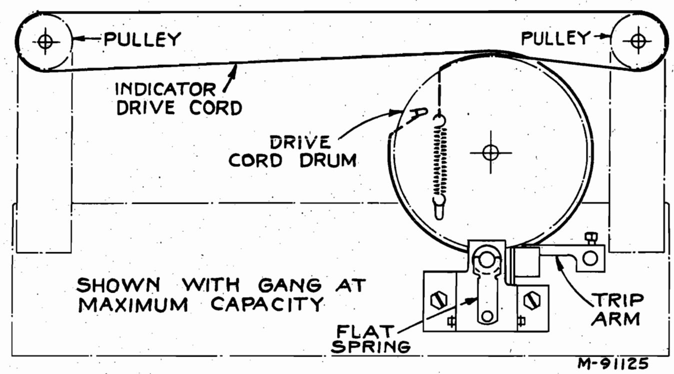
MODEL K105
Drive Cord Data

RCA MFG. CO., INC.

MODEL K60, Chassis RC415
MODEL K80, Chassis RC415A
Dial Data, Parts List

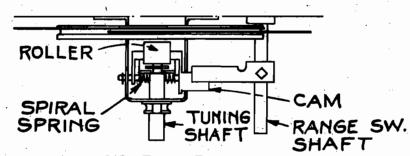


CONDENSER DRIVE CORD ARRANGEMENT



Note: In the Dial Indicator Drive Cord Assembly drawing at the right the mechanism is shown with the range switch in the "A" band position. In this position the trip arm on the range switch shaft must be adjusted so that when push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

DIAL INDICATOR DRIVE CORD ASSEMBLY.



TOP VIEW

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-415A)	
33620	Arm—Push arm and cam assembly on tuning unit—less lock screw	.35
33432	Arm—Trip arm and set screw located on range switch shaft	.15
33430	Board—Antenna and ground terminal board	.20
30766	Cap—Rubber cap for Magic Eye—Model K80 only	.15
12714	Capacitor—Air-trimmer, 2-12 mmfd. (C10)	.50
33429	Capacitor—Trimmer capacitor bank, 2 sections 4-50 mmfd., and 3 sections 2-20 mmfd. (C3, C5, C6, C9, C11)	.80
31871	Capacitor—20 mmfd. (C2)	.40
12723	Capacitor—56 mmfd. (C12)	.35
30904	Capacitor—100 mmfd. (C19, C20)	.25
12404	Capacitor—120 mmfd. (C21, C22)	.30
14712	Capacitor—180 mmfd. (C23)	.30
30232	Capacitor—220 mmfd. (C14)	.35
30608	Capacitor—510 mmfd. (C1)	.35
31433	Capacitor—560 mmfd. (C7)	.35
12537	Capacitor—560 mmfd. (C32)	.35
31403	Capacitor—3,300 mmfd. (C8)	.60
31405	Capacitor—6,000 mmfd. (C13)	.75
5107	Capacitor—.0025 mfd. (C25)	.20
4838	Capacitor—.005 mfd. (C24, C26, C29, C33*, C35*)	.25
4937	Capacitor—.01 mfd. (C28)	.25
32787	Capacitor—.05 mfd., 400 V. (C17, C34)[a]	.20
32786	Capacitor—0.1 mfd. (C18)	.25
33014	Capacitor—Electrolytic, 3 sections 10 mfd., one section 20 mfd. (C16, C27, C30, C31)	1.90
32821	Coil—Antenna coil (L1, L2, L3, L4)	1.35
32824	Coil—Oscillator coil (L5, L6, L7)	1.00
33424	Control—Tone control (S3, S4)	1.15
33425	Control—Volume control and power switch (R6, S5)	2.00
32635	Cord—Condenser drive cord	.24
32634	Cord—Drive cord	.10
32713	Core—Adjustable core and stud for oscillator coil	.35
33627	Drum—Condenser drive drum	.25
33174	Drum—Drive cord drum with set screws and calibrator dial	.65
11891	Lamp—Dial lamp	.17
33625	Plate—Front guide plate for push arms	.25
5040	Plug—4-contact female for speaker cable	.30
33427	Pulley—Drive cord pulley and mounting bracket	.30
33626	Pulley—Drive pulley—less bronze drive cord	.25
14439	Resistor—100 ohms, ¼ watt (R12)	.20
30735	Resistor—560 ohms, 1 watt (R8)	.22
13714	Resistor—5,600 ohms, ¼ watt (R11)	.20
12265	Resistor—6,800 ohms, ¼ watt (R17)	.20
33489	Resistor—15,000 ohms, 2.5 watt (R3)	.55
14284	Resistor—22,000 ohms, 1/10 watt (R5)	.15
12454	Resistor—33,000 ohms, ¼ watt (R2)	.20
12285	Resistor—470,000 ohms, ¼ watt (R9, R10, R14*, R16*)	.20
12013	Resistor—1 meg., 1/10 watt (R13)*	.15

STOCK No.	DESCRIPTION	Unit List Price
13730	Resistor—1 meg., ¼ watt (R1)	.20
12679	Resistor—2.2 meg., ¼ watt (R4)	.20
13601	Resistor—10 meg., ¼ watt (R7, R15*)	.20
30340	Retainer—Retainer for shaft of tuning shaft cam and arm	.02
33419	Roller—Friction roller for tuning knob shaft	.10
4669	Screw—No. 8-32 square head set screw for drum	.03
33621	Screw—Push arm lock screw	.05
33624	Shaft—Tuning condenser drive shaft and washer	.15
33422	Shaft—Tuning shaft—less friction roller	.20
31364	Socket—Dial lamp socket	.20
13871	Socket—Magic Eye tube socket*	.45
14278	Socket—Phonograph or Television input socket	.25
31319	Socket—Tube socket	.25
33175	Spring—Drive cord tension spring	.05
33623	Spring—Drive drum cord spring	.04
33622	Spring—Push arm return spring	.08
33421	Spring—Tuning shaft flat spring	.10
33420	Spring—Tuning shaft cam spiral spring	.06
33426	Switch—Range switch (S1, S2)	1.10
33428	Transformer—First i-f transformer (L9, L10, C19, C20)	1.95
14308	Transformer—Second i-f transformer (L11, L12, C21, C22, C23, R5)	2.90
33618	Transformer—Power transformer—105-120 volts, 25 cycle (T1)	6.40
33112	Transformer—Power transformer—105-120 volts, 50-60 cycle (T1)	4.30
	SPEAKER ASSEMBLIES (RL-70J1)	
31825	Cap—Cone center dust cap	.05
11469	Coil—Hum neutralizing coil (L13)	.30
33116	Coil—Speaker field coil (L15)	2.10
31275	Cone—Speaker cone, voice coil, and dust cap (L14)	1.75
5039	Plug—4-prong male, for speaker*	.30
33444	Transformer—Output transformer (T2)*	2.00
	MISCELLANEOUS ASSEMBLIES	
33473	Button—Push button	.10
30716	Clip—Magic Eye clip	.25
33437	Dial—Dial scale (glass)	1.10
33439	Escutcheon—Dial escutcheon—less push buttons	2.20
33435	Frame—Dial scale holder, mounting brackets, pointer, and Magic Eye bracket and clip assembled—less dial*	2.50
34383	Indicator—Dial pointer, carriage, and clip	.40
33434	Knob—Volume control, tone control, range switch, or station selector knob	.30
33431	Link—Link for "Antenna-Ground" terminal board	.02
33842	Marker—Station selectors call letter markers	.25
33438	Screw—Thumb screw for Magic Eye clip*	.05
34143	Shaft—Pointer carriage slide rod	.15
14270	Spring—Retaining spring for knob	.05

[a] C18 in Model K80

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

*In Model K80 only

NOTE: Above Parts List applies to both Model K-60 and K-80 except for items noted. Items on the right apply only to Model K-60.

4839	Capacitor—0.1 mfd. (C16)	.30
32240	Capacitor—Electrolytic, 2 sections 10 mfd., one section 20 mfd. (C27, C30, C31)	1.45
5119	Plug—3-contact female for speaker cable	.25
31388	Resistor—390 ohms, 1 watt (R8)	.22
30146	Resistor—4,700 ohms, ¼ watt (R11)	.20
	SPEAKER ASSEMBLIES (RL-70H6)	
5118	Plug—3-contact male, for speaker	.25
31301	Transformer—Output transformer (T2)	1.70
33436	Frame—Dial scale holder, mounting brackets, and pointer assembled—less dial	2.35

MODELS K60,K62,Ch.RC415B
MODELS K80,K81,K82,
Chassis RC415C,RC415D
Alignment,Parts

RCA MFG. CO., INC.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES	
33620	Arm—Push arm and cam assembly on tuning unit—less lock screw	.35
33432	Arm—Trip arm and set screw located on range switch shaft	.15
34574	Board—"Ant.-Grd." terminal board	.20
12581	Cap—i-f transformer shield cap	.25
30766	Cap—Rubber cap for Magic Eye—Models K-80, K-81	.15
34573	Capacitor—Trimmer, 2 sections 2-10 mmfd. each	.35
34572	Capacitor—Trimmer, 2 sections 4-50 mmfd. each	.35
12714	Capacitor—Air-trimmer, 2-12 mmfd. (C10)	.50
14079	Capacitor—6.8 mmfd. (C3)	.35
34580	Capacitor—39 mmfd. (C2)	XX
12723	Capacitor—56 mmfd. (C12)	.35
30949	Capacitor—56 mmfd. (C21, C22)	.25
30904	Capacitor—100 mmfd. (C19, C20)	.25
30232	Capacitor—220 mmfd. (C14)	.35
30433	Capacitor—470 mmfd. (C1)	.35
34581	Capacitor—650 mmfd. (C7)	.40
30057	Capacitor—2,700 mmfd. (C8)	.55
31399	Capacitor—4,700 mmfd. (C13)	.65
5107	Capacitor—.0025 mfd. (C25)	.20
33584	Capacitor—.005 mfd. (C18—Model K-60 only), (C35—Models K-80, K-81), (C37—All Models)	.25
4838	Capacitor—.005 mfd. (C24, C26, C29)	.25
4937	Capacitor—.01 mfd. (C18—Models K-80, K-81), (C28—All Models)	.25
32787	Capacitor—.05 mfd. (C34—Models K-80, K-81), (C17—All Models)	.20
4839	Capacitor—0.1 mfd. (C16) (Model K-60 only)	.30
32786	Capacitor—0.1 mfd.	.25
32240	Capacitor—Electrolytic, 2 sections 10 mfd., one section 20 mfd. (C27, C30, C31) (Model K-60 only)	1.45
33014	Capacitor—Electrolytic, 3 sections 10 mfd., one section 20 mfd. (C16, C27, C30, C31) (K-80, K-81)	1.90
34579	Coil—Oscillator coil	.80
34578	Control—Tone control	1.35
34695	Control—Volume control and power switch	XX
32635	Cord—Condenser drive cord	.24
32634	Cord—Drive cord	.10
32713	Core—Adjustable core and stud for oscillator coil	.35
33627	Drum—Condenser drive drum	.25
33174	Drum—Drive cord drum with set screws and calibrator dial	.65
11891	Lamp—Dial lamp	.17
33625	Plate—Front guide plate for push arms	.25
5119	Plug—3-contact female for speaker cable (Model K-60-A only)	.25
5040	Plug—4-contact female for speaker cable (Models K-80, K-81)	.30
33427	Pulley—Drive cord pulley and mounting bracket	.30
33626	Pulley—Drive pulley—less bronze drive cord	.25
31388	Resistor—390 ohms, 1 watt (R8) (Model K-60 only)	.22
30735	Resistor—560 ohms, 1 watt (R8) (Models K-80, K-81)	.22
14024	Resistor—2,700 ohms, ½ watt (R11, R15) (Models K-80, K-81)	.20
12695	Resistor—15,000 ohms, ½ watt (R17) (Models K-80, K-81)	.20
33489	Resistor—15,000 ohms, 2.5 watt (R3)	.55
12454	Resistor—33,000 ohms, ½ watt (R2)	.20
5132	Resistor—47,000 ohms, 1/10 watt	.15
12412	Resistor—47,000 ohms, ½ watt (R11) (Model K-60 only)	.20
12286	Resistor—56,000 ohms, ½ watt (R11) (Models K-80, K-81)	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12013	Resistor—1 meg., 1/10 watt (R13) (Models K-80, K-81)	.15
12679	Resistor—2.2 meg., ½ watt (R4)	.20
30271	Resistor—4.7 meg., ½ watt (R1)	.20
13601	Resistor—10 meg., ½ watt (R7)	.20
30340	Retainer—Retainer for shaft of tuning shaft cam and arm	.02
33419	Roller—Friction roller for tuning knob shaft	.10
4669	Screw—No. 8-32 square head set screw for drum	.03
33621	Screw—Push arm lock screw	.05
33624	Shaft—Tuning condenser drive shaft and washer	.15
33422	Shaft—Tuning shaft—less friction roller	.20
34575	Socket—3-contact female, for loop input	.20
31364	Socket—Dial lamp socket	.20
13871	Socket—Magic Eye tube socket (Models K-80, K-81)	.45
14278	Socket—Phonograph or Television input socket	.25
31319	Socket—Tube socket	.25
33175	Spring—Drive cord tension spring	.05
33623	Spring—Drive drum cord spring	.04
33622	Spring—Push arm return spring	.08
33421	Spring—Tuning shaft flat spring	.10
33420	Spring—Tuning shaft cam spiral spring	.06
34577	Switch—Range switch	1.55
14376	Transformer—First i-f transformer	2.45
32825	Transformer—Second i-f transformer	2.50
33618	Transformer—Power transformer—105-120 volts, 25-60 cycle (T1)	6.40
33112	Transformer—Power transformer—105-120 volts, 50-60 cycle (T1)	4.30
	SPEAKER ASSEMBLIES (K-60) (RL-70H6)	
31825	Cap—Cone center dust cap	.02
11469	Coil—Hum neutralizing coil	.30
33116	Coil—Speaker field coil	2.10
31275	Cone—Speaker cone, voice coil and dust cap	1.75
5118	Plug—3-contact male, for speaker	.25
31301	Transformer—Output transformer (T2)	1.70
	SPEAKER ASSEMBLIES (K-80, K-81, K-80-X) (RL-70J1)	
31825	Cap—Cone center dust cap	.02
11469	Coil—Hum neutralizing coil	.30
33116	Coil—Speaker field coil	2.10
31275	Cone—Speaker cone, voice coil and dust cap	1.75
5039	Plug—4 prong male, for speaker	.30
33444	Transformer—Output transformer (T2)	2.00
	MISCELLANEOUS ASSEMBLIES	
33474	Button—Push button (K-60, K-80)	.10
34994	Button—Push button (K-81)	XX
34992	Cap—Spindle cap for antenna loop (K-81)	XX
30716	Clip—Magic Eye clip (K-60, K-80)	.25
34582	Dial—Dial scale (glass) (K-60, K-80)	1.25
34997	Dial—Dial scale (glass) (K-81)	
33439	Escutcheon—Dial escutcheon—less push buttons (K-60, K-80)	2.20
34993	Escutcheon—Dial scale and push button escutcheon (K-81)	XX
33436	Frame—Dial scale holder, mounting brackets, and pointer assembled—less dial	2.35
34996	Frame—Dial frame complete with brackets—*less* pointer guide rods, pointer and carriage, dial scale and Magic Eye clip (K-81)	XX
33435	Frame—Dial scale holder, mounting brackets, pointer, and Magic Eye bracket and clip assembled—less dial (K-60, K-80)	2.50
34583	Frame—Frame only for "C" band loop—less wire and plug	.30
34383	Indicator—Dial pointer, carriage, and clip	.40
34998	Knob—Tuning, tone control, range switch, volume control and power switch or antenna loop shaft knob (K-81)	XX
33434	Knob—Volume control, tone control, range switch or station selector knob (K-60, K-80)	.30
34988	Loop—"A" and "B" band loop complete for K-60	XX
34991	Loop—"A" and "B" band antenna loop complete (K-81)	XX
33842	Marker—Station selector markers	.25
34872	Pin—Complete set of dowel pins for antenna loop (K-60, K-80)	.25
34990	Plug—2-prong male plug for antenna loop—"C" band (K-81)	XX
32641	Plug—3-prong male plug for "A" and "B" band antenna loop	.10
31482	Screw—No. 8-32 square head set screw (K-81)	.03
33438	Screw—Thumb screw for Magic Eye clip (K-60, K-80)	.05
34995	Shaft—Flexible shaft for antenna loop (K-81)	XX
34491	Shaft—Pointer and carriage guide rods (K-81)	.15
14270	Spring—Retaining spring for knob	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

XX Price upon application to your RCA Victor Parts Distributor.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference when the chassis is removed; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	1st-det. grid, in series with .01 mfd.	455 kc	"C" band quiet point	L6 and L7 (2nd I-F trans.) L4 and L5 (1st I-F trans.)
2	1st-det. grid, in series with .01 mfd.	15 mc	191° "C" band	C6 (osc.)*
3	1st-det. grid, in series with .01 mfd.	2.44 mc	115° "B" band	C9 (osc.)
4	Fasten chassis in cabinet, see that link is closed on the antenna board, attach dial indicator to drive cord, with indicator at 530 kc mark and gang at maximum capacity.			
5	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15 mc	15 mc signal "C" band	C11 Rock gang
6	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	6.0 mc	6.0 mc signal "C" band	"C" loop leads**
7	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	Repeat step 5		
8	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	600 kc	600 kc "A" band	L3 (osc.) Rock gang
9	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	1,500 kc "A" band	C10 (osc.) C36 (loop)
10	Repeat steps 8 and 9			
11		2.44 mc	2.44 kc "B" band	C9 (osc.) Rock gang

* Use minimum capacity peak if two peaks can be obtained.
** Adjust spacing between two leads from "C" band loop.
NOTE: Oscillator tracks above signal on all bands.

The push-buttons should be adjusted for eight favorite stations after the receiver is operating, and has had a brief warm-up period.

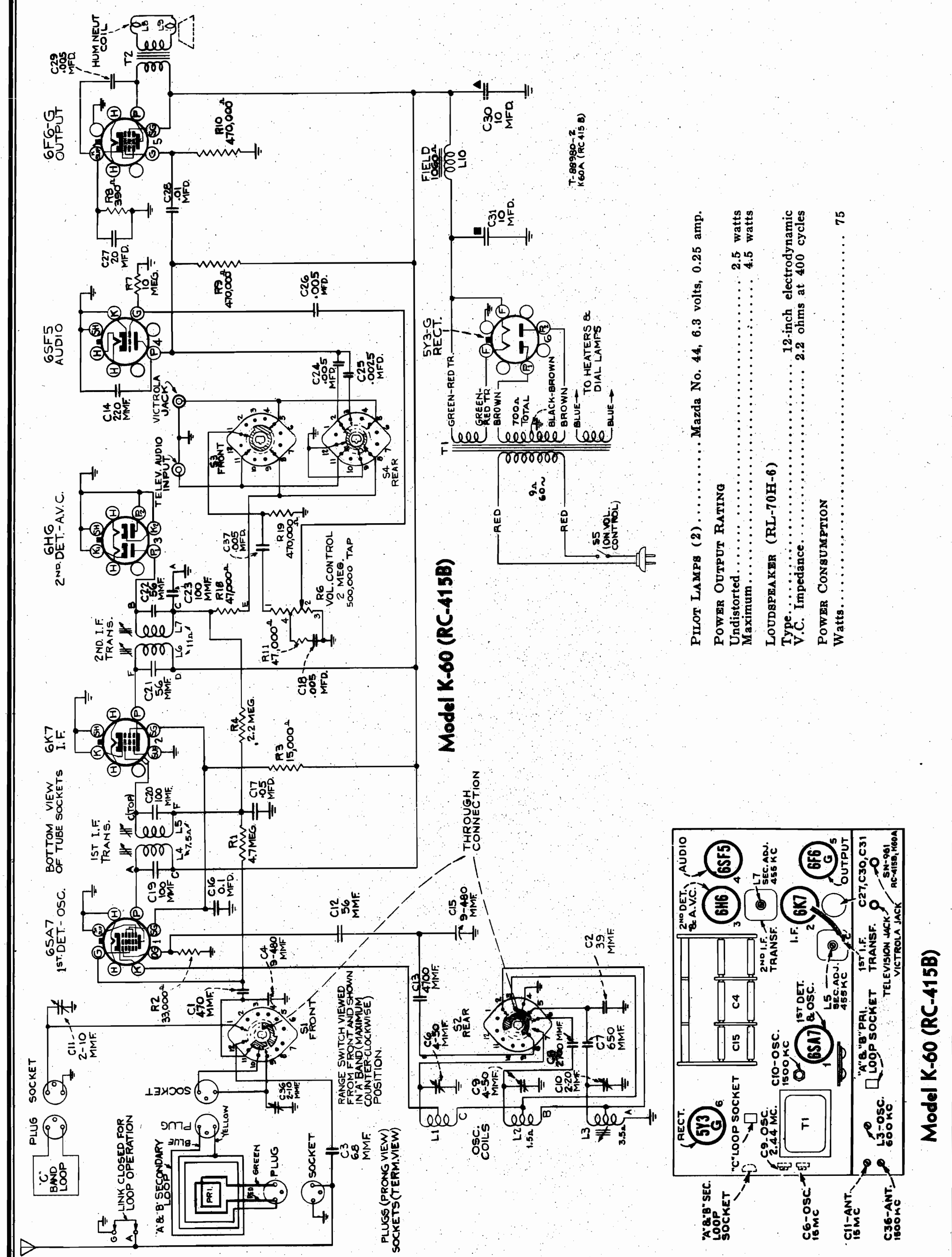
Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-button screws in back of the station-marker recesses.
2. Set Accessory-Tone Knob to "Radio" and turn the range selector to "A."
3. Press in the tuning knob and accurately tune in the first station.
4. With station accurately tuned in, press in the first push-button and tighten the screw.
5. Place the station marker tab in the recess.
6. Proceed in a similar manner to adjust the remainder of the push-buttons.

RCA MFG. CO., INC.

MODELS K60, K62, Ch. RC415B (With Loop)

Schematic, Socket, Trimmers



PILOT LAMPS (2)..........Mazda No. 44, 6.3 volts, 0.25 amp.

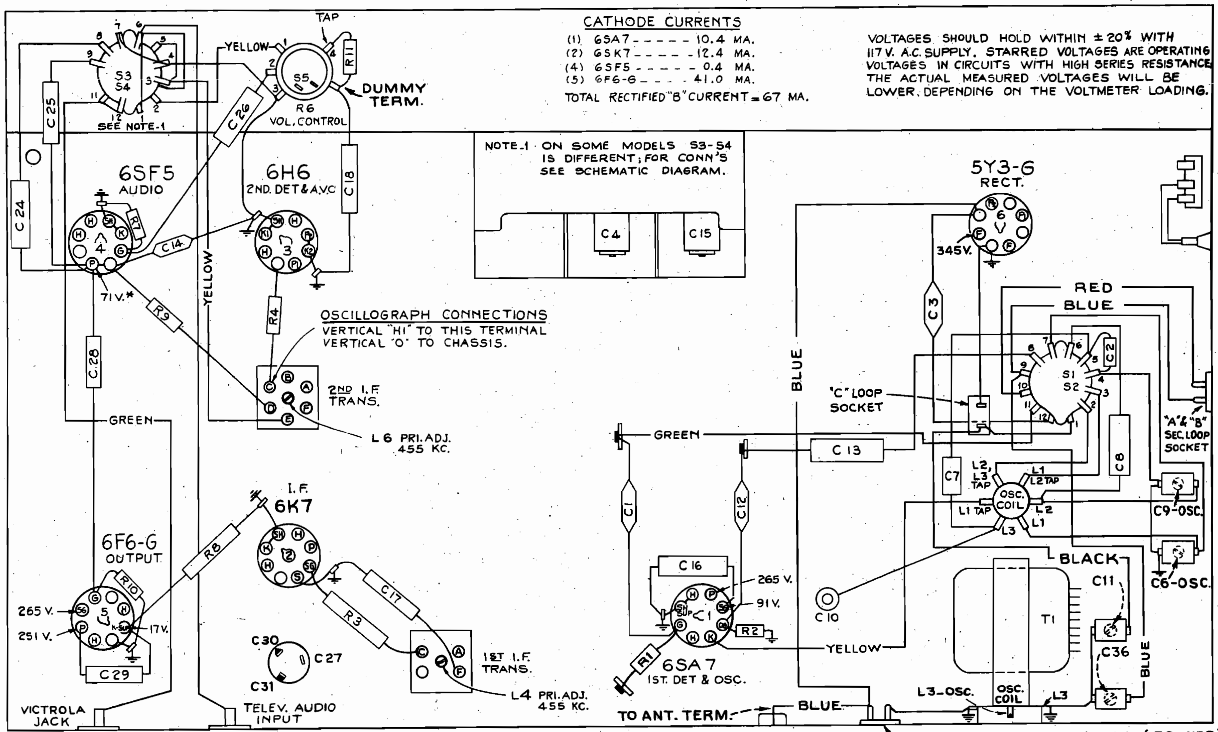
POWER OUTPUT RATING
Undistorted..........2.5 watts
Maximum..........4.5 watts

LOUDSPEAKER (RL-70H-6)
Type..........12-inch electrodynamic
V.C. Impedance..........2.2 ohms at 400 cycles

POWER CONSUMPTION
Watts..........75

MODELS K60,K62,Ch.RC415B
MODELS K80,Ch.RC415C,RC415D
K81,K82,Chassis RC415C
Chassis Wiring,Voltage

RCA MFG. CO., INC.

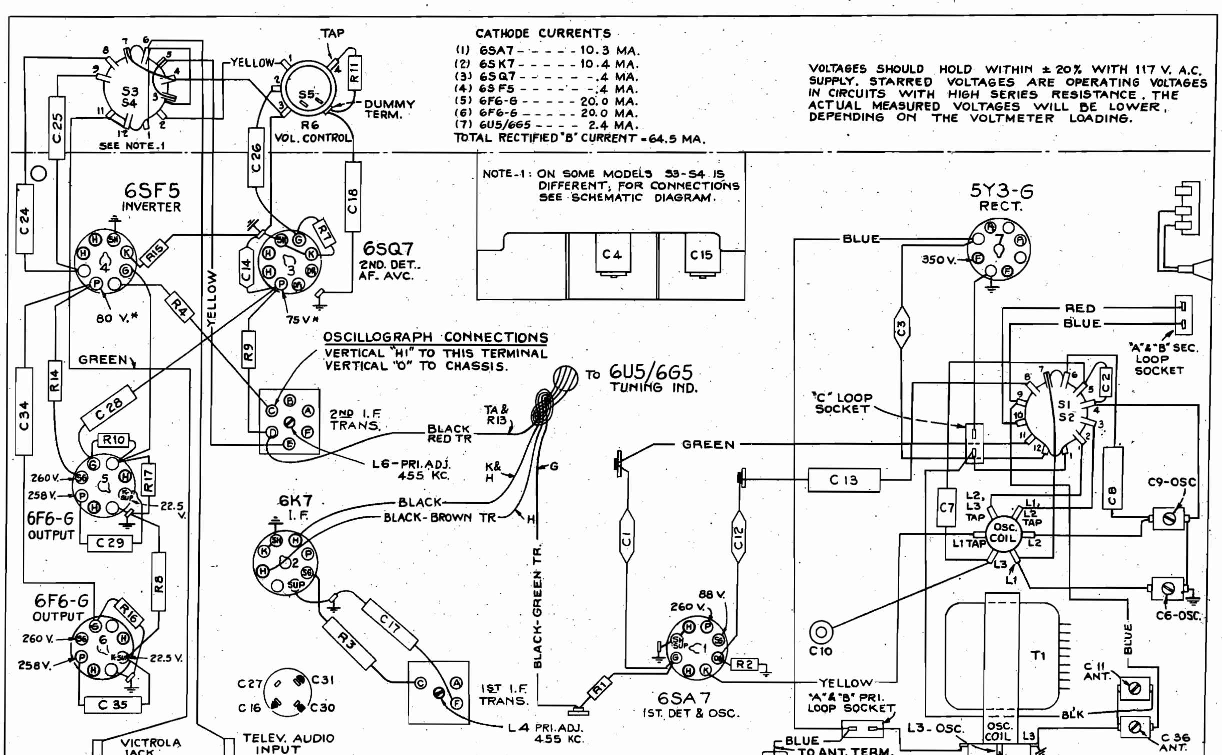


ALL HEATERS 6.3 V. AC, EXCEPT 5Y3-G, 5 V. AC.

BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING & SOCKET VOLTAGES

K-60A (RC-415B)
SN-1004

Model K-60 (RC-415B)



ALL HEATERS 6.2 V. AC, EXCEPT 5Y3-G, 5 V. AC.

BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING & SOCKET VOLTAGES

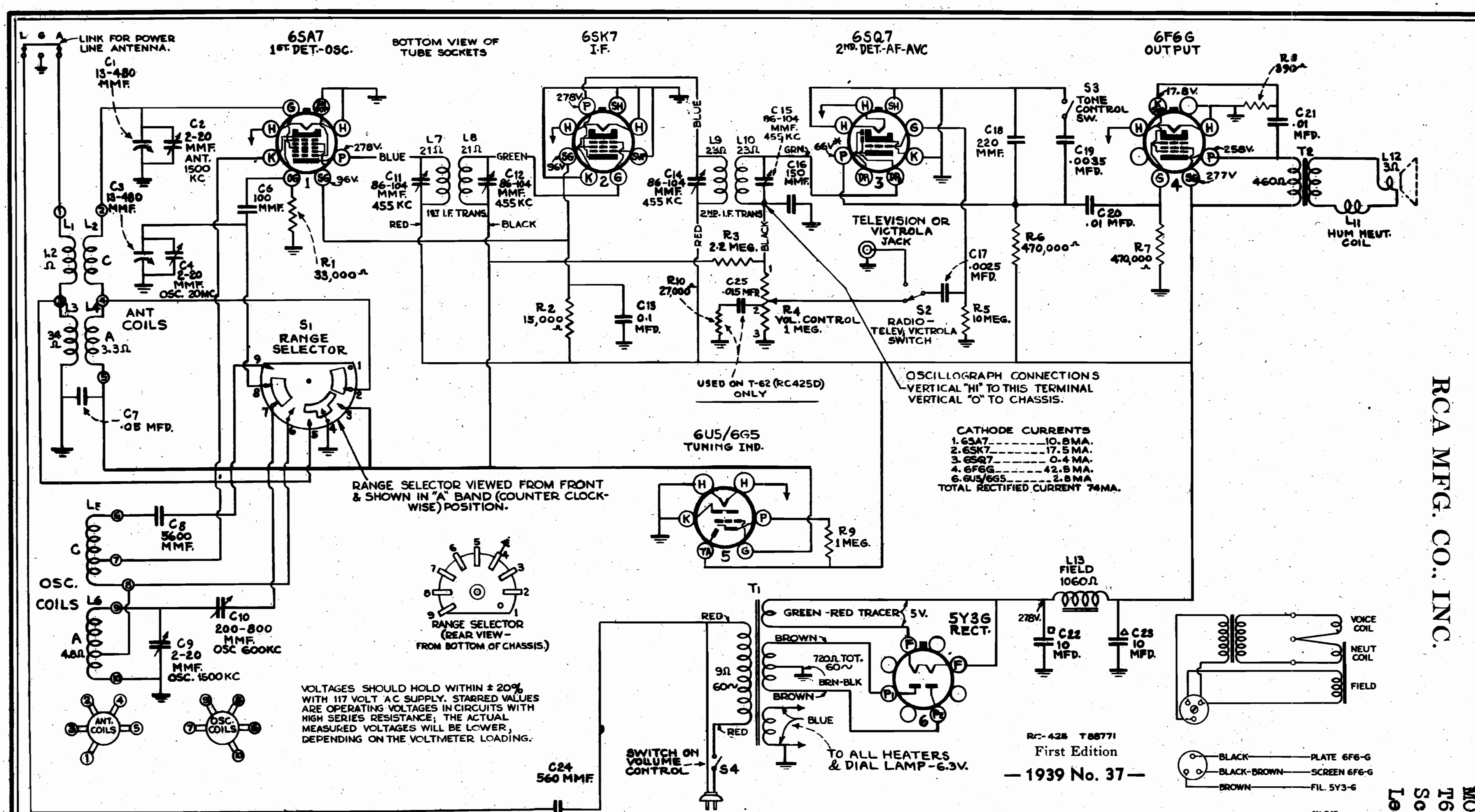
SN-1002
RC-415C-K80A

Models K-80 (RC-415C, RC-415D), and K-81 (RC-415C)

* *The Tuning Indicator is not used in RC-415D*

MODELS T60, Ch. RC425
T62, Chassis RC425D
Schematic, Voltage
Lead Dress

RCA MFG. CO., INC.



Power Line Antenna

Each of these models is equipped with a built-in power line antenna. To use this antenna, the link on the antenna terminal board should be connected between "A" and "L", thus connecting the antenna input of the receiver through a capacitor to the powerline. If an outside antenna is used, it should be connected to "A", a ground connection made to "G", and the link removed.

Loudspeaker (T-60, RL-78-6; T-62, RL-79A-4)

Type .... T-60, 5-inch electrodynamic; T-62, 6-inch electrodynamic

V. C. Impedance.................. 3.4 ohms at 400 cycles

Power Supply Ratings

Rating A .... 105-125 volts, 50-60 cycles, 80 watts

Rating B .... 105-125 volts, 25-60 cycles, 80 watts

Rating C............... 100-130, 140-160, 195-250 volts, 40-60 cycles, 80 watts

Pilot Lamp (1) .....Mazda No. 51, 6.3 volts, 0.20 amp.

Frequency Ranges

Standard Broadcast .... 540-1,720 kc

Short Wave .... 5.6-20 mc

Intermediate Frequency .... 455 kc

Power Output Rating

Undistorted .... 2.2 watts

Maximum .... 4.2 watts

Precautionary Lead Dress.—

1. Dress the Power Line Antenna lead close to the chassis base and near the back flange.
2. Power switch leads should be dressed around the 6SQ7 socket.

MODELS T60,T62
Alignment,Trimmers
Socket,Tuner,Dial Data

RCA MFG. CO., INC.

Alignment Procedure

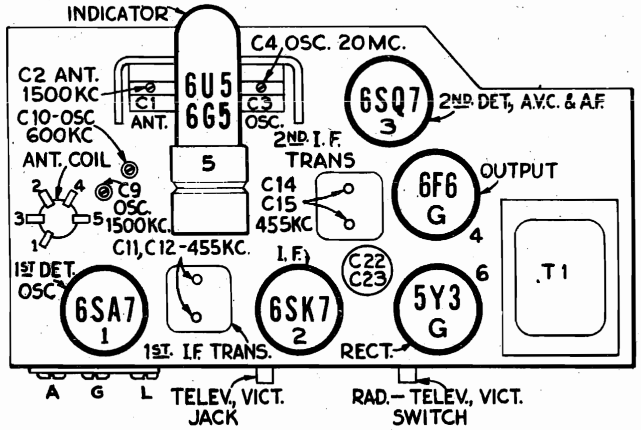
Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid A.V.C. action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, 6.1 mc, and 20 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

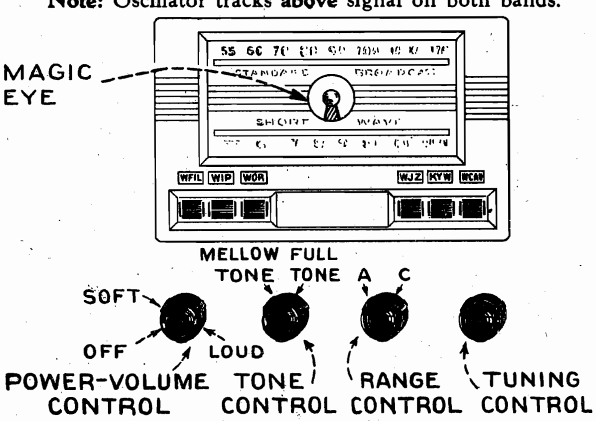
Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the mark at the extreme left (low frequency) end of the dial scale.

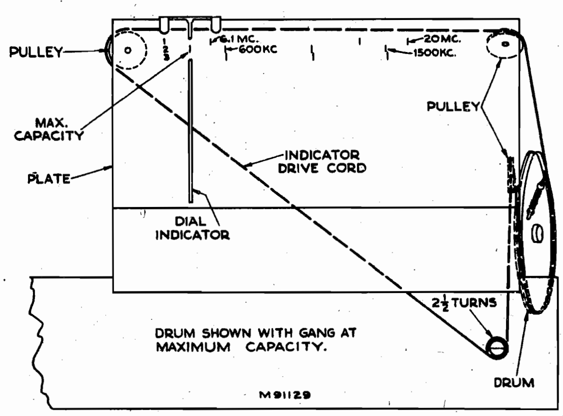


Steps	Connect the high side of the test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Antenna terminal	455 kc	"A" Band Quiet point between 550-750 kc	C14 and C15 (2nd I-F trans.)
2				C11 and C12 (1st I-F trans.)
3	Antenna terminal in series with 300 ohms	20 mc	"C" Band 20 mc calibration mark	C4 (osc.)*
4	Antenna terminal in series with 200 mmf.	1,500 kc	"A" Band 1,500 kc calibration mark	C9 (osc.) C2 (ant.)
5		600 kc	"A" Band 600 kc calibration mark	C10 (osc.) Rock gang
6	Repeat step 4			

* Use **minimum** peak if two can be obtained. Check to determine that C4 has been adjusted properly by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

Note: Oscillator tracks **above** signal on both bands.





DIAL MECHANISM AND CALIBRATION MARKS.

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Turn the accessory switch on the back apron of the chassis to "Radio" position and accurately tune in the station for which the first button is to be set.

3. Press in the first push-button rod (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

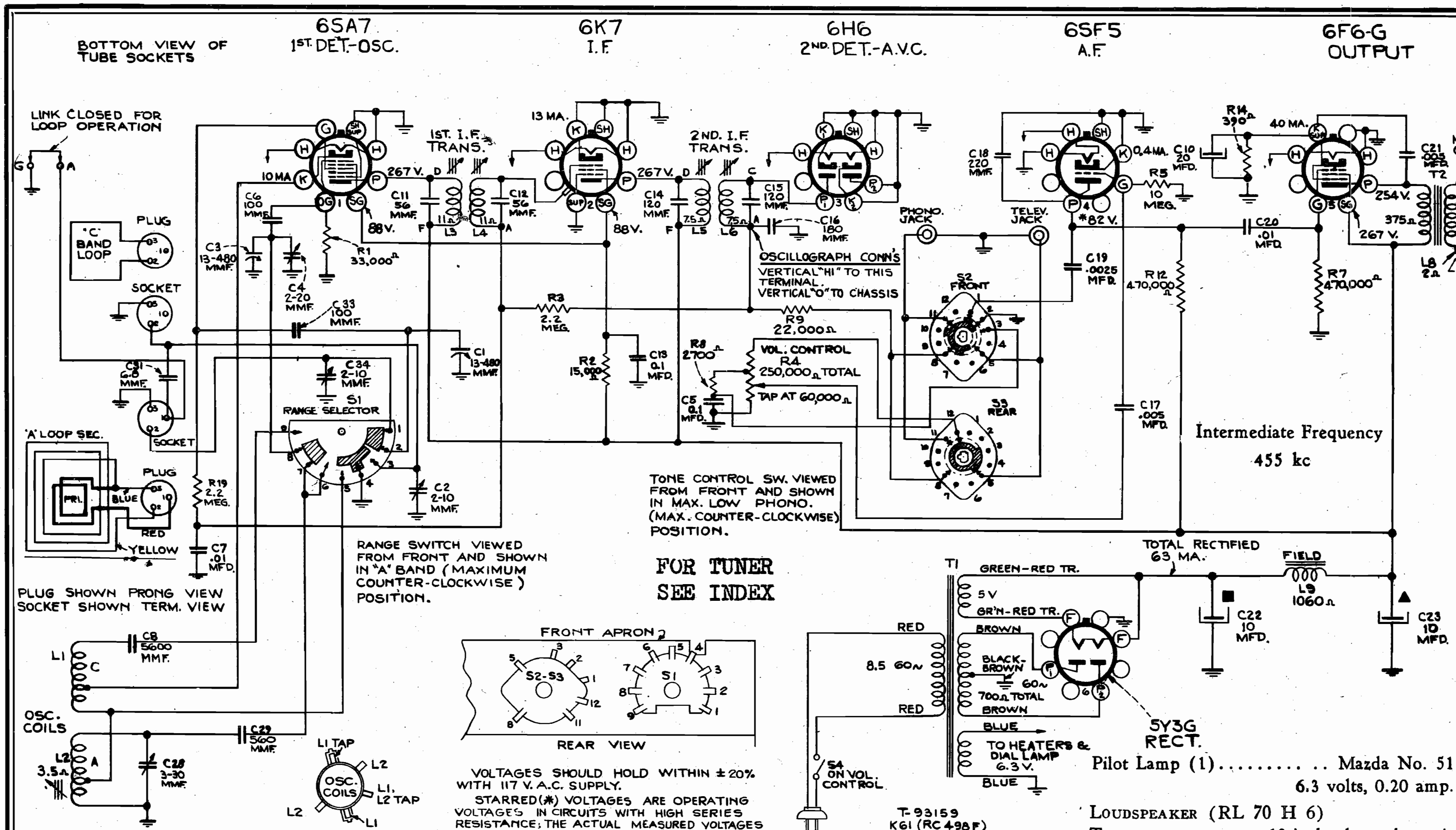
4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Insert the station marker tabs in the recesses above the push-buttons.

RCA MFG. CO., INC.

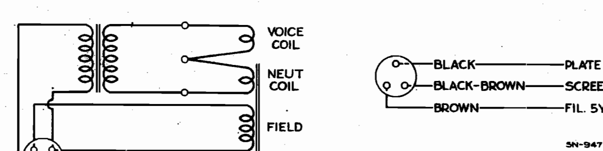
MODEL K61, Chassis RC498F
Schematic, Voltage
Lead Dress



Pilot Lamp (1) .... Mazda No. 51
6.3 volts, 0.20 amp.

Loudspeaker (RL 70 H 6)
Type .... 12-inch electrodynamic
Voice Coil Impedance at 400 cycles. 2.2 ohms

Frequency Ranges
Standard Broadcast .... 540 to 1,560 kc.
Short-Wave .... 5.8 to 18 mc



CONNECTIONS & COLORS OF SPEAKER & CABLE

Power Output Rating
Undistorted .... 2.5 watts
Maximum .... 4.5 watts

Power Supply Ratings
Rating A..... 105-125 volts, 50-60 cycles, 75 watts
Rating B..... 105-125 volts, 25-60 cycles, 75 watts
Rating C..... 105-125, 200-250 volts, 50-60 cycles, 75 watts

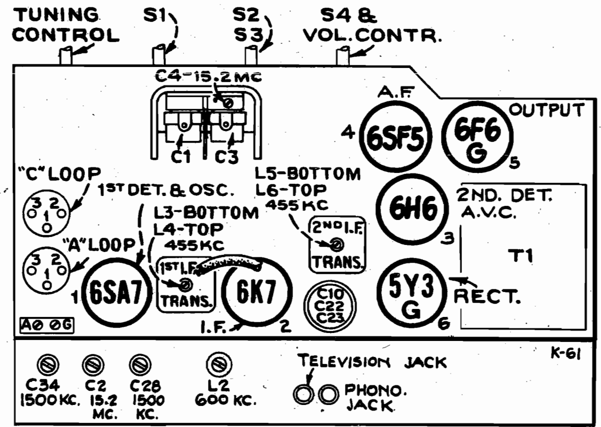
Precautionary Lead Dress.—

1. Dress AC switch leads away from 6SF5 tube socket.
2. Do not twist loop leads together or around each other. Spacing between leads from "C" band loop to chassis is important—see alignment step "5".
3. "High side" leads from loop sockets, range switch, oscillator coil, and trimmers must be dressed away from chassis and each other.
4. Dress C-6 and C-33 away from each other.
5. Dress C-17 away from power switch leads.

MODEL K61, Chassis RC498F
Alignment, Trimmers
Socket, Dial Data

RCA MFG. CO., INC.

Alignment Procedure



Tube and Trimmer Locations

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis schematic.

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

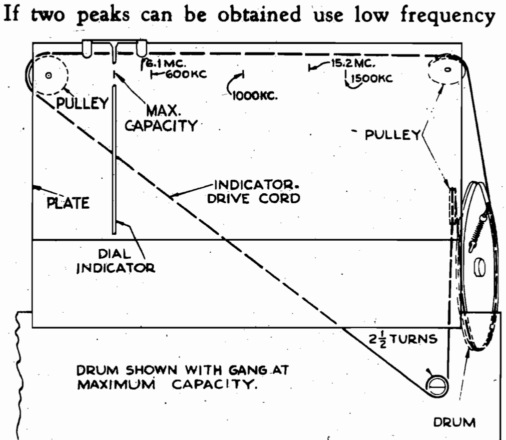
Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	I-F grid through 0.1 mfd capacitor and ground	455 kc	Quiet point between 1,720-1,500 kc	L5 and L6 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd capacitor and ground	455 kc	Quiet point between 1,720-1,500 kc	L3 and L4 (1st I-F trans.)
3	1st det. grid through 0.1 mfd capacitor and ground	15.2 mc	15.2 mc	C-4 oscillator*
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
5		6.1 mc	6.1 mc	Spacing between leads from "C" band loop to chassis
6		15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
7		1,500 kc	1,500 kc	C-34 antenna C-28 oscillator
8		600 kc	Rock at 600 kc	L-2 oscillator while rocking
9		1,500 kc	1,500 kc	C-34 antenna C-28 oscillator

When making adjustments 4 to 9 inclusive the chassis must be in the cabinet, both loops connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

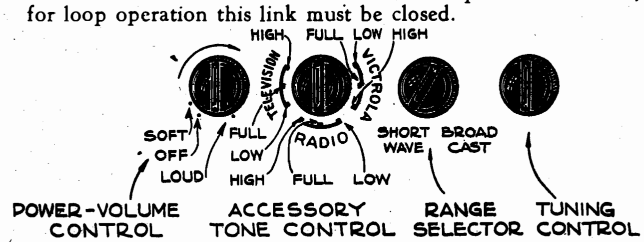
† If two peaks can be obtained use low frequency (maximum capacity) peak.



Dial Indicator and Drive Mechanism

Antennas

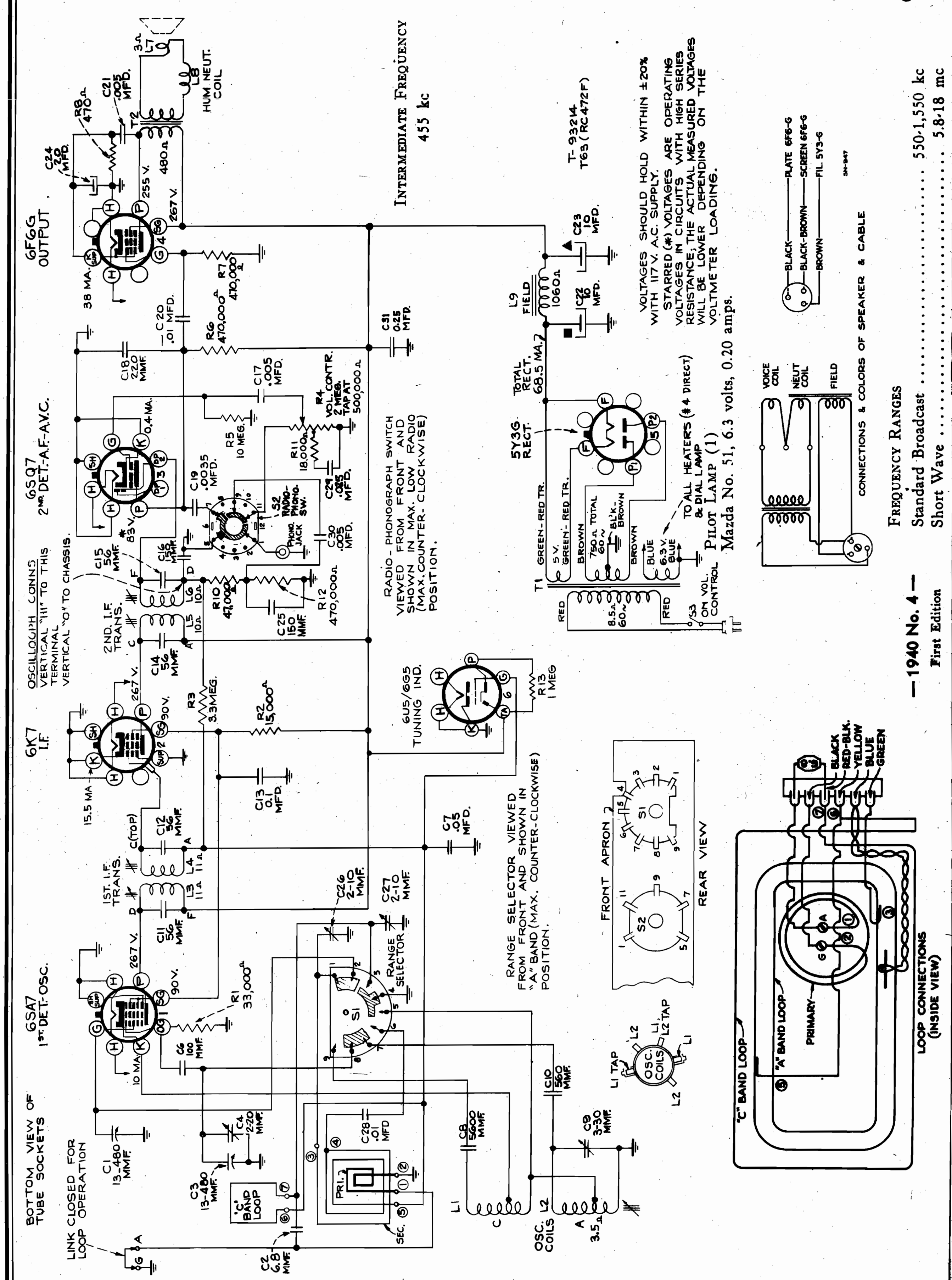
This receiver is equipped with two loop antennas ("C" band horizontal and fixed, and "A" band vertical and rotatable). During operation the "A" band loop should be rotated to the position giving maximum signal strength and freedom from noise. If desired, an outside antenna and ground can be connected to the terminals provided and when this is done the link between these terminals must be opened. However, for loop operation this link must be closed.



Controls

MODEL T63, Ch. RC472F
Schematic, Voltage

RCA MFG. CO., INC.



MODEL T63,Ch.RC472F
Alignment,Trimmers
Socket,Dial Data
Tuner

RCA MFG. CO., INC.

MODEL K61
Tuner Data

POWER OUTPUT RATING

Undistorted ..... 2.5 watts
Maximum ..... 4.5 watts

LOUDSPEAKER (RL 79 A 4)

Type ..... 6 inch Electrodynamic
Voice Coil Impedance at 400 Cycles..... 3.4 ohms

POWER SUPPLY RATINGS

Rating A ..... 105-125 volts, 50-60 cycles, 75 watts
Rating B ..... 105-125 volts, 25-60 cycles, 75 watts
Rating C .... 105-125, 200-250 volts, 50-60 cycles, 75 watts

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action. The low side of the test-oscillator should be connected to the receiver chassis.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, adjust the dial indicator along the drive cable to the 540 kc mark, gang condenser fully meshed. The indicator has a clip for attachment to the cable.

Precautionary Lead Dress:

(1) Dress C8 (Oscillator coil to range switch) and its leads away from surrounding wires and chassis.

(2) Dress R2 (Screen to B+) away from surrounding wires and parts.

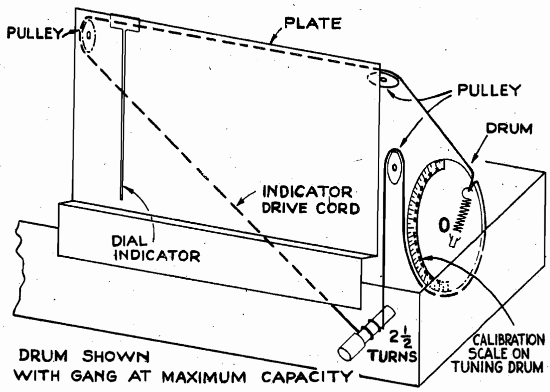
(3) Dress power switch leads away from 6SQ7 and 6F6G tube sockets.

Steps	Connect high side of test-osc. to—	Tune test osc. to—	Turn radio Dial to	Adjust the following for max. peak output
1	Grid of 6K7 through 0.01 mfd.	455 kc	"A" band Quiet point between 550-750 kc	L5 and L6 (2nd I-F trans.)
2	Grid of 6SA7 through 0.01 mfd.			L3 and L4 (1st I-F trans.)
3	Antenna terminal through 300 ohms	15 mc	"C" band 15 mc (132°)	C4 osc.* C27 ant.**
4	Antenna terminal through 200 mmfd.	600 kc	"A" band 600 kc (23.5°)	L2 osc. (Rock in)
5		1,500 kc	"A" band 1,500 kc (156.5°)	C9 osc. C26 ant.
6	Repeat Steps 4 and 5			

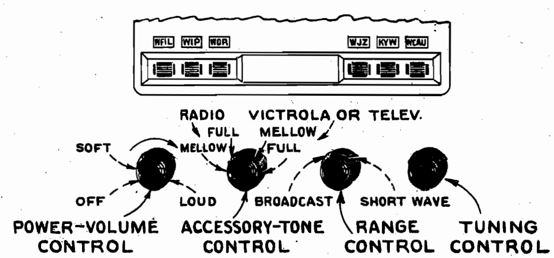
* Use **minimum** capacity peak if two can be obtained.
** Use **maximum** capacity peak if two can be obtained.
NOTE: Oscillator tracks **above** signal on all bands.

ANTENNAS

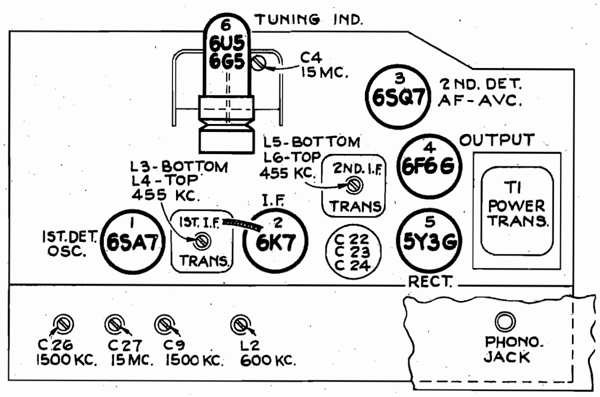
This receiver is equipped with a loop antenna for "A" and "C" bands. Both loops are fixed in position being mounted vertically from the rear of the chassis. For best performance the receiver should be turned to a position giving maximum signal strength and freedom from noise. The loop connections are shown in a separate diagram. If desired, an external antenna and ground can be connected to the terminals provided. In this case the link between these terminals must be opened; however, for loop operation this link must be closed.



Dial Indicator and Drive Mechanism



Dial and Controls



Tube and Trimmer Locations

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up for any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Set the receiver for "Radio" operation, range selector on "Broadcast", and accurately tune in the station for which the first button is to be set.

3. Press in the first push-button rod (left) with the screwdriver as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

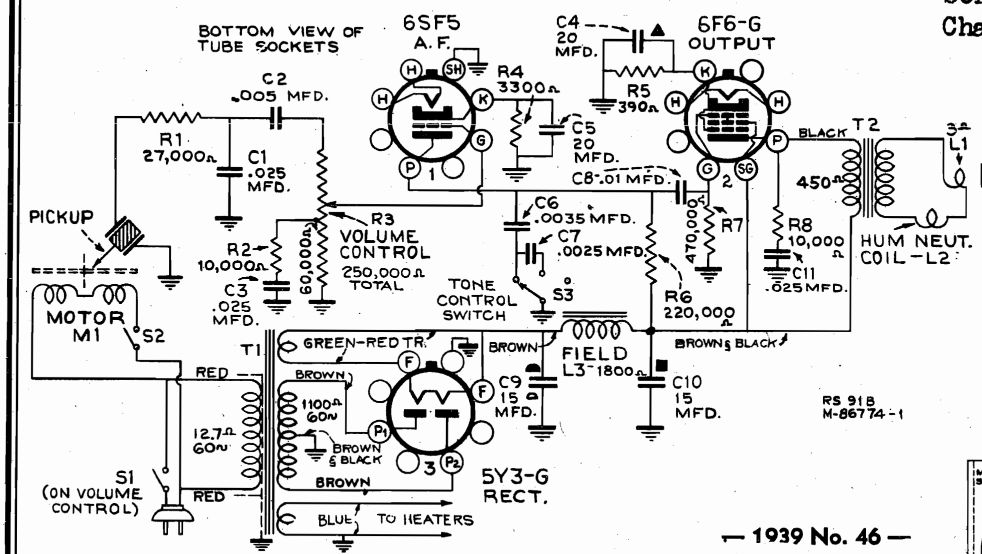
4. Replace the push-button on its shaft.

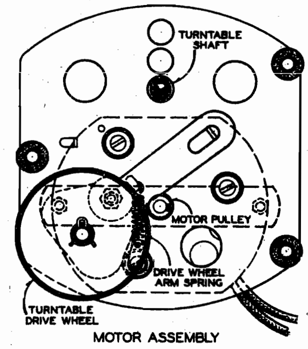
5. Proceed in a similar manner for the remainder of the push-buttons.

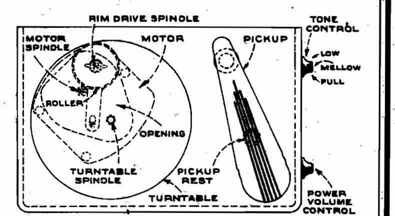
6. Insert the station marker tabs in the recesses above the push-buttons.

RCA MFG. CO., INC.

MODEL R60,Chassis RS91B
Victrola
Schematic,Voltage
Chassis Wiring,Assembly







— 1939 No. 46 —
First Edition

The Victrola Model R-60 consists of a crystal pickup, a two-stage audio amplifier, a six-inch electrodynamic speaker, and a rim-drive motor turntable mechanism with automatic mercury switch for starting and stopping—all housed in a wood cabinet of modern design and appearance.

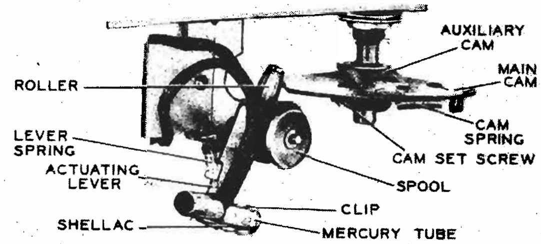
The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the top and bottom motor spindle bearings, to the turntable spindle, and to the turntable drive wheel bearing.

CAUTION: Keep oil away from drive bushing on top of motor spindle and from rubber driving tire on turntable drive wheel.

The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1¾ inches from the center line of the spindle. The motor may be shut off at any time by placing the pickup on the pickup rest.

VICTROLA MODEL R-60

(phonograph only) **RS-91B**



MERCURY SWITCH MECHANISM
(VIEWED FROM FRONT
SHOWN WITH PICKUP IN REST POSITION)

Specifications

Power Supply Ratings

A-6	105-125 volts, 60 cycles, 90 watts
A-5	105-125 volts, 50 cycles, 90 watts

Loudspeaker (RL-79-2)

Type	6-inch electrodynamic
V. C. Impedance at 400 cycles	3.4 ohms

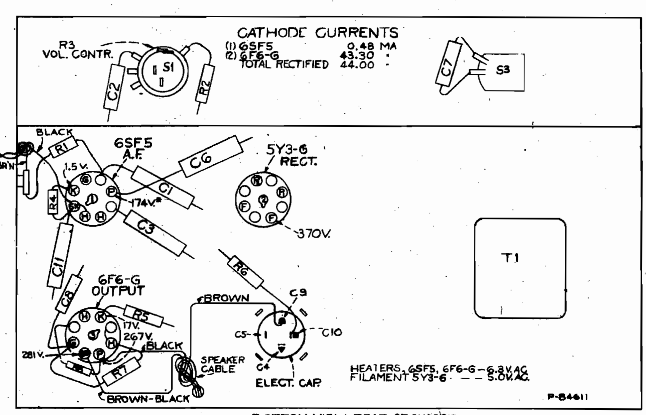
Tube Complement

(1) RCA—6SF5	A-F Amplifier
(2) RCA—6F6-G	Output
(3) RCA—5Y3-G	Rectifier

Pickup

Type	Crystal
Impedance	100,000 ohms at 400 cycles
Average Output	1½ volts at 1,000 cycles with 250,000 ohms load

	Height	Width	Depth
Cabinet Dimensions (inches)	8$\frac{1}{16}$	14	9¾
Chassis Base Dimensions (inches)	2¼	7⅜	4¼
Overall Chassis Height			6½ inches
Weight			20 lbs. (shipping)



BOTTOM VIEW-REAR OF CHASSIS
PARTS LAYOUT AND SOCKET VOLTAGES

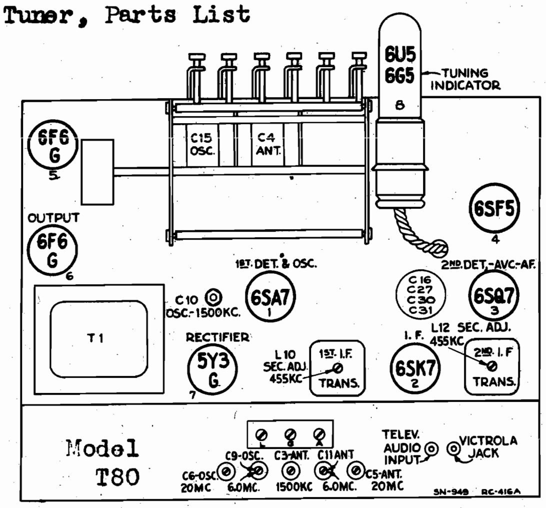
***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated. Values should hold within approximately ±20% with 117-volt a-c supply.

MODELS T64,T65,Ch.RC416
MODEL T80,Chassis RC416A
Tuner, Parts List

RCA MFG. CO., INC.

MODEL T80,
Socket,Trimmers



The push-buttons should be adjusted for six favorite stations after the receiver is operating, and has had a brief warm-up period.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-button screws in back of the station-marker recesses.
2. Set Accessory-Tone Knob to "Radio" and turn the range selector to "A," so that the "A" band indicator lights up.
3. Press in the tuning knob and accurately tune in the first station.
4. With station accurately tuned in, press in the first push-button and tighten the screw.
5. Place the station marker tab in the recess.
6. Proceed in a similar manner to adjust the remainder of the push-buttons.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-416A)	
33620	Arm—Push arm and cam assembly on tuning unit—less lock screw	.35
33430	Board—Antenna and ground terminal board	.20
34268	Cap—Rubber cap for tuning tube	.10
12714	Capacitor—Air trimmer, 2-12 mmfd. (C10)	.50
33429	Capacitor—Trimmer capacitor bank, two 4-50 mmfd., three 2-20 mmfd., sections (C3, C5, C6, C9, C11)	.80
32792	Capacitor—25 mmfd. (C2)	.40
12723	Capacitor—56 mmfd. (C12)	.35
30904	Capacitor—100 mmfd. (C19, C20)	.25
12404	Capacitor—120 mmfd. (C21, C22)	.30
14712	Capacitor—180 mmfd. (C23)	.30
12694	Capacitor—220 mmfd. (C14)	.35
30433	Capacitor—470 mmfd. (C1)	.35
12537	Capacitor—560 mmfd. (C32)	.35
31433	Capacitor—560 mmfd. (C7)	.35
31403	Capacitor—3,300 mmfd. (C8)	.60
31405	Capacitor—6,000 mmfd. (C13)	.75
5107	Capacitor—.0025 mfd. (C25)	.20
4838	Capacitor—.005 mfd. (C24, C26, C29, C33*, C35)*	.25
4937	Capacitor—.01 mfd. (C28)	.25
4870	Capacitor—.025 mfd. (C18)	.20
32787	Capacitor—.05 mfd. (C17, C34)*	.20
33014	Capacitor—Electrolytic, three 10 mfd., and one 20 mfd. sections (C16, C27, C30, C31)	1.90
33508	Clip—Magic Eye mounting clip and bracket	.25
32821	Coil—Antenna coil (L1, L2, L3, L4)	1.35
32824	Coil—Oscillator coil (L5, L6, L7)	1.00
32635	Cord—Condenser drive cord	.24
32634	Cord—Drive cord	.10
32713	Core—Adjustable core and stud for oscillator coil	.35
33627	Drum—Condenser drive drum	.25
34267	Drum—Drive cord drum	.65
33186	Gear—Volume control knob shaft and gear	.40
33185	Gear—Volume control gear and hub, with set screws	.50
11891	Lamp—Dial lamp	.17
33431	Link—Antenna and ground terminal board link	.02
34041	Link—Link complete with arm and cam for operating range switch	.50
33628	Plate—Front guide plate for push arms	.25
13871	Plug—Eye cable plug	.45
5040	Plug—Speaker cable plug	.30
33509	Pulley—Drive cord pulley and bracket (1 pulley)	.20
33510	Pulley—Drive cord pulleys and bracket (2 pulleys)	.45
33626	Pulley—Drive pulley	.25
14439	Resistor—100 ohms, ¼ watt (R12)	.20
30735	Resistor—560 ohms, 1 watt (R8)	.22
12265	Resistor—6,800 ohms, ¼ watt (R17)*	.20
14559	Resistor—10,000 ohms, ¼ watt (R11)	.20
33489	Resistor—15,000 ohms, 2.5 watts (R3)	.55
14284	Resistor—22,000 ohms, 1/10 watt (R5)	.15
12454	Resistor—33,000 ohms, ¼ watt (R2)	.20
12285	Resistor—470,000 ohms, ¼ watt (R9, R10, R14*, R16)*	.20
12013	Resistor—1 meg., 1/10 watt (R13)	.15
13730	Resistor—1 meg., ¼ watt (R1)	.20
12679	Resistor—2.2 meg., ¼ watt (R4)	.20
13601	Resistor—10 meg., ¼ watt (R7, R15)	.20
14343	Retainer—Retaining ring for volume control knob shaft	.03
34040	Ring—Retaining ring for tuning shaft	.02
4669	Screw—No. 8-32 sq. hd. set screw for volume control gear and drum	.03
33621	Screw—Push arm lock screw	.05
34039	Shaft—Range switch knob shaft	.15
33624	Shaft—Tuning condenser drive shaft and washer	.15
34038	Shaft—Tuning knob shaft with rubber drive roller and pulley assembled	.60
33545	Shield—Dial lamp shield	.05
31364	Socket—Dial lamp socket	.20
33514	Socket—Phonograph and Television socket	.25
31319	Socket—Tube socket	.25
33544	Spring—Drive cord tension spring	.05
33623	Spring—Drive drum cord spring	.04
33622	Spring—Push arm return spring	.08
34042	Spring—Spring and pin for range switch shaft	.20
33515	Spring—Tension spring for spring and pin	.02
33513	Switch—Range switch (S1, S2)	1.05
33511	Tone Control, Television and Phono switch (S3, S4)	1.10
33428	Transformer—First i-f transformer (L9, L10, C19, C20)	1.95
14308	Transformer—Second i-f transformer (L11, L12, C21, C22, C23, R5)	2.90
33619	Transformer—Power transformer 105-120 volts, 25-60 cycles (T1)	6.40
33112	Transformer—Power transformer 105-120 volts, 50-60 cycles (T1)	4.30
31446	Transformer—Power transformer—Universal—60 cycle (T1)	6.40
33512	Volume control and power switch (R6, S5)	2.00
33726	Washer—"C" washer for spring and pin	.02
34037	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (RL79-5)	
32907	Cap—Cone center dust cap	.02
32906	Coil—Hum neutralizing coil	.25
33547	Coil—Speaker field coil	1.00
32934	Cone—Speaker cone and voice coil	1.65
5039	Plug—4-prong male speaker connection plug*	.30
33599	Transformer—Speaker output transformer*	1.35
	MISCELLANEOUS ASSEMBLIES	
33474	Button—Push button	.10
33552	Dial—Glass dial scale	1.80
33549	Escutcheon—Dial and push button escutcheon—less buttons and screen	1.95
33551	Frame—Dial frame, holder, and pointer assembled—less dial	1.70
33471	Knob—Volume control knob	.25
33553	Knob—Range selector knob	.30
33470	Knob—Tone control knob	.20
33505	Knob—Tuning control knob	.30
33842	Marker—Station selector call letter markers	.25
33550	Screen—"Push Button "A" Band" marker screen	.20
30330	Spring—Retaining spring for knob, Stock No. 33470	.03
14270	Spring—Retaining spring for knob, Stock No. 33553 and Stock No. 33471	.05
4982	Spring—Retaining spring for knob, Stock No. 33505	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

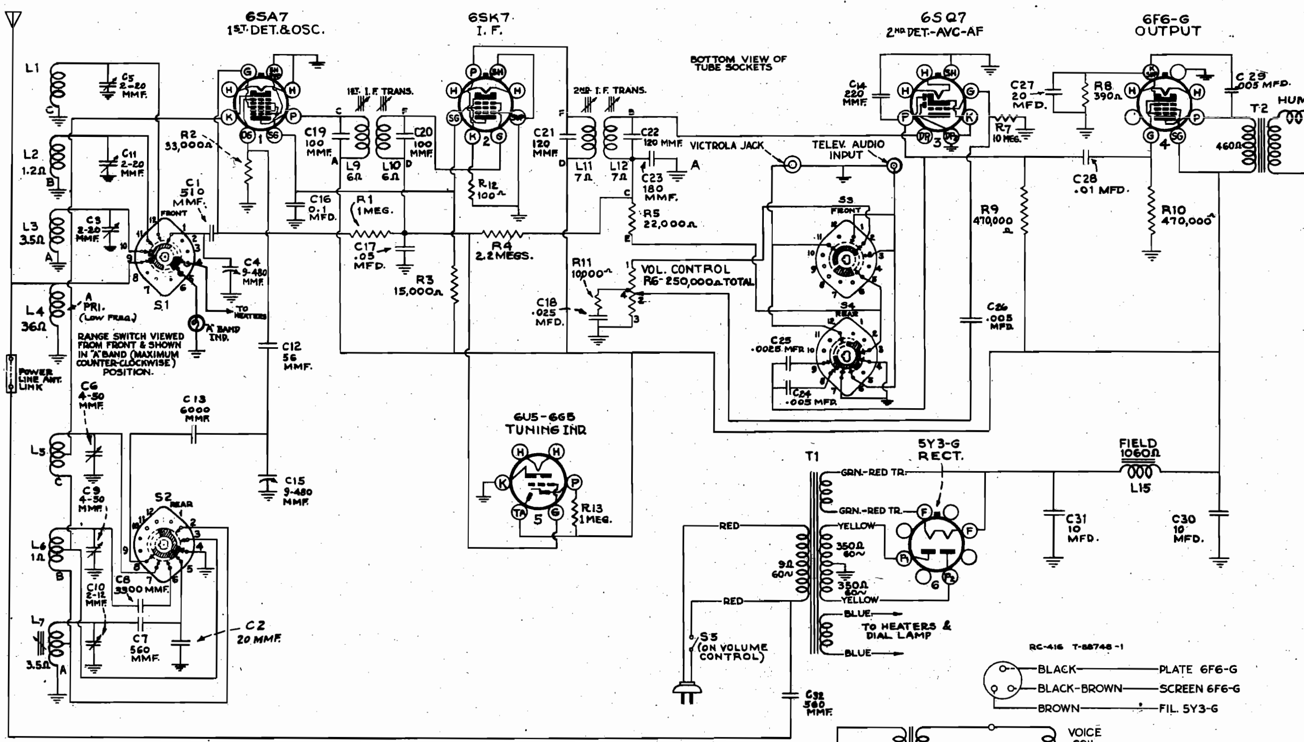
* Model T-80 only

NOTE: Above Parts List applies to both Models T-64 and T-80, except for the items noted. Items on the right apply only to Model T-64.

4839	Capacitor—0.1 mfd. (C16)	.30
32240	Capacitor—Electrolytic, two 10 mfd., and one 20 mfd. sections (C27, C30, C31)	1.45
31388	Resistor—390 ohms, 1 watt (R8)	.22
5119	Plug—Speaker cable plug	.25
	SPEAKER ASSEMBLIES (RL-79-4)	
5118	Plug—3-contact male plug for speaker	.25
32905	Transformer—Output transformer (T2)	1.35

RCA MFG. CO., INC.

MODELS T64, T65, Ch. RC416
Schematic, Voltage
Chassis Wiring, Changes



Note: On some receivers the following circuit changes are in effect:

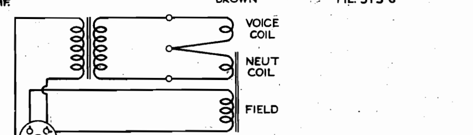
1. C1 is 470 mmfd.
2. There are three types of 2nd. I-F transformers in use.

a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown below.

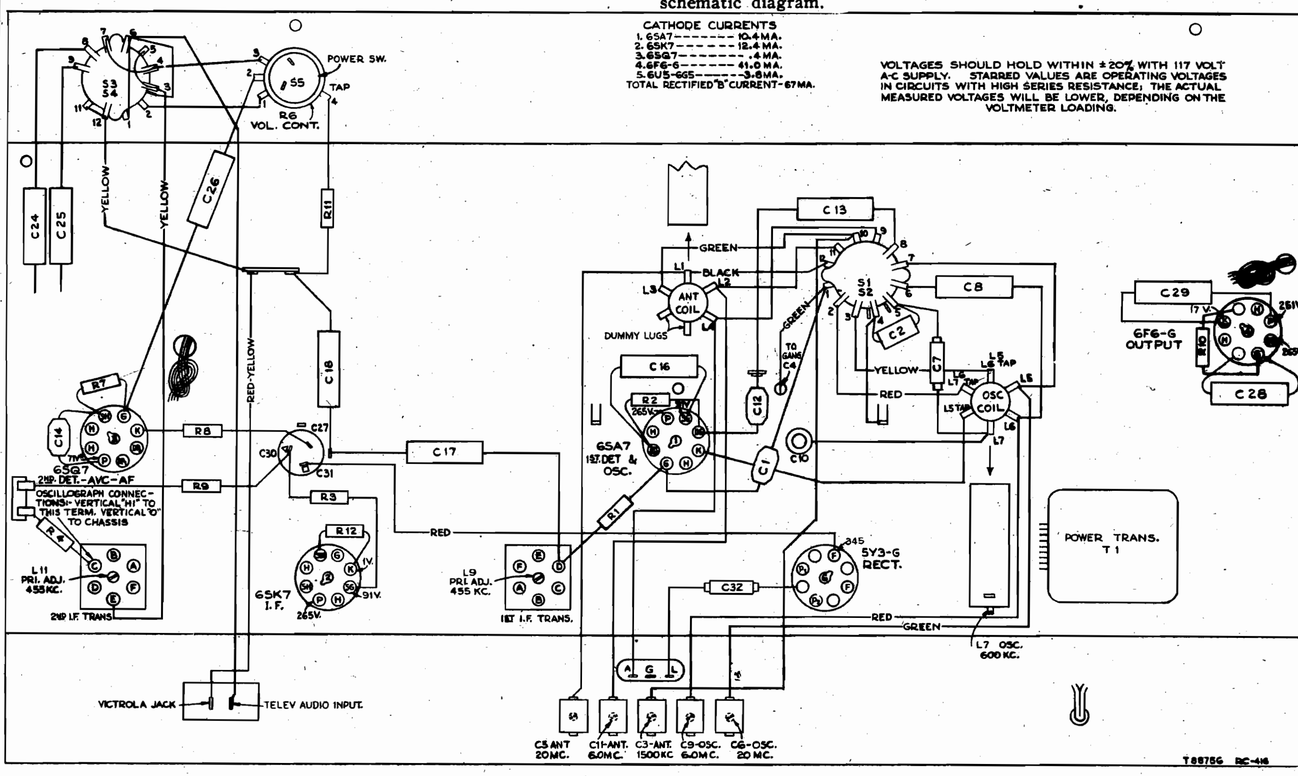
b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.

c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the schematic diagram.

Important: Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the schematic diagram.



CONNECTIONS & COLORS OF SPEAKER & CABLE



BOTTOM VIEW-REAR OF CHASSIS
R-F. WIRING & SOCKET VOLTAGES

First Edition

MODEL T64,T65,Ch.RC416
Alignment,Trimmers
Socket,Drive Cable

RCA MFG. CO., INC.

POWER SUPPLY RATINGS

Rating A...... 105-125 volts, 50-60 cycles, 75 watts

Rating B...... 105-125 volts, 25-60 cycles, 75 watts

Rating C...... 100-130, 140-160, 195-250 volts, 40-60 cycles, 75 watts

PILOT LAMPS (2).. Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING
Undistorted.................... 2.5 watts
Maximum...................... 4.5 watts

LOUDSPEAKER (RL-79-4)
Type.............. 6-inch Electrodynamic
V.C. Impedance..... 3.4 ohms at 400 cycles

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

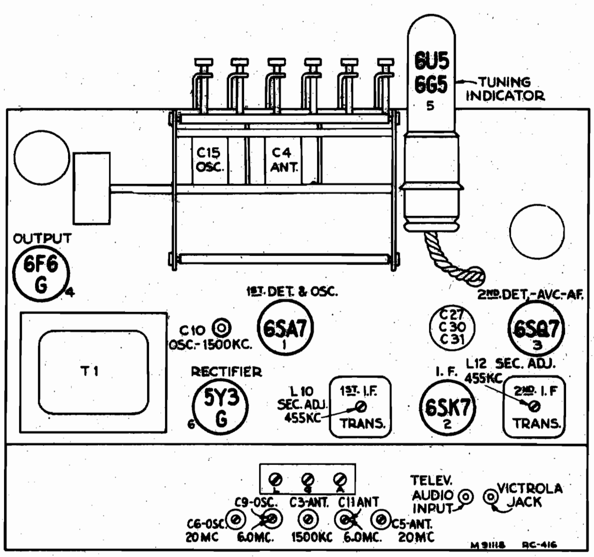
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.



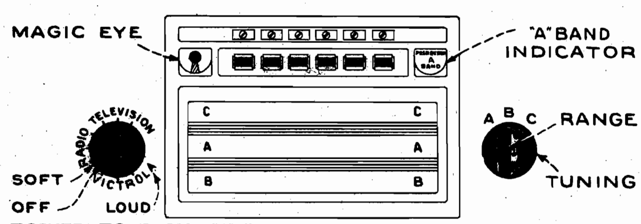
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 240° mark on the calibration scale when the plates are fully meshed.

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 grid in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L11 and L12 (2nd I-F Trans.)
2	6SA7 grid in series with .01 mfd.			L9 and L10 (1st I-F Trans.)
3	Ant. terminal in series with 300 ohms	20 mc	20 mc (40°) "C" Band	C6 (osc.)* C5 (ant.)
4		6 mc	6 mc (52.5°) "B" Band	C9 (osc.)** C11 (ant.)
5	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc (41.75°) "A" Band	C10 (osc.) C3 (ant.)
6		600 kc	600 kc (200.25°) "A" Band	L7 (osc.) Rock Gang
7	Repeat step 5.			

* Use **minimum** capacity peak if two can be obtained. Check to determine that C6 has been adjusted to correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

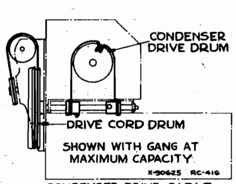
** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

Note: Oscillator tracks **above** signal on all bands.

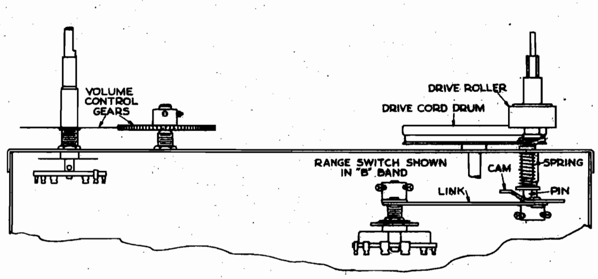


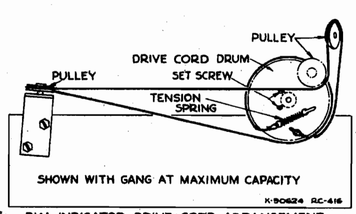
POWER-TONE-VOLUME CONTROL

RANGE-TUNING CONTROL



CONDENSER DRIVE CABLE ARRANGEMENT



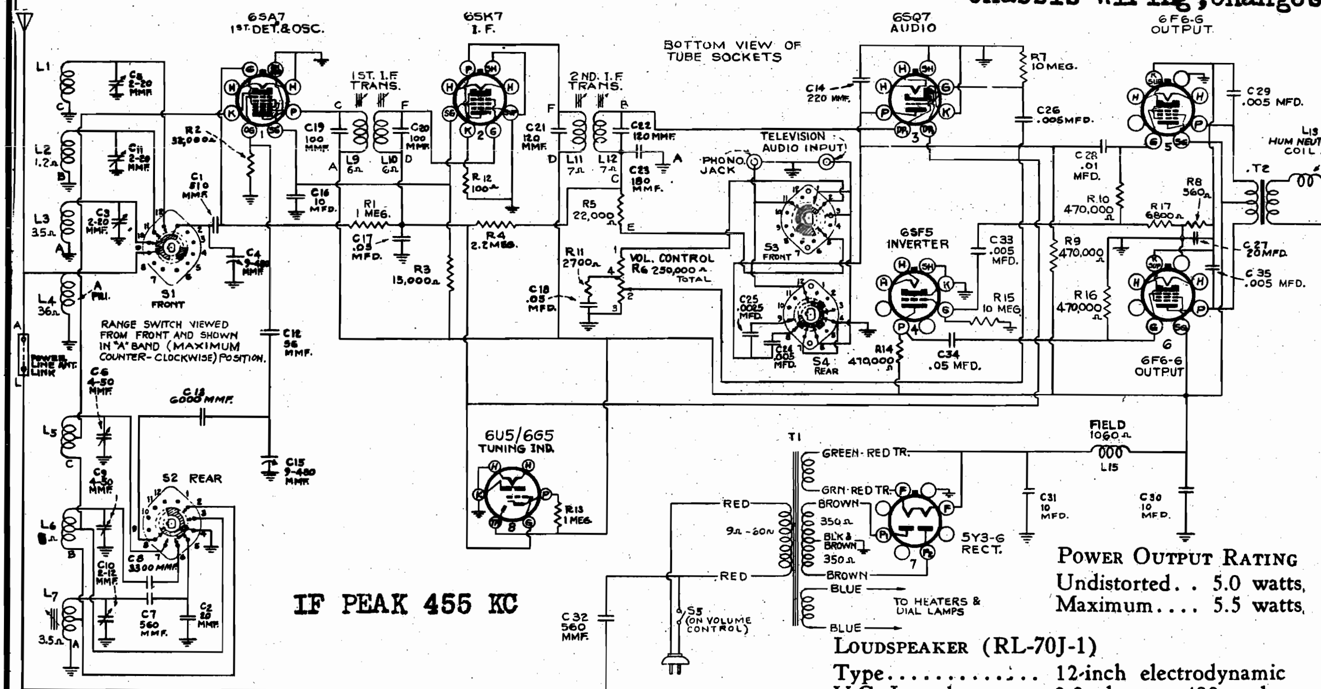


DIAL INDICATOR DRIVE CORD ARRANGEMENT

Note: Adjustment of the link and cam should be such that in "A" band position when push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

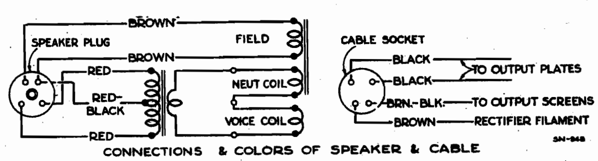
RCA MFG. CO., INC.

MODEL K80, Ch. RC415A
Schematic, Voltage
Chassis Wiring, Changes



Power Output Rating
Undistorted. . 5.0 watts,
Maximum. . . . 5.5 watts,

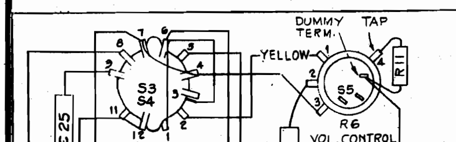
Loudspeaker (RL-70J-1)
Type. . . . . 12-inch electrodynamic
V.C. Impedance. . . . 2.2 ohms at 400 cycles



CONNECTIONS & COLORS OF SPEAKER & CABLE

Note: On some receivers the following circuit modifications are in effect:

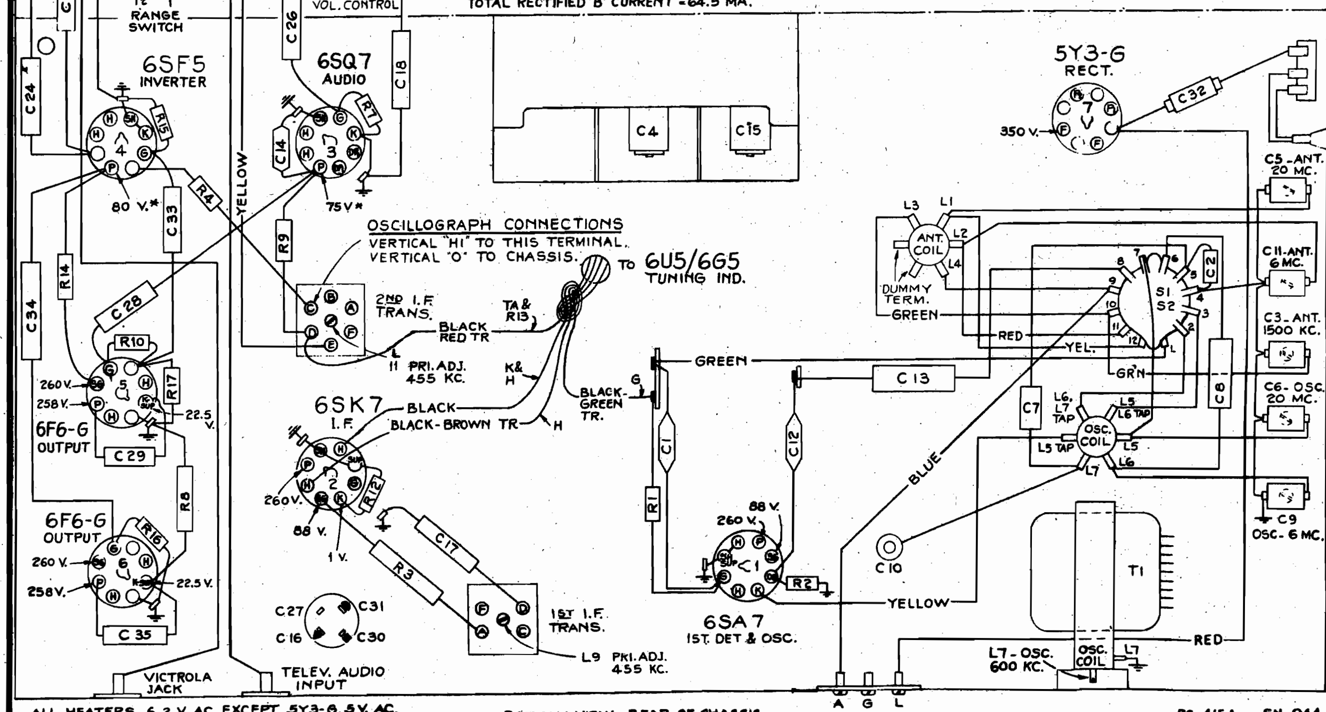
1. R11 is 5,600 ohms, and C18 is 0.1 mfd.
2. C1 is 470 mmfd.; R15 is 2,700 ohms and is connected from cathode of 6SF5 Inverter to ground; R17 is 15,000 ohms; and C33 is omitted.
3. There are three types of 2nd I-F transformers in use.
a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown above.
b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.
c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the above diagram.
Important: Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the diagram.



CATHODE CURRENTS

(1)	6SA7	10.3 MA.
(2)	6SK7	10.4 MA.
(3)	6SQ7	.4 MA.
(4)	6SF5	.4 MA.
(5)	6F6-G	20.0 MA.
(6)	6F6-G	20.0 MA.
(7)	6U5/6G5	2.4 MA.

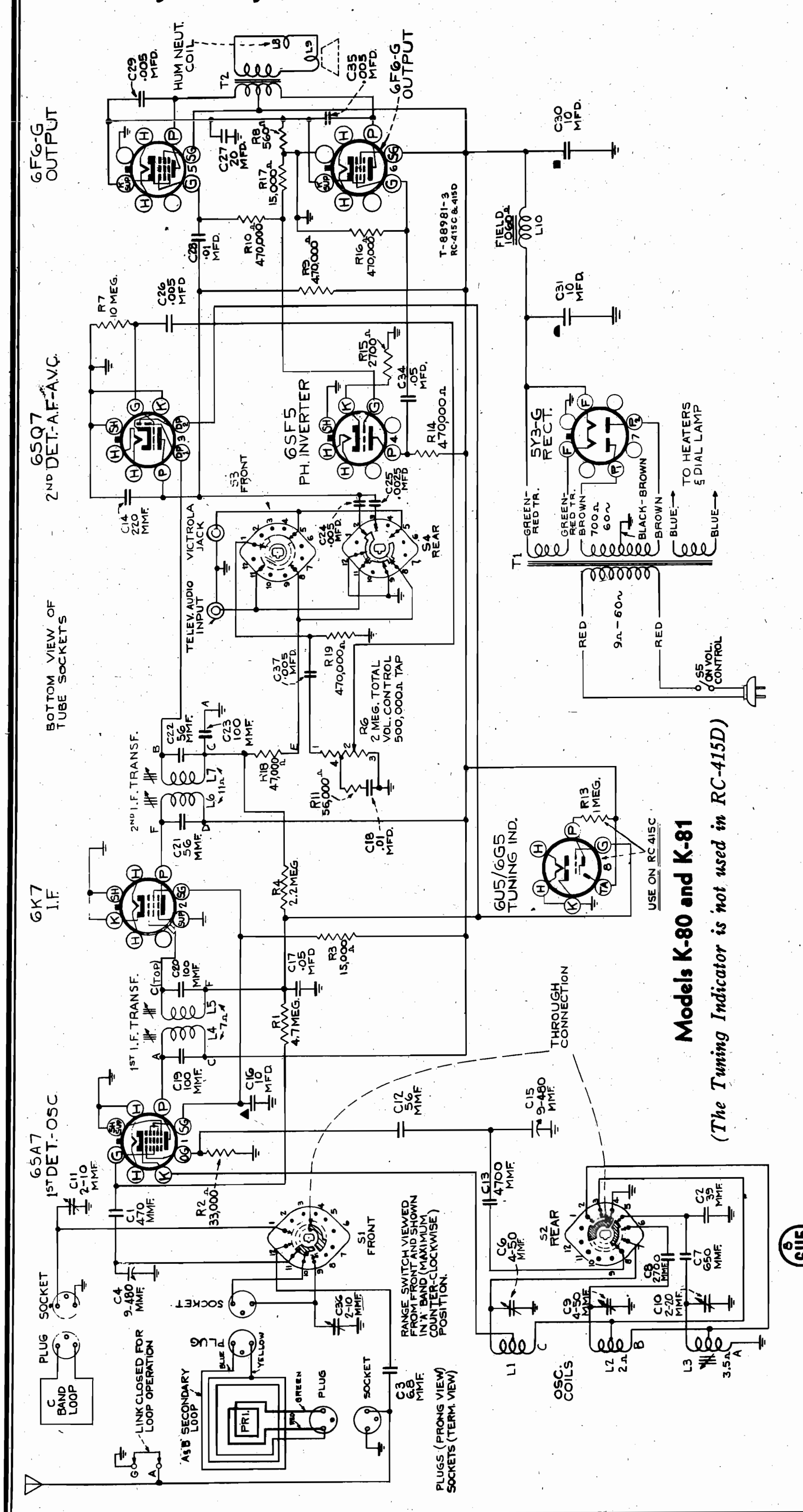
TOTAL RECTIFIED "B" CURRENT = 64.5 MA.



R-F WIRING & SOCKET VOLTAGES

MODELS K80, Ch. RC415C, RC415D
K81, K82, Ch. RC415C
Schematic, Socket, Trimmers

RCA MFG. CO., INC.



Models K-80 and K-81

(The Tuning Indicator is not used in RC-415D)

FOR OTHER DATA SEE INDEX

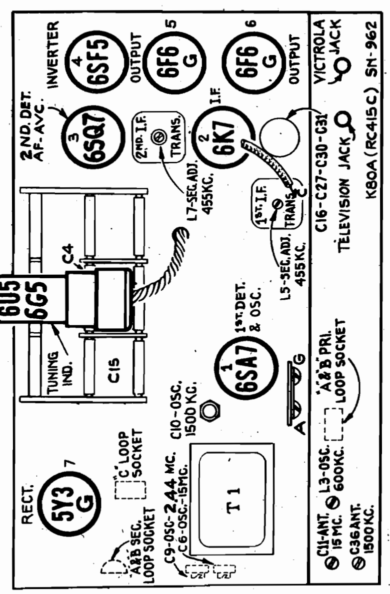
PILOT LAMPS (2)........ Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING
Undistorted........ 5.0 watts
Maximum........ 5.5 watts

LOUDSPEAKER (RL-70J-1)
Type........ 12-inch electrodynamic
V.C. Impedance........ 2.2 ohms at 400 cycles

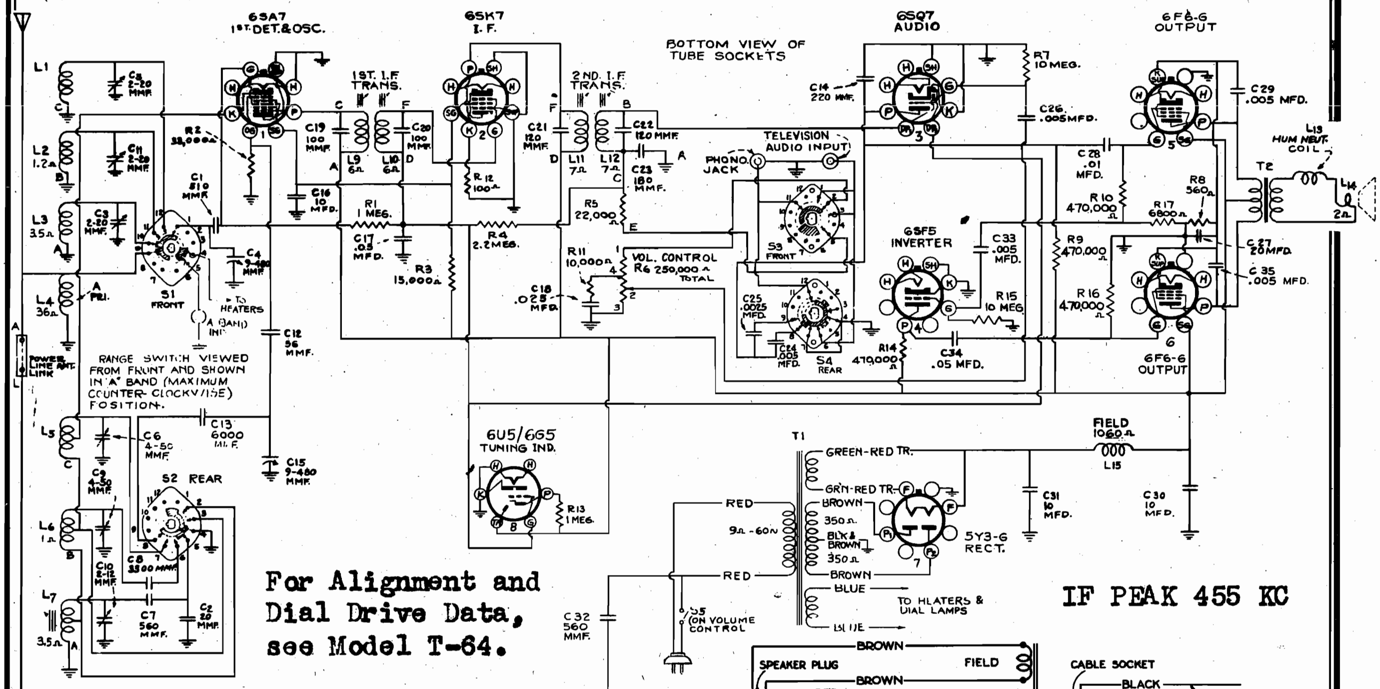
POWER CONSUMPTION
Watts........ 85

The Dial Drive used in this chassis is the same as is used in Chassis RC415



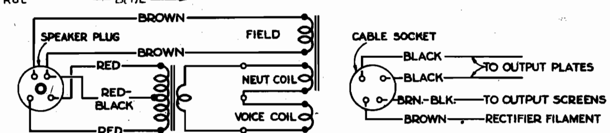
RCA MFG. CO., INC.

MODEL T80, Ch. RC416A
Schematic, Voltage
Chassis Wiring



For Alignment and Dial Drive Data, see Model T-64.

IF PEAK 455 KC



CONNECTIONS & COLORS OF SPEAKER & CABLE

Note: On some receivers the following circuit modifications are in effect:

1. R11 is 5,600 ohms, and C18 is 0.1 mfd.
2. C1 is 470 mfd.; R15 is 2,700 ohms and is connected from cathode of 6SF5 Inverter to ground; R17 is 15,000 ohms; and C33 is omitted.
3. There are three types of 2nd I-F transformers in use.

a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown below.

b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.

c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the schematic diagram.

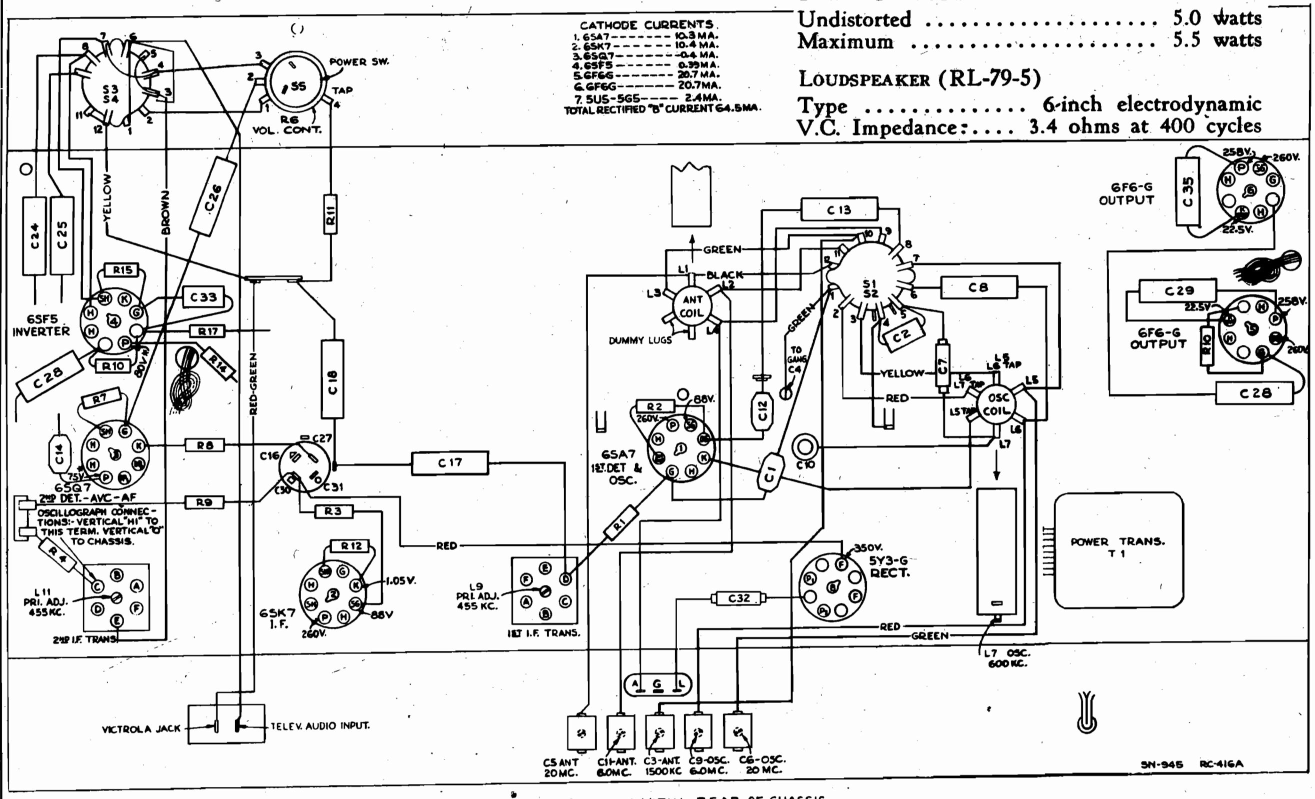
Important: Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the schematic diagram.

POWER OUTPUT RATING

Undistorted .... 5.0 watts
Maximum .... 5.5 watts

LOUDSPEAKER (RL-79-5)

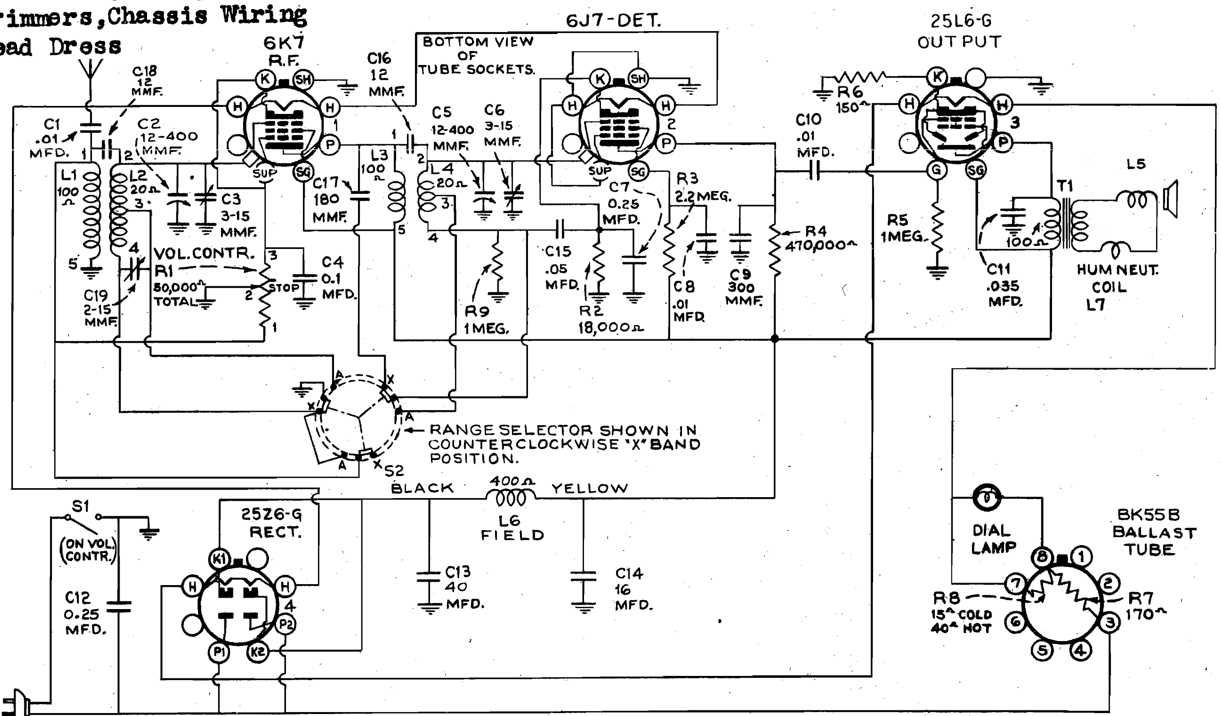
Type .... 6-inch electrodynamic
V.C. Impedance:.... 3.4 ohms at 400 cycles



BOTTOM VIEW—REAR OF CHASSIS

MODEL 95XLW
Chassis RC-345F
Schematic, Voltage, Socket
Trimmers, Chassis Wiring
Lead Dress

RCA MFG. CO., INC.



Power Supply Ratings

A-C Rating.................. 105-125 volts, 25-60 cycles, 50 watts
D-C Rating............................... 105-125 volts, 50 watts

Dial Lamp. Mazda No. 40, 6.3 volts, .15 amps.

Frequency Ranges

Long Wave (X)..................................... 150-360 kc
Standard Broadcast (A).......................... 530-1,500 kc

Loudspeaker

Type................ 5-inch electrodynamic
Voice-Coil Impedance... 3 ohms at 400 cycles

Power Output

(125 volt, 60 cycle supply)
Undistorted..................... 1.0 watt
Maximum...................... 1.5 watts

Alignment Procedure

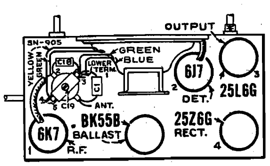
CAUTION: The chassis is connected to one side of the power line. Avoid contact of chassis or parts to external ground when servicing.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low frequency end when the gang condenser is at maximum.

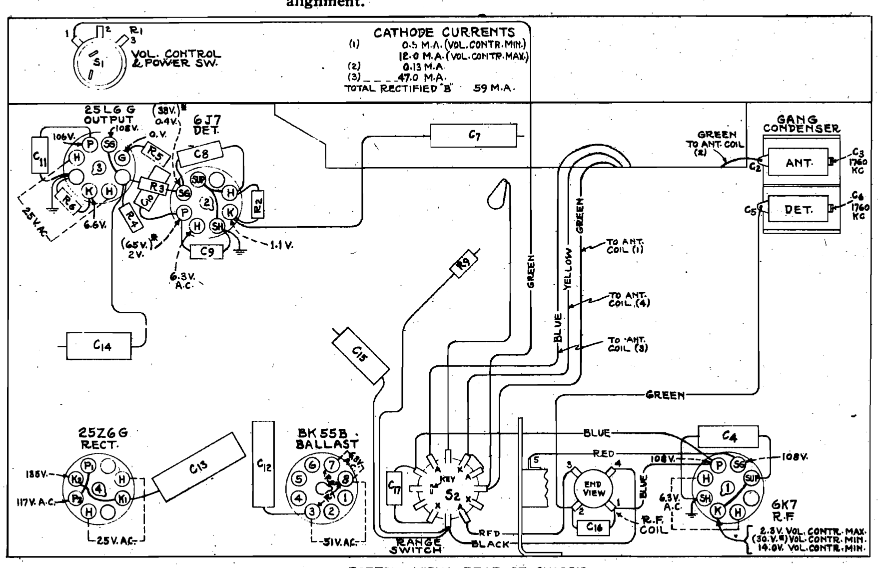
Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 capacitor. Keep antenna roll and lead clear of chassis during alignment.

To align "A" band, turn range switch to "A" band (clockwise) position, turn receiver dial to 1,500 kc, tune test-oscillator to 1,500 kc, connect an output meter across the voice coil, and turn volume control to maximum. Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

To align "X" band, turn range switch to "X" band (counter-clockwise) position, tune test-oscillator to 360 kc, and adjust C19 for maximum output. The gang should be rocked during "X" band alignment.



Tube and Trimmer Locations



BOTTOM VIEW- REAR OF CHASSIS

* Note: Values with (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

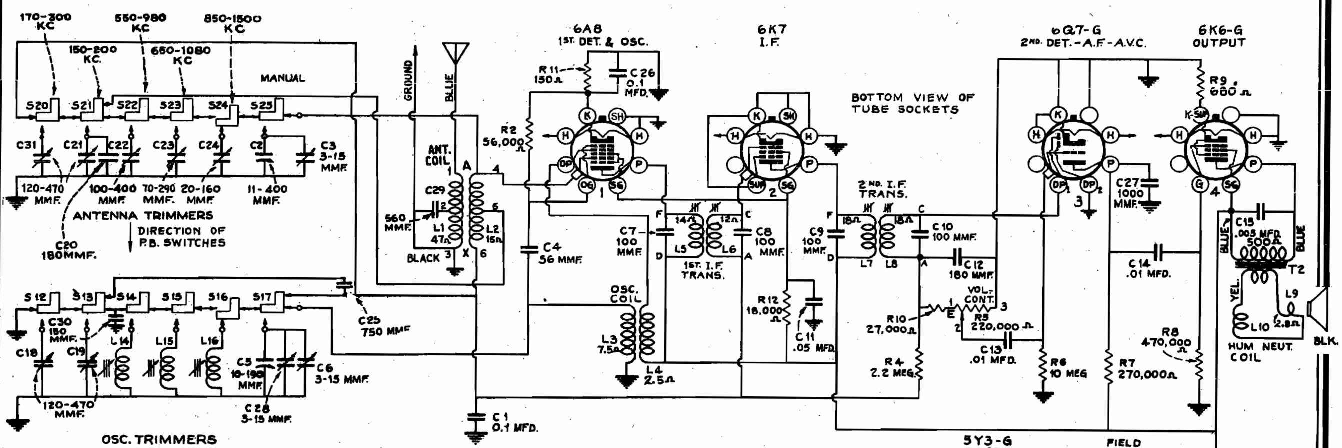
Precautionary Lead Dress

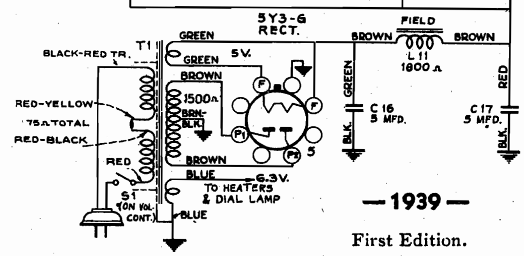
1. Dress power cord away from yellow lead to volume control.
2. Dress all leads away from antenna coil.
3. Green lead from gang to detector coil must be dressed under switch shaft and over detector coil (looking from bottom of chassis).
4. Yellow lead from volume control to 6K7 cathode must be dressed down against rear apron of chassis.
5. Green lead from switch to volume control must be dressed away from all other wires.
6. All leads to detector coil, except green lead in No. 3 (above) must be dressed down against the chassis base.

First Edition, 39

RCA MFG. CO., INC.

MODEL 95T5LW
Chassis RC-348F
Schematic, Voltage
Chassis Wiring, Lead Dress



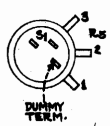


Precautionary Lead Dress.—

1. Blue, green, and black leads to the volume control should be dressed away from the 6K6-G socket and from leads to this socket.
2. Leads to the power transformer should be dressed toward the end of the chassis and away from wires to the push button assembly.
3. Power cord lead should be dressed toward the end of the chassis.

—1939—

First Edition.

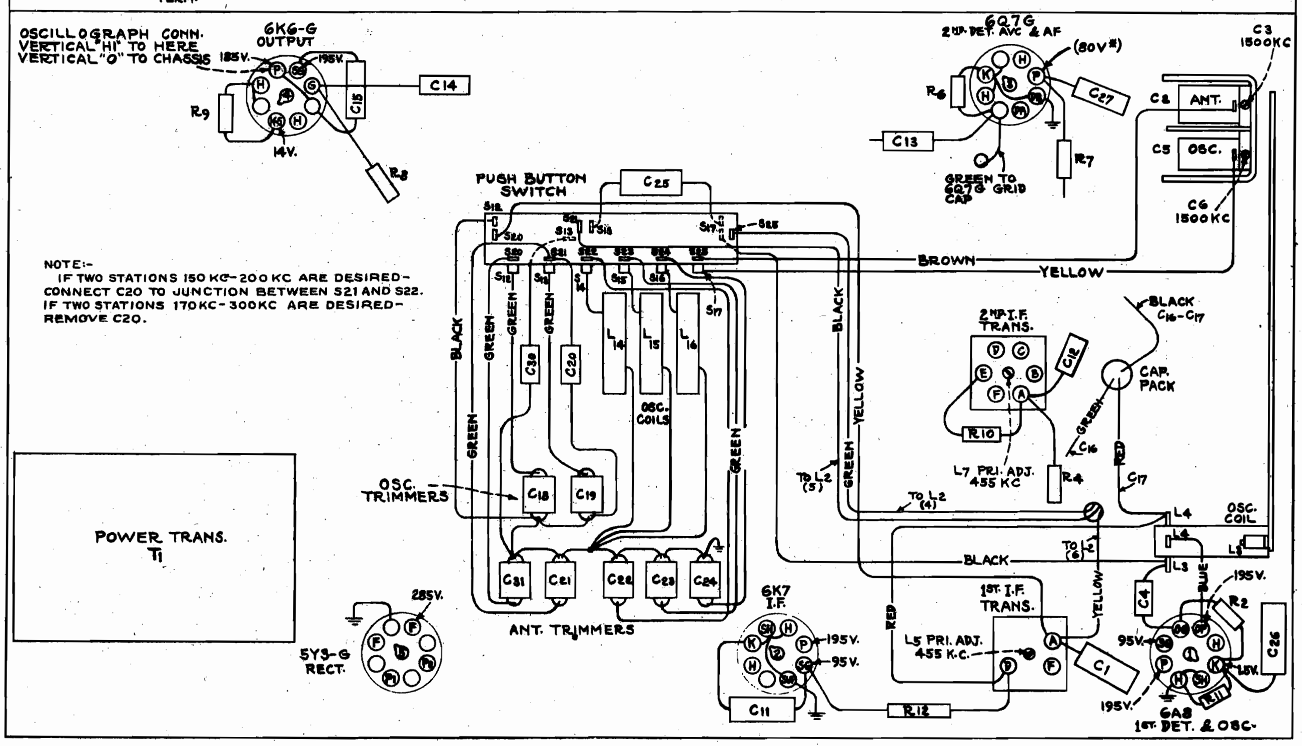


VOL. CONTROL & POWER SWITCH

CATHODE CURRENTS

(1)	6A8-G	9. M.A.
(2)	6K7	12.1 M.A.
(3)	6Q7-G	0.48 M.A.
(4)	6K6-G	22. M.A.

TOTAL RECTIFIED "B" CURRENT 44 M.A.



T-88621-0

BOTTOM VIEW - REAR OF CHASSIS

R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

MODEL 95T5LW,Ch.RC-348F
Alignment,Trimmers
Socket,Tuner,Dial Data

RCA MFG. CO., INC.

Adjustments for Electric Tuning

Push Button Ranges:

Two stations between approximately 150- 300 kc
One station between approximately 550- 980 kc
One station between approximately 650-1,080 kc
One station between approximately 850-1,500 kc

This model has six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations. The station buttons connect to separate magnetite-core coils and trimmers and to separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screw-driver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for preliminary adjustments.

The procedure is as follows:

1. Make a list of the desired stations, arranged in the order of the push button ranges shown on the schematic diagram.
2. To adjust buttons Nos. 1 and 2, best results are obtained by using a test-oscillator. Using a separate receiver, tune in the desired station for button No. 1 and zero-beat the test-oscillator against the carrier of this station. Then, keeping the same setting on the test-oscillator, connect its output to the antenna of the 95T5LW. Adjust the antenna and oscillator trimmers of button No. 1 for maximum output. Proceed in a similar fashion for button No. 2.
3. To adjust buttons Nos. 3, 4 and 5, proceed as follows:
   a. Push in the dial-tuning (right-hand) button, and manually tune in the third station on the list.
   b. Push in station-button No. 3 and adjust No. 3 oscillator core (L14) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
   c. Adjust No. 3 antenna trimmer (C22) for maximum output on this station.
   d. Adjust for each of the remaining stations in a similar manner.

   (Clockwise adjustment of oscillator and antenna trimmers tunes the circuits to lower frequencies.)

   e. Make a final careful adjustment of the oscillator and antenna trimmers, using one or two feet of wire as an antenna to insure sharp peaking.

POWER SUPPLY RATINGS
Rating A .... 105-125 volts, 50-60 cycles, 50 watts
Rating C .... 100-120, 200-240 volts, 50-60 cycles, 50 watts

POWER OUTPUT
Undistorted .... 1.0 watt
Maximum .... 1.5 watts

LOUDSPEAKER
Type .... 5-inch Electrodynamic
V.C. Impedance .... 3.1 ohms at 400 cycles

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

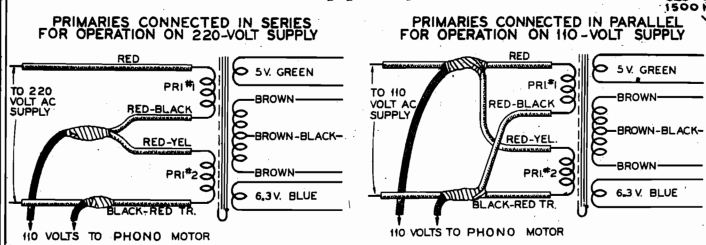
Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

After completion of alignment, seal the i-f core-adjustment screws with household cement.

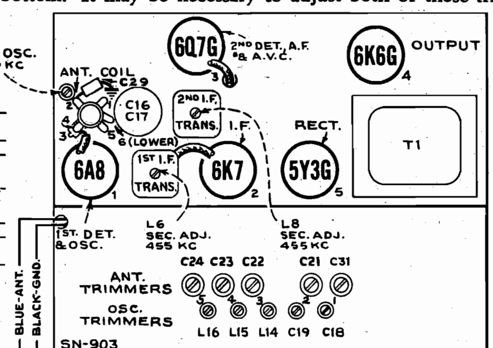
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

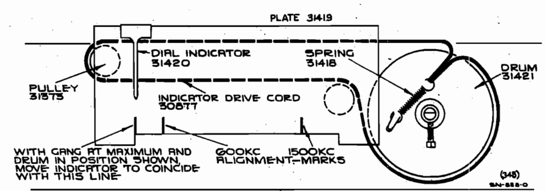
*** The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.**



Replacement Universal Power Transformer

D-C RESISTANCE: PRIMARY #1 .... 34.8 Ω; PRIMARY #2 .... 39.8 Ω; H.V. SECONDARY (TOTAL) .... 1390 Ω





DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

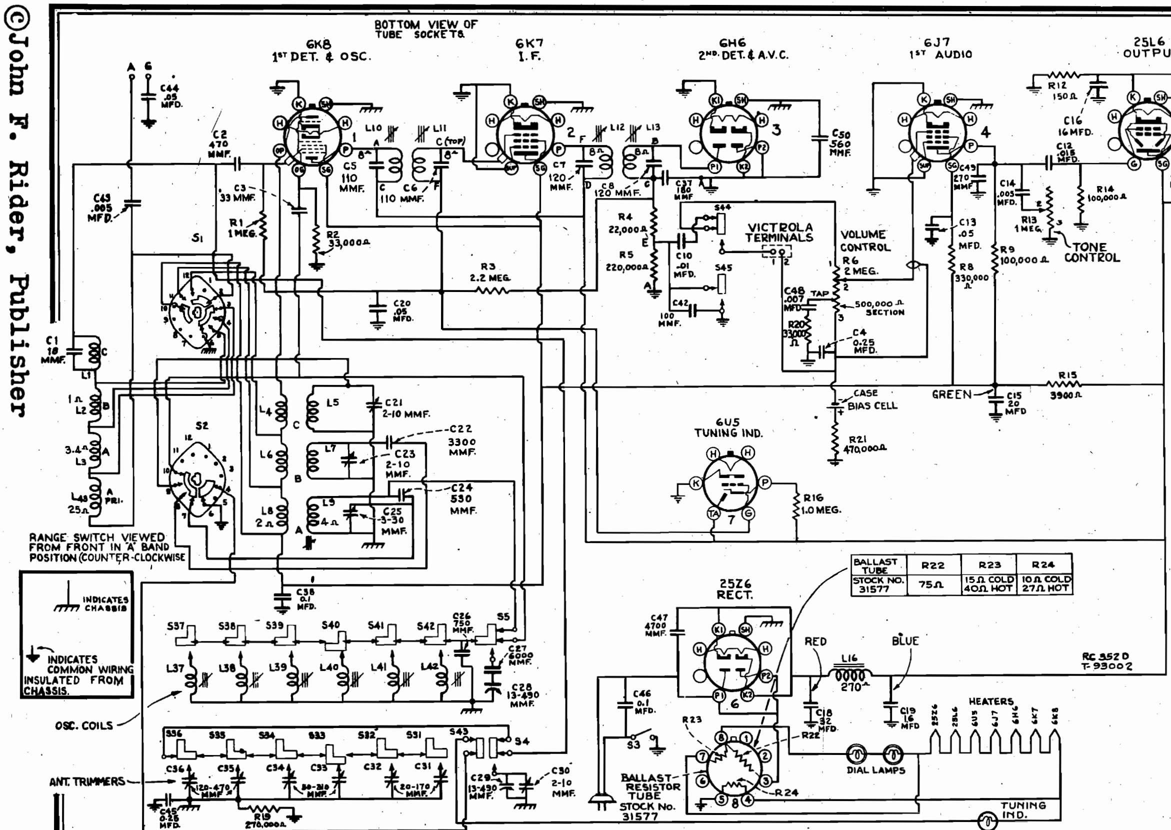
Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

At Left—*Tube and Trimmer Locations*

MODEL 98T2, Chassis RC352D
Schematic, Alignment, Tuner

RCA MFG. CO., INC.



BALLAST TUBE STOCK NO. 31577	R22	R23	R24
	75Ω	15Ω COLD 40Ω HOT	10Ω COLD 27Ω HOT

Alignment Procedure

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio-dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Transformer)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Transformer)
3	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (150.5°) "A" band	L9
4		1,500 kc	1,500 kc (28°) "A" band	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms.	6 mc	6 mc (26.5°) "B" band	C23 (osc.)*
7		20 mc	20 mc (22°) "C" band	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

*Use minimum capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

Note.—Oscillator tracks 455 kc above signal on all bands.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, move the dial indicator on the drive cable to the left-hand end mark on dial, with gang condenser fully meshed.

Adjustments for Electric Tuning

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Pilot Lamps........Mazda 47, 6.3 volts, .15 amp.

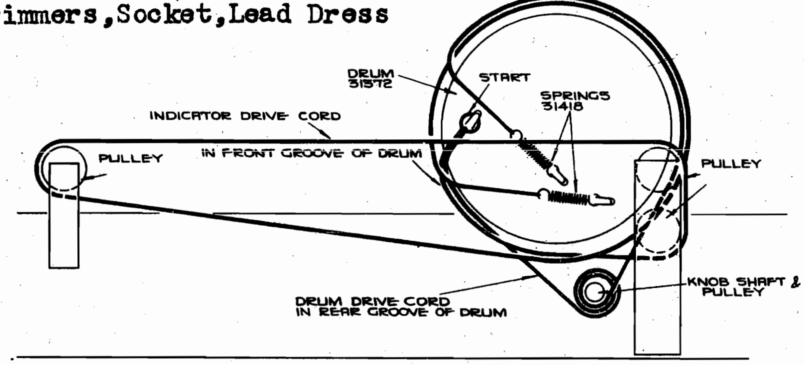
POWER OUTPUT
Undistorted .... 1.5 watts
Maximum .... 2.5 watts

POWER SUPPLY RATING
A-C Rating 105-125 volts, 25-60 cycles, 55 watts
D-C Rating .... 105-125 volts, 55 watts

LOUDSPEAKER (PERMANENT-MAGNET DYNAMIC)
Diameter .... 6 inches
V. C. Impedance at 400 cycles .... 3 ohms

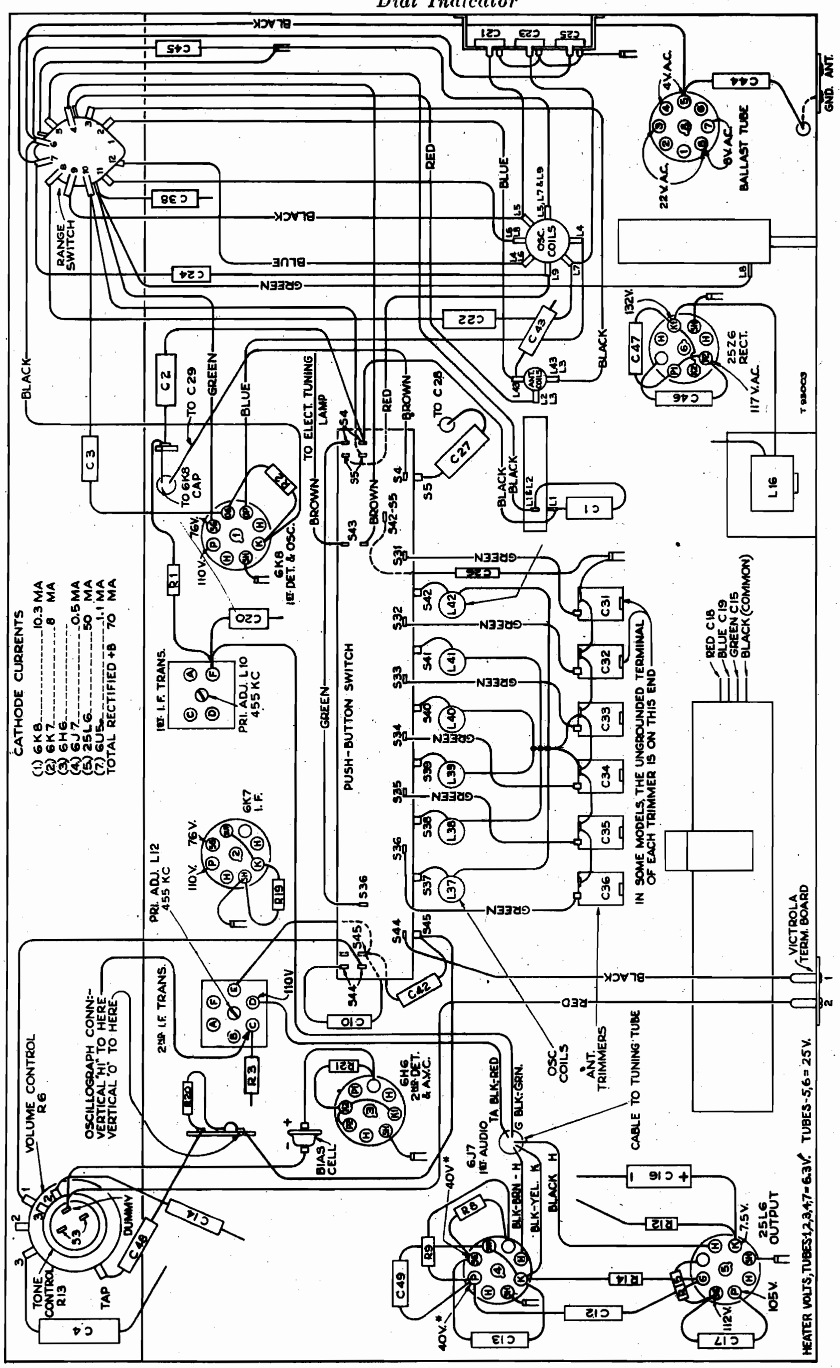
MODEL 98T2, Ch. RC352D
Chassis Wiring, Voltage
Trimmers, Socket, Lead Dress

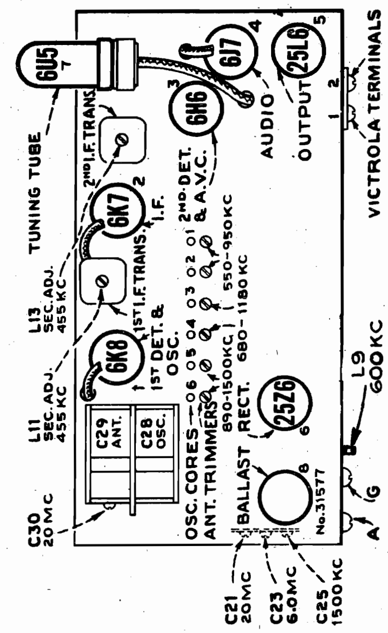
RCA MFG. CO., INC.



DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Arrangement of Drive Cords for Tuning Condenser and Dial Indicator





R-F Wiring Diagram and Socket Voltages

Measurements made to low-side of tone control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Precautionary Lead Dress.—

1. Dress the bias cell clear of all bus leads.
2. Leads from S43 must be dressed in front of range switch.
3. Blue lead from range switch to L5 must be short and clear of other leads.
4. Dress leads away from antenna and oscillator coils.
5. Leads across back of chassis must be dressed under electrolytic to prevent approaching Victrola jack.
6. Green lead from range switch to rear contact on oscillator coil must be dressed close to base.

RCA MFG. CO., INC.

MODEL 98T2, Ch. RC352D
Parts List

Miscellaneous Service Notes

Bias Cell.—The bias cell provides approximately 1-volt bias for the 1st audio grid. The cell should never be shorted, not measured with an ordinary voltmeter or other device that draws current. The cell may be checked by measuring the 1st-audio cathode current with a new tested 6J7 tube in this socket. The current should be approximately $\frac{1}{2}$ milliampere. If it is appreciably greater than $\frac{1}{2}$ mil., install a new bias cell.

Victrola Attachment.—Two screw-type terminals, numbered 1 and 2, are provided on the rear apron of the chassis for connection to a Victrola Attachment, such as the R-93, R-93B, etc. *(When A-C supply is available.)*

Care must be taken that these terminals are never connected in any way to the chassis, otherwise injury will result to the bias cell. To safeguard against this possibility, the following precautions should be observed in connecting the Victrola Attachment to the receiver.

Victrola Attachment with shielded cable.—If the shielded cable has a plug connector, remove the plug, connect the shielding to terminal 1, and connect the lead (inside the shielding) to terminal 2. Tape the shielding for a sufficient distance to prevent the possibility of it shorting against the chassis.

Victrola Attachment with twisted-pair cable.—Connect the low-side of the Attachment to terminal No. 1, and the high-side of the Attachment to terminal No. 2. (In some Attachments, the lead from the low-side is black, and the lead from the high-side is black-brown.)

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. For operation on a-c, a similar reversal of the plug may reduce hum.

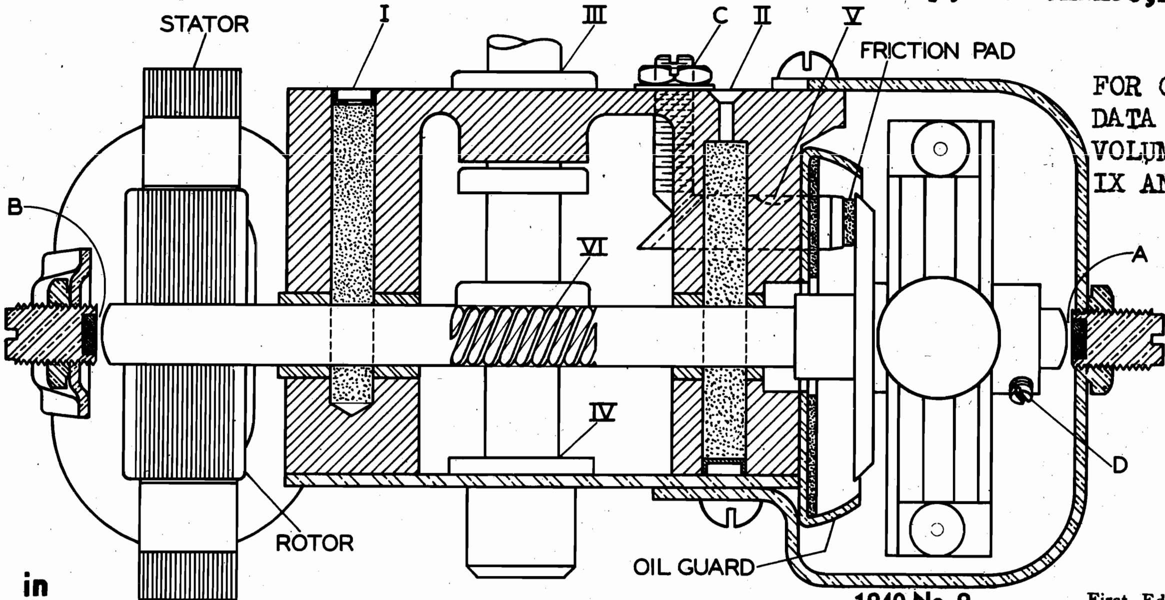
REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES	
31577	Ballast—Ballast resistor tube (R22, R23, R24)	.80
31767	Board—Antenna-ground terminal board	.20
31579	Board—Phonograph terminal board	.20
30752	Bracket—Bracket for holding Magic Eye tube	.25
14338	Bushing—Variable condenser mounting bushing and screws	.08
30766	Cap—Cap for Magic Eye	.15
31400	Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25)	.50
32486	Capacitor—Antenna coil trimmer capacitor bank—20-470 mmfd. (C31, C32, C33, C34, C35, C36)	1.40
12948	Capacitor—33 mmfd. (C3)	.35
12722	Capacitor—18 mmfd. (C1)	.35
12720	Capacitor—100 mmfd. (C42)	.35
14262	Capacitor—109 mmfd. (C5, C6)	.30
12404	Capacitor—120 mmfd. (C7, C8)	.30
14712	Capacitor—180 mmfd. (C37)	.30
12488	Capacitor—270 mmfd. (C49)	.35
30433	Capacitor—470 mmfd. (C2)	.35
32492	Capacitor—530 mmfd. (C24)	.40
12537	Capacitor—560 mmfd. (C50)	.35
31435	Capacitor—750 mmfd. (C26)	.40
4881	Capacitor—3,300 mmfd. (C22)	.60
12897	Capacitor—4,700 mmfd. (C47)	.65
31405	Capacitor—6,000 mmfd. (C27)	.75
5148	Capacitor—.007 mfd. (C48)	.20
4838	Capacitor—.005 mfd. (C14, C43)	.25
14393	Capacitor—.01 mfd. (C10)	.30
11315	Capacitor—.015 mfd. (C12, C17)	.20
4886	Capacitor—.05 mfd. (C13, C20, C44)	.20
4839	Capacitor—0.1 mfd. (C38, C46)	.30
12484	Capacitor—0.25 mfd. (C4, C45)	.30
31323	Capacitor—16 mfd. (C16)	.65
31576	Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19)	2.15
31581	Cell—Bias cell	.25
31382	Clip—Mounting clip for coils and cores on oscillator bank	.04
32493	Coil—Antenna coil (L1, L2, L3, L43)	1.35
31951	Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24)	1.40
31385	Coil—Push button oscillator coil (L37, L38)	.30
32487	Coil—Push button oscillator coil (L39, L40)	.35
31383	Coil—Push button oscillator coil (L41, L42)	.30
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	2.65
5119	Connector—3-contact female connector plug for reproducer cable	.25
32668	Control—Volume control, tone control, and on-off switch (R6, R13, S3)	3.00
32634	Cord—Drum drive cord	.10
32635	Cord—Indicator pointer drive cord	.24
31386	Core—Adjustable core and stud assembly for oscillator bank	.15
12800	Core—Adjustable core and stud for oscillator coil, Stock No. 31951	.35
31372	Drum—Variable condenser drive cord drum and calibrator	.65
31580	Holder—Bias cell holder	.15
32552	Indicator—Dial pointer	.20
31480	Lamp—Dial lamp (Mazda No. 47)	.20
32670	Plate—Dial color plate, pointer slide, and lamp brackets assembled	.75
31373	Pulley—Drive cord pulley	.08
5066	Reactor (L16)	1.65
31577	Resistor—Ballast resistor (R22, R23, R24)	.80
30880	Resistor—150 ohms, $\frac{1}{2}$ watt (R12)	.20
30694	Resistor— 3,900 ohms, $\frac{1}{2}$ watt (R15)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R4)	.15
12454	Resistor—33,000 ohms, $\frac{1}{4}$ watt (R2, R20)	.20
14560	Resistor—100,000 ohms, $\frac{1}{4}$ watt (R9, R14)	.20
11398	Resistor—220,000 ohms, 1/10 watt (R5)	.15
12199	Resistor—270,000 ohms, $\frac{1}{4}$ watt (R19)	.20
14983	Resistor—330,000 ohms, $\frac{1}{4}$ watt (R8)	.20
12285	Resistor—470,000 ohms, $\frac{1}{4}$ watt (R21)	.20
13730	Resistor—1 meg., $\frac{1}{4}$ watt (R1)	.20
12013	Resistor—1 meg., 1/10 watt (R16)	.15
12679	Resistor—2.2 meg., $\frac{1}{4}$ watt (R3)	.20
14343	Retainer—Drive cord pulley retainer	.03
14887	Retainer—Retainer for drive cord pulley	.01
4669	Screw—No. 8-32 square head set screw for drum, Stock No. 31372	.03
32671	Shaft—Station selector knob shaft and pulley	.35
12110	Shield—Radiotron shield cap	.14
31365	Socket—Dial lamp socket	.30
13871	Socket—Magic Eye socket	.45
31251	Socket—Tube socket	.25
31970	Spring—Tension spring for station selector push button switch latch bar	.05
31418	Spring—Indicator or drum drive cord tension spring	.05
31370	Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	3.85
33009	Switch—Range switch (S1, S2)	1.15
14376	Transformer—First i-f transformer (L10, L11, C5, C6)	2.45
14283	Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5)	3.80
31577	Tube—Ballast resistor tube (R22, R23, R24)	.80
	SPEAKER ASSEMBLIES (84307-1)	
31665	Cone—Speaker cone and voice coil (L14)	3.20
5118	Plug—3-contact male plug for speaker	.25
31664	Speaker complete	6.30
31666	Transformer—Output transformer (T1)	1.20
	MISCELLANEOUS ASSEMBLIES	
31397	Button—Station selector push button	.15
31456	Cover — 8-protective covers for push button markers	.08
32673	Dial—Station selector dial scale (glass)	.60
32674	Escutcheon—Station selector escutcheon less dial scale and push buttons	3.85
31355	Knob—Range switch knob	.12
14359	Knob—Station selector knob	.20
31391	Knob—Tone control knob	.15
30773	Knob—Volume control knob	.15
31458	Marker—"Dial Tuning" push button marker	.01
31457	Marker—"Record Player" push button marker	.01
31589	Marker—Station call letters push button markers	.35
4982	Spring—Retaining spring for knob, Stock No. 14359	.05
30330	Spring—Retaining spring for knob, Stock No. 31391	.03
14270	Spring—Retaining spring for knob, Stock Nos. 30773 and 31355	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL Governor Motors for Models R98,U103,U105,U124 | RCA MFG. CO., INC. | U125,U126,U130,U132,U134 Assembly,Maintenance,Notes



FOR OTHER DATA SEE VOLUMES IX AND X

— 1940 No. 9 — First Edition

Used in Models U-125, U-126, U-130, U-132, U-134, U-103, U-105, U-124, R-98, Etc.

Lubrication and Adjustment.

To assure normal and satisfactory operation, every motor requiring service should be lubricated and adjusted as follows:—

(1) Remove motor end brackets, bottom cover containing lower spindle bearing, and governor. Slide vertical spindle downward, remove C-washer; then push upward to disengage worm gear. Slide rotor and shaft from motor.

(2) Clean rotor bearings and rotor shaft thoroughly with "Carbona" or "benzine." Flush oil reservoirs I and II with the same solvent, preferably after removing oil wicks.

(3) Remove governor felt friction pad V. Replace this pad with revised type Stock No. 34058, being certain to saturate thoroughly with oil.

(4) Put slight amount of oil in each rotor bearing, and re-insert rotor shaft. See that shaft revolves freely when in position.

(5) Oil bearing IV, grease gear VI, and re-install bottom cover; checking to assure that vertical spindle revolves freely and worm is properly meshed after cover is in place and screws tightened. Do not misplace small disc of bottom thrust bearing.

(6) Inspect governor to see that springs move freely under retaining washers, and that governor is otherwise in good condition. Install on rotor shaft, checking for possible bind of sleeve on the shaft.

(7) Replace end brackets containing thrust screws "A" and "B"

(8) Adjust thrust screw "A" so that **one** steel lamination of rotor shows beyond the stator laminations as illustrated. This positions rotor at the electrical center of the stator, for maximum torque.

(9) Adjust thrust screw "B" to provide 1/16 inch clearance from end of rotor shaft.

(10) Fill both wells I and II with oil. At least 30-50 drops are required. Also oil bearing III.

(11) Position governor so that when it is fully contracted (closed), the friction disc is aligned with outer edge of oil guard. Tighten set screw "D".

(12) Connect motor to source of power, and adjust screw "C" to give 78 R.P.M. After allowing motor to run a short time, to compress felt pad. It may be necessary to re-check position of governor to give sufficient range of speed adjustment.

(13) Test motor, after allowing it to reach operating temperature, by grasping spindle and noting relative amount of force required to cause governor to contract. Also stall motor, and release, to see that governor has "snappy" response.

Special Notes

(1) Do not interchange parts of different motors, especially bearings, shafts, or gears.

(2) Where a new rotor or turntable spindle is installed, allow motor to run-in for eight hours; preferably under load.

(3) The motor should not be tested or used at temperatures below 65 degrees Fahrenheit.

(4) Where thrust bearing screw "A" is badly worn or does not have a fibre insert, replace with RCA Stock No. 31616.

(5) Governor motors should be thoroughly lubricated after approximately 300-500 hours of operation. This is equivalent to 1-2 years usage in the average home.

Lubricant Specifications

Only **mineral** base oils and greases should be used.

(1) For points requiring oil, use a type having a high viscosity index (with a viscosity rating of SAE 20-30), such as "Esso Motor Oil, Uniflo No. 3."

(2) For points requiring grease, a light gear grease having good clinging properties, such as "Cities Service No. 7035-A1" or "Koolmotor Universal Trojan No. 1", should be used.

Governor Waver—Causes

Drifting of motor speed at a slow rate, or erratic shift to other than normal speed, is generally caused by (1) binding of rotor or spindle bearings due to lack of lubrication, (2) scored shafts or bearings, (3) binding due to tight adjustment of thrust bearing "B", (4) binding of turntable spindle bearing on motor board (where used), (5) improper centering of motor with respect to turntable spindle.

Governor Chatter—Causes

When the governor rattles or flutters rapidly, accompanied by excessive mechanical noise, the likely source of trouble is (1) glazed felt friction pad due to lack of lubrication, (2) rotor not centrally positioned in stator, (3) thrust bearing "A" worn, (4) mis-aligned or rough governor disc.

Heavy Duty Motor

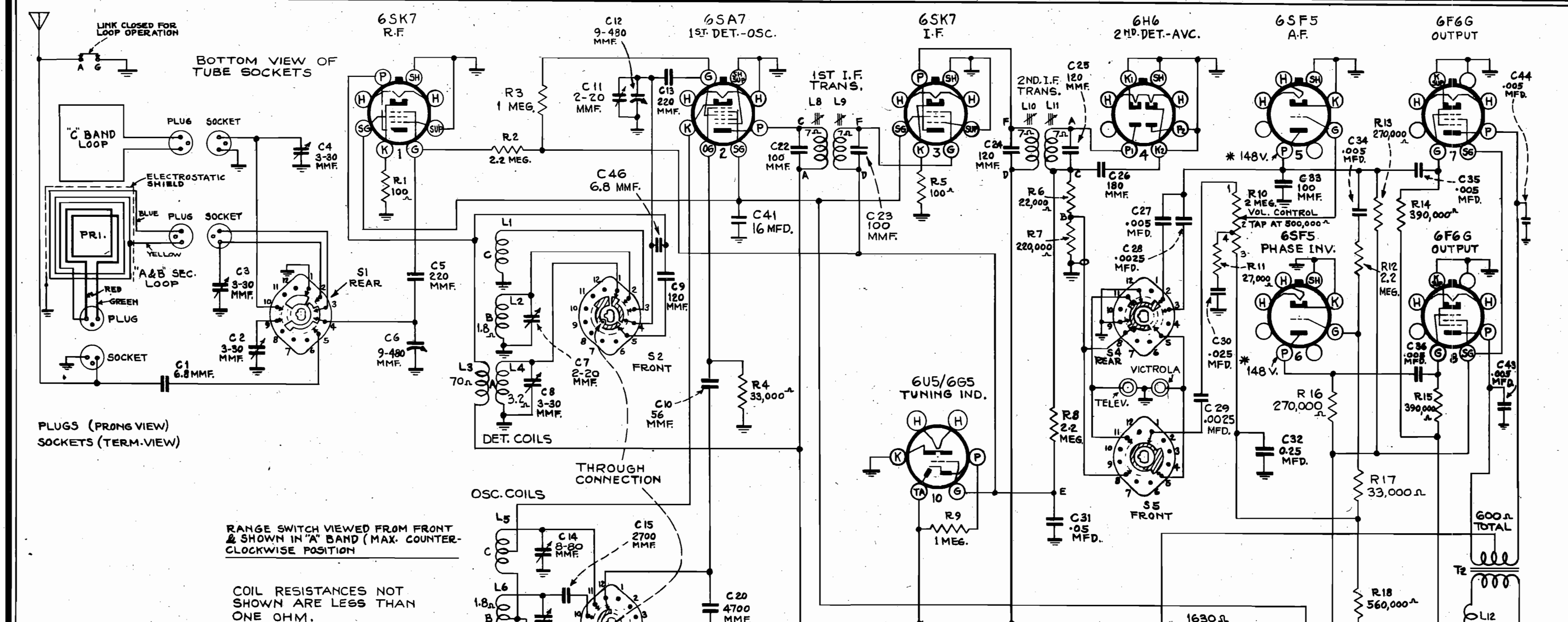
A heavy duty motor Stock No. 31163 is available for replacement of the Stock No. 31157 type used in Models U125, U126, U128, U132, U134, etc., at a nominal exchange price. The larger motor has a higher torque specification, will operate normally over greater ranges of voltage and frequency, and gives increased life before relubricaton is required.

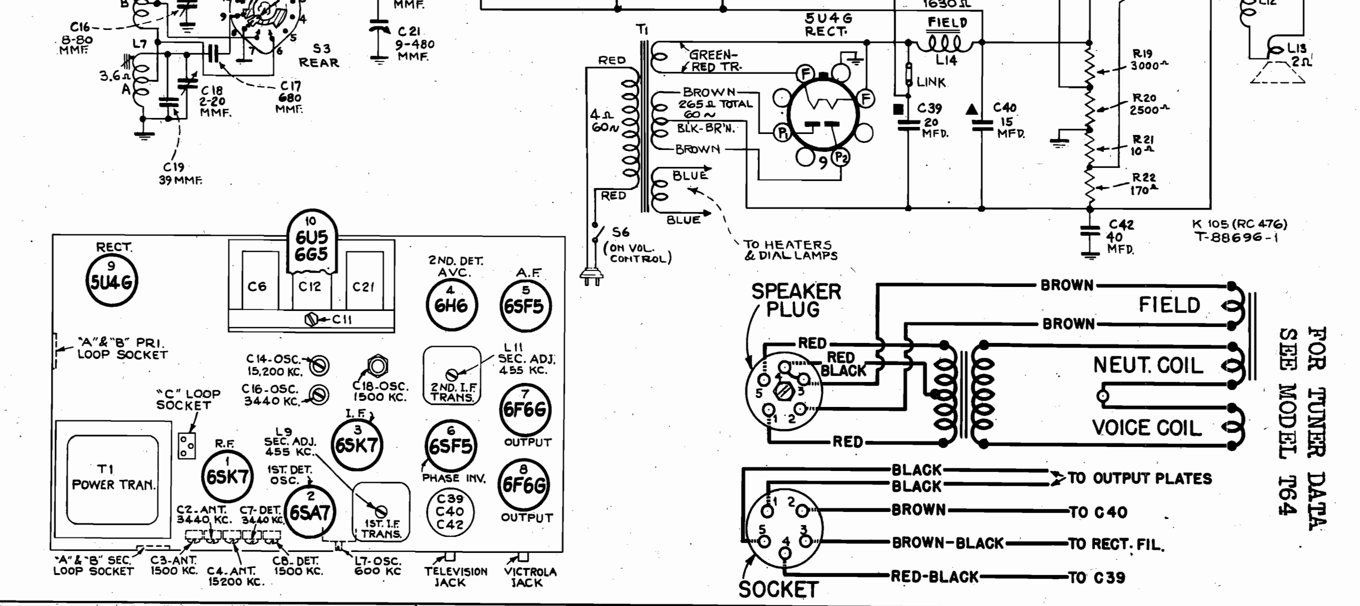
FOR DRIVE DATA
SEE MODEL K60

RCA MFG. CO., INC.

MODEL K105, Chassis RC476
Schematic, Socket, Trimmers

FOR TUNER DATA
SEE MODEL T64





Pilot Lamps (2) .... Mazda No. 44, 6.3 volts, 0.25 amp.

Frequency Ranges
Standard Broadcast .... 540-1,550 kc
Medium Wave............ .... 1.55-4.0 mc
Short Wave .... 5.8-18.0 mc

Intermediate Frequency......... 455 kc

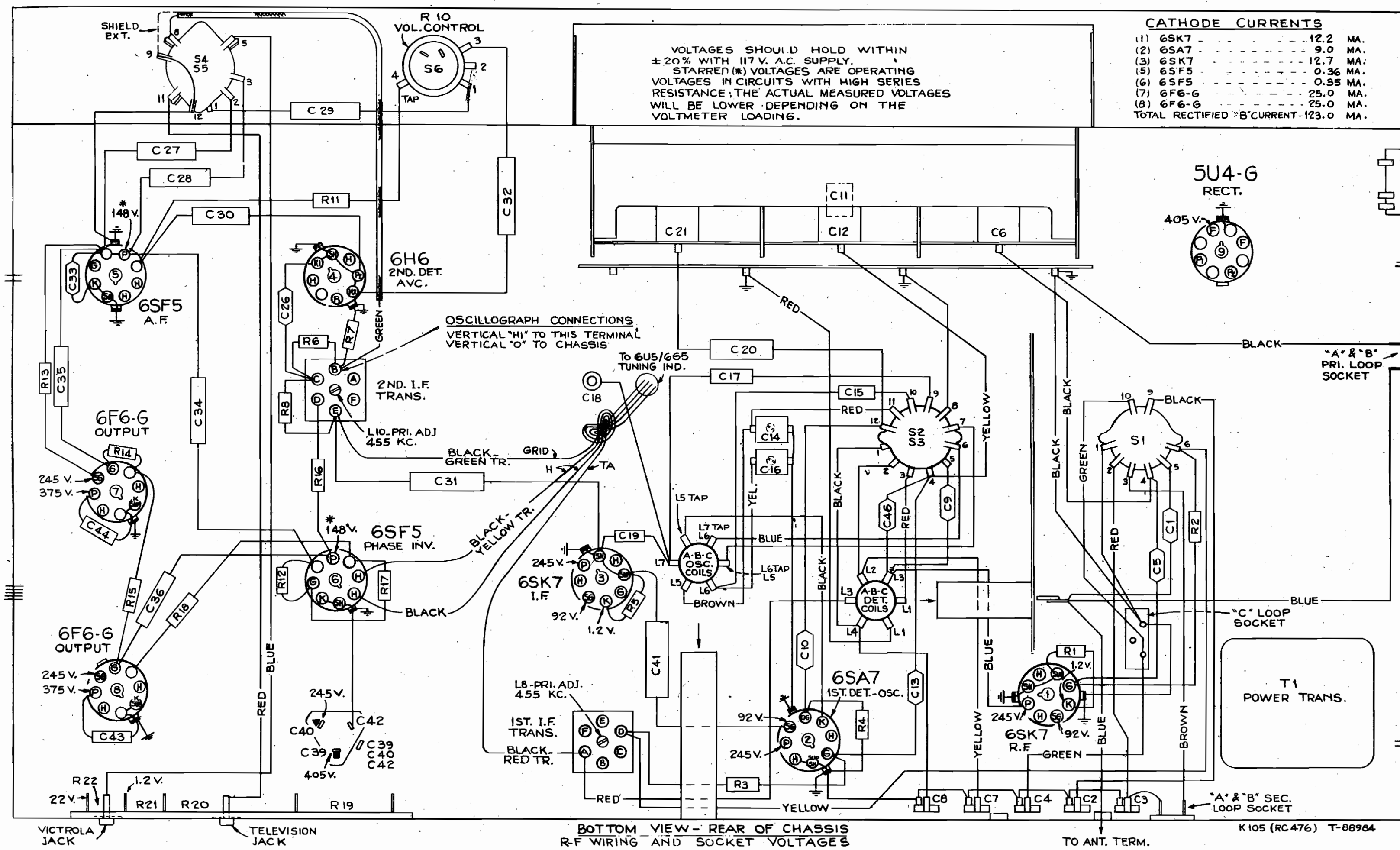
Power Output Rating
Undistorted.................. 10 watts
Maximum................... 12 watts

Loudspeaker (RL-70K-2)
Type........... 12-inch electrodynamic
V.C. Impedance.... 2.2 ohms at 400 cycles

Power Supply Ratings
Rating A..... 105-125 volts, 50-60 cycles, 150 watts
Rating B..... 105-125 volts, 25-60 cycles, 150 watts
Rating C..... 100-130, 140-160, 195-250 volts, 40-60 cycles, 150 watts

MODEL K105, Ch. RC476
Voltage, Chassis Wiring
Lead Dress

RCA MFG. CO., INC.



Precautionary Lead Dress:

1. Dress 4,000-mmfd. roll capacitor from the range switch to the gang condenser (C21) away from the chassis.
2. Dress 2,700-mmfd. capacitor connected from the oscillator coil (L6) to the range switch away from the bus wire directly beneath it.
3. Dress leads from phono and television plugs to tone control switch away from the speaker leads, terminal No. 3 (plate) of the output leads and away from the 6H6.
4. Dress red AC leads to power switch away from 6H6 and away from volume control terminals.
5. Leads from power transformer must be dressed close to base away from trimmer bank and oscillator coil.
6. All leads from trimmers should be dressed away from chassis base and range switch.
7. Green, blue, and brown leads from loop terminal boards should be dressed away from chassis base and range switch.

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action. For the first six steps in alignment the low side of the test-oscillator should be connected to the receiver chassis. Following step 6, the signal must be radiated (see note under alignment table).

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during the first six steps of alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"B" band Quiet point between 1.5-2.0 mc	L10 and L11 (2nd I-F trans.)
2	6SA7 det. grid in series with .01 mfd.			L8 and L9 (1st I-F trans.)
3	6SK7 R-F grid in series with 0.1 mfd.	15.2 mc	15.2 mc (192°) "C" band	C14 (osc.)* C11 (det.) Rock Gang
4		3.44 mc	3.44 mc (183°) "B" band	C16 (osc.)** C7 (det.)
5		600 kc	600 kc (38.5°) "A" band	L7 (osc.) Rock gang
6		1,500 kc	1,500 kc (216°) "A" band	C18 (osc.) C8 (det.)
7	Radiate signal (See note)	15.2 mc	15.2 mc "C" band	C4 (ant.)
8		6.1 mc	6.1 mc "C" band	Inductance of "C" band loop†
9		Repeat step 7		
10		3.44 mc	3.44 mc "B" band	C2 (ant.)
11		1,500 kc	1,500 kc "A" band	C3 (ant.)
12		600 kc	600 kc "A" band	L7 (osc.) Rock Gang
13		1,500 kc	1,500 kc "A" band	C18 (osc.) C8 (det.)

Note.—Following step 6, a radiated signal must be used for the remainder of the alignment. One or two turns of wire forming a loop approximately 18 inches in diameter connected across the output of a test-oscillator such as RCA Model 153, or Stock No. 9595 (TMV-97C), etc., will be suitable. For the adjustments using the radiated signal, the chassis must be placed in the cabinet and the receiver loops connected. The radiating loop should be placed near enough to the receiver loop to provide ample signal strength for alignment.

* Use **minimum** capacity peak if two can be obtained. Check to determine that C14 has been adjusted to the correct peak by tuning the receiver to approximately 14.29 mc where a weaker signal should be received.

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-476)	
33620	Arm—Push arm and cam assembly on tuning unit—less lock screw	.35
34574	Board—"Antenna-Ground" board	.20
30766	Cap—Rubber cap for Tuning Indicator	.15
12884	Capacitor—Air trimmer—2-20 mmfd. (C18)	.60
34701	Capacitor—Trimmer comprising 4 sections of 3-30 mmfd. and 1 section of 2-20 mmfd. (C2, C3, C4, C7, C8)	.80
34702	Capacitor—Trimmer comprising 2 sections of 8-80 mmfd. (C14, C16)	.40
14079	Capacitor—6.8 mmfd. (C1, C46)	.35
13545	Capacitor—39 mmfd. (C19)	.35
12723	Capacitor—56 mmfd. (C10)	.35
12720	Capacitor—100 mmfd. (C33)	.35
34699	Capacitor—100 mmfd. (C22, C23)	.30
12724	Capacitor—120 mmfd. (C9)	.35
34700	Capacitor—120 mmfd. (C24, C25)	.30
13003	Capacitor—180 mmfd. (C26)	.35
12694	Capacitor—220 mmfd. (C5, C13)	.35
31552	Capacitor—680 mmfd. (C17)	.40
30057	Capacitor—2,700 mmfd. (C15)	.55
31399	Capacitor—4,700 mmfd. (C20)	.65
34459	Capacitor—.0025 mfd. (C28, C29)	.20
33584	Capacitor—.005 mfd. (C27, C34, C35, C36, C43, C44)	.25
4870	Capacitor—.025 mfd. (C30)	.20
32787	Capacitor—.05 mfd. (C31)	.20
12484	Capacitor—0.25 mfd. (C32)	.30
31323	Capacitor—16 mfd. (C41)	.65
34533	Capacitor—Electrolytic comprising 1 section of 20 mfd., 1 section of 15 mfd. and 1 section of 40 mfd.	1.80
34579	Coil—Oscillator coil	.80
34697	Coil—R.F. coil	2.00
32634	Cord—Tuning condenser drum drive cord	.10
32713	Core—Core and stud for oscillator coil	.35
34578	Control—Tone control	1.35
34695	Control—Volume control and power switch	2.00
33627	Drum—Condenser drive drum	.25
33174	Drum—Tuning condenser drive drum	.65
34532	Gear—Gear sector for range switch	.55
11891	Lamp—Dial lamp	.17
33427	Pulley—Drive cord pulley and mounting bracket	.30
35005	Pulley—Drive pulley less bronze drive cord	.20
34537	Resistor—Voltage divider comprising 1 section of 3,000 ohms, 1 section of 2,500 ohms, 1 section of 10 ohms, and 1 section of 170 ohms (R19, R20, R21, R22)	.95
14439	Resistor—100 ohms, ¼ watt (R1, R5)	.20
13998	Resistor—22,000 ohms, ¼ watt (R6)	.20
12738	Resistor—27,000 ohms, ¼ watt (R11)	.20
12454	Resistor—33,000 ohms, ¼ watt (R4, R17)	.20
12264	Resistor—220,000 ohms, ¼ watt (R7)	.20
12199	Resistor—270,000 ohms, ¼ watt (R13, R16)	.20
13479	Resistor—390,000 ohms, ¼ watt (R14, R15)	.20
12486	Resistor—560,000 ohms, ¼ watt (R18)	.20
12013	Resistor—1 megohm, 1/10 watt (R9)	.15
13730	Resistor—1 megohm, ¼ watt (R3)	.20
12679	Resistor—2.2 megohm, ¼ watt (R2, R8, R12)	.20
30340	Retainer—Retainer for shaft of tuning shaft cam and arm	.02

STOCK No.	DESCRIPTION	Unit List Price
33419	Roller—Friction roller for tuning knob shaft	.10
31613	Screw—No. 8-32 milled head set screw for drum, Stock No. 33174	.02
14350	Screw—No. 8-32 square head set screw for gear, Stock No. 34532	.03
33621	Screw—Push arm lock screw	.05
34703	Shaft—Range switch shaft	.15
33422	Shaft—Tuning shaft less friction roller	.20
31364	Socket—Dial lamp socket	.20
13871	Socket—Tuning Indicator socket	.45
14278	Socket—Phonograph input socket	.25
34575	Socket—2-terminal loop socket	.20
31319	Socket—Tube socket	.25
33175	Spring—Drive cord spring	.05
33622	Spring—Push arm return spring	.08
34694	Spring—Tuning shaft cam spiral spring	.10
33421	Spring—Tuning shaft flat spring	.10
34696	Switch—Range switch	3.00
34698	Transformer—First i-f transformer	1.75
34524	Transformer—Second i-f transformer	2.20
34693	Transformer—Power transformer—110 volts, 25 cycles	6.00
34539	Transformer—Power transformer—105-125 volts, 50-60 cycles	4.75
	SPEAKER ASSEMBLIES (RL-70K-5)	
31825	Cap—Dust cap	.02
35170	Coil—Field coil	2.90
11469	Coil—Neutralizing coil	.30
34773	Cone—Cone complete with voice coil	1.45
34728	Diffuser	.80
31539	Plug—5-prong male plug for speaker	.25
14534	Transformer—Output transformer	2.10
	MISCELLANEOUS ASSEMBLIES	
35046	Bearing—Antenna loop bearing comprising spindle and pivot	.70
33474	Button—Push button	.10
34285	Clip—Tuning Indicator clip	.25
35045	Dowel—1 set of dowel pins for loop antenna	.10
33439	Escutcheon—Station selector escutcheon less push buttons	2.20
34706	Frame—Dial frame complete with brackets less dial, pointer, pointer guide rods and Tuning Indicator clip	1.10
34583	Frame—Frame only for "C" band loop	.30
34383	Indicator—Station selector indicator	.40
33434	Knob—Tuning, tone control, range switch or power switch and volume control knob	.30
35132	Loop—"A" and "B" band antenna loop	11.80
33842	Marker—Push button station markers	.25
34990	Plug—2-prong male plug for "C" band loop	.10
32641	Plug—3-prong male plug for "A" and "B" band loop	.10
34708	Scale—Glass dial scale	2.15
35049	Shaft—Flexible shaft assembly to turn loop	.85
34491	Shaft—Pointer carriage guide shaft	.15
14270	Spring—Retaining spring for knob, Stock No. 33434	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

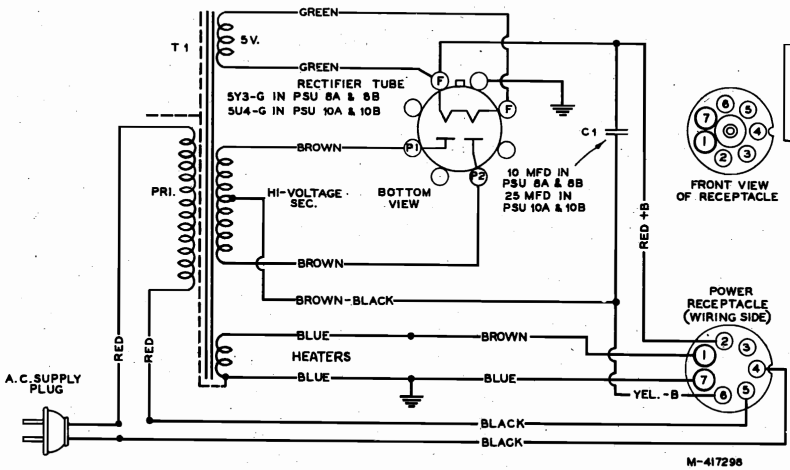
** Use **minimum** capacity peak if two can be obtained. Check to determine that C16 has been adjusted to the correct peak by tuning the receiver to approximately 2.53 mc where a weaker signal should be received.

† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

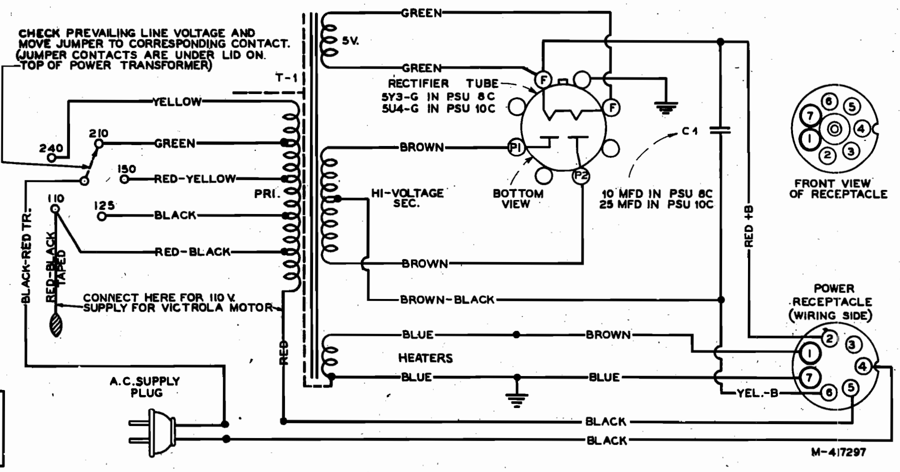
Important.—The oscillator tracks **above** the signal on all bands.

MODELS 8A, 8B, 8C, 10A, 10B, 10C
A-C S.P.U.
Schematics, Data
Parts

RCA MFG. CO., INC.



Schematic Circuit Diagram of Power Supply Units PSU 8A, 8B, 10A, and 10B



Schematic Diagram of Power Supply Units PSU 8C and 10C

PSU 8A, 8B, 8C, 10A, 10B and 10C A-C Power Supply Units

General Description

Certain models of the "Q" Line of RCA Victor "Magic Brain" 1938 radio receivers are designed for use with a separate plug-in power supply unit. Different units are available to permit operation on a-c power supplies of various voltages and cycles, and also on 110 or 220 volts d-c.

Service data and diagrams for the a-c units are contained in this sheet: The d-c units are described in a separate sheet.

Each a-c unit is equipped with an 18-inch 6-wire cable with a 7-contact female receptacle which plugs into a 7-prong male connector on the receiver chassis. The a-c power cord is 6 feet long. The units are approximately 7½ inches long, 4¼ inches wide, and 6 inches high.

Testing.—To check an a-c power unit when a receiver is not available, connect a 50-watt resistor (4,800 ohms for PSU 8A, 8B, 8C, and 3,450 ohms for PSU 10A, 10B and 10C) across contacts 2 and 6 on the power receptacle. Connect a jumper across contacts 4 and 5. Measure the d-c voltage across the resistor, which should be approximately 375 volts, with 117 volts supply on the 117-volt tap.

Specifications

Type	Rating		Radiotron Rectifier	D-C Output	Heater (A-C)	Used with Models	D-C Resis., T1		Net Weight (pounds)
	Voltage	Cycles					Pri. ohms Total	Sec. ohms Total	
PSU 8A	105-125	50/60	5Y3-G	375 volts at 78 milliamps	6.45 V 3 amps	8Q1 and 8Q4	6.4	535	7
PSU 8B	105-125	25/60					8.3	705	9½
PSU 8C	Universal*	50/60					17.4	455	11½
PSU 10A	105-125	50/60	5U4-G	380 volts at 110 milliamps	6.36 V 5 amps	10Q1, 12Q4, 12QK, 12QU**	3.0	250	9
PSU 10B	105-125	25/60					3.9	250	13
PSU 10C	Universal*	50/60					8.9	190	15

* The universal can be set for 105-117, 117-130, 140-160, 200-225, or 225-250 volt supply.
** Model 12QU has a phonograph motor designed for 50/60 cycle operation only, and uses either PSU 10A, or 10C.

First Edition

REPLACEMENT PARTS

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
31739	Cable—6-conductor power output cable with plug	1.20
11203	Capacitor—10 mfd. (C1) (PSU 8A, 8B or 8C only)	1.15
14531	Capacitor—25 mfd. (C1) (PSU 10A, 10B or 10C only)	1.55
14409	Plug—7-contact plug for power output cable	.45
31251	Socket—Rectifier tube socket	.25
31733	Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) (PSU 8A only)	7.70
31736	Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) (PSU 10A only)	10.75
31734	Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) (PSU 8B only)	10.35
31737	Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) (PSU 10B only)	14.30
31735	Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) (PSU 8C only)	10.80
31738	Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) (PSU 10C only)	14.95

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RCA MFG. CO., INC.

MODEL RP139A
MODEL RP145
Adjustments, Notes
Parts

The RP-139-A and RP-145 automatic record changers are very similar in design and construction. Most of the parts and adjustments are identical on both. The RP-139-A turntable is driven through a worm gear in the motor housing while the RP-145 turntable is driven through a friction drive disc mounted on the turntable spindle.

On Model RP-145 it is important that the drive motor spindle, and rubber tires on main driving disc and idler pulley be kept clean and free from oil, grease, dirt, or any foreign matter at all times. Any quick-drying naphtha is satisfactory for cleaning these parts. The RP-145 drive motor bearing is lubricated from an oil well filled and sealed at the factory. It should not require lubrication in the field.

The RP-145 turntable is not removable from the spindle. However, the rubber tired driving disc is fastened to the spindle by means of a tapered pin "24." If necessary to remove these parts the tapered pin should first be removed. The driving disc can then be removed from the spindle and the turntable and spindle assembly lifted upward from the motorboard. If this is done, great care should be taken not to bend the spindle. At the same time the spindle bearing should be oiled and the cup and ball thrust bearing oiled and checked for proper position.

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc., are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

The 10 and 12 inch records must be absolutely flat for smooth operation.

A pickup shorting switch, located under the motorboard, operates when the pickup is moved outward to the pickup rest.

MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A."
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E."
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E."
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B." Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C."
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; or instrument is not being operated at normal room temperature; on Model RP-145 oil, grease, dirt, or other foreign matter on motor spindle, main driving disc or idler pulley rubber tire. Clean with any quick drying naphtha. Also, on RP-145 the motor support bracket "N" should be moved in its mounting holes until the motor spindle is parallel to the turntable spindle and exactly at right angles to the main driving disc "29." The bracket mounting nuts should then be securely tightened.
9. Record knives strike edge of records—Records warped: record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H."
11. When playing both types of records mixed and needle either lands in 10 inch position on 12 inch record or misses record entirely—Increase tension of mixed record discriminating lever spring "M."

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. Rotate the turntable until the changer is out-of-cycle; and check rubber bumper bracket (A). The roller should clear the nose of the cam plate by approximately 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

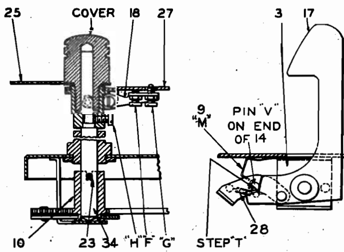
D. & E. Needle Landing on Record. — The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4⅝ inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17." Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D."

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5⅞ inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motorboard, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife. — The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .055 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .052—.058 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F," adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.



H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where both separating knives have turned clockwise as far as the mechanism will turn them; lift record upward until it is in contact with both separating knives. Then loosen screws "H" and shift record shelves "27" so that the curved inner edges of the shelves are uniformly spaced approximately 1/16 inch from the record edge. Some backlash will be present in the rotation of these shelves. They should be adjusted so that the backlash permits them to move away from the record but not closer than the approximate 1/16 inch specified above. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H."

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown). — When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motorboard. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers and pulleys on underside of motorboard. The turntable spindle bearing of RP-145 must be lubricated from the top of the motorboard. Using an oil can with a long spout, reach in between the turntable and motorboard and apply oil directly to the spindle.

On Model RP-139-A apply a few drops of light machine oil (S.A.E.-10) to the motor oil hole adjacent to the spindle bearing after each 1,000 hours of operation. The oil hole has a screw plug.

Do not allow oil or grease to come in contact with rubber mounting of tone arm base, rubber bumper, rubber spindle cap, or rubber parts of friction drive mechanism of Model RP-145.

STOCK No.	DESCRIPTION	Unit List Price
	PICKUP ARM ASSEMBLIES	
33906	Arm—Pickup arm shell	.45
33977	Cable—Pickup shielded cable (8)	.50
33905	Crystal—Pickup cartridge and needle screw (RP-139-A only)	4.25
35171	Crystal—Pickup cartridge and needle screw (RP-145 only)	xx
33976	Pin—Used to fasten pivot arm in pickup arm shell	.03
33974	Screw—Needle screw	.15
33975	Shaft—Pickup pivot shaft and pivot arm	1.40
	MOTOR ASSEMBLIES (Model RP-139A)	
32956	Coil—Field coil and laminations for 25 cycle motor	7.15
32955	Coil—Field coil and laminations for 50 cycle motor	5.90
32954	Coil—Field coil and laminations for 60 cycle motor	5.35
32960	Gear—Motor spindle gear and pin	.75
32873	Motor—Motor complete, 25 cycle, 110 volt AC	15.95
32872	Motor—Motor complete, 50 cycle, 110 volt AC	13.75
32871	Motor—Motor complete, 60 cycle, 110 volt AC	13.25
30870	Plug—2-prong male plug—used on motor leads	.35
32959	Spindle—Turntable spindle complete with metal pinion and fibre gear for 25 cycle motor	2.90
32958	Spindle—Turntable spindle complete with metal pinion and fibre gear for 50 cycle motor	2.90
32957	Spindle—Turntable spindle complete with metal pinion and fibre gear for 60 cycle motor	2.90
32875	Switch—Motor control switch (4)	.30
	MOTOR ASSEMBLIES (Model RP-145)	
34513	Armature—Complete armature and shaft for 60 cycle motor	xx
34512	Cap—Bakelite cap for motor	xx
34365	Capacitor—1.25 mfd., for 60 cycle motor (38)	1.75
34364	Motor—105/125 volts, 60 cycle, complete with capacitor (37)	6.75
30870	Plug—2-prong male plug for motor leads	.35
	MOTORBOARD ASSEMBLIES (Model RP-139A)	
33981	Base—Pickup arm mounting base	.60
33978	Board—Motorboard complete with bearings and posts less operating mechanism	6.50
33909	Cup—Used needle cup, lid, and pickup arm rest (6)	1.00
33979	Escutcheon—Index escutcheon	.50
31150	Mounting—Pickup arm base rubber mounting complete	.45
31155	Spring—Used needle cup lid spring (49)	.04
	MOTORBOARD ASSEMBLIES (Model RP-145)	
33981	Base—Pickup arm mounting base	.60
34363	Board—Motorboard complete with bearings and posts—less operating mechanisms	6.70
33909	Cup—Used cup, lid, and pickup arm rest (6)	1.00
33979	Escutcheon—Index escutcheon	.50
31150	Mounting—Pickup arm base rubber mounting complete	.45
31155	Spring—Used needle cup lid spring (49)	.04
32875	Switch—Motor switch (4)	.30
	OPERATING MECHANISM	
10129	Ball—Steel ball for turntable bearing (Model RP-145)	.02
33984	Bracket—Record discriminating lever mounting bracket (3)	.20
33987	Cam—Cam and drive gear (42)	2.00
6808	Clutch—Trip lever clutch (5)	.35
34369	Cup—Turntable bearing cup (Model RP-145) (36)	.20
32883	Damper—Rubber drive sleeve and damper plate for motor spindle (Model RP-139A) (45, 46)	.30
34367	Disc—Turntable drive disc and tire (Model RP-145) (29)	2.25
31116	Finger—Trip lever friction finger (7)	.45
32879	Gear—Long arm and rack gear (41)	.60
31121	Gear—Record separator shaft gear (10)	.90
32880	Gear—Short arm and rack gear (40)	.55
34368	Grommet—Rubber grommet for motor mounting (Model RP-145) (48)	.08
31151	Guide—Lift cable guide spring (2)	.10
33982	Guide—Main spring guide (11)	.10
34370	Idler—Turntable idler wheel and arm (Model RP-145) (39)	.60
33986	Lever—Index lever (12)	.60
31138	Lever—Locating lever and pawl (14)	.70
33985	Lever—Main lever (15)	1.05
33993	Lever—10-inch and 12-inch record discriminating lever (17)	.85
31140	Lever—Pickup lift cable lever and spring (16)	.55
31130	Lever—Record separator elevating lever with adjustment screws (18)	.80
31132	Lever—Trip detaining lever (19)	.30
34874	Lever—Trip lever assembly (20)	1.85
31131	Lever—Trip regulator lever (21)	.25
33992	Link—Index lever setting link and button	.20
31137	Pawl—Index lever pawl (13)	.30
31133	Pawl—Trip pawl assembly (22)	.80
31535	Pin—Drive pin for turntable drive disc (Model RP-145) (24)	.03
31124	Pin—Pin to fasten gear on record separator shaft (23)	.04
31118	Screw—Cone pointed set screw for record separator shelf ("H")	.06
14195	Screw—No. 10-32 cone pointed set screw for trip lever hub ("D")	.05
33983	Screw—Record separator elevating lever pivot screw	.15
31117	Screw—Special to adjust friction clutch	.03
33990	Separator—Record separator knife (25)	1.85
33988	Shaft—Record separator shaft (34)	.70
33989	Shelf—Record separator shelf (27)	1.25
3676	Spring—Cam gear pawl spring	.04
31136	Spring—Index lever pawl spring (30)	.05
3666	Spring—Lift cable spring (31)	.04
32436	Spring—Locating lever spring (35)	.05
32882	Spring—Main lever tension spring (43)	.05
34876	Spring—Pickup arm starting spring (26)	.10
14190	Spring—Record discriminating lever pawl spring or locating lever pawl spring (28)	.08
33994	Spring—Record discriminating lever spring (flat) (9)	.05
14191	Spring—Trip detaining lever spring (33)	.04
34372	Spring—Turntable idler wheel spring (Model RP-145) (47)	.10
34371	Support—Turntable drive and motor support (Model RP-145)	.70
34875	Switch—Pickup shorting switch (44)	.45
33991	Turntable—(Model RP-139A)	3.00
34366	Turntable and Spindle Shaft—(Model RP-145) (32)	3.35
34373	Washer—"C" washer for mounting idler wheel and arm (Model RP-145)	.03

xx Price upon application to your RCA Victor Parts Distributor.

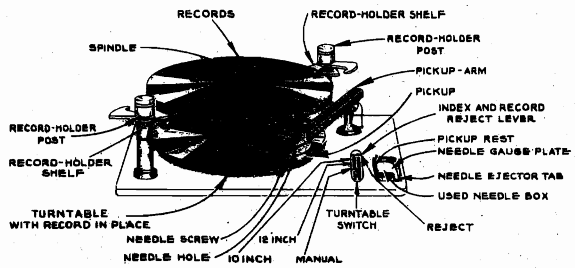
ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

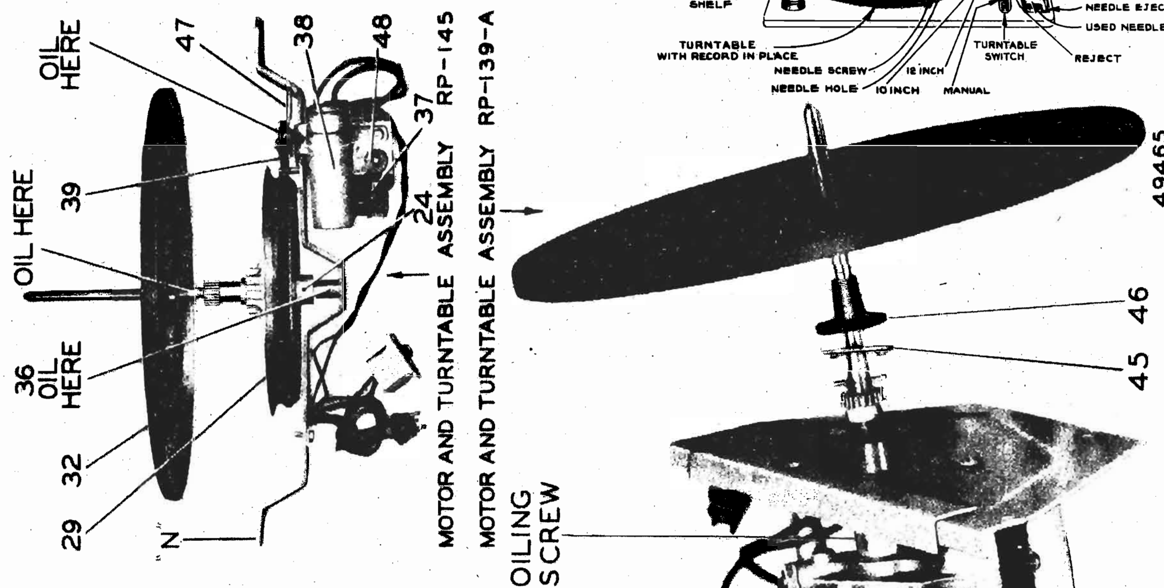
MODEL RP139A
MODEL RP145
Assembly, Ratings

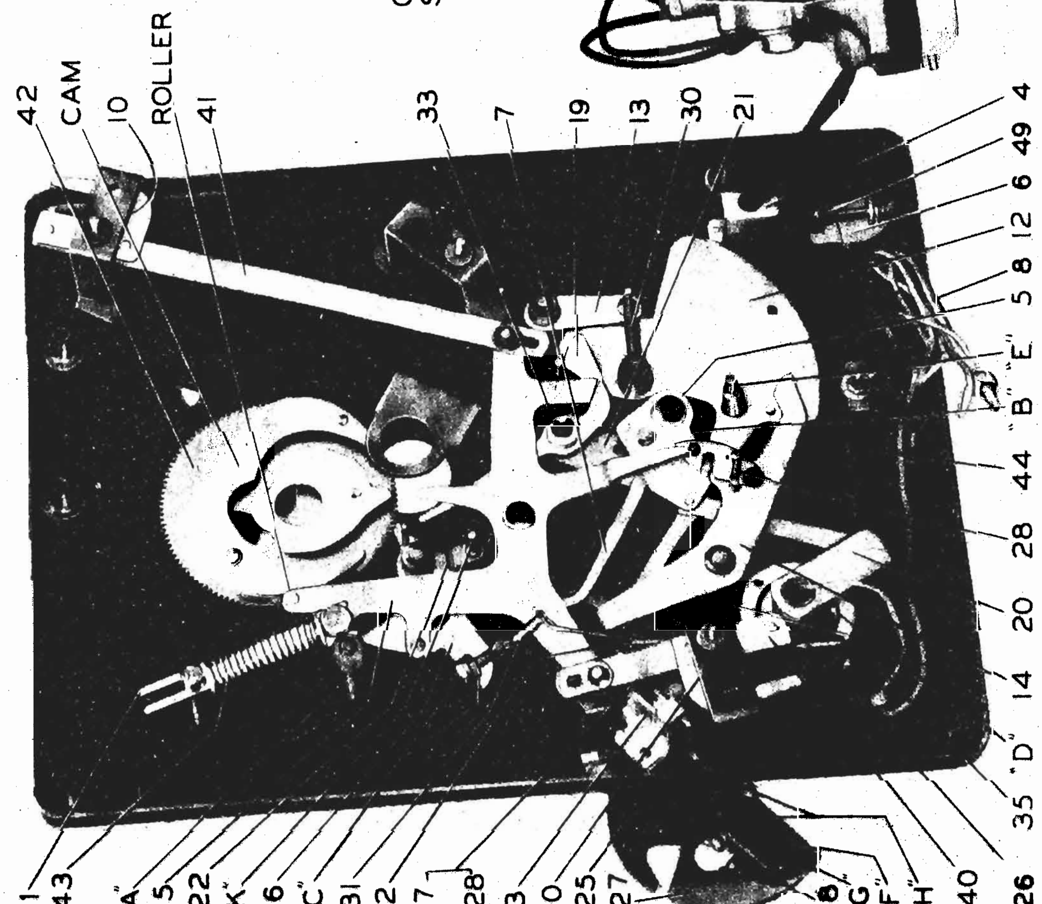
RCA MFG. CO., INC.

These record changers are available for operation on voltages and frequencies as follows:

RP-139-A	105-125 volts,	60 cycles,	21 watts
RP-139-A	105-125 volts,	50 cycles,	21 watts
RP-139-A	105-125 volts,	25 cycles,	22 watts
RP-145	105-125 volts,	60 cycles,	15 watts
RP-145	105-125 volts,	50 cycles,	15 watts

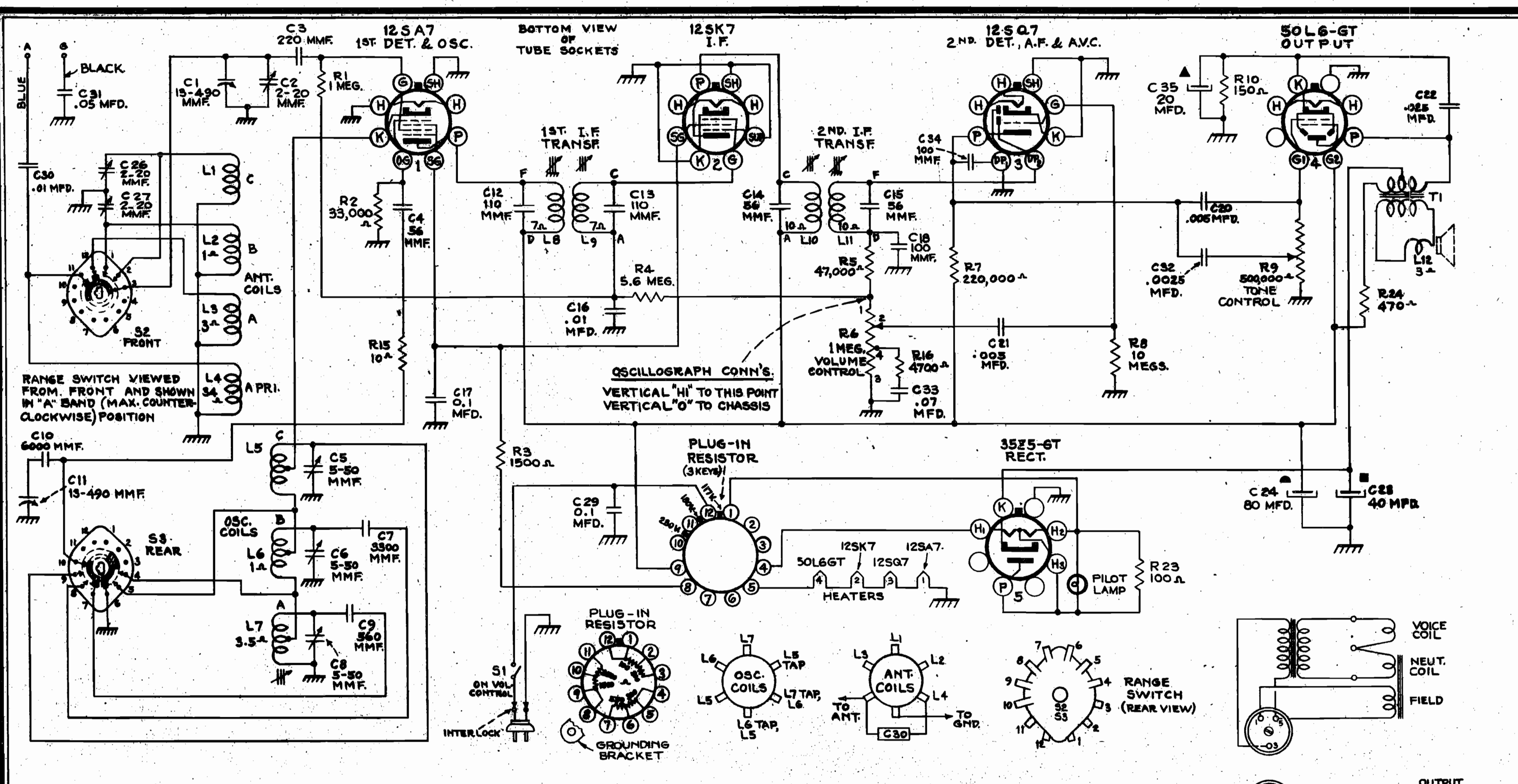






MODEL 5Q66
Ch. RC-477C
Schematic, Voltage

RCA MFG. CO., INC.



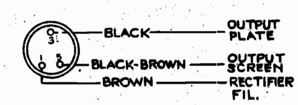
TUBES	117 V. SUPPLY				180 V. SUPPLY				230 V. SUPPLY			
	VOLTAGE			CURRENT	VOLTAGE			CURRENT	VOLTAGE			CURRENT
	P	SG	K	K	P	SG	K	K	P	SG	K	K
(1) 12SA7	106	89	—	8.3	137	98	—	12.8	146	87	—	12.8
(2) 12SK7	106	89	—	16.0	137	98	—	17.9	146	87	—	17.9
(3) 12SQ7	58*	—	—	.2	70*	—	—	.3	74*	—	—	.3
(4) 50L6-GT	114	106	6.5	45.8	142	137	8.3	50.0	157	146	8.9	52.0
(5) 35Z5-GT	—	—	119	70.3	—	—	150	80.0	—	—	160	83.0

VOLTAGES SHOULD HOLD WITHIN ± 20%.

* CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER.

— 1940 —

First Edition



SPEAKER AND CABLE CONNECTIONS

T-93176
5Q66 (RC477C)

Frequency Ranges

Standard Broadcast ("A" Band). 540-1,720 kc (555-174 m)
Medium Wave ("B" Band) ...... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band) .... 7.0-22 mc (42.8-13.6 m)

Intermediate Frequency .... 455 kc

Power Output Rating
(210-250 Volt Operation)

Undistorted .... 3.0 watts
Maximum .... 4.5 watts

Loudspeaker (84905-501)

Type 5-inch
V. C. Impedance .... 4.5 ohms at 400 cycles

Power Supply Ratings

105-125 volts .... 30 watts
160-180 volts .... 45 watts
210-250 volts .... 60 watts

Pilot Lamp ....Mazda No. 47, 6.3 volts, 0.15 amp.

Ballast Tube .... RCA Stock No. 35748

MODEL 5Q66
Alignment, Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground lead (black), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

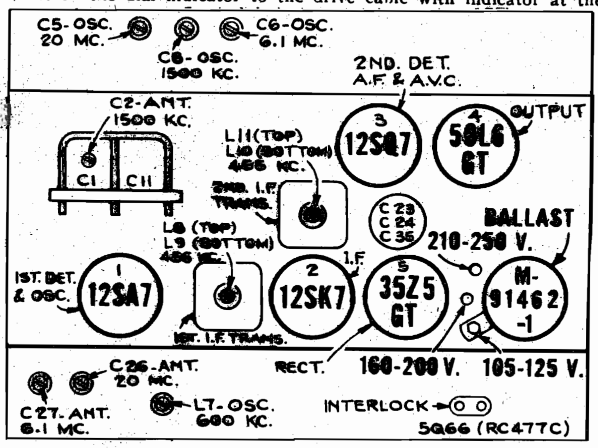
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	12SK7 I-F grid in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C2 (ant.) C8 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C5 (osc.)* C26 (ant.)
7		6 mc	6 mc (148°) "B" Band	C6 (osc.)* C27 (ant.)
8	Antenna lead in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C8 (osc.)

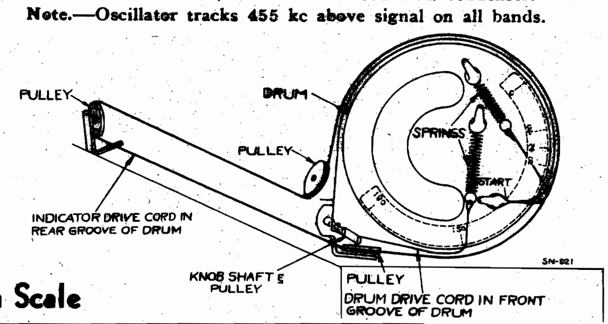
* Use minimum capacity peak if two peaks can be obtained.

† Rock gang condenser slightly while adjusting L7.

** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

Note.—Oscillator tracks 455 kc above signal on all bands.

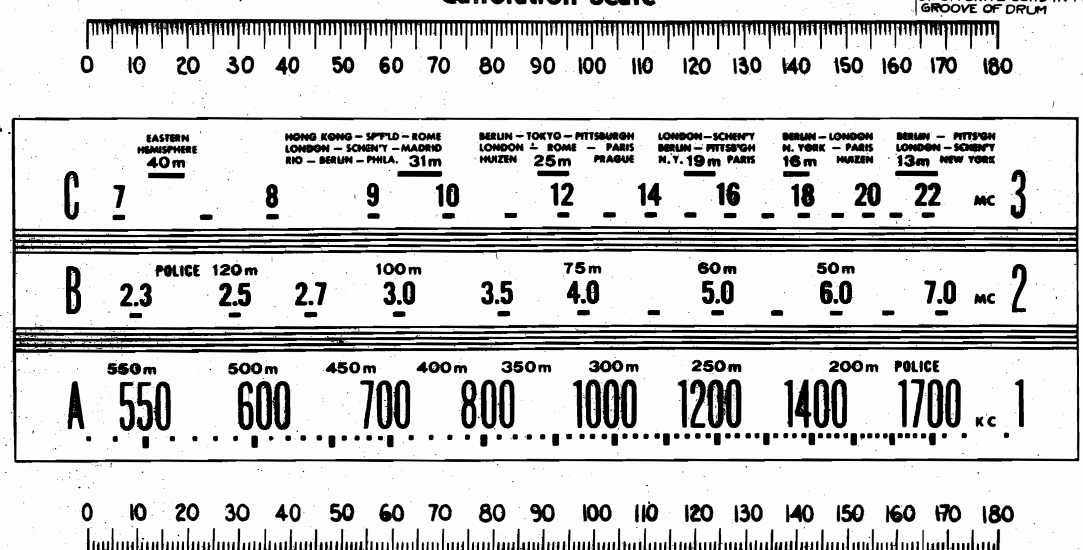




Above—Top View

At Right—Dial Mechanism

Calibration Scale

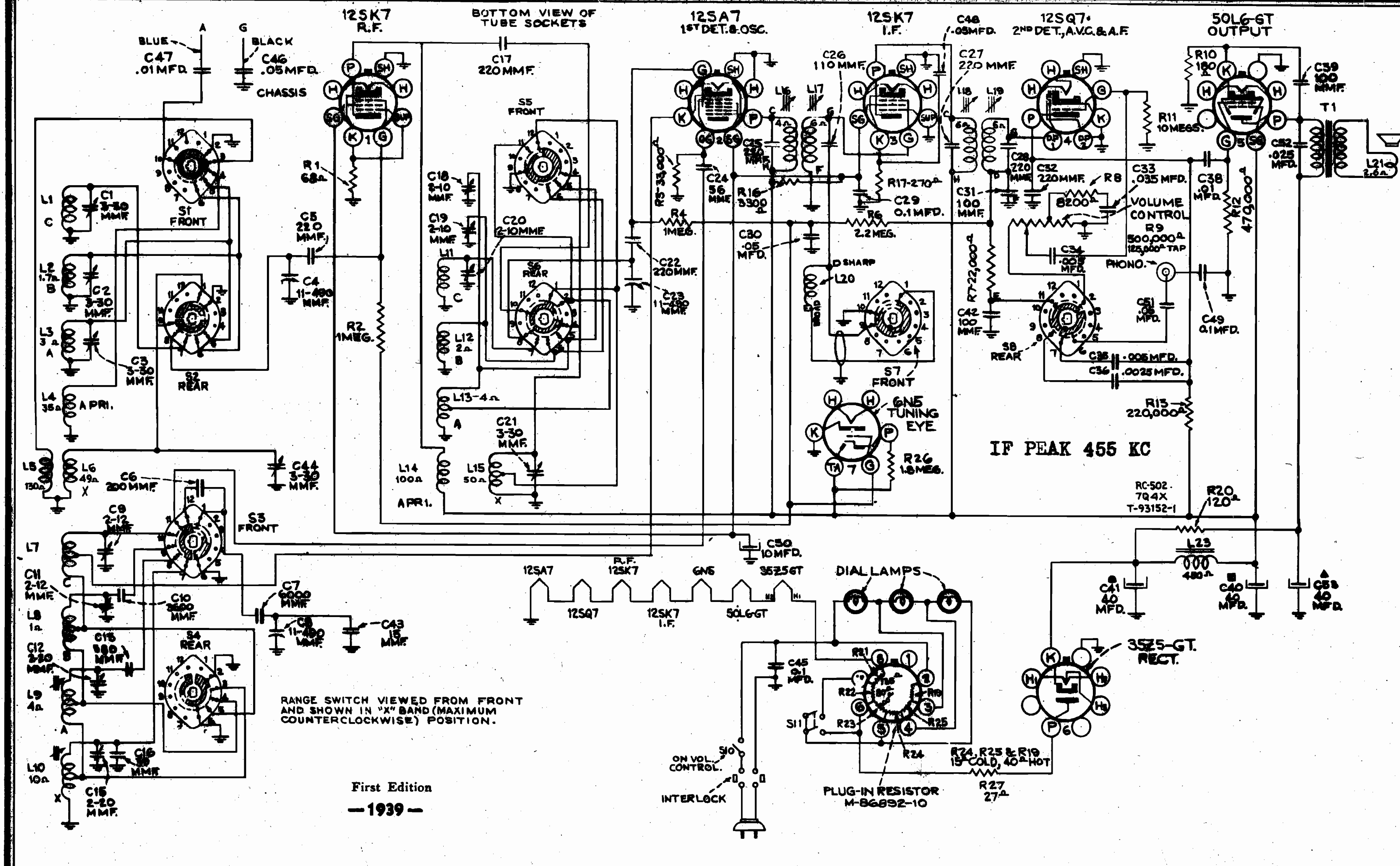


Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

MODEL 7Q4X
Ch. RC-502
Schematic

RCA MFG. CO., INC.



First Edition
—1939—

Pilot Lamps (3) .... Mazda No. 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

160-200 volts, 40-100 cycles	60 watts
160-200 volts, Direct Current	60 watts
210-250 volts, 40-100 cycles	70 watts
210-250 volts, Direct Current	70 watts

LOUDSPEAKER (RL-90-1)

Type	8-inch permanent magnet dynamic
Voice Coil Impedance	2.6 ohms at 400 cycles

POWER OUTPUT RATING

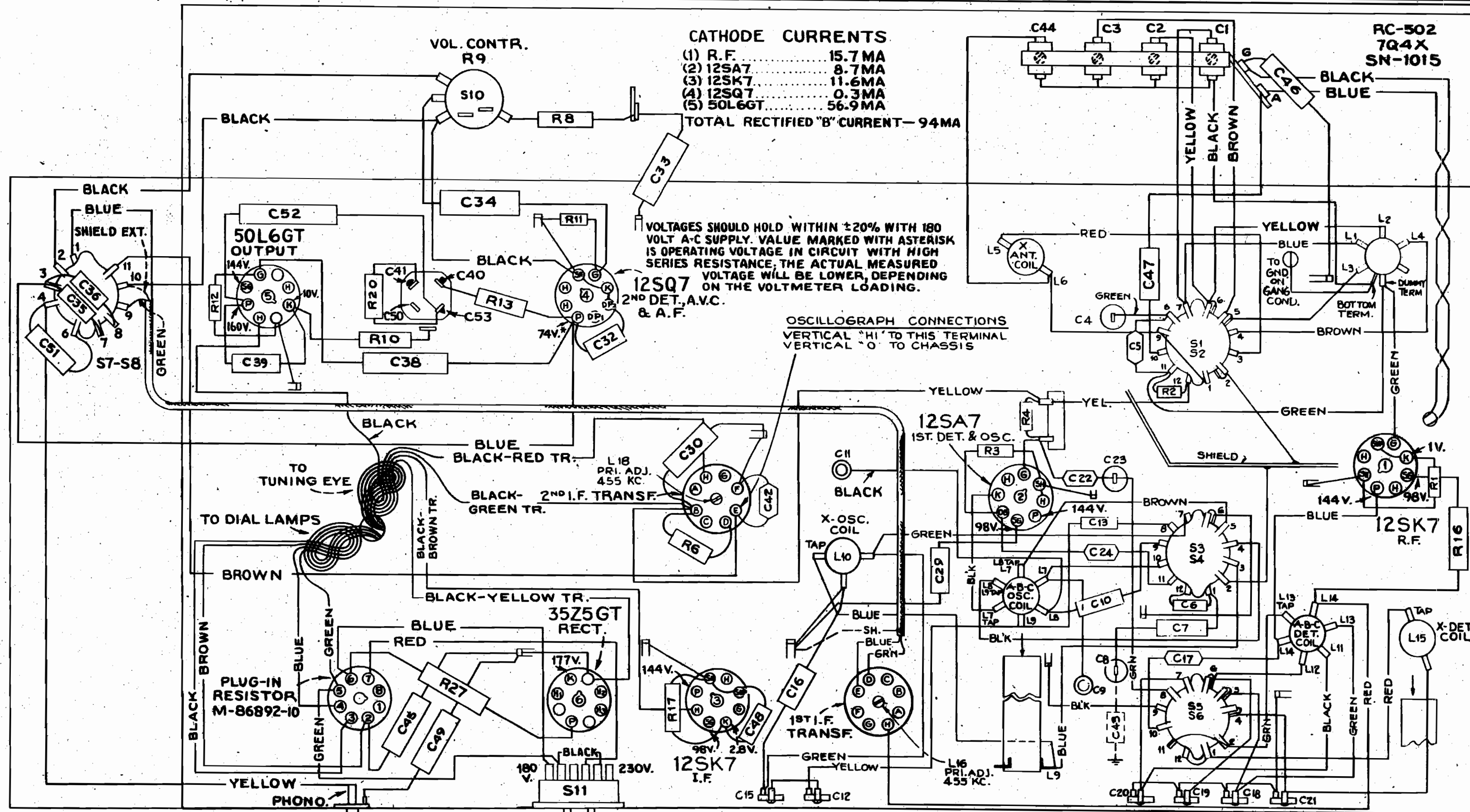
Undistorted	3.5 watts
Maximum	4.5 watts

FREQUENCY RANGES

"X" Band	145-405 kc (2,069-740 m)
Standard Broadcast ("A")	540-1,720 kc (555-174 m)
"B" Band	2.3-7.0 mc (130-42.8 m)
"C" Band	7.0-22.0 mc (42.8-13.6 m)
INTERMEDIATE FREQUENCY	455 kc

MODEL 7Q4X
Chassis Wiring, Voltage
Phono.Data, Lead Dress

RCA MFG. CO., INC.



BOTTOM VIEW—REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

Phonograph Operation:

A jack is provided on the rear of the chassis for connection to a phonograph attachment. The cable from the phonograph attachment should be terminated in a Stock No. 31048 plug to fit the jack.

The attachment must be designed to operate on the particular voltage and frequency of the power supply line. (Most attachments are for alternating current only, and can not be used on direct current.)

Precautionary Lead Dress:

1. Dress the black diode lead running between the 12SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.

2. Dress the brown lead from terminal E on the 2nd I-F transformer to terminal 11 on S8 against the chassis.

3. Dress the phono lead from phono jack to switch along the side of the chassis.

4. Dress the filament lead from No. 8 of the 12SQ7 to 12SK7 R.F. behind the 12SQ7 socket and away from diode and plate.

5. Dress C-34 and R-11 along chassis above volume control.

Caution!

Before replacing ballast resistor, check rectifier and plate circuits to be sure that there are no shorts which would cause the ballast to burn out.

RCA TUBE COMPLEMENT

(1) RCA-12SK7 .... R-F Amplifier
(2) RCA-12SA7 .... 1st Detector, Oscillator
(3) RCA-12SK7 .... I-F Amplifier
(4) RCA-12SQ7... 2nd Detector, A.V.C., Audio Amplifier
(5) RCA-50L6GT .... Output
(6) RCA-35Z5GT .... Rectifier
(7) RCA-6N5 .... Tuning Indicator

MODEL 7Q4X
Alignment, Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment. — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

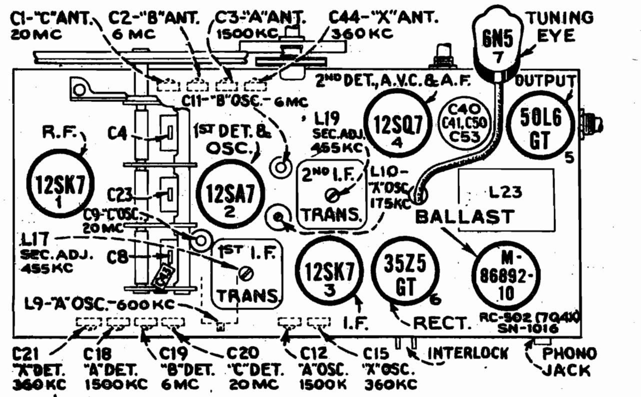
Test-Oscillator. — For all alignment operations, connect the low side of the test-oscillator to the black lead and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.



Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Turn tone control to 3rd position (sharp) from maximum counter-clockwise.			
2	12SK7 I-F grid in series with .01 mfd.	455 kc	"A" band Quiet point between 550-750 kc	L18 and L19 (2nd I-F trans.)
3	12SA7 grid in series with .01 mfd.			L16 and L17 (1st I-F trans.)
4	Turn tone control to 4th position (broad) from maximum counter-clockwise and check I-F response which should be a slightly double-peaked curve. Leave tone control in 3rd position (sharp) for the following steps.			
5	Ant. lead in series with 200 mmfd.	360 kc	360 kc (149°) "X" band	C15 (osc.)† C21 (det.) C44 (ant.)
6		175 kc	175 kc (53°) "X" band	L10 (osc.) Rock gang
7		1,500 kc	1,500 kc (152°) "A" band	C12 (osc.)†† C18 (det.) C3 (ant.)
8		600 kc	600 kc (32°) "A" band	L9 (osc.) Rock gang
9	Repeat steps 5, 6, 7, and 8.			
10	Ant. lead in series with 300 ohms	6 mc	6 mc (149°) "B" band	C11 (osc.)* C19 (det.) C2 (ant.)
11		20 mc	20 mc (157°) "C" band	C9 (osc.)** C20 (det.) C1 (ant.)

* Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to the correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

† Preset L10 core approximately ½-inch out before adjusting C15.

†† Preset L9 core screw flush with apron before adjusting C12.

Note.—Oscillator tracks above signal on all bands.

MODELS 8QB,8QBK
Ch. RC-336
Alignment,Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

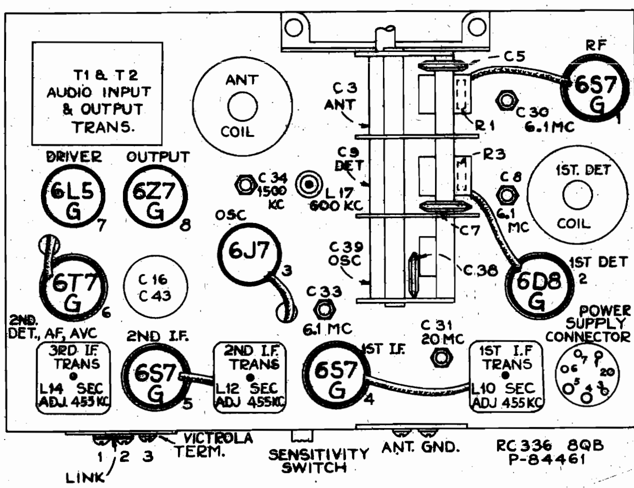
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

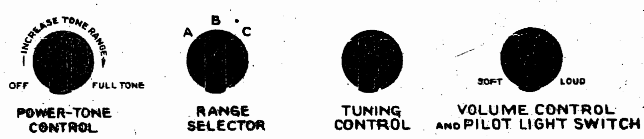
As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.



Top View, Showing Location of Tubes and Trimmers



Location of Controls

The pilot lights are illuminated by pressing in the volume-control knob. (The pilot lights are not controlled by this action when the receiver is operated with the CV-110 a-c power supply unit.) Sensitivity switch is on rear of chassis.

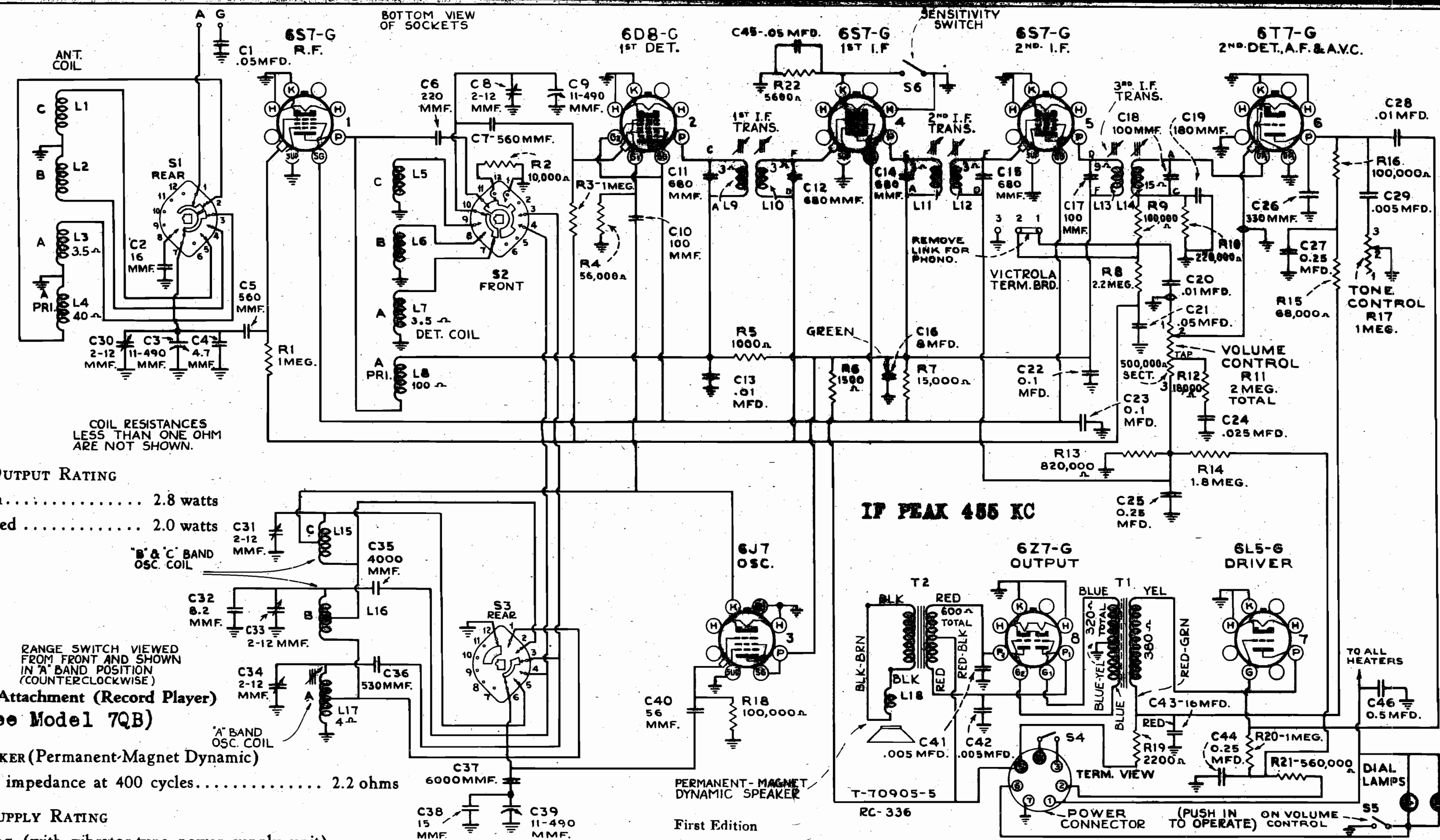
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
Leave the sensitivity switch open (minimum sensitivity) during all alignment operations.				
1	6S7-G 2nd-I.F. grid cap, in series with .01 mfd.	455 kc	"B" band, Quiet point.	L13 and L14 (3rd I-F Trans.)
2	6S7-G 1st-I.F. grid cap, in series with .01 mfd.			L11 and L12 (2nd I-F Trans.)
3	6D8-G 1st-det. grid cap, in series with .01 mfd.			L9 and L10 (1st I-F Trans.)
4	Antenna Terminal, in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" band	C33 (osc.)* C8 (det.)† C30 (ant.)
4A	Check to determine that C33 has been adjusted to correct peak by turning radio to 5.19 mc (50°), where a weaker signal should be received.			
5	Antenna Terminal, in series with 300 ohms	20 mc	20 mc (23.5°) "C" band	C31 (osc.)*
5A	Check to determine that C31 has been adjusted to correct peak by turning radio to 19.09 mc (29.5°), where a weaker signal should be received.			
6	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (31°) "A" band	C34 (osc.)*
7	Antenna Terminal in series with 200 mmf.	600 kc	600 kc (144.5°) "A" band	L17 (osc.)††
8	Repeat Step No. 6.			

* Use **minimum** capacity peak (plunger out) if two peaks can be obtained.
† Rock the gang condenser slightly while adjusting C8, and use **maximum** capacity peak if two peaks can be obtained.
†† Rock the gang condenser slightly while adjusting L17 for maximum output.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.

RCA MFG. CO., INC.

MODELS 8QB, 8QBK
Schematic, Lead Dress



Power Output Rating

Maximum .... 2.8 watts

Undistorted .... 2.0 watts

Victrola Attachment (Record Player)
(See Model 7QB)

Loudspeaker (Permanent-Magnet Dynamic)

Voice-coil impedance at 400 cycles .... 2.2 ohms

Power Supply Rating

D-C Rating (with vibrator-type power supply unit)—
6.3 volts, 3.5 amps.

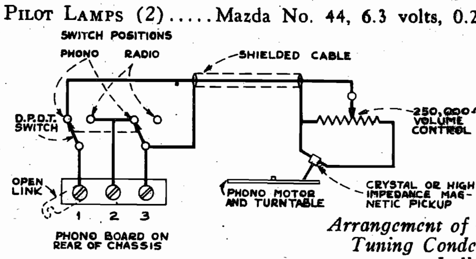
A-C Rating (with CV-110 A-C power supply unit)—
105-117, 117-130, 140-160, 200-225, 225-250 volts, 25-60 cycles.

Precautionary Lead Dress.—

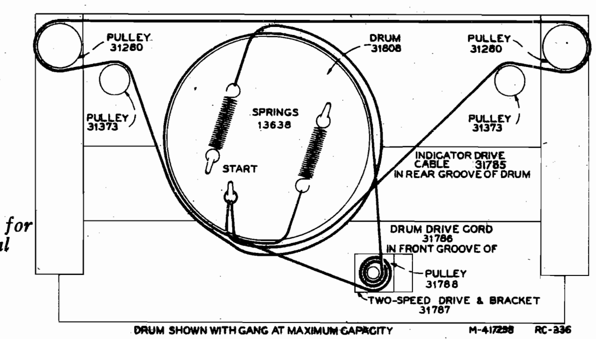
1. Dress the leads from 1st-detector coil to range switch away from trimmer C8.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to chassis.
4. Grid-cap connectors must not ground to tube shields.
5. Dress black lead from terminal 7 on power connector into corner and close to side of chassis.

First Edition

Pilot Lamps (2) ..... Mazda No. 44, 6.3 volts, 0.25 amp.



Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

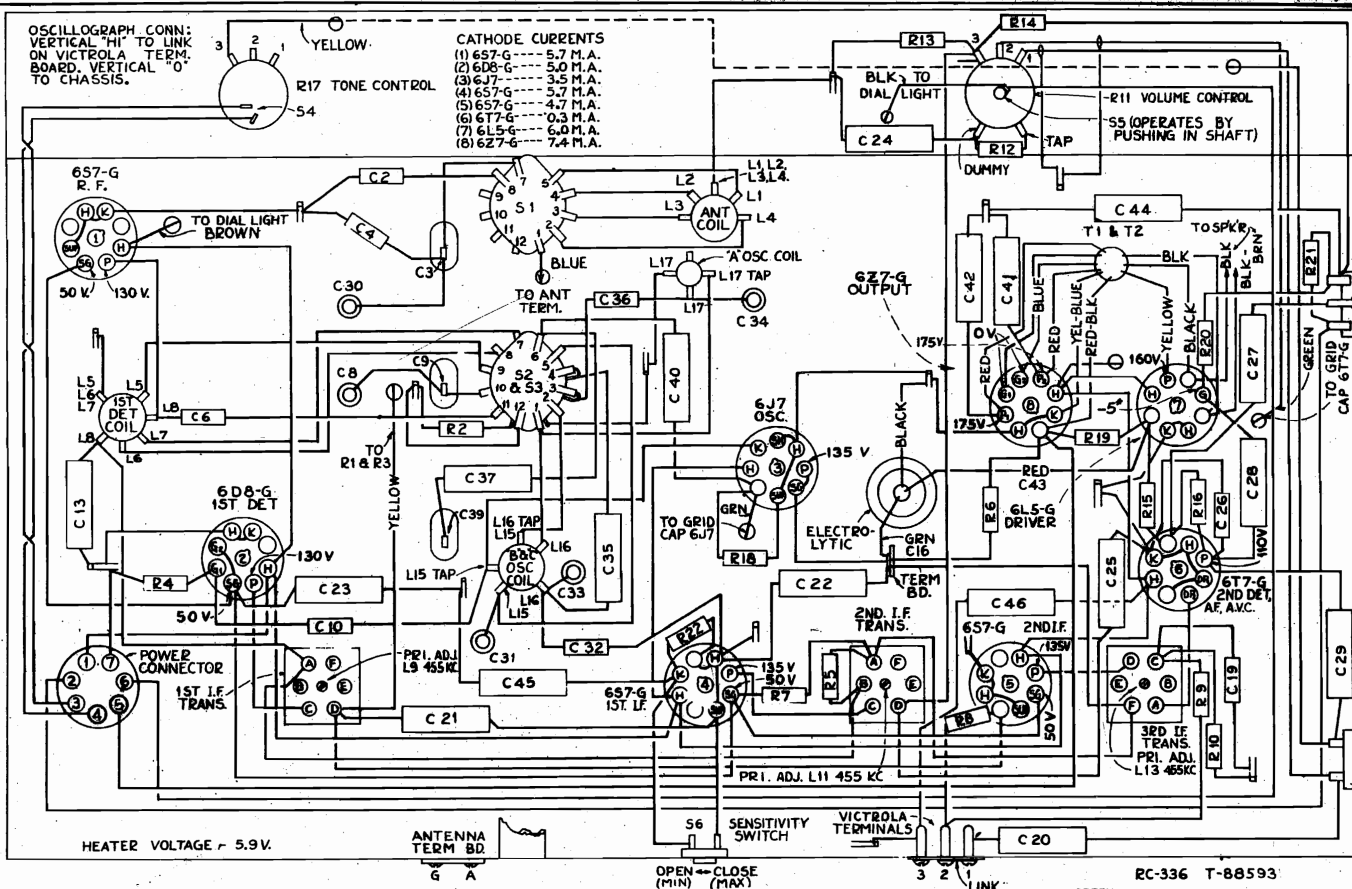
MODELS 8QB, 8QBK
Chassis Wiring, Voltage
SPU Schematics

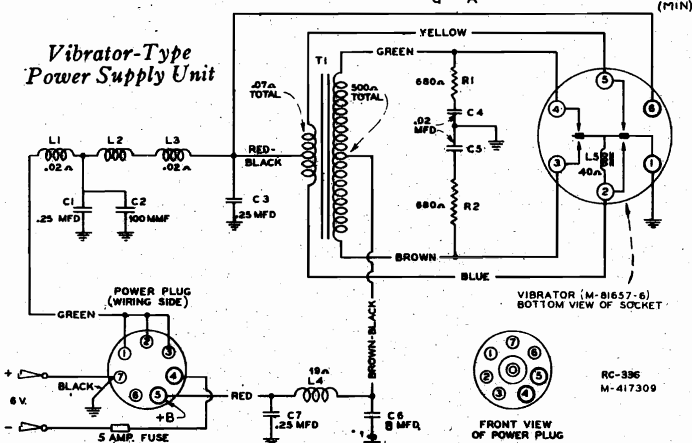
RCA MFG. CO., INC.

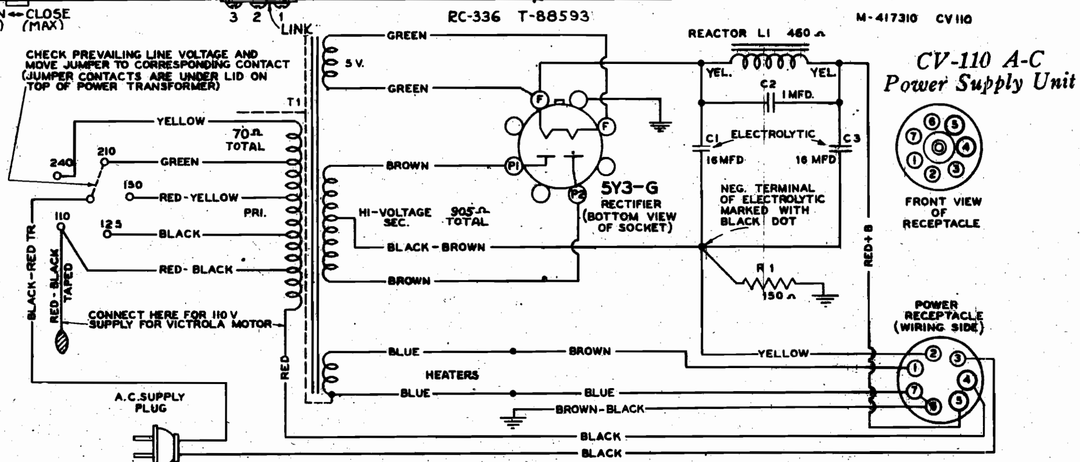
Bottom View of Chassis, with R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 6-volt d-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the meter loading.

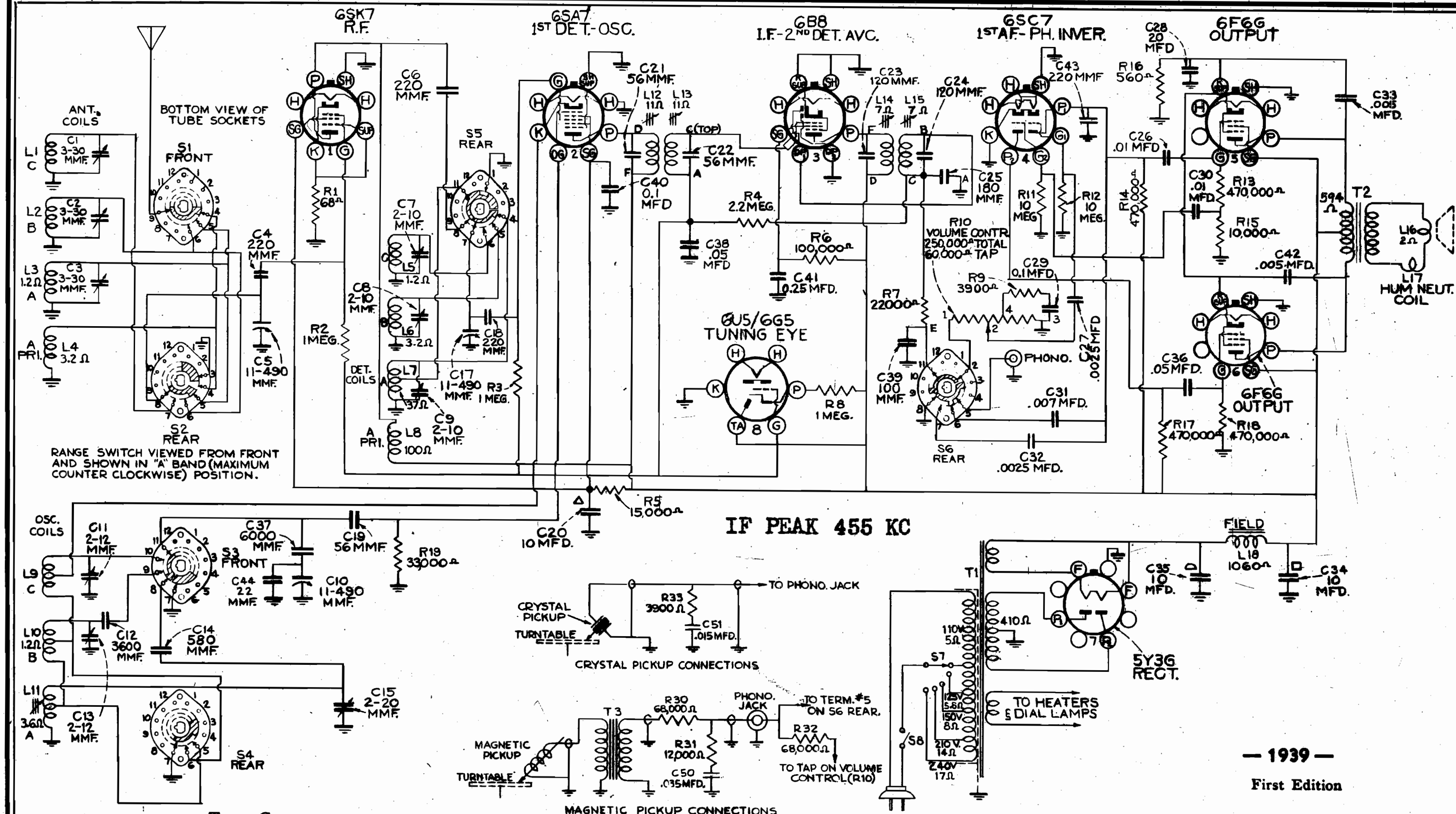






RCA MFG. CO., INC.

MODELS 8Q2, Ch. RC-443
8QU5C, 8QU5M, Ch. RC-443B
Schematic, Lead Dress



Tube Complement

(1) RCA-6SK7 .... R-F Amplifier
(2) RCA-6SA7 .... 1st Detector-Oscillator
(3) RCA-6B8 .... I-F Amplifier, 2nd Det., A.V.C.
(4) RCA-6SC7 .... A-F Amplifier, Phase Inverter
(5) RCA-6F6-G .... Power Output
(6) RCA-6F6-G .... Power Output
(7) RCA-5Y3-G .... Rectifier
(8) RCA-6U5/6G5 .... Tuning Indicator

Frequency Ranges

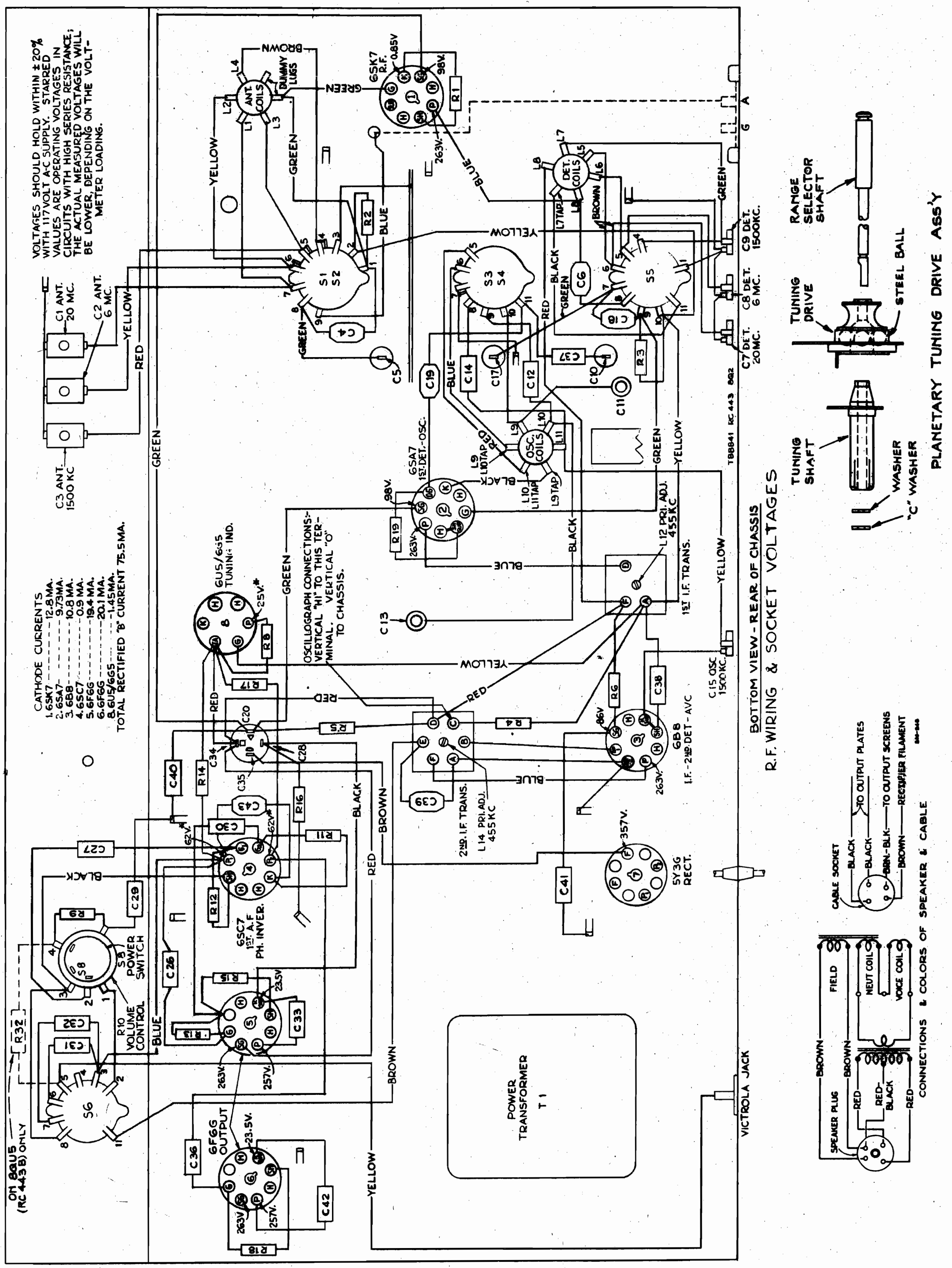
Standard Broadcast ("A" Band) ....540-1,720 kc (555-174 m)
Medium Wave ("B" Band) .... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band) .... 7.0-22.0 mc (42.8-13.6 m)

Precautionary Lead Dress:

1. Leads from L5 and L6 to terminals 5 and 6 on S5, and the leads from these terminals to C7 and C8, should be dressed as far as possible from parts at ground potential.
2. The lead from the detector gang (C17) to terminal 7 on S5, and the lead from the 6SA7 grid to terminal 9 on S5 should be kept away from ground and from parts in the oscillator grid circuit, such as C37, C19, S3 and S4.
3. The lead from terminal E on the second I-F transformer to terminal 11 on S6 should be dressed against the sub-base.
4. The lead from the plate of the 6SK7 (R-F) to L8 should be dressed away from parts at ground potential.
5. The lead from the grid of the 6SK7 (R-F) to terminal 1 on S1 should be kept as far as possible from the antenna lead running to terminal 9 on S1.

MODELS 8Q2, 8QU5C, 8QU5M
Chassis Wiring, Voltage

RCA MFG. CO., INC.



RCA MFG. CO., INC.

Specifications

INTERMEDIATE FREQUENCY .... 455 kc

CRYSTAL PICKUP
Impedance .... 100,000 ohms at 1,000 c.p.s.
Average Output ... 1.5 volts at 1,000 c.p.s. across 500,000 ohms load

PILOT LAMPS (3) ... 2-Mazda No. 44, 6.3 volts, 0.25 amp.; 1-Mazda No. 47, 6.3 volts, 0.15 amp

POWER OUTPUT RATING
Undistorted .... 4.5 watts
Maximum .... 5.5 watts

LOUDSPEAKER (RL-63J-6)
Type .... 8-inch electrodynamic
V.C Impedance .... 2.2 ohms at 400 c.p.s.

PHONOGRAPH MOTOR .... self-starting, constant-speed, induction type

MAGNETIC PICKUP
Impedance .... 96 ohms at 1,000 c.p.s.
Average Output .. 0.14 volts at 400 c.p.s. across open circuit

POWER SUPPLY RATINGS

8Q2:
Rating A .... 105-125 volts, 50-60 cycles, 75 watts
Rating B .... 105-125 volts, 25-60 cycles, 75 watts
Rating C ...... 100-130, 140-160, 195-250 volts, 40-60 cycles, 75 watts

8QU5C and 8QU5M
Rating A5.......... 105-125 volts, 50 cycles, 105 watts
Rating A6.......... 105-125 volts, 60 cycles, 105 watts
Rating C5..... 105-125; 200-250 volts, 50 cycles, 105 watts
Rating C6..... 105-125; 200-250 volts, 60 cycles, 105 watts

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

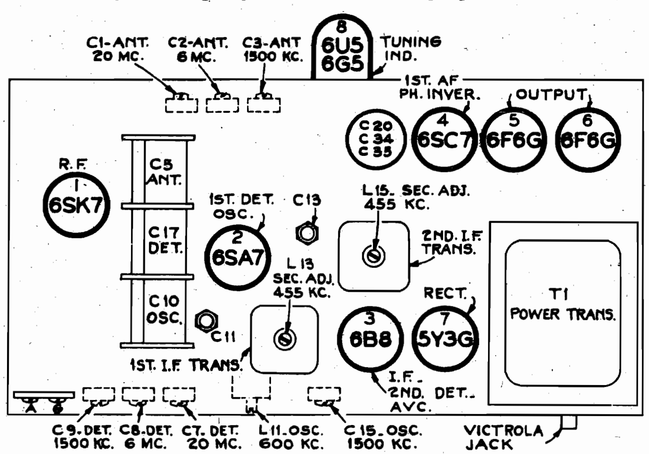
As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

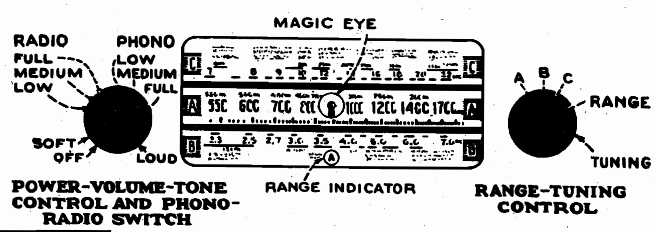
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.

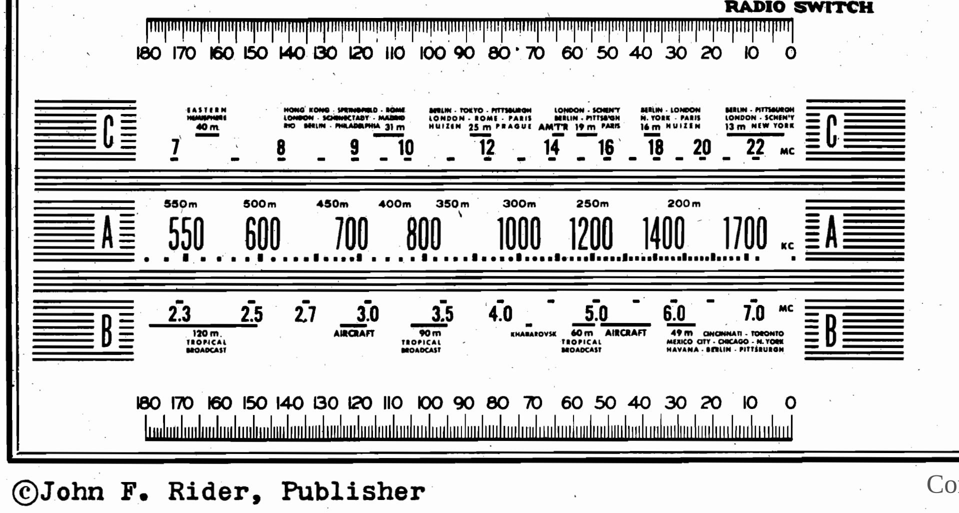
Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to	Tune test-osc. to	Turn radio dial to	Adjust the following for maximum peak output
1	6B8-I-F grid in series with .01 mfd.	455 kc	Quiet point on "C" Band	L14 and L15 (2nd I-F Trans.)
2	Stator of middle section of gang [C17] in series with .01 mfd.	455 kc	Quiet point on "C" Band	L12 and L13 (1st I-F Trans.)
3	Ant. terminal in series with 200 mmfd.	600 kc	600 kc (148°) "A" Band	L11 (osc.) Rock gang
4	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc (28°) "A" Band	C15 (osc.)* C9 (det.)† C3 (ant.)
5	Ant. terminal in series with 300 ohms	6.1 mc	6.1 mc (29°) "B" Band	C13 (osc.)* C8 (det.)† C2 (ant.)
6	Ant. terminal in series with 300 ohms	20 mc	20 mc (23°) "C" Band	C11 (osc.)* C7 (det.)† C2 (ant.)

* Use minimum capacity peak if two peaks can be obtained.
† Use maximum capacity peak if two peaks can be obtained.
NOTE: Oscillator tracks 455 kc above signal on all bands.







Calibration Scale

Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

MODELS 8Q2,8QU5C,8QU5M
Phonograph Data

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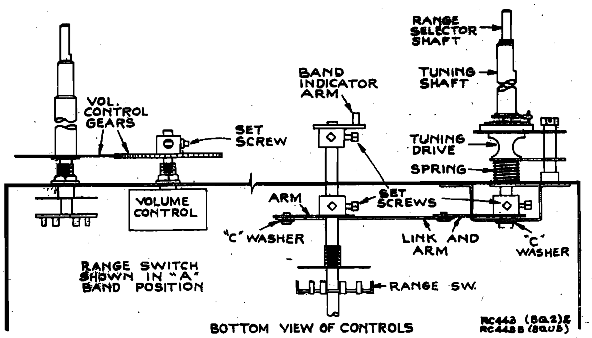
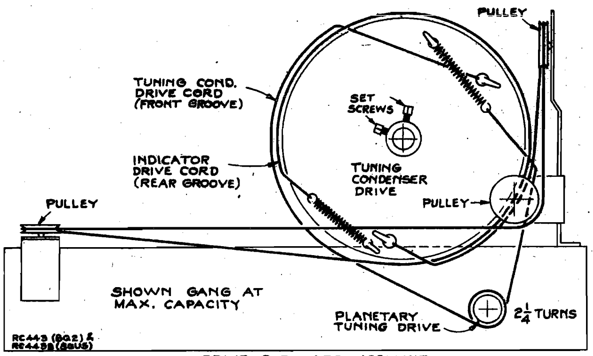


BOTTOM VIEW OF CONTROLS



DRIVE CORD ARRANGEMENT

Victrola Data

The 8QU5M is equipped with a magnetic pickup, and the 8QU5C with a crystal pickup. The output of the crystal pickup is fed directly into the Victrola jack at the rear of the chassis. On instruments using a magnetic pickup, a transformer and compensating circuit are used between the pickup and the Victrola jack (see schematic diagram). The transformer has two jacks, the larger one (primary) for input from the pickup and the smaller one (secondary) for output to the compensating circuit. The components of the compensating circuit are mounted externally to the chassis on a terminal board in the rear of the cabinet.

The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the spindle bearing and oil hole.

The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1⅞ inches from the center line of the spindle shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.

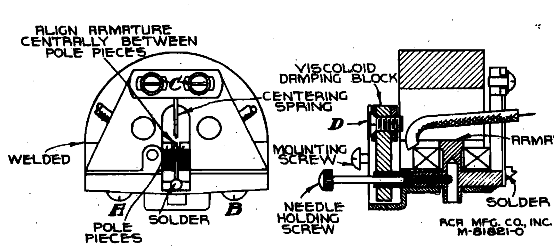
Crystal Pickup:

The crystal pickup is sealed in a metal case; if failure occurs, do not attempt to repair the unit, but install a new crystal unit.

Magnetic Pickup:

The magnetic pickup used is of an improved design. The horseshoe magnet is rigidly welded to the pole pieces and is irremovable. There is a centering spring attached to the armature to maintain proper adjustment and to provide a limiting effect on the movement of the armature. Service operations which may be necessary on the pickup are as follows:

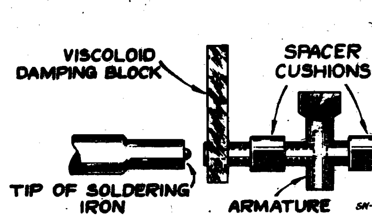
Centering Armature.—Refer to the figure showing the pickup inner structure. The armature is shown in its proper relation to the magnet pole pieces, i. e., exactly centered. Whenever this centering adjustment has been disturbed it will be necessary to remove the pickup mechanism from the tone arm for re-adjustment. Unsolder the two leads from the lugs on the terminal board at the rear of the pickup.



Insert a small rod or nail into the armature needle hole and tighten the needle holding screw to hold the rod securely. If the armature clamping screws A and B have not been disturbed, screws C should be loosened which will permit the armature to be moved from side to side, the rod acting as a lever to perform this operation. The proper adjustment is obtained when the armature is brought to the mid position between the pole pieces. Screws C should then be tightened. The armature position should then be central between the pole pieces and at right angles to them. Check to make sure that the armature is not touching the coil. The air gap between the pole pieces and the armature should be kept free from dust, filings, and other foreign material which would obstruct the movement of the pickup armature.

Replacing Coil.—Whenever there is defective operation due to an open or shorted pickup coil, this coil should be replaced. Remove the pickup mechanism and terminal board. Remove screws A and B and the magnet assembly. Remove the bakelite coil support (with coil attached) and insert the new coil support assembly in its place, after which replace the magnet assembly and center the armature as described above, then re-assemble the remainder of the unit. Only rosin core solder should be used for soldering the coil leads and pick-up leads to the pickup terminal board. This same type of solder should be used when necessary for soldering the centering spring to the armature.

Magnetizing.—Loss of magnetization will not usually occur when the pickup has received normal care because the magnet and pole pieces are one unit and the magnetic circuit remains practically closed at all times. When the pickup has been mishandled, subjected to a strong a-c field, jolted, or dropped, there may be an appreciable loss of magnetic strength, in which case it will be necessary to re-magnetize the entire structure. To do this, it will be necessary to first remove the pickup mechanism from the tone arm, and then remove the magnet assembly. Place the magnet assembly on the poles of a standard pickup magnetizer such as the RCA Stock No. 9549 Pickup Magnetizer and charge the magnet in accordance with the instructions accompanying the magnetizer. It is preferable to check the polarity of the pickup magnet and to remagnetize it so that the same polarity is maintained.



Damping Block.—The viscoloid damping block which is attached to the front end of the armature shank serves to reduce undesirable resonances and to cause the frequency response to be uniform. Should it be necessary to replace this damping block, the pickup mechanism should be removed from the tone arm. Remove screw D and the damping block from the pickup assembly. Make sure that the shaft of the armature which contacts the viscoloid is clean. Then insert the new damping block so that it occupies the same position as that of the original block, and is in correct vertical alignment with the armature. The hole in the block is somewhat smaller than the diameter of the armature in order to permit a snug fit. With the damping block properly aligned on the armature, screw D with its washer should then be replaced. Heat should be applied to the armature (viscoloid side) so that the damping block will fuse at the point of contact and become rigidly attached to the armature. A special-tip soldering iron, constructed as shown, will be found very useful in performing this operation. The iron should be applied only long enough to slightly melt the block, causing a small bulge on both sides.

RCA MFG. CO., INC.

REPLACEMENT PARTS

Models 8Q2,8QU5C,8QU5M **Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-443 and RC-443B)	
34133	Arm—Band indicator arm—located on range switch shaft	.45
34502	Arm—Operating arm on range switch shaft	.25
10194	Ball—Steel ball	.02
31767	Board—Antenna ground terminal board	.20
34131	Bracket—Drive cord pulley and brackets	.55
33819	Capacitor—Trimmer capacitor—3 sections of 2-10 mmfd. each	.60
12714	Capacitor—Air trimmer capacitor—2-12 mmfd. (C11, C13)	.50
33817	Capacitor—Trimmer capacitor—1 section of 2-20 mmfd. (C15)	.30
33820	Capacitor—Trimmer capacitor—3 sections of 3-30 mmfd. each (C1, C2, C3)	.60
31868	Capacitor—22 mmfd. (C44)	.30
12723	Capacitor—56 mmfd. (C19)	.35
30949	Capacitor—56 mmfd. (C21, C22)	.25
12720	Capacitor—100 mmfd. (C39)	.35
12404	Capacitor—120 mmfd. (C23, C24)	.30
14712	Capacitor—180 mmfd. (C25)	.30
12694	Capacitor—220 mmfd. (C4, C6, C18, C43)	.35
33235	Capacitor—580 mmfd. (C14)	.40
12811	Capacitor—3,600 mmfd. (C12)	.60
31405	Capacitor—6,000 mmfd. (C37)	.75
5107	Capacitor—.0025 mfd. (C27, C32)	.20
4838	Capacitor—.005 mfd. (C33, C42)	.25
13033	Capacitor—.007 mfd. (C31)	.25
4858	Capacitor—.01 mfd. (C26, C30)	.25
32787	Capacitor—.05 mfd. (C36, C38)	.20
32786	Capacitor—0.1 mfd. (C29, C40)	.25
12484	Capacitor—0.25 mfd. (C41)	.30
33014	Capacitor—Comprising 3 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts (C20, C28, C34, C35)	1.90
33762	Coil—Antenna coil—A-B-C bands (L1, L2, L3, L4)	1.20
33763	Coil—Detector coil—A-B-C bands (L5, L6, L7, L8)	1.60
32824	Coil—Oscillator coil—A-B-C bands (L9, L10, L11)	1.00
33756	Condenser—Variable tuning condenser (C5, C10, C17)	5.50
33814	Control—Volume control and switch (R10, S8)	2.00
32635	Cord—Indicator drive cord	.24
32634	Cord—Tuning condenser drive cord	.10
32713	Core—Adjustable core and stud for oscillator coils	.35
33770	Drive—Planetary tuning drive—less shafts and balls, and shaft retainer	.90
33773	Drum—Variable tuning condenser drum and hub	.90
33185	Gear—Shaft and gear for volume control	.50
34132	Gear—Shaft and gear for tone control	.55
11891	Lamp—Pilot lamp	.17
33767	Link—Operating link and arm on range switch knob shaft	.60
5040	Plug—4-contact female plug for speaker cable	.30
34130	Pulley—Drive pulley and brackets	.30
14281	Resistor—68 ohms, ½ watt (R1)	.20
17214	Resistor—560 ohms, 2 watt (R16)	.22
12955	Resistor—3,900 ohms, ½ watt (R9)	.20
14559	Resistor—10,000 ohms, ½ watt (R15)	.20
33489	Resistor—15,000 ohms, 2½ watt (R5)	.55
14284	Resistor—22,000 ohms, 1/10 watt (R7)	.15
12454	Resistor—33,000 ohms, ½ watt (R19)	.20
3252	Resistor—100,000 ohms, ½ watt (R6)	.20
12285	Resistor—470,000 ohms, ½ watt (R13, R14, R17, R18)	.20
13730	Resistor—1 megohm, ½ watt (R2, R3, R8)	.20
12679	Resistor—2.2 megohms, ½ watt (R4)	.20
13601	Resistor—10 megohms, ½ watt (R11, R12)	.20
14350	Screw—No. 8-32 x 11/32 square head set screw for gear and drum	.03
34134	Shaft—Range switch shaft	.80
34135	Shaft—Tuning knob shaft	.70
33829	Socket—Magic Eye bracket and socket	.50
14278	Socket—Phonograph input socket	.25
31364	Socket—Pilot lamp socket	.20
31251	Socket—Tube socket	.25
13638	Spring—Indicator drive cord spring	.08
33769	Spring—Planetary tuning drive spring	.15
31418	Spring—Tuning condenser drive cord spring	.05
33757	Switch—Range switch (S1, S2, S3, S4, S5)	2.25
34602	Switch—Tone control (S6)	1.25
32263	Transformer—1st I.F. transformer (L12, L13, C21, C22)	2.30
14308	Transformer—2nd I.F. transformer (L14, L15, C23, C24, C25, R7)	2.90
31734	Transformer—Power transformer—105/125 volts, 25/60 cycle (T1)	10.35
31733	Transformer—Power transformer—105/125 volts, 50/60 cycle (T1)	4.75
31735	Transformer—Power transformer—105/130, 140/160, 200/250 volts, 50/60 cycle (T1, S7)	10.80
	MOTOR ASSEMBLIES (Model 8QU5-C) (Model 8QU5-M)	
32650	Field—Motor field coils and laminations, 110 volts, 50 cycle	5.10
32336	Field—Motor field coils and laminations, 110 volts, 60 cycle	5.10
33220	Motor—105-125 volts, 50 cycles—less mounting plate	11.25
33219	Motor—105-125 volts, 60 cycles—less mounting plate	10.75
33361	Shaft—Turntable spindle shaft and gear—50 cycle	1.40
33360	Shaft—Turntable spindle shaft and gear—60 cycle	1.40

STOCK No.	DESCRIPTION	Unit List Price
	PICKUP AND ARM ASSEMBLIES (Model 8QU5-M)	
34304	Arm—Pickup arm—less unit cable and pivot arm	1.50
34303	Arm—Pivot arm and set screw	1.40
14291	Armature—Pickup armature	1.45
14930	Coil—Pickup coil	1.20
14292	Damper—Pickup armature damper	.25
32228	Pickup Unit—Magnet, coil, needle screw, and armature, assembled	4.95
34300	Screw—No. 6-32 x ⅛ headless set screw for pickup pivot arm	.15
3811	Screw—Needle screw	.10
	PICKUP AND ARM ASSEMBLIES (Model 8QU5-C)	
34305	Arm—Pickup arm—less crystal, cable, and pivot arm	1.80
34306	Arm—Pickup pivot arm with set screw	.80
34550	Bushing—Rubber bushing for pickup pivot arm	.05
34307	Crystal—Pickup crystal cartridge and needle screw	3.75
33529	Screw—Needle screw	.10
34300	Screw—No. 6-32 x ⅛ headless set screw for pickup pivot arm	.15
	AUTOMATIC SWITCH ASSEMBLIES (Model 8QU5-C) (Model 8QU5-M)	
34315	Base—Pickup arm base for crystal pickup—Model 8QU5-C	.85
34312	Base—Pickup arm base for magnetic pickup—Model 8QU5-M	.30
32865	Bracket—Switch bracket and terminal board	.40
34308	Cam—Switch cam assembly with spring	.55
32864	Lever—Switch actuating lever, roller, and clip	.45
34309	Mounting—Pickup arm base mounting (rubber grommet, washers, and nut)	.20
34311	Ring—Retaining ring for pickup arm pivot shaft	.05
14195	Screw—No. 10-32 x 5/16 set screw for switch cam hub	.05
34314	Shaft—Pickup arm pivot shaft—for crystal pickup—Model 8QU5-C	.65
34313	Shaft—Pickup arm pivot shaft—for magnetic pickup—Model 8QU5-M	.65
34310	Spool—Insulating spool for switch leads	.10
32868	Spring—Switch lever spring	.05
32867	Spring—Tension spring for switch cam	.05
32866	Switch—Mercury tube and leads	1.75
31608	Washer—Retaining washer for switch lever	.01
	SPEAKER ASSEMBLIES (RL-63-J6)	
31825	Cap—Dust cap	.02
12079	Coil—Field coil (L18)	3.30
11469	Coil—Neutralizing coil (L17)	.30
34274	Cone—Cone, complete with voice coil and dust cap (L16)	1.50
5039	Plug—4-prong male for speaker	.30
14534	Transformer—Output transformer (T2)	2.10
	MISCELLANEOUS ASSEMBLIES	
32610	Bumper—Rubber bumper for pickup arm—Models 8QU5-C and 8QU5-M	.10
34308	Cam—Actuating cam for automatic switch—Models 8QU5-C and 8QU5-M	.55
11315	Capacitor—.015 mfd.—Model 8QU5-C (C51)	.20
5196	Capacitor—.035 mfd.—Model 8QU5-M (C50)	.20
33680	Cup—Needle cup—Models 8QU5-C and 8QU5-M	.15
31464	Damper—Turntable rubber drive sleeve and metal damper plate—Models 8QU5-C and 8QU5-M	.30
34142	Dial—Dial glass scale	1.95
34140	Frame—Dial frame less pointers, dial glass and guide rods	2.50
13085	Hinge—Cabinet lid hinge—Models 8QU5-C and 8QU5-M	.22
11607	Holder—Packaged needle holder—Models 8QU5-C and 8QU5-M	.85
34144	Indicator—Band indicator strip	.30
34141	Indicator—Station selector indicator and carriage	.40
34139	Knob—Range switch knob	.20
34137	Knob—Tone control knob	.20
34136	Knob—Volume control or tuning knob	.30
31048	Plug—2-contact male plug for phono. input cable—Models 8QU5-C and 8QU5-M	.15
12955	Resistor—3,900 ohms, ½ watt—Model 8QU5-C (R33)	.20
30128	Resistor—12,000 ohms, ½ watt—Model 8QU5-M (R31)	.20
13715	Resistor—68,000 ohms, ½ watt—Model 8QU5-M (R30)	.20
34568	Rest—Pickup rest—Models 8QU5-C and 8QU5-M	.40
34143	Rod—Dial pointer slide rod—Models 8QU5-C and 8QU5-M	.15
34491	Rod—Pointer carriage guide rod—Model 8Q2	.15
34316	Screw—Motor mounting screws, washers, and spacers (sufficient for 1 motor)—Models 8QU5-C and 8QU5-M	.40
14195	Screw—No. 10-32 set screw for cam, Stock No. 34308	.05
34145	Slide—Band indicator slide less strip	.30
32867	Spring—Actuating cam spring	.05
4982	Spring—Retaining spring for knob, Stock No. 34136	.05
14270	Spring—Retaining spring for knob, Stock No. 34137	.05
34138	Spring—Retaining spring for knob, Stock No. 34139	.05
31164	Support—Cabinet lid support—Models 8QU5-C and 8QU5-M	.45
14609	Transformer—Phono. input transformer for model with magnetic pickup—Model 8QU5-M	4.15
33532	Turntable—10-inch turntable—Models 8QU5-C and 8QU5-M	2.90

Model 8Q4

STOCK No.	DESCRIPTION	Unit List Price
	RECEIVER ASSEMBLIES (RC-337A)	
31815	Board—Antenna and ground terminal board	.20
12717	Board—Phonograph input terminal board	.22
31303	Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord	.40
31820	Cable—Indicator pointer drive cable	.55
30766	Cap—Rubber cap for Magic Eye	.15
12607	Cap—Top shield cap for first or second i-f transformer	.20
12714	Capacitor—Trimmer 2-12 mmfd. (C1, C3, C10, C11, C35, C37, C38, C39)	.50
14079	Capacitor—6.8 mmfd. (C54)	.35
13200	Capacitor—10 mmfd. (C43, C45)	.35
12722	Capacitor—18 mmfd. (C2)	.35
13545	Capacitor—39 mmfd. (C44)	.35
31270	Capacitor—100 mmfd. (C17, C18)	.30
31813	Capacitor—120 mmfd. (C15, C16, C51, C53)	.30
12724	Capacitor—120 mmfd. (C24, C49)	.35
13003	Capacitor—180 mmfd. (C19, C49)	.35
12952	Capacitor—330 mmfd. (C5, C7, C8)	.35
31790	Capacitor—530 mmfd. (C42)	.40
31792	Capacitor—4,000 mmfd. (C36)	.60
31405	Capacitor—6,000 mmfd. (C47)	.75
4838	Capacitor—.005 mfd. (C26, C28)	.25
14393	Capacitor—.01 mfd. (C21, C22, C25)	.30
11315	Capacitor—.015 mfd. (C52)	.20
4886	Capacitor—.05 mfd. (C20)	.20
4839	Capacitor—0.1 mfd. (C6, C50)	.30
12484	Capacitor—0.25 mfd. (C23)	.30
5212	Capacitor—16 mfd. (C29)	1.35
31818	Clip—Magic Eye mounting clip	.15
31810	Coil—Antenna coil (L1, L2, L3, L4, L5)	2.50
31782	Coil—Oscillator coil—"A" band only (L13)	.80
31783	Coil—Oscillator coil—"B" and "C" bands only (L11, L12)	1.05
31812	Coil—Oscillator coil—"X" band only (L14)	.80
31811	Coil—R-f coil (L6, L7, L8, L9, L10)	2.40
31774	Condenser—3-gang variable tuning condenser (C4, C9, C46)	5.80
31278	Cord—Band indicator cord	.12
31786	Cord—Variable condenser drive cord	.25
31787	Drive—Two-speed drive and mounting bracket	1.95
31808	Drum—Variable condenser drive cord drum	.80
31819	Indicator—Band indicator strip	.15
11891	Lamp—Dial lamp	.17
31817	Plate—Cushion socket mounting plate—less socket	.10
5040	Plug—4-contact female plug for speaker cable	.30
14404	Plug—7-contact male plug for power input	.35
31788	Pulley—Two-speed drive pulley	.20
31280	Pulley—Indicator pointer drive cord pulley (large)	.10
31373	Pulley—Indicator pointer drive cord pulley (small)	.08
31272	Pulley—Range switch pulley	.20
14560	Resistor—18 ohms, ½ watt (R15)	.20
14526	Resistor—200 ohms, wire-wound, 2½ watt (R14)	.20
14837	Resistor—1,000 ohms, 1/10 watt (R22)	.15
13204	Resistor—8,200 ohms, 2 watt (R16)	.25
13302	Resistor—10,000 ohms, 1/10 watt (R23)	.15
14559	Resistor—10,000 ohms, ½ watt (R20)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R6)	.15
12738	Resistor—27,000 ohms, ½ watt (R8)	.20
14167	Resistor—27,000 ohms, 2 watt (R21)	.25
11300	Resistor—33,000 ohms, 1/10 watt (R19)	.15
14023	Resistor—82,000 ohms, ½ watt (R13)	.20
14560	Resistor—100,000 ohms, ½ watt (R9)	.20
11453	Resistor—270,000 ohms, 1/10 watt (R5)	.15
12199	Resistor—270,000 ohms, ½ watt (R11)	.20
13005	Resistor—390,000 ohms, 1/10 watt (R12)	.15
12013	Resistor—1 meg., 1/10 watt (R1, R2, R18)	.15
5131	Resistor—2.2 meg., 1/10 watt (R4)	.15
14887	Retainer—Indicator drive cord pulley retainer	.01
4669	Screw—No. 8-32 x 3/8-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808	.08
31364	Socket—Dial lamp socket	.20
13871	Socket—Magic Eye socket	.45
31251	Socket—Octal base tube socket	.25
31279	Spring—Band indicator tension spring	.03
13638	Spring—Tension spring for pointer drive cable, or variable condenser drive cord	.08
31823	Switch—D.P.S.T. power switch with leads (S5, S8)	1.40
31806	Switch—Range switch (S1, S2, S3, S4, S6, S7)	2.25
31546	Tone Control and selectivity switch (R10, S6)	1.50
31063	Transformer—First i-f transformer (L15, L16, L24, C15, C16)	2.25
31064	Transformer—Second i-f transformer (L22, L23, L25, C51, C53)	2.25
31268	Transformer—Third i-f transformer (L17, L18, C17, C18)	2.05
31450	Volume Control (R7)	1.50
	SPEAKER ASSEMBLIES (RL63J-1)	
31825	Cap—Speaker cone center dust cap	.05
11469	Coil—Hum neutralizing coil (L20)	.30
12012	Coil—Speaker field coil (L21)	2.90
31828	Cone—Speaker cone and voice coil (L19)	1.55
31826	Plug—4-contact male plug for speaker	.30
31827	Speaker—Complete	10.45
14355	Transformer—Output transformer (T1)	2.00
	MISCELLANEOUS ASSEMBLIES	
31834	Dial—Dial scale and crystal	1.20
31832	Escutcheon—Dial scale escutcheon—less dial scale and crystal	2.40
31717	Indicator—Indicator pointer and carriage	.40
31802	Knob—Station selector, tone control, volume control or range switch knob	.15
30868	Plug—2-contact female plug for speaker cable	.35
30870	Plug—2-contact male plug for speaker cable	.35
31287	Rod—Pointer carriage slide rod	.15
14270	Spring—Retaining spring for knob, Stock No. 31802	.05
31558	Spring—Stop spring for pointer slide rod	.02

Model 95T5LW

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-348-F)	
32216	Capacitor—Antenna trimmer capacitor bank (C31, C21, C22, C23, C24)	1.20
32217	Capacitor—Trimmer capacitor bank (C18, C19)	.70
12723	Capacitor—56 mmfd. (C4)	.35
30904	Capacitor—100 mmfd. (C7, C8, C9, C10)	.25
12725	Capacitor—150 mmfd. (C30)	.35
13003	Capacitor—180 mmfd. (C12, C20)	.35
12537	Capacitor—560 mmfd. (C29)	.35
31435	Capacitor—750 mmfd. (C25)	.40
12635	Capacitor—1,000 mmfd. (C27)	.50
4838	Capacitor—.005 mfd. (C15)	.25
14393	Capacitor—.01 mfd. (C13, C14)	.30
4886	Capacitor—.05 mfd. (C11)	.20
30899	Capacitor—0.1 mfd. (C1, C26)	.30
31423	Capacitor—Comprising 2 sections 5 mfd. each (C16, C17)	1.40
31382	Clip—Oscillator coil and core mounting clip	.04
32218	Coil—Antenna coil (L1, L2)	1.90
31098	Coil—Oscillator coil (L3, L4)	.85
31383	Coil—Oscillator coil (L16)	.30
31384	Coil—Oscillator coil (L15)	.30
31415	Coil—Oscillator coil (L14)	.30
31097	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28)	2.70
30877	Cord—Indicator drive cord	.20
30905	Core—Adjustable core and stud for i-f transformers	.35
31386	Core—Adjustable core and stud for oscillator coils	.15
31421	Drum—Variable condenser drive cord drum	.45
32219	Indicator—Station selector indicator pointer	.20
11891	Lamp—Dial lamp	.17
31419	Plate—Dial color plate	.12
31373	Pulley—Indicator drive cord pulley	.08
13428	Resistor—150 ohms, ½ watt (R11)	.20
31024	Resistor—680 ohms, ½ watt (R9)	.20
30151	Resistor—18,000 ohms, 1 watt (R12)	.22
12788	Resistor—27,000 ohms, ½ watt (R10)	.20
12286	Resistor—56,000 ohms, ½ watt (R2)	.20
12199	Resistor—270,000 ohms, ½ watt (R7)	.20
12285	Resistor—470,000 ohms, ½ watt (R8)	.20
12679	Resistor—2.2 meg., ½ watt (R4)	.20
13601	Resistor—10 meg., ½ watt (R6)	.20
14887	Retainer—Pulley retainer	.01
14350	Screw—No. 8-32 square head set screw for drum Stock No. 31421	.03
31364	Socket—Dial lamp socket	.20
31251	Socket—Tube socket	.25
31418	Spring—Indicator drive cord tension spring	.05
32215	Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25)	3.00
31412	Volume control and power switch (R5, S1)	1.50
30902	Transformer—First i-f transformer (L5, L6, C7, C8)	1.90
30903	Transformer—Second i-f transformer (L7, L8, C9, C10)	1.80
31410	Transformer—Power transformer, 100-120 and 200-210 volts, 50-60 cycle (T1)	5.80
	SPEAKER ASSEMBLIES (Speaker 84326-2)	
31473	Cone—Speaker cone and voice coil (L9)	1.70
31472	Speaker—Complete	4.05
31474	Transformer—Output transformer (T2)	1.65
	MISCELLANEOUS ASSEMBLIES	
31428	Button—Station selector switch push button	.06
32220	Dial—Station selector dial scale	.45
31095	Discs—10 celluloid protector discs for call letter markers	.10
30863	Knob—Volume control and power switch, or tuning condenser knob	.15
30991	Marker—Station call letter markers	.40
30900	Spring—Retaining spring for knob Stock No. 30863	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

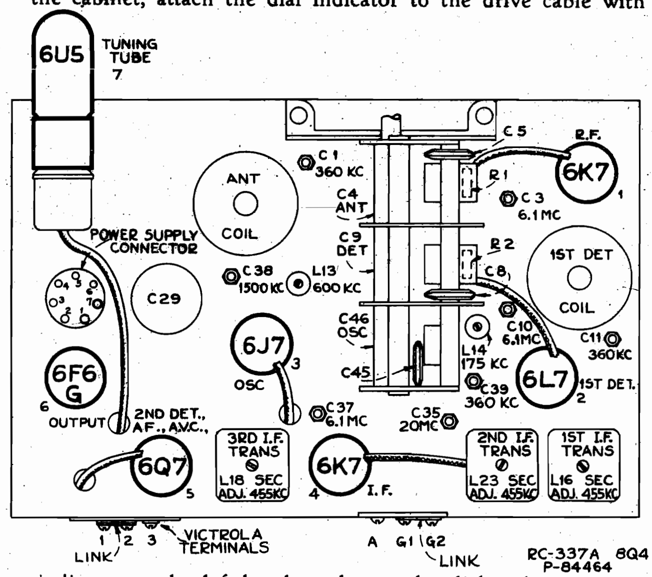
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with



indicator at the left-hand marks on the dial scale, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, with 300 ohm resistor from cap to chassis	455 kc	——	L17 and L18* (3rd I-F Trans.)
2	6L7 1st-Det. grid cap, with 300 ohm resistor from cap to chassis, regular grid lead removed from cap	455 kc	Fidelity control counter-clockwise (sharp)	L23 and L22 (2nd I-F Trans.) and L16 and L15** (1st I-F Trans.)
3	Antenna terminal (A), in series with 300 ohms	6.1 mc	6.1 mc (28.2°) "B" band	C37 (osc.)*** C10 (det.)† C3 (ant.)
4	Antenna terminal, in series with 300 ohms	20 mc	20 mc (22.5°) "C" band	C35 (osc.)††
5	Antenna terminal, in series with 200 mmf.	1,500 kc	1,500 kc (32°) "A" band	C38 (osc.)
6	Antenna terminal, in series with 200 mmf.	600 kc	600 kc (143.8°) "A" band	L13 (osc.)
7	Repeat steps 5 and 6.			
8	Adjust C39 so that it projects approximately 15/16-inch above top of chassis.			
9	Antenna terminal, in series with 200 mmf.	175 kc	175 kc (121.3°) "X" band	L14 (osc.)
10	Antenna terminal, in series with 200 mmfd.	360 kc	360 kc (30.2°) "X" band	C39 (osc.) C11 (det.) C1 (ant.)
11	Repeat oscillator adjustments in steps 9 and 10.			

* Adjust for coincident response curves when using oscillograph.

** Readjust L23, L22, L16, and L15 several times to secure coincident curves. Turn fidelity control full clockwise (broad) and check response, which should be symmetrical, and with **greater** gain than on sharp.

*** Use **minimum** capacity peak if two peaks can be obtained with C37.

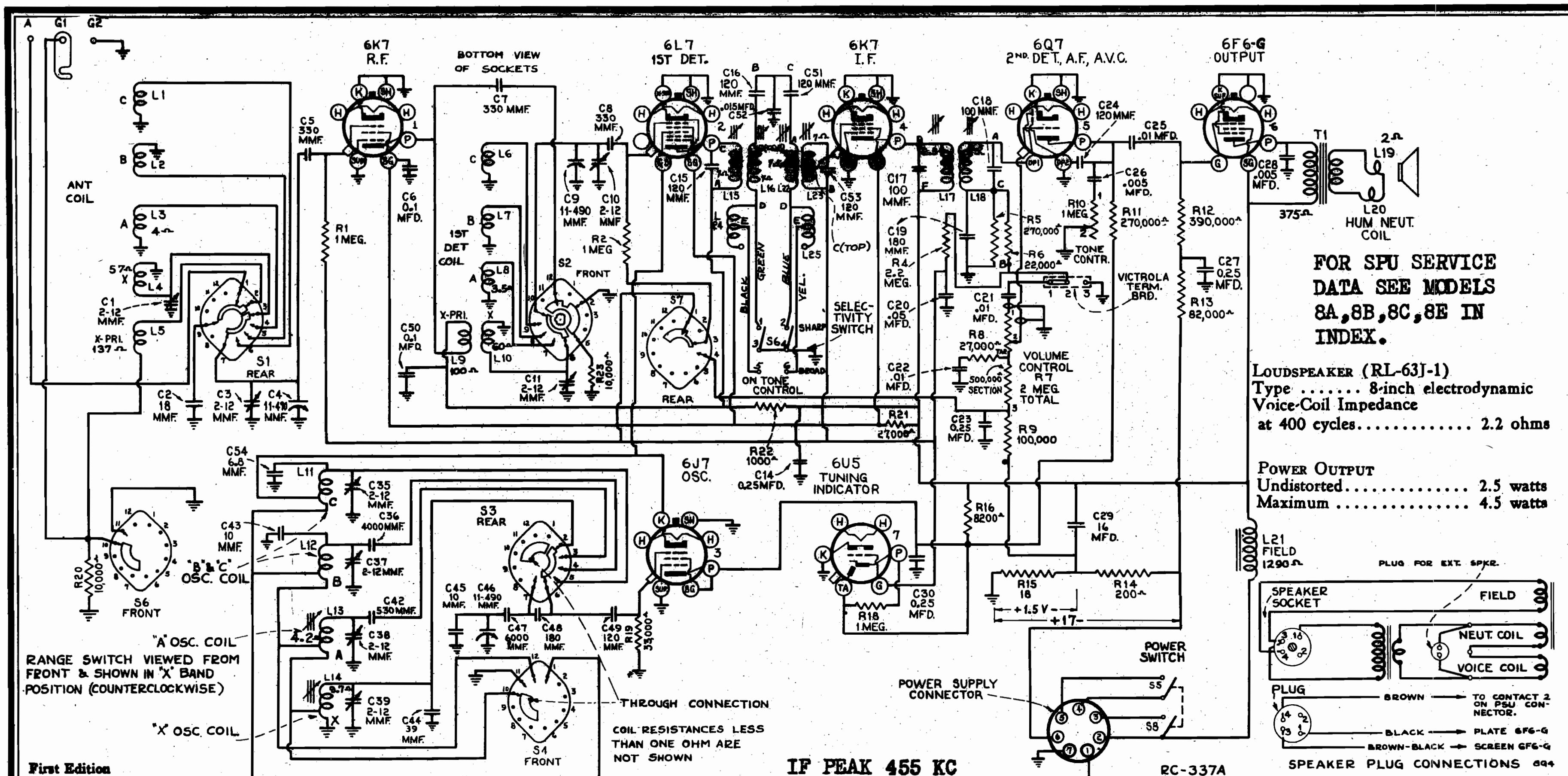
† Rock the gang condenser slightly and use **maximum** capacity peak if two peaks can be obtained with C10. Check to determine that C37 has been adjusted to the correct peak by turning receiver to 5.19 mc (50°) where a weaker signal should be received.

†† Use **minimum** capacity peak if two peaks can be obtained, and check to determine that C35 has been adjusted to the correct peak by turning the receiver to 19.09 mc (27½°) where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.

MODEL 8Q4
Ch.RC-337A
Schematic, Lead Dress
Phono.Data

RCA MFG. CO., INC.



FOR SPU SERVICE DATA SEE MODELS 8A, 8B, 8C, 8E IN INDEX.

LOUDSPEAKER (RL-63J-1)
Type .... 8-inch electrodynamic
Voice-Coil Impedance
at 400 cycles............ 2.2 ohms

POWER OUTPUT
Undistorted.............. 2.5 watts
Maximum .... 4.5 watts

IF PEAK 455 KC

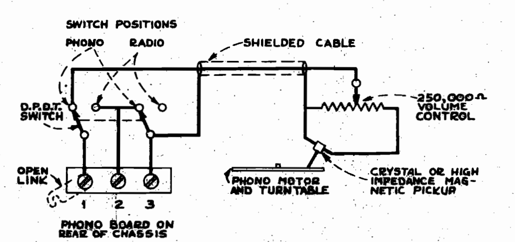
First Edition

Pilot Lamps (2) .... Mazda No. 44, 6.3 volts, .25 amp.

FREQUENCY RANGES
Long Wave ("X" Band)....... 150-400 kc (2,000-750 m)
Standard Broadcast ("A" Band). 530-1,720 kc (566-174 m)
Medium Wave ("B" Band)...... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)........ 7.0-22 mc (42.8-13.6 m)

Precautionary Lead Dress.—

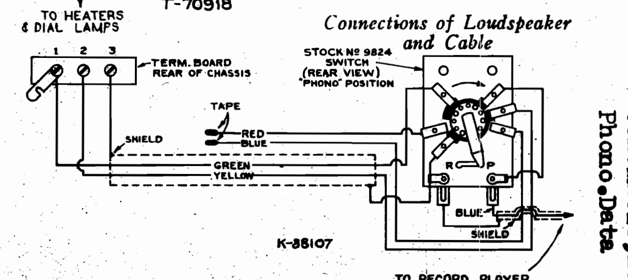
1. Dress all leads and wiring parts away from 6J7 oscillator grid.
2. Twist together the two leads from the 1st i-f transformer to the fidelity switch. Also the two leads from the 2nd i-f transformer.
3. Dress all leads away from the detector coil.
4. Dress leads from the detector coil to the range switch (contacts 7 and 8 on detector section of switch) away from the detector trimmer C10.



In the event that a Stock No. 9824 switch is not available, a double-pole—double-throw toggle switch may be used, connecting it as shown above.

The radio volume control may be used to regulate the volume of the record player.

Connections of Loudspeaker and Cable



Victrola Attachment (Record Player).—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R-93 and R-94 series. A stock No. 9824 switch may be used to change from radio to record player as shown above.

MODEL 8Q4
Chassis Wiring, Voltage
SPU Notes, Dial Data

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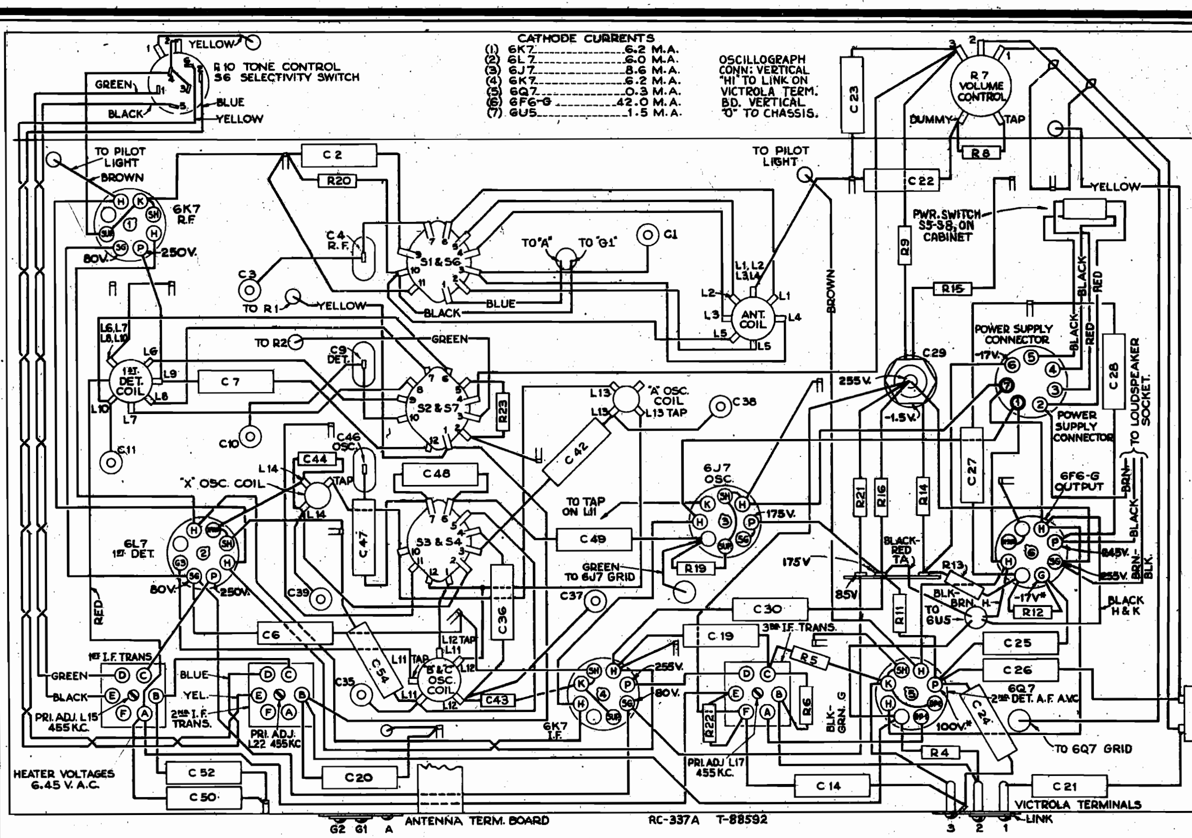


Bottom View of Chassis, with R-F Wiring Diagram and Socket Voltages

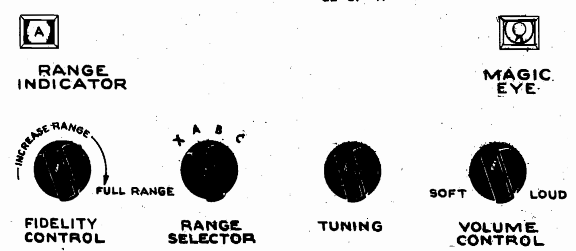
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Miscellaneous Service Data

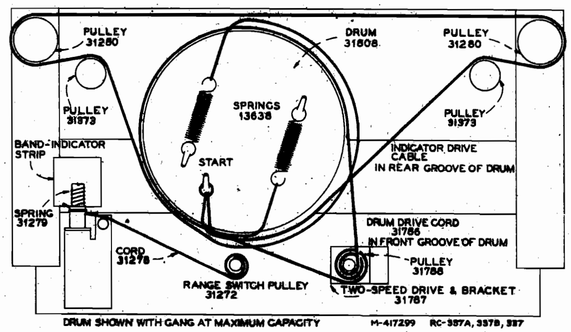
Plug for Extension Loudspeaker.—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired. A permanent-magnet dynamic speaker, with voice-coil impedance of **not less than 2 ohms** is recommended. The voice coil of the extension speaker should be connected by means of two-conductor cable (such as is used on electric appliances) to the male plug. This cable may be any desired length up to several hundred feet. With a long run, it is advisable to use heavier cable. An extension speaker with 2-ohm voice coil will receive approximately half the power output of the receiver. With a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased. (A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.) The RCA MI-6248 Alnico 8-inch diameter permanent-magnet dynamic loudspeaker with 2-ohm voice coil, and 5-watt power-handling capacity is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished wood housing.

Antenna Connections.—Three terminals ("A," "G1," and "G2") are provided on the rear of chassis. Connect the antenna to "A." Connect "G1" to a nearby ground. A link connects "G1" and "G2." In case of electrical interference (especially on "X" band) open the link and connect "G2" separately to ground. This also applies when a D-C power supply is used.



Location of Controls

A toggle-type power switch is mounted on the right-hand side of the cabinet



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Power Supply Units

Model 8Q4 has a seven-prong connector for connection to a separate power supply unit. Units are available in different ratings for a-c and d-c operation, as listed under "Power Supply Ratings" in the electrical specifications.

The d-c power supply unit (PSU 8E) is too large to be mounted inside the cabinet and may be placed on the table behind the receiver, or in any other convenient location that permits plugging into the connector on the receiver chassis.

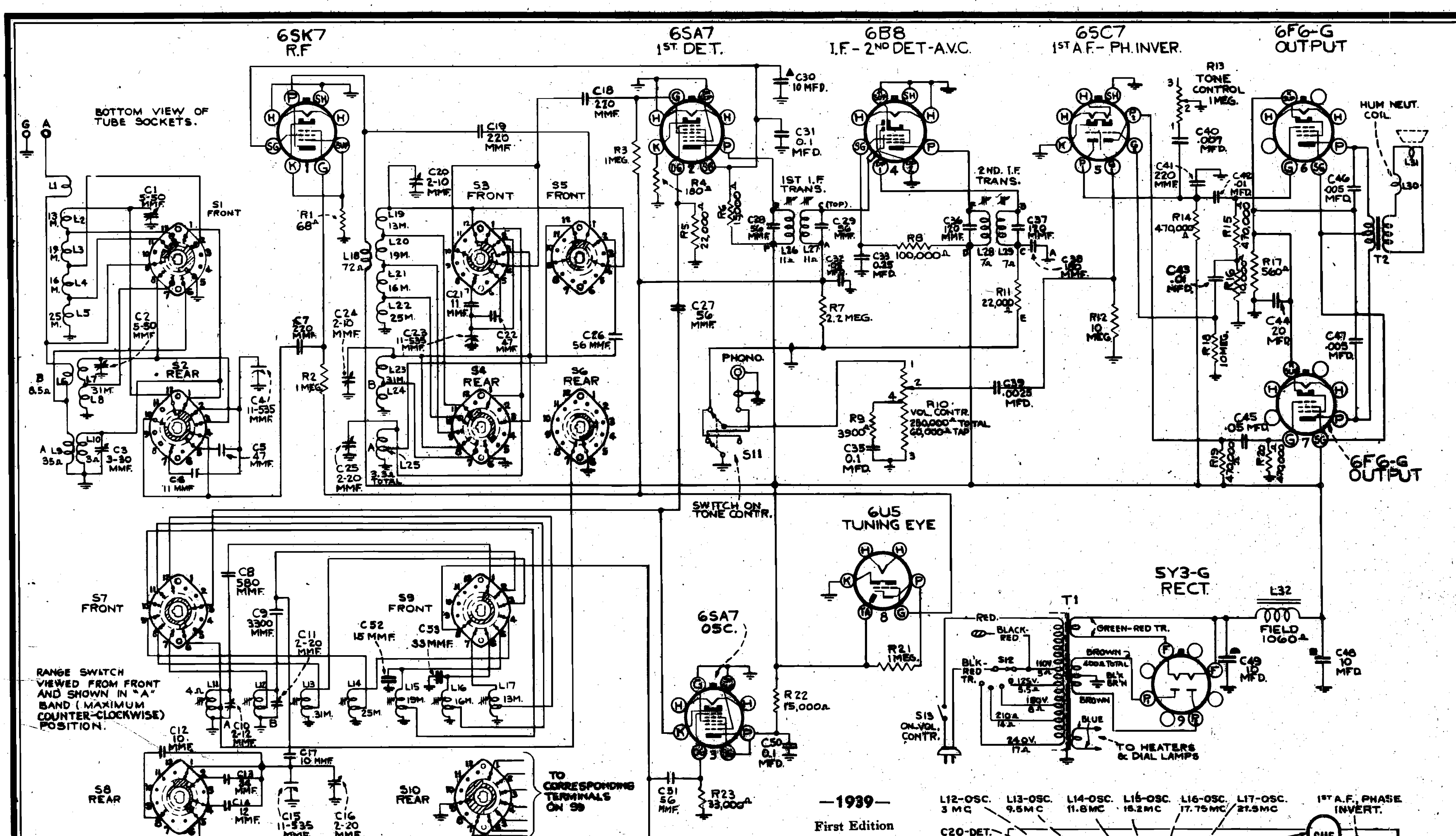
Service data, diagrams, and replacement parts lists for the power supply units are printed in separate service data sheets, which should be referred to for further information.

POWER SUPPLY RATINGS

	Volts	Cycles
A-C Ratings		
With PSU 8A	105-125	50-60
With PSU 8B	105-125	25-60
With PSU 8C	105-130, 140-160, 200-225, 225-250	50-60
D-C Rating		
With PSU 8E	105-125, 210-250	D-C

MODELS 9Q1, 9QK
Chassis RC-444
Schematic, Socket
Trimmers, Lead Dress

RCA MFG. CO., INC.



—1939—

First Edition

Precautionary Lead Dress.—

1. C-39 must be pushed downward as close to the chassis and front apron as possible.
2. The power cord leads must be pushed as far away from C-39 and the 6SC7 and 6F6G sockets as possible, preferably toward the center of the chassis.
3. Dress the green lead from the volume control to the phono. switch directly against the front apron for its entire length.

Loudspeaker	9Q1	9QK
Model	(RL-63K-5)	(RL-70J-3)
Type	8-inch Electrodynamic	12-inch Electrodynamic
V.C. Impedance at 400 C.P.S.	2.2 ohms	2.2 ohms

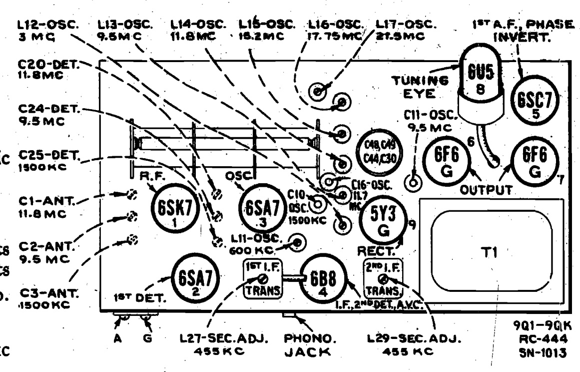
Power Output Rating
Undistorted .... 4.5 watts
Maximum .... 5 watts

Pilot Lamps (3) .... Mazda 51, 7.5 volts, 0.2 amp.

Intermediate Frequency .... 455 kc

Power Supply Ratings

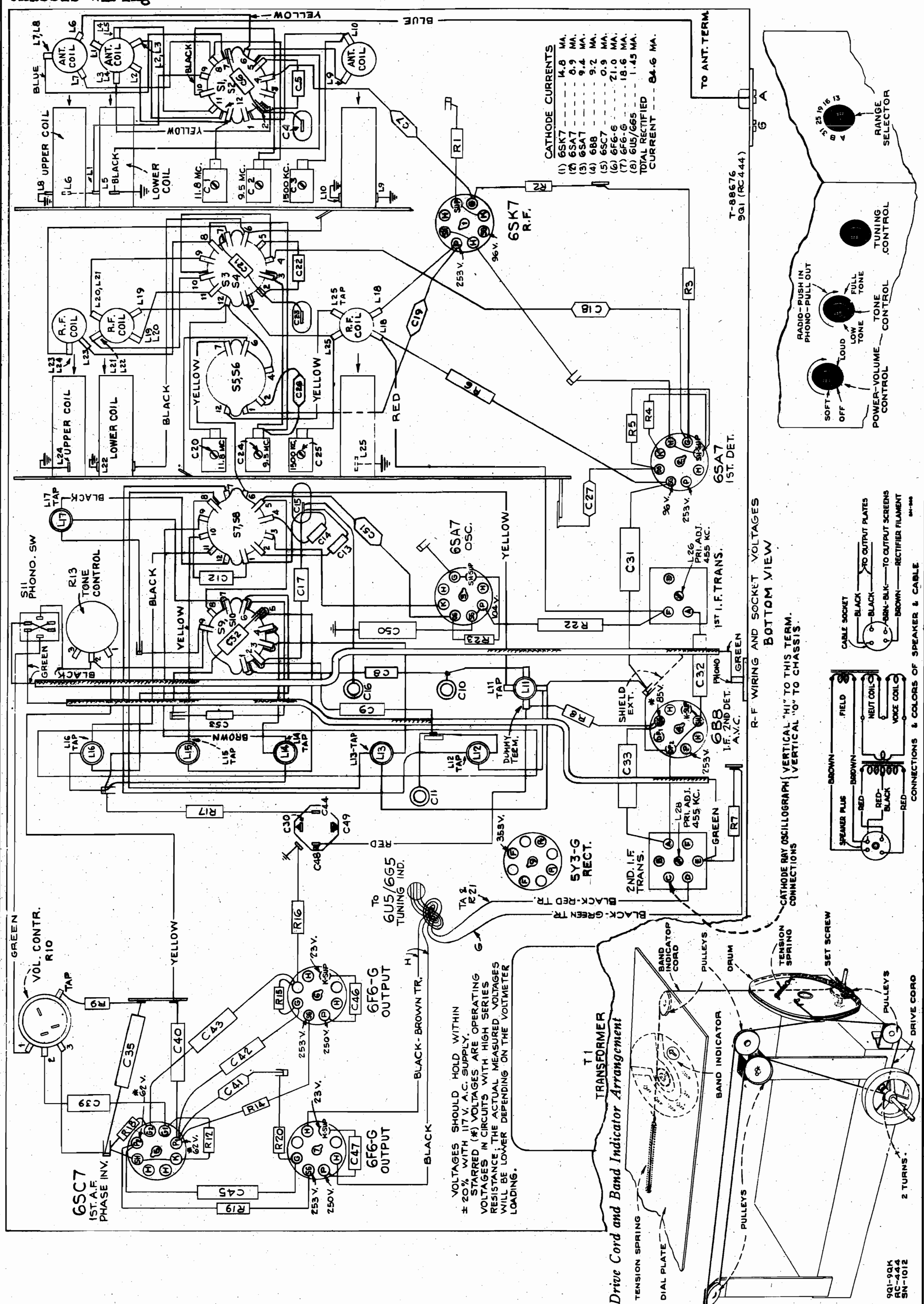
Symbol	Voltage	Frequency (cycles)	Watts
Rating A	105-125	50-60	100
Rating B	105-125	25-60	100
Rating C	100-130, 140-160, 195-250	40-60	100



MODELS 9Q1,9QK
Chassis Wiring

RCA MFG. CO., INC.

Voltage,Dial Assembly



RCA MFG. CO., INC.

MODELS 9Q1, 9QK
Alignment

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calbration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Range switch	Turn radio dial to—	Adjust the following for max. peak output
1	6B8 I-F Grid in series with .01 mfd.	455 kc	A	Quiet Point Near 0°	L29 and L28 (2nd I.F. Trans.)
2	6SA7 1st Detector Grid in series with .01 mfd.				L27 and L26 (1st I.F. Trans.)
3	Antenna Terminal in series with 300 ohms	9.5 mc	31M	20°	L13 (osc.)* C24 (det.)† C2 (ant.)
4		11.7 mc		171°	C16 (osc.)*
4A		Check to determine that C16 has been adjusted to the correct peak by turning radio to 10.8 mc (141°) where a weaker signal should be received.			
5		9.5 mc	B	180°	C11 (osc.)*
5A		Check to determine that C11 has been adjusted to the correct peak by turning radio to 8.6 mc (156°) where a weaker signal should be received.			
6		3.0 mc	B	0°	L12 (osc.)* (Rock Gang)
7	Antenna Terminal in series with 200 mmf.	1,500 kc	A	149°	C10 (osc.) C3 (ant.) C25 (det.)
8		600 kc		27°	L11 (osc.) (Rock Gang)
8A		Repeat steps 7 and 8.			
9	Antenna Terminal in series with 300 ohms	11.8 mc	25M	33°	L14 (osc.)* C20 (det.)† C1 (ant.)
10		15.2 mc	19M	37°	L15 (osc.)*
11		17.75 mc	16M	40°	L16 (osc.)**
12		21.5 mc	13M	55°	L17 (osc.)**

* Use peak with plunger out if two peaks can be obtained. ** Use peak with plunger in if two peaks can be obtained.
† Rock gang condenser slightly while peaking. Use maximum capacity peak if two peaks can be obtained.
Note: Oscillator tracks **above** signal on A, B, 31M, 25M and 19M bands; **below** signal on 16M and 13M bands.

MODELS 9Q1,9QK
MODEL 9Q4
Parts Lists

RCA MFG. CO., INC.

MODEL 9Q4

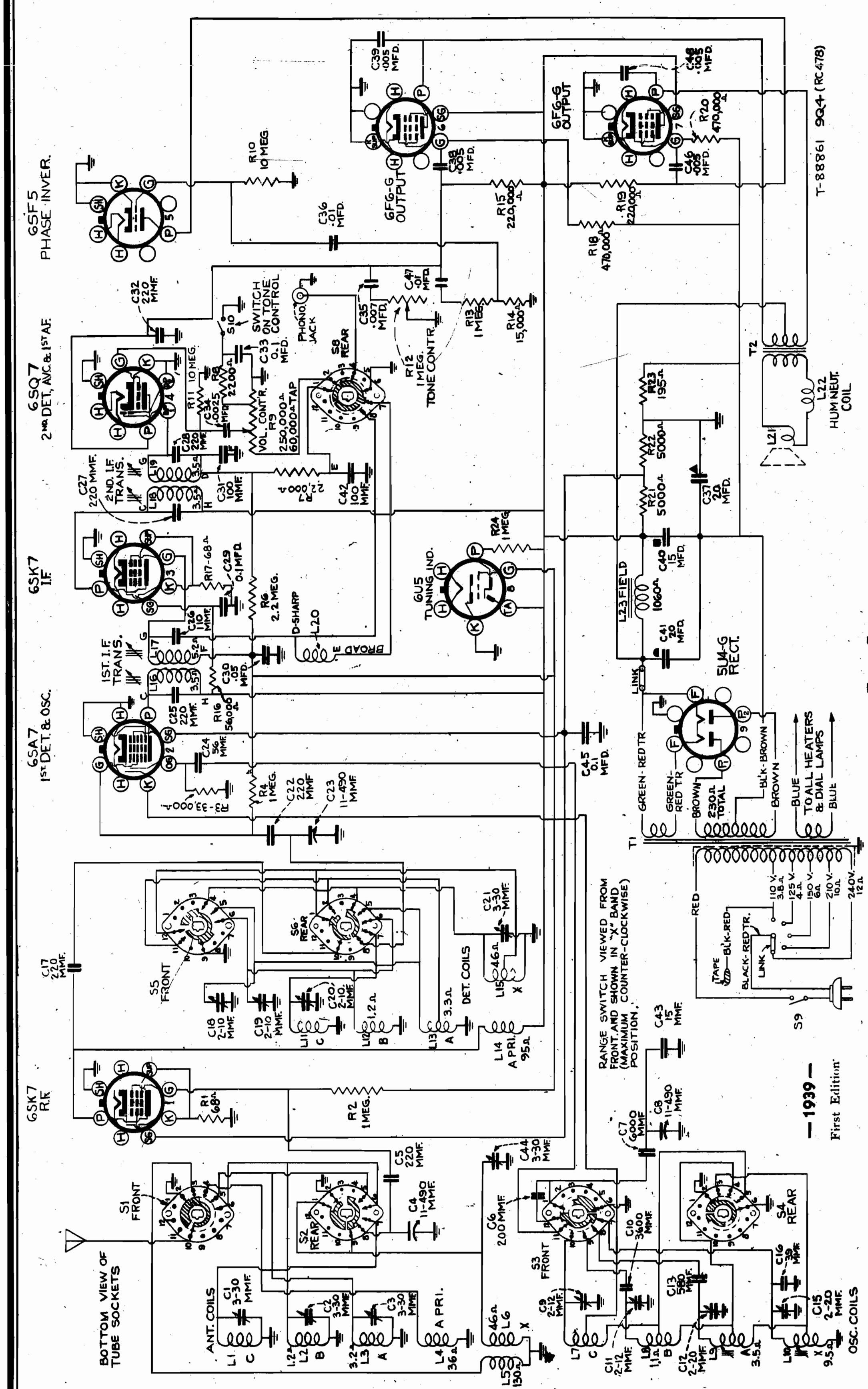
STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES (RC-478)
34401	Arm—Arm and hub for band indicator less cable—fastens on range switch shaft
34400	Belt—Drive belt
31767	Board—"Ant.-Grd." terminal board
32635	Cable—Cable and clips for band indicator
33821	Capacitor—Mica trimmer—3 sections 2-10 mmfd. and 1 section 3-30 mmfd. (C18, C19, C20, C21)
12714	Capacitor—Air trimmer, 2-12 mmfd. (C9, C11)
33818	Capacitor—Mica trimmer, 2 sections 2-20 mmfd. each (C12, C15)
12896	Capacitor—15 mmfd. (C43)
33822	Capacitor—Mica trimmer, 4 sections 3-30 mmfd. each (C1, C2, C3, C44)
13545	Capacitor—39 mmfd. (C16)
12723	Capacitor—56 mmfd. (C24)
12720	Capacitor—100 mmfd. (C42, C31)
32239	Capacitor—110 mmfd. (C26)
30232	Capacitor—200 mmfd. (C6)
12694	Capacitor—220 mmfd. (C5, C17, C22, C32)
33760	Capacitor—220 mmfd. (C25, C27, C28)
33235	Capacitor—580 mmfd. (C13)
12811	Capacitor—3,600 mmfd. (C10)
31405	Capacitor—6,000 mmfd. (C7)
34459	Capacitor—.0025 mfd. (C34)
33584	Capacitor—.005 mfd. (C38, C39, C46, C48)
5148	Capacitor—.007 mfd. (C35)
4937	Capacitor—.01 mfd. (C36, C47)
32787	Capacitor—.05 mfd. (C30)
4839	Capacitor—0.1 mfd. (C29, C33, C45)
34393	Capacitor—Electrolytic—2 sections 20 mfd. and 1 section 15 mfd. (C37, C40, C41)
33762	Coil—Antenna coil A-B-C Bands (L1, L2, L3, L4)
32823	Coil—Antenna coil X Band (L5, L6)
33763	Coil—Detector coil A-B-C Bands (L11, L12, L13, L14)
33765	Coil—Detector coil X Band (L15)
33764	Coil—Oscillator coil A-B-C Bands (L7, L8, L9)
32931	Coil—Oscillator coil X Band (L10)
33756	Condenser—3-gang variable tuning condenser (C4, C8, C23)
34595	Control—Tone control (R12)
32634	Cord—Pointer drive cord
32713	Core—Adjustable core and stud for A-B-C Band coil
34392	Drum—Variable condenser drive drum
11891	Lamp—Dial lamp
14028	Nut—Clamping nut for air trimmer
31817	Plate—Cushion socket mounting plate, less socket
12493	Plug—5-contact female plug for speaker cable
34399	Pulley—Drive belt pulley and set screws for tuning knob shaft
34398	Pulley—Drive belt pulley and set screws for intermediate drive shaft
31373	Pulley—Drive cord pulley for L.H. support
34402	Pulley—Drive cord pulley and bracket for R.H. support
34394	Pulley—L.H. support and drive cord pulleys (2) assembled, less loose pulley
34395	Pulley—R.H. support and drive cord pulleys (2) assembled, less loose pulley and bracket
14281	Resistor—68 ohms, ½ watt (R1, R17)
13716	Resistor—2,200 ohms, ½ watt (R8)
34189	Resistor—Voltage divider, 2 sections 5,000 ohms and 1 section 195 ohms (R21, R22, R23)
12695	Resistor—15,000 ohms, ¼ watt (R14)
13998	Resistor—22,000 ohms, ¼ watt (R7)
12454	Resistor—33,000 ohms, ¼ watt (R3)
30650	Resistor—56,000 ohms, ¼ watt (R16)
12264	Resistor—220,000 ohms, ¼ watt (R15, R19)
12285	Resistor—470,000 ohms, ¼ watt (R18, R20)
12013	Resistor—1 megohm, 1/10 watt (R24)
13730	Resistor—1 megohm, ¼ watt (R2, R4, R13)
12679	Resistor—2.2 megohm, ¼ watt (R6)
13601	Resistor—10 megohm, ¼ watt (R11, R10)
30340	Retainer—Retaining clip for pulley, Stock No. 31373
34396	Shaft—Intermediate tuning drive shaft, and drive cord pulley—less drive belt pulley and set screws
34397	Shaft—Intermediate tuning drive shaft, and flywheel—less drive belt pulley and set screws
31364	Socket—Dial lamp socket
34864	Socket—Magic Eye socket
14278	Socket—Phono. input socket
31251	Socket—Tube socket
31418	Spring—Pointer drive cord tension spring
34391	Switch—Phono. switch, and fidelity control switch (S8)
34390	Switch—Range switch (S1, S2, S3, S4, S5, S6)
34596	Switch—Slide switch for tone control (S10)
33759	Transformer—First i-f transformer (L16, L17, L20, C25, C26)
33761	Transformer—Second i-f transformer (L18, L19, C27, C28, C31, R7)
34183	Transformer—Power transformer — 100/130, 140/160, 195/250 volts, 50/60 cycles (T1)
34389	Volume Control—Volume control and power switch (R9, S9)
33726	Washer—"C" washer for tuning shaft
	SPEAKER ASSEMBLIES (RL63K3)
31825	Cap—Dust cap
34615	Cone—Cone complete with voice coil (L2)
31539	Plug—5-prong male plug for speaker
34691	Speaker—8-inch dynamic complete with cone and voice coil—less output transformer
14534	Transformer—Output transformer (T2)

MODEL 9Q1,9QK

STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES
14517	Board—"Antenna-Ground" board
34665	Bracket—Drive cord bracket and pulley—long bracket with one pulley
34660	Bracket—Drive cord bracket and pulley—short bracket with one pulley
34656	Bracket—Drive cord bracket and pulleys—long bracket with two pulleys
12714	Capacitor—Air trimmer—2-12 mmfd. (C10)
12884	Capacitor—Air trimmer—long—2-20 mmfd. (C11, C16)
34654	Capacitor—Trimmer comprising 2 sections of 2.5-10 mmfd. and 1 section of 2.5-20 mmfd. (C20, C24, C25)
34653	Capacitor—Trimmer comprising 2 sections of 5-50 mmfd. and 1 section of 3-30 mmfd. (C1, C2, C3)
13200	Capacitor—10 mmfd. (C12, C17)
34668	Capacitor—11 mmfd. (C6, C21)
33380	Capacitor—12 mmfd. (C14)
12896	Capacitor—15 mmfd. (C52)
12948	Capacitor—33 mmfd. (C53)
34670	Capacitor—34 mmfd. (C13)
13141	Capacitor—47 mmfd. (C5, C22)
12723	Capacitor—56 mmfd. (C26, C27, C51)
30949	Capacitor—56 mmfd. (C28, C29)
31813	Capacitor—120 mmfd. (C36, C37)
14712	Capacitor—180 mmfd. (C38)
12694	Capacitor—220 mmfd. (C7, C18, C19, C41)
33235	Capacitor—580 mmfd. (C8)
31403	Capacitor—3,300 mmfd. (C9)
34459	Capacitor—.0025 mfd. (C39)
33584	Capacitor—.005 mfd. (C46, C47)
5148	Capacitor—.007 mfd. (C40)
4937	Capacitor—.01 mfd. (C42, C43)
32787	Capacitor—.05 mfd. (C32, C45)
4839	Capacitor—0.1 mfd. (C31, C35, C50)
12484	Capacitor—0.25 mfd. (C33)
33014	Capacitor—Electrolytic comprising 3 sections of 10 mfd. and 1 section of 20 mfd. (C30, C44, C48, C49)
34648	Coil—Antenna coil—AT160
34649	Coil—Antenna coil—AT161
34647	Coil—Antenna coil—AT163
31782	Coil—Oscillator coil for "A" band
34659	Coil—Oscillator coil for "B" band and 31 meter bands
34661	Coil—Oscillator coil for 13 meter band
34657	Coil—Oscillator coil for 16 meter and 19 meter bands
34658	Coil—Oscillator coil for 25 meter band
34652	Coil—R. F. coil—RFT 108A
34651	Coil—R. F. coil—RFT 110
34650	Coil—R. F. coil—RFT 112
34645	Condenser—Variable tuning condenser
34666	Control—Tone control
34667	Control—Volume control and power switch
34662	Cord—Tuning condenser drive cord
34392	Drum—Variable tuning condenser drive drum
11765	Lamp—Dial lamp
5040	Plug—4 contact female plug for speaker
34663	Pulley—Range switch pulley and hub
14281	Resistor—68 ohms, ½ watt (R1)
30545	Resistor—180 ohms, ½ watt (R4)
30735	Resistor—560 ohms, 1 watt (R17)
12955	Resistor—3,900 ohms, ¼ watt (R9)
14559	Resistor—10,000 ohms ¼ watt (R16)
33489	Resistor—15,000 ohms 2½ watt (R6, R22)
14284	Resistor—22,000 ohms 1/10 watt
13998	Resistor—22,000 ohms ¼ watt (R5)
12454	Resistor—33,000 ohms ¼ watt (R23)
14560	Resistor—100,000 ohms ¼ watt (R8)
12285	Resistor—470,000 ohms ¼ watt (R14, R15, R19, R20)
12013	Resistor—1 meg., 1/10 watt (R21)
13730	Resistor—1 megohm ¼ watt (R2, R3)
12679	Resistor—2.2 megohm ¼ watt (R7)
13601	Resistor—10 megohm ¼ watt (R12, R18)
4669	Screw—No. 8-32 square head set screw for drum Stock No. 34392
14350	Screw—Square head set screw for pulley Stock No. 34663
34655	Shaft—Tuning knob shaft and flywheel
31364	Socket—Dial lamp socket
34864	Socket—Magic Eye socket
14278	Socket—Phonograph input socket
31251	Socket—Tube socket
13638	Spring—Tuning condenser drive drum spring
34646	Switch—Range switch
34664	Switch—Slide switch for tone control
32263	Transformer—1st I.F. transformer
14308	Transformer—2nd I.F. transformer
31734	Transformer—Power transformer—110 volts 25 cycle
31735	Transformer—Power transformer—Universal 50-60 cycle
31733	Transformer—Power transformer—110 volt 60 cycle
	SPEAKER ASSEMBLIES MODEL 9Q1 (RL-63K5)
31825	Cap—Dust cap
34615	Cone—Cone complete with voice coil
5039	Plug—4 contact male plug for speaker
34671	Speaker—8" Dynamic complete with cone and voice coil less output transformer and plug
14534	Transformer—Output transformer
	SPEAKER ASSEMBLIES MODEL 9QK (RL-70J3)
31825	Cap—Dust cap
12079	Coil—Field coil
11489	Coil—Neutralizing coil
31275	Cone—Cone complete with voice coil
5039	Plug—4 prong male plug for speaker
14534	Transformer—Output transformer

MODEL 9Q4
Chassis RC-478
Schematic

RCA MFG. CO., INC.



Intermediate Frequency .... 455 kc

Power Output Rating
Undistorted .... 10 watts
Maximum .... 12 watts

Loudspeaker (RL-63K-3)
Type .... 8-inch electrodynamic
V.C. Impedance ...... 2.2 ohms at 400 cycles

Power Supply Ratings
Rating A...... 105-125 volts, 50-60 cycles, 115 watts
Rating B...... 105-125 volts, 25-60 cycles, 115 watts
Rating C...... 105-130, 140-160, 200-250 volts, 40-60 cycles, 115 watts

Tube Complement
(1) RCA-6SK7 .... R-F Amplifier
(2) RCA-6SA7 ..... 1st Detector-Oscillator
(3) RCA-6SK7 .... I-F Amplifier
(4) RCA-6SQ7 ..... 2nd Detector, A.V.C., and A-F Amplifier
(5) RCA-6SF5 .... Phase Inverter
(6) RCA-6F6-G .... Output
(7) RCA-6F6-G .... Output
(8) RCA-6U5/6G5 ...... Tuning Indicator
(9) RCA-5U4-G .... Rectifier

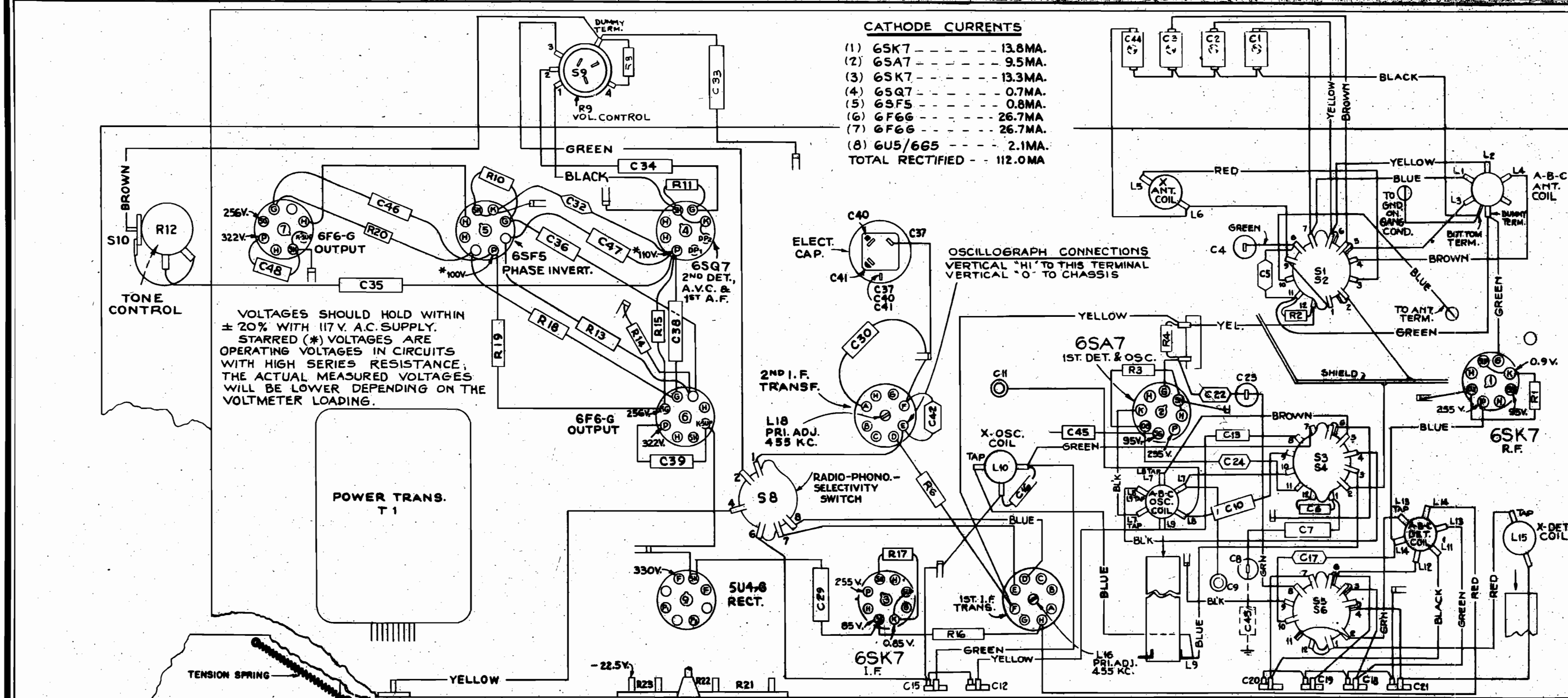
Pilot Lamps (2) ...... Mazda No. 44, 6.3 volts, 0.25 amp.

— 1939 —
First Edition

MODEL 9Q4
Chassis Wiring, Voltage

RCA MFG. CO., INC.

Lead Dress, Dial Data



CATHODE CURRENTS

(1)	6SK7	13.8MA.
(2)	6SA7	9.5MA.
(3)	6SK7	13.3MA.
(4)	6SQ7	0.7MA.
(5)	6SF5	0.8MA.
(6)	6F6G	26.7MA
(7)	6F6G	26.7MA
(8)	6U5/6G5	2.1MA.
	TOTAL RECTIFIED	112.0MA

BOTTOM VIEW – REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

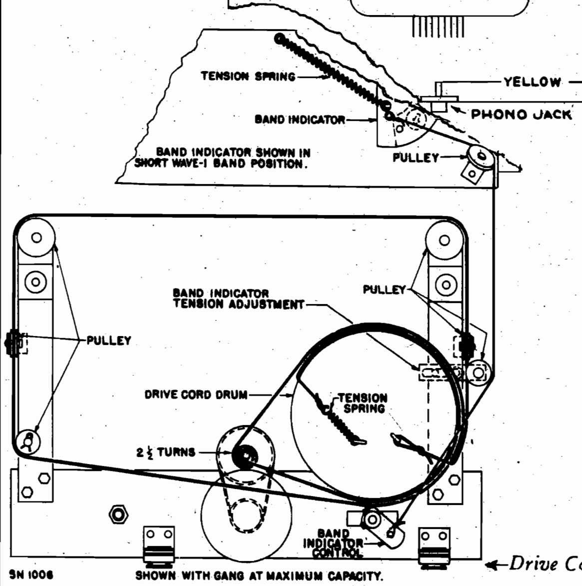
RC-478 (9Q4)
SN-1008

FREQUENCY RANGES

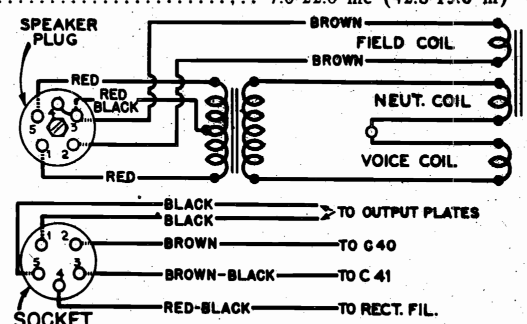
Long Wave ("X" Band)	145-405 kc (2,069-740 m)
Standard Broadcast ("A" Band)	540-1,720 kc (555-174 m)
Medium Wave ("B" Band)	2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)	7.0-22.0 mc (42.8-13.6 m)

Precautionary Lead Dress:

1. Dress black lead from L11 to C20 away from other leads.
2. Dress the green lead from the middle section of the gang away from any other leads, parts, or chassis.
3. Dress the black diode lead running between the 6SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.
4. Twist the power leads together and dress them away from the 6SQ7 socket, and also away from the yellow phono input lead.
5. Keep green lead of 6SK7 R-F grid circuit away from blue antenna lead.



Drive Cord and Band Indicator Arrangement



SPEAKER PLUG CONNECTIONS SN1005

MODEL 9Q4
Alignment, Trimmers
Socket

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

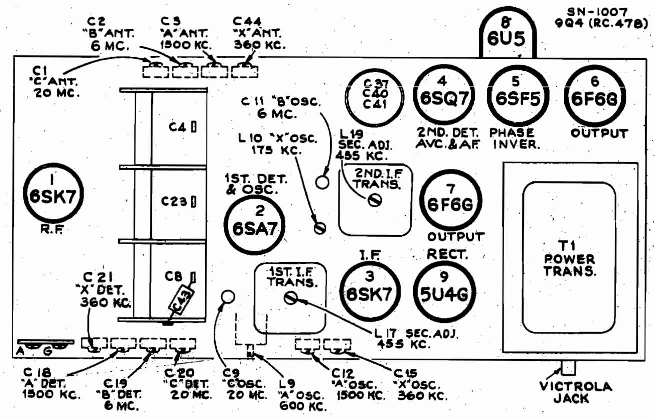
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

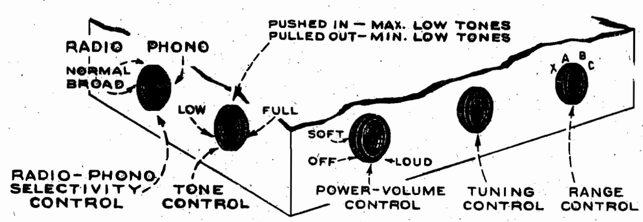
Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.





Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Turn tone control to 2nd position (sharp) from maximum counter-clockwise.			
2	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" Band Quiet point between 550-750 kc	L18 and L19 (2nd I-F trans.)
3	6SA7 grid in series with .01 mfd.			L16 and L17 (1st I-F trans.)
4	Turn tone control to maximum counter-clockwise (broad) position and check I-F response which should be a slightly double-peaked curve. Return tone control to 2nd position (sharp) for the following steps.			
5	Ant. terminal in series with 200 mmfd.	175 kc	175 kc (52.5°) "X" Band	L10 (osc.) Rock gang
6		360 kc	360 kc (148.5°) "X" Band	C15 (osc.) C21 (det.) C44 (ant.)
7		600 kc	600 kc (32°) "A" Band	L9 (osc.) Rock gang
8		1,500 kc	1,500 kc (152°) "A" Band	C12 (osc.) C18 (det.) C3 (ant.)
9	Repeat steps 5, 6, 7, and 8.			
10	Ant. terminal in series with 300 ohms	6.1 mc	6.1 mc (151°) "B" Band	C11 (osc.)* C19 (det.) C2 (ant.)
11		20 mc	20 mc (157°) "C" Band	C9 (osc.)** C20 (det.) C1 (ant.)

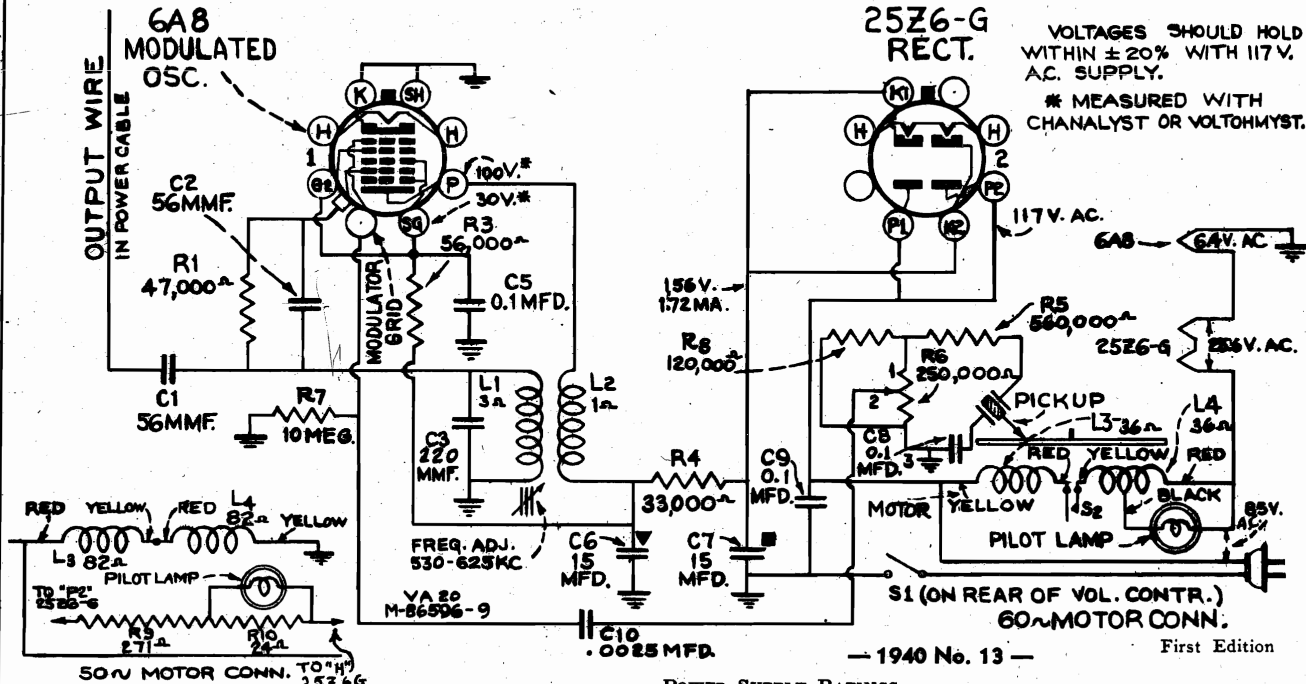
* Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning receiver to approximately 5.19 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to the correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

Note.—Oscillator tracks **above** signal on all bands.

MODEL VA-21
Wireless Record Player
Schematic, Voltage
Adjustments, Notes

RCA MFG. CO., INC.



— 1940 No. 13 —

First Edition

General Description

The crystal pickup in Model VA-21 is connected through a volume control to grid No. 1 in an RCA-6A8 tube which functions as a modulated r-f oscillator. The oscillator frequency can be adjusted from 530 to 625 kc by means of a magnetite core in the oscillator transformer, L1-L2. (This is a screwdriver adjustment at the rear of the cabinet.) An output wire is connected to the grid circuit of the oscillator, and is run parallel with the power cable. The output is sufficient to permit operation within approximately 20 feet of a radio receiver.

Set-Up Procedure

1. Insert plug in power supply outlet, and turn the power-switch—volume control knob on top of VA-21 to full clockwise position. Start a record on the VA-21. The motor is a synchronous manual-starting type, and requires a clockwise spin to start.

2. Tune the radio receiving set to a quiet point between 530-625 kc.

3. Tune the oscillator in the VA-21 to this frequency by adjusting the button on the rear of the VA-21 cabinet to obtain peak output on the receiver. Clockwise rotation decreases the frequency; counter-clockwise rotation increases the frequency.

4. Adjust the radio volume control for the highest volume that is likely to be required, and then use the VA-21 volume control for further adjustment.

5. In noisy locations, it may be desirable to leave the VA-21 volume control turned full clockwise, and regulate the radio volume control for the desired level.

6. If there is insufficient volume, or excessive noise, the remedy is to couple the VA-21 to the radio receiver, by running a piece of insulated wire between the two units: Wrap one end (three or four turns) around the antenna lead-in on the radio, and wrap the other end (three or four turns) around the short wire that projects from the plug on the power cord of the VA-21. With an RCA Master Antenna, wrap the wire around the counter-poise lead where it attaches to the receiver (terminal A3) or to the coupling unit (terminal B). With a loop receiver, place the end of the wire close to the loop.

7. If the radio receiver has push-button tuning, one of the buttons may be set up to tune in the VA-21 oscillator frequency. This button should be marked "Record Player."

Precautionary Lead Dress

1. The power supply cord must be dressed between chassis and top of cabinet, away from grid of 6A8, and entirely away from 25Z6-G.

2. All leads to oscillator coil must be as short as possible.

3. All motor leads must be dressed away from rotor.

4. Pickup leads must be dressed away from the top grid of 6A8, and kept away from the 25Z6-G.

Power Supply Ratings

A-6	105-125 volts, 60 cycles, 50 watts
A-5	105-125 volts, 50 cycles, 50 watts

Motor

Type	Synchronous (Manual Starting)
Turntable Speed	78 r.p.m.

Pickup

Type	Crystal
Pickup Impedance	100,000 ohms at 1000 cycles
Average Output Voltage	1½ volts at 1000 cycles with 250,000 ohm load.

Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

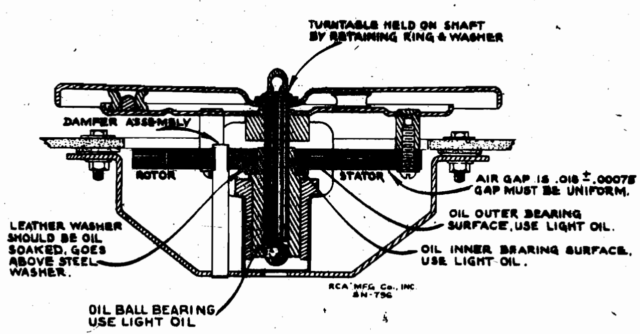
Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.

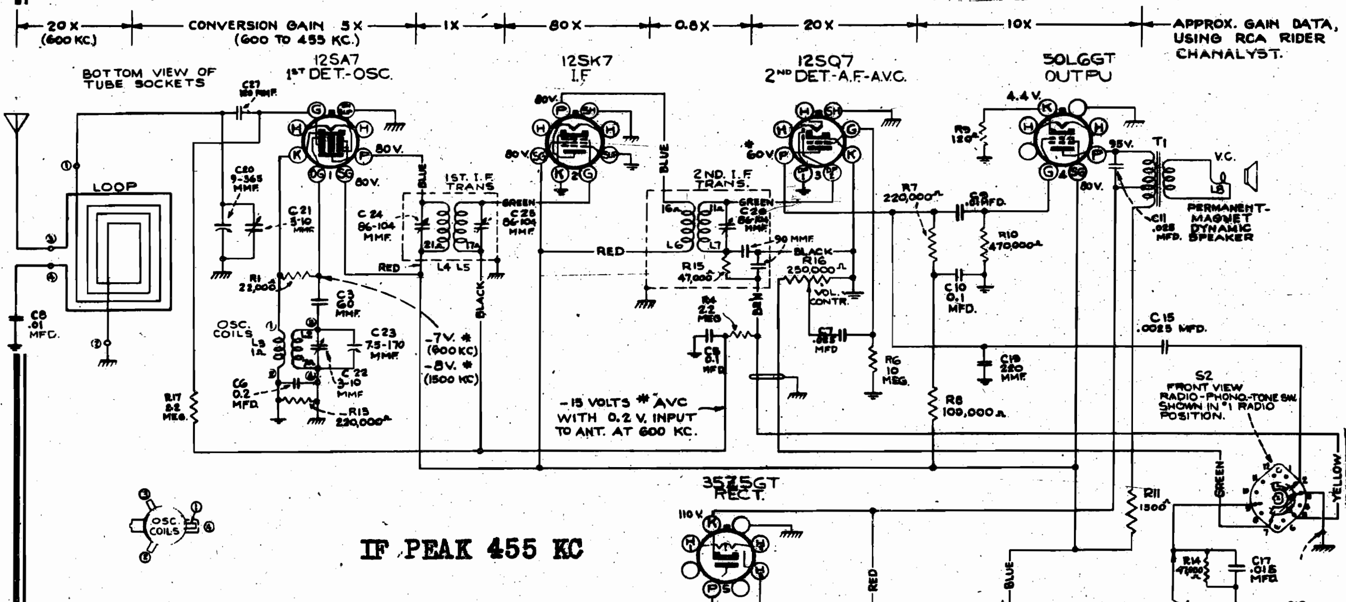
Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

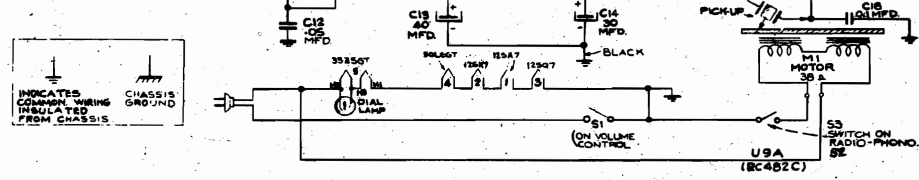
Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

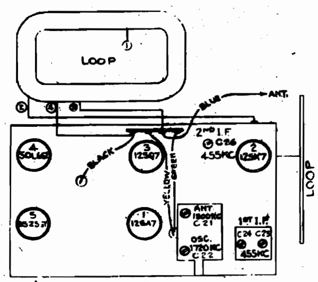


RCA MFG. CO., INC.

MODEL U9(2nd Production)
Schematic, Gain, Voltage
Alignment, Trimmers, Socket
Lead Dress, Phono. Data

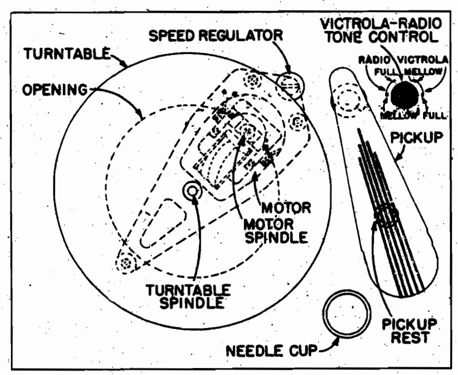






TUBE LOCATIONS AND ALIGNMENT SCREW POSITIONS

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117V. AC. SUPPLY.
* MEASURED WITH CHANALYST, OR VOLTOHMYST.



—1940 No. 12—

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—Connect the low side of the test oscillator to the receiver chassis through a 0.01 mfd capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should coincide with the left hand mark stamped in the dial back-plate.

Antenna.—This set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the green antenna lead, stapled to the base of the cabinet. The antenna should not be longer than 100 feet including the lead-in. If it is longer, connect a 100 mmfd. capacitor in series with the lead-in.

Steps	Connect the high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for max. output—
1	Tuning Cond. stator (det.) in series with 0.01 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C24, C25, C26 (1st and 2nd I-F transformers)
2	Antenna lead (green) in series with 100 mmfd.	1,720 kc	Full Clockwise (out of mesh)	C22 (osc.)
3		1,500 kc	Resonance on 1,500 kc signal	C21 (ant.)

LEAD	DRESS
black-high side of AC line	Away from R10; C9, R7 and C15; against side of chassis
heaters	down against chassis
C7, C9, C19, C15, R6, R7, R10, Shield Cable (green and yellow)	up away from chassis
blue and brown leads from phono switch	Tape to shielded cable away from phone switch black leads
green converter lead	Against base and away from diode lead
green diode lead	Away from 12SQ7 grid

First Edition

MODEL [illegible]9(2nd Production)
Phono.Data,Parts List

RCA MFG. CO., INC.

Miscellaneous Service Data

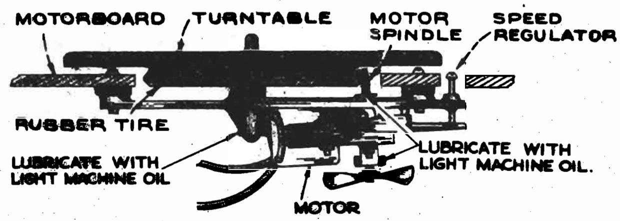
PHONOGRAPH MECHANISM.—

The phonograph motor is self-starting and operates the turntable through friction drive between the motor spindle and the rubber tire on the underside of the turntable.

The rubber driving tire on the turntable should never be removed since it is ground in to be concentric with the spindle. If replacement is required, the entire turntable should be replaced.

The speed regulator raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

Lubrication.—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. **CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.**



Electrical and Mechanical Specifications

FREQUENCY RANGE
Standard Broadcast and one Police Band........... 540-1,720 kc

INTERMEDIATE FREQUENCY .... 455 kc

TUBE COMPLEMENT
(1) RCA-12SA7...................... 1st Detector—Oscillator
(2) RCA-12SK7.............................. I-F Amplifier
(3) RCA-12SQ7.................. 2nd Detector, A.V.C., A.F.
(4) RCA-50L6GT............................ Power Output
(5) RCA-35Z5GT.................................. Rectifier

PILOT LAMP (1).......... Mazda No. 51, 7.5 volts, 0.2 amp.

LOUDSPEAKER (RL-81-A3)
Type.................................. 5-inch P M Dynamic
Voice Coil Impedance.................. 4.0 ohms at 400 cycles

PICKUP.. Crystal
Pickup Impedance.................... 0.1 meg. at 1,000 cycles

PHONO MECHANISM.................... Self-starting motor / Edge-driven turntable / Adjustable Speed

POWER OUTPUT RATING
Undistorted.. 0.71 watts
Maximum... 1.36 watts

POWER SUPPLY RATINGS
A-6................................ 105-125 volts, 60 cycles
A-5................................ 105-125 volts, 50 cycles

POWER CONSUMPTION.............................. 55 watts

CABINET DIMENSIONS
10-5/16 in. high .... 17-7/16 in. wide .... 13⅜ in. deep
Tuning Drive Ratio...................................... 12 to 1
Shipping Weight.. 23½ lbs.
Net Weight.. 22 lbs.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

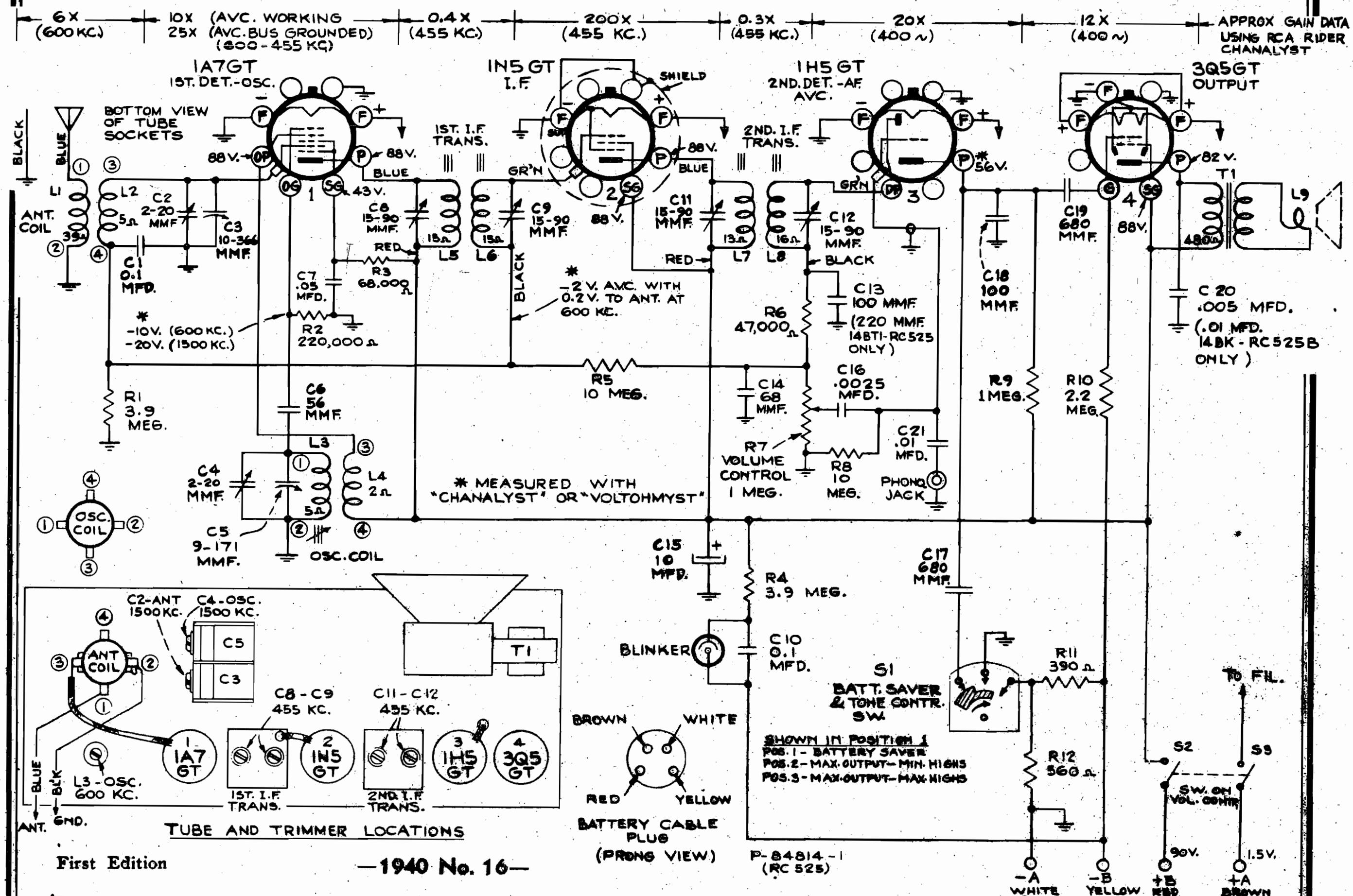
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-482C)	
12724	Capacitor—120 mmfd. (C27)	.35
13057	Capacitor—68 mmfd. (C3)	.35
34459	Capacitor—.0025 mfd. (C15)	.20
11315	Capacitor—.015 mfd. (C17)	.20
30938	Capacitor—.025 mfd. (C7, C11)	.20
4937	Capacitor—.01 mfd. (C8, C9)	.25
32787	Capacitor—.05 mfd. (C12)	.20
4839	Capacitor—0.1 mfd. (C5, C10, C18)	.30
34595	Capacitor—0.2 mfd. (C6)	.30
34873	Capacitor—Electrolytic comprising 1 section of 40 mfd. and 1 section of 30 mfd.	1.00
34443	Coil—Oscillator coil	.60
34843	Condenser—Tuning condenser	2.20
34034	Control—Volume control and power switch	1.50
32634	Cord—Drive cord	.10
33453	Drum—Drive cord drum	.50
34841	Frame—Dial and drive frame complete—less indicator drive cord, tuning shaft and drive drum	1.45
34842	Indicator—Station selector indicator	.30
11765	Lamp—Dial lamp	.15
35130	Loop—Antenna loop	1.45
30868	Plug—2-contact female plug for motor cable	.35
5119	Plug—3-contact female plug for speaker cable	.25
12071	Resistor—120 ohms, ¼ watt (R9)	.20
3153	Resistor—1,500 ohms, 1 watt (R11)	.22
13998	Resistor—22,000 ohms, ¼ watt (R1)	.20
5132	Resistor—47,000 ohms, 1/10 watt	.15
12412	Resistor—47,000 ohms, ¼ watt (R14)	.20
14560	Resistor—100,000 ohms, ¼ watt (R8)	.20
12264	Resistor—220,000 ohms, ¼ watt (R7, R13)	.20
12285	Resistor—470,000 ohms, ¼ watt (R10)	.20
12679	Resistor—2.2 meg., ¼ watt (R4, R17)	.20
13601	Resistor—10 meg., ¼ watt (R6)	.20
34033	Shaft—Tuning shaft	.25
34449	Socket—Dial lamp socket	.30
32537	Socket—Tube socket	.20
33296	Spring—Retaining spring for drum Stock No. 33453	.06
34844	Transformer—First I-F transformer	1.25
34442	Transformer—Second I-F transformer	1.50
11908	Washer—"C" washer for holding shaft Stock No. 34033	.03

STOCK No.	DESCRIPTION	Unit List Price
	MOTOR ASSEMBLIES	
32654	Ball—Ball for turntable bearing	.06
33907	Base—Motor base and ball assembled	.80
33902	Motor—Complete motor 105-125 volts, 60 cycle (M1)	3.70
34496	Motor—Complete motor 105-125 volts, 50 cycle (M1)	4.60
33896	Mounting—Motor cradle mounting hardware and retainer	.10
	PICKUP AND ARM ASSEMBLIES	
33591	Arm—Pickup arm only—less cartridge, base and cable	.50
34481	Arm—Pickup pivot arm and shaft	.70
34482	Base—Pickup mounting base	.30
34758	Bushing—Rubber bushing and metal bushing for pickup pivot arm shaft	.15
33122	Crystal—Pickup crystal cartridge and needle screw	3.75
34311	Ring—Retaining ring for pivot shaft	.05
33529	Screw—Needle screw	.10
	SPEAKER ASSEMBLIES (RL-81A3)	
32907	Cap—Dust cap	.02
35570	Cone—Cone complete with voice coil	1.35
5118	Plug—3-prong male plug for speaker	.25
35904	Transformer—Output transformer	1.45
	MISCELLANEOUS ASSEMBLIES	
33680	Cup—Needle cup	.15
34849	Dial—Glass dial scale	1.50
34850	Hinge—Lid hinge	.25
33942	Knob—"Radio-Phono." switch knob	.25
30863	Knob—Tuning or volume control and power switch knob	.15
30870	Plug—2-contact male plug for motor leads	.35
32610	Rest—Rubber pickup rest	.10
30900	Spring—Retaining spring for knobs Stock No. 33942 and 30863	.05
32627	Support—Lid support	.40
33467	Switch—Combination "Radio-Phono." switch tone control	1.35
33899	Turntable—Turntable complete with spindle and rubber drive tire	3.70

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

RCA MFG. CO., INC.

MODELS 14BT1,14BT2,14BK
Ch.RC-525,RC-525A,RC-525B
Schematic,Gain,Voltage
Alignment,Trimmers,Socket
Lead Dress,Batt.Connection



First Edition —1940 No. 16—

Frequency Range........................ 540-1,720 kc
Intermediate Frequency........................ 455 kc

LOUDSPEAKER

Type........................ Permanent-magnet Dynamic
Diameter (14BT1, 14BT2) 5 in. (14BK) 6 in.
Voice Coil Impedance (14BT1. 14BT2) 4 ohms (14BK) 3.4 ohms

POWER OUTPUT

	Switch at "Battery Saver"	Switch at "Music" or "Speech"
Undistorted	.065 watts	.140 watts
Maximum	.180 watts	.250 watts

BATTERIES REQUIRED

1 "A"—"B" Pack (Burgess Type 17GD60 or equivalent).

CURRENT CONSUMPTION

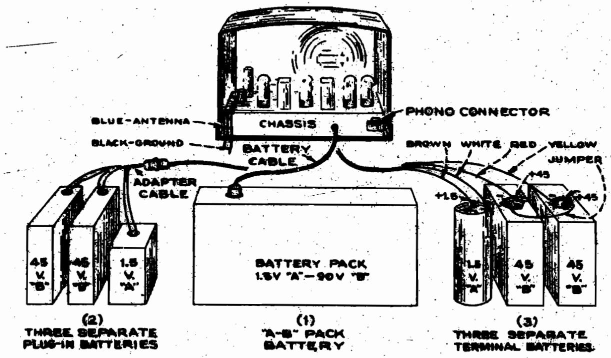
"A" 0.25 amperes
"B" { 7.3 m.a. (switch at "Battery Saver" position).
11.8 m.a. (switch at "Music" or "Speech" position).

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

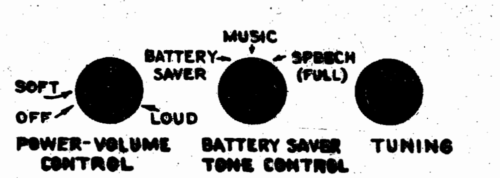
Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1N5-GT grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	C11 and C12 (2nd I-F transformer)
2	1A7-GT grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	C8 and C9 (1st I-F transformer)
3	Antenna terminal, in series with 200 mmfd. Connect low side of test-osc. to "G" term.	1500 kc	1500 kc	C4 (osc.) C2 (ant.)
4		600 kc	600 kc	L3 (osc.) Rock in
5	Repeat steps 3 and 4			



Precautionary Lead Dress

1. The phono input leads should be dressed away from 3Q5GT output leads.
2. C21 should be dressed away from the 3Q5GT output leads.
3. The lead from the 3Q5GT plate to output transformer should be dressed under clip and away from audio input plate leads.



MODELS 14BT1,14BT2,14BK
MODELS 16K,16T2,16T3
MODEL 16T4
Parts Lists

RCA MFG. CO., INC.

MODELS 14BT1, 14BT2 and 14BK

Chassis Nos. RC-525, 525A, 525B

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES		13167	Resistor—3.9 meg., ¼ watt	.20
36088	Bearing—Tuning shaft bearing and nut	.10	13601	Resistor—10 meg., ¼ watt	.20
35097	Can—Shield can for I-F transformer Stock No. 36084	.30	36089	Shaft—Tuning shaft	.10
36083	Can—Shield can for I-F transformer Stock No. 36083	.30	35787	Socket—Phono. input socket only	.15
12723	Capacitor—56 mmfd.	.35	31319	Socket—Tube socket	.25
13057	Capacitor—68 mmfd.	.35	33175	Spring—Drive cord spring	.05
12720	Capacitor—100 mmfd.	.35	31261	Spring—Oscillator coil mounting spring	.01
12694	Capacitor—220 mmfd.	.35	35098	Spring—Spring to hold transformer in shield can	.08
14498	Capacitor—680 mmfd.	.45	36081	Switch—Battery saver and tone switch	.75
34459	Capacitor—.0025 mfd.	.20	36082	Transformer—First I-F transformer—less shield can	1.40
33584	Capacitor—.005 mfd.	.25	36084	Transformer—Second I-F transformer—less shield can	1.40
4937	Capacitor—.01 mfd.	.25	34373	Washer—"C" washer for tuning shaft	.03
32787	Capacitor—.05 mfd.	.20		SPEAKER ASSEMBLIES Model 14BT1, 14BT2 (RL-85-4)	
4839	Capacitor—0.1 mfd.	.30	32907	Cap—Dust cap	.02
33911	Capacitor—Electrolytic 10 mfd., 150 volts	.70	36295	Cone—Cone complete with voice coil	.75
36085	Coil—Antenna coil	1.00	36098	Transformer—Output transformer	1.25
36092	Coil—Oscillator coil	.50		SPEAKER ASSEMBLIES (RL-92-3) Model 14BK	
36091	Condenser—Variable tuning condenser Models 14BT2 and 14BK	2.25	32907	Cap—Dust cap	.02
36079	Condenser—Variable tuning condenser Model BT1	2.25	36077	Cone—Cone complete with voice coil	1.25
36080	Control—Volume control and power switch	1.50	5118	Plug—3-prong male plug for speaker	.25
32634	Cord—Drive cord	.10	36098	Transformer—Output transformer	1.25
36093	Core—Adjustable core and stud for oscillator coil	.15		MISCELLANEOUS ASSEMBLIES	
36087	Frame—Dial frame complete with pulleys Models 14BT2 and 14BK	.75	35104	Crystal—Escutcheon and crystal—Model 14BT1	1.00
36086	Frame—Dial frame—less dial—Model 14BT1	.30	36099	Decalcomania—Control marker decal	.05
35091	Indicator—Station selector indicator Model 14BT1	.25	36100	Dial—Dial scale—Model 14BTL	.50
36090	Indicator—Station selector indicator Model 14BT2 and 14BK	.20	36102	Dial—Glass dial scale—Model 14BK	1.00
34256	Lamp—Blinker lamp	1.35	36101	Dial—Glass dial scale—Model 14BT2	.80
5119	Plug—3-prong male plug for speaker cable	.25	35937	Escutcheon—Dial scale escutcheon—less dial for Model 14BK	1.25
30550	Plug—4-prong male plug for battery cable	.20	35915	Escutcheon—Dial scale escutcheon—less dial—Model 14BT2	.90
32289	Pulley—Drive cord pulley	.10	35678	Fastener—Push-on fastener for crystal Stock No. 35104	.02
12261	Resistor—390 ohms, ¼ watt	.20	36297	Knob—Volume control, power switch, tone switch, or tuning knob	.25
12414	Resistor—560 ohms, ¼ watt	.20	30900	Spring—Retaining spring for knobs	.05
12412	Resistor—47,000 ohms, ¼ watt	.20			
13715	Resistor—68,000 ohms, ¼ watt	.20			
12264	Resistor—220,000 ohms, ¼ watt	.20			
13730	Resistor—1 meg., ¼ watt	.20			
12679	Resistor—2.2 meg., ¼ watt	.20			

MODEL 16T4

Chassis No. RC-509

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-509)	
34785	Board—"Antenna-Ground" board	.20
35857	Capacitor—Mica trimmer—1 section of 3-30 mmfd. and 1 section of 8-80 mmfd.	.35
35866	Capacitor—Mica trimmer—3 sections of 8-80 mmfd.	.50
35869	Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd.	1.00
12720	Capacitor—100 mmfd. (C1, C5, C7)	.35
34699	Capacitor—100 mmfd.	.30
34700	Capacitor—120 mmfd.	.30
13003	Capacitor—180 mmfd. (C18)	.35
12952	Capacitor—330 mmfd. (C19)	.35
35877	Capacitor—720 mmfd. (C27)	.45
13895	Capacitor—5,600 mmfd. (C32)	.70
34459	Capacitor—.0025 mfd. (C33)	.20
33640	Capacitor—.005 mfd. (C20, C21, C23, C31)	.25
4937	Capacitor—.01 mfd. (C6)	.25
32787	Capacitor—.05 mfd. (C4)	.20
4839	Capacitor—0.1 mfd. (C15, C30)	.30
35858	Capacitor—Electrolytic comprising 2 sections of 10 mfd., 450 volts and 1 section of 20 mfd., 25 volts	1.70
35876	Coil—Coil and resistor assembly (L2 and R16)	.30
35785	Coil—Loop primary (L1)	.50
35789	Coil—Oscillator coil	1.15
35803	Coil—Oscillator coils for push button switch	.30
35874	Condenser—Variable tuning condenser	2.85
35860	Control—Tone control	1.10
35859	Control—Volume control and power switch	2.00
32634	Cord—Drive cord	.10
35871	Core—Adjusting core and stud for oscillator coils	.55
35788	Core—Core and stud for oscillator coil	.15
35870	Indicator—Station selector indicator	.20
35855	Loop—Antenna loop complete	3.00
35856	Loop—Antenna loop winding	.80
35872	Plate—Dial back plate	.95
32289	Pulley—Drive cord pulley and rivet	.10
30681	Resistor—470 ohms, 1 watt (R14)	.22
14720	Resistor—1,000 ohms, ¼ watt (R3)	.20
14024	Resistor—2,700 ohms, ¼ watt (R17)	.20
30694	Resistor—3,900 ohms, ¼ watt (R1)	.20
35875	Resistor—12,000 ohms, 3 watts (R7)	.35
13998	Resistor—22,000 ohms, ¼ watt (R9)	.20
12454	Resistor—33,000 ohms, ¼ watt (R5)	.20
12412	Resistor—47,000 ohms, ¼ watt (R4)	.20
12285	Resistor—470,000 ohms, ¼ watt (R11, R13)	.20
12679	Resistor—2.2 meg., ¼ watt (R2, R8)	.20
13601	Resistor—10 meg., ¼ watt (R12)	.20
35862	Shaft—Tuning shaft	.20
35772	Shield—Power transformer bottom shield	.30
35934	Shield—Power transformer top shield assembly	.65
31364	Socket—Dial lamp socket	.20
35787	Socket—Phono. input socket	.15
31251	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
35868	Switch—Push button switch	3.15
35863	Switch—Range switch	1.80
35636	Transformer—First I-F transformer	1.70
35790	Transformer—Second I-F transformer	1.60
35588	Transformer—Power transformer—110 volts, 25 cycle	6.30
35853	Transformer—Power transformer—less end shields 110 volts, 60 cycle	3.45
33726	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (RL-79B1)	
35849	Cap—Dust cap	.03
35880	Coil—Field coil	1.50
35441	Cone—Cone complete with voice coil	1.25
35879	Transformer—Output transformer	1.50
	MISCELLANEOUS ASSEMBLIES	
35883	Button—Push button (dark brown)	.15
36299	Button—Push button (light brown)	XX
35919	Decalcomania—Control panel decal	.10
35393	Decalcomania—"Television" decal	.05
35916	Dial—Glass dial scale	1.25
35915	Escutcheon—Dial scale escutcheon—less dial	.90
35881	Escutcheon—Push button escutcheon	.85
35814	Knob—Tone control or range switch knob (dark brown)	.25
36297	Knob—Tone control or range switch knob (light brown)	XX
35775	Knob—Tuning or volume control knob (dark brown)	.25
36298	Knob—Tuning or volume control knob (light brown)	XX
11765	Lamp—Dial lamp	.15
33842	Marker—Station selector marker	.25
34053	Spring—Retaining spring for button Stock No. 35883	.02
30900	Spring—Retaining spring for knobs Stock Nos. 35814 and 35775	.05

MODELS 16K, 16T2 and 16T3

Chassis No. RC-509C RC-509B RC-509A

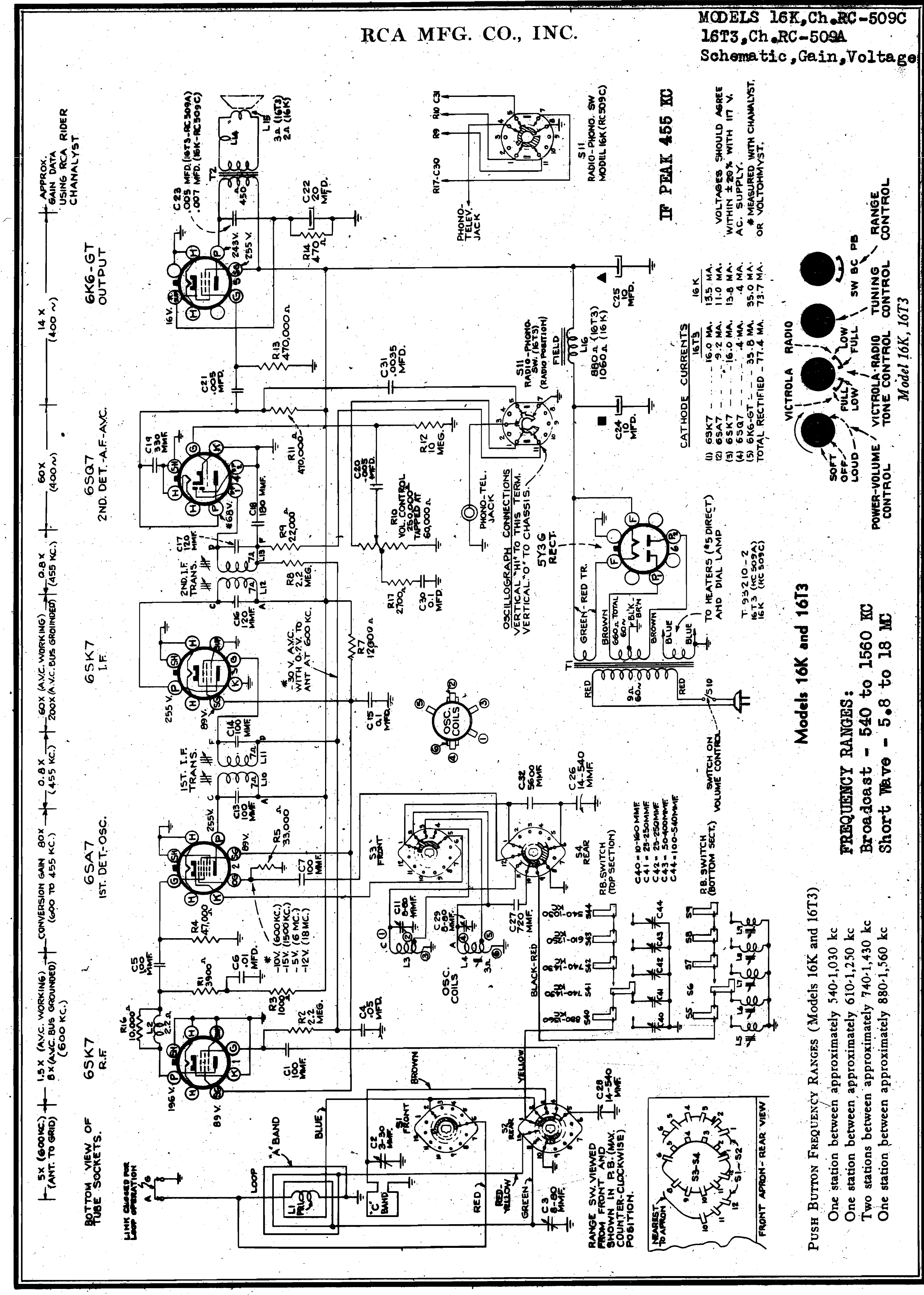
Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price	STOCK No.	DESCRIPTION	Unit List Price
	MODEL 16T2 (RC-509B) MODEL 16T3 (RC-509A) MODEL 16K (RC-509C)		31418	Spring—Drive cord spring	.05
34785	Board—"Antenna-Ground" board	.20	35868	Switch—Push button switch—(Models 16T3 and 16K)	3.15
35857	Capacitor—Mica trimmer—1 section of 3-30 mmfd. and 1 section of 8-80 mmfd.	.35	35864	Switch—Range switch—(Models 16T3 and 16K)	1.95
35867	Capacitor—Mica trimmer comprising 2 sections of 8-80 mmfd.	.40	35865	Switch—Range switch—(Model 16T2)	1.20
35869	Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd. and 1 section of 100-540 mmfd. (Models 16T3 and 16K)	1.00	35666	Transformer—First I-F transformer	1.70
34699	Capacitor—100 mmfd., mica	.30	35790	Transformer—Second I-F transformer	1.60
12720	Capacitor—100 mmfd., moulded	.35	35588	Transformer—Power transformer—110 volts, 25 cycle	6.30
34700	Capacitor—120 mmfd.	.30	35587	Transformer—Power transformer—110 volts, 60 cycle—(Model 16K)	4.00
13003	Capacitor—180 mmfd.	.35	35853	Transformer—Power transformer—less end shields—110 volts, 60 cycle (Models 16T2 and 16T3)	3.45
12952	Capacitor—330 mmfd.	.35	33726	Washer—"C" washer for tuning shaft	.02
35877	Capacitor—720 mmfd.	.45		SPEAKER ASSEMBLIES (RL-70H6) Model 16K	
13895	Capacitor—5,600 mmfd.	.70	31825	Cap—Cone center dust cap	.02
30303	Capacitor—.0035 mfd. (Models 16T2 and 16T3)	.40	11469	Coil—Hum neutralizing coil	.30
33640	Capacitor—.005 mfd.	.25	33116	Coil—Speaker field coil	2.10
5148	Capacitor—.007 mfd.	.25	31275	Cone—Speaker cone, voice coil, and dust cap	1.50
4937	Capacitor—.01 mfd.	.25	5118	Plug—3-contact male for speaker	.25
32787	Capacitor—.05 mfd.	.20	31301	Transformer—Output transformer	1.70
4839	Capacitor—0.1 mfd.	.30		SPEAKER ASSEMBLIES (RL-79B1) Models 16T2 and 16T3	
35858	Capacitor—Electrolytic comprising 2 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts	1.70	35849	Cap—Dust cap	.03
35876	Coil—Coil and resistor assembly [R16 and L2 (L4 in 16T2)]	.30	35880	Coil—Field coil	1.50
35785	Coil—Loop primary (L1)	.50	35441	Cone—Cone complete with voice coil	1.25
35803	Coil—Oscillator coils for push button switch—(Models 16T3 and 16K)	.30	35879	Transformer—Output transformer	1.50
35854	Coil—Oscillator coil	.85		MISCELLANEOUS ASSEMBLIES	
35874	Condenser—Variable tuning condenser	2.85	35883	Button—Push button—(Models 16T3 and 16K) (dark brown)	.15
35861	Control—Tone control—(Models 16T3 and 16T2)	.95	36299	Button—Push button (light brown)	XX
35935	Control—Tone control—(Model 16K)	.90	35921	Decalcomania—Control panel decal—(Model 16T2)	.10
35859	Control—Volume control and power switch	2.00	35920	Decalcomania—Control panel decal—(Models 16T3 and 16K)	.10
32634	Cord—Drive cord	.10	35393	Decalcomania—"Television" decal	.05
35871	Core—Adjusting core and stud for oscillator coils—(Models 16T3 and 16K)	.55	35938	Dial—Glass dial scale—(Model 16K)	1.00
35788	Core—Core and stud for oscillator coil	.15	35918	Dial—Glass dial scale—(Model 16T2)	1.00
35870	Indicator—Station selector indicator	.20	35917	Dial—Glass dial scale—(Model 16T3)	1.00
35856	Loop—Antenna loop winding	.80	35937	Escutcheon—Dial scale escutcheon—(Model 16K)	1.25
35855	Loop—Antenna loop complete	3.00	35882	Escutcheon—Dial scale escutcheon—(Model 16T2)	.85
35936	Plate—Dial back plate—(Model 16K)	.95	35915	Escutcheon—Dial scale escutcheon—less dial—(Model 16T3)	.90
35873	Plate—Dial back plate—(Model 16T2)	.80	35881	Escutcheon—Push button escutcheon—(Models 16T3 and 16K)	.85
35872	Plate—Dial back plate—(Model 16T3)	.95	35814	Knob—Tone control or range switch knob (dark brown)	.25
5119	Plug—3-contact female plug for speaker cable—(Model 16K)	.25	36297	Knob—Tone control or range switch knob (light brown)	XX
32289	Pulley—Drive cord pulley and rivet	.10	35775	Knob—Tuning or volume control knob (dark brown)	.25
30681	Resistor—470 ohms, 1 watt	.22	36298	Knob—Tuning or volume control knob (light brown)	XX
14720	Resistor—1,000 ohms, ¼ watt	.20	11765	Lamp—Dial lamp	.15
14024	Resistor—2,700 ohms, ¼ watt	.20	33842	Marker—Station selector marker	.25
30694	Resistor—3,900 ohms, ¼ watt	.20	34053	Spring—Retaining spring for button Stock No. 35883	.02
35875	Resistor—12,000 ohms, 3 watts	.35	30900	Spring—Retaining spring for knobs Stock Nos. 35814 and 35775	.05
13998	Resistor—22,000 ohms, ¼ watt	.20			
12454	Resistor—33,000 ohms, ¼ watt	.20			
12412	Resistor—47,000 ohms, ¼ watt	.20			
12285	Resistor—470,000 ohms, ¼ watt	.20			
12679	Resistor—2.2 meg., ¼ watt	.20			
13601	Resistor—10 meg., ¼ watt	.20			
35862	Shaft—Tuning shaft	.20			
35772	Shield—Power transformer bottom shield	.30			
35934	Shield—Power transformer top shield assembly	.55			
31364	Socket—Dial lamp socket	.20			
35787	Socket—Phono. input socket	.15			
31251	Socket—Tube socket	.25			

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

XX—Price upon application to your local RCA Victor Parts Distributor.


MODELS 16K, Ch. RC-509C
16T3, Ch. RC-509A
Schematic, Gain, Voltage
RCA MFG. CO., INC.
Models 16K and 16T3
Model 16K, 16T3
IF PEAK 455 KC
FREQUENCY RANGES:
Broadcast - 540 to 1560 KC
Short Wave - 5.8 to 18 MC
PUSH BUTTON FREQUENCY RANGES (Models 16K and 16T3)
One station between approximately 540-1,030 kc
One station between approximately 610-1,250 kc
Two stations between approximately 740-1,430 kc
One station between approximately 880-1,560 kc
VOLTAGES SHOULD AGREE WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
CATHODE CURRENTS
16T3
16K
(1) 6SK7 16.0 MA. 13.5 MA.
(2) 6SA7 9.2 MA. 11.0 MA.
(3) 6SK7 16.0 MA. 13.8 MA.
(4) 6SQ7 .4 MA. .4 MA.
(5) 6K6-GT 35.8 MA. 35.0 MA.
TOTAL RECTIFIED 77.4 MA. 73.7 MA.
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6SK7 R.F.
6SA7 1ST. DET.-OSC.
6SK7 I.F.
6SQ7 2ND. DET.-A.F.-AVC.
6K6-GT OUTPUT
5Y3G RECT.
BOTTOM VIEW OF TUBE SOCKETS.
OSCILLOGRAPH CONNECTIONS VERTICAL "HI" TO THIS TERM. VERTICAL "O" TO CHASSIS.
PHONO-TEL. JACK
POWER-VOLUME CONTROL
VICTROLA-RADIO TONE CONTROL
TUNING CONTROL
RANGE CONTROL
SOFT OFF LOUD
FULL LOW
VICTROLA RADIO
SW BC PB
RANGE SW. VIEWED FROM FRONT AND SHOWN IN P.B. (MAX. COUNTER-CLOCKWISE) POSITION.
P.B. SWITCH (TOP SECTION)
P.B. SWITCH (BOTTOM SECT.)
SWITCH ON VOLUME CONTROL
TO HEATERS (#5 DIRECT) AND DIAL LAMP
FRONT APRON - REAR VIEW
NEAREST TO APRON
OSC. COILS
LOOP

MODELS 16K,16T2,16T3
Alignment,Trimmers
Socket

RCA MFG. CO., INC.

Models 16K, 16T2, 16T3

PILOT LAMP.. Mazda No. 51, 7.5 volts, 0.20 amp.

POWER OUTPUT RATING

Undistorted	2.5 watts
Maximum	4.5 watts

LOUDSPEAKERS	16K	16T2, 16T3
Size	12-inch	6-inch
V. C. impedance at 400 cycles	2.2 ohms	3.4 ohms
Identification Number	RL-70H6	RL-79B1

POWER SUPPLY RATINGS

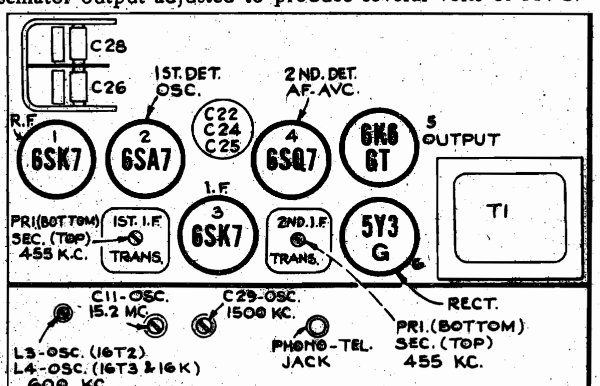
105-125 volts, 50-60 cycles	70 watts
105-125 volts, 25-60 cycles	70 watts
105-125, 200-250 volts, 50-60 cycles	70 watts

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.



Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

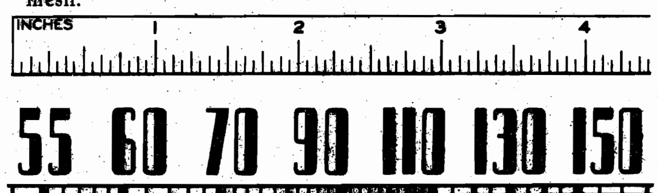
Using Tuning Dial.—

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.
4. After completion of alignment, replace the glass dial in cabinet, taking care that the fibre light shields are in correct position at ends of dial.

Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.
3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale. For example, 1,500 kc is approximately 4 inches from the reference mark.

Dial-Pointer Adjustment.—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.



Calibration Dial

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid, in series with .01 mfd.	455 kc	"A" band, Quiet Point at 1,500 kc end of dial	L7 and L8 (2nd I.F. Trans.)
2	1st det. grid, in series with .01 mfd.			L5 and L6 (1st I.F. Trans.)
3	Antenna terminal, in series with 300 ohms (link open)	15.2 mc	15.2 mc "C" band	C11 (osc.)* C2 (ant.)
4	Antenna terminal, in series with 200 mmfd. (link open)	1,500 kc	1,500 kc "A" band	C29 (osc.) C3 (ant.)
5		600 kc	600 kc "A" band	L3 (in 16T2) L4 (in 16K and 16T2) Rock in
6	Repeat steps 4 and 5.			

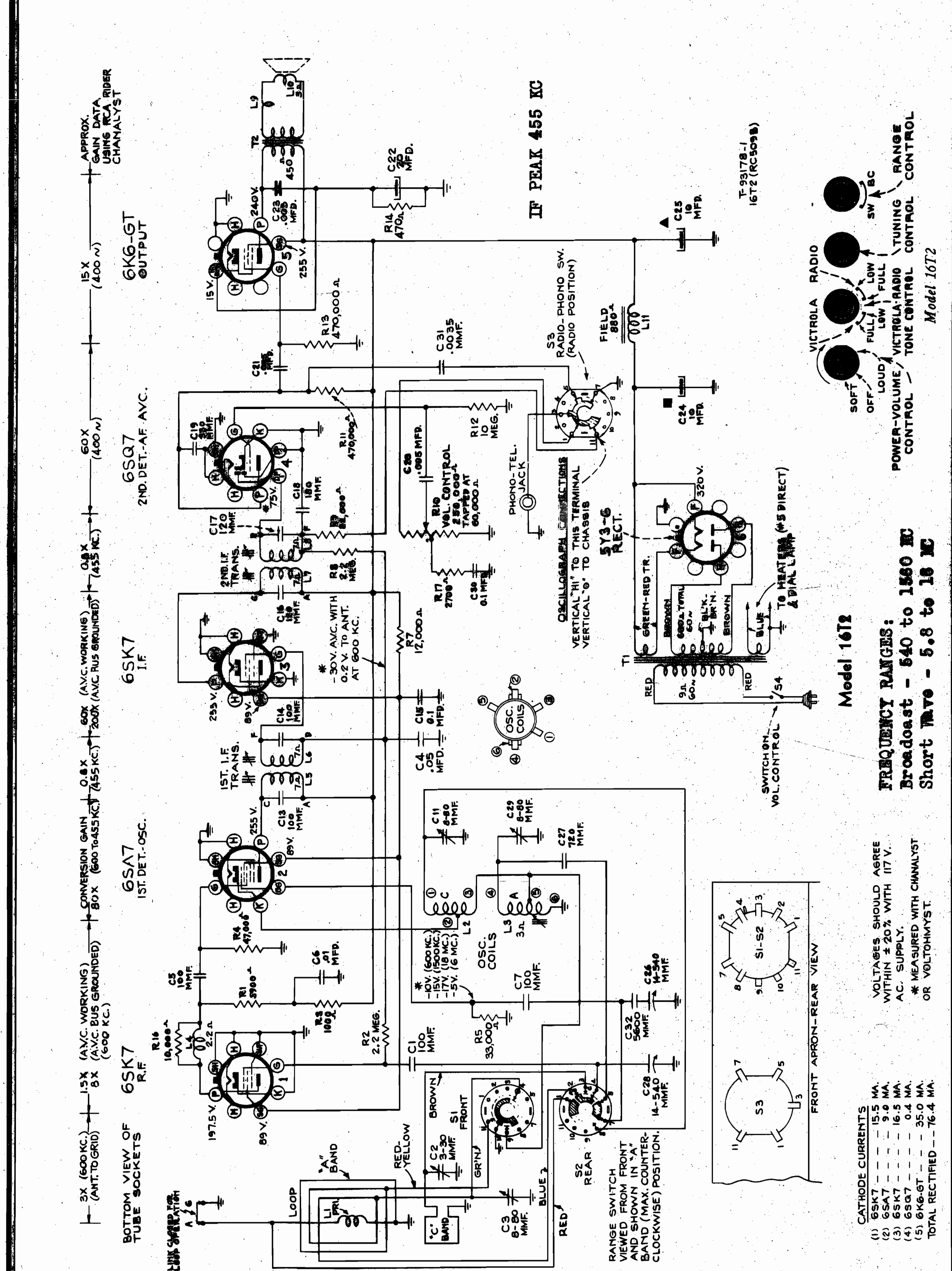
In case of instability during R-F alignment, connect a 27,000 ohm 1/4 watt resistor across "D" and "F" of 2nd I-F transformer.

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used, by tuning receiver to 14.29 mc, where a weaker signal should be received.

Note: Oscillator tracks **above** signal on **both bands**.

MODEL 16T2, Ch. RC-509B
Schematic, Gain, Voltage

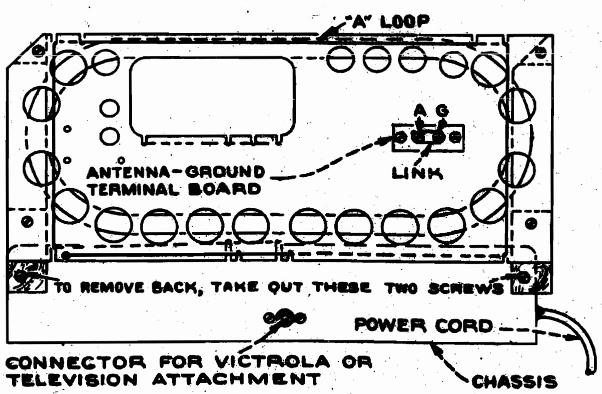
RCA MFG. CO., INC.



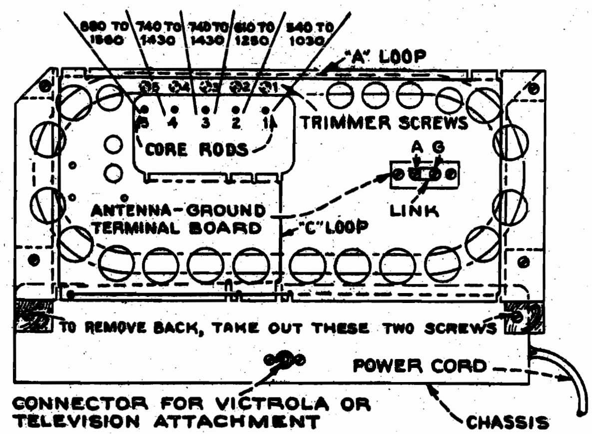
MODELS 16K,16T3
Tuner Data,Trimmers
Loop Connections,Dial

RCA MFG. CO., INC.

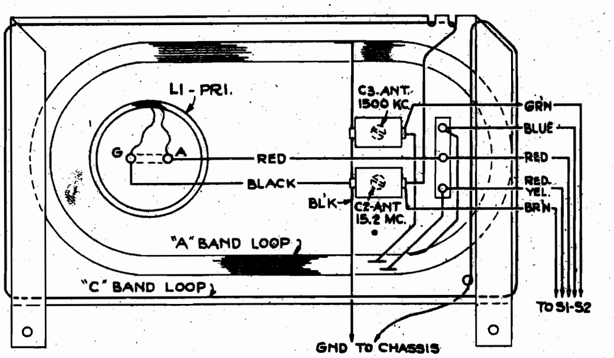
MODEL 16T2
Loop Connections,Dial
Lead Dress,all models



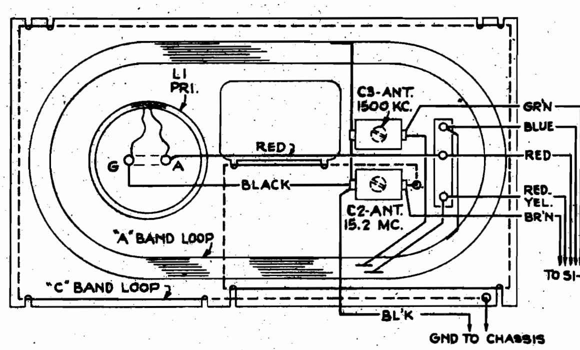
Model 16T2



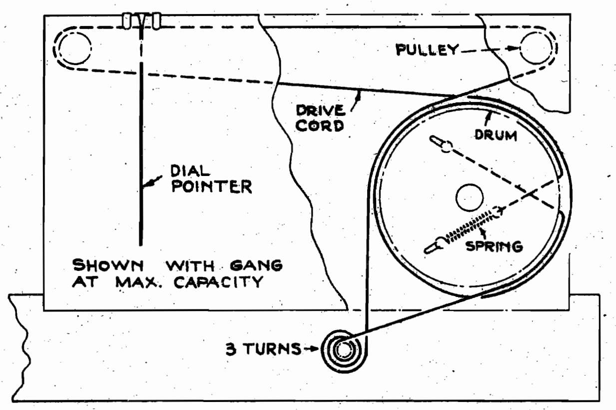
Model 16K, 16T3



Model 16T2



Model 16K, 16T3



Precautionary Lead Dress:—

1. Dress red leads from C band trimmer to coil and switch away from each other (16T2).
2. Keep bus from range switch to lance short as possible (16T2).
3. Tape together red, blue, and brown leads from chassis to loop (16T2).
4. Dress yellow lead from IF to tone switch up away from chassis.
5. Dress C-20 from volume control up away from chassis.
6. Keep grid end of R-12 as short as possible.
7. Dress C-30 away from red and brown A.C. leads.
8. Dress power transformer leads down against chassis.
9. Dress brown power transformer leads back away from IF transformer.

At left—Dial Drive in Models 16K, 16T2, 16T3

Push Button Adjustment (Models 16K and 16T3)

The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast (BC) position and manually tune in the first station on the list.
3. Turn range switch to push-button (PB) position and press in the left-hand button.
4. Unscrew the push-button loop trimmers to minimum capacity.
5. Adjust L9 to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust L9 for peak output.
6. Adjust C44 for peak output on the first station.
7. Proceed in the same manner to adjust for the remaining four stations.

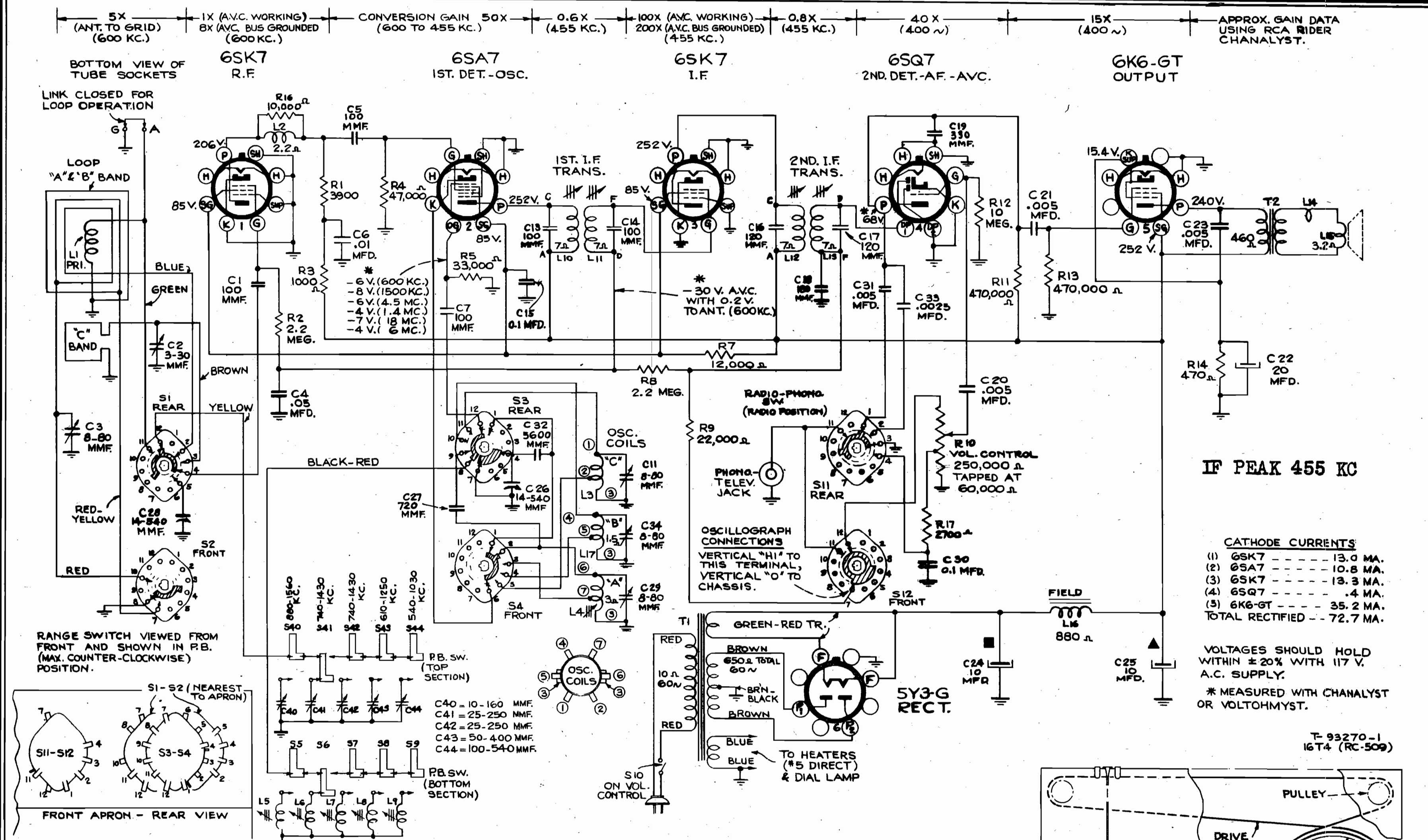
Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. The procedure outlined above (backing the push-button loop trimmers to minimum capacity before adjusting the cores) will reduce this effect.

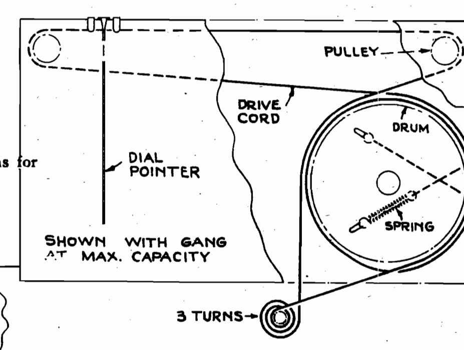
On the 880 to 1,560 kc push-button, the higher frequency stations may be received with L5 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

MODEL 16T4, Ch. RC-509
Schematic, Gain, Voltage
Dial, Tone Cont. Data

RCA MFG. CO., INC.





Frequency Ranges

Broadcast..... 540-1,560 kc
"B" Band....... 1.4-4.5 mc
"C" Band....... 5.8-18 mc

Pilot Lamp

Mazda No. 51, 7.5 volts, 0.20 amp.

Power Output Rating

Undistorted.............................. 2.5 watts
Maximum................................. 4.5 watts

Push Button Frequency Ranges

One station between approximately 540-1,030 kc
One station between approximately 610-1,250 kc
Two stations between approximately 740-1,430 kc
One station between approximately 880-1,560 kc

Loudspeakers

Size.............................. 6-inch
V.C. impedance at 400 cycles... 3.4 ohms
Identification Number........ RL-79B1

Power Supply Ratings

105-125 volts, 50-60 cycles... 70 watts
105-125 volts, 25-60 cycles... 70 watts

Tone Control

The tone control has four positions for radio, and four positions for Victrola or Television sound:

No. 1—Radio—maximum low—minimum high
No. 2—Radio—maximum low—reduced high
No. 3—Radio—maximum low—maximum high
No. 4—Radio—minimum low—maximum high
No. 5—Phono—maximum low—minimum high
No. 6—Phono—maximum low—reduced high
No. 7—Phono—maximum low—maximum high
No. 8—Phono—minimum low—maximum high
(No. 1 is full counter-clockwise, and No. 8 is full clockwise.)

First Edition

MODEL 16T4
Alignment, Trimmers, Socket Tuner, Loop Connections

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Electronic Völtmeter.—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. Or, if necessary, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

Using Tuning Dial.—

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.
4. After completion of the alignment, replace the glass dial in cabinet, taking care that the fibre light shields are in correct position at ends of dial.

Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.
3. Refer to calibration scale printed in this service note.* This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale. For example, 1,500 kc is approximately 4 inches from the reference mark.

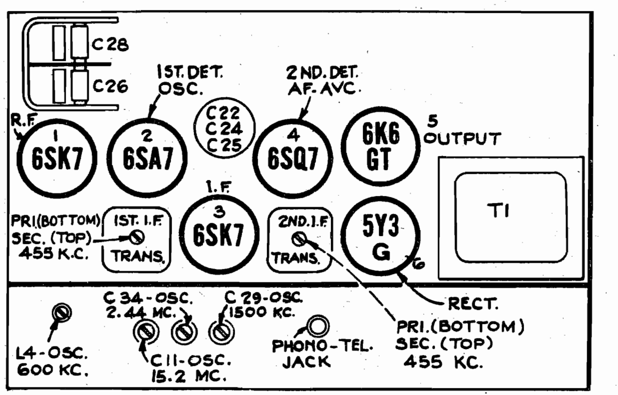
*** see Calibration Dial Model 16K**

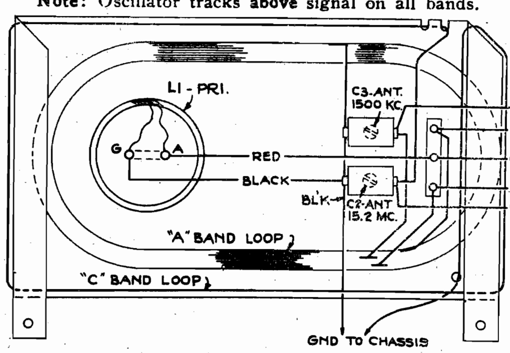
Dial-Pointer Adjustment.—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid, in series with .01	455 kc	"A" band, Quiet Point at 1,500 kc end of dial	L12 and L13 (2nd I.F. Trans.)
2	1st-Det. grid, in series with .01			L10 and L11 (1st I.F. Trans.)
3	Antenna terminal, in series with 300 ohms (link open)	15.2 mc	15.2 mc "C" band	C11 (osc.)* C2 (ant.)
4		2.44 mc	2.44 mc "B" band	C34 (osc.) Rock in
5	Antenna terminal, in series with 200 mmfd. (link open)	1,500 kc	1,500 kc "A" band	C29 (osc.) C3 (ant.)
6		600 kc	600 kc "A" band	L4 Rock in
7	Repeat steps 5 and 6.			

* Use minimum capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used, by tuning receiver to 14.29 mc, where a weaker signal should be received.

Note: Oscillator tracks **above** signal on all bands.



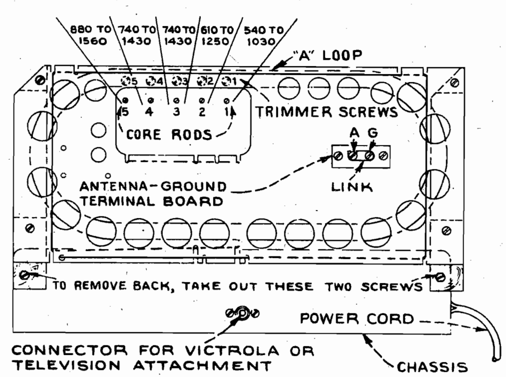


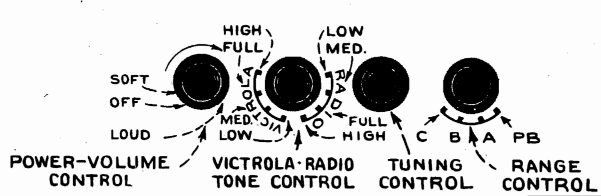
Push Button Adjustment

The push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across "A" and "G" terminals on back of set. In either case the procedure is as follows:

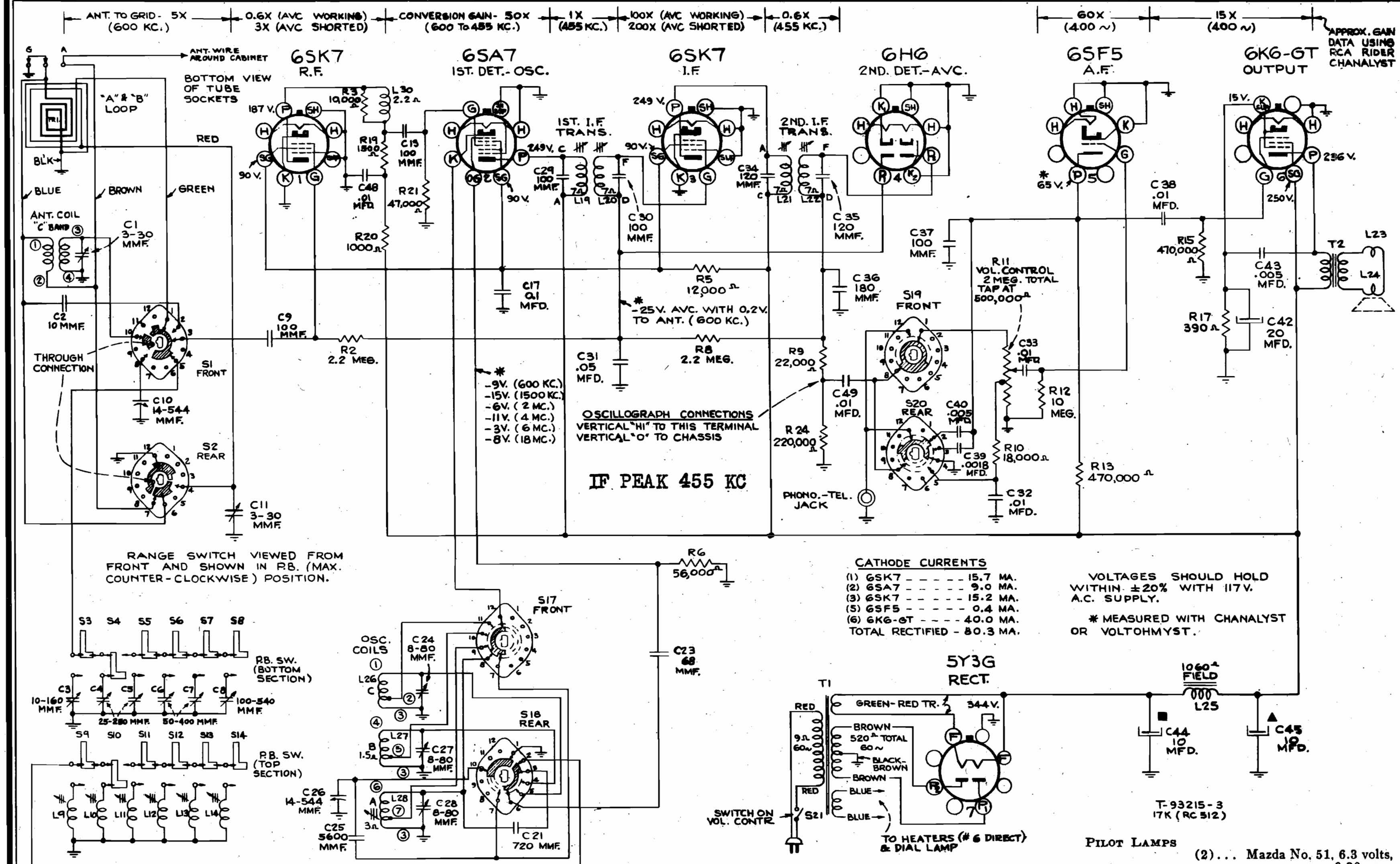
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push-in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L9) to receive the station.
4. After oscillator core is adjusted properly, adjust C-44 for maximum output.
   Owing to the relatively high RF gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push-button loop trimmers to minimum capacity before adjusting the push-button magnetite cores.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.





MODEL 17K, Ch. RC-512
Schematic, Gain, Voltage

RCA MFG. CO., INC.



Pilot Lamps
(2) . . . Mazda No. 51, 6.3 volts, 0.20 amp.

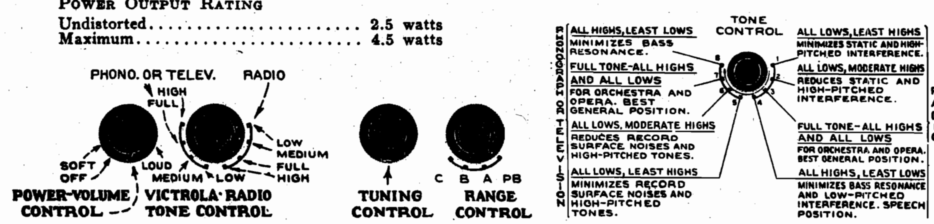
Frequency Ranges
Standard Broadcast . . . 540-1,600 kc
Medium Wave . . . . 1.5-4.0 mc
Short Wave . . . . 5.8-18.0 mc

Power Supply Ratings
105-125 volts, 50-60 cycles, 90 watts
105-125 volts, 25-60 cycles, 90 watts

Loudspeaker (RL-70-L5)
Type . . . . 12-inch Electrodynamic
V.C. Impedance . . . . 2.2 ohms at 400 cycles

Push-Button Ranges
One station between approximately . . . 540-1,030 kc
Two stations between approximately . . 610-1,250 kc
Two stations between approximately . . 740-1,480 kc
One station between approximately . . . 880-1,550 kc

Power Output Rating
Undistorted . . . . 2.5 watts
Maximum . . . . 4.5 watts



First Edition —1940 No. 21 —

MODEL 17K
Alignment, Trimmers
Socket, Dial, Loop

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

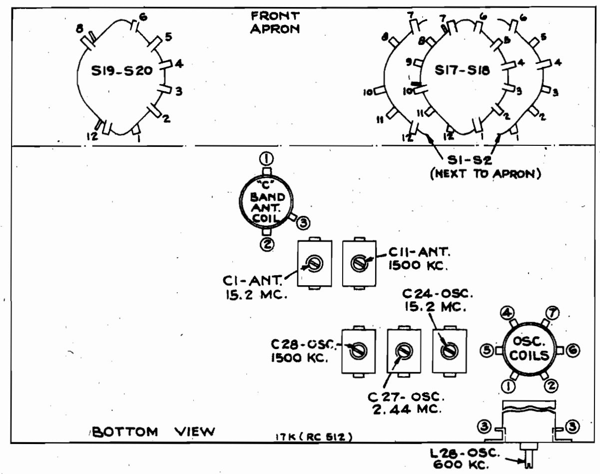
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

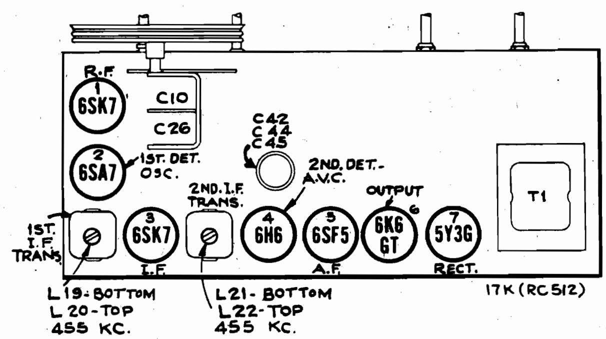
Calibration for Alignment.—The proper dial calibration for alignment purposes can be set up in two ways:

1. The dial may be removed from the cabinet by sliding out the two spring pieces which clamp it in its mounting position. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial slipped under the pointer so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced including the fibre light shields which are folded under the ends of the glass scale.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

Pointer for Calibration Scale.—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

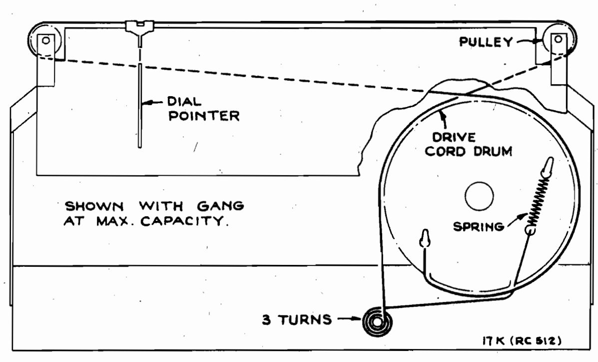


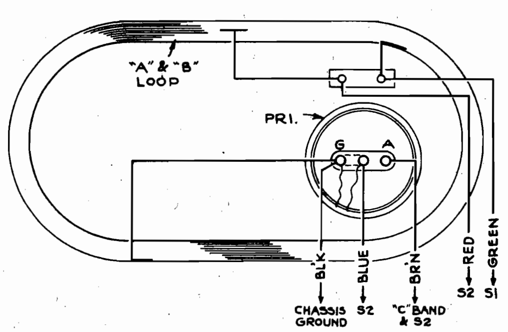
Steps	Connect high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	6SK7 I-F grid in series with 0.01 mfd.	455 kc	"A" band. Quiet Point between 550 and 750 kc	L-21 and L-22 (2nd I-F Trans.)
2	6SA7 grid in series with 0.01 mfd.			L-19 and L-20 (1st I-F Trans.)
3	Antenna terminal in series with 47 mmfd.	15.2 mc	15.2 mc (149°) "C" band	C-24 (Osc.)* C-1 (R-F) Rock gang
4	Antenna terminal in series with 200 mmf. (link open)	2.44 mc	2.44 mc (97°) "B" band	C-27 (Osc.)
5	Antenna terminal in series with 200 mmf.	600 kc	600 kc (30.5°) "A" band	L-28 (Rock in)
6	Antenna terminal in series with 200 mmf.	1,500 kc	1,500 kc (158°) "A" band	C-28 (Osc.) C-11 (R-F)
7	Repeat steps 5 and 6.			



* Use **minimum** capacity peak if two can be obtained. Check to determine that C-24 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

Note.—Oscillator tracks **above** signal on all bands.





RCA MFG. CO., INC.

Push Button Adjustment

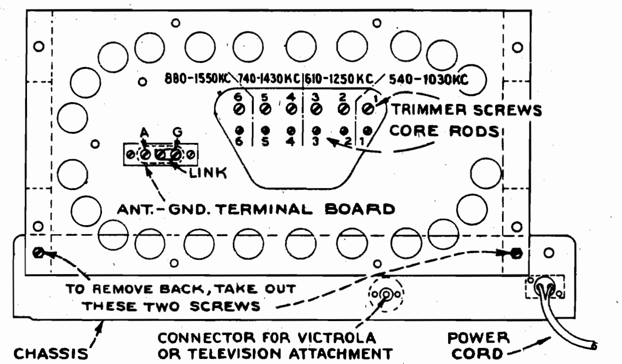
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-14) to receive the station.
4. After oscillator core is set correctly, adjust C-8 for maximum output.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Owing to the relatively high r-f gain, it may be found that a given station can be tuned in at several different settings of the magnetite-core oscillator push-button coils. In such cases, it is advisable to unscrew the loop push-button trimmers to minimum capacity before adjusting the magnetite cores.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L-9 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.



Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-512)	
34025	Board—"Antenna-Ground" board	.25
35795	Calibrator—Drive drum calibrator	.25
35792	Capacitor—Trimmer comprising 2 sections of 3-30 mmfd. each	.40
35791	Capacitor—Mica trimmer comprising 3 sections of 8-80 mmfd. each	.50
13200	Capacitor—10 mmfd.	.35
35804	Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd.	1.15
13057	Capacitor—68 mmfd.	.35
12720	Capacitor—100 mmfd.	.35
13003	Capacitor—180 mmfd.	.35
35877	Capacitor—720 mmfd	.45
13895	Capacitor—5,600 mmfd.	.70
34506	Capacitor—.0018 mfd.	.25
33584	Capacitor—.005 mfd.	.25
4937	Capacitor—.01 mfd.	.25
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
35858	Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts each and 1 section of 20 mfd., 25 volts	1.70
35965	Coil—Antenna coil—"C" band	.60
35876	Coil—Coil and resistor assembly	.30
36031	Coil—Loop loading coil	.50
35789	Coil—Oscillator coil	1.15
35803	Coil—Push button switch oscillator coil	.30
35960	Condenser—Variable tuning condenser	2.50
36249	Control—Tone control	1.15
36250	Control—Volume control and power switch	2.00
34662	Cord—Drive cord	.25
35788	Core—Adjusting core and stud for oscillator coil	.15
35871	Core—Adjusting core and stud for push button oscillator coils	.55
35794	Drum—Tuning condenser drive drum—less calibrator	.70
35799	Frame—Dial frame complete with lamp bracket and pulleys—less dial	2.00
35798	Indicator—Station selector indicator and carriage	.20
36029	Loop—Antenna loop complete	3.00
36030	Loop—Loop winding only	.75
36009	Plug—2-contact male plug for loop cable	.25
5119	Plug—3-contact female plug for speaker cable	.25
5040	Plug—4-contact female plug for speaker cable	.30
35787	Plug—Phono. input plug	.15
35973	Pulley—Drive cord pulley	.08
30498	Resistor—390 ohms, ½ watt	.20
14720	Resistor—1,000 ohms, ½ watt	.20
30654	Resistor—1,500 ohms, ½ watt	.20
35876	Resistor—10,000 ohms	.30
35875	Resistor—12,000 ohms, 3 watts	.35
13045	Resistor—18,000 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ½ watt	.20

STOCK No.	DESCRIPTION	Unit List Price
12454	Resistor—33,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
35797	Shaft—Tuning shaft and pulley	.30
35772	Shield—Bottom end shield for power transformer	.30
35709	Shield—Top end shield for power transformer	.30
31364	Socket—Dial lamp socket	.20
31251	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
36025	Switch—Push button selector switch	3.50
36024	Switch—Range switch	1.90
35636	Transformer—First I-F transformer	1.70
35790	Transformer—Second I-F transformer	1.60
35588	Transformer—Power transformer—110 volts, 25 cycle	6.30
35959	Transformer—Power transformer—110 volts, 60 cycle—less end shields	3.75
35969	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (RL-70L5)	
13867	Cap—Dust cap	.03
12079	Coil—Field coil—1,060 ohms	2.70
11469	Coil—Neutralizing coil	.30
36145	Cone—Cone complete with voice coil	1.50
5118	Plug—3-prong male speaker plug	.25
31301	Transformer—Output transformer	1.70
	MISCELLANEOUS ASSEMBLIES	
36027	Bezel—Push button bezel—less buttons	.75
35883	Button—Push button—dark brown	.15
36299	Button—Push button—light brown	.15
35914	Decalcomania—Control panel decal	.10
36028	Dial—Glass dial scale	1.20
36026	Escutcheon—Dial scale escutcheon—less dial	1.75
35814	Knob—Range switch or tone control knob—dark brown	.25
36297	Knob—Range switch or tone control knob—light brown	.25
35775	Knob—Tuning or volume control knob—dark brown	.25
36298	Knob—Tuning or volume control knob—light brown	.25
11765	Lamp—Dial lamp	.15
36149	Marker—Push button station marker	.35
36007	Mounting—Antenna loop mounting hardware	.10
33774	Mounting—Speaker mounting hardware comprising 1 eyelet and 1 grommet	.30
34053	Spring—Retaining spring for button Stock No. 35883 and 36299	.02
30900	Spring—Retaining spring for knob Stock No. 35775, 35814, 36297, 36298	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL 18T
Tuner Data, Parts

RCA MFG. CO., INC.

Push Button Adjustment

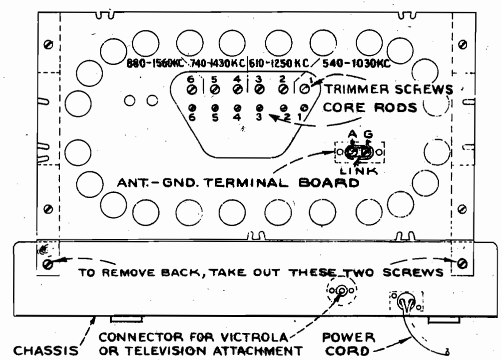
Six station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across "A" and "G" terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-14) to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations. Approximate tracking will be indicated by noise, when tuned off a station, which will disappear when the station is correctly tuned.
4. After oscillator core is adjusted properly, adjust C-8 for maximum output.

   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Owing to the relatively high RF gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases, it is advisable to unscrew the push-button loop trimmers to minimum capacity before adjusting the push-button magnetite cores.



Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-511)	
34785	Board—"Antenna-Ground" board	.20
31292	Capacitor—Mica trimmer for loop—comprising 2 sections of 3-30 mmfd.	.40
35792	Capacitor—Mica trimmer—comprising 2 sections of 3-30 mmfd.	.40
35791	Capacitor—Mica trimmer—comprising 3 sections of 8-80 mmfd.	.50
13001	Capacitor—8.2 mmfd.	.35
35804	Capacitor—Mica trimmer—comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd. and 1 section of 100-540 mmfd.	1.15
12896	Capacitor—15 mmfd.	.35
13057	Capacitor—68 mmfd.	.35
34699	Capacitor—100 mmfd. (in 1st I.F. can)	.30
12720	Capacitor—100 mmfd.	.35
34700	Capacitor—120 mmfd.	.30
13003	Capacitor—180 mmfd.	.35
12952	Capacitor—330 mmfd.	.35
35877	Capacitor—720 mmfd.	.45
34787	Capacitor—2,850 mmfd.	.50
13895	Capacitor—5,600 mmfd.	.70
34459	Capacitor—.0025 mfd.	.20
33584	Capacitor—.005 mfd.	.25
32787	Capacitor—.05 mfd.	.20
12484	Capacitor—0.25 mfd.	.30
33014	Capacitor—Electrolytic—comprising 3 sections of 10 mfd. and 1 section of 20 mfd.	1.90
35785	Coil—Loop primary (L1)	.50
35803	Coil—Push button oscillator coil	.30
35789	Coil—Oscillator coil	1.15
35805	Coil—R. F. coil	1.15
35796	Condenser—Variable tuning condenser	4.00
35807	Control—Volume control (¼ meg.) and power switch	2.00
36250	Control—Volume control (2 meg.) and power switch	XX
32634	Cord—Drive cord	.10
35788	Core—Core and stud for oscillator coil	.15
35795	Dial—Calibrator dial	.25
35794	Drum—Tuning condenser drive drum—less calibrator	.70
35799	Frame—Dial frame complete—less dial scale	2.00
35798	Indicator—Station selector indicator	.20
35786	Loop—Antenna loop winding	.50
35784	Loop—Complete antenna loop with trimmer, coil and "Antenna-Ground" board	3.60
13988	Resistor—10 ohm, ¼ watt	.20
13220	Resistor—56 ohm, ¼ watt	.20
14439	Resistor—100 ohm, ¼ watt	.20
35885	Resistor—470 ohm, 2 watt	.25
13716	Resistor—2,200 ohm, ¼ watt	.20
14024	Resistor—2,700 ohm, ¼ watt	.20
14559	Resistor—10,000 ohm, ¼ watt	.20
35875	Resistor—12,000 ohm, 3 watt	.35
12695	Resistor—15,000 ohm, ¼ watt	.20
13998	Resistor—22,000 ohm, ¼ watt	.20
12454	Resistor—33,000 ohm, ¼ watt	.20
12264	Resistor—220,000 ohms, ¼ watt	.20
12285	Resistor—470,000 ohm, ¼ watt	.20
12679	Resistor—2.2 megohm, ¼ watt	.20
13601	Resistor—10 megohm, ¼ watt	.20
14350	Screw—No. 8-32 square-head set-screw for drum	.03
35797	Shaft—Tuning shaft and pulley	.30
31364	Socket—Dial lamp socket	.20
35787	Socket—Phonograph input socket	.15
31251	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
35802	Switch—Push button switch—less coils and trimmer	2.75
35793	Switch—Range switch	2.20
36249	Switch—Tone switch	XX
35636	Transformer—First I.F transformer	1.70
35790	Transformer—Second I.F. transformer	1.60
35588	Transformer—Power transformer, 110 volt, 25 cycle	6.30
35800	Transformer—Power transformer, 110 volt, 60 cycle	4.75
33726	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (RL79A5)	
35849	Cap—Speaker cone dust cap	.03
35810	Coil—Field coil, 1,060 ohm	1.70
35441	Cone—Cone complete with voice coil	1.25
35809	Transformer—Output transformer	1.35
	MISCELLANEOUS ASSEMBLIES	
35813	Bezel—Push button bezel	1.10
35812	Button—Push button (dark brown)	.15
36300	Button—Push button (light brown)	XX
35914	Decalcomania—Control panel decal	.10
35392	Decalcomania—"RCA Victor" decal	.05
35811	Dial—Glass dial scale	1.75
35814	Knob—Range or tone switch knob (dark brown)	.25
36297	Knob—Range or tone switch knob (light brown)	XX
35775	Knob—Tuning or volume control knob (dark brown)	.25
36298	Knob—Tuning or volume control knob (light brown)	XX
11765	Lamp—Dial lamp	.15
36149	Marker—Push button marker	XX
30900	Spring—Retaining spring for knobs, Stock No. 35814	.05

XX—Price upon application to your RCA Distributor.

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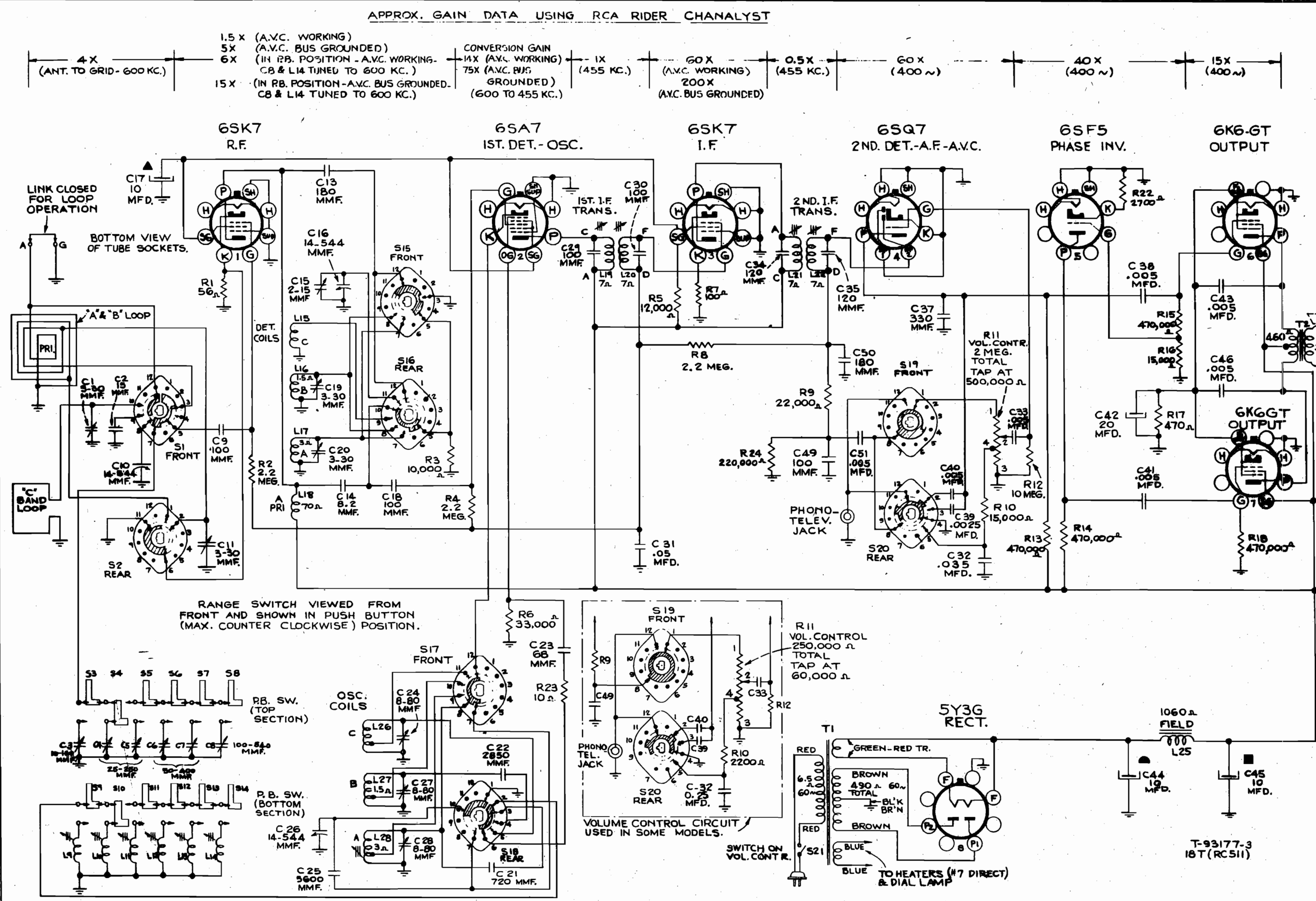
RCA MFG. CO., INC.



—1940 No. 11—

Electrical Specifications

Frequency Ranges

Broadcast	540-1,560 kc
Medium Wave	1.56-4.0 mc
Short Wave	5.8-18.0 mc
Intermediate Frequency	455 kc

Push-Button Ranges

One station between approximately	540-1,030 kc
Two stations between approximately	610-1,250 kc
Two stations between approximately	740-1,430 kc
One station between approximately	880-1,560 kc

Pilot Lamps

(2)... Mazda No. 51, 6.3 volts, 0.20 amp.

Power Output Rating

Undistorted	5.0 watts
Maximum	5.5 watts

Loudspeaker (RL-79-A5)

Type	6-inch Electrodynamic
V.C. Impedance	3.4 ohms at 400 cycles

Power Supply Ratings

105-125 volts, 50-60 cycles, 90 watts
105-125 volts, 25-60 cycles, 90 watts

First Edition

MODEL 18T
Alignment, Trimmers
Socket, Dial, Loop
Tone Cont. Data

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

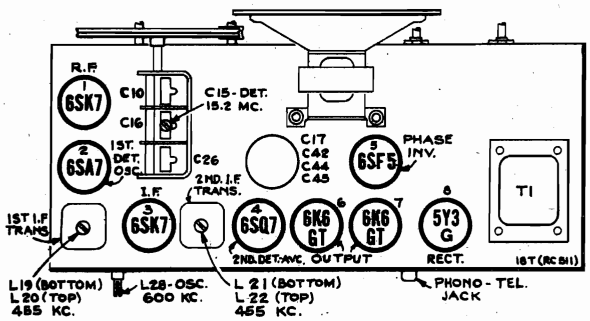
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration for Alignment.—The proper dial calibration for alignment purposes can be set up in two ways:

1. The dial may be removed from the cabinet by sliding out the two spring pieces which clamp it in its mounting position. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial slipped under the pointer so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced including the fibre light shields which are folded under the ends of the glass scale.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

Pointer for Calibration Scale.—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

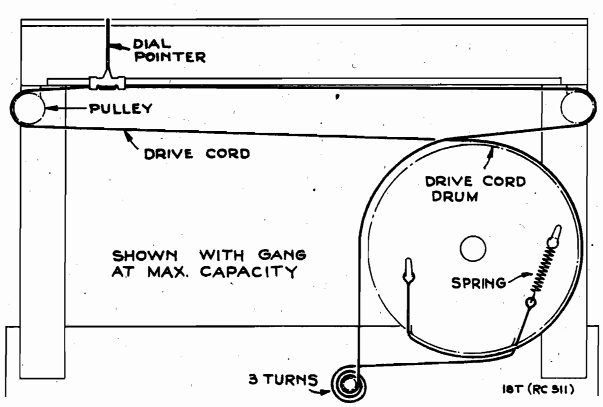


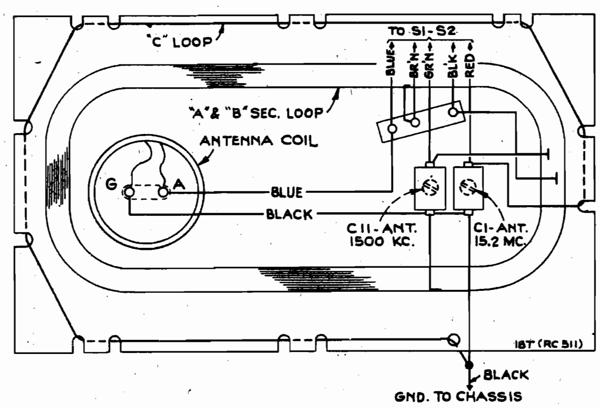
Steps	Connect high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	6SK7 I-F grid in series with 0.01 mfd.	455 kc	"A" band Quiet Point between 550 and 750 kc	L-21 and L-22 (2nd I-F Trans.)
2	6SA7 grid in series with 0.01 mfd.			L-19 and L-20 (1st I-F Trans.)
3	Antenna terminal in series with 300 ohms ("A" antenna trimmer C-11, should be ¼ turn out)	15.2 mc	15.2 mc (149°) "C" band	C-24 (Osc.)* C-15 (Det.) Rock gang C-1 (R-F) Rock gang
4	Antenna terminal in series with 200 mmf.	2.44 mc	2.44 mc (91.5°) "B" band	C-27 (Osc.) C-19 (Det.)
5	Antenna terminal in series with 200 mmf. (Preset "A" osc. trimmer C-28 ¼ turn out)	600 kc	600 kc (33.2°) "A" band	L-28 Rock gang
6	Antenna terminal in series with 200 mmf.	1,500 kc	1,500 kc (163.4°) "A" band	C-28 (Osc.) C-20 (Det.) C-11 (R-F)
7	Repeat step 5, then 6			
8	Antenna terminal in series with 300 ohms	15.2 mc	15.2 mc (149°) "C" band	C-1 (R-F) Rock gang

* Use minimum capacity peak if two can be obtained. Check to determine that C-24 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

Note.—Oscillator tracks **above** signal on all bands.

To reduce sensitivity during RF Alignment connect a 15,000 ohm, ½ watt resistor across secondary of 1st IF transformer.



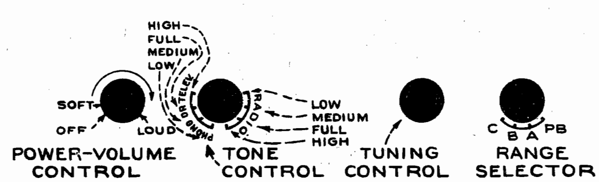


Tone Control

The tone control has four positions for radio, and four positions for Victrola or Television sound:

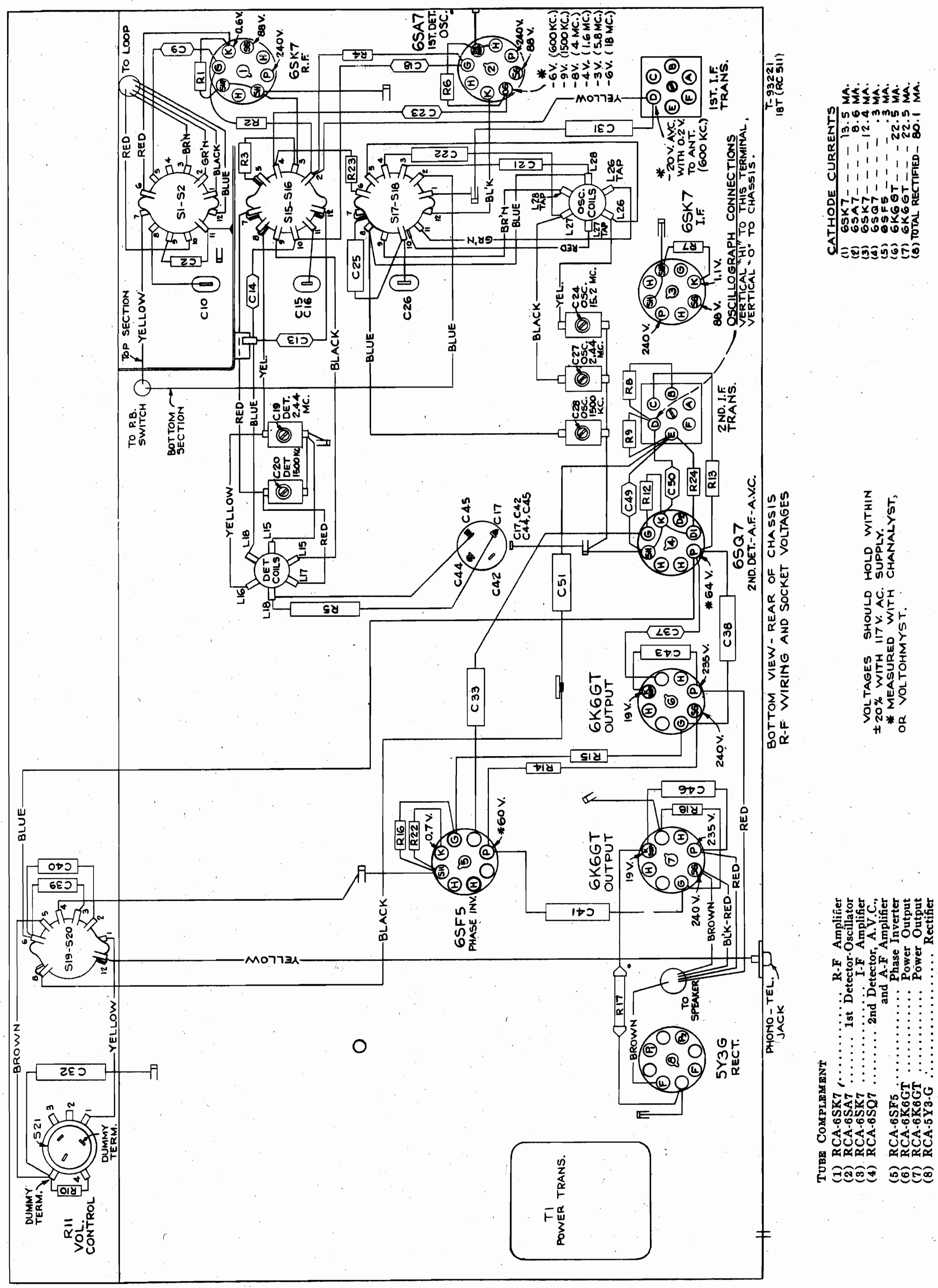
No. 1—Radio—maximum low—minimum high
No. 2—Radio—maximum low—reduced high
No. 3—Radio—maximum low—maximum high
No. 4—Radio—minimum low—maximum high
No. 5—Phono—maximum low—minimum high
No. 6—Phono—maximum low—reduced high
No. 7—Phono—maximum low—maximum high
No. 8—Phono—minimum low—maximum high

(No. 1 is full counter-clockwise, and No. 8 is full clockwise.)



RCA MFG. CO., INC.

MODEL 18T
Chassis Wiring, Voltage



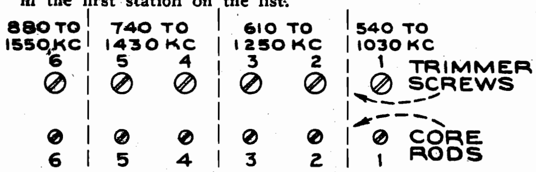
RCA MFG. CO., INC.

Adjustment for Electric Tuning

This model has six push buttons for electric tuning. The buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the six desired stations, arranged in order from low to high frequencies.
2. Turn Range Control knob to "A" position, and manually tune in the first station on the list.



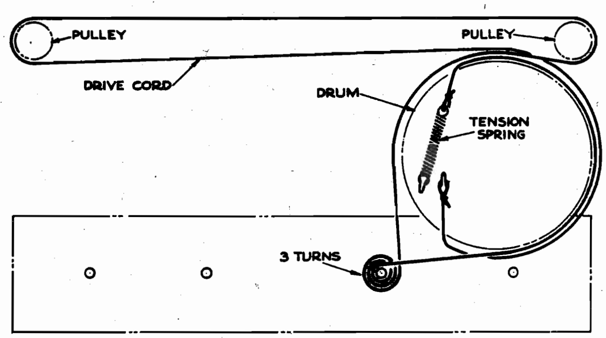
Push Button Adjustments

Turn the Loop Antenna to give minimum pickup of signal, no outside antenna should be used and link on antenna board should be closed.

3. Turn Range Control knob to "PB" and press push button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.

   Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push button antenna trimmers to minimum capacity before adjusting the oscillator cores.

   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining five stations in the same manner.
6. After all six stations are tuned-in on the buttons, turn the Loop Antenna to a position giving the best signal pickup and make a final careful adjustment of all core rods until best reception is obtained for each. Outdoor antenna should now be reconnected if used.



Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

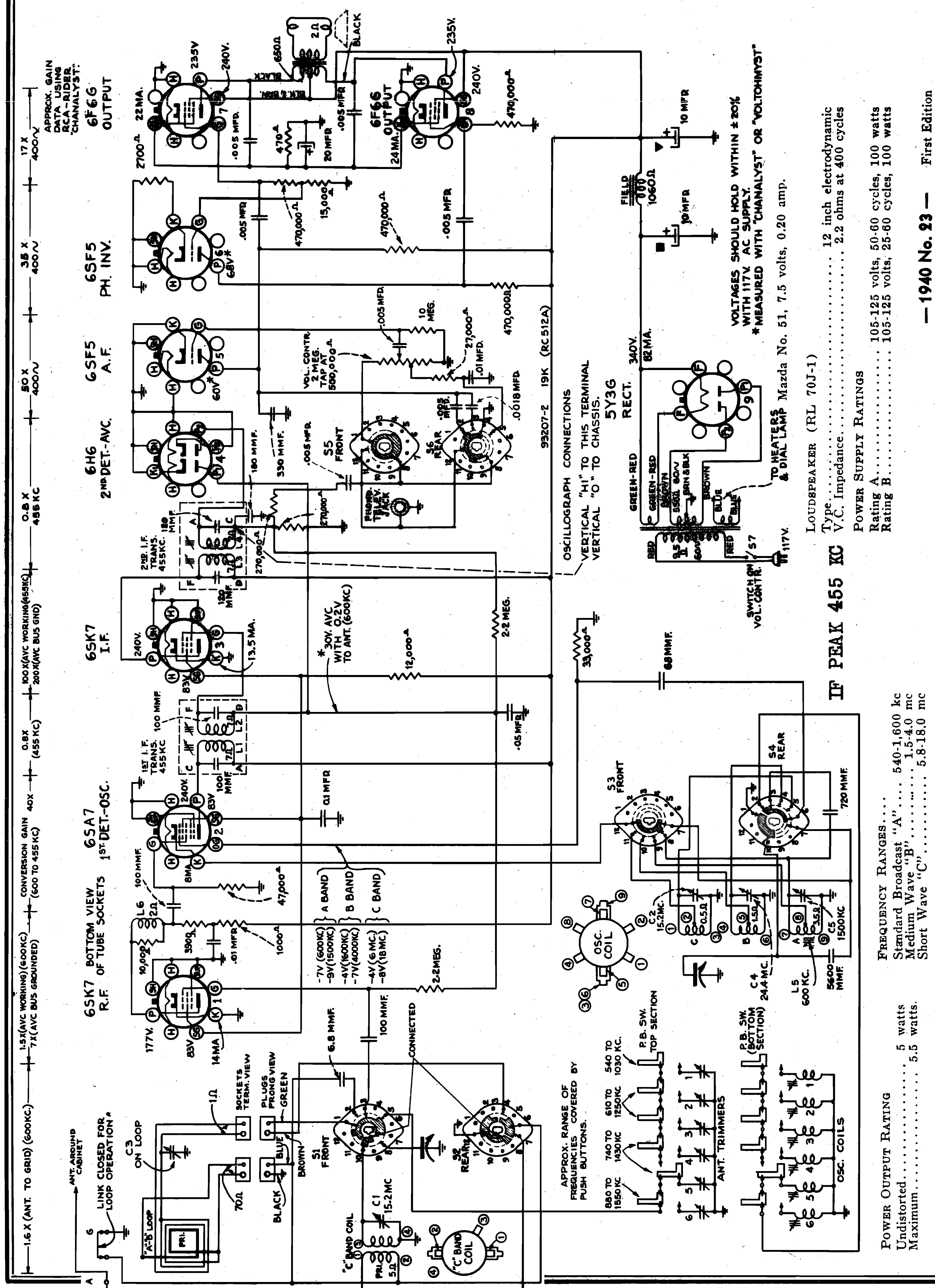
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-512A)	
35966	Board—"Antenna-Ground" board	.20
35795	Calibrator—Drive drum calibrator	.25
35961	Capacitor—Mica trimmer (C1)	.25
14079	Capacitor—6.8 mmfd.	.35
35791	Capacitor—Mica trimmer comprising 3 sections (C2, C4, C5)	.50
35804	Capacitor—Mica trimmer comprising 6 sections for push buttons 1, 2, 3, 4, 5, 6	1.15
13057	Capacitor—68 mmfd.	.35
12720	Capacitor—100 mmfd., moulded	.35
34699	Capacitor—100 mmfd., mica	.30
34700	Capacitor—120 mmfd.	.30
13003	Capacitor—180 mmfd.	.35
12952	Capacitor—330 mmfd.	.35
35877	Capacitor—720 mmfd.	.45
13895	Capacitor—5,600 mmfd.	.70
34506	Capacitor—.0018 mfd.	.25
33584	Capacitor—.005 mfd.	.25
14393	Capacitor—.01 mfd.	.30
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
35858	Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts each and 1 section of 20 mfd., 25 volts	1.70
35965	Coil—Antenna coil—"C" band	.60
35876	Coil—Coil and resistor assembly L6	.30
35789	Coil—Oscillator coil (A, B, C)	1.15
35803	Coil—Push button switch oscillator coil	.30
35960	Condenser—Variable tuning condenser	2.50
35962	Control—Volume control and power switch	2.00
34662	Cord—Drive cord	.25
35788	Core—Adjusting core and stud for oscillator coil (L5)	.15
35871	Core—Adjusting core and stud for push button oscillator coils 1, 2, 3, 4, 5, 6	.55
35794	Drum—Tuning condenser drive drum—less calibrator	.70
35970	Indicator—Station selector indicator and carriage	.30
35972	Plate—Dial plate complete with drive cord pulleys	1.10
36009	Plug—2-contact male plug for loop cable	.25
5040	Plug—4-contact female plug for speaker cable	.30
35973	Pulley—Drive cord pulley	.08
32165	Resistor—470 ohms, 2 watts	.25
14720	Resistor—1,000 ohms, ¼ watt	.20
14024	Resistor—2,700 ohms, ¼ watt	.20
30694	Resistor—3,900 ohms, ¼ watt	.20
35875	Resistor—12,000 ohms, 3 watts	.35
12695	Resistor—15,000 ohms, ¼ watt	.20

STOCK No.	DESCRIPTION	Unit List Price
12738	Resistor—27,000 ohms, ¼ watt	.20
12454	Resistor—33,000 ohms, ¼ watt	.20
12412	Resistor—47,000 ohms, ¼ watt	.20
12199	Resistor—270,000 ohms, ¼ watt	.20
12285	Resistor—470,000 ohms, ¼ watt	.20
12679	Resistor—2.2 meg., ¼ watt	.20
13601	Resistor—10 meg., ¼ watt	.20
35968	Shaft—Tuning shaft and pulley	.25
36772	Shield—Bottom shield for power transformer	.30
35709	Shield—Top shield for power transformer	.30
31364	Socket—Dial lamp socket	.20
31251	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
35787	Socket—Phono. input socket	.15
35974	Support—Dial plate support	.65
35967	Switch—Push button selector switch	3.50
35964	Switch—Range switch (S1, S2, S3, S4)	1.90
35963	Switch—Tone switch (S5, S6)	1.00
35636	Transformer—First I-F transformer	1.70
35790	Transformer—Second I-F transformer	1.60
35588	Transformer—Power transformer—110 volts, 25 cycle	6.30
35959	Transformer—Power transformer—110 volts, 60 cycle—less end shields	3.75
35969	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (RL-70J1)	
31825	Cap—Cone center dust cap	.02
11469	Coil—Hum neutralizing coil	.30
33116	Coil—Speaker field coil	2.10
31275	Cone—Speaker cone, voice coil, and dust cap	1.50
5039	Plug—4-prong male, for speaker	.30
33444	Transformer—Output transformer	2.00
	MISCELLANEOUS ASSEMBLIES	
36005	Button—Push button	.15
35998	Capacitor—Mica trimmer (C3) for loop	.25
36002	Coil—Loop primary coil	.40
35914	Decalcomania—Control panel decal	.10
36019	Dial—Glass dial scale	1.65
36006	Escutcheon—Dial scale escutcheon—less dial	2.75
36003	Knob—Tone or range switch knob	.25
36004	Knob—Tuning or volume control knob	.25
11765	Lamp—Dial lamp	.15
35997	Loop—Antenna loop	3.00
36149	Marker—Station selector push button markers	.35
36007	Mounting—Antenna loop mounting hardware	.10
35029	Mounting—Speaker mounting hardware	.35
35999	Socket—Two contact socket for antenna loop	.25
34053	Spring—Push button spring	.02
14270	Spring—Retaining spring for knobs	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL 19K, Ch. RC-512A
Schematic, Gain, Voltage

RCA MFG. CO., INC.



MODEL 19K
Alignment, Trimmers
Socket, Speaker, Lead Dress

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

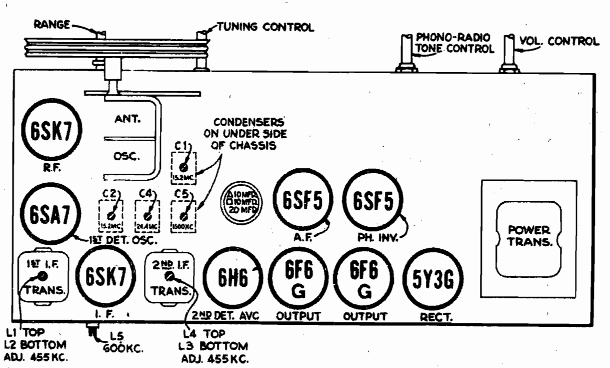
Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Preacautionary Lead Dress.—

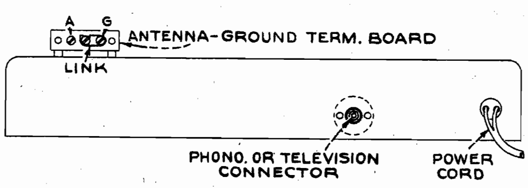
1. Dress 2nd I.F leads close to chassis.
2. Dress leads from volume control and tone switch away from filaments, diode and power leads.
3. Dress .005 mfd. volume control condenser away from electrolytic.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Range switch	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A"	Quiet Point near 180°	L3 and L4 (2nd I-F Trans.)
2	6SA7 1st Detector in series with .01 mfd.				L1 and L2 (1st I-F Trans.)
3	Ant. terminal "A" in series with 47 mmf.	15.2 mc	"C"	148.5°	C1 (ant.) C2 (osc.)*
4	Ant. section of gang condenser in series with 300 ohms	2.44 mc	"B"	97°	C4 (osc.)*
5		1,500 kc	"A"	160°	C5 (osc.)*
6		600 kc		30°	L5 (osc.) (Rock gang)
7	Fasten chassis in cabinet. Connect loop, see that link is closed on the antenna board, attach dial indicator to drive cord, with indicator at 540 kc mark and gang at maximum capacity.				
8	Radiation loop consisting of two turns of wire 18 in. in diameter located 4 to 6 feet from receiver	1,500 kc	"A"	1,500 kc	C3 (ant.) (on loop)
9		600 kc		600 kc	L5 (osc.) (Rock gang)
10		Repeat steps 8 and 9.			

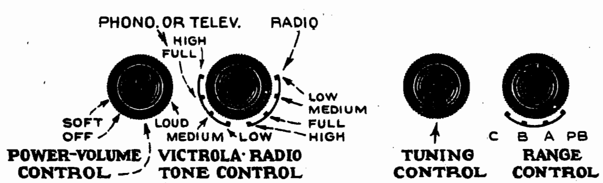
* Use minimum capacity peak of two peaks can be obtained.
Note: Oscillator tracks above signal on all bands.



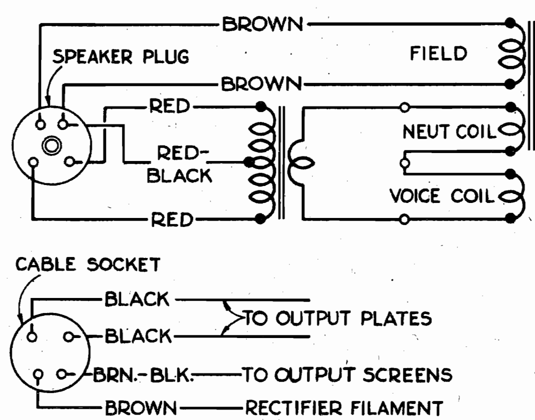
Tube and Trimmer Locations



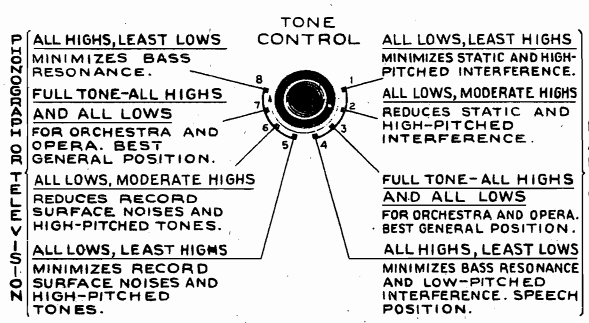
Back of Chassis



Location of Controls



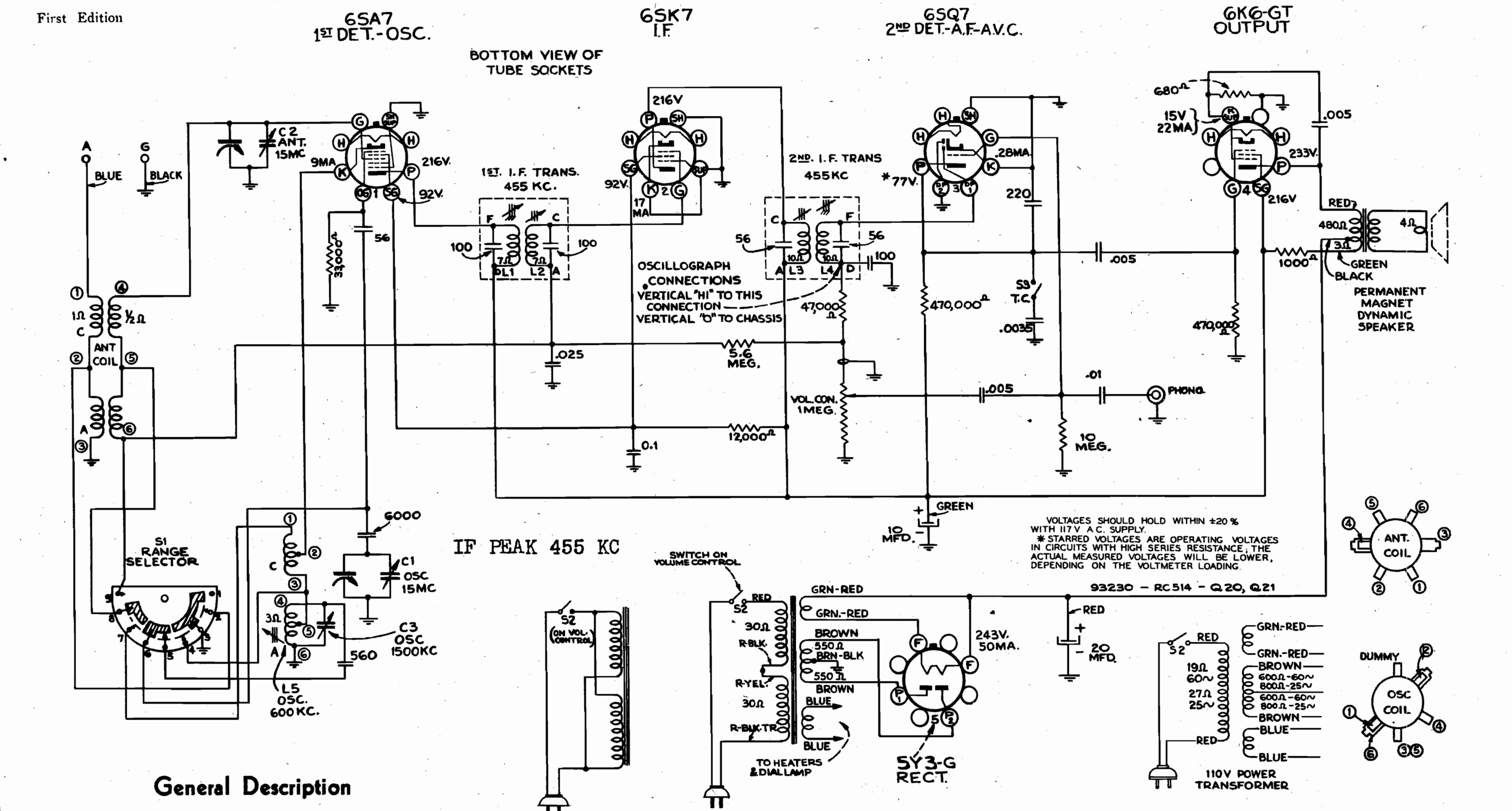
Connections and Colors of Loudspeaker and Cable



Tone Control and Phono-Radio Switch

RCA MFG. CO., INC.

— 1940 No. 17 —
First Edition



General Description

Models Q20 and Q21 are two-band table type superheterodyne receivers. They are designed to cover the broadcast range of 540 to 1,800 kilocycles, and the short-wave range from 4.5 to 18 megacycles.

Features of design include: Magnetite-core I.F. transformers; magnetite-core "A" band oscillator coil; automatic volume control; tone control; illuminated dial; jack for phonograph attachment; 25 to 1 ratio vernier tuning, and dust-proofed permanent-magnet dynamic loudspeaker.

Phonograph Attachment.—A jack is provided on the rear of chassis for connection to a phonograph attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Electrical Specifications

Pilot Lamp................ Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS

Rating A........... 105-125 volts, 50-60 cycles, 50 watts
Rating B............ 105-125 volts, 25-60 cycles, 50 watts
Rating C..... 105-125, 200-250 volts, 50-60 cycles, 50 watts

POWER OUTPUT RATING

Undistorted................................. 1.5 watts
Maximum................................. 2.3 watts

LOUDSPEAKER

Type (RL-81-A2)...... 5-inch permanent-magnet dynamic
Voice-coil Impedance............4.5 ohms at 400 cycles

FREQUENCY RANGES

Standard Broadcast (A)........ 540-1,800 kc (555-166 m)
Short Wave (C).................. 4.5-18 mc (66.7-16.6 m)
Intermediate Frequency......................... 455 kc

MODELS Q20 and Q21

Chassis No. RC-514

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

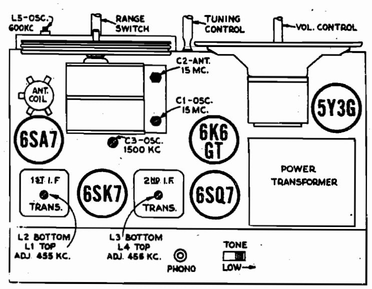
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

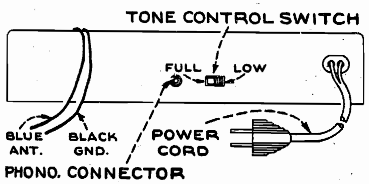
Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Precautionary Lead Dress.—

1. Green lead from oscillator section of var. condenser should be dressed away from antenna leads.
2. 6,000 mmfd. capacitor should bear against electrolytic capacitor.
3. Dress blue I.F. lead against chassis.
4. .005 volume control capacitor should be dressed away from output plate leads.



Tube and Trimmer Location



Back of Chassis

Controls

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	I-F grid through 0.1 mfd. capacitor and ground	455 kc	Quiet point between 550-750 kc	L-3 and L-4 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd. capacitor and ground	455 kc		L-1 and L-2 (1st I-F trans.)
3	Antenna Lead in series with 300 ohms	15 mc	15 mc "C" band	C-1 oscillator*
4		15 mc	Rock at 15 mc	C-2 antenna† while rocking
5	Antenna terminal in series with 200 mmfd.	1,500 kc	1,500 kc "A" band	C-3 oscillator
6		600 kc	Rock at 600 kc "A" band	L-5 oscillator while rocking
7		1,500 kc	1,500 kc "A" band	C-3 oscillator

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.

GAIN DATA

(as taken with the RCA-Rider Chanalyst)

(A) R.F.—I-F Gain (R.F.—I.F. Channel) — Approximate Gain

1. Antenna to 6SA7 grid............ 8 at 600 kc
2. 6SA7 grid to plate (conversion 600 to 455 kc)...................... 4
3. 6SA7 plate to 6SK7 grid.......... 1 at 455 kc
4. 6SK7 grid to plate................ 80 at 455 kc
5. 6SK7 plate to 6SQ7 diode.......... .7 at 455 kc

(B) A.F. Gain (A.F. Channel)

1. 6SQ7 grid to plate............ 50 at 400 cycles
2. 6K6GT grid to plate............ 10 at 400 cycles

(C) Oscillator Grid (OG-6SA7) Voltage — (Electronic Volt. Meter)

1. Oscillator Voltage at 600 kc.............. —12V
2. Oscillator Voltage at 1,500 kc............. —16V
3. Oscillator Voltage at 4.5 mc.............. — 5V
4. Oscillator Voltage at 15 mc............... — 9V

(D) A.V.C. Voltage — (Electronic Volt. Meter)

With 0.2V. input to antenna at 600 kc....... —15V

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-514)	
33817	Capacitor—Mica trimmer (C3)	.30
12723	Capacitor—56 mmfd.	.35
30949	Capacitor—56 mmfd. (2nd. I-F)	.25
34699	Capacitor—100 mmfd. (1st. I-F)	.30
12720	Capacitor—100 mmfd.	.35
12694	Capacitor—220 mmfd.	.35
12537	Capacitor—560 mmfd.	.35
31405	Capacitor—6,000 mmfd.	.75
30303	Capacitor—.0035 mfd.	.40
4838	Capacitor—.005 mfd.	.25
33584	Capacitor—.005 mfd.	.25
14393	Capacitor—.01 mfd.	.30
4870	Capacitor—.025 mfd.	.20
4639	Capacitor—0.1 mfd.	.30
35761	Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 10 mfd.	.90
35762	Coil—Antenna coil	1.40
35763	Coil—Oscillator coil	.80
35760	Condenser—Variable tuning condenser	2.55
32713	Core—Adjusting core and stud for oscillator coil (L5)	.35
32634	Cord—Drive cord	.10
35770	Dial—Dial scale	.65
35768	Drum—Drive drum	.45
35668	Indicator—Station selector indicator	.25
11765	Lamp—Dial lamp—Mazda No. 51	.15
35769	Plate—Dial plate—less dial scale	.45
31024	Resistor—680 ohms, ½ watt	.20
30152	Resistor—1,000 ohms, 1 watt	.22
8073	Resistor—12,000 ohms, 2 watts	.25
12454	Resistor—33,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
11668	Resistor—5.6 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
35771	Shaft—Tuning shaft	.20
35772	Shield—Bottom end shield for power transformer	.30
35709	Shield—Top end shield for power transformer	.30
35766	Socket—Dial lamp socket	.25
31251	Socket—Tube socket	.25
31319	Socket—Tube socket (6SA7)	.25
13638	Spring—Drive cord spring	.08
35767	Support—Tuning condenser support	.25
30953	Switch (S3)	.45
35765	Switch—Range switch (S1)	.85
35636	Transformer—First I-F transformer	1.70
35628	Transformer—Second I-F transformer	1.85
35758	Transformer—Power transformer—110 volts, 25 cycle—less end shields	5.25
35757	Transformer—Power transformer—110 volts, 60 cycle—less end shields	2.95
35759	Transformer—Power transformer—Univ. 60 cycle	4.00
35764	Volume control and power switch (S2)	1.50
33726	Washer—"C" washer for tuning shaft	.02
	SPEAKER ASSEMBLIES (RL-81A2)	
32907	Cap—Cone dust cap	.02
35570	Cone—Cone complete with voice coil	1.35
35774	Transformer—Output transformer	1.45
	MISCELLANEOUS ASSEMBLIES	
35104	Crystal—Escutcheon and crystal for Model Q20	1.00
35105	Crystal—Escutcheon and crystal for Model Q21	1.00
35678	Fastener—Push on fastener for crystal, Stock No. 35104	.02
35679	Knob—Tuning, range switch or volume control knob for Model Q20	.15
35775	Knob—Tuning, range switch or volume control knob for Model Q21	.25
30900	Spring—Retaining spring for knobs, Stock Nos. 35679 and 35775	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Models 45X-16, 45X-17

Chassis No. RC-459M

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

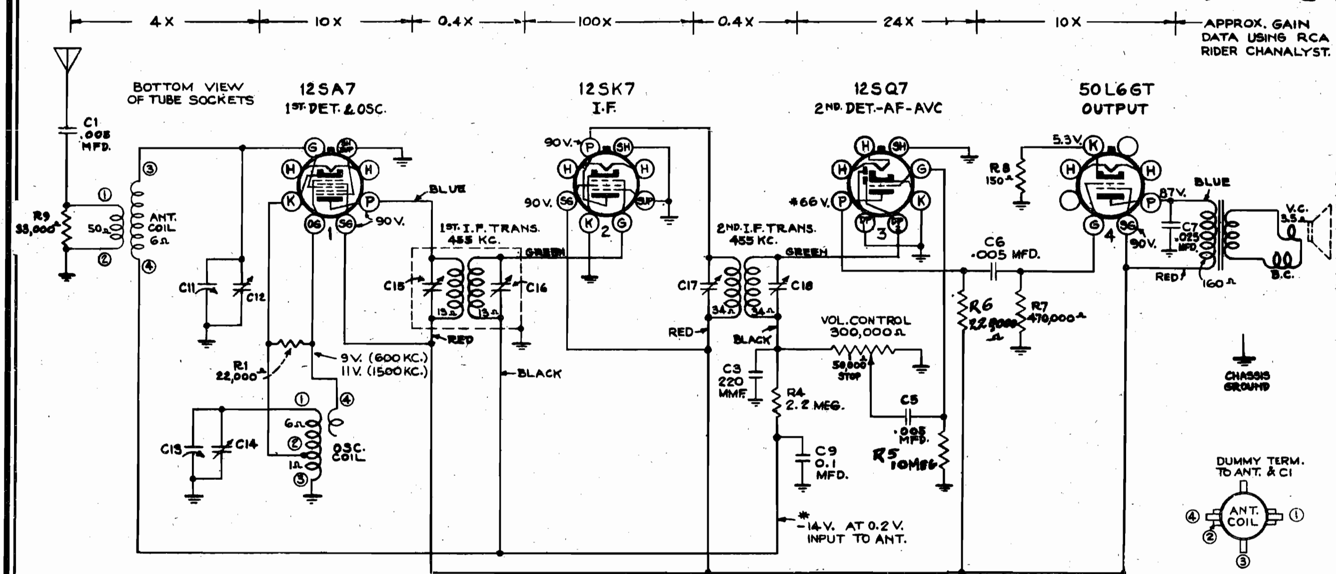
STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-459M)	
35097	Can—Shield can for transformers—Stock Nos. 35346 and 35347	.30
12694	Capacitor—220 mmfd.	.35
33584	Capacitor—.005 mfd.	.25
4937	Capacitor—.01 mfd.	.25
11315	Capacitor—.015 mfd.	.20
32787	Capacitor—.05 mfd.	.20
12484	Capacitor—0.25 mfd.	.30
35348	Capacitor—Electrolytic, comprising 1 section of 30 mfd., and 1 section of 20 mfd.	.95
35571	Coil—Oscillator coil	.70
35534	Condenser—Variable tuning condenser	2.30
35344	Control—Volume control and power switch	1.50
32634	Cord—Drive cord	.10
35992	Dial—Dial scale	.65
35063	Drum—Drive drum	.30
35993	Frame—Dial frame—less dial	.25
35062	Indicator—Station selector indicator	.20
11765	Lamp—Dial lamp	.15
35061	Loop—Antenna loop	1.95
30189	Resistor—120 ohms, ½ watt	.20
14561	Resistor—220 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ½ watt	.20
12264	Resistor—220,000 ohms, ½ watt	.20
12285	Resistor—470,000 ohms, ½ watt	.20
12679	Resistor—2.2 meg., ½ watt	.20
13601	Resistor—10 meg., ½ watt	.20
35343	Shaft—Drive shaft	.10
34449	Socket—Dial lamp socket	.30
31251	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
35098	Spring—Retaining spring for transformers Stock Nos. 35346 and 35347	.08
35056	Transformer—Audio transformer	1.30
35346	Transformer—First I-F transformer—less shield can	1.40
35347	Transformer—Second I-F transformer	1.40
34373	Washer—"C" washer for drive shaft	.03
	SPEAKER ASSEMBLIES (39223-502)	
35065	Cone—Cone complete with voice coil	1.20
	SPEAKER ASSEMBLIES (RL-86-2)	
32907	Cap—Dust cap	.02
35066	Cone—Cone complete with voice coil	1.30
34450	Speaker—5 inch dynamic speaker complete with cone and voice coil—less output transformer	3.25
	MISCELLANEOUS ASSEMBLIES	
36041	Back—Cabinet back for Model 45X16	.25
36042	Back—Cabinet back for Model 45X17	.25
35996	Bushing—Bushing and wood screw for rotor discs	.05
35079	Crystal—Dial scale escutcheon and crystal	.65
35995	Disc—Rotor disc (cardboard)	.10
35994	Disc—Stationary disc (masonite) and rubber feet	.40
33006	Foot—Rubber foot	.03
30863	Knob—Tuning or volume control knob	.15
30900	Spring—Retaining spring for knob	.05

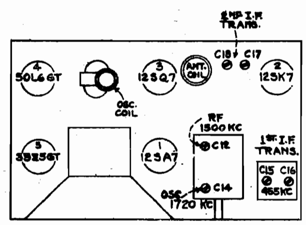
ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

Alignment, Trimmers Socket, Parts

RCA MFG. CO., INC.

MODELS 45X3, 45X4
Chassis RC-457E
Schematic, Gain, Voltage



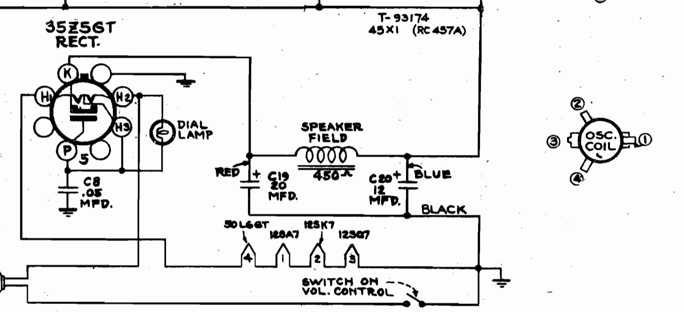


TUBE LOCATIONS
& ALIGNMENT SCREW POSITIONS

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.
✱ MEASURED WITH CHANALYST, OR VOLTOHMYST.

IF PEAK 455 KC

FREQUENCY RANGE..
535-1,720 kc



POWER SUPPLY RATINGS — 1940 No. 18 — First Edition

A-C Rating................ 105-125 volts, 50-60 cycles, 30 watts
D-C Rating............. 105-125 volts, direct current, 30 watts

Dial Lamp (1).................. Mazda 51, 7.5 volts, 0.2 amp.

POWER OUTPUT
(117 volt, 60 cycle supply)........................... 1.0 watt

LOUDSPEAKER
Type............................... 4-inch Electrodynamic
Voice-coil impedance at 400 cycles..................... 4 ohms

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

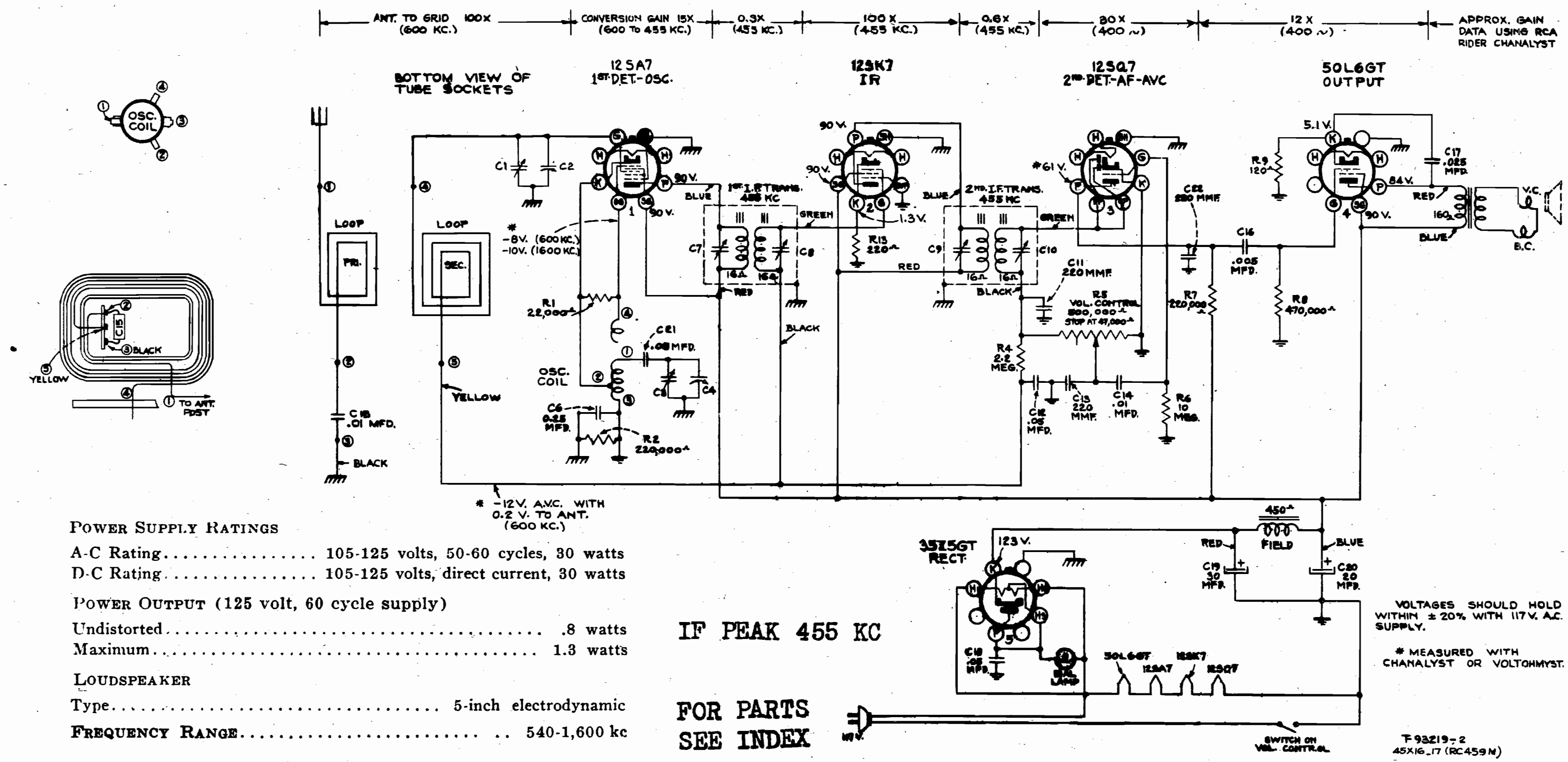
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with .001 mfd.	455 kc	QuietPoint at 1,600 kc end of dial	C17, C18 (2nd I-F Trans.)
2	12SA7 grid in series with .001 mfd.			C15, C16 (1st I-F Trans.)
3	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C14 (oscillator)
4		1,500 kc	Resonance on 1,500 kc signal	C12 (antenna)

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-457E)	
12694	Capacitor—220 mmfd.	.35
33584	Capacitor—.005 mfd.	.25
4870	Capacitor—.025 mfd.	.20
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
32576	Capacitor—Electrolytic comprising 1 section of 20 mfd., and 1 section of 12 mfd.	.75
35115	Coil—Antenna coil	.80
35333	Coil—Oscillator coil	.65
35977	Condenser—Variable tuning condenser	2.40
35979	Control—Volume control and power switch	1.50
32634	Cord—Drive cord	.10
35982	Dial—Dial scale	.70
35980	Indicator—Station selector indicator	.25
11765	Lamp—Dial lamp	.15
31193	Lead—Antenna lead	.50
35981	Plate—Dial plate—less dial	.30
30880	Resistor—150 ohms, ½ watt	.20
13998	Resistor—22,000 ohms, ¼ watt	.20
12454	Resistor—33,000 ohms, ¼ watt	.20
12264	Resistor—220,000 ohms, ¼ watt	.20
12285	Resistor—470,000 ohms, ¼ watt	.20
12679	Resistor—2.2 meg., ¼ watt	.20
13601	Resistor—10 meg., ¼ watt	.20
35978	Shaft—Tuning shaft	.10
35332	Shield—Shield for first I-F transformer	.30
35345	Socket—Dial lamp socket	.25
31251	Socket—Tube socket	.25
30585	Spring—Drive cord spring	.06
35098	Spring—Spring to hold I-F transformer in shield can	.08
34846	Transformer—Audio transformer	1.25
35331	Transformer—First I-F transformer—less shield	1.10
33301	Transformer—Second I-F transformer	1.20
34373	Washer—"C" washer for tuning shaft	.03
	SPEAKER ASSEMBLIES (39105-505)	
35120	Cone—Cone complete with voice coil	1.15
35611	Speaker—Four inch dynamic speaker complete with cone and voice coil	3.10
	MISCELLANEOUS ASSEMBLIES	
36017	Back—Cabinet back—Model 45X3	.25
36018	Back—Cabinet back—Model 45X4	.25
35983	Bezel—Dial scale bezel and crystal	1.00
35121	Knob—Walnut volume control or tuning knob	.10
35126	Spring—Retaining spring for knob Stock No. 35121	.03

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODELS 45X16, 45X17
Chassis RC-459M
Schematic, Gain, Voltage
Alignment, Trimmers
Socket

RCA MFG. CO., INC.



POWER SUPPLY RATINGS

A-C Rating . . . . 105-125 volts, 50-60 cycles, 30 watts

D-C Rating . . . . 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted . . . . .8 watts

Maximum . . . . 1.3 watts

LOUDSPEAKER

Type . . . . 5-inch electrodynamic

FREQUENCY RANGE . . . . 540-1,600 kc

Dial Lamp (1) . . . . Mazda 51, 7.5 volts, .20 amp.

IF PEAK 455 KC

FOR PARTS
SEE INDEX

—1940 No. 22—

First Edition

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

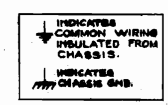
Test-Oscillator.—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

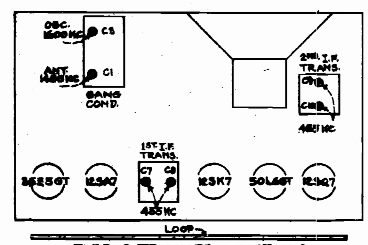
Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 I-F grid in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C9 and C10 (2nd I-F trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd.			C7 and C8 (1st I-F trans.)
3	Radiation loop consisting of two turns of wire 18 inches in diameter	1,600 kc	Full clockwise (out of mesh)	C3 (oscillator)
4		1,400 kc	Resonance on 1,400 kc signal	C1 (antenna)

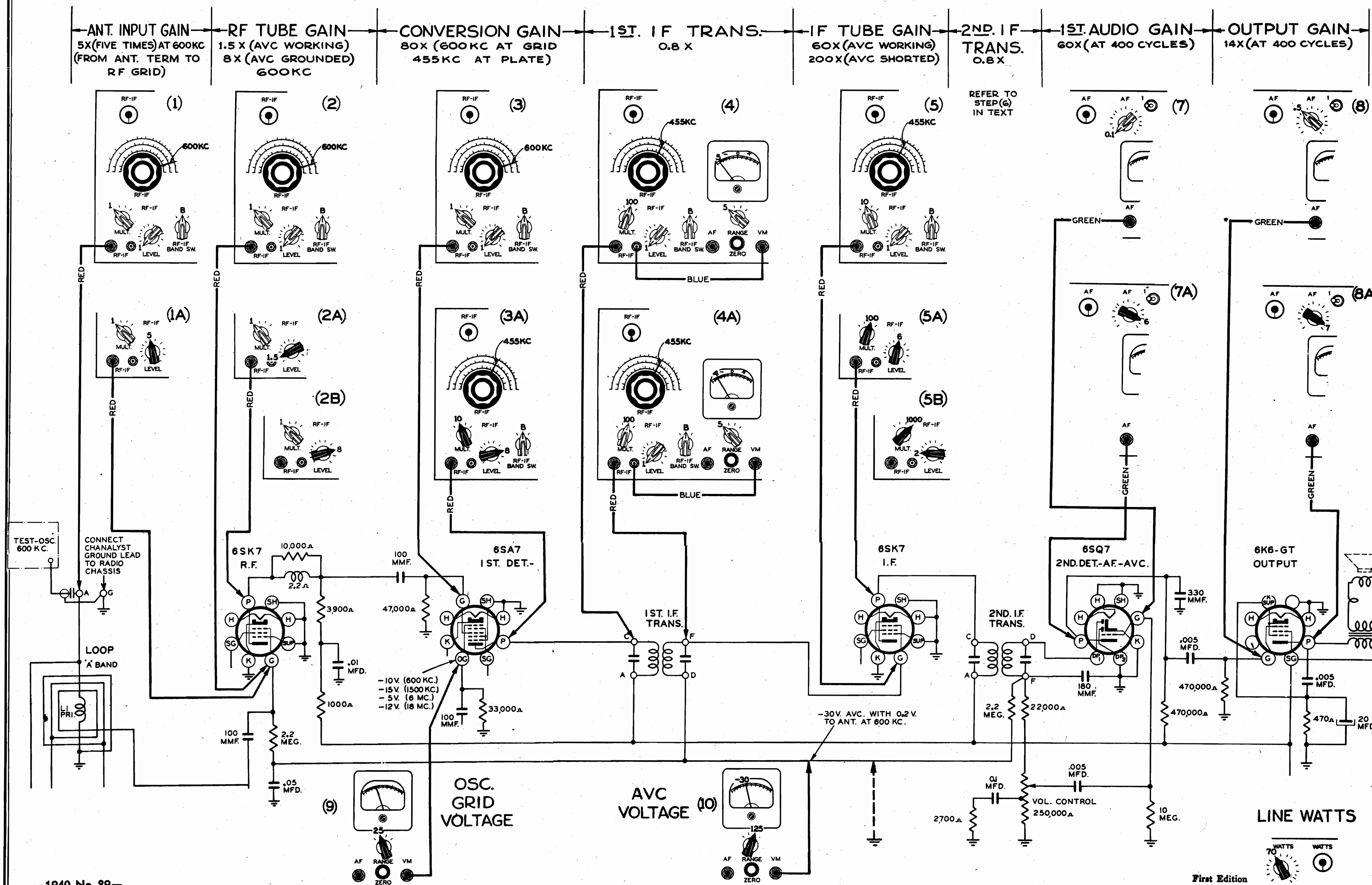




TUBE & TRIMMER LOCATIONS

RCA MFG. CO., INC.

Gain Data Instructions
Test Schematic



First Edition

Introduction

Complete gain data is published in the Service Notes for RCA Victor 1941 radio receivers.

For speed and convenience, the gain data is printed on the schematic diagram of each model.

For the utmost utility in signal tracing, so that any trouble may be quickly narrowed down to a single point, the gain is given for each separate RF, IF and AF tube, and also for each RF and IF transformer. In addition, the AVC voltage is shown, and also the oscillator grid voltage on all frequency ranges.

Tube Gain Is Shown Both With and Without AVC

The gain data in RCA Victor Service Notes generally shows the gain of the RF, 1st-detector, and IF tubes both with and without automatic volume control.

In general, it is recommended that gain checks be made as outlined herein, first checking the gain with the AVC working, and then if there is any doubt with the AVC bus grounded.

The important thing in following this recommended procedure (where the signal is fed into the antenna circuit for all checks) is to keep the RF–IF channel at maximum sensitivity when establishing the level at the antenna terminal, at the grid of the RF tube, and at the grid of the detector tube, as shown at (1), (2), and (3) in the illustration.

This method is followed in obtaining the published RCA gain data on actual production samples.

On small sets, the gain is given only with the AVC **working.**

On certain models, the 1st-detector tube is not controlled by the AVC, and should therefore be measured with the AVC working.

In checking from primary to secondary on RF and IF transformers, the AVC should be left working to avoid possible grid current that would reduce the apparent gain of the transformers.

Gain Tolerance

Several variable factors influence the gain of sections in a receiver, including **tubes,** which may vary more than 25%, **AVC action, grid current** if the AVC is killed, **regeneration,** adjustment of the **tuned circuits, accuracy of tuning, line voltage,** and **experience** on the part of the operator.

Obviously it is impossible to specify definite receiver tolerances. Two-to-one variations may be regarded as normal.

Make Gain Checks With 600 kc Signal Fed into Antenna Terminal of Receiver

All gain checks throughout the entire receiver circuit (radio-frequency, intermediate-frequency, and audio-frequency sections) can be made with the signal generator connected to one point (the antenna terminal), and tuned to one frequency (600 kc).

This naturally simplifies the procedure and speeds up the work.

Preliminary Set-Up

Signal Generator Connections

Connect the output cable of the signal generator to the **antenna** and ground **terminals** of the receiver.

Dummy Antenna

Use the recommended dummy (usually 100, 200, or 300 mmfd.) in series with the antenna terminal.

Tune Signal Generator to 600 kc

Adjust the signal generator to 600 kc, or to some frequency near 600 kc that is free from local broadcast interference.

The exact frequency is not important. If the signal generator **is slightly off calibration,** set it to the 600 kc mark, **because both the receiver and the Chanalyst will be tuned to the actual generator frequency** even though this may be **slightly above or below 600 kc.** In other words, the generator **frequency is the starting point,** and both the receiver and the **Chanalyst will be tuned to it.**

Use 400 Cycle Audio Modulation (30%)

Set the signal generator to give 400 cycle internal audio modulation on the 600 kc signal. The percentage of modulation is not important in making gain checks, but the standard value of 30% is recommended.

Tune the Receiver to 600 kc

Tune the receiver carefully for peak output on the signal (assumed to be 600 kc) from the generator.

Connect Chanalyst Ground Lead to the Receiver Chassis

Connect the clip on the end of the Chanalyst ground lead (black) to the receiver chassis. (See note in reference to connection on a.c.-d.c. receivers.)

Tune RF-IF Channel to 600 kc

Place the Chanalyst RF-IF probe (red cable) on the receiver antenna terminal. Set the RF–IF controls as shown in step (1), and tune the RF–IF channel for peak output as indicated on the RF–IF magic eye.

Making Gain Checks

(Refer to drawing, which shows each step in checking a typical radio receiver.)

Step (1). Antenna Input Gain

With the RF–IF channel tuned to the 600 kc signal, and with the **level** and **multiplier** controls set at 1 and 1, as shown at (1) in the drawing, adjust the output of the signal generator until the RF–IF Magic Eye just closes (or electronic voltmeter reads –5 volts). See note about using the electronic voltmeter in conjunction with the magic eye.

Move the RF–IF probe from the antenna terminal to the grid prong of the RF tube. If there is a gain, the RF–IF magic eye will overlap. Adjust the **level** control until the eye is just closed. In this example, the **level** control has been turned from 1 to 5, indicating a voltage step-up or gain of five times from the antenna terminal to the grid of the first tube. (This is the gain from the antenna coil to the tuned loop.)

The service note for this particular model (Model 16T3) specifies an approximate gain of five times from the antenna terminal to the RF control grid. If the gain is appreciably less than 5 times, the tracking should be checked. The simplest and most definite method for doing this is described later.

Step (2). RF Tube Gain

Place RF–IF probe on grid of RF tube. Set RF–IF input controls as shown in (2). Adjust signal generator output until RF–IF Magic Eye is just closed.

Move RF–IF probe to plate of RF tube. Adjust **level** control until RF–IF eye just closes. If new **level** setting is 1.5, the gain from grid to plate is 1.5 times.

To check the RF tube gain without automatic volume control, ground the AVC bus as indicated in dotted lines. Repeat step (2) to establish a signal level on the grid. Then move the RF–IF probe to the plate of the RF tube, and adjust the **level** control until the RF–IF eye is just closed. In this example (2B) the **level** control is turned to 8, indicating an RF tube gain of eight times with the AVC killed.

Move the probe to the grid of the 1st-detector tube, which is resistance-coupled to the RF tube in this particular model. There should be only a slight drop through the coupling circuit.

Remove the AVC ground after this check.

With a receiver that has transformer coupling between the RF and 1st-detector tubes, check the gain from primary to secondary (with AVC working).

Step (3). 1st-Detector Conversion Gain

Place the RF–IF probe on 1st-detector control grid and turn RF–IF **level** and **multiplier** controls to 1 and 1. Adjust signal generator output so the RF–IF Magic Eye is just closed.

Move the RF–IF probe to the 1st-detector plate. Tune the RF–IF channel for peak output on the IF signal. Adjust **multiplier** and **level** controls so RF–IF Magic Eye is just closed.

In this example (3A) the **multiplier** is turned from 1 to 10 (10 times), and the **level** control is turned from 1 to 8 (8 times). The conversion gain is therefore 80 times.

The IF signal voltage across the plate circuit of the 1st-detector tube is 80 times greater than the 600 kc signal voltage across the 1st-detector grid circuit.

If the conversion gain is appreciably less than specified, it may be due to incorrect IF alignment, but first try retuning the set for peak output. (The voltmeter channel provides an excellent output meter for this purpose by using it to measure AVC voltage.)

Step (4). Checking 1st-IF Transformer

In this step, there is a decrease or loss, instead of a gain, from primary to secondary of the 1st-IF transformer.

Place the RF–IF probe on the primary of the 1st-IF transformer and adjust the signal generator output so the RF–IF Magic Eye just closes, or so the electronic voltmeter indicates –5 volts.

Move the probe to the secondary. In this example (4A), the eye opens slightly, and the meter drops to –4 volts, indicating a loss of 5 to 4 or 0.8 times.

Step (5). IF Tube Gain

Place RF–IF probe on the IF grid. Set **multiplier** at 10 and **level** at 1. Adjust signal generator output so that RF–IF Magic Eye is just closed.

Move RF–IF probe to plate of the IF tube and adjust **multiplier** and **level** controls until eye is just closed.

In this example (5A) the **multiplier** is turned from 10 to 100 (10 times) and the **level** control is turned from 1 to 6 (6 times). The gain is therefore 10 times 6, or 60.

To check the IF gain with the AVC killed, connect the AVC bus to the chassis and repeat step (5) to establish a signal level on the IF grid.

Move the RF–IF probe to the plate of the IF tube and adjust the **multiplier** and **level** controls until the RF–IF Magic Eye just closes. In this example (5B), the **multiplier** is turned from 10 to 1,000 (100 times) and the **level control**

is turned from 1 to 2. Therefore the IF gain is 100 times 2, or 200, with the AVC killed.

Remove the AVC bus ground after this check.

Step (6). Checking 2nd-IF Transformer

In this particular set, the 2nd-IF transformer has the same loss as the 1st-IF transformer, and is checked as in step (4), except with **multiplier** at 1,000.

Step (7). 1st-Audio Gain

(In making audio gain checks, the tone controls should be set for maximum response.)

Turn Chanalyst AF control to 0.1 and set AF toggle switch to 1.

Place the AF channel probe (green cable) on the arm of the receiver volume control. Adjust the receiver volume control so the AF channel Magic Eye just closes.

Move the probe to the 1st-audio grid. There should be only a slight drop through the coupling condenser.

With the AF channel probe on the grid of the 1st-audio tube, reset the receiver volume control so the AF eye is just closed.

Move the AF probe to the plate of the 1st-audio tube. Adjust the AF channel control so the AF eye is just closed. In this example (7A) the control is turned from 0.1 to 6.0, indicating a voltage step-up or gain of 60 times (0.1 divided into 6.0 equals 60).

Move the AF probe to the grid of the output tube. There should be only a slight drop through the coupling capacitor.

If the receiver has a phase inverter tube, check its gain in the same way as described for the 1st-audio tube.

Step (8). Output Stage Gain

Turn Chanalyst AF control to 0.5 and place AF probe on the grid of the output tube. Adjust the receiver volume control so the AF Magic Eye is just closed.

Move the probe to the plate of the output tube. Adjust the AF channel control so the AF eye is just closed. In this example (8A), the control is turned from 0.5 to 7.0, indicating a voltage step-up or gain of 14 times (0.5 divided into 7.0 equals 14).

With a push-pull (or parallel push pull) output stage, check each tube separately, with the other output tube (or tubes) removed from the set. This gives a definite check on each output tube. The published data gives the gain with all of the output tubes in operation.

Step (9). Measuring Oscillator Grid Voltage

Checking the oscillator grid current (by measuring the rectified oscillator signal across the oscillator grid leak) is a valuable and quick method of determining whether the oscillator is working throughout the range on each band.

Connect the electronic voltmeter channel probe (blue cable) to the oscillator grid. Observe the voltage reading while tuning across each band.

The published RCA gain data gives the oscillator grid voltage at the high-frequency and low-frequency end of each band.

It will be observed that the oscillator grid voltage generally increases when tuning through stations. The published data is taken at quiet points on the dial.

"Dead spots" or points where the oscillator ceases to work may be caused by absorption due to resonance in adjacent coils through defects in shorting action of the range switch and will show up as dips in the oscillator grid voltages.

Step (10). Measuring AVC Voltage

Connect the voltmeter channel probe (blue cable) to the AVC bus. Turn the signal generator from low output up to high output and observe the AVC voltage. It will be found to increase rapidly at first, and then more slowly up to an approximate maximum (in this particular example) of –30 volts.

In the published RCA gain data, the AVC voltage is given for a large input to the antenna. This input voltage is stated as a matter of record. The specified AVC voltage may be regarded as the approximate maximum.

Checking Oscillator Frequency

Place the oscillator channel probe (brown cable) near the oscillator circuit in the receiver. Tune the oscillator channel for maximum indication on the oscillator channel Magic Eye.

The correct oscillator frequency should equal the sum of the input signal frequency plus the intermediate frequency. In this particular example, the input signal is 600 kc, and the intermediate frequency is 455 kc, so the correct oscillator frequency is 600 plus 455, or 1,055 kc.

Wattage Indicator

Plug the Chanalyst into a 110-volt a.c supply, and plug the receiver into the Chanalyst **test watts** receptacle. Turn "on" the power switches of both Chanalyst and receiver. After a brief warm-up period, adjust the **watts** control so the **watts** Magic Eye just closes. The setting of the **watts** control indicates the power consumption of the receiver.

The rated power consumption of radio receivers (as printed in service data and on the chassis or cabinet labels) is seldom accurate to within 10% of the actual consumption.

Quick Over-All Gain Checks on RF, IF, and AF Sections

The approximate over-all gain of any section (RF, IF, or AF) can be found by multiplying together the gain (with AVC killed) of the parts that comprise the particular section.

Using the accompanying diagram as an example:

The RF section extends from the antenna terminal to the 1st-detector grid. This includes the antenna transformer (which in this case has a primary coil and a loop secondary) with a gain of 5, and the RF tube, with a gain of 8. The over-all RF gain is 5 times 8, or 40.

The 1st-detector conversion gain, and the 1st-IF transformer should be checked separately.

The IF tube and the 2nd-IF transformer may be checked as one section, feeding IF signal from the generator into the IF grid, with the multiplier and level controls at 1 and 1 to establish the lowest possible level on the IF grid.

The AF section extends from the 1st-AF grid to the output plate, and includes the 1st-AF tube and the output tube. The over-all AF gain is 60 times 14, or approximately 800.

Miscellaneous Data

Electronic Voltmeter May Be Used in Conjunction With the Magic Eye

When tuning the RF–IF channel, the electronic voltmeter may be used as an auxiliary resonance indicator, and for level checks as shown in step (4).

Connect the voltmeter cable (blue) between the VM jack and the RF–IF tip jack.

Set the **meter range** to 5, and, with no signal input to the RF–IF channel, adjust the **zero** control so the meter needle is at center zero.

When connected in this way, the meter indicates the rectified signal voltage at the grid of the RF–IF Magic Eye. Approximately –5 volts are required to just close the eye.

Tracking at 600 kc

In using the published gain data it is advisable to check, and if necessary adjust, the tracking between the RF tuned circuits and the oscillator circuit.

The following method is unequalled for speed and accuracy because no "rocking" of the gang condenser is necessary.

(a) Align the IF to the correct IF frequency.
(b) Feed a 600 kc signal into the antenna circuit of receiver through the specified dummy antenna.
(c) Place RF–IF probe (red cable) on grid of first tube in receiver, and tune the RF–IF channel to the 600 kc signal.
(d) Carefully turn the receiver gang condenser for maximum output on the RF–IF Magic Eye (not for maximum output on the receiver).
(e) Leave the receiver gang in this position even though the receiver dial may indicate 10 or 20 kc off, because this is the correct setting of the gang to tune the receiver's antenna circuit to 600 kc.
(f) Connect the electronic voltmeter probe (blue cable) to the AVC circuit of the receiver.
(g) Adjust the oscillator magnetite core or low-frequency padder for maximum AVC voltage as indicated on the electronic voltmeter.

Input to Loop Receivers

Some loop receivers have a link that must be opened when feeding the signal generator into the antenna terminal.

On console loop receivers, such as RCA Model 110K, if only the chassis has been brought in for service, and the loop is not available, connect the signal generator through an .01 mfd. capacitor to the control grid of the first tube. Tune the receiver for maximum AVC voltage on the 600 kc signal.

Chanalyst Ground Connection to AC-DC Receivers

On a.c.-d.c. receivers where one side of the 110-volt line is connected to the chassis, attach the Chanalyst ground lead to the receiver chassis.

If the 110-volt line is isolated from the receiver chassis, connect the Chanalyst ground lead to the common negative wiring in the chassis.

In either of these cases it must be remembered that the receiver and the Chanalyst may be "hot," and due care must be taken to prevent grounding of either. The best method is to use an isolating power transformer as described below.

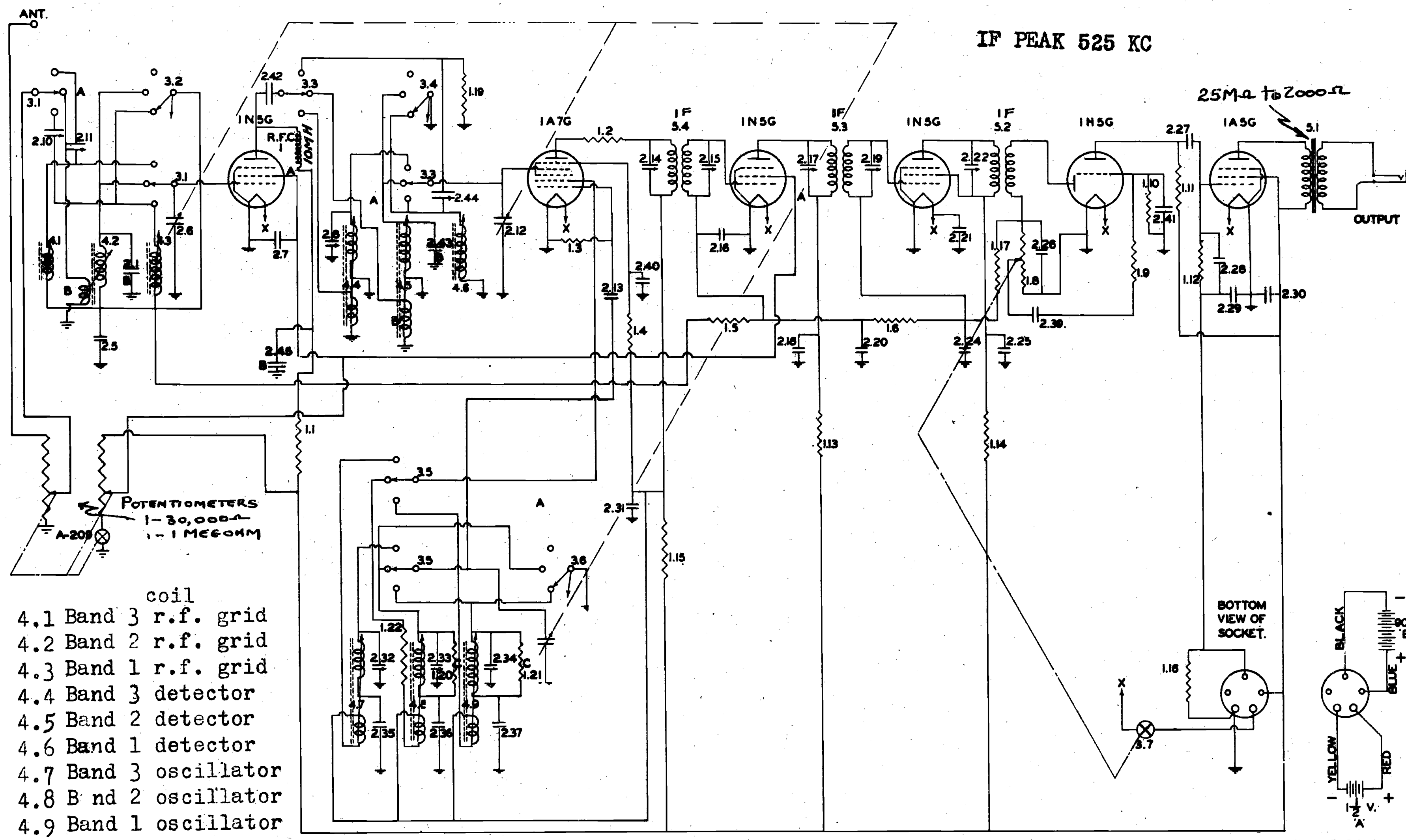
Isolating Power Transformer

When working on a.c.-d.c. receivers, it is becoming general practice to use a one-to-one ratio power transformer between the a.c. power supply and the receiver. This avoids grounding difficulties and certain hum conditions.

The isolation power transformer may be used in conjuction with the Chanalyst when testing a.c.-d.c. receivers by plugging one winding of the transformer into the Chanalyst **test-watts** receptacle, and connecting the a.c.-d.c. receiver to the other winding.

MODEL ME-14
Schematic

RADIO MFG. ENGINEERS, INC.



coil
4.1 Band 3 r.f. grid
4.2 Band 2 r.f. grid
4.3 Band 1 r.f. grid
4.4 Band 3 detector
4.5 Band 2 detector
4.6 Band 1 detector
4.7 Band 3 oscillator
4.8 B nd 2 oscillator
4.9 Band 1 oscillator

SCHEMATIC ME-14	C-149		DATE 3 6 39. DRAWN BY R.B.M. APPROVED BY:

RADIO MFG. ENGINEERS, Inc.
111 Harrison Street PEORIA, ILL., U. S. A.

The power drawn from the batteries is very small--being .675 watts from the 90 volt "B" battery, represented by a current of 7.5 milliamperes; and a current from a 1.4 volt filament battery of 300 milliamperes.

MODEL ME-14
Alignment, Socket
Trimmers, Parts

RADIO MFG. ENGINEERS, INC.

The unit includes 6 tubes and is a superheterodyne type receiver, providing both manual and automatic volume control; coverage of the entire frequency range in three selective positions of the band switch, and an audio output of 100 milliwatts. 100 milliwatts of audio power is also sufficient to operate a small loudspeaker. However, the unit is primarily designed for headphone operation and a jack is provided on the rear apron of the chassis for the insertion of a standard headphone plug. The output impedance of this phone circuit carries no direct current through it, since it is the secondary of a transformer and it is designed to supply a 2000 ohm load. If a loudspeaker is used, a suitable transformer should be used with it to match it to the output of the receiver.

SERVICE NOTES

The intermediate frequacy used in the ME-14 receiver is 525 kilocycles. Alignment can be achieved by inserting a signal of 525 kilocycles. By connecting a test oscillator generating 525 kilocycles (modulated) to the grid of the first detector tube, the intermediate frequency transformers labeled No. 1, No. 2, and No. 3 I.F. (See Figure 3) can be adjusted to maximum reading on an audio output meter connected directly across the headphones, or across a special plug inserted in the headphone jack. Alignment is made on a given signal of 525 kilocycles for maximum reading on the output meter. It is essential that the input signal put into the first detector tube be not more than 200 microvolts, since the automatic volume control will hold all variations constant if the signals are of this order or higher. If it is impossible to cut down the energy delivered by the test oscillator, by means of adjustments on the test oscillator itself, the "Manual Gain" control may be of some assistance, although its range insofar as controlling circuits behind the first detectoris rather limited. About 10 volts of audio should be obtained for optimum adjustment purposes, and the output of the signal generator, or test oscillator, should be lowered to a point where about 10 volts are obtained for alignment at the optimum peak adjustments. This, of course, means that the "Audio Gain" control should be set for maximum audio output.

Distorted signals having a very broken and rough characteristic are usually due to the fact that the fialment battery is below its required voltage and needs replacement. The sensitivity of the instrument will, of course, fall off at the same time and the combination of the two conditions can be used as an indication that the filament battery has served its purpose.

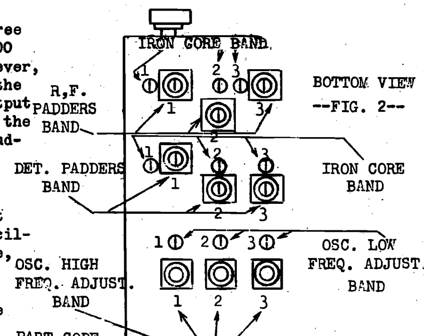
RADIO FREQUENCY ALIGNMENT

All of the controls for radio frequency alignment, except the series padder for low frequency calibration of Band 3, are available from the bottom of the chassis. In Figure 3 it will be seen that the oscillator padder, used for adjustment of the low frequency calibration of Band 3, is located near the center of the chassis between the "B" batteris and the last section of the variable condenser. The capacity of this condenser is increased with counterclockwise rotation of the screw-driver with which it is adjusted. Counterclockwise rotation decreases the frequency, and clockwise rotation increases the frequency.

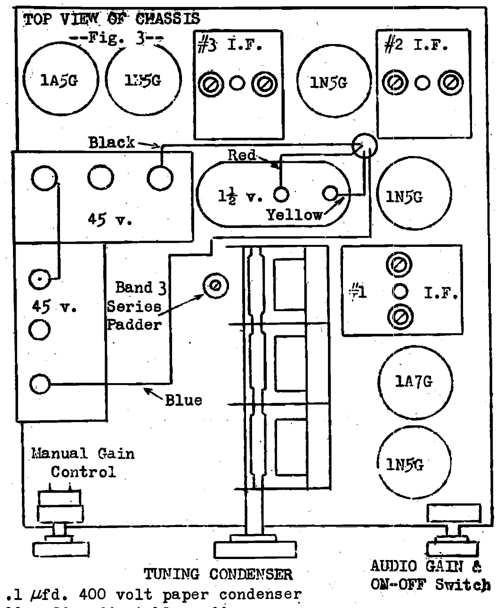
For recalibrating the instrument is is only necessary to make sure that the pointer is set properly with respect to the rotors of the variable condenser, and this is done by setting the rotors at full mesh and having the pointer, at the same time, set to the horizontal line on the left end of the calibrated scale. Under these conditions and with frequencies of accurately known value the following alignment frequencies and their respective adjusters are listed as follows:

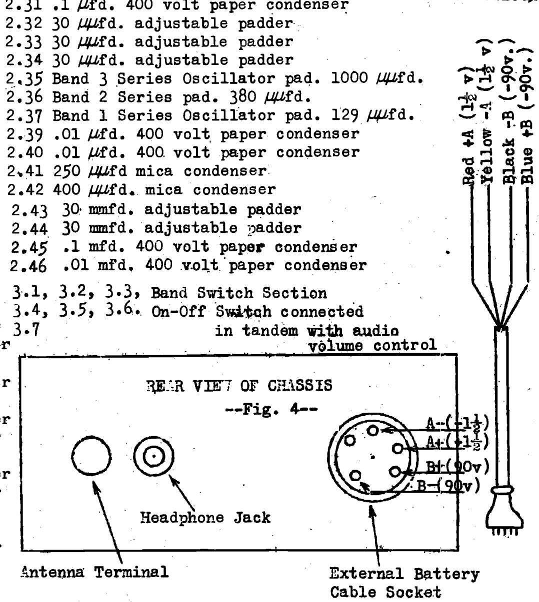
Band 1 .2 megacycles, Band 1 Oscillator Series Padder (See Figure 2)
Band 1 .4 megacycles, Band 1 Oscillator Parallel Padder (See Figure 2)
Band 2 700 kilocycles, use Band 2 Oscillator Series Padder (See Fig. 2)
Band 2 1200 kilocycles, use Band 2 Oscillator Parallel Padder (See Fig. 2)
Band 3 2 megacycles, use Band 3 Series Padder, (See Figure 3)
Band 3 4 megacycles, use Band 3 Oscillator Parallel Padder (See Fig. 2)

After the calibration has been established by means of these adjustments, the respective bands are lined up, insofar as their radio frequency circuits are concerned, by adjustment of the respective Band padders for the radio frequency grid and the detector grid. Figure 2 shows the detector and r.f. padder for each band. Adjustments are to be made on a given modulated signal with an output meter across the headphones and adjustments left at the position giving maximum output meter reading.



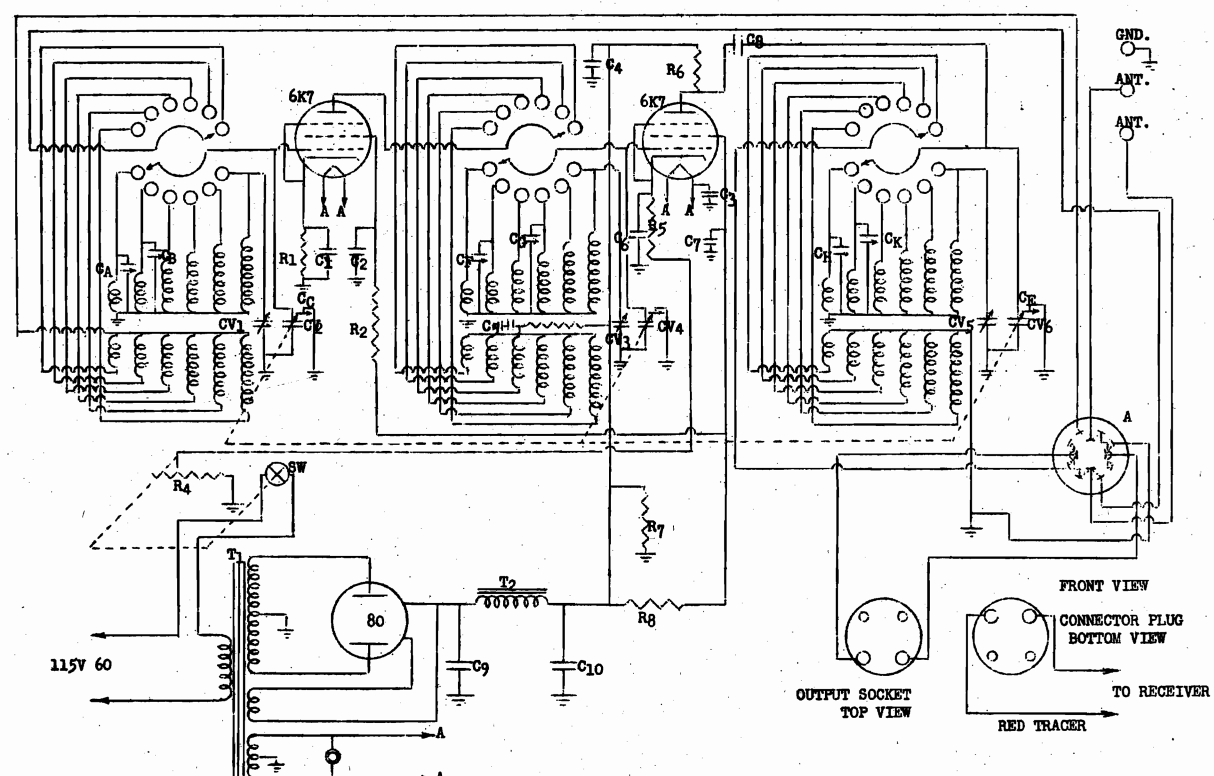
PART CODE NUMBER	SPECIFICATION
1.1	2000 ohms, 1/3 watt resistor
1.2	2000 ohms, 1/3 watt resistor
1.3	250,000 ohms, 1/3 watt resistor
1.4	100,000 ohms, 1/3 watt resistor
1.5	250,000 ohms, 1/3 watt resistor
1.6	100,000 ohms, 1/3 watt resistor
1.8	250,000 ohms, 1/3 watt resistor
1.9	5000 ohms, 1/3 watt resistor
1.10	250,000 ohms, 1/3 watt resistor
1.11	250,000 ohms, 1/3 watt resistor
1.12	250,000 ohms, 1/3 watt resistor
1.13	2000 ohms, 1/3 watt resistor
1.14	2000 ohms, 1/3 watt resistor
1.15	2000 ohms, 1/3 watt resistor
1.16	500 ohms, 1/2 watt resistor
1.17	1 megohm, 1/3 watt resistor
1.18	50,000 ohms, 1/3 watt resistor
1.19	100,000 ohms, 1/3 watt resistor
1.20	50,000 ohms, 1/3 watt resistor
1.21	100,000 ohms, 1/3 watt resistor
1.22	1,000 ohms, 1/3 watt resistor
2.1	30 μμfd adjustable padder
2.5	.1 μfd. 400 volt paper condenser
2.7	.1 μfd. 400 volt paper condenser
2.8	30 μμfd. adjustable padder
2.10	30 μμfd. adjustable padder
2.11	30 μμfd. adjustable padder
2.13	100 μμfd. mica condenser
2.14	I.F. Amplifier Trans. Adj. Trimmer
2.15	I.F. Amplifier Trans. Adj. Trimmer
2.16	deleted
2.17	I.F. Amplifier Trans. Adj. Trimmer
2.18	.1 μfd. 400 volt paper condenser
2.19	I.F. Amplifier Trans. Adj. Trimmer
2.20	.01 μfd. 400 volt paper condenser
2.21	.1 μfd. 400 volt paper condenser
2.22	I.F. Amplifier Trans. Adj. Trimmer
2.24	.01 μfd. 400 volt paper condenser
2.25	.1 μfd. 400 volt paper condenser
2.26	250 μμfd. mica condenser
2.27	.01 μfd. 400 volt paper condenser
2.28	250 μμfd. mica condenser
2.29	1 μfd. 200 volt paper condenser
2.30	1 μfd. 200 volt paper condenser
2.31	.1 μfd. 400 volt paper condenser
2.32	30 μμfd. adjustable padder
2.33	30 μμfd. adjustable padder
2.34	30 μμfd. adjustable padder
2.35	Band 3 Series Oscillator pad. 1000 μμfd.
2.36	Band 2 Series pad. 380 μμfd.
2.37	Band 1 Series Oscillator pad. 129 μμfd.
2.39	.01 μfd. 400 volt paper condenser
2.40	.01 μfd. 400 volt paper condenser
2.41	250 μμfd mica condenser
2.42	400 μμfd. mica condenser
2.43	30 mmfd. adjustable padder
2.44	30 mmfd. adjustable padder
2.45	.1 mfd. 400 volt paper condenser
2.46	.01 mfd. 400 volt paper condenser
3.1, 3.2, 3.3,	Band Switch Section
3.4, 3.5, 3.6, 3.7	On-Off Switch connected in tandem with audio volume control



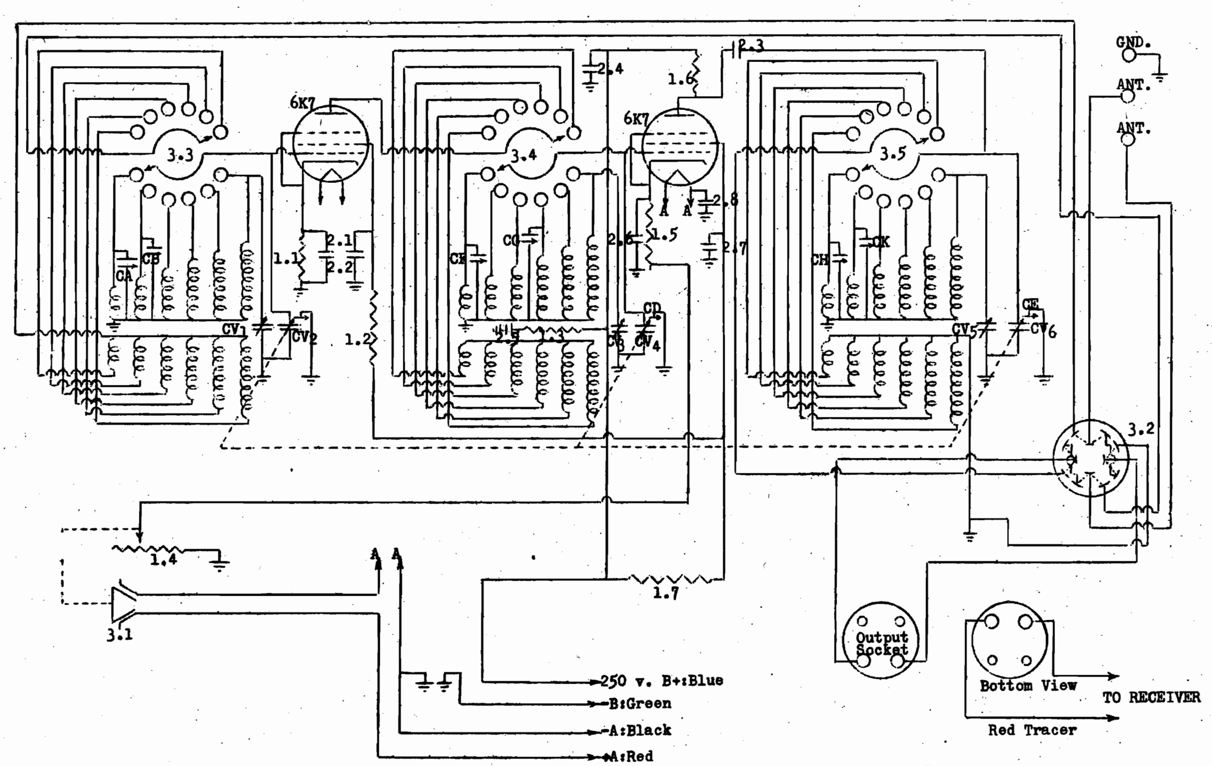


RADIO MFG. ENGINEERS, INC.

MODEL DB-20, Late
MODEL DB-20 Batt.
Schematics



DB-20 PRESELECTOR SCHEMATIC



DB-20 BATTERY OPERATED SCHEMATIC

MODEL DB-20, Late
MODEL DB-20 Batt.
Alignment, Trimmers
Voltage

RADIO MFG. ENGINEERS, INC.

The RME DB-20 Preselector is a compact efficient design of a straightforward radio frequency amplifier cascade with a specified input and output impedance. The input impedance is of a low value varying between 200 and 350 ohms over the frequency range covered by the tuning elements of the instrument. The output impedance varies over the same range in the same manner so that the insertion of this amplifier between the antenna and the RME-69 receiver incurs no mismatch in the coupling system and provides an increase in selectivity and gain due to its insertion.

The adjustment of the amplifier is calibrated on a scale in as close a manner as it is possible to calibrate such an instrument and tuning of the instrument should be done so that the setting of the indicator on the DB-20 scale is very close to the frequency being used. One check on this method is to set the tuning control of the amplifier to a position which gives a maximum meter reading on a given signal when used in conjunction with the RME-69 or any other receiver having a tuning indicator. In the absence of the tuning indicator background noise or signal strength may be used as an indication of optimum setting of the preamplifier and this will compensate for small variations which are bound to occur in the calibration of the instrument.

One side of the output circuit of the DB-20 is grounded and it is essential that the proper wire of the output cable be connected to the antenna post of the receiver with which it is used in order to provide proper operation for the combination. The high side or the ungrounded lead of the output cable is marked with a red tracer and this should be normally connected to the antenna terminal which would be used in the connection of a Marconi Antenna against ground in normal receiver operation without the DB-20. On the RME-69 receiver this is the outside terminal of the three-terminal input strip marked A - A - G. The other lead, which is a plain black wire, is to be connected to the middle antenna terminal and a ground jumper can be used to connect, A (center) to G on the terminal strip. In the case of a receiver being used with the DB-20 which has only a two-terminal input, that is antenna and ground, the black wire connects, of course, to the ground and the red tracer wire to the antenna terminal. A reversal of these leads will cause inefficient operation and probably no operation at all even when the antenna switch is thrown so that the antenna is connected directly to the receiver. This can be a source of trouble when poor operation is experienced.
A change-over switch is provided and consists merely of a four pole double throw switch indicated in Fig. 1 so that when it is thrown to the left the antenna is connected to the DB-20 and the DB-20 connected to the receiver input terminal. When the switch is thrown to the right the antenna is connected directly to the receiver and the DB-20 circuits are entirely removed from the picture.

PROCEDURE FOR ALIGNMENT OF THE RADIO FREQUENCY CIRCUIT

As an indicating device for alignment changes the meter on the RME-69 receiver can be used to indicate maximum signal being supplied the receiver from the DB-20. In the case of other communication receivers the same method may be used with their respective carrier level or R meter indication. In case the alignment is made with a receiver without carrier indicating devices an output meter can be used in the regular manner in which it is used for the alignment of receivers, but in this case, of course, it will be necessary to use a modulated signal input to the DB-20 to supply an audio component which can be used to operate the output meter.

All adjustments described should be adjusted to and left set at maximum meter readings be it carrier amplitude indicator or output as indicated on the output meter.

First set the receiver to 1000 Kc. and tune the DB-20 to 1000 Kc. which will be indicated on the main tuning dial and the band in which will be found 1000 Kc. is provided by setting the switch to position one (1). Set the pointer of the DB-20 on 1 Mc. reading of the scale and supply 1 Mc. signal input to the antenna terminal to the DB-20 setting the selector switch on the DB-20 (Fig.1) to the left position. When in this position adjust C_c, C_d and C_e for maximum meter reading.

Then switch to band two and three successively and check the setting at 2, 3, 4 and 5 megacycles. These frequencies, of course, will be checked by placing the band switch in the proper position required for tuning to these frequencies. The receiver, of course, must also be adjusted to these frequencies simultaneously with the DB-20.

The calibration for these frequencies will be found to be dependent on the settings of C_c, C_d and C_e which are made for 1000 Kc. on band one and will be in adjustment if band one is properly aligned.

Next turn the switch to position four and feed a signal of 7 Mc. into the receiver and adjust the tuning control of the DB-20 so that it sets on 7 Mc. Under these conditions check the setting of C_g for peak output. (Fig. 2).

Next set the band switch on position five and insert a signal of 14 Mc. into the receiver adjusting the tuning control of the DB-20 to 14 Mc. under these conditions adjust C_b, C_f and C_k for maximum output.

Next set the band switch to position six and set the tuning indicator to 30 Mc. on the scale and insert a signal of 30 Mc. into the DB-20. This condition obtained adjust C_a, C_d and C_h for maximum output.

During all of these settings and adjustments, of course, the receiver should be set to the same frequency as the DB-20 so that it will be able to receive the output of the DB-20 at the proper frequency.

The adjustments just described will assure maximum output due to alignment of the RF circuit in the DB-20.

The voltages to be expected at points indicated on the schematic diagram of Figure 13 are as follows:

1 to ground (volume control set to minimum) 26.6 volts.
1 to ground (volume control set to maximum) 3.4 volts.

2 to ground 265 volts	6 to ground 265 volts
3 to ground 100 volts	7 to ground 123 volts
4 to ground 3.4 volts	8 to ground 333 volts
5 to ground 333 volts	9 to ground 380 volts

A to A 6.6 volts at 115 volts line voltage AC

The following continuity checks should be made:

	Band (1)	Band (2)	Band (3)	Band (4)	Band (5)	Band (6)	
11 to ground	3.8	1.4	0.6	0.2	0.2	0.2	(ohms)
12 to 13	0.2	0.2	0.2	0.2	0.2	0.2	(ohms)
14 to 15	0.2	0.2	0.2	0.2	0.2	0.2	(ohms)
16 to ground	3.8	1.4	0.6	0.2	0.2	0.2	(ohms)
17 to ground	3.8	1.4	0.6	0.2	0.2	0.2	(ohms)

All measurements made with output cable and antenna disconnected and changeover switch in DB-20 position.

Voltages greater or smaller than these values listed by an amount exceeding 15% indicates difficulty in the power circuits of the receiver.

Resistances greater or less by 15% than the resistances listed indicates conditions other than normal in continuity in these circuits.

If the amplifier is dead as evidenced by a loss in signal strength on a given signal when the DB-20 is cut into the circuit the loss being compared with the signal received when the antenna is connected directly to the receiver may be due to a dead tube which is usually due to the fact that the filament is burned and can be ascertained by placing the hand on the tube to see whether or not it is warm or cold. If it is warm, of course, the filament is lit and probably the tube is satisfactory. If the tube is cold the filament is probably open and therefore the tube needs replacing. Of course, tubes can be defective from other reasons which can not be detected in this manner but must be ascertained by checking on a regular tube checker.

Another reason for a dead amplifier may be due to lack of voltage on elements of the tube and can be checked by the voltage check.

Cause of no voltage on the plate or screen of the tube can be due to short circuit in the by-passes of C_7, C_2, C_4, C_8, C_{10} or C_1 or an open resistor R_6, R_2, R_3 or an open choke T_2 or a burned out 80 rectifier tube or an open circuit in the antenna coil or the output coils of the DB-20 which can be checked by the continuity measurements listed above.

If the amplifier has very little gain (the average gain should be 3R's over that of the receiver itself) it is probably due to misalignment and can be corrected by the procedure described on pages 2 and 3, or there is a defective tube which is not providing all the gain that is standard and the tubes can be checked and replaced by tubes having suitable characteristics.

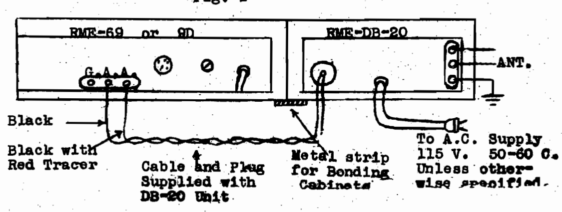
Additional information regarding special cases of trouble can be obtained from the Radio Mfg. Engineers by listing the details in a letter and writing direct to the factory.

METHOD OF CONNECTION OF THE DB-20 WITH THE RME-69 RECEIVER

The DB-20 unit is housed in a furniture steel crinkle finished cabinet which matches the height and appearance of the cabinet used to house the RME-69 receiver. It is designed to be placed at the left side of the receiver. Figure 1, Sheet 2, shows a sketch of the rear view of the DB-20 placed alongside of the receiver. In order to make sure that the two cabinets are well bonded together, it is advisable to make sure that all paint is cleaned from the adjacent cabinet bottom edges, and the two placed close together on a clean surface copper strip about three inches by ten inches long, or aluminum, or any metal of a non-ferrous kind with a clean surface.

The main factor to consider is that the two cabinets are properly connected to this ground. This prevents the possibility of any feedback due to the antenna of the DB-20 getting close to the output wires of the DB-20 and causing oscillation and also reduces the effect of signal leakage direct to the receiver due to the fact that the units are at a high impedance above ground. When this location and placement of the two units has been achieved, the connections can be made as indicated in Figure 1. The cable and plug indicated in the diagram are furnished with the DB-20 unit. In this twisted pair will be found one black wire and one black wire with red tracer. The black wire with the red tracer should be placed as indicated on the outside antenna post of the RME-69 Receiver. The black wire can be placed on the other antenna post and the ground should be connected to any good ground available. If it is certain that the bond is good, the ground as indicated on the DB-20 will be sufficient for the entire system.

Fig. 1



RADIO MFG. ENGINEERS, INC.

MODEL DB-20, Late
MODEL DB-20 Batt.
Trimmers, Chassis
Parts List

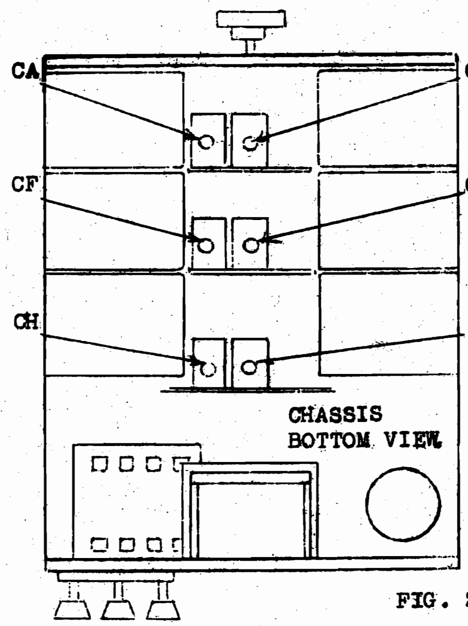
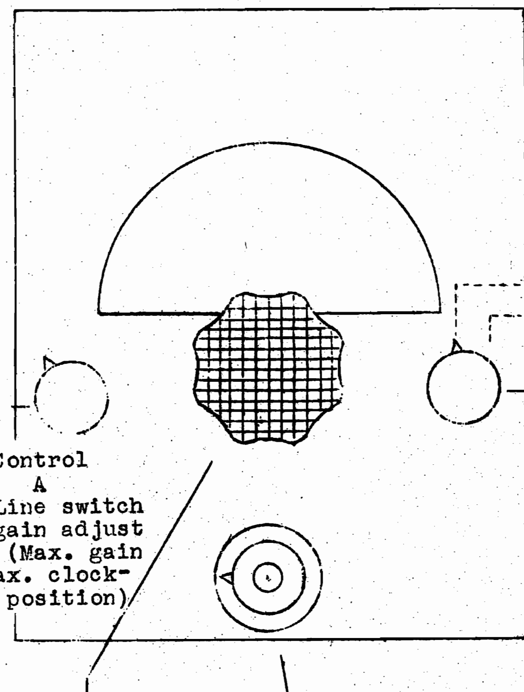


FIG. 2



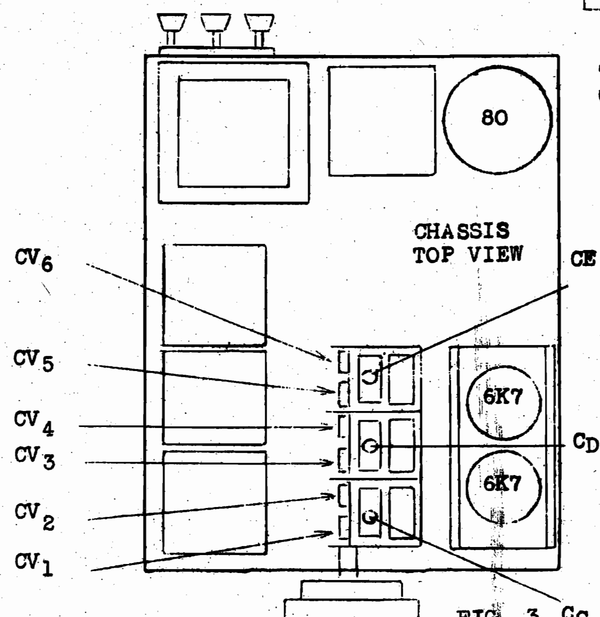


FIG. 3

BATTERY OPERATED DB-20 PARTS LIST

RESISTORS

1.1.....300 ohm
1.2..10,000 ohm
1.3..10,000 ohm
1.4..30,000 ohm variable
1.5.....300 ohm
1.6..10,000 ohm
1.7..50,000 ohm 1 watt

CONDENSERS

2.1....... .01
2.2....... .01
2.3....... .0001
2.4....... .01
2.5....... .01
2.6....... .01
2.7....... .01

CA 5 - 30 μμfd Adj. padder
CB 5 - 30 μμfd Adj. padder
CC Variable condenser trimmers
CD Variable condenser trimmers
CE Variable condenser trimmers
CF 5 - 30 μμfd Adj. padder
CG 5 - 30 μμfd Adj. padder
CH 5 - 30 μμfd Adj. padder
CK 5 - 30 μμfd Adj. padder

CV_1 Variable tuning condenser
CV_2 Variable tuning condenser
CV_3 Variable tuning condenser
CV_4 Variable tuning condenser
CV_5 Variable tuning condenser
CV_6 Variable tuning condenser

SWITCHES

3.1 Line switch
3.2 Antenna changeover switch
3.3 Band switch section
3.4 Band switch section
3.5 Band switch section

PARTS LIST FOR DB-20

R_1 300 ohm
R_2 10,000 ohm
R_3 10,000 ohm
R_4 30,000 ohm variable
R_5 300 ohm
R_6 10,000 ohm
R_7 15,000 ohm 10 watt
R_8 50,000 ohm 1 watt

C_1 .01
C_2 .01
C_3 .002
C_4 .01
C_5 .01
C_6 .01
C_7 .01
C_8 .0001
C_9 8 μfd.
C_{10} 12 μfd.

T_1 Power transformer
T_2 Filter choke

C_a 5 - 30 μμfd adj. padder
C_b 5 - 50 μμfd adj. padder
C_f 5 - 30 μμfd adj. padder
C_g 5 - 30 μμfd adj. padder
C_h 5 - 30 μμfd adj. padder
C_k 5 - 50 μμfd adj. padder

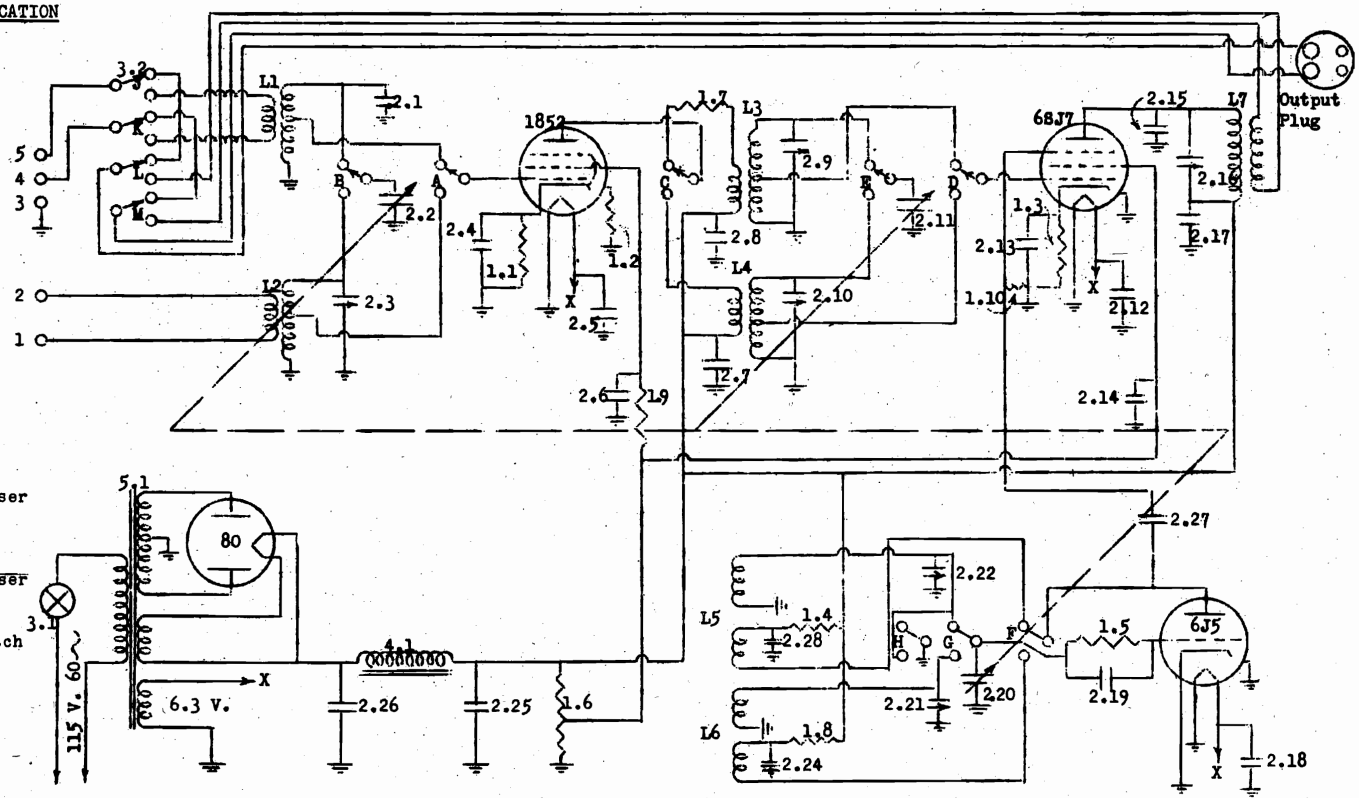
C_{v1-6} Variable tuning condenser

C_c, C_d, C_e Variable condenser, trimmers

MODEL DM-30X
Schematic, Voltage

RADIO MFG. ENGINEERS, INC.

PART CODE NUMBER	SPECIFICATION
2.1	20 μμfd. condenser
2.2	Tuning condenser
2.3	20 μμfd. condenser
2.4	400 μμfd. condenser
2.5	400 μμfd. condenser
2.6	400 μμfd. condenser
2.7	400 μμfd. condenser
2.8	250 μμfd. condenser
2.9	20 μμfd. condenser
2.10	20 μμfd. condenser
2.11	Tuning Condenser
2.12	400 μμfd. condenser
2.13	400 μμfd. condenser
2.14	400 μμfd. condenser
2.15	50 μμfd. condenser
2.16	30 μμfd. condenser
2.17	.01 μfd. condenser
2.18	400 μμfd. condenser
2.19	100 μμfd. condenser
2.20	Tuning condenser
2.21	15 μμfd. condenser
2.22	15 μμfd. condenser
2.24	400 μμfd. mica condenser
2.25	15 μfd. condenser
2.26	10 μfd. condenser
2.27	50 μμfd. condenser
2.28	.002 μfd. mica condenser
3.1	S.P.S.T. Switch
3.2 (J K,L,M)	4.P.D.T. Switch
A,B,C,D, E,F,G,H.	Band Switch



1.1	200 ohm, 1/3 watt resistor
1.2	35 ohm, 1/3 watt resistor
1.3	5000 ohms, 1/3 watt resistor
1.4	10,000 ohm, 1 watt resistor
1.5	5000 ohm, 1/3 watt resistor
1.6	15,000 ohm, 10 watts C.T.
1.7	35 ohm, 1/3 watt resistor
1.8	10,000 ohm, 1 watt resistor
1.9	5000 ohm, 1/3 watt resistor
1.10	1000 ohm, 1/3 watt resistor

4.1	Choke, 30 henries
5.1	Power transformer
L_1	Band 2 R.F. coil
L_2	Band 1 R.F. Coil
L_3	Band 2 Det. coil
L_4	Band 1 Det. coil
L_5	Band 2 Osc. coil
L_6	Band 1 Osc. coil
L_7	Output Coupling Transformer 1550KC

This unit is in effect a frequency converter and therefore acts as a radio frequency amplifier and mixer tube with its oscillator in an over-all superheterodyne type of circuit. It must be used in connection with a regular receiver capable of tuning to a frequency of 1550 KC. The associated receiver therefore acts as an intermediate frequency amplifier unit and a demodulator and audio amplifier in order to reproduce the output of the expander.

DM-30X SCHEMATIC

TEST VOLTAGES OF RME DM-30X

Measurements obtained with 115 v. A.C. line voltage:

R.F. Amplifier, cathode to ground......... 1 v. - 1.5 v.
R.F. Amplifier, plate to ground........... 210 v. - 240 v.
R.F. Amplifier, screen to ground.......... 110 v. - 125 v.

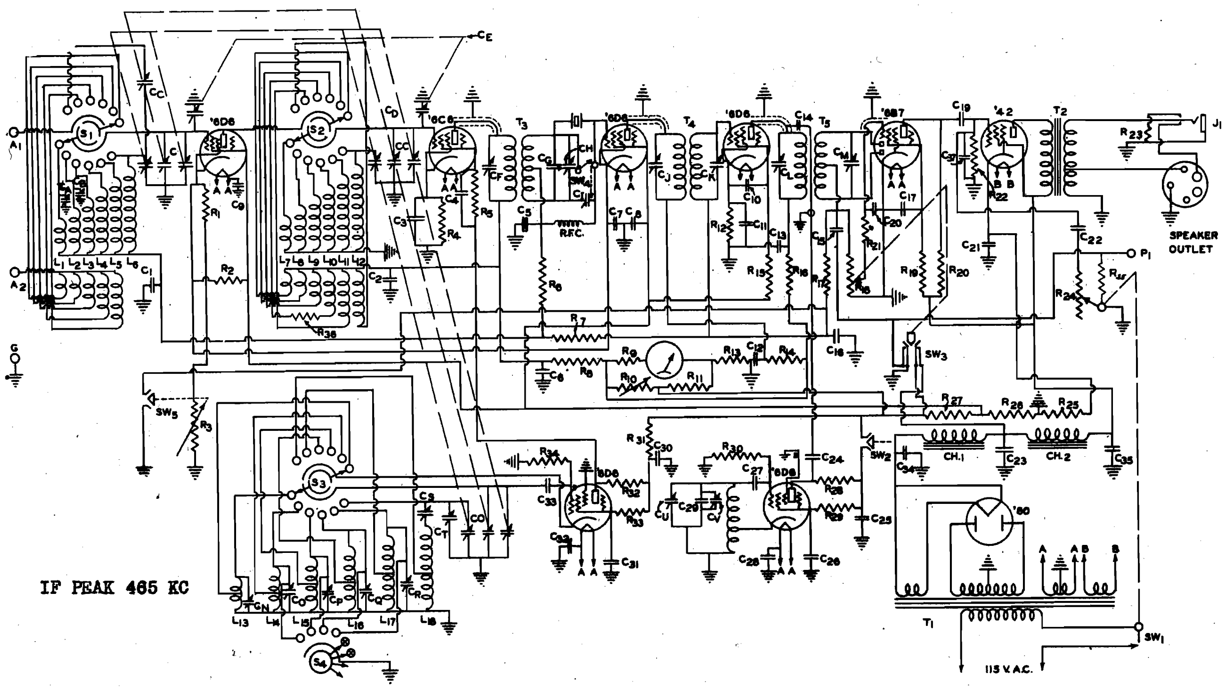
Detector, cathode to ground............. 5 v. - 6 v.
Detector, plate to ground.......... ..... 210 v. - 240 v.
Detector, screen to ground............... 110 v. - 125 v.

*Oscillator, plate to ground (oscillating) 125 v. - 140 v.
Osc., plate to ground (not oscillating).. 110 v. - 120 v.

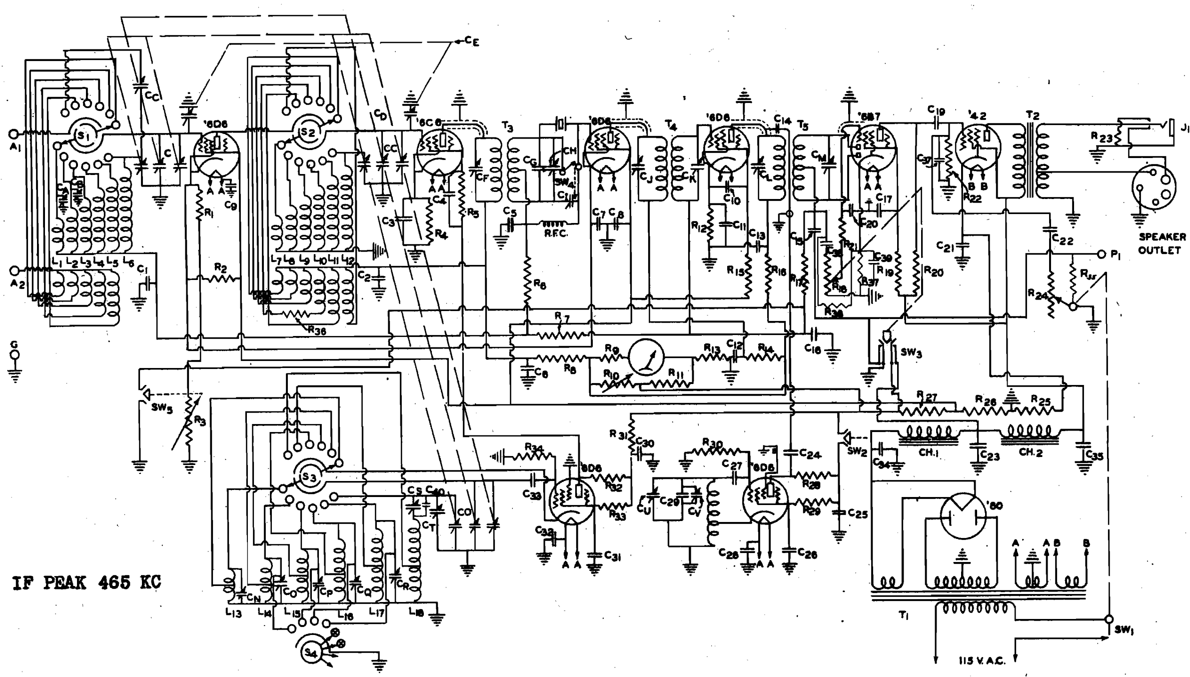
Note* This voltage must be measured at "B" plus end of plate coil to prevent application of voltmeter leads from affecting oscillator circuit.

MODEL 69 AC Late
MODEL 69AC Late Revised
Schematics

RADIO MFG. ENGINEERS, INC.



R.M.E. 69 SCHEMATIC CIRCUIT
AC – LATE
C-23

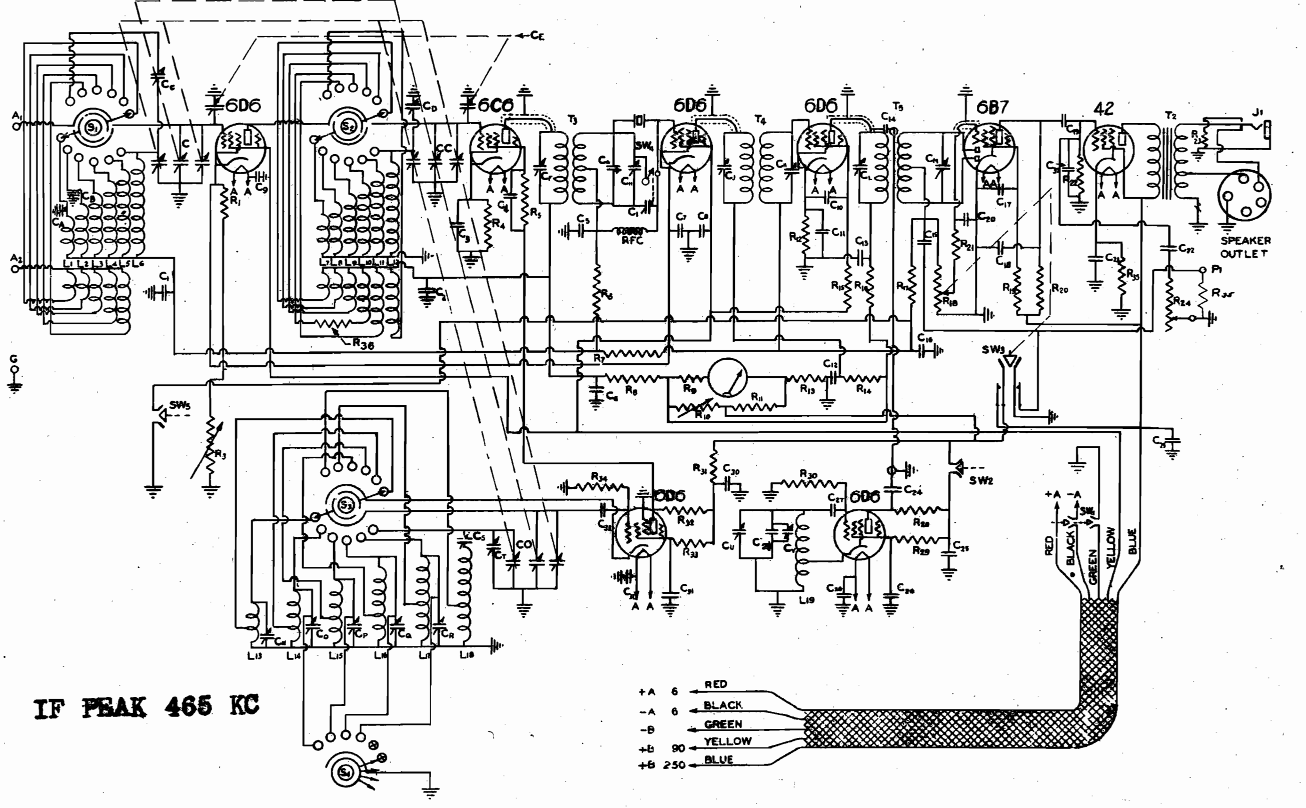


R.M.E. 69 SCHEMATIC CIRCUIT
AC – LATE REVISED
C-23

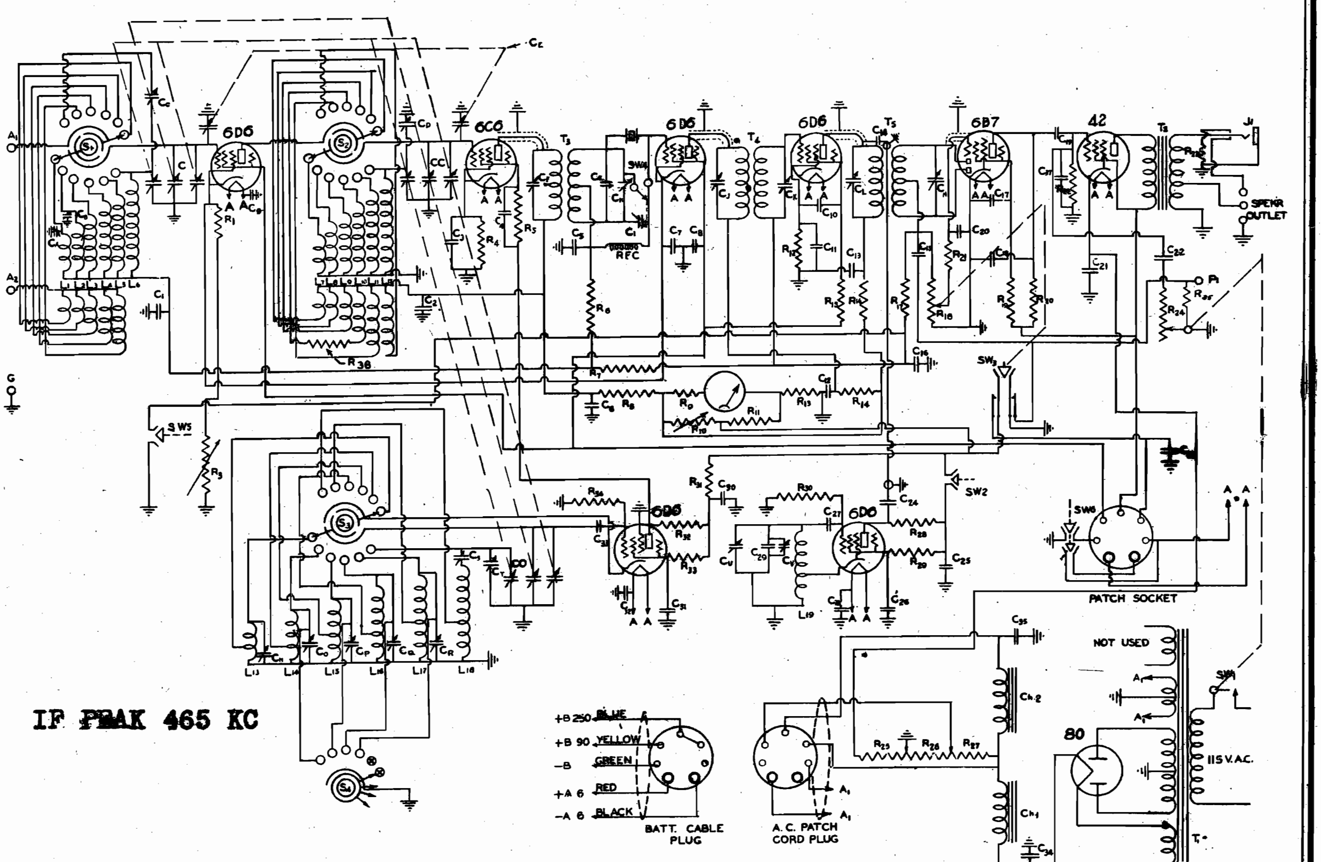
RADIO MFG. ENGINEERS, Inc.
111 HARRISON STREET PEORIA, ILLINOIS

MODEL 69A
MODEL 69B
Schematics

RADIO MFG. ENGINEERS, INC.



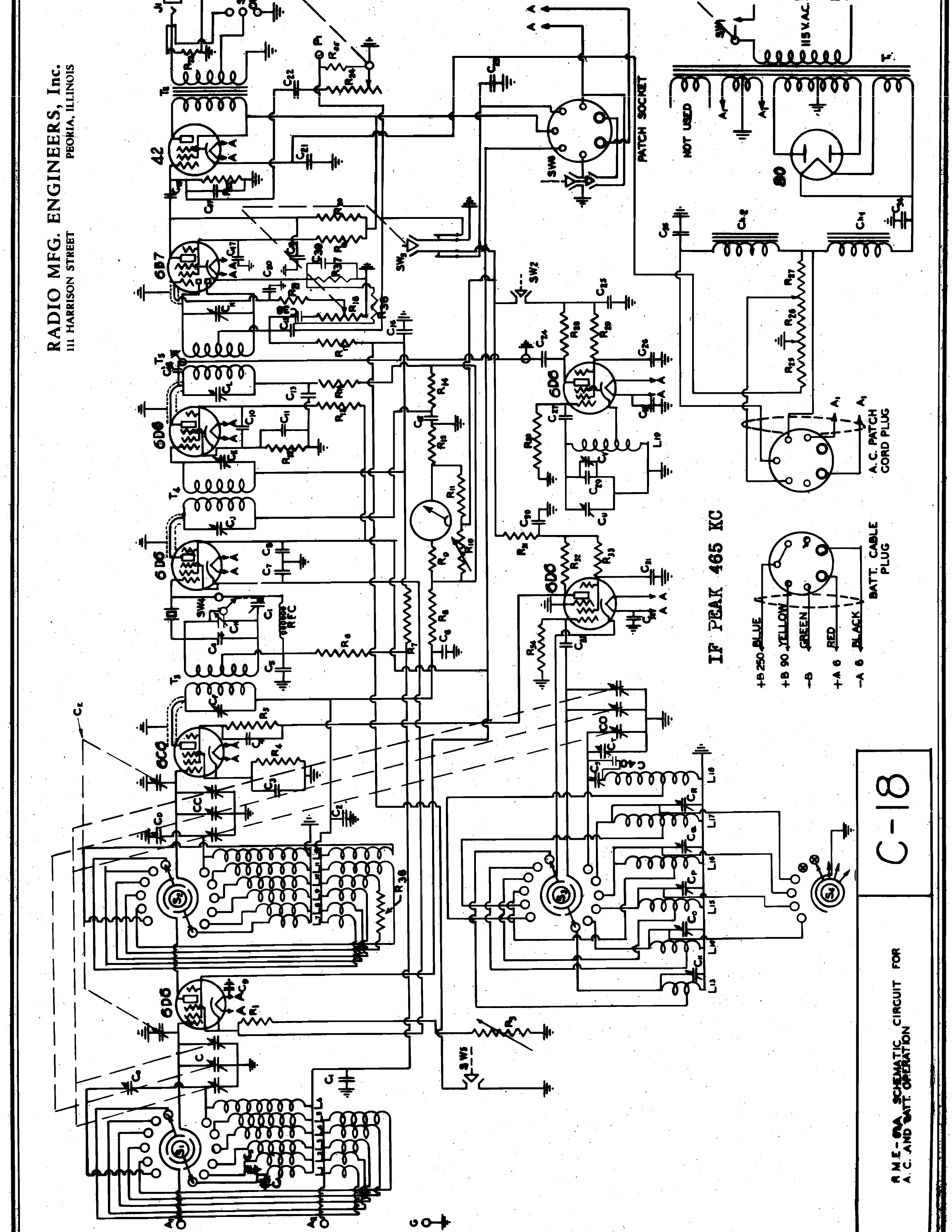
Schematic Diagram of RME 69-B for Battery Operation



Schematic Diagram of RME 69-A for AC or Battery Operation

RADIO MFG. ENGINEERS, INC.

MODEL 69 Revised AC or Batt. Schematic



MODEL 69
Notes, Parts

RADIO MFG. ENGINEERS, INC.

LEGEND OF RESISTORS, CONDENSERS, CHOKES, AND TRANSFORMERS OF RME-69 RECEIVER SCHEMATIC DIAGRAM.

SPECIFICATION

C_a and C_b 30 μμfd. adjustable mica padders.
C_c 30 μμfd. mica padder.
C_d deleted.
C_e Dual section resonator control, 4 μμfd minimum, 30 μμfd maximum.
C_f, C_g, C_j, C_k, C_l, C_m. Adjustable trimming condensers in the intermediate frequency transformers.
C_h 25 μμfd midget air padder.
C_i 30 μμfd mica adjustable phasing condenser.
C_n, C_o, C_p, C_r 30 μμfd adjustable padders.
C_q 70 μμfd adjustable padder.
C_s .0004 mica condenser shunted by 70 μμfd. mica adjustable trimmer.
C_t Mica trimmer on the oscillator section of the main tuning condenser.
C_u 70 μμfd adjustable mica padder.
C_v 25 μμfd variable air condenser

C_{34} 8 μfd 450 volt electrolytic.
C_{35} 8 μfd 450 volt electrolytic.
C_{37} .00025 μfd moulded condenser
C_{38} .1 μfd, 400 volts
C_{39} 20 μfd, 25 volt
C_{40} 400 μμfd, moulded mica

RFC 16 millhenries
CH_1 30 henries, 100 ma.
CH_2 30 henries, .50 ma.

L_1 Band 6 RF grid coil
L_2 Band 5 RF grid coil
L_3 Band 4 RF grid coil
L_4 Band 3 RF grid coil
L_5 Band 2 RF grid coil
L_6 Band 1 RF grid coil

C_1 .01 μfd 400 volts.
C_2 .01 μfd 400 volts.
C_3 .01 μfd 400 volts.
C_4 .01 μfd 400 volts.
C_5 .01 μfd 400 volts.
C_6 .1 μfd 400 volts.
C_7 .1 μfd 400 volts.
C_8 .1 μfd 400 volts.
C_9 .002 moulded mica condenser.
C_{10} .01 μfd 400 volts.
C_{11} .1 μfd 400 volts.
C_{12} .1 μfd 400 volts.
C_{13} .1 μfd 400 volts.
C_{14} 1" of shielded braid wrapped around plate lead of second intermediate frequency amplifier tube. Approximate capacity 10 μμfds.
C_{15} .00025 μμfd.
C_{16} .01 μfd. 400 volts.
C_{17} .1 μfd. 400 volts.
C_{19} .01 μfd 400 volts.
C_{20} .00025 μfd moulded mica condenser.
C_{21} 20 μfd 25 volt electrolytic.
C_{22} .01 μfd 400 volts.
C_{23} 12 μfd 450 volt electrolytic.
C_{24} .0001 moulded mica condenser.
C_{25} .01 μfd 400 volt electrolytic.
C_{26} .01 μfd 400 volts.
C_{27} .0001 μfd moulded mica.
C_{28} .01 μfd 400 volt.
C_{29} .00025 moulded ± 5%.
C_{30} .1 μfd 400 volts.
C_{31} .01 μfd. 400 volts.
C_{32} .01 μfd. 400 volts.
C_{33} .0001 μfd moulded ± 5%.

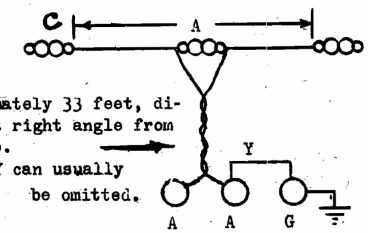
S_1, S_2, S_3, S_4, Band Change Switch
SW_1 115 volt line switch
SW_2 Beat oscillator on and off switch
SW_3 Switch operated by control "H" for connecting monitor circuit and opening B supply to amplifier stage.
SW_4 Crystal switch for series of for paralllel
SW_5 Cut-off switch for removing AVC action (operated in tandem with R)
T_1 Main power transformer
T_2 Audio output transformer to 4,000 ohms and 600 ohms.
T_3 First intermediate frequency amplifier transformer.
T_4 Second intermediate frequency amplifier transformer.
T_5 Third intermediate frequency amplifier transformer.

R_1 200 ohms, 1/2 watt
R_2 20,000 ohms, 1 watt
R_3 30,000 ohms, variable
R_4 5,000 ohms, 1/2 watt
R_5 1 megohm, 1/2 watt
R_6 250,000 ohms, 1/2 watt
R_7 100,000 ohms, 1/2 watt
R_8 2,000 ohms, 1/2 watt
R_9 500 ohms, 1/2 watt ±5%
R_{10} 200 ohms wire wound var. R meter balance
R_{11} 1,000 ohms. 1/2 watt
R_{12} 800 ohms, 1/2 watt
R_{13} 100,000 ohms, 2 watts
R_{14} 2,000 ohms, 1/2 watt
R_{15} 10,000 ohms, 1/2 watt
R_{16} 2,000 ohms, 1/2 watt
R_{17} 1 megohm, 1/2 watt
R_{18} 250,000 ohm potentiometer audio level control
R_{19} 1 megohm, 1/2 watt
R_{20} 100,000 ohms, 1/2 watt
R_{21} 50,000 ohms, 1/2 watt
R_{22} 250,000 ohms, 1/2 watt
R_{23} 5,000 ohms, 1/2 watt
R_{24} 1,000,000 ohms potentiometer
R_{25} 410 ohms bleeder section
R_{26} 7200 ohms, bleeder section
R_{27} 6800 ohms, bleeder section
R_{28} 10,000 ohms, 1/2 watt
R_{29} 100,000 ohms, 1/2 watt
R_{30} 100,000 ohms, 1/2 watt
R_{31} 2,000 ohms, 1/2 watt
R_{32} 2,000 ohms, 1/2 watt
R_{33} 50,000 ohms, 1/2 watt
R_{35} 10,000 ohms, 1/2 watt
R_{36} 5,000 ohms, 1/2 watt
R_{37} 1,000 ohms, 1/2 watt
R_{38} 100,000 ohms, 1/2 watt
R_{34} 50,000 ohms, 1/2 watt

L_7 Band 6 first detector grid coil
L_8 Band 5 first detector grid coil
L_9 Band 4 first detector grid coil
L_{10} Band 3 first detector grid coil
L_{11} Band 2 first detector grid coil
L_{12} Band 1 first detector grid coil
L_{13} Band 6 oscillator coil
L_{14} Band 5 oscillator coil
L_{15} Band 4 oscillator coil
L_{16} Band 3 oscillator coil
L_{17} Band 2 oscillator coil
L_{18} Band 1 oscillator coil

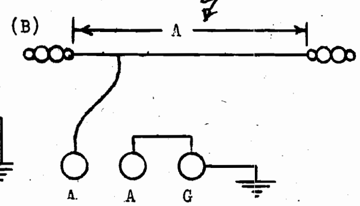
The antenna input impedance to an RME-69 Receiver varies in the vicinity of 250 to 350 ohms. The antenna supply should therefore be of the Marconi type which is fed at current maximum to the receiver or of the twisted pair type where impedances of lines involved are in the vicinity of the 250 ohms previously mentioned. For maximum selectivity insofar as the input circuit is concerned, the value of this impedance should be taken into account. Antennae which are supplying signal to the receiver at a high potential point should not be used in conjunction with the RME-69 Receiver because of the great loss in voltage transfer encountered in such a combination. The half-wave doublet type of antenna providing a tuned antenna system for a certain range of frequencies has certain marked directional characteristics. These directiona characteristics are evident in the fact that the greatest pick-up occurs in a direction at right angles to the axis of the antenna, forming in effect a Figure 8 pattern in which the lobes are located off the sides of the antenna instead of off the ends.

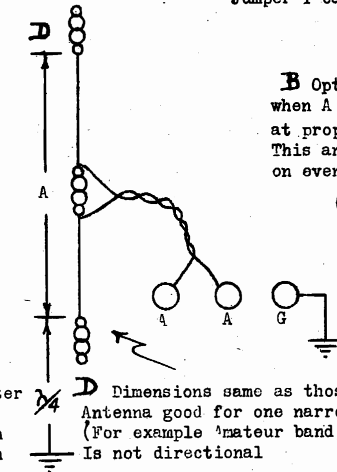
C-Optimum condition when $A = \frac{\lambda}{2}$ Not satisfactory for wide range freq. Excellent for any amateur band if $A = \frac{\lambda}{2}$ is in the middle of the band. For example: For 20 meter band antenna should be designed for 14,200 KC.



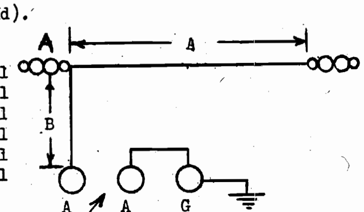
A = approximately 33 feet, directional at right angle from line of wire.
Jumper Y can usually be omitted.

B Optimum signal input to receiver when $A = \frac{\lambda}{2}$; and feeder is tapped at proper distance from center. This antenna works quite well usually on even harmonics also.





D Dimensions same as those of C. Antenna good for one narrow band. (For example amateur band). Is not directional



A General Marconi connection. Optimum condition exists when A plus $B = \frac{\lambda}{4}, \frac{\lambda}{4}, \frac{\lambda}{4}$ etc.

MODEL 69
Voltage

RADIO MFG. ENGINEERS, INC.

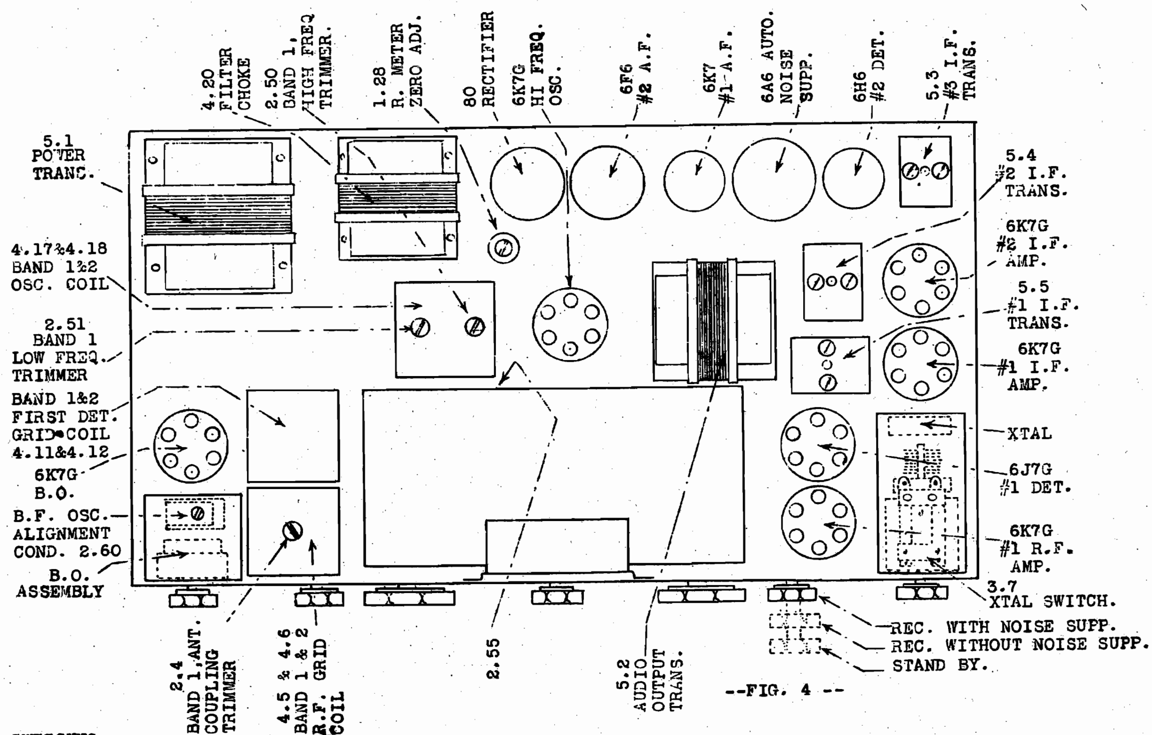
TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN THE RECEIVER CIRCUIT (Measurements made with voltmeter having internal resistance of 1,000 ohms per volt. Instruments with other internal resistances give entirely different readings) Note: Line voltage should be 115 v.

PLACE TEST PRODS BETWEEN	CORRECT VOLTAGE (Switch "H" in toward panel)	CORRECT VOLTAGE (Switch "H" pulled outward fm.panel)
Radio frequency amplifier plate and ground	240 volts	0 volts
Radio frequency amplifier screen and ground	100 "	0 "
Radio frequency amplifier cathode and ground	3.2 "	0 "
First detector plates	240 "	0 "
First detector screen and ground	75 "	0 "
First detector cathode and ground	3.5 "	0 "
First intermediate frequency amplifier plate and ground	250 "	0 "
First intermediate frequency amplifier screen and ground	100 "	0 "
Intermediate frequency amplifier cathode and ground	3.2 "	0 "
(The same voltages apply to the second intermediate frequency amplifier tube elements)		
6B7 plate and ground	115 "	145 "
6B7 screen and ground	25 "	35 "
42 plate and ground	244 "	280 "
42 screen and ground	248 "	290 "
42 cathode and ground	16 "	18 "
80 rectifier filament and ground	258 "	335 "
Oscillator plate and ground	248 "	0 "
Oscillator screen and ground	115 "	0 "
Beat oscillator plate and ground	180 "	210 "
Beat oscillator screen and ground	100 "	130 "
The voltage across R-31	14 "	0 "

These voltages are subject to a fluctuation of plus or minus 15% without indication of material difficulties.

MODEL 70
Chassis, Socket,
Trimmers,
Switch Data

RADIO MFG. ENGINEERS, INC.



--FIG. 4 --

SWITCHES

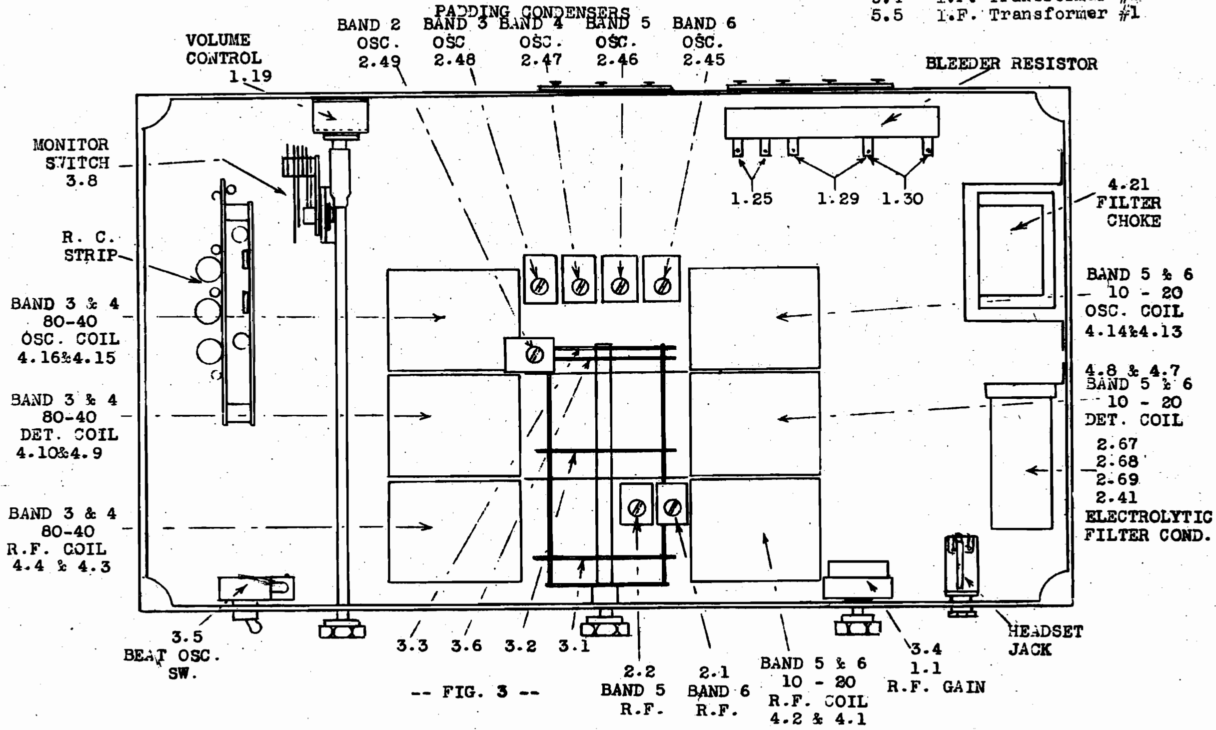
- 3.1 Band change switch
- 3.2 Band change switch
- 3.3 Band change switch
- 3.4 AVC On-Off
- 3.5 Beat Oscillator
- 3.6 Band change switch
- 3.7 Crystal switch
- 3.8 Noise suppressor and stand-by.
- 3.9 Line switch

INDUCTANCE

- 4.1 Band 6 R.F. Grid coil
- 4.2 Band 5 R.F. Grid coil
- 4.3 Band 4 R.F. Grid coil
- 4.4 Band 3 R.F. Grid coil
- 4.5 Band 2 R.F. Grid coil
- 4.6 Band 1 R.F. Grid coil
- 4.7 Band 6 1st Det. coil
- 4.8 Band 5 1st Det. coil
- 4.9 Band 4 1st Det. coil
- 4.10 Band 3 1st Det. coil
- 4.11 Band 2 1st Det. coil
- 4.12 Band 1 1st Det. coil
- 4.13 Band 6 Osc. coil
- 4.14 Band 5 Osc. coil
- 4.15 Band 4 Osc. coil
- 4.16 Band 3 Osc. coil
- 4.17 Band 2 Osc. coil
- 4.18 Band 1 Osc. coil
- 4.19 Beat Oscillator coil
- 4.20 30H 100MA Filter choke
- 4.21 30H 50 MA Filter choke
- RFC 10MH R.F. Choke

TRANSFORMERS

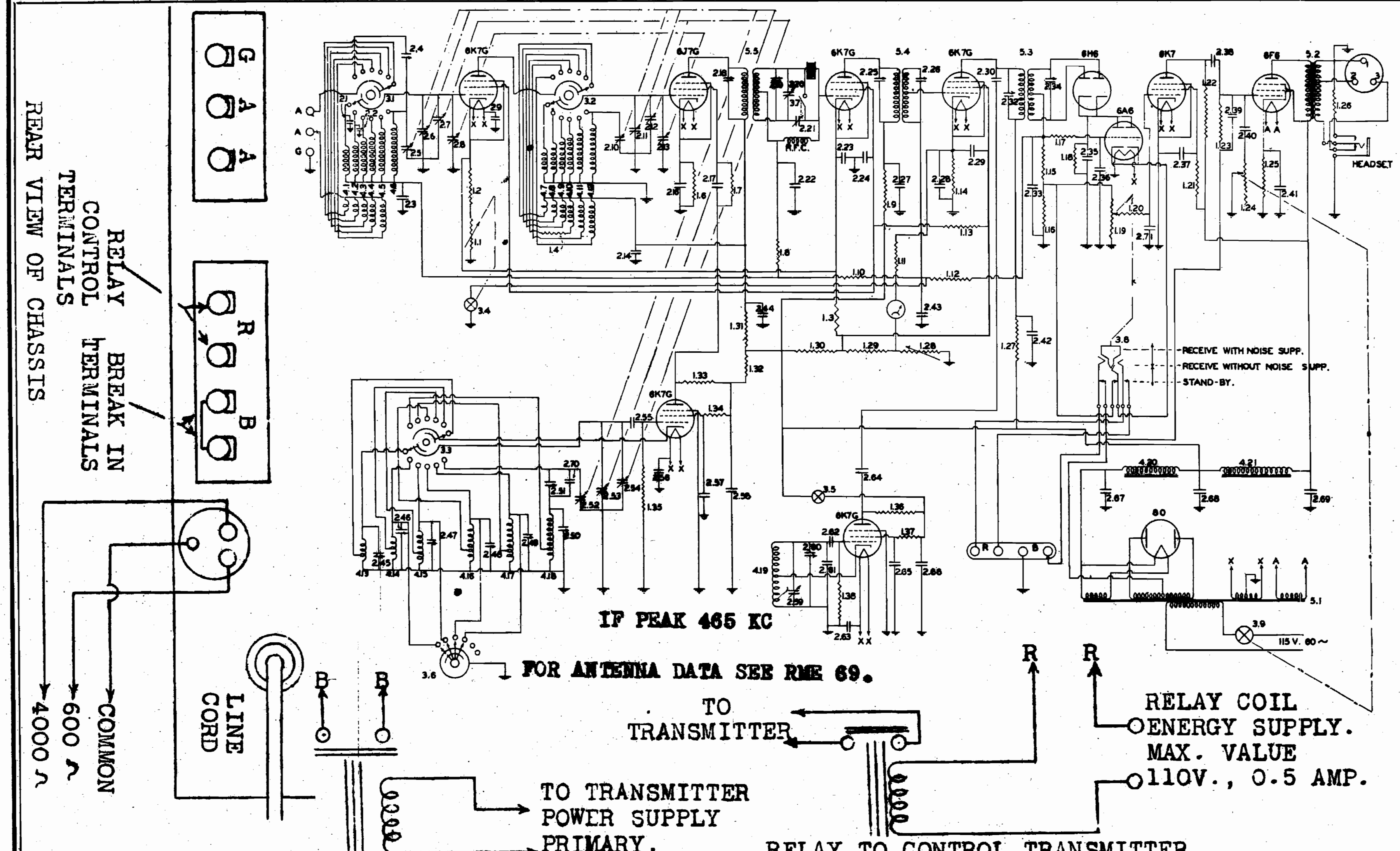
- 5.1 Power transformer
- 5.2 Audio transformer
- 5.3 I.F. Transformer #3
- 5.4 I.F. Transformer #2
- 5.5 I.F. Transformer #1



-- FIG. 3 --

MODEL 70
Schematic

RADIO MFG. ENGINEERS, INC.



RELAY TO CONTROL TRANSMITTER.

TYPICAL CIRCUIT FOR REMOTE BREAK-IN CONTROL OF RECEIVER. TERMINAL PAIR MARKED B ON RECEIVER CONNECT TO B - B. CIRCUIT BETWEEN B PAIR IS CLOSED WHEN RELAY OR REMOTE SWITCH IS CLOSED DURING TRANSMITTER STAND-BY PERIODS.

TYPICAL CIRCUIT DIAGRAM OF CONNECTING OF RELAY CONTROL CIRCUIT OF RECEIVER. LEADS R - R CONNECT TO TERMINAL PAIR MARKED R., ON RECEIVER.

RELAY CLOSES WHEN RECEIVER STAND-BY CONTROL IS PULLED OUTWARD FROM PANEL. (MAXIMUM POSITION)

MODEL 70
Voltage
Parts

RADIO MFG. ENGINEERS, INC.

TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN THE RECEIVER CIRCUIT
(Measurements made with voltmeter having internal resistance of 1,000 ohms per volt. Instruments with other internal resistances give entirely different readings) Note: Line voltage should be 115v.

PLACE TEST PRODS BETWEEN	CORRECT VOLTAGE (Switch marked Audio level and Standby in toward panel)	CORRECT VOLTAGE (Switch marked Audio level and Standby outward from panel.)
Radio frequency amplifier plate and ground.	240 volts	0 volts
Radio frequency amplifier screen and ground	100 volts	0 volts
Radio frequency amplifier cathode and ground	3.2 volts	0 volts
First detector plates	240 volts	0 volts
First detector screen and ground	75 volts	0 volts
First detector cathode and ground	3.5 volts	0 volts
First intermediate frequency amplifier screen and ground	100 volts	0 volts
First intermediate frequency amplifier plate and ground	250 volts	0 volts
6K7 Audio Amp. plate and ground	115 volts	0 volts
6K7 screen and ground	25 volts	0 volts
6F6 plate and ground	244 volts	0 volts
6F6 screen and ground	248 volts	0 volts
6F6 cathode and ground	16 volts	0 volts
80 rectifier filament and ground	258 volts	0 volts
Oscillator plate and ground	248 volts	0 volts
Oscillator screen and ground	115 volts	0 volts
Beat oscillator plate and ground	180 volts	0 volts
Beat oscillator screen and ground	100 volts	0 volts
The voltage across 1.32	14 volts	0 volts

These voltages are subject to a fluctuation of plus or minus 15% without indication of material difficulties.

RME-70 PARTS LIST

Resistors

1.1	30,000 ohm variable
1.2	150 ohm 1/2 watt
1.3	20,000 ohm 1 watt
1.4	5,000 ohm 1/2 watt
1.6	5,000 ohm 1/2 watt
1.7	1 megohm 1/2 watt
1.8	250,000 ohm 1/2 watt
1.9	2,000 ohm 1/2 watt
1.10	100,000 ohm 1/2 watt
1.11	35 ohm 1/2 watt
1.12	1 megohm 1/2 watt
1.13	5,000 ohm 1/2 watt
1.14	150 ohm 1/2 watt
1.15	50,000 ohm 1/2 watt
1.16	50,000 ohm 1/2 watt
1.17	1 megohm 1/2 watt
1.18	100,000 ohm 1/2 watt
1.19	250,000 ohm volume control
1.20	50,000 ohm 1/2 watt
1.21	1 megohm 1/2 watt
1.22	100,000 ohm 1/2 watt
1.23	250,000 ohm 1/2 watt
1.24	1 megohm potentiometer
1.25	410 ohm section of bleeder
1.26	5,000 ohm 1/2 watt
1.27	2,000 ohm 1/2 watt
1.28	200 ohm R meter pot.
1.29	7,200 ohm bleeder
1.30	6,800 ohm bleeder
1.31	2,000 ohm 1/2 watt
1.32	2,000 ohm 1/2 watt
1.33	2,000 ohm 1/2 watt
1.34	50,000 ohm 1/2 watt
1.35	50,000 ohm 1/2 watt
1.36	10,000 ohm 1/2 watt
1.37	100,000 ohm 1/2 watt
1.38	100,000 ohm 1/2 watt

Condensers

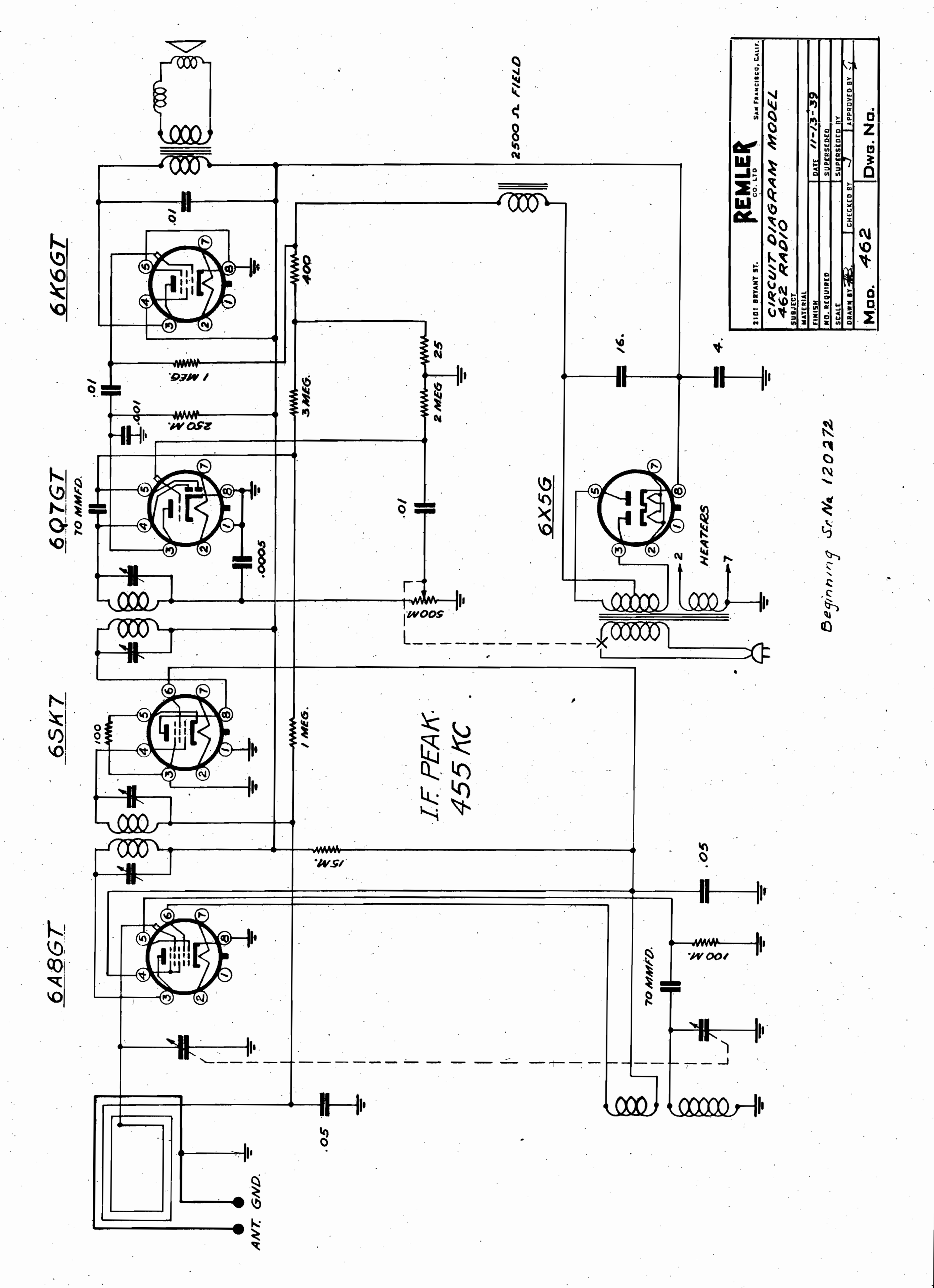
2.1	30 µµfd Adj.
2.2	30 µµfd Adj.
2.3	.01 µfd 400 volt
2.4	30 µµfd Adj.
2.5	Tuning condenser
2.6	Tuning condenser
2.7	Bandspread condenser
2.8	Resonator
2.9	.002 Mica
2.10	Tuning condenser
2.11	Tuning condenser
2.12	Bandspread condenser
2.13	Resonator
2.14	.01 400 volt
2.16	.01 400 volt

Condensers cont.

2.17	.01 400 volt
2.18	I.F. Trimmer
2.19	I.F. Trimmer
2.20	25 µµfd variable
2.21	30 µµfd Adj.
2.22	.01 400 volt
2.23	.1 400 volt
2.24	.1 400 volt
2.25	I.F. Trimmer
2.26	I.F. Trimmer
2.27	.1 400 volt
2.28	.1 400 volt
2.29	.01 400 volt
2.30	1" of shielded braid--Capacity approximately 10 µµfd.
2.32	I.F. Trimmer
2.33	.00005 Mica
2.34	I.F. Trimmer
2.35	.00005 Mica
2.36	.1 400 volt
2.37	.1 400 volt
2.38	.01 600 volt
2.39	.00025 Mica
2.40	.01 400 volt
2.41	40 µfd 25 v. electrolytic
2.42	.1 400 volt
2.43	.01 400 volt
2.44	.1 400 volt
2.45	30 µµfd Adj.
2.46	70 µµfd Adj.
2.47	30 µµfd Adj.
2.48	30 µµfd Adj.
2.49	30 µµfd Adj.
2.50	30 µµfd Adj.
2.51	.0004 Mica
2.52	Tuning condenser
2.53	Tuning condenser
2.54	Bandspread condenser
2.55	.0001 Mica 5% Tol.
2.56	.0004 Mica
2.57	.01 400 volt
2.58	.1 400 volt
2.59	25 µµfd variable
2.60	50 µµfd Adj.
2.61	.00025 Mica
2.62	.0001 Mica
2.63	.01 400 volt
2.64	.00025 Mica
2.65	.01 400 volt
2.66	.01 400 volt
2.67	10 µfd 450 V. Elec.
2.68	15 µfd 450 V. Elec.
2.69	15 µfd 450 V. Elec.
2.70	70 µµfd Adj.
2.71	.00025 Mica

REMLER COMPANY, LTD.

MODEL 462
Schematic



MODELS 463,464,465,470
Schematic,Tuner,Notes

REMLER COMPANY, LTD.

MODELS 463, 464, 465
and 470

This is a six tube superheterodyne receiver, operating on 110 - 120 volts, 50 or 60 cycles current.

INSTALLATION

This receiver may be used with the Built-In antenna where receiving conditions are favorable. When greater distance is required, or where receiving conditions are not satisfactory with the Built-In antenna, an outside antenna may be used. This outside aerial should be from 50 to 100 feet in length and should be connected to the terminal on the back of the cabinet marked A. The outside aerial should be run in as straight a line as possible and be kept clear of wires or other metal objects. A good ground connection to a water pipe is essential for clearest reception. The ground lead should be connected to the terminal marked G and should be as short as possible.

CONTROLS

The control on the left of the cabinet is the volume control and ON and OFF switch when in the extreme left position. On the right side of the receiver is located the station selector or tuning control. On Models 463, 465 and 470 the center knob controls the high frequency response. When turned to the left the full tone range of the program is reproduced. Turning the control to the right diminishes the higher frequency tones. A position approximately one quarter turn from the left position is satisfactory for most programs. On Model 464, this control is on the back of the receiver. The antenna switch on the back of the cabinet changes the connections to either the Built-In or Outside Aerial when one is used.

OPERATION

With the line cord connected turn the volume control about one half turn to the right and allow about one half minute for the tubes to properly heat. Select the desired station with the tuning control, varying the control until the tuning indicator produces the narrowest shadow. Adjust the volume control to the desired level and the tone control for the most pleasing response. For best quality be certain the station is properly tuned in as indicated by the tuning indicator.

AUTOMATIC PUSH BUTTON TUNING-MODELS 464 and 470

The push buttons are adjusted for selecting five stations as indicated by the call letters over the buttons. To receive any one of these stations, turn on the receiver as described above and depress the button corresponding to the desired station. Adjust the volume to the intensity required. To use the tuning control for selecting the stations, depress the DIAL button. Directions for changing the push button station set up are attached to the bottom of the cabinet.

PHONOGRAPH-MODEL 465

This model is provided with a record player which reproduces up to 12 inch recordings with the cabinet top closed. To change over to phonograph, turn the volume control to the right about half a turn and throw the record switch, located in the top of the cabinet, to the right. Volume and tone may be adjusted as with the radio operation. Use a heavy needle for best reproduction.

SERVICE DATA

The antenna switch on the back of the receiver changes the input circuit to either the enclosed loop antenna or to an outside aerial. The trimmer for this circuit is on the rear section of the variable condenser, while the oscillator trimmer is on the front section of the variable condenser. Trimmers for the I.F. circuits are adjustable through holes on the tops of the I.F. transformer shields. The intermediate frequency is 455 K.C.

Trimmers for the push button circuits are accessible through an opening in the bottom of the cabinet. The oscillator gang is nearest the front of the cabinet. The lowest frequency range sections are on the left.

The following tubes are used in this receiver:

6A8GT	-	Mixer Oscillator
6SK7	-	I.F. Amplifier
6SQ7	-	Detector - A.F. Amplifier
6V6GT	-	Power Amplifier
6X5G	-	Rectifier
6V5	-	Tuning Indicator

Type 46 dial lamps

Voltage Readings

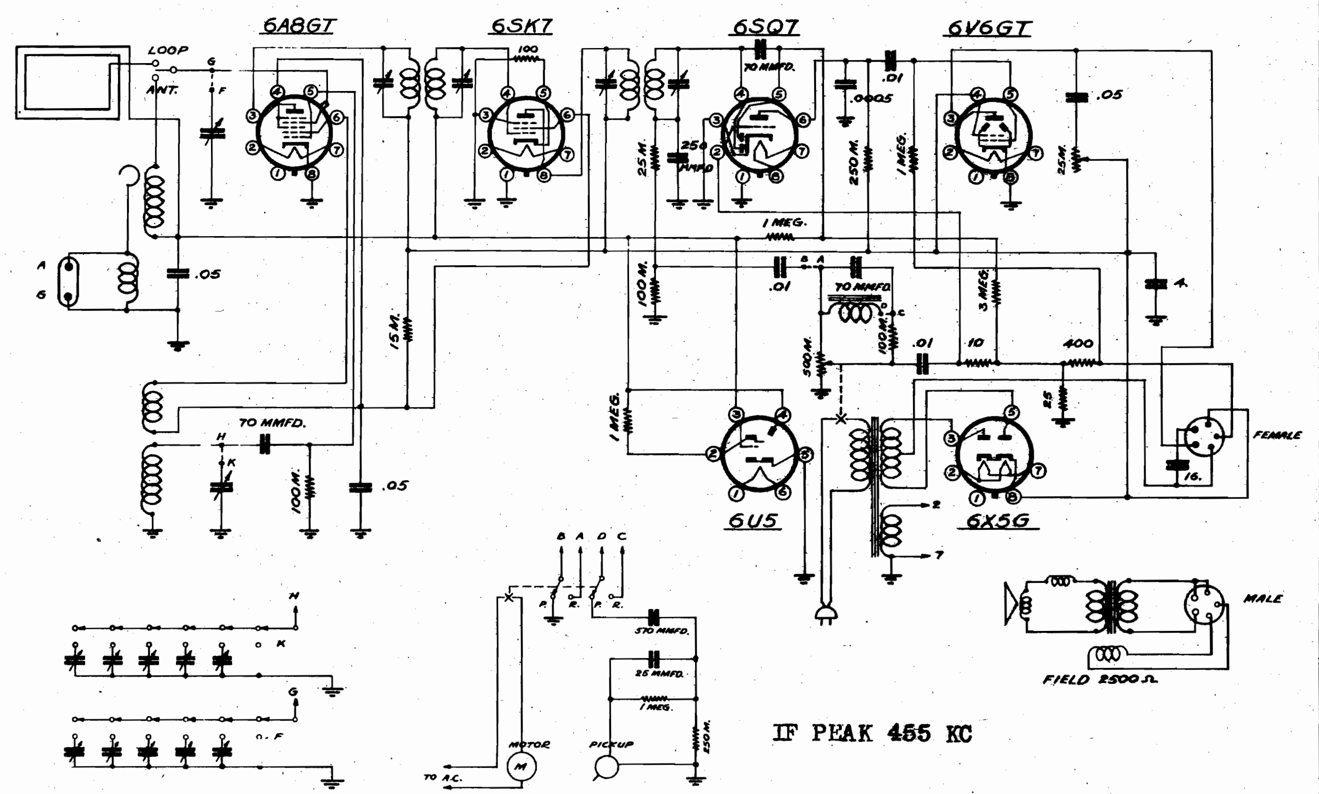
A.C. Voltages

Line	120 volts
Heater	6 "

D.C. Voltages
From Ground to-

6X5G	Cathode	235 volts
6V6GT	Plate	225 "
6V6GT	Screen	235 "
6V6GT	Grid Bias Supply	18 "
6SQ7	Plate	110 "
6SQ7	Grid Bias Supply	1.1 "
6SK7	Plate	235 "
6SK7	Screen	105 "
6SK7	Cathode	1.3 "
6A8GT	Plate	235 "
6A8GT	Screen	105 "
6A8GT	Oscillator Plate	105 "

REMLER CO. LTD
2101 BRYANT ST. SAN FRANCISCO, CALIF.
CIRCUIT DIAGRAM MODEL 463-470 RADIO
MATERIAL
FINISH | DATE 11/1/39
NO. REQUIRED | SUPERSEDED
SCALE | SUPERSEDED BY
DRAWN BY | CHECKED BY | APPROVED BY
MOD. 463-470 DWG. NO.

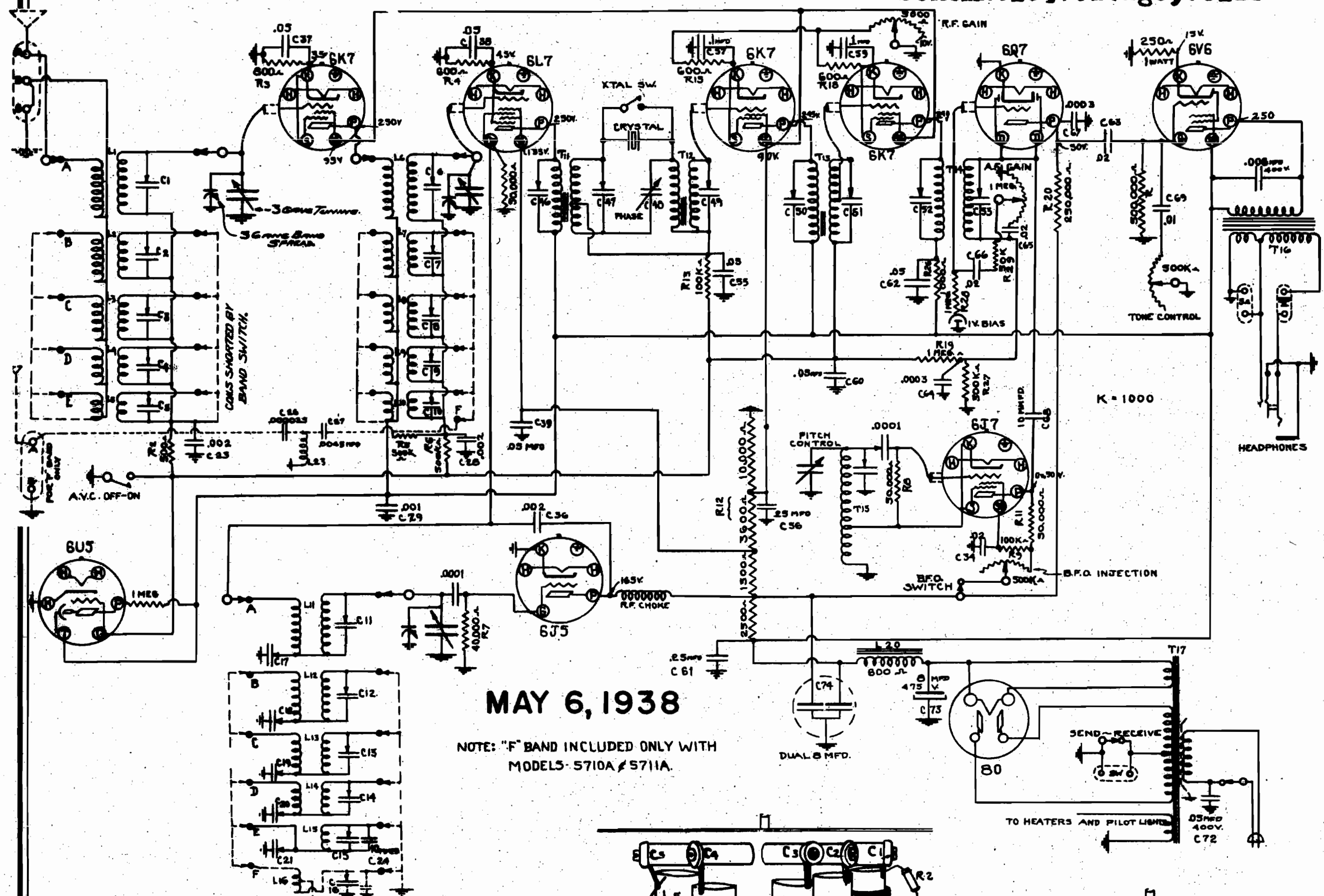


MODELS 464-470

MODEL 465

MODELS 5710, 5711, Ch. 107.450
5710A, 5711A, Ch. 107.450-2

SEARS, ROEBUCK & CO. Schematic, Voltage, Coils



MAY 6, 1938

NOTE: "F" BAND INCLUDED ONLY WITH MODELS 5710A & 5711A.

MODELS- 5710-11 5710A-11A	SEE NOTE 1
DATE- 9-9-37	LIC.# 1731
REVISED-	DWG. No. 829-715

I.F. = 465 KC.

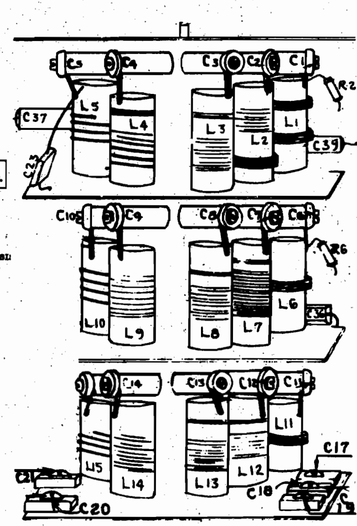
TUBE SOCKETS ARE VIEWED FROM UNDER-SIDE OF CHASSIS.

VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS WITH A.C. LINE OF 117 VOLTS, AND WITH R.F. GAIN CONTROL FULL ON, NO SIGNAL IN ANTENNA.

POWER SUPPLY:
105 - 120 Volts, 60 Cycle A.C. - 95 Watts
105 - 135 Volts, 25 Cycle A.C. - 95 Watts

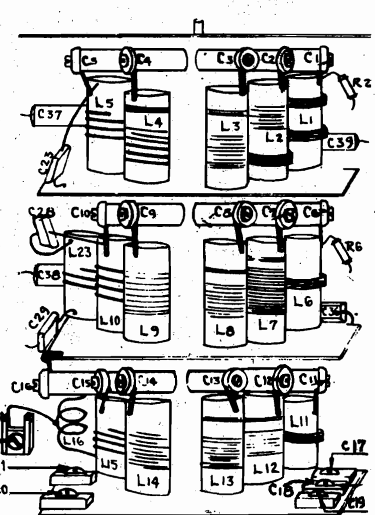
LOUD SPEAKER:
Type . . . . . . Permanent Magnet Dynamic
Size . . . Within Separate Case - 8 Inch

POWER OUTPUT:
Type . . . . Single Output
Undistorted . . . . 4 Watts
Maximum . . . . 5 Watts



MODELS 5710 AND 5711

FIG 2.



MODELS 5710A AND 5711A

FIG. 3.

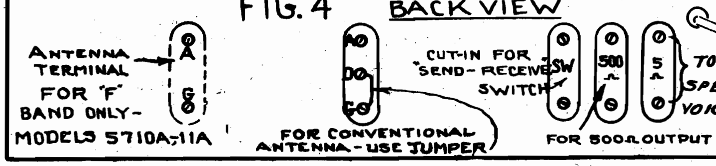
TUBES AND FUNCTIONS:

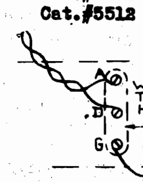
6K7	1st RF	6Q7G	Second Detector, 1st AF
6L7	Translator	6V6G	Single Output
6J5G	Oscillator	80	Rectifier
6K7	IF Amplifier	6J7G	Beat Frequency Oscillator
6K7	IF Amplifier	6U5	Tuning Eye

Recommended Antenna Equipment:

Cat. #5567 The Doublet System.
Cat. #5510 Conventional System.
Cat. #5575 Conventional System.
Cat. #5512 Conventional System.

FIG. 4 BACK VIEW

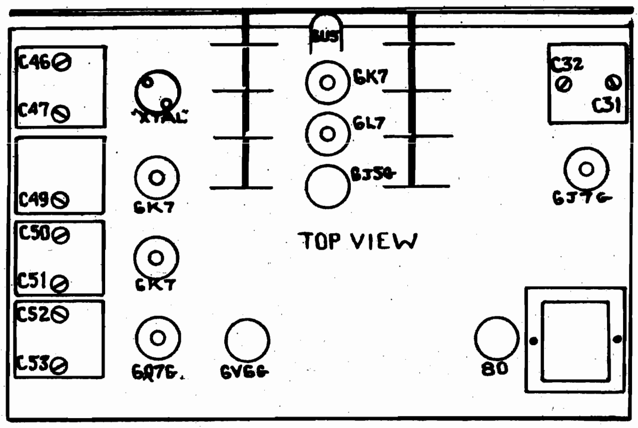




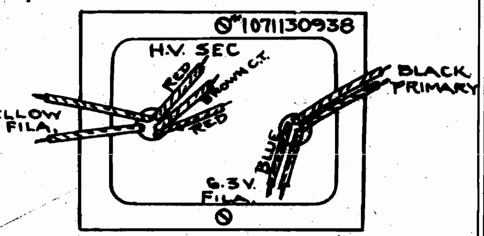
MODEL 5710, 5711, 5710A
5711A

SEARS, ROEBUCK & CO.

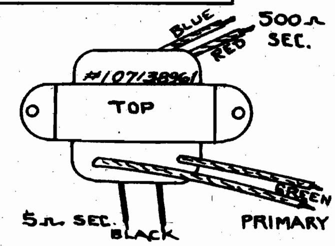
Alignment, Trimmers
Socket



COLOR CODE OF POWER TRANS. LEADS



COLOR CODE OF OUTPUT TRANS. LEADS



PRELIMINARY: FIG. 1

Output meter connection.....................4,000 ohm or more copper oxide meter across 5 ohm terminals. Shunt with speaker

Output meter reading to indicate .5 watt..1.575 V.

Average sensitivity in microvolts for .5 watt output....................................See chart below

Generator ground lead connection. ..Direct to chassis Generator modulation....30%, 400 cycles Position of volume control A.F. gain....Full on R.F. gain....Full on A.V.C. Switch...On Band spread dial set at 100...Min. Capacity

NOTE 1; When aligning the I.F. channel a condenser of .05 MFD. may be used in series with the generator lead.

NOTE 2; When aligning the broadcast band, a 250 MMFD. condenser may be used in series with the signal generator.

NOTE 3; When aligning the short wave bands a 400 ohm resistor may be used in series with the signal generator.

POSITION OF VARIABLE AND BAND SW.	GENERATOR FREQ.	GENERATOR CONNECTION	TRIMMER LOCATION	TRIMMER ADJUSTMENTS IN ORDER	TRIMMER FUNCTION	APPROX. MICROVOLTS
Closed "A" Band	465 KC	6L7 Grid	SEE FIG.1	C53,52,51 50,49,47,46	I.F.	15
60 MC "F" 40 MC "F"	60 MC 40 MC	A-G Ant. Term. A-G Ant. Term.	MODELS 5710A-11A SEE FIG.3	C16 C22	Osc. Padder	Approx. 10 Approx. 10
36 MC "E" 16 MC "E"	36 MC 16	A-D-G Ant. Term. A-D-G Ant. Term.	SEE FIG.2or3	C15,10,5 C21	Osc. Trans. Ant. Padder	Approx. 3 Approx. 3
15 MC "D" 7 MC "D"	15 MC 7 MC	A-D-G Ant. Term. A-D-G Ant. Term.	SEE FIG.2or3	C14, 9,4 C20	Osc. Trans. Ant. Padder	Approx. 1 Approx. 1
6 MC "C" 3 MC "C"	6 MC 3 MC	A-D-G Ant. Term. A-D-G Ant. Term.	SEE FIG.2or3	C13, 8,3 C19	Osc. Trans. Ant. Padder	Approx. 1 Approx. 1
2.6MC "B" 1.3MC "B"	2.6 1.3	A-D-G Ant. Term. A-D-G Ant. Term.	SEE FIG.2or3	C12, 7,2 C18	Osc. Trans. Ant. Padder	Approx. 1 Approx. 1
1.2MC "A" .6 MC "A"	1200 KC 600 KC	A-D-G Ant. Term. A-D-G Ant. Term.	SEE FIG.2or3	C11, 6,1 C17	Osc. Trans. Ant. Padder	Approx. 1 Approx. 1

NOTE: 4 When using a CRYSTAL, set PHASING CONTROL to almost minimum capacity. See special alignment instructions below for Crystal.

ALIGNMENT INSTRUCTIONS - FOR RECEIVERS EQUIPPED WITH CRYSTALS

(1) REMOVE CRYSTAL, set crystal phasing condenser to almost minimum capacity and throw "XTAL" switch to "in" position.

(2) With the 465 KC signal, re-adjust the I.F. Trimmer C-46 - the one nearest the front panel of the receiver - by turning the screw counter-clockwise. The signal now may be slightly weaker than before and sound "off-side". This, however, is a normal condition.

(3) REPLACE THE CRYSTAL - A very noticeable drop in signal strength may be noted, due to the filtering action of the crystal, and the frequency control of the signal generator must be "rocked" slowly back and forth, until the increase in signal strength indicates the exact frequency of the crystal being used. Now re-align the entire I.F. system to this frequency.

(4) Adjust "XTAL" phasing condenser for the lowest pitched note possible and re-adjust signal generator frequency. Repeat and continue to repeat this alignment procedure until no further improvement in the alignment can be accomplished.

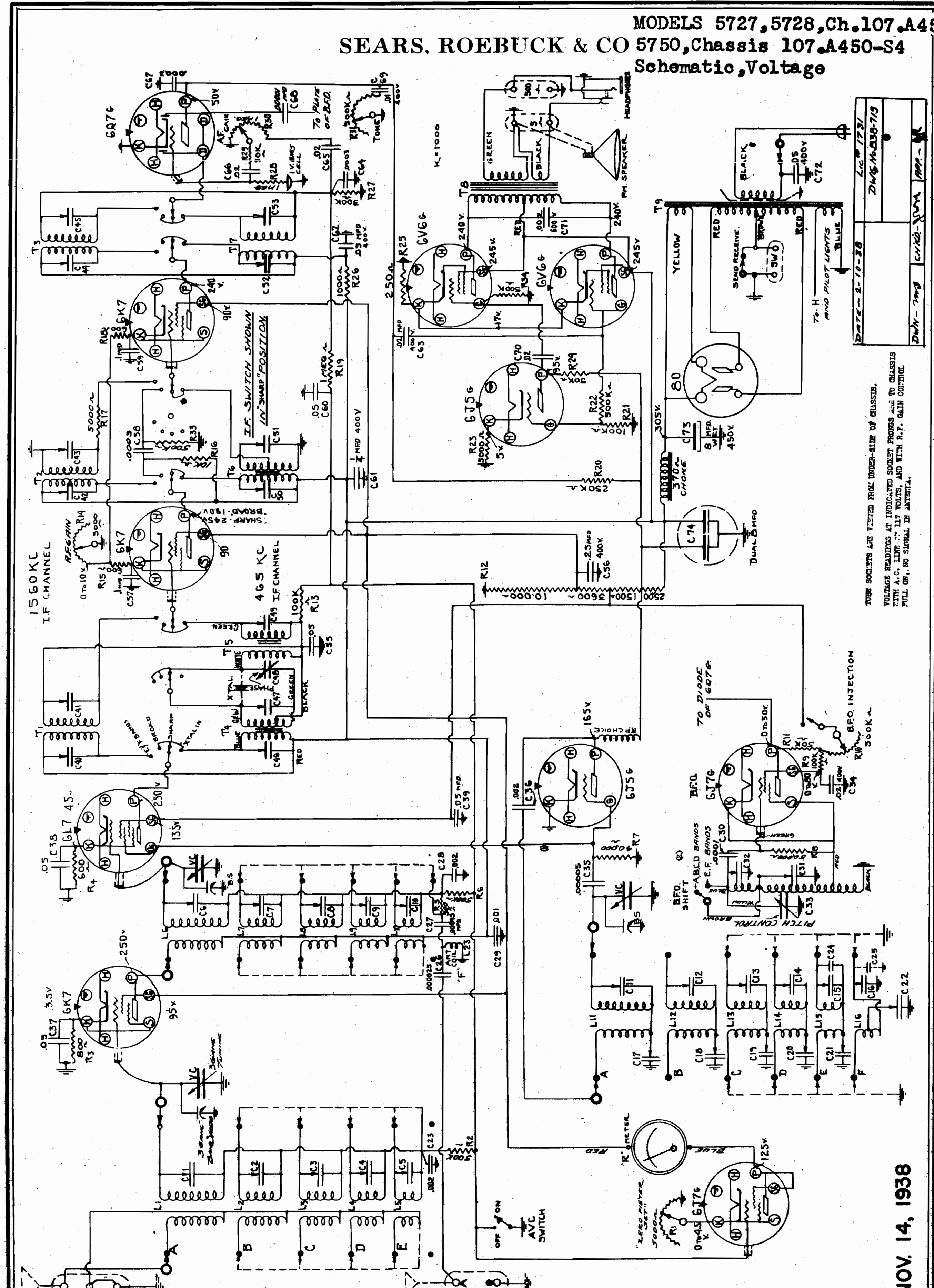
NOTE: If the "XTAL" switch should now be thrown to another position, an apparent rise in gain will be noticed, which is caused by the addition of higher frequencies and background noise, so it does not mean that the sensitivity of this set is impaired in any way by use of the crystal.

NOTE: 5 THE BEAT FREQUENCY OSCILLATOR is adjusted for the A, B, C, D, Bands with Trimmer C31 and C32. Set pitch control to half capacity. Recheck C31.

MODELS 5727,5728,Ch.107.A450
5750,Chassis 107.A450-S4

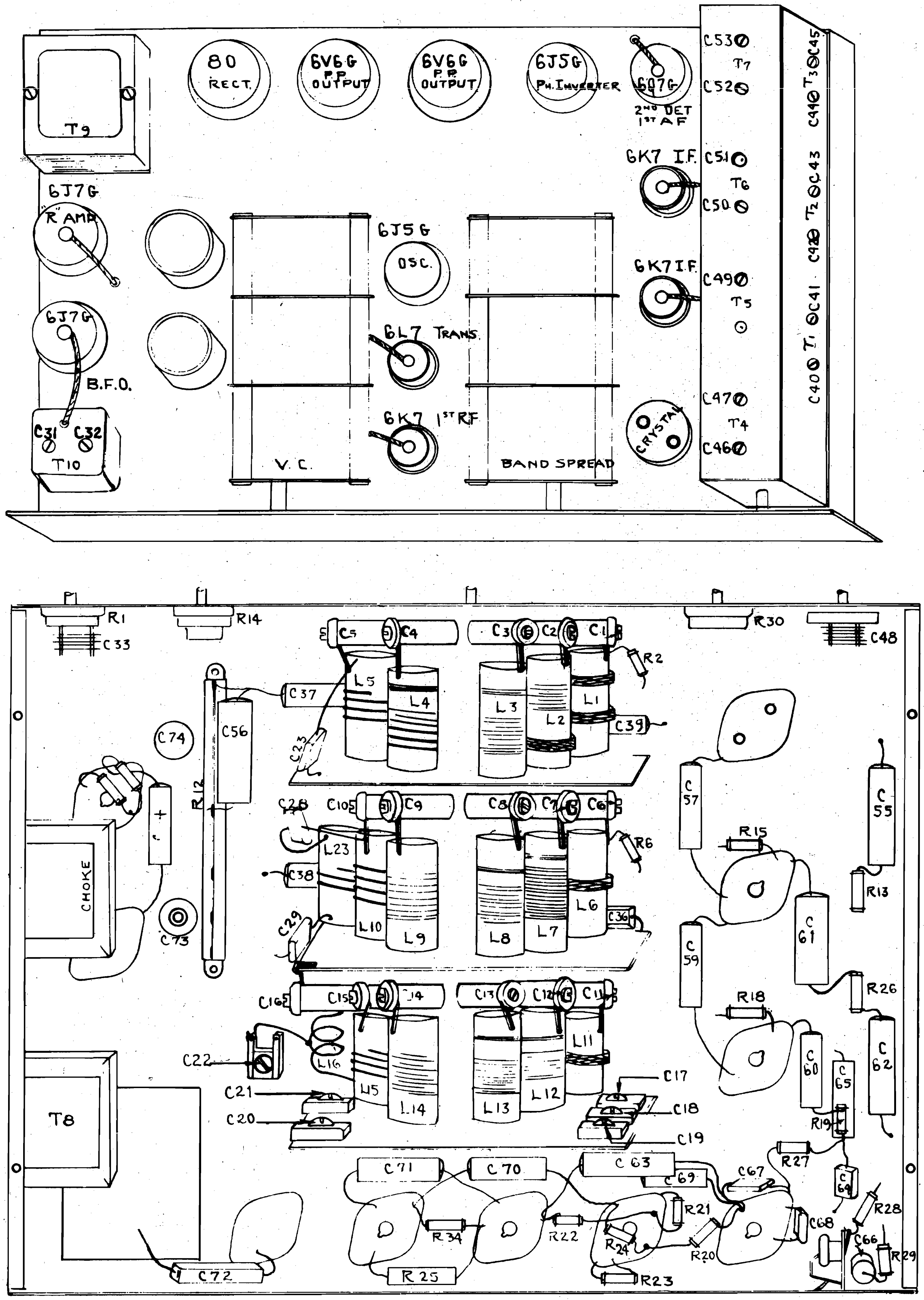
SEARS, ROEBUCK & CO

Schematic,Voltage



MODELS 5727,5728,5750
Socket,Trimmers
Chassis Wiring

SEARS, ROEBUCK & CO.



SEARS, ROEBUCK & CO.

MODELS 5727, 5728, 5750
Changes, Transformers
Specifications

SUBJECT: MECHANICAL CHANGES WITH DIAL MECHANISM ON MODELS 5727, 5728 TO ACCOMPLISH A HORIZONTAL TYPE DIAL MOUNTED IN A NEW CABINET, FINISHED GREY. THIS IS KNOWN AS MODEL 5750, FACTORY IDENTIFICATION NUMBER 107.A450-84.

TUBES AND FUNCTIONS:

6K7	1st RF
6L7	Translator
6J5G	Oscillator
6K7	IF Amplifier
6Q7G	Second Detector, 1st AF
6K7	IF Amplifier
6J5G	Phase inverter
6V6G	P. P. Output
6V6G	P. P. Output
80	Rectifier
6J7G	"R" Meter Voltage Amplifier
6J7G	Beat Frequency Oscillator

POWER SUPPLY:

105 - 120 Volts, 60 Cycle A.C. - 125 Watts
105 - 135 Volts, 25 Cycle A.C. - 125 Watts

FREQUENCY RANGE - 6 BANDS:

Band A	.55 to 1.2 MC
Band B	1.2 to 2.8 MC
Band C	2.8 to 6.5 MC
Band D	6.5 to 16 MC
Band E	16 to 40 MC
Band F	32 to 65 MC

INTERMEDIATE FREQUENCY = BANDS A,B,C, & D - 465 KC

POWER OUTPUT:

Type	Push Pull Output
Undistorted	9 Watts
Maximum	15 Watts

LOUD SPEAKER:

Type	Permanent Magnet Dynamic
Size	Within Separate Case 10 Inch

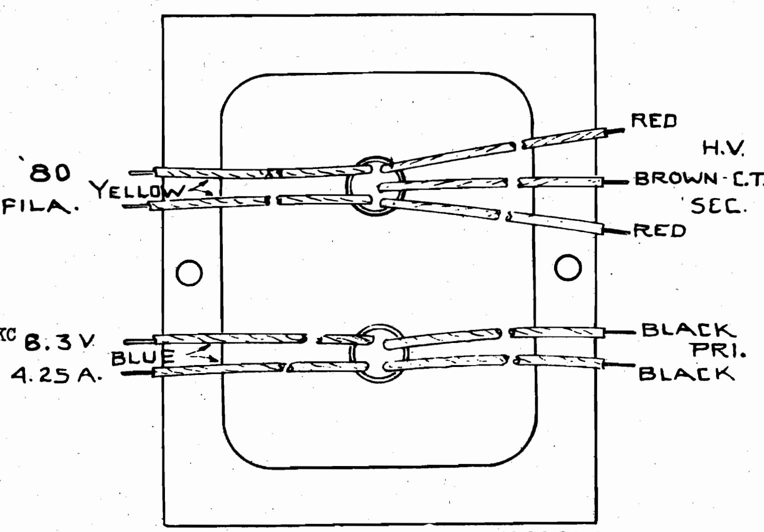
CHASSIS FEATURES:

SEND-RECEIVE terminals in rear of chassis for break-in connection.
RF Stages . . . . One
VARIABLE CONDENSER . . . . . . Three Gang
ANTENNAE . . . . TWO REQUIRED
HEADPHONE JACK . . . . ON FRONT PANEL
Crystal Phaser.
Beat Frequency Oscillator, Pitch Control.
B.F.O. OFF-ON Switch with Injection Control.

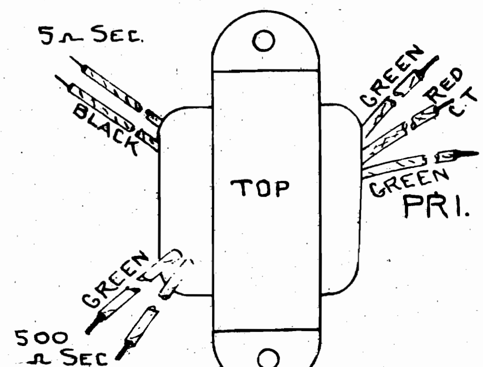
OPERATING FEATURES:

A.V.C. with ON-OFF Switch
Three Gang Electrical Band Spread
A.F. Gain or Audio Level
R.F. Gain or Sensitivity
Tone Control
"R" Meter Showing Signal Strength
"R" Meter Zero Adjustment
Four-position IF Setting: 1560 KC
Iron Core Broad 465 KC
Iron Core Sharp 465 KC
Crystal Filter-In Position

COLOR CODE AND LEAD POSITION



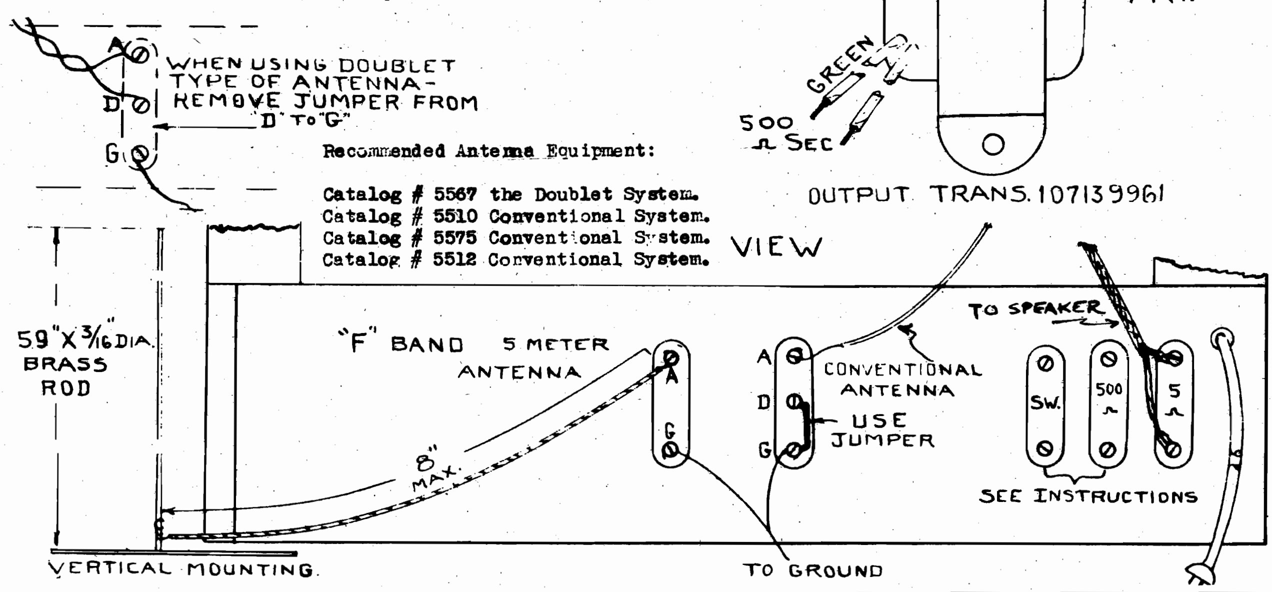
POWER TRANS. 1071046938



OUTPUT TRANS. 10713996I

Recommended Antenna Equipment:

Catalog # 5567 the Doublet System.
Catalog # 5510 Conventional System.
Catalog # 5575 Conventional System.
Catalog # 5512 Conventional System.



MODELS 5727, 5728, 5750
Alignment

SEARS, ROEBUCK & CO.

This receiver is a 12 tube 6 Band set designed especially for use on the short wave bands. The set was not designed for ordinary broadcast reception although it will cover this band.

This Amateur receiver employs many features as outlined above. Attention must be noted to the Dual I.F. system, the use of the 1560 KC I.F. for use on the "E" and "F" Bands to obtain a higher image response and prevent "garbling" of frequency modulated signals on 5 meters. The 1560 KC I.F. assemblies are designed to give a broad band pass flat top response characteristic.

Note that two antenna systems must be used, one for the "E & F" Bands and one for the "A" "B" "C" & "D" Bands.

PRELIMINARY:

Output meter connection.....................4,000 ohm or more copper oxide meter across 5 ohm terminals. Shunt with speaker

Output meter reading to indicate .5 watt..1.575 V.

Average sensitivity in microvolts for .5 watt output...............................See chart below

Generator ground lead connection...Direct to chassis

Generator modulation...............30%, 400 cycles

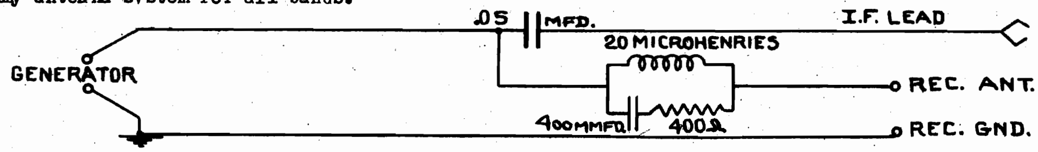
Position of volume control A.F. gain.......Full on

Position of volume control R.F. gain.......Full on

A.V.C. Switch.....................................On

Band spread dial set at 100..........Min. Capacity

NOTE 1 When aligning the two I.F. channels a condenser of .05 Mfd. may be used in series with the generator lead. For the other bands the following circuit is shown with the values that make a universal dummy antenna system for all bands.



POSITION OF VARIABLE AND BAND SW.	GENERATOR FREQ.	GENERATOR CONNECTION	POSITION OF I.F. BAND SWITCH	TRIMMER ADJUSTMENTS IN ORDER	TRIMMER FUNCTION	APPROX. MICROVOLTS
Closed "A" Band	465 KC	6L7 Grid	"XTAL" See Note 2	C53,52,51 50,49,47,46	I.F.	15
Closed "A" Band	1560 KC	6L7 Grid	"E" & "F"	C45,44,43 42,41,40	I.F.	15
60 MC "F"	60 MC	A-G Ant. Term.	"E" & "F"	C16	Osc.	Approx. 10
40 MC "F"	40 MC	A-G Ant. Term.	"E" & "F"	C22	Padder	Approx. 10
36 MC "E"	36 MC	A-D-G Ant. Term.	"E" & "F"	C15,10,5	Osc. Trans. Ant.	Approx. 3
16 MC "E"	16	A-D-G Ant. Term.	"E" & "F"	C21	Padder	Approx. 3
15 MC "D"	15 MC	A-D-G Ant. Term.	XTAL or "Sharp"	C14, 9,4	Osc. Trans. Ant.	Approx. 1
7 MC "D"	7 MC	A-D-G Ant. Term.	XTAL or "Sharp"	C20	Padder	Approx. 1
6 MC "C"	6 MC	A-D-G Ant. Term.	XTAL or "Sharp"	C13, 8,3	Osc. Trans. Ant.	Approx. 1
3 MC "C"	3 MC	A-D-G Ant. Term.	XTAL or "Sharp"	C19	Padder	Approx. 1
2.6MC "B"	2.6	A-D-G Ant. Term.	XTAL or "Sharp"	C12, 7,2	Osc. Trans. Ant.	Approx. 1
1.3MC "B"	1.3	A-D-G Ant. Term.	XTAL or "Sharp"	C18	Padder	Approx. 1
1.2MC "A"	1200 KC	A-D-G Ant. Term.	XTAL or "Sharp"	C11, 6,1	Osc. Trans. Ant.	Approx. 1
.6 MC "A"	600 KC	A-D-G Ant. Term.	XTAL or "Sharp"	C17	Padder	Approx. 1

NOTE 2: When using a CRYSTAL, set PHASING CONTROL to almost minimum capacity. See special alignment instructions below for Crystal. Align set in "sharp" position if set is without crystal.

ALIGNMENT INSTRUCTIONS - FOR RECEIVERS EQUIPPED WITH CRYSTALS

(A) REMOVE CRYSTAL, set crystal phasing condenser to almost minimum capacity and throw IF switch to "XTAL" position.

(B) With the 465 KC signal, re-adjust the I.F. Trimmer C-46 - the one nearest the front panel of the receiver - by turning the screw counter-clockwise. The signal now may be slightly weaker than before and sound "off-side". This, however, is a normal condition.

(C) REPLACE THE CRYSTAL - A very noticeable drop in signal strength may be noted, due to the filtering action of the crystal, and the frequency control of the signal generator must be "rocked" slowly back and forth, until the increase in signal strength indicates the exact frequency of the crystal being used. Now re-align the entire I.F. system to this frequency.

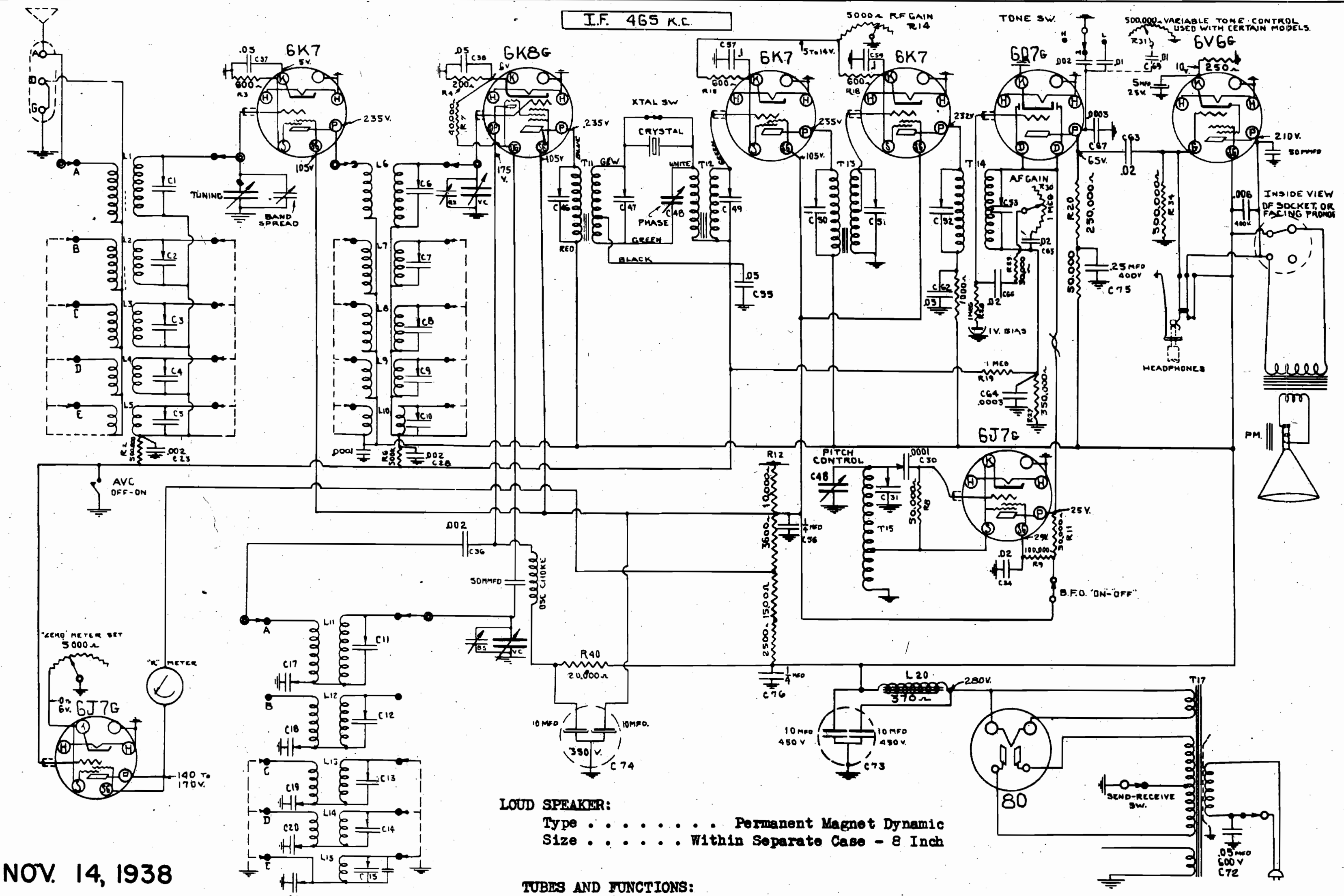
(D) Adjust "XTAL" phasing condenser for the lowest pitched note possible and re-adjust signal generator frequency. Repeat and continue to repeat this alignment procedure until no further improvement in the alignment can be accomplished.

NOTE: If the IF switch should now be thrown to another position, an apparent rise in gain will be noticed, which is caused by the addition of higher frequencies and background noise, so it does not mean that the sensitivity of this set is impaired in any way by use of the crystal.

NOTE 3: THE BEAT FREQUENCY OSCILLATOR is adjusted for the A, B, C, D, Bands with Trimmer C31. With models having an "E" & "F" Band B.F.O.—Adjust C32 with dial at 1560 on Band D to 1560 KC. Recheck C31. Set pitch control to half capacity.

MODELS 5752,5753
Chassis 107.440-S1
Schematic,Voltage

SEARS, ROEBUCK & CO.



NOV. 14, 1938

LOUD SPEAKER:
Type . . . . Permanent Magnet Dynamic
Size . . . . Within Separate Case - 8 Inch

TUBES AND FUNCTIONS:
6K7..............................1st RF
6K8G..............................Translator
6K7..............................IF Amplifier
6K7..............................IF Amplifier
6Q7G...........Second Detector, 1st AF

6V6G..............................Single Output
80..............................Rectifier
6J7G..................Beat Frequency Oscillator
6J7G..................V.T.V.M. for "R" Meter

POWER SUPPLY:
105 - 120 Volts, 60 Cycle A.C.85 Watts
105-135 Volts, 25 Cycle A.C. - 85 Watts

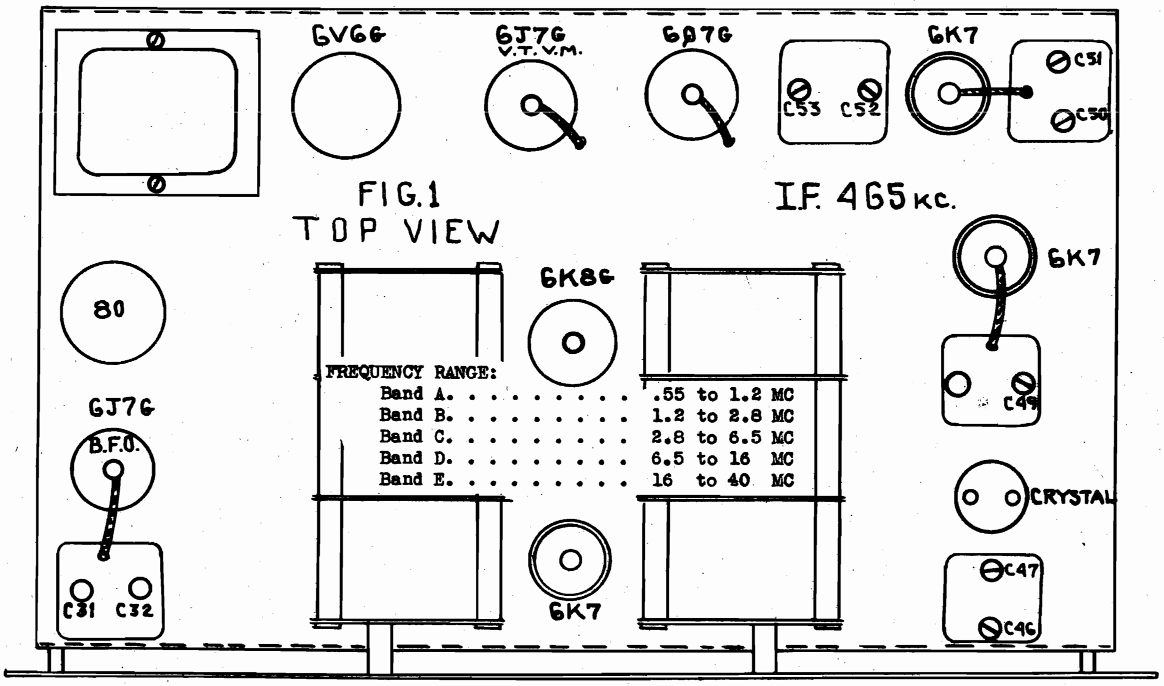
POWER OUTPUT:
Type . . . . Single Output
Undistorted . . . . 4 Watts
Maximum . . . . 5 Watts

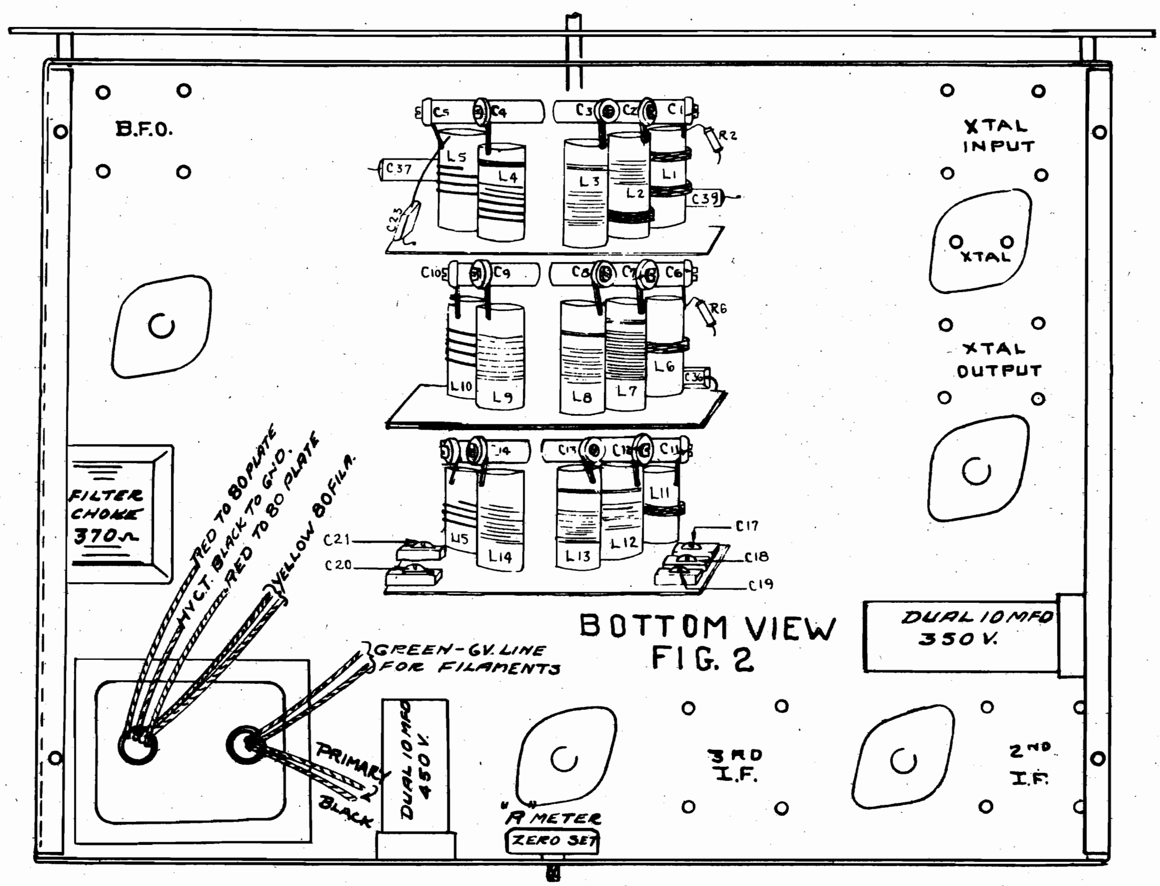
VOLTAGES AS SHOWN TAKEN FROM GROUND WITH:-
- LINE VOLTAGE - 118 V.A.C.
- R.F. GAIN - FULL ON.
- TUNING COND. FULL CAPACITY

107.440-S1		
9-19-38	DWG. NO. 839-715	
	LIC. #7791	
REVISIONS:		
D'W'N	CH'K'D	APP'V'D

MODELS 5752, 5753
Socket, Trimmers
Chassis

SEARS. ROEBUCK & CO.





THE THREE TERMINALS - A, D, and G in the middle back of the chassis are for the ANTENNA AND GROUND connections. When using the conventional flat-top and lead-in type of antenna, CONNECT THE LEAD-IN TO THE TERMINAL MARKED "A", being sure that a wire jumper connects from D to G terminals. The G terminal is for the ground connection.

For any DOUBLET TYPE of antenna, remove the shorting jumper from D to G and connect the two leads of the doublet system to A and D.

The "G" terminal is for the ground connection.

MODELS 5752, 5753
Alignment

SEARS, ROEBUCK & CO.

OPERATING FEATURES:

A.V.C. with ON-OFF Switch
Three-Gang Electrical Band Spread
AF Gain or Audio Level Control
RF Gain or Sensitivity Control
Tone Control
Beat Frequency Osc. Pitch Control
B.F.O. Switch with Injection Control
Crystal Phaser
Send-Receive terminals in rear of Chassis for break-in connection
IRON CORE IF Stages
Headphone Jack on Front Panel

ALIGNMENT FREQUENCIES

Band A	600 and 1200 KC
Band B	1.5 and 2.6 MC
Band C	3.0 and 6.0 MC
Band D	7.0 and 15 MC
Band E	16 and 36 MC

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection..
...4,000 ohm or more copper oxide meter across 5 ohm terminals. Shunt with speaker

Output meter reading to indicate .5 watt.............1.575 V.

Average sensitivity in microvolts for .5 watt output....See chart

Generator ground lead connection.................. Direct to chassis

Dummy antenna value in series with generator output. See Note 1

Connection of generator output lead..................See Chart

Generator modulation..........................30%, 400 cycles

Position of volume control A.F. gain...................Full on

Position of volume control R.F. gain...................Full on

A.V.C. Switch..On

Band spread dial set at 100......................Min. Capacity

NOTE 1; When aligning the I.F. channel a condenser of .05 MFD. may be used in series with the generator lead.
NOTE 2; When aligning the broadcast band, a 250 MMFD. condenser may be used in series with the signal generator.
NOTE 3; When aligning the short wave bands a 400 ohm resistor may be used in series with the signal generator.

POSITION OF VARIABLE AND BAND SW.	GENERATOR FREQ.	GENERATOR CONNECTION	TRIMMER LOCATION	TRIMMER ADJUSTMENTS IN ORDER	TRIMMER FUNCTION	APPROX. MICROVOLTS
Closed "A" Band	465 KC	6L7 Grid	SEE FIG.1	C53,52,51 50,49,47,46	I.F.	15
36 MC "E"	36 MC	A-D-G Ant. Term.	SEE FIG.2	C15,10,5	Osc. Trans. Ant.	Approx. 3
16 MC "E"	16	A-D-G Ant. Term.		C21	Padder	Approx. 3
15 MC "D"	15 MC	A-D-G Ant. Term.	SEE FIG.2	C14, 9,4	Osc. Trans. Ant.	Approx. 1
7 MC "D"	7 MC	A-D-G Ant. Term.		C20	Padder	Approx. 1
6 MC "C"	6 MC	A-D-G Ant. Term.	SEE FIG.2	C13, 8,3	Osc. Trans. Ant.	Approx. 1
3 MC "C"	3 MC	A-D-G Ant. Term.		C19	Padder	Approx. 1
2.6MC "B"	2.6	A-D-G Ant. Term.	SEE FIG.2	C12, 7,2	Osc. Trans. Ant.	Approx. 1
1.5MC "B"	1.3	A-D-G Ant. Term.		C18	Padder	Approx. 1
1.2MC "A"	1200 KC	A-D-G Ant. Term.	SEE FIG.2	C11, 6,1	Osc. Trans. Ant.	Approx. 1
.6 MC "A"	600 KC	A-D-G Ant. Term.		C17	Padder	Approx. 1

NOTE: 4 When using a CRYSTAL, set PHASING CONTROL to almost minimum capacity. See special alignment instructions below for Crystal.

ALIGNMENT INSTRUCTIONS FOR RECEIVERS USING CRYSTALS

THE I.F. STAGES:
FIRST - With the XTAL switch in the "OUT" position, align the I.F. stages to 465 KC, feeding signal into the grid of the 6L7.

SECOND - FOR RECEIVERS EQUIPPED WITH CRYSTALS:

(A) REMOVE CRYSTAL, set crystal phasing condenser to almost minimum capacity and throw XTAL switch to "IN" position.

(B) With the 465 KC signal re-adjust the I.F. Trimmer - the one nearest the front panel of the receiver - by turning the screw counter-clockwise. The signal now may be slightly weaker than before, and sound "off-side". This, however, is a normal condition.

(C) REPLACE THE CRYSTAL - A very noticeable drop in signal strength may be noted, due to the filtering action of the crystal and the frequency control of the signal generator must be "rocked" slowly back and forth, until the increase in signal strength indicates the exact frequency of the crystal being used. Now re-align the entire I.F. system to this frequency.

(D) Adjust XTAL phasing condenser for the lowest pitched note possible and re-adjust signal generator frequency. Repeat and continue to repeat this alignment procedure until no further improvement in the alignment can be accomplished.

NOTE: - If the XTAL switch should now be thrown to the "OUT" position, an apparent rise in gain will be noticed which is caused by the addition of higher frequencies and background noise, so it does not mean that the sensitivity of this set is impaired in any way by use of the crystal.

NOTE: 5 THE BEAT FREQUENCY OSCILLATOR is adjusted with trimmers C31 and C32. Set pitch control to half capacity. Recheck C31.

MODELS See Below
Tuner, Alignment

SEARS, ROEBUCK & CO.

THE BIAS CELLS:

Models 6056,6057
CHASSIS 101.548

Do not attempt to test the bias cells with a voltmeter. Ordinarily these cells have an indefinitely long life and should not be the cause of any trouble. The cells must be in their holders in the proper direction so that the polarity of the bias applied to the tubes will be correct. The zinc shell of the cells is the negative terminal and must connect to the tube grids. If the cells are removed from their holders, be sure that they are replaced so that the polarity will be correct. The Location of Parts diagram shows the correct positions of the cells.

THE FILAMENT CIRCUIT:

Models 6119,6120,6126,6127,6200,6250
CHASSIS 101.546,101.546-1

All of the tube heaters are connected in series. Accordingly, if any one tube burns out, the others will not light. The full line voltage will appear across the heater terminals of the burnt out tube.

Under certain conditions the chassis may be above ground potential by an amount equal to the line voltage. Accordingly, appropriate precaution should be taken when working on the chassis, by insulating the chassis completely from ground, etc.

Models 6025,6128,6201,6231,6251;6119,6120,6126,6127,6200,6250
• CHASSIS 101.547,-A,-1,-1B CHASSIS 101.546,101.546-1

PUSH BUTTON TUNING

SETTING UP:

Each of the push buttons should be set up in the following manner:

1. Make a list of the local stations desired to be set up on the push buttons.
2. Punch out of the call letter sheets the corresponding call letters.
3. Pull the push button knob off of its lever (the push buttons slip off the shaft).
4. Unscrew (turn counter-clockwise) the slotted shaft then exposed two or three turns (use a token or small screw driver).
5. Push the slotted shaft all the way in.
6. Tune in the desired station or station to be set up, making sure to hold the slotted shaft as far in as possible.
7. While holding both the tuning knob and the slotted push button shaft all the way in, securely tighten (turning counter-clockwise) the slotted screw.
8. Check for accuracy by detuning the station and retuning with that push button. If the setting is not accurate, follow the procedure as outlined in points No. 3 to No. 8.
9. Place the proper call letter in the recess in front of the push button, and cover the call letter with one of the clear celluloid discs supplied.
10. Push the push button back into place on the push button lever.
11. Follow the procedure as outlined in points No. 3 to No. 10, inclusive, for each of the remaining buttons.

OPERATION:

"Push button stations" will be tuned accurately by pushing the push button all the way to its stop.

NOTE: Push buttons on Model 101.547 chassis are locked and unlocked by turning the button.

FOR CHASSIS 101.546,-1; 101.548; 101.574,A,-1; 101.535.

ELIMINATING WHISTLE AT 910 KC:

A whistle, due to a beat between the second harmonic (910 kc) of the 455 kc IF, and a 910 kc signal may be experienced. In localities where the 910 kc station is one that is frequently listened to, it will be desirable to shift the whistle to some other point where it will not be objectionable. This can be done by shifting the IF frequency of the receiver.

Determine at what point between 880 kc and 940 kc the whistle will be least objectionable. Dividing this frequency by two will give the new IF frequency to which the receiver should be aligned. For example, if it is determined that a whistle at 890 kc would not be objectionable, the IF should be realigned at 890/2 or 445 kc. Try to select the new IF frequency as close to 455 kc as possible.

Align the IF at the new frequency and then realign the rest of the receiver as described under, "ALIGNMENT PROCEDURE".

ALIGNMENT PROCEDURE

For Models 6025,6128,6201,6231,6251 Chassis 101.547,-A,-1,-1B; 6208,6209 Chassis 101.544; 6214,6270 Chassis 101.552,101.552A; 6056,6057 Chassis 101.548 6133,6141,6139,6137,6202,6203,6253,6252,6199 Chassis 101.535.

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . . (B)(0.09 VOLTS) . . . . 0.37 volts
Generator ground lead connection . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator output lead . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI

Models 6025,6128,6201,6231,6251 Chassis 101.547,-A,-1,-1B; 6208,6209 Chassis101.544; 6214,6270 Chassis 101.552,101.552A.
Position of Dial Pointer with variable fully closed . . . . . . Horizontal (To fall on first heavy block below 550 kc.)

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	(C)	TRIMMERS ADJUSTED (IN ORDER SHOWN)	(A)	TRIMMER FUNCTION
"AM"	Closed	455 kc	.1 mfd.	6J8G Grid (A) 1D7G " (C) 1C7G "	T2, T1	T2, T1	T2, T1	IF Output IF Input
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	C4*	C1*	Wave Trap
"AM"	Open	1730 kc	.0002 mfd.	Ant. Term.	C6	C6	C8	Oscillator
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C2	C2	C2	Translator
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	C7	C9	Padder
"FOR"	(A) 6-15 mc(rock)	(A) 6-15 mc	400 ohms	Ant. Term.	C4	C1	C3	Translator

(A) For Models 6208,6209 Chassis 101.544. (C) For Models 6214,6270 Chassis 101.552,101.552A.

MODELS 6056,6057 Chassis 101.548; 6133,6141,6139,6137,6202,6203,6253.6252,6199 Chassis 101.535.
Position of Dial Pointer with variable fully closed . . . . Horizontal (To fall along second ornamental horizontal line)
(B) For Chassis 101.535 {Center of first mark to left of 550 kc calibration mark.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	(B)	TRIMMER FUNCTION
"AM"	Closed	455 kc	.1 mfd.	1C7G Grid (B) 6J8G "	T2, T1	T2, T1	IF Output IF Input
"AM"	600 kc	455 kc*	.0003 mfd.	Ant. Term.	C1*	C1*	Wave Trap
"AM"	{(B) FULLY OPEN 1750 kc	{(B) 1730 kc 1750 kc	.0002 mfd.	Ant. Term.	C5	C7	Oscillator
"AM"	1400 kc	1400 kc	.0003 mfd.	Ant. Term.	C2	C2	Translator
"AM"	600 kc (rock)	600 kc	.0003 mfd.	Ant. Term.	C6	C8	Padder
"SW" or "FOR"	(B) 5-16 mc (rock)	(B) 5-16 mc	400 ohms	Ant. Term.	C4	C3	Translator

(B) For Model 6133,6141, 6139,6137,6202,6203,6253,6252,6199 Chassis 101.535.

IMPORTANT ALIGNMENT NOTES

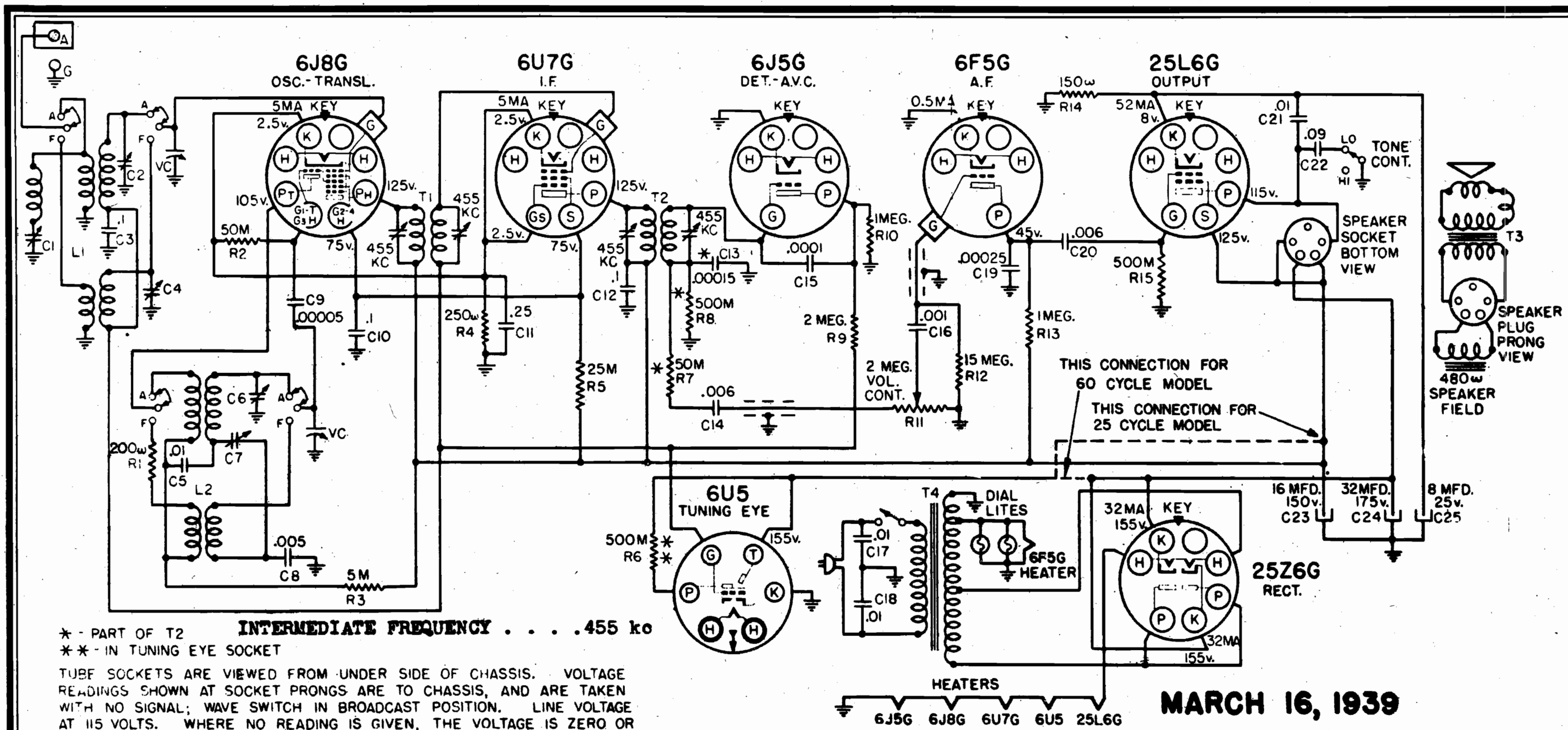
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

SEARS, ROEBUCK & CO.

MODELS 6025,6201,Ch.101.547
6128,6251,Ch.101.547-1 and
Ch.101.547-A;6231,Chassis
101.547-1B
Schematic,Voltage,Changes



MARCH 16, 1939

* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 115 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

INTERMEDIATE FREQUENCY . . . . .455 kc

POWER SUPPLY:
All models available . . . . .105-125 volts, 25-60 cycle, 50 watts

FREQUENCY RANGES:

Band "AM"	.540-1730 kc
Band "SW"	.5.9-18.2 mc

ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Ant-Transl. Trimmer	Padder
Band "AM"	1730 kc	1400 kc	600 kc
Band "SW"	None	15 mc	--

POWER OUTPUT:
Type . . . . Beam tube
Undistorted . . . . 1.75 watts
Maximum . . . . 3 watts

OPERATING FEATURES:
Tone Control . . . . .Two Position
Automatic Volume Control
Push Button Tuning (5 button)
Tuning Eye

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . .6 inch
Field coil resistance . . . . 480 Ohms

CHASSIS FEATURES:
Number IF stages . . . . One
Number condensers in gang . . . . . .Two
Antenna . . . . Conventional
Built-in IF Wave Trap

CHASSIS IDENTIFIED BY 101.547A:

Chassis identified by the number 101.547A on the metal plate at the rear of the chassis are the same as 101.547-1 chassis except for a change in the design and part number of the dial escutcheon.

ADDITION OF SUFFIX "-1B" TO 101.547 CHASSIS:

Chassis identified by 101.547-1B are the same as 101.547-1A except for a change in the design and part number of the push buttons, push button escutcheon, call letter sheets and covers. Also a new 10" speaker has been used.

FOR ALIGNMENT SEE INDEX

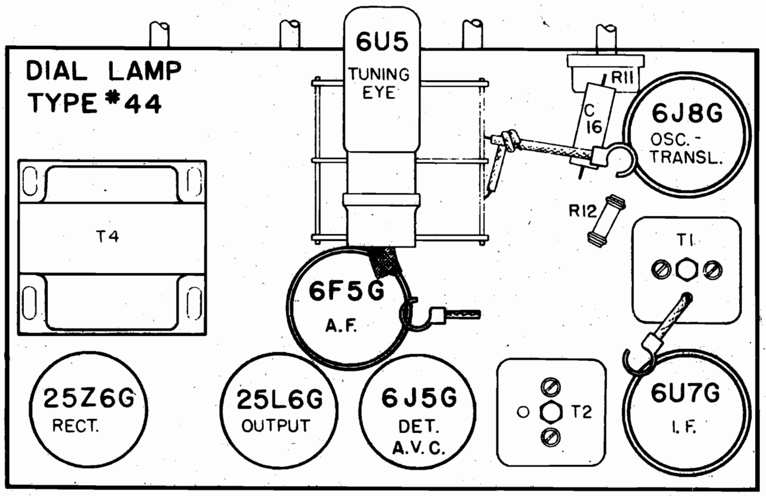
CHASSIS 101.547,-1,-A,-1B
CHASSIS 101.546,-1,-1A
Socket,Trimmers,Chassis

SEARS, ROEBUCK & CO.

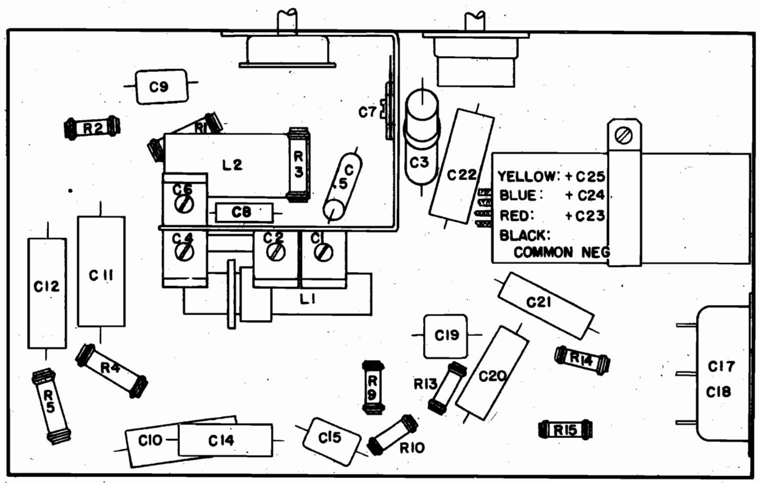
MODELS 6025, 6128, 6301, 6251 MODEL 6231

RECOMMENDED ANTENNA EQUIPMENT

Catalog #5586 Doublet Antenna Kit
" #5587 " " "
" #5588 Conventional Ant. Kit
" #5575 " " "



LOCATIONS OF PARTS ON TOP OF CHASSIS.



LOCATIONS OF PARTS UNDER CHASSIS

MODELS 6200, 6130, 6136, 6127, 6119, 6350 CHASSIS– 101.546, -1, -1A

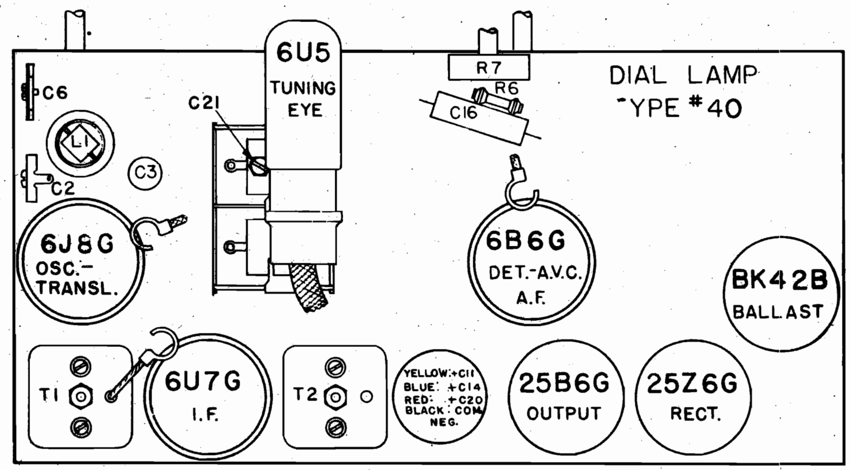
OPERATING FEATURES:
Tone Control . . . . Two Position
Automatic Volume Control
Push Button Tuning (5 button)
Tuning Eye

CHASSIS FEATURES:
Number IF stages . . . . One
Number condensers in gang . . . . . Two
Antenna . . . . Conventional
Built-in IF Wave Trap

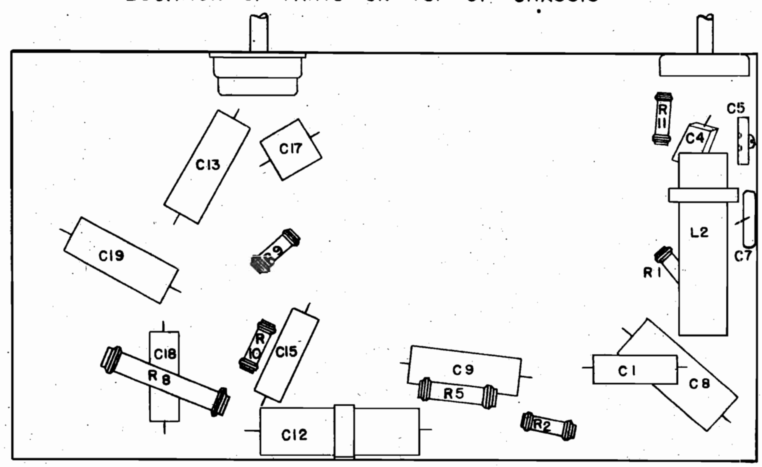
MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:
1. Upper left knob . . . . .Volume
2. Lower left knob. . .On-off switch & Tone
3. Lower right knob. . Wave band switch
4. Upper right knob. .Station Selector

CONTROL OPERATION:
Turning right: . . . . Volume increase
Turning right: . . . . "ON", "HI", "LO"
Turning right: . . . . "AM", "SW"
Tuning ratio: 4:1



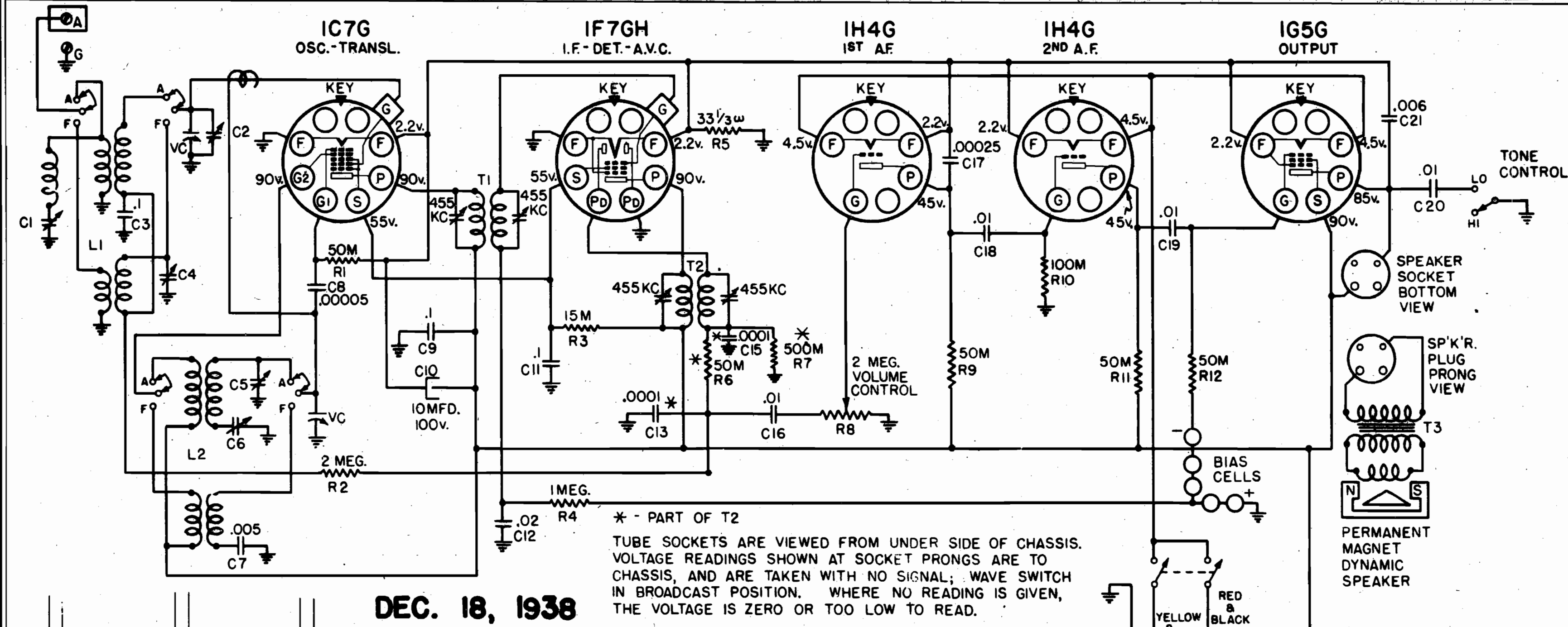
LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS

MODELS 6056,6057
Chassis 101.548
Schematic,Voltage
Socket,Trimmers
Chassis

SEARS, ROEBUCK & CO.



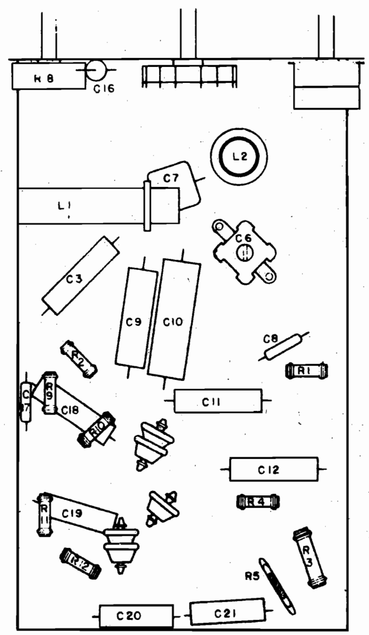
✱ - PART OF T2

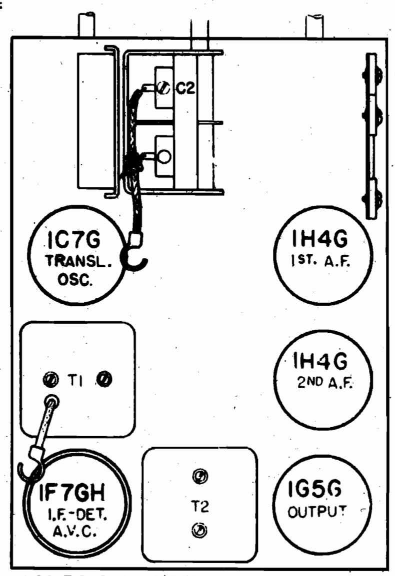
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

DEC. 18, 1938

FOR ALIGNMENT SEE INDEX

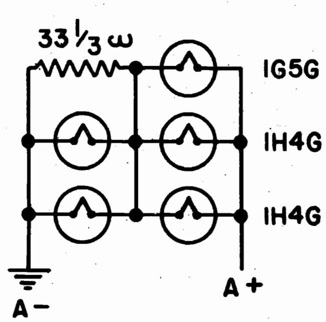
INTERMEDIATE FREQUENCY
455 kc


LOCATION OF PARTS UNDER CHASSIS



LOCATIONS OF PARTS ON TOP OF CHASSIS.

FILAMENT CIRCUIT:



POWER SUPPLY:
- "A" Battery (4½ volt dry). . . 1-#5031
- "A" Battery (4 volt storage). .1-#5049
- "B" Batteries . . . . .2-#5131
- "A" Drain . . . . 0.24 amperes
- "B" Drain . . . . .12 ma

LOUD SPEAKER:
- Type . . . . .PM Dynamic
- Size . . . . 6 inch

POWER OUTPUT:
- Type . . . . Pentode
- Undistorted . . . . 0.20 watts
- Maximum . . . . 0.40 watts

FREQUENCY RANGES:
- Broadcast . . . . .540-1750 kc
- Short Wave . . . . 5.9-18 mc

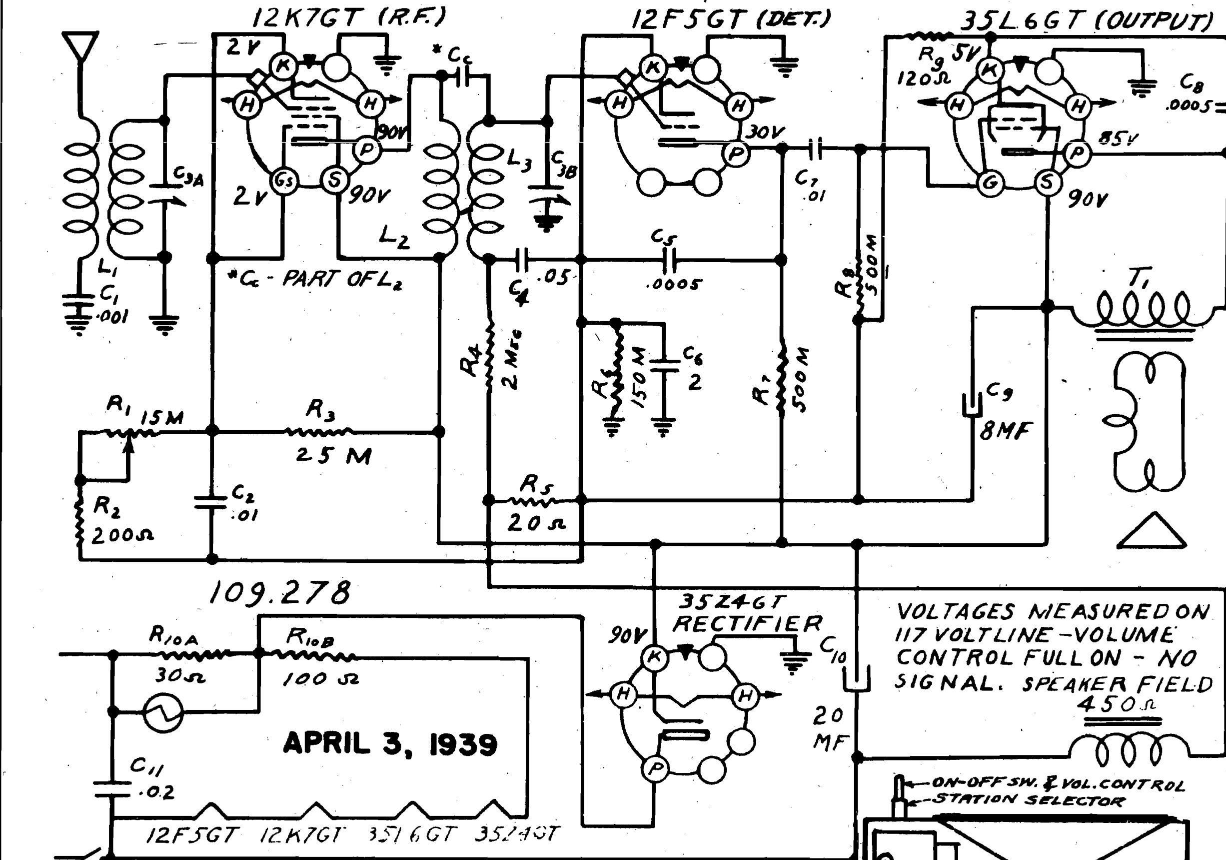
ALIGNMENT FREQUENCIES:

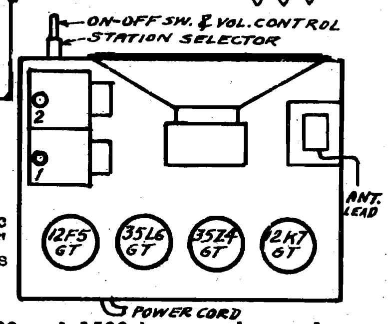
Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1750 kc	1400 kc	600 kc
None	16 mc	Fixed

MODELS 6106,6107,6108,6116
Chassis 109.278

SEARS, ROEBUCK & CO.

Schematic, Voltage, Socket
Alignment, Trimmers





POWER SUPPLY:
105-125 volts, 50-60 cycle or D. C. 25 Watts on 117 volt line.

POWER OUTPUT:
Type................Beam Power
Undistorted..........9 Watt
Maximum............1.35 Watts

LOUD SPEAKER:
Type...................Dynamic
Size......................3½"
Field Resistance.....450 Ohms

ALIGNMENT PROCEDURE

Either a signal generator or a broadcast signal between 1400 and 1500 kc. may be used.

The antenna of the receiver should be extended as for normal use. Tune in a station between 1400 and 1500 kc. and adjust the trimmers on top of the tuning condenser for maximum signal

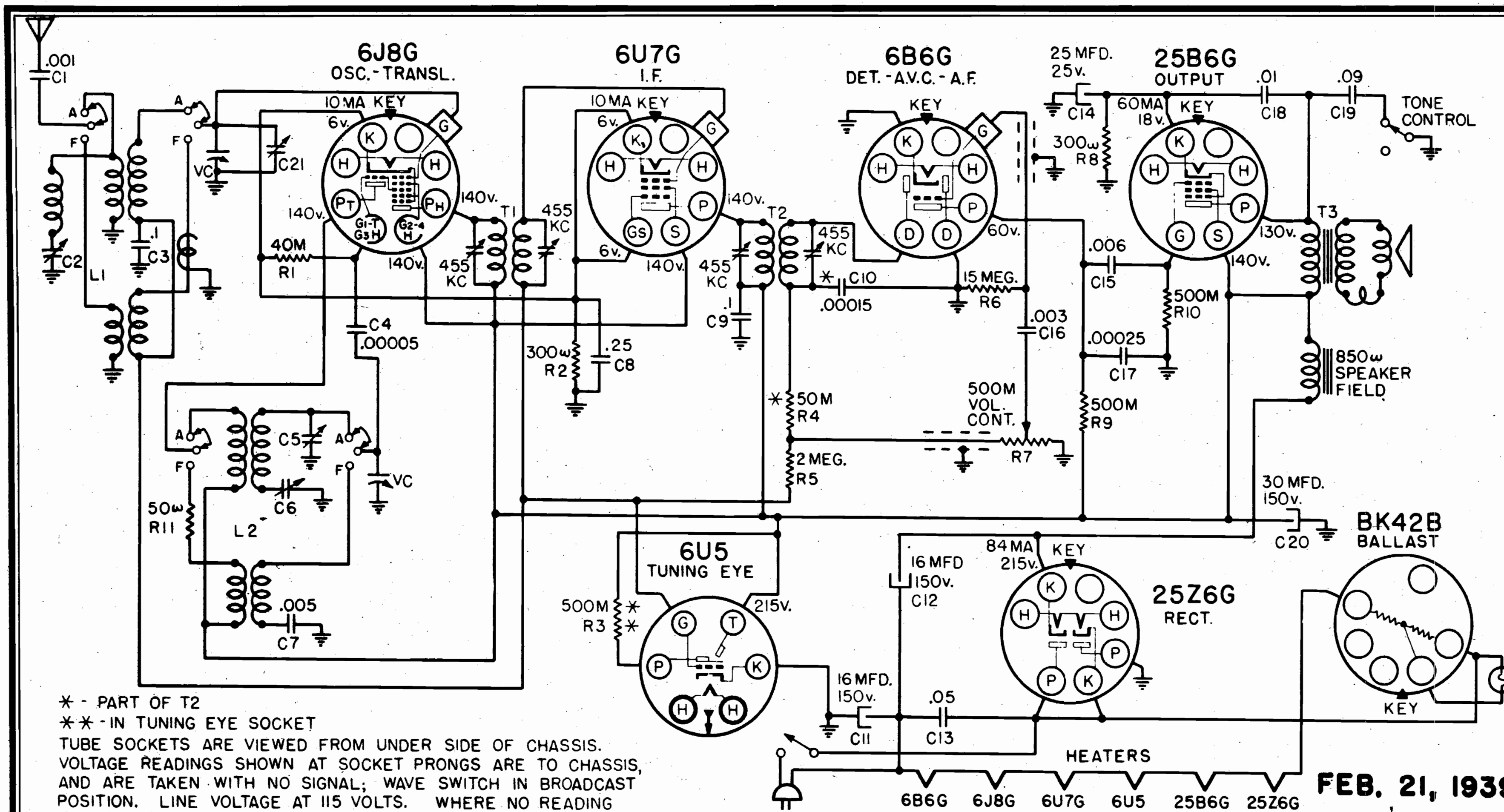
If a signal generator is used, extend the antenna as described above, run a wire from the generator parallel to, but insulated from the antenna. Set the generator to 1720 kc. Turn the tuning condenser all the way to the right (Minimum capacity). Tune in the signal from the generator with the trimmer on the rear section of the tuning condenser. Set the generator at about 1400 kc. Tune in the signal and adjust the trimmer on the front section of the tuning condenser for maximum response.

DEFECT	GENERALLY CAUSED BY	REMEDY
Dead Receiver	No current at outlet	Check outlet for current and be sure power cord plug is making good contact
	Open or short circuit in set	Repair or replace
Poor Sensitivity and Volume	Insufficient antenna pickup	Connect to outdoor antenna
	Defective tube	Replace
	Receiver out of alignment	Follow alignment procedure
Station interference	Receiver located near powerful stations	Do not uncoil all of antenna
Poor tone	Overloading	Reduce volume control setting
	Speaker out of adjustment	Repair or replace
Oscillation	Antenna lead coiled around or near set	Run antenna wire away from set

MODELS 6119,6120,6126,6127
6200,6250,Chassis 101.546,
101.546-1;6120A,6230,6250A
Chassis 101.546-1A

Schematic,Voltage

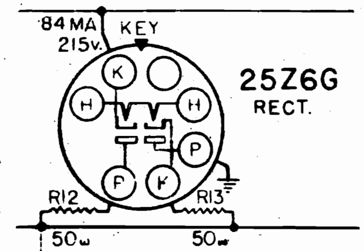
SEARS. ROEBUCK & CO.



* - PART OF T2
** - IN TUNING EYE SOCKET
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 115 VOLTS. WHERE NO READING S GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

FEB. 21, 1939

Connections
Model 101.546-1
See "CHANGES"



INTERMEDIATE FREQUENCY . . 455 kc

POWER SUPPLY:
All models available . . . . .105-125 volts, 25-60 cycle, 60 watts

FREQUENCY RANGES:
Band "AM" . . . . 540-1730 kc
Band "SW" . . . . 5.95-18.2 mc

ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Ant-Transl. Trimmer	Padder
Band "AM"	1400 kc	1400 kc	600 kc
Band "SW"	None	None	Fixed

RECOMMENDED ANTENNA EQUIPMENT

Catalog #5586 Doublet Antenna Kit
" #5587 " " "
" #5588 Conventional Ant. Kit
" #5575 " " "

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . .2 watts
Maximum . . . . .3 watts

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 5-3/8 inches
Field coil resistance . . . . 850 Ohms

MODELS 6119,6120,6126,6127
6200,6250,6120A,6230,6250A
Alignment,Changes

SEARS, ROEBUCK & CO.

CHANGES

ADDITION OF TWO 50 OHM 2 WATT RESISTORS TO ELIMINATE FAILURE OF 25Z6G RECTIFIER TUBES AND IN SOME CASES SUBSEQUENT SHORTING OF THE FIRST SECTION OF THE ELECTROLYTIC FILTER CONDENSER.

NOTE: The resistors have been added at the factory when the identification number reads 101.546-1.

Remove the wire connecting pins #4 and #5 of the rectifier tube to pin #7 of the ballast tube. One 50 ohm 2 watt resistor is connected from pin #4 of the rectifier to pin #7 of the ballast tube. The other 50 ohm 2 watt resistor is connected from pin #5 of the rectifier to pin #7 of the ballast tube.

The 50 ohm 2 watt resistors, part number 1012214418, can be obtained from source 101.

Connections are shown on schematic diagram, Model 101.546-1.

CHECKING CONDITION OF FILTER ELECTROLYTICS AFTER 25Z6G RECTIFIER TUBE HAS FAILED.

Check the resistance, with the power disconnected from the set, of each filter electrolytic with a DC ohmmeter, reversing the terminals of the ohmmeter on each condenser. A shorted condenser will show very low resistance in both tests.

If, after the resistors are added and a new rectifier tube installed, the set has excessive hum, the voltage across each of the filter electrolytics should be checked. If the voltage across any one of them is more than 20% below the value shown on the schematic, the replacement of this electrolytic should correct the hum. The condenser used to replace the defective section of the electrolytic should be 1012019913. These condensers can be obtained direct from source 101.

Chassis identified by 101.546-1A are the same as 101.546-1 except for a change in the design and part number of the push buttons and call letter sheets.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil

Output meter reading to indicate 500 milliwatts . . . . 1.2 volts

Dummy antenna value to be in series with generator output . . . . See chart below

Connection of generator output lead . . . . See chart below

Generator modulation . . . . 30%, 400 cycles

Position of Volume Control . . . . Fully clockwise

Position of Tone Control . . . . HI

Position of Dial Pointer with variable fully closed . . . . Horizontal

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION
"AM"	Closed	455 kc	.1 mfd.	6J8G Grid	T2, T1	IF Output IF Input
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Lead	C2*	Wave Trap
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Lead	C5,C21	Oscillator Translator
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Lead	C6	Padder

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

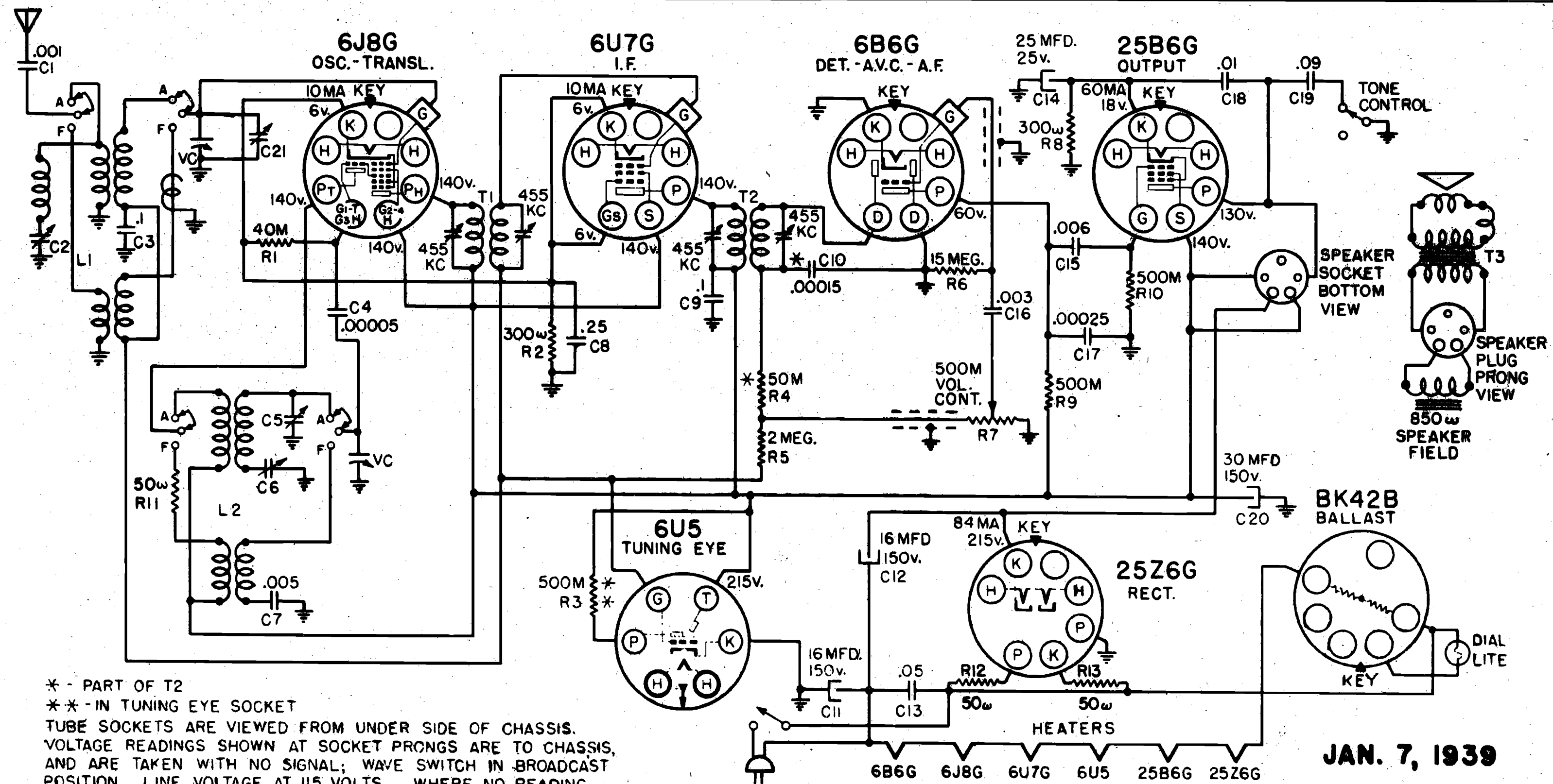
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

There are no trimmer adjustments for the short wave band.

SEARS, ROEBUCK & CO.

MODEL 6130
Chassis 101.577
101.577-1
Schematic, Voltage Changes



* - PART OF T2
** - IN TUNING EYE SOCKET
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 115 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

JAN. 7, 1939

DIFFERENCES BETWEEN 101.557 AND 101.557-1:

R12 and R13, 50 ohms each, have been added to the 25Z6G plate and cathode circuits of 101.557-1 chassis. (See schematic.) These resistors are to prevent failure of the 25Z6G tube and should be added to 101.557 chassis as described in Bulletins XY6784 and XY6795, dated December 28th 1938. Either filter condenser, C11 or C12, may be damaged by a defective 25Z6G tube and should be checked with an ohmmeter before replacing the tube. A normal condenser will show high resistance when the polarity of the ohmmeter terminals agrees with the polarity of the condenser and will show considerably lower resistance when the ohmmeter terminals are reversed. (Be sure power is off when checking.) If C11 is found damaged, it is not necessary to replace the entire 3-section block. Instead, C11 should be replaced by a new single unit 13 mfd. condenser, part #1012019913. Remove the yellow lead of the original electrolytic and in its place connect the yellow lead of the new condenser. Connect the black lead of the new electrolytic to the same place in the circuit as the black lead of the original electrolytic. If the set has excessive hum, the capacity of C11 and C12 should be checked by shunting a #1012019913 condenser across each of them, observing correct polarity.

THE PUSH BUTTON TUNING MECHANISM:

Push buttons are locked and unlocked by tightening or loosening the slotted screw, made accessible when the push button knob is pulled off of its plunger. Stations are set up by holding the plunger all the way in and tuning in the desired station. The setting then is locked by securely tightening the slotted screw.

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER SUPPLY:
All models available .
105-125 volts, 50-60 cycle, 60 watts

FREQUENCY RANGES:
Band "AM" . . . . 540-1730 kc
Band "FOR" . . . . 5.95 mc-18.2 mc

ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Ant-Transl. Trimmer	Padder
Band "AM"	1400 kc	1400 kc	600 kc
Band "FOR"	None	None	None

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 6"
Field coil resistance . . . . 850 ohms
App. field coil voltage drop. . . 75 V.

POWER OUTPUT:
Type . . . . Beam tube
Undistorted . . . . 2 watts
Maximum . . . . 3 watts

MODEL 6130
Alignment, Trimmers
Socket, Chassis

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts. . . . . 1.2 volts
Average sensitivity in microvolts for 500 milliwatts output . . . . See chart below
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator output lead . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . Horizontal

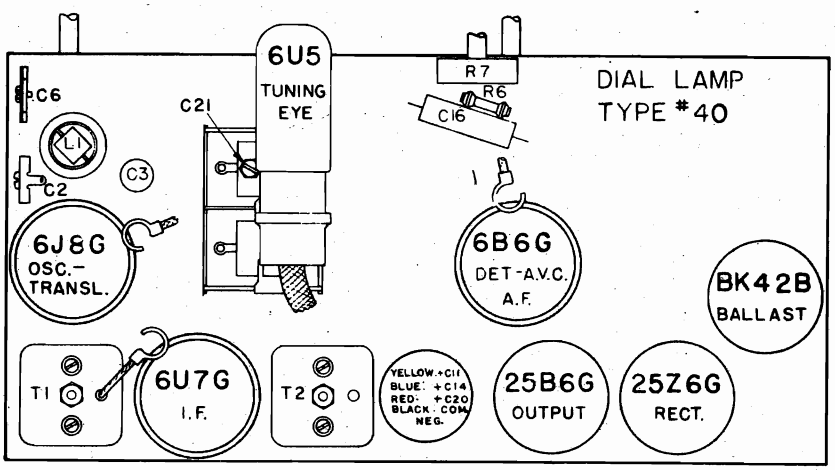
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6J8G Grid	T2, T1	IF Output IF Input	70
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Lead	C2*	Wave Trap	--
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Lead	C5, C21	Oscillator Translator	50
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Lead	C6	Padder	55

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

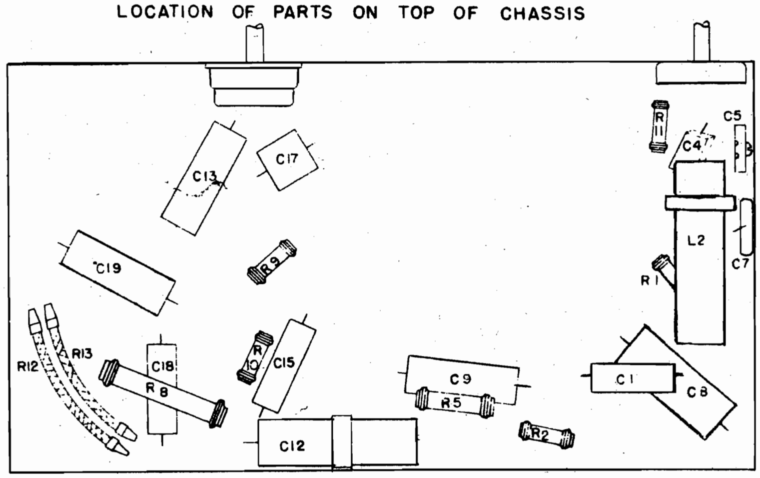
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective

There are no trimmer adjustments for the short wave band.



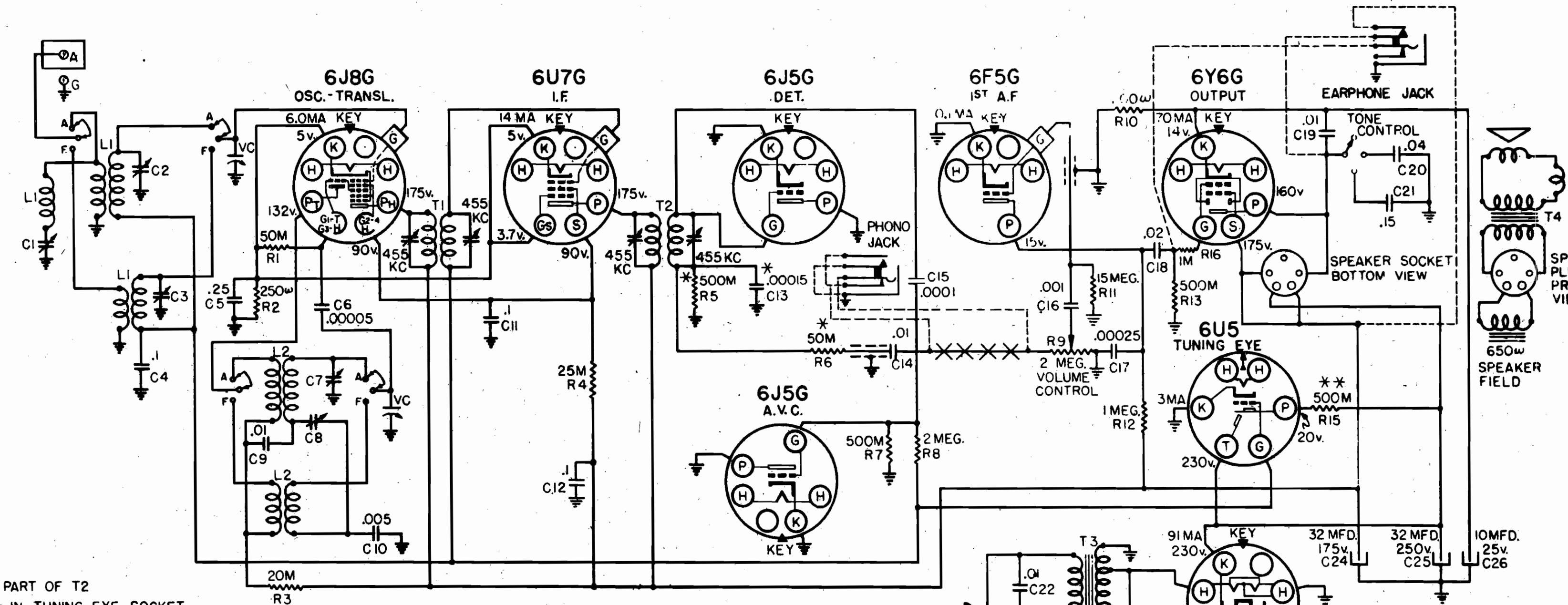
LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS

MODELS 6133,6141,6139,6137
6202,6203,6253,6252,6199
Chassis 101.535
Schematic,Voltage

SEARS, ROEBUCK & CO.



* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 115 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

XX INDICATES LEAD TO BE BROKEN
DOTTED LINES INDICATE NEW CONNECTIONS.

DEC. 18, 1938

RECOMMENDED ANTENNA EQUIPMENT

Catalog #5586 Doublet Antenna Kit
" #5587 " " "
" #5588 Conventional Ant. Kit
" #5575 " " "

ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Ant-Transl. Trimmer	Padder
Band "AM"	1400 kc	1400 kc	600 kc
Band "SW"	None	15 mc	Fixed

FREQUENCY RANGES:
Band "AM" . . . . 540-1730 kc
Band "SW" . . . . 5.9-18.5 mc

POWER OUTPUT:
Type . . . . Tetrode
Undistorted . . . . 3-1/2 watts
Maximum . . . . 5 watts

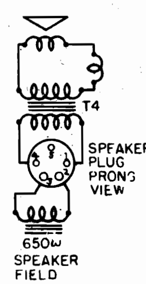
LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 8 and 10 inch
Field coil resistance . . . . 650 Ohms
App.field coil voltage drop..55 Volts

INTERMEDIATE FREQUENCY . . . . .455 kc

POWER SUPPLY:
All models available . . . . 105-125 volts, 50-60 cycle, 75 watts
All models available . . . . .105-125 volts, 25 cycle, 90 watts

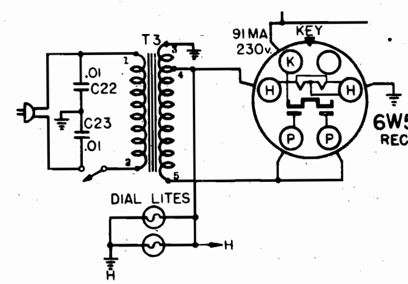
SPEAKER PLUG COLOR CODE

1. Green
2. Yellow
3. Black
4. Brown
5. Blank



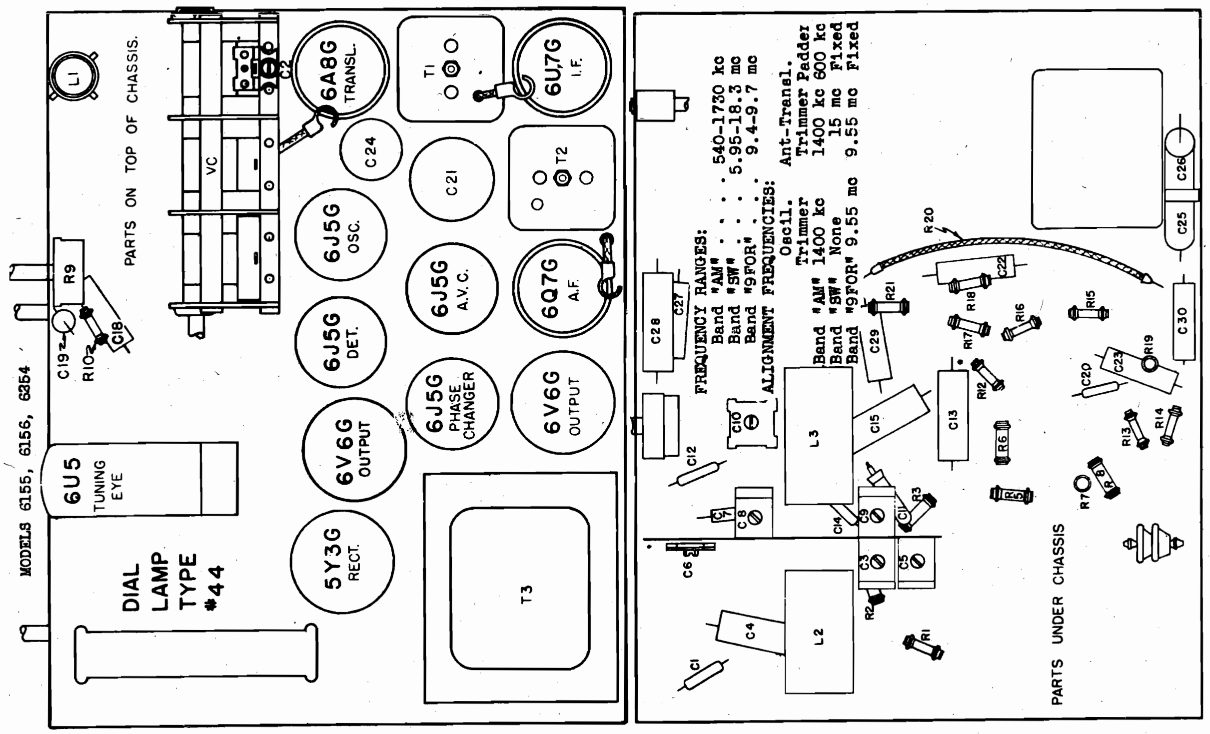
PWR. TRANSF. COLOR CODE

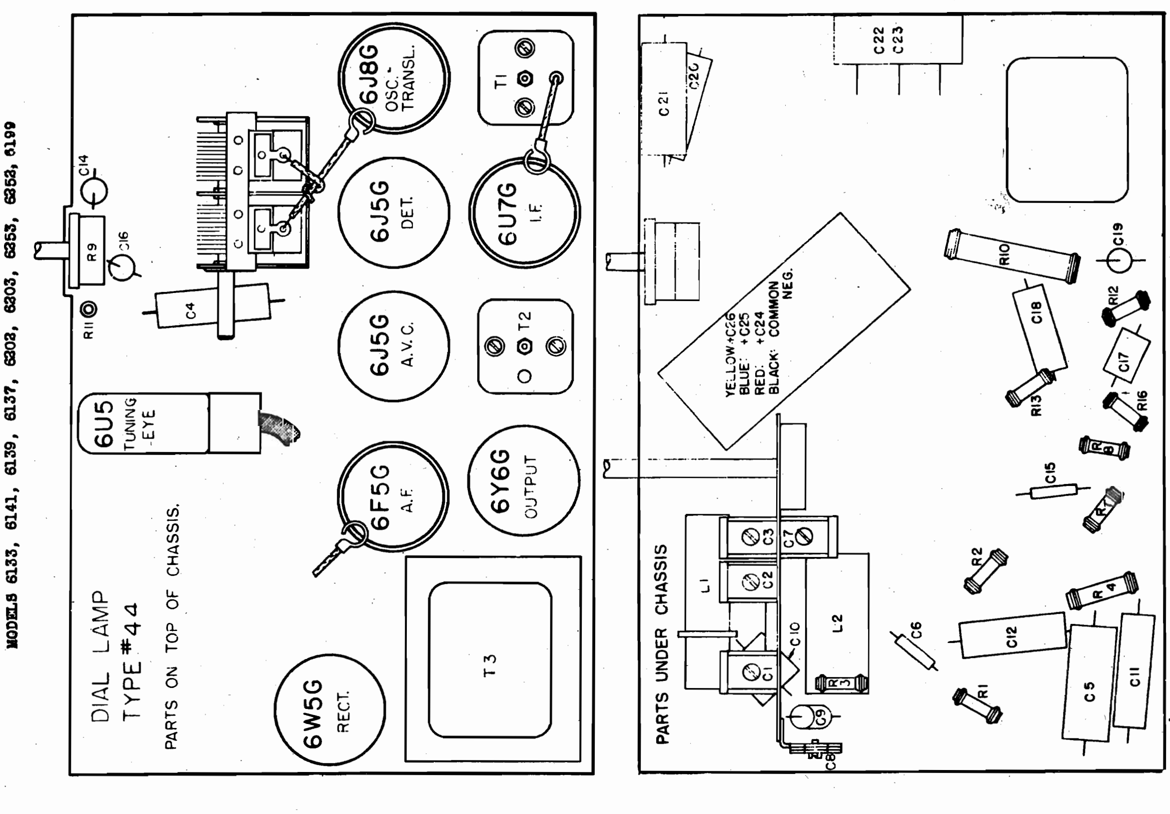
1. Black
2. Green
3. Slate
4. Yellow
5. Red



MODELS 6133,6137,6139,6141
6199,6202,6203,6252,6253
MODELS 6155,6156,6254
Socket,Trimmers,Chassis

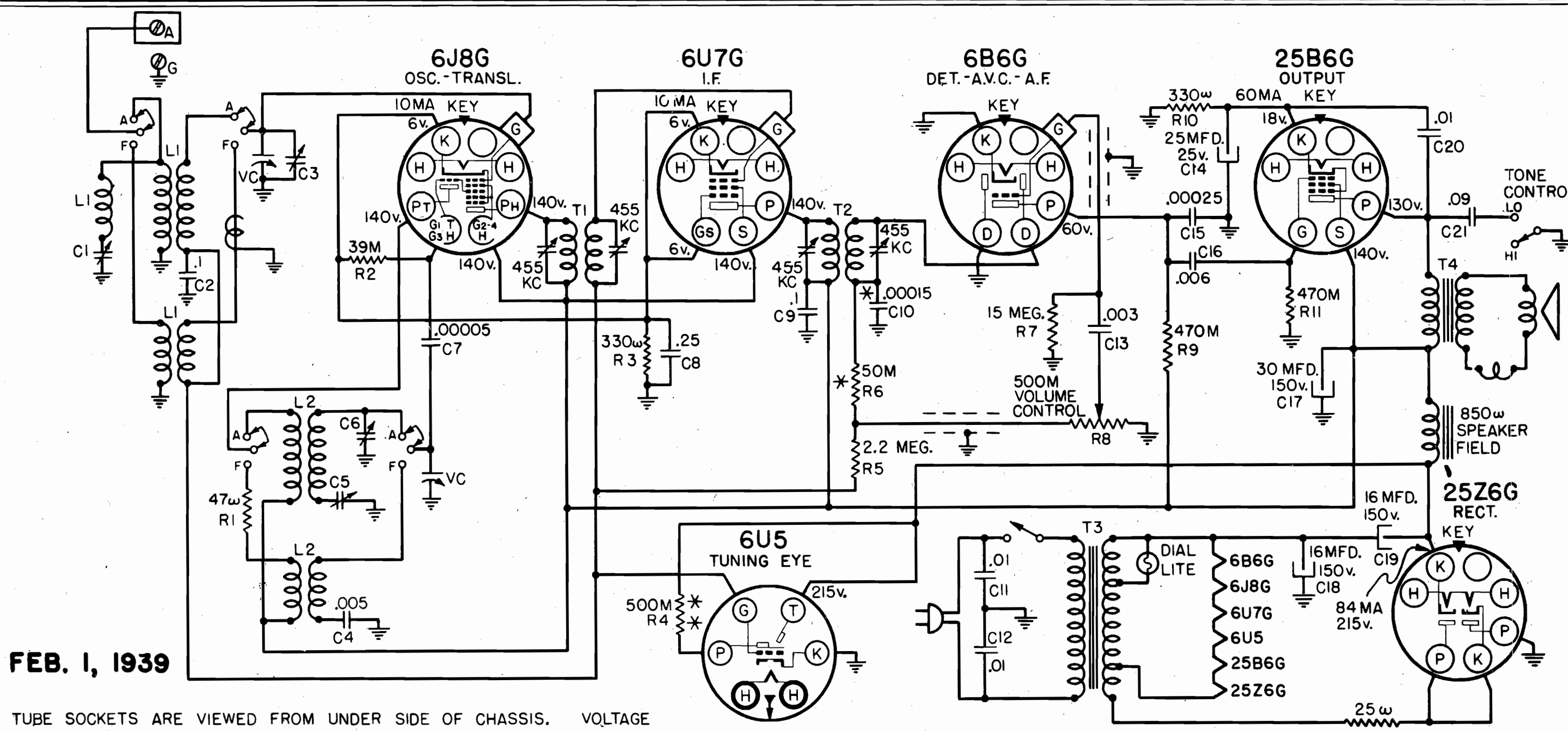
SEARS, ROEBUCK & CO.





MODEL 6151
Chassis 101.556,101.556-1
Schematic,Voltage,Changes

SEARS, ROEBUCK & CO.



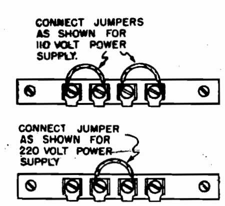
FEB. 1, 1939

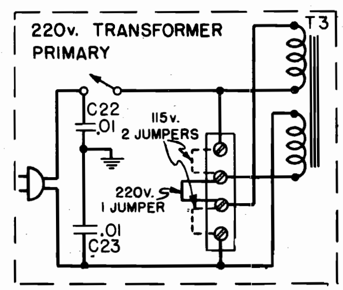
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 115 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

* - PART OF T2
** - IN TUNING EYE SOCKET

INTERMEDIATE FREQUENCY

455 kc





__DIFFERENCES BETWEEN 101.556 AND 101.556-1:__

101.556 is supplied with a 105-125 volt, 50-60 cycle power transformer. This model is intended for domestic use.

101.556-1 is intended for export use and is equipped with a tapped power transformer for 105-125 volt or 210-250 volt, 40-60 cycle power. The illustrations below show the proper jumper connections, found under the chassis, to match the supply voltage (101.556-1 only).

__PUSH BUTTON TUNING MECHANISM:__

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then __securely__ locking the adjustment.

__RECOMMENDED ANTENNA EQUIPMENT:__

Catalog #5586 Doublet; reduces noise on Broadcast and Short Waves.
Catalog #5587 Doublet; reduces noise on Short Waves.
Catalog #5588, #5575; Conventional Antennas.

POWER SUPPLY:
101.556 . . . . 105-125 volts, 50-60 cycle, 45 watts
101.556-1 . . . . 105-125 volts: 210-250 volts, 40 cycle, 45 watts

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . 3 watts
Maximum . . . . 3 watts

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 5-3/8"
App. field coil resistance. .850 ohms

MODELS 6177A, 6178A, 6179A, 6185A, MODEL 6151 Align., Chass. Skt., Trims.

SEARS, ROEBUCK & CO.

CHASSIS 101.556 AND 101.556-1

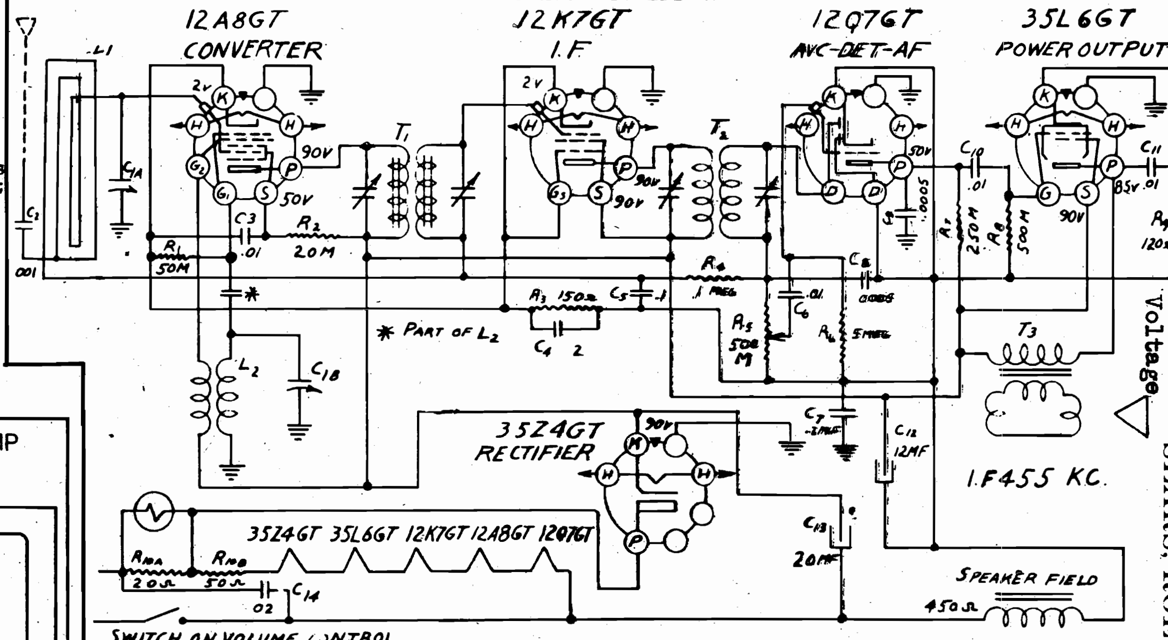
ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts .0.36 volts
Average sensitivity in microvolts for 50 milliwatts output . . . . See chart below

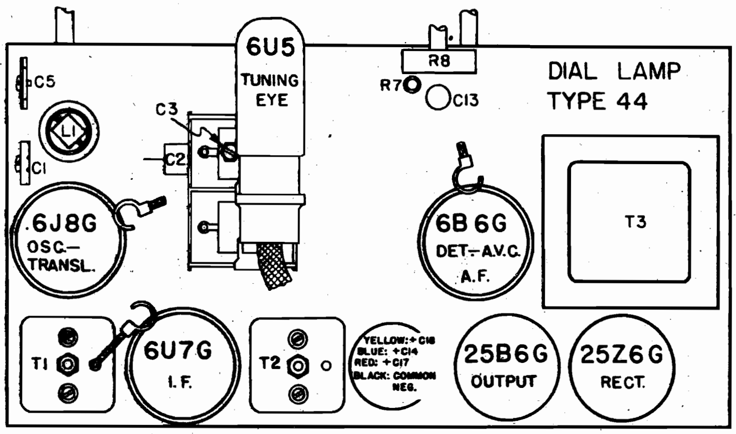
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of dial pointer with variable fully closed . . . . To fall on block immediately above and between the letters "mc" and "kc".

FOR ALIGNMENT SEE INDEX

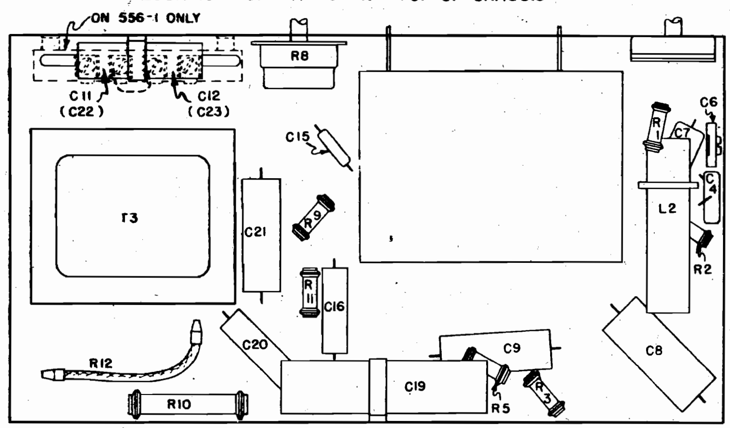


VOLTAGES INDICATED AT SOCKET TERMINALS ARE MEASURED WITH 1000 OHM PER VOLT METER, ON 117V LINE, WITH NO SIGNAL

APRIL 3, 1939



LOCATION OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS

MODELS 6177A, 6178A, 6179A, 6185A (109.279-1) MODEL 6185A (109.279-2)

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6J8G Grid	T3,T1	IF output IF Input	60
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"AM"	Fully open	1750 kc	.0003 mfd.	Ant. Term.	C6	Oscillator	100
"AM"	1400 kc	1400 kc	.0003 mfd.	Ant. Term.	C3	Translator	50
"AM"	600 kc(rock)	600 kc	.0003 mfd.	Ant. Term.	C5	Padder	35

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

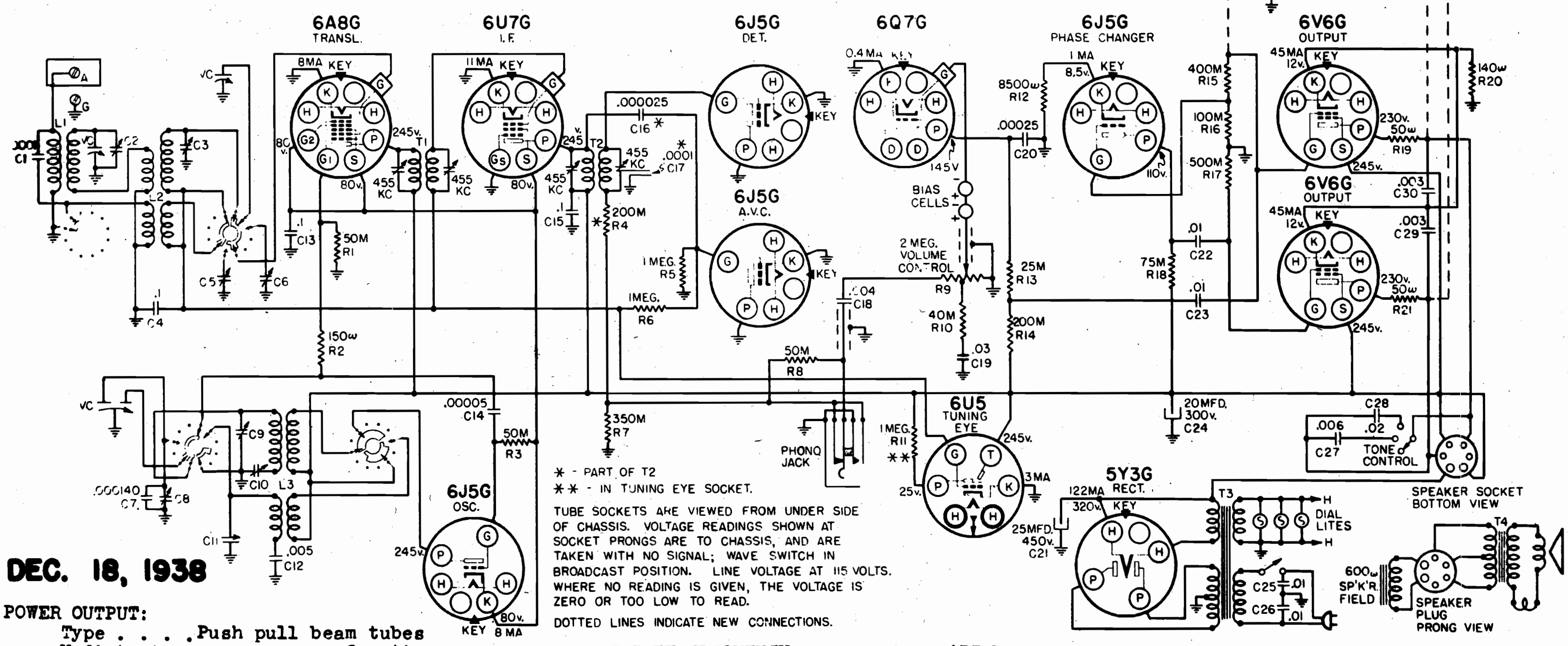
The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

There are no trimmer adjustments for the short wave band.

MODELS 6155,6156,6254
Chassis 101.549
Schematic,Voltage Changes

SEARS, ROEBUCK & CO.

POWER SUPPLY:
All models available . . . . 105-125 volts, 50-60 cycle,110 watts
All models available .105-125 volt, 25 cycle, 120 watts



DEC. 18, 1938

POWER OUTPUT:
Type . . . . Push pull beam tubes
Undistorted . . . . . . 6 watts
Maximum . . . . 10 watts

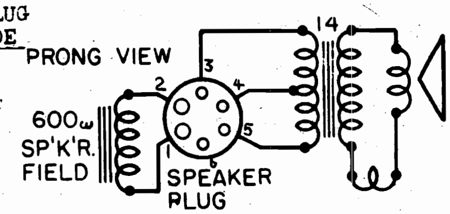
LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 10 and 12 inch
Field coil resistance . . . . 600 ohms
App. field voltage drop. . . 75 volt

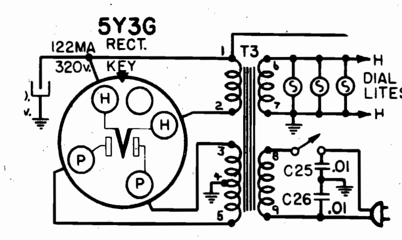
INTERMEDIATE FREQUENCY . . . . 455 kc

RECOMMENDED ANTENNA EQUIPMENT

Catalog #5586 Doublet Antenna Kit
" #5587 " " "
" #5588 Conventional Ant. Kit
" #5575 " " "

SPEAKER PLUG COLOR CODE
1. Black
3. Yellow
3. Brown
4. Red
5. Green
6. Blank





PWR. TRANSF. COLOR CODE
1,2. Red
3. Blue
4. Slate
5. Red
6,7. Black
8. Black
9. Green

CIRCUIT CHANGES TO REDUCE HUM:

If there is complaint about objectionable hum, the following changes will result in reduction of hum.

Replace the 100M ohm resistor, R13, with a 25M ohm resistor.

Replace the 150M ohm resistor, R14, with a 200M ohm resistor.

Remove the ground wire that runs from the volume control to the ground lug on the volume control bracket. Disconnect the braiding of the shielded volume control cable from the ground lug on the volume control bracket. Connect an insulated wire from the ground lug on the volume control to the braiding of the shielded cable, taping this connection carefully to prevent it from shorting to the chassis.

MODELS See Below
Alignment

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY: For all Models and Chassis listed in tables below.

Output meter connection . . . . Across loud speaker voice coil

Output meter reading to indicate 500 milliwatts . . . . 0.96 volt

Generator ground lead connection . . . . Receiver chassis

Dummy antenna value to be in series with generator output . . . . See chart below

Connection of generator output lead . . . . See chart below

Generator modulation . . . . 30%, 400 cycles

Position of Volume Control . . . . Fully clockwise

Position of Tone Control . . . . HI

Position of Dial Pointer with variable fully closed . . . . Center of block to left of 550 kc calibration mark.

MODELS 6155,6156,6254 CHASSIS 101.549

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION
"AM"	Closed	455 kc	.1 mfd.	6A8G Grid	T2, T1	IF Output IF Input
"SW"	15 mc (rock)	15 mc	400 ohms	Ant. Term.	C5	Translator
"9FOR"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C8* C6	Oscillator Translator
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C9,C3,C2	Osc.,Trans.Ant.
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder

MODELS 6158,6159,6192 CHASSIS 101.555,101.555-1

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6A8G Grid	T2,T1	IF Output IF Input	810
"SW"	15 mc(rock)	15 mc	400 ohms.	Ant. Term.	C13	Translator	40
"9"	9.55 mc	9.55 mc	400 ohms.	Ant. Term.	C9* C16	Oscillator Translator	60
"11"	11.71 mc	11.71 mc	400 ohms.	Ant. Term.	C7* C15	Oscillator Translator	40
"15"	14.9 mc	14.9 mc	400 ohms.	Ant. Term.	C5* C14	Oscillator Translator	40
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C17,C12, C1	Osc.,Transl., RF	30
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C18	Padder	40

IMPORTANT ALIGNMENT NOTES

The alignment must be done in the order given.

*Two peaks can be had, one with the trimmer screwed further out than the other. The correct adjustment is with the trimmer screwed further out. The other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

ALIGNMENT PROCEDURE

PRELIMINARY: For all Models and Chassis listed in tables below.

Output meter connection . . . . Across loud speaker voice coil

Generator ground lead connection . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator output lead. . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise

MODELS 6264, 6265 CHASSIS 101.551

Output meter reading to indicate 50 milliwatts . . . . 0.34 volts
Average sensitivity in microvolts for 50 milliwatts output . . . . See chart below
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . To fall in center of block to left of 550 kc mark.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T3,T2,T1	IF Output IF Interstage IF Input	200
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"SW"	16 mc (rock)	16 mc	400 ohms	Ant. Term.	C8	Translator	15
"9FOR"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C2,C11	Osc.,Trans.	18
"AM"	Fully open	1730 kc	.0002 mfd.	Ant. Term.	C9	Oscillator	20
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C7	Translator	10
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder	10

MODELS 6336, 6436 CHASSIS 101.574

Approximate microvolts input for 500 milliwatts output . . . . See chart below
Position of Tone Control . . . . Both buttons out
Position of Dial Pointer with variable fully closed . . . . On first mark to left of 550 kc calibration mark.

Output meter reading to indicate 500 milliwatts . . . . 1.6 volts

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"A"	Fully open	1730 kc	.0002 mfd.	Ant. Term.	C14	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C10	Translator	50
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C15	Padder	50
"B"	2.3 mc(rock)	2.3 mc	400 ohms	Ant. Term.	C17	Osc. Pad.	110
"B"	2.5 mc	2.5 mc	400 ohms	Ant. Term.	C12†	Translator	110
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C11†	Transl.Pad.	110
"C"	18 mc	18 mc	400 ohms	Ant. Term.	C5**	Oscillator	--
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C3	Translator	30
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C20**	Oscillator	--
"D"	9.55 mc(rock)	9.55 mc	400 ohms	Ant. Term.	C9	Translator	85
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C18**	Oscillator	--
"E"	11.71 mc(rock)	11.71 mc	400 ohms	Ant. Term.	C8	Translator	80

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

† Repeat the C11 and C12 adjustments until perfect alignment is obtained. This will require going back and forth in these adjustments several times.

** If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

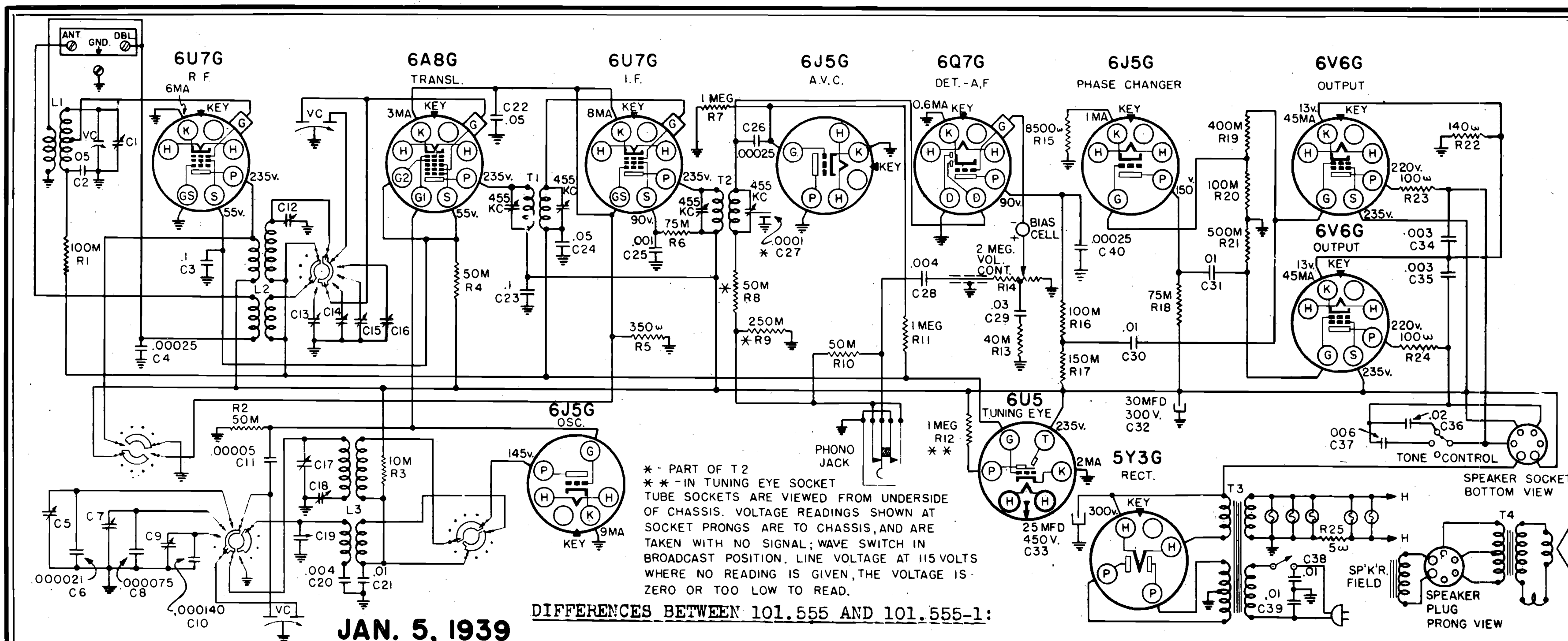
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

Schematic, Voltage
Chassis, Socket
Trimmers

SEARS, ROEBUCK & CO.

MODELS 6158, 6159, 6192
Chassis 101.555
101.555-1



JAN. 5, 1939

DIFFERENCES BETWEEN 101.555 AND 101.555-1:

101.555 and 101.555-1 are the same electrically. The differences are in the design (and part numbers) of the escutcheons and knobs, as shown in the parts list. The push button escutcheon for Model 101.555 is removed by taking out the snap-in buttons, made accessible when the volume and tuning knobs are pulled off their shafts. The 101.555-1 push button escutcheon is removed by taking out the screws that hold it and the dial escutcheon.

INTERMEDIATE FREQUENCY

455 kc

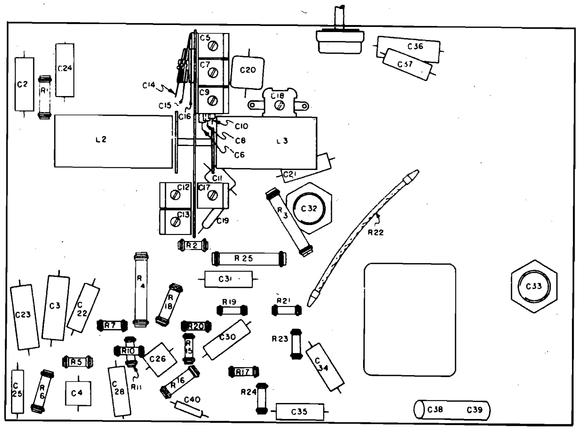
FOR ALIGNMENT
SEE INDEX

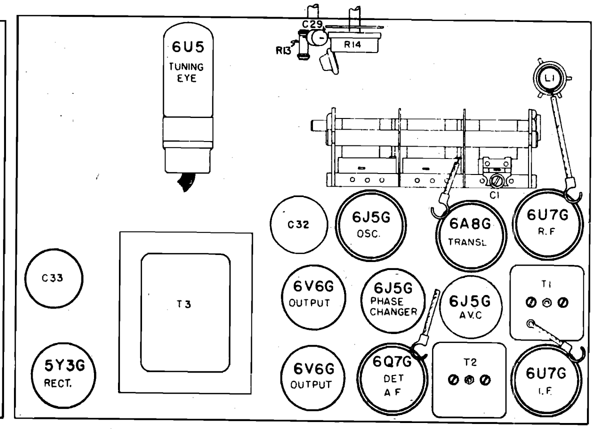
FOR ALIGNMENT SEE INDEX

FREQUENCY RANGES:
- Band "AM" . . . . 540-1750 kc
- Band "SW" . . . . 5.95-18.3 mc
- Band "9" . . . . 9.4-9.7 mc
- Band "11" . . . . 11.55-12.1 mc
- Band "15" . . . . 14.4-15.4 mc

POWER OUTPUT:
- Type . . . . Push pull beam tubes
- Undistorted . . . . 6 watts
- Maximum . . . . .10 watts

LOUD SPEAKER:
- Type . . . . .Dynamic
- Size . . . . 12 and 15 inch
- Field coil resistance . . . . . .600 ohms
- App. field coil voltage drop . . . . .65 V.



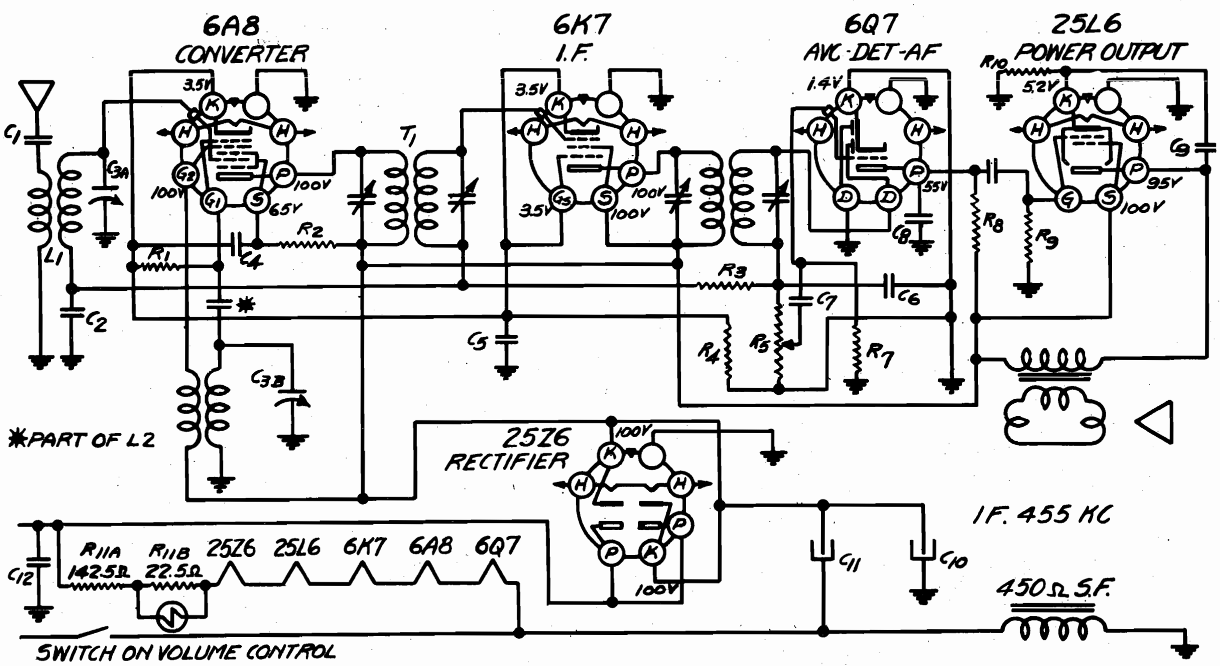


POWER SUPPLY:
- All models available . . . . .105-125 volts, 50-60 cycle, 105 watts
- All models available . . . . 105-125 volts, 25 cycle, 115 watts

MODELS 6160,6161,6163
6175.Ch.109.199-1

SEARS, ROEBUCK & CO.

Schematic, Voltage
Socket, Trimmers
Alignment



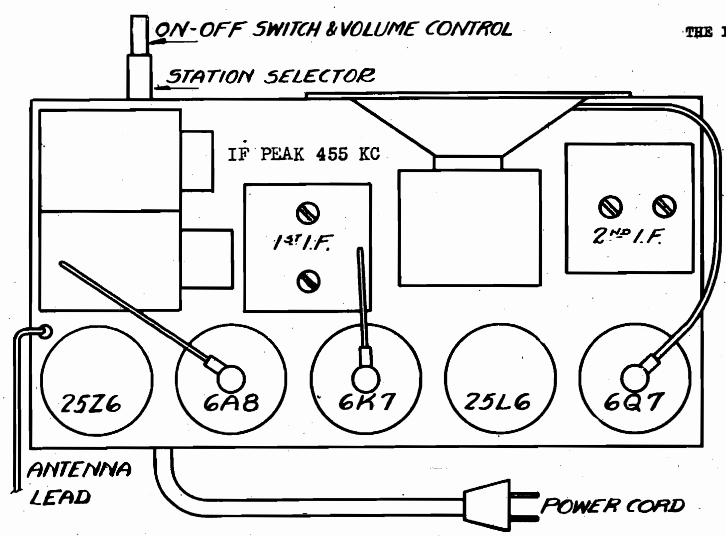
VOLTAGES INDICATED AT SOCKET TERMINALS ARE MEASURED WITH 1000 OHM PER VOLT METER, ON 117V LINE, WITH NO SIGNAL

JAN. 12, 1939

POWER SUPPLY

105-125 Volts 50-60 Cycle or D.C. .... 43 watts on 117 volt line.

THE LINE CORD MUST NOT BE SHORTENED OR ALTERED IN ANY WAY.



FREQUENCY RANGE

Broadcast and other services 540 to 1720 KC.

ALIGNMENT FREQUENCIES

455 KC., 1720 KC., 1400 KC.

LOUD SPEAKER

Type...................... Dynamic
Size...................... 3½ inch
Field Resistance........ 450 ohms

POWER OUTPUT

Type.................. Beam Power
Undistorted............ 1.2 watt
Maximum .... 2 watts

ALIGNMENT PROCEDURE

See Tube Layout Diagram for location of trimmers.

Connect the Signal Generator ground to the receiver chassis thru a .1 mfd. condenser. Using a .05 mfd. condenser (SEE NOTE BELOW) in series with the high side of the generator, apply a 455 KC. signal to the grid of the 6K7 IF amplifier tube and align the 2nd IF transformer. Repeat for the 1st IF transformer, applying the signal to the grid of the 6A8 tube. Using an 85 to 100 mmf. condenser as a "dummy" antenna, turn the tuning condenser to minimum capacity, apply a 1720 KC signal to the antenna and tune in the signal with the oscillator trimmer. Set the generator to 1400 KC., tune in the signal and adjust the antenna trimmer. (The antenna and oscillator trimmers are located on top of the tuning condenser. see the Tube Layout Diagram).

NOTES

If considerable hum appears when the generator is connected to the 6K7 or 6A8 tubes, use a smaller condenser in series with the high side of the generator.

The "dummy antenna" used for aligning the oscillator and antenna should be connected to the receiver end of the antenna.

Use a weak signal from the generator. Strong signals tend to cause improper adjustments.

MECHANICAL SPECIFICATIONS

CONTROLS

Upper Knob.............. Tuning
Lower Knob.. On-Off & Volume

CONTROL OPERATION

Direct Drive
Turn right to turn power on and to increase volume.

SEARS, ROEBUCK & CO.

MODELS 6133,6141,6139,6137,6202,6203,6253,6252,6199 CHASSIS 101.535

CONNECTION OF EARPHONE AND PHONOGRAPH PICKUP JACKS:

Part number 1016119531 jack, for connection of earphones or phonograph pick-up, can be ordered directly from source 101. Retail selling price is 79¢.

The schematic diagram on Page 8 shows the connections.

If a crystal pick-up is used, a filter composed of a .01 mfd. condenser and a 100M ohm resistor connected in series,should be connected across the pick-up to prevent excessive bass response. This filter will also act as a partial scratch filter.

PUSH BUTTON TUNING

SETTING UP:

Leave the radio turned on for about 15 minutes before adjusting the push buttons. This "warming up" period will insure permanent and accurate settings.

1. Make a list of the stations that you want to set up for push button tuning. It is advisable, but not necessary, to arrange the stations in the order of their frequency (kilocycles); that is, the station of lowest frequency will be #1,the station of next higher frequency #2, etc. The top left push button can be used for station #1, the lower left one for station #2, the next upper one for station #3, etc. If you wish, short wave stations that can be tuned in on the SPREAD BAND scale can be set up for push button tuning. The stations selected must give strong and reliable reception.

2. Remove the four screws that hold the plate through which the push buttons protrude, and remove the plate. (This plate is called the "escutcheon".) If your radio is a table model (not a console), remove the snap-in button at the right side of the cabinet. See Fig.1.

3. Push the tuning knob in and turn it so that the dial pointer comes to the right end of the dial. If your radio is a table model, a key,illustrated in Fig. 2, will be found in the Instruction Leaflet envelope. Insert this key in the hole in the side of the cabinet from which the snap-in button was removed and engage the key with the slot at the end of the push button locking mechanism. Unscrew (turn counter-clockwise) the key a few turns, unlocking the mechanism. (A screw driver can be used for unlocking the mechanism instead of the key supplied.)

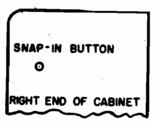
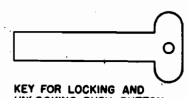


FIG. 1


KEY FOR LOCKING AND UNLOCKING PUSH-BUTTON MECHANISM.
FIG. 2

If yours is a console model, the mechanism can be unlocked by reaching in from the back of the cabinet and unscrewing (turning counter-clockwise) the wing nut, at the end of the mechanism, a few turns. (This can be done by hand.)

4. Push the button that you wish to use for your #1 station, all the way in and hold it in firmly. Push the tuning knob in and turn it until your #1 station is tuned in exactly. Then let go of the push button, making sure not to turn the tuning knob until you have let go of the button. (Turning the knob while the button is pushed in would spoil the accuracy of the adjustment.) Be as exact as possible in tuning your station since this will determine how accurately your station will be tuned whenever you use the push button.

5. Push in your #2 button. Hold it in firmly and tune in your #2 station accurately. Then let go of the push button and then the tuning knob. Proceed in the same manner for the other stations on your list.

6. When all of the stations have been set up, push the tuning knob in and turn it so that the dial pointer comes to the left end of the dial. Then lock the mechanism by tightening (turning clockwise) the wing nut for console models or by using the key for table models If yours is a table model, replace the snap-in button in the side of the cabinet.

7. Punch out the call letters of your desired stations from the call letter sheets supplied. Insert the call letters in the celluloid holders at the back of the escutcheon. Be sure to insert the call letters so that they are opposite their respective push buttons. Then replace the escutcheon.

8. You may change your choice of stations at any time by unlocking the mechanism as described in Step 3 and adjusting the button to the new station, as described in Step 4. Then relock the mechanism as described in Step 6. The call letters of the new station should be inserted in the call letter holder in their proper position.

OPERATION:

Push the button, indicated for your desired station, all the way in. Your station then will be tuned in. If you have selected short wave stations for approximate push button tuning, be sure the band switch is turned to the proper band.

MODEL 6155,6156,6254 CHASSIS 101.549

PUSH BUTTON TUNING

SETTING UP:

Leave the radio turned on for about 15 minutes before adjusting the push buttons. This "warming up" period will insure permanent and accurate settings.

1. Make a list of the stations that you want to set up for push button tuning. It is helpful to arrange the stations in the order of their frequency (kilocycles); that is, the station of lowest frequency will be #1, the station of next higher frequency #2, etc. The top left push button can be used for station #1, the lower left one for station #2, the next upper one for station #3, etc. If you wish, short wave stations that can be tuned in on a SPREAD BAND scale can be set up for push button tuning. The stations selected must give strong and reliable reception.

2. Remove the four screws that hold the plate through which the push buttons protrude, and remove the plate. (This plate is called the "escutcheon".)

3. Push the tuning knob in and turn it so that the dial pointer comes to the left end of the dial. Engage the small screw driver, supplied, with the slotted shaft that is between the tuning knob and the push buttons. Unlock the mechanism by pushing the shaft in and unscrewing it (turn counter-clockwise) about four turns. Then remove the screw driver. Use the small screw driver, supplied. Do not use a large handled one because too much force might damage the mechanism.

4. Push the button that you wish to use for your #1 station, all the way in and hold it in firmly. Push the tuning knob in and turn it until your #1 station is tuned in exactly, as indicated by the tuning eye. Be as exact as possible in tuning your station since this will determine how accurately your station will be tuned whenever you use the push button. Then let go of the push button before turning the tuning knob again. If properly done, the tuning eye indication will not change when you let go of the push button.

5. Push in your #2 button. Hold it in firmly and tune in your #2 station accurately. Then let go of the push button; then the tuning knob. Proceed in the same manner for the other stations on your list.

6. After the last station has been set up, lock the mechanism by pushing the slotted shaft in and securely tightening it (turn clockwise), using the small screw driver, supplied (Pushing the slotted shaft in will release the last push button. The dial pointer will move to the right end of the dial as the slotted shaft is turned.) Then remove the screw driver. If the slotted shaft remains pushed in when the screw driver is removed, turning it back and forth very slightly will release it.

After locking the mechanism, test the setting of each button by pushing it in. Then see if the station can be tuned still more accurately by using the tuning knob. Increased accuracy of tuning with the knob will be indicated by a narrower shadow of the tuning eye. If you find any stations that have not been correctly set up, unlock the mechansim, as described in Step 3, and readjust the setting. Be sure to lock the mechanism again before tuning any stations.

7. Punch out the call letters of your desired stations from the call letter sheets supplied. Insert the call letters in the recesses in the front of the push buttons. Cover the call letters with the clear celluloid tabs supplied. Replace the escutcheon.

8. You may change your choice of stations at any time by unlocking the mechansim as described in Step 3 and adjusting the button to the new station,as described in Step 4. Then relock the mechanism as described in Step 6. The call letters of the new station should be inserted in the proper push button.

OPERATION:

Push the button, indicated for your desired station, all the way in. Your station then will be tuned in. If you have selected short wave stations for push button tuning, be sure the band switch is turned to the proper band. The button will remain part way in, indicating what station is tuned in, until you push another button or until you push the tuning knob

MODELS 6158,6159,6192 CHASSIS 101.555,101.555-1; 6368 CHASSIS 101.582,6382 CHASSIS 101.594; 6497 CHASSIS101.595

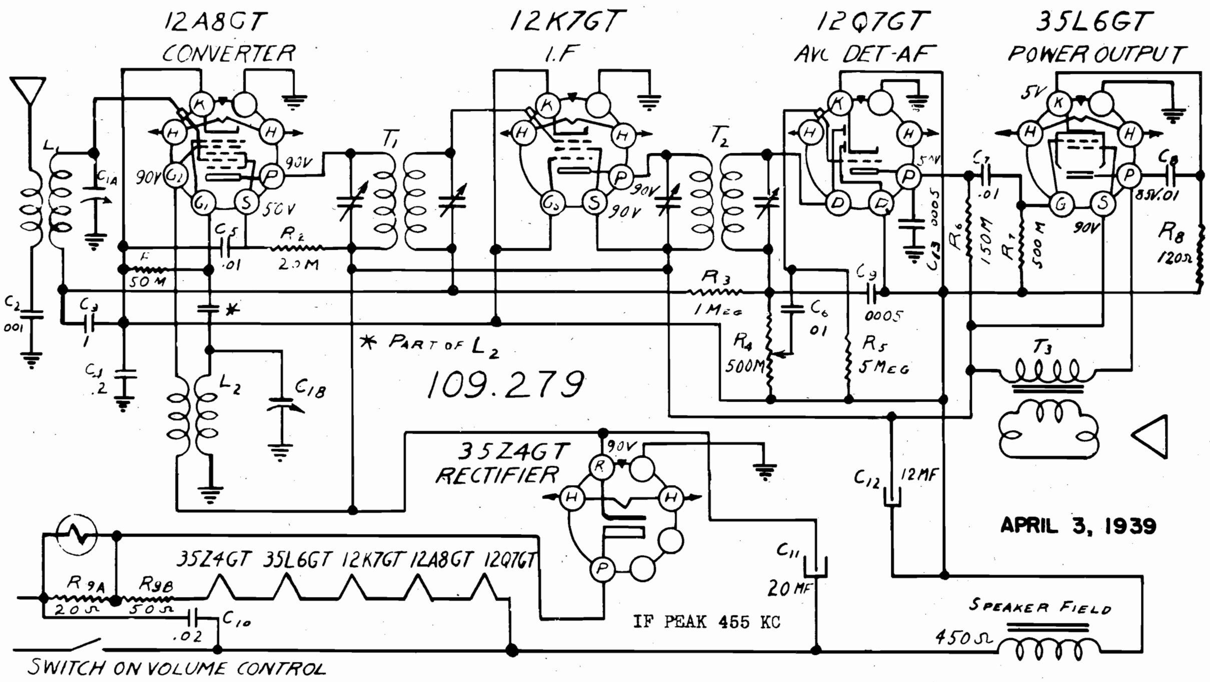
PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), releasing the plunger, then securely locking the adjustment by holding the screw driver lightly in the screw head allowing the spring tension to hold the plunger against the screw driver.

MODELS 6177,6178,6179 6185,Ch. 109.279
Schematic,Voltage
Alignment,Trimmers

SEARS, ROEBUCK & CO.

Socket,Notes
CHASSIS 109.279-1,-2
Alignment,Trimmers
Socket,Notes



POWER SUPPLY

105-125 Volts 50-60 Cycle or D.C...
...26 watts on 117 volt line.

LOUD SPEAKER

Type......................Dynamic
Size......................3½ inch
Field Resistance..........450 ohms

POWER OUTPUT

Type......................Beam Power
Undistorted...............1.0 watt
Maximum...................1.35 watts

FREQUENCY RANGE

Broadcast and other services 540 to 1720 KC.

ALIGNMENT FREQUENCIES

455 KC., 1720 KC., 1400 KC.

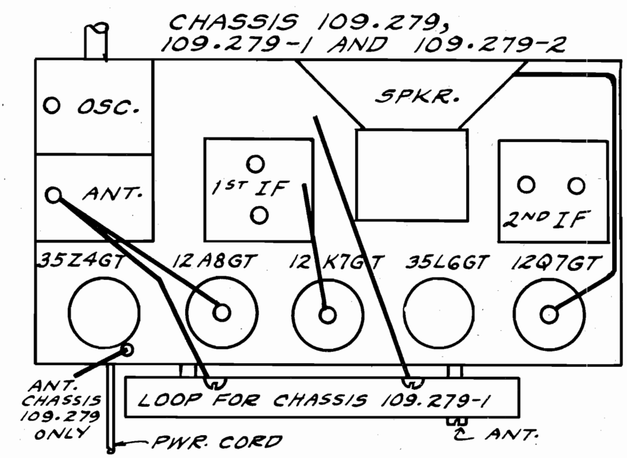
CONTROLS

Upper Knob................Tuning
Lower Knob.......On-Off & Volume

CONTROL OPERATION

Direct Drive
Turn right to turn power on and to increase volume.

VOLTAGES INDICATED AT SOCKET TERMINALS ARE MEASURED WITH 1000 OHM PER VOLT METER, ON 117V LINE, WITH NO SIGNAL



ALIGNMENT FOR CHASSIS 109.279,109.279-1.

SEE TUBE LAYOUT DIAGRAM FOR LOCATION OF TRIMMERS.

Connect the signal generator ground to the receiver chassis thru a .1 mfd. condenser. Using a .05 mfd. condenser in series with the high side of the generator, apply a 455 kc signal to the grid of the 12K7GT IF amplifier tube and adjust the 2nd IF transformer. Repeat for the 1st IF transformer, applying the signal to the grid of the 12A8GT tube.

CHASSIS 109.279 ONLY

Using an 85 to 100 mmf. condenser as a dummy antenna, turn the tuning condenser to minimum capacity , apply a 1720 kc signal to the antenna and tune in the signal with the oscillator trimmer. Set the generator to 1400 kc., tune in the signal and adjust the antenna trimmer. (the antenna and oscillator trimmers are located on top of the tuning condenser.)

CHASSIS 109.279-1 and 109.279-2 ONLY

Turn the tuning condenser all the way to the right (minimum capacity), apply a 1720 kc signal to the grid of the 12A8GT tube and adjust the Oscillator trimmer. The antenna trimmer may be adjusted by tuning in a station near 1400 kc and adjusting the antenna trimmer for maximum signal.

To align the antenna with a signal generator, connect a single turn loop (about a foot square) to the generator in series with a 400 ohm resistor or a 100.mmf. condenser. Place the loop about one foot in back of the receiver, set the generator at 1400 kc. tune in the signal from the generator and adjust the antenna trimmer.

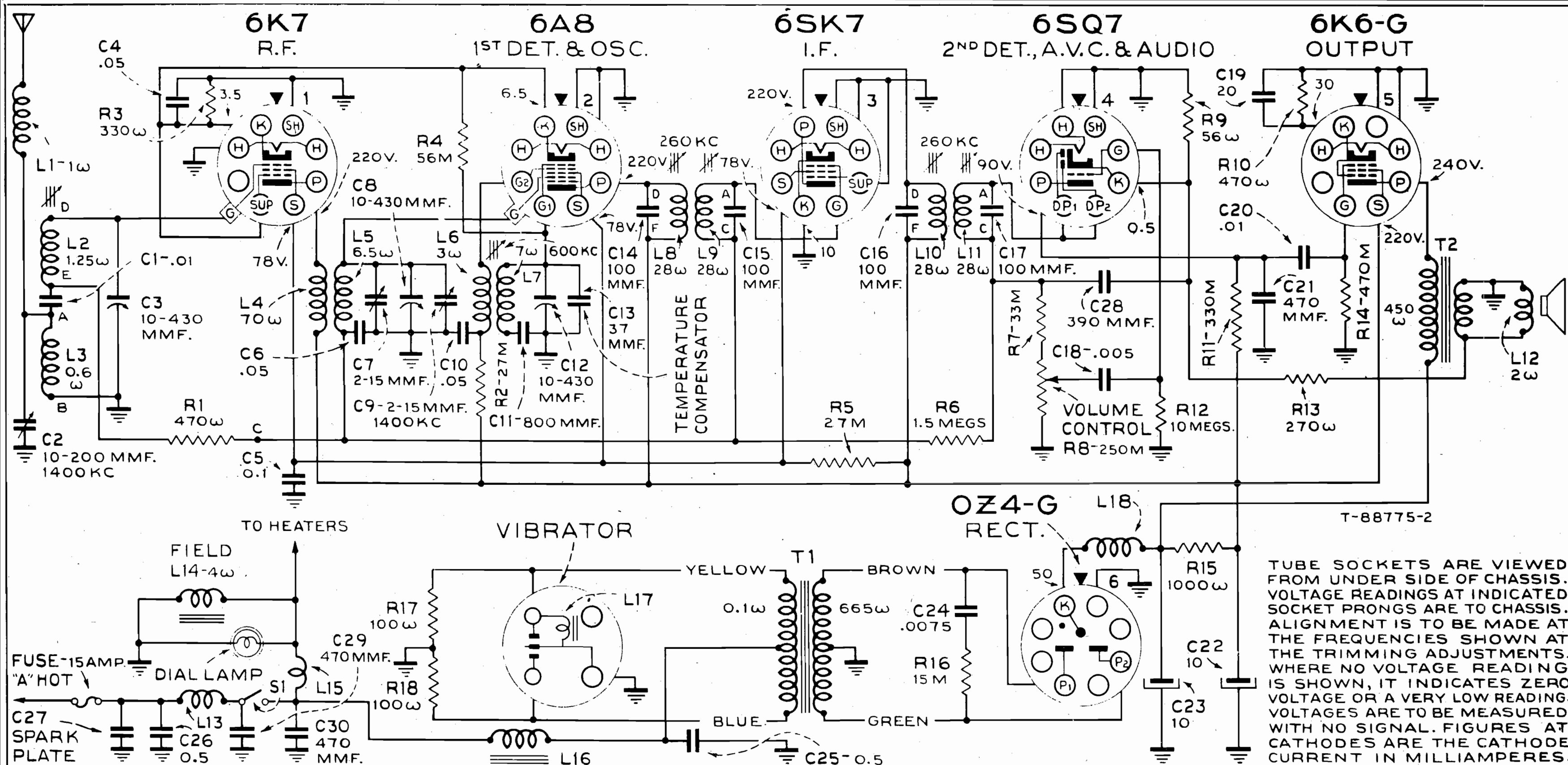
NOTE: ALL MODELS

If considerable hum appears when the signal generator is connected to the receiver, use a smaller condenser in series with the generator. In some cases it will be necessary to connect the generator ground to B- (cathode terminal of the 12Q7GT socket) instead of to the chassis.

Use a weak signal from the generator, strong signals tend to cause improper adjustments.

MODEL 6190,Ch.126.209
Schematic,Voltage
Drive Cord Data

SEARS. ROEBUCK & CO.



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE THE CATHODE CURRENT IN MILLIAMPERES.

LOUDSPEAKER:
- Type .... Electrodynamic
- Size .... 5 inches
- V.C. Impedance .... 2.2 ohms at 400 cycles
- Field Coil Resistance .... 4 ohms

FREQUENCY RANGE .... 550-1,550 kc

ALIGNMENT FREQUENCIES:
- I-F .... 260 kc
- Ant. .... 1,400 kc
- Osc. .... 600 kc
- Det. .... 1,400 kc

POWER OUTPUT:
- Type .... Pentode
- Undistorted .... 1.8 watts
- Maximum .... 3.7 watts

POWER SUPPLY:
- "A" ....6.3 volt Auto Storage Battery
- "B" .... Non-Synchronous Vibrator
- Current Drain .... 6.7 amps.
- Fuse Protection .... 15 amperes

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

TURN FREE GEAR CLOCKWISE ONE TOOTH TO OBTAIN SCISSOR ACTION BEFORE MESHING GEAR SECTOR

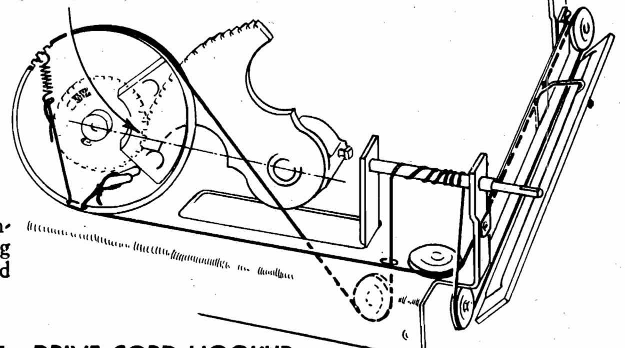
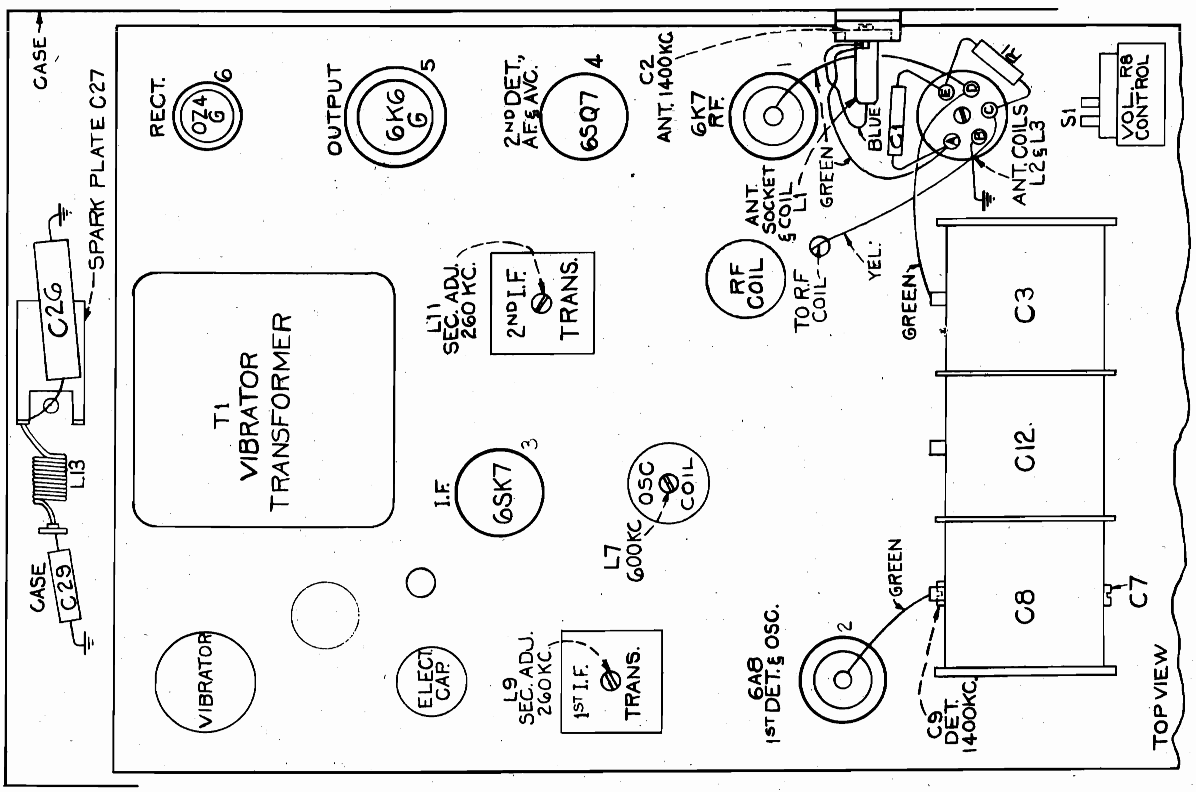


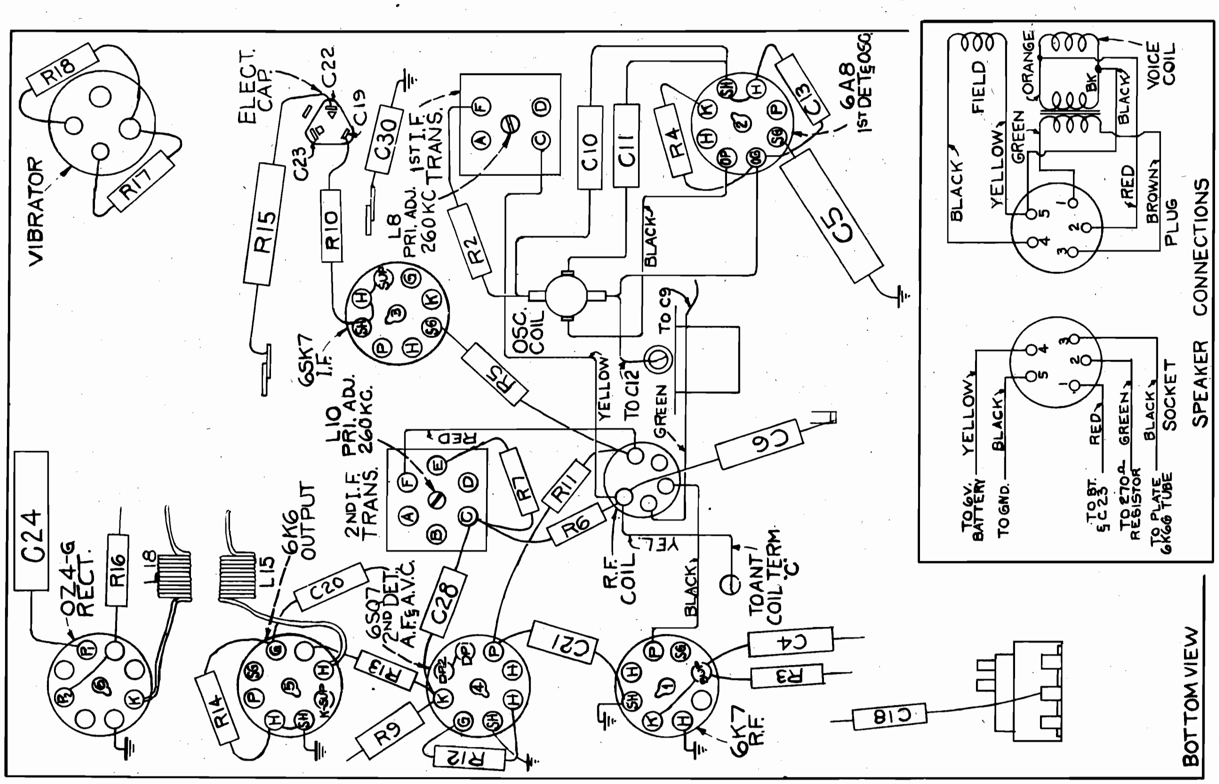
FIG. 5. DRIVE CORD HOOKUP

JUNE 2, 1939

MODEL 6190
Chassis Wiring
Socket, Trimmers

SEARS, ROEBUCK & CO.





MODEL 6301
Alignment

SEARS, ROEBUCK & CO.

MODEL 6190
Alignment, Tuner
Assembly

Antenna Filter:

A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. As shown in Figure 4, the filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.

Noise Elimination:

The presence of noise is generally due to the high intensity of electrical disturbances from the car ignition system in relation to strength of desired station. The reduction of such noise should be carried out methodically by: (1) Increasing effectiveness of the antenna and providing for protection against stray pickup; (2) subduing the interference at its source; and (3) installation of filter devices to prevent transmission of interference into the receiver circuits.

Antenna—Should be located well away from engine compartment to avoid ignition disturbance, and as far as possible from front wheels to eliminate "wheel static." Lead-in should be completely shielded and shield grounded to frame of car at as many points as possible. It is very essential that the antenna be electrically "matched" to the receiver input—this is accomplished by adjustment of the antenna trimmer and the operations explained under "Antenna Circuit."

Ignition—Radio frequency interference is created in the secondary and primary ignition circuits, usually at each point where a repeating contact, or spark, is made. The most prominent sources on the average car are: (a) Distributor—add the suppressor-resistor in the center or common high-voltage lead; also have points cleaned and adjusted, if necessary; (b) Generator—connect an 0.5 mfd. shielded capacitor directly across generator output; also see that commutator is smooth and brushes properly seated for minimum sparking; (c) Gasoline Gauge—on gauges having an electrical contact, an 0.5 mfd. shielded capacitor may be required between the terminal and car frame; (d) Temperature Gauge—where a contacting device is used, interference can be eliminated with an 0.5 mfd. capacitor connected between the circuit and car frame; (e) Spark Plugs—suppressors in leads to spark plugs may possibly be required in extreme cases of interference, on older cars, and in localities where signals are very weak; see that spark plugs are properly adjusted and are not leaky; (f) Ammeter—the supply for the receiver is usually taken from this point; a 0.5 mfd. capacitor from the "hot" lead will prevent passage of interference into the set over this circuit; (g) Dome Light—wiring to the dome light should be shielded; and an 0.5 mfd. capacitor attached between the circuit and car frame, preferably at the point where lead enters the corner post; (h) Wiring—primary and secondary ignition wiring should be physically separated; possible points of poor insulation should be checked, and all connections must be secure.

Car Chassis Bonds—Intermittent electrical connection between members of the car chassis, caused by vibration, will cause noise interference. Flexible bonding connections to the frame will correct this condition. The most sources are: (a) transmission case; (b) muffler; (c) steering column; (d) cylinder head; (e) dash controls; (f) rear springs; (g) brake cables; (h) hood cover; (i) receiver case.

Wheel Static—Interference from this source generally originates in the front wheels, and is related to road surface composition, and atmospheric conditions. Spring devices are available for attachment to the wheels for making a permanent connection between the hub and axle; these should be installed where required. The wheel bearings should be checked for proper adjustment. Patches in tires will frequently cause wheel static; exchange front and rear wheels. Be sure antenna is well separated from wheels of car.

Push Button Adjustment:

The push buttons should be adjusted for five favorite stations after the receiver is installed and operating.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push buttons one-half turn.
2. Using the tuning control, accurately tune in the first station.
3. With station accurately tuned in, press the first push button fully in and then gently release so as not to jar mechanism.
4. Tighten the push button securely with fingers. Do not force with pliers.
5. Proceed in same manner to adjust the other four push buttons.

Adjustment of Push Button Mechanism:

The mechanism should be adjusted so that when using either manual or push button tuning, it operates positively and without backlash or bind. The following hints will be found helpful in adjusting the mechanism properly.

1. With the gang condenser in full mesh, the sector gear should have the two end teeth fully meshed in the scissor gear, as shown in the illustration.
2. The position of the sector gear on the rocker-plate shaft should be adjusted so that there is clearance between the rocker-plates and the frame of the push button mechanism at both extremities of gang rotation. Thus correct adjustment prevents the rotation of the gang being limited by the rocker plates touching the frame.
3. The drive cord should have 6½ turns around the tuning shaft as shown in the illustration. Three degrees of adjustment of the tension on the drive cord may be obtained by use of the three positions for connecting the drive-cord-tension spring to the drive-cord drum on the condenser shaft as shown.
4. The push-arms, rocker-plate shaft, and pulleys should be lubricated with light grease (sparingly). Care should be taken to keep the lubricant off of the drive cord.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections .... Across speaker voice coil
Output meter readings to indicate 1 watt .... 1.8. 1.5 volts
Generator ground lead connections .... To chassis
Dummy antenna value to be in series with generator output .... See chart below
Connection of generator output lead .... See chart below
Generator modulation .... 30%, 400 cycles
Position of Volume Control .... Fully clockwise
Chassis must be in its case when aligning R-F circuit.

Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connections	Adjustment Symbol	Circuit Adjusted	Approx. Microvolts
No Signal 550-750 kc	260	.01 mfd.	6SK7 Grid (No. 4 pin)	L-10, L-11	2nd I.F. Trans.	35000•; 15,000
No Signal 550-750 kc	260	.01 mfd.	6A8 Grid	L-8, L-9	1st I.F. Trans.	500•; 600
600 kc	600 kc	100 mmfd.*	Antenna Connector	L-7 †	Osc.	1.3
1,400 kc Signal	1,400 kc	100 mmfd.*	Antenna Connector	C-9 † C7• C-2 † C1•	Det. Ant.	1
600 kc (rock)	600 kc	100 mmfd.*	Antenna Connector	L-7 †	Osc.	1.3
1,400 kc Signal	1,400 kc	100 mmfd.*	Antenna Connector	C-9 † C7• C-2 † C1•	Det. Ant.**	1

IMPORTANT ALIGNMENT NOTES

* Make the generator connection through a 100 mmfd. (.0001) capacity inserted at the antenna connector of the receiver. The lead from the signal generator to the 100 mmfd. capacitor may be shielded if desired, but no shielding should be used between capacitor and antenna connector.

† These adjustments should be made with unit enclosed in its shielded case, through holes provided for adjustment purposes.

** Final adjustment of C-2 must be made after the receiver has been installed and the antenna connected. See "Antenna Circuit" in "Service Hints."

Each step of the alignment should be repeated in it original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

Values shown under "Microvolts" are only approximate.

•FOR MODEL 6301 CHASSIS 126.211.

Antenna Circuit:

It is very important that these instructions be followed when installing the receiver.

The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from the antenna filter L-1 to the antenna coil terminal ("A"). Where a "Double Under the Running Board" type of antenna is to be used having a capacity of approximately 200 mmf., the capacitor added should be approximately 300 mmf. The insulated running board type having an approximate capacity of 550 mmf. will require a capacitor of approximately 150 mmf. Cars using an insulated steel top of approximately 3,500 mmf. will require a series capacitor of 120 mmf.

After installation and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer C-2 for maximum signal output. This trimmer is accessible by removing plug button near antenna jack on side of receiver. If a maximum (peak) signal output cannot be obtained in the range of the antenna trimmer, the effective capacity should be checked and compensated for by varying series capacity as described above.

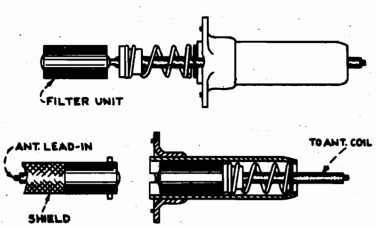
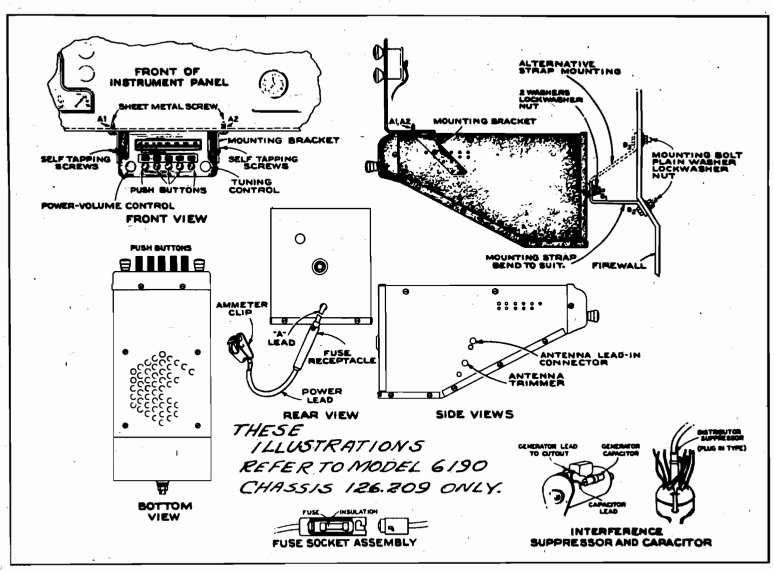


FIG. 4. ANTENNA FILTER

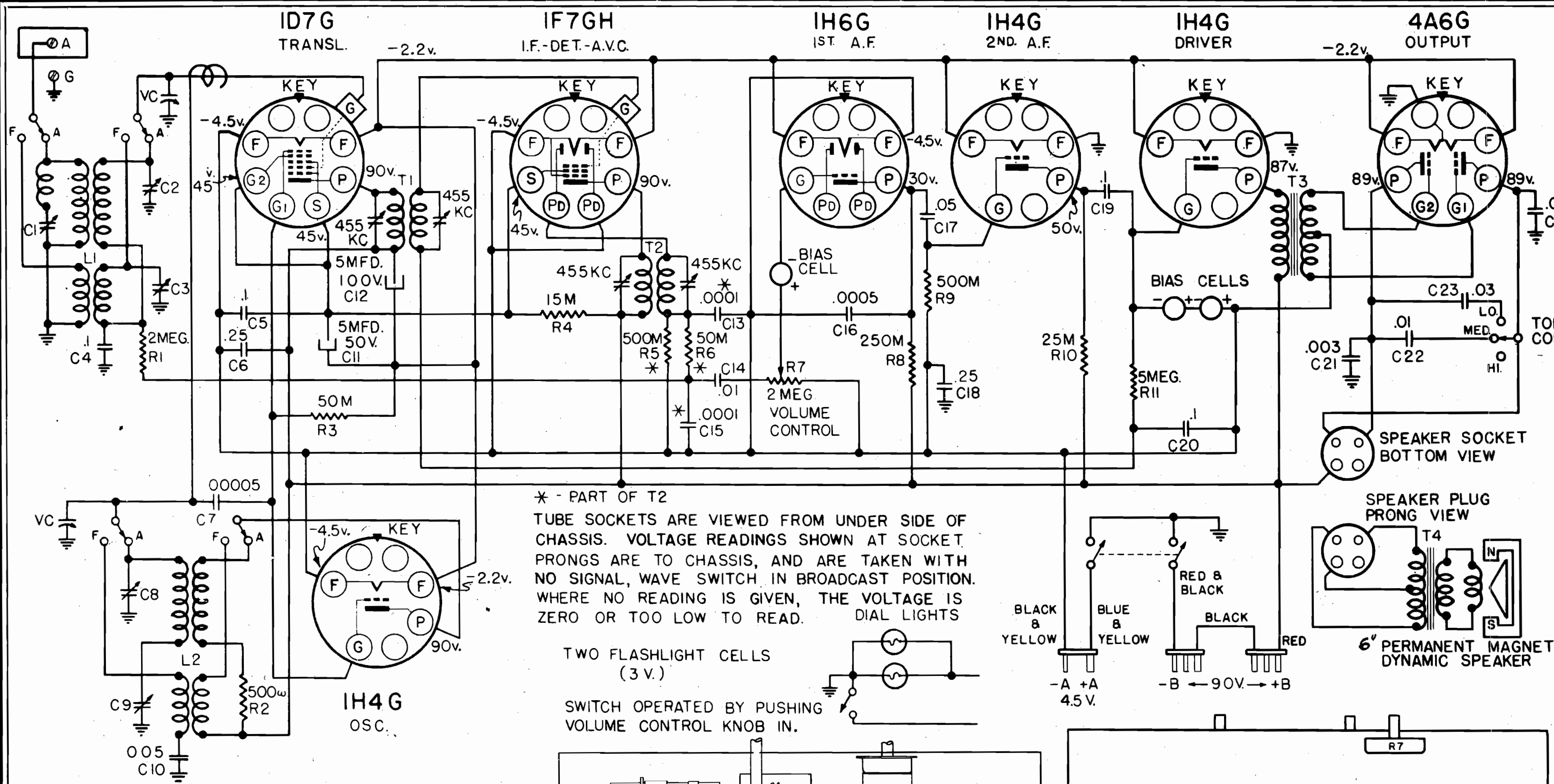


MODELS 6208,6209
Chassis 101.554
Schematic,Voltage

SEARS, ROEBUCK & CO.

Chassis,Socket
Trimmers,Tuner

FOR ALIGNMENT SEE INDEX

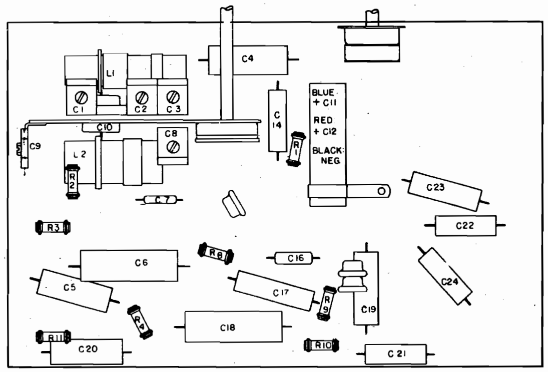


* - PART OF T2

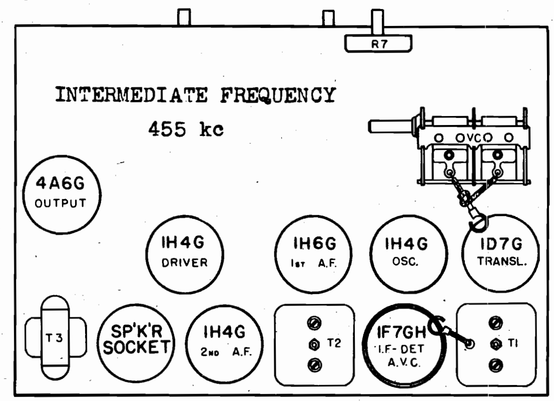
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL, WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

TWO FLASHLIGHT CELLS (3 V.)

SWITCH OPERATED BY PUSHING VOLUME CONTROL KNOB IN.



LOCATIONS OF PARTS UNDER CHASSIS



LOCATIONS OF PARTS ON TOP OF CHASSIS

POWER SUPPLY:

"A" Battery (4½ volt dry)	1 - #5031
"A" Battery (4 volt storage)	1 - #5049
"B" Batteries	2 - #5041
"A" Drain	0.24 Amperes
"B" Drain	12 ma

POWER OUTPUT:

Type	Class "B"
Undistorted	0.43 watts
Maximum	0.95 watts

PUSH BUTTON TUNING:

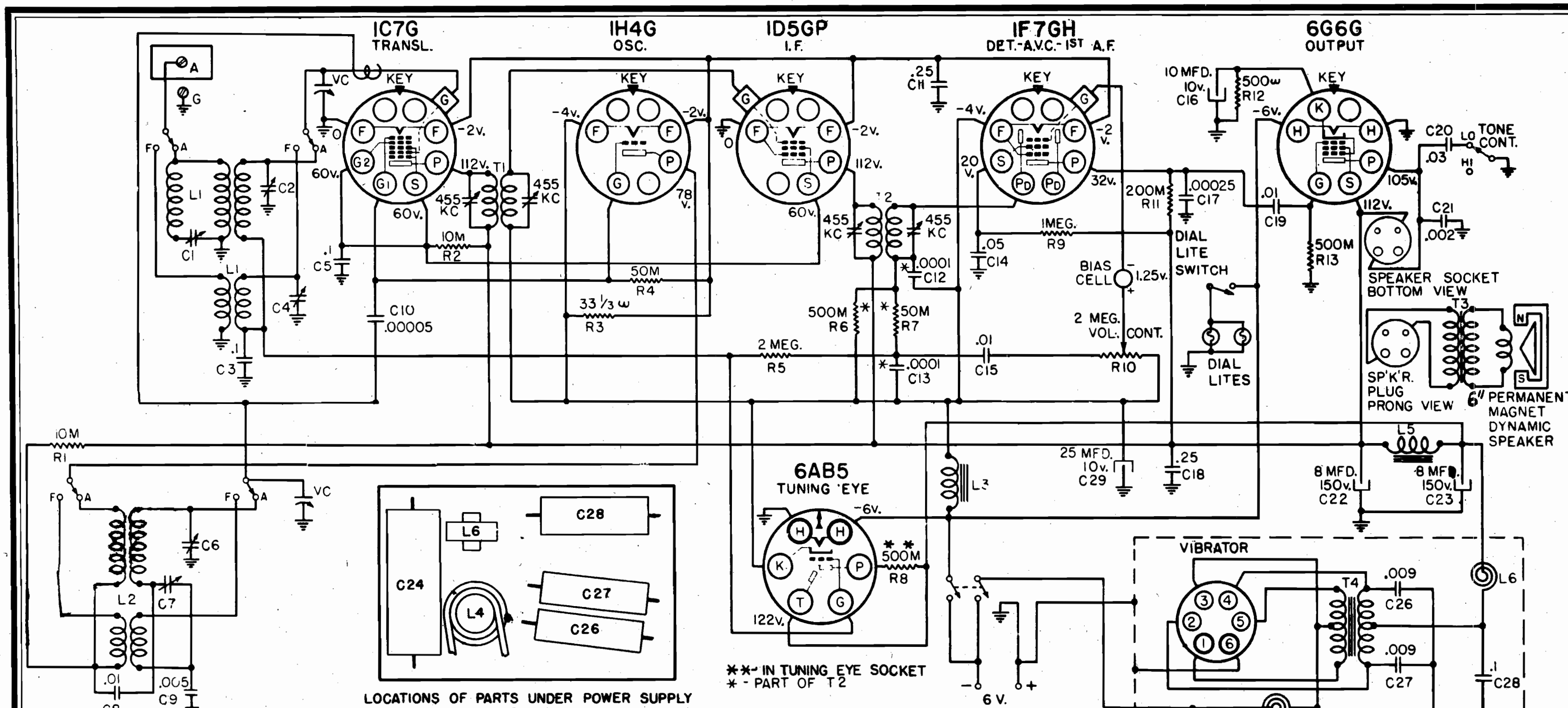
The push button mechanism is locked and unlocked by tightening or loosening the wing nut at the end of the mechanism. (A separate key is supplied in the case of table models instead of the wing nut.) Stations are set up by holding the button all the way in and accurately tuning to the station. Then release the button. After all of the buttons have been set up, lock the mechanism securely to prevent slipping.

JAN. 3, 1939

MODELS 6214,6270
Chassis 101.552,101.552A
Schematic,Voltage,Chassis
Socket,Trimmers,Notes

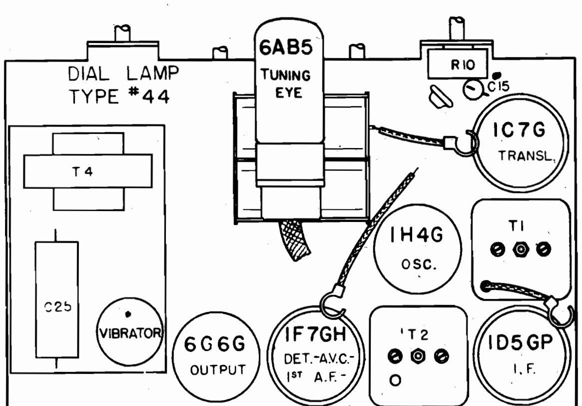
FOR ALIGNMENT SEE INDEX

SEARS, ROEBUCK & CO.

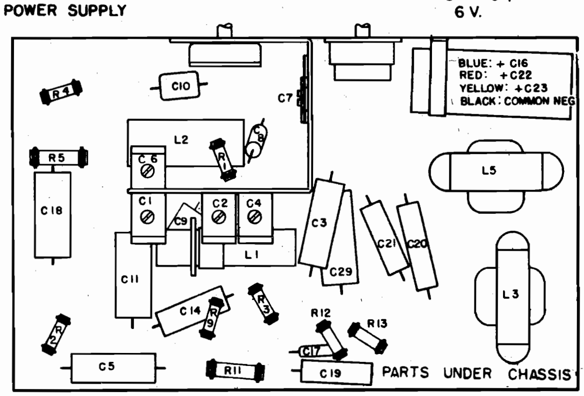


LOCATIONS OF PARTS UNDER POWER SUPPLY

INTERMEDIATE FREQUENCY . . . . 455 kc



LOCATION OF PARTS ON TOP OF CHASSIS



PARTS UNDER CHASSIS

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. READINGS SHOWN AT CATHODE PRONGS ARE CATHODE CURRENT IN MILLIAMPERES.

POWER SUPPLY:
Six volt storage battery
Battery Drain . . . . 1.5 Amp.

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . .0.25 watts
Maximum . . . . 0.5 watts

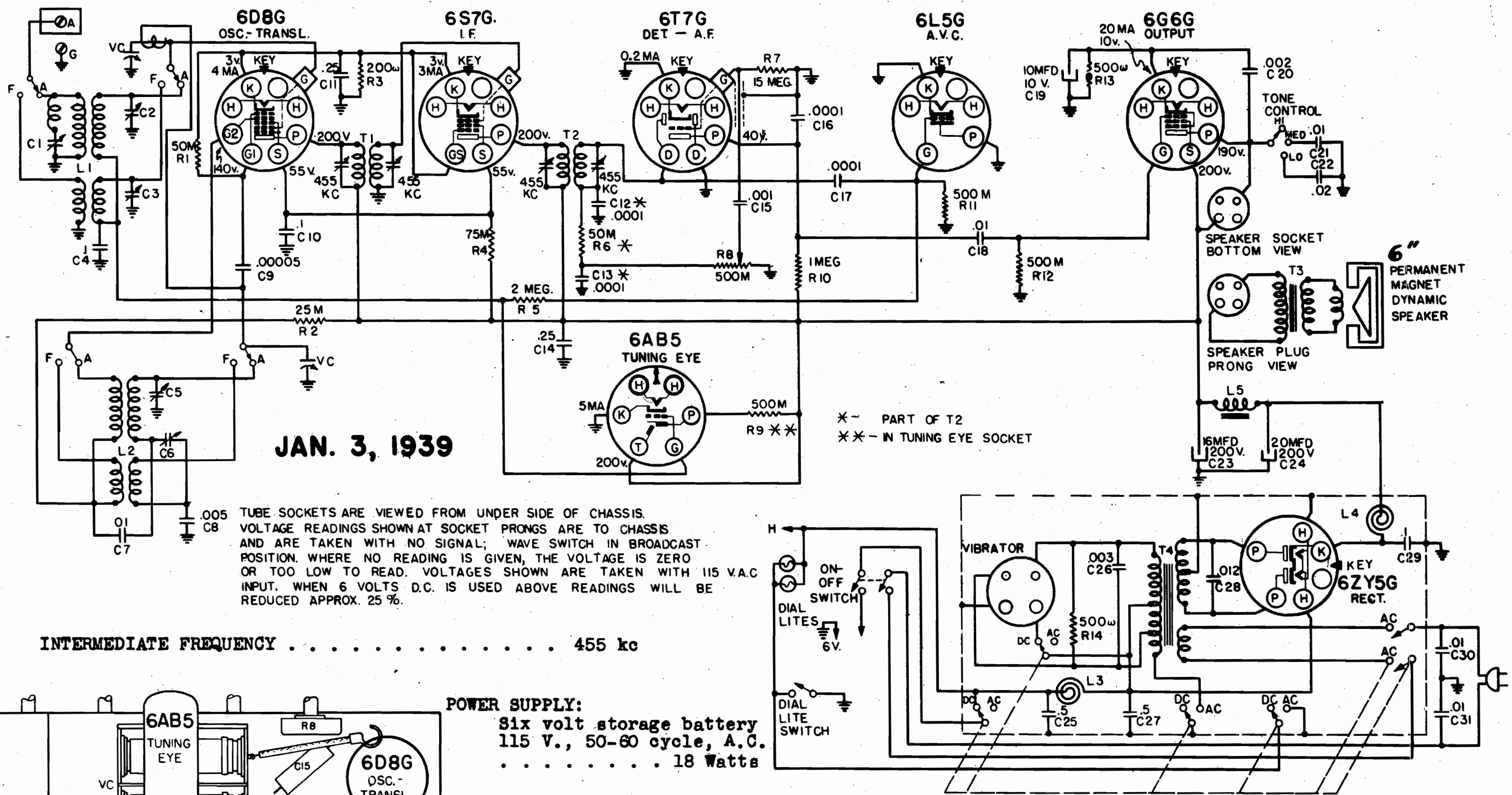
DEC. 30, 1938

DIFFERENCES BETWEEN 101.552 AND 101.552A:

Model 552A is the same electrically as Model 552. The differences are in the style (and part numbers) of the dial, escutcheons, knobs, call letter sheets, and push button tuning unit. The push buttons on 101.552 chassis are locked and unlocked by turning the button. The buttons on 101.552A chassis are locked and unlocked by turning a slotted screw, made accessible by pulling the buttons off of the push button plungers.

MODELS 6218,6271,6272
Chassis 101.553,101.553A
Schematic,Voltage,Chassis
Socket,Trimmers,Notes

SEARS, ROEBUCK & CO.



FOR ALIGNMENT SEE INDEX

JAN. 3, 1939

*– PART OF T2
**– IN TUNING EYE SOCKET

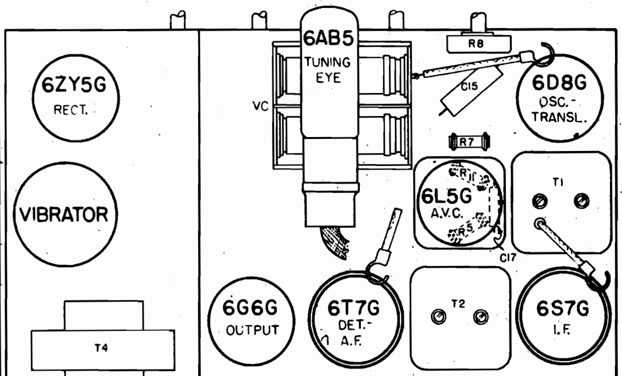
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. VOLTAGES SHOWN ARE TAKEN WITH 115 V.A.C INPUT. WHEN 6 VOLTS D.C. IS USED ABOVE READINGS WILL BE REDUCED APPROX. 25 %.

INTERMEDIATE FREQUENCY . . . . 455 kc

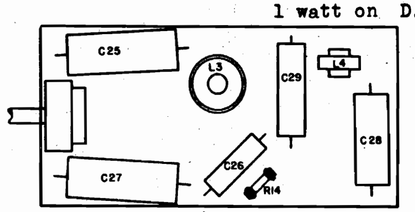
POWER SUPPLY:
Six volt storage battery
115 V., 50-60 cycle, A.C.
. . . . 18 Watts

Battery Drain . . . . 2.3 Amperes

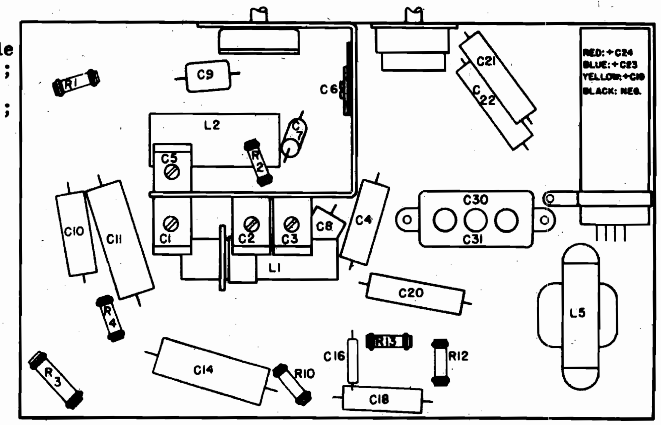
POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . 0.8 watts on A.C.;
0.45 watts on D.C.
Maximum . . . . . . 1.8 watts on A.C.;
1 watt on D.C.



LOCATIONS OF PARTS ON TOP OF CHASSIS.



LOCATIONS OF PARTS UNDER POWER SUPPLY



LOCATIONS OF PARTS UNDER CHASSIS.

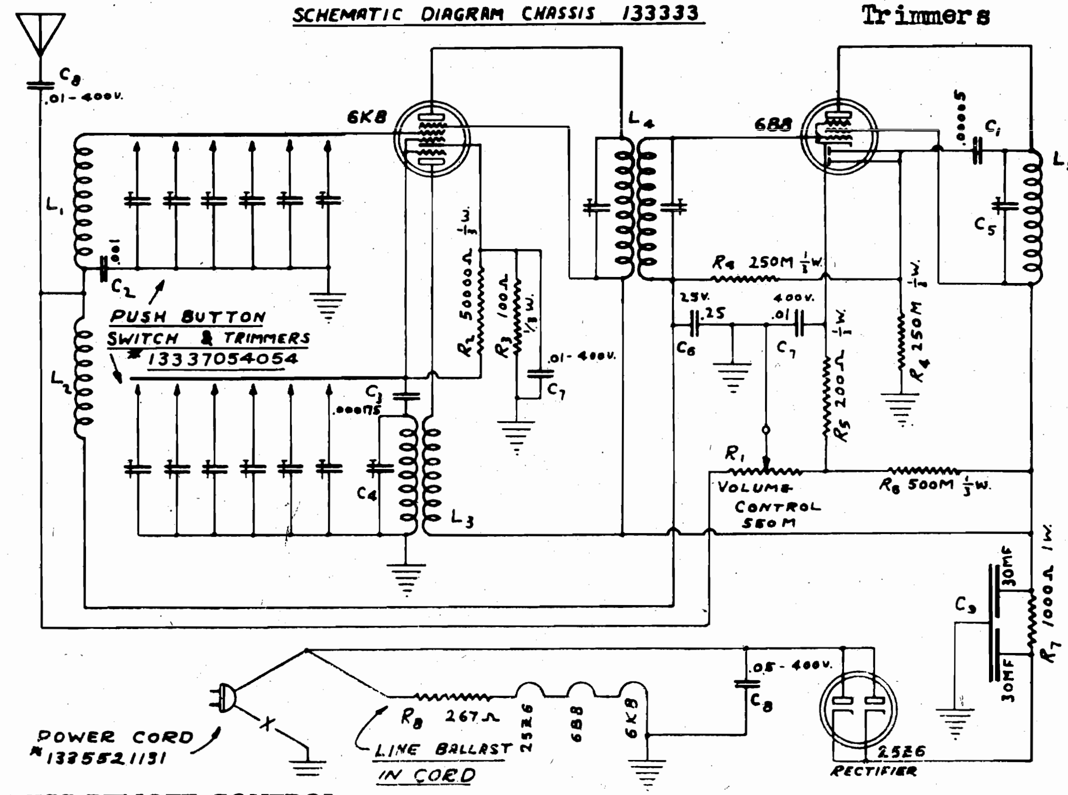
DIFFERENCES BETWEEN 101.553 AND 101.553A:

Model 553A is the same electrically as Model 553. The differences are in the style (and part numbers) of the dial, escutcheons,knobs,call letter sheets, and push button tuning unit. The push buttons on 101.553 chassis are locked and unlocked by turning the button. The push buttons on 101.553A chassis are locked and unlocked by turning the slotted screw,made accessible by pulling the buttons off of the push button plungers.

SEARS-ROEBUCK & CO.

MODEL 6225, Ch. 133.333
Schematic, Chassis
Control Data
Trimmers

SCHEMATIC DIAGRAM CHASSIS 133333



WIRELESS REMOTE CONTROL

MODEL 6225

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

6K8	Oscillator-Mixer
6B8	IF-AVC
25Z6	Rectifier

ALIGNMENT FREQUENCY:
Each button is aligned to desired station.

INTERMEDIATE FREQUENCY: .... 1570 KC

OPERATING FEATURES:
Push Button Tuning Only (6 buttons)
Automatic Volume Control

POWER SUPPLY:
105-125 volts, AC or DC, 25-60 cycle, 40 watts.

FREQUENCY RANGE:

Trimmer No. 1	550 — 1000 KC
Trimmer No. 2	550 — 1000 KC
Trimmer No. 3	600 — 1100 KC
Trimmer No. 4	600 — 1100 KC
Trimmer No. 5	800 — 1450 KC
Trimmer No. 6	1150 — 1500 KC

CHASSIS FEATURES:

Number IF Stages	One
Antenna	Attached

Special Push Button Switch with ganged trimmers for antenna and oscillator tuning.

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:
1. 6 Push Buttons
2. 1 Small Knob

CONTROL OPERATION:
1. Push to select station
2. Turn clockwise to turn on and to increase volume.

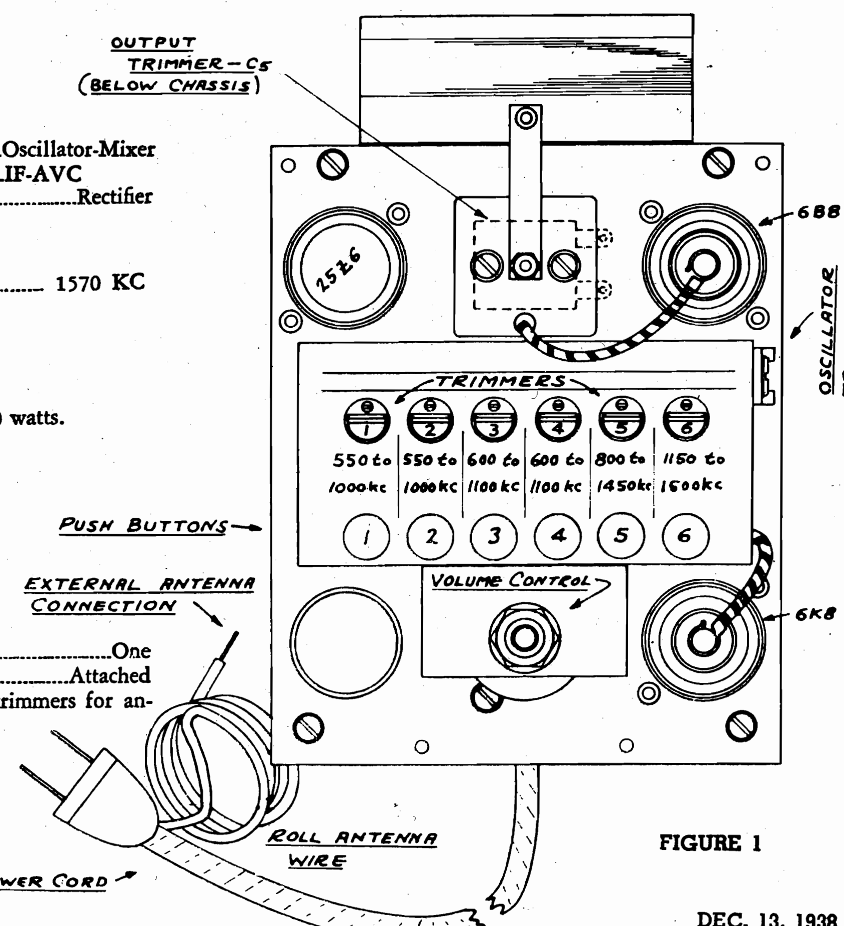


FIGURE 1

DEC. 13, 1938

MODEL 6225, Wireless Remote Control
Alignment, Notes, Parts

SEARS, ROEBUCK & CO.
GENERAL INFORMATION AND SERVICE HINTS

The Remote Control consists simply of the mixer and IF stages only of a conventional radio. The mixer stage is conventional. The antenna and oscillator circuits are tuned by ganged trimmers which are selected and connected across the coils by means of a push button switch. There is no variable condenser. This mixer stage feeds into an IF transformer tuned to 1570 KC. The signal is further amplified by the pentode section of the 6B8 tube. The plate load of this tube is a large radiating coil, also tuned to 1570 KC. Signal voltage is taken off through a small condenser to feed the diodes and develop AVC voltage for both stages. Thus when the radio with which the Control is used is tuned to 1570 KC it picks up the radiation from the plate coil of the 6B8 and reproduces the program in a normal manner. The volume control is in the cathode circuit of the 6B8 tube, thus controlling the gain of this tube and the RF in the radiating coil. A little current is bled through the volume control so that the tube will be completely cut off at the minimum setting.

Obviously the degree of performance depends not only on the signal fed into the Control but on getting the radio tuned to the exact output frequency of the Control and the amount of coupling between the Control output coil and the radio antenna circuit at a maximum. While under ordinary conditions practically any set-up will be satisfactory, in places where signals are weak or a great deal of noise interference exists, the Control will be much more satisfactory if a lead is brought from the antenna connection of the receiver close to the Control, thus increasing the coupling many times. Under noisy conditions any long outside antennas should be removed from the receiver as they will feed noise into the set on top of the Control signal. An indoor antenna can be arranged in the home which will lie close to the control thus giving good operation and also be very satisfactory for normal use with the radio.

In extremely noisy localities the above method at times will not bring about normal noise-free reception. It then will be necessary to loop the wire that leads from the antenna binding post of the receiver, over the transmitting radiator or coil of the remote tuner. One turn is all that is necessary. After this turn is added, go through the alignment procedure on Page 3.

In some localities it is possible that some station or signal will come in on 1570 KC. This will be received simultaneously with the Control signal and a heterodyne or whistle will result. In such cases the IF system of the Remote Control should be realigned to the nearest frequency to 1570 KC where no trouble is experienced. (See paragraph on alignment.) These IF's can be aligned to any frequency from 1460 to 1700 KC. Also in cases where the radio will not tune as high as 1570 KC the Remote Control can be realigned to a lower frequency.

For best operation the Remote Control should be operated with the volume control near the full on position to insure a good signal strength.

ALIGNMENT PROCEDURE

For alignment the Control should be removed from the cabinet. First remove the four rubber feet which hold the fiber bottom cover in place. Remove the volume control knob but not the push buttons. Finally remove the four wood screws which hold the chassis to the cabinet blocks.

INTERMEDIATES:

Use a standard signal generator with a modulated signal. Set the signal generator to 1570 KC (or the special IF frequency for extraordinary conditions as described above in "Special Helps"). The Control must be aligned in conjunction with a radio receiver as the Control has no audio. An output meter should be connected into this receiver to indicate resonance peaks. A short length of wire should be connected to the antenna post of the receiver. First feed the generator output direct to the radio receiver antenna and carefully tune the radio to this frequency. (*Do not change* the signal generator setting after the receiver has been tuned to it.) Connect the generator to the antenna of the Control at the end of the power cord and lay the short length of wire next to the large output coil on the Control. Turn the volume control on the Control on full. The volume control on the receiver should be adjusted as necessary to keep the output meter on scale. Keep the signal generator output level low to make the AVC ineffective. Now adjust the IF transformer trimmers to resonance. Finally adjust the output coil trimmer on the bottom of the chassis.

BROADCAST:

Now turn the signal generator to 540 KC. Depress button number one. Turn large trimmer number one in as far as is practical without getting it down so tight that it cannot be tuned accurately. Be careful not to force this screw as the coupling between trimmers can be sheared. With the trimmer in this position back the oscillator coil trimmer to the 540 KC signal. No further broadcast alignment is required as this is done when the buttons are set to their stations.

Schematic Location	Part Number	Description	List Selling Price
L1	1332820851	Antenna coil	.75
L2	1333020853	Antenna choke	.30
L3	1332820852	Oscillator coil	.55
L4	13333203541	I.F. transformer with shield	.75
L5	13335203551	Output coil	.50
C1		.00005 mfd. mica condenser	.15
C2		.001 mfd. mica condenser	.15
C3		.000175 mfd. mica condenser	.15
C4	1331701549	Condenser-mica trimmer-working cap.=40 mmf.	.20
C5	1331701546	Condenser-mica trimmer-working cap.=75 mmf.	.25
C6		Condenser–.25mfd.–25 volt	.17
C7		Condenser–.01 mfd.–400 volt	.13
C8		Condenser–.05 mfd.–400 volt	.13
C9	1332001482	Condenser–electrolytic–30–30 mfd.	.75
R1	13324181003	Volume control and switch–550M	.60
R2		Resistor – 50M – 1/3 watt	.15
R3		Resistor – 100 ohm 1/3 watt	.15
R4		Resistor – 250M – 1/3 watt	.15
R5		Resistor – 200 ohm 1/3 watt	.15
R6		Resistor – 500M – 1/3 watt	.15
R7		Resistor – 1000 ohm – 1 watt	.15
R8		Line ballast – 267 ohm (part of power cord)	

CHASSIS—IDENTIFICATION NUMBER 133.333

HOW TO ORDER PARTS

1. Use Purchase Order Form 5284.
2. On the Purchase Order always give the following information:
   (1) PART NUMBER and DESCRIPTION for each part ordered
   (2) The IDENTIFICATION NUMBER, which is 133.333.
   This number is found on the top of the chassis.

PARTS LIST-SOURCE NO. 133

1335521131	Power cord with resistance	.65
1335523122б	Roll antenna wire	.10
13337054054	Push button switch and trimmers	4.00
13360363026	Cabinet	3.00
13360363027	Cabinet bottom	.15
1333905194	Push button knobs	.20
1333905191	Volume control knobs	.10
13344053004	Escutcheon plate	.20
1335925184	Call letter sheets	.20
1335925445	Instruction sheet	.03

SEARS-ROEBUCK & CO.

MODEL 6225
Push-Button Data
Notes

SETTING UP THE BUTTONS:

As the Control has no audio system it is necessary to use it in conjunction with a radio when setting push-buttons at any other alignment operations.

Before setting the push buttons it is necessary to tune the radio which is being used exactly to the resonant frequency of the IF channel in the Control. This can be accomplished by the following steps:

(A) Place the Remote Control on or beside the radio with which it is to be used. Disconnect any aerials on the radio and connect a short length of wire which will reach the Remote Control and should be laid very close to the high end of the Remote Control Cabinet. Stretch out the antenna hank on the end of the power cord on the Remote Control.

(B) Plug in the Remote Control and turn the volume control on fully clockwise and leave in this position throughout the entire procedure. Turn on the receiver and turn up the volume until the noise between stations is audible. Allow the radio and the Remote Control to run for at least one quarter hour in order that they may become fully heated. *All* the buttons on the Remote Control should be released. Do this by slightly depressing any released button.

(C) Tune the receiver to approximately 1570 KC on the broadcast band. Tune back and forth at this point and listen for a point of greatly increased noise level. This spot should be tuned in in the same manner you would tune in a station. You are actually tuning in the *sensitivity noise* of the Remote Control.

In case the Control is also being realigned, a short cut is made possible by tuning the receiver to the signal generator output, without changing the setting at which the Control IF's are aligned.

HOW TO SET UP PUSH BUTTONS:

1. Make a list of station call letters of six nearby powerful broadcast stations that it is desired to set up on the buttons. Arrange the stations in the list in the order of their frequency. That is, the station of lowest frequency will be first; the next higher second, etc. After marking down the frequencies on the chart along side of the station call letters and arranging them in their proper order, number 1, 2, 3, 4, 5 and 6 respectively. Check each frequency with figure 1. A typical list appears below.

Station Call Letters	Frequency	Button No.
WMAQ	670 KC	1
WLW	700 KC	2
WGN	720 KC	3
WENR-WLS	870 KC	4
WHO	1000 KC	5
WCKY	1490 KC	6

Remember that buttons No. 1 and No. 2 will tune only stations with frequencies from 550 to 1000 KC. Similarly buttons No. 3 and No. 4 will only tune stations with frequencies from 600 to 1100 KC. Button No. 5 from 800 to 1450 KC and No. 6 from 1150 to 1500 KC.

2. The Remote Control is shipped with the holes in the escutcheon open, exposing the trimmer adjusting screws. After completing the adjusting procedure, as outlined below, tear out the tabs bearing the proper call letters of the stations set up on each trimmer and button, from the sheet of tabs supplied. These tabs will slip into the recess around the trimmer holes and close them, giving the hole a neat appearance. The trimmers are more easily accessible if the two screws and escutcheon are removed.
3. With the manual dial knob on the receiver find station No. 1 on the list, noting its program.
4. Return the pointer to the control frequency setting near 1570 KC as outlined above.
5. Depress button No. 1 (see figure 1).
6. With a small screw driver turn large trimmer screw No. 1 in or out until the program previously heard is heard again. Tune this station accurately. This can be determined by ear. Rotate the trimmer screw back and forth across the station to find a setting where the tone is deepest and the noise level lowest.
7. Now adjust small screw No. 1, turning it to the right or left until the program is received with maximum volume. If the radio has a tuning eye, the correct setting for this screw is indicated when the sides of the shadow are closest together.

(FOR RECEIVERS WITH PUSH BUTTON TUNING ONLY)

When setting up the control in a home with a receiver with push buttons.

After determining the proper setting of the receiver dial, for Remote Control operation, set up this frequency on the proper push button as outlined in the operating instructions for the receiver. This will simplify the set up procedure for the remaining buttons of the Remote Control. Additionally it will simplify the location of the proper dial setting for Remote Control operation whenever the Remote Control is to be used.

8. Locate the second station on your list on the radio dial, noting its program.
9. Push button No. 1 and tune the radio to the preset frequency of about 1570 KC as outlined in paragraph (C), only this time use the station set on button No. 1 for the 1570 KC reference point, instead of noise.
10. Without changing radio dial press button No. 2 and use procedure outlined in points 6 and 7, only using trimmer screws No. 2.
11. Set up remaining buttons as outlined in points 8, 9, and 10, substituting in point 10 the number of the button and the trimmer screws to be adjusted.

It is best to set the buttons on the stations themselves rather than trying to duplicate their frequencies on a signal generator.

THE ANTENNA:

The antenna wire is supplied with the Control. It is connected through an extra wire in the power cord. It should be uncoiled and extended as far as possible from the Control. In locations remote from broadcasting stations additional pickup can be had by connecting the end of the antenna to a conventional outdoor antenna.

THE FILAMENT CIRCUIT AND POWER SUPPLY:

All of the tubes are conected in series. Accordingly, if any one tube burns out the others will not light. It is necessary to replace only the burned out tube; the others will then light. A resistor is built into the line cord to reduce the voltage for the tube filaments.

The line cord must not be shortened or altered in any way.

CAUTION:

Under no condition should a ground be attached to this Control, also no grounded object should be allowed to come in contact with the chassis.

MODEL 6229 Ch.126.210
MODEL 6233 Ch.126.222
Wireless Record Players
Operation,Notes

SEARS, ROEBUCK & CO.

General Information and Service Hints

This Wireless Record Player is designed to operate in conjunction with any radio receiver having a frequency range which includes 530 to 625 kc.

The output of the crystal pickup, shunted by a 250,000 ohm volume control, a 560,000 ohm resistor and a 0.1 mfd. condenser, is connected to grid No. 1 of the 12A8GT modulator-oscillator tube. The 12A8GT tube acts as a modulated-oscillator producing a signal whose frequency may be adjusted from 530 to 625 kc by means of the screwdriver adjustment at the rear of the cabinet.

The antenna or output wire is connected thru a coupling condenser to the grid circuit of the oscillator, and run parallel with the power cord. The output is sufficient to permit operation within approximately 20 feet of the radio receiver.

OPERATING PROCEDURE

1. After inserting plug in proper power supply outlet, turn the power-switch-volume control knob on top of cabinet to full clockwise position. Place either 10 or 12 inch record on the turntable, starting the synchronous motor by a clockwise twirl with the hand.

2. Tune the radio receiver to a quiet point between 530-625 kc.

3. Tune the oscillator in the record player to the tuned frequency of the receiver by adjusting the button on the rear of the record player cabinet to obtain peak output on the receiver. Rotating the button to the right decreases the frequency; to the left increases the frequency.

4. Adjust volume control on radio receiver to the highest volume that may be required, and then use the record player volume control for further adjustment.

5. In noisy locations, it may be desirable to leave the record player volume control turned full on, and regulate the radio receiver volume control for the desired level.

6. If there is insufficient volume, or excessive noise, the record player may be coupled to the receiver, by running a piece of insulated wire between the two units; wrap three or four turns of the coupling wire around the antenna lead-in on the radio receiver and connect the other end in the same way to the short wire that projects from the plug on the power cord of the record player.

Phonograph Motor Service Data

The synchronous motor used in this instrument is designed to be simple and foolproof. Among its many features are constancy of speed, low power consumption, single moving part, ease of starting, rubber damper, ease of repair, and long life. The parts that may require attention are plainly shown on "Motor Details." The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Rotor Adjustment

Use three shims (22 mil for 60 cycle and 16 mil for 25 cycle motors), spaced equally around the gap between rotor and stator. When rotor is suitably adjusted, securely tighten the three screws which hold the rotor to the turntable. The centering operation is very similar to that done with a dynamic speaker.

*If top of rotor lamination assembly is not flush with top of stator laminations, additional steel washers should be inserted beneath the stator until it is raised to the desired level.

*MODEL 6229 ONLY.

Lubrication

Both the rotor and stator have bearing surfaces about the center vertical axis. These bearings and the ball bearing at the bottom of the turntable's shaft should be oiled whenever player is serviced. The leather washer beneath the stator is to be pliable and soaked in light oil.

Removing the Rotor from the Stator

The rotor and turntable assembly simply rests on the ball bearing at the bottom of the vertical bearing, and may be removed by lifting out. Don't turn player upside down without holding turntable.

Hum and Vibration

A small amount of hum when starting, decreasing to a negligible amount while running, is normal. If excessive vibration occurs either at starting or running, it may be due to one of the following:

(1) Insufficient lubrication in outer bearing or any other failure that will cause the stator to bind.

(2) Metal and leather washers in improper position, see "Motor Details."

(3) Leather washer not oiled. When replacing the leather washer, make sure that it is thoroughly soaked in oil.

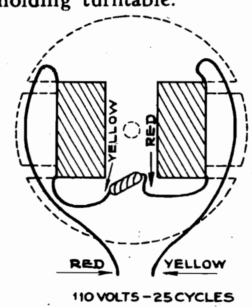
(4) Motor not properly supported from motor board. Unless the motor is properly supported from the motor board, vibration will be excessive.

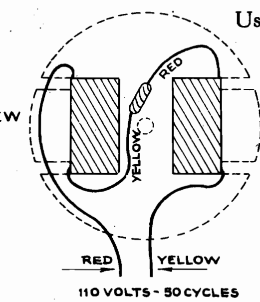
(5) Burrs on poles of rotor or stator. They should be removed with fine emery cloth.

(6) Loose laminations of the stator.

(7) Improper horizontal alignment of the rotor and stator. Correct horizontal alignment is as shown in the motor assembly drawing.

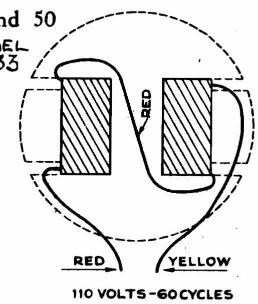
The damper spring must fit without binding or chattering, in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. Any binding in the washers or stator bearing which prevents the movement of the stator may cause speed variations in the motor. The damper spring must exert equal force in restoring the stator to its mid-position when the stator is deflected manually in either direction.





Use three 13-mil shims (on 25 and 50 cycle motors, use 16-mil)—MODEL 6233

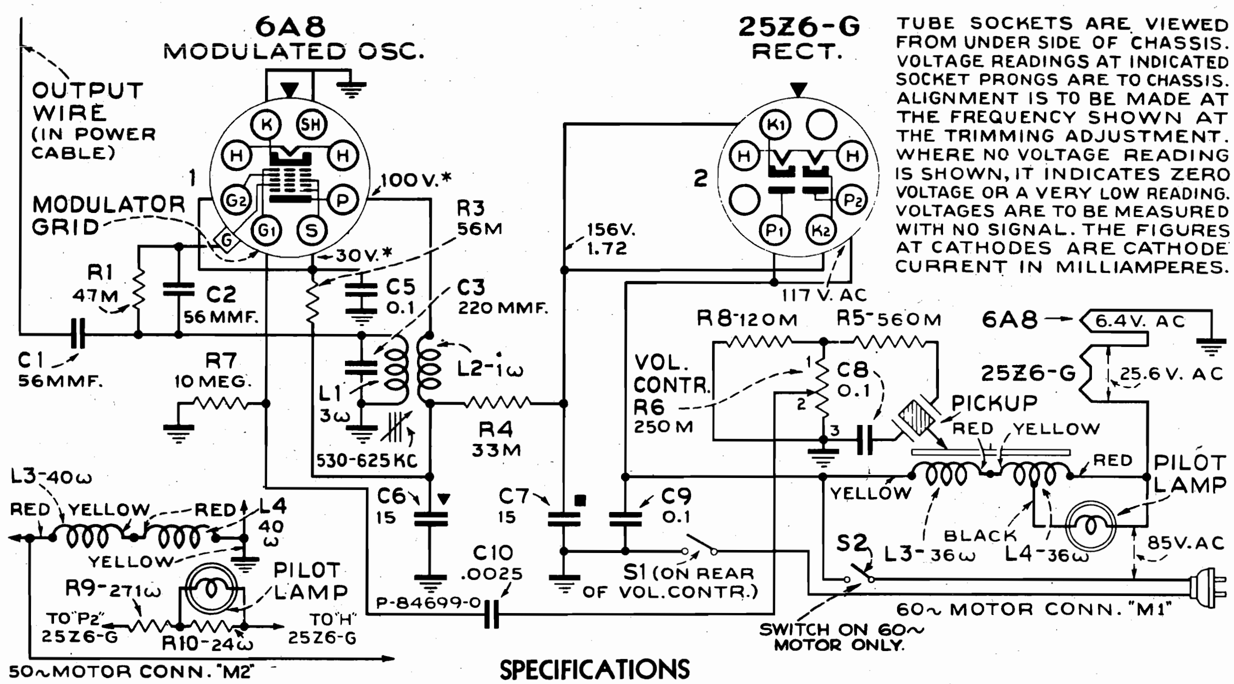
MODEL 6233
BOTTOM VIEWS
OF MOTOR
STATOR SHOWING
COIL WIRING



MODEL 6229
Schematic, Voltage
Chassis Wiring

SEARS, ROEBUCK & CO.

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT THE TRIMMING ADJUSTMENT. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. THE FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.



SPECIFICATIONS

TUBES AND FUNCTIONS:
- 6A8 .... Modulator—Oscillator
- 25Z6-G .... Half-Wave Rectifier

DIAL LAMP .... Mazda 47, 6-8 volts, .15 amp.

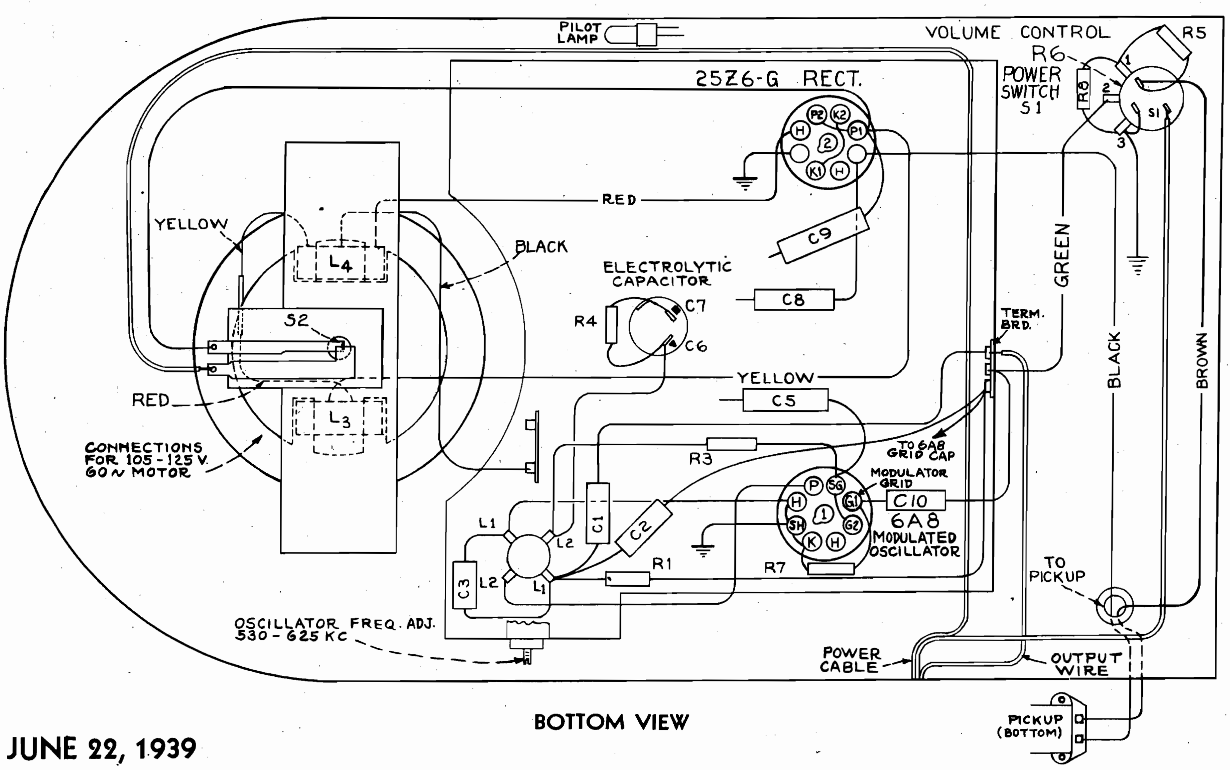
FREQUENCY RANGE .... 530-625 kc

VOLUME CONTROL .... 250,000 ohms-Power Switch-Volume

CRYSTAL PICKUP
- Impedance .... 100,000 ohms at 1,000 cycles
- Average Output Volts .... $1\frac{1}{2}$ volts at 1,000 cycles with 250,000 ohm load

POWER SUPPLY
- A-6 .... 105-126 volts, 60 cycles, 50 watts
- A-5 .... 105-126 volts, 50 cycles, 50 watts

MOTOR .... 78 r.p.m. Synchronous (manual starting)



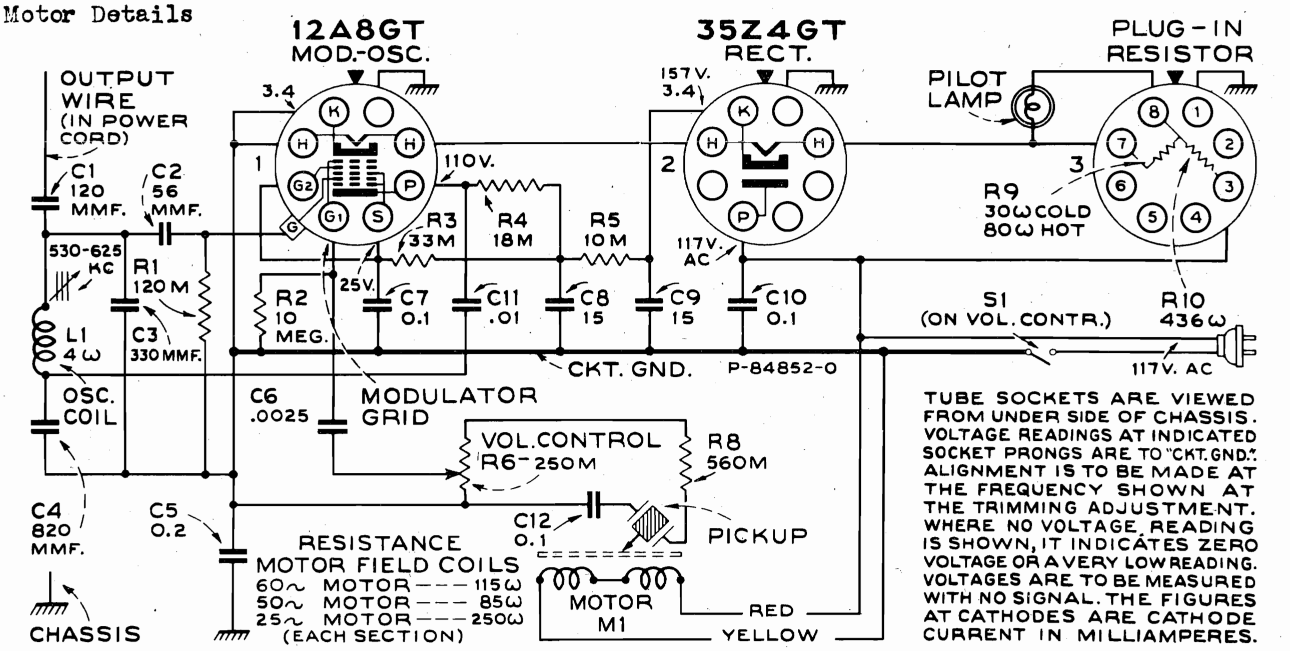
BOTTOM VIEW

JUNE 22, 1939

MODEL 6233
Schematic, Voltage
Chassis Wiring
Motor Details

SEARS, ROEBUCK & CO.

MODEL 6229
Motor Details



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO "CKT. GND.". ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT THE TRIMMING ADJUSTMENT. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. THE FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

DIAL LAMP .... Mazda 44, 6.3 volts., 0.25 amp.

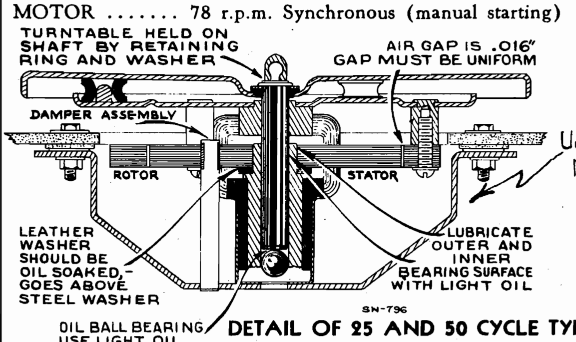
FREQUENCY RANGE .... 530-625 kc

VOLUME CONTROL ...... 250,000 ohms-Power Switch-Volume

MOTOR .... 78 r.p.m. Synchronous (manual starting)

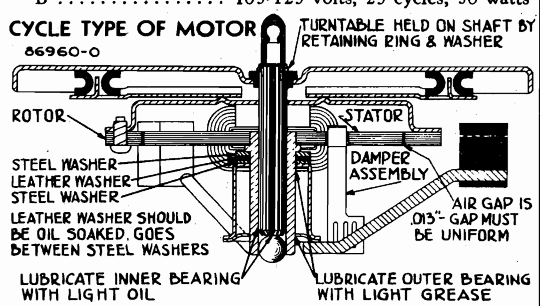
CRYSTAL PICKUP
Impedance............ 100,000 ohms at 1,000 cycles
Average Output Volts...... 1½ volts at 1,000 cycles with 250,000 ohm load

POWER SUPPLY
A-6 .... 105-125 volts, 60 cycles, 30 watts
A-5 .... 105-125 volts, 50 cycles, 30 watts
B .... 105-125 volts, 25 cycles, 30 watts

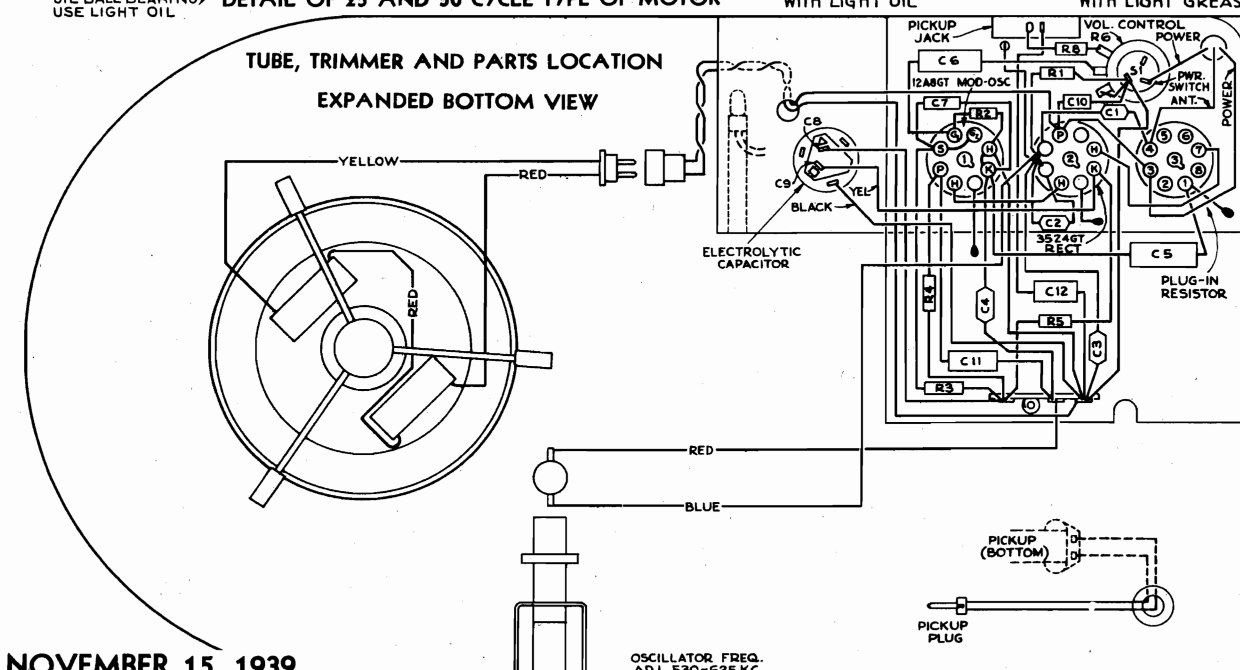


DETAIL OF 25 AND 50 CYCLE TYPE OF MOTOR

DETAIL OF 60 CYCLE TYPE OF MOTOR



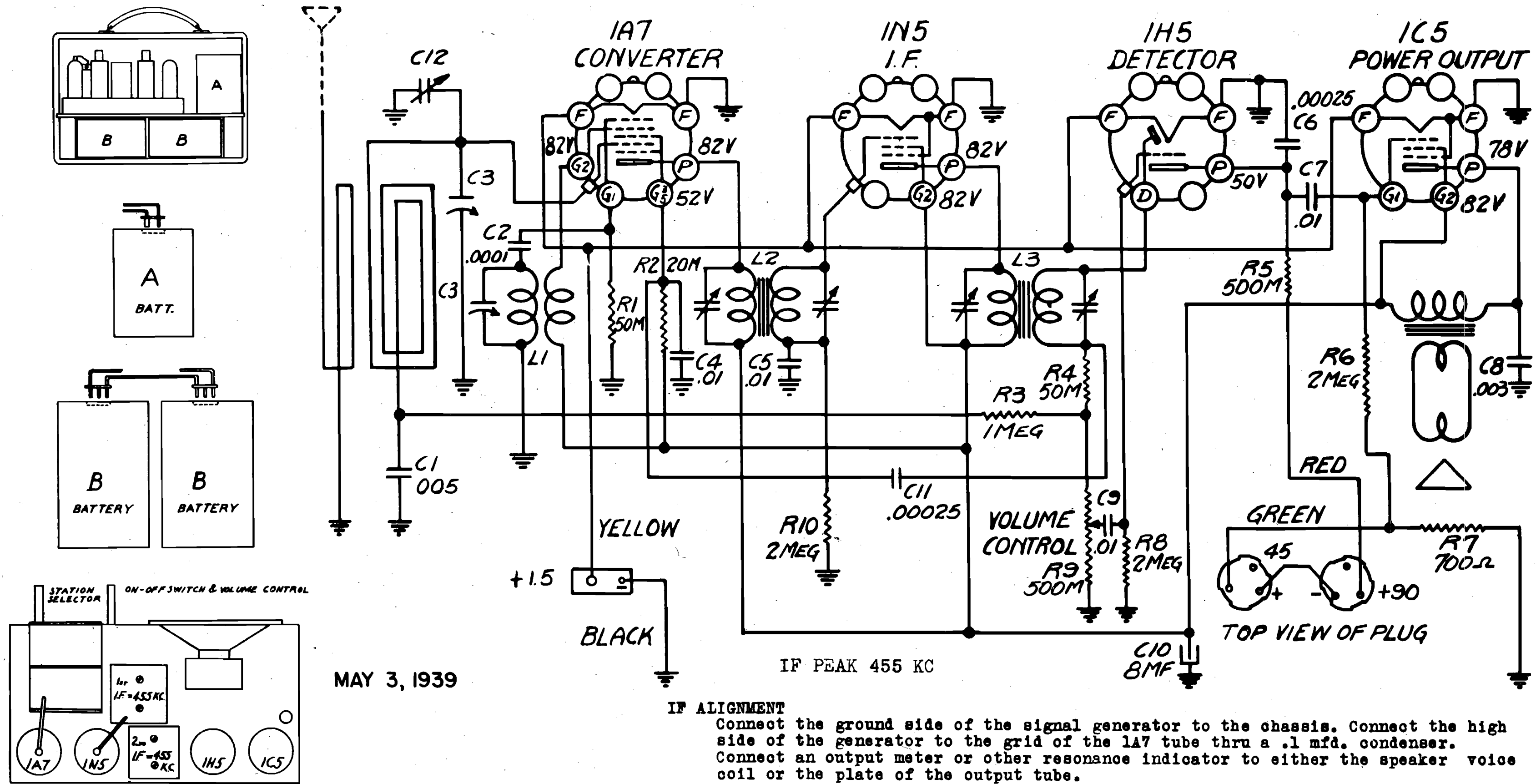
TUBE, TRIMMER AND PARTS LOCATION
EXPANDED BOTTOM VIEW



NOVEMBER 15, 1939

MODEL 6256,Ch.109.290
Schematic,Voltage
Socket,Trimmers
Alignment

SEARS, ROEBUCK & CO.



MAY 3, 1939

VOLTAGES MEASURED TO CHASSIS WITH 90VB AND 1.5VA. VOLUME CONTROL OPEN-NO SIGNAL.

IF PEAK 455 KC

ALIGNMENT FREQUENCIES,455-1580-1400 KC.

LOUD SPEAKER
Type.....................P.M. Dynamic
Size.......................... 5 inch

POWER SUPPLY........................Batteries

FREQUENCY RANGE................540 to 1580 KC.

POWER OUTPUT
Type........................Pentode
Undistorted.............. .150 watt
Maximum .... .3 watt

IF ALIGNMENT

Connect the ground side of the signal generator to the chassis. Connect the high side of the generator to the grid of the 1A7 tube thru a .1 mfd. condenser. Connect an output meter or other resonance indicator to either the speaker voice coil or the plate of the output tube.
Using a 455 kc. signal and with the volume control full on so that only a very weak signal is necessary, adjust first the 2nd and then the 1st IF transformer for maximum resonance indication.

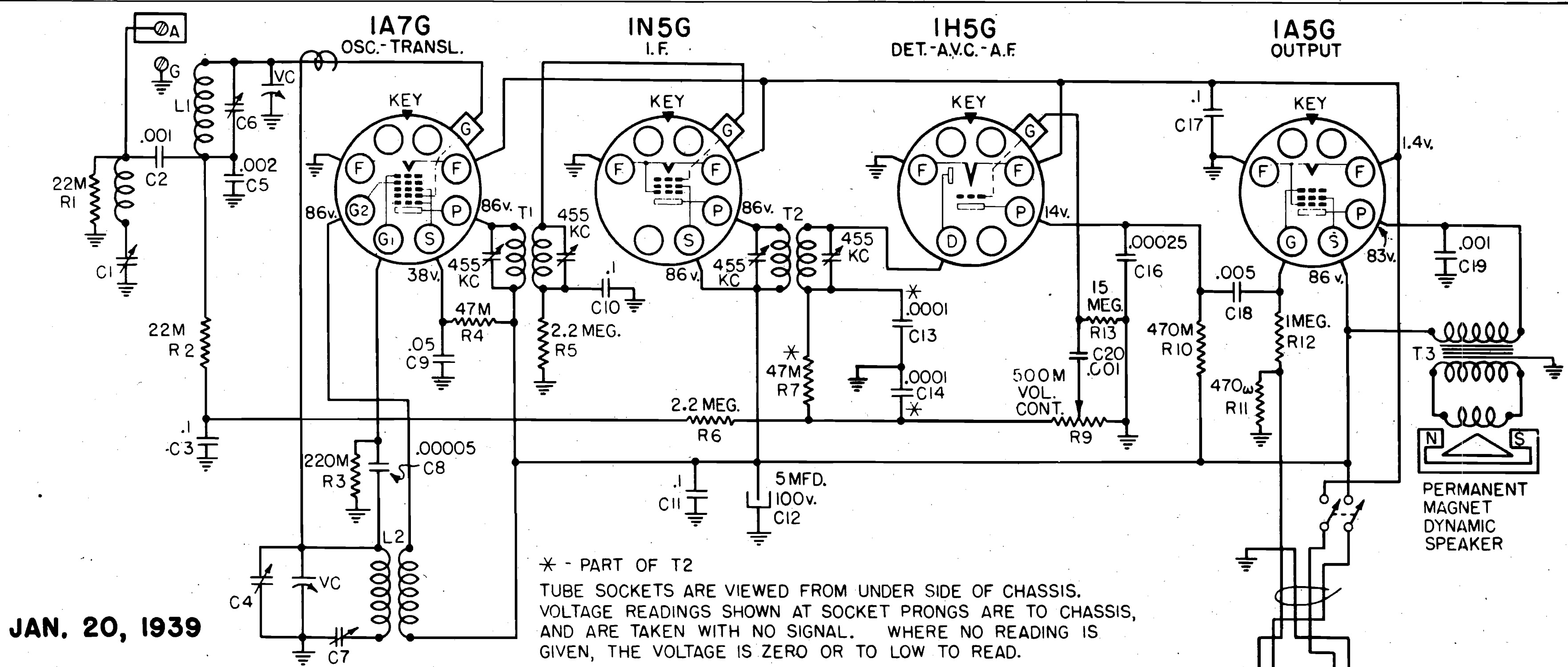
RF ALIGNMENT

Using the same signal generator connections as for IF alignment, turn the tuning condenser to minimum capacity and adjust the oscillator to 1580 kc. (The oscillator trimmer is on the variable condenser).
Slide the shelf and chassis back in the cabinet and place the batteries in their proper position. Connect the signal generator leads to a single loop of wire about eight inches in diameter. Place this loop about one foot from the cabinet in the same plane as the front of the cabinet. Set the signal generator at 1400 Kc., tune the receiver until this signal is heard and adjust the trimmer on the back of the variable condenser.
The tuning condenser is of the cut plate oscillator type and no adjustment is necessary at 600 Kc.

ALWAYS USE A WEAK SIGNAL FROM THE GENERATOR. Strong signals tend to cause improper adjustments.

MODEL 6260,Ch.101.558
Schematic,Voltage
Chassis,Socket,Trimmers

SEARS, ROEBUCK & CO.



JAN. 20, 1939

✳ - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TO LOW TO READ.

POWER SUPPLY:
#5060. . A-B block(1.4 v."A", 90 v."B")
or
#734 . . . . 2 v. Storage "A"
2 - #5041 . . . . . . .45 v."B" battery
#5070. . . .Adaptor necessary with 2 v. Storage "A"

"A" Drain . . . . 0.3 Amperes
"B" Drain . . . . 8.5 ma

INTERMEDIATE FREQUENCY
455 kc

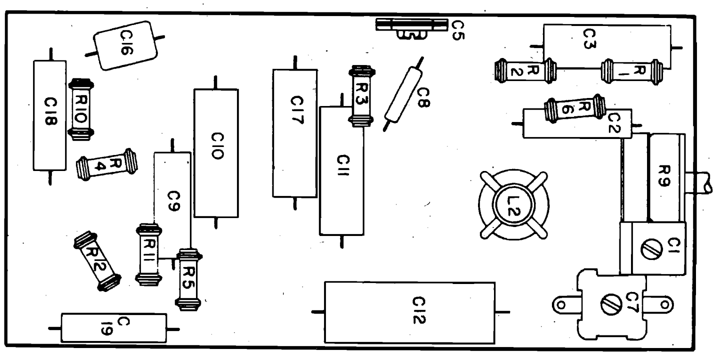
ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Translator Trimmer	Padder
1750 kc	1400 kc	600 kc

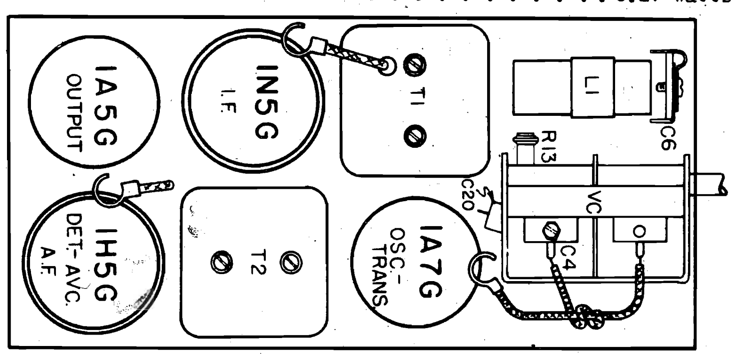
LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 5 inch

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . .0.09 watts
Maximum . . . . .0.17 watts

FREQUENCY RANGE:
Broadcast . . . . 540-1750 kc



LOCATIONS OF PARTS UNDER CHASSIS



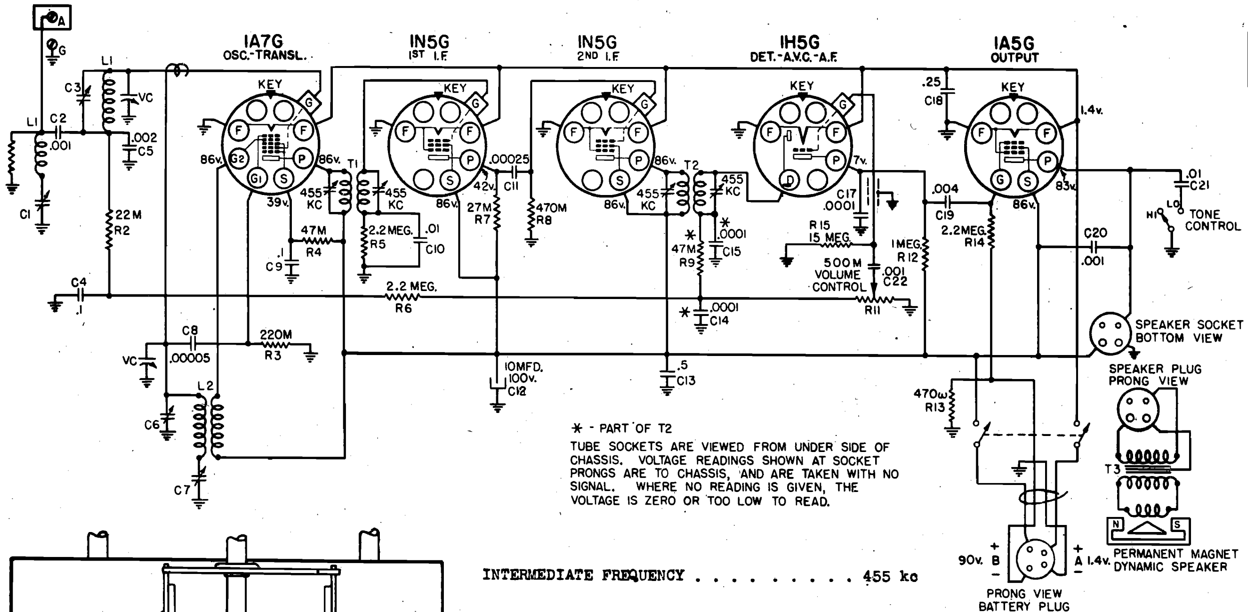
LOCATIONS OF PARTS ON TOP OF CHASSIS

FOR ALIGNMENT SEE INDEX

Socket, Trimmers
Tuner

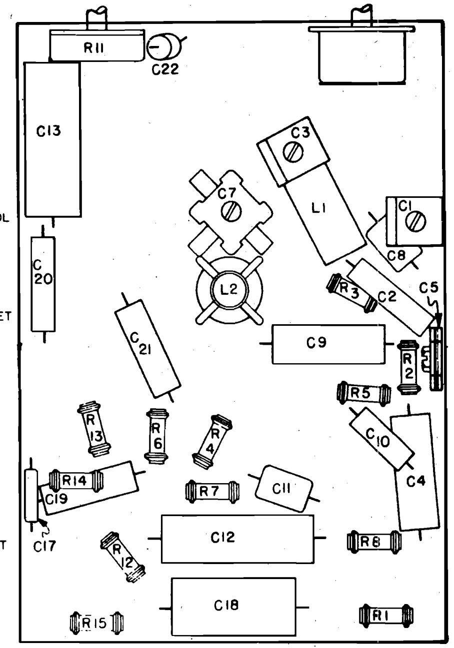
SEARS, ROEBUCK & CO.

MODEL 6261, Ch. 101.561
Schematic, Voltage
Chassis, Alignment



* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.



LOCATIONS OF PARTS UNDER CHASSIS

INTERMEDIATE FREQUENCY . . . . 455 kc

ALIGNMENT PROCEDURE

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	1A7G Translator Grid	T2, T1	IF	50
600 kc	455 kc	.0002 mfd.	Ant. Term.	C1*	IF Wave Trap	--
Fully open	1750 kc	.0002 mfd.	Ant. Term.	C6	Oscillator	50
1400 kc**	1400 kc	.0002 mfd.	Ant. Term.	C3	Translator	20
600 kc (rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	20

* The generator should be adjusted to give high output. The trimmer should be adjusted for minimum output meter reading instead of the customary maximum reading. If the frequency of an interfering station near 455 kc is known, the generator and trimmer should be adjusted for the frequency of the interfering station rather than 455 kc.

** Using the dial as a template make a dummy dial of cardboard with only the 1400 kc calibration on it. Slip this dummy dial over the shaft, hold it horizontal so that the 1400 mark will come at the same position as the 1400 mark on the actual dial and turn the dial pointer to the 1400 kc mark. (The dial pointer should be horizontal when the condenser is fully open or fully meshed.)

The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.

POWER SUPPLY:
#5060. . A-B block (1.4v. "A", 90v. "B")
or
#734 . . . . 2v. Storage "A"
2 - #5041 . . . . . . 45v. "B" battery
#5071 . . . . . . Adaptor necessary with 2v. Storage "A"
"A" Drain . . . . 0.25 amperes
"B" Drain . . . . 10 ma

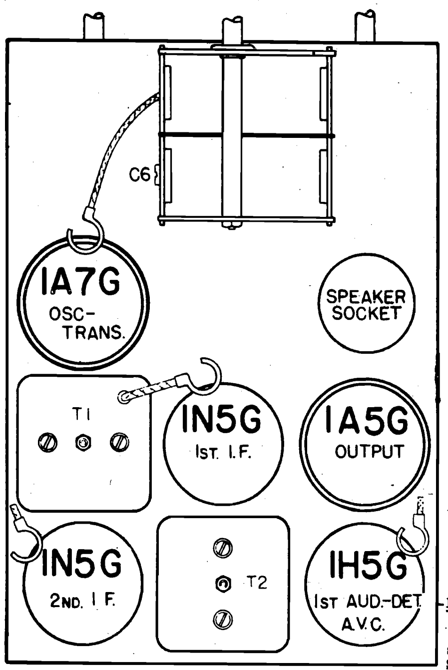
LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 5"

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . 0.09 watts
Maximum . . . . 0.17 watts

FREQUENCY RANGE:
Broadcast. . . . . .540-1750 kc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1750 kc	1400 kc	600 kc

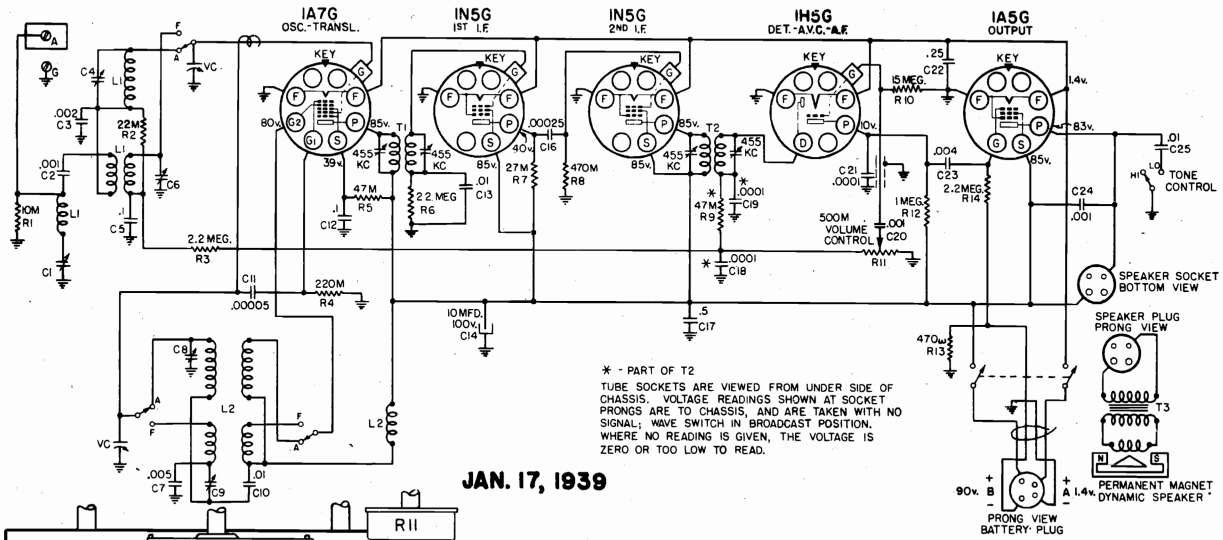


LOCATIONS OF PARTS ON TOP OF CHASSIS

JAN. 17, 1939

MODEL 6262,Ch.101.550
Schematic,Voltage
Chassis,Alignment
Socket,Trimmers,Tuner

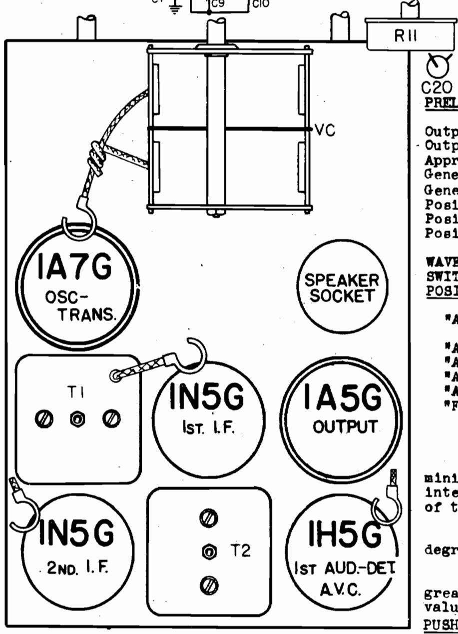
SEARS. ROEBUCK & CO.



* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

JAN. 17, 1939



LOCATIONS OF PARTS ON TOP OF CHASSIS

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts. . . . . .0.3 volts
Approximate average sensitivity in microvolts for 50 milliwatts output. . . . .See chart below
Generator ground lead connection. . . . . .Receiver chassis
Generator modulation . . . . .30%, 400 cycles
Position of Volume Control. . . . . .Fully clockwise
Position of Tone Control . . . . .HI
Position of Dial Pointer with variable fully closed . . . . Horizontal

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T2, T1	IF Output IF Input	60
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"AM"	Fully open	1750 kc	.0002 mfd.	Ant. Term.	C8	Oscillator	40
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C4	Translator	25
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C9	Padder	25
"FOR"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C6	Translator	30

IMPORTANT ALIGNMENT NOTES

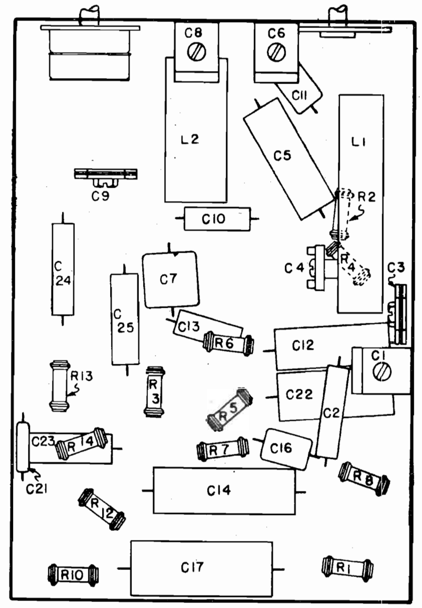
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.



LOCATIONS OF PARTS UNDER CHASSIS

POWER SUPPLY:
#5060. . .A-B block (1.4v. "A", 90v."B")
or
#734 . . . . 2v. Storage "A"
2 - #5041 . . . . 45v. "B" battery
#5071. . .Adaptor necessary with 2 volt Storage "A"

"A" Drain . . . . 0.25 amperes
"B" Drain . . . . 10.35 ma

FREQUENCY RANGES:
Broadcast . . . . 540-1750 kc
Short Wave . . . . 5.95-18.3 mc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1750 kc	1400 kc	600 kc
None	15 mc	Fixed

INTERMEDIATE FREQUENCY . . . . 455 kc

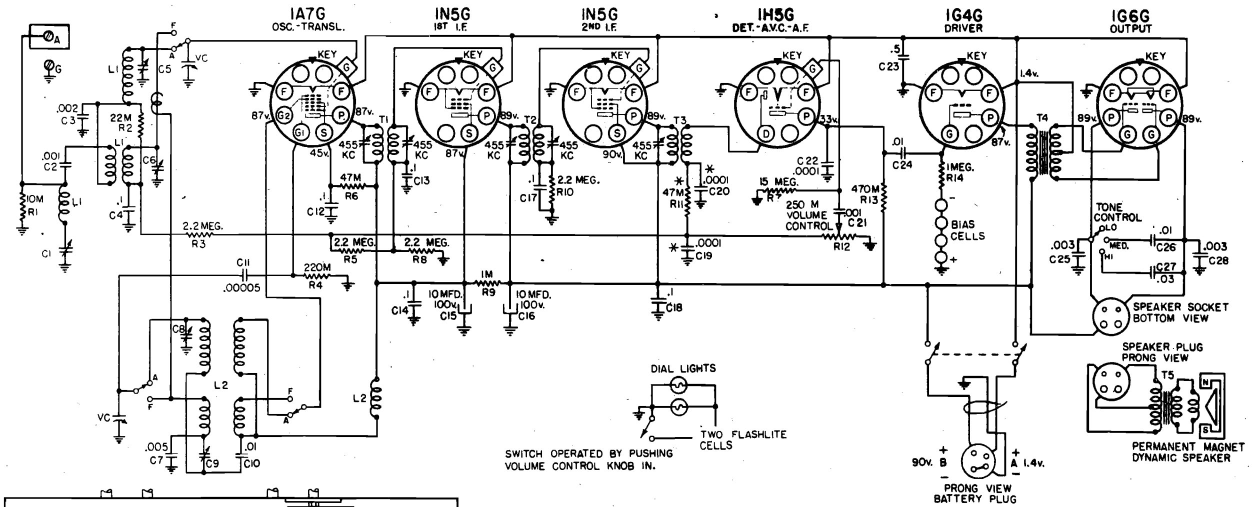
LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 6 inch

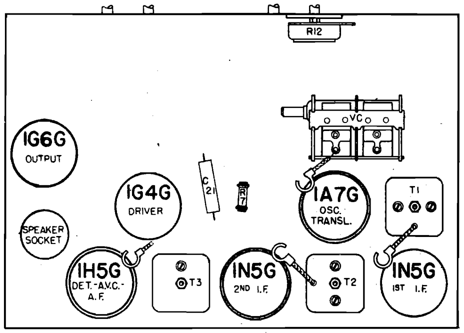
POWER OUTPUT:
Type . . . . .Pentode
Undistorted . . . . 0.089 watts
Maximum . . . . 0.18 watts

CHASSIS 101.553, -A
Alignment

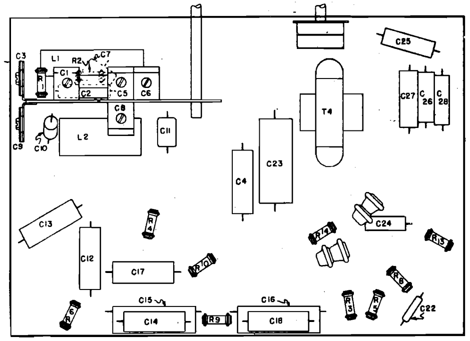
SEARS, ROEBUCK & CO.

MODEL 6263, Ch. 101.562
Schematic, Voltage
Chassis, Alignment
Socket, Trimmers, Tuner





LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS.

* - PART OF T3

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

INTERMEDIATE FREQUENCY . . . 455 kc

CHASSIS FEATURES:
Number IF stages. . . . . Two
Number condensers in gang. . . . . Two
Antenna. . . . . Marconi
Built-in IF Wave Trap

OPERATING FEATURES:
Tone Control. . . . . . . Three position
Automatic Volume Control
"On-Off" Indicator
Dial FLASH-O-LITE
Push Button Tuning (6 button)

OPERATING CONTROLS:
1. Upper left knob . . . . Volume and dial light
2. Lower left knob. . . . . Wave Switch
3. Upper right knob. . . . . . . Tuning
4. Lower right knob . . "On-Off" Switch and Tone

CONTROL OPERATION:
Turning right: . . . . Volume increase
Pushing in: Dial lights
Turning right: "AM", "FOR"
Tuning ratio: 10:1
Turning right: "ON", "HI", "MED", "LO"

JAN. 20, 1939

POWER SUPPLY:
#5061. .A-B block (1.4 v."A", 90 v."B")
or
#734 . . . . 2 v. Storage "A"
2 - #5043. . . . . . . 45 v. "B" Battery
#5072. . . Adaptor necessary with 2 v. Storage "A"
"A" Drain. . . . . 0.35 Amperes
"B" Drain. . . . . 12 ma

LOUD SPEAKER:
Type. . . . . PM Dynamic
Size. . . . . 6 inch

POWER OUTPUT:
Type. . . . . Class "B"
Undistorted. . . . . 0.41 watts
Maximum. . . . . 0.74 watts

FREQUENCY RANGES:
Broadcast . . . . 540-1730 kc
Short Wave . . . . 5.95-18.5 mc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1730 kc	1400 kc	600 kc
None	16 mc	Fixed

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Ⓐ Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . Ⓐ 0.37 volts . . . . 0.34 volts
Approximate average sensitivity in microvolts for 50 milliwatt output. . . . See chart below
Generator ground lead connection . . . . Receiver chassis
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . To fall in center of heavy block to left of 550 kc mark.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN) Ⓐ	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS Ⓐ
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid Ⓐ 6D8G "	T3, T2, T1	IF Output, IF Interstage, IF Input	30 55
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1 C1*	Wave Trap	-- --
"AM"	Fully open	1730 kc Ⓐ 1500	.0002 mfd.	Ant. Term.	C8	Oscillator	35 } 80
"AM"	1400 kc Ⓐ 1500	1400 kc	.0002 mfd.	Ant. Term.	C5 C5	Translator	10 } 80
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Term.	C9 C6	Padder	10 55
"FOR"	Ⓐ 15-16 mc (rock)	Ⓐ 15-16 mc	400 ohms	Ant. Term.	C6 C3	Translator	8 60

Ⓐ For Models 6218, 6271, 6272. Chassis 101.533, 101.533A

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

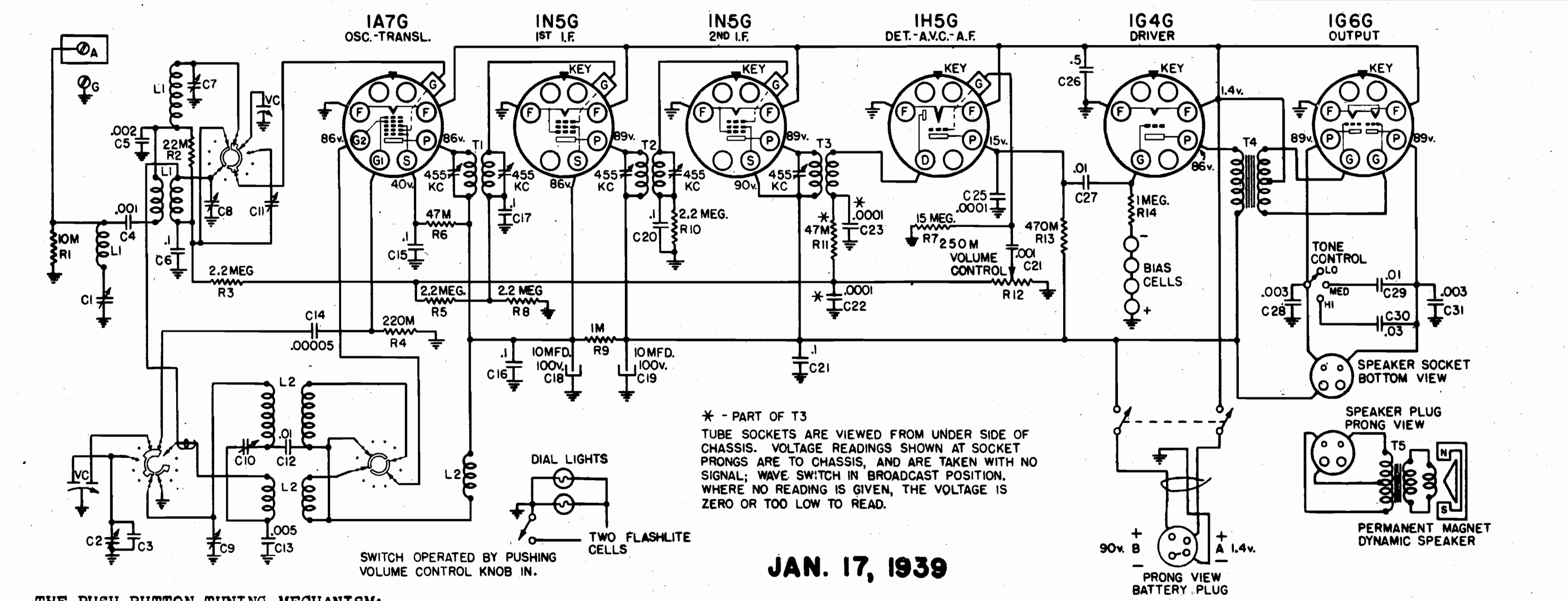
The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

PUSH BUTTON TUNING:

The push button mechanism is locked and unlocked by tightening or loosening the wing nut at the end of the mechanism. (A separate key is supplied in the case of table models instead of the wing nut.) Stations are set up by holding the button all the way in and accurately tuning to the station. Then release the button. After all of the buttons have been set up, lock the mechanism securely to prevent slipping.

MODELS 6264,6265
Chassis 101.551
Schematic,Voltage,Socket
Chassis,Tuner,Trimmers

SEARS, ROEBUCK & CO.



* - PART OF T3

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

JAN. 17, 1939

POWER SUPPLY:

#5061. .	A-B block (1.4v. "A", 90v. "B")	
	or	
#734	2v. Storage "A"	
2 - #5043	45v. "B" battery	
#5072	.Adaptor necessary with 2v. Storage "A"	

"A" Drain . . . . .0.35 amperes
"B" Drain . . . . 12 ma

INTERMEDIATE FREQUENCY

455 kc

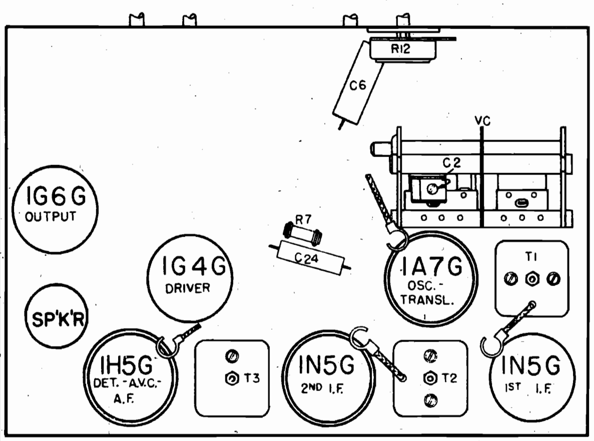
FOR ALIGNMENT
SEE INDEX

LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 6 and 8 inch

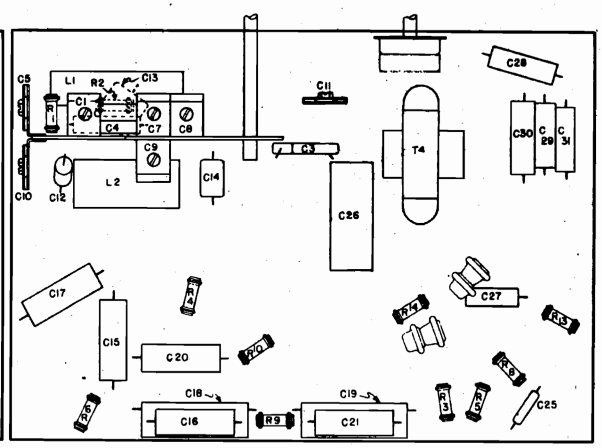
POWER OUTPUT:
Type . . . . .Class "B"
Undistorted . . . . 0.4 watts
Maximum . . . . 0.7 watts

THE PUSH BUTTON TUNING MECHANISM:

The push button mechanism is locked or unlocked by tightening or loosening the wing nut at the end of the mechanism. (A key, instead of the wing nut, is supplied with table models. Remove the snap-in button at the side of the cabinet and engage the key with the slot at the end of the push button mechanism.) Stations are set up by unlocking the mechanism, holding the button all the way in, tuning to the desired station, and then releasing the button. After all of the buttons have been set, the mechanism should be locked by securely tightening the wing nut.



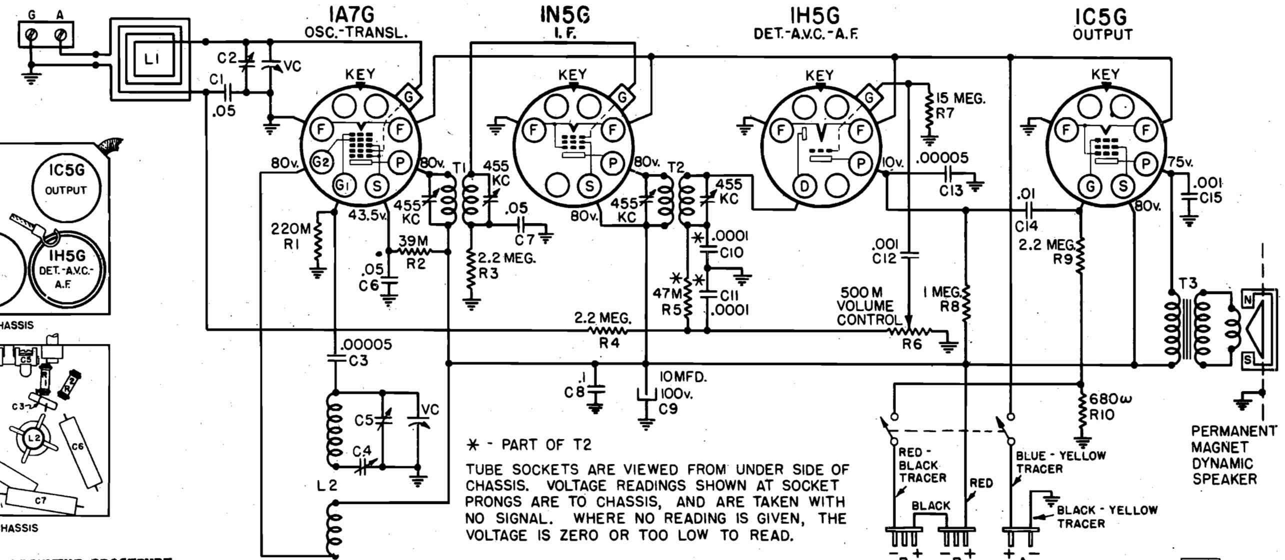
LOCATIONS OF PARTS ON TOP OF CHASSIS

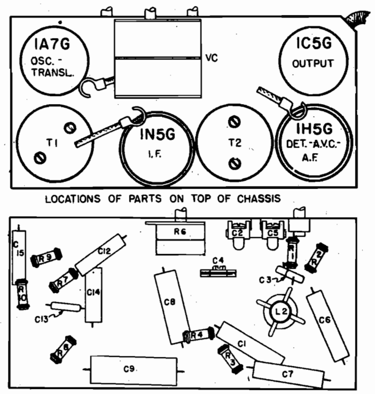


LOCATIONS OF PARTS UNDER CHASSIS

SEARS, ROEBUCK & CO.

MODEL 6266
Ch.101.563,101.563-1A
Schematic,Voltage,Chassis
Socket,Trimmers,Alignment





LOCATIONS OF PARTS ON TOP OF CHASSIS

LOCATIONS OF PARTS UNDER CHASSIS

* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

Chassis identified by 101.563-1A use a loop antenna that is wound directly on the back cover of the carrying case. The knob design and part number also have been changed.

Should the loop be disconnected from the receiver for any reason, be sure that the colored leads are re-connected to the same terminals as originally, indicated by the paint spot on one of the terminals.

ALIGNMENT PROCEDURE

Output meter connections . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . 0.38 volts
Generator ground lead connection . . . . To ground
Connection of generator output lead . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully on
Position of Dial Pointer with variable fully closed To fall on bar just below 550 kc calibration mark.

POSITION OF VARIABLE	GENERATOR FREQUENCY	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 kc	1A7G Transl.Grid with .1 mfd. in series	T2, T1	IF
Fully open	1610 kc	* See note below	C5	Oscillator
1400 kc	1400 kc	* See note below	C2	Translator
600 kc (rock)	600 kc	* See note below	C4	Padder

The chassis is removed from the case in order to align the IF but the loop antenna must be left connected.

* Run a wire from the output terminal of the signal generator, having it come near the receiver. However, no metallic connection is made between the signal generator and the receiver.

The back cover containing the loop antenna must be in place when making the translator, oscillator, and padder adjustments. Also, the batteries must be in place (instead of making connection to external batteries). The trimmers are accessible from the front of the receiver when the escutcheon is removed, as shown in the illustration.

The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

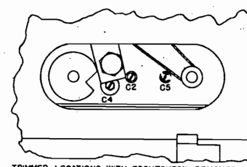
Alignment should be done with no connection made to the external antenna and ground terminals, even though an external antenna is normally used with the set.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

INTERMEDIATE FREQUENCY

455 kc



TRIMMER LOCATIONS WITH ESCUTCHEON REMOVED

FEB. 13, 1939

POWER SUPPLY:
"A" Battery (1½ volt) . . . . . 1 - #5063
Service rating - 150 Hours
"B" Batteries . . . . 2 - #5039
Service rating - 200 Hours

POWER OUTPUT:
Type . . . . Single Pentode
Undistorted . . . . 0.15 watts
Maximum . . . . 0.275 watts

LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 5 inch

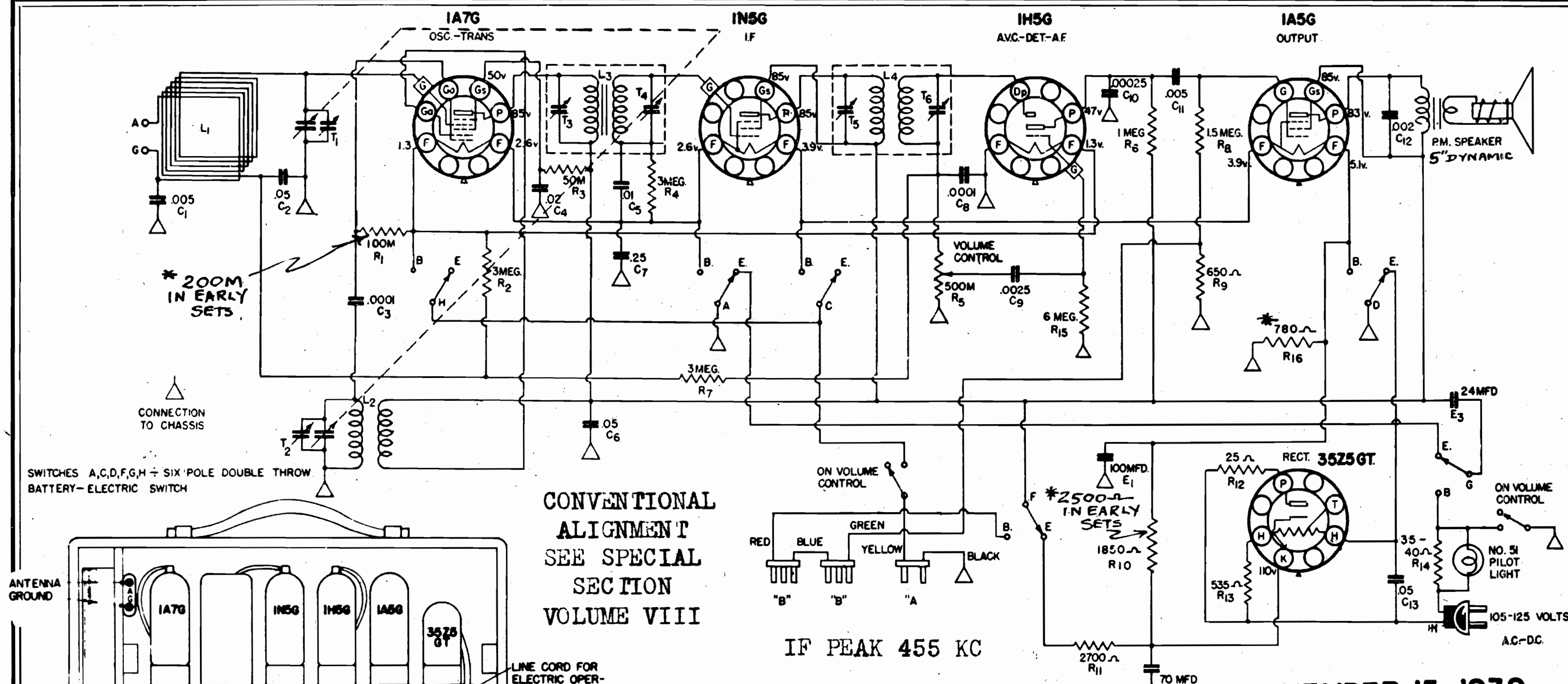
ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1610 kc	1400 kc	600 kc

FREQUENCY RANGE:
Broadcast . . . . 540-1610 kc

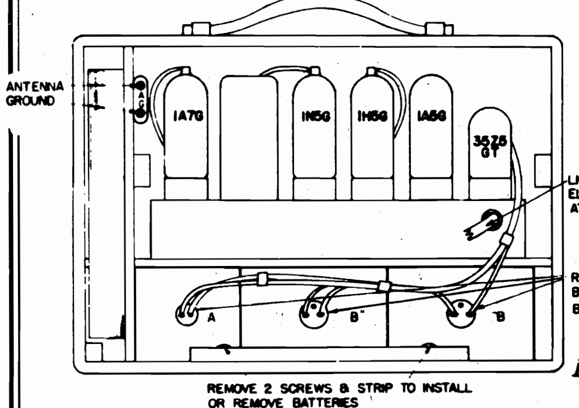
MODEL 6274
Ch.110.391,110.391-1
Schematic,Voltage
Aligmment,Batt.Conn.

SEARS, ROEBUCK & CO.



CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

IF PEAK 455 KC



TUBE SOCKETS VIEWED FROM TOP SIDE OF CHASSIS VOLTAGES AT INDICATED SOCKET PRONGS ARE MEASURED TO CHASSIS WITH THE SWITCH IN THE ELECTRIC POSITION

NOVEMBER 15, 1939

* IDENTIFICATION NO. 110.391-1
(1) Resistors R1 and R10 have been changed. (2) Resistor R16 has been added. (3) Electrolytic condensers E1 and E2 have been changed.

		Oscil. Trimmer	Oscil. Padder
ALIGNMENT FREQUENCIES:	Broadcast.......	1500 KC	Fixed

ALIGNMENT NOTES

The complete assembly of loop mounting and chassis shelf should be removed as a unit in order to align the receiver.

The batteries should be in the proper position when aligning the receiver.

1500 KC Run a wire from the output terminal of the generator, having it come near the receiver. However, no electrical connection is made between the signal generator and the receiver.

Alignement should be done with no connection made to the external antenna and ground terminals.

Always keep the output power from the generator at its lowest possible value to prevent the avc of the receiver from interfering with accurate alignment.

FREQUENCY RANGE:

Broadcast .... 540-1730 KC

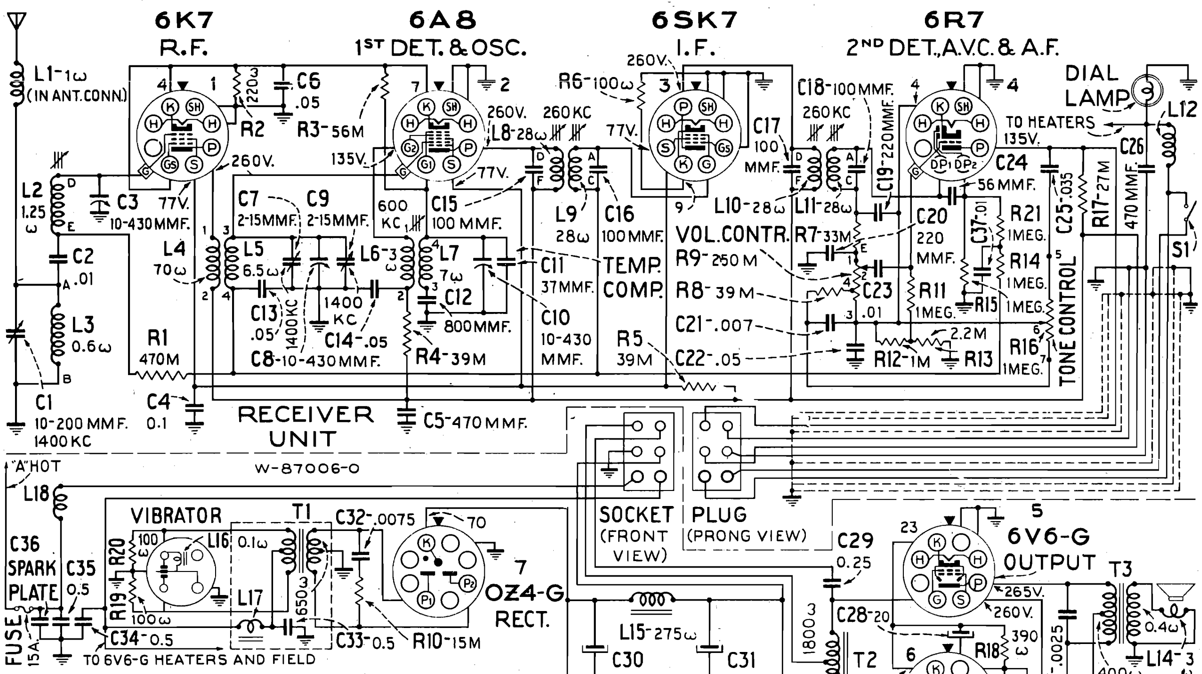
POWER OUTPUT:

Type	Pentode
Undistorted	100 MW
Maximum	260 MW

* CHASSIS, IDENTIFIED BY No. 110.391-1, HAVE UNDERGONE A CIRCUIT CHANGE IN ORDER TO PROTECT THE ELECTROLYTIC CONDENSER FROM EXCESSIVE VOLTAGE SURGES AND TO IMPROVE TUBE OPERATION STABILITY.

SEARS, ROEBUCK & CO.

MODEL 6301, Ch. 126.211
Schematic, Voltage, Dial Assembly



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

FREQUENCY RANGE .... 550-1,550 kc

ALIGNMENT FREQUENCIES:
- I-F .... 260 kc
- Ant. .... 1,400 kc
- Oscl. .... 600 kc
- Det. .... 1,400 kc

POWER OUTPUT:
- Type .... Push-Pull Beam
- Undistorted .... 6 watts
- Maximum .... 8 watts

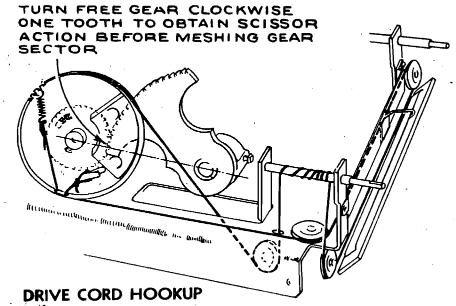
POWER SUPPLY:
- "A" .... 6.3 volt Auto Storage Battery
- "B" .... Non-Synchronous Vibrator
- Current Drain .... 8.7 amps.
- Fuse Protection .... 15 amperes

LOUDSPEAKER:
- Type .... Electrodynamic
- Size .... 8 inches
- V.C. Impedance .... 3 ohms at 400 cycles
- Field Coil Resistance .... 4 ohms

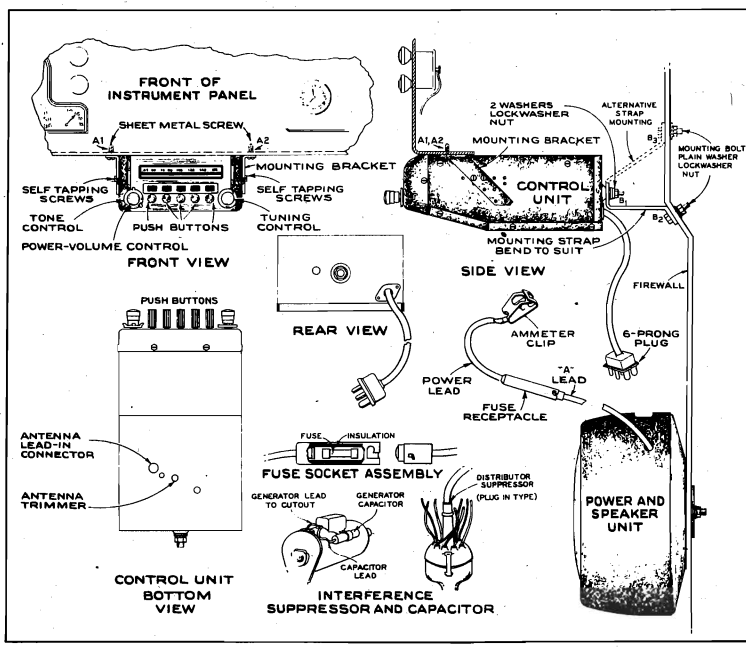
Manual Tuning Dial:

A manual tuning knob is provided so that additional stations may be tuned in as desired. The manual tuning shaft is connected through a cord drive to a drum on the condenser shaft. This same cord drives the dial indicator by passing over a pulley on the chassis. Figure shows the complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and condenser drum.

TURN FREE GEAR CLOCKWISE ONE TOOTH TO OBTAIN SCISSOR ACTION BEFORE MESHING GEAR SECTOR



DRIVE CORD HOOKUP



Loudspeaker:

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

FOR OTHER DATA SEE INDEX

MAY 3, 1939

MODEL 6301
Chassis Wiring, Socket
Trimmers

SEARS, ROEBUCK & CO.

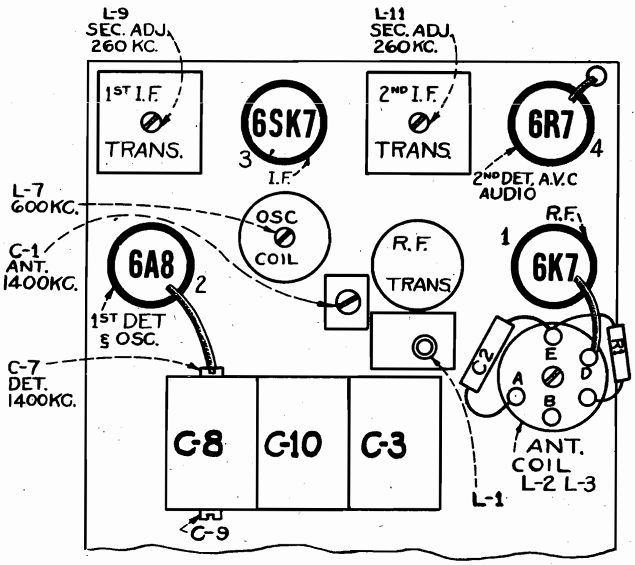


FIG. 1 CONTROL UNIT
TUBE, TRIMMER AND PARTS LOCATION
BOTTOM VIEW

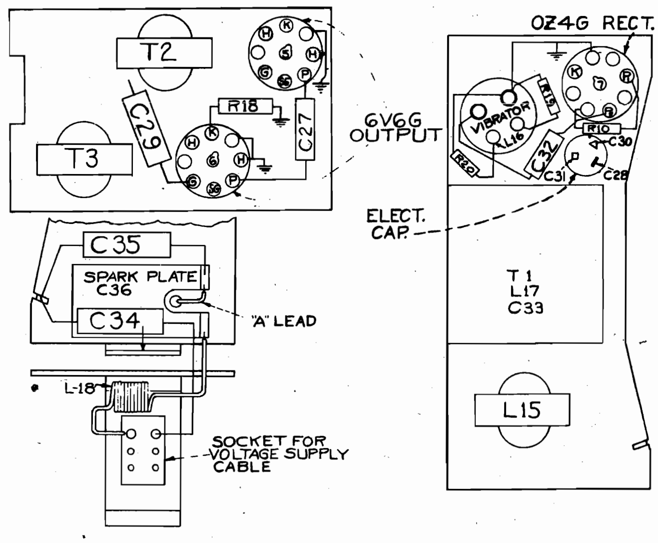


FIG. 2. POWER AND SPEAKER UNIT
TUBE AND PARTS LOCATION
EXPANDED VIEW

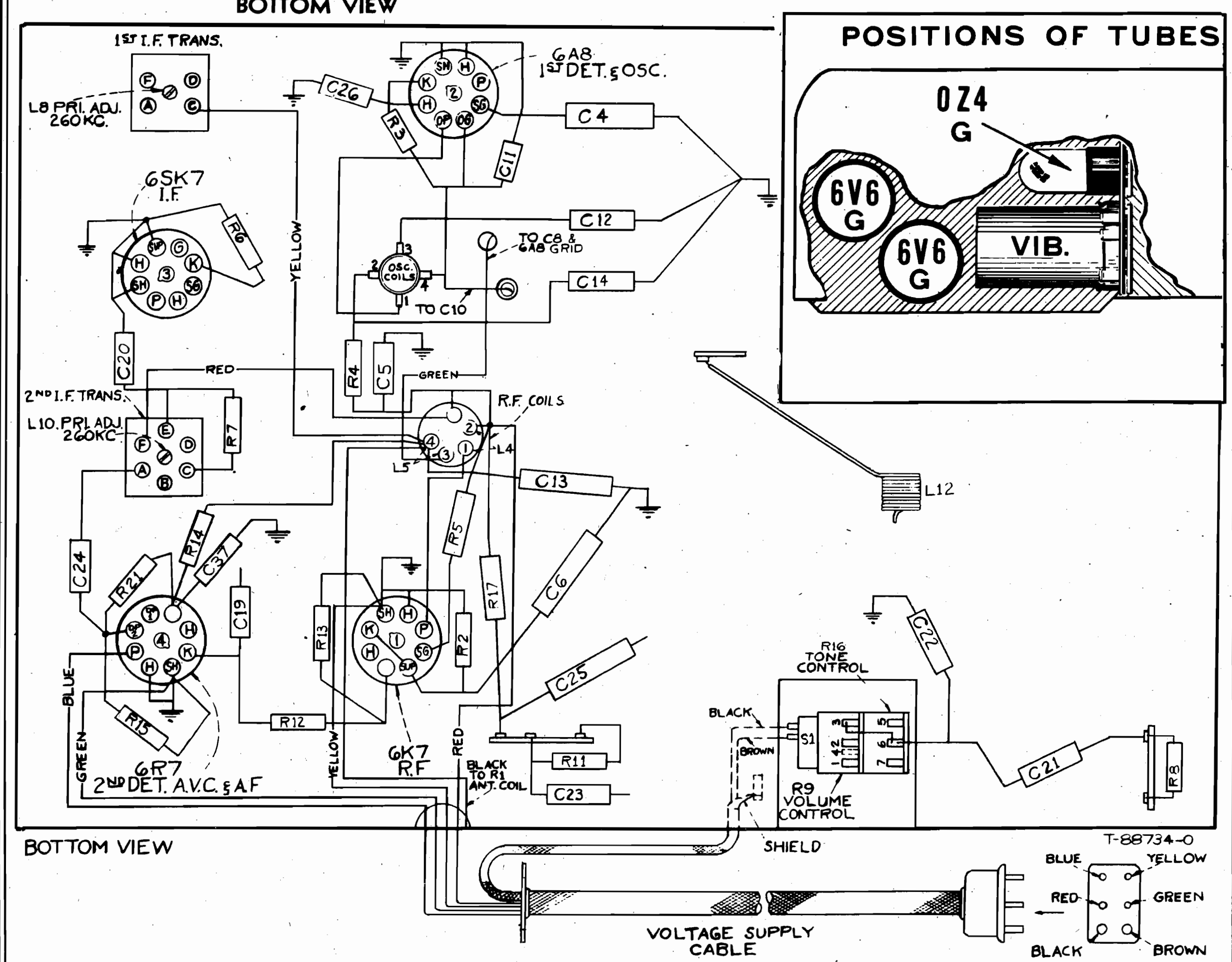


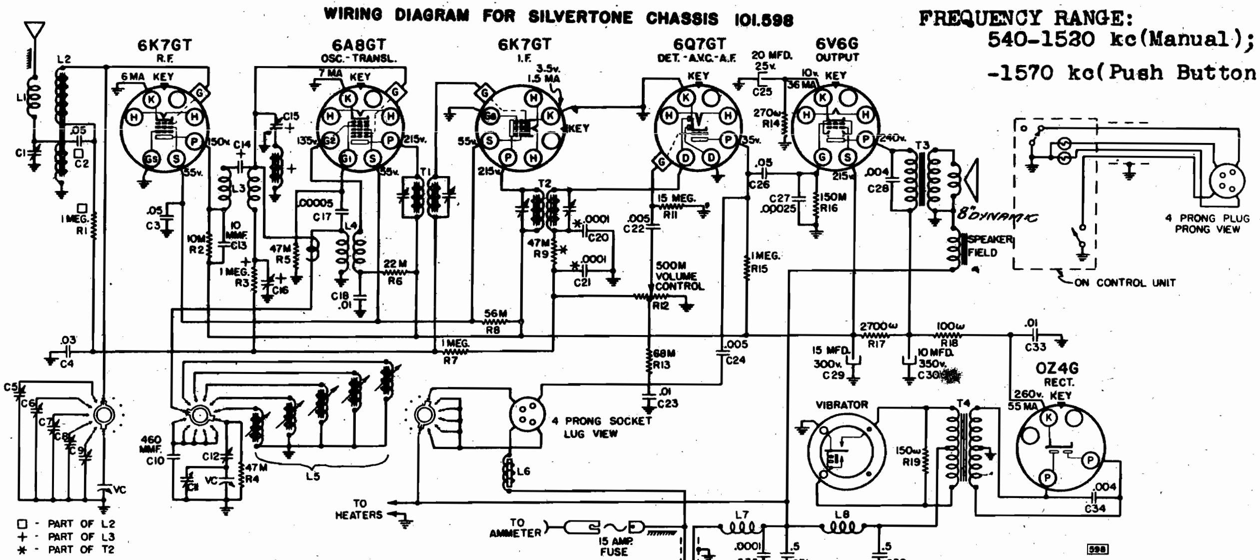
FIG. 3. CONTROL UNIT
TUBE, TRIMMER AND PARTS LOCATION — TOP VIEW

MODEL 6302, Ch. 101.598
Schematic, Voltage, Chassis Socket, Trimmers, Alignment

SEARS, ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.598

FREQUENCY RANGE:
540-1520 kc (Manual);
-1570 kc (Push Button)



□ - PART OF L2
+ - PART OF L3
✱ - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

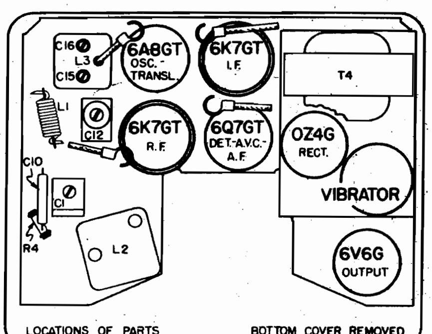
"A" BATTERY = 6. VOLTS CURRENT DRAIN = 7.0 AMPERES

FEBRUARY 22, 1940

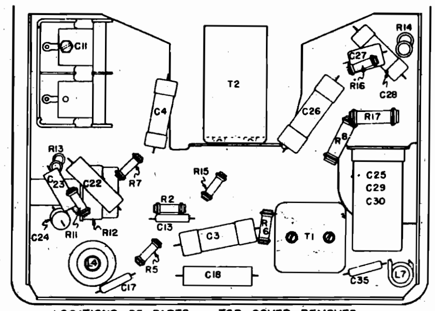
IF PEAK 455 KC

INTERMEDIATE FREQUENCY
455 kc

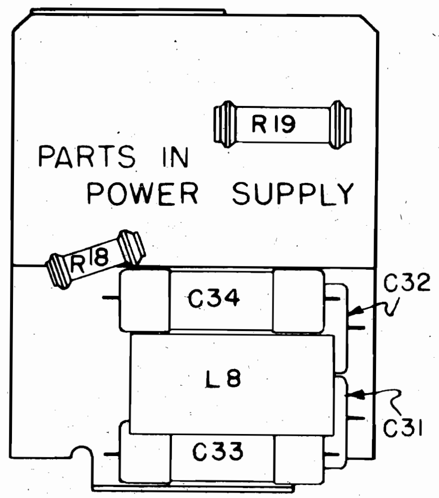
POWER OUTPUT:
Type . . . . Pentode
Undistorted . . 3.3 watts
Maximum . . . . . 6 watts



LOCATIONS OF PARTS BOTTOM COVER REMOVED



LOCATIONS OF PARTS · TOP COVER REMOVED



PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter connections Across loud speaker voice coil
Output meter reading to indicate 1 watt . . 0.79 volts
Position of Volume Control . Fully on
Position of Tone Control . . Brilliant

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS FOR 1 W. OUTPUT
Closed	455 kc	.1 mfd.	RF Grid	T2, T1	IF	--
Closed	455 kc	.1 mfd.	RF Grid	C16*	IF Wave Trap	--
Open	1530 kc	**	Ant. Conn.	C11	Oscillator	--
Open	2430 kc	**	Ant. Conn.	C15*	Image Rejector	--
Closed	540 kc	**	Ant. Conn.	C12	Padder	10
Open	1520 kc	**	Ant. Conn.	C11	Oscillator	10
1400 kc	1400 kc	**	Ant. Conn.	C1	Antenna	10
600 kc (rock)	600 kc	**	Ant. Conn.	C12	Padder	10

The receiver must be in its case during alignment (but the covers will be removed).

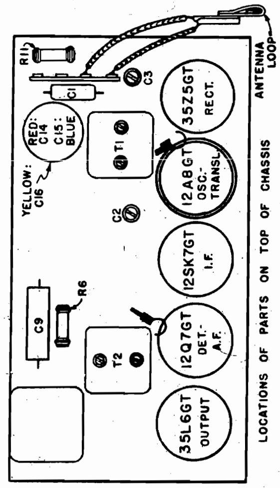
* The signal generator should be adjusted for high output and the trimmer should be adjusted for minimum response.

** The dummy antenna will consist of a 40 mmfd. condenser connected in series between the generator and the receiver and another 40 mmfd. condenser connected from the receiver antenna connection to the chassis.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy.

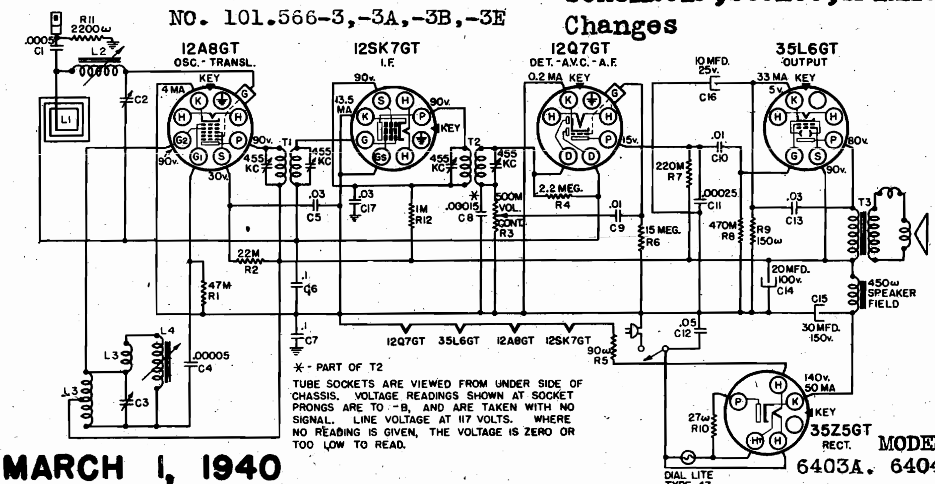
Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment, except as noted by (*) above.

MODEL 6302,Ch.101.598
Tuner Data



SEARS, ROEBUCK & CO.

MODELS 6403A to 6406A
Ch.101.566-3,-3A,-3B,-3E
Schematic,Socket,Trimmers
Changes



MARCH 1, 1940

MODELS
6403A. 6404A,
6405A, 6406A

FOR OTHER DATA REFER TO ORIGINAL CHASSIS,NUMBER 101566.

SUBJECT: ADDITION OF SUFFIX NUMBER -3 TO CHASSIS IDENTIFICATION NUMBER 101.566:

Chassis identified by the addition of suffix number -3 use a 12SK7GT tube instead of the 12K7GT. The revised schematic and top of chassis illustration are shown in this supplement. Changes in the parts :-

1012842407 oscillator padder and trimmer coil L3, retail price 34¢, replaces 1012820932.

1012042405 20 mfd.,100 volt; 30 mfd.,150 volt; 10 mfd., 25 volt electrolytic condenser, C14, C15, C16, retail price 59¢, replaces 1012030935.

A .03 mfd., 200 volt condenser, C17, retail price 7¢, is added.

A 1M ohm, 1/10 watt resistor, R12. retail price 15¢, is added.

FOR ALIGNMENT
SEE INDEX

1013342406 IF input transformer, retail price 60¢, replaces 10133209091.

1013542435 IF output transformer, retail price 60¢, replaces 1013520910.

1012842409 loop, retail price 55¢, is used for all the bakelite cabinet models.

1012842465 loop, retail price 69¢, is used for all the wood cabinet models except 101.566E.

10128411422 loop and cover assembly, retail price 76¢, is used for 101.566E assembly only.

MATCHING THE ANTENNA: *MODEL 6302 Ch.101.598.*

Before proceeding with this adjustment the receiver should be left on for about 15 minutes to warm up.

An adjusting screw, accessible to a screw driver through a hole in the bottom cover of the case, is provided to match the receiver to the car antenna. With the receiver adjusted for "DIAL" tuning, use the Station Selector knob to tune in a very weak station at about 1400 kilocycles, with the volume control fully on. Then turn the adjusting screw to the point affording maximum volume.

THE PUSH BUTTON TUNING MECHANISM:

Preselection of push button tuned stations is accomplished by settings of the iron cores in the oscillator coils and settings of the trimmer condensers across the antenna coil. The proper coils are selected by a switch which is rotated one step at a time by means of a solenoid, controlled by the tuning push button. Pushing the button also mechanically rotates the station call letter drum.

Each button can be set only to a station within a certain frequency range as follows:
#1 540 to 920 kc #2 630 to 1070 kc #3 690 to 1170 kc #4 850 to 1450 kc #5 920 to 1570 kc

To set up the mechanism, insert the call letter tabs in their proper frequency order in the call letter drum. The drum is accessible by removing the snap-in button at the top of the push button unit before mounting the unit. One of the positions is for manual tuning. When this position is reached, the manual tuning dial will become illuminated and the receiver can be tuned manually.

Stations are set up by removing the front grille of the receiver, exposing the station tuning screws. The adjusting screws are labeled. The OSC. screw must be adjusted first; then the ANT. screw. Then repeat the two adjustments.

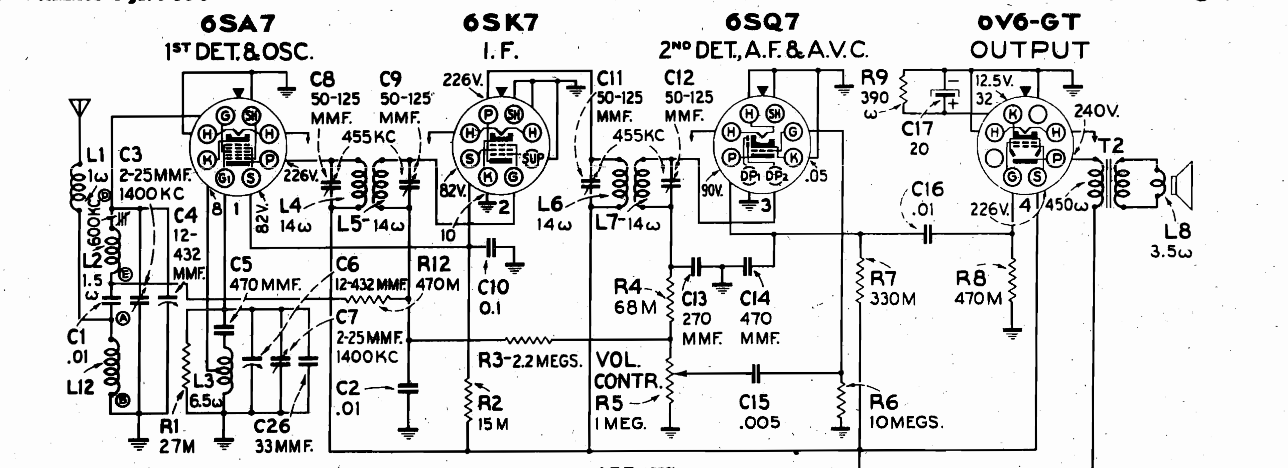
TO SYNCHRONIZE THE MECHANISM, PUSH THE TUNING BUTTON UNTIL THE MANUAL TUNING DIAL BECOMES ILLUMINATED. REMOVE THE PUSH BUTTON CABLE FROM ITS SOCKET IN THE SIDE OF THE RECEIVER CASE AND THEN PUSH THE BUTTON UNTIL THE "DIAL" TAB COMES INTO VIEW. THEN REINSERT THE CABLE PLUG.

Under certain conditions the mechanism may fall out of synchronism if the button is not pushed all the way in and completely released when operating it. The user should be instructed accordingly.

Chassis Wiring, Socket Trimmers, Notes

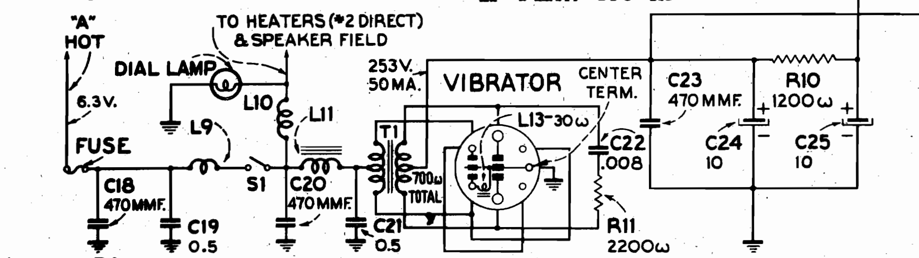
SEARS, ROEBUCK & CO.

MODEL 6303, Ch. 126.223 Schematic, Voltage, Dial



Dial Lamp Mazda No. 51, 6-8 volts, 0.2 ampere

IF PEAK 455 KC



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES TO BE MEASURED WITH NO SIGNAL. THE FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

FEBRUARY 20, 1940

Frequency Range 550-1,550 kc

Power Supply

"A"	6.3 volt Auto Storage Battery
"B"	Synchronous Vibrator
Current Drain	5.8 amps.
Fuse Protection	15 amperes

Power Output

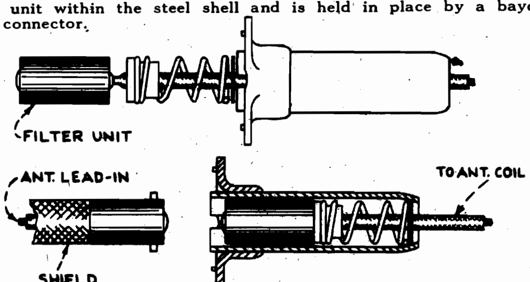
Type	Beam Power
Undistorted	2.0 watts
Maximum	4.0 watts

Loudspeaker

Type	Electrodynamic
Size	4-inch
V.C. Impedance	4 ohms at 400 cycles
Field Coil Resistance	4 ohms

Antenna Filter:

A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. As illustrated, the filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.



ANTENNA FILTER

Tuning Dial:

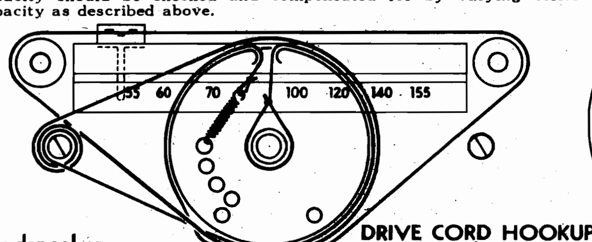
The tuning shaft is connected through a cord drive to a drum on the condenser shaft. This same cord drives the dial indicator by passing over pulleys on the chassis. The complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and condenser drum is shown in the "Drive Cord Hookup" illustration.

Antenna Circuit:

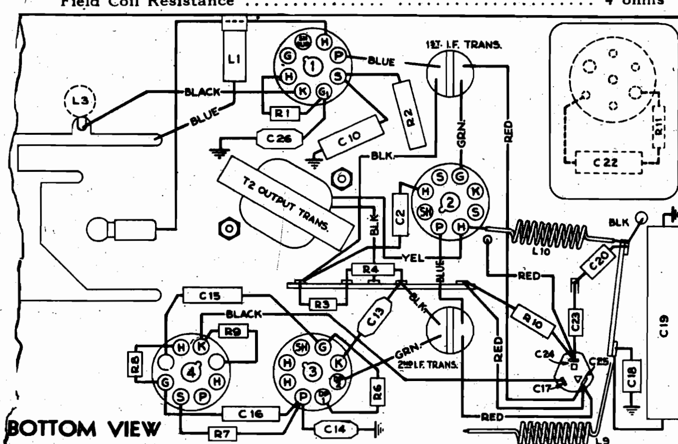
It is very important that these instructions be followed when installing the receiver.

The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 100 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from the antenna filter L-1 to the antenna coil terminal ("A").

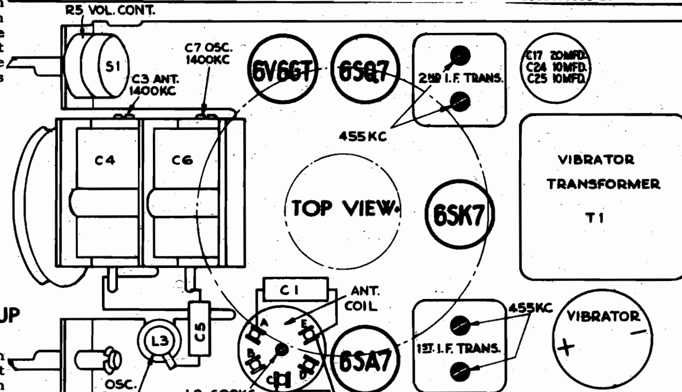
After installation and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer C-3 for maximum signal output. This trimmer is accessible by removing plug button (see illustration) on side of receiver. If a maximum (peak) signal output cannot be obtained in the range of the antenna trimmer, the effective capacity should be checked and compensated for by varying series capacity as described above.



DRIVE CORD HOOKUP



BOTTOM VIEW



Loudspeaker:

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

MODEL 6303,Ch.126.223
Alignment,Noise Notes

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

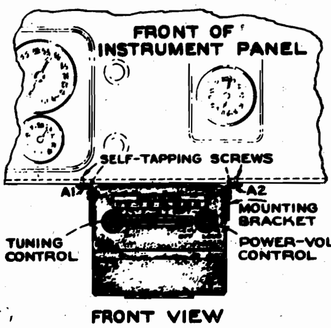
Output meter connections .... Across speaker voice coil
Output meter readings to indicate 1 watt .... 2 volts
Generator ground lead connections .... To chassis
Dummy antenna value to be in series with generator output .... See chart below
Connection of generator output lead .... See chart below
Generator modulation .... 30%, 400 cycles
Position of Volume Control .... Fully clockwise

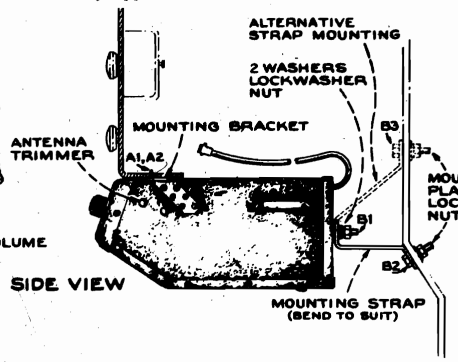
Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connections	Adjustment Symbol	Circuit Adjusted	Approx. Microvolts
No Signal 550-750 kc	455	.01 mfd.	6SK7 Grid (No. 4 pin)	C11, C12	2nd I.F Trans.	2,400
No Signal 550-750 kc	455	.01 mfd.	6SA7 Grid (No. 8 pin)	C8, C9	1st I.F. Trans.	55
600 kc Signal	600 kc	100 mmfd.*	Antenna Connector	L2	Ant.	7
1,400 kc	1,400 kc	100 mmfd.*	Antenna Connector	C7 C3	Osc. Ant.	2
600 kc Signal	600 kc	100 mmfd.*	Antenna Connector	L2	Ant.	7
1,400 kc Signal	1,400 kc	100 mmfd.*	Antenna Connector	C3	Ant.**	2

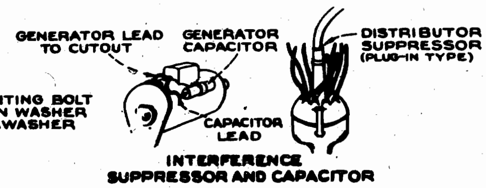
* Make the generator connection through a 100 mmfd. (.0001) capacity inserted at the antenna connector of the receiver. The lead from the signal generator to the 100 mmfd. capacitor may be shielded if desired, but no shielding should be used between capacitor and antenna connector.

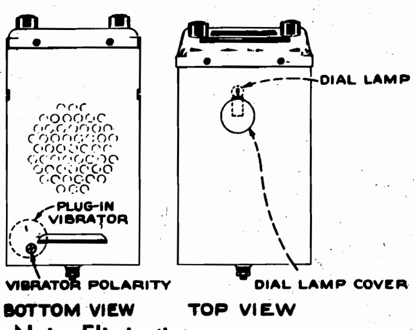
** Final adjustment of C3 must be made after the receiver has been installed and the antenna connected. See "Antenna Circuit".

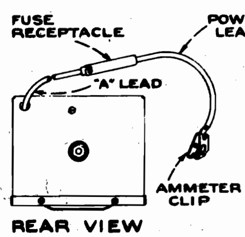
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.
Alignment adjustment locations are shown on the top and bottom parts location views of chassis.
Only the dummy antenna indicated in the chart for any particular frequency should be used.
Values shown under "Microvolts" are only approximate.

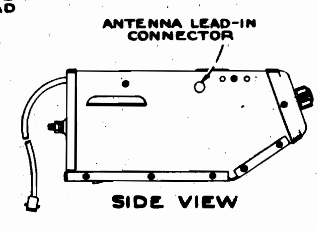


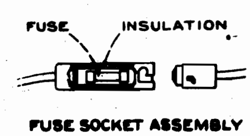












Noise Elimination:

The presence of noise is generally due to the high intensity of electrical disturbances from the car ignition system in relation to strength of desired station. The reduction of such noise should be carried out methodically by: (1) Increasing effectiveness of the antenna and providing for protection against stray pickup; (2) subduing the interference at its source; and (3) installation of filter devices to prevent transmission of interference into the receiver circuits.

Antenna—Should be located well away from engine compartment to avoid ignition disturbance, and as far as possible from front wheels to eliminate "wheel static." Lead-in should be completely shielded and shield grounded to frame of car at as many points as possible. It is very essential that the antenna be electrically "matched" to the receiver input—this is accomplished by adjustment of the antenna trimmer and the operations explained under "Antenna Circuit."

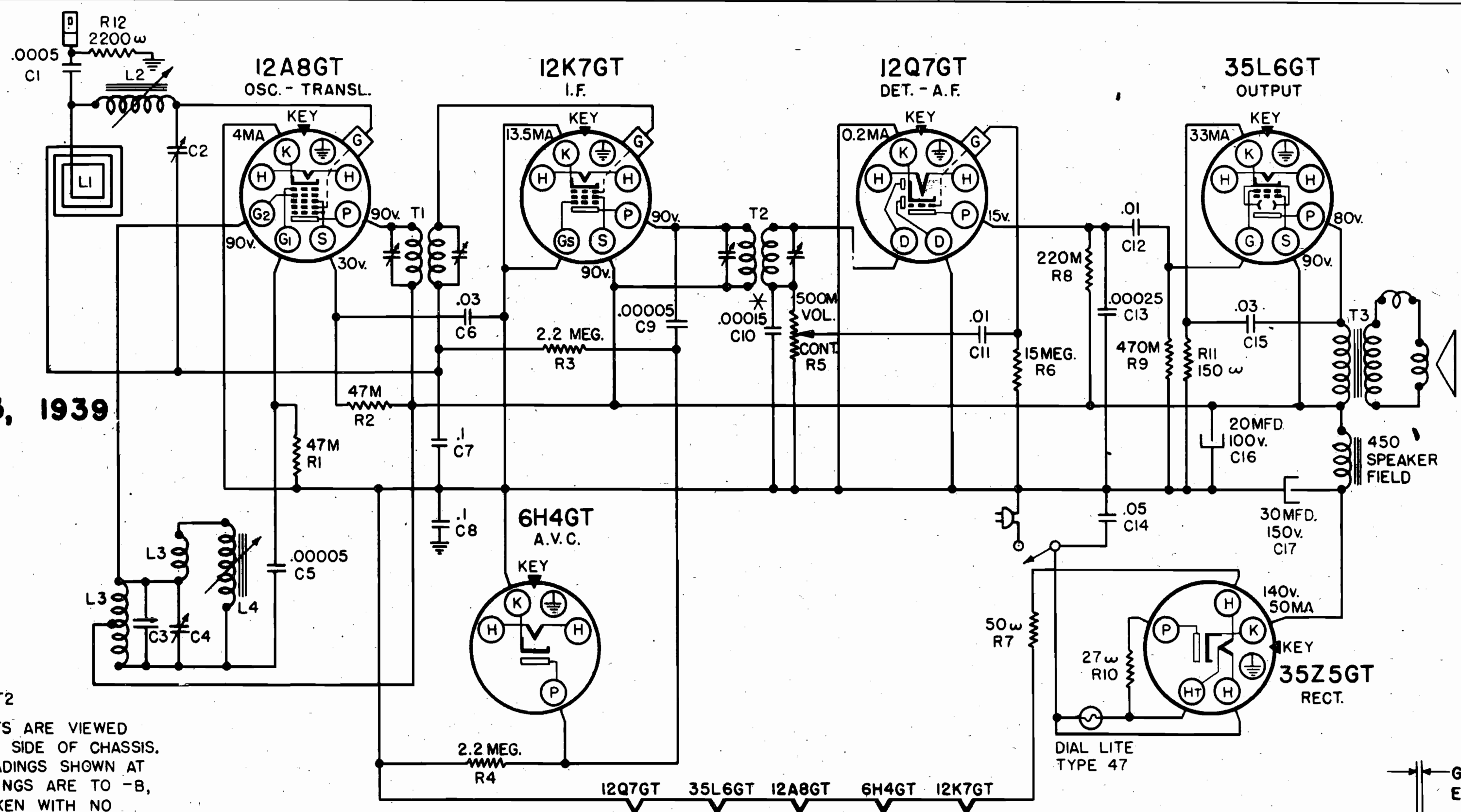
Ignition—Radio frequency interference is created in the secondary and primary ignition circuits, usually at each point where a repeating contact, or spark, is made. The most prominent sources on the average car are: (a) Distributor—add the suppressor-resistor in the center or common high-voltage lead; also have points cleaned and adjusted, if necessary; (b) Generator—connect an 0.5 mfd. shielded capacitor directly across generator output; also see that commutator is smooth and brushes properly seated for minimum sparking; (c) Gasoline Gauge—on gauges having an electrical contact, an 0.5 mfd. shielded capacitor may be required between the terminal and car frame; (d) Temperature Gauge—where a contacting device is used, interference can be eliminated with an 0.5 mfd. capacitor connected between the circuit and car frame; (e) Spark Plugs—suppressors in leads to spark plugs may possibly be required in extreme cases of interference, on older cars, and in localities where signals are very weak; see that spark plugs are properly adjusted and are not leaky; (f) Ammeter—the supply for the receiver is usually taken from this point; a 0.5 mfd. capacitor from the "hot" lead will prevent passage of interference into the set over this circuit; (g) Dome Light—wiring to the dome light should be shielded; and an 0.5 mfd. capacitor attached between the circuit and car frame, preferably at the point where lead enters the corner post; (h) Wiring—primary and secondary ignition wiring should be physically separated; possible points of poor insulation should be checked, and all connections must be secure.

Car Chassis Bonds—Intermittent electrical connection between members of the car chassis, caused by vibration, will cause noise interference. Flexible bonding connections to the frame will correct this condition. The most sources are: (a) transmission case; (b) muffler; (c) steering column; (d) cylinder head; (e) dash controls; (f) rear springs; (g) brake cables; (h) hood cover; (i) receiver case.

Wheel Static—Interference from this source generally originates in the front wheels, and is related to road surface composition, and atmospheric conditions. Spring devices are available for attachment to the wheels for making a permanent connection between the hub and axle; these should be installed where required. The wheel bearings should be checked for proper adjustment. Patches in tires will frequently cause wheel static; exchange front and rear wheels. Be sure antenna is well separated from wheels of car.

MODEL 6320,Ch.101.585
Schematic,Voltage,Dial

SEARS, ROEBUCK & CO.



AUG. 23, 1939

✱ PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO -B, AND ARE TAKEN WITH NO SIGNAL LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

POWER SUPPLY:
All models available . . . . 105-125 volts, AC-DC, 30 watts

FREQUENCY RANGE . . . . .540-1620 kc **ALIGNMENT FREQUENCIES:** . . .Osc. - 540 kc; Transl. - 900 kc

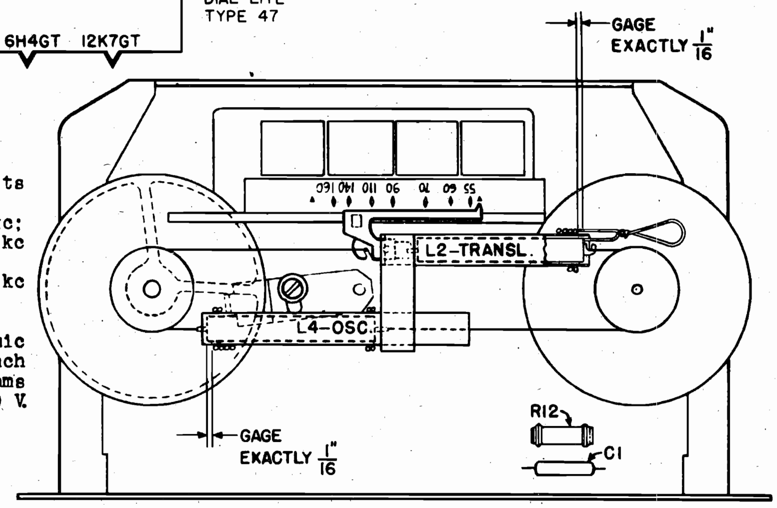
INTERMEDIATE FREQUENCY . . . . 455 kc

POWER OUTPUT:
Type . . . . .Beam Tube
Undistorted . . . . 0.8 watts
Maximum . . . . .1.25 watts

LOUD SPEAKER:
Type . . . . .Dynamic
Size . . . . 5 inch
Field coil resistance . . . . 450 ohms
Approx.field coil voltage drop. . 50 V.

OPERATING FEATURES:
Automatic Volume Control
AC-DC
Push Button Tuning (4 button)

CHASSIS FEATURES:
Number IF stages . . . . One
Permeability tuned
Built-in loop with provision for external antenna



CORE DRIVE ASSEMBLY

MODEL 6320
Chassis, Socket, Trimmers
Notes, Tuner, Alignment

SEARS, ROEBUCK & CO.

REMOVING THE CHASSIS FROM THE CABINET:

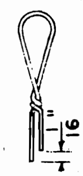
In addition to the two screws that hold the back of the chassis there is also a screw that holds the speaker frame to the cabinet.

DIAL LIGHT REPLACEMENT:

The dial light socket is attached to a bracket at the rear of the chassis, held with a single screw.

COIL REPLACEMENT:

No regard need be paid to the colors of paint spots on coils or cores. Coils may be replaced individually; however, cores must be replaced in pairs to secure proper matching and are furnished in pairs for service. To replace a coil, cut away the cement from the old coil and remove the coil. Insert the new coil in the bracket and position it so that, when the tuning knob is turned to its low frequency limit, the core will extend exactly 1/16" beyond the end of the coil winding. A gauge, easily made of a piece of wire as illustrated, should be used for determining this dimension. Similarly, when replacing cores, the coil positions must be checked to see that there is exactly 1/16" overlap of the core beyond the end of the coil winding with the tuning knob at the low frequency limit. This is true for both oscillator and translator cores and coils. New coils can be cemented to the bracket with Major's, Du Pont, or equivalent cement.



ELIMINATING HUM MODULATION WHEN USING AN EXTERNAL ANTENNA:

As shown by the Schematic and by the Location of Parts diagram, there is a 2200 ohms resistor, connected from the external antenna clip to chassis. This resistor prevents hum modulation when using an external antenna. If such hum is experienced, examine the chassis to see if this resistor has been incorporated. (The resistor is mounted alongside of the loop antenna connection board as shown in the Location of Parts diagram. It was not incorporated in early production.) If necessary, addition of the resistor will eliminate the complaint.

PUSH BUTTON TUNING:

Each button is set up by loosening the screw (under the call letter tab), tuning in the station, depressing the button and then tightening the screw.

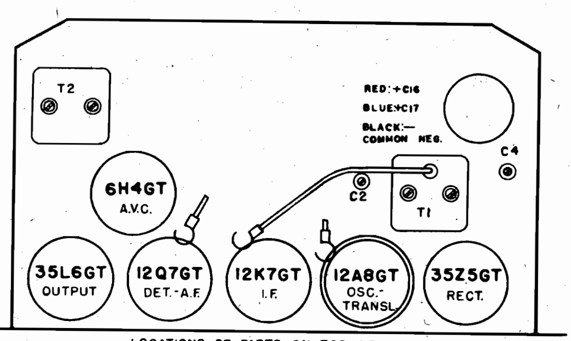
ALIGNMENT PROCEDURE

PRELIMINARY:

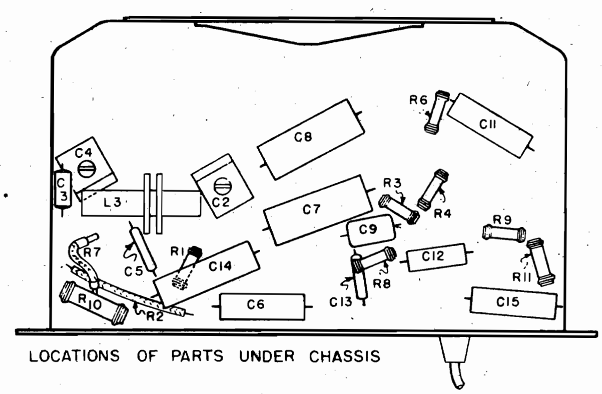
Output meter connection . . . . Across loud speaker voice coil
Output meter to indicate 50 milliwatts . . . . 0.36 volt
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator ground lead . . . . To external ground
Position of Volume Control . . . . Fully on

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION
550 kc	455 kc	.1 mfd.	12A8GT Grid	T2, T1	IF
540 kc	540 kc	.0002 mfd.	Ant. Clip	C4	Oscillator
900 kc	900 kc	.0002 mfd.	Ant. Clip	C3	Translator

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.



LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS

SEARS, ROEBUCK & CO.

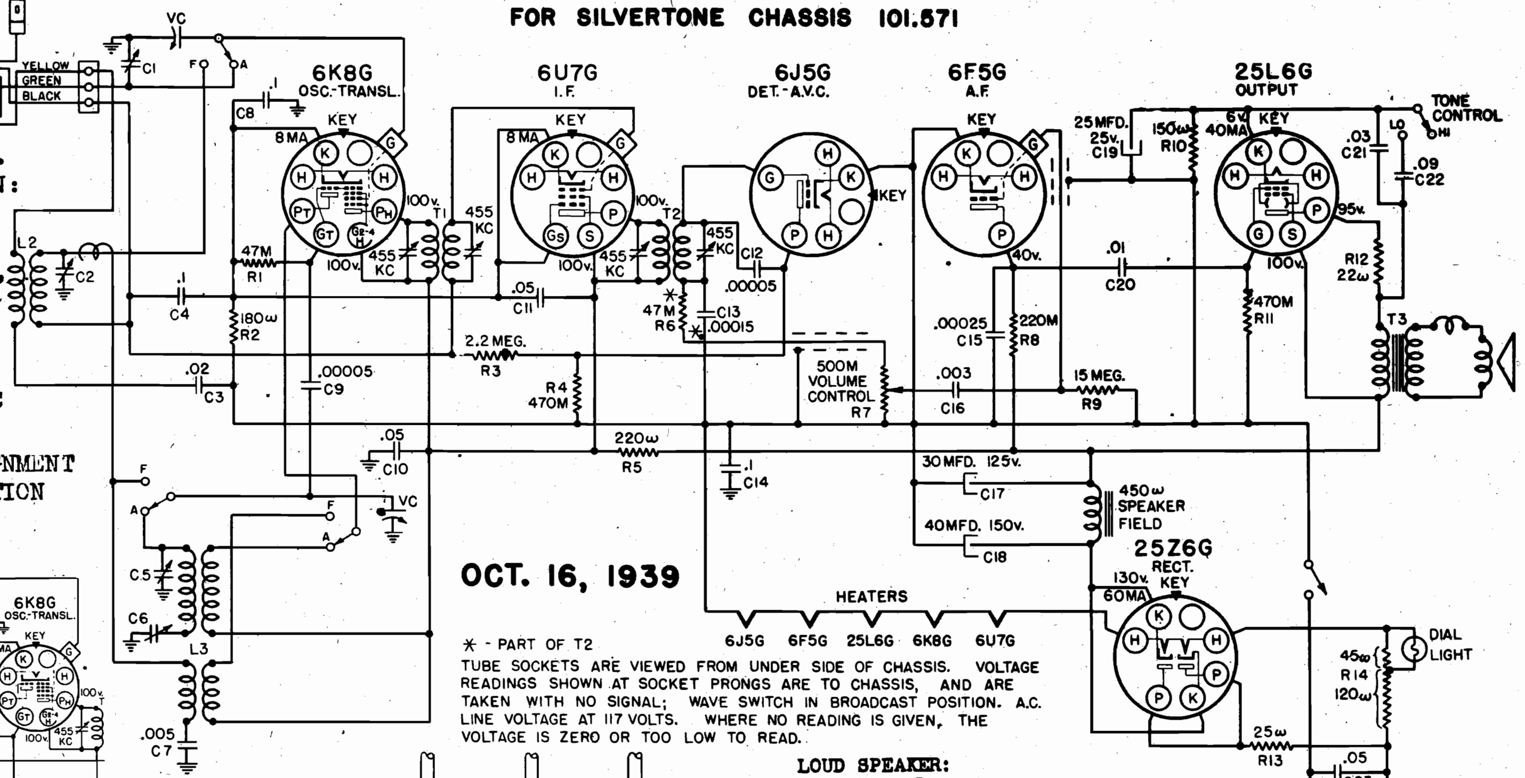
MODELS 6321, 6322, 6323, 6421
Ch. 101.571, 101.571-1, -1A, -1B
Schematic, Voltage, Chassis Socket, Trimmers, Changes

FOR SILVERTONE CHASSIS 101.571

PUSH-BUTTON ADJUSTMENT:
Pull off push button knob to locate slotted screwhead.
SETTING UP STATION:
Loosen screwhead; tune station; tighten screwhead, thus locking mechanism.

IF PEAK 455 KC

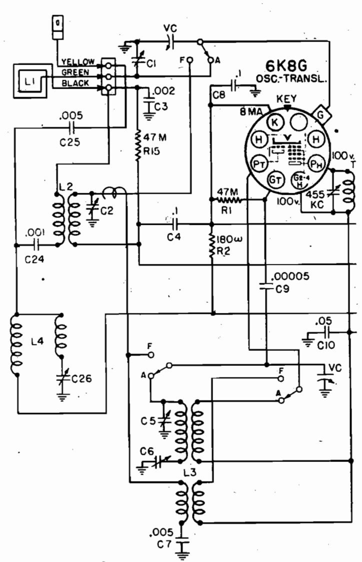
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

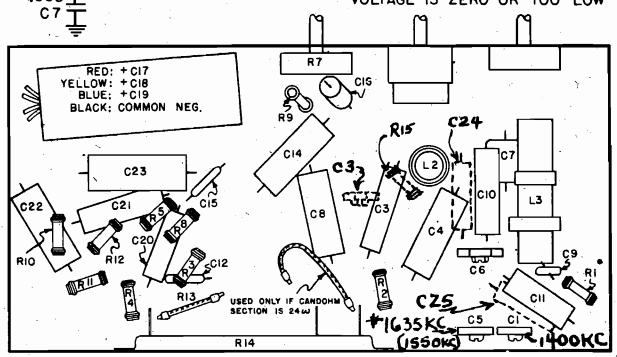


OCT. 16, 1939

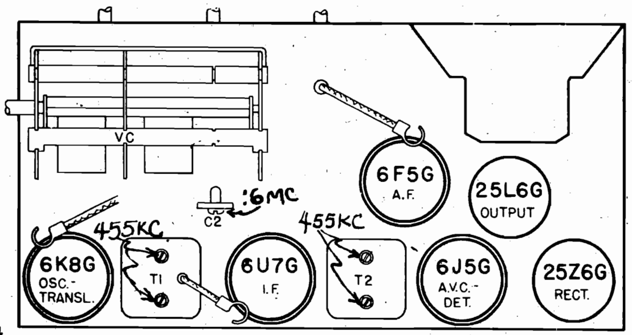
* - PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. A.C. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

LOUD SPEAKER:
Type Dynamic
Size 5 inch
Field coil resistance 450 ohms





LOCATIONS OF PARTS UNDER CHASSIS.



YELLOW GREEN BLACK LOCATIONS OF PARTS ON TOP OF CHASSIS

POWER OUTPUT:
Type . . . . .Beam tube
Undistorted . . . . .1 watt
Maximum . . . . .1.8 watt

FOR SILVERTONE CHASSIS 101.571-1 PARTS DOTTED USED IN CHASSIS 101.571-1, 101.571-1A, -1B.

ADDITION OF SUFFIX NUMBER -1 TO 101.571 AND 101.571-A, -B CHASSIS:

As shown by the schematic diagram, certain changes have been incorporated in the antenna circuit of this model, including the addition of an I.F. wave trap. Chassis incorporating the changes are identified by the addition of suffix number -1.

* The top frequency for adjusting the broadcast oscillator trimmer with the variable fully open becomes 1550 kc instead of the original 1635 kc.

MODELS 6324,6424,Ch.101.570
6324,6424,6493,Ch.101.570-1A,
101.570-1B

SEARS, ROEBUCK & CO.

Schematic,Voltage,Chassis
Socket,Trimmers,Changes

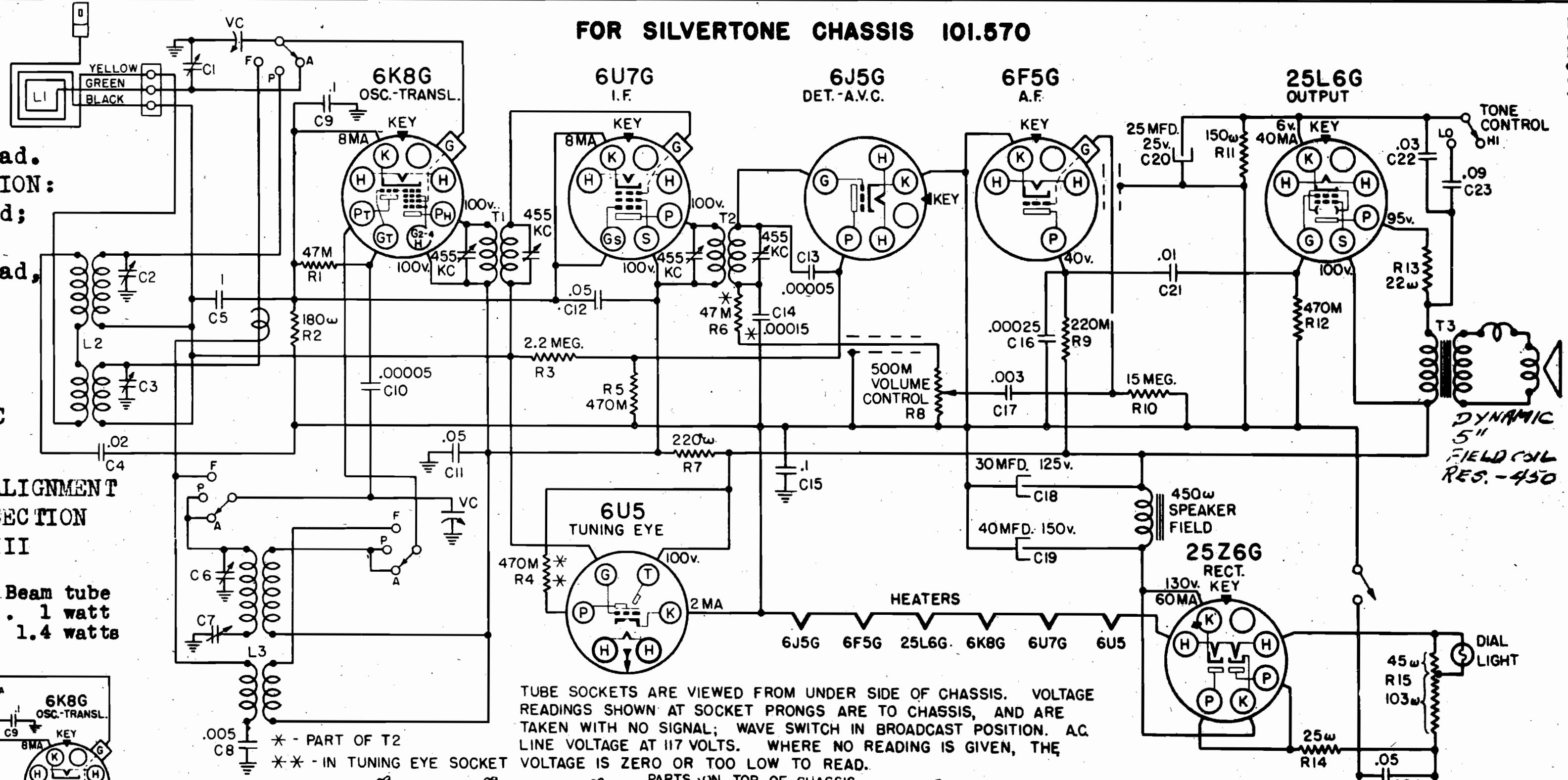
PUSH-BUTTON ADJUSTMENT:
Pull off push button knob to locate slotted screwhead.
SETTING UP STATION:
Loosen screwhead; tune station; tighten screwhead, thus locking mechanism.

IF PEAK 455 KC

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

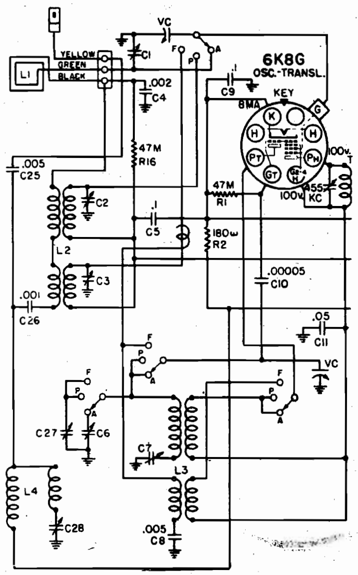
POWER OUTPUT:
Type . . . Beam tube
Undistorted . 1 watt
Maximum . . 1.4 watts

FOR SILVERTONE CHASSIS 101.570

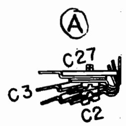


TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. A.C. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

PARTS DOTTED USED ON 101.570-1,-1A CHASSIS

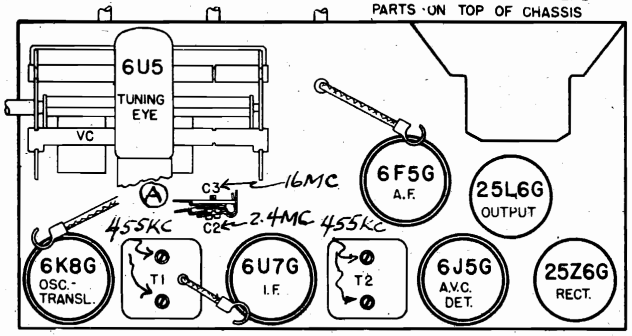


FOR SILVERTONE CHASSIS 101.570-1

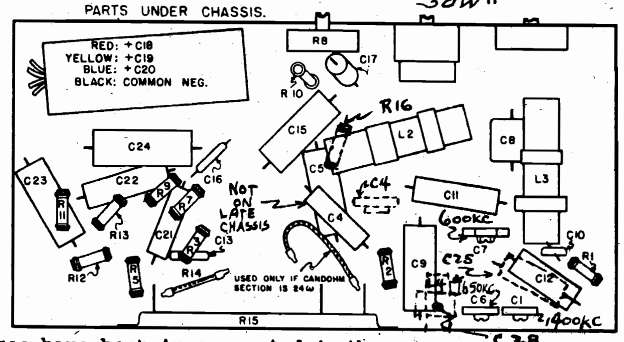


TRIMMERS ON LATE CHASSIS. TRIM C27 AT 2550 KC. SEE NOTE MARKED *

PARTS ON TOP OF CHASSIS



PARTS UNDER CHASSIS.



ADDITION OF SUFFIX NUMBER -1 TO 101.570 AND 101.570-A CHASSIS:

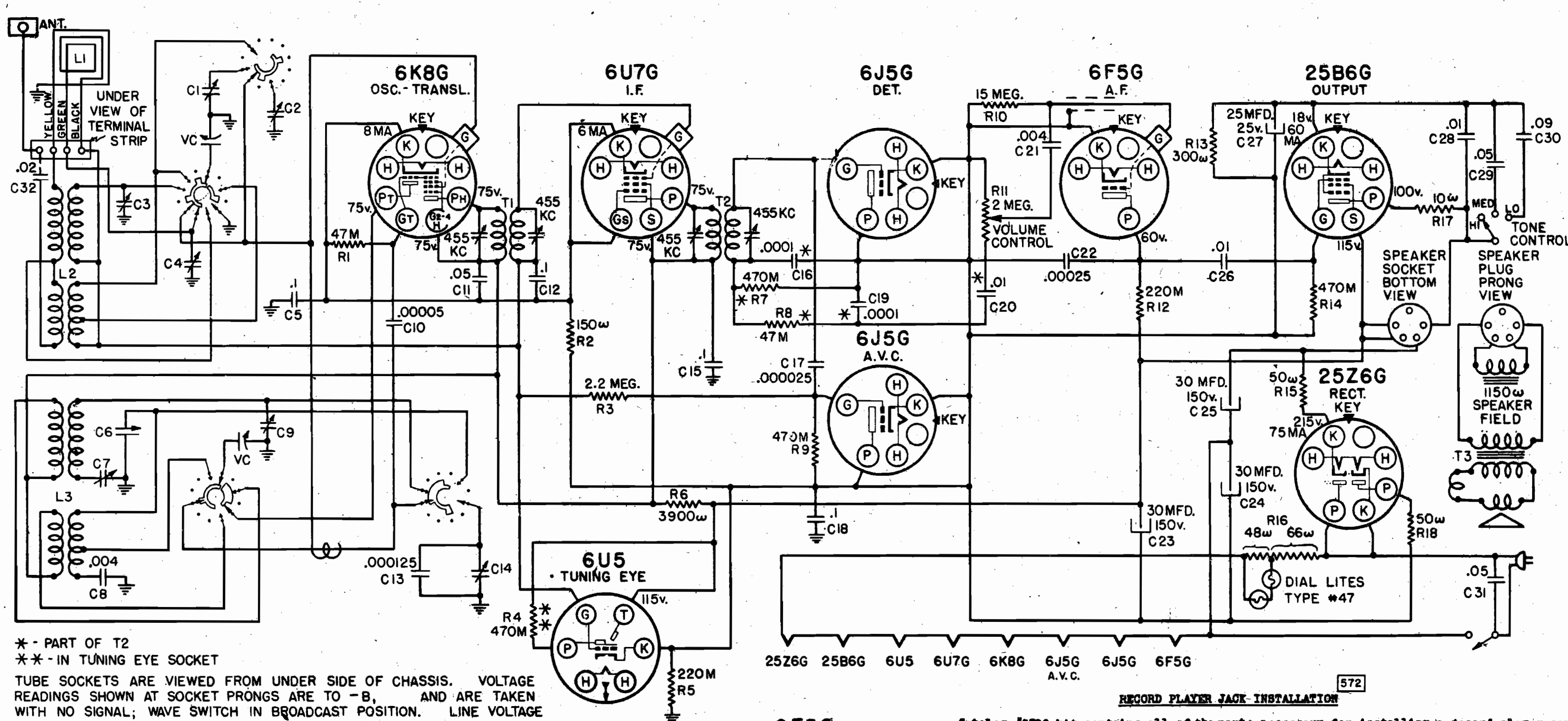
As shown by the schematic diagram, certain changes have been incorporated in the antenna circuit of this model, including the addition of an I.F. wave trap. Chassis incorporating the changes are identified by the addition of suffix number -1.

*The top frequency for adjusting the broadcast oscillator trimmer with the variable fully open becomes 1550 kc instead of the original 1650 kc. An additional police band oscillator trimmer, C27, is incorporated and is to be adjusted at 2550 kc with the variable fully open.

OCT. 16, 1939

SEARS, ROEBUCK & CO.

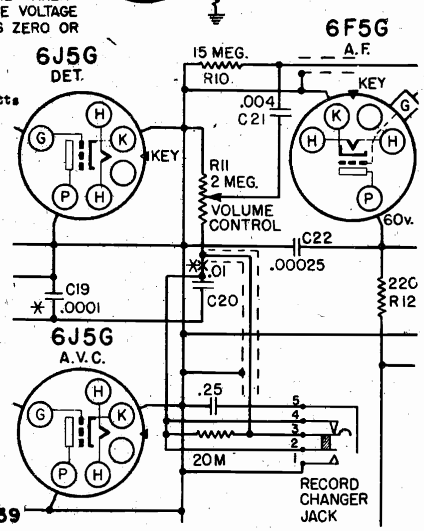
MODELS 6325, 6425
Ch. 101.572
Schematic, Voltage
Jack Installation



✱ - PART OF T2

✱✱ - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO −B, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.



POWER SUPPLY:
All models available . .105-125 v., 25-60 cycles AC: 60 watts

INTERMEDIATE FREQUENCY . . . . 455 kc

LOUD SPEAKER:
- Type . . . . Dynamic
- Size . . . . 6 inch
- Approx. field coil res. . . . 1150 ohms
- Approx. field coil voltage drop. . 95 v.

POWER OUTPUT:
- Type . . . . Beam
- Undistorted . . . . 1.8 watts
- Maximum . . . . 2.9 watts

FREQUENCY RANGES:
- Band "A" . . . . 545-1650 kc
- Band "B" . . . . 1475-2525 kc
- Band "C" . . . . 5.95-18.15 mc
- Band "D" . . . . 9.4-9.85 mc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1600 kc	1400 kc	600 kc
None	2.4 mc	Fixed
None	15 mc	Fixed
9.55 mc	9.55 mc	Fixed

AUGUST 17, 1939

572

RECORD PLAYER JACK INSTALLATION

Catalog #5798 kit contains all of the parts necessary for installing a record player connection jack in this chassis.

There is a hole provided for the jack in the rear of the chassis. Mount the jack, using the two insulating washers, so that all parts of the jack are insulated from the chassis. The connections, shown in the schematic section, are as follows:

Remove the yellow lead that goes to the high side of the volume control and connect the lead instead to jack terminals #3 and #4.

Connect the .25 mfd. condenser from jack terminal #5 to B-.

Connect the 20M ohm resistor between terminals #3 and #4.

Connect the piece of shielded wire from jack terminal #3 to the high side of the volume control. Connect the end of the shield to the B- side of the volume control.

Connect jack terminal #1 to B- using the piece of push-back wire.

If hum is objectionable, the following operations will eliminate it:

The pickup connecting cord must be a two conductor shielded lead and the shield must be connected back to the receiver chassis. The other end of the shield must be connected to the record player volume control shell.

The pickup circuit must not be grounded or connected back to B- at any point external to the receiver. For example, in the Silvertone Model 6227 record player one side of the pickup circuit is connected to the tone arm. This connection must be eliminated by unfastening and taping up the lug that connects the lead to the tone arm. The tone arm itself must be grounded to the receiver chassis.

Both positions of the receiver line cord plug and of the record player line cord plug in their receptacles should be tried. Usually one position will give considerably less hum.

In cabinet styles fitted with a back cover, it will be necessary to cut away a portion of the cover to permit convenient insertion of the plug in the jack.

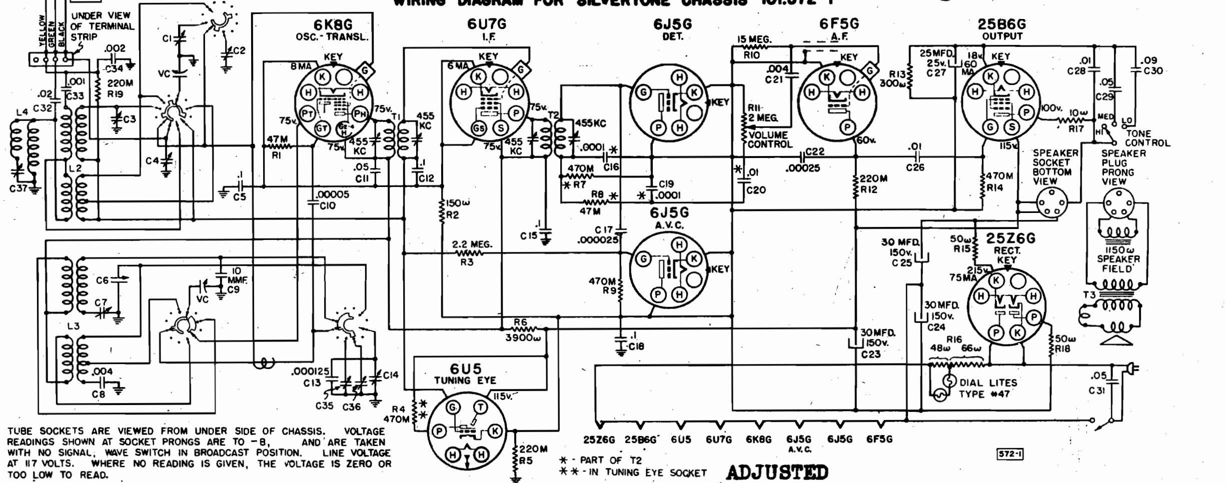
Usually better tone will be had by leaving the receiver volume control set near maximum and controlling the volume by means of the control on the record player.

MODELS 6325,6425
Ch.101.572
Alignment,Chassis

SEARS, ROEBUCK & CO.

Socket,Trimmers,Tuner
Chassis 101.572-1
Schematic,Voltage
Alignment Notes

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.572-1



SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	1600 kc	1600 kc	.0002 mfd.	Ant. Term.	C9	Oscillator	200
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C4	Translator	35
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	130
"B"	3.4 mc(rock)	3.4 mc	400 ohms	Ant. Term.	C3	Translator	320
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C1	Translator	85
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C14*,C2	Osc.,Transl.	160

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

*** If two peaks can be had, the correct adjustment is with the trimmer screw further out. The other peak is the image.**

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

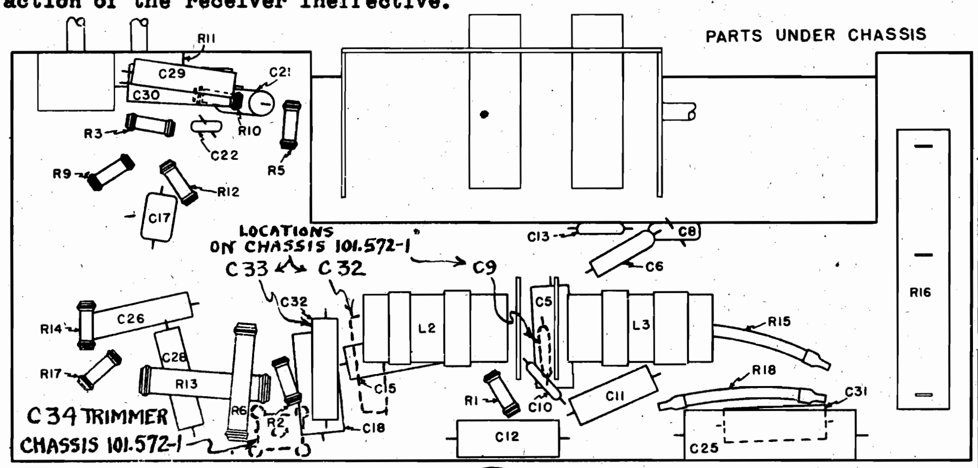
PUSH-BUTTON ADJUSTMENT: Pull off push-button knob to locate slotted screwhead.

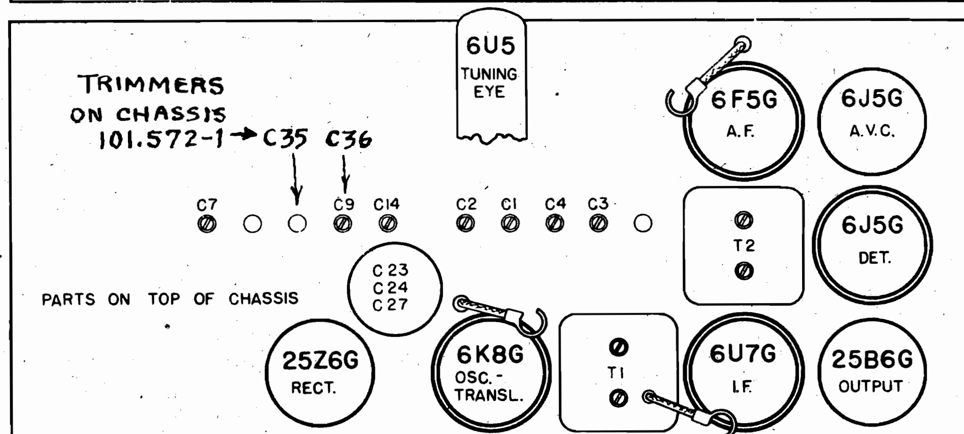
SETTING UP STATION: Loosen screw-head; tune station; tighten screwhead, thus locking mechanism.

CHASSIS 101.572-1 Top frequency, variable completely open, is 1530 kc. Has wave-trap adjustment C37, to be made with variable at 600 kc and signal at 455 kc. Make this adjustment for min. output reading.

OCT. 2, 1939

PARTS UNDER CHASSIS

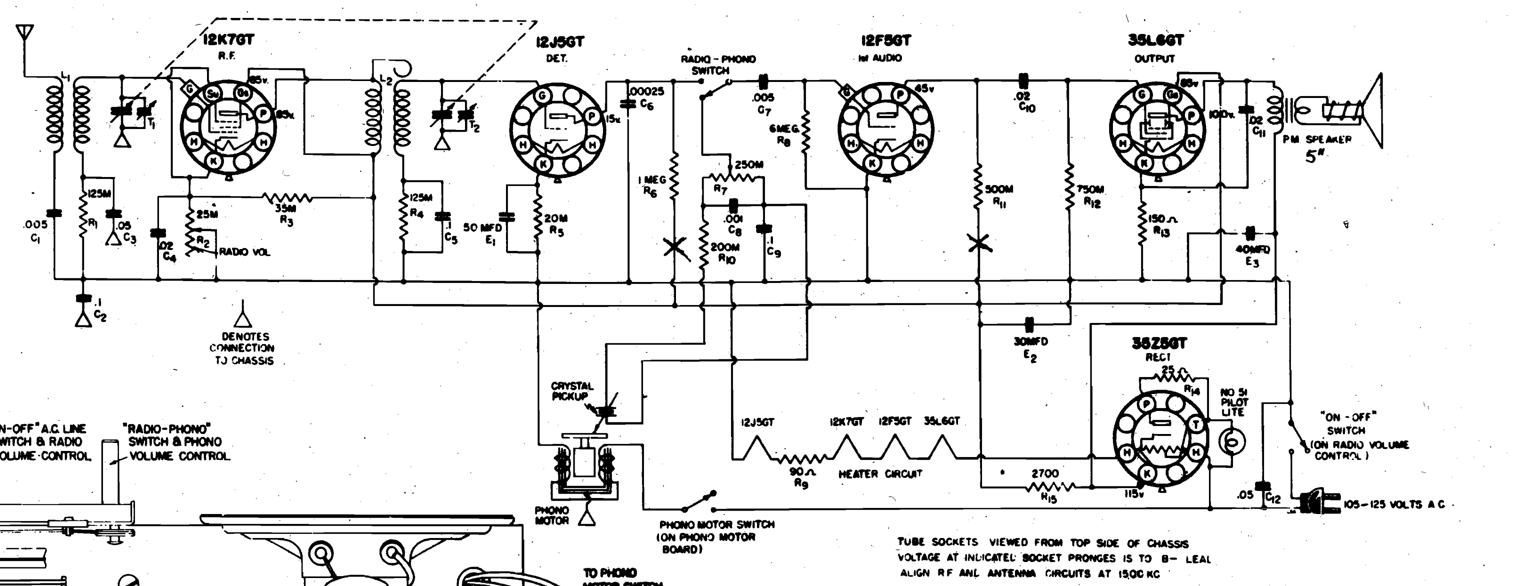


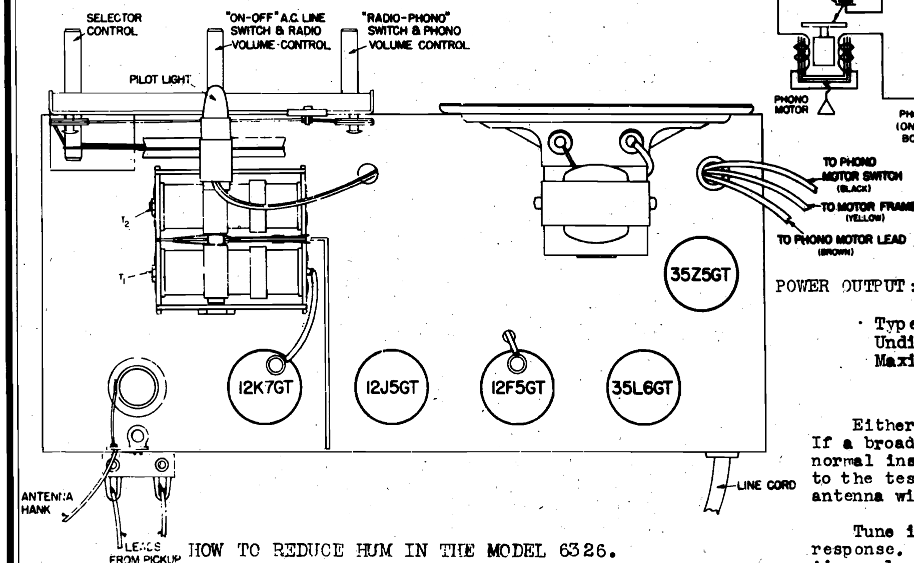


PARTS ON TOP OF CHASSIS

MODEL 6326, Ch. 110.987
Schematic, Voltage
Alignment, Trimmers
Socket, Notes

SEARS, ROEBUCK & CO.





POWER SUPPLY:

All models available. 105-125 volts, 60 cycle A.C. . . .50 watts

POWER OUTPUT:

Type	Beam Power
Undistorted	1. watt
Maximum	1.5 watts

FREQUENCY RANGE

Broadcast . . . . 530-1730 KC

ALIGNMENT PROCEDURE

Either a broadcast signal of about 1500 kc or a test oscillator signal may be used. If a broadcast signal is used, the antenna of the receiver should be extended as in a normal installation. If a test oscillator signal is used, a wire should be connected to the test oscillator output and run parallel to but insulated from the receiver's antenna wire. The generator ground connection should be connected to ground.

Tune in the 1500 kc signal and adjust the trimmers for maximum loud speaker response. This can be done accurately if the volume control setting is reduced to give a low volume level. The location of this trimmer is shown in the tube socket location diagram.

HOW TO REDUCE HUM IN THE MODEL 6326.

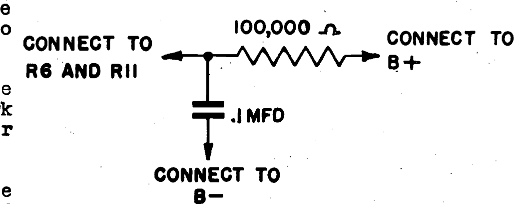
In cases where excessive hum is encountered, it may be reduced by either one of the following methods.

1. In many cases, heater to cathode leakage in the 12J5GT or 12F5GT tubes may be causing excessive hum. If replacing the faulty tubes does not materially reduce the hum, it will be necessary to proceed as follows.

2. Disconnect the plate resistors (R6 and R11) of the 12J5GT and the 12F5GT tubes from the plate supply at the points marked "x" in the circuit diagram and connect them to the filter network as shown in the filter network diagram. The filter network consists of a .1 mfd 400 volt paper condenser and a 100,000 ohm 1/4 watt resistor.

A number of these sets were sent to the field without a shield on the 12F5GT tube. One should be on this tube in order to reduce the hum level. Currently produced models have this shield installed at the factory.

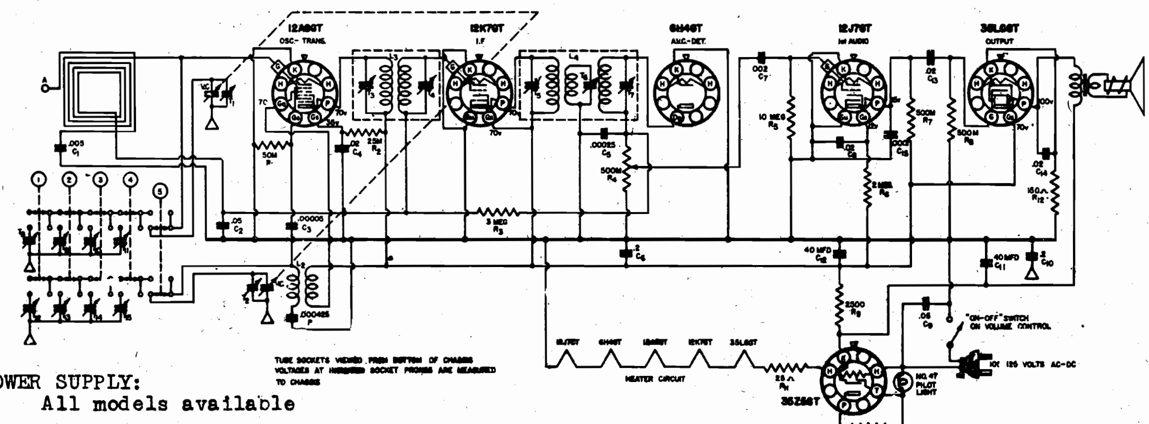
FILTER NETWORK

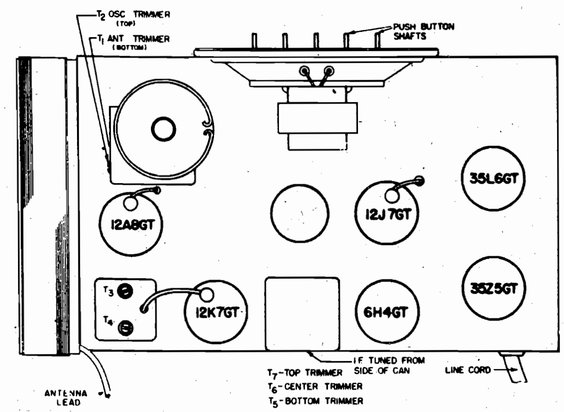


DECEMBER 21, 1939

MODEL 6327, Ch. 110.990
Schematic, Voltage, Socket
Trimmers, Alignment

SEARS, ROEBUCK & CO.





POWER SUPPLY:
All models available
. . . . 110-125 volts, 25-60 cycle AC or DC, 30 watts

IF PEAK 455 KC

ALIGNMENT PROCEDURE

Output meter connections. Across primary output transformer

Output meter reading to indicate 0.050 watt
for Weston type 571 output meter on 15 volt scale . . . . 10.5 volts

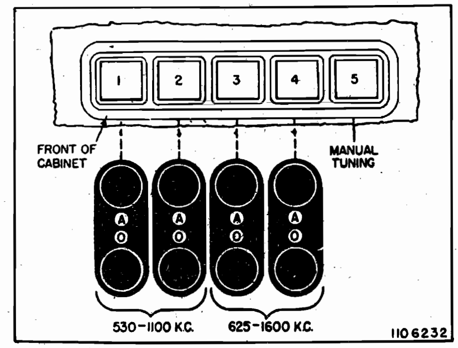
Dummy antenna value in series with generator output. . . . . 100 mmfds.

Connection of generator ground. . . . . B- Bus

Generator modulation. . . . . App. 30% @ 400 cycles

Position of volume control . . . . Fully clockwise

PUSH BUTTON SWITCH POSITION	POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
Manual "IN"	**	455 kc	12K7GT, Grid	T6*, T5, T7	I.F.
				T6, T5, T7	
"	**	455 kc	12A8GT, Grid	T3, T4	I.F.
"	1500 kc	1500 kc	***	T2, T1	Osc., R.F.



TRIMMER
ADJUSTMENT CARD

FREQUENCY RANGE:
Broadcast. . .535-1700 KC

POWER OUTPUT
Type. . . . . .Beam Power
Undistorted. 1.0
Maximum. 1.5

LOUD SPEAKER:
Type. . . . . .Dynamic
Size. . . . . .5"
Field. . . . . .P.M.

IMPORTANT ALIGNMENT NOTES

FOR TUNER SEE INDEX

It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

*First time T 5 is misaligned by loosening center screw one turn.

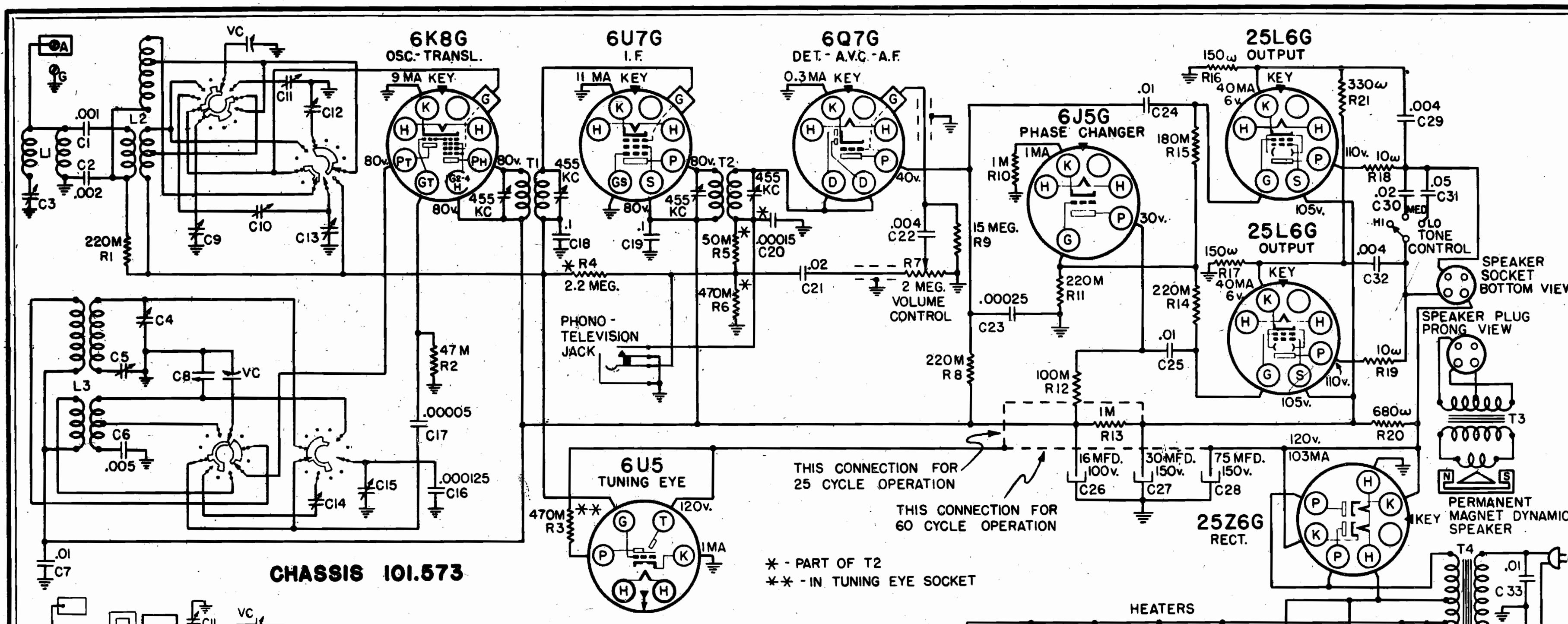
**Short oscillator section of variable condenser. Second I.F. alignment must be done twice to secure flat top tuning.

***Connect generator output to a separate radiating loop and pickup 1500 KC signal on receiver.

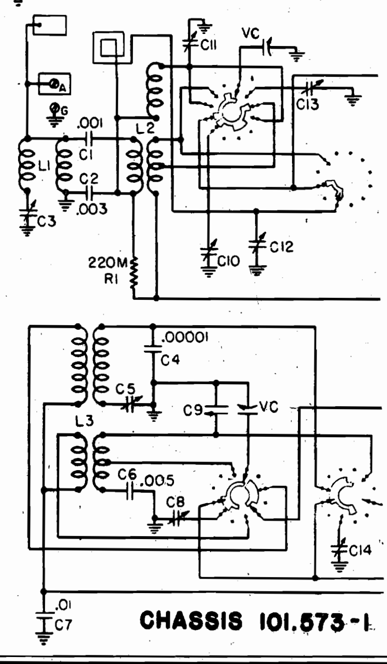
FEBRUARY 28, 1940

SEARS, ROEBUCK & CO.

MODELS 6335,6435,6490
6495,Ch.101.573
Schematic,Voltage,Tuner
MODEL 6490A,Ch.101.573-1,-1B
Change in Schematic



✱ - PART OF T2
✱✱ - IN TUNING EYE SOCKET



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO −B, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

JUNE 19, 1939

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER SUPPLY:
All models available . . . . .105-135 v., 50-60 cycles AC; 65 watts
All models available . . . . .105-135 v., 25-60 cycles AC; 65 watts

POWER OUTPUT:
Type . . . . Push-pull beam
Undistorted . . . . 3 watts
Maximum . . . . 3.7 watts

LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . .8 and 10 inch

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.

MODELS 6335,6435,6490
6495,Ch.101.573;6490A
Ch.101.573-1, -1B
Alignment,Chassis

SEARS, ROEBUCK & CO.

Trimmers,Socket
Dial Data
MODELS See Below
Dial Drive Data

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts . . . . 1.28 volts
Approximate microvolts input for 500 milliwatts output . . . . See chart below
Generator ground lead connection . . . . To external ground
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . At block to left of 550 kc calibration mark.

FOR CHASSIS 101.573-1

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C3*	Wave Trap	--
"B"	2.6 mc	2.6 mc	400 ohms	Ant. Term.	C14	Oscillator	100
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C11	Translator	100
"A"	Fully open	1600 kc	.0002 mfd.	Ant. Term.	C8	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C12	Translator	40
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C5	Padder	40
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C13	Translator	15
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C15,C10	Osc.,Transl.	60

FOR CHASSIS 101.573

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc*	.0002 mfd.	Ant.Term.	C3*	Wave Trap	--
"A"	Fully open	1750 kc	.0002 mfd.	Ant.Term.	C4	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C12	Translator	40
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant.Term.	C5	Padder	40
"B"	3.3 mc	3.3 mc	400 ohms	Ant.Term.	C14,C10	Osc. Pad., Transl.Pad.	100
"B"	3.5 mc	3.5 mc	400 ohms	Ant.Term.	C13	Translator	100
"C"	15 mc(rock)	15 mc	400 ohms	Ant.Term.	C11	Translator	15
"D"	9.55 mc	9.55 mc	400 ohms	Ant.Term.	C15,C9	Osc.,Transl.	60

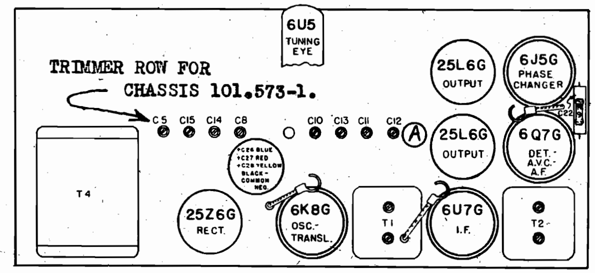
Repeat the C14, C10 and C13 adjustments until perfect alignment is obtained. This will require going back and forth over these adjustments several times.

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc. C3 is mounted under chassis.

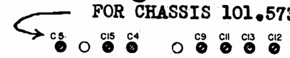
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

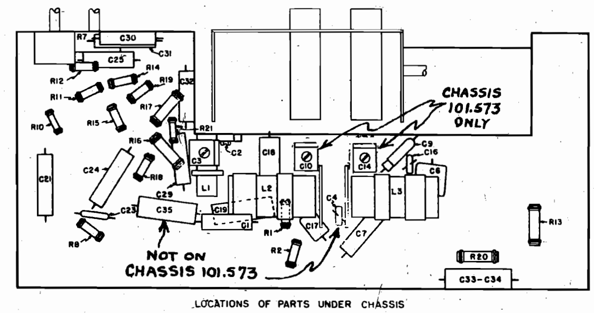
The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.



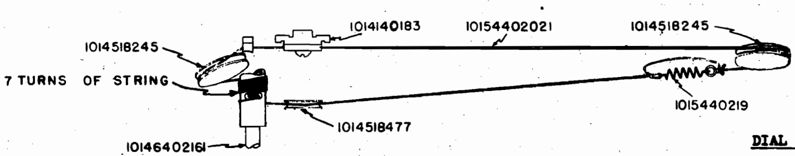
LOCATIONS OF PARTS ON TOP OF CHASSIS

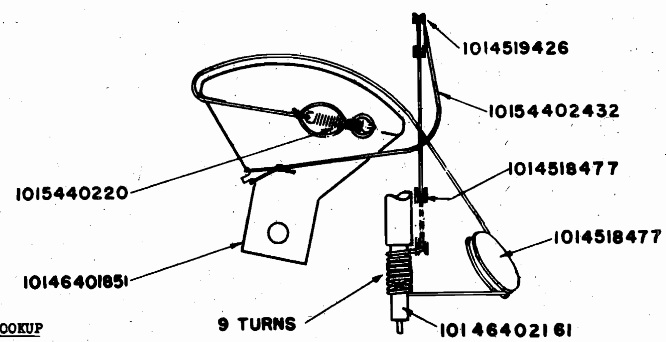
TRIMMER ROW AT (A) ABOVE
FOR CHASSIS 101.573





LOCATIONS OF PARTS UNDER CHASSIS





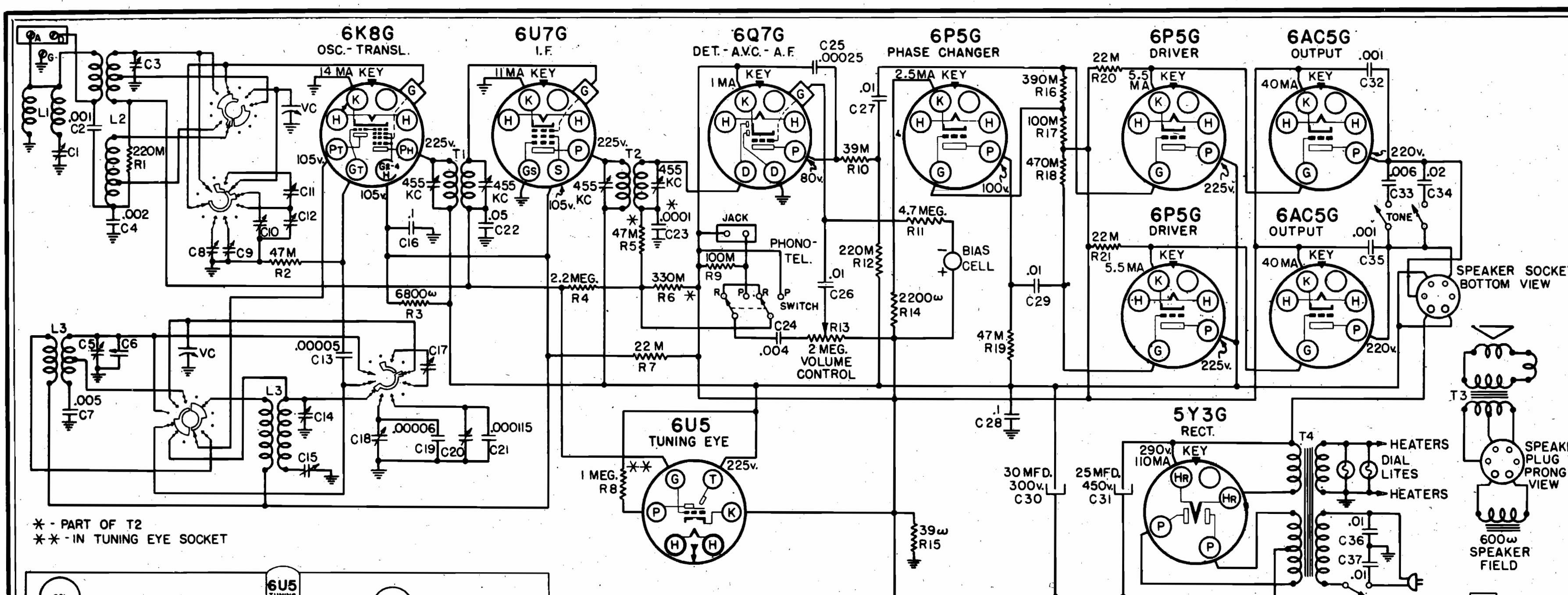
DIAL DRIVE HOOKUP

THIS DIAL AND DRIVE HOOKUP APPLIES DIRECTLY TO MODELS 6335,6435,6490,6495,CHASSIS 101.573; 6490A CHASSIS 101.573-1,-1B; 6359,6360,6361,6379, 6380,6381 CHASSIS 101,579; 6368 CHASSIS 101.582;6382 CHASSIS 101.594;Also to MODELS 6362,6363,6364 CHASSIS 101.581 EXCEPT THAT PART NO. 1014141219 REPLACES PART 1014141183 SHOWN ABOVE. THE ABOVE ALSO APPLIES TO MODEL 6441 CHASSIS 101.599 EXCEPT THAT PART NO. 1015440240 REPLACES NO. 1015440220 AND 1014542196 REPLACES PART NO. 1014519426 SHOWN ABOVE.

Schematic, Voltage
Chassis, Tuner
Socket, Trimmers

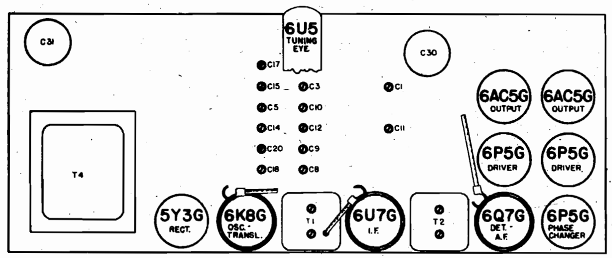
SEARS, ROEBUCK & CO.

MODELS 6336, 6436
Ch. 101.574

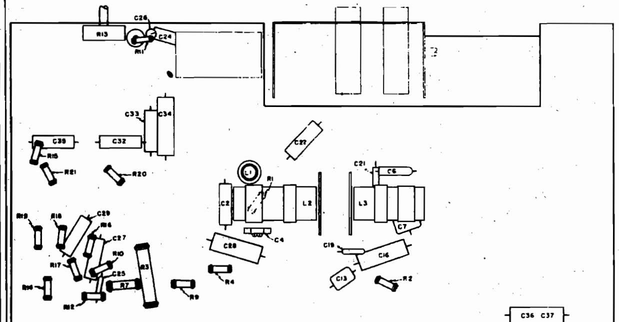


* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.



LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS

INTERMEDIATE FREQUENCY . . . . .455 kc

POWER SUPPLY:
All models available . . . . .105-125 volt AC; 25 and 50-60 cycle; 105 watts

LOUD SPEAKER:
Type . . . . .Dynamic
Size . . . . .10 inch
Approx. field coil res. . . . .600 ohms
Approx. field coil voltage drop. . 65 v.

POWER OUTPUT:
Type . . . . . .Push-pull direct coupling
Undistorted . . . . 4 watts
Maximum . . . . 7 watts

FOR ALIGNMENT
SEE INDEX

GENERAL INFORMATION & SERVICE HINTS

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #5523: Greatest pickup and noise reduction.
Catalog #5522: Less effective pickup and noise reduction than Catalog #5523.
Catalog #5575: Conventional antenna.

JUNE 19, 1939

MODELS 6336,6436
Ch.101.574
Circuit Change,Notes

SEARS, ROEBUCK & CO.

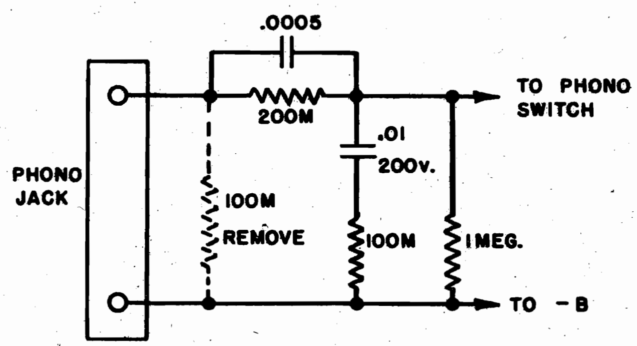
CIRCUIT CHANGE TO IMPROVE TONE WHEN USING CATALOG #6227 RECORD PLAYER.

REDUCING MICROPHONICS.

Bass response can be increased and record reproduction tone improved when this receiver is used in conjunction with a Catalog #6227 record player, by inserting the network shown schematically below.

The 100M ohm resistor at present across the phono jack terminals is to be removed. As shown below, the lead going to the high side of the phono jack is to be broken and a 200M ohm resistor shunted by a .0005 mfd. mica condenser is to be inserted in series with it. The 100M ohm and the 1 megohm resistors and the .01 mfd. condenser are to be connected as shown.

Because of the increased bass response, there may be a greater tendency toward microphonics. For this reason, the record player should not be put directly on top of the receiver cabinet.



REDUCING MICROPHONICS:

1. Be sure that the two shipping bolts and the wood spacer strips have been removed.

2. See that knobs, control shafts, and dial lights or dial mechanism do not touch the cabinet.

3. See that the rubber bumpers at the rear of the chassis do not press on it more than enough to prevent shifting.

Although the foregoing three points are simple, and commonly known, very often insufficient attention is paid to them. It is very important that the points mentioned be very thoroughly checked.

4. Any means of reducing the signal input will help, such as using a shorter antenna or connecting a small mica condenser (.0001 to .0002 mfd.) in series with the antenna lead.

5. All but initial production cabinets have two bracing strips added under the chassis mounting shelf at its ends. A kit, part number 1016041718, can be obtained from source 101 and contains the necessary material and instructions for adding these reinforcing bracing strips.

6. If the predominant microphonic tone is of low frequency, improvement can be had by reducing the capacity of the coupling condensers in the audio amplifier. These are C27 and C29, which should be reduced from .01 mfd. to .006 mfd., 600 v. Both condensers must be changed to avoid unbalancing the push pull circuit. This change will reduce the low frequency response and is not recommended except for extreme cases.

INSTRUCTIONS FOR ADDING BRACING STRIPS, MENTIONED IN PARAGRAPH #5, PRECEDING:

Turn the cabinet upside down. (Be careful to protect the cabinet finish.)

Clamp one of the cleats along the under side-edge of the chassis shelf. The end of the cleat should be against the cabinet back rail.

Using the cleat as a template, drill three 9/32" holes in the chassis mounting shelf. Be careful that none of the dirt from drilling gets into the speaker or chassis.

In the same manner, drill three holes at the other end of the chassis mounting shelf.

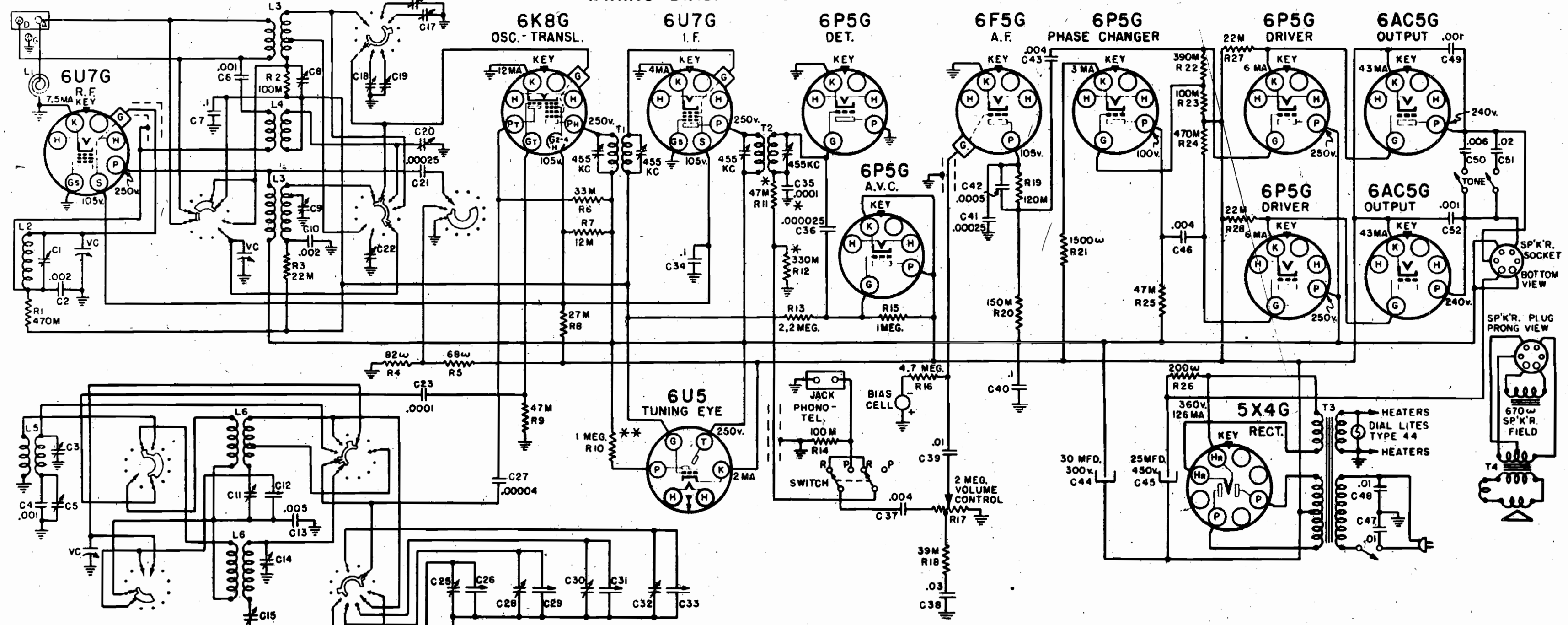
Clean off any splinters and bolt the cleats tightly to the underside of the chassis mounting shelf, with the bolt heads on the top side of the shelf. The flat washers go under the nuts.

DIAL AND DRIVE HOOKUP: This is similar to that of Model 6335 . In ordering parts use 1014140301 instead of 1014140183; 10154402051 instead of 10154402021 and 1014540331 instead of 1014518245.

SEARS, ROEBUCK & CO.

MODELS 6337,6437
Chassis 101.576
6437A,Ch.101.576-1
Schematic,Voltage
Tuner,Changes

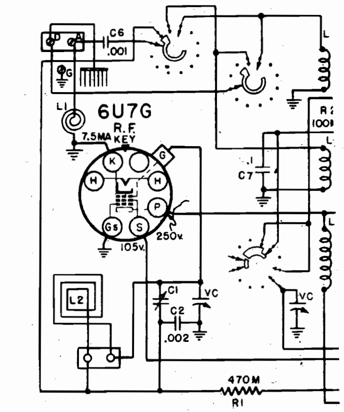
WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.576



* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

576



FOR SILVERTONE CHASSIS 101.576-1

AUGUST 18, 1939

THE DIAL AND DRIVE HOOKUP IS IDENTICAL TO THAT OF MODEL 6336.

PUSH BUTTON TUNING MECHANISM: INTERMEDIATE FREQUENCY . . . . .455 kc

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station) and then securely locking the adjustment.

POWER SUPPLY:
All models available . . . . 105-125 volt; 50-60 cycles AC; 135 watts
All models available . . . . 105-125 volt; 25-60 cycles AC; 140 watts

POWER OUTPUT:
Type . . . . . .Push pull direct coupling
Undistorted . . . . .6 watts
Maximum . . . . .10 watts

LOUD SPEAKER:
Type . . . . .Dynamic
Size . . . . .15 inch
Approx. field coil res. . . . .670 ohms
Approx. field coil voltage drop..85 v.

DIFFERENCES BETWEEN 101.576 & 101.576-1:

The 101.576-1 contains a built-in loop antenna and short wave antenna plate ("RADIONET" Antenna System).

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #5523: Greatest pickup and noise reduction.
Catalog #5522: Less effective pickup and noise reduction than Catalog #5523.
Catalog #5575: Conventional antenna.

MODELS 6337,6437
Ch.101.576;6437A,
Ch,101.576-1

SEARS, ROEBUCK & CO.

Alignment,Trimmers
Chassis,Socket

The alignment must be done in the order given.

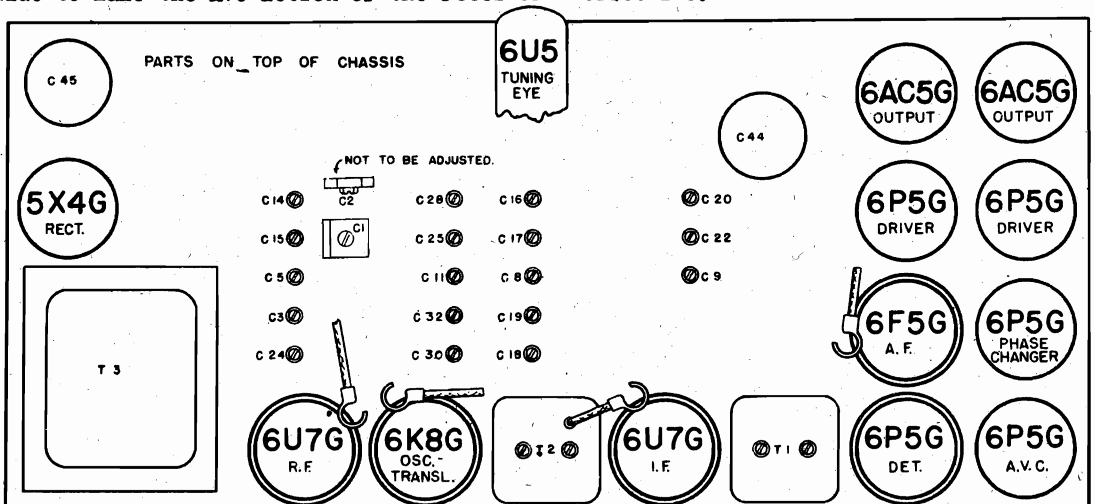
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	Fully open	1720 kc	.0002 mfd.	Ant. Term.	C14	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C1,C9	RF,Transl.	25
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C15	Padder	35
"B"	5 mc	5 mc	400 ohms	Ant. Term.	C3*	Oscillator	--
"B"	4 mc	4 mc	400 ohms	Ant. Term.	C20	Translator	180
"B"	1.8 mc(rock)	1.8 mc	400 ohms	Ant. Term.	C5	Padder	260
"C"	15 mc	15 mc	400 ohms	Ant. Term.	C24*,C22	Osc.,Transl.	60
"D"	6 mc	6 mc	400 ohms	Ant. Term.	C32*	Oscillator	--
"D"	6.2 mc(rock)	6.2 mc	400 ohms	Ant. Term.	C19	Translator	130
"F"	11.7 mc	11.7 mc	400 ohms	Ant. Term.	C28	Oscillator	100
"F"	12.1 mc	12.1 mc	400 ohms	Ant. Term.	C11	Padder	--
"E"	9.6 mc	9.6 mc	400 ohms	Ant. Term.	C30*	Oscillator	--
"E"	9.4 mc(rock)	9.4 mc	400 ohms	Ant. Term.	C18	Translator	145
"E"	9.9 mc	9.9 mc	400 ohms	Ant. Term.	C8	Padder	--
"F"	11.9 mc	11.9 mc	400 ohms	Ant. Term.	C16	Translator	--
"G"	15.1 mc	15.1 mc	400 ohms	Ant. Term.	C25*,C17	Osc.,Transl.	100

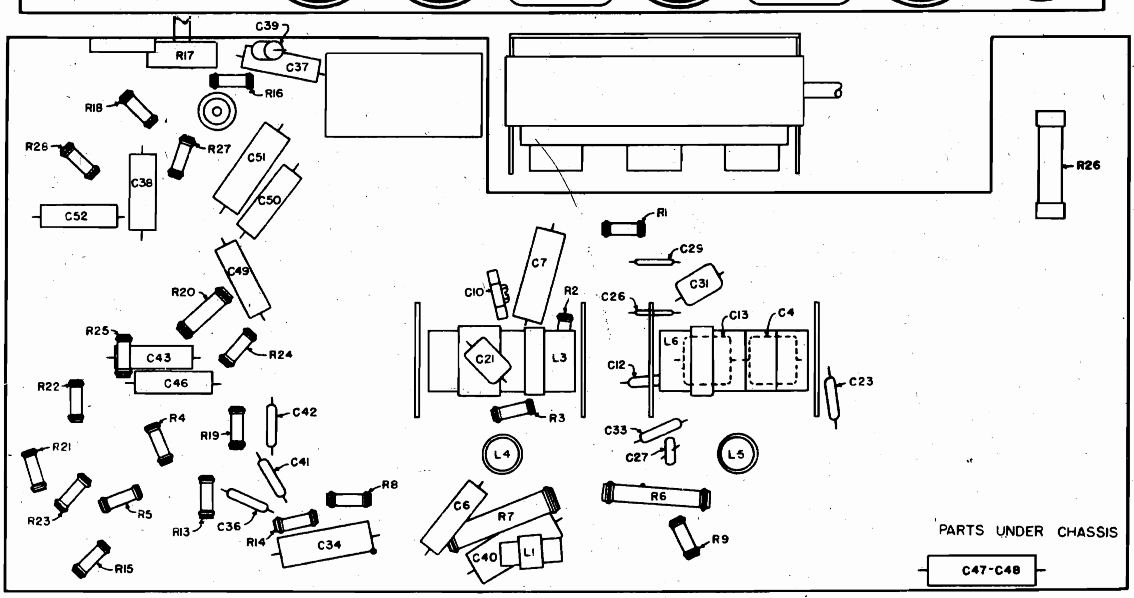
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

*If two peaks can be had, the correct adjustment is with the trimmer screw further out. The other peak is the image.

The C30, C18, C8 adjustments will affect each other so that they must be repeated several times to secure proper alignment and calibration, ALSO C28 and C19 adjustments.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

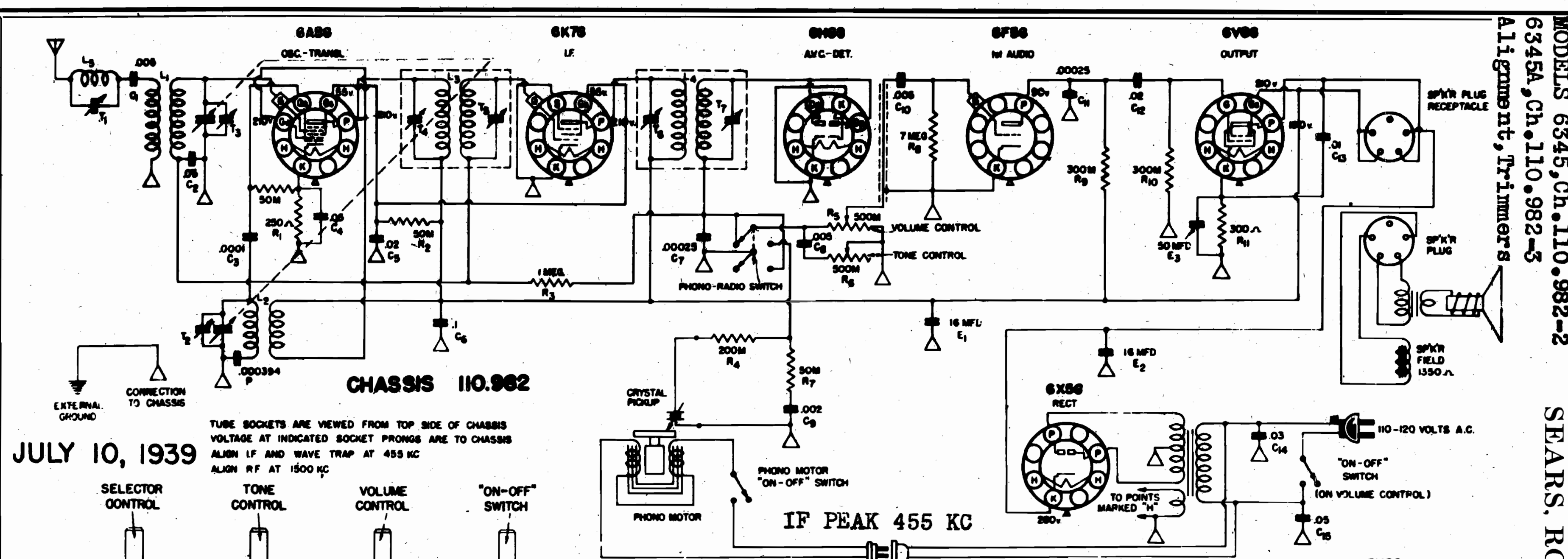




Alignment,Trimmers
MODELS 6345,Ch.110.982-2
6345A,Ch.110.982-3
Alignment,Trimmers

SEARS, ROEBUCK & CO.

MODELS 6345,Ch.110.982,
6491,6494,Ch.110.982-1A
Schematic,Voltage,Socket

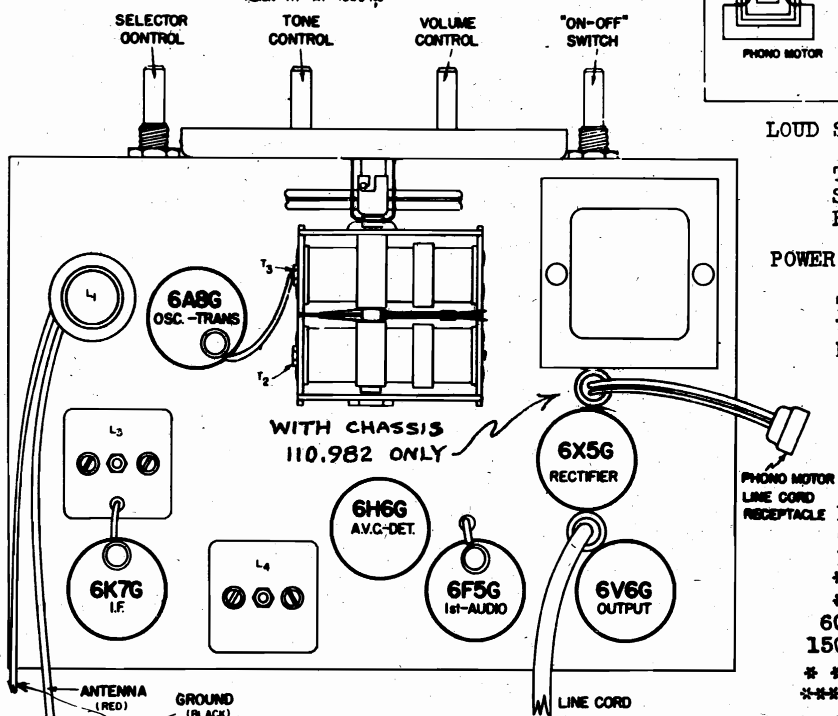


CHASSIS 110.982

TUBE SOCKETS ARE VIEWED FROM TOP SIDE OF CHASSIS
VOLTAGE AT INDICATED SOCKET PRONGS ARE TO CHASSIS
ALIGN I.F AND WAVE TRAP AT 455 KC
ALIGN RF AT 1500 KC

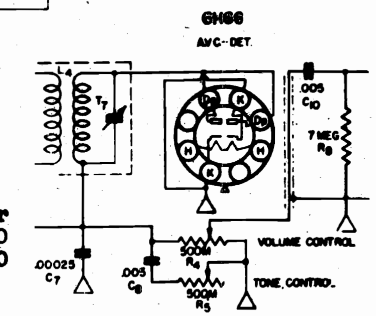
JULY 10, 1939

IF PEAK 455 KC



ADDITION OF SUFFIX -1A to 982 CHASSIS

This chassis is the same as 110.982 except that the radio-phono switch and connections are omitted and in its place an "on-off" switch is used. The escutcheon knobs and volume controls have also been changed.



CHASSIS 110.982-1A

LOUD SPEAKER:

Type.................................Dynamic
Size.....................................8"
Field Resistance................1350 ohms

POWER OUTPUT:

Type...............................Beam Power
Undistorted.............................. 2.0
Maximum.................................. 3.0

POWER SUPPLY:

All models available

105-125 volts, 60 cycle AC, 70 watts

ALIGNMENT PROCEDURE

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
* *	455 KC	6K7G, Grid	T6, T7	I F.	2000
* *	455 KC	6A8G, Grid	T4, T5	I.F.	110
600 KC	455 KC	ANT.	T1	Wave Trap	***
1500 KC	1500 KC	ANT.	T2, T3	Osc. R.F.	60

* * Short oscillator section of variable condenser.
*** Adjust trimmer for minimum output with large signal input.

MODELS 6345,Ch.110.982-2,
6345A,Ch.110.982-3
Schematics,Voltage

SEARS, ROEBUCK & CO.

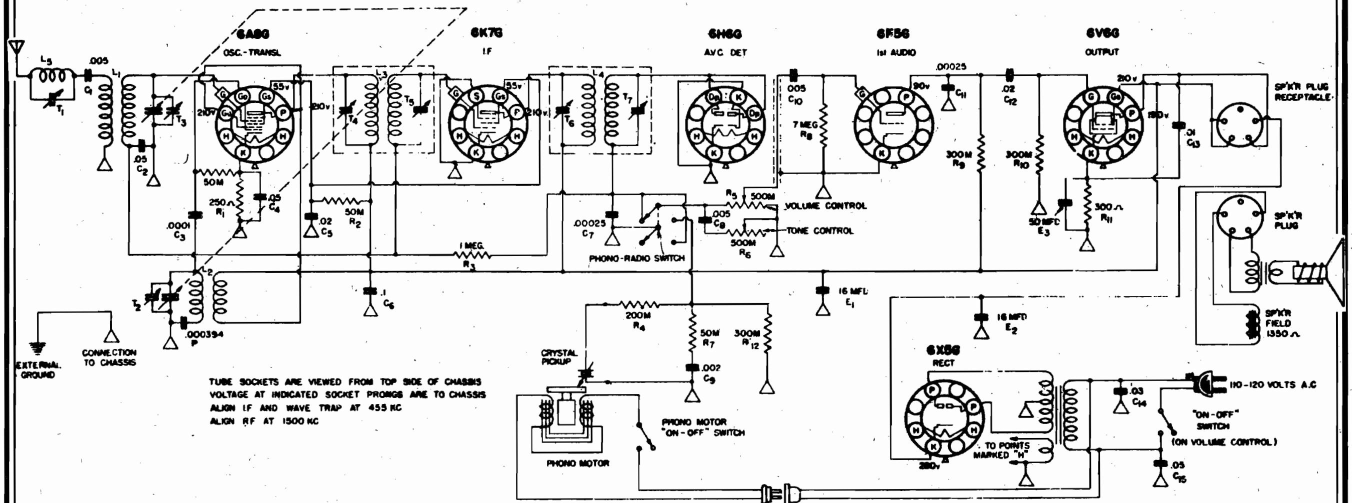
FOR ALIGNMENT SEE INDEX

CHASSIS IDENTIFIED BY 110.982-2 HAVE HAD A CIRCUIT CHANGE MADE TO DECREASE THE TENDENCY OF THE SET TO BECOME MICROPHONIC AT HIGH LEVELS OF PHONOGRAPH REPRODUCTION.

THE RESISTOR R12 HAS BEEN ADDED.

FOR ELECTRICAL AND MECHANICAL SPECIFICATIONS, GENERAL INFORMATION, ALIGNMENT PROCEDURE ETC.,
See Model 6345, Chassis 110.982.

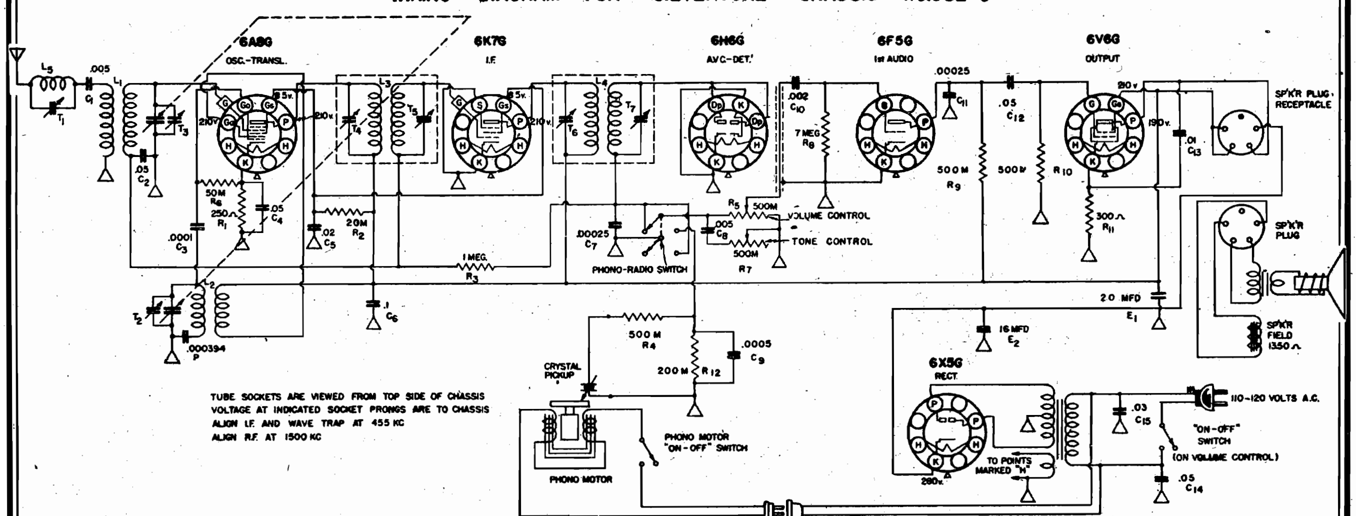
WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.982-2



CHASSIS IDENTIFIED BY 110.982-3 HAVE HAD CIRCUIT CHANGES MADE TO INCREASE THE SENSITIVITY IN THE R.F. PORTION OF THE CIRCUIT AS WELL AS TO INCREASE THE AUDIO GAIN AND INCREASE THE UNDISTORTED OUTPUT. THE ELECTROLYTIC CONDENSER E3 HAS BEEN ELIMINATED AND THE PART NUMBERS OF RESISTORS R1, R2,R4,R6, R7,R9,R10 and R12 AS WELL AS CONDENSERS C9, C10, C12, C14, C15 AND OUTPUT I.F. L4 HAVE BEEN CHANGED.

FOR ELECTRICAL AND MECHANICAL SPECIFICATIONS, GENERAL INFORMATION, ALIGNMENT PROCEDURE, ETC.
See Model 6345, Chassis 110.982.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.982-3

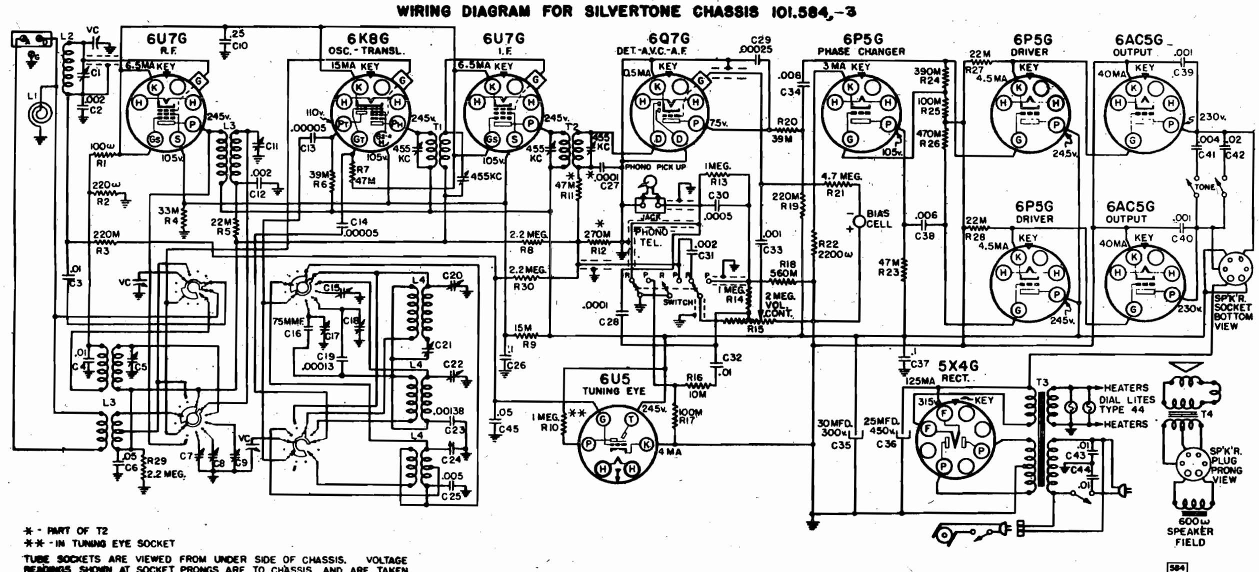


OCTOBER 6, 1939

SEARS, ROEBUCK & CO.

MODELS 6346,6346A,6446,6446A Ch.101.584,-1,-2,-3,-4,-5 Schematics, Voltages, Changes

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.584,-3



* - PART OF T2
** - IN TUNING EYE SOCKET
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

ADDITION OF SUFFIX NUMBERS:

Chassis 101.584-1 (Catalog #6346A) is the same as chassis 101.584 except that it has a built-in loop antenna (in the cabinet) for broadcast reception and a short wave antenna plate for short wave reception (RADIONET Antenna System). Because of the antenna system change, the broadcast band frequency range extends to 1625 kc instead of 1730 kc.

Chassis 101.584-2 is the same as 101.584-1 except that it uses a different tone arm and pickup cartridge, not interchangeable with the ones used in 101.584 and 101.584-1. Accordingly, when ordering either a tone arm or a pickup cartridge, be sure the proper part number is used and the correct chassis number indicated in the order.

POWER SUPPLY:

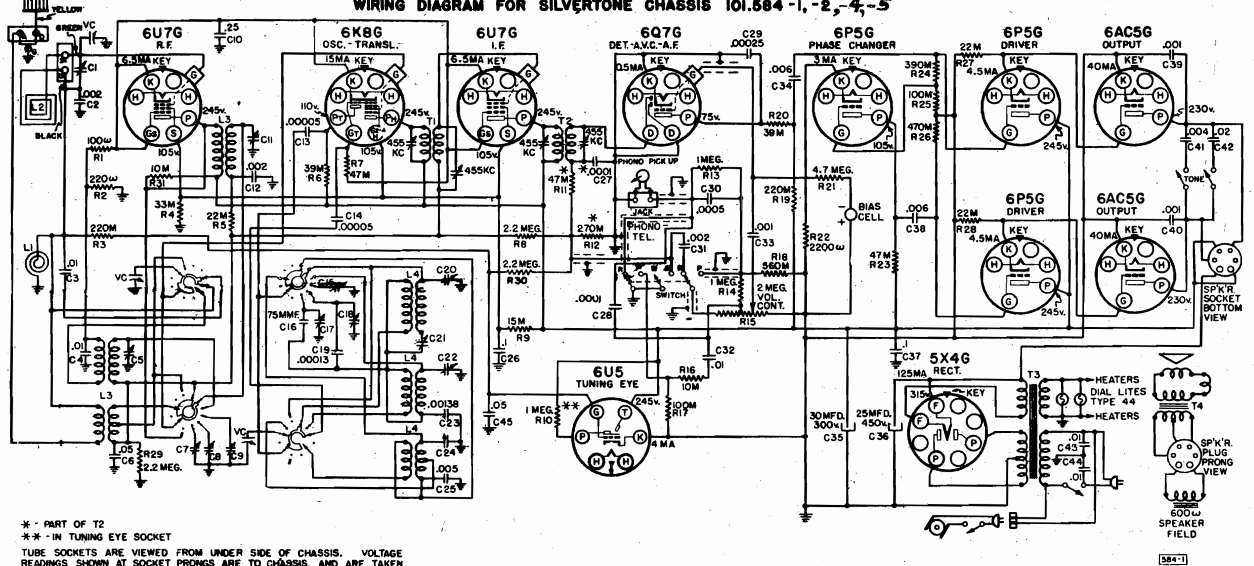
All models available . . . . 105-125 volts, 60 cycle; 120 watts
All models available . . . . 105-125 volts, 50 cycle; 120 watts
All models available . . . . 105-125 volts, 25 cycle; 130 watts

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER OUTPUT:
Type . . . . . Push pull direct coupling
Undistorted . . . . 6 watts
Maximum . . . . 10 watts

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 12 inch
Approx. field coil res. . . . . 600 ohms
Approx. field coil voltage drop. .70 v.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.584-1,-2,-4,-5



* - PART OF T2
** - IN TUNING EYE SOCKET
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

SEPTEMBER 27, 1939

MODELS 6346,6346A,6446,6446A
Alignment,Chassis,Socket
Trimmers,Dial Drive Data

SEARS, ROEBUCK & CO.

MODELS See Below
Dial Drive Data

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts . . . . 1.6 volt
Average sensitivity in microvolts for 500 milliwatts output . . . . See chart below
Connection of generator output lead . . . . See chart below
Connection of generator ground lead . . . . To chassis
Dummy antenna value to be in series with generator output . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . Both buttons out
Position of Dial Pointer with variable fully closed. . . . . On mark to left of 550 kc calibration

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	Open	1730 kc	.0002 mfd.	Ant. Term.	C20	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C1,C11	RF,Transl.	20
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C21	Padder	20
"B"	5 mc	5 mc	400 ohms	Ant. Term.	C22,C5	Osc.,Transl.	150
"C"	18.3 mc	18.3 mc	400 ohms	Ant. Term.	C15*	Oscillator	--
"C"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C9	Translator	75
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C18*,C8	Osc.,Transl.	100
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C17*,C7	Osc.,Transl.	100

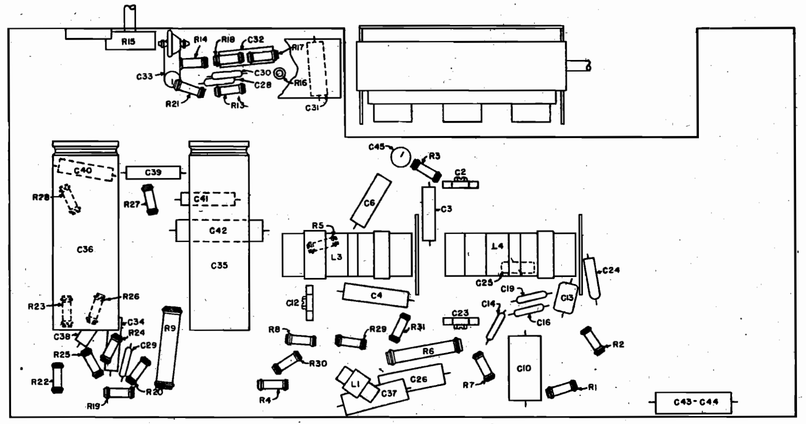
IMPORTANT ALIGNMENT NOTES

The alignment procedure for 101.584-1,-2 is the same as above except that the C20 adjustment is made with the generator at 1625 kc. After the alignment has been completed, the C1 and C11 adjustments should be repeated, using a 1400 kc broadcast signal.

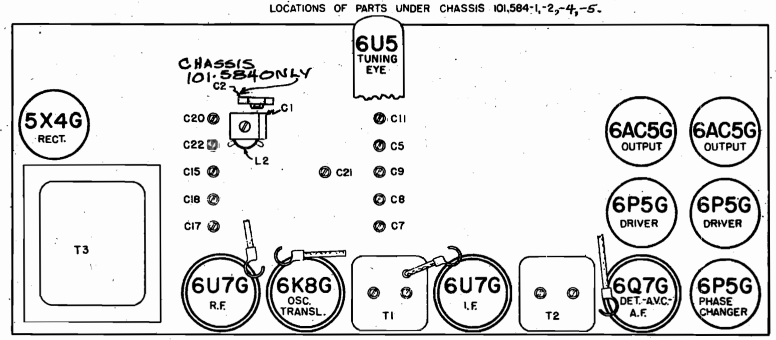
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

*If two peaks can be had, the correct adjustment is with the trimmer screw further out. The other peak is the image.

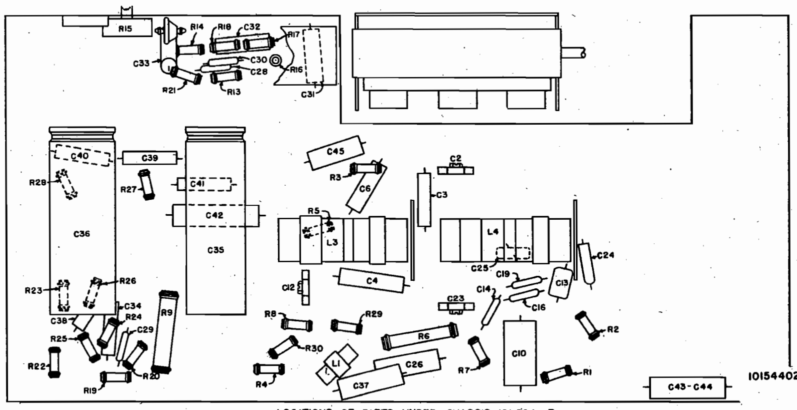
The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.



LOCATIONS OF PARTS UNDER CHASSIS 101.584-1,-2,-4,-5.

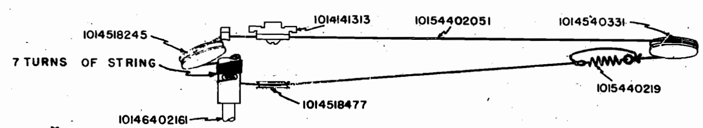


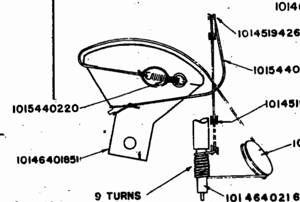
LOCATIONS OF PARTS ON TOP OF CHASSIS 101.584



LOCATIONS OF PARTS UNDER CHASSIS 101.584-3.

Before ordering parts for Dial Drive System, check these drawings:





DIAL AND DRIVE SYSTEM
FOR MODELS 6346,6346A,6446 Chassis 101.584,-1,-2,-3.
AND FOR THE FOLLOWING EXCEPT THAT PART NO.1014141313
IS REPLACED BY PART NO. 1014140301.:-
6438,6438A,6439 Chassis 101.583; 6438B,6439A,6497
Chassis 101.583-1; 6438B,6439A,6440 Chassis101.583-2;
6497 Chassis 101.595.

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #5523: Greatest pickup and noise reduction.
Catalog #5522: Less effective pickup and noise reduction than Catalog #5523.
Catalog #5575: Conventional antenna.

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), releasing the plunger, then securely locking the adjustment by holding the screwdriver lightly in the screw head allowing the spring tension to hold the plunger against the screwdriver.

SEARS. ROEBUCK & CO.

MODELS 6346,6346A,6446,6446A
MODEL 6447,Ch.101.590-1 to -5
Automatic Record Changer
Assembly,Adjustments,Notes

AUTOMATIC RECORD CHANGER

SUMMARY OF OPERATING INSTRUCTIONS:

The Changer plays twelve 10" or ten 12" records. To reload, revolve the two posts slightly, grasping them underneath the Shelf Plates. Turn them back after the played records are removed; they will fall and lock when in proper position. Then place the new records on the Shelf Plates, and push "R" button to put Changer in operation. To play the other size records, turn the knob at top of each post until proper figure is opposite pointer, and press the "10" or "12" button, to agree with pointer setting. To reject a record(or to start a change cycle as for testing purposes) simply press the "R" (Release or Reject) button, at any time while needle is upon a record. To play manually, turn plates out of the way as for reloading, and press "M" button.

OILING:

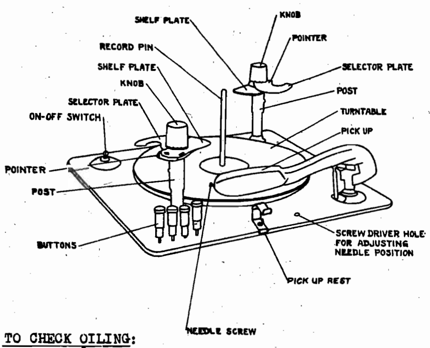
The Changer should be lubricated once a year with about a dozen drops of Kenmore #9724 stainless oil at each of the following 6 points. All points can be reached from above, through holes in the mounting plate, as follows:

No. 1), No. 2), No. 3) Three oil holes on motor gear housing. Reach all three through two holes marked "A" on drawing.

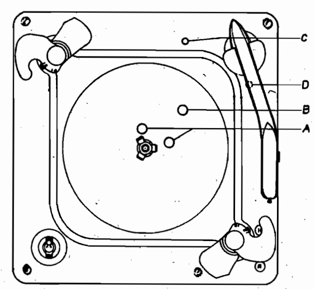
No. 4 Through hole marked "B", drop the oil upon flat surface of cam. It will distribute itself to proper points.

No. 5 Through holes marked "C", see felt wick, and drop the oil directly upon it.

No. 6 Through hole marked "D", see felt wick, and drop the oil directly upon it.



OIL HOLES IN MOUNTING PLATE



TO CHECK OILING:

If squeaks are heard compare the squeak with and without a load of records; stacked records themselves sometimes squeak against a center pin. See that all five wicks are in position, including three 1/4" wicks in frame of Motor. See that each wick is thoroughly saturated (as it may not be if insufficient oil or too heavy oil has been used). Lift out all three motor wicks, with tweezers; see if old oil has become gummy (commonly due to use of low-grade oil). If necessary, clean gummed-up wicks with kerosene. See that each is saturated with good oil; then, before replacing them, drop a little good oil into the holes.

ADJUSTMENTS:

There are three adjustments that can be made. All are correctly made at the factory, and ordinarily need never be altered. Should it become necessary to remake any of these adjustments, due to accident or tampering, proceed as follows:

A. ADJUSTING LANDING POSITION OF NEEDLE ON THE RECORD. (See Top View. This adjustment is made with a screw driver from above--does not require removing Changer from cabinet.) If needle comes down too far from edge of record, playing of records will not start at their beginning. Turn Needle - Landing Adjusting Screw very slightly counter-clockwise. If needle comes down too close to edge of record, needle may slip off edge of record. Turn the adjusting screw clockwise.

Also see Paragraph 12, following.

B. ADJUSTING DISTANCE FROM RECORD PIN AT WHICH TRIGGER WILL TRIP AND CHANGE CYCLE WILL BEGIN. Turn Trip Adjusting Screw 18, toward the trigger for earlier tripping, or away from it for later tripping. This Changer does not depend, for automatic tripping, on the records being provided with any special grooves at end; it trips whenever needle comes within a certain distance of Record Pin. The factory adjustment is for 1-7/8" from center of Record Pin. This is the most generally satisfactory distance; no modern record will then be cut off before playing is finished, and none will fail to trip at end. For certain records of early manufacture, it may not be possible to find an adjustment that will always trip and never cut off.

C. ADJUSTING HEIGHT TO WHICH PICKUP ARM RISES. The arm should rise, during the change cycle, high enough so that it clears by only*1/8" the stack of records resting above it. (Be careful, before deciding that adjustment is necessary, to see that the record at bottom of stack is not a warped one.) To make this adjustment, loosen the locknut on Pickup Sleeve 32 (see photographs) and turn the Sleeve to lengthen or shorten Pickup Plunger 21. When correct adjustment is found, tighten locknut again.

*This dimension may be made 1/4". If the pickup is made to rise too close to the bottom record, the stud may never clear the groove in the cam gear and the arm will keep moving back and forth continuously.

REPLACING MOTOR: When mounting replacement Motor, it is most important to see that Record Pin is centered between the two Posts of the Changer, that it stands perpendicular to Main Plate 53, and that it has not become bent so as to wobble. Even though the Posts are stout and not easy to bend, it is well to check them also, with a 12" combination square laid clear across the concave upper surface of Main Plate. When the new Motor has been attached, with three screws through Grommet Sleeves 51 (spacers) into its frame, and Record Pin is seen to revolve without appreciable wobble (a wobble would indicate that it has been bent in transit from factory) the correct position of Pin midway between the Posts can be accurately checked in this way: Place a single 12" record on the Shelf Plates, press "R" button, and turn turntable forward by hand. Immediately after the Shelf Plates open and let it fall, turn Turntable slightly backward, and with other hand support the record between the Shelf Plates; it can then be readily seen whether Record Pin is off center. If it is, remove the record and Turntable, and loosen slightly the screw or screws nearest the Shelf Plate to which record appeared closest. This should improve evenness of operation. However, unless the unevenness was very slight, it will be necessary for a permanent repair to insert a shim or two on one or more of the three screws (or change shims from one screw to another). The shims used are shaped like an ordinary washer, cut out at one side (see cut-away view at 53 on photo, showing a shim in place upon one of the Grommet Sleeves). Shims can readily be cut out with shears and punch from thin metal or cardboard. They should be inserted, around proper screws (when screws have been sufficiently loosened) between Motor Frame and the metal Grommet Sleeve. Do not insert shims next to rubber grommet.

TROUBLE SHOOTING:

Cases of failure to operate satisfactorily will generally be found due either to neglect of proper lubrication, or to tampering with the mechanism after it leaves the factory, or to injuries accidentally sustained as by external vibration or by impact of some heavy object. In addition there is always the possibility that any kind of spring may "go dead" (cease to operate without any visible breakage) even though the utmost factory precautions are taken against it---or that setscrews may work loose due to some external vibration. Damage from tampering is likely to take the form of bent parts; never bend any part during examination. Be careful, especially, never to push upward from below on Cam Connecting Rod Lift 37 while mechanism is operating; bending may result, and even slight bending here might interfere with correct timing of the cycle operations.

Among the principal trouble symptoms to which such causes may give rise, are the following:

1. MECHANISM IS SLOW IN STARTING, OR STALLS DURING A CHANGE CYCLE, BUT A SLIGHT FORWARD PUSH WITH THE HAND STARTS IT AGAIN. May be caused by

a. Failure to lubricate properly. Oil thoroughly, per instructions above.
b. Loose setscrews.

c. Weakness of drive: line voltage may be abnormally low, or motor windings damaged. If windings are found damaged, remove motor and return it to factory for repair or replacement. See above: "Replacing Motor".

2. MOTOR FAILS TO RUN, EVEN WHEN IT IS ENTIRELY DISCONNECTED FROM OTHER WIRING AND PROPER VOLTAGE IS APPLIED DIRECTLY TO THE TWO ENDS OF ITS WINDINGS. This indicates trouble in Motor windings. Unless the damage is easily seen and repaired, replace Motor, as above described.

3. MOTOR IS SLOW IN STARTING.

a. Check oiling, as directed above. It may not have been properly done; old oil may have become gummy.

b. Changer may have been in a very cold place, and may not yet have reached room temperature. Give it a fair chance to get warmed up, before concluding that Motor is defective, and proceeding as in Paragraph 2.

4. SQUEAKS OR OTHER NOISES, DURING PLAYING OF RECORDS.

a. Check oiling, as directed previously. (If squeaks are heard, they will usually be found to come from the records--not from the mechanism).

b. See that all setscrews are tight.

c. Examine Motor windings; especially the shading coils (not visible in photos) which encircle a portion of each laminated pole and make the Motor self-starting. If coils have been jarred loose at any point, they may be tightened accordingly.

5. CHANGER IS NOISY WHEN IN CYCLE. Check oiling.

MODELS 6346,6346A,6446,6446A
MODEL 6447

SEARS, ROEBUCK & CO.

Record Changer Notes,Assembly

6. MOTION OF PICKUP TOWARD RECORD PIN WILL NOT TRIP CHANGER MECHANISM.

a. It may be found that, instead of trigger being actuated, there is stretching of Swivel Spring 95 (joining the lugs at ends of Swivel Spreaders 90 and 91), allowing the spreaders to open. Increase tension of Spring 95, by bending slightly the lug on either Spreader. If this increased tension causes needle to jump across the record, needle may be a little out of vertical, radially--it may "lean" toward center of record. To remedy this, grasp Pickup arm and twist it, very slightly, in a clockwise direction, so that it stands vertical, or even leans a little in outward direction.

b. If trigger is being properly actuated, probably Cam Lever 39 is binding against Sub-Plate 41. Look for dirt or obstructions; see that rivets are working freely. If the Lever engages Cam Lever Pawl 34, so that Lift 37 forces its roller up into the groove on Cam Gear 82, and if setscrews are tight, the change cycle must operate, as Cam Gear turns.

7. PRESSING "R" BUTTON DOESN'T TRIP CHANGER MECHANISM.

a. Check Key Control Unit 75: see whether there is an obstruction or a bent part which prevents "R" button from going clear down to the end of its travel.

b. Examine Reject Rod 78. If it does not trip, even when properly revolved by complete depressing of "R" button, the rod has probably been bent, and must be restored in same way. Grasp the two ends and twist it slightly.

c. If Trigger 16 is being properly actuated but without starting a change cycle, see directions above, Paragraph 6-b.

8. PRESSING "M" BUTTON FAILS TO PUT CHANGER MECHANISM OUT OF ACTION SO AS TO ENABLE MANUAL OPERATION. Check Key Control Unit as in preceding paragraph. First see that button goes clear down; then follow its action through Manual Rod 77.

9. MOTOR STOPS IMMEDIATELY WHEN CHANGER SWITCH IS TURNED OFF DURING A CHANGE CYCLE (instead of continuing to run, as it should, until needle is again upon a record, and then stopping). Or--

10. TURNING CHANGER SWITCH OFF FAILS TO STOP CHANGER AT ALL. Either of these two conditions would indicate failure of Cycling Switch 85. Cycling Switch operates normally to short-circuit the manual Changer Switch (which may be located in position shown at 54, or elsewhere) during change cycle only. Such damage to Cycling Switch (not likely to occur) would necessitate returning the entire Changer to source 101.

11. CHANGER FAILS TO REPEAT LAST RECORD. See Paragraph 6, above.

12. NEEDLE LANDS PROPERLY ON RECORD BUT FAILS TO MOVE OVER INTO RECORD GROOVE. Pickup arm is normally impelled toward center of records by Lead Spring 97. Should a slight increase in its tension be found necessary, this can be easily obtained by bending the lug, to which it is attached, down against Main Plate. If tendency then appears for needle to jump across record, check angle of needle (see Paragraph 6-a above).

13. RECORDS FALL UNEVENLY UPON TURNTABLE. Seldom objectionable, this is due to Record Pin not being correctly centered between Posts. If necessary, it can be corrected as described above; see "Replacing Motor".

14. LAST RECORD DROPS ON ONE SIDE ONLY. This suggests a Post bent out of perpendicular to Main Plate. Test with square as directed (see "Replacing Motor"). If Post must be straightened, be careful not to bend other parts.

15. CHANGER CONTINUES CYCLING. Due to failure of Lift 37 to fall back out of engagement with Cam Gear. Check the various rivets at which motion occurs, to find the point where friction or binding is interfering with freedom of motion.

16. RECORD IS DRIVEN, BUT NOT HEARD, OR NOT HEARD WITH PROPER VOLUME. See that Pickup cord is plugged in. Check amplifier and speaker and connections to them, thoroughly. If then trouble is still suspected in pickup, test its output with a vacuum-tube voltmeter. Playing an average record, output should test 1 to 2.5 volts. If pickup cartridge is found not to deliver proper output, remove it and install another.

17. SELECTOR PLATE FAILS TO SEPARATE BOTTOM RECORD FROM STACK. This is due either to a badly warped condition of the record, or to its being of a thickness very considerably different from those now in standard use. The design of both Selector and Shelf Plates is such as to accommodate a maximum variation in thickness and flatness of records, but certain records may be found which are so far out as to be impracticable for use in automatic changers.

Improper spacing between blades could also result in jamming or failure of the blade to separate the bottom record from the stack. The proper spacing of the blades in the 10" position is .050"-.055"; in the 12" position it is .070"-.075". A special long gauge is necessary to measure this dimension since the blades are not directly over each other. However, it is extremely unlikely that the blades could become bent out of their proper adjustment since they are very rigid. Adjustment is secured by bending of the blades.

IF NECESSARY TO DISASSEMBLE THE CHANGER:

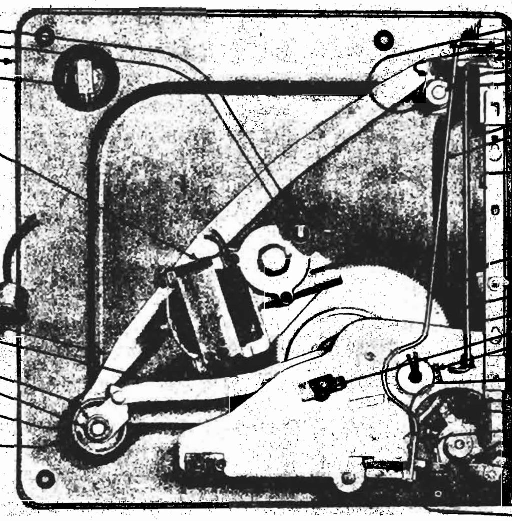
Before attempting to remove Sub-Plate Assembly 83, detach Key Control Unit 75 from Main Plate. To do this, start with Control Unit Truss Bar 80. Then take out the screw which holds left end of Adjusting Rod Lever 94. Next remove Adjusting Rod 92 and Adjusting Rod Extension 79. Take out the screw holding Spring 73; then the screws holding Key Control Unit 75 to Main Plate. Rods 77 and 78 can then, with due care, be extracted without bending. Free the Cam Connecting Rod 58 by loosening setscrew holding Spreader and Hub Assembly 59. Sub-Plate Assembly can then be detached without bending parts. In reassembling, reverse the procedure.

FAILURE TO PLAY THROUGH THE ENTIRE RECORD WHEN ONLY ONE OR TWO RECORDS ARE ON THE TURNTABLE:

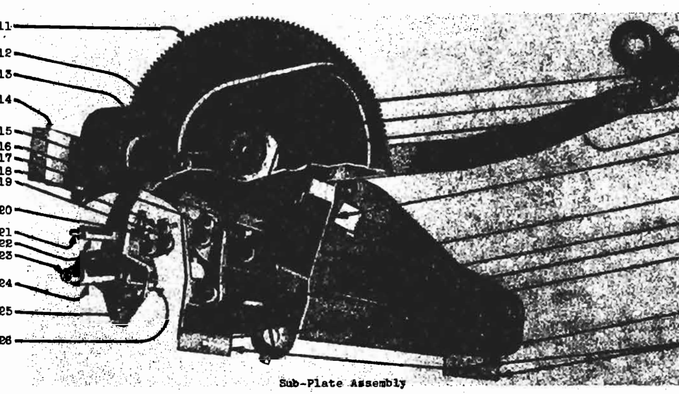
If the mechanism fails to play more than just a small portion of the record when only one or two records are on the turntable, in all likelihood it is due to the use of a needle shorter than the ones furnished and to which the mechanism has been adjusted. The needles used must not be less than 11/16" in length, although they may be of greater length.

ELIMINATING RUMBLE:

The record changer plate must be completely free in its mounting to avoid excessive rumble. The split nuts on the mounting screws, under the changer plate, should be loosened for three or four turns. The mounting screws themselves should be unscrewed for three or four turns since they may form a thread in the rubber bushings and thereby compress the bushings excessively.



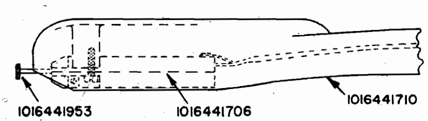
Bottom View



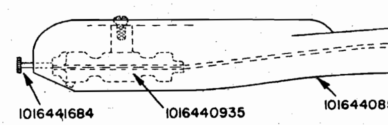
Sub-Plate Assembly

ADDITION OF SUFFIX NUMBER -3 TO 101.584 CHASSIS:

Assemblies identified as 101.584-3 are the same as 101.584 except that they use a different tone arm and pickup cartridge, not interchangeable with the ones used in 101.584. The drawings below illustrate the tone arms and cartridges used in 101.584,-1,-2,-3. Be sure to give the proper part number and also mention the complete identification number including the dash number when ordering these parts.



CARTRIDGE & ARM USED IN 101.584-2, -3



CARTRIDGE & ARM USED IN 101.584, -1

Notes, Assembly Views

SEARS, ROEBUCK & CO

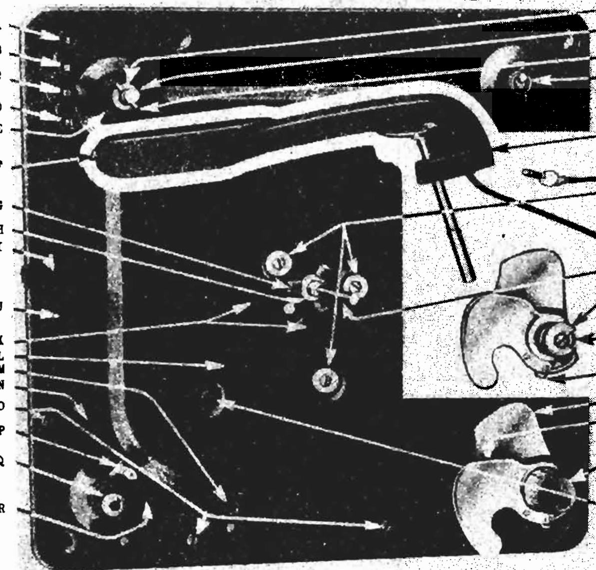
MODELS 6346, 6346A, 6446, 6446A
MODEL 6447

ADDITION OF SUFFIX NUMBERS -4 AND -5 TO CHASSIS IDENTIFICATION NUMBER 101.590, 101.584:

Chassis identified by the suffix number -4 are the same as those identified by the suffix number *-1 except that the record changer unit has certain changes incorporated, as explained below. *same as 101.590-2 in the case of the chassis 101.590).

Chassis identified by the suffix number -5 are the same as those identified by -2 except that the record changer unit has certain changes incorporated;- *(-3 for chassis 101.590).

The record changer design has been changed so that the adjustment, controlling the distance from the record pin at which the trigger will trip and the change cycle will begin, can be made through a hole in the top plate, marked "AR" in the photograph. Turn the screw head clockwise for earlier tripping; counter-clockwise for later tripping. (The effect is to alter the position of the Cam CJ which strikes the Trigger CP. It may be found that the cam has been revolved through a half turn; in this case, the above directions would apply only after the cam has been returned to the correct position by revolving the screw head half a turn.)



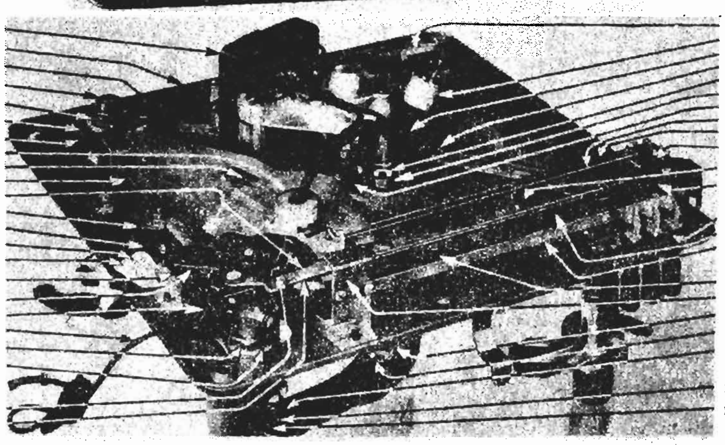


Photo E-F. Bottom View

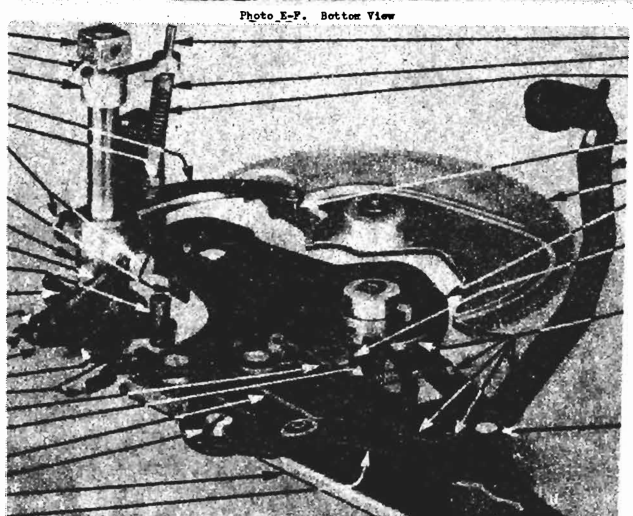


Photo C-D. View of Sub-Plate Assembly, Together with Certain Other Assemblies.

FEB. 28, 1940

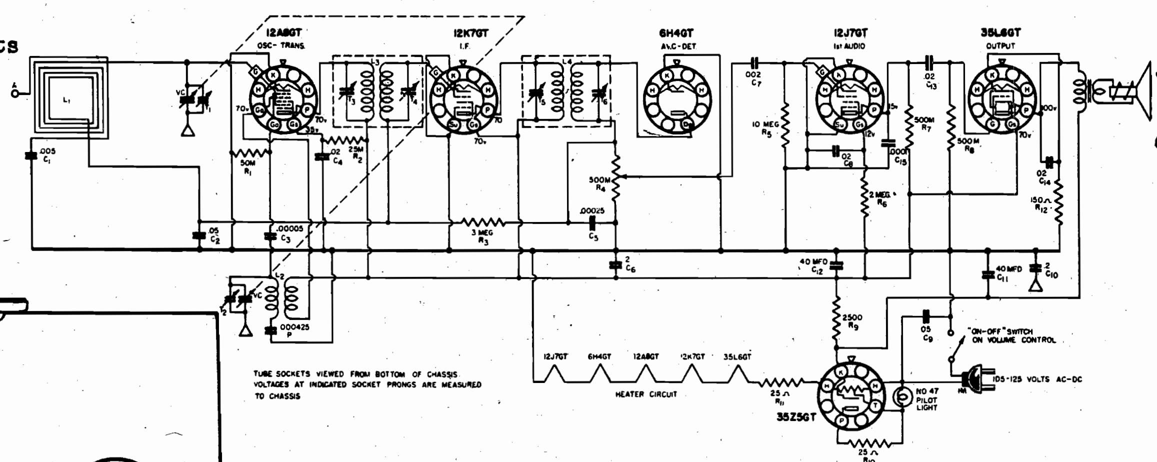
MODEL 6329,Ch.110.989
Schematic,Socket
Trimmers,Alignment

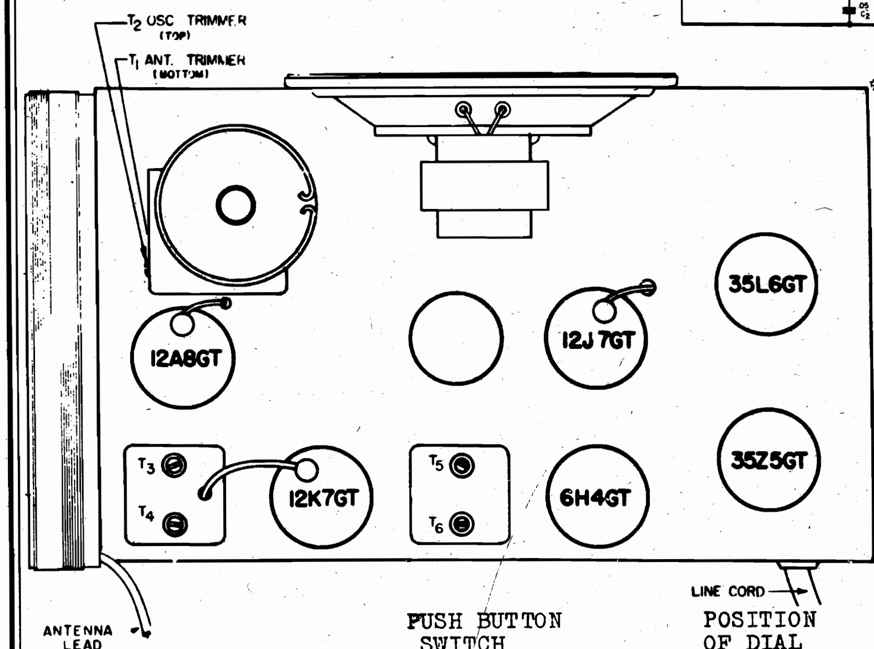
SEARS, ROEBUCK & CO.

POWER SUPPLY:
All models available. . . . .
110-125 volts, 25-60 cycle AC or DC, 30 watts

FREQUENCY RANGE:
Broadcast. . . . . .535-1700 KC

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.989





IF PEAK 455 KC

ALIGNMENT PROCEDURE

Output meter connections . . . . Across primary output transformer

Output meter reading to indicate 0.050 watt
for Weston type 571 output meter on 15 volt scale 13.0 Volts

Dummy antenna value in series with generator output . . 100 mmfds..

Connection of generator ground. . . . . B- Bus

Generator modulation. . . . . .App. 30% @ 400 cycles

Position of volume control. . . . . ,Fully clockwise

PUSH BUTTON SWITCH POSITION	POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
Manual "IN"	**	455 kc	12K7GT,Grid	T5,T6	I.F.
"	**	455 kc	12A8GT,Grid	T3,T4	I.F.
	1500 kc	1500 kc	***	T2,T1	Osc.,R.F.

LOUD SPEAKER:
Type...Dynamic
Size.......5"
Field.....P. M.

POWER OUTPUT
Type.......Beam Power
Undistorted.......1.0
Maximum...........1.5

It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

** Short oscillator section of variable condenser.

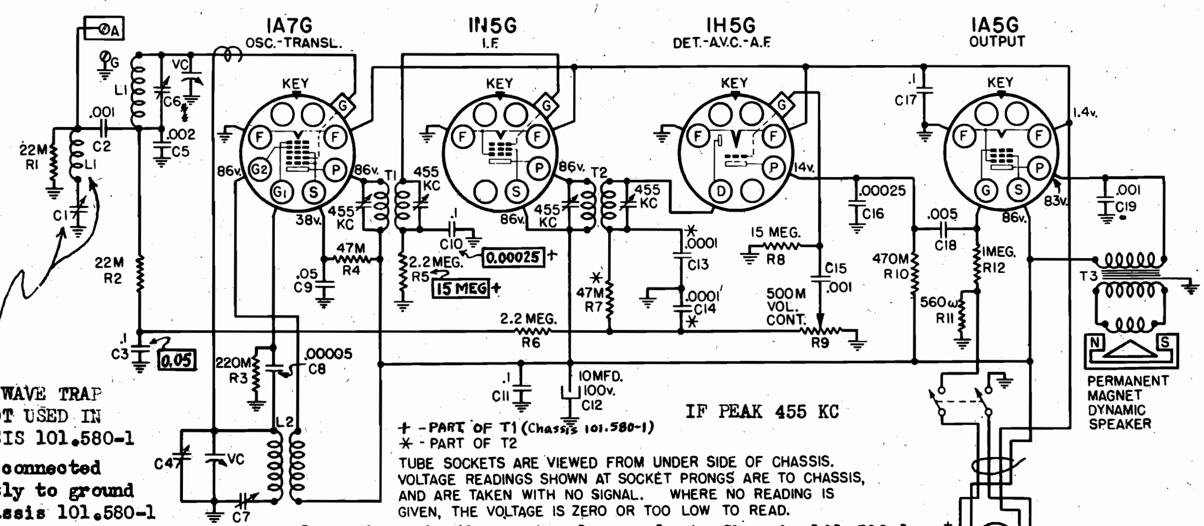
***Connect generator output to a separate radiating loop and pickup 1500 KC signal on receiver.

MARCH 20, 1940

Chassis, Alignment
Socket, Trimmers

SEARS. ROEBUCK & CO.

MODELS 6350, 6351, 6352
Ch. 101.580, 101.580-1
Schematic, Voltage



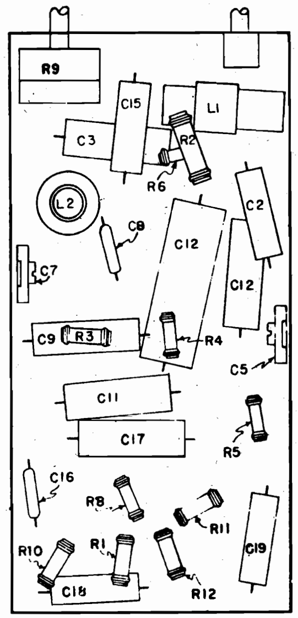
THIS WAVE TRAP IS NOT USED IN CHASSIS 101.580-1

*C6 is connected directly to ground in Chassis 101.580-1

+ - PART OF T1 (Chassis 101.580-1)
* - PART OF T2

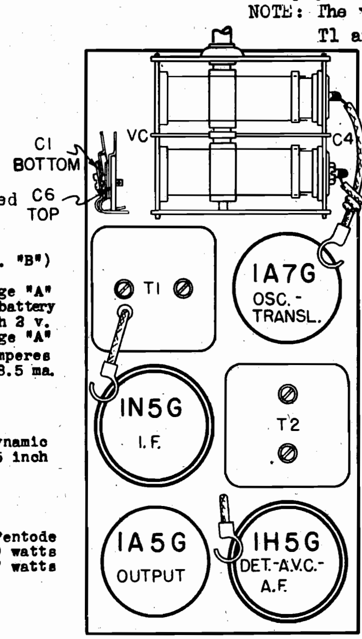
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

NOTE: The values shown in the rectangles apply to Chassis 101.580-1
T1 and T2 are iron core transformers in Chassis 101.580-1.



PARTS UNDER CHASSIS

In Chassis 101.580-1, a new variable condenser is used; trimmers C4 and C6 are mounted on this condenser.



LOCATIONS OF PARTS ON TOP OF CHASSIS.

POWER SUPPLY:
#5060. . A-B block (1.4v. "A", 90v. "B")
or
#734 . . . . 2v. Storage "A"
2 - #5041 . . . . 45v. "B" battery
#5070 . . . Adaptor necessary with 2 v. Storage "A"
"A" Drain . . . . .0.2 Amperes
"B" Drain . . . . 8.5 ma.

LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . .5 inch

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . 0.09 watts
Maximum . . . . 0.17 watts

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . 0.3 volts
Approximate average sensitivity in microvolts for 50 milliwatts output . . . See chart below
Generator ground lead connection . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator output lead . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully on
Position of pointer with variable fully closed . . . . Horizontal (To fall on block below 550 kc calibration mark.)

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	1A7G Translator Grid	T2, T1	IF	110
600 kc	455 kc	.0002 mfd.	Ant. Term.	C1*	IF Wave Trap	--
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C6, ~~C4~~	Translator ~~Oscillator~~	90
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	90

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted to give high output. The trimmer should be adjusted for minimum output meter reading instead of the customary maximum reading. If the frequency of an interfering station near 455 kc is known, the generator and trimmer should be adjusted for the frequency of the interfering station rather than 455 kc.

The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy.

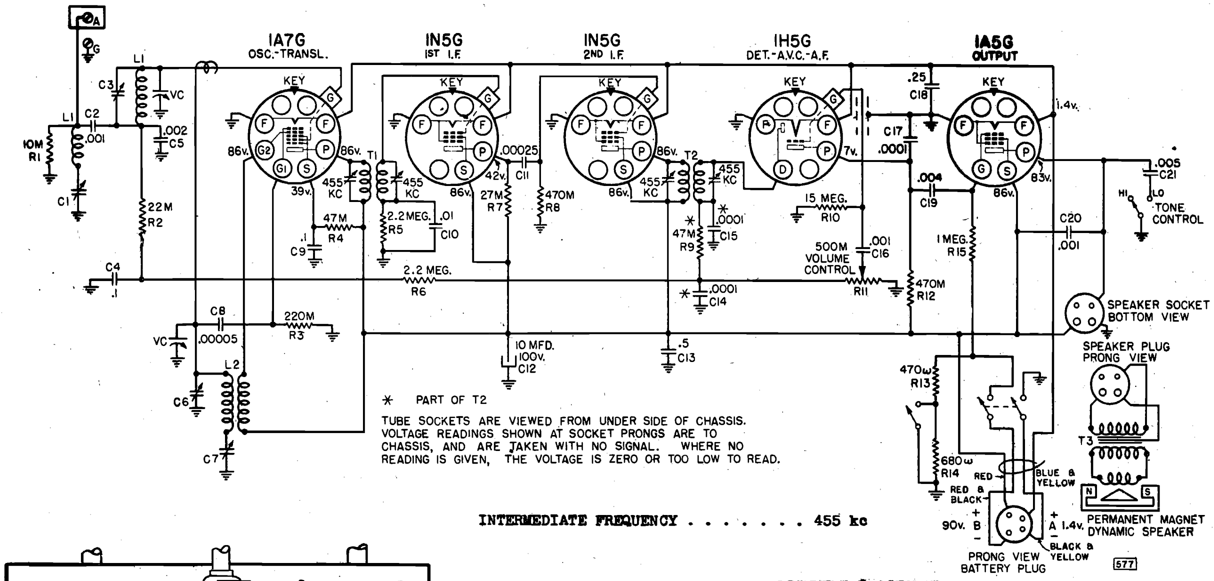
Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

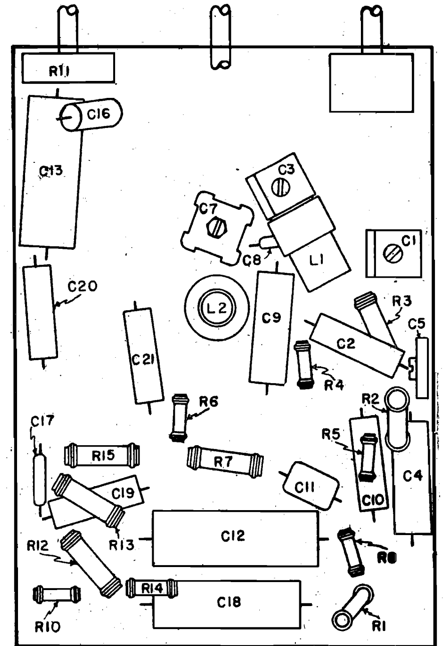
FEB. 14, 1940

MODELS 6353,6354,6355
Ch. 101.577
Schematic,Voltage
Chassis,Alignment
Socket,Trimmers

SEARS, ROEBUCK & CO.

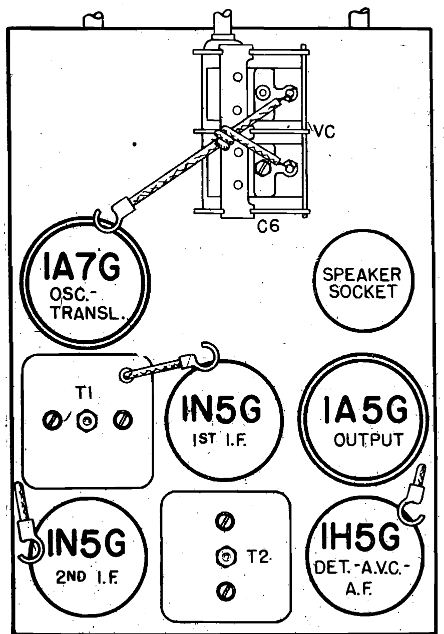
MODEL 6260,Ch.101.558
Alignment





LOCATIONS OF PARTS UNDER CHASSIS

INTERMEDIATE FREQUENCY . . . . 455 kc



LOCATIONS OF PARTS ON TOP OF CHASSIS

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections . . . . .Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . 0.3 volts
Approximate microvolts input to indicate 50 milliwatts output . . . . See chart below
Generator ground lead connection . . . . .Receiver chassis
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . .Fully on
Position of Tone Control . . . . .HI
Position of ~~pointer with~~ variable fully closed . . . . .Horizontal (To fall on block below 550 kc calibration mark.)
(For Model 6260 dial pointer should be horizontal when fully open or fully meshed).

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN) (A)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS (A)
Closed	455 kc	.1 mfd.	1A7G Translator Grid	T2, T1 T2,T1	IF	125 65
600 kc	455 kc	.0002 mfd.	Ant. Term.	C1* C1*	IF Wave Trap	--- --
Fully open	1750 kc	.0002 mfd.	Ant. Term.	C6 C4	Oscillator	125 45
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C3 C6	Translator	80 30
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7 C7	Padder	85 25

(A) For 6260,Chassis 101.558 **IMPORTANT ALIGNMENT NOTES**

* The generator should be adjusted to give high output. The trimmer should be adjusted for minimum output meter reading instead of the customary maximum reading. If the frequency of an interfering station near 455 kc is known, the generator and trimmer should be adjusted for the frequency of the interfering station rather than 455 kc.

The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

FREQUENCY RANGE:
Broadcast . . . . 545-1750 kc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1750 kc	1400 kc	600 kc

POWER OUTPUT:
Type . . . . .Pentode
Undistorted . . . . .0.09 watts
Maximum . . . . .0.17 watts

LOUD SPEAKER:
Type . . . . .PM Dynamic
Size . . . . 5 inch

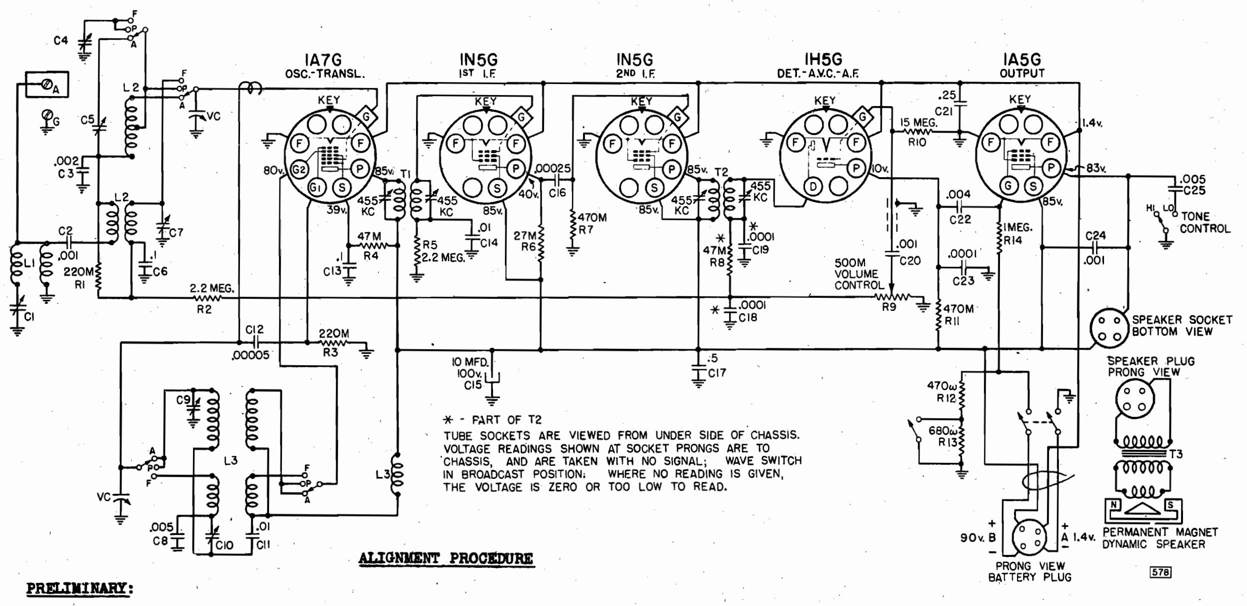
POWER SUPPLY:
#5060. . A-B block (1.4v. "A", 90v. "B")
or
#734 . . . . .2v. Storage "A"
2 - #5041 . . . . .45v. "B" battery
#5071 . . . . . . .Adaptor necessary with 2v. Storage "A"
"A" Drain. . . . . .0.25 amperes
"B" Drain. . . . . .10.25 ma

MAY 11, 1939

Schematic, Voltage
Chassis, Alignment
Socket, Trimmers

SEARS, ROEBUCK & CO.

MODELS 6356, 6357, 6358
Ch. 101.578



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . 0.3 volts
Approximate microvolts input for 50 milliwatts output . . . . See chart below
Generator ground lead connection . . . . Receiver chassis
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . Horizontal

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T2, T1	IF Output IF Input	65
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"AM"	Fully open	1750 kc	.0002 mfd.	Ant. Term.	C9	Oscillator	45
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C5	Translator	22
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder	35
"POL"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C4	Translator	80
"FOR"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C7	Translator	20

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

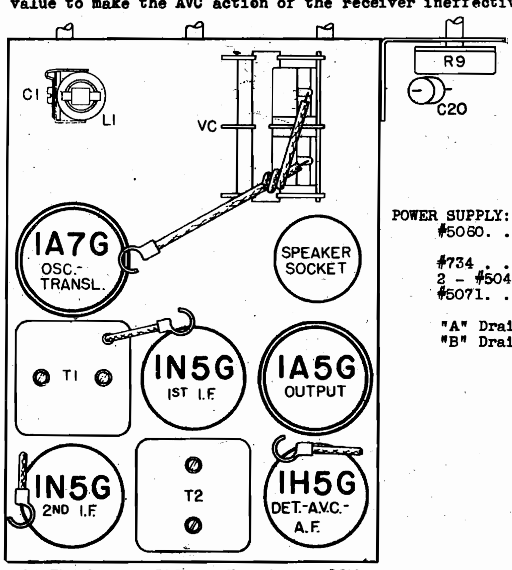
FREQUENCY RANGES:
Broadcast . . . 545-1750 kc
Police . . . . 1455-2650 kc
Short Wave . . . 5.95-18.2 mc

LOUD SPEAKER:
Type . . . . . . PM Dynamic
Size . . . . 6 inch

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . 0.09 watts
Maximum . . . . . 0.18 watts

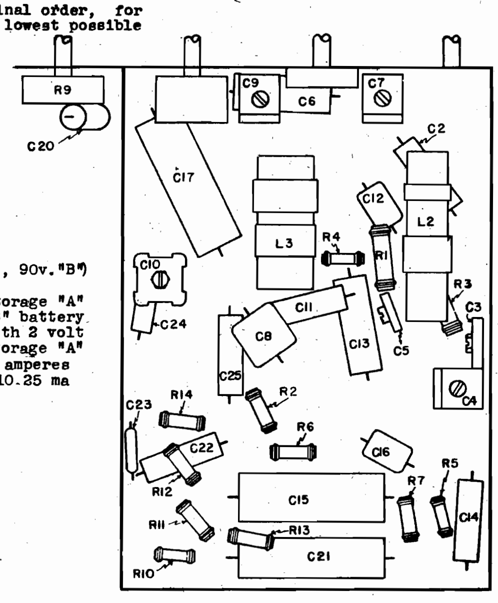
RECOMMENDED ANTENNA EQUIPMENT:

Catalog #5523, #5522, #5575.



LOCATIONS OF PARTS ON TOP OF CHASSIS

POWER SUPPLY:
#5060. . . A-B block (1.4v. "A", 90v."B")
or
#734 . . . . 2v. Storage "A"
2 - #5041. . . . . 45v. "B" battery
#5071. . . Adaptor necessary with 2 volt Storage "A"
"A" Drain. . . . . 0.25 amperes
"B" Drain. . . . . 10.25 ma

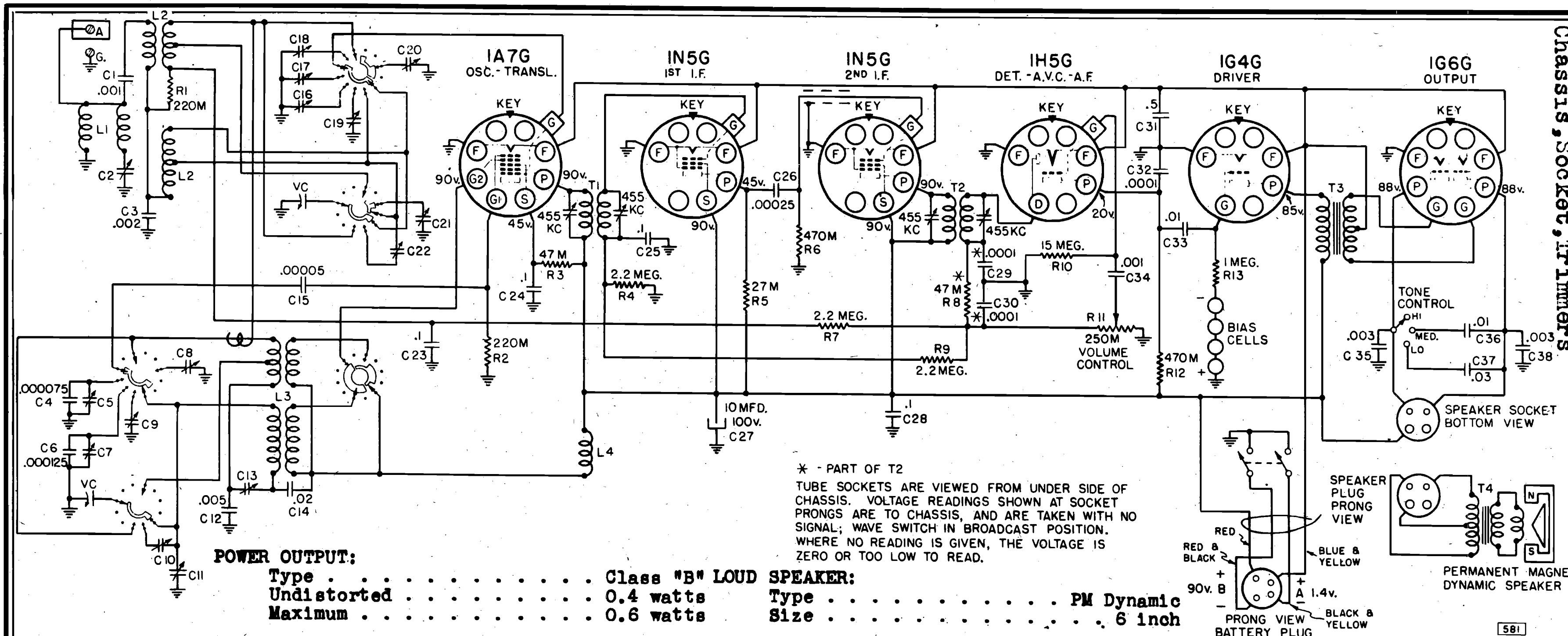


MAY 12, 1939

LOCATIONS OF PARTS UNDER CHASSIS

MODELS 6362,6363,6364
Ch.101.581
Schematic,Voltage,Tuner
Chassis,Socket,Trimmers

SEARS, ROEBUCK & CO.



✳ - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

POWER OUTPUT:

Type	Class "B"
Undistorted	0.4 watts
Maximum	0.6 watts

LOUD SPEAKER:

Type	PM Dynamic
Size	6 inch

POWER SUPPLY:

#5061. .A-B block (1.4 v. "A", 90 v."B")
or
#734 . . . . 2 v. Storage "A"
2 - #5043 . . . . 45 v. "B"Battery
#5072. . . .Adaptor necessary with 2 v. Storage "A"

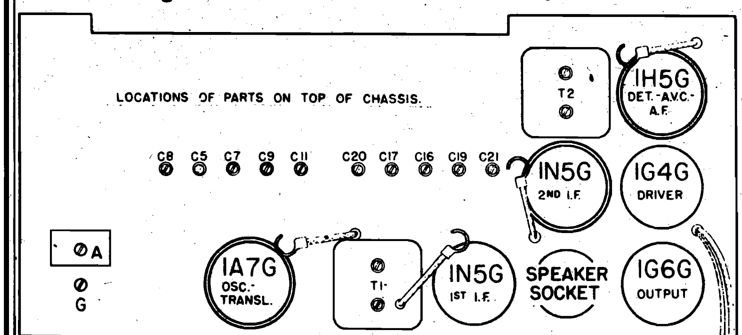
"A" Drain . . . . .0.35 Amperes
"B" Drain . . . . 12 ma

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #5523: Greatest pickup and noise reduction.
Catalog #5522: Less effective pickup and noise reduction than Catalog #5523.
Catalog #5575: Conventional antenna.

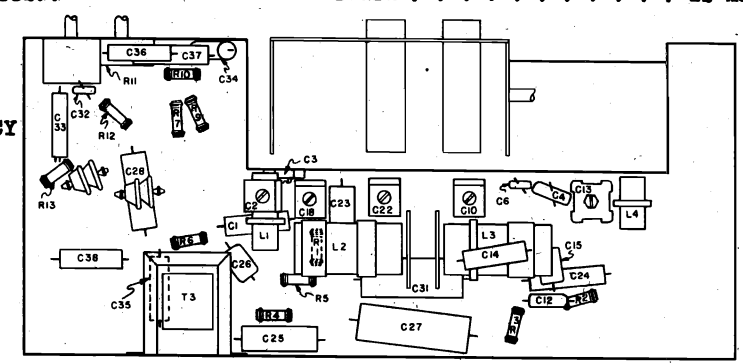


INTERMEDIATE FREQUENCY

455 kc

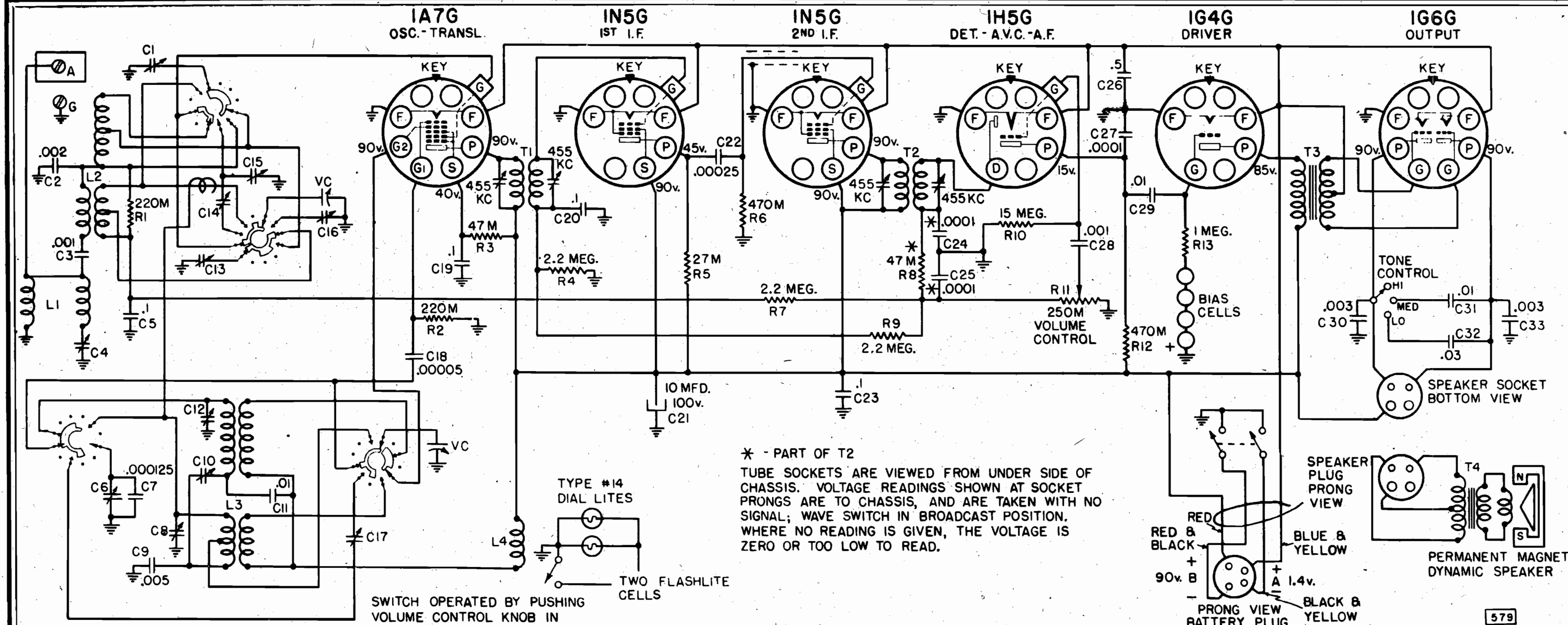
FOR ALIGNMENT
SEE INDEX

JUNE 19, 1939



SEARS, ROEBUCK & CO.

MODELS 6359, 6360, 6361, 6379, 6380, 6381. Ch. 101.579
Schematic, Voltage, Chassis Socket, Trimmers, Tuner



✳ - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

INTERMEDIATE FREQUENCY . . . . . . 455 kc

RECOMMENDED ANTENNA EQUIPMENT:

Cat. #5523:	Greatest pickup and noise reduction.
Cat. #5522:	Less effective pickup and noise reduction than Catalog #5523.
Cat. #5575:	Conventional antenna.

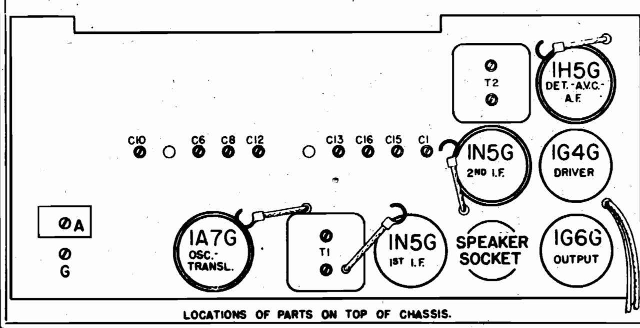
POWER SUPPLY:

#5061. .A-B block(1.4 v."A", 90 v. "B")
or
#734 . . . . 2 v. Storage "A"
2 - #5043 . . . . 45 v. "B" Battery
#5072. . . .Adaptor necessary with 2 v. Storage "A"

"A" Drain . . . . .0.35 amperes
"B" Drain . . . . 12 ma

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.



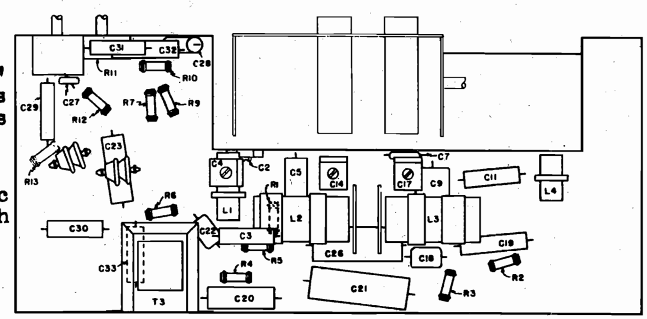
LOCATIONS OF PARTS ON TOP OF CHASSIS.

POWER OUTPUT:
Type . . . . .Class "B"
Undistorted . . . . . 0.4 watts
Maximum . . . . 0.6 watts

LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 6 and 8 inch

FOR ALIGNMENT
SEE INDEX

JUNE 19, 1939



LOCATIONS OF PARTS UNDER CHASSIS

MODELS See Below
Alignment

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY: For all Models and Chassis listed in the tables below.

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . 0.3 volt
Approximate microvolts input for 50 milliwatts output . . . . See chart below
Generator ground lead connection . . . . To chassis
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . . At block to left of 550 kc calibration mark.

MODELS 6359,6360,6361,6379,6380,6381 CHASSIS 101.579

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	1A7G Grid	T2,T1	IF	--
"A"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C4*	Wave Trap	--
"A"	Fully open	1750 kc	.0002 mfd.	Ant. Term.	C13	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C1	Translator	35
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder	30
"B"	2.3 mc	2.3 mc	400 ohms	Ant. Term.	C17	Osc. Pad	--
"B"	2.3 mc	2.3 mc	400 ohms	Ant. Term.	C14†	Transl.Pad.	45
"B"	2.5 mc	2.5 mc	400 ohms	Ant. Term.	C15†	Translator	45
"C"	18.3 mc	18.3 mc	400 ohms	Ant. Term.	C8	Oscillator	--
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C16	Translator	40
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C6**,C13	Osc.,Transl.	40

MODELS 6362,6363,6364 CHASSIS 101.581

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	1A7G Grid	T2,T1	IF	
"A"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C3*	Wave Trap	
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C11,C31	Osc.,Transl.	
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C13	Padder	
"B"	2.3 mc	2.3 mc	400 ohms	Ant. Term.	C10,C32	Osc. Pad, Transl.Pad	
"B"	2.5 mc	2.5 mc	400 ohms	Ant. Term.	C18	Translator	
"C"	18 mc	18 mc	400 ohms	Ant. Term.	C9	Oscillator	
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C19	Translator	
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C7**,C16	Osc.,Transl.	
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C5**,C17	Osc.,Transl.	
"F"	14.9 mc	14.9 mc	400 ohms	Ant. Term.	C8**,C20	Osc.,Transl.	

MODEL 6368 CHASSIS 101582, MODEL 6382 CHASSIS 101.594

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6D8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C6*	Wave Trap	--
"B"	Fully open	5.85 mc	400 ohms	Ant. Term.	C9	Oscillator	--
"B"	5 mc	5 mc	400 ohms	Ant. Term.	C4	Translator	75
"B"	2 mc(rock)	2 mc	400 ohms	Ant. Term.	C11	Padder	110
"C"	18 mc	18 mc	400 ohms	Ant. Term.	C2**	Oscillator	--
"C"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C5	Translator	50
"A"	Fully open	1730 kc	.0002 mfd.	Ant. Term.	C7	Oscillator	100
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C3	Translator	55
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder	50

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

† Repeat the C14 and C15 adjustments until perfect alignment is obtained. This will require going back and forth in these adjustments several times.

** If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

ALIGNMENT PROCEDURE

PRELIMINARY: For all Models and Chassis listed in the tables below.

Output meter connection . . . . Across loud speaker voice coil
Approximate microvolts input for 500 milliwatts output . . . . . . See chart below
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator output lead . . . . See chart below
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . HI
Position of Dial Pointer with variable fully closed . . . . . At block to left of 550 kc calibration mark.

MODEL 6441 CHASSIS 101.599

Output meter reading to indicate 500 milliwatts . . . . 1.28 volts
Generator ground lead connection . . . . To external ground

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	Fully open	1650 kc	.0003 mfd.	Ant. Clip	C14	Oscillator	100
"A"	1400 kc	1400 kc	.0003 mfd.	Ant. Clip	C1,C8	Ant.,Transl.	25
"A"	600 kc(rock)	600 kc	.0003 mfd.	Ant. Clip	C11	Padder	10
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Clip	C7	Translator	100
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Clip	C15*	Translator	15
"D"	9.55 mc(rock)	9.55 mc	400 ohms	Ant. Clip	C18,C16	Osc.,Transl.	60

MODELS 6438,6438A,6439 CHASSIS 101.583; 6438B,6439A,6497 CHASSIS 101.583-1 6497 CHASSIS 101595

Output meter reading to indicate 500 milliwatts . . . . 1.6 volts
Connection of generator ground lead . . . . To chassis

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS	Ⓐ
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--	--
"A"	Open	1750kc Ⓐ, 1625 kc	.0002 mfd.	Ant. Term.	C19	Oscillator	--	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C1,C10†	RF,Transl.	20	10
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C20	Padder	20	15
"B"	5 mc	5 mc	400 ohms	Ant. Term.	C21,C5	Osc.,Transl.	150	130
"C"	18.3 mc	18.3 mc	400 ohms	Ant. Term.	C14*	Oscillator	--	--
"C"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C9	Translator	75	70
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C18*,C8	Osc.,Transl.	100	--
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C16*,C7	Osc.,Transl.	100	--

Ⓐ For Models 6438,6438A,6439 Chassis 101.583

IMPORTANT ALIGNMENT NOTES

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

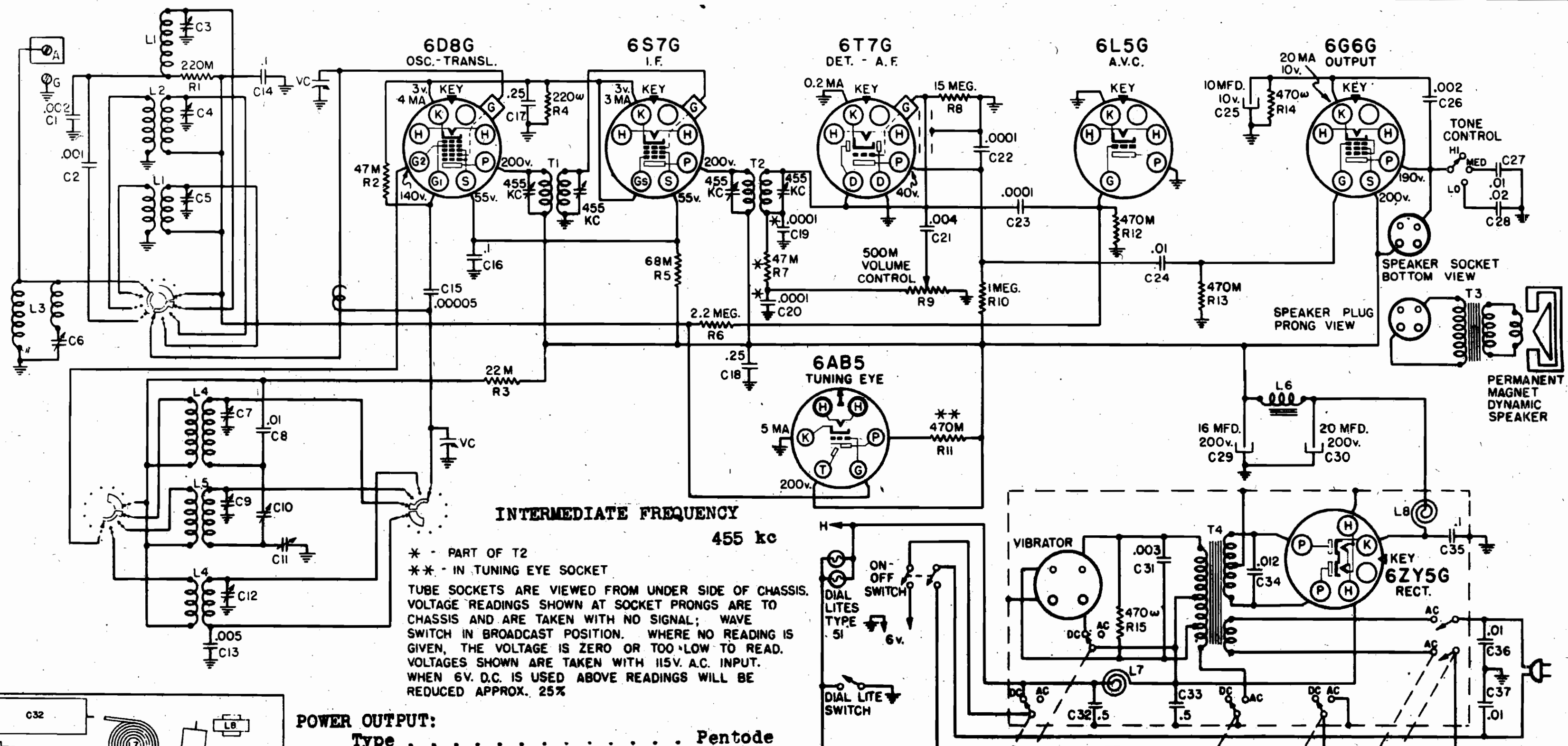
* If two peaks can be had, the correct adjustment is with the trimmer screw further out. The other peak is the image.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

† After the alignment has been completed, the C1 and C10 adjustments should be repeated, using a 1400 kc broadcast signal.

SEARS, ROEBUCK & CO.

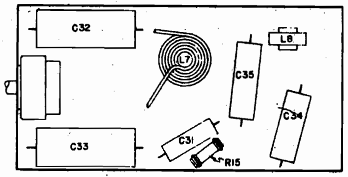
MODELS 6368, Ch. 101.582, 6382, Ch. 101.594
Schematic, Voltage, Chassis Socket, Trimmers



INTERMEDIATE FREQUENCY
455 kc

* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. VOLTAGES SHOWN ARE TAKEN WITH 115V. A.C. INPUT. WHEN 6V. D.C. IS USED ABOVE READINGS WILL BE REDUCED APPROX. 25%

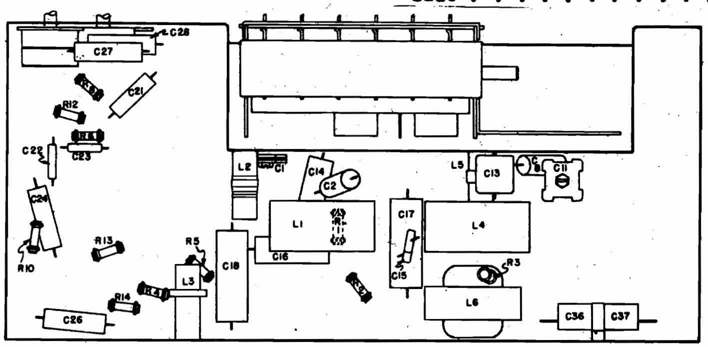


LOCATIONS OF PARTS UNDER POWER SUPPLY - 101.582 101.594

POWER OUTPUT:
Type . . . . Pentode
Undistorted . . . . 1.42 watts on A.C.;
.78 watts on D.C.
Maximum . . . . 2.8 watts on A.C.;
1.43 watt on D.C.

LOUD SPEAKER:
Type . . . . PM Dynamic
Size . . . . 6 and 8 inch

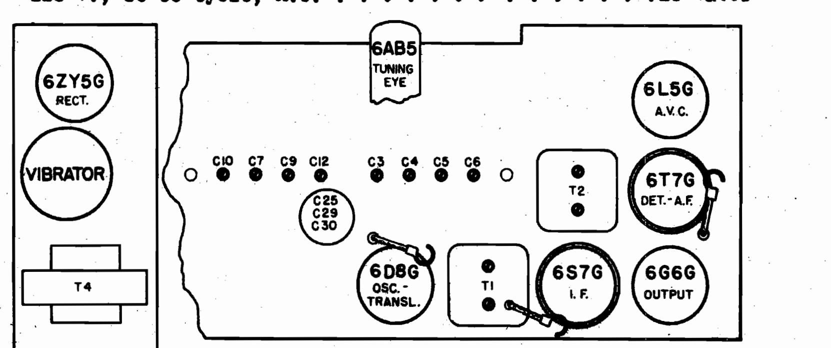
POWER SUPPLY:
Six volt storage battery Battery Drain . . . . . 2.3 Amperes
115 V., 50-60 cycle, A.C. . . . . .18 Watts



LOCATIONS OF PARTS UNDER CHASSIS - 101.582 101.594

FOR ALIGNMENT SEE INDEX

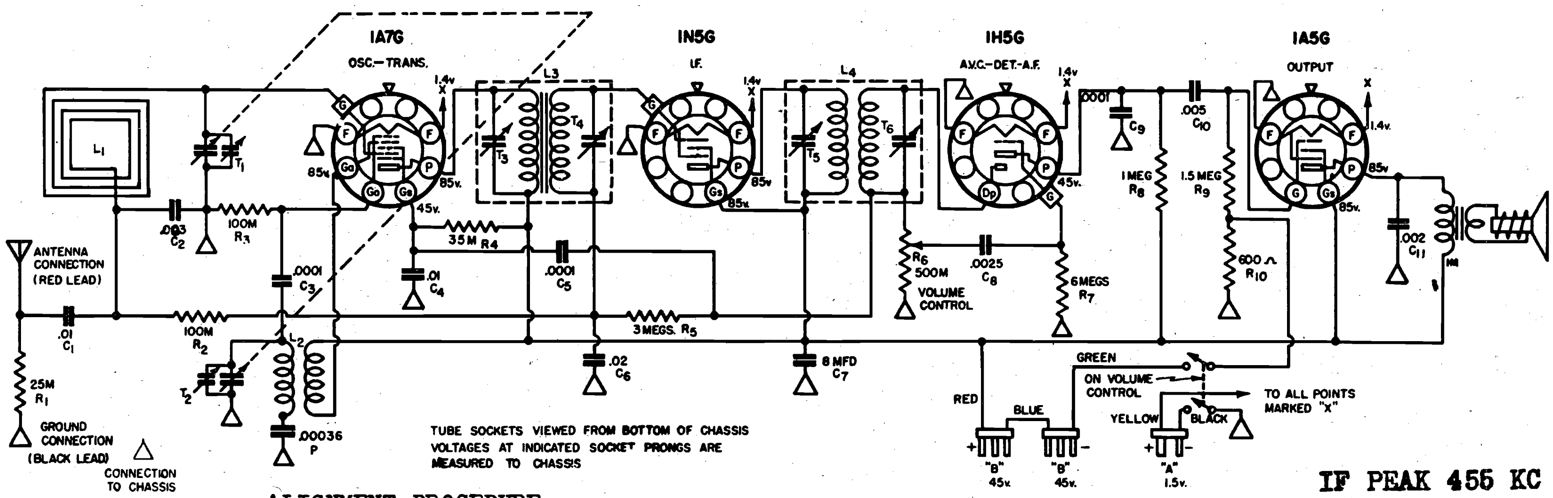
NOV. 8, 1939



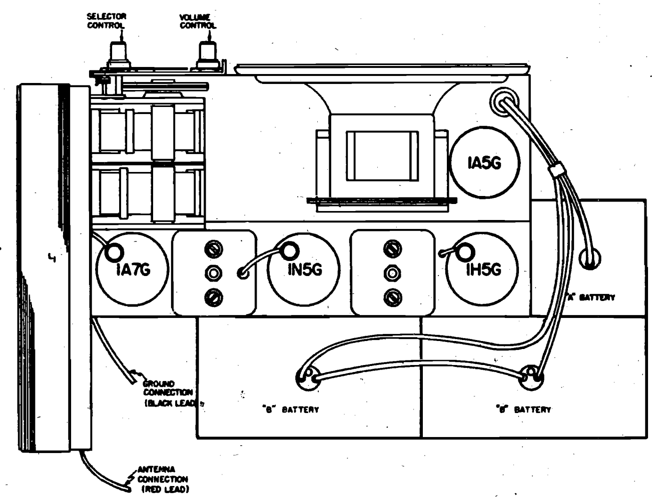
LOCATIONS OF PARTS ON TOP OF CHASSIS

MODELS 6372, 6373
Chassis 110.991
Schematic, Voltage
Socket, Trimmers
Alignment

SEARS, ROEBUCK & CO.



IF PEAK 455 KC



ALIGNMENT PROCEDURE

Output meter connections......Across primary of output transformer

Generator Ground lead..................................To ground

Connection of generator output lead..................See Chart below

Generator modulation..................................30%, 400 cycles

Position of Volume Control..............................Fully on

POSITION OF VARIABLE	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS	TRIMMER FUNCTION
Closed	455 KC	1A7G Grid	T3, T4 T5, T6	I.F.
1500 KC	1500 KC	*	T1, T2	R.F. osc.

The batteries should be in the proper position when aligning the receiver.

* Run a wire from the output terminal of the generator, having it come near the receiver However, no electrical connection is made between the signal generator and the receiver.

Alignment should be done with no connection made to the external antenna and ground terminals.

Always keep the output power from the generator at its lowest possible value to prevent the avc of the receiver from interfering with accurate alignment.

LOUDSPEAKER:

Type..............Dynamic
Size.................. 5"
Field................ P.M.

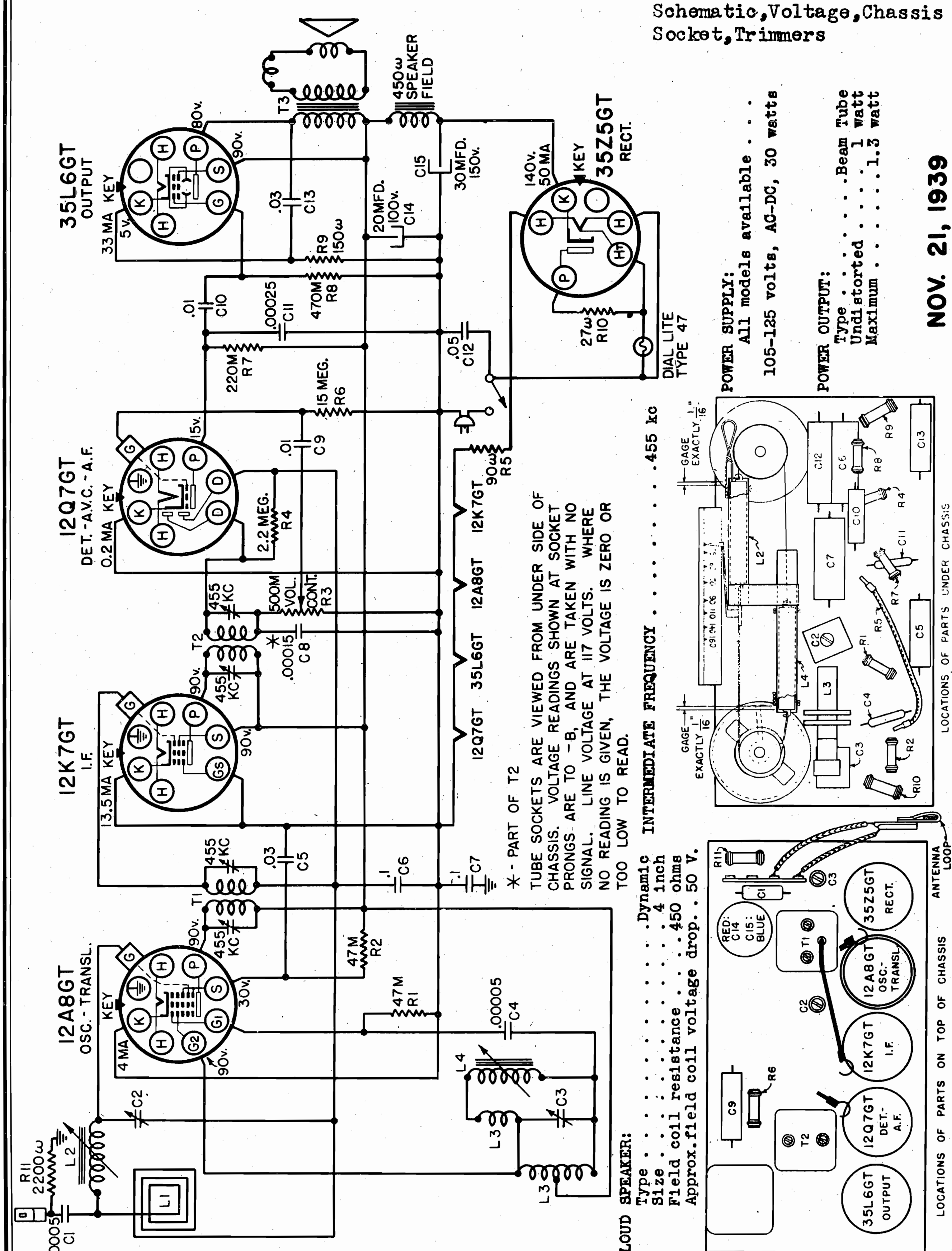
POWER OUTPUT:

Type................pentode
Undistorted.......... 100 MW
Maximum............. 260 MW

SEARS, ROEBUCK & CO

MODELS 6403,6404,6405,6406
6492,6496.Ch.101.566A to E
Ch.101.566-1A to -1E incl.
Ch.101.566-2A to -2E incl.
Schematic,Voltage,Chassis
Socket,Trimmers

FOR ALIGNMENT SEE INDEX



* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO -B, AND ARE TAKEN WITH NO SIGNAL. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

INTERMEDIATE FREQUENCY . . . . 455 kc

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 4 inch
Field coil resistance . . . . 450 ohms
Approx. field coil voltage drop. . 50 V.

POWER SUPPLY:
All models available . . .
105-125 volts, AC-DC, 30 watts

POWER OUTPUT:
Type . . . . Beam Tube
Undistorted . . . . 1 watt
Maximum . . . . 1.3 watt

NOV. 21, 1939

LOCATIONS OF PARTS UNDER CHASSIS

LOCATIONS OF PARTS ON TOP OF CHASSIS

MODELS See Below
Alignment,Notes
MODEL 7230
Notes

SEARS. ROEBUCK & CO.

GENERAL INFORMATION & SERVICE HINTS

MODELS 6403,6404,6405,6406,6492,6496 CHASSIS 101.566 (A,B,C,D,E);101.566-1, -1A,-1B,-1C,-1D,-1E; 101.566-2,-2A,-2B,-2C,-2D,-2E. --ONLY--.

ADDITION OF SUFFIX LETTERS (-A,-B,-C,-D,-E)

Suffix letters have been added to the chassis identification number when the chassis has been used in the various different cabinets.

ADDITION OF SUFFIX NUMBERS -1 AND -2 TO CHASSIS IDENTIFICATION NUMBER:

In order to broaden the selectivity somewhat,, chassis identified with the addition of suffix number, -1, have had the connections of the 1st I.F. Transformer reversed so that the blue wire goes to B+ and the red wire to the 12A8GT plate. Some of these sets also have a 22M ohm resistor in place of the 47M ohm resistor, R2.

Chassis identified by the addition of suffix number, -2, have a different 1st I.F. Transformer, part number 10133421701, and a different 2nd I.F. Transformer, part number 1013342185, giving a still greater decrease in selectivity. The value of R2 in these chassis is 22M ohms.

DIAL LIGHT REPLACEMENT:

The dial light can be replaced without removing the chassis from the cabinet by removing the center tube making it possible to pull the dial light socket off of its bracket.

MODELS 6407,6408,6409 CHASSIS 101.567 (-A,-B), 101.567-1,(-1A,-1B), 101.567-2 (-2A,-2B) --ONLY--.

ADDITION OF SUFFIX LETTERS:

Chassis identified by 101.567 are used in Catalog number 6407, black cabinet. Suffix letter "-A" has been added when the chassis is used in Catalog number 6408, ivory cabinet. Suffix letter "-B" is added when the chassis is used in Catalog number 6409, walnut cabinet.

DIAL LIGHT REPLACEMENT:

The dial light socket is attached to a bracket at the rear of the chassis, held with a single screw.

PUSH BUTTON TUNING:

Each button is set up by loosening the screw (under the call letter tab), tuning in the station, depressing the button and then tightening the screw.

NOTE:- THE FOLLOWING INFORMATION APPLIES TO ALL CHASSIS AND MODELS LISTED ABOVE UNDER MODELS 6403,etc. AND MODELS 6407, etc.

THE LOOP ANTENNA:

The loop antenna is directional so that reception may be improved or interference lessened by turning the set to a particular position. In locations where the signal strength is too low to give satisfactory reception from the loop antenna, an outside antenna may be connected to the Fahnstock clip at the end of the lead at the rear of the receiver. No attempt should be made to use a ground connection.

REMOVING THE CHASSIS FROM THE CABINET:

In addition to the two screws that hold the back of the chassis there is also a screw that holds the speaker frame to the cabinet.

THE HEATER CIRCUIT:

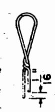
The heaters of all of the tubes are connected in series. Accordingly, if any one tube burns out, the others will not light. It is necessary to replace only the burnt out tube; the others then will light. The burnt out tube can be located through the fact that the full line voltage will appear across its heater prongs.

POSITION OF POWER CORD PLUG:

On AC, the power cord plug should be tried in both its possible positions in the receptacle and left in the position that gives least hum. On DC, the receiver will work at only one position of the plug in its receptacle.

COIL REPLACEMENT:

No regard need be paid to the colors of paint spots on coils or cores. Coils may be replaced individually; however, cores must be replaced in pairs to secure proper matching and are furnished in pairs for service. To replace a coil, cut away the cement from the old coil and remove the coil. Insert the new coil in the bracket and position it so that, when the tuning knob is turned to its low frequency limit, the core will extend exactly 1/16" beyond the end of the coil winding. A gauge, easily made of a piece of wire as illustrated, should be used for determining this dimension. Similarly, when replacing cores, the coil positions must be checked to see that there is exactly 1/16" overlap of the core beyond the end of the coil winding with the tuning knob at the low frequency limit. This is true for both oscillator and translator cores and coils. New coils can be cemented to the bracket with Major's, Du Pont, or equivalent cement.



ELIMINATING HUM MODULATION WHEN USING AN EXTERNAL ANTENNA:

As shown by the Schematic and by the Location of Parts diagram, there is a 2200 ohms resistor, connected from the external antenna clip to chassis. This resistor prevents hum modulation when using an external antenna. If such hum is experienced, examine the chassis to see if this resistor has been incorporated. (The resistor is mounted alongside of the loop antenna connection board as shown in the Location of Parts diagram. It was not incorporated in early production.) If necessary, addition of the resistor will eliminate the complaint.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter to indicate 50 milliwatts . . . . .0.36 volt
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator ground lead . . . . To external ground
Position of Volume Control . . . . Fully on

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION
550 kc	455 kc	.1 mfd.	12A8GT Grid	T2,T1	IF
540 kc	540 kc	.0002 mfd.	Ant. Clip	C3*	Oscillator
700 kc see note A	700 kc	.0002 mfd.	Ant. Clip	C2*	Translator
900 kc see note B	900 kc	.0002 mfd.	Ant. Clip	C2*	Translator

IMPORTANT ALIGNMENT NOTES

NOTE A:- Applies only to MODELS 6403,etc as listed above.
NOTE B:- Applies only to MODELS 6407, etc as listed above.

* Adjustment accessible through holes in bottom of cabinet with chassis in cabinet.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

General Information and Service Hints

MODEL 7230 CHASSIS 126.208

Eliminating Whistle at 910 KC:

A whistle due to a beat between the second harmonic (910 kc) of the 455 kc I-F, and a 910 kc signal may be experienced. In localities where the 910-kc station is one that is frequently listened to, it will be desirable to shift the whistle to some other point where it will not be objectionable. This can be done by shifting the I-F frequency of the receiver.

Determine at what point between 880 and 940 kc the whistle will be least objectionable. Dividing this frequency by two will give the new I-F frequency to which the receiver should be aligned. For example, if it is determined that a whistle at 930 kc would not be objectionable, the I-F should be re-aligned at 930/2 or 465 kc. Try to select the new I-F frequency as close as possible to 455 kc.

An interfering whistle may also be caused by two stations having a frequency difference equal to the I-F frequency (455 kc) of the receiver. This will be evidenced by a whistle appearing when the receiver is tuned to either of the stations. It may be further localized by tuning the receiver to each of these stations and then stopping the oscillator, in each case, by grounding the oscillator stator section of the variable tuning condenser C32 (rear section) to chassis. If the whistle, in each case, still persists, it is being caused by the beat between these two stations and may be corrected by shifting the I-F frequency of the receiver to a frequency other than the difference frequency of the two local or strong signals (stations).

The I-F amplifier should not be shifted to a frequency higher than 470 kc, nor lower than 440 kc, but should be as close to 455 kc as possible.

Align the I-F at the new frequency and then re-align the rest of the receiver as described under "ALIGNMENT PROCEDURE."

Loudspeaker:

Centering of the loudspeaker voice-coil is done in the usual manner with three, narrow-paper or celluloid feelers, after first removing the front dust-cover by gently cutting it away. A dust-cover should be cemented back in place upon completion of the adjustment.

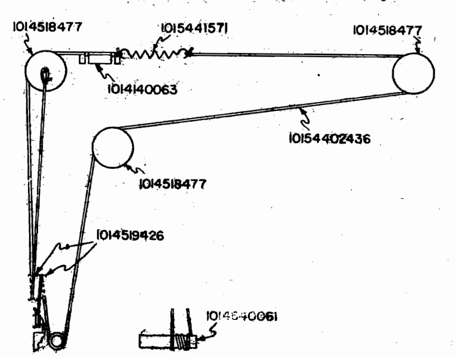
Unpacking and Assembly:

Remove the tape which holds the pickup on the pickup rest during shipment. The knobs and turntable parts will be found in a separate package. Assemble the washer, rubber spindle cap, and turntable on the spindle as shown in the diagram. The projections on the washer should fit over the pin in the spindle, and the rubber cap should be pushed down against the washer.

Motor Lubrication:

The phonograph motor should be oiled occasionally by lifting off the turntable and applying a few drops of light machine oil to the spindle.

Before ordering parts for Dial Drive System, check these drawings:

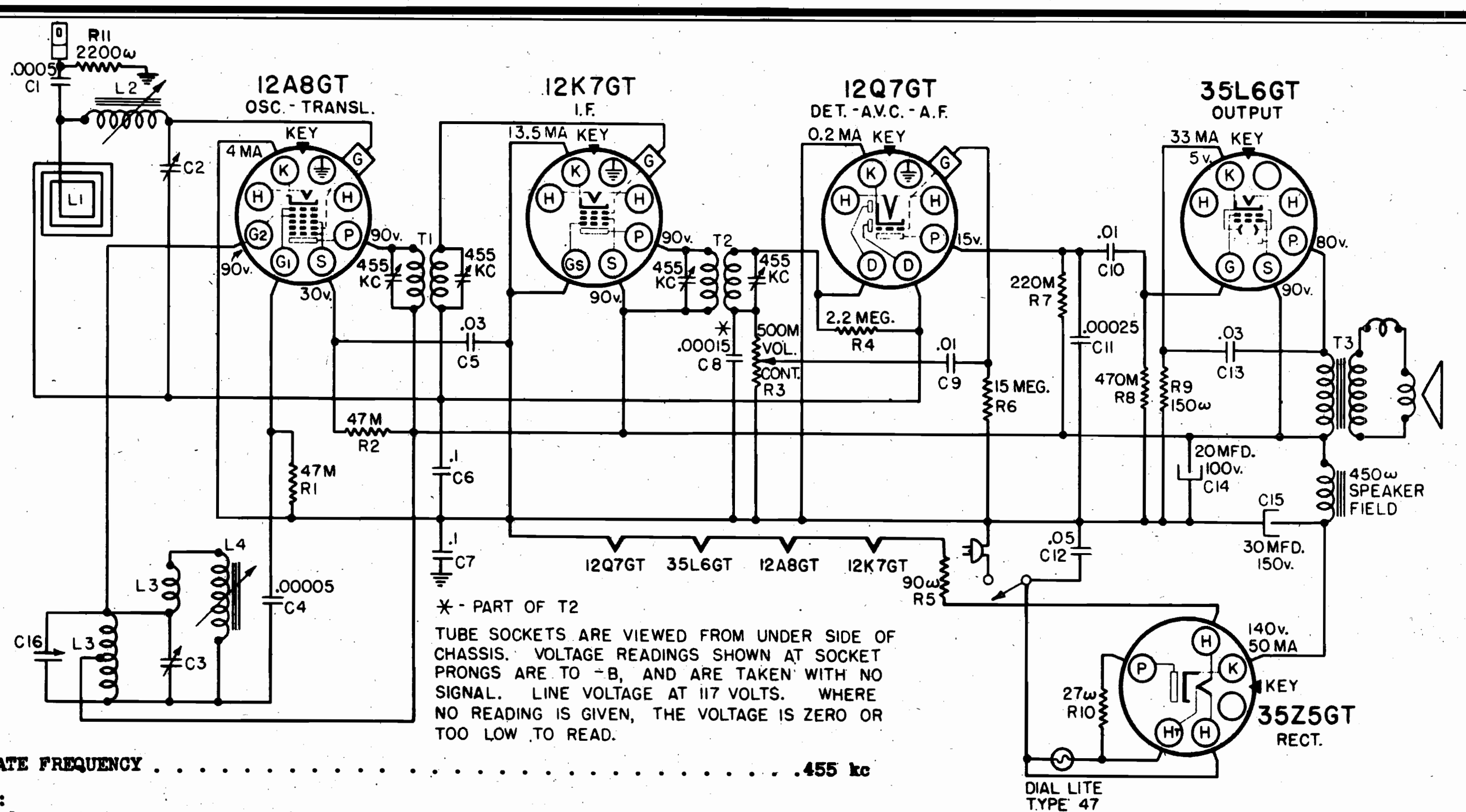


MODEL 6447 CHASSIS 101.590,-1,-2,-3.

SEARS. ROEBUCK & CO.

MODELS 6407,6408,6409
Ch.101.567,101.567-A,-B
101.567-1,-1A,-1B
101.567-2,-2A,-2B
Schematic,Voltage,Chassis
Socket,Trimmers,Drive Cord

FOR ALIGNMENT
SEE INDEX



✱ - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO -B, AND ARE TAKEN WITH NO SIGNAL. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

NOV. 21, 1939

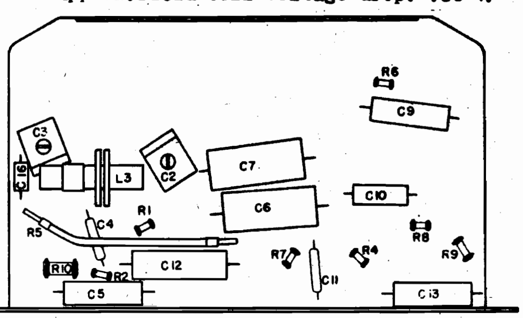
INTERMEDIATE FREQUENCY . . . . .455 kc

POWER SUPPLY:
All models available . . . . 105-125 volts, AC-DC, 30 watts

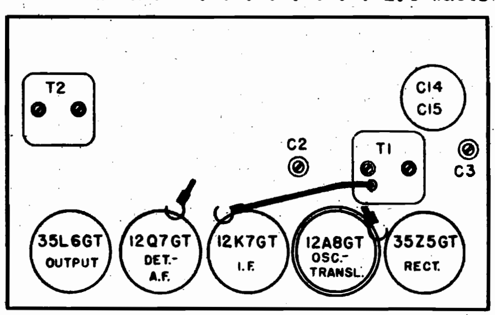
FREQUENCY RANGE . . . . .540-1620 kc ALIGNMENT FREQUENCIES: . . .Osc. - 540 kc; Transl. - 900 kc

LOUD SPEAKER:
Type . . . . .Dynamic.
Size . . . . .4 inch
Field coil resistance . . . . .450 ohms
Approx.field coil voltage drop. .50 V.

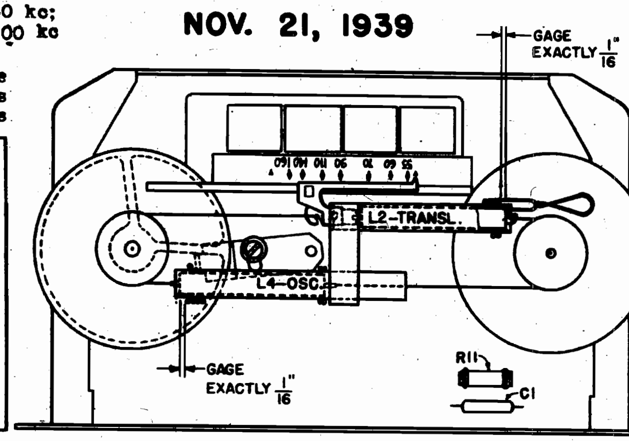
POWER OUTPUT:
Type . . . . .Beam Tube
Undistorted . . . . 0.8 watts
Maximum . . . . 1.4 watts



LOCATIONS OF PARTS UNDER CHASSIS



LOCATIONS OF PARTS ON TOP OF CHASSIS



CORE DRIVE ASSEMBLY

MODELS 6407,6408,6409
Changes to Chassis
MODELS 6407A,6408A,6409A
Ch.101.567-3,-3A,-3B
Schematic,Voltage

SEARS, ROEBUCK & CO.

ADDITION OF SUFFIX NUMBERS -1 AND -2 TO CHASSIS IDENTIFICATION NUMBER:

In order to broaden the selectivity somewhat, chassis identified with the addition of suffix number, -1, have had the connections of the 1st I.F. Transformer reversed so that the blue wire goes to B+ and the red wire to the 12A8GT plate. This decrease in selectivity improves the repeat accuracy of the push button setting. Some of these sets also have a 22M ohm resistor in.place of the 47M ohm resistor, R2.

Chassis identified by the addition of suffix number, -2, have a different 1st I.F. Transformer, part number 10133421701, and a different 2nd I.F. Transformer, part number 1013343171, giving a still greater decrease in selectivity and a still further improvement in repeat accuracy of the push button settings. The value of R2 in these chassis is 22M ohms.

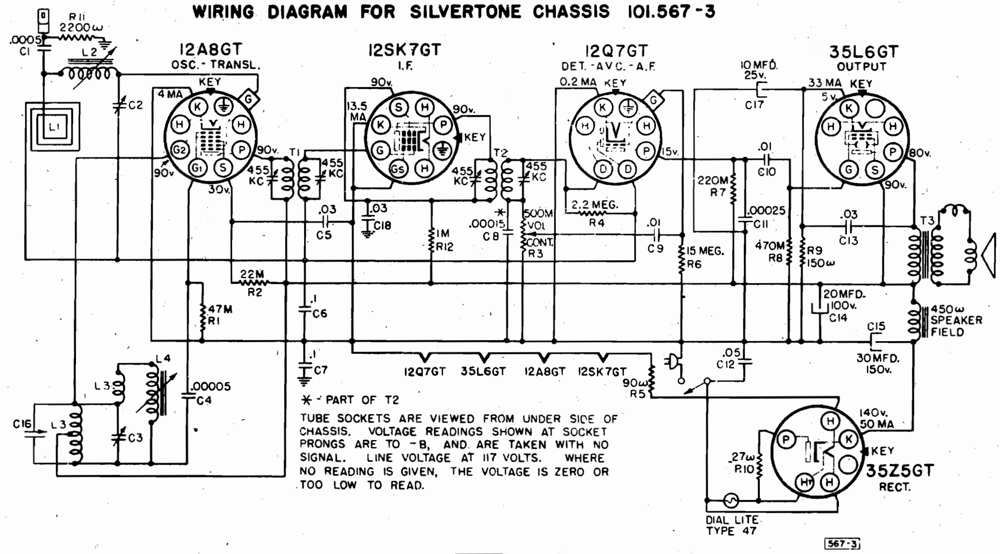
SUBJECT: ADDITION OF SUFFIX NUMBER -3 TO CHASSIS IDENTIFICATION NUMBER:

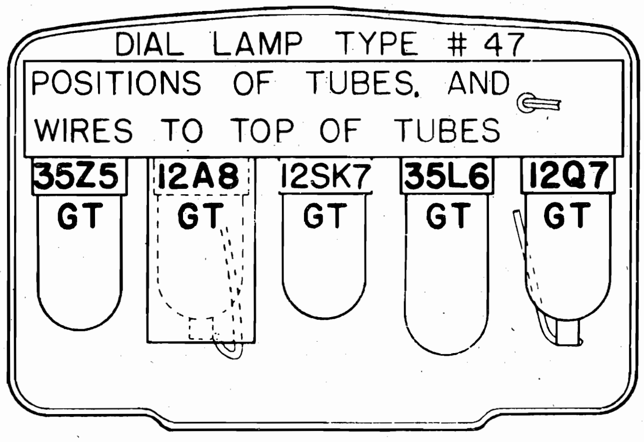
Chassis identified by the addition of suffix number 3 (plus any suffix letter) to the identification number use a 12SK7GT IF tube instead of a 12K7GT. In addition, the positions of the 12Q7GT Detector and 35L6GT Output tubes have been interchanged. The revised Wiring Diagram and Tube Layout are shown in this supplement.

Changes in the parts are as follows:

Loop antenna changed to 1012843410; retail price 48¢.
Electrolytic condenser changed to 1012042405; retail price 59¢.
IF Input Transformer changed to 1013342406; retail price 60¢.
IF Output Transformer changed to 1013542476; retail price 60¢
1M ohm 1/3 watt Resistor, R12, added; retail price 15¢.
.03 mfd., 200 volt Condenser, C18, added; retail price 7¢.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.567-3





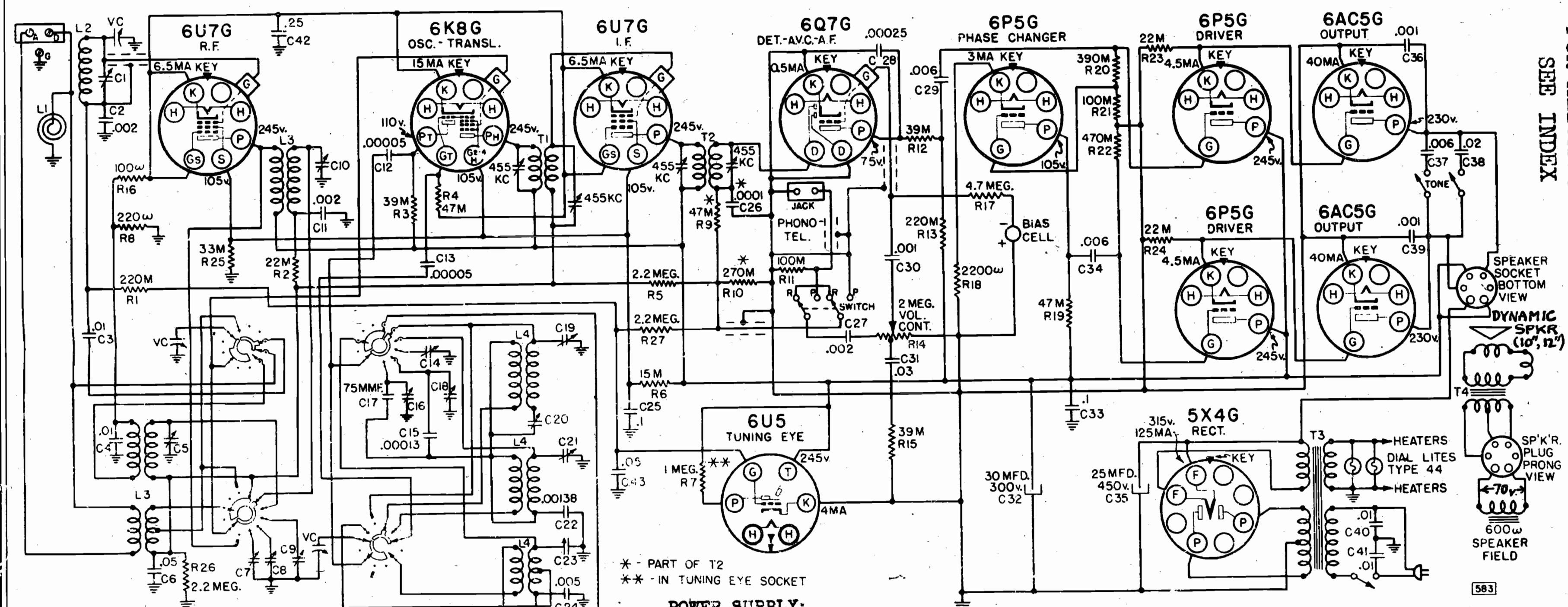
FOR ALIGNMENT
SEE INDEX

FEB. 13, 1940

MODELS 6438,6438A,6439
Chassis 101.583
Schematic,Voltage,Chassis
Tuner,Socket,Trimmers
CHASSIS 101.583-1
Socket,Trimmers,Chassis

SEARS, ROEBUCK & CO.

FOR ALIGNMENT SEE INDEX



* - PART OF T2
** - IN TUNING EYE SOCKET

CHASSIS 101.583

POWER SUPPLY:
All models available . . . . 105-125 volts, 50-60 cycles; 105 watts
All models available . . . . 105-125 volts, 25-60 cycles; 110 watts

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

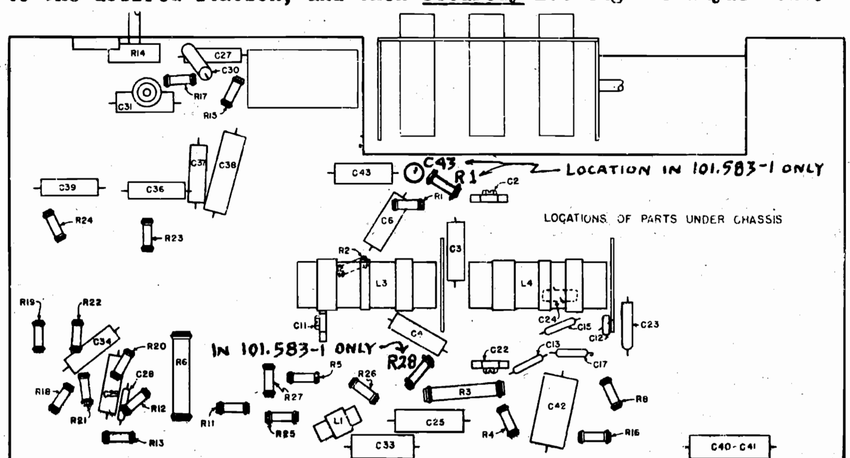
PUSH BUTTON TUNING MECHANISM:

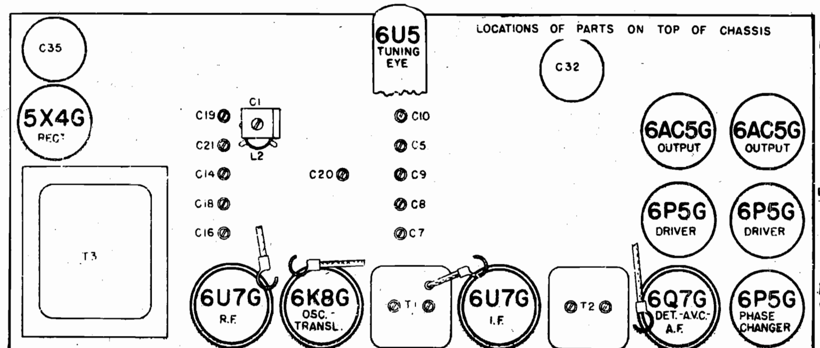
The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, holding the plunger all the way in and tuning to the desired station, and then securely locking the adjustment.

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER OUTPUT:
Type . . . . . Push pull direct coupling
Undistorted . . . . 6 watts
Maximum . . . . 10 watts

JULY 21, 1939

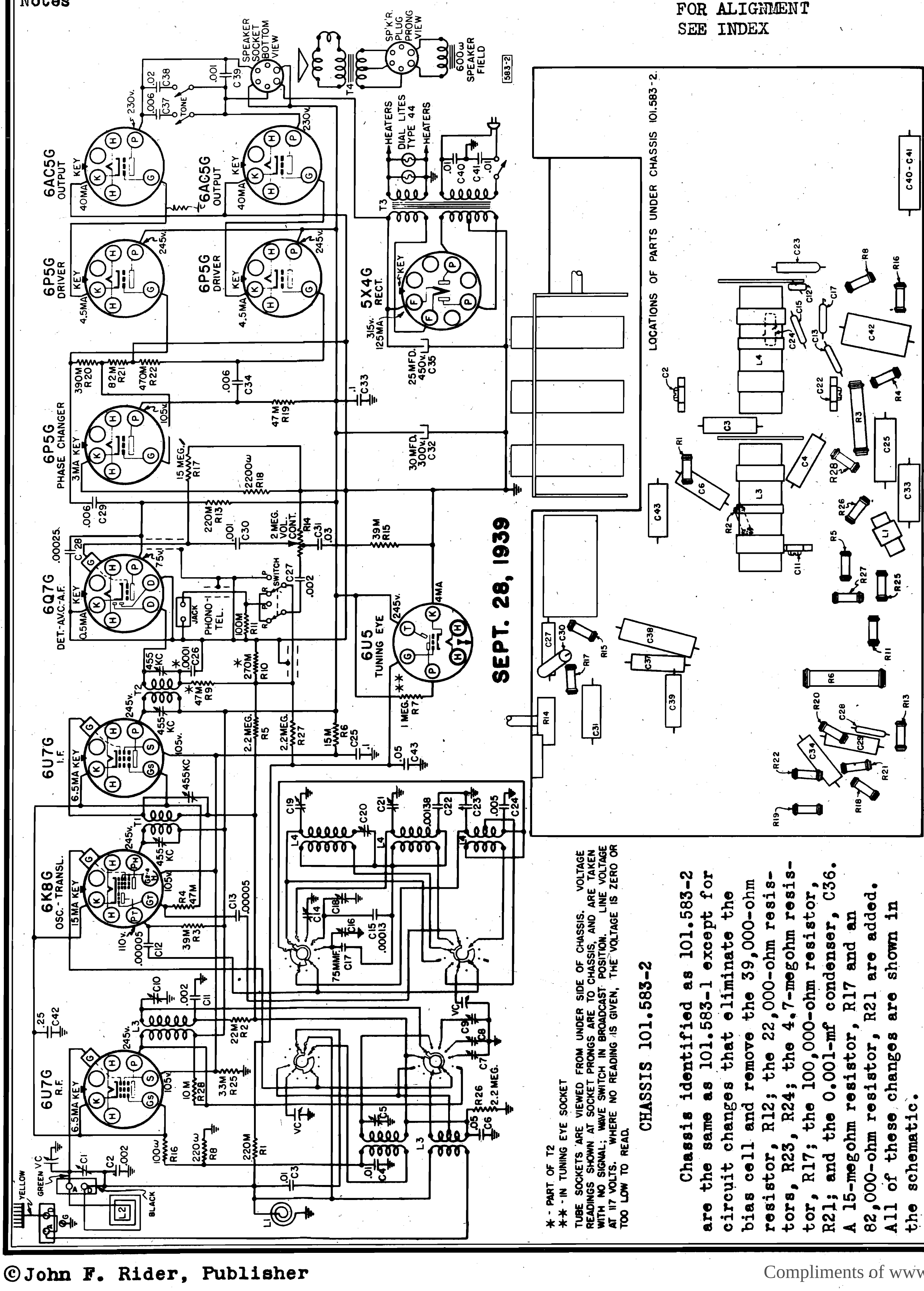




MODELS 6438B, 6439A, 6440
Chassis 101.583-2
Schematic, Voltage, Chassis
Notes

SEARS, ROEBUCK & CO.

FOR ALIGNMENT
SEE INDEX



* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

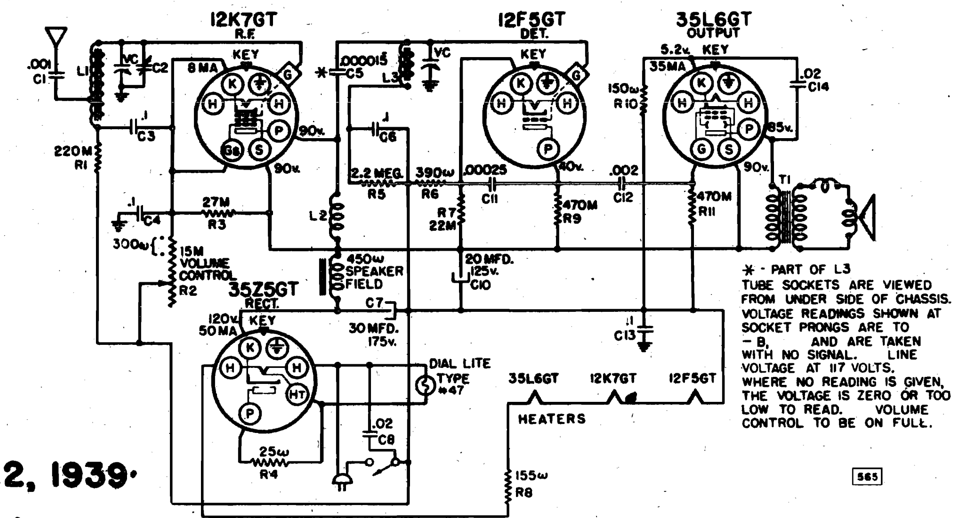
CHASSIS 101.583-2

Chassis identified as 101.583-2 are the same as 101.583-1 except for circuit changes that eliminate the bias cell and remove the 39,000-ohm resistor, R12; the 22,000-ohm resistors, R23, R24; the 4.7-megohm resistor, R17; the 100,000-ohm resistor, R21; and the 0.001-mf condenser, C36. A 15-megohm resistor, R17 and an 82,000-ohm resistor, R21 are added. All of these changes are shown in the schematic.

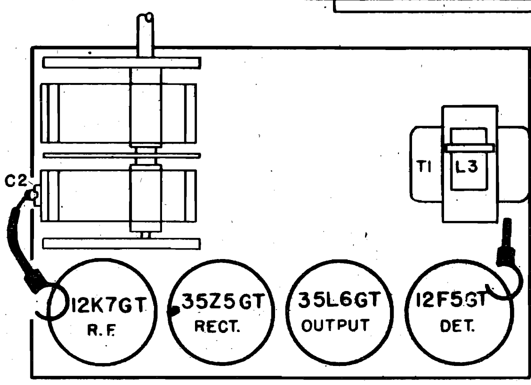
Schematic, Voltage, Chassis Socket, Trimmers, Alignment Notes

SEARS, ROEBUCK & CO.

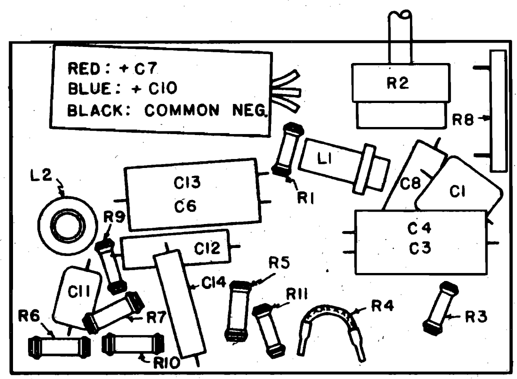
MODELS 6400, 6401, 6402
Ch. 101.565, 101.565-A, -B
MODELS 6400A, 6401A, 6402A
Ch. 101.593, 101.593-A, -B



SEPT. 22, 1939.



LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS

POWER SUPPLY:
All models available . . . . 105-125 volts; AC-DC, 30 Watts

POWER OUTPUT:
Type . . . . Beam Tube
Undistorted . . . . 0.65 watts
Maximum . . . . 0.85 watts

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 3-1/2 inch
Field coil resistance . . . 450 ohms
Field coil voltage drop. . . 30 volts

ALIGNMENT PROCEDURE

Either a broadcast signal of about 1400 kc or a test oscillator signal may be used. If a broadcast signal is used, the antenna of the receiver should be extended as in a normal installation. If a test oscillator signal is used, a wire should be connected to the test oscillator output and run parallel to but insulated from the receiver's antenna wire.

Tune in the 1400 kc signal and adjust the trimmer of the variable for maximum loud speaker response. This can be done most accurately if the volume control setting is reduced to give low volume level. The variable should be rocked a degree or two during the adjustment.

SUFFIX LETTERS "A" & "B"

101.565 chassis is used in the black cabinet, Catalog #6400. Suffix letter "A" is added to the chassis identification, making it 101.565-A, for the ivory cabinet, Catalog #6401. Suffix letter "B" is added, making the chassis identification 101.565-B, for the walnut cabinet, Catalog #6402.

Chassis 101.593,-A,-B is exactly the same as 101.565,-A,-B described in RL 207, except that it uses a speaker having a higher inductance field to give more satisfactory operation on 25 cycle AC. The field coil resistance is 550 ohms instead of 450 ohms as in the 101.565 speaker.

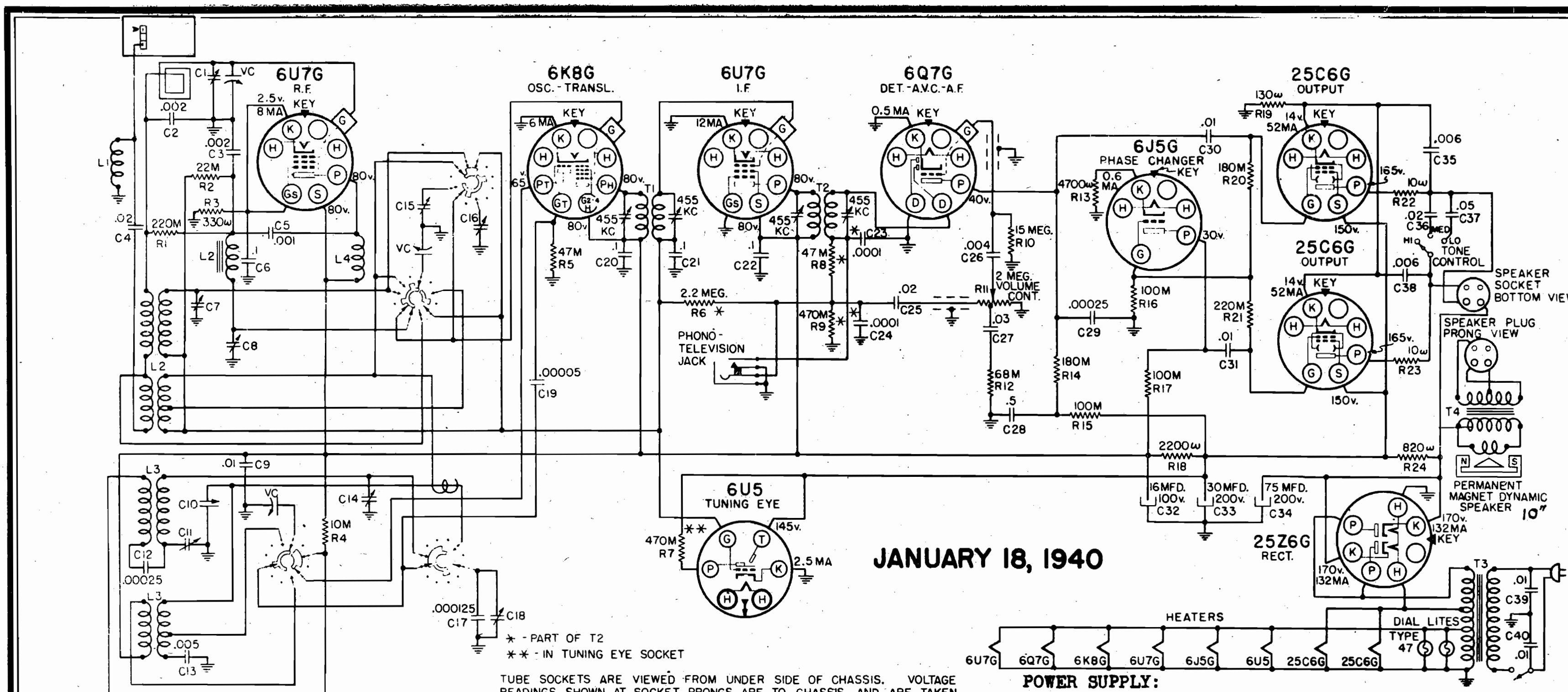
REDUCING 25 CYCLE DIAL LIGHT FLICKER:

Objectionable 25 cycle flicker of the dial light can be eliminated, at some sacrifice in illumination, by changing the connection of the 25 ohm resistor, R4, to the other side of the dial light socket lead; i.e., change the R4 connection from prong #3 of the 35Z5GT tube to prong #3.

MODEL 6441, Ch. 101.599
Schematic, Voltage, Chassis
Socket, Trimmers, Tuner

SEARS, ROEBUCK & CO.

FOR
ALIGNMENT SEE
INDEX



JANUARY 18, 1940

* - PART OF T2
** - IN TUNING EYE SOCKET

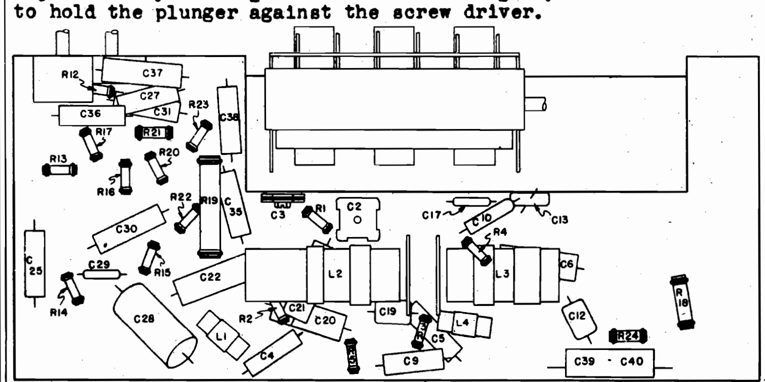
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

POWER SUPPLY:
All models available . . .105-125 v., 50-60 cycles AC; 85 watts
All models available . . .105-125 v., 25-60 cycles AC; 90 watts

POWER OUTPUT:
Type . . . . Push pull beam tube
Undistorted . . . . .5 watts
Maximum . . . . .8 watts

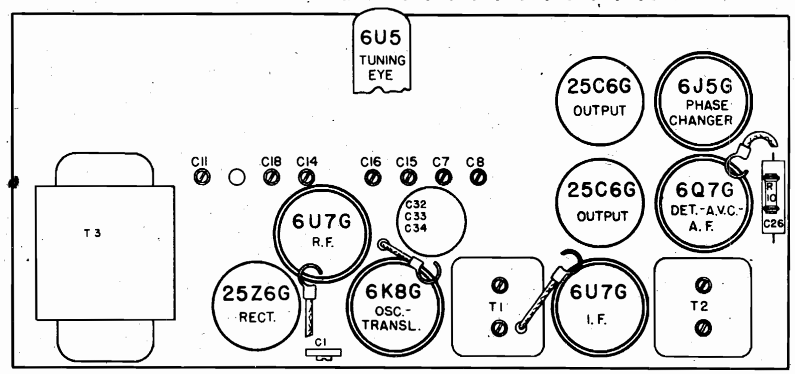
PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), releasing the plunger, then securely locking the adjustment by holding the screw driver lightly in the screw head allowing the spring tension to hold the plunger against the screw driver.



LOCATIONS OF PARTS UNDER CHASSIS - 101.599

INTERMEDIATE FREQUENCY
455 kc



LOCATIONS OF PARTS ON TOP OF CHASSIS

SEARS, ROEBUCK & CO.

MODEL 6447, Ch. 101.590, 101.590-1 to 101.590-5
Schematics, Voltage, Notes

ADDITION OF SUFFIX NUMBERS:

Chassis 101.590-1 is the same as 101.590 except that it uses a different tone arm and pickup cartridge, not interchangeable with the ones used in 101.590. Accordingly, when ordering either a tone arm or a pickup cartridge, be sure the proper part number is used and the correct chassis number indicated in the order. 101.590,-1 use a two position tone control.

101.590-2 is the same as 101.590 except for changes in the antenna circuit, including the addition of an I.F. wave trap. A continuously variable tone control is used.

101.590-3 is the same as 101.590-2 except that it uses the same tone arm and pickup that are used in 101.590-1.

POWER SUPPLY:

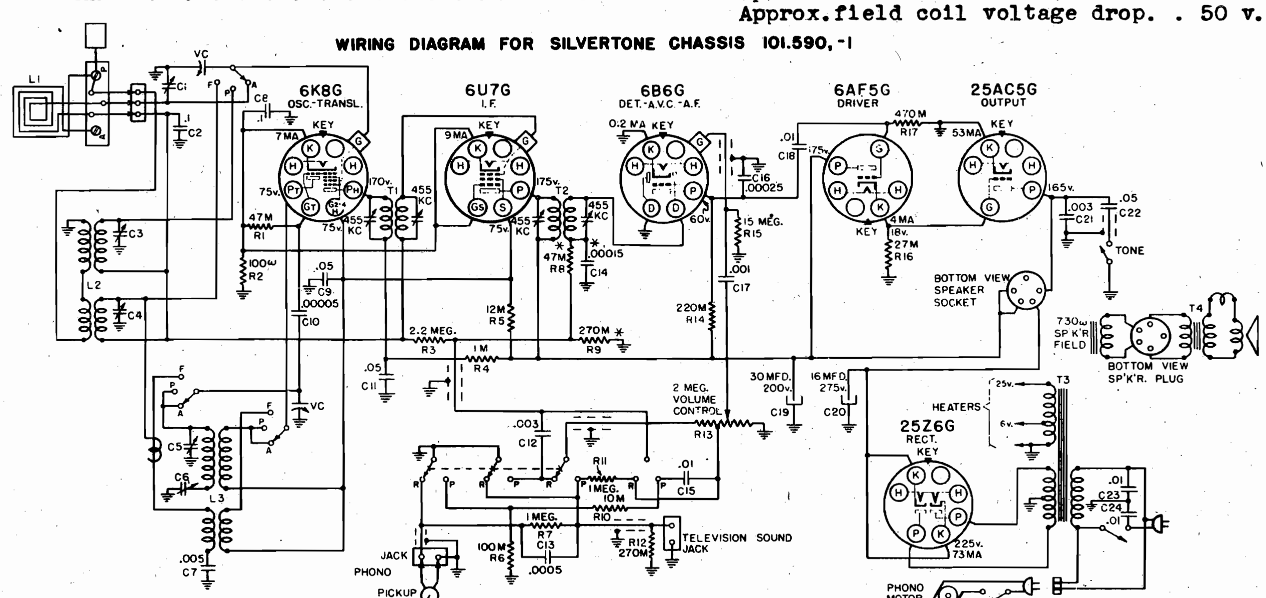
All models available . . . . 105-125 volts, 60 cycle, AC; 75 watts
All models available . . . . 105-125 volts, 50 cycle, AC; 80 watts
All models available . . . . 105-125 volts, 25 cycle, AC; 90 watts

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER OUTPUT:
Type . . . . Direct coupled
Undistorted . . . . 2-1/2 watts
Maximum . . . . 4 watts

LOUD SPEAKER:
Type . . . . Dynamic
Size . . . . 10 inch
Approx. field coil resistance. . 730 Ohms
Approx. field coil voltage drop. . 50 v.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.590, -1

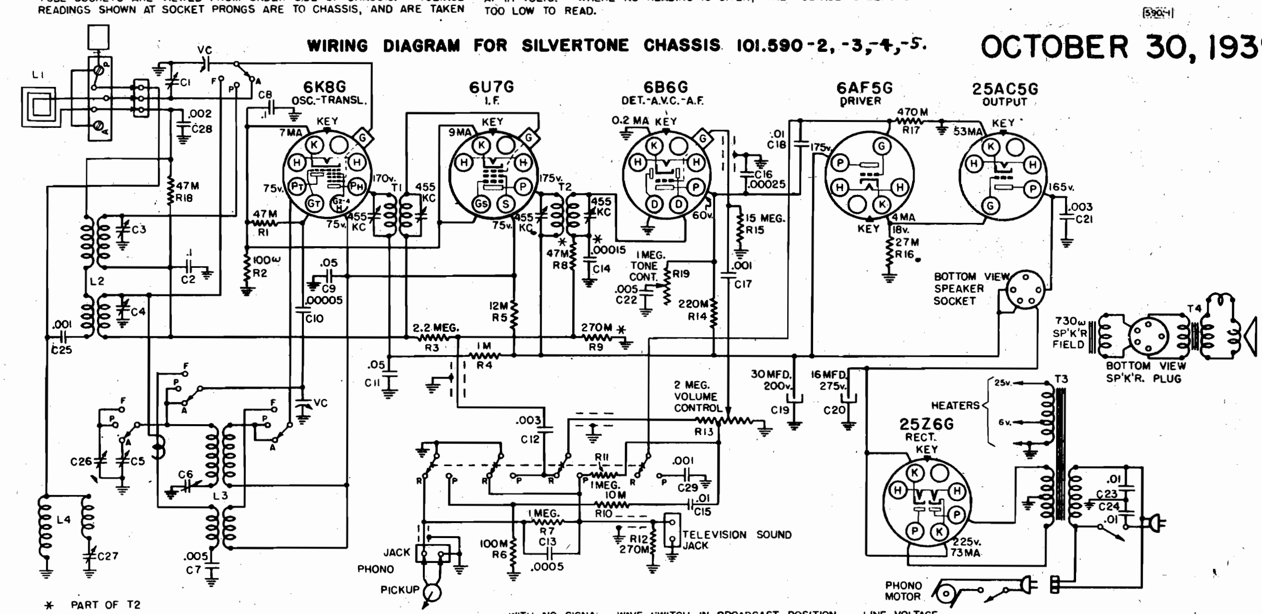


✱ PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

590-1

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.590-2, -3, -4, -5.

OCTOBER 30, 1939



✱ PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

590-2,-3

MODEL 6447
Chassis, Socket, Trimmers
Alignment, Tuner

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts . . . . 0.8 volts
Approximate microvolts input to indicate 500-milliwatts output . . . . See chart below
Connection of generator ground lead . . . . Receiver chassis
Generator modulation . . . . 30%, 400 cycles
Position of Volume Control . . . . Fully clockwise
Position of Tone Control . . . . Treble (HI)
Position of Dial Pointer with variable fully closed . . . . On mark below 550 kc calibration mark.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"AM"	600 kc	455 kc	.0002 mfd.	Ant. Clip	C27*	Wave Trap	--
"AM"	Fully open	1650 kc**	.0002 mfd.	Ant. Clip	C5	Oscillator	225
"AM"	Fully open	1550 kc***	.0002 mfd.	Ant. Clip	C5	Oscillator	225
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Clip	C1	Translator	35
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Clip	C6	Padder	100
"POL"	Fully open	2.55 mc***	400 ohms	Ant. Clip	C26***	Oscillator	--
"POL"	3.4 mc	3.4 mc	400 ohms	Ant. Clip	C3	Translator	135
"FOR"	16 mc(rock)	16 mc	400 ohms	Ant. Clip	C4	Translator	45

IMPORTANT ALIGNMENT NOTES

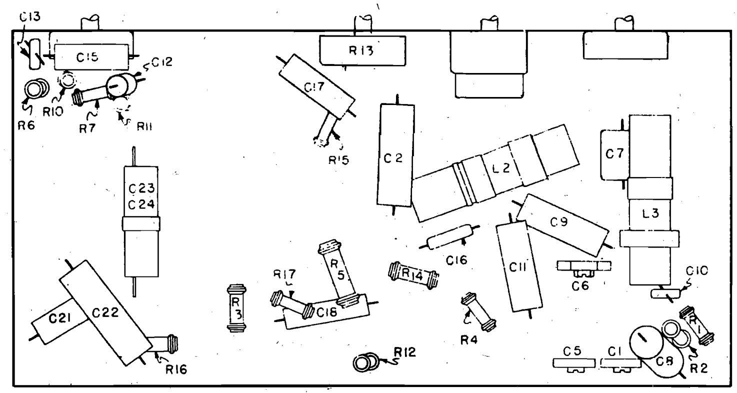
* In 101.590-2,-3 only. The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

** 101.590,-1 only. *** 101.590-2,-3 only.

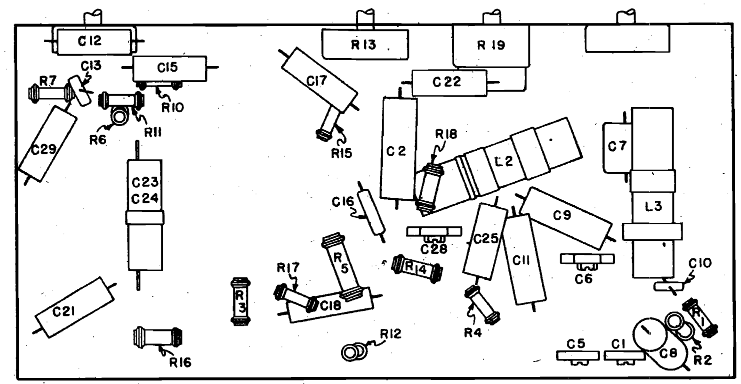
Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

The alignment procedure should be repeated stage by stage, in the original order, for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

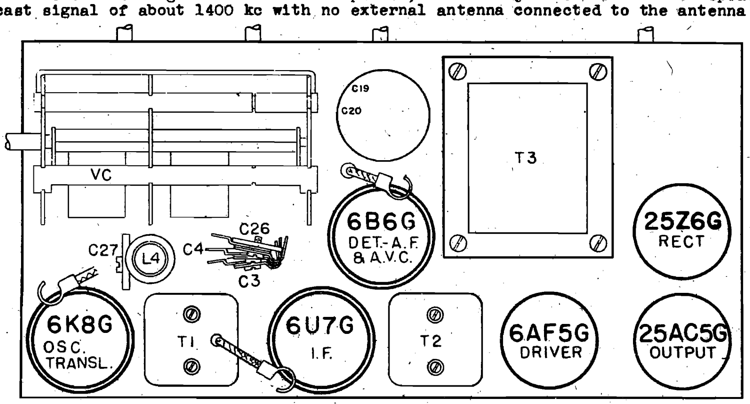
After the alignment has been completed, the C1 adjustment should be repeated on a broadcast signal of about 1400 kc with no external antenna connected to the antenna terminal.



LOCATIONS OF PARTS UNDER CHASSIS 101.590, -1



LOCATIONS OF PARTS UNDER CHASSIS 101.590-2, -3, -4, -5.



YELLOW
GREEN
BLACK

LOCATIONS OF PARTS ON TOP OF CHASSIS 101.590-2, -3, -1*

NOTE: L4, C26 and C27 shown above, are not used on Chassis 101.590-1

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), releasing the plunger, then securely locking the adjustment by holding the screwdriver lightly in the screw head allowing the spring tension to hold the plunger against the screwdriver.

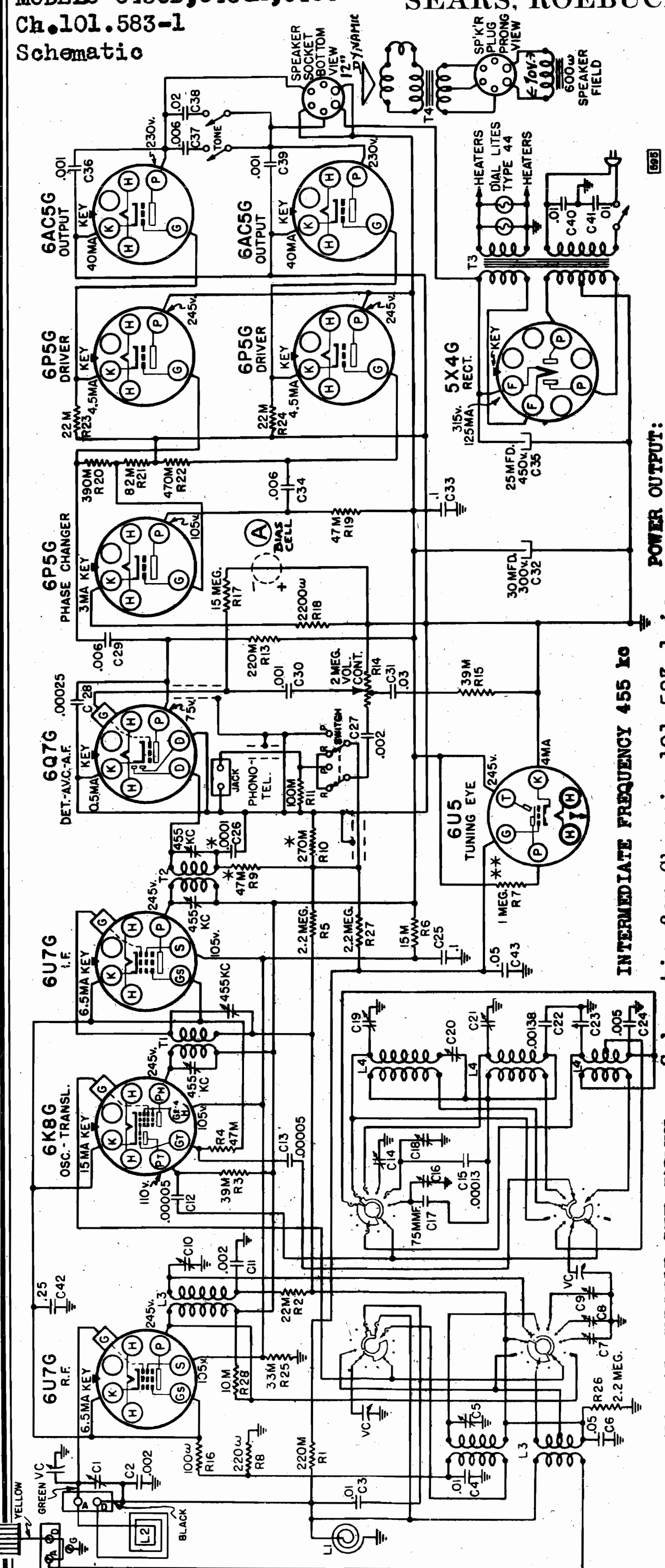
RECOMMENDED ANTENNA EQUIPMENT:

Catalog #5523: Greatest pickup and noise reduction.
Catalog #5522: Less effective pickup and noise reduction than Catalog #5523.
Catalog #5575: Conventional antenna.

MODELS 6438B, 6439A, 6497
Ch. 101.583-1
Schematic

SEARS, ROEBUCK & CO.

MODEL 6497, Ch. 101.595
Schematic, Voltage, Chassis
Socket, Trimmers



POWER OUTPUT:
Type . . . . . . Push-pull direct coupling
Undistorted . . . . 6 watts
Maximum . . . . 10 watts

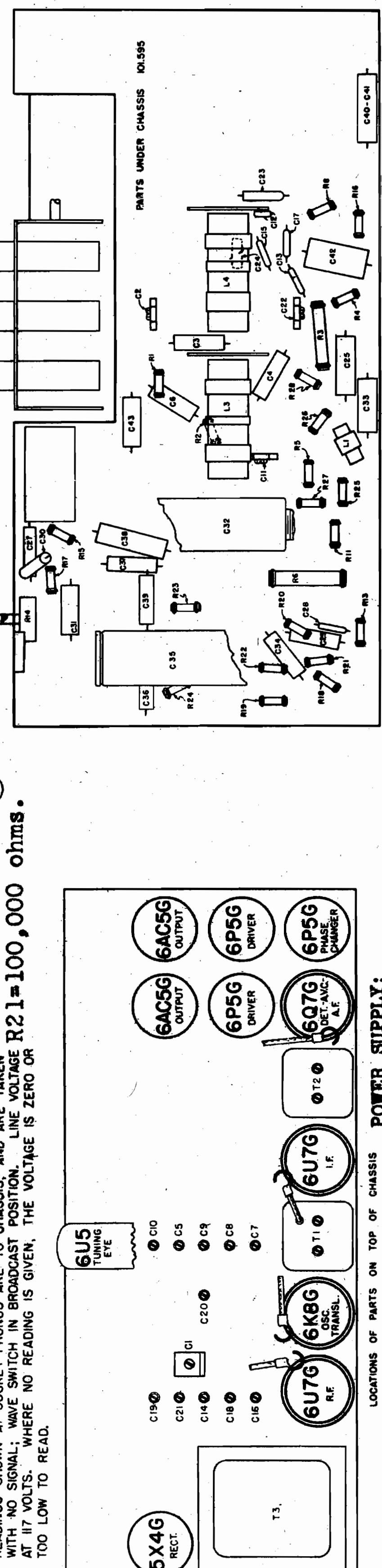
INTERMEDIATE FREQUENCY 455 kc

Schematic for Chassis 101.583-1 is the same as above except that a bias cell is added at (A) and R17=4.7 MEG, R21=100,000 ohms.

FOR ALIGNMENT SEE INDEX

* - PART OF T2
** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

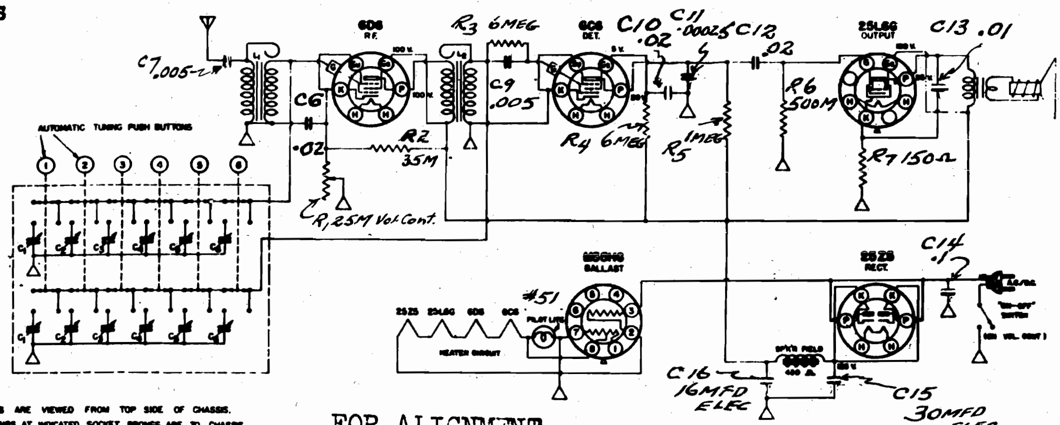


POWER SUPPLY:
All models available . . . . 105-125 volts, 50-60 cycles; 105 watts
All models available . . . . 105-135 volts, 35-60 cycles; 110 watts

NOVEMBER 24, 1939

MODEL 7219, Ch. 110. 7219
Schematic, Socket, Tuner
Trimmers

SEARS, ROEBUCK & CO.



TUBE SOCKETS ARE VIEWED FROM TOP SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES A VERY LOW READING.
VOLTAGE MEASUREMENTS TAKEN WITH 1000 OHMS PER VOLT METER AND VOLUME CONTROL ON FULL.

FOR ALIGNMENT
SEE INDEX

TUNING RANGE	CAPACITY RANGE
BUTTON NO.1 - 540-800KC.	C_1 - 150-420 MMF.
BUTTON NO.2 - 600-1000KC.	C_2 - 100-300 MMF.
BUTTON NO.3 - 600-1000KC.	C_3 - 100-300 MMF.
BUTTON NO.4 - 700-1350KC.	C_4 - 60-200 MMF.
BUTTON NO.5 - 700-1350KC.	C_5 - 60-200 MMF
BUTTON NO.6 - 950-1600KC.	C_6 - 20-140 MMF.

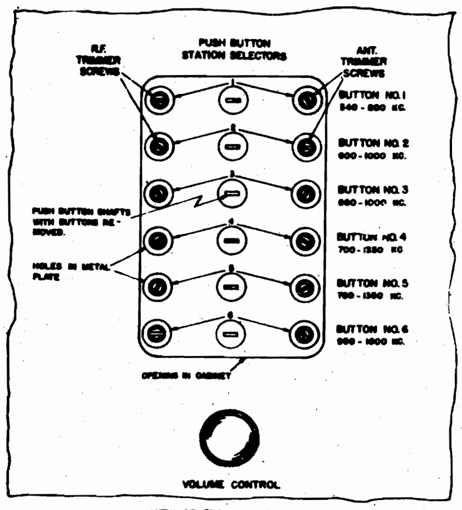
LOUD SPEAKER:
Type........................Dynamic
Size..............................5"
Field Resistance............ 450 Ohms

POWER OUTPUT:
Type..................Beam Power
Undistorted...........1.25 watts
Maximum...............1.75 watts

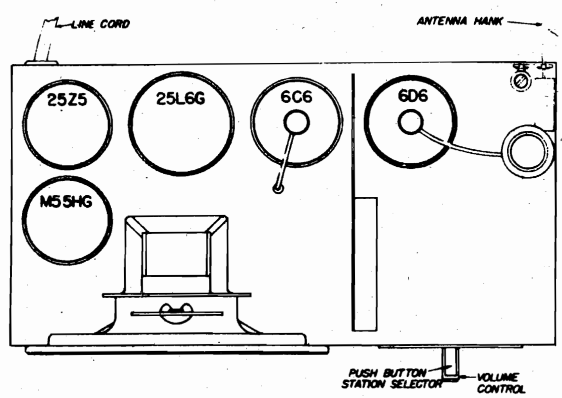
APRIL 26, 1939

POWER SUPPLY
All models available. . . . . . .D.C.
or 105-125 volts, 50-60 cycle A.C. 40 watts

FREQUENCY RANGE:
Broadcast . . . . . .540-1600 KC



VIEW OF FRONT PANEL WITH PLAQUE REMOVED



INSTRUCTIONS FOR AUTOMATIC TUNING

Unscrew the wooden plaque through which the push buttons emerge, by removing the screws located at the top and bottom of the plaque.

From the figure shown, determine which pair of trimmer screws have a range including that frequency. For example: The station you might wish to receive may have a transmitting frequency of 590 kc. Since the range of the button No. 1 is 540-800 kc., 590 kc. would be included in this range.

Push that button "IN"

If the frequency of the desired station is higher than that of the station to which it has already been tuned at the factory, turn the Antenna and R.F. trimmer screws to the LEFT slowly until the desired station is heard. If the frequency of the desired station is lower than that of the station to which the trimmers have been adjusted at the factory, turn the trimmer screws to the RIGHT until the station is heard.

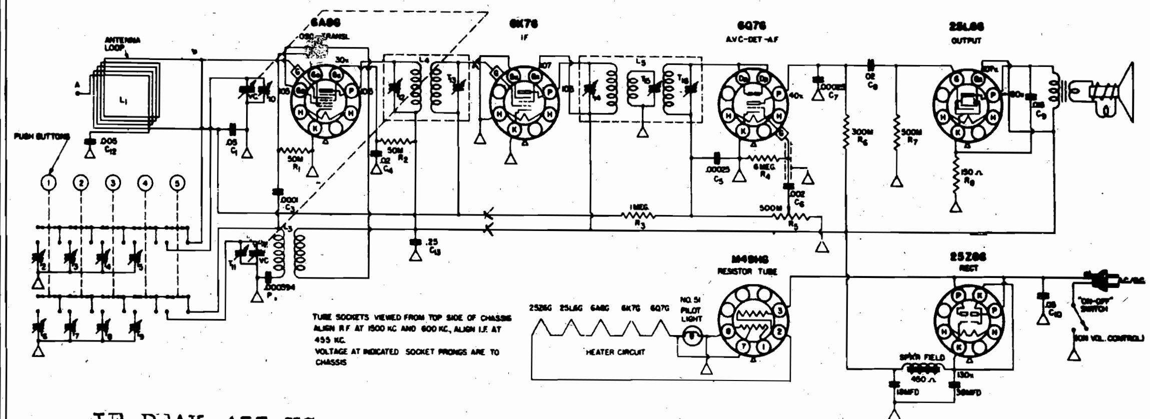
Alternately adjust the R.F. and Antenna trimmers, each time giving screws about 1/8 turn, until maximum volume is obtained. This completes the adjustments for one station.

Note: In some cases, it may be desirable to readjust the trimmers slightly for maximum volume after the set has been unpacked. Rough handling in transportation may have disturbed the trimmer settings.

SEARS. ROEBUCK & CO.

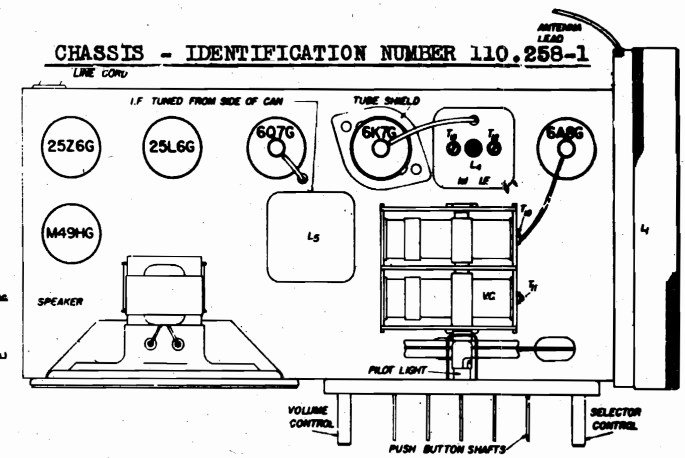
MODELS 7227,7243,Ch.110.258
7250,Ch.110.258-1
Schematic,Socket,Trimmers
Voltage

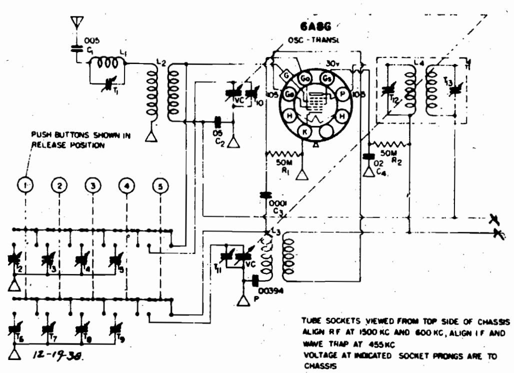
WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.258-1



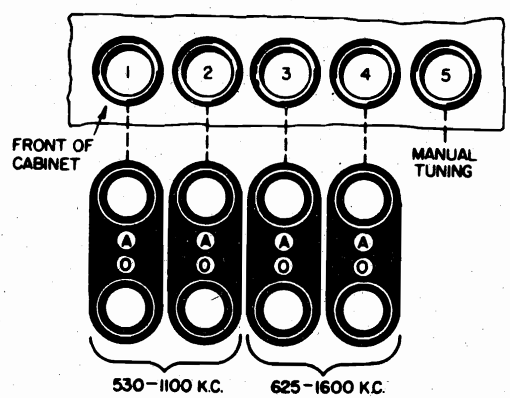
IF PEAK 455 KC

CHASSIS - IDENTIFICATION NUMBER 110.258-1



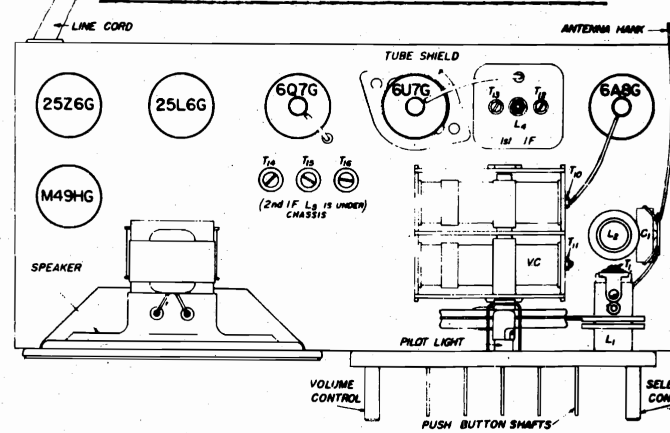


FOR SILVERTONE CHASSIS 110.258



AUTOMATIC TUNING ADJUSTMENTS

CHASSIS-IDENTIFICATION NUMBER 110.258



POWER SUPPLY:
All models available . . . . 105-125 volts, 50-60 cycle or DC, 45 watts

POWER OUTPUT:

Type	Beam Power
Undistorted	1.0
Maximum	2.4

LOUD SPEAKER:

Type	Dynamic
Size	5"
Field Resistance	450 ohms

APRIL 26, 1939

MODELS See Below
Alignment, Tuner

SEARS, ROEBUCK & CO.

MODELS 7250 CHASSIS 110.258-1; 7251 CHASSIS 110.988; 7227, 7243 CHASSIS 110.258 6327 CHASSIS 110.990.

AUTOMATIC TUNING CONTROL ADJUSTMENT

Leave the radio turned on for about 15 minutes before adjusting the push buttons. This "warming up" period will insure permanent and accurate settings.

Read the entire procedure through very carefully before attempting to set the push buttons.

1. Make a list of the stations and their frequencies (kilocycles) that you want to set up for push button tuning. It is advisable, but not necessary, to arrange the stations in the order of their frequency (kilocycles); that is, the station of the lowest frequency will be controlled by button No. 1, the station of the next higher frequency by button No. 2, etc.

2. Refer to the diagram underneath the cabinet and see which set of adjustment screws will have a tuning range that includes the frequency of the first station you wish to adjust. The frequency ranges of the adjustment screws are divided into two groups, one group covering from 530 to 1100 kc, the other covering from 625 to 1600 kc.

3. From the same diagram, after finding where the proper pair of adjustment screws are located, trace the dotted line connecting these screws to one of the push buttons. This is the button which, after the adjustments are completed, will tune in the station.

4. Push this button "IN".

5. Turn the volume control knob on full (to extreme right) and adjust screw marked "O" until the desired station is heard. If when making this adjustment, a number of stations can be brought in as the screw is turned and it is doubtful which station is the correct one, press button No. 5 (Manual Tuning) "IN" and turn the station selector knob to the number on the dial that corresponds to the frequency of the station. Listening to the program being broadcast will identify the station when adjusting screw "O".

6. Adjust the screw marked "A" for maximum volume, retarding the volume control and readjusting if necessary. This completes the adjustments for this particular station.

7. Cut out the station name from the list supplied and glue into face of button.

8. Insert celluloid disc.

9. Proceed in the same manner to adjust the tuning screws for the other stations on your list.

MODELS 7250 CHASSIS 110.258-1; 7251 CHASSIS 110.988; 7227, 7243 CHASSIS 110.258

ALIGNMENT PROCEDURE

Output meter connections . . . . Across primary output transformer

Output meter reading to indicate 0.050 watt for Weston type 571 output meter on 15 volt scale . . . . 9 volts

Average sensitivity in mv. for 0.050 watt . . . . See chart below

Dummy antenna valve in series with generator output . . . . 100 mmfds.

Connection of generator ground . . . . To chassis

MODEL 7807 CHASSIS 113.414

AUTOMATIC TUNING CONTROL ADJUSTMENT

Tune the receiver dial to any desired station, choose the push button which you wish to control this station. Unscrew the push button one full turn, then depress the button as far as it will go, release the button and turn until tight. The chosen station may always be received by depressing this button.

Remove call letter disc of station from list supplied and insert in button.

Insert celluloid disc.

In a like manner select a station for each of the other buttons and make necessary adjustments for each station.

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter connection . . . . Across loud speaker voice coil

Output meter reading to indicate 500 milliwatts . . . . 1.2 volts

Generator ground lead connection. . . . . Receiver chassis

Dummy antenna value in series with generator output . . . . See chart below

Connection of generator output lead. . . . . See chart below

Generator modulation. . . . . 30%, 400 cycles

Position of volume control . . . . Fully clockwise

Position of tone control. . . . . Clockwise

Position of Dial Pointer with variable fully closed . . . . Over first heavy line below 550 kc

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROX. MICROVOLTS
Open	465 kc.	.1 Mfd.	6SA7 Grid	T2, T1	I.F. Output I.F. Input	100
Open	1750 kc.	.0002 Mfd.	External Aerial Terminal	C20	Oscillator	75
1400 kc.	1400 kc.	.0002 Mfd.	External Aerial Terminal	C19	Translator	50
600 kc. (Rock)	600 kc.	.0002 Mfd.	External Aerial Terminal	C3	Padder	50

Where indicated by the word "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

Generator modulation . . . . App. 30% @ 400 cycles

Position of volume control . . . . Fully clockwise

NOTE:- In the following table (A) refers to Model 7250 Chassis 110.258-1; (B) refers to Model 7251 Chassis 110.988 and (C) refers to Models 7227, 7243 Chassis 110.258

PUSH BUTTON SWITCH POSITION	POSITION OF DIAL POINTER	GENERATOR FREQUENCY	(A) GENERATOR CONNECTION	(B) GENERATOR CONNECTION	(C) GENERATOR CONNECTION	(A) TRIMMERS ADJUSTED	(B) TRIMMERS ADJUSTED	(C) TRIMMERS ADJUSTED	TRIMMER FUNCTION	(A) APPROXIMATE MICROVOLTS	(B) APPROXIMATE MICROVOLTS	(C) APPROXIMATE MICROVOLTS
Manual "IN"	* *	455 kc	6K7G, Grid	12K7GT, Grid	6U7G, Grid	T15*, T14, T16, T15, T14, T16,	T14*, T13, T15, T14, T13, T15,	T15*, T14, T16 T15, T14, T16	I.F.	5000	5000	4000
"	* *	455 kc	6A8G, Grid	12A8GT, Grid	6A8G, Grid	T 12, T 13	T12, T11	T12, T13	I.F.	90	75	58
"(C) ONLY	550 kc	455 kc			Ant.			T1	wave trap			***
"	1500 kc	1500 kc	***	***	Ant.	T11, T10	T10, T9	T11, T10	Osc., R.F.			23

IMPORTANT ALIGNMENT NOTES

It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

* First time is misaligned by loosening center screw one turn.

** Short oscillator section of variable condenser. Second I.F. alignment must be done twice to secure flat top tuning.

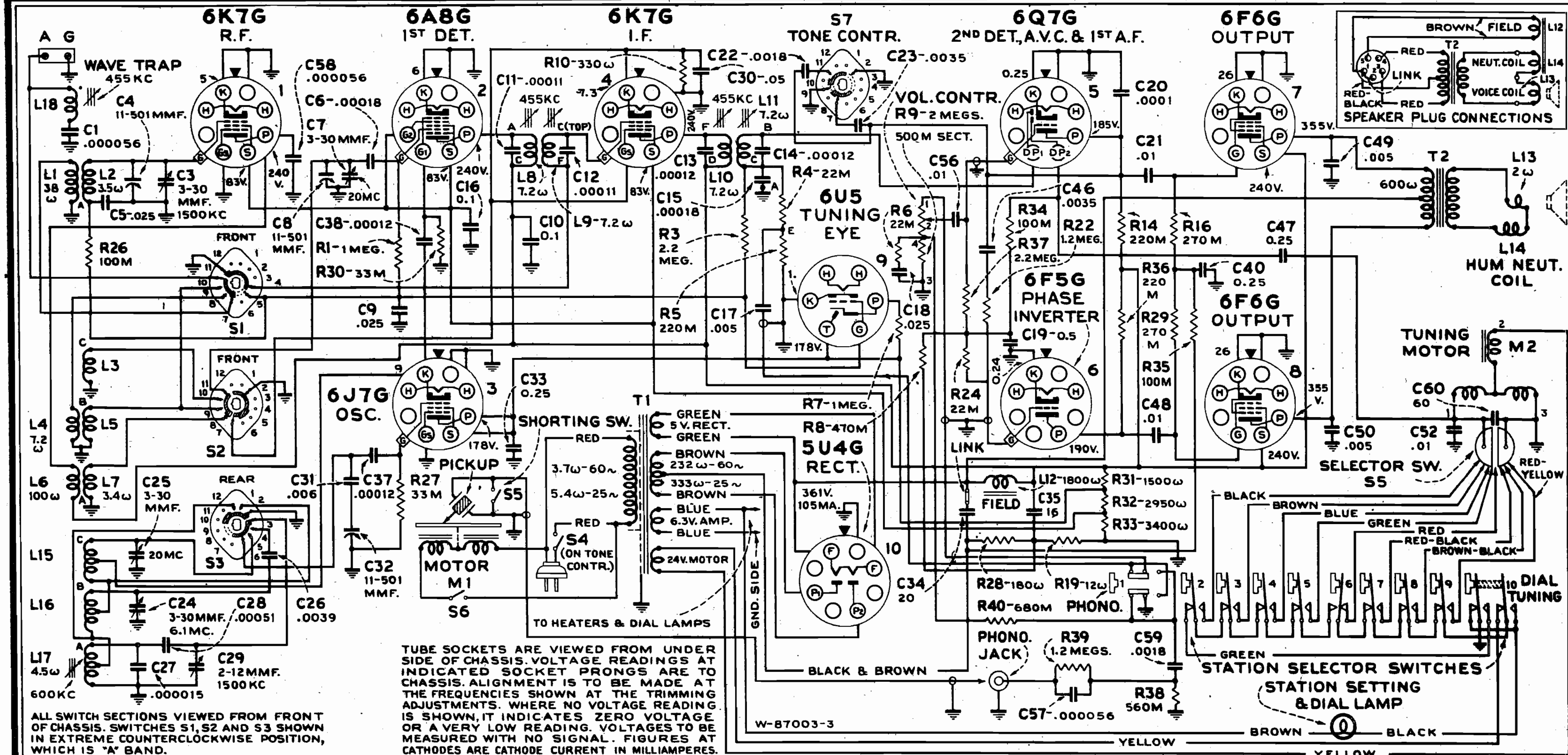
***Connect generator output to a separate radiating loop and pickup 1500 KC signal on receiver.

**** Adjust trimmer for minimum output with large signal input.

Values shown under "Microvolts" are only approximate.

SEARS, ROEBUCK & CO.

MODEL 7228, Ch. 126.206
Schematic, Voltage
Dial Drive



POWER OUTPUT:

Type	Push-Pull Pentode
Undistorted	10 watts
Maximum	12 watts

INTERMEDIATE FREQUENCY .... 455 kc

LOUDSPEAKER:

Type	Electrodynamic
Size	12 inches
V.C. Impedance	2.25 ohms at 400 cycles
Field Coil Resistance	1,800 ohms
App. Field Coil Voltage Drop	120 volts

Loudspeaker:

Centering of the loudspeaker voice-coil is done in the usual manner with three, narrow-paper or celluloid feelers, after first removing the front dust-cover by gently cutting it away. A dust-cover should be cemented back in place upon completion of the adjustment.

PHONOGRAPH:

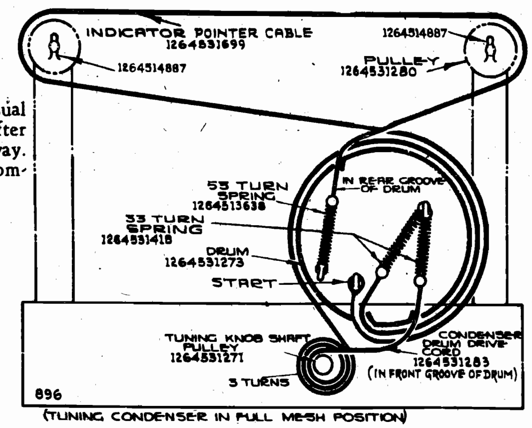
Type	Automatic—Manual
Record Capacity	Eight 10-inch or Seven 12-inch
Turntable Speed	78 R.P.M., adjustable
Type of Pickup	Crystal
Pickup Impedance	100,000 ohms at 1,000 cycles

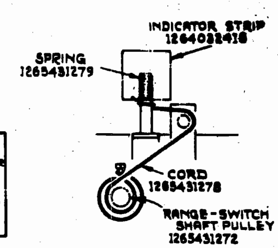
POWER SUPPLY RATINGS AVAILABLE

	Radio Only	Total
105-125 volts, 60 cycles	120 watts	150 watts
105-125 volts, 50-60 cycles	120 watts	150 watts
105-125 volts, 25 cycles	120 watts	150 watts

Dial Lamps (Three), Phonograph Compartment Lamp (One)	6.3 volts, 0.25 ampere
Pilot Lamp (One)	6.3 volts, 0.15 ampere

DIAL DRIVE HOOKUP





DECEMBER 20, 1938

MODEL 7228
Record Changer

SEARS, ROEBUCK & CO.
Automatic Record Changer

Adjustments, Notes

GENERAL INFORMATION

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc. are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

The turntable, spindle, and pinion gear are assembled by means of a 3/32 inch straight pin. This pin may be removed by gently driving with a standard pin punch.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

A shorting switch, located in the pickup head, operates due to pressure when the pickup is placed on the pickup rest.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record. — The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17". Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D".

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife. — The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustments be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H".

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

The felt washer between the turntable and spindle bearing should be soaked in light engine oil whenever the turntable is removed, or as required for proper operation.

Do not allow oil or grease to come in contact with, rubber mounting of tone arm base, rubber bumper, or flexible coupling of drive motor.

MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual mis-adjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A".
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E".
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E".
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B". Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C".
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; flexible coupling between motor and changer mechanism not correctly assembled; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H".
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed—Increase tension of pickup locating lever spring "34"

MODEL 7228
Alignment, Trimmers
Socket

SEARS. ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

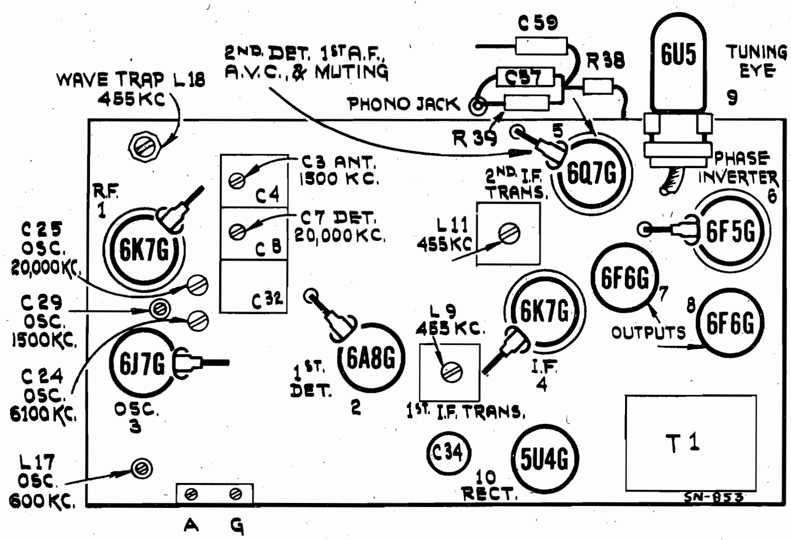
Output meter connections .... Across speaker voice coil
Output meter reading to indicate 1.0 watt output .... 1.5 volts
Approximate average sensitivity in microvolts for 1.0 watt output .... See chart below
Dummy antenna value to be inserted in series with generator output .... See chart below
Connection of generator output lead .... See chart below
Connection of generator ground lead .... To chassis
Generator modulation .... 30%, 400 cycles
Position of Volume Control .... Fully clockwise
Position of Tone Control .... Fully clockwise

Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully closed.

Dial - Indicator Adjustment. — After fastening the chassis in the cabinet, attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 540 kc end of Broadcast "A" band.



LOCATION OF PARTS AND ALIGNMENT ADJUSTMENTS ON TOP OF CHASSIS

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
"A"	Low End	455 kc	.001 mfd.	6K7-G I-F Grid	L10, L11	2nd I-F Trans.	7,600
"A"	Low End	455 kc	.001 mfd.	6A8-G Grid	L8, L9	1st I-F Trans.	130
"A"	Low End	455 kc	.0002 mfd.	Ant.	L18	Wave Trap †	——
"C"	20 mc (146°)	20 mc	300 ohms	Ant.	C25	Osc. *	——
"C"	20 mc (146°) (rock)	20 mc	300 ohms	Ant.	C7	Det. **	50
"B"	6.1 mc (139°)	6.1 mc	300 ohms	Ant.	C24	Osc. *	30
"A"	1,500 kc (150.5°)	1,500 kc	.0002 mfd.	Ant.	C29, C3	Osc., Ant.	—
"A"	600 kc (31°) (rock)	600 kc	.0002 mfd.	Ant.	L17	Osc.	3
"A"	1,500 kc (150.5°)	1,500 kc	.0002 mfd.	Ant.	C29, C3	Osc., Ant.	5

IMPORTANT ALIGNMENT NOTES

† Adjust wave-trap for minimum output.
* Use minimum capacity peak if two peaks can be obtained.
** Use maximum capacity peak if two peaks can be obtained.

Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set from interfering with accurate alignment.

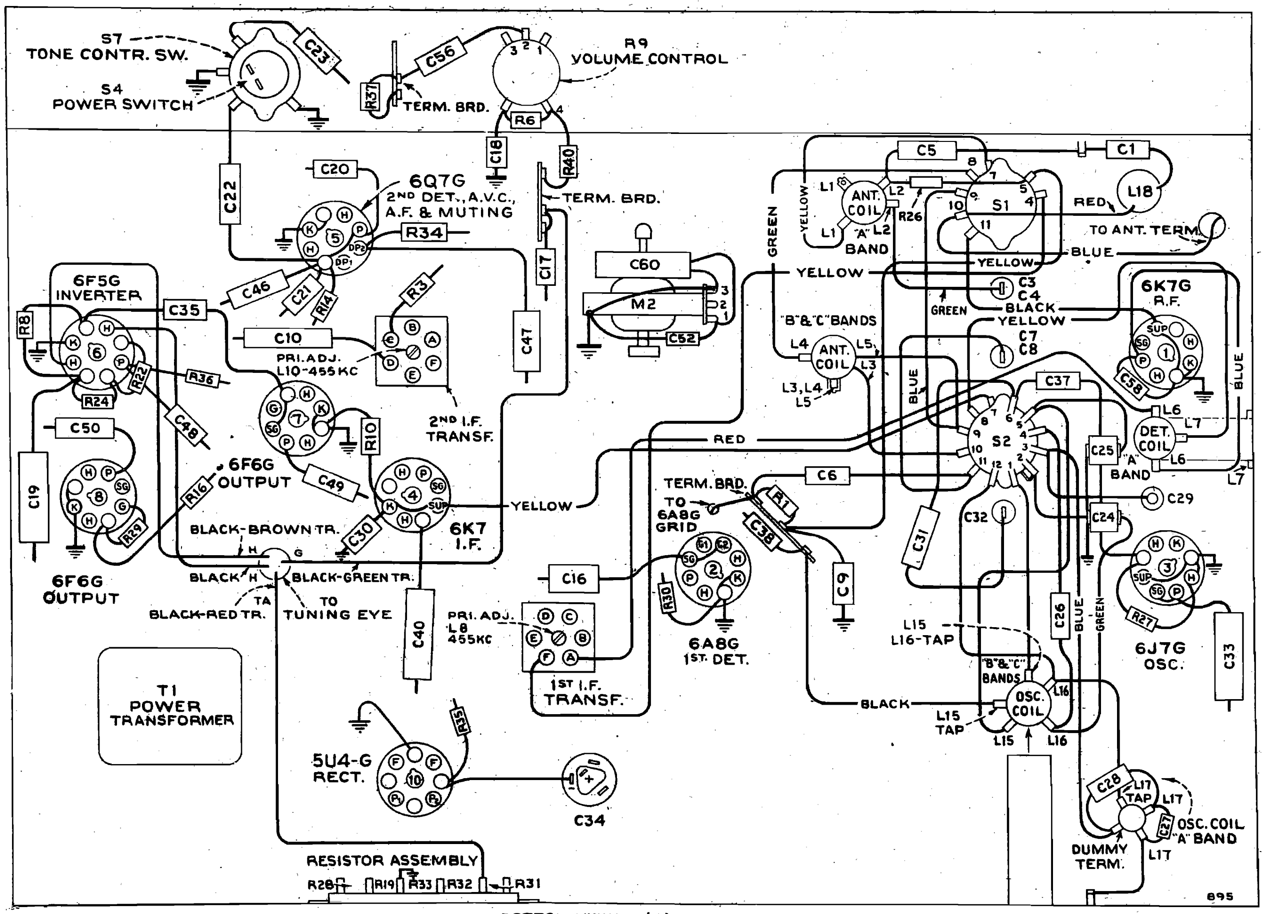
Adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band. Grid cap leads should remain in place during alignment.

Values shown under, "Microvolts," are only approximate.

MODEL 7228
Chassis Wiring,
Tuner Notes

SEARS, ROEBUCK & CO.



BOTTOM VIEW–REAR OF CHASSIS

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact (push-button adjuster pin), and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

Adjustment of Selector Disc:

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the beveled operating-end at the left (viewed from rear).

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-inch from the body of the contacts.

Muting Circuit:

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Lubrication:

Motor bearings and **gear bearings;** use light machine oil.

Gear faces, dial-indicator pulleys and **rails;** use petroleum jelly.

Selector disc; apply ***thin*** film of petroleum jelly.

Tuning Motor Replacement:

Replacements for the tuning motor (No. 1264532434, 25 cycle, and No. 1264532095, 50-60 cycle) are supplied with a spiral thrust spring on the motor shaft. This spring should be removed (with a pair of long-nose pliers) before installing the motor in the chassis.

General Information and Service Hints

Eliminating Whistle at 910 KC:

A whistle due to a beat between the second harmonic (910 kc) of the 455 kc I-F, and a 910 kc signal may be experienced. In localities where the 910 kc station is one that is frequently listened to, it will be desirable to shift the whistle to some other point where it will not be objectionable. This can be done by shifting the I-F frequency of the receiver.

Determine at what point between 880 and 940 kc the whistle will be least objectionable. Dividing this frequency by two will give the new I-F frequency to which the receiver should be aligned. For example, if it is determined that a whistle at 930 kc would not be objectionable, the I-F should be re-aligned at 930/2 or 465 kc. Try to select the new I-F frequency as close as possible to 455 kc.

An interfering whistle may also be caused by two stations having a frequency difference equal to the I-F frequency (455 kc) of the receiver. This will be evidenced by a whistle appearing when the receiver is tuned to either of the stations. It may be further localized by tuning the receiver to each of these stations and then stopping the oscillator, in each case, by grounding the oscillator stator section of the variable tuning condenser C32 (rear section) to chassis. If the whistle, in each case, still persists, it is being caused by the beat between these two stations and may be corrected by shifting the I-F frequency of the receiver to a frequency other than the difference frequency of the two local or strong signals (stations).

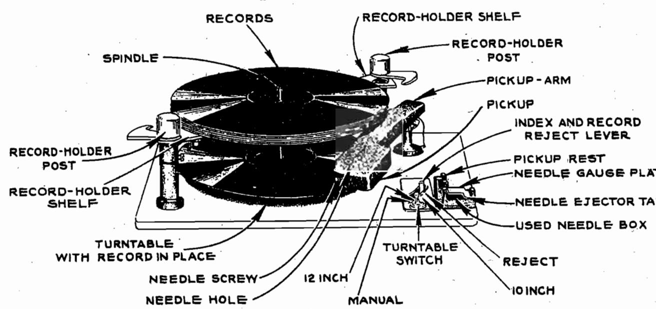
The I-F amplifier should not be shifted to a frequency higher than 470 kc, nor lower than 440 kc, but should be as close to 455 kc as possible.

Align the I-F at the new frequency and then re-align the rest of the receiver as described under "ALIGNMENT PROCEDURE."

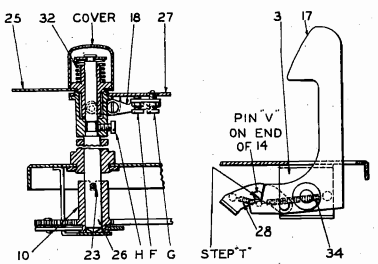
Unpacking:

Remove bracket "A" securing the pickup and needle mechanism, by removing screw "B." Also remove the red bolts "C" and "D," the paper coverings on the record posts and pickup, and the cardboard strip in the rear of the chassis. The instruction booklet and call-letter markers and covers will be found in an envelope in the record well. The knobs are in an envelope in the rear of the chassis. The wooden skids which are bolted to the bottom of the cabinet should also be removed.

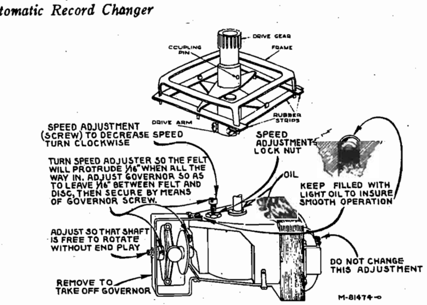
SEARS, ROEBUCK & CO.



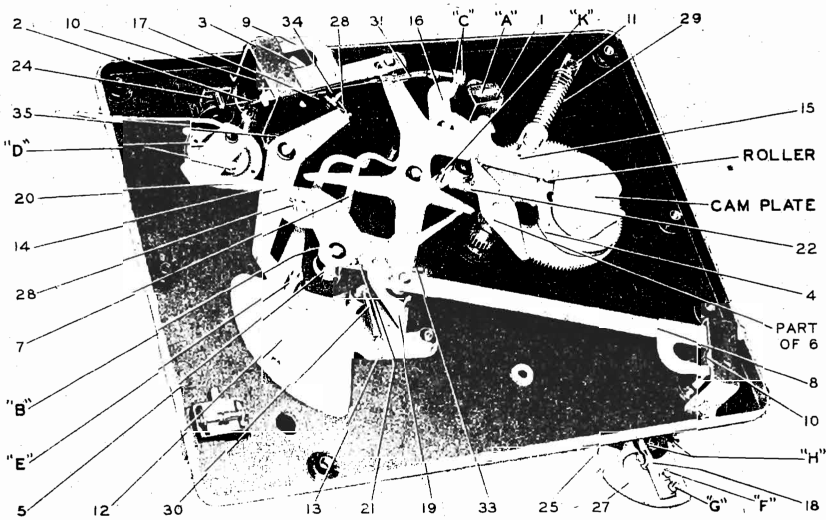
Top View of Automatic Record Changer



Details of Record Shelf Posts, and Locating Lever Assemblies



Motor Data and Coupling

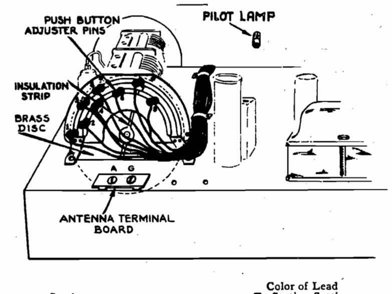


Bottom View of Automatic Record Changer

NOTE: Numbers refer to parts—letters refer to adjustments.

Adjustments for Electric Tuning

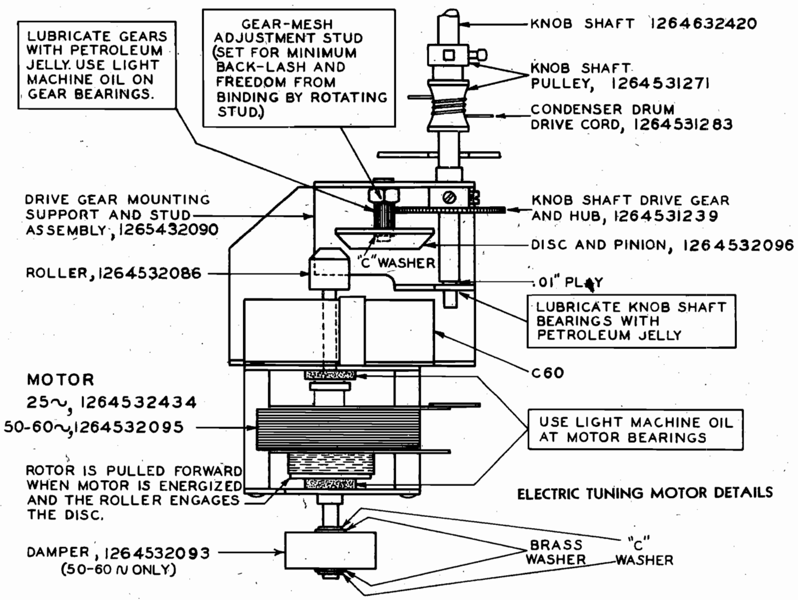
1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn band switch to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Tuning Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.



Station Button	Color of Lead To Station-Setting Contact
No. 1	Black
No. 2	Brown
No. 3	Blue
No. 4	Green
No. 5	Red
No. 6	Red-black
No. 7	Brown-black
No. 8	Red-yellow

STATION SETTING PINS

COMPONENT PARTS OF STATION SETTING CONTACT



ELECTRIC TUNING MOTOR DETAILS

MODEL 7230
Alignment, Socket
Trimmers

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections .... Across speaker voice coil
Output meter reading to indicate 1.0 watt output .... 1.5 volts
Approximate average sensitivity in microvolts for 1.0 watt output .... See chart below
Dummy antenna value to be inserted in series with generator output .... See chart below
Connection of generator output lead .... See chart below
Connection of generator ground lead .... To chassis
Generator modulation .... 30%, 400 cycles
Position of Volume Control .... Fully clockwise
Position of Tone Control .... Fully clockwise
Position of Dial Pointer with variable tuning condenser fully closed .... To fall on last calibration mark at 540 kc end of "Broadcast" band

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
Broadcast	Low End	455 kc	0.001 mfd.	6K7-G I-F Grid	L12, L13	2nd I-F Transformer	3,600
Broadcast	Low End	455 kc	0.001 mfd.	6K8 Grid	L10, L11	1st I-F Transformer	55
Broadcast	Low End	455 kc	0.0002 mfd.	Ant.	C1	Wave-Trap†	——
Short Wave	15.2 mc	15.2 mc	300 ohms	Ant.	C3	Osc.*	——
Short Wave	15.2 mc (Rock)	15.2 mc	300 ohms	Ant.	C34	Ant.**	20
Broadcast	1,500 kc	1,500 kc	0.0002 mfd.	Ant.	C6	Osc.	——
Broadcast	600 kc (Rock)	600 kc	0.0002 mfd.	Ant.	L9	Osc.	10
Broadcast	1,500 kc	1,500 kc	0.0002 mfd.	Ant.	C6	Osc.	15

IMPORTANT ALIGNMENT NOTES

† Adjust wave-trap for minimum output.
* Use minimum capacity peak if two peaks can be obtained.
** Use maximum capacity peak if two peaks can be obtained.

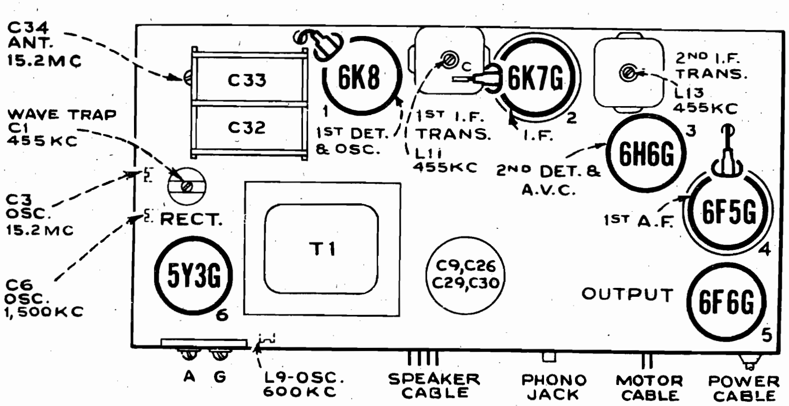
Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output of the generator at its lowest possible value to prevent the AVC action of the set from interfering with accurate alignment.

Adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band. Grid cap leads should remain in place during alignment.

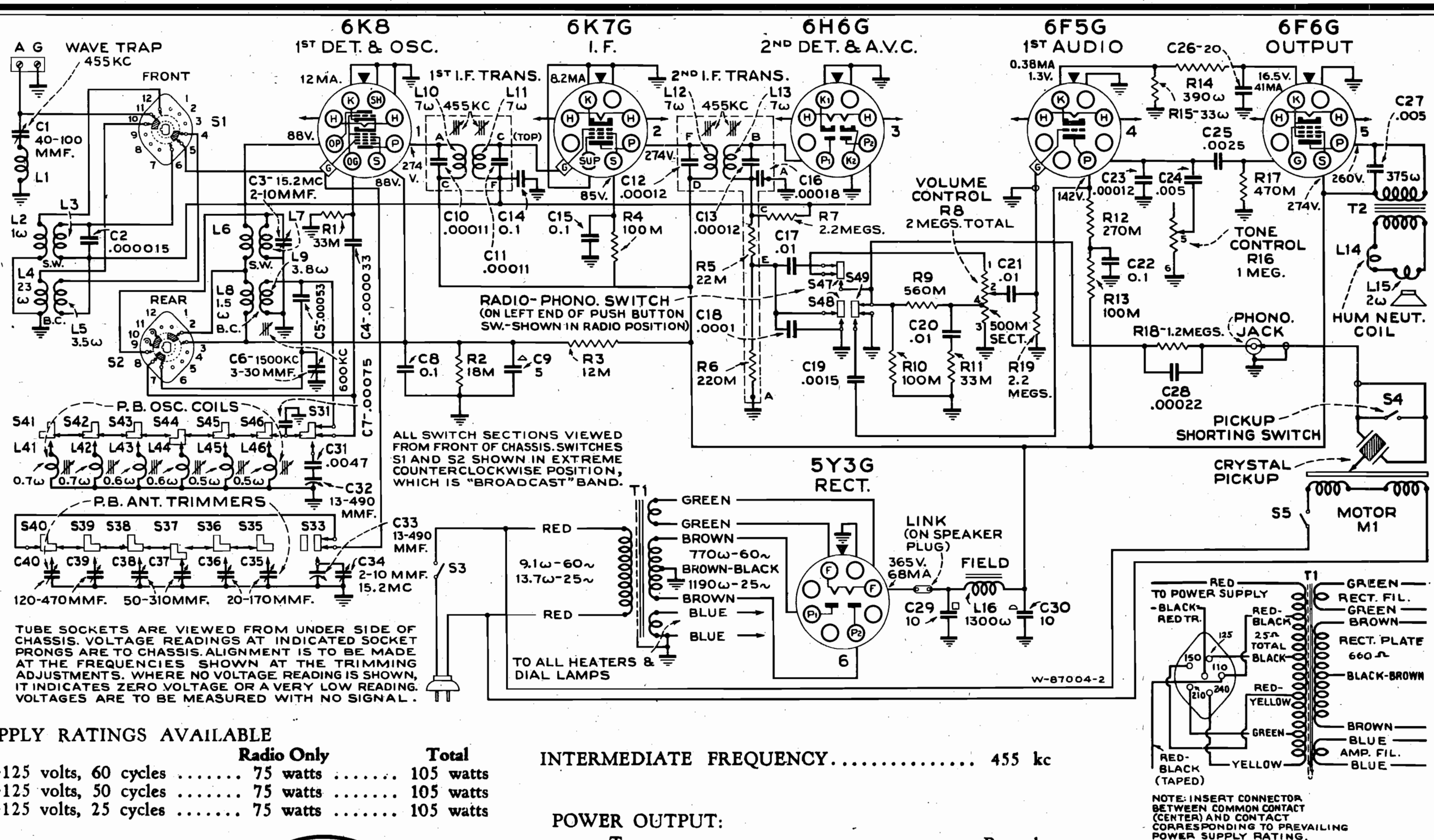
Values shown under "Microvolts" are only approximate.



LOCATION OF PARTS AND ALIGNMENT ADJUSTMENTS ON TOP OF CHASSIS

MODEL 7230, Ch. 126.208
Schematic, Voltage
Dial Drive

SEARS, ROEBUCK & CO.



Connections for 100-130, 140-160, and 200-250 volt, 50-60-cycle power transformer No. 1261031446.

POWER SUPPLY RATINGS AVAILABLE

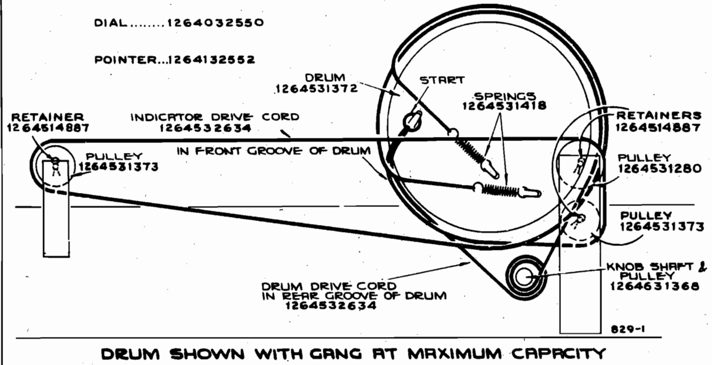
		Radio Only	Total
"A-6"	105-125 volts, 60 cycles	75 watts	105 watts
"A-5"	105-125 volts, 50 cycles	75 watts	105 watts
"B"	105-125 volts, 25 cycles	75 watts	105 watts

INTERMEDIATE FREQUENCY .... 455 kc

POWER OUTPUT:
- Type .... Pentode
- Undistorted .... 2.5 watts
- Maximum .... 4.5 watts

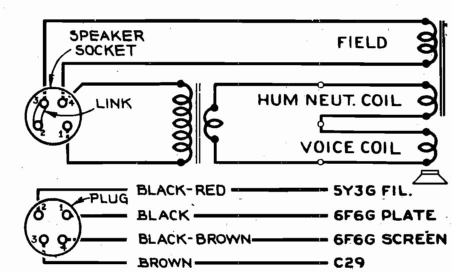
LOUDSPEAKER:
- Type .... Electrodynamic
- Size .... 12 inches
- Voice Coil Impedance...... 2.2 ohms at 400 cycles
- Field Coil Resistance .... 1,300 ohms
- App. Field Coil Voltage Drop .... 90 volts

Dial Lamps (Two) .... 6.3 volts, 0.25 ampere



DIAL DRIVE HOOKUP

DECEMBER 20, 1938

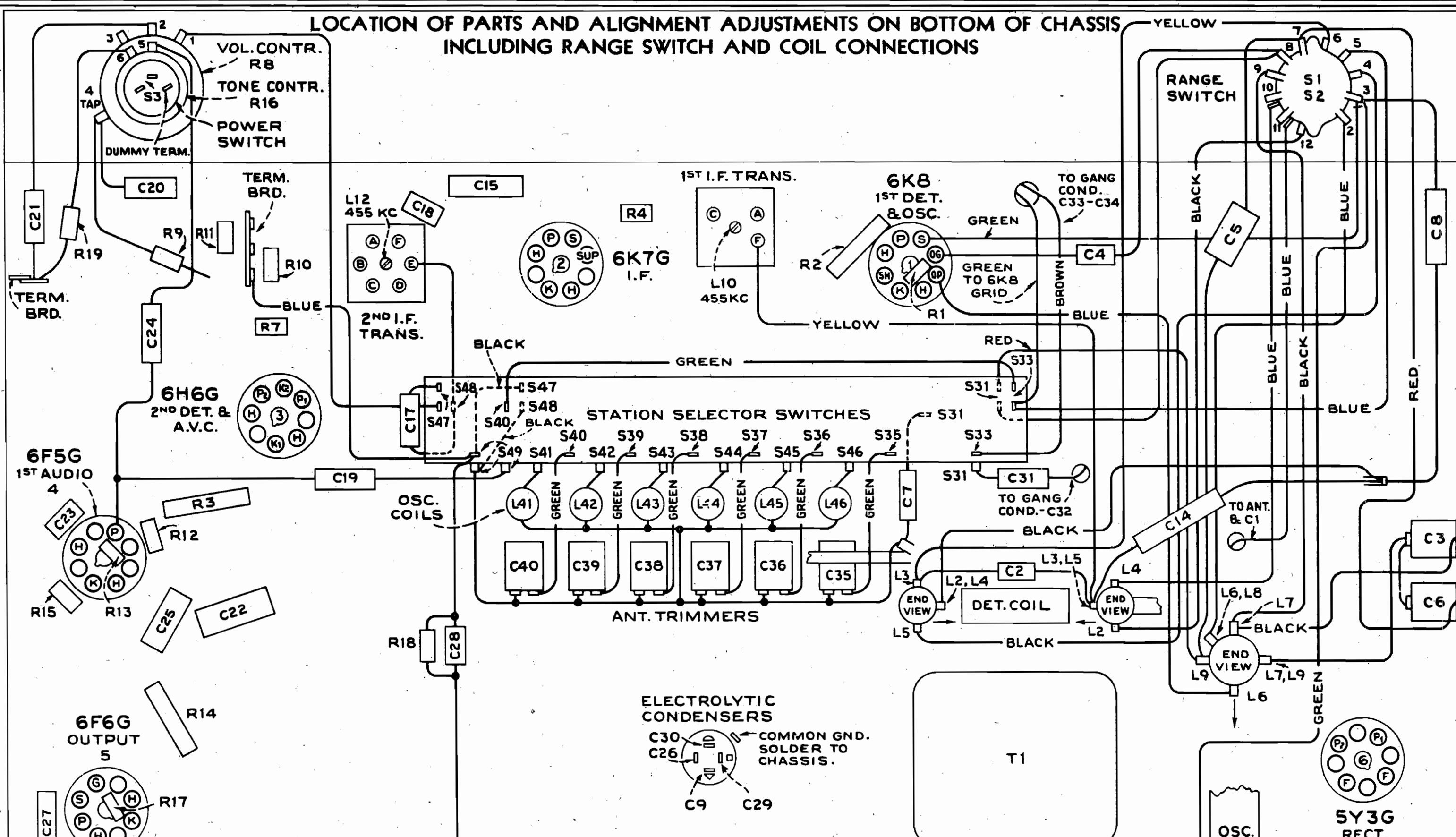


SPEAKER PLUG CONNECTIONS

MODEL 7230
Chassis Wiring
Tuner, Terminal Board

SEARS, ROEBUCK & CO.

LOCATION OF PARTS AND ALIGNMENT ADJUSTMENTS ON BOTTOM OF CHASSIS INCLUDING RANGE SWITCH AND COIL CONNECTIONS



FREQUENCY RANGES:

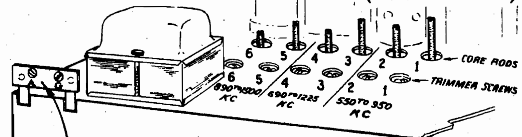
Broadcast........................ 540—1,720 kc
Short Wave....................... 5.8—18 mc

Adjustments for Push Button Tuning

Each of the six station push buttons connects to a separate magnetite-core oscillator coil and a separate antenna trimmer, both of which must be adjusted to select the desired station when this button is depressed. Use an insulated screw-driver or alignment tool, allowing at least five minutes warm-up period before making adjustments. The regular antenna should be used for the preliminary adjustments. Proceed as follows:

1. Make a list of the six desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (rear) push button, and manually tune in the first station on the list.
3. Push in station-button No. 1, and adjust No. 1 oscillator core (L41) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C40) for maximum output on this station.
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final critical adjustment of the oscillator cores, using one or two feet of wire as an antenna to ensure sharp peaking.
(NOTE: Clockwise adjustment of the oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

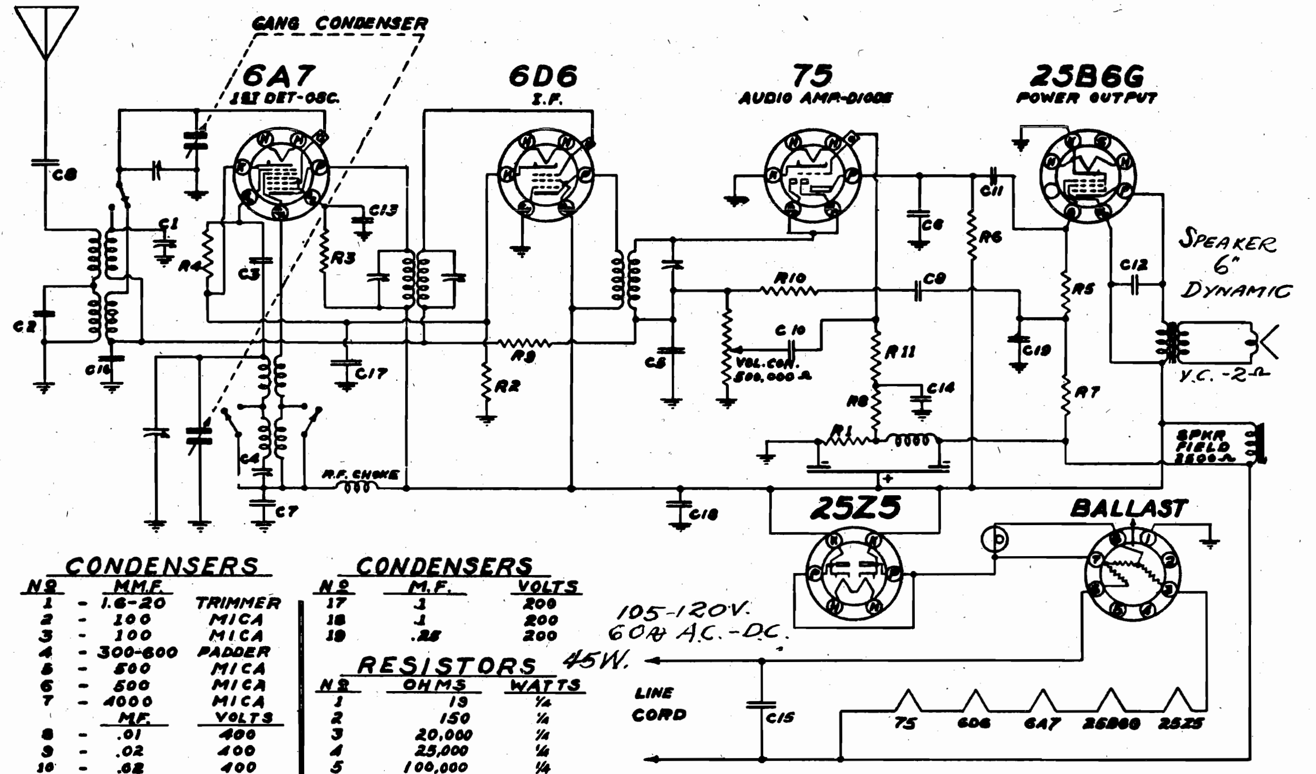
Six Push-button Tuning Ranges........... 550—1,500 kc
Two stations between approximately 550— 950 kc (Buttons 1 and 2)
Two stations between approximately 690—1,225 kc (Buttons 3 and 4)
Two stations between approximately 890—1,500 kc (Buttons 5 and 6)



ANTENNA TERMINAL BOARD

MODEL 7231, Ch. 105.6H
Schematic, Socket
Trimmers, Alignment

SEARS. ROEBUCK & CO.



IF PEAK 456 KC

CONDENSERS

NO	MMF.	
1	1.6-20	TRIMMER
2	100	MICA
3	100	MICA
4	300-600	PADDER
5	500	MICA
6	500	MICA
7	4000	MICA
	MF.	**VOLTS**
8	.01	400
9	.02	400
10	.02	400
11	.02	400
12	.02	400
13	.05	200
14	.05	200
15	.05	400
16	.1	200

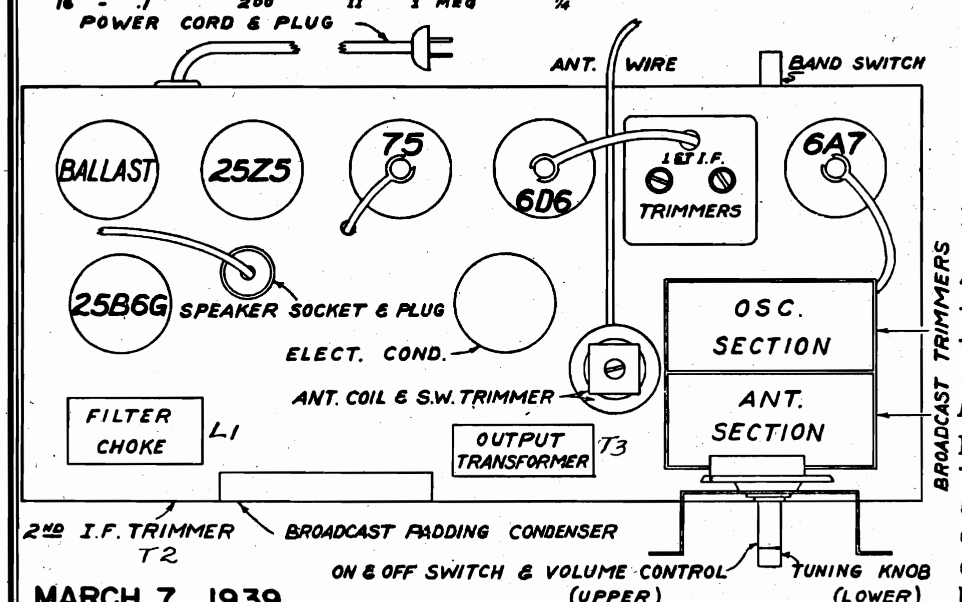
CONDENSERS

NO	M.F.	VOLTS
17	.1	200
18	.1	200
19	.25	200

RESISTORS

NO	OHMS	WATTS
1	19	1/4
2	150	1/4
3	20,000	1/4
4	25,000	1/4
5	100,000	1/4
6	250,000	1/4
7	400,000	1/4
8	500,000	1/4
9	1 MEG	1/4
10	1 MEG	1/4
11	1 MEG	1/4

POWER OUTPUT:
Type............. Pentode
Undistorted........1 watt
Maximum.........1½ watts



FREQUENCY RANGES :
535 to 1750 KC
5600 to 18100 KC

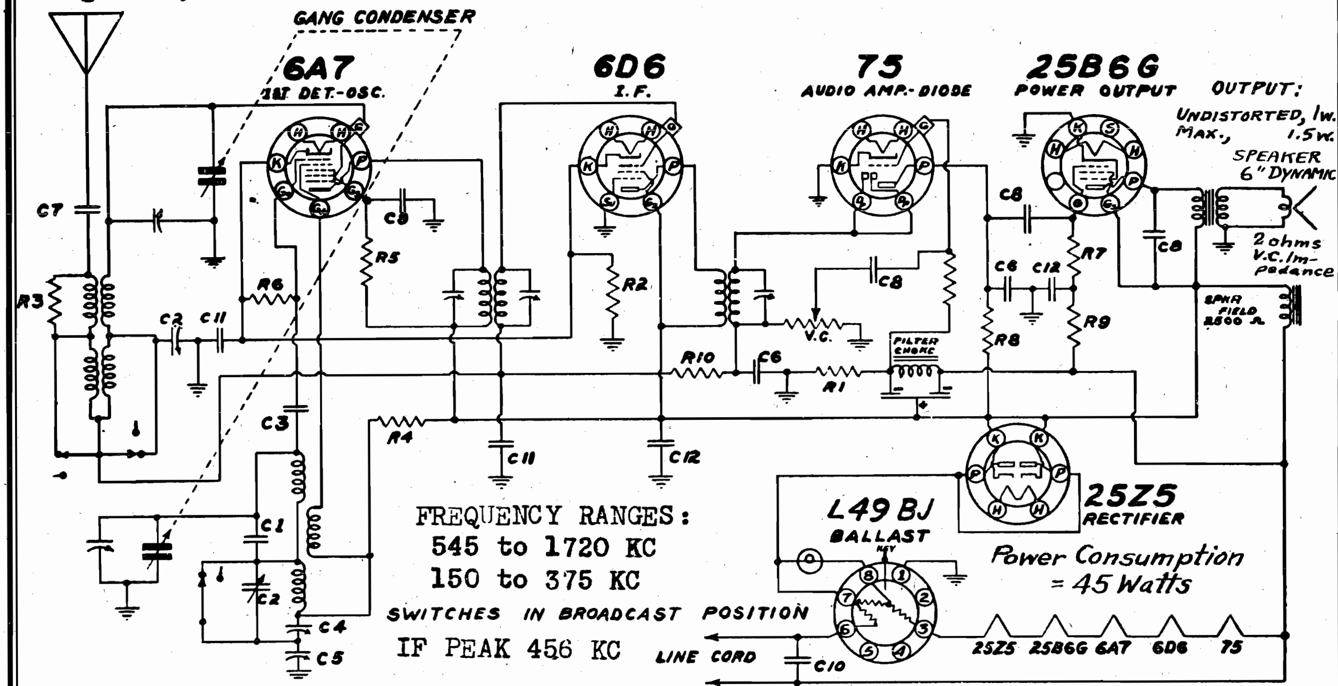
IF ALIGNMENT - Generator at 456 KC, connected to the control grid of the 6A7 tube, thru a .05 MFD condenser. Adjust IF trimmers to peak, they are located; two in transformer can above chassis, and other on front apron of chassis, is the left hand section.

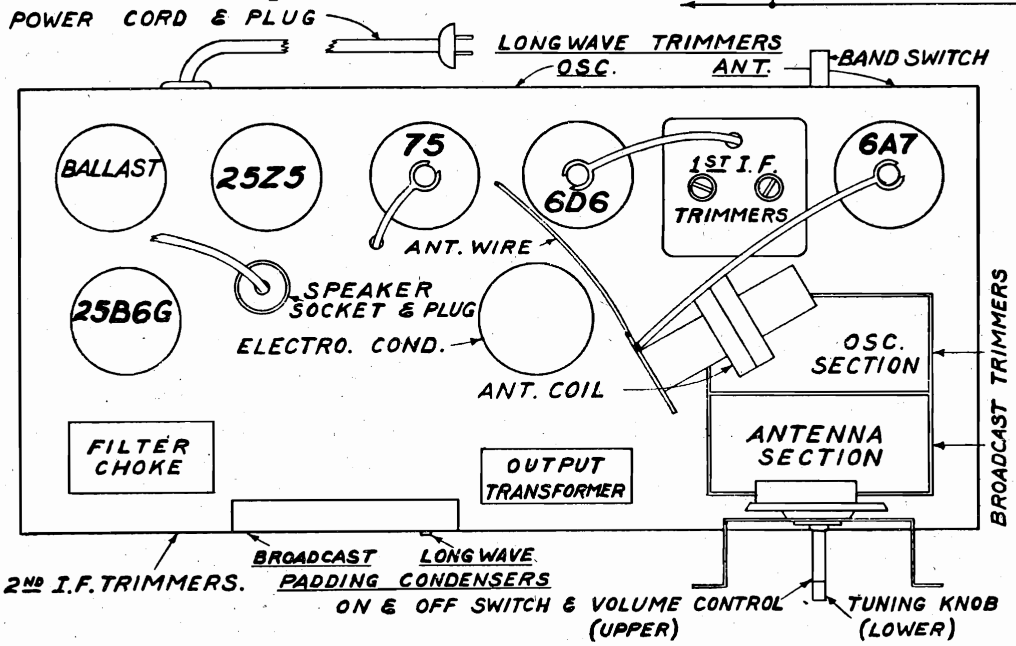
MARCH 7, 1939

BROADCAST BAND ALIGNMENT - Generator at 1400 KC, connected to antenna lead of receiver thru 100 MMFD condenser. Dial at 1400 KC, adjust rear gang condenser trimmer (OSC) to peak, then front section of gang condenser to peak. Generator at 600 KC, receiver dial at approximately 600 KC, while rocking the variable condenser across signal adjust oscillator padder to maximum peak. SHORTWAVE BAND - Generator at 600 KC, rotate condenser from high frequency end until generator signal is heard, then peak trimmer on antenna coil. No other shortwave band adjustments required on this receiver. Repeat all adjustments.

MODEL 7232, Ch. 105.6L
Schematic, Socket
Alignment, Trimmers

SEARS, ROEBUCK & CO.





CONDENSERS

No. -	M.M.F.	
C1 -	10	GIMMIK
C2 -	30-100	MICA
C3 -	100	"
C4 -	100-200	"
C5 -	300-600	"
C6 -	500	"
	M.F.	
C7 -	.01	400 V.
C8 -	.02	400 V.
C9 -	.05	200 V.
C10 -	.05	400 V.
C11 -	.1	200 V.
C12 -	.25	200 V.

RESISTORS

No. -	OHMS	WATTS
R1 -	18	
R2 - *	300	1/4
R3 -	8,000	1/4
R4 -	15,000	1/4
R5 -	20,000	1/4
R6 -	25,000	1/4
R7 -	100,000	1/4
R8 -	250,000	1/4
R9 -	400,000	1/4
R10 -	1,000,000	1/4

V.C. - 1/2 MEG. VOLUME CON.
* TOLERANCE ± 10%

MARCH 7, 1939

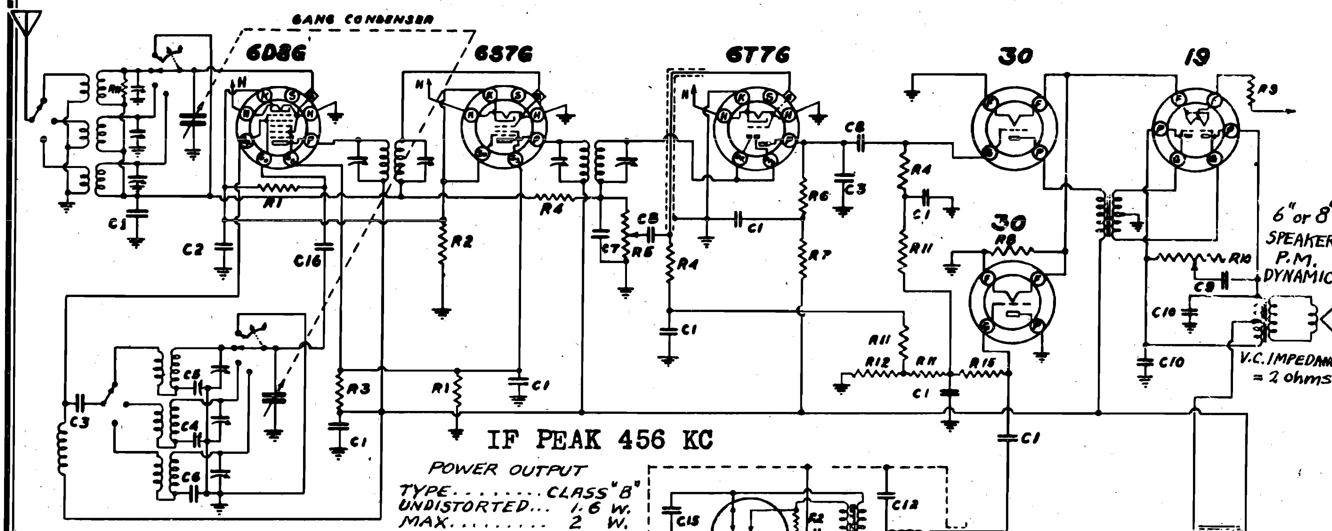
IF ALIGNMENT - Generator at 456 KC, and connected to the control grid of the 6A7 thru a .05 MFD condenser. Align the three IF trimmers to maximum peak. The three trimmers are located as follows : two are located in the IF can on the top of the chassis, the third is located on the front apron of the chassis and is the left hand section.

BROADCAST - Generator at 1400 KC, connected to the antenna thru a 100 MMFD condenser. Dial set at 1400 KC, peak rear trimmer of gang condenser (OSC), then peak front trimmer. Shift generator and dial to 600 KC, while rocking gang condenser peak the oscillator padding condenser for maximum resonance.

LONG WAVE - Generator at 375 KC, peak oscillator trimmer, gang condenser completely open. Generator at 325 KC, peak the antenna trimmer, mounted on longwave antenna coil, after signal has been found by rotation condenser from high fre-end of dial. Pad the oscillator condenser at 160 KC while rocking condenser.

MODEL 7233,Ch.105.6PU
Schematic,Socket
Alignment,Trimmers

SEARS. ROEBUCK & CO,



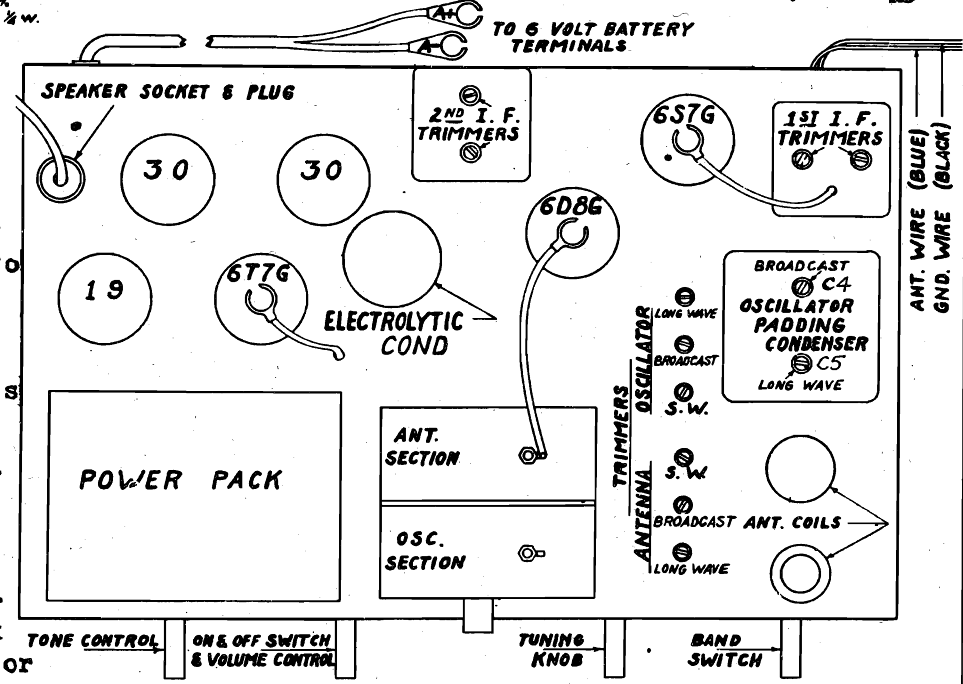
MARCH 7, 1939

CONDENSERS

C1 - .1-200V.
C2 - .25-200V.
C3 - 500MMF.
C4 - 300-600 MMF.
C5 - 50-200 MMF.
C6 - 4000 MMF.
C7 - 256 MMF.
C8 - .02-400V.
C9 - .05-400V.
C10 - .002-400 V.
C11 - .005-400 V.
C12 - .01 - 600 V.
C13 - .5-10 V.
C14 - .05-200 V.
C15 - .01-1000 V.
C16 - 100 MMF.

RESISTORS

R1 - 50,000 Ω 1/4 W.
R2 - 250 Ω 1/4 W.
R3 - 15,000 Ω 1/4 W.
R4 - 1 MEG Ω 1/2 W.
R5 - 500,000 Ω VOLUME CONTROL
R6 - 250,000 Ω 1/4 W.
R7 - 100,000 Ω 1/4 W.
R8 - 14.3 Ω ± 5%
R9 - 8.1 Ω ± 5%
R10 - 100,000 Ω TONE CONTROL
R11 - 500,000 Ω 1/4 W.
R12 - 75,000 Ω 1/4 W.
R13 - 200,000 Ω 1/4 W.
R14 - 70 Ω ±10%
R15 - 600,000 Ω 1/4 W.



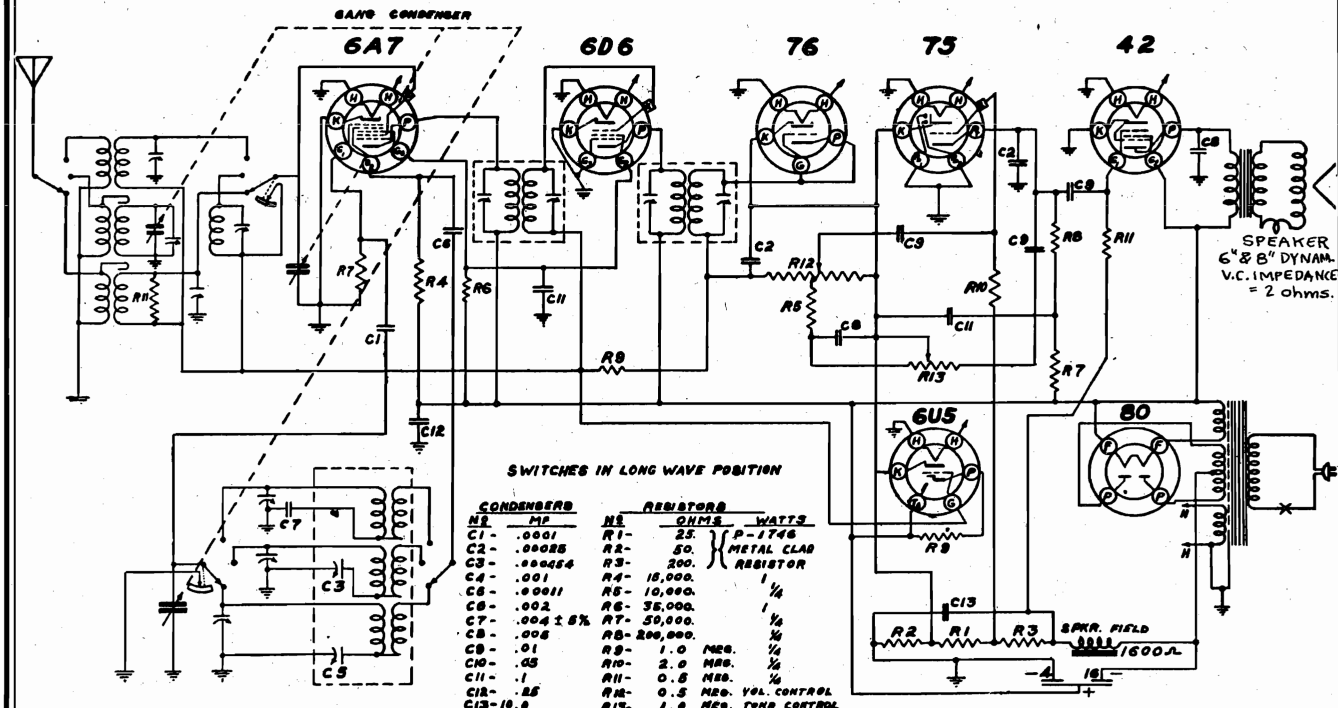
FREQUENCY RANGES :
535 to 1730 KC
150 to 380 KC
5.6 to 18.1 MC

IF ALIGNMENT-Generator at 456 KC, connected to control grid of 6D8G thru a .05 MFD condenser, then peak the IF transformer trimmers for maximum response.

BROADCAST BAND - Generator at 1730 KC, the gang condenser out of mesh, peak oscillator trimmer. Dial and Generator at 1400 KC,peak antenna and pre-selector trimmers. Generator and dial at 600 KC, while rocking variable condenser across signal,peak the oscillator padder to maximum.
SHORTWAVE BAND - Generator to 18.1 MC, variable condenser at minimum, peak the S.W. oscillator trimmer. Generator and dial at 16 MC, peak antenna trimmer. No provisions for low frequency padding have been made in this band. Check response at 6 MC.
LONGWAVE BAND - Set gang condenser to minimum and generator to 380 KC, peak the longwave oscillator trimmer, then shift the generator signal to 325 KC, peak the antenna trimmer. Next set the generator to 160 KC, — then peak the longwave oscillator padding condenser to maximum response while rocking variable condenser.

MODEL 7234,Ch.105.7MU
Schematic,Socket
Alignment,Trimmers

SEARS, ROEBUCK & CO.

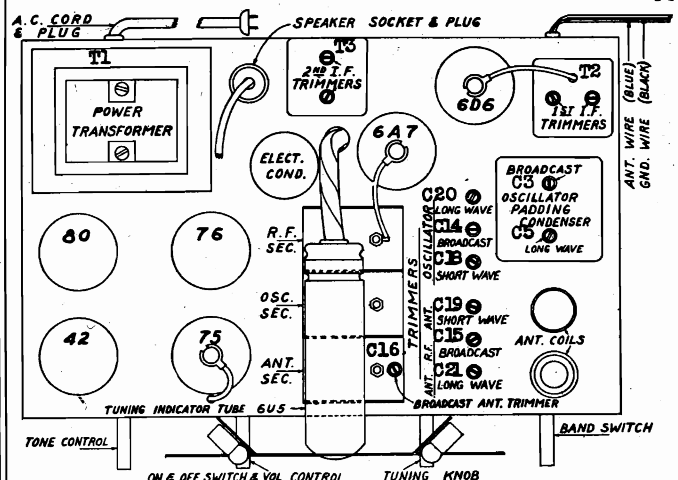


CONDENSERS No	MF	RESISTORS No	OHMS	WATTS
C1-	.0001	R1-	25.	P-1746 METAL CLAD RESISTOR
C2-	.00025	R2-	50.	
C3-	.000454	R3-	200.	
C4-	.001	R4-	15,000.	1
C5-	.00011	R5-	10,000.	1/4
C6-	.002	R6-	35,000.	1
C7-	.004 ± 5%	R7-	50,000.	1/4
C8-	.005	R8-	200,000.	1/4
C9-	.01	R9-	1.0 MEG.	1/4
C10-	.05	R10-	2.0 MEG.	1/4
C11-	.1	R11-	0.5 MEG.	1/4
C12-	.25	R12-	0.5 MEG.	VOL. CONTROL
C13-	10.0	R13-	1.0 MEG.	TONE CONTROL

INTERMEDIATE FREQUENCY: .... 456 kc

SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Fully closed	456 kc	.1 mfd	6A7 Grid	T 3 T2	IF Output IF Input	 45
"AM"	Fully open	1730 kc	.0002 mfd	Ant. Lead	C14	Oscillator	
"AM"	1400 kc	1400 kc	.0002 mfd	Ant. Lead	C15 C16	Preselector Antenna	 10
"AM"	600 kc (rock)	600 kc	.0002 mfd	Ant. Lead	C3	Padder	8
"SW"	Fully open	18.1 mc	400 ohms	Ant. Lead	C18	Oscillator	
"SW"	16 mc	16 mc	400 ohms	Ant. Lead	C19	Antenna	16
"LW"	Fully open	380 kc	.0002 mfd	Ant. Lead	C20	Oscillator	
"LW"	920 meters	325 kc	.0002 mfd	Ant. Lead	C 21	Antenna	8
"LW"	1875 meters (rock)	160 kc	.0002 mfd	Ant. Lead	C5	Padder	15

POWER SUPPLY:............................ Tapped-105-125-150-230 volts, 60 cycles, 56 watts



FREQUENCY RANGES:
Band "AM"............... 535 kc-1730 kc
Band "LW"............... 150 kc-380 kc
Band "SW"............... 5.6 mc-18.1 mc

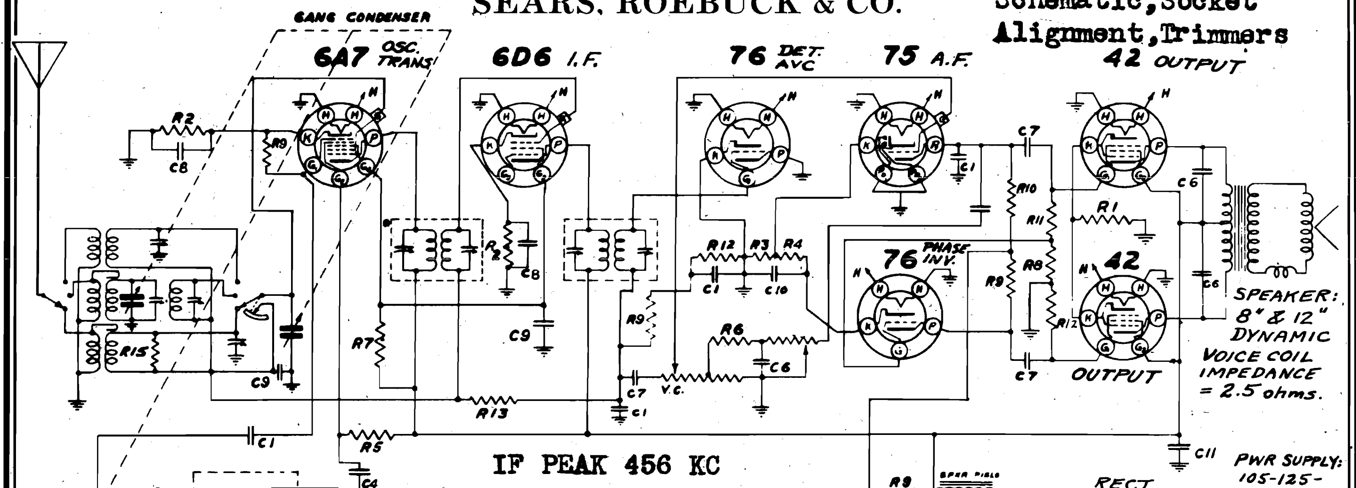
POWER OUTPUT:
Type....... .... Pentode
Undistorted .... 2.5 watts
Maximum...................... 3.5 watts

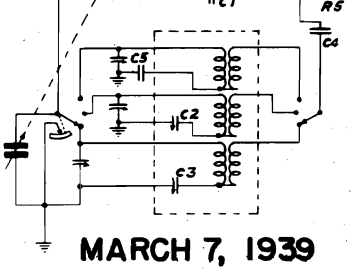
UNIVERSAL TRANSFORMER is used. Removing 2 screws and a shield on top of power transformer exposes terminal plate and pin connector. Inserting pin into clip marked with voltage at which set is to be used, permits operation on 105, 125, 150 or 230 volts. For use on AC ONLY.

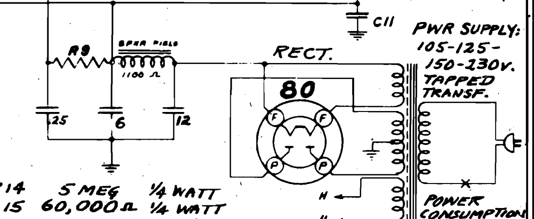
MARCH 7, 1939

MODEL 7235, Ch. 105.8KU
Schematic, Socket
Alignment, Trimmers

SEARS, ROEBUCK & CO.







IF PEAK 456 KC

CONDENSERS		
No.	M.F.	
1	.0001	MICA
2	.000454	WKG
3	.00011	WKG
4	.002	400 V.
5	.004 ± 5%	MICA
6	.005	600 V.
7	.01	400 V.
8	.05	200 V.
9	.1	400 V.
10	10.0 ELEC.	35 V.
11	.25	400 V.

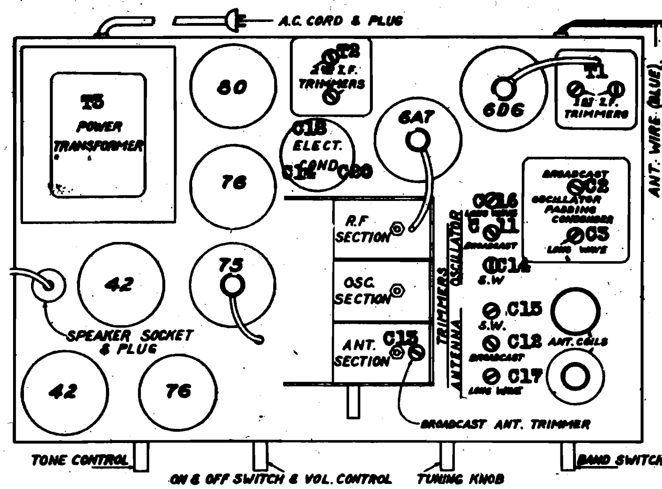
RESISTORS		
No.	OHMS	WATTS
1	200	1 1/2
2	350	1/4
3	750	1/4
4	2,500	1/4
5	15,000	1.0
6	20,000	1/4
7	35,000	1.
8	46,000	1/4
9	50,000	1/4
10	200,000	1/4
11	455,000	1/4
12	.5 MEG	1/4
13	1 MEG	1/4

R14 5 MEG 1/4 WATT
R15 60,000 Ω 1/4 WATT

POWER OUTPUT:
Type ...... Push Pull Pentode
Undistorted .... 6 watts
Maximum .... 7.5 watts

MARCH 7, 1939

V.C. – VOLUME CONTROL, 1 MEG.
T.C. – TONE CONTROL, 1 MEG.
SWITCHES IN LONG WAVE POSITION.



I.F. ALIGNMENT With the wave switch in the Broadcast Band and the gang condenser set at minimum. Adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A7) through a .05 or .1 mfd. condenser. The ground on the test oscillator can be connected to the chassis ground. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT Connect the output of the signal generator to the antenna lead (blue) through a .0002 mfd. mica condenser. Set the gang condenser to minimum and the oscillator to 1730 KC and adjust the "oscillator trimmer" to receive this signal. Make no other adjustments at this frequency. Then set the generator to 1400 KC and tune in this signal by rotating the gang to 1400 on the dial. Adjust the "preselector" and "antenna" trimmer to maximum signal. Set the signal generator to 600 KC and tune in the signal on the receiver. **Note:** approximately the same sensitivity should be noted at this point as was at 1400 KC. The signal strength may sometimes be improved by padding the circuits. This is done by slowly increasing or decreasing the oscillator padding condenser and, at the same time, continuously tuning back and forth across the signal with the receiver until the maximum reading is obtained on the output meter. This adjustment may seem a little complicated but is the easiest way to adjust the oscillator to the preselector of the R.F. section. Return to 1400 KC and again go over the adjustments of this frequency to be certain that they were not put slightly out of alignment when adjustment was made at 600 K.C.

SHORT WAVE BAND ALIGNMENT The short wave band is adusted by setting the generator to 18,100 KC and with the gang at minimum, adjust the "short wave oscillator trimmer" to receive the signal. Set the generator at 16,000 KC, tune in the signal and adjust the "short wave antenna" trimmer to give maximum output. As there is no variable low frequency padding condenser on this band, the sensitivity of the receiver should be checked at 6000 KC to determine whether the circuits are in line at this frequency. Should the receiver lack sensitivity at 6000 KC, the antenna and oscillator coils, as well as the .004 mica padding condenser, should be tested for defects as sometimes these components become subject to mechanical or electrical injuries, despite their rugged construction and liberal ratings.

LONG WAVE BAND ALIGNMENT The long wave band is adjusted by connecting the output of the signal generator through a .0002 Mfd. mica condenser to the blue antenna lead. Then set the gang to minimum and the generator to 380 KC and adjust the long wave oscillator trimmer to receive this signal. Then set the generator to 325 KC and adjust the long wave antenna trimmer to give maximum output. Next set generator to 160 KC and pad the circuits to maximum output. Owing to the nature of tthe long wave band, the trimmer and padding condensers react upon each other to quite a degree; consequently, several re-adjustments at the trimming and padding positions are required before the circuits are adjusted properly.

MODEL 7235
MODEL 7236
MODEL 7425
Tuner Data

SEARS, ROEBUCK & CO.

MODEL 7235 (CHASSIS 105.8KU); MODEL 7236 (CHASSIS 105.8TU)

THE AUTOMATIC TUNING DIAL

CHOOSING THE STATIONS TO BE USED

The telephone dial has 10 buttons located in a ring within the dial scale. Make a list of 10 of your favorite stations which are tuned in regularly. Shown in Fig.1A is the approximate frequency range that each button will cover. NOTE: If 2 stations happen to fall within the range of one button, one station will necessarily have to be tuned in with the selector knob.

PROCEDURE FOR ADJUSTING THE TELEPHONE DIAL BUTTONS

(1) Choose one of the stations out of the list of stations selected and by means or the station selector very carefully tune in this station, noting at the same time the exact pointer location on the dial.

(2) Now select the proper button for the first station chosen by referring to Fig. 1A and noting the button into whose range the station falls. For example, station WGN with a frequency of 720 KC comes under the button whose frequency ranges from 670-755 KC. Usually the button nearest the tuning point or the bottom of the dial will be the proper button.

(3) Loosen the button by unscrewing it (not the dial) ½ turn to the left. Now press the button in all the way and rock the dial back and forth a trifle until a click is heard Do not release the button now but set the pointer to its former location and with the dial in this position, being careful not to move it, proceed to tighten the button by turning it in the opposite direction (to the right). Make sure the button is very securely tightened as it may get out of adjustment.

(4) From the station call sheet supplied remove the proper station disc and insert into the push button so that the wording is horizontal when the button is at the bottom, and then insert a clear celluloid insert. Follow this same procedure for the remaining buttons.

(5) If for any reason it is necessary to remove a station call letter disc, the use of a pen knife or any sharp pointed instrument will facilitate the removal.

MODEL 7425 CHASSIS 107.375

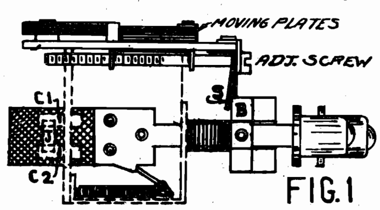


FIG.1

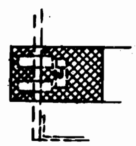


FIG.2

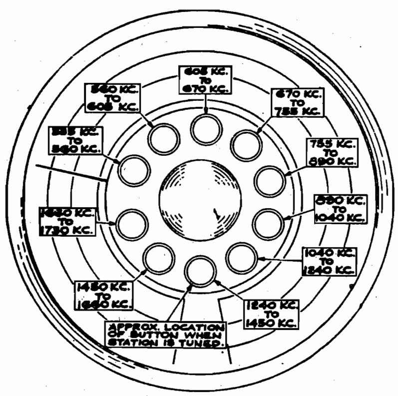


Fig. 1A

MECHANICAL ACTION OF THE PERM-A-MATIC TUNER

Fig. 1 shows one of the buttons depressed for a station. The trimmer panel assembly (for the antenna circuit) is designed with spring fingers "S" that make contact with cross bar "B" completing the ground circuit of the R.F. Trimmer.

When making the original set-up, the adjusting screw may indicate two positions for resonance. This is due to the possibility of the small amount of play in the screw thread and is of no concern as long as it is set to the exact resonance point.

The jumper contact "J" connects C1 contact to C2 contact with the button "IN". This completes the oscillator circuit for that particular button.

Fig. 2 shows the jumper position with the button "OUT".

Fig. 3 shows the manual OFF-ON button in the "OUT" position.

The "L" shaped sliding contact is the common cathode return circuit and alternates the bias on the 6K8 for manual tuning or on the 6A7 for push button tuning.

Fig. 4 shows the iron core movement within the oscillator coil. Its position is held stationary by the small spring wire across the coil form. The position of this spring must be such that no spring action is apparent from the end of the adjustment stud due to pressure with a screwdriver. Otherwise, when the screwdriver is removed, the core will shift out of position.

The button is held down by action of the latch bar and is released when another key raises the latch bar on its way down.

If it is necessary to replace a coil, mount it in line with the other coils and cement it in place.

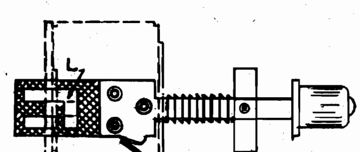


FIG.3

SCREW TENSION SPRINGS.

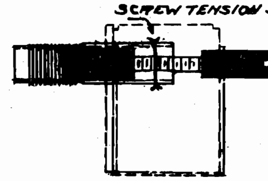
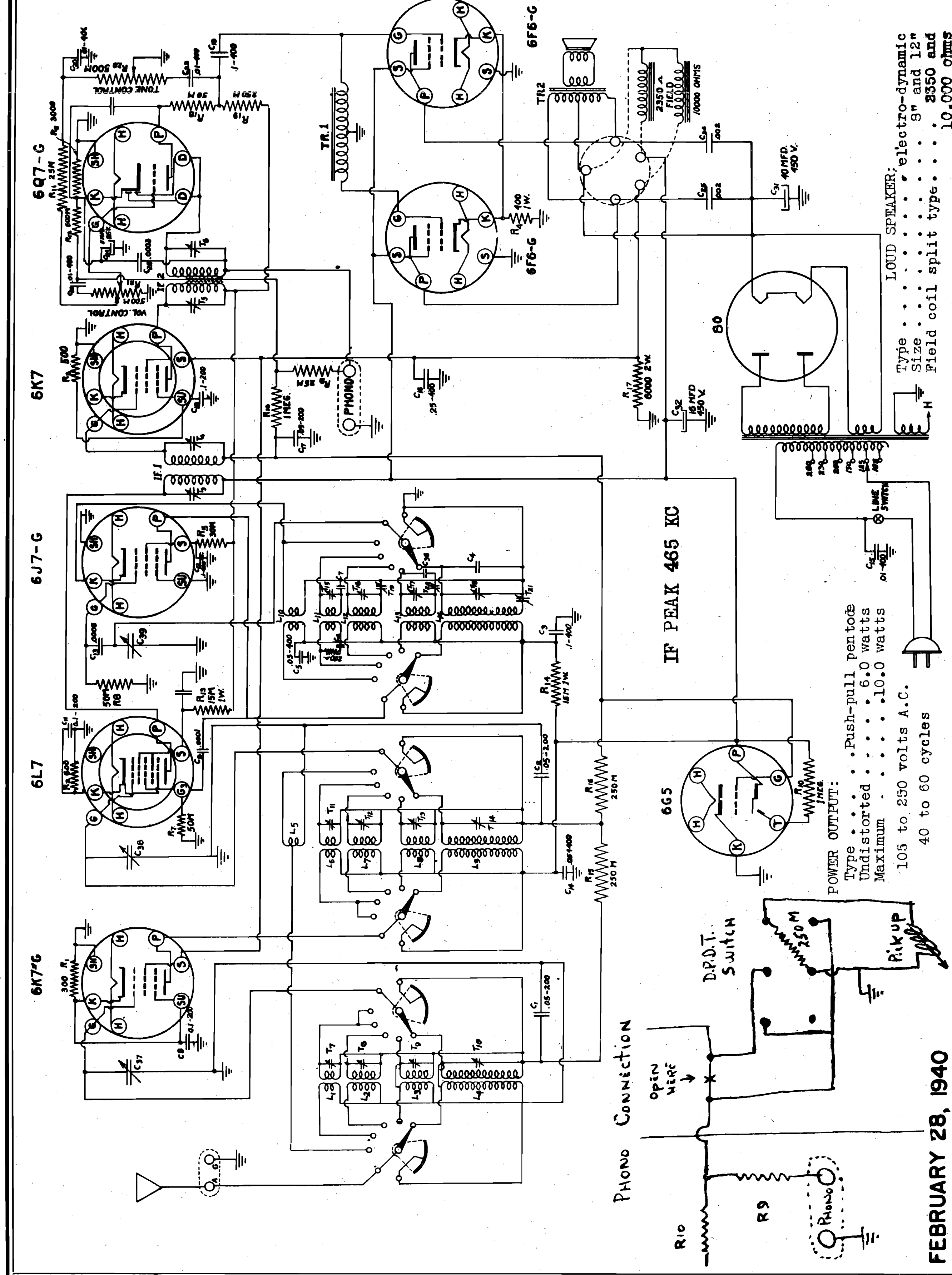


FIG.4

MODELS 7237, 7239
Ch. 104.709
Schematic, Voltage

SEARS, ROEBUCK & CO.



MODELS 7237,7239
Voltage,Socket
Trimmers,Coils
Voltage Connections
Alignment Notes

SEARS, ROEBUCK & CO.

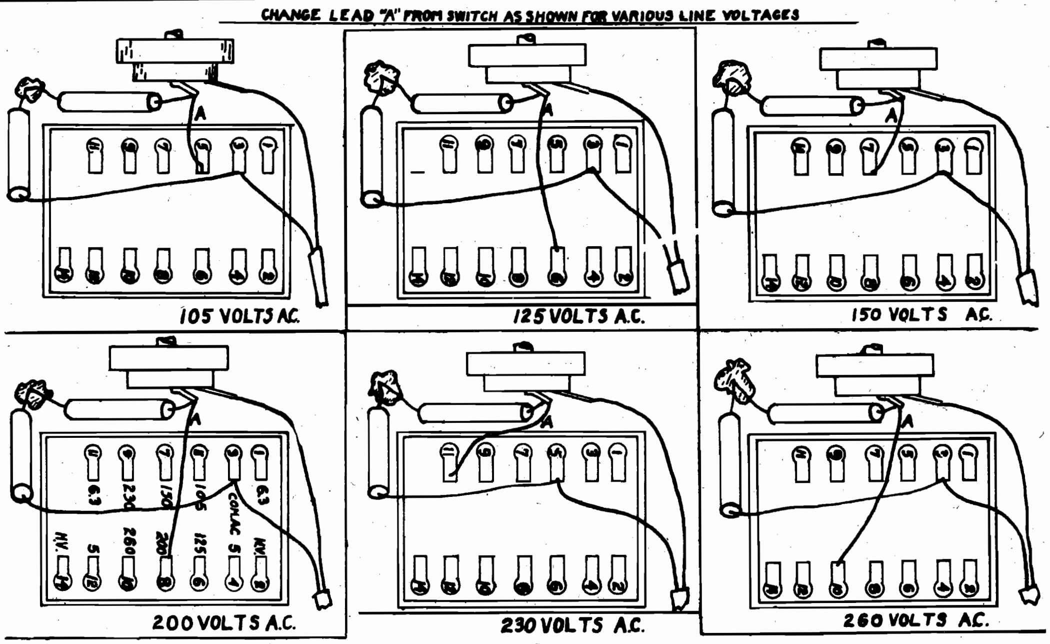


Fig. 1

All Voltages taken from ground with line voltage 115 volts.

TUBE	POSITION	PLATE	SCREEN GRID	CATHODE	FILAMENT
6K7-G	1st. R.F.	250 V.	115 V.	2 V.	6 V.
6L7	Mixer	245 V.	172 V.	5.5 V.	6 V.
6J7-G	Oscillator	135 V.	155 V.	-	6 V.
6K7	I.F.	245 V.	115 V.	3.5 V.	6 V.
6Q7-G	Diode Det.	60 V.	-	1 V.	6 V.
6F6-G 6F6-G	P.P. Audio P.P. Audio	325 V. 325 V.	250 V. 250 V.	19 V. 19 V.	6 V. 6 V.

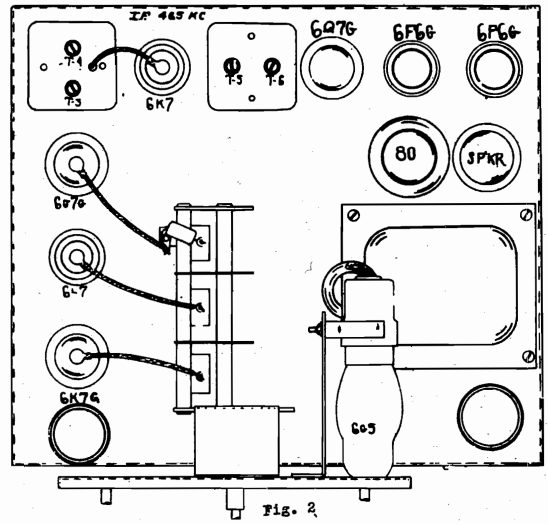


Fig. 2

ALIGNMENT FREQUENCIES:
Band 1 . . . . 1600 KC & 600
Band 2 . . . . 6 MC
Band 3 . . . . 18 MC
Band 4 . . . . no adjustment
Band 5 . . . . .375 KC

FREQUENCY RANGES:
Band 1 . . . . 540-1750 KC
Band 2 . . . . 1.75-6.0 MC
Band 3 . . . . 6.0-18.0 MC
Band 4 . . . . 15.0-40 MC
Band 5 . . . . . 750-2100 meters (longwave)

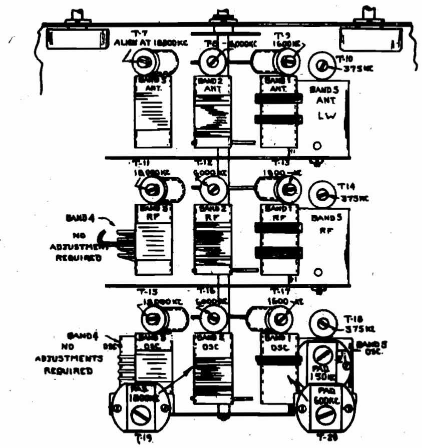


Fig. 3

IMPORTANT ALIGNMENT NOTES

It is assumed that if an alignment procedure becomes necessary that the serviceman has an oscillator capable of accurately covering the range of the receiver and that a meter output indicator is used.

The I.F. stages are aligned in the usual manner by feeding a 465 KC signal into the grid of the 6L7 tube.

Follow Fig. 2 and Fig. 3 showing trimmer locations and alignment frequency.

Always adjust the oscillator first in any particular band.

Use as low an output as possible from the test oscillator in making the various adjustments.

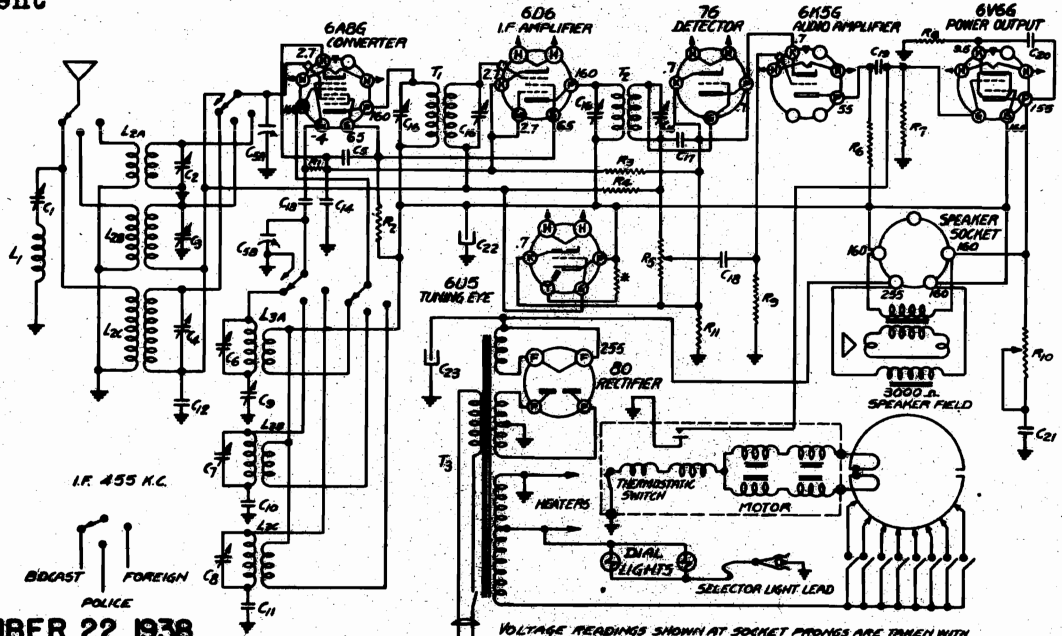
After trimming at the high frequency end of the dial and adjusting the padding condenser at the other end, always recheck the settings of the trimmer at the high frequency end of the dial.

BEFORE STARTING ALIGNMENT CHECK POSITION OF TUNING HAND AND MAKE CERTAIN THAT IT IS EXACTLY STRAIGHT ACROSS ON THE FIRST CALIBRATION LINE WHEN THE CONDENSERS ARE AT MAXIMUM CAPACITY ROTATION.

Schematic, Voltage Socket, Trimmers Alignment

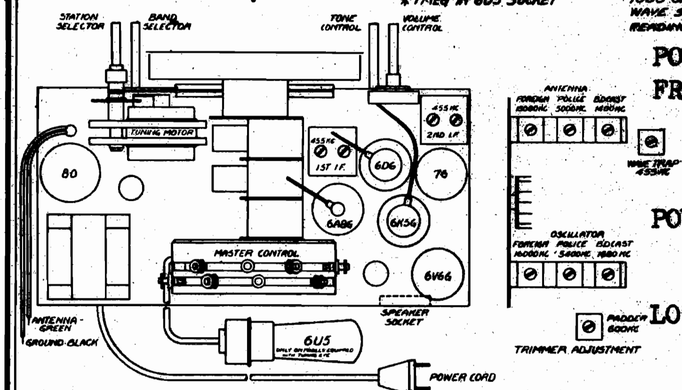
SEARS, ROEBUCK & CO.

MODELS 7241, 7241A
Ch. 109.246



NOVEMBER 22, 1938

VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TAKEN WITH 1000 OHM PER VOLT METER FROM PRONG TO CHASSIS, WITH NO SIGNAL, WAVE SWITCH IN BROADCAST POSITION ON 117 VOLT LINE. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.



POWER SUPPLY: 115 volts, 60 cycles, 45 watts
FREQUENCY RANGES: 540 to 1650 KC
1650 to 5400 KC
5250 to 16000 KC

POWER OUTPUT: Undistorted = 0.75 watts
Maximum = 1.4 watts

LOUD SPEAKER: Type, Dynamic
Size, 8-inch
Field Resistance = 3000 ohms

ALIGNMENT PROCEDURE

Connect an output meter across the speaker voice coil. The volume control should be set a few degrees back of the maximum volume position. Use a weak signal from the generator. Strong signals tend to cause improper adjustments.

IF. Connect the generator ground to the receiver chassis. Using a .1 mfd. condenser in series with the high side of the generator, apply a 455 KC signal to the grid of the 6D6 IF amplifier tube and aline the 2nd IF transformer. Repeat for the 1st IF transformer, applying the signal to the grid of the 6A8G tube. (See tube layout diagram for location of trimmers.).

RF. Using a 250 mmf. condenser as a "dummy" antenna, turn the wave switch all the way to the left, apply 455 KC signal to the antenna and adjust the wave trap trimmer for minimum response. Turn the tuning condenser to minimum capacity, set the generator at 1680 KC and adjust the Broadcast Oscillator trimmer for top frequency. Set the generator at 1400 KC and aline the Broadcast Antenna trimmer. Set the generator at 600 KC, tune the receiver to the signal and adjust the padder. The tuning condenser must be rocked back and forth through the signal while varying the padder in order to assure perfect alignment.

A 400 ohm resistor must be used as a "dummy" antenna for proper alignment of the two short wave bands. Set the wave switch in the center position, adjust the oscillator top frequency to 5400 KC, then aline the antenna trimmer at about 5000 KC.
Turn the Wave Switch to the extreme right hand position, adjust the oscillator top frequency to 16000 KC and aline the antenna at 15000KC. In order to be sure that the top end of the last band is set properly it is best to screw the oscillator trimmer down tight, then unscrew to the second peak. The antenna trimmer should be screwed down tight then unscrewed to the first peak. This procedure should be followed in order that the oscillator and antenna circuits will be set in the correct relation to each other. It is best to rock the tuning condenser back and forth through the signal while making these adjustments at high frequencies.

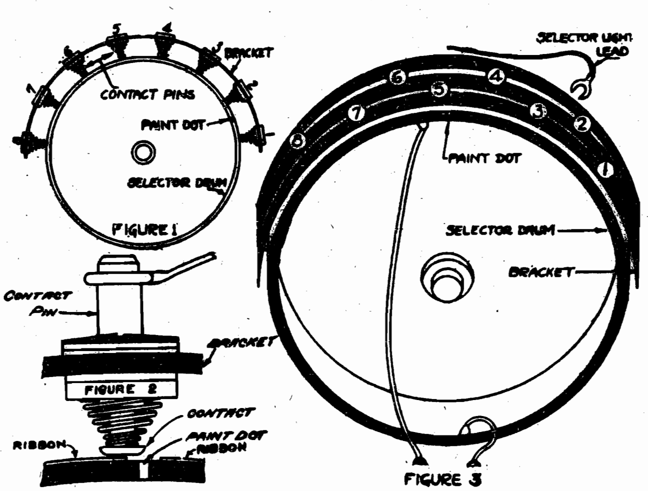
MODELS 7241,7241A
Ch.109.246
MODELS 7242,7242A
Ch.109.190
Automatic Tuner Data

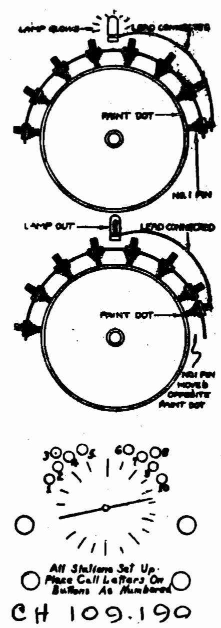
SEARS, ROEBUCK & CO.

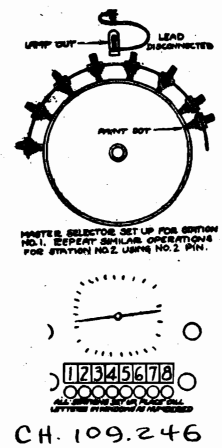
ELECTRIC AUTOMATIC TUNING INSTRUCTIONS

ELECTRIC AUTOMATIC TUNING
The tuning unit consists of three parts. (1) The MASTER SELECTOR. This includes the SELECTOR DRUM, and the SELECTOR PINS. These parts are located on the back of the variable condenser together with their associated brackets and wiring. (2) MOTOR and DRIVE. This assembly consists of an induction motor having a mechanical clutch with magnetic throw out, a train of gears operating directly onto the manual tuning shaft. (3) PUSH BUTTON ASSEMBLY. These buttons are located on the front of the chassis and extend through the escutcheon below the dial.

SETTING UP THE MASTER SELECTOR
List eight local or strong stations according to frequency. Setting up weak or distant stations is not recommended. Call the station nearest the left hand end of the dial(nearest 1600 KC.) the No. 1 Station. Number the other stations similarly going from left to right across the dial. On the back of the receiver will be found the SELECTOR DRUM and the eight CONTACT PINS which determine the point at which the tuner will stop when the buttons are pressed. Figure 1 shows the general layout and relation of the drum and contacts. Figure 2 shows one of the contact pins in detail. Figure 3 shows the arrangement of the contact pins, each pin being numbered according to the system suggested for numbering the stations.
On the SELECTOR DRUM are two pairs of CONTACT RIBBONS. Note that there is a paint dot on the edge of the drum directly opposite the break in the ribbons on the upper half of the drum. This is for locating the approximate position at which a given CONTACT PIN should be set in order to have the DRUM stop for a particular station.
IT IS IMPORTANT THAT THE FOLLOWING STEPS BE FOLLOWED EXACTLY AS OUTLINED:
(1) Turn the wave switch to the "Broadcast" position. Turn the receiver ON and let it run for at least ten minutes to allow the tubes to reach their final operating temperature.
(2) Using the MANUAL STATION SELECTOR, tune in the No. 1 station, that is the one nearest the 1600 KC. end of the dial. Watch the tuning tube closely, making certain that the station is tuned in perfectly.
(3) Attach the SELECTOR LIGHT lead to the No. 1 pin. This lead has a spring clip at the end and will be found clipped to a ground post at the top of the selector bracket. Unless the pin happens to be set exactly the DIAL LIGHTS will glow when the lead is touched to the pin.
(4) Observe the position of the paint dot on the edge of the DRUM. Grasp the No. 1 pin firmly and slide it toward the paint dot. When the PIN is directly opposite the paint dot the lights will go out indicating that the pin is properly set. To insure the greatest accuracy slide the pin back and forth across the break in the ribbons, leaving it set half way between the points where the lights go out.
(5) Using similar procedure set up the other seven stations, in each case using the pin bearing the same number as the station being set up.
(6) Locate the CALL LETTERS of your stations on the printed sheets supplied with the receiver and insert them in the proper pockets above the buttons.
(7) The only operations necessary to tune in any of the eight stations set up as outlined above are: Turn the receiver ON, allow an interval of time for the tubes to heat and press the button for the station desired <u>HOLDING THE BUTTON DOWN UNTIL THE POINTER STOPS MOVING</u>. Then adjust the tone and volume.



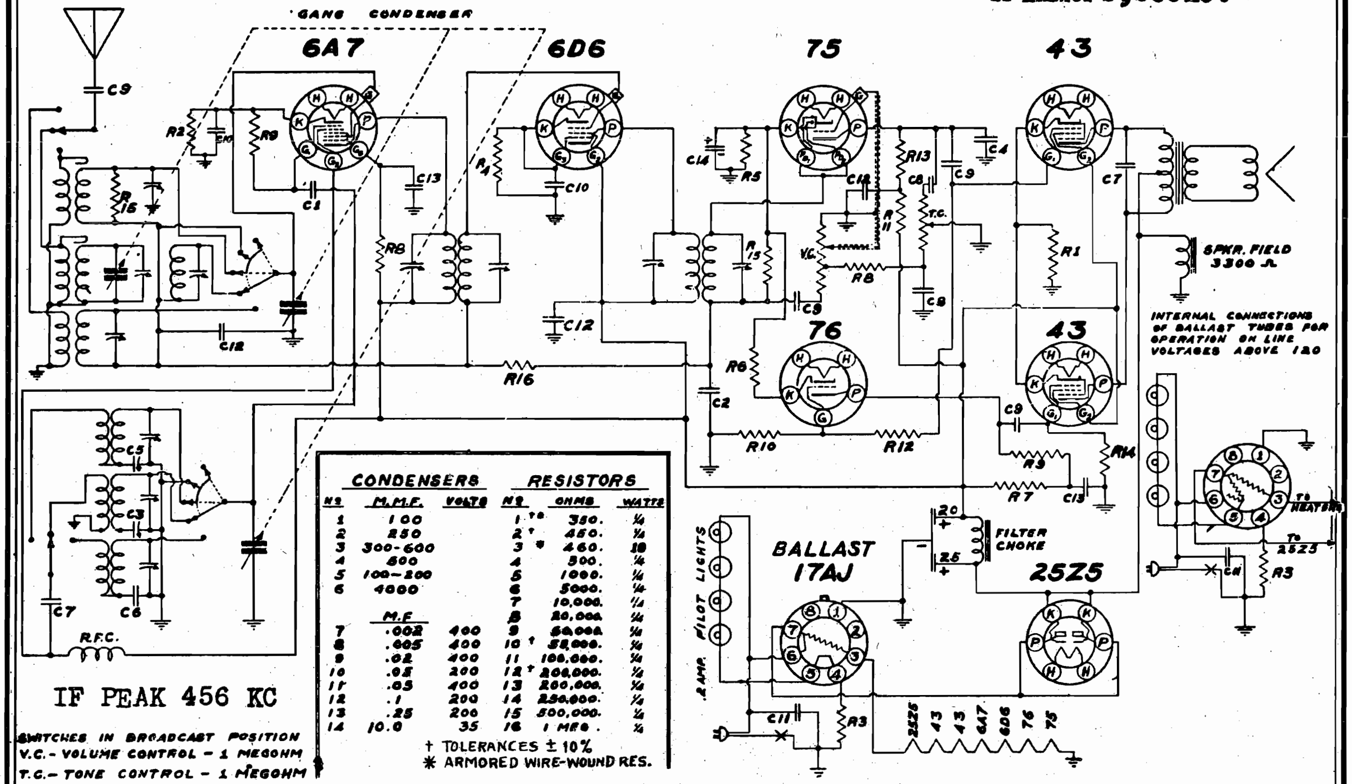




Note that in Chassis 109.190, ten contact pins are provided.

SEARS, ROEBUCK & CO.

MODEL 7236,Ch.105.8TU
Schematic,Alignment
Trimmers,Socket



CONDENSERS Nº	M.M.F.	VOLTS	RESISTORS Nº	OHMS	WATTS
1	100		1 †*	350.	¼
2	250		2 †	450.	¼
3	300-600		3 *	460.	10
4	500		4	500.	¼
5	100-200		5	1000.	¼
6	4000		6	5000.	¼
			7	10,000.	¼
	M.F		8	20,000.	¼
7	.002	400	9	50,000.	¼
8	.005	400	10 †	52,000.	¼
9	.02	400	11	100,000.	¼
10	.05	200	12 †	200,000.	¼
11	.05	400	13	200,000.	¼
12	.1	200	14	250,000.	¼
13	.25	200	15	500,000.	¼
14	10.0	35	16	1 MEG.	¼

† TOLERANCES ± 10%
✱ ARMORED WIRE-WOUND RES.

IF PEAK 456 KC

SWITCHES IN BROADCAST POSITION
V.C.- VOLUME CONTROL - 1 MEGOHM
T.C.- TONE CONTROL - 1 MEGOHM

POWER SUPPLY:..................................105-125 volts, 60 cycles, AC or DC, 70 watts

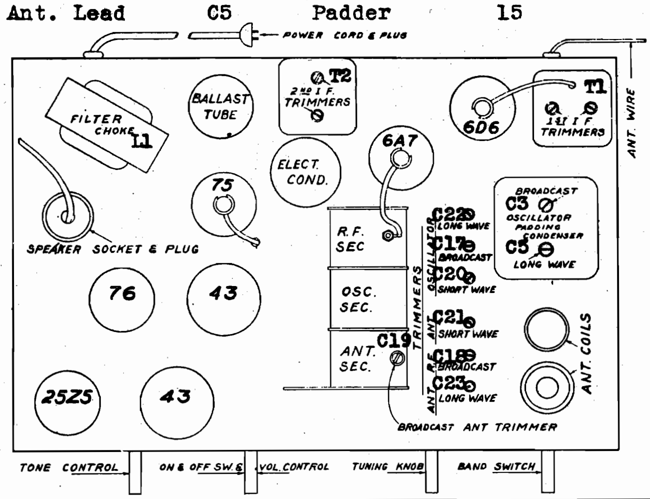
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	456 kc	.1 mfd	6A7 Grid	T2 T1	IF Output IF Input	45
"AM"	Fully open	1730 kc	.0002 mfd	Ant. Lead	C 17	Oscillator	
"AM"	1400 kc	1400 kc	.0002 mfd	Ant. Lead	C18 C19	Preselector Antenna	10
"AM"	600 kc(rock)	600 kc	.0002 mfd	Ant. Lead	C3	Padder	8
"SW"	Fully open	18.1 mc	400 ohm	Ant. Lead	C20	Oscillator	
"SW"	16 mc	16 mc	400 ohm	Ant. Lead	C21	Antenna	16
"LW"	Fully open	380 kc	.0002 mfd	Ant. Lead	C22	Oscillator	
"LW"	920 meters	325 kc	.0002 mfd	Ant. Lead	C 23	Antenna	8
"LW"	1875 meters (rock)	160 kc	.0002 mfd	Ant. Lead	C5	Padder	15

For PUSH-BUTTON TUNER, see Index

FREQUENCY RANGES:
- Band "AM"............... 535 kc-1750 kc
- Band "LW"...................150 kc-375 kc
- Band "SW"...............5.6 mc-18.1 mc

POWER OUTPUT:
- Type................. Push Pull Pentode
- Undistorted................... 1.8 watts
- Maximum......................2.5 watts

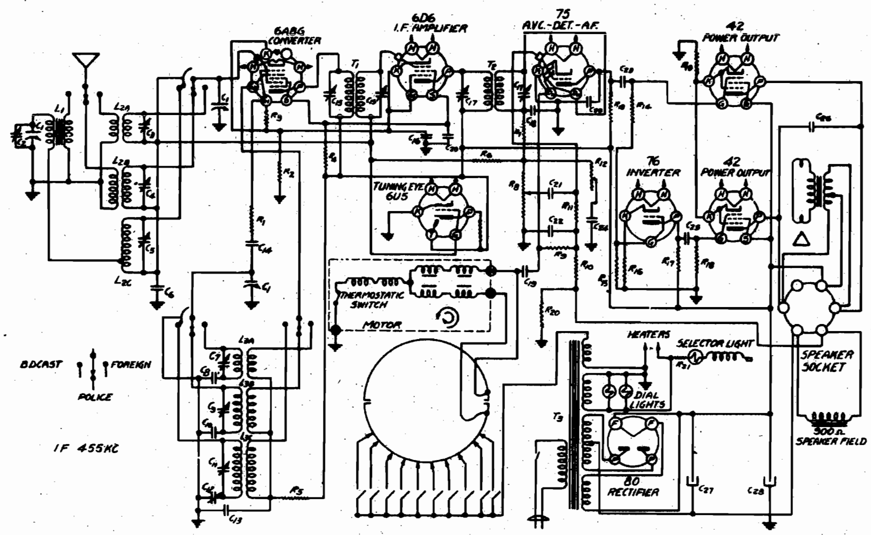
LOUD SPEAKER:
- Type.......................... Dynamic
- Size .... 8 and 12 inch
- Field coil resistance......... 3000 ohms
- Voice coil impedance........... 2.5 ohms

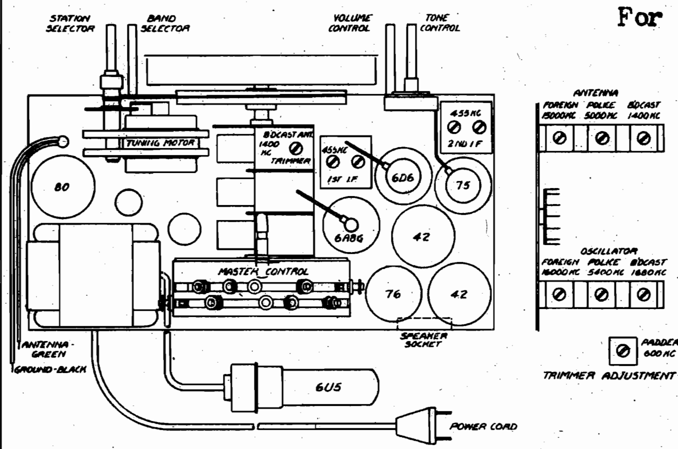


MARCH 7, 1939

MODELS 7242,7242A
Ch.109.190
Schematic,Socket
Alignment,Trimmers

SEARS. ROEBUCK & CO.





For ELECTRIC AUTOMATIC TUNING, see Index.

POWER SUPPLY: 105-125 volts, 60 cycles
80 watts

FREQUENCY RANGES: 540 to 1650 KC
1650 to 5400 KC
5250 to 16000 KC

POWER OUTPUT: Undistorted = 3 watts
Maximum = 5 watts

LOUD SPEAKER: Type, Dynamic
Size, 8-inch
Field Resistance=900 ohms

JAN. 5, 1939

ALIGNMENT PROCEDURE

Connect an output meter across the speaker voice coil. The volume control should be set a few degrees back of the maximun volume position. Use a weak signal from the generator. Strong signals tend to cause improper adjustments.

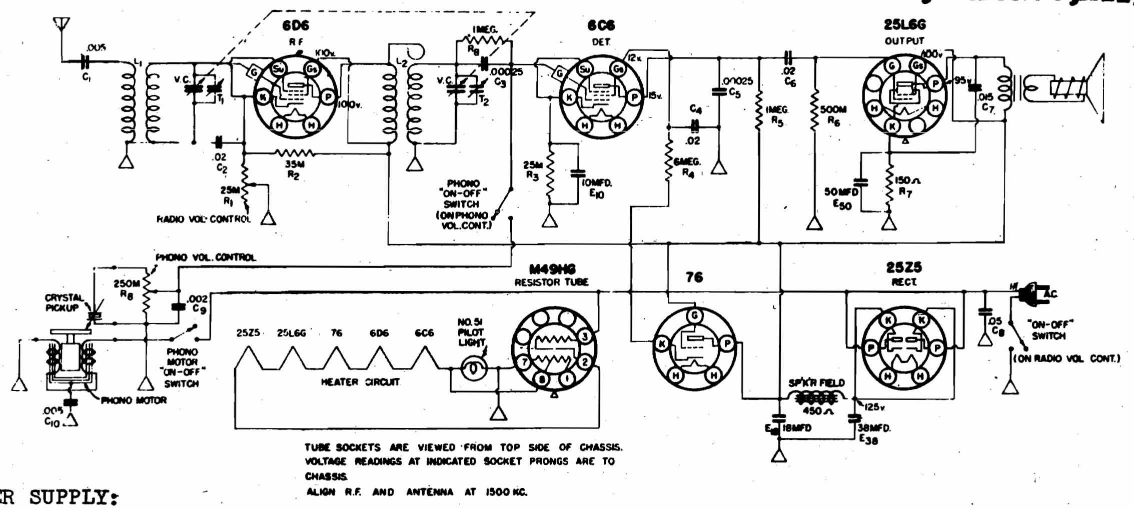
IF. Connect the generator ground to the receiver chassis. Using a .1 mfd. condenser in series with the high side of the generator, apply a 455 KC signal to the grid of the 6D6 IF amplifier tube and aline the 2nd IF transformer. Repeat for the 1st IF transformer, applying the signal to the grid of the 6A8G tube. (See tube layout diagram for location of trimmers.)

RF. Using a 200 mmf condenser as a "dummy" antenna, Turn the wave switch to the "Broadcast" position and the tuning condenser to minimum capacity. Feed a 1680 KC signal to the antenna and adjust the broadcast oscillator trimmer for top frequency. Set the generator at about 1400 KC and adjust the broadcast antenna and RF trimmers. Set the generator for 600 KC., tune the receiver to the signal and adjust the padder. The tuning condenser should be rocked back and forth through the signal while varying the padder to assure perfect alignment.

A 400 ohm resister must be used as a dummy antenna for proper alignment of the short wave bands. Set the wave switch in the center position, adjust the oscillator top frequency to 5400 KC., Then align the antenna trimmer at about 5000 KC. With the wave switch in the extreme right hand position adjust the oscillator top frequency of the high frequency band to 16000 KC., and align the antenna at about 15000 KC. In order to be sure that the top end of the last band is set properly, it is best to screw the oscillator trimmer down tight, then unscrew to the second peak. The antenna trimmer should be screwed down tight then unscrewed to the first peak. This procedure should be followed in order that the oscillator and antenna circuits will be set in the correct relation to each other. It is best to rock the tuning condenser back and forth through the signal while making these adjustments at high frequencies.

SEARS, ROEBUCK & CO.

MODEL 7244,Ch.110.907
Schematic,Voltage
Socket,Trimmers,Alignment



POWER SUPPLY:

All models available .... 105-125 volts, 60 cycle A.C. .... 40 watts

FREQUENCY RANGE:

Broadcast .... 530-1730 KC

ALIGNMENT FREQUENCY

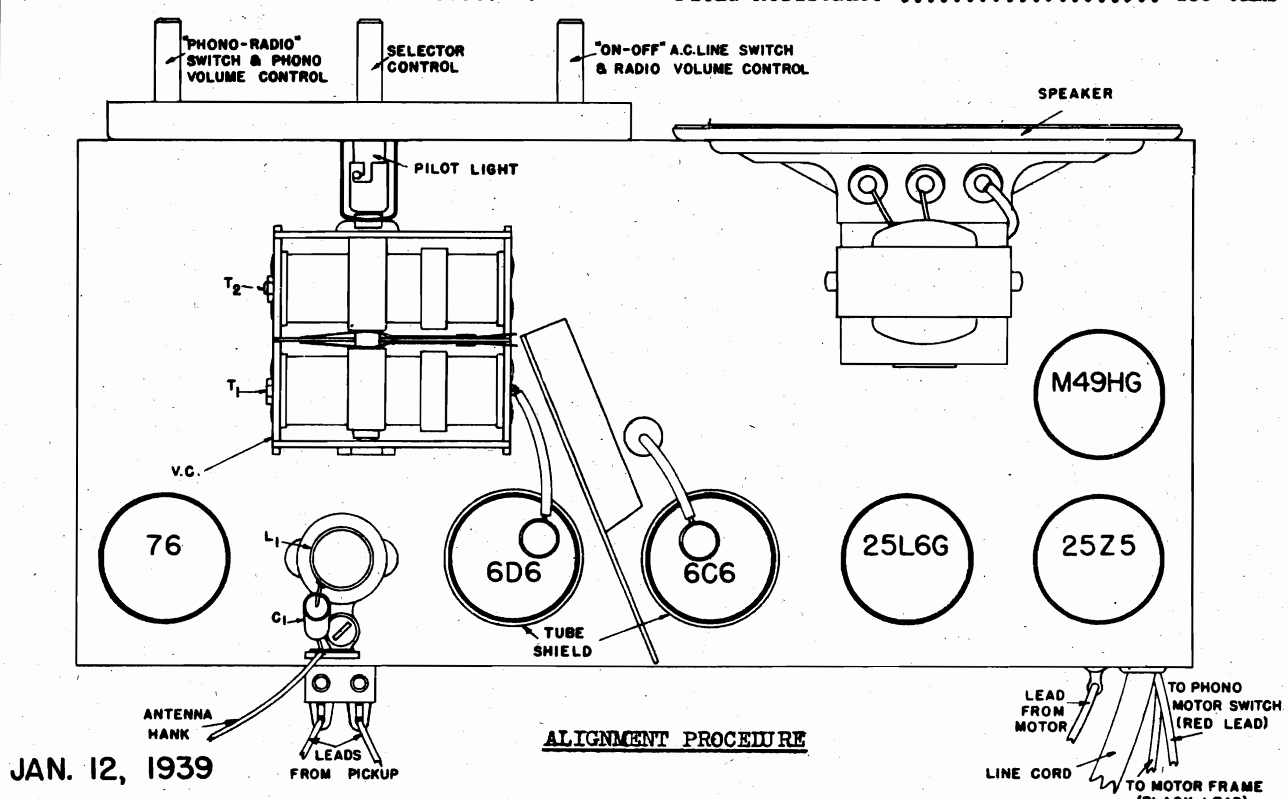
1500 KC

POWER OUTPUT:

Type	Beam Power
Undistorted	1.25 watts
Maximum	1.75 watts

LOUD SPEAKER:

Type	Dynamic
Size	5"
Field Resistance	450 Ohms



JAN. 12, 1939

ALIGNMENT PROCEDURE

Either a broadcast signal of about 1500 kc or a test oscillator signal may be used. If a broadcast signal is used, the antenna of the receiver should be extended as in a normal installation. If a test oscillator signal is used, a wire should be connected to the test oscillator output and run parallel to but insulated from the receiver's antenna wire. The generator ground connection should be connected to ground.

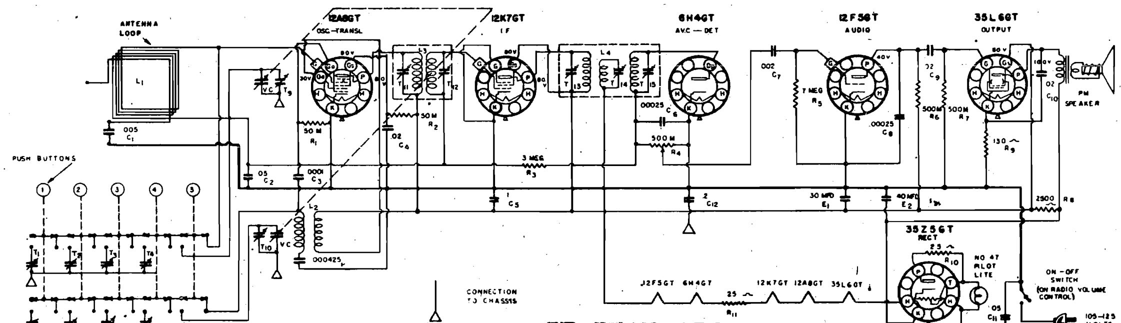
Tune in the 1500 kc signal and adjust the trimmers for maximum loud speaker response. This can be done most accurately if the Volume Control setting is reduced to give a low volume level. The location of this trimmer is shown in the tube socket location diagram.

MODELS 7251,Ch.110.988
7246,7251,Ch.110.988-1A,-2
Schematics,Socket,Trimmers

SEARS, ROEBUCK & CO.

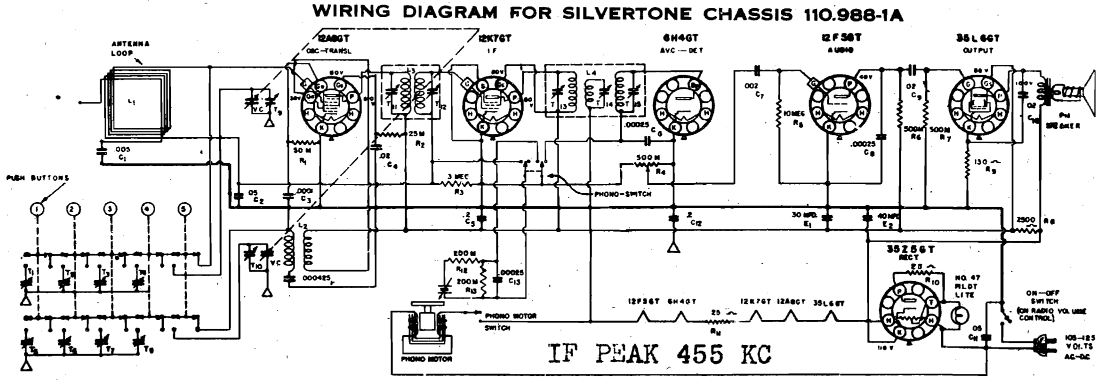
FOR ALIGNMENT SEE INDEX

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.988



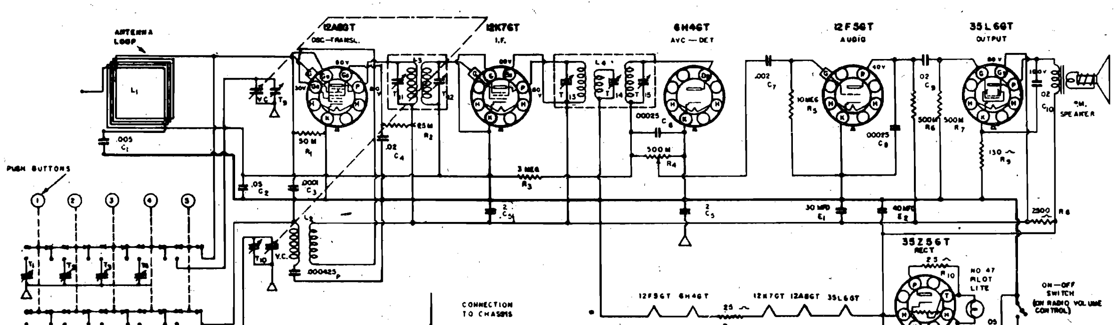
IF PEAK 455 KC

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.988-1A



IF PEAK 455 KC

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.988-2

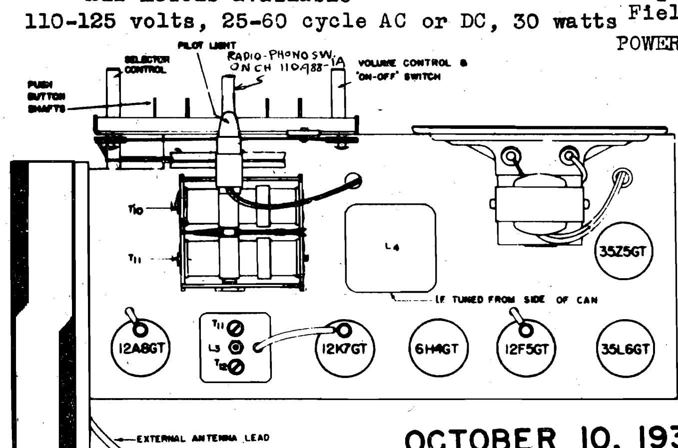


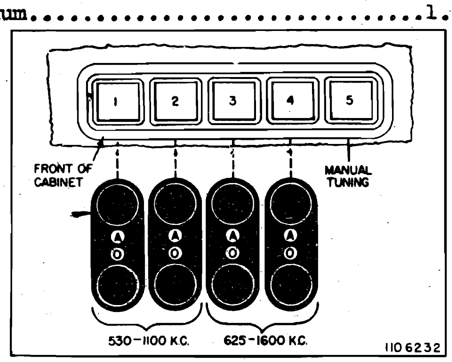
IF PEAK 455 KC

POWER SUPPLY:
All models available
110-125 volts, 25-60 cycle AC or DC, 30 watts

LOUD SPEAKER:
Type..................................Dynamic
Size..................................5"
Field.................................P.M.

POWER OUTPUT:
Type..........................Beam Power
Undistorted...........................1.0
Maximum...............................1.5

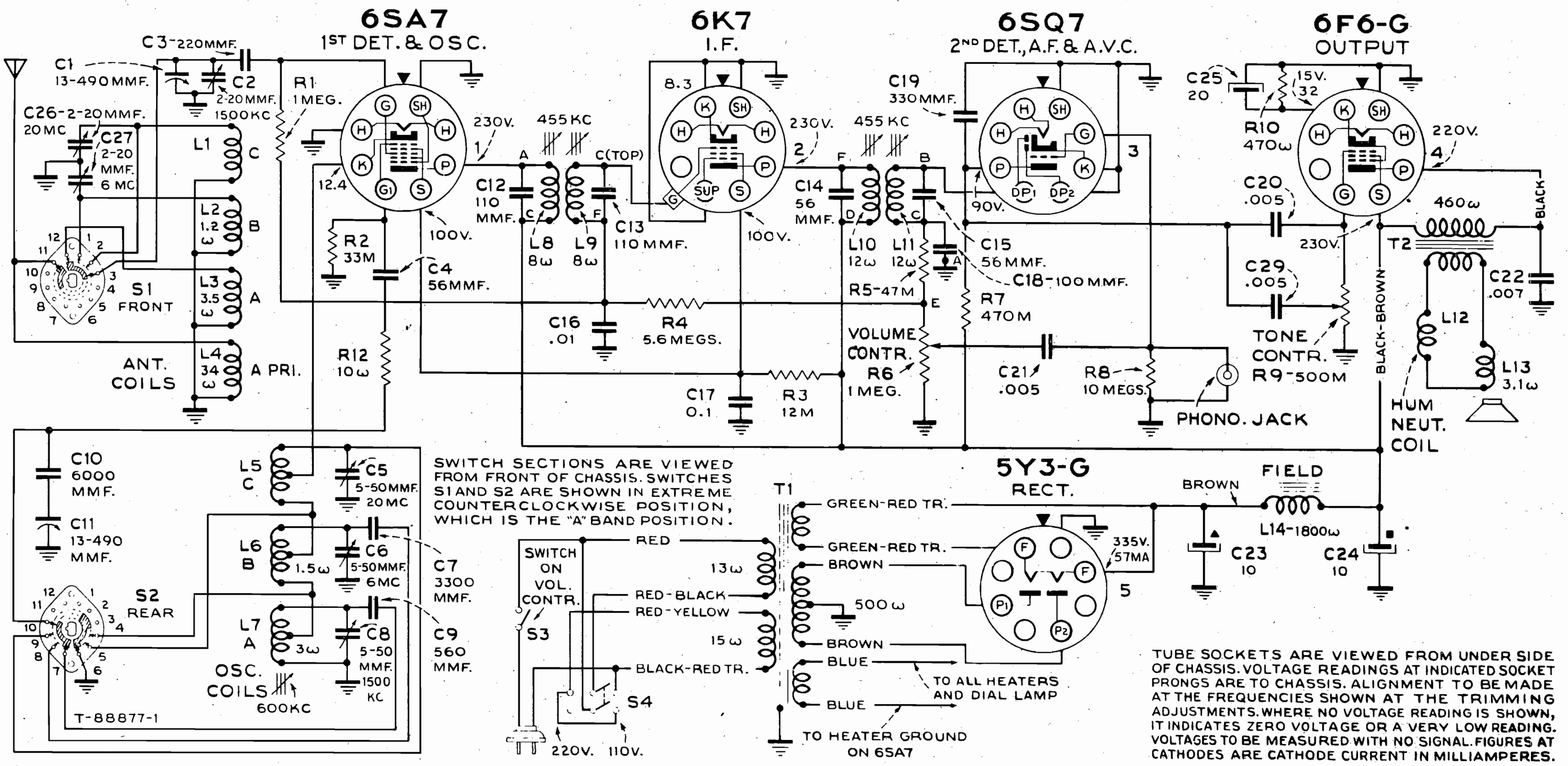




OCTOBER 10, 1939

MODEL 7300 (Export)
Ch.126.216
Schematic, Voltage
Phono. Connections

SEARS, ROEBUCK & CO.



LOUDSPEAKER:

Type.................... 6-inch Electrodynamic
Voice Coil Impedance....... 3.4 ohm at 400 cycles
Field Coil Resistance................. 1,800 ohms
App. Field Coil Voltage Drop............ 100 volts

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

POWER OUTPUT:

Type.................................. Pentode
Undistorted............................ 1.5 watts
Maximum............................... 3.3 watts

POWER SUPPLY RATING AVAILABLE:

105-125 volts, 25 cycles, 70 watts
105-125/200-250 volts, 50-60 cycles, 70 watts

Dial Lamp......... Mazda 44, 6.3 volts, 0.25 amp.

FREQUENCY RANGES:

(A) Standard Broadcast.. 540-1,720 kc (550-174 m)
(B) Medium Wave....... 2.3-7.0 mc (130-42.8 m)
(C) Short Wave........ 7.0-22.0 mc (42.0-13.6 m)

INTERMEDIATE FREQUENCY................ 455 kc

ALIGNMENT FREQUENCIES:

Band "A"..... 600 kc (osc.) 1,500 kc (ant., osc.)
Band "B"..................... 6 mc (osc., ant.)
Band "C"..................... 20 mc (osc., ant.)

Record Player:

A jack is provided on the rear of chassis for connection to a No. 6227 Silvertone Record Player which is supplied only in 100-125 volts, 25, 50 or 60 cycle rating. If receiver is to be used on 220 volts, it will be necessary to connect the Record Player power cord to the 110V. primary section of the Power Transformer as shown in Figure 5.

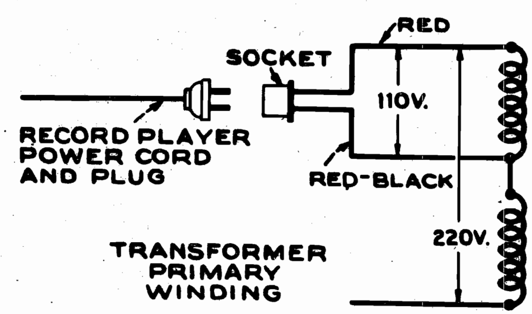


FIG. 5. RECORD PLAYER CONNECTIONS (220 V. — 110 V.)

AUGUST 7, 1939

MODEL 7300
Chassis Wiring, Socket Trimmers, Dial, Notes

SEARS, ROEBUCK & CO.

Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45° mark on the drum scale (see "Dial Drive Drawing") must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 550 kc end of Broadcast "A" band. The dial pointer has a spring clip for attachment to the cable.

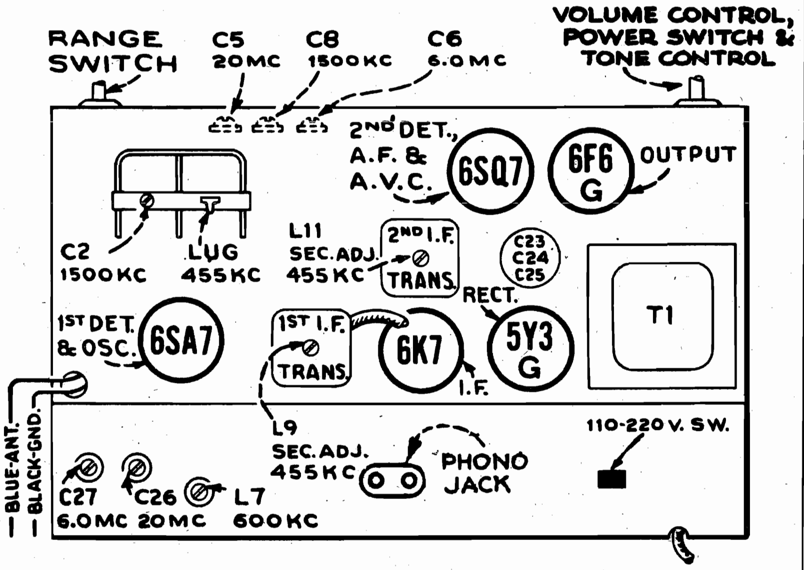


FIG. 1. TUBE, TRIMMER AND PARTS LOCATION

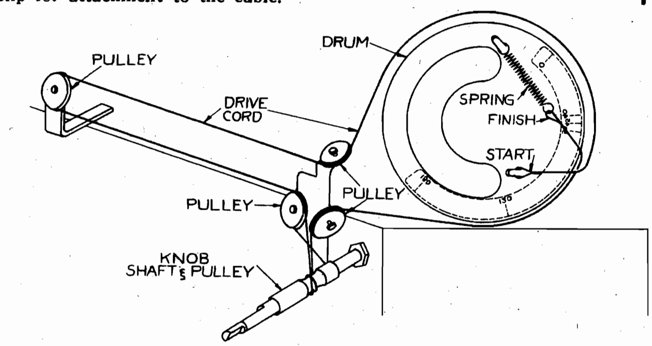


FIG. 2. CONDENSER AND INDICATOR DRIVE CORD

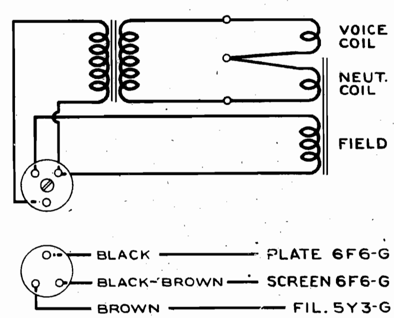


FIG. 3. SPEAKER AND CABLE CONNECTIONS

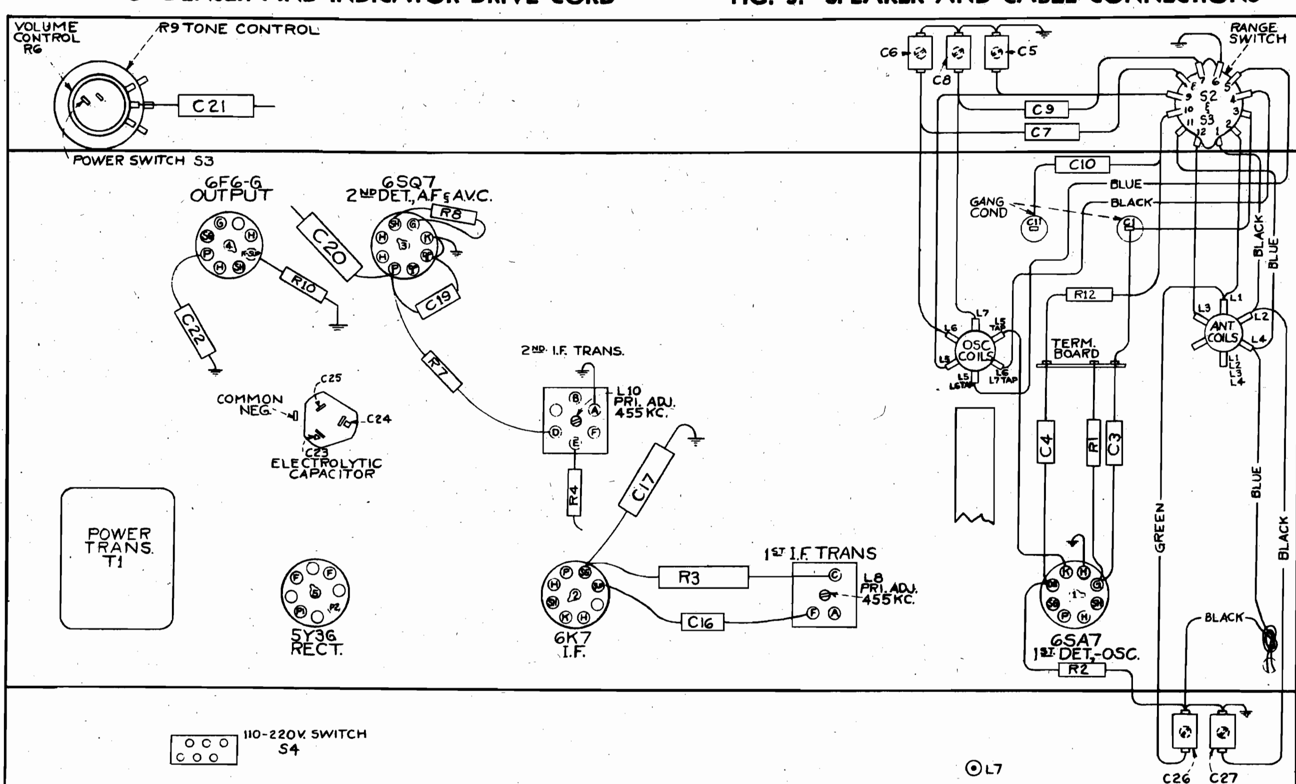


FIG. 4. TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

MODEL 7300
Alignment

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections........ Across speaker voice coil
Output meter reading to indicate 1.0 watt output........ 1.6 volts
Approximate average sensitivity in microvolts for 1.0 watt output........ See chart below
Dummy antenna value to be inserted in series with generator output........ See chart below
Connection of generator output lead........ See chart below
Connection of generator ground lead........ To chassis
Generator modulation........ 30%, 400 cycles
Position of Volume Control........ Fully Clockwise
Position of Tone Control........ Fully Clockwise

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
"A"	Low End	455 kc	.001 mfd.	6K7 I-F Grid	L10, L11	2nd I-F Trans.	3,500
"A"	Low End	455 kc	.001 mfd.	Tuning Condenser Stator (osc.)	L8, L9	1st I-F Trans.	85
"A"	600 kc (33°) (rock)	600 kc	.0002 mfd.	Ant.	L7	Osc.	15
"A"	1,500 kc (152.4°)	1,500 kc	.0002 mfd.	Ant.	C8, C2	Osc., Ant.	——
"C"	20 mc (155.4°)	20 mc	300 ohms	Ant.	C5	Osc.*	——
"C"	20 mc (155.4°) (rock)	20 mc	300 ohms	Ant.	C26	Ant.	95
"B"	6.0 mc (149°)	6.0 mc	300 ohms	Ant.	C6	Osc.*	15
"B"	6.0 mc (149°)	6.0 mc	300 ohms	Ant.	C27	Ant.	——
"A"	1,500 kc (150.5°)	1,500 kc	.0002 mfd.	Ant.	C29, C3	Osc., Ant.	15

IMPORTANT ALIGNMENT NOTES

*Use minimum capacity peak if two peaks can be obtained.

Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

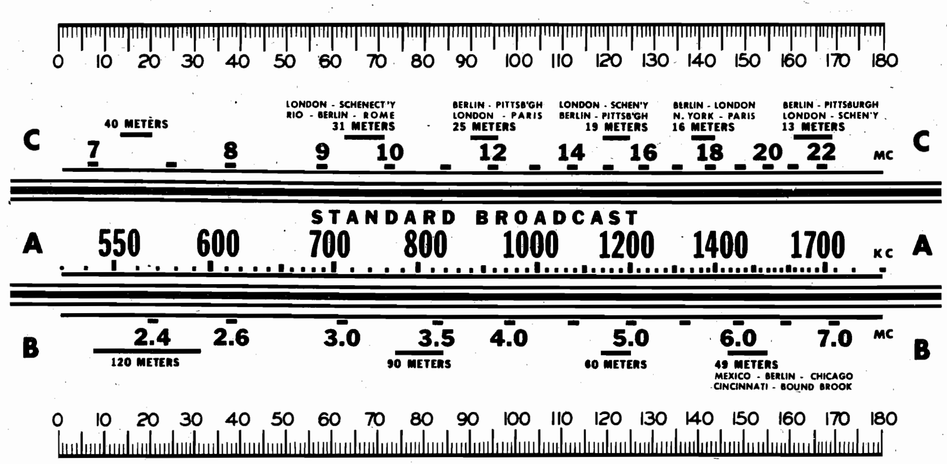
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set interfering with accurate alignment.

Adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band. Grid cap leads should remain in place during alignment.

Note.—Oscillator tracks 455 kc above signal on all bands.

Values shown under, "Microvolts," are only approximate.



Calibration Scale

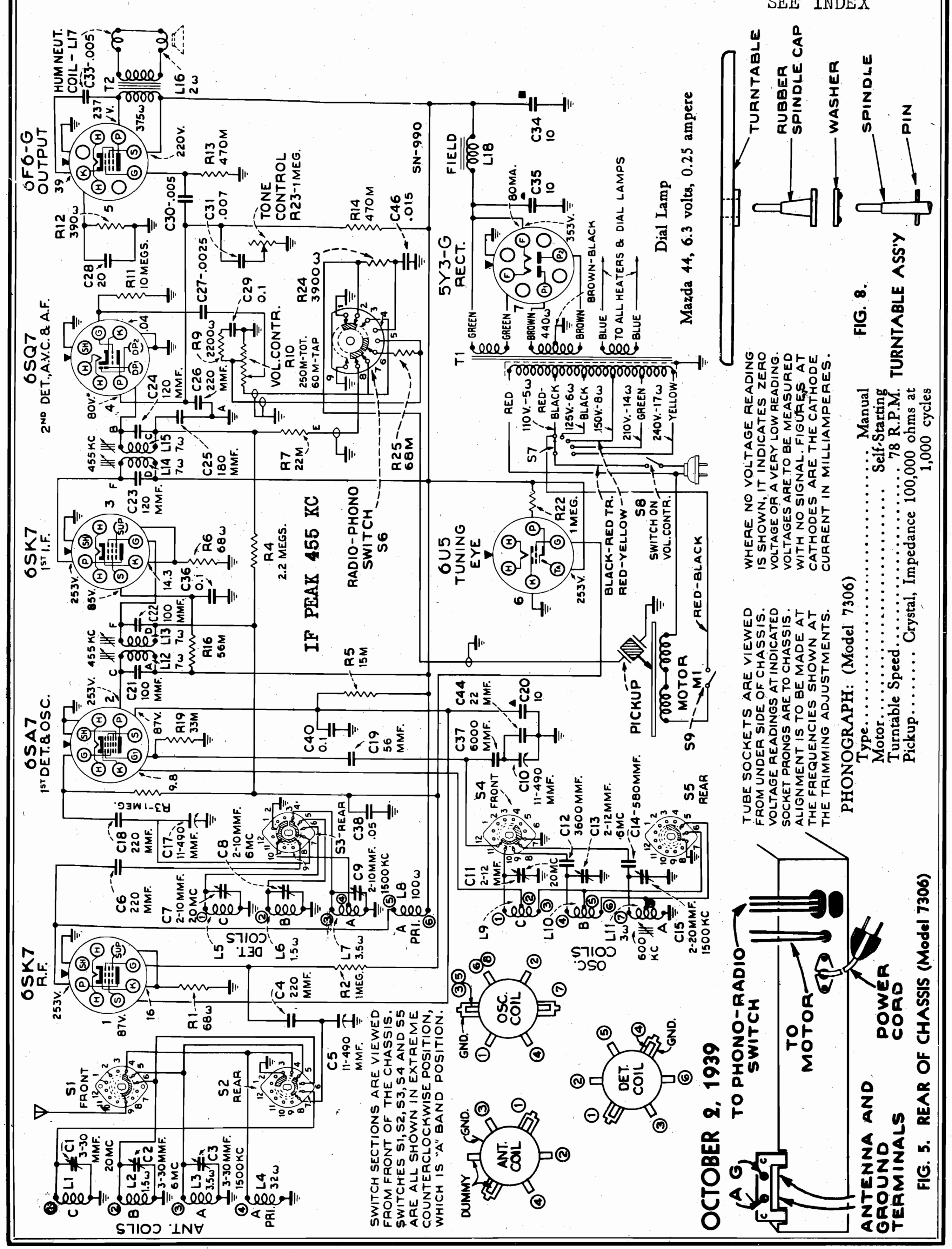
Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

MODEL 7306 (Export)
Ch. 126.218
Schematic, Voltage

SEARS, ROEBUCK & CO.

FOR ALIGNMENT
SEE INDEX

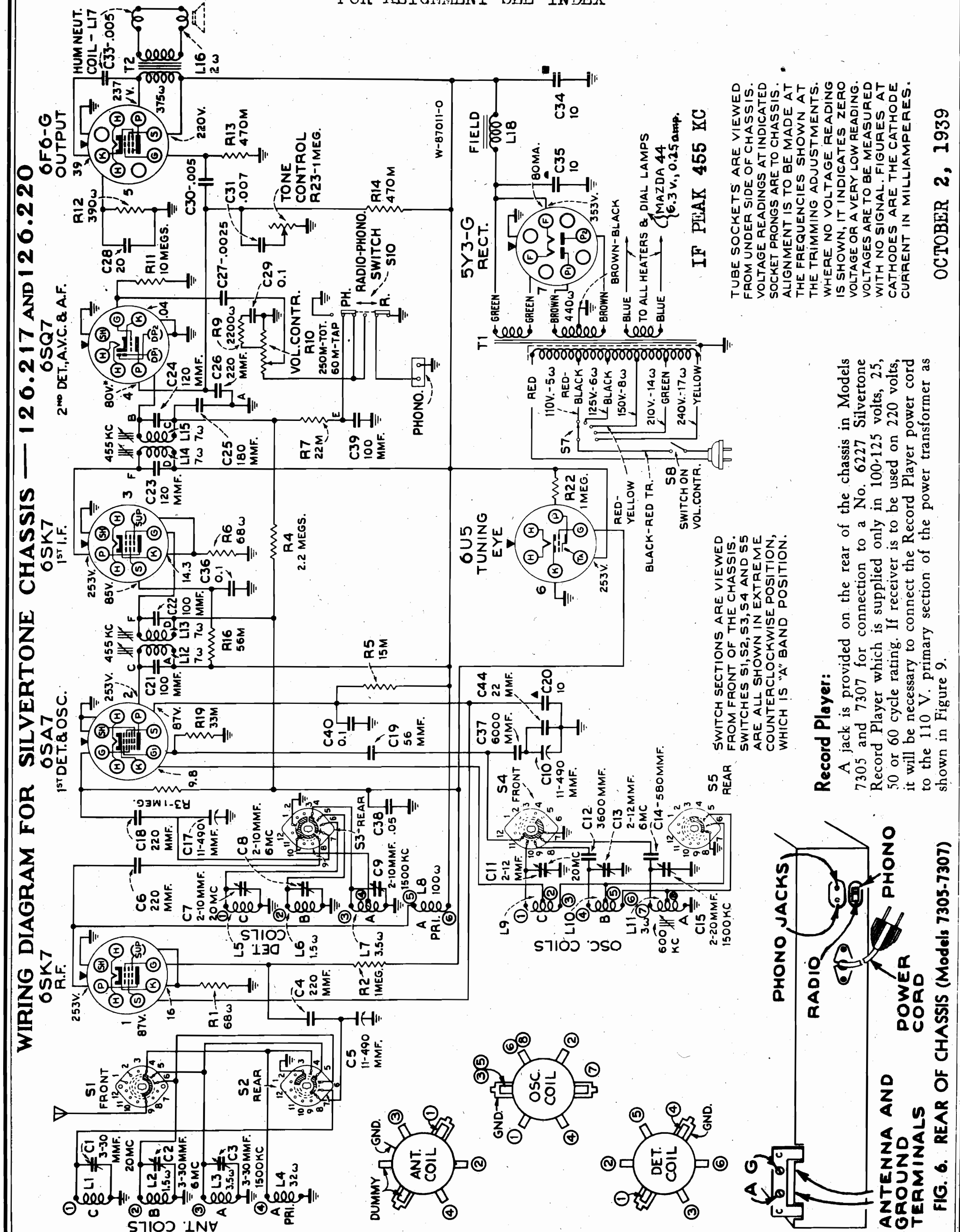


SEARS, ROEBUCK & CO.

MODELS 7305,Ch.126.217,
7307,Ch.126.220 (Export)
Schematic,Voltage

FOR ALIGNMENT SEE INDEX

WIRING DIAGRAM FOR SILVERTONE CHASSIS — 126.217 AND 126.220



IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE THE CATHODE CURRENT IN MILLIAMPERES.

OCTOBER 2, 1939

SWITCH SECTIONS ARE VIEWED FROM FRONT OF THE CHASSIS. SWITCHES S1,S2,S3,S4 AND S5 ARE ALL SHOWN IN EXTREME COUNTERCLOCKWISE POSITION, WHICH IS "A" BAND POSITION.

Record Player:

A jack is provided on the rear of the chassis in Models 7305 and 7307 for connection to a No. 6227 Silvertone Record Player which is supplied only in 100-125 volts, 25, 50 or 60 cycle rating. If receiver is to be used on 220 volts, it will be necessary to connect the Record Player power cord to the 110 V. primary section of the power transformer as shown in Figure 9.

FIG. 6. REAR OF CHASSIS (Models 7305-7307)

MODELS 7305, 7306, 7307
Chassis Wiring, Socket
Trimmers, Notes

SEARS, ROEBUCK & CO.

Loudspeaker:

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale (see "Dial Drive Drawing") must be in a vertical position when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial - Indicator Adjustment. — After fastening the chassis in the cabinet attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 550 kc end of Broadcast "A" band. The dial pointer has a spring clip for attachment to the cable.

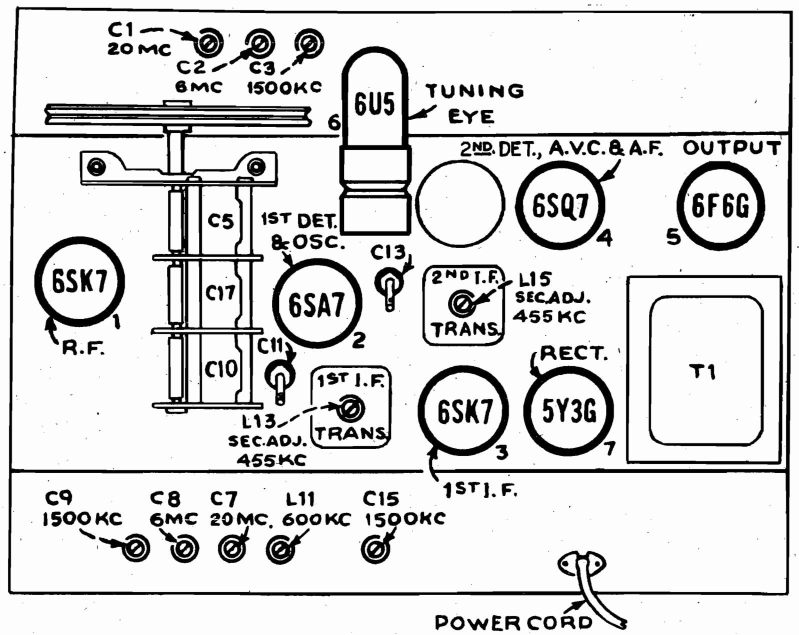


FIG. 1. TUBE, TRIMMER AND PARTS LOCATION

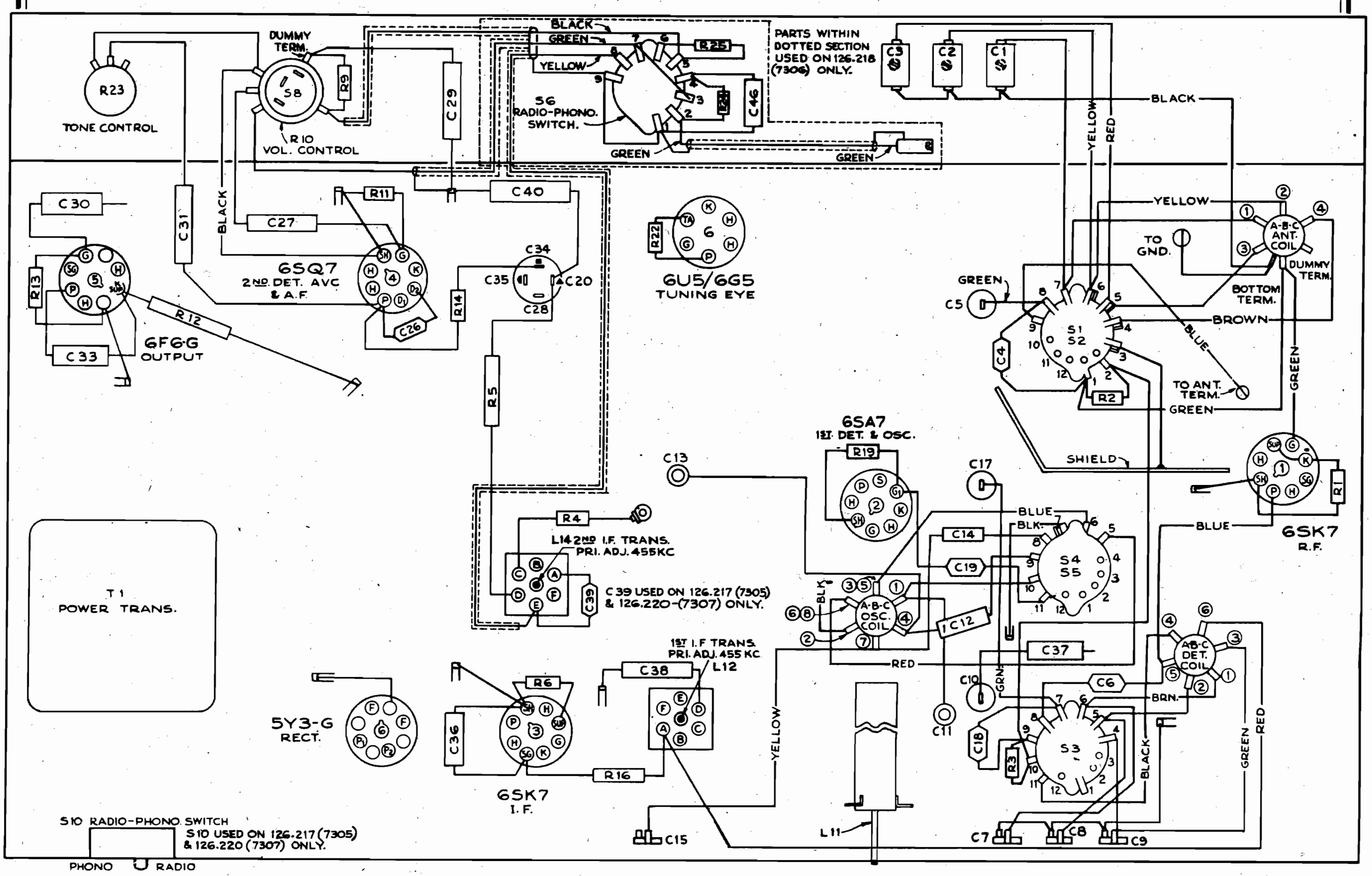


FIG. 2. TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

MODELS 7305, 7306, 7307
Alignment

SEARS, ROEBUCK & CO.

Model 7305 (126.217) and Model 7307 (126.220) are the same except for the size of speaker. Model 7305 having a 6-inch and Model 7307 a 12-inch electrodynamic speaker.

Model 7306 (126.218) has an 8-inch electrodynamic speaker and is supplied as a radio-phonograph combination.

POWER SUPPLY RATING:
- Models 7305 and 7307.......... 100-130, 140-160, 195-250 volts, 40 to 60 cycles, 75 watts
- Model 7306.......... 100-130, 140-160, 195-250 volts, 40 to 60 cycles, 75 watts
  - Phono Motor.......... 20 watts
  - Total.......... 95 watts

CHASSIS FEATURES:
- No. R-F Stages (all bands).......... One
- No. I-F Stages.......... One
- Tuning Eye
- Line Noise Electrostatic Transformer Shield
- Aural-Compensated Volume Control
- Magnetite-Core Adjusted I-F Transformers and Band "A" Low-Frequency Oscillator Tracking
- Jack and Switch for Phonograph Attachment on Models 7305 and 7307

FREQUENCY RANGES:
- (A) Standard Broadcast.. 540-1,720 kc (550-174 m)
- (B) Medium Wave...... 2.3-7.0 mc (130-42.8 m)
- (C) Short Wave........ 7.0-22.0 mc (42.0-13.6 m)

ALIGNMENT FREQUENCIES:
- Band "A".. 600 kc (osc.) 1,500 kc (osc., det., ant.)
- Band "B".......... 6 mc (osc., det., ant.)
- Band "C".......... 20 mc (osc., det., ant.)

INTERMEDIATE FREQUENCY.......... 455 kc

POWER OUTPUT:
- Type.......... Pentode
- Undistorted.......... 2.5 watts
- Maximum.......... 4.5 watts

LOUDSPEAKER:	Model 7305	Model 7306	Model 7307
Type—Electrodynamic	6-inch	8-inch	12-inch
Voice Coil Impedance at 400 Cycles	3.4 ohms	2.2 ohms	2.2 ohms
Field Coil Resistance	1,800 ohms	1,060 ohms	1,060 ohms
Approx. Field Coil Voltage Drop	130 volts	130 volts	130 volts

ALIGNMENT PROCEDURE

PRELIMINARY:

- Output meter connections.......... Across speaker voice coil
- Output meter reading to indicate 1.0 watt output.......... 1.6 volts
- Approximate average sensitivity in microvolts for 1.0 watt output.......... See chart below
- Dummy antenna value to be inserted in series with generator output.......... See chart below
- Connection of generator output lead.......... See chart below
- Connection of generator ground lead.......... To chassis
- Generator modulation.......... 30%, 400 cycles
- Position of Volume Control.......... Fully clockwise
- Position of Tone Control.......... Fully clockwise

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
"A"	Low End	455 kc	.001 mfd.	6SK7 I-F Grid	L14, L15	2nd I-F Trans.	4,600
"A"	Low End	455 kc	.001 mfd.	Tuning Condenser Stator (osc.)	L12, L13	1st I-F Trans.	85
"A"	600 kc (148°) (rock)	600 kc	.0002 mfd.	Ant.	L11	Osc.	2.8
"A"	1,500 kc (28°)	1,500 kc	.0002 mfd.	Ant.	C15, C9, C3	Osc., Det., Ant.	2.1
"B"	6.0 mc (31°)	6.0 mc	300 ohms	Ant.	C13*, C8, C2	Osc.,* Det., Ant.	2.1
"C"	20 mc (23°)	20 mc	300 ohms	Ant.	C11*, C7, C1	Osc.,* Det., Ant.	4.2

IMPORTANT ALIGNMENT NOTES

*Use minimum capacity peak if two peaks can be obtained.

Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set interfering with accurate alignment.

Adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band.

Note.—Oscillator tracks 455 kc above signal on all bands.

Values shown under, "Microvolts," are only approximate.

MODELS 7305,7306,7307
MODELS 7310,7312

SEARS, ROEBUCK & CO.

Phonograph Data,Dial

NOTE:-ILLUSTRATIONS MARKED WITH✱APPLY ALSO TO MODELS 7310,7312.

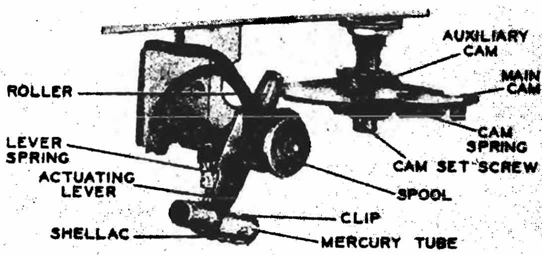
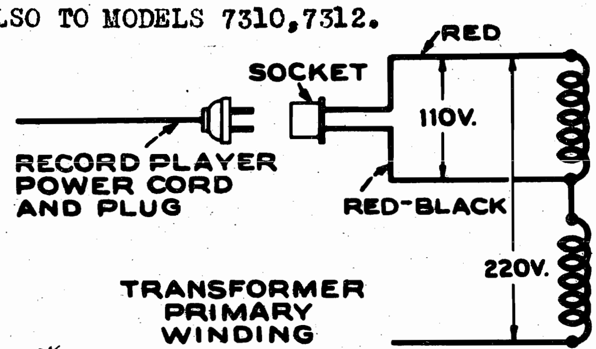


FIG. 4. MERCURY SWITCH MECHANISM
(Model 7306) Viewed from front—shown with pickup in rest position

The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1⅞ inches from the center line of the turntable shaft.



✱FIG. 9. RECORD PLAYER CONNECTIONS (220V—110V)
(✱FIG.8)

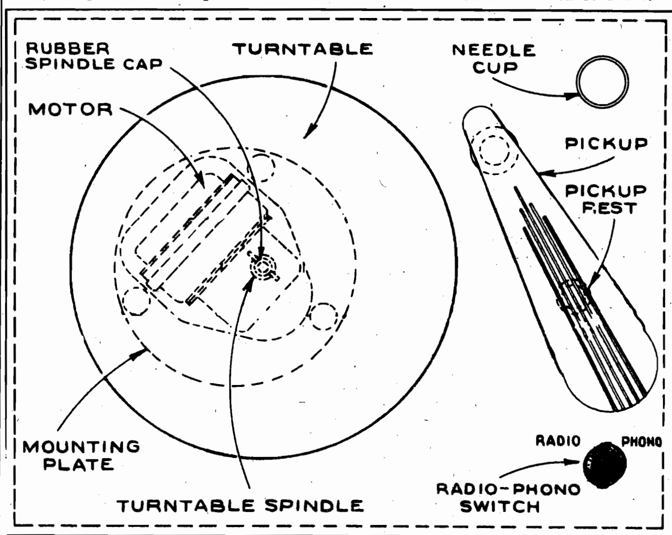
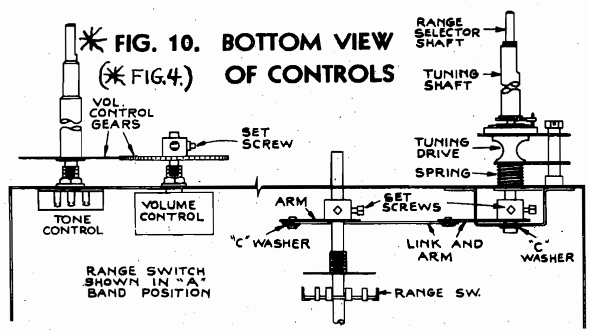
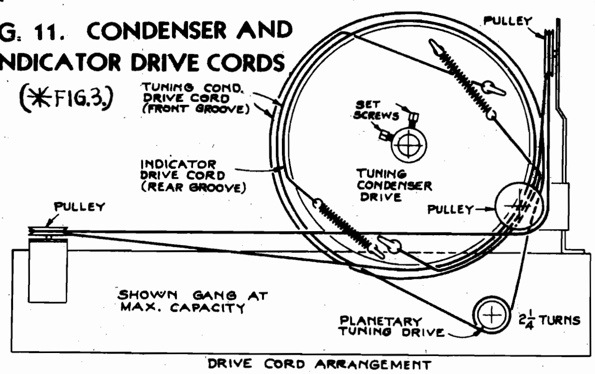


FIG. 3. PHONOGRAPH MOTOR BOARD AND OPERATING CONTROLS (Model 7306)

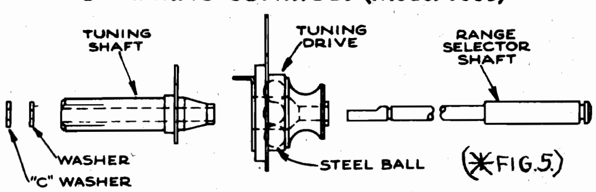
✱FIG. 10. BOTTOM VIEW OF CONTROLS
(✱FIG.4)



✱FIG. 11. CONDENSER AND INDICATOR DRIVE CORDS
(✱FIG.3)

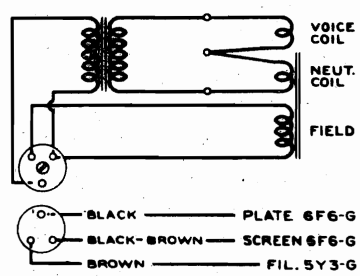


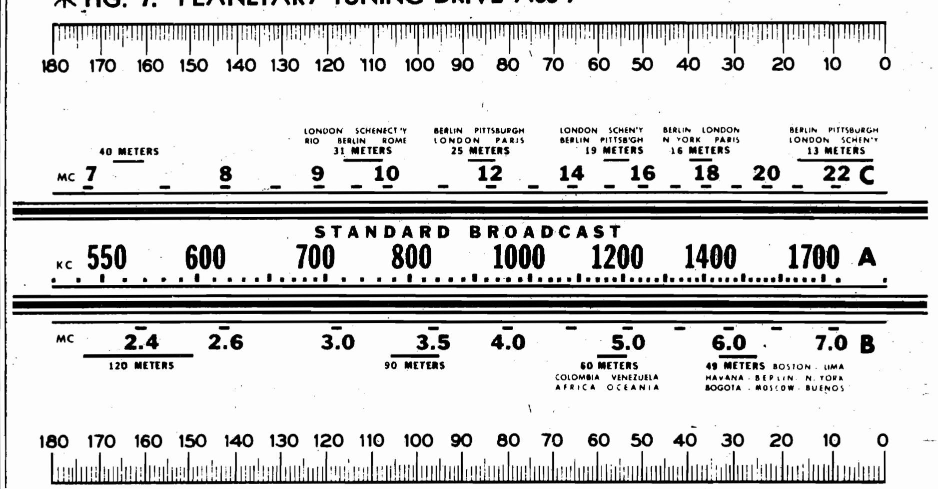
DRIVE CORD ARRANGEMENT



✱FIG. 7. PLANETARY TUNING DRIVE ASS'Y

FIG. 12. ➔
SPEAKER AND CABLE CONNECTIONS





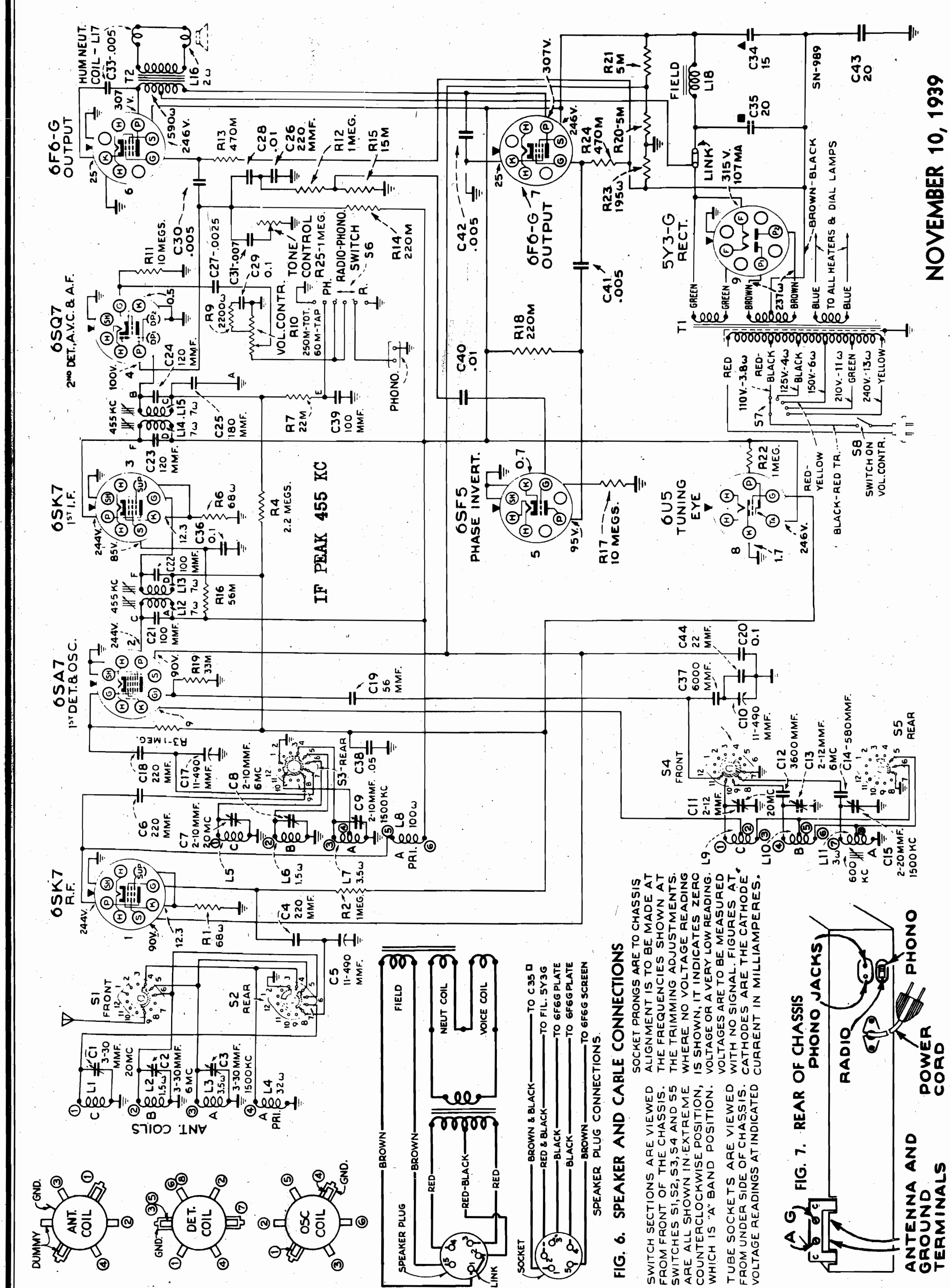
✱ Calibration Scale

Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 32° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

SEARS, ROEBUCK & CO.

MODELS 7310,Ch.126.219
7312,Ch.126.221(Export)
Schematic,Voltage



SPEAKER PLUG CONNECTIONS.

FIG. 6. SPEAKER AND CABLE CONNECTIONS

SWITCH SECTIONS ARE VIEWED FROM FRONT OF THE CHASSIS. SWITCHES S1,S2,S3,S4 AND S5 ARE ALL SHOWN IN EXTREME COUNTERCLOCKWISE POSITION, WHICH IS "A" BAND POSITION.

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE THE CATHODE CURRENT IN MILLIAMPERES.

FIG. 7. REAR OF CHASSIS

NOVEMBER 10, 1939

MODELS 7310, 7312
Chassis Wiring, Socket
Trimmers, Dial Data

SEARS, ROEBUCK & CO.

General Information and Service Hints

Loudspeaker:

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

Tuning Dial:

The tuning shaft is connected through a cord drive to a drum on the condenser shaft. This same cord drives the dial indicator by passing over a pulley on the chassis. Figure 3 shows the complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and condenser drum.

Record Player:

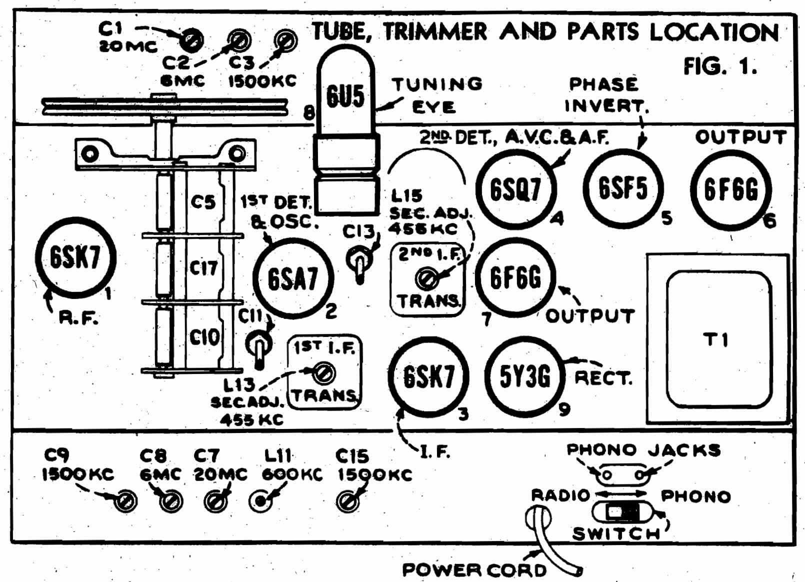
A jack is provided on the rear of the chassis for connection to a No. 6227 Silvertone Record Player which is supplied only in 100-125 volts, 25, 50 or 60 cycle rating. If receiver is to be used on 220 volts, it will be necessary to connect the Record Player power cord to the 110 V. primary section of the power transformer as shown in Figure 8.

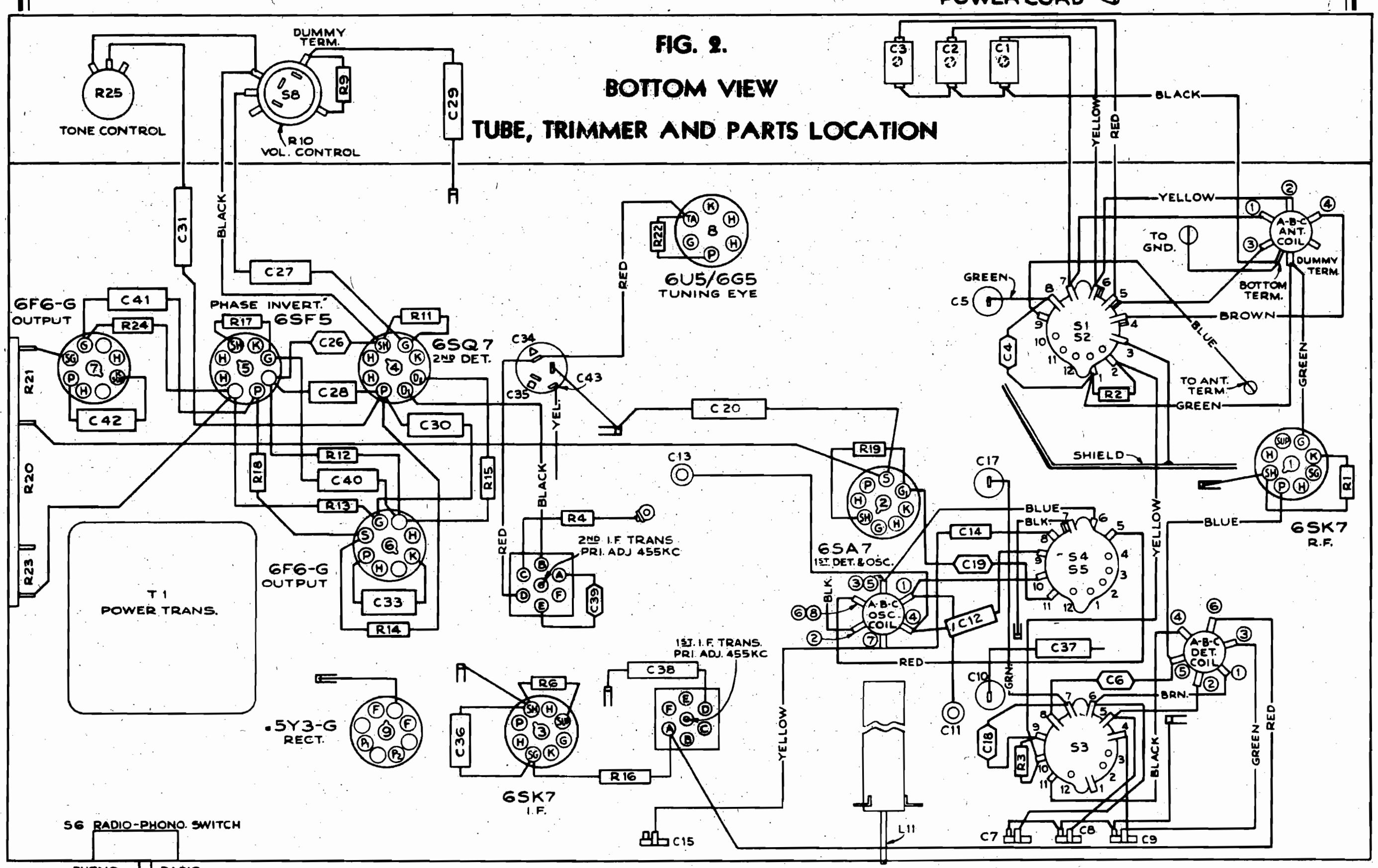
Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale (see "Dial Drive Drawing") must be in a vertical position when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial - Indicator Adjustment. — After fastening the chassis in the cabinet attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 550 kc end of Broadcast "A" band. The dial pointer has a spring clip for attachment to the cable.





SEARS ROEBUCK & CO.

LOUDSPEAKER:	Model 7310	Model 7312
Type—Electrodynamic	8-inch	12-inch
Voice Coil Impedance at 400 Cycles	2.2 ohms	2.2 ohms
Field Coil Resistance	1,060 ohms	1,060 ohms
Approximate Field Coil Voltage Drop	70 volts	70 volts

Note.—The above models are identical except for the size of speaker. Model 7310 has an 8-inch and Model 7312 a 12-inch electrodynamic speaker.

POWER OUTPUT:
- Type .... Push-Pull
- Undistorted .... 10.5 watts
- Maximum .... 11.5 watts

INTERMEDIATE FREQUENCY .... 455 kc

POWER SUPPLY RATING:
100-130, 140-160, 195-250 volts, 40 to 60 cycles, 95 watts

FREQUENCY RANGES:
- (A) Standard Broadcast.. 540-1,720 kc (550-174 m)
- (B) Medium Wave....... 2.3-7.0 mc (130-42.8 m)
- (C) Short Wave........ 7.0-22.0 mc (42.0-13.6 m)

ALIGNMENT FREQUENCIES:
- Band "A"... 600 kc (osc.) 1,500 kc (osc., det., ant.)
- Band "B".......... 6 mc (osc., det., ant.)
- Band "C".......... 20 mc (osc., det., ant.)

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections	Across speaker voice coil
Output meter reading to indicate 1.0 watt output	1.48 volts
Approximate average sensitivity in microvolts for 1.0 watt output	See chart below
Dummy antenna value to be inserted in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	To chassis
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	Fully clockwise

LOCATION OF PARTS AND ALIGNMENT ADJUSTMENTS ON TOP OF CHASSIS

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
"A"	Low End	455 kc	.001 mfd.	6SK7 I-F Grid	L14, L15	2nd I-F Trans.	5,000
"A"	Low End	455 kc	.001 mfd.	Tuning Condenser Stator (osc.)	L12, L13	1st I-F Trans.	100
"A"	1,500 kc (28°)	1,500 kc	.0002 mfd.	Ant.	C15, C9, C3	Osc., Det., Ant.	2
"A"	600 kc (148°) (rock)	600 kc	.0002 mfd.	Ant.	L11	Osc.	2
"B"	6.0 mc (31°)	6.0 mc	300 ohms	Ant.	C13,* C8, C2	Osc.,* Det., Ant.	2
"C"	20 mc (23°)	20 mc	300 ohms	Ant.	C11,* C7, C1	Osc.,* Det., Ant.	2.5

IMPORTANT ALIGNMENT NOTES

* Use minimum capacity peaks if two peaks can be obtained.

Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set interfering with accurate alignment.

Adjustment locations are shown on the top and bottom parts location views of chassis.

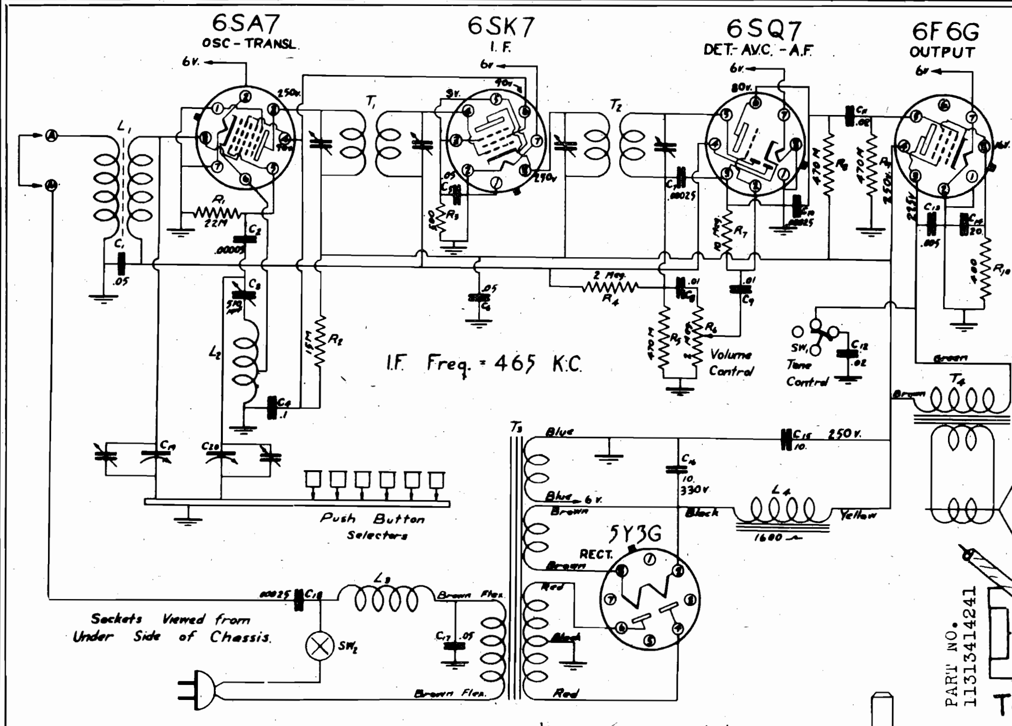
Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band.

Note.—Oscillator tracks 455 kc above signal on all bands.

Values shown under, "Microvolts," are only approximate.

MODEL 7807,Ch.113,414
Schematic,Voltage
Chassis,Socket
Trimmers

SEARS, ROEBUCK & CO.



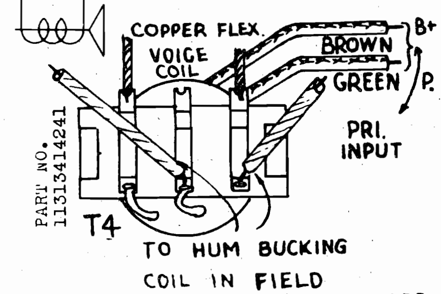
POWER SUPPLY:
105 - 120 Volts, 50-60 Cycle A.C. . . . 55 Watts

LOUD SPEAKER:
Type. . . . . Dynamic
Size. . . . . 6 inch
Field resistance. . . . . . .1600 ohms

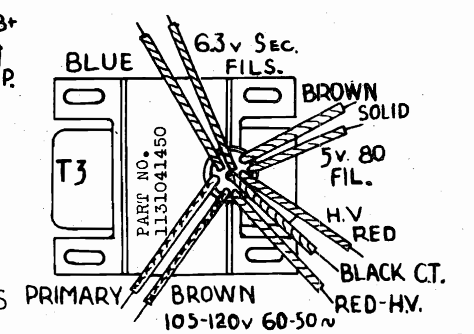
POWER OUTPUT:
Type . . . . Single Pentode
Undistorted. . . . . 2.1 Watts
Maximum. . . . . 3.9 Watts

FREQUENCY RANGE:
Broadcast. . . . . 540-1750 KC

INTERMEDIATE FREQUENCY. . . . . 465 KC

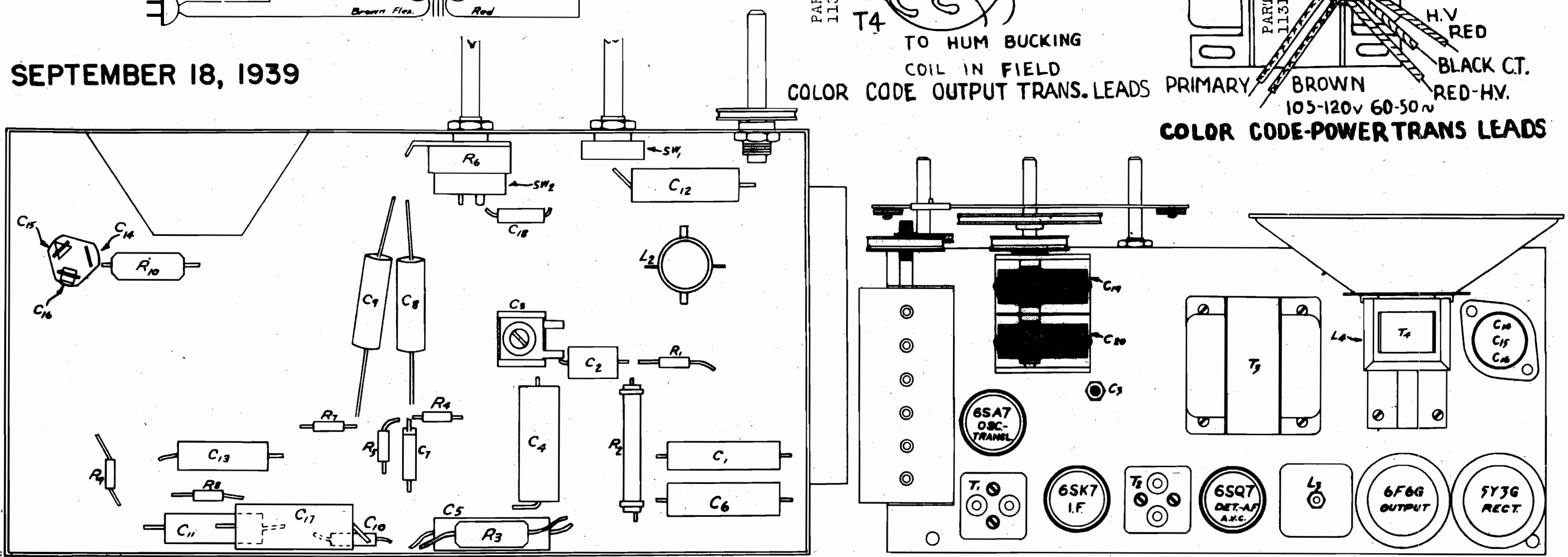


COLOR CODE OUTPUT TRANS. LEADS



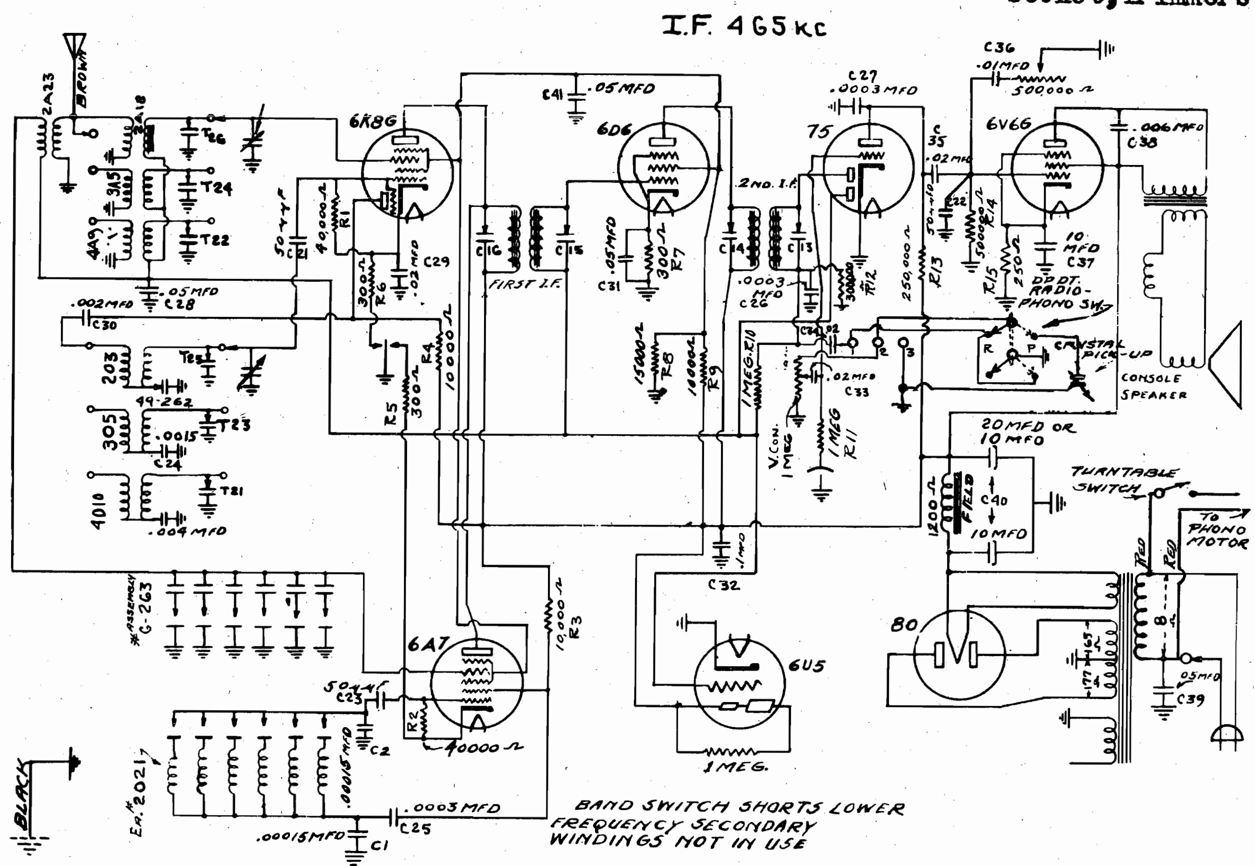
COLOR CODE-POWER TRANS LEADS

SEPTEMBER 18, 1939



SEARS, ROEBUCK & CO.

MODEL 7245
Ch.107.375
Schematic, Voltage Socket, Trimmers



TUBES AND FUNCTIONS:

Tube	Function
6K8G	Manual tuning 1st Detector
6A7	Automatic tuning 1st Detector
6D6	I-F Amplifier
75	2nd Detector, AVC, 1st AVC.
6U5	Tuning Eye
6V6G	Power Output
80	Rectifier
Dial Lamps (2)	6.3 Volts .15 Amps.

POWER SUPPLY RATINGS AVAILABLE AND CONSUMPTION:

	RADIO ONLY	TOTAL
105-125 Volts, 60 Cycles	60 Watts	90 Watts
105-125 Volts, 50 Cycles	60 Watts	90 Watts
105-125 Volts, 25 Cycles	60 Watts	90 Watts

POWER OUTPUT:
- Type. . . . . Single Pentode
- Undistorted . . . . 4.5 Watts
- Maximum . . . . 6.5 Watts

PHONOGRAPH:
- Type. . . . . Automatic-Manual
- Record Capacity . . . . . Eight 10" or Seven 12"
- Speed 78 R.P.M. . . . . Constant
- Type of Pickup. . . . . Crystal
- Pickup Impedance. . . . . 100,000 ohms at 1,000 Cy

LOUDSPEAKER:
- Type. . . . . Electrodynamic
- Size. . . . . 12 inches
- V.C. Impedance. . . . . . 4.5 at 400 cycles
- Field Coil Resistance . . . . 1200 ohms
- App. Field Coil Voltage Drop. . . . 90 volts

FREQUENCY RANGES:
- Standard Broadcast. . . . . . . 540-1720 kc.
- Medium Wave . . . . 2.2- 7.5 mc.
- Short Wave. . . . . 7 - 22 mc.

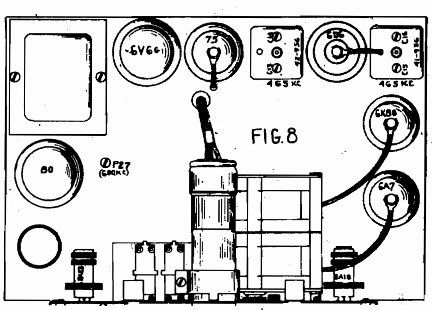


FIG. 8

SOCKET VOLTAGE READINGS

TUBE	FUNCTION	CATHODE	SCREEN GRID	PLATE	OSC. PLATE
6K8G	Mixer	3	95	225	135 V.
6D6	I.F.	3	95	225	-
75	Det AVC	-	-	45	-
6V6G	Output	12	235	225	-
6A7	Push B.	3	95	-	135 V.

Voltages taken from ground with line voltage at 117 V.A.C.
Drop across speaker field 90 V.

JULY 10, 1939

MODEL 7245
Alignment, Trimmers
Tuner Data

SEARS, ROEBUCK & CO.

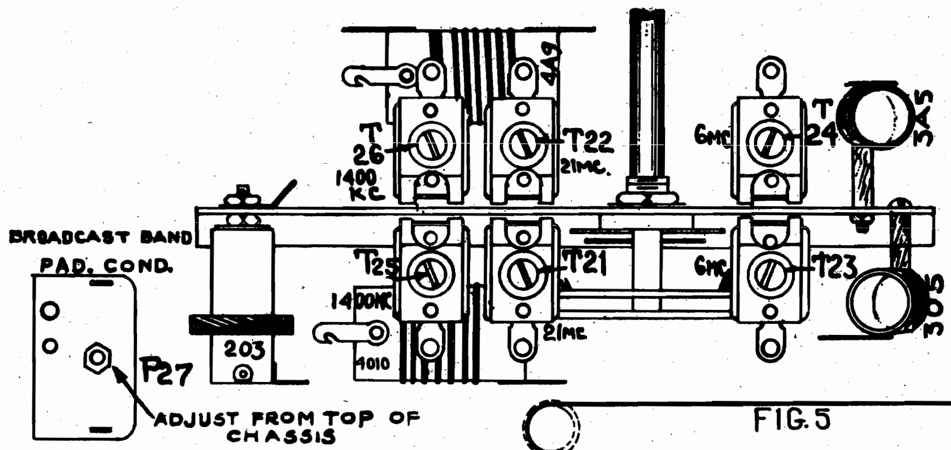


FIG. 9

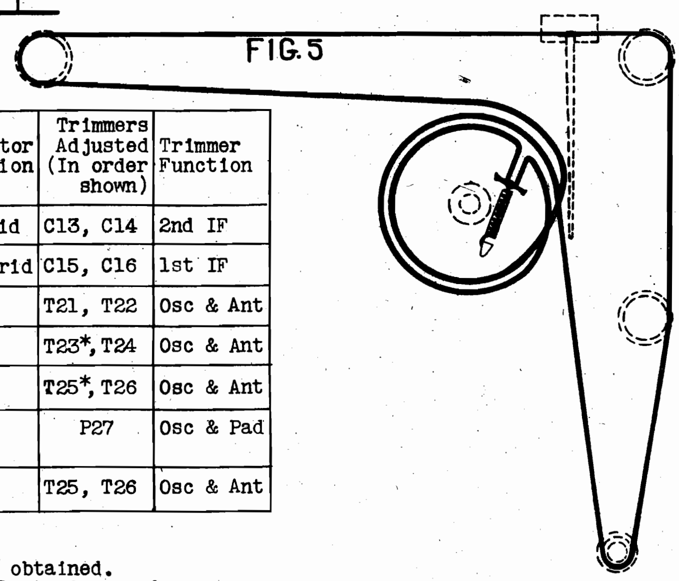


FIG. 5

DIAL DRIVE HOOKUP

ALIGNMENT PROCEDURE

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function
Broadcast	Low End	465 KC	.001 Mfd.	6D6 Grid	C13, C14	2nd IF
Broadcast	Low End	465 KC	.001 Mfd.	6K8G Grid	C15, C16	1st IF
Shortwave	21 MC	21 MC	300 Ohms	Ant.	T21, T22	Osc & Ant
Med. Wave	6 MC	6 MC	300 Ohms	Ant.	T23*, T24	Osc & Ant
Broadcast	1400 KC	1400 KC	.0002 Mfd.	Ant.	T25*, T26	Osc & Ant
Broadcast	600 KC (Rock)	600 KC	.0002 Mfd.	Ant.	P27	Osc & Pad
Broadcast	1400 KC	1400 KC	.0002 Mfd.	Ant.	T25, T26	Osc & Ant

IMPORTANT ALIGNMENT NOTES

*Use minimum capacity peak if two peaks can be obtained.
Where indicated by the word "Rock", the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set from interfering with accurate alignment.
Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band. Grid cap leads should remain in place during alignment.

SET-UP INSTRUCTIONS FOR PERMA-MATIC AUTOMATIC TUNER
NOTE: DO NOT ATTEMPT ANY ADJUSTMENTS UNTIL THE SET HAS BEEN TURNED ON AT LEAST 20 MINUTES

(1) Remove the push-button escutcheon by removing a screw at each end of the plate.

(2) Depress any one of the selector buttons. The correct adjustment screws are always to the RIGHT of the depressed button. Tune in the desired station by turning the black slotted stud (numbered 1 on the illustration below). This varies the iron core position within the oscillator coil.

(3) Adjust the screw with slotted head for maximum electric eye deflection. This adjustment is numbered 2 in illustration and always the one directly above the station selector adjustment mentioned in above paragraph. If electric eye overlaps on strong stations, adjust for maximum overlap. When making the two adjustments it is possible to obtain a strong deflection of the tuning eye apparently for a station and yet no station is present. THIS IS A NORMAL CONDITION and just means that the two adjustments are not close enough in relation to each other and can be corrected by varying the two adjustment screws.

THERE IS NO FREQUENCY DISCRIMINATION BETWEEN BUTTONS. ANY ONE OF SELECTORS WILL TUNE THE ENTIRE BROADCAST BAND (1600-540 KC).

NOTICE: DO NOT FORCE ANY ADJUSTMENTS if they tighten up in the course of adjustment, either the maximum or minimum has been reached and the adjustment should be made by opposite rotation.

It will be found easier to adjust if the low frequency stations are started on the right side and progress toward high frequency stations to left, IN THE SAME ORDER AS THE TUNING DIAL.

However, the above procedure is not absolutely necessary if there should be some preference for arranging stations otherwise.

AFTER ALL ADJUSTMENTS HAVE BEEN MADE -- GO OVER EACH ADJUSTMENT THE SECOND TIME TO MAKE CERTAIN THEY ARE CORRECT AND TO COMPENSATE FOR SUBSEQUENT ADJUSTMENTS.

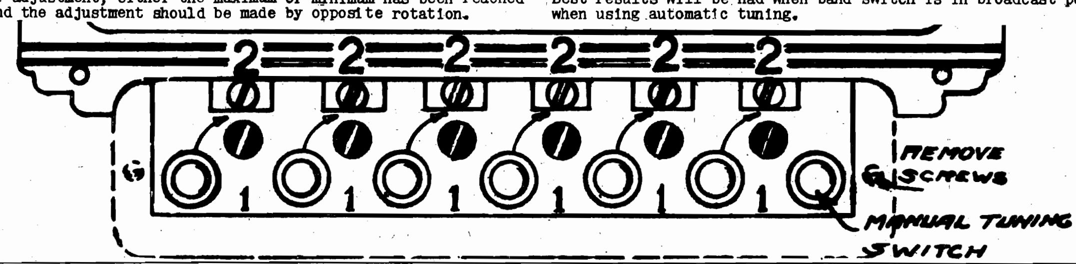
It is a big help to tune the desired station in on main dial while making adjustments, in order that the station can be quickly recognized by switching from manual back to button being adjusted.

It is not necessary to lock any of the adjustments as they are automatically locked.

Push out necessary station letter indicator from tab sheet, moisten back, and press into place above the correct button.

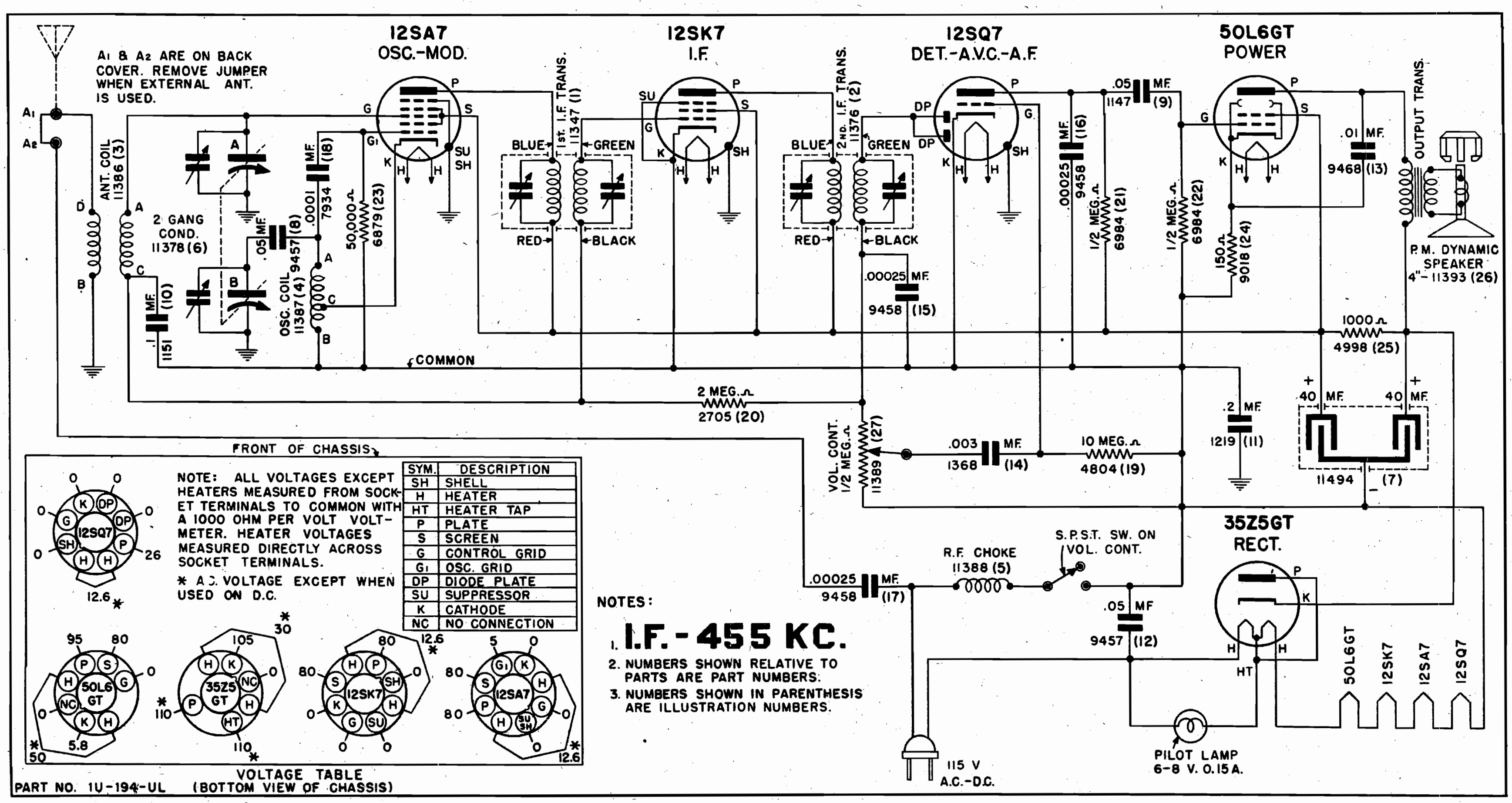
NOTICE: Turning station selector screw clock-wise lowers the frequency.

Best results will be had when band switch is in broadcast position when using automatic tuning.



MODEL 1U-194UL
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

Part No.			Description	List Price
1	11347	Coil	1st I.F. Transformer	$0.90
2	11376	Coil	2nd I.F. Transformer	.80
3	11386	Coil	Antenna	.50
4	11387	Coil	Oscillator	.45
5	11388	Coil	Antenna Line Choke	.25
6	11378	Condenser	Tuning Two Gang	1.75
7	11494	Condenser	Tubular Dry Electrolytic 40-40 Mfd.	1.10
8	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
9	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
10	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
11	1219	Condenser	Tubular .2 Mfd. 400 Volt	.27
12	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
13	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
14	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
15	9458	Condenser	Mica .00025 Mfd	.21
16	9458	Condenser	Mica .00025 Mfd	.21
17	9458	Condenser	Mica .00025 Mfd	.21
18	7934	Condenser	Mica .0001 Mfd	.21
19	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
20	2705	Resistor	Carbon 2 Megohm 1/3 Watt	.19
21	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
22	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
23	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
24	9018	Resistor	Carbon 150 Ohm 1/3 Watt	.19
25	4998	Resistor	Carbon 1000 Ohm 1 Watt	.21
26	11393	Speaker	P.M. Dynamic 4 in.	2.50
27	11389	Volume Control	With Switch	.80

MISCELLANEOUS PARTS

Part No.		Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
11381	Dial Scale	Calibrated Scale	.30
8184	Dial Cord	12 in. of 18 lb. Dial Drive Cord	.10
11379	Dial Shaft	Dial Drive Shaft	.12
11725	Dial Pointer	For Dial-Bronze	.15
11384	Dial Pointer	For Dial	.15
11391	Dial Crystal	For Dial	.22
10207	Knob	Ivory	.08
11733	Knob	Walnut	.10

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

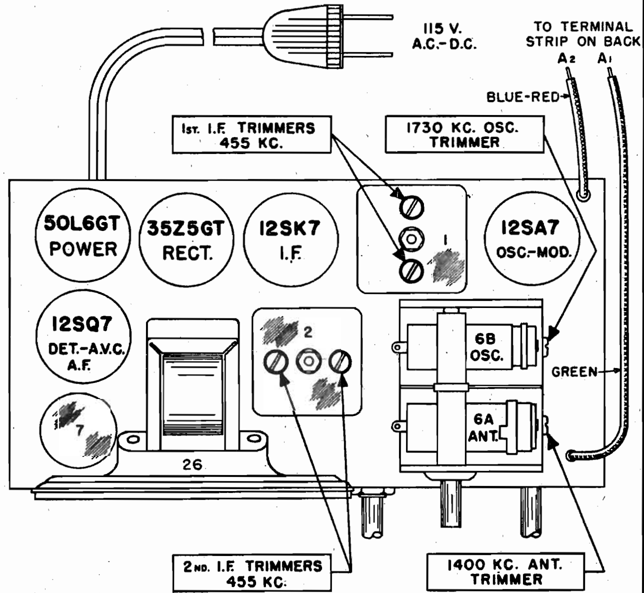
W. 3M 1-40 PART NO. 1U-194UL

MODEL 1U-194UL
Socket, Trimmers
Chassis, Alignment

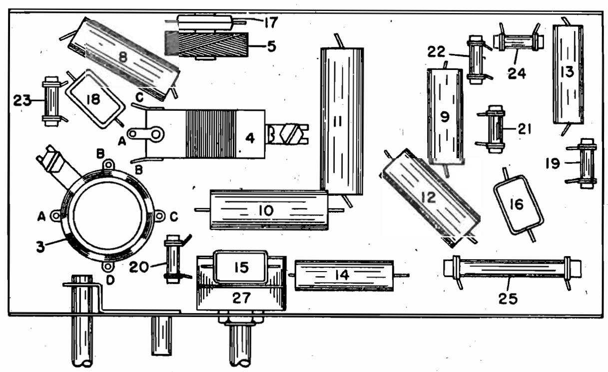
SENTINEL RADIO CORP.

SENTINEL MODEL 1U-194UL

5 tube A. C. - D. C. Operated Superheterodyne Receiver.



NO. 1U-194-UL



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

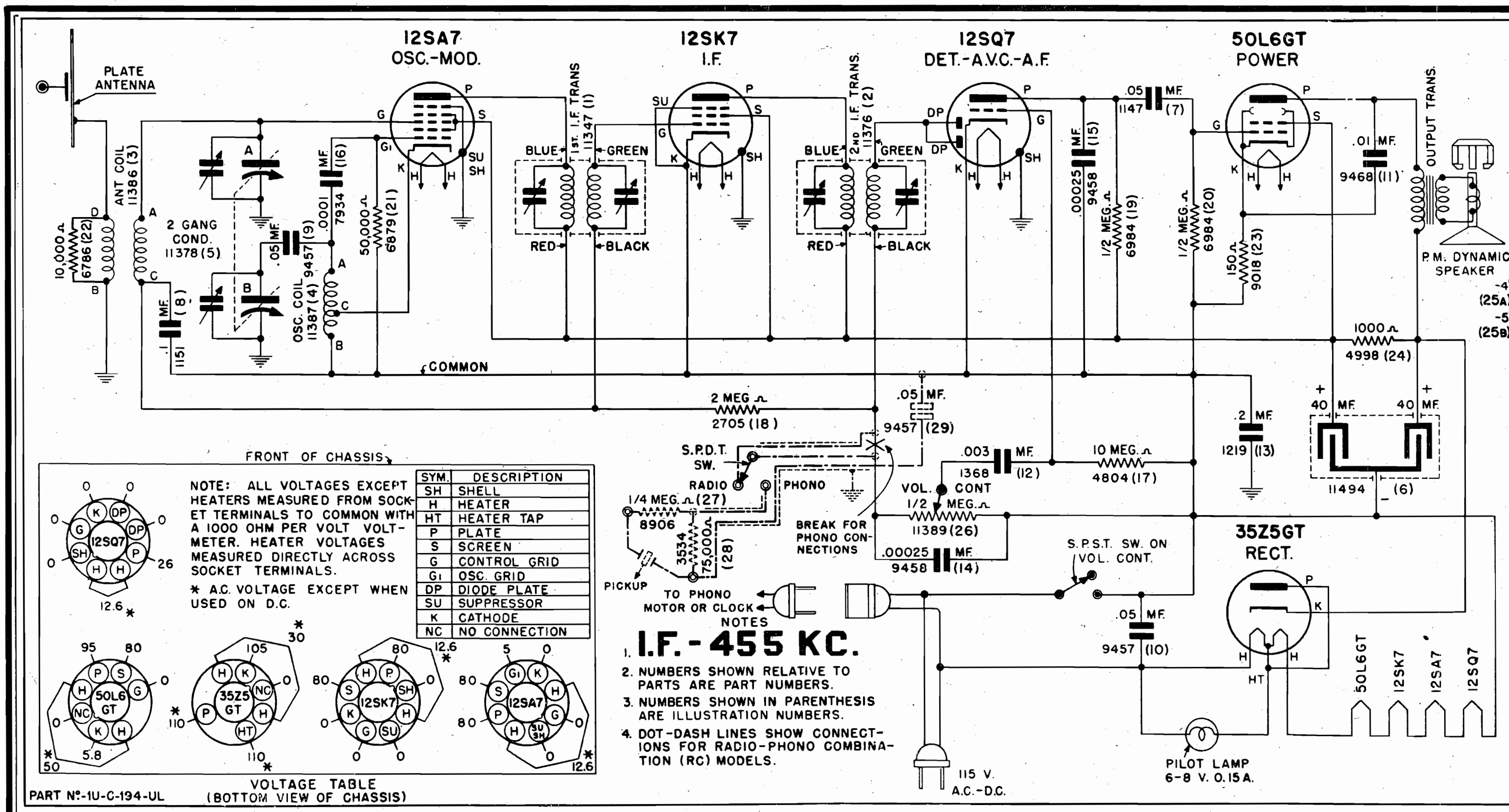
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis through .01 Mfd. condenser—if too much hum is encountered, leave unconnected.

	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 12SA7 tube	Adjust the second I. F. transformer trimmers for maximum output then adjust each of the first I. F. trimmers for maximum output
1	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD condenser	Receiver "A1" post	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD condenser	Receiver "A1" post	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

SENTINEL RADIO CORP.

MODEL 1U-C-194UL, RC-1U-194UL
Schematic, Voltage



PARTS LIST

Part	No.		Description	List Price
1	11347	Coil	1st I. F. Transformer	$ .90
2	11376	Coil	2nd I. F. Transformer	.80
3	11386	Coil	Antenna	.50
4	11387	Coil	Oscillator	.45
5	11378	Condenser	Tuning Two Gang	1.75
6	11494	Condenser	Dry Electric 40-40 Mfd.	1.10
7	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
8	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
9	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
10	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
11	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
12	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
13	1219	Condenser	Tubular .2 Mfd. 400 Volt	.27
14	9458	Condenser	Mica .00025 Mfd.	.21
15	9458	Condenser	Mica .00025 Mfd.	.21
16	7934	Condenser	Mica .0001 Mfd.	.21
17	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
13	2705	Resistor	Carbon 2 Megohm 1/3 Watt	.19
19	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19

Part	No.		Description	List Price
20	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
21	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
22	6786	Resistor	Carbon 10,000 Ohm 1/3 Watt	.19
23	9018	Resistor	Carbon 150 Ohm 1/3 Watt	.19
24	4998	Resistor	Carbon 1000 Ohm 1 Watt	.21
25A	11393	Speaker	P. M. Dynamic 4 in.	2.50
25B	11364	Speaker	P. M. Dynamic 5 in.	2.90
26	11389	Volume Control	With S.P.S.T. Switch	.80
27	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
28	3534	Resistor	Carbon 75,000 Ohm 1/3 Watt	.19
29	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
	10573	Switch	"Off-On" Motor Switch	.65
	2434	Switch	"Radio-Phono" Switch	.70

MISCELLANEOUS PARTS

Part No.		Description	List Price
11843	Back	Metal Cabinet Back	.25
11403	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
11846	Clock	115 Volt 60 Cycle	3.75
11847	Clock	115 Volt 50 Cycle	4.00
11851	Clock Face	Clock Face Only	.25

Part No.		Description	List Price
11852	Clock Hand	Black Hour Hand	.20
11853	Clock Hand	Black Minute Hand	.15
11854	Clock Hand	Red Second Hand	.15
11381	Dial Scale	Calibrated Scale	.30
8184	Dial Cord	Dial Drive Cord	.10
11379	Dial Shaft	Dial Drive Shaft	.12
11725	Dial Pointer	For Dial-Bronze	.15
11384	Dial Pointer	For Dial	.15
11391	Dial Crystal	For Dial and Clock	.22
11841	Knob	Tuning-Ivory for Clock Model	.10
11733	Knob	For Phono-Radio Motor Switches	.10
11371	Escutcheon	For Dial with Crystal Used with Phono Model	.75
11899	Receptacle	A.C. Receptacle and Plug for Phono Motor and Clock	.50
11912	Phono Motor	115 Volt 50 Cycle with 8 in. Turntable	4.50
11913	Phono Motor	115 Volt 60 Cycle with 8 in. Turntable	4.25
11907	Pickup	Crystal Pickup and Arm	4.25

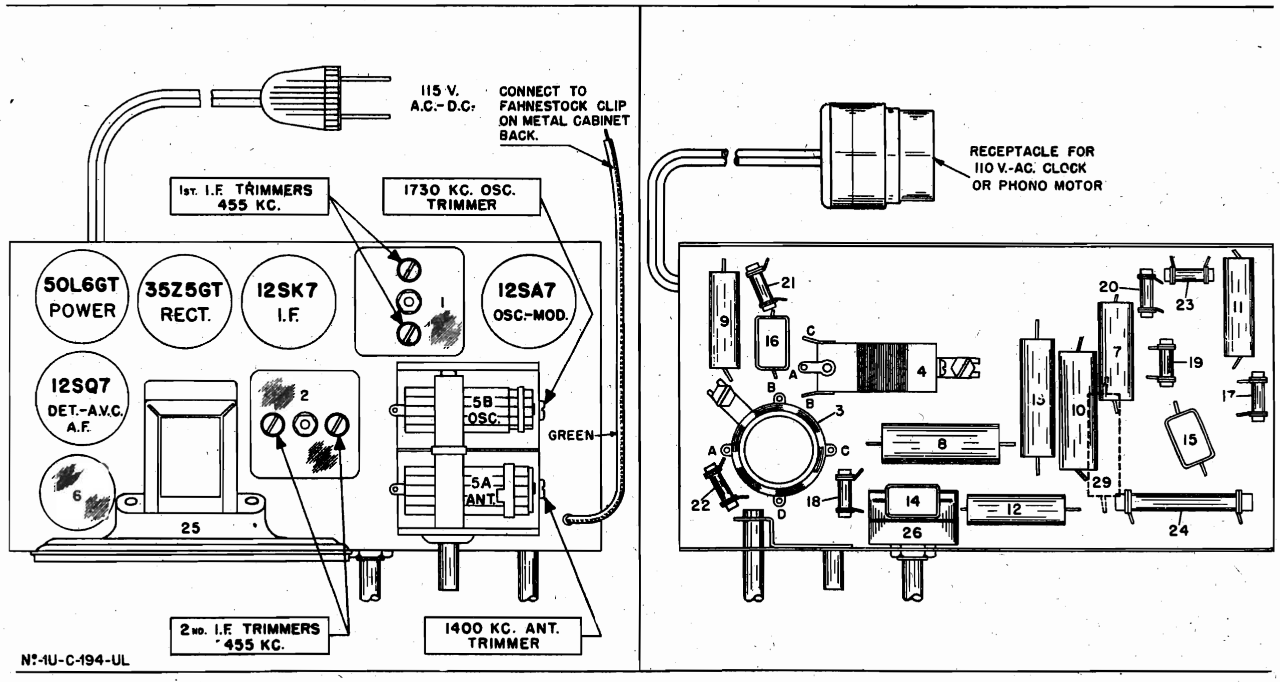
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.   WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER   W. 3M 1-40 PART NO. 1U-C-194UL RC-1U-194UL

MODELS 1U-C-194UL
RC-1U-194UL
Socket, Trimmers, Chassis
Alignment

SENTINEL RADIO CORP.

SENTINEL MODEL 1U-C-194UL & RC-1U-194UL

5 tube A. C. - D. C. Operated Superheterodyne Receiver



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

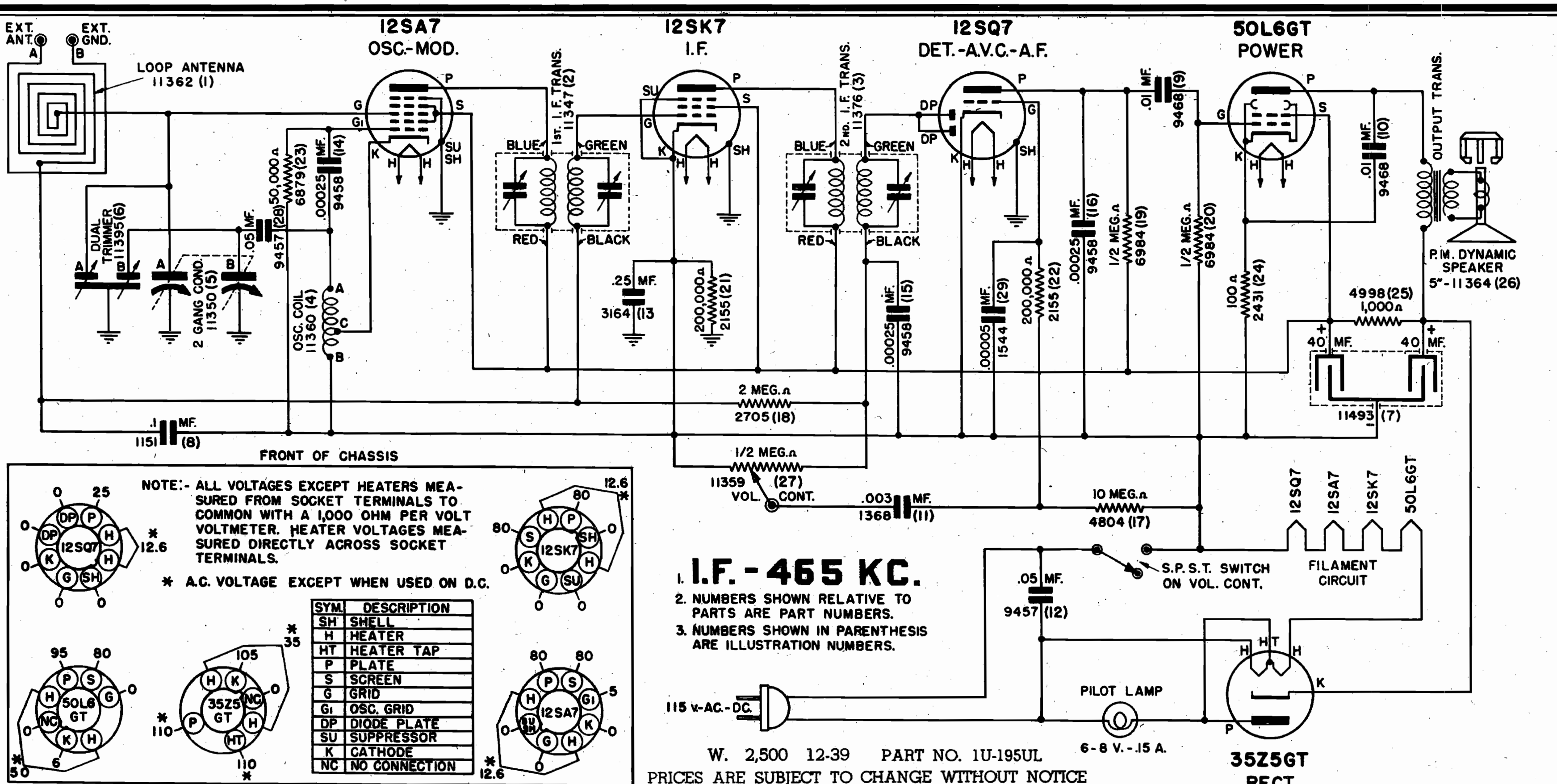
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis through .01 Mfd. condenser—if too much hum is encountered, leave unconnected.

	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts-layout diagram for location of trimmers mentioned below:
	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 12SA7 tube	Adjust the second I. F. transformer trimmers for maximum output then adjust each of the first I. F. trimmers for maximum output
1	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD condenser	To Metal Cabinet Back	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD condenser	To Metal Cabinet Back	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

SENTINEL RADIO CORP.



NOTE:- ALL VOLTAGES EXCEPT HEATERS MEASURED FROM SOCKET TERMINALS TO COMMON WITH A 1,000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.

* A.C. VOLTAGE EXCEPT WHEN USED ON D.C.

SYM.	DESCRIPTION
SH	SHELL
H	HEATER
HT	HEATER TAP
P	PLATE
S	SCREEN
G	GRID
G1	OSC. GRID
DP	DIODE PLATE
SU	SUPPRESSOR
K	CATHODE
NC	NO CONNECTION

VOLTAGE TABLE (BOTTOM VIEW OF CHASSIS)

1. I.F. - 465 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.

W. 2,500 12-39 PART NO. 1U-195UL

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

PART NO. 1U-195-UL

	Part No.		Description	List Price
1	11362	Antenna	Loop	$ .65
2	11347	Coil	1st I. F. Transformer	.90
3	11376	Coil	2nd I. F. Transformer	.80
4	11360	Coil	Oscillator	.50
5	11350	Condenser	Tuning Two Gang (Pushbutton Mech. Tuner Unit)	3.75
6	11395	Condenser	Dual Trimmer 2-90 Mmf.	.30
7	11493	Condenser	Tubular Dry Electrolytic 40-40 Mfd. 150 Volts	1.00
8	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
9	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
10	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
11	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
12	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
13	3164	Condenser	Tubular .25 Mfd. 400 Volt	.26
14	9458	Condenser	Mica .00025 Mfd.	.21
15	9458	Condenser	Mica .00025 Mfd.	.21
16	9458	Condenser	Mica .00025 Mfd.	.21
17	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
18	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
19	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
20	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
21	2155	Resistor	Carbon 200,000 Ohm ⅓ Watt	.19
22	2155	Resistor	Carbon 200,000 Ohm ⅓ Watt	.19
23	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
24	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
25	4998	Resistor	Carbon 1,000 Ohm 1 Watt	.21
26	11364	Speaker	P. M. Dynamic 5 in.	3.00
27	11359	Volume Control	With S. P. S. T. Switch	.80
28	9457	Condenser	.05 Mfd. 400 Volt	.18
29	1544	Condenser	.00005 Mfd. Mica	.21

MISCELLANEOUS PARTS

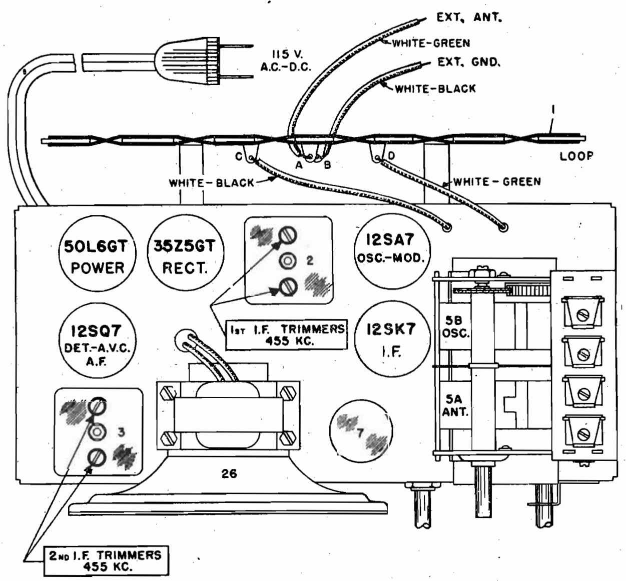
Part No.		Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
11354	Dial Scale	Calibrated Scale	.30
8184	Dial Cord	Dial Drive Cord	.10
11352	Dial Shaft	Dial Drive Shaft	.12
11513	Dial Pointer	For Dial-Bronze	.15
10659	Dial Pointer	For Dial	.16
11357	Dial Crystal	For Dial Used with Bakelite Cabinet Only	.27
11371	Escutcheon	For Dial Used with Wood Cabinet Only	.75
11200	Escutcheon	For Pushbutton Used with Wood Cabinet Only	.35
11733	Knob	Bakelite Tuning for Wood Cabinet	.10
11734	Knob	Bakelite Pushbutton for Wood Cabinet	.10
11729	Knob	Walnut Bakelite Tuning for Walnut Plastic Cabinet	.10
11731	Knob	Walnut Bakelite Pushbutton for Walnut Plastic Cabinet	.10
11730	Knob	Onyx Bakelite Tuning for Onyx Cabinet	.12
11732	Knob	Onyx Bakelite Pushbutton for Onyx Cabinet	.12
	Cabinet	Walnut Plastic	2.00
	Cabinet	Onyx Plastic	4.25

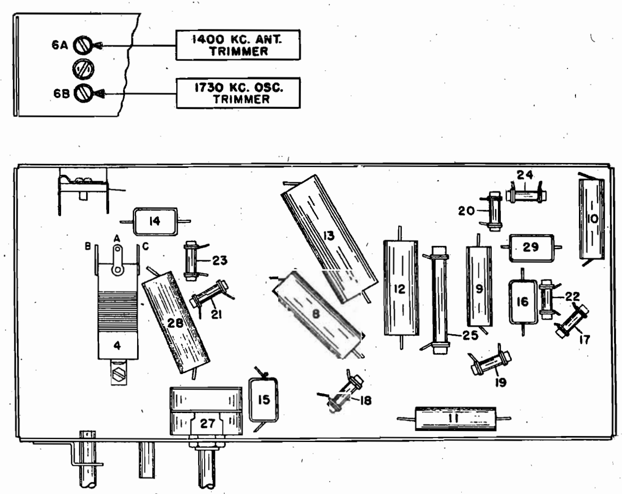
MODEL 1U-195UL
Socket, Trimmers
Chassis, Alignment

SENTINEL RADIO CORP

SENTINEL MODEL 1U-195UL

5 tube A. C. - D. C. Operated Superheterodyne Receiver





NO.1U-195-UL

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME APPROXIMATE POSITION IN THE BACK OF CHASSIS IT WILL BE IN WHEN THE SET IS IN THE CABINET AND THE BACK ATTACHED.

When adjusting 1720 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

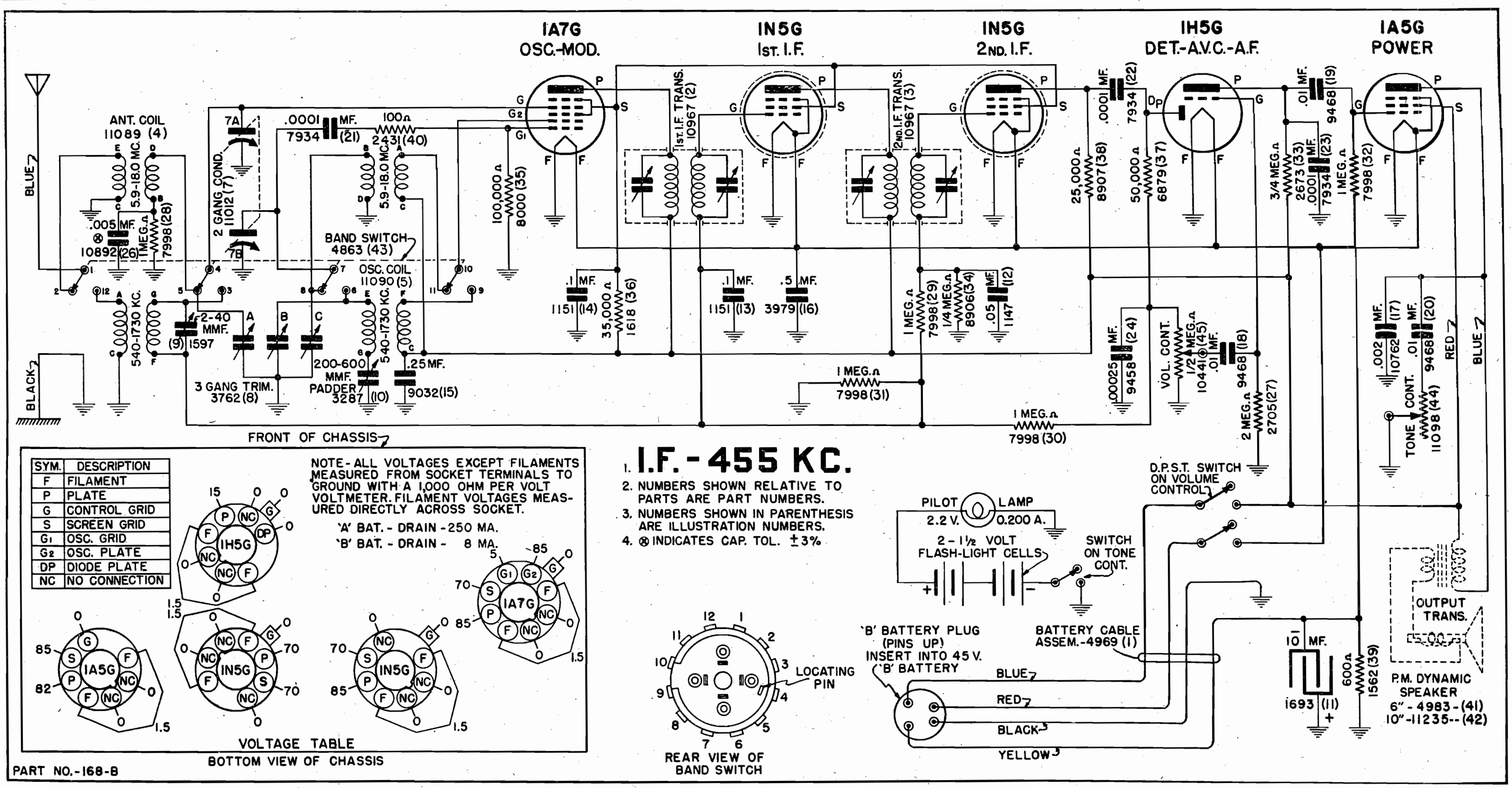
(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

DO NOT ATTACH LOW SIDE OF TEST OSCILLATOR TO RECEIVER—LEAVE UNCONNECTED.

		TEST OSCILLATOR			
	Set receiver dial to:	**Adjust test oscillator frequency to:**	**Use dummy antenna in series with output of test oscillator consisting of:**	**Attach output of test oscillator to:**	**Refer to parts layout diagram for location of trimmers mentioned below—and:**
	I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 12SA7 tube DO NOT REMOVE CAP	Adjust the second I. F. transformer trimmers for maximum out put—then adjust each of the first I.F. trimmers for maximum output.
1	Exactly 1730 K. C.	Exactly 1730 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Exactly 1400 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1400 K. C. antenna trimmer for maximum output.

MODEL 168B
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Illus. No.	Part No.		Description	List Price
1 (a)	4969	Cable	Battery With 4 Prong Plug	$ .35
1 (b)	11159	Cable	Battery with 2-3 Prong "B" and 1-2 Prong "A" Plugs	.55
2	10967	Coil	1st I. F. Transformer	1.10
3	10967	Coil	2nd I. F. Transformer	1.10
4	11089	Coil	Antenna	.65
5	11090	Coil	Oscillator	.60
7	11012	Condenser	Tuning Two Gang	1.75
8	3762	Condenser	Trimmer Three Gang 2-40 Mmf. Ea.	.47
9	1597	Condenser	Trimmer (2-40 Mmf.)	.21
10	3287	Condenser	Padder 200-600 Mmf.	.45
11	1693	Condenser	Dry Electrolytic 10 Mfd. 25 Volt	.75
12	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
13	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
14	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
15	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
16	3979	Condenser	Tubular .5 Mfd. 200 Volt	.40
17	10762	Condenser	Tubular .002 Mfd. 400 Volt	.19
18	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
19	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
20	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
21	7934	Condenser	Mica Moulded .0001 Mfd.	.21
22	7934	Condenser	Mica Moulded .0001 Mfd.	.21
23	7934	Condenser	Mica Moulded .0001 Mfd.	.21
24	9458	Condenser	Mica Moulded .00025 Mfd.	.21
26	10892	Condenser	Mica Moulded .005 Mfd. + 3%	.30
27	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
28	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
29	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
30	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
31	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
32	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
33	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
34	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
35	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt	.19
36	1618	Resistor	Carbon 35,000 Ohm ⅓ Watt	.19
37	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
38	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
39	1562	Resistor	Carbon 600 Ohm ⅓ Watt	.19
40	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
41	4983	Speaker	P. M. Dynamic 6 in.	4.25
42	11235	Speaker	P. M. Dynamic 10 in.	7.50
43	4863	Switch	Wave Band	.60
44	11098	Tone Control	With Dial Light Switch	.80
45	10441	Volume Control	With Off-On Switch	.95

MISCELLANEOUS PARTS

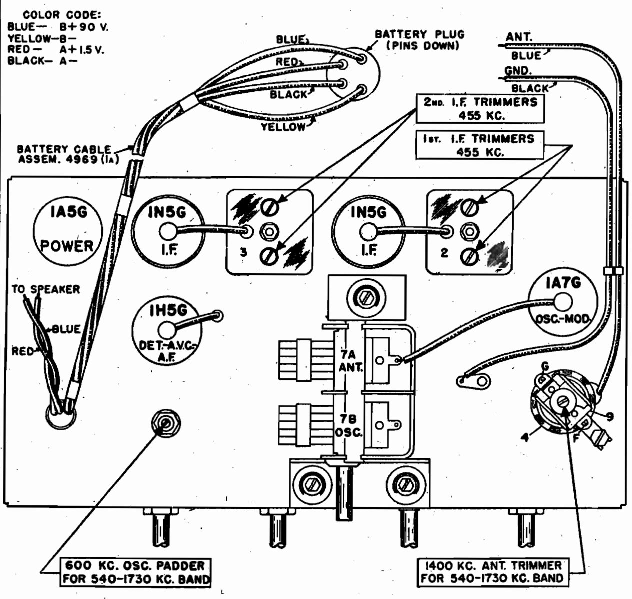
Part No.		Description	List Price
8184	Cord	Dial Drive Cord	.10
11094	Dial Scale	Calibrated Dial Scale Only	.45
11107	Dial Indicator	On-Off Indicator Assembly	.20
10777	Dial Pointer	For Dial	.16
11102	Escutcheon	For Dial-Uses Four Metal Clips for Mounting	1.00
11267	Escutcheon	For Dial-Uses Wood Screws for Mounting	1.00
4958	Knob	Marked "Tuning"	.12
4959	Knob	Marked "Off-Volume"	.12
4589	Spring	Cord Tension	.04
4960	Knob	Marked "Tone"	.12
4961	Knob	Marked "Band Switch"	.12
3487	Plug	3 Prong "B"	.10
10351	Plug	2 Prong "A"	.10
4978	Plug	4 Prong "AB"	.10

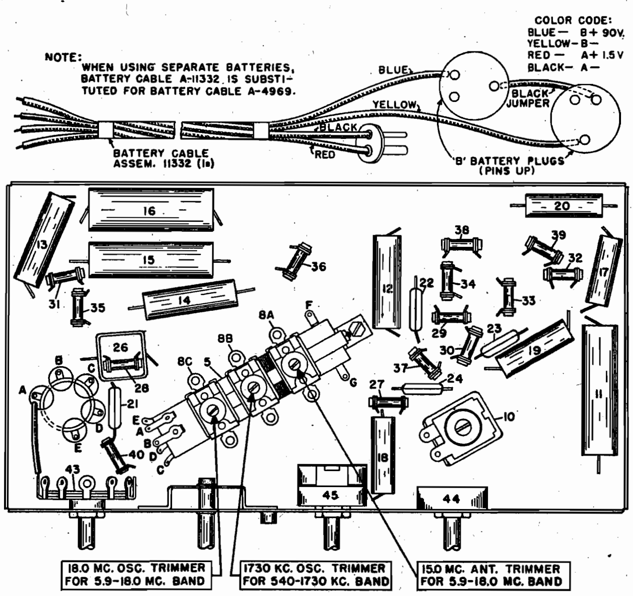
MODEL 168B
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

TWO BAND—FIVE TUBE

1½ Volt—Battery Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

o Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

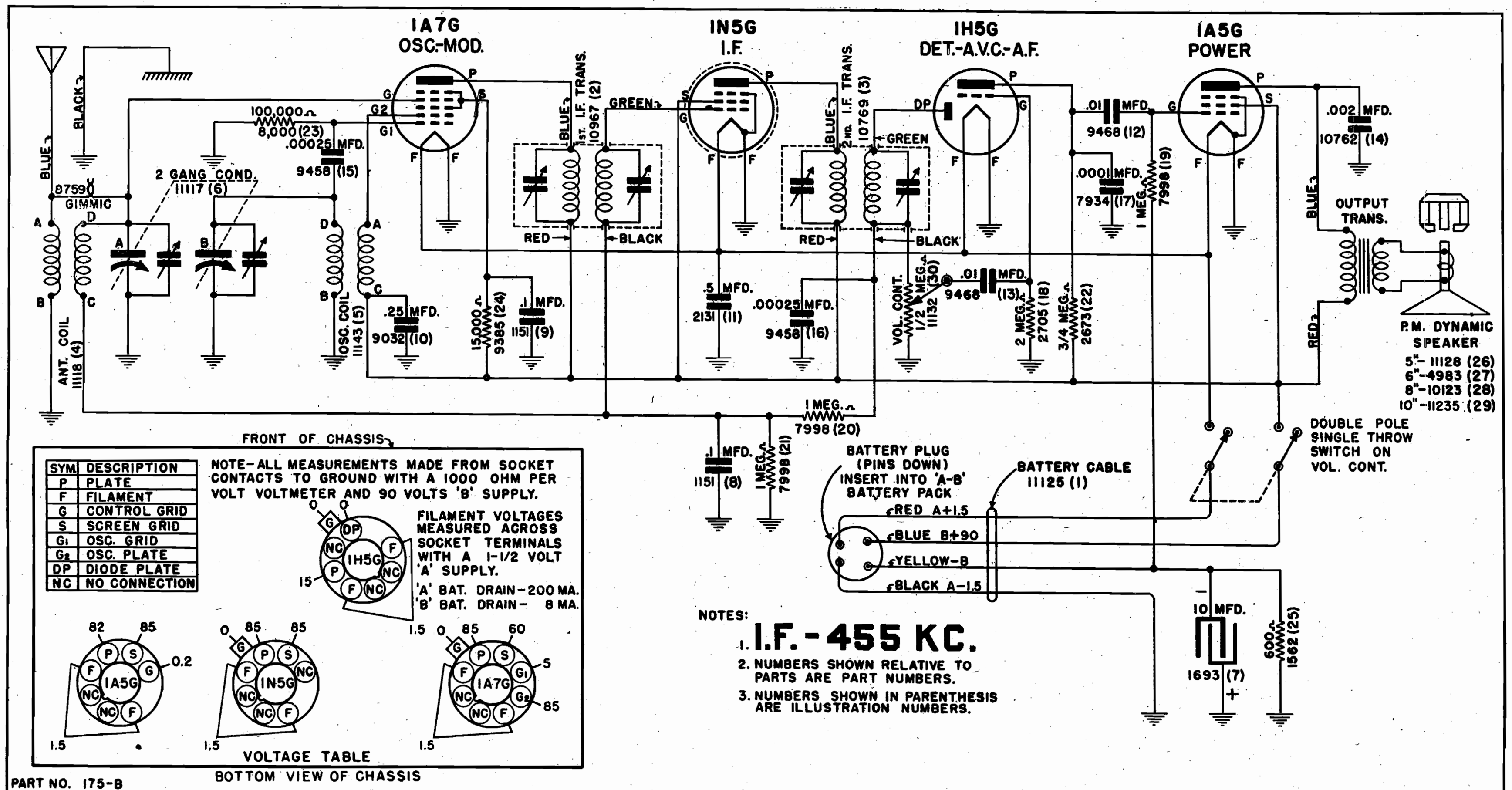
Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.
(b) Use an accurately calibrated test oscillator with some type of output measuring device.
(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR — Adjust test oscillator frequency to:	TEST OSCILLATOR — Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR — Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. Alignment use any band position	Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High Side to grid cap of 1A7G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.9 to 18 M.C. Band	1 Exactly 18 M.C.	Exactly 18 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	Adjust 18 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Exactly 15 M.C.	Exactly 15 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

MODEL 175B
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

Illus. No.	Part No.		Description	List Price
1(a)	11125	Cable	Battery (With 4 Prong Plug)	$ .25
1(b)	11332	Cable	Battery (With 2-3 Prong and 1-2 Prong Plug)	.37
2	10967	Coil	1st I. F. Transformer	1.10
3	10769	Coil	2nd I. F. Transformer	1.10
4	11118	Coil	Antenna	.55
5	11143	Coil	Oscillator	.45
6	11117	Condenser	Tuning (2 Gang)	2.00
7	1693	Condenser	Tubular Dry Elec. 10 Mfd. 25 V. D. C.	.75
8	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
9	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
10	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
11	2131	Condenser	Tubular .5 Mfd. 200 Volt	.55
12	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17

No. Illus.	No. Part		Description	Price List
13	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
14	10762	Condenser	Tubular .002 Mfd. 400 Volt	.19
15	9458	Condenser	Mica .00025 Mfd.	.21
16	9458	Condenser	Mica .00025 Mfd.	.21
17	7934	Condenser	Mica .0001 Mfd.	.21
18	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
19	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
20	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
21	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
22	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
23	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt	.19
24	9385	Resistor	Carbon 15,000 Ohm ⅓ Watt	.19
25	1562	Resistor	Carbon 600 Ohm ⅓ Watt	.19
26	11128	Speaker	P. M. Dynamic 5 in.	4.00
27	4983	Speaker	P. M. Dynamic 6 in.	4.25
29	11235	Speaker	P. M. Dynamic 10 in.	7.50
30	11132	Volume	Control with "off-on" Switch	.95

MISCELLANEOUS PARTS

Part No.		Description	List Price
11108	Bulb	2 Cell 2.2 Volt White Bead Type	.07
11121	Dial Scale	Calibrated Dial Scale	.40
8184	Dial Cord	24 in. of 18 lb. Cord	.10
11119	Dial Shaft		.15
11127	Dial Indicator	"Off-On" Switch	.15
11626	Dial Pointer		.30
11627	Dial Crystal	For Dial	.30
11140	Dial Escutcheon	For Cabinet	1.25
4978	Plug	4 Prong Battery Plug	.06
10207	Knob	Antique Ivory Tuning Control	.10
11145	Knob	Walnut Tuning Control	.10

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

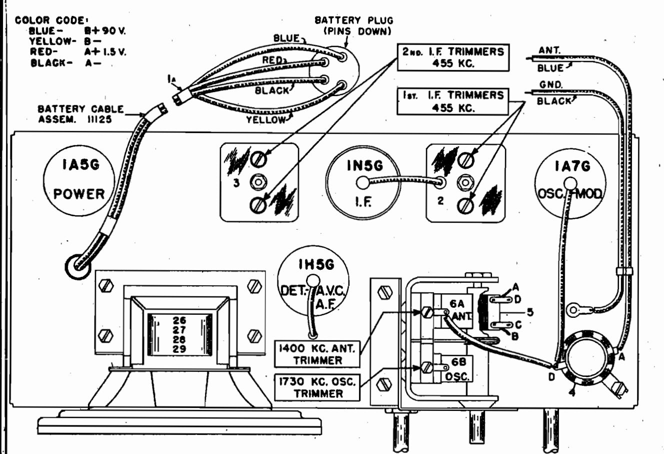
W. 4M 9-39 PART NO. 175B

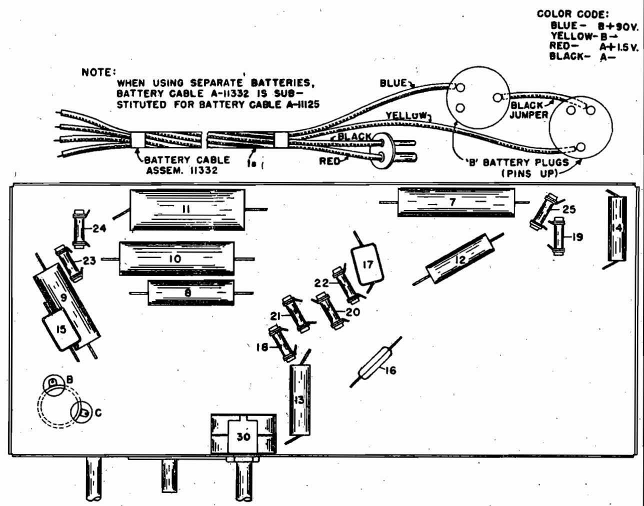
MODEL 175B
Socket,Trimmers
Chassis,Alignment

SENTINEL RADIO CORP.

4 TUBE — 1½ VOLT BATTERY OPERATED

SUPERHETERODYNE RECEIVER





NO. 175-B

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

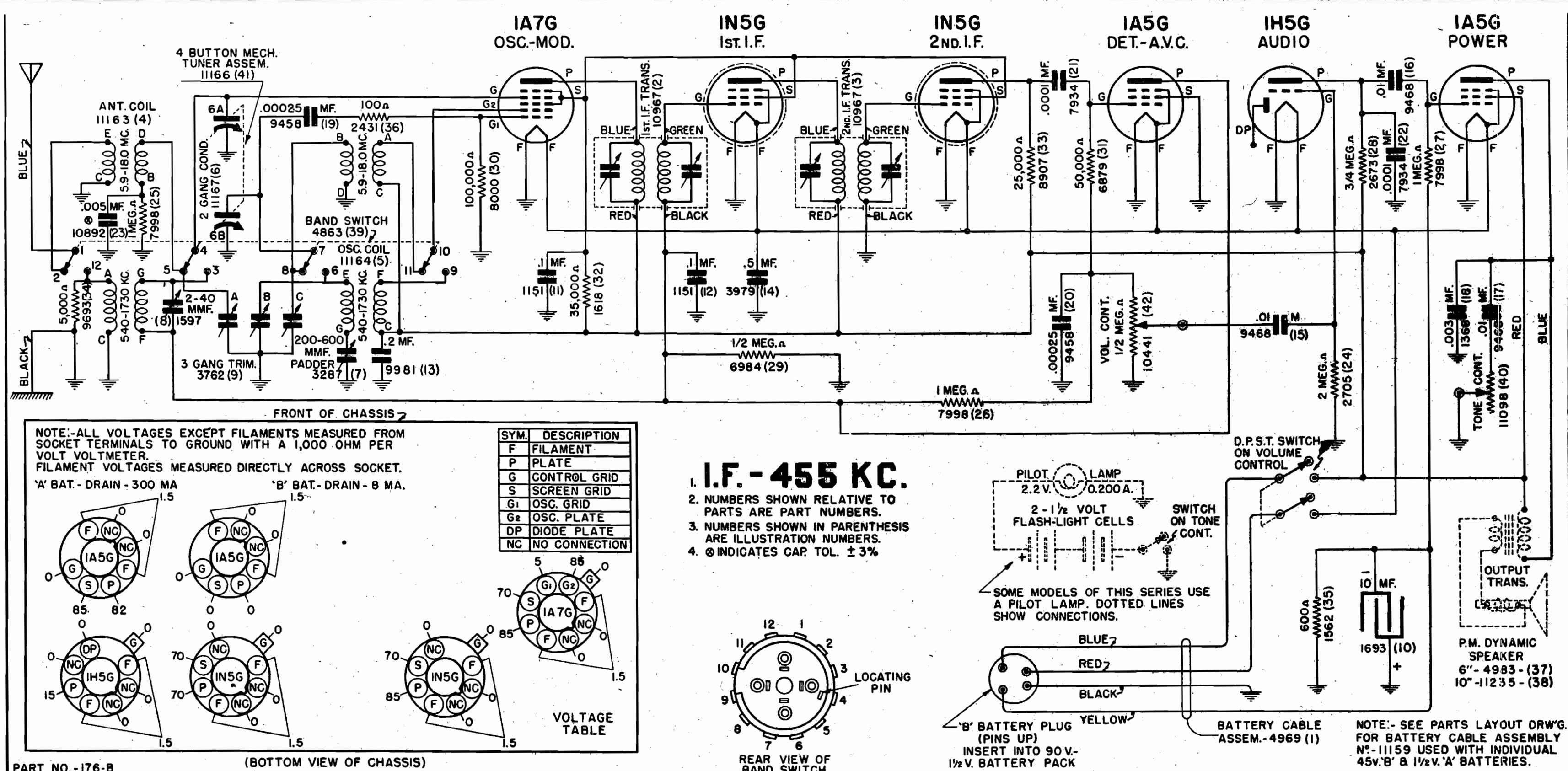
(c) Have ground lead of test oscillator attached to chassis.

	Set receiver dial to:	TEST OSCILLATOR Adjust test oscillator frequency to:	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7G tube DO NOT REMOVE CAP.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
1	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

SENTINEL MODEL 175B

MODEL 176B
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

Illus. No.	Part No.		Description	List Price
1A	4969	Cable	Battery with Four Prong Plug	$ .35
1B	11159	Cable	Battery with 2-3 Prong "B" and 1-2 Prong "A" Plugs	.55
2	10967	Coil	1st I. F. Transformer	1.10
3	10967	Coil	2nd I. F. Transformer	1.10
4	11163	Coil	Antenna	.70
5	11164	Coil	Oscillator	.60
6	11167	Condenser	Two Gang with Four Button Mechanical Tuner Assembly	3.00
7	3287	Condenser	Padder 200-600 Mmf.	.45
8	1597	Condenser	Trimmer	.21
9	3762	Condenser	Trimmer Three Gang	.47
10	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt D.C. Wkg.	.75
11	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
12	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
13	9981	Condenser	Tubular .2 Mfd. 200 Volt	.29
14	3979	Condenser	Tubular .5 Mfd. 200 Volt	.40
15	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
16	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
17	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
18	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
19	9458	Condenser	Mica .00025 Mfd.	.21
20	9458	Condenser	Mica .00025 Mfd.	.21

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Illus. No.	Part No.		Description	List Price
21	7934	Condenser	Mica .0001 Mfd.	.21
22	7934	Condenser	Mica .0001 Mfd.	.21
23	10892	Condenser	Mica .005 Mfd. ± 3%	.30
24	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
25	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
26	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
27	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
28	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
29	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
30	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt	.19
31	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
32	1618	Resistor	Carbon 35,000 Ohm ⅓ Watt	.19
33	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
34	9693	Resistor	Carbon 5,000 Ohm ⅓ Watt	.19
35	1562	Resistor	Carbon 600 Ohm ⅓ Watt	.19
36	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
37	4983	Speaker	P. M. Dynamic 6"	4.25
38	11235	Speaker	P. M. Dynamic 10"	7.50
39	4863	Switch	Wave	.60
40	11098	Tone Control	With Dial Light Switch	.80
41	11166	Tuner Unit	Complete with Four Button Mech. Assem. Two Gang Condenser and Mechanical Drive Assembly	3.95
42	10441	Volume Control	With D. P. S. T. "On-Off" Switch	.95

WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

MISCELLANEOUS PARTS

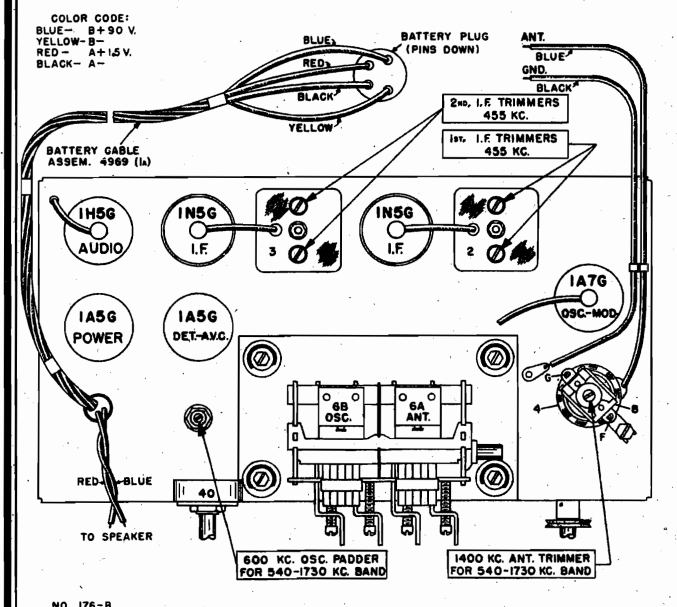
Illus. No.	Part No.		Description	List Price
	8184	Cord	12" of 18 lb. Drive Cord	.10
	11189	Dial Scale	Calibrated Scale Only	.55
	11173	Dial Assembly	Complete Drive Mechanism Less Scale	.75
	11193	Dial Pointer	For Dial	.16
	11198	Escutcheon	For Dial with Mtg. Screw Holes in Corners	1.25
	11199	Escutcheon	For Dial with Mtg. Screw Holes away from Corners	1.25
	11200	Escutcheon	Pushbutton Used with 11198 Dial Escutcheon	.35
	11201	Escutcheon	Pushbutton Used with 11199 Dial Escutcheon	.35
	4958	Knob	Marked "Tuning"	.12
	4959	Knob	Marked "Off-Volume"	.12
	4960	Knob	Marked "Tone"	.12
	4961	Knob	Marked "Band Switch"	.12
	3487	Plug	3 Prong "B"	.10
	10351	Plug	2 Prong "A"	.10
	4978	Plug	4 Prong "AB"	.10
	11197	Dial Spring	Gear Drive Shaft Tension	.16
	4589	Dial Spring	Cord Tension	.04
	11185	Dial Shaft	Gear Drive Shaft Assembly	.35

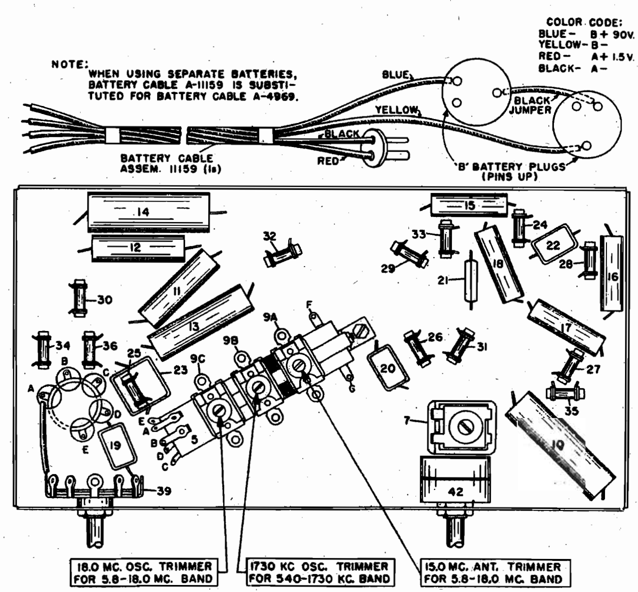
4M W. 12-39 PART NO. 176B

MODEL 176B
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

SENTINEL MODEL 176B
TWO BAND—SIX TUBE
1½ Volt—Battery Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

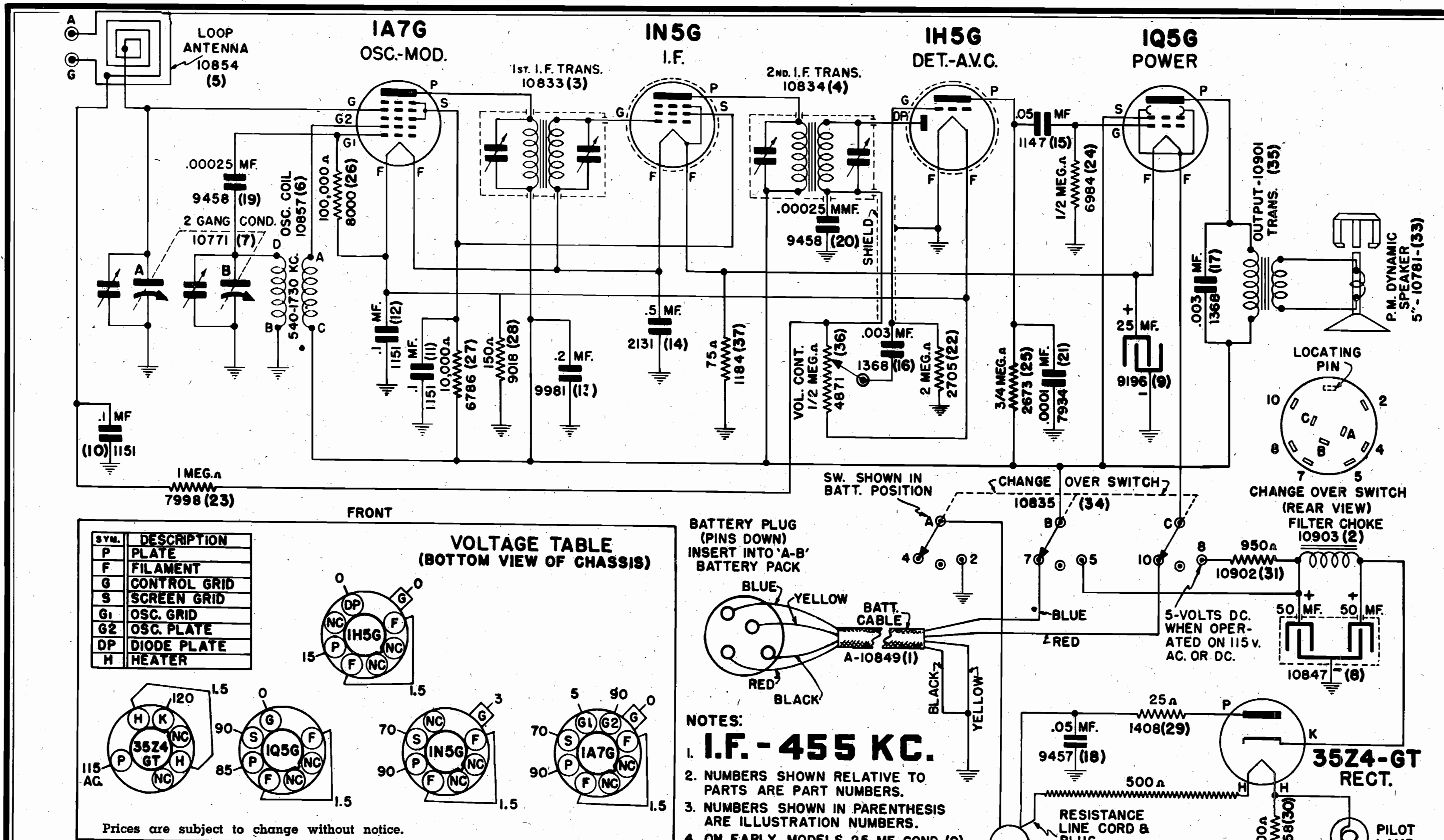
Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.
(b) Use an accurately calibrated test oscillator with some type of output measuring device.
(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. Alignment use any band position		Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High Side to grid cap of 1A7G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1	Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.8 to 18 M.C. Band	1	Exactly 18 M.C.	Exactly 18 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	Adjust 18 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Exactly 15 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

MODEL 180XL
Schematic, Voltage

SENTINEL RADIO CORP.



NOTES:

1. I.F. - 455 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ON EARLY MODELS 25 MF. COND. (9) WAS TWO 10 MF. COND. IN PARALLEL.

Prices are subject to change without notice.

PARTS LIST

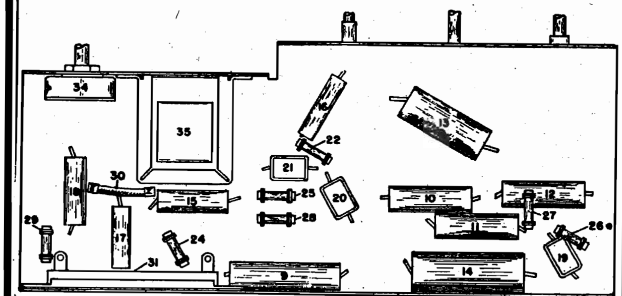
Illus. No.	Part No.		Description	List Price
1	10849	Cable	Battery	$ .30
2	10903	Choke	Filter	.85
3	10833	Coil	1st I.F. Transformer	1.45
4	10834	Coil	2nd I. F. Transformer	1.45
5	10854	Loop	Antenna Complete with Frame	1.75
6	10857	Coil	Oscillator	.60
7	10771	Condenser	Tuning Two Gang	1.65
8	10847	Condenser	Tubular Dry Electrolytic 50-50 Mfd. 150 Volts	1.10
9	9196	Condenser	Tubular Dry Electrolytic 25 Mfd. 25 Volt	.94
10	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
11	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
12	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
13	9981	Condenser	Tubular .2 Mfd. 200 Volt	.29
14	2131	Condenser	Tubular .5 Mfd. 200 Volt	.55
15	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
16	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
17	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
18	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
19	9458	Condenser	Mica Moulded .00025 Mfd.	.21
20	9458	Condenser	Mica Moulded .00025 Mfd.	.21
21	7934	Condenser	Mica Moulded .0001 Mfd.	.21
22	2705	Resistor	Carbon 2 Megohm 1/3 Watt	.19
23	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
24	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
25	2673	Resistor	Carbon 750,000 Ohm 1/3 Watt	.19
26	8000	Resistor	Carbon 100,000 Ohm 1/3 Watt	.19
27	6786	Resistor	Carbon 10,000 Ohm 1/3 Watt	.19
28	9018	Resistor	Carbon 150 Ohm 1/3 Watt	.19
29	1408	Resistor	Flexible 25 Ohm 1 Watt	.19
30	10858	Resistor	Wire Wound Flexible 200 Ohm 2 Watt	.22
31	10902	Resistor	Wire Wound Flexible 950 Ohm 9½ Watts	.65
32	10851	Resistor	Line Cord & Plug	.90
33	10781	Speaker	P.M. DYNAMIC 5" Less Transformer	3.25
34	10835	Switch	Voltage Selector	.60
35	10901	Transformer	Output	.90
36	4871	Volume Control		.80
37	1184	Resistor	Wire Wound Flexible 75 Ohm 1 Watt	.19
38	10962	Resistor	Extension Line Cord 220 Volt	1.50

MODEL 180XL
Socket,Trimmers
Alignment,Chassis

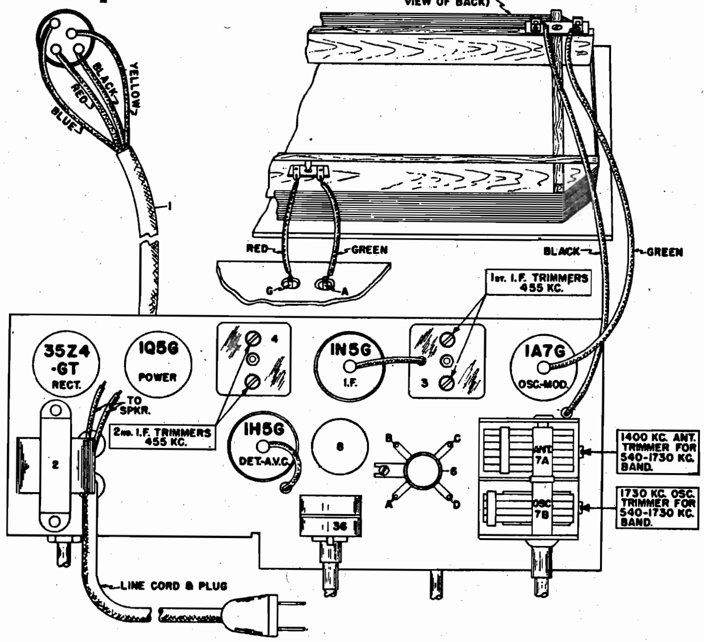
SENTINEL RADIO CORP.

PORTABLE – BATTERY OR 110 VOLTS, DC-AC 50-60 CYCLES

Bottom View of Chassis



Top View of Chassis



ALIGNMENT PROCEDURE

Follow procedure carefully and in the order given—read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment, check tuning dial adjustment by: turn gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

Use an accurately calibrated test oscillator with some type of output measuring device.

BEFORE ALIGNING, PLACE LOOP ANTENNA AND THE "A" AND "B" BATTERY-PACK IN THE SAME APPROXIMATE POSITION IN THE BACK OF CHASSIS THAT THEY WILL BE IN WHEN THE SET IS IN THE CABINET AND THE CABINET BACK CLOSED.

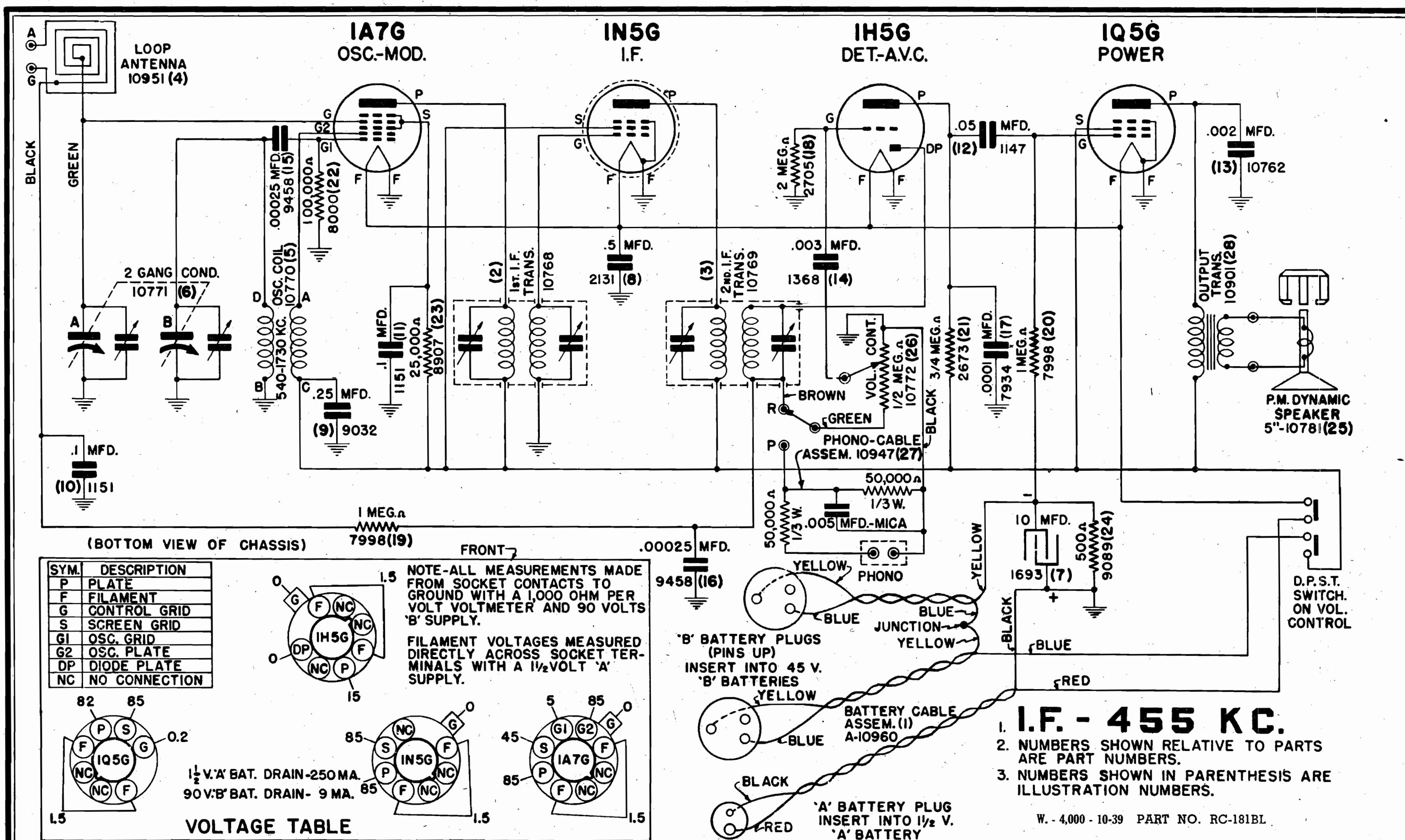
When adjusting 1730 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to terminals on bottom of cabinet back.

Couple test oscillator to receiver loop by:
a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.
b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

	TEST OSCILLATOR			
Set receiver dial to:	**Adjust test oscillator frequency to:**	**Use dummy antenna in series with output of test oscillator consisting of:**	**Attach output of test oscillator to:**	**Refer to parts layout diagram for location of trimmers mentioned below—and:**
I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 1A7G tube Low side to chassis DO NOT REMOVE CAP	Adjust the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
(1) Exactly 1730 K. C.	Exactly 1730 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1730 K. C. oscillator trimmer for maximum output.
(2) Approx. 1400 K. C.	Exactly 1400 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1400 K. C. antenna trimmer for maximum output.

MODEL 181BL
Schematic, Voltage

SENTINEL RADIO CORP.



1. I.F. - 455 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.

W. - 4,000 - 10-39 PART NO. RC-181BL

PARTS LIST

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

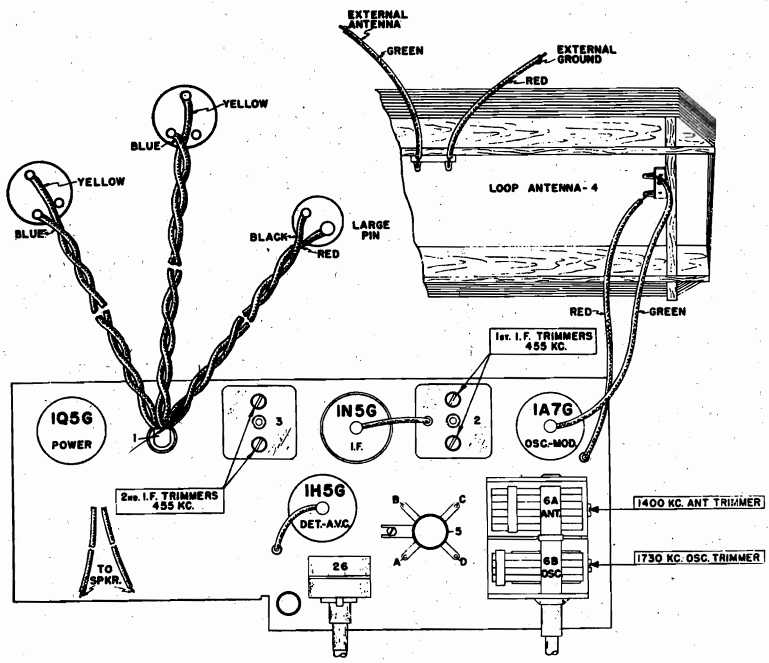
Illus. No.	Part No.		Description	List Price
1	10960	Cable	Battery, 6 Conductor Complete with Plugs	$ .55
2	10768	Coil	1st I.F. Transformer	1.05
3	10769	Coil	2nd I.F. Transformer	1.10
4	10951	Loop	Antenna Complete with Frame	1.75
5	10770	Coil	Oscillator	.65
6	10771	Condenser	Tuning Two Gang	1.65
7	1693	Condenser	Tubular Dry Elec. 10 Mfd. 25 Volt D. C.	.75
8	2131	Condenser	Tubular .5 Mfd. 200 Volt	.55
9	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
10	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
11	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
12	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
13	10762	Condenser	Tubular .002 Mfd. 400 Volt	.19
14	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
15	9458	Condenser	Mica .00025 Mfd.	.21
16	9458	Condenser	Mica .00025 Mfd.	.21
17	7934	Condenser	Mica .0001 Mfd.	.21
18	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
19	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
20	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
21	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
22	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt	.19
23	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
24	9089	Resistor	Carbon 500 Ohm ⅓ Watt	.19
25	10781	Speaker	P. M. Dynamic 5 in.	3.25
26	10772	Volume Control	With D.P.S.T. Switch	.95
27	10947	Cable	For Phono Motor Complete with No. 2434 Switch	.90
28	10901	Transformer	Output	.90

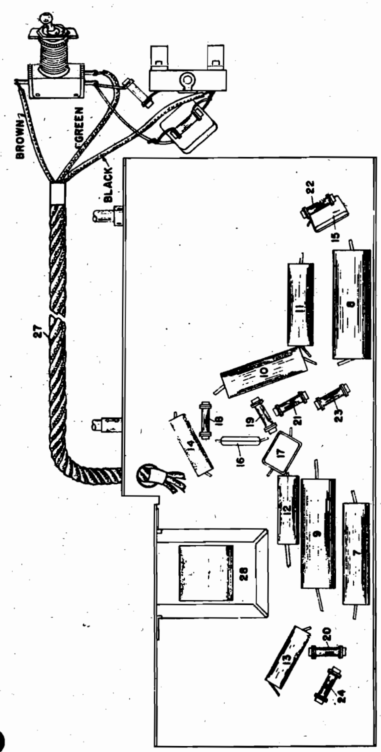
MISCELLANEOUS PARTS

Illus. No.	Part No.		Description	List Price
	10920	Dial Scale	Calibrated Dial Scale	.35
	3814	Dial Drive Cord		.15
	10777	Dial Pointer		.16
	10853	Dial Escutcheon	For Cabinet	.65
	4958	Knob	Marked "Tuning"	.12
	4959	Knob	Marked "Off-Volume"	.12
	10954	Phono Motor	Spring Wound Complete with Turntable	5.50
	10955	Pickup	Crystal-Dark Brown Finish	5.25

MODEL 181BL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.





SENTINEL MODEL 181BL
4 TUBE — 1½ VOLT BATTERY OPERATED

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

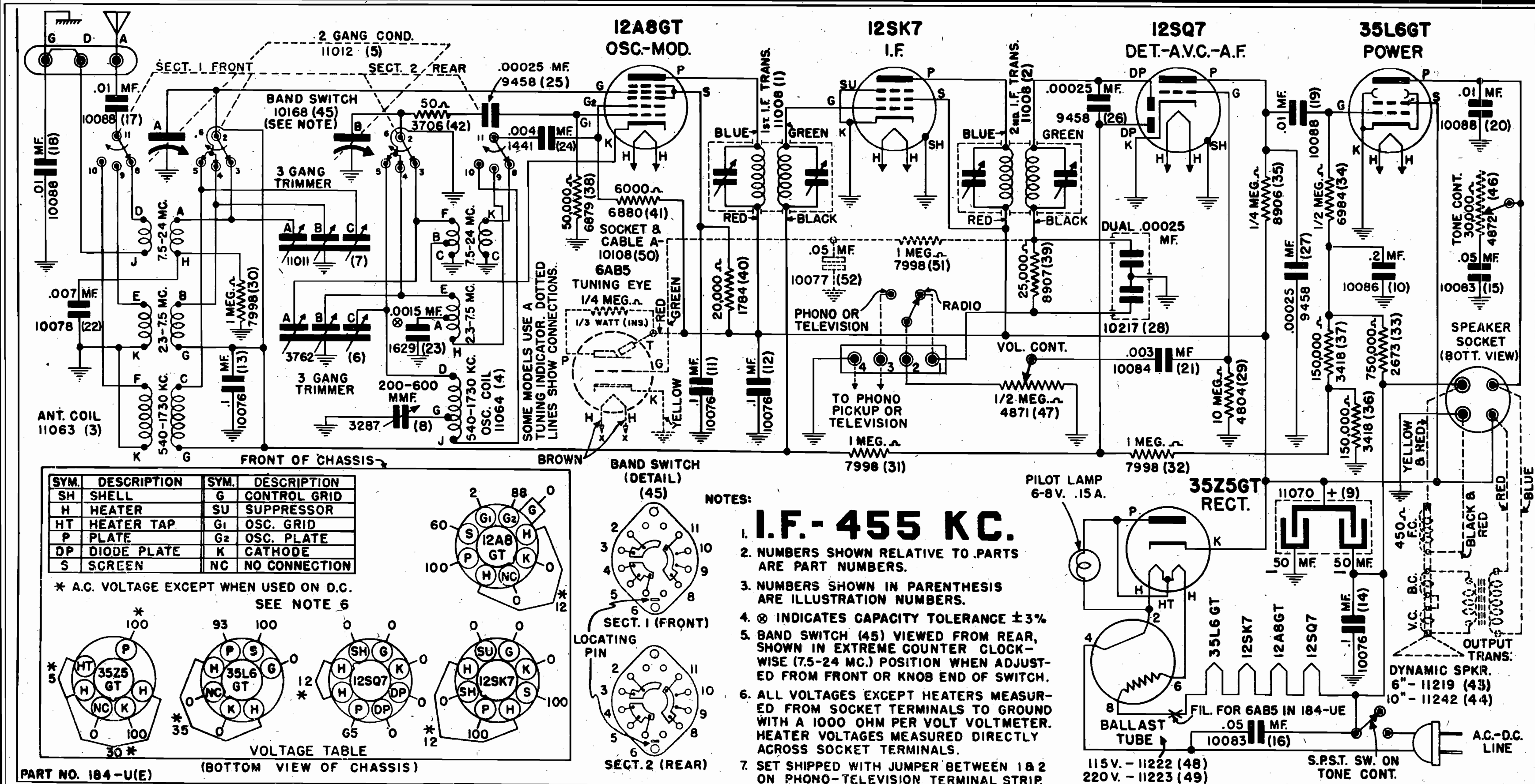
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7G tube DO NOT REMOVE CAP.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
1 Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

SENTINEL RADIO CORP.

MODELS 184U, 184UE
Schematic, Voltage



SYM.	DESCRIPTION	SYM.	DESCRIPTION
SH	SHELL	G	CONTROL GRID
H	HEATER	SU	SUPPRESSOR
HT	HEATER TAP	G1	OSC. GRID
P	PLATE	G2	OSC. PLATE
DP	DIODE PLATE	K	CATHODE
S	SCREEN	NC	NO CONNECTION

NOTES:

1. I.F. - 455 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ⊗ INDICATES CAPACITY TOLERANCE ±3%
5. BAND SWITCH (45) VIEWED FROM REAR, SHOWN IN EXTREME COUNTER CLOCKWISE (7.5-24 MC.) POSITION WHEN ADJUSTED FROM FRONT OR KNOB END OF SWITCH.
6. ALL VOLTAGES EXCEPT HEATERS MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.
7. SET SHIPPED WITH JUMPER BETWEEN 1 & 2 ON PHONO-TELEVISION TERMINAL STRIP.

PARTS LIST

Illus. No.	Part No.		Description	List Price
1	11008	Coil	1st I.F. Transformer	$1.25
2	11008	Coil	2nd I.F. Transformer	1.25
3	11063	Coil	Antenna	.85
4	11064	Coil	Oscillator	.75
5	11012	Condenser	Tuning Two Gang	1.75
6	3762	Condenser	Trimmer Three Gang	.47
7	11011	Condenser	Trimmer Three Gang	.50
8	3287	Condenser	Padder 200-600 Mmf.	.45
9	11070	Condenser	Dry Electrolytic Condenser 50-50 Mfd.	.75
10	10086	Condenser	Tubular .2 Mfd. 200 Volt	.20
11	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
12	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
13	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
14	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
15	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
16	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
17	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
18	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
19	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
20	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
21	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
22	10078	Condenser	Tubular .007 Mfd. 200 Volt	.19
23	1629	Condenser	Mica .015 Mfd. ± 3%	.21
24	1441	Condenser	Mica .004 Mfd.	.21
25	9458	Condenser	Mica .00025 Mfd.	.21
26	9458	Condenser	Mica .00025 Mfd.	.21
27	9458	Condenser	Mica .00025 Mfd.	.21
28	10217	Condenser	Mica .00025 Mfd.	.21
29	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
30	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
31	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
32	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
33	2673	Resistor	Carbon 750,000 Ohm 1/3 Watt	.19
34	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
35	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
36	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
37	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
38	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
39	8907	Resistor	Carbon 25,000 Ohm 1/3 Watt	.19
40	1784	Resistor	Carbon 20,000 Ohm 1/3 Watt	.19
41	6880	Resistor	Carbon 6,000 Ohm 1/3 Watt	.19
42	3706	Resistor	Carbon 50 Ohm 1/3 Watt	.19
43	11219	Speaker	Electro-Dynamic 6 in.	4.00
44	11242	Speaker	Electro-Dynamic 10 in.	6.00
45	10168	Switch	Band Selector	1.30
46	4872	Tone Control	With On-Off Switch	.80
47	4871	Volume Control		.80
48	11222	Ballast Tube	115 Volt	.60
49	11223	Ballast Tube	220 Volt	1.00
50	10108	Socket & Cable	6AB5 Tuning Eye Cable & Socket Assembly	.65
51	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
52	10077	Condenser	Tubular .05 Mfd. 200 Volt	.19

MISCELLANEOUS PARTS

Part No.		Description	List Price
11304	Bulb	6-8 Volt .150 Amp. Type No. 47 Bayonet Base	.10
11246	Band Indicator	For Dial	.12
8184	Dial Cord	24 in. of 18 Lb. Drive Cord	.15
11021	Dial Scale	Calibrated Scale	.55
11017	Dial Shaft	Drive Shaft	.11
11025	Dial Pointer	Dial Indicator	.16
11693	Dial Spring	Cord Tension Spring	.04
11198	Escutcheon	For Dial with Mtg. Screw Holes in Corners	1.25
11199	Escutcheon	For Dial with Mtg. Screw Holes Away From Corners	1.25
10030	Knob	Marked "Tuning"	.12
10032	Knob	Marked "Volume"	.12
10068	Knob	Marked "Off-On-Tone"	.12
10069	Knob	Marked "Band Switch"	.12

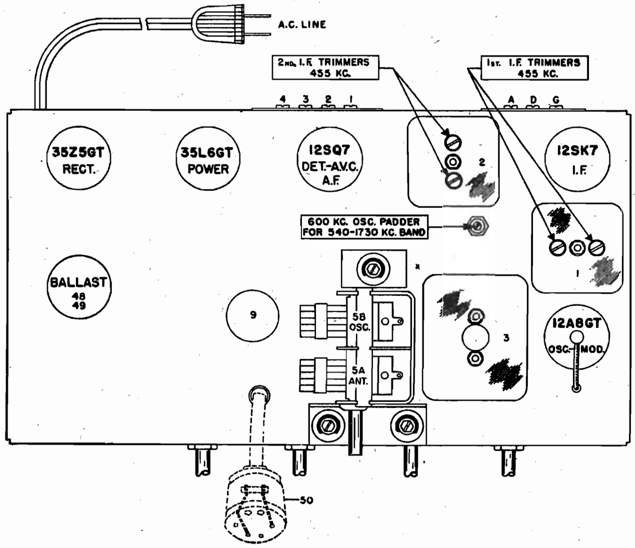
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

3M W. 12-39 Part No. 184U-184UE

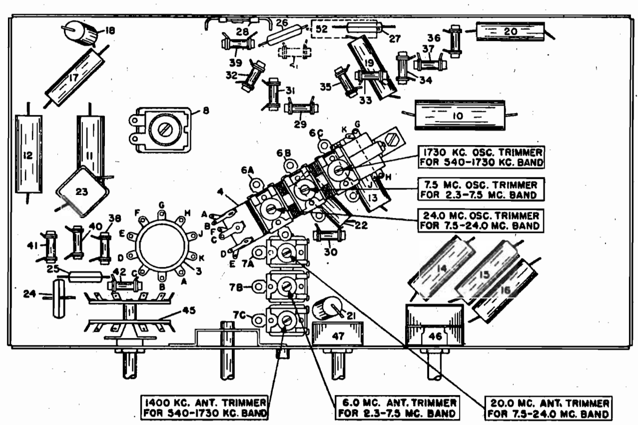
MODELS 184U,184UE
Socket,Trimmers
Alignment,Chassis

SENTINEL RADIO CORP.

SENTINEL MODEL 184U and 184UE—THREE BAND—FIVE and SIX TUBE
A. C. Operated Superheterodyne Receiver



NO. 184-U(E).



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

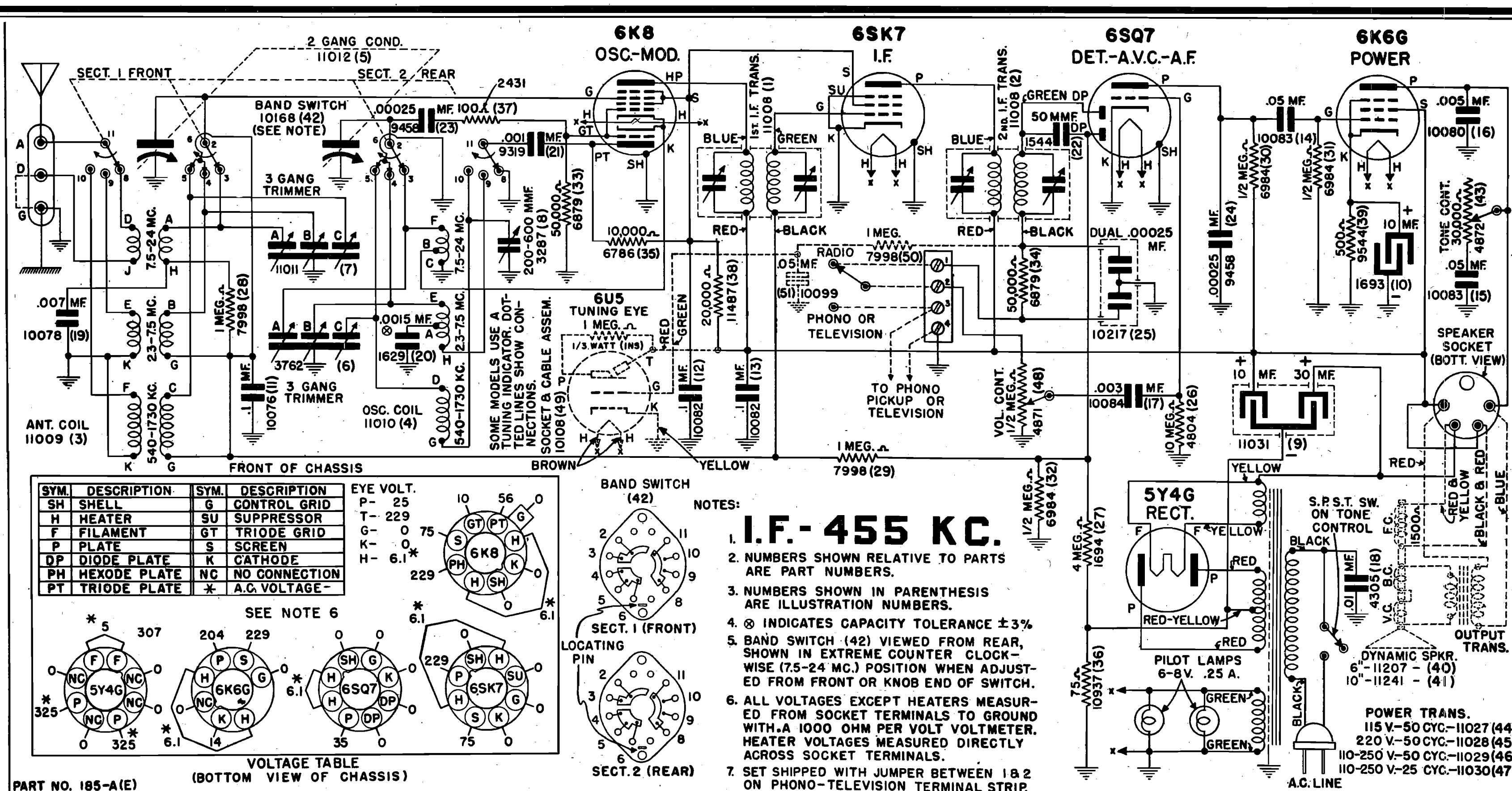
Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.
(b) Use an accurately calibrated test oscillator with some type of output measuring device.
(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I.F. ALIGNMENT use any band position		Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 12A8GT Do not remove cap	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 TO 540 K.C. BAND	1	Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.3 TO 7.5 M.C. BAND	1	Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2	Approx. 6. M.C.	Exactly 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna trimmer for maximum output
7.5 TO 24 M.C. BAND	1	Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna trimmer for maximum output.

SENTINEL RADIO CORP.

MODELS 185A, 185AE
Schematic, Voltage



SYM.	DESCRIPTION	SYM.	DESCRIPTION
SH	SHELL	G	CONTROL GRID
H	HEATER	SU	SUPPRESSOR
F	FILAMENT	GT	TRIODE GRID
P	PLATE	S	SCREEN
DP	DIODE PLATE	K	CATHODE
PH	HEXODE PLATE	NC	NO CONNECTION
PT	TRIODE PLATE	*	A.C. VOLTAGE-

NOTES:

1. I.F. - 455 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ⊗ INDICATES CAPACITY TOLERANCE ±3%
5. BAND SWITCH (42) VIEWED FROM REAR, SHOWN IN EXTREME COUNTER CLOCKWISE (7.5-24 MC.) POSITION WHEN ADJUSTED FROM FRONT OR KNOB END OF SWITCH.
6. ALL VOLTAGES EXCEPT HEATERS MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.
7. SET SHIPPED WITH JUMPER BETWEEN 1 & 2 ON PHONO-TELEVISION TERMINAL STRIP.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

W. - 4,000 - 10-39 PART NO. 185A

PARTS LIST

Illus. No.	Part No.		Description	List Price
1	11008	Coil	1st I.F. Transformer	$1.25
2	11008	Coil	2nd I.F. Transformer	1.25
3	11009	Coil	Antenna	.85
4	11010	Coil	Oscillator	.75
5	11012	Condenser	Tuning Two Gang	1.75
6	3762	Condenser	Trimmer Three Gang	.47
7	11011	Condenser	Trimmer Three Gang	.50
8	3287	Condenser	Padder 200-600 Mmf.	.45
9	11031	Condenser	Dry Electrolytic 10-30 Mfd. 450 Volts	1.25
10	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt D.C.	.75
11	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
12	10082	Condenser	Tubular .1 Mfd. 400 Volt	.20
13	10082	Condenser	Tubular .1 Mfd. 400 Volt	.20
14	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
15	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
16	10080	Condenser	Tubular .005 Mfd. 400 Volt	.17
17	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
18	4305	Condenser	Tubular .01 Mfd. 220 Volt	.30
19	10078	Condenser	Tubular .007 Mfd. 200 Volt	.19
20	1629	Condenser	Mica .0015 Mfd.	.21
21	9319	Condenser	Mica .001 Mfd.	.21
22	1544	Condenser	Mica .00005 Mfd.	.21
23	9458	Condenser	Mica .00025 Mfd.	.21
24	9458	Condenser	Mica .00025 Mfd.	.21
25	10217	Condenser	Mica Dual .00025 Mfd.	.21
26	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
27	1694	Resistor	Carbon 4 Megohm 1/3 Watt	.19
28	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
29	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
30	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
31	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
32	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
33	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
34	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
35	6786	Resistor	Carbon 10,000 Ohm 1/3 Watt	.19
36	10937	Resistor	Carbon 75 Ohm 1/3 Watt	.19
37	2431	Resistor	Carbon 100 Ohm 1/3 Watt	.19
38	11487	Resistor	Carbon 20,000 Ohm 1½ Watt	.22
39	9544	Resistor	Carbon 500 Ohm 1 Watt	.22
40	11207	Speaker	Electro Dynamic 6 in.	4.25
41	11241	Speaker	Electro Dynamic 10 in.	6.00
42	10168	Switch	Wave	1.30
43	4872	Tone Control	With On-Off Switch	.80
44	11027	Transformer	Power 115 Volt 50 Cycle	3.25
45	11028	Transformer	Power 220 Volt 50 Cycle	4.10
46	11029	Transformer	Power 110-250 Volt 50 Cycle	6.50
48	4871	Volume Control		.80
49	10108	Socket & Cable	Tuning Eye Assembly (6U5 Tube)	.65
50	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
51	10077	Condenser	Tubular .05 Mfd. 200 Volt	.19

MISCELLANEOUS PARTS

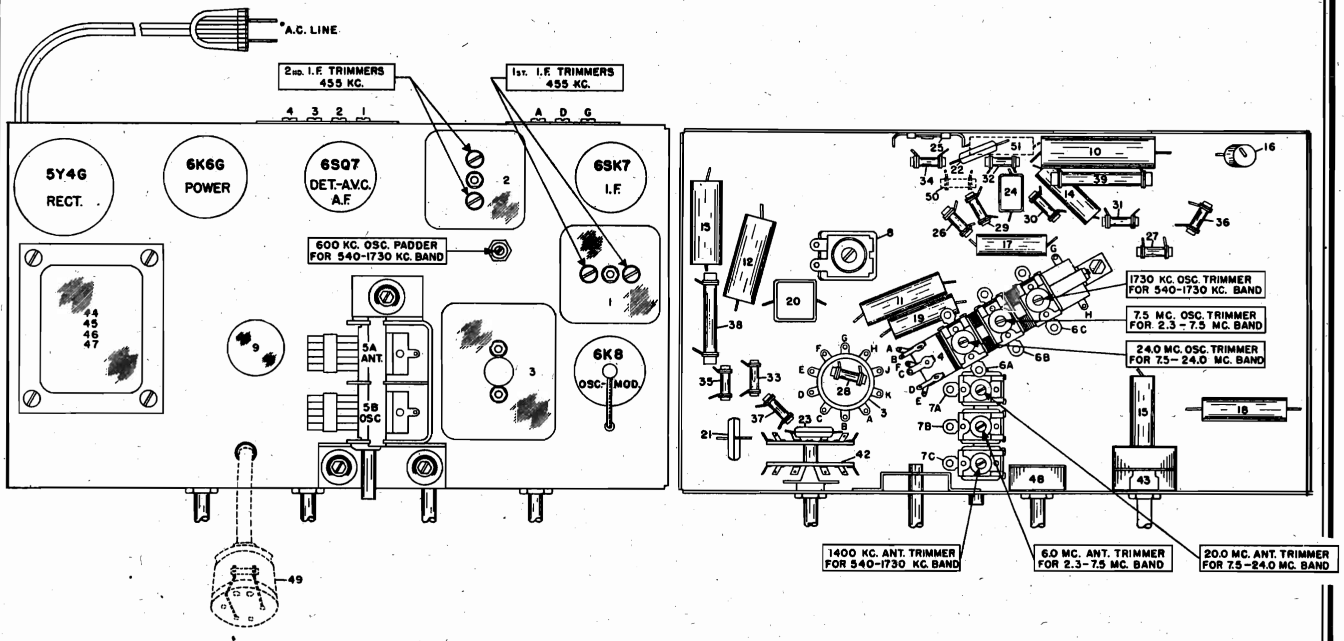
Part No.		Description	List Price
10292	Bulb	6-8 Volt .250 Ampere Type C-3¼ No. 44	.10
11022	Dial Scale	Calibrated Scale	.60
11246	Dial Indicator	Band Indicator	.12
8184	Dial Cord	Dial Drive Cord 24 in. of 18 Lb.	.15
11017	Dial Shaft	Dial Drive Shaft	.11
11025	Dial Pointer	For Dial	.16
11198	Escutcheon	For Dial with Mtg. Screw Holes In Corners	1.25
11199	Escutcheon	For Dial with Mtg. Screw Holes Away From Corners	1.25
4958	Knob	Marked "Tuning"	.12
10906	Knob	Marked "Volume"	.12
11566	Knob	Marked "Off-Tone"	.12
4961	Knob	Marked "Band Switch"	.12
8117	Shaft Clamp	"C" Retainer Washer for Drive Shaft	.02
10578	Strip	Antenna and Ground Post	.15

MODELS 185A, 185AE
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

SENTINEL MODEL 185A and 185AE—THREE BAND—FIVE and SIX TUBE

A. C. Operated Superheterodyne Receiver



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

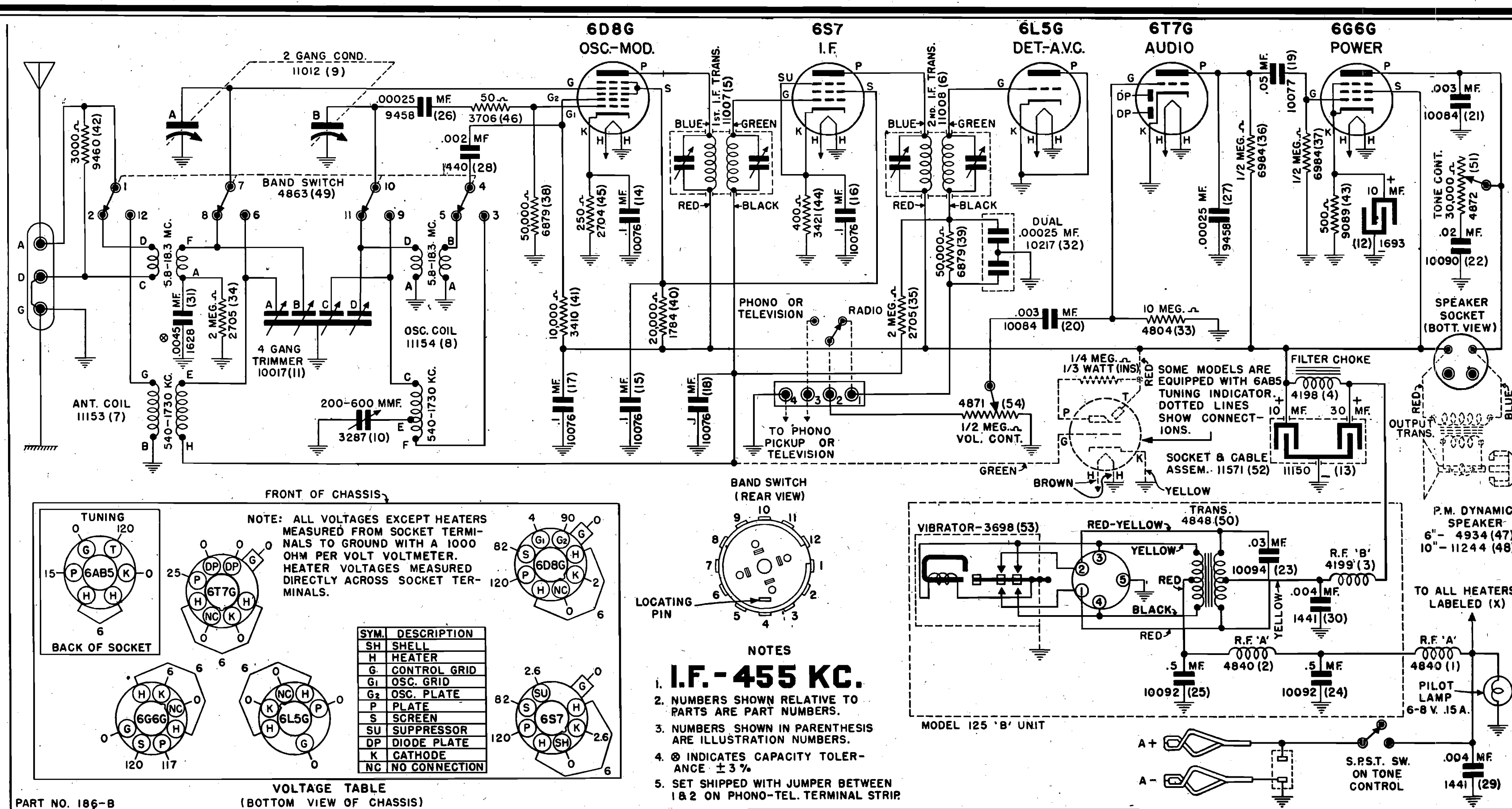
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR Adjust test oscillator frequency to:	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I.F. ALIGNMENT use any band position	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 TO 540 K.C. BAND	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Exactly 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C antenna trimmer for maximum output
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser.	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.3 TO 7.5 M.C. BAND	1 Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Exactly 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna trimmer for maximum output
7.5 TO 24 M.C. BAND	1 Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use—is tuned in.
	2 Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna trimmer for maximum output.

MODELS 186B, 186BE
Schematic, Voltage

SENTINEL RADIO CORP.



NOTES

1. I.F. - 455 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ⊗ INDICATES CAPACITY TOLERANCE ±3%.
5. SET SHIPPED WITH JUMPER BETWEEN 1 & 2 ON PHONO-TEL. TERMINAL STRIP.

PARTS LIST

Part No.			Description	List Price
1	4840	Choke	R. F. "A"	$ .18
2	4840	Choke	R. F. "A"	.18
3	4199	Choke	R. F. "B"	.40
4	4198	Choke	Filter	.95
5	11007	Coil	1st I. F. Transformer	1.25
6	11008	Coil	2nd I. F. Transformer	1.25
7	11153	Coil	Antenna	.70
8	11154	Coil	Oscillator	.60
9	11012	Condenser	Tuning (Two Gang)	1.75
10	3287	Condenser	Padder 340-460 Mmf.	.45
11	10017	Condenser	Trimmer Four Gang	.55
12	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt	.75
13	11150	Condenser	Dry Electrolytic 1-10 & 30 Mfd.	1.00
14	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
15	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
16	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
17	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
18	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
19	10077	Condenser	Tubular .05 Mfd. 200 Volt	.19
20	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
21	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
22	10090	Condenser	Tubular .02 Mfd. 400 Volt	.19
23	10094	Condenser	Tubular .03 Mfd. 800 Volt	.22
24	10092	Condenser	Tubular .5 Mfd. 100 Volt	.25
25	10092	Condenser	Tubular .5 Mfd. 100 Volt	.25
26	9458	Condenser	Mica .00025 Mfd.	.21
27	9458	Condenser	Mica .00025 Mfd.	.21
28	1440	Condenser	Mica .002 Mfd.	.21
29	1441	Condenser	Mica .004 Mfd.	.21
30	1441	Condenser	Mica .004 Mfd.	.21
31	1628	Condenser	Mica .0045 Mfd. ∓ 3%	.24
32	10217	Condenser	Dual Mica .00025 Mfd.	.21
33	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
34	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
35	2705	Resistor*	Carbon 2 Megohm ⅓ Watt	.19
36	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
37	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
38	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
39	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
40	1784	Resistor	Carbon 20,000 Ohm ⅓ Watt	.19
41	3410	Resistor	Carbon 10,000 Ohm ⅓ Watt	.19
42	9460	Resistor	Carbon 3,000 Ohm ⅓ Watt	.19
43	9089	Resistor	Carbon 500 Ohm ⅓ Watt	.19
44	3421	Resistor	Carbon 400 Ohm ⅓ Watt	.19
45	2704	Resistor	Carbon 250 Ohm ⅓ Watt	.19
46	3706	Resistor	Carbon 50 Ohm ⅓ Watt	.19
47	4934	Speaker	P. M. Dynamic 6 in.	5.00
48	11244	Speaker	P. M. Dynamic 10 in.	6.50
49	4863	Switch	Band	.60
50	4848	Transformer	Power	2.25
51	4872	Tone Control	With S. P. S. T. Switch	.80
52	11571	Teleye Socket Assembly	Cable Used with 6AB5 Tube	.65
53	3698	Vibrator		3.50
54	4871	Volume Control		.80

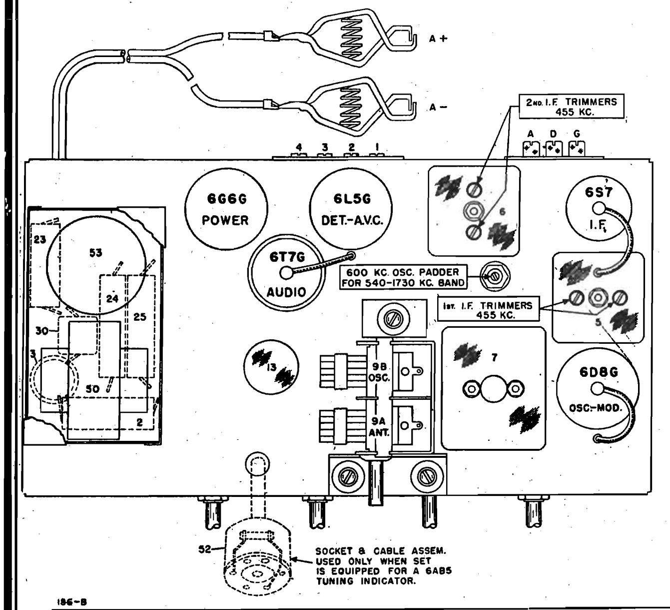
MISCELLANEOUS PARTS

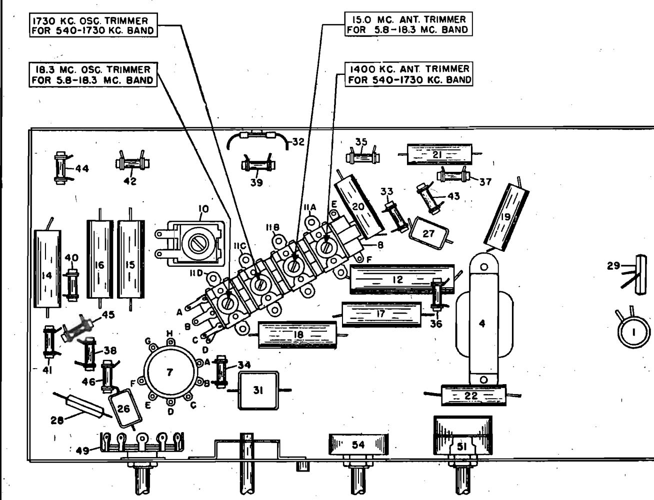
		Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
8184	Cord	Dial Drive Cord	.10
11156	Dial Scale	Calibrated Scale Only	.60
11017	Dial Shaft	Drive Shaft	.11
11025	Dial Pointer	For Dial	.16
11198	Escutcheon	For Dial—with Mounting Screw Holes in Corners	1.25
11199	Escutcheon	For Dial—with Mounting Screw Holes away from Corners	1.25
4958	Knob	Marked "Tuning"	.12
10906	Knob	Marked "Volume"	.12
11566	Knob	Marked "Off-On Tone"	.12
4961	Knob	Marked "Band Switch"	.12
4589	Spring	Cord Tension	.04
10578	Strip	Antenna Marked "G. D. A."	.15

SENTINEL RADIO CORP.

TWO BAND—FIVE and SIX TUBE

6 Volt Battery Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabluations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
I. F. alignment use any band position	Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6D8G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K. C. Band	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	Adjust 1730 K. C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.8 to 18.3 M. C. Band	1 Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	Receiver "A" antenna post	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor	Receiver "A" antenna post	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

Television Connections:—The audio amplifier and loud speaker of this receiver can be used to amplify the sound output of a television receiver not equipped with an audio amplifier and speaker—just connect the sound channel output of the television receiver (from the second detector) to the No. 3 and No. 4 terminals on back of receiver and attach a single pole double throw switch.

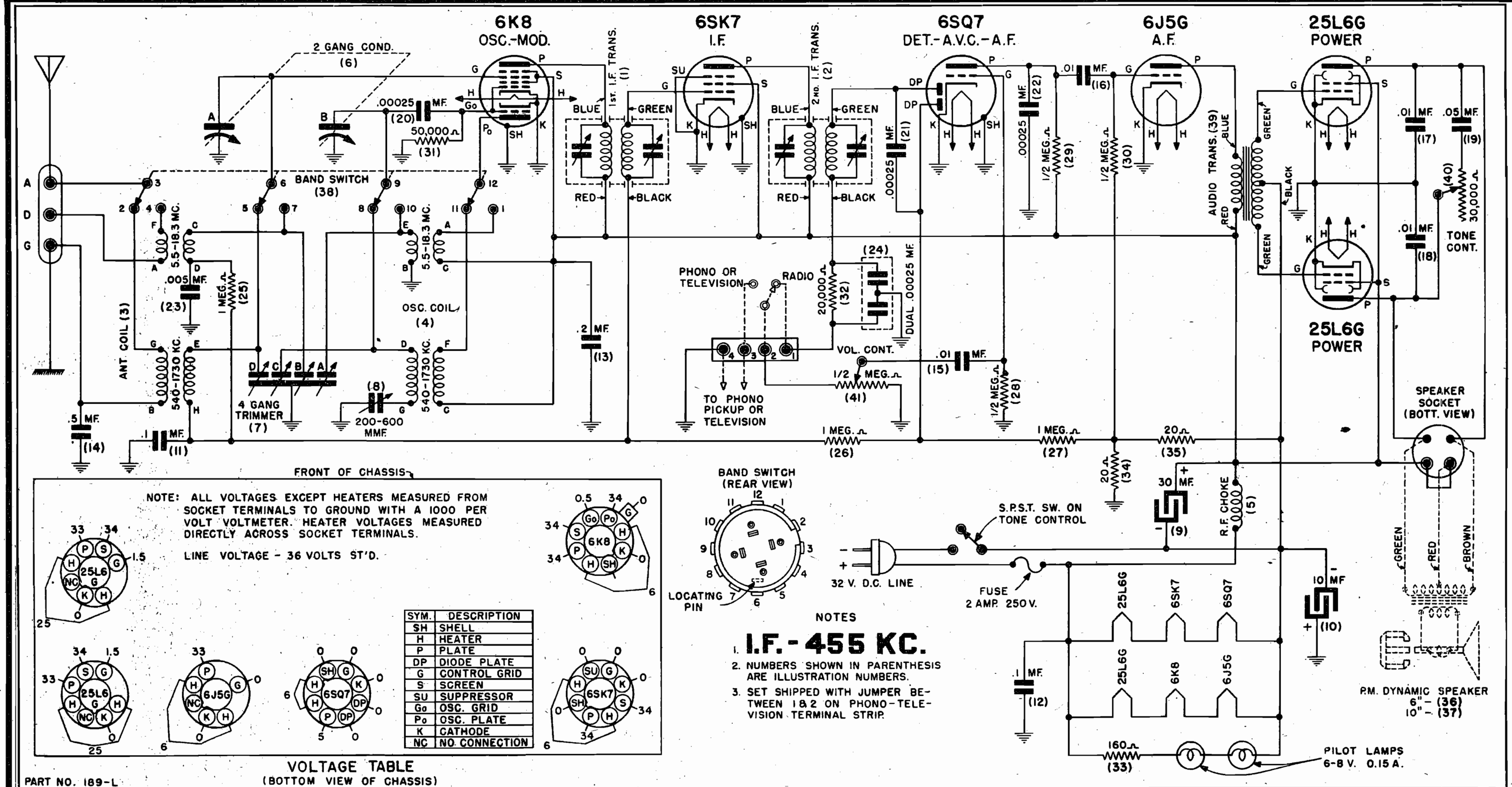
Phonograph Connections:—Phonograph records may be electrically reproduced through the receiver loud speaker by connecting the leads of the phonograph pickup to the No. 3 and No. 4 terminals and using either an electrical or hand wound spring operated phonograph motor. The pickup should be of the high impedance type and a single pole double throw switch must be connected as shown in diagram. To operate—place switch in phono position—set pickup needle on record and adjust radio volume control to desired amount of volume.

When shipped from factory a jumper wire is attached to terminals 1 and 2. If receiver is not to be used for phono or television operation, leave the jumper wire in this position. When receiver is used for either phono or television sound operation, remove jumper wire.

SENTINEL MODELS 186B and 186BE

MODEL 189L
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

Part No.			Description	List Price
1	11008	Coil	1st I.F. Transformer	$1.25
2	11008	Coil	2nd I.F. Transformer	1.25
3	11072	Coil	Antenna	.75
4	11074	Coil	Oscillator	.60
5	4199	Coil	R.F. "B" Choke	.40
6	11012	Condenser	Tuning Two Gang	1.75
7	10017	Condenser	Trimmer Four Gang	.55
8	3287	Condenser	Padder 340-460 Mmf.	.45
9	11080	Condenser	Tubular Dry Electrolytic 30 Mfd. 50 Volt	.60
10	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt	.75
11	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
12	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
13	10086	Condenser	Tubular .2 Mfd. 200 Volt	.20
14	10099	Condenser	Tubular .5 Mfd. 200 Volt	.25
15	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
16	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
17	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
18	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
19	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
20	9458	Condenser	Mica .00025 Mfd.	.21
21	9458	Condenser	Mica .00025 Mfd.	.21
22	9458	Condenser	Mica .00025 Mfd.	.21
23	10892	Condenser	Mica .005 Mfd. ± 3%	.30
24	10217	Condenser	Mica Dual .00025 Mfd.	.21
25	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
26	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
27	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
28	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
29	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
30	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
31	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
32	1784	Resistor	Carbon 20,000 Ohm ⅓ Watt	.19
33	11081	Resistor	Wire Wound 160 Ohm 3.6 Watt	.55
34	11082	Resistor	Wire Wound Flexible 20 Ohm ½ Watt	.19
35	11082	Resistor	Wire Wound Flexible 20 Ohm ½ Watt	.19
36	11216	Speaker	Dynamic, P.M. 6 in.	5.50
37	11245	Speaker	Dynamic, P.M. 10 in.	7.50
38	4863	Switch	Wave	.60
39	10142	Transformer	Audio	2.00
40	4872	Tone Control	With S.P.S.T. A.C. Switch	.80
41	4871	Volume Control		.80

MISCELLANEOUS PARTS

Part No.		Description	List Price
3856	Block	Fuse Mtg. Block	.15
11304	Bulb	6-8 Volt .150 Ampere Light No. 47 Bayonet Base	.10
3857	Cover	For Fuse Block	.10
11017	Dial Shaft	Drive Shaft	.11
8184	Dial Cord	3 Ft. of 18 Lb. Drive Cord	.20
11693	Dial Spring	Cord Tension Spring	.04
11076	Dial Scale	Calibrated Scale	.60
11025	Dial Pointer		.16
11198	Escutcheon	For Dial with Mtg. Screw Holes in Corners	1.25
11199	Escutcheon	For Dial with Mtg. Screw Holes Away From Corners	1.25
8215	Fuse	2 Ampere	.10
10030	Knob	Marked "Tuning"	.12
10032	Knob	Marked "Volume"	.12
10068	Knob	Marked "Tone"-On-Off"	.12
10069	Knob	Marked "Band Switch"	.12
10578	Strip	3 Post Antenna & Ground Strip	.15
11005	Strip	4 Post Phono & Television Strip	.10

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

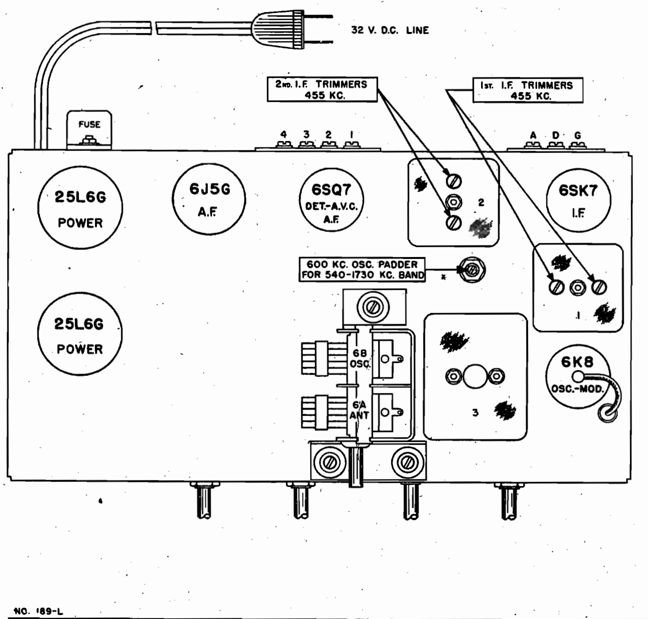
WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

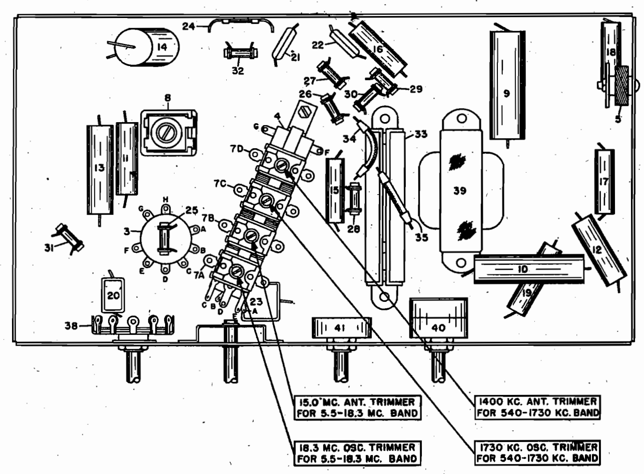
W. 4M 1-40 PART NO. 189L

MODEL 189L
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

SENTINEL MODEL 189L
TWO BAND—SIX TUBE
32 Volt Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabluations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to "G" Post.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR Adjust test oscillator frequency to:	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K. C. Band	1	Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	Adjust 1730 K. C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output
5.5 to 18.3 M. C. Band	1	Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	Receiver "A" antenna post	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor	Receiver "A" antenna post	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

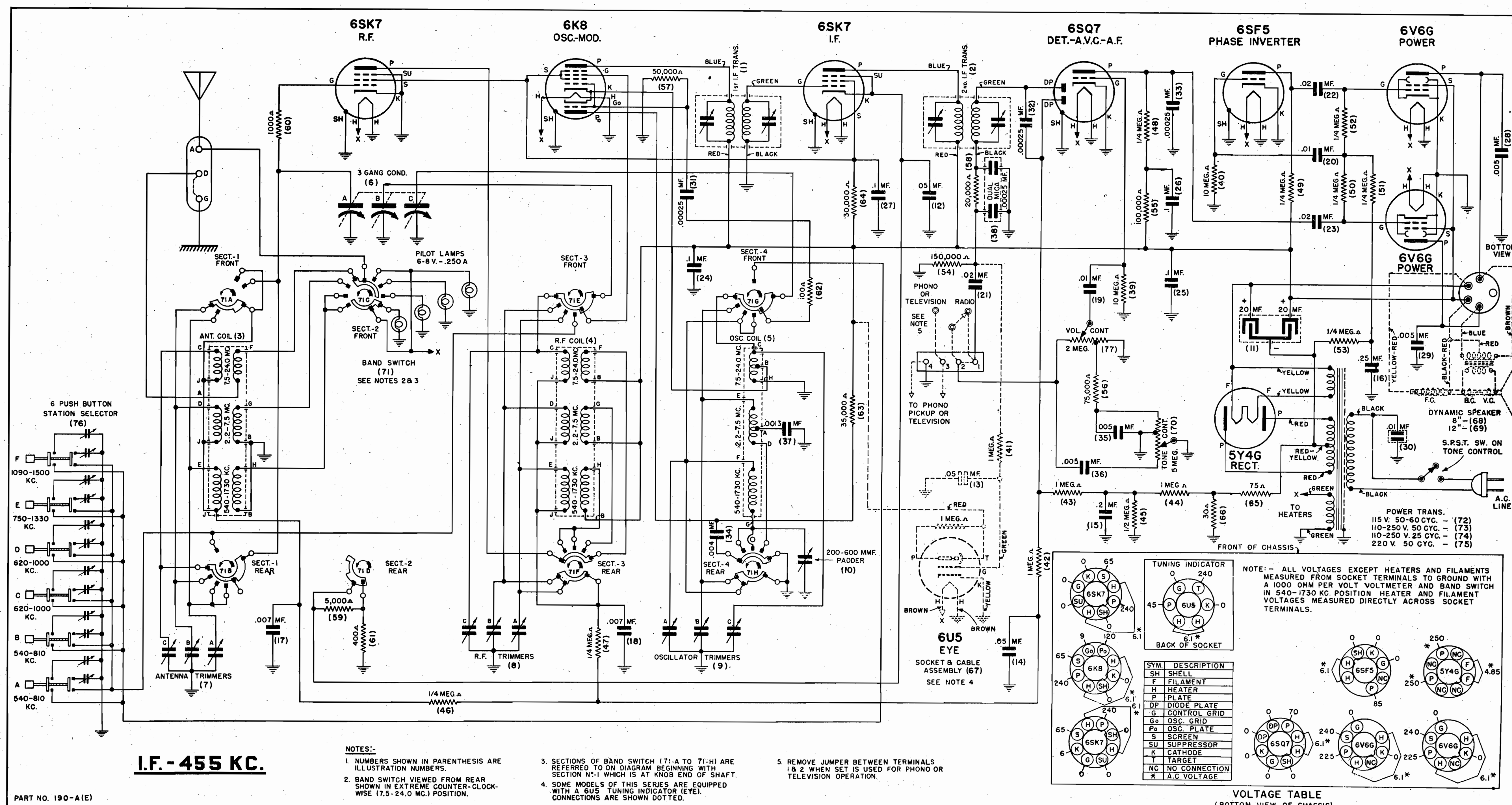
Television Connections:—The audio amplifier and loud speaker of this receiver can be used to amplify the sound output of a television receiver not equipped with an audio amplifier and speaker—just connect the sound channel output of the television receiver (from the second detector) to the No. 3 and No. 4 terminals on back of receiver and attach a single pole double throw switch.

Phonograph Connections:—Phonograph records may be electrically reproduced through the receiver loud speaker by connecting the leads of the phonograph pickup to the No. 3 and No. 4 terminals and using either an electrical or hand wound spring operated phonograph motor. The pickup should be of the high impedance type and a single pole double throw switch must be connected as shown in diagram. To operate—place switch in phono position—set pickup needle on record and adjust radio volume control to desired amount of volume.

When shipped from factory a jumper wire is attached to terminals 1 and 2. If receiver is not to be used for phono or television operation, leave the jumper wire in this position. When receiver is used for either phono or television sound operation, remove jumper wire.

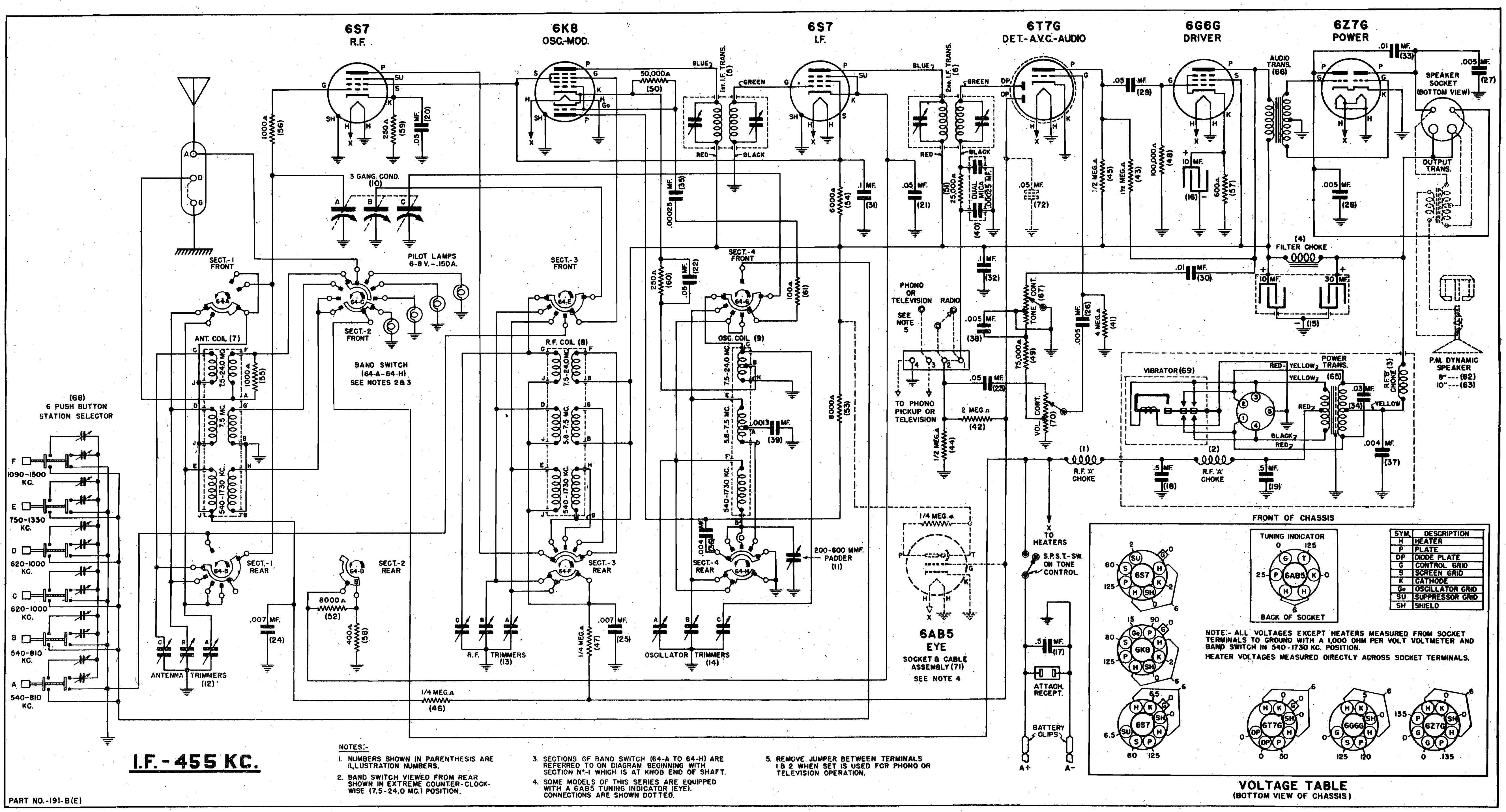
SENTINEL RADIO CORP.

MODELS 190A,190AE
Schematic,Voltage



MODELS 191B,191BE
Schematic,Voltage

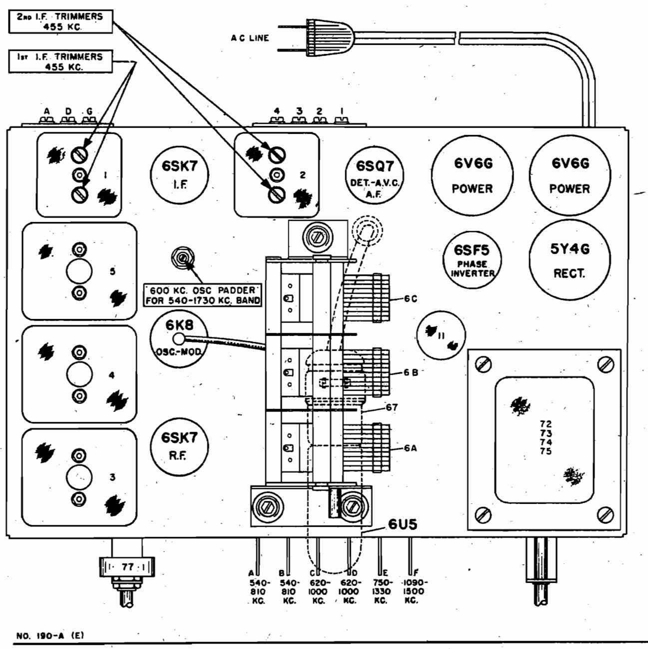
SENTINEL RADIO CORP.

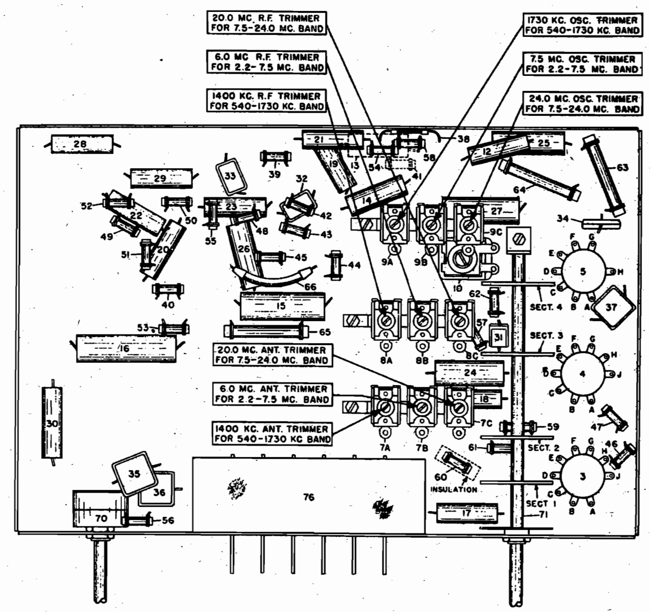


SENTINEL RADIO CORP.

MODELS 190A,190AE
Socket,Trimmers
Alignment,Chassis

SENTINEL MODEL 190A and 190AE—THREE BAND—EIGHT and NINE TUBE
AC Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

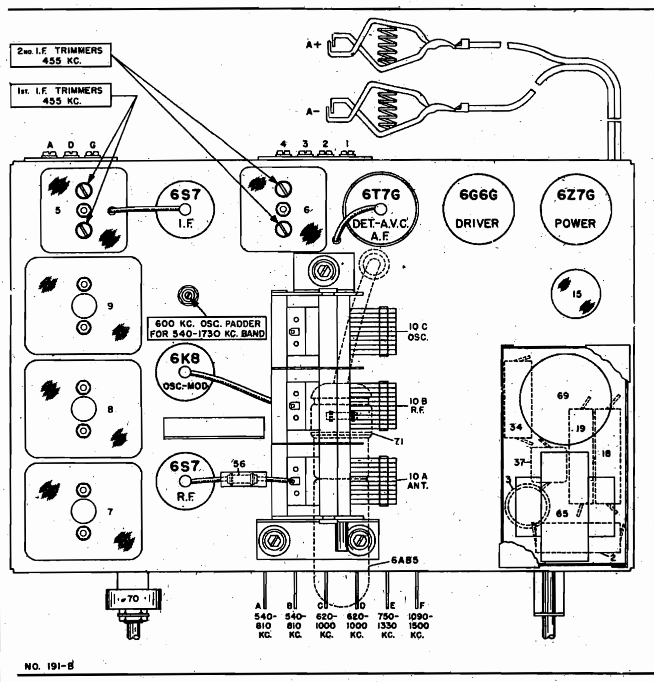
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.
(b) Use an accurately calibrated test oscillator with some type of output measuring device.
(c) Have ground lead of test oscillator attached to chassis.

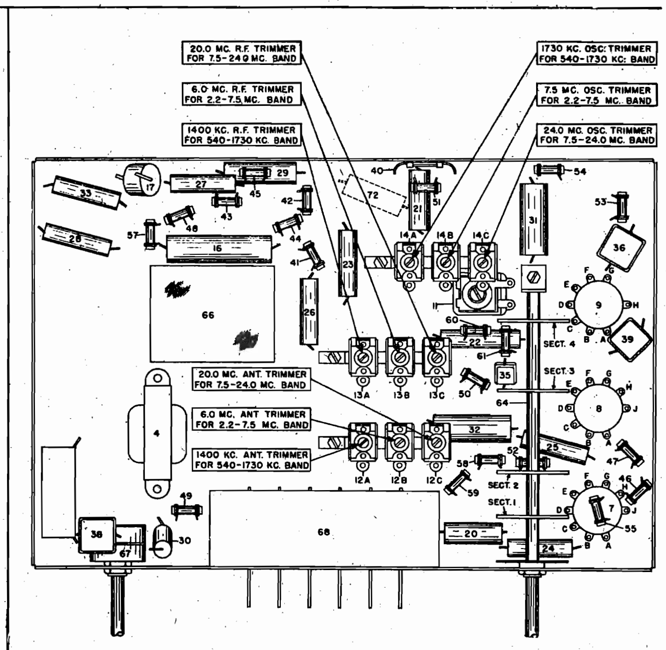
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR Adjust test oscillator frequency to:	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I.F. ALIGNMENT use any band position	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 TO 540 K.C. BAND	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna and R.F. trimmers for maximum output
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.2 TO 7.5 M.C. BAND	1 Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Exactly 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna and R.F. trimmers for maximum output
7.5 TO 24 M.C. BAND	1 Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna and R.F. trimmers for maximum output

MODELS 191B, 191BE
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

SENTINEL MODEL 191B and 191BE—THREE BAND—SIX and SEVEN TUBE
6 Volt Battery Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

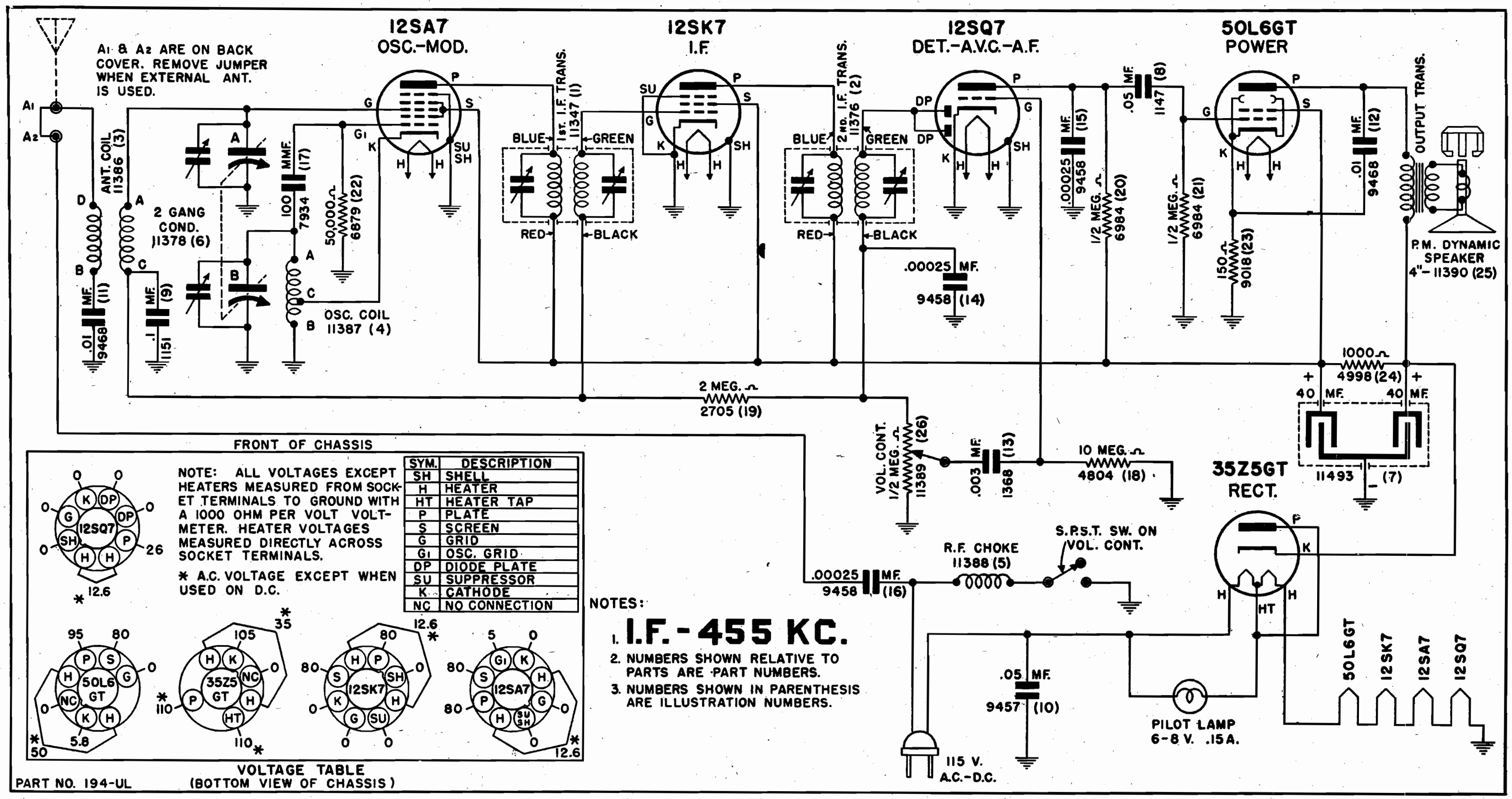
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I.F. ALIGNMENT use any band position	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 TO 540 K.C. BAND	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna and R.F. trimmers for maximum output
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.2 TO 7.5 M.C. BAND	1 Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Exactly 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna and R.F. trimmers for maximum output
7.5 TO 24 M.C. BAND	1 Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna and R.F. trimmers for maximum output

MODEL 194UL
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

Part No.			Description	List Price
1	11347	Coil	1st I. F. Transformer	$ .90
2	11376	Coil	2nd I. F. Transformer	.80
3	11386	Coil	Antenna	.50
4	11387	Coil	Oscillator	.45
5	11388	Coil	Antenna Line Choke	.25
6	11378	Condenser	Tuning Two Gang	1.75
7	11493	Condenser	Tubular Dry Elec. 40 Mfd.-40 Mfd.	1.00
8	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
9	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
10	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
11	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
12	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
13	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
14	9458	Condenser	Mica .00025 Mfd.	.21
15	9458	Condenser	Mica .00025 Mfd.	.21
16	9458	Condenser	Mica .00025 Mfd.	.21
17	7934	Condenser	Mica .0001 Mfd.	.21
18	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
19	2705	Resistor	Carbon 2 Megohm 1/3 Watt	.19
20	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
21	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
22	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
23	9018	Resistor	Carbon 150 Ohm 1/3 Watt	.19
24	4998	Resistor	Carbon 1000 Ohm 1 Watt	.21
25	11390	Speaker	P. M. Dynamic 4 in.	2.70
26	11389	Volume Control	With S.P.S.T. Switch	.80

MISCELLANEOUS PARTS

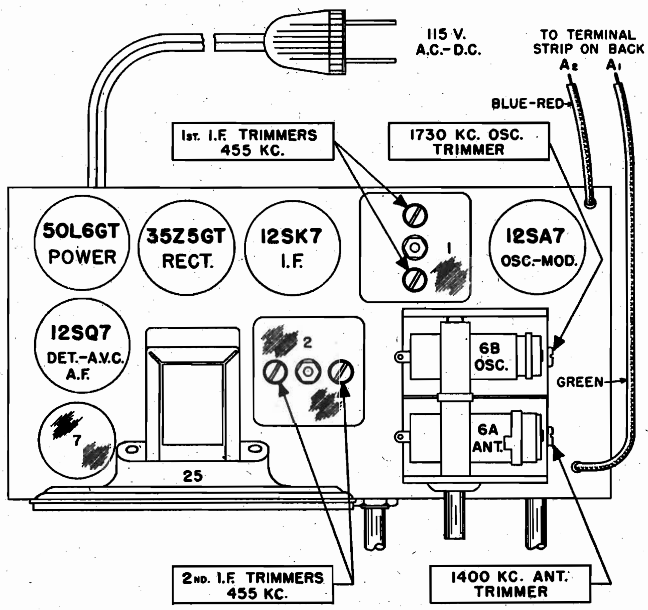
Part No.		Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
11381	Dial Scale	Calibrated Scale	.30
8184	Dial Cord	Dial Drive Cord	.10
11379	Dial Shaft	Dial Drive Shaft	.12
11725	Dial Pointer	For Dial-Bronze	.15
11384	Dial Pointer	For Dial	.15
11391	Dial Crystal	For Dial	.22
11563	Knob	Bakelite Tuning for Walnut Plastic Cabinet	.10
10207	Knob	Bakelite Push Button for Ivory Plastic Cabinet	.08
	Cabinet	Walnut Plastic	1.80
	Cabinet	Ivory Plastic	2.15

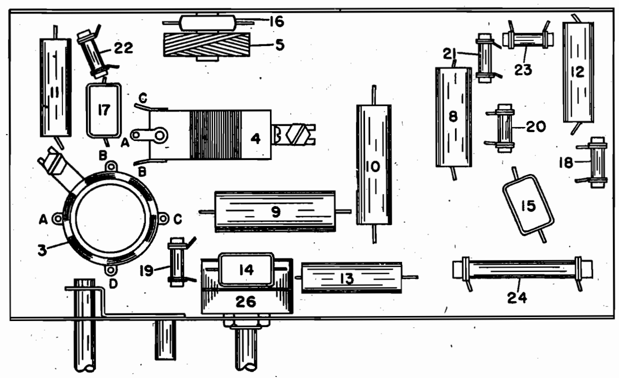
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. W. 4,000 10-39

MODEL 194UL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

5 tube A. C. - D. C. Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

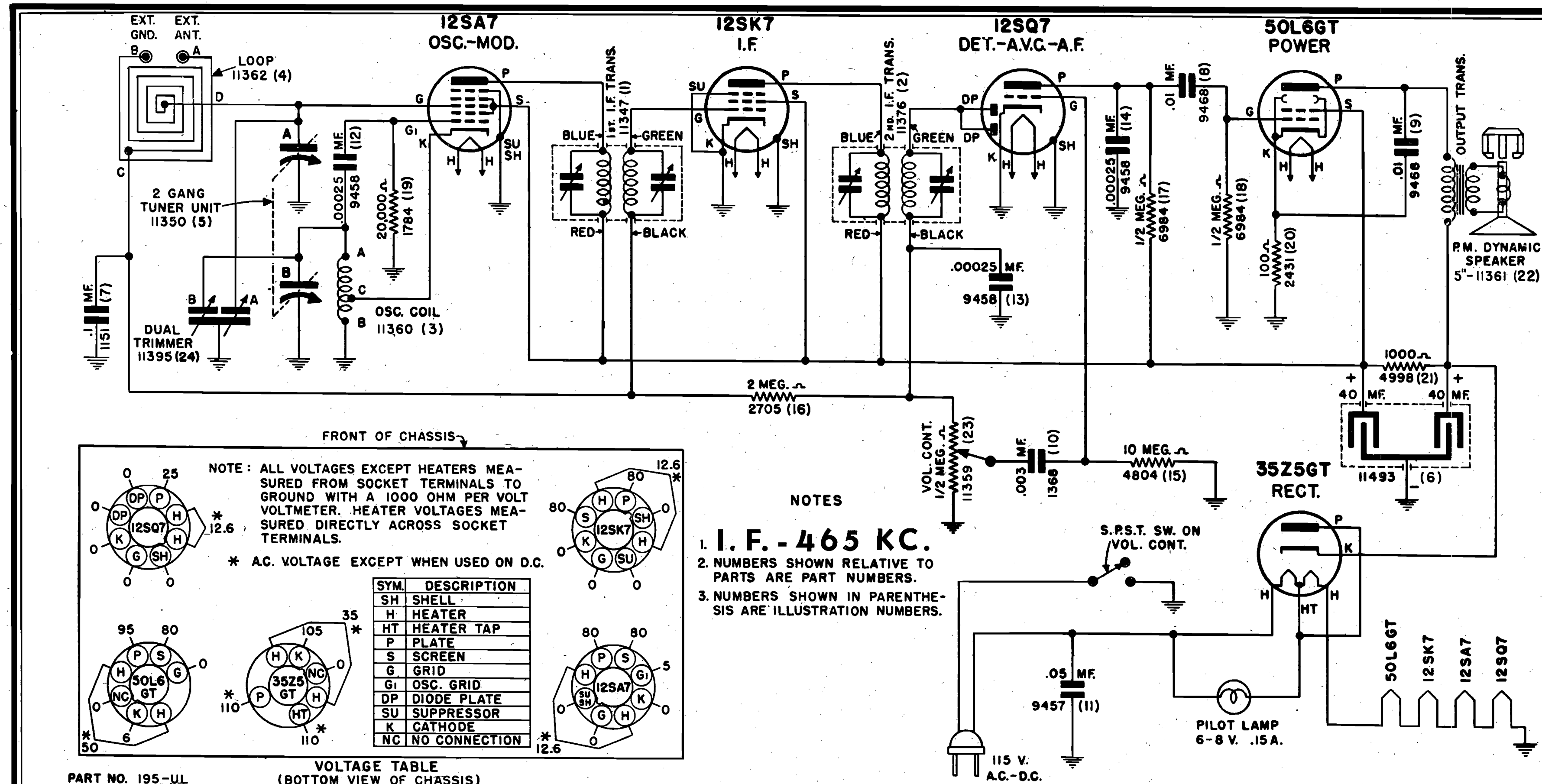
Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.
(b) Use an accurately calibrated test oscillator with some type of output measuring device.
(c) Have ground lead of test oscillator attached to gang condenser frame.

	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 12SA7 tube DO NOT REMOVE CAP.	Adjust the second I. F. transformer trimmer for maximum output then adjust each of the first I. F. trimmers for maximum output
1	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD condenser	Receiver "A1" post	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD condenser	Receiver "A1" post	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

MODEL 195UL
Schematic, Voltage

SENTINEL RADIO CORP.



NOTES

1. I. F. - 465 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.

PARTS LIST

Part No.			Description	List Price
1	11347	Coil	1st I. F. Transformer	.90
2	11376	Coil	2nd I. F. Transformer	.80
3	11360	Coil	Oscillator	.50
4	11362	Antenna	Loop	.65
5	11350	Condenser	Tuning (Two Gang) Push Button Mech. Tuner Unit	3.75
6	11493	Condenser	Tubular Dry Elec. 40-40 Mfd.	1.00
7	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
8	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
9	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
10	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
11	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
12	9458	Condenser	Mica .00025 Mfd.	.21
13	9458	Condenser	Mica .00025 Mfd.	.21
14	9458	Condenser	Mica .00025 Mfd.	.21
15	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
16	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
17	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
18	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
19	1784	Resistor	Carbon 20,000 Ohm ⅓ Watt	.19
20	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
21	4998	Resistor	Carbon 1,000 Ohm ⅓ Watt	.19
22	11361	Speaker	P. M. Dynamic 5 in.	2.70
23	11359	Volume Control	With S.P.S.T. Switch	.80
24	11395	Condenser	Dual Trimmer 2-40 Mmf.	.30
25	2155	Resistor	Carbon 200,000 Ohm ⅓ Watt	.19

MISCELLANEOUS PARTS

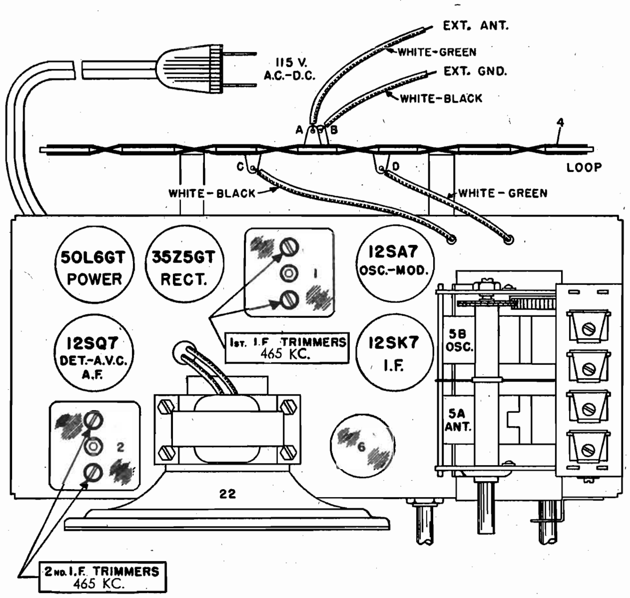
Part No.		Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
11354	Dial Scale	Calibrated Scale	.30
8184	Dial Cord	Dial Drive Cord	.10
11352	Dial Shaft	Dial Drive Shaft	.12
11513	Dial Pointer	For Dial-Bronze	.15
10659	Dial Pointer	For Dial	.16
11357	Dial Crystal	For Dial Used With Bakelite Cabinet Only	.27
11371	Escutcheon	For Dial Used With Wood Cabinet Only	.75
11200	Escutcheon	For Pushbutton Used With Wood Cabt. Only	.35
10208	Knob	Bakelite Tuning for Wood Cabinet	.12
11372	Knob	Bakelite Push Button for Wood Cabinet	.10
11563	Knob	Bakelite Tuning for Walnut Plastic Cabinet	.10
11595	Knob	Bakelite Push Button for Plastic Cabinet	.10
11564	Knob	Bakelite Tuning for Onyx Cabinet	.10
11596	Knob	Bakelite Push Button for Onyx Cabinet	.10
	Cabinet	Walnut Plastic	2.00
	Cabinet	Onyx Plastic	4.25

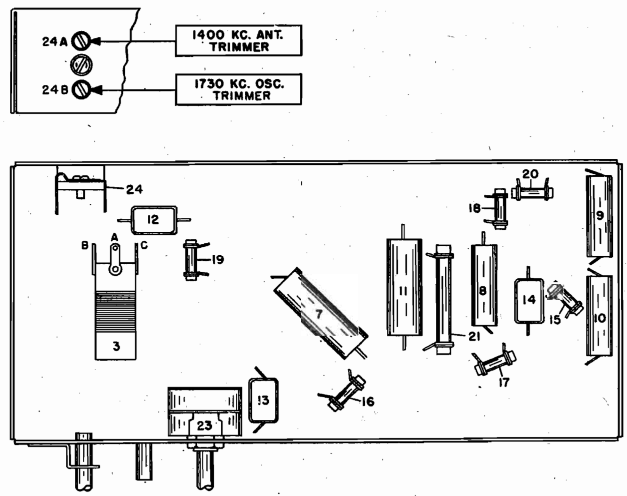
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. W4M 9-39

MODEL 195UL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

5 tube A. C. - D. C. Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME APPROXIMATE POSITION IN THE BACK OF CHASSIS IT WILL BE IN WHEN THE SET IS IN THE CABINET AND THE BACK ATTACHED.

When adjusting 1730 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

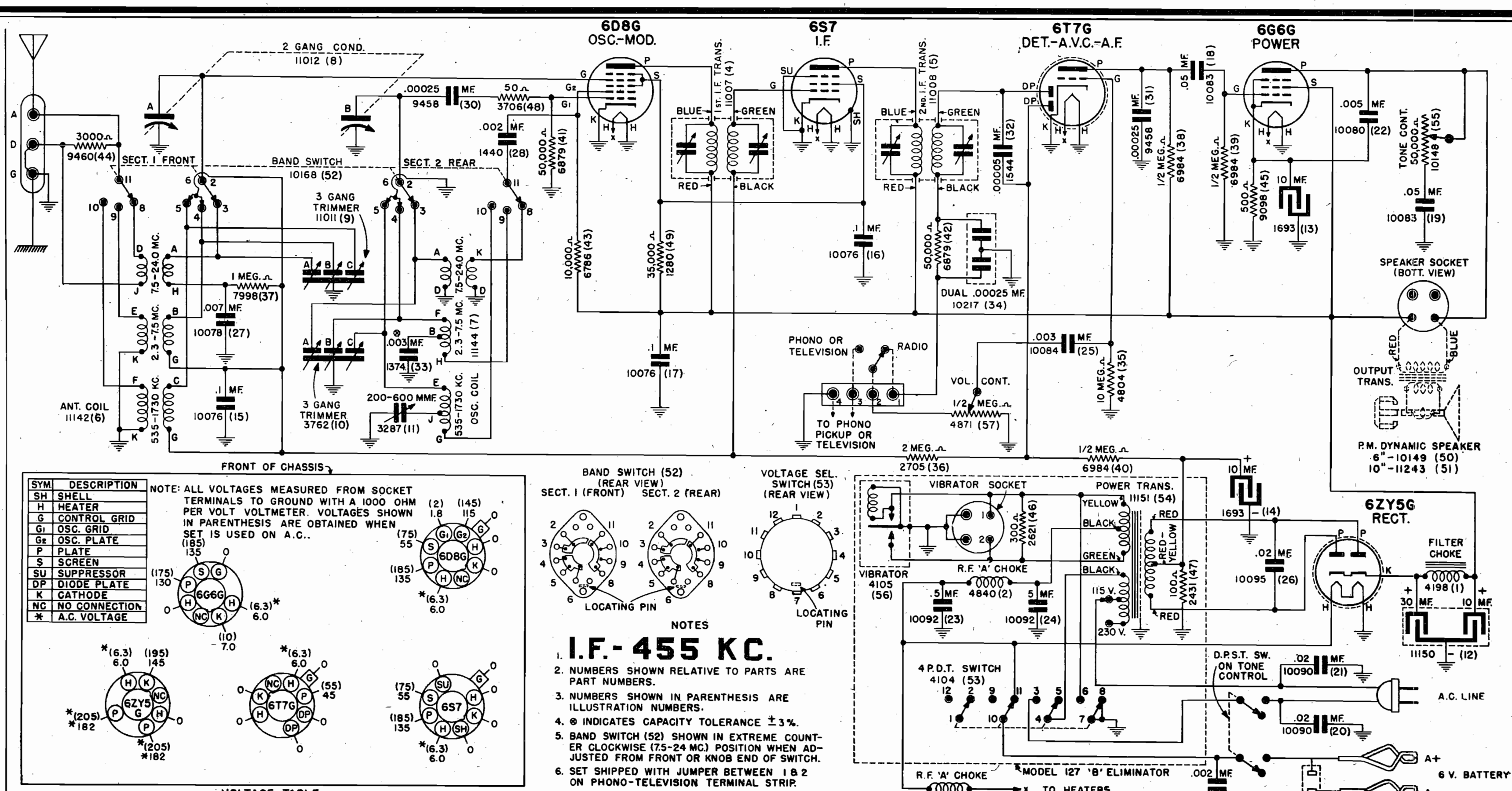
(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

DO NOT ATTACH LOW SIDE OF TEST OSCILLATOR TO RECEIVER—LEAVE UNCONNECTED.

	Set receiver dial to:	TEST OSCILLATOR — Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below—and:
	I. F. Any point where no interfering signal is received	465 K. C.	.02 MFD condenser	High side to grid terminal of 12SA7 tube DO NOT REMOVE CAP	Adjust the second I. F. transformer trimmers for maximum out put—then adjust each of the first I.F. trimmers for maximum output.
1	Exactly 1730 K. C.	Exactly 1730 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Exactly 1400 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1400 K. C. antenna trimmer for maximum output.

SENTINEL RADIO CORP.

MODEL 197X
Schematic, Voltage



SYM	DESCRIPTION
SH	SHELL
H	HEATER
G	CONTROL GRID
G_1	OSC. GRID
G_2	OSC. PLATE
P	PLATE
S	SCREEN
SU	SUPPRESSOR
DP	DIODE PLATE
K	CATHODE
NC	NO CONNECTION
*	A.C. VOLTAGE

NOTE: ALL VOLTAGES MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM PER VOLT VOLTMETER. VOLTAGES SHOWN IN PARENTHESIS ARE OBTAINED WHEN SET IS USED ON A.C..

NOTES

1. **I.F.-455 KC.**
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ⊗ INDICATES CAPACITY TOLERANCE ±3%.
5. BAND SWITCH (52) SHOWN IN EXTREME COUNTER CLOCKWISE (7.5-24 MC.) POSITION WHEN ADJUSTED FROM FRONT OR KNOB END OF SWITCH.
6. SET SHIPPED WITH JUMPER BETWEEN 1 & 2 ON PHONO-TELEVISION TERMINAL STRIP.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. — W. 3M 12-39 PART NO. 197-X

Part No.	Part		Description	List Price
1	4198	Choke	Audio Filter	$ .95
2	4840	Choke	R. F. "A"	.18
3	4840	Choke	R. F. "A"	.18
4	11007	Coil	1st I. F. Transformer	1.25
5	11008	Coil	2nd I. F. Transformer	1.25
6	11142	Coil	Antenna	.75
7	11144	Coil	Oscillator	.65
8	11012	Condenser	Tuning Two Gang	1.75
9	11011	Condenser	Trimmer Three Gang	.50
10	3762	Condenser	Trimmer Three Gang	.47
11	3287	Condenser	Padder 340-460 Mmf.	.45
12	11150	Condenser	Dry Electrolytic 10-30 Mfd. 250 Volt	1.00
13	1693	Condenser	Dry Electrolytic 10 Mfd. 25 Volt	.75
14	1693	Condenser	Dry Electrolytic 10 Mfd. 25 Volt	.75
15	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
16	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
17	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
18	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
19	10083	Condenser	Tubular .05 Mfd. 400 Volt	.19
20	10090	Condenser	Tubular .02 Mfd. 400 Volt	.19
21	10090	Condenser	Tubular .02 Mfd. 400 Volt	.19
22	10080	Condenser	Tubular .005 Mfd. 400 Volt	.17
23	10092	Condenser	Tubular .5 Mfd. 100 Volt	.25
24	10092	Condenser	Tubular .5 Mfd. 100 Volt	.25
25	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
26	10095	Condenser	Tubular .02 Mfd. 1000 Volt	.20
27	10078	Condenser	Tubular .007 Mfd. 200 Volt	.19
28	1440	Condenser	Mica .002 Mfd.	.21
29	1440	Condenser	Mica .002 Mfd.	.21
30	9458	Condenser	Mica .00025 Mfd.	.21
31	9458	Condenser	Mica .00025 Mfd.	.21
32	1544	Condenser	Mica .00005 Mfd.	.21
33	1374	Condenser	Mica .003 Mfd. ± 3%	.24
34	10217	Condenser	Mica Dual .00025 Mfd.	.21
35	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
36	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
37	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
38	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
39	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
40	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
41	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
42	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
43	6786	Resistor	Carbon 10,000 Ohm ⅓ Watt	.19
44	9460	Resistor	Carbon 3,000 Ohm ⅓ Watt	.19
45	9089	Resistor	Carbon 500 Ohm ⅓ Watt	.19
46	2621	Resistor	Carbon 300 Ohm ⅓ Watt	.19
47	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
48	3706	Resistor	Carbon 50 Ohm ⅓ Watt	.19
49	1280	Resistor	Carbon 35,000 Ohm ½ Watt	.19
50	10149	Speaker	P. M. Dynamic 6 in.	5.00
51	11243	Speaker	P. M. Dynamic 10 in.	7.00
52	10168	Switch	Wave Band	1.30
53	4104	Switch	Voltage Selector	.75
54	11151	Transformer	Power, 6 Volt - 115-230 Volt 50-60 Cycle	3.00
55	10148	Tone Control	With On-Off Switch	.90
56	4105	Vibrator		3.50
57	4871	Volume Control		.80

MISCELLANEOUS PARTS

Part		Description	List
11304	Bulb	6-8 Volt .150 Amp. Dial Light No. 47 Bayonet Base	.10
2262	Clamp	Battery Clamp	.17
11017	Dial Shaft	Drive Shaft	.11
8184	Dial Cord	24 in. of 18 lb. Drive Cord	.15
11693	Dial Spring	Cord Tension Spring	.04
11022	Dial Scale	Calibrated Scale	.60
11025	Dial Pointer	Indicator Needle	.16
11246	Dial Indicator	Band Indicator	.12
11198	Escutcheon	For Dial with Crystal (Mtg. Screw Holes in Corners)	1.25
11199	Escutcheon	For Dial with Crystal (with Mtg. Holes Away from Corners)	1.25
10030	Knob	Marked "Tuning"	.12
10032	Knob	Marked "Volume"	.12
10068	Knob	Marked "Tone-On-Off"	.12
10069	Knob	Marked "Band Switch"	.12

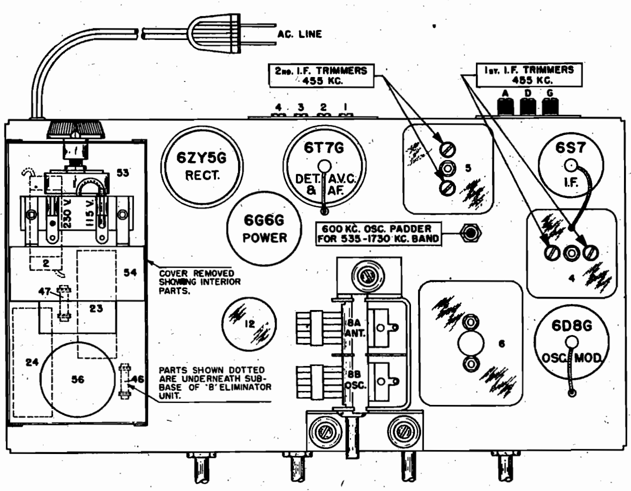
MODEL 197X
Socket, Trimmers
Alignment, Chassis

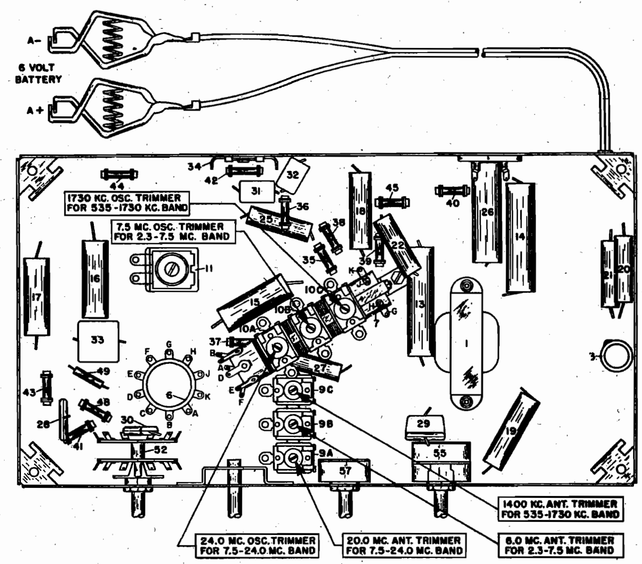
SENTINEL RADIO CORP.

SENTINEL MODEL 197X

TWO BAND—FIVE TUBE

115 Volt A. C. or 6 Volt Battery Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.
(b) Use an accurately calibrated test oscillator with some type of output measuring device.
(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I.F. ALIGNMENT use any band position	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6D8G tube. Do not remove cap	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 TO 540 K.C. BAND	**1** Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.3 TO 7.5 M.C. BAND	**1** Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Approx. 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna trimmer for maximum output.
7.5 TO 24 M.C. BAND	**1** Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna trimmer for maximum output.

THIS RECEIVER CAN BE OPERATED WITH A SIX VOLT STORAGE BATTERY OF FROM 115 TO 230 VOLT 50 TO 60 CYCLE CURRENT.

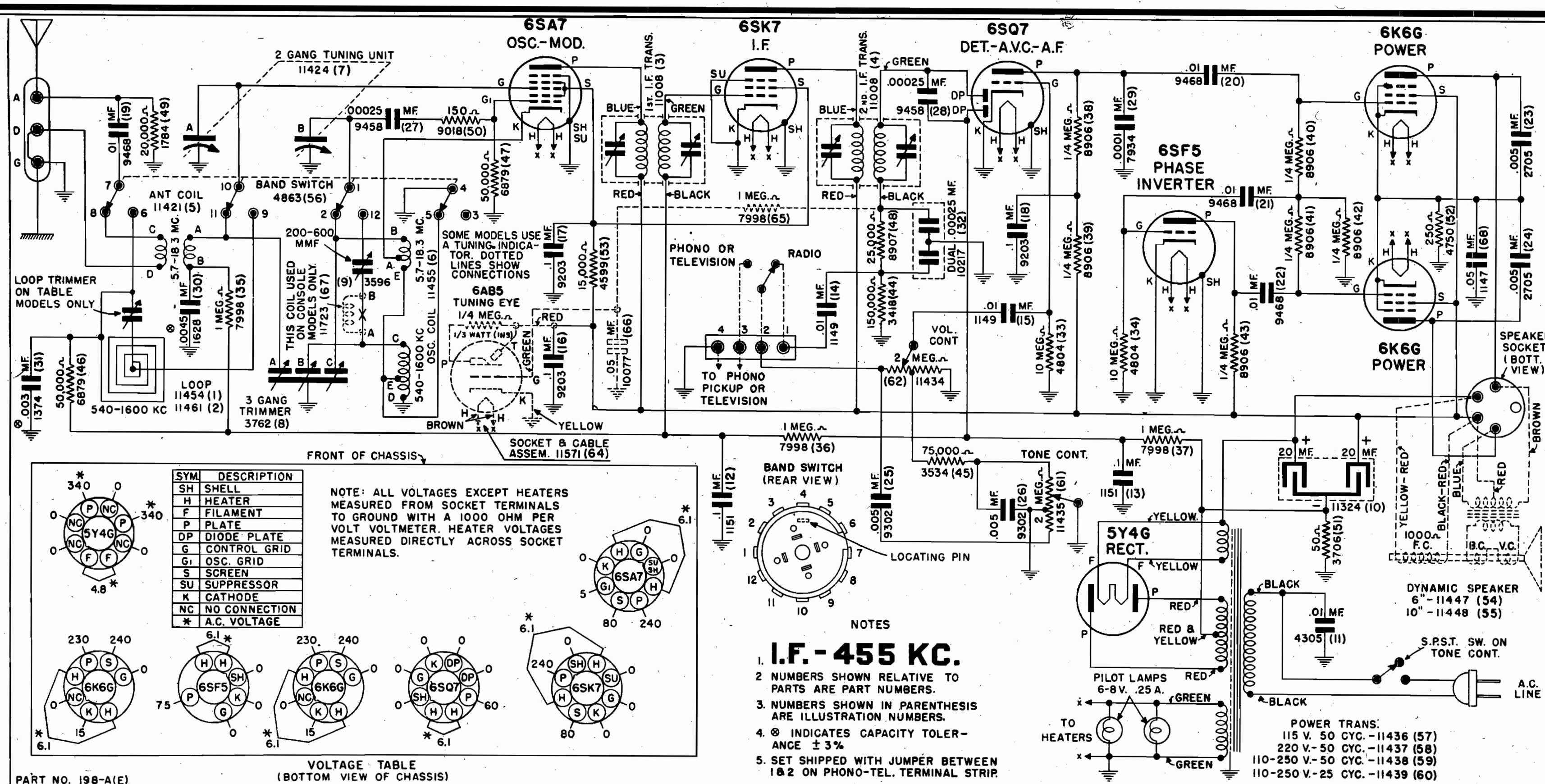
FOR AC OPERATION obtain from the Electric Supply Company the voltage and current rating of the local Electric Service and — — — remove top cover from power unit and insert metal tipped lead into proper terminal socket that will be found underneath top cover of power unit. Place voltage selector switch knob in "115—230" positon and plug set power cord plug into house lighting outlet.

FOR SIX VOLT BATTERY OPERATION attach battery cable leads to six volt storage battery and place voltage selector switch knob to "6 V."

SENTINEL RADIO CORP

MODELS 198A, 198AE Schematic, Voltage

W. 4M 11-39 PART NO. 198AL-E



NOTES

1. I.F. - 455 KC.
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ⊗ INDICATES CAPACITY TOLERANCE ±3%
5. SET SHIPPED WITH JUMPER BETWEEN 1 & 2 ON PHONO-TEL. TERMINAL STRIP.

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Illus. No.	Part No.		Description	List Price
1	11454	Antenna	Loop (For Table Model)	$2.00
2	11461	Antenna	Loop (For Console Model)	3.50
3	11008	Coil	1st I.F. Transformer	1.25
4	11008	Coil	2nd I.F. Transformer	1.25
5	11421	Coil	Antenna—Short Wave	1.25
6	11455	Coil	Oscillator Two Band	1.35
7	11424	Condenser	Tuning—Two Gang—With Push Button Mech.	4.00
8	3762	Condenser	Trimmer Three Gang	.47
9	3596	Condenser	Padding 340-460 Mmf.	.44
10	11324	Condenser	Dry Electrolytic 20 Mfd. - 20 Mfd. 450 Volt D.C Wkg.	1.25
11	4305	Condenser	Tubular (Shielded) .01 Mfd. 200 V.	.30
12	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
13	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
14	1149	Condenser	Tubular .01 Mfd. 200 Volt	.17
15	1149	Condenser	Tubular .01 Mfd. 200 Volt	.17
16	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20
17	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20
18	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20
19	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
20	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
21	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
22	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
23	2075	Condenser	Tubular .005 Mfd. 600 Volt	.18
24	2075	Condenser	Tubular .005 Mfd. 600 Volt	.18
25	9302	Condenser	Mica .005 Mfd.	.55
26	9302	Condenser	Mica .005 Mfd.	.55
27	9458	Condenser	Mica .00025 Mfd.	.21
28	9458	Condenser	Mica .00025 Mfd.	.21
29	7934	Condenser	Mica .0001	.21
30	1628	Condenser	Mica .0045 Mfd. ± 3%	.24
31	1374	Condenser	Mica .003 Mfd. ± 3%	.24
32	10217	Condenser	Mica Dual .00025 Mfd.	.21
33	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
34	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
35	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
36	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
37	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
38	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
39	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
40	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
41	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
42	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
43	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
44	3418	Resistor	Carbon 150,000 Ohm ⅓ Watt	.19
45	3534	Resistor	Carbon 75,000 Ohm ⅓ Watt	.19
46	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
47	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
48	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
49	1784	Resistor	Carbon 20,000 Ohm ⅓ Watt	.19
50	9018	Resistor	Carbon 150 Ohm ⅓ Watt	.19
51	3706	Resistor	Carbon 50 Ohm ⅓ Watt	.19
52	4750	Resistor	Carbon 250 Ohm 1 Watt	.22
53	4599	Resistor	Carbon 15,000 Ohm 1½ Watt	.22
54	11447	Speaker	Electro-Dynamic 6 in.	4.50
55	11448	Speaker	Electro-Dynamic 10 in.	7.00
56	4863	Switch	Band Selector	.60
57	11436	Transformer	Power 115 Volt 50 Cycle	3.50
58	11437	Transformer	Power 220 Volt 50 Cycle	4.25
59	11438	Transformer	Power 110-250 Volt 50 Cycle	6.75
60	11439	Transformer	Power 110-250 Volt 25 Cycle	8.75
61	11435	Tone Control	With S.P.S.T. Switch	.90
62	11434	Volume Control		.70
64	11571	Cable Assembly	Tuning Eye Cable & Socket Assembly	.65
65	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
66	10077	Condenser	Tubular .05 Mfd. 400 Volt	.19
67	11723	Coil	Oscillator Series (Console Only)	.80
68	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19

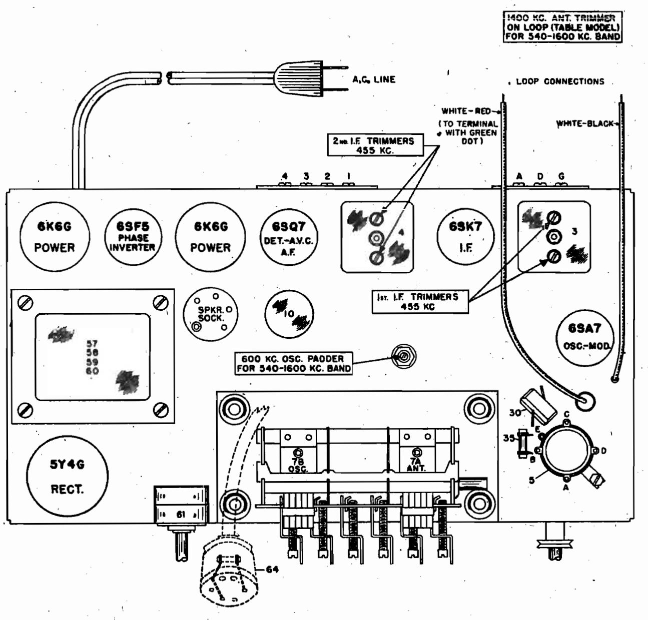
MISCELLANEOUS PARTS

Part No.		Description	List Price
10292	Bulb	Pilot Lamp 6-8 Volt .25 Amp. Type No. 44	.10
11176	Dial Pointer		.10
11426	Dial Assembly	Drive Assembly Less Scale & Gear	2.00
11185	Dial Gear	Drive Shaft with Rubber Sleeve	.35
8184	Dial Cord	12 in. of 18 Lb. Drive Cord	.10
11197	Dial Spring	Drive Shaft Tension Spring	.16
11430	Dial Scale	Calibrated Scale	.40
11450	Escutcheon	For Dial	1.25
11449	Escutcheon	For Dial	1.50
11452	Escutcheon	Push Button Used with No. 11450 Dial Escutcheon	.35
11451	Escutcheon	Push Button Used with No. 11449 Dial Escutcheon	.35
10030	Knob	Marked "Tuning"	.12
10068	Knob	Marked "Off-On Tone"	.12
10069	Knob	Marked "Band Switch"	.12
10032	Knob	Marked "Volume"	.12
11202	Knob	Push Button	.08

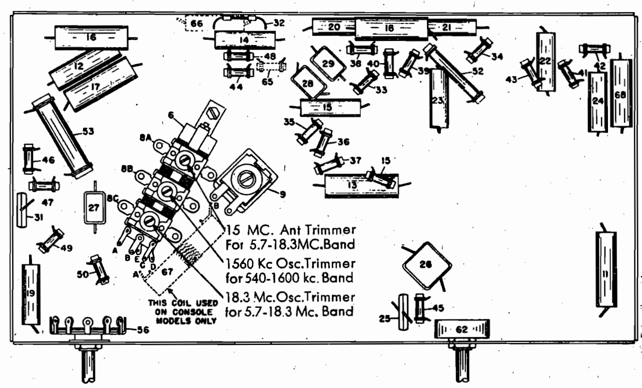
MODELS 198A,198AE
Socket,Trimmers
Alignment,Chassis

SENTINEL RADIO CORP.

TWO BAND—SEVEN and EIGHT TUBE
A. C. Operated Superheterodyne Receiver



NO. 198-A(E)



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1600 or 1560 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

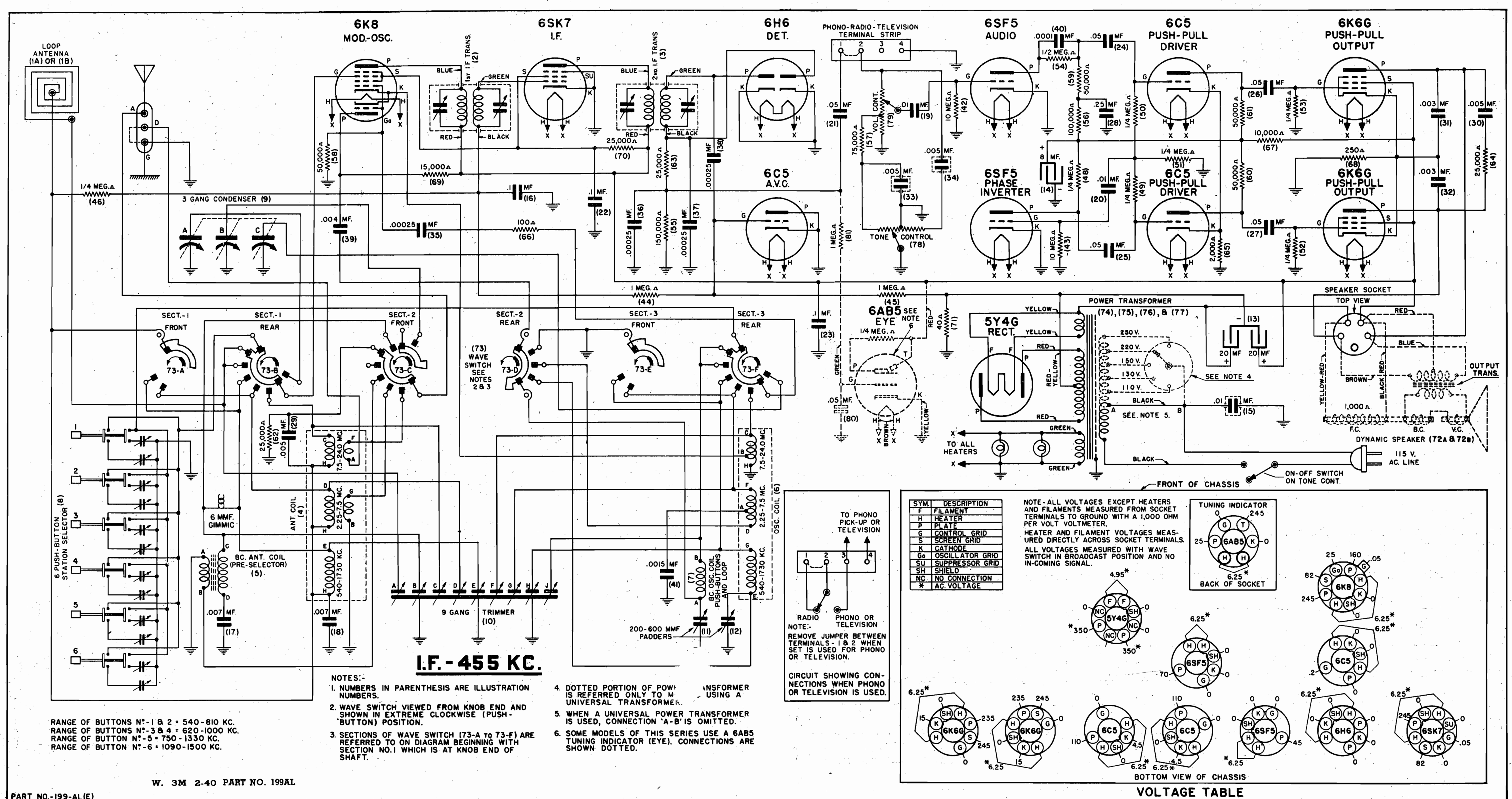
(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR Adjust test Oscillator frequency to:	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position	Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6SA7 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1560 to 540 K.C. Band	1 Exactly 1500 K.C.	Exactly 1560 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 1530 K. C. oscillator trimmer for maximum output
	2 Approx. 1400 K.C. Table Model only.	Approx. 1400 K.C. Table Model Only	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.7 to 18.3 M. C. Band	1 Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	Use Small Loop to couple test oscillator to receiver loop	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 15 M.C.	Approx. 15 M. C.	400 Ohm	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output

MODELS 199A, 199AE
Schematic, Voltage

SENTINEL RADIO CORP.



I.F. - 455 KC.

RANGE OF BUTTONS No-1 & 2 = 540-810 KC.
RANGE OF BUTTONS No-3 & 4 = 620-1000 KC.
RANGE OF BUTTON No-5 = 750-1330 KC.
RANGE OF BUTTON No-6 = 1090-1500 KC.

NOTES:-

1. NUMBERS IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
2. WAVE SWITCH VIEWED FROM KNOB END AND SHOWN IN EXTREME CLOCKWISE (PUSH-BUTTON) POSITION.
3. SECTIONS OF WAVE SWITCH (73-A TO 73-F) ARE REFERRED TO ON DIAGRAM BEGINNING WITH SECTION NO.1 WHICH IS AT KNOB END OF SHAFT.
4. DOTTED PORTION OF POW[illegible]ANSFORMER IS REFERRED ONLY TO M[illegible] USING A UNIVERSAL TRANSFORMER.
5. WHEN A UNIVERSAL POWER TRANSFORMER IS USED, CONNECTION 'A-B' IS OMITTED.
6. SOME MODELS OF THIS SERIES USE A 6AB5 TUNING INDICATOR (EYE). CONNECTIONS ARE SHOWN DOTTED.

NOTE:- REMOVE JUMPER BETWEEN TERMINALS - 1 & 2 WHEN SET IS USED FOR PHONO OR TELEVISION.

CIRCUIT SHOWING CONNECTIONS WHEN PHONO OR TELEVISION IS USED.

SYM.	DESCRIPTION
F	FILAMENT
H	HEATER
P	PLATE
G	CONTROL GRID
S	SCREEN GRID
K	CATHODE
Go	OSCILLATOR GRID
SU	SUPPRESSOR GRID
SH	SHIELD
NC	NO CONNECTION
*	AC. VOLTAGE

NOTE - ALL VOLTAGES EXCEPT HEATERS AND FILAMENTS MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1,000 OHM PER VOLT VOLTMETER.
HEATER AND FILAMENT VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.
ALL VOLTAGES MEASURED WITH WAVE SWITCH IN BROADCAST POSITION AND NO IN-COMING SIGNAL.

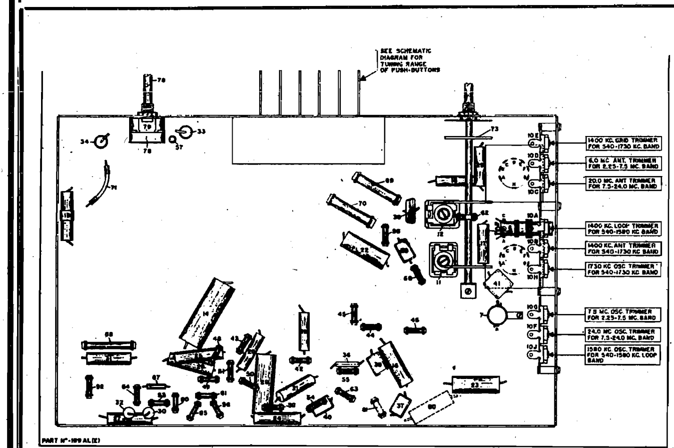
VOLTAGE TABLE

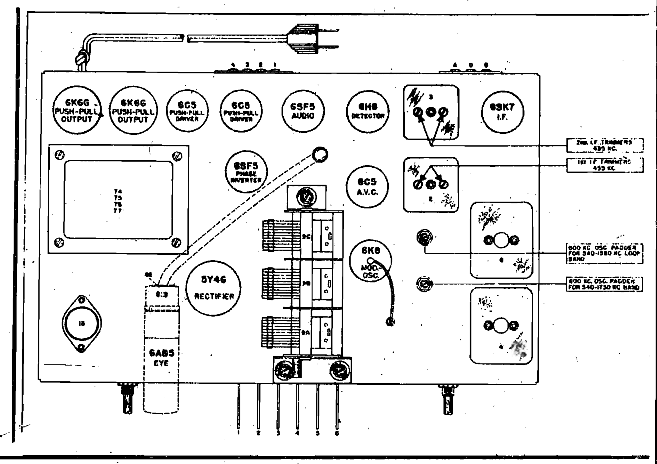
W. 3M 2-40 PART NO. 199AL

PART NO.-199-AL(E)

SENTINEL RADIO CORP.

MODELS 199A,199AE
Socket,Trimmers
Alignment,Chassis





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 600 or 1580 kilocycle loop oscillator trimmers and 1400 kilocycle loop antenna trimmer, do not connect test oscillator to "A" post.

Couple test oscillator to receiver loop by:

(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

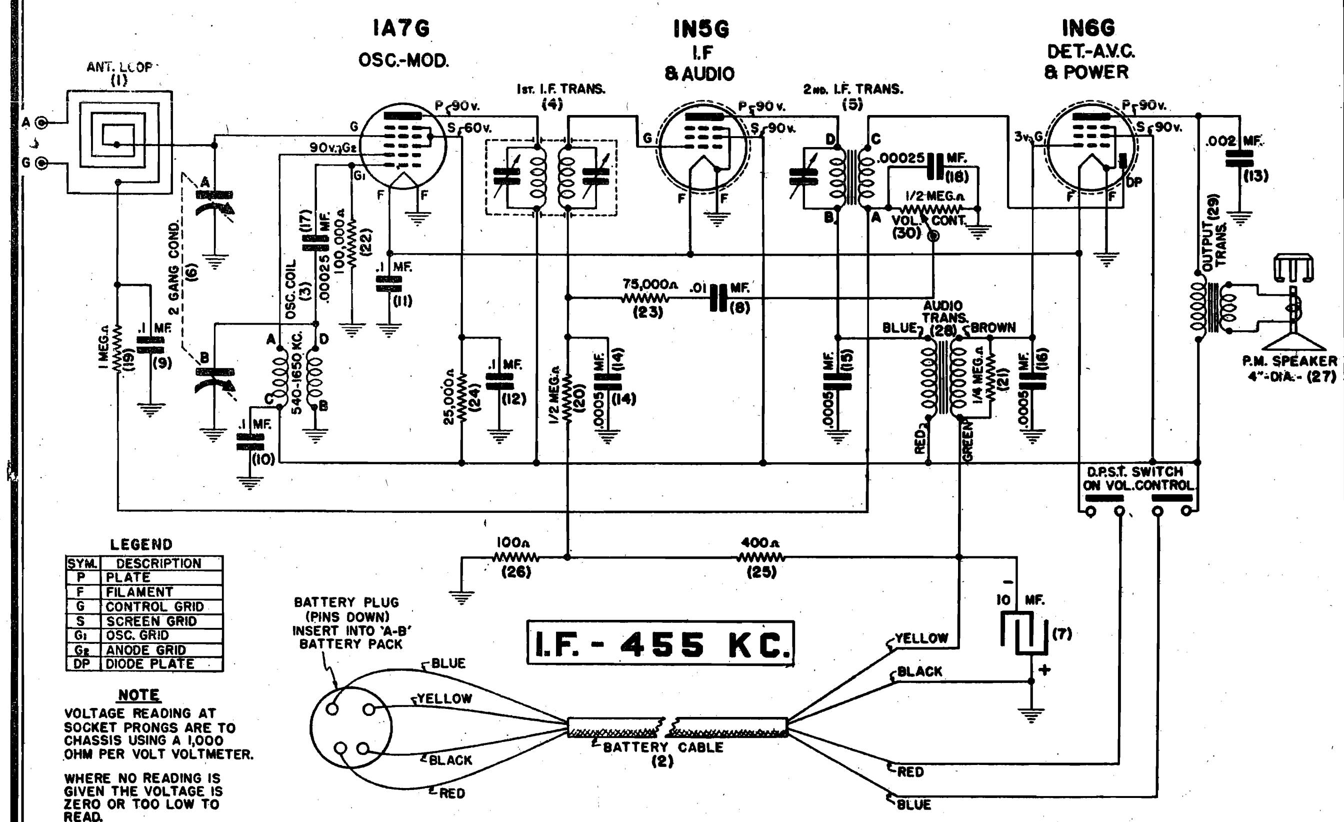
(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

(c) Place band switch in next to maximum right hand position.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR Adjust test Oscillator frequency to	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1580 to 540 K.C. Band Using Loop Aerial	1	Exactly 1580 K.C.	Exactly 1580 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 1580 K. C. oscillator trimmer for maximum output
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 1400 K.C. loop antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 600 K.C. loop oscillator padder for maximum output.
1730 TO 540 K.C. BAND USING REGULAR AERIAL	1	Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna and grid trimmers for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.25 TO 7.5 M.C. BAND	1	Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2	Approx. 6. M.C.	Approx. 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna trimmer for maximum output.
7.5 24 M.C. BAND	1	Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna trimmer for maximum output.

MODEL 160BL
Schematic,Voltage,Chassis
Alignment,Socket,Trimmers

SENTINEL RADIO CORP.



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment, check tuning dial adjustment by: turn gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

BEFORE ALIGNING, PLACE LOOP ANTENNA AND THE "A" AND "B" BATTERY-PACK IN THE SAME APPROXIMATE POSITION IN THE BACK OF CHASSIS THAT THEY WILL BE IN WHEN THE SET IS IN THE CABINET AND THE CABINET BACK CLOSED.

When adjusting 1650 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to terminals on bottom of cabinet back.

Couple test oscillator to receiver loop by:

a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

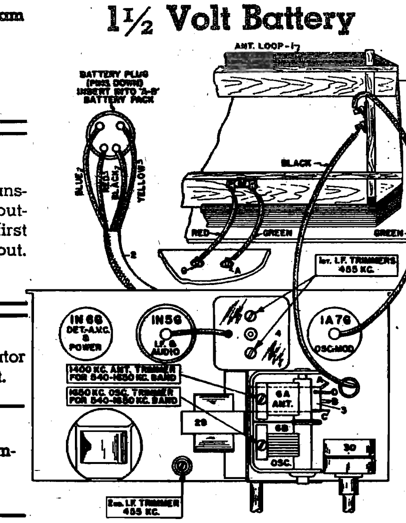
b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

PART Nº-160-BL

	Set receiver dial to:	TEST OSCILLATOR Adjust test oscillator frequency to:	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below—and:
	I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 1A7G tube Low side to chassis DO NOT REMOVE CAP.	Adjust the second I. F. transformer trimmer for maximum output—then adjust each of the first I. F. trimmers for maximum output.
(1)	Exactly 1650 K. C.	Exactly 1650 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1650 K. C. oscillator trimmer for maximum output.
(2)	Approx. 1400 K. C.	Exactly 1400 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1400 K. C. antenna trimmer for maximum output

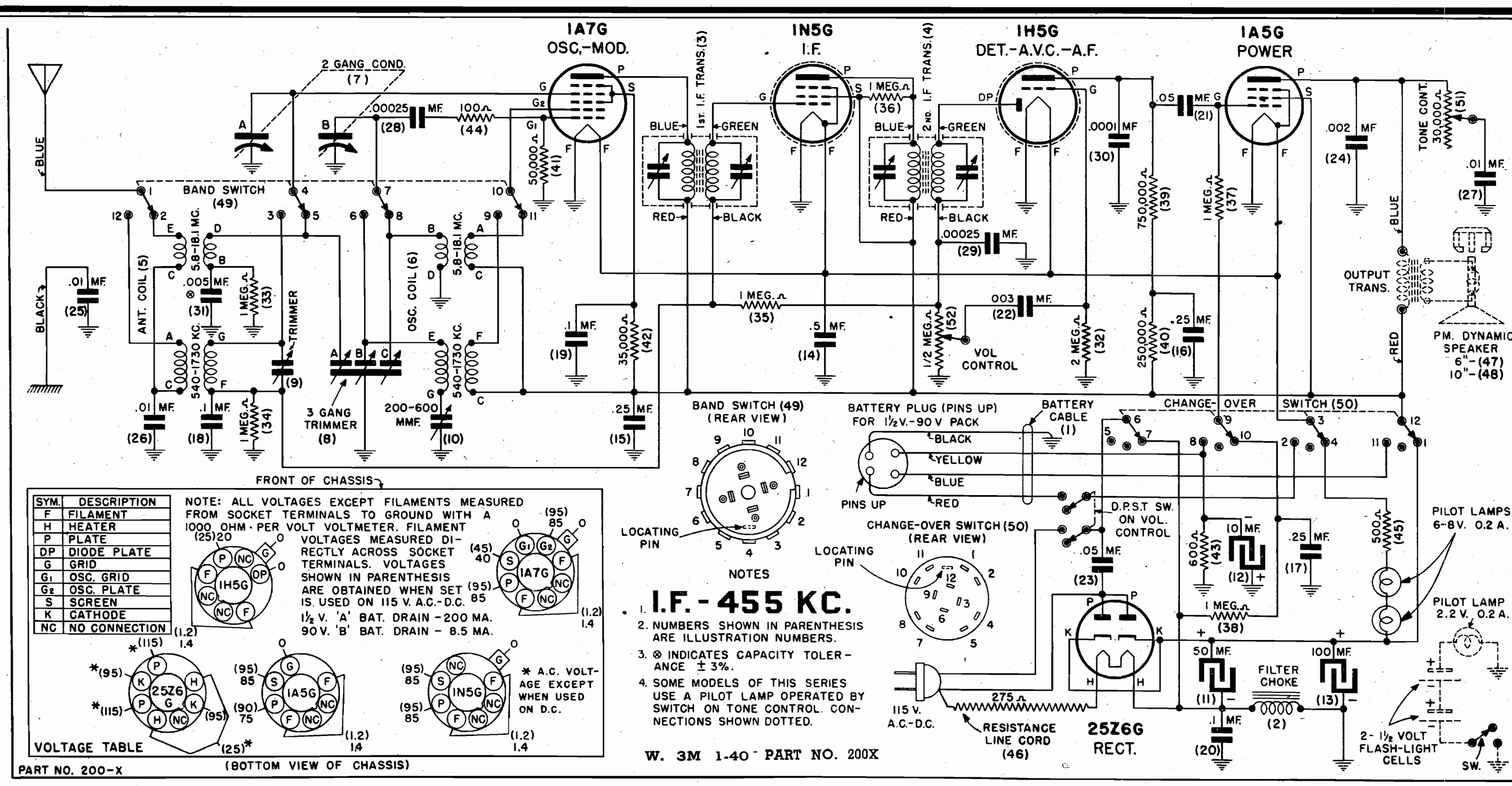
3 TUBE PORTABLE

1½ Volt Battery



MODEL 200X
Schematic, Voltage

SENTINEL RADIO CORP.



PARTS LIST

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Illus. No.	Part No.		Description	List Price
1	4969	Cable	Battery, Assembly with Four Prong Plug	$0.35
2	11501	Choke	Filter	1.75
3	11539	Coil	1st I.F. Transformer	1.50
4	10834	Coil	2nd I.F. Transformer	1.45
5	11089	Coil	Antenna	.65
6	11090	Coil	Oscillator	.60
7	11012	Condenser	Tuning Two Gang	1.75
8	3762	Condenser	Trimmer Three Gang	.47
9	1597	Condenser	Trimmers 3-35 Mmf.	.21
10	3287	Condenser	Padder 340-460 Mmf.	.45
11	11502	Condenser	Tubular Dry Electrolytic 50 Mfd. 150 Volt D. C.	1.10
12	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt D. C.	.75
13	11508	Condenser	Dry Electrolytic 100 Mfd. 150 Volt D. C.	1.10
14	2131	Condenser	Tubular .5 Mfd. 200 Volt	.55
15	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
16	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
17	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
18	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
19	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20

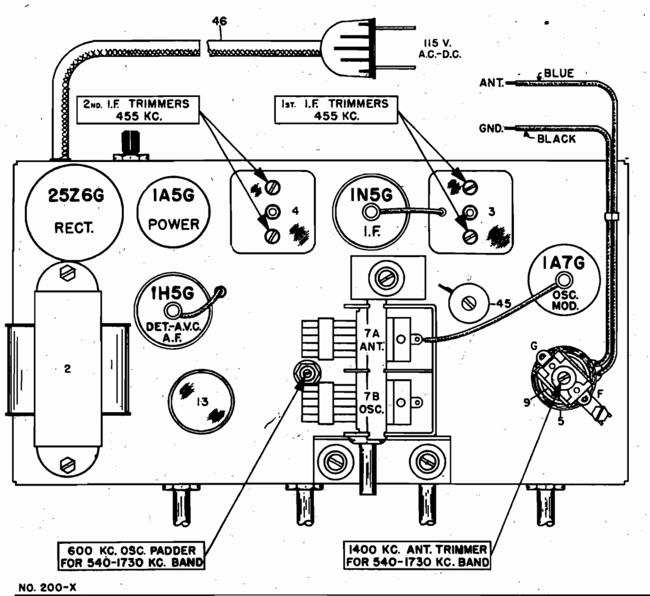
Illus. No.	Part No.		Description	List Price
20	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
21	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
22	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
23	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
24	10762	Condenser	Tubular .002 Mfd. 400 Volt	.19
25	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
26	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
27	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
28	9458	Condenser	Mica .00025 Mfd.	.21
29	9458	Condenser	Mica .00025 Mfd.	.21
30	7934	Condenser	Mica .0001 Mfd.	.21
31	10892	Condenser	Mica .005 Mfd. ± 3%	.30
32	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
33	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
34	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
35	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
36	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
37	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
38	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
39	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
40	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
41	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
42	1618	Resistor	Carbon 35,000 Ohm ⅓ Watt	.19
43	1562	Resistor	Carbon 600 Ohm ⅓ Watt	.19
44	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
45	11504	Resistor	Wire Wound (Vit. Enam.) 500 Ohm	.30

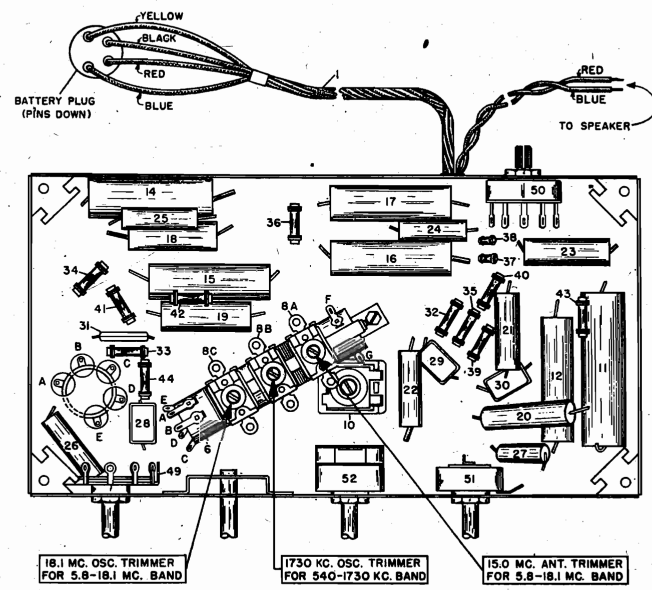
Illus. No.	Part No.		Description	List Price
46	11505	Resist. Cord	115 Volt Line Cord	.90
47	4983	Speaker	P. M. Dynamic 6 in.	4.25
48	11235	Speaker	P. M. Dynamic 10 in.	7.50
49	4863	Switch	Wave Band	.60
50	11500	Switch	Change-Over	.80
51	11098	Tone Control	With Dial Light Switch	.80
52	10441	Volume Control	With On-Off Switch	.95
		MISCELLANEOUS PARTS		
	8184	Dial Cord	24 in. of 18 Lb. Drive Cord	.15
	11017	Dial Shaft	Drive Shaft	.11
	11094	Dial Scale	Calibrated Scale	.45
	11107	Dial Indicator	On-Off Dial Indicator	.20
	4832	Dial Spring	Cord Tension Spring	.06
	10777	Dial Pointer		.10
	11267	Escutcheon	With Crystal for Dial (Uses Wood Screws for Mtg.)	1.00
	11102	Escutcheon	With Crystal for Dial (Uses Four Metal Clips for Mtg.)	1.00
	10030	Knob	Marked "Tuning"	.12
	10069	Knob	Marked "Band Switch"	.12
	11871	Knob	Marked "Off-Volume"	.12
	10033	Knob	Marked "Tone"	.12
	11506	Knob	For Voltage Selector Switch	.12
	10884	Plate	AC-DC—"Off-Batt." Indicator	.10
	4978	Plug	Four Prong Battery Plug	.10

MODEL 200X
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

Five Tube - Two Band
Battery or 110 Volts, DC-AC 50-60 Cycles
Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

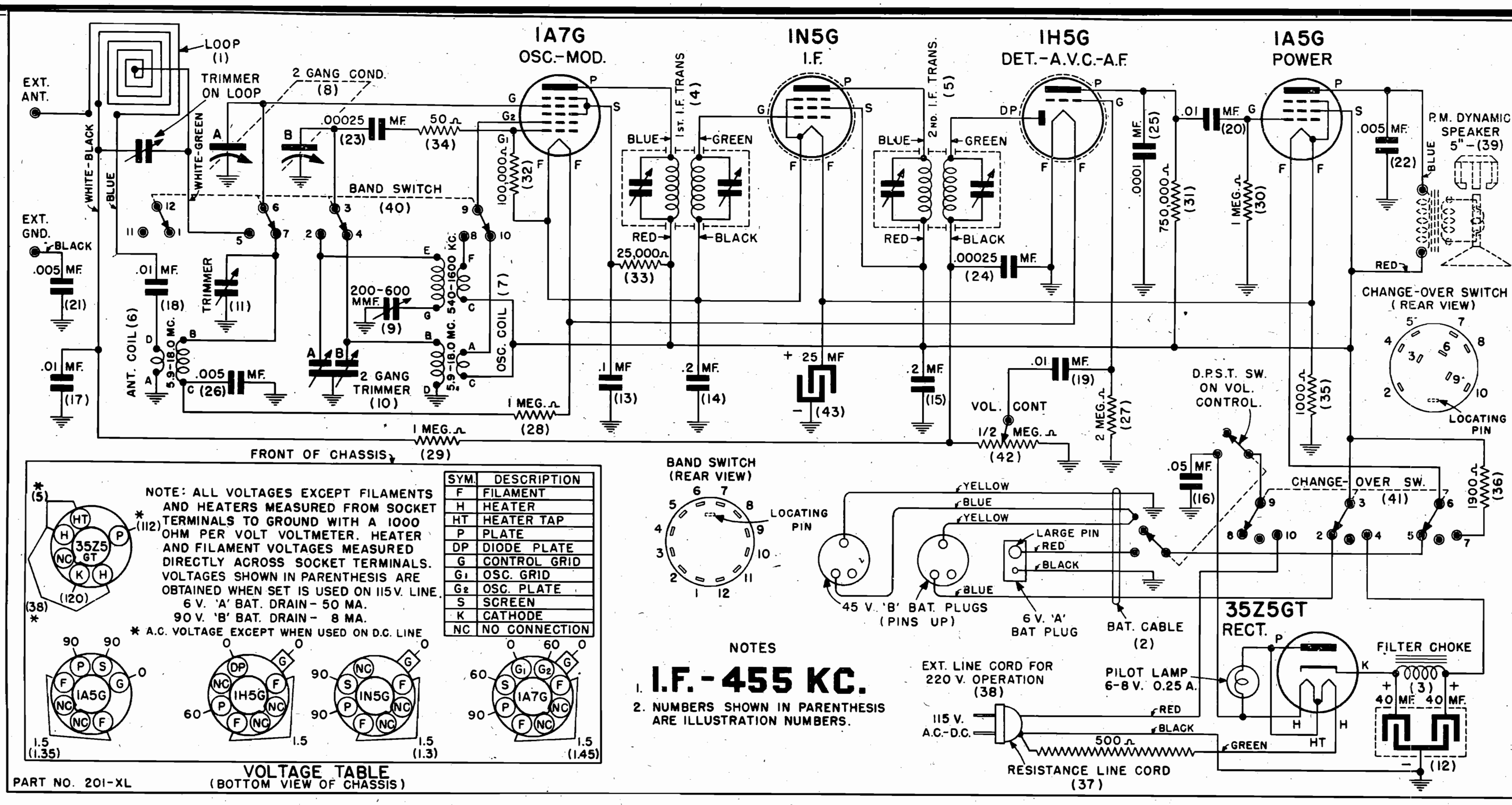
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. Alignment use any band position		Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High Side to grid cap of 1A7G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1	Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output
	3	Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.8 to 18.1 M.C. Band	1	Exactly 18.1 M.C.	Exactly 18.1 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	Adjust 18.1 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Exactly 15 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

SENTINEL RADIO CORP.

MODEL 201XL
Schematic, Voltage



PARTS LIST

Illus. No.	Part No.		Description	List Price
1	11677	Antenna	Loop	$1.10
2	11673	Cable	Battery With 2-3 Prong "B" Plugs and 1-2 Prong "A" Plug	.60
3	10832	Choke	Filter	.85
4	4791	Coil	1st I.F. Transformer	1.15
5	4792	Coil	2nd I.F. Transformer	1.15
6	11664	Coil	Antenna	.85
7	11665	Coil	Oscillator	.65
8	11660	Condenser	Tuning Two Gang	1.75
9	3287	Condenser	Padder 340-460 Mmf.	.45
10	11395	Condenser	Trimmer Dual 3-35 Mmf.	.30
11	1597	Condenser	Trimmer 3-45 Mmf.	.21
12	11493	Condenser	Dry Electrolytic 40-40 Mfd. 150 Volt D. C. Wkg.	1.00
13	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
15	10086	Condenser	Tubular .2 Mfd. 200 Volt	.20
16	10077	Condenser	Tubular .05 Mfd. 200 Volt	.19
17	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
18	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
19	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
20	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
21	10080	Condenser	Tubular .005 Mfd. 400 Volt	.17
22	10080	Condenser	Tubular .005 Mfd. 400 Volt	.17
23	9458	Condenser	Mica .00025 Mfd.	.21
24	9458	Condenser	Mica .00025 Mfd.	.21
25	7934	Condenser	Mica .0001 Mfd.	.21
26	9302	Condenser	Mica .005 Mfd. ± 3%	.55
27	2705	Resistor	Carbon 2 Megohm 1/3 Watt	.19
28	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
29	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
30	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
31	2673	Resistor	Carbon 750,000 Ohm 1/3 Watt	.19
32	8000	Resistor	Carbon 100,000 Ohm 1/3 Watt	.19
33	8907	Resistor	Carbon 25,000 Ohm 1/3 Watt	.19
34	3706	Resistor	Carbon 50 Ohm 1/3 Watt	.19
35	11694	Resistor	Wire Wound 1000 Ohm 1½ Watt	.30
36	11672	Resistor	Wire Wound 1900 Ohm	.75
37	10851	Resistor	Resistance Line Cord	.90
38	10962	Resistor	220 Volt Extension Resistance Line Cord	1.50
39	11680	Speaker	P. M. Dynamic 5 in.	3.75
40	11661	Switch	Wave	.90
41	11666	Switch	Change-Over	.80
42	10441	Volume Control	With D.P.S.T. Switch	.95
43	9196	Condenser	Dry Electrolytic 25 Mfd. 25 Volt	.50

MISCELLANEOUS PARTS

Part No.		Description	List Price
10292	Bulb	6-8 Volt .250 Ampere Type No. 44	.10
11667	Dial Frame	Frame Mechanism Less Scale	.85
11669	Dial Scale		.50
11648	Dial Indicator	"On-Off" Indicator	.20
8184	Dial Cord	14 in. of 18 Lb. Drive Cord	.10
10777	Dial Pointer	Indicator	.16
11519	Escutcheon	For Dial With Crystal	.75
10853	Escutcheon	For Dial With Crystal	.65
4958	Knob	Marked "Tuning"	.12
4959	Knob	Marked "Off-Volume"	.12
4961	Knob	Marked "Band Switch"	.12
11642	Plug	3 Prong "B" Battery	.10
11046	Plug	2 Prong "A" Battery	.08
10884	Plate	Marked "AC-DC"—"Off"—"Batt."	.10

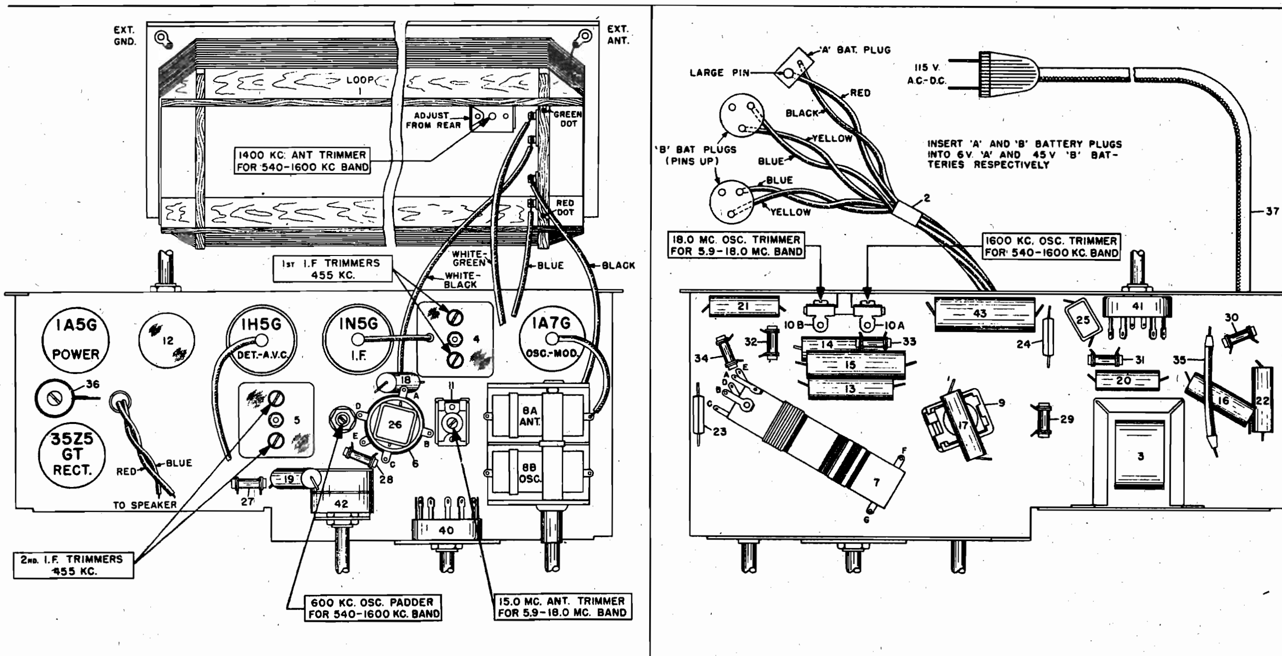
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

W. 3M 1-40 PART NO. 201XL

MODEL 201XL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

Two Band
Battery or 110 Volts, DC-AC 50-60 Cycles
Superheterodyne Receiver



NO. 201-XL

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1600 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

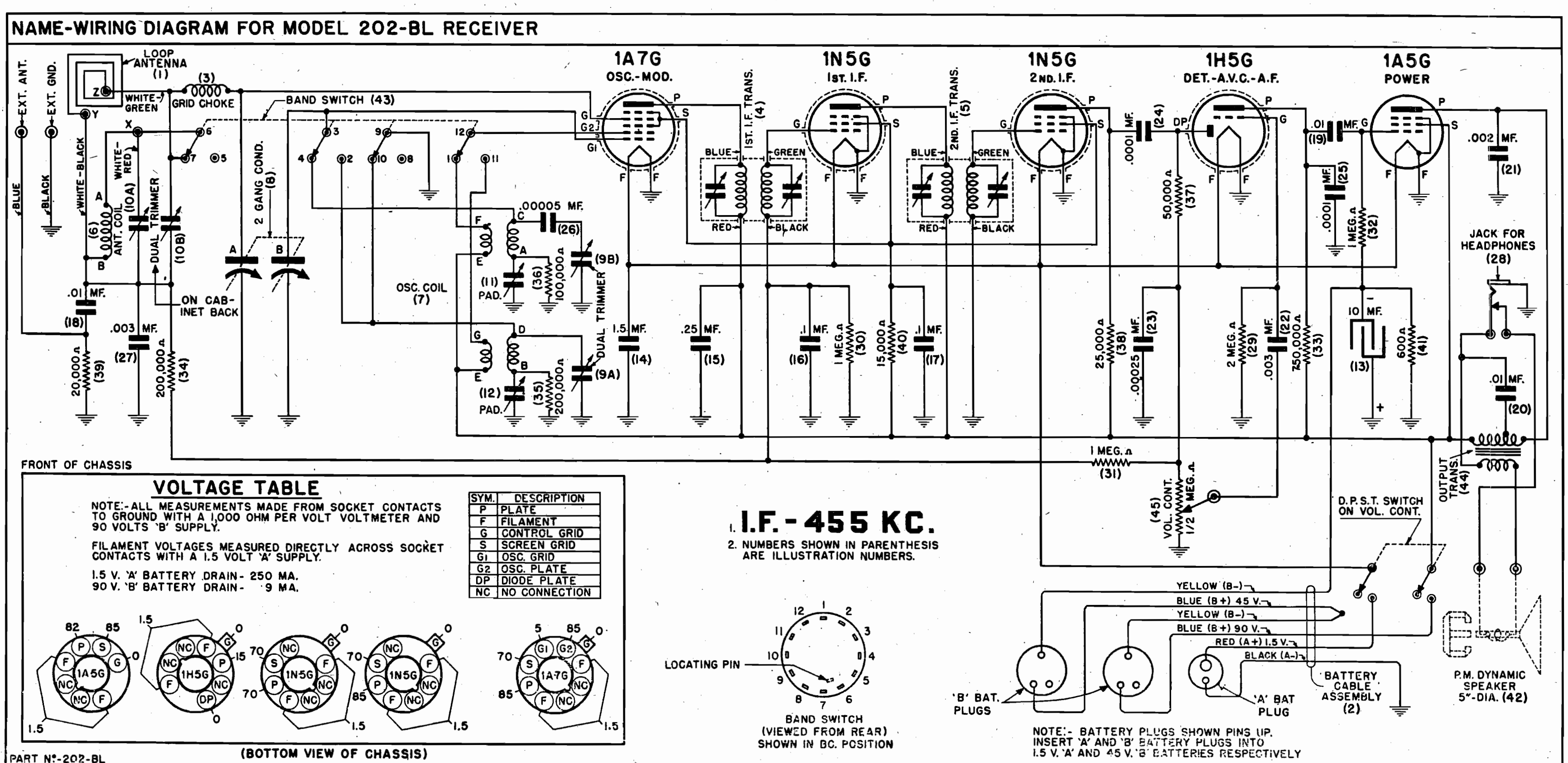
(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR Adjust test Oscillator frequency to	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 KC.	.02 Mfd. condenser	High side to grid cap of 1A7 G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1600 to 540 K.C. Band	1	Exactly 1600 K.C.	Exactly 1600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 1600 K. C. oscillator trimmer for maximum output
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.9 to 18 M.C. Band	1	Exactly 18 M. C.	Exactly 18 M. C.	400 Ohm carbon resistor	High side to "Ext. Ant." Lug. Low side to "Ext. GND" Lug	Adjust 18 M. C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm	High side to "Ext. Ant." Lug. Low side to "Ext. GND" Lug	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output

SENTINEL RADIO CORP.

MODEL 202BL
Schematic, Voltage



PARTS LIST

No.	Part		Description	Price List
1	11654	Antenna	Loop	$1.75
2	11644	Cable	For Battery with 2-3 prong "B" and 1-2 prong "A" plugs	.75
3	11606	Choke	Grid	.30
4	10967	Coil	1st I. F. Transformer	1.10
5	10967	Coil	2nd I. F. Transformer	1.10
6	11602	Coil	Antenna	.75
7	11603	Coil	Oscillator	.60
8	11252	Condenser	Tuning Two Gang	1.70
9A	11613	Condenser	Trimmer Dual 50-70 Mmf.	.33
9B	11613	Condenser	Trimmer Dual 50-70 Mmf.	.33
10A	11355	Condenser	Trimmer Dual	.30
10B	11655	Condenser	Trimmer Dual	.30
11	3287	Condenser	Padder 340-460 Mmf.	.45
12	4067	Condenser	Padder 160-200 Mmf.	.28
13	1693	Condenser	Dry Electrolytic 10 Mfd. 25 Volt	.75
14	11659	Condenser	Flat Type 1.5 Mfd. 100 Volt	.30
15	10089	Condenser	Tubular .25 Mfd. 200 Volt	.23
16	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
17	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
18	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
19	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
20	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
21	10079	Condenser	Tubular .002 Mfd. 400 Volt	.17
22	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
23	9458	Condenser	Mica .00025 Mfd.	.21
24	7934	Condenser	Mica .0001 Mfd.	.21
25	7934	Condenser	Mica .0001 Mfd.	.21
26	1544	Condenser	Mica .00005 Mfd.	.21
27	1374	Condenser	Mica .003 Mfd. ± 3%	.24
28	11646	Phono Jack		.50
29	2705	Resistor	Carbon 2 Megohm ⅓ Watt	.19
30	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
31	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
32	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
33	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
34	2155	Resistor	Carbon 200,000 Ohm ⅓ Watt	.19
35	2155	Resistor	Carbon 200,000 Ohm ⅓ Watt	.19
36	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt	.19
37	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
38	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
39	1784	Resistor	Carbon 20,000 Ohm ⅓ Watt	.19
40	9385	Resistor	Carbon 15,000 Ohm ⅓ Watt	.19
41	1562	Resistor	Carbon 600 Ohm ⅓ Watt	.19
42	10781	Speaker	5" P.M. Dynamic Less Transformer	3.25
43	11632	Switch	Wave	.85
44	11601	Transformer	Output	.90
45	11631	Volume Control	With D.P.S.T. Switch	.80

MISCELLANEOUS PARTS

Part		Description	Price List
11608	Dial Mechanism	Complete Dial Assembly	2.25
11610	Dial Scale	Calibrated Scale	.50
8184	Dial Cord	14" of 18 Lb. Drive Cord	.10
11693	Dial Spring	Cord Tension Spring	.04
10777	Dial Pointer	Dial Needle	.16
11648	Dial Indicator	On-Off Indicator	.20
10853	Escutcheon	For Dial with Crystal	.65
11519	Escutcheon	For Dial with Crystal	.75
4958	Knob	Marked "Tuning"	.12
4959	Knob	Marked "Off-Volume"	.12
4961	Knob	Marked "Band Switch"	.12
11642	Plug	3 Prong for "B" Battery	.10
10351	Plug	2 Prong for "A" Battery	.10

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

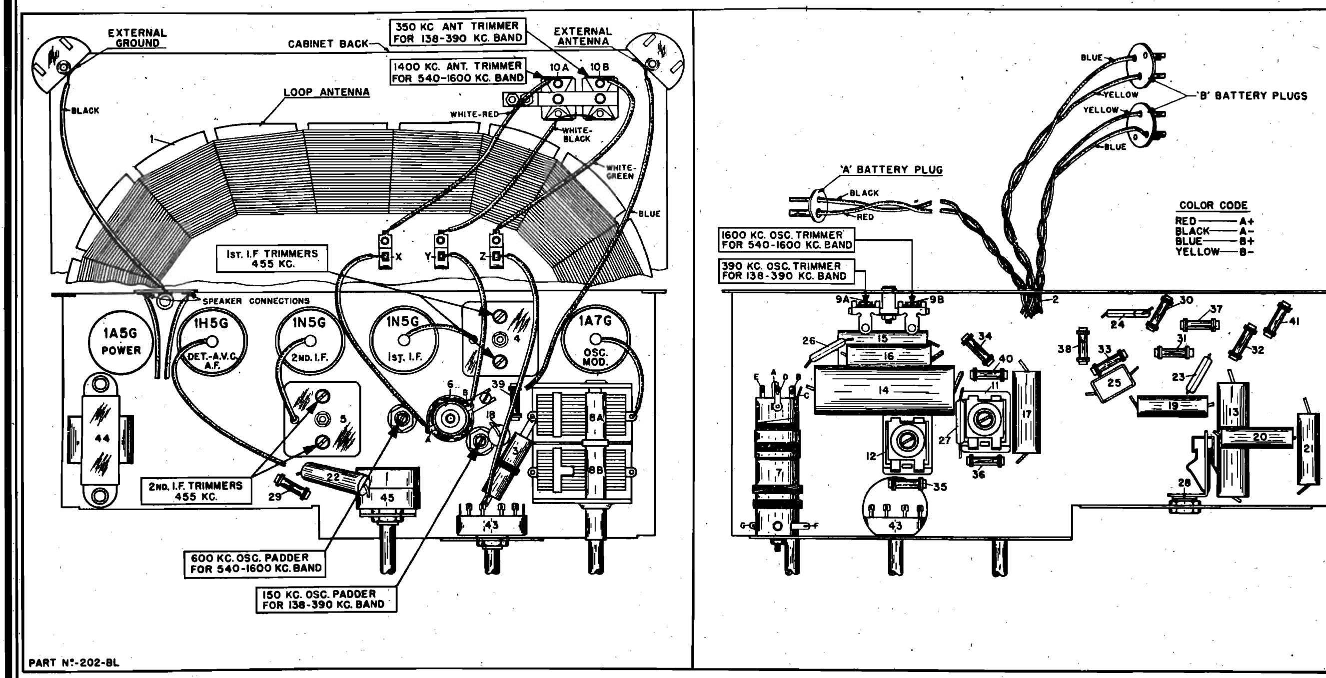
WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

W. 3M 3-40 Part No. 202BL

MODEL 202BL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

SENTINEL MODEL 202BL
TWO BAND—FIVE TUBE
Battery Operated Superheterodyne Receiver



ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting trimmers, do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

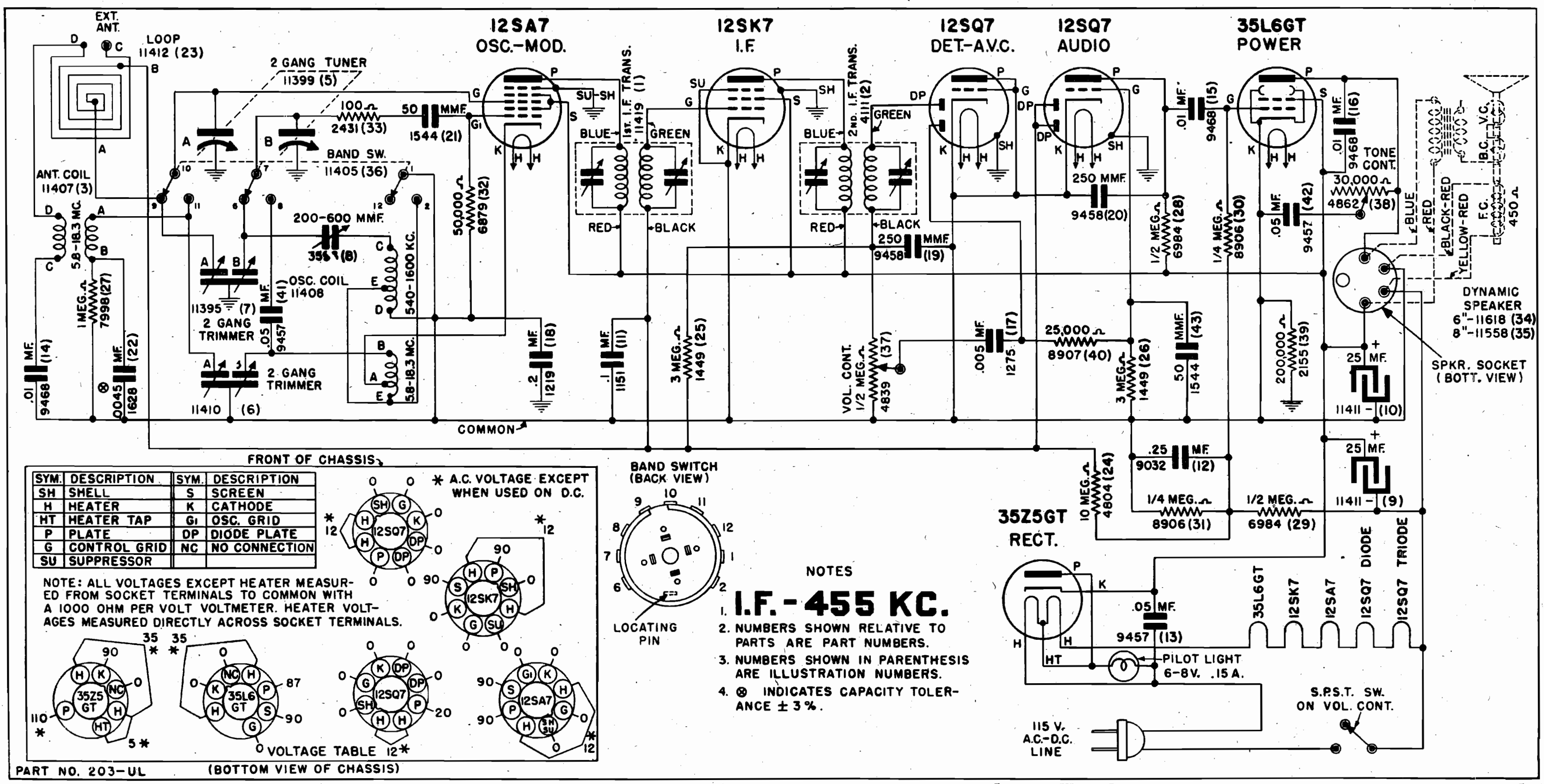
(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

BE SURE TO ALIGN 138-390 K.C. BAND FIRST—ALWAYS REALIGN 1600-540 K.C. BAND AFTERWARDS.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR Adjust test Oscillator frequency to	TEST OSCILLATOR Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 KC.	.02 Mfd. condenser	High side to grid of 1A7G Tube Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
138 to 390 K. C. Band	1	Exactly 390 K.C.	Exactly 390 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 390 K.C. oscillator trimmer for maximum output.
	2	Approx. 350 K.C.	Approx. 350 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 350 K.C. antenna trimmer for maximum output.
	3	Approx. 150 K.C.	Approx. 150 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 150 K.C. oscillator padder for maximum response.
1600 to 540 K.C. Band	1	Exactly 1600 K.C.	Exactly 1600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 1600 K. C. oscillator trimmer for maximum output
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.

SENTINEL RADIO CORP.

MODEL 203UL
Schematic, Voltage



SYM.	DESCRIPTION	SYM.	DESCRIPTION
SH	SHELL	S	SCREEN
H	HEATER	K	CATHODE
HT	HEATER TAP	G1	OSC. GRID
P	PLATE	DP	DIODE PLATE
G	CONTROL GRID	NC	NO CONNECTION
SU	SUPPRESSOR		

NOTE: ALL VOLTAGES EXCEPT HEATER MEASURED FROM SOCKET TERMINALS TO COMMON WITH A 1000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.

NOTES

1. **I.F. - 455 KC.**
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. ⊗ INDICATES CAPACITY TOLERANCE ± 3%.

PARTS LIST

Illus. No.	Part No.		Description	List Price
1	11419	Coil	1st I.F. Transformer	$1.25
2	4111	Coil	2nd I.F. Transformer	1.25
3	11407	Coil	Antenna	.65
4	11408	Coil	Oscillator	.65
5	11399	Condenser	Two Gang Tuner Unit (4 Button Mechanical)	3.75
6	11410	Condenser	Trimmer Two Gang	.30
7	11395	Condenser	Trimmer Dual	.30
8	3596	Condenser	Padding 200-600 Mmf.	.44
9	11411	Condenser	Dry Electrolytic 25 Mfd. 200 Volt	.60
10	11411	Condenser	Dry Electrolytic 25 Mfd. 200 Volt	.60
11	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
12	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
13	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
14	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
15	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
16	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
17	1275	Condenser	Tubular .005 Mfd. 400 Volt	.18
18	1219	Condenser	Tubular .2 Mfd. 400 Volt	.27
19	9458	Condenser	Mica .00025 Mfd.	.21
20	9458	Condenser	Mica .00025 Mfd.	.21
21	1544	Condenser	Mica .00005 Mfd.	.21
22	1628	Condenser	Mica .0045 Mfd. ± 3%	.24
23	11412	Antenna	Loop	.80
24	4804	Resistor	Carbon 10 Megohm ⅓ Watt	.19
25	1449	Resistor	Carbon 3 Megohm ⅓ Watt	.19
26	1449	Resistor	Carbon 3 Megohm ⅓ Watt	.19
27	7998	Resistor	Carbon 1 Megohm ⅓ Watt	.19
28	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
29	6984	Resistor	Carbon 500,000 Ohm ⅓ Watt	.19
30	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
31	8906	Resistor	Carbon 250,000 Ohm ⅓ Watt	.19
32	6879	Resistor	Carbon 50,000 Ohm ⅓ Watt	.19
33	2431	Resistor	Carbon 100 Ohm ⅓ Watt	.19
34	11618	Speaker	Electro-Dynamic 6 in.	4.25
35	11558	Speaker	Electro-Dynamic 8 in.	5.50
36	11405	Switch	Band	.65
37	4839	Volume Control	Withon-off Switch	.85
38	4862	Tone Control		.65
39	2155	Resistor	Carbon 200,000 Ohm ⅓ Watt	.19
40	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
41	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
42	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
43	1544	Condenser	Mica .00005 Mfd.	.21

MISCELLANEOUS PARTS

Part No.		Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Mazda Type No. 47 Bayonet Base	.10
4398	Call Letters	Set of ⅜ in. Call Letters	.25
11547	Dial Scale	Calibrated Scale	.50
4761	Dial Shaft	Drive Shaft	.15
8184	Dial Cord	Drive Cord 12 in. of 18 lb. Drive Cord	.10
11193	Dial Pointer	For Dial	.16
11140	Escutcheon	For Dial—With Crystal	1.00
11139	Escutcheon	For Dial—With Crystal	1.00
11556	Escutcheon	For Pushbuttons	.40
11557	Escutcheon	For Pushbuttons	.40
4958	Knob	Marked "Tuning"	.12
4959	Knob	Marked "Off-Volume"	.12
4960	Knob	Marked "Tone"	.12
4961	Knob	Marked "Band Switch"	.12
11559	Knob	Pushbutton	.10

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

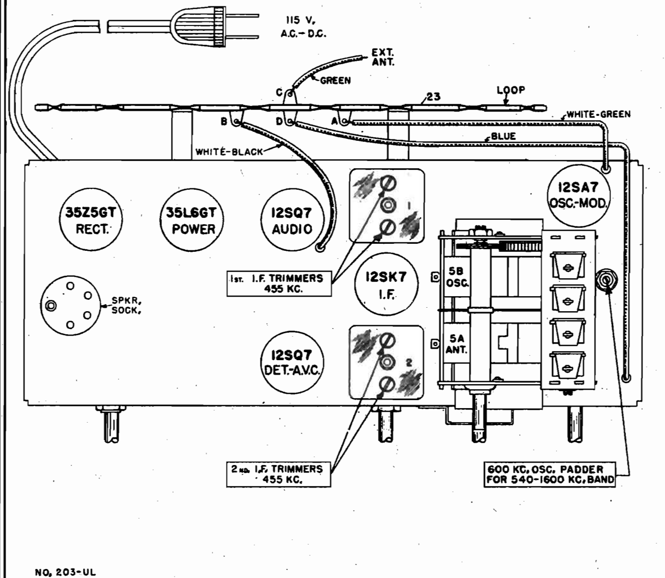
W. 4M 12-39 Part No. 203UL

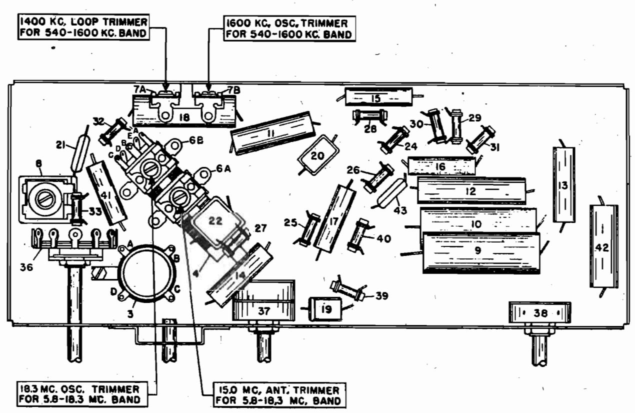
MODEL 203UL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

TWO BAND—SIX TUBE

A. C.—D. C. Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1600 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer; do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

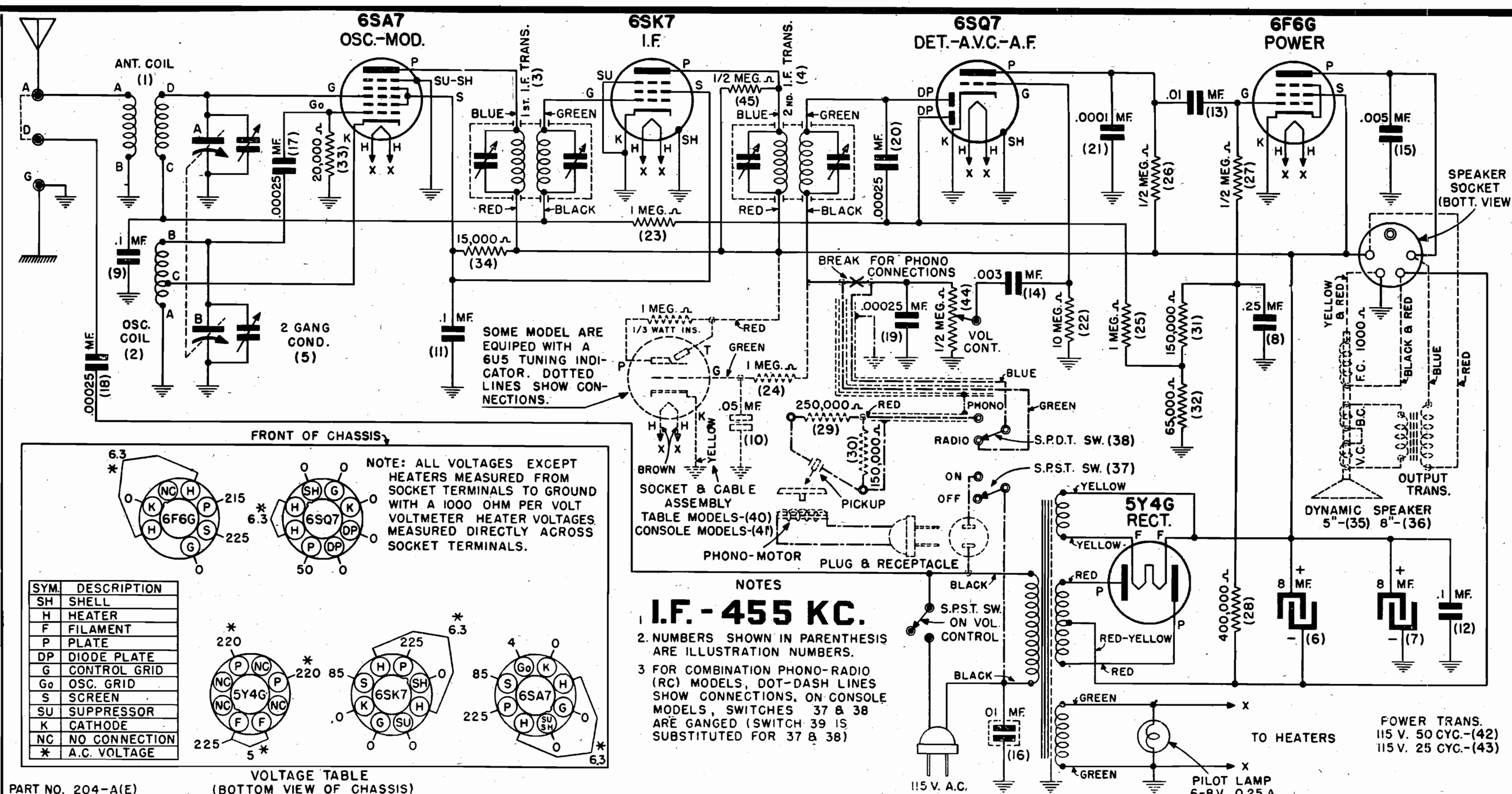
(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR Adjust test Oscillator frequency to	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 KC.	.02 Mfd. condenser	High side to grid cap of 12SA7 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1600 to 540 K.C. Band	1	Exactly 1600 K.C.	Exactly 1600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 1600 K. C. oscillator trimmer for maximum output
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output
	3	Approx. 600 K.C.	Approx. 600 K.C	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.8 to 18.3 M.C. Band	1	Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	High side to Green Ant. Lead, Low side to frame of gang condenser	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm	High side to Green Ant. Lead, Low side to frame of gang condenser	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output

SENTINEL RADIO CORP.

MODELS 204A, 204AE
Schematic, Voltage



PARTS LIST

Part No.			Description	List Price
1	11269	Coil	Antenna	$ .70
2	11271	Coil	Oscillator	.60
3	4404	Coil	1st I. F. Transformer	1.20
4	4404	Coil	2nd I. F. Transformer	1.20
5	11526	Condenser	Tuning (Two Gang)	2.00
6	10625	Condenser	Dry Electrolytic 8 Mfd.-350 Volt D. C. Wkg.	.55
7	10625	Condenser	Dry Electrolytic 8 Mfd.-350 Volt D. C. Wkg.	.55
8	9032	Condenser	Tubular .25 Mfd. 200 Volt	.25
9	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
10	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
1'	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20
12	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20
13	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
14	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
15	2075	Condenser	Tubular .005 Mfd. 600 Volt	.18
16	4305	Condenser	Tubular .01 Mfd. 220 Volt (Shielded)	.30
17	9458	Condenser	.00025 Mfd. Mica	.21
18	9458	Condenser	.00025 Mfd. Mica	.21
19	9458	Condenser	.00025 Mfd. Mica	.21
20	9458	Condenser	.00025 Mfd. Mica	.21
21	7934	Condenser	.0001 Mfd. Mica	.21
22	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
23	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
24	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
25	7998	Resistor	Carbon 1 Megohm 1/3 Watt	.19
26	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
27	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
28	3133	Resistor	Carbon 400,000 Ohm 1/3 Watt	.19
29	8906	Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
30	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
31	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
32	11599	Resistor	Carbon 65,000 Ohm 1/3 Watt	.19
33	1784	Resistor	Carbon 20,000 Ohm 1/3 Watt	.19
34	4599	Resistor	Carbon 15,000 Ohm 1½ Watt	.22
35	11278	Speaker	Electro-Dynamic 5"	3.00
36	11537	Speaker	Electro-Dynamic 8"	5.00
37	10573	Switch	S.P.S.T. (On-Off) Used with Phono Model Having Tuning Eye	.65
38	2434	Switch	S.P.D.T. (Rad-Phono) Used with Phono Model Having Tuning Eye	.70
39	10472	Switch	Radio-Phono (Used with Phono Model without Tuning Eye	1.00
40	4516	Socket & Cable Assembly	For 6U5 Tuning Eye Incl. Socket and Resistor	.65
41	10108	Socket & Cable Assembly	For 6U5 Tuning Eye Incl. Socket and Resistor (Used with Phono Model)	.65
42	11272	Transformer	Power 115 Volt 50 Cycle	2.80
43	11273	Transformer	Power 115 Volt 25 Cycle	5.00
44	4839	Volume Control		.85
45	6984	Resistor	Carbon 500,000 Ohm—1/3 Watt	.19

MISCELLANEOUS PARTS

10292	Bulb	6-8 Volt .250 Amp. Type 3¼ No. 44	.10
11529	Dial Scale		.35
8184	Dial Cord	12" of 18 lb. Drive Cord	.10
11017	Dial Shaft	Dial Drive Shaft	.11
11489	Dial Pointer	Indicator Needle	.15
11140	Escutcheon	With Crystal for Dial	1.00
11339	Escutcheon	With Crystal for Dial	1.00
4519	Escutcheon	For Tuning Eye	.30
11796	Knob		.10
10473	Motor	Phono 110 Volt 60 Cycle less Turntable	7.00
10546	Motor	Phono 110 Volt 50 Cycle Less Turntable	7.50
10547	Motor	Phono 220 Volt 50 Cycle Less Turntable	8.00
10955	Pickup	Crystal Pickup and Arm	5.25
11797	Turntable	10" Velveteen Covered	1.50
11798	Turntable	12" Velveteen Covered	1.75

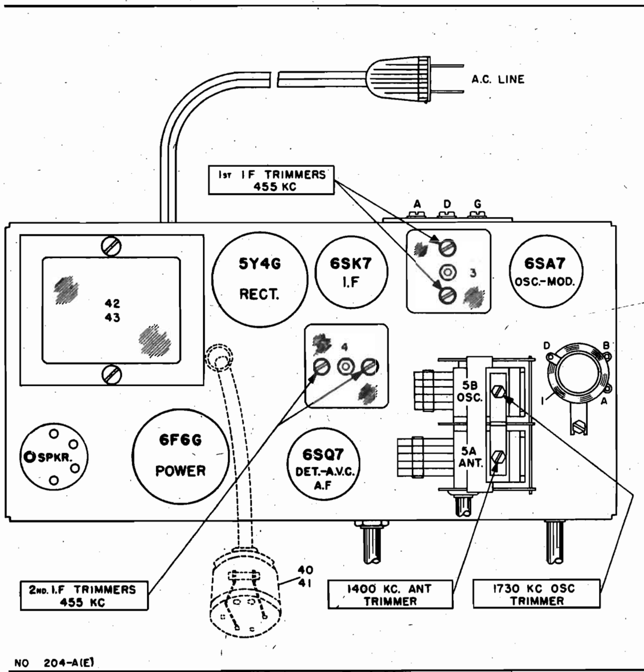
W. 4M PART NO. 204A

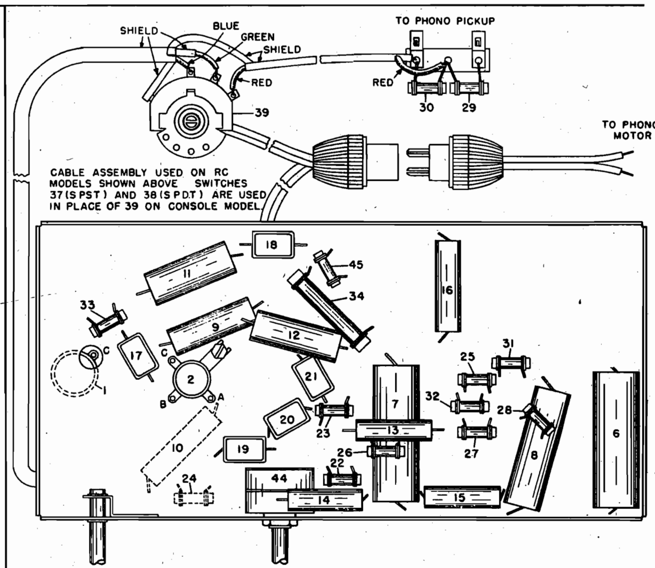
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

MODELS 204A, 204AE
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

5 and 6 tube A. C. Operated Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

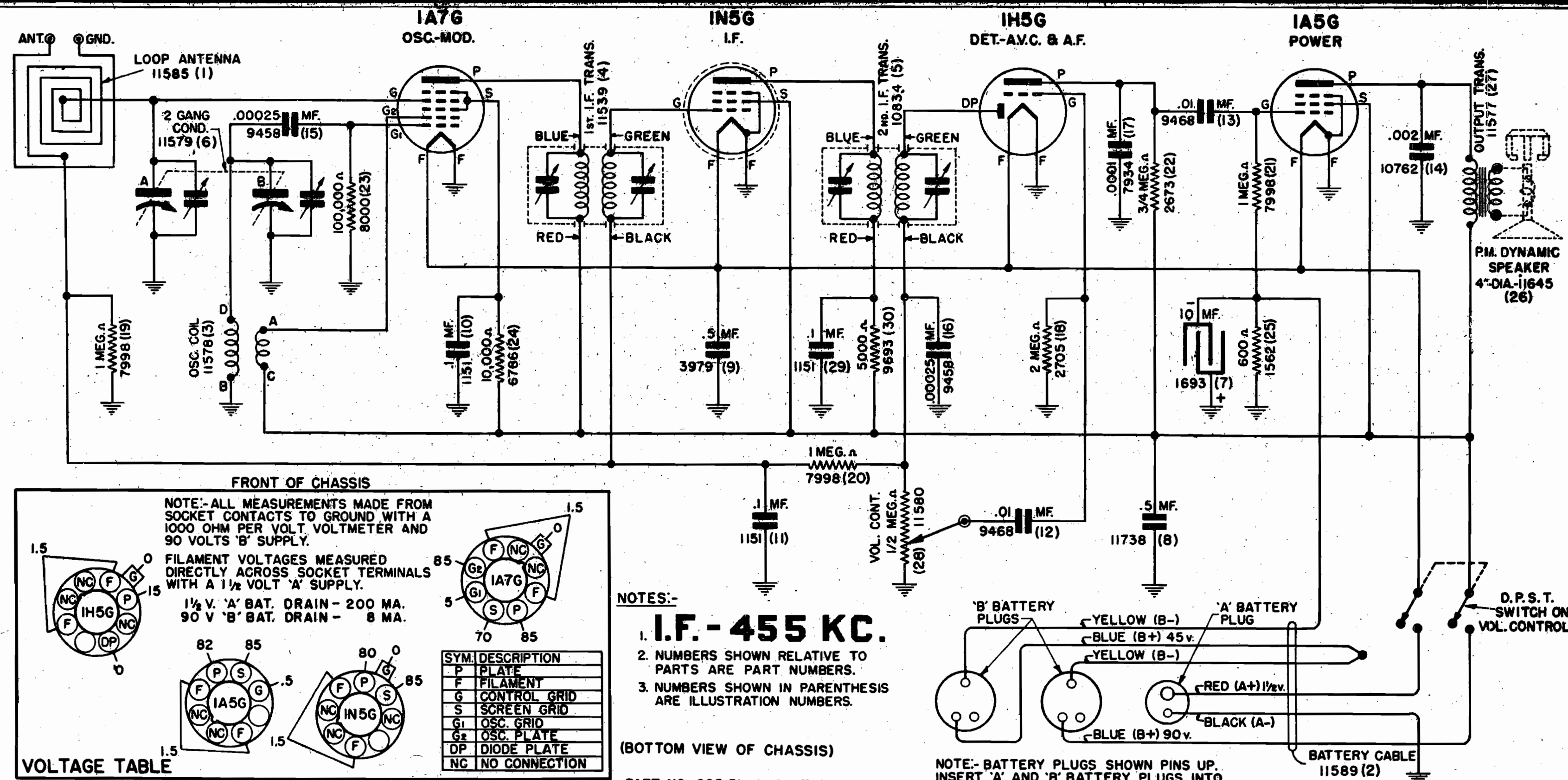
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to gang condenser frame.

	Set receiver dial to:	TEST OSCILLATOR — Adjust test oscillator frequency to:	TEST OSCILLATOR — Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR — Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
	I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 6SA7 tube DO NOT REMOVE CAP.	Adjust the second I. F. transformer trimmers for maximum output then adjust each of the first I. F. trimmers for maximum output
1	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD condenser	Receiver "A" post	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD condenser	Receiver "A" post	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

MODEL 205BL
Schematic, Voltage

SENTINEL RADIO CORP.



PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PARTS LIST

Illus. No.	Part No.		Description	List Price
1	11585	Antenna Loop		$ .90
2	11589	Cable	Battery Complete with Plugs	.45
3	11578	Coil	Oscillator	.60
4	11539	Coil	1st I. F. Transformer	1.50
5	10834	Coil	2nd I. F. Transformer	1.45
6	11579	Condenser	Tuning Two Gang	1.95
7	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt	.75
8	11738	Condenser	Tubular .5 Mfd. 100 Volt +40%, —10%	.35
9	3979	Condenser	Tubular .5 Mfd. 200 Volt +40%, —10%	.40
10	1151	Condenser	Tubular .1 Mfd. 200 Volt +40%, —10%	.20
11	1151	Condenser	Tubular .1 Mfd. 200 Volt +40%, —10%	.20
12	9468	Condenser	Tubular .01 Mfd. 400 Volt +40%, —10%	.17
13	9468	Condenser	Tubular .01 Mfd. 400 Volt +40%, —10%	.17
14	10762	Condenser	Tubular .002 Mfd. 400 Volt +40%, —10%	.19
15	9458	Condenser	Mica .00025 Mfd. ±20%	.21
16	9458	Condenser	Mica .00025 Mfd. ±20%	.21
17	7934	Condenser	Mica .0001 Mfd. ±20%	.21
18	2705	Resistor	Carbon 2 Megohm ⅓ Watt ±20%	.19
19	7998	Resistor	Carbon 1 Megohm ⅓ Watt ±20%	.19
20	7998	Resistor	Carbon 1 Megohm ⅓ Watt ±20%	.19
21	7998	Resistor	Carbon 1 Megohm ⅓ Watt ±20%	.19
22	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt ±20%	.19
23	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt ±20%	.19
24	6786	Resistor	Carbon 10,000 Ohm ⅓ Watt ±10%	.19
25	1562	Resistor	Carbon 600 Ohm ⅓ Watt ±10%	.19
26	11645	Speaker	P. M. Dynamic 4 in.	2.50
27	11577	Transformer	Output	1.00
28	11580	Volume Control	With S.T.D.P. Switch	.85
29	1151	Condenser	Tubular .1 Mfd. 200 Volt ±40%	.20
30	9693	Resistor	Carbon 5000 Ohm ⅓ Watt	.19

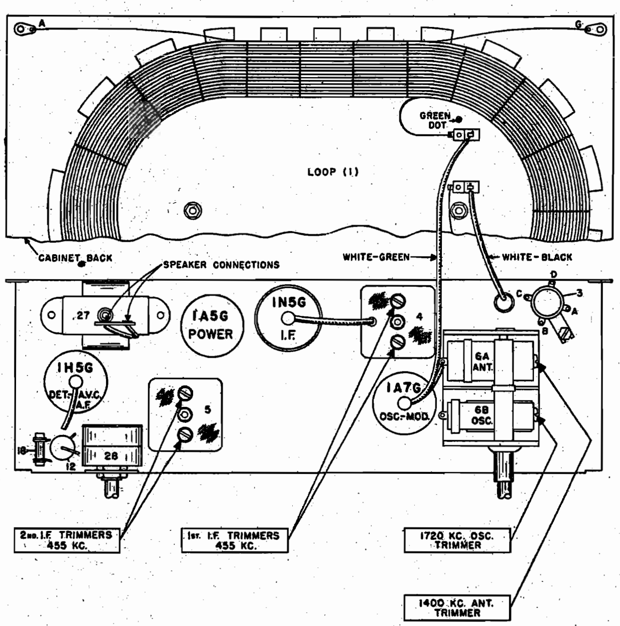
MISCELLANEOUS PARTS

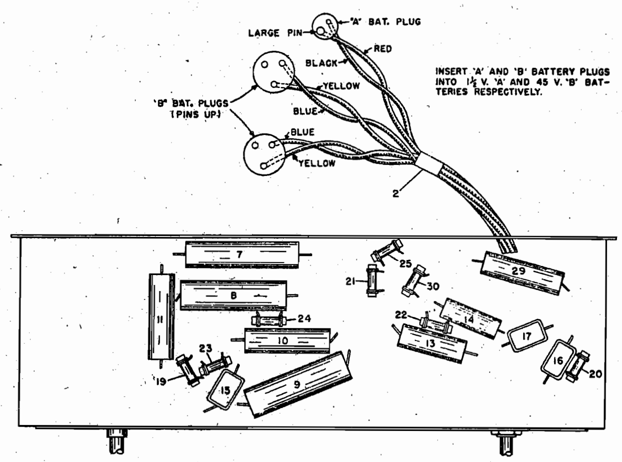
Part No.		Description	List Price
11642	Battery Plug	3 Prong "B"	.10
10351	Battery Plug	2 Prong "A"	.10
	Cabinet	Complete with No. 11622 Back and Loop	4.50
11622	Cabinet Back	Complete with Loop	1.50
3814	Dial Cord	18 in. of 30 lb. Cord	.15
11620	Dial Scale	Calibrated Scale	.35
11693	Dial Spring	Cord Tension Spring	.04
11696	Dial Pointer	White Lacquer Finish	.20
11583	Dial Crystal		.20
10787	Knob	Mottled Walnut Tenite	.08

MODEL 205BL
Socket, Trimmers
Alignment, Chassis

SENTINEL RADIO CORP.

4 tube 1½ Volt Portable Superheterodyne Receiver





ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IN THE BACK OF CHASSIS IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1720 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop.

Couple test oscillator to receiver loop by:

(a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator.

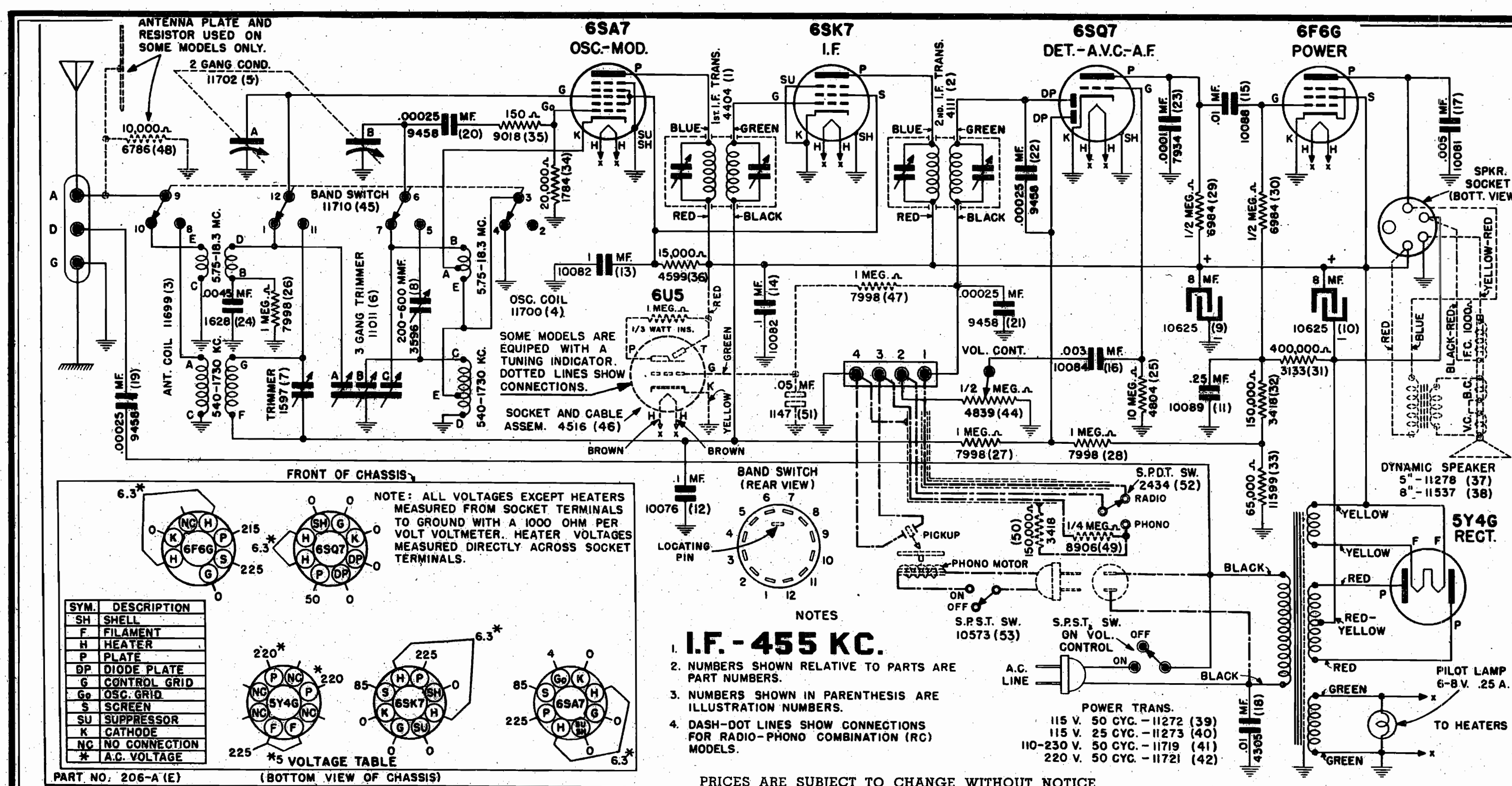
(b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Set receiver dial to:	TEST OSCILLATOR Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below—and:
I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 1A7G tube DO NOT REMOVE CAP	Adjust the second I. F. transformer trimmers for maximum out put—then adjust each of the first I.F. trimmers for maximum output.
1 Exactly 1720 K. C.	Exactly 1720 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1720 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Exactly 1400 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1400 K. C. antenna trimmer for maximum output.

MODELS 206A, 206AE, RC206A RC206AE

Schematic, Voltage

SENTINEL RADIO CORP.



PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

Part No.			Description	List Price
1	4404	Coil	1st I.F. Transformer	$1.20
2	4111	Coil	2nd I.F. Transformer	1.25
3	11699	Coil	Antenna	.75
4	11700	Coil	Oscillator	.70
5	11702	Condenser	Tuning Two Gang	1.75
6	11011	Condenser	Trimmer Three Gang	.50
7	1597	Condenser	Trimmer 3-45 Mmf.	.21
8	3596	Condenser	Padder 340-460 Mmf.	.44
9	10625	Condenser	Dry Electrolytic 8 Mfd. 350 Volt	.55
10	10625	Condenser	Dry Electrolytic 8 Mfd. 350 Volt	.55
11	10089	Condenser	Tubular .25 Mfd. 200 Volt	.23
12	10076	Condenser	Tubular .1 Mfd. 200 Volt	.19
13	10082	Condenser	Tubular .1 Mfd. 400 Volt	.20
14	10082	Condenser	Tubular .1 Mfd. 400 Volt	.20
15	10088	Condenser	Tubular .01 Mfd. 400 Volt	.19
16	10084	Condenser	Tubular .003 Mfd. 400 Volt	.17
17	10081	Condenser	Tubular .005 Mfd. 600 Volt	.20
18	4305	Condenser	Tubular .01 Mfd. 220 Volt	.30
19	9458	Condenser	Mica .00025 Mfd.	.21
20	9458	Condenser	Mica .00025 Mfd.	.21
21	9458	Condenser	Mica .00025 Mfd.	.21
22	9458	Condenser	Mica .00025 Mfd.	.21
23	7934	Condenser	Mica .0001 Mfd.	.21
24	1628	Condenser	Mica .0045 Mfd. ± 3%	.24
25	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
26	7998	Resistor	Carbon 10 Megohm 1/3 Watt	.19
27	7998	Resistor	Carbon 10 Megohm 1/3 Watt	.19

Part No.			Description	List Price
28	7998	Resistor	Carbon 10 Megohm 1/3 Watt	.19
29	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
30	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
31	3133	Resistor	Carbon 400,000 Ohm 1/3 Watt	.19
32	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
33	11599	Resistor	Carbon 65,000 Ohm 1/3 Watt	.19
34	1784	Resistor	Carbon 20,000 Ohm 1/3 Watt	.19
35	9018	Resistor	Carbon 150 Ohm 1/3 Watt	.19
36	4599	Resistor	Carbon 15,000 Ohm 1½ Watt	.22
37	11278	Speaker	5 in. Electro-Dynamic	3.00
38	11537	Speaker	8 in. Electro-Dynamic	5.00
39	11272	Transformer	Power 115 Volt 50 Cycle	2.80
40	11273	Transformer	Power 115 Volt 25 Cycle	5.00
41	11719	Transformer	Power 110 Volt—230 Volt 50 Cycle	5.50
42	11721	Transformer	Power 220 Volt 50 Cycle	4.75
44	4839	Volume Control	With S.P.S.T. Switch	.85
45	11710	Switch	Wave	.90
46	4516	Socket & Cable Assem.	For 6U5 Tuning Eye	.65
47	7998	Resistor	1 Megohm 1/3 Watt	.19
48	6786	Resistor	10,000 Ohm 1/3 Watt Used only on Console Model	.19
49	8906	Resistor	250,000 Ohm 1/3 Watt	.19
50	3418	Resistor	Carbon 150,000 Ohm 1/3 Watt	.19
51	1147	Condenser	.05 Mfd. 200 Volt	.19
52	2434	Switch	Phono S.P.D.T.	.70
53	10573	Switch	S.T.S.T. "On-Off"	.65

MISCELLANEOUS PARTS

Part No.		Description	List Price
11926	Antenna Plate	Copper Plated—(Console Model Only)	1.00
10292	Bulb	6-8 Volt .250 Amp. Type 3¼ No. 44	.10
11707	Dial Scale		.60
8184	Dial Cord	12 in. of 18 lb. Drive Cord	.10
11017	Dial Shaft	Dial Drive Shaft	.11
11489	Dial Pointer	Indicator Needle	.15
11140	Escutcheon	With Crystal for Dial	1.00
11339	Escutcheon	With Crystal for Dial	1.00
4519	Escutcheon	For Tuning Eye	.30
11796	Knob		.10
11907	Pickup	Crystal Pickup and Arm	4.25
10030	Knob	Marked "Tuning" Used With Console Model	.12
10069	Knob	Marked "Band Switch" Used With Console Model	.12
11871	Knob	Marked "Off-Volume" Used With Console Model	.12
4958	Knob	Marked "Tuning" Used With Table Model	.12
4959	Knob	Marked "Off-Volume" Used With Table Model	.12
4961	Knob	Marked "Band Selector" Used With Table Model	.12

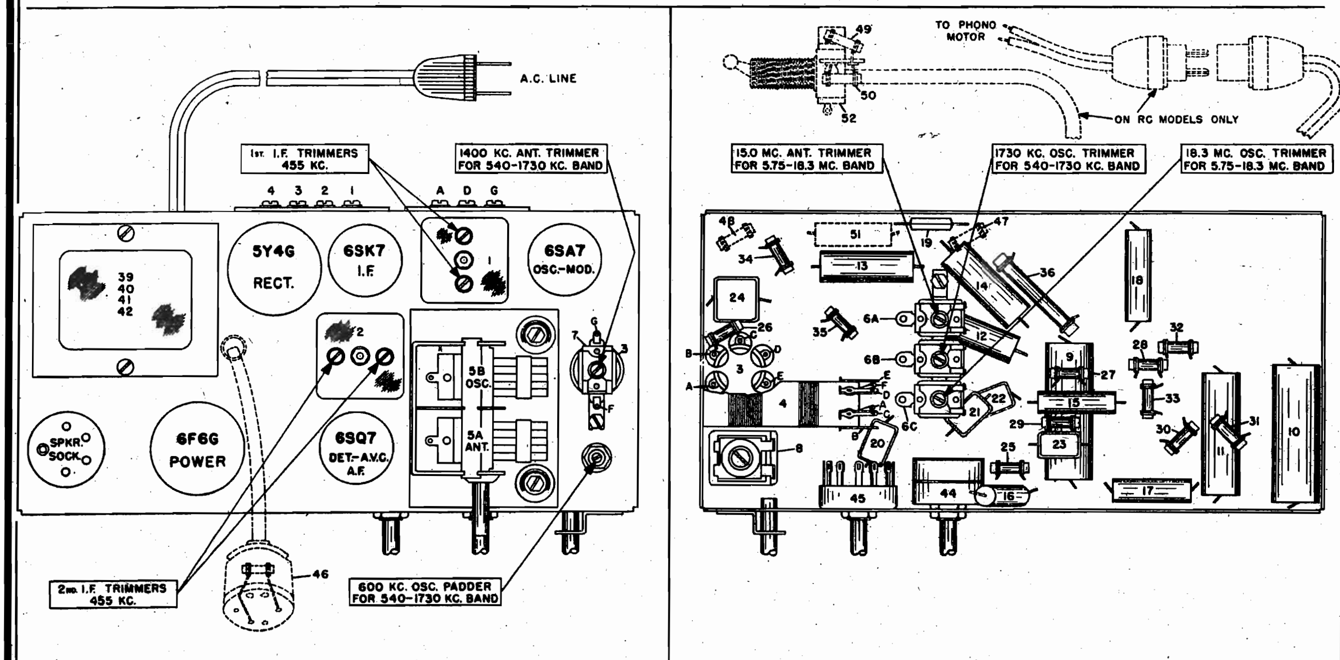
W. 3M 2-40 PART NO. 206A

MODELS 206A, 206AE, RC206A
RC206AE
Socket, Trimmers, Chassis
Alignment

SENTINEL RADIO CORP.

TWO BAND—FIVE and SIX TUBE

A. C. Operated Superheterodyne Receiver



NO. 206-A (E)

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabluations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:		Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6SA7 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K. C. Band	1	Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	Adjust 1730 K. C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver "A" antenna post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output
5.75 to 18.3 M.C. Band	1	Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	Receiver "A" antenna post	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor	Receiver "A" antenna post	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

Television Connections:—The audio amplifier and loud speaker of this receiver can be used to amplify the sound output of a television receiver not equipped with an audio amplifier and speaker—just connect the sound channel output of the television receiver (from the second detector) to the No. 3 and No. 4 terminals on back of receiver and attach a single pole double throw switch.

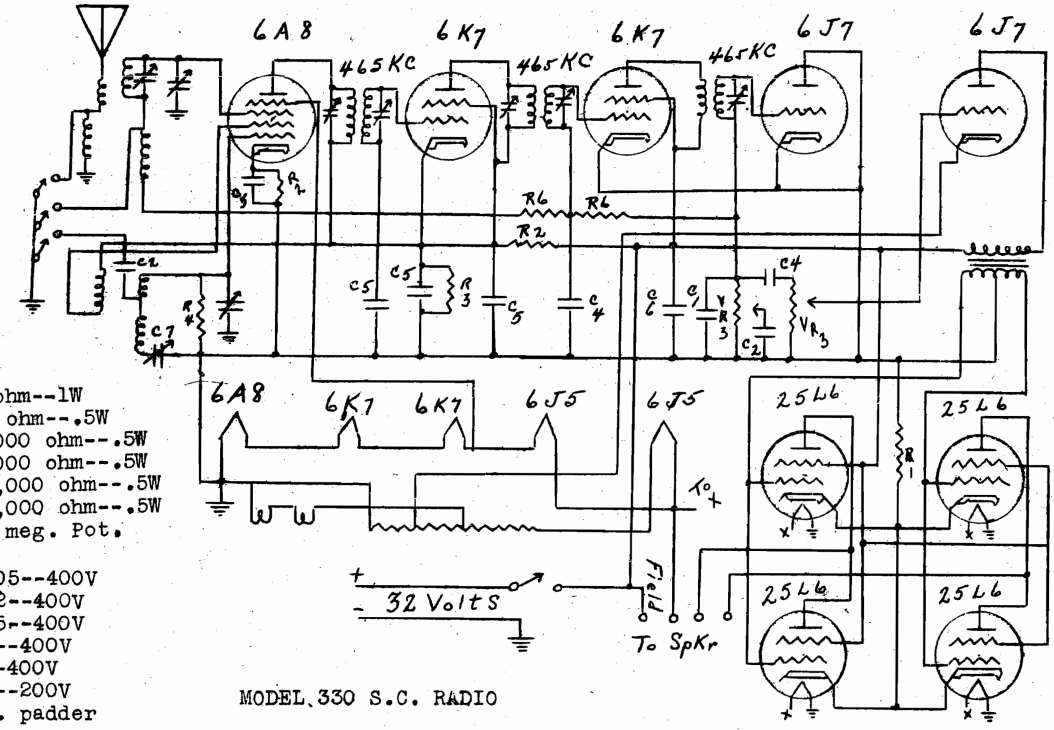
Phonograph Connections:—Phonograph records may be electrically reproduced through the receiver loud speaker by connecting the leads of the phonograph pickup to the No. 3 and No. 4 terminals and using either an electrical or hand wound spring operated phonograph motor. The pickup should be of the high impedance type and a single pole double throw switch must be connected as shown in diagram. To operate—place switch in phono position—set pickup needle on record and adjust radio volume control to desired amount of volume.

When shipped from factory a jumper wire is attached to terminals 1 and 2. If receiver is not to be used for phono or television operation, leave the jumper wire in this position. When receiver is used for either phono or television sound operation, remove jumper wire.

SENTINEL MODELS 206A, 206AE, RC206A, and RC206AE

SETCHELL CARLSON, INC.

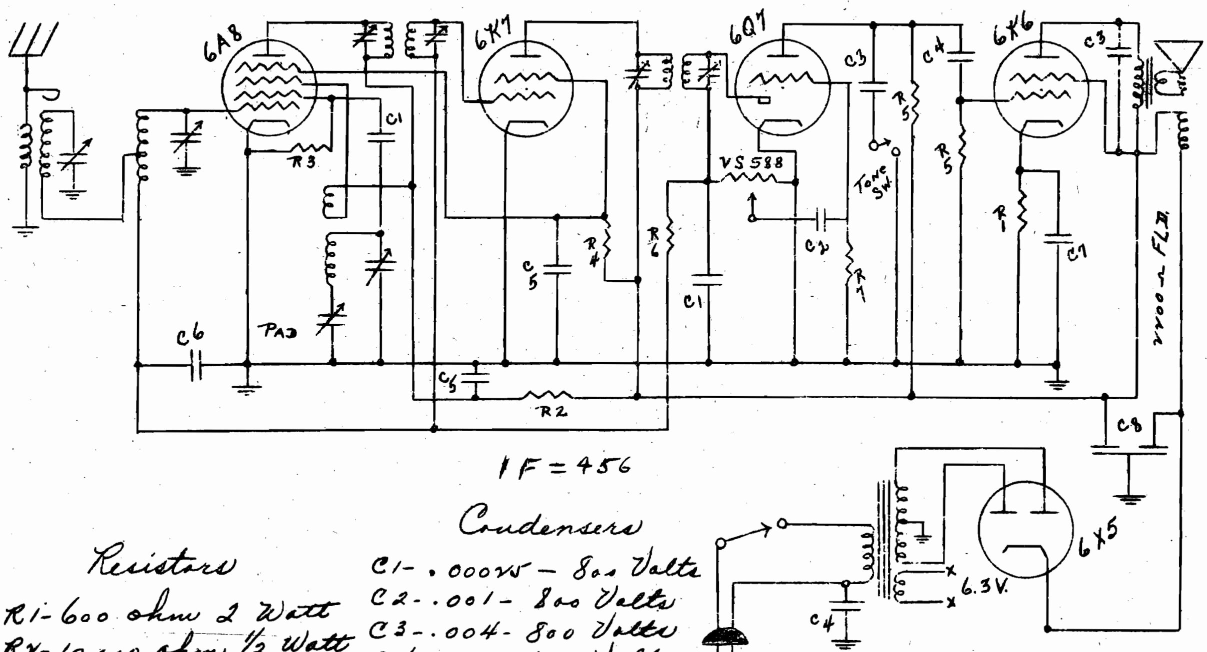
MODEL 330
MODEL 588
Schematics



R1--75 ohm--1W
R2--700 ohm--.5W
R3--25,000 ohm--.5W
R4--50,000 ohm--.5W
R5--200,000 ohm--.5W
R6--500,000 ohm--.5W
Vr3--.5 meg. Pot.

C1--.0005--400V
C2--.002--400V
C3--.005--400V
C4--.01--400V
C5--.1--400V
C6--.25--200V
C7--Adj. padder

MODEL 330 S.C. RADIO



IF = 456

Resistors

R1- 600 ohm 2 Watt
R2- 10,000 ohm 1/2 Watt
R3- 25,000 " " "
R4- 50,000 " " "
R5- 500,000 " " "
R6- 1 Meg " " "
R7- 15 Meg. " " "
VS588 - 1/2 Meg Control & Sw.

Condensers

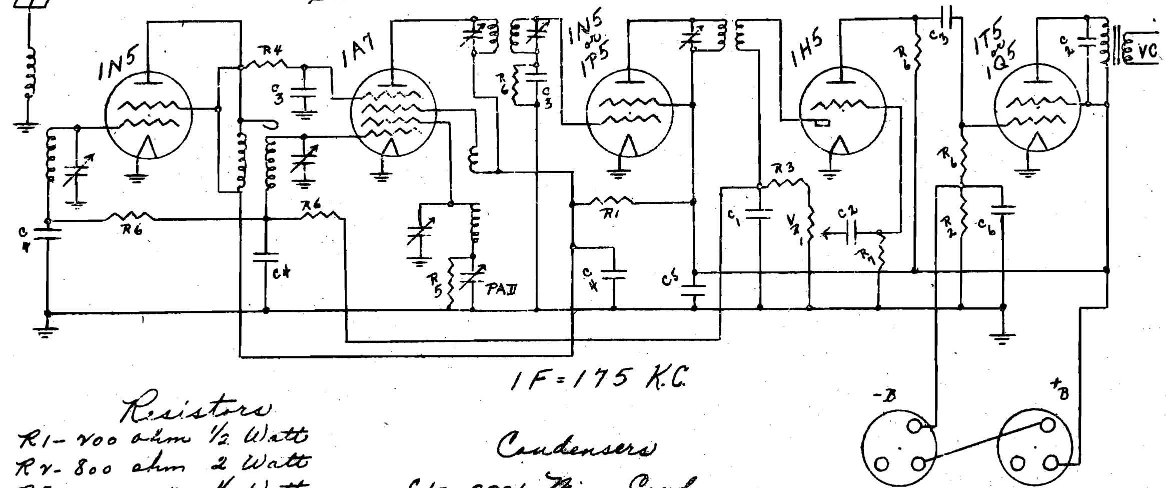
C1- .00025 - 800 Volts
C2- .001 - 800 Volts
C3- .004 - 800 Volts
C4- .01 - 400 Volts
C5- .05 - 400 Volts
C6- .1 - 200 Volts
C7- 10 - 25 Volts
C8- 8X8 - 450 Volts

Model #588

MODELS 401,405
MODELS 407,408,4017
Schematics

SETCHELL CARLSON. INC.

Setchell - Carlson Model 401 and 405



IF = 175 K.C.

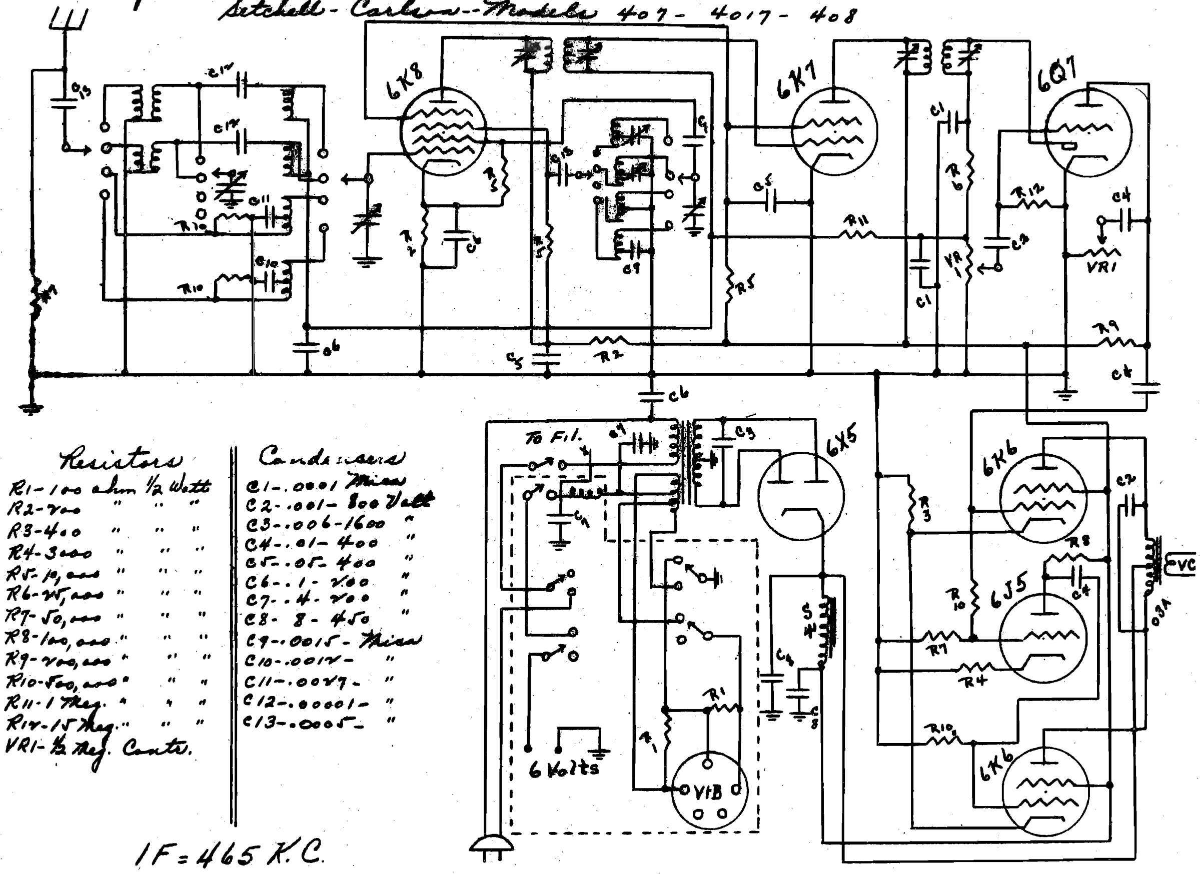
Resistors

R1- 200 ohm 1/2 Watt
R2- 800 ohm 2 Watt
R3- 25,000 " 1/2 Watt
R4- 50,000 " " "
R5- 100,000 " " "
R6- 1 Meg. " " "
R7- 15 Meg. " " "
VR1- 1/2 Meg. Vol. Control

Condensers

C1- .0001 Mica Cond.
C2- .001 - 800 Volt "
C3- .01- 400 " "
C4- .1- 200 " "
C5- 1 Mfd. 200 " "
C6- 10 " 25 " "

Setchell - Carlson - Models 407- 4017- 408



Resistors

R1-100 ohm 1/2 Watt
R2-200 " " "
R3-400 " " "
R4-3000 " " "
R5-10,000 " " "
R6-25,000 " " "
R7-50,000 " " "
R8-100,000 " " "
R9-200,000 " " "
R10-500,000 " " "
R11-1 Meg. " " "
R12-15 Meg. " " "
VR1-1/2 Meg. Contr.

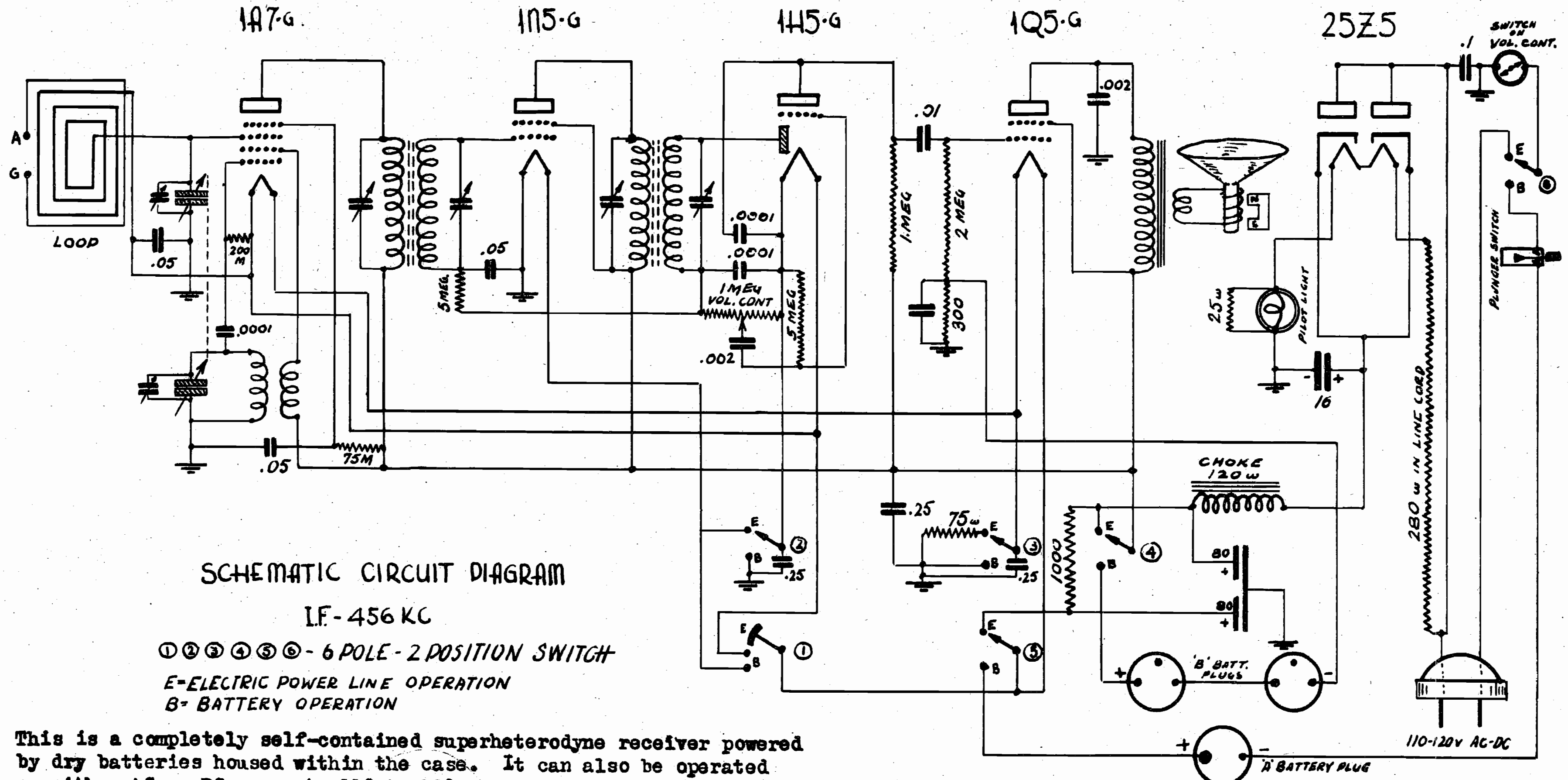
Condensers

C1-.0001 Mica
C2-.001- 800 Volt
C3-.006-1600 "
C4-.01-400 "
C5-.05-400 "
C6-.1-200 "
C7-.4-200 "
C8- 8-450 "
C9-.0015- Mica
C10-.0012- "
C11-.0027- "
C12-.00001- "
C13-.0005- "

IF = 465 K.C.

MODEL A-218
Schematic, Notes

SKY-CHIEF RADIO CORP.



This is a completely self-contained superheterodyne receiver powered by dry batteries housed within the case. It can also be operated on either AC or DC current, 110 to 120 volts.

The batteries required are:

1- 1½ volt "A" battery (Eveready 742 or equivalent)
2- 45 " "B" batteries(Eveready 762 or equivalent)

These batteries are installed by opening the rear cover and inserting them horizontally in the lower compartment. The two plugs having three prongs are inserted into each of the receptacles on the "B" batteries and the two prong plug is inserted into the "A" battery receptacle.

To operate the set from the AC or DC power line, open the rear cover, turn the switch from battery position marked "B" to current position marked "C". Then remove the line cord from within and plug it into any convenient electric outlet. This cord should be extended to its full length. In operation it will become warm. This is natural and no danger will result. Under no circumstances should this cord be cut or shortened. If the receiver fails to operate when plugged into a DC line the plug should be rotated one half turn.

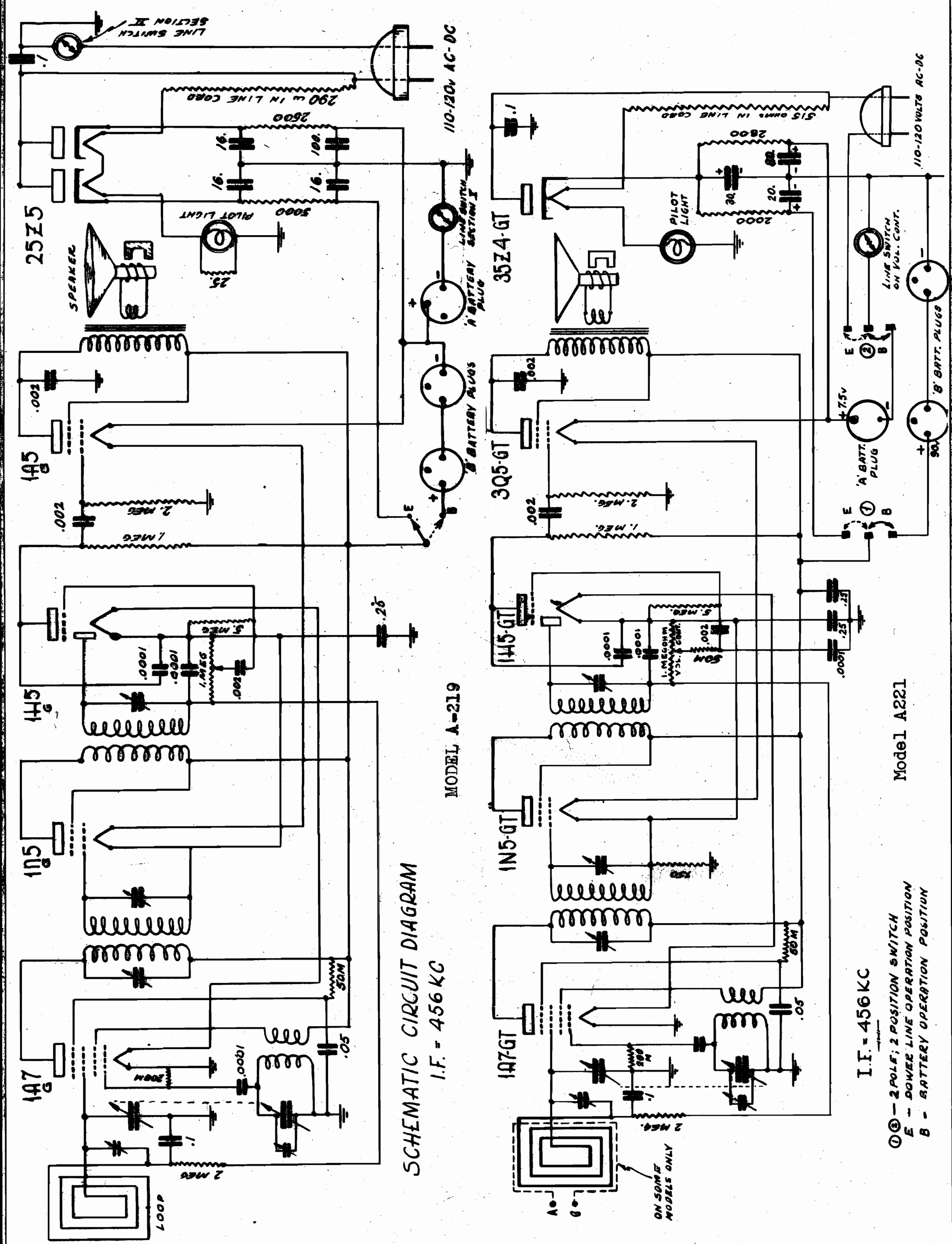
To change from power operation to battery operation, pull the line cord from the plug and turn the switch back to battery operation.

The following tubes are employed:

1- 1A7G; 1-1N5G; 1-1H5G; 1- 1Q5G; 1- 25Z5

MODEL A-219
MODEL A-221
Schematics

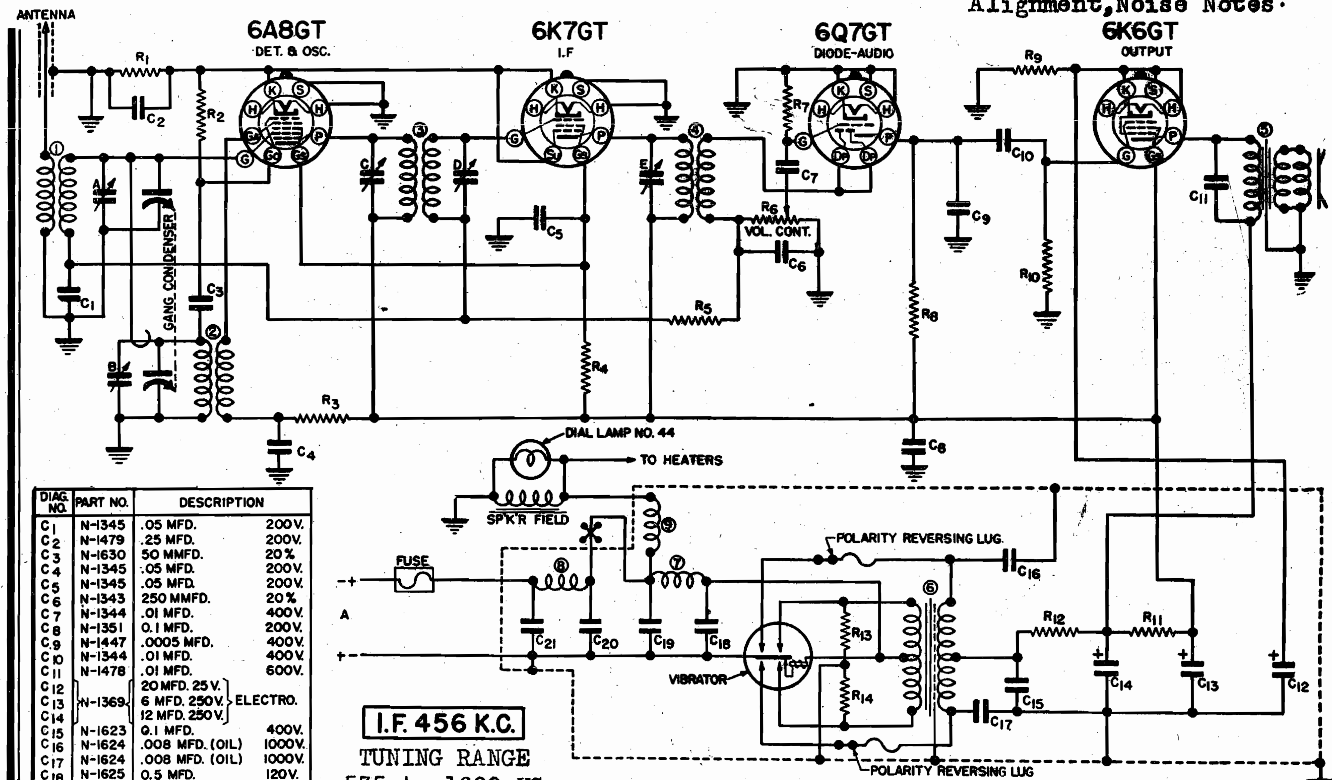
SKY-CHIEF RADIO CORP.



MODEL KU-9
Noise Notes

SONORA RADIO & TELEV., CORP.

MODEL AU-10
Chassis AU
Schematic, Socket, Trimmers
Alignment, Noise Notes



DIAG. NO.	PART NO.	DESCRIPTION		
C1	N-1345	.05 MFD.		200V.
C2	N-1479	.25 MFD.		200V.
C3	N-1630	50 MMFD.		20%
C4	N-1345	.05 MFD.		200V.
C5	N-1345	.05 MFD.		200V.
C6	N-1343	250 MMFD.		20%
C7	N-1344	.01 MFD.		400V.
C8	N-1351	0.1 MFD.		200V.
C9	N-1447	.0005 MFD.		400V.
C10	N-1344	.01 MFD.		400V.
C11	N-1478	.01 MFD.		600V.
C12	N-1369	20 MFD. 25 V.	ELECTRO.	
C13	N-1369	6 MFD. 250 V.	ELECTRO.	
C14	N-1369	12 MFD. 250 V.	ELECTRO.	
C15	N-1623	0.1 MFD.		400V.
C16	N-1624	.008 MFD. (OIL)		1000V.
C17	N-1624	.008 MFD. (OIL)		1000V.
C18	N-1625	0.5 MFD.		120V.
C19	N-1625	0.5 MFD.		120V.
C20	N-1343	250 MMFD.		20%
C21	N-1343	250 MMFD.		20%
R1	N-1473	200 OHM	.5W.	10%
R2	N-1260	50,000 OHM	.5 W.	20%
R3	N-1627	20,000 OHM	.5 W.	20%
R4	N-1627	20,000 OHM	.5 W	20%
R5	N-1262	1 MEGOHM	.5 W	20%
R6	N-1238	0.5 MEGOHM	VOL. CONT.	
R7	N-1419	6 MEGOHM	.5 W.	20%
R8	N-1261	250,000 OHM	.5 W.	20%
R9	N-1628	750 OHM	.5 W.	10%
R10	N-1264	0.5 MEGOHM	.5 W.	20%
R11	N-1256	500 OHM	.5 W.	20%
R12	N-1482	250 OHM	.5 W.	20%
R13	N-1629	100 OHM	1 W.	20%
R14	N 1629	100 OHM	1 W.	20%

I.F. 456 K.C.

TUNING RANGE
535 to 1600 KC

1	N-1249	ANTENNA COIL
2	N-1250	OSCILLATOR COIL
3	N-1248	1 ST. I.F. TRANS.
4	N-1596	2 ND. I.F. TRANS.
5	N-1235	4" SPEAKER & TRANS.
6	N-1540	VIBRATOR TRANS.
7	N-1477	HASH CHOKE
8	N-1632	MOTOR NOISE CHOKE
9	N-1631	HEATER CHOKE

N-1236	VIBRATOR (SYNCHRONOUS)
N-1237	GANG CONDENSER
N-1241	TUNING DIAL
N-1539	BATTERY LEADS
N-1239	TOGGLE SWITCH

4 TUBE-6 VOLT
SUPERHETERODYNE
SINGLE BAND
AUTO SET

DRN. J.B. APP. 2-25-39 AU

MOTOR NOISE ELIMINATION

1. Ground the antenna lead-in shield at one or more points to the cowl or any other metal surface in contact with the lead-in.

2. Move the battery lead around to a point of least noise pick-up and fasten in place with tying cord or tape.

3. Bond together the throttle rod, choke rod and any metal tubing with a piece of copper braid and ground to the fire wall. This should be done on the engine side.

4. Bond steering post to firewall.

5. Bond hood, side panel and other protective covering for engine if it is not making a positive contact to the body.

In extreme cases, a distributor resistor and generator condenser will reduce noise interference to a minimum. These parts are available at your dealer.

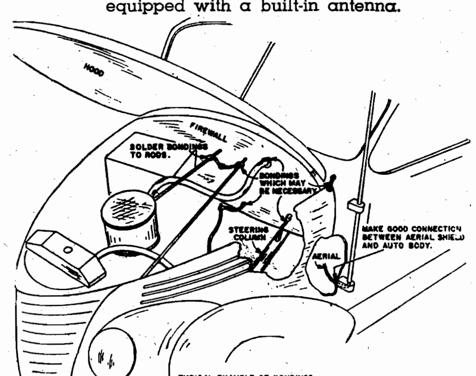
From the standpoint of motor noise, the whip type antenna recommended has been found to be the most satisfactory. It is advisable to use this type antenna even if the car is equipped with a built-in antenna.

I. F. ALIGNMENT. With the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A8G) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three trimmers to peak or maximum reading on the output meter.

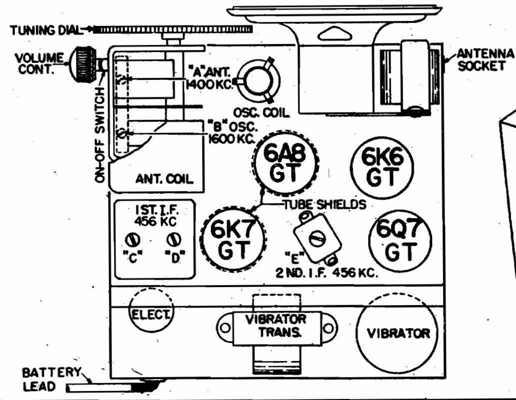
ANT. AND OSC. ALIGNMENT. Connect the antenna to the generator through a 65 MMF dummy* and set the dial and generator at 1600 KC (gang at minimum capacity). Align the BC oscillator trimmer for maximum output. Set the test oscillator at 1400 KC and tune in the signal with the dial and adjust the antenna trimmer for maximum output.

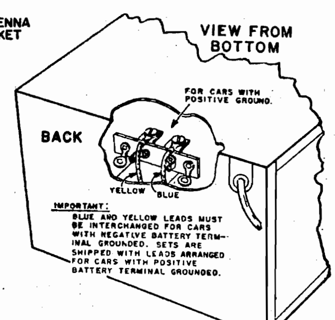
Next set the test oscillator at 600 KC and tune in the signal with the dial to check the sensitivity at this point.

*If the antenna is aligned using a whip antenna shielded lead use a 30 MMF dummy antenna.



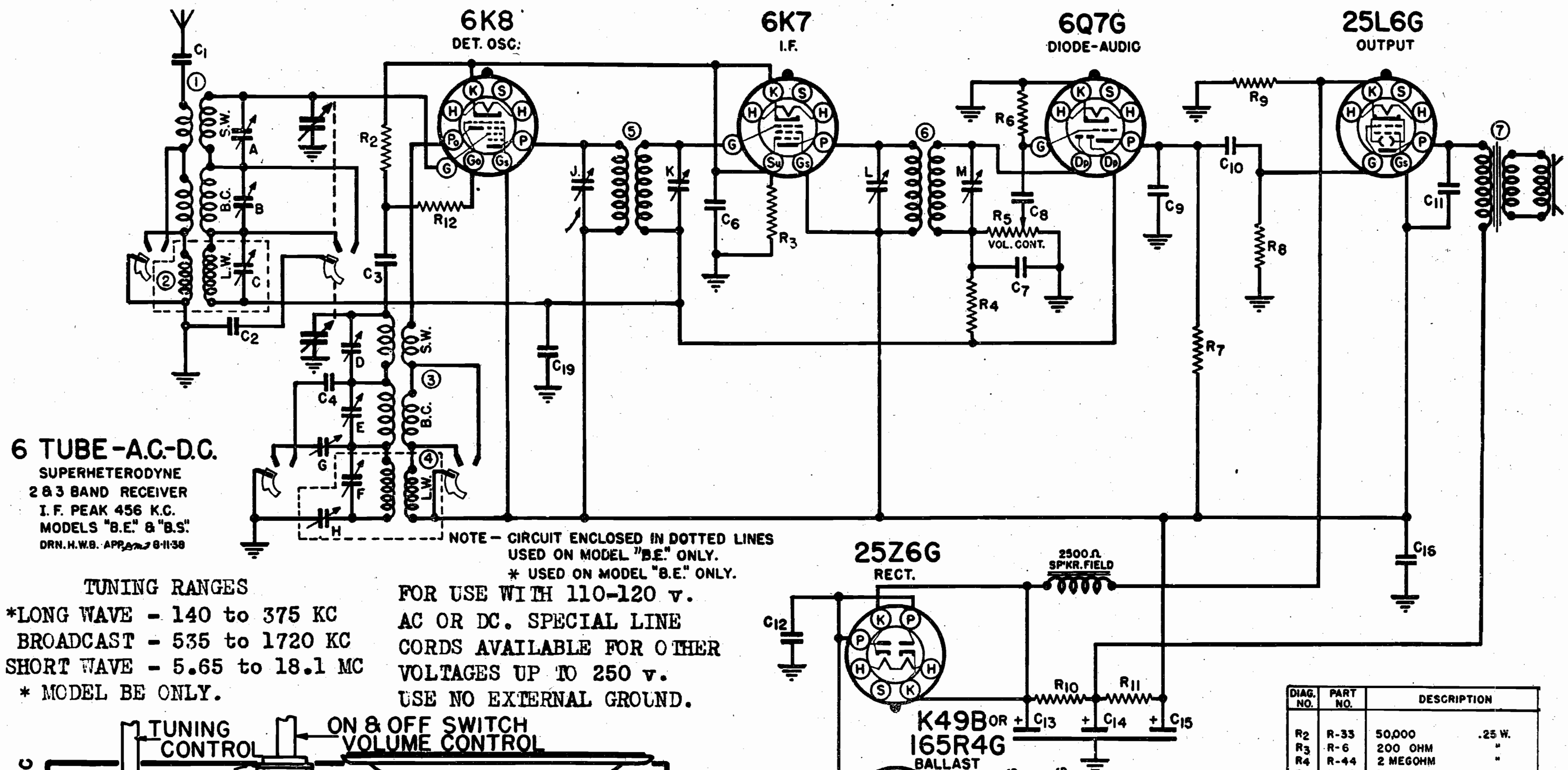
TYPICAL EXAMPLE OF BONDINGS





CHASSIS BE,BS
Schematic,Socket,Trimmers
Alignment

SONORA RADIO & TELEV.. CORP.

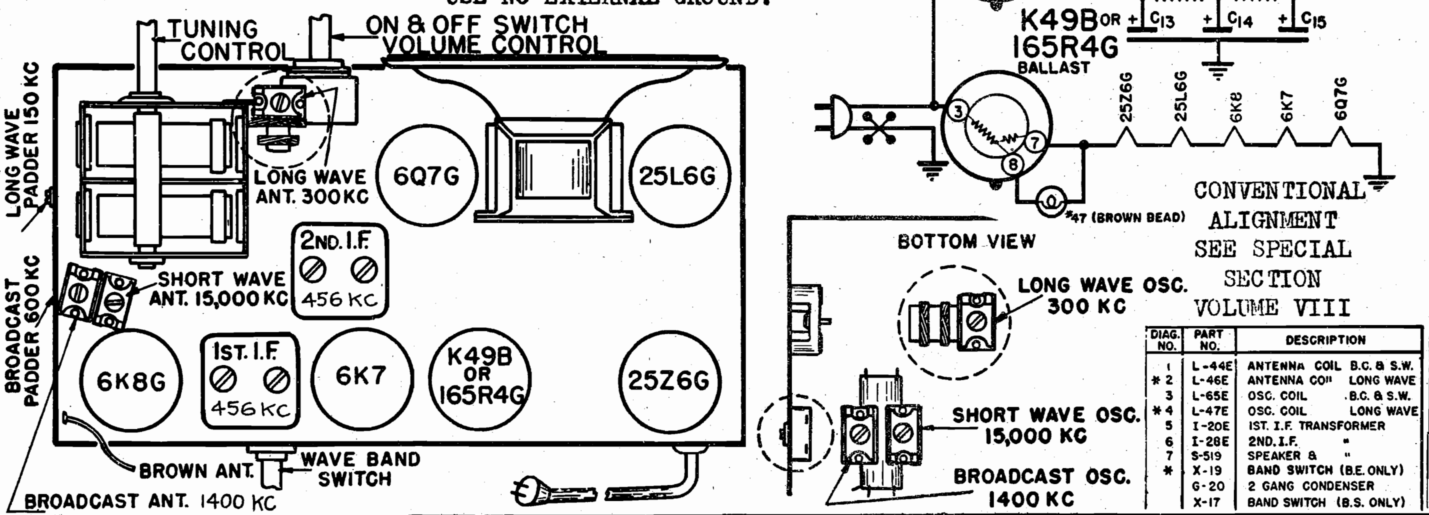


6 TUBE-A.C.-D.C.
SUPERHETERODYNE
2 & 3 BAND RECEIVER
I.F. PEAK 456 K.C.
MODELS "B.E." & "B.S."
DRN. H.W.B. APP. 8-11-38

NOTE – CIRCUIT ENCLOSED IN DOTTED LINES USED ON MODEL "B.E." ONLY.
* USED ON MODEL "B.E." ONLY.

TUNING RANGES
*LONG WAVE - 140 to 375 KC
BROADCAST - 535 to 1720 KC
SHORT WAVE - 5.65 to 18.1 MC
* MODEL BE ONLY.

FOR USE WITH 110-120 v.
AC OR DC. SPECIAL LINE
CORDS AVAILABLE FOR OTHER
VOLTAGES UP TO 250 v.
USE NO EXTERNAL GROUND.



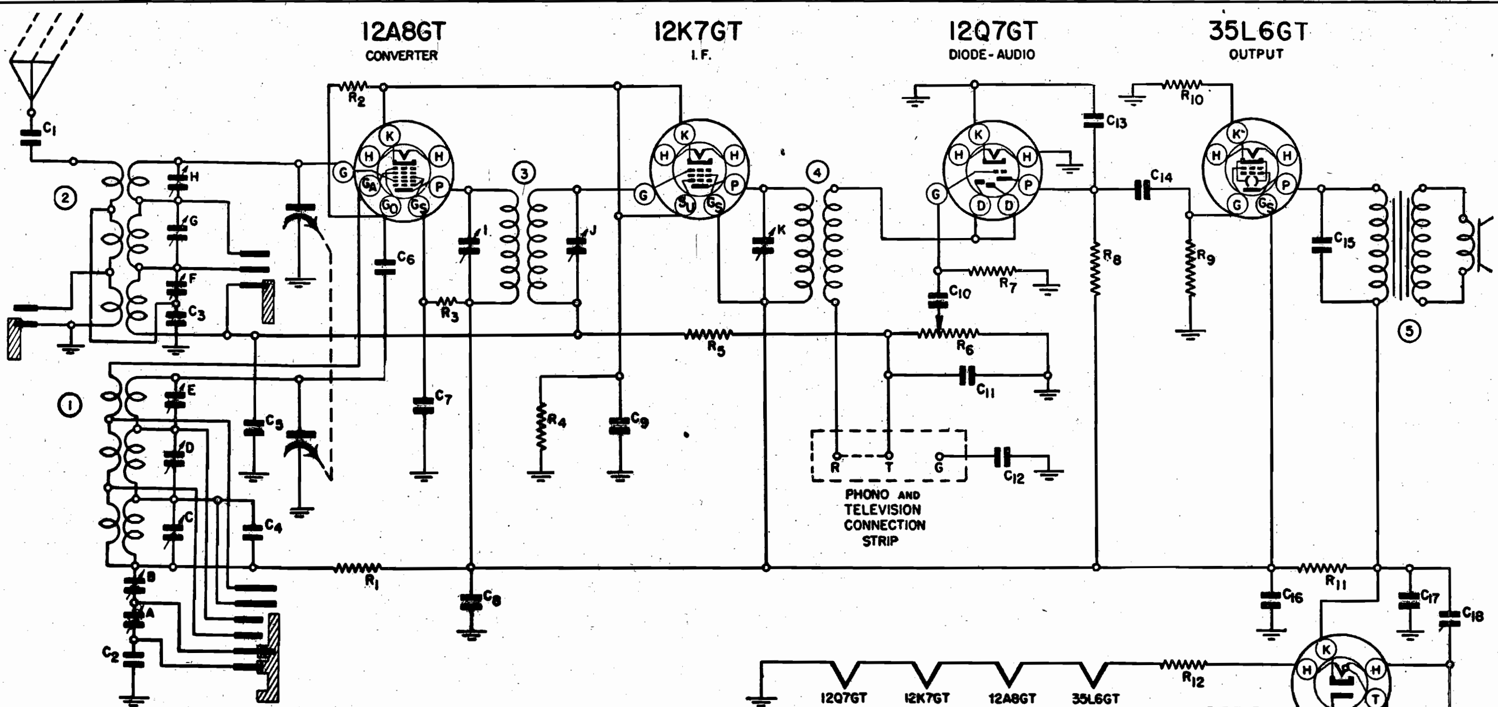
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

DIAG. NO.	PART NO.	DESCRIPTION
1	L-44E	ANTENNA COIL B.C. & S.W.
* 2	L-46E	ANTENNA COIL LONG WAVE
3	L-65E	OSC. COIL B.C. & S.W.
* 4	L-47E	OSC. COIL LONG WAVE
5	I-20E	IST. I.F. TRANSFORMER
6	I-28E	2ND. I.F. "
7	S-519	SPEAKER & "
*	X-19	BAND SWITCH (B.E. ONLY)
	G-20	2 GANG CONDENSER
	X-17	BAND SWITCH (B.S. ONLY)

DIAG. NO.	PART NO.	DESCRIPTION
R_2	R-33	50,000 .25 W.
R_3	R-6	200 OHM "
R_4	R-44	2 MEGOHM "
R_5	V-20	1 MEGOHM VOLUME CONT.
R_6	R-46	6 MEGOHM .25 W.
R_7	R-41	.25 MEGOHM "
R_8	R-48	.3 MEGOHM "
R_9	R-105	125 OHM ± 10% .5 W.
R_{10}	R-110	400 OHM "
R_{11}	R-14	1000 OHM .25 W.
R_{12}	R-5	150 OHM .25 W.
C_1	C-4	.01 MFD. 400 V.
C_2	C-1	.1 MFD. 200 V.
C_3	C-115	50 MMFD. 20%
C_4	C-106C	2500 MMFD. 3%
C_6	C-16	.25 MFD. 200 V.
C_7	C-110	100 MMFD. 20%
C_8	C-27	.006 MFD. 800 V.
C_9	C-111	250 MMFD. 20%
C_{10}	C-4	.01 MFD. 400 V.
C_{11}	C-4	.01 MFD. 400 V.
C_{12}	C-14	.05 MFD. 400 V.
C_{13}	C-237	30 MFD. 150 V.
C_{14}	C-237	10 MFD. 150 V.
C_{15}	C-237	30 MFD. 150 V.
C_{16}	C-13	.05 MFD. 200 V.
C_{17}	C-13	.05 MFD. 200 V.
C_{18}	C-14	.05 MFD. 400 V.
C_{19}	C-13	.05 MFD. 200 V.
G	P-5	300-600 MMFD. B.C. PAD
*H	P-4	100-250 MMFD. L.W. PAD

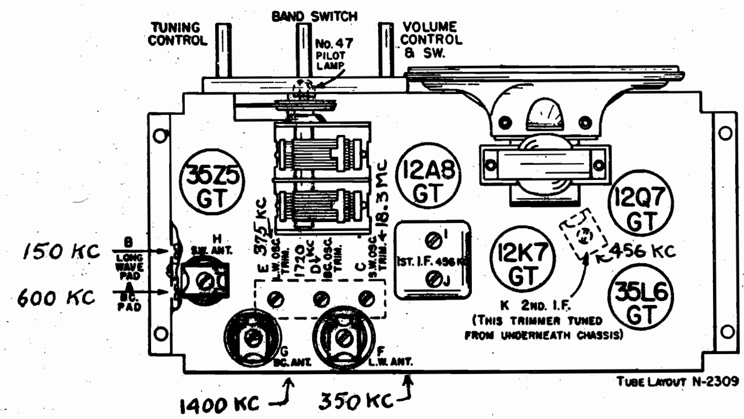
CHASSIS BJE
Schematic, Socket
Trimmers, Alignment

SONORA RADIO & TELEV., CORP.



This receiver is designed to operate over three tuning ranges. The broadcast band extends from 535 to 1720 Kilocycles (KC) (174 to 560 Meters); the European long wave band extends from 140 to 375 KC (800 to 2140 meters); the International Short Wave Band extends from 5.65 to 18.3 Megacycles (MC) (16.4 to 53 Meters).

DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION	
R_1	N-1258	10,000 OHMS	.5W. 20%	C_{12}	N-1344	.01 MFD.	400V.
R_2	N-1260	50,000 OHMS	.5W. 20%	C_{13}	N-1447	.0005 MFD.	400V.
R_3	N-1627	20,000 OHMS	.5W. 20%	C_{14}	N-1344	.01 MFD.	400V.
R_4	N-1742	25 OHMS	.5W. 20%	C_{15}	N-1376	.02 MFD.	400V.
R_5	N-1262	1 MEGOHM	.5W. 20%	C_{16}	N-2015	20 MFD. 150V.	EL'T'LYT
R_6	N-2257	.5 MEGOHM VOLUME CONTROL		C_{17}		35 MFD. 150V.	
R_7	N-1263	10 MEGOHM	.5W. 20%	C_{18}	N-1346	.05 MFD.	400V.
R_8	N-1377	200,000 OHMS	.5W. 20%				
R_9	N-1264	.5 MEGOHM	.5W. 20%				
R_{10}	N-1787	250 OHMS	.5W. 10%	A	N-2291	BC. PADDING COND.	
R_{11}	N-1617	2500 OHMS	.5W. 20%	B		L.W. PADDING COND.	
R_{12}	N-1618	80 OHMS	2W. 10%	1			
R_{13}	N-1814	50 OHMS	.5W. 20%	C	N-2310	L.W. OSC. TRIM.	
				D		BC. OSC. TRIM.	
				E		S.W. OSC. TRIM.	
C_1	N-1344	.01 MFD.	400V.	2			
C_2	N-1690	4000 MMFD.	5%	F	N-2304	L.W. ANT. COIL & TRIM.	
C_3	N-2306	200 MMFD.	10%	G	N-2302	BC. ANT. COIL & TRIM.	
C_4	N-2311	100 MMFD.	10%	H	N-2303	S.W. ANT. COIL & TRIM.	
C_5	N-1345	.05 MFD.	200V.	3	N-1598E	1ST. I.F. TRANS.	
C_6	N-1342	50 MMFD.	20%	4	N-1596E	2ND. I.F. TRANS.	
C_7	N-1345	.05 MFD.	200V.	5	N-2254E	5" PM SPEAKER & TRANS.	
C_8	N-1351	.1 MFD.	200V.	K	N-1597	2ND. I.F. TRIM. COND.	
C_9	N-1351	.1 MFD.	200V.		N-2301	GANG CONDENSER	
C_{10}	N-1344	.01 MFD.	400V.				
C_{11}	N-1374	100 MMFD.	20%				



I.F. 456 KC.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

5 TUBE A.C.-D.C.
SUPERHETERODYNE
THREE BAND

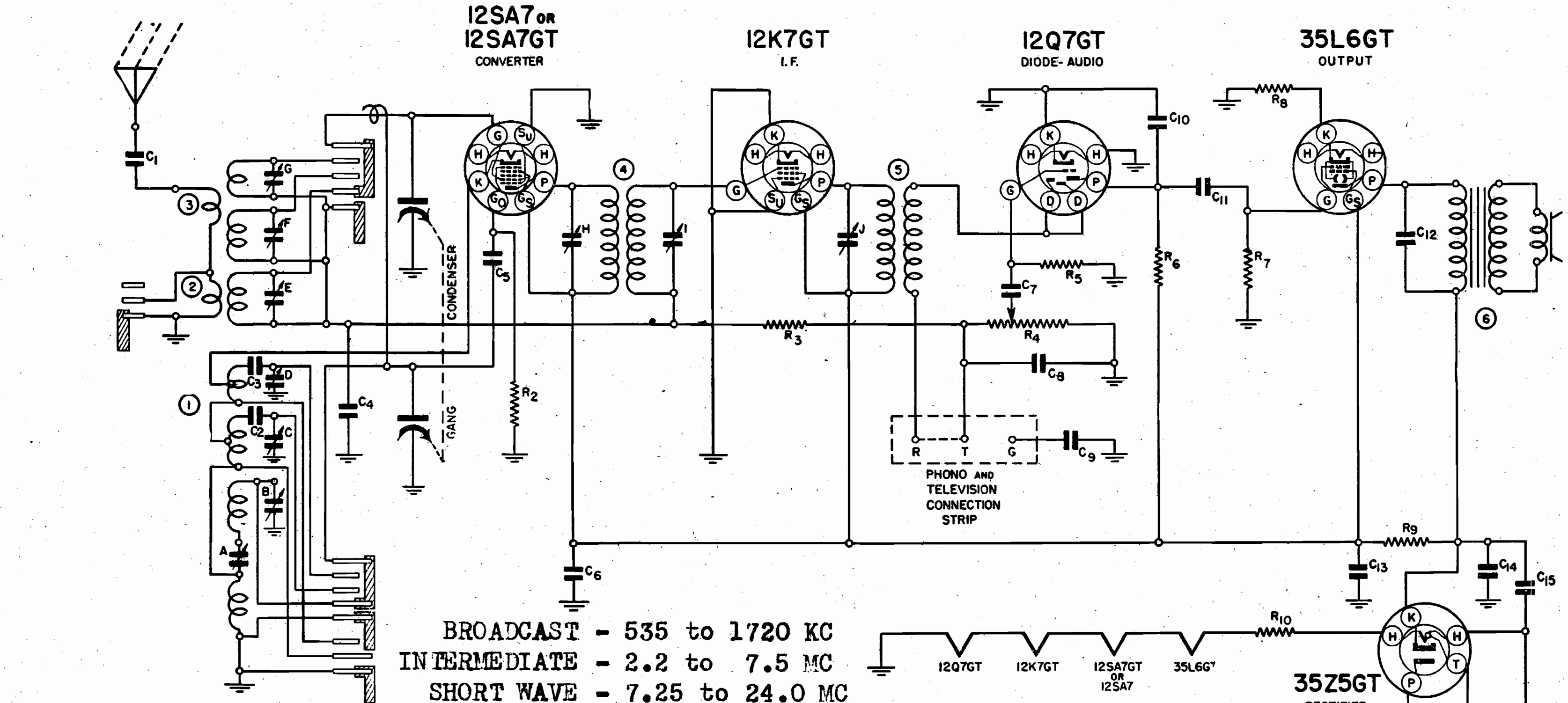
USE 100-MMF DUMMY FOR LONG-WAVE AND B.C. ALIGNMENT

DRWN. W.F. APPR. AUG. 3, '39

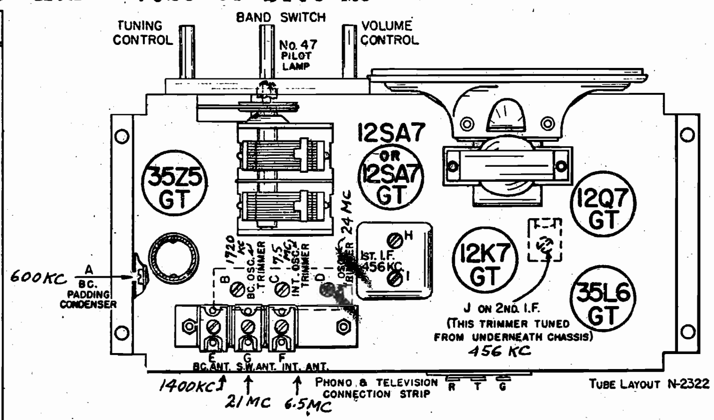
BJE-TJE

CHASSIS BJI
Schematic, Socket
Alignment, Trimmers

SONORA RADIO & TELEV., CORP.



BROADCAST - 535 to 1720 KC
INTERMEDIATE - 2.2 to 7.5 MC
SHORT WAVE - 7.25 to 24.0 MC



I.F. 456 KC.

5 TUBE A.C.-D.C.
SUPERHETERODYNE
THREE BAND

DRWN. W.F. APPR. AUG. 10, '39

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1614	50 OHM .5W. 20%	C_{10}	N-1447	.0005 MFD. 400 V.
R_2	N-1627	20,000 OHM .5W. 20%	C_{11}	N-1344	.01 MFD. 400 V.
R_3	N-1262	1 MEGOHM .5W. 20%	C_{12}	N-1376	.02 MFD. 400 V.
R_4	N-2257	.5 MEGOHM VOLUME CONTROL	C_{13}	N-2015	20 MFD. 150 V. EL'T'LYT'C.
R_5	N-1263	10 MEGOHM .5W. 20%	C_{14}	N-2015	35 MFD. 150 V. EL'T'LYT'C.
R_6	N-1377	.2 MEGOHM .5W. 20%	C_{15}	N-1346	.05 MFD. 400 V.
R_7	N-1264	.5 MEGOHM .5W. 20%			
R_8	N-1787	250 OHM .5W. 10%			
R_9	N-1257	2000 OHM .5W. 20%	A	N-2205	BC. PADDING CONDENSER
R_{10}	N-1618	80 OHM 2W. 10%	B	N-2316	BC. OSC. TRIMMING COND.
			C	N-2316	INT. B. OSC. TRIM. COND.
			D	N-2316	S.W. OSC. TRIM. COND.
			E	N-2316	BC. ANT. TRIM. COND.
			F	N-2316	INT. B. ANT. TRIM. COND.
			G	N-2316	S.W. ANT. TRIM. COND.
C_1	N-1344	.01 MFD. 400V.	1	N-2319	OSCILLATOR COIL
C_2	N-2290	1550 MMFD. 3%	2	N-2330	BC. ANTENNA COIL
C_3	N-1690	4000 MMFD. 5%	3	N-2318	INT. & S.W. ANT. COIL
C_4	N-1345	.05 MFD. 200V.	4	N-1598E	1ST. I.F. TRANS.
C_5	N-1342	50 MMFD. 20%	5	N-1596E	2ND. I.F. TRANS.
C_6	N-1351	.1 MFD. 200 V.	6	N-2254E	5" P.M. SP. & TRANS.
C_7	N-1344	.01 MFD. 400V.			
C_8	N-1374	100 MMFD.		N-2301	2 SEC. GANG COND.
C_9	N-1344	.01 MFD. 400V.			

USE 100-MMF DUMMY FOR BROADCAST ALIGNMENT

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

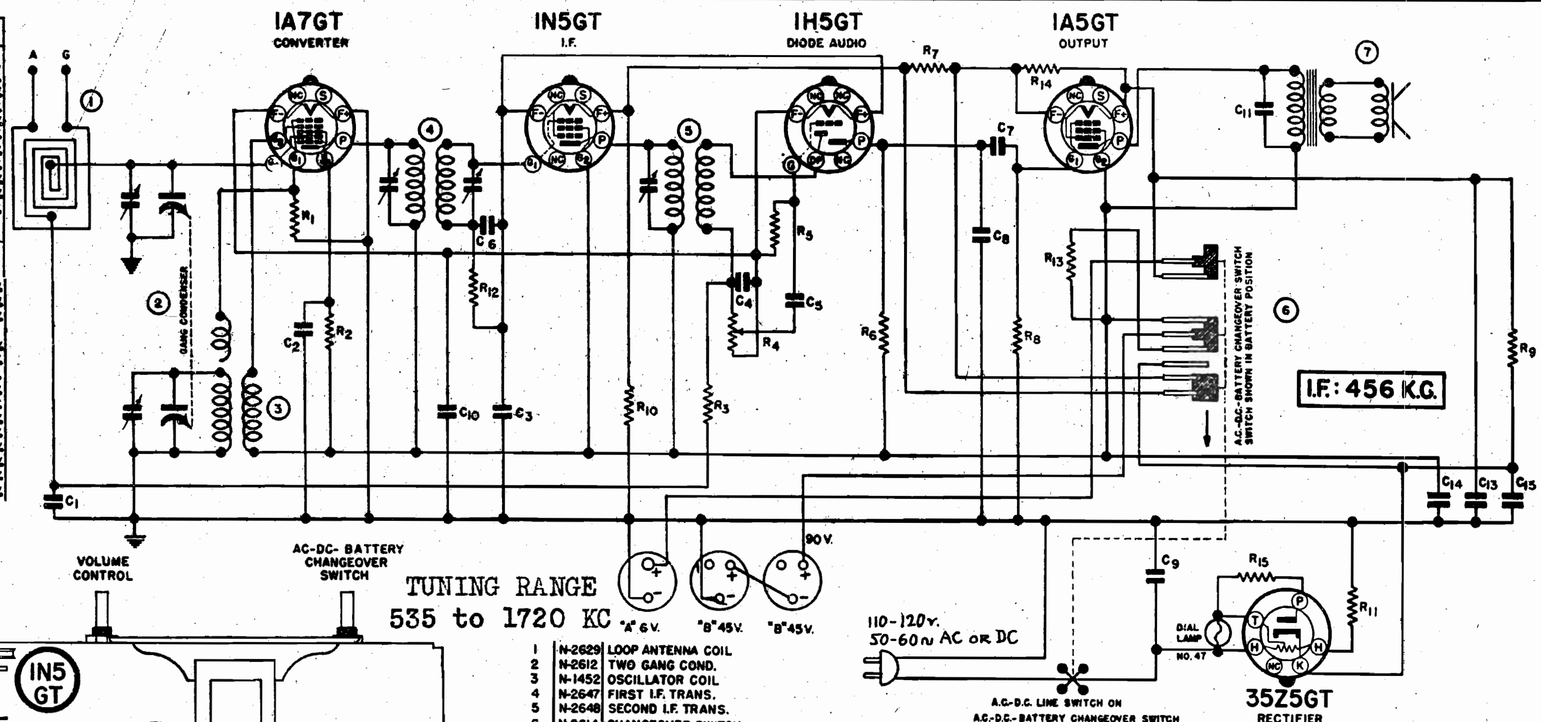
BJI - TJI

CHASSIS KD
Battery Data

SONORA RADIO & TELEV., CORP.

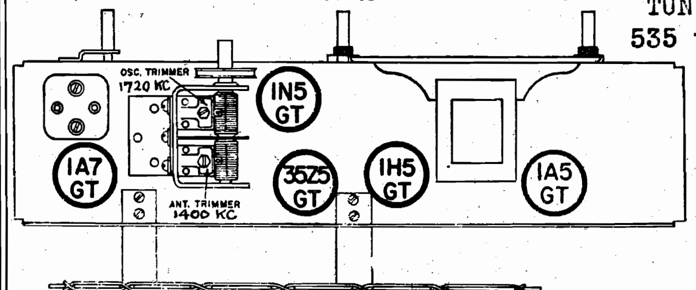
MODEL KB-73, Ch. KB
Schematic, Socket
Trimmers, Alignment
Battery Data

DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1345	.05 MFD. 200WV. 20%
C_2	N-1345	.05 MFD. 200WV. 20%
C_3	N-1479	.25 MFD. 200WV. 20%
C_4	N-1374	.0001 MFD. MICA 20%
C_5	N-1344	.01 MFD. 400WV. 20%
C_6	N-1376	.02 MFD. 400WV. 20%
C_7	N-1344	.01 MFD. 400WV. 20%
C_8	N-1343	.00025 MF. MICA 20%
C_9	N-1346	.05 MFD. 400WV. 20%
C_{10}	N-1351	.1 MFD. 200WV. 20%
C_{11}	N-2063	.003 MFD. 600WV. 20%
C_{13}	N-2748	100 MFD. 7.5V. ELECTROLYTIC COND.
C_{14}	N-2748	20 MFD. 150V. ELECTROLYTIC COND.
C_{15}	N-2748	40 MFD. 150V. ELECTROLYTIC COND.
R_1	N-1377	200,000 OHM .5W. 20%
R_2	N-1684	75,000 OHM .5W. 20%
R_3	N-1378	2.0 MEGOHM .5W. 20%
R_4	N-2623	1.0 MEG. VOLUME CONT.
R_5	N-1378	2.0 MEGOHM .5W. 20%
R_6	N-1262	1.0 MEGOHM .5W. 20%
R_7	N-2755	12. OHM .5W. 20%
R_8	N-1378	2. MEGOHM .5W. 20%
R_9	N-2754	1970. OHM 5.5W. 5%
R_{10}	N-1694	1000 OHM .5W. 20%
R_{11}	N-2753	550. OHM 12.5W. 10%
R_{12}	N-1263	10. MEGOHM .5W. 20%
R_{13}	N-1257	2000 OHM .5W. 20%
R_{14}	N-1257	2000 OHM .5W. 20%
R_{15}	N-2452	100 OHM 1.W. 20%



TUNING RANGE
535 to 1720 KC

1	N-2629	LOOP ANTENNA COIL
2	N-2612	TWO GANG COND.
3	N-1452	OSCILLATOR COIL
4	N-2647	FIRST I.F. TRANS.
5	N-2648	SECOND I.F. TRANS.
6	N-2614	CHANGEOVER SWITCH
7	N-2747	5" P.M. SPEAKER & TRAN.



CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII

5 TUBE
BATTERY & 110-120V. AC-DC
SUPERHETERODYNE

DRWN. *E.K.*
APP.
DEC. 29, '39
KB

The following combined "AB" pack will give approximately 150 hours of life. The clamp arrangement is illustrated in Fig. 1. (The same clamp arrangement applies to either a pack or the type of "A" and "B" batteries illustrated.)

SUPPLIER	Combined "A" and "B" battery in one unit
Ray-O-Vac	AB694

The following batteries will give approximately 250 to 300 hours of life and are installed according to Figure 2. One "A" battery and two "B" batteries are required.

SUPPLIER	6 Volt "A" Battery (Approx. $3\frac{13}{16}$"x$2\frac{21}{32}$"x$5\frac{11}{32}$")	45 Volt "B" Battery (Approx. $4\frac{3}{16}$"x$2\frac{11}{32}$"x$5\frac{11}{32}$")
Eveready	718	762
Burgess	2F4	B30
Ray-O-Vac	698A	P5303
General Dry Battery	8F4	V-30-B
Marathon	896	3050
Usalite	638	624
Bond	4827	3017

The following batteries will give approximately 250 to 300 hours life and are installed according to Figure 1. One "A" battery and two "B" batteries are required.

SUPPLIER	6 Volt "A" Battery ($10\frac{3}{4}$"x$3\frac{21}{32}$"x$1\frac{13}{32}$")	45 Volt "B" Battery ($3\frac{1}{2}$"x$1\frac{3}{4}$"x$5\frac{7}{16}$")
Eveready	747	482

The following batteries will give approximately 100 to 125 hours of life and are installed according to Figure 2. Use a third clamp to anchor the center battery. One "A" battery and two "B" batteries are required.

SUPPLIER	6 Volt "A" Battery (Approx. $2\frac{5}{8}$"x$2\frac{5}{8}$"x4")	45 Volt "B" Battery (Approx. $3\frac{1}{2}$"x$2\frac{1}{4}$"x$4\frac{1}{2}$")
Burgess	F4PI	A30
Ray-O-Vac	694A	430P
General Dry Battery	4F4	V30A
Marathon	496	3040

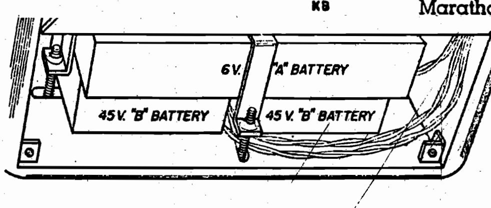


FIGURE 1

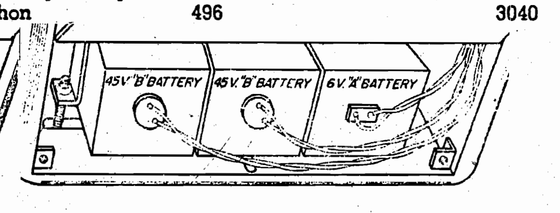
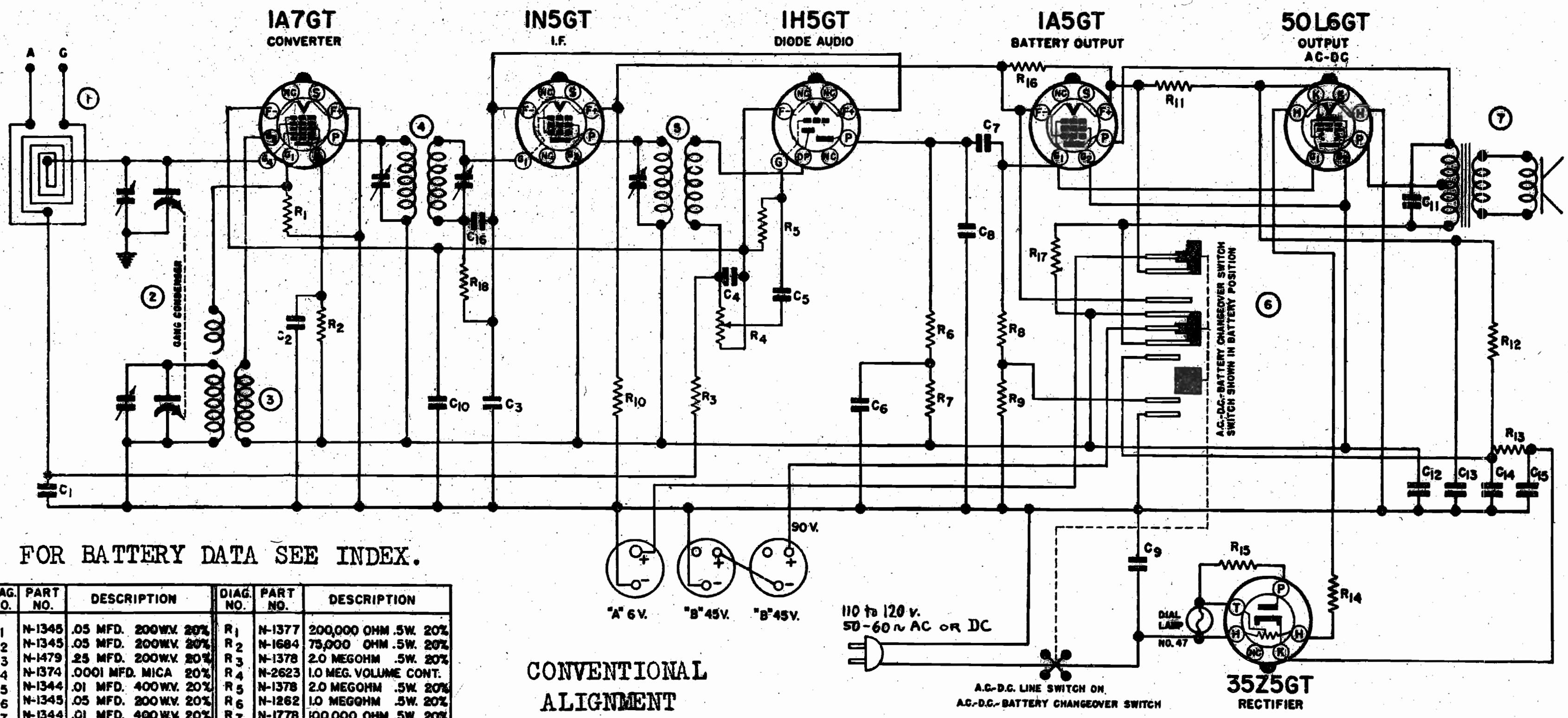


FIGURE 2

MODEL KD-75, Ch. KD
Schematic, Socket
Trimmers, Alignment

SONORA RADIO & TELEV., CORP.



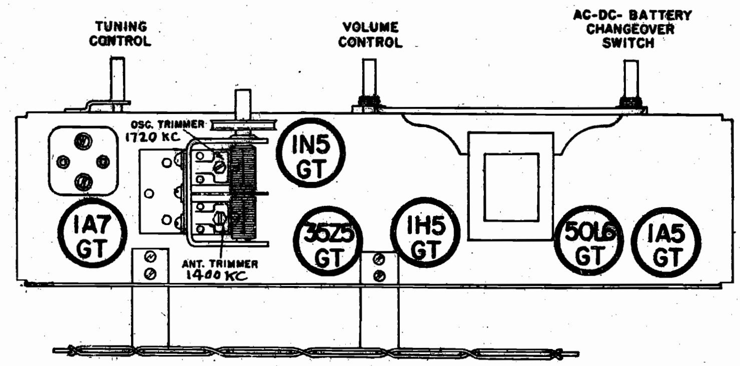
FOR BATTERY DATA SEE INDEX.

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1345	.05 MFD. 200W.V. 20%	R_1	N-1377	200,000 OHM .5W. 20%
C_2	N-1345	.05 MFD. 200W.V. 20%	R_2	N-1684	75,000 OHM .5W. 20%
C_3	N-1479	.25 MFD. 200W.V. 20%	R_3	N-1378	2.0 MEGOHM .5W. 20%
C_4	N-1374	.0001 MFD. MICA 20%	R_4	N-2623	1.0 MEG. VOLUME CONT.
C_5	N-1344	.01 MFD. 400W.V. 20%	R_5	N-1378	2.0 MEGOHM .5W. 20%
C_6	N-1345	.05 MFD. 200W.V. 20%	R_6	N-1262	1.0 MEGOHM .5W. 20%
C_7	N-1344	.01 MFD. 400W.V. 20%	R_7	N-1778	100,000 OHM .5W. 20%
C_8	N-1343	.00025 MF. MICA 20%	R_8	N-1264	500,000 OHM .5W. 20%
C_9	N-1346	.05 MFD. 400W.V. 20%	R_9	N-1262	1.0 MEGOHM .5W. 20%
C_{10}	N-1351	.1 MFD. 200W.V. 20%	R_{10}	N-1694	1000 OHM .5W. 20%
C_{11}	N-2063	.003 MFD. 600W.V. 20%	R_{11}	N-2713	20 OHM INS. .5W. 10%
C_{12}	N-2627	20 MFD. 150.V. ELECTROLYTIC COND.	R_{12}	N-2716	15,000 OHM 1.W. 10%
C_{13}	N-2627	100 MFD. 7.5 V. ELECTROLYTIC COND.	R_{13}	N-2715	160 OHM 1.W. 10%
C_{14}	N-2627	20 MFD. 150.V. ELECTROLYTIC COND.	R_{14}	N-2717	220. OHM INS. 5W. 10%
C_{15}	N-2627	40 MFD. 150.V. ELECTROLYTIC COND.	R_{15}	N-2714	50 OHM 1.W. 20%
C_{16}	N-1376	.02 MFD. 400W.V. 20%	R_{16}	N-1257	2000 OHM .5W. 20%
			R_{17}	N-1776	1500 OHM .5W. 20%
			R_{18}	N-1419	6. MEGOHM .5W. 20%
1	N-2629	LOOP ANTENNA COIL			
2	N-2612	TWO GANG COND.			
3	N-1432	OSCILLATOR COIL			
4	N-2647	FIRST I.F. TRANS.			
5	N-2648	SECOND I.F. TRANS.			
6	N-2614	CHANGEOVER SWITCH			
7	N-2624	5" P.M. SPEAKER & TRAN.			

CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII

TUNING RANGE
535 to 1720 KC

I.F.: 456 K.C.



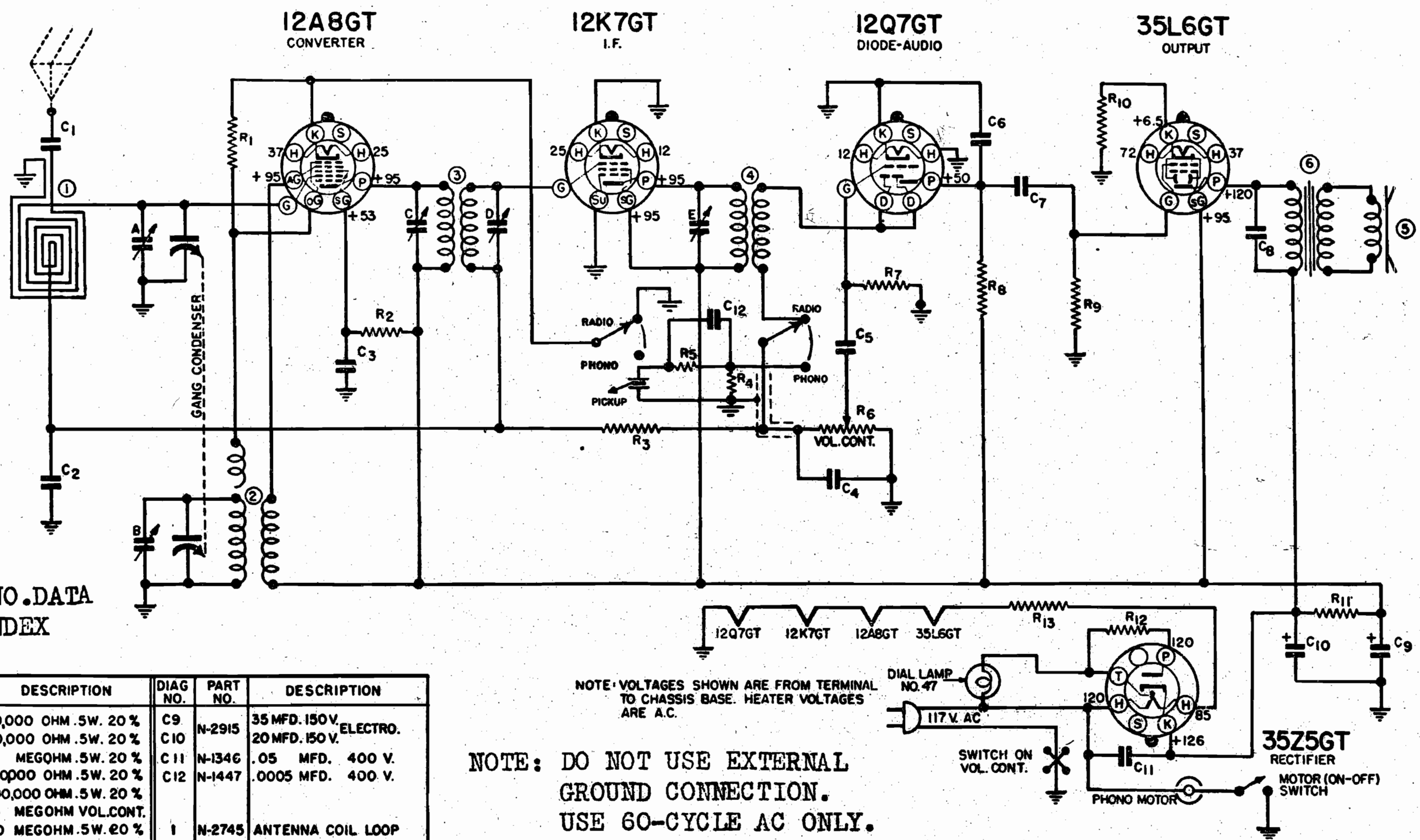
6 TUBE
BATTERY & 110-120V. AC-DC
SUPERHETERODYNE

DRWN. S.K. OCT. 31, '39
APP.

KD

SONORA RADIO & TELEV.. CORP.

MODEL KE-78,Ch.KE
Schematic,Socket
Alignment,Trimmers



NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO CHASSIS BASE. HEATER VOLTAGES ARE A.C.

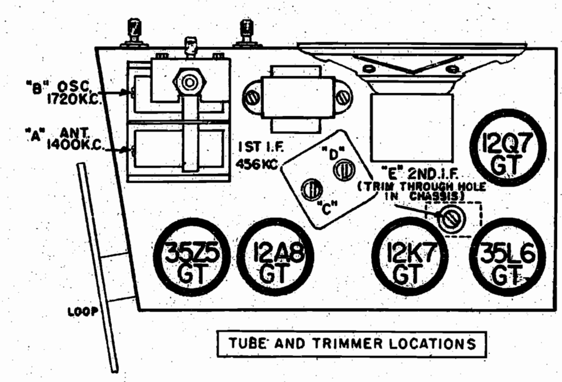
NOTE: DO NOT USE EXTERNAL GROUND CONNECTION. USE 60-CYCLE AC ONLY.

FOR PHONO.DATA SEE INDEX

DIAG NO.	PART NO.	DESCRIPTION	DIAG NO.	PART NO.	DESCRIPTION
R1	N-1260	50,000 OHM .5W. 20%	C9	N-2915	35 MFD. 150 V. ELECTRO.
R2	N-1627	20,000 OHM .5W. 20%	C10		20 MFD. 150 V.
R3	N-1262	1 MEGOHM .5W. 20%	C11	N-1346	.05 MFD. 400 V.
R4	N-1653	300,000 OHM .5W. 20%	C12	N-1447	.0005 MFD. 400 V.
R5	N-1696	400,000 OHM .5W. 20%			
R6	N-2876	.5 MEGOHM VOL.CONT.			
R7	N-1263	10 MEGOHM .5W. 20%	1	N-2745	ANTENNA COIL LOOP
R8	N-1377	200,000 OHM .5W. 20%	2	N-1452	OSCILLATOR COIL
R9	N-1264	500,000 OHM .5W. 20%	3	N-2938	1ST.I.F. TRANSFORMER
R10	N-1616	250 OHM .5W. 10%	4	N-2890	2ND.I.F. TRANSFORMER
R11	N-1617	2500 OHM .5W. 20%	5	N-2914	4" P.M. SPEAKER
R12	N-1614	50 OHM .5W. 20%	6	N-2952	OUTPUT TRANSFORMER
R13	N-1618	80 OHM 2 W. 10%	E	N-2649	2ND.I.F. TRIMMING COND.
				N-2875	2 GANG CONDENSER
				N-2094	MOTOR ON-OFF SWITCH
C1	N-1344	.01 MFD. 400 V.		N-2877	RADIO-PHONO SWITCH
C2	N-1345	.05 MFD. 200 V.		N-2921	PHONO MOTOR & TURNTABLE
C3	N-1345	.05 MFD. 200 V.		N-2832	CRYSTAL PICK-UP
C4	N-1374	.0001 MFD. MICA			
C5	N-1344	.01 MFD. 400 V.			
C6	N-1447	.0005 MFD. 400V.			
C7	N-1344	.01 MFD. 400V.			
C8	N-1376	.02 MFD. 400V.			

TUNING RANGE
535 to 1720 KC

CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII



TUBE AND TRIMMER LOCATIONS

I.F. 456 KC.

SUPERHETERODYNE
SINGLE BAND
PHONO. COMBINATION

DRWN L.T.C. APPRD.

KE

CHASSIS KE,TB,TF,TJF,TNF
Phonograph Data

SONORA RADIO & TELEV., CORP.

PHONOGRAPH OPERATION

ALL TYPES

PICKUP — The pickup is the new crystal type. To insert a needle, raise the pickup arm to a vertical position, loosen the needle holder screw on the front, insert a needle to its full depth, tighten up the needle holder screw and lower pickup arm to its non-playing position outside the record and slip into the pick-up rest holder. When commencing to play, remove pickup from holder, lift and place gently the point of the needle on the smooth outer rim of the record and slide into the first groove of the record.

NOTE: In case a hum comes from the speaker when your hand is on the pick-up, reverse the power plug in the power outlet receptical.

PLAYING RECORDS

(a) Turn on the volume control and "on-off" switch on the receiver.

FOR (b),(c) SEE BELOW

(d) Lift pickup and lower the needle point gently to the smooth outer rim of the record and slide into the first groove of the record.

(e) Adjust volume to proper level by rotation of the volume control knob. Adjust tone control for best reproduction. If record and needle scratch noise is objectionable the tone control may be used to subdue or eliminate by adjustment of the tone to the left, the position that favors "Bass" response. After the selection is completed, lift the pickup, swing the arm to the right beyond the edge of the record and lower and affix to the arm rest bracket.

(f) When you have finished playing, lift pickup and place in its rest position and remove record from turntable. Never leave pickup with needle resting on record or on turntable.

KE, TB, TF ONLY

(b) Turn the "Radio-phono" switch to the phono position.

(c) Place the selected record upon the turntable and move the starting lever forward. This will place the record in motion.

TJF, TNF ONLY

(b) Slide the "Radio-phono" switch to the phono position.

(c) Place the selected record upon the turntable and press the motor starting switch.

This will place the record in motion.

TB ONLY

MOTOR STARTING SWITCH AND AUTOMATIC STOP—The motor starting switch is operated by the lever which comes from underneath the turntable at the right. Pressing the lever to the rear starts the motor. The arm projecting above the turntable to the rear and to the right of the turntable is the automatic stop switch. The automatic stop switch is adjustable and should be adjusted to stop the motor when the pick-up needle travels the last record groove (nearest the center). This can be done by moving the release arm to a position where it just touches the side of the pick-up arm when the needle is in the last groove and with the motor running.

TURNTABLE — Before attempting to operate the phonograph, loosen the three screws which hold the motor in place about two full turns to float the motor free in the rubber mountings. Place the turntable on the spindle and apply a slight pressure to the turntable and it will snap into the correct position. Be certain that the cabinet rests squarely on a flat surface so that the turntable is level and rotates in a true horizontal plane.

KE, TJF, TNF ONLY

MOTOR SWITCH. (Small Button located on top of cabinet underneath cover)—The radio set must first be turned on before this switch will operate. Push the switch once to turn on the motor. Push the switch again to turn off the motor.

TURNTABLE—Gently place the turntable on the motor spindle and carefully place the rubber tired drive wheel inside the turntable flange. **DO NOT FORCE TURNTABLE OVER DRIVE WHEEL.** Be certain that the cabinet rests squarely on a flat surface so that the turntable is level and rotates in a true horizontal plane.

TF ONLY

MOTOR. The motor is a strong mechanical type hand wound spring motor. Insert the crank in the hole at the right. When the motor is fully wound the phonograph will play two full ten-inch records before rewinding is required.

TURNTABLE. To start turntable move the brake lever forward. To stop turntable pull lever toward you. Speed may be regulated by the control arm. For correct pitch adjust this speed to 78 revolutions per minute.

WARNING: Do not forget to turn off radio set when through playing records or the battery will run down. Battery life is appreciably shortened by continuous operation over long periods of time.

RECORD HOLDER. Eight ten-inch records may be carried in the record holder in the cabinet lid. To remove record holding clamp turn it ninety degrees. Place records in lid, replace clamp, sliding it up tight against records before turning it.

SERVICE

KE, TB ONLY

As the phonograph motor is the only moving part it is the only part of your phono-attachment that will require any attention. The motor requires oiling once every six months. Remove the turntable and apply 3 or 4 drops of Number 10 S.A.E. Oil in each of the three oil wells on the top of the motor. These oil wells are below the mounting plate and are in a straight line about one inch apart.

TF ONLY

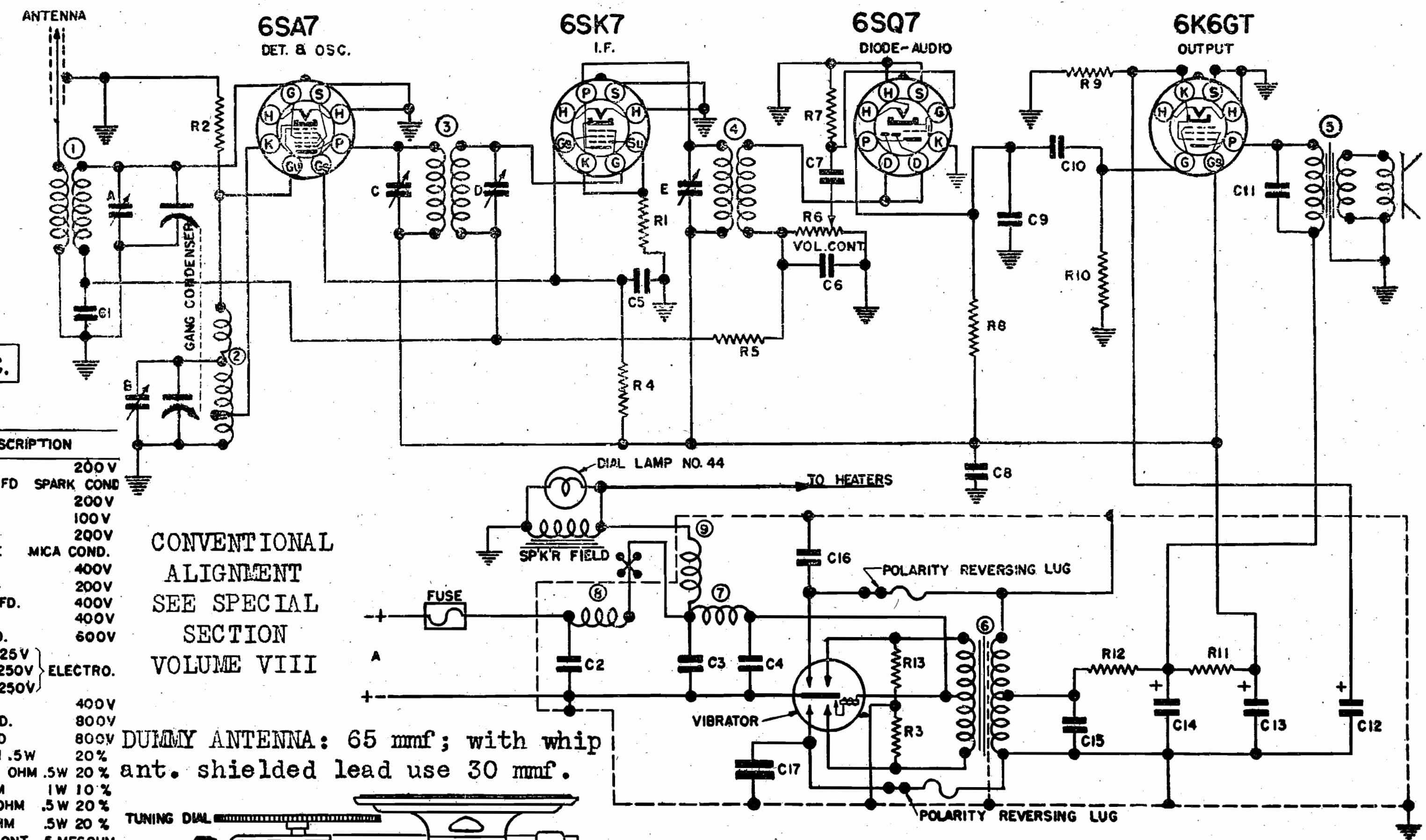
SERVICE. The phonograph motor will require oiling once every three months. Apply 3 or 4 drops of Number 10 S. A. E. oil to the turntable bearings, to the bearings at each end of the governor shaft, to the felt pad on the governor brake, and to the gears and bearings on the gear shafts.

TJF, TNF ONLY

The motor requires oiling once every year. Remove the turntable and detach the motor by removing the 3 wood screws. Apply 2 or 3 drops of Number 10 S.A.E. Oil in each of the felt wicks around the bearings.

SONORA RADIO & TELEV.. CORP.

MODEL KU-9,Ch.KU
Schematic,Socket
Alignment,Trimmers

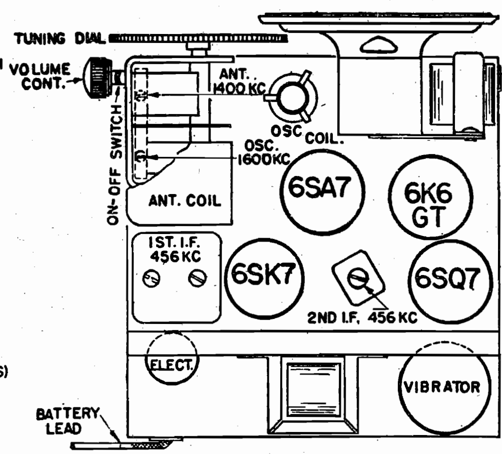


I.F. 456 KC.

DIAG. NO.	PART NO.	DESCRIPTION	
C1	N-1345	.05 MFD.	200V
C2	N-2807	.0002 MFD SPARK COND	
C3	N-1351	.1 MFD.	200V
C4	N-2814	.5 MFD.	100V
C5	N-1351	.1 MFD.	200V
C6	N-1343	250 MMF. MICA COND.	
C7	N-1344	.01 MFD.	400V
C8	N-1351	.1 MFD.	200V
C9	N-1447	.0005 MFD.	400V
C10	N-1344	.01 MFD.	400V
C11	N-2817	.015 MFD.	600V
C12 C13 C14	N-2795	20 MFD. 25V; 6 MFD. 250V; 12 MFD. 250V	ELECTRO.
C15	N-1623	.1 MFD.	400V
C16	N-2815	.013 MFD.	800V
C17	N-2815	.013 MFD	800V
R1	N-1349	100 OHM .5W	20%
R2	N-1627	20,000 OHM .5W	20%
R3	N-2816	75 OHM 1W	10%
R4	N-1683	7,500 OHM .5W	20%
R5	N-1262	1 MEGOHM .5W	20%
R6	N-1238	VOL. CONT	.5 MEGOHM
R7	N-1419	6 MEGOHM .5W	20%
R8	N-1354	300,000 OHM .5W	20%
R9	N-1628	750 OHM .5W	10%
R10	N-1264	500,000 OHM .5W	20%
R11	N-1256	500 OHM .5W	20%
R12	N-1482	250 OHM .5W	20%
R13	N-2816	75 OHM 1W	10%
1	N-2797	ANTENNA COIL	
2	N-2793	OSCILLATOR COIL	
3	N-2791	1ST. I.F. TRANS.	
4	N-1596	2ND. I.F. TRANS.	
5	N-2787	4" SPKR. & TRANS.	
6	N-2790	VIBRATOR TRANS.	
7	N-2805	HASH CHOKE	
8	N-2804	MTR. NOISE CHOKE	
9	N-2843	FILAMENT CHOKE	
	N-2794	VIBRATOR(SYNCHRONOUS)	
	N-1237	GANG CONDENSER	
	N-1241	TUNING DIAL	
	N-2798	BATTERY LEADS	
	N-1239	TOGGLE SWITCH	

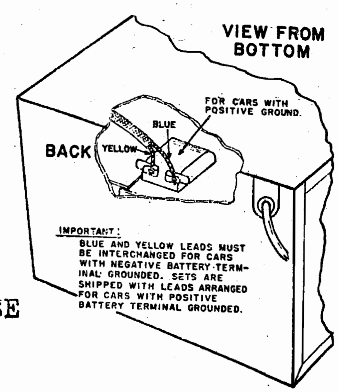
CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII

DUMMY ANTENNA: 65 mmf; with whip ant. shielded lead use 30 mmf.



NOTE:
6SA7, 6SK7 AND 6SQ7 CAN BE REPLACED BY 6SA7GT, 6SK7GT AND 6SQ7GT IF TUBE SHIELDS ARE USED.

FOR MOTOR NOISE
ELIMINATION
SEE INDEX



TUNING RANGE
535 to 1600 KC

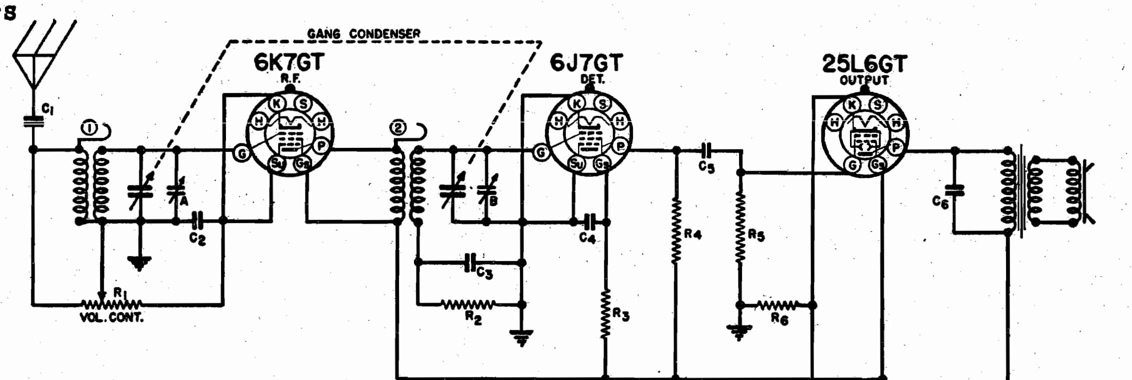
4 TUBE - 6 VOLT
SUPERHETERODYNE
SINGLE BAND
AUTO SET

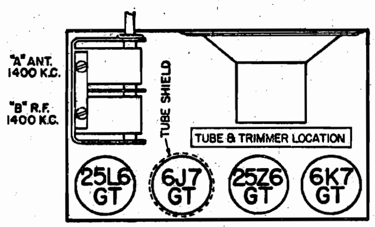
DRN. SK APP. [illegible]

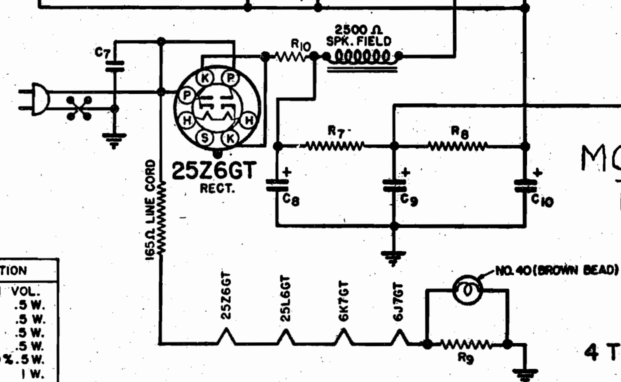
KU

CHASSIS P
MODEL TP-108,Ch.TP
Schematics,Socket
Trimmers

SONORA RADIO & TELEV., CORP.





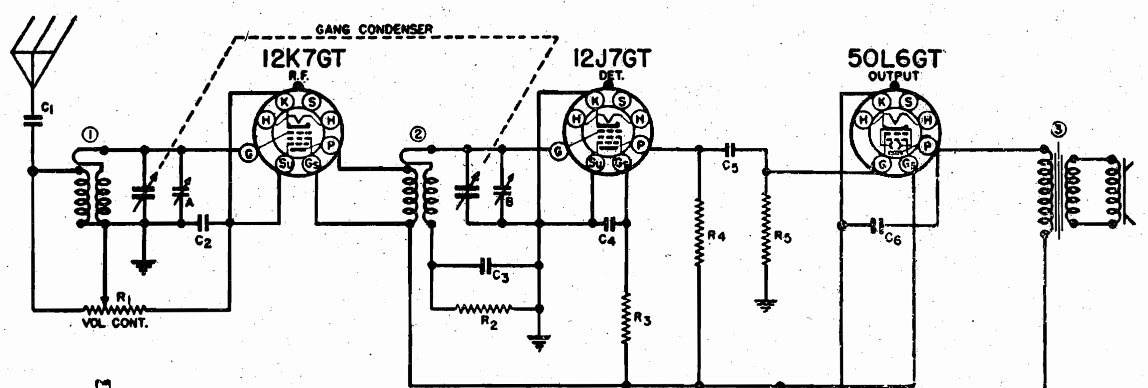


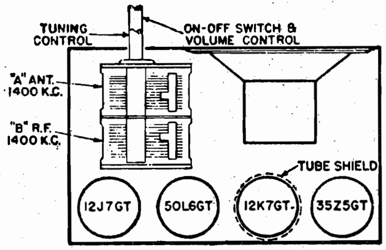
MODEL P

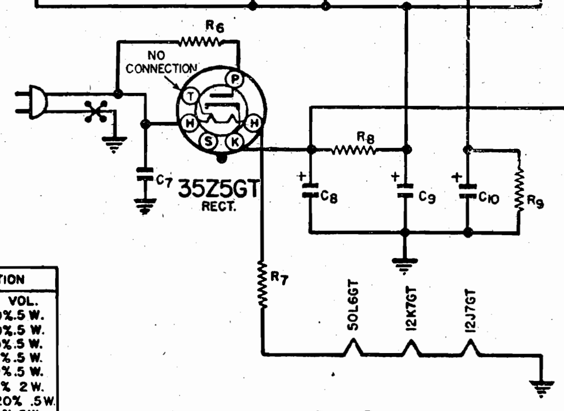
4 TUBE T.R.F.

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1344	.01 MFD. 400 V.	R_1	V-23	25,000 OHM VOL.
C_2	N-1345	.05 MFD. 200 V.	R_2	N-1418	3.5 MEG. .5 W.
C_3	N-1345	.05 MFD. 200 V.	R_3	N-1419	6 MEG. .5 W.
C_4	N-1344	.01 MFD. 400 V.	R_4	N-1262	1 MEG. .5 W.
C_5	N-1344	.01 MFD. 400 V.	R_5	N-1264	.5 MEG. .5 W.
C_6	N-1344	.01 MFD. 400 V.	R_6	N-1416	125 OHM ±10% .5 W.
C_7	N-1346	.05 MFD. 400 V.	R_7	N-1420	125 OHM 1 W.
C_8	C-233	16 MFD. 150 W.V.	R_8	N-1417	3,000 OHM .5 W.
C_9	C-233	8 MFD. 150 W.V.	R_9	N-1415	30 OHM 1.0 W.
C_{10}	C-233	6 MFD. 150 W.V.	R_{10}	N-1251	25 OHM 1 W.
	S-300	SPEAKER	1	L-110	ANTENNA COIL
	G-25	GANG CONDENSER	2	L-111	R.F. COIL

OPERATES ON 110-120 V., 50-60~ AC or DC
DO NOT CONNECT TO EXTERNAL GROUND.







MODEL TP

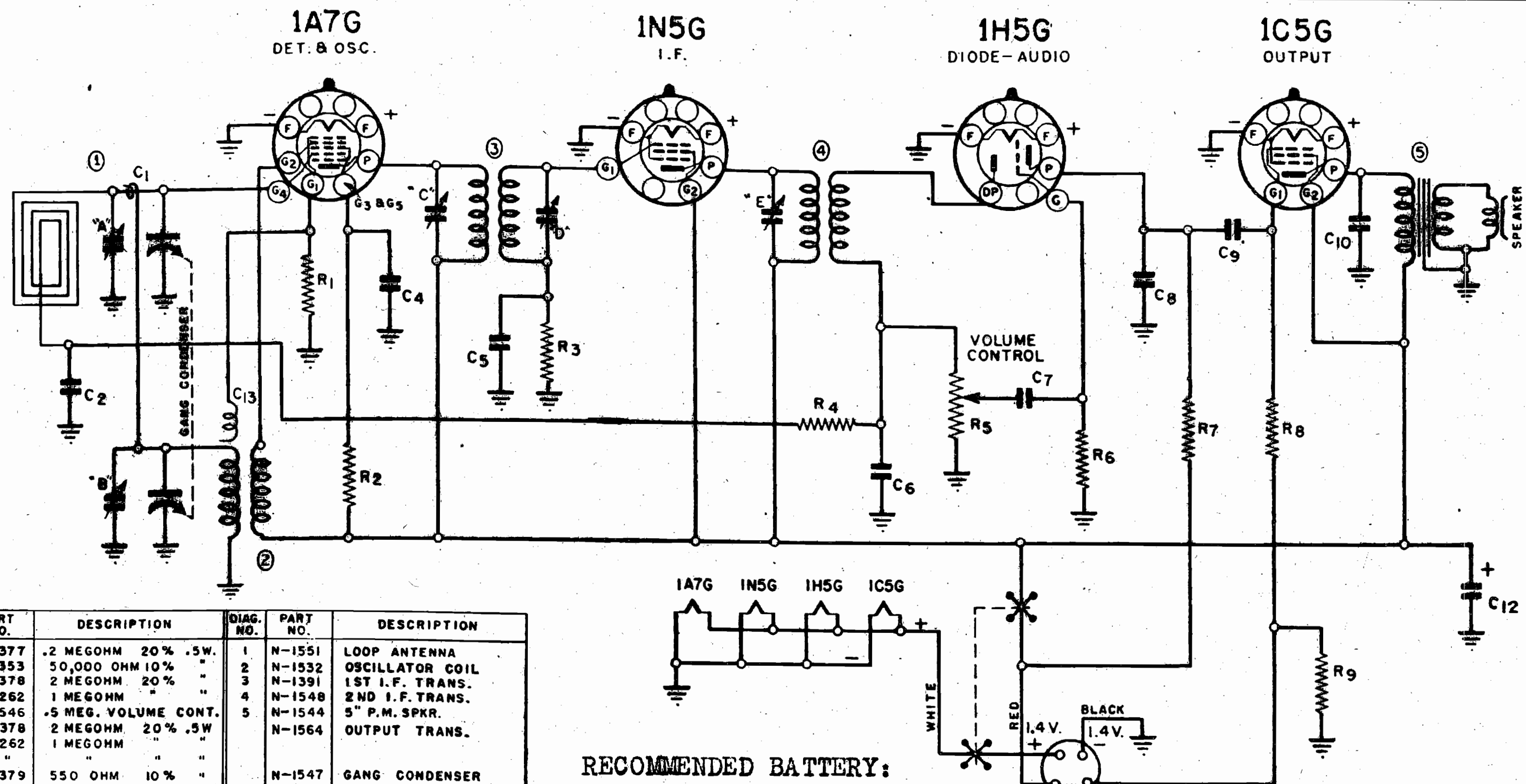
4 TUBE T.R.F.

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1344	.01 MFD. 400 V.	R_1	N-1537	25,000 OHM VOL.
C_2	N-1345	.05 MFD. 200 V.	R_2	N-1418	3.5 MEG. 20% .5 W.
C_3	N-1345	.05 MFD. 200 V.	R_3	N-1835	6 MEG. 20% .5 W.
C_4	N-1344	.01 MFD. 400 V.	R_4	N-1262	1 MEG. 20% .5 W.
C_5	N-1344	.01 MFD. 400 V.	R_5	N-1264	.5 MEG. 20% .5 W.
C_6	N-1344	.01 MFD. 400 V.	R_6	N-1614	50 OHM 20% .5 W.
C_7	N-1346	.05 MFD. 400 V.	R_7	N-1618	80 OHM 10% 2 W.
C_8	N-1850	25 MFD. 150 V. ELECT.	R_8	N-1417	3,000 OHM 20% .5 W.
C_9	N-1850	10 MFD. 150 V. ELECT.	R_9	N-1718	250 OHM 10% .5 W.
C_{10}	N-1850	20 MFD. 25 V. ELECT.	1	N-1790	ANTENNA COIL
	N-1401 N-1847	GANG CONDENSER	2	N-1791	R.F. COIL
			3	N-2047	SPEAKER & TRANS.

OPERATES ON 110-120V, 50-60~ AC or DC
DO NOT CONNECT TO EXTERNAL GROUND

CHASSIS PL
Schematic, Socket
Trimmers, Alignment

SONORA RADIO & TELEV., CORP.



DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1377	.2 MEGOHM 20% .5W.
R_2	N-1353	50,000 OHM 10% "
R_3	N-1378	2 MEGOHM 20% "
R_4	N-1262	1 MEGOHM " "
R_5	N-1546	.5 MEG. VOLUME CONT.
R_6	N-1378	2 MEGOHM 20% .5W
R_7	N-1262	1 MEGOHM " "
R_8	N- "	" " "
R_9	N-1379	550 OHM 10% "
C_1	——	GIMMIC
C_2	N-1345	.05 MFD 200 V.
C_4	N-1345	.05 MFD. 200 V.
C_5	N-1376	.02 MFD. 400 V.
C_6	N-1343	250 MMFD. 20%
C_7	N-1344	.01 MFD. 400 V.
C_8	N-1374	100 MMFD. 20%
C_9	N-1344	.01 MFD 400 V.
C_{10}	N-1347	.006 MFD. 600 V.
C_{12}	N-1367	6 MFD. ELECTROLYTIC
C_{13}	-	CAPACITY INCLUDED IN OSCILLATOR COIL.

DIAG. NO.	PART NO.	DESCRIPTION
1	N-1551	LOOP ANTENNA
2	N-1532	OSCILLATOR COIL
3	N-1391	1ST I.F. TRANS.
4	N-1548	2ND I.F. TRANS.
5	N-1544	5" P.M. SPKR.
	N-1564	OUTPUT TRANS.
	N-1547	GANG CONDENSER
	N-1552	BATTERY CABLE
"E"	N-1453	TRIMMER COND.-2ND I.F.

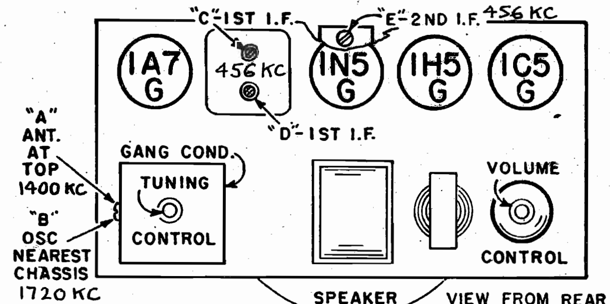
RECOMMENDED BATTERY:
NO. 6OA-2L, GENERAL DRY
BATTERIES, INC., CLEVELAND

I. F. 456 K.C.

TUNING RANGE
535 to 1720 KC

NOTE: TUBE SOCKETS SHOWN FROM WIRING SIDE.

TUBE LAYOUT & TRIMMER LOCATION



PORTABLE
4 TUBE - $1\frac{1}{2}$ VOLT
SUPERHETERODYNE
SINGLE BAND

DRWN. F.L.C. APP. Dmf. 2-1-39

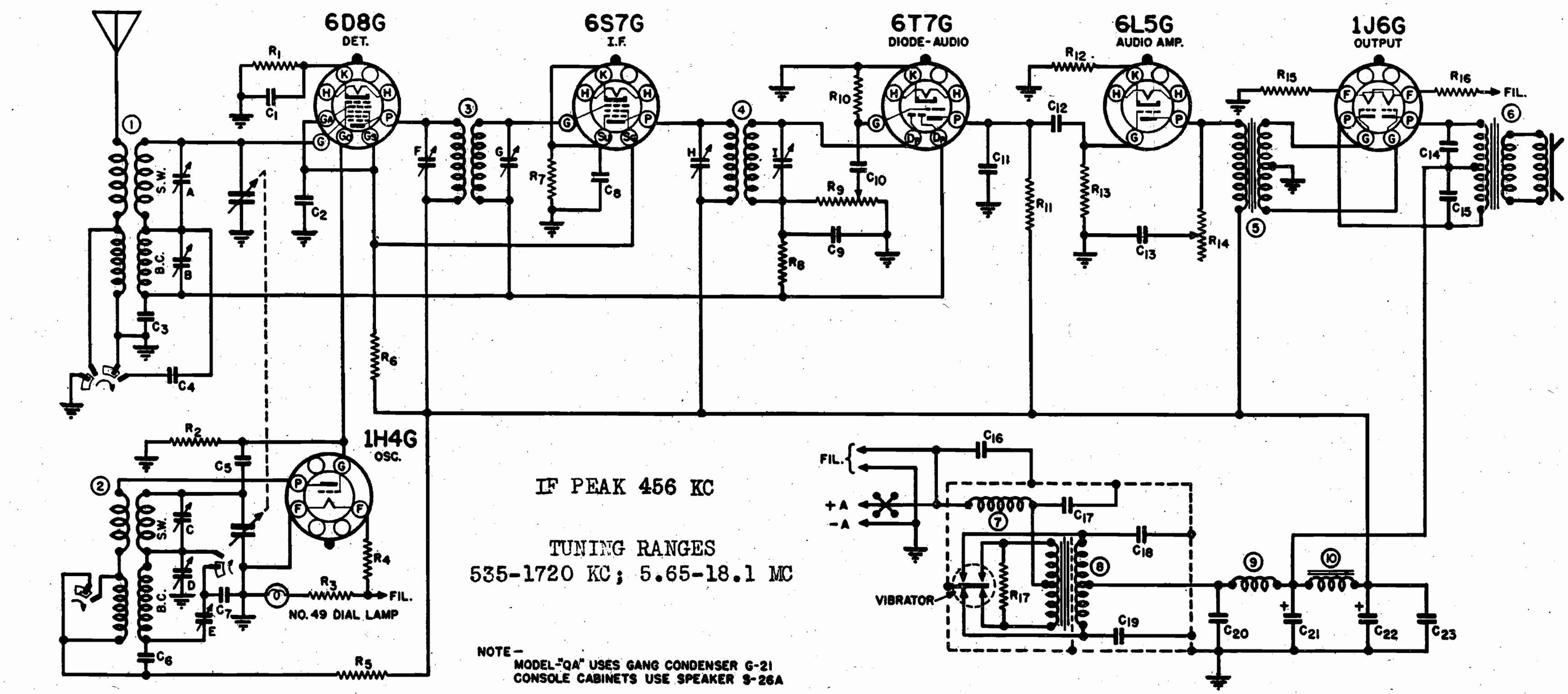
PL

CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII

BROADCAST BAND ALIGNMENT. Remove chassis, battery pack, and loop antenna from cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. Make a loop consisting of two turns of wire approximately one foot in diameter and connect across the generator terminals. Place this loop parallel to the loop antenna and about six inches away from it.

CHASSIS Q,QA
Schematic,Socket
Alignment,Trimmers

SONORA RADIO & TELEV., CORP.



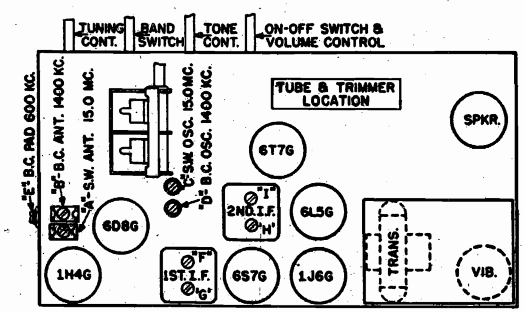
IF PEAK 456 KC

TUNING RANGES
535-1720 KC; 5.65-18.1 MC

NOTE—
MODEL-"QA" USES GANG CONDENSER G-21
CONSOLE CABINETS USE SPEAKER S-26A

IMPORTANT NOTE: The battery must never be charged while set is in operation. If a windcharger is used, it should always be disconnected from the battery when the receiver is being used. An inexpensive double throw switch can be used for simultaneously connecting the battery to the receiver and disconnecting the windcharger. This will increase the life of the tubes and give additional economy to the use of the receiver.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII



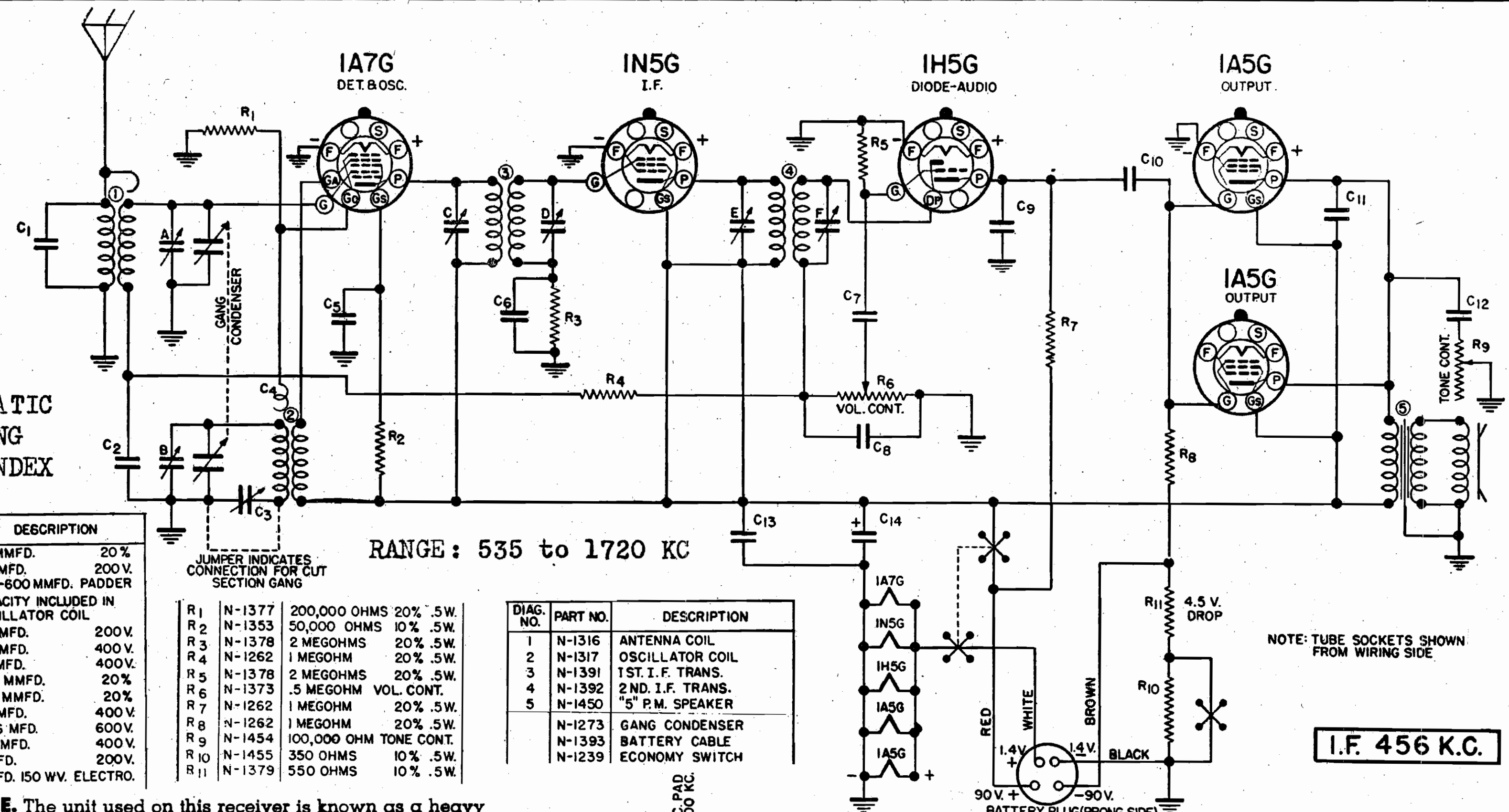
DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_{1}	C-13	.05 MFD. 200 V.	C_{19}	C-71	.01 MFD. (OIL) 1,000 V.	R_{9}	V-20	1 MEG. VOLUME CONT.	1	L-44	ANTENNA COIL
C_{2}	C-1	.1 MFD. 200 V.	C_{20}	C-5	.01 MFD. 600 V.	R_{10}	R-55	10 MEGOHM .25 W.	2	L-63	OSCILLATOR COIL
C_{3}	C-13	.05 MFD. 200 V.	C_{21}	C-242	10 MFD. 250 V.	R_{11}	R-41	.25 MEGOHM .25 W.	3	I-20	1ST. I.F. TRANS.
C_{4}	C-4	.01 MFD. 400 V.	C_{22}		15 MFD. 250 V.	R_{12}	R-16	2,000 OHM .25 W.	4	I-28	2ND. I.F. "
C_{5}	C-115	50 MMFD.	C_{23}	C-1	.1 MFD. 200 V.	R_{13}	R-42	.5 MEGOHM .25 W.	5	T-103	AUDIO "
C_{6}	C-4	.01 MFD. 400 V.				R_{14}	V-110	.1 MEG. TONE CONT.	6	S-26	SPKR. "
C_{7}	C-1090	4,000 MMFD. 3 %				R_{15}	R-510	8.3 OHM 5% .5 W.	7	H-206	"A" CHOKE
C_{8}	C-13	.05 MFD. 200 V.				R_{16}	R-510	8.3 OHM 5% .5 W.	8	T-26	POWER TRANS.
C_{9}	C-110	100 MMFD.				R_{17}	R-107	200 OHM .5 W.	9	H-207	R.F. CHOKE
C_{10}	C-27	.006 MFD. 800 V.							10	H-9	AUDIO CHOKE
C_{11}	C-111	250 MMFD.	R_{1}	R-12	500 OHM .25 W.				A		2-35 MMFD.
C_{12}	C-4	.01 MFD. 400 V.	R_{2}	R-33	50,000 OHM .25 W.				B		"
C_{13}	C-27	.006 MFD. 800 V.	R_{3}	R-511	67.0 OHM .5 W.				C		"
C_{14}	C-5	.01 MFD. 600 V.	R_{4}	R-511	67.0 OHM .5 W.				D		"
C_{15}	C-5	.01 MFD. 600 V.	R_{5}	R-25	10,000 OHM .25 W.		X-17	BAND SWITCH	E	P-2	200-750 MMFD.
C_{16}	C-22	.5 MFD. 50 V.	R_{6}	R-26	15,000 OHM .25 W.		G-20	GANG CONDENSER			
C_{17}	C-22	.5 MFD. 50 V.	R_{7}	R-13	750 OHM .25 W.		F-4	SYN. VIBRATOR			
C_{18}	C-71	.01 MFD. (OIL) 1,000 V.	R_{8}	R-44	2 MEGOHM .25 W.		W-207	BATTERY CABLE			

FOR AUTOMATIC TUNING
USED ON MODEL QA
SEE INDEX

6 TUBE-6 VOLT
SUPERHETERODYNE
TWO BAND
I.F. PEAK 456 KC.
MODEL-"Q"-"QA"
DRN. H.W.S. APP. 8/14/38

CHASSIS SL
Schematic, Socket
Alignment, Trimmers

SONORA RADIO & TELEV., CORP.



AUTOMATIC
TUNING
SEE INDEX

RANGE: 535 to 1720 KC

I.F. 456 K.C.

DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1342	50 MMFD. 20%
C_2	N-1345	.05 MFD. 200V.
C_3	N-1323	300-600 MMFD. PADDER
C_4		CAPACITY INCLUDED IN OSCILLATOR COIL
C_5	N-1345	.05 MFD. 200V.
C_6	N-1376	.02 MFD. 400V.
C_7	N-1344	.01 MFD. 400V.
C_8	N-1343	250 MMFD. 20%
C_9	N-1374	100 MMFD. 20%
C_{10}	N-1344	.01 MFD. 400V.
C_{11}	N-1347	.006 MFD. 600V.
C_{12}	N-1376	.02 MFD. 400V.
C_{13}	N-1351	.1 MFD. 200V.
C_{14}	N-1367	6 MFD. 150 WV. ELECTRO.

R_1	N-1377	200,000 OHMS 20% .5W.
R_2	N-1353	50,000 OHMS 10% .5W.
R_3	N-1378	2 MEGOHMS 20% .5W.
R_4	N-1262	1 MEGOHM 20% .5W.
R_5	N-1378	2 MEGOHMS 20% .5W.
R_6	N-1373	.5 MEGOHM VOL. CONT.
R_7	N-1262	1 MEGOHM 20% .5W.
R_8	N-1262	1 MEGOHM 20% .5W.
R_9	N-1454	100,000 OHM TONE CONT.
R_{10}	N-1455	350 OHMS 10% .5W.
R_{11}	N-1379	550 OHMS 10% .5W.

DIAG. NO.	PART NO.	DESCRIPTION
1	N-1316	ANTENNA COIL
2	N-1317	OSCILLATOR COIL
3	N-1391	1ST. I.F. TRANS.
4	N-1392	2ND. I.F. TRANS.
5	N-1450	"5" P.M. SPEAKER
	N-1273	GANG CONDENSER
	N-1393	BATTERY CABLE
	N-1239	ECONOMY SWITCH

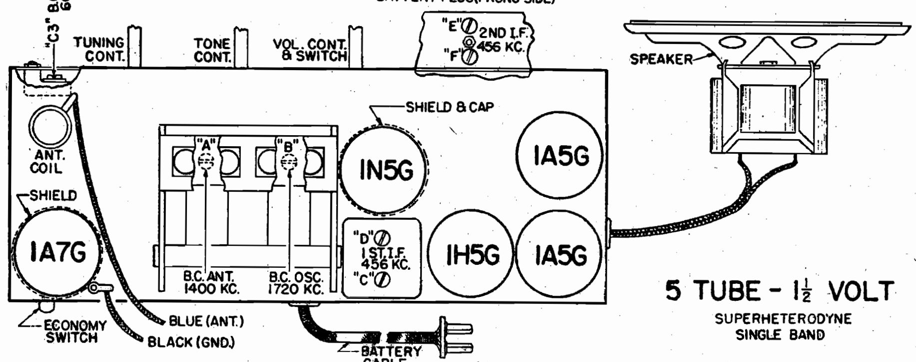
BATTERY LIFE. The unit used on this receiver is known as a heavy duty 1½ volt and 90 volt AB dry battery pack, approximately sixteen inches long, four and a half inches wide and six and a half inches high with a socket type connector. A battery of this type has a probable life of six to seven months with three hours daily use and a longer or shorter life as the daily usage is decreased or increased when the set is operated in the "power position"

REAR SWITCH. (Two Position Economy Switch.) The switch is provided to obtain the maximum of battery life without sacrificing the performance of the set.

The switch should be operated in the "Economy" (left hand) position until the performance of the radio receiver drops sufficiently to indicate the end of the batteries' normal life.

When the battery is new the set gives sufficient power output and sensitivity in the economy position and the life of the battery is materially increased.

When the battery becomes old the "Power" position (right hand) makes it possible to use the battery to the complete end of the batteries' useful life and still retain good reception.



5 TUBE - 1½ VOLT
SUPERHETERODYNE
SINGLE BAND

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

SET WITH CUT SECTION GANG		
C_3	N-1323	PADDER, ELIMINATED
	N-1338	GANG CONDENSER
2	N-1337	OSCILLATOR COIL

DRN. J.B. APP. 1-16-39

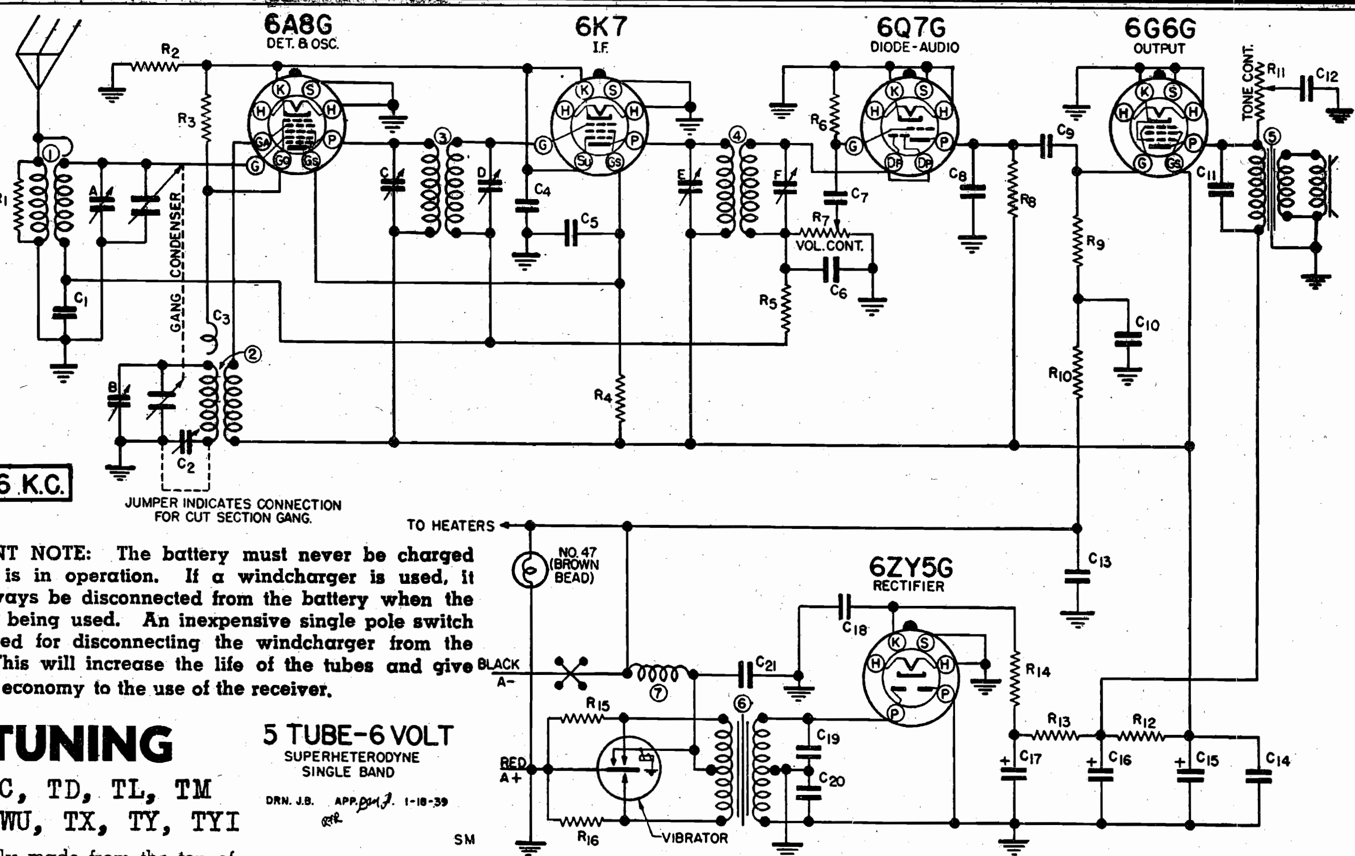
SL

CHASSIS SM
Schematic, Socket
Alignment, Trimmers, Tuner

SONORA RADIO & TELEV.. CORP.

CHASSIS QA, SL, SM, TC, TD
TL, TM, TR, TT, TW, TWU, TX
TY, TYI
Automatic Tuner Data

DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1345	.05 MFD. 200V.
C_2	N-1323	300-600 MMFD. PADDER
C_3		CAPACITY INCLUDED IN OSCILLATOR COIL
C_4	N-1479	.25 MFD. 200V.
C_5	N-1351	.1 MFD. 200V.
C_6	N-1374	100 MMFD. 20%
C_7	N-1347	.006 MFD. 600V.
C_8	N-1343	250 MMFD. 20%
C_9	N-1344	.01 MFD. 400V.
C_{10}	N-1345	.05 MFD. 200V.
C_{11}	N-1347	.006 MFD. 600V.
C_{12}	N-1376	.02 MFD. 400V.
C_{13}	N-1471	.5 MFD. 50V.
C_{14}	N-1351	.1 MFD. 200V.
C_{15}	N-1468	20 MFD. 150V. ELECTRO.
C_{16}	N-1468	20 MFD. 150V. ELECTRO.
C_{17}	N-1468	10 MFD. 250V. ELECTRO.
C_{18}	N-1478	.01 MFD. 600V.
C_{19}	N-1480	.01 MFD. (OIL) 1000V.
C_{20}	N-1480	.01 MFD. (OIL) 1000V.
C_{21}	N-1471	.5 MFD. 50V.
R_1	N-1259	15,000 OHMS 20% .5W.
R_2	N-1473	200 OHMS 10% .5W.
R_3	N-1260	50,000 OHMS 20% .5W.
R_4	N-1474	25,000 OHMS 20% .5W.
R_5	N-1378	2 MEGOHMS 20% .5W.
R_6	N-1263	10 MEGOHMS 20% .5W.
R_7	N-1320	1 MEGOHM VOL. CONT. SET WITH CUT SECTION GANG
C_2	N-1323	PADDER, ELIMINATED
	N-1338	GANG CONDENSER
2	N-1337	OSCILLATOR COIL



IMPORTANT NOTE: The battery must never be charged while set is in operation. If a windcharger is used, it should always be disconnected from the battery when the receiver is being used. An inexpensive single pole switch can be used for disconnecting the windcharger from the battery. This will increase the life of the tubes and give additional economy to the use of the receiver.

5 TUBE-6 VOLT
SUPERHETERODYNE
SINGLE BAND

DRN. J.B. APP. 1-18-39

SM

AUTOMATIC TUNING

For Chassis QA, SL, SM, TC, TD, TL, TM TR, TT, TW, TWU, TX, TY, TYI

ADJUSTMENT. All adjustments are simply made from the top of the cabinet without the use of tools since the push-button knobs serve this purpose.

To make adjustments, turn each knob to the left about 1 complete turn. The knob is knurled to provide a positive grip for this purpose.

With the knob turned free, tune to any desired station with the manual tuning control. Depress the push button knob as far as possible and turn to the right to tighten adjustment. Meanwhile, hold the manual tuning control in position to the station tuned.

Be sure the push button knob is held down in position while being tightened.

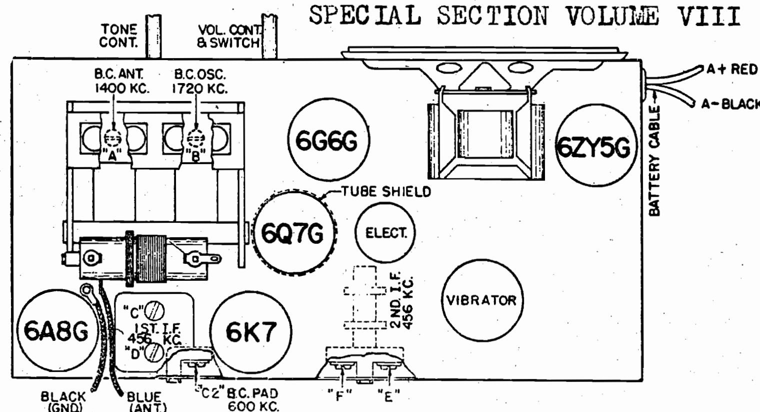
After the stations are adjusted it is advisable to check each button to assure sufficient tightening.

To assure accurate adjustment, the volume control should be set at a moderate level and the station tuned in slowly to a point of maximum volume and clarity.

It is not necessary to follow any particular sequence of stations since each button is adjustable to any station.

With each button definitely set and securely tightened to the selected stations, the tuner is ready for operation.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

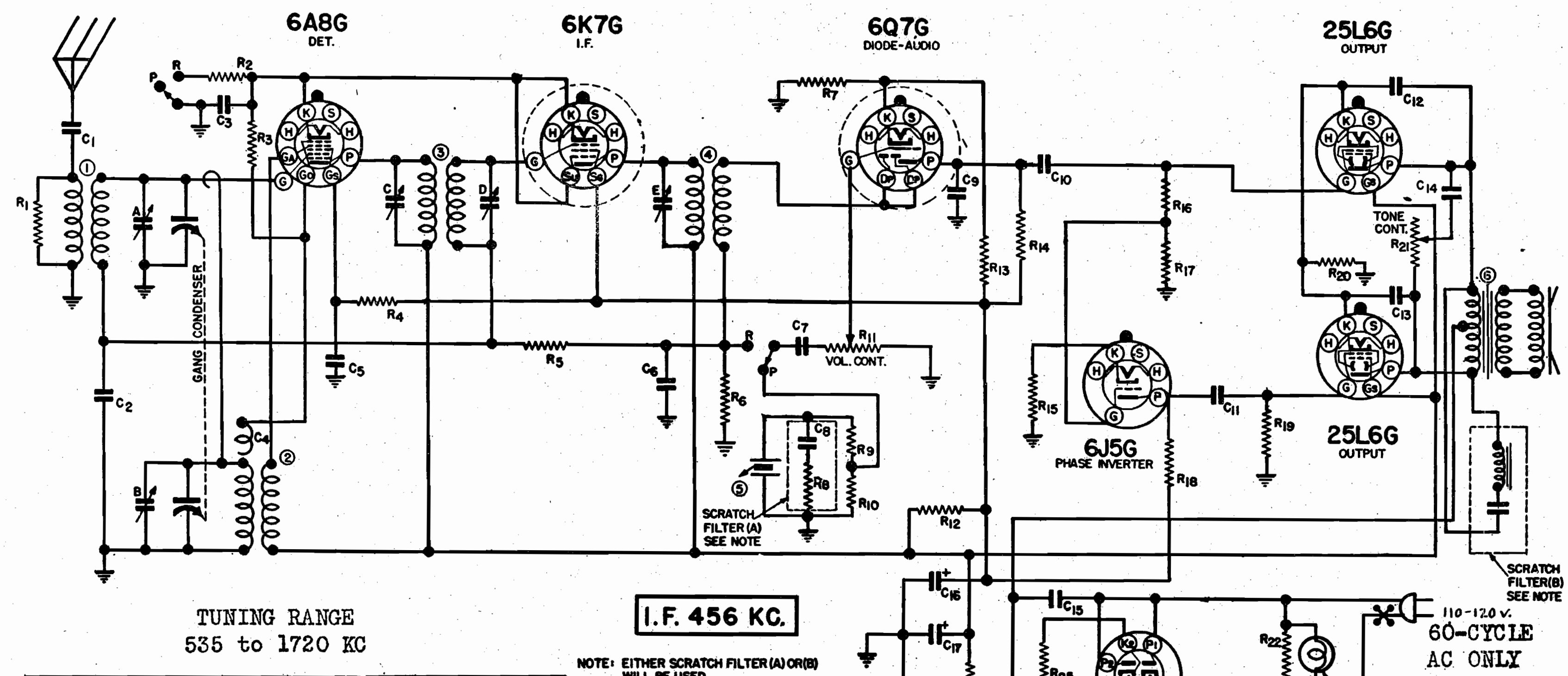


DIAG. NO.	PART NO.	DESCRIPTION
R_8	N-1261	250,000 OHMS 20% .5W.
R_9	N-1264	.5 MEGOHMS 20% .5W.
R_{10}	N-1260	50,000 OHMS 20% .5W.
R_{11}	N-1454	100,000 OHM TONE CONT.
R_{12}	N-1256	500 OHMS 20% .5W.
R_{13}	N-1482	250 OHMS 20% .5W.
R_{14}	N-1482	250 OHMS 20% .5W.
R_{15}	N-1498	50 OHMS 20% 1W.
R_{16}	N-1498	50 OHMS 20% 1W.
1	N-1461	ANTENNA COIL
2	N-1317	OSCILLATOR COIL
3	N-1318	1 ST. I.F. TRANS.
4	N-1319	2ND. I.F. TRANS.
5	N-1472	5" P.M. SPEAKER & TRANS.
6	N-1476	POWER TRANS.
7	N-1477	"A" CHOKE
	N-1273	GANG CONDENSER
	N-1485	BATTERY CABLE
	N-1431	VIBRATOR (NON-SYNCHRO.)

SONORA RADIO & TELEV., CORP.

CHASSIS TB
Schematic, Socket, Trimmers
Alignment

FOR PHONO.DATA
SEE INDEX



TUNING RANGE
535 to 1720 KC

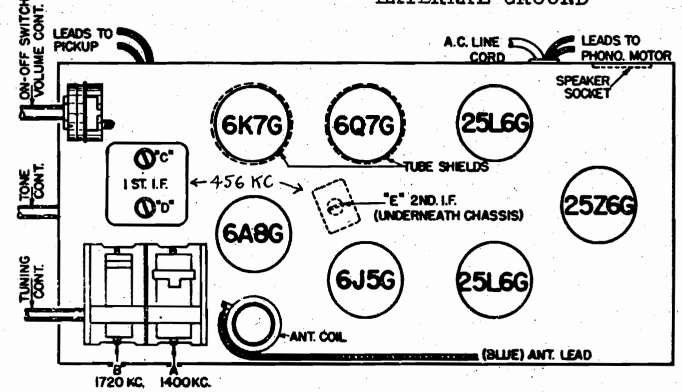
I.F. 456 KC.

NOTE: EITHER SCRATCH FILTER (A) OR (B) WILL BE USED.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

DO NOT USE
EXTERNAL GROUND

DIAG. NO.	PART NO.	DESCRIPTION
C 1	N-1344	.01 MFD. 400 V.
C 2	N-1345	.05 MFD. 200 V.
C 3	N-1351	.1 MFD. 200 V.
C 4		CAPACITY INCLUDED IN OSCILLATOR COIL.
C 5	N-1345	.05 MFD. 200 V.
C 6	N-1374	100 MMFD. 20 %
C 7	N-1344	.01 MFD. 400 V.
C 8	N-1803	750 MMFD. 20 %
C 9	N-1343	250 MMFD. 20 %
C 10	N-1344	.01 MFD. 400 V.
C 11	N-1344	.01 MFD. 400 V.
C 12	N-1344	.01 MFD. 400 V.
C 13	N-1344	.01 MFD. 400 V.
C 14	N-1623	.1 MFD. 400 V.
C 15	N-1346	.05 MFD. 400 V.
C 16	N-1755	10 MFD. 150 V. ELECTRO.
C 17	N-1755	40 MFD. 150 V. ELECTRO.
C 18	N-1755	30 MFD. 150 V. ELECTRO.
R 1	N-1259	15,000 OHM .5W. 20%
R 2	N-1775	300 OHM .5W. 20%
R 3	N-1260	50,000 OHM .5W. 20%
R 4	N-1627	20,000 OHM .5W. 20%
R 5	N-1262	1 MEGOHM .5W. 20%
R 6	N-1264	500,000 OHM .5W. 20%
R 7	N-1775	300 OHM .5W. 20%
R 8	N-1482	250 OHM .5W. 20%
R 9	N-1264	500,000 OHM .5W. 20%
R 10	N-1377	200,000 OHM .5W. 20%
R 11	N-1734	.5 MEGOHM VOL. CONTROL
R 12	N-1776	1500 OHM .5W. 20%
R 13	N-1460	30,000 OHM .5W. 20%
R 14	N-1779	150,000 OHM .5W. 20%
R 15	N-1776	1500 OHM .5W. 20%
R 16	N-1780	350,000 OHM .5W. 20%
R 17	N-1353	50,000 OHM .5W. 10%
R 18	N-1778	100,000 OHM .5W. 20%
R 19	N-1696	400,000 OHM .5W. 20%
R 20	N-1774	80 OHM 1W. 10%
R 21	N-1735	25,000 OHM TONE CONTROL
R 22	N-1756	22 OHM 2W. ARMORED WIRE RES.
R 23	N-1756	45 OHM 4.5W. ARMORED WIRE RES.
R 24	N-1458	25 OHM .5W. 20%
R 25	N-1458	25 OHM .5W. 20%
R 26	N-1694	1000 OHM .5W. 20%
1	N-1451	ANTENNA COIL
2	N-1452	OSCILLATOR COIL
3	N-1754	1 ST. I.F. TRANSFORMER
4	N-1596	2 ND. I.F. TRANSFORMER
5	N-1782	CRYSTAL PICKUP
6	N-1740	6" P. M. SPEAKER (TABLE)
6	N-1741	8" P. M. SPEAKER (CONSOLE)
E	N-1597	TRIMMER COND. (2ND. I.F.)
	N-1733	GANG CONDENSER
	N-1758	RADIO-PHONO CHANGEOVER SWITCH.
	N-1599	LINE CORD



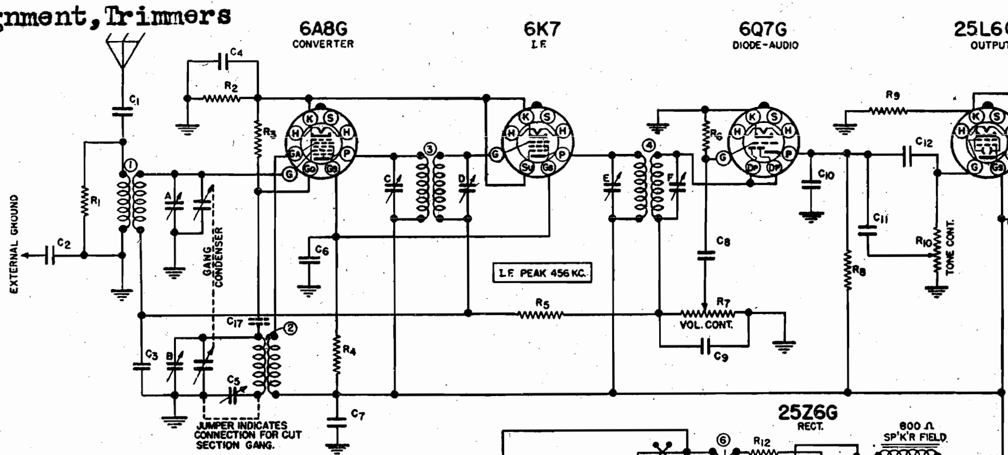
SUPERHETERODYNE
PHONO. COMBINATION

DRN. J.B. APP. 4-21-39

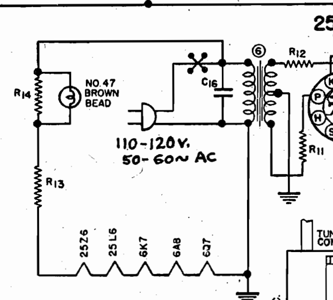
TB

CHASSIS TC
CHASSIS TS
Schematics, Socket
Alignment, Trimmers

SONORA RADIO & TELEV.. CORP.



AUTOMATIC TUNING SEE INDEX



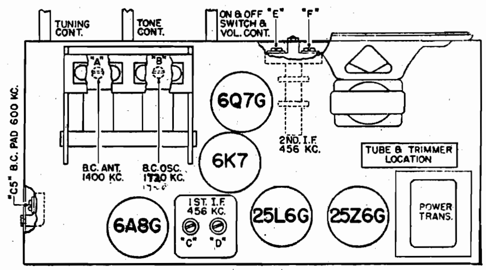
IF PEAK 456 KC

MODEL TC

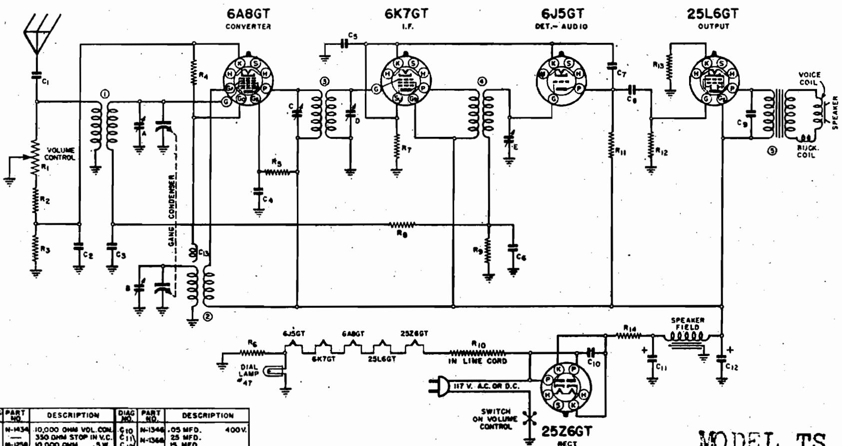
DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1344	.01 MFD. 400V.	R_{11}	N-1349	100 OHMS .5 W.
C_2	N-1344	.01 MFD. 400V.	R_{12}	N-1349	100 OHMS .5 W.
C_3	N-1345	.05 MFD. 200V.	R_{13}	N-1322	150 OHMS ARMORED WIRE RES.
C_4	N-1351	.1 MFD. 200V.	R_{14}	N-1322	30 OHMS ARMORED WIRE RES.
C_5	N-1323	300-600 MMFD. PADDER			
C_6	N-1345	.05 MFD. 200V.			
C_7	N-1345	.05 MFD. 200V.			
C_8	N-1347	.006 MFD. 600V.	1	N-1316	ANTENNA COIL
C_9	N-1343	250 MMFD.	2	N-1317	OSCILLATOR COIL
C_{10}	N-1343	250 MMFD.	3	N-1318	1.ST. I.F. TRANSFORMER
C_{11}	N-1347	.006 MFD. 600V.	4	N-1319	2ND. I.F. TRANSFORMER
C_{12}	N-1344	.01 MFD. 400V.	5	N-1314	SPEAKER & TRANSFORMER
C_{13}	N-1344	.01 MFD. 400V.	6	N-1315	POWER TRANSFORMER
C_{14}	N-1312	15 MFD. 150V.			
C_{15}	N-1312	20 MFD. 200V.		N-1273	GANG CONDENSER
C_{16}	N-1346	.05 MFD. 400V.			
C_{17}		CAPACITY INCLUDED IN OSCILLATOR COIL.			
R_1	N-1352	15,000 OHMS .5 W.			
R_2	N-1360	150 OHMS .5 W.			
R_3	N-1353	50,000 OHMS .5 W.			
R_4	N-1352	15,000 OHMS .5 W.			
R_5	N-1355	1 MEGOHM .5 W.	SET WITH CUT SECTION GANG		
R_6	N-1356	15 MEGOHMS .5 W.		N-1337	OSCILLATOR COIL
R_7	N-1320	1 MEGOHM VOLUME CONT.		N 1338	GANG CONDENSER
R_8	N-1354	300,000 OHMS .5W.	C_5	N 1323	PADDER, ELIMINATED
R_9	N-1350	150 OHMS .5 W. ±10%			
R_{10}	N-1321	.5 MEGOHM TONE CONT.			

RANGE: 535-1720 KC

5 TUBE A.C.
SUPERHETERODYNE
SINGLE BAND
CHASSIS-TC
DRN. J.B. APP'D 11-5-38



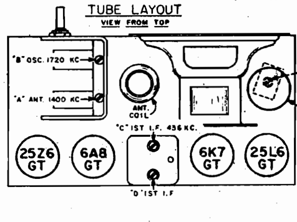
CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII



MODEL TS

DIAG NO.	PART NO.	DESCRIPTION	DIAG NO.	PART NO.	DESCRIPTION
R_1	N-1434	10,000 OHM VOL. CON.	C_{10}	N-1346	.05 MFD. 400V.
R_2	—	350 OHM STOP IN V.C.	C_{11}	N-1366	25 MFD.
R_3	N-1258	10,000 OHM .5 W.	C_{12}	N-1366	15 MFD.
R_4	N-1280	50,000 OHM "	C_{13}		CAPACITY INCLUDED IN OSCILLATOR COIL
R_5	N-1460	30,000 OHM "			
R_6	N-1415	30 OHM 1.0 W.	"E"	N-1463	2ND I.F. TRIMMER
R_7	N-1459	600 OHM .5 W			
R_8	N-1262	1.0 MEGOHM "			
R_9	N-1378	2.0 MEGOHM "			
R_{10}	N-1436	150 OHM IN LINE CORD	①	N-1451	ANTENNA COIL
R_{11}	N-1377	200,000 OHM .5 W	②	N-1452	OSCILLATOR COIL
R_{12}	N-1264	500,000 OHM "	③	N-1433	1ST I.F. TRANS.
R_{13}	N-1457	125 OHM "	④	N-1432	2ND I.F. TRANS.
R_{14}	N-1458	25 OHM "	⑤	N-1370	5" SPK. & TRANS.
C_1	N-1344	.01 MFD. 400 V.		N-1431	GANG CONDENSER
C_2	N-1345	.05 MFD. 200 V.			
C_3	N-1345	.05 MFD. "			
C_4	N-1346	.05 MFD. "			
C_5	N-1351	.10 MFD. "			
C_6	N-1344	.01 MFD. 400 V			
C_7	N-1447	.0005 MFD "			
C_8	N-1344	.01 MFD. "			
C_9	N-1344	.01 MFD "			

TUBE LAYOUT
VIEW FROM TOP



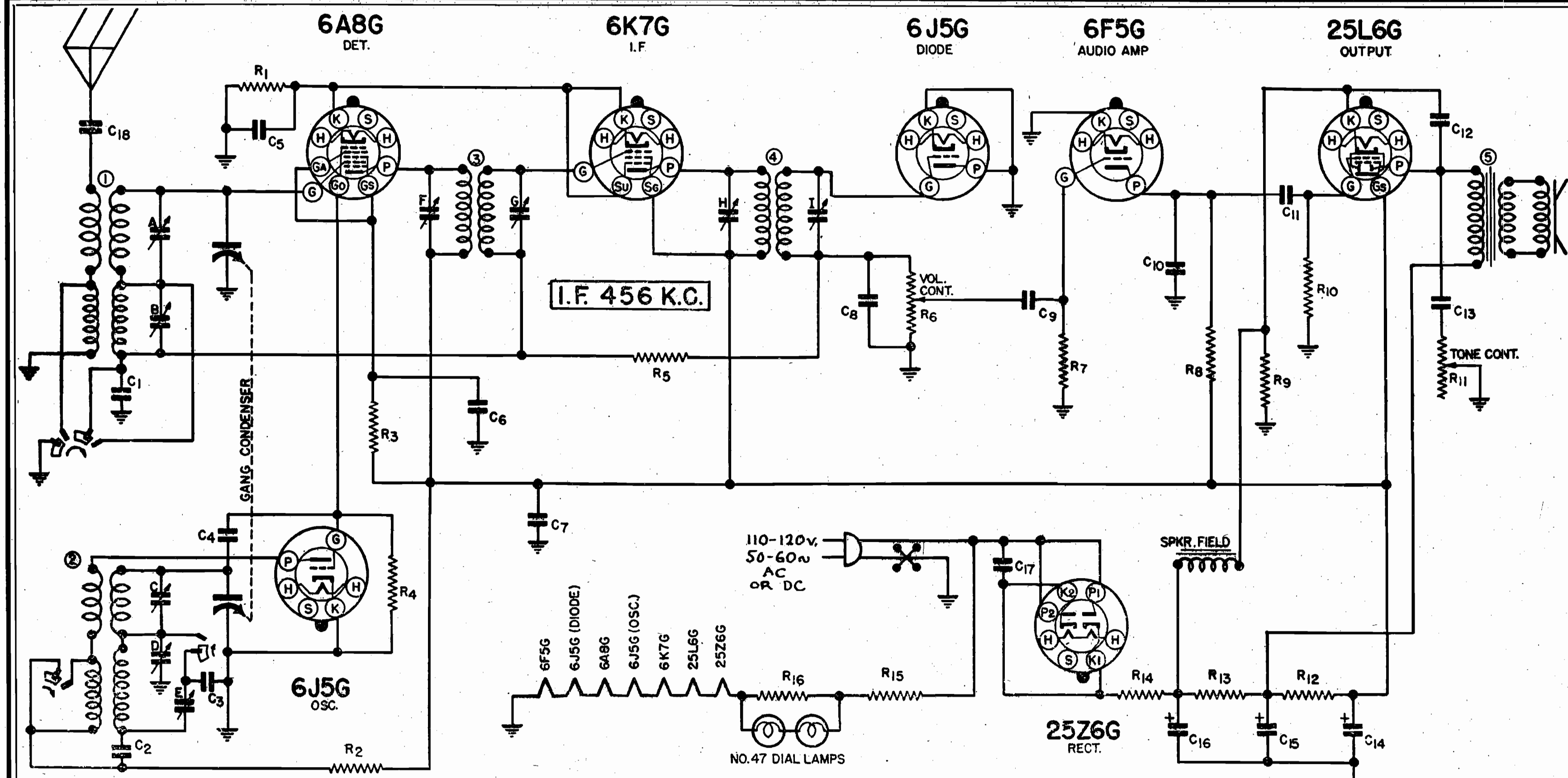
I.F. 456 KC.

5 TUBE A.C.-D.C.
SUPERHETERODYNE
SINGLE BAND

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII
DO NOT USE EXTERNAL GROUND

SONORA RADIO & TELEV., CORP.

CHASSIS TD
Schematic, Socket
Alignment, Trimmers



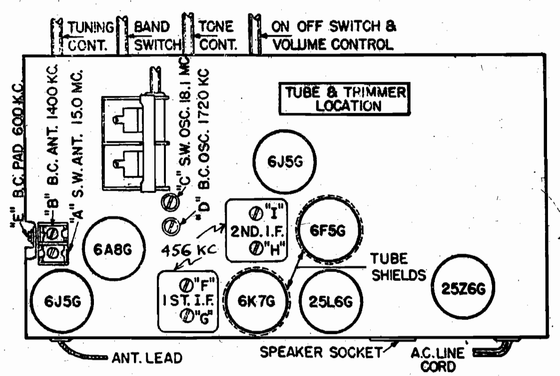
DO NOT USE EXTERNAL GROUND CONNECTION

TUNING RANGES: 535-1720 KC; 5.65-18.1 MC

DIAG. NO.	PART NO.	DESCRIPTION	
C1	N-1345	.05 MFD.	200 V.
C2	N-1344	.01 MFD.	400 V.
C3	N-1690	4000 MMFD.	5 %
C4	N-1342	50 MMFD.	20%
C5	N-1479	.25 MFD.	200V.
C6	N-1345	.05 MFD.	200V.
C7	N-1351	.1 MFD.	200V.
C8	N-1343	250 MMFD.	20%
C9	N-1344	.01 MFD.	400V.
C10	N-1343	250 MMFD.	20%
C11	N-1344	.01 MFD.	400V.
C12	N-1376	.02 MFD.	400V.
C13	N-1346	.05 MFD.	400V.
C14	C-237	30 MFD. 150 V.	ELECTRO.
C15	C-237	10 MFD. 150 V.	ELECTRO.
C16	C-237	30 MFD. 150 V.	ELECTRO.
C17	N-1346	.05 MFD.	400V.
C18	N-1344	.01 MFD.	400V.

DIAG. NO.	PART NO.	DESCRIPTION		
R1	N-1473	200 OHM	.5W.	10%
R2	N-1695	5,000 OHM	.5W.	20%
R3	N-1259	15,000 OHM	.5W.	20%
R4	N-1260	50,000 OHM	.5W.	20%
R5	N-1262	1 MEGOHM	.5W.	20%
R6	V-22	.5 MEGOHM	VOL. CONTROL	
R7	N-1419	6 MEGOHM	.5W.	20%
R8	N-1261	250,000 OHM	.5W.	20%
R9	N-1692	100 OHM	1W.	10%
R10	N-1696	400,000 OHM	.5W.	20%
R11	V-109	25,000 OHM	TONE CONT.	
R12	N-1694	1,000 OHM	.5W.	20%
R13	N-1693	325 OHM	1W.	10%
R14	N-1458	25 OHM	.5W.	20%
R15	N-1691	95 OHM, 9W, 10%	ARMORED WIRE RES.	
R16	N-1691	53 OHM, 4.5W, 10%	ARMORED WIRE RES.	

DIAG. NO.	PART NO.	DESCRIPTION
1	L-72	ANTENNA COIL
2	L-63	OSCILLATOR COIL
3	N-1688	1 ST. I.F. TRANSFORMER
4	N-1689	2 ND. I.F. TRANSFORMER
5	N-1687	6" DYN. SP'K'R (TABLE)
5	N-1688	8" DYN. SP'K'R (CONSOLE)
E	N-1254	PADDING CONDENSER
	X-17	BAND SWITCH
	G-21	GANG CONDENSER
	N-1599	LINE CORD



CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

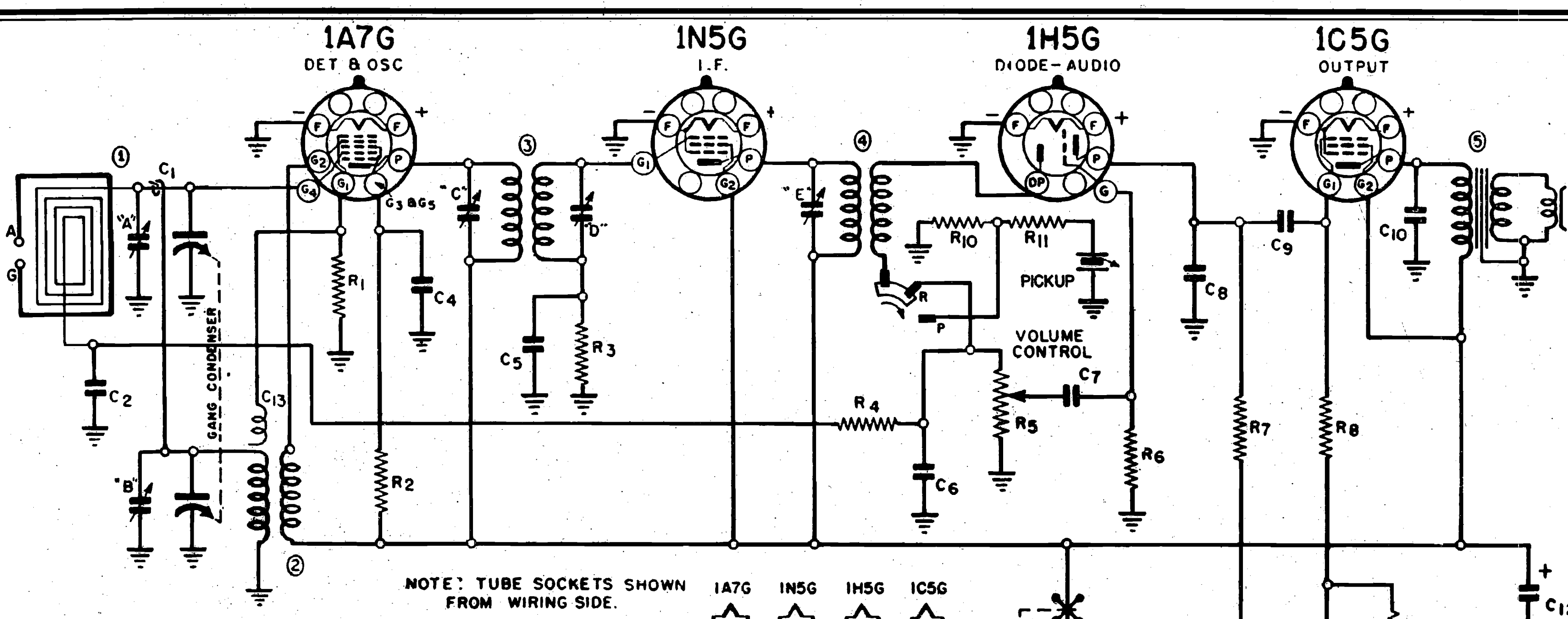
7 TUBE A.C.-D.C.
SUPERHETERODYNE
TWO BAND

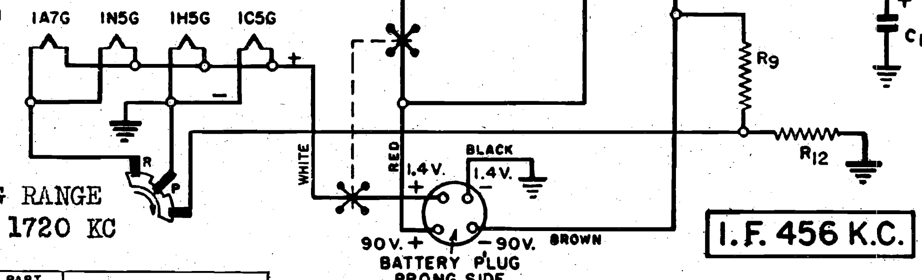
DRN. BY- J.B. APP. BY- 4-25-39
TD

FOR AUTOMATIC TUNING SEE INDEX

MODEL TF-39, Ch. TF
Schematic, Socket
Trimmers, Alignment

SONORA RADIO & TELEV., CORP.





TUNING RANGE
535 to 1720 KC

I.F. 456 K.C.

BATTERY The unit used on this receiver is a 1½ volt and 90 volt AB dry battery pack. The following batteries are recommended:

Supplier	Part No.
General Dry Batteries	60A-2L
Burgess	5DA60
Burgess	6TA60

INDIVIDUAL "A" AND "B" BATTERIES.

A hook-up harness consisting of three plugs and a socket is required. This hook-up harness is not furnished with the receiver and should be purchased when obtaining separate A and B batteries.

SUPPLIER	1½ Volt A Battery (2½" x 2½" x 4")	45 Volt B Battery (2½" x 4⅛" x 5")
Eveready	No. 742	No. 762
Burgess	No. 4FAPI	No. B 30 PI
Ray-O-Vac	No. P94A	No. P 5303
General Dry Battery	No. 4H1	No. V-30-B

Use one "A" battery and two "B" batteries with the hook-up harness. Clamp down the batteries with support strap.

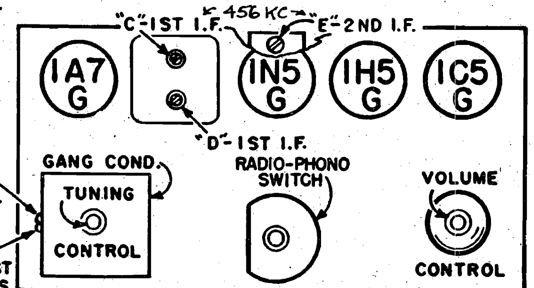
DIAG. NO.	PART NO.	DESCRIPTION
1	N-1804	LOOP ANTENNA
2	N-1452	OSCILLATOR COIL
3	N-1391	1ST I.F. TRANS.
4	N-1548	2ND I.F. TRANS.
5	N-1507	5" P.M. SPKR. & TRANS.
	N-1737	GANG CONDENSER
	N-1552	BATTERY CABLE
"E"	N-1453	TRIMMER COND.-2ND I.F.
	N-1883	RADIO-PHONO SWITCH

DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1377	.2 MEGOHM 20% .5W.
R_2	N-1353	50,000 OHM 10% "
R_3	N-1378	2 MEGOHM 20% "
R_4	N-1262	1 MEGOHM " "
R_5	N-1738	.5 MEG. VOLUME CONT.
R_6	N-1378	2 MEGOHM 20% .5W
R_7	N-1262	1 MEGOHM " "
R_8	N- "	" " "
R_9	N-1661	650 OHM 10% "
R_{10}	N-1929	65,000 OHM 20% "
R_{11}	N-1779	150,000 OHM 20% "
R_{12}	N-1844	300 OHM 10% "
C_1	——	GIMMIC
C_2	N-1345	.05 MFD 200 V
C_4	N-1345	.05 MFD. 200 V.
C_5	N-1376	.02 MFD. 400 V.
C_6	N-1343	250 MMFD. 20%
C_7	N-1344	.01 MFD. 400 V.
C_8	N-1374	100 MMFD. 20%
C_9	N-1344	.01 MFD 400 V.
C_{10}	N-1347	.006 MFD. 600 V.
C_{12}	N-1367	6 MFD. ELECTROLYTIC
C_{13}	-	CAPACITY INCLUDED IN OSCILLATOR COIL.

CONNECT TO GENERATOR 2-TURN LOOP APPROX. 1 FOOT IN DIAM. PLACE THIS PARALLEL TO RECEIVER LOOP, ABOUT 6 INCHES AWAY FROM IT.

CONVENTIONAL ALIGNMENT: SEE SPECIAL SECTION OF VOLUME VIII.

TUBE LAYOUT & TRIMMER LOCATION



"A" ANT. AT TOP 1400 KC

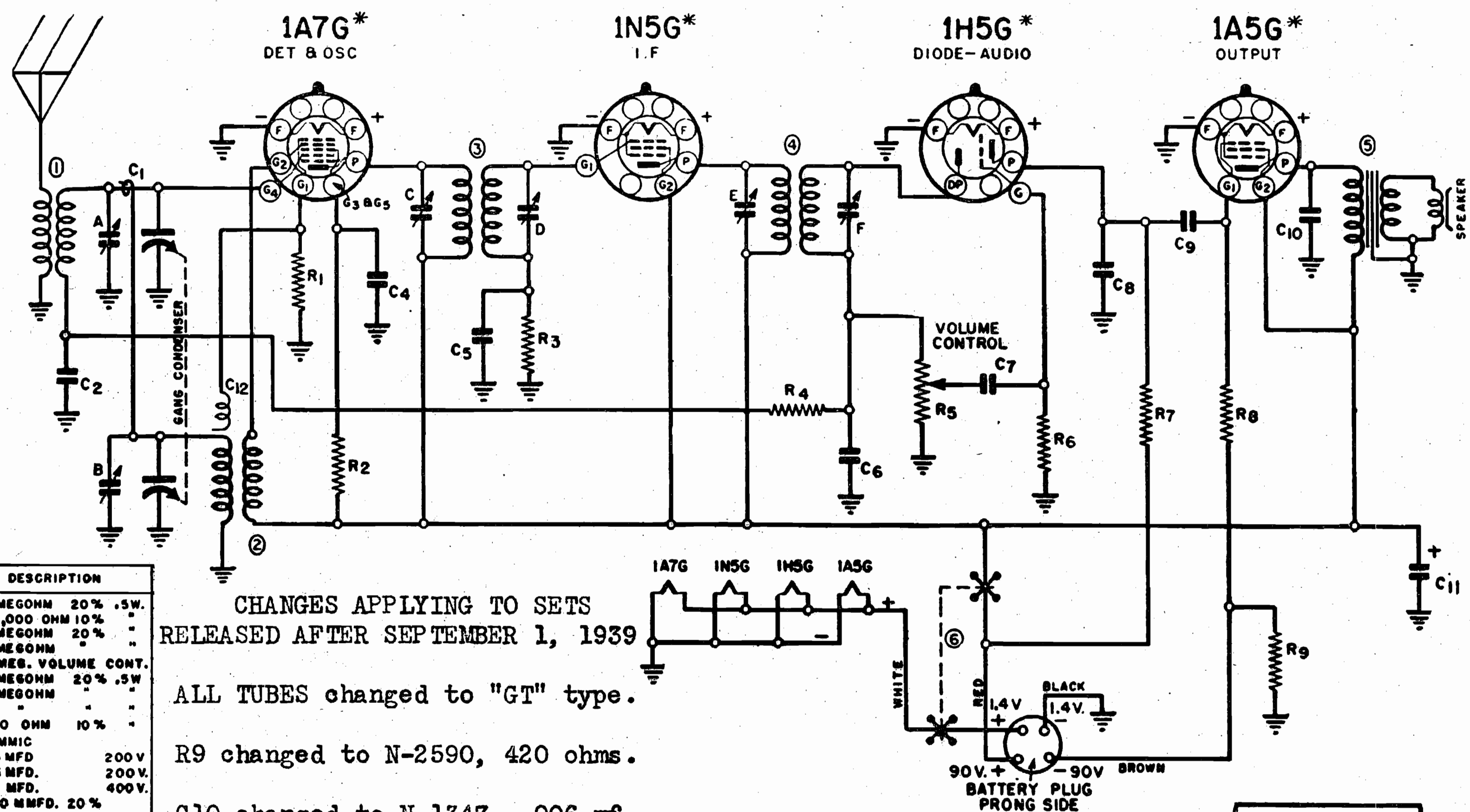
"B" OSC NEAREST CHASSIS 1720 KC

DRWN. J.B. APP. 5-16-39 TF
20%

FOR PHONO. DATA SEE INDEX

MODEL TH-46
Chassis TH, Early, Late
Schematic, Socket
Alignment, Trimmers

SONORA RADIO & TELEV.. CORP.



I.F. 456 K.C.

NOTE: TUBE SOCKETS SHOWN FROM WIRING SIDE.

4 TUBE - 1½ VOLT
SUPERHETERODYNE
SINGLE BAND

DRWN. J.B. APP. 5-16-39

TH

DIAG. NO.	PART NO.	DESCRIPTION
R1	N-1377	.2 MEGOHM 20% .5W.
R2	N-1353	50,000 OHM 10% "
R3	N-1378	2 MEGOHM 20% "
R4	N-1262	1 MEGOHM " "
R5	N-2056	.5 MEG. VOLUME CONT.
R6	N-1378	2 MEGOHM 20% .5W
R7	N-1262	1 MEGOHM " "
R8	N- "	" " "
* R9	N-2064	600 OHM 10% "
C1	—	GIMMIC
C2	N-1345	.05 MFD 200V
C4	N-1345	.05 MFD. 200V.
C5	N-1376	.02 MFD. 400V.
C6	N-1343	250 MMFD. 20%
C7	N-1344	.01 MFD. 400V.
C8	N-1374	100 MMFD. 20%
C9	N-1344	.01 MFD 400V.
* C10	N-2063	.003 MFD. 600V.
C11	N-1367	6 MFD. ELECTROLYTIC
C12	—	CAPACITY INCLUDED IN OSCILLATOR COIL.
1	N-1451	ANTENNA COIL
2	N-1452	OSCILLATOR COIL
3	N-1391	1ST I.F. TRANS.
4	N-1509	2ND I.F. TRANS.
* 5	N-1507	5" P.M. SPKR & TRANS.
6	N-2061	BATTERY SWITCH
	N-1856	GANG CONDENSER
	N-1393	BATTERY CABLE

* SEE "CHANGES"

CHANGES APPLYING TO SETS RELEASED AFTER SEPTEMBER 1, 1939

ALL TUBES changed to "GT" type.

R9 changed to N-2590, 420 ohms.

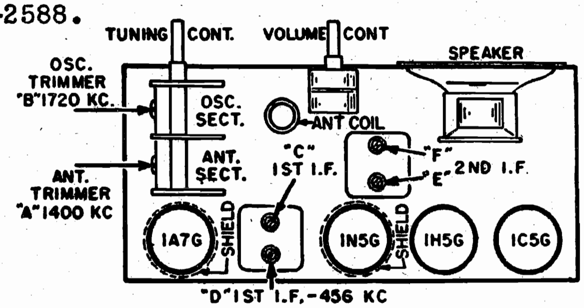
C10 changed to N-1347, .006 mf.

5 changed to Part No. N-2588.

TUNING RANGE
535 to 1720 KC

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

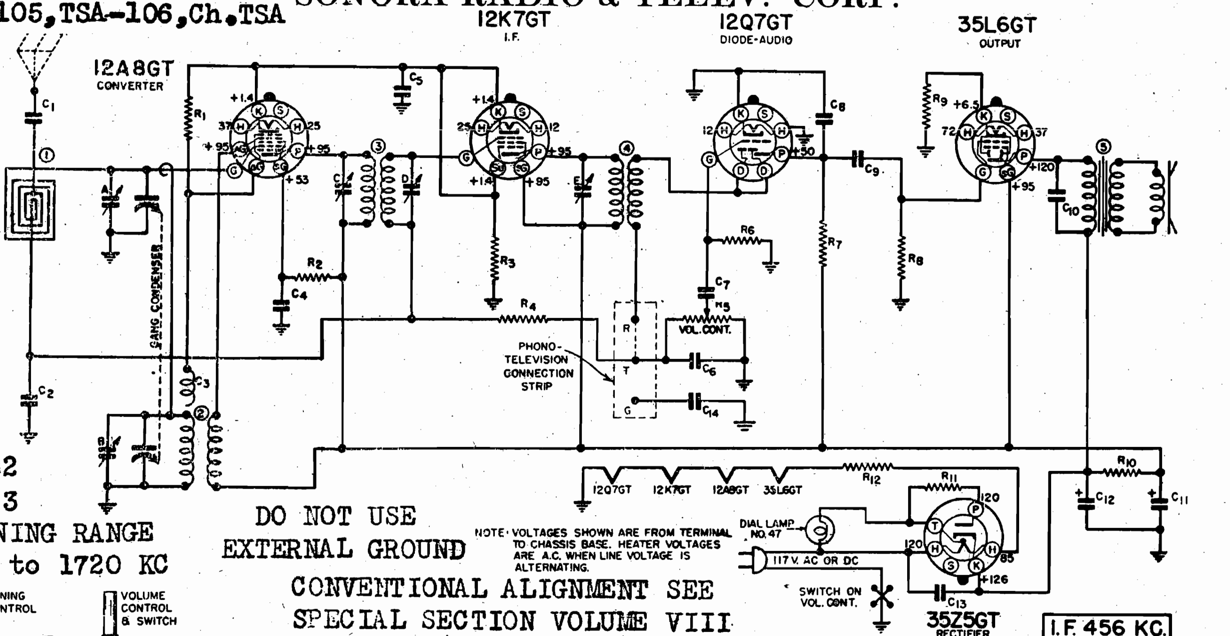
TUBE LAYOUT & TRIMMER LOCATION



MODELS TJ-62, TJ-63
Chassis TJ
MODELS TN-45, Ch. TN,
TSA-105, TSA-106, Ch. TSA

Schematics, Socket, Trimmers
Alignment

SONORA RADIO & TELEV. CORP.

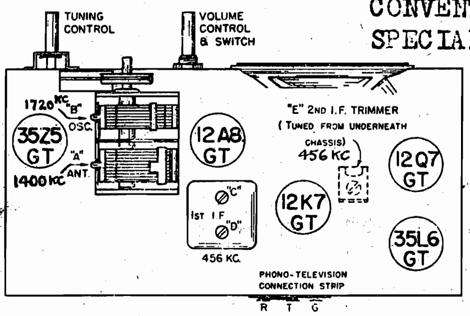


TJ-62
TJ-63
TUNING RANGE
535 to 1720 KC

DO NOT USE
EXTERNAL GROUND

CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII

I.F. 456 KC.

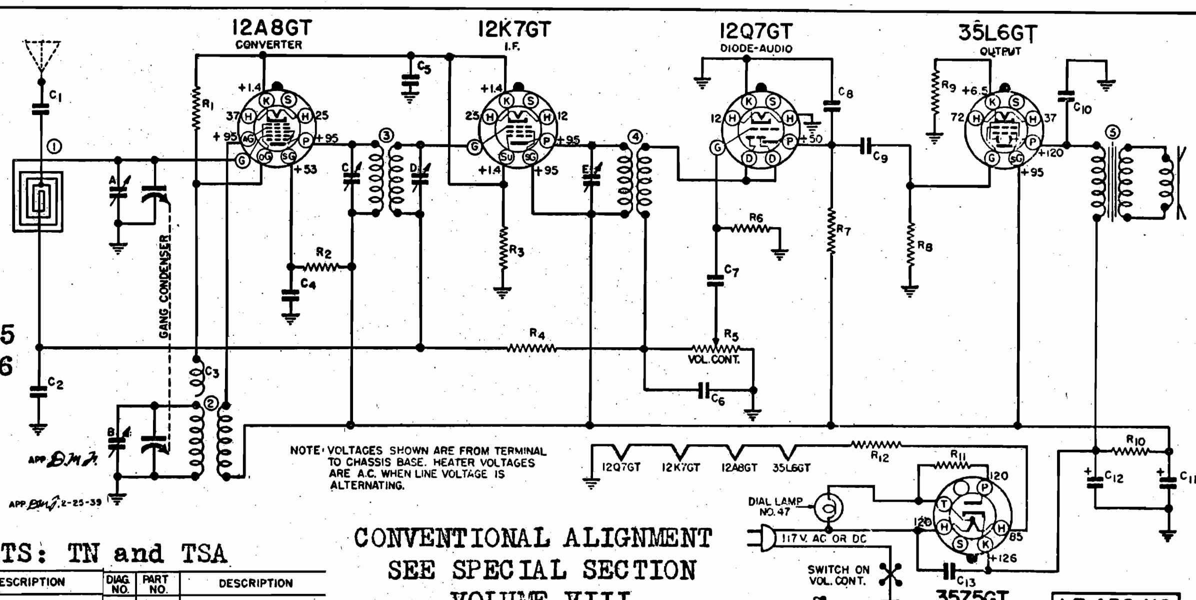


DIAG NO.	PART NO.	DESCRIPTION			DIAG NO.	PART NO.	DESCRIPTION		DIAG NO.	PART NO.	DESCRIPTION	
R1	N-1260	50,000 OHM	.5W.	20%	C1	N-1344	.01 MFD.	400V.	C7	N-1344	.01 MFD.	400 V.
R2	N-1527	20,000 OHM	.5W	20%	C2	N-1345	.05 MFD.	200V.	C8	N-1447	.0005 MFD.	400V.
R3	N-1742	25 OHM	.5W.	20%	C3		CAPACITY INCLUDED IN OSCILLATOR COIL		C9	N-1344	.01 MFD.	400V.
R4	N-1262	1 MEGOHM	.5W.	20%	C4	N-1345	.05 MFD.	200V.	C10	N-1376	.02 MFD.	400V.
R5	N-2257	0.5 MEGOHM	VOL. CONT.		C5	N-1351	.1 MFD.	200V.	C11, C12	N-2015	35 MFD. 150V., 20 MFD. 150V. ELECTRO.	
R6	N-1263	10 MEGOHM	.5W.	20%	C6	N-1374	100 MMFD.		C13	N-1346	.05 MFD.	400V.
R7	N-1377	200,000 OHM	.5W.	20%	1	N-2256	ANTENNA COIL LOOP		C14	N-1344	.01 MFD.	400V.
R8	N-1264	500,000 OHM	.5W.	20%	2	N-1452	OSCILLATOR COIL			N-2255	GANG CONDENSER	
R9	N-1787	250 OHM	.5W.	10%	3	N-1598	1ST. I.F. TRANSFORMER					
R10	N-1617	2500 OHM	.5W.	20%	4	N-1596	2ND. I.F. TRANSFORMER					
R11	N-1614	50 OHM	.5W.	20%	5	N-2254	5" PM SPEAKER & TRANS.					
R12	N-1618	60 OHM	2W.	10%	E	N-1597	2ND. I.F. TRIMMING COND.					

5 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND

CHKD W.F. APPR. BMJ TJ

FOR PHONO-TELEVISION
CONNECTIONS SEE TR



Models
TN-45
TSA-105
TSA-106

TN: DRN. J.B. APP. BMJ
TSA: DRN. J.B. APP. BMJ 2-25-39

PARTS: TN and TSA

DIAG NO.	PART NO.	DESCRIPTION			DIAG NO.	PART NO.	DESCRIPTION	
R1	N-1260	50,000 OHM	.5W.	20%	C7	N-1344	.01 MFD.	400 V.
R4	N-1262	1 MEGOHM	5W.	20%	C8	N-1447	.0005 MFD.	400 V.
R6	N-1263	10 MEGOHM	.5W.	20%	C9	N-1344	.01 MFD.	400 V.
R7	N-1377	200,000 OHM	.5W.	20%	C10	N-1376	.02 MFD.	400 V.
R8	N-1264	500,000 OHM	.5W.	20%	C11, C12	N-1366	25 MFD. 150V., 15 MFD. 150V. ELECTRO.	
R9	N-1616	250 OHM	.5W.	10%	C13	N-1346	.05 MFD.	400V.
R10	N-1617	2500 OHM	.5W.	20%	1	N-1594	ANTENNA COIL LOOP	
R11	N-1614	50 OHM	.5W.	20%	2	N-1452	OSCILLATOR COIL	
R12	N-1618	80 OHM	2W.	10%	3	N-1598	1ST. I.F. TRANSFORMER	
C1	N-1344	.01 MFD.		400V.	4	N-1596	2ND. I.F. TRANSFORMER	
C2	N-1345	.05 MFD.		200V.	E	N-1597	2ND. I.F. TRIMMING COND.	
C3		CAPACITY INCLUDED IN OSCILLATOR COIL						
C4	N-1345	.05 MFD.		200V.				
C5	N-1351	.1 MFD.		200V.				
C6	N-1374	100 MMFD.				N-1431	GANG CONDENSER	

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

TSA ONLY

R2	N-1460	30,000 OHM	.5W.	20%
R3	N-1615	100 OHM	.5W.	10%
R5	N-1595	0.5 MEGOHM	VOL. CONT.	
5	N-1585	4" P.M. SPEAKER & TRANS.		

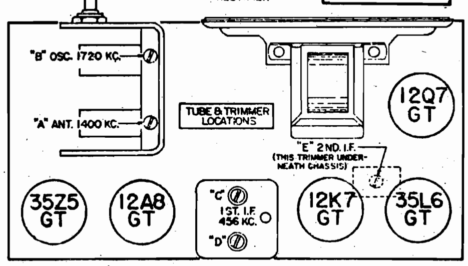
TN ONLY

R2	N-1627	20,000 OHM	5W	20%
R3	N-1742	25 OHM	5W.	10%
R5	N-2070	0.5 MEGOHM	VOL. CONT.	
5	N-2074	4" PM SPEAKER & TRANS.		

DO NOT
USE
EXTERNAL
GROUND

TUNING RANGE:
535 to 1720 KC

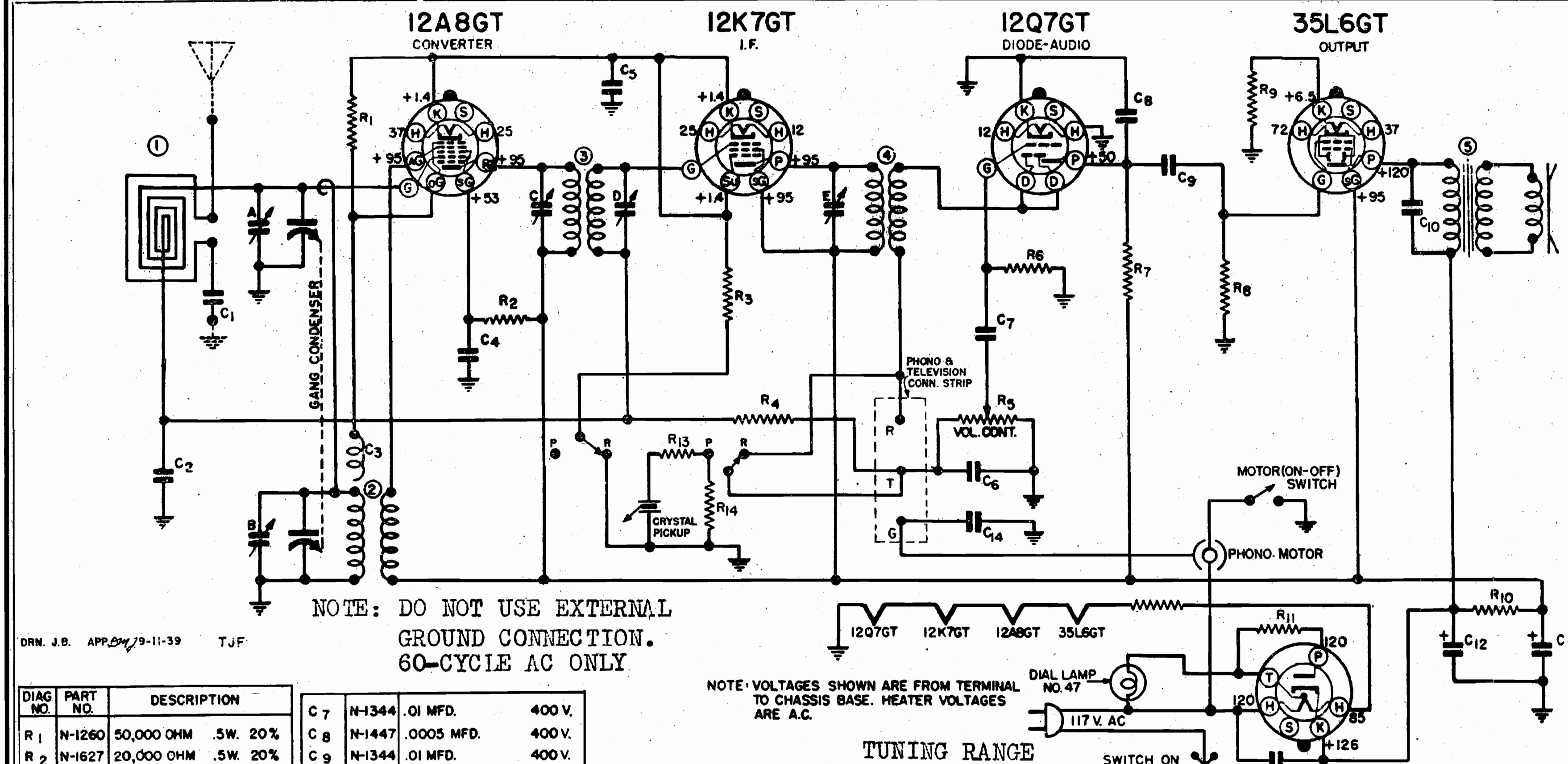
I.F. 456 KC.



SONORA RADIO & TELEV. CORP.

CHASSIS TJF
Schematic, Socket
Alignment, Trimmers

FOR PHONO. DATA SEE INDEX



NOTE: DO NOT USE EXTERNAL GROUND CONNECTION. 60-CYCLE AC ONLY

NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO CHASSIS BASE. HEATER VOLTAGES ARE A.C.

DRN. J.B. APP. 9-11-39 TJF

TUNING RANGE 535 to 1720 KC

I.F. 456 KC.

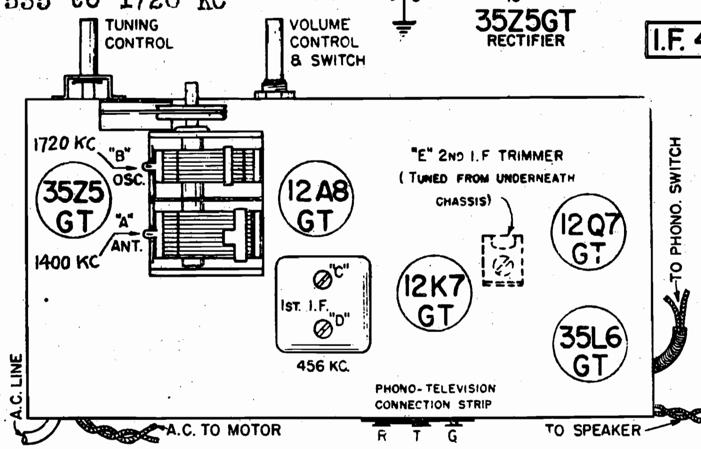
CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

DIAG NO.	PART NO.	DESCRIPTION		
R 1	N-1260	50,000 OHM	.5W.	20%
R 2	N-1627	20,000 OHM	.5W.	20%
R 3	N-1742	25 OHM	.5W.	20%
R 4	N-1262	1 MEGOHM	.5W.	20%
R 5	N-2257	0.5 MEGOHM	VOL. CONT.	
R 6	N-1263	10 MEGOHM	.5W.	20%
R 7	N-1377	200,000 OHM	.5W.	20%
R 8	N-1264	500,000 OHM	.5W.	20%
R 9	N-1787	250 OHM	.5W.	10%
R 10	N-1617	2500 OHM	.5W.	20%
R 11	N-1614	50 OHM	.5W.	20%
R 12	N-1618	80 OHM	2W.	10%
R 13	N-1264	500,000 OHM	.5W.	20%
R 14	N-1260	50,000 OHM	.5W.	20%
C 1	N-1344	.01 MFD.	400V.	
C 2	N-1345	.05 MFD.	200V.	
C 3		CAPACITY INCLUDED IN OSCILLATOR COIL		
C 4	N-1345	.05 MFD.	200V.	
C 5	N-1351	.1 MFD.	200V.	
C 6	N-1374	100 MMFD.		

C 7	N-1344	.01 MFD.	400 V.
C 8	N-1447	.0005 MFD.	400 V.
C 9	N-1344	.01 MFD.	400 V.
C 10	N-1376	.02 MFD.	400V.
C 11	N-2015	35 MFD. 150V.	ELECTRO.
C 12	N-2015	20 MFD. 150V.	ELECTRO.
C 13	N-1346	.05 MFD.	400 V.
C 14	N-1344	.01 MFD.	400 V.
1	N-2256	ANTENNA COIL LOOP	
2	N-1452	OSCILLATOR COIL	
3	N-1598	1 ST. I.F. TRANSFORMER	
4	N-1596	2ND. I.F. TRANSFORMER	
5	N-2438	6" P.M. SPEAKER & TRANS.	
E	N-1597	2ND. I.F. TRIMMING COND.	

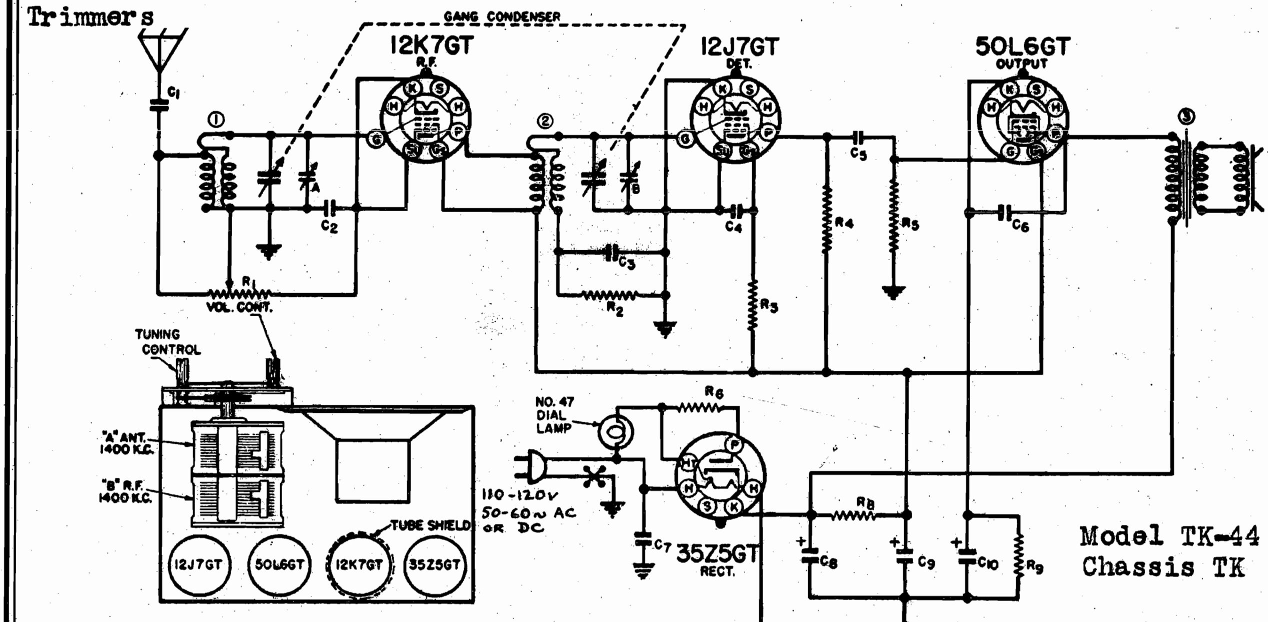
N-2255	GANG CONDENSER
N-2442	PHONO. MOTOR & TURNTABLE
N-2403	CRYSTAL PICKUP
N-2409	RADIO-PHONO SWITCH
N-1980	MOTOR (ON-OFF) SWITCH

TELEVISION CONNECTOR: Connect leads from television receiver to T and G; connect shield (if any) to G. Consult instructions accompanying television receiver. Operates with radio-phono switch in phono position.



MODEL TK-44, Ch. TK
CHASSIS TKE, TPE
Schematics, Socket
Trimmers

SONORA RADIO & TELEV., CORP.



Model TK-44
Chassis TK

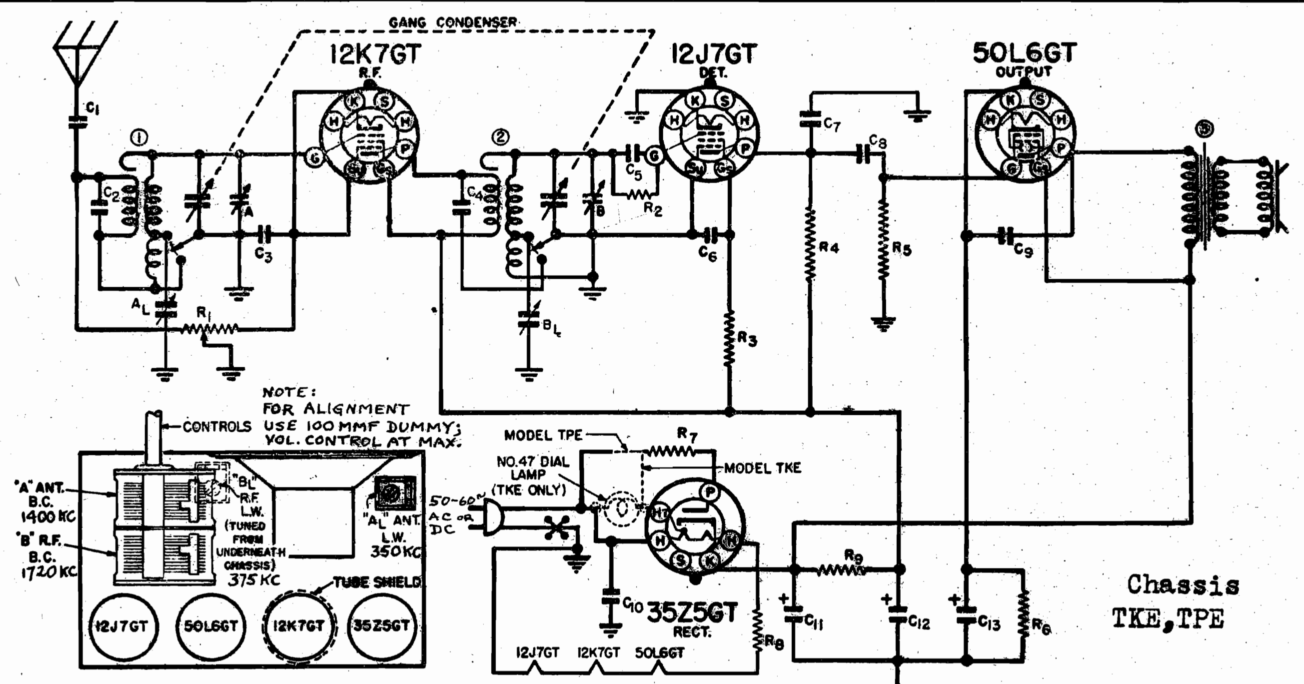
DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1344	.01 MFD. 400 V.	R_1	N-2013	25,000 OHM VOL.
C_2	N-1345	.05 MFD. 200 V.	R_2	N-1418	3.5 MEG. 20% .5 W.
C_3	N-1345	.05 MFD. 200 V.	R_3	N-1835	6 MEG. 20% .5 W.
C_4	N-1344	.01 MFD. 400 V.	R_4	N-1262	1 MEG. 20% .5 W.
C_5	N-1344	.01 MFD. 400 V.	R_5	N-1264	.5 MEG. 20% .5 W.
C_6	N-1344	.01 MFD. 400 V.	R_6	N-1614	50 OHM 20% .5 W.
C_7	N-1346	.05 MFD. 400 V.	R_7	N-1618	80 OHM 10% 2 W.
C_8	N-1850	25 MFD. 150 V. ELECT.	R_8	N-1417	3,000 OHM 20% .5 W.
C_9	N-1850	10 MFD. 150 V. ELECT.	R_9	N-1787	250 OHM 10% .5 W.
C_{10}	N-1850	20 MFD. 25 V. ELECT.	1	N-1790	ANTENNA COIL
	N-1855	GANG CONDENSER	2	N-1791	R.F. COIL
			3	N-2047	SPEAKER & TRANS.

USE NO EXTERNAL GROUND CONNECTION

4 TUBE T.R.F.

CHKD. W.F. 6-21-37 APPR. [illegible]

TK44



Chassis TKE, TPE

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C_1	N-1344	.01 MFD. 400 V.	C_{11}	N-2380	35 MFD. 150 V. ELYTC	R_6	N-1787	250 OHMS .5W. 10%
C_2	N-2383	150 MMFD. 20%	C_{12}	N-2380	10 MFD. 150 V. ELYTC	R_7	N-1614	50 OHMS .5W 20%
C_3	N-1345	.05 MFD. 200 V.	C_{13}	N-2380	20 MFD. 25 V. ELYTC	R_8	N-1618	80 OHMS .5W. 10%
C_4	N-2383	150 MMFD. 20%				R_9	N-1417	3000 OHMS .5W. 20%
C_5	N-1344	.01 MFD. 400 V.					N-1401	GANG COND. MODEL TPE
C_6	N-1376	.02 MFD. 400 V.	R_1	N-2013	25,000 OHM V.C. MODEL TPE		N-1855	" " " TKE
C_7	N-1343	250 MMFD. 20%	R_1	N-1537	25,000 OHM V.C. " TKE	1	N-2378	ANTENNA COIL
C_8	N-1344	.01 MFD. 400 V.	R_2	N-1418	3.5 MEGOHM .5W. 20%	2	N-2379	R.F. COIL
C_9	N-1344	.01 MFD. 400 V.	R_3	N-1835	6 MEGOHM .5W. 20%	3	N-2047E	SPEAKER & TRANS.
C_{10}	N-1346	.05 MFD. 400 V.	R_4	N-1262	1 MEGOHM .5W. 20%	A_L	N-2315	ANT. LONG WAVE TRIMMER
			R_5	N-1264	.5 MEGOHM .5W. 20%	B_L	N-2315	R.F. " " "

USE NO EXTERNAL GROUND CONNECTION

4 TUBE T.R.F.
TWO BAND
BROADCAST & LONG WAVE

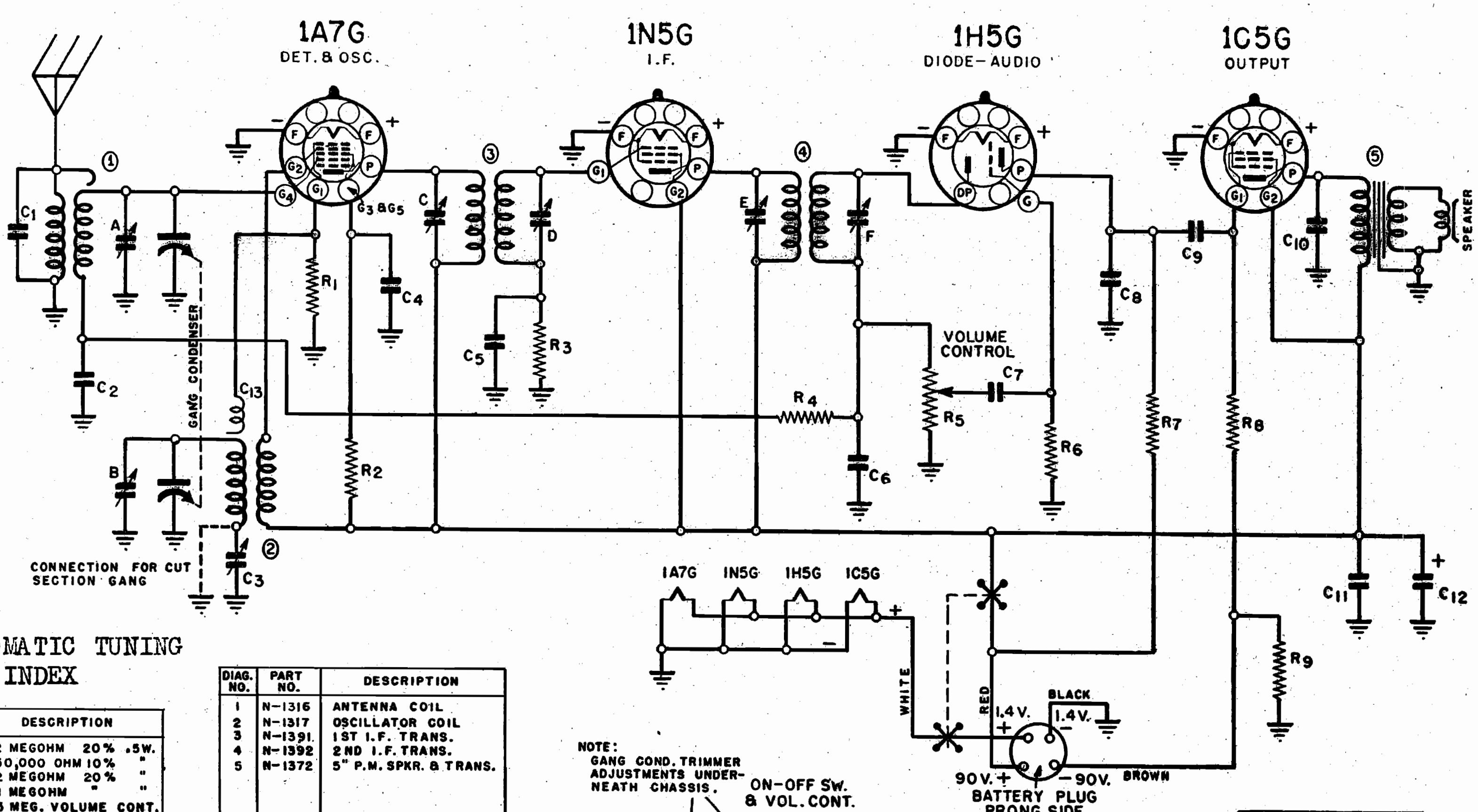
CHKD. W.F. APPR. [illegible] AUG. 19, '39

TUNING RANGES
535-1720 KC; 140-375 KC

TKE, TPE

SONORA RADIO & TELEV., CORP.

CHASSIS TL
Schematic, Socket
Trimmers, Alignment

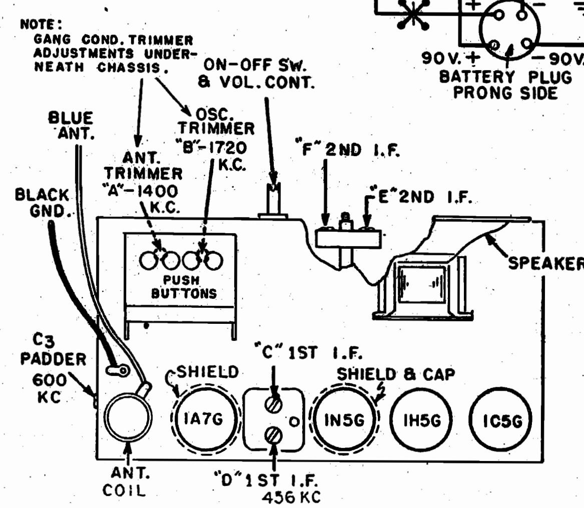


I.F. 456 K.C.

NOTE: TUBE SOCKETS SHOWN FROM WIRING SIDE.

TUNING RANGE
535 to 1720 KC

4 TUBE - $1\frac{1}{2}$ VOLT
SUPERHETERODYNE
SINGLE BAND



DRWN. F.L.C. APP. R.M.J. 1-10-39

TL

FOR AUTOMATIC TUNING
SEE INDEX

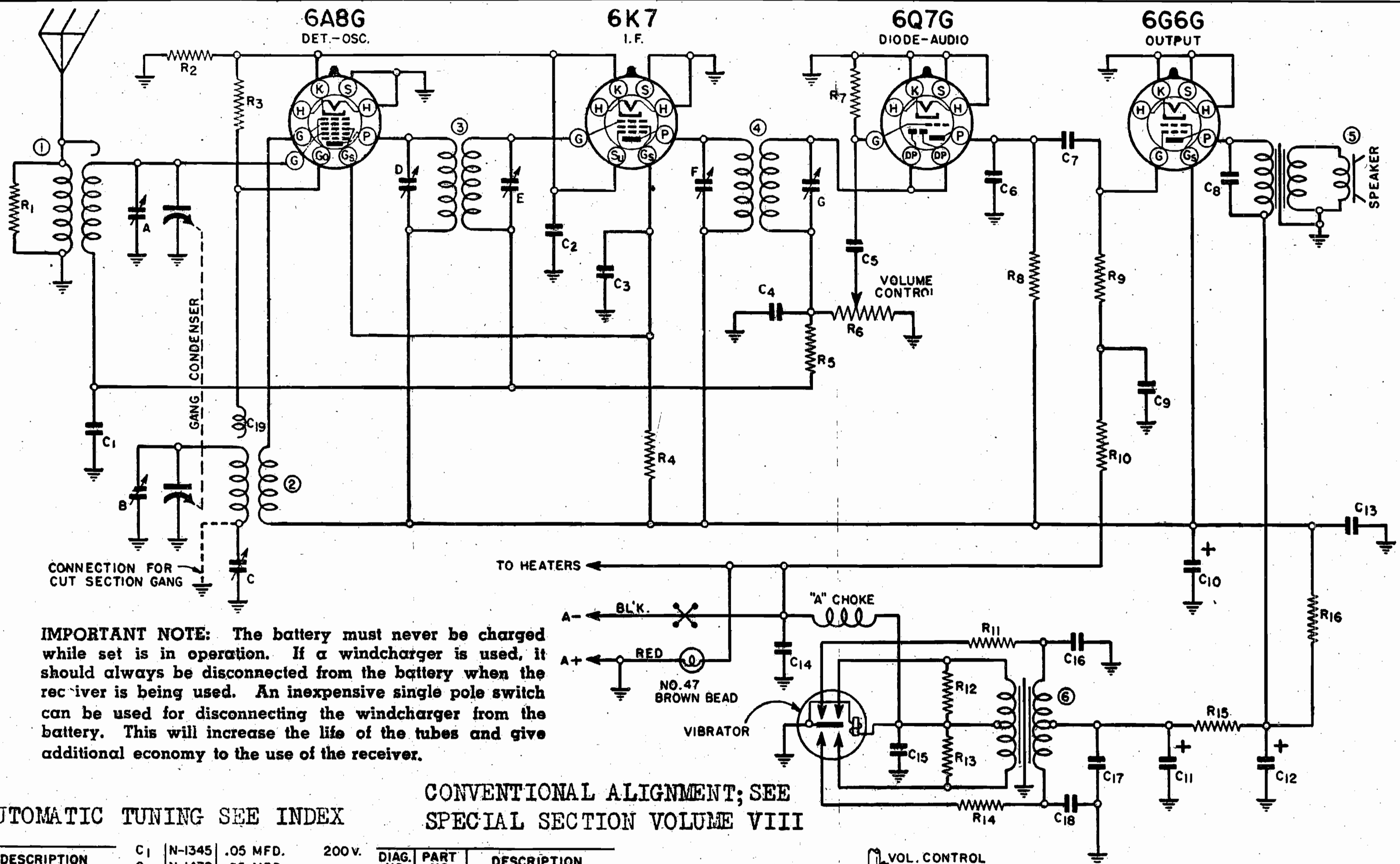
DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1377	.2 MEGOHM 20% .5W.
R_2	N-1353	50,000 OHM 10% "
R_3	N-1378	2 MEGOHM 20% "
R_4	N-1262	1 MEGOHM " "
R_5	N-1373	.5 MEG. VOLUME CONT.
R_6	N-1378	2 MEGOHM 20% .5W
R_7	N-1262	1 MEGOHM " "
R_8	N- "	" " "
R_9	N-1379	550 OHM 10% "
C_1	N-1342	50 MMFD. 20%
C_2	N-1345	.05 MFD. 200V
C_3	N-1323	PAD. COND. 300-600 MMF.
C_4	N-1345	.05 MFD. 200V.
C_5	N-1376	.02 MFD. 400V.
C_6	N-1343	250 MMFD. 20%
C_7	N-1344	.01 MFD. 400V.
C_8	N-1374	100 MMFD. 20%
C_9	N-1344	.01 MFD 400V.
C_{10}	N-1347	.006 MFD. 600V.
C_{11}	N-1351	.10 MFD. 200V.
C_{12}	N-1367	6 MFD. ELECTROLYTIC
C_{13}		CAPACITY INCLUDED IN OSCILLATOR COIL

DIAG. NO.	PART NO.	DESCRIPTION
1	N-1316	ANTENNA COIL
2	N-1317	OSCILLATOR COIL
3	N-1391	1ST I.F. TRANS.
4	N-1392	2ND I.F. TRANS.
5	N-1372	5" P.M. SPKR. & TRANS.
	N-1273	GANG CONDENSER
	N-1393	BATTERY CABLE
SET WITH CUT SECTION GANG		
C_3	N-1323	PADDER ELIMINATED
	N-1338	GANG CONDENSER
2	N-1337	OSCILLATOR COIL

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

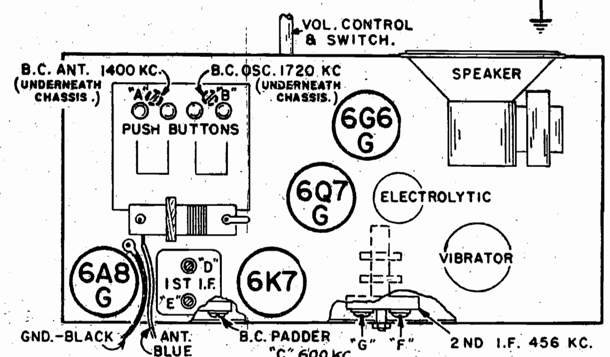
CHASSIS TM
Schematic,Socket
Alignment,Trimmers

SONORA RADIO & TELEV., CORP.



IMPORTANT NOTE: The battery must never be charged while set is in operation. If a windcharger is used, it should always be disconnected from the battery when the rec iver is being used. An inexpensive single pole switch can be used for disconnecting the windcharger from the battery. This will increase the life of the tubes and give additional economy to the use of the receiver.

CONVENTIONAL ALIGNMENT; SEE SPECIAL SECTION VOLUME VIII



I.F. 456 KC.

NOTE: TUBE SOCKETS SHOWN FROM WIRING SIDE.

4 TUBE 6 VOLT

SUPERHETERODYNE

SINGLE BAND

DRWN. F.L.C. APP. 1-19-39

TM

FOR AUTOMATIC TUNING SEE INDEX

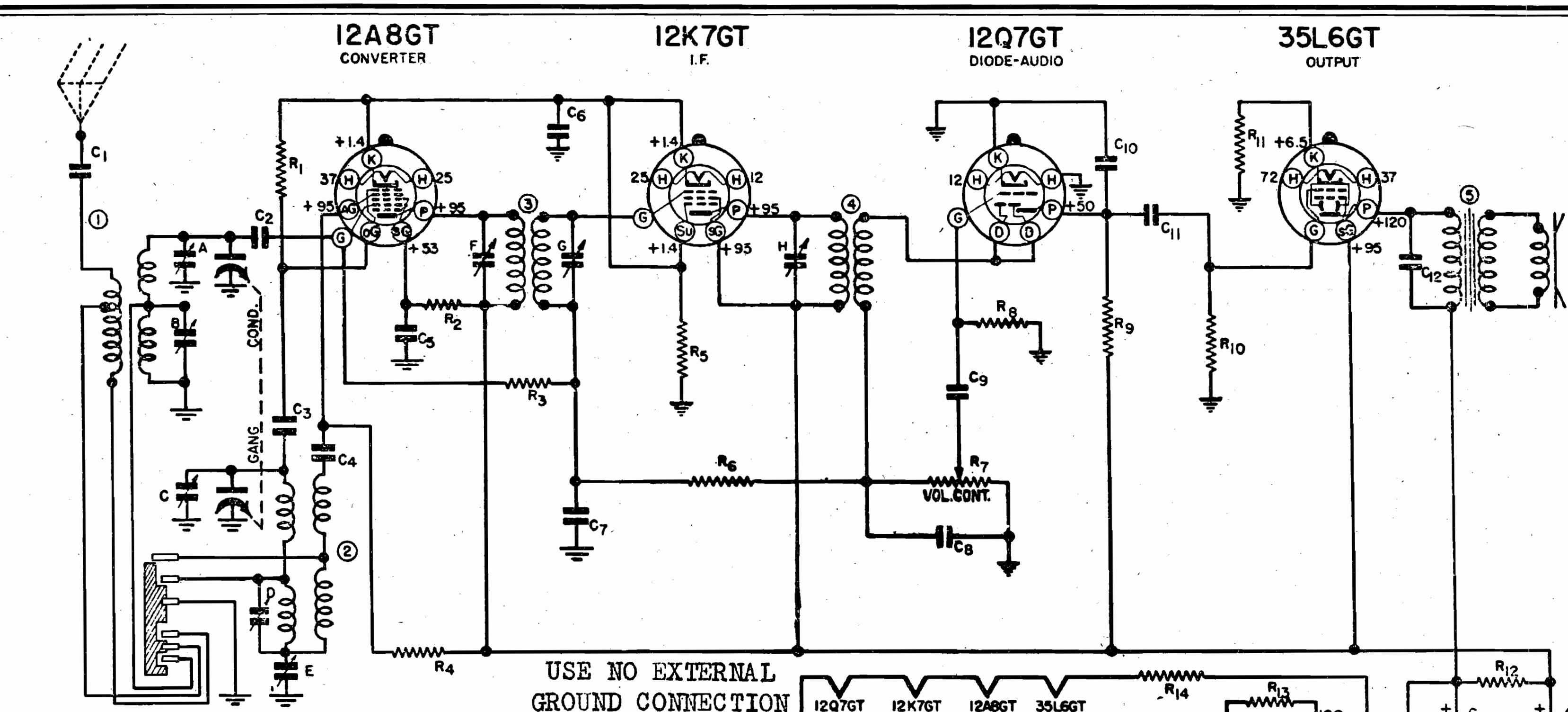
DIAG. NO.	PART NO.	DESCRIPTION	
R_1	N-1259	15,000 OHM	.5 W.
R_2	N-1473	200 OHM	"
R_3	N-1260	50,000 OHM	"
R_4	N-1474	25,000 OHM	"
R_5	N-1378	2.0 MEGOHM	"
R_6	N-1320	1.0 MEG. VOL. CONT.	
R_7	N-1263	10.0 MEGOHM	.5 W.
R_8	N-1261	250,000 OHM	"
R_9	N-1264	.5 MEG.	"
R_{10}	N-1260	50,000 OHM	"
R_{11}	N-1256	500 OHM	"
R_{12}	N-1506	75 OHM	1. W.
R_{13}	N-1506	75 OHM	1. W.
R_{14}	N-1256	500 OHM	.5 W.
R_{15}	N-1482	250 OHM	"
R_{16}	N-1256	500 OHM	"

C_1	N-1345	.05 MFD.	200 V.
C_2	N-1479	.25 MFD.	"
C_3	N-1351	.10 MFD.	"
C_4	N-1374	100 MMFD.	—
C_5	N-1347	.006 MFD.	600 V.
C_6	N-1343	250 MMFD.	—
C_7	N-1344	.01 MFD.	400 V.
C_8	N-1347	.006 MFD	600 V.
C_9	N-1345	.05 MFD.	200 V.
C_{10}	N-1468	20 MFD.	150 V.
C_{11}	N-1468	10 MFD.	250 V.
C_{12}	N-1468	20 MFD.	150 V.
C_{13}	N-1351	.10 MFD.	200 V.
C_{14}	N-1471	.5 MFD.	50 V.
C_{15}	N-1471	.5 MFD.	50 V.
C_{16}	N-1480	.01 MFD. (OIL)	1000 V.
C_{17}	N-1478	.01 MFD.	600 V.
C_{18}	N-1480	.01 MFD. (OIL)	1000 V.
C_{19}	—	CAPACITY INCLUDED IN OSCILLATOR COIL.	

DIAG. NO.	PART NO.	DESCRIPTION
1	N 1461	ANTENNA COIL
2	N 1317	OSCILLATOR COIL
3	N 1318	1 ST I.F. TRANS.
4	N 1319	2 ND I.F. TRANS.
5	N 1472	5" P.M. SPEAKER
6	N 1476	POWER TRANS.
"C"	N 1323	PADDER COND.
	N 1475	VIBRATOR (SYNCHRO)
	N 1477	"A" CHOKE
	N 1273	2 GANG COND.-TUNER
	N 1485	BATTERY CABLE
SET WITH CUT SECT. GANG		
	N 1337	OSCILLATOR COIL
	N 1338	GANG CONDENSER
"C"	—	PADDER ELIMINATED

SONORA RADIO & TELEV., CORP.

CHASSIS TNE
Schematic, Socket
Alignment, Trimmers



USE NO EXTERNAL GROUND CONNECTION

NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO CHASSIS BASE. HEATER VOLTAGES ARE A.C. WHEN LINE VOLTAGE IS ALTERNATING.

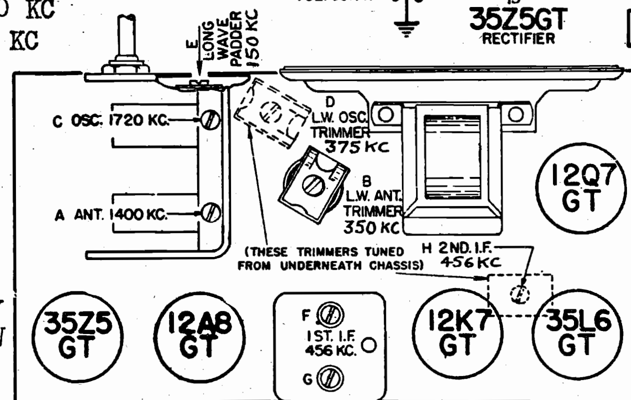
RANGES
535 to 1720 KC
140 to 375 KC

I.F. 456 KC.

DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1260	50,000 OHM .5W. 20%
R_2	N-1627	20,000 OHM .5W. 20%
R_3	N-1378	2 MEGOHM .5W. 20%
R_4	N-1258	10,000 OHM .5W. 20%
R_5	N-1742	25 OHM .5W. 20%
R_6	N-1262	1 MEGOHM .5W. 20%
R_7	N-1595	.5 MEGOHM VOL. CONT.
R_8	N-1263	10 MEGOHM .5W. 20%
R_9	N-1377	.2 MEGOHM .5W. 20%
R_{10}	N-1264	.5 MEGOHM .5W. 20%
R_{11}	N-1616	250 OHM .5W. 10%
R_{12}	N-1617	2500 OHM .5W 20%
R_{13}	N-1614	50 OHM .5W. 20%
R_{14}	N-1618	80 OHM 2W. 10%
C_1	N-1344	.01 MFD. 400 V.
C_2	N-1447	.0005 MFD. 400 V.
C_3	N-1342	50 MMFD.
C_4	N-1344	.01 MFD. 400 V.
C_5	N-1345	.05 MFD. 200 V.

DIAG. NO.	PART NO.	DESCRIPTION
C_6	N-1351	.1 MFD. 200 V.
C_7	N-1345	.05 MFD. 200 V.
C_8	N-1374	100 MMFD.
C_9	N-1344	.01 MFD. 400 V.
C_{10}	N-1447	.0005 MFD. 400 V.
C_{11}	N-1344	.01 MFD. 400 V.
C_{12}	N-1376	.02 MFD. 400 V.
C_{13}	N-1366	15 MFD. 150 V. ELECTROLYTIC
C_{14}	N-1366	30 MFD. 150 V. ELECTROLYTIC
C_{15}	N-1346	.05 MFD. 400 V.
1	N-2342	ANTENNA COIL
2	N-2343	OSCILLATOR COIL
3	N-1598E	1ST. I.F. TRANSFORMER
4	N-1596E	2ND. I.F. TRANSFORMER
5	N-2074E	4" P.M. SPEAKER & TR.
B	N-2315	L.W. ANT. TRIMMER
D	N-1597	L.W. OSC. TRIMMER
E	N-2345	L.W. PADDER
H	N-1597	2ND. I.F. TRIMMER
	N-1431	GANG CONDENSER

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII.
NOTE: Use a 100-mmf dummy for BC and LW alignment.



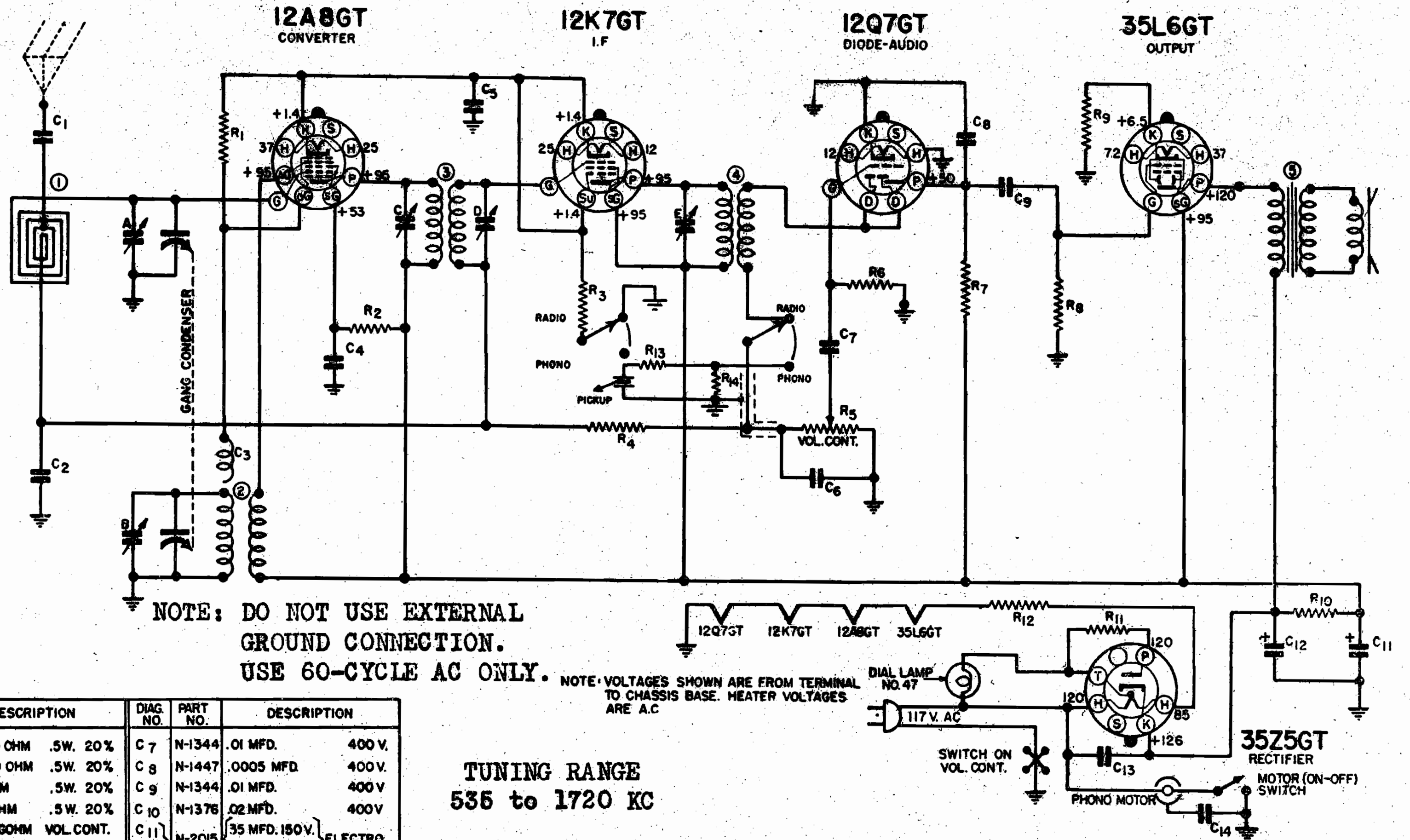
TUBE LAYOUT N-2340

5 TUBE AC-DC
SUPERHETERODYNE
TWO BAND
LONG WAVE & BROADCAST
CHKD. W.F. APPR. L.O.W.
AUG. '39

TNE - TSE

MODELS TNF-60, TNF-68
Chassis TNF
Schematic, Socket
Alignment, Trimmers

SONORA RADIO & TELEV. CORP.



NOTE: DO NOT USE EXTERNAL GROUND CONNECTION.
USE 60-CYCLE AC ONLY.

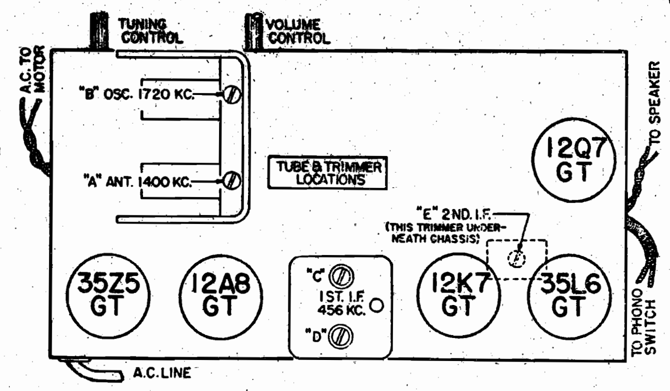
NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO CHASSIS BASE. HEATER VOLTAGES ARE A.C

TUNING RANGE
535 to 1720 KC

DIAG. NO.	PART NO.	DESCRIPTION
R 1	N-1260	50,000 OHM .5W. 20%
R 2	N-1627	20,000 OHM .5W. 20%
R 3	N-1742	25 OHM .5W. 20%
R 4	N-1262	1 MEGOHM .5W. 20%
R 5	N-2070	0.5 MEGOHM VOL. CONT.
R 6	N-1263	10 MEGOHM .5W. 20%
R 7	N-1377	200,000 OHM .5W. 20%
R 8	N-1264	500,000 OHM .5W. 20%
R 9	N-1616	250 OHM .5W. 10%
R 10	N-1617	2500 OHM .5W. 20%
R 11	N-1614	50 OHM .5W. 20%
R 12	N-1618	80 OHM 2W. 10%
R 13	N-1264	500,000 OHM .5W. 20%
R 14	N-1260	50,000 OHM .5W. 20%
C 1	N-1344	.01 MFD. 400V.
C 2	N-1345	.05 MFD. 200V.
C 3		CAPACITY INCLUDED IN OSCILLATOR COIL
C 4	N-1345	.05 MFD. 200V.
C 5	N-1351	.1 MFD. 200V.
C 6	N-1374	100 MMFD.

DIAG. NO.	PART NO.	DESCRIPTION
C 7	N-1344	.01 MFD. 400 V.
C 8	N-1447	.0005 MFD. 400 V.
C 9	N-1344	.01 MFD. 400 V
C 10	N-1376	.02 MFD. 400V
C 11	N-2015	35 MFD. 150V. ELECTRO.
C 12		20 MFD. 150V. ELECTRO.
C 13	N-1346	.05 MFD. 400V.
C 14	N-1834	.002 MFD. 600V.
1	N-1594	ANTENNA COIL LOOP
2	N-1452	OSCILLATOR COIL
3	N-1598	1ST. I.F. TRANSFORMER
4	N-1596	2ND. I.F. TRANSFORMER
5	N-2389	5" P.M. SPEAKER & TRANS.
E	N-1597	2ND. I.F. TRIMMING COND.
	N-1879	GANG CONDENSER
	N-1980	MOTOR (ON-OFF) SWITCH
	N-2409	RADIO-PHONO SWITCH
	N-2442	PHONO MOTOR & TURNTABLE
	N-2402	CRYSTAL PICKUP

CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII



I.F. 456 KC.

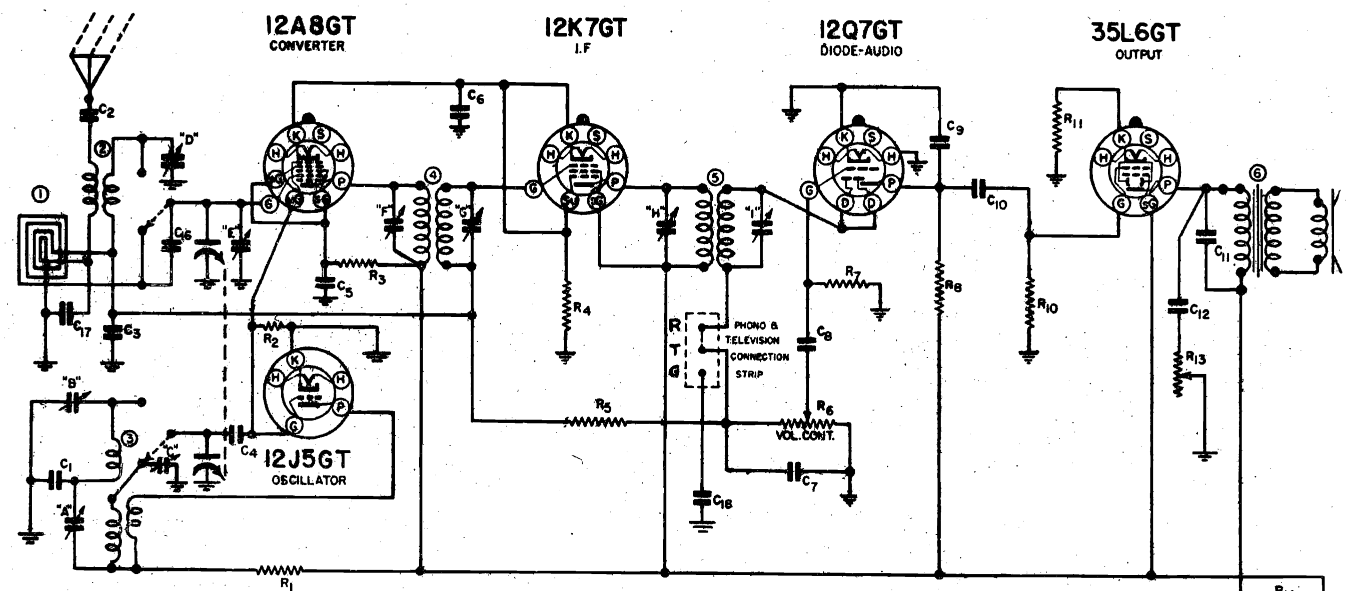
SUPERHETERODYNE
SINGLE BAND
PHONO. COMBINATION

DRN. J.B. APP. 9-8-39

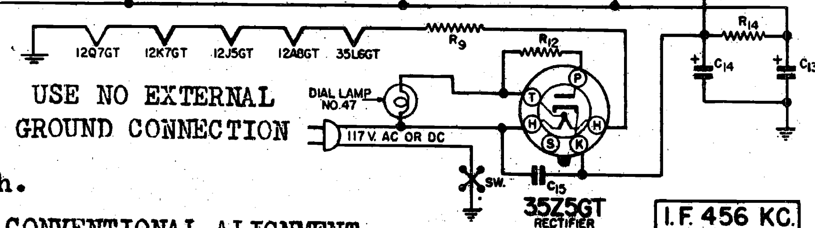
TNF

MODEL TR-53, Ch. TR
Schematic, Socket
Alignment, Trimmers

SONORA RADIO & TELEV., CORP.



FOR
AUTOMATIC
TUNING
SEE INDEX

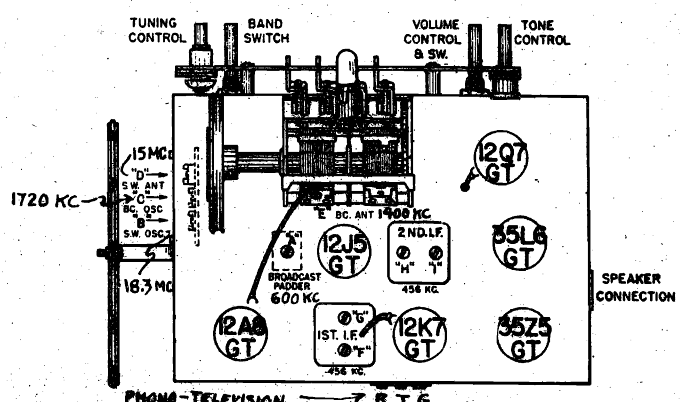


USE NO EXTERNAL
GROUND CONNECTION

I.F. 456 KC.

TELEVISION and PHONOGRAPH CONNECTOR: To use, remove link from terminals R and T. Connect leads from external source to T and G; connect shield (if any) to G. Consult instructions of manufacturer of television receiver or phonograph.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII



TUNING RANGES
535 to 1720 KC
5.65 to 18.3 MC

6 TUBE A.C.-D.C.
SUPERHETERODYNE
TWO BAND

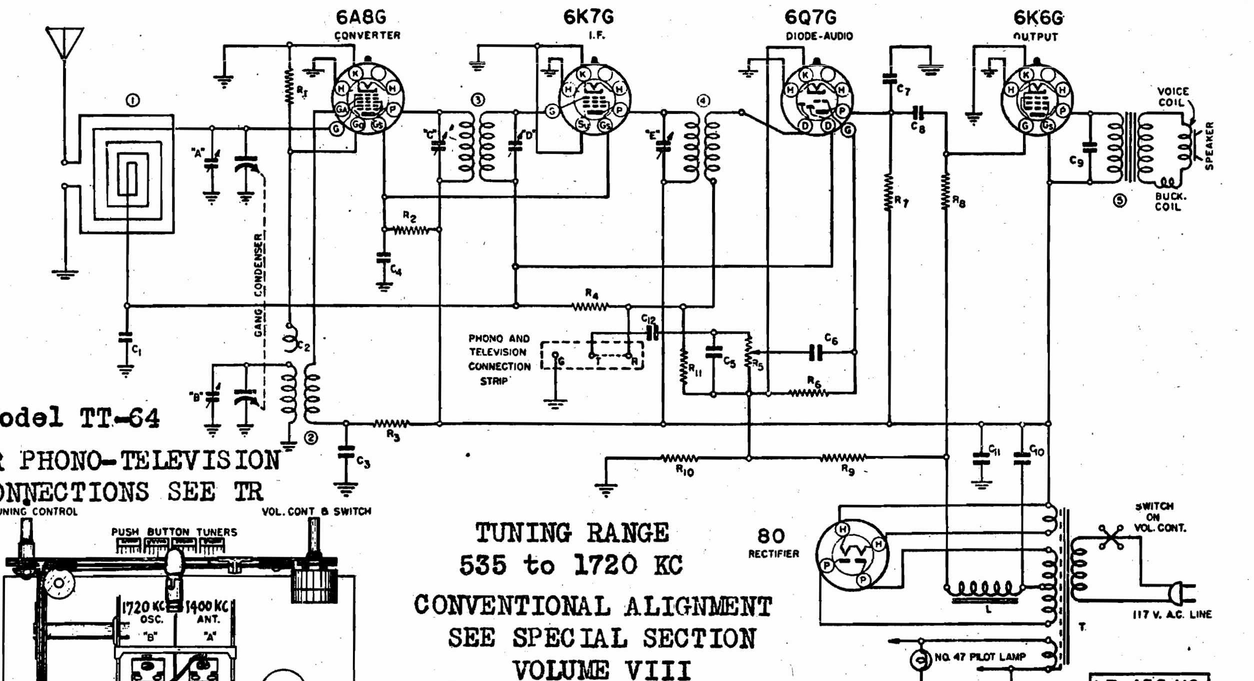
DRN. W.F. APP.

TR

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1258	10,000 OHM .5W. 20%	C_8	N-1344	.01 MFD. 400 V.
R_2	N-1260	50,000 OHM .5W. 20%	C_9	N-1447	.0005 MFD. 400 V.
R_3	N-1460	30,000 OHM .5W. 20%	C_{10}	N-1344	.01 MFD. 400 V.
R_4	N-2209	25 OHM .5W. 10%	C_{11}	N-1344	.01 MFD. 400 V.
R_5	N-1262	1 MEGOHM .5W. 20%	C_{12}	N-1346	.05 MFD. 400 V.
R_6	N-2163	.5 MEGOHM VOL. CONT.	C_{13}	N-2206	20 MFD. 150 V. ELTLYC.
R_7	N-1263	10 MEGOHM .5W. 20%	C_{14}		40 MFD. 150 V.
R_8	N-1377	.2 MEGOHM .5W. 20%	C_{15}	N-1346	.05 MFD. 400 V.
R_9	N-2195	40 OHM 1 W. 10%	C_{16}	N-1897	25 MMFD.
R_{10}	N-1264	.5 MEGOHM .5W. 20%	C_{17}	N-1897	25 MMFD.
R_{11}	N-1787	250 OHM .5W. 10%	C_{18}	N-1344	.01 MFD. 400 V.
R_{12}	N-1614	50 OHM .5W. 20%	1	N-2154	ANTENNA COIL LOOP
R_{13}	N-2157	25,000 OHM TONE CONT.	2	N-2010	BAND 2 ANTENNA COIL
R_{14}	N-1617	2500 OHM .5W. 20%	3	N-2008	OSC. COIL
C_1	N-1690	BAND 2 PAD .004 MFD. 5%	4	N-2159	1ST. I.F. TRANSFORMER
C_2	N-1344	.01 MFD. 400 V.	5	N-2160	2ND. I.F. TRANSFORMER
C_3	N-1345	.05 MFD. 200 V.	6	N-2153	6" P.M. SPKR. & TRANS.
C_4	N-1342	50 MMFD.	"A"	N-2205	BROADCAST PADDER
C_5	N-1345	.05 MFD. 200 V.	"B"	N-2158	SHORT W. OSC. TRIMMER
C_6	N-2215	.15 MFD. 200 V.	"C"		BROADCAST OSC. TRIM.
C_7	N-1374	100 MMFD.	"D"		SHORT W. ANT. TRIMMER

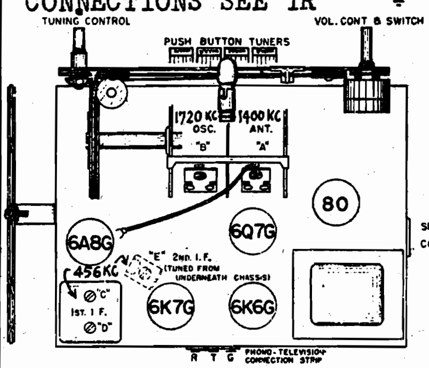
MODEL TT-64, Ch. TT
MODEL TW-49, Ch. TW, TWU
Schematics, Socket
Alignment, Trimmers

SONORA RADIO & TELEV. CORP.



Model TT-64

FOR PHONO-TELEVISION CONNECTIONS SEE TR



TUNING RANGE
535 to 1720 KC

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1260	50,000 OHMS .5W. 20%
R_2	N-1460	30,000 OHMS .5W 20%
R_3	N-1460	30,000 OHMS .5W. 20%
R_4	N-1682	3 MEGOHMS .5W. 20%
R_5	N-2223	1 MEGOHM VOL. CONT.
R_6	N-1419	6 MEGOHMS .5W. 20%
R_7	N-1377	200,000 OHMS .5W. 20%
R_8	N-1264	.5 MEGOHM .5W 20%
R_9	N-1693	325 OHMS .5W. 10%
R_{10}	N-1481	75 OHMS .5W. 20%
R_{11}	N-1264	.5 MEGOHM .5W. 20%

C_1	N-1345	.05 MFD 200V.
C_2		CAPACITY BETWEEN COILS
C_3	N-1346	.05 MFD 400V.
C_4	N-1623	.1 MFD. 400V.
C_5	N-1374	100 MMFD.
C_6	N-1347	.006 MFD 600V.
C_7	N-1343	250 MMFD.
C_8	N-1344	.01 MFD 400V.
C_9	N-1478	.01 MFD. 600V.
C_{10}, C_{11}	N-2224	10 MFD. 350V., 6 MFD. 350V. ELYTC
C_{12}	N-1344	.01 MFD. 400V.

①	N-2222	ANTENNA LOOP
②	N-1452	OSCILLATOR COIL
③	N-2159	1ST I.F. TRANS.
④	N-1596	2ND I.F. TRANS.
⑤	N-2225	5" SPK. & TRANS.
L		1800 OHM SPK FIELD
T	N-2226	POWER TRANS.
	N-2000	GANG CONDENSER
"E"	N-1597	2ND. I.F. TRIMMING COND.

I.F. 456 KC.

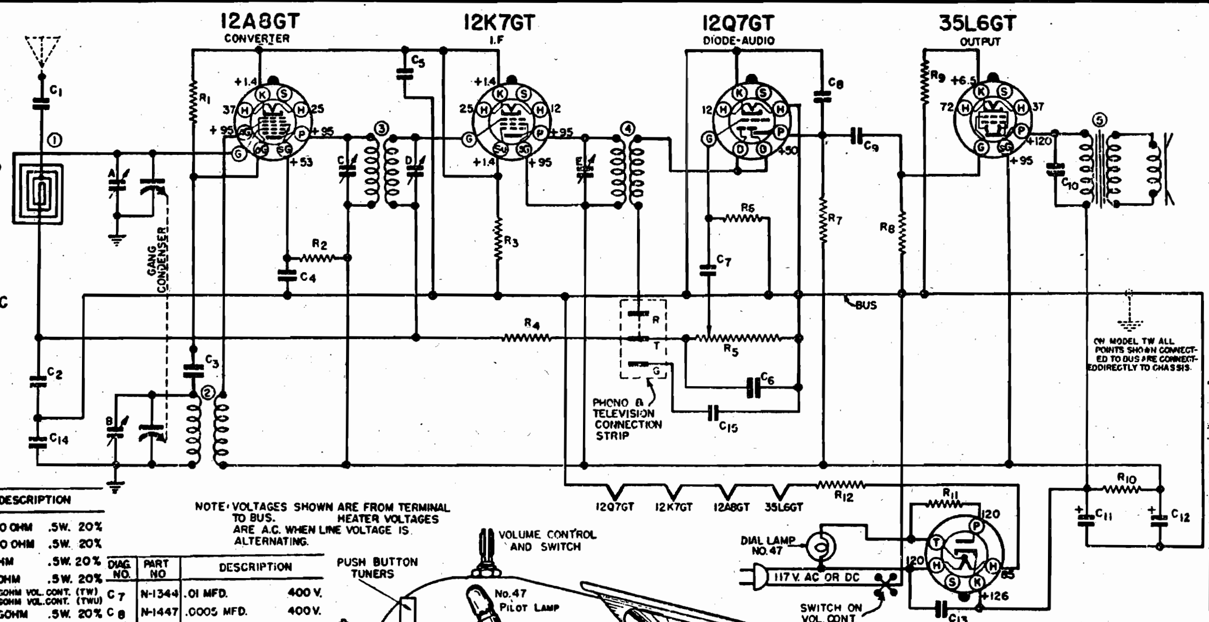
5 TUBE A.C.
SUPERHETERODYNE
SINGLE BAND

DRWN. W.F. APP. B.M.J.

TT

MODEL TW-49
CHASSIS TW, TWU

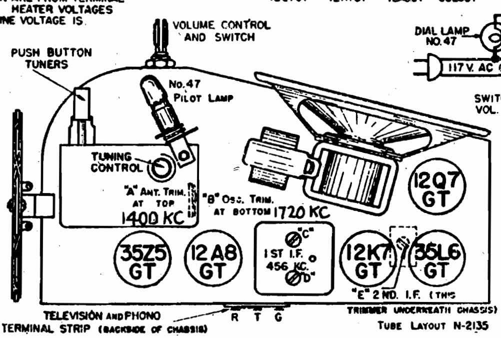
TUNING RANGE
535-1720 KC



NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO BUS. HEATER VOLTAGES ARE A.C. WHEN LINE VOLTAGE IS ALTERNATING.

DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1260	50,000 OHM .5W. 20%
R_2	N-1627	20,000 OHM .5W. 20%
R_3	N-1742	25 OHM .5W. 20%
R_4	N-1262	1 MEGOHM .5W. 20%
R_5	N-2087 / N 2322	0.5 MEGOHM VOL. CONT. (TW) / 0.5 MEGOHM VOL. CONT. (TWU)
R_6	N-1263	10 MEGOHM .5W. 20%
R_7	N-1377	200,000 OHM .5W. 20%
R_8	N-1264	500,000 OHM .5W. 20%
R_9	N-1616	250 OHM .5W. 10%
R_{10}	N-1617	2500 OHM .5W. 20%
R_{11}	N-1614	50 OHM .5W. 20%
R_{12}	N-1618	80 OHM 2W. 10%
C_1	N-1344	.01 MFD. 400V
C_2	N-1345 / N-1351	.05 MFD. 400V. (TW) / .1 MFD. 200V. (TWU)
C_3	N-1342	50 MMFD.
C_4	N-1345	.05 MFD. 200V.
C_5	N-2215	15 MFD. 200V.
C_6	N-1374	100 MMFD
	N-2053	GANG CONDENSER AND TUNER

DIAG. NO.	PART NO	DESCRIPTION
C_7	N-1344	.01 MFD. 400 V.
C_8	N-1447	.0005 MFD. 400V.
C_9	N-1344	.01 MFD. 400V.
C_{10}	N-1376	.02 MFD 400V
C_{11}, C_{12}	N-2015	35 MFD. 150V., 20 MFD. 150V. ELECTRO.
C_{13}	N-1346	.05 MFD. 400V.
C_{14}	N-1479	.25 MFD. (TWU ONLY) 400V.
C_{15}	N-1344	.01 MFD. 400V.
1	N-2123	ANTENNA COIL LOOP
2	N-1452 / N-2161	OSCILLATOR COIL (TW) / OSCILLATOR COIL (TWU)
3	N-1598 / N-1934	1ST I.F TRANSFORMER (TW) / 1ST. I.F. TRANSFORMER (TWU)
4	N-1596	2ND. I.F. TRANSFORMER
5	N-2014 / N-2519	5" P.M. SPEAKER & TRANS. (TW) / 5" P.M. SPEAKER & TRANS. (TWU)
E	N-1597	2ND I.F TRIMMING COND.



I.F. 456 KC.

DO NOT USE EXTERNAL GROUND

5 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND

DRWN. J.B. APP'D.

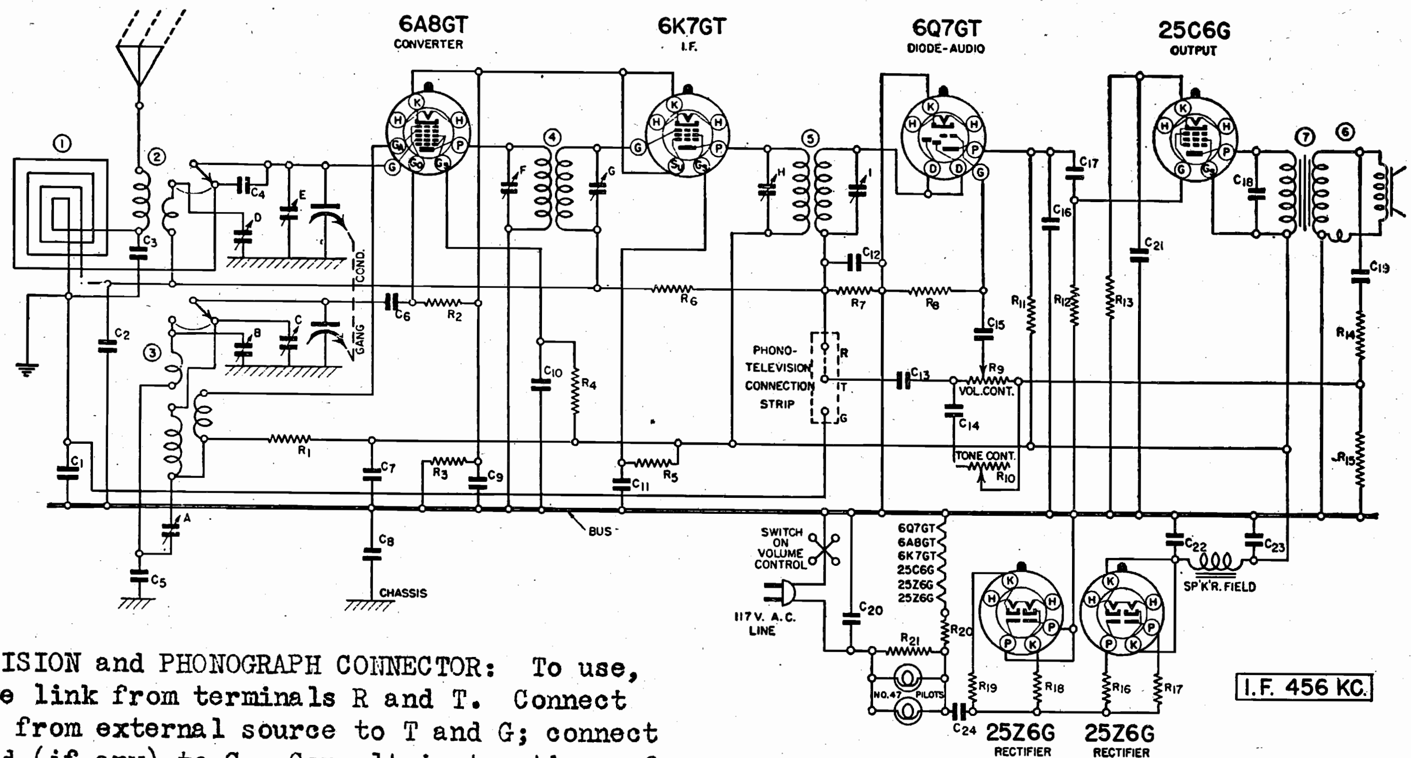
FOR PHONO-TELEVISION CONNECTIONS SEE TR

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

TW & TWU.

SONORA RADIO & TELEV., CORP.

MODELS TX-53, TX-58
Chassis TX
Schematic, Socket
Alignment, Trimmers



FOR TUNER
SEE INDEX

TELEVISION and PHONOGRAPH CONNECTOR: To use, remove link from terminals R and T. Connect leads from external source to T and G; connect shield (if any) to G. Consult instructions of manufacturer of television receiver or phonograph.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

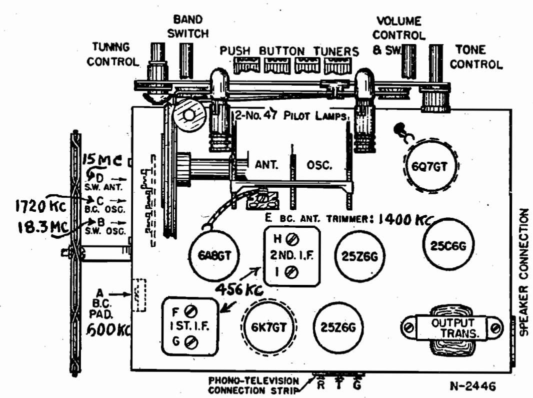
TUNING RANGES
535 to 1720 KC
5.65 to 18.3 MC

6 TUBE A.C.
SUPERHETERODYNE
TWO BAND

DRWN. W.F. AUG.11,'39 APPR. SEPT.6,'39

DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1627	20,000 OHM .5W. 20%
R_2	N-1260	50,000 OHM .5W. 20%
R_3	N-1787	250 OHM .5W. 10%
R_4	N-1460	30 000 OHM .5W. 20%
R_5	N-2455	40,000 OHM .5W. 20%
R_6	N-1262	1 MEGOHM .5W. 20%
R_7	N-1264	0.5 MEGOHM .5W. 20%
R_8	N-1419	6 MEGOHM .5W. 20%
R_9	N-2411	0.5 MEGOHM VOL. CONT.
R_{10}	N-2435	1 MEGOHM TONE CONT.
R_{11}	N-1261	.25 MEGOHM .5W. 20%
R_{12}	N-1264	0.5 MEGOHM .5W. 20%
R_{13}	N-2453	235 OHM 1 W. 10%
R_{14}	N-2454	5000 OHM .5W. 10%
R_{15}	N-1473	200 OHM .5W. 10%
R_{16}	N-2452	100 OHM 1 W. 20%
R_{17}	N-2452	100 OHM 1 W. 20%
R_{18}	N-2451	75 OHM 1 W. 20%
R_{19}	N-2451	75 OHM 1 W. 20%
R_{20}	N-2298	62 OHM ARMORED WIRE RES.
R_{21}	N-2298	17 OHM ARMORED WIRE RES.
C_1	N-1344	.01 MFD. 400V. 20%
C_2	N-1345	.05 MFD. 200 V. 20%
C_3	N-1897	25 MMFD. 20%
C_4	N-1897	25 MMFD. 20%
C_5	N-1690	4000 MMFD. 5%
C_6	N-1342	50 MMFD. 20%
C_7	N-1351	0.1 MFD. 200V. 20%
C_8	N-1479	.25 MFD. 200 V. 20%
C_9	N-1479	.25 MFD. 200V. 20%

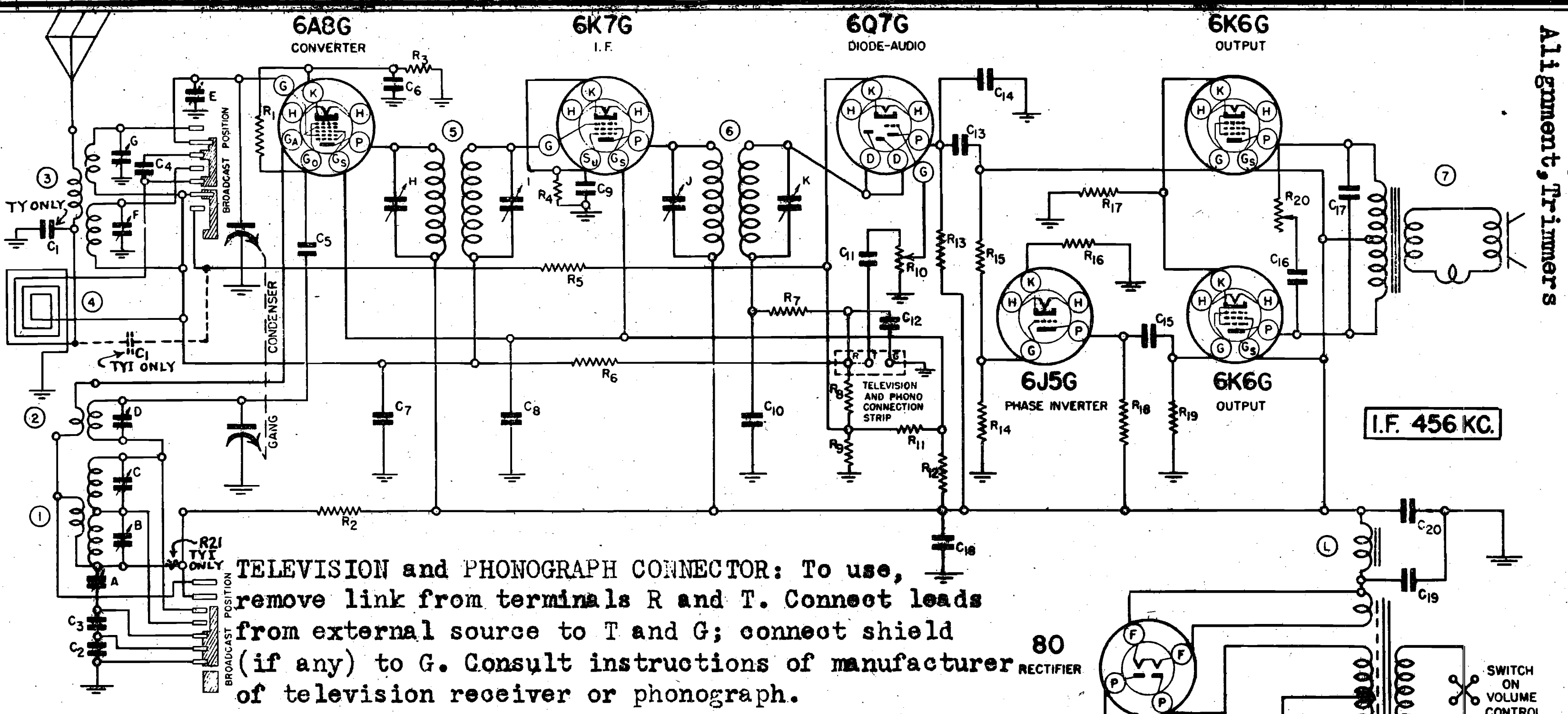
DIAG. NO.	PART NO.	DESCRIPTION
C_{10}	N-1345	.05 MFD. 200V. 20%
C_{11}	N-1345	.05 MFD. 200 V. 20%
C_{12}	N-1374	100 MMFD. 20%
C_{13}	N-1344	.01 MFD. 400V. 20%
C_{14}	N-2450	.002 MFD. 400V. 20%
C_{15}	N-1344	.01 MFD. 400V. 20%
C_{16}	N-1343	250 MMFD. 20%
C_{17}	N-1376	.02 MFD. 400V. 20%
C_{18}	N-1344	.01 MFD. 400V. 20%
C_{19}	N-1351	0.1 MMFD. 200V. 20%
C_{20}	N-1346	.05 MFD. 400V. 20%
C_{21}	N-2437	20 MFD. 25V. ELECT. COND.
C_{22}	N-2437	30 MFD. 250V. ELECT. COND.
C_{23}	N-2437	30 MFD. 150 V. ELECT. COND.
C_{24}	N-2436	30 MFD. 150V. ELECT. COND.
1	N-2154	ANTENNA LOOP
2	N-2010	S.W. ANTENNA COIL
3	N-2008	OSC. COIL
4	N-2461	1st. I.F. TRANS.
5	N-2462	2nd. I.F. TRANS.
6	N-2431	6" DYN. SPKR. (TABLE)
6	N-2432	8" DYN. SPKR. (CONSOLE)
7	N-2444	OUTPUT TRANS.
A	N-2205	BC. PADDING COND.
B	N-2158	S.W. OSC. TRIM. COND.
C	N-2158	BC. OSC. TRIM. COND.
D	N-2158	S.W. ANT. TRIM. COND.
	N-2218	GANG COND. & TUNER
	N-2164	BAND SWITCH



TX

MODEL TY-54
Chassis TY,TYI
Schematic,Socket
Alignment,Trimmers

SONORA RADIO & TELEV., CORP.

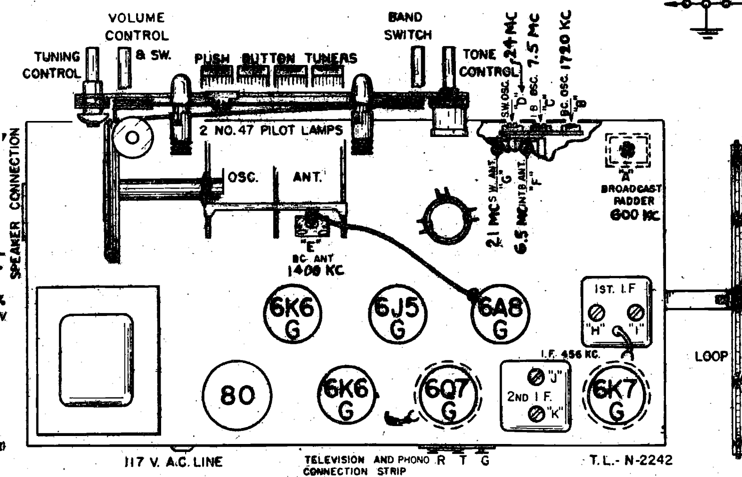


TELEVISION and PHONOGRAPH CONNECTOR: To use, remove link from terminals R and T. Connect leads from external source to T and G; connect shield (if any) to G. Consult instructions of manufacturer of television receiver or phonograph.

FOR AUTOMATIC TUNING
SEE INDEX

TUNING RANGES
B.C. 535 to 1720 KC
INT. 2.2 to 7.5 MC
S.W. 7.25 to 24.0 MC

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII



TYI POWER TRANSFORMER

Switch Position	Power Supply Voltage
110	105 to 117
130	118 to 137
150	138 to 160
220	205 to 233
250	234 to 265

TY{ DRWN. W.F. AUG.1,'39 APPR. AUG. 2, '39
TYI CHK. J.B. APP. 9-12-39

PARTS: TY and TYI

DIAG NO.	PART NO.	DESCRIPTION		
R_1	N-1260	50,000 OHM	.5W.	20%
R_2	N-1627	20,000 OHM	.5W.	20%
R_3	N-1379	550 OHM	.5W.	10%
R_4	N-1628	750 OHM	.5W	10%
R_5	N-1262	1 MEGOHM	.5W.	20%
R_6	N-1262	1 MEGOHM	.5W.	20%
R_7	N-1260	50,000 OHM	.5W.	20%
R_8	N-1264	.5 MEGOHM	.5W.	20%
R_9	N-2293	450 OHM	.5W.	10%
R_{10}	N-2282	1 MEGOHM VOLUME CONTROL		
R_{11}	N-1474	25,000 OHM	.5W.	20%
R_{12}	N-1259	15,000 OHM	.5W.	20%
R_{13}	N-1377	200,000 OHM	.5W.	20%
R_{14}	N-1777	34,000 OHM	.5W.	10%
R_{15}	N-2294	400,000 OHM	.5W.	10%
R_{16}	N-1257	2,000 OHM	.5W.	20%
R_{17}	N-2292	400 OHM	1.W.	10%
R_{18}	N-1779	150,000 OHM	.5W.	20%
R_{19}	N-1264	.5 MEGOHM	.5W.	20%
R_{20}	N-2281	125,000 OHM TONE CONTROL		
C_2	N-2290	1550 MMFD.		3%
C_3	N-1690	4000 MMFD.		5%
C_4	N-1897	25 MMFD.		20%
C_5	N-1342	50 MMFD.		20%
C_6	N-1345	.05 MFD.		200V.
C_7	N-1345	.05 MFD.		200V.
C_8	N-1351	.1 MFD.		200V.
C_9	N-1345	.05 MFD		200V.
C_{10}	N-1342	50 MMFD.		20%
C_{11}	N-1344	.01 MFD.		400V.
C_{12}	N-1342	50 MMFD.		20%
C_{13}	N-1344	.01 MFD.		400V.
C_{14}	N-1343	250 MMFD.		20%
C_{15}	N-1344	.01 MFD.		400V.
C_{16}	N-1973	.02 MFD.		600V.
C_{17}	N-2054	.006 MFD.		800V.
C_{18}	N-1623	.1 MFD.		400V.
C_{19}	N-2283	15 MFD. 350V.	EL'T'LYTC	
C_{20}	N-2283	10 MFD. 350V.	EL'T'LYTC	
	N-1999	GANG COND. & TUNER		
A	N-2205	BC. PADDING COND.		
B	N-2158	BC. OSC. TRIMMING COND.		
C	N-2158	I.B. OSC. TRIMMING COND.		
D	N-2158	S.W. OSC. TRIMMING COND.		
F	N-2284	I.B. ANT. TRIM COND.		
G	N-2284	S.W. ANT. TRIM. COND.		
L		800 OHM SP. FIELD		

PARTS: TY ONLY

C_1	N-1897	25 MMFD.	20%
1	N-2009	BC. & INT.B. OSC COIL	
2	N-2280	S.W. OSC. COIL	
3	N-2011	INT.B. & S.W. ANT COIL	
4	N-2154	ANTENNA COIL LOOP	
5	N-2159	1ST. I.F. TRANS.	
6	N-2286	2ND. I.F. TRANS.	
*7	N-2237	6-1/2" DYN. SP. & TRANS.	
T	N-2149	POWER TRANSFORMER	
*	N-2300	CONSOLE SPEAKER & TRANS.	

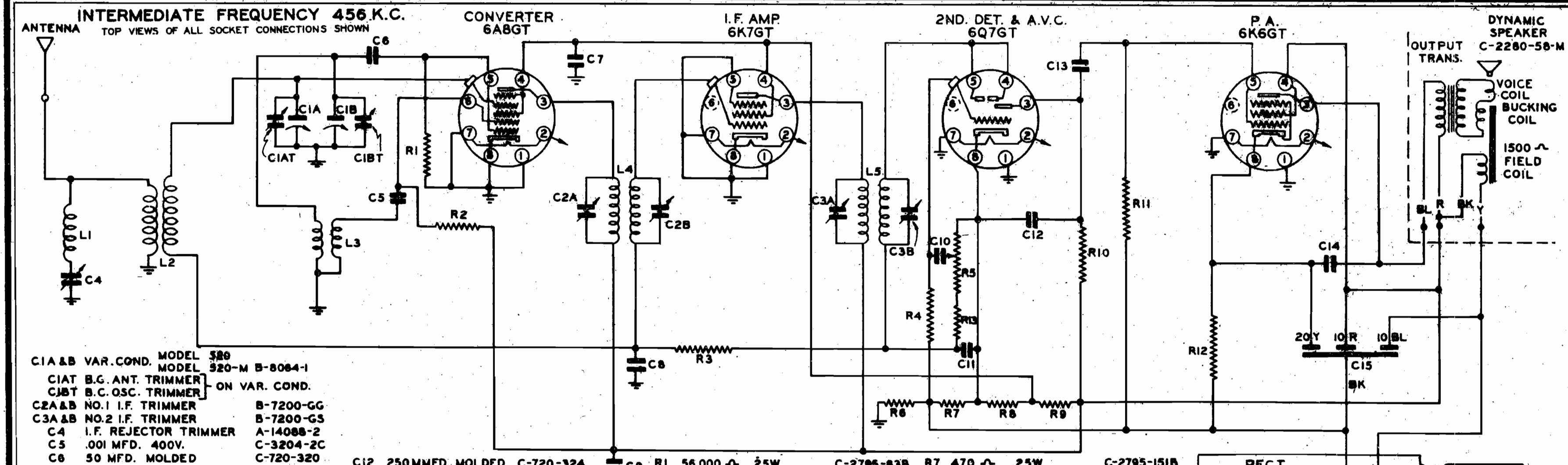
PARTS: TYI ONLY

R_{21}	N-1265	200 OHM	.5W. 20%
C_1	N-1447	.0005 MFD.	400V
1	N-2009E	BC. & INT.B. OSC COIL	
2	N-2280E	S.W. OSC. COIL	
3	N-2011E	INT.B. & S.W. ANT. COIL	
4	N-2154	ANTENNA COIL LOOP	
5	N-2159E	1ST I.F. TRANS.	
6	N-2285E	2ND. I.F TRANS.	
7	N-2237E	6 1/2" DYN. SPEAKER & TRANS.	(TABLE)
7	N-2300	8" DYN. SPEAKER & TRANS.	(CONSOLE)
T	N-2407	POWER TRANSFORMER	

Alignment, Trimmers
Socket

SPARKS WITHINGTON CO.

MODELS 520, 520M
Schematic, Voltage



C1A&B VAR. COND. MODEL 520 MODEL 520-M B-8084-1
C1AT B.C. ANT. TRIMMER ON VAR. COND.
C1BT B.C. OSC. TRIMMER ON VAR. COND.
C2A&B NO.1 I.F. TRIMMER B-7200-GG
C3A&B NO.2 I.F. TRIMMER B-7200-G5
C4 I.F. REJECTOR TRIMMER A-14088-2
C5 .001 MFD. 400V. C-3204-2C
C6 50 MFD. MOLDED C-720-320
C7 .1 MFD. 200V. C-3202-38C
C8 .05 MFD. 200V. C-3202-28C
C9 .1 MFD. 400V. C-3204-38C
C10 .02 MFD. 200V. C-3202-22C
C11 250 MMFD. MOLDED C-720-324

C12 250 MMFD. MOLDED C-720-324
C13 .05 MFD. 400V. C-3204-28C
C14 .01 MFD. 600V. C-3206-76C
C15 20-10-10 MFD. ELECT. A-14684-4

R1 56,000 ^ .25W. C-2795-83B
R2 22,000 ^ .5W. C-2798-76C
R3 1 MEGOHM .25W. C-2795-98B
R4 560,000 ^ .25W. C-2795-95B
R5 500,000 ^ VOL. CONTROL A-15129-4
R6 220 ^ .25W. C-2795-143B

R7 470 ^ .25W. C-2795-151B
R8 27,000 ^ 1W. C-2797-79B
R9 33,000 ^ 3W. C-2799-80A
R10 270,000 ^ .25W. C-2795-91B
R11 680,000 ^ .25W. C-2795-30B
R12 680 ^ 1W. C-2797-60B
R13 27000 ^ .25W. C-2795-79B

ALIGNMENT CHART

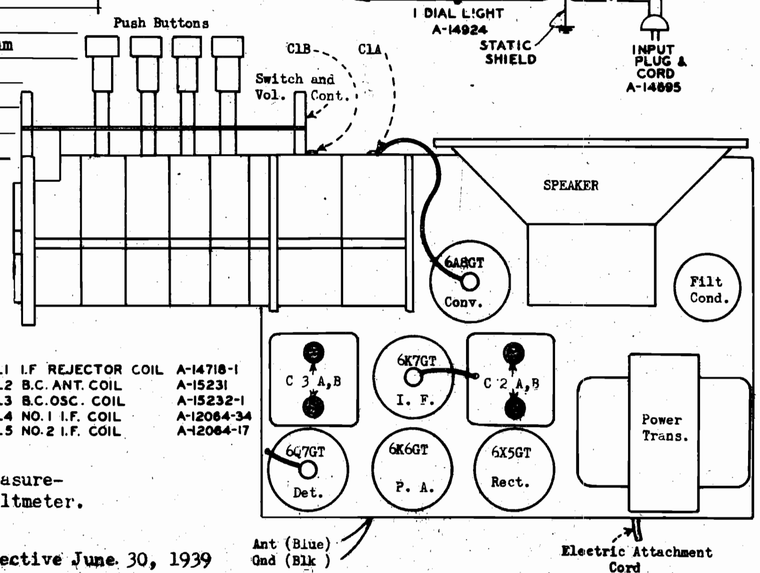
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer at last calibration mark with tuning condenser plates flush)						
2	I. F.	6A7 Grid	.1mf.	456 KC	Open	C3A,B	2nd I. F.
						C2A,B	1st I. F.
3	Rejector	Ant.	200mmf.	456 KC	Closed	C4	Adjust to minimum
4	BC Band	Ant.	200mmf.	1500 KC	1500 KC	C1B Osc.	Peak Accurately
						C1A Ant.	Peak Accurately
5	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)						
6	(Check operations 1 to 5 inclusive)						

VOLTAGE CHART

Line Voltage: 115 volts Position of Volume Control: Full with Antenna Disconnected

Tube	Function	#1	#2	#3	#4	#5	#6	#7	#8	Grid Cap
		Voltage of Socket Prongs to Gnd. (See Prong Nos. on Diagram)								
6A8GT	Converter	0	0	250	67	4	175	*6.3	0	.1
6K7GT	I. F. Amp.	0	0	250	67	0	1.5	*6.3	0	.1
6Q7GT	2nd. Det. AVC-AF	0	0	65	**	**	**	*6.3	0	0
6K6GT	P. A.	0	0	225	250	0	3.5	*6.3	10	-
6X5GT	Rectifier	-	0	275*	0	275*	0	0	300	

Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.
*AC volts.
**Cannot be measured with Weston Analyzer #665 Type 2.

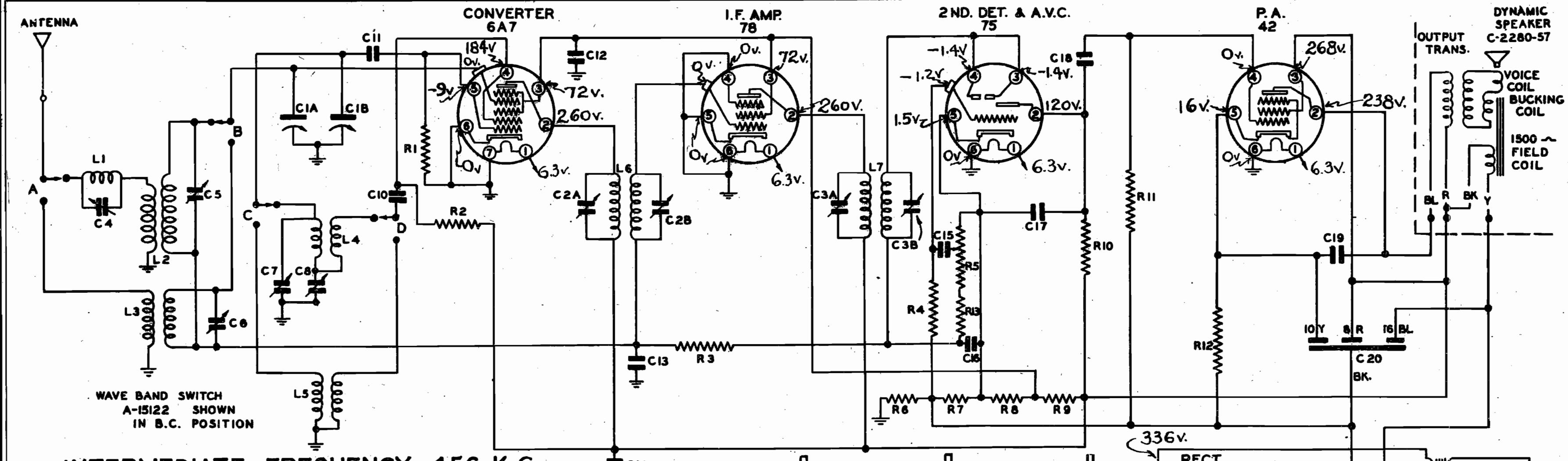


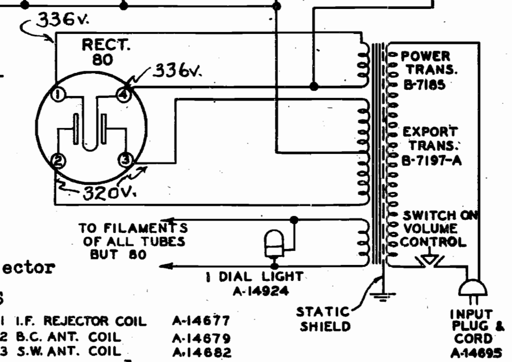
L1 I.F. REJECTOR COIL A-14718-1
L2 B.C. ANT. COIL A-15231
L3 B.C. OSC. COIL A-15232-1
L4 NO.1 I.F. COIL A-12064-34
L5 NO.2 I.F. COIL A-12064-17

(Original) Effective June 30, 1939

MODEL 530X
Schematic, Voltage, Socket
Alignment, Trimmers

SPARKS. WITHINGTON CO.





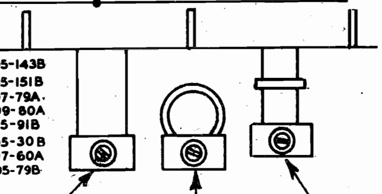
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS

C1A&B	VARIABLE CONDENSER	B-7181
C2A&B	NO.1 I.F. TRIMMER	B-7200-GG
C3A&B	NO.2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	S.W. ANT. TRIMMER	A-14088-5
C7	B.C. OSC. TRIMMER	B-7199-BY
C8	B.C. OSC. PADDER	B-7199-BY
C10	.001 MFD. 400V.	C-3204-2C
C11	50 MMFD. MOLDED	C-720-320
C12	.1 MFD. 200V.	C-3202-38C

C13	.05 MFD. 200V.	C-3202-28C
C14	.1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 200V.	C-3202-22C
C16	250 MMFD. MOLDED	C-720-324
C17	250 MMFD. MOLDED	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.01 MFD. 600V.	C-3206-76C
C20	16-8-10 MFD. ELECT.	A-14675
R1	56,000 Ω .25W.	C-2795-83B
R2	22,000 Ω .5 W.	C-2796-78C
R3	1 MEGOHM .25 W.	C-2795-98B
R4	560,000 Ω .25 W.	C-2795-95B
R5	500,000 Ω VOL. CONTROL	A-15129-2

R6	220 Ω	.25W.	C-2795-143B
R7	470 Ω	.25W.	C-2795-151B
R8	27,000 Ω	1 W.	C-2797-79A
R9	33,000 Ω	3 W.	C-2799-80A
R10	270,000 Ω	.25W.	C-2795-91B
R11	680,000 Ω	.25W.	C-2795-30B
R12	680 Ω	1 W.	C-2797-60A
R13	27,000 Ω	.25 W.	C-2795-79B



C5 - BC Ant. Trim.
C6 - SW Ant. Trim.
C4 - I-F Rejector

TRIMMER LOCATIONS UNDER CHASSIS

L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679
L3	S.W. ANT. COIL	A-14682
L4	B.C. OSC. COIL	A-14213-2
L5	S.W. OSC. COIL	A-14213-2
L6	NO.1 I.F. COIL	A-12064-16
L7	NO.2 I.F. COIL	A-12064-17

Notes: Voltage readings;- Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.

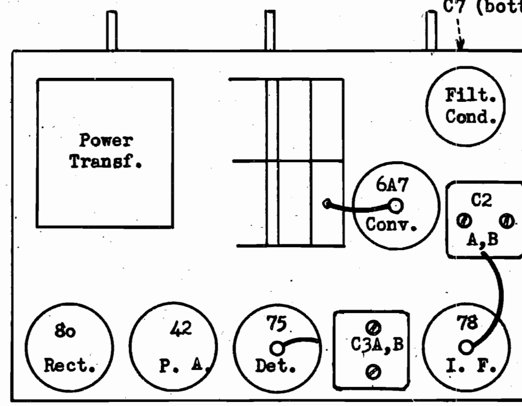
ALIGNMENT

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with last calibration mark at right end of scale with gang closed)							
2	I.F.	6A7 Grid	.1 mf.	456	BC.	Open	C3 A,B	2nd I.F.
							C2 A,B	1st I.F.
3	Rejector	Ant.	200 mmf.	456	BC.	Closed	C4	Adjust to minimum
4	Broad. Band	Ant.	200 mmf.	1500	BC.	1500	C7	
5	BC.	Ant.	200 mmf.	1500	BC.	1500	C5	
6	BC.	Ant.	200 mmf.	600	BC.	600	C8	
7	(Repeat operations 3 and 4)							
8	(Check for dial calibration and sensitivity at 1500 KC, 900 KC, 600 KC.)							
9	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6	**
10	(Check for dial calibration and sensitivity at 18 MC and 6 MC)							
11	(Check operations 1 to 9 inclusive)							

* 100 ohm and 200 mmf. in series.
** Be sure to trim to fundamental and not to image.

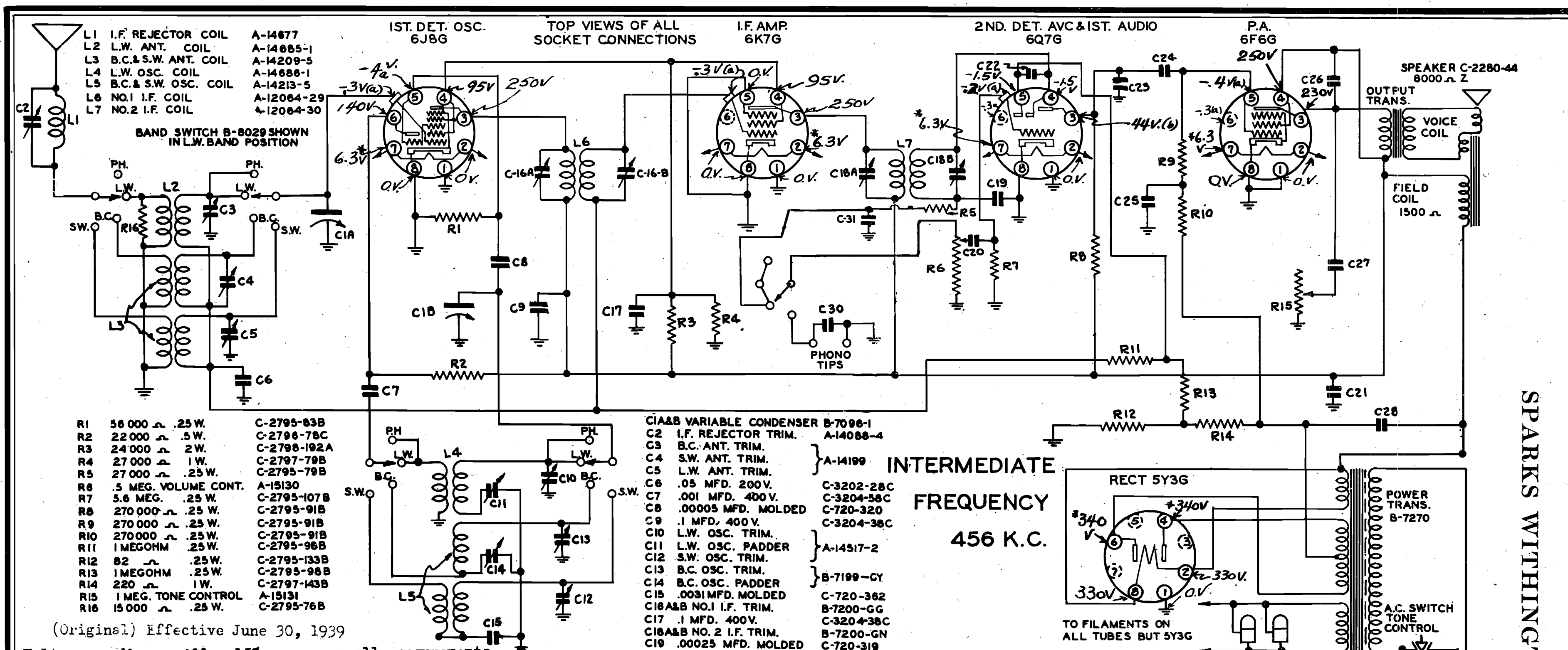
(Original) Effective June 30, 1939

C8 (top)
C7 (bottom)



MODEL 540LX
Schematic, Voltage, Socket Alignment, Trimmers

SPARKS WITHINGTON CO.



L1	I.F. REJECTOR COIL	A-14677
L2	L.W. ANT. COIL	A-14685-1
L3	B.C.& S.W. ANT. COIL	A-14209-5
L4	L.W. OSC. COIL	A-14686-1
L5	B.C.& S.W. OSC. COIL	A-14213-5
L6	NO.1 I.F. COIL	A-12064-29
L7	NO.2 I.F. COIL	A-12064-30

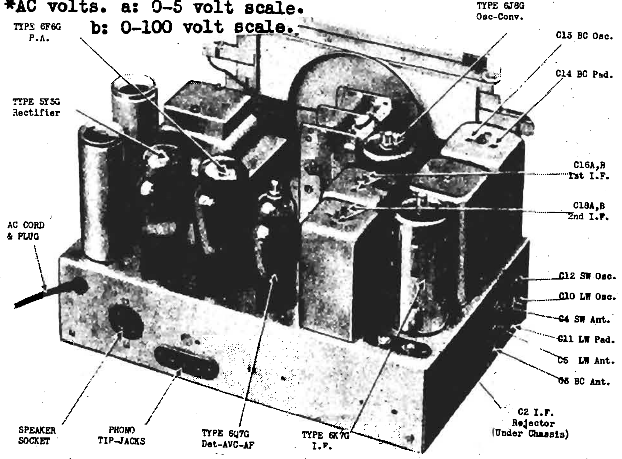
BAND SWITCH B-8029 SHOWN IN L.W. BAND POSITION

R1	56 000 Ω	.25 W.	C-2795-83B
R2	22 000 Ω	.5 W.	C-2796-78C
R3	24 000 Ω	2 W.	C-2798-192A
R4	27 000 Ω	1 W.	C-2797-79B
R5	27 000 Ω	.25 W.	C-2795-79B
R6	.5 MEG. VOLUME CONT.		A-15130
R7	5.6 MEG.	.25 W.	C-2795-107B
R8	270 000 Ω	.25 W.	C-2795-91B
R9	270 000 Ω	.25 W.	C-2795-91B
R10	270 000 Ω	.25 W.	C-2795-91B
R11	1 MEGOHM	.25 W.	C-2795-98B
R12	82 Ω	.25 W.	C-2795-133B
R13	1 MEGOHM	.25 W.	C-2795-98B
R14	220 Ω	1 W.	C-2797-143B
R15	1 MEG. TONE CONTROL		A-15131
R16	15 000 Ω	.25 W.	C-2795-76B

C1A&B	VARIABLE CONDENSER	B-7096-1
C2	I.F. REJECTOR TRIM.	A-14088-4
C3	B.C. ANT. TRIM.	A-14199
C4	S.W. ANT. TRIM.	A-14199
C5	L.W. ANT. TRIM.	A-14199
C6	.05 MFD. 200V.	C-3202-28C
C7	.001 MFD. 400V.	C-3204-58C
C8	.00005 MFD. MOLDED	C-720-320
C9	.1 MFD. 400V.	C-3204-38C
C10	L.W. OSC. TRIM.	A-14517-2
C11	L.W. OSC. PADDER	A-14517-2
C12	S.W. OSC. TRIM.	A-14517-2
C13	B.C. OSC. TRIM.	B-7199-CY
C14	B.C. OSC. PADDER	B-7199-CY
C15	.0031 MFD. MOLDED	C-720-362
C16A&B	NO.1 I.F. TRIM.	B-7200-GG
C17	.1 MFD. 400V.	C-3204-38C
C18A&B	NO. 2 I.F. TRIM.	B-7200-GN
C19	.00025 MFD. MOLDED	C-720-319
C20	.05 MFD. 200V.	C-3202-28C
C21	30 MFD. 300V. ELECT.	A-14072-A
C22	.0001 MFD. MOLDED	C-720-318
C23	.00025 MFD. MOLDED	C-720-319
C24	.05 MFD. 400V.	C-3204-84C
C-25	.1 MFD. 200V.	C-3202-38C
C26	.006 MFD. 600V.	C-3206-68C
C27	.03 MFD. 600V.	C-3206-80C
C28	16 MFD. 450V. ELECT	A-14073-A
C29	.006 MFD. 600V.	C-3206-12C
C30	.003 MFD. 200V.	C-3202-82C
C31	.0001 MFD. MICA	C-720-325

(Original) Effective June 30, 1939

Voltage readings: Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.
*AC volts. a: 0-5 volt scale.
b: 0-100 volt scale.



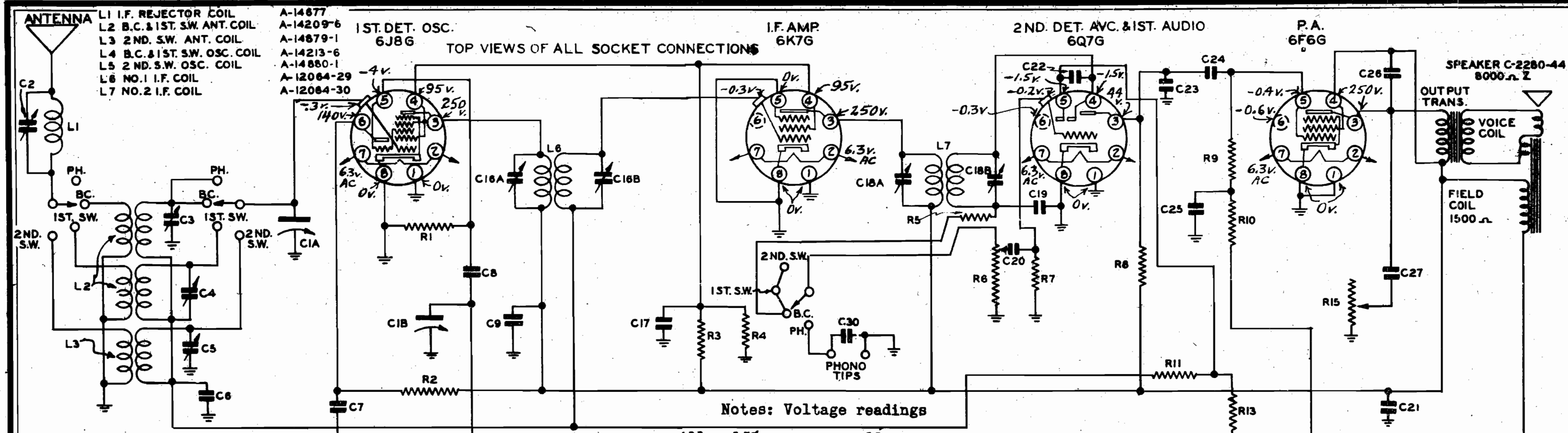
ALIGNMENT

(*)Use 200 mmf. condenser and 100 ohm non-inductive resistor in series.

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER		REMARKS
1	(Set dial pointer to last mark below 540 KC (BC) with tuning condenser plates flush)								
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C16A,B;C18A,B		
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C2		Adjust to minimum
4	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C13	Osc.	
							C3	Ant.	
5				600 KC	BC	600 KC	C14	Pad.	
6	(Repeat operation 4)								
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)								
8	Long Wave Band	Ant.	200 mmf.	400 KC	LW	400 KC	C10	Osc.	
							C5	Ant.	
9				150 KC	LW	150 KC	C11	Pad.	
10	(Repeat operations 8 and 9 once or twice to insure perfect adjustment)								
11	(Check calibration and sensitivity at 150 KC, 260 KC and 400 KC)								
12	Shortwave Band	Ant.	(*)	18 MC	SW	18 MC	C12	Osc.	Rock dial for peak adjustment.
							C4	Ant.	
13	(Check calibration and sensitivity at 6.0 MC, 9.0 MC and 18 MC)								

MODEL 540SX
Schematic, Voltage, Socket
Alignment, Trimmers

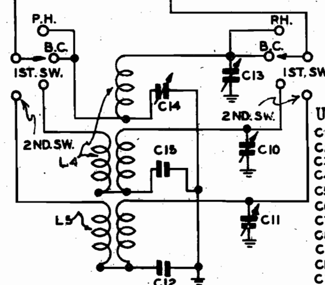
SPARKS WITHINGTON CO.



L1	I.F. REJECTOR COIL	A-14677
L2	B.C. & 1ST. S.W. ANT. COIL	A-14209-6
L3	2 ND. S.W. ANT. COIL	A-14879-1
L4	B.C. & 1ST. S.W. OSC. COIL	A-14213-6
L5	2 ND. S.W. OSC. COIL	A-14880-1
L6	NO. 1 I.F. COIL	A-12064-29
L7	NO. 2 I.F. COIL	A-12064-30

BAND SWITCH SHOWN IN B.C. POSITION
SWITCH PART NO. B-8029

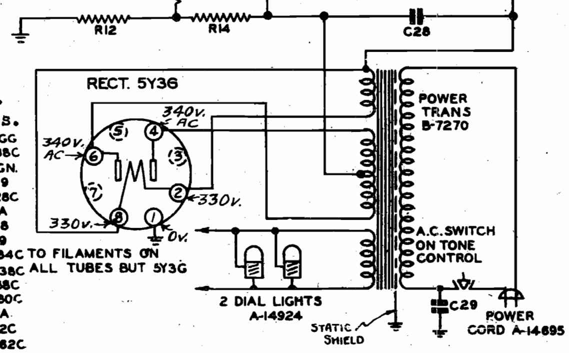
R-1	56000 Ω .25 W.	C-2795-83B
R2	22000 Ω 5 W.	C-2796-78C
R3	24000 Ω 2 W.	C-2798-192A
R4	27000 Ω 1 W.	C-2797-79B
R5	27000 Ω .25 W.	C-2795-79B
R6	.5 MEG. VOL. CONTROL	A-15130
R7	5.6 MEG. .25 W.	C-2795-107B
R8	270000 Ω .25 W.	C-2795-91B
R9	270000 Ω .25 W.	C-2795-91B
R10	270000 Ω .25 W.	C-2795-91B
R11	1 MEGOHM .25 W.	C-2795-98B
R12	82 Ω .25 W.	C-2795-133B
R13	1 MEGOHM .25 W.	C-2795-98B
R14	220 Ω 1 W.	C-2797-143B
R15	1 MEG. TONE CONTROL	A-15131

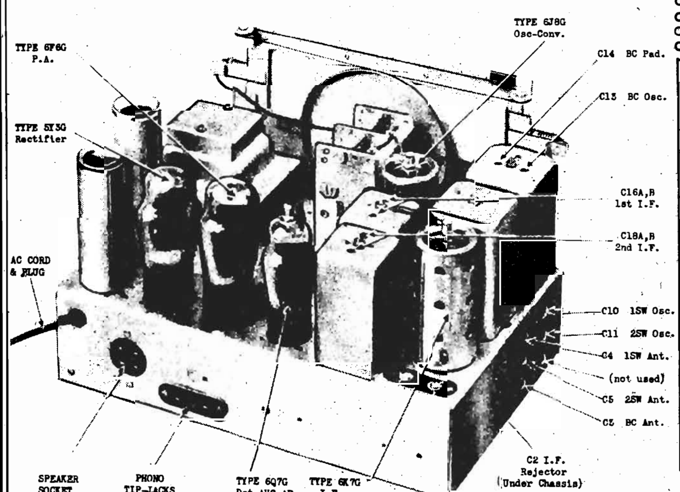


Notes: Voltage readings

Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.
All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.

C1A&B	VARIABLE CONDENSER	B-7098-1	C16A&B	NO. 1 I.F. TRIM.	B-7200-GG
C2	I.F. REJECTOR TRIM.	A-14088-4	C17	.1 MFD. 400 V.	C-3204-38C
C3	B.C. ANT. TRIM.	A-14199-4	C18A&B	NO. 2 I.F. TRIM.	B-7200-GN.
C4	NO. 1 S.W. TRIM.	A-14199-4	C19	.00025 MFD. MOLDED	C-720-319
C5	NO. 2 S.W. TRIM.	A-14199-4	C20	.05 MFD. 200 V.	C-3202-28C
C6	.05 MFD. 200 V.	C-3202-28C	C21	30 MFD. 300 V. ELECT.	A-14072-A
C7	.001 MFD. 400 V.	C-3204-58C	C22	.0001 MFD. MOLDED	C-720-318
C8	.00005 MFD. MOLDED	C-720-320	C23	.00025 MFD. MOLDED	C-720-319
C9	.1 MFD. 400 V.	C-3204-38C	C24	.05 MFD. 400 V.	C-3204-84C
C10	NO. 1 S.W. OSC. TRIM.	A-14954	C25	.1 MFD. 200 V.	C-3202-38C
C11	NO. 2 S.W. OSC. TRIM.	A-14954	C26	.006 MFD. 600 V.	C-3206-68C
C12	.00361 MFD. MICA	C-720-353	C27	.03 MFD. 600 V.	C-3206-80C
C13	B.C. OSC. TRIM.	B-7199-CY	C28	16 MFD. 450 V. ELECT.	A-14073-A
C14	B.C. OSC. PADDER	B-7199-CY	C29	.006 MFD. 600 V.	C-3206-12C
C15	.00114 MFD. MOLDED	C-720-368	C30	.003 MFD. 200 V.	C-3202-82C



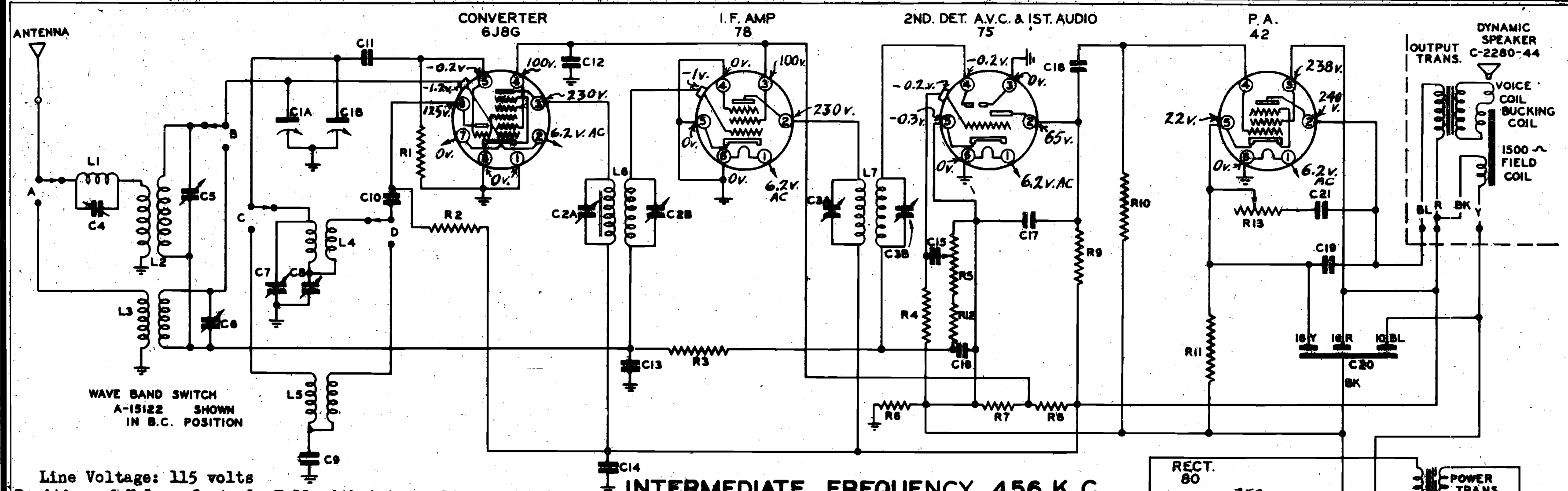


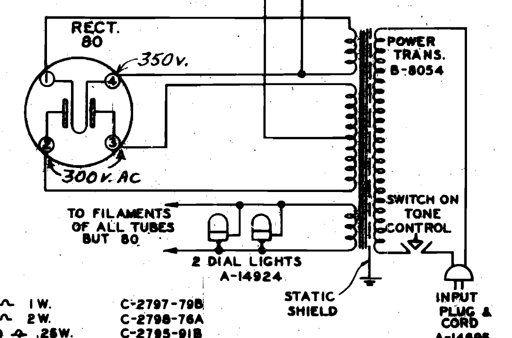
OPER-ATION	ALIGN-MENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark at end of scale with tuning condenser closed)							
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C18 A,B C16 A,B	2nd I.F. 1st I.F.
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broad-cast Band	Ant.	200 mmf.	1400 KC	BC	1400 KC	C13 Osc. C3 Ant.	
5				600 KC	BC	600 KC	C14 Pad	Rock dial for peak adj.
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC, 1400 KC)							INTERMEDIATE FREQUENCY 456 K.C.
8	1st SW Band	Ant.	*	7. MC	1 SW	7. MC	C10 Osc. C4 Ant.	
9	(Check calibration and sensitivity at 2.5 MC, 4. MC and 7. MC)							
10	2nd SW Band	Ant.	*	22. MC	2 SW	22. MC	C11 Osc. C5 Ant.	Rock dial for peak adj.
11	(Check calibration and sensitivity at 8. MC, 15. MC and 22. MC)							

* Use 200 mmf. condenser and 100 ohm non-inductive resistor in series. (Original) Effective June 30, 1939

SPARKS WITHINGTON CO.

MODEL 550M
Schematic, Voltage, Socket
Alignment, Trimmers



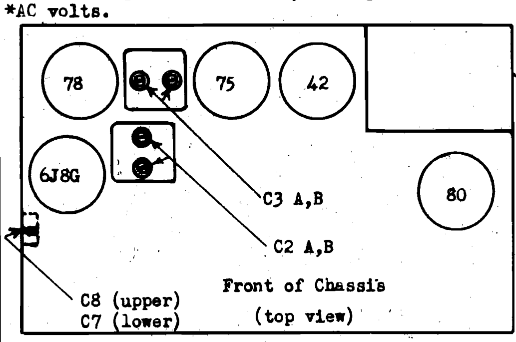


INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS

Line Voltage: 115 volts
Position of Volume Control: Full with Antenna Disconnected
Voltage readings:-Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.
*AC volts.

C1A&B	VARIABLE CONDENSER	B-8064
C2A&B	NO. 1 I.F. TRIMMER	B-7200-DD
C3A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	S.W. ANT. TRIMMER	A-14088-5
C7	B.C. OSC. TRIMMER	B-7199-BY
C8	B.C. OSC. PADDER	
C9	3880 MMFD. MOLDED	C-720-346
C10	100 MMFD. MOLDED	C-720-339
C11	25 MMFD. MOLDED	C-720-342
C12	.1 MFD. 200V.	C-3202-38C
C13	.05 MFD. 200V.	C-3202-28C
C14	.1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 200V.	C-3202-22C
C16	250 MMFD. MOLDED	C-720-324
C17	250 MMFD. MOLDED	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.003 MFD. 600V.	C-3206-62C
C20	16-10-16 MFD. ELECT.	A-14780
C21	.03 MFD. 600V.	C-3206-80C
R1	56,000 ∿ .25W.	C-2795-83B
R2	22,000 ∿ .5W.	C-2796-78C
R3	1 MEGOHM .25W.	C-2795-98B
R4	4.7 MEGOHM .25W.	C-2795-106B
R5	500,000 ∿ VOL. CONTROL	A-15130-1
R6	200 ∿ .25W	C-2795-142B
R7	27,000 ∿ 1W.	C-2797-79B
R8	15,000 ∿ 2W.	C-2798-76A
R9	270,000 ∿ .25W.	C-2795-91B
R10	680,000 ∿ .25W.	C-2795-30B
R11	680 ∿ 1W.	C-2797-60B
R12	56,000 ∿ .25W.	C-2795-83B
R13	TONE CONT. & SW.	A-15128
L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-4
L4	B.C. OSC. COIL	A-14213-2A
L5	S.W. OSC. COIL	
L6	NO. 1 I.F. COIL	A-15211
L7	NO. 2 I.F. COIL	A-12064-17



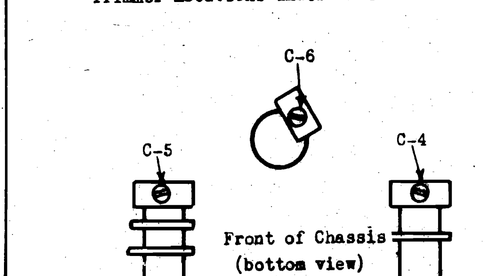
Front of Chassis
(top view)

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark on scale when condenser plates are flush)							
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C3 A,B	2nd I-F transformer
3							C2 A,B	1st I-F transformer
4	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C4	Adjust to minimum
5	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C7 Osc trim	Peak accurately
6							C5 Ant trim	Peak accurately
7				600 KC	BC	600 KC	C8 Osc pad.	Peak accurately
8	(Repeat operations 5 and 6)							
9	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
10	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6 Ant. trim	**
11	(Check calibration and sensitivity at 6 MC and 18 MC)							
12	(Check operations 1 to 11 inclusive)							

*100 ohm and 200 mmf. in series.
**Rock variable condenser slightly while adjusting for maximum output.

(Original) Effective June 30, 1939

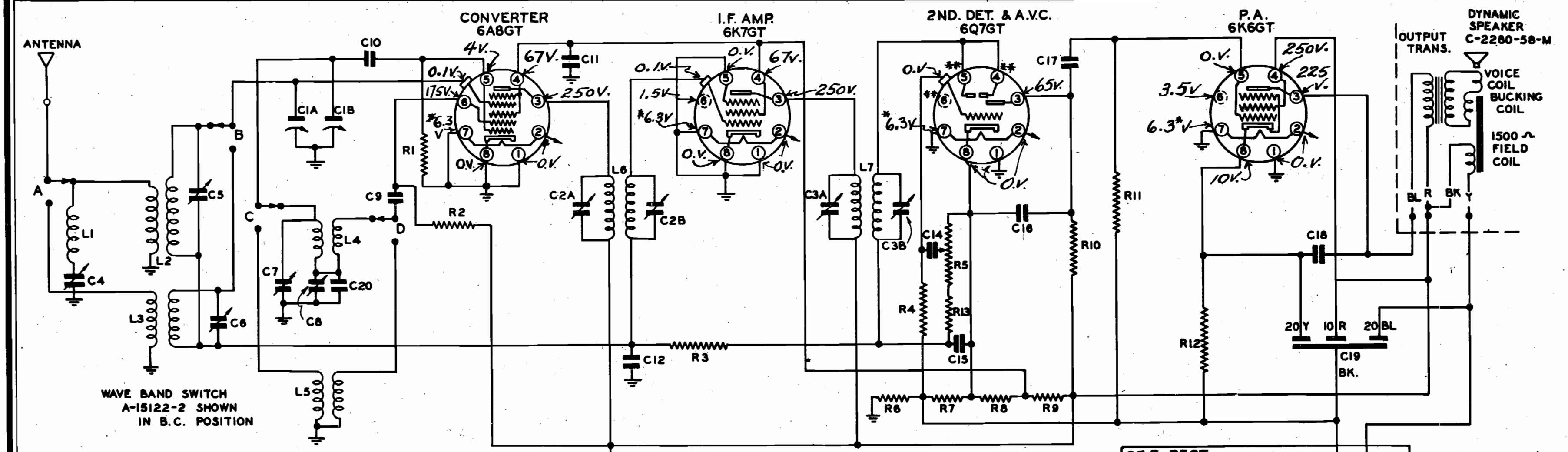
Trimmer Locations under Chassis



Front of Chassis
(bottom view)

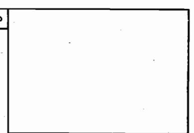
MODEL 57OM
Schematic, Voltage, Socket
Alignment, Trimmers

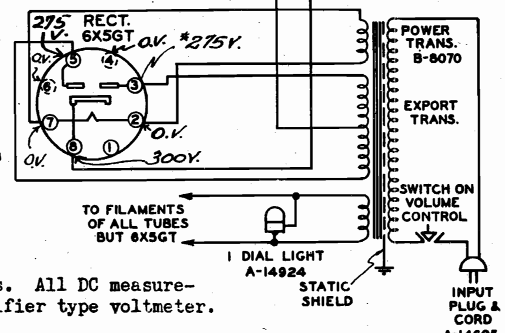
SPARKS WITHINGTON CO.



INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



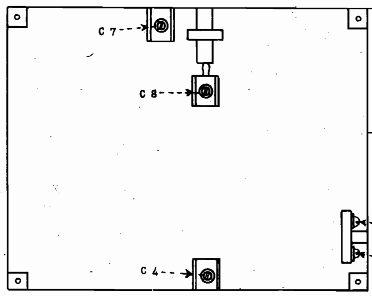


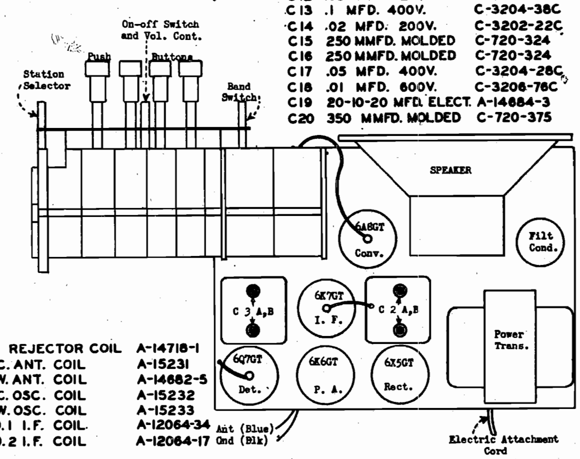
C1A&B	VARIABLE CONDENSER	B-8064-2
C2A&B	NO.1 I.F. TRIMMER	B-7200-GG
C3A&B	NO.2 I.F. TRIMMER	B-7200-GS
C4	I.F. REJECTOR TRIMMER	A-14088-2
C5	B.C. ANT. TRIMMER	A-14200
C6	S.W. ANT. TRIMMER	
C7	B.C. OSC. TRIMMER	A-14088-1
C8	B.C. OSC. PADDER	A-14088-1
C9	.001 MFD. 400V.	C-3204-2C
C10	50 MMFD. MOLDED	C-720-320
C11	.1 MFD. 200V.	C-3202-38C
C12	.05 MFD. 200V.	C-3202-28C
C13	.1 MFD. 400V.	C-3204-38C
C14	.02 MFD. 200V.	C-3202-22C
C15	250 MMFD. MOLDED	C-720-324
C16	250 MMFD. MOLDED	C-720-324
C17	.05 MFD. 400V.	C-3204-28C
C18	.01 MFD. 600V.	C-3206-78C
C19	20-10-20 MFD. ELECT.	A-14684-3
C20	350 MMFD. MOLDED	C-720-375

R1	33,000 Ω .25W.	C-2795-80B
R2	22,000 Ω .5W	C-2798-78C
R3	1 MEGOHM .25 W.	C-2795-98B
R4	560,000 Ω .25 W.	C-2795-95B
R5	500,000 Ω VOL. CONTROL	A-15129-4A
R6	220 Ω .25W.	C-2795-143B
R7	470 Ω .25W	C-2795-151B
R8	27,000 Ω 1 W.	C-2797-79B
R9	33,000 Ω 3 W.	C-2799-80A
R10	270,000 Ω .25W	C-2795-91B
R11	680,000 Ω .25W.	C-2795-30B
R12	680 Ω 1 W.	C-2797-60B
R13	27000 Ω .25W.	C-2795-79B

L1	I.F. REJECTOR COIL	A-14718-1
L2	B.C. ANT. COIL	A-15231
L3	S.W. ANT. COIL	A-14682-5
L4	B.C. OSC. COIL	A-15232
L5	S.W. OSC. COIL	A-15233
L6	NO.1 I.F. COIL	A-12064-34
L7	NO.2 I.F. COIL	A-12064-17

Voltage readings:
Allow 15% + or – on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.
*AC volts. **Cannot be measured with Weston Analyzer #665 Type 2. (Original) Effective June 30, 1939





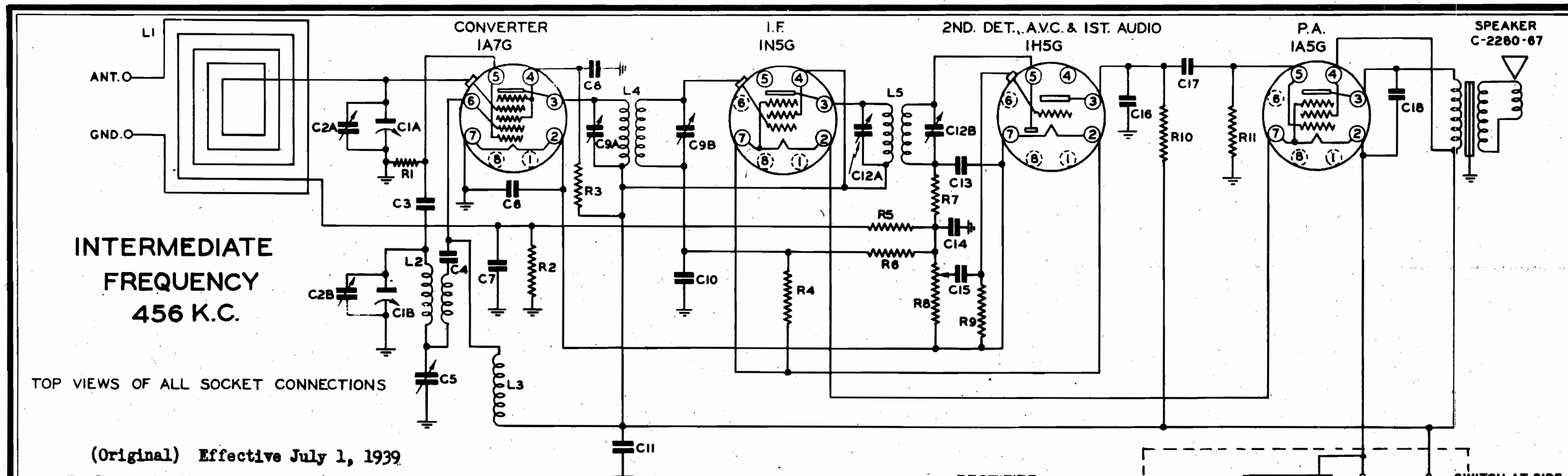
ALIGNMENT CHART

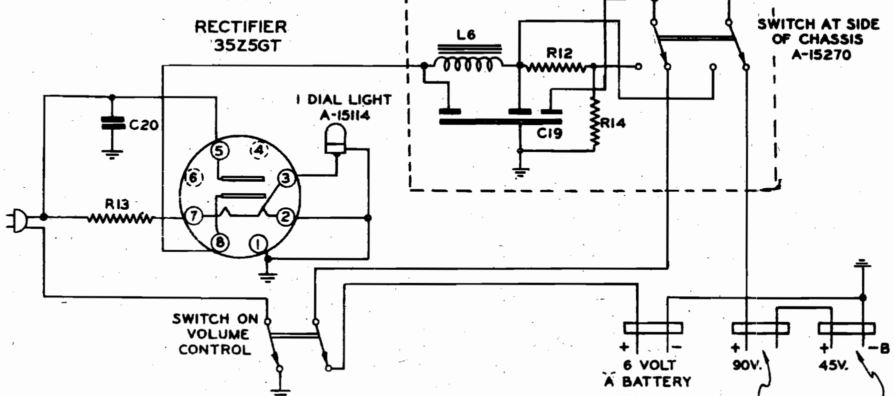
OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer at last calibration mark with tuning condenser plates flush)							
2	I. F.	6A7 Grid.	.1 mf.	456 KC	BC	Open	C3 A,B	2nd I. F.
							C2 A,B	1st. I. F.
3	Rejector	Ant.	200mmf.	456 KC	BC	Closed	C4	Adjust to minimum
4	Broad-cast Band	Ant.	200mmf.	1500 KC	BC	1500 KC	C7 osc.	Peak Accurately
							C5 ant.	Peak Accurately
5				600 KC	BC	600 KC	C8 pad.	Peak Accurately
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)							
8	S. W. Band	Ant.	(*)	18 MC	SW	18 MC	C6 ant.	(**)
9	(Check calibration and sensitivity at 18 MC and 6 MC)							
10	(Check operations 1 to 9 inclusive)							

(*) 100 ohm and 200mmf in series
(**) Rock tuning condenser while trimming for maximum output.

MODEL 590-1
Schematic, Changes

SPARKS WITHINGTON CO.





C1A&B	VARIABLE CONDENSER	B-8078
C2A&B	TRIMMERS ON VAR. CONDENSER	
C3	25 MMF. MICA	C-720-369
C4	250 MMF. MICA	C-720-324
C5	OSCILLATOR PADDER	A-14911-4A
C6	.03 MFD. 200V.	C-3202-80C
C7	.05 MFD. 200V.	C-3202-140C
C8	.05 MFD. 200V.	C-3202-28C
C9A&B	NO.1 I.F TRIMMER	B-7200-GG
C10	.05 MFD. 200V.	C-3202-140C
C11	.05 MFD. 200V.	C-3202-28C
C12A&B	NO.2 I.F. TRIMMER	B-7200-GG
C13	100 MMF. MICA	C-720-325
C14	100 MMF. MICA	C-720-325
C15	.01 MFD. 400V.	C-3204-132C
C16	100 MMF. MICA	C-720-325
C17	.01 MFD. 400V.	C-3204-132C
C18	.001 MFD. 1000V.	C-3210-114C
C19	20-20-20 MFD. 150V. ELECT.	A-14684-5
C20	.05 MFD. 400V.	C-3204-84C
R1	180,000 Ω .25 W.	C-2795-89B
R2	1 MEGOHM .25 W.	C-2795-98B
R3	68,000 Ω .25 W.	C-2795-84B
R4	1 MEGOHM .25 W.	C-2795-98B
R5	2.2 MEGOHM .25W.	C-2795-102B
R6	2.2 MEGOHM .25W.	C-2795-102B
R7	56,000 Ω .25W.	C-2795-83B
R8	500,000 Ω VOL. CONTROL	A-15132-1
R9	10 MEGOHM .25W.	C-2795-110B
R10	1 MEGOHM .25W.	C-2795-98B
R11	2.2 MEGOHM .25W.	C-2795-102B
R12	1790 Ω 5W.	A-14263-1
R13	547 Ω RESISTANCE CORD	A-15266
L1	LOOP ANTENNA	C-3227
L2	B.C. OSC. COIL	A-15232-2
L3	OSC. PLATE CHOKE	A-14718-1
L4	NO.1 I.F. COIL	A-12064-35
L5	NO.2 I.F. COIL	A-12064-35
L6	FILTER CHOKE	A-15272
R14	2700 Ω .25 W.	C-2795-67B

6 VOLT A BATTERY: BURGESS 2F4, EVEREADY 718, GENERAL 8F4, RAY-O-VAC P698A (K611 KIT)

BURGESS B-30, EVEREADY 762, GENERAL V-30-B, RAY-O-VAC P5303

(Original) Effective July 1, 1939

Early production sets of the SPARTON Model 590-1 employed the same circuit as shown except that a different filter and voltage reducing network was used.

The original circuit is shown below in Fig. 1 and the revised circuit in complete schematic.

Detailed instructions for making the circuit change which also involves the addition of a special resistor, are as follows:

1. Remove the chassis from the cabinet.
2. Locate the brown (5watt) resistor which connects to one of the socket terminals of the type 1A5G tube. Solder one lead of special resistor to this same terminal and the other lead to the next terminal on this same socket, proceeding in a clockwise direction. (This socket terminal is grounded at the socket eyelet.)

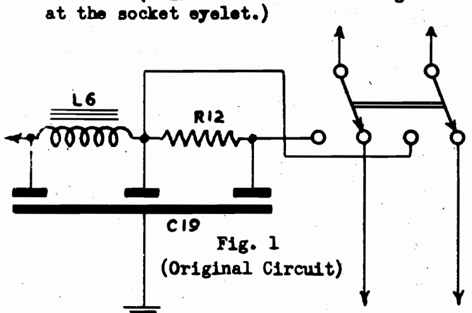


Fig. 1
(Original Circuit)

3. Clip off excess (unused) wire from resistor leads and be sure resistor (and resistor leads) do not touch other wires or parts of chassis.

This circuit revision should be incorporated in any original Model 590-1 sets, as it will safeguard the life of the 1.4 volt tubes in case the change-over (transfer) switch is raised while the set is being operated on AC, or in case tubes are changed while the set is being operated on AC.

4. Locate the yellow and black wire which connects to the electrolytic condenser (20-20-20 mf.)
5. Follow this wire to the point where it connects to the change-over (transfer) switch. Unsolder the yellow and black wire at this connection and connect it to the middle switch terminal. (The middle terminal already has another yellow and black wire as well as a condenser lead covered with black insulation connected to it. Do not disturb these connections.
6. All soldered connections should be made clearly and carefully.
7. Install chassis in cabinet.

(First Revision)

Effective July 19, 1939

MODEL 590-1
Alignment, Voltage
Trimmers, Socket

SPARKS WITHINGTON CO.

VOLTAGE CHART

Receiver Operated on: AC Supply
Line Voltage: 117 Volts

Volume Control on Full
Dial Tuned to Quiet Channel

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic Diagram)								
		No.1	No.2	No.3	No.4	No.5	No.6	No. 7	No.8	Grid Cap
1A7G	Converter	90	1.5	92	28	0	90	0	90	0
1N5G	I. F. Amplifier	0	4.4	92	92	0	6	2.8	0	0
1H5G	Det. AVC. Audio	0	2.8	0*	0	0	0	1.5	0	0
1A5G	P. A.	0	5.8	88	92	0	0	4.4	5.8	-
35Z5GT	Rectifier	0	0	1.8	0	120	0	28	152	-

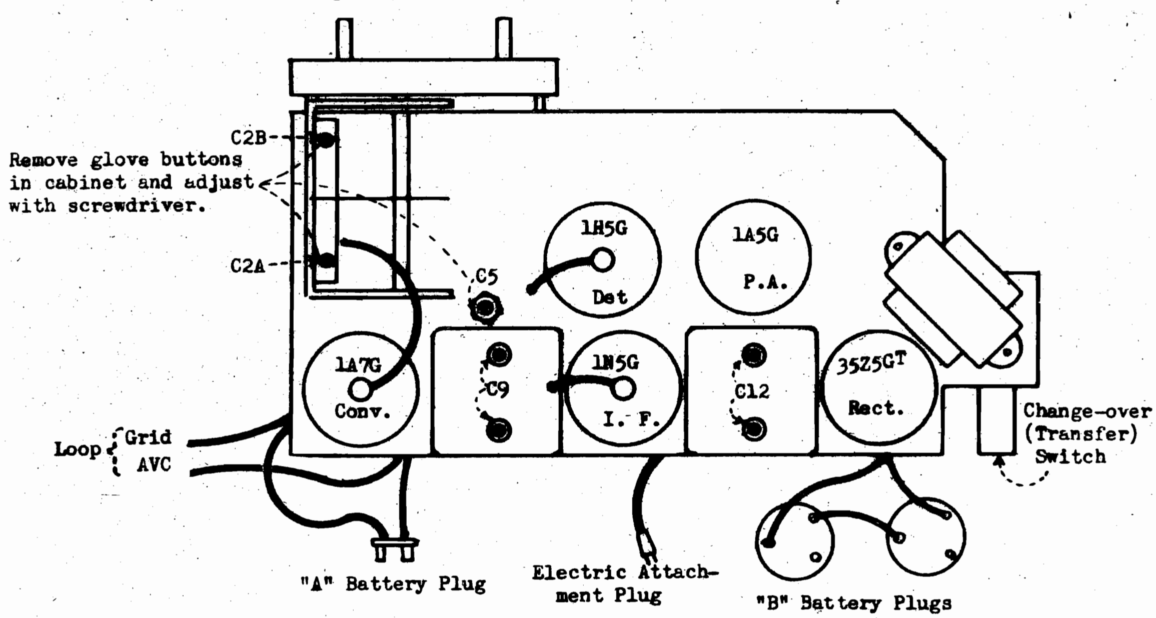
Notes: Voltage and resistance readings are for schematic diagram Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 2. (1000 ohms per volt)

*Cannot be measured with Weston Selective Analyzer No. 665, Type 2.

ALIGNMENT CHART

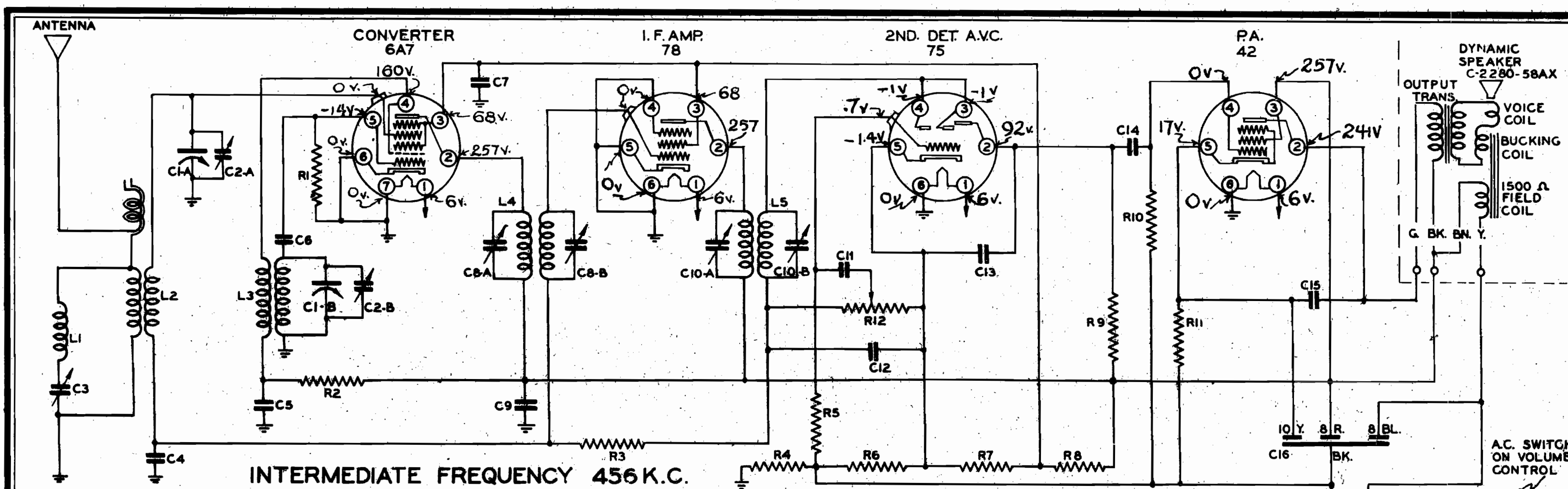
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING CONDENSER SETTING	TRIMMER	REMARKS
1	(Set pointer parallel with horizontal lines when condenser plates are flush)						
2	I. F.	1A7G Grid	.1 mf.	456KC	Open	C 12 A & B	2nd I. F.
						C 9 A & B	1st I. F.
3	Broadcast Band	Separate Loop*	*	1500KC	1500KC	C 2B Osc.	Peak Accurately*
						C 2A Ant.	Peak Accurately*
4				600KC	600KC	C5 Pad.	Peak Accurately*
5	(Repeat operation 3)						
6	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)						
7	(Check operations 1 to 6 inclusive)						

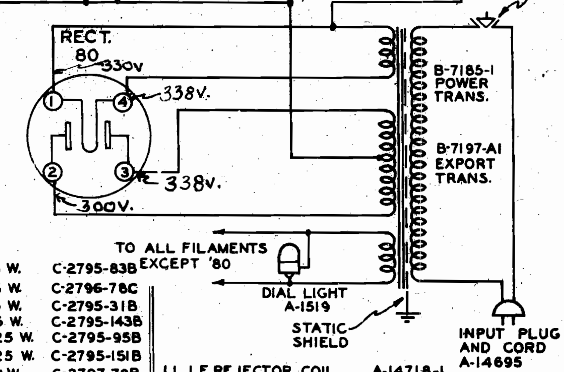
*Preliminary alignment af antenna and oscillator adjustments may be made with chassis out of cabinet. Final alignment must be made with chassis installed in cabinet and with back cover snapped shut.
For final alignment it is recommended that an extra Model 590-1 Loop Antenna (Part No. C-3327) be obtained. Connect generator "Ant" to loop terminal marked "Grid" and generator "Gnd" to loop terminal marked "AVC". With back cover of set snapped shut, place the extra loop directly in back of the Model 590-1 being aligned so that it will be parallel with the loop inside the set and from one to three feet distant.
The antenna trimmer, oscillator trimmer and oscillator padder can be reached by removing glove buttons in top of cabinet. (See chassis diagram.)



MODEL 580X
Schematic, Voltage, Socket
Alignment, Trimmers

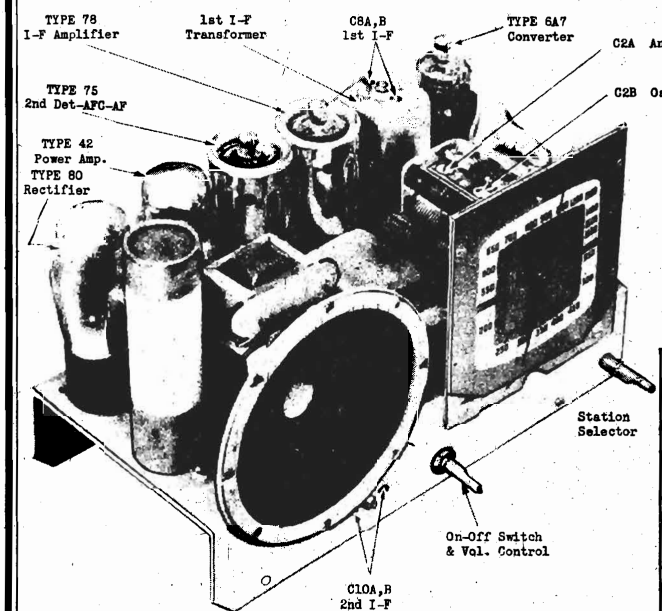
SPARKS WITHINGTON CO.





Notes: Voltage readings; Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages are + DC voltages.

Position of Volume Control: Full with Antenna Disconnected Line Voltage: 115 volts



	C1-A&B VARIABLE COND. (580X)	B-7198
	C1-A&B VARIABLE COND. (5518-A)	B-7237-1
C2A Ant. Trim. C2B Osc. Trim.	C2 TRIMMERS ON VARIABLE CONDENSER	
	C3 I.F. REJECTOR TRIM. (5518-A)	A-14398
	C3 I.F. REJECTOR TRIM. (5)	A-14720
	C4 .05 MFD. 200 V.	C-3202-28C
	C5 .006 MFD. 400 V.	C-3204-12C
	C6 50 MMF. MOLDED	C-720-320
	C7 .1 MFD. 200 V.	C-3202-38C
	C8-A&B NO. 1 I.F. TRIMMER	B-7200-GG
	C9 .1 MFD. 400 V.	C-3204-38C
	C10-A&B NO. 2 I.F. TRIMMER	B-7200-GN
	C11 .02 MFD. 200 V.	C-3202-22C
	C12 250 MMF. MOLDED	C-720-324
	C13 250 MMF. MOLDED	C-720-324
	C14 .05 MFD. 400 V.	C-3204-28C
	C15 .01 MFD. 600 V.	C-3206-76C
	C16 10-8-8 MFD. ELECT. (580X)	A-14715
	C16 10-8-8 MFD. ELECT. (5518-A)	A-14785

R1	56,000 Ω	.25 W.	C-2795-83B
R2	22,000 Ω	.5 W.	C-2796-78C
R3	1 MEGOHM	.25 W.	C-2795-31B
R4	220 Ω	.25 W.	C-2795-143B
R5	560,000 Ω	.25 W.	C-2795-95B
R6	470 Ω	.25 W.	C-2795-151B
R7	27,000 Ω	1 W.	C-2797-79B
R8	33,000 Ω	3 W.	C-2799-80A
R9	270,000 Ω	.25 W.	C-2795-91B
R10	680,000 Ω	.25 W.	C-2795-30B
R11	680 Ω	.5 W.	C-2796-60C
R12	.5 MEG. VOLUME CONT. & SWITCH		A-15129-3

L1	I.F. REJECTOR COIL	A-14718-1
L2	ANTENNA COIL	B-7094-1
L3	OSCILLATOR COIL	A-12052-4
L4	NO. 1 I.F. TRANS.	A-12064-16
L5	NO. 2 I.F. TRANS.	A-12064-17

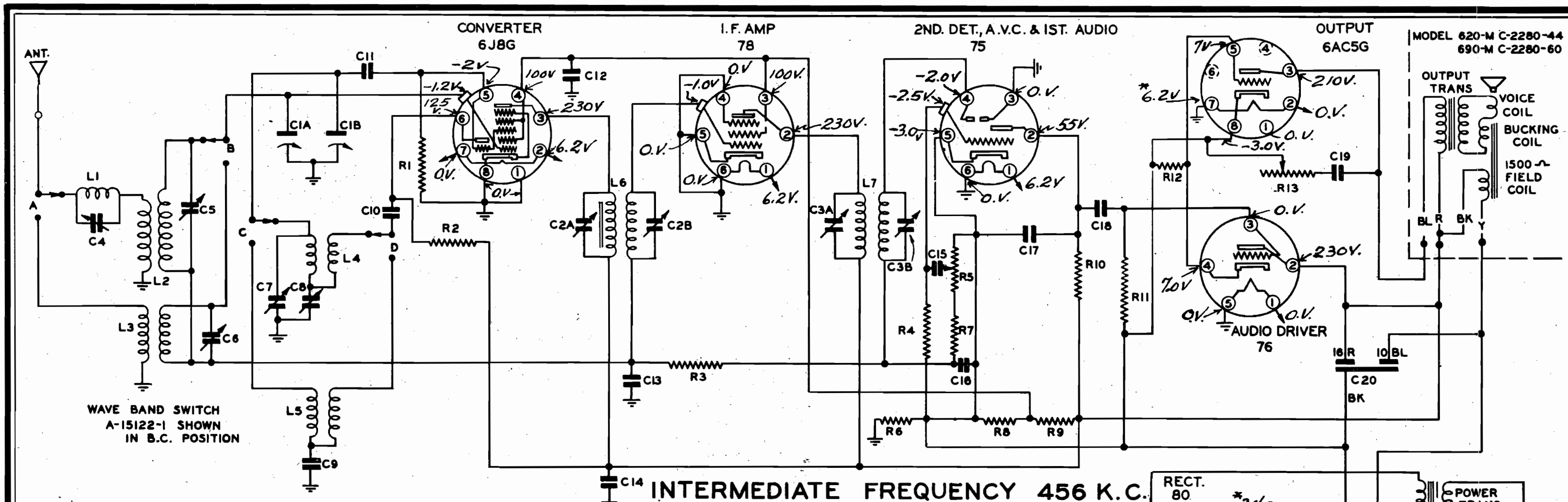
(Original) Effective June 30, 1939

ALIGNMENT

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to end of scale with condenser gang closed)						
2	I.F.	6A7 Grid	.1 mf.	456	Closed	C10 A,B C8 A,B	(2nd I.F.) (1st I.F.)
3	Rejector	Ant.	150 mmf.	456	Closed	C3	Adjust to min.
4	Broadcast Band	Ant.	150 mmf.	1500	1500	C2 A Ant. C2 B Osc.	
5	(Check for dial reading and sensitivity at 600 kc., 1000 kc.)						
6	(Check operations 1 to 5 inclusive)						

MODELS 620M, 690M
Schematic, Voltage, Socket
Alignment, Trimmers

SPARKS WITHINGTON CO.

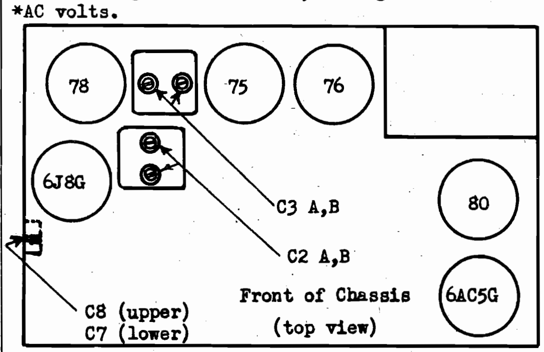


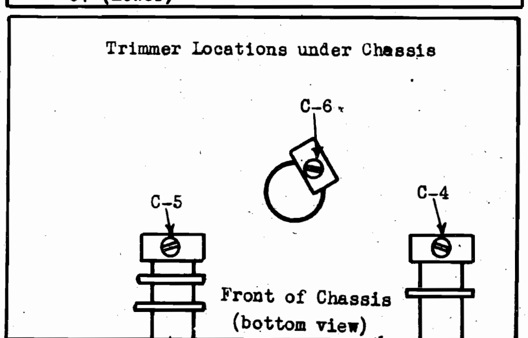
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS

Voltage readings:–Allow 15% + or – on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.
*AC volts.

C1A & B	VARIABLE CONDENSER	B-7229
C2A & B	NO.1 I.F. TRIMMER	B-7200-DD
C3A & B	NO.2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	S.W. ANT. TRIMMER	A-14088-5
C7	B.C. OSC. TRIMMER	B-7199-BY
C8	B.C. OSC. PADDER	B-7199-BY
C9	3880 MMFD. MOLDED	C-720-346
C10	100 MMFD. MOLDED	C-720-339
C11	25 MMFD MOLDED	C-720-342
C12	.1 MFD. 200 V.	C-3202-38C
C13	.05 MFD. 200V.	C-3202-28C
C14	.1 MFD. 400V.	C-3204-38G
C15	.02 MFD. 200 V.	C-3202-22C
C16	250 MMFD. MOLDED	C-720-324
C17	250 MMFD. MOLDED	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.03 MFD. 600V.	C-3206-80C
C20	16-10 MFD. ELECT.	A-14799
R1	56,000 Ω .25 W.	C-2795-83B
R2	22,000 Ω .5W.	C-2796-78C
R3	1 MEGOHM .25 W.	C-2795-98B
R4	4.7 MEGOHM .25W.	C-2795-106B
R5	500,000 Ω VOL. CONTROL	A-15130-1
R6	200 Ω .25W.	C-2795-142B
R7	56,000 Ω .25 W.	C-2795-83B
R8	27,000 Ω 1 W.	C-2797-79B
R9	15,000 Ω 2 W.	C-2798-76A
R10	270,000 Ω .25W.	C-2795-91B
R11	1 MEGOHM .25W.	C-2795-98B
R12	27,000 Ω .25W.	C-2795-79B
R13	TONE CONTROL & SW.	A-15128-1
L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-4
L4	B.C. OSC. COIL	A-14213-2A
L5	S.W. OSC. COIL	A-14213-2A
L6	NO.1 I.F. COIL	A-15211
L7	NO.2 I.F. COIL	A-12064-17





OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark on scale when condenser plates are flush)							
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C3 A,B	2nd I-F transformer
3							C2 A,B	1st I-F transformer
4	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C4	Adjust to minimum
5	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C7 Osc trim	Peak accurately
6							C5 Ant trim	Peak accurately
7				600 KC	BC	600 KC	C8 Osc pad.	Peak accurately
8	(Repeat operations 5 and 6)							
9	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
10	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6 Ant. trim	**
11	(Check calibration and sensitivity at 6 MC and 18 MC)							
12	(Check operations 1 to 11 inclusive)							

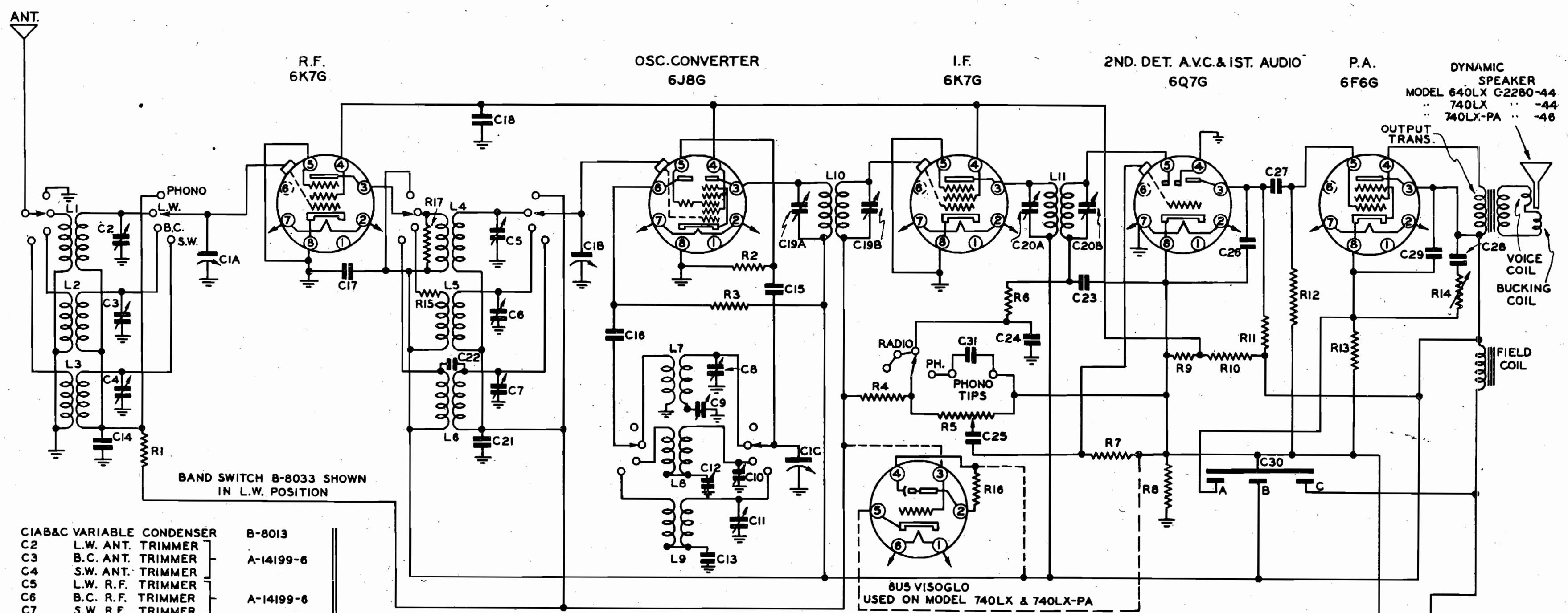
*100 ohm and 200 mmf. in series.
**Rock variable condenser slightly while adjusting for maximum output.

(Original) Effective June 30, 1939

MODELS 640LX,740LX,740LX-PA

SPARKS WITHINGTON CO. Schematic

SPARTON SUPERHETERODYNE MODELS 640LX, 740LX & 740LX-PA
INTERMEDIATE FREQUENCY 456 K.C.
TOP VIEWS OF ALL SOCKET CONNECTIONS



C1A B & C	VARIABLE CONDENSER	B-8013
C2	L.W. ANT. TRIMMER	A-14199-6
C3	B.C. ANT. TRIMMER	
C4	S.W. ANT. TRIMMER	
C5	L.W. R.F. TRIMMER	A-14199-6
C6	B.C. R.F. TRIMMER	
C7	S.W. R.F. TRIMMER	
C8	L.W. OSC. TRIMMER	A-14517-5
C9	L.W. OSC. PADDER	
C10	B.C. OSC. TRIMMER	B-7199-BY
C11	S.W. OSC. TRIMMER	A-14517-5
C12	B.C. OSC. PADDER	B-7199-BY
C13	2900 MMF. MOLDED	C-720-378
C14	.05 MFD. 200V.	C-3202-84C
C15	25 MMF. MOLDED	C-720-342
C16	250 MMF. MOLDED	C-720-324
C17	.1 MFD. 400V.	C-3204-38C
C18	.1 MFD. 400V.	C-3204-38C
C19A&B	IST. I.F. TRIMMER	B-7200-GG
C20A&B	2ND. I.F. TRIMMER	B-7200-GN
C21	.05 MFD. 200V.	C-3202-84C
C22	10 MMF. MOLDED	C-720-367
C23	250 MMF. MOLDED	C-720-324
C24	100 MMF. MOLDED	C-720-325
C25	.05 MFD. 200V.	C-3202-84C
C26	250 MMF. MOLDED	C-720-324
C27	.05 MFD. 400V.	C-3204-28C
C28	.03 MFD. 600V.	C-3206-80C
C29	.003 MFD. 600V.	C-3206-118C
C30	ELECT. CONDENSER	A-14684-2
C31	.001 MFD. 200V	C-3202-58C
C32	.006 MFD. MOLDED	C-720-347
C33	.006 MFD. MOLDED	C-720-347

R1	100,000 Ω .25W.	C-2795-86B
R2	56,000 Ω .25W.	C-2795-83B
R3	22,000 Ω .5W.	C-2796-78C
R4	1 MEGOHM .25W.	C-2795-98B
R5	VOLUME CONTROL	A-15127
R6	56,000 Ω .25W.	C-2795-83B
R7	5.6 MEGOHM .25W.	C-2795-107B
R8	130 Ω .25W.	C-2795-138B
R9	39,000 Ω 1W.	C-2797-81B
R10	27,000 Ω 3W.	C-2799-79A
R11	270,000 Ω .25W.	C-2795-91B
R12	680,000 Ω .25W.	C-2795-96B
R13	680 Ω 1W.	C-2797-60B
R14	TONE CONTROL & SWITCH	A-15128-1
R15	8200 Ω .25W.	C-2795-73B
R16	220,000 Ω .25W.	C-2795-90B
R17	130 Ω .25W.	C-2795-138B

L1	L.W. ANT. COIL	A-14209-8
L2	B.C. ANT. COIL	
L3	S.W. ANT. COIL	A-14682-6
L4	L.W. R.F. COIL	A-14210-2
L5	B.C. R.F. COIL	
L6	S.W. R.F. COIL	A-15108-1
L7	L.W. OSC. COIL	A-14213-12
L8	B.C. OSC. COIL	
L9	S.W. OSC. COIL	A-14880-4
L10	IST. I.F. COIL	A-12064-33
L11	2ND. I.F. COIL	A-12064-17

(Original) Effective September 1, 1939

MODELS 640LX,740LX
740LX-PA

SPARKS WITHINGTON CO.

MODELS 640SX,740SX
740SX-PA
Voltage,Alignment,Trimmers

VOLTAGE CHART

Line Voltage: 115 volts
Position of Band Switch: Broadcast
Position of Volume Control: Full with Antenna Disconnected
Position of Radio-Phono Switch: Radio

Tube	Function	Voltage of Socket Prongs to Gnd. See Prong Nos. on Schematic Diagram								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6K7G	R-F Amp.	0	0	230	90	0	-	6.3*	0	.1
6J8G	Osc. Converter	0	0	275	90	.2	135	6.3*	0	1.25
6K7G	I. F. Amplifier	0	0	275	90	0	-	6.3*	0	1.25
6Q7G	2nd Det. AVC AF.	0	0	50	1.	0	3	6.3*	3.5	3
6F6G	Power Amplifier	0	0	255	275	**	3.5	6.3*	20	-
5Y3G	Rectifier	0	375	-	350*	-	350*	-	375	-
6U5	Viso-Glo	0	150	.5	300	4	6.3*	-	-	-

Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts. **Cannot test with Weston Analyzer No. 665 Type 2.

ALIGNMENT CHART

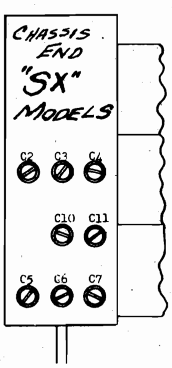
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER		Adjust all Trimmers for Maximum Output
1	(Set pointer even with last calibration mark when condenser plates are flush.)								
2	I. F.	6J8G	.1 mf	456 KC	BC	Open	C20 A,B	C20, A,B	2nd I. F.
							C19, A,B	C19, A,B	1st I. F.
3	Broad-cast Band	Ant.	200 mmf	1400 KC	BC	1400KC	C8 FOR	C10 FOR	BC Oscillator
							C5 "SX"	C6 "LX"	BC R.F.
							C2 MODELS	C3 MODELS	BC Antenna
4				600 KC	BC	600KC	C9	C12	BC Padder
5	(Repeat operation 3)								
6	(Check calibration and sensitivity at 600 KC, 900 KC and 1400 KC)								

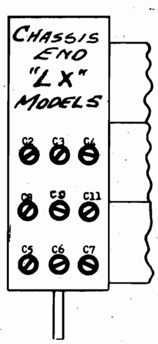
"SX" Models

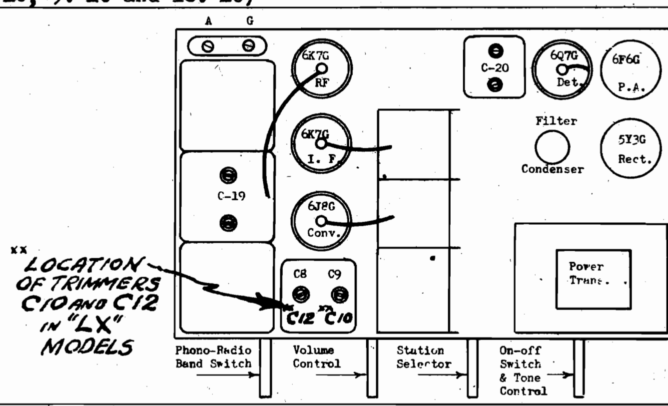
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	Adjust all Trimmers for Maximum Output
7	1st SW Band	Ant.	100 ohm 200 mmf series	6. MC	1 SW	6. MC	C10	1SW Oscillator
							C6	1SW R-F
							C3	1SW Antenna
8	(Check calibration and sensitivity at 2.5MC and 6.MC.)							
9	2nd SW Band	Ant.	100 ohm 200 mmf series	21 MC	2 SW	21. MC	C11	2SW Oscillator
							C7	2SW R-F
							C4	2SW Antenna
10	(Check calibration and sensitivity at 7.5 MC, 18. MC and 21. MC)							
11	(Check operation 1 to 10 inclusive.)							

"LX" Models

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	Adjust all Trimmers for Maximum Output
7	Long Wave Band	Ant.	200 mmf	400KC	LW	400KC	C8	LW Oscillator
							C5	LW R-F
							C2	LW Antenna
8				150KC	LW	150KC	C9	LW Padder
9	(Repeat operation 7)							
10	(Check calibration and sensitivity at 400 KC, 300 KC and 150 KC)							
11	Short Wave Band	Ant.	100 ohm 200 mmf series	18 MC	SW	18 MC	C11	SW Oscillator
							C7	SW R-F
							C4	SW Antenna
12	(Check calibration and sensitivity at 6. MC, 9. MC and 18. MC)							
13	(Check operation 1 to 12 inclusive.)							

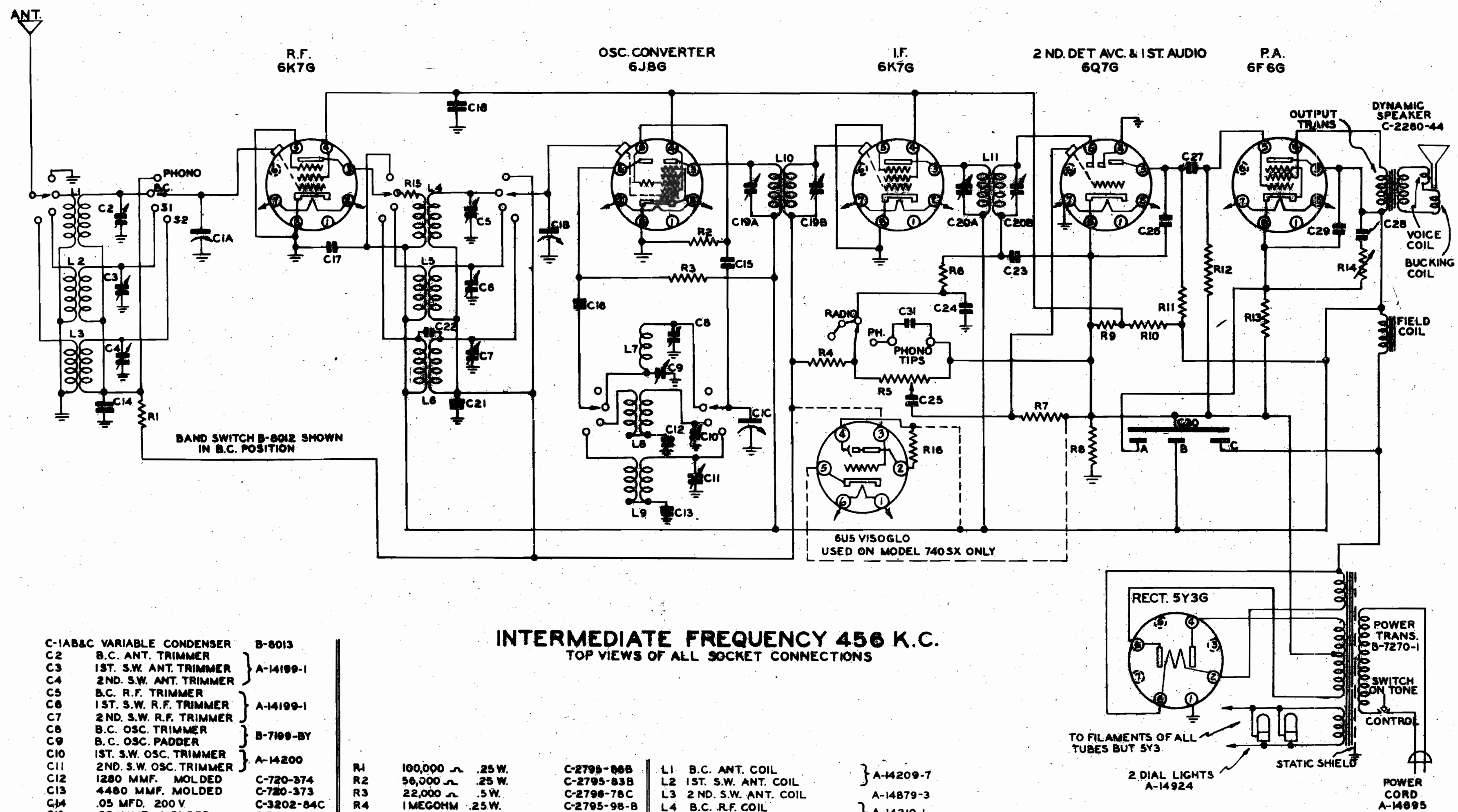






MODELS 640SX, 740SX, 740SX-PA

SPARKS WITHINGTON CO. Schematic



INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS

C-1AB&C	VARIABLE CONDENSER	B-8013
C2	B.C. ANT. TRIMMER	A-14199-1
C3	1ST. S.W. ANT. TRIMMER	
C4	2ND. S.W. ANT. TRIMMER	
C5	B.C. R.F. TRIMMER	A-14199-1
C6	1ST. S.W. R.F. TRIMMER	
C7	2ND. S.W. R.F. TRIMMER	
C8	B.C. OSC. TRIMMER	B-7199-BY
C9	B.C. OSC. PADDER	
C10	1ST. S.W. OSC. TRIMMER	A-14200
C11	2ND. S.W. OSC. TRIMMER	
C12	1280 MMF. MOLDED	C-720-374
C13	4480 MMF. MOLDED	C-720-373
C14	.05 MFD. 200 V	C-3202-84C
C15	25 MMF. MOLDED	C-720-342
C16	250 MMF. MOLDED	C-720-324
C17	.1 MFD. 400 V.	C-3204-38C
C18	.1 MFD. 400 V.	C-3204-38C
C19A&B	1ST. I.F. TRIMMER	B-7200-GG
C20A&B	2 ND. I.F. TRIMMER	B-7200-GN
C21	.05 MFD. 200 V.	C-3202-84C
C22	10 MMF. MOLDED	C-720-367
C23	250 MMF. MOLDED	C-720-324
C24	100 MMF. MOLDED	C-720-325
C25	.05 MFD. 200 V.	C-3202-84C
C26	250 MMF. MOLDED	C-720-324
C27	.05 MFD. 400 V.	C-3204-28C
C28	.03 MFD. 600 V.	C-3206-80C
C29	.003 MFD. 600 V.	C-3206-118C
C30	ELECT. CONDENSER	A-14684-2
C31	.001 MFD. 200 V.	C-3202-58C

R1	100,000 Ω	.25 W.	C-2795-86B
R2	56,000 Ω	.25 W.	C-2795-83B
R3	22,000 Ω	.5 W.	C-2796-78C
R4	1 MEGOHM	.25 W.	C-2795-98-B
R5	VOLUME CONTROL		A-15127
R6	56,000 Ω	.25 W.	C-2795-83B
R7	5.6 MEGOHM	.25 W.	C-2795-107B
R8	130 OHM	.25 W.	C-2795-136B
R9	39,000	1 W.	C-2797-81B
R10	27,000 Ω	3 W.	C-2799-79A
R11	270,000 Ω	.25 W.	C-2795-91B
R12	680,000 Ω	.25 W.	C-2795-96B
R13	680 OHM	1 W.	C-2797-60B
R14	TONE CONTROL & SWITCH		A-15128-1
R15	8200 Ω	.25 W.	C-2795-73B
R16	220,000 Ω	.25 W.	C-2795-90B

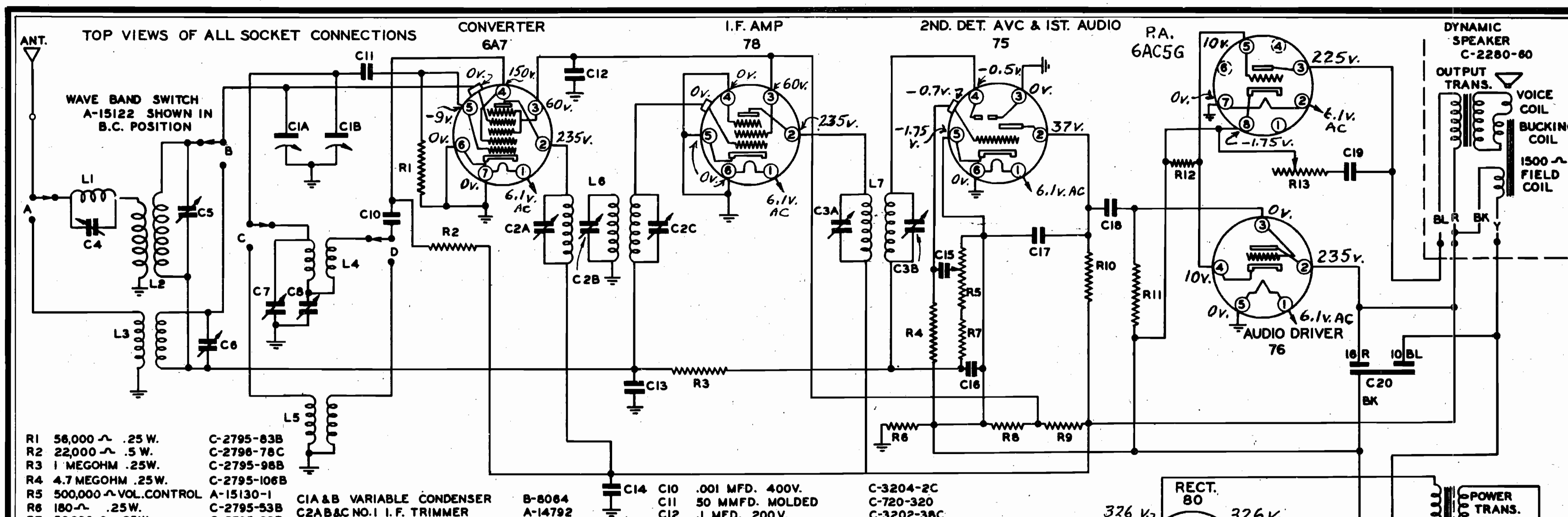
L1	B.C. ANT. COIL	A-14209-7
L2	1ST. S.W. ANT. COIL	
L3	2 ND. S.W. ANT. COIL	A-14879-3
L4	B.C. R.F. COIL	A-14210-1
L5	1ST. S.W. R.F. COIL	
L6	2ND S.W. R.F. COIL	A-15108
L7	B.C. OSC. COIL	A-14213-10
L8	1ST. S.W. OSC. COIL	
L9	2 ND. S.W. OSC. COIL	A-14880-3
L10	1ST. I.F. COIL	A-12064-33
L11	2ND. I.F. COIL	A-12064-17

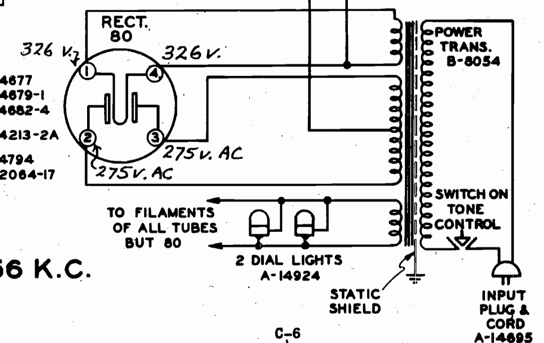
MODEL 640SX & 740SX & 740SXPA

(First Revision) Effective September 1, 1939

MODEL 66OM
Schematic, Voltage, Socket
Alignment, Trimmers

SPARKS WITHINGTON CO.





R1	56,000 ~ .25 W.	C-2795-83B	
R2	22,000 ~ .5 W.	C-2796-78C	
R3	1 MEGOHM .25W.	C-2795-98B	
R4	4.7 MEGOHM .25W.	C-2795-106B	
R5	500,000 ~ VOL.CONTROL	A-15130-1	
R6	180 ~ .25W.	C-2795-53B	
R7	56,000 ~ .25W.	C-2795-83B	
R8	27,000 ~ 1 W.	C-2797-79B	
R9	33,000 ~ 3 W.	C-2799-80A	
R10	270,000 ~ .25W.	C-2795-91B	
R11	1 MEGOHM .25W.	C-2795-98B	
R12	27,000 ~ .25W.	C-2795-79B	
R13	TONE CONTROL & SW.	A-15128	

C1A&B	VARIABLE CONDENSER	B-8064
C2A B&C	NO.1 I.F. TRIMMER	A-14792
C3A&B	NO.2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	S.W ANT. TRIMMER	A-14088-5
C7	B.C. OSC. TRIMMER	B-7199-BY
C8	B.C. OSC. PADDER	B-7199-BY

C10	.001 MFD. 400V.	C-3204-2C
C11	50 MMFD. MOLDED	C-720-320
C12	.1 MFD. 200V.	C-3202-38C
C13	.05 MFD. 200V.	C-3202-28C
C14	.1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 200V.	C-3202-22C
C16	250 MMFD. MOLDED	C-720-324
C17	250 MMFD. MOLDED	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.03 MFD 600V.	C-3206-80C
C20	16-10 MFD. ELECT.	A-14799

L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-4
L4	B.C. OSC. COIL	A-14213-2A
L5	S.W. OSC. COIL	A-14213-2A
L6	NO.1 I.F. COIL	A-14794
L7	NO.2 I.F. COIL	A-12064-17

Voltage readings: - Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages are + DC voltages.

INTERMEDIATE FREQUENCY 456 K.C.

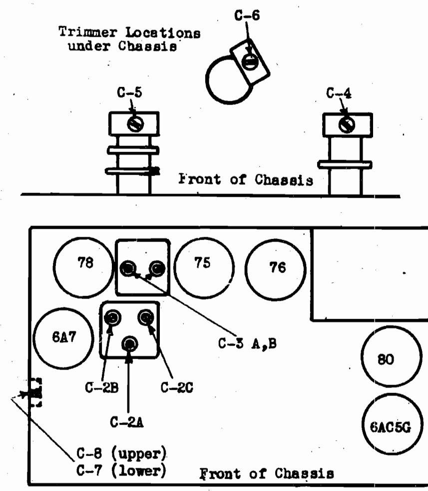
ALIGNMENT

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark on scale when condenser plates are flush)							
2	I.F.	6A7 Grid	.1 mf.	456 KC	BC	Open	C3A,B;C2A,B,C	Adjust to approx. peak
3							C2B (Transfer)	Detune by tightening ½ t.
4							C3A,B;C2A,C	Peak accurately
5							C2B	Peak accurately*
6	Rejector	Ant.	200 mmf.	456 KC	BC	Open	C4	Adjust to minimum
7	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C7 BC osc trim	Peak accurately
8							C5 BC ant trim	Peak accurately
9				600 KC	BC	600 KC	C8 BC osc pad.	Peak accurately
10	(Repeat operations 7 and 8)							
11	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
12	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6 SW ant trim	**
13	(Check calibration and sensitivity at 6.0 MC and 18 MC)							
14	(Check operations 1 to 13 inclusive)							

*100 ohm non-inductive resistor and 200 mmf. condenser in series.

**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental of signal and not on image. Peak accurately.

(Original) Effective July 1, 1939

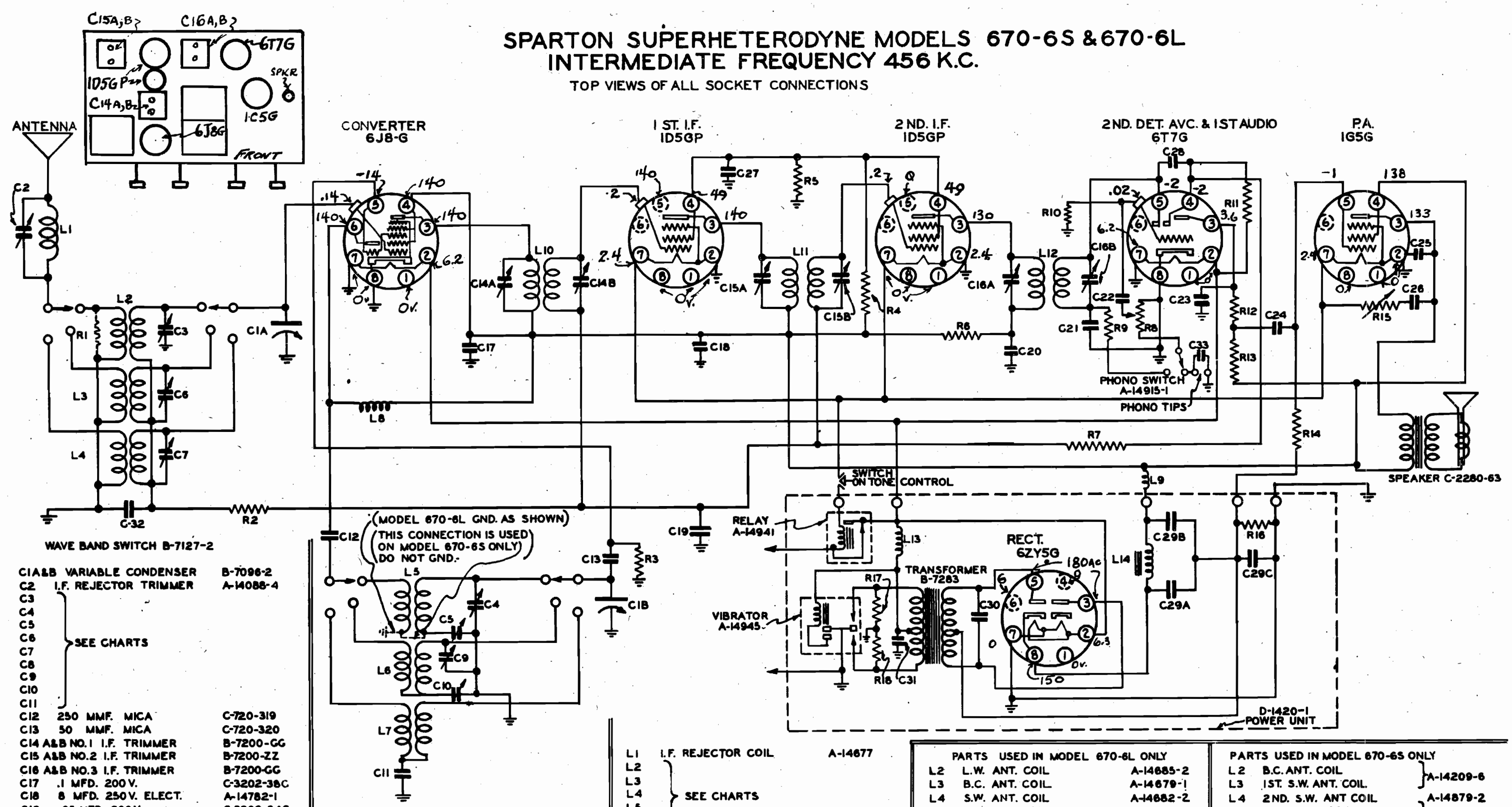


MODELS 670-6L,670-6S
Schematic,Voltage,Socket

SPARKS WITHINGTON CO.

SPARTON SUPERHETERODYNE MODELS 670-6S & 670-6L
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VARIABLE CONDENSER	B-7096-2
C2	I.F. REJECTOR TRIMMER	A-14088-4
C3	SEE CHARTS	
C4		
C5		
C6		
C7		
C8		
C9		
C10		
C11		
C12	250 MMF. MICA	C-720-319
C13	50 MMF. MICA	C-720-320
C14 A&B	NO.1 I.F. TRIMMER	B-7200-GG
C15 A&B	NO.2 I.F. TRIMMER	B-7200-ZZ
C16 A&B	NO.3 I.F. TRIMMER	B-7200-GG
C17	.1 MFD. 200V.	C-3202-38C
C18	8 MFD. 250V. ELECT.	A-14782-1
C19	.05 MFD. 200V.	C-3202-84C
C20	.05 MFD. 200 V.	C-3202-28C
C21	250 MMF. MICA	C-720-319
C22	.05 MFD. 200V.	C-3202-28C
C23	250 MMF MICA	C-720-319
C24	.05 MFD. 200V.	C-3202-28C
C25	.003 MFD. 400V.	C-3204-118C
C26	.03 MFD. 400V.	C-3204-136C
C27	.1 MFD. 200V.	C-3202-38C
C28	250 MMF. MICA	C-720-319
C29	16-10-20 ELECT.	A-14942
C30	.009 MFD. 800V. BUFFER	C-3208-74C
C31	1 MFD. 120 V.	C-3203-56B
C32	.05 MFD. 200 V.	C-3202-84C
C33	.003 MFD. 200V.	C-3202-62C

R1	SEE CHARTS	
R2	27000 Ω .25 W.	C-2795-79B
R3	56000 Ω .25 W.	C-2795-83B
R4	39000 Ω .5 W.	C-2796-197C
R5	56000 Ω .5 W.	C-2796-201C
R6	4700 Ω .25 W.	C-2795-70B
R7	560000 Ω .25 W.	C-2795-95B
R8	250000 Ω VOL. CONTROL	A-14075-A1
R9	56000 Ω .25 W.	C-2795-83B
R10	5.6 MEGOHM .25 W.	C-2795-107B
R11	1 MEGOHM .25 W.	C-2795-98B
R12	180000 Ω .25 W.	C-2795-89B
R13	180000 Ω .25 W.	C-2795-89B
R14	560000 Ω .25 W.	C-2795-95B
R15	250000 Ω TONE CONTROL	A-14778
R16	510 Ω .5 W.	C-2796-152C
R17	56 Ω .5 W.	C-2796-47C
R18	56 Ω .5 W.	C-2796-47C

L1	I.F. REJECTOR COIL	A-14677
L2	SEE CHARTS	
L3		
L4		
L5		
L6		
L7		
L8	OSC. PLATE CHOKE	A-14881-1
L9	B+ HASH CHOKE	A-14718-2
L10	NO.1 I.F. COIL	A-12064-14
L11	NO.2 I.F. COIL	A-12064-2
L12	NO.3 I.F. COIL	A-12064-15
L13	A HASH CHOKE	A-14944
L14	FILTER CHOKE	A-12597

PARTS	USED IN MODEL 670-6L ONLY	
L2	L.W. ANT. COIL	A-14685-2
L3	B.C. ANT. COIL	A-14679-1
L4	S.W. ANT. COIL	A-14682-2
L5	L.W. OSC. COIL	A-14686-2
L6	B.C. OSC. COIL	A-14213-7
L7	S.W. OSC. COIL	A-14213-7
R-1	12000 Ω .25 W.	C-2795-75B
C-3	L.W. ANT. TRIMMER	A-14517-5
C-4	L.W. OSC. TRIMMER	A-14517-5
C-5	L.W. OSC. PADDER	A-14517-5
C-6	B.C. ANT. TRIMMER	A-14088-5
C-7	S.W. ANT. TRIMMER	A-14088-5
C9	B.C. OSC. TRIMMER	B-7199-CY
C10	B.C. OSC. PADDER	B-7199-CY
C11	3100 MMF. MICA	C-720-362

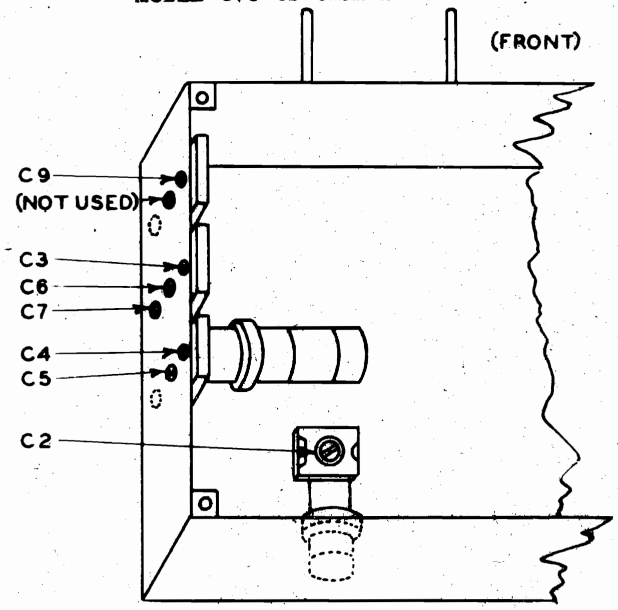
PARTS	USED IN MODEL 670-6S ONLY	
L2	B.C. ANT. COIL	A-14209-6
L3	1ST. S.W. ANT. COIL	A-14209-6
L4	2ND. S.W. ANT COIL	A-14879-2
L5	B.C. OSC. COIL	A-14213-8
L6	1ST. S.W. OSC. COIL	A-14213-8
L7	2ND. S.W. OSC. COIL	A-14880-1
R1	NOT USED	
C-4	B.C. OSC. TRIMMER	B-7199-CY
C-5	B.C. OSC. PADDER	B-7199-CY
C9	1ST. S.W. TRIMMER	A-14200-3
C3	B.C. ANT. TRIMMER	A-14199-4
C6	1ST. S.W. ANT. TRIMMER	A-14199-4
C7	2ND. S.W. ANT. TRIMMER	A-14199-4
C10	1ST. S.W. PAD. .00114 MOLDED	C-720-368
C11	2ND. S.W. PAD. .00361 MOLDED	C-720-353

Notes:
Voltage readings. Allow 15% + or - on all measurements. (Original) Effective June 30, 1939
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.

MODELS 670-6L, 670-6S
Alignment, Trimmers

SPARKS WITHINGTON CO.

MODEL 670-6S CHASSIS BOTTOM

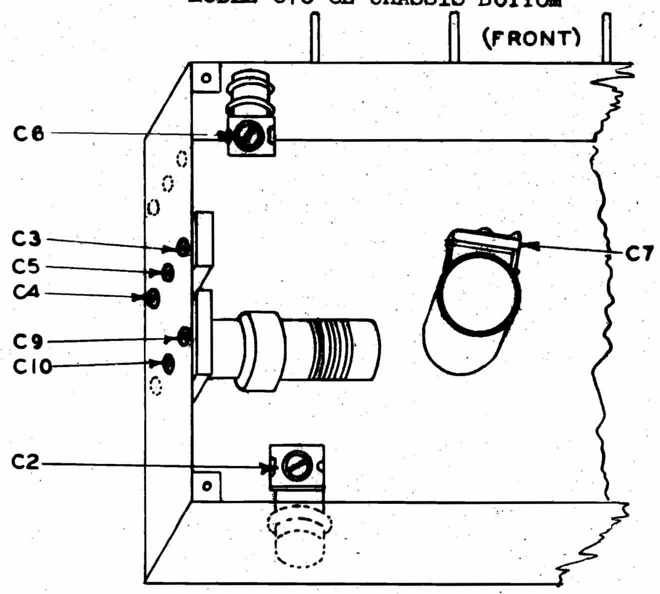


670-6S
ALIGNMENT

OPER-ATION	ALIGN-MENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS*
1	(Set dial pointer to last calibrated mark below 550 KC)							
2	I.F.	6J8G Grid Cap	.1 mf.	456 KC	BC	(Open)	C16 A&B C15 A&B C14 A&B	3rd I.F.T. 2nd I.F.T. 1st I.F.T.
3	Rejector	Ant.	200 mmf.	456 KC	BC	(Open)	C2	Adj. to minimum
4	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C4 Osc. C3 Ant.	
5				600 KC	B.C.	600 KC	C5 Pad.	
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC, & 1500 KC)							
8	1st short wave Band	Ant.	*	7.0 MC	1 SW	7.0 MC	C9 Osc. C6 Ant.	
9	(Check calibration and sensitivity at 2.5 MC, 4.0 MC & 7.0 MC)							
10	2nd SWband	Ant.	*	21.0 MC	2 SW	21.0 MC	C7 Ant.	**
11	(Check calibration and sensitivity at 7.0 MC, 15 MC & 21 MC)							

* 200 mmf. condenser and 100 ohm non-inductive resistor in series.
** Rock dial while trimming.
If dial reading is off calibration, some adjustment may be made by moving the oscillator condenser lead toward or away from the chassis base plate.

MODEL 670-6L CHASSIS BOTTOM



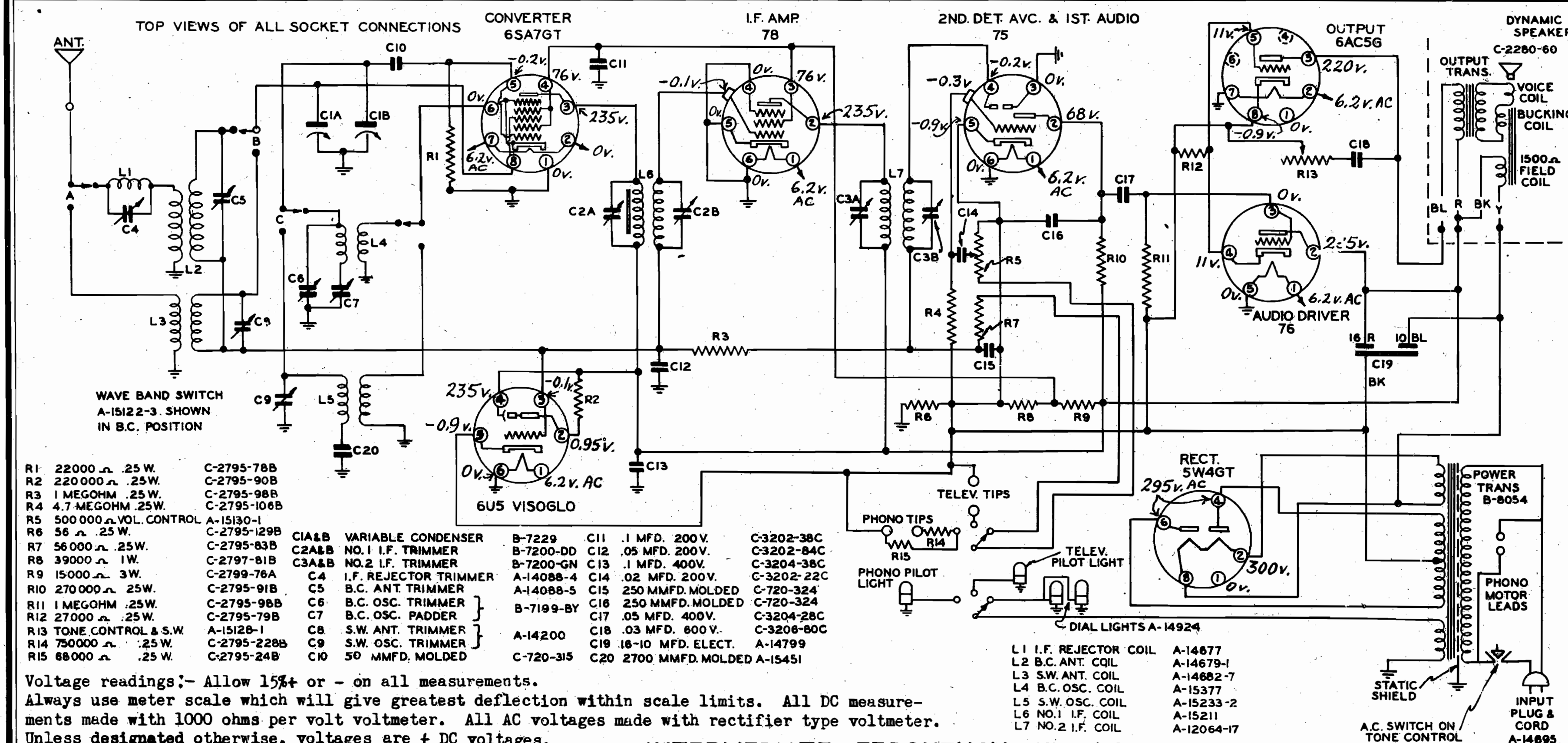
670-6L
ALIGNMENT

OPER-ATION	ALIGN-MENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last calibrated mark below 550KC)							
2	I.F.	6J8G Grid Cap	.1 mf.	456 KC	BC	(Open)	C16 A&B C15 A&B C14 A&B	3rd I.F.T. 2nd I.F.T. 1st I.F.T.
3	Rejector	Ant.	200 mmf.	456 KC	BC	(Open)	C2	Adj. to minimum
4	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C9 Osc. C6 Ant.	
5				600 KC	BC	600 KC	C10 Pad.	
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
8	Long-Wave Band	Ant.	200 mmf.	400 KC	LW	400 KC	C4 Osc. C3 Ant.	
9				150 KC	LW	150 KC	C5 Pad.	
10	(Repeat operation 8)							
11	(Repeat operations 8, 9 and 10 if necessary, to insure accurate alignment)							
12	(Check calibration and sensitivity at 150 KC, 260 KC and 400 KC)							
13	Short Wave Band	Ant.	*	18 MC	SW	18 MC	~~[illegible]~~ C7 Ant.	Rock dial
14	(Check calibration and sensitivity at 6 MC, 15 MC and 18 MC)							

* 200 mmf. condenser and 100 ohm non-inductive resistor in series.

SPARKS WITHINGTON CO.

MODEL 760PS
Schematic, Voltage, Socket
Alignment, Trimmers



R1	22000 Ω .25 W.	C-2795-78B
R2	220000 Ω .25 W.	C-2795-90B
R3	1 MEGOHM .25 W.	C-2795-98B
R4	4.7 MEGOHM .25 W.	C-2795-106B
R5	500000 Ω VOL. CONTROL	A-15130-1
R6	56 Ω .25 W.	C-2795-129B
R7	56000 Ω .25 W.	C-2795-83B
R8	39000 Ω 1 W.	C-2797-81B
R9	15000 Ω 3 W.	C-2799-76A
R10	270000 Ω .25 W.	C-2795-91B
R11	1 MEGOHM .25 W.	C-2795-98B
R12	27000 Ω .25 W.	C-2795-79B
R13	TONE CONTROL & S.W.	A-15128-1
R14	750000 Ω .25 W.	C-2795-228B
R15	68000 Ω .25 W.	C-2795-24B

C1A&B	VARIABLE CONDENSER	B-7229
C2A&B	NO. 1 I.F. TRIMMER	B-7200-DD
C3A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	B.C. OSC. TRIMMER	B-7199-BY
C7	B.C. OSC. PADDER	B-7199-BY
C8	S.W. ANT. TRIMMER	A-14200
C9	S.W. OSC. TRIMMER	A-14200
C10	50 MMFD. MOLDED	C-720-315

C11	.1 MFD. 200 V.	C-3202-38C
C12	.05 MFD. 200 V.	C-3202-84C
C13	.1 MFD. 400 V.	C-3204-38C
C14	.02 MFD. 200 V.	C-3202-22C
C15	250 MMFD. MOLDED	C-720-324
C16	250 MMFD. MOLDED	C-720-324
C17	.05 MFD. 400 V.	C-3204-28C
C18	.03 MFD. 600 V.	C-3206-80C
C19	16-10 MFD. ELECT.	A-14799
C20	2700 MMFD. MOLDED	A-15451

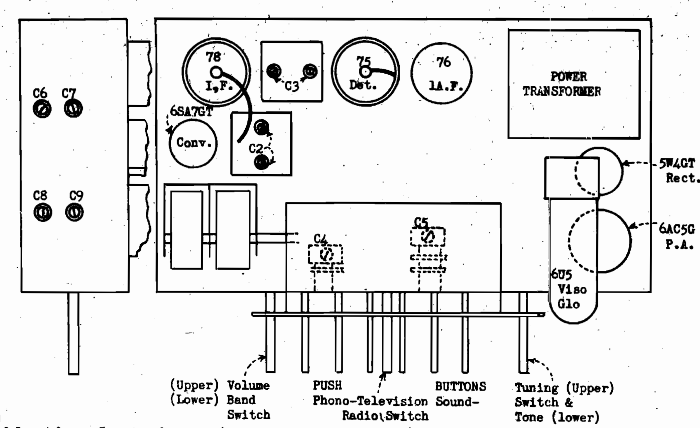
L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-7
L4	B.C. OSC. COIL	A-15377
L5	S.W. OSC. COIL	A-15233-2
L6	NO. 1 I.F. COIL	A-15211
L7	NO. 2 I.F. COIL	A-12064-17

Voltage readings:- Allow 15%+ or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages are + DC voltages.

INTERMEDIATE FREQUENCY 456 K.C.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with last calibration mark with condenser plates flush)							
2	I.F.	6SA7GT Grid	.1 mf.	456 KC	BC	Open	C3 A & B	2nd I.F.
							C2 A & B	1st. I.F.
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C4	Adjust to minimum
4	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C6	BC Osc. Trim.
							C5	BC Ant. Trim.
5				600 KC	BC	600 KC	C7	BC Osc. Padder **
6	(Repeat operation 4)							
7	(Check calibration and sensitivity on 600 KC, 900 KC and 1500 KC)							
8	Short Wave	Ant.	*	18MC	SW	18MC	C9	SW Osc. Trim.
							C8	SW Ant. Trim **
9	(Check calibration and sensitivity at 6 MC, 9 MC, and 18 MC)							
10	(Check operations 1 to 9 inclusive)							

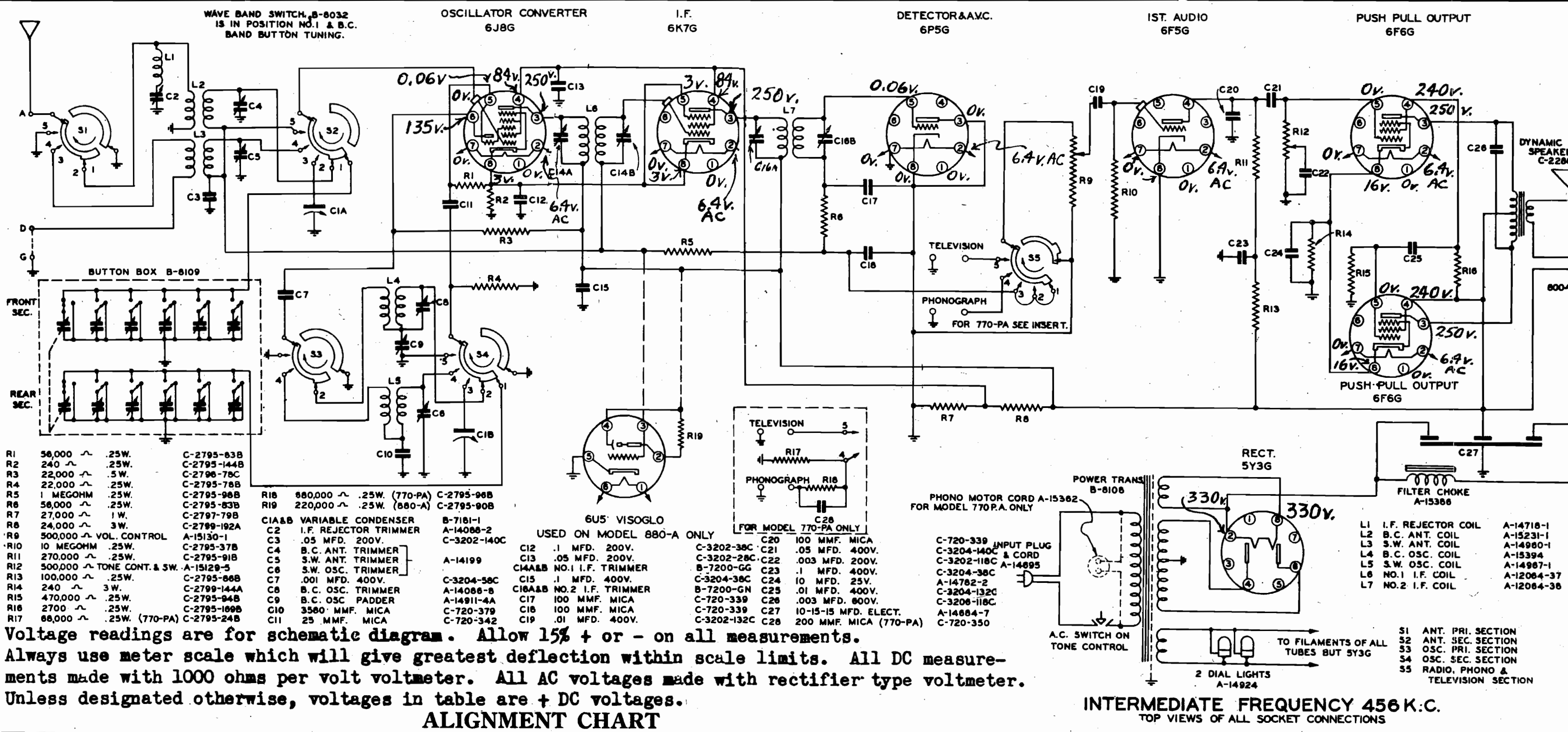


Notes: *100 ohms and 200 mmf. in series **Rock variable condenser for maximum output. (Original) Effective September 28, 1939

MODELS 770,770PA,880A
Schematic,Voltage

SPARKS WITHINGTON CO.

Socket,Alignment
Trimmers

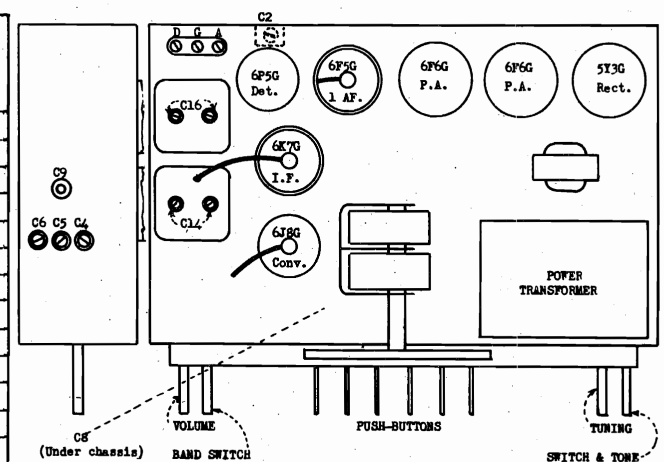


Voltage readings are for schematic diagram. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.

ALIGNMENT CHART

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNE COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with last calibration mark when condenser plates are flush)							
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C16 A&B	2nd I.F.
							C14 A&B	1st I.F.
3	Rejector	Ant.	200 mmf.	456KC	BC	Closed	C2	Adjust to minimum
4	Broad - cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C4	BC Osc. Trim.
							C4	BC Ant. Trim.
5				600 KC	BC	600 KC	C9	BC Osc. Padder**
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)							
8	Short Wave	Ant.	*	18MC	SW	18MC	C6	SW Osc. Trim.
							C5	SW Ant. Trim **
9	(Check calibration and sensitivity at 6MC, 9MC, and 18MC)							
10	(Check operations 1 to 9 inclusive)							

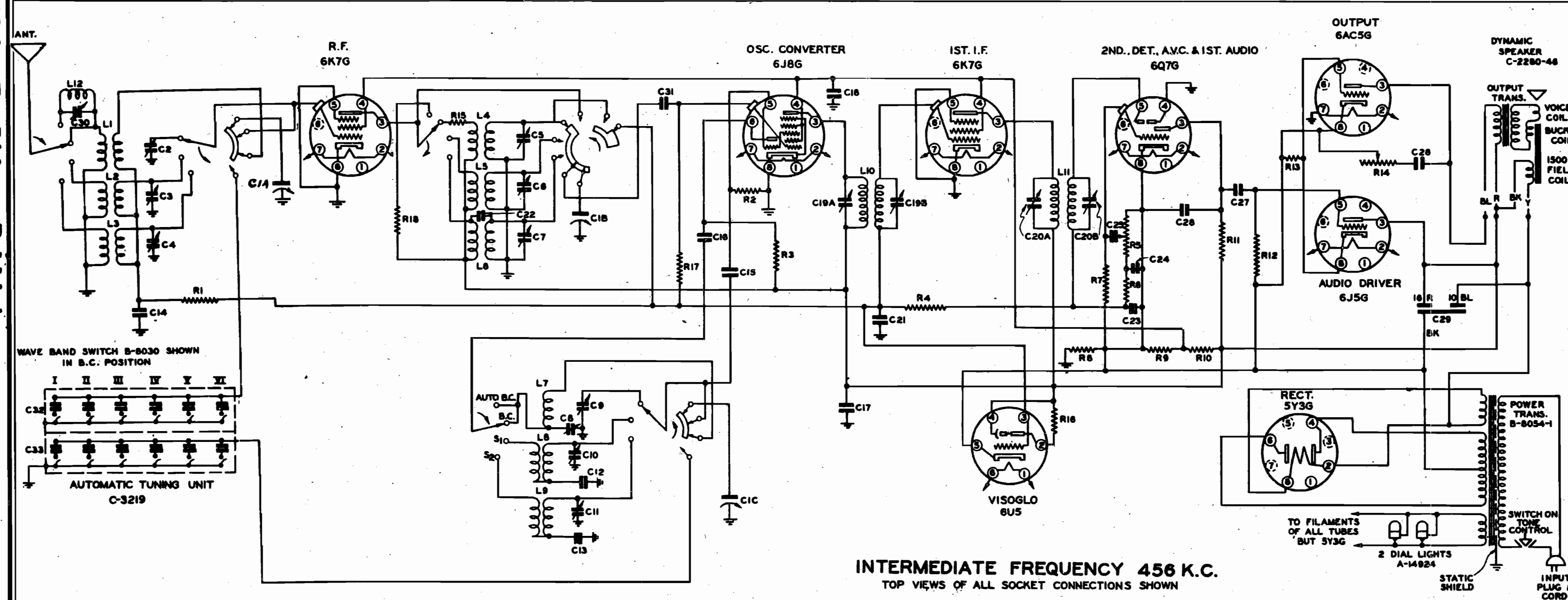
* 100 ohms and 200 mmf. in series. **Rock variable condenser for maximum output.



(Original) Effective September 28, 1939

MODEL 880
Schematic, Voltage

SPARKS WITHINGTON CO.



INTERMEDIATE FREQUENCY 456 K.C.
TOP VIEWS OF ALL SOCKET CONNECTIONS SHOWN

C1A,B&C	VARIABLE CONDENSER	B-8013
C2	B.C. ANT. TRIMMER	A-14199-1 (C2, C3, C4)
C3	1ST. S.W. ANT. TRIMMER	
C4	2ND. S.W. ANT. TRIMMER	
C5	B.C. R.F. TRIMMER	A-14199-1 (C5, C6, C7)
C6	1ST. S.W. R.F. TRIMMER	
C7	2ND. S.W. R.F. TRIMMER	
C8	B.C. OSC. TRIMMER	B-7199-BY (C8, C9)
C9	B.C. OSC. PADDER	
C10	1ST. S.W. OSC. TRIMMER	A-14200 (C10, C11)
C11	2ND. S.W. OSC. TRIMMER	
C12	1280 MMF. MOLDED	C-720-374
C13	4480 MMF. MOLDED	C-720-373
C14	.05 MFD. 200V.	C-3202-84C
C15	25 MMF. MOLDED	C-720-342
C16	250 MMF. MOLDED	C-720-324
C17	.1 MFD. 400V.	C-3204-38C
C18	.1 MFD. 400V.	C-3204-38C
C19A&B	NO.1 I.F. TRIMMER	B-7200-GG
C20A&B	NO.2 I.F. TRIMMER	B-7200-GN
C21	.05 MFD. 200V.	C-3202-84C
C22	10 MMF. MOLDED	C-720-387
C23	250 MMF. MOLDED	C-720-324
C24	100 MMF. MOLDED	C-720-325
C25	.05 MFD. 200V.	C-3202-84C
C26	250 MMF. MOLDED	C-720-324
C27	.05 MFD. 400V.	C-3204-28C
C28	.03 MFD. 600V.	C-3206-80C
C29	16-10 MFD. ELECT.	A-14799-2
C30	I.F. REJECTOR TRIMMER	A-14088-4
C31	10 MMF. MOLDED	C-720-387
C32 & C33		
I-II	150-700 MMFD. TRIM.	A-15000-1
III	75-300 MMFD. TRIM.	A-15000-2 (III, IV)
IV	30-175 MMFD. TRIM.	
V	12-100 MMFD. TRIM.	A-15000-3 (V, VI)
VI	6-50 MMFD. TRIM.	

R1	100,000 Ω .25W.	C-2795-86B
R2	56,000 Ω .25W.	C-2795-83B
R3	22,000 Ω .5W.	C-2795-78C
R4	1 MEGOHM .25W.	C-2795-98B
R5	VOLUME CONTROL	A-15127
R6	56,000 Ω .25W.	C-2795-83B
R7	5.6 MEGOHM .25W.	C-2795-107B
R8	130 Ω .25W.	C-2795-138B
R9	27,000 Ω 1W.	C-2797-79B
R10	22,000 Ω 3W.	C-2799-191A
R11	270,000 Ω .25W.	C-2795-91B
R12	680,000 Ω .25W.	C-2795-96B
R13	27,000 Ω .5W.	C-2796-79C
R14	TONE CONTROL & SWITCH	A-15128-1
R15	8200 Ω .25W.	C-2795-73B
R16	220,000 Ω .25W.	C-2795-90B
R17	1 MEGOHM .25W.	C-2795-98B
R18	12 000 Ω .5W.	C-2796-75C

L1	B.C. ANT. COIL	A-14209-7 (L1, L2)
L2	1ST. S.W. ANT. COIL	
L3	2ND. S.W. ANT. COIL	A-14879-3
L4	B.C. R.F. COIL	A-14210-1 (L4, L5)
L5	1ST. S.W. R.F. COIL	
L6	2ND. S.W. R.F. COIL	A-15108
L7	B.C. OSC. COIL	A-14213-11 (L7, L8)
L8	1ST. S.W. OSC. COIL	
L9	2ND. S.W. OSC. COIL	A-14880-3
L10	NO. 1 I.F. COIL	A-12064-33
L11	NO. 2 I.F. COIL	A-12064-17
L12	I.F. REJECTOR COIL	A-14877

VOLTAGE CHART

Line Voltage: 120 Volts
Band Switch: Broadcast Band (Manual)
Position of Volume Control: Full with Antenna Disconnected

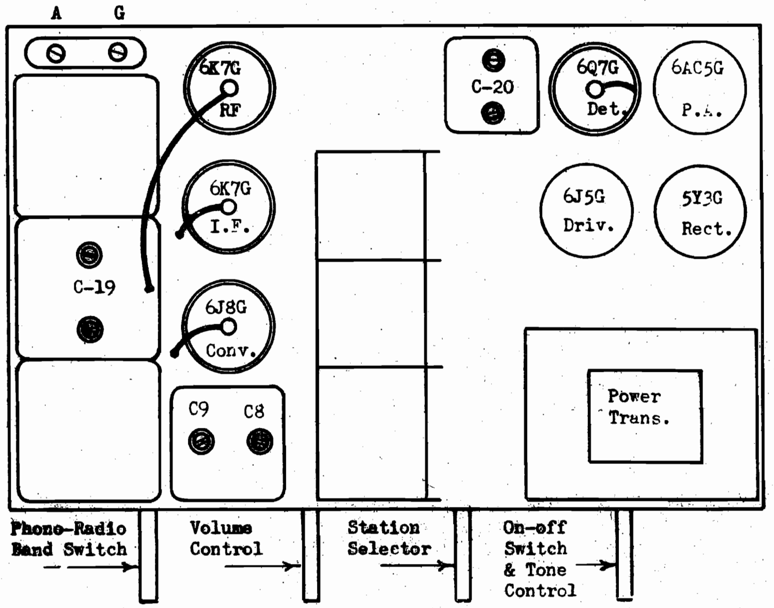
Tube	Function	Voltage of Socket Prongs to Gnd. See Prong Nos. on Schematic Diagram								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6K7G	R-F Amplifier	0	0	200	80	0	0	6.3*	0	-.2
6J8G	Osc - Converter	0	0	250	80	**	140	6.3*	0	-.5
6K7G	I-F Amplifier	0	0	250	80	0	[illegible].5	6.3*	0	-.5
6Q7G	Det - AVC - AF	0	0	50	-1.25	0	-2.5	6.3*	0	-2.5
6J5G	Driver	0	0	250	--	**	--	6.3*	8	--
6AC5G	Power Amplifier	0	0	250	--	8	--	6.3*	-3	--
5Y3G	Rectifier	0	300	--	300*	--	300*	--	300	--
6U5	Viso-Glo	0	125	-.5	250	-3	6.3*	--	--	--

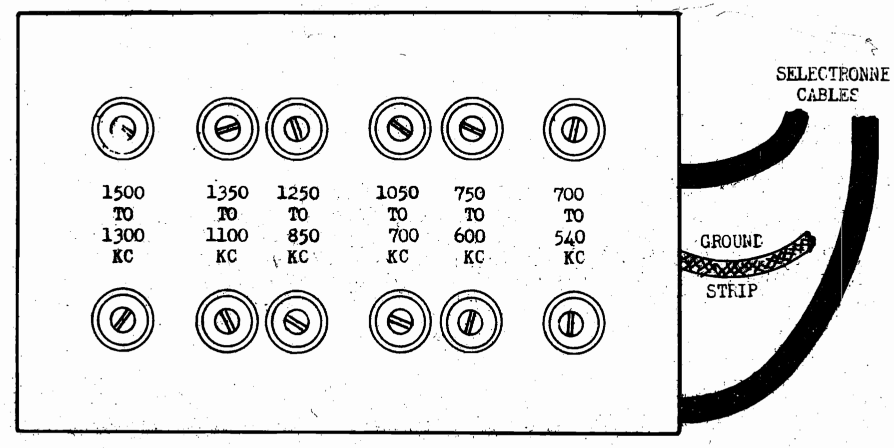
Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 100 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.
**Cannot be accurately measured with Weston Analyzer No. 665, Type 2.

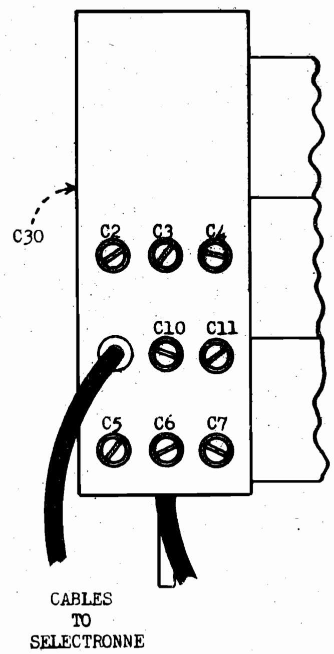
(Original) Effective July 1, 1939

MODEL 880
Alignment, Socket
Trimmers

SPARKS WITHINGTON CO.







ALIGNMENT CHART

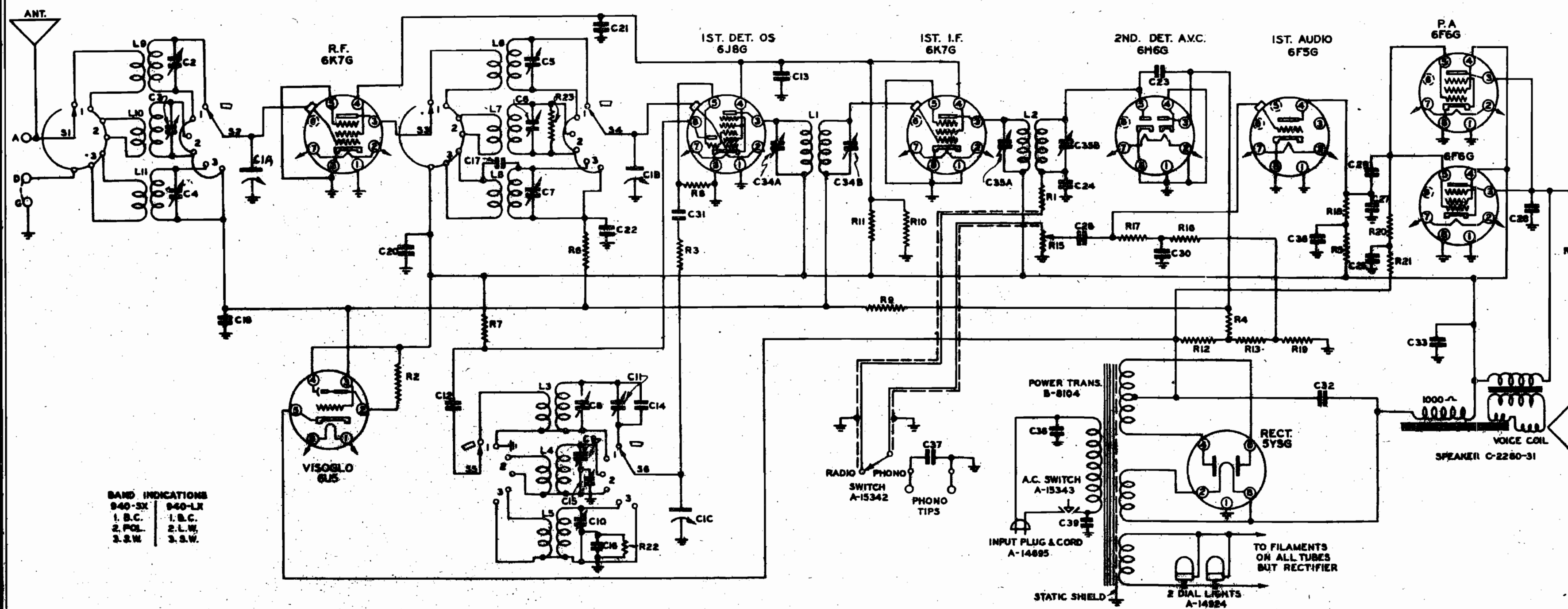
OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	ADJUST FOR MAX. OUTPUT
1	(Set dail pointer to dots at low frequency end of dial.)							
2	I.F.	6K7G	.1mf	456 KC	BC*	Open	C20 A & B	2nd I. F.
							C19 A & B	1st I. F.
3	I. F. Rej.	Ant.	200 mmf	456KC	BC**	Closed	C C30	Adjust for Minimum
4	Broad-Cast Band	Ant.	200 mmf	1500 KC	BC*	1500 KC	C8	Osc. Trimmer
							C5	RF Trimmer
							C2	Ant. Trimmer
5				600 KC	BC*	600 KC	C9	Osc. Padder
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)							
8	1st Short Wave Band	Ant.	200 mmf 100 ohm series	6.0 MC	1 SW	6.0 MC	C10	Osc. Trimmer
							C6	RF Timmer
							C3	Ant. Trimmer
9	(Check calibration and sensitivity at 6.0 MC, 4.0 MC and 2.5 MC)							
10	2nd Short Wave Band	Ant.	200 mmf 100 ohm series	21 MC	2 SW	21 MC	C11	Osc. Trimmer
							C7	RF Trimmer
							C4	Ant Trimmer
11	(Check calibration and sensitivity at 21.0 MC, 15.0 MC, 6.0 MC)							
12	(Check operations 1 to 11 inclusive)							

*Band switch must be turned for manual tuning of Broadcast Band.
**Band switch must be turned for automatic (Selectronne) tuning.

MODELS 940LX, 940SX
Schematic

SPARKS WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODEL 940-SX & 940-LX



BAND INDICATIONS

940-SX	940-LX
1. B.C.	1. B.C.
2. POL.	2. L.W.
3. S.W.	3. S.W.

INTERMEDIATE FREQUENCY 456 K.C.
TOP VIEW OF ALL SOCKET CONNECTIONS

C1A B & C	VARIABLE CONDENSER	B-7279-2
C2	B.C. ANT. TRIMMER	A-14088-1
C3	BAND 2 ANT. TRIMMER	A-14088-1
C4	S.W. ANT. TRIMMER	A-14088-1
C5	B.C. DET. TRIMMER	A-14088-1
C6	BAND 2 DET. TRIMMER	A-14088-1
C7	S.W. DET. TRIMMER	A-14088-1
C8	B.C. OSC. TRIMMER	A-14088-1
C9	BAND 2 OSC. TRIMMER	A-14088-1
C10	S.W. OSC. TRIMMER	A-14088-1
C11	B.C. OSC. PADDER	A-14088-1
C12	.00025 MFD. MOLDED	C-720-319
C13	.05 MFD. 400V.	C-3204-28C
C14	.000475 MFD. MOLDED	C-720-332
C15	SEE SEPARATE CHART	
C16	SEE SEPARATE CHART	
C17	12 MFD. COUPLER	C-720-354
C18	.05 MFD. 200V.	C-3202-28C
C19	.03 MFD. 800V.	C-3208-80C
C20	.05 MFD. 400V.	C-3204-28C
C21	.05 MFD. 400V.	C-3204-28C
C22	.05 MFD. 200V.	C-3202-28C.
C23	.00025 MFD. MOLDED	C-720-319
C24	.0001 MFD. MOLDED	C-720-325
C25	.1 MFD. 100V.	C-3201-38C
C26	.003 MFD. 600V.	C-3206-118C
C27	.00025 MFD. MOLDED	C-720-319
C28	.01 MFD. 200V.	C-3202-78C
C29	.05 MFD. 400V.	C-3204-28C
C30	.1 MFD. 100V.	C-3201-38C
C31	.0001 MFD. MOLDED	C-720-339
C32	16 MFD. 450V. ELECT.	A-14073-A
C33	30 MFD. 300V. ELECT.	A-14072-A
C34A&B	NO.1 I.F. TRIMMER	B-7200-GG
C35A&B	NO.2 I.F. TRIMMER	B-7200-GH
C36	.1 MFD. 400V.	C-3204-38C
C37	.003 MFD. 200V.	C-3202-82C
C38	.006 MFD. MOLDED	C-720-347
C39	.006 MFD. MOLDED	C-720-347

R1	56,000 Ω .25W.	C-2795-83B
R2	220,000 Ω .25W.	C-2795-90B
R3	10 Ω .25W.	C-2795-111B
R4	1 MEGOHM .25W.	C-2795-98B
R5	100,000 Ω .25W.	C-2795-25B
R6	100,000 Ω .25W.	C-2795-25B
R7	22,000 Ω .5W.	C-2796-78C
R8	56,000 Ω .25W.	C-2795-83B
R9	470,000 Ω .25W.	C-2795-94B
R10	27,000 Ω 1W.	C-2797-79B.
R11	18,000 Ω 2W.	C-2798-77A
R12	200 Ω 2W.	C-2798-142A
R13	8 Ω .25W.	B-7103-8A
R14	1 MEGOHM TONE CONTROL	A-15133
R15	250,000 Ω VOLUME CONTROL	A-15127-1
R16	1 MEGOHM .25W.	C-2795-98B
R17	360,000 Ω .25W.	C-2795-95B
R18	270,000 Ω .25W.	C-2795-91B
R19	27 Ω .25W.	C-2795-121B
R20	270,000 Ω .25W.	C-2795-91B
R21	270,000 Ω .25W.	C-2795-91B
R22	SEE SEPARATE CHART	
R23	SEE SEPARATE CHART	

940-SX COILS

L1	NO.1 I.F. COIL	A-12064-12
L2	NO.2 I.F. COIL	A-12064-17
L3	B.C. OSC. COIL	A-14241-16
L4	POL. OSC. COIL	A-14241-11
L5	S.W. OSC. COIL	A-14241-12
L6	B.C. DET. COIL	A-14242-8
L7	POL. DET. COIL	A-14242-13
L8	S.W. DET. COIL	A-14242-8
L9	B.C. ANT. COIL	A-14243-1
L10	POL. ANT. COIL	A-14243-6
L11	S.W. ANT. COIL	A-14243-7

940-LX COILS

L1	NO.1 I.F. COIL	A-12064-12
L2	NO.2 I.F. COIL	A-12064-17
L3	B.C. OSC. COIL	A-14241-16
L4	L.W. OSC. COIL	A-14241-21
L5	S.W. OSC. COIL	A-14241-3
L6	B.C. DET. COIL	A-14242-8
L7	L.W. DET. COIL	A-14242-18
L8	S.W. DET. COIL	A-14242-3
L9	B.C. ANT. COIL	A-14243-1
L10	L.W. ANT. COIL	A-14243-15
L11	S.W. ANT. COIL	A-14243-3

NO. FROM BACK OF SET

S1	ANT. PRI. SECTION
S2	ANT. SEC. SECTION
S3	DET. PRI. SECTION
S4	DET. SEC. SECTION
S5	OSC. PRI. SECTION
S6	OSC. SEC. SECTION

PARTS USED IN MODEL 940-SX ONLY

C15	.00171 MFD. MOLDED	C-720-352
C16	.00361 MFD. MOLDED	C-720-353
R22	NOT USED	
R23	NOT USED	

PARTS USED IN MODEL 940-LX ONLY

C15	L.W. OSC. PADDER	A-14088-3
C16	.00388 MFD. MOLDED	C-720-346
R22	68,000 Ω .25W.	C-2795-24B
R23	100000 Ω .25W.	C-2795-86B

(Original) Effective July 1, 1939

MODELS 940LX, 940SX
Alignment, Voltage
Socket, Trimmers

SPARKS WITHINGTON CO.

VOLTAGE CHART

Line Voltage: 125 Volts
Voltage Tap: 115-135

Position of Volume Control: Full with Antenna Disconnected
Band Switch - Broadcast

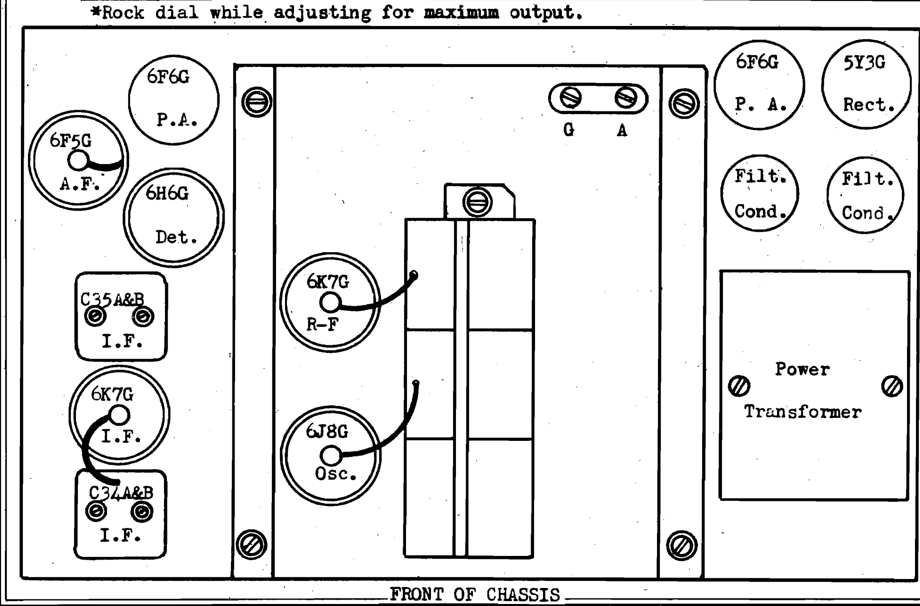
Tube	Function	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6K7G	R.F.	-	-	240	94	-	-	*6	-	**
6J8G	Converter	-	-	240	94	**	137	*6	-	**
6K7G	I.F.	-	-	240	94	-	-	*6	-	**
6H6G	2nd. Det. A.V.C.	-	-	*	-	**	-	*6	-	
6F5G	1st A.F.	-	*6	-	**	-	-	-	-	**
6F6G	P.A.	-	*6	235	240	**	-	-	-	
6F6G	P.A.	-	*6	235	240	**	-	-	-	
5Y3G	Rect.	-	340	-	355	-	355	-	340	
6U5	Viso-Glo	*6	**	**	240	-3.1	-			

Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages. *AC volts.
**Cannot be measured with 1000 ohms per volt voltmeter. Bias for 6F6G can be measured from B- to Gnd.

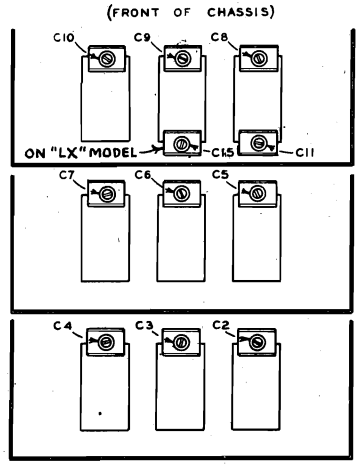
ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SECTION	TRIMMER	ADJUST FOR MAX. OUTPUT
1	(Set pointer even with last calibration mark when condenser plates are flush.)							
2	I. F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C-35A&B	2nd I. F.
							C-34A&B	1st I. F.
3	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C-8	Osc. Trimmer
							C-5	R. F. Trimmer
							C-2	Ant. Trimmer
4				600 KC	BC	600KC	C11*	Osc. Padder
5	(Repeat operation 3)							
LX MODEL ONLY								
6	Long Wave Band	Ant.	200 mmf.	400 KC	LW	400 KC	C9	Osc. Trimmer
							C6	RF Trimmer
							C3	Ant. Trimmer
7				150 KC	LW	150 KC	C15	Osc. Padder.
8	(Repeat operation 6)							
9	Short Wave Band	Ant.	100 ohms 200 mmf. series	18MC	SW	18 MC	C-10	Osc. Trimmer
							C-7	RF Trimmer
							C-4*	Ant. Trimmer
10	(Check calibration and senstivity at 6. MC., 9 MC., and 18 Mc.)							
11	(Check operations 1 to 10 inclusive)							
SX MODEL								
6	1st Short Wave Band (Police)	Ant.	100 ohm 200 mmf series	7 MC	1st SW	7 MC	C9	Osc. Trimmer
							C6	RF Trimmer
							C3*	Ant. Trimmer
7	(Check calibration and sensitivity at 7 MC and 2.5 MC.)							
8	2nd Short Wave Band	Ant.	100 ohm 200 mmf series	21 MC	2nd SW	21 MC	C10	Osc. Trimmer
							C7	RF Timmer
							C4*	Ant. Trimmer
9	(Check calibration and sensitivity at 8 MC. and 21 MC)							
10	(Check operations 1 to 9 inclusive.)							

*Rock dial while adjusting for maximum output.



FRONT OF CHASSIS



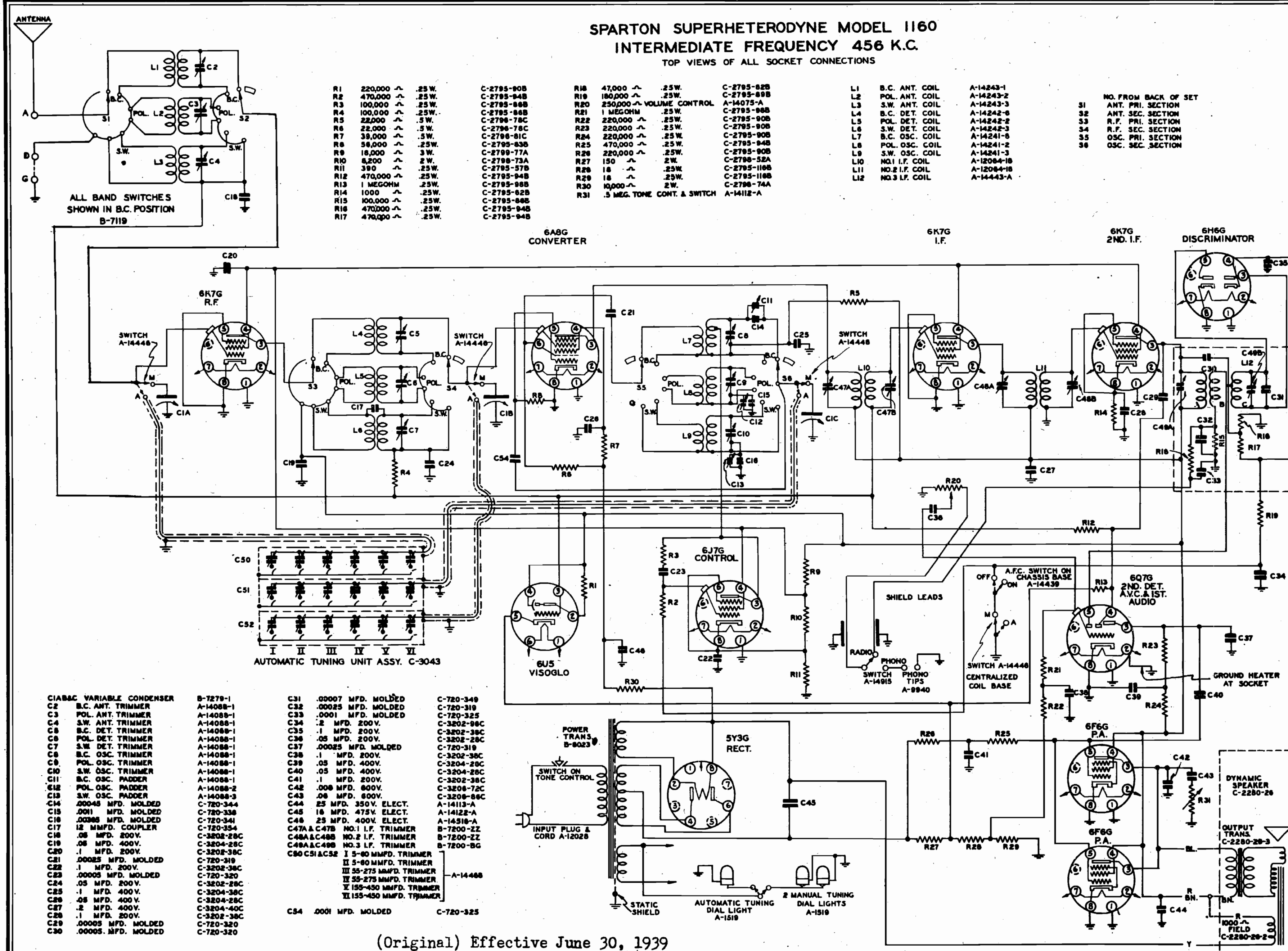
TRIMMER LOCATIONS
(under chassis)

MODEL 1160 Schematic

SPARKS WITHINGTON CO.

SPARTON SUPERHETERODYNE MODEL 1160
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



R1	220,000 Ω	.25W.	C-2795-90B
R2	470,000 Ω	.25W.	C-2795-94B
R3	100,000 Ω	.25W.	C-2795-86B
R4	100,000 Ω	.25W.	C-2795-86B
R5	22,000 Ω	.5W.	C-2796-78C
R6	22,000 Ω	.5W.	C-2796-78C
R7	39,000 Ω	.5W.	C-2796-81C
R8	56,000 Ω	.25W.	C-2795-83B
R9	18,000 Ω	3W.	C-2799-77A
R10	8,200 Ω	2W.	C-2798-73A
R11	390 Ω	.25W.	C-2795-57B
R12	470,000 Ω	.25W.	C-2795-94B
R13	1 MEGOHM	.25W.	C-2795-98B
R14	1000 Ω	.25W.	C-2795-62B
R15	100,000 Ω	.25W.	C-2795-86B
R16	470,000 Ω	.25W.	C-2795-94B
R17	470,000 Ω	.25W.	C-2795-94B

R18	47,000 Ω	.25W.	C-2795-82B
R19	180,000 Ω	.25W.	C-2795-89B
R20	250,000 Ω	VOLUME CONTROL	A-14075-A
R21	1 MEGOHM	.25W.	C-2795-98B
R22	220,000 Ω	.25W.	C-2795-90B
R23	220,000 Ω	.25W.	C-2795-90B
R24	220,000 Ω	.25W.	C-2795-90B
R25	470,000 Ω	.25W.	C-2795-94B
R26	220,000 Ω	.25W.	C-2795-90B
R27	150 Ω	2W.	C-2798-52A
R28	18 Ω	.25W.	C-2795-116B
R29	18 Ω	.25W.	C-2795-116B
R30	10,000 Ω	2W.	C-2798-74A
R31	.5 MEG. TONE CONT. & SWITCH		A-14112-A

L1	B.C. ANT. COIL	A-14243-1
L2	POL. ANT. COIL	A-14243-2
L3	S.W. ANT. COIL	A-14243-3
L4	B.C. DET. COIL	A-14242-6
L5	POL. DET. COIL	A-14242-2
L6	S.W. DET. COIL	A-14242-3
L7	B.C. OSC. COIL	A-14241-6
L8	POL. OSC. COIL	A-14241-2
L9	S.W. OSC. COIL	A-14241-3
L10	NO.1 I.F. COIL	A-12084-16
L11	NO.2 I.F. COIL	A-12084-16
L12	NO.3 I.F. COIL	A-14443-A

	NO. FROM BACK OF SET
S1	ANT. PRI. SECTION
S2	ANT. SEC. SECTION
S3	R.F. PRI. SECTION
S4	R.F. SEC. SECTION
S5	OSC. PRI. SECTION
S6	OSC. SEC. SECTION

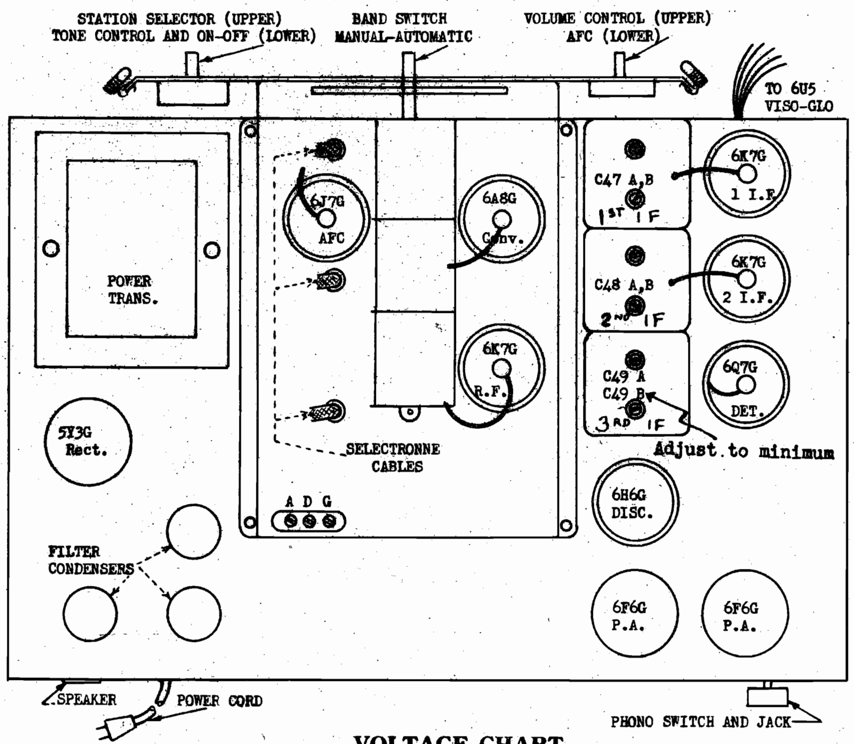
C1A B & C	VARIABLE CONDENSER	B-7279-1
C2	B.C. ANT. TRIMMER	A-14088-1
C3	POL. ANT. TRIMMER	A-14088-1
C4	S.W. ANT. TRIMMER	A-14088-1
C5	B.C. DET. TRIMMER	A-14088-1
C6	POL. DET. TRIMMER	A-14088-1
C7	S.W. DET. TRIMMER	A-14088-1
C8	B.C. OSC. TRIMMER	A-14088-1
C9	POL. OSC. TRIMMER	A-14088-1
C10	S.W. OSC. TRIMMER	A-14088-1
C11	B.C. OSC. PADDER	A-14088-1
C12	POL. OSC. PADDER	A-14088-2
C13	S.W. OSC. PADDER	A-14088-3
C14	.00045 MFD. MOLDED	C-720-344
C15	.0011 MFD. MOLDED	C-720-338
C16	.00365 MFD. MOLDED	C-720-341
C17	12 MMFD. COUPLER	C-720-354
C18	.05 MFD. 200V.	C-3202-28C
C19	.05 MFD. 400V.	C-3204-28C
C20	.1 MFD. 200V.	C-3202-38C
C21	.00025 MFD. MOLDED	C-720-319
C22	.1 MFD. 200V.	C-3202-38C
C23	.00005 MFD. MOLDED	C-720-320
C24	.05 MFD. 200V.	C-3202-28C
C25	.1 MFD. 400V.	C-3204-38C
C26	.05 MFD. 400V.	C-3204-28C
C27	.2 MFD. 400V.	C-3204-40C
C28	.1 MFD. 200V.	C-3202-38C
C29	.00005 MFD. MOLDED	C-720-320
C30	.00005 MFD. MOLDED	C-720-320

C31	.00007 MFD. MOLDED	C-720-349
C32	.00025 MFD. MOLDED	C-720-319
C33	.0001 MFD. MOLDED	C-720-325
C34	.2 MFD. 200V.	C-3202-96C
C35	.1 MFD. 200V.	C-3202-38C
C36	.05 MFD. 200V.	C-3202-28C
C37	.00025 MFD. MOLDED	C-720-319
C38	.1 MFD. 200V.	C-3202-38C
C39	.05 MFD. 400V.	C-3204-28C
C40	.05 MFD. 400V.	C-3204-28C
C41	.1 MFD. 200V.	C-3202-38C
C42	.006 MFD. 600V.	C-3206-72C
C43	.06 MFD. 600V.	C-3206-86C
C44	25 MFD. 350V. ELECT.	A-14113-A
C45	16 MFD. 475V. ELECT.	A-14122-A
C46	25 MFD. 400V. ELECT.	A-14516-A
C47A & C47B	NO.1 I.F. TRIMMER	B-7200-ZZ
C48A & C48B	NO.2 I.F. TRIMMER	B-7200-ZZ
C49A & C49B	NO.3 I.F. TRIMMER	B-7200-BG
C50 C51 & C52	I 5-60 MMFD. TRIMMER	A-14468
	II 5-60 MMFD. TRIMMER	
	III 55-275 MMFD. TRIMMER	
	IV 55-275 MMFD. TRIMMER	
	V 155-450 MMFD. TRIMMER	
	VI 155-450 MMFD. TRIMMER	
C54	.0001 MFD. MOLDED	C-720-325

(Original) Effective June 30, 1939

MODEL 1160
Voltage, Alignment
Socket, Trimmers

SPARKS WITHINGTON CO.



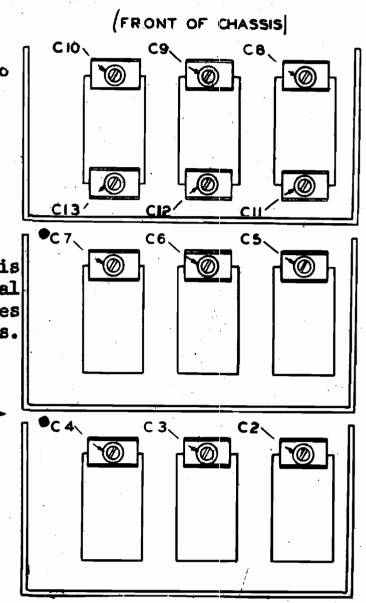
ALIGNMENT CHART
(see note)

Viso-Glo Tube in socket
AFC switch "OFF"

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER
1	I.F.	Conv. Grid	.1 mf.	456	BC	Open	C47 A,B C48 A,B C43 A
2	Discrim.	Conv. Grid	.1 mf.	456	BC	Open	C49 B
3	Broadcast Band	Ant.	200 mmf.	1500	BC	1500	C8 Osc. C5 RF C2 Ant.
4		Ant.	200 mmf.	600	BC	600	C11 Pad
5	(Repeat operation 3)						
6	(Check calibration and sensitivity 1500 KC, 900 KC and 600 KC) *						
7	1st Short Wave	Ant.	100 ohm 200 mmf. series	6 MC.	1st S.W.	6 MC.	C9 Osc. C6 RF C3 Ant.
8		Ant.	200 mmf.	1.95 MC.	1st S.W.	1.95 MC.	C12 Pad
9	(Repeat operation 7)						
10	(Check calibration and sensitivity at 6 MC. and 1.95 MC.)						
11	2nd Short-Wave Band	Ant.	100 ohm 200 mmf. series	18 MC.	2nd S.W.	18 MC.	C10 Osc. C7 R.F. C4 Ant.
12		Ant.		6 MC.	2nd S.W.	6 MC.	C13 Pad
13	(Repeat operation 11)						
14	(Check calibration and sensitivity at 18 MC. and 6 MC.)						
15	(Check operations 1 to 14 inclusive)						

* Check AFC by connecting generator to converter grid cap and tuning generator and receiver to 1500 KC. Note output meter reading with AFC switch "off". Switch AFC "on" and if output changes appreciably, touch up discriminator trimmer until there is no change in sensitivity.

NOTE: Check to see that dial pointer is parallel to horizontal lines on dial when variable condenser rotor plates are fully meshed with stator plates.



TRIMMER LOCATIONS
(Under Chassis)

●Rock dial slightly while adjusting

VOLTAGE CHART

Line Voltage: 115 volts AC Position of Volume Control: Full with Antenna Disconnected
Band Selector Switch - BC Band - Manual Tuning AFC Switch - Off

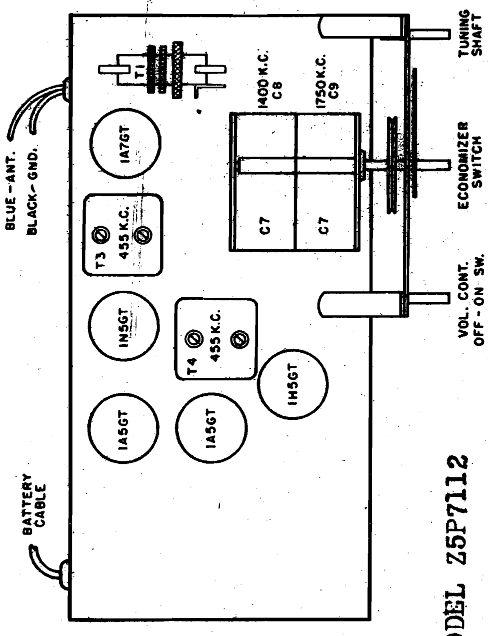
Tube	Function	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic Diagram) No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6K7G	R-F Amp.	0	0	260	62	0	0	6.2*	0	-.2
6A8G	Converter	0	0	260	112	-.2	150	6.2*	0	-.1
6K7G	1st I-F Amp.	0	6.2*	260	60	0	0	0	0	**
6K7G	2nd I-F Amp.	0	6.2*	260	60	2.7	0	0	2.7	0
6H6G	Discriminator	0	6.2*	**	0	**	-	0	0	-
6J7G	AFC	0	0	240	60	3	0	6.2*	0	0
6Q7G	Det-AVC-1st Audio	0	6.2*	46	**	**	0	0	0	**
6F6G	Power Amp.	0	6.2*	240	260	-.8	0	0	0	-
6F6G	Power Amp.	0	6.2*	240	260	-.8	0	0	0	-
5Y3G	Rectifier	-	390*	-	370*	-	370*	-	390*	-
6E5	Viso-Glo	6.2	**	**	260	-3.4	0	-	-	-

Notes: Voltage and resistance readings are for schematic diagram. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with Weston Selective Analyzer No. 665, Type 2.
* AC volts.
** Cannot be measured with Weston Selective Analyzer No. 665, Type 2.

(Original) Effective June 30, 1939

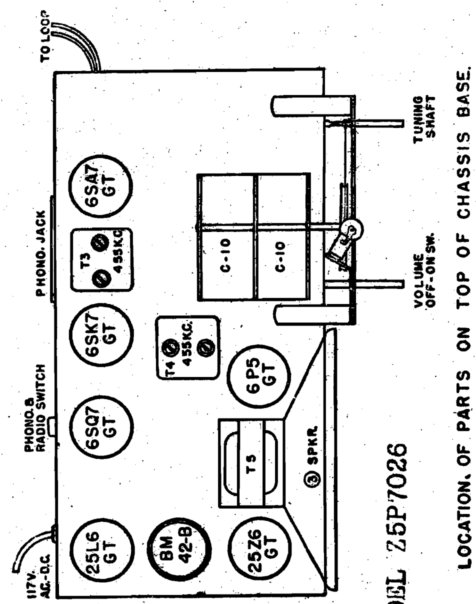
MODEL Z5P7026
MODEL Z5P7112
Schematics, Socket
Trimmers

SPIEGEL INC.



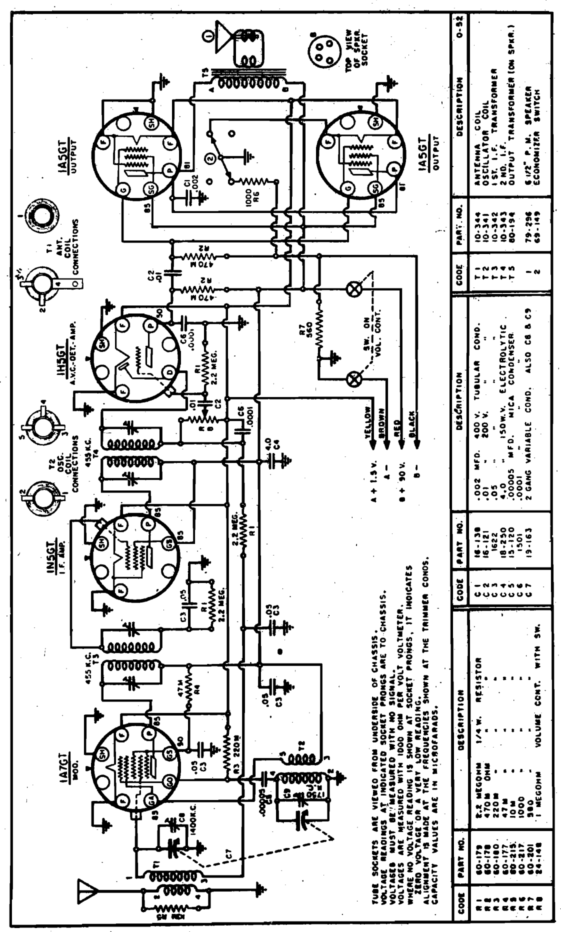
MODEL Z5P7112

FOR CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME V111

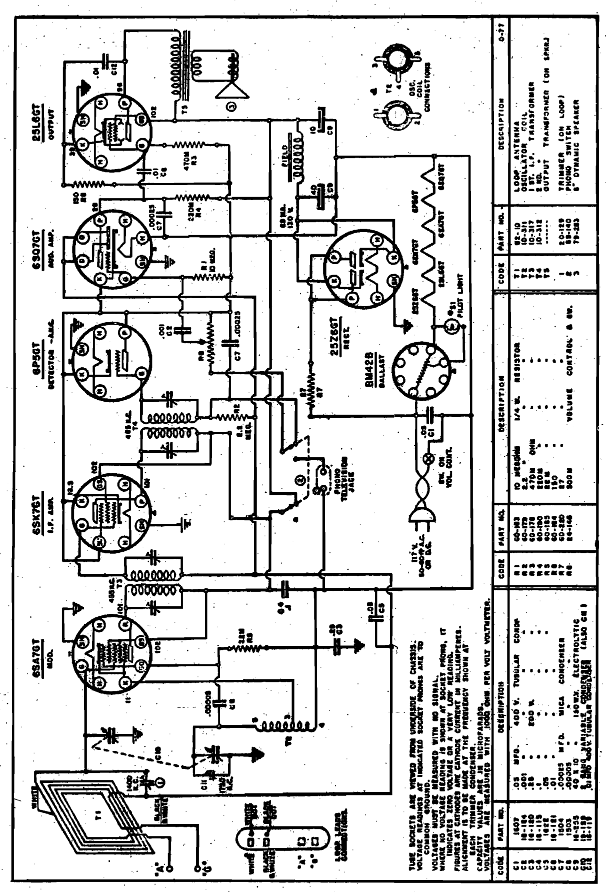


MODEL Z5P7026

LOCATION OF PARTS ON TOP OF CHASSIS BASE.



IF PEAK 455 KC

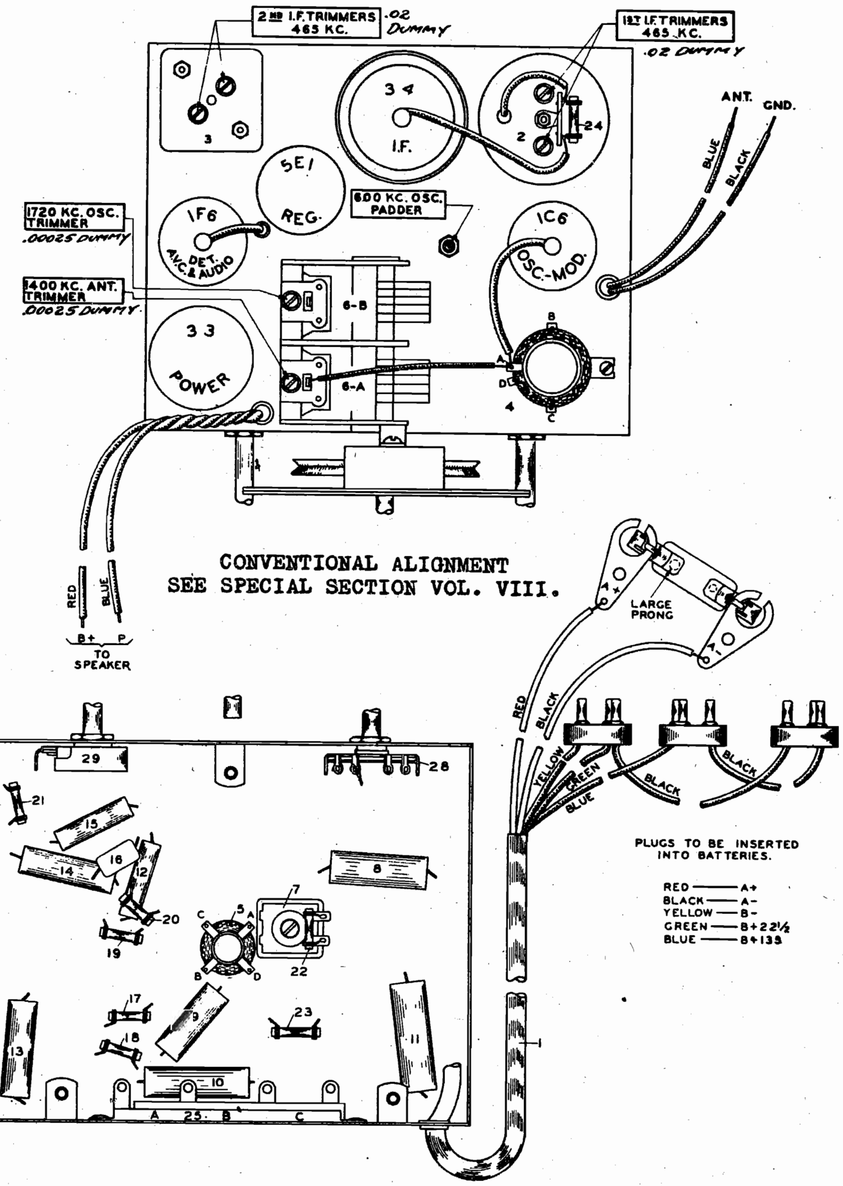


MODEL 128B
MODEL 6700
Alignment

SPIEGEL INC.

MODELS 1204 to 1207
Chassis, Socket, Trimmers

MODELS 1204, 1205, 1206 and 1207
Chassis 80B



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOL. VIII.

MODEL 128B

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below and:
I.F. alignment use any band position	Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 1C7G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C.	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Exactly 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	Adjust 1400 K.C. antenna trimmer for maximum output.
	3 Approximately 600 K.C.	Approximately 600 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.7 to 18.1 M.C. BAND	1 Exactly 18.1 M.C.	Exactly 18.1 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	Adjust 18.1 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Exactly 15 M.C.	Exactly 15 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	Adjust 15 M.C. antenna trimmer for maximum output.

ALIGNING I.F. STAGE AT 465 KILOCYCLES: MODEL 6700 - CHASSIS 68B

(a) Attach the ground lead of the test oscillator to the chassis. Connect the other lead to the grid cap of the 6A7 tube through a .02 Mfd. series condenser. DO NOT REMOVE GRID CLIP.
(b) Set test oscillator to EXACTLY 465 kilocycles and turn receiver volume control on full.
(c) Peak each of the second I.F. transformer trimmers.
(d) Peak each of the first I.F. transformer trimmers.

ALIGNING 1720-535 KILOCYCLE BAND:

(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh), at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If the dial needle does not point exactly to the last line move needle to correct position.
(b) Remove test oscillator lead from grid of 6A7 tube and connect to receiver antenna lead through a .00025 Mfd. series condenser.
(c) Adjust band selector switch for operation on the 1720-535 kilocycle band.
(d) Set test oscillator frequency and receiver dial to EXACTLY 1720 kilocycles, and BRING IN 1720 KILOCYCLE TEST OSCILLATOR SIGNAL TO MAXIMUM OUTPUT BY ADJUSTING 1720 KILOCYCLE OSCILLATOR TRIMMER.
(e) Tune receiver dial and set test oscillator frequency to EXACTLY 1400 kilocycles. Adjust 1400 K.C. preselector and antenna trimmers for maximum sensitivity.
(f) Set test oscillator frequency and receiver dial to approximately 600 kilocycles. Then while rocking gang condenser slightly to right and left, adjust 600 K.C. oscillator padder for maximum signal response.

ALIGNING 1.8-5.8 MEGACYCLE BAND:

(a) Replace .00025 Mfd. test oscillator antenna lead series condenser with a 400 ohm resistor.
(b) Adjust band selector switch to 1.8-5.8 megacycles, tune receiver dial and set test oscillator frequency to EXACTLY 5.8 megacycles. Bring in 5.8 megacycle test signal to maximum output by adjusting 5.8 M.C. oscillator trimmer.
(c) Tune receiver dial and test oscillator frequency to EXACTLY 5 megacycles, and adjust 5 M.C. antenna trimmer for maximum sensitivity.

ALIGNING 5.8-18.3 MEGACYCLE BAND:

(a) Leave 400 ohm resistor in series with test oscillator lead and place band selector switch for operation on 5.8-18.3 megacycle band, tune receiver dial and set test oscillator frequency to EXACTLY 18 megacycles.
(b) Adjust 18 M.C. oscillator trimmer to bring in 18 megacycle test signal to maximum output.

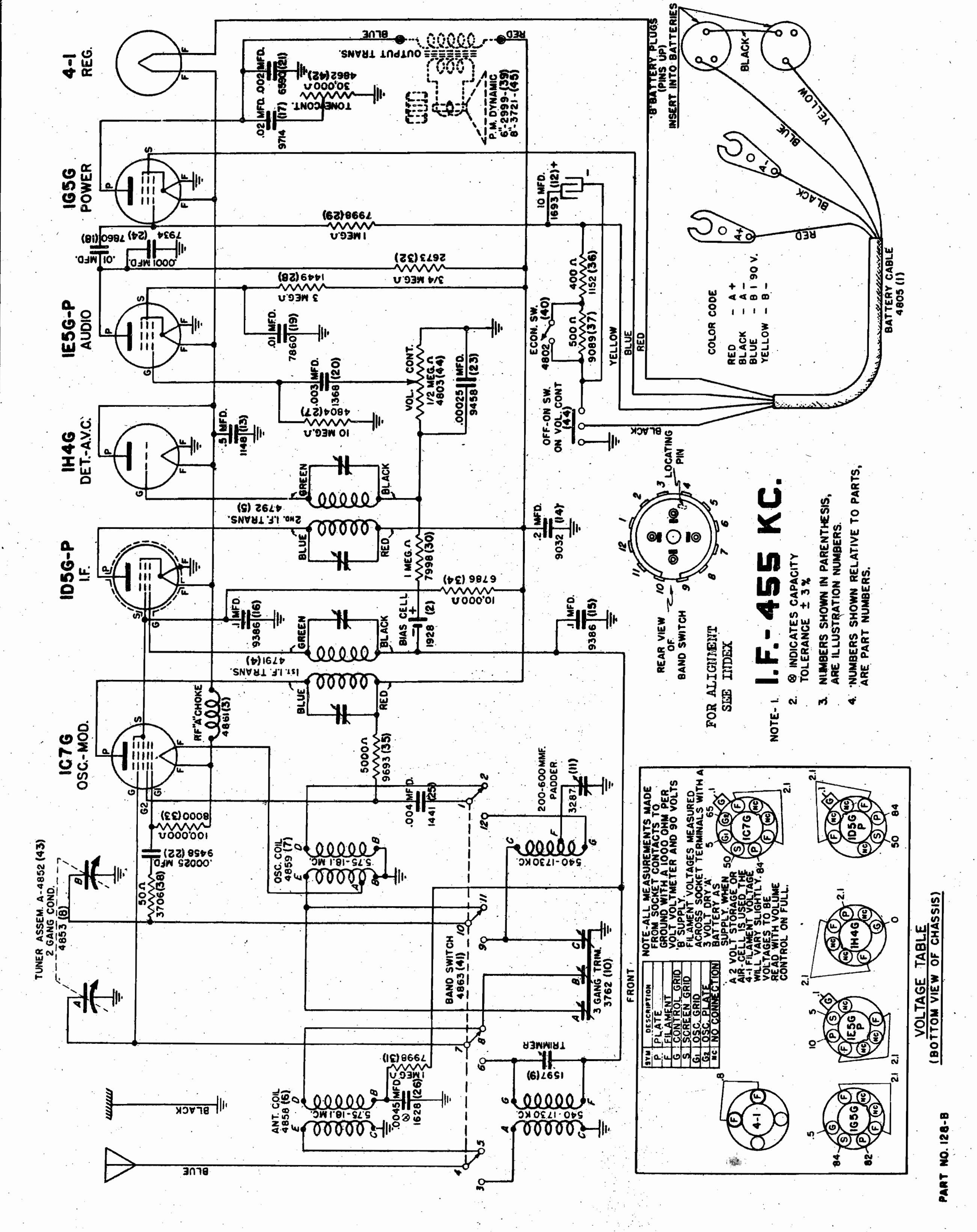
NOTE: When adjusting this trimmer two peaks, the fundamental and the image peak will be noticed. CARE MUST BE TAKEN THAT THE FUNDAMENTAL PEAK AND NOT THE IMAGE PEAK IS USED FOR ALIGNING THE RECEIVER AT 18 MEGACYCLES. Always back off the trimmer to minimum capacity, then screw down the trimmer (add capacity) until the FIRST PEAK which is the fundamental and the proper one to use is tuned in. If the trimmer is screwed down beyond the point where the first peak is received the incorrect image peak will be tuned in. After completing adjustment of the oscillator trimmer at 18 megacycles, always check to see if the proper peak has been used. To do this leave test oscillator frequency at 18 megacycles, increase the output of the test oscillator and tune receiver dial to approximately 17 megacycles. Then vary the receiver dial slightly to the right and left of 17 megacycles, and if the fundamental peak was used in aligning at 18 megacycles the test oscillator signal will be heard at approximately 17 megacycles on the receiver dial.

(c) Tune receiver dial and set test oscillator frequency to EXACTLY 15 megacycles.
(d) Rock gang condenser slightly to right and left and adjust 15 M.C. antenna trimmer for maximum 15 megacycle test signal response.

MODEL 128B
Schematic
Voltage, Socket

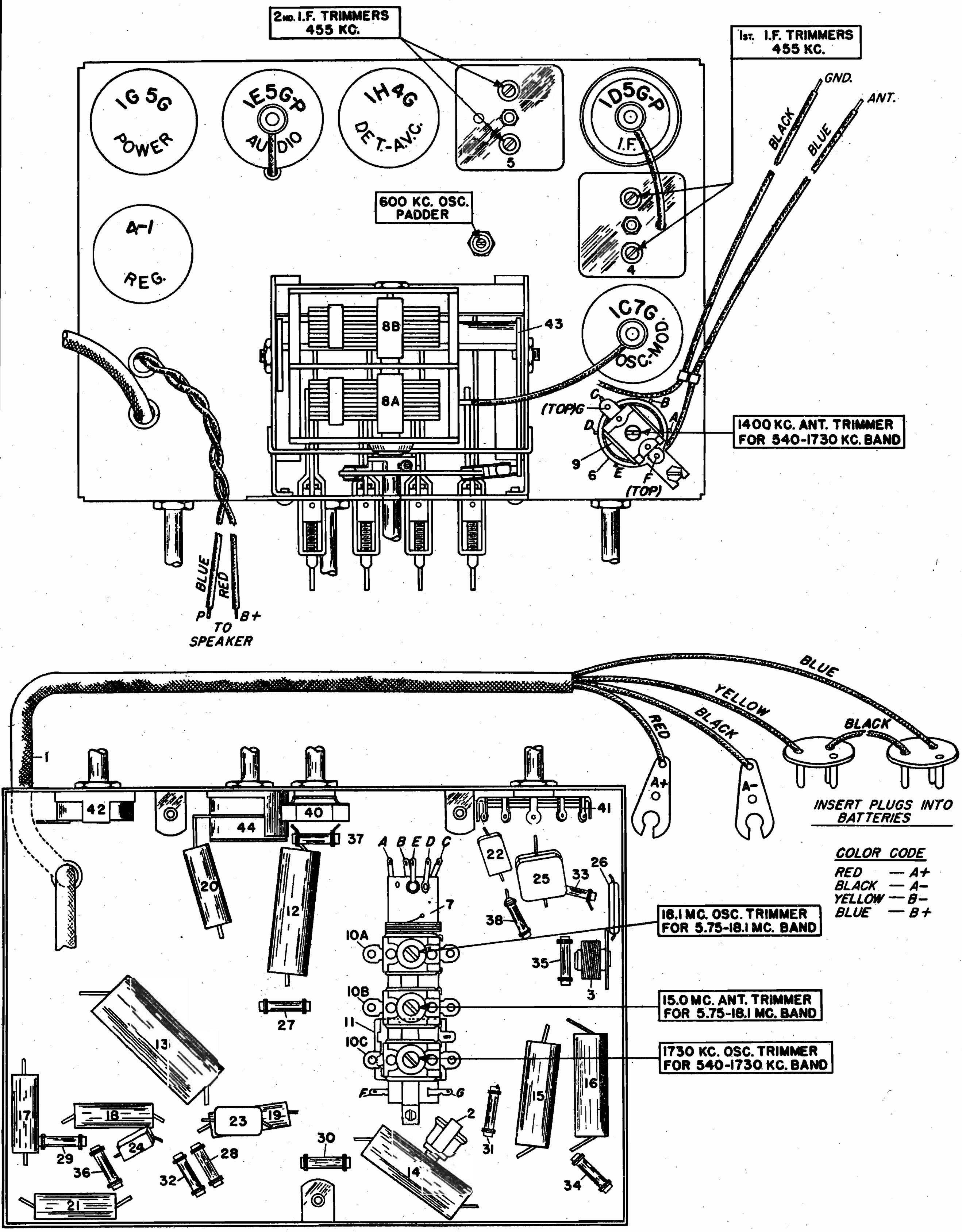
SPIEGEL INC.

TWO BAND—SIX TUBE INCLUDING BALLAST TUBE
2 Volt Battery Operated Superheterodyne Receiver



MODEL 128B
Chassis, Socket
Trimmers

SPIEGEL INC.

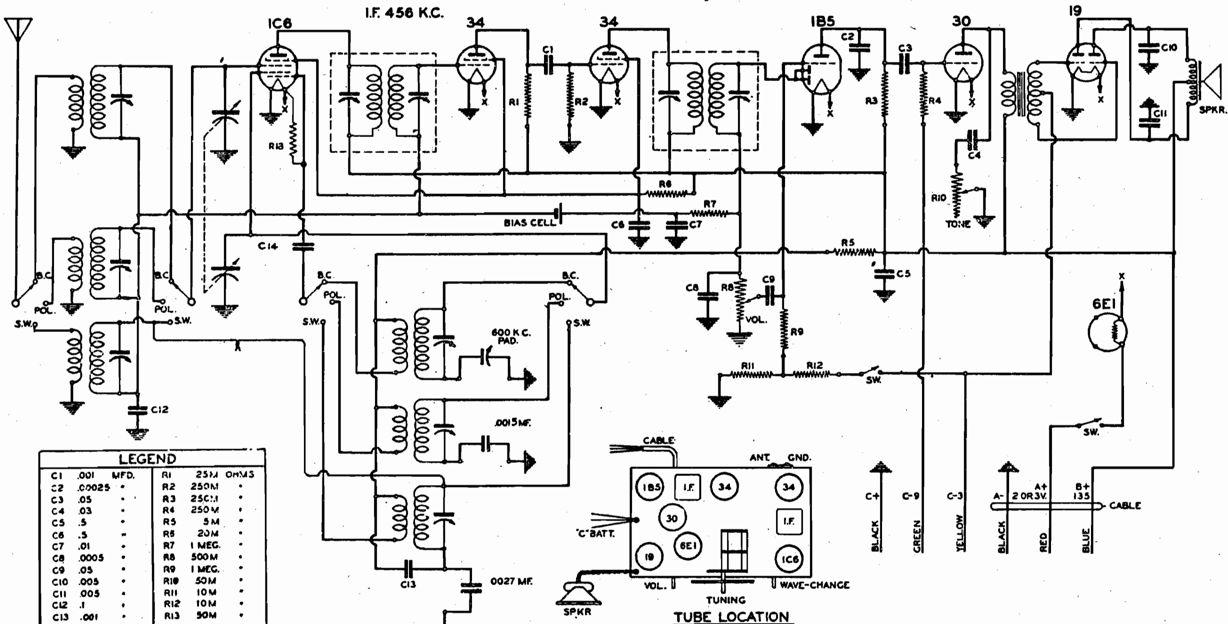


SPIEGEL INC.

MODELS 142, 154, 6602, 6650
Chassis 725
Schematic, Socket, Trimmers
Alignment

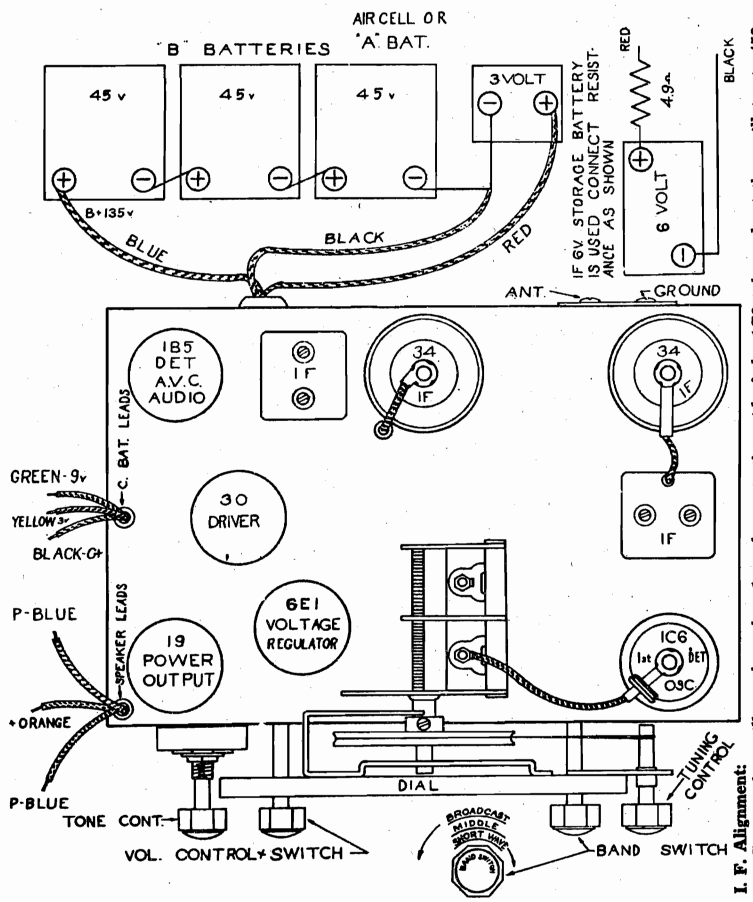
A good ground connection to a water pipe or other metallic conductor entering into the ground for some distance is ESSENTIAL.

IF PEAK 456 KC



LEGEND					
C1	.001	MFD.	R1	25M	OHMS
C2	.00025	"	R2	250M	"
C3	.05	"	R3	250M	"
C4	.03	"	R4	250M	"
C5	.5	"	R5	5M	"
C6	.5	"	R6	20M	"
C7	.01	"	R7	1 MEG.	"
C8	.0005	"	R8	500M	"
C9	.05	"	R9	1 MEG.	"
C10	.005	"	R10	50M	"
C11	.005	"	R11	10M	"
C12	.1	"	R12	10M	"
C13	.001	"	R13	50M	"
C14	.0001	"			

7-Tube, 2-Volt Battery Operated Superheterodyne



I. F. Alignment:
Connect the oscillator through a .1 condenser to the grid of the 1C6 tube and set the oscillator to 456 kilocycles. Peak each I. F. stage to resonance as indicated by maximum output on the output meter.

R. F. Alignment:
With the wave change switch in the broadcast position, set the oscillator to 1700 kilocycles and connect in series with a .00025 condenser to the antenna of the receiver. Rotate the variable condenser to the 1700 setting of the dial and adjust the trimmer condenser of the broadcast oscillator to resonance. This trimmer is located on the right side of the chassis, second position from the front. Reset the test oscillator to 1400 kilocycles and adjust antenna trimmer located under the chassis. Now set oscillator to 600 kilocycles and adjust padder located on top of the chassis. Check alignment at 1000 kilocycles.

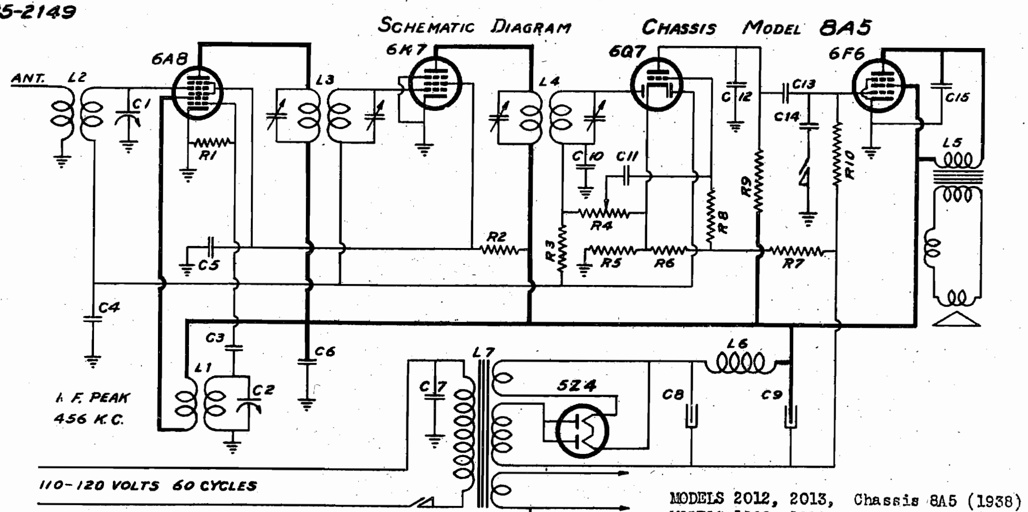
For aligning the police band, set test oscillator to 5 megacycles and switch to the police band position on the set. With the condenser rotated to this frequency setting as indicated on the dial, adjust oscillator trimmer located on the right side of the chassis, first position from the front. Now adjust antenna trimmer located on the front of the chassis, left position, to resonance.

The short wave band is aligned by setting the condenser to 18 megacycles and adjust the oscillator trimmer located on the right side of the chassis, third position from the front to resonance with an 18 megacycle signal from the test oscillator. Turn dial to 16 M. C. and adjust antenna trimmer through right hand hole in front of chassis, rocking variable condenser slightly back and forth to get maximum peak.

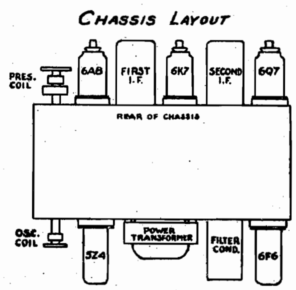
MODELS 1008,1009,Ch.8A5(1939)
2012,2013,Ch.8A5(1938)
MODELS 2006,2007,Ch.1T
Schematics,Alignment

SPIEGEL INC.

25-2149



MODELS 2012, 2013, Chassis 8A5 (1938)
MODELS 1008, 1009, Chassis 8A5 (1939)



CODE OF SCHEMATIC DIAGRAM

RESISTORS

R1	53-898	50,000 Ohm	1/4 Watt Resistor
R2	53-1042	25,000 Ohm	1/4 Watt Resistor
R3	53-926	1 Meg Ohm	1/4 Watt Resistor
R4	19-2007	500,000 Ohm	Vol. Cont. & Switch
R5		60 Ohm	Candohm Resistor
R6	53-2019	20 Ohm	Candohm Resistor
R7		240 Ohm	Candohm Resistor
R8	53-925	500,000 Ohm	1/4 Watt Resistor
R9	53-924	250,000 Ohm	1/4 Watt Resistor
R10	53-925	500,000 Ohm	1/4 Watt Resistor

CONDENSERS

C1,C2	77-2007	Two Gang Variable Condenser
C3	76-2002	.00005 Mfd. Mica Condenser
C4	75-2005	.1 Mfd. 200 V. Paper Cond.
C5	75-2005	.1 Mfd. 200 V. Paper Cond.
C6	75-2005	.1 Mfd. 200 V. Paper Cond.

COND. (Cont.)

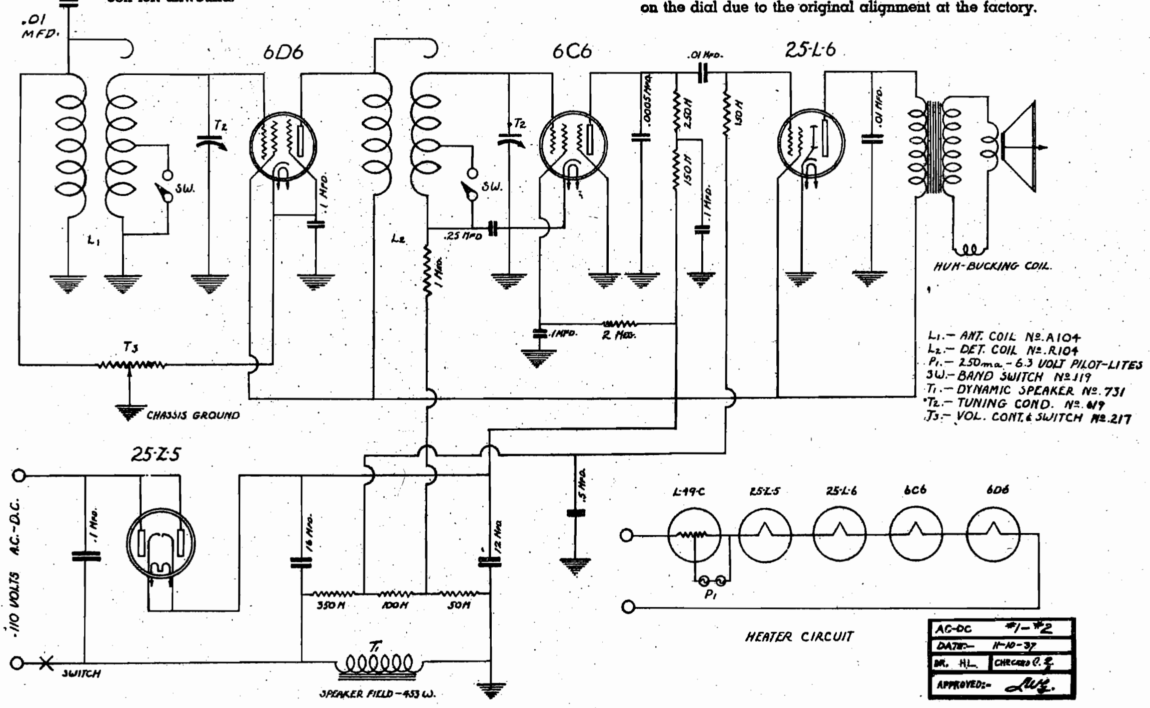
C7	75-2003	.01 Mfd. 400 V. Paper Cond.
C8	18-2008	6 Mfd. 350 W.V. Elect. Cond.
C9	18-2008	6 Mfd. 350 W.V. Elect. Cond.
C10	76-307	.0005 Mfd. Mica Condenser
C11	75-2005	.1 Mfd. 200 V. Paper Cond.
C12	75-2014	.001 Mfd. 600 V. Paper Cond.
C13	75-2005	.1 Mfd. 200 V. Paper Cond.
C14	75-2003	.01 Mfd. 400 V. Paper Cond.
C15	75-2002	.004 Mfd. 600 V. Paper Cond.

ALIGNMENT FREQUENCIES
1400 KC, 1000 KC and 600 KC
FOR CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION OF VOLUME V111

MODELS 2006 and 2007 - Chassis 1T

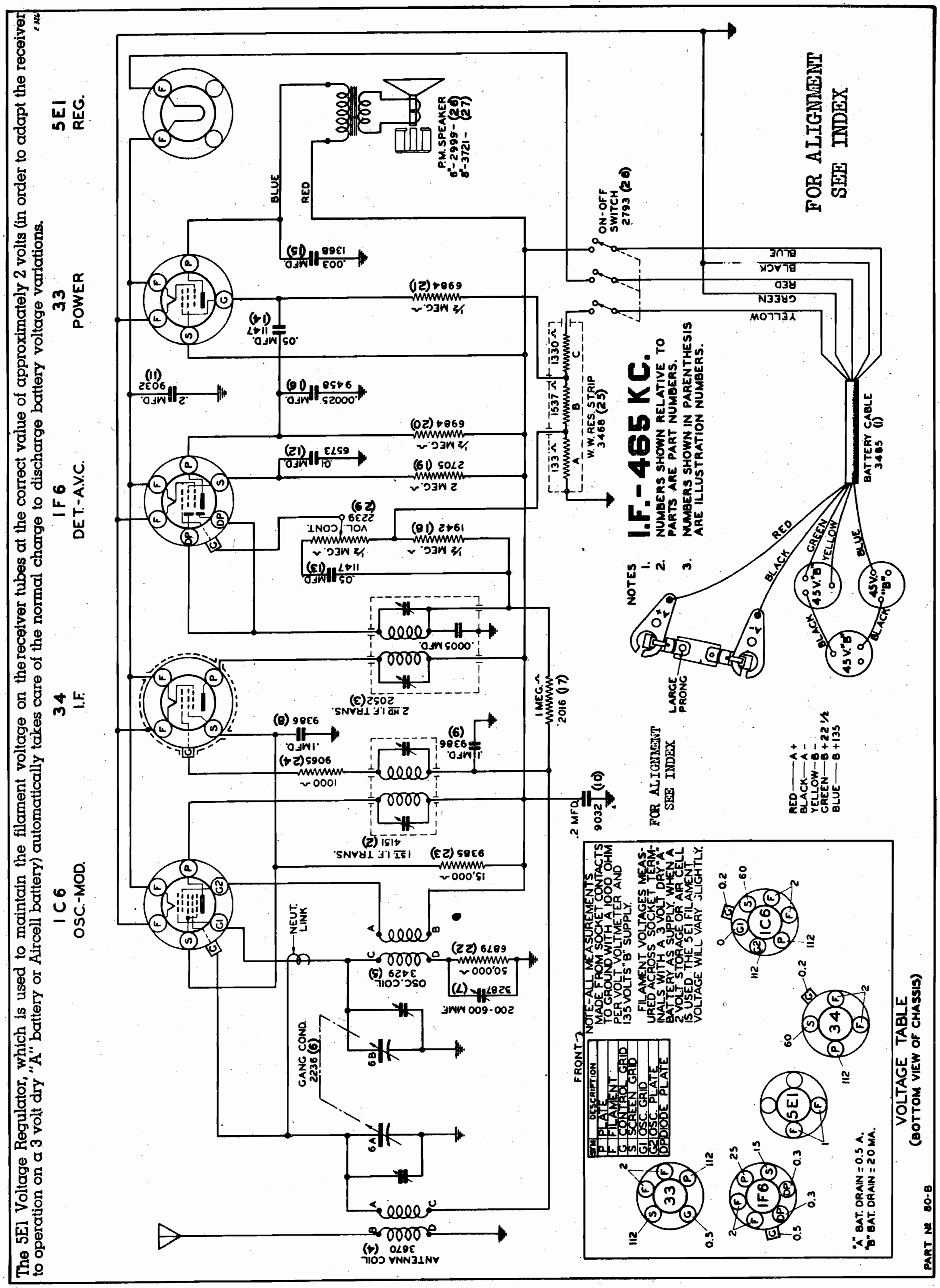
ALIGNMENT PROCEDURE: The alignment of this receiver requires the use of a test oscillator that covers a frequency range from 540 to 4000 KC. For exact alignment an output meter should be connected across the output transformer on the speaker. A dummy antenna of approximately 180 mmfd. should be used and connected to antenna with aerial coil left unwound.

Adjust oscillator to 1400 KC. Turn knob controlling dial to 1400 on the dial. Rotate adjustment screws on tuning condenser until maximum output is produced. (with Volume Control at maximum). Reset oscillator to 1000 KC and finally to 600 KC and check. The receiver should check OK at these points for alignment. It is only necessary to re-adjust at one point on the dial due to the original alignment at the factory.



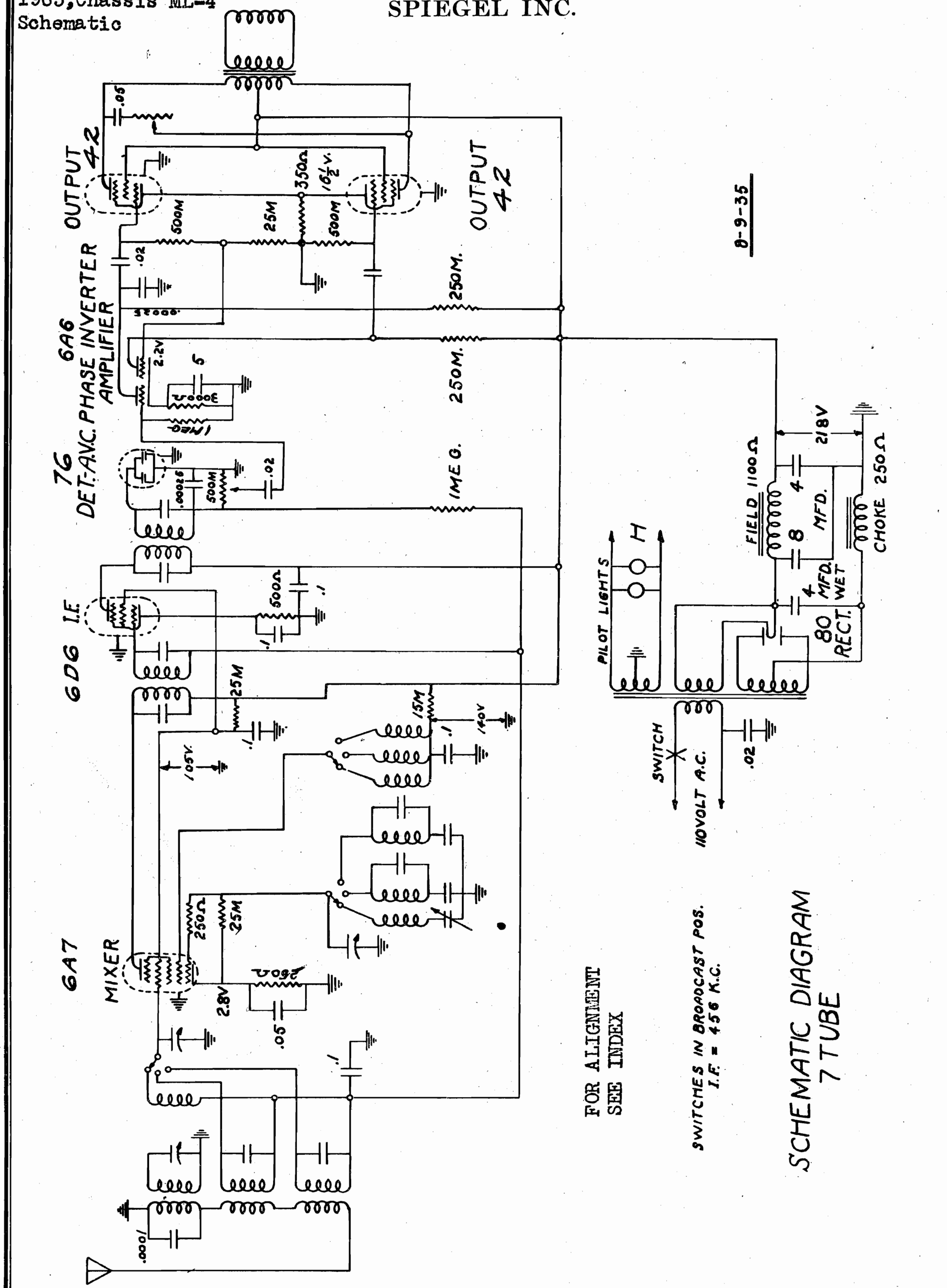
SPIEGEL INC.

MODELS 1204 to 1207 incl.
Chassis 80B
Schematic, Voltage, Socket



MODELS 1904,1916,1952, 1965,Chassis ML-4
Schematic

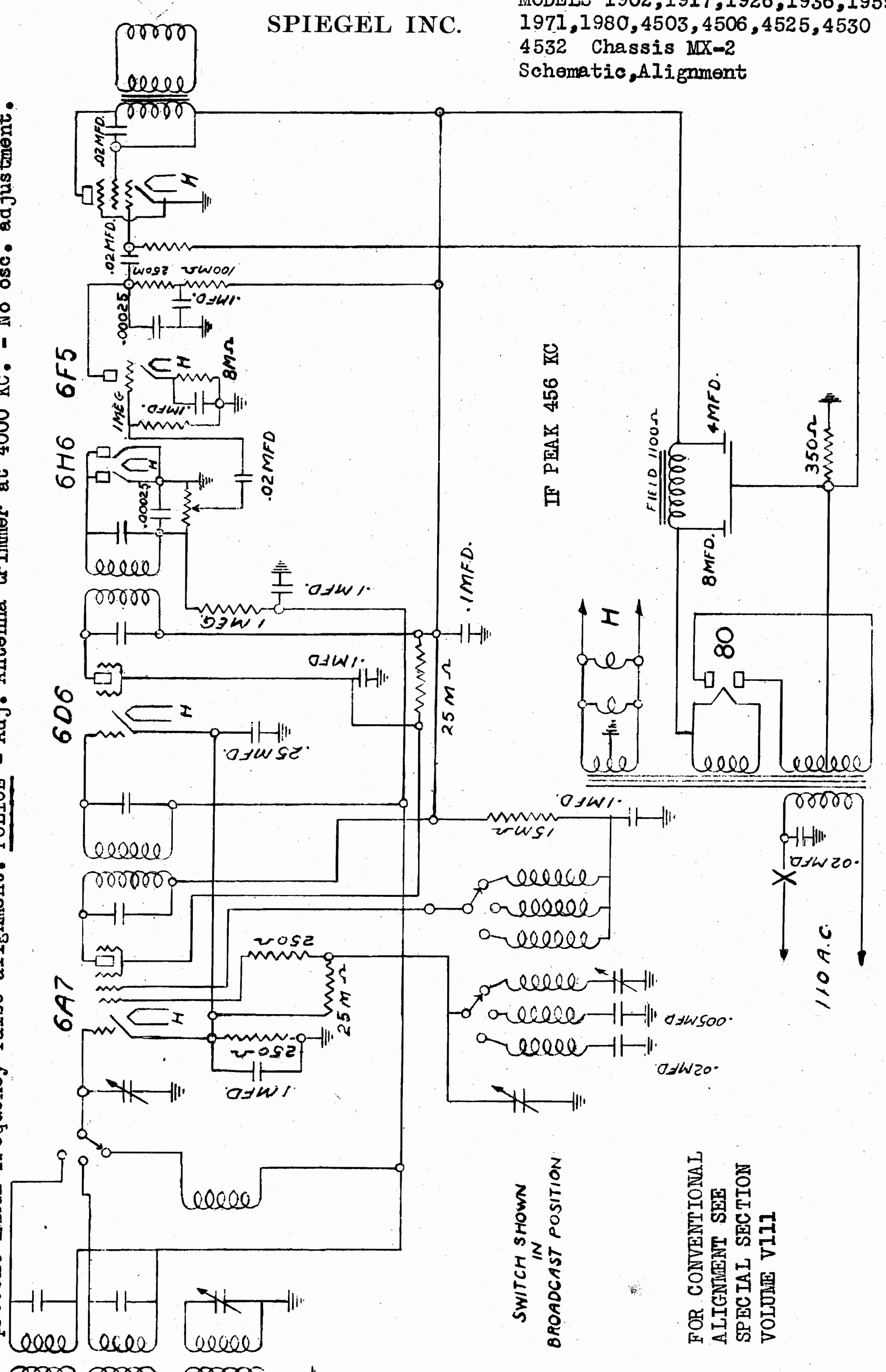
SPIEGEL INC.



SPIEGEL INC.

MODELS 1902,1917,1926,1936,1959
1971,1980,4503,4506,4525,4530
4532 Chassis MX-2
Schematic,Alignment

IF ALIGNMENT - Align at 456 KC thru .05 or .1 mf. cond. BC ALIGNMENT - Osc., RF and Pre-Selector gang cond. trimmers at 1400 KC. Osc. Padder at 600 KC. FOREIGN BAND - 19 to 49 meters- Osc. and Ant. trimmers alignment at 14000 KC. Start by Osc. trimmer being loose and Antenna trim. being tight, to prevent IMAGE frequency false alignment. POLICE - Adj. Antenna trimmer at 4000 KC. - No osc. adjustment.



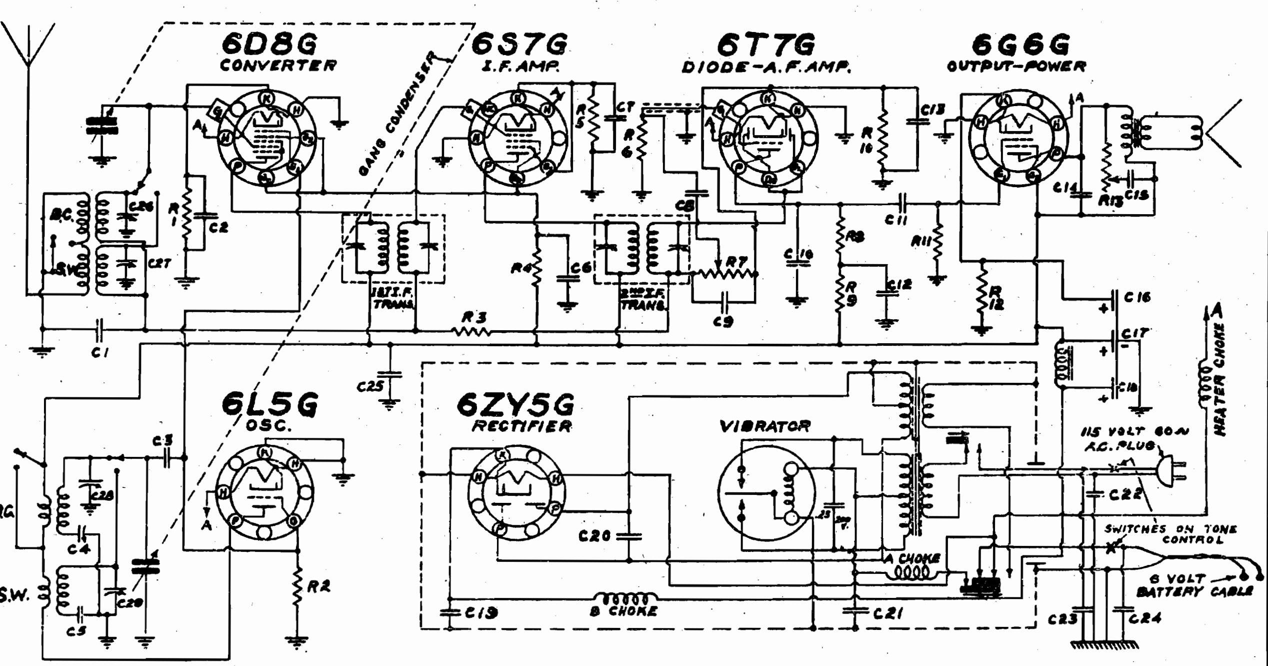
FOR CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME V111

MODELS 2006, 2007, 4040
Chassis 6A

SPIEGEL INC.

Schematic, Socket
Trimmers, Alignment

Six Tube 6 Volt Battery 110-120 Volt AC Superheterodyne



IF PEAK 456 KC

CONDENSERS

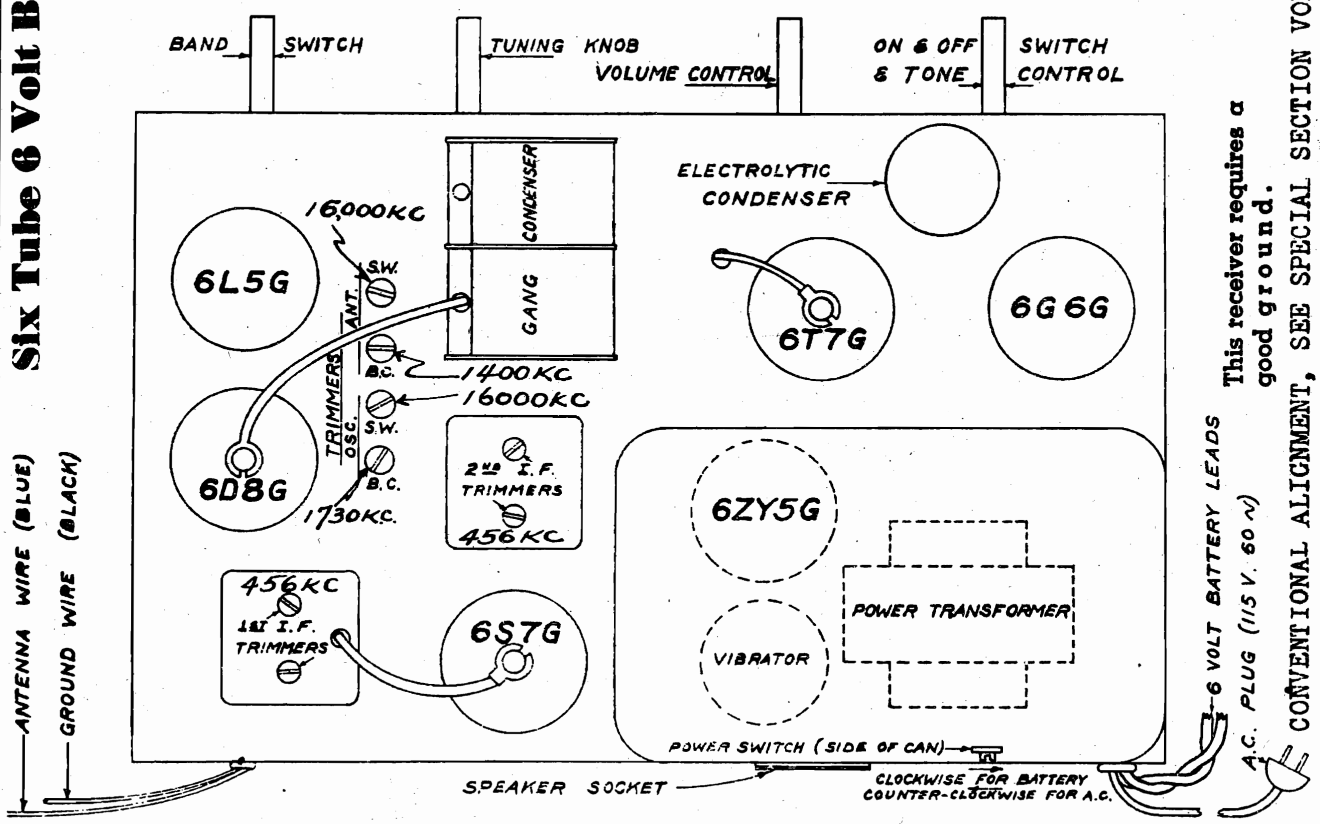
No	CAPACITY	TYPE	No	CAPACITY	TYPE
1	.05 Mfd.	200 V.	13	.5 Mfd.	200 V.
2	.05 Mfd.	200 V.	14	.005 "	600 V.
3	100 mmf.	MICA	15	.05 "	400 V.
4	300-600 mmf.	"	16	5. "	25 V.
5	4000 mmf.	M. ± 5%	17	8. "	200 V.
6	.1 Mfd.	200 V.	18	8. "	200 V.
7	.05 "	200 V.	19	.01 "	600 V.
8	.01 "	400 V.	20	.015 "	1,000 V. OIL TYPE
9	250 mmf.	MICA	21	.5 "	10 V.
10	250 "	"	22	.05 "	400 V.
11	.01 Mfd.	400 V.	23	.01 "	600 V.
12	.1 "	200 V.	24	.5 "	10 V.
			25	.1 "	200 V.

RESISTORS

No	OHMS	WATTS	SPL. TOL.
1	1500	1/4	± 10%
2	50,000	1/4	
3	1,000,000	1/4	
4	30,000	1/4	
5	1,000	1/4	± 10%
6	1,000,000	1/4	
7	500,000	1/4	(VOL. CONT.)
8	500,000	1/4	
9	200,000	1/4	
10	10,000	1/4	± 10%
11	500,000	1/4	
12	450	1/4	± 10%
13	100,000	1/4	(TONE CONT.)

BAND SWITCH IN BROADCAST POSITION.
POWER SWITCH IN BATTERY POSITION.
I.F. — 456 K.C.
C26 TO C29 - 2 TO 20 mmf. TRIMMERS

SCHEMATIC DIAGRAM 6A

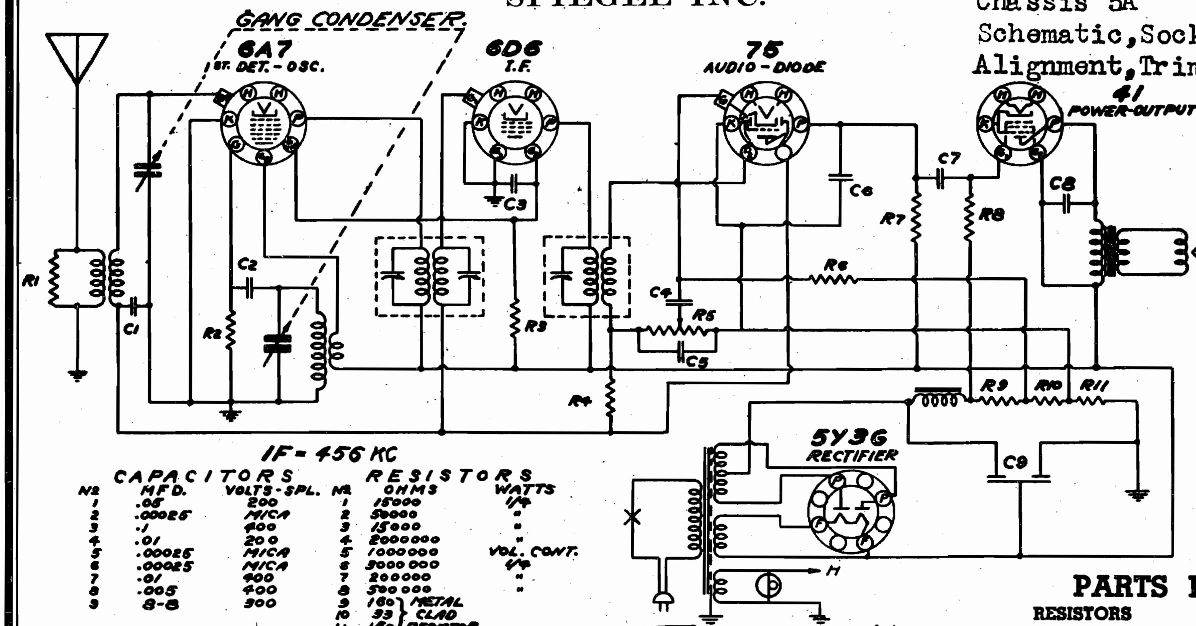


This receiver requires a good ground.

CONVENTIONAL ALIGNMENT, SEE SPECIAL SECTION VOL. VIII

MODELS 2014, 2015, 2016
Chassis 5A
Schematic, Socket, Tuner
Alignment, Trimmers

SPIEGEL INC.

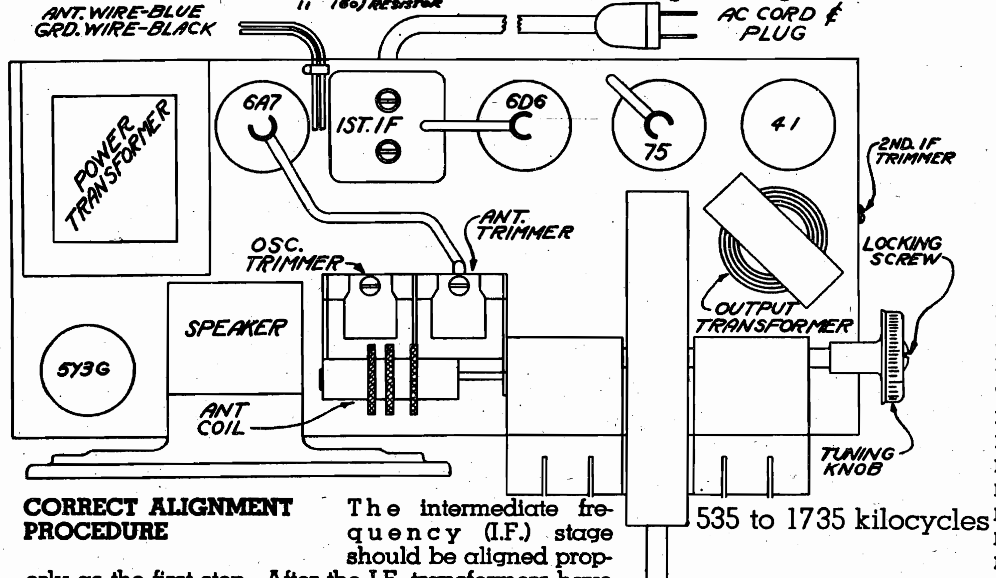


IF = 456 KC

CAPACITORS No.	MFD.	VOLTS-SPL.
1	.05	200
2	.00025	MICA
3	.1	400
4	.01	200
5	.00025	MICA
6	.00025	MICA
7	.01	400
8	.005	400
9	8-8	300

RESISTORS No.	OHMS	WATTS
1	15000	1/4
2	50000	"
3	15000	"
4	2000000	"
5	1000000	VOL. CONT.
6	3000000	1/4
7	200000	"
8	500000	"
9	160	METAL CLAD RESISTOR
10	33	METAL CLAD RESISTOR
11	160	METAL CLAD RESISTOR

ANT. WIRE-BLUE
GRD. WIRE-BLACK



PARTS LIST

RESISTORS

P1220	200,000 Ohm ¼ Watt	
P417	50,000 Ohm ¼ Watt	
P258	15,000 Ohm ¼ Watt	
P137	500,000 Ohm ¼ Watt	
P1114	2,000,000 Ohm ¼ Watt	
P2438	Candohm Resistor	

CONDENSERS

P164	.01 Mfd. 400 Volt
P1322	.005 Mfd. 600 Volt
P334	.05 Mfd. 400 Volt
P148	.05 Mfd. 200 Volt

MICA CONDENSERS

P817	.00025

ELECTROLYTIC CONDENSERS

P2397	Dual 8 Mfd. 300 W.V.

ADJUSTABLE CONDENSERS

P2411	Gang Condenser

TRANSFORMERS AND COILS

P2395	110 V. Power Transformer
P2396	125 V. Power Transformer
P2391	Output Transformer
P1506	1st I.F. Transformer
P2394	2nd I.F. Transformer
P2412	Oscillator Coil
P2393	Antenna Coil

CORRECT ALIGNMENT PROCEDURE The intermediate frequency (I.F.) stage should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the Broadcast Band alignment should be the next procedure.

I.F. ALIGNMENT Adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A7) through a .05 or .1 mfd. condenser. The ground on the test oscillator can be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT Adjust the oscillator to 1730 KC and connect the output to the antenna lead (Blue) through a .0002 mfd. mica condenser. Set the gang condenser to minimum capacity and adjust the gang condenser trimmer (oscillator) to receive this signal. After this has been carefully done, the next step is to set the generator to 1400 KC and after tuning in the signal adjust the antenna trimmer to peak. This is all that is necessary for the alignment unless the plates of the gang condenser have been bent out of shape. In case of bent plates, set the test oscillator and the receiver to 600 KC and bend the plates into the position for maximum output.

PROCEDURE FOR SETTING UP AND OPERATING AUTOMATIC PUSH BUTTONS

Select four strong local stations tuned in regularly. Now loosen **Locking Screw** (see chassis layout) several turns with a coin or a screw driver and press in any one of the four push buttons. Holding the button down, tune in any one of four selected stations by rotating the tuning knob (side knob) slowly back and forth until the signal is cleared.

Release the push button and press in another button and hold down, tuning in another favorite station with tuning knob. Follow the same procedure for the remaining stations. Now hold tuning knob (side knob) securely and with coin or screw driver, tighten locking screw. This screw holds all stations in adjustment.

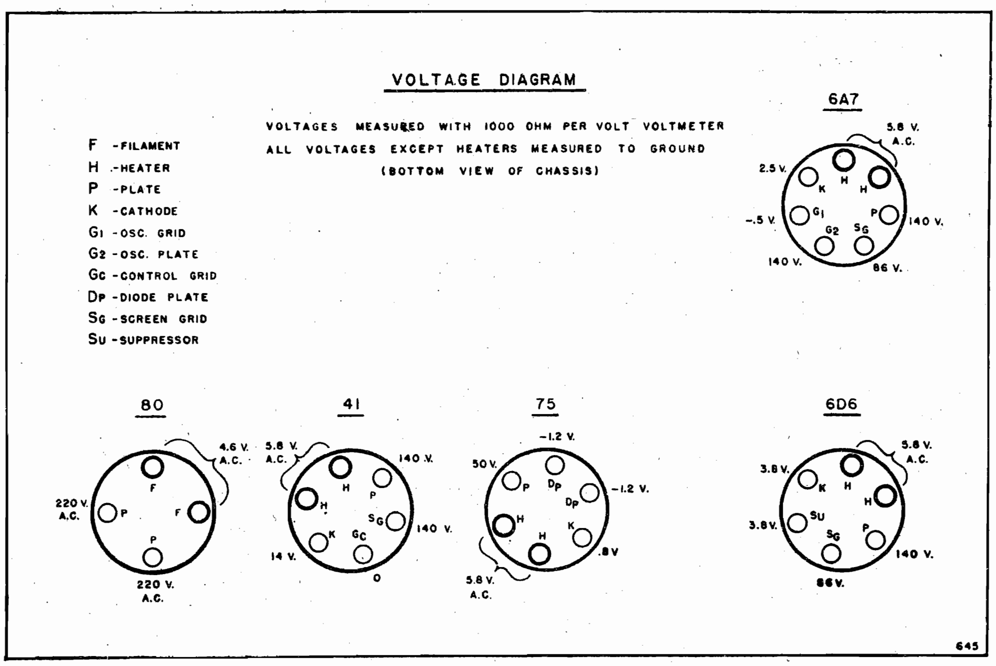
In order to change any station already set up, to another, hold tuning knob securely, loosen locking screw and select the new station as explained above. Tear the correct station call letter tabs from the set of sheets supplied and push them into rectangular windows above each push button.

The automatic push button dial is now set up for quick tuning.

MODELS 2056, 2057
Chassis 645
Schematic, Voltage

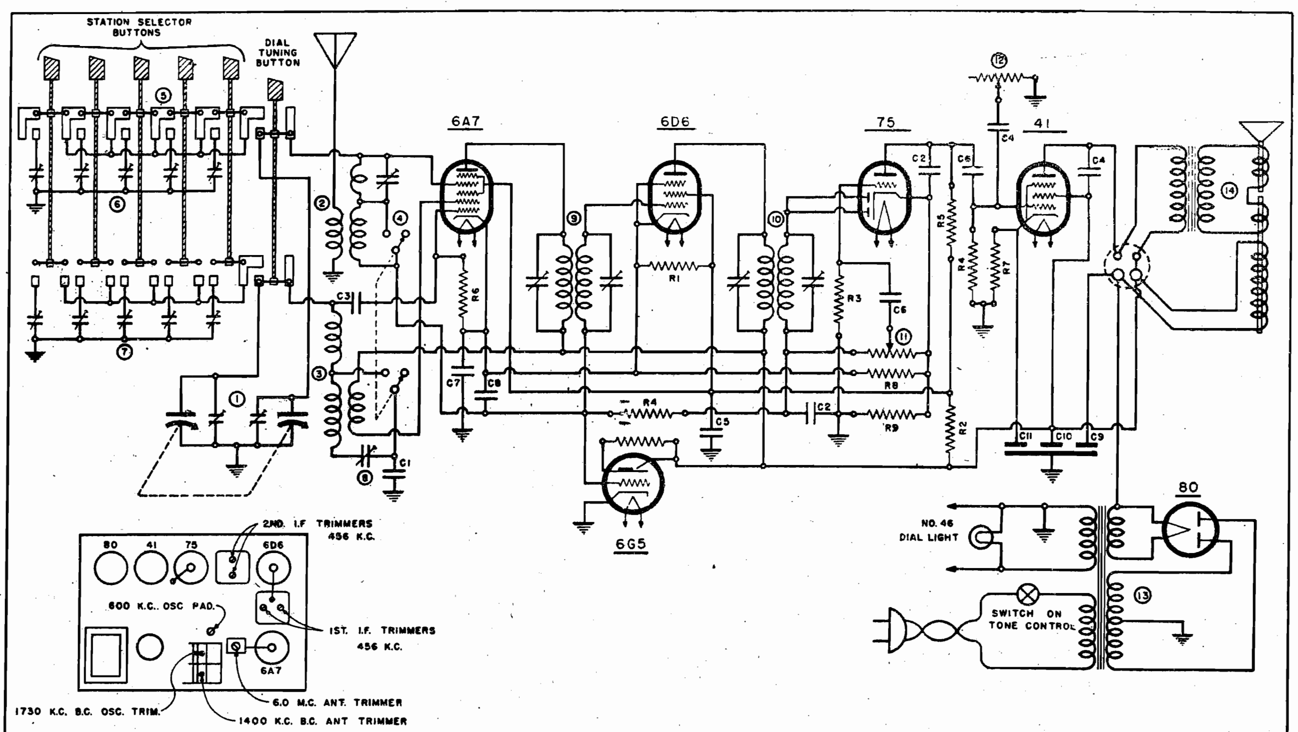
SPIEGEL INC.

Socket, Trimmers
Alignment



FOR CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION OF VOLUME V111

FOR TUNER DATA SEE VOLUME X PAGE 10-8



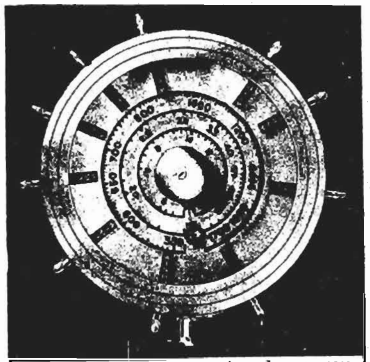
PART NO.		DESCRIPTION
R1	6117	25,000 OHM 1/2 W CARBON RES.
R2	6105	10,000 " " " "
R3	6017	1 MEG. " 1/3 W " "
R4	6018	500,000 " " " "
R5	6056	200,000 " " " "
R6	6028	40,000 " " " "
R7	6052	800 " " " "
R8	60-151	160 " " " " ±10%
R9	60-150	51 " " " " ±10%

PART NO.		DESCRIPTION
C1	15-101	.00148 MFD. MICA CONDENSER ±5%
C2	1504	.00025 " " " "
C3	1501	.0001 " " " "
C4	1651	.004 " 600 V. TUBULAR COND.
C5	1607	05 " 400 V. " "
C6	1603	01 " " " "
C7	1614	25 " 200 V. " "
C8	1622	05 " " " "
C9	18-102	8 " 250 V. WET ELECTROLYTIC
C10	"	4 " " " "
C11	"	4 " 25 V. " "

	PART NO.	DESCRIPTION 645
1	19-113	2 GANG CONDENSER
2	10-196	ANTENNA COIL
3	10-147	OSCILLATOR COIL
4	69-108	WAVE SWITCH
5	69-115	6 BUTTON PUSH-BUTTON SWITCH
6	20-106	ANT. TRIMMER STRIP
7	20-107	OSC. " "
8	20-100	BC OSC. PADDING TRIMMER
9	10-194	1ST. I.F. TRANSFORMER
10	10-195	2ND. I.F. "
11	24-105	VOLUME CONTROL
12	26-106	TONE CONTROL WITH SWITCH
13	80-104	POWER TRANSFORMER
14		SPEAKER

SPIEGEL INC.

SERVICE NOTES for "AUTOMATIC-TUNE" WHEEL DIAL



INDICATOR STOP: TO TUNE...GRASP KNURLED METAL TAB BELOW THE STATION CALL LETTER OF THE DESIRED STATION BETWEEN THUMB AND FOREFINGER AND SWING DIAL UNTIL KNURLED TAB IS UNDERNEATH INDICATOR STOP.

KNURLED METAL TAB: ...AFTER PROPERLY SETTING TAB HOLDERS, FIRMLY TIGHTEN SO THAT THEY CANNOT MOVE ON DIAL RAIL.

FROM 1 TO 10 STATIONS OPERATING ON FREQUENCIES SEPARATED BY 40 KILOCYCLES OR MORE MAY BE AUTOMATIC TUNE ...... BY PROPERLY SETTING TAB HOLDERS

FIG. 1

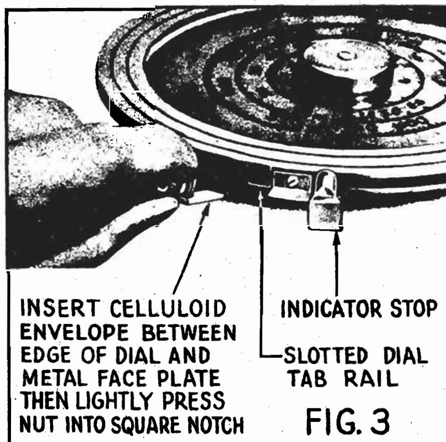
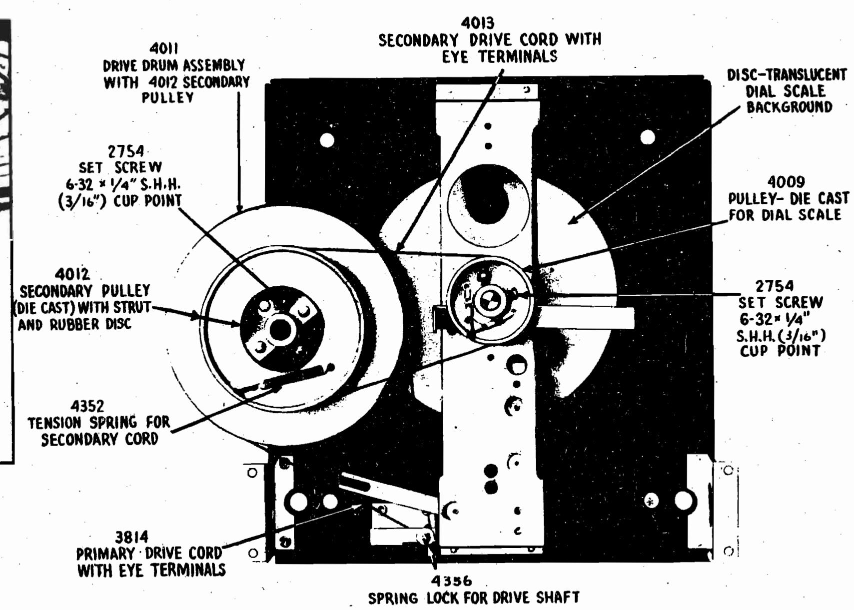


FIG. 3

DIAL MECHANISM



While an "AUTOMATIC-TUNE" tab may be set for distant weak stations, better results will be obtained if the stations selected for "AUTOMATIC-TUNE" are strong nearby or local stations.

AFTER IT IS DETERMINED WHAT STATIONS YOU WISH TO "AUTOMATIC-TUNE", OBTAIN THE FREQUENCIES USED AND CALL LETTERS OF THESE STATIONS AND SET STATION TABS BY:

1. Lay station call letter tab sheet on flat surface and with a razor or sharp knife cut out desired station tab by cutting around black edges of each desired tab.
2. To illustrate the proper setting of station paper strip and metal tab holder the receiver is shipped from the factory with a station tab properly set for Station WGN 720 kilocycles.
   Carefully note that the station call letter tab appears directly below the 720 kilocycle calibration on the face of the dial and that the knurled tab is firmly screwed down on slotted tab rail. If Station WGN is not one of the selected stations or if a tab is to be set for a station which operates on a frequency less than 720 kilocycles, remove WGN celluloid envelope and station call letter paper strip by:
   (a) Loosen tab holder by grasping knurled end of metal tab with finger tips and turn one or two turns to the left.
   (b) Slide the metal holder tab to square notch in dial tab rail—adjacent to permanently attached tab stop—and pull outward on tab until it is pulled free from tab holder rail.
   (c) Slide the celluloid envelope out of the metal tab frame.
3. **PLACE EACH SELECTED STATION CALL LETTER PAPER STRIP INSIDE OF CELLULOID ENVELOPE BY:**
   (a) Hold celluloid envelope with curved end upward.
   (b) Place station call letter paper strip inside of celluloid envelope with printed call letters upward.
4. **INSERT CELLULOID ENVELOPE INTO A METAL TAB FRAME BY:**
   (a) Hold curved end of celluloid envelope towards metal knurled tab holder and insert celluloid into metal frame.
   (b) Gently push celluloid inward until curved end of envelope touches edge of celluloid envelope tab frame.
   (c) Arrange tabs in numerical order according to station frequency.
5. **SET THE METAL TAB HOLDERS ON DIAL BY: (See Fig. 3)**
   (a) Set the first metal tab holder for the station that broadcasts on the lowest frequency—least number of kilocycles—and then set the next station tab for the selected station operating on the next lowest frequency, continuing on in this way until a tab has been set for all of the selected stations.
   (b) Carefully tune in the station which broadcasts on the lowest frequency—least number of kilocycles.
   (c) Insert celluloid envelope between edge of dial and metal face plate—Lightly press nut on end of knurled tab into square notch in slotted dial rail—then slide tab holder along rail until the knurled tab is underneath the indicator stop on the dial at which point station call letter strip will appear directly below the indicator line on the face of the dial.
   (d) Tighten tab holders as much as possible without moving dial by turning knurled tab to the right—then swing dial so knurled tab is away from indicator stop on the dial and firmly tighten so that it cannot move on the dial rail. DO NOT USE PLIERS TO TIGHTEN.

REPLACING No. 4000 DIAL GLASS SCALE ASSEMBLY

As it requires special tools to properly set part No. 4005 shaft assembly on part No. 4000 glass scale—we will ship all orders for No. 4000 glass scales with the No. 4005 shaft assembled on the glass scale.

WHEN INSTALLING PART No. 4000 GLASS ASSEMBLY WITH No. 4005 SHAFT ATTACHED carefully follow procedure in order given:

(a) Insert No. 4005 shaft into main bushing attached to the cadmium plated bracket on back of dial face.

b) Place steel spacer washer and brass tension spring in order named over end of No. 4005 shaft.

(c) Place the small die cast primary pulley No. 4009 on shaft—do not tighten No. 2754 set screws.

(d) Loosen the two set screws in brass spacer collar on the No. 4005 shaft.

(e) Adjust brass spacer collar—by sliding collar on shaft—so that there will be approximately 1/8" clearance between the bottom of metal tab holder and the face plate. Firmly retighten brass collar and No. 2754 die cast pulley set screws. Failure to provide proper clearance will result in scratches on dial face and the dial mechanism will not operate freely.

TO INSTALL No. 3814 PRIMARY DRIVE CORD:

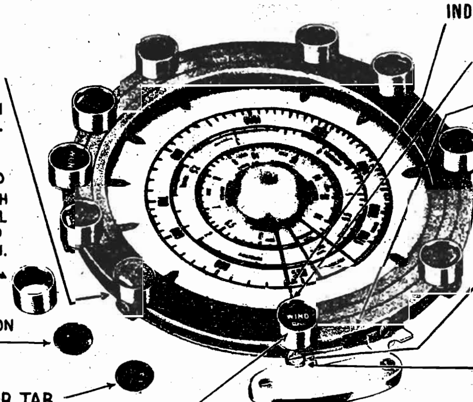
(a) Looking at back of dial, wrap dial cord twice around No. 4355 drive shaft in CLOCKWISE direction.

(b) Hook No. 3462 tension spring into loops at end of dial cord.

NEVER LOOSEN THE FOUR SCREWS THAT HOLD THE CADMIUM PLATED BRACKET TO DIAL FACE—OTHERWISE THE MAIN BUSHING WILL BE THROWN OUT OF CENTER.

MODELS 2104 to 2107
MODELS 4510,4556
Push-Button Tuner
Assembly,Notes,Parts

SERVICE NOTES for PUSH BUTTON DIAL



FROM ONE TO TEN STATIONS OPERATING ON FREQUENCIES SEPARATED BY FORTY KILOCYCLES OR MORE MAY BE AUTOMATICALLY TUNED BY PROPERLY SETTING PUSH BUTTONS.

IT IS A SIMPLE MATTER TO "AUTOMATIC TUNE" AFTER THE STATION PUSH BUTTONS HAVE BEEN PROPERLY SET—JUST PLACE INDEX FINGER INTO THE PUSH BUTTON HAVING CALL LETTERS OF THE DESIRED STATION PUSHING INWARD—THEN SWING DIAL UNTIL DIAL STOPS, AT WHICH POINT THE DESIRED STATION SHOULD BE PROPERLY TUNED IN AND THE METAL INDICATOR ATTACHED TO THE PUSH BUTTON SHOULD POINT TO THE INDICATOR LINE ON FACE OF DIAL. If reception is slightly distorted—which may be particularly noticeable when tuning weak stations—retune for maximum clarity by using conventional tuning knobs.

WHILE A PUSH BUTTON MAY BE SET FOR DISTANT WEAK STATIONS, BETTER RESULTS WILL BE OBTAINED IF THE STATIONS SELECTED FOR AUTOMATIC PUSH BUTTON TUNING ARE STRONG NEARBY OR LOCAL STATIONS.

AFTER IT IS DETERMINED WHAT STATIONS YOU WISH TO "AUTOMATIC PUSH BUTTON TUNE" OBTAIN THE FREQUENCY USED AND CALL LETTERS OF THESE STATIONS AND SET PUSH BUTTONS BY:

To illustrate the proper installation and setting of the Push Buttons, the receiver is shipped from the factory with a Push Button properly set for station WGN, Chicago, 720 kilocycles. If station WGN is not one of the selected stations, remove call letters by:

a. Grasp cap section of Push Button between fingers and gently pull outward until it is clear of dial.

b. Carefully remove the station call letter tab and celluloid disc.

SET STATION PUSH BUTTON BY:

a. Gently press desired round paper station call letter tabs out of station tab sets.

b. Always set the first push button for the desired station that broadcasts on the lowest frequency—the least number of kilocycles—and then set the next push button for the selected station operating on the next lowest frequency, continuing on in this manner until a Push Button has been set for all of the desired stations.

c. Loosen Push Button locking screw and remove cups on all Push Buttons by grasping cap between fingers and gently pulling outward—then remove celluloid discs.

d. Carefully tune in the station which broadcasts on the lowest frequency—least number of kilocycles.

e. Slide the Push Button nearest to the low frequency end of dial scale—without moving dial—until metal indicator attached to Push Button is exactly even with the indicator line on the face of the dial,—then with a small screw driver firmly lock Push Button in place by tightening Push Button locking screw.

f. Place printed paper station call letter tab, having call letters of station tuned in—on top of Push Button cup, then—place celluloid protective disc on top of this and gently press Push Button cap firmly down over Push Button cup.

g. Next set a Push Button for the desired station operating on the next lowest frequency in the same manner as above and continue on in this way until all the Push Buttons have been properly set.

AFTER THE TEN PUSH BUTTONS HAVE BEEN PROPERLY SET THEY WILL NOT REQUIRE FURTHER ATTENTION — EXCEPT WHEN MOVED FROM THEIR POSITION OR WHEN AN ADDITIONAL TAB IS INCLUDED WHICH WOULD DISTURB THE POSITION OF THE OTHER TABS.

FOR OTHER ASSEMBLIES SEE "AUTOMATIC TUNE" WHEEL DIAL ASSEMBLIES.

SPIEGEL INC.

PARTS LIST

COMPLETE PUSH BUTTON DIAL ASSEMBLY LESS ESCUTCHEON

Part No.	Part Name	Description	List Price
211	Dial Assembly	Used With Model 78B Complete Assembly Less Escutcheon	$12.75
212	Dial Assembly	Used With Model 78BE Complete Assembly Less Escutcheon	12.75
208	Dial Assembly	Used With Model 82A Complete Assembly Less Escutcheon	12.75
209	Dial Assembly	Used With Model 82AE & 86AE Complete Assembly Less Escutcheon	12.75
210	Dial Assembly	Used With Model 91B & 95B Complete Assembly Less Escutcheon	12.25

MISCELLANEOUS PARTS USED IN ABOVE ASSEMBLIES

Part No.	Part Name	Description	List Price
4047	Cap	Push Button	.15
4046	Celluloid Disc	Station Call Letter Cover	.05
3814	Cord	Primary Drive Cord	.15
4013	Cord	Secondary Drive Cord	.15
4041	Cup Assembly	Push Button—With Clip and Compression Spring	.15
3995	Band Indicator Assem.	For Model 78BE-78B-91B-95B	.75
3992	Band Indicator Assem.	For Model 82AE-82A-86AE	.75
4011	Drive Drum Assem. with	4012 Secondary Pulley and Rubber Disc Coupler	1.25
4355	Drive Shaft		.12
4027	Disc	Translucent Dial Scale Background for Model 78BE	.50
3984	Disc	Translucent Dial Scale Background for Model 82AE & 86AE	.55
4024	Disc	Translucent Dial Scale Background for Model 82A	.55
4029	Disc	Translucent Dial Scale Background for Model 91B, 95B & 78B	.50
3771	Escutcheon	For Cabinet—All Models	1.00
4040	Hub Cap		.15
4009	Pulley	Dial Scale Drive (Die Cast)	.45
4039	Plate	Slide Stop	.10
4000	Scale	Calibrated Glass Scale With 4005 Shaft Assem.	2.75
8071	Screw	For Hub Cap 3-48 x ¼" O.H.I.M.	.005
2754	Screw	For Pulley 6-32 x ¼" S.H.H. Cup Point	.01
4037	Slide Stop	Push Button Stop	.10
4356	Spring Lock	For Drive Shaft	.01 net
4352	Spring Tension	For Secondary Cord	.07
3462	Spring Tension	For Primary Cord	.07

Prices are subject to change without notice.

When ordering parts be sure to mention part number and order all parts from:

Printed in U.S.A.

MODELS 2104 to 2107
MODELS 4510,4556
Drive Cord Data

SPIEGEL INC.

TO INSTALL No. 4013 SECONDARY DRIVE CORD:

The dial mechanism picture shows and refers to eye terminals on drive cord—these were used in early production. Loops made by knots in the cords are now used to attach cord to lugs in the No. 4009 die cast pulley and to the No. 4352 & 3462 tension springs.

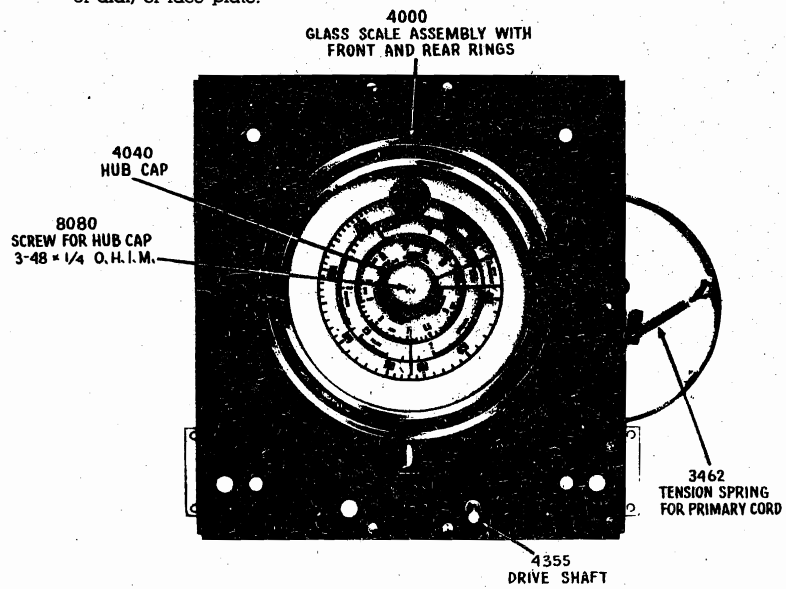
(a) Looking at the front of the dial rotate dial scale COUNTER-CLOCKWISE until dial stop is reached.

(b) Loosen the two No. 2754 set screws in small die cast pulley No. 4009.

(c) Looking at front of dial turn the small die cast pulley so that the cut out in pulley will be towards the left and approximately in line with the upper edge of the dial light bracket. This bracket which is only used in six volt battery and 110 volt AC models is shown mounted on the cadmium plated dial face plate bracket in dial mechanism picture.

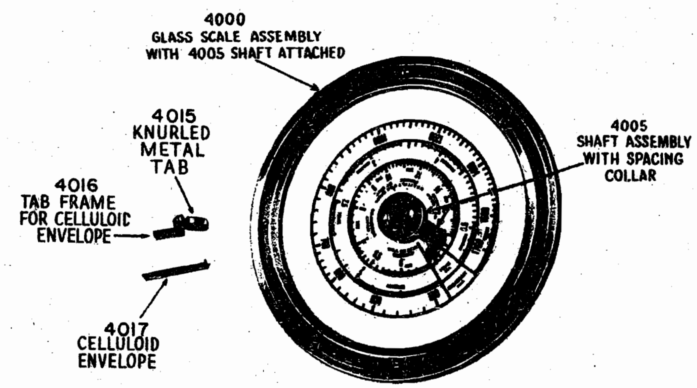
(d) Hook No. 4352 tension spring in dial cord loop.

(e) Turn No. 4011 drum so that the hole in the No. 4012 large die cast pulley—through which the secondary drive cord is pulled—is towards the top of face plate. This will bring the hole approximately in line with the left hand edge (looking at back of dial) of face plate.



(f) Take long end of No. 4013 secondary drive cord—measured from knot at spring to end of cord—then looking at the front of dial, wrap cord one complete turn CLOCK WISE around the No. 4009 small die cast pulley. The other end of the cord (short end) is placed on bottom half of secondary and primary die cast pulleys.

(g) Firmly tighten No. 2754 set screws in small die cast pulley.



COMPLETE WHEEL DIAL ASSEMBLY LESS ESCUTCHEON

Part No.	Part Name	Description	List Price
205	Dial Assembly	Used With Model 78B Complete Assembly Less Escutcheon	$12.75
206	Dial Assembly	Used With Model 78BE Complete Assembly Less Escutcheon	12.75
207	Dial Assembl·	Used With Model 82A Complete Assembly Less Escutcheon	12.75
201	Dial Assembly	Used With Model 82AE & 86AE Complete Assembly Less Escutcheon	12.75
204	Dial Assembly	Used With Model 91B & 95B Complete Assembly Less Escutcheon	12.25

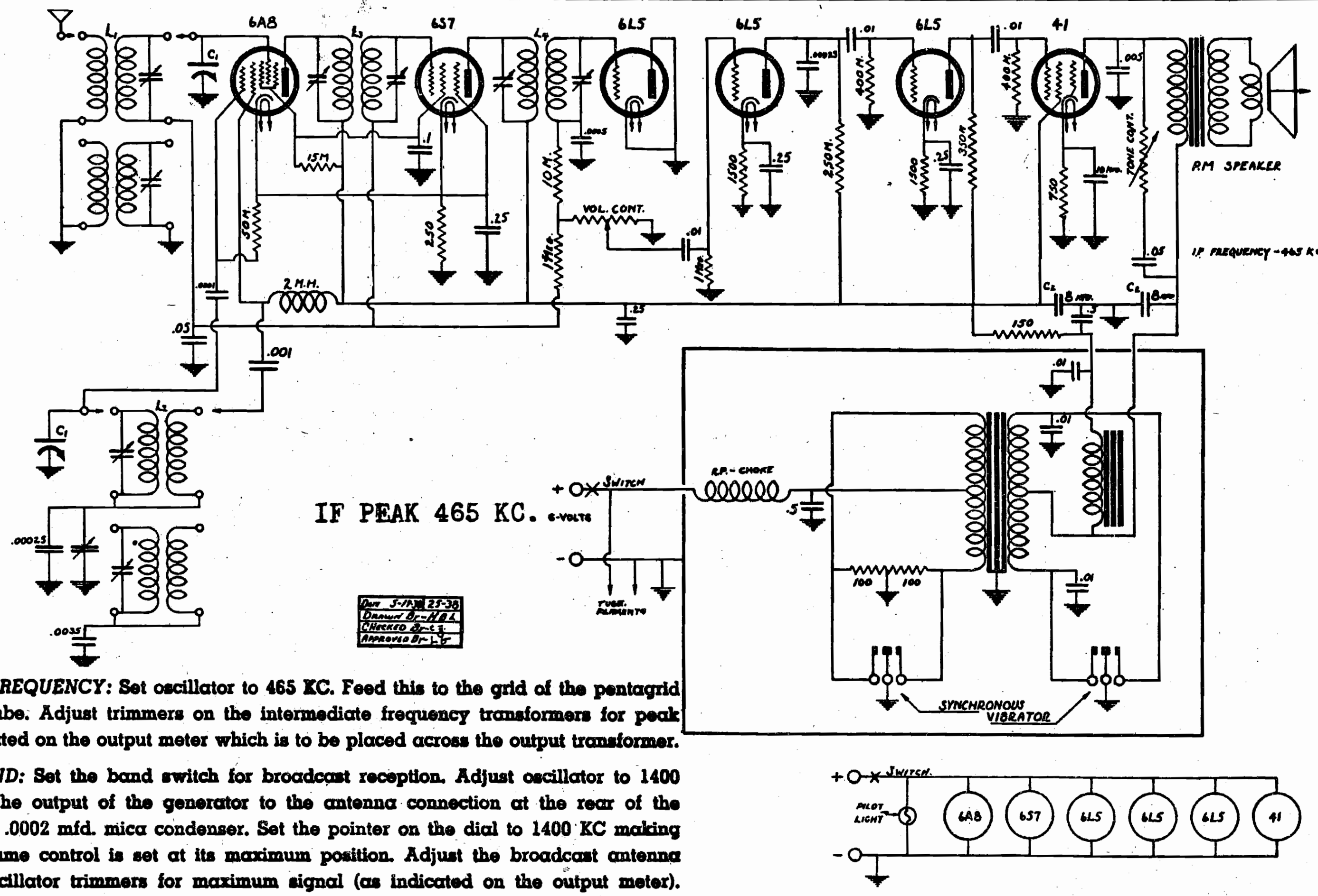
MISCELLANEOUS PARTS USED IN ABOVE ASSEMBLIES

Part No.	Part Name	Description	List Price
4016	Celluloid Envelope	Station Call Letter Cover	.05
3814	Cord	Primary Drive Cord	.15
4013	Cord	Secondary Drive Cord	.15
3995	Band Indicator Assem.	For Model 78BE-78B-91B-95B	.75
3992	Band Indicator Assem.	For Model 82AE-82A-86AE	.75
4011	Drive Drum Assem. with	4012 Secondary Pulley and Rubber Disc Coupler	1.25
4355	Drive Shaft		.12
4027	Disc	Translucent Dial Scale Background for Model 78BE	.50
3984	Disc	Translucent Dial Scale Background for Model 82AE & 86AE	.55
4024	Disc	Translucent Dial Scale Background for Model 82A	.55
4029	Disc	Translucent Dial Scale Background for Model 91B, 95B & 78B	.50
3771	Escutcheon	For Cabinet—All Models	1.00
4017	Frame	Metal Holder for Celluloid Envelope	.05
4040	Hub Cap		.15
4015	Knurled Tab		.05
4009	Pulley	Dial Scale Drive (Die Cast)	.45
4000	Scale	Calibrated Glass Scale With 4005 Shaft Assem.	2.75
8071	Screw	For Hub Cap 3-48 x ¼" O.H.I.M.	.005
2754	Screw	For Pulley 6-32 x ¼" S.H.H. Cup Point	.01
4356	Spring Lock	For Drive Shaft	.01 net
4352	Spring Tension	For Secondary Cord	.07
3462	Spring Tension	For Primary Cord	.07

Prices are subject to change without notice.

MODELS 2222, 2223, 2224, 2225
Chassis 25
Schematic, Alignment

SPIEGEL INC.



L1 - ANT. COIL No 430
L2 - OSC COIL No 431
L3 - 1st IF TRANSFORMER No 101T
L4 - 2nd IF TRANSFORMER No 101B
BAND SWITCH No 124
TONE CONT. No 305
VOL. CONT. & SWITCH No 221

C1 - TUNING COND. No 624
C2 - FILTER COND. No 1720
SPEAKER 6" No 722 - 8" No 723
OUTPUT TRANSFORMER No 524
POWER TRANSFORMER No 526
VIBRATOR No 480

INTERMEDIATE FREQUENCY: **Set oscillator to 465 KC. Feed this to the grid of the pentagrid (6A7) converter tube. Adjust trimmers on the intermediate frequency transformers for peak readings as indicated on the output meter which is to be placed across the output transformer.**

BROADCAST BAND: **Set the band switch for broadcast reception. Adjust oscillator to 1400 KC and connect the output of the generator to the antenna connection at the rear of the chassis through a .0002 mfd. mica condenser. Set the pointer on the dial to 1400 KC making sure that the volume control is set at its maximum position. Adjust the broadcast antenna and broadcast oscillator trimmers for maximum signal (as indicated on the output meter). Re-set the dial pointer on the receiver and on the test oscillator to 600 KC. Slowly increase or decrease the *broadcast padding* condenser while tuning back and forth across the signal with the station selector knob until the maximum reading is obtained on the output meter. Re-check the 1400 KC alignment as the adjustment at 600 KC may have slightly disturbed the original 1400 KC setting.**

SHORT WAVE: **Set band switch on short wave position. Connect the antenna of the radio receiver to the output of the test oscillator through a 400 ohm carbon resistor. Set oscillator and receiver dial at 15 megacycles. Adjust the short wave antenna and short wave oscillator trimming condensers for maximum output as indicated by readings on the output meter. No other adjustments are necessary for aligning this band.**

It is advisable to check the sensitivity at 6000 KC to determine whether the circuits are properly aligned. Should the receiver lack sensitivity at this frequency check the .0035 mica condenser for short circuit.

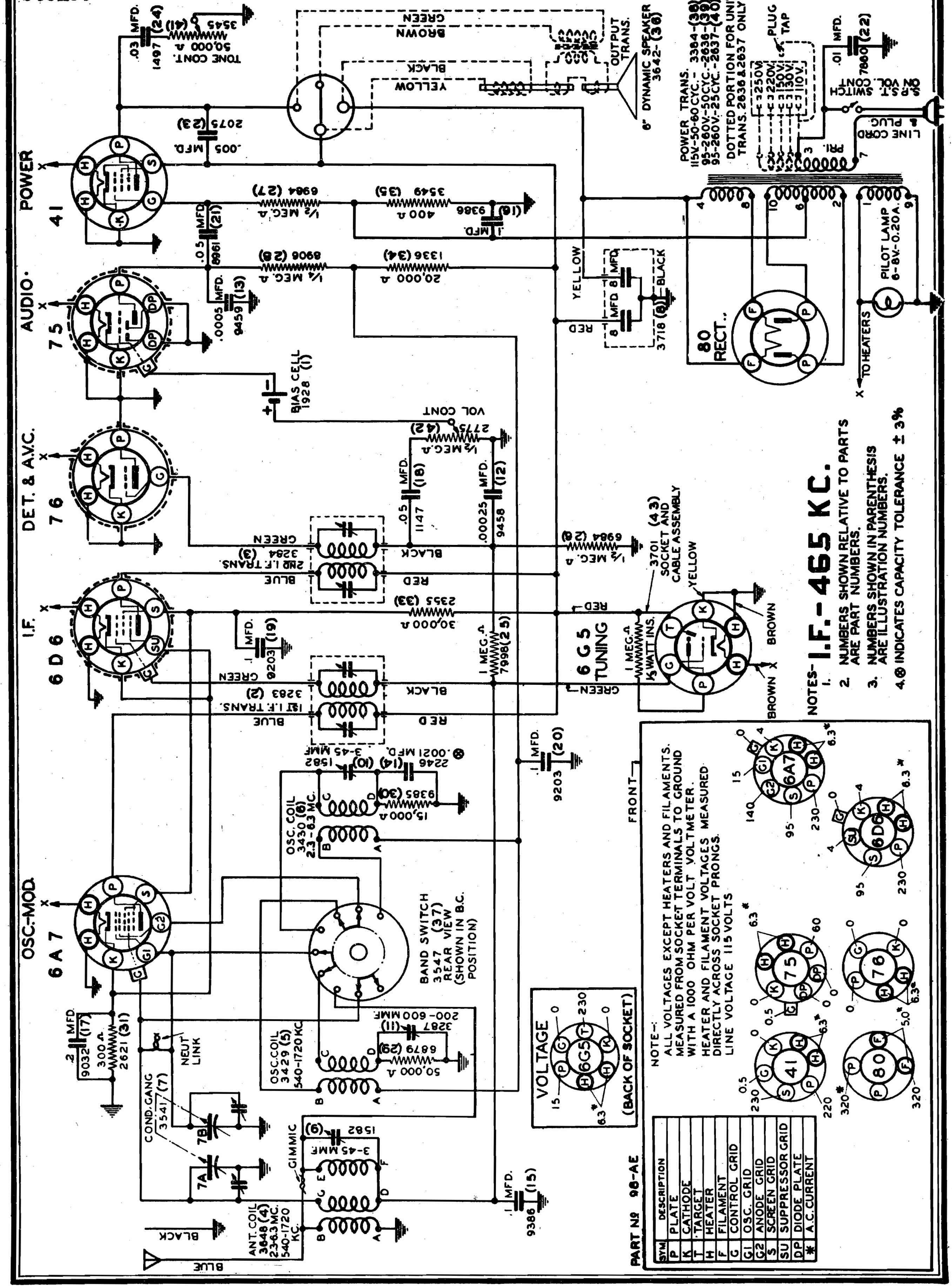
This receiver is designed to operate over two tuning ranges.

from 540 K.C. to 1730 and
from 5800 K.C. to 18000 K.C.

Schematic, Voltage Socket

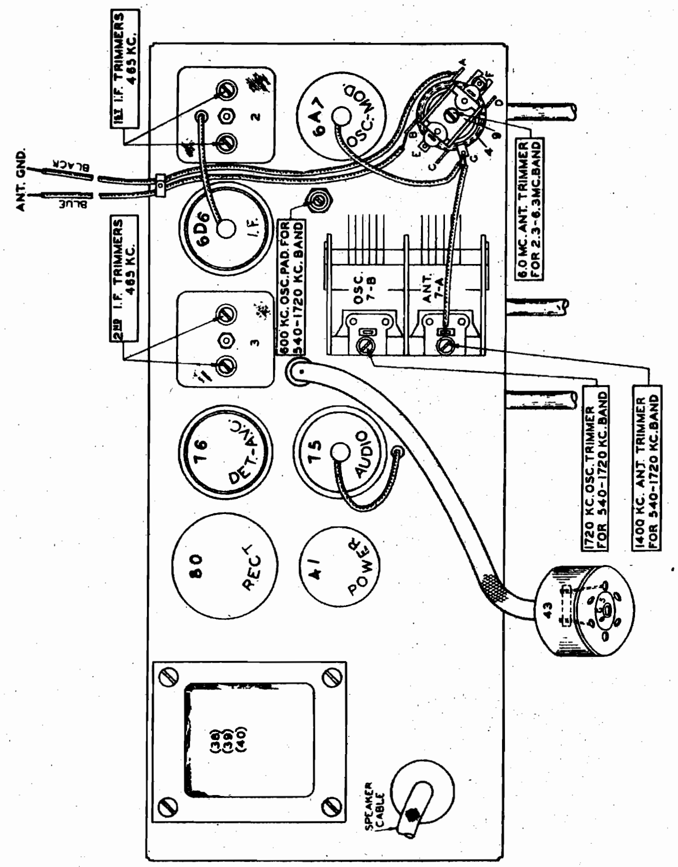
SPIEGEL INC.

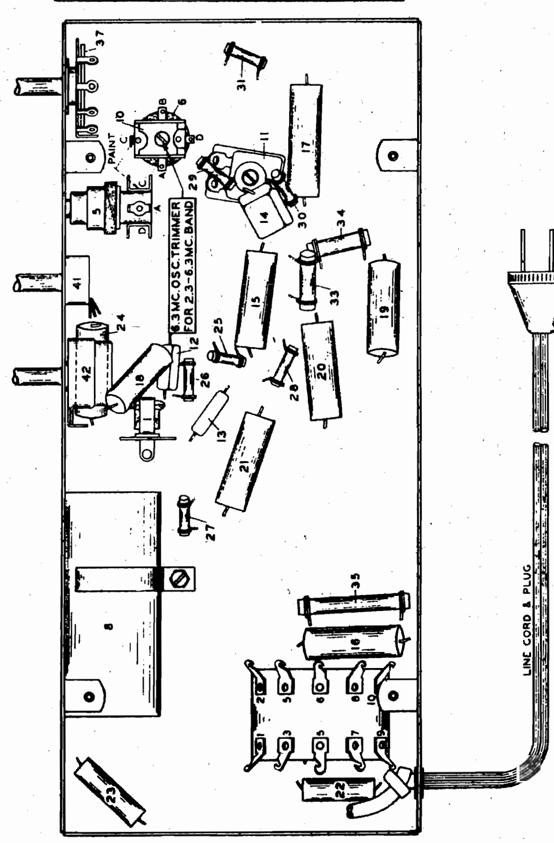
MODELS 4000,4020
Chassis 1098AE



MODELS 4000, 4020
Chassis 1098AE
Chassis, Socket
Alignment, Trimmers

SPIEGEL INC.





ALIGNMENT PROCEDURE:

Lack of sensitivity, selectivity or poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker; open or grounded bias resistor, bypass condenser, inadequate or excessively long antenna, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proven not to be the cause.

NOTE: BE SURE TO FOLLOW PROCEDURE CAREFULLY WHEN ALIGNING, OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT.

IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER.

ALIGNING I.F. STAGE AT 465 KILOCYCLES:

(a) Connect the ground lead of the test oscillator to the chassis or set ground lead. Connect the other lead of the test oscillator to the grid cap of the 6A7 tube through a .02 Mfd. series condenser. DO NOT REMOVE GRID CLIP.

(b) Set test oscillator to EXACTLY 465 kilocycles and turn receiver volume control on full.

(c) Peak each of the second I.F. transformer trimmers.

(d) Peak each of the first I.F. transformer trimmers.
To assure most accurate trimmer setting repeat above adjustment several times always using lowest possible test oscillator output consistent with readable output meter scale deflection.

ALIGNING 1720-540 KILOCYCLE BAND:

(a) Remove test oscillator lead from grid of the 6A7 tube and attach it to the receiver antenna lead through a .00025 Mfd. series condenser.

(b) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh), at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If the dial needle does not point exactly to the last line move needle to correct position.

(c) Set receiver dial and test oscillator frequency to EXACTLY 1720 kilocycles.

(d) Bring in 1720 KC test oscillator signal to maximum output by adjusting the trimmer condenser mounted on top of the oscillator section of the gang condenser. Looking at the front of the receiver the rear section of the gang condenser is the oscillator section.

(e) Tune receiver dial and set test oscillator frequency to EXACTLY 1400 kilocycles.

(f) Adjust trimmer on top of the front section gang condenser (antenna section) for maximum 1400 kilocycle test signal response.

(g) Tune receiver dial and set test oscillator frequency to approximately 600 kilocycles.

(h) While rocking the tuning condenser back and forth adjust 600 KC oscillator padder condenser which is accessible through the hole in the top of the chassis adjacent to the gang condenser for maximum 600 kilocycle signal response.

ALIGNING 2.3-6.3 MEGACYCLE BAND:

(a) Replace .00025 Mfd. Test oscillator antenna lead series condenser with a 400 ohm resistor.

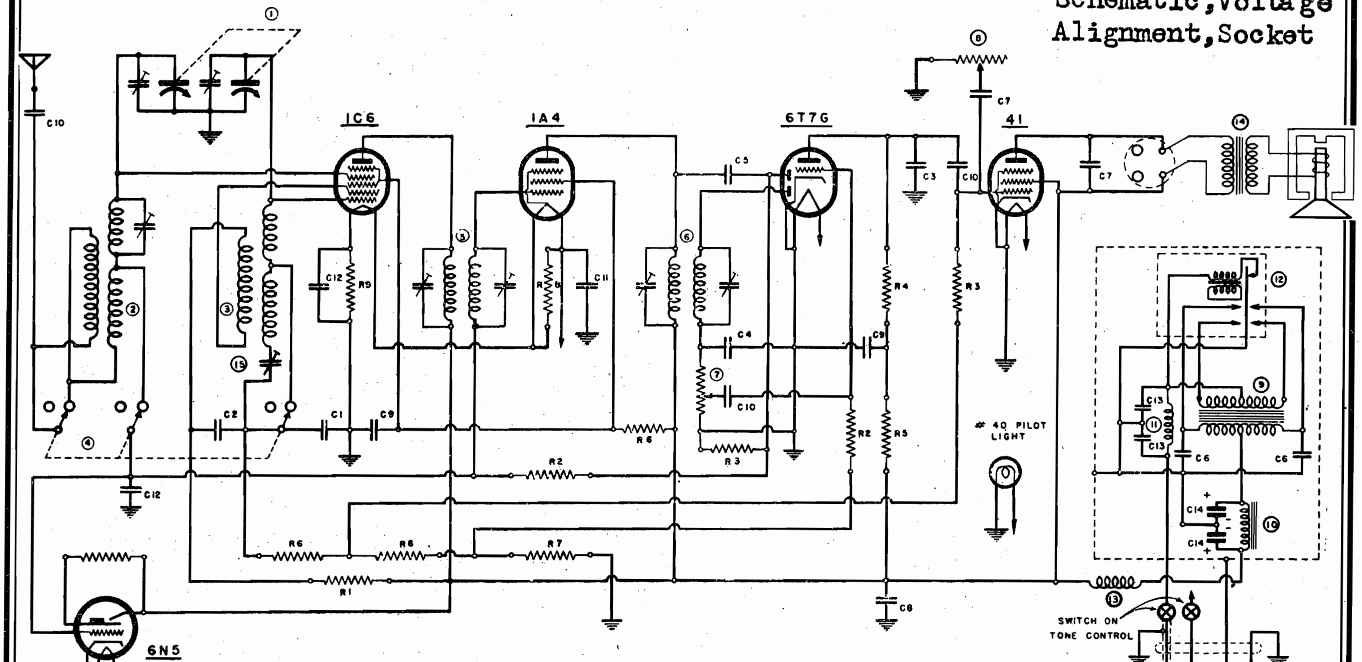
(b) Adjust band selector switch for 2.3-6.3 megacycles band operation, tune receiver dial and set test oscillator frequency to EXACTLY 6.3 megacycles.

(c) Bring in 6.3 megacycle test oscillator signal to maximum output by adjusting 6.3 M.C. oscillator trimmer on top of coil located underneath chassis.

(d) Tune receiver dial and test oscillator frequency to EXACTLY 6 megacycles, and adjust 6 M.C. antenna trimmer which is mounted on coil located on top of chassis for maximum sensitivity.

SPIEGEL INC.

MODELS 4402,4410
Chassis 562
Schematic,Voltage
Alignment,Socket

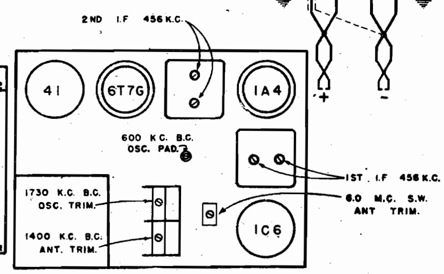


IF PEAK 456 KC

PART NO.		DESCRIPTION
R1	6120	20,000 OHM 1/2 WATT CARBON RES.
R2	6017	1 MEG. " 1/3 " " "
R3	6015	500,000 " " " " "
R4	6024	250,000 " " " " "
R5	6026	100,000 " " " " "
R6	6027	25,000 " " " " "
R7	60-142	4000 " " " " "
R8	60-102	33 1/3 " 1/2 " WIRE WOUND "
R9	60-121	16 2/3 " " " " " "

PART NO.		DESCRIPTION
C1	1509C	.002 MFD. MICA ± 5%
C2	1500	.001 " "
C3	1504	.00025 " "
C4	1501	.0001 " "
C5	1503	.00005 " "
C6	1604	.01 " 600V TUBULAR COND.
C7	1611	.006 " " " "
C8	1616	.25 " 400V " "
C9	1601	.1 " " " "
C10	1603	.01 " " " "
C11	1614	.25 " 200V " "
C12	1600	.1 " " " "
C13	1655	.5 " 180V " "
C14	1845	DUAL 8 " 150V ELECT'L'TIC "

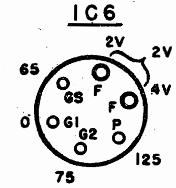
PART NO.		DESCRIPTION 562
1	19-113	2-GANG VARIABLE CONDENSER
2	10-123	ANTENNA COIL
3	10-124	OSCILLATOR COIL
4	69-111	WAVE SWITCH
5	10-185	1ST I.F. TRANSFORMER
6	10-186	2ND I.F.
7	24-105	VOLUME CONTROL
8	26-107	TONE CONTROL WITH SWITCH
9	80-130	POWER TRANSFORMER
10	3307	FILTER CHOKE
11	33-200	R.F. "A" "
12	3407	VIBRATOR
13	33-204	R.F. "B" CHOKE
14		SPEAKER
15	20-100	B.C. OSC. PADDING CONDENSER



VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER
ALL VOLTAGES EXCEPT HEATERS MEASURED TO GROUND.

F - - - FILAMENT
H - - - HEATER
K - - - CATHODE
SU - - SUPPRESSOR
GS - - SCREEN GRID
G1 - - OSC. GRID
G2 - - OSC. PLATE
G - - - CONTROL GRID
DP - - DIODE PLATE
P - - - PLATE

1C6



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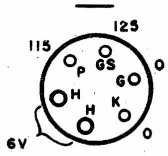
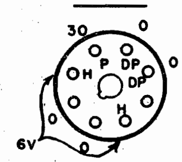
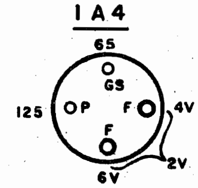


6T7G



1A4



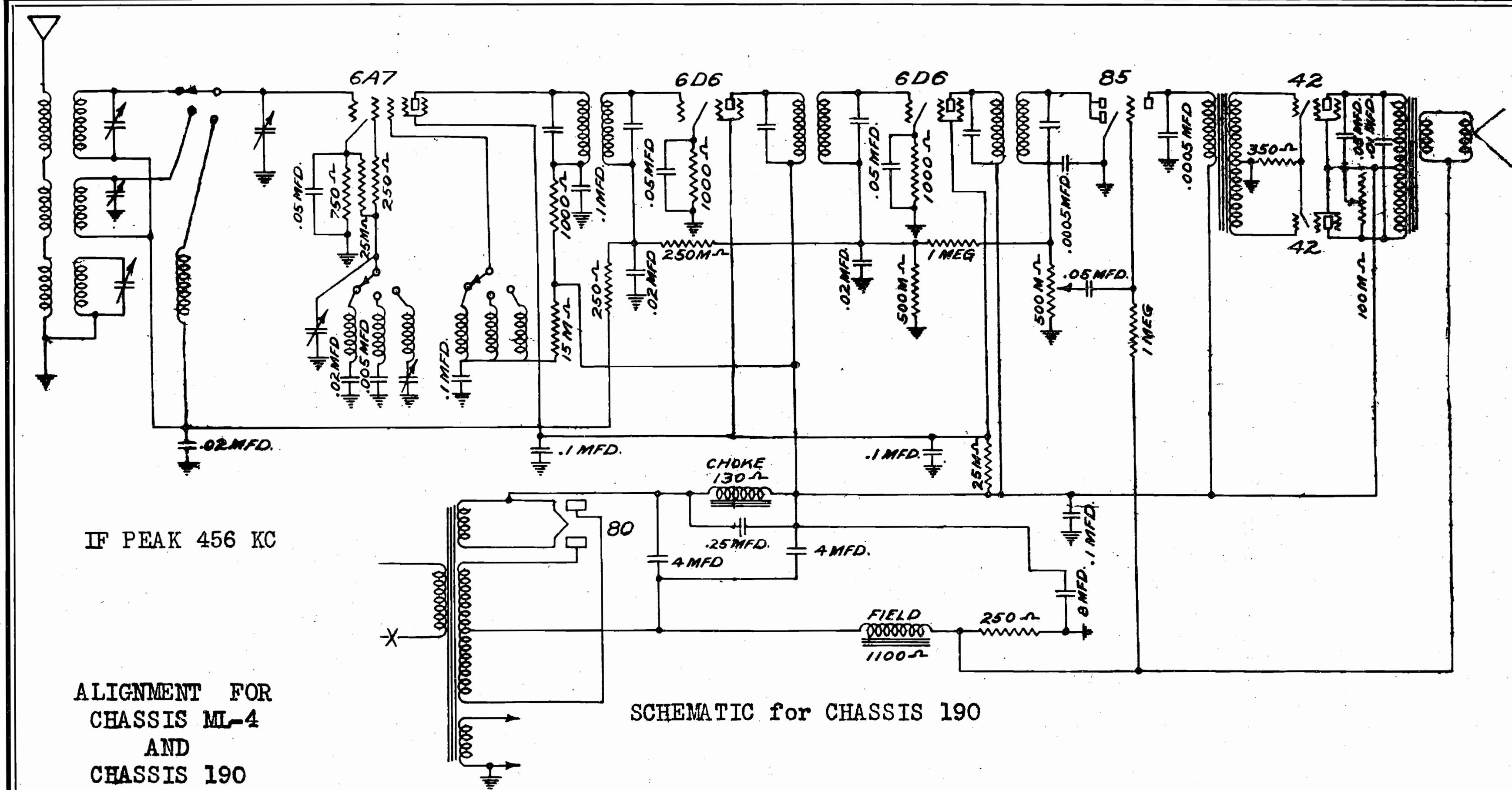
562

IF ALIGNMENT - Set test oscillator at 456 KC and adjust trimmers for maximum output. BROADCAST ALIGNMENT - At 1730 KC, adjust BC oscillator for maximum output. At 1400 KC adjust Antenna trimmer for maximum output. At 600 KC, adjust BC oscillator for maximum output. SHORT WAVE ALIGNMENT - Feed 6 MC signal to antenna thru .00025 MF and adjust SW trimmer at 6 MC. BC alignment is thru .00025 MF cond.

MODELS 4504,4507,4536
9936, Chassis 190
Schematic,Alignment

SPIEGEL INC.

MODELS 1904,1916,1952,1965
Chassis ML-4
Alignment



IF PEAK 456 KC

SCHEMATIC for CHASSIS 190

ALIGNMENT FOR CHASSIS ML-4 AND CHASSIS 190

ALIGNMENT OF IF STAGES - Align four IF trimmers to peak or max. reading at 456 KC, thru .05 or .1 mf condenser.

BROADCAST BAND - Set test osc. at 1400 KC and connect output to antenna post, thru a .0001 mf condenser. Set dial at 1400 KC and adjust Osc. trimmer to peak (located on rear gang condenser section). Then adjust center RF trimmer and front pre-selector trimmer to peak. Adjust Osc. padder at 600 KC to peak. Padder is located at left-hand end of chassis near 6D6 tube.

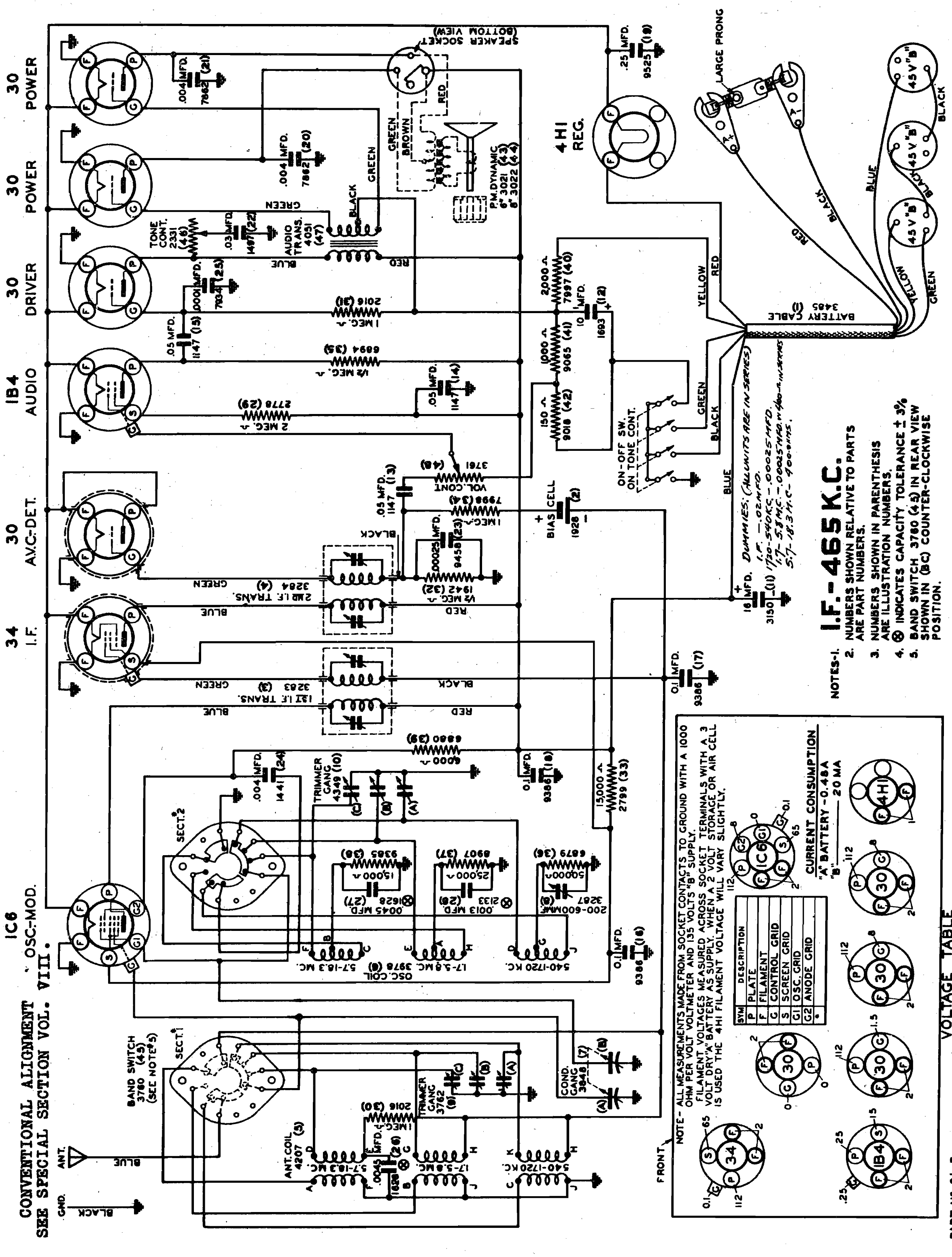
FOREIGN BAND - Band of 19 to 49 meters is adjusted by two trimmers on SW coil at top of chassis. Set Osc. at 14000 KC. Osc. is near 1st IF transformer and the antenna coil is in front of SW osc. coil. Adjust these two trimmers at 14000 KC for peak. NOTE: Always start by having the osc. coil trimmer loose and the antenna coil trimmer fairly tight (in all the way); other wise a false alignment of the IMAGE frequency is possible. Do not adjust gang condenser trimmers in aligning the Foreign or Police Bands, as this will throw the Broadcast Alignment out.

POLICE BAND - Dial and osc. at 4000 KC adjust antenna coil trimmer to resonance. No osc. adjustment necessary.

SPIEGEL INC.

MODELS 4510, 4556
Chassis 1091B
Schematic, Voltage
Alignment, Socket

FOR AUTOMATIC TUNE WHEEL SEE INDEX



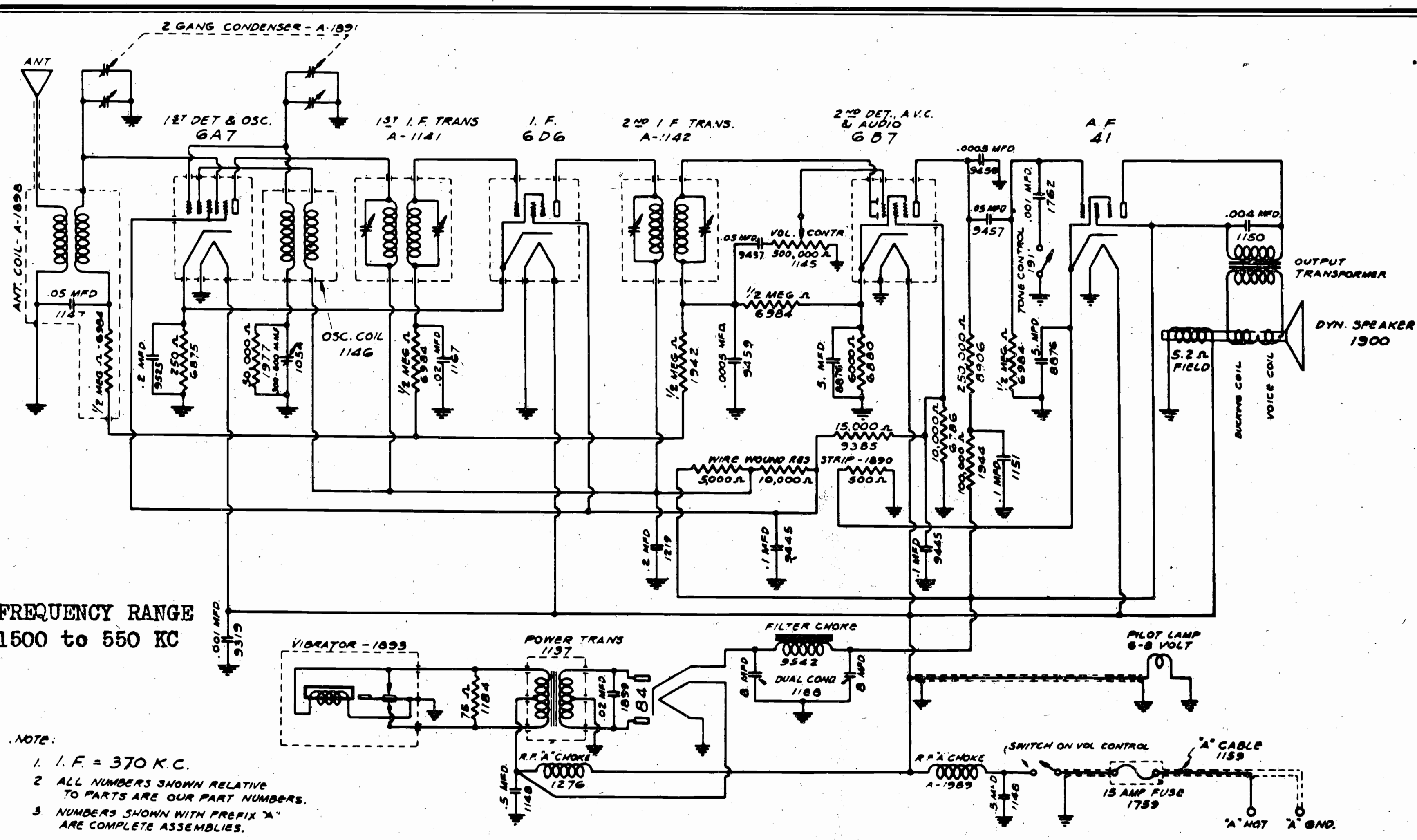
CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOL. VIII.

The three oscillator trimmers on the coil mounted on side of chassis, reading from chassis to end of coils are: 1720 KC, 5.8 MC & 18.3 MC.

Looking at bottom of chassis, the three antenna trimmers on coil attached to front of chassis, reading from front to rear are: 1400 KC, 5 MC & 15 MC.

MODEL 4534, Chassis 1OM
Schematic, Voltage
Alignment

SPIEGEL INC.



FREQUENCY RANGE
1500 to 550 KC

NOTE:
1. I.F. = 370 K.C.
2. ALL NUMBERS SHOWN RELATIVE TO PARTS ARE OUR PART NUMBERS.
3. NUMBERS SHOWN WITH PREFIX "A" ARE COMPLETE ASSEMBLIES.

ALIGNMENT FREQUENCIES
IF 370 KC
Os. & Ant. 1400 KC
Padder 600 KC

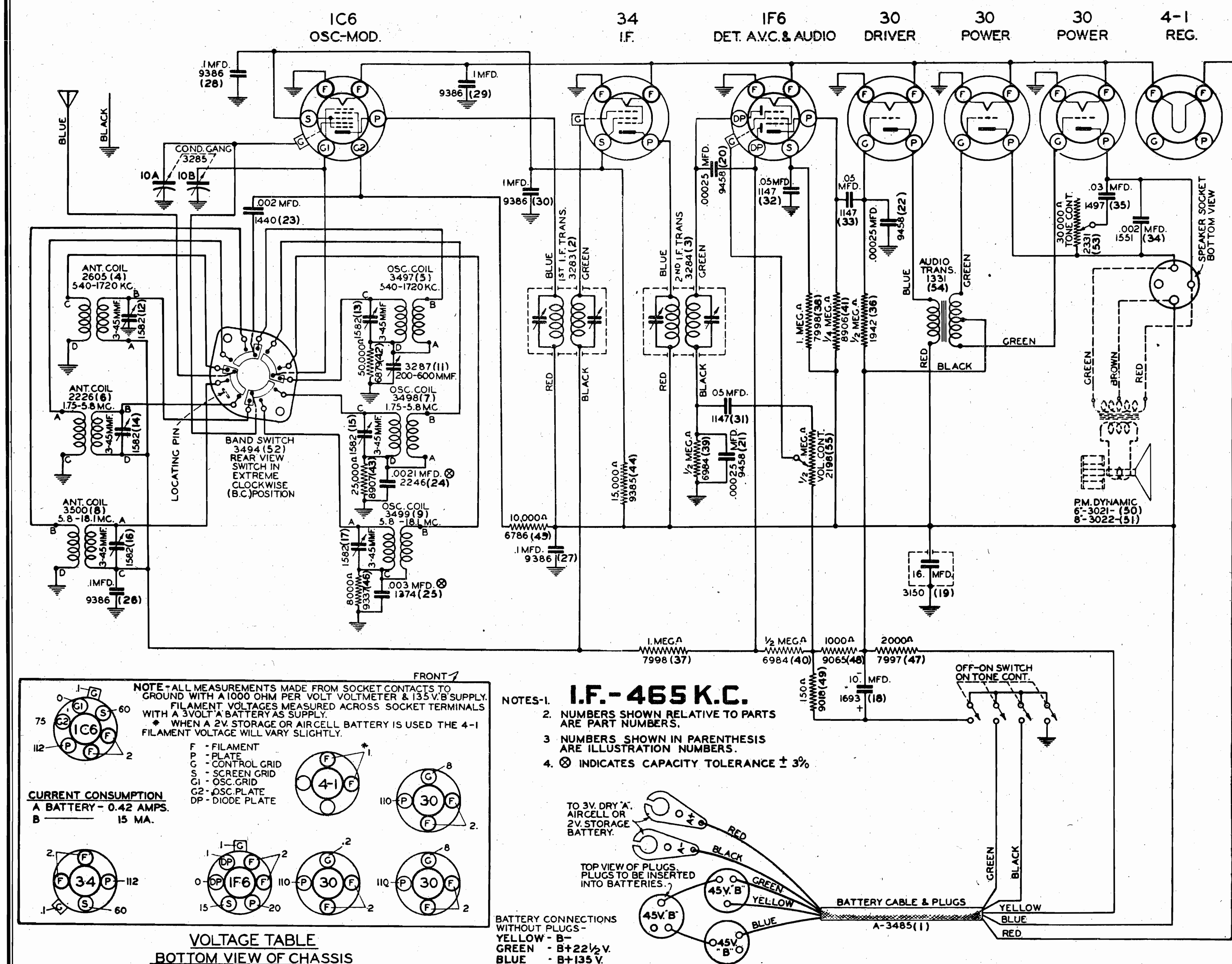
CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOL. V111

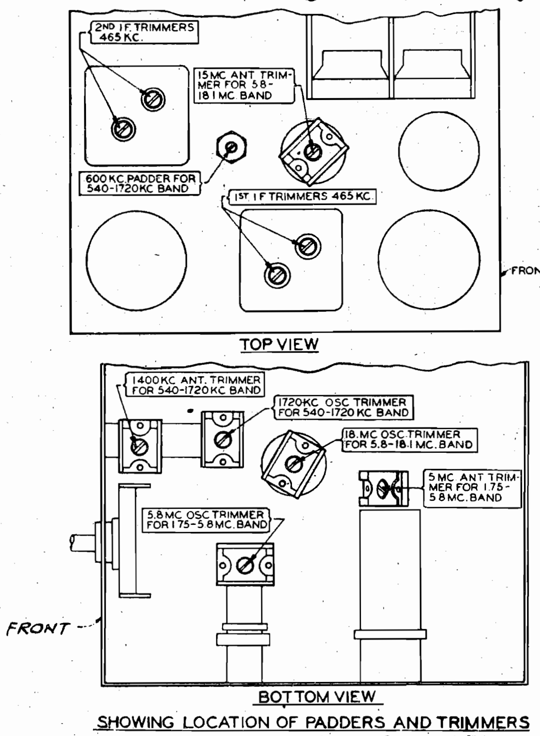
TUBE TYPE	TUBE POSITION	FILAMENT VOLTS	PLATE VOLTS	CATHODE VOLTS	SCREEN VOLTS	GRID No.1	GRIDS No. 3&5
6A7	OSC. & MOD.	6	180	3.6		180	75
6D6	I-F	6	180	3.6	75	-	-
6B7	2nd Det & AVC	6	32 *	1.9	30*	-	-
41	OUTPUT	6	220	15	230	-	-
84	RECTIFIER	6	-	230	-	-	-

* Comparative voltage only. TOTAL "A" VOLTAGE TOTAL "A" CURRENT 5.9 AMP

SPIEGEL INC.

MODELS 5104,5152
Chassis 1075B
Schematic,Voltage,Chassis
Alignment,Socket,Trimmers





ALIGNMENT

IF ALIGNMENT :- Set test osc. at 465 KC and adjust IF stages, thru .02 Condenser.

AT 1720-540 KC BAND thru .00025 Cond. :-
At 1720 KC adjust Osc. trim. at maximum.
At 1400 KC adj. Ant. trim. for max. sig.
At 600 KC adj. Osc. padder for max. sig.

AT 1.75 - 5.8 MC BAND:-thru 400 OHM resistor
Test. osc. at 5.8 MC, adj. osc. trimmer for maximum response. At 5 MC adjust Ant. trimmer for maximum sensitivity.

AT 5.8 - 18.1 BAND THRU 400 OHM RESISTOR.
At 18 MC adjust. Osc. trim. max. output. Fundamental and not Image peak is used for 18 MC alignment. Back off trim.to minimum, then add capacity until FIRST PEAK (fundamental) is tuned in. Screwing down trim. too much brings in IMAGE.

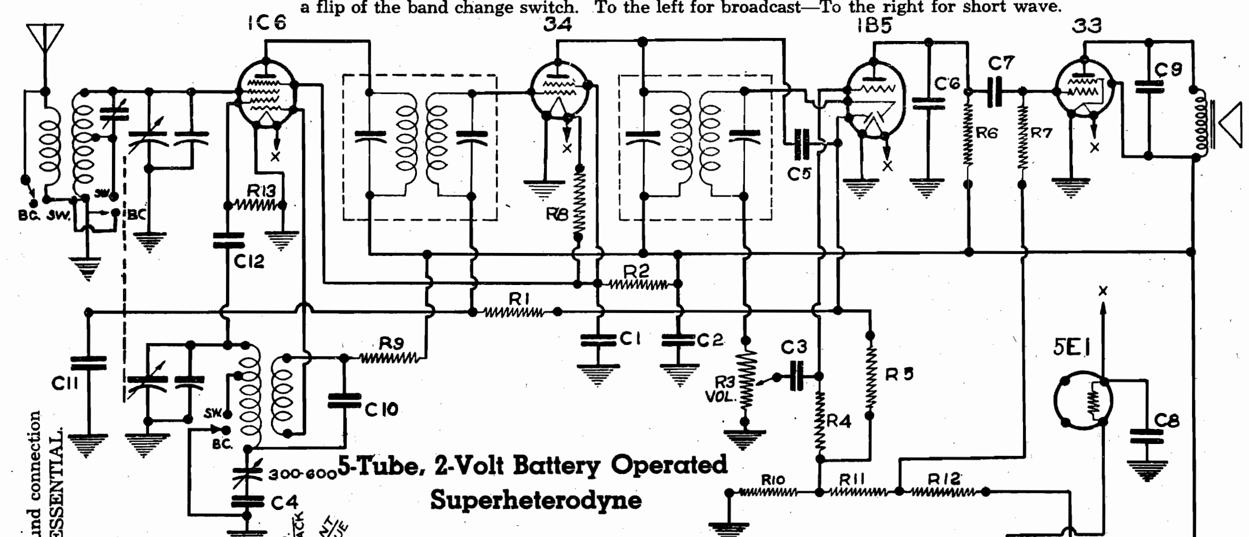
For check:- Set test osc. at 18 MC, increasing output; set dial at 17 MC; vary dial to left and right of 17 Mc. If correct fundamental peak was used in alignment at 18 MC, then test osc.signal will be heard at 17 MC. of dial setting.
At 15 MC adjustment, Ant. trimmer for maximum signal.
Repeat all adjustments for final check.

1936 - 1937

SPIEGEL INC.

MODEL 6606, Chassis 525
Schematic, Socket, Trimmers
Alignment

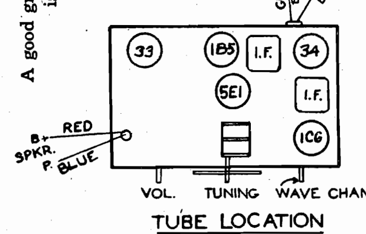
The frequency range covered by this receiver is as follows: Broadcast band 537 KC to 1730 KC. The short wave band covers a range of 2.2 megacycles to 6.4 megacycles and either of these bands are selected at will by a flip of the band change switch. To the left for broadcast—To the right for short wave.



5-Tube, 2-Volt Battery Operated Superheterodyne

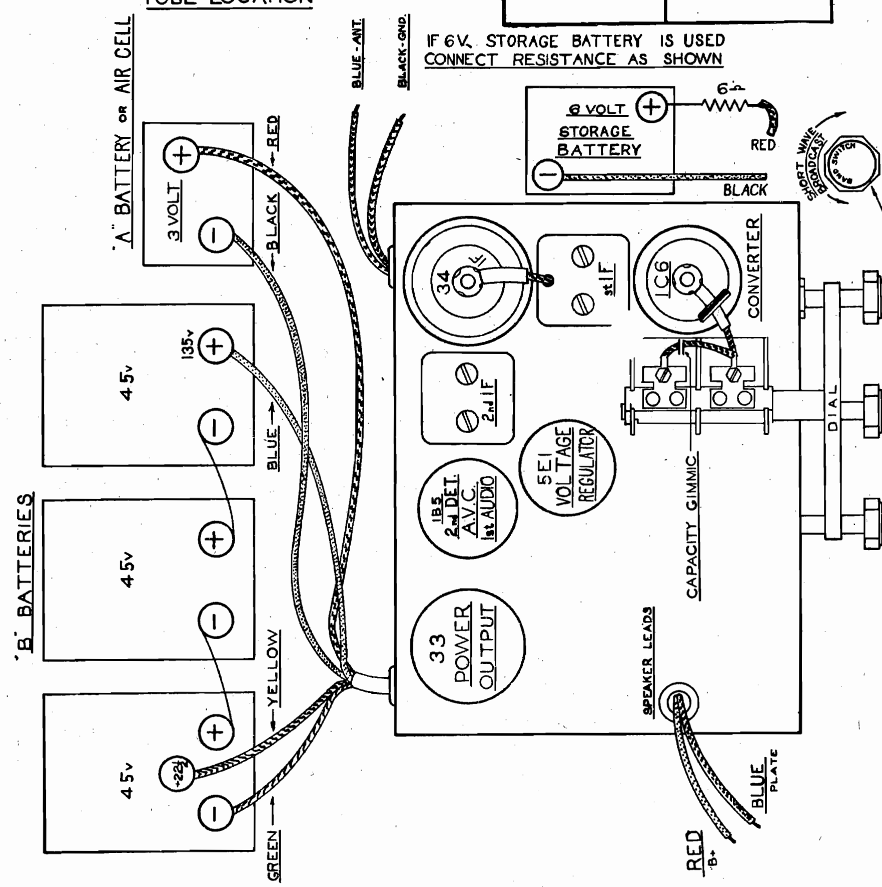
A good ground connection is ESSENTIAL.

R1	1. MEG. OHMS	C1	.1 MFD.
R2	15 M	C2	.1
R3	500 M	C3	.05
R4	1. MEG.	C4	.002
R5	1. MEG.	C5	.00025
R6	250 M	C6	.00025
R7	500 M	C7	.05
R8	50 M	C8	.25
R9	50 M	C9	.01
R10	400	C10	.001
R11	4500	C11	.1
R12	2 M	C12	.0001
R13	50 M		



TUBE LOCATION

IF 6V. STORAGE BATTERY IS USED CONNECT RESISTANCE AS SHOWN



I. F. Alignment:

Connect the oscillator through a .1 condenser to the grid of the 1C6 tube and set the oscillator to 456 kilocycles. Peak each I. F. stage to resonance as indicated by maximum output on the output meter.

R. F. Alignment:

With the wave change switch in the broadcast position, set the oscillator to 1700 kilocycles and connect in series with a .00025 condenser to the antenna of the receiver. Rotate the variable condenser to the 1700 setting of the dial and adjust the trimmer condenser of the broadcast oscillator to resonance. The location of oscillator trimmer is on rear section of variable condenser. Reset the test oscillator to 1400 kilocycles and adjust antenna trimmer located corner front section of variable condenser. Now set oscillator to 600 kilocycles and adjust padder located on side of chassis. Check alignment at 1000 kilocycles.

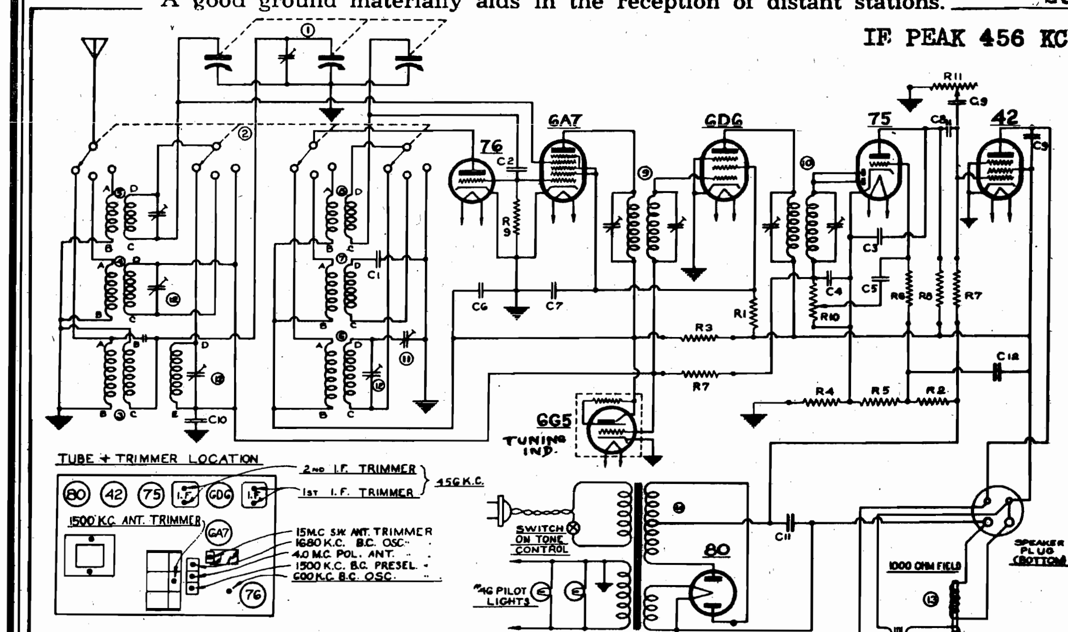
For aligning police band, set test oscillator to 6 megacycles. Turn band switch to short wave. **Rotate variable condenser until signal is heard. Peak antenna trimmer (across antenna coil under chassis) to maximum.** Rock variable condenser slightly backward and forward until maximum peak is reached.

SPIEGEL INC.

MODELS 5004, 5005, 5056
Chassis 701

Schematic, Voltage
Alignment, Trimmers
Socket

A good ground materially aids in the reception of distant stations.



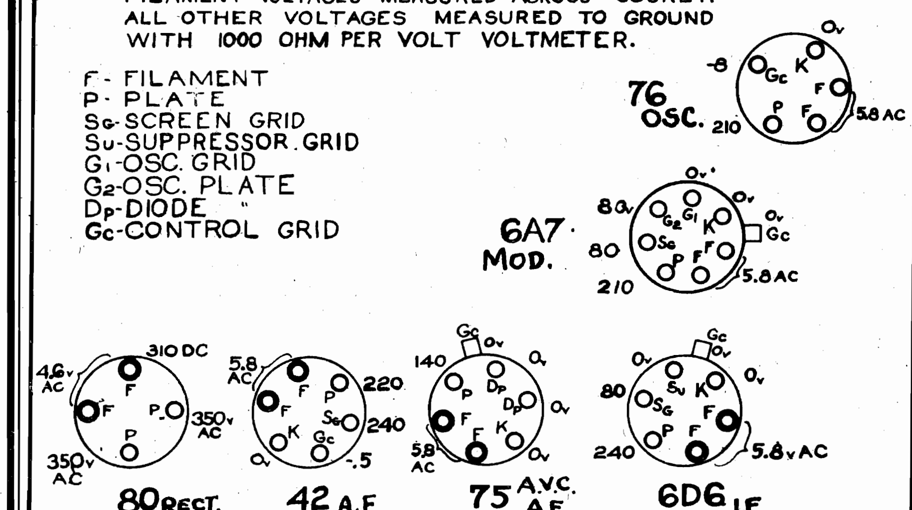
CIRCUIT DATA

PART No.		DESCRIPTION	PART No.		DESCRIPTION
C1	1500C	.0009 MFD. MICA 3%	R7	6018	800,000 OHMS 1/3W
C2	1503	.00005 "	R8	6024	250 000 "
C3	1802	.0005 "	R9	6025	50000 "
C4	1804	.00025 "	R10	24-101	500000 VOL. CONTR.
C5	1605	.02 400 v	R11	26-101	500 000 TONE CONTR.
C6	1602	.1 600 v	1	19-106	GANG
C7	1601	.1 400 v	2	69-103	SWITCH
C8	1648	.03 600 v	3	10-137	B.C. ANT.+PRESELECTOR COIL
C9	1651	.004 "	4	10-135	POL. " "
C10	1622	.05 200 v	5	10-132	S.W. " "
C11	18-202	10.0 ELECTROLYTIC	6	10-134	B.C. OSC. "
C12	18-201	12.0 "	7	10-136	POL. " "
R1	6211	15000 OHMS 1W.	8	10-133	S.W. " "
R2	60-100	200 " 1W.5%	9	1123	1ST I.F.
R3	6115	1000 " ½W.	10	1124	2ND I.F.
R4	60-103	30 " 5%	11	20-100	B.C. OSC. PADDER
R5	60-104	20 "	12	20-101	TRIMMER GANG
R6	6020	2.0MEG " 1/3W	13		SPEAKER
			14	80-105	POWER TRANSF.

BANDS
1680 to 535 KC
5.6 to 1.7 MC
20 to 5.4 MC

FILAMENT VOLTAGES MEASURED ACROSS SOCKET.
ALL OTHER VOLTAGES MEASURED TO GROUND
WITH 1000 OHM PER VOLT VOLTMETER.

F- FILAMENT
P- PLATE
Sg- SCREEN GRID
Su- SUPPRESSOR GRID
G1- OSC. GRID
G2- OSC. PLATE
Dp- DIODE "
Gc- CONTROL GRID



ALIGNMENT PROCEDURE

The equipment required for re-aligning this receiver is an output meter and a modulated source of radio frequency (a signal generator or microvolter). This source of radio frequency must be accurately calibrated in frequency and must have a method of varying the output.

All alignments must be made with the volume control turned full on and with the signal input from the generator reduced to as low a value as possible while still giving a sufficient output to be easily read on the output meter.

Connect the output meter, through a .5 M.F. condenser and a resistance of such a value as to make the total meter resistance approximately 7000 ohms, to the two small pins of the speaker plug. The output meter remains connected during the entire alignment procedure.

1. Connect the signal generator to the grid cap of the 6A7 tube through a .1 M.F. condenser. Connect the ground of the generator to the ground post of the receiver. With the wave switch on broadcast position and the dial set to about 1000 K.C., feed in a 456 K.C. signal. Adjust the trimmers on top of the first and second I.F. transformers until the maximum output is obtained. This aligns the I.F.

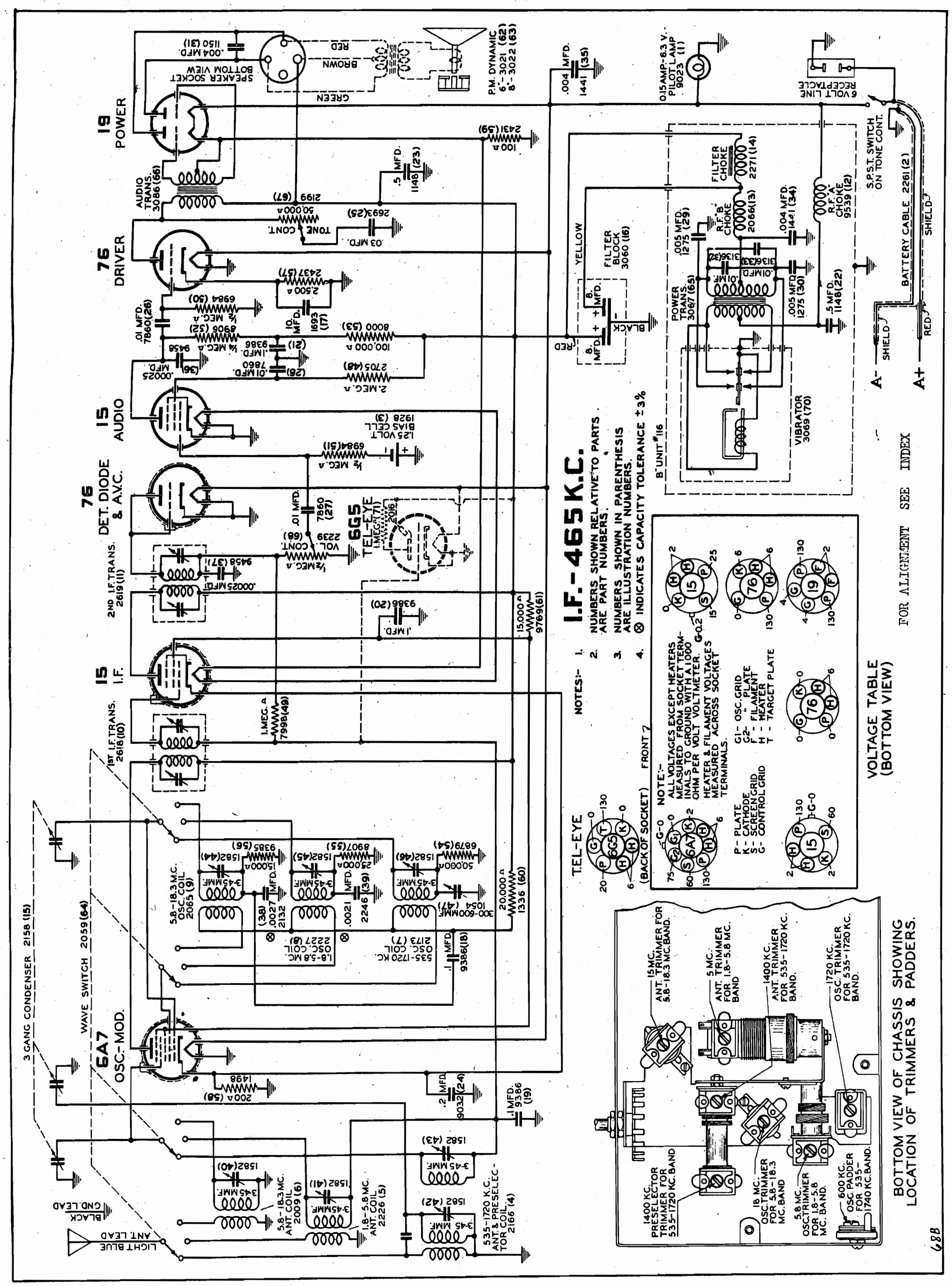
2. Leaving the wave switch on broadcast position turn the dial to the extreme high frequency end. Feed a 1680 K.C. signal to the receiver antenna post through a .00025 M.F. mica condenser. Adjust the 1680 K.C. broadcast oscillator trimmer for maximum output. Set the generator to 1500 K.C. and tune in this signal on the receiver. Then adjust the 1500 K.C. broadcast antenna trimmer and the 1500 K.C. broadcast preselector trimmer for maximum output. Set the generator to 600 K.C. and adjust the 600 K.C. broadcast oscillator pad to maximum output **while tuning the receiver back and forth across the signal** from the generator. This completes the alignment of the broadcast band.

3. The police band is aligned by feeding 4.0 M.C. signal to the receiver antenna lead through the .00025 condenser. Turn the wave switch to the center position and tune the receiver to this signal. Adjust the 4.0 M.C. police antenna trimmer for best output.

4. The short wave band is aligned in the same way using a 15 M.C. signal and adjusting the 15 M.C. short wave antenna trimmer after having turned the wave switch to the right hand position.

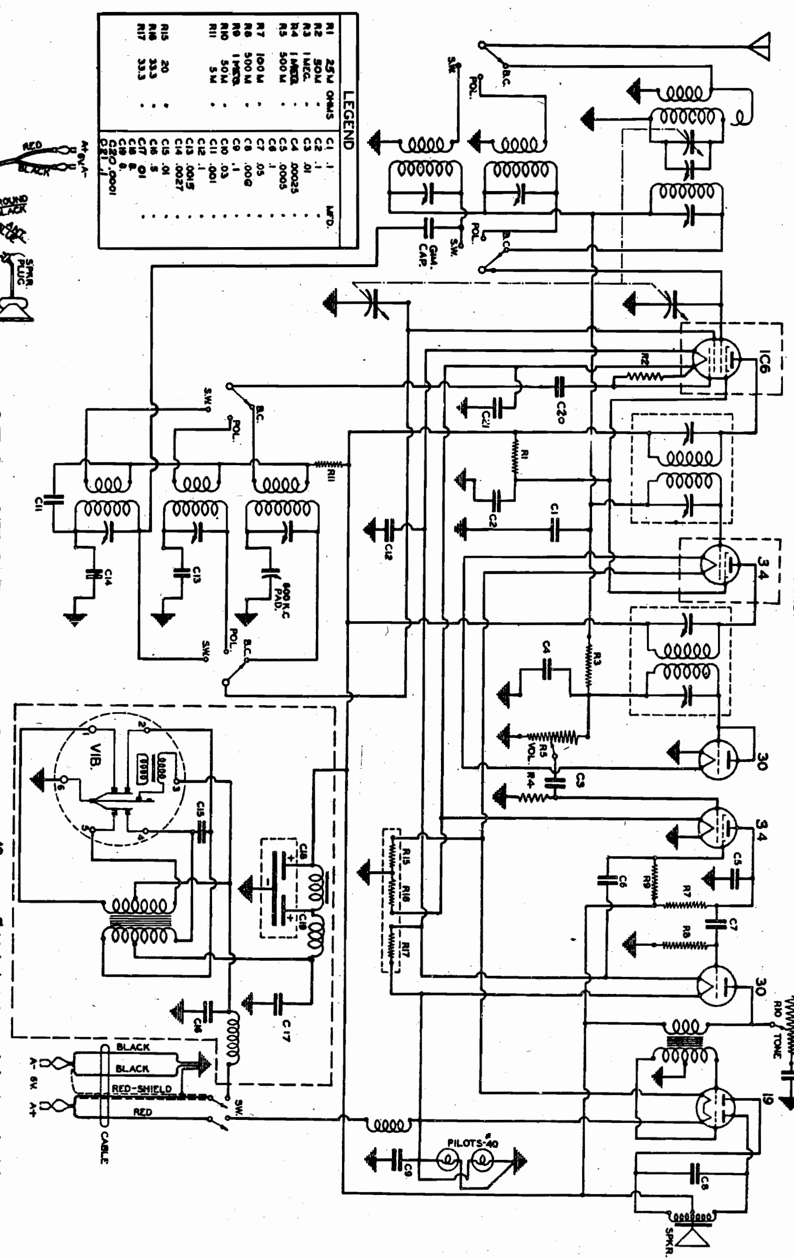
SPIEGEL INC.

MODEL 6700, Chassis 68B
Schematic, Voltage
Socket, Trimmers



MODELS 6714, 6758
Chassis 600
Schematic, Alignment
Socket, Trimmers

SPIEGEL INC.



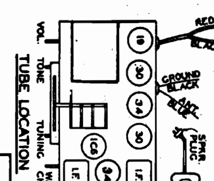
LEGEND

R1	25M	OHMS	C1	.1	MFD.
R2	50M	"	C2	.1	"
R3	1 MEG.	"	C3	.01	"
R4	1 MEG.	"	C4	.00025	"
R5	500 M	"	C5	.0005	"
			C6	.1	"
R7	100 M	"	C7	.05	"
R8	500 M	"	C8	.006	"
R9	1 MEG.	"	C9	.1	"
R10	50 M	"	C10	.03	"
R11	5 M	"	C11	.001	"
			C12	.1	"
			C13	.0015	"
			C14	.0027	"
R15	20	"	C15	.01	"
R16	33.3	"	C16	.5	"
R17	33.3	"	C17	.01	"
			C18	8.	
			C19	8.	
			C20	.0001	
			C21	.1	

A good ground connection to a water pipe or other metallic conductor entering into the ground for some distance is ESSENTIAL.

WARNING: IF WINDCHARGER IS USED DO NOT OPERATE SET WITH CHARGER CONNECTED.

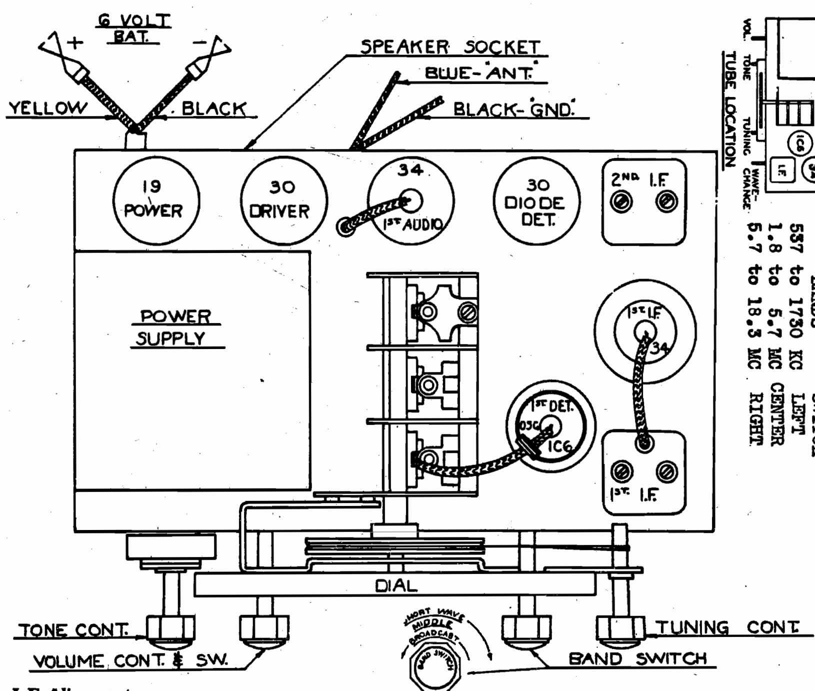
Warning: Place Storage Battery in such a position that clips on Battery Cable may be fastened directly to Battery Terminals. Do not add any additional wire length to cables as this will make the set hum.



TUBE LOCATION

6-Tube, 6-Volt Superheterodyne Battery Receiver

BANDS	SWITCH
537 to 1730 KC	LEFT
1.8 to 5.7 MC	CENTER
5.7 to 18.3 MC	RIGHT



I. F. Alignment:

Connect the oscillator through a .1 condenser to the grid of the 1C6 tube and set the oscillator to 456 kilocycles. Peak each I. F. stage to resonance as indicated by maximum output on the output meter.

R. F. Alignment:

With the wave change switch in the broadcast position, set oscillator to 1700 kilocycles and connect in series with a .00025 condenser to the antenna of the receiver. Rotate the variable condenser to the 1700 setting of the dial and adjust the trimmer condenser of the broadcast oscillator to resonance. This trimmer is located on the right side of the chassis, second position from the front. Reset the test oscillator to 1400 kilocycles and adjust antenna trimmer located on top of rear section of variable condenser. Peak detector trimmer located across preselector coil under chassis. Now set oscillator to 600 kilocycles and adjust padder located on top of the chassis. Check alignment at 1000 kilocycles.

For aligning the police band, set test oscillator to 5 megacycles and switch to the police band position on the set. With the condenser rotated to this frequency setting as indicated on the dial, adjust oscillator trimmer located on the right sid eof the chassis, first position from the front. Now adjust antenna trimmer located on the front of the chassis, left position, to resonance.

The short wave band is aligned by setting the condenser to 18 megacycles and adjust the oscillator trimmer located on the right side of the chassis, first position from the front to resonance with an 18 megacycle signal from the test oscillator. Turn dial to 16 M. C. Set test oscillator to 16 M. C. and adjust antenna trimmer through right hand hole in front of chassis, rocking variable condenser slightly back and forth to get maximum peak.

STEWART-WARNER CORP.

MODELS 01-5H1 to 01-5H9
Chassis 01-5H
Schematic, Voltage

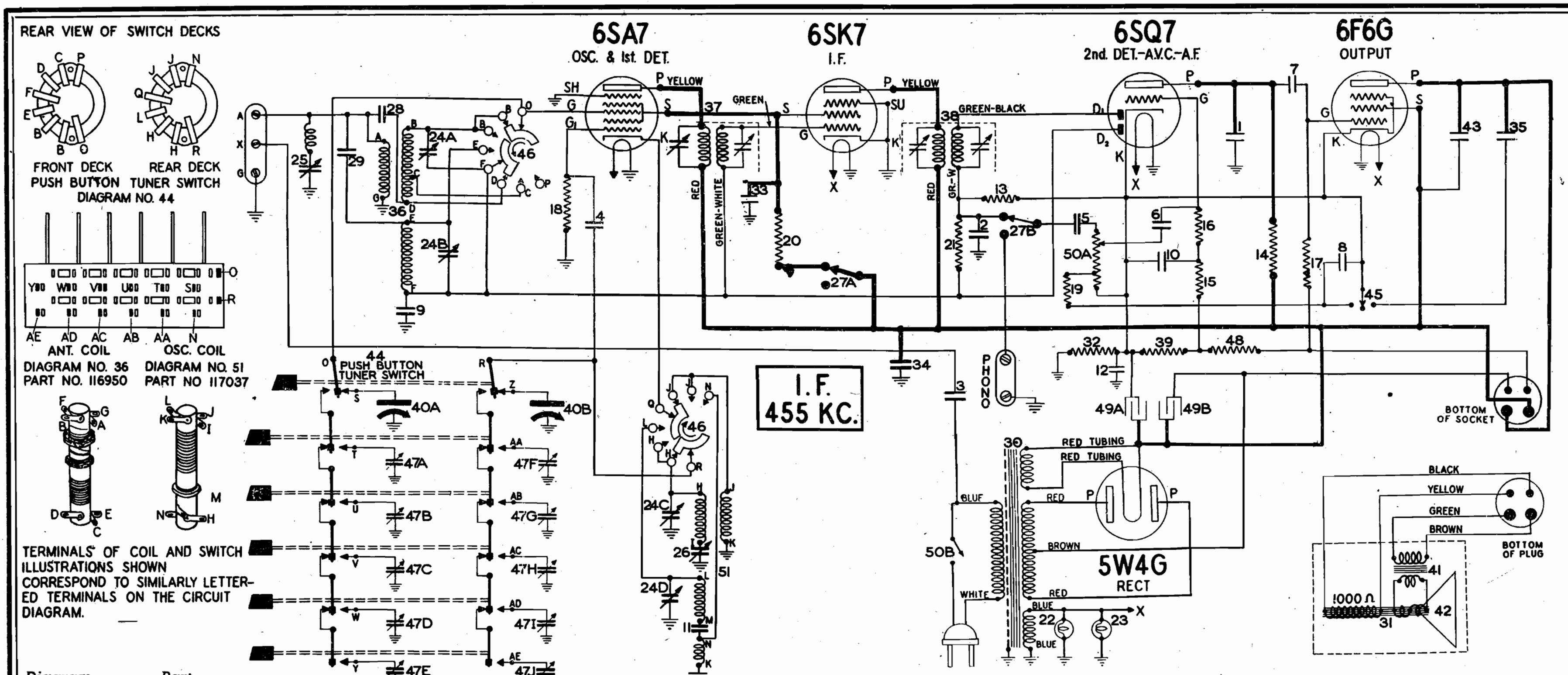
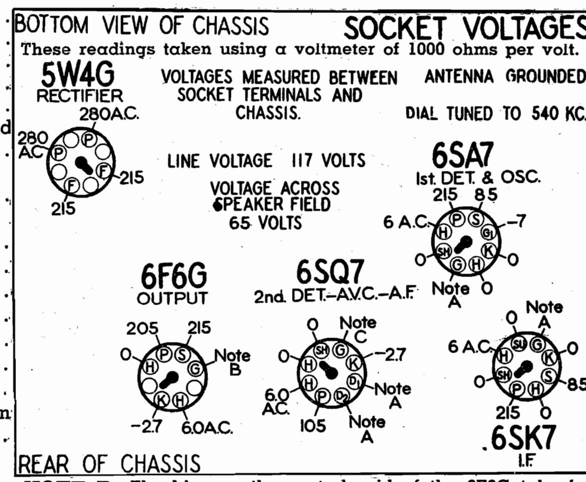


Diagram Number	Part Number	Description
1-2-3	83539	Condenser—mica 260 mmfd.
4	85061	Condenser—mica 51 mmfd.
5-6-7	88026	Condenser—paper .02 mfd. 400 volt.
8	88030	Condenser—paper .01 mfd. 400 volt.
9-10	88189	Condenser—paper .05 mfd. 200 volt.
11	88587	Condenser—mica .0042 mfd.
12	89421	Condenser—paper .1 mfd. 200 volt.
13-14	110553	Resistor—carbon 220,000 ohms ¼ watt
15-16	110554	Resistor—carbon 1 megohm ¼ watt.
17	110559	Resistor—carbon 470,000 ohms ¼ watt
18-19	110566	Resistor—carbon 33,000 ohms ¼ watt
20	110568	Resistor—carbon 15,000 ohms 1 watt.
21	110580	Resistor—carbon 3.3 meg. ¼ watt.
22-23	110629	Lamp—6.3 volt—.25 amps.
24A to 24D	112792	Condenser—trimmer (4 section)
25	112796	Coil—wave trap (with trimmer)
26	112799	Condenser—padder (530 to 630 mmfd.)
27A-27B	114141	Switch—radio—phono (D.P.D.T.)
28-29	114969	Condenser—mica 15 mmfd.
30	114999	Transformer—power
31	M-115059	Speaker—8" electro-dynamic
32	116077	Resistor—150 ohms—¼ watt.
33-34	116625	Condenser—.1 mfd. 600 volt.
35	116893	Condenser—.02 mfd. 600 volt.
36	116950	Coil—antenna
37	116954	Transformer—1st I.F.
38	116955	Transformer—2nd I.F.
39	116967	Resistor—25 ohms 1 watt wire wound
40A-40B	116996	Condenser—variable gang
41	M-117091	Transformer—output for M-115059 speaker
42	M-117092	Cone & Voice coil assembly for M-115059 speaker
43	117022	Condenser—.002 mfd. 600 volt.
44	117024	Switch—push button
45	117025	Tone control
46	117026	Range switch
47A to 47J	117027	Trimmer condenser—gang
48	117032	Resistor—300 ohms 1 watt.
49A-49B	117034	Condenser—dual electrolytic—Section A, 10 mfd.—Section B, 15 mfd.
50A-50B	117035	Volume control with on-off switch.
51	117037	Coil—oscillator

NOTE A: The bias on the control grids of the 6SA7 and 6SK7 tubes and on the diode plates of the 6SQ7 tube is —2.7 volts measured across resistor No. 32.

BOTTOM VIEW OF CHASSIS — SOCKET VOLTAGES

These readings taken using a voltmeter of 1000 ohms per volt.



NOTE B: The bias on the control grid of the 6F6G tube is —18 volts measured across resistors No. 39 and 48.
NOTE C: The bias on the control grid of the 6SQ7 tube is —4 volts measured across resistor No. 39.

CHASSIS 01-5H
CHASSIS 02-4A
Alignment, Trimmers
Socket, Notes

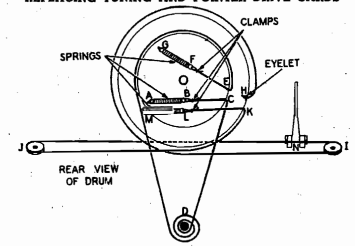
STEWART-WARNER CORP.

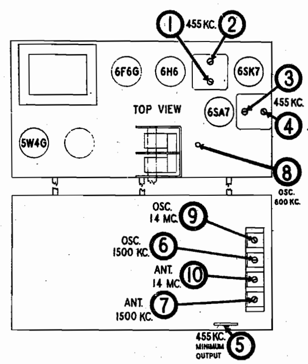
ALIGNMENT PROCEDURE FOR 01-5H CHASSIS

1. Connect the output meter across the voice coil or between the plate of the 6F6G output tube and ground in series with a .1 mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the "G" terminal or the chassis. NOTE: Remove the connector from between the "A" and "X" terminals.
3. Turn the volume control to the maximum volume position and keep it in this position throughout the entire alignment procedure.
4. With the gang condenser in full mesh, set the pointer at a point 1¾" from the left flange of the brown dial plate. This point corresponds to the last mark on the low frequency end of the dial scale. If the pointer is incorrectly set, it is only necessary to loosen the set screws on the dial drive drum and push the gang condenser in full mesh, with the pointer properly set, then retighten the set screws.

Dummy Ant. in Series with Sig Gen.	Connection of Sig. Generator Output To Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Front Lug of Gang Condenser	455 KC	Broadcast	Any Point Where It Does Not Affect The Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	"A" Terminal	455 KC	Broadcast	Any Point Where It Does Not Affect The Signal	5	Wave Trap	Adjust for minimum output using a strong generator signal.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	1500 KC (2⅜" from right Dial Plate end)	6	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	Tune To 1500 KC Generator Signal	7	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	"A" Terminal	600 KC	Broadcast	Tune To 600 KC Generator Signal	8	Broadcast Oscillator (Series Pad)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	"A" Terminal	14 MC	Foreign	14 MC (2-7/16" from right Dial Plate end)	9	Foreign Oscillator (Shunt)	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 13.1 MC. If image does not appear realign at 14 MC. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"A" Terminal	14 MC	Foreign	14 MC	10	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

REPLACING TUNING AND POINTER DRIVE CARDS





MISCELLANEOUS PARTS

Part Number	Description	List Price
117008	Call letter tabs and instruction sheets	$0.45
114955	Clamp for dial cord	.01
112745	Clip—coil mtg.	.01
112798	Clip—wave trap mtg.	.01
85321	Connector—for internal antenna	.01
116948	Cord—dial	.18
117057	Cord—drive	.15
117021	Dial scale and escutcheon	1.75
117029	Drive drum and bushing	.50
116998	Escutcheon for push buttons	.30
98348	Eyelet—for dial cord ... Per Dz.	.05
116773	Knob—tuning or volume	.10
116952	Pin for push buttons	.02
110496	Plug—4 prong—for speaker	.12
117036	Pointer assembly	.28
112762	Pulley—dial cord drive	.04
116999	Push button	.08
117019	Reflector—for pilot light	.04
81145	Retaining ring—for drive shaft ... Per C	.50
83552	Screw—chassis mtg.	.03
85040	Screw—No. 6 Hex. Hd. ... Per C	.35
83624	Screw—self tapping 8 x ¼	.01
114914	Screw—special head—for mtg. escutcheon ... Per Dz.	.15
114117	Socket—dial lamp	$0.18
110501	Socket—4 prong (for speaker)	.16
116690	Socket—octal base (small)	.12
111090	Spacer—steel	.02
116981	Spring—pointer cord tension	.06
113177	Spring—dial cord tension	.09
117458	Spring—push button	.05
116536	Terminal strip (G.X.A.)	.15
84407	Terminal strip—phono	.12
117033	Tuning shaft	.12
111456	Washer—spring washer ... Per C	.50
116530	Washer—(paper) for back of knobs	.005

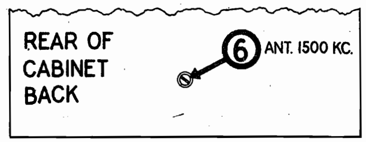
ALIGNMENT EQUIPMENT & PROCEDURE 02-4A

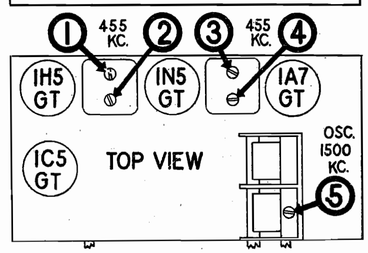
FOR ALIGNMENT an output meter and an accurately calibrated signal generator are required.

1. Connect the output meter across the voice coil or between the plate of the 1C5GT output tube and ground through a 0.1 Mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the chassis.
3. Turn the volume control to the maximum volume position and keep it in this position while aligning. The loop antenna should always be connected.
4. With the gang condenser in full mesh, set the dial pointer in a horizontal position. If the pointer is incorrectly set, it is merely necessary to loosen the set screw on the dial drum, move the pointer to the horizontal position with the gang in full mesh, and tighten the set screw.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Control Grid of 1A7GT	455 KC.	Any Point Where It Does Not Affect Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
At this point place the chassis in the cabinet and turn the dial until the pointer indicates 1500, now remove the chassis and proceed with the alignment without disturbing this dial setting.						
400 Ohm Carbon Resistor	"Ant" Terminal	1500 KC.	1500 KC.	5	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
400 Ohm Carbon Resistor	"Ant" Terminal	1500 KC.	Tune To 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.

Now disconnect the output meter and signal generator leads and replace the chassis and batteries in the cabinet being sure to connect the loop. Bring the antenna lead of the signal generator near the loop until the 1500 KC. signal is heard weakly, and readjust trimmer No. 6 for maximum output by ear.





USING AN OUTSIDE ANTENNA

An outside antenna may be connected to this radio to provide better signal pick-up on weak stations. When this is done, a ground connection should also be used. The antenna and ground wires should be brought in through the hole provided in the bottom of the cabinet and connected to the terminals marked "ANT." and "GND." on the inside of the cabinet back.

When using an outside antenna, a weak signal near 1500 KC should be tuned in and trimmer No. 6 adjusted for maximum volume. If it is impossible to get a proper peak on this trimmer, check the connections of the white and green-white wires to see if they are reversed.

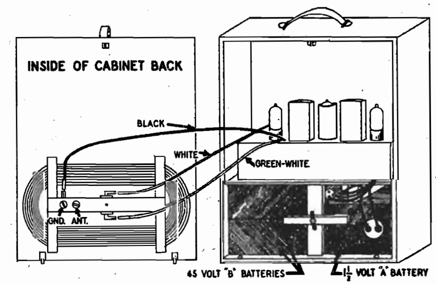
INSTALLATION OF BATTERIES

The following 1½ volt "A" batteries will fit the space provided: Eveready No. 743 or Ray-O-Vac No. P96A.

"B" batteries of the proper size are Eveready No. 727 or No. 482 or Ray-O-Vac No. BB30P. Where long life is desired, the Eveready No. 482 is especially recommended.

To install the batteries, first slide the "B" batteries into place as shown in the drawing below, and connect a three pronged plug to each one. Slide the "A" battery into place as shown and connect the two pronged plug to it. Fasten the battery supporting block as shown and secure it with a washer and wing nut.

CAUTION: Do not attempt to install or remove the "B" batteries unless the battery plugs are disconnected. When replacing the cabinet back be sure to connect the plugs to the proper receptacles on the loop as shown in the drawing, otherwise improper operation may result.



STEWART-WARNER CORP.

CHASSIS 01-6A, 010-6AX, 01-6B, 010-6BX, 01-6D, 010-6DX
Schematic, Voltage, Socket, Phono. Schematic

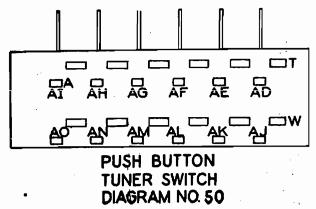
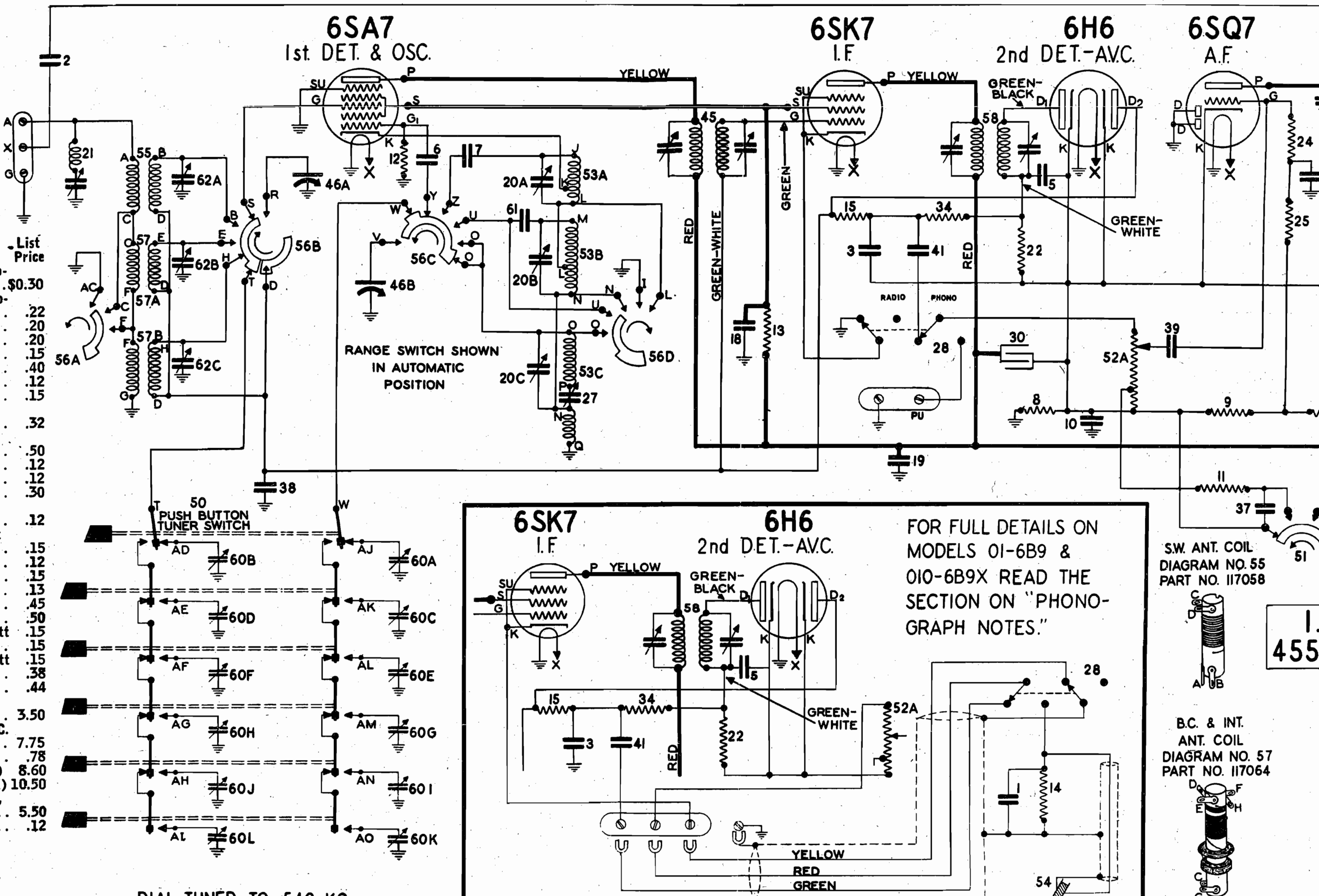
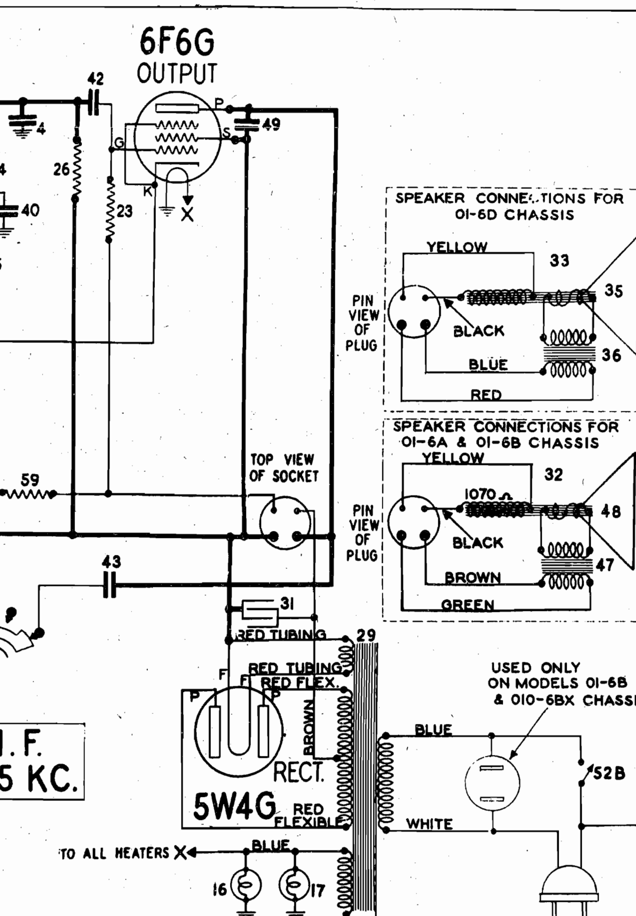
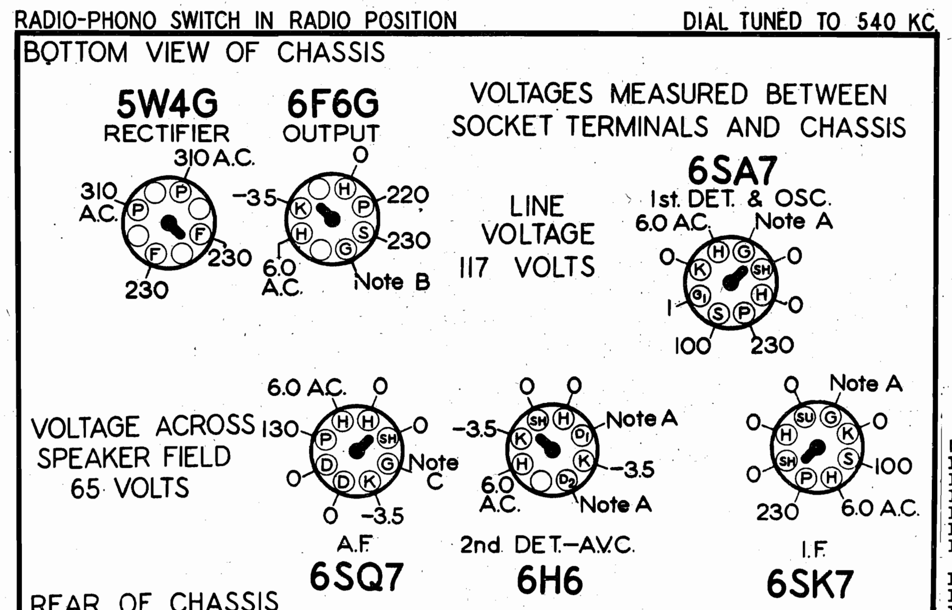


Diagram Number	Part Number	Description	List Price
1	81156	Condenser—mica, .001 mfd. (see "Phonograph Notes")	$0.30
	111122	Condenser—mica, .003 mfd. (see "Phonograph Notes")	.22
2-3-4	83539	Condenser—mica, 260 mmfd.	.20
5	83783	Condenser—mica, 110 mmfd.	.20
6	85061	Condenser—mica, 51 mmfd.	.15
7	85440	Condenser—mica, 3510 mmfd.	.40
8	88460	Resistor—150 ohms, ½ watt, W.W.	.12
9	88465	Resistor—25 ohms, ½ watt, W.W.	.15
10	89532	Condenser—paper, .25 mfd., 200 volts (01-6A, 01-6B, 010-6AX, 010-6BX)	.32
	117356	Condenser—electrolytic, 10 mfd., 25 volts (01-6D, 010-6DX only)	.50
11	110552	Resistor—carbon, 47,000 ohms, ¼ watt	.12
12	110565	Resistor—carbon, 22,000 ohms, ¼ watt	.12
13	110575	Resistor—carbon, 12,000 ohms, 2 watts	.30
14	110578	Resistor—carbon, 68,000 ohms, ¼ watt (see "Phonograph Notes")	.12
	112971	Resistor—insulated 470,000 ohms ¼ watt (see "Phonograph Notes")	.15
15	110580	Resistor—carbon, 3.3 meg., ¼ watt	.12
16-17	110629	Lamp—6.3 volts—.25 amps.	.15
18-19	111252	Condenser—paper, .05 mfd., 400 volt	.13
20A-20B-20C	112072	Condenser—trimmer—3 sections	.45
21	112796	Coil—wave trap (with trimmer)	.50
22-23	112971	Resistor—insulated, 470,000 ohms, ¼ watt	.15
24-25	112972	Resistor—insulated, 1 meg., ¼ watt	.15
26	112987	Resistor—insulated, 220,000 ohms, ¼ watt	.15
27	113346	Condenser—padding	.38
28	114141	Switch—D.P.D.T.	.44
29	114530	Power transformer, 117 volt, 60 cycle (01-6A, 01-6B, 01-6D)	3.50
	116352	Power transformer, 110-240 V., 40-133 C. (010-6AX, 010-6BX, 010-6DX)	7.75
30-31	114972	Condenser—electrolytic, 16 mfd., 450 volt	.78
32	U-115060	Speaker—dynamic, 10", (01-6A7, 010-6A7X)	8.60
	U-115061	Speaker—dynamic, 12", (01-6B9, 010-6B9X)	10.50
33	U-115063	Speaker—dynamic, 6", (01-6D4, 01-6D1, 010-6DX)	5.50
34	116058	Resistor—carbon, 47,000 ohms, ¼ watt	.12



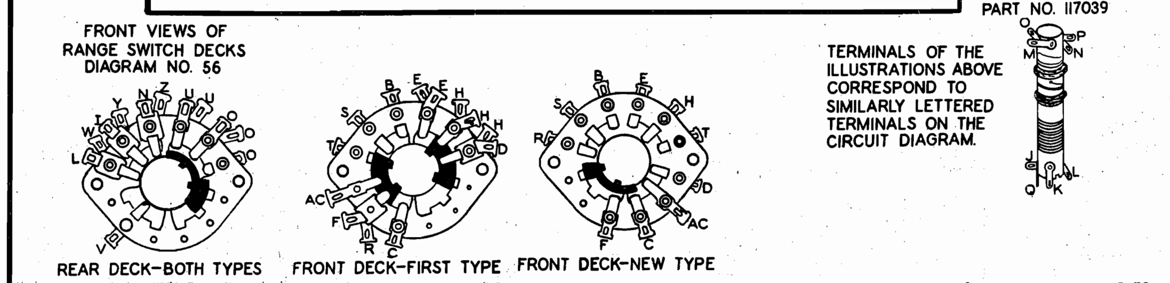


RADIO-PHONO SWITCH IN RADIO POSITION



These readings were taken, using a high resistance voltmeter of 1000 ohms per volt.

NOTE A: The bias on the control grids of the 6SK7 and 6SA7 tubes and on the diode plates of the 6H6 tube is —2.7 volts measured across resistor No. 8.



MISCELLANEOUS PARTS

Part Number	Description	List Price
117009	Call tabs and instruction sheets for 01-6A sets	$0.45
117010	Call tabs and instruction sheets for 01-6B sets	.50
117534	Call tabs and instruction sheets for 01-6D sets	.45
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
112798	Clip—for mounting wave trap	.01
85321	Connector—for internal antenna	.01
116948	Cord—dial (6 ft. lengths)	.18
117057	Cord—drive (3 ft. lengths)	.15
111973	Cushion—rubber rest for back of chassis (01-6A7, 010-6A7X)	.06
117028	Dial plate & pulley assembly (01-6A, 01-6B)	1.00
117194	Dial plate & pulley assembly (01-6D)	.85
117042	Dial scale and escutcheon (01-6A, 01-6B)	1.50
117198	Dial scale and escutcheon (01-6D)	1.25
117029	Drive drum and bushing	.50
116998	Escutcheon for push buttons	.30
88348	Eyelet—for dial cord Per Doz.	.05
116773	Knob—tuning or volume	.10
116952	Pin for push buttons	.02
117036	Pointer assembly (01-6A, 01-6B)	.28
117195	Pointer assembly (01-6D)	.32
116999	Push buttons	.08
116165	Receptacle for 2 prong plug	.50
117019	Reflector—for pilot lights	.04
81145	Retaining ring—for drive shaft Per C	.50
114148	Rotor—for power transformer switch (010-6AX, 010-6BX, 010-6DX)	

NOTE B: The bias on the control grid of the 6F6G tube is —16 volts, measured across resistors No. 9 and 59.

NOTE C: The bias on the control grid of the 6SQ7 tube is —1.4 volts measured across resistor No. 9.

Diagram Number	Part Number	Description	List Price
35	U-116211	Cone & Voice Coil assy. for U-115063 speaker	$1.65
36	U-116212	Output transformer for U-115063 speaker	1.50
	116352	Power transformer, 100-240 volt, 40-133 cycles (010-6AX, 010-6BX, 010-6DX)	7.75
37	116640	Condenser—.01 mfd., 600 volts	.15
38-39-40	116819	Condenser—.05 mfd., 600 volts	.20
41-42-43	116893	Condenser—.02 mfd., 600 volts	.15
44	116942	On-Off Phono switch (01-6B9, 010-6B9X)	.25
45	116954	Transformer—1st I.F. (01-6A, 01-6B, 01-6D)	1.20
	117523	Transformer—1st I.F. (010-6AX, 010-6BX, 010-6DX)	1.35
46A-46B	116996	Condenser—variable gang	3.30
47	U-117004	Output transformer for U-115060 & U-115061 speakers	2.50
48	U-117005	Cone & Voice coil assy. for U-115060 speaker	2.50
	U-117071	Cone & Voice coil assy. for U-115061 speaker	2.30
49	117022	Condenser—.002 mfd., 600 volt	.15
50	117024	Switch—push button	2.80
51	117025	Tone control switch	.60
52A-52B	117035	Volume control with switch—1 meg.	1.00
53A-53B-53C	117039	Coil—oscillator (with trimmers)	2.15
54	117053	Phono pickup arm with arm rest and mtg. nut (01-6B9, 010-6B9X)	7.25
55	117058	Coil—antenna S.W.	.50
56A to 56D	117062	Range switch	1.90
57A-57B	117064	Coil—antenna, B.C. & Pol. or Int.	1.00
	117071	Coil & Voice coil assy. for U-115061 speaker	2.30
58	117072	Transformer—2nd I.F. (01-6A, 01-6B, 01-6D)	1.20
	117580	Transformer—2nd I.F. (010-6AX, 010-6BX, 010-6DX)	1.20
59	117075	Resistor—300 ohms 1 watt W.W.	.16
60A to 60L	117081	Push button trimmer gang condenser assy.	5.20
61	117113	Condenser—mica, 1760 mmfd.	.30
	117356	Condenser—electrolytic, 10 mfd., 25 volt (01-6D, 010-6DX only)	.50
62	117450	Condenser—trimmer—3 section	.40
	117523	Transformer—1st I.F. (010-6AX, 010-6BX, 010-6DX)	1.35
	117580	Transformer—2nd I.F. (010-6AX, 010-6BX, 010-6DX)	1.20
63		See Phonograph parts list.	

RANGE SWITCH

Two types of range switches were used in these receivers. Both switches are electrically identical, although the contacts are arranged differently on the front decks of the two types. The rear decks of both switches are identical. Illustrations of both types of switch decks adjacent to the circuit diagram show the connections to the various lugs, as they correspond to lettered terminals on the circuit diagram. Coil and push button tuner switch drawings give the same information regarding connections.

CHASSIS 01-6A,010-6AX,01-6B,010-6BX,01-6D,010-6DX
Alignment,Trimmers,Phono.Notes,Drive Cord Data

STEWART-WARNER CORP.

MODELS 01-6C9,010-6C9X
Alignment,Trimmers,Drive Cord,Tuner,Notes

ALIGNMENT EQUIPMENT & PROCEDURE

FOR ALIGNMENT: An output meter and an accurately calibrated signal generator are required.

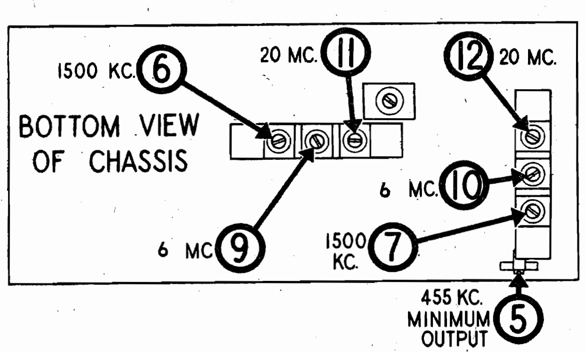
1. Connect the output meter across the voice coil or between the plate of the 6F6-G output tube and ground in series with a .1 mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the "G" terminal or the chassis.
3. Turn the volume control to the maximum volume position and keep it in this position throughout the entire alignment procedure. Remove the connector from between the "A" and "X" terminals.
4. The pointer should be at the following distances with the gang condenser in full mesh:
01-6D & 010-6DX CHASSIS: 2$\frac{3}{16}$ inches from the LEFT end of the dial plate.
01-6A, 010-6AX, 01-6B, & 010-6BX CHASSIS: 1⅜ inches from the LEFT end of the dial plate.

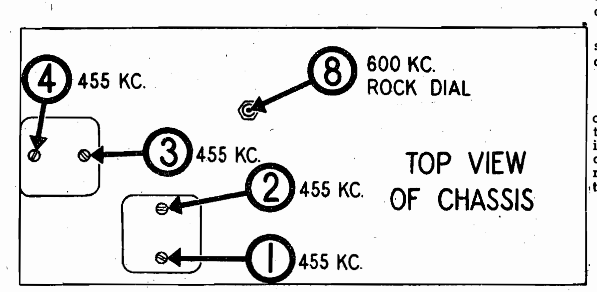
NOTE: When aligning models 01-6B9 and 010-6B9X, make the following connections at the phonograph terminal strip on the rear of the chassis near the center:
Ground the right hand terminal (the one nearest the push button trimmers).

Connect the center and left hand terminals together.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output To Receiver	Signal Generator Frequency	Band Switch Position	Pointer Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Front Lug on Gang Condenser	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then Repeat Adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	Antenna Terminal "A"	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	5	Wave Trap	Adjust for Minimum Output, using a strong generator signal.
200 MMFD. Mica Condenser	Antenna Terminal "A"	1500 KC	Broadcast	*1500 KC	6	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal "A"	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	7	Broadcast Detector	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal "A"	600 KC	Broadcast	Tune to 600 KC Generator Signal	8	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	Antenna Terminal "A"	6 MC	Intermediate	*6 MC	9	Intermediate Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 5.1 MC. If Image does not appear, Realign at 6 MC with Trimmer Screw farther Out. Recheck Image.
400 OHM Carbon Resistor	Antenna Terminal "A"	6 MC	Intermediate	Tune to 6 MC Generator Signal	10	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	Antenna Terminal "A"	20 MC	Foreign	*20 MC	11	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was obtained by Tuning in Image at Approx. 19.1 MC. If Image does not appear Realign at 20 MC with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Antenna Terminal "A"	20 MC	Foreign	Tune to 20 MC Generator Signal	12	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is obtained.

*For pointer settings at these frequencies, see "Alignment Points"





TONE CONTROL CIRCUIT CHANGES

The tone control circuit used in most receivers of this model is shown in the circuit diagram on the reverse side of this sheet. Chassis employing this type of tone control circuit are stamped with the letter "S" on the chassis.

To the right of the circuit diagram is shown a tone control circuit used in some early receivers. Note the important differences both in the set itself and in the push button circuit. A few receivers incorporate a tone control circuit differing from both circuits illustrated. In these cases, it is suggested that the serviceman revise these earlier circuits so as to convert them to the tone control circuit illustrated at the right of the receiver circuit diagram.

In some chassis, Resistor No. 31 was 22,000 ohms instead of 47,000 ohms. If this lower value resistor is replaced by the 47,000 ohm unit, an improvement in tone will result, especially noticeable on higher volume.

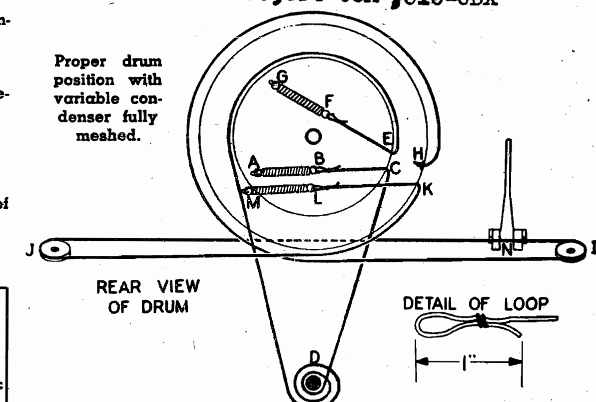
IMPORTANT: Servicemen are cautioned not to interchange radio chassis indiscriminately in these receivers. The tone control circuit of an early receiver will not operate with a chassis of the later type (Stamped "S") and vice versa. Should it be necessary to interchange chassis and tone control assemblies, change the connections of the switch or of the set to conform to the circuit diagram.

PHONOGRAPH PICK-UP CIRCUIT CHANGES

Some of the earlier chassis of this model did not include the 220,000 ohm resistor or the 0.001 mfd. condenser, which are shown connected across the pick-up. If either of these units are missing, or are of a value different from that specified, the insertion of the proper units will improve the tone when records are being played.

DIAL CORD REPLACEMENT

Chassis 01-6A,010-6AX,01-6B
01-6C,010-6CX ,010-6BX



TO REPLACE THE TUNING DRIVE CORD

1. 19¾ inches of dial drive cord (part No. 117057) are required. Make a one-inch loop in each end of this cord, using a dial cord clip, (part No. 114955) (See sketch above for detail of loop). A knot may be tied if a slightly smaller loop is made.
2. Fasten one end of a tension spring (part No. 113177) to the loop at point B and the other end of the spring to tab A.
3. Pass the other end of the dial cord through hole C in the inner drum and
4. Make two and a half turns of the cord about tuning shaft D.
5. Continue the cord clockwise (rear view) about the inner drum and pass it through hole E.
6. Fasten a tension spring, (part No. 113177) to the other loop of the cord at point F and fasten the spring to the tab G.

TO REPLACE THE POINTER DRIVE CORD

1. 37 inches of pointer drive cord, (part No. 116948) are required. Fasten an eyelet (part No. 88348) at a point one-half inch from one end of this cord.
2. Pass the other end of the cord outward through hole H in the larger drum.
3. Fashion a one-inch loop at outer end of the pointer cord, (See detail of loop in illustration), using a dial cord clip (part No. 114955), or tie a knot using a smaller loop.
4. Continue the cord counter-clockwise (rear view) around the larger drum and around the rear of pulley I from the rear to the front.
5. Go from pulley I around the front of pulley J and counter-clockwise (rear view) around the larger drum to hole K.
6. Pass the loop through hole K and fasten it to one end of a tension spring (part No. 113177) at point L, the other end of the spring being fastened to point M.
7. Clip the dial pointer to the cord. With the drum in the position shown, and with the gang condenser in full mesh, fasten the pointer so that it is at a point 1⅜ inches from the left end of the brown dial plate (front view).

PHONOGRAPH NOTES

On early releases of model 01-6B9, a 220,000 ohm resistor was connected across the phonograph pickup at the "PHONO-RADIO" switch.

In order to eliminate needle scratch on these sets, a 68,000 ohm resistor and a .003 mfd. condenser were substituted for the 220,000 ohm resistor. These were connected as shown in the circuit diagram and are included on the parts list under diagram numbers 1 and 14.

On all late releases a pickup with different cushioning was used, and the values of the resistor and condenser were changed to 470,000 ohms and .001 mfd. These values are also included under diagram numbers 1 and 14.

If "growling" is encountered during phonograph operation, the chassis mounting bolts should be checked to see that they are loose enough to allow the chassis to float on its rubber cushions.

If the set is of the early type using the 220,000 ohm resistor, the substitution of the 68,000 ohm resistor and .003 mfd. condenser described above may help to reduce "growling."

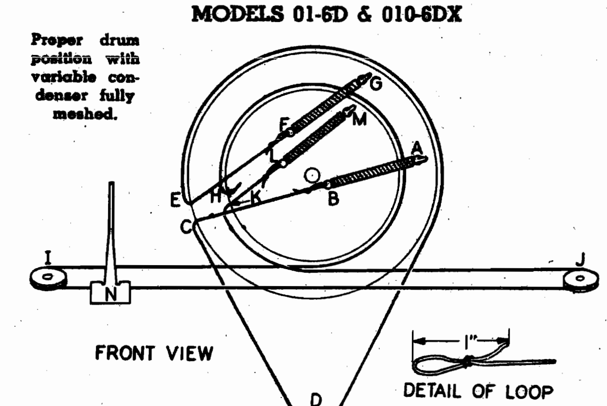
RANGE SWITCH

Two types of range switches were used in this receiver. Both switches are electrically identical, although the contacts are arranged differently on the front decks of the two types. The rear decks of both switches are identical. Illustrations of both types of switch decks adjacent to the circuit diagram show the connections to the various lugs, as they correspond to lettered terminals on the circuit diagram. Coil and push button tuner switch drawings give the same information regarding connections.

SETTING UP PUSH BUTTONS

1. Always allow set to warm up thoroughly before attempting to set up the push buttons. Fifteen minutes will suffice.
2. Set must be connected to a good antenna system, preferably the antenna on which it is to operate.
3. On the bottom of the chassis, as viewed from rear of cabinet will be seen six pairs of adjusting screws, which are used to adjust the push button trimmers to the selected stations. The larger of the two screws in each case adjusts BOTH the oscillator and antenna trimmers, while the smaller screw is a vernier adjustment on the antenna trimmer.
4. The frequency range of the trimmers is indicated on the sticker adjacent to the trimmer adjusting screws. Select six local stations whose frequencies fall within the tuning range of the individual trimmers.

MODELS 01-6D & 010-6DX



TO REPLACE THE TUNING DRIVE CORD

1. 25½ inches of dial drive cord (part No. 117057) are required. Make a one-inch loop in each end of this cord, using a dial cord clip, (part No. 114955) (See sketch above for detail of loop). A knot may be tied if a slightly smaller loop is made.
2. Fasten one end of a tension spring (part No. 113177) to the loop at point B and the other end of the spring to tab A.
3. Pass the other end of the dial cord through hole C in the outer drum.
4. Make one and a half turns of the cord about tuning shaft D.
5. Continue the cord counter-clockwise about the outer drum and pass it through hole E.
6. Fasten a tension spring, (part No. 113177) to the other loop of the cord at point F and fasten the spring to the tab G.

TO REPLACE THE POINTER DRIVE CORD

1. 34⅛ inches of pointer drive cord, (part No. 116948) are required. Fasten an eyelet (part No. 88348) at a point one-half inch from one end of this cord.
2. Pass the other end of the cord outward through hole H in the smaller drum.
3. Fashion a one-inch loop at outer end of the pointer cord, (See detail of loop in illustration), using a dial cord clip (part No. 114955), or tie a knot using a smaller loop.
4. Continue the cord clockwise around the smaller drum and around pulley I from the rear to the front.
5. Go from pulley I around the front of Pulley J and clockwise around the smaller drum to hole K.
6. Pass the loop through hole K and fasten it to one end of a tension spring (part No. 113177) at point L, the other end of the spring then being fastened to point M.
7. Clip the dial pointer to the cord. With the drum in the position shown, and with the gang condenser in full mesh, fasten the pointer so that it is at a point 2$\frac{3}{16}$" from the left end of the brown dial plate.

ALIGNMENT POINTS

Frequency	Pointer Distance in inches from Right End of Brown Dial Plate	
	Models 01-6A, 010-6AX, 01-6B, 010-6BX	Models 01-6D & 010-6DX
1500 KC	2-5/16"	3"
6 MC.	2-3/8"	2-15/16"
20 MC.	2-3/16"	2-7/8"

5. Label the push buttons with the call letters of the selected stations, assigning the lowest frequency station to the extreme left hand button and the highest frequency station to the extreme right hand button.
6. Turn the range switch to "B" and manually tune in the station you wish to set up on the extreme left hand button.
7. Turn the range switch to "A" and push in the left hand button. Using a small screwdriver, adjust the large screw of the No. 1 trimmer until the station you had previously tuned in manually is again heard. Adjust this screw to the point where the program is heard with the deepest tone.
8. Insert the screwdriver in the small screw of this trimmer and turn it until the station is heard with deepest tone. Now again check the setting of the larger adjusting screw, making sure it is adjusted to the point of deepest tone.
9. The set-up for this button is now complete. Set up the remaining buttons in a similar manner.
10. In some instances it may be necessary to reset the trimmer after several months, as they may drift due to heat, humidity, etc.

Do not adjust trimmers too tightly or too loosely. Wherever possible, select stations that will fall well within the frequency ranges specified on the trimmers.

SETTING THE DIAL POINTER

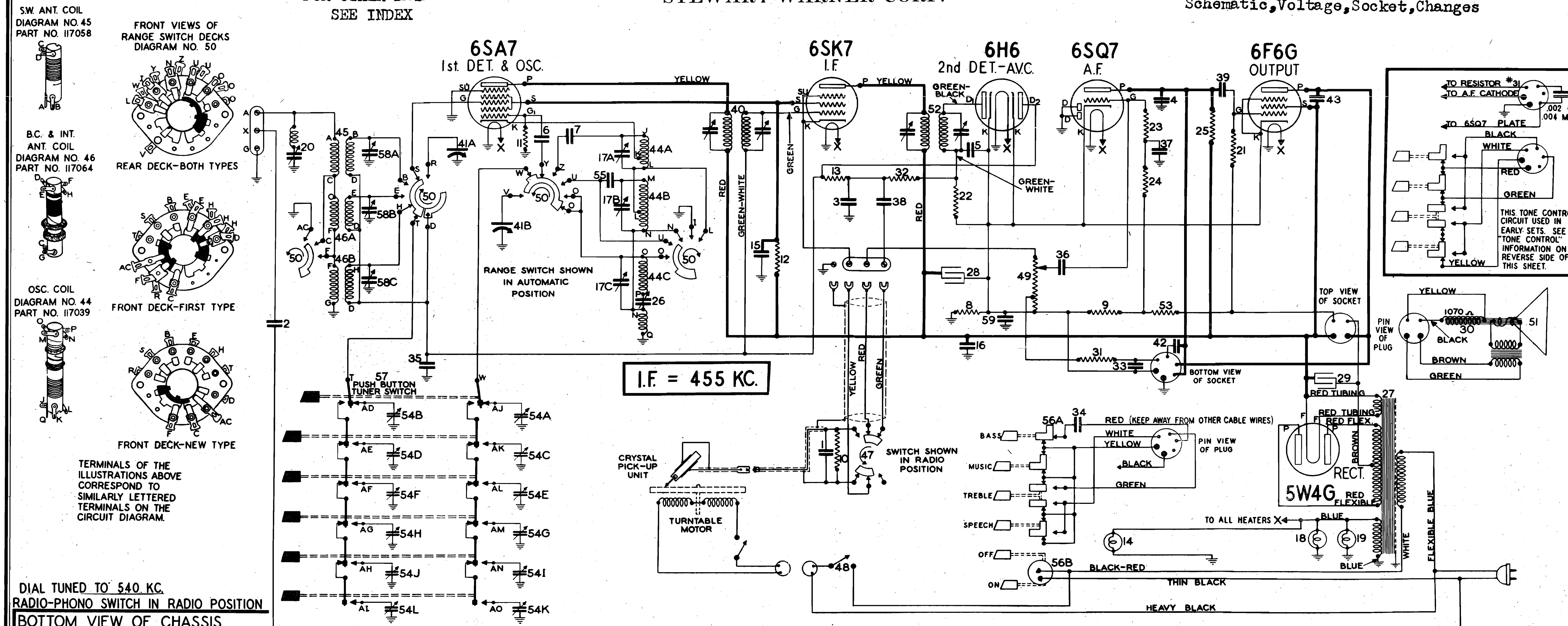
Since the dial scale is printed on the escutcheon glass, the serviceman will not know whether the pointer is set correctly unless the set is in place in the cabinet. With the gang condenser in full mesh, the dial pointer should be at a point 1⅜ inches from the left end of the brown dial plate. If the pointer is not set correctly, loosen the two set screws holding the dial drum to the condenser shaft. Then hold the condenser in full mesh and move the dial drum until the pointer reaches the proper point, then tighten the set screws.

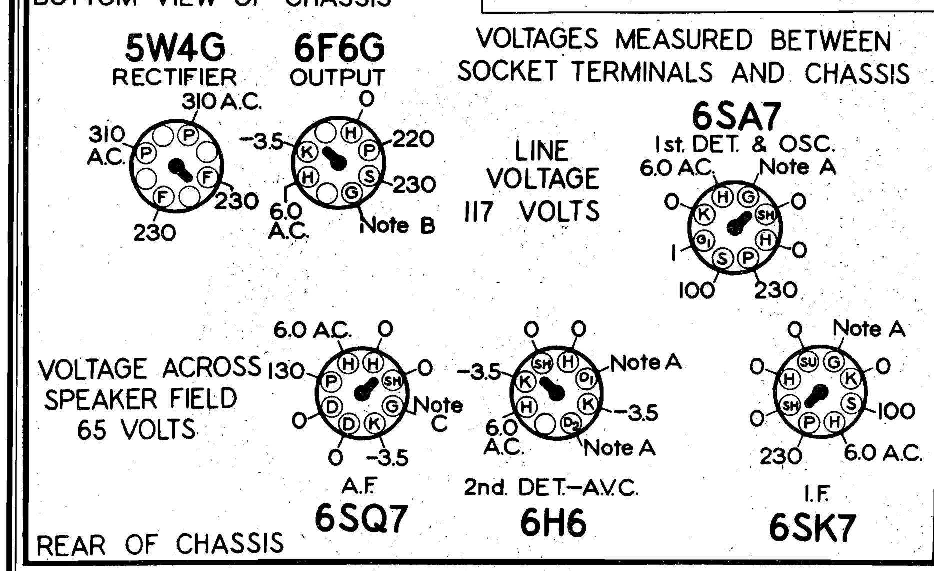
When replacing the chassis in the cabinet, be sure it is in the position giving most accurate dial calibration.

FOR OTHER DATA SEE INDEX

STEWART-WARNER CORP.

MODELS 01-6C9,Ch.01-6C;010-6C9X,Ch.010-6CX
Schematic,Voltage,Socket,Changes





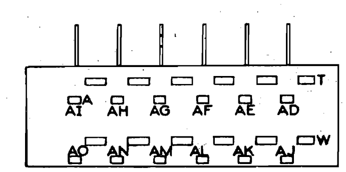
These readings were taken, using a high resistance voltmeter of 1000 ohms per volt.

NOTE A: The bias on the control grids of the 6SK7 and 6SA7 tubes and on the diode plates of the 6H6 tube is —2.7 volts measured across resistor No. 8.

NOTE B: The bias on the control grid of the 6F6G tube is —16 volts, measured across resistors No. 9 and 53.

NOTE C: The bias on the control grid of the 6SQ7 tube is —1.4 volts measured across resistor No. 9.

Diagram Number	Part Number	Description	List Price
1	81156	Condenser—mica 1000 mmfd.	$ 0.30
2-3-4	83539	Condenser—mica 260 mmfd.	.20
5	83783	Condenser—mica 110 mmfd.	.20
6	85061	Condenser—mica 51 mmfd.	.15
7	85440	Condenser—mica .00351 mfd. 3%	.40
8	88460	Resistor—wire wound 150 ohms ½ watt	.12
9	88465	Resistor—wire wound 25 ohms ½ watt	.15
10	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
11	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
12	110575	Resistor—carbon 12,000 ohms 2 watts	.30
13	110580	Resistor—carbon 3.3 megohm ¼ watt	.12
14	110629	Lamp—6.3 volt—.25 amps	.15
15-16	111252	Condenser—paper .05 mfd. 400 volt	.13
17A-17B-17C	112072	Condenser—trimmer—3 section	.45
18-19	112636	Lamp—dial (frosted) 6-8 volt—.25 amps.	.25
20	112796	Coil—wave trap (with trimmer)	.50
21-22	112971	Resistor—insulated 470,000 ohms ¼ watt.	.15
23-24	112972	Resistor—insulated 1 megohm ¼ watt	.15
25	112987	Resistor—insulated 220,000 ohms ¼ watt.	.15
26	113346	Condenser—padding	.38
27	114530	Power Transformer 117 volt—60 cycle	3.50
	116352	Power Transformer 100-240 volt; 40-133 cycles	7.75
28-29	114972	Condenser—electrolytic 16 mfd. 450 volt	.78
30	U-115061	Speaker—electro-dynamic 12"	10.50
31-32	116058	Resistor—carbon 47,000 ohms ¼ watt	.12
	116352	Power Transformer 100-240 volt; 40-133 cycles	7.75
33-34	116640	Condenser—.01 mfd. 600 volt	.15
35-36-37	116819	Condenser—.05 mfd. 600 volt	.20
38-39	116893	Condenser—.02 mfd. 600 volt	.15
40	116954	Transformer—1st I.F.	1.20
	117598	Transformer—1st I.F. (010-6CX)	1.20
41A-41B	116996	Condenser—variable gang	3.30
42-43	117022	Condenser—.002 mfd. 600 volt	.15
44A-44B-44C	117039	Coil—oscillator (with trimmers)	2.15
45	117058	Coil—antenna (short wave)	.50
46A-46B	117064	Coil—antenna	1.00
47	117067	Switch (Radio Phono)	.55



PUSH BUTTON TUNER SWITCH DIAGRAM NO. 57

Diagram Number	Part Number	Description	List Price
48	117068	Switch for Phono motor	$ 0.60
49	117069	Volume control	.85
50	117070	Range switch	1.70
51	U-117071	Diaphragm assembly for U-115061 speaker.	2.30
52	117072	Transformer—2nd I.F.	1.20
	117580	Transformer—2nd I.F. (010-6CX only)	1.20
53	117075	Resistor—300 ohms 1 watt wire wound	.16
54A to 54L	117081	Push button trimmer gang assembly	5.20
55	117113	Condenser—mica .001/6 mfd. 3%	.30
56A-56B	117115	Switch—push button for tone control and on-off switch	2.30
57	117126	Push button switch	2.40
58A-58B-58C	117450	Trimmer condenser strip—3 gang	.40
	117580	Transformer—2nd I.F. (010-6CX only)	1.20
	117598	Transformer—1st I.F. (010-6CX only)	1.20
59	118206	Condenser—.25 mfd. 600 volt	.35

DIAL AND MISCELLANEOUS PARTS

Part Number	Description	List Price
117127	Cable (Phono Pick Up)	$0.40
84572	Cable—shielded for phono pick up (24")	.60
114955	Clamp for dial cord	.01
112745	Clip—coil mounting	.01
112798	Clip—for mtg. wave trap	.01
85321	Connector—for internal antenna	.01
116948	Cord—dial	.18
117057	Cord—drive	$0.15
117028	Dial plate & pulley assembly	1.00
117029	Drive drum & bushing	.50
117042	Escutcheon & Dial Scale	1.50
116998	Escutcheon for push buttons	.30
88348	Eyelet—for dial cord ... Dz.	.05
117131	Indicator button (bulls eye)	.12
116773	Knob—tuning or volume	.10
84571	Needle cup for phono	.10
116952	Pin for push buttons	.02
117118	Plug (female for motor cable)	.10
117114	Plug (male for motor cable)	.15
110496	Plug—speaker (4 prong)	.12
117036	Pointer Assembly	.28
116999	Push Button	.08
117019	Reflector—for pilot lights	.04
81145	Retaining ring—for drive shaft ... Per C	.50
114148	Rotor Voltage Switch	.50
113463	Rubber bushing—chassis mtg.	.03
83624	Screw—self tapping 8 x ¼	.01
85827	Screw—No. 8-32 Sq. Head Set Screw	.02
85040	Screw—No. 6 Hex. Hd. ... Per C	.35
114914	Screw—special head—for mtg. escutcheons .. Per Dz.	.15
81834	Socket—6 prong	.10
110501	Socket—4 prong (for spkr.)	.16
114117	Socket—dial lamp	.18
117123	Socket—for pilot light	.26
116690	Socket—(octal base) (small)	.12
117078	Socket—octal with special grounding lug	.12
111090	Spacer—steel, mechanism mtg. to chassis	.02
113177	Spring—dial cord tension	.09
117458	Spring—push button	.05
116981	Spring—for pointer	.02
117011	Station tabs & instruction sheets	.40
84412	Terminal strip—phono	.03
116536	Terminal strip (G.X.A.)	.15
117103	Tuning shaft	.06
117102	Tuning shaft extension	.10
111456	Washer—spring washer ... Per C	.50
116530	Washer (paper) for back of knobs	.005

STEWART-WARNER CORP.

MODEL 01-6C9,Ch.01-6C
Auto.Record Changer
Adjustments,Assemblies

Servicing the Automatic Record Changer

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc., are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

Refer to photograph and illustrations for references in following text.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record.—The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17." Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D."

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife.—The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformily spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H."

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

Apply a few drops of light machine oil to the motor spindle bearing and oil hole adjacent to the spindle bearing. The oil hole has a screw plug.

Do not allow oil or grease to come in contact with rubber mounting of tone arm base, rubber bumper, or rubber spindle cap.

MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

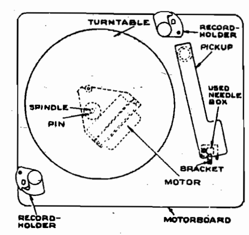
1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A."
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E."
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E."
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B." Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C."
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H."
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed — Increase tension of pickup locating lever spring "34."

Leveling

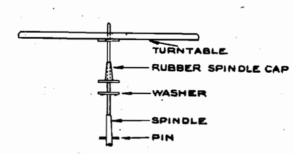
When a record has been played the pickup moves out, another record is dropped down, and the needle is fed automatically into the starting groove of this record. If the needle fails to enter the starting groove, raise the right-hand side of the cabinet by inserting thin spacers under the base on that side. If the needle slides over a few grooves, raise the left-hand side of the cabinet in a similar manner.

Lubrication

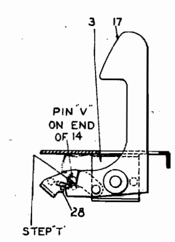
A few drops of good quality light machine oil should be applied about once every six months at the base of the spindle below the metal washer under the turntable.



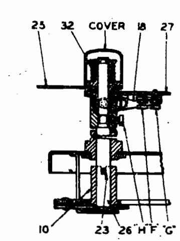
Motorboard



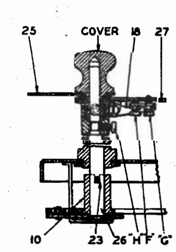
Turntable



Locating Lever



Early Type Shelf Posts



New Type Shelf Posts

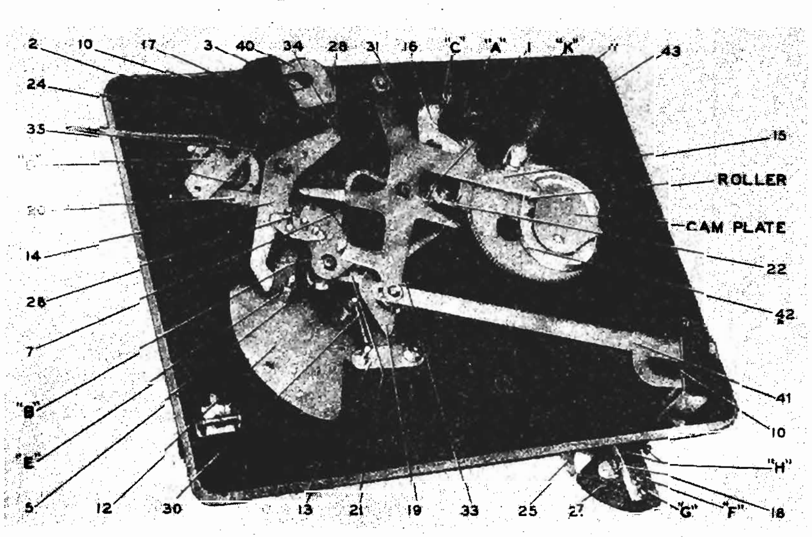
MODEL 01-6C9,Ch.01-6C
Auto.Record Changer
Assemblies,Notes

STEWART-WARNER CORP.

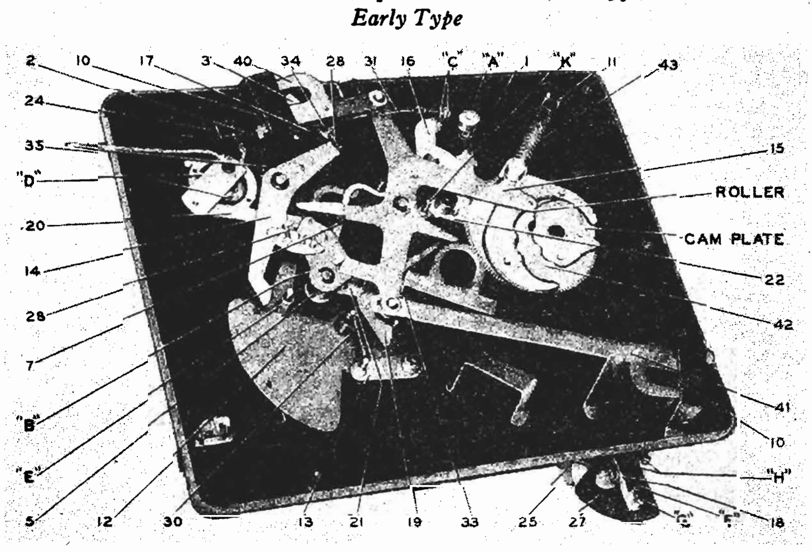
Automatic Record Changer

Two slightly different Record Changers are being used in the Stewart-Warner Model 01-6C9 Radio Phonograph Combination. The early type is shown in Figure 1a and the later one in Figure 1b. The two types are easily identified by the shape of the top covers of the record holder posts. The early type has plain cylindrical covers while the later type has knob shaped covers so they can be grasped easily.

The two types are practically identical in both operation and service. All the information contained in this Service Manual applies to both types unless otherwise indicated.



NOTE: Numbers refer to parts—letters refer to adjustments
Early Type

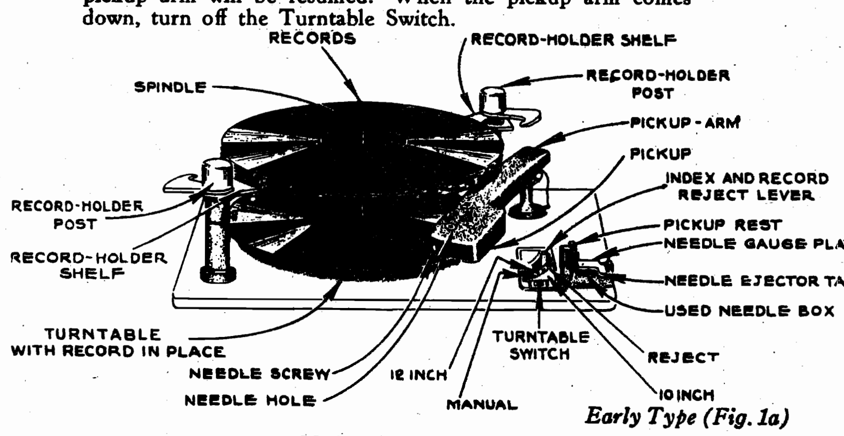


NOTE: Numbers refer to parts—letters refer to adjustments
Late Type

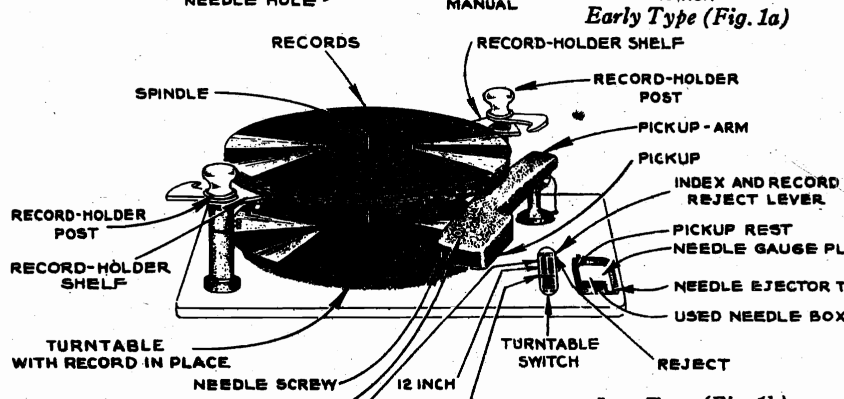
OPERATING INSTRUCTIONS

This Record Changer will automatically play a series of eight 10- or seven 12-inch records of the 78 revolutions-per-minute type or, if you so desire, you may play records, of any size up to 12 inches, manually. Records of the last few years with the standard eccentric or spiral stopping groove will operate the automatic mechanism and change your records for you. The Record Changer is for operation on 110 volts, 60 cycles.

Before operating the phonograph, either automatically or manually, be sure that the pickup is down and can be moved by hand. If not, a "cycle" must be completed to bring it down. To do this, throw Motor Switch "on." The turntable will start to revolve and the cycle of motion on the pickup arm will be resumed. When the pickup arm comes down, turn off the Turntable Switch.



Early Type (Fig. 1a)



Late Type (Fig. 1b)

STEWART-WARNER CORP.

MODEL 01-6C9, Ch. 01-6C
Notes, Parts

Cautions

1. Never use force to start or stop the motor or any part of the record-changing mechanism or pickup arm.

2. The use of records which have become warped or damaged through improper care may cause the mechanism to jam and damage the instrument. In addition, records which have become warped will slide on one another when playing, resulting in unsatisfactory reproduction.

3. This instrument is NOT RECOMMENDED for playing 10-inch and 12-inch records in mixed sequence. If the user desires this service he must be positive that all records are perfectly flat and free from warp. The Index and Record Reject Lever must be set at "10" and after playing the last selection the pickup will come down in position for a 10-inch record and repeat the playing of the record on a 10-inch diameter unless the Turntable Switch is turned off. Any jamming of the mechanism under these conditions indicates that the records used are not perfectly flat or that their edges are not sufficiently smooth to permit normal operation of the separators in dropping each record in sequence onto the turntable.

Controls and Moving Mechanism

Index and Record Reject Lever.—This lever is located near the right front corner of the motorboard with its index plate marked for four positions—"MANUAL," "12," "10," and "REJECT." When you desire to change record selections manually, this lever should be set in the "MANUAL" position. With the lever in the "12" position, the mechanism is set to play a series of 12-inch records automatically. To play either a series of 10-inch records, or 10- and 12-inch records mixed, the lever should be set at the "10" position.

To reject a record being played, or to start the record-changing cycle in case the record just played does not have the standard eccentric or spiral stopping groove, simply push the lever to the "REJECT" position and let go. The pickup will raise up and swing outwards and the next record will drop down. Upon releasing the lever, it will automatically return to the "10" position. If you are playing a series of 12-inch records, the lever should be returned to the "12" position after rejecting a record. Keep the lever in its "MANUAL" position when not actually playing records automatically.

Turntable Switch.—The switch located just in front of the Index and Record Reject Lever controls the current to the turntable motor. LEAVE THIS SWITCH IN THE "ON" POSITION AT ALL TIMES.

Pickup and Top-Loading Needle Socket.—The pickup is the new crystal type, with a hole in the top for insertion of needles. When not playing records, the pickup arm should be moved out to the right beyond the turntable and placed at rest on the support with the pickup over the needle gauge plate. The edge of the pickup in the early type record player must be in the groove provided, while in the later type, it should be just beyond the vertical lug on the corner of the used needle box. The pickup must be in this position to change needles.

To insert a needle initially, loosen the needle screw on the front of the pickup, place needle in hole at top so that it drops down against the needle gauge plate and then tighten up the needle screw.

Needle Ejector.—The extending tab on the needle gauge plate of the needle box operates the needle ejector. To change a needle, place pickup in rest position, loosen needle screw and press the extending tab on the needle gauge plate to drop the used needle into the box below. Release tab, allowing the needle gauge plate to swing back, and then insert a new needle in the pickup as described above.

The used needle box may be taken out and emptied by first lifting the pickup off its rest and allowing it to float between the rest and the turntable. Then tilt the box upwards at the front and lift out. To replace the box, tilt it upwards at front and lower it into the hole with the lug on the back of the box in the slot in the motorboard. Slide the lug under the motorboard and push the box in place. Replace the pickup on its rest.

Record Holder Shelves.—To place a record on the turntable or to remove records, raise the record holder shelves and swing clear of outer edge of record. Also push back vertical lever adjacent to the rear record holder post. You now have clear access to the turntable. Before loading the magazine for Automatic Operation swing the record holder shelves back into position.

Automatic Operation

1. Push the button marked "ON" and turn RADIO-PHONO switch to PHONO.

2. See that pickup is over needle gauge plate with needle properly in place. If not, complete a "cycle" as explained in the second paragraph under "OPERATING INSTRUCTIONS".

3. With Index and Record Reject Lever at "MANUAL" swing the record holder shelves out of the way and place the first of the series of records on the turntable. Swing the record holder shelves back into the position where they drop down slightly and snap into place. Then put the remainder of the records (up to seven 10-inch or six 12-inch records) on the record holder posts (as shown in Figure 1). The records should be arranged in the desired order with the desired selection face up and the last selection on top.

4. Set the Index and Record Reject Lever to the proper position. (See INDEX AND RECORD REJECT LEVER)

Manual Operation

To play records manually:
1. Proceed as in steps 1 and 2, under "AUTOMATIC OPERATION."
2. Place record on turntable with desired selection upwards.
3. Set Index and Record Reject Lever to "MANUAL" position.
4. Proceed as in steps 5, 6 and 7 under "AUTOMATIC OPERATION."

When you have finished playing, be sure that the turntable has stopped and the pickup is in the rest position over needle gauge plate. Never leave pickup with needle resting on a record or on the turntable.

5. Throw the Motor switch to "ON." This is the left hand knob on the front of the cabinet. The turntable should commence to revolve.

6. When turntable has attained speed, lift pickup and lower gently on to the record so that the needle point enters the outside groove.

7. Close the lid of the cabinet to eliminate mechanical reproduction of sound by the needle. Adjust the radio volume control knob to the desired volume and push in the tone control button giving the most pleasing tone.

The whole series of records will now play without further attention, and the last record will repeat until the Phono Motor Switch is turned off. **Allow the record-changing mechanism to complete its cycle before the turntable is stopped.** Then lift the pickup, swing the arm to the right beyond the edge of the record and lower it onto the pickup rest with pickup over needle gauge plate. The record player is then ready for reloading, or for manual operation.

NOTE.—A bind or a jam in the mechanism can usually be relieved by rotating the turntable by hand in the reverse direction.

PARTS LIST

OPERATING MECHANISM

Diagram No.	Part No.	DESCRIPTION
1	S-14209	Bumper—Main lever rubber bumper (early type only)
2	S-31151	Guide—Pickup lift cable guide (coil spring 80T 2-in. large)
3	S-31134	Bracket—Pickup locating lever-mounting bracket
5	S-6808	Clutch—Trip lever friction clutch assembly
7	S-31116	Finger—Trip lever friction finger assembly
10	S-31121	Gear—Record post gear
11	S-31123	Guide—Main lever spring guide
12	S-31114	Lever—Index lever assembly (early type)
	S-33992	Lever—Index lever assembly (late type)
13	S-31137	Lever—Index lever tension spring lever
14	S-31138	Lever—Locating lever and pawl assembly
15	S-31113	Lever—Main lever assembly (early type)
	S-33985	Lever—Main lever assembly (late type)
16	S-31140	Lever—Pickup lift cable lever and spring assembly
17	S-31135	Lever—Pickup locating lever assembly (early type)
	S-34002	Lever—Pickup locating lever assembly (late type)
18	S-31130	Lever—Record separator elevating lever complete with adjusting screws
19	S-31132	Lever—Trip detaining lever
20	S-31115	Lever—Trip lever assembly
21	S-31131	Lever—Trip regulator lever
22	S-31133	Pawl—Trip pawl assembly
23	S-31124	Pin—Record post drive pin
24	S-14207	Roller—Pickup lift cable roller and bracket assembly
25	S-31126	Separator—Record separator knife (early type)
	S-34775	Separator—Record separator knife and cap (late type)
26	S-31122	Shaft—Record separator post shaft (early type)
	S-33988	Shaft—Record separator post shaft (late type)
27	S-31125	Shelf—Record post shelf assembly (early type)
	S-33989	Shelf—Record post shelf assembly (late type)
28	S-14190	Spring—Pickup locating lever short spring or locating lever pawl tension spring (16 turns, .180-in. O.D., 19/32-in. lg.)
30	S-31136	Spring—Index lever tension spring (25 turns, .190-in. O.D., 15/16-in. lg.)
31	S-3666	Spring—Pickup lift cable tension spring (20 turns, .195-in. O.D., 1-in. lg.)
32	S-31127	Spring—Record separator pressure spring (8 turns, [illegible]-in. O.D., [illegible]-in. lg.) (early type only)
33	S-14191	Spring—Trip detaining lever tension spring (15 turns, .190-in. O.D., [illegible]-in. lg.)
34	S-31875	Spring—Pickup locating lever tension spring (14 turns, .220-in. O.D., 27/32-in. lg.)
35	S-32436	Spring—Locating lever tension spring (16 turns, .182-in. O.D., 21/32-in. lg.)
40	S-32880	Gear—Rack gear for rear right-hand record post
41	S-32879	Gear—Rack gear for front left-hand record post
42	S-32878	Cam—Cam and drive gear (early type)
	S-33987	Cam—Cam and drive gear (late type)
43	S-32882	Spring—Main lever tension spring (18 turns, .6-in. O.D., 3-in. lg.)
B	S-3117	Screw—Special screw to adjust friction clutch tension
S1	S-32875	Switch—Motor control switch

Note.—Most parts in the new type and old type record changers are identical. Parts which are not identical are marked "OLD TYPE" or "NEW TYPE." Refer to the first paragraph.

PICKUP AND ARM ASSEMBLIES

Part No.	Description
S-33096	Arm—Pickup arm—less crystal cartridge, needle screw, pivot arm and cable (early type)
S-34776	Arm—Pickup arm—less crystal cartridge, needle screw, pivot arm and cable (late type)
S-32635	Cable—Pickup arm lift cable and clips
S-31156	Crystal—Pickup crystal cartridge and needle screw (early type)
S-34710	Crystal—Pickup crystal cartridge and needle screw (late type)
S-33114	Damper—Viscoloid damper for crystal armature (early type)
S-33123	Damper—Viscoloid damper for crystal armature (late type)
S-31160	Screw—Pickup needle screw
S-31161	Shaft—Pickup pivot arm and shaft assembly

MOTORBOARD ASSEMBLIES

Part No.	Description
S-31149	Base—Tone arm mounting base
S-9848	Cup—Used needle cup, rest, and lid complete (early type)
S-33909	Cup—Used needle cup, rest, and lid complete (late type)
S-32877	Escutcheon—Index escutcheon (early type)
S-33979	Escutcheon—Index escutcheon (late type)
S-31150	Mounting—Pickup arm base rubber mounting complete
S-31155	Spring—Needle cup lid tension spring

MISCELLANEOUS ASSEMBLIES

Part No.	Description
S-31129	Cover—Cap for top of record post (early type only)
S-32883	Damper—Motor spindle rubber drive sleeve and metal damper plate
S-3676	Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 4-3/64-in. lg.)
S-31470	Springs—Motorboard mounting springs, screw and washers (4 required)
S-32881	Turntable—Complete (early type)
S-33991	Turntable—Complete (late type)
S-31128	Washer—"C" washer for top of record post

MOTOR ASSEMBLIES

Part No.	Description
S-32955	Coil—Field coil and laminations for 50-cycle motor
S-32954	Coil—Field coil and laminations for 60-cycle motor
S-32960	Gear—Motor spindle gear and pin
S-32872	Motor—Motor complete, 50-cycle, 110 volts AC
S-32871	Motor—Motor complete, 60-cycle, 110 volts AC
S-32958	Spindle—Turntable spindle complete with fibre gear for 50-cycle motor
S-32957	Spindle—Turntable spindle complete with fibre gear for 60-cycle motor

MODELS 05-5L1 to 05-5L9
Chassis 05-5L
Schematic, Voltage, Socket

STEWART-WARNER CORP.

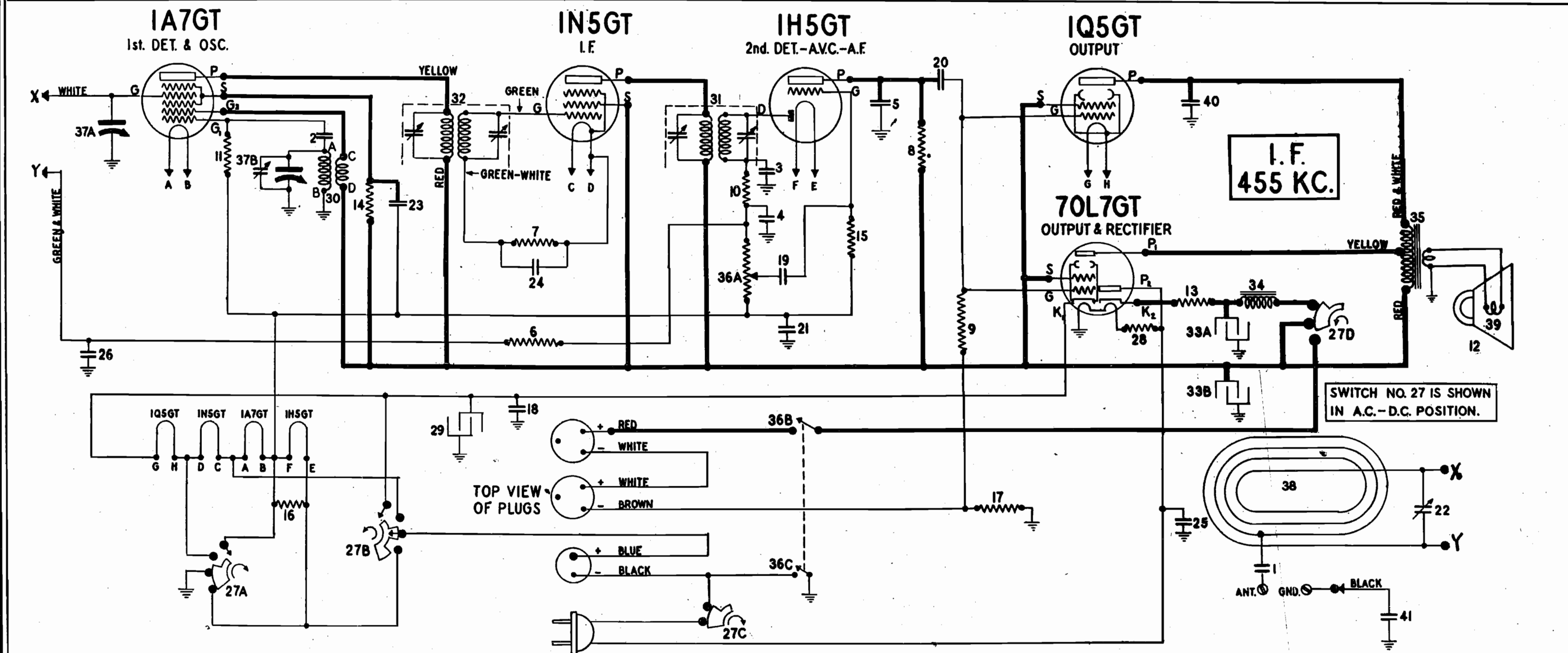
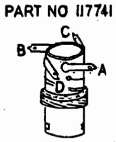


Diagram Number	Part Number	Description
1	83539	Condenser—mica, 260 mmfd.
2-3-4	83783	Condenser—mica, 110 mmfd.
5	85394	Condenser—mica, 510 mmfd.
6-7	110570	Resistor—carbon, 2.2 meg., 1/4 watt
8-9	112971	Resistor—470,000 ohms, 1/4 watt
10	112986	Resistor—100,000 ohms, 1/4 watt
11	112987	Resistor—insulated, 220,000 ohms, 1/4 watt
12	R-115069	Speaker—P.M. dynamic (5 in.)
13	116013	Resistor—50 ohms, 1 watt, W.W.
14	116058	Resistor—Insulated, 47,000 ohms, 1/4 watt
15	116071	Resistor—3.3 meg., 1/10 watt
16	116095	Resistor—220 ohms, 1/4 watt
17	116097	Resistor—Insulated, 400 ohms, 1/4 watt
18	116625	Condenser—.1 mfd., 600 volts
19-20	116640	Condenser—.01 mfd., 600 volts
21	116706	Condenser—.2 mfd., 600 volts
22	116781	Condenser—trimmer
23-24-25-26	116819	Condenser—.05 mfd., 600 volts
27A TO 27D	117719	Switch—(A.C.-D.C.-Battery)
28	117729	Resistor—360 ohms, 7.26 watts
29	117730	Condenser—100 mfd, 10 volt electrolytic
30	117741	Coil—oscillator
31	117742	Transformer—2nd I.F.
32	117743	Transformer—1st I.F.
33A-33B	117759	Condenser—dual 20 mfd., 150 volt
34	117888	Filter—choke
35	117891	Transformer—output
36A-36B-36C	117897	Volume control—1 megohm (with switch)
37A-37B	117902	Condenser—tuning
38	117914	Loop antenna
39	R-118003	Cone & voice coil for R-115069 speaker
40-41	118194	Condenser—.006 mfd., 600 volts

Part Number	Description
117708	Battery cable
117795	Battery retaining block
117837	Cabinet and back
112745	Clip—coil mounting
113019	Clip—dial scale retaining
113178	Cord—dial (supplied in 4 ft. lengths)
117802	Dial scale
117772	Knob (A.C.-D.C.-Battery)
117894	Knob—volume
117895	Knob—tuning
118732	Loop terminal strip with trimmer and contacts
116488	Nut—8-32 wing nut
117769	Plate—"Stewart-Warner"
117778	Plate—"A.C.-D.C. & BATT."
117779	Plate—"OFF—VOLUME"
117780	Plate—"TUNING"
116398	Plug—3 prong male
116397	Plug—2 prong male
116916	Pointer assembly
81145	Retaining ring—for drive shaft
83624	Screw—self tapping 8x1/4
113191	Screw—special No. 8-32x1 1/8
117716	Shield—tube
116690	Socket (octal base) (small)
111981	Spring—for dial cord tension
117896	Tuning shaft
84015	Washer—paper for back of knobs
116414	Window, dial

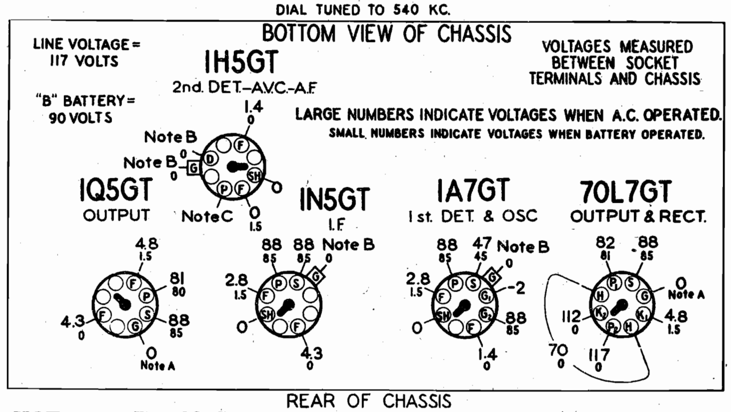
OSCILLATOR COIL
DIAGRAM NO. 30
PART NO 117741



NOTE
TERMINALS OF COIL SHOWN IN ILLUSTRATION ARE LETTERED TO CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM.

SOCKET VOLTAGES

DIAL TUNED TO 540 KC.



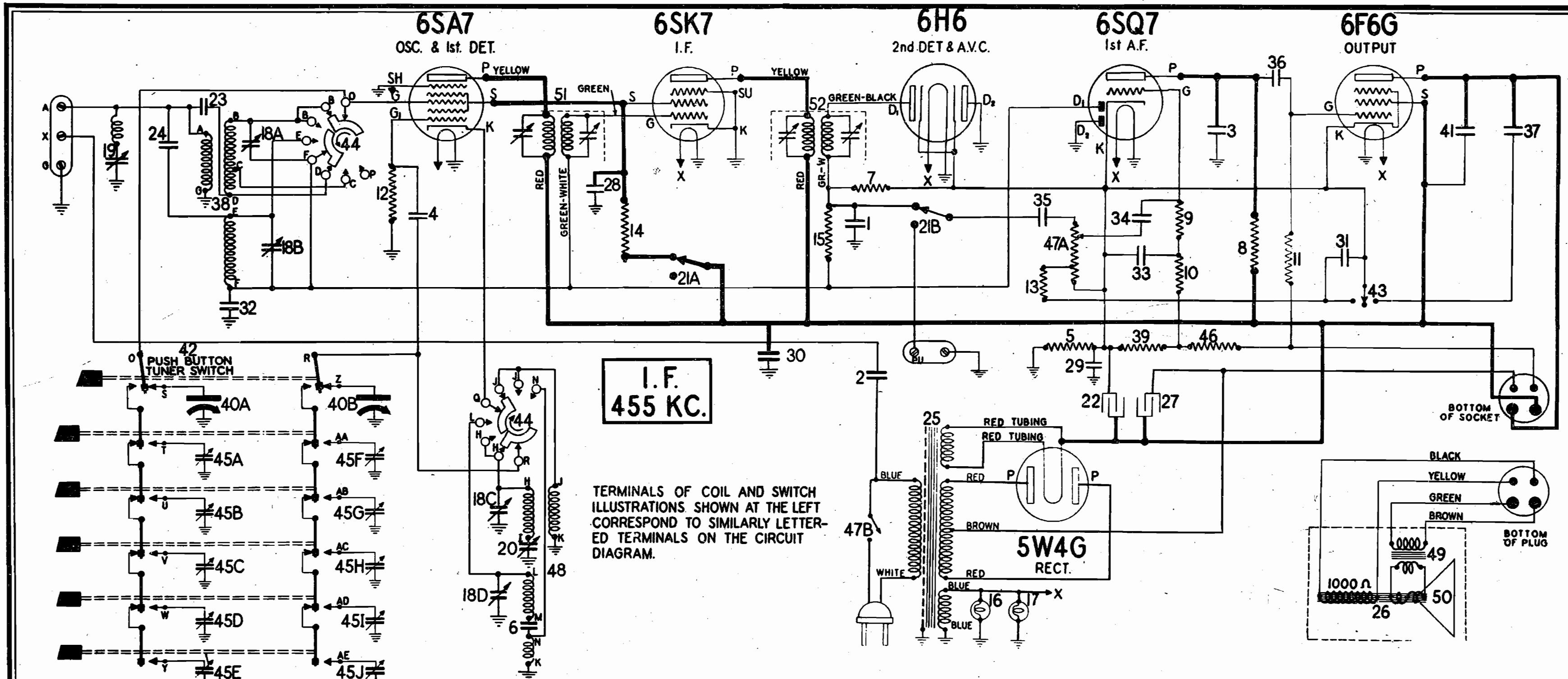
NOTE A: The 1Q5GT grid bias during battery operation is —5 volts measured across resistor 17.

NOTE B: During A.C.-D.C. operation these elements are slightly positive with respect to chassis. This voltage cannot be measured properly on ordinary meters.

NOTE C: Due to the high resistance of resistor 8, only a small voltage will be read on a meter having a resistance of 1000 ohms per volt.

STEWART-WARNER CORP.

MODELS 01-6E1 to 01-6E9
Chassis 01-6E
Schematic



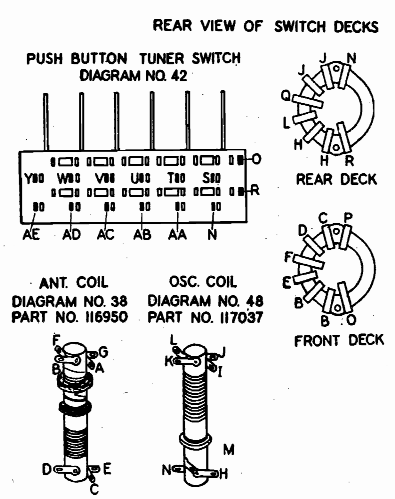


Diagram Number	Part Number	Description	List Price
1-2-3	83539	Condenser—mica 260 mmfd.	$0.20
4	85061	Condenser—mica 51 mmfd.	.15
5	88461	Resistor—carbon 150 ohms ¼ watt.	.12
6	88587	Condenser—mica .0042 mfd.	.35
7-8	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
9-10	110554	Resistor—carbon 1 megohm ¼ watt	.12
11	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
12-13	110566	Resistor—carbon 33,000 ohms ¼ watt	.12
14	110568	Resistor—carbon 15,000 ohms 1 watt	.15
15	110580	Resistor—carbon 3.3 meg. ¼ watt.	.12
16-17	110629	Lamp—6.3 volt—.25 amps	.15
18A to 18D	112792	Condenser—trimmer 4 section	.60
19	112796	Coil—wave trap (with trimmer)	.50
20	112799	Condenser—padder (530 to 630 mmfd.)	.36
21A-21B	114141	Switch—D.P.D.T.	.44
22	114258	Condenser—electrolytic 8 mfd. 450 volt	.98
23-24	114969	Condenser—mica 15 mmfd.	.12
25	114999	Transformer—power 117 volt 60 cycle	3.50
26	M-115059	Speaker—10" electro-dynamic	7.60
27	116262	Condenser—electrolytic 16 mfd. 450 volt	$0.78
28-29-30	116625	Condenser—.1 mfd. 600 volt	.25
31	116640	Condenser—.01 mfd. 600 volt	.15
32-33	116819	Condenser—.05 mfd. 600 volt	.20
34-35-36-37	116893	Condenser—.02 mfd. 600 volt	.15
38	116950	Coil—antenna	1.00
39	116967	Resistor—25 ohm 1 watt 10% wire wound	.16
40A-40B	116996	Condenser—variable gang	3.30
41	117022	Condenser—.002 mfd. 600 volt	.15
42	117024	Switch—push button	2.80
43	117025	Tone control	.60
44	117026	Range switch	1.30
45A to 45J	117027	Trimmer condenser gang	4.00
46	117032	Resistor—300 ohms 1 watt	.15
47A-47B	117035	Volume control with switch—1 meg.	1.00
48	117037	Coil—oscillator	.86
49	M-117091	Transformer—output for M-115059 speaker	1.50
50	M-117092	Cone and Voice coil assembly for M-115059 speaker	2.20
51	117885	Transformer—1st I.F.	1.10
52	117886	Transformer—2nd I.F.	1.10

MODELS 01-6E1 to 01-6E9
Alignment, Voltage
Trimmers, Socket

STEWART-WARNER CORP.

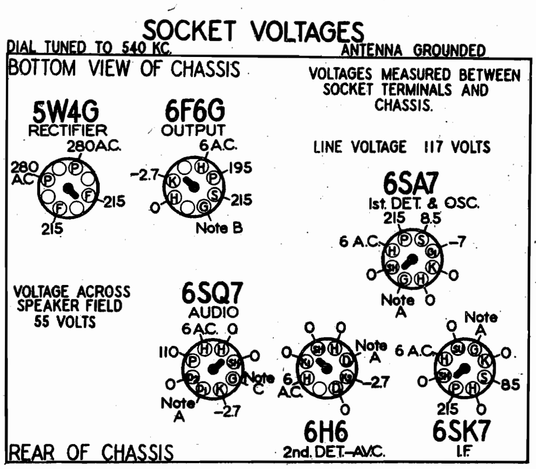
1. Connect the output meter across the voice coil or between the plate of the 6F6G output tube and ground in series with a .1 mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)

2. Connect the ground lead of the signal generator to the "G" terminal or the chassis. NOTE: Remove the connector from between the "A" and "X" terminals.

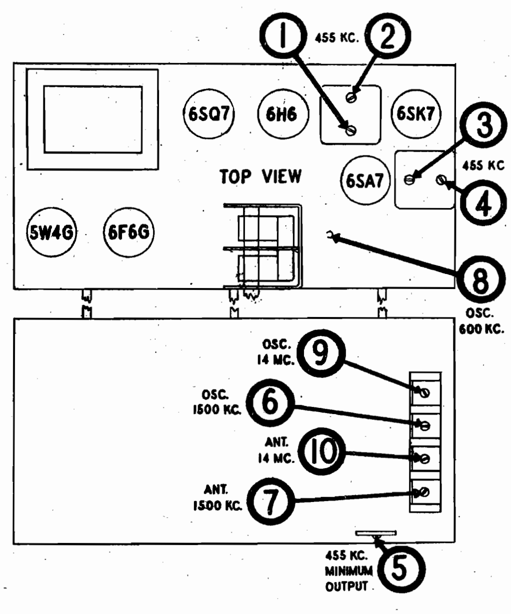
3. Turn the volume control to the maximum volume position and keep it in this position throughout the entire alignment procedure.

4. With the gang condenser in full mesh, set the pointer at a point 1⅜" from the left flange of the brown dial plate. This point corresponds to the last mark on the low frequency end of the dial scale. If the pointer is incorrectly set, it is only necessary to loosen the set screws on the dial drive drum and push the gang condenser in full mesh, with the pointer properly set, then retighten the set screws.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output To Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Front Lug of Gang Condenser	455 KC	Broadcast	Any Point Where It Does Not Affect The Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I. F.	
200 MMFD. Mica Condenser	"A" Terminal	455 KC	Broadcast	Any Point Where It Does Not Affect The Signal	5	Wave Trap	Adjust for minimum output using a strong generator signal.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	1500 KC (2⅜" from right Dial Plate end)	6	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	Tune To 1500 KC Generator Signal	7	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser.	"A" Terminal	600 KC	Broadcast	Tune to 600 KC Generator Signal	8	Broadcast Oscillator (Series Pad)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	"A" Terminal	14 MC	Foreign	14 MC (2-7/16" from right Dial Plate end)	9	Foreign Oscillator (Shunt)	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 13.1 MC. If image does not appear realign at 14 MC. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"A" Terminal	14 MC	Foreign	14 MC	10	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

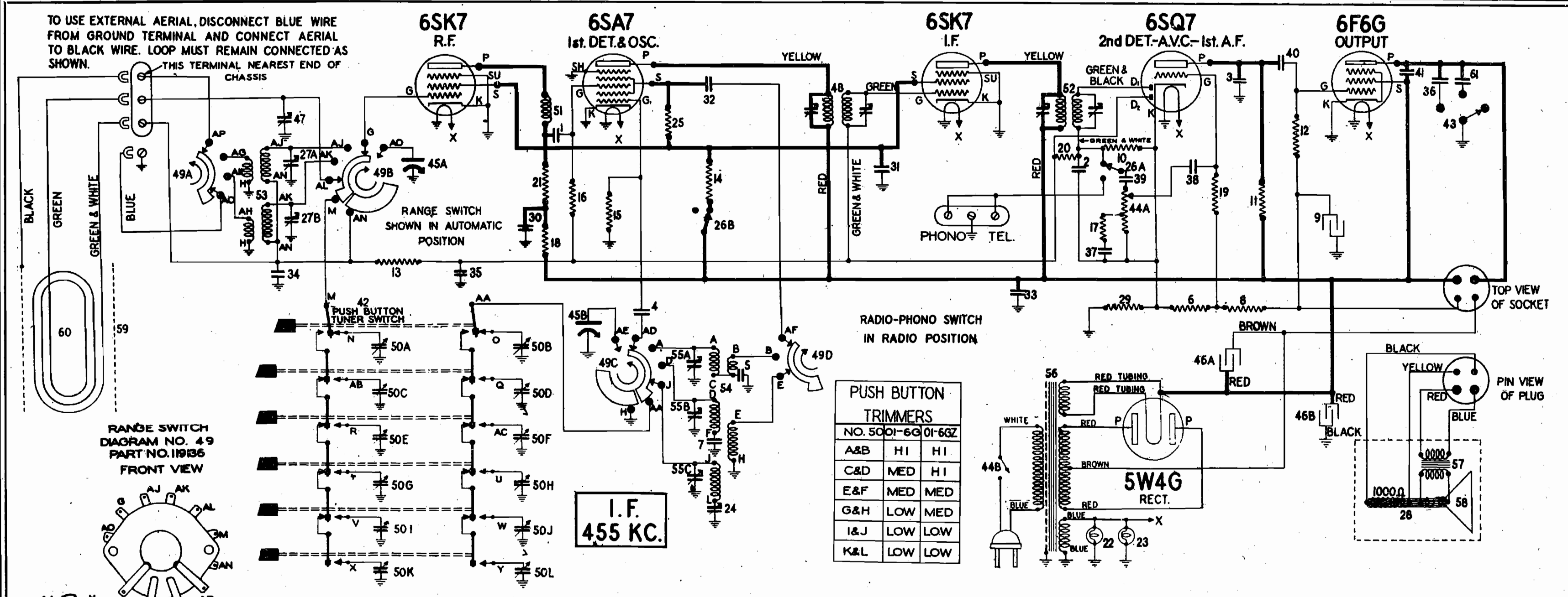


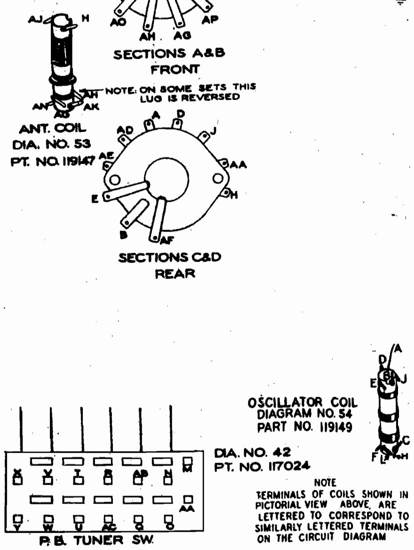
These readings taken using a voltmeter of 1000 ohms per volt.
NOTE A: The bias on the control grids of the 6SA7 and 6SK7 tubes and on diode plate D_1 of the 6H6 and 6SQ7 tubes is -2.7 volts, measured across resistor No. 5.
NOTE B: The bias on the control grid of the 6F6G tube is -17 volts measured across resistors No. 39 and 46.
NOTE C: The bias on the control grid of the 6SQ7 tube is -4 volts, measured across resistor No. 39.



STEWART-WARNER CORP.

MODELS 01-6G1, 01-6G4-1 to 01-6G4-5 inc. Ch. 01-6G
01-6G1-Z, 01-6G4-1-Z to 01-6G4-5-Z inc. Ch. 01-6G-Z
Schematic





ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2-3	83539	Condenser—mica 260 mmfd.	$0.20
4	85061	Condenser—mica 51 mmfd.	.15
5	85440	Condenser—mica .00351 mfd. 3%	.40
6	88465	Resistor—wire wound 25 ohms ½ watt	.15
7	89275	Condenser—mica .002 mfd.	.40
8	89762	Resistor—wire wound 220 ohms 1 watt	.16
9	110377	Condenser—electrolytic 10 mfd.—35 volts	.24
10-11-12	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
13	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
14	110561	Resistor—carbon 15,000 ohms 2 watts	.30
15-16	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
17	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
18	118805	Resistor—carbon 10,000 ohms 1 watt	.12
19	110570	Resistor—carbon 2.2 meg. ¼ watt	.12
20	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
21	110586	Resistor—carbon 2,200 ohms ¼ watt	.12
22-23	110629	Lamp—6.3 volt .25 amps.	.15
24	112799	Condenser—padder (530 to 630 mmfd.)	.36
25	112978	Resistor—insulated, 470 ohms ¼ watt	.12
	113035	Condenser—.006 mfd. 600 volt	.14
26A-26B	114141	Switch—D.P.D.T. (Radio-Phono)	.44
27A-27B	114937	Condenser—2 section trimmer	.40
28	U-115086	Speaker—dynamic 6 in.	4.95
29	116275	Resistor—wire wound 50 ohms ½ watt (10%)	.15
30-31	116625	Condenser—.1 mfd. 600 volt	.25
32	116640	Condenser—.01 mfd. 600 volt	.15
33	116706	Condenser—.2 mfd. 600 volt	.35
34-35	116819	Condenser—.05 mfd. 600 volt	.20
36-37-38-39-40	116893	Condenser—.02 mfd. 600 volt	.15
41	117022	Condenser—.002 mfd. 600 volt	.15
42	117024	Switch—push button	2.80
43	117025	Tone control switch	.60
44A-44B	117035	Volume control with switch—1 meg.	1.00
45A-45B	117527	Condenser—gang	3.25
46A-46B	118421	Condenser—electrolytic 10-15 mfd. 450 volts	1.50
47	118431	Condenser—trimmer	.22
	119024	Transformer—2nd I.F.	1.10
48	119042	Transformer—1st I.F.	1.10
49A to 49C	119136	Range switch	1.45
50A to 50L	119662	Condenser—push button trimmer (Low) 540 to 1000 KC.	.24
50A to 50L	119663	Condenser—push button trimmer (Med.) 750 to 1375 KC.	.24
50A to 50L	119664	Condenser—push button trimmer (Hi) 980 to 1550 KC.	.24
51	119138	Coil—compensating	.25
52	119024	Transformer—2nd I.F.	1.10
53	119147	Coil—antenna	1.10
54	119149	Coil—oscillator	1.10
55A-55B-55C	119174	Condenser—trimmer 3 section	.45
56	119205	Transformer—power	4.20
57	U-119226	Transformer—output for U-115086 speaker	1.10
58	U-119227	Cone & Voice coil for U-115086 speaker	1.65
59	119246	Shield for loop antenna	.45
60	119331	Cabinet back and loop antenna complete 01-6G1 & 01-6G1-Z	2.00
60	119349	Cabinet back and loop antenna complete 01-6G4-1 & 01-6G4-1-Z	2.00
60	119347	Cabinet back and loop antenna complete 01-6G4-2 & 01-6G4-2-Z, 01-6G4-3 & 01-6G4-3-Z, 01-6G4-5 & 01-6G4-5-Z	2.00
60	119352	Cabinet back and loop antenna complete 01-6G4-4 & 01-6G4-4-Z	2.00
61	113035	Condenser—.006 mfd. 600 volt	.14

CHASSIS 01-6G, 01-6G-Z
Alignment, Voltage, Socket
Trimmers

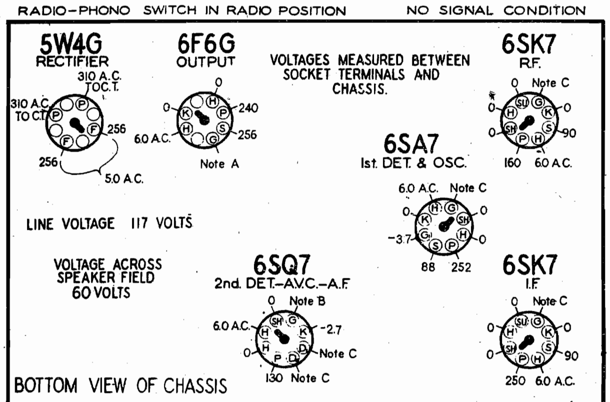
STEWART-WARNER CORP.

1. Connect the output meter across the voice coil or from the plate of the 6F6G output tube to ground through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis AND REMOVE THE BLUE WIRE FROM THE CHASSIS TERMINAL.
3. Turn the volume control to the maximum position and keep it in this position throughout the alignment procedure.
4. Set the pointer 2⅛" from left end of brown dial plate with condenser gang in full mesh.
5. The loop must be connected as indicated in circuit diagram at all times, and must be in the same relative position it occupies when the set is in the cabinet.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Lug on Front Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	Black Loop Wire	1500 KC	Broadcast	1500 KC 2⅞" from right end of dial plate	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD Mica Condenser	Black Loop Wire	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	6*	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Black Loop Wire	600 KC	Broadcast	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series Pad)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	Black Loop Wire	5 MC	Intermediate	5 MC 2-13/16" from right end of dial plate	8	Intermediate Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 4.1 MC. If Image does not appear, Realign at 5 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Black Loop Wire	5 MC	Intermediate	Tune to 5 MC Generator Signal	9	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	Black Loop Wire	16 MC	Foreign	16 MC 2-15/16" from right end of dial plate	10	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 15.1 MC. If Image does not appear, Realign at 16 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Black Loop Wire	16 MC	Foreign	Tune to 16 MC Generator Signal	11	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

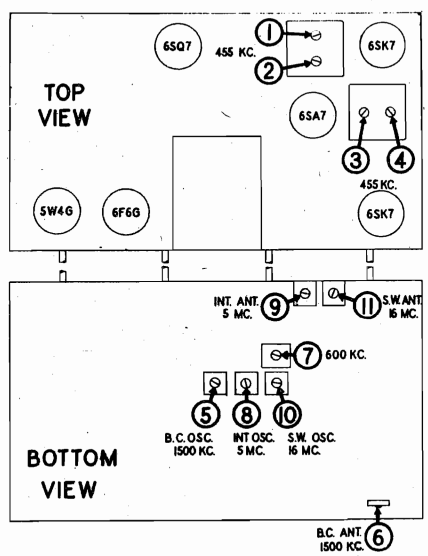
*NOTE: Realign trimmer No. 6 after set is in cabinet by connecting blue wire to ground terminal, placing range switch in broadcast position, and adjusting for maximum output on a weak signal at approximately 1500 KC.

RADIO-PHONO SWITCH IN RADIO POSITION   NO SIGNAL CONDITION



REAR OF CHASSIS

NOTE A: Bias on 6F6G output tube is —18 volts measured across resistors 29, 6 and 8.
NOTE B: Bias on 6SQ7 grid is —1.5 volts measured across resistor 6.
NOTE C: Bias on diode plates, 6SK7 I.F., 6SA7 DET., and 6SK7 R.F. is —3 volts measured across resistor 29.



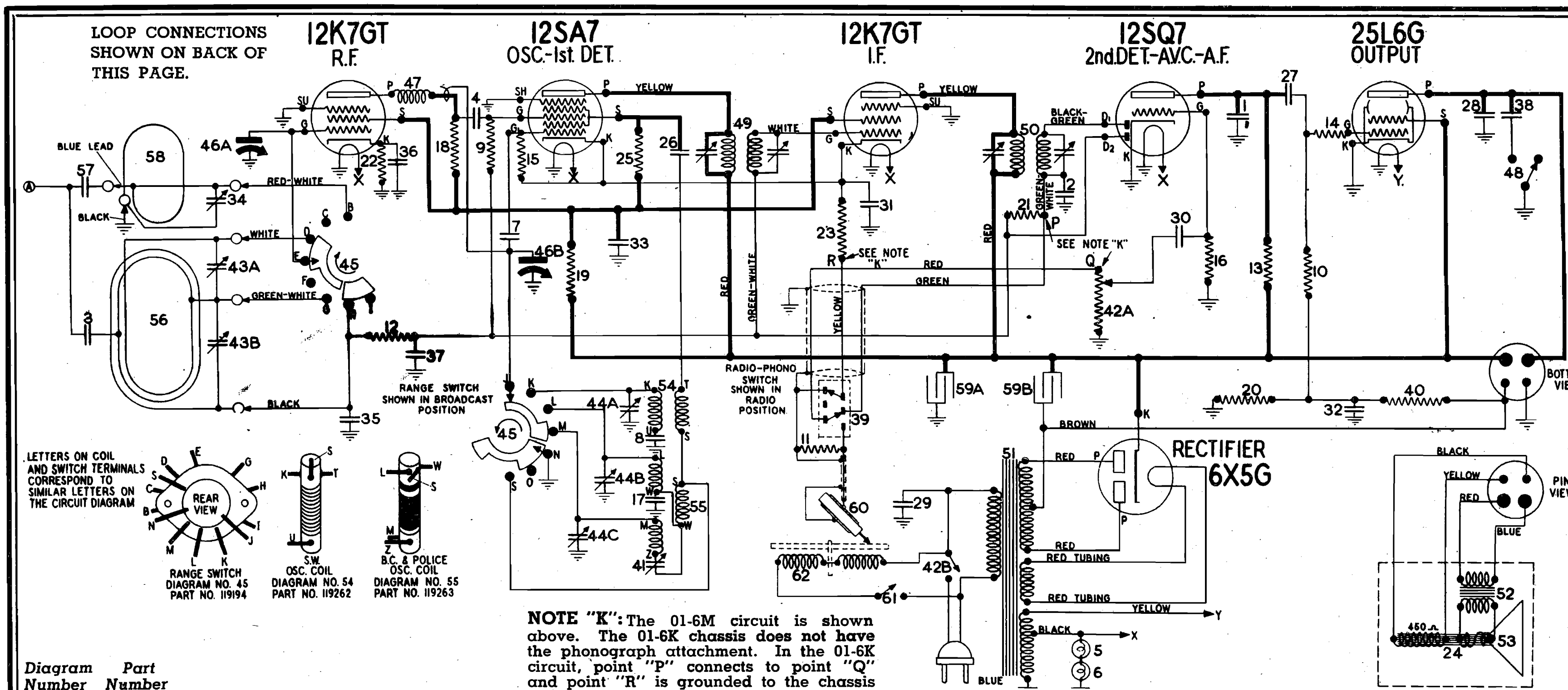
Part Number	Description	List Price
119317	Call letter tabs and instruction sheets	$0.45
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—dial drive (supplied in 2 foot lengths)	.15
116948	Cord—pointer drive (supplied in 6 ft. lengths)	.18
117029	Drive drum and bushing	.50
88348	Eyelet—for dial cord ... Per Dz.	.05
119202	Escutcheon and dial (01-6G1 & 01-6G1-Z)	.90
119373	Escutcheon and dial 01-6G4 & 01-6G4-Z)	.90
119209	Escutcheon and P. B. Assembly (01-6G1 & 01-6G1-Z)	1.15
116953	Escutcheon and P. B. Assembly (01-6G4 & 01-6G4-Z)	.90
119210	Escutcheon for push buttons (01-6G1 & 01-6G1-Z)	.30
116998	Escutcheon for push buttons (01-6G4 & 01-6G4-Z)	.30
119167	Knob (01-6G1 & 01-6G1-Z)	.10
116773	Knob (01-6G4 & 01-6G4-Z)	.10

CABINET BACKS

119332	Cabinet Back only (01-6G1 & 01-6G1-Z)	$1.80
119351	Cabinet Back only (01-6G4-1 & 01-6G4-1-Z)	.15
119348	Cabinet Back only (01-6G4-2 & 01-6G4-2-Z) (01-6G4-3 & 01-6G4-3-Z) (01-6G4-5 & 01-6G4-5-Z)	.15
119353	Cabinet Back only (01-6G4-4 & 01-6G4-4-Z)	.20
116952	Pin for push buttons	.02
117195	Pointer	.32
119211	Push button (01-6G1 & 01-6G1-Z)	.10
116999	Push button (01-6G4 & 01-6G4-Z)	.08
117019	Reflector—for pilot light	.04
81145	Retaining ring—for drive shaft ... Per C	.50

MODELS 01-6K1, Ch. 01-6K
01-6M9, Ch. 01-6M
Schematic, Voltage

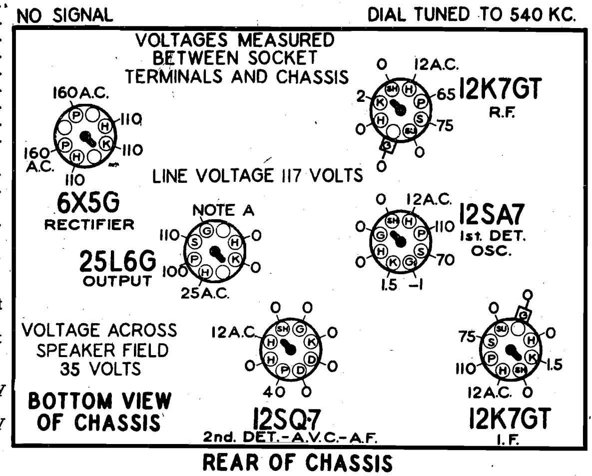
STEWART-WARNER CORP.



NOTE "K": The 01-6M circuit is shown above. The 01-6K chassis does not have the phonograph attachment. In the 01-6K circuit, point "P" connects to point "Q" and point "R" is grounded to the chassis

Diagram Number	Part Number		Diagram Number	Part Number	
1	83539	Condenser—mica 260 mmfd.	40	118809	Resistor—carbon 680,000 ohms 1/4 watt
2	83539	Condenser—mica 260 mmfd. (Model 01-6K only)	41	118919	Condenser—padding
	85061	Condenser—mica 50 mmfd. (Model 01-6M only)	42A-42B	119086	Volume control—1 meg. (with switch)
3-4	83783	Condenser—mica 110 mmfd.	43A-43B	119126	Trimmer condenser—2 section
5-6	85296	Lamp—6-8 volt Mazda No. 51	44A to 44C	119174	Condenser—trimmer 3 section
7	88173	Condenser—mica 50 mmfd.	45	119194	Switch—range
8	88587	Condenser—mica .0042 mfd.	46A-46B	119212	Condenser—gang (with drum)
9	110552	Resistor—carbon 47,000 ohms 1/4 watt	47	119213	Coil—compensating
10	110553	Resistor—carbon 220,000 ohms 1/4 watt	48	119214	Switch—tone control
11	110553	Resistor—carbon 220,000 ohms 1/4 watt (Model 01-6M only)	49	119220	Transformer—1st I.F.
12-13	110559	Resistor—carbon 470,000 ohms 1/4 watt	50	119221	Transformer—2nd I.F.
14	110560	Resistor—carbon 100 ohms 1/4 watt	51	119223	Transformer—power
15	110564	Resistor—carbon 100,000 ohms 1/4 watt	52	U-119228	Transformer—output—for U-115088 speaker
16	110580	Resistor—carbon 3.3 meg. 1/4 watt	53	U-119229	Cone & Voice coil assembly for U-115088 speaker
17	112426	Condenser—mica 1650 mmfd. (3%)	54	119262	Coil—short wave oscillator
18-19	112952	Resistor—carbon 3,300 ohms 1/4 watt	55	119263	Coil—B.C. & Pol. Oscillator
20	112956	Resistor—carbon 220,000 ohms 1/4 watt	56	119302	Loop antenna (BC & POL) with cabinet back (01-6K only)
21	112973	Resistor—carbon 1.5 meg. 1/4 watt		119620	Loop antenna (BC & POL) with cabinet back (01-6M only)
22	112978	Resistor—insulated 470 ohms 1/4 watt	57	119314	Condenser—mica 5 mmfd.
23	116062	Resistor—150 ohms 1/4 watt	58	119329	Short wave loop antenna assembly complete (01-6K only)
24	U-115088	Speaker—dynamic 6"		119622	Short wave loop antenna assembly complete (01-6M only)
25	118803	Resistor—680 ohms 1/4 watt	59A-59B	119343	Condenser—electrolytic 20-40 mfd. 200 volt
26-27-28	119193	Condenser—.01 mfd. 600 volt	60	119864	Crystal Cartridge (01-6M9)
29	119757	Condenser—.01 mfd. 600 volt (shielded)	61	119619	Automatic stop for motor (Model 01-6M only)
30	116647	Condenser—.004 mfd. 600 volt	62	119728	Motor (Model 01-6M only)
31-32-33	116706	Condenser—.2 mfd. 600 volt			
34	116781	Condenser—trimmer			
35-36-37	116819	Condenser—.05 mfd. 600 volt			
38	116984	Condenser—.04 mfd. 600 volt			
39	117054	Switch—"Radio-Phono" with escutcheon (Model 01-6M only)			

NO SIGNAL — DIAL TUNED TO 540 KC.



REAR OF CHASSIS

NOTE A: The bias on the control grid of the 25L6G tube is —9 volts, measured across resistor No. 20. Due to the high resistances involved the voltage measured will be less than this value.

CHASSIS 01-6K,01-6M
Alignment,Trimmers,Socket

STEWART-WARNER CORP.

ALIGNMENT PROCEDURE FOR 01-6K AND 01-6M CHASSIS

1. Connect the output meter across the voice coil or between the plate of the 25L6G output tube and ground in series with a .1 mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)

2. If a dummy antenna is used, connect the ground lead of the signal generator to the chassis. The information in the table below assumes a dummy antenna will be used when aligning this receiver.

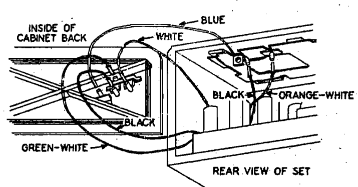
   If no dummy is to be used omit the connection from generator ground to the chassis. Then connect an unshielded lead to the output terminal of the signal generator and place the lead near the loops of the receiver, and make no connection to the antenna terminal on the rear of the cabinet.

3. Turn the volume control to the maximum clockwise position and keep it in this position throughout the entire alignment procedure.
4. With the gang condenser in full mesh, set the pointer so that its position is horizontal.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output To Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Position	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Grid of 12K7GT R.F. Tube	455 KC	Broadcast	Any Point Where It Does Not Affect Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	Antenna Terminal	1500 KC	Broadcast	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	Antenna Terminal	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	10	Broadcast Antenna	Place broadcast loop antenna in same position relative to chassis as it occupies when in cabinet. Adjust for maximum output.
200 MMFD. Mica Condenser	Antenna Terminal	600 KC	Broadcast	Tune to 600 KC Generator Signal	6	Broadcast Oscillator (Series)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	Antenna Terminal	5 MC	Intermediate	5 MC	7	Intermediate Oscillator (Shunt)	Adjust for maximum output. Check to see if proper peak is obtained by tuning in image at approx. 4.1 MC. If image does not appear realign at 5 MC with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Antenna Terminal	16 MC	Foreign	16 MC	8	Foreign Oscillator (Shunt)	Adjust for maximum output. Check to see if proper peak is obtained by tuning in image at approx. 15.1 MC. If image does not appear realign at 16 MC with trimmer screw farther out. Recheck image.
Before making the following adjustments, install the chassis and both loops in the cabinet							
400 OHM Carbon Resistor	Antenna Terminal	5 MC	Intermediate	Tune to 5 MC Generator Signal	9	Intermediate Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
200 MMFD. Mica Condenser	Antenna Terminal	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	10	Broadcast Antenna	Adjust for maximum output Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	Antenna Terminal	16 MC	Foreign	Tune to 16 MC Generator Signal	11	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

DIAL AND MISCELLANEOUS PARTS

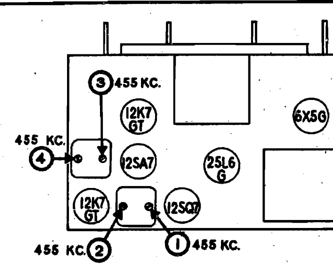
Part No.	Description	List Price
119304	Cabinet back (back only) Model 01-6K	$0.20
119621	Cabinet back (back only) Model 01-6M	.22
117117	Cable—for connecting motor (01-6M only)	.38
114955	Clamp—for dial cord	.01
113019	Clip—dial scale retaining	.01
112745	Clip—coil mounting	.01
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18
119618	Phono Pick-up arm (Model 01-6M only)	5.85
119274	Dial scale	.26
119208	Escutcheon—dial	.80
117806	Idler wheel with rubber rim (01-6M9)	.60
119167	Knob	.10
84571	Needle cup (Model 01-6M)	.10
110496	Plug—4 prong—for speaker	.12
116883	Pointer	.16
81145	Retaining ring—for drive shaft......Per C	.50
117807	Rubber rim for idler wheel (01-6M9)	.12
83624	Screw—self tapping 8 x 1/4	.01
112874	Screw—No. 10 x 1 1/8 chassis mtg	.01
119218	Screw for mounting escutcheon	.02
119204	Shaft-tuning	.10
85427	Socket—octal base (standard)	.15
110501	Socket—4 prong (for speaker)	.16
111008	Socket—dial lamp (grounded side)	.12
113122	Socket—dial lamp (ungrounded side)	.12
111090	Spacer—steel	.02
114968	Spring—dial cord tension	.03
119729	Turntable (Model 01-6M)	1.50
117816	Turntable shaft (01-6M9)	.35
110829	Washer—flat steel, for mtg. chassis	.01
116530	Washer (paper) for back of knobs	.005

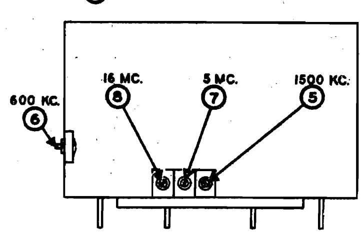


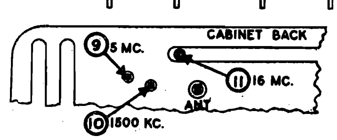
NOTE

If this receiver is to be used with an outside aerial, it is recommended when aligning the receiver that the signal generator be connected to the antenna terminal through the dummy antenna shown in the table above. If the set is to be used without an external aerial, it is preferable to make adjustments on Trimmers No. 6, 9, 10 and 11 with no connection to the antenna terminal, and with an unshielded wire from the signal generator output placed near the receiver loop.

When making the initial adjustment of Trimmers No. 10 and No. 6 the loops should be placed in their approximately correct position with respect to the chassis. Otherwise the adjustment of Trimmer No. 6 may be incorrect.



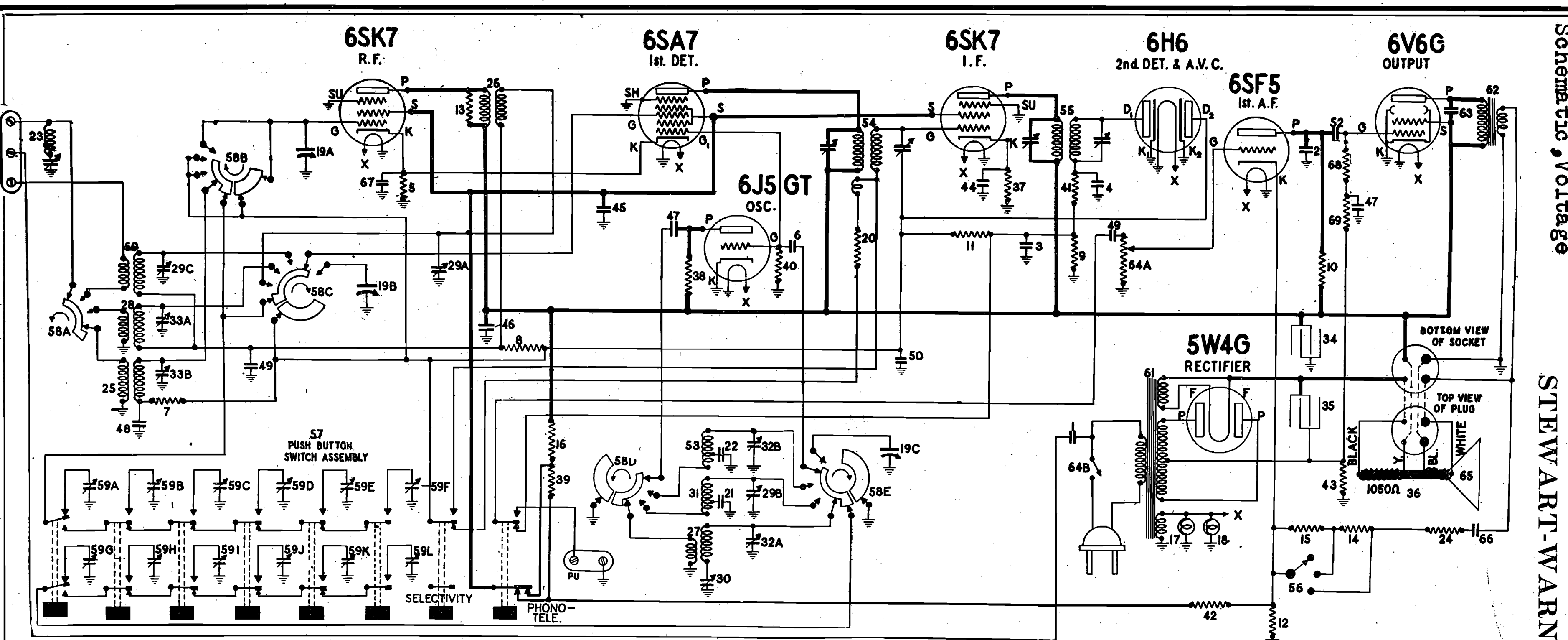




MODELS 01-8A1 to 01-8A9
Chassis 01-8A

Schematic, Voltage

STEWART-WARNER CORP.



SOCKET VOLTAGES

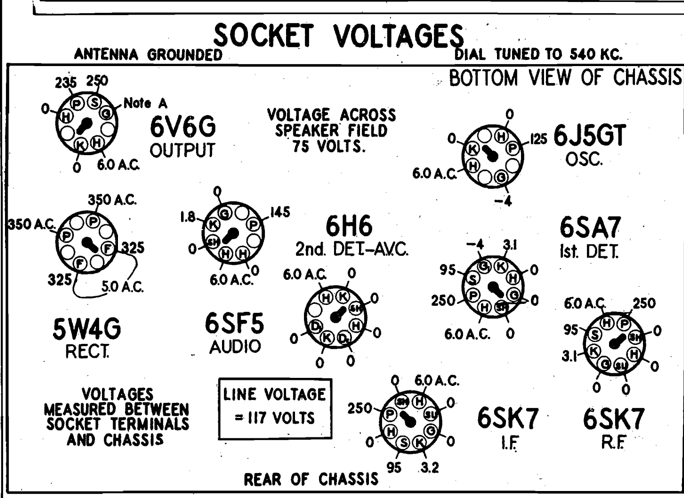


Diagram Number	Part Number	Description	Diagram Number	Part Number	Description
1-2	83539	Condenser—mica 260 mmfd.	34-35	114972	Condenser—electrolytic—16 mfd. 450 volt
3-4	83783	Condenser—mica 110 mmfd.	36	U-115071	Speaker—12" electro dynamic
5	84979	Resistor—250 ohms ½ watt Wire Wound	37	116015	Resistor—400 ohms ½ watt wire wound
6	85061	Condenser—mica 51 mmfd.	38-39	116055	Resistor—carbon 22,000 ohms ½ watt
7-8-9-10	110553	Resistor—carbon 220,000 ohms ¼ watt	40-41	116058	Resistor—47,000 ohms ¼ watt insulated
11	110554	Resistor—carbon 1 megohm ¼ watt	42	116086	Resistor—18,000 ohms 1 watt
12	110556	Resistor—330 ohms ¼ watt	43	116094	Resistor—220 ohms 2 watts wire wound
13-14	110573	Resistor—carbon 2,200 ohms ¼ watt	44-45-46	116625	Condenser—.1 mfd. 600 volt
15	110587	Resistor—3,900 ohms ¼ watt	47	116640	Condenser—.01 mfd. 600 volt
16	110595	Resistor—carbon 12,000 ohms 3 watts	48-49-50	116819	Condenser—.05 mfd. 600 volt
17-18	110629	Lamp—6.3 volt—.25 amps.	51-52	116893	Condenser—.02 mfd. 600 volt
19A-19B-19C	110936	Condenser—variable gang	53	117530	Coil—short wave oscillator
20	110975	Resistor—wire wound 33 ohms ½ watt	54	117616	Transformer—1st I.F.
21	112426	Condenser—mica 1650 mmfd.	55	117618	Transformer—2nd I.F.
22	112427	Condenser—mica 4050 mmfd.	56	117678	Switch—tone control
23	112796	Coil—wave trap with trimmer	57	117694	Push button switch
24	112978	Resistor—470 ohms ¼ watt	58A to 58E	117787	Range switch
25	113295	Coil—antenna (B.C.)	59A to 59L	117788	Condenser—trimmer gang
26	113296	Coil—R.F. (B.C.)	60	117819	Coil—short wave antenna
27	113297	Coil—Oscillator (B.C.)	61	117830	Transformer—power
28	113298	Coil—Antenna (Police)	62	118144	Transformer—output
29A-29B-29C	113320	Condenser—trimmer—3 section	63	118194	Condenser—.006 mfd. 600 volt
30	113346	Condenser—padding	64A-64B	118198	Volume control 1 meg. (with switch)
31	113412	Coil—oscillator (Police)	65	U-118202	Cone & Voice coil for U-115071 speaker
32A-32B, 33A-33B	114937	Condenser—trimmer—2 section	66-67	118206	Condenser—.25 mfd. 600 volt
			68-69	110553	Resistor—carbon 220,000 ohms ¼ watt

All voltages measured in radio position.
Use a high resistance voltmeter of at least 1000 ohms per volt.
NOTE A: The bias for the control grid of the 6V6G is 15 volts measured across resistor 43.

CHASSIS 01-8A
CHASSIS 01-8B
Alignment, Socket
Trimmers

STEWART-WARNER CORP.

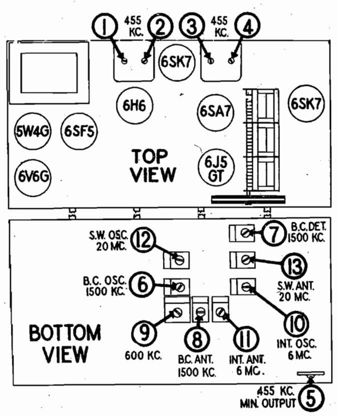
ALIGNMENT PROCEDURE FOR 01-8A CHASSIS

1. Connect the output meter across the voice coil or from the plate of the 6V6G output tube to ground through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis and remove the connector from between the "A" and "X" terminals.
3. Turn the volume control to the maximum volume position and keep it in this position throughout the alignment procedure.
4. Push in the "Selectivity" button and keep it pushed in. Check the pointer to see that it is correctly set.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD Condenser	Lug on Middle Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then Repeat Adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	"A" Terminal	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	5	Wave Trap	Adjust for Minimum Output, Using a Strong Generator Signal.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	1500 KC	6	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	7	Broadcast Detector	Adjust for Maximum Output.
					8	Broadcast Antenna	
200 MMFD. Mica Condenser	"A" Terminal	600 KC	Broadcast	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	"A" Terminal	6 MC	Intermediate	6 MC	10	Intermediate Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 5.1 MC. If Image does not appear, Realign at 6 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	"A" Terminal	6 MC	Intermediate	Tune to 6 MC Generator Signal	11	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	"A" Terminal	20 MC	Foreign	20 MC	12	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 19.1 MC. If Image does not appear, Realign at 20 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	"A" Terminal	20 MC	Foreign	Tune to 20 MC Generator Signal	13	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

MISCELLANEOUS PARTS

Part Number	Description	List Price
114032	Bracket & Pulley Assembly—right hand	$0.34
114034	Bracket & Pulley Assembly—left hand	.34
117012	Call tabs and instructions	.44
114042	Clamp—for dial scale	.10
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
112798	Clip—for mtg. wave trap coil	.01
85321	Connector—for internal antenna	.01
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18
117057	Cord—drive (supplied in 3 ft. lengths)	.15
114921	Dial background—brown suede paper	.10
114915	Dial mounting plate	.38
117840	Dial scale	.80
113338	Drum—dial drive	.54
114052	Escutcheon—dial	2.00
117757	Escutcheon—for push buttons	.40
116773	Knob—tuning, etc.	.10
117758	Pin—for push buttons	.02
117662	Pointer assembly	.32
112762	Pulley—dial cord drive	.04
116999	Push button	.08
113463	Rubber bushing—chassis mtg.	.03
83624	Screw—self tapping 8x¼	.01
85040	Screw—No. 6 Hex. Hd. Per C	.35
112874	Screw—No. 10x1⅛" chassis mtg.	.01
113191	Screw—special No. 8/32x1⅛	.01
114914	Screw—No. 2x⅜ Phillips head Per Doz.	.15
85827	Set Screw—8/32 square head	.02
118463	Screw—large adjusting for top deck P.B. trimmers	.03
118464	Screw—small adjusting for top deck P.B. trimmers	.03
118465	Screw—large adjusting for bottom deck P.B. trimmers	.03
85427	Socket—octal base (standard)	.15
110501	Socket—4 prong (for speaker)	.16
113025	Socket—octal base (with special ground)	.15
114117	Socket—dial lamp	.18
113177	Spring—dial cord tension	.09
117458	Spring—push button	.05
116536	Terminal strip (G.X.A.)	.15
84407	Terminal strip—phono	.12
117664	Tuning shaft	.32
116530	Washer—paper for back of knobs	.005



ALIGNMENT PROCEDURE FOR 01-8B CHASSIS

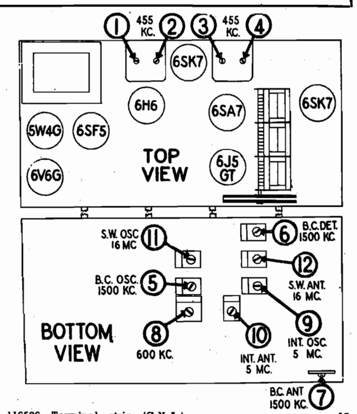
1. Connect the output meter across the voice coil or from the plate of the 6V6G output tube to ground through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis and remove the connector from between the "G" and "X" terminals.
3. Turn the volume control to the maximum volume position and keep it in this position throughout the alignment procedure.
4. Push in the "Selectivity" button and keep it pushed in. Check the pointer to see that it is correctly set.
5. The loop must be connected as indicated in circuit diagram at all times.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD Condenser	Lug on Middle Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	"A" Terminal	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	6	Broadcast Detector	Adjust for Maximum Output.
					7	Broadcast Antenna	
200 MMFD. Mica Condenser	"A" Terminal	600 KC	Broadcast	Tune to 600 KC Generator Signal	8	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	"A" Terminal	5 MC	Intermediate	5 MC	9	Intermediate Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 4.1 MC. If Image does not appear, Realign at 5 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	"A" Terminal	5 MC	Intermediate	Tune to 5 MC Generator Signal	10	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	"A" Terminal	16 MC	Foreign	16 MC	11	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 15.1 MC. If Image does not appear, Realign at 16 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	"A" Terminal	16 MC	Foreign	Tune to 16 MC Generator Signal	12	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

NOTE: Realign trimmer No. 7 after set is in cabinet by connecting "X" and "G" together, placing range switch in broadcast position, and adjusting for maximum output on a weak signal at approximately 1500 KC.

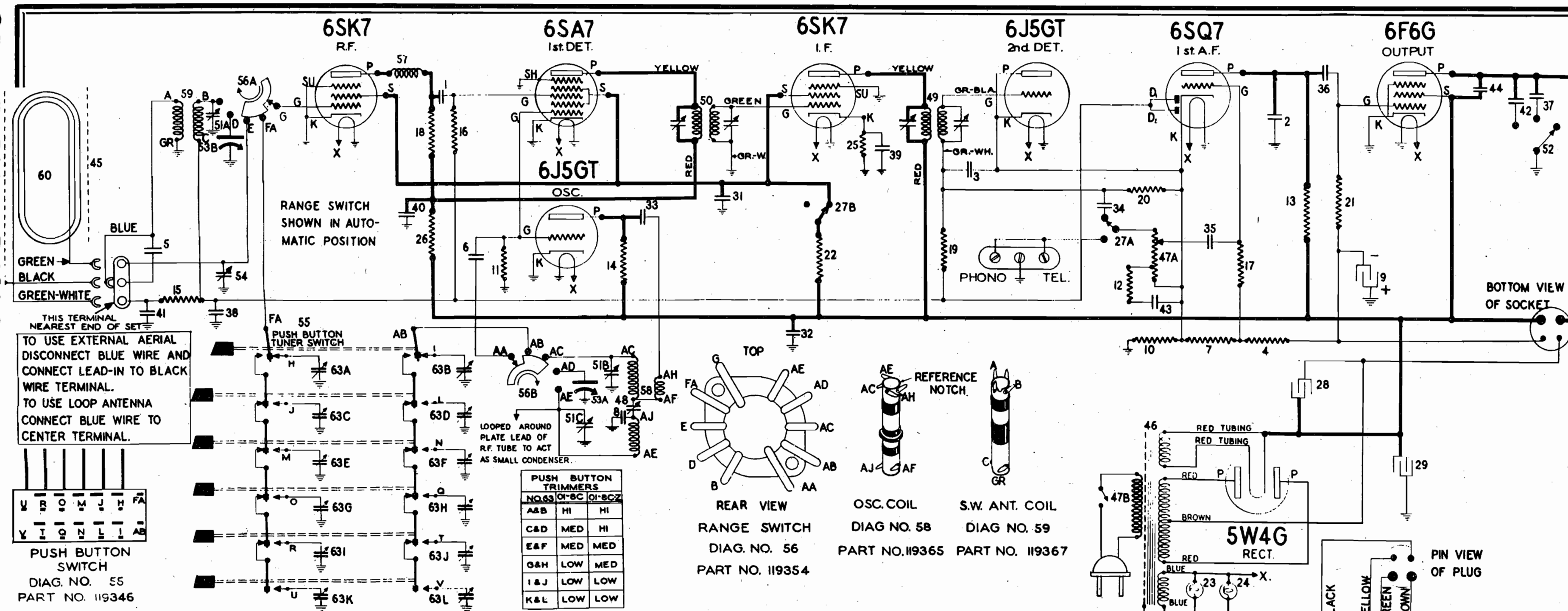
MISCELLANEOUS PARTS

Part Number	Description	List Price
114032	Bracket & Pulley Assembly—right hand	$0.34
114034	Bracket & Pulley Assembly—left hand	.34
118704	Call tabs and instructions	.45
114955	Clamp—for dial cord	.01
114042	Clamp for dial scale	.10
112745	Clip—coil mounting	.01
85321	Connector—for internal antenna	.01
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18
117057	Cord—drive (supplied in 2 ft. lengths)	.15
110075	Cup washer for gang condenser mounting	.02
111973	Cushion—rubber rest for back of chassis	.06
114921	Dial back ground—brown suede paper	.10
114915	Dial mounting plate	.38
118699	Dial scale	.85
118480	Disc—for end of loop antenna	.05
113338	Drum—dial drive	.54
114052	Escutcheon—dial	2.00
117757	Escutcheon—for push buttons	.40
88348	Eyelet—pointer rope Per Doz.	.05
116773	Knob—tuning or volume	.10
117758	Pin—for push buttons	.02
117662	Pointer assembly	.32
116999	Push buttons	.08
113463	Rubber bushing—chassis mtg.	.03
83722	Rubber grommet for gang condenser mounting	.03
93624	Screw—self tapping 8x¼	.01
85040	Screw—No. 6 Hex. Hd. Per C	.35
112874	Screw—No. 10x1⅛ Chassis mtg.	.01
113191	Screw—special No. 8/32x1⅛	.01
114914	Screw—special head—for mounting escutcheon Per Doz.	.15
118463	Screw—large adjusting for top deck P.B. trimmers	.03
118464	Screw—small adjusting for top deck P.B. trimmers	.03
118465	Screw—large adjusting for bottom deck P.B. trimmers	.03
85827	Set Screw—8-32 Square Head (Drive drum)	.02
85427	Socket—octal base (standard)	.15
110501	Socket—4 prong (for speaker)	.16
113025	Socket—octal base (with special ground)	.15
114117	Socket—dial lamp	.18
113177	Spring—dial cord tension	.09
117458	Spring for push buttons	.05
116536	Terminal strip (G.X.A.)	.15
118691	Terminal strip (1-2-3)	.12
84407	Terminal strip (phono)	.12
113205	Thrust Plate—for tuning shaft	.02
117664	Tuning shaft	.32
116530	Washer (paper) for back of knobs	.005



MODELS 01-8C7,Ch.01-8C
01-8C7-Z,Ch.01-8C-Z
Schematic,Voltage

STEWART-WARNER CORP.



All measurements made with a voltmeter of 1000 ohms per volt.

NOTE A: Bias for the 6F6G output tube is 23.5 volts measured across resistors No. 10, 7 & 4.

NOTE B: Voltage on the triode grid of the 6SQ7 audio tube is —2 volts measured across resistor No. 7.

NOTE C: Bias for the 6SK7 R.F and 6SA7 1st det. grids and voltage on the 6J5GT 2nd det. grid and diode plates on 6SQ7 is —3 volts measured across resistor No. 10.

SOCKET VOLTAGES

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.

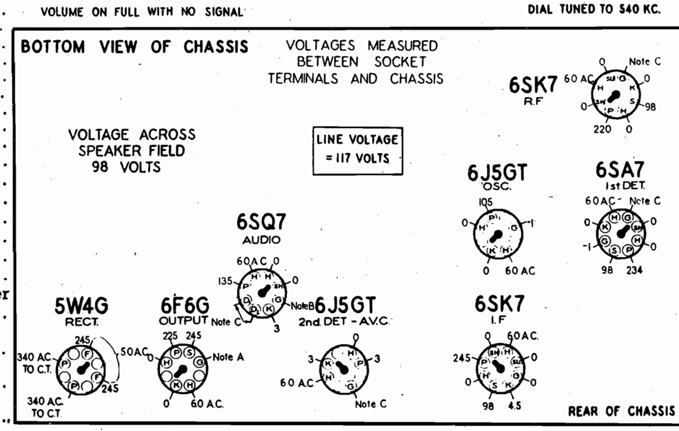


Diagram Number	Part Number	Description
1-2	83539	Condenser—mica 260 mmfd.
3	83783	Condenser—mica 110 mmfd.
4	88460	Resistor—wire wound 150 ohms ½ watt
5-6	85061	Condenser—mica 51 mmfd.
7	88465	Resistor—25 ohms ½ watt W.W.
8	38587	Condenser—mica .0042 mfd.
9	110377	Condenser—electrolytic 10 mfd. 35 volt
10	110534	Resistor—wire wound 40 ohms ½ watt
11-12	110552	Resistor—carbon 47,000 ohms ¼ watt.
13	110553	Resistor—carbon 220,000 ohms ¼ watt.
14	110558	Resistor—carbon 33,000 ohms ½ watt.
15	110559	Resistor—carbon 470,000 ohms ¼ watt.
16	110564	Resistor—carbon 100,000 ohms ¼ watt.
17	110570	Resistor—carbon 2.2 meg. ¼ watt.
18	110573	Resistor—carbon 2,200 ohms ¼ watt.
19	110580	Resistor—carbon 3.3 meg. ¼ watt.
20-21	110584	Resistor—carbon 330,000 ohms ¼ watt.
22	110595	Resistor—carbon 12,000 ohms 3 watts.
23-24	110629	Lamp—6.3 volt—.25 amps.
25	112978	Resistor—insulated 470 ohms ¼ watt.
26	112980	Resistor—carbon 1000 ohms ¼ watt.
27A-27B	114141	Switch—D.P.D.T.
28-29	114972	Condenser—electrolytic 16 mfd. 450 volt.
30	U-115091	Speaker—dynamic 10"
31-32	116625	Condenser—.1 mfd. 600 volt.
33 to 37	116640	Condenser—.01 mfd. 600 volt.
38 to 41	116819	Condenser—.05 mfd. 600 volt.

Diagram Number	Part Number	Description
42-43	116893	Condenser—.02 mfd. 600 volt.
44	117022	Condenser—.002 mfd. 600 volt.
45	118475	Shield for loop antenna.
46	118665	Transformer—power
47A-47B	118669	Volume control with switch 1 meg.
48	118919	Condenser—padding
49	119024	Transformer—2nd I.F.
50	119042	Transformer—1st I.F.
51A-51B-51C	119174	Condenser—trimmer—3 section
52	119289	Switch—tone
53A-53B	119291	Condenser—variable tuning
54	119345	Condenser—trimmer
55	119346	Switch—push button
56A-56B	119354	Switch—range
57	119362	Coil—compensating
58	119365	Coil—oscillator
59	119367	Coil—S. W. antenna
60	119390	Loop antenna (complete
61	U-119464	Transformer—output for U-115091 speaker
62	U-119465	Cone & Voice coil for U-115091 speaker.
63A to 63L	119662	Condenser—push button trimmer (Low) 540 to 1000 KC.
63A to 63L	119663	Condenser—push button trimmer (Med.) 750 to 1375 KC.
63A to 63L	119664	Condenser—push button trimmer (Hi) 980 to 1550 KC.

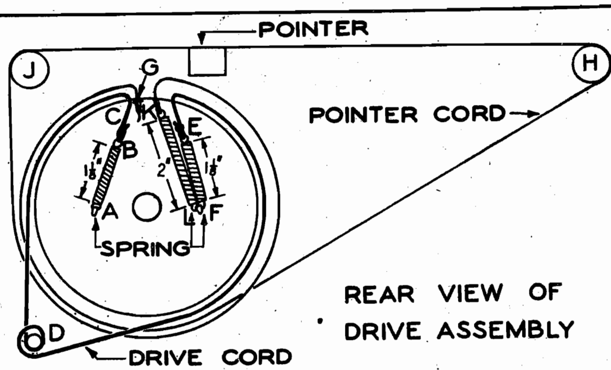
MODELS 01-8C7,01-8C7-Z
Alignment,Socket,Trimmers
Drive Cord Data

STEWART-WARNER CORP.

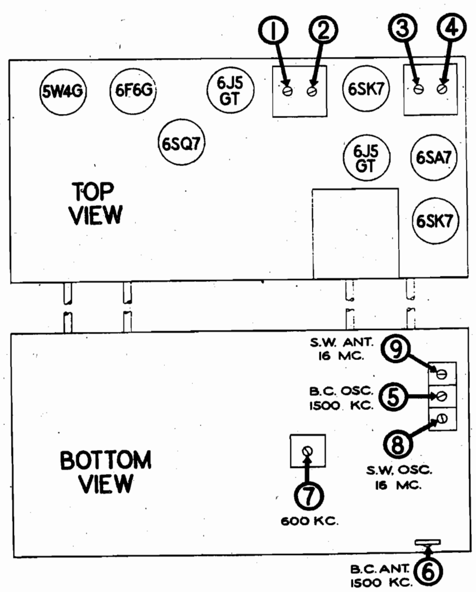
1. Connect the output meter across the voice coil or from the plate of the 6F6G output tube to ground through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis and REMOVE THE BLUE WIRE FROM THE CENTER SCREW ON ANTENNA TERMINAL STRIP.
3. Turn the volume control to the maximum position and keep it in this position throughout the alignment procedure.
4. Check the pointer to see that it is correctly set to 540 KC with gang in full mesh.
5. The loop must be connected as indicated in circuit diagram at all times.
6. With some signal generators it may be found that reducing the input to a useable value is impossible using the dummy antennas recommended below. In such cases the signal generator may be disconnected entirely from the set and the R. F. lead of the signal generator placed in the vicinity of the loop. On the S. W. position the shield wire (black) may be disconnected from set and input fed to center terminal.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Lug on Rear Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	Center Screw on Antenna Terminal Strip	1500 KC	Broadcast	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Center Screw on Antenna Terminal Strip	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	6*	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Center Screw on Antenna Terminal Strip	600 KC	Broadcast	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	Center Screw on Antenna Terminal Strip	16 MC	Foreign	16 MC	8	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 15.1 MC. If Image does not appear, Realign at 16 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Center Screw on Antenna Terminal Strip	16 MC	Foreign	Tune to 16 MC Generator Signal	9	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*NOTE: Realign trimmer No. 6 after set is in cabinet by connecting blue wire to center screw on antenna terminal strip, placing range switch in broadcast position, and adjusting for maximum output on a weak signal at approximately 1500 KC.



REAR VIEW OF DRIVE ASSEMBLY



TO REPLACE THE TUNING DRIVE CORD

1. Make a loop in one end of the dial drive cord (Part No. 117057 and fasten a spring (Part No. 113177) to this loop.
2. Fasten the spring to tab A and pass the cord through hole C in the rear of the drum.
3. Make one and one half turns of the cord about tuning shaft D.
4. Continue the cord around the drum through the other hole in the rear of the drum and form a loop at E. Fasten a spring (Part No. 113177) to the loop and adjust the loop to give the approximate dimension indicated.
5. Fasten the spring to tab F.

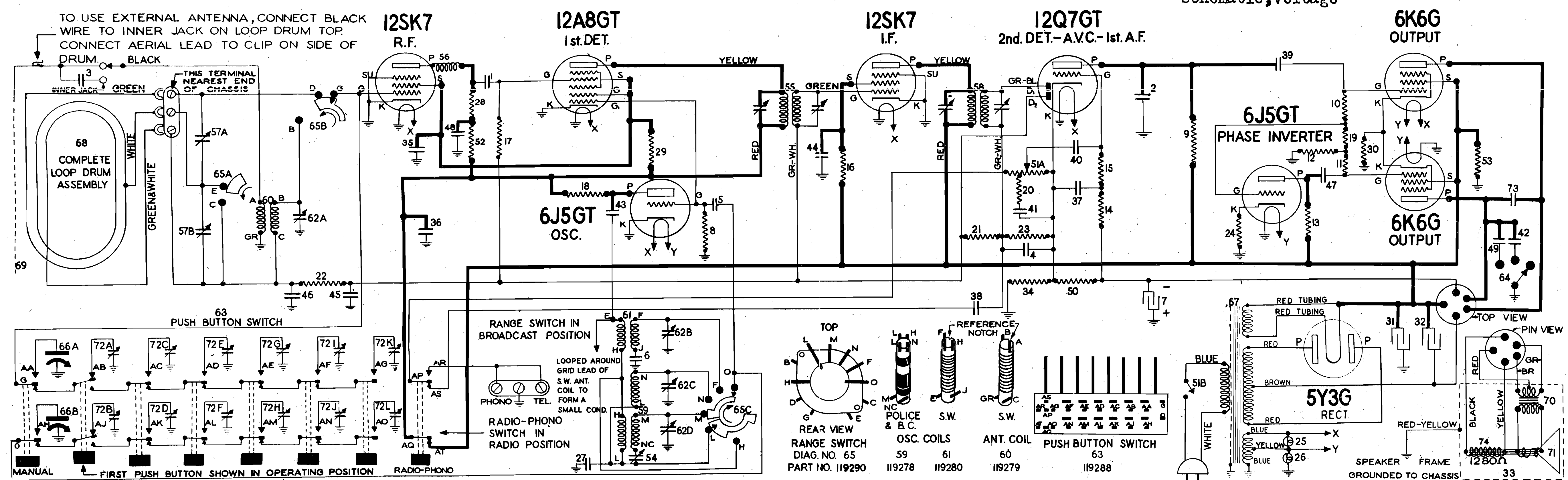
TO REPLACE THE POINTER DRIVE CORD

1. Fasten an eyelet (Part No. 88348) at a point one-half inch from one end of the cord (Part No. 116948) and pass the cord through hole G in the front of the drum.
2. Continue the cord around the drum and around pulley H.
3. Go from pulley H to pulley J and around the drum through hole K in the front of the drum.
4. Fasten a spring (Part No. 113177) at this point by forming a loop in the cord.
5. Adjust the loop so that the spring is extended to 2 inches.
6. Fasten the spring to tab L.

7. The condenser should be one quarter meshed (or at an angle of 45°) when the drum is in the indicated position.
8. Cement the pointer to the pointer drive cord so that it reads 540 KC with the gang in full mesh.

STEWART-WARNER CORP.

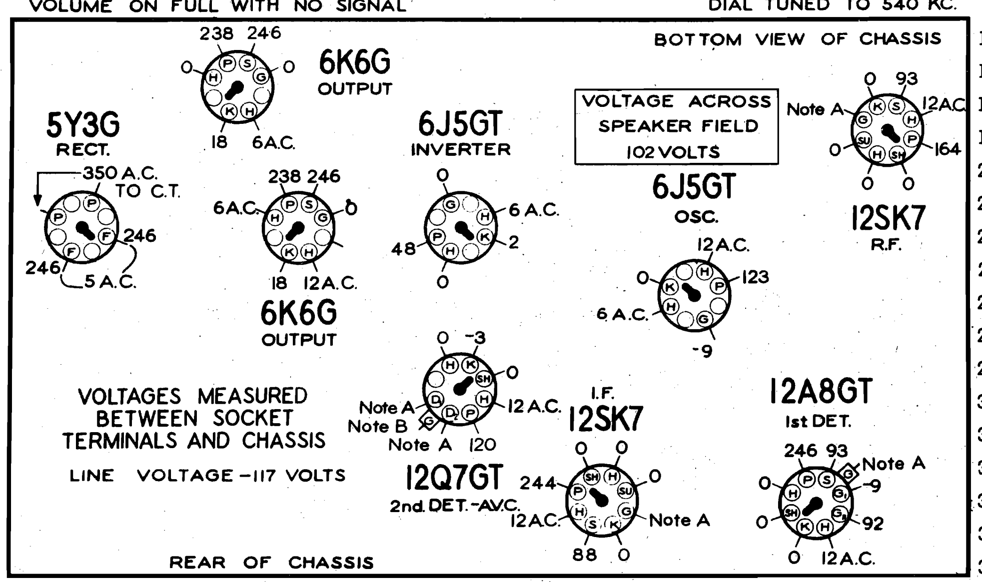
MODELS 01-9A7,Ch.01-9A;01-9A7-Z,Ch.01-9A-Z
Schematic,Voltage



PUSH BUTTON TRIMMER RANGES

TRIMMER CONDENSERS	01-9A RANGE	01-9A-Z RANGE
72L & 72K	540 KC. to 1000 KC.	540 KC. to 1000 KC.
72J & 72I	540 KC. to 1000 KC.	540 KC. to 1000 KC.
72H & 72G	540 KC. to 1000 KC.	750 KC. to 1375 KC.
72F & 72E	750 KC. to 1375 KC.	750 KC. to 1375 KC.
72D & 72C	750 KC. to 1375 KC.	980 KC. to 1550 KC.
72B & 72A	980 KC. to 1550 KC.	980 KC. to 1550 KC.

VOLUME ON FULL WITH NO SIGNAL   DIAL TUNED TO 540 KC.



USE A HIGH RESISTANCE VOLTMETER OF AT LEAST 1000 OHMS PER VOLT.

NOTE A: The bias on the 12SK7 R.F., 12A8GT 1st Det., 12SK7 I.F., and the diode plates of the 12Q7GT 2nd Det. is —3 volts measured across resistor No. 34.

NOTE B: Bias on the grid of the 12Q7GT 1st Audio is —1.8 volts measured across resistor No. 50.

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3-4	83783	Condenser—mica 110 mmfd.	.20
5	85061	Condenser—mica 51 mmfd.	.15
6	88587	Condenser—mica .0042 mfd.	.35
7	110377	Condenser—electrolytic 10 mfd. 35 volt	.80
8	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
9 to 13	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
14-15	110554	Resistor—carbon 1 megohm ¼ watt	.12
16-17	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
18	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
19-20	110566	Resistor—carbon 33,000 ohms ¼ watt	.12
21	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
22-23	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
24	110573	Resistor—carbon 2,200 ohms ¼ watt	.12
25-26	110629	Lamp—6.3 volt .25 amps	.15
27	112426	Condenser—mica 1650 mmfd. (3%)	.30
28	112952	Resistor—carbon 3,300 ohms ¼ watt	.10
29	112998	Resistor—insulated 22,000 ohms 2 watts	.20
30	114334	Resistor—wire wound 360 ohms 2 watts (10%)	.20
31-32	114972	Condenser—electrolytic 16 mfd. 450 volt	.78
33	R-115089	Speaker—dynamic (12")	10.00
34	116479	Resistor—wire wound 33 ohms 3 watts	.20
35 to 37	116625	Condenser—.1 mfd. 600 volt	.25
38 to 43	116640	Condenser—.01 mfd. 600 volt	15
44 to 48	116819	Condenser—.05 mfd. 600 volt	.20
49	116984	Condenser—.04 mfd. 600 volt	.20
	117022	Condenser—.002 mfd. 600 volt	.15
50	117395	Resistor—20 ohms 1 watt	.16
51A-51B	118669	Volume control—1 meg. (with switch)	1.40
52	118805	Resistor—carbon 10,000 ohms 1 watt	.12
53	118808	Resistor—27,000 ohms 3 watts	.22
54	118919	Condenser—padding	.40
55	119042	Transformer—1st I.F.	1.10
56	119138	Coil—compensating	.25
57A-57B	119275	Condenser—trimmer (for loop) 2 section	.30
58	119277	Transformer—2nd I.F.	1.10
59	119278	Coil—B.C. & Police Oscillator	.60
60	119279	Coil—short wave antenna	.62
61	119280	Coil—short wave oscillator	.62
62A to 62D	119283	Condenser—trimmer (4 section)	.60
63	119288	Switch—push button	2.50
64	119289	Switch—tone	.60
65A to 65C	119290	Switch—range	1.00
66A-66B	119291	Condenser—variable tuning	2.90
67	119381	Transformer—power	5.40
68	119391	Loop Antenna—complete	3.20
69	119392	Loop Antenna—shield	1.00
70	R-119512	Transformer—output for R-115089 speaker	1.55
71	R-119513	Cone & voice coil for R-115089 speaker	2.20
72A to 72L	119662	Condenser—P. B. Trimmer (Low) 540 to 1000 KC	.24
	119663	Condenser—P. B Trimmer (Med.) 750 to 1375 KC	.24
	119664	Condenser—P. B. Trimmer (Hi) 980 to 1550 KC	.24
73	117022	Condenser—.002 mfd. 600 volt	.15
74	R-119767	Field Coil—for R-115089 speaker	2.50

CHASSIS 01-9A, 01-9A-Z
Alignment, Trimmers, Socket, Loop, Drive Cord

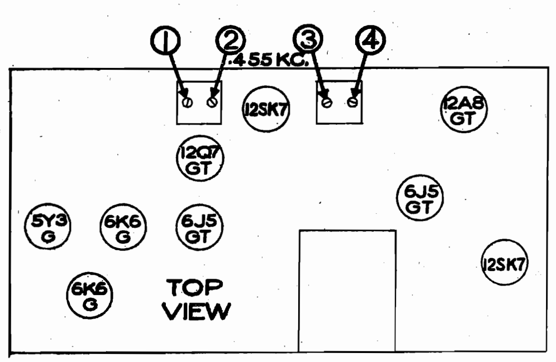
STEWART-WARNER CORP.

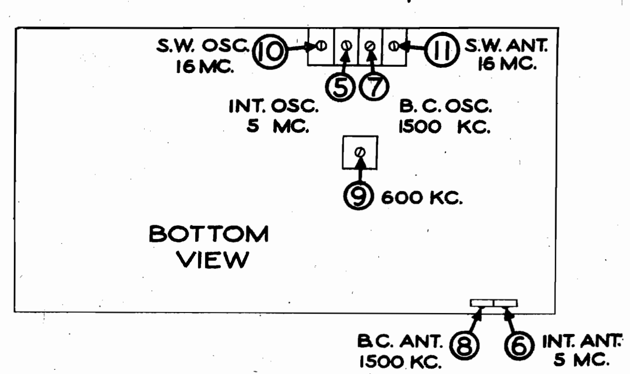
ALIGNMENT PROCEDURE FOR 01-9A & 01-9A-Z CHASSIS

1. Connect the output meter across the voice coil or from plate to plate of the 6K6G output tubes through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis and change the black wire from the outer to the inner clip on top of the loop drum.
3. Turn the volume control to the maximum position and keep it in this position throughout the alignment procedure.
4. Push in the Manual button and keep it pushed in.
5. The loop must be connected as indicated in circuit diagram at all times.
6. With some signal generators, it may be found that the signal cannot be reduced to a useable value using the dummy antennas recommended below. In such cases the signal generator may be disconnected entirely from the set and the R. F. lead of the signal generator placed in the vicinity of the loop. On the Short Wave position the shield wire (black) may be disconnected from its jack and the output of the signal generator connected to the black wire through a 400 ohm resistor.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Lug on Front Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
400 OHM Carbon Resistor	Clip on Side of Loop Drum	5 MC	Intermediate	5 MC	5	Intermediate Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 4.1 MC. If Image does not appear, Realign at 5 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Clip on Side of Loop Drum	5 MC	Intermediate	Tune to 5 MC Generator Signal	6*	Intermediate Antenna	*Adjust for Maximum Output.
200 MMFD. Mica Condenser	Clip on Side of Loop Drum	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Clip on Side of Loop Drum	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	*Adjust for Maximum Output.
200 MMFD. Mica Condenser	Clip on Side of Loop Drum	600 KC	Broadcast	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series Padder)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	Clip on Side of Loop Drum	16 MC	Foreign	16 MC	10	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 15.1 MC. If Image does not appear, Realign at 16 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Clip on Side of Loop Drum	16 MC	Foreign	Tune to 16 MC Generator Signal	11	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*Realign trimmer No. 6 on 5 MC, then trimmer No. 8 on 1500 KC, after set is in cabinet.





NOTES FOR 01-9A and 01-9A-Z CHASSIS

AUDIO HOWLS

For proper operation this chassis must be allowed to float on the rubber cushions on which it is mounted. If this is not done the set may howl when receiving strong signals. Loosen the four bolts holding down the chassis and remove the two wood strips which support the chassis during shipment. Make sure that neither the control knobs, their shafts nor any part of the dial mechanism touches the front panel or the set may still howl.

The speaker frame must be grounded to the chassis by the red and yellow wire provided. Reaction between the speaker and loop may otherwise result.

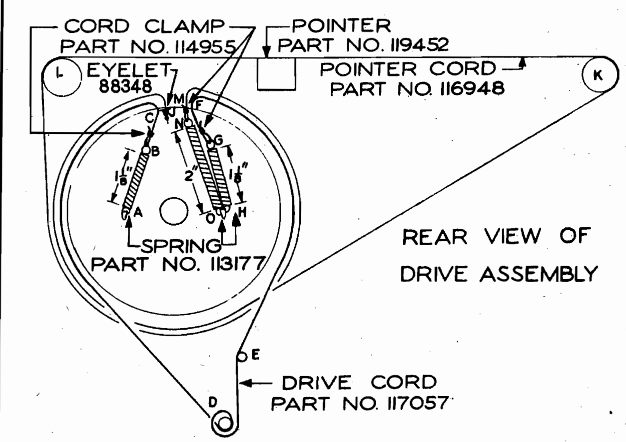
TO SET POINTER

The pointer should be set to 540 K.C. on the dial scale when the tuning condenser is in full mesh. Cement pointer to cord at this point and allow to dry before moving.

TO SET DRUM ON CONDENSER SHAFT.

With the tuning condenser plates in the horizontal (half mesh) position, the holes in the drum should be at the top. To change position of drum, loosen set screws.

REPLACING THE DRIVE CORDS



TO REPLACE DIAL DRIVE CORD

1. Make a one inch loop in end of cord (Part No. 117057) using a dial cord clip (Part No. 114955).
2. Fasten a tension spring (Part No. 113177) to tab A and one end of the cord to the spring at point B.
3. Pass the other end of the dial cord through hole C on the rear of the drum.
4. Make one and one half turns of the cord about tuning shaft D.
5. Continue the cord clockwise by E to hole F in the rear of the drum.
6. The cord length should be adjusted so that the springs will be stretched to approximately the dimension indicated. Fasten a tension spring (Part No. 113177) to the cord by forming a new loop at G and then fastening spring to tab H.

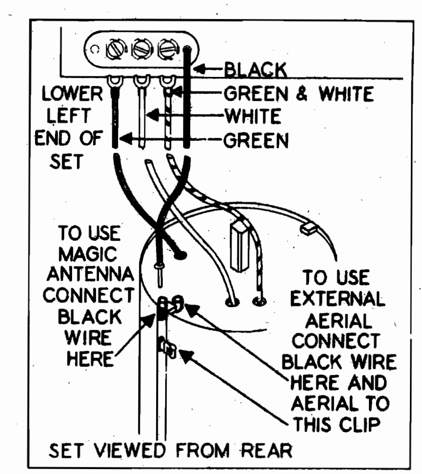
TO REPLACE THE POINTER DRIVE CORD

1. Fasten an eyelet (Part No. 88348) at a point one-half inch from one end of the cord (Part No. 116948).
2. Pass cord through hole J at the front of the drum.
3. Continue cord counter-clockwise around drum and around pulley K.
4. From pulley K go over pulley L and around front of drum through hole M.
5. The length of cord should be adjusted until the spring is stretched to approximately the length indicated. Fasten a spring with a loop and clip as indicated, to the cord.
6. Fasten spring to tab O.

MISCELLANEOUS PARTS

Part Number	Description	List Price
119376	Call Tabs and Instructions	$0.38
114955	Clamp for dial cord	.01
110140	Clip—grid	.01
112745	Clip—coil mounting	.01
116948	Cord—pointer drive (supplied in 6 ft. lengths)	.18
117057	Cord—drive (supplied in 2 ft. lengths)	.15
111973	Cushion—rubber rest for back of chassis	.06
119330	Dial scale	.35
113402	Drum—dial cord drive	.56
119215	Escutcheon—dial	1.30
119216	Escutcheon & P. B. Assembly	1.25
119217	Escutcheon for push buttons	.40
88348	Eyelet—for dial cord ... Per Dz.	.05
119167	Knob	.10
119323	Pilot Light assembly (single wire)	.18
119325	Pilot Light assembly (double wire)	.20
117758	Pin—for push button	.02
119452	Pointer	.14
119211	Push button	.10
81145	Retaining ring—for drive shaft ... Per C	.50
113463	Rubber bushing—chassis Mtg.	.03
83624	Screw—self tapping 8 x ¼	.01
85040	Screw—No. 6 Hex. Hd. ... Per C	.35
119218	Screw—Escutcheon Mtg.	.02
85827	Set Screw—8-32 Square Head	.02
85427	Socket—octal base (standard)	.15
114876	Socket—octal base (special)	.15
117704	Socket—for speaker 5 prong	.13
111090	Spacer—steel	.02
112874	Screw—No. 10 x 1⅛ chassis Mtg.	.01
113177	Spring—dial cord tension	.09
117458	Spring for push button	.05
84412	Terminal strip—phono	.03
118606	Tuning shaft	.18
110829	Washer—flat steel, for mtg. chassis	.01
111456	Washer—spring washer for tuning shaft ... Per C	.50
116530	Washer (paper) for back of knobs	.005

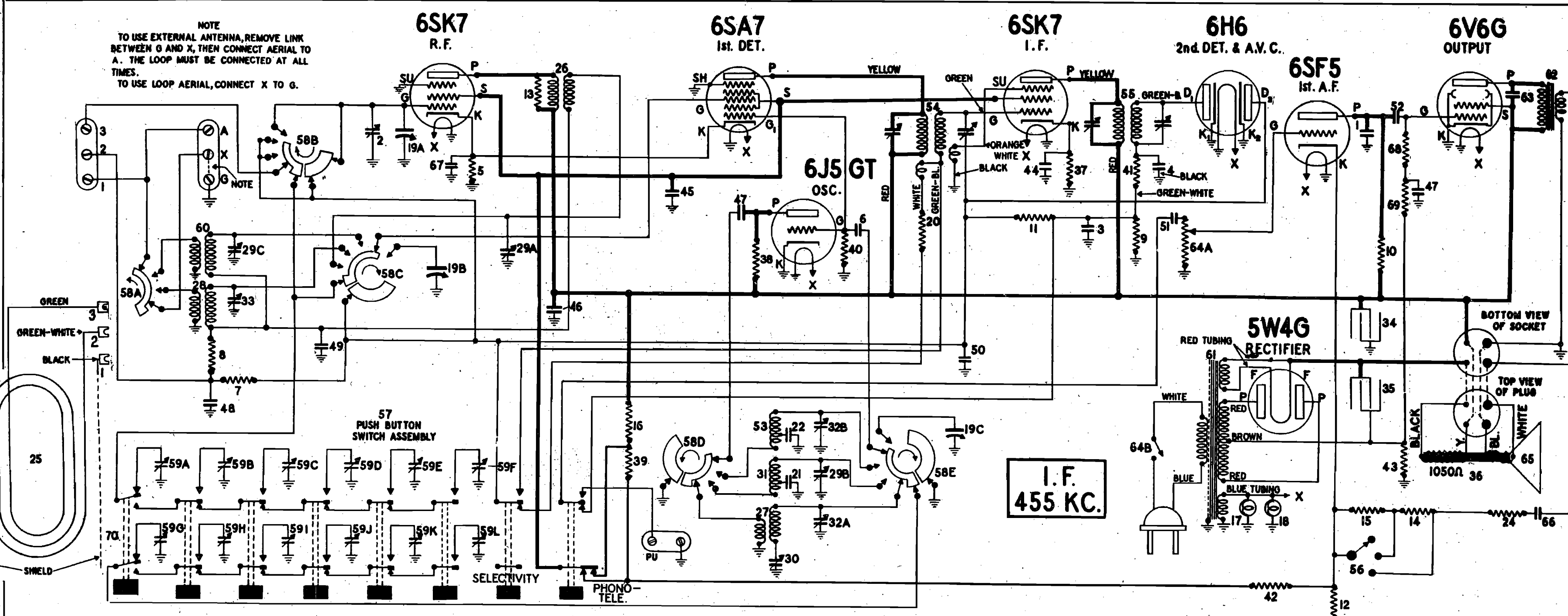
LOOP CONNECTIONS



MODELS 01-8B1 to 01-8B9 inc.
Chassis 01-8B

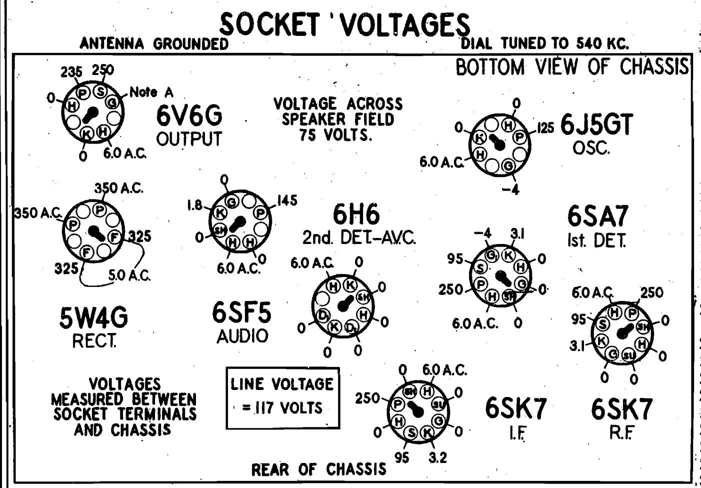
Schematic, Voltage

STEWART-WARNER CORP.



FOR ALIGNMENT SEE INDEX

SOCKET VOLTAGES



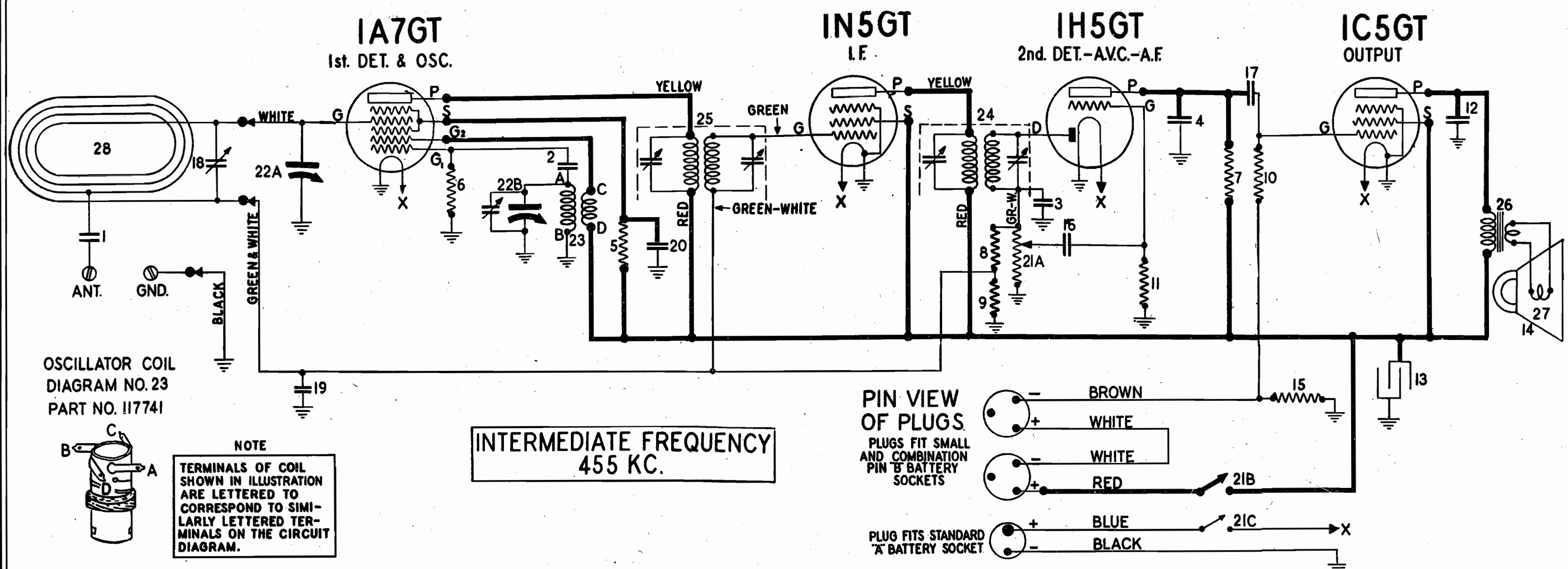
All voltages measured in radio position.
Use a high resistance voltmeter of at least 1000 ohms per volt.
NOTE A: The bias for the control grid of the 6V6G is 15 volts measured across resistor 43.

Diagram Number	Part Number	Description
1	83539	Condenser—mica 260 mmfd.
2	111043	Condenser—trimmer (single section)
3-4	83783	Condenser—mica 110 mmfd.
5	84979	Resistor—250 ohms ½ watt W.W.
6	85061	Condenser—mica 51 mmfd.
7-8-9-10	110553	Resistor—carbon 220,000 ohms ¼ watt
11	110554	Resistor—carbon 1 megohm ¼ watt
12	110556	Resistor—carbon 330 ohms ¼ watt
13	110557	Resistor—carbon 4,700 ohms ¼ watt
14	110586	Resistor—carbon 2,200 ohms ¼ watt
15	110587	Resistor—carbon 3,900 ohms ¼ watt
16	110595	Resistor—carbon 12,000 ohms 3 watts
17-18	110629	Lamp—6.3 volt—.25 amps
19A-19B-19C	110743	Condenser—variable gang
20	110975	Resistor—wire wound 33 ohms ½ watt
	111043	Trimmer condenser (single section)
21	118679	Condenser—mica .00113 mfd.
22	112427	Condenser—mica 4050 mmfd. (3%)
24	112978	Resistor—insulated 470 ohms ¼ watt
25	118696	Loop antenna complete
26	118706	Coil—broadcast R.F.
27	118686	Coil—broadcast oscillator
28	118689	Coil—police antenna
29A-29B-29C	113320	Condenser—trimmer—3 section
30	113346	Condenser—padding
31	118687	Coil—police oscillator
32A-32B	114937	Condenser—2 section trimmer
33	111043	Trimmer condenser (single section)
34-35	114972	Condenser—electrolytic 16 mfd. 450 volt
36	U-115071	Speaker—12" dynamic

Diagram Number	Part Number	Description
37	116015	Resistor—wire wound—400 ohms ½ watt
38-39	116055	Resistor—carbon 22,000 ohms ½ watt
40-41	116058	Resistor—insulated 47,000 ohms ¼ watt
42	116086	Resistor—carbon 18,000 ohms 3 watts
43	116094	Resistor—220 ohms 2 watts W.W.
44-45-46	116625	Condenser—.1 mfd. 600 volt
47	116640	Condenser—.01 mfd. 600 volt
48-49-50	116819	Condenser—.05 mfd. 600 volt
51-52	116893	Condenser—.02 mfd. 600 volt
53	118688	Coil—short wave oscillator
54	118682	Transformer—1st I.F.
55	118684	Transformer—2nd I.F.
56	117678	Switch—tone control
57	117694	Push button switch
58A to 58E	117787	Range switch
59A to 59L	117788	Condenser—trimmer gang
60	118690	Coil—short wave antenna
61	117830	Transformer—power
62	118144	Transformer—output
63	118194	Condenser—.006 mfd. 600 volts
64A-64B	118198	Volume control with switch
65	U-118202	Cone & Voice coil for U-115071 speaker
66-67	118206	Condenser—.25 mfd. 600 volts
68-69	110553	Resistor—220,000 ohms ¼ watt
70	118475	Shield for loop antenna (also see No. 118696)
	118682	Transformer—1st I.F.
	118684	Transformer—2nd I.F.
	118696	Loop antenna complete (with shield)

MODELS 02-4A1 to 02-4A9 inc.
Chassis 02-4A
Schematic, Voltage

STEWART-WARNER CORP.



ELECTRICAL PARTS

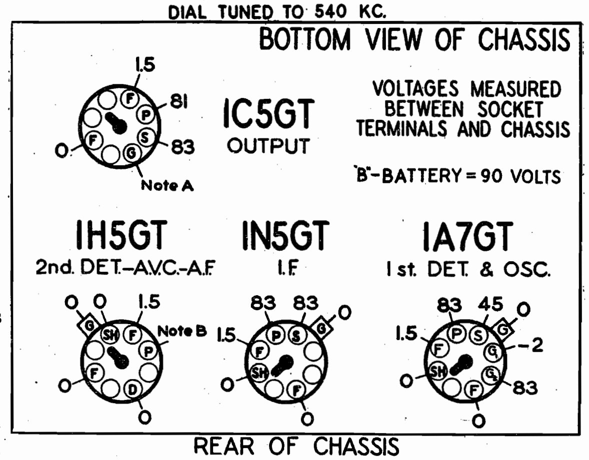
Diagram Number	Part Number	Description
1	83539	Condenser—mica, 260 mmfd.
2-3-4	85061	Condenser—mica, 51 mmfd.
5	110552	Resistor—carbon, 47,000 ohms, ¼ watt
6	110553	Resistor—carbon, 220,000 ohms, ¼ watt
7	110554	Resistor—carbon, 1 megohm, ¼ watt
8-9-10	110570	Resistor—carbon, 2.2 meg., ¼ watt
11	110580	Resistor—carbon, 3.3 meg., ¼ watt
12	113035	Condenser—Ceramic Tube, .006 mfd., 600 volt
13	113118	Condenser—Electrolytic—8 mfd., 150 volt
14	U-115068	Speaker—P.M. Dynamic (4 in.)
15	116061	Resistor—800 ohm, ¼ watt
16-17	116640	Condenser—.01 mfd., 600 volt
18	116781	Trimmer Condenser
19-20	116819	Condenser—.05 mfd., 600 volt
21A-21B-21C	117706	Volume Control—1 meg., with switch
22A-22B	117707	Condenser—Tuning
23	117741	Coil—Oscillator
24	117742	Transformer—2nd I.F.
25	117743	Transformer—1st I.F.
26	117782	Transformer—Output
27	U-118280	Cone & Voice Coil Assembly for U-115068 Speaker
28	117914	Loop Antenna

MISCELLANEOUS PARTS

Part Number	Description
117770	Battery retaining Block
117927	Button—"Off" Marker
116399	Cable—for Batteries
117836	Cabinet & Back
112745	Clip—Coil Mounting
113178	Cord—Dial (Supplied in 4 ft. lengths)
117715	Drive Drum and pointer assembly
117800	Dial scale
117894	Knob—volume
117895	Knob—tuning
118732	Loop terminal strip with trimmer & contacts
116397	Plug—2 prong Male
116398	Plug—3 prong Male
116488	Nut—8-32 Wing Nut
81145	Retaining Ring—for drive shaft
85040	Screw—No. 6 Hex. Hd.
113191	Screw—Special No. 8-32 x 1⅛
117716	Shield—Tube
116690	Socket (octal base) small
111981	Spring—for dial cord tension
117709	Tuning Shaft

SOCKET VOLTAGES

DIAL TUNED TO 540 KC.



NOTE A: The bias for the control grid of the 1C5GT tube is —7 volts measured across resistor 15.

NOTE B: Due to the high resistance of resistor 7, only a slight deflection will be obtained when using a meter having a resistance of 1000 ohms per volt.

MODELS 03-5A1 to 03-5A9 inc. Chassis 03-5A

STEWART-WARNER CORP.

Schematic, Voltage

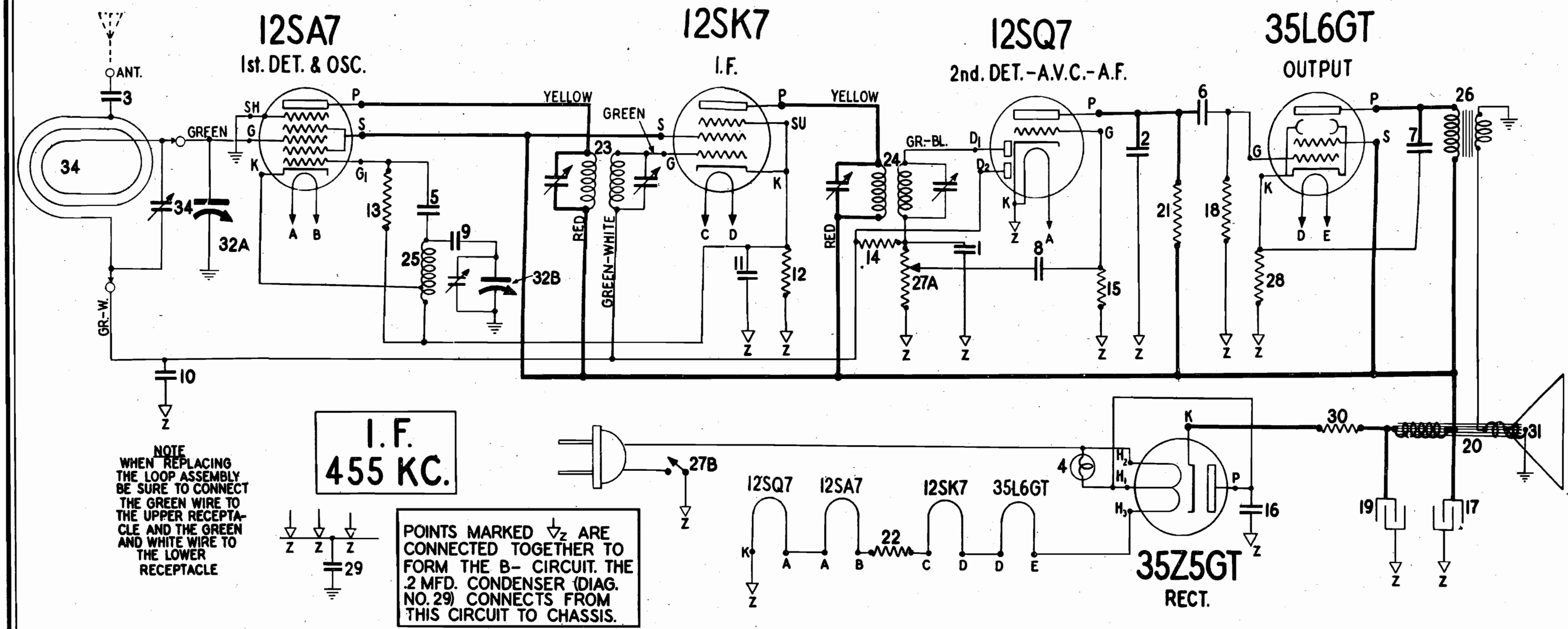
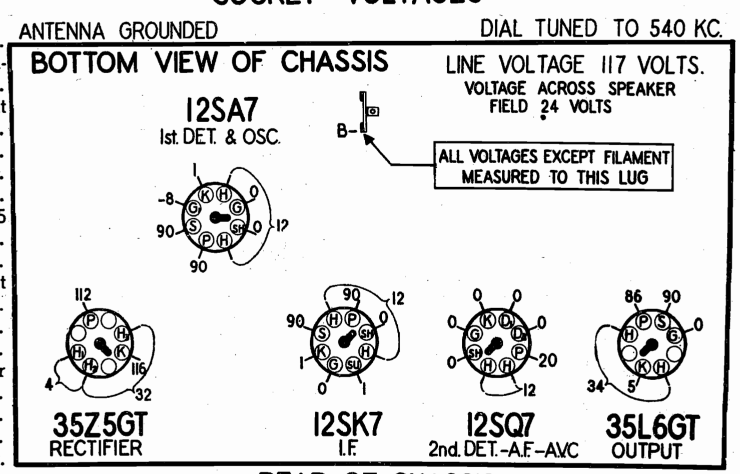


Diagram Number	Part Number	Description	Diagram Number	Part Number	Description
1-2	83539	Condenser—mica, 260 mmfd.	20	U-115055	Speaker—electro dynamic
3	83783	Condenser—mica, 110 mmfd.	21	116067	680,000 ohm, ¼ watt—20% insulated
4	85296	Lamp—dial, 6 to 8 volt (mazda #51)	22	116527	Resistor—100 ohms—10% 3 watt W.W.
5	85394	Condenser—mica, 510 mmfd.	23	116667	Transformer—1st I.F.
6-7	88026	Condenser—paper, .02 mfd., 400 volt	24	116672	Transformer—2nd I.F.
8-9	88030	Condenser—paper, .01 mfd., 400 volt	25	116674	Coil—oscillator
10	88189	Condenser—paper, .05 mfd., 200 volt	26	U-116676	Transformer—output for U-115055 speaker
11	88193	Condenser—paper, .25 mfd., 150 volt	27A-27B	116691	Volume control with switch
12	110560	Resistor—carbon, 100 ohms, ¼ watt	28	116702	Resistor—140 ohms—10% ½ watt W.W.
13	110565	Resistor—22,000 ohms, ¼ watt	29	116706	Condenser—0.2 mfd., 600 volt
14-15	110580	Resistor—carbon, 3.3 meg., ¼ watt	30	116752	Resistor—33 ohms, 1 watt W.W.
16	111252	Condenser—paper, .05 mfd., 400 volt	31	U-116727	Cone & Voice Coil Assem. for U-115055 speaker
17	112898	Condenser—electrolytic, 16 mfd., 150 volt	32A-32B	116755	Condenser—2 gang
18	112971	Resistor—insulated 470,000 ohms, ¼ watt	33	116775	Loop antenna
19	113472	Condenser — electrolytic 40 mfd., 150 volt	34	116781	Condenser—trimmer for loop ant. assembly

SOCKET VOLTAGES



Use a high resistance voltmeter of at least 1000 ohms per volt.

CHASSIS 03-5A
CHASSIS 05-5L
Alignment, Trimmers
Socket

STEWART WARNER CORP.

SERVICE DATA for MODEL 03-5A CHASSIS

ALIGNMENT PROCEDURE

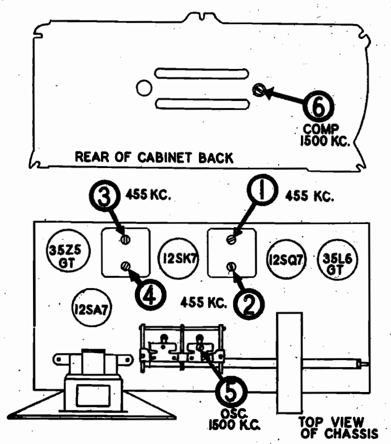
FOR ALIGNMENT: An output meter and an accurately calibrated signal generator are required.

1. Connect the output meter across the voice coil; or, using a condenser in series, connect between the plate of the 35L6GT output tube and B- as shown on the voltage chart. The more sensitive type should be connected across the voice coil.
2. Connect the ground lead of the signal generator to the B- lug (shown on the voltage chart) through a .25 mfd. condenser and keep it connected in this manner throughout the entire alignment procedure. Failure to do this may have serious results, as one side of the power line may be grounded in the signal generator, or hum may be encountered.
3. Turn the volume control to the maximum volume position and leave it in this position throughout the entire alignment procedure.
4. TO CALIBRATE THE DIAL—Remove the chassis from the cabinet and set it on a flat surface (insulated from ground). With the gang in full mesh, the last dial division (just below 55) on the low frequency end, should be exactly 4⅜ inches above the table surface. If this is not the case, release the set screw in the collar which connects the gang condenser shaft with the tuning unit, and holding the gang in full mesh, turn the dial until the last division is exactly 4⅜ inches above the table surface. Now re-tighten the set screw in the collar. The 4⅜ inch division on the ruler (when measured vertically from table surface), is to be used as the dial indicator for all calibration and alignment.

Dummy Ant. in Series with Signal Generator	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Green wire of Loop (loop must be connected)	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	"Ant." Terminal	1500 KC	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	"Ant." Terminal	1500 KC	Tune to 1500 KC Generator Signal	6	Broadcast Antenna (Shunt)	Adjust for maximum output. Then re-adjust as explained below.

Now remove the output meter and signal generator connections and replace the set in the cabinet. Replace the cabinet back and MAKE SURE THAT THE GREEN WIRE GOES TO THE UPPER RECEPTACLE OF THE LOOP AND THE GREEN-WHITE WIRE TO THE LOWER RECEPTACLE. Place the antenna lead from the signal generator near the back of the cabinet and turn the output up until the 1500 KC signal is weakly heard. Adjust trimmer No. 6 for maximum output by ear.

IMPORTANT: In order to get maximum sensitivity, trimmer condenser No. 6 (marked COMP. on back of cabinet) should be adjusted for maximum volume on a weak signal near 1400 KC. This should be done every time an external antenna is connected or disconnected.



MISCELLANEOUS PARTS

Part Number	Description	List Price
112745	Clip—coil mounting	$0.01
113504	Collar—coupling (between tuner unit and gang condenser shaft)	.08
113558	Clutch spring—for tuner (on cam shaft)	.04
113560	Dial Scale—celluloid strip	.22
113582	Dial Window—celluloid	.12
113557	Key—for push button tuner (left hand)	.24
113572	Key—for push button (right hand)	.24
116556	Insulator—pilot light	.10
113500	Mechanical tuner unit—less tenite tips for push buttons	3.90
116689	Pad—for push button levers	.02
85827	Set Screw—8-32 square head	.02
83624	Screw—self tapping 8 x ¼	.01
113636	Screw—No. 8 x ¾" Chassis mtg.	.01
113537	Screw—for tuning knob (antique bronze)	.18
113538	Screw—for tuning knob (chrome head)	.14
85040	Screw—No. 6 Hex. Head ... Per C	.35
113699	Screw—No. 8 x 1" for chassis mtg.	.01
113542	Socket—dial lamp—insulated	.10
116690	Socket—(Octal base) (small)	.12
113550	Tabs—station call letters	.28
113559	Spring—for key return	.02
CABINETS		
116699	Cabinet (walnut)	3.75
116731	Cabinet—ivory sprayed	4.50
CABINET BACKS		
116795	Back—cabinet (ivory)	.15
116780	Back—cabinet (walnut)	.15
FELT PADS (Cabinet feet)		
113589	Felt Pad (cabinet feet—walnut and colors)	.06
113592	Felt Pad (cabinet feet—ivory) 3/16"	.06
FELT STRIP (behind push buttons)		
113548	Felt Strip (brown) behind push button levers	.02
113549	Felt Strip (white) behind push button levers	.03
PUSH BUTTON TIPS		
113529	Tip—for push button (ivory)	.05
114710	Tip—for push button (walnut)	.05
TUNING KNOBS		
113531	Knob—tuning (ivory)	.30
114711	Knob—tuning (walnut)	.26
VOLUME KNOBS		
113574	Knob—volume (ivory)	.18
114712	Knob—volume (walnut)	.16

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

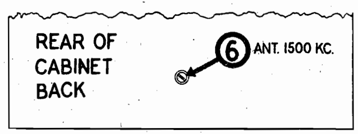
SERVICE DATA for MODEL 05-5L CHASSIS

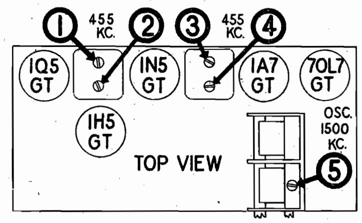
ALIGNMENT PROCEDURE

1. Connect the output meter across the voice coil of the speaker or between the plate of the 1Q5GT output tube and chassis through a .1 mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the chassis through a .25 mfd. condenser.
3. Turn the "A.C.-D.C.-Battery" switch to "A.C.-D.C." or "Battery" depending upon the source of power being used.
4. Turn the volume control to the maximum volume position and keep it in this position while aligning. The loop antenna must be connected.
5. With the gang condenser in full mesh, the dial pointer should be in the horizontal position. If the pointer is incorrectly set, hold the gang in full mesh and move the pointer to the correct position by hand.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Condenser	Control Grid of 1A7GT	455 KC.	Any Point Where It Does Not Affect Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Condenser	"Ant" Terminal	1500 KC.	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
200 MMFD. Condenser	"Ant" Terminal	1500 KC.	Tune To 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.

Now disconnect the output meter and signal generator leads and replace the chassis and batteries in the cabinet being sure to connect the loop. Bring the antenna lead of the signal generator near the loop until the 1500 KC. signal is heard weakly and re-adjust trimmer No. 6 for maximum output by ear.





USING AN EXTERNAL ANTENNA

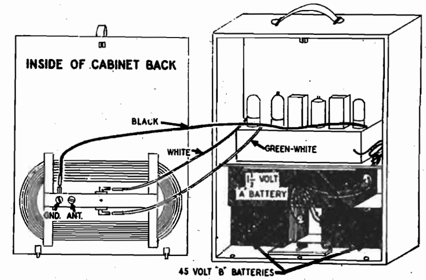
An external antenna may be connected to this radio to provide better signal pickup on weak stations. If the radio is being operated on A.C. or D.C. power lines, do not use a ground. If hum is encountered when operating from A.C. lines, the power cord plug should be reversed at the wall outlet. When the radio is operated from batteries and an external antenna is used, a ground must be used to obtain satisfactory pickup.

After an external antenna has been connected, a weak signal near 1500 KC should be tuned in, and trimmer No. 6 adjusted for maximum volume. If it is impossible to get a proper peak on this trimmer, check the connections of the white and green-white wires to see that they are connected exactly as shown in the drawing to the right. Please note that this drawing is slightly different from the one on the back cover of the receiver.

INSTALLATION OF BATTERIES

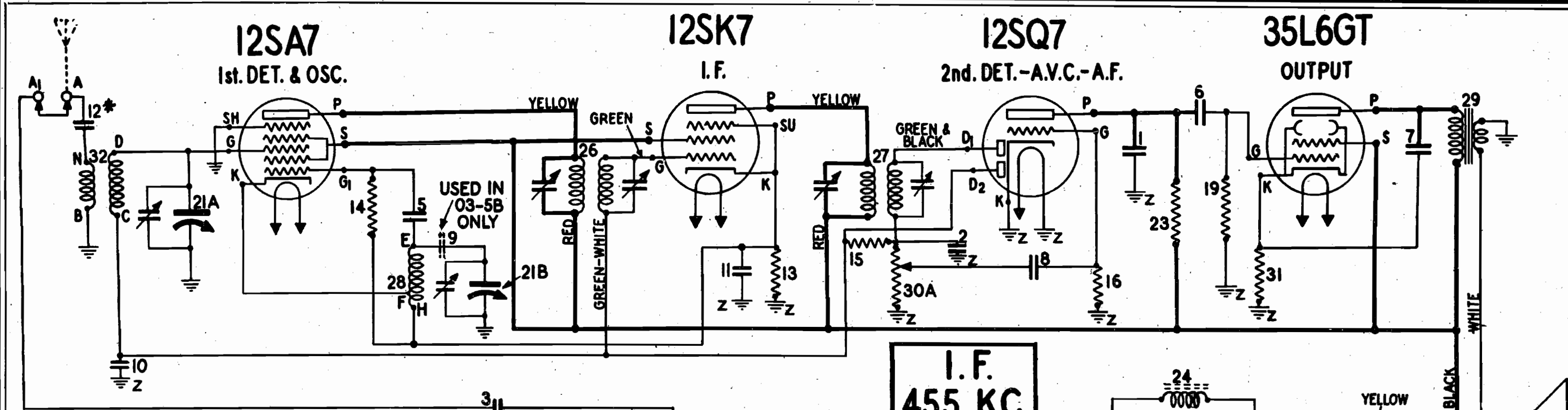
Two Eveready No. 482 "B" Batteries and one Eveready No. 745 "A" Battery are required for battery operation. To install the batteries proceed as follows:

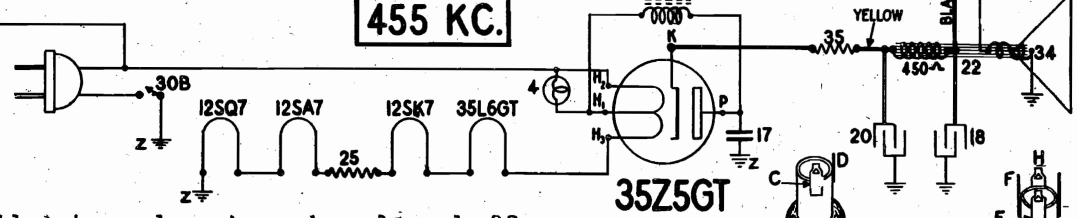
1. If the power cord plug is connected to a power outlet disconnect it.
2. Remove the cabinet back.
3. Remove the three wires from the clips on the inside of the cabinet back.
4. Place the "A" battery in the bottom of the case and connect the two pronged plug to it.
5. Connect the three pronged plugs to the "B" batteries and slide them UNDER the "A" battery into the positions shown in the figure below.
6. Fasten the battery retaining block as shown, slide it against the batteries until REASONABLY tight, and tighten the wing nut.
7. Replace the cabinet back, being sure to connect the three wires to the proper clips as shown in the figure below. Improper operation will result if this is not done.



MODEL Senior Varsity
CHASSIS 03-5B,07-5B
Schematic,Voltage

STEWART-WARNER CORP.





03-5B CHASSIS: ALL GROUNDS MARKED "Z" ARE NOT CONNECTED DIRECTLY TO CHASSIS BUT ARE CONNECTED TOGETHER AND GROUNDED TO CHASSIS THROUGH A .2 MFD. CONDENSER (PART NO. 116706).

07-5B CHASSIS: GROUNDS MARKED "Z" CONNECTED DIRECTLY TO CHASSIS.

* Not used on some sets. May be added to reduce hum when line buffer condenser is used in case several receivers use same antenna.

NOTE
TERMINALS OF COILS SHOWN IN PICTORIAL VIEWS ARE LETTERED TO CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM.

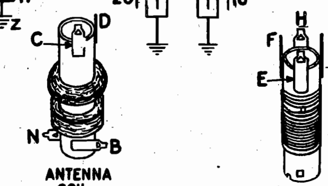


Diagram Number	Part Number	Description
1-2-3	83539	Condenser—Mica 260 mmfd.
4	85296	Lamp—dial 6 to 8 volt .25 amps.
5	85394	Condenser—mica 510 mmf.
6-7	88026	Condenser—paper .02 mfd. 400 volt
8	88030	Condenser—paper .01 mfd. 400 volt
9	88030	Condenser—paper .01 mfd. 400 volt (03-5B only)
10	88189	Condenser—paper .05 mfd. 200 volt
11	88193	Condenser 0.25 mfd. 150 volt
12	89826	Condenser—paper .004 mfd. 400 volt
13	110560	Resistor—carbon 100 ohms 1/4 watt
14	110565	Resistor—carbon 22,000 ohms 1/4 watt
15-16	110580	Resistor—carbon 3.3 meg. 1/4 watt
17	111252	Condenser—paper .05 mfd. 400 volt
18	112898	Condenser—electrolytic 16 mfd. 150 volt
19	112971	Resistor—insulated 470,000 ohms 1/4 watt
20	113472	Condenser—electrolytic 40 mfd. 150 volt
21A & 21B	113478	Condenser—variable gang
22	U-115055	Speaker—electro dynamic
23	116067	680,000 ohms 1/4 watt insulated
24	116232	R. F. Choke
25	116527	Resistor 100 ohms 3 watt W.W.
26	116667	Transformer—1st I.F.
27	116672	Transformer—2nd I.F.
28	116674	Coil—oscillator
29	U-116676	Transformer—output for U-115055 speaker
30A-30B	116691	Volume control with switch
31	116702	Resistor—140 ohms 1/2 watt W.W.
32	116704	Coil—antenna
	116706	Condenser—0.2—600 volts (03-5B only)
34	U-116727	Cone & voice coil for U-115055 speaker
35	116752	Resistor—33 ohms 1 watt W.W.

Part Number	Description
112745	Clip—coil mounting
113504	Collar—coupling (between tuner unit & gang condenser shaft)
113558	Clutch spring—for tuner (on cam shaft)
113560	Dial scale—celluloid strip
113582	Dial Window—celluloid
116556	Insulator Pilot Light (03-5B only)
113572	Key—for push button (right hand)
113557	Key—for push button tuner (left hand)
113500	Mechanical tuner unit—less tenite tips for push buttons
116689	Pad—for push button levers
83624	Screw—self tapping 8x1/4
85040	Screw—No. 6 Hex. Hd.
85827	Set Screw—8-32 Square Head
113537	Screw—for tuning knob (antique bronze)
113538	Screw—for tuning knob (chrome head)
113636	Screw—No. 8x3/4" chassis mtg.
113638	Screw—back cover retaining
113699	Screw—No. 8x1" for chassis mtg.
113542	Socket—dial lamp—insulated
116690	Socket—Octal Base (small)
113559	Spring—for key return
113550	Tabs—station call letters
116223	Terminal strip—for antenna (A-A_1)
113548	Felt Strip (Brown) behind push buttons
113549	Felt Strip (White) behind push buttons
113837	Felt Strip (Gray) behind push buttons

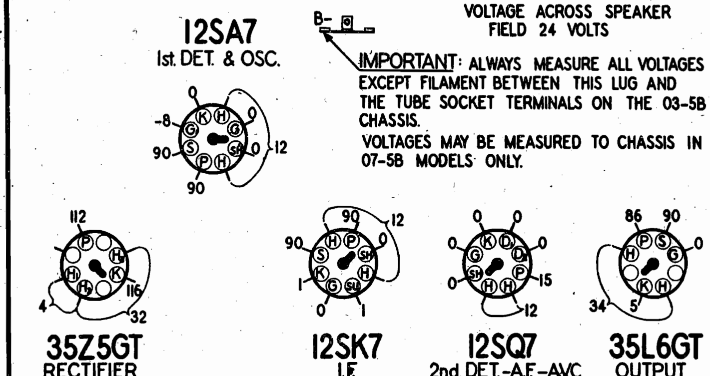
SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

LINE VOLTAGE 117 VOLTS
VOLTAGE ACROSS SPEAKER FIELD 24 VOLTS

IMPORTANT: ALWAYS MEASURE ALL VOLTAGES EXCEPT FILAMENT BETWEEN THIS LUG AND THE TUBE SOCKET TERMINALS ON THE 03-5B CHASSIS.
VOLTAGES MAY BE MEASURED TO CHASSIS IN 07-5B MODELS ONLY.

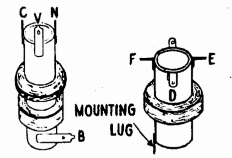


REAR OF CHASSIS

Use a High Resistance Voltmeter of at Least 1000 Ohms per Volt.

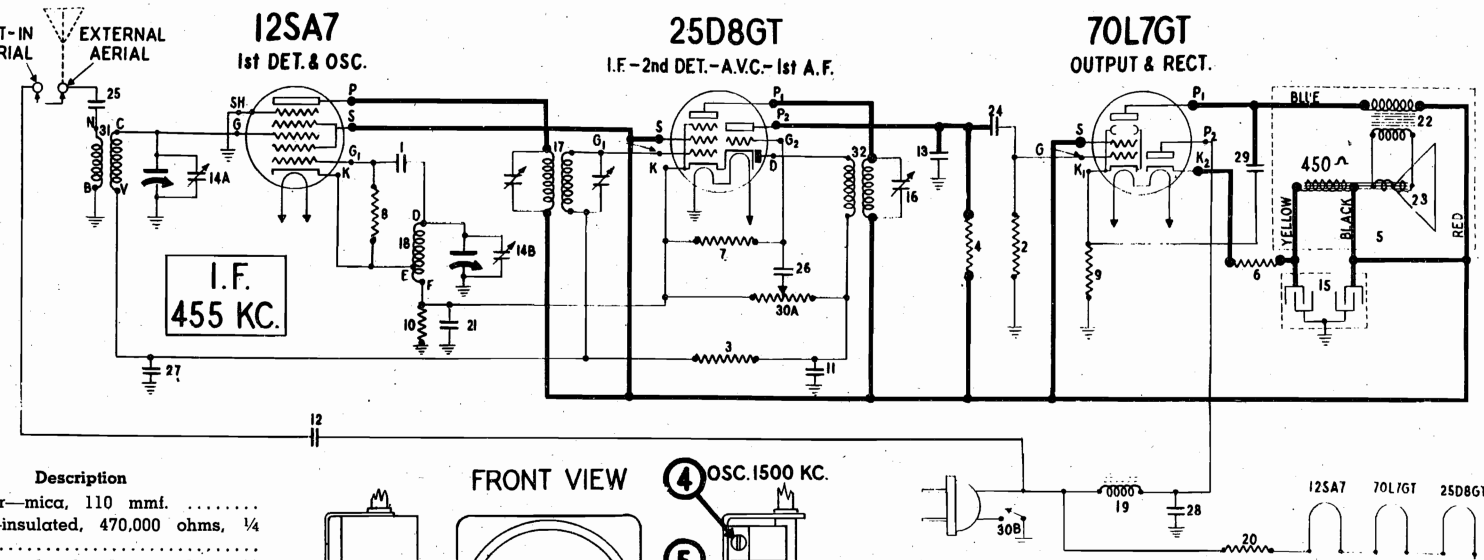
MODEL A-6S, Ch. 07-32
Schematic, Voltage, Socket
Trimmers, Alignment

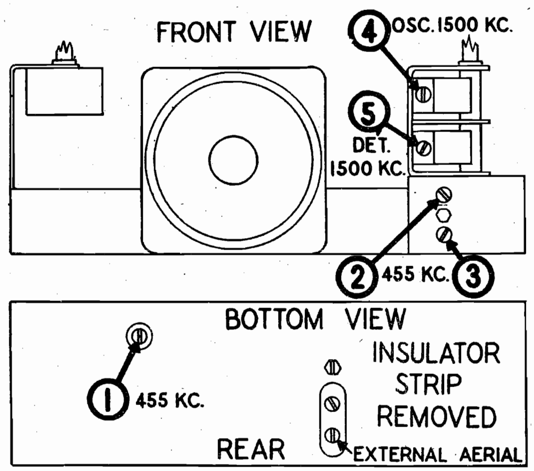
STEWART WARNER CORP.



ANTENNA COIL DIAGRAM NO. 31 PART NO. 117093	OSCILLATOR COIL DIAGRAM NO. 18 PART NO. 116609

NOTE: TERMINALS OF COILS SHOWN IN PICTORIAL VIEWS ABOVE, ARE LETTERED TO CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM



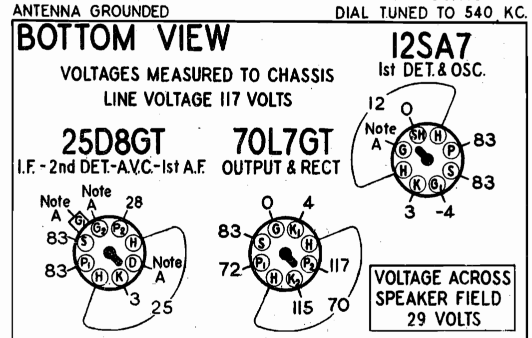


GANG CONDENSER TRIMMER

There are three trimmers located on the gang condenser used in this receiver. Two of these trimmers are shown in the trimmer location diagram which is shown on this page, and are marked No. 4 and No. 5. The third trimmer is located on the back of the gang condenser and has been adjusted at the factory so that further adjustment should be unnecessary. If this trimmer has been tampered with, however, it may be necessary to adjust it so that a satisfactory peak can be secured on trimmer No. 4.

SOCKET VOLTAGES

VOLUME CONTROL SET AT MAXIMUM VOLUME POSITION
ANTENNA GROUNDED — DIAL TUNED TO 540 KC.



REAR OF CHASSIS

NOTE A: Due to the high resistance of resistors No. 3, No. 7, and No. 30A, only a very slight deflection will be obtained on a meter having a resistance of 1000 ohms per volt.

For ALIGNMENT

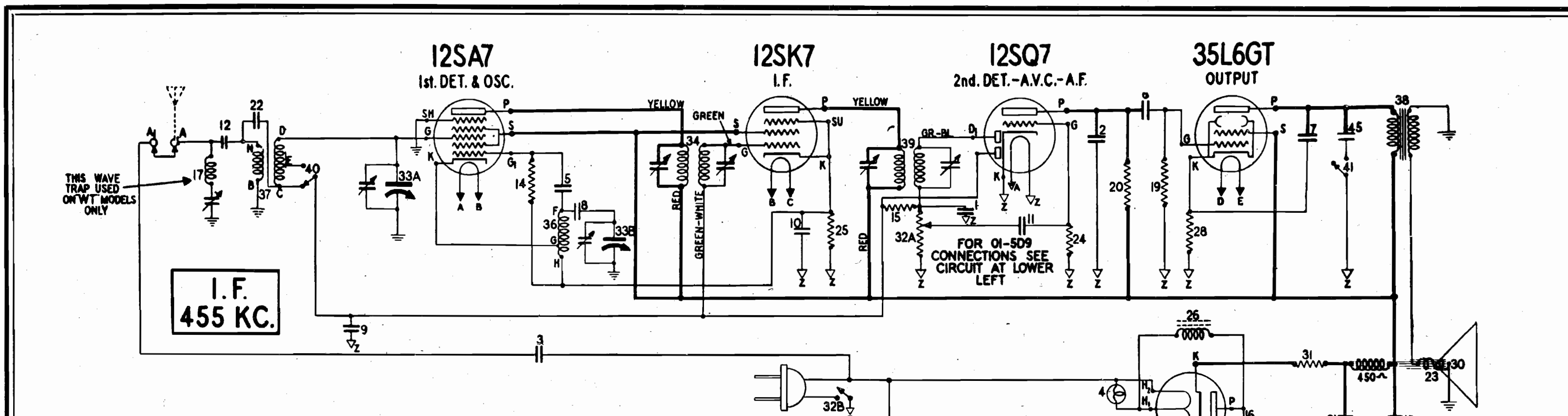
See Stewart-Warner Page 10-2

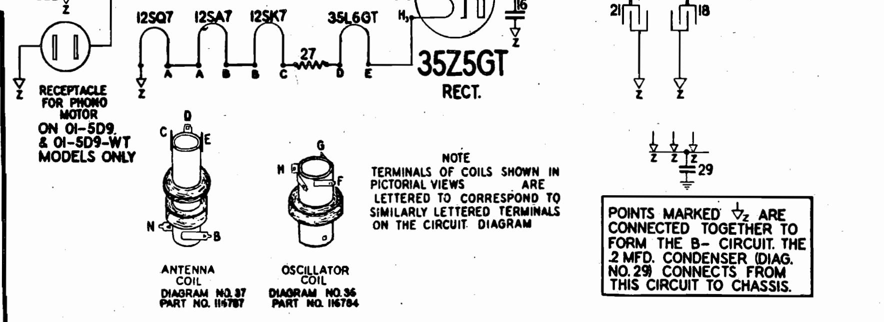
Diagram Number	Part Number	Description
1	83783	Condenser—mica, 110 mmf.
2	112971	Resistor—insulated, 470,000 ohms, ¼ watt
3	112972	Resistor—insulated, 1 megohm, ¼ watt
4	112987	Resistor—insulated, 220,000 ohms, ¼ watt
5	R-115053	Speaker—dynamic 3"
6	116013	Resistor—50 ohm, 1 watt
7	116050	Resistor—insulated, 10 megohm, ¼ watt
8	116059	Resistor—insulated, 22,000 ohm, ¼ watt
9	116064	Resistor—insulated, 100 ohm ½ watt
10	116069	Resistor—insulated, 100 ohm, ¼ watt
11-12-13	116224	Condenser—mica, 260 mmfd.
14A-14B	116578	Condenser—2 gang tuning
15	116587	Condenser—electrolytic, Dual 20 mfd. 150 volt
16	116599	Condenser—trimmer for 2nd I.F.
17	116605	Transformer—1st I.F.
18	116609	Coil—oscillator
19	116616	Coil—R. F. Choke
20	116618	Resistor—65 ohms, 2 watts, Wire Wound
21	116625	Condenser—.1 mfd., 600 volt
22	R-116633	Transformer — output for R-115053 speaker
23	R-116635	Cone & Voice coil assembly for R-115053 speaker
24	116640	Condenser—.01 mfd., 600 volt
25-26	116647	Condenser—.004 mfd., 600 volt
27	116819	Condenser—.05 mfd., 600 volt
28-29	116893	Condenser—.02 mfd., 600 volt
30A-30B	117088	Volume control (500,000 ohms—with switch)
31	117093	Coil—antenna
32	117097	Transformer—2nd I.F.

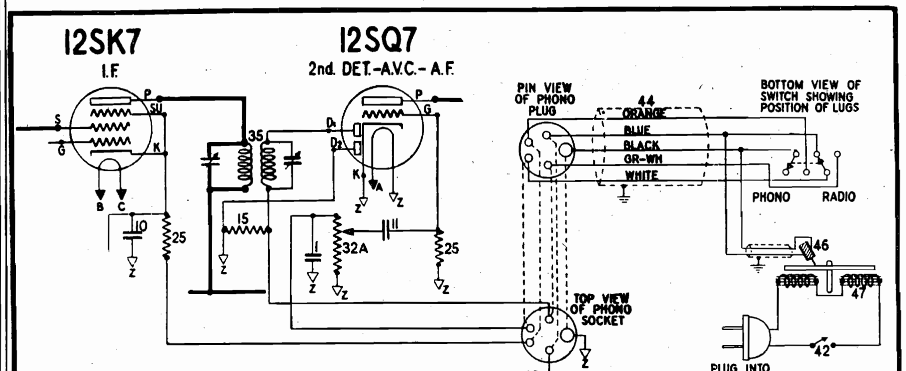
Part Number	Description
116637	Cabinet—(walnut)
116657	Cabinet—(sprayed ivory)
112745	Clip—coil mounting
85321	Connector—for internal antenna
116576	Insulator—fibre for base (inside)
117101	Insulator—fibre for base (outside)
116532	Knob—volume control (red)
116533	Knob—tuning (red)
116886	Knob—volume control (ivory)
116887	Knob—tuning (ivory)
116584	Rubber foot for bottom of cabinet.
116629	Screw—No. 8-32 x 1⅛ Bind H.M.S.
116630	Screw—No. 8-32 x 1½ Bind H.M.S.
116615	Socket—small octal
116583	Terminal Strip—(for antenna)
116592	Tube Shield

STEWART-WARNER CORP.

MODELS 03-5C1,Ch.03-5C,
01-5D9,01-5D9-WT,Ch.01-5D
Schematic,Voltage,Socket
Phono.Connections







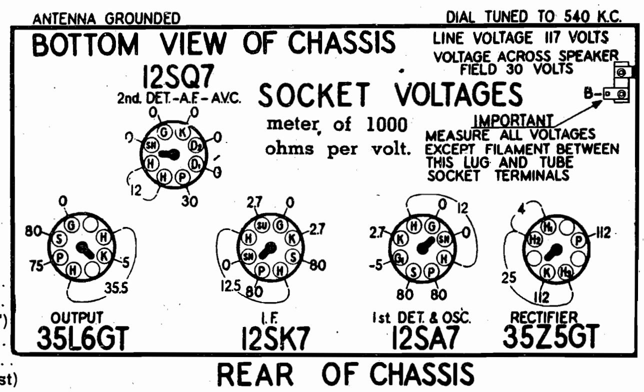
01-5D9 CIRCUIT CONNECTIONS

IMPORTANT

WHEN THE 01-5D CHASSIS IS REMOVED FOR SERVICE, THE PHONOGRAPH PICKUP CABLE MUST BE PLUGGED IN AND THE "RADIO" "PHONO" SWITCH PLACED IN THE "RADIO" POSITION BEFORE THE SET WILL OPERATE.

THE 01-5D9 PHONOGRAPH MOTOR MUST BE OPERATED ON A.C. ONLY.

Diagram Number	Part Number	Description
1-2-3	83539	Condenser—mica 260 mmfd.
4	85296	Lamp—dial 6 to 8 volt .25 amps.
5	85394	Condenser—mica 510 mmfd.
6-7	88026	Condenser—paper .02 mfd. 400 volt
8	88030	Condenser—paper .01 mfd. 400 volt
9	88189	Condenser—paper .05 mfd. 200 volt
10	88193	Condenser—paper .25 mfd. 150 volt
11-12-13	89826	Condenser—paper .004 mfd. 750 volt (2 used on 03-5C & 03-5C-WT)
14	110565	Resistor—22,000 ohms
15	110580	Resistor—carbon 3.3 meg. ¼ watt
16	111252	Condenser—paper .05 mfd. 400 volt
17	112796	Coil—wave trap with trimmer (WT models only)
18	112898	Condenser—electrolytic 16 mfd. 150 volt
19	112971	Resistor—insulated 470,000 ohms ¼ watt
20	112987	Resistor—insulated 220,000 ohms ¼ watt
21	113472	Condenser—electrolytic 40 mfd. 150 volt
22	114969	Condenser—mica 15 mmfd.
23	U-115055	Speaker—dynamic 5"
24	116050	Resistor—insulated 10 meg. ¼ watt
25	116062	Resistor—150 ohms ¼ watt
26	116232	R. F. Choke
27	116527	Resistor 100 ohms 3 watt wire wound
28	116702	Resistor—140 ohms ½ watt wire wound
29	116706	Condenser—.2 mfd. 600 volt
30	U-116727	Cone & voice coil assembly for U-115055 speaker
31	116752	Resistor—33 ohms 1 watt wire wound
32A-32B	116762	Volume control—1 meg. with switch
33A-33B	116763	Condenser—variable gang
34	116782	Transformer—1st I.F.
35	116783	Transformer—2nd I.F. (01-5D & 01-5D-WT)
36	116784	Coil—oscillator
37	116787	Coil—antenna
38	116788	Transformer—output
39	116809	Transformer—2nd I.F. (03-5C & 03-5C-WT)
40-41	116896	Switch—S.P.D.T.
42	116942	Switch—(On-Off) for phono motor (01-5D & 01-5D-WT)
43	116945	Switch—(Radio-phono) (01-5D & 01-5D-WT)
44	116966	Pickup cable and plug (01-5D & 01-5D-WT)
45	116984	Condenser—.04 mfd. 600 volt
46	117053	Phono pickup unit (01-5D & 01-5D-WT)
47		Phono motor unit (see phonograph parts list)



CHASSIS 03-5C,01-5D
CHASSIS 07-5B,03-5B
Alignment,Trimmers
Socket,Notes

STEWART-WARNER CORP.

CHASSIS MODELS 03-5C AND 01-5D

ALIGNMENT PROCEDURE

FOR ALIGNMENT: An output meter and an accurately calibrated signal generator are required.

1. Connect the output meter across the voice coil, or using a .1 mfd. condenser in series connect between the 35L6GT tube plate and B— as shown on the voltage chart.
2. Connect the ground lead of the signal generator through a .25 mfd. condenser to B— as shown on the voltage chart.
3. Remove the connector between terminals A and A_1, turn the volume control to maximum position and place the band switch in the broadcast position. On the 01-5D chassis the "Phono" cable must also be plugged in and the "Radio" "Phono" switch placed in the "Radio" position.
4. With the gang condenser in full mesh, the pointer should be in a horizontal position. If it is not, it should be moved to this position before alignment.

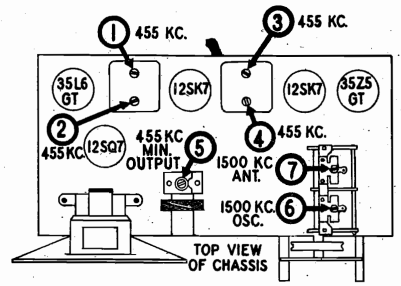
Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 Mfd. Condenser	Trimmer Lug On Large Section Of Variable Condenser	455 KC.	Any Point Where it Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then Repeat Adjustment.
				3-4	1st I.F.	
200 Mmfd. Mica Condenser	"A" Terminal	455 KC.	Any Point Where it Does Not Affect the Signal	5 Used Only On Chassis Marked "WT"	Wave Trap "WT" Models Only	Adjust for Minimum Output Using a Strong Generator Signal.
200 Mmfd. Mica Condenser	"A" Terminal	1500 KC.	1500 KC.	6	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 Mmfd. Mica Condenser	"A" Terminal	1500 KC.	Tune to 1500 KC. Generator Signal	7	Broadcast Antenna (Shunt)	Adjust for Maximum Output.

DIAL AND MISCELLANEOUS PARTS

Part Number	Description	List Price
112745	Clip—coil mounting	$0.01
113019	Clip—dial scale retaining	.01
112798	Clip—for mtg. wave trap coil (used on WT model)	.01
85321	Connector for built-in antenna	.01
113178	Cord—dial	.30
116800	Dial scale	.10
116773	Knob—tuning or volume	.10
116916	Pointer assembly	.04
116165	Receptacle—2 prong for Phono motor (01-5D & 01-5D-WT)	.50
81145	Retaining ring—for drive shaft ... Per C	.50
83624	Screw—self tapping 8x¼	.01
85040	Screw—No. 6 Hex. Head ... Per C	.35
116758	Shaft—tuning	.12
116690	Socket—octal base	.12
116793	Socket—for pilot light	.25
114271	Socket—5 prong for Phono motor (01-5D & 01-5D-WT)	.17
111981	Spring—for dial cord tension	.03
116223	Terminal strip—for antenna (A-A_1)	.12
116530	Washer—(paper) for back of knobs	.005
111456	Washer—spring washer ... Per C	.50
116414	Window, dial	.25

PHONOGRAPH PARTS (01-5D9 & 01-5D9-WT)

Part Number	Description	List Price
117884	Crystal Cartridge only (with leads)	$4.00
117053	Crystal Pickup unit complete	7.25
117810	Idler wheel mounting stud and plate	.22
117806	Idler wheel with rubber rim	.60
117818	Motor drive pulley with set screw	.26
117817	Motor mounting plate	.75
84571	Needle cup	.10
117085	Needle screw	.18
117812	Nut—large to retain idler assembly	.01
117813	Nut—small to lock idler retaining nut	.01
117168	Phono motor unit for 60 cycles (less turntable)	7.40
117815	Retaining clip for turntable shaft	.02
117808	Retaining clip for idler wheel	.02
117807	Rubber rim for idler wheel	.12
117814	Spacer for motor mounting	.04
117809	Spring for idler assembly	.10
117083	Turntable	1.00
117816	Turntable shaft	.35
117811	Washer—brass to retain idler plate	.02



RADIO AND PHONOGRAPH OPERATION

These radios are equipped with a police band covering frequencies from about 2320 KC. to 2500 KC. at one end of the dial scale as indicated by the word POLICE. To use this band, push the switch located on the back of the chassis to the position marked POLICE.

A Built-in Line Antenna is incorporated in all models and will generally give satisfactory results in localities where powerful broadcast stations are located. To use this built-in antenna, terminals A and A_1 on the back of the chassis must be connected together. When aligning the set the connector between these two terminals should be removed. This will prevent pickup of signals which may interfere with the alignment procedure.

The Model 01-5D9 receiver is equipped with a phonograph turntable and crystal pickup unit. This receiver can be operated on A.C. only when the phonograph unit is used. Attempts to operate the phonograph unit on D.C. will damage it. The 03-5C chassis however may be operated on either A.C. or D.C. of the proper voltage.

SERVICE DATA FOR MODEL 07-5B and 03-5B CHASSIS

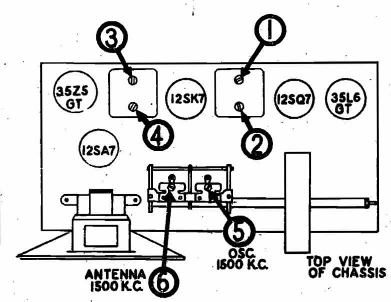
ALIGNMENT PROCEDURE

FOR ALIGNMENT: An output meter and an accurately calibrated signal generator with a tuning range from 455 KC to 1500 KC are required.

1. Connect the output meter across the voice coil or, using a .1 mfd. condenser in series, connect as follows:
MODEL 03-5B: Between the 35L6GT plate and B— terminal shown on voltage chart.
MODEL 07-5B: Between the 35L6GT plate and chassis.
2. Connect the ground lead of the signal generator to the chassis of the receiver through a .25 mfd. condenser and keep it connected in this manner throughout the entire alignment procedure. Failure to do this may have serious results as one side of the power line may be grounded in the signal generator. If oscillation or hum occurs in the model 03-5B, connect the ground lead of the signal generator through a .25 mfd. condenser to B— as shown on the Voltage Chart.
3. Remove the connector between terminals A and A_1, also turn the volume control to the maximum volume position and keep it in this position throughout the entire alignment procedure.
4. TO CALIBRATE THE DIAL: Remove the chassis from the cabinet and set it on a flat surface (insulated from ground). With the gang condenser in full mesh, the last dial division (just below 55) on the low frequency end should be exactly 4⅜ inches above the table surface. If the dial is not in this position with the gang in full mesh, it is necessary to re-set the dial. Loosen the set screw in the collar which connects the gang condenser shaft with the tuning unit, adjust to the correct position and tighten the screw.

The 4⅜ inch division on the ruler (when measured vertically from the table surface) is to be used as the dial indicator for all calibrations and alignment.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Mica Condenser	Trimmer lug on large section of variable condenser	455 KC	Any point where it does not affect the signal	1-2	1st I.F.	Adjust for Maximum Output. Then repeat adjustment.
				3-4	2nd I.F.	
200 MMFD. Mica Condenser	Antenna Terminal A	1500 KC	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal A	1500 KC	Tune to 1500 KC Generator Signal	6	Broadcast Antenna (Shunt)	Adjust for Maximum Output.



BUILT-IN ANTENNA SYSTEM

The Built-In Antenna incorporated in this receiver will generally give very satisfactory results in localities where Powerful broadcast stations exist. This Built-In Antenna will function when terminals A and A_1 on the back of the chassis are connected together. In cases where noises are excessive or greater sensitivity is desired, remove the jumper connecting terminals A and A_1 and connect an external antenna to terminal A.

When aligning this receiver, the jumper connecting terminals A and A_1 should be removed. This will prevent picking up signals which might interfere with the alignment procedure. When the I.F. channel is being aligned, the gang condenser should be set at a point where no interfering signal will be received.

HOW TO SET UP PUSH BUTTON TUNER

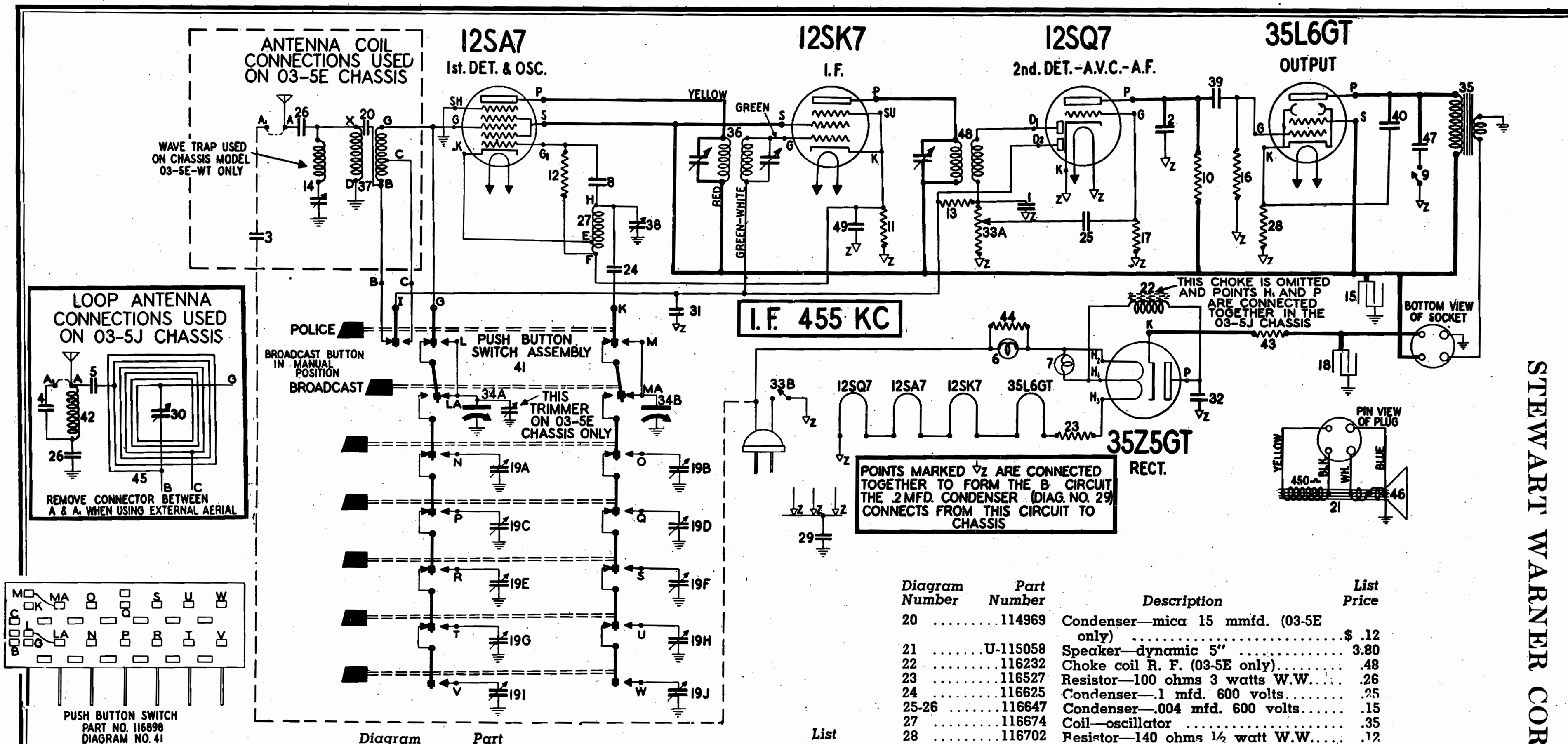
1. Connect the set to a good antenna system and allow it to operate for at least 15 minutes before setting up buttons.
2. Select four nearby powerful stations to which you wish to set up the buttons. Any button may be set to any desired station.
3. Hold the tuning knob firmly and loosen the screw in its center not more than two whole turns.
4. Hold the button, you wish to set, down firmly and tune in the station to be set to that button. Be sure to tune in the station accurately. Release the push button. The rest of the buttons may be set up in the same manner.
5. After all buttons have been set, re-tighten the screw in the tuning knob. Hold the knob firmly while tightening this screw.
6. The push buttons should now be labeled with their proper call letters in the spaces provided above the push buttons. Call letter sheets are provided with your receiver.
7. In using the push button tuner, be sure to push the button all the way down, otherwise the desired station will not be tuned in.

MISCELLANEOUS PARTS

Part No.	Description	List Price
	CABINETS	
116699	Walnut	$3.75
116731	Ivory (Sprayed)	4.50
	CABINET BACKS	
116719	Walnut	.14
116723	Ivory	.14
	FELT PADS (Cabinet feet)	
113589	Walnut and colors—3/16"	.06
113592	Ivory—3/16"	.06
	KNOBS — TUNING	
113531	Ivory	.30
114711	Walnut	.26
	KNOBS — VOLUME	
113574	Ivory	.18
114712	Walnut	.18
	PUSH BUTTON TIPS	
113529	Ivory	.05
114710	Walnut	.05

STEWART WARNER CORP.

CHASSIS 03-5E, 03-5J
Schematic



LETTERS ON TERMINALS OF COIL AND SWITCH PICTORIALS CORRESPOND TO LETTERS ON DIAGRAM.

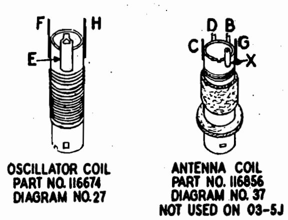


Diagram Number	Part Number	Description	List Price
1-2-3	83539	Condenser—mica 260 mmfd. (2 used on 03-5J)	$0.20
4-5	85061	Condenser—mica 51 mmfd. 03-5J only	.15
6-7	85296	Lamp—dial 6 to 8 volt .15 amps.	.16
8	85394	Condenser—mica 510 mmfd.	.25
9	88054	Switch—tone control	.30
10	110553	Resistor—carbon 220,000 ohms 1/4 watt	.12
11	110560	Resistor—carbon 100 ohms 1/4 watt	.12
12	110565	Resistor—22,000 ohms 1/4 watt	.12
13	110580	Resistor—carbon 3.3 meg. 1/4 watt	.12
14	112796	Wave Trap with trimmer (03-5E-WT only)	.50
15	112898	Condenser—electrolytic 16 mfd. 150 volt	.50
16	112971	Resistor—insulated 470,000 ohms 1/4 watt	.15
17	112975	Resistor—carbon 10 meg. 1/4 watt	.12
18	113472	Condenser—electrolytic 40 mfd. 150 volt	.56
19A to 19E.	114964	Condenser—Push button trimmer for 03-5E	2.25
	116963	Condenser—Push button trimmer for 03-5J	2.25

Diagram Number	Part Number	Description	List Price
20	114969	Condenser—mica 15 mmfd. (03-5E only)	$ .12
21	U-115058	Speaker—dynamic 5"	3.80
22	116232	Choke coil R. F. (03-5E only)	.48
23	116527	Resistor—100 ohms 3 watts W.W.	.26
24	116625	Condenser—.1 mfd. 600 volts	.25
25-26	116647	Condenser—.004 mfd. 600 volts	.15
27	116674	Coil—oscillator	.35
28	116702	Resistor—140 ohms 1/2 watt W.W.	.12
29	116706	Condenser—.2 mfd. 600 volt	.35
30	116781	Condenser—trimmer (03-5J only)	.22
31-32	116819	Condenser—.05 mfd. 600 volt	.20
33A-33B	116834	Volume control—1 meg. (with switch)	1.10
34A-34B	116836	Condenser—tuning for 03-5E	2.80
	116961	Condenser—tuning for 03-5J	3.20
35	116846	Transformer—output	1.00
36	116848	Transformer—1st I.F.	1.05
37	116856	Coil—antenna—03-5E only	.60
38	116879	Condenser—trimmer 5 to 50 mmfd.	.15
39-40	116893	Condenser—paper .02 mfd. 600 volt	.15
41	116898	Push button switch	3.30
42	116933	Antenna choke coil 03-5J only	.35
	116961	Condenser—tuning for 03-5J	3.20
	116963	Trimmer condenser strip (push button) 03-5J	2.25
43	116967	Resistor 25 ohms 1 watt W.W.	.16
44	116968	Resistor—40 ohms 2 watts W.W.	.86
45	116969	Loop antenna 03-5J only	.90
46	U-116982	Cone & voice coil for U-115058 speaker	1.55
47	116984	Condenser—.04 mfd. 600 volt	.20
48	117798	Transformer—2nd I.F.	1.20
49	118206	Condenser—.25 mfd. 600 volt	.35

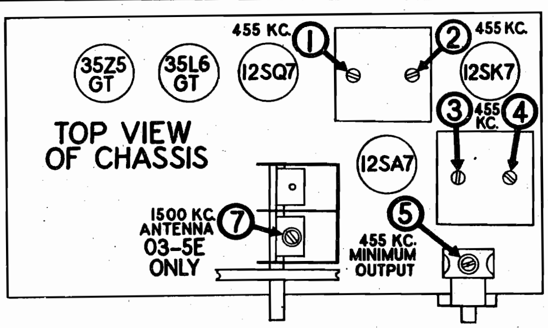
CHASSIS 03-5E, 03-5J
Alignment, Voltage
Trimmers, Socket

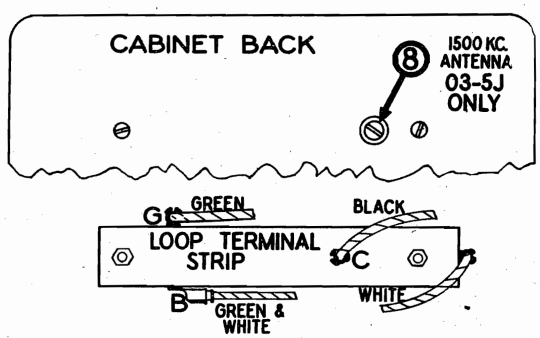
STEWART WARNER CORP.

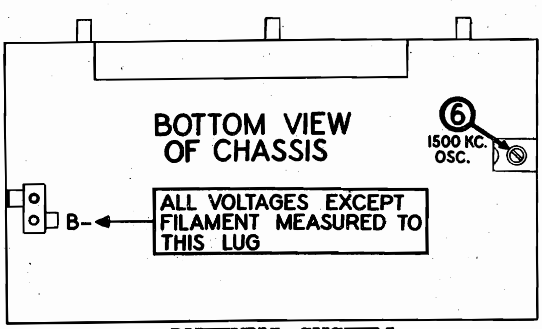
ALIGNMENT PROCEDURE

1. Connect the output meter across the voice coil or using a .1 mfd. condenser in series, connect from the 35L6GT output tube plate to B— as shown on bottom view of chassis.
2. Connect the ground lead of the signal generator through a .25 MFD condenser to the B— lug as shown on bottom view of chassis.
3. Turn the volume control to maximum position and push the "Broadcast" button in.
4. The pointer should be in a horizontal position when the gang condenser is in full mesh. If it is not, it will be necessary to remove the dial window by pushing out the clips holding it in place and setting the pointer to the correct position. Be sure that the dial face is in the correct position when this is done.
5. On the 03-5E chassis, remove connector between A and A_1.
6. On the 03-5J chassis, connect the loop making sure the wires are connected to their proper clips on the loop terminal strip and make sure A is connected to A_1.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Mica Condenser	Stator lug on large section of variable condenser	455 KC	Any point where it does not affect signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	Antenna Terminal "A"	455 KC	Any point where it does not affect signal	5 Used on 03-5E-WT only	Wave Trap	Adjust for minimum output using a strong generator signal.
200 MMFD. Mica Condenser	Antenna Terminal "A"	1500 KC	1500 KC	6	Broadcast Oscillator (Shunt)	Adjust for maximum output.
On the 03-5E and 03-5E-WT Chassis only, proceed with this step:						
200 MMFD. Mica Condenser	Antenna Terminal "A"	1500 KC	Tune to 1500 KC Generator Signal	7 03-5E and 03-5E-WT only	Broadcast Antenna (Shunt)	Adjust for maximum output.
On the 03-5J chassis, remove the output meter leads, replace the chassis in the cabinet and replace the cabinet back and loop assembly being sure to connect the loop properly as shown below. Replace connector between terminal A and A_1. Then make the following adjustment.						
Place lead from Sig. Generator close to the loop.		1500 KC	Tune to 1500 KC Generator Signal	8 03-5J only	Broadcast Antenna (Shunt)	Adjust for maximum output by ear.



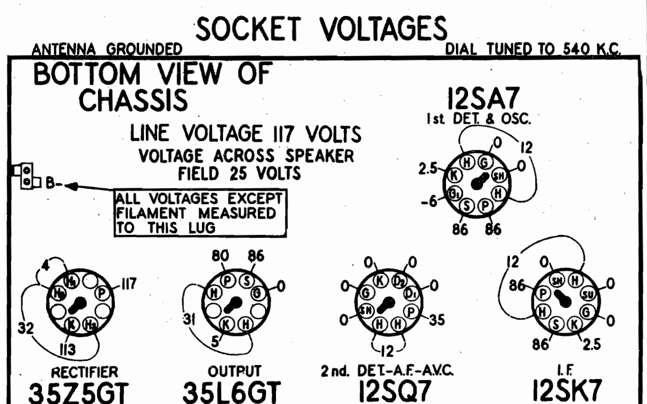




ANTENNA SYSTEM

A built-in line antenna is incorporated in the 03-5E chassis models. The 03-5J uses a loop antenna. Both sets have terminals so that an external antenna may be used. To connect an external antenna to either of these sets, remove the connector between A and A_1 and connect the antenna to the terminal marked A. Do not make any connection to the terminal marked A_1.

It should not be necessary to change the setting of the trimmer on the 03-5J cabinet back when connecting or removing an external antenna if the set has been properly aligned.

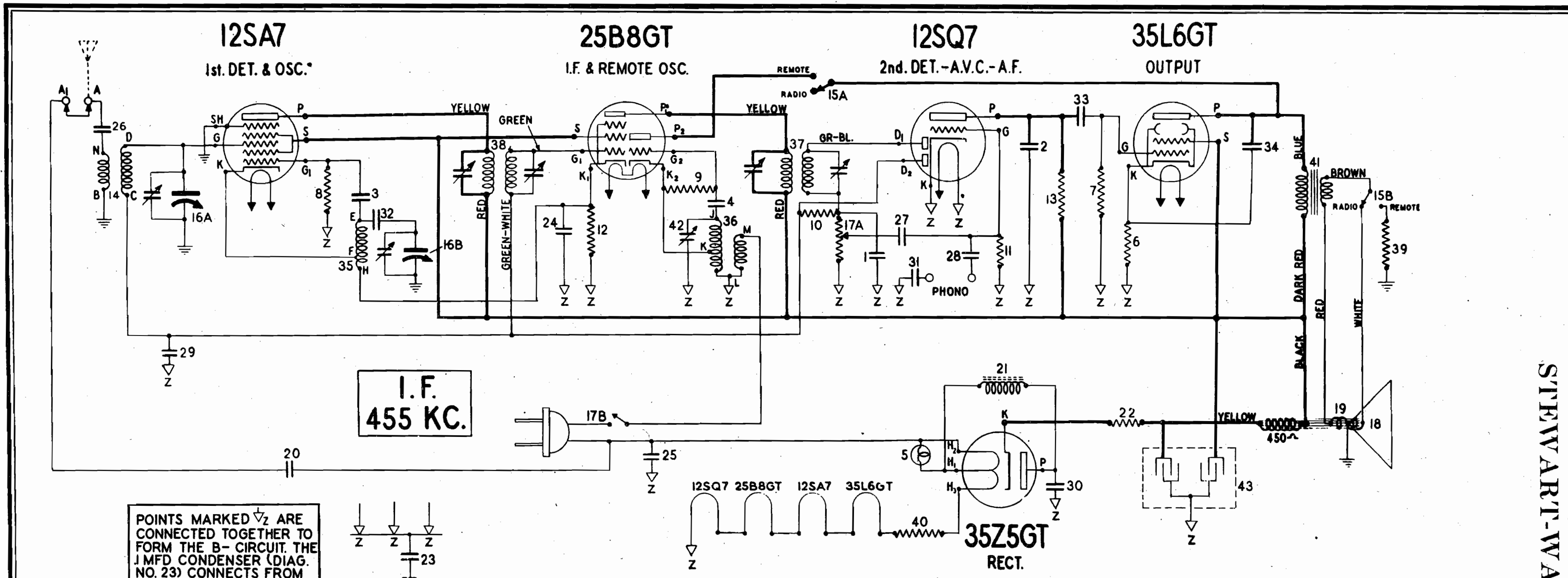


REAR OF CHASSIS

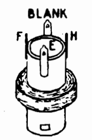
Use a high resistance Voltmeter of at least 1000 ohms per volt.

STEWART-WARNER CORP.

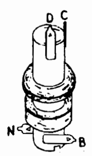
MODELS 03-5K1 to 03-5K9
Magician, Ch. 03-5K
Schematic



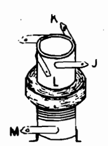
POINTS MARKED ▽Z ARE CONNECTED TOGETHER TO FORM THE B- CIRCUIT. THE .1 MFD CONDENSER (DIAG. NO. 23) CONNECTS FROM THIS CIRCUIT TO CHASSIS.



OSCILLATOR COIL
DIAGRAM NO. 35
PART NO 117352



ANTENNA COIL
DIAGRAM NO. 14
PART NO 113449



REMOTE OSC. COIL
DIAGRAM NO. 36
PART NO 117359

NOTE
TERMINALS OF COILS SHOWN IN PICTORIAL VIEWS ABOVE, ARE LETTERED TO CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica, 260 mmfd.	$0.20
3-4	83783	Condenser—mica, 110 mmfd.	.20
5	85296	Lamp—dial, 6 to 8 volt, .15 amps.	.16
6	88460	Resistor—wire wound, 150 ohms, ½ watt	.12
7	110559	Resistor—carbon, 470,000 ohms, ¼ watt	.12
8	110565	Resistor—carbon, 22,000 ohms, ¼ watt	.12
9	110566	Resistor—carbon, 33,000 ohms, ¼ watt	.12
10-11	110580	Resistor—carbon, 3.3 meg., ¼ watt	.12
12	110590	Resistor—carbon, 180 ohms, ¼ watt	.12
13	110591	Resistor—carbon, 680,000 ohms, ¼ watt	.12
14	113449	Coil—antenna	.78
15A-15B	114141	Switch D.P.D.T.	.44
16A-16B	114870	Condenser—variable gang	2.85
17A-17B	114879	Volume control—1 megohm; with switch	.96
18	R-114886	Cone and voice coil for R-115066 speaker	1.00

Diagram Number	Part Number	Description	List Price
19	R-115066	Speaker—dynamic, 4 inch (with output trans.)	$4.30
20	116224	Condenser—mica, 260 mmfd., 500 volt	.15
21	116232	R. F. Choke	.48
22	116479	Resistor—wire wound, 33 ohms, 3 watts	.20
23-24	116625	Condenser—.1 mfd., 600 volt	.25
25	116640	Condenser—.01 mfd., 600 volt	.15
26-27-28	116647	Condenser—.004 mfd., 600 volt	.15
29-30-31	116819	Condenser—.05 mfd., 600 volt	.20
32-33-34	116893	Condenser—.02 mfd., 600 volt	.15
35	117352	Coil—oscillator	.38
36	117359	Coil—for remote control oscillator	.60
37	117384	Transformer—2nd I.F.	1.10
38	117385	Transformer—1st I.F.	1.25
39	117394	Resistor—5 ohm, 1 watt, W.W.	.16
40	117395	Resistor—20 ohm, 1 watt, W.W.	.16
41	R-117484	Transformer — output for R-115066 speaker	1.50
42	117558	Condenser—trimmer, 50 mmfd. max. cap.	.25
43	117559	Condenser—electrolytic, 30-30 mfd., 150 volt	1.20

MODELS 03-5K1 to 03-5K9
Alignment, Voltage, Socket
Trimmers, Notes

STEWART-WARNER CORP.

ALIGNMENT PROCEDURE

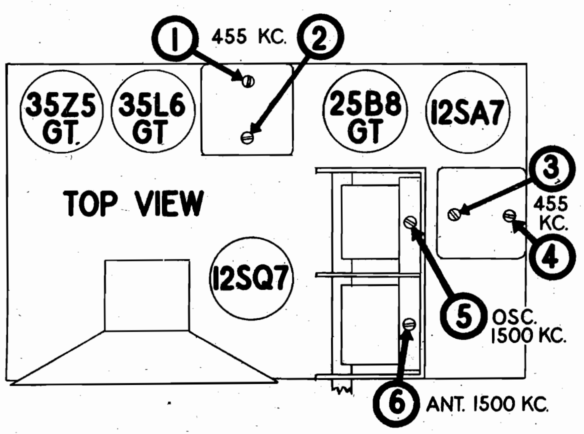
1. Connect the output meter across the voice coil or, using a .1 mfd. condenser in series, connect between the 35L6GT plate and B— terminal shown on voltage chart.

2. Connect the ground lead of the signal generator to the chassis of the receiver through a .25 mfd. condenser and keep it connected in this manner throughout the entire alignment procedure. Failure to do this may have serious results as one side of the power line may be grounded in the signal generator. If oscillation or hum occurs, connect the ground lead of the signal generator through a .25 mfd. condenser to B— as shown on the Voltage Chart.

3. Remove the connector between terminals A and A_1, also turn the volume control to the maximum volume position and keep it in this position throughout the entire alignment procedure.

4. Push the black sliding button on the rear of the chassis to the left (viewed from the rear). This is the position labeled "RADIO."

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Mica Condenser	Trimmer lug on front section of variable condenser	455 KC.	Any point where it does not affect the signal	1-2 3-4	2nd I.F. 1st I.F.	Adjust for Maximum Output. Then repeat adjustment.
200 MMFD. Mica Condenser	Antenna Terminal "A"	1500 KC.	1500 KC.	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal "A"	1500 KC.	Tune to 1500 KC. Generator Signal	6	Broadcast Antenna (Shunt)	Adjust for Maximum Output.



FOR ADJUSTMENT OF TRIMMER ON BACK OF CHASSIS, REFER TO FOURTH PARAGRAPH, UNDER HEADING "REMOTE OPERATION."

REMOTE OPERATION

The Stewart-Warner "Magician," in addition to being a high grade radio receiver, can be used to control one or more radios in the home. This is accomplished by using the triode section of the 25B8GT tube as a radio frequency oscillator and modulating the output of this oscillator with the audio frequency output of the 35L6GT tube. The D. P. D. T. switch (diagram No. 15) located on the rear of the chassis, switches the output of the 35L6GT to the speaker in the "RADIO" position, and to the remote oscillator in the "REMOTE" position.

The modulated radio frequency signal of the remote oscillator, is coupled to the power line by means of the coil, diagram No. 36. Any radio receiver in the home with a line antenna can tune in this signal. Any station tuned in with the "Magician" will be heard on the controlled receiver. The volume may be controlled with the volume control on the "Magician."

The volume control on the controlled receiver should be set to between one half and three quarters of the maximum volume position. Usually it should be turned up as far as possible without encountering excessive hum. Frequently operation can be improved or hum and noise reduced by reversing the power line plugs of the "Magician" or the controlled receiver.

The frequency of the remote oscillator can be varied from approximately 540 to 800 KC. by means of the trimmer on the back of the chassis. The frequency is set to 540 KC. at the factory, but sometimes it may be desirable to change this slightly by adjusting the slotted screw located on the back of the chassis. This adjustment must be changed if the controlled receiver does not tune to 540 KC., or if there is a station you wish to hear near 540 or 1080 KC. It is also useful for reducing whistles, although it is perfectly normal for the controlled receiver to whistle when the "Magician" is tuned to its own control frequency or to a harmonic of that frequency.

Phonograph operation may be had on either direct or remote operation by connecting the leads from a record playing to the "PHONO" terminals, turning the volume control to minimum volume position with current on, and controlling the volume by means of the volume control on the record player.

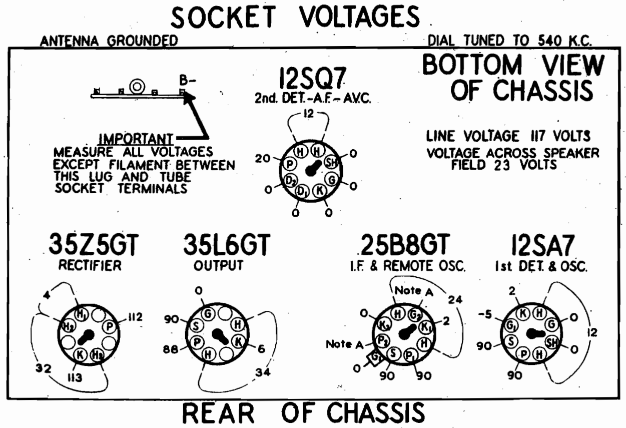
LINE ANTENNA ADAPTER

Any type of radio may be controlled by the "Magician," but if it does not have a line antenna, a Stewart-Warner Line Antenna Attachment Unit (Part No. 117643) should be used. The Line Antenna Attachment Unit allows any standard receiver to operate either with or without an external antenna. The Line Antenna Attachment Unit is also useful in isolating other radios which have a large buffer condenser and thus effectively short circuit the remote control signal on the power line. A Line Antenna Attachment Unit connected to each radio in the home will improve remote operation to a great extent.

MISCELLANEOUS PARTS

Part Number	Description	List Price
117405	Back—cabinet for 03-5K3	$0.08
117412	Back—cabinet for 03-5K1	.08
114950	Cabinet for 03-5K1 (Walnut)	2.00
116338	Cabinet for 03-5K3 (Ivory)	2.75
112745	Clip—coil mounting	.01
85321	Connector—for internal antenna	.01
113565	Decal. (Stewart-Warner)	.02
117414	Decal. (Magician)	.06
116556	Insulator—pilot light	.10
114867	Knob—volume for 03-5K3 (Red)	.08
114973	Knob—tuning for 03-5K3 (Red)	.45
114933	Knob—volume for 03-5K1 (Walnut)	.12
114975	Knob—tuning for 03-5K1 (Walnut)	.45
116485	Pad—asbestos	.03
85040	Screw—No. 6 Hex. Hd. Per C	.35
83624	Screw—No. 8 Hex. Hd.	.01
116592	Shield—tube	.10
114876	Socket—octal base	.15
114982	Socket—for dial lamp	.20
117383	Terminal Strip (A-A_1, and Phono)	.26
117411	Trimount Stud	.01

SOCKET VOLTAGES



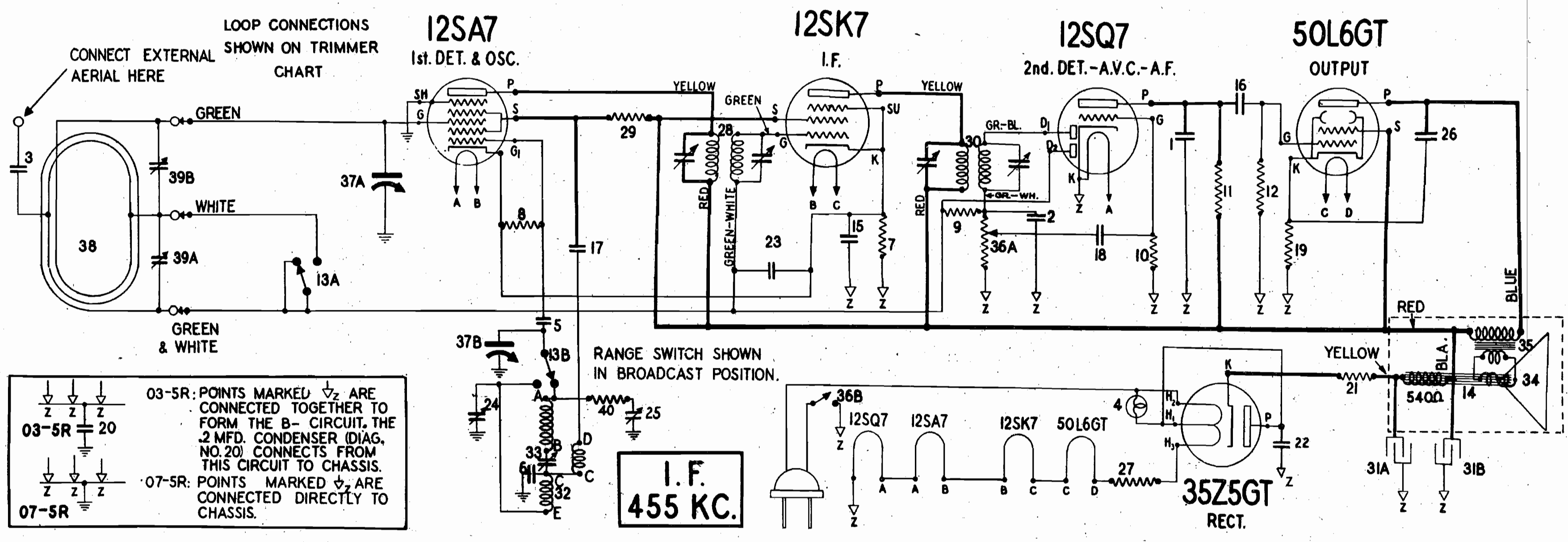
REAR OF CHASSIS

NOTE A: With switch No. 15 in "REMOTE" position, there will be a small negative voltage on G_2 and a positive reading of 88 volts on P_2.

Use a High Resistance Voltmeter of at Least 1000 Ohms per Volt

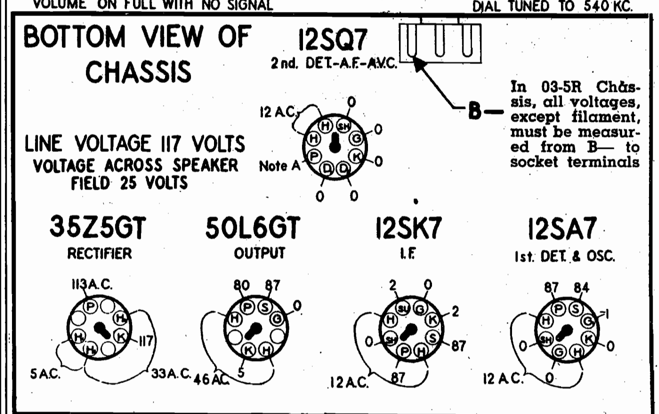
STEWART-WARNER CORP.

MODELS 03-5R1,03-5R3 to 03-5R6
Ch.03-5R;07-5R1,07-5R3 to 07-5R6
Chassis 07-5R
Schematic,Voltage



SOCKET VOLTAGES

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC.



REAR OF CHASSIS

Use a High Resistance Voltmeter of at Least 1000 Ohms per Volt.
NOTE A: Only a small voltage will be indicated on this plate when using a meter of 1000 ohms per volt.

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3	83783	Condenser—mica 110 mmfd.	.20
4	85296	Lamp bulb—dial (Mazda 51)	.16
5	85563	Condenser—mica 26 mmfd.	.15
6	89275	Condenser—mica .002 mfd.	.40
	110556	Resistor—330 ohms ¼ watt	.12
7	110560	Resistor—carbon 100 ohms ¼ watt	.12
8	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
9-10	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
11	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
12	112993	Resistor—carbon 470,000 ohms 1/10 watt	.12
13A-13B	114141	Switch—D.P.D.T.	.44
14	R-115081	Speaker—dynamic (4")	4.25
15	116625	Condenser—.1 mfd. 600 volt	.25
16-17	116640	Condenser—.01 mfd. 600 volt	.15
18	116647	Condenser—.004 mfd. 600 volt	.15
19	116702	Resistor—140 ohms ½ watt Wire Wound	.12
20	116706	Condenser—.2 mfd. 600 volt (Omitted on 07-5R)	.35
21	116752	Resistor—33 ohms 1 watt Wire Wound	.15
22-23	116819	Condenser—.05 mfd. 600 volt	.20
24-25	116879	Condenser—trimmer 5 to 50 mmfd.	.15
26	116883	Condenser—.02 mfd. 600 volt	.15
27	117395	Resistor—20 ohms 1 watt	.16
28	118614	Transformer—1st I.F.	1.10
29	118803	Resistor—(insulated)—680 ohms ¼ watt	.12
30	118903	Transformer—2nd I.F.	1.10
31A-31B	118911	Condenser—Electrolytic—20—20 mfd., 150 Volts	.75
32A-32B-32C	119653	Coil—oscillator (chassis not stamped with letter on back)	$0.52
	119784	Coil—oscillator (chassis stamped with "S" on back)	.52
33	118919	Condenser—padding	.40
34	R-118959	Cone & Voice coil for R-115081 speaker	1.50
35	R-118960	Transformer—output for R-115081 speaker	1.00
36A-36B	119413	Volume control—1 meg. (with switch)	1.10
37A-37B	119005	Condenser—variable tuning (with drum)	2.70
38	119119	Loop antenna assembly, without trimmers (03-5R4 to 03-5R6) (07-5R4 to 07-5R6) only (chassis not stamped with letter on back)	.75
	119786	Loop antenna assembly, without trimmers (03-5R4 to 03-5R6) (07-5R4 to 07-5R6) (chassis stamped "S" on back)	.75
	119309	Loop antenna (03-5R1 & 07-5R1) (03-5R3 07-5R3) chassis not stamped with letter	.80
	119769	Loop antenna (03-5R1 & 07-5R1) (03-5R3 & 07-5R3) (chassis stamped "S" on back)	.80
39A-39B	119122	Loop trimmers complete with antenna terminal (03-5R4 to 03-5R6) (07-5R4 to 07-5R6) only	.65
	119126	Trimmer condenser assembly (03-5R1 to 03-5R3) (07-5R1 to 07-5R3) only	.35
40	110556	Resistor—330 ohms ¼ watt	.12
	119653	Oscillator coil (for chassis not stamped with letter on back)	.52
	119784	Oscillator coil (for chassis stamped "S" on back)	.52

MODELS 03-5R1,03-5R3 to 03-5R6
07-5R1,07-5R3 to 07-5R6
Alignment,Trimmers,Socket

STEWART-WARNER CORP.

ALIGNMENT PROCEDURE FOR 03-5R and 07-5R CHASSIS

FOR ALIGNMENT: An output meter and an accurately calibrated signal generator with a tuning range from 455 KC to 7 MC are required.

1. Connect the output meter across the voice coil or, using a .1 mfd. condenser in series, connect as follows:
   MODEL 03-5R: Between the 50L6GT plate and B— terminal shown on voltage chart.
   MODEL 07-5R: Between the 50L6GT plate and chassis.
2. Connect the ground lead of the signal generator to the chassis of the receiver through a .25 mfd. condenser and keep it connected in this manner throughout the entire alignment procedure. Failure to do this may have serious results as one side of the power line may be grounded in the signal generator. If oscillation or hum occurs in the model 03-5R, connect the ground lead of the signal generator through a .25 mfd. condenser to B— as shown on the Voltage Chart.
3. Turn the volume control to the maximum volume position and keep it in this position throughout the alignment procedure.
4. Be sure the loop is connected as shown below and that IT IS IN THE SAME RELATIVE POSITION IT OCCUPIES WHEN IN THE CABINET.
5. The pointer should be set to 540 KC with gang in full mesh.

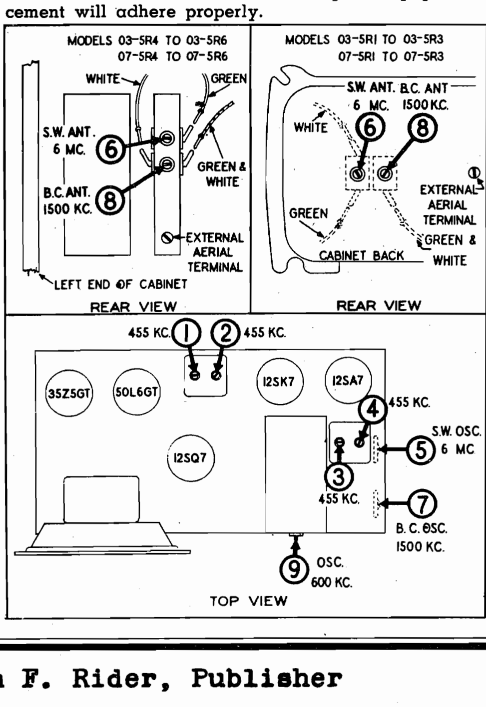
Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Condenser	Lug on Rear Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then Repeat Adjustment.
					3-4	1st I.F.	
400 OHM Carbon Resistor	External Aerial Terminal	6 MC	Foreign	6 MC	5	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 5.1 MC. If Image does not appear, Realign at 6 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	External Aerial Terminal	6 MC	Foreign	Tune to 6 MC Generator Signal	6*	Foreign Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	600 KC	Broadcast	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*NOTE: After chassis and loop are in cabinet, realign trimmer No. 6 at 6 MC. then trimmer No. 8 at 1500 KC. The generator lead placed near the loop will usually give sufficient signal.

FASTENING DIAL WINDOW

If the dial window on a plastic cabinet comes loose, it can easily be fastened in place with speaker cement after removing the chassis from cabinet.

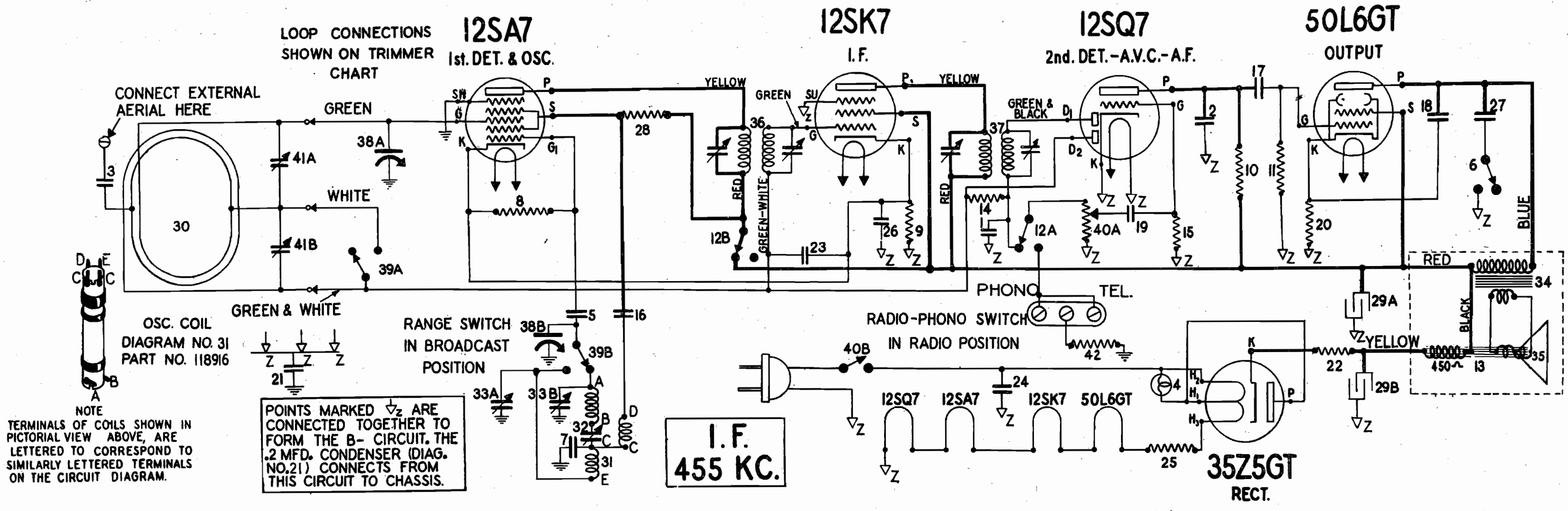
Before fastening the window, it is advisable to roughen the surface of the cabinet with a file or rough sandpaper so that the cement will adhere properly.



MISCELLANEOUS PARTS LIST

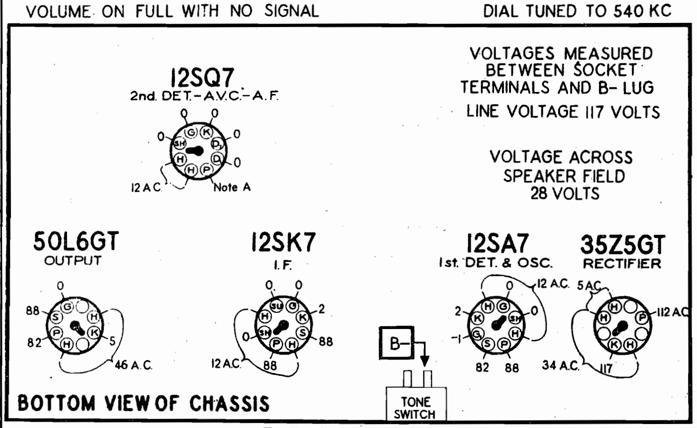
Part No.	Description	List Price
112745	Clip—coil mounting	$0.01
116948	Cord—dial (supplied in 6 ft. lengths)	.18
118990	Dial scale (Chassis not stamped with letter on back)	.07
119771	Dial scale (Chassis stamped "S" on back)	.07
119047	Dial window	.15
119011	Pointer	.06
83624	Screw—self tapping 8x¼	.01
85040	Screw—No. 6 Hex. Hd. Per C	.35
118953	Shaft—tuning	.15
116690	Socket—small octal base	.12
119008	Socket—pilot light	.22
111981	Spring—for dial cord tension	.03
	CABINETS	
119036	Cabinet (walnut) complete with dial window (03-5R1, 07-5R1)	2.25
119038	Cabinet (ivory) complete with dial window (03-5R3, 07-5R3)	3.00
119150	Cabinet (03-5R4, 07-5R4)	7.20
119151	Cabinet (03-5R5, 07-5R5)	9.60
119152	Cabinet (03-5R6, 07-5R6)	9.60
	CABINET BACKS	
119384	Cabinet back (walnut) with ant. term. and trimmers (03-5R1, 07-5R1)	.90
119385	Cabinet back (ivory) with ant. term. and trimmer (03-5R3, 07-5R3)	.90
119172	Cabinet back only (03-5R4, 07-5R4)	1.30
119173	Cabinet back only (03-5R5, 07-5R5)	1.30
	KNOBS	
119013	Knob (walnut) (03-5R1, 07-5R1)	.10
119058	Knob (red) (03-5R3, 07-5R3)	.10
119175	Knob (tan) (03-5R4, 07-5R4) (03-5R5, 07-5R5) (03-5R6, 07-5R6)	.10

STEWART WARNER CORP.



SOCKET VOLTAGES

VOLUME ON FULL WITH NO SIGNAL — DIAL TUNED TO 540 KC



REAR OF CHASSIS

Use a High Resistance Voltmeter of at Least 1000 Ohms per Volt.

NOTE A: The reading on this plate will be small because of the high resistance of resistor No. 10.

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3	83783	Condenser—mica 110 mmfd.	.20
4	85296	Lamp—dial 6 to 8 volt (Mazda 51)	.16
5	85563	Condenser—mica 26 mmfd.	.15
6	88054	Switch—tone control	.30
7	89275	Condenser—mica .002 mfd.	.40
8	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
9	110560	Resistor—carbon 100 ohms ¼ watt.	.12
10	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
11	112993	Resistor—carbon 470,000 ohms 1/10 watt	.12
12A-12B	114141	Switch—D.P.D.T. (Radio-Phono)	.44
13	R-115085	Speaker—dynamic (5")	4.00
14-15	116090	Resistor—insulated 3.3 megohms ¼ watt	.15
16-17-18	116640	Condenser—.01 mfd. 600 volt	.15
19	116647	Condenser—.004 mfd. 600 volt	.15
20	116702	Resistor—140 ohms ½ watt wire wound	.12
21	116706	Condenser—.2 mfd. 600 volt	.35
22	116752	Resistor—33 ohms 1 watt wire wound	.15
23-24	116819	Condenser—.05 mfd. 600 volt	.20
25	117395	Resistor—20 ohms 1 watt	.16
26	118206	Condenser—.25 mfd. 600 volts	.35
27	118487	Condenser—.07 mfd. 600 volts	.25
28	118803	Resistor—insulated 680 ohms ¼ watt	.12
29A-29B	118911	Condenser—electrolytic—20-20 mfd. 150 volt	.75
30	118915	Cabinet back and loop antenna complete (03-5S1)	1.65
	119145	Cabinet back and loop antenna complete (03-5S2)	1.65
31	118916	Coil—oscillator	.52
32	118919	Condenser—padding	.40
33A-33B	118920	Trimmer strip (2 sect.)	.30
34	R-118995	Transformer—output for R-115085 speaker	1.00
35	R-118999	Cone & Voice coil for R-115085 speaker	1.70
36	119042	Transformer—1st I.F.	1.10
37	119081	Transformer—2nd I.F.	1.00
38A-38B	119084	Gang condenser & push button unit	3.80
39A-39B	119085	Range switch	.50
40A-40B	119086	Volume control—1 meg. (with switch)	1.00
41A-41B	119126	Condenser—trimmer for loop antenna	.35
42	110553	Resistor—220,000 ohms ¼ watt (on underwriters' approved sets only).	.12

MODELS 03-5S1, 03-5S2
Alignment, Socket, Trimmers

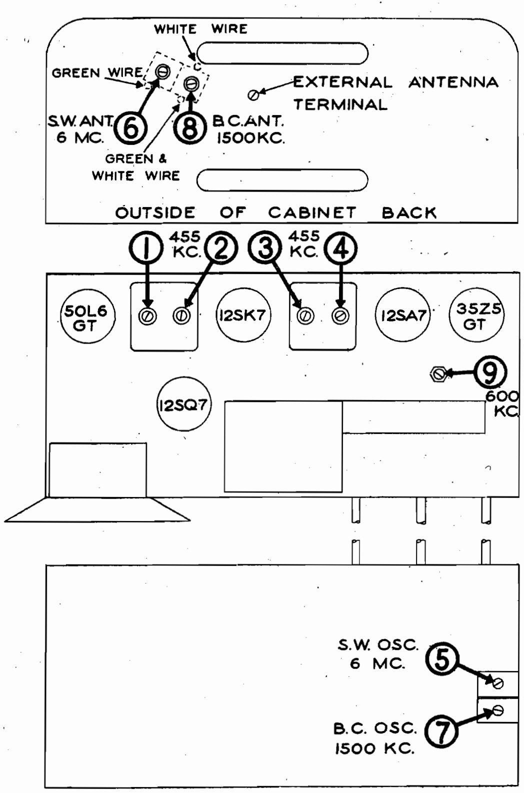
STEWART-WARNER CORP.

ALIGNMENT PROCEDURE FOR 03-5S CHASSIS

1. Connect the output meter across the voice coil or from the plate of the 50L6GT output tube to B— through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis through a .25 mfd. condenser.
3. Turn the volume control to the maximum volume position and keep it in this position throughout the alignment procedure.
4. Be sure the loop is properly connected at all times, AND THAT IT IS IN THE SAME RELATIVE POSITION TO THE CHASSIS AS WHEN IN THE CABINET.
5. Set the dial pointer to read 540 KC. with the gang in full mesh.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD Condenser	Green Wire Lead to Loop	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then Repeat Adjustment.
					3-4	1st I.F.	
400 OHM Carbon Resistor	Antenna Terminal on Cabinet Back	6 MC	Foreign	6MC	5	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 5.1 MC. If Image does not appear, Realign at 6 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Antenna Terminal on Cabinet Back	6 MC	Foreign	Tune to 6MC Generator Signal	6*	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
200 MMFD. Mica Condenser	Antenna Terminal on Cabinet Back	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal on Cabinet Back	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal on Cabinet Back	600 KC	Broadcast	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series Pad)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*After chassis and loop are in cabinet, realign trimmer No. 6 at 6 MC. then trimmer No. 8 at 1500 KC., using a weak signal. The signal generator lead placed near the loop will usually give sufficient signal.

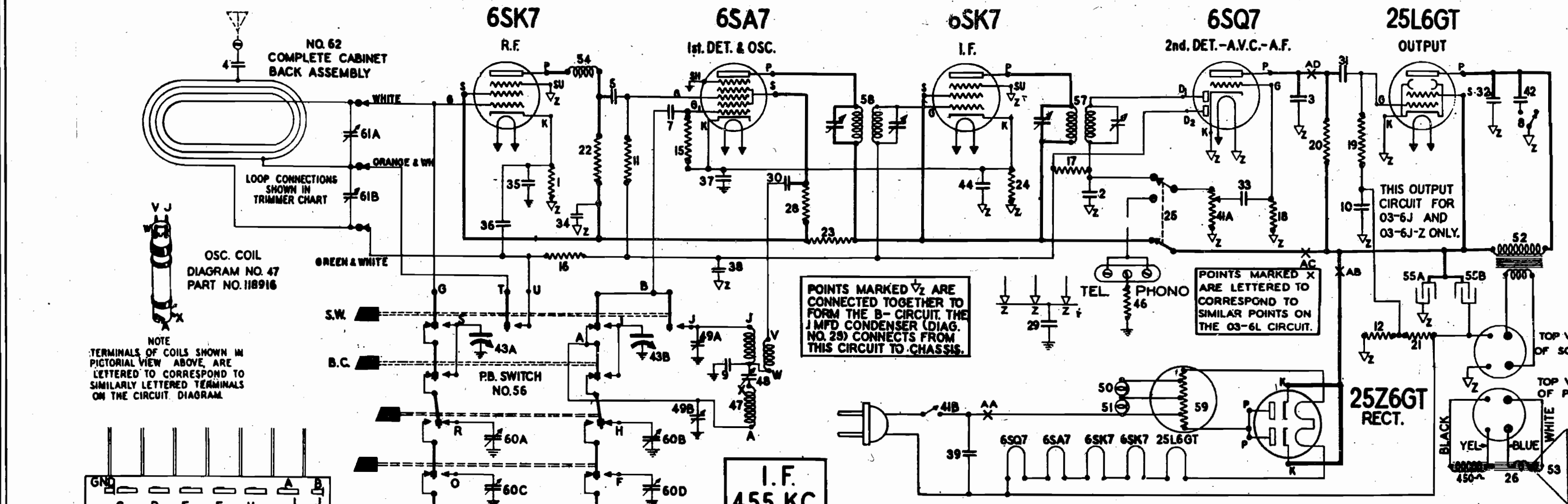


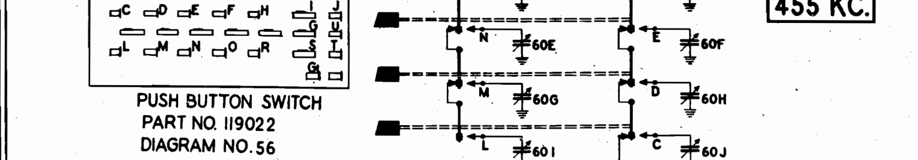
MISCELLANEOUS PARTS

Part Number	Description	List Price
118915	Cabinet Back assembly complete (03-5S1)	$1.65
119145	Cabinet Back assembly complete (03-5S2)	1.65
119129	Call tabs & instruction sheets	.40
112745	Clip—coil mounting	.01
112764	Clip—dial scale retaining	.01
113178	Cord—dial—(supplied in 4 ft. lgths)	.30
119090	Dial scale	.12
119044	Escutcheon—push button	.38
118913	Knob—Range switch, tuning, or volume	.10
118929	Pointer shaft & pulley	.12
119088	Pointer	.12
119089	Push button	.12
84214	Retaining ring for shafts or dial drum	.02
81145	Retaining ring for drive shaft..........Per C	.50
113672	Rubber grommet (on tuning shaft)	.02
83624	Screw—self tapping 8x¼	.01
85040	Screw—No. 6 Hex. Hd..........Per C	.35
114914	Screw for mounting escutcheon..........Per Dz.	.15
116690	Socket—small octal base	.12
116793	Socket—for pilot light	.40
113177	Spring—dial cord tension	.09
119187	Spring for push button tuner	.05
119186	Strap (fabric), including rivets, and washers for push button tuner	.08
84412	Terminal strip—(Phono-Tele.)	.03
118931	Tuning shaft	.15
111456	Washer—spring washer..........Per C	.50
116530	Washer for back of knobs	.005
116414	Window for dial	.25

MODELS 03-6J1,Ch.03-6J; 03-6J1-Z,Ch.03-6J-Z 03-6L7,Ch.03-6L 03-6L7-Z,Ch.03-6L-Z Schematic

STEWART-WARNER CORP.



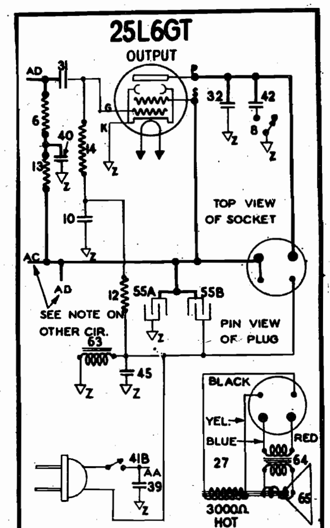


PUSH BUTTON TRIMMER RANGES		
DIAGRAM NO.	03-6J & 03-6L	03-6J-Z & 03-6L-Z
60A-60B	HIGH	HIGH
60C-60D	MED.	HIGH
60E-60F	LOW	MED.
60G-60H	LOW	MED.
60I-60J	LOW	LOW

SEE PARTS LIST BELOW FOR RANGES IN KILOCYCLES

Diagram Number	Part Number	Description	List Price
1	67981	Resistor—carbon 400 ohms ¼ watt	$0.25
2-3	83539	Condenser—mica 260 mmfd.	.20
4-5	83783	Condenser—mica 110 mmfd.	.20
6	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
7	85061	Condenser—mica 51 mmfd.	.15
8	88054	Switch—tone	.30
9	89275	Condenser—mica .002 mfd.	.40
10	110377	Condenser—10 mfd. 35 volt (03-6L & 03-6L-Z only)	.80
	116625	Condenser—.1 mfd. 600 volt (03-6J & 03-6J-Z only)	.25
11	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
12	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
13-14	110553	Resistor—carbon 220,000 ohms ¼ watt (03-6L & 03-6L-Z only)	.12
15	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
16	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
17-18	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
19	110584	Resistor—carbon 330,000 ohms ¼ watt (03-6J & 03-6J-Z only)	.12
20-21	110591	Resistor—carbon 680,000 ohms ¼ watt (03-6J & 03-6J-Z only)	.12
22	112952	Resistor—carbon 3,300 ohms ¼ watt	.10
23	112964	Resistor—carbon 1,500 ohms ¼ watt	.15
24	112994	Resistor—carbon 220 ohms ¼ watt	.12
25	114141	Switch—D.P.D.T.	.44
26	R-115083	Speaker—dynamic (5") (03-6J & 03-6J-Z only)	4.00
27	M-115087	Speaker—dynamic (8") (03-6L7 & 03-6L7-Z)	7.50
28	116068	Resistor—carbon 680 ohms ¼ watt	.12
29	116625	Condenser—.1 mfd. 600 volt	.25
30-31-32	116640	Condenser—.01 mfd. 600 volt	.15
33	116647	Condenser—.004 mfd. 600 volt	.15
34	116706	Condenser—.2 mfd. 600 volt	.35
35 to 39	116819	Condenser—.05 mfd. 600 volt	.20
40	116819	Condenser—.05 mfd. 600 volt (03-6L & 03-6L-Z only)	$0.20
41A-41B	116834	Volume control—1 megohm (with switch)	1.10
42	116984	Condenser—.04 mfd. 600 volts	.20
43A-43B	117625	Condenser—tuning (with drum)	3.00
44	118206	Condenser—.25 mfd. 600 volts	.35
45	118290	Condenser—.5 mfd. 150 volts (03-6L & 03-6L-Z only)	.50
46	110553	Resistor—220,000 ohms ¼ watt (on Underwriters' approved sets)	.12
47	118916	Coil—oscillator	.52
48	118919	Condenser—padding	.40
49A-49B	118920	Trimmer strip (2 section)	.30
50-51	110629	Lamp—dial 6.3 volts .25 amps.	.15
52	118996	Transformer—output (03-6J & 03-6J-Z only)	1.00
53	R-118999	Cone & Voice coil for R-115083 speaker	1.70
54	119001	Coil—R. F.	.28
55A-55B	119021	Condenser—electrolytic—20-40 mfd. 150 volt	1.00
56	119022	Switch—push button	3.00
57	119024	Transformer—2nd I.F.	1.15
58	119042	Transformer—1st I.F.	1.10
59	119109	Ballast tube	.75
60A-60J	119662	Push button trimmer (Low 540 to 1000 KC)	.24
	119663	Push button trimmer (Med. 750 to 1375 KC)	.24
	119664	Push button trimmer (High 980 to 1550 KC)	.24
61A-61B	119126	Trimmer condenser—2 section	.35
62	119143	Cabinet back & loop antenna assembly (03-6J1 & 03-6J1-Z)	1.95
	119145	Loop antenna & trimmer assembly (03-6L7 & 03-6L7-Z)	1.65

Diagram Number	Part Number	Description
63	119266	Choke—filter (03-6L7 & 03-6L7-Z only)
64	M-119514	Transformer—output for M-115087 speak (03-6L & 03-6L-Z only)
65	M-119515	Cone & Voice coil for M-115087 speaker (03-6L & 03-6L-Z only)



03-6L & 03-6L-Z CONNECTIONS

MODELS 03-6J1,03-6J1-Z,03-6L7,
03-6L7-Z
Alignment,Voltage,Trimmers
Socket

STEWART-WARNER CORP.

03-6J, 03-6J-Z, 03-6L, and 03-6L-Z CHASSIS

ALIGNMENT PROCEDURE

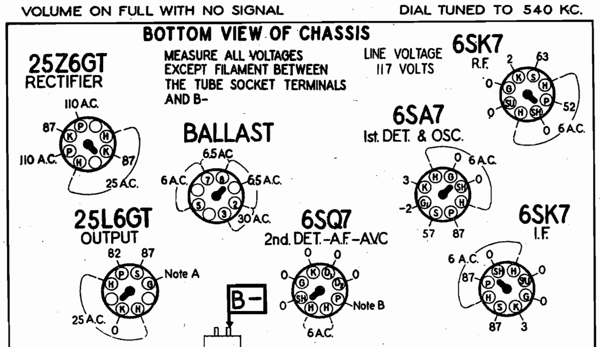
FOR ALIGNMENT: An output meter and an accurately calibrated signal generator are required.

1. Connect the output meter across the voice coil, or using a .1 mfd. condenser in series connect between the 25L6GT tube plate and B— as shown on the voltage chart.
2. Connect the ground lead of the signal generator through a .25 mfd. condenser to B— as shown on the voltage chart.
3. Connect the loop antenna to the radio, being sure to connect the wires to the proper receptacles on the loop antenna as shown in drawing below.
4. With the gang condenser in full mesh, the pointer should be in a horizontal position. If it is not, it should be moved to this position before alignment.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Push Button Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Mica Condenser	Lug on Rear Section of Variable Condenser	455 KC	"Broadcast" Button Pushed In	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Aerial Terminal	6 MC	"Short Wave" Button Pushed In	6 MC	5	Short Wave Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 5.1 MC. If Image does not appear, Realign at 6 MC, with Trimmer Screw farther out. Recheck Image.
200 MMFD. Mica Condenser	External Aerial Terminal	6 MC	"Short Wave" Button Pushed In	Tune to 6 MC Generator Signal	6*	Short Wave Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	1500 KC	"Broadcast" Button Pushed In	1500 KC	7*	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	1500 KC	"Broadcast" Button Pushed In	Tune to 1500 KC Generator Signal	8	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	600 KC	"Broadcast" Button Pushed In	Tune to 600 KC Generator Signal	9*	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

***NOTE:** When making these adjustments, the loop should be in the same relative position to the chassis as when mounted in the cabinet. Adjustments 6 & 8 should be repeated after the set and loop have been replaced in the cabinet.

VOLUME ON FULL WITH NO SIGNAL   DIAL TUNED TO 540 KC.

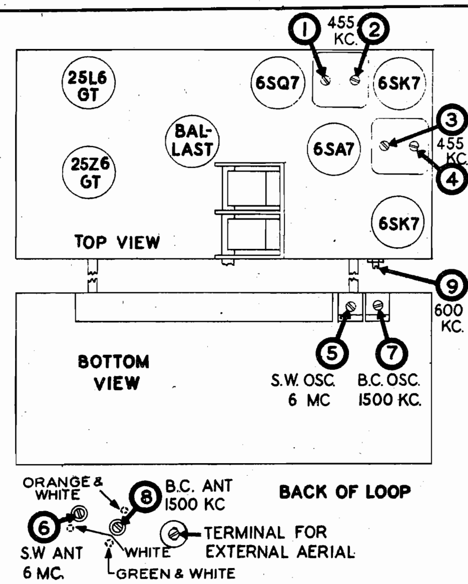


REAR OF CHASSIS

These readings taken using a voltmeter of 1000 ohms per volt.

NOTE A: The bias on the 25L6GT grid is: on 03-6J chassis: —4 volts measured across resistor No. 12; on 03-6L chassis: —5 volts measured across choke No. 63.

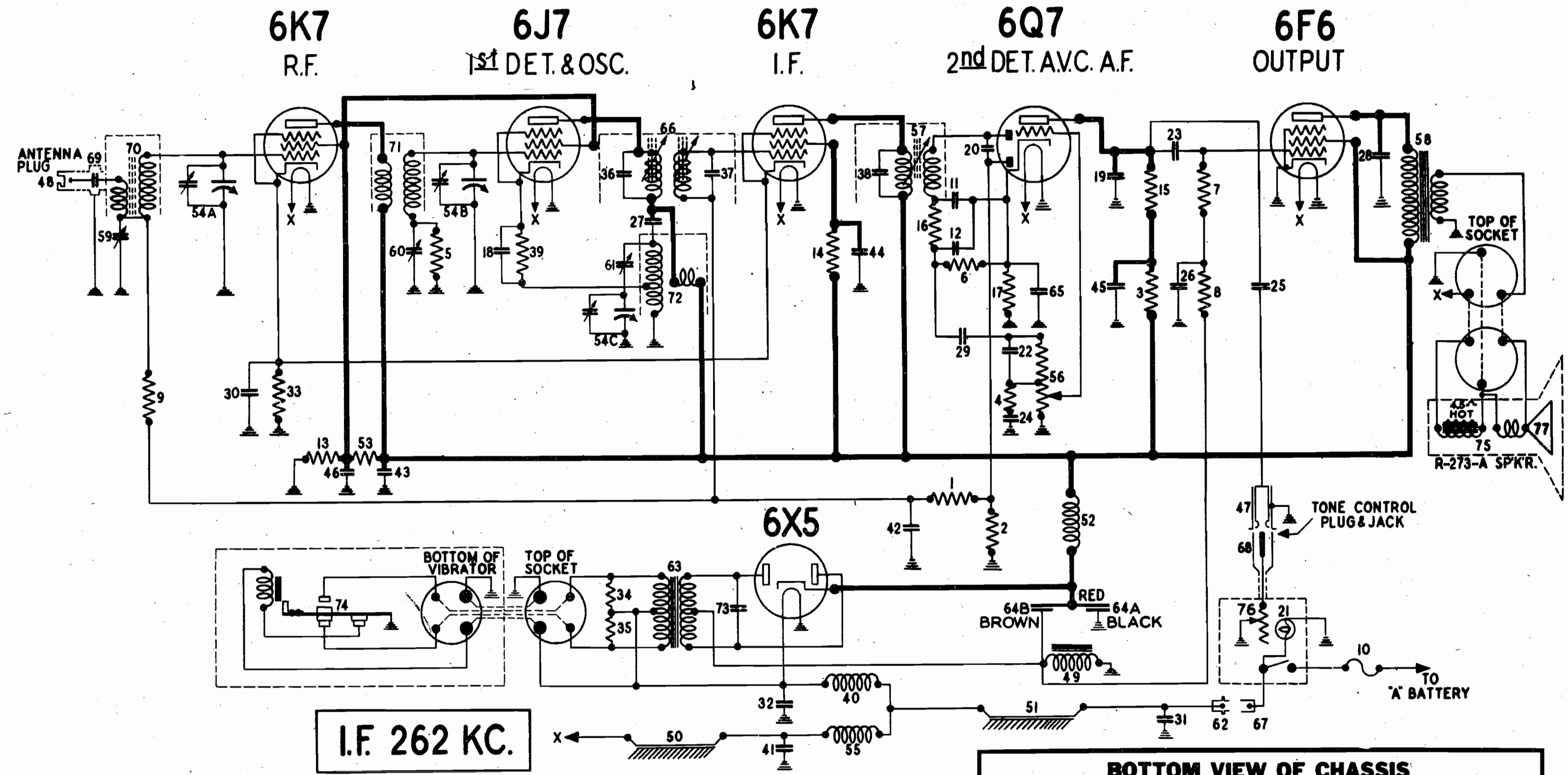
NOTE B: Due to the high resistance of resistors No. 20, 6, and 13, only a small voltage will be read at the plate of the 6SQ7 when using a voltmeter having a resistance of 1000 ohms per volt.

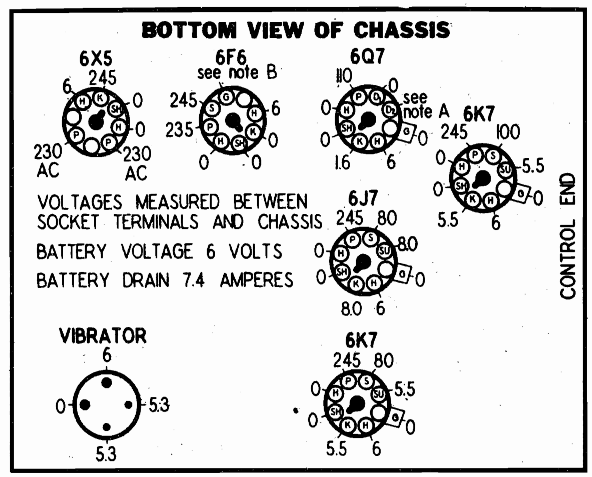


Part Number	Description	List Price
119168	Cabinet—plastic for 03-6J1 & 03-6J1-Z	$7.20
119143	Cabinet back & loop assembly (03-6J1 & 03-6J1-Z)	1.95
119145	Cabinet back & loop assembly (03-6L7 & 03-6L7-Z)	1.65
119171	Call tabs & instructions	.35
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
112794	Clip—dial scale retaining	.01
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18
119261	Cover plate for trimmer hole (03-6L7 & 03-6L7-Z)	.15
119120	Dial scale	.25
116810	Dial window (03-6J1 & 03-6J1-Z)	.35
119208	Dial escutcheon (03-6L7 & 03-6L7-Z)	.80
119166	Knob—push button	.08
119167	Knob—tuning or volume	.08
116902	Plate for trimmer hole (03-6J1 & 03-6J1-Z)	.12
116883	Pointer	.16
81145	Retaining ring—for drive shaft Per C	.50

STEWART-WARNER CORP.

MODEL R-1781
Schematic,Voltage





IMPORTANT: Use a high resistance voltmeter of 1,000 ohms per volt. Make allowances for battery voltage variation.

NOTE A: This voltage is 1.6 volts measured across resistor No. 17.

NOTE B: The grid bias of the 6F6 output tube is -14 volts measured between chassis and ungrounded filter choke terminal.

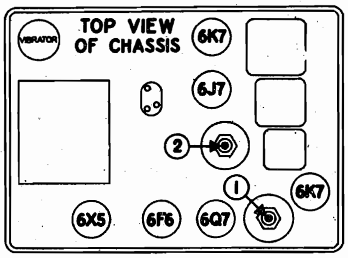
Diagram Number	Part Number	Description
1-2	83072	Carbon resistor, 510,000 ohm 1/4 watt
3-4	83080	Carbon resistor, 51,000 ohm 1/4 watt
5-6-7, 8-9	83082	Carbon resistor, 260.000 ohm 1/4 watt
10	83207	Fuse, 15 ampere 25 volt
11-12	83539	Mica condenser, 260 mmfd.
13-14-15	84198	Carbon resistor, 110,000 ohm 1/4 watt
16	84238	Carbon resistor, 11,000 ohm 1/4 watt
17	84240	Carbon resistor, 4,000 ohm 1/4 watt
18	84282	Mica condenser, .001 mfd.
19-20	84370	Mica condenser, 110 mmfd.
21	85296	Dial light bulb (bayonet type)
22	85394	Mica condenser, 510 mmfd.
23	88026	Paper condenser, .02 mfd. 400 volt
24	88029	Paper condenser, .004 mfd. 400 volt
25	88030	Paper condenser, .01 mfd. 400 volt
26	88046	Paper condenser, .1 mfd. 150 volt
27	88173	Mica condenser, 50 mmfd.
28	88185	Paper condenser, .006 mfd. 600 volt
29	88189	Paper condenser, .05 mfd. 200 volt
30	88193	Paper condenser, .25 mfd. 150 volt
31-32	88195	Paper condenser, .5 mfd. 150 volt
33	88203	Carbon resistor, 600 ohm 1/4 watt
34-35	88204	Wire wound resistor, 210 ohm 1/2 watt
36-37-38	88233	Mica condenser, 110 mmfd.
39	86257	Carbon resistor, 9,500 ohm 1/4 watt
40	88289	"A" choke (in vibrator supply)
41	88298	Condenser .25 mfd. 150 volt (low loss)
42	88534	Condenser .05 mfd. 150 volt (low loss)
43-44-45	88682	Paper condenser, .1 mfd. 400 volt
46	89421	Paper condenser, .1 mfd. 200 volt
47	110078	Tone control socket

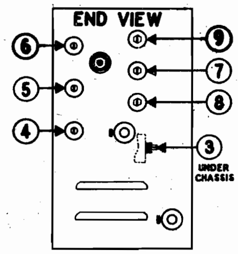
Diagram Number	Part Number	Description
48	110087	Antenna lead receptacle
49	110149	Filter choke (iron core)
50-51	110161	Interference elimination capacitor
52	110174	Radio frequency choke
53	110186	Carbon resistor, 110,000 ohm 1/2 watt
54A to C	110300	Three gang variable condenser
55	110306	"A" choke (in filament supply)
56	110311	Volume control, 500,000 ohm
57	110312	2nd I.F. transformer
58	110313	Output transformer
59	110331	Antenna compensating condenser
60	110332	R.F. padding condenser
61	110333	Oscillator padding condenser
62	110371	"A" contact and lead assem.
63	110375	Power transformer
64A, 64B	110376	Electrolytic condenser {8 mfd. sect. / 4 mfd. sect.}
65	110377	Electrolytic condenser, 10 mfd. 25 volt
66	110378	1st I.F. transformer
67	110404	32 inch "A" lead (standard)(from set to control hd.)
	110444	42 inch "A" lead (special)(from set to control hd.)
68	110405	29 inch tone control cable (standard)
	110443	36 inch tone control cable (special)
69	110414	Paper condenser, .02 mfd. 200 volt
70	110415	Antenna coil and shield
71	110416	R.F. coil and shield
72	110417	Oscillator coil and shield
73	110431	Paper condenser, .01 mfd. 1,700 volt
74	110432	Vibrator
75	R273A	Speaker 8 inch dynamic
76	110310	Tone control (250,000 ohm)
77	110460	Speaker cone

MODEL R-1781
Alignment, Trimmers, Socket

STEWART-WARNER CORP.

CHASSIS 01-6G, 01-6G-Z
Drive Cord Data





TRIMMER LOCATIONS

Trimmer Number		Alignment Frequency
1	1st I.F. transformer trimmer (top)	262 KC.
2	2nd I.F. transformer trimmer	262 KC.
3	1st I.F. transformer trimmer (bottom)	262 KC.
4	Oscillator series padder	600 KC.
5	R.F. series padder	600 KC.
6	Antenna compensator (padder)	600 KC.
7	Oscillator shunt trimmer	1400 KC.
8	R.F. Shunt trimmer	1400 KC.
9	Antenna shunt trimmer	1400 KC.

ALIGNMENT

The equipment necessary for proper alignment of this receiver consists of a good modulated oscillator, a sensitive output meter and an insulated screw driver.

The test oscillator must be accurately calibrated and its output must be adjustable to give a very weak signal which will not actuate the A.V.C. of the receiver. The insulated screw driver should be made of fibre or bakelite although a small metal blade inserted at the tip is permissible. A long blade in an insulated handle is not suitable and will prevent accurate adjustment.

An output meter with a full scale reading of four volts or less is desirable so that it can be connected directly across the voice coil terminals of the speaker. Any A.C. voltmeter with such a range will be satisfactory. If your output meter is not equipped with such a low scale, it should be connected from the plate of the output tube to chassis.

During alignment, the volume control should be turned full on and the receiver case should be in place. The front cover can be removed to permit the connection of the output meter. Keep rear cover in place.

I.F. ALIGNMENT

1- (a) Set the test oscillator to exactly 262 KC.

(b) Connect the output terminal of the oscillator to the grid of the 6J7 tube through a .1 to .5 mfd. condenser. Do not remove the grid lead from the tube.

(c) Connect the grounded output lead of the oscillator to the receiver case.

(d) Turn the gang condenser of the receiver to any point where it has no tuning effect on the 262 KC. signal.

(e) Adjust trimmers 1, 2 and 3 for maximum output. Trimmer No. 3 is located under the chassis but can be reached through a hole in the rear cover.

(f) Repeat the adjust of trimmers 1, 2 and 3.

R.F. CALIBRATION AND ALIGNMENT

This receiver employs an unusual circuit which allows the antenna, the R.F. and the oscillator circuits to be adjusted near the low frequency end of the dial in addition to the high frequency end. To get maximum sensitivity and accurate dial calibration, the following procedure must be followed exactly.

2- Low Frequency Alignment.

(a) Connect the output of the test oscillator to the antenna socket of the receiver through a 200 mmfd. (.0002 mfd.) mica condenser. This condenser must ~~not~~ be omitted or alignment will be incorrect.

(b) Connect the control head to the receiver, then turn the tuning knob until the variable condenser plates are in full mesh.

Adjust the dial calibration so that the dial pointer is on the last dial calibration mark below 550 KC. The relative position of the control head, the control shaft, and the receiver must remain unchanged until the alignment is completed.

(c) Turn the tuning knob until the dial pointer indicates that the set is tuned to 600 KC.

(d) Set the test oscillator at exactly 600 KC.

(e) Adjust trimmer No. 4 for maximum output. The adjustment of this trimmer must be made with an insulated screw driver having no more than a small metal tip.

(f) Retune the receiver to the oscillator signal.

(g) Adjust trimmers 5 and 6 for maximum output.

3- High Frequency Alignment.

(a) Tune the receiver to exactly 1400 KC. on the tuning dial.

(b) Adjust the test oscillator to exactly 1400 KC.

(c) Adjust trimmer No. 7 for maximum output.

(d) Carefully tune the receiver to the 1400 KC. oscillator signal.

(e) Adjust trimmers 8 and 9 for maximum output.

4- Final Adjustment.

(a) Repeat operations 2 (c) to (g) and 3 (a) to (e) in the same order until no further improvement in output can be made. Adjustments must be repeated at least once and if the set is badly out of alignment, a second repetition is necessary.

ANTENNA COMPENSATOR AJUSTMENT

The antenna compensator must be adjusted after the installation of the receiver has been completed in order to match the receiver to the antenna. If this adjustment is made for an old under-car aerial, care must be taken that the aerial and its insulators are clean and free from mud or slush which would alter the capacity and resistance. More accurate adjustment is possible if the aerial and its insulators are washed and allowed to dry before attempting adjustment.

The adjustment is to be made as follows:

(a) Carefully tune the receiver to some fairly weak signal between 550 and 650 KC.

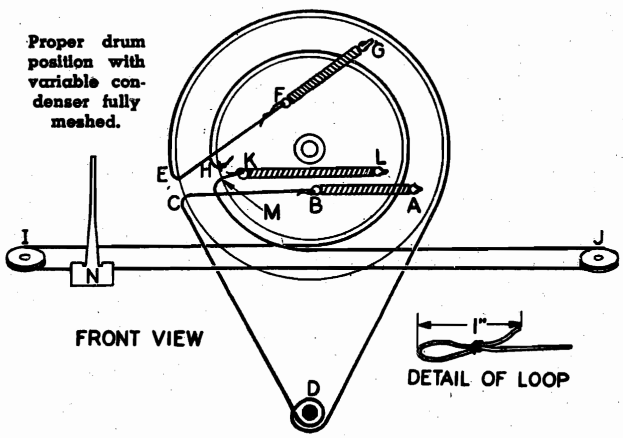
(b) Remove the chrome plated button adjacent to the antenna jack. (Covering trimmer No. 6).

(c) Adjust the antenna compensator, trimmer No. 6 for maximum volume. Carefully retune the receiver to the signal, then again adjust the compensator.

Do not attempt to adjust any of the other trimmers on stations at this time or the entire alignment will be upset since an oscillator must be used for all adjustments except the antenna compensator.

Note: If you do not get a peak when adjusting this trimmer and if the car has a built-in antenna of unusually high capacity such as an insulated running board or insulated metal roof, it will be necessary to insert a special plug-in adapter in series with the antenna lead. These adapters are made in two types and can be obtained from United Motors Service Stations. For aerials having a capacity between 400 and 900 micro-microfarads (insulated running boards), the adapter United Motors Part No. 7231410 (marked with red band) should be used. For aerials between 900 and 2,000 micro-microfarads (metal roof tops) their Part No. 1210915 should be used.

REPLACING DIAL CORDS
01-6G & 01-6G-Z



TO REPLACE THE TUNING DRIVE CORD

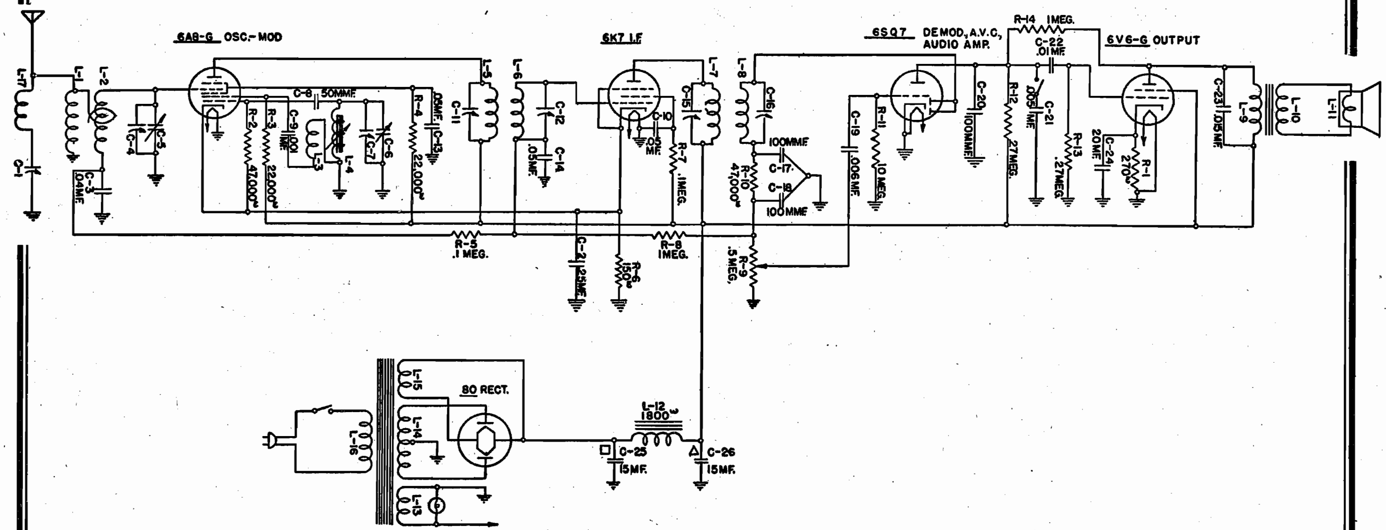
1. 25½ inches of dial drive cord (part No. 117057) are required. Make a one-inch loop in each end of this cord, using a dial cord clip, (part No. 114955) (See sketch above for detail of loop). A knot may be tied if a slightly smaller loop is made.
2. Fasten one end of a tension spring (part No. 113177) to the loop at point B and the other end of the spring to tab A.
3. Pass the other end of the dial cord through hole C in the outer drum.
4. Make one and a half turns of the cord about tuning shaft D.
5. Continue the cord counter-clockwise about the outer drum and pass it through hole E.
6. Fasten a tension spring (part No. 113177) to the other loop of the cord at point F and fasten the spring to the tab G.

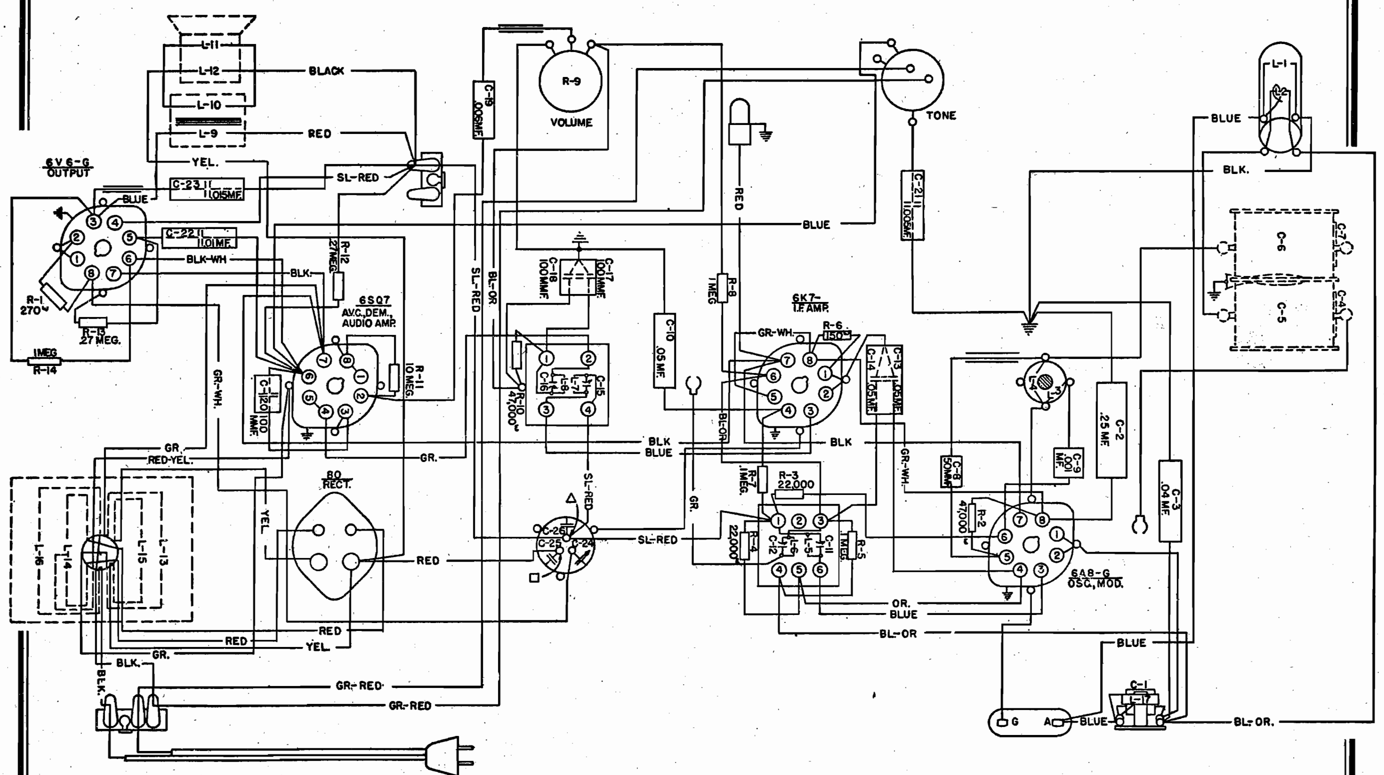
TO REPLACE THE POINTER DRIVE CORD

1. 34⅛ inches of pointer drive cord, (part No. 116948) are required. Fasten an eyelet (part No. 88348) at a point one-half inch from one end of this cord.
2. Pass the other end of the cord outward through hole H in the smaller drum.
3. Fashion a one-inch loop at outer end of the pointer cord (See detail of loop in illustration), using a dial cord clip (part No. 114955), or tie a knot using a smaller loop.
4. Continue the cord clockwise around the smaller drum and around pulley I from the rear to the front.
5. Go from pulley I around the front of pulley J and clockwise around the smaller drum to hole M.
6. Pass the loop through hole M and fasten it to one end of a tension spring (part No. 113177) at point K, the other end of the spring then being fastened to point L.
7. Clip the dial pointer to the cord. With the drum in the position shown, and with the gang condenser in full mesh, fasten the pointer so that it is at a point 2⅛" from the left end of the brown dial plate.

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 400H, 400HB
400N, 400NB, 400S,
400SB
Schematic, Chassis
Wiring





IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
400-H	50-60 Cycles	30107	30109	30137
400-HB	25-60 Cycles	30108	30109	30137
400-N	50-60 Cycles	30107	30547	30137
400-NB	25-60 Cycles	30108	30547	30137
400-S	50-60 Cycles	30107	30548	30137
400-SB	25-60 Cycles	30108	30548	30137

Input Power Rating .... 37 Watts
Intermediate Frequency .... 455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles .... Approximately 5 Ohms
Speaker Field Coil Resistance .... 1800 Ohms

MODELS 400H, 400HB 400N, 400NB, 400S 400SB
Alignment, Voltage Socket, Trimmers Resistance

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 405H Alignment

Take all D. C. voltage readings on the 500 volt scale except where an asterisk appears.
Take all readings with chassis operating and tuned to 1000 Kc.—no signal.
Use a line voltage of 120 volts or make allowance for the variation.
Read from indicated socket terminals to chassis base.
A. C. Voltages are indicated by italics.

			Terminals of Sockets								Heater Voltages Between Heater Terminals	
Tube	Circuit	Cap	1	2	3	4	5	6	7	8	Socket Terminal Numbers	Volts A. C.
6A8G	Mod.—Osc.	0	0	0	+175	+82	—	+100	*6.3*	+2*	2–7	*6.3*
6K7	I. F. Amp.	0	0	0	+175	+65	+2*	—	*6.3*	+2*	2–7	*6.3*
6SQ7	Dem.—A. V. C. —Audio	—	0	0	0	0	0	+75	*6.3*	0	7–8	*6.3*
6V6G	Output	—	0	0	+160	+175	0	+75	*6.3*	+8*	2–7	*6.3*
80	Rectifier	—	+265	*255*	*255*	+265	—	—	*5*	—	1–4	*5*

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to Electrolytic Capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base except when an asterisk appears.

			TERMINALS OF SOCKETS							
Tube	Circuit	Cap	1	2	3	4	5	6	7	8
6A8G	Mod.—Osc.	1.5M	S	S	*1800Ω	*24000Ω	47000Ω	24000Ω	S	150Ω
6K7	I. F. Amp.	1.5M	S	S	*1800Ω	*100000Ω	150Ω	1.5M	S	150Ω
6SQ7	Dem.—A. V. C. —Audio	—	S	10M	S	500000Ω	500000Ω	*250000Ω	S	S
6V6G	Output	—	S	S	*2200Ω	*1800Ω	300000Ω	*250000Ω	S	270Ω
80	Rectifier	—	1M or Greater	270Ω	270Ω	1M or Greater	—	—	—	—

Symbols used are as follows: Ω—ohms; M—megohms; S—short; O—open.
*These readings should be made from indicated terminals to terminal No. 1 of the rectifier socket (type 80 tube).

Other Tests Not Shown on Chart

Antenna terminal to chassis base; 70 ohms.

Ground terminal to chassis base; "short".

Between terminals of A. C. plug; "open" with A. C. switch open; 17 ohms with A. C. switch closed.

R. F. coil tests, measured directly across R. F. coil terminals (see wiring diagram on Page 5 for location of R. F. coil terminals): L1—70 ohms; L2—4 ohms; L3—3 ohms; L4—4 ohms; L17—70 ohms.

ALIGNING INFORMATION

NEVER REALIGN UNLESS ABSOLUTELY NECESSARY.

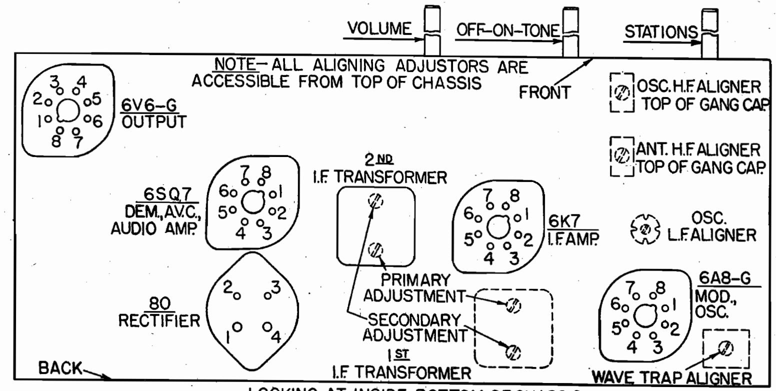
Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator (except when wave trap adjustments are made). A strong signal makes adjustments inaccurate.

Always have receiver volume control "full on".

Never align with tone control in bass position.

See Location Chart above for location of all the aligning adjustment screws.



LOOKING AT INSIDE BOTTOM OF CHASSIS

Location Chart

Aligning Procedure (follow this order exactly)

I. Dial Pointer Adjustment.

With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the upper black line at the low frequency end of the dial.

II. Intermediate Frequency Adjustments.

1. Tune set to extreme low frequency position. (.54 megacycles on dial scale).
2. Connect the ground terminal of the signal generator to the ground binding post of the receiver.
3. Introduce a modulated signal of 455 kilocycles, using a 0.1 microfarad capacitor in series with the lead from the signal generator to the grid cap of the 6A8G tube. (Do not remove the grid clip from this tube.)
4. Adjust the I. F. Aligners for maximum output in the following order:
   a. Secondary of Second I. F. Transformer.
   b. Primary of Second I. F. Transformer.
   c. Secondary of First I. F. Transformer.
   d. Primary of First I. F. Transformer.

III. Wave Trap Adjustment.

1. Tune set to 1,000 kilocycles.
2. Leave the ground terminal of the signal generator connected to the ground binding post of the receiver.
3. Introduce a fairly strong modulated signal of 455 kilocycles to the antenna binding post using a 200 mmf. capacitor in series with the lead from the signal generator.
4. Adjust the wave trap aligner for minimum signal.

IV. Radio Frequency Adjustments.

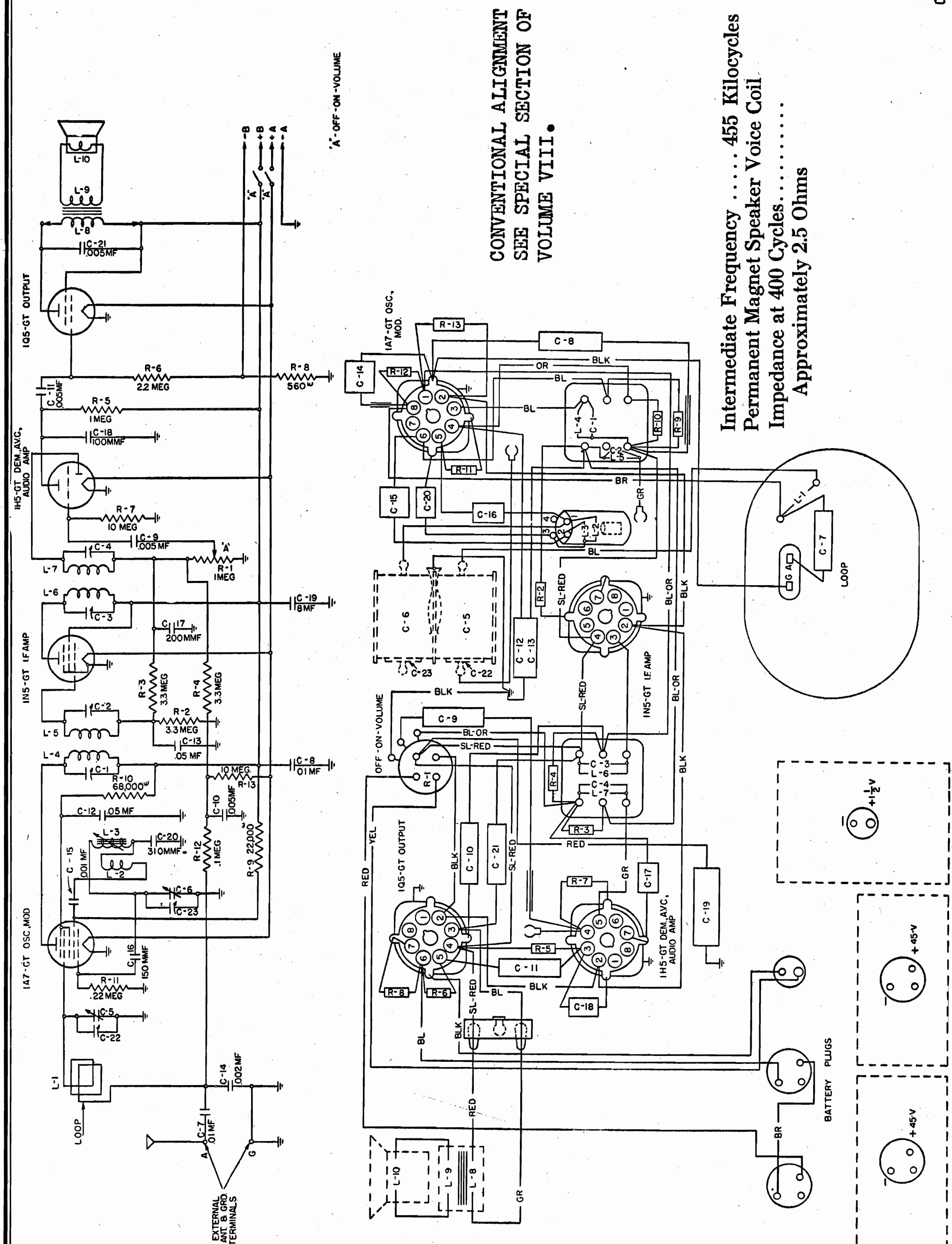
(Leave the signal generator connected in the same way as for the wave trap alignment.)

1. Set the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles.
2. Adjust the iron core in the oscillator coil for maximum signal.
3. Set the signal generator's frequency and the receiver's tuning dial to 1.5 megacycles.
4. Adjust the two aligning capacitors on the variable capacitor for maximum signal.
5. Reset both the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles and repeat operation 2.
6. Reset both the signal generator's frequency and the receiver's tuning dial to 1.5 megacycles and repeat operation 4.

NOTE. Operation 5 and 6 may be repeated as often as necessary to obtain maximum sensitivity.

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 402
Chassis 30990
Schematic
Chassis Wiring

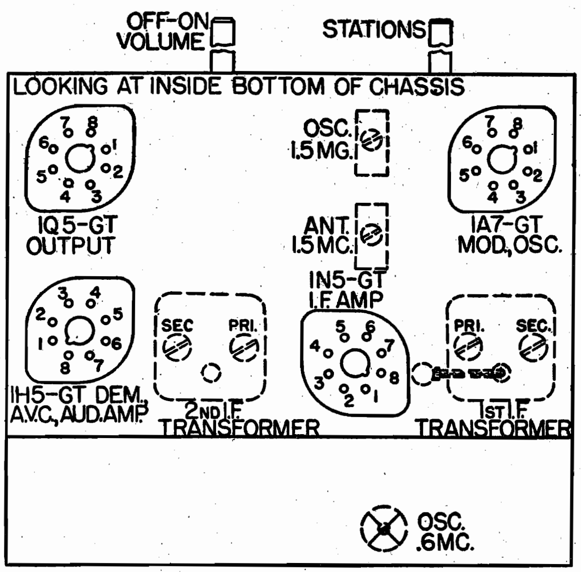


CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION OF
VOLUME VIII.

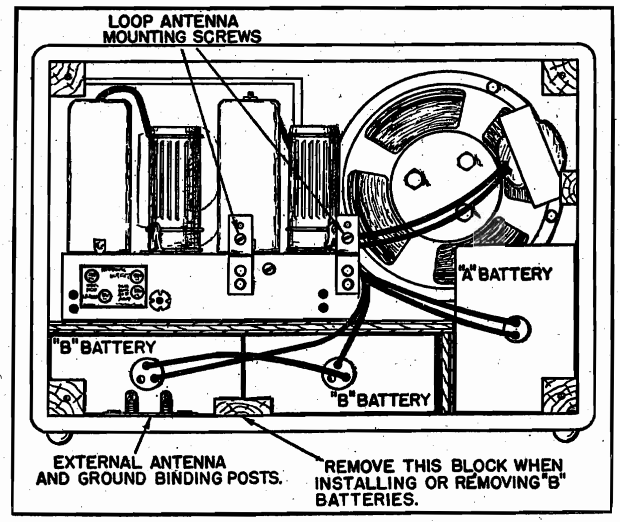
Intermediate Frequency ......455 Kilocycles
Permanent Magnet Speaker Voice Coil
Impedance at 400 Cycles..........
Approximately 2.5 Ohms

MODEL 402
Voltage, Socket
Trimmers, Chassis
Resistance

STROMBERG-CARLSON TEL. MFG. CO.



Location Chart



View Showing Installation of Batteries (With Back of Cabinet and Loop Antenna Removed)

Tube	Circuit	Cap	*Terminals of Sockets* 1	2	3	4	5	6	7	8	*Heater Voltages Between Heater Terminals* Socket Terminal Numbers	Volts
1A7GT	Mod.—Osc.	0	0	+1.4*	+84	+35	−3*	+58	0	0	2–7	+1.4*
1N5GT	I. F. Amp.	0	0	+1.4*	+84	+84	0	0	0	0	2–7	+1.4*
1H5GT	Dem.—A. V. C. —Audio	0	0	+1.4*	+30	0	0	0	0	0	2–7	+1.4*
1Q5GT	Output	—	0	+1.4*	+82	+84	0	+5.5*	0	0	2–7	+1.4*

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the batteries before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to Electrolytic Capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base except when an asterisk appears.

Tube	Circuit	Cap	*TERMINALS OF SOCKETS* 1	2	3	4	5	6	7	8
1A7GT	Mod.—Osc.	4M	4M	10M	1M	1M	22000¶	1M	S	4M
1N5GT	I. F. Amp.	1.5M	O	10M	1M	1M	O	O	S	O
1H5GT	Dem.—A. V. C. —Audio	10M	O	10M	3M	10M	800000¶	O	S	O
1Q5GT	Output	—	O	10M	1M	1M	2.2M	500¶	S	O

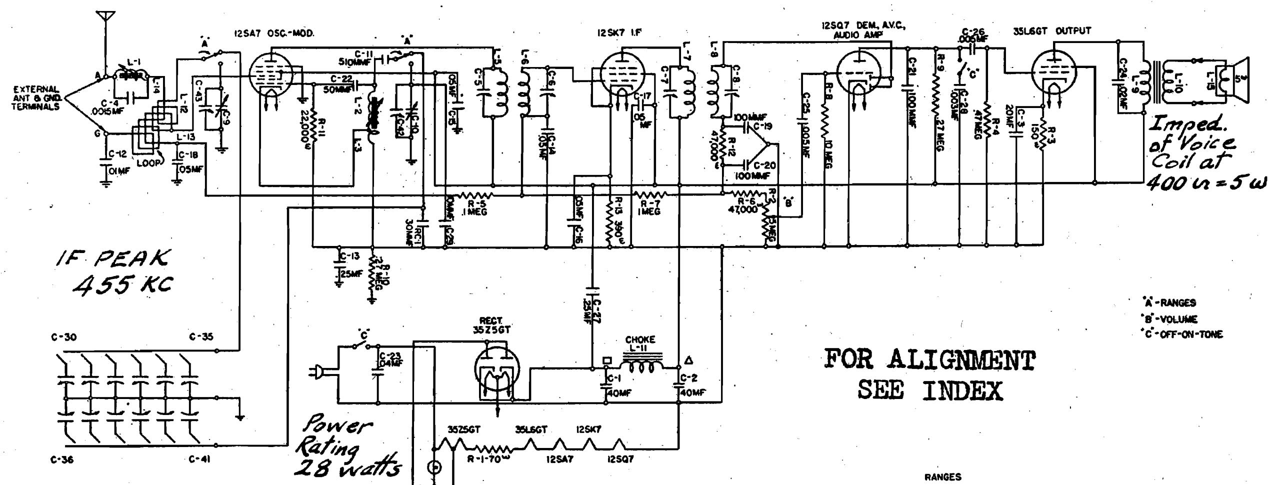
Symbols used are as follows: ¶—ohms; M—megohms; S—short; O—open.

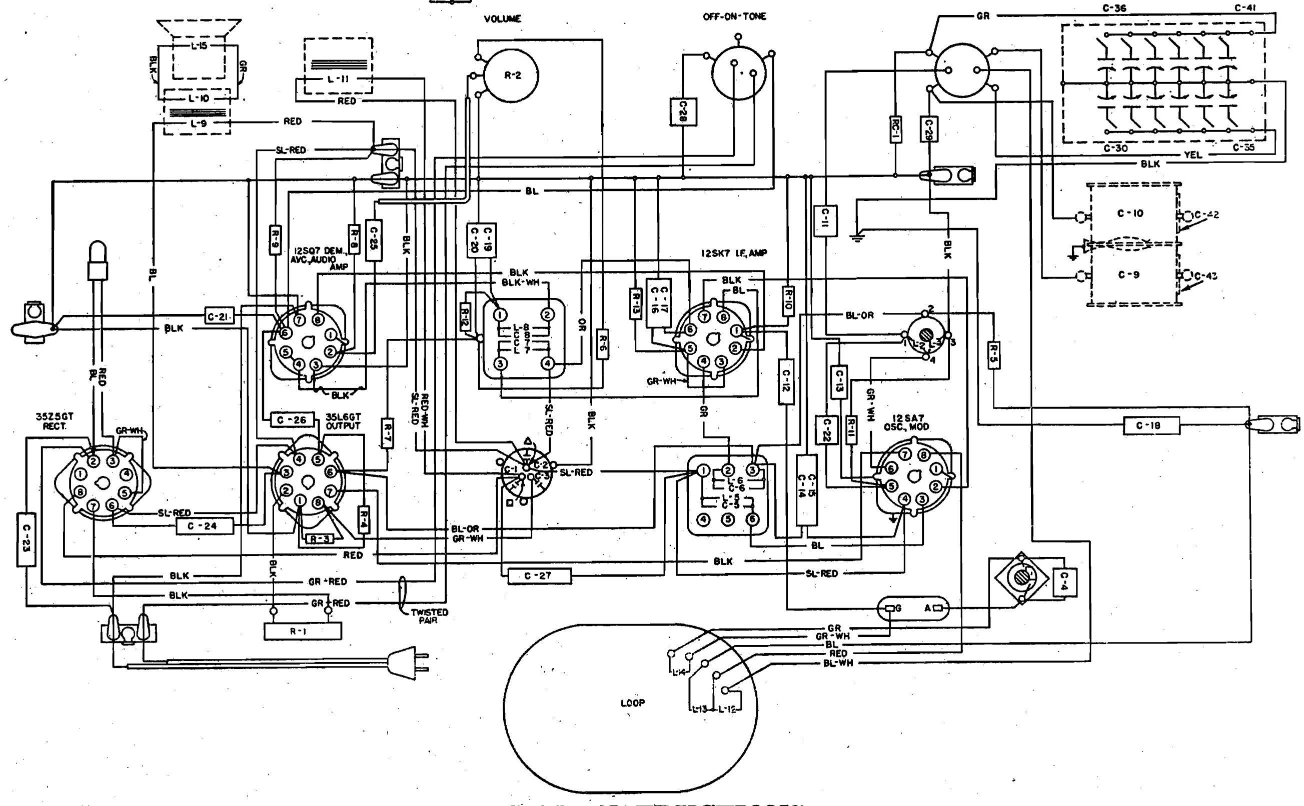
Other Tests Not Shown on Chart

Antenna terminal to chassis base; "open".
Ground terminal to chassis base; "short".
R. F. coil tests, measured directly across R. F. coil terminals (see wiring diagram for location of R. F. coil terminals): L1—.8 ohm; L2—7 ohms; L3—3 ohms.

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 405H
Schematic
Chassis Wiring





SPECIAL INSTRUCTIONS

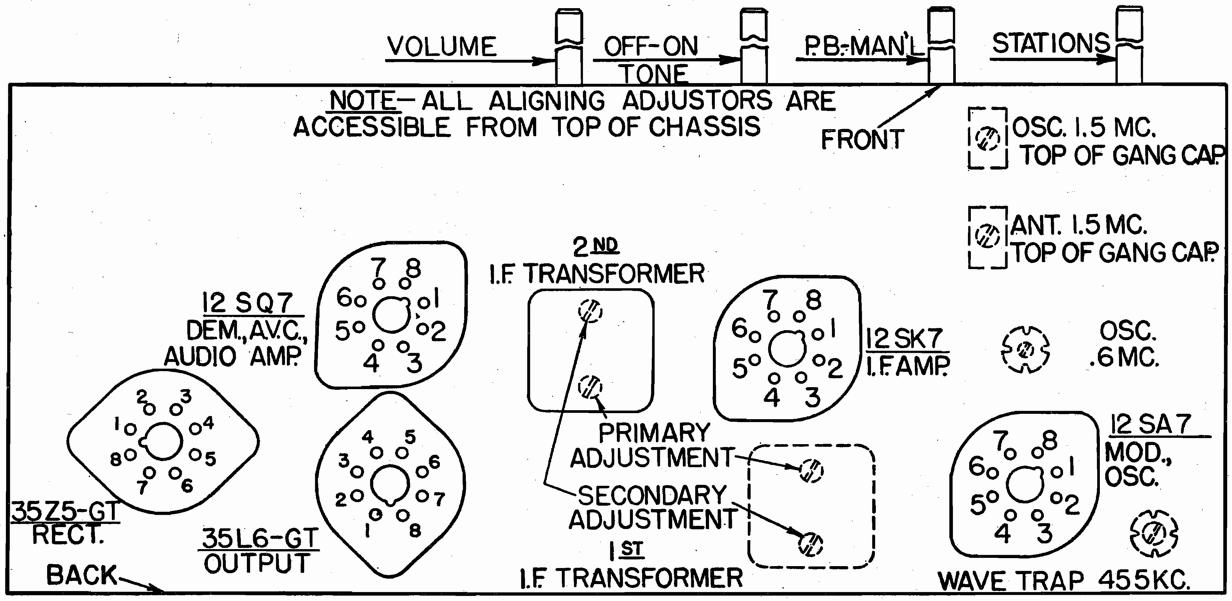
To connect an external antenna and ground or to examine or replace tubes, it is necessary to unscrew the thumb screw located at the right hand side of the loop antenna, and the loop can then be swung outward on its hinge.

Always screw the loop antenna in its proper position when operating the receiver.

For Tuner Data, see that of Model 420 which is the same with the exception of item 2. In the case of Model 405-H, this should read "The stations should be arranged according to frequency with the highest frequency at the top and the lowest frequency at the bottom.

MODEL 405H
Voltage, Socket
Trimmers, Resistance

STROMBERG-CARLSON TEL. MFG. CO.



LOOKING AT INSIDE BOTTOM OF CHASSIS

A. C. Voltages are indicated by italics; when the receiver is operated from a D. C. power supply, D. C. voltages will be obtained in place of A. C. voltages shown.

Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8	Heater Voltages Between Heater Terminals: Socket Terminal Numbers	Volts A.C.
12SA7	Mod.—Osc.	—	0	*25*	+110	+110	−30	0	*38*	0	2–7	12
12SK7	I. F. Amp.	—	0	*12*	+3*	0	+3*	+110	*25*	+110	2–7	12
12SQ7	Dem.—A. V. C. —Audio	—	0	0	0	0	0	+40	0	*12*	7–8	12
35L6GT	Output	—	0	*75*	+100	+110	0	—	*38*	+7*	2–7	35
35Z5GT	Rectifier	—	—	*120*	+115	—	+115	—	+85	+118	2–7	35

CONTINUITY TEST

CAUTION: Remove all tubes, disconnect the receiver from the power supply and short the high side of the C-1 Capacitor (Red, Red-white wires) and the heavy bus wire to the chassis base before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to Electrolytic Capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base except when an asterisk appears.

R. F. coil tests, measured directly across R. F. coil terminals (see wiring diagram for location of R. F. coil terminals): L1—1.5 ohms; L2—4 ohms; L3—3 ohms; L12—.2 ohm; L13—.3 ohm; L14—"short".

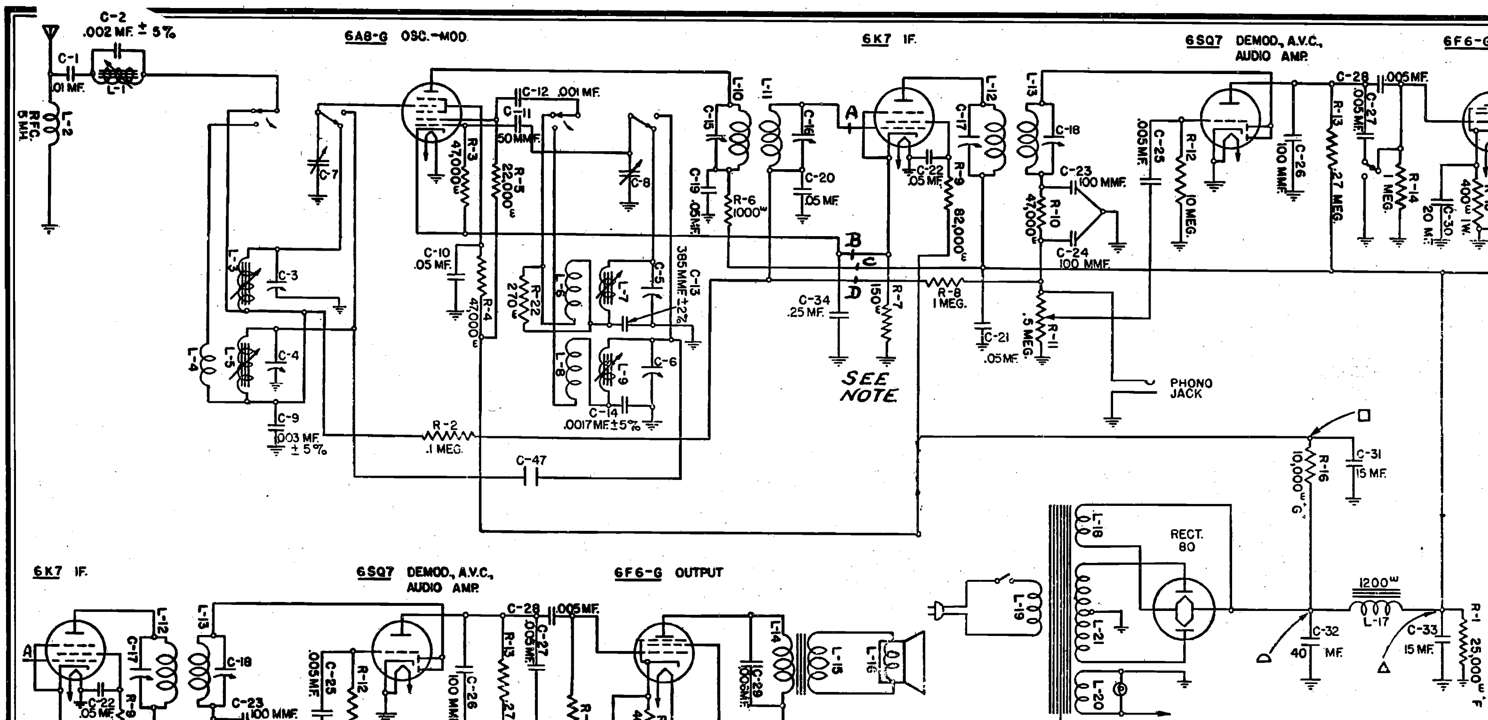
Tube	Circuit	Cap	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
12SA7	Mod.—Osc.	—	S	O	130¶	130¶	22000¶	S	O	1.5M
12SK7	I. F. Amp.	—	S	O	390¶	1.5M	390¶	390¶	O	150¶
12SQ7	Dem.—A. V. C. —Audio	—	S	10M	S	600000¶	600000¶	270000¶	S	O
35L6GT	Output	—	S	O	200¶	130¶	550000¶	1.5M	O	150¶
35Z5GT	Rectifier	—	O	O	O	O	O	130¶	O	S

Symbols used are as follows: ¶—ohms; M—megohms; S—short; O—open.

Schematics

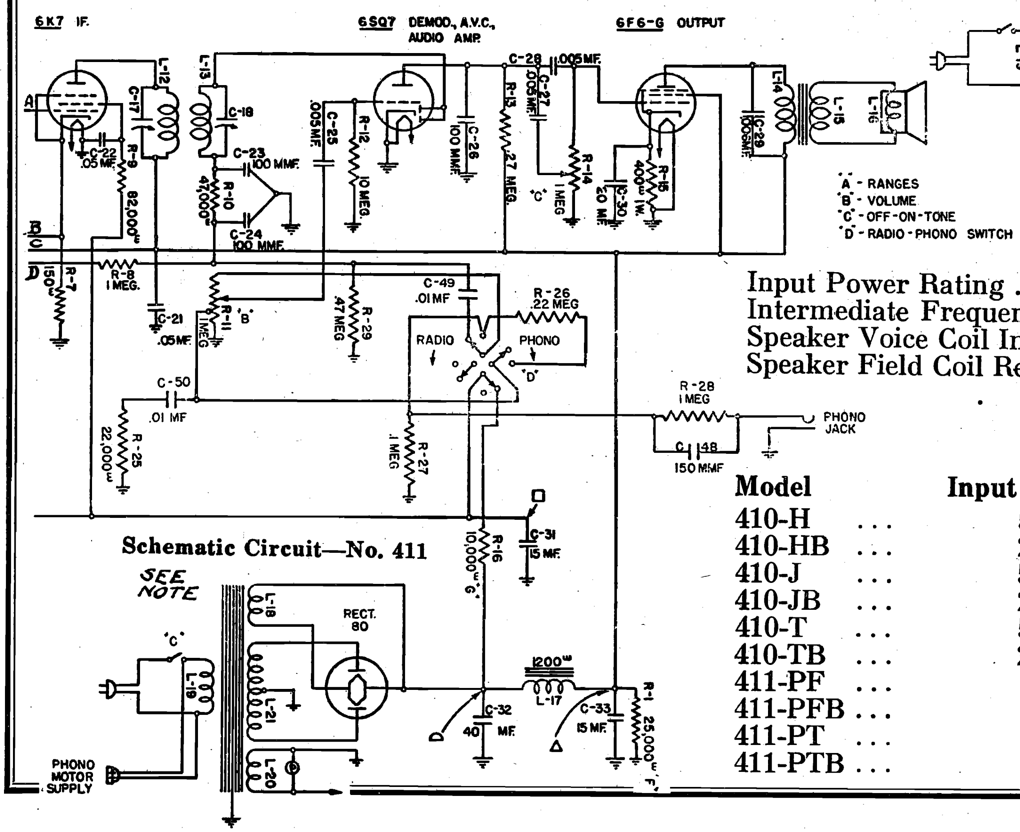
STROMBERG-CARLSON TEL. MFG. CO.

MODELS 410H, 410HB 410J, 410JB, 410T, 410TB, 411PF, 411PFB 411PT, 411PTB



Schematic Circuit—No. 410

NOTE: Model 411 is the same as Model 410 up to the input of the 6K7 at points A, B, C and D.



'A' - RANGES
'B' - VOLUME
'C' - OFF-ON-TONE
'D' - RADIO-PHONO SWITCH

Schematic Circuit—No. 411

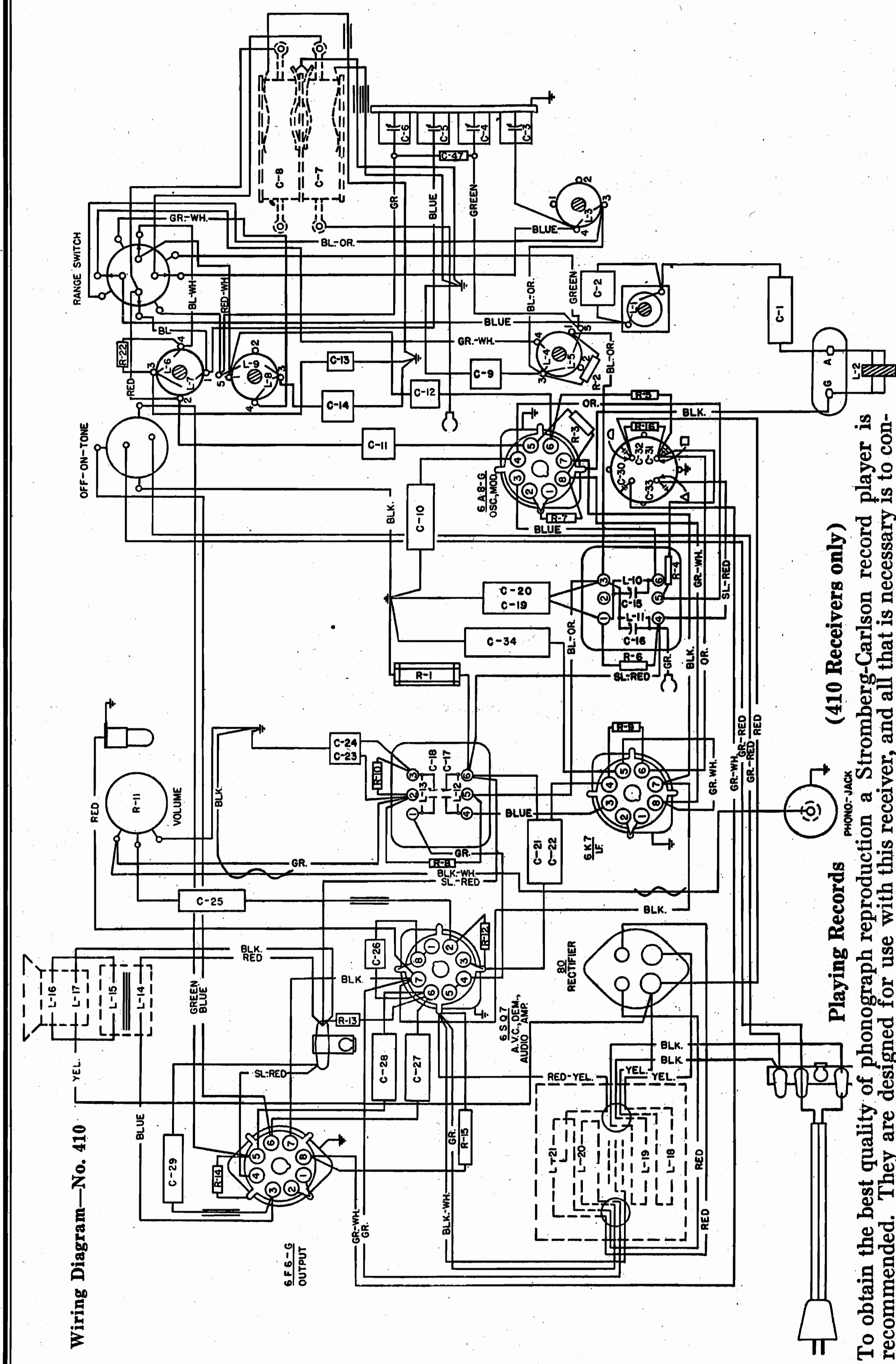
Input Power Rating ....52 Watts
Intermediate Frequency .... 455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles . Approximately 5 Ohms
Speaker Field Coil Resistance.........................1000 Ohms

Model	Input Power Frequency	Chassis	Cabinet	Speaker
410-H ...	50-60 Cycles	30302	30361	30304
410-HB ...	25-60 Cycles	30303	30361	30304
410-J ...	50-60 Cycles	30302	30478	30304
410-JB ...	25-60 Cycles	30303	30478	30304
410-T ...	50-60 Cycles	30302	30459	30304
410-TB ...	25-60 Cycles	30303	30459	30304
411-PF ...	60 Cycles	30629	30603	30304
411-PFB ...	25 Cycles	30630	30603	30304
411-PT ...	60 Cycles	30629	30604	30304
411-PTB ...	25 Cycles	30630	30604	30304

MODELS 410H, 410HB 410J, 410JB. 410T 410TB

STROMBERG-CARLSON TEL. MFG. CO.

Chassis Wiring Phono. Data



Wiring Diagram—No. 410

Playing Records

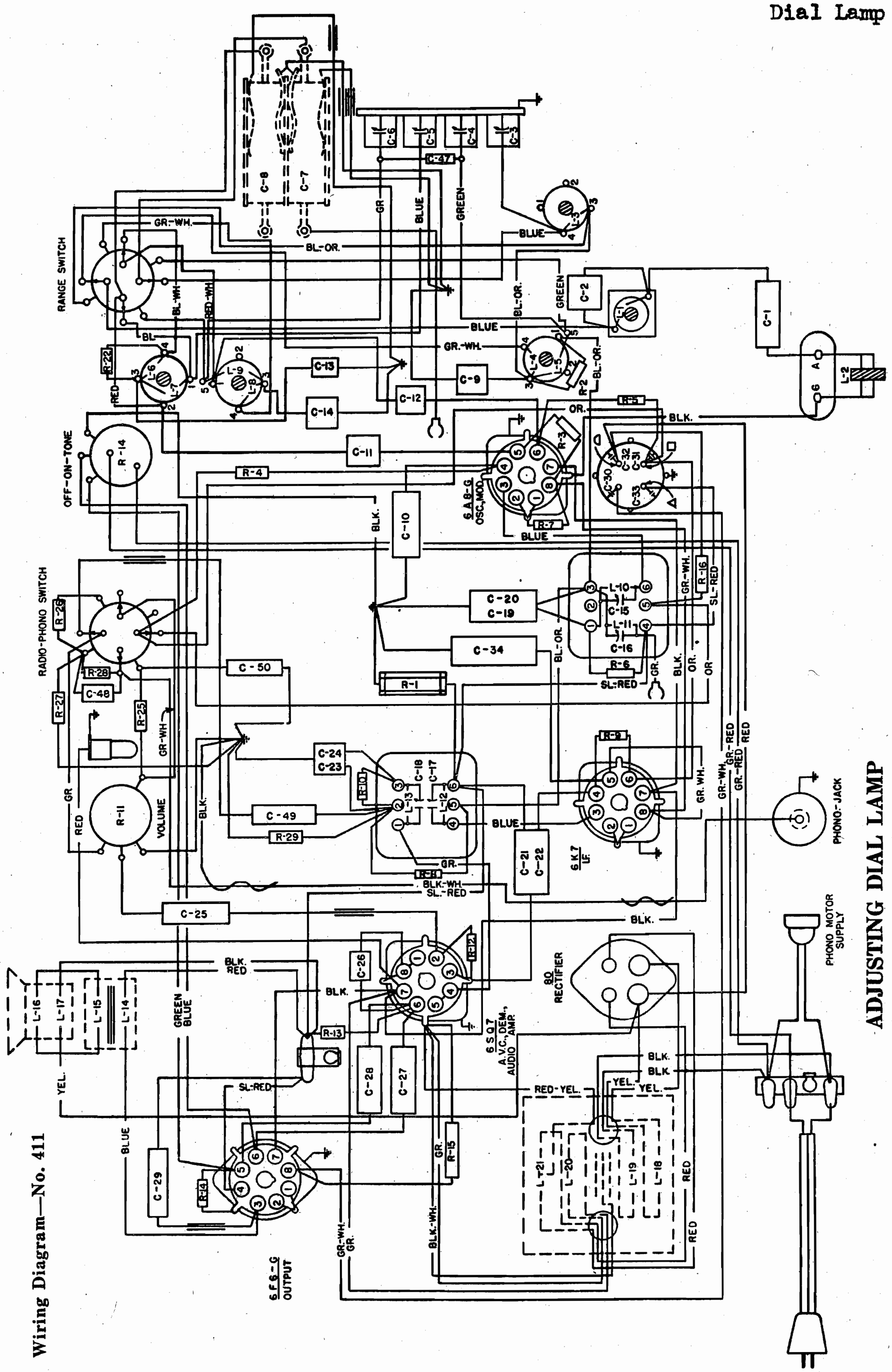
(410 Receivers only)

To obtain the best quality of phonograph reproduction a Stromberg-Carlson record player is recommended. They are designed for use with this receiver, and all that is necessary is to connect the record player to the single prong socket provided in the chassis, tune the receiver to a quiet place on the dial scale and proceed to operate. The volume may be controlled with the volume control at the receiver, or (if such is provided) with the volume control on the record player.

A low impedance pick-up may also be used, but a matching transformer must be placed between the phonograph pick-up and the chassis.

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 411PF,411PFB
411PT,411PTB
Chassis Wiring
Dial Lamp Note



Wiring Diagram—No. 411

ADJUSTING DIAL LAMP

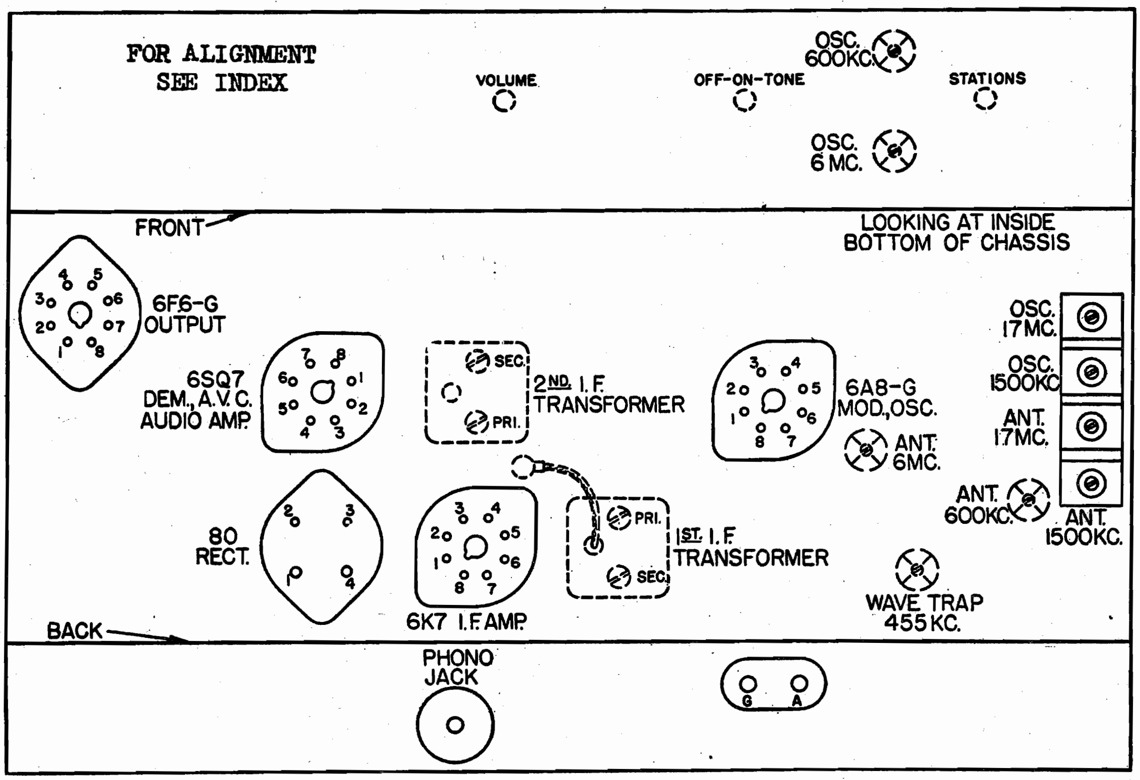
The dial on this receiver is edge lighted, and for proper illumination it is **very important** that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

MODELS 410H,410HB
410J,410JB,410T
410TB,411PF,411PFB
411PT,411PTB

STROMBERG-CARLSON TEL. MFG. CO.

Voltage,Socket
Trimmers
Resistance



Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8	Heater Voltages Between Heater Terminals: Terminal Numbers	Volts A.C.
6A8G	Mod.—Osc.	0	0	0	+260	+100	—	+180	6.5	+3*	2–7	6.5
6K7	I. F. Amp.	0	0	0	+260	+100	+3*	+270	6.5	+3*	2–7	6.5
6SQ7	Dem.—A. V. C. —Audio	—	0	—	0	—	—	+100	6.5	0	7–8	6.5
6F6G	Output	—	0	0	+240	+260	—	—	6.5	+15	2–7	6.5
80	Rectifier	—	+330	315	315	+330	—	—	—	—	1–4	5

*Read on lowest possible scale of voltmeter.

Tube	Circuit	Cap	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6A8G	Mod.—Osc.	1.5M	S	S	26,000¶	85,000¶	50,000¶	60,000¶	S	150¶
6K7	I. F. Amp	1.5M	S	S	25,000¶	110,000¶	150¶	35,000¶	S	150¶
6SQ7	Dem.—A. V. C. —Audio	—	S	10M	S	550,000¶	550,000¶	300,000¶	S	S
6F6G	Output	—	S	S	25,000¶	25,000¶	1M	*	S	400¶
80	Rectifier	—	26,000¶	250¶	250¶	26,000¶	—	—	—	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

* Tone control in "Treble" position—1 megohm.
Tone control in "Bass" position—"short".

Other Tests Not Shown on Chart

Antenna terminal to chassis base—70 ohms.
Ground terminal to chassis base—"short".
Phono terminal to chassis base—500,000 ohms.

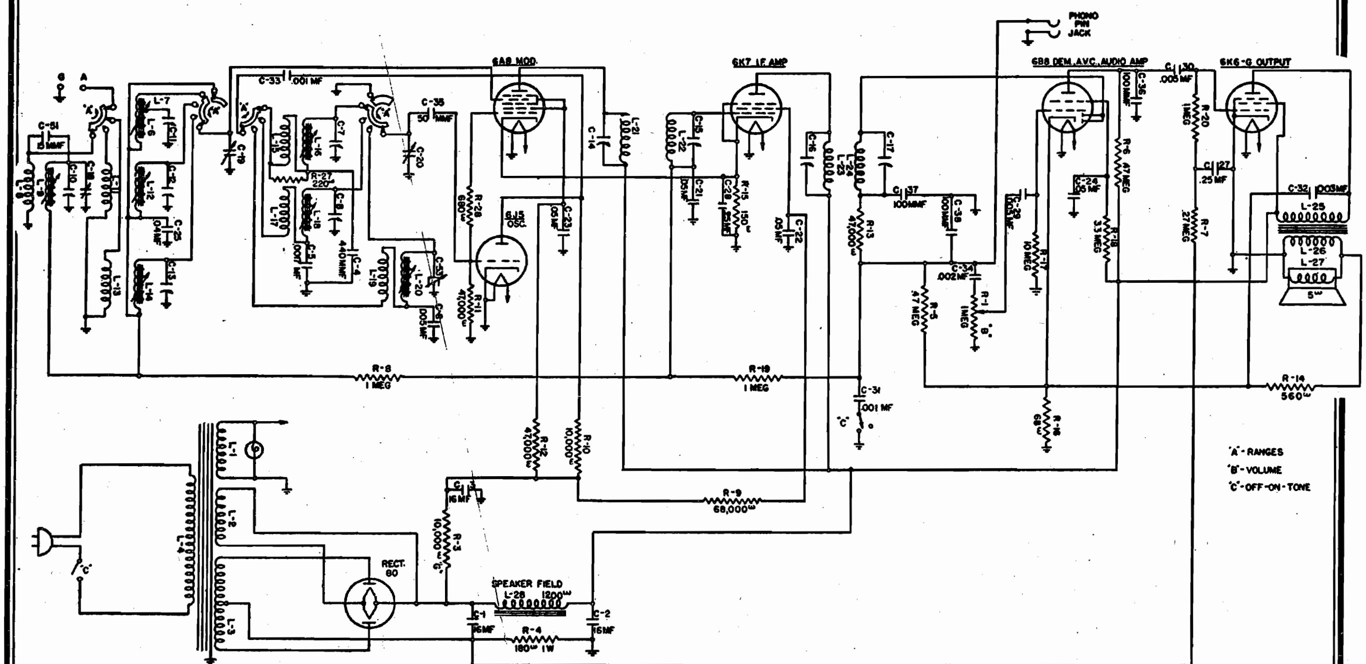
Between terminals of AC plug:
AC switch open—"open".
AC switch closed—8 ohms.
Terminals of AC plug to chassis base—"open".

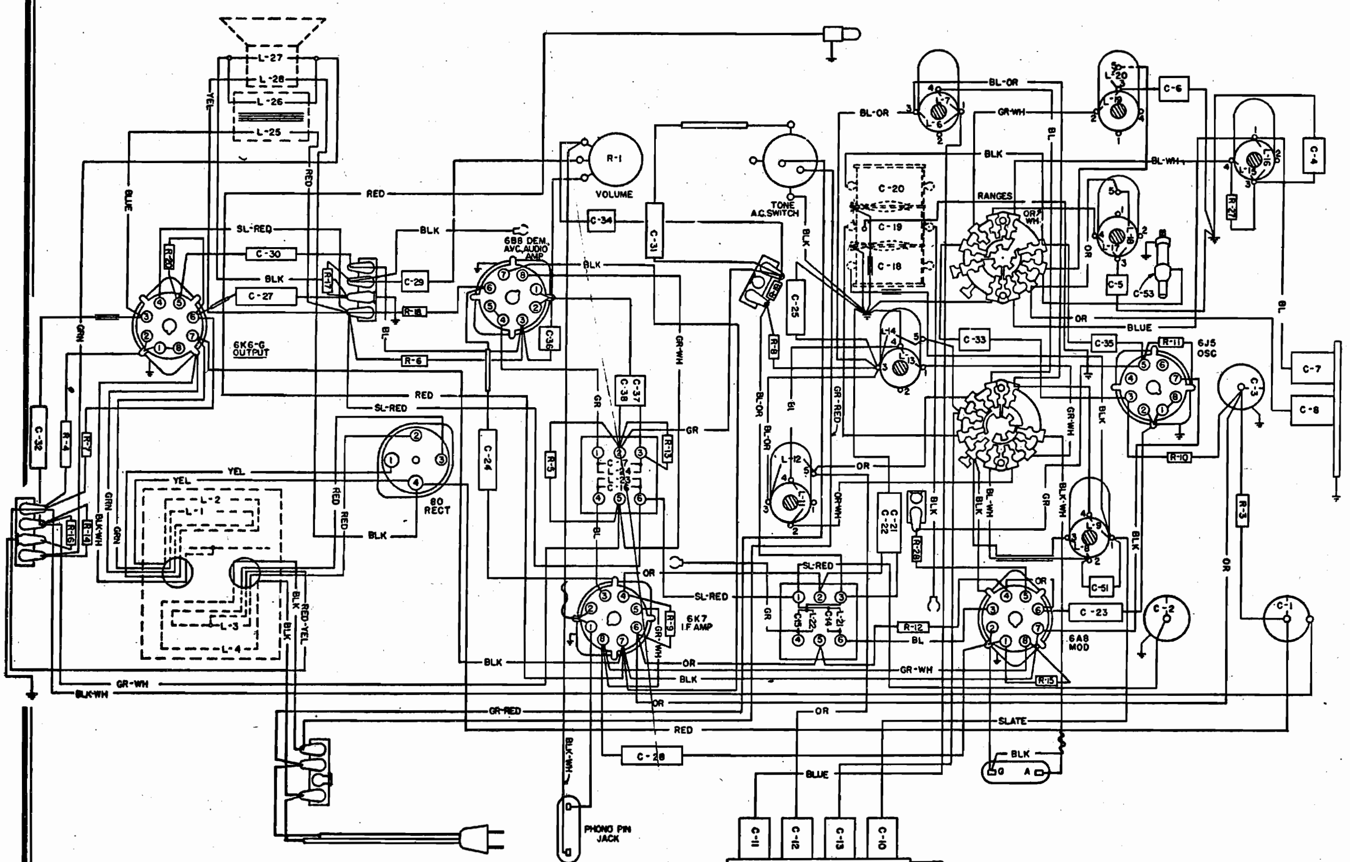
R. F. coil tests measured directly across R. F. coil terminals with range switch set in Standard Broadcast Position (A Range).
L3—3 ohms; L4—"short"; L5—"short"; L6—.5 ohm; L7—4 ohms; L8—.1 ohm; L9—"short".

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 412H, 412HB
Schematic
Chassis Wiring

FOR ALIGNMENT SEE INDEX





Input Power Rating .... 65 Watts
Intermediate Frequency .... 455 Kilocycles
Speaker Voice Coil Impedance at 400 cycles .... Approximately 5 Ohms
Speaker Field Coil Resistance .... Approximately 1200 Ohms

MODELS 412H, 412HB
Voltage, Socket
Trimmers
Resistance

STROMBERG-CARLSON TEL. MFG. CO.

IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
412-H	50-60 Cycles	30346	30589	30602
412-HB	25-60 Cycles	30347	30589	30602

SPECIFICATIONS

Voltage Rating .... Standard 50-60 Cycles; also available 25-60 Cycles
Type of Circuit .... Superheterodyne
Tuning Ranges .... 0.54 to 1.7 Mc.; 2.3 to 7.6 Mc.; 7.6 to 23 Mc.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply and short C2 (16 mf. capacitor) to chassis base before making continuity test. Be sure to remove the "short" after continuity tests have been completed.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from the indicated terminals to chassis base unless otherwise specified.

			TERMINALS OF SOCKETS							
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8
6A8	Modulator	1.6M	S	S	10Ω	60000Ω	47000Ω	60000Ω	S	150Ω
6J5	Oscillator	—	S	S	20000Ω	O	47000Ω	O	S	S
6K7	I.F. Amp.	1.5M	S	S	10Ω	80000Ω	150Ω	10000Ω	S	150Ω
6B8	Dem.—A. V. C. Audio	10M	S	S	500000Ω	500000Ω	500000Ω	3M	S	60Ω
6K6G	Output	—	S	S	340Ω	S	1.3M	260000Ω	S	S
80	Rectifier	—	1200Ω	420Ω	420Ω	1200Ω	—	—	—	—

Symbols used on chart are as follows: Ω—ohms; M—megohms; S—short; O—open.

Other Tests Not Shown on Chart

Antenna terminal to chassis base:
- Range switch set to standard broadcast position .... 50 ohms
- Range switch set to medium wave position .... "short"
- Range switch set to short wave position .... "short"

Ground terminal to chassis base .... "short"

Between terminals of A. C. plug:
- A. C. switch open .... "open"
- A. C. switch closed .... 8 ohms

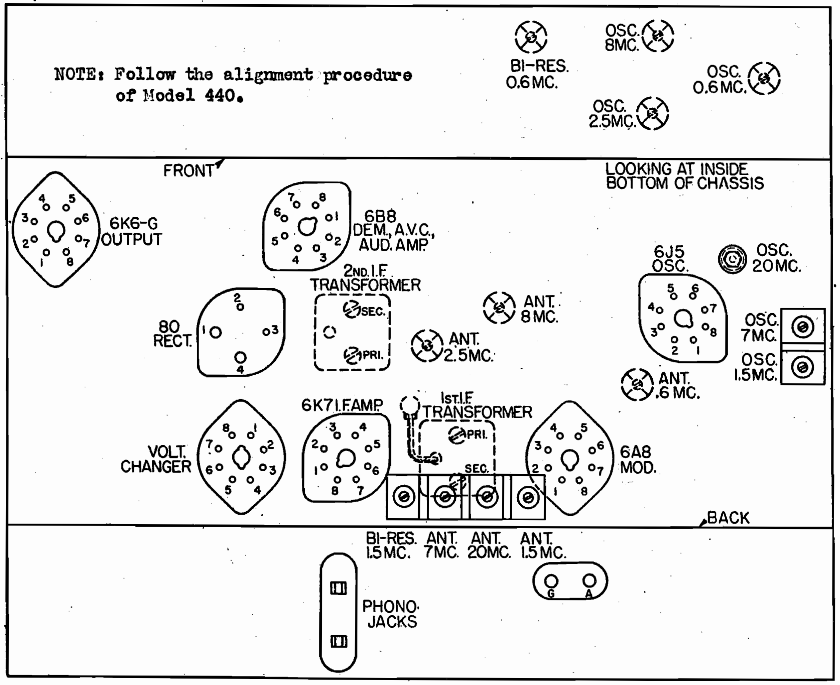
Terminals of A. C. plug to chassis base .... "open"

Phono terminals to chassis base:
- Terminal nearest to the top of the chassis .... "short"
- Terminal nearest to the bottom of the chassis .... 1 megohm

R. F. coil tests measured directly across R. F. coil terminals with range switch set in standard broadcast position. (See wiring diagram on Page 6 for location of coil terminals.)

L6—1.5 ohms; L7—1 ohm; L8—50 ohms; L9—3 ohms; L11—.2 ohm; L12—.2 ohm; L13—.1 ohm; L14—short; L15—.6 ohm; L16—4 ohms; L17—.2 ohm; L18—.2 ohm; L19—.2 ohm; L20—short.

NOTE: Follow the alignment procedure of Model 440.



Location Chart

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned to approximately 1000 Kc.—no signal.
Use a line voltage of 120 volts, or make allowance for any slight variation.
Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.
Take all D. C. readings on the 500 volt scale except when an asterisk appears.
A. C. voltages are indicated by italics.

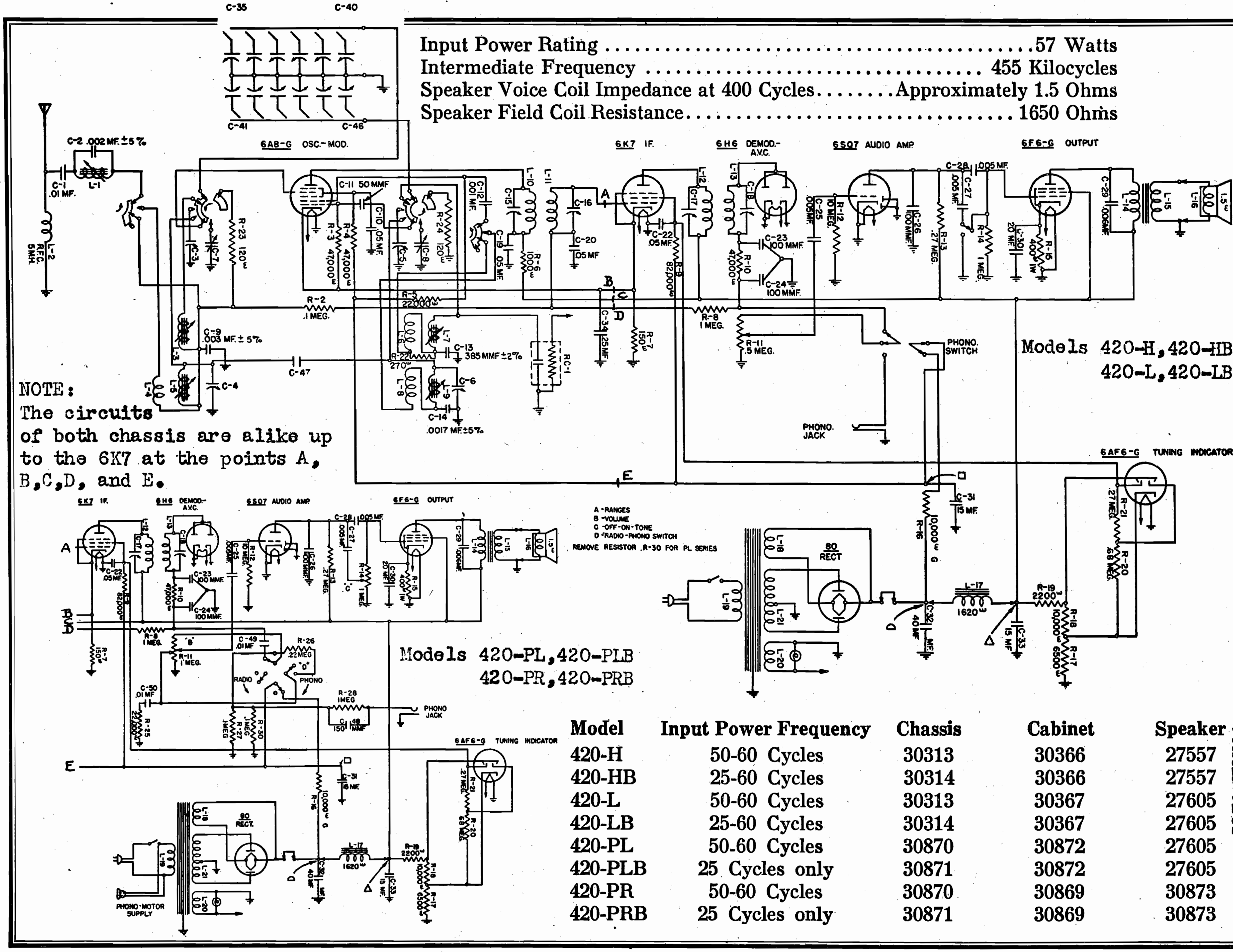
			Terminals of Sockets								*Heater Voltages Between Heater Terminals*	
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8	*Socket Terminal Numbers*	*Volts A.C.*
6A8	Modulator	0	0	0	+255	+90	−10	+90	*6.3*	+2*	2-7	*6.3*
6J5	Oscillator	—	0	0	+150	—	−10	—	*6.3*	0	2-7	*6.3*
6K7	I. F. Amp.	0	0	0	+255	+100	+2*	—	*6.3*	+2*	2-7	*6.3*
6B8	Dem.—A. V. C. Audio	0	0	0	+60	0	0	+15	*6.3*	0	2-7	*6.3*
6K6G	Output	—	0	0	+235	+255	−1	—	*6.3*	—		
80	Rectifier	—	+345	*350*	*350*	+345	—	—	—	—	1-4	*5*

*Read on lowest possible scale of voltmeter.

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 420H, 420HB, 420L, 420LB, 420PL, 420PLB, 420PR, 420PRB
Schematics

Input Power Rating .... 57 Watts
Intermediate Frequency .... 455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles........ Approximately 1.5 Ohms
Speaker Field Coil Resistance .... 1650 Ohms

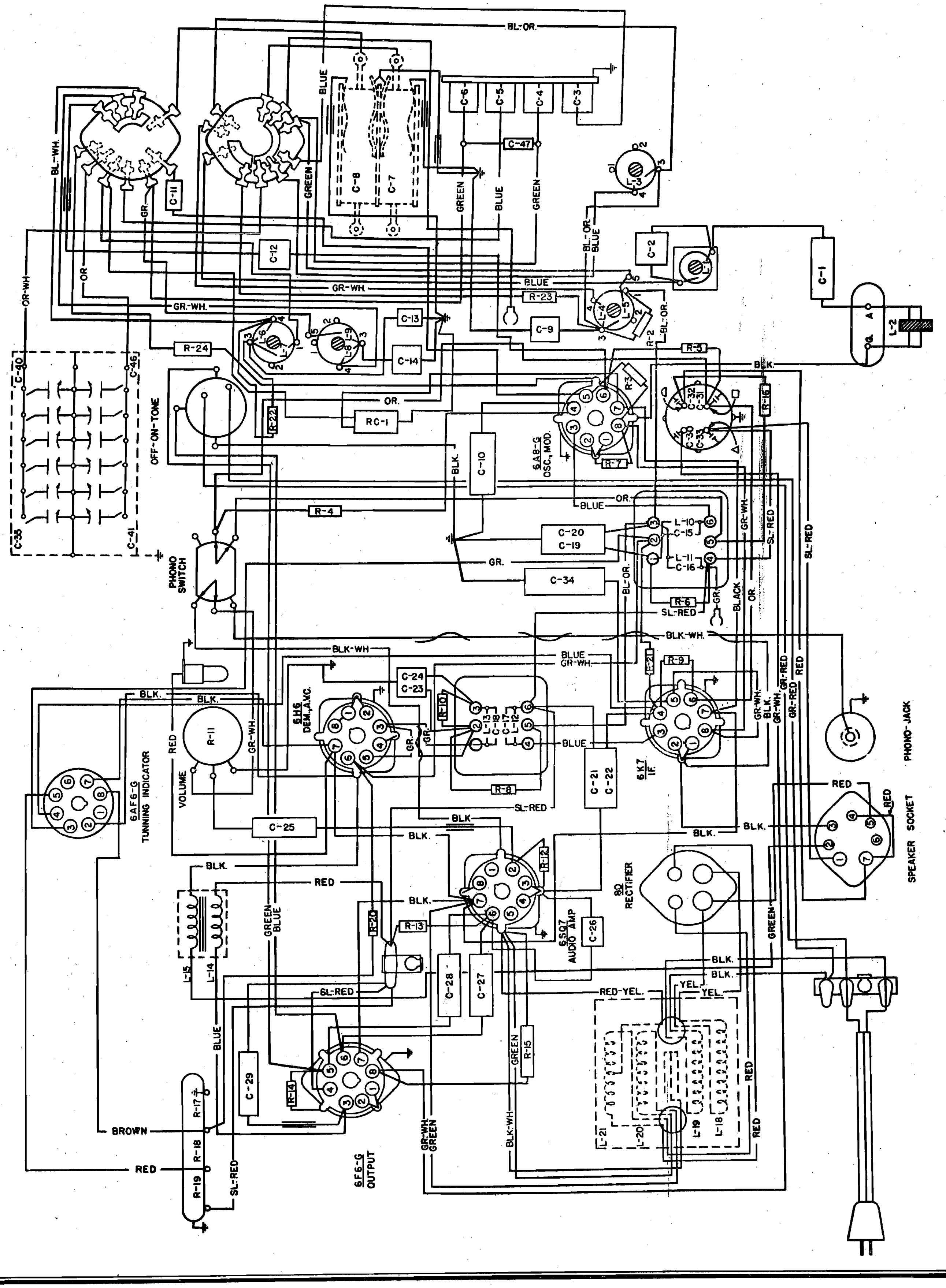


NOTE:
The circuits of both chassis are alike up to the 6K7 at the points A, B, C, D, and E.

Model	Input Power Frequency	Chassis	Cabinet	Speaker
420-H	50-60 Cycles	30313	30366	27557
420-HB	25-60 Cycles	30314	30366	27557
420-L	50-60 Cycles	30313	30367	27605
420-LB	25-60 Cycles	30314	30367	27605
420-PL	50-60 Cycles	30870	30872	27605
420-PLB	25 Cycles only	30871	30872	27605
420-PR	50-60 Cycles	30870	30869	30873
420-PRB	25 Cycles only	30871	30869	30873

MODELS 420H, 420HB
420L, 420LB
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.

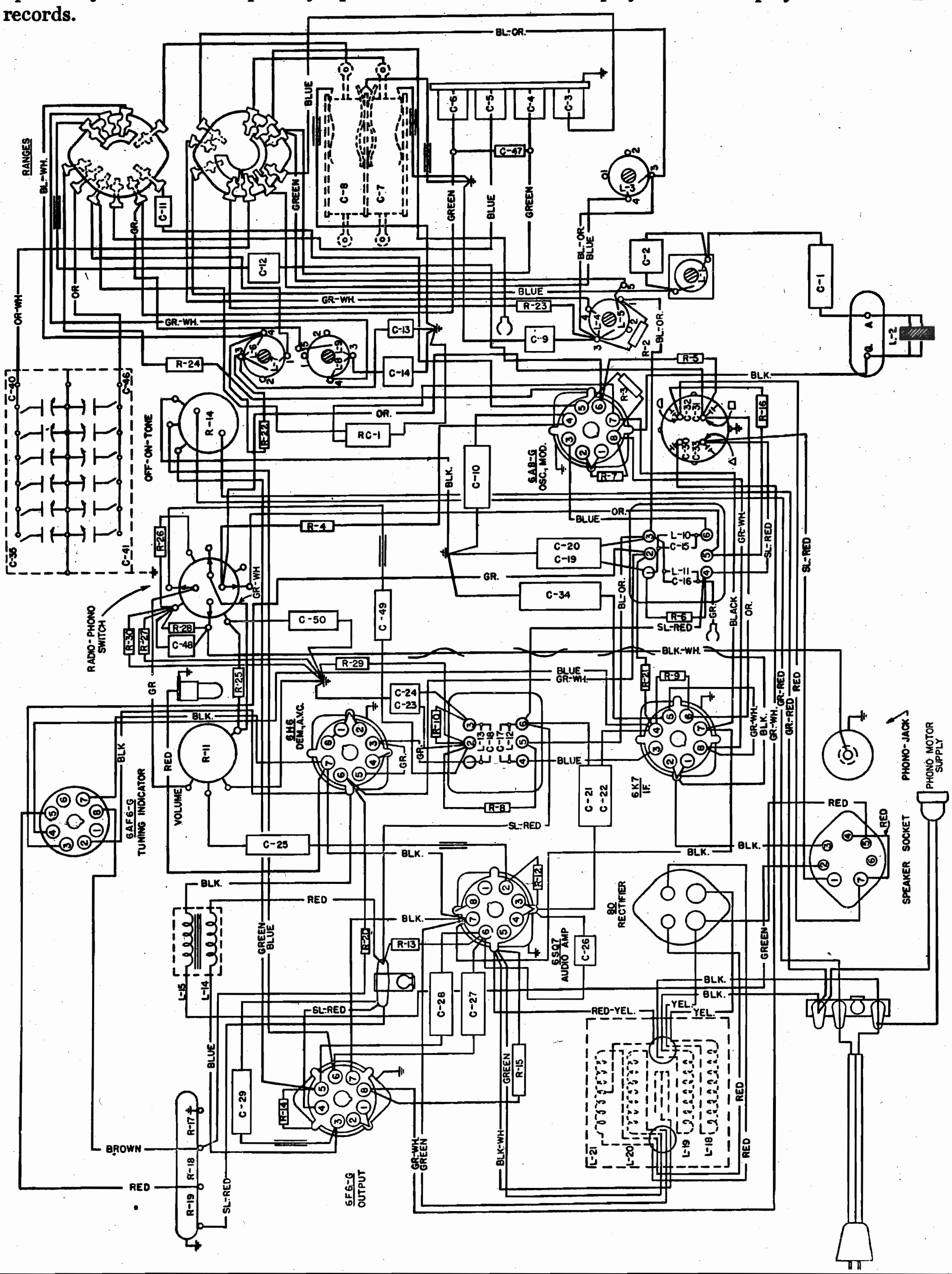


STROMBERG-CARLSON TEL. MFG. CO.

MODELS 420PL, 420PLB 420PR, 420PRB Chassis Wiring

The No. 420-PR Receivers are equipped with a single record phonograph unit using a crystal pick-up in conjunction with a specially equalized circuit. The phonograph unit is designed to play the standard 10 or 12 inch 78 R.P.M. records.

The No. 420-PL Receivers are equipped with an automatic record changer using a crystal pick-up in conjunction with a specially equalized circuit. This record player shifts and plays 10 or 12 inch records.



MODELS 420H, 420HB
420L, 420LB, 420PL
420PLB, 420PR, 420PRB
Voltage, Tuner
Resistance

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 405H
MODEL 430
Tuner Data

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 Kc.—no signal.

Use a line voltage of 120 volts, or make allowance for the variation.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.

Take all D. C. readings on the 500 volt scale except when an asterisk appears.

Read from indicated terminals to chassis base.

See location chart on Page 4 for position of terminals.

A. C. voltages are indicated by italics.

To measure voltages of 6AF6G tube remove the metal cover on the tuning indicator socket and read from indicated terminals.

			Terminals of Sockets								Heater Voltages Between Heater Terminals	
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8	*Socket Terminal Numbers*	*Volts A.C.*
6A8G	Mod.—Osc.	0	0	0	+255	+99	—	+175	*6.3*	+2.5*	2–7	*6.3*
6K7	I. F. Amp.	0	0	0	+257	+85	+2.5*	+255	*6.3*	+2.5*	2–7	*6.3*
6H6	Dem.—A. V. C.	—	0	0	—	0	—	+60	*6.3*	0	2–7	*6.3*
6SQ7	Audio Amp.	—	0	—	0	0	0	+95	*6.3*	0	7–8	*6.3*
6F6G	Output	—	0	0	+245	+257	—	—	*6.3*	+16	2–7	*6.3*
6AF6G	Tuning Ind.	—	—	0	+80	+115	+230	—	*6.3*	+100	2–7	*6.3*
80	Rectifier	—	+365	*350*	*350*	+365	—	—	—	—	1–4	*5*

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to electrolytic capacitors in the circuit.

When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location Chart on Page 4 for position and numbering of terminals.

			TERMINALS OF SOCKETS							
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8
6A8G	Mod.—Osc.	A	S	S	20000¶	B	50000¶	C	S	150¶
6K7	I. F. Amp.	D	S	S	18000¶	E	150¶	F	S	150¶
6H6	Dem.—A. V. C.	—	S	S	G	S	H	280000¶	S	S
6SQ7	Audio Amp.	—	S	10M	S	S	S	280000¶	S	S
6F6G	Output	—	S	S	19000¶	19000¶	1M	1M	S	400¶
6AF6G	Tuning Ind.	—	O	S	250000¶	100000¶	15000¶	O	S	6000¶
80	Rectifier	—	19000¶	150¶	150¶	19000¶	—	—	—	—
—	Speaker Socket	—	19000¶	S	S	800000¶	O	O	800000¶	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

OTHER TESTS NOT SHOWN ON CHART

Radio-Phono Switch Set To		
Note	Radio Position	Phono Position
A	1.8M	O
B	80,000¶	1M
C	50,000¶	1M
D	1.5M	O
E	100,000¶	1M
F	25,000¶	1M
G	550,000¶	O
H	550,000¶	O

Phonograph jack terminal to chassis base.
- A: Radio Phonograph switch in Radio position "open".
- B: Radio Phonograph switch in Phonograph position 500,000 ohms.

Antenna terminal to chassis base 70 ohms.

Ground terminal to chassis base "short".

Between terminals of A. C. plug "open" with A. C. switch open, 7 ohms with A. C. switch closed. Terminals of A. C. plug to chassis base "open".

Front terminal of Push Button Unit (orange-white wire) to chassis base.
- Radio Phonograph switch in Radio position 1.8M.
- Radio Phonograph switch in Phono position "open".

Rear terminal of Push Button Unit (orange wire) to chassis base Range switch in Push Button position "open".
- Range switch in Standard Broadcast position (A Band) 120 ohms.
- Range switch in Short Wave position (C Band) 120 ohms.

R. F. coil tests measured directly across R. F. coil terminals with Range switch set in standard broadcast position (A Band): L3—3 ohms, L4—.2 ohms, L-5—"short", L6—.2 ohms, L7—4 ohms, L8—.2 ohms, L9—"short".

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

IMPORTANT: The stations selected should be the local or favorite stations which give good reception at all times.

Set up stations in the daytime to avoid unnecessary interference.

Allow the set to run for about twenty minutes before setting up stations.

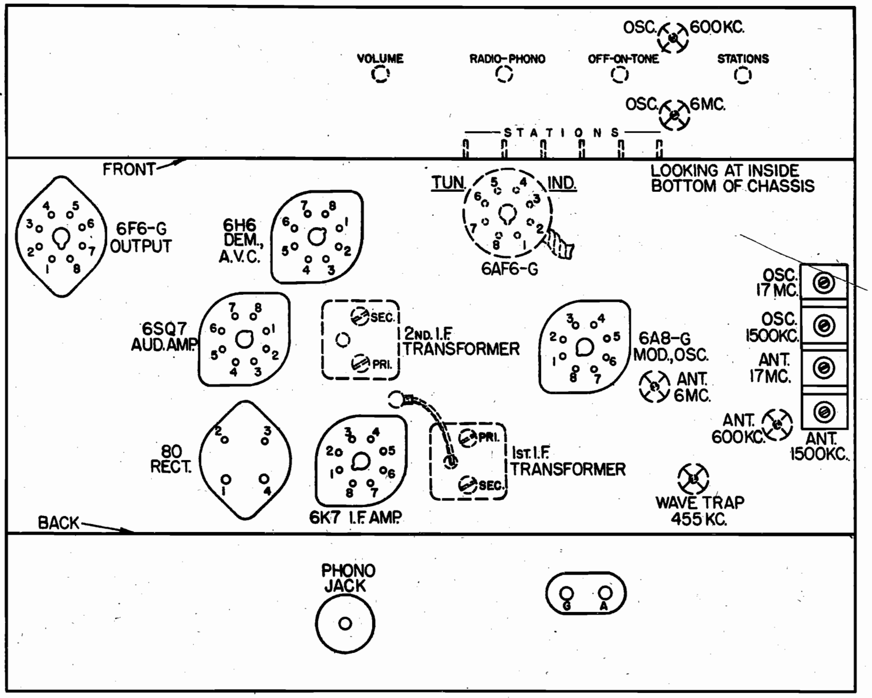
Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

1. Remove the push button escutcheon by removing the screws and pulling downward and outward.
2. Put the call letters of the selected stations in place above the push buttons. The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial. (The call letters will be found inside the envelope stapled inside or underneath the cabinet.)
3. Tune in manually the highest frequency station to be set up and note carefully the program being transmitted.
4. Turn the range switch to the push button position and push the highest frequency button, then adjust the large screw over this button until the desired program is heard. (If the proper adjusting screw cannot be reached it will be necessary to turn the station selector control until the screw is accessible through one of the holes in the pulley.)
5. After the large screw is carefully adjusted, adjust the small vernier screw for maximum closing of the tuning indicator. (Be sure the large adjusting screw does not move while turning the vernier screw.)
6. Set up the other five stations in the same manner.
7. Recheck the adjustment of each adjusting screw.

MODELS 420H, 420HB 420L, 420LB, 420PL 420PLB, 420PR, 420PRB Alignment, Socket Trimmers

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 410, 411 MODELS 430 Alignment



Location Chart

ALIGNING INFORMATION

Always have receiver volume control full on.

Never align with tone control in "Bass" position.

See location chart above for location of all the aligning adjustment screws.

Aligning Procedure (follow this order exactly)

I. Dial pointer adjustment.

With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the vertical line located at the extreme low frequency end of the short wave band.

II. Intermediate frequency adjustments.

1. Set the range switch to Standard Broadcast position.
2. Tune set to extreme low frequency end of the dial.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 Kilocycles to the grid cap of the 6A8G Tube, using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Do not remove the grid clip from this tube.)
5. Adjust the I. F. Aligners for maximum output in the following order:
   A. Secondary of second I. F. transformer.
   B. Primary of second I. F. transformer.
   C. Secondary of first I. F. transformer.
   D. Primary of first I. F. transformer.

III. Radio frequency adjustments.

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm carbon type resistor, and connect it to the antenna terminal of the chassis.
2. Set the range switch to the short-wave range position (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycles oscillator and antenna (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

Standard Broadcast Range (A Band)

1. Replace the 400 ohm carbon type resistor in series with the output lead from the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the Standard Broadcast Range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 Kc.
4. Adjust the 600 Kc. oscillator and antenna (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 Kc.
6. Adjust the 1500 Kc. oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operation three and four.
8. Repeat operation five and six.

IV. **Wave Trap Adjustment.**

(Leave the receiver connected in the same manner as when adjusting the Standard Broadcast Range ("A" Band)).

1. Tune set to 1000 Kc.
2. Set the signal generator frequency to 455 Kc. and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

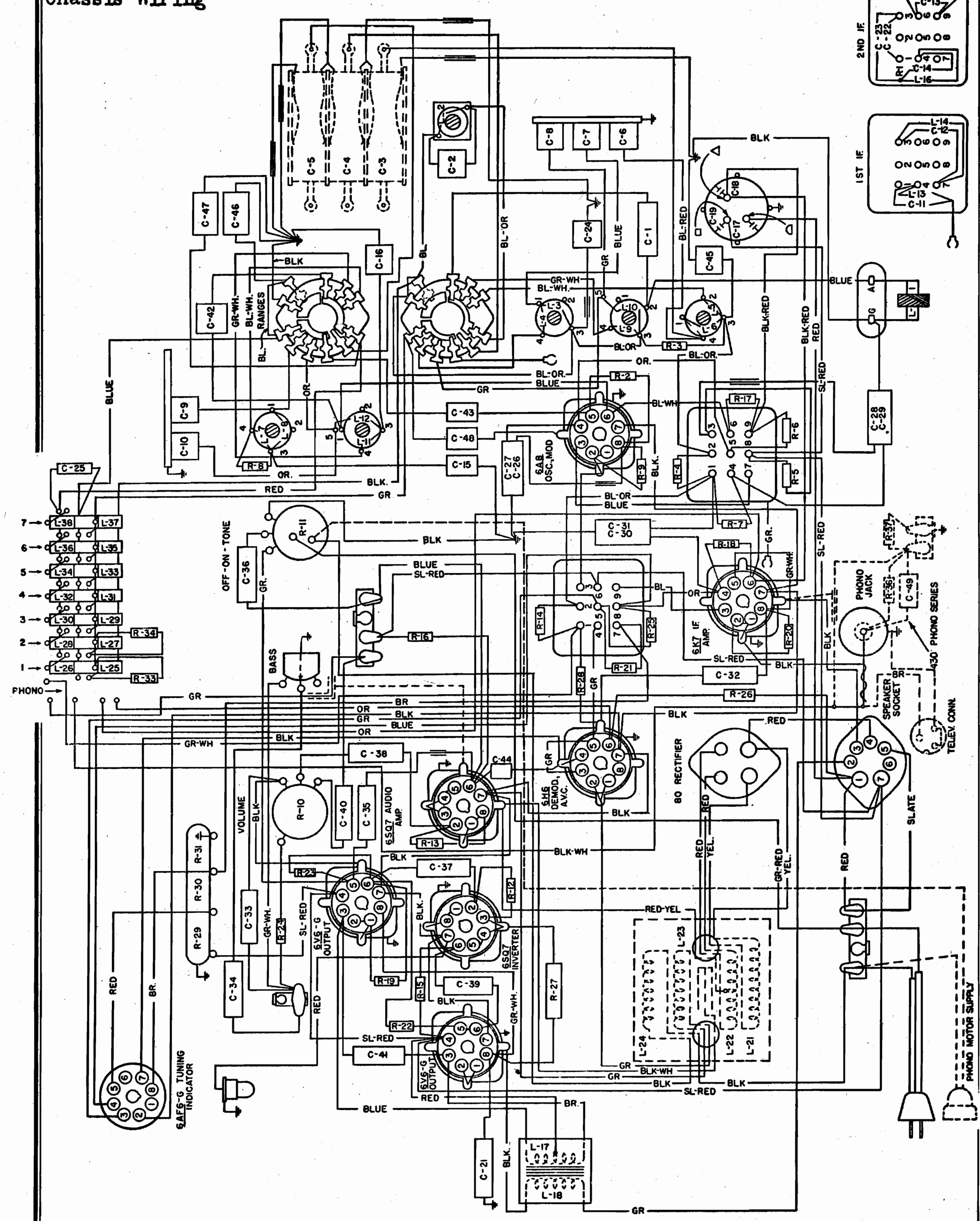
ADJUSTING DIAL LAMP

The dial on this receiver is edge lighted, and for proper illumination it is very important that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

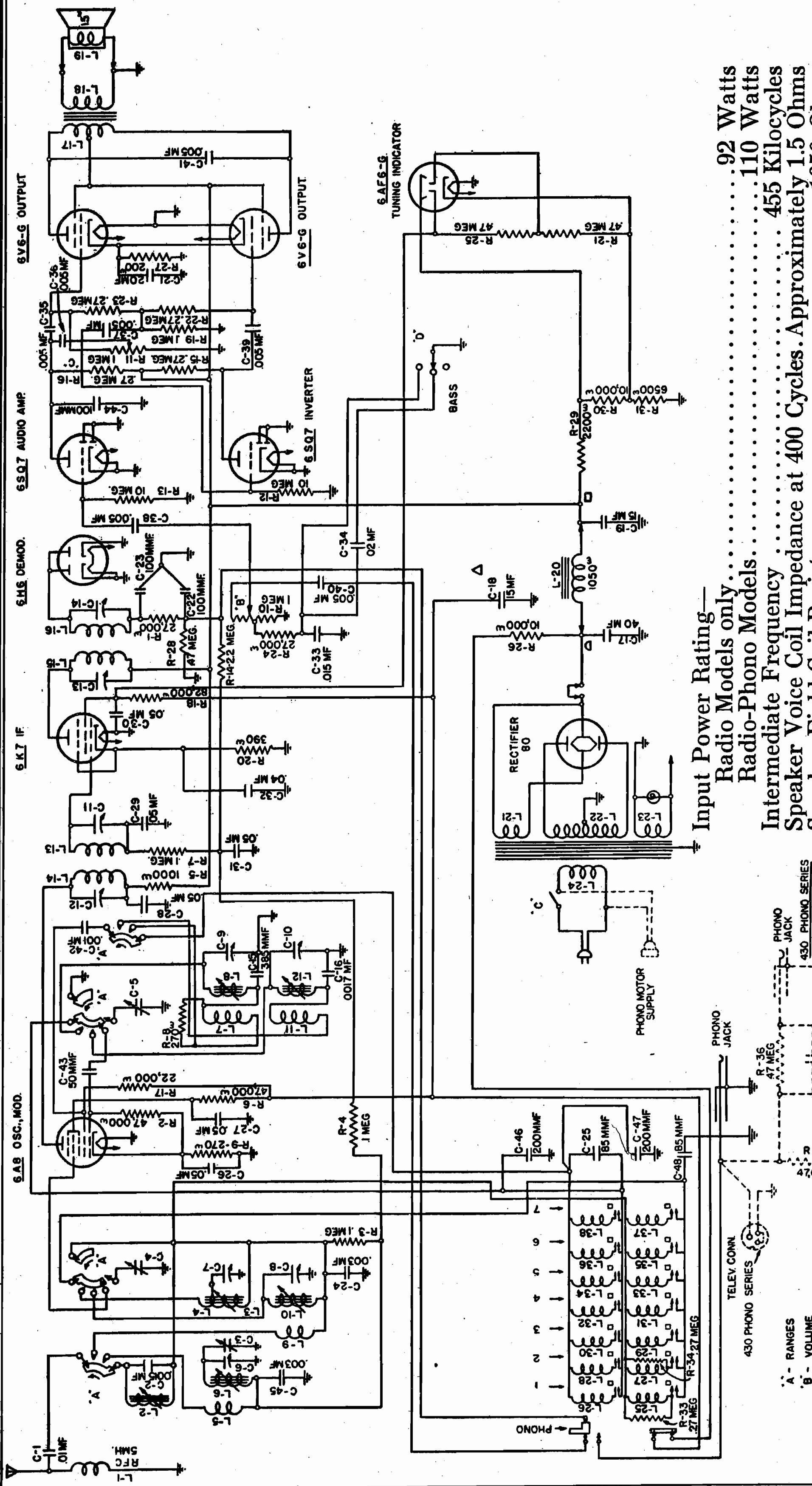
MODELS 430H, 430HB
430L, 430LB, 430M
430MB, 430PL, 430PLB
430PF, 430PFB
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.



STROMBERG-CARLSON TEL. MFG. CO.

MODELS 430H, 430HB
430L, 430LB, 430M
430MB, 430PL, 430PLB
430PF, 430PFB
Schematic



Input Power Rating—
Radio Models only..................92 Watts
Radio-Phono Models..................110 Watts
Intermediate Frequency..................455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles, Approximately 1.5 Ohms
Speaker Field Coil Resistance..................1050 Ohms

Model	Input Power Frequency	Chassis	Cabinet	Speaker
430-H	50-60 Cycles	30317	30457	30358
430-HB	25-60 Cycles	30318	30457	30358
430-L	50-60 Cycles	30317	30104	27834
430-LB	25-60 Cycles	30318	30104	27834
430-M	50-60 Cycles	30317	30105	30359
430-MB	25-60 Cycles	30318	30105	30359
430-PL	50-60 Cycles	30867	30993	26170
430-PLB	25 Cycles only	30868	30993	26170
430-PF	50-60 Cycles	30867	30866	26171
430-PFB	25 Cycles only	30868	30866	26171

FOR ALIGNMENT AND TUNER DATA, SEE INDEX

MODELS 430H, 430HB, 430L, 430LB, 430M, 430MB, 430PL, 430PLB, 430PF, 430PFB

STROMBERG-CARLSON TEL. MFG. CO.

Voltage, Socket, Trimmers, Resistance

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 Kc.—no signal.
Use a line voltage of 120 volts, or make allowance for the variation.
Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.
Take all D. C. readings on the 500 volt scale except when an asterisk appears.
Read from indicated terminals to chassis base.
See location chart for position of terminals.
A. C. voltages are indicated by italics.
To measure voltages of 6AF6G tube remove the metal cover on the tuning indicator socket and read from indicated terminals.

Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8	Heater Voltages Between Heater Terminals: Socket Terminal Numbers	Volts A.C.
6A8	Mod.—Osc.	0	0	0	+250	+110	−8*	+173	*6.5*	+3*	2–7	*6.5*
6K7	I. F. Amp.	0	0	0	+253	+108	+3.5*	—	*6.5*	+3.5*	2–7	*6.5*
6H6	Dem.—A. V. C.	—	0	0	0	0	0	0	*6.5*	0	2–7	*6.5*
6SQ7	Audio Amp.	—	0	0	0	0	0	+108	*6.5*	0	2–7	*6.5*
6SQ7	Audio Inv.	—	0	0	0	0	0	+108	*6.5*	0	2–7	*6.5*
6V6G	Output	—	0	0	+250	+254	0	—	*6.5*	+14.5	2–7	*6.5*
6V6G	Output	—	0	0	+250	+254	0	—	*6.5*	+14.5	2–7	*6.5*
6AF6G	Tuning Ind.	—	+90	—	—	+220	+110	+52	*6.5*	0	2–7	*6.5*
80	Rectifier	—	+382	*375*	*375*	+382	—	—	—	—	1–4	*5*
—	Speaker Socket	—	—	+382	0	0	+382	+382	—	—	—	—

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.
Use a good meter capable of measuring accurately up to several megohms.
The resistances given are often approximate, owing to electrolytic capacitors in the circuit.
When this is the case, be sure to reverse the test leads and read the highest resistance.
Read from indicated terminals to chassis base unless otherwise specified.
See location Chart for position and numbering of terminals.

Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8
6A8	Mod.—Osc.	A	S	S	20000¶	B	48000¶	C	S	270¶
6K7	I. F. Amp.	3M	S	S	19000¶	D	390¶	29000¶	S	390¶
6H6	Dem.—A. V. C.	—	S	S	50000¶	S	50000¶	20000¶	S	S
6SQ7	Audio Amp.	—	S	10M	S	S	S	300000¶	S	S
6SQ7	Audio Inv.	—	S	10M	S	S	S	300000¶	S	S
6V6	Output (E)	—	S	S	16000¶	16000¶	270000¶	100000¶	S	200¶
6V6	Output	—	S	S	16000¶	16000¶	400000¶	O	S	200¶
80	Rectifier	—	19000¶	100¶	120¶	19000¶	—	—	—	—
6AF6G	Tun. Ind.	—	O	S	270000¶	100000¶	16000¶	O	S	6500¶
—	Speaker Socket	—	100000¶ or Greater	S	S	O	100000¶ or Greater	O	16000¶	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

A. Push in any pre-set station button;
   - Set range switch to Push Button position .... 2.8 megohms
   - Set range switch to "A" range position .... 2.8 megohms
   - Set range switch to "C" range position .... 2.8 megohms

   Push buttons in normal position (all buttons out);
   - Set range switch to Push Button position .... "open"
   - Set range switch to "A" range position .... 2.8 megohms
   - Set range switch to "C" range position .... 2.8 megohms

B. Push in "Phono" button .... 200,000 ohms
   Push in any pre-set station button .... 70,000 ohms

C. Push in "Phono" button .... 200,000 ohms
   Push in any pre-set station button .... 50,000 ohms

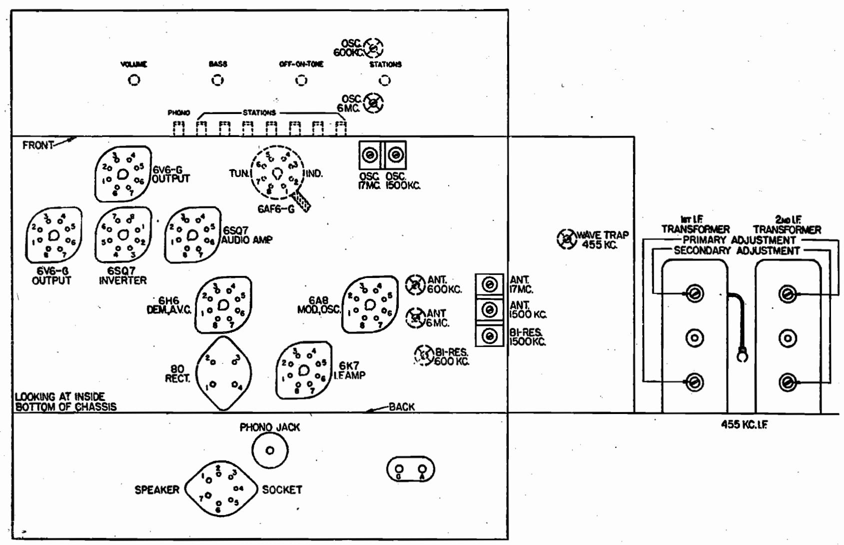
D. Push in "Phono" button .... 200,000 ohms
   Push in any pre-set station button .... 100,000 ohms

E. 6V6 Tube Socket nearest to the front of the chassis

Other Tests Not Shown on Chart

Antenna terminal to chassis base .... 75 ohms
Ground terminal to chassis base .... "short"
Phono terminal to chassis base .... "open"
Test between terminals of A.C. plug;
- A.C. switch open .... "open"
- A.C. switch closed .... 5 ohms

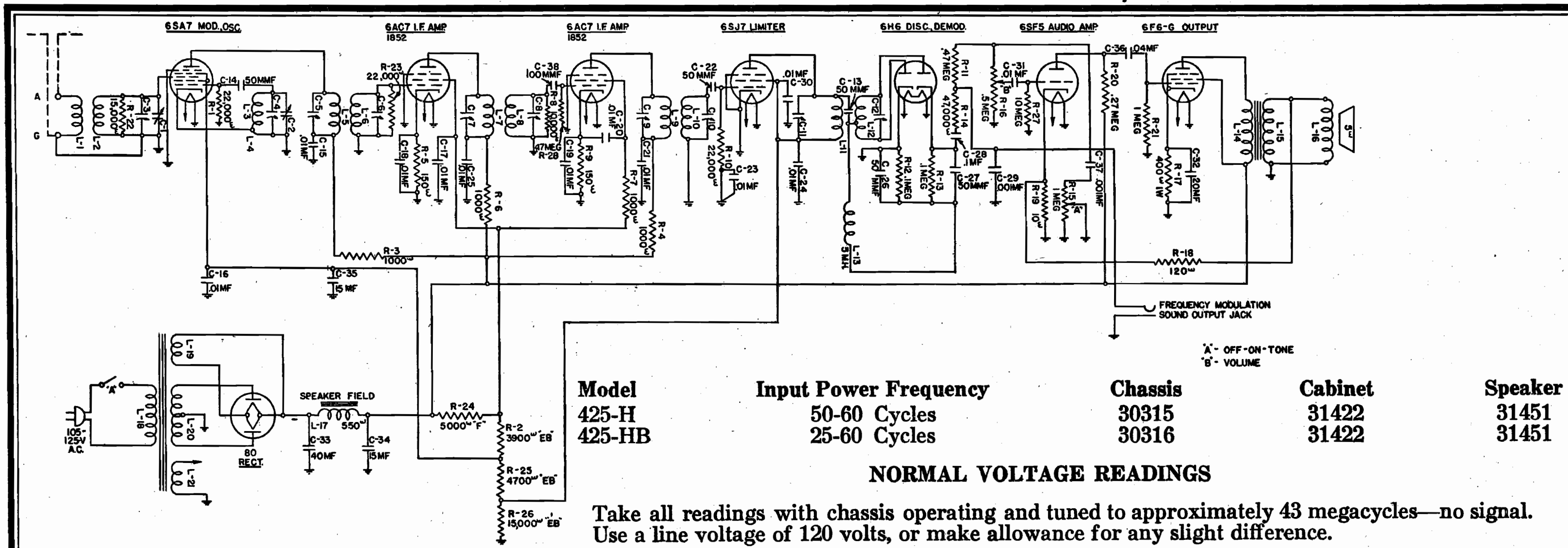
Terminals of A.C. plug to chassis base .... "open"
R. F. coil tests measure directly across R. F. coil terminals with range switch in broadcast position ("A" range): L3—.8 ohm; L4—.8 ohm; L5—.1 ohm; L6—3 ohms; L7—.3 ohm; L8—4 ohms; L9—.1 ohm; L10—"short"; L11—.1 ohm; L12—"short".



Location Chart

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 425H, 425HB
Schematic, Voltage



Model	Input Power Frequency	Chassis	Cabinet	Speaker
425-H	50-60 Cycles	30315	31422	31451
425-HB	25-60 Cycles	30316	31422	31451

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned to approximately 43 megacycles—no signal. Use a line voltage of 120 volts, or make allowance for any slight difference.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt. Take all D. C. readings on the 500 volt scale except when an asterisk appears. Read from indicated terminals to chassis base. See location chart for position of terminals.

A. C. voltages are indicated by italics.

Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8	Heater Voltages Between Heater Terminals: Socket Terminal Numbers	Volts A.C.
6SA7	Osc. and Mod.	—	0	0	+240	+90	0	0	*6.3*	0	2–7	*6.3*
6AC7 (1852)	1st I. F. Amp.	—	0	0	0	0	+2*	+148	*6.3*	+230	2–7	*6.3*
6AC7 (1852)	2nd I. F. Amp.	—	0	0	0	0	+2*	+145	*6.3*	+230	2–7	*6.3*
6SJ7	Limiter	—	0	0	0	0	0	+50	*6.3*	+57	2–7	*6.3*
6H6	Demod. (Discr.)	—	0	0	0	0	−10*	0	*6.3*	0	2–7	*6.3*
6SF5	Audio Amp.	—	0	0	0	0	+90	+245	*6.3*	0	2–7	*6.3*
6F6G	Output	—	0	0	+230	+245	0	0	*6.3*	+15*	2–7	*6.3*
80	Rectifier	—	+300	*310*	*310*	+300	—	—	—	—	1–4	*5*

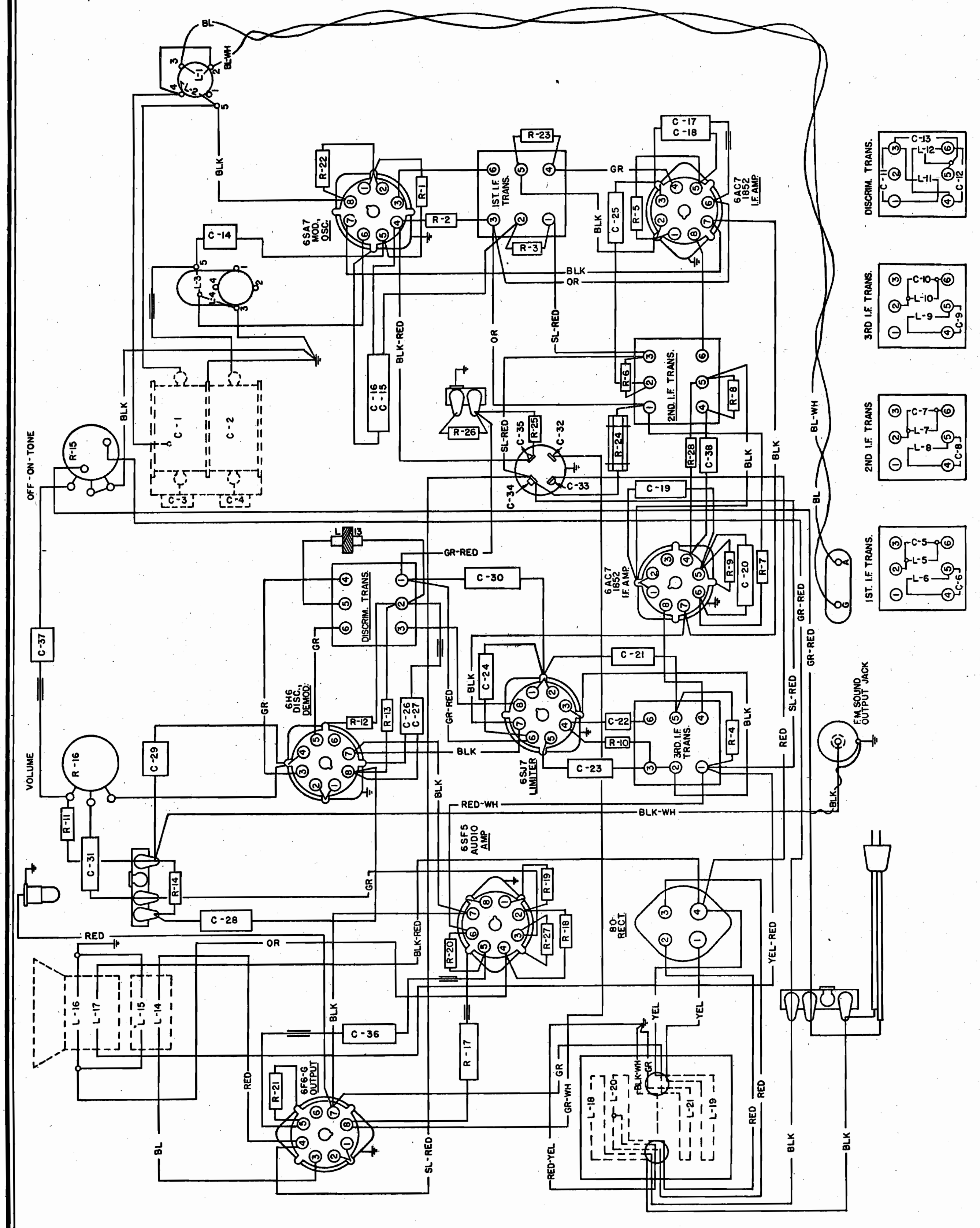
*Read on lowest possible scale of voltmeter.

SPECIFICATIONS

Voltage Rating .... 105 to 125 Volts
Type of Circuit .... Frequency Modulation—Superheterodyne
Tuning Range
40 to 44 Megacycles (40,000 to 44,000 Kilocycles)
Input Power Rating (120 Volt line) .... 79 Watts
Intermediate Frequency .... 2.1 Megacycles (2100 Kilocycles)
Speaker Voice Coil Impedance at 400 Cycles .... Approximately 5 Ohms
Speaker Field Coil Resistance .... Approximately 550 Ohms

MODELS 425H, 425HB
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.



STROMBERG-CARLSON TEL. MFG. CO.

MODELS 425H,425HB
Socket,Trimmers
Resistance

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Use a good ohmmeter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to Electrolytic Capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance. Read from indicated terminals to chassis base.

			TERMINALS OF SOCKETS							
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8
6SA7	Osc. and Mod.	—	S	S	30000¶	20000¶	20000¶	S	S	S
6AC7 (1852)	1st I. F. Amp.	—	S	S	S	2¶	150¶	27000¶	S	30000¶
6AC7 (1852)	2nd I. F. Amp.	—	S	S	S	500000¶	150¶	30000¶	S	30000¶
6SJ7	Limiter	—	S	S	S	20000¶	S	18000¶	S	18000¶
6H6	Demod. (Discr.)	—	S	S	90000¶	S	90000¶	O	S	180000¶
6SF5	Audio Amp.	—	S	10¶	10M	S	300000¶	30000¶	S	S
6F6G	Output	—	S	S	30000¶	30000¶	1M	O	S	400¶
80	Rectifier	—	100¶	30000¶	30000¶	100¶	—	—	—	—

Symbols used are as follows: ¶—ohms; M—megohms; S—short; O—open.

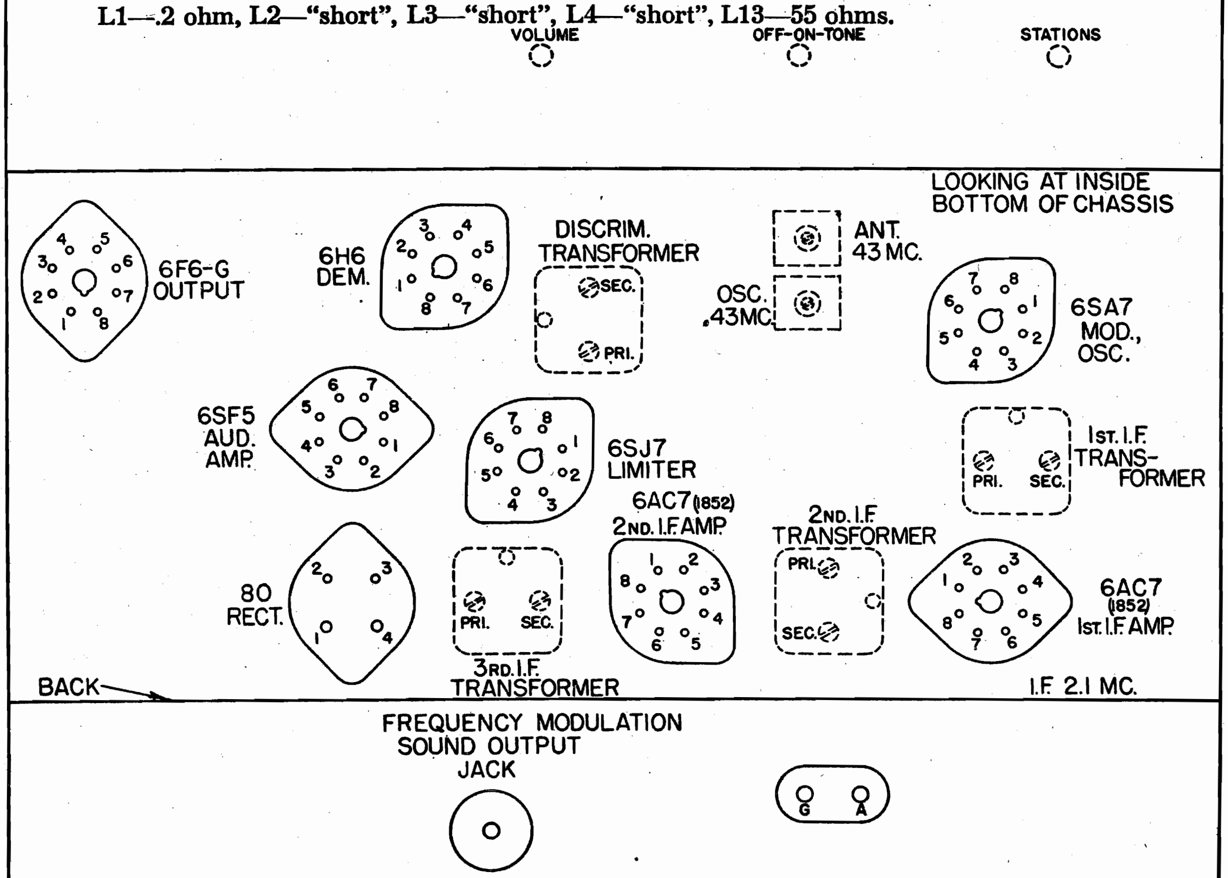
Other Tests Not Shown on Chart

Antenna terminal to chassis base....... "short"
Ground terminal to chassis base....... "short"
F. M. Sound Output Jack to chassis base 1 megohm

Terminals of A. C. plug to chassis base.. "open"
Between terminals of A. C. plug:
A. C. switch open................ "open"
A. C. switch closed............... 6 ohms

R. F. coil tests measured directly across R. F. coil terminals. (See wiring diagram for location of R. F. coil terminals.)

L1—.2 ohm, L2—"short", L3—"short", L4—"short", L13—55 ohms.



Location Chart

STROMBERG-CARLSON TEL. MFG. CO.

Using the 425 Receiver as a Converter

This receiver may be used as a converter so that the audio system of a good high fidelity receiver of the ordinary amplitude modulation type may be utilized to provide the type of high fidelity reception only possible with frequency modulation.

It is only necessary to connect the single pin jack on the back of the chassis (labeled Frequency Modulation Sound Output Jack) to the Phono Input of any other receiver or sound system by means of the cord provided.
In this way, the speaker of the 425 Receiver will act as a "tweeter" or treble speaker and the speaker system of the amplitude modulation receiver will serve as the bass speaker. The balance between the two speakers can be controlled by operating the two volume controls.

ACCESSORIES

Antenna

The proper antenna for frequency modulation reception will depend upon the distance from the stations which it is desired to receive. In some locations, a simple single wire antenna will be suitable but for best results, the Stromberg-Carlson No. 5-A Antenna Adapter used in conjunction with the No. 5 Antenna to which the amplitude modulation receiver is connected is recommended.

It may also be necessary to utilize a horizontal dipole type of antenna in some locations.

Playing Records

To obtain the best quality of phonograph reproduction, a Stromberg-Carlson record player is recommended. If this set is used as a converter, the phonograph should be attached to the amplitude modulation receiver in the regular way. (The installation of a simple switch will eliminate plugging and unplugging).

If this set is used as a receiver, the sound output jack may be readily converted to a phonograph in put jack by removing the black-white wire which comes from this jack from the terminal block to which it is connected and connecting it to the high side of the volume control (this is the terminal on the volume control to which resistor R-11 is attached).
After this has been done, it is only necessary to plug in a record player, tune to a quiet place on the dial and proceed to operate.

Adjusting Dial Lamp

One dial lamp is used to illuminate the dial on the No. 425 Receiver. To adjust the dial lamp for proper illumination of the dial, slide the lamp socket back and forth on its mounting bracket until maximum illumination is obtained.

ALIGNING INFORMATION

General

Never Realign Unless Absolutely Necessary.

All aligning adjustments are carefully made at the factory with special equipment which is designed for aligning frequency modulation receivers. The limitations of commercial oscillographs and other ordinary test equipment are such that alignment should not be attempted in the field unless absolutely necessary.

If alignment is attempted, it will not be successful unless the instructions which follow are adhered to exactly.

The following equipment will be required:

1. A good signal generator with variable output voltage. (All adjustments are made using an unmodulated signal.)
2. A good center "O" microammeter with 100 divisions on each side of "O".

Always have receiver volume control full on.

See location chart for location of aligning adjustment screws.

I. Discriminator Adjustment.

1. Tune the set to the extreme high frequency end of the dial (44.5 megacycles).
2. Connect the center "O" microammeter with a one megohm resistor in series across one half of the discriminator load (from ground to the junction of the two 100,000 ohm resistors R-12 and R-13).
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce an unmodulated signal of 2100 kilocycles to the grid (terminal No. 4) of the 6SJ7 limiter tube using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Approximately one volt signal is necessary.)
5. Adjust the primary of the discriminator transformer for maximum reading of the microammeter.
6. Remove the microammeter and the one megohm resistor from the junction of R-12 and R-13 resistors and connect them across the whole discriminator load (from the high side of the R-13 to ground.)
7. Adjust the secondary of the discriminator transformer for "O" reading of the microammeter.

II. Intermediate Frequency Adjustments.

Important: All intermediate frequency adjustments are made using the same unmodulated signal of 2100 kilocycles. Each I. F. stage must be adjusted independently and in the order given. **Do not make any overall adjustments after the previous stage is aligned.**

1. Disconnect the jumper wire from the low side of the limiter grid resistor (R-10) and connect the microammeter directly to this wire without using the one megohm resistor.
2. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 second I. F. tube (Terminal No. 4).
3. Adjust the secondary of the third I. F. transformer for maximum reading of the microammeter.
4. Adjust the primary of the third I. F. transformer for maximum reading of the microammeter.
5. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 first I. F. tube (Terminal No. 4).
6. Adjust the secondary of the second I. F. transformer for maximum reading of the microammeter.
7. Adjust the primary of the second I. F. transformer for maximum reading of the microammeter.
8. Disconnect the black wire to the antenna coil from the grid terminal of the 6SA7 modulator tube (terminal No. 8) and connect the output lead from the signal with the 0.1 microfarad capacitor in series to this terminal.
9. Adjust the secondary of the first I. F. transformer for maximum reading of the microammeter.
10. Adjust the primary of the first I. F. transformer for maximum reading of the microammeter.

III. Radio Frequency Adjustments.

(Leave the signal generator connected to the grid of the 6SA7 tube in the same manner as when adjusting the first I. F. transformer.)

1. Set the signal generator frequency and the receiver tuning dial to 43 megacycles.
2. Adjust the oscillator aligning capacitor located on top of the gang capacitor unit for maximum reading of the microammeter.
3. Remove the output lead and the 0.1 microfarad capacitor in series with it from the grid of the 6SA7 tube and resolder in its original position the black wire which was removed from this terminal.
4. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm carbon type resistor and connect it to the antenna terminal of the receiver.
5. Adjust the antenna aligning capacitor located on top of the gang capacitor unit for maximum reading of the microammeter and, at the same time, rotate the gang tuning capacitor back and forth through resonance to obtain maximum reading on the microammeter.

   IMPORTANT: Do not go back and touch up any adjustments previously made. If the receiver is not in proper alignment after completing the adjustments outlined above, go back and start over again and follow the instructions through to the finish.
6. Re-solder the jumper wire to the low side of the limiter grid resistor (R-10).

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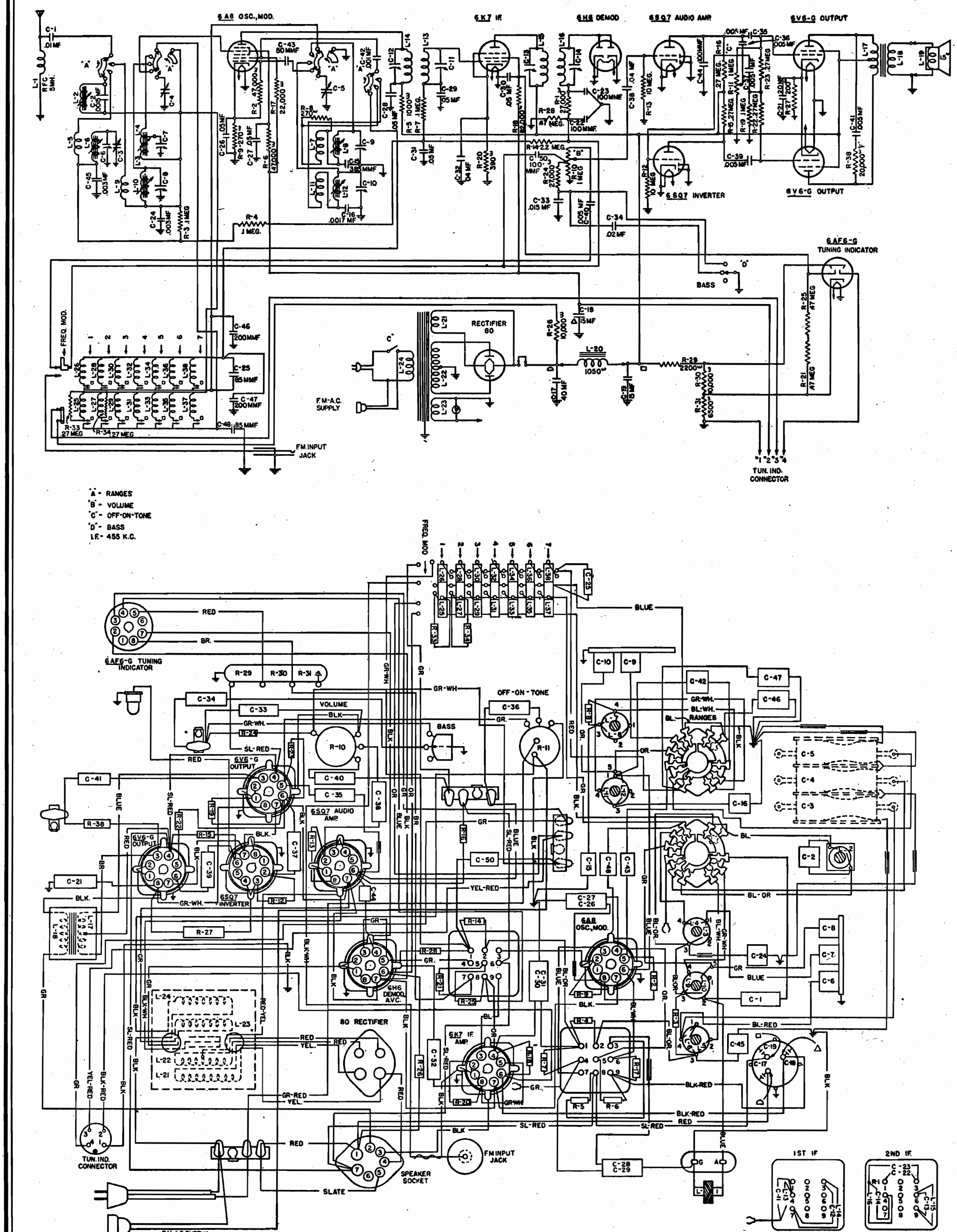
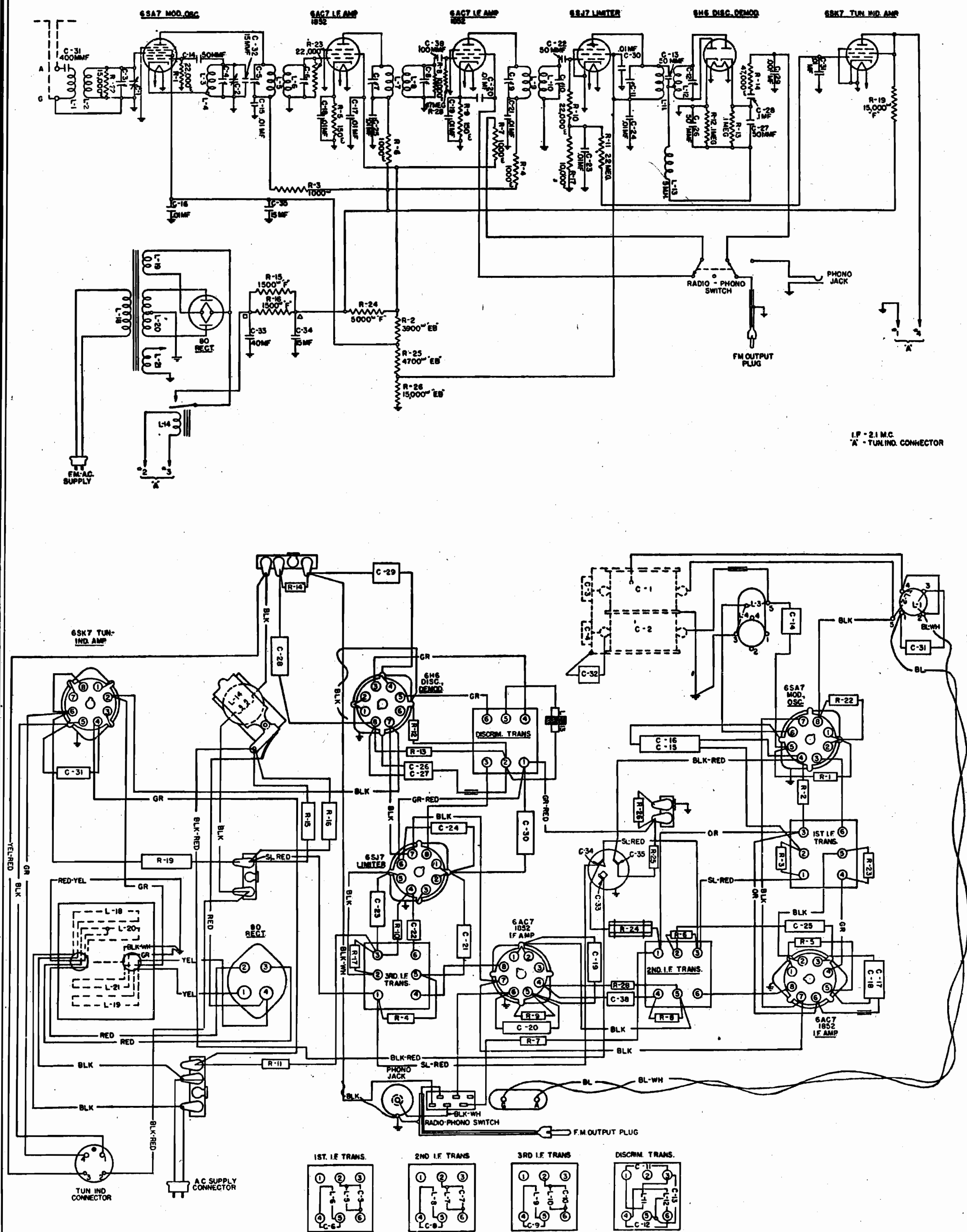
MODEL 435M
Schematic (A.M.)
Chassis Wiring



Wiring and Schematic Diagram
Amplitude Modulation

MODEL 435M
Schematic (F.M.)
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.



Wiring and Schematic Diagram
Frequency Modulation

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 435M
Socket, Trimmers
A.M. and F.M.
Notes

IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
435-M	50-60 Cycles	31481 Amp. Mod. 31482 Freq. Mod.	31840	30359

SPECIFICATIONS

Tuning Ranges	Frequency Modulation 40 to 44 Mc. (40,000 to 44,000 Kc.) Short Wave 5.8 to 18 Mc. (5,800 to 18,000 Kc.) Standard Broadcast .54 to 1.7 Mc. (540 to 1,700 Kc.)
Voltage Rating	105 to 125 Volts
Type of Circuit	Superheterodyne with Electric Tuning
Input Power Rating	140 Watts
Intermediate Frequency	455 Kilocycles (Amplitude Modulation) 2.1 Megacycles (Frequency Modulation)
Speaker Voice Coil Impedance at 400 Cycles	Approximately 1.5 Ohms
Speaker Field Coil Resistance	Approximately 1050 Ohms

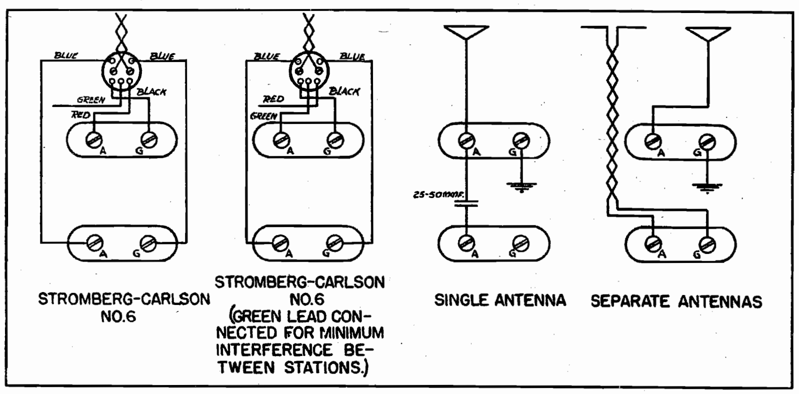
ACCESSORIES

ANTENNA. For best results use a Stromberg-Carlson No. 6 Antenna. This antenna is designed to provide improved pick-up on both the amplitude and frequency modulation bands.

If it is desired, two ordinary antennas may be used, one for amplitude modulation, which should be a straight wire "L" type antenna about 75 feet long, and one for frequency modulation. This latter antenna may be a straight wire about 40 feet in length or of the dipole type with two arms approximately 5½ feet in length. The dipole antenna will exhibit a marked directional effect and should be erected as high as possible above the ground and adjusted so as to receive the desired frequency modulated stations with best results.

For average reception, a single straight wire antenna may be used for both amplitude and frequency modulation.

The various types of antennas should be connected to the No. 435 Receiver as follows:



PLAYING RECORDS. To obtain the best quality of phonograph reproduction, a Stromberg-Carlson record player is recommended. They are designed for use with this receiver and all that is necessary is to connect the record player to the single prong socket provided in the chassis, operate the "Radio-Phono" switch located on the back of the chassis to "Phono" position, push in the frequency modulation button on the front of the receiver and proceed to operate. The volume and tone may be controlled with the controls at the receiver or (if such is provided), the volume control on the record player may be used.

A low impedance pick-up may be used, but a matching transformer must be placed between the phonograph pick-up and the chassis.

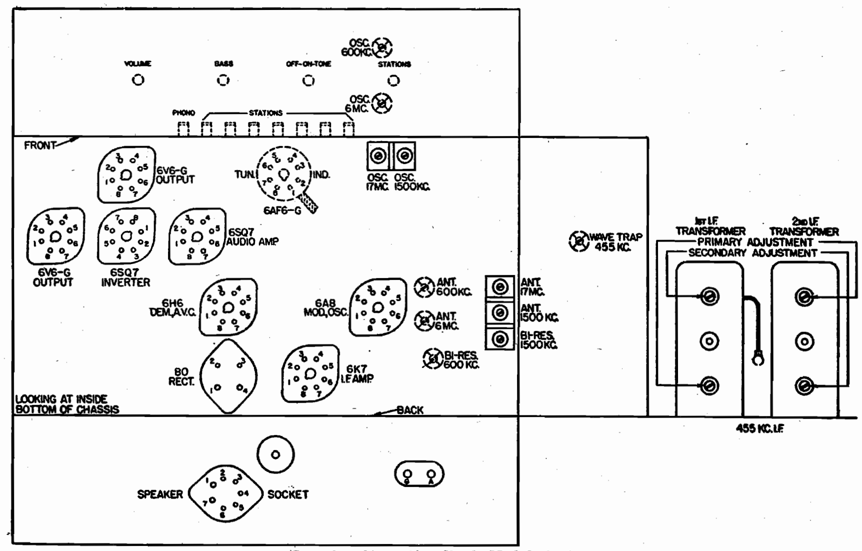
HEADSET ATTACHMENT. Headphones can be very simply attached to this receiver. Ask for Pc. No. 28303 Headset Package Assembly, which comes complete with headphones and installation instructions.

CARE OF CABINET. The finish of Stromberg-Carlson Cabinets should be protected by using Stromberg-Carlson Cabinet Polish regularly. It is available in pint cans, designated as Pc. No. 28601.

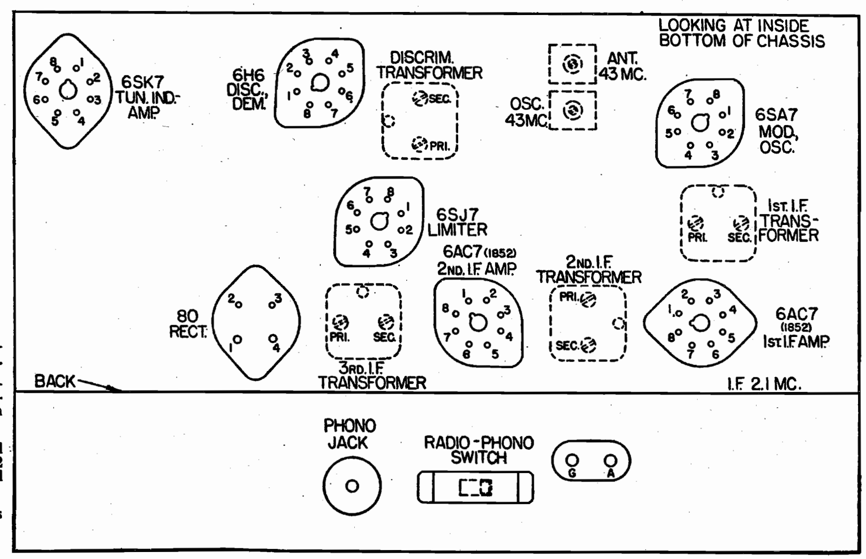
Nicks and scratches of most kinds can be repaired quickly and easily by proper use of the Pc. No. 26962 Touch-Up Kit. Complete instructions are provided with each kit.

TOOLS. Stromberg-Carlson can supply all the tools required for working on these sets. For example:

SD-29 Phillips Head Screwdriver
No. 24608 Aligning Tool
Also pliers, cutters, screwdrivers, etc.



Location Chart (Amplitude Modulation)



Location Chart—(Frequency Modulation)

MODEL 435M
Alignment

STROMBERG-CARLSON TEL. MFG. CO.

ALIGNING INFORMATION

NEVER REALIGN UNLESS ABSOLUTELY NECESSARY

GENERAL. All aligning adjustments are carefully made at the factory with special equipment which is designed for aligning frequency modulation receivers. The limitations of commercial oscillographs and other ordinary test equipment are such that alignment should not be attempted in the field unless absolutely necessary.

If alignment is attempted, it will not be successful unless the instructions which follow are adhered to exactly.

The following equipment will be required:

1. A good signal generator with variable output voltage. (All adjustments of the frequency modulation range are made using an unmodulated signal.)
2. A good center "O" microammeter with 100 divisions on each side of "O".

Always have receiver volume control full on.

See location chart on Page 5 for location of aligning adjustment screws.

Important. Before proceeding to align the frequency modulation chassis of this receiver tune the receiver to 43 megacycles and mark this point with a pencil on the large pulley of the frequency modulation chassis. Carefully remove the drive cord from this pulley noting the relation of the point marked with the setting of the variable capacitor.

I. Discriminator Adjustment. (Frequency Modulation)

1. Tune the set to the extreme high frequency plates of variable capacitor all the way in.
2. Connect the center "O" microammeter with a one megohm resistor in series across one half of the discriminator load (from ground to the junction of the two 100,000 ohm resistors R-12 and R-13).
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce an unmodulated signal of 2100 kilocycles to the grid (terminal No. 4) of the 6SJ7 limiter tube using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Approximately one volt signal is necessary.)
5. Adjust the primary of the discriminator transformer for maximum reading of the microammeter.
6. Remove the microammeter and the one megohm resistor from the junction of R-12 and R-13 resistors and connect them across the whole discriminator load (from the high side of the R-13 to ground).
7. Adjust the secondary of the discriminator transformer for "O" reading of the microammeter.

II. Intermediate Frequency Adjustments. (Frequency Modulation)

Important: All intermediate frequency adjustments are made using the same unmodulated signal of 2100 kilocycles. Each I. F. stage must be adjusted independently and in the order given. **Do not make any overall adjustments after the previous stage is aligned.**

1. Disconnect the jumper wire from the low side of the limiter grid resistor (R-10) and connect the microammeter directly to this wire without using the one megohm resistor.
2. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 second I. F. tube (Terminal No. 4).
3. Adjust the secondary of the third I. F. transformer for maximum reading of the microammeter.
4. Adjust the primary of the third I. F. transformer for maximum reading of the microammeter.
5. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 first I. F. tube (Terminal No. 4).
6. Adjust the secondary of the second I. F. transformer for maximum reading of the microammeter.
7. Adjust the primary of the second I. F. transformer for maximum reading of the microammeter.
8. Disconnect the black wire to the antenna coil from the grid terminal of the 6SA7 modulator tube (terminal No. 8) and connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to this terminal.
9. Adjust the secondary of the first I. F. transformer for maximum reading of the microammeter.
10. Adjust the primary of the first I. F. transformer for maximum reading of the microammeter.

III. Radio Frequency Adjustments. (Frequency Modulation)

(Leave the signal generator connected to the grid of the 6SA7 tube in the same manner as when adjusting the first I. F. transformer.)

1. Set the signal generator frequency and the receiver tuning dial to 43 megacycles.
2. Adjust the oscillator aligning capacitor located on top of the gang capacitor unit for maximum reading of the microammeter.
3. Remove the output lead and the 0.1 microfarad capacitor in series with it from the grid of the 6SA7 tube and resolder in its original position the black wire which was removed from this terminal.
4. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm carbon type resistor and connect it to the antenna terminal of the receiver.
5. Adjust the antenna aligning capacitor located on top of the gang capacitor unit for maximum reading of the microammeter and, at the same time, rotate the gang tuning capacitor back and forth through resonance to obtain maximum reading on the microammeter.

IMPORTANT: Do not go back and touch up any adjustments previously made. If the receiver is not in proper alignment after completing the adjustments outlined above, go back and start over again and follow the instructions through to the finish.

6. Re-solder the jumper wire to the low side of the limiter grid resistor (R-10).

IV. Intermediate Frequency Adjustments. (Amplitude Modulation)

1. Set the range switch to Standard Broadcast position.
2. Tune set to extreme low frequency end of the dial.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 Kilocycles to the grid cap of the 6A8 Tube, using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Do not remove the grid clip from this tube.)
5. Adjust the I. F. Aligners for maximum output in the following order:
   - A. Secondary of second I. F. transformer.
   - B. Primary of second I. F. transformer.
   - C. Secondary of first I. F. transformer.
   - D. Primary of first I. F. transformer.

V. Radio Frequency Adjustments. (Amplitude Modulation)

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm carbon type resistor, and connect it to the antenna terminal of the chassis.
2. Set the range switch to the short-wave range (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycles oscillator and antenna (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

Standard Broadcast Range (A Band)

1. Replace the 400 ohm carbon type resistor in series with the output lead from the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the Standard Broadcast Range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 Kc.
4. Adjust the 600 Kc. oscillator, Bi-Resonator and antenna (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 Kc.
6. Adjust the 1500 Kc. oscillator, Bi-Resonator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

VI. Wave Trap Adjustment.

(Leave the receiver connected in the same manner as when adjusting the Standard Broadcast Range (A Band)).

1. Tune set to 1000 Kc.
2. Set the signal generator frequency to 455 Kc. and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

FEATURES

SPECIAL CIRCUITS. A tuning indicator having two apertures is used in this receiver. One aperture will operate when tuning stations in the standard broadcast and short-wave ranges and the other aperture will operate when tuning stations in the frequency modulation range. Stations should be tuned for maximum closing of the tuning indicator.

Iron core coils are used in the standard broadcast and short-wave ranges to provide greater accuracy of alignment. In addition a thernal drift compensator is included in the circuit. The audio system employs a special inverter push-pull circuit designed to provide excellent fidelity. The power transformer has an electro-static shield to reduce line noises to a minimum and the chassis is thoroughly shielded throughout.

AUTOMATIC TUNING. An adjustable iron core coil type of automatic tuning is employed and the stations may be easily located by properly utilizing the concentric adjusting screws provided. A special tool identified as SD-70 Screwdriver will help materially in setting up the automatic tuning.

MANUAL TUNING. Important. When tuning stations manually in the Standard Broadcast or Short Wave ranges be sure that the push button designated "Freq. Mod." is **not** pushed in.

PHONOGRAPH OPERATION. A jack is provided on the back of the chassis into which a record player may be plugged and a switch is provided next to it for switching from "Radio" to "Phonograph".

TELEVISION. Switching to phonograph also makes the audio amplifier and loud speaker available for use with television receivers designed for this type of sound reproduction.

REMOVING THE CHASSIS FROM CABINET

Do not remove the chassis from the shelves; instead, remove the chassis and shelf assembly by taking out the six wood screws from the top shelf and the four wood screws from the bottom shelf, thus removing chassis and shelves as a unit.

ADJUSTING DIAL LAMP

The dial on this receiver is edge lighted, and for proper illumination it is very **important** that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

MODEL 435M
Tuner, Voltage
Resistance

STROMBERG-CARLSON TEL. MFG. CO.

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

IMPORTANT: The stations selected should be the local or favorite stations which give good reception at all times.

Set up stations in the daytime to avoid unnecessary interference.

Allow the set to run for about twenty minutes before setting up stations.

Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

1. Remove the dial escutcheon by removing the screws and pulling downward and outward.
2. Put the call letters of the selected stations in place above the push buttons. The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial. (The call letters will be found inside the envelope stapled inside or underneath the cabinet.)
3. Tune in manually the highest frequency station to be set up and note carefully the program being transmitted.
4. Turn the range switch to the push button position and push the highest frequency button.
5. Using a very small screwdriver adjust the slot in the inner screw until it coincides with the slot in the outer screw.
6. Using a larger screwdriver, adjust both screws at the same time until the desired station is tuned in as well as possible.
7. Using the small screwdriver again, adjust the small inner screw for maximum closing of the tuning indicator. (Be sure the outer screw does not move while adjusting the inner screw.) Operations 5, 6 and 7 can be greatly simplified by using Stromberg-Carlson SD-70 Adjusting Tool which is a double screwdriver designed to fit both of these screws at the same time.
8. Set up the other stations in the same manner.
9. Recheck the adjustment of each adjusting screw.

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 Kc. or 43 Mc.—no signal.

Use a line voltage of 120 volts, or make allowance for the variation.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.

Take all D. C. readings on the 500 volt scale except when an asterisk appears.

Read from indicated terminals to chassis base.

See location chart on Page 5 for position of terminals.

A. C. voltages are indicated by italics.

To measure voltages of 6AF6G tube remove the metal cover on the tuning indicator socket and read from indicated terminals.

Tube	Circuit	Cap	1	2	3	4	5	6	7	8
	AMPLITUDE MODULATION CHASSIS									
			TERMINALS OF SOCKETS							
6A8	Mod. and Osc.	0	0	0	+250	+110	−8*	+173	*6.3*	+3*
6K7	I. F. Amp.	0	0	0	+253	+108	+4*	—	*6.3*	+4*
6H6	Dem. and A. V. C.	—	0	0	0	0	0	0	*6.3*	0
6SQ7	Audio Amp.	—	0	0	0	0	0	+108	*6.3*	0
6SQ7	Audio Inv.	—	0	0	0	0	0	+108	*6.3*	0
6V6G	Output	—	0	0	+250	+254	0	—	*6.3*	+14
6V6G	Output	—	0	0	+250	+254	0	—	*6.3*	+14
6AF6G	Tuning Indicator	—	—	0	+52	+110	+220	—	*6.3*	+90
80	Rectifier	—	+382	*375*	*375*	+382	—	—	—	—
—	Speaker Socket	—	—	+382	0	0	+382	+382	—	—
	FREQUENCY MODULATION CHASSIS									
6SA7	Mod. and Osc.	—	0	0	+240	+90	0	0	*6.3*	0
6AC7	1st I. F. Amp.	—	0	0	0	0	+2*	+148	*6.3*	+230
6AC7	2nd I. F. Amp.	—	0	0	0	0	+2*	+145	*6.3*	+230
6SJ7	Limiter	—	0	0	0	0	0	+50	*6.3*	+57
6H6	Demod. (Discr.)	—	0	0	0	0	−10*	0	*6.3*	0
6SK7	Tun. Ind. Amp.	—	0	0	0	0	0	+275	*6.3*	+275
80	Rectifier	—	+300	*310*	*310*	+300	—	—	—	—

*Read on lowest possible scale of voltmeter
5 volts AC between terminals 1 and 4 of rectifier sockets (No. 80 tube)

CONTINUITY TEST

Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Test speaker socket with speaker left out.

Leave speaker plug in socket for all other tests of the amplitude modulation chassis.

Use a good meter capable of measuring up to several megohms.

The resistances given are often approximate owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart for position and numbering of terminals.

Tube	Circuit	Cap	1	2	3	4	5	6	7	8
	AMPLITUDE MODULATION CHASSIS									
			TERMINALS OF SOCKETS							
6A8	Mod. and Osc.	3M	S	S	20000Ω	200000Ω	48000Ω	200000Ω	S	270Ω
6K7	I. F. Amp.	3M	S	S	19000Ω	200000Ω	390Ω	200000Ω	S	390Ω
6H6	Dem.—A. V. C.	—	S	S	500000Ω	S	500000Ω	20000Ω	S	S
6SQ7	Audio Amp.	—	S	10M	S	S	S	300000Ω	S	S
6SQ7	Audio Inv.	—	S	10M	S	S	S	300000Ω	S	S
6V6G	Output (A)	—	S	S	16000Ω	16000Ω	270000Ω	100000Ω	S	200Ω
6V6G	Output	—	S	S	16000Ω	16000Ω	400000Ω	O	S	200Ω
6AF6G	Tun. Ind.	—	O	S	O	200000Ω	16000Ω	O	S	6500Ω
80	Rectifier	—	19000Ω	100Ω	120Ω	19000Ω	—	—	—	—
—	Speaker Socket	—	1000000Ω or Greater	S	S	O	1000000Ω or Greater	O	16000Ω	—
	FREQUENCY MODULATION CHASSIS									
6SA7	Osc. and Mod.	—	S	S	30000Ω	20000Ω	20000Ω	S	S	S
6AC7	1st. I. F. Amp.	—	S	S	S	3Ω	150Ω	24000Ω	S	30000Ω
6AC7	2nd I. F. Amp.	—	S	S	S	500000Ω	150Ω	B	S	30000Ω
6SJ7	Limiter	—	S	S	S	32000Ω	S	15000Ω	S	15000Ω
6H6	Demod. (Discr.)	—	S	S	100000Ω	S	100000Ω	O	S	200000Ω
6SK7	Tun. Ind. Amp.	—	S	S	S	2.2M	S	40000Ω	S	40000Ω
80	Rectifier	—	29000Ω	250Ω	250Ω	29000Ω	—	—	—	—

Symbols used on chart are as follows: Ω—ohms; M—megohms; S—short; O—open

A. 6V6G tube socket nearest to the front of the chassis

B. Radio-Phono switch in "Radio" position .... 24,000 ohms
Radio-Phono switch in "Phono" position .... "open"

Other Tests Not Shown on Chart (Amplitude Modulation Chassis)

- Antenna terminal to chassis base .... 75 ohms
- Ground terminal to chassis base .... "short"
- Audio connector socket to chassis base .... "open"
- Between terminals of A. C. plug:
  - A. C. switch open .... "open"
  - A. C. switch closed .... 5 ohms
- Terminals of A. C. plug to chassis base .... "open"
- R. F. coil tests measured directly across R. F. coil terminals with range switch in standard broadcast position. ("A" Range)

L3—.8 ohm; L4—.8 ohm; L5—.1 ohm; L6—3 ohms; L7—.3 ohm; L8—4 ohms; L9—.1 ohm; L10—"short"; L11—.1 ohm; L12—"short".

Other Tests Not Shown on Chart (Frequency Modulation Chassis)

- Antenna terminal to chassis base .... "open"
- Ground terminal to chassis base .... "short"
- Phono jack to chassis base .... "open"
- Terminals of A. C. plug to chassis base .... "open"
- Between terminals of A. C. plug .... 9 ohms
- Relay socket to chassis base:
  - Terminal No. 1 .... 40,000 ohms
  - Terminal Nos. 2 and 3 .... "open"
  - Terminal No. 4 .... "short"
- Audio connector plug to chassis base:
  - Prong of plug .... "open"
  - Shield of plug .... "short"
- Between prong of audio connector plug and contact of phono jack:
  - Radio-Phono switch in "Phono" position .... "short"
  - Radio-Phono switch in "Radio" position .... "open"
- R. F. coil tests measured directly across R. F. coil terminals.

L1 — .2 ohm; L2 — "short"; L3 — "short"; L4—"short"; L13—55 ohms.

MODELS 450M, 450MB
Chassis Wiring

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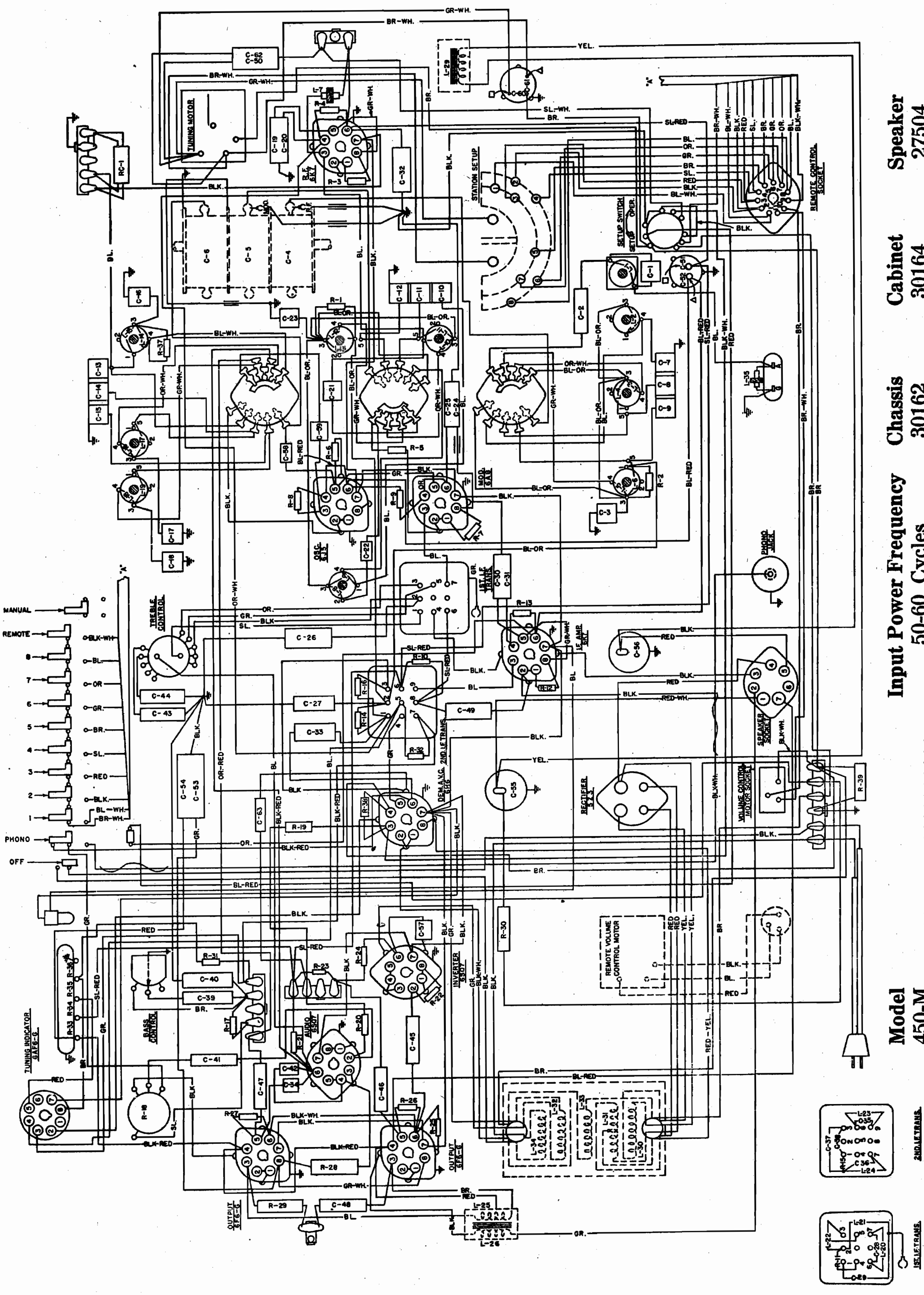
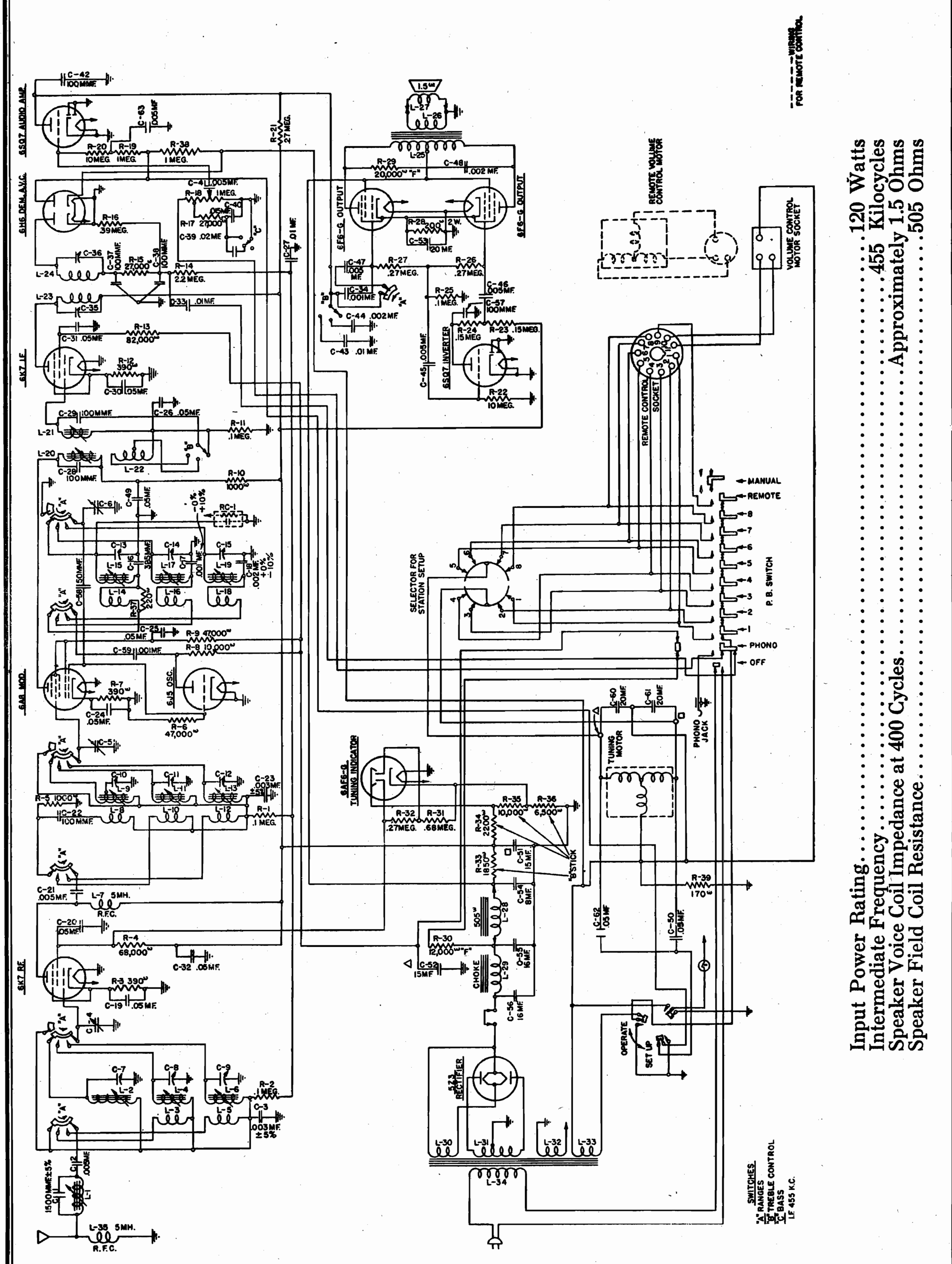


Model	Input Power Frequency	Chassis	Cabinet	Speaker
450-M	50-60 Cycles	30162	30164	27504
450-MB	25-60 Cycles	30163	30164	27504

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 450M, 450MB
Schematic



MODELS 450M, 450MB
Voltage, Alignment
Socket, Trimmers
Resistance

STROMBERG-CARLSON TEL. MFG. CO.

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 Kc.—no signal.
Use a line voltage of 120 volts, or make allowance for the variation.
Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.
Take all D. C. readings on the 500 volt scale except when an asterisk appears.
Read from indicated terminals to chassis base.
A. C. voltages are indicated by italics.
To measure voltages of 6AF6G tube remove the metal cover on the tuning indicator socket and read from indicated terminals.

Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8	Heater Voltages Between Heater Terminals: Socket Terminal Numbers	Volts A.C.
6K7	R. F. Amp.	0	0	0	+250	+106	+3*	—	*6.5*	+3*	2-7	*6.5*
6A8	Modulator		0	0	+250	+96	−20*	+96	*6.5*	+2*	2-7	*6.5*
6J5	Oscillator	0	0	0	+156	—	−20*	—	*6.5*	0	2-7	*6.5*
6K7	I. F. Amp.	0	0	0	+250	+100	+3*	—	*6.5*	+3*	2-7	*6.5*
6H6	Demodulator	—	0	0	0	0	0	—	*6.5*	0	2-7	*6.5*
6F5	Audio Inv.	0	0	0	—	+136	—	—	*6.5*	0	2-7	*6.5*
6F5	Audio Amp.	0	0	0	—	+159	—	—	*6.5*	0	2-7	*6.5*
6F6	Output	—	0	0	+316	+322	0	—	*6.5*	+21*	2-7	*6.5*
6F6	Output	—	0	0	+316	+322	0	—	*6.5*	+21*	2-7	*6.5*
6AF6G	Tun. Ind.	—	0	0	+100	+106	+225	—	*6.5*	+90	2-7	*6.5*
5Z3	Rectifier	—	+410	*400*	*400*	+410	—	—	—	—	1-4	*5*
Speaker Socket		—	+400	0	+410	+410	+410	—	*310*	—		

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to electrolytic capacitors in the circuit.

When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from the indicated terminals to chassis base unless otherwise specified.

Tube	Circuit	Cap	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6K7	R. F. Amp.	2.7M	S	S	20,000¶	80,000¶	390¶	20,000¶	S	390¶
6A8	Modulator	2.7M	S	S	20,000¶	80,000¶	47,000¶	80,000¶	S	390¶
6J5	Osc.	—	S	S	42,000¶	32,000¶	47,000¶	32,000¶	S	S
6K7	I. F. Amp.	100,000¶	S	S	20,000¶	*	390¶	**	S	390¶
6H6	Demodulator	—	S	S	1M	190¶	470,000¶	1M	S	S
6SQ7	Audio Amp.	—	S	10M	S	S	S	280,000¶	S	S
6SQ7	Audio Inv.	—	S	10M	S	S	S	320,000¶	S	S
6F6G	Output	—	S	S	20,000¶	20,000¶	390,000¶	100,000¶	S	190¶
6F6G	Output	—	S	S	20,000¶	20,000¶	390,000¶	100,000¶	S	190¶
5Z3	Rectifier	—	22,000¶	500¶	500¶	22,000¶	—	—	—	—
6AF6G	Tun. Ind.	—	O	S	250,000¶	80,000¶	17,000¶	O	S	7,000¶
Speaker Socket	—	—	.5M or Greater	S	S	O	.5M or Greater	O	17,000¶	—

Symbols used are as follows: ¶—ohms; M—megohms; S—short; O—open.

* Push "Phono" button in—"open".
Push "Manual" button in—100,000 ohms.

** Push "Phono" button in—"open".
Push "Manual" button in—32,000 ohms.

Other tests not shown on chart

Test from phono jack on back of chassis base;
Push "Phono" button in—1 megohm.
Push "Manual" button in—"open".

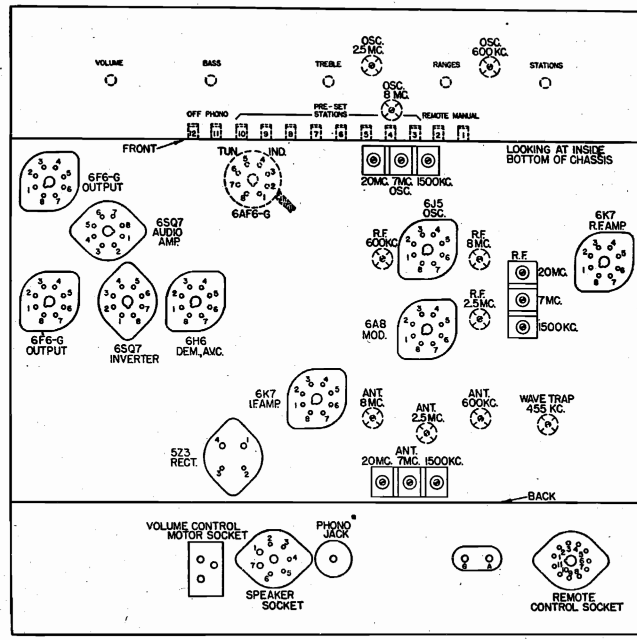
Antenna terminal to chassis base—70 ohms.

Ground terminal to chassis base—"short".

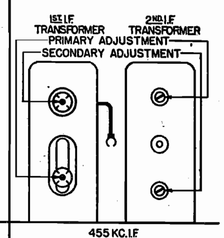
Test between terminals of A. C. plug;
Push "Off" button in—"open".
Push "Manual" button in—3 ohms.
Terminals of A. C. plug to chassis base—"open".

R. F. coil tests measured directly across R. F. coil terminals with range switch set in standard position (A Band).

L1—1 ohm, L2—3 ohms, L3—.2 ohm, L4—.2 ohm, L5—.2 ohm, L6—"short", L7—70 ohms, L8—"short", L9—1 ohm, L10—.2 ohm, L11—.3 ohm, L12—.5 ohm, L13—.1 ohm, L14—.5 ohm, L15—4 ohms, L16—.2 ohm, L17—.3 ohm, L18—.2 ohm, L19—.2 ohm.

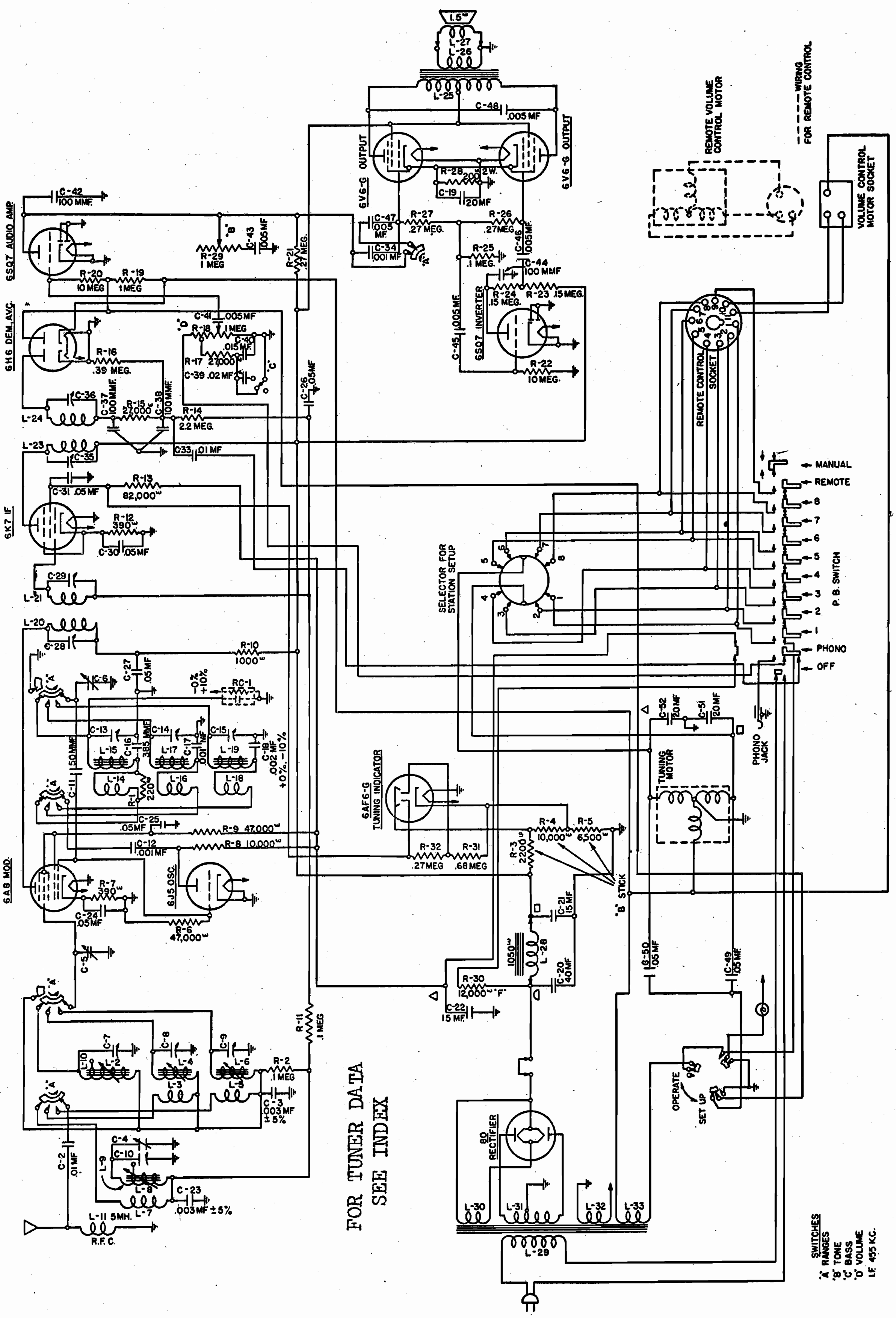


NOTE: Follow alignment procedure for Model 440, noting the addition of the R-F trimmers in the Model 450.
Adjust wave-trap trimmer for minimum output.



STROMBERG-CARLSON TEL. MFG. CO.

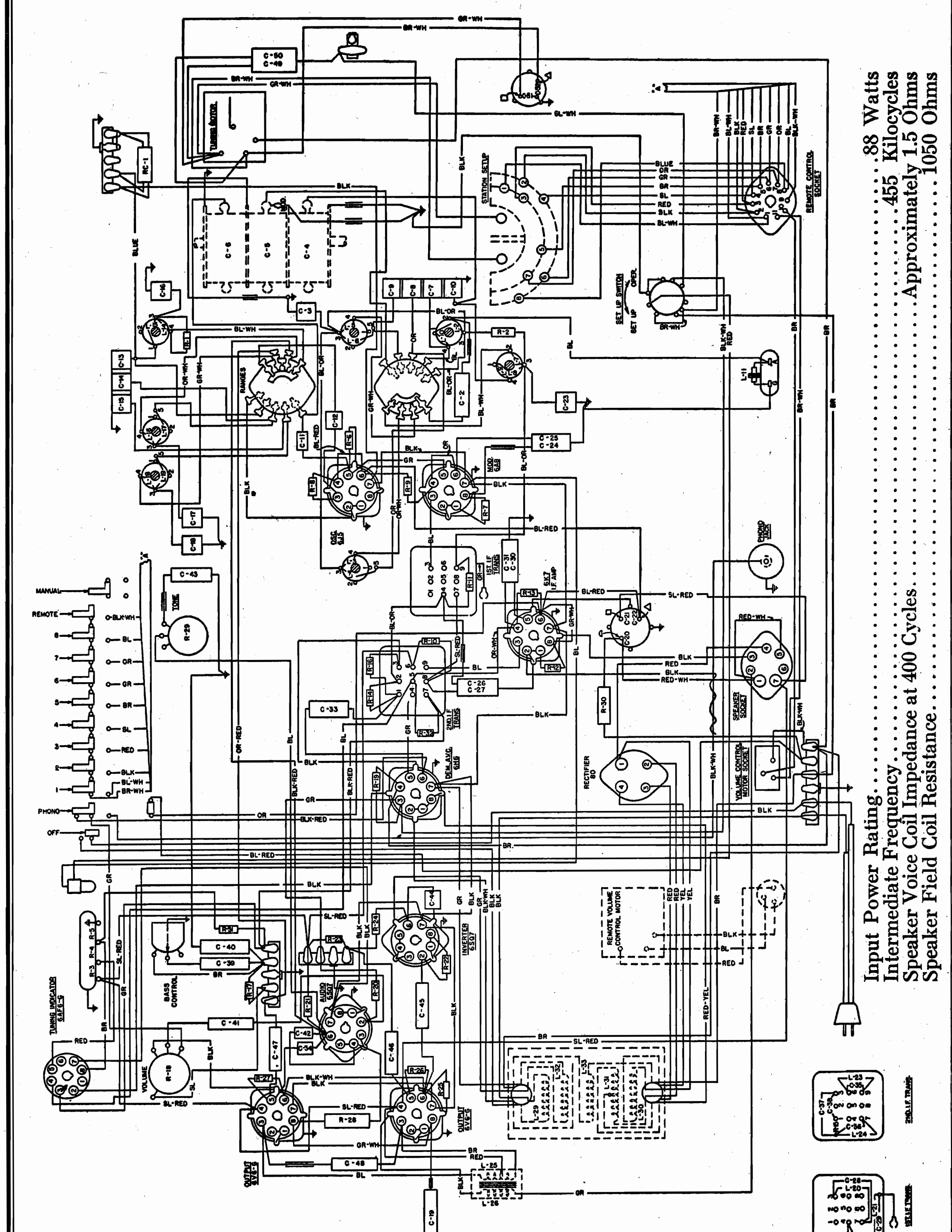
MODELS 440M, 440MB
Schematic



Model	Input Power Frequency	Chassis	Cabinet	Speaker
440-M	50-60 Cycles	30319	30360	26170
440-MB	25-60 Cycles	30320	30360	26170

MODELS 440M, 440MB
Chassis Wiring

STROMBERG-CARLSON TEL. MFG. CO.



MODELS 450M, 450MB
Tuner Data

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 440M, 440MB
Voltage, Resistance
Tuner Data

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 Kc.—no signal.
Use a line voltage of 120 volts, or make allowance for the variation.
Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.
Take all D. C. readings on the 500 volt scale except when an asterisk appears.
A. C. voltages are indicated by italics.
To measure voltages of 6AF6G tube remove the metal cover on the tuning indicator socket and read from indicated terminals.

Tube	Circuit	Cap	Terminals of Sockets 1	2	3	4	5	6	7	8	Heater Voltages Between Heater Terminals: Socket Terminal Numbers	Volts A.C.
6A8	Modulator	0	0	0	+260	+95	—	+95	*6.5*	+2*	2–7	*6.5*
6J5	Oscillator	—	0	0	+160	—	—	+230	*6.5*	0	2–7	*6.5*
6K7	I. F. Amp.	0	0	0	+260	+95	+3*	+230	*6.5*	+3*	2–7	*6.5*
6H6	Dem.—A. V. C.	—	0	0	—	—	—	—	*6.5*	0	2–7	*6.5*
6SQ7	Audio Amp.	—	0	0	0	0	0	+100	*6.5*	0	7–8	*6.5*
6SQ7	Audio Inv.	—	0	0	0	0	0	+95	*6.5*	0	7–8	*6.5*
6V6	Output	—	0	0	+255	+260	—	—	*6.5*	+14*	2–7	*6.5*
6V6	Output	—	0	0	+255	+260	—	—	*6.5*	+14*	2–7	*6.5*
6AF6G	Tun. Ind.	—	—	0	+70	+100	+230	—	*6.3*	+100	2–7	*6.3*
80	Rectifier	—	+380	*385*	*385*	+380	—	—	—	—	1–4	*5*
—	Speaker Socket	—	+390	0	0	+390	+390	—	+265	—	—	—

*Read on lowest possible scale of voltmeter.

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.
Use a good meter capable of measuring accurately up to several megohms.
The resistances given are often approximate, owing to electrolytic capacitors in the circuit.
When this is the case, be sure to reverse the test leads and read the highest resistance.

Tube	Circuit	Cap	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6A8	Modulator	2.7 M.	S	S	20,000Ω	80,000Ω	47,000Ω	80,000Ω	S	390Ω
6J5	Oscillator	—	S	S	41,000Ω	31,000Ω	47,000Ω	31,000Ω	S	S
6K7	I. F. Amp.	2.5 M.	S	S	19,000Ω	A	390Ω	B	S	390Ω
6H6	Dem.—A. V. C.	—	S	S	C	3Ω	410,000Ω	1 M.	S	S
6SQ7	Audio Amp.	—	S	10 M.	S	S	S	290,000Ω	S	S
6SQ7	Audio Inv.	—	S	10 M.	S	S	S	320,000Ω	S	S
6V6G	Output	—	S	S	17,000Ω	17,000Ω	370,000Ω	100,000Ω	S	200Ω
6V6G	Output	—	S	S	17,000Ω	17,000Ω	370,000Ω	100,000Ω	S	200Ω
6AF6G	Tun. Ind.	—	O	S	250,000Ω	150,000Ω	16,000Ω	O	S	6,500Ω
80	Rectifier	—	17,000Ω	110Ω	120Ω	17,000Ω	—	—	—	—
—	Speaker Socket	—	8,000Ω	S	S	O	8,000Ω	O	20,000Ω	—

Symbols used are as follows: Ω—ohms; M—megohms; S—short; O—open.

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

IMPORTANT: The stations selected should be the local or favorite stations which give good reception at all times.
Set up stations in the daytime to avoid unnecessary interference.
Allow the set to run for about twenty minutes before setting up stations.
Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

1. Put the call letters of the selected stations in place above the push buttons. The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial. (The call letters will be found inside the envelope stapled inside or underneath the cabinet).
2. Set the "Treble" control in normal position.
3. Turn the set-up switch (located on the base just back of the brush and commutator assembly) to the set-up position. (The slot in the screw should point toward "set-up").
4. Push the button of the highest frequency station to be set up (button No. 3) and then tune in that station manually. Be sure the station is exactly "in tune" by tuning carefully and watching the cathode ray indicator.
5. Slide the brush to which the blue wire is connected until it is over the slot in the commutator. Then adjust it very carefully until the pilot light goes out. This indicates exact adjustment.
6. Repeat operations 4 and 5 for each station. Work from right to left or from the higher to the lower frequencies in accordance with the table below:

Push Button No.	Purpose	Color of wire on brush
1	Manual	—
2	Remote	—
3	Highest frequency station	Blue
4	Next lower frequency station	Orange
5	Next lower frequency station	Green
6	Next lower frequency station	Brown
7	Next lower frequency station	Slate
8	Next lower frequency station	Red
9	Next lower frequency station	Black
10	Lowest frequency station	Blue White
11	Phonograph	
12	Off	

See diagram

7. Turn the set-up switch back to the "Operate" position.
8. Check the operation of all the push buttons to be sure that each has been accurately set up. If it is necessary to readjust any of the buttons, follow the procedure given above.

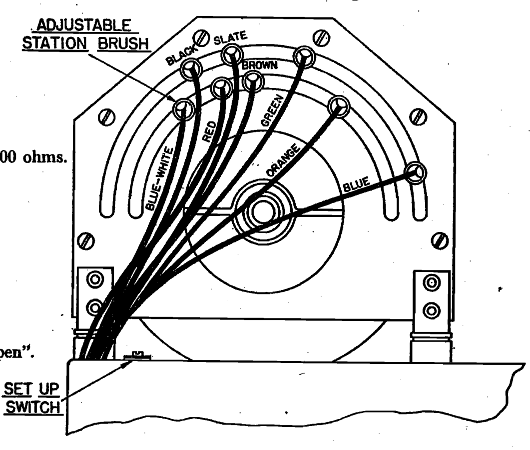
A. Push "Phono" button in—380,000 ohms.
   Push "Manual" button in—100,000 ohms.
B. Push "Phono" button in—380,000 ohms.
   Push "Manual" button in—32,000 ohms.
C. Set up switch to "Set-Up" position—Short.
   Set up switch to "Operate" position—110,000 ohms.

Other tests not shown on chart

Test from phono jack on back of chassis base;
Push "Phono" button in—1 megohm.
Push "Manual" button in—"open".
Antenna terminal to chassis base—70 ohms.
Ground terminal to chassis base—"short".
Test between terminals of A. C. plug;
Push "Off" button in—"open".
Push "Manual" button in—3 ohms.
Terminals of A. C. plug to chassis base—"open".

R. F. coil tests measured directly across R. F. coil terminals with range switch set in standard position (A Band).

L1—1 ohm, L2—1.5 ohms, L3—.2 ohm, L4—2 ohms, L5—.1 ohm, L6—"short", L7—.1 ohm, L8—2 ohms, L9—1.5 ohms, L10—.2 ohm, L14—.5 ohm, L15—4 ohms, L16—.2 ohm, L17—.3 ohm, L18—.2 ohm, L19—"short".

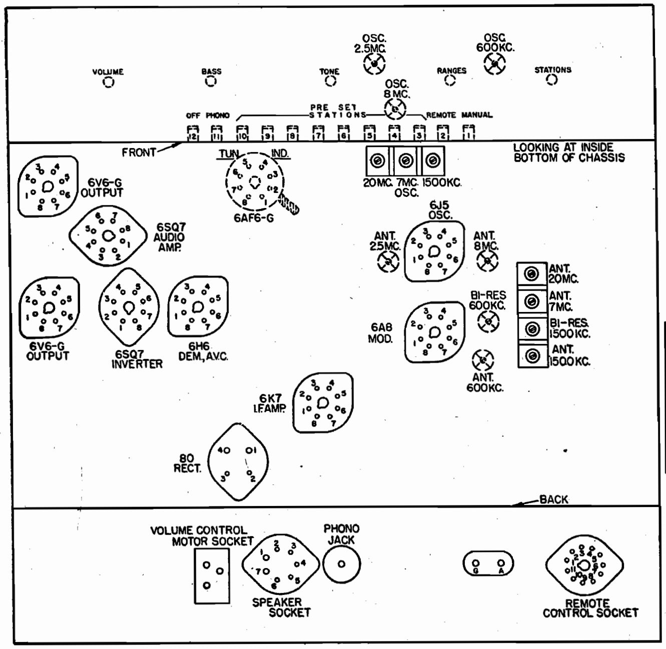


Showing Adjustable Station Brushes and Set Up Switch.

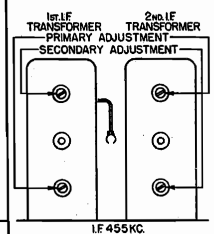
MODELS 440M, 440MB
Alignment, Trimmers
Socket

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 412H, 412HB
Alignment



Location Chart



ALIGNING INFORMATION

NEVER ALIGN UNLESS ABSOLUTELY NECESSARY.

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator. A strong signal makes adjustments inaccurate.

Always have receiver volume control full on.

Never align with tone control in "Bass" position.

See location chart above for location of all the aligning adjustment screws.

Aligning Procedure (follow this order exactly)

I. Dial pointer adjustment.

With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the vertical line located at the extreme low frequency end of the short-wave band.

II. Intermediate frequency adjustments.

1. Push in the "Manual" push button.
2. Set the range switch to Standard Broadcast position.
3. Tune set to extreme low frequency end of the dial.
4. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
5. Introduce a modulated signal of 455 Kilocycles to the grid cap of the 6A8G Tube, using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Do not remove the grid clip from this tube.)
6. Adjust the I. F. Aligners for maximum output in the following order:
   - A. Secondary of second I. F. transformer.
   - B. Primary of second I. F. transformer.
   - C. Secondary of first I. F. transformer.
   - D. Primary of first I. F. transformer.

III. Radio frequency adjustments.

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm carbon type resistor, and connect it to the antenna terminal of the chassis.
2. Set the range switch to the short-wave range position (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 8 megacycles.
4. Adjust the 8 megacycle oscillator and antenna iron cores for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 20 megacycles.
6. Adjust the 20 megacycle oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

Medium Wave Range (B Band)

1. Leave the receiver connected in the same manner as when adjusting the Short-Wave Range (C Band).
2. Set the range switch to the medium wave range position (B Band).
3. Set the signal generator frequency and the receiver tuning dial to 2.5 megacycles.
4. Adjust the 2.5 megacycle oscillator and antenna iron cores for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 7.0 megacycles.
6. Adjust the 7 megacycle oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operation three and four.
8. Repeat operation five and six.

Standard Broadcast Range (A Band)

1. Replace the 400 ohm carbon type resistor in series with the output lead from the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the Standard Broadcast Range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 Kc.
4. Adjust the 600 Kc. oscillator, bi-resonator and antenna iron cores for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 Kc.
6. Adjust the 1500 Kc. oscillator, bi-resonator and antenna aligning capacitors for maximum signal.
7. Repeat operation three and four.
8. Repeat operation five and six.

ADJUSTING DIAL LAMP

The dial on this receiver is edge lighted, and for proper illumination it is very important that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

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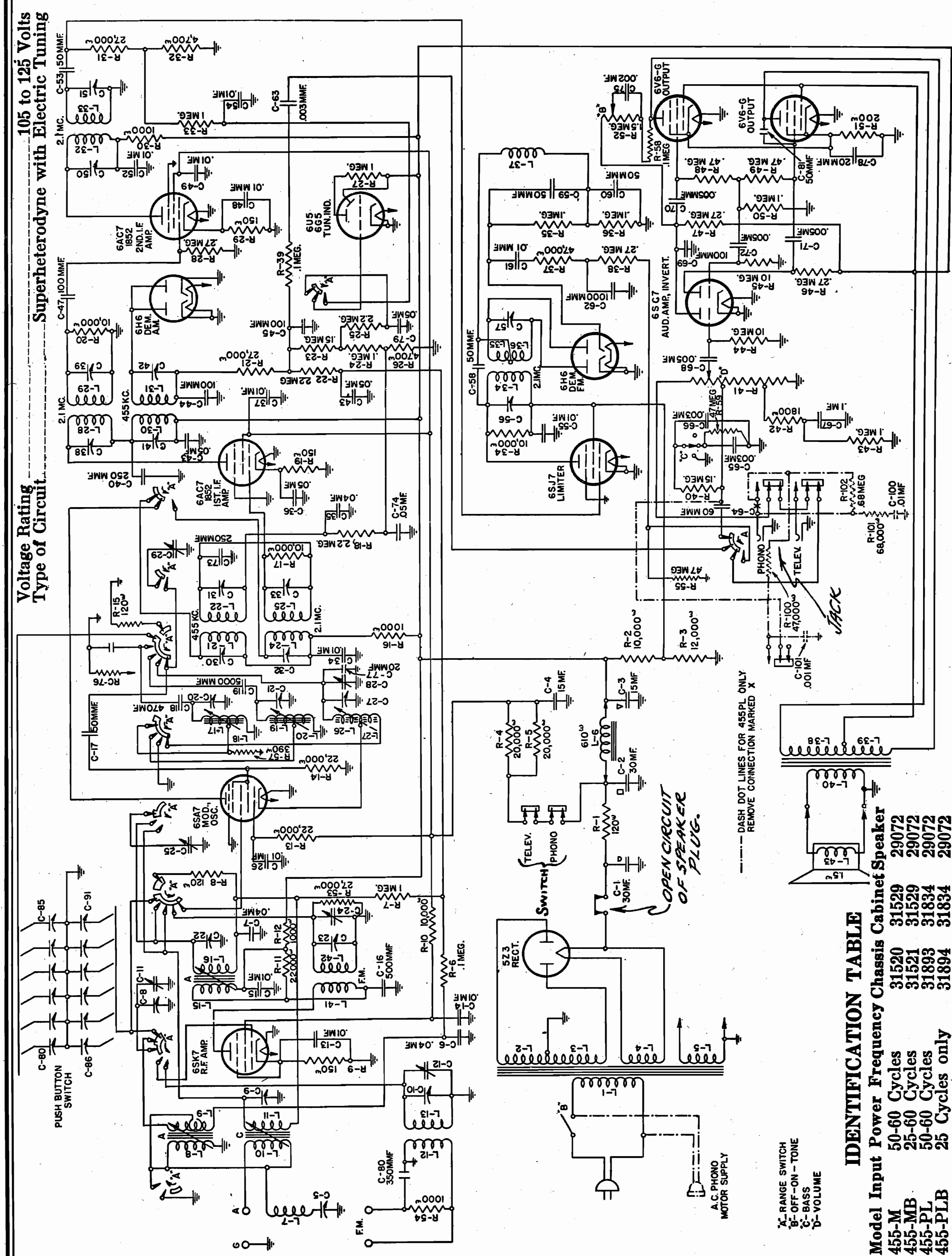
MODELS 455M, 455MB 455PL, 455PLB Schematic



IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
455-M	50-60 Cycles	31520	31529	29072
455-MB	25-60 Cycles	31521	31529	29072
455-PL	50-60 Cycles	31893	31834	29072
455-PLB	25 Cycles only	31894	31834	29072

MODELS 455M, 455MB
455PL, 455PLB
Chassis Wiring

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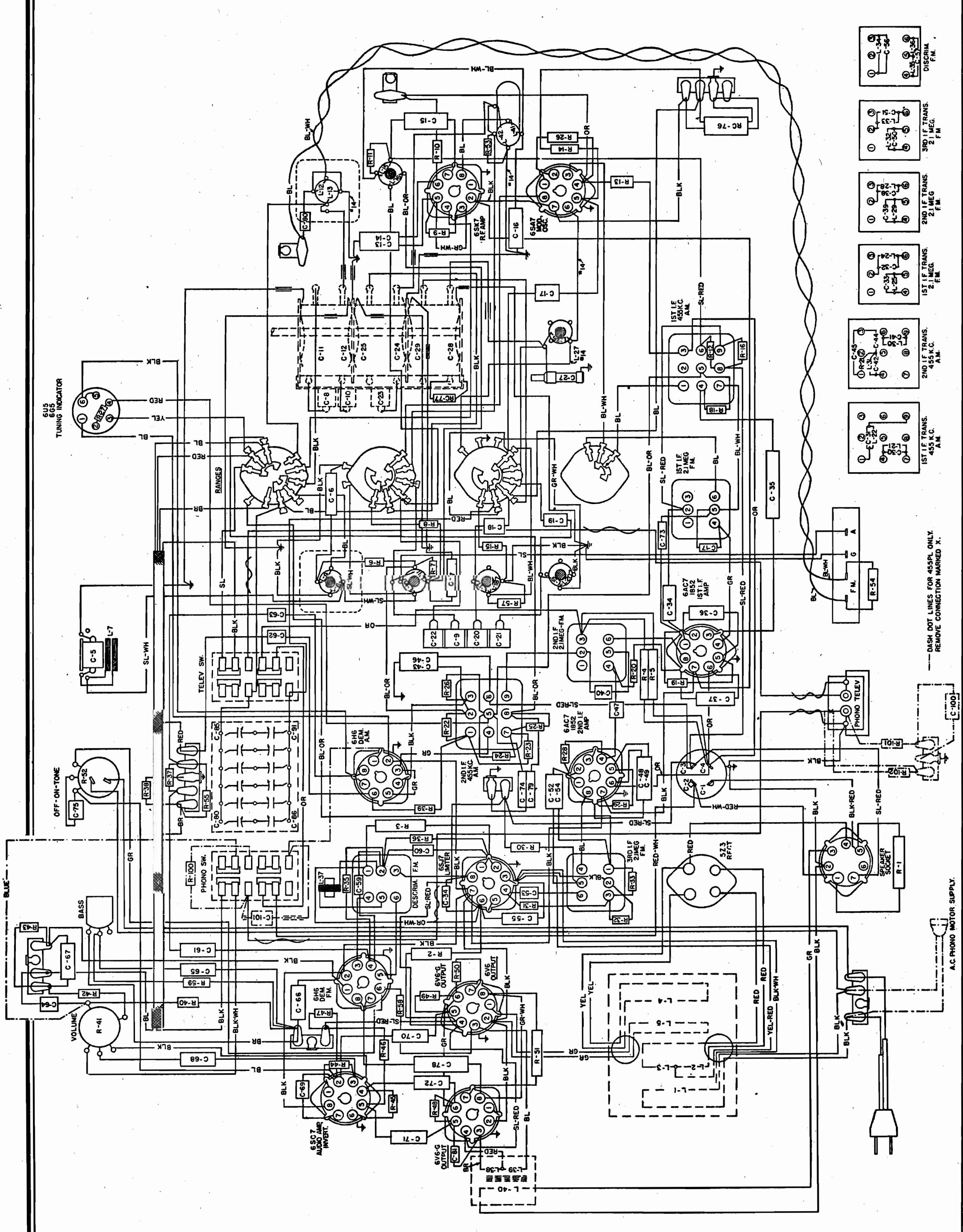


STROMBERG-CARLSON TEL. MFG. CO.

MODELS 455M, 455MB
455PL, 455PLB
Alignment, Trimmers
Socket, Notes

ALIGNING INFORMATION

NEVER ALIGN UNLESS ABSOLUTELY NECESSARY

All aligning adjustments are carefully made at the factory with special equipment which is designed for aligning frequency modulation receivers. The limitations of commercial oscillographs and other ordinary test equipment are such that alignment should not be attempted in the field unless absolutely necessary. **If alignment is attempted it will not be successful unless the instructions which follow are adhered to exactly.**

The following equipment will be required:

1. Standard signal generator and output meter.
2. Microammeter "0" to 200 microamps.
3. Center "0" Microammeter with 100 divisions on each side of "0". See location chart on page — for location of all aligners.

ALIGNING PROCEDURE (follow this order exactly).

I. Discriminator adjustment (Frequency Modulation)

1. Tune the set to the extreme high frequency end of the dial (44.5 megacycles).
2. Connect the center "0" microammeter with a one megohm resistor in series across one half of the discriminator load (from ground to the junction of the two 100,000 ohm resistors R-35 and R-36).
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce an unmodulated signal of 2100 kilocycles to the grid (terminal No. 4) of the 6SJ7 limiter tube using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Approximately one volt signal is necessary.)
5. Adjust the primary of the discriminator transformer for maximum reading of the microammeter.
6. Remove the microammeter and the one megohm resistor from the junction of R-35 and R-36 resistors and connect them across the whole discriminator load (from the high side of the R-35 to ground).
7. Adjust the secondary of the discriminator transformer for "0" reading of the microammeter.

II. Intermediate frequency adjustments (Frequency Modulation)

Important: All intermediate frequency adjustments are made using the same unmodulated signal of 2100 kilocycles. Each I. F. stage must be adjusted independently and in the order given. **Do not make any overall adjustments after the previous stage is aligned.**

1. Disconnect the ground side of the limiter grid resistor (R-32) and connect the "0" to 200 microammeter in series with it and ground.
2. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 second I. F. tube (Terminal No. 4).
3. Adjust the secondary of the third I. F. transformer for maximum reading of the microammeter.
4. Adjust the primary of the third I. F. transformer for maximum reading of the microammeter.
5. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 first I. F. tube (Terminal No. 4).
6. Adjust the secondary of the second I. F. transformer for maximum reading of the microammeter.
7. Adjust the primary of the second I. F. transformer for maximum reading of the microammeter.
8. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6SA7 modulator tube (Terminal No. 8).
9. Adjust the secondary of the first I. F. transformer for maximum reading of the microammeter.
10. Adjust the primary of the first I. F. transformer for maximum reading of the microammeter.

III. Radio frequency adjustments (Frequency Modulation)

1. Set the signal generator frequency and the receiver tuning dial to 40 megacycles.
2. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm resistor and connect it to the F. M. antenna terminal farthest from the end of the antenna and ground terminal strip.
3. Connect the ground lead to the other F. M. terminal on the antenna and ground terminal strip.
4. Adjust the oscillator 40 megacycles core aligner for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 43 megacycles.
6. Adjust the oscillator shunt aligner for maximum signal.
7. Adjust the R. F. and antenna aligners for maximum signal on the "0" to 200 microammeter maintaining the center "0" microammeter at "0" at all times by rotating the receiver dial slightly back and forth.
8. Remove both meters from the circuits and resolder the 4700 ohm resistor R-32 in its original position to terminal No. 2 on the third I. F. transformer.

IV. Intermediate frequency adjustments (Amplitude Modulation)

Adjustment of second I. F. transformer.

1. Set the range switch to standard broadcast position.
2. Turn the volume control "full on".
3. Replace the 100 ohm resistor in series with the output lead from the signal generator with a 0.1 microfarad capacitor and connect it to the grid of the 6AC7 first I. F. tube (Terminal No. 4).
4. Connect the ground terminal of the signal generator to the ground terminal of the receiver.
5. Introduce a modulated signal of 455 kilocycles to the grid of the 6AC7 first I. F. tube.
6. Adjust the second I. F. transformer aligners for maximum signal in the following order:
   a. Secondary of second I. F. transformer.
   b. Primary of second I. F. transformer.

Adjustment of first I. F. transformer.

1. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series with it to the grid of the 6SA7 Modulator Tube (Terminal No. 8).
2. Adjust the first I. F. transformer aligners for maximum signal in the following order:
   a. Secondary of first I. F. transformer.
   b. Primary of first I. F. transformer.

V. Radio Frequency adjustments (Amplitude Modulation)

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm resistor and connect it to the Amplitude Modulation antenna terminal on the back of the chassis.
2. Set the range switch to the short-wave range position (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycle "oscillator" and "antenna" iron cores for maximum signal.
5. Set the signal generator and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles "oscillator" and "antenna" aligning capacitors for maximum signal.
7. Repeat operations 3 and 4.
8. Repeat operations 5 and 6.

Standard Broadcast Range (A Band)

1. Replace the 400 ohm resistor in series with the output lead of the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the standard broadcast range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 kilocycles.
4. Adjust the 600 kilocycle "oscillator", "R. F." and "Antenna" iron cores for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 kilocycles.
6. Adjust the 1500 kilocycle "oscillator", "R. F." and "Antenna" aligning capacitors for maximum signal.
7. Repeat operations 3 and 4.
8. Repeat operations 5 and 6.

VI. Wave trap adjustment. (Leave the receiver connected in the same manner as when adjusting the standard broadcast range) (A Band).

1. Set the receiver's tuning dial to 1000 kilocycles.
2. Set the signal generator frequency to 455 kilocycles and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

IMPORTANT: Do not go back and touch up any adjustments previously made. If the receiver is not in proper alignment after completing the adjustments outlined above, go back and start over again and follow the instructions through to the finish.

ACCESSORIES

ANTENNA. For best results use a Stromberg-Carlson No. 6 Antenna. This antenna is designed to provide improved pick-up on both the amplitude and frequency modulation bands.

If it is desired, two ordinary antennas may be used, one for amplitude modulation, which should be a straight wire "L" type antenna about 75 feet long, and one for frequency modulation. This latter antenna may be a straight wire about 40 feet in length or of the dipole type with two arms approximately

PLAYING RECORDS. To obtain the best quality of phonograph reproduction a Stromberg-Carlson record player is recommended. They are designed for use with this receiver, and all that is necessary is to connect the record player to the single prong socket provided in the chassis and proceed to operate. The volume and tone may be controlled with the controls at the receiver, or (if such is provided) the volume control on the record player may be used.

A low impedance pick-up may also be used, but a matching transformer must be placed between the phonograph pick-up and the chassis.

HEADSET ATTACHMENT. Headphones can be very simply attached to this receiver. Ask for Pc. No. 5¾ feet in length. The dipole antenna will exhibit a marked directional effect and should be erected as high as possible above the ground and adjusted so as to receive the desired frequency modulated stations with best results.

For average reception, a single straight wire antenna may be used for both amplitude and frequency modulation.

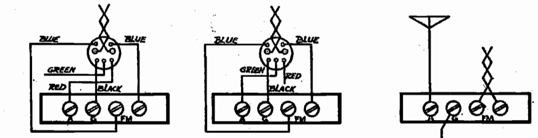
The various types of antennas should be connected to the No. 455 Receiver as follows:

28303 Headset Package Assembly, which comes complete with headphones and installation instructions.

CARE OF CABINET. The finish of Stromberg-Carlson Cabinets should be protected by using Stromberg-Carlson Cabinet Polish regularly. It is available in pint cans, designated as Pc. No. 28601.

Nicks and scratches of most kinds can be repaired quickly and easily by proper use of the Pc. No. 26962 Touch-Up Kit. Complete instructions are provided with each kit.

TOOLS. Stromberg-Carlson can supply all the tools required for working on these sets. For example:
SD-29 Phillips Head Screwdriver
No. 24608 Aligning Tool
Also pliers, cutters, screwdrivers, etc.



STROMBERG-CARLSON NO.6

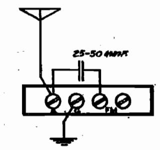
STROMBERG-CARLSON NO.6 UTILIZING TAP TO REDUCE INTERFERENCE ON BROADCAST RANGE.

SEPARATE ANTENNAS

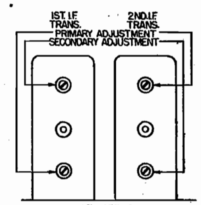
ADJUSTING DIAL LAMP

The dial on this receiver is edge-lighted, and for proper illumination it is very important that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

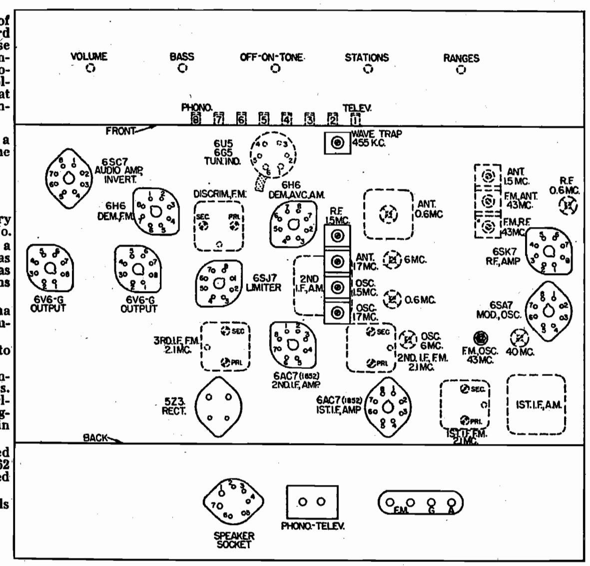
To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.



SINGLE ANTENNA



Location Chart.



MODELS 455M, 455MB
455PL, 455PLB
Voltage, Tuner

STROMBERG-CARLSON TEL. MFG. CO.

Circuit Data
Resistance

SPECIFICATIONS

Tuning Ranges: Frequency Modulation 40 to 44 Mc. (40,000 to 44,000 Kc.); Short-wave 5.8 to 18 Mc. (5800 to 18,000 Kc.); Standard Broadcast .54 to 1.7 Mc. (540 to 1700 Kc.)

Input Power Rating—
Radio Models only .... 125 Watts
Radio-Phono Models .... 145 Watts

Intermediate Frequency .... 455 Kilocycles (Amplitude Modulation); 2.1 Megacycles (Frequency Modulation)

Speaker Field Coil Resistance—Approximately .... 610 Ohms
Speaker Voice Coil Impedance at 400 Cycles—Approximately .... 1.5 Ohms

NORMAL VOLTAGE READINGS

Take all voltage readings with chassis operating and tuned manually to 1000 kilocycles—no signal.

Use a line voltage of 125 volts or make allowance for any slight variation.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt. Take all D. C. readings on the 500 volt scale except when an asterisk appears. Read from indicated terminals to chassis base. See location chart for position of terminals.

A. C. voltages are indicated by italics.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
6K7	R. F. Amp.	0	*6.3*	+0.6*	0	+0.6	+95	0	+125
6SA7	Modulator and Oscillator	0	0	+125	+115	—8	0	*6.3*	0
6AC7 (1852)	1st I. F. Amp. (A. M.—F. M.)	0	0	0	0	+3*	+140	*6.3*	+240
6AC7 (1852)	2nd I. F. Amp. (F. M.)	0	0	0	0	+2*	+140	*6.3*	+240
6SJ7	Limiter (F. M.)	0	0	0	0	0	+100	*6.3*	+100
6H6	Demodulator (A. M.)	0	*6.3*	0	0	0	—	0	0
6H6	Demodulator (F. M.)	0	*6.3*	0	0	0	—	0	0
6SC7	Audio Amp. and Audio Inv.	0	+60	0	0	+75	0	0	*6.3*
6V6G	Output	0	*6.3*	+240	+240	0	—	0	0
6V6G	Output	0	*6.3*	+240	+240	0	—	0	—
6U5	Tuning Indicator	0	0	+240	+20	0	*6.3*	—	—
5Z3	Rectifier	+360	*355*	*355*	+360	—	—	—	—
	Speaker Socket	+340	0	0	+360	+360	—	+240	—

*Read on lowest possible scale of voltmeter

FEATURES

GENERAL. This is a twelve-tube, three-gang, three-range receiver, designed for the reception of both amplitude and frequency modulated stations.

The chassis is of the fortified type, with bails provided for ease in handling and servicing. Eight button capacitor type automatic tuning is provided, and six favorite stations may be set up on the automatic tuning unit. The other two buttons are for switching to phonograph or television. Tone is adjusted by a variable tone control and the dial is of the slide rule type edge-lighted to provide clear visibility without glare.

Provision is made for a record player to be used with all models not already equipped with phonograph mechanism without additional wiring. The No. 455 Phonograph Models are equipped with an automatic record changer, using a crystal pick-up in conjunction with a specially equalized circuit. This record player shifts and plays either 10 or 12 inch records.

The chassis is designed to provide excellent sensitivity and fidelity and the power output is exceptionally good.

FREQUENCY MODULATION: The "Armstrong Wide-Swing Frequency Modulation System" used in this receiver is an outstanding development in radio. The Federal Communications Commission has established five channels between 40 and 44 megacycles for frequency modulated transmitting stations. Since this is a comparatively high frequency, the distance over which reception is possible is limited.

SPECIAL CIRCUITS. A tuning indicator having two apertures, one for strong signals and one for weak signals, is used with this receiver. One aperture will close with a signal of approximately 100,000 microvolts, and the other will not close even with a two-volt signal.

Iron core coils are used in the broadcast and short-wave ranges to provide greater accuracy of alignment.

The audio system employs a special push-pull inverter system, designed to provide very good fidelity. The power transformer has an electrostatic shield to reduce line noise to a minimum, and the chassis is thoroughly shielded throughout.

AUTOMATIC TUNING. A substitution capacitor type of tuning is employed, and stations may be easily located using only one adjusting screw. Furthermore, each adjusting screw is provided with a vernier to make accurate adjustments possible.

PHONOGRAPH OPERATION. A jack is provided on the back of the chassis of all receivers not already equipped with phonograph mechanism, into which a record player may be plugged and a push button is provided on the front of the receiver for switching from "Radio" to "Phonograph".

TELEVISION. A jack is provided on the back of the chassis and a push button is provided on the front of the receiver for television operation. This makes the audio amplifier and loud-speaker system available for use with television receivers designed for this type of sound reproduction.

CONTINUITY TEST

Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Test speaker socket with speaker left out.

Leave speaker plug in socket for all other tests.

Use a good meter capable of measuring up to several megohms.

The resistances given are often approximate owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart on Page 3 for position and numbering of terminals.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
6SK7	R. F. Amp.	S	S	150¶	A	150¶	B	S	25000¶
6SA7	Mod. and Osc.	S	S	25000¶	B	20000¶	S	S	C
6AC7 (1852)	1st I. F. Amp. (A. M.—F. M.)	S	S	S	2M	150¶	B	S	20000¶
6AC7 (1852)	2nd I. F. Amp. (F. M.)	S	S	S	270000¶	150¶	B	S	25000¶
6H6	Demodulator (A.M.)	S	S	280000¶	S	280000¶	300000¶	S	S
6H6	Demodulator (F.M.)	S	S	100000¶	200000¶	100000¶	100000¶	S	S
6SJ7	Limiter	S	S	S	30000¶	S	12000¶	S	12000¶
6SC7	Audio Amp. and Audio Inv.	S	270000¶	10M	10M	270000¶	S	S	S
6V6G	Output	S	S	20000¶	20000¶	570000¶	100000¶	S	200¶
6V6G	Output	S	S	20000¶	20000¶	570000¶	100000¶	S	200¶
6U5	Tuning Indicator	S	1M	D	20000¶	S	S	—	—
5Z3	Rectifier	25000¶	50¶	50¶	25000¶	—	—	—	—
—	Speaker Socket	200000¶ or Greater	S	S	O	200000¶ or Greater	O	25000¶	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

A. Range switch in push button position .... "Open"
Range switch in standard broadcast position .... 3 Megohms
Range switch in short-wave position .... "Open"
Range switch in frequency modulation position .... "Short"

B. Push in phono button .... 1 Megohm or greater
Push in television button .... 1 Megohm or greater

C. Range switch in push button position .... 2 Megohms
Range switch in standard broadcast position .... 2 Megohms
Range switch in short-wave position .... 2 Megohms
Range switch in frequency modulation position .... "Short"

D. Range switch in push button position .... 2 Megohms
Range switch in standard broadcast position .... 2 Megohms
Range switch in short-wave position .... 2 Megohms
Range switch in frequency modulation position .... 1 Megohm

Other tests not shown on chart
Phono jack to chassis base:
Push in phono button .... 1.5 Megohms
Push in any pre-set station button .... "Open"

Television jack to chassis base:
Push in television button .... 1.5 Megohms
Push in any pre-set station button .... "Open"

Antenna terminal to chassis base:
Range switch in push button position .... 75 Ohms
Range switch in standard broadcast position .... 75 Ohms
Range switch in short-wave position .... "Short"
Range switch in frequency modulation position .... 75 Ohms

Ground terminal to chassis base .... "Short"

Frequency modulation antenna and ground tests:
Between F. M. terminals .... 1,000 Ohms
F. M. terminal nearest the end of the terminal strip to chassis base .... 1,000 Ohms
F. M. terminal farthest from the end of the terminal strip to chassis base .... "Short"

Terminals of A. C. plug to chassis base .... "Open"

Between terminals of A. C. plug:
A. C. switch in "On" position .... 2 Ohms
A. C. switch in "Off" position .... "Open"

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

IMPORTANT: The stations selected should be the local or favorite stations which give good reception at all times.

Set up stations in the daytime to avoid unnecessary interference.

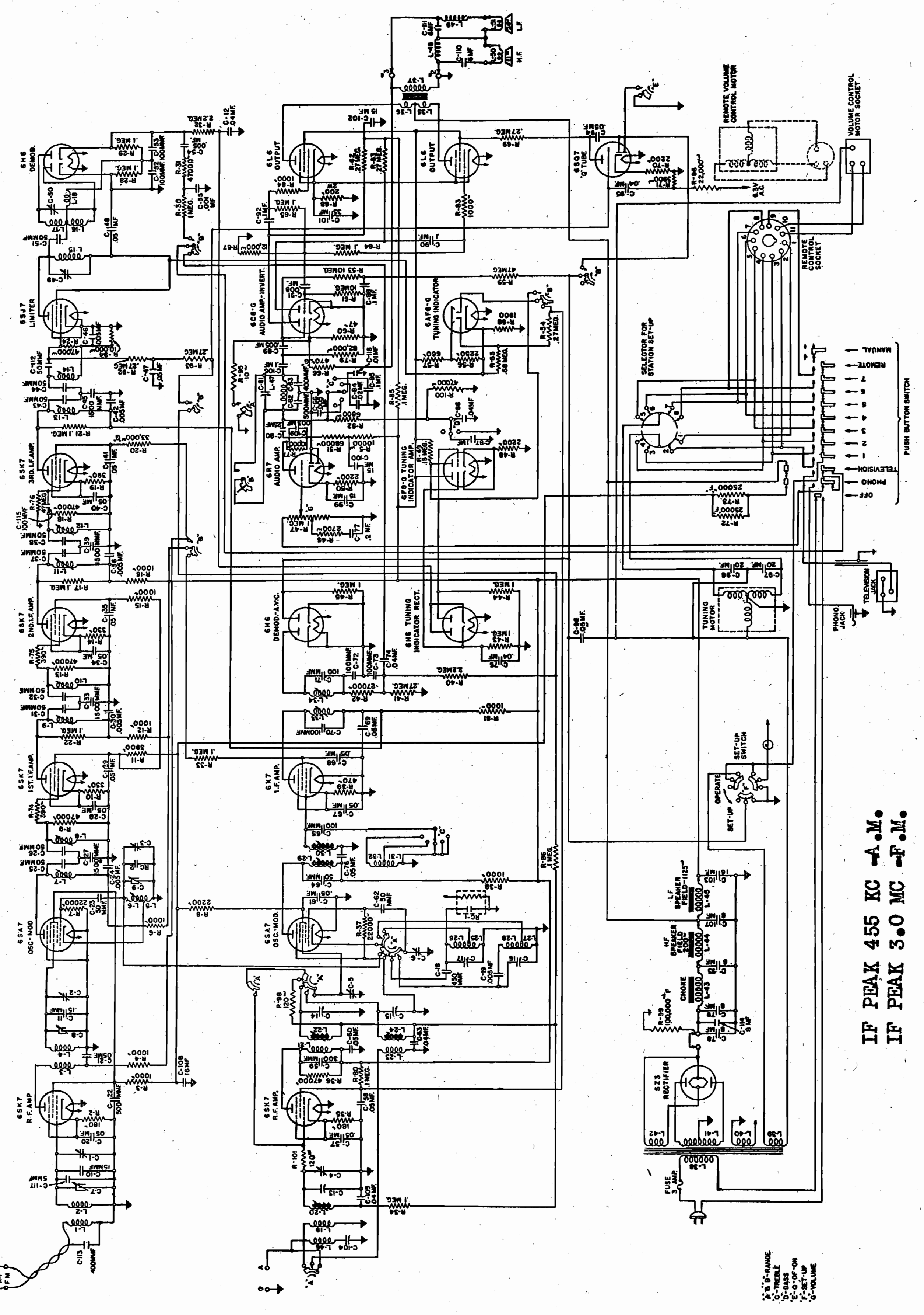
Allow the set to run for about twenty minutes before setting up stations.

Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

1. Remove the dial escutcheon by removing the screws and pulling downward and outward.
2. Put the call letters of the selected stations in place above the push buttons. **The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial.** (The call letters will be found inside the envelope stapled inside or underneath the cabinet.)
3. Tune in manually the highest frequency station to be set up and note carefully the program being transmitted.
4. Turn the range switch to the push button position and push the highest frequency button, then adjust the large screw over this button until the desired program is heard.
5. After the large screw is carefully adjusted, adjust the small vernier screw for maximum closing of the tuning indicator. (Be sure the large adjusting screw does not move while turning the vernier screw.)
6. Set up the other five stations in the **same manner.**
7. Recheck the adjustment of each **adjusting screw.**

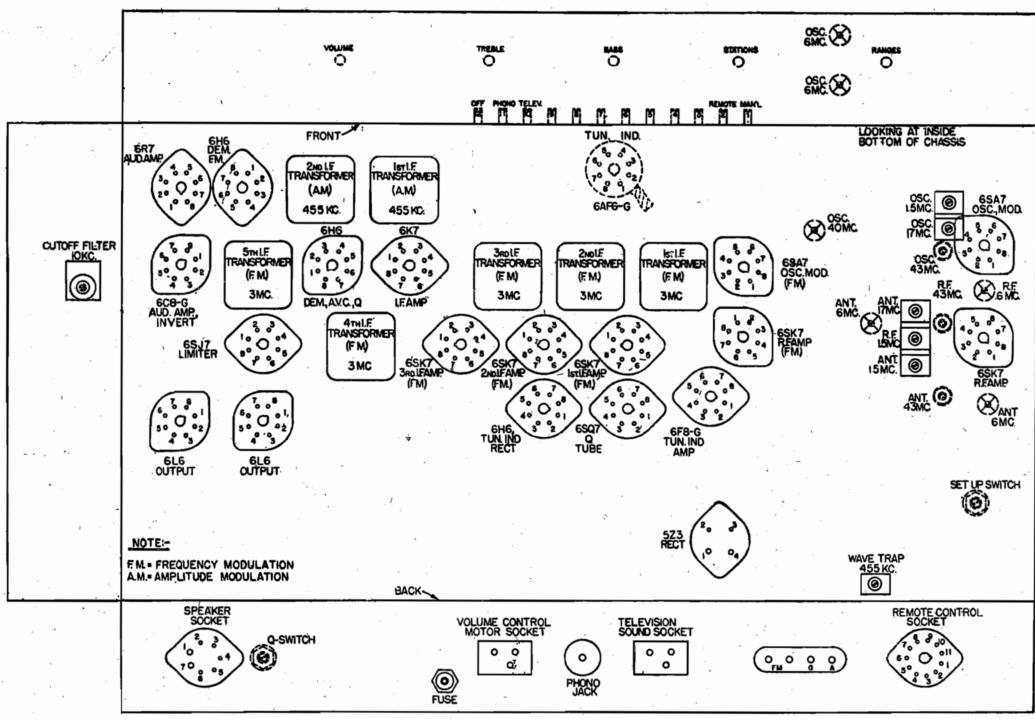
STROMBERG-CARLSON TEL. MFG. CO.

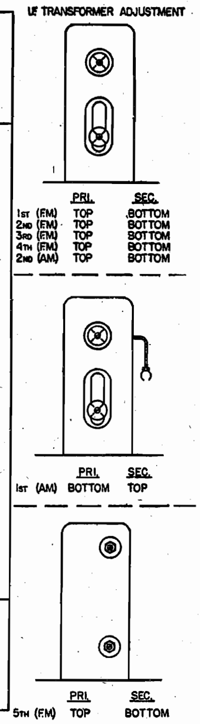
MODELS 480M, 480MB
Schematic



MODELS 480M, 480MB
Socket, Trimmers
Notes

STROMBERG-CARLSON TEL. MFG. CO.





Location Chart

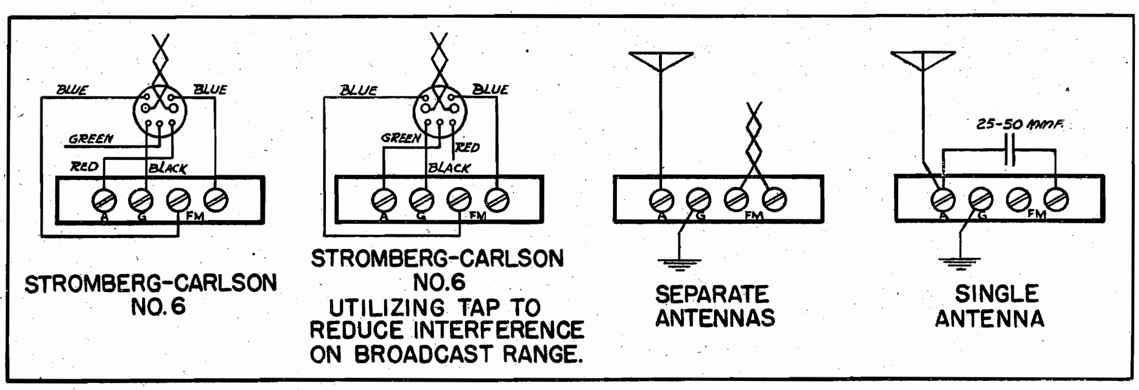
ACCESSORIES

ANTENNA. For best results use a Stromberg-Carlson No. 6 Antenna. This antenna is designed to provide improved pick-up on both the amplitude and frequency modulation bands.

If it is desired, two ordinary antennas may be used, one for amplitude modulation, which should be a straight wire "L" type antenna about 75 feet long, and one for frequency modulation. This latter antenna may be a straight wire about 40 feet in length or of the dipole type with two arms approximately 5½ feet in length. The dipole antenna will exhibit a marked directional effect and should be erected as high as possible above the ground and adjusted so as to receive the desired frequency modulated stations with best results.

For average reception, a single straight wire antenna may be used for both amplitude and frequency modulation.

The various types of antennas should be connected to the No. 480 Receiver as follows:



PLAYING RECORDS. To obtain the best quality of phonograph reproduction a Stromberg-Carlson record player is recommended. They are designed for use with this receiver, and all that is necessary is to connect the record player to the single prong socket provided in the chassis and proceed to operate. The volume and tone may be controlled with the controls at the receiver, or (if such is provided) the volume control on the record player may be used.

A low impedance pick-up may also be used, but a matching transformer must be placed between the phonograph pick-up and the chassis.

HEADSET ATTACHMENT. Headphones can be very simply attached to this receiver. Ask for Pc. No. 28303 Headset Package Assembly, which comes complete with headphones and installation instructions.

CARE OF CABINET. The finish of Stromberg-Carlson Cabinets should be protected by using Stromberg-Carlson Cabinet Polish regularly. It is available in pint cans, designated as Pc. No. 28601.

Nicks and scratches of most kinds can be repaired quickly and easily by proper use of the Pc. No. 26962 Touch-Up Kit. Complete instructions are provided with each kit.

TOOLS. Stromberg-Carlson can supply all the tools required for working on these sets. For example:
SD-29 Phillips Head Screwdriver
No. 24608 Aligning Tool
Also pliers, cutters, screwdrivers, etc.

STROMBERG-CARLSON TEL. MFG. CO.

FEATURES

GENERAL. This is a twenty-tube, three gang, three range receiver designed for the reception of both amplitude and frequency modulated stations and is equipped with a dual coaxial speaker system. It is capable of reproducing without distortion an audio frequency range of at least 10,000 cycles.

The chassis is of the fortified type with bails provided for ease in handling and servicing. Automatic tuning is accomplished by means of a motor drive controlled by a commutator and brush assembly and the dial is of the slide rule type, edge-lighted for clear visibility without glare. Separate treble and bass controls are provided to make accurate adjustment of the tone possible.

REMOTE CONTROL. Remote selection of stations is accomplished by simply plugging the remote control unit into the socket provided on the back of the chassis. This unit enables the user to select any one of eight favorite stations which have been previously set up on the electric tuning system of the receiver.

FREQUENCY MODULATION: The "Armstrong Wide-Swing Frequency Modulation System" used in this receiver is an outstanding development in radio.

The Federal Communications Commission has established five channels between 40 and 44 megacycles for frequency modulated transmitting stations. Since this is a comparatively high frequency, the distance over which reception is possible is limited.

SPEAKER SYSTEM. A coaxial dual speaker system is used in this receiver. The low frequency speaker owes much of its effectiveness to the unusually large field structure with a subsequently increased magnetic flux in the air gap. The treble speaker with its back completely enclosed is mounted directly in front of the bass speaker; both speakers are connected by means of a frequency dividing network to the receiver at an impedance of 24 ohms. The Acoustical Labyrinth is used in conjunction with this speaker system and the complete system is capable of providing a relatively even response to all tones from 65 to more than 10,000 cycles per second.

SPECIAL CIRCUITS. A tuning indicator having two apertures is used with this receiver. For tuning stations on the standard broadcast and short-wave range, one aperture is for strong signals and the other for weak signals. One aperture will close with a signal of approximately 100,000 microvolts and the other will not close even with a two volt signal. Stations on the frequency modulation range should be tuned for maximum closing of both apertures.

Iron core coils are used in the broadcast and short-wave ranges to provide greater accuracy of alignment. The audio system employs a special inverter push-pull circuit designed to provide excellent fidelity, and the chassis is thoroughly shielded throughout with an electro-statically shielded power transformer.

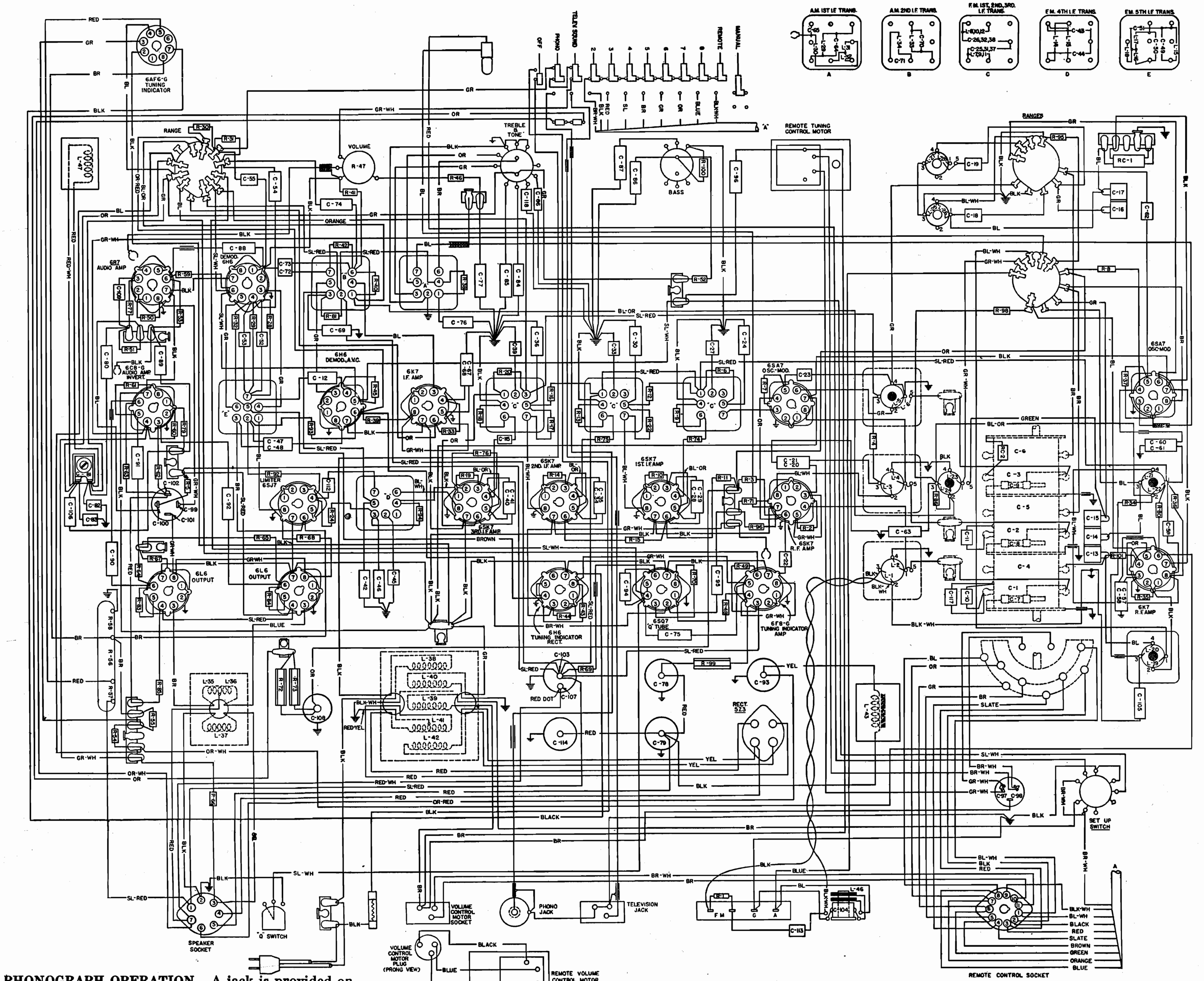
AUTOMATIC TUNING. Twelve push buttons are provided from right to left; their operation is as follows:

1. Manual Control
2. Remote Control
3–9. Pre-set Stations (7)
10. Television Sound
11. Phonograph
12. "Off" Switch

Pushing any button (except the "off" button) turns the set on and tuning is accomplished by means of an electric motor, driving the regular variable capacitor to a pre-set point.

Set up is very easily accomplished by means of a switch which causes the pilot light to go out when the brush is properly located.

TELEVISION. A socket is provided on the back of the chassis into which a television receiver may be plugged and a push button is provided on the front of the chassis for switching to television so that the audio amplifier and speaker system employed in this receiver are available for use with television receivers designed for this type of sound reproduction.



PHONOGRAPH OPERATION. A jack is provided on the back of the chassis into which a record player may be plugged and a push button is provided on the front of the chassis for switching from "Radio" to "Phonograph".

Wiring Diagram

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 480M,480MB
Alignment

IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
480-M	50-60 Cycles	31085	31088	31087 (Bass) 31126 (Treble)
480-MB	25-60 Cycles	31086	31088	31087 (Bass) 31126 (Treble)

SPECIFICATIONS

Tuning Ranges	Frequency Modulation 40 to 44 Mc. (40,000 to 44,000 Kc.) Shortwave 5.8 to 18 Mc. (5800 to 18,000 Kc.) Standard Broadcast .54 to 1.7 Mc. (540 to 1700 Kc.)
Voltage Rating	105 to 125 Volts
Type of Circuit	Superheterodyne with Electric Tuning
Input Power Rating	225 Watts
Intermediate Frequency	455 Kilocycles (Amplitude Modulation) 3.0 Megacycles (Frequency Modulation)
Speaker Field Coil Resistance—Approximately	1125 Ohms (Bass) 200 Ohms (Treble)
Speaker Voice Coil Impedance at 400 Cycles—Approximately	24 Ohms (Bass) 11 Ohms (Treble)

ALIGNING INFORMATION

NEVER REALIGN UNLESS ABSOLUTELY NECESSARY

GENERAL. All aligning adjustments are carefully made at the factory with special equipment which is designed for aligning frequency modulation receivers. The limitations of commercial oscillographs and other ordinary test equipment are such that alignment should not be attempted in the field unless absolutely necessary.

If alignment is attempted, it will not be successful unless the instructions which follow are adhered to exactly.

The following equipment will be required:
1. Standard signal generator with sweep circuit.
2. Wide band sweep signal generator.
3. Oscillograph.
4. Microammeter "0" to 200 Microamps.
5. Center "0" Microammeter with 100 divisions each side of "0".

See location chart above for location of all aligning screws.

ALIGNING PROCEDURE (follow this order exactly)

I. **Dial pointer adjustment.** With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the two vertical lines located at the extreme low frequency end of the dial scale.

II. **Intermediate frequency adjustments** (Frequency Modulation)
1. Set the range switch to Frequency Modulation position and the volume control to "off" position.
2. Tune the set to the extreme high frequency end of the dial (44.5 megacycles).
3. Disconnect the ground side of the 10000 ohm resistor R94 and connect the "0" to 200 microammeter in series with it and ground. (This resistor is connected between terminals No. 3 and 4 of the fourth I. F. transformer.)
4. Connect the oscillograph between high side of R94 resistor and ground.
5. Connect the ground terminal of the wide band sweep signal generator to the ground terminal of the 6SK7 third I. F. tube socket.
6. Introduce a signal of 3 megacycles to the grid of the 6SK7 third I. F. tube (Terminal No. 4), using a 0.1 microfarad capacitor in series with the output lead of the signal generator. Keep the "0" to 200 microammeter at approximately 100 microamps.
7. Align the secondary and primary of the fourth I. F. transformer for maximum reading on the "0" to 200 microammeter.
8. Slight adjustments of the aligners may be made if necessary to obtain a symmetrical curve on the oscillograph. Try for a good curve rather than the very last bit of output.
9. Connect the output lead and the 0.1 microfarad capacitor in series with it to the grid of the 6SK7 second I. F. tube (Terminal No. 4).
10. Align the third I. F. transformer in the same manner.
11. Connect the output lead and the 0.1 microfarad capacitor in series with it to the grid of the 6SK7 first I. F. tube (Terminal No. 4).
12. Connect the ground lead to the ground terminal of the 6SK7 first I. F. tube socket.
13. Align the second I. F. transformer in the same manner.
14. Connect the output lead and the 0.1 microfarad capacitor in series with it to the grid of the 6SA7 modulator tube (Terminal No. 8).
15. Connect the ground lead to the ground terminal of the 6SA7 modulator tube socket.
16. Align the first I. F. transformer in the same manner.
17. Remove the wide band sweep signal generator.

III. **Discriminator adjustment** (Frequency Modulation)

Note: Be sure the frequency of both signal generators are the same.
1. Connect the ground terminal of the standard signal generator to the ground terminal of the 6SK7 second I. F. tube socket.
2. Introduce an unmodulated signal of 3 megacycles to the grid of the 6SK7 second I. F. tube (Terminal No. 4) using a 0.1 microfarad capacitor in series with the output lead of the standard signal generator.
3. Connect the center "0" microammeter with a .5 megohm resistor in series across one-half of the discriminator load. (From ground to the junction of the two .1 megohm resistors R28 and R29).
4. Set the attenuator on the standard signal generator for maximum output.
5. Adjust the primary of the discriminator transformer for maximum reading on the center "0" microammeter.
6. Connect the center "0" microammeter and the .5 megohm resistor in series with it across the whole discriminator load. (Terminal No. 4 of the 6H6 Demodulator tube and ground).
7. Adjust the secondary of the discriminator transformer for center "0" reading of the microammeter.
8. Vary the frequency of the standard signal generator slightly and be sure that the center "0" microammeter reads the same on each side of resonance. If not, go back and realign both primary and secondary.

IV. **Radio frequency adjustments** (Frequency Modulation)
1. Set the signal generator frequency and the receiver tuning dial to 40 megacycles.
2. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm resistor and connect it to the F. M. antenna terminal nearest to the end of the antenna and ground terminal strip.
3. Connect the ground lead to the other F. M. terminal on the antenna and ground terminal strip.
4. Adjust the oscillator 40 megacycles core aligner for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 43 megacycles.
6. Adjust the oscillator shunt aligner for maximum signal.
7. Adjust the R. F. and antenna aligners for maximum signal on the "0" to 200 microammeter **maintaining the center "0" microammeter at "0" at all times by rotating the receiver dial slightly back and forth.**
8. Remove both meters from the circuits and resolder the 10000 ohm resistor R94 in its original position to terminal No. 4 on the fourth I. F. transformer.

V. **Intermediate frequency adjustments** (Amplitude Modulation)

Adjustment of second I. F. transformer.
1. Set the range switch to standard broadcast position.
2. Set the fidelity control in the center or "sharp" position and turn the volume control "full on".
3. Connect the oscillograph to the high side of the volume control R47.
4. Replace the 100 ohm resistor in series with the output lead from the signal generator with a 0.1 microfarad capacitor and connect it to the grid cap of the 6K7 I. F. tube. (Do not remove the grid cap from this tube.)
5. Connect the ground terminal of the signal generator to the ground terminal of the receiver.
6. Introduce a modulated signal of 455 kilocycles to the grid of the 6K7 I. F. tube.
7. Adjust the second I. F. transformer aligners for a symmetrical curve on the oscillograph in the following order:
   a. Secondary of second I. F. transformer.
   b. Primary of second I. F. transformer.
8. Set the fidelity control to the high fidelity (expanded) position and readjust the primary of the second I. F. transformer for symmetrical curve.
9. Set the fidelity control back to the center or "sharp" position.

Adjustment of first I. F. transformer.
1. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series with it to the grid of the 6SA7 Modulator Tube. (Terminal No. 4.)
2. Adjust the first I. F. transformer aligners for a symmetrical curve on the oscillograph in the following order:
   a. Secondary of first I. F. transformer.
   b. Primary of first I. F. transformer.
3. After the Amplitude Modulation I. F. adjustments have been completed, the fidelity control should be turned to the high fidelity position and a check made on the shape of the curve which should show a slight double peak.
4. Turn the fidelity control back to middle or "sharp" position.
5. Remove the oscillograph from the circuit.

VI. **Radio frequency adjustments** (Amplitude Modulation)

Short Wave Range (C Band)
1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm resistor and connect it to the Amplitude Modulation antenna terminal on the back of the chassis.
2. Set the range switch to the short wave range position (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycle "oscillator" and "antenna" iron cores for maximum signal.
5. Set the signal generator and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles "oscillator" and "antenna" aligning capacitors for maximum signal.
7. Repeat operations 3 and 4.
8. Repeat operations 5 and 6.

Standard Broadcast Range (A Band)
1. Replace the 400 ohm resistor in series with the output lead of the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the standard broadcast range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 kilocycles.
4. Adjust the 600 kilocycle "oscillator", "R. F." and "Antenna" iron cores for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 kilocycles.
6. Adjust the 1500 kilocycle "oscillator", "R. F." and "Antenna" aligning capacitors for maximum signal.
7. Repeat operations 3 and 4.
8. Repeat operations 5 and 6.

VII. **Wave trap adjustment.** (Leave the receiver connected in the same manner as when adjusting the standard broadcast range) (A Band).
1. Set the receiver's tuning dial to 1000 kilocycles.
2. Set the signal generator frequency to 455 kilocycles and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

IMPORTANT: Do not go back and touch up any adjustments previously made. If the receiver is not in proper alignment after completing the adjustments outlined above, go back and start over again and follow the instructions through to the finish.

MODELS 480M,480MB
Voltage,Resistance

STROMBERG-CARLSON TEL. MFG. CO.

ADJUSTING DIAL LAMP

The dial on this receiver is edge-lighted, and for proper illumination it is very important that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

NORMAL VOLTAGE READINGS

Take all voltage readings with chassis operating and tuned manually to 1000 kilocycles or 43 megacycles—no signal.

The upper figures shown in the table are with the range switch set to the standard broadcast range and tuned to approximately 1000 kilocycles—no signal.

The lower figures shown in the table are with the range switch set to the frequency modulation position and tuned to approximately 43 megacycles—no signal.

Use a line voltage of 125 volts or make allowance for any slight variation.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt. Take all D. C. readings on the 500 volt scale except when an asterisk appears. Read from indicated terminals to chassis base. See location chart for position of terminals.

A. C. voltages are indicated by italics.

Tube	Circuit	Range Switch Set To	Cap	1	2	3	4	5	6	7	8
				TERMINALS OF SOCKETS							
6SK7	R. F. Amp. (F. M.)	A. M.	—	0	0	+1*	—	+1*	+68	*6.5*	0
		F. M.	—	0	0	+3*	—	+3*	+135	*6.5*	+265
6SA7	Mod. and Osc. (F. M.)	A. M.	—	0	0	+290	+70	—	0	*6.5*	0
		F. M.	—	0	0	+280	+120	—	0	*6.5*	0
6SK7	1st I. F. Amp. (F. M.)	A. M.	—	0	0	+2*	—	+2*	+70	*6.5*	+290
		F. M.	—	0	0	+4*	—	+4*	+110	*6.5*	+265
6SK7	2nd I. F. Amp. (F. M.)	A. M.	—	0	0	+2*	—	+2*	+55	*6.5*	+290
		F. M.	—	0	0	+3*	—	+3*	+90	*6.5*	+270
6SK7	3rd I. F. Amp. (F. M.)	A. M.	—	0	0	0	—	0	0	*6.5*	+285
		F. M.	—	0	0	+6*	—	+6*	+150	*6.5*	+260
6SJ7	Limiter (F. M.)	A. M.	—	0	0	0	—	0	+95	*6.5*	+95
		F. M.	—	0	0	0	—	0	+90	*6.5*	+95
6H6	Demod. (F. M.)	A. M.	—	0	0	—	—	—	—	*6.5*	0
		F. M.	—	0	0	—	—	—	—	*6.5*	0
6SQ7	"Q" (F. M.)	A. M.	—	0	0	+2*	—	—	+130	*6.5*	0
		F. M.	—	0	0	+2*	—	—	+120	*6.5*	0
6H6	Tun. Ind. Rect. (F. M.)	A. M.	—	0	0	—	—	—	—	*6.5*	—
		F. M.	—	0	0	—	—	—	—	*6.5*	—
6F8G	Tun. Ind. Amp. (F. M.)	A. M.	0	0	0	+295	+11**	—	+200	*6.5*	+11**
		F. M.	0	0	0	+275	+10**	—	+185	*6.5*	+10**
6SK7	R. F. Amp. (A. M.)	A. M.	—	0	0	+2*	—	+2*	+90	*6.5*	+290
		F. M.	—	0	0	+2*	—	+2*	+80	*6.5*	+275
6SA7	Mod. and Osc. (A. M.)	A. M.	—	0	0	+290	+70	—	0	*6.5*	0
		F. M.	—	0	0	+275	+135	—	+100	*6.5*	0
6K7	I. F. Amp. (A. M.)	A. M.	0	0	0	+285	+115	+4*	+290	*6.5*	+4*
		F. M.	0	0	0	+260	0	0	0	*6.5*	0
6H6	Demod., A. V. C., "Q" (A. M.)	A. M.	—	0	0	—	0	—	—	*6.5*	0
		F. M.	—	0	0	—	0	—	—	*6.5*	0
6R7	Audio Amp.	A. M.	0	0	0	+90	0	0	—	*6.5*	+3*
		F. M.	0	0	0	+85	0	0	—	*6.5*	+3*
6C8G	Audio Inv.	A. M.	0	0	0	+35	—	—	+35	*6.5*	0
		F. M.	0	0	0	+35	—	—	+35	*6.5*	0
6L6G	Output	A. M.	—	0	0	+415	+290	—	—	*6.5*	+20**
		F. M.	—	0	0	+410	+275	—	—	*6.5*	+20**
6L6G	Output	A. M.	—	0	0	+415	+290	—	—	*6.5*	+20**
		F. M.	—	0	0	+410	+275	—	—	*6.5*	+20**
5Z3	Rectifier	A. M.	—	+495	*480*	*480*	+495	—	—	*5*	—
		F. M.	—	+495	*480*	*480*	+495	—	—	*5*	—
6AF6G	Tun. Ind.	A. M.	—	—	0	+65	+90	+250	—	*6.5*	+95
		F. M.	—	—	0	+60	+185	+235	—	*6.5*	+90
	Speaker Socket	A. M.	—	+290	0	0	+495	+495	+486	+425	—
		F. M.	—	+275	0	0	+495	+495	+486	+420	—

*Read on lowest possible scale of voltmeter.
**Read on 100 volt scale of voltmeter.

CONTINUITY TEST

Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Test speaker socket with speaker left out.

Leave speaker plug in socket for all other tests. (If a speaker is not available when checking continuity the speaker socket may be shorted by using two pieces of bus wire and shorting together terminals 1, 6 and 7 and terminals 4 and 5 of the speaker socket. (See location chart for position and numbering of terminals.) **Caution: Be sure to remove the two shorting wires when the continuity test is completed.**

Tube	Circuit	Cap	1	2	3	4	5	6	7	8
			TERMINALS OF SOCKETS							
6SK7	R. F. Amp. (F. M.)	—	S	S	180¶	S	180¶	A	S	O
6SA7	Osc. and Mod. (F. M.)	—	S	S	6000¶	A	22000¶	S	S	S
6SK7	1st I. F. Amp. (F. M.)	—	S	S	330¶	390¶	330¶	B	S	6000¶
6SK7	2nd I. F. Amp. (F. M.)	—	S	S	330¶	390¶	330¶	C	S	6000¶
6SK7	3rd I. F. Amp. (F. M.)	—	S	S	390¶	470000¶	390¶	D	S	5000¶
6SJ7	Limiter (F. M.)	—	S	S	S	57000¶	S	1900¶	S	1900¶
6H6	Demod. (F. M.)	—	S	S	100000¶	200000¶	100000¶	1M	S	S
6SQ7	"Q" Tube (F. M.)	—	S	600000¶	2200¶	E	E	280000¶	S	S
6H6	Tun. Ind. Rect. (F. M.)	—	S	S	1M	2.4M	2.4M	O	S	1M
6F8G	Tun. Ind. Amp. (F. M.)	1M	S	S	5000¶	2000¶	1M	150000¶	S	2200¶
6SK7	R. F. Amp. (A. M.)	—	S	S	180¶	F	180¶	90000¶	S	5000¶
6SA7	Osc. and Mod. (A. M.)	—	S	S	6000¶	G	22000¶	H	S	I
6K7	I. F. Amp. (A. M.)	7¶	S	S	5000¶	J	470¶	K	S	470¶
6H6	Demod., A. V. C., "Q" (A. M.)	—	S	S	300000¶	S	900000¶	500000¶	S	S
6R7	Audio Amp.	1M	S	S	100000¶	S	S	1.5M	S	2200¶
6C8G	Audio Inv.	1M	S	S	350000¶	47¶	10M	350000¶	S	S
6L6	Output	—	S	S	5000¶	5000¶	150000¶	150000¶	S	200¶
6L6	Output	—	S	S	5000¶	5000¶	150000¶	150000¶	S	200¶
5Z3	Rectifier	—	5000¶	30¶	30¶	5000¶	—	—	—	—
6AF6G	Tun. Ind.	—	O	S	200000¶	L	4200¶	O	S	1900¶
—	Speaker Socket	—	5000¶	S	S	O	90000¶	90000¶	300000¶	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

Use a good meter capable of measuring up to several megohms.

The resistances given are often approximate owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart for position and numbering of terminals.

A. Push in any "Pre-set Station" Button .... 18,000 Ohms
   Push in "Phono" Button .... 300,000 Ohms
   Push in "Television" Button .... 300,000 Ohms

B. Push in any "Pre-set Station" Button .... 20,000 Ohms
   Push in "Phono" Button .... 400,000 Ohms
   Push in "Television" Button .... 400,000 Ohms

C. Push in any "Pre-set Station" Button .... 30,000 Ohms
   Push in "Phono" Button .... 400,000 Ohms
   Push in "Television" Button .... 400,000 Ohms

D. Range switch in standard broadcast position .... "Open"
   Range switch in short-wave position .... "Open"
   Range Switch in frequency modulation position .... 38,000 Ohms

E. "Q" Switch "On"
   Range switch in standard broadcast position .... "Open"
   Range switch in short-wave position .... "Open"
   Range Switch in frequency modulation position .... 1 Megohm

   "Q" Switch "Off"
   Range switch in standard broadcast, short-wave and frequency modulation positions .... "Short"
   Set up switch in "Set up" position .... "Short"
   Set up switch in "Operate" position .... 1 Megohm

F. Range switch in standard broadcast position .... 3 Megohms
   Range switch in short-wave position .... 3 Megohms
   Range switch in frequency modulation position .... 550,000 Ohms

G. Push in any "Pre-set Station" Button .... 20,000 Ohms
   Push in "Phono" Button .... 400,000 Ohms
   Push in "Television" Button .... 400,000 Ohms

H. Range switch in standard broadcast position .... "Short"
   Range switch in short-wave position .... "Short"
   Range switch in frequency modulation position .... "Open"

I. Range switch in standard broadcast position .... 3.5 Megohms
   Range switch in short-wave position .... 3.5 Megohms
   Range switch in frequency modulation position .... "Open"

J. Range switch in standard broadcast position .... 100,000 Ohms
   Range switch in short-wave position .... 100,000 Ohms
   Range switch in frequency modulation position .... "Open"

K. Range switch in standard broadcast position .... 5,000 Ohms
   Range switch in short-wave position .... 5,000 Ohms
   Range switch in frequency modulation position .... "Open"

L. Range switch in standard broadcast position .... 900,000 Ohms
   Range switch in short-wave position .... 900,000 Ohms
   Range switch in frequency modulation position .... 1.5 Megohms

Other tests not shown on chart—

Phono jack to chassis base
   Push in "Phono" button .... 1 Megohm
   Push in any "Pre-set" Station button .... "Open"

Television jack to chassis base
   Terminal No. 1 (this is the terminal located nearest to the bottom of the chassis) Push in "Television" button .... 1 Megohm
   Terminal Nos. 2 and 3 .... "Short"

Amplitude Modulation Antenna Terminal to chassis base .... "Short"
Amplitude Modulation Ground Terminal to chassis base .... "Short"
Frequency Modulation Terminals to chassis base .... "Open"
Between Frequency Modulation Terminals .... 1,000 Ohms
Terminals of A. C. Plug to chassis base .... "Open"
Between terminals of A. C. Plug—
   Push in "Off" button .... "Open"
   Push in any other button .... 1.5 Ohms

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 480M, 480MB
Tuner Data

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

IMPORTANT: The stations selected should be local or favorite stations which give good reception at all times. Frequency Modulated Stations, as well as Amplitude Modulation Stations, may be set up on the push buttons by simply using the appropriate button determined by the position of the Frequency Modulated Station on the dial.

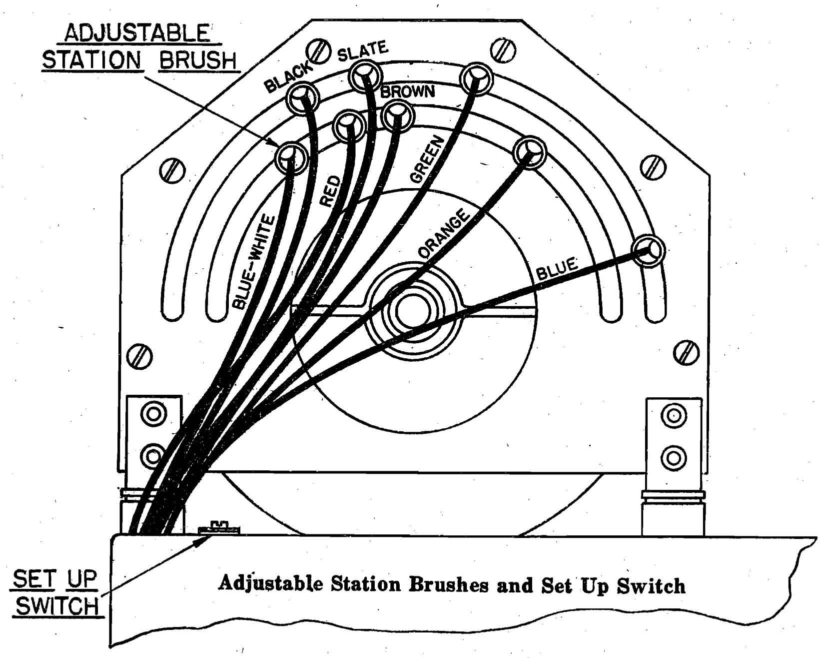
Set up stations in the daytime to avoid unnecessary interference.

Allow the set to run for about twenty minutes before setting up stations.

Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

Seven stations may be set up for push buttons located on the front of the receiver and eight stations may be set up on the remote control unit. The same seven stations which were set up for the buttons on the front of the receiver must also be used on the remote control unit and the eighth station which is chosen for the remote control unit must be of a lower frequency than any of the other stations which have been set up.

1. Put the call letters of the selected stations in place above the push buttons. **The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial.** (The call letters will be found inside the envelope stapled inside or underneath the cabinet).
2. Remove the metal escutcheon and transparent strip from the remote control unit. Put the station call letters in place so that the station having the highest frequency is nearest to the volume control buttons and then in successive order according to frequency. Replace the metal escutcheon, transparent strip and three screws. (The call letters for the remote control unit are included in the P-31424 Remote Control Package Assembly.)
3. Set the "Treble" control in normal position.
4. Turn the set-up switch (located on the base just back of the brush and commutator assembly) to the set-up position. (The slot in the screw should point toward "set-up").
5. Push the button of the highest frequency station to be set up (button No. 3) and then tune in that station manually. **Be sure the station is exactly "in tune" by tuning carefully and watching the cathode ray indicator.**
6. Slide the brush to which the blue wire is connected until it is over the slot in the commutator. Then adjust it very carefully until the pilot light goes out. This indicates exact adjustment.
7. Repeat operations 4 and 5 for each station. Work from right to left or from the higher to the lower frequencies in accordance with the table below:
8. Turn the set-up switch back to the "Operate" position.
9. Check the operation of all the push buttons to be sure that each has been accurately set up. If it is necessary to readjust any of the buttons, follow the procedure given above.



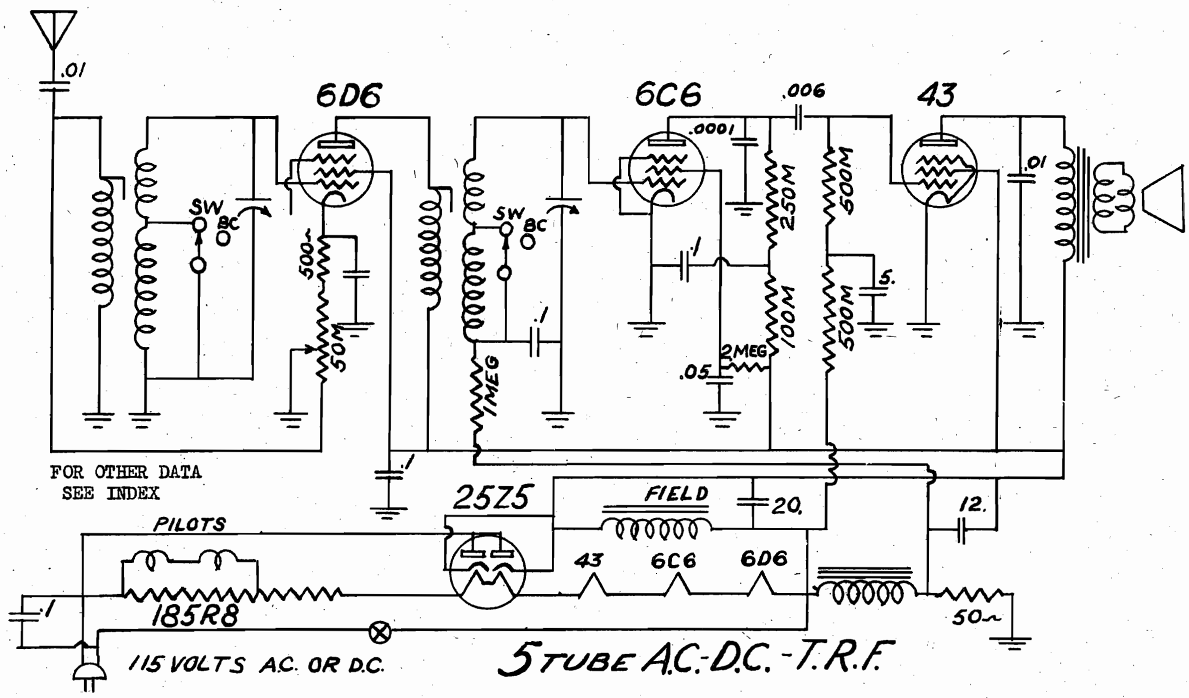
Adjustable Station Brushes and Set Up Switch

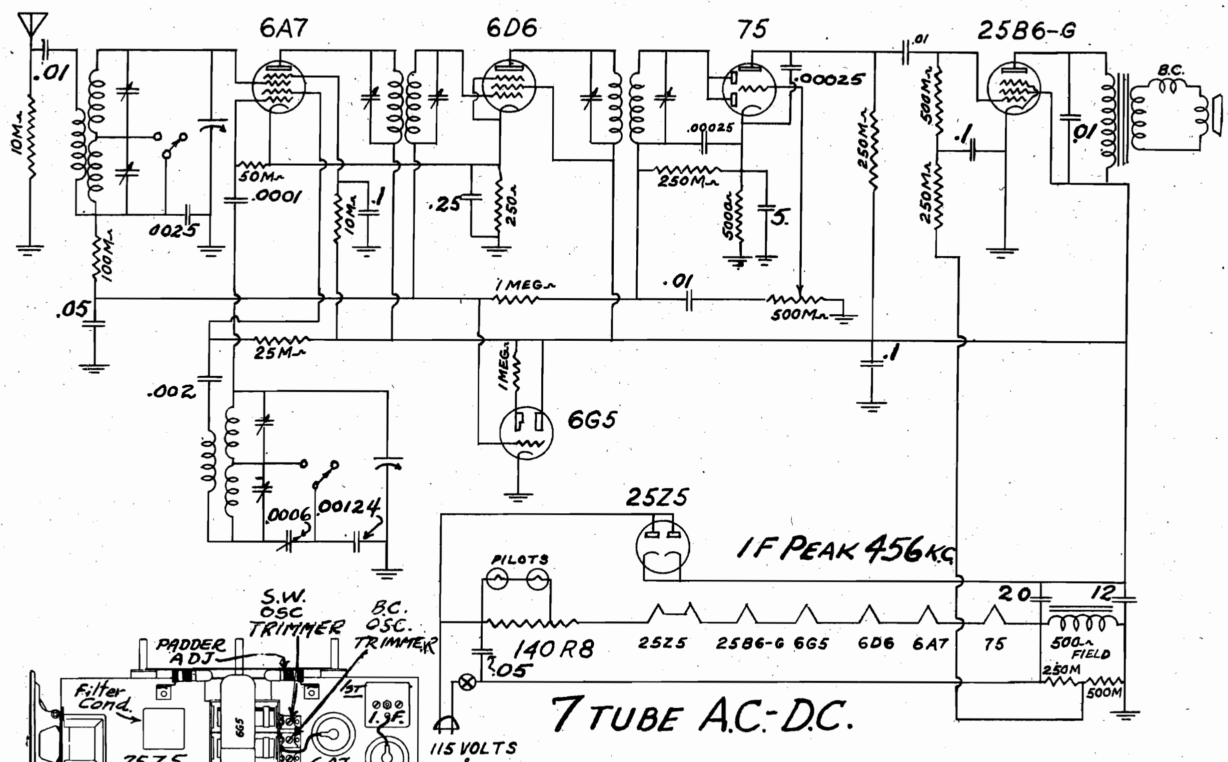
Push Button No.	Purpose	Color of wire on brush	
1	Manual	—	See diagram of adjustable brushes and set-up switch.
2	Remote	—	
3	Highest frequency station	Blue	
4	Next lower frequency station	Orange	
5	Next lower frequency station	Green	
6	Next lower frequency station	Brown	
7	Next lower frequency station	Slate	
8	Next lower frequency station	Red	
9	Lowest frequency station on receiver	Black	
10	Telev. button on receiver Lowest frequency button on remote control unit	Blue White	
11	Phonograph		
12	Off		

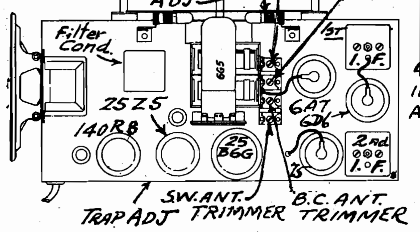
MODEL 7-Tube AC-DC Superhet. Schematic, Socket Alignment, Trimmers

TRAV-LER RADIO & TELEVISION CORP.

MODEL 5-Tube TRF Schematic



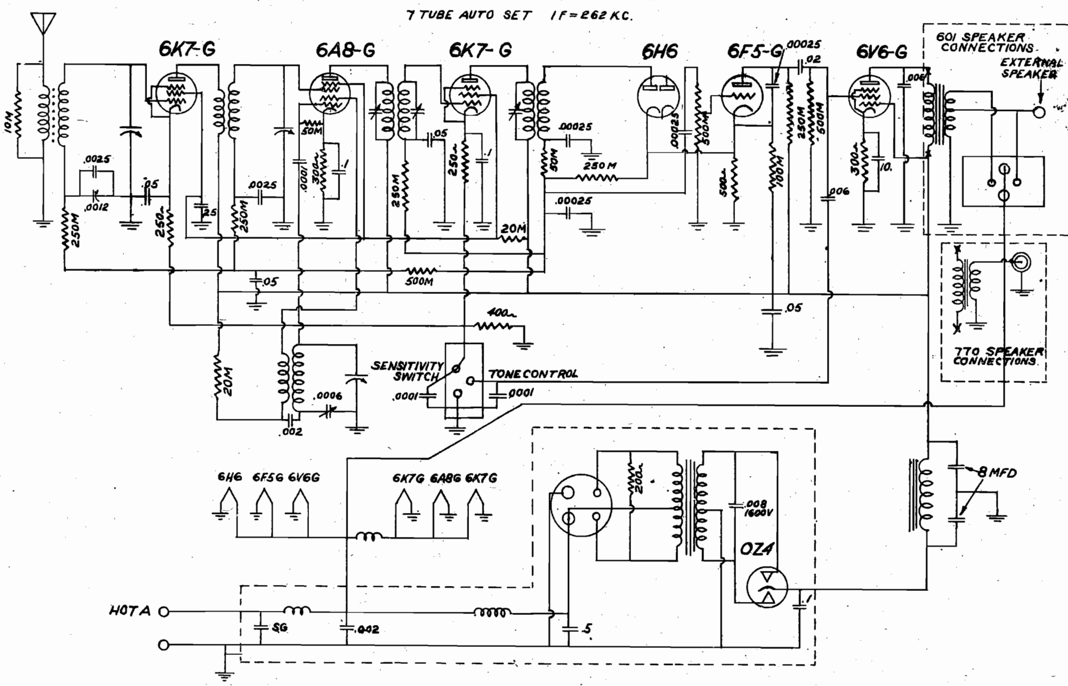




ALIGNMENT; I.F. at 456 KC. Using a .00025 condenser as a dummy antenna, adjust B.C.Osc. trimmer at 1700 KC, B.C. Ant. Trimmer at 1400 KC, Padder at 600 KC. Using a 400 ohm resistor as dummy, at 6 M.C. adjust SW Osc. and then SW Ant. trimmers to resonance.

MODEL 7-Tube Auto
Schematic, Socket
Trimmers, Alignment
Voltage

TRAV-LER RADIO & TELEVISION CORP.

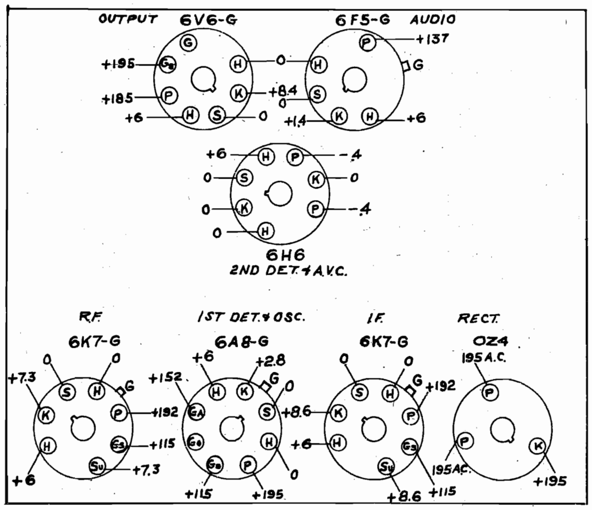


ALIGNMENT INSTRUCTIONS

1. Set variable condenser with rotor plates in open position. Set signal generator to 262 kc., connect generator lead to grid cap of 6A8G using a .1 mfd., condenser as a dummy antenna. Adjust IF trimmers for maximum output, reducing signal generator output as signal increases.
2. Set signal generator to 1620 kc., connecting generator lead to antenna lead on set using a .00025 condenser as dummy antenna. Rotate oscillator trimmer until signal is picked up. Set generator to 1400 kc., pick up signal by rotating variable condenser then adjust RF and antenna trimmers for maximum signal, reducing generator output as speaker signal increases. Set signal generator to 600 kc., rotate variable condenser to pickup signal then adjust for maximum sensitivity by rotating oscillator padder while rocking variable condenser.
3. Recheck alignment adjustments at 1620 and 1400 kc.
4. When set is installed, antenna circuit may be tracked to car antenna by adjusting antenna padder located just below antenna socket.

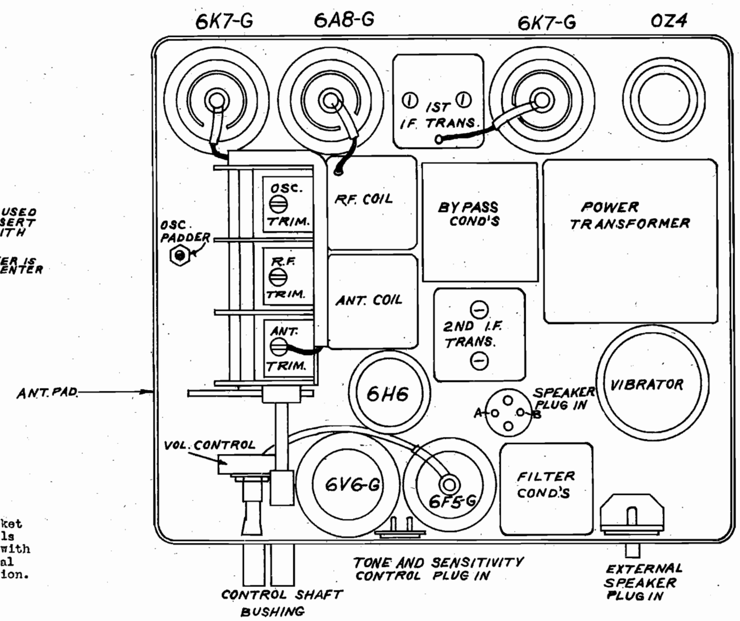
ELIMINATION OF MOTOR NOISES FOR EXCEPTIONAL CASES:

A later type of car will require less attention then one which is loosened at body joints. The elimination of the generator ripple which is distinguished by a high pitched whirring sound is accomplished by means of a condenser from generator cutout to ground. In the case of a roof antenna a condenser should be connected from a point on the lead that connects to the dome light, as it passes through the left or right hand channel of the car to ground. Make sure that the shielding is continuous from the end of the antenna cable to as far up to the aerial proper as possible. Large diameter shielding is preferred. In stubborn cases use a distributor suppresser. This is inserted in the distributor head or in the ignition coil spout or any place along the high tension lead. In some cases where motors are mounted on rubber it is necessary to bond the engine to the chassis by means of heavy metal braiding.



NOTE:
WHEN EXTERNAL SPEAKER IS USED WITH INTERNAL SPEAKER, INSERT INTERNAL SPEAKER PLUG WITH CENTER PRONG AT-B-
WHEN ONLY INTERNAL SPEAKER IS USED INSERT PLUG WITH CENTER PRONG AT-A-

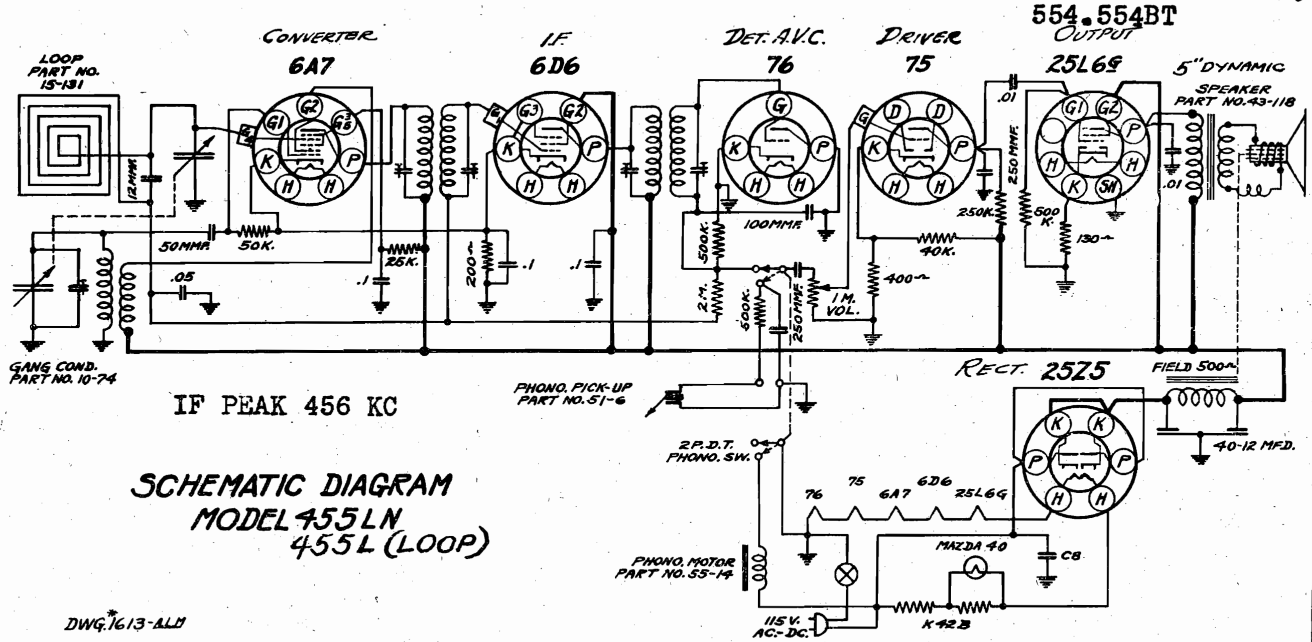
Botton view of 7-tube auto set showing socket positions and voltages from socket terminals to ground. All voltage measurements taken with volume control at maximum and with no signal applied. Sensitivity switch in "OFF" position. Use volt-meter of 1000 ohms per volt.



Schematics, Alignment

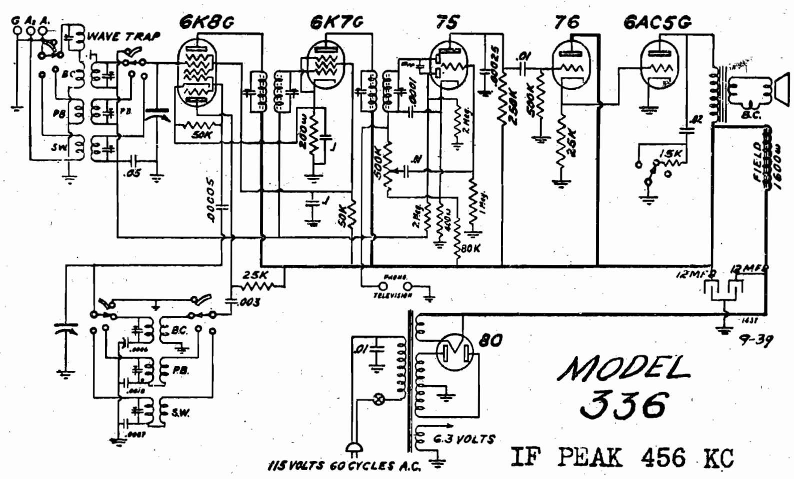
TRAV-LER RADIO & TELEV. CORP.

MODEL 336
MODELS 455L, 455LN
MODELS 553, 553BT, 554, 554BT



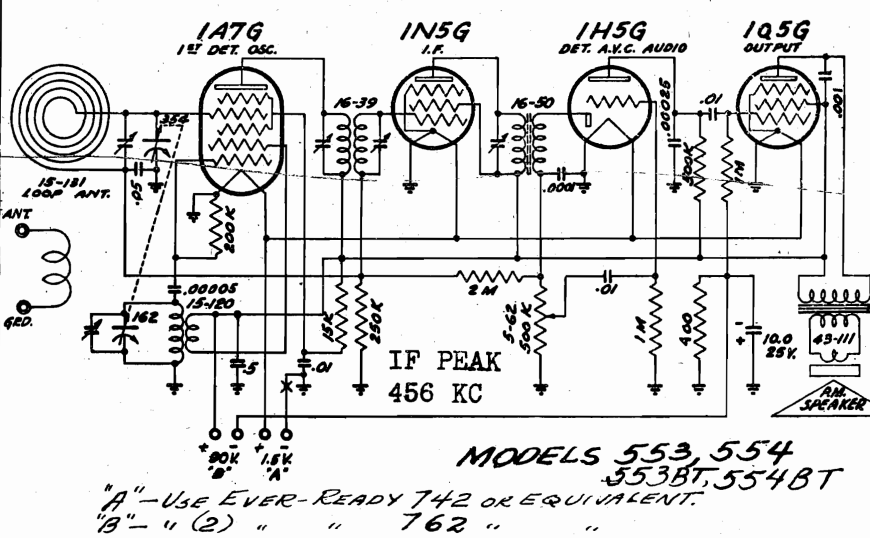
IF PEAK 456 KC

SCHEMATIC DIAGRAM
MODEL 455LN
455L (LOOP)



MODEL 336

IF PEAK 456 KC



IF PEAK 456 KC

MODELS 553, 554
553BT, 554BT

"A" – Use Ever-Ready 742 or equivalent.
"B" – " (2) " " 762 " "

MODELS 455L (Loop), 455 LN
ALIGNMENT

IF 456 KC. RF (Use single loop of wire 5 or 6 inches in diameter about 8 inches from receiver loop) Adjust Osc. and Ant. trimmers at 1400 KC for Max. Output.

MODEL 336
ALIGNMENT

IF - 456 KC. Adjust B.C. Osc. at 1720 KC; B.C. R.F. and Ant. Trimmers at 1400 KC, Pad at 600 KC; Check at 1400 KC. INT. Adjust P.B. Osc. at 6700; P.B. Ant. and R.F. trimmers at 6000 KC; Check at 2200 KC. S.W. Adjust S.W. Osc. at 24.5 MC, S.W. Ant. and R.F. trimmers at 22 MC.; Check at 8 MC. (Use a standard all wave dummy antenna if available)

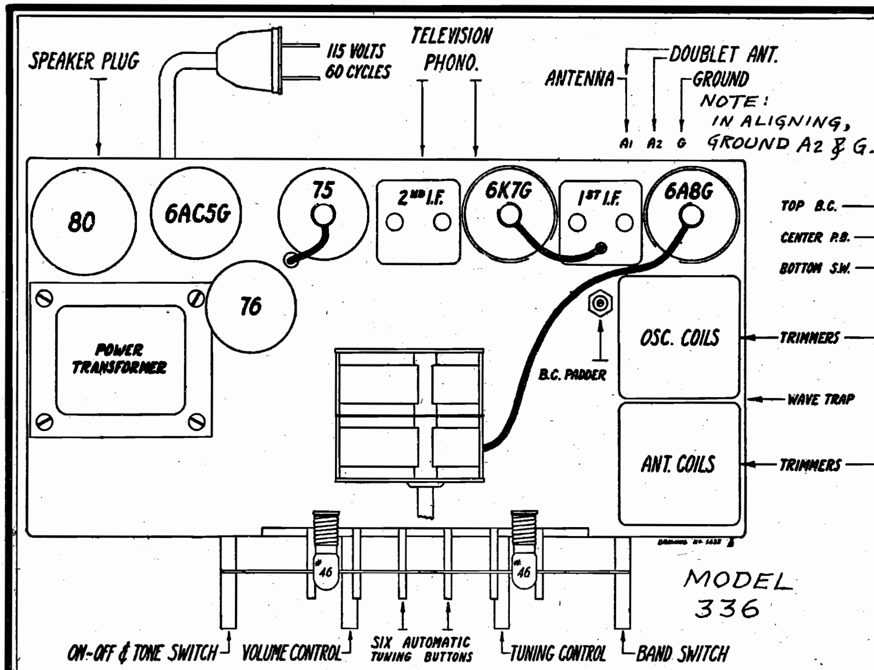
MODELS 553, 554.
ALIGNMENT

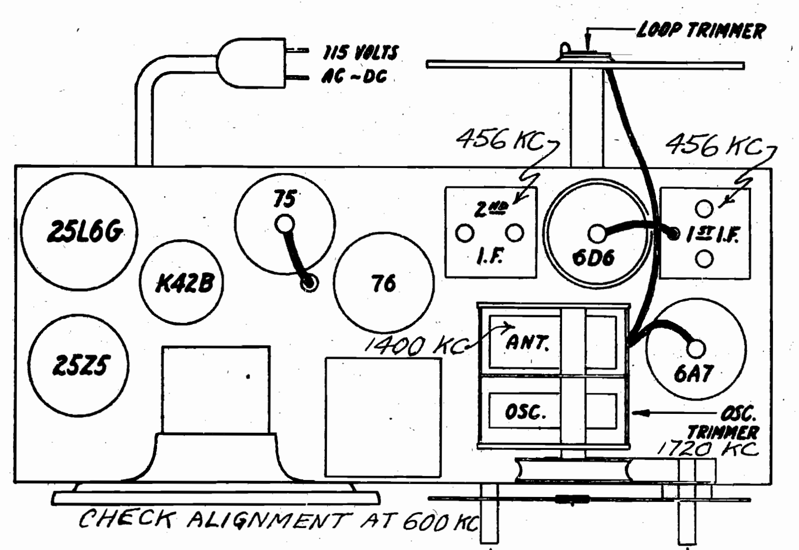
IF - 456 KC. R.F. (Use a signal loop near and parallel to receiver loop. Receiver loop should be close to installed position) Adjust Osc. at 1720 KC, Ant. at 1400 KC and check at 600 KC.

MODEL 336 MODEL 620
MODEL 621 MODEL 720
Socket, Trimmers

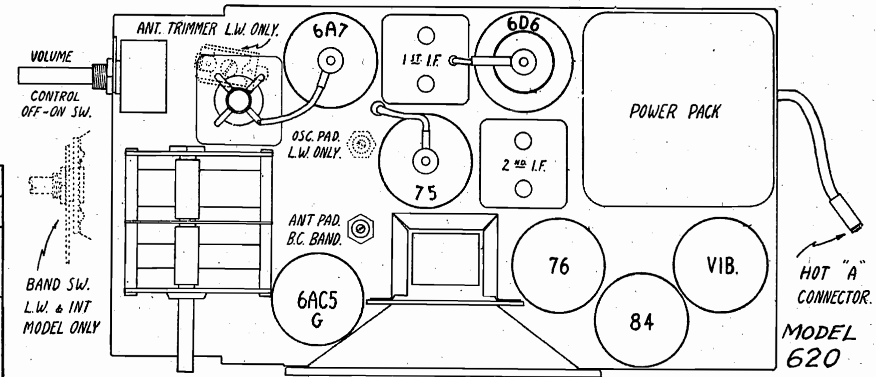
TRAV-LER RADIO & TELEV. CORP

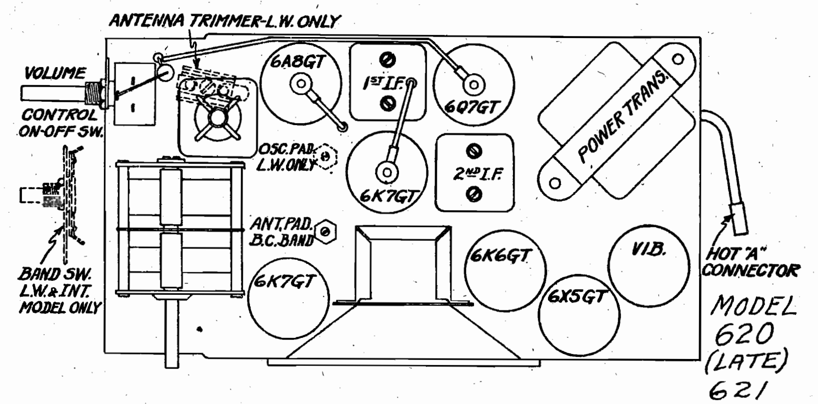
MODEL 336 MODEL 539M
MODEL 570B MODEL 576
MODEL 801 Tuner Data





MODEL 720





PUSH BUTTON OPERATION

Applies to Models 336, 539M, 570B, 576, 576B, 801.

Six Push Button Station Selectors are incorporated in this receiver. Each button may be adjusted to select any station or frequency in the Broadcast Band. To adjust each button, perform the following operations:

1. Tune in a desired station with the Selector knob.
2. Twist the Push Button you want set up for this station, to the left about one full turn to loosen the mechanism.
3. Push this button in as far as it will go, while still holding the Selector knob firmly so the station will not be detuned.
4. With the button pressed all the way in, twist it to the right until it is tight and then release it.

Follow this procedure with the other five buttons, setting each for a different station.

Now, when any Push Button is pressed, the station for which that button is set, should appear perfectly tuned in. If it is not perfectly tuned, repeat the above procedure until satisfactory results are obtained.

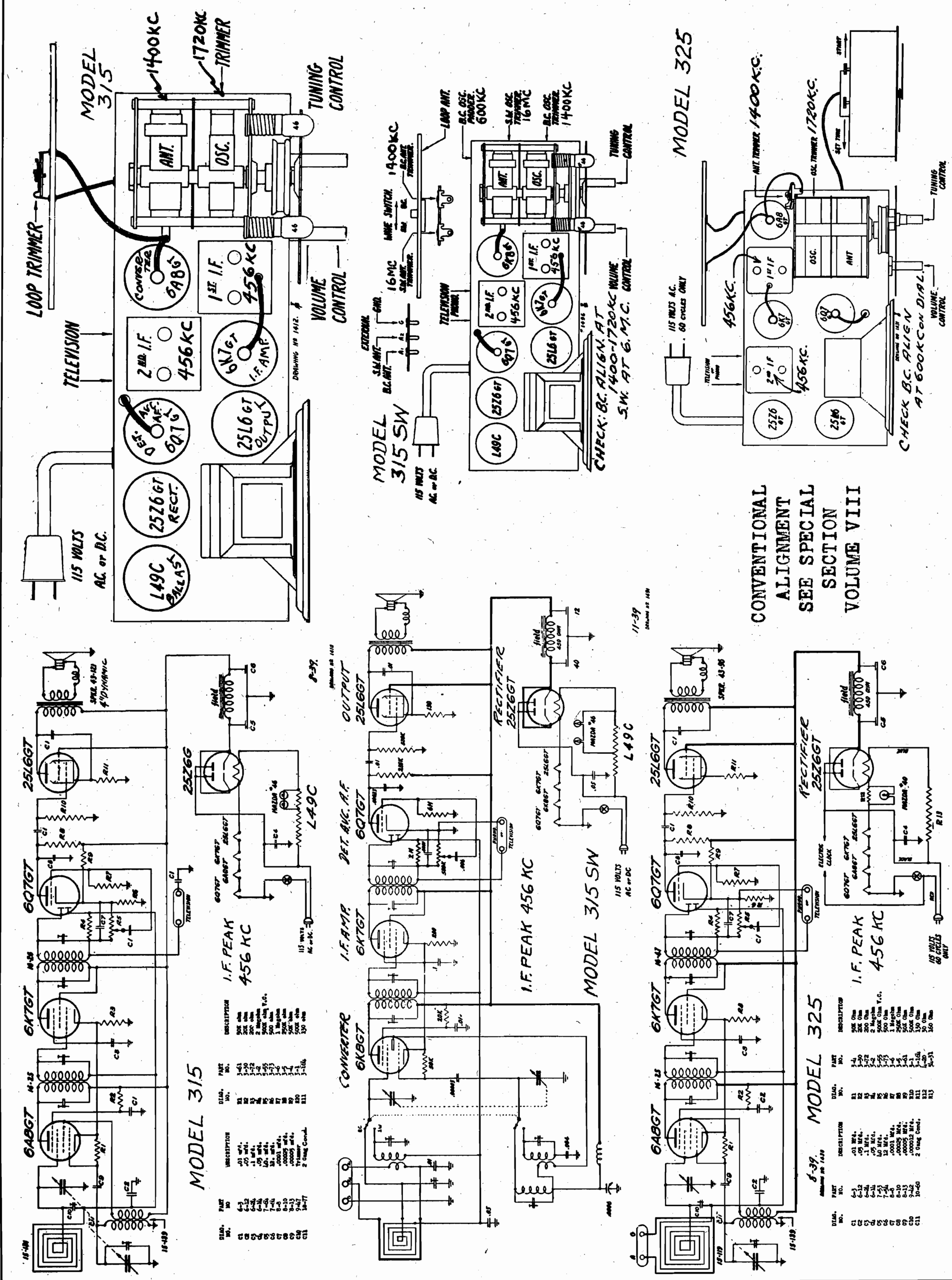
Select the Call Letter Tabs to correspond to the stations the buttons are set for, and insert them in places provided above each button.

DRAWING No. 1392

Schematics, Socket Trimmers, Alignment

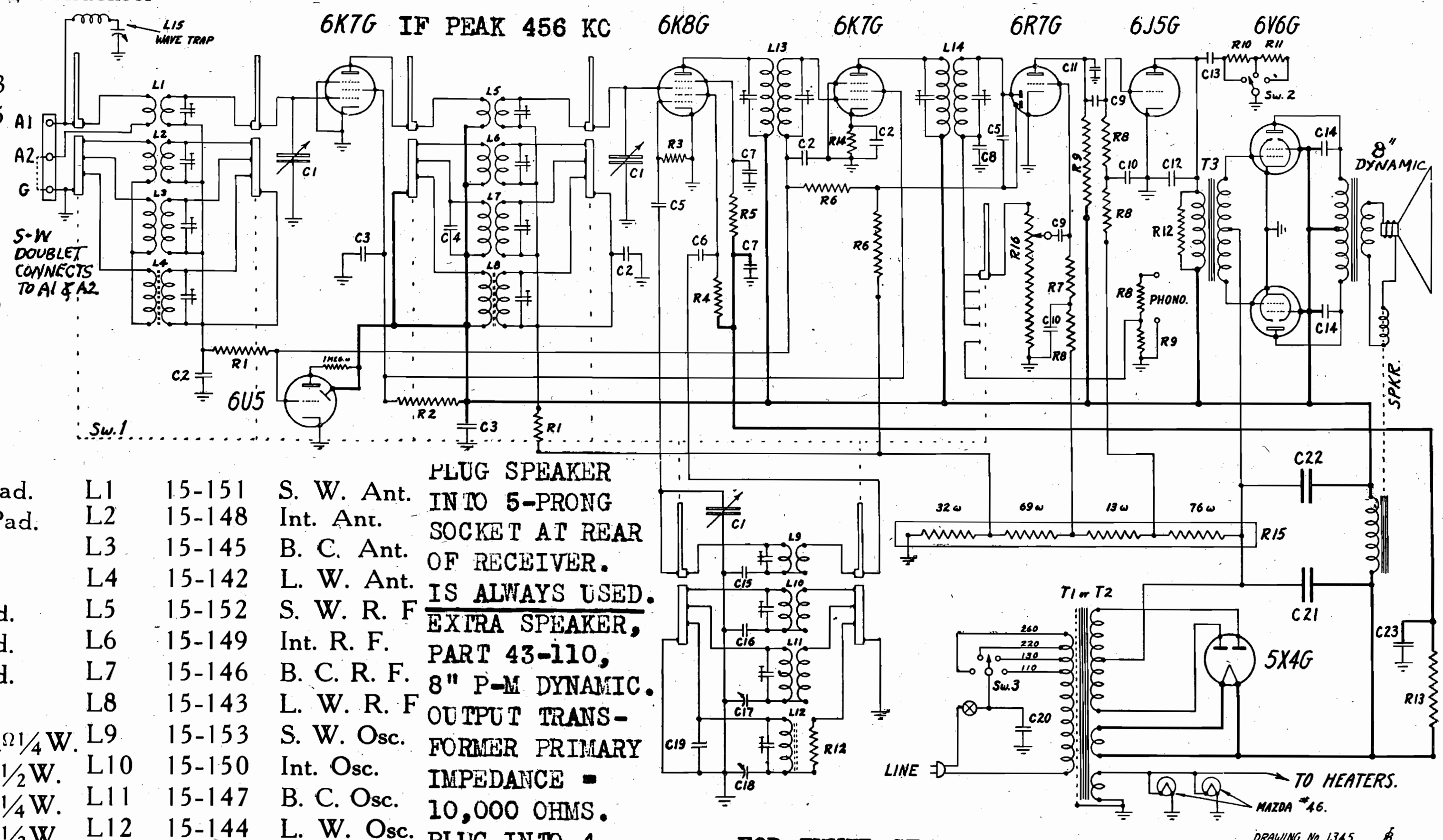
TRAV-LER RADIO & TELEV. CORP.

MODEL 315
MODEL 315SW
MODEL 325



MODEL 539M
Schematic, Alignment

TRAV-LER RADIO & TELEV. CORP.



PLUG SPEAKER INTO 5-PRONG SOCKET AT REAR OF RECEIVER. IS ALWAYS USED. EXTRA SPEAKER, PART 43-110, 8" P-M DYNAMIC. OUTPUT TRANSFORMER PRIMARY IMPEDANCE = 10,000 OHMS. PLUG INTO 4-PRONG SOCKET AT REAR.

FOR TUNER SEE INDEX

C1	10-62	Tuning Condenser	
C2	6-12	.05	
C3	6-26	.1	
C4	8-19	.00003	
C5	8-13	.00005	
C6	6-36	.003	
C7	6-14	.05	
C8	8-8	.0001	
C9	6-3	.01	
C10	6-24	.1	
C11	8-10	.00025	
C12	8-1	.001	
C13	6-11	.03	
C14	6-53	.003	
C15	8-47	.0087	
C16	8-7	.0018	
C17	9-27	B.C. Pad.	
C18	9-14	L.W. Pad.	
C19	8-33	.00005	
C20	6-4	.01	
C21	7-49	25 mfd.	
C22	7-51	20 mfd.	
C23	7-66	16 mfd.	
R1	3-5	250KΩ	1/4W.
R2	3-169	75KΩ	1/2W.
R3	3-4	50KΩ	1/4W.
R4	3-8	25KΩ	1/2W.
R5	3-170	30KΩ	1 W.
R6	3-2	2KΩ	1/4W.
R7	3-6	1KΩ	1/4W.
R8	3-1	500KΩ	1/4W.
R9	3-17	100KΩ	1/4W.
R10	3-3	5KΩ	1/4W.
R11	3-14	10KΩ	1/4W.
R12	3-29	25KΩ	1/4W.
R13	3-168	12KΩ	1 W.
R14	3-13	300Ω	1/4W.
R15	4-15	Resistor Strip	
R16	5-54	500KΩ Volume Control	

L1	15-151	S. W. Ant.
L2	15-148	Int. Ant.
L3	15-145	B. C. Ant.
L4	15-142	L. W. Ant.
L5	15-152	S. W. R. F.
L6	15-149	Int. R. F.
L7	15-146	B. C. R. F.
L8	15-143	L. W. R. F.
L9	15-153	S. W. Osc.
L10	15-150	Int. Osc.
L11	15-147	B. C. Osc.
L12	15-144	L. W. Osc.
L13	16-39	I. F. Input
L14	16-40	I. F. Output
L15	16-53	Wave Trap.
T1	11-53	Power Trans. 50-60 Cy. 110 to 260 V.
T2	11-52	Power Trans. 115 V. 60 Cy.
T3	12-18	A. F. Tran. P. P. Input
Sw1	14-53	Wave Switch.
Sw2	14-48	Tone Switch.
Sw3	14-56	Line Voltage Switch
Spkr	43-93	Speaker 850ΩField.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII.
I.F. signal on 6K8G grid thru 0.1 mf.
Dial at 1720 KC. Peak at 456 KC.

	DUMMY *	TRIM ANT.,RF	TRIM OSC.**	PAD OSC.	CHECK
LONG WAVE	200 MMF	320 KC	365 KC	200 KC	320 KC
BROADCAST	200 MMF	1400 KC	1750 KC	600 KC	1400 KC
SHORT WAVE	400 OHMS	22 MC	24.5 MC	---	8 MC

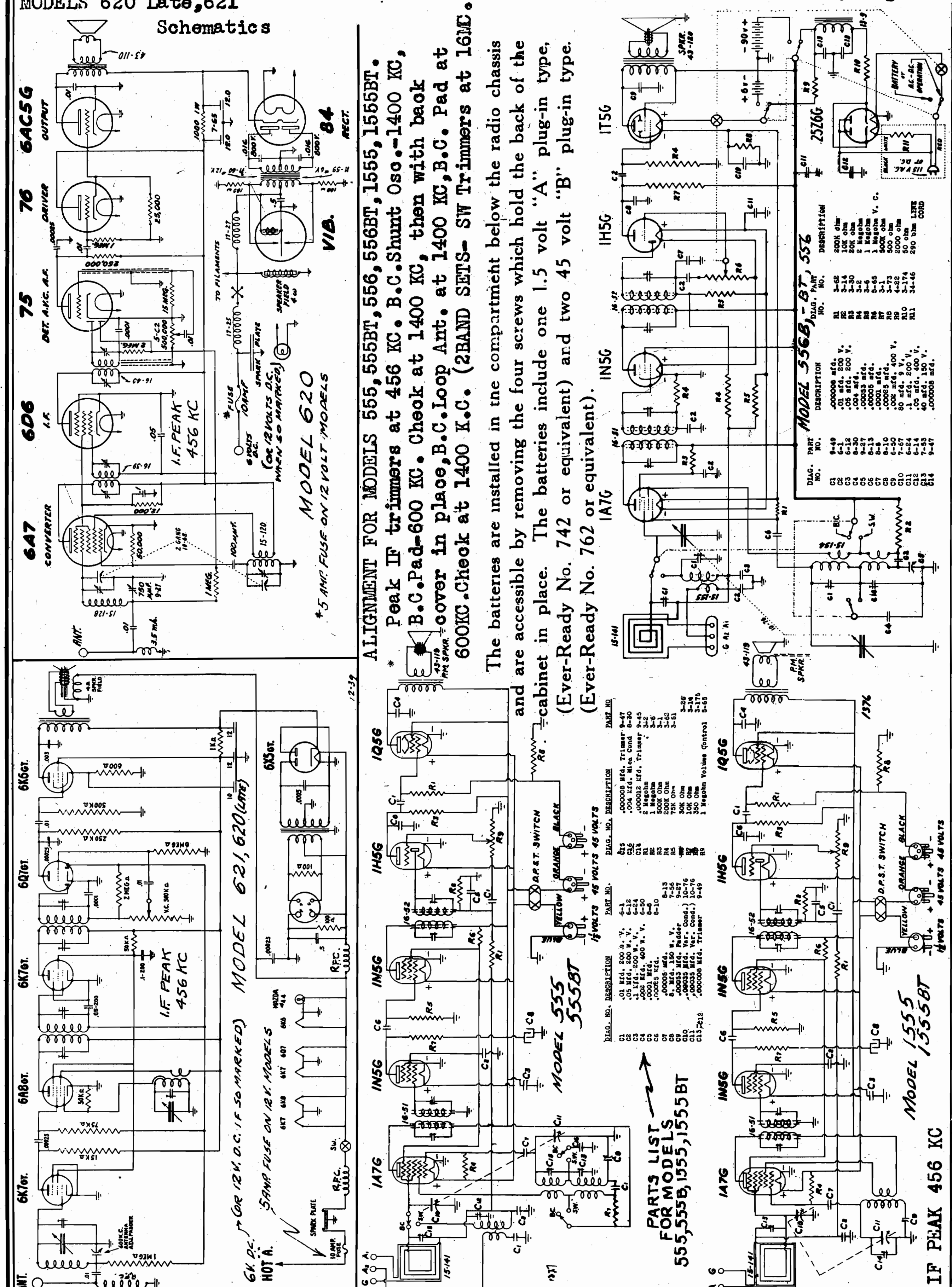
* Use Standard All Wave Dummy if available.
** With variable condenser fully open.

6-'39

MODEL 620 Early
MODELS 620 Late, 621
Schematics

TRAV-LER RADIO & TELEV. CORP

MODELS See Below
Schematics, Alignment



ALIGNMENT FOR MODELS 555, 555BT, 556, 556BT, 1555, 1555BT.

* Peak IF trimmers at 456 KC. B.C. Shunt Osc.-1400 KC, B.C. Pad-600 KC. Check at 1400 KC, then with back cover in place, B.C. Loop Ant. at 1400 KC, B.C. Pad at 600KC. Check at 1400 K.C. (2BAND SETS- SW Trimmers at 16MC.

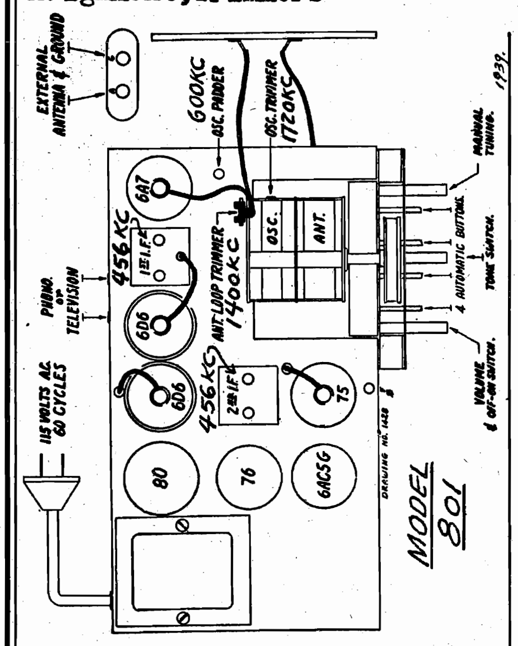
The batteries are installed in the compartment below the radio chassis and are accessible by removing the four screws which hold the back of the cabinet in place. The batteries include one 1.5 volt "A" plug-in type, (Ever-Ready No. 742 or equivalent) and two 45 volt "B" plug-in type. (Ever-Ready No. 762 or equivalent).

MODELS 576,576B
Schematic, Socket
Alignment, Trimmers

TRAV-LER RADIO & TELEV. CORP.

MODEL 720
Schematic

MODEL 801
Schematic
Chassis,
Alignment



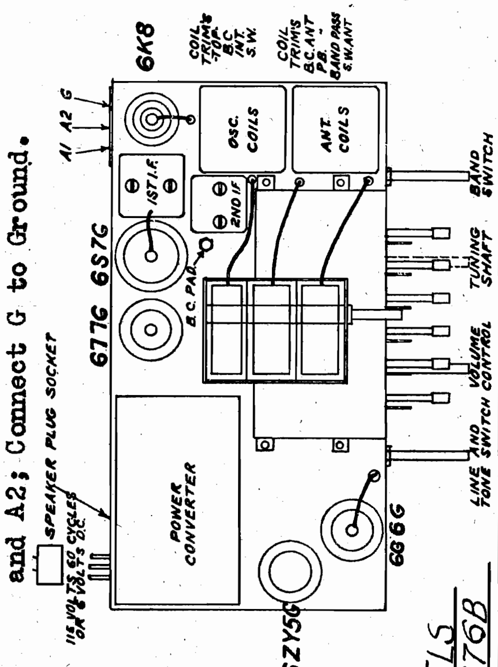
ALIGNMENT FREQUENCIES

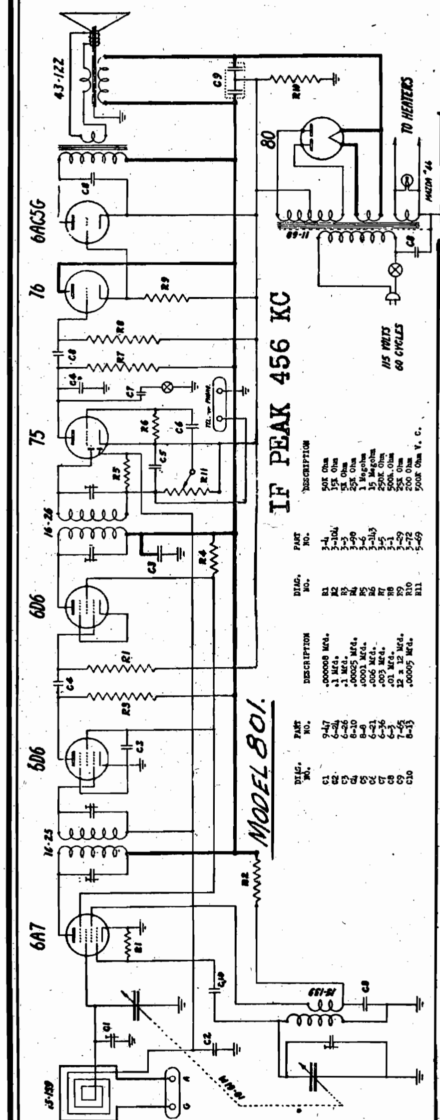
(Use standard all wave dummy antenna if available)

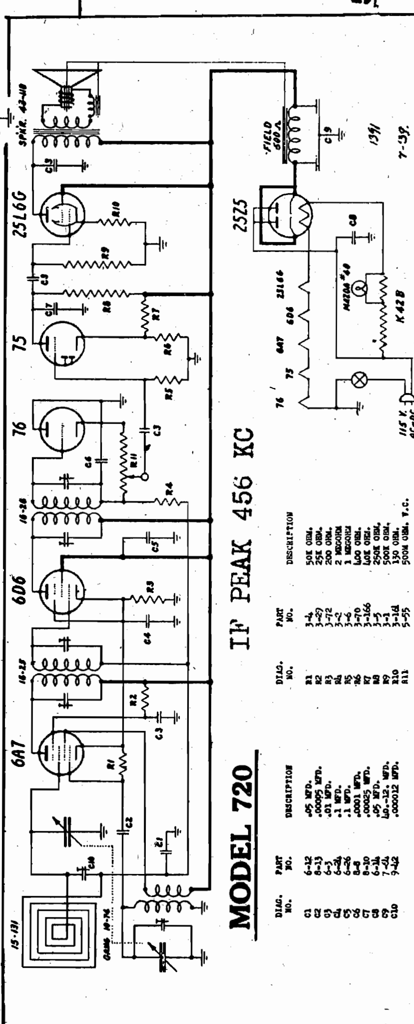
IF - 456 KC. B.C. Osc.-1720 KC, B.C. Band Pass - 1400 KC., B.C. Ant.-1400KC, B.C.Pad-600 KC. Check band at 1400 KC.

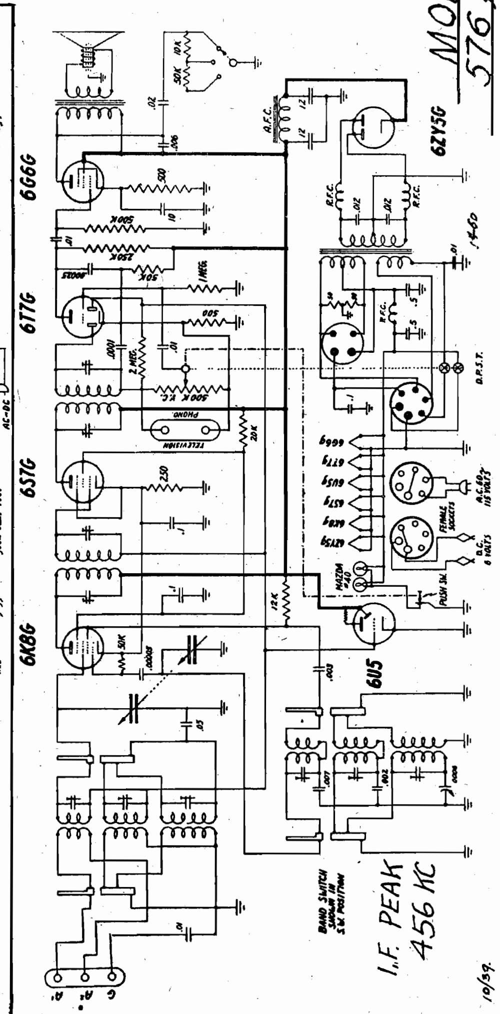
INT.-Osc.-6.6MC, Ant.- 6.0 MC; Check Band at 2.2 MC. S.W. Osc.-24.5 MC; Ant.-22 MC. Check Band at 8 MC.

MODELS 576,576B. S.W. Doublet Antenna:- Connect to A1 and A2; Connect G to Ground.





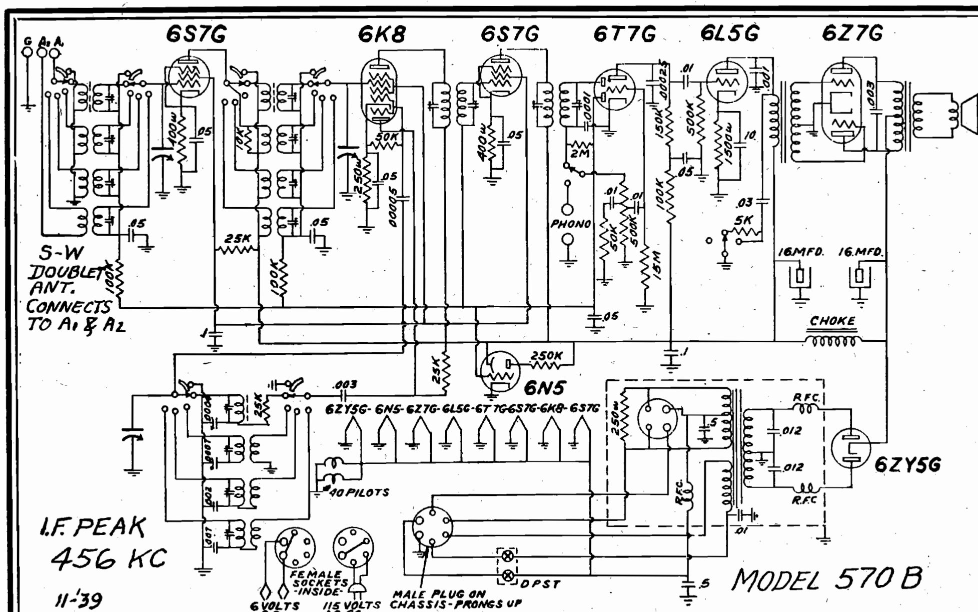




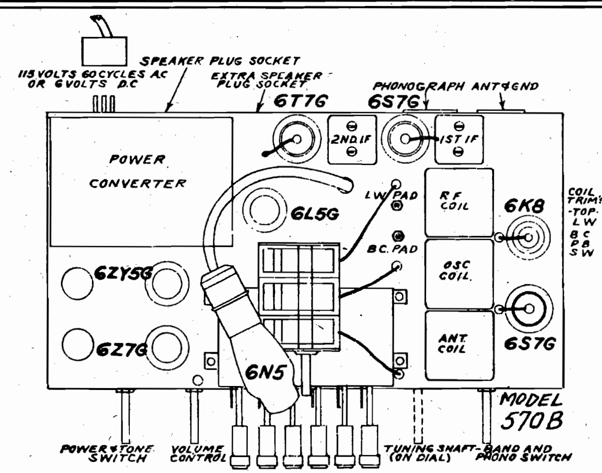
Schematics, Socket Alignment, Trimmers

TRAV-LER RADIO & TELEV. CORP.

MODEL 570B
MODELS 1556, 1556B 1556BT



MODEL 570 B



MODEL 570B

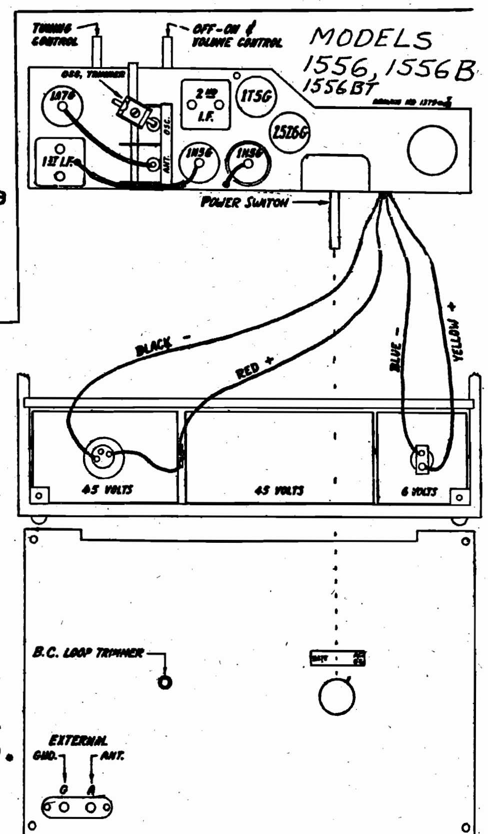
FOR TUNER DATA SEE INDEX

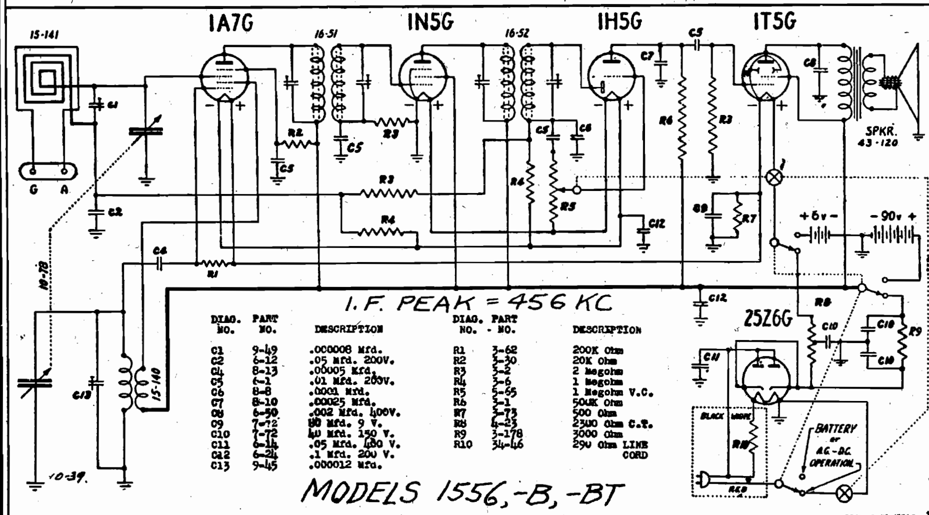
CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

BAND	DUMMY①	ANT., RF	②TRIM	OSC. PAD	OSC. CHECK
LONG WAVE	200 MMF	320 KC	362 KC	200 KC	320 KC
BROADCAST	200 MMF	1400 KC	1720 KC	600 KC	1400 KC
INTERMEDIATE	400 OHMS	6 MC	6.7 MC	---	2.2 MC
SHORT WAVE	400 OHMS	22 MC	24.5 MC	---	8 MC

I.F. signal on 6K8 grid thru 0.1 mf. Dial at 1720 KC. Peak at 456 KC.

① Use Standard All Wave Dummy if available.
② With variable condenser fully open.





I.F. PEAK = 456 KC

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	9-49	.000008 Mfd.	R1	3-62	200K Ohm
C2	6-12	.05 Mfd. 200V.	R2	3-30	20K Ohm
C4	8-13	.00005 Mfd.	R3	3-2	2 Megohm
C5	6-1	.01 Mfd. 200V.	R4	3-6	1 Megohm
C6	8-8	.0001 Mfd.	R5	5-65	1 Megohm V.C.
C7	8-10	.00025 Mfd.	R6	3-1	500K Ohm
C8	6-50	.002 Mfd. 400V.	R7	3-73	500 Ohm
C9	7-72	80 Mfd. 9 V.	R8	4-23	2300 Ohm C.T.
C10	7-72	40 Mfd. 150 V.	R9	3-178	3000 Ohm
C11	6-14	.05 Mfd. 400 V.	R10	34-46	290 Ohm LINE CORD
C12	6-24	.1 Mfd. 200 V.			
C13	9-45	.000012 Mfd.			

MODELS 1556, -B, -BT

ALIGNMENT

I.F.-Dial at 1500 KC. Generator leads thru 0.1 mf to 1A7G grid and to chassis. Peak at 456 KC.

R.F.-Generator leads as above. Trim osc. at 1400 KC. Fasten back cover; Generator loosely coupled, trim loop for max. at 1400.

MODELS 570B, 576
576B
Conversion Data
MODELS 620, 621
Alignment, Tuner

TRAV-LER RADIO & TELEV. CORP.

MODELS 620, 621

ANTENNA CONNECTION

The shielded antenna lead supplied with the radio is plugged into the receptacle provided in the underside of the radio. The other end is connected to the lead from the antenna and taped so the connection cannot touch the cable shield or any metal part of the car. If the automobile has a built-in antenna, the lead should be found behind the dash, extending from the right or left-hand corner post. It is important that this lead be cut and connected to the shielded set lead as close to the corner post as possible, to eliminate antenna pickup of motor noise.

On cars where it is necessary to install an antenna, a "fish-pole" type, an "over-the-roof" type, or a "under-the-running board" type, may be used. Two antennas, one mounted under each running board, are recommended for the best reception, as the noise on the radio will increase as the size of the antenna decreases.

The lead from the antenna should be shielded, direct, and as short as is practical. It should not be twisted around any part of the car, and should not lead thru the motor compartment. All connections should be clean, tight, **soldered**, and insulated with tape. The antenna must never touch any part of the car.

ANTENNA MATCHING ADJUSTMENT

As the sizes and types of antennas vary considerably, it is necessary to adjust the radio to "match" the antenna used. To do this, tune in a station, accurately, at roughly 600 kilocycles, reduce the volume of the set, pry out the plug on the underside of the set, insert a screw driver, and turn for maximum output. Replace the plug when this has been accomplished, and the radio is ready to operate efficiently on any station.

MOTOR NOISE ELIMINATION

To eliminate motor noise, a condenser and a suppressor are supplied with the radio. The condenser is mounted on the generator with its lead connected to the terminal of the generator output on the generator side rather than on the battery side. The heavy insulated lead in the center of the distributor cap is pulled out, the suppressor inserted in its place, and the heavy lead inserted in the end of the suppressor.

This, with the antenna installed properly will eliminate motor noise in most cars. In some of the older cars it may be necessary to install a condenser similar to the generator condenser, bolted to the dash or a good ground, with the lead connected to the ammeter with the set battery lead. When a built-in roof antenna is used, a condenser should be connected to the dome light lead where it passes through the right or left hand post to the roof. The condenser should be bolted to grounded metal.

PUSH BUTTON ADJUSTMENT

Six push button station selectors are incorporated in this receiver, and each may be set to select any frequency or station within the range of the set.

To adjust each button, follow these instructions.

1. With the set in operation, tune in any station the push button is to be set for, with the right hand tuning knob.

2. Keep a firm grip on the tuning knob so the station will not be detuned, and turn the push button about one turn to the left to loosen the mechanism. Press the button all the way in and turn it to the right until it is tight.

Repeat these operations with the other five buttons, setting each for a different station. Insert the correct call letter tab into the space provided in the panel just above the push buttons.

TECHNICAL INSTRUCTIONS

A good output meter should be used in all alignment adjustments. This meter should be of the high resistance A.C. type, with a low range scale of 2.5 or 3 volts. The leads are connected across the voice coil terminals of the speaker.

I. F. ALIGNMENT

Set the variable condenser at minimum capacity, (dial pointer at (1) 1560 K.C.). Connect the two leads from a good, modulated signal generator, the ground lead to the radio chassis and the other lead through a .1 mfd. condenser, to the grid cap of the (2) 6A7, with the tube's grid lead still in place.

Connect the leads from a fully charged 6 volt storage battery to the receiver chassis and battery lead, the polarity being reversible.

With the set in operation and the volume control full on, set the signal generator to 456 K.C. and increase its output until the signal is heard in the set's speaker. Starting with the second I. F., adjust the I. F. trimmers for maximum output, decreasing the signal generator output as the receiver output increases.

The generator output in all the alignment adjustments should be adjusted so the meter will read approximately .4 volts continually.

R. F. ALIGNMENT

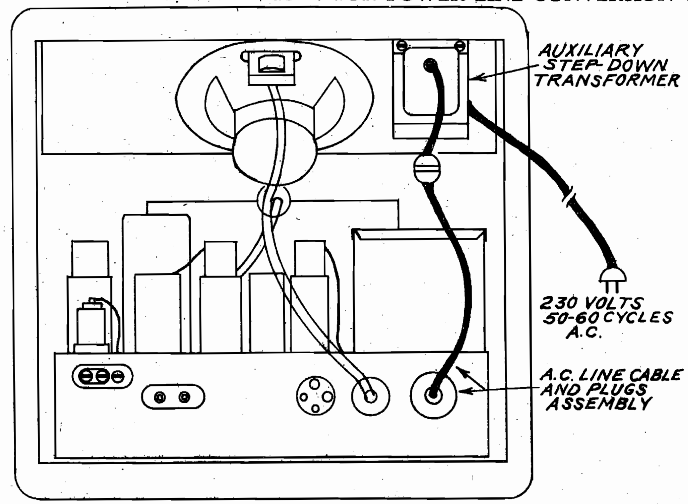
With the variable condenser still full open, set the generator to (1) 1560 K.C. Connect the generator lead to the antenna lead through a .0001 mfd. condenser as dummy antenna. Adjust the oscillator trimmer for maximum output. Set the receiver dial and the generator to 1400 K.C. so the signal comes through, and adjust the antenna trimmer for maximum output.

Set the receiver dial and generator to 600 K.C. and adjust the oscillator padder for maximum output by rocking the variable condenser (with the tuning knob) as the padder is adjusted.

Return the dial and generator setting to 1400 K.C. and check for alignment.

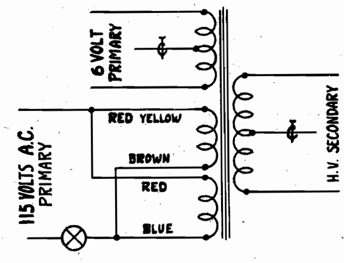
(1) 1550 for 620 (1940), 621.
(2) 6A8GT in " " "

INSTRUCTIONS FOR POWER LINE CONVERSION OF BATTERY MODELS 570B, 576, 576B

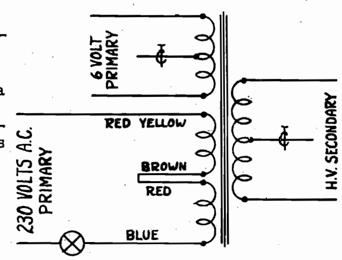


WARNING

These radios must never be used on a D.C. power line at either 115 or 230 volts, or on any A.C. power line Frequency, except 50 or 60 cycles. Any attempt to do so will result in a burned out transformer.



115 VOLT PRIMARY CONNECTIONS



230 VOLT PRIMARY CONNECTIONS

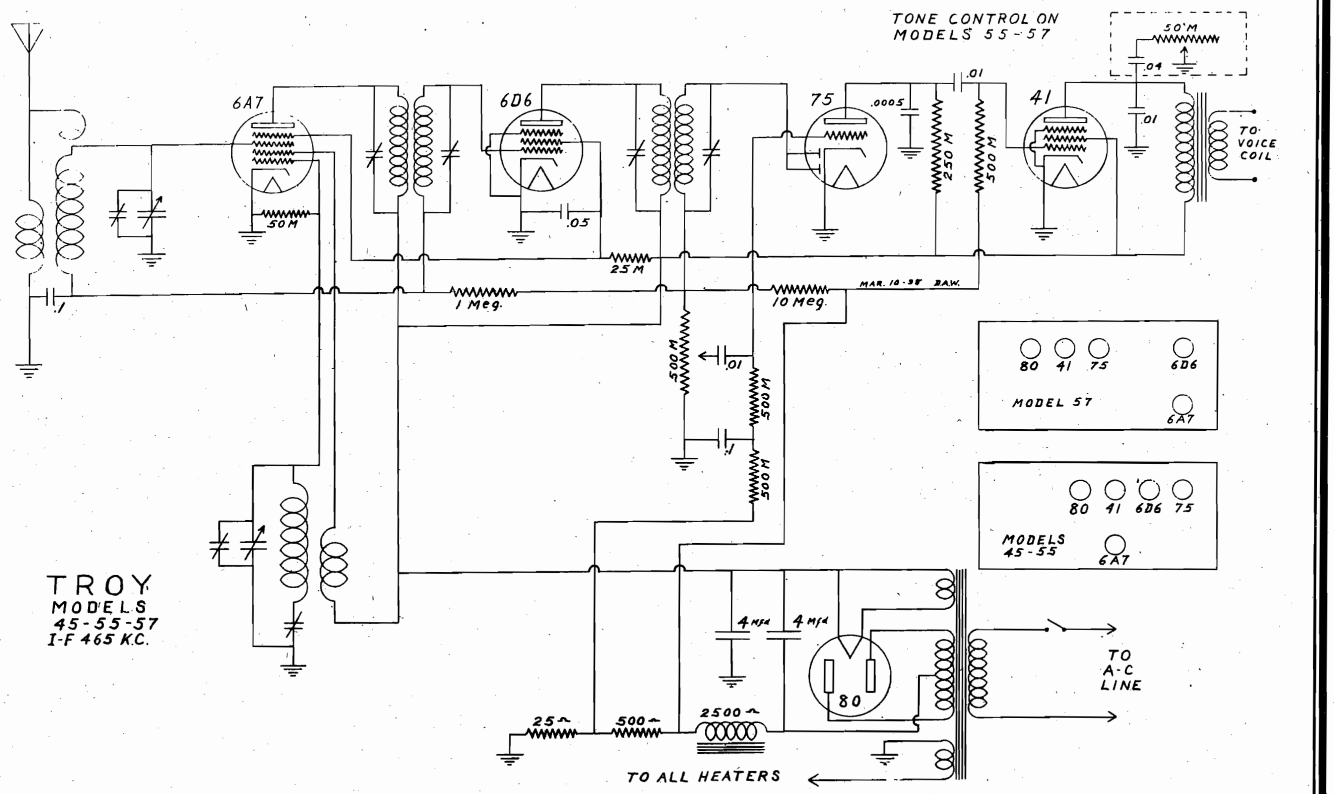
The standard battery model radios, are equipped with a special type power transformer so that these radios may be operated from either a 6 volt storage battery, or a 115 volt, 50 or 60 cycles A.C. power line.

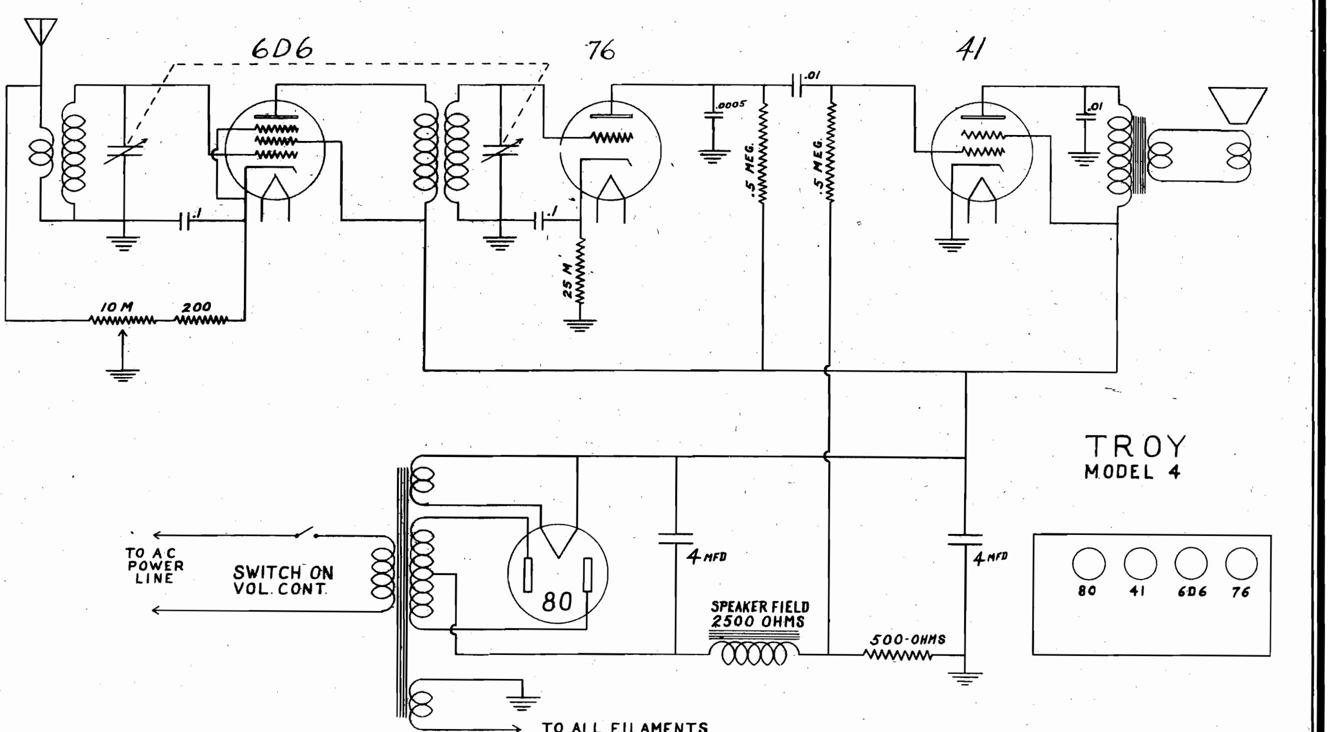
To adapt these radios to operate from a 230 volt, 50 or 60 cycles A.C. power line, a special auxiliary step-down transformer has been developed. This transformer, Part Number 11-62, is used to reduce 230 volts to 115 volts, for normal operation. Under no circumstances may either of these models be used to operate from 230 volts A.C. without this step-down transformer.

The auxiliary transformer is mounted inside the radio cabinet on the speaker board with 1/2 inch wood screws. The cable and plugs assembly supplied with the radio for 115 volts A.C. line operation, is connected to the power plug at the rear of the radio, and the other end plugged into the female receptacle provided on the auxiliary transformer. The male plug on the long transformer cable is then plugged into a 230 volts A.C. outlet.

TROY RADIO & TELEV. CO.

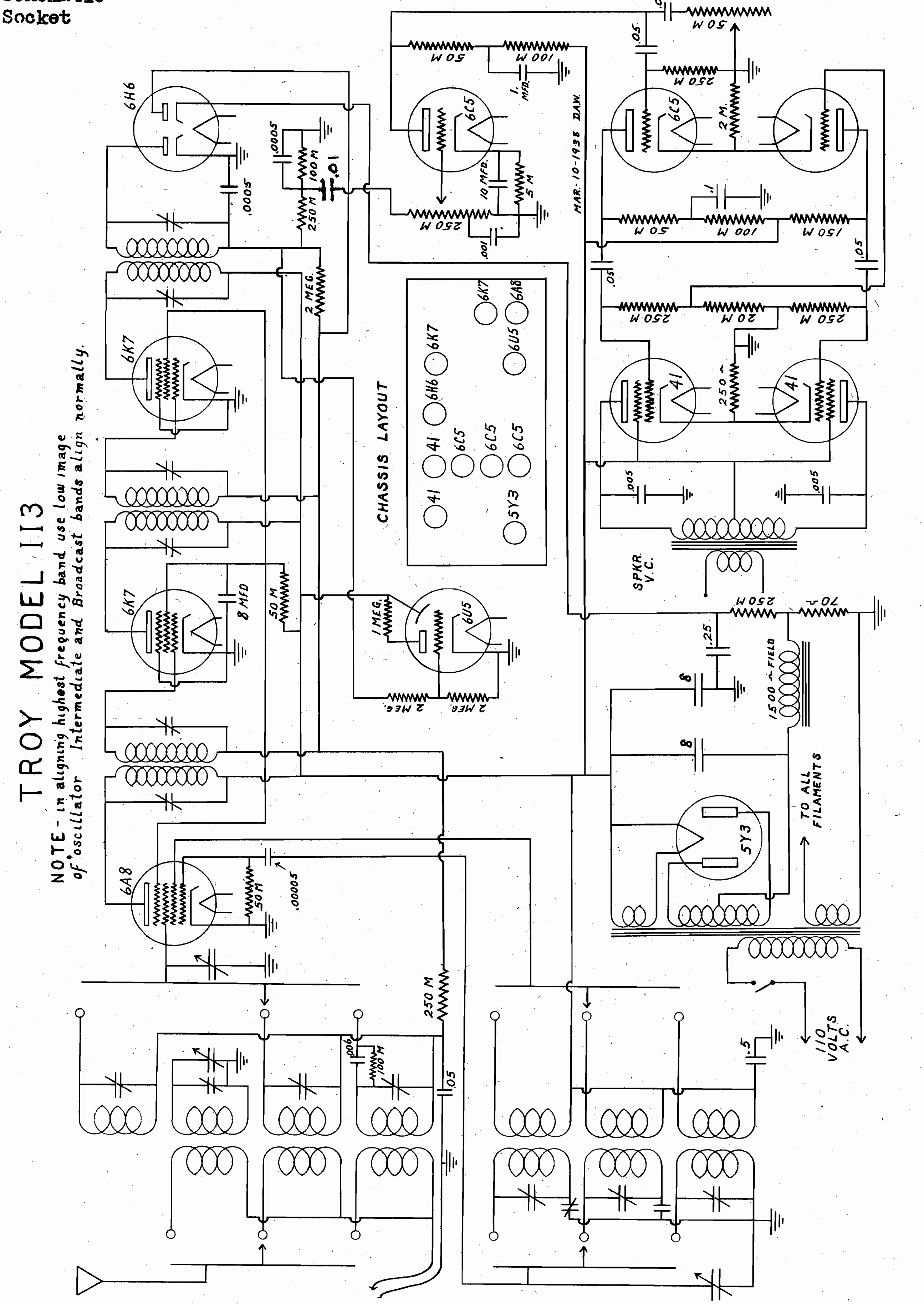
MODEL 4 Revised
MODELS 45,55,57
Revised
Schematics, Socket





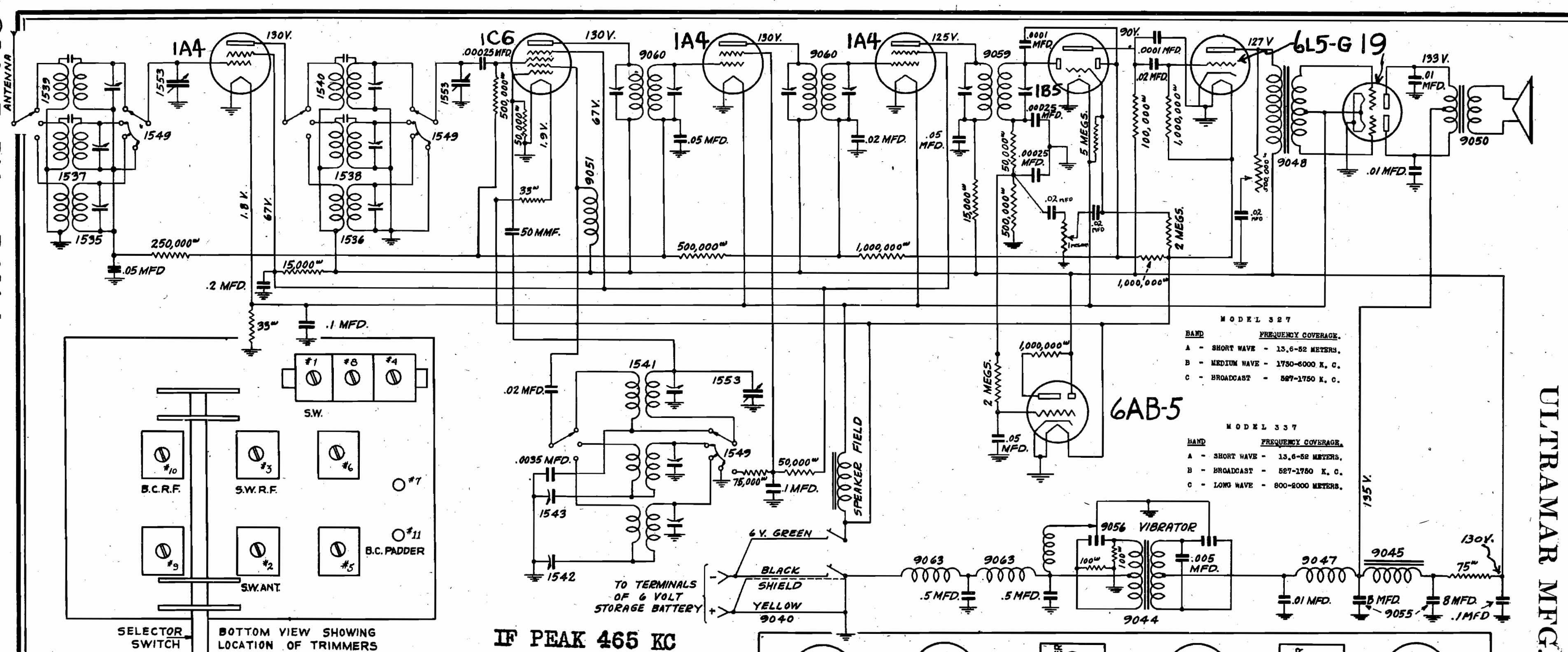
MODEL 113
Schematic
Socket

TROY RADIO & TELEV. CO.

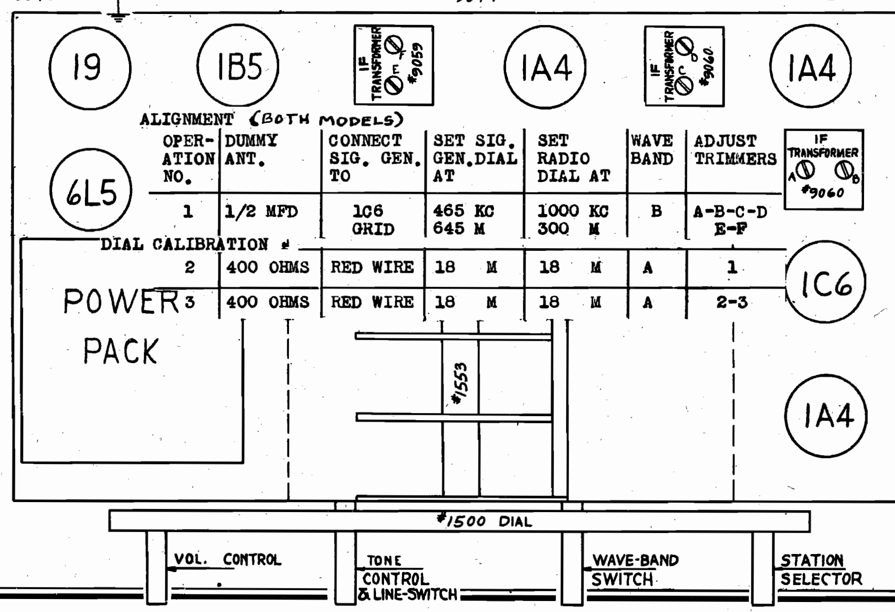


ULTRAMAR MFG. CORP.

MODELS 327, 337
Schematic, Socket, Voltage Alignment, Trimmers



IF PEAK 465 KC



ALIGNMENT (BOTH MODELS)

OPER-ATION NO.	DUMMY ANT.	CONNECT SIG. GEN. TO	SET SIG. GEN. DIAL AT	SET RADIO DIAL AT	WAVE BAND	ADJUST TRIMMERS
1	1/2 MFD	1C6 GRID	465 KC 645 M	1000 KC 300 M	B	A-B-C-D E-F
DIAL CALIBRATION #						
2	400 OHMS	RED WIRE	18 M	18 M	A	1
3	400 OHMS	RED WIRE	18 M	18 M	A	2-3

PROCEDURE MODEL 327

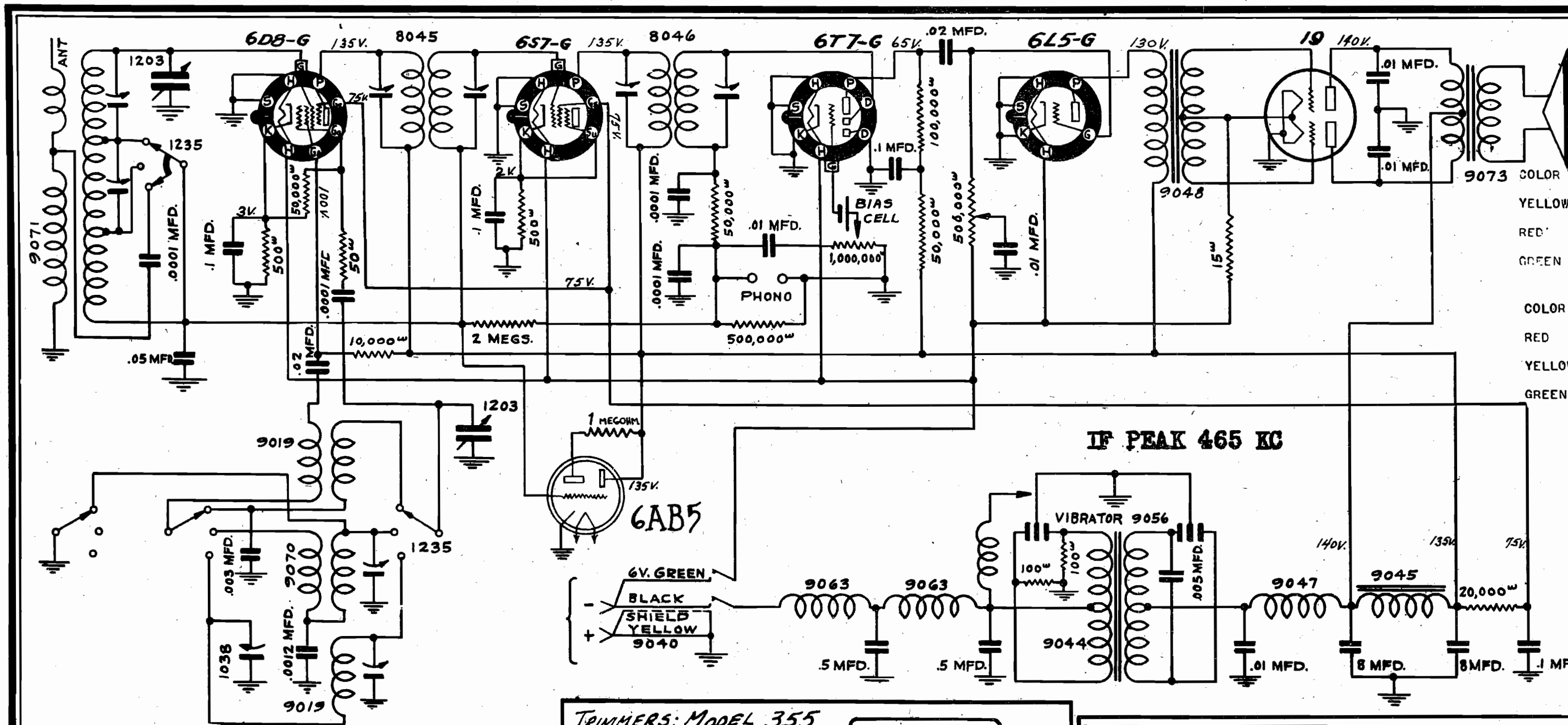
4	400 OHMS	RED WIRE	5000 KC 60 M	B	4-5-6	
5	400 OHMS	RED WIRE	2000 KC 150 M	B	7	ROCK VAR. COND.
6	400 OHMS	RED WIRE	REPEAT OPERATION FOUR			
7	250 MMFD	RED WIRE	1500 KC 200 M	C	8-9-10	
8	250 MMFD	RED WIRE	600 KC 500 M	C	11	ROCK VAR. COND.
9	250 MMFD	RED WIRE	REPEAT OPERATION SEVEN			

PROCEDURE MODEL 337

4	250 MMFD	RED WIRE	1500KC 200 M	B	4-5-10	
5	250 MMFD	RED WIRE	600 KC 500 M	B	11	ROCK VARIABLE CONDENSER
6	250 MMFD	RED WIRE	REPEAT OPERATION FOUR			
7	250 MMFD	RED WIRE	900 M	C	8-9-6	
8	250 MMFD	RED WIRE	1800M	C	7	ROCK VAR. COND.
9	250 MMFD	RED WIRE	REPEAT OPERATION SEVEN			

MODELS 345,355
Schematic,Socket,Voltage
Alignment,Trimmers

ULTRAMAR MFG. CORP.

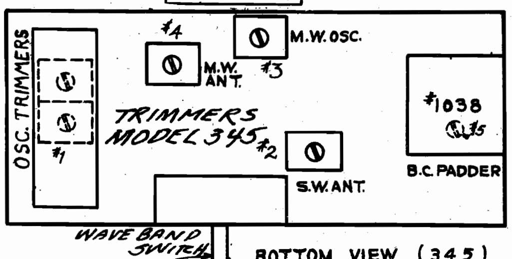


MODEL 345		
COLOR	BAND	FREQUENCY COVERAGE.
YELLOW -	C - -	526-1600 K. C.
RED -	B - -	1680-5700 K. C.
GREEN -	A - -	16.3-52 METERS.

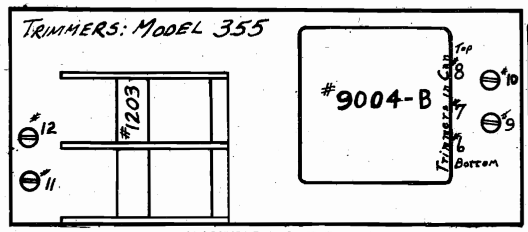
MODEL 355		
COLOR	BAND	FREQUENCY COVERAGE
RED -	C - -	800-2000 METERS
YELLOW -	B - -	187-570 METERS
GREEN -	A - -	16.3-52 METERS.

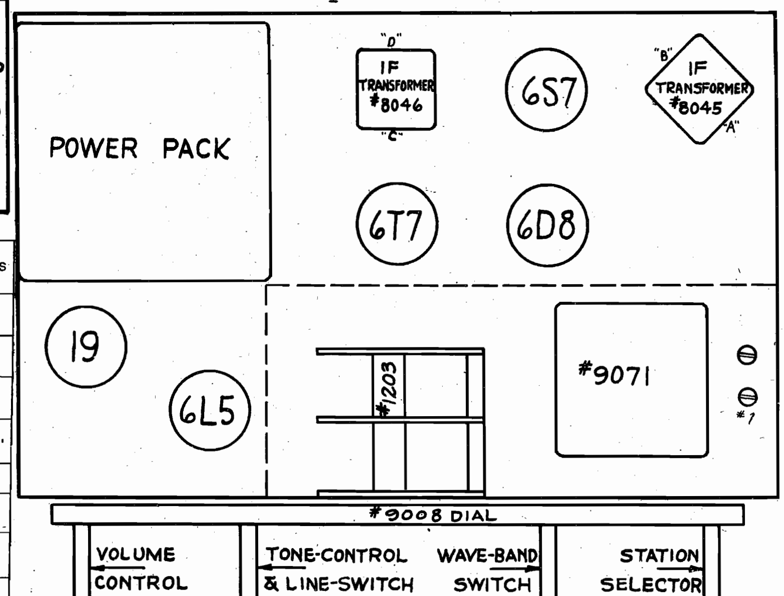
TUBE SYMBOLS

- H - HEATER
- K - CATHODE
- S - SHELL OF TUBE
- D - DIODE PLATE
- P - PLATE
- G - SIGNAL GRID
- GS - SCREEN GRID
- SU - SUPPRESSOR GRID
- GO - OSCILLATOR GRID
- GA - OSCILLATOR ANODE
- T - TARGET



BOTTOM VIEW (345)





ALIGNMENT PROCEDURE MODEL 345

OPER-ATION NO.	DUMMY ANT.	CONNECT SIG.GEN. TO	SIG.GEN. DIAL AT	RADIO DIAL AT	BAND	ADJUST TRIMMERS
1	1/2 MFD.	6D8G GRID	465 KC.	1000 KC.	C YELLOW	A-B-C-D (I.F.)
2	400 OHMS	RED WIRE	20 M.	20 M.	A GREEN	2*
3	400 OHMS	RED WIRE	5000 KC.	5000 KC.	B RED	3-4
4	250 MMFD.	RED WIRE	1400 KC.	1400 KC.	C YELLOW	1
5	250 MMFD.	RED WIRE	600 KC.	600 KC.	C YELLOW	5*
6	250 MMFD.	RED WIRE	REPEAT OPERATION FOUR.			

*ROCK VAR. CONDENSER.

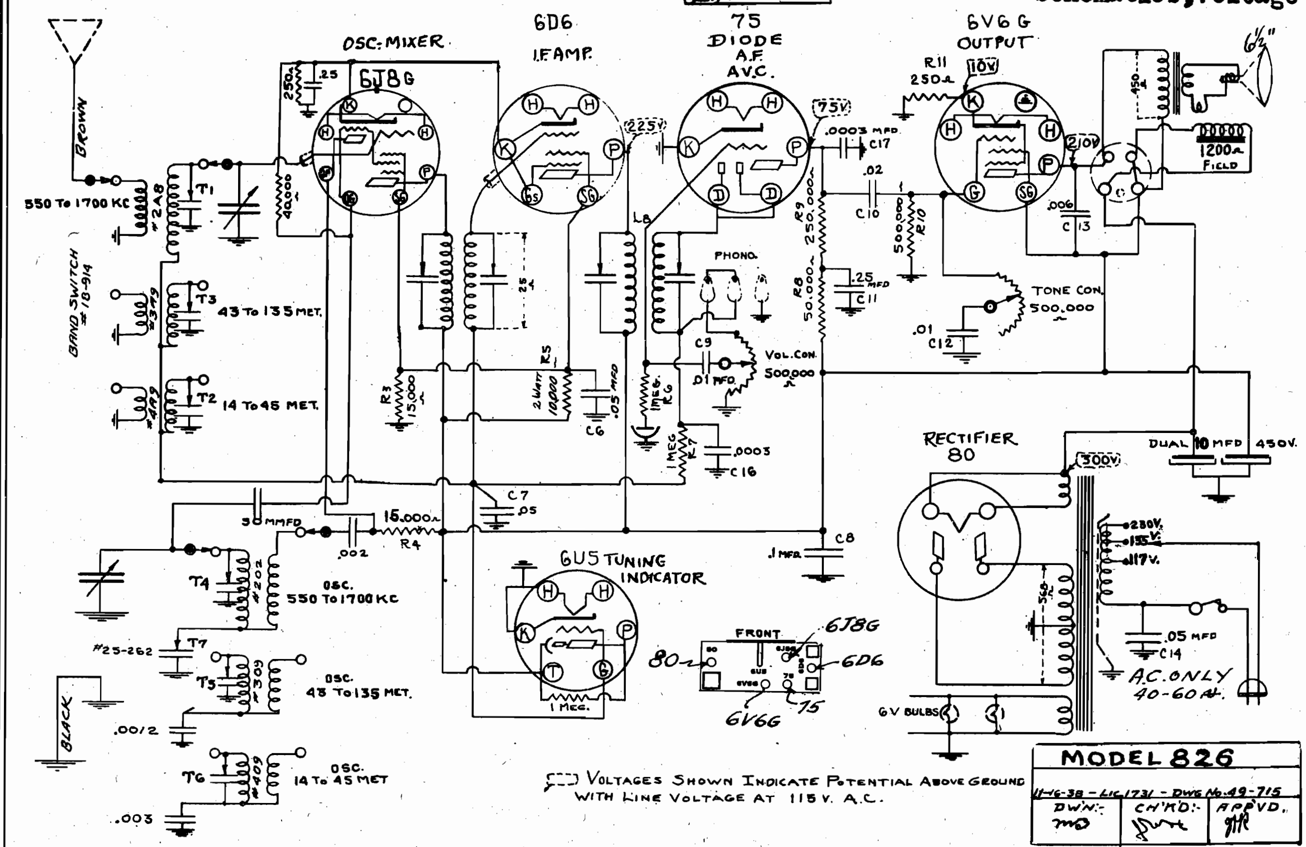
ALIGNMENT PROCEDURE MODEL 355

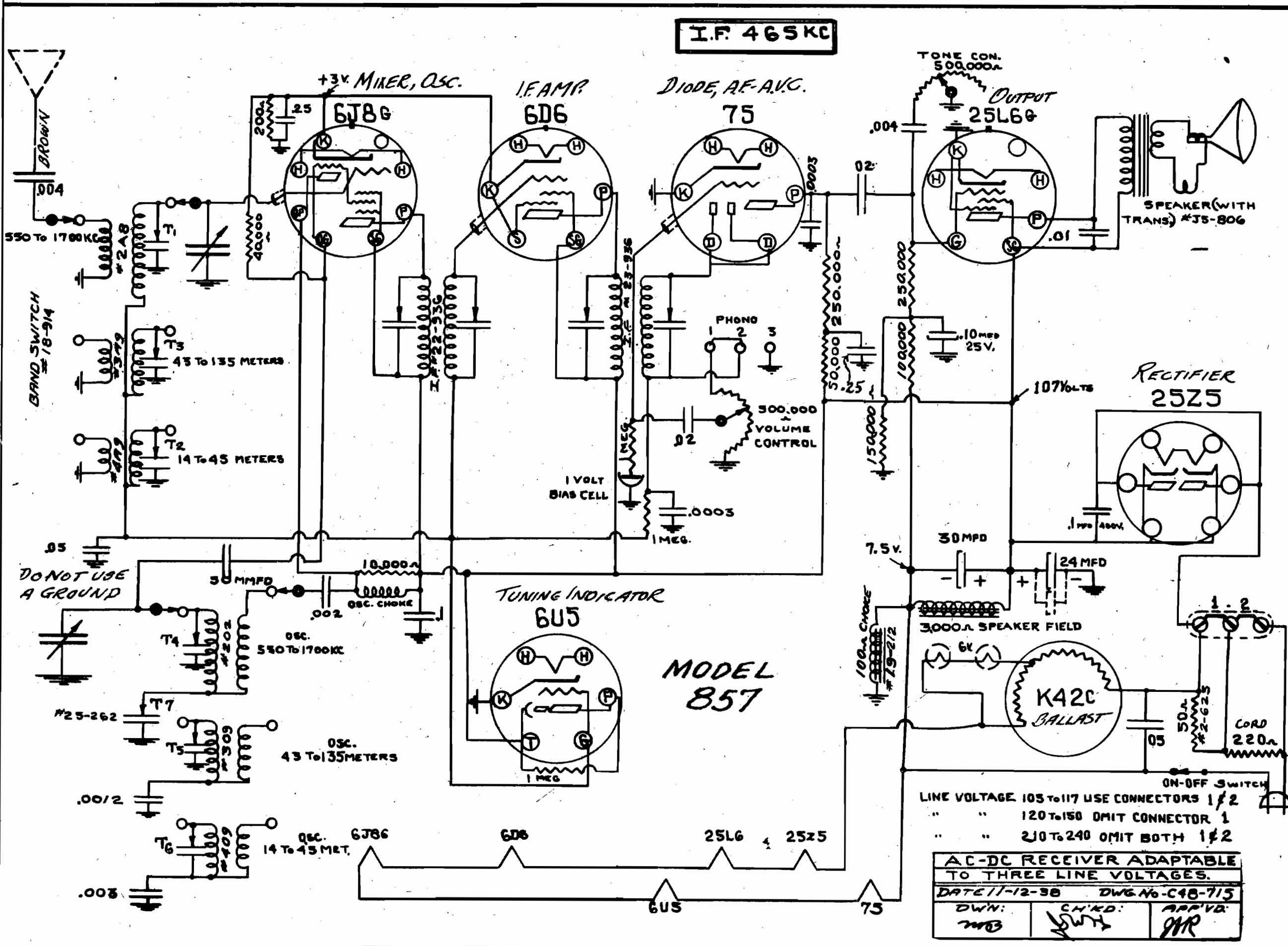
OPER-ATION NO.	DUMMY ANT.	CONNECT SIG.GEN. TO	SIG.GEN. DIAL AT	RADIO DIAL AT	BAND	ADJUST TRIMMERS
1	1/2 MFD.	6D8-G GRID	465 KC.	1000 KC.	B YELLOW	A-B-C-D (I.F.)
2	400 OHMS	RED WIRE	20 M.	20 M.	A GREEN	6*
3	250 MMFD.	RED WIRE	1400 KC.	1400 KC.	B YELLOW	9-7
4	250 MMFD.	RED WIRE	600 KC.	600 KC.	B YELLOW	11*
5	250 MMFD.	RED WIRE	REPEAT OPERATION THREE.			
6	250 MMFD.	RED WIRE	900 M.	900 M.	C RED	10-8
7	250 MMFD.	RED WIRE	1800 M.	1800 M.	C RED	12*
8	250 MMFD.	RED WIRE	REPEAT OPERATION SIX.			

*ROCK VAR. CONDENSER.

ULTRAMAR MFG. CORP.

MODEL 826
MODEL 857
Schematics, Voltage





MODEL 826
MODEL 857
Alignment, Trimmers
Phono. Data

ULTRAMAR MFG. CORP.

MODEL 826

The intermediate frequency stages are tuned to 465 KC and have a sensitivity of about 27 microvolts. (for 50 milliwatt output)

The maximum output is rated at about 5 watts, and 3.5 watts undistorted.

MODEL 857

The intermediate frequency stages are tuned to 465 KC and have a sensitivity of about 27 microvolts. (for 50 milliwatt output)

The maximum output is rated at about 4-1/2 watts, and 2.4 watts undistorted.

The three line voltage ranges are obtained by use of the resistance cord, an extra resistor within the chassis, and the Ballast tube. See schematic diagram. The Ballast tube also provides necessary voltage for the two pilot lights connected in series.

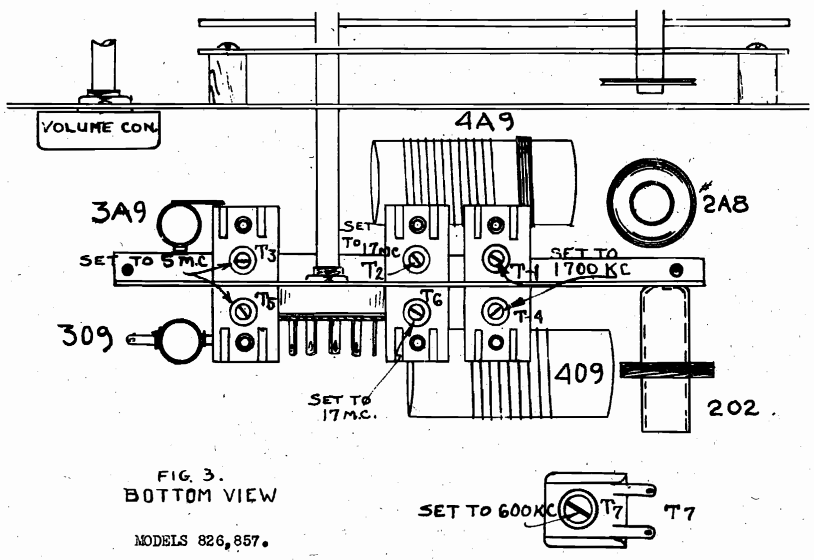


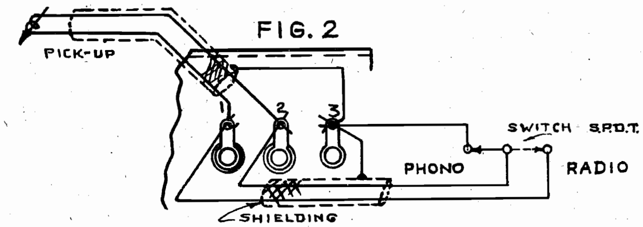
FIG. 3.
BOTTOM VIEW

MODELS 826, 857.

THE ADAPTATION OF THE SET FOR USE WITH PHONOGRAPH
MODELS 826, 857.

Out of the back of the chassis there extends three lugs labeled "Phono" 1-2-3. For phonograph use, the jumper is removed and the pick-up leads from the pick-up are connected to Nos. 1 and 2 terminals, with the overall wire shield grounded to No. 3 terminal. A single pole double throw switch may be used to change from Radio to "Phono". See Fig. 2.

FIG. 2



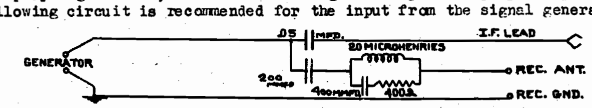
NOTE:

With certain models, the chassis is floated on cushion rubber. In shipment the chassis is tightened on corner wood strips. To release, loosen the four bottom screws, remove strips and let chassis float free.

ALIGNMENT MODELS 826, 857.

No change should be made with the I.F. or R.F. adjustments unless it is certain that such adjustments are necessary.

The following instructions are given with the assumption that the service station has the proper generator, means of measuring the output and proper input connections. The following circuit is recommended for the input from the signal generator.



See that the dial hand is straight across when the condenser is at full capacity.

After aligning the four trimmers of the IF system to 465 KC, refer to Fig. 3 showing the position of the R.F. trimmer and the frequency to which they are to be adjusted. Although the dial is calibrated in meters, there will be found on the dial extra points representing the frequency in kilocycles corresponding to the trimmer adjustments as shown in Fig. 3.

N O T E S:

Always peak the oscillator circuit first and recheck after the antenna circuit is adjusted.

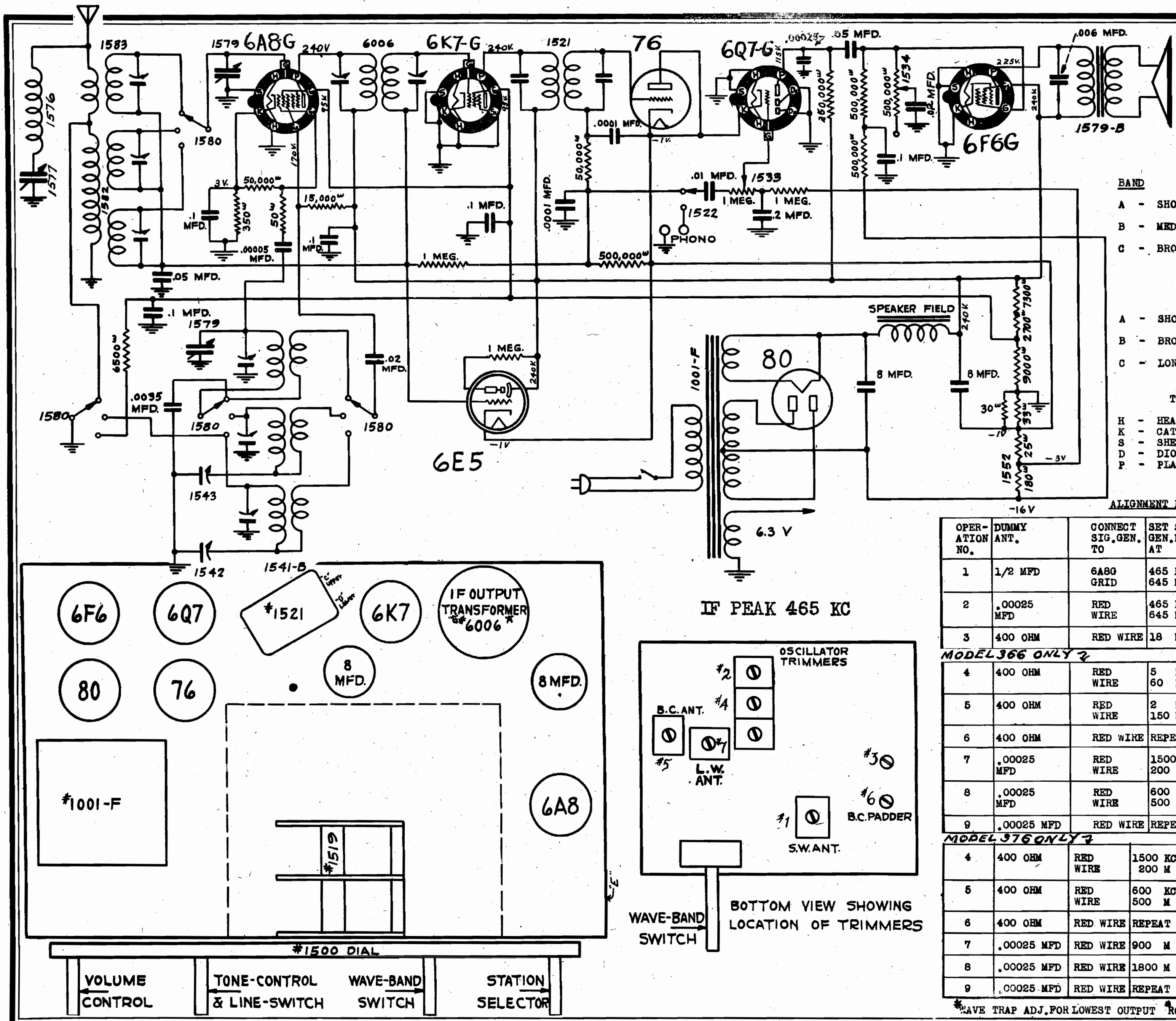
Be certain the alignment is not made at an image frequency.

Seal trimmers after final adjustment.

The normal voltages are shown on the schematic circuit taken from the various points to ground.

ULTRAMAR MFG. CORP.

MODELS 366,376
Schematic,Voltage,Socket Alignment,Trimmers



M O D E L 3 6 6

BAND		FREQUENCY COVERAGE.
A	- SHORT WAVE	- 13.6-52 METERS.
B	- MEDIUM WAVE	- 1730-6000 K. C.
C	- BROADCAST	- 527-1750 K. C.

M O D E L 3 7 6

		FREQUENCY COVERAGE.
A	- SHORT WAVE	- 13.6-52 METERS.
B	- BROADCAST	- 527-1750 K. C.
C	- LONG WAVE	- 800-2000 METERS.

T U B E S Y M B O L S

H - HEATER
K - CATHODE
S - SHELL OF TUBE
D - DIODE PLATE
P - PLATE
G - SIGNAL GRID
GS - SCREEN GRID
SU - SUPPRESSOR GRID
GO - OSCILLATOR GRID
GA - OSCILLATOR ANODE
T - TARGET

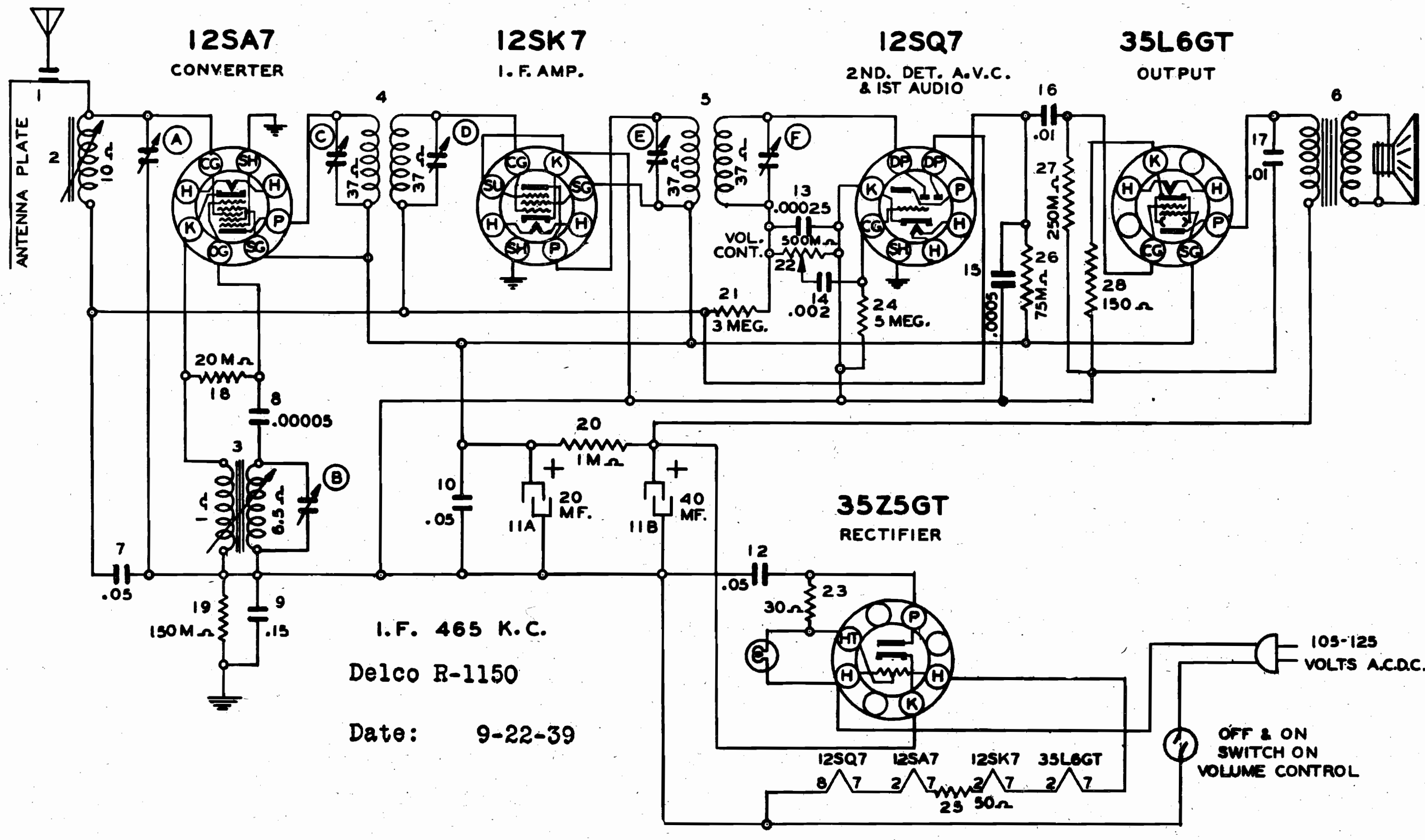
ALIGNMENT PROCEDURE

OPER-ATION NO.	DUMMY ANT.	CONNECT SIG.GEN. TO	SET SIG. GEN.DIAL AT	SET RADIO DIAL AT	WAVE BAND	ADJUST TRIMMERS
1	1/2 MFD	6A8G GRID	465 KC 645 M	1000 KC 300 M	C	A-B-C-D (I.F.)
2	.00025 MFD	RED WIRE	465 KC 645 M	600 KC 500 M	C	E*
3	400 OHM	RED WIRE	18 M	18 M	A	1•
MODEL 366 ONLY						
4	400 OHM	RED WIRE	5 MC 60 M	5 MC 60 M	B	2
5	400 OHM	RED WIRE	2 MC 150 M	2 MC 150 M	B	3•
6	400 OHM	RED WIRE	REPEAT OPERATION FOUR			
7	.00025 MFD	RED WIRE	1500 KC 200 M	1500 KC 200 M	C	4-5
8	.00025 MFD	RED WIRE	600 KC 500 M	600 KC 500 M	C	6•
9	.00025 MFD	RED WIRE	REPEAT OPERATION SEVEN			
MODEL 376 ONLY						
4	400 OHM	RED WIRE	1500 KC 200 M	1500 KC 200 M	B	2-5
5	400 OHM	RED WIRE	600 KC 500 M	600 KC 500 M	B	6•
6	400 OHM	RED WIRE	REPEAT OPERATION FOUR			
7	.00025 MFD	RED WIRE	900 M	900 M	C	4-7
8	.00025 MFD	RED WIRE	1800 M	1800 M	C	3•
9	.00025 MFD	RED WIRE	REPEAT OPERATION SEVEN			

*WAVE TRAP ADJ. FOR LOWEST OUTPUT •ROCK VARIABLE CONDENSER

UNITED MOTORS SERVICE INC.

MODEL R1150
Schematic



I.F. 465 K.C.

Delco R-1150

Date: 9-22-39

GENERAL: The Delco Model R-1150 is a five tube table model AC-DC Superheterodyne receiver with permeability tuning and a 4" P.M. speaker.

ANTENNA: A capacity type plate antenna is used on this radio, which also serves as the back cover plate for the radio. For reception of local or powerful nearby stations no other antenna is usually required. This antenna is not directional, however, noise or weak reception will result if the back of the radio is placed against metal objects. A clip is provided for capacitively coupling an outside antenna to the receiver.

MODEL R1150
Voltage, Socket
Chassis, Trimmers

UNITED MOTORS SERVICE INC.

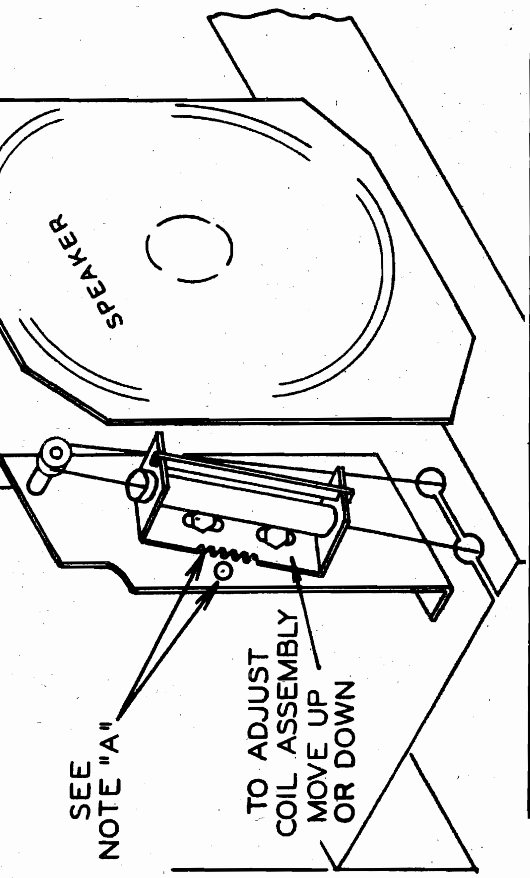
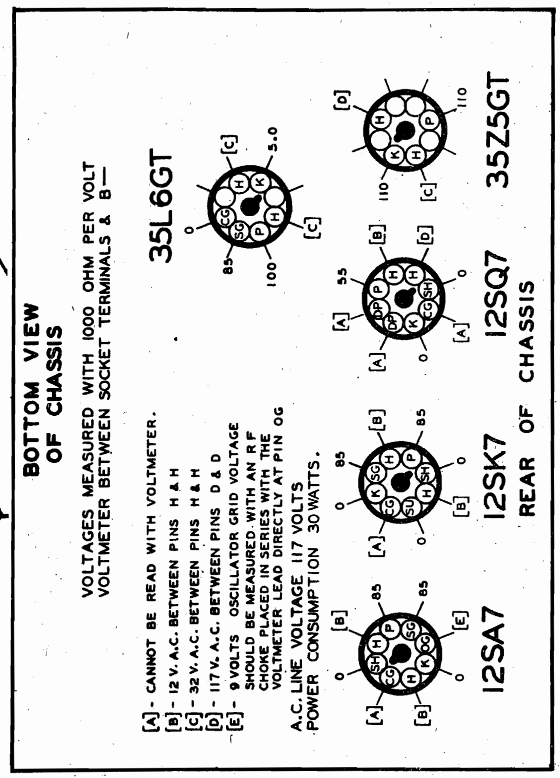


FIG. 2--ANTENNA COIL ADJUSTMENT



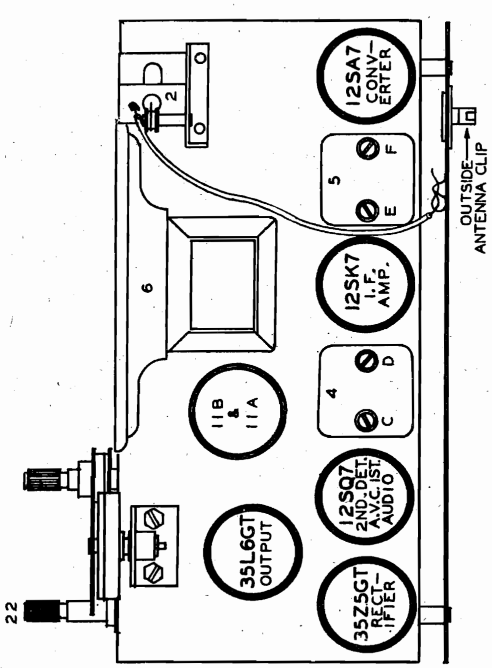


FIG. 4--PARTS LAYOUT--Top View

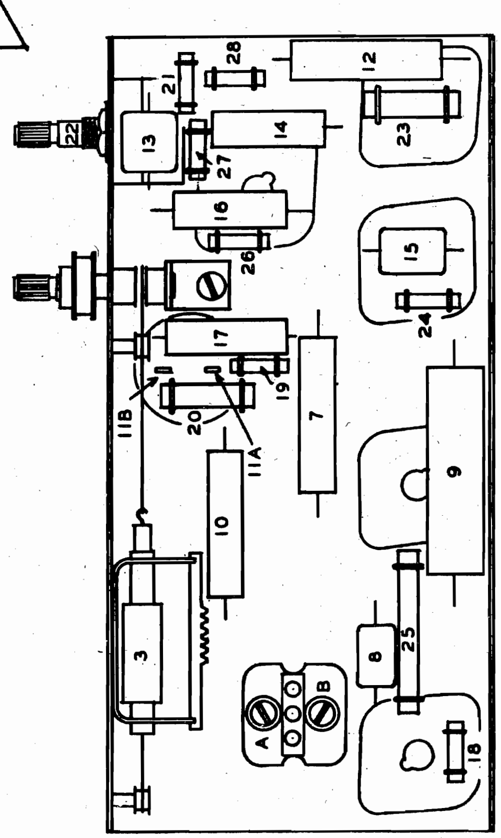


FIG. 5--PARTS LAYOUT--Bottom View

UNITED MOTORS SERVICE INC.

MODEL R1150
Alignment
MODELS R1151,R1152
Voltage,Chassis
Socket,Trimmers

CIRCUIT ALIGNMENT MODEL R1150

If realignment is found necessary, the circuits can be properly adjusted only by using a calibrated test oscillator or a signal generator and an output meter. The chassis should be removed from the cabinet for alignment.

1. Aligning I-F Stages at 465 Kilocycles

   (a) Connect the ground lead of the signal generator to B-.

   (b) Connect the signal lead of the signal generator to the antenna plate of the receiver through a .1 mfd. condenser.

   (c) Connect the output meter from plate to screen grid of the 35L6GT output tube.

   (d) Adjust the trimmers on the 2nd I-F coil and then the 1st I-F coil (Illus. C-D-E-F, Fig. 4) for maximum output.

2. Aligning at 1720 Kilocycles

   (a) Leave the signal generator leads connected as before.

   (b) Rotate the tuning control knob to the high frequency end of the dial. (Iron cores should extend 1 9/32" from edge of windings.)

   (c) Set the signal generator to exactly 1720 K.C.

   (d) Adjust the oscillator trimmer (Illus. B, Fig. 5) for maximum output.

   (e) Disconnect the signal lead of the signal generator from the back plate and connect to the antenna terminal of the receiver through a .0002 mfd. condenser.

   (f) Adjust the antenna trimmer (Illus. A, Fig. 5) for maximum output.

3. Aligning at 1400 Kilocycles

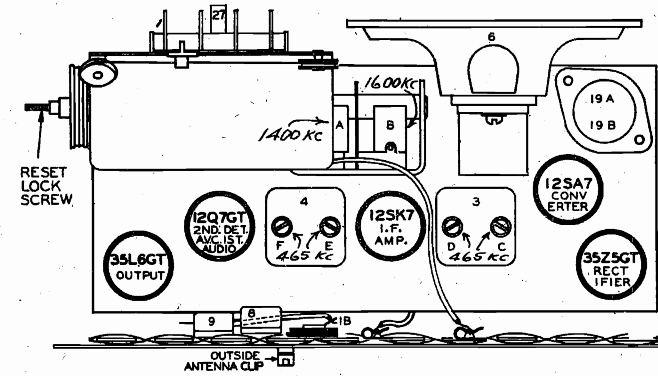
   (a) Set the signal generator to 1400 K.C.

   (b) Rotate the tuning control knob until this signal is tuned in with maximum output.

   (c) Adjust the position of the antenna coil (Fig. 2) until maximum output is obtained.

NOTE: (A.) To adjust the position of the antenna or oscillator coils, insert one edge of the blade of a screwdriver in the hole in the chassis plate and engage the blade in the gear teeth of the coil form (Fig. 2).

   (d) Repeat the adjustment of the antenna trimmer at 1720 K.C. and the antenna coil at 1400 K.C. until no further increase in output can be obtained.



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOL.VIII

FIG. 3--PARTS LAYOUT--Top View

MODELS R1151,R1152

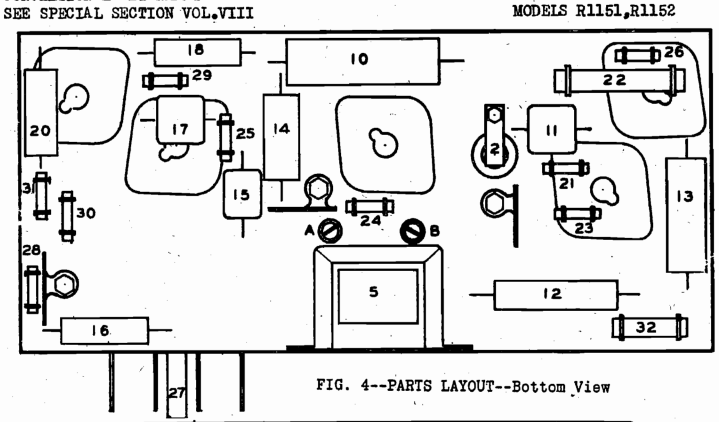
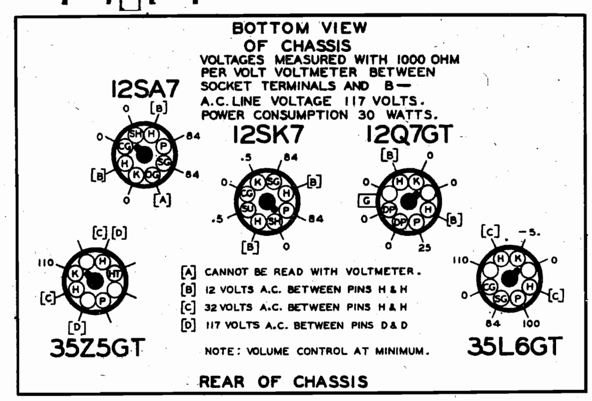
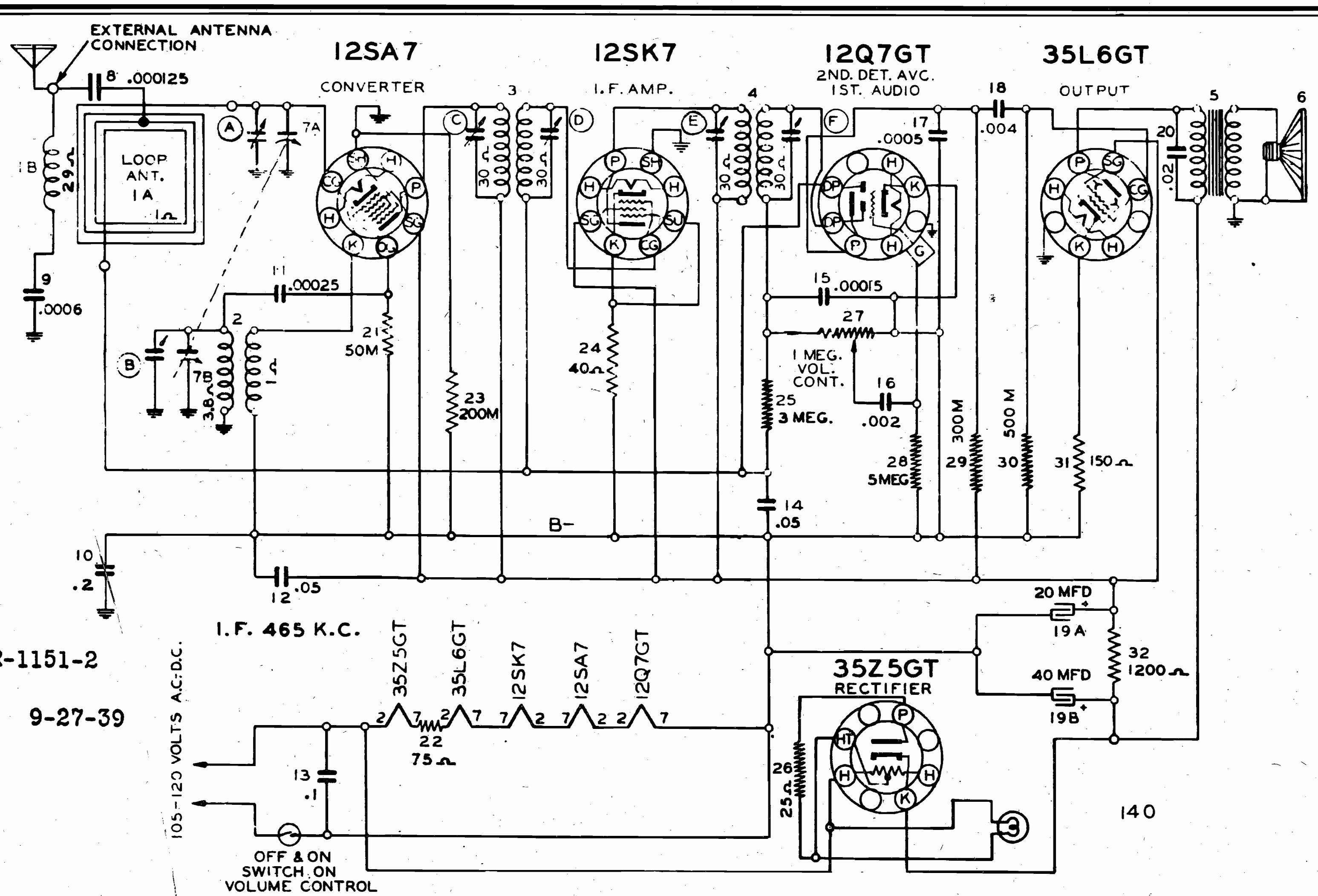


FIG. 4--PARTS LAYOUT--Bottom View



MODELS R1151,1152
Schematic

UNITED MOTORS SERVICE INC.



Delco R-1151-2

Date: 9-27-39

GENERAL: The Delco Models R-1151 and R-1152 are five-tube, AC-DC superheterodyne receivers with mechanical push-button tuning and 5" P.M. speakers.

ANTENNA: A loop antenna is built inside the back cover of these radios. This type of antenna is somewhat directional, therefore, the radio should be tried in different positions to determine the position which will produce the best reception.

MODEL R1153
Schematic

UNITED MOTORS SERVICE INC.

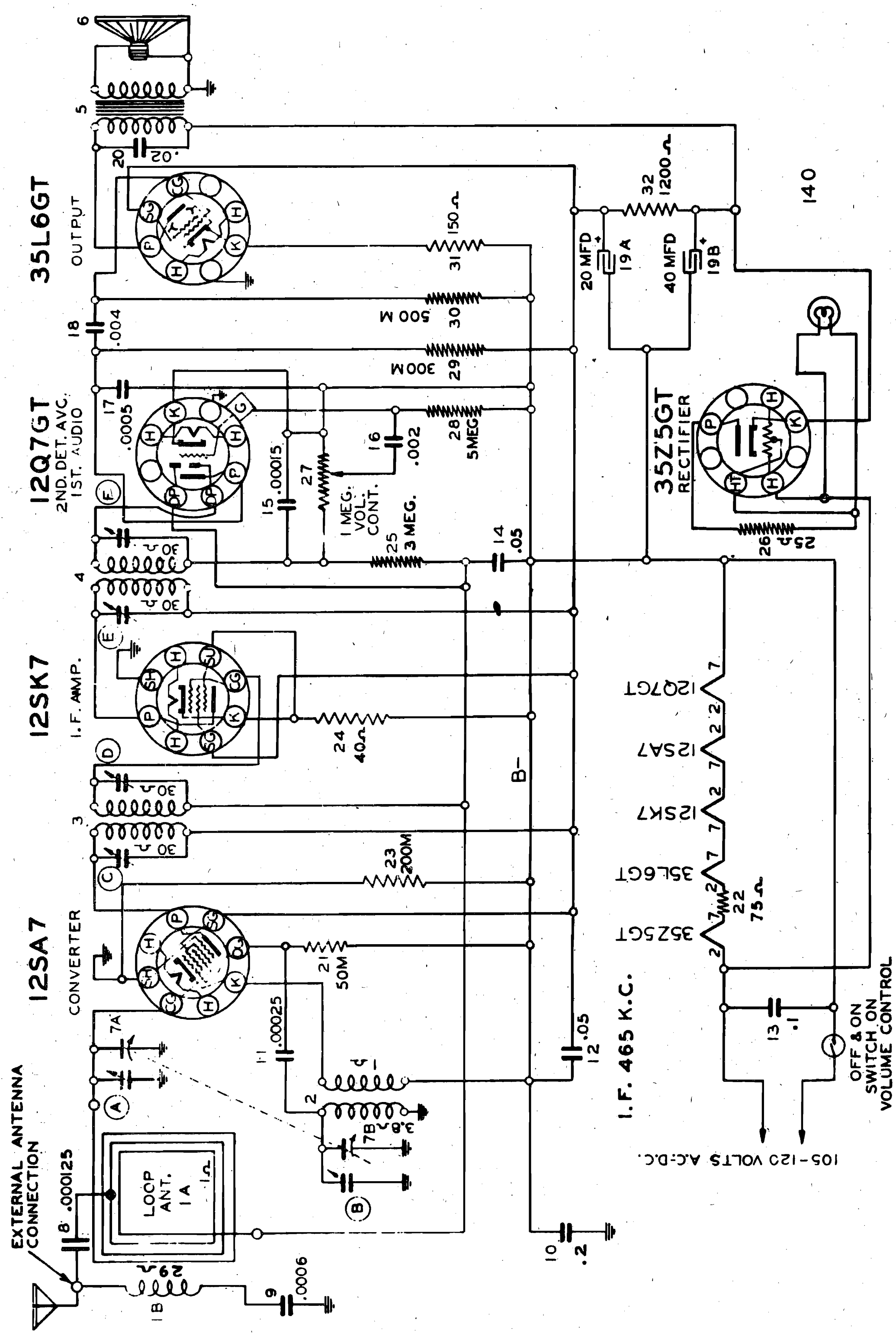


Fig. 2--DELCO MODEL R-1153 CIRCUIT DIAGRAM

Delco R-1153

Date: 9-27-39

MODEL R1153
Voltage, Chassis
Socket, Trimmers
Alignment

UNITED MOTORS SERVICE INC.

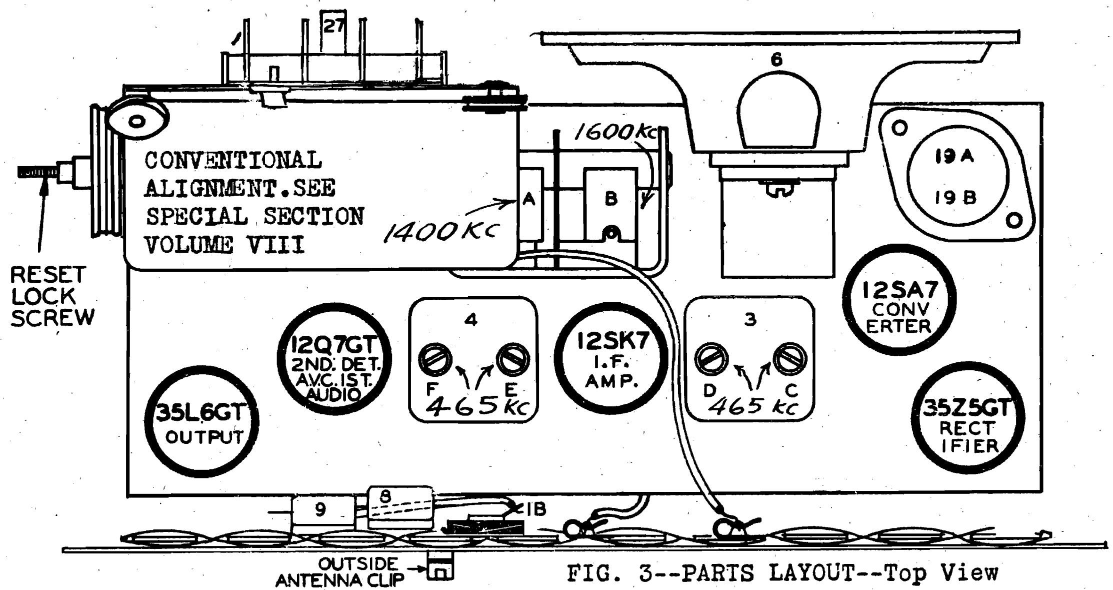


FIG. 3--PARTS LAYOUT--Top View

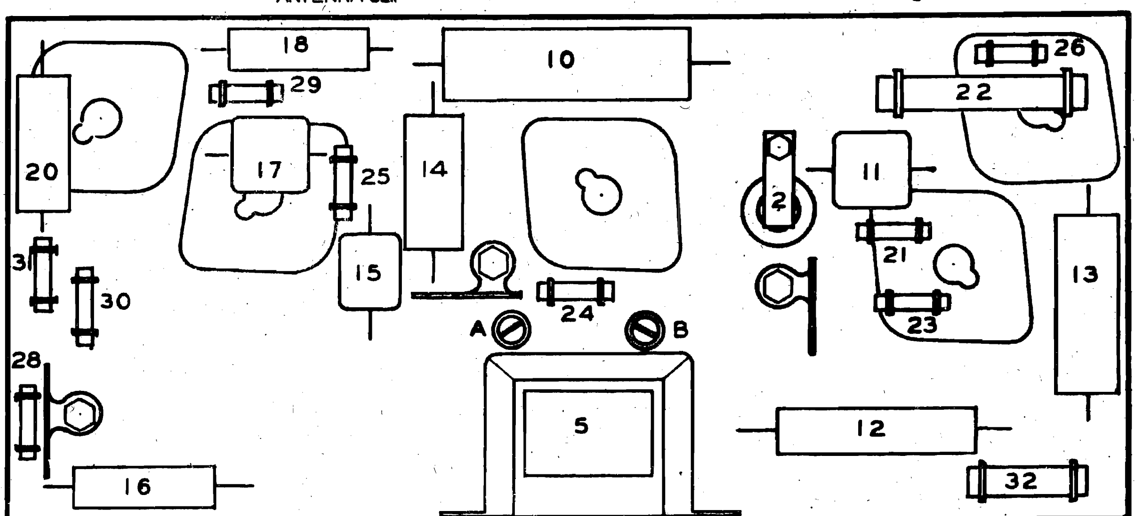
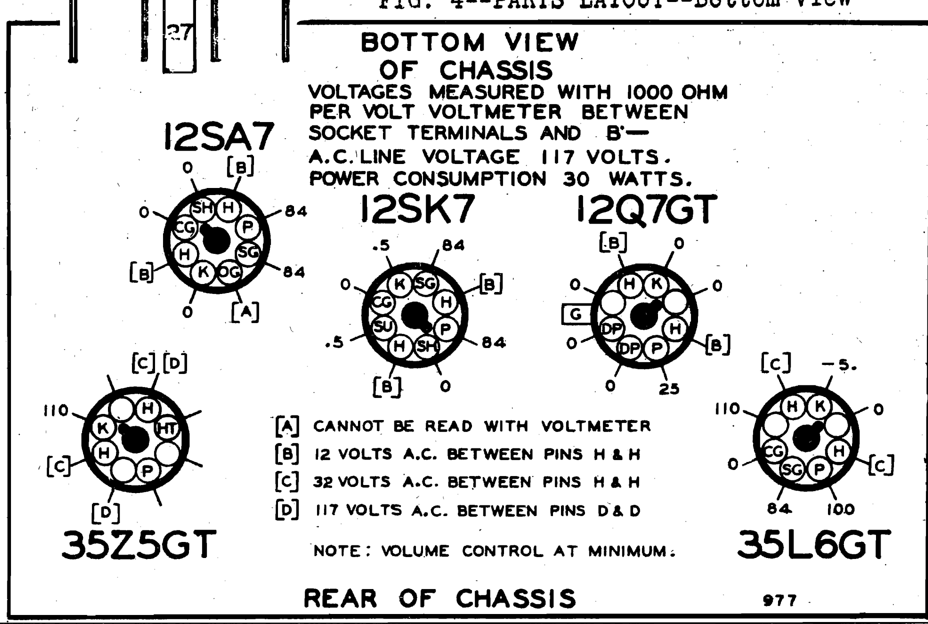


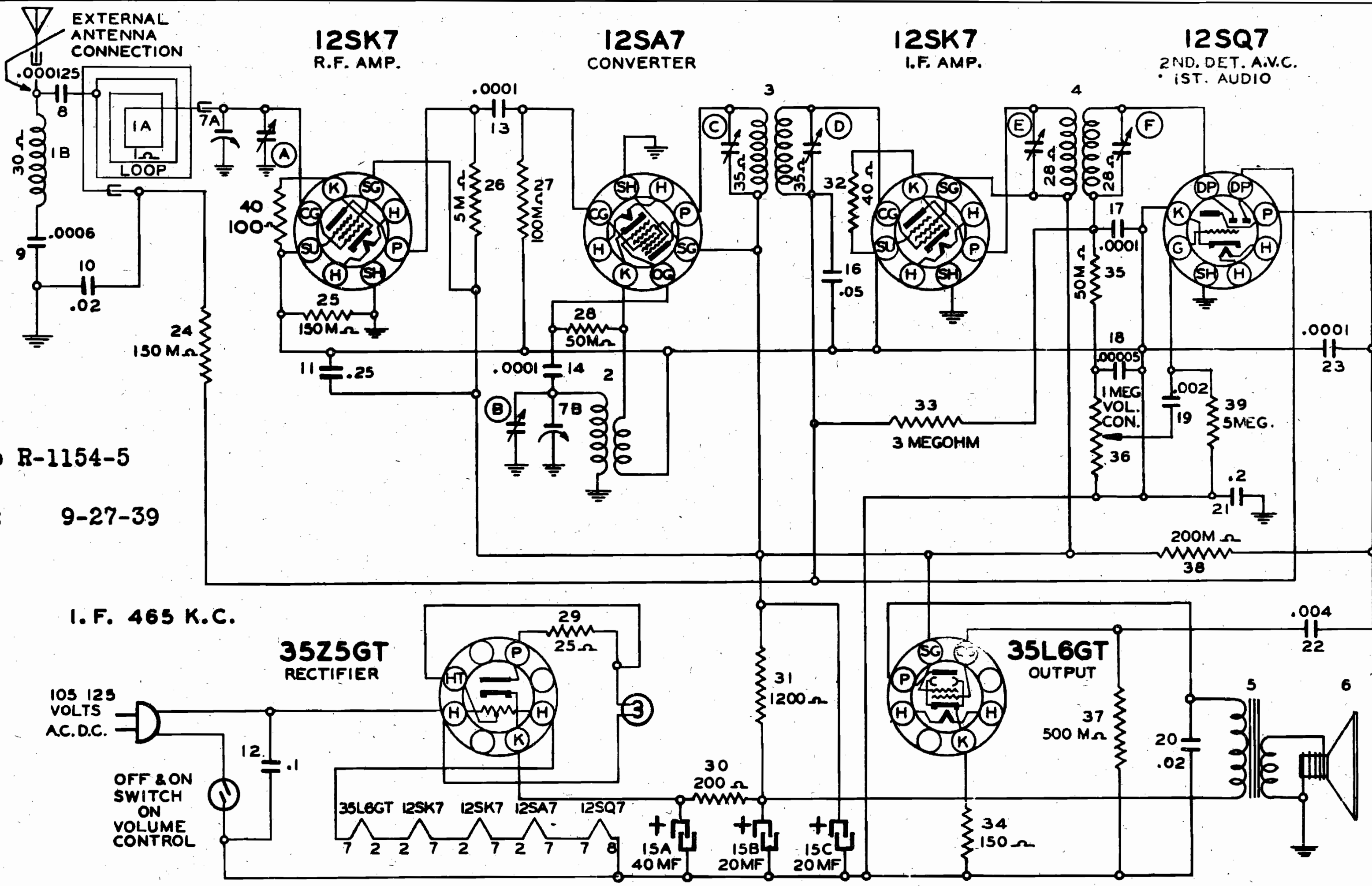
FIG. 4--PARTS LAYOUT--Bottom View



CONVENTIONAL
ALIGNMENT SEE
SPEC. SECTION
VOLUME VIII.

MODELS R1154,R1155
Schematic

UNITED MOTORS SERVICE INC.



Delco R-1154-5

Date: 9-27-39

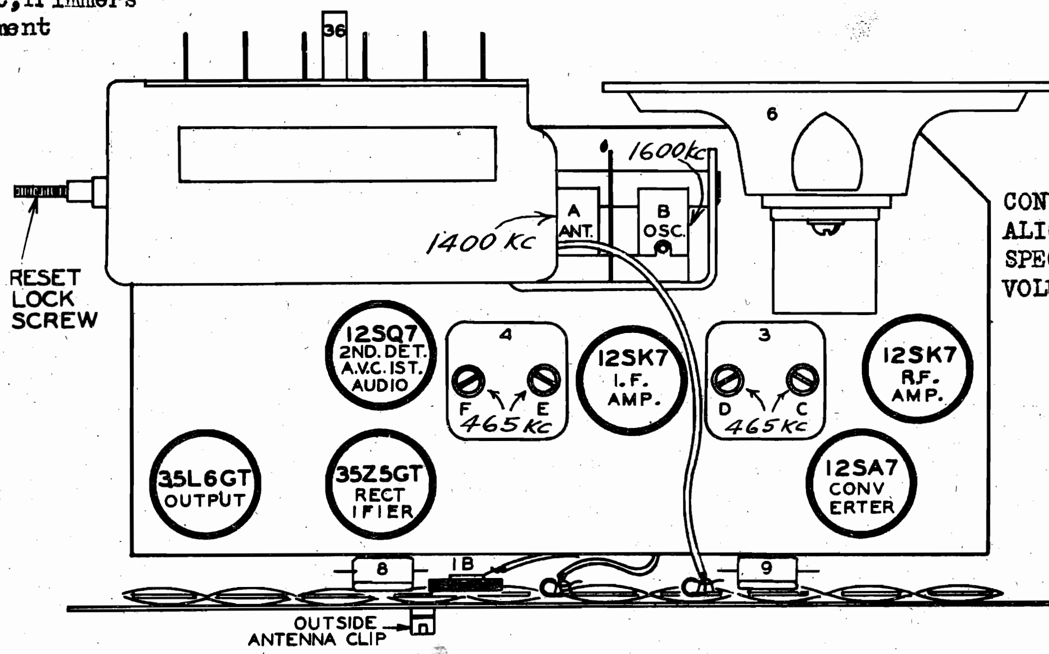
I. F. 465 K.C.

GENERAL: The Delco Models R-1154 and R-1155 are six-tube table models, AC-DC superheterodyne receivers with mechanical push-button tuning built-in loop antennas, and 5" P.M. speakers.

ANTENNA: A loop antenna is built inside the back cover of these radios. This type of antenna is somewhat directional, therefore, the radio should be tried in different positions to determine the position which will produce the best reception.

MODELS R1154,R1155
Voltage,Chassis
Socket,Trimmers
Alignment

UNITED MOTORS SERVICE INC.



CONVENTIONAL ALIGNMENT.SEE SPECIAL SECTION VOLUME VIII

FIG. 3--PARTS LAYOUT--Top View

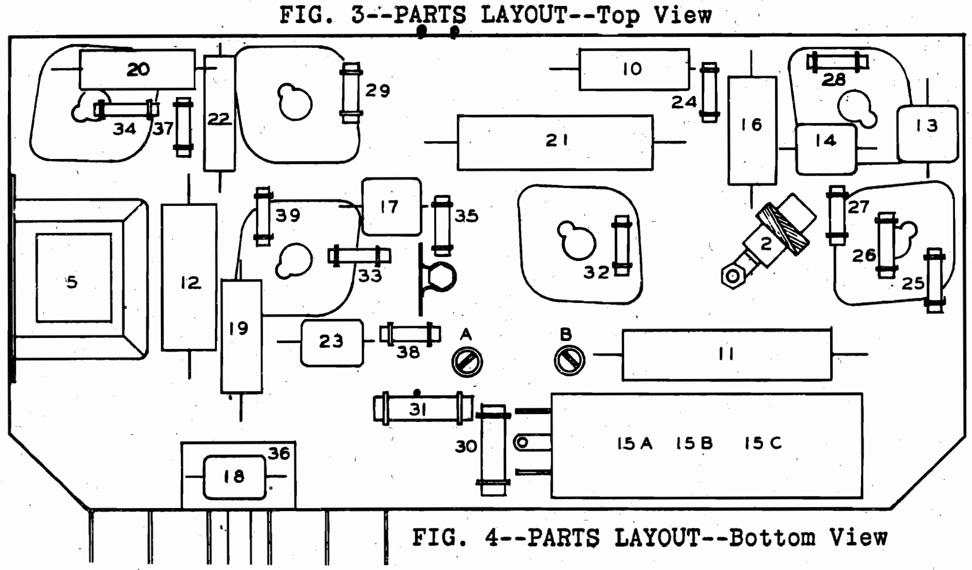
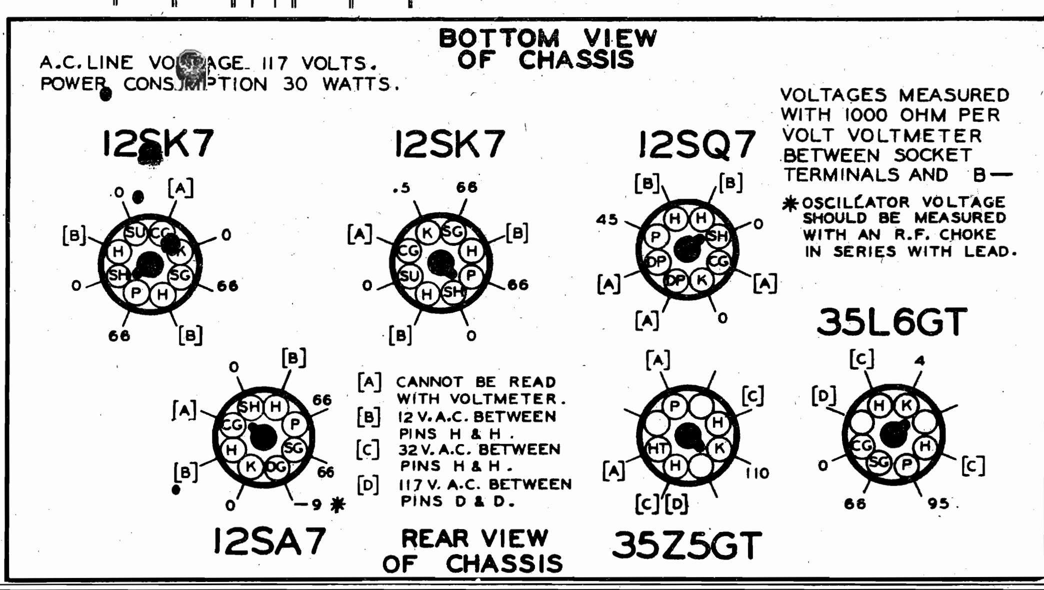
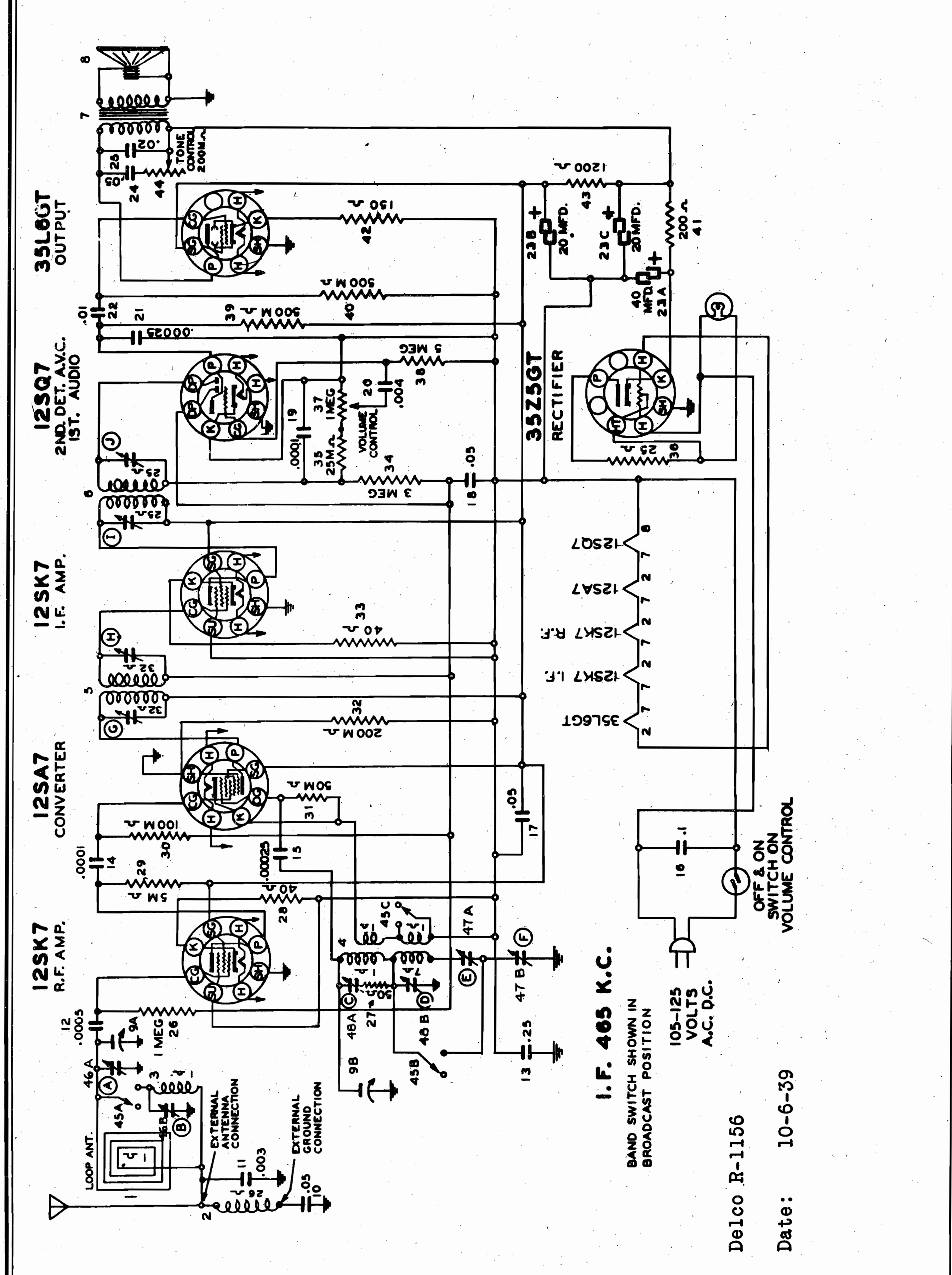


FIG. 4--PARTS LAYOUT--Bottom View



UNITED MOTORS SERVICE INC.

MODEL R1156
Schematic



MODEL R1156
Alignment
Trimmers

UNITED MOTORS SERVICE INC.

1. Aligning I-F Stages at 465 Kilocycles

(a) Connect the ground lead of the signal generator to the B- terminal of the receiver. (Pin #6, 35L6GT tube)

(b) Connect the signal lead of the signal generator to the grid of the 12SK7 I-F tube through a 1. mfd. condenser.

(c) Connect the output meter across the primary of the output transformer.

(d) Leave the loop connected to the radio and held in back of the chassis in the same position and distance from the chassis as when both units are mounted in the cabinet.

(e) Set the signal generator to exactly 465 K.C.

(f) With the band switch in the Broadcast position, the volume control on full and the rotor plates of the condenser gang completely out of mesh, adjust the trimmers on the second I-F coil (Illus. I & J, Fig. 3) for maximum output.

(g) Connect the signal lead of the signal generator to the grid of the 12SA7 tube.

(h) Adjust the trimmers on the first IF coil (Illus. G & H, Fig. 3) for maximum output.

2. Aligning at 4050 Killocycles

(a) Connect the signal lead of the signal generator to the antenna clip of the receiver through a .002 mfd. condenser.

(b) Connect the ground lead of the signal generator to the ground clip of the receiver.

(c) Set the signal generator to exactly 4050 K.C.

(d) With the band switch in the short wave position and the rotor plates of the condenser gang completely out of mesh, adjust the short wave oscillator trimmer (Illus. C, Fig. 5) for maximum output.

3. Aligning at 3500 Kilocycles

(a) Leave the signal generator connected the same as before.

(b) Set the signal generator to 2500 K.C.

(c) Rotate the shaft of the tuning condenser gang until this signal is tuned in with maximum output.

(d) Adjust the short wave antenna trimmer (Illus. B, Fig. 5) for maximum output.

4. Aligning at 1650 Kilocycles

(a) Set the signal generator to 1650 K.C.

(b) Rotate the shaft of the tuning condenser gang until this signal is tuned in with maximum output.

(c) Adjust the short wave oscillator series pad (Illus. F, Fig. 5) while rocking the rotor plates of the condenser gang back and forth through the signal until maximum output is obtained.

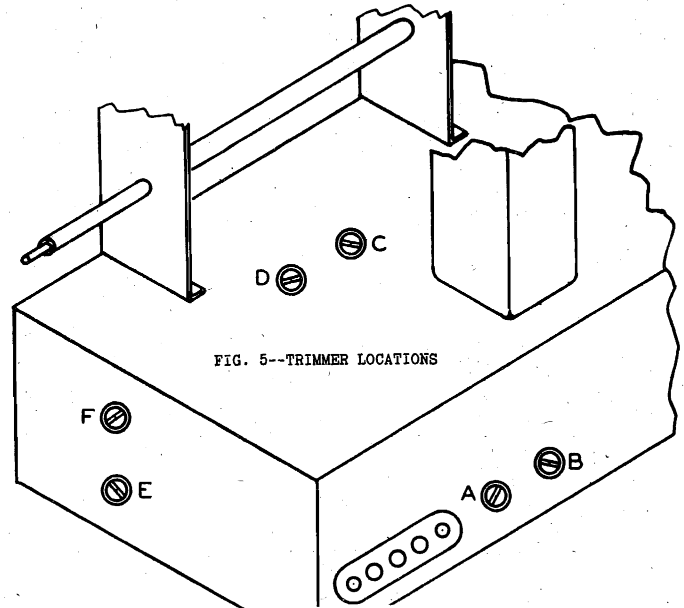


FIG. 5--TRIMMER LOCATIONS

5. Aligning at 1550 Kilocycles

(a) Change the band switch to Broadcast position.

(b) Set the signal generator to exactly 1550 K.C.

(c) With the rotor plates of the condenser gang completely out of mesh, adjust the broadcast oscillator trimmer (Illus. D, Fig. 5) for maximum output.

6. Aligning at 1400 Kilocycles

(a) Set the signal generator to 1400 K.C.

(b) Rotate the rotor plates of the condenser gang until this signal is tuned in with maximum output.

(c) Adjust the Broadcast antenna trimmer (Illus. A, Fig. 5) for maximum output.

7. Aligning at 600 Kilocycles

(a) Set the signal generator to 600 K.C.

(b) Rotate the rotor plates of the condenser gang until this signal is tuned in with maximum output.

(c) Adjust the Broadcast oscillator series pad (Illus. E, Fig. 5) while rocking the rotor plates of the condenser gang back and forth through the signal until maximum output is obtained.

NOTE: After each band is completed, repeat the procedure as a final check.

UNITED MOTORS SERVICE INC.

MODEL R1156
Voltage, Chassis
Socket, Trimmers

FIG. 3--PARTS LAYOUT--Top View

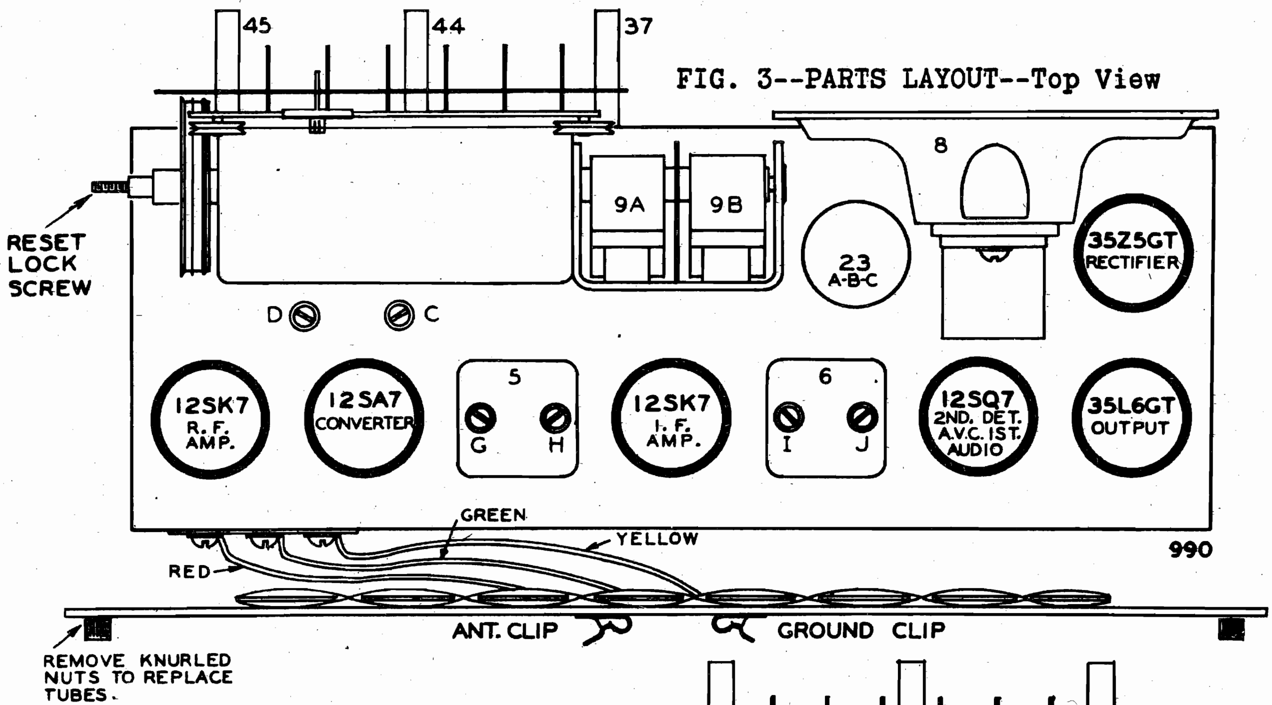
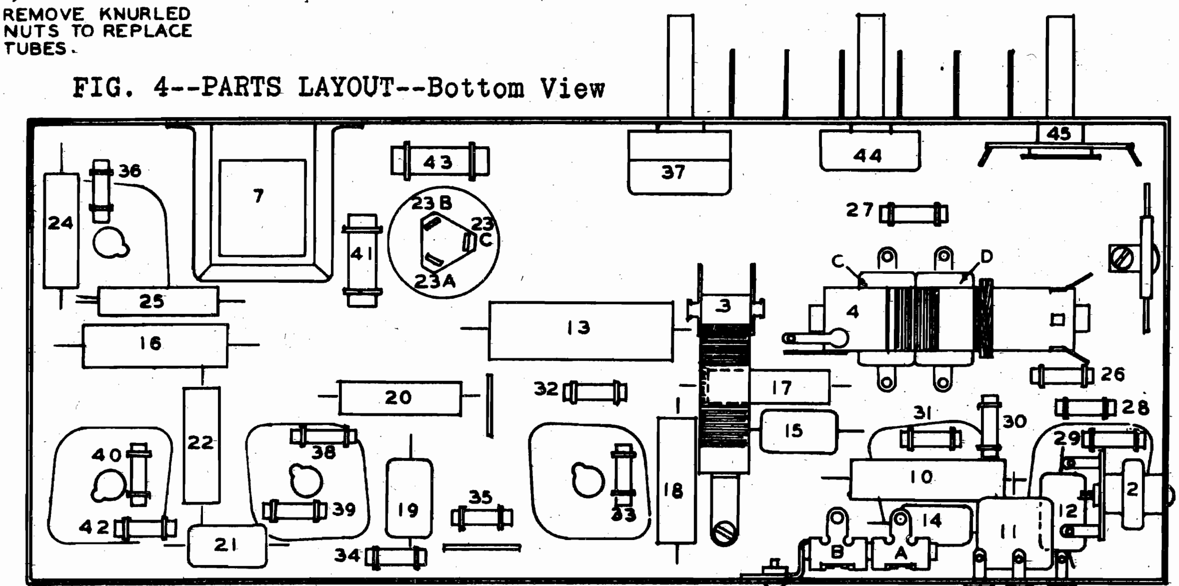
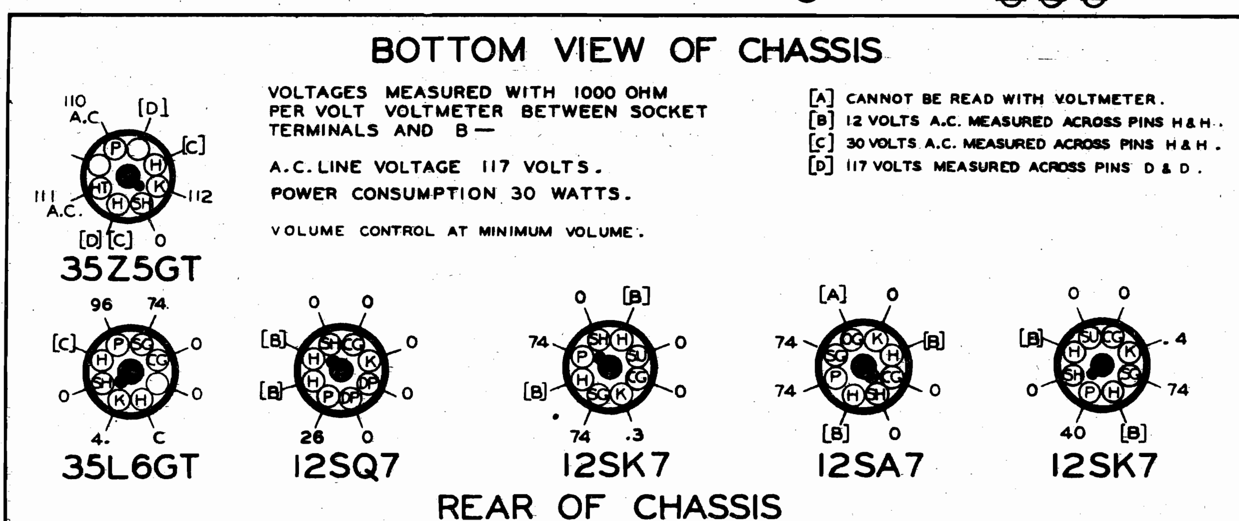


FIG. 4--PARTS LAYOUT--Bottom View



BOTTOM VIEW OF CHASSIS



VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND B—

A.C. LINE VOLTAGE 117 VOLTS.
POWER CONSUMPTION 30 WATTS.

VOLUME CONTROL AT MINIMUM VOLUME.

[A] CANNOT BE READ WITH VOLTMETER.
[B] 12 VOLTS A.C. MEASURED ACROSS PINS H & H.
[C] 30 VOLTS A.C. MEASURED ACROSS PINS H & H.
[D] 117 VOLTS MEASURED ACROSS PINS D & D.

MODEL R1160
Chassis, Socket
Trimmers

UNITED MOTORS SERVICE INC.

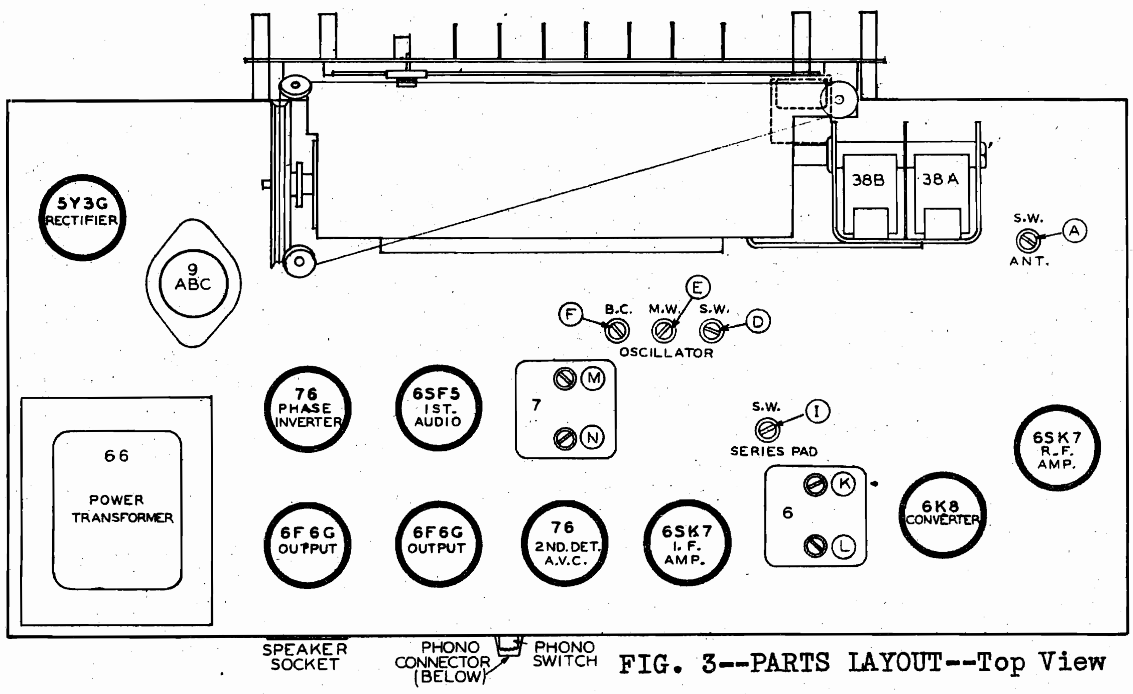
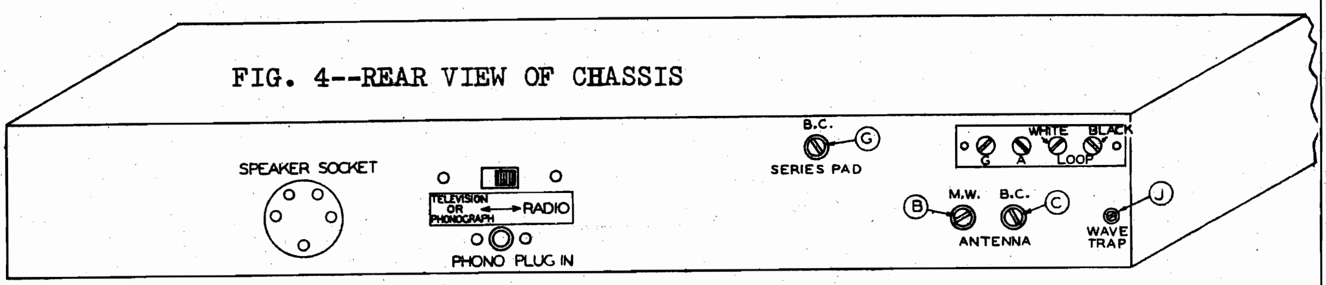


FIG. 3--PARTS LAYOUT--Top View

FIG. 4--REAR VIEW OF CHASSIS



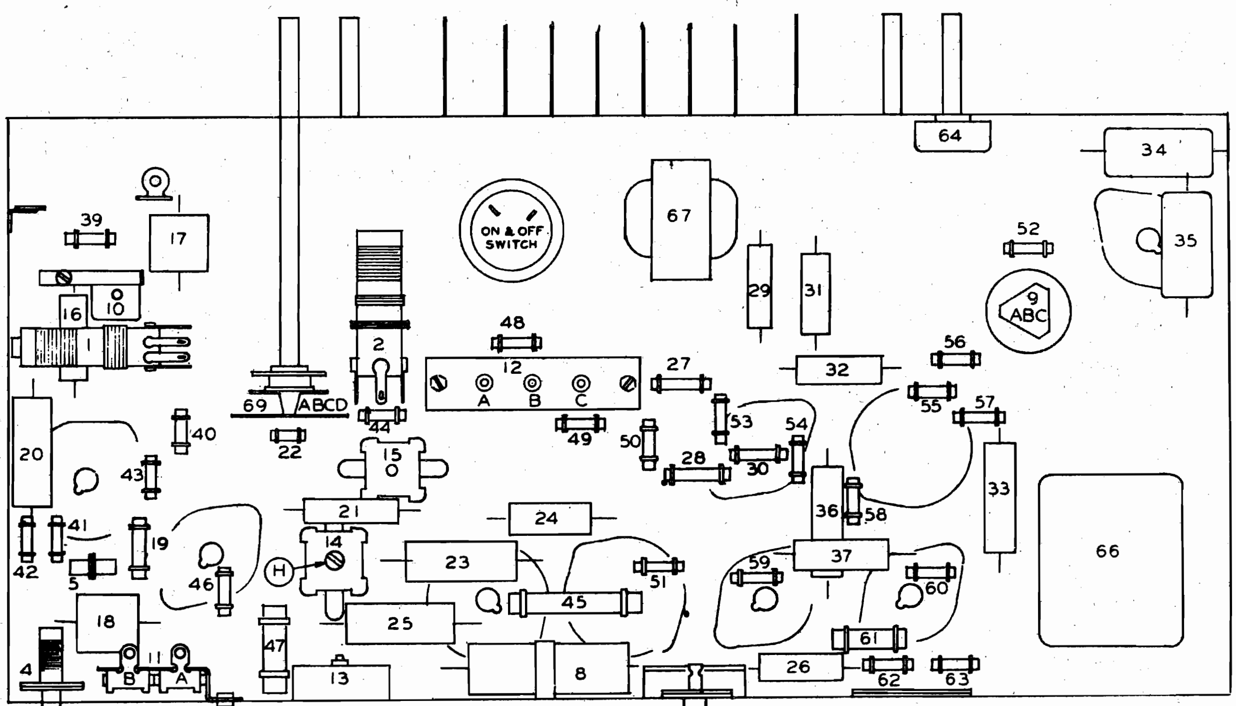
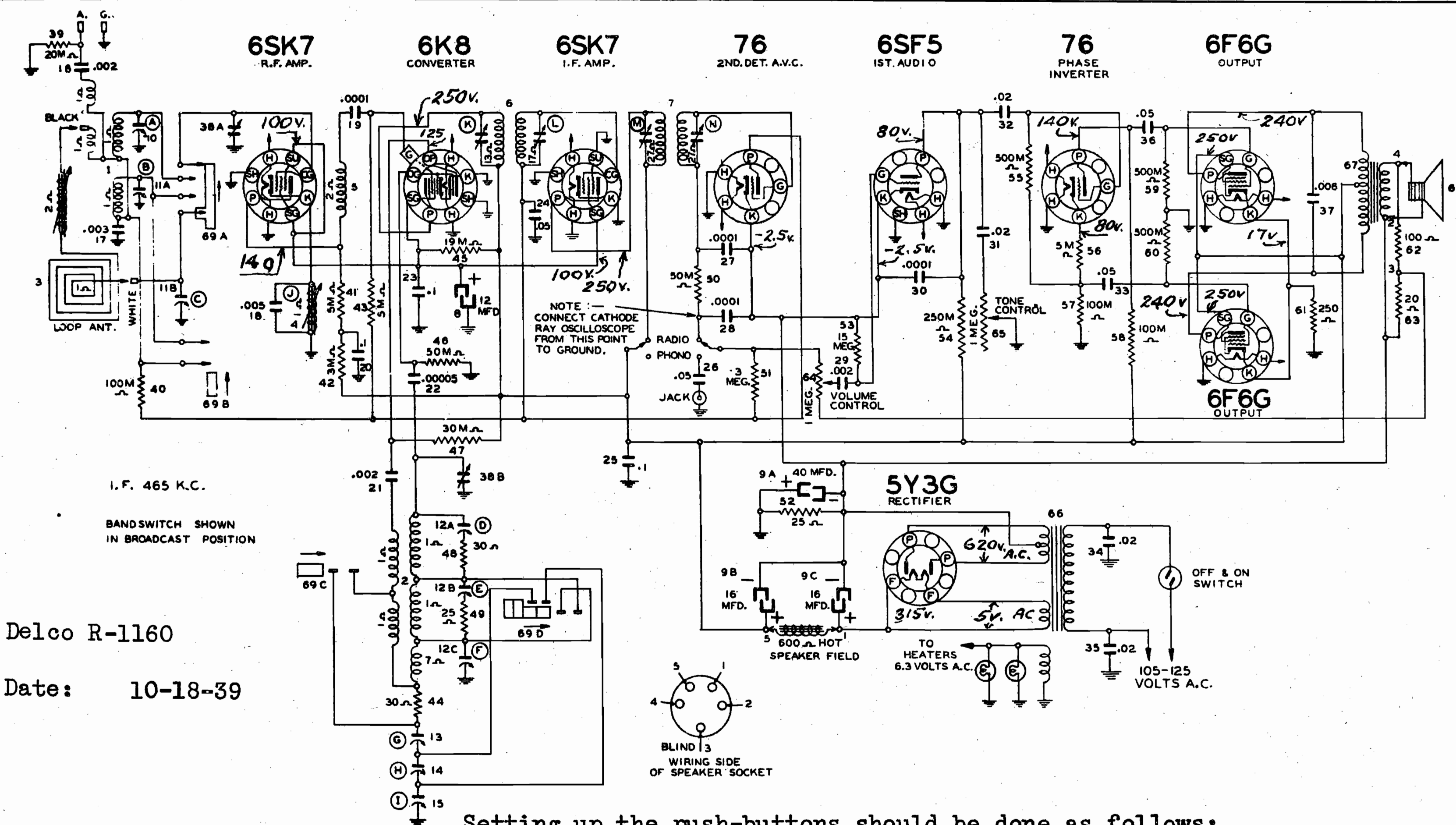


FIG. 5--PARTS LAYOUT--Bottom View

MODEL R1160
Schematic, Voltage
Tuner

UNITED MOTORS SERVICE INC.



Delco R-1160

Date: 10-18-39

Setting up the push-buttons should be done as follows:

1. Pull the "reset" knob all the way out and rotate counter-clockwise until it cannot be turned any further, releasing the cams.
2. Push in on the button to be set and the manual tuning knob so that both stay latched in.
3. With knob and button held in, tune in the desired station carefully. Repeat with other buttons.
4. Pull out reset knob and turn clockwise to lock cams firmly.

MODEL R1160
Alignment, Parts

UNITED MOTORS SERVICE INC.

DUMMY ANTEN	SIG.GEN. CONNECT.	SIG.GEN. FREQ.	BAND SW. POSIT.	RECE'VER DIAL SET.	TRIMMER	TRIMMER DESCRIP.	ADJUST AT
0.1 mf	6K8 Cont. grid	465 kc	B.C.		K,L,M,N	I-F.	Max.
.0002 mf	Term."A"	17 mc	S.W.	17 mc	D	S-W Osc.	Max.
					A	S-W Ant.	Max.
"	"	6 mc	"	6 mc	I	S-W Osc.Pad.	Max.
"	"	1550 kc	B.C.	Note 1	F	B-C Osc.	Max.
"	"	1500 kc	"	1500 kc	C	B-C Ant.	Max.
"	"	600 kc	"	600 kc	G	B-C Osc.Pad.	Max.
"	"	465 kc	"		J	I-F Wavetrap	MIN.
"	"	3.5 mc	Mid.Wave	3.5 mc	E	Mid.Wave Osc.	Max.
					B	" " Ant.	Max.
"	"	1550 kc	"	1550 kc	H	" " Ser.Pad.	Max.

Recheck middle wave adjustment at 3.5 mc
Recheck B-C band alignment

Note 1. Rotate tuning condenser to bring rotor plates of gang all the way out of mesh and against the high-frequency stop.

CHASSIS ELECTRICAL PARTS

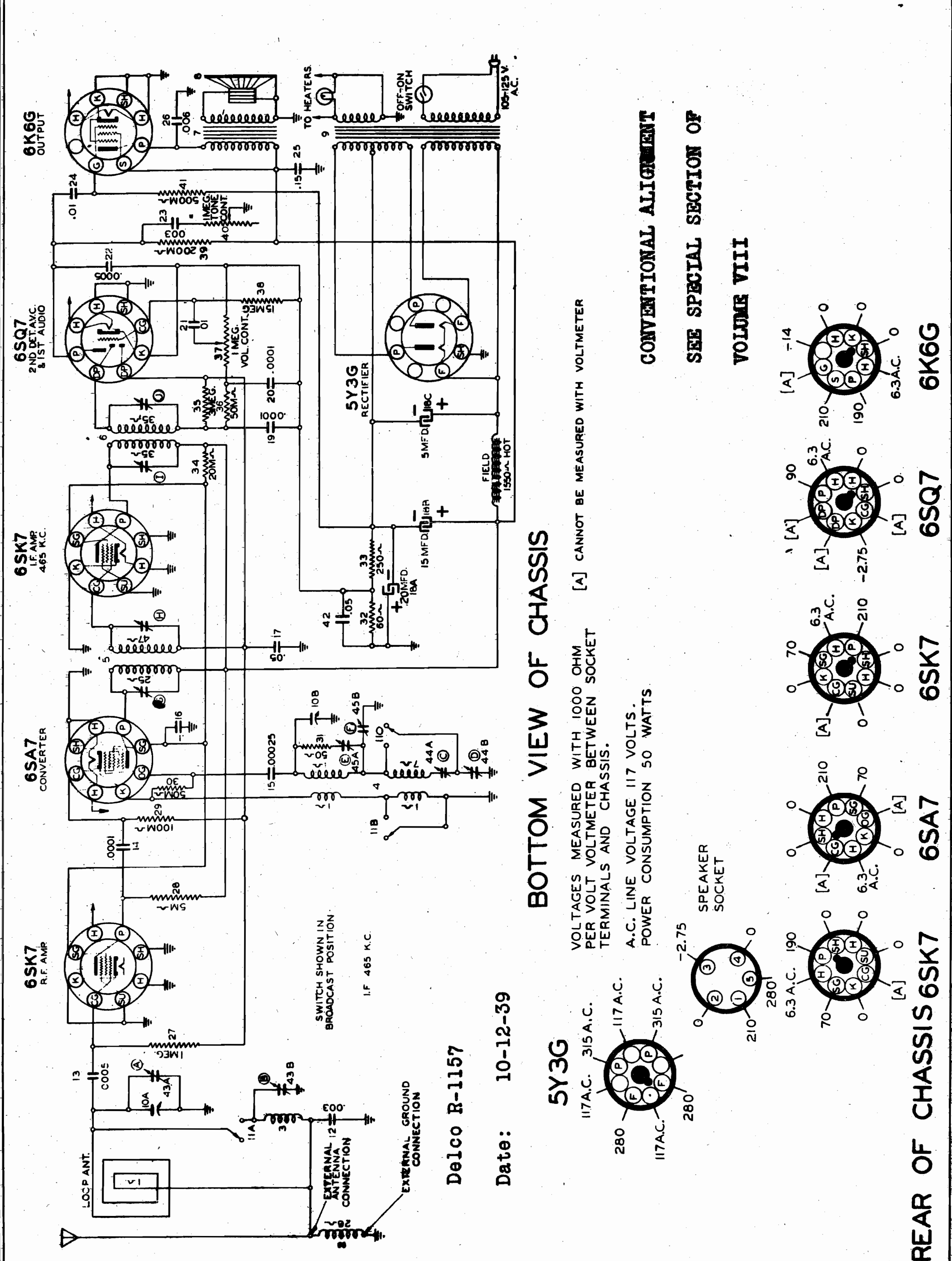
Illus. No.	Part No.	Part Name	Description
1	1214203	Coil	S.W., M.W. Antenna
2	1214234	Coil	S.W., M.W., B.C. Oscillator
3	1214204	Antenna	Loop
4	1214235	Coil	I-F Wave Trap
5	1214205	Coil	R-F
6	1214236	Coil Assy.	1st I-F
7	1214206	Coil Assy.	2nd I-F
8	1213013	Condenser	Electrolytic 12 mfd. 300 V.
9	1214207	Condenser	Electrolytic
		Section A	40 mfd. 25 V.
		Section B	16 mfd. 400 V.
		Section C	16 mfd. 450 V.
10	1214237	Condenser	Trimmer S.W. Antenna
11	1214208	Condenser	Trimmer M.W., B.C. Antenna
12	1214238	Condenser	Trimmer S.W., M.W., B.C. Oscillator
13	1214209	Condenser	Trimmer B.C. Pad
14	1214211	Condenser	Trimmer M.W. Pad
15	1214210	Condenser	Trimmer S.W. Pad
16	1209148	Condenser	Tubular .002 mfd. 800 V.
17	1210859	Condenser	Molded .003 mfd.
18	1213290	Condenser	Molded .005 mfd.
19	1210275	Condenser	Molded .0001 mfd.
20	1207908	Condenser	Tubular .1 mfd. 400 V.
21	1209148	Condenser	Tubular .002 mfd. 800 V.
22	1207625	Condenser	Molded .00005 mfd.
23	1207908	Condenser	Tubular .1 mfd. 400 V.
24	7230592	Condenser	Tubular .05 mfd. 600 V.
25	1207908	Condenser	Tubular .1 mfd. 400 V.
26	7230592	Condenser	Tubular .05 mfd. 600 V.
27-28	1210275	Condenser	Molded .0001 mfd.
29	1209148	Condenser	Tubular .002 mfd. 800 V.
30	1210275	Condenser	Molded .0001 mfd.
31-32	1212099	Condenser	Tubular .02 mfd. 600 V.
33	7230592	Condenser	Tubular .05 mfd. 600 V.
34-35	1212281	Condenser	Molded .02 mfd. 600 V.
36	7230592	Condenser	Tubular .05 mfd. 600 V.
37	7230593	Condenser	Tubular .006 mfd. 600 V.
38	1213986	Condenser	Variable 2 gang tuning
39	1210882	Resistor	Insulated 20,000 ohm 1/2 watt
40	1209883	Resistor	Insulated 100,000 ohm 1/2 watt
41	1211066	Resistor	Insulated 5,000 ohm 1/2 watt
42	1210882	Resistor	Insulated 3,000 ohm 1/2 watt
43	1211066	Resistor	Insulated 5,000 ohm 1/2 watt
44	1213031	Resistor	Carbon 30 ohm 1/2 watt
45	7239157	Resistor	Insulated 18,000 ohm 2 watt
46	1210116	Resistor	Insulated 50,000 ohm 1/2 watt
47	1211102	Resistor	Insulated 30,000 ohm 1 watt
48-49	1213031	Resistor	Carbon 30 ohm 1/2 watt
50	1210116	Resistor	Insulated 50,000 ohm 1/2 watt
51	1211149	Resistor	Insulated 3 megohm 1/2 watt
52	1213031	Resistor	Insulated 30 ohm 1/2 watt
53	1213343	Resistor	Insulated 15 megohm 1/2 watt
54	1210117	Resistor	Insulated 250,000 ohm 1/2 watt
55	1210470	Resistor	Insulated 500,000 ohm 1/2 watt
56	1211066	Resistor	Insulated 5,000 ohm 1/2 watt
57-58	1209883	Resistor	Insulated 100,000 ohm 1/2 watt
59-60	1210470	Resistor	Insulated 500,000 ohm 1/2 watt
61	1211011	Resistor	Insulated 250 ohm 1 watt
62	1211000	Resistor	Insulated 100 ohm 1/2 watt
63	1213030	Resistor	Insulated 20 ohm 1/2 watt
64	1213540	Control	Volume - 1 megohm
65	1214212	Control	Tone - 1 megohm
66	1214239	Transformer	Power - 60 cycles
66	1214258	Transformer	Power - 25 cycles
67	1214240	Transformer	Output Speaker
68	1213871	Speaker	12" Dynamic (600 ohm field)
69	1214241	Switch	Band Change

TUNER ASSEMBLY PARTS

Part No.	Part Name	Description
1214245	Diffuser	Dial Light
1212301	Button	Diffuser Snap
1214219	Pointer	Station Indicator
1213041	Carriage	Pointer
1212233	Cord	Dial String
1214123	Spring	Dial String Tension
1214220	Drum Assy.	Dial Pointer Drive
1214221	Stud	Drum and Gear

UNITED MOTORS SERVICE INC.

MODEL R1157
Schematic
Voltage



MODEL R1157
Chassis, Socket
Alignment, Trimmers

UNITED MOTORS SERVICE INC.

FIG. 3--PARTS LAYOUT--Top View

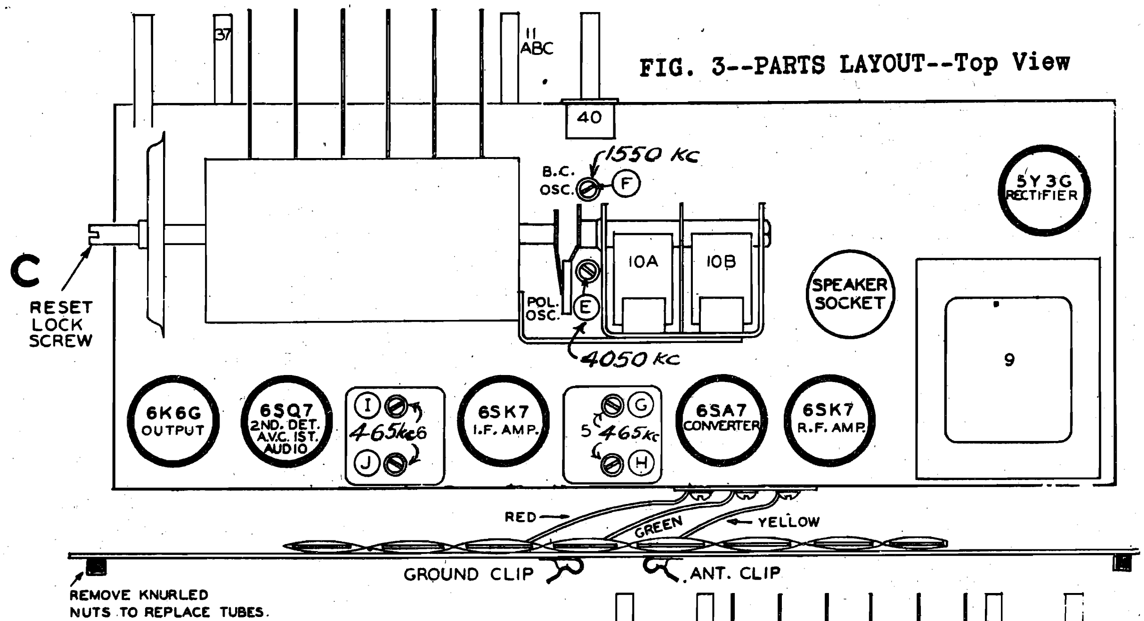
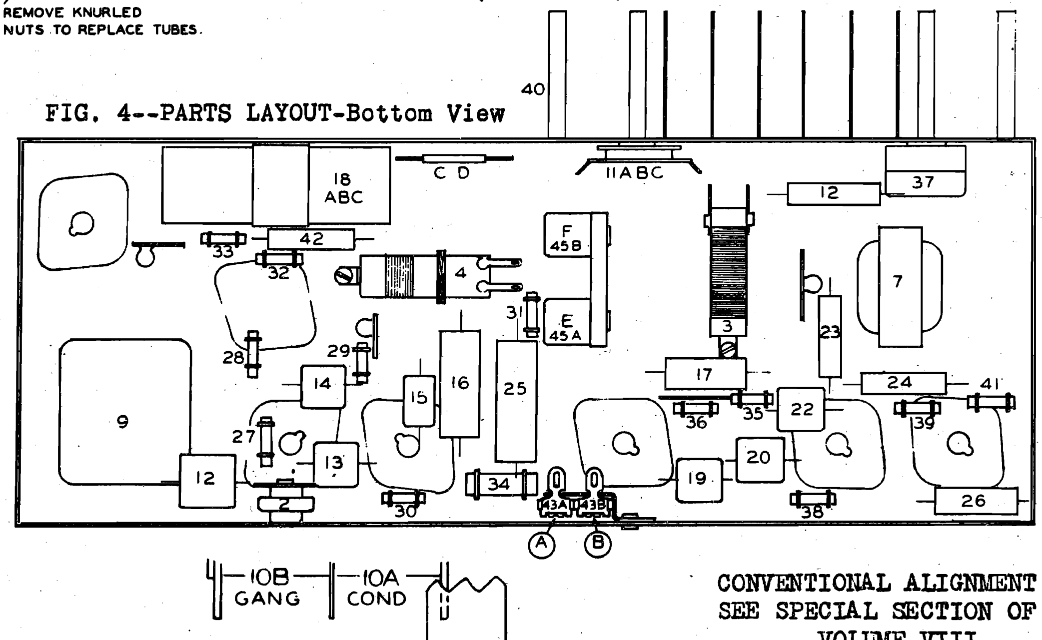


FIG. 4--PARTS LAYOUT-Bottom View



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION OF
VOLUME VIII

FIG. 5--TRIMMER LOCATIONS

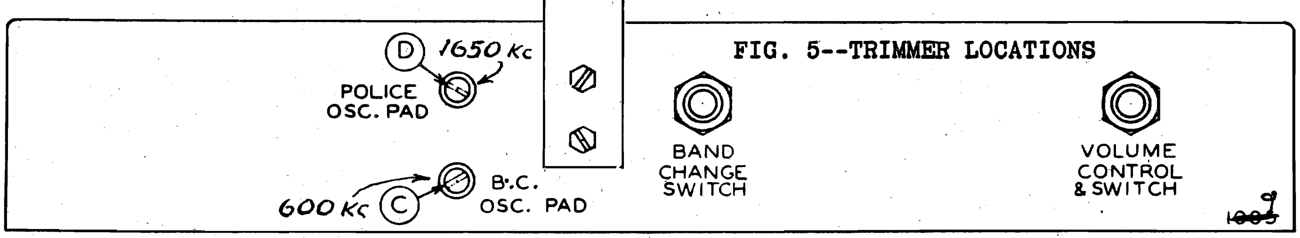
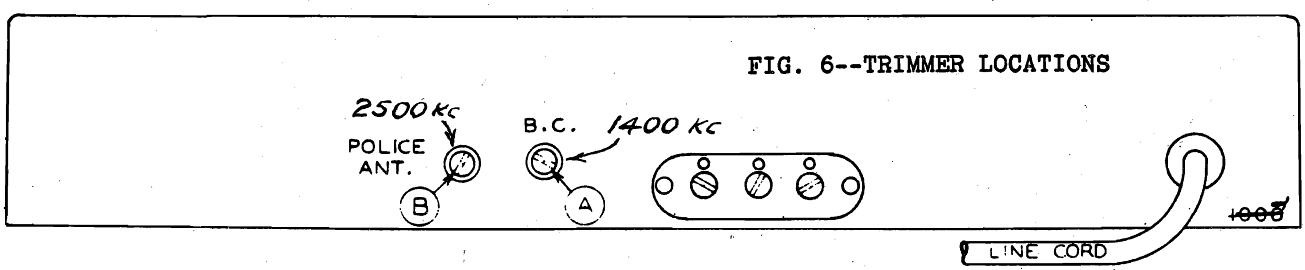
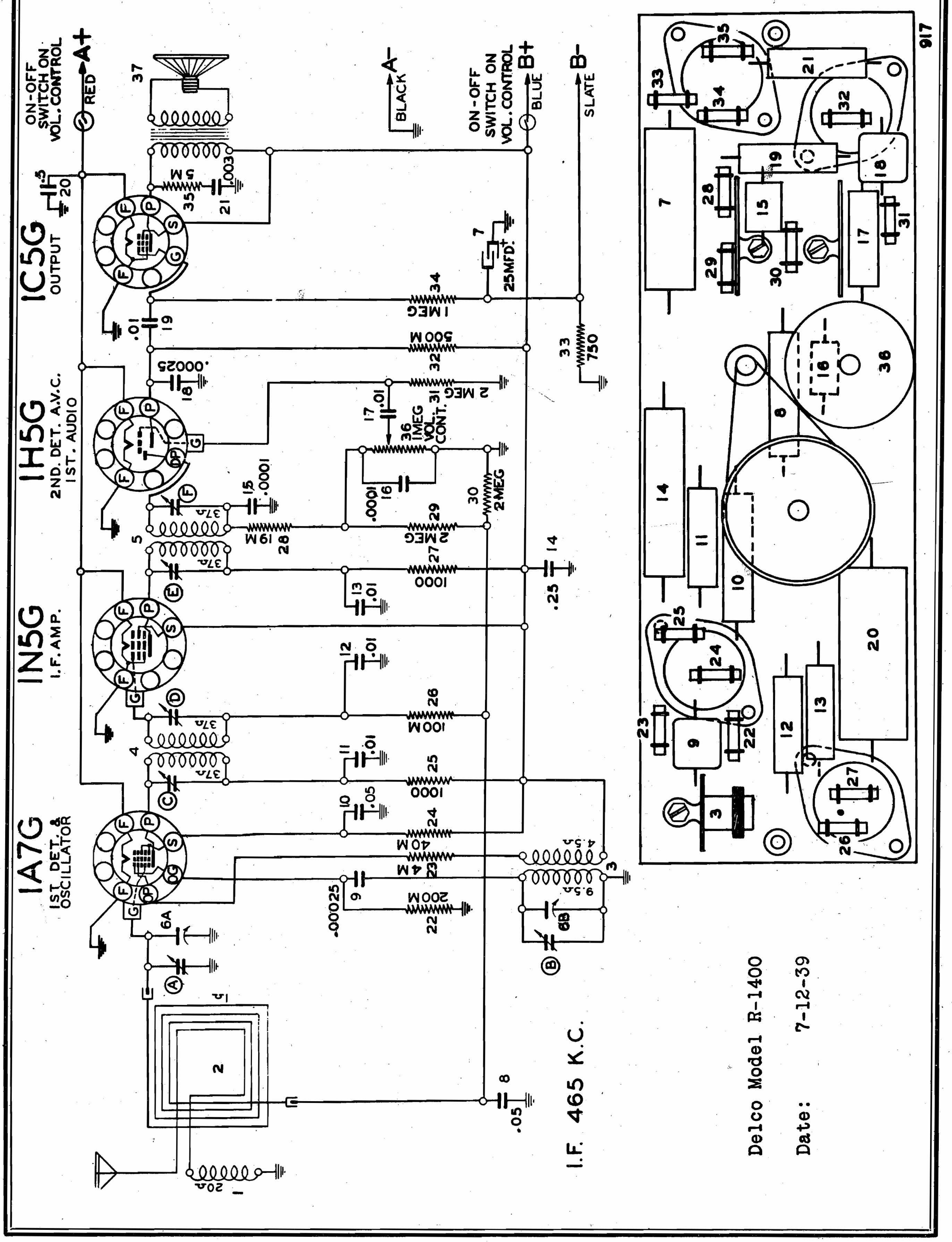


FIG. 6--TRIMMER LOCATIONS



UNITED MOTORS SERVICE

MODEL R1400
Schematic
Chassis



MODEL R1400
Voltage, Socket
Alignment, Trimmers

UNITED MOTORS SERVICE INC.

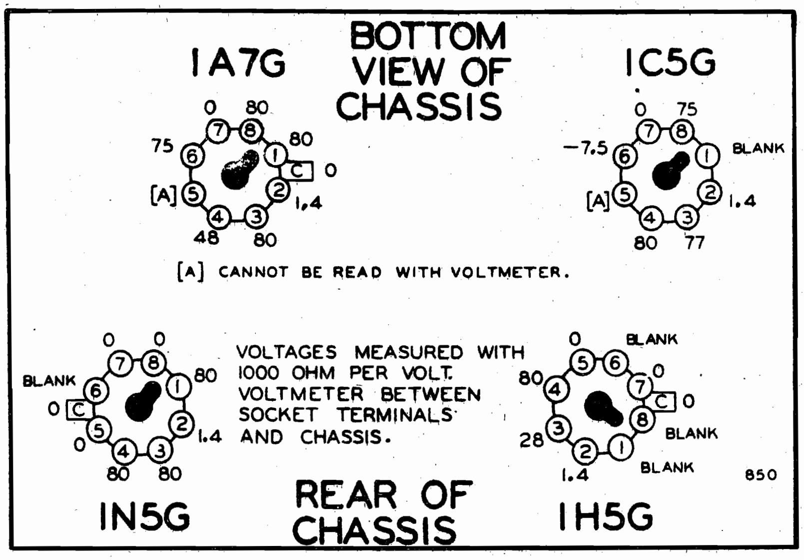
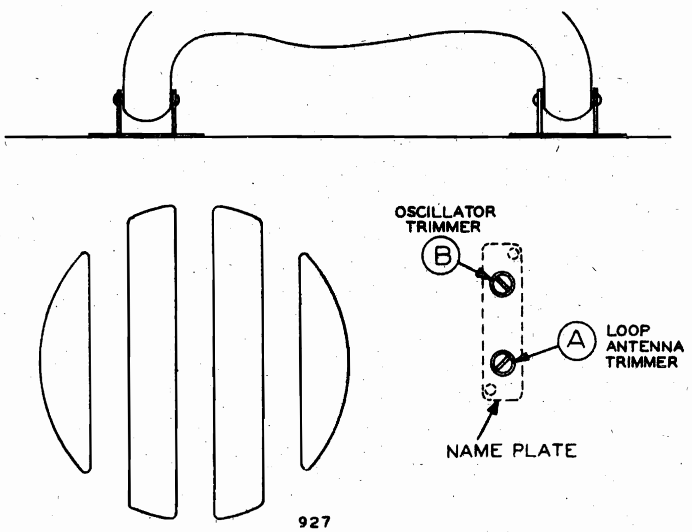


FIG. 1--TUBE SOCKET VOLTAGES



1. Aligning I-F Stages at 465 Kilocycles-

Set the signal generator to exactly 465 K.C.

Adjust the I-F trimmers C-D-E-F (Illus. 4 and 5, Fig. 4) for maximum output, using the lowest output from the signal generator which will give a readable indication on the output meter, not to exceed 50 milliwatts.

2. Aligning at 1650 Kilocycles

(a) Leave all connections the same as for I-F alignment.

(b) Set the signal generator to exactly 1650 K.C.

(c) Adjust the oscillator trimmer condenser (Illus. B, Fig. 2), for maximum output.

3. Aligning at 1400 Kilocycles

NOTE: This adjustment MUST be made with set and loop mounted and firmly attached in cabinet.

(a) Remove the 1 megohm resistor and connect loop leads to the loop antenna. (Check these clips to make sure that contacts are clean and tight.)

(b) Remove signal lead of the signal generator from the grid of the 1A7G tube and place in a position where the signal can be picked up by the loop antenna. (The signal lead of the signal generator may be connected to the metal carrier pins of the case handle and the ground lead connected to the chassis mounting screw.)

(c) Set the signal generator to 1400 K.C.

(d) Adjust the loop trimmer (Illus. "A", Fig. 2) for maximum output.

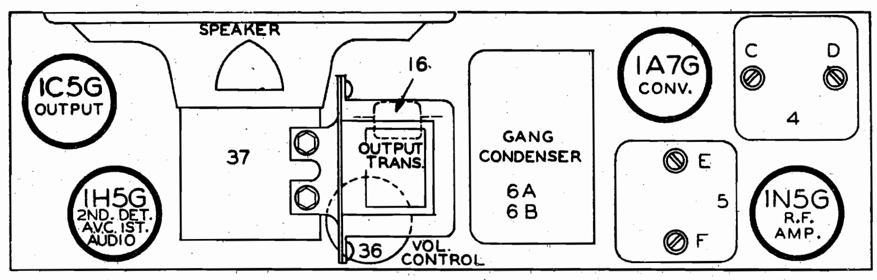
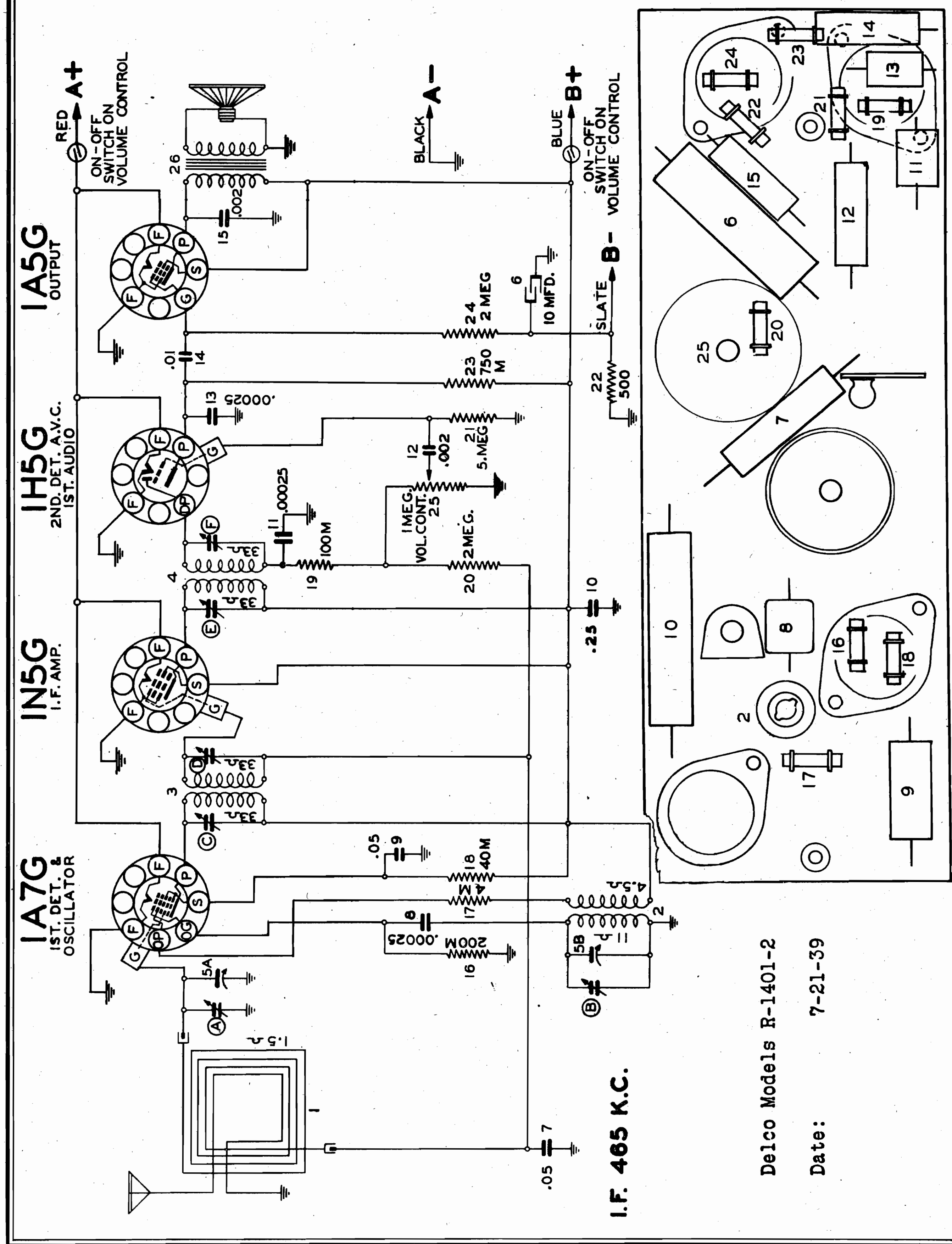


FIG 2--TRIMMER LOCATIONS

UNITED MOTORS SERVICE INC.

MODELS R1401,R1402
Schematic,Chassis



MODELS R1401,R1402
Voltage,Socket
Alignment,Trimmers

UNITED MOTORS SERVICE INC.

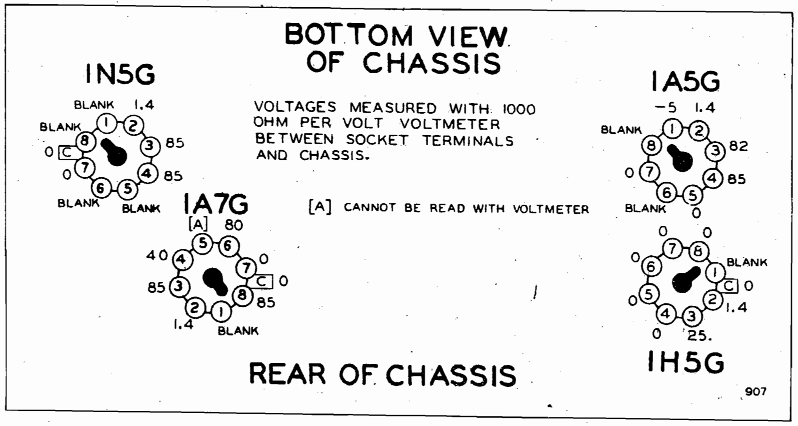


FIG. 1--TUBE SOCKET VOLTAGES

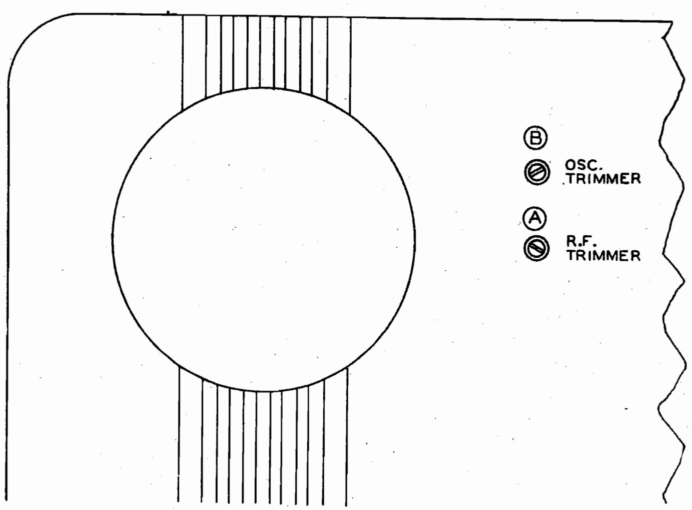
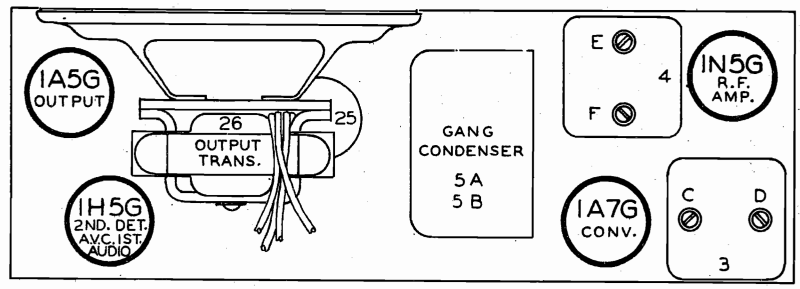


FIG 2--TRIMMER LOCATIONS



1. Aligning I-F Stages at 465 Kilocycles-

   Set the signal generator to exactly 465 K.C.

   Adjust the I-F trimmers C-D-E-F (Illus. 3 and 4, Fig. 4) for maximum output, using the lowest output from the signal generator which will give a readable indication on the output meter, not to exceed 50 milliwatts.

2. Aligning at 1650 Kilocycles

   (a) Leave all connections the same as for I-F alignment.

   (b) Set the signal generator to exactly 1650 K.C.

   (c) Adjust the oscillator trimmer condenser (Illus. "B", Fig. 2), for maximum output.

3. Aligning at 1400 Kilocycles

   NOTE: This adjustment MUST be made with set and loop mounted and firmly attached in cabinet.

   (a) Remove the 1 megohm resistor and connect loop leads to the loop antenna. (Check these clips to make sure that contacts are clean and tight.)

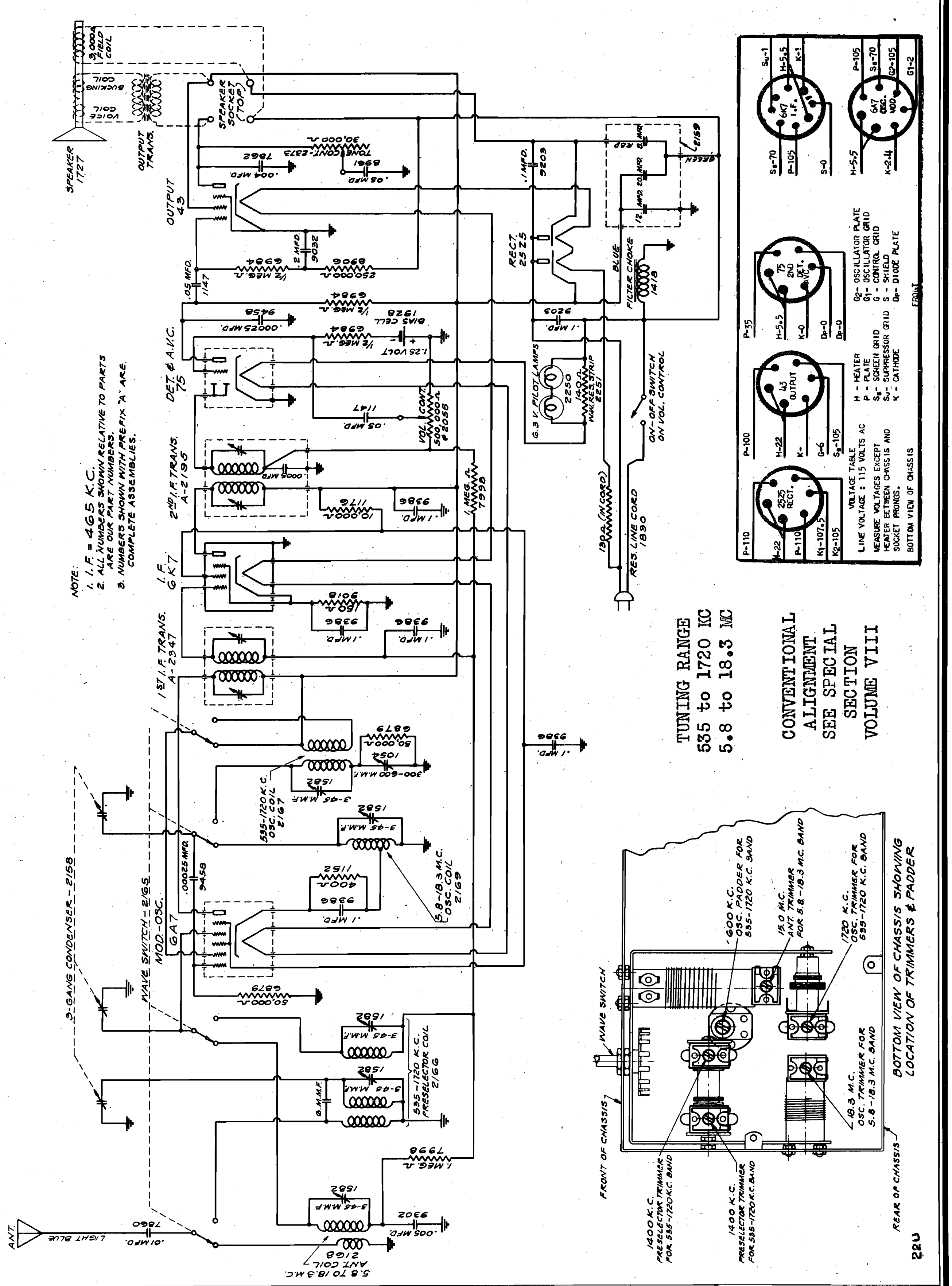
   (b) Remove signal lead of the signal generator from the grid of the 1A7G tube and place in a position where the signal can be picked up by the loop antenna. (The signal lead of the signal generator may be connected to the metal carrier pins of the case handle and the ground lead connected to the chassis mounting screw.)

   (c) Set the signal generator to 1400 K.C.

   (d) Adjust the loop trimmer (Illus. "A", Fig. 2) for maximum output.

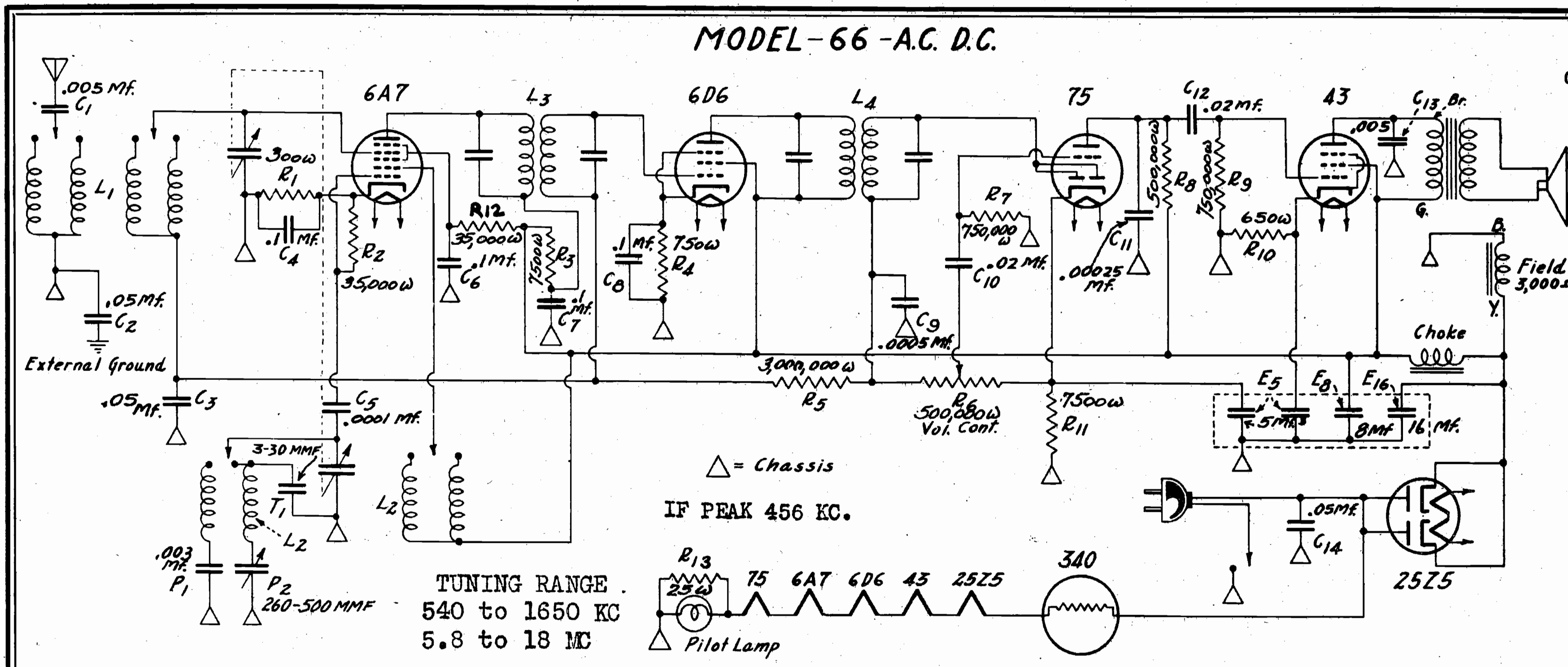
WALGREEN CO.

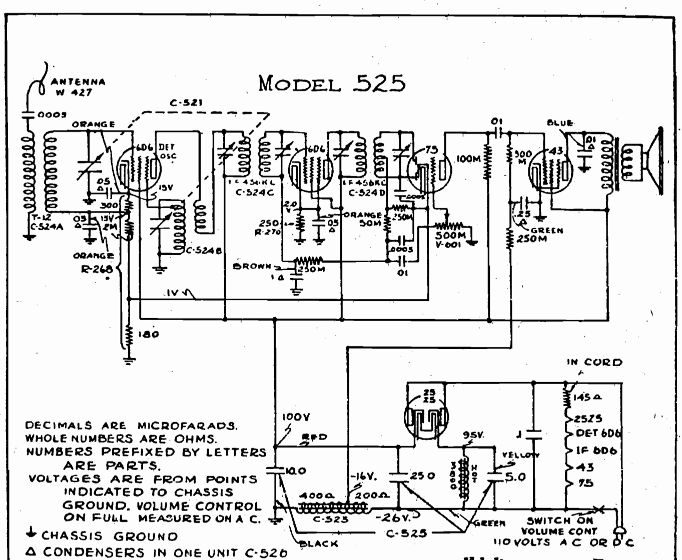
MODEL 22U-73
Schematic, Voltage, Socket
Alignment, Trimmers



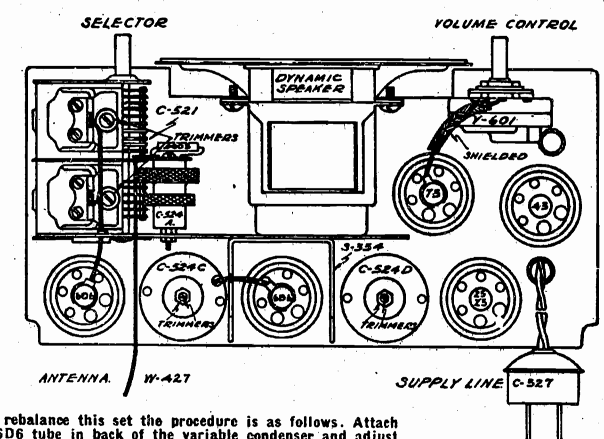
MODEL 66
Schematic
MODEL 525
Schematic, Voltage, Socket
Alignment, Trimmers

WALGREEN CO.





Part No.	Description
C 145	.1—300 Volt Condenser.........
C 155	.0005 Mica Condenser...........
C 521	Two Gang Condenser...........
C 522	.01—400 Volt Condenser.........
C 523	600 Ohm Choke Coil............
C 524A	Antenna Coil ....
C 524B	Oscillator Coil ....
C 524C	I. F. Transformer...............
C 524D	I. F. Transformer...............
C 525	5-25-10 Electrolytic Condenser...
C 525B	5-25-10 Electrolytic Condenser....
C 526	By-Pass Condenser Block.......
C 527	Special Cord and Plug.........
C 531	Dual .05 Condenser ....
C 534	Dual .1-.025 Condenser..........
K 214	Knobs ....
R 268	2480 Ohm Resistor..............
R 270	250 Ohm—Wire Wound Resistor.
V 601	Volume Control ....
W427	Antenna Wire ....



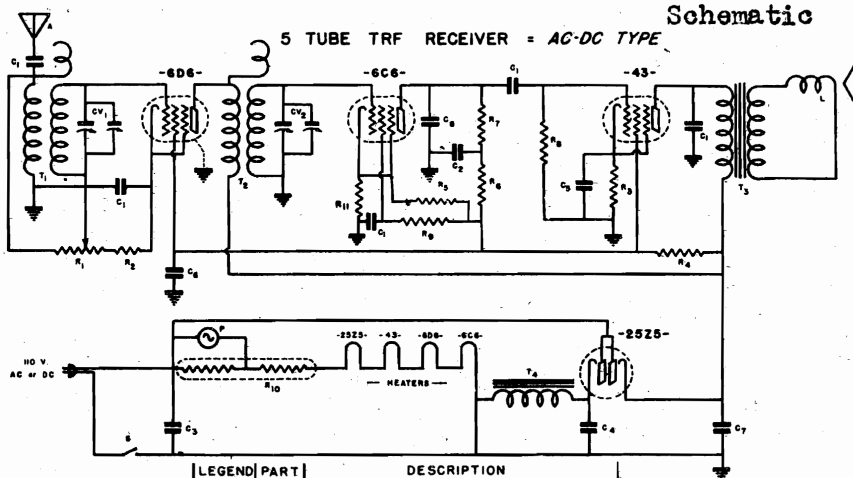
Should it be necessary, at any time, to rebalance this set the procedure is as follows. Attach a 456 kilocycle oscillator to the grid of the 6D6 tube in back of the variable condenser and adjust the trimming condensers of the I. F. transformers to maximum deflection on an output meter connected across the primary of the speaker input transformer. While adjusting these trimmers, the variable condenser should be at the maximum capacity position—at the extreme right of its rotation.

Next disconnect the antenna wire and connect an oscillator in series with a 75 mmf. condenser to the antenna coil. Rotate the condenser plates to the minimum capacity position—extreme left turn, and adjust the trimmer condenser of the rear section of the variable condenser to resonance with an oscillator set at 1725 kilocycles, then adjust the condenser of the front section of the variable condenser to resonance. Align at 1400—1200—1000—800—600—530 kilocycles bend slotted plates of variable condenser if necessary.

IF PEAK 456 KC

WALGREEN CO.

MODEL B-66-RIS
Schematic, Voltage, Socket
Alignment, Trimmers
MODEL 200
Schematic



ALIGN AT
1500 KC

MODEL 200

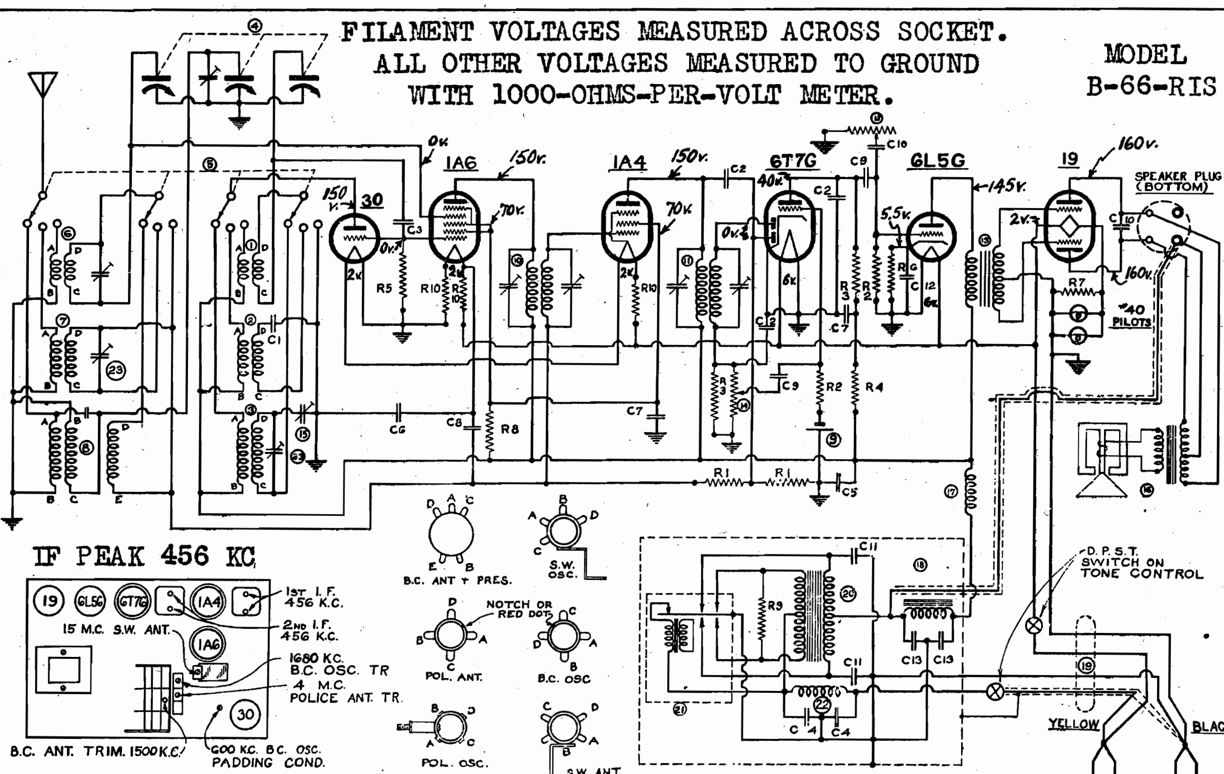
LEGEND	PART NO.	DESCRIPTION
C_1	211	.01 MFD 400 V. TUBULAR CONDENSER
C_2	216	.018 MFD 400V. TUBULAR CONDENSER
C_3	210	.1 MFD 400V. TUBULAR CONDENSER
C_4	IN 316	4 MFD 175 W.V. ELECTROLYTIC COND.
C_5	IN 316	5 MFD 25 W.V ELECTROLYTIC COND
C_6	IN 316	8 MFD 150 W.V. ELECTROLYTIC COND.
C_7	IN 316	14 MFD 175 W.V. ELECTROLYTIC COND.
C_8	401	.00025 MICA CONDENSER
CV_{1-2}	621	2 GANG VARIABLE CONDENSER

LEGEND	PART NO.	DESCRIPTION
R_1	2006	10,000 OHM VOLUME CONTROL
R_2	—	275 OHM (Minimum on Volume Control)
R_3	104	600 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_4	108	5,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_5	111	25,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_6	142	51,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_7	116	250,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_8	117	500,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_9	120	3 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_{11}	105	1000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR

LEGEND	PART NO.	DESCRIPTION
R_{10}	2903	L-55-B BALLAST TUBE
T_1	1213	ANTENNA COIL
T_2	1312	R F COIL
T_3	IN 809	SPEAKER OUTPUT TRANSFORMER
T_4	IN 809	SPEAKER FIELD (2500 ohms)
S	—	LINE SWITCH ON VOLUME CONTROL
P	2902	MAZDA #46 PILOT LIGHT
A	2400	INDOOR ANTENNA HANK
L	809	5" DYNAMIC SPEAKER

FILAMENT VOLTAGES MEASURED ACROSS SOCKET.
ALL OTHER VOLTAGES MEASURED TO GROUND
WITH 1000-OHMS-PER-VOLT METER.

MODEL
B-66-RIS



CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

	PART NO.	DESCRIPTION		
C1	1500C	.001	MFD.	MICA 5%
C2	1504	.00025	"	"
C3	1510	.000025	"	"
C4	1655	.5	"	180v
C5	1616	.25	"	400v
C6	1614	.25	"	200v
C7	1601	.1	"	400v
C8	1600	.1	"	200V
C9	1603	.01	"	400V
C10	1611	.006	"	600 V
C11	1604	.01	"	600 V
C12	16-100	10 M.F.D. 25V. ELECTROLYTIC		
C13	1845	8 " 150V "		

	PART NO.	DESCRIPTION		
R1	6017	1 MEG	OHM	1/3 W.
R2	6018	.5	"	"
R3	6024	.25 "	"	"
R4	6026	100,000	"	"
R5	6025	50,000	"	"
R6	6006	1500	"	"
R7	6007	200	"	"
R8	6117	25,000	"	1/2 W.
R9	6101	100	"	"
R10	60-102	33 1/3	"	WIRE WOUND

	PART NO.	DESCRIPTION
1	10-139	S.W. OSC. COIL
2	10-138	POLICE OSC. COIL
3	10-134	B.C. OSC. COIL
4	19-106	3 GANG CONDENSER
5	69-103	WAVE SWITCH
6	10-132	S.W. ANT. COIL
7	10-135	POLICE ANT. COIL
8	10-137	B.C. ANT. & PRESEL. C'L.
9	4600	BIAS CELL
10	1133	1ST. I.F. TRANSFORMER
11	1134	2ND. I.F. TRANSFORMER
12	26-102	TONE CONTROL
13	8010	PUSH-PULL AUDIO TRANS.

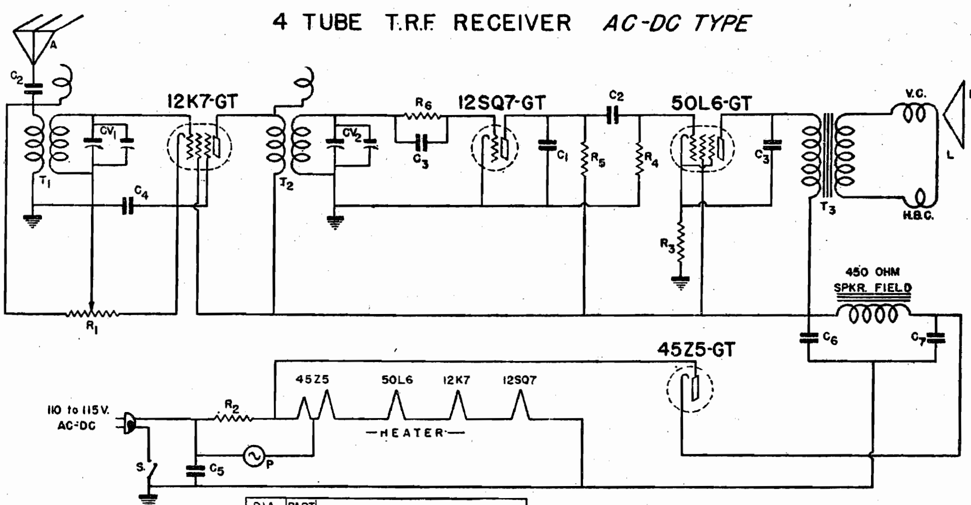
	PART NO.	DESCRIPTION
14	24-101	VOLUME CONTROL
15	20-100	B.C. OSC. PADDER
16		SPEAKER
17	3303	R.F. "B" CHOKE
18	3307	FILTER
19	23-103	BATTERY CABLE
20	8041	POWER TRANFORMER
21	3407	VIBRATOR
22	3313	R.F. "A" CHOKE
23	26-102	TRIMMER STRIP

TUNING RANGE
535 to 1680 KC
1.7 to 5.6 MC
5.4 to 20 MC

MODEL 209
MODEL 410
Schematics, Socket

WALGREEN CO.

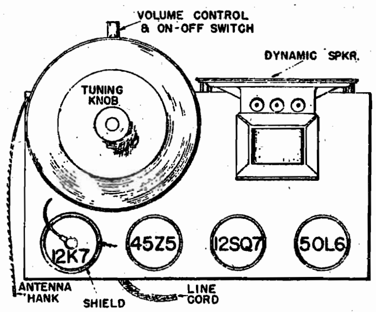
4 TUBE T.R.F. RECEIVER *AC-DC TYPE*



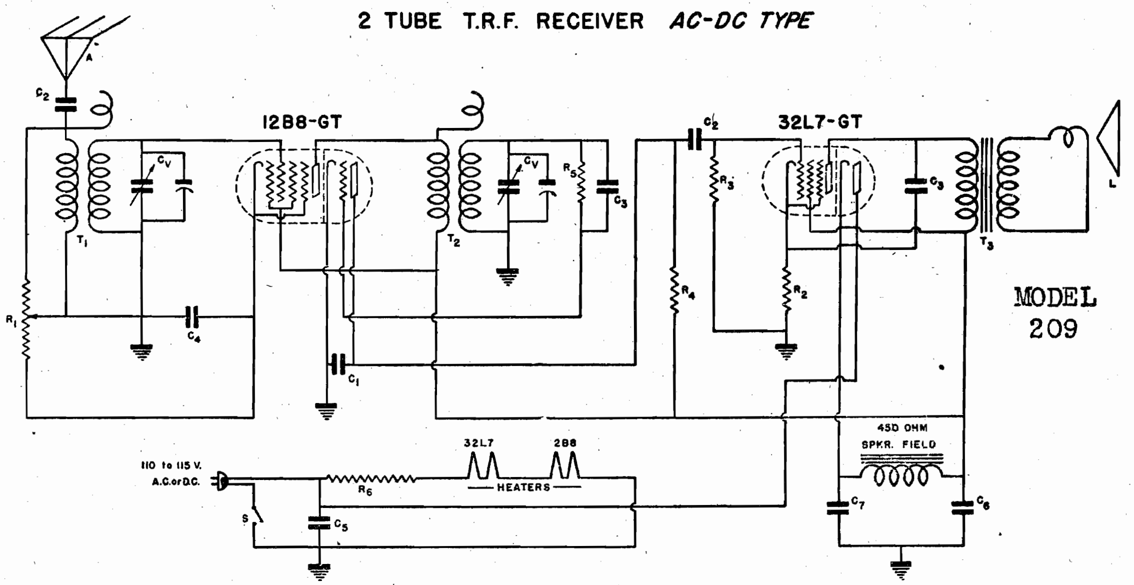
DIA. NO.	PART NO.	DESCRIPTION
R_1	2032	25,000 OHM VOLUME CONTROL
R_2	—	10 OHM $\frac{1}{4}$ WATT CARBON RESIST.
R_3	—	150 OHM $\frac{1}{4}$ WATT CARBON RESIST.
R_4	—	$\frac{1}{2}$ MEGOHM $\frac{1}{4}$ WATT CAR. RESIST.
R_5	—	1 MEGOHM $\frac{1}{4}$ WATT CARBON RESIST.
R_6	—	3 MEGOHM $\frac{1}{4}$ WATT CAR. RESIST.
P	—	MAZDA #47 PILOT LIGHT
S	—	LINE SWITCH ON VOLUME CONT.
A	—	ANTENNA WIRE
L	8330	DYNAMIC SPEAKER

DIA. NO.	PART NO.	DESCRIPTION
C_1	—	.00025 MFD. 600V. TUB. COND.
C_2	—	.01 MFD. 400 V. TUBULAR COND.
C_3	—	.02 MFD. 400 V. TUBULAR COND.
C_4	—	.05 MFD. 200 V. TUBULAR COND.
C_5	—	.05 MFD. 400 V. TUBULAR COND.
C_6	IN 343	10 MFD. 150 V. TUBULAR COND.
C_7	IN 343	30 MFD. 150 V. TUBULAR COND.
CV_{1-2}	628C	2 GANG VARIABLE COND.
T_1	A-10	ANTENNA COIL
T_2	R-10	R.F. COIL
T_3	IN 8338	SPEAKER TRANSFORMER

MODEL 410



2 TUBE T.R.F. RECEIVER *AC-DC TYPE*

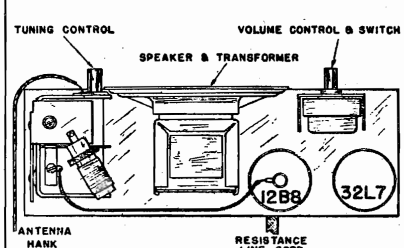


MODEL 209

LEGEND	OUR PART NO.	DESCRIPTION
C_1	—	.00025 MFD. 600 V. TUBULAR CONDENSER
C_2	—	.01 MFD. 400 V. TUBULAR CONDENSER
C_3	—	.02 MFD. 400 V. TUBULAR CONDENSER
C_4	—	.05 MFD. 200 V. TUBULAR CONDENSER
C_5	—	.05 MFD. 400 V. TUBULAR CONDENSER
C_6	IN 344	10 MFD. 150 V. ELECTROLYTIC CONDENSER
C_7	IN 344	30 MFD. 150 V. ELECTROLYTIC CONDENSER
C_V	628-D	2 GANG VARIABLE CONDENSER
A	—	AERIAL WIRE
L	833	DYNAMIC SPEAKER

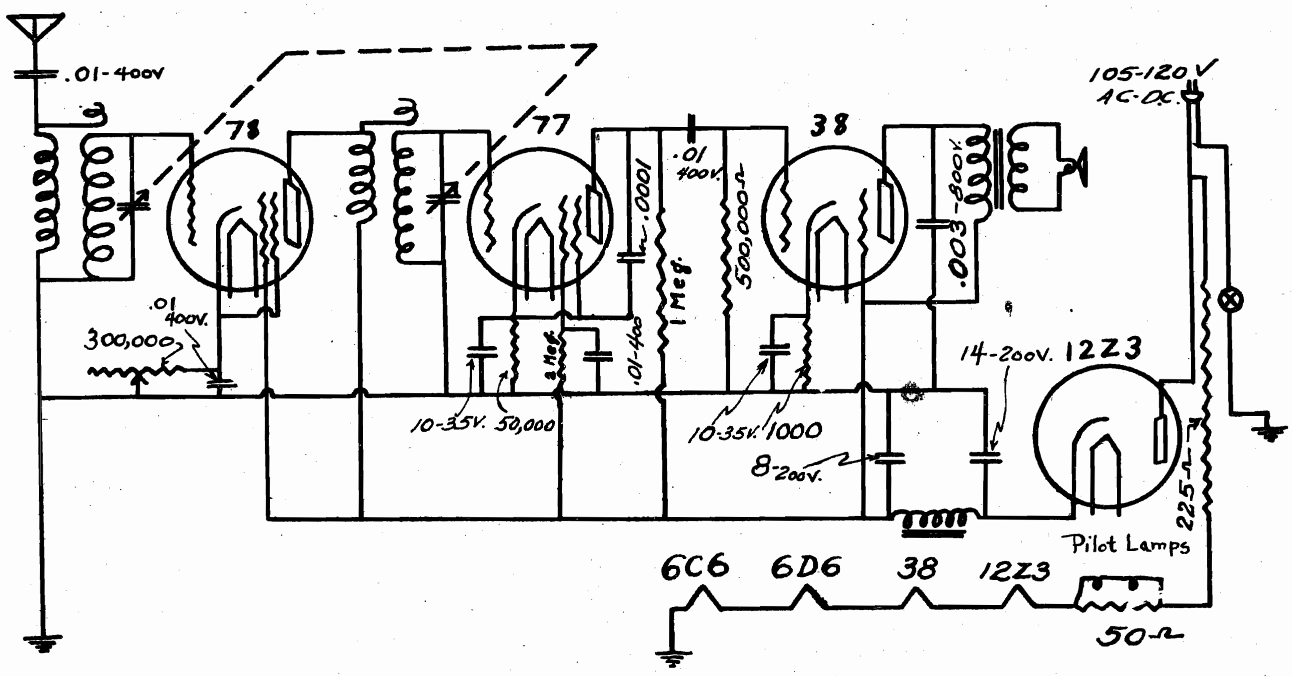
LEGEND	OUR PART NO.	DESCRIPTION
R_1	2031	10,000 OHM VOLUME CONTROL
R_2	—	150 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_3	—	500,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_4	—	1 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_5	—	3 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_6	1816	240 OHM RESISTANCE LINE CORD
T_1	A-10	ANTENNA COIL
T_2	R-10	R. F. COIL
T_3	ON 833	SPEAKER TRANSFORMER
S	—	LINE SWITCH ON VOLUME CONTROL

CHASSIS LAYOUT & TUBE LOCATION

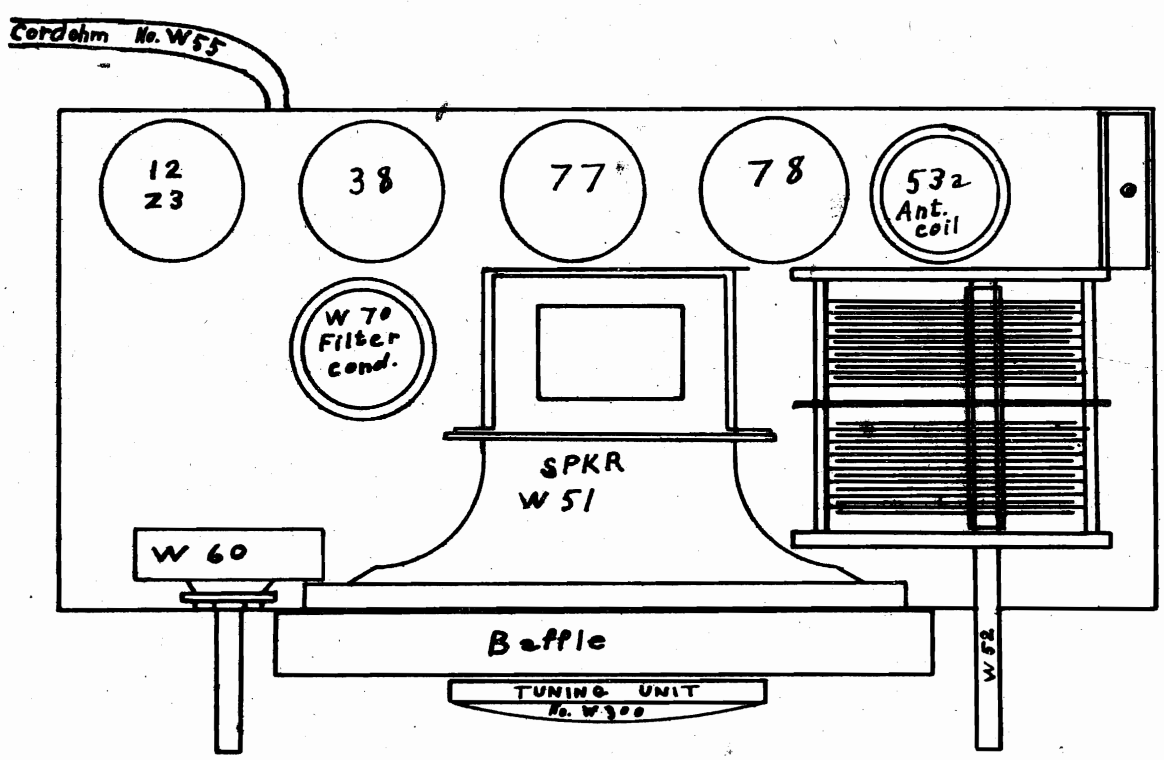


WALGREEN CO.

MODEL 250
Schematic
Socket

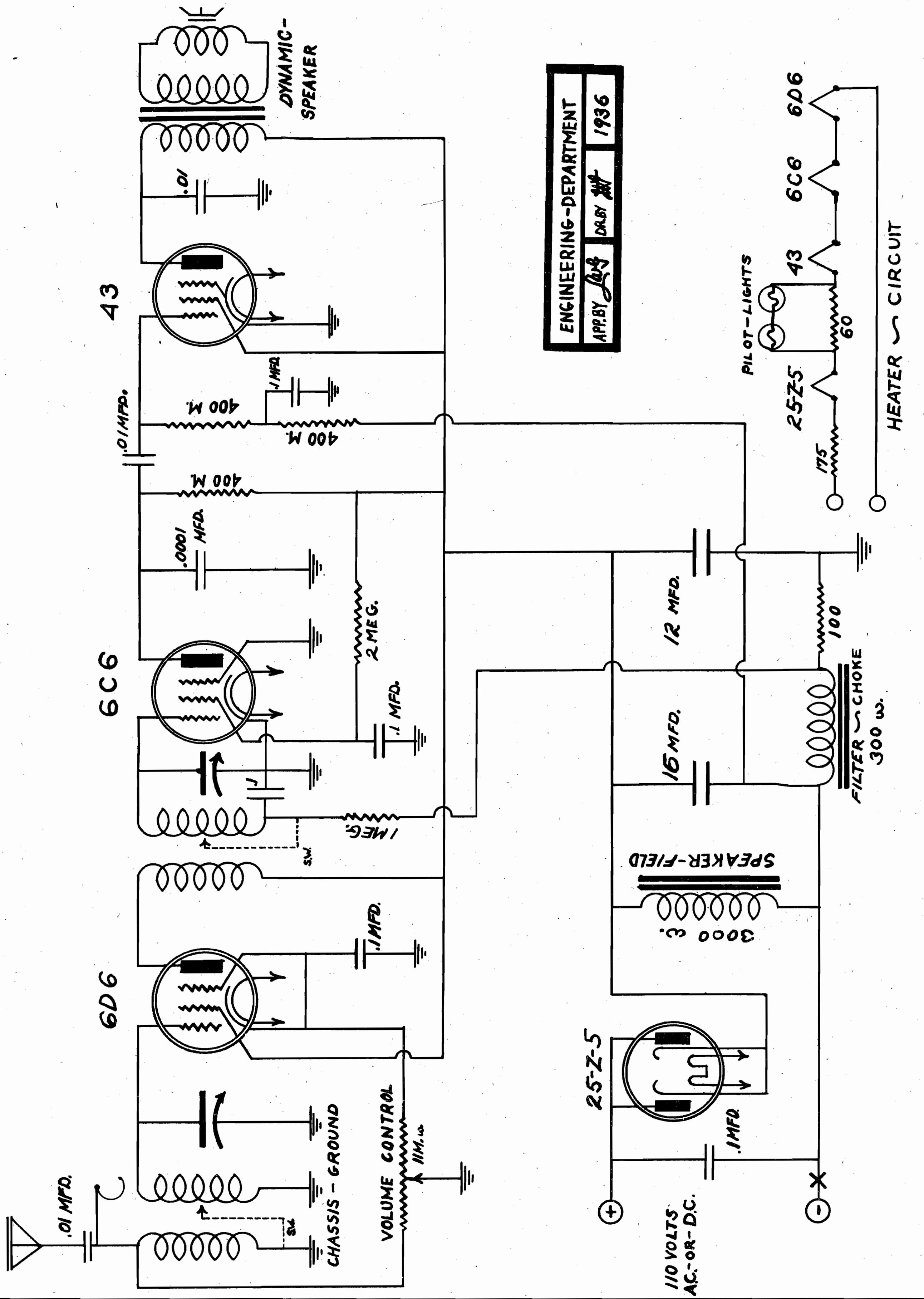


To balance set, remove chassis from cabinet then turn the condenser all the way up and adjust detector stage trimmer condenser to about 1720 kc and align RF stage for maximum gain.



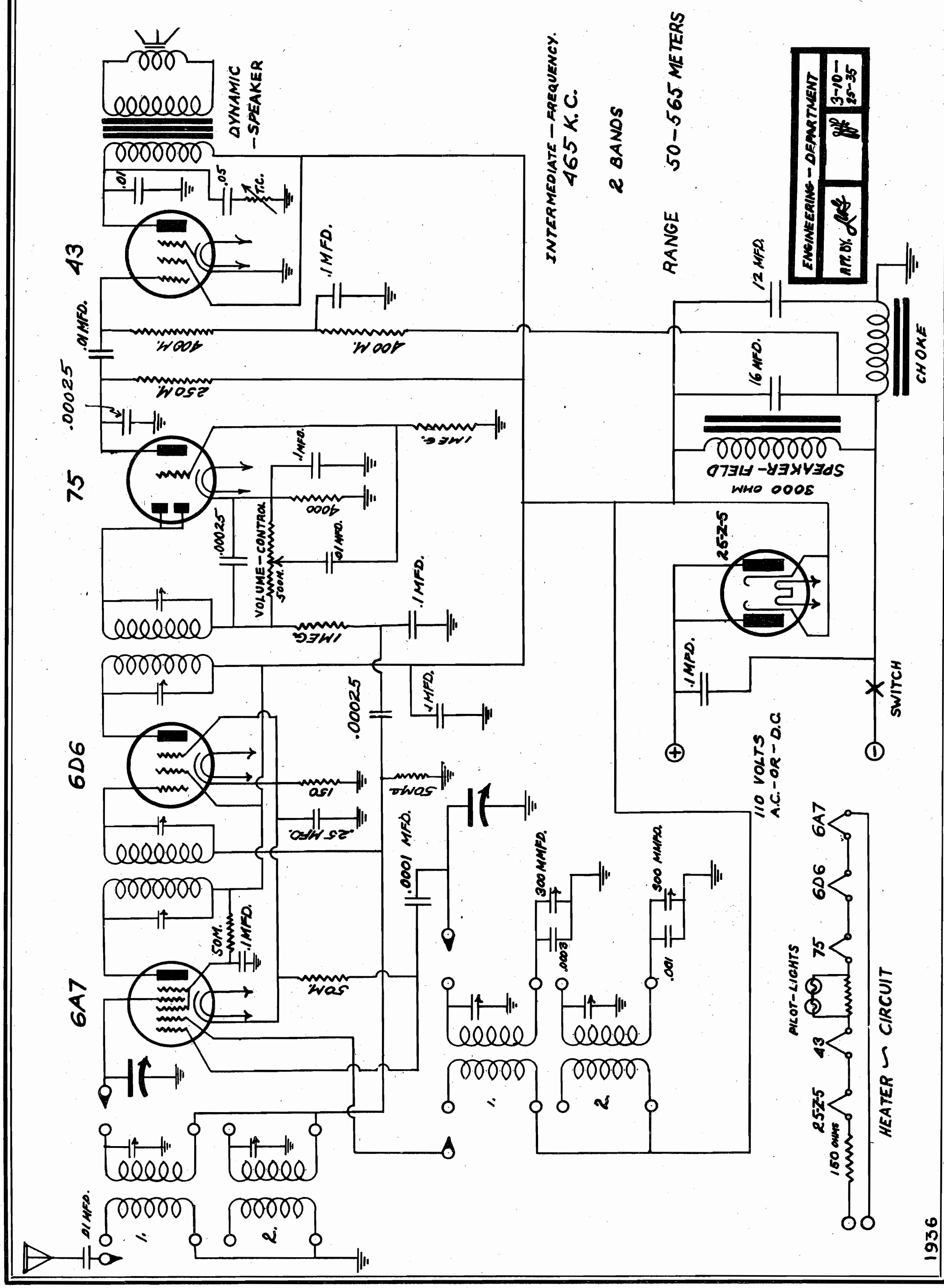
MODEL 252P
Schematic

WALGREEN CO.



MODELS 300,300P(Early)
Schematic

WALGREEN CO.

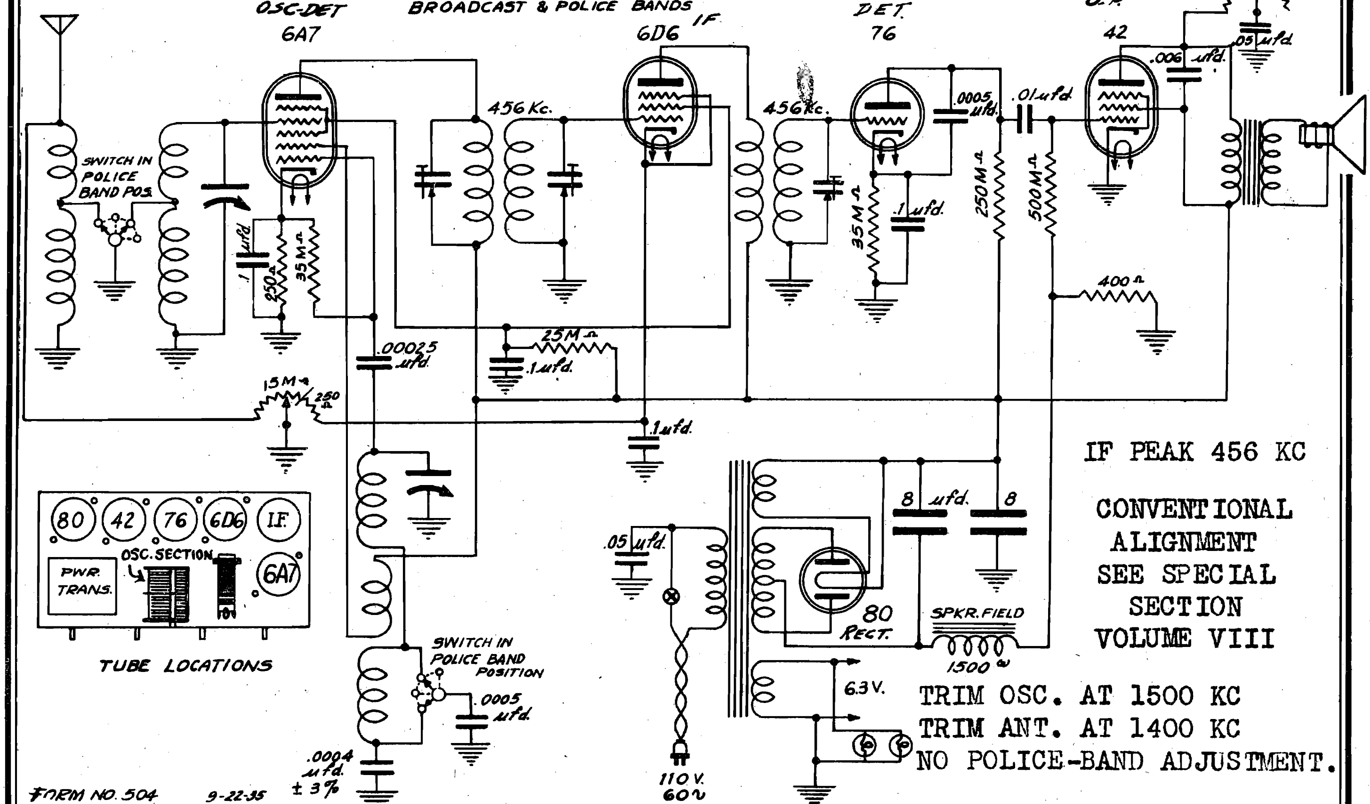


MODEL 400(Late)
Schematic, Voltage
Socket, Trimmers
MODEL 502
Schematic, Socket
Alignment, Trimmers

WALGREEN CO.

CIRCUIT DIAGRAM MODEL 502

5 TUBE A.C. SUPERHETERODYNE
BROADCAST & POLICE BANDS

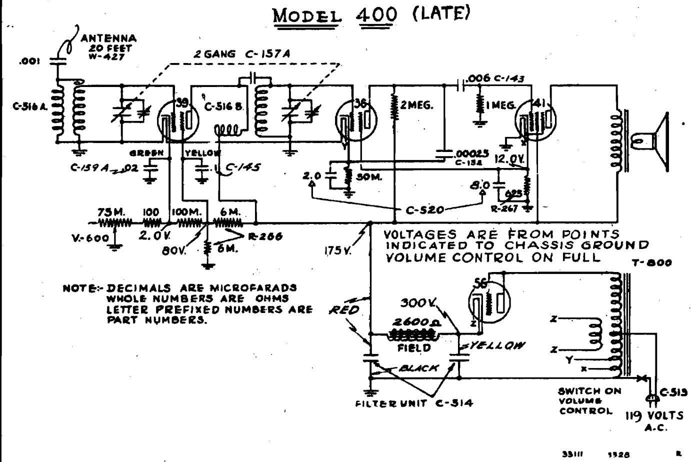


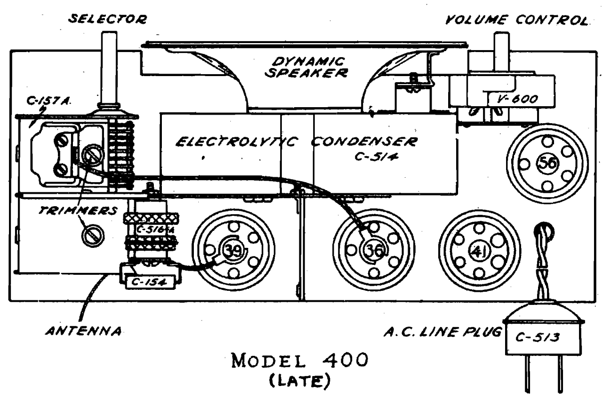
IF PEAK 456 KC

CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII

TRIM OSC. AT 1500 KC
TRIM ANT. AT 1400 KC
NO POLICE-BAND ADJUSTMENT.

MODEL 400 (LATE)



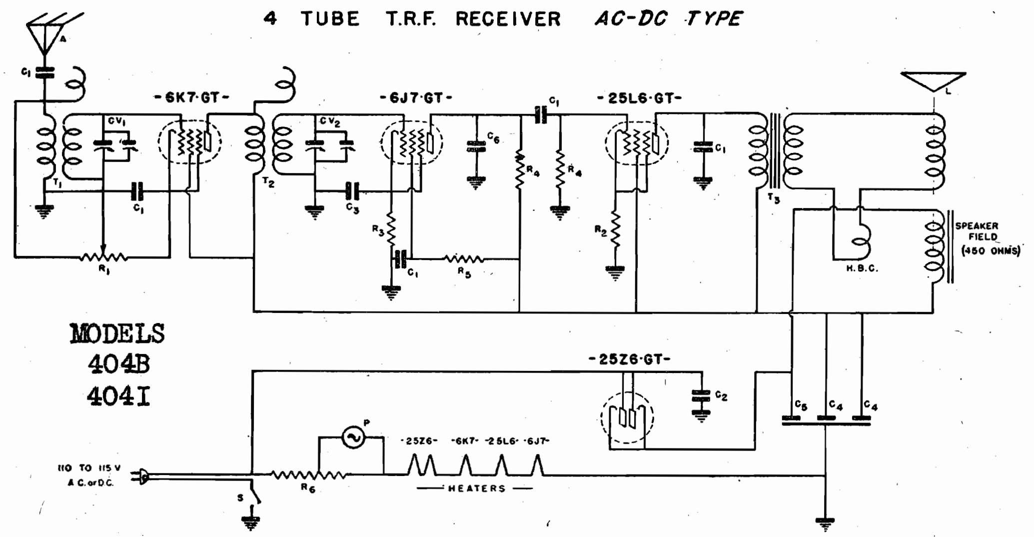


Model 400 Radio Receiver.
USE ONLY ON 105-115 VOLTS
ALTERNATING CURRENT—45 WATTS

WALGREEN CO.

MODELS 404B, 404I
MODELS 409, 419
Schematics, Socket Trimmers

4 TUBE T.R.F. RECEIVER *AC-DC TYPE*

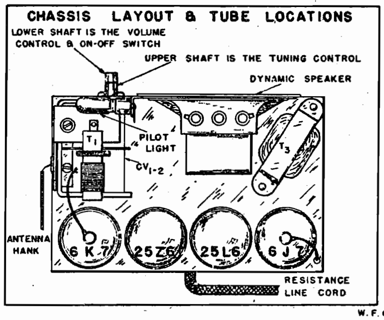


MODELS
404B
404I

LEGEND	OUR PART NO.	DESCRIPTION
C_1	—	.01 MFD. 400 V TUBULAR CONDENSER
C_2	—	.02 MFD. 400 V. TUBULAR CONDENSER
C_3	—	.25 MFD. 25 V TUBULAR CONDENSER
C_4	IN 336	10 MFD 150 W.V. ELECTROLYTIC COND.
C_5	IN 336	20 MFD. 150 W.V. ELECTROLYTIC COND.
C_6	—	.00025 MICA CONDENSER
CV_{1-2}	628-A	2 GANG VARIABLE CONDENSER
T_1	A-10	ANTENNA COIL
T_2	R-10	R F COIL
T_3	IN 823	SPEAKER TRANSFORNER

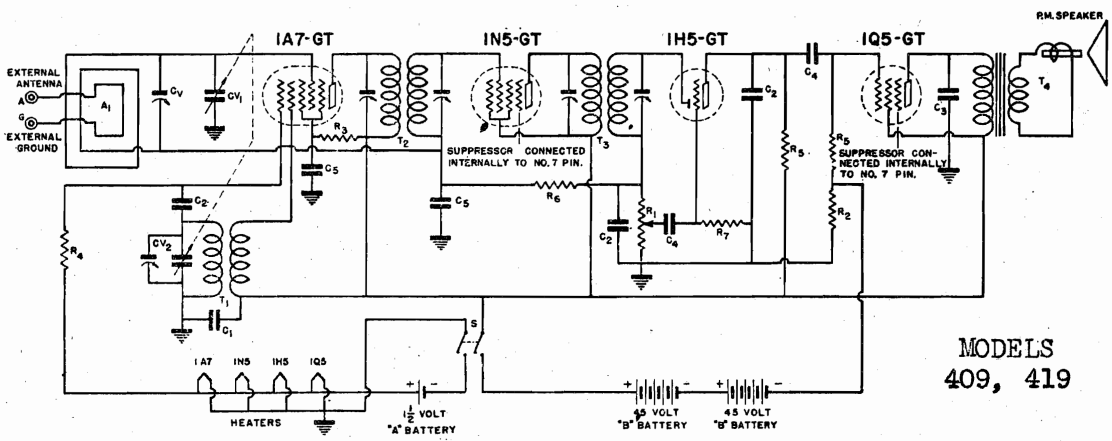
LEGEND	OUR PART NO.	DESCRIPTION
R_1	2028	10,000 OHM VOLUME CONTROL
R_2	—	150 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_3	—	25,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R	—	500,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_5	—	2 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_6	1811-A	210 OHM RESISTANCE LINE CORD
S	—	LINE SWITCH ON VOLUME CONTROL
P	—	MAZDA # 44 PILOT LIGHT
A	—	ANTENNA HANK
L	823	DYNAMIC SPEAKER

CHASSIS LAYOUT & TUBE LOCATIONS



W.F.S.

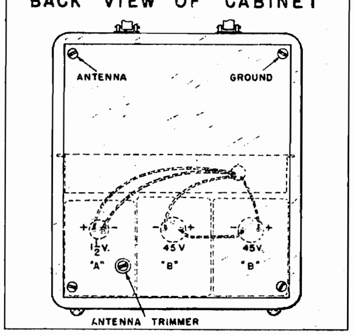
4 TUBE SUPERHETERODYNE RECEIVER - *BATTERY OPERATED*



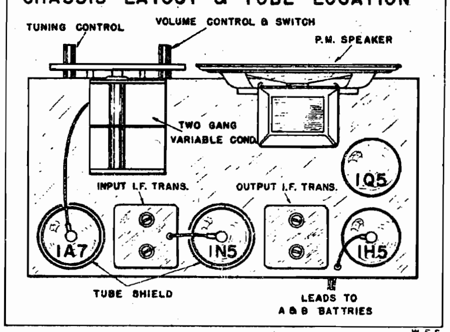
MODELS
409, 419

DIAG. NO.	PART NO.	DESCRIPTION
C_V	518	2 TO 40 MMFD. TRIMMING CONDENSER
CV_{1-2}	648	2 GANG VARIABLE CONDENSER
C_1	—	10 MFD. 200 V. ELECTROLYTIC CONDENSER
C_2	—	.00025 MFD. 600 V. TUBULAR CONDENSER
C_3	—	.002 MFD. 800 V. TUBULAR CONDENSER
C_4	—	.01 MFD. 400 V. TUBULAR CONDENSER
C_5	—	.05 MFD. 200 V. TUBULAR CONDENSER
A_1	3515-A	ANTENNA LOOP
T_1	0-5	OSCILLATOR COIL
T_2	I-3	INPUT I.F. TRANSFORMER
T_3	0-3	OUTPUT I.F. TRANSFORMER
T_4	635-A	PERMANENT MAGNET SPEAKER
S	—	SWITCH ON VOLUME CONTROL
R_1	2009G	500,000 OHM VOLUME CONTROL
R_2	—	550 OHM $\frac{1}{4}$ WATT CARBON RESISTOR-10%
R_3	—	50,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_4	—	250,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_5	—	500,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_6	—	2 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_7	—	3 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR

BACK VIEW OF CABINET



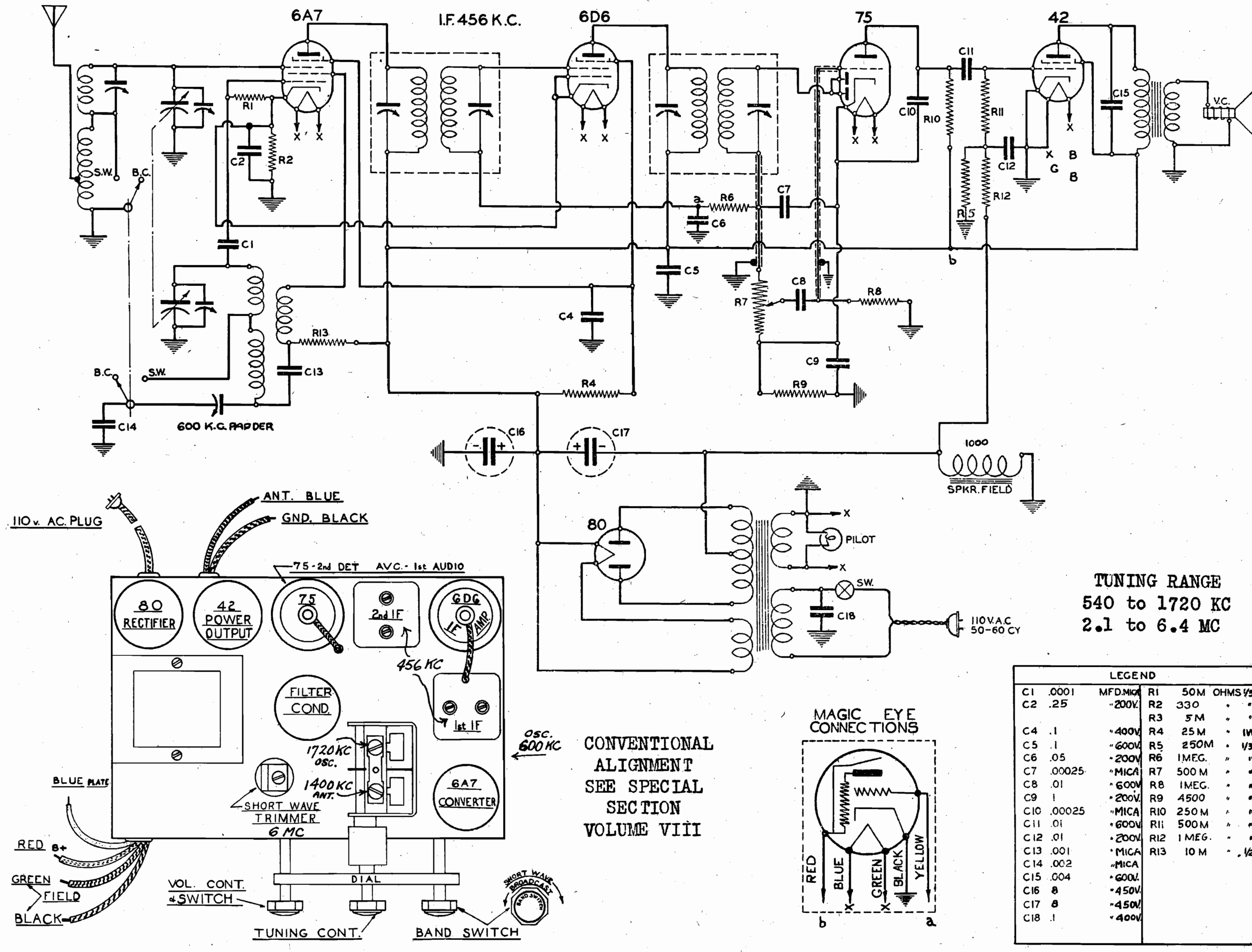
CHASSIS LAYOUT & TUBE LOCATION



W.F.S.

MODEL 510 AC (Early)
Schematic, Socket
Alignment, Trimmers

WALGREEN CO.



CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

TUNING RANGE
540 to 1720 KC
2.1 to 6.4 MC

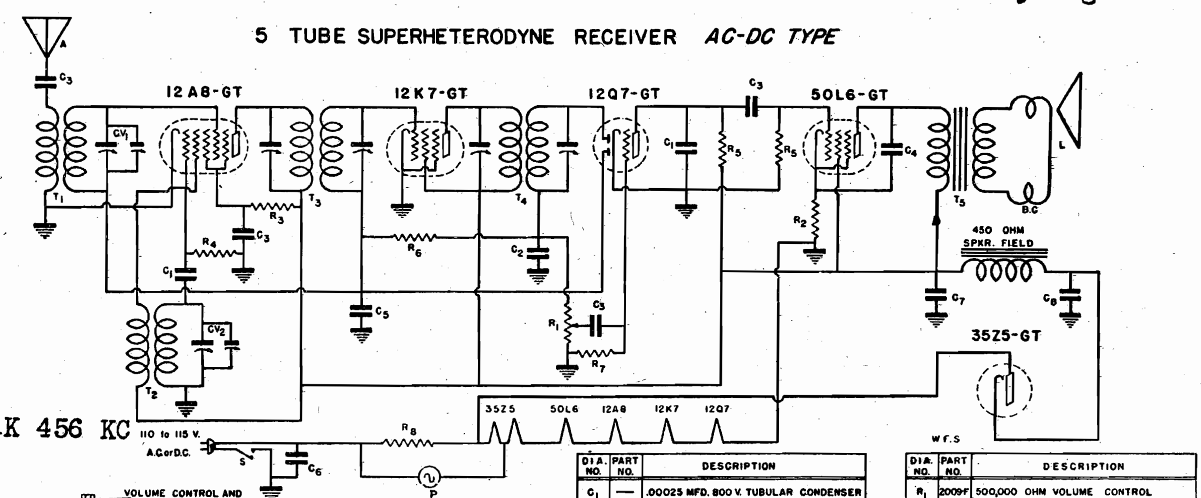
LEGEND

C1	.0001	MFD. MICA	R1	50M	OHMS	1/3W
C2	.25	" 200V.	R2	330	"	"
			R3	5M	"	"
C4	.1	" 400V.	R4	25M	"	1W
C5	.1	" 600V.	R5	250M	"	1/3W.
C6	.05	" 200V.	R6	1 MEG.	"	"
C7	.00025	" MICA	R7	500M	"	"
C8	.01	" 600V.	R8	1 MEG.	"	"
C9	1	" 200V.	R9	4500	"	"
C10	.00025	" MICA	R10	250M	"	"
C11	.01	" 600V.	R11	500M	"	"
C12	.01	" 200V.	R12	1 MEG.	"	"
C13	.001	" MICA	R13	10M	"	1/2W
C14	.002	" MICA				
C15	.004	" 600V.				
C16	8	" 450V.				
C17	8	" 450V.				
C18	.1	" 400V.				

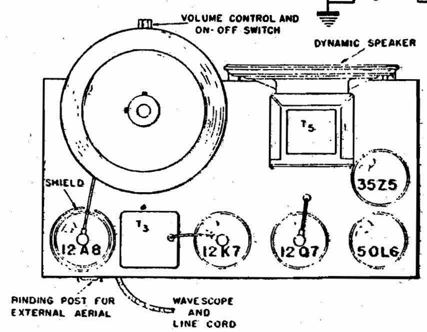
MODEL 510 AC-DC (Late)
MODEL 529
Schematics, Socket
Trimmers, Alignment

WALGREEN CO.

5 TUBE SUPERHETERODYNE RECEIVER *AC-DC TYPE*



IF PEAK 456 KC

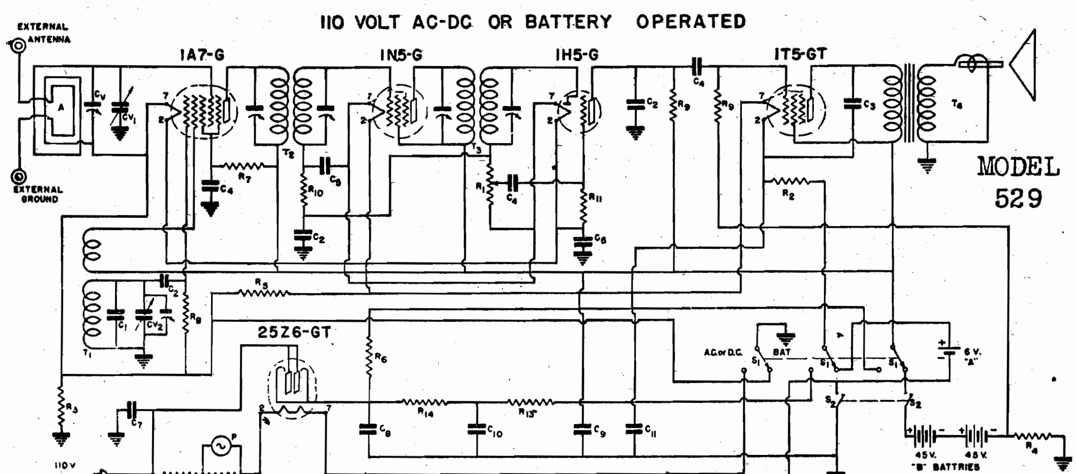


MODEL 510

DIA. NO.	PART NO.	DESCRIPTION
C_1	—	.00025 MFD. 800 V. TUBULAR CONDENSER
C_2	—	.0005 MFD. 200V TUBULAR CONDENSER
C_3	—	.01 MFD. 400 V. TUBULAR CONDENSER
C_4	—	.02 MFD. 400 V TUBULAR CONDENSER
C_5	—	.05 MFD. 200 V. TUBULAR CONDENSER
C_6	—	.1 MFD. 400 V. TUBULAR CONDENSER
C_7	IN 344	10 MFD. 150 W.V. ELECTROLYTIC COND
C_8	IN 344	30 MFD. 150 W.V. ELECTROLYTIC COND
CV_{1-2}	648	2 GANG VARIABLE CONDENSER
P	—	MAZDA NO 47 PILOT LIGHT
A	—	WAVESCOPE AERIAL
L	833-B	DYNAMIC SPEAKER
S	—	LINE SWITCH ON VOLUME CONTROL

DIA. NO.	PART NO.	DESCRIPTION
R_1	2009-F	500,000 OHM VOLUME CONTROL
R_2	—	150 OHM $\frac{1}{4}$ WATT CARBON RESISTOR-10%
R_3	—	50,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_4	—	25,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_5	—	500,000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_6	—	2 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_7	—	6 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_8	—	10 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
T_1	A-5-A	ANTENNA COIL
T_2	0-5	OSCILLATOR COIL
T_3	1-3	INPUT I F TRANSFORMER
T_4	D-3	OUTPUT I F TRANSFORMER
T_5	IN 833-B	SPEAKER TRANSFORMER

110 VOLT AC-DC OR BATTERY OPERATED



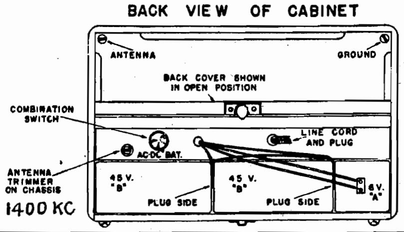
MODEL 529

DIAG. NO.	PART NO	DESCRIPTION
C_1	—	.00002 MICA CONDENSER ± 10%
C_2	—	.00025 MFD 600V TUBULAR CONDENSER
C_3	—	.002 MFD. 600V. TUBULAR CONDENSER
C_4	—	.01 MFD 400V. TUBULAR CONDENSER
C_5	—	.05 MFD. 200V TUBULAR CONDENSER
C_6	—	.1 MFD. 200V. TUBULAR CONDENSER
C_7	—	.1 MFD. 400V TUBULAR CONDENSER
C_8	345.	40 MFD 200V. ELECTROLYTIC CONDENSER
C_9	345	20 MFD 200V ELECTROLYTIC CONDENSER
C_{10}	345	10 MFD 35 V ELECTROLYTIC CONDENSER
C_{11}	345	70 MFD 6 V. ELECTROLYTIC CONDENSER
C_V	518	2 TO 40 MMFD TRIMMER CONDENSER

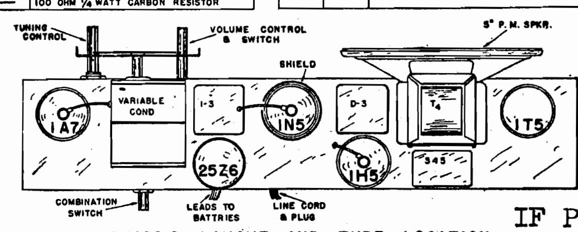
DIAG. NO	PART NO.	DESCRIPTION
CV_{1-2}	648	2 GANG VARIABLE CONDENSER
A	3519	ANTENNA LOOP
T_1	0-5	OSCILLATOR COIL
T_2	1-3	INPUT I.F. TRANSFORMER
T_3	D-3	OUTPUT I F TRANSFORMER
T_4	837	PERMANENT MAGNET SPEAKER
S_1	1940	3 POLE TWO POSITION BAND SWITCH
S_2	—	SWITCH ON VOLUME CONTROL
R_1	2009-E	500,000 OHM VOLUME CONTROL
R_2	—	10 OHM $\frac{1}{4}$ WATT CARBON RESISTOR ± 10%
R_3	—	30 OHM $\frac{1}{4}$ WATT CARBON RESISTOR ± 10%
R_4	—	100 OHM $\frac{1}{4}$ WATT CARBON RESISTOR

DIAG. NO.	PART NO.	DESCRIPTION
R_5	—	700 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_6	—	3000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_7	—	50000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_8	—	150 000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_9	—	500 000 OHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_{10}	—	2 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_{11}	—	3 MEGOHM $\frac{1}{4}$ WATT CARBON RESISTOR
R_{12}	1818	305 OHM TAPPED RESISTANCE LINE CORD
R_{13}	IN-155	400 OHM 1 WATT WIRE WOUND RESISTANCE
R_{14}	IN-155	2200 OHM 5 WATT WIRE WOUND RESISTANCE
P	—	MAZDA NO. 47 PILOT LIGHT

BACK VIEW OF CABINET



1400 KC

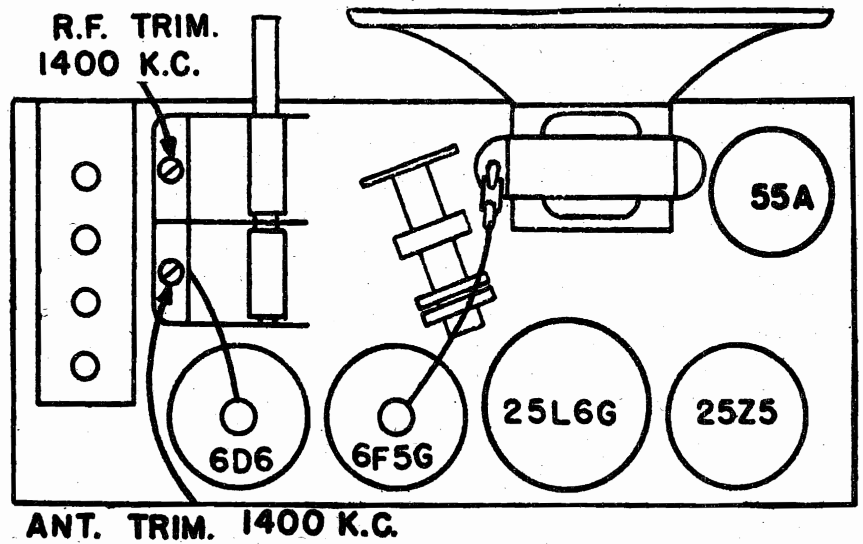


CHASSIS LAYOUT AND TUBE LOCATION

IF PEAK 456 KC

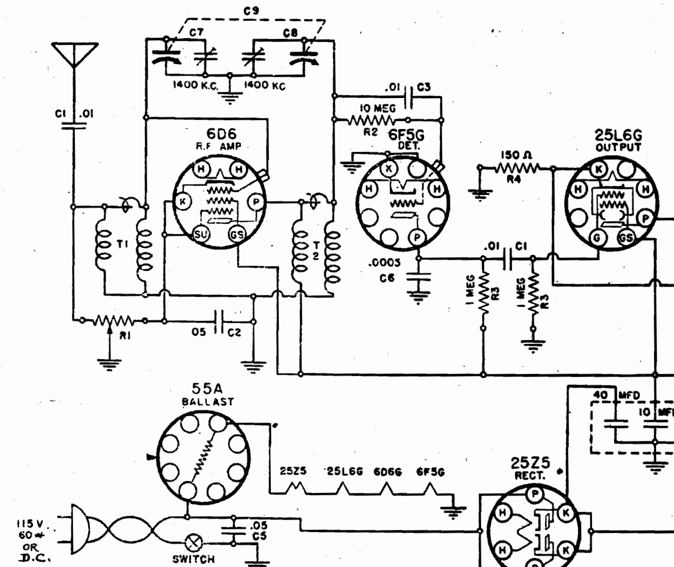
MODEL 542
Schematic, Socket
Trimmers, Tuner

WALGREEN CO.



This receiver is a 5 tube AC/DC current operated T.R.F.

CONVENTIONAL
ALIGNMENT SEE
SPEC. SECTION
VOL. VIII



INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

After receiver is installed and antenna and ground properly connected, plug line cord into a convenient outlet. Then turn the volume control to about the center of rotation. This will turn the receiver on and put it in an operating condition. Time must be allowed for the tubes to heat up before stations can be tuned in. This time is approximately one-half minute.

The automatic tuning feature of your radio makes it possible to set up 6 favorite American broadcast stations and tune them in quickly with the automatic tuner. Choose stations for push-button operation heard with good volume at all times.

Cut the call letters of your 6 selected stations from the list supplied with your receiver and slip them into the Tab Holder from the top, with the clear celluloid in front of the call letters to protect them. Arrange the call letters in the Tab Holder from right to left. Have the call letters of the lowest frequency station at the extreme right and work progressively to the left so that the highest frequency call letters will be at the extreme left.

Follow the procedure outlined below, in order to adjust the push-buttons properly:

1. By means of the Station Selector Knob tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the lowest frequency—that is, your selected station which is tuned in nearest the right-hand side of the dial.

2. After the station has been tuned in accurately with the right hand, continue to hold it in its exact position firmly, and with the left hand loosen the Push-Button to be set up for that station by unscrewing the Push-Button about one turn to the left (counter-clockwise).

3. Continuing to hold the Station Selector Knob in its exact position, PUSH THE PUSH-BUTTON IN ALL THE WAY with the left hand.

4. After the Push-Button has been depressed all the way, tighten it gently toward the right (clockwise). Release Push-Button slowly and when in normal position grip button and tighten firmly.

The Push-Button tuning system is now correctly set up for your first selected station of lowest frequency and the Call Letter Tab for this station should be at the extreme right of the Call Letter Holders.

Follow through with this same procedure, setting up the other 5 stations in the order of their frequency—that is, the second station set up will be second lowest in frequency and the third station set up will be third lowest in frequency.

Carefully check each Push-Button for the accuracy of the setting. If, when tuning in any station with its Automatic Push-Button it does not have equal volume or clarity to that obtained with manual tuning, this may indicate the automatic adjustment for that station was not made accurately. Should there be any inaccuracy in any one of the Push-Button adjustments, correction can be made by repeating the above procedure for that button only. Do not reset those Push-Buttons that are accurately adjusted.

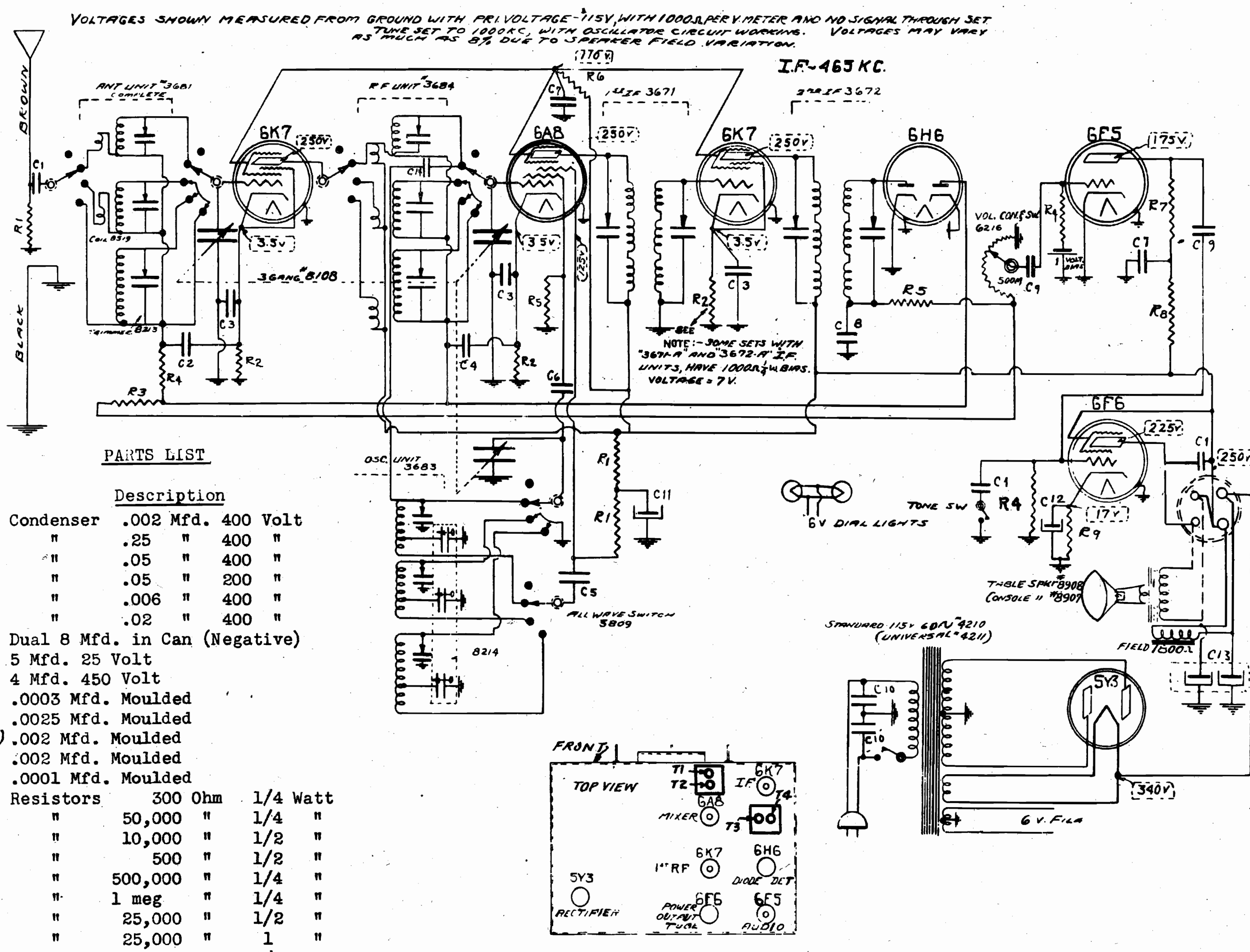
No further adjustments are necessary to operate your radio automatically or manually. To receive any one of your four selected stations for automatic operation, merely push in ALL THE WAY the Button set up for that station.

This receiver is made to cover from 1750K.C. to 535K.C.

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 542
C1	1604	.01 MFD. 600V. TUBULAR CONDENSER	R1	24-127	VOLUME CONTROL & SWITCH
C2	1622	.05 MFD. 200 V. " "	R2	60-193	10 MEGOHM 1/3 W. RESISTOR
C3	16-119	.01 MFD. 400 V. " "	R3	60-195	1 " " "
C4	16-103	.02 MFD. 600 V. " "	R4	60-184	150 OHMS " "
C5	1607	.05 MFD. 400V. " "			
C6	15-112	.0005 MFD. MICA CONDENSER	T1	10-249	ANTENNA COIL
C7, C8 } C9	19-135	ANTENNA VARIABLE COND. OSCILLATOR VARIABLE COND.	T2	10-250	R.F COIL
			T3		OUTPUT TRANSFORMER
C10	18-234	FILTER CONDENSER- 40 X 10 MF-400WV 20 MF - 25 WV	I	79-251	SPEAKER

MODEL 750
Schematic, Voltage
Socket

WALGREEN CO.



PARTS LIST

Part No.	Description			
3516 (C2)	Condenser	.002 Mfd.	400	Volt
2758 (C7)	"	.25 "	400	"
2757 (C10)	"	.05 "	400	"
2183 (C3)	"	.05 "	200	"
3515 (C1)	"	.006 "	400	"
3517 (C9)	"	.02 "	400	"
3004 (C13)	Dual 8 Mfd. in Can (Negative)			
3003 (C12)	5 Mfd. 25 Volt			
8814 (C11)	4 Mfd. 450 Volt			
8304 (C8)	.0003 Mfd. Moulded			
8305X (C4)	.0025 Mfd. Moulded			
2287X (C5)	.002 Mfd. Moulded			
287 (C14)	.002 Mfd. Moulded			
2366 (C6)	.0001 Mfd. Moulded			
1836 (R2)	Resistors	300 Ohm	1/4	Watt
1843 (R5)	"	50,000 "	1/4	"
3349 (R1)	"	10,000 "	1/2	"
1890 (R9)	"	500 "	1/2	"
3328 (R4)	"	500,000 "	1/4	"
3335 (R3)	"	1 meg "	1/4	"
3344 (R8)	"	25,000 "	1/2	"
2650 (R6)	"	25,000 "	1	"
1824 (R7)	"	250,000 "	1/2	"

MODEL 750
Alignment
Trimmers, Chassis

WALGREEN CO

THE I.F. STAGES

The I.F.'s are aligned by the usual system of feeding the intermediate frequency of 465KC into the grid of the 6A7 tube.

The two trimmers in each of the I.F. cans should be very carefully peaked to resonance as they are very critical and will greatly affect the performance of the set. These are trimmers number T1, T2, T3, T4. (See pictorial diagram).

The sensitivity of the I.F. stages will be 30 microvolts or better.

Always use as low an output as possible from the test oscillator in making the various adjustments.

II ALIGNMENT OF SHORTWAVE BAND 5.5 TO 18 M.C.

First check the position of the dial hand by rotating the condenser shaft to the left to full capacity. At this point the dial hand should be straight across in line with the lines dividing the scale in half. If the hand is off position it can be lined up by removing dial glass and setting hand with screw in center of dial.

1. Set the test oscillator to 17 megacycles.

2. Turn wave band switch all the way to right for highest S.W. band, and set dial hand to 17 M.C.

3. Peak trimmer condenser T5 of the oscillator coil (See pictorial) to resonance with 17 M.C. fed into antenna.

4. Adjust antenna and RF coil trimmers T6 and T7 to same frequency after the above mentioned oscillator trimmer has been set.

5. Turn dial hand to 6 M.C. on the same band and peak padding condenser P-1 to 6 M.C.

III SHORTWAVE BAND 1.7 TO 5.5 M.C.

1. Set band switch to this band and dial hand to 5 M.C.
2. Peak trimmer T8 to 5 M.C.
3. Peak antenna and RF trimmer to T9 and T10 to 5 M.C.
4. Rotate dial to 1.7 M.C. and adjust padding condenser P-2 1.7 M.C.

NOTE: After adjusting the two high bands at 17 megacycles and 5 megacycles the test oscillator input to antenna should be increased and receiver dial advanced to .9 megacycle lower and note if test oscillator signal is heard.

In case there is no response the oscillator trimmers have been pulled down too tightly. The trimmers should be released until this condition exists then go back to original point of alignment - reduce antenna input voltage and correct the trimmer adjustment.

EXAMPLE: The receiver has been adjusted to 17 megacycles. Tune receiver to approximately 16.9 M.C.

Increase oscillator signal by "opening up" the attenuator. Move the dial back and forth at 16.9 M.C.

If no signal is heard, let oscillator trimmer off until it is heard at 16.9 M.C.

Reduce signal voltage from generator, go back to 17 M.C. and slightly correct this last trimmer adjustment.

The same applies to the 5 M.C. adjustment.

IV THE BROADCAST BAND

1. Turn wave band switch all the way to left and dial hand set to 1400 KC (the top scale).

2. Peak oscillator trimmer T11 to 1400 KC and RF circuit trimmers T12 and T13 to same frequency.

3. Set dial hand to 550 KC and adjust oscillator padding condenser P-3 to 550 KC.

4. Recheck dial at 1400 KC as in number (1) and (2).

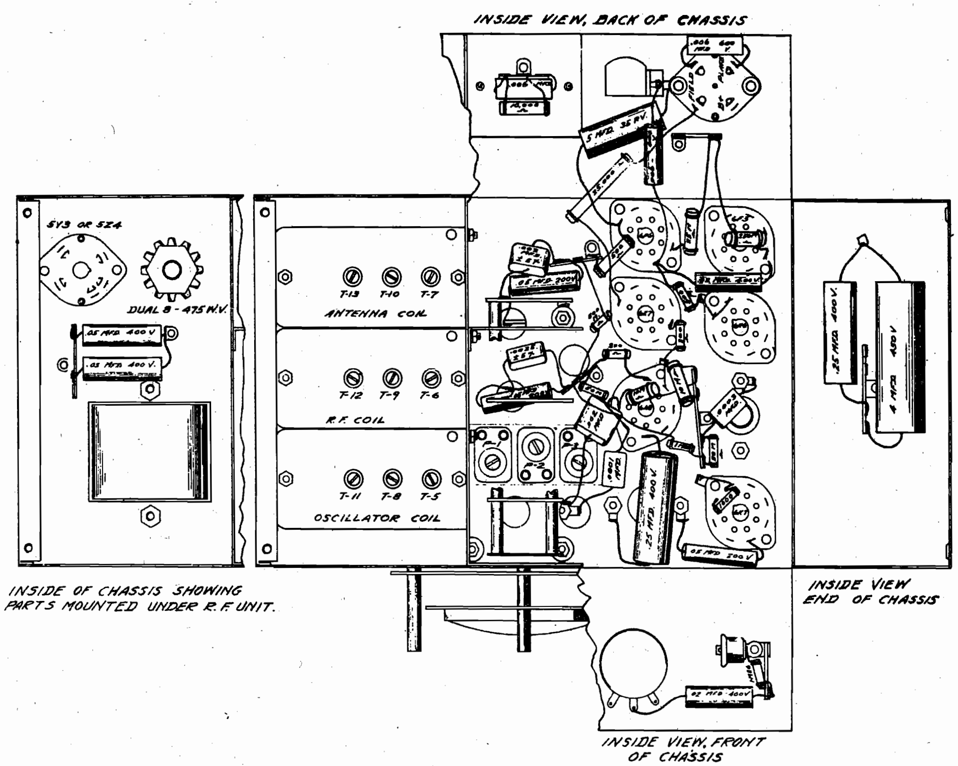
5. Points in the middle of the dial may be checked and if necessary the plates of the front section of variable condenser may be bent for alignment.

V NOTES.

1. Seal all trimmers after their final adjustment.

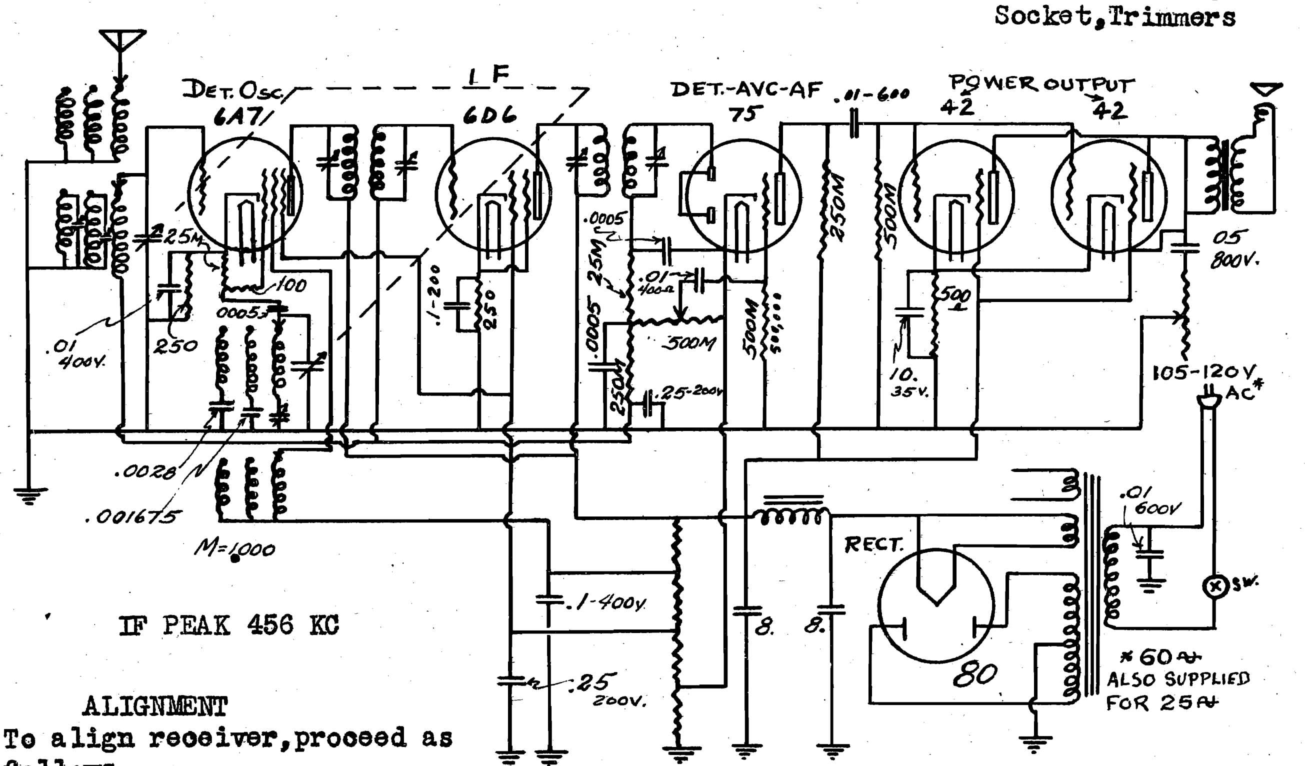
2. Be sure that the settings are being made to the true fundamental signal from the oscillator and not on a harmonic or image frequency.

3. Refer to the schematic for the voltages at the tube sockets.



WALGREEN CO.

MODELS 600,650
Schematic,Alignment
Socket,Trimmers

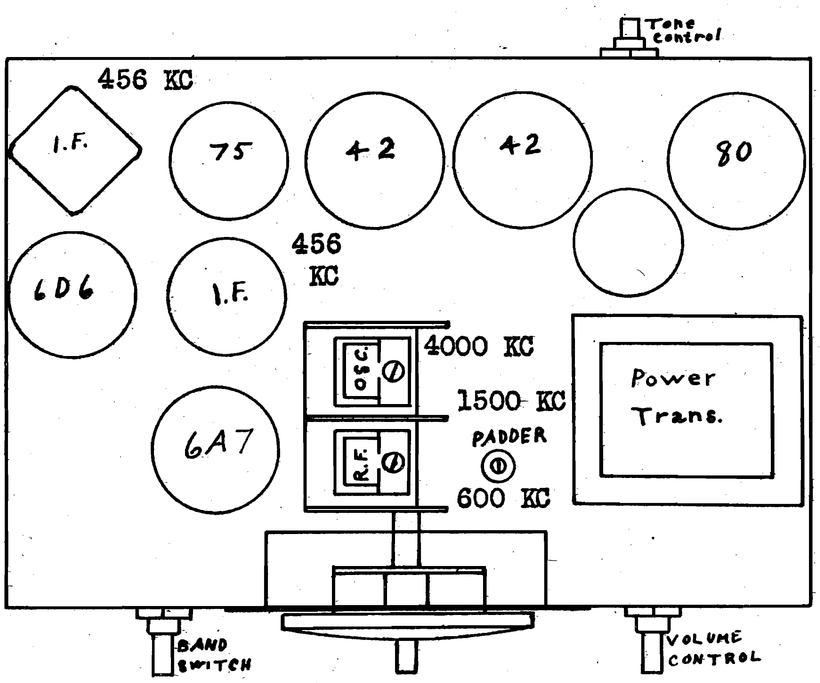


IF PEAK 456 KC

ALIGNMENT

To align receiver,proceed as follows,

1. Apply 456 KC note to control grid of 6A7 and peak IF transformers for maximum gain.
2. Apply 4000 KC note to antenna wire; set band switch to second band and align trimmer on oscillator section of variable condenser to track with 4000 KC on dial
3. Turn band switch to broadcast band; apply 1500 KC note to antenna wire, adjust trimmer of RF section of variable condenser for maximum gain.
4. Apply 600 KC note to antenna, adjust padder condenser for maximum gain, swinging condenser back and forth across 600 KC signal.
5. Check 1400 KC signal for alignment.
6. Turn band switch to second band; check 4000 KC signal for alignment and adjust trimmer on antenna coil for greatest gain at 4000 KC.
7. Turn band switch to last band and adjust trimmer on antenna coil for greatest noise on 12 megacycles.

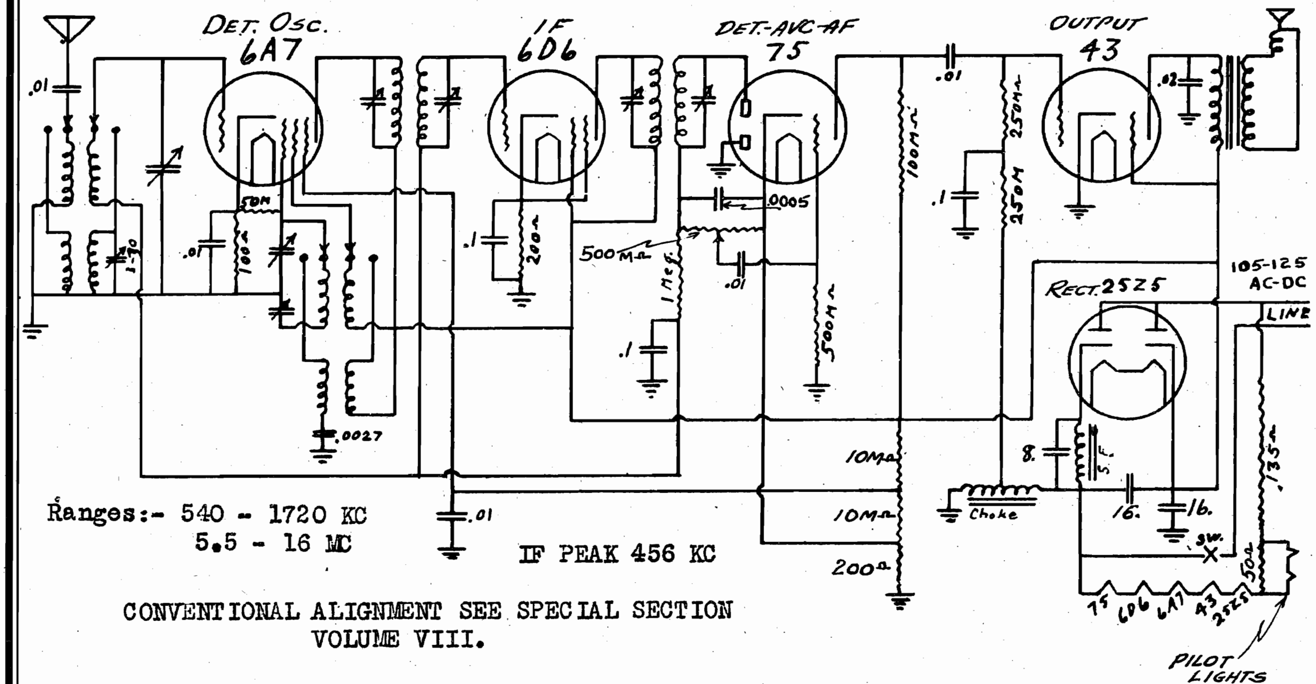


RANGES:-

This receiver covers
540 - 1720 kilocycles
1720- 5000 kilocycles
5.5- 16 megacycles

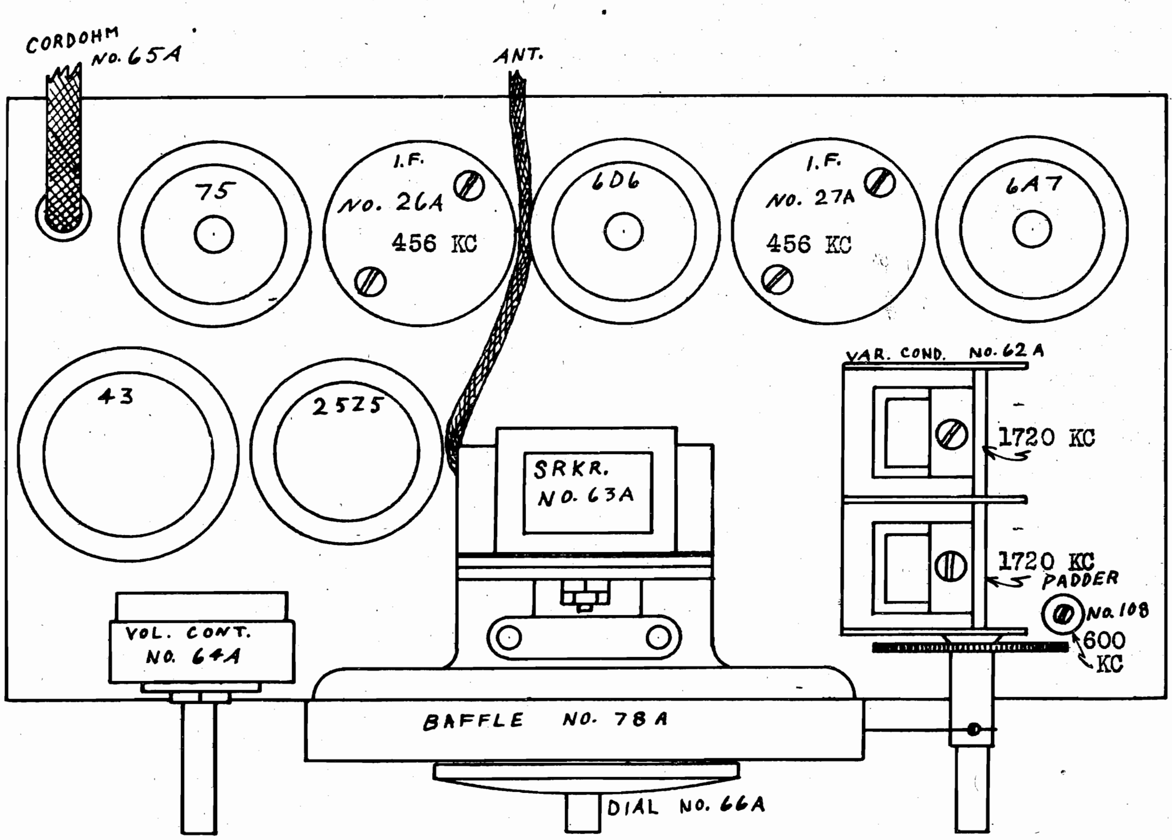
MODEL 901
Schematic, Alignment
Socket, Trimmers

WALGREEN CO.



Ranges:- 540 - 1720 KC
5.5 - 16 MC

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII.



Check alignment at 1400 KC. To align short wave band, adjust trimmer underneath chassis for greatest noise level around the 25 meter band.

6-14-35- F.W.

Schematics, Sockets, Voltage
Alignment, Trimmers

WARWICK MFG. CORP.

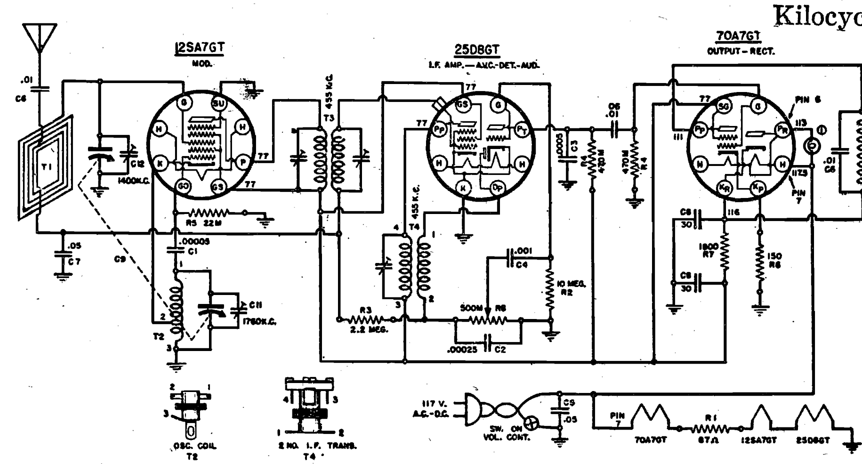
MODELS 0-30, 0-300 to 0-309
MODELS 0-40, 0-407

This receiver covers a frequency range from 540 Kilocycles to 1760 Kilocycles (K.C.).

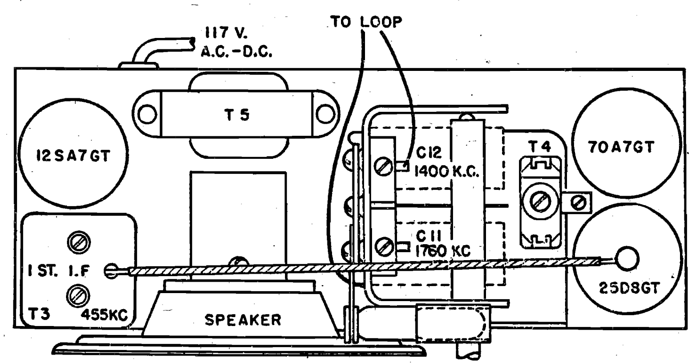
Model No. 0-30

Model No. 0-300 to 0-309, Inclusive

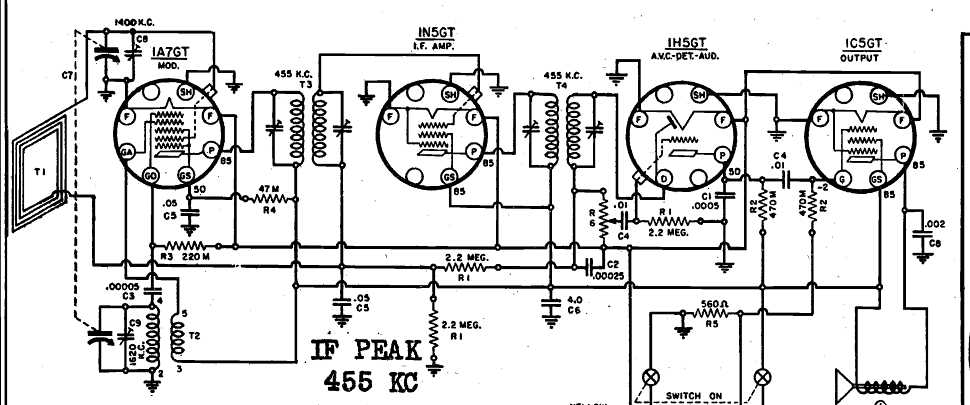
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOLUME VIII



IF PEAK
455 KC

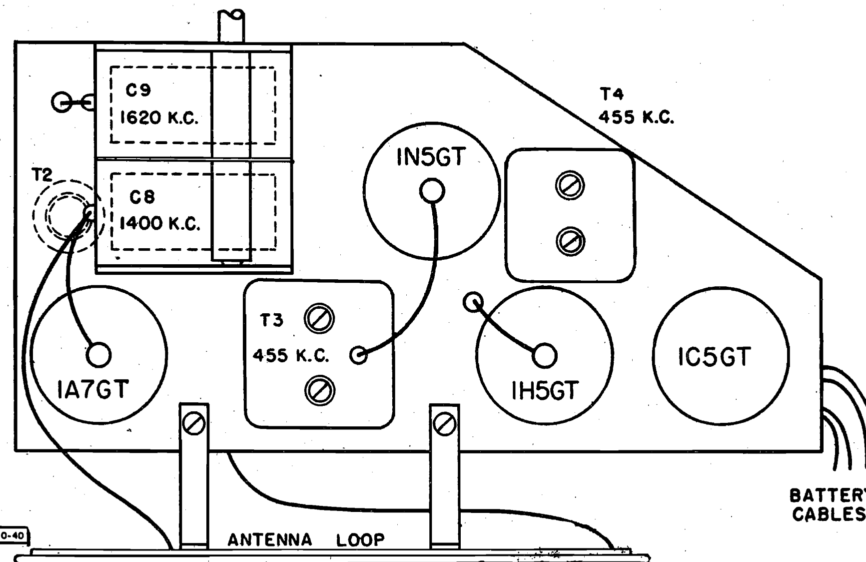


CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-30
C1	1503	.00005 MFD. MICA CONDENSER	R1	60-238	87 OHMS 2 W. WIRE WOUND RESISTOR	T1	82-4	ANTENNA LOOP
C2	1504	.00025 " " "	R2	60-225	10 MEGOHM 1/2 W. CARBON RESISTOR	T2	10-299	OSCILLATOR COIL
C3	15-113	.0005 " " "	R3	60-208	2.2 " " " "	T3	10-296	1 ST. I.F. TRANSFORMER
C4	15-111	.001 " " "	R4	60-206	470 M OHM " " "	T4	10-297	2 ND. " "
C5	1607	.05 " - 400 V. TUBULAR CONDENSER	R5	60-223	22 M " " " "	T5	80-176	OUTPUT "
C6	16-121	.01 " 200 V. " "	R6	60-240	150 " " " "			
C7	1622	.05 " " " "	R7	60-241	1800 " 1 W. " "	1	89-4	PILOT LIGHT #47
C8	18-251	30 X 30 " 150W.V. ELECTROLYTIC COND.	R8	24-139	500 M " VOLUME CONTROL	2	79-270	SPEAKER
C9	19-150	2 GANG VARIABLE COND. ALSO C12 & C11						



IF PEAK
455 KC

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER COND.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
CAPACITY READINGS ARE IN MICROFARADS.



CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-40
R1	60-179	2.2 MEGOHM 1/3 WATT RESISTOR	C1	15-112	.0005 MFD. MICA CONDENSER	T1	82-2	ANTENNA LOOP
R2	60-178	470 M OHM " " "	C2	1504	.00025 " " "	T2	10-294	OSCILLATOR COIL
R3	60-180	220 M " " " "	C3	1503	.00005 " " "	T3	10-293	1 ST. I.F. TRANSFORMER
R4	60-177	47 M " " " "	C4	16-121	.01 MFD. 200 V. TUBULAR CONDENSER	T4	10-281	2 ND. " "
R5	60-201	560 Ω " " " "	C5	1622	.05 " 200 V. " "			
R6	24-138	1 MEGOHM VOLUME CONTROL	C6	18-250	4.0 " 150W.V. " "	1	79-272	5" SPEAKER
			C7	19-149	2 GANG VARIABLE COND. ALSO C8 & C9			
			C8	1609	.002 MFD. 400 V. TUBULAR CONDENSER			

MODEL 0-40, 0-407.

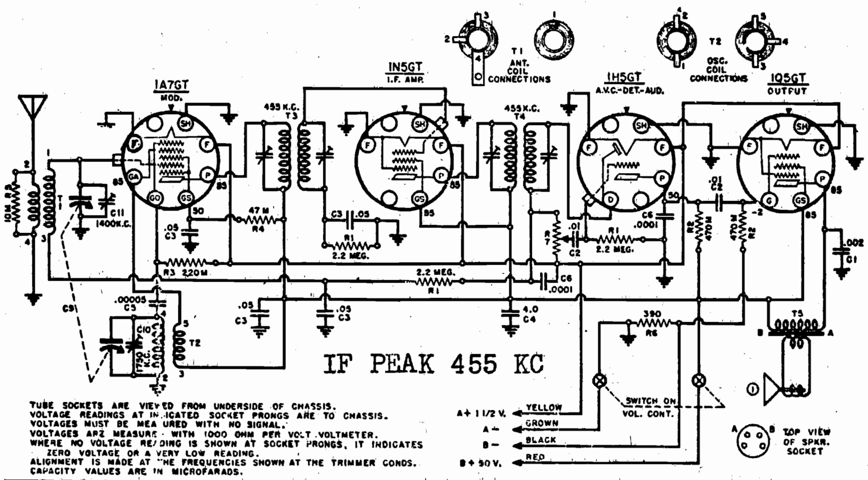
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

This receiver is made to cover the standard broadcast band from 1620 K.C. to 535 K.C.

MODELS 0-43,0-430 to 0-439
MODELS 0-44,0-440 to 0-449
MODELS 0-62,0-620 to 0-629
Schematics,Socket,Trimmers
Alignment,Voltage

WARWICK MFG. CORP.

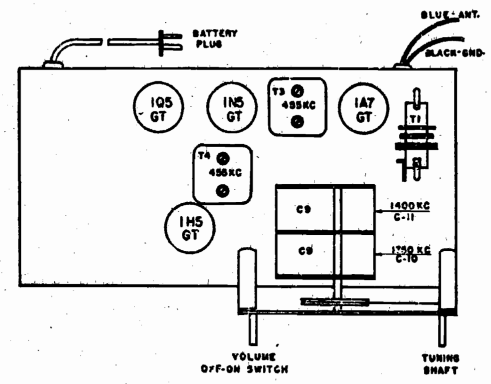
Model No. 0-44
Model No. 0-440 to 0-449, Inclusive
Model No. 0-43
0-430 to 0-439, Incl.



IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDS.
CAPACITY VALUES ARE IN MICROFARADS.

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-44
R 1	60-179	2.2 MEGOHM 1/4 W. RESISTOR	C 1	16-138	.002 MFD. 400V. TUBULAR COND.	T 1	10-344	ANTENNA TRANSFORMER
R 2	60-178	470M OHM " "	C 2	16-121	.01 " 200V. " "	T 2	10-341	OSCILLATOR "
R 3	60-180	220M " " "	C 3	1622	.05 " " " "	T 3	10-342	1 ST. I.F "
R 4	60-177	47M " " "	C 4	18-250	4.0 " 150W.V. ELECTROLYTICS	T 4	10-343	2 ND. I.F. "
R 5	60-215	10M " " "	C 5	15-120	.00005 MFD. MICA CONDENSER	T 5	------	OUTPUT TRANS. (ON SPKR.)
R 6	60-221	390 " " "	C 6	1501	.0001 " " "			
R 7	24-149	1 MEGOHM VOLUME CONTROL	C 9	19-165	2 GANG VAR. COND. ALSO C10 & C11	1	79-297	5" P M. SPEAKER

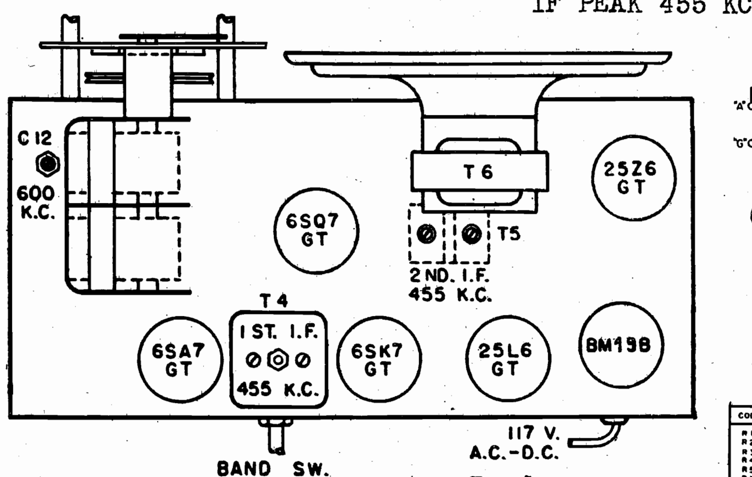


LOCATION OF PARTS ON TOP OF CHASSIS BASE

CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII

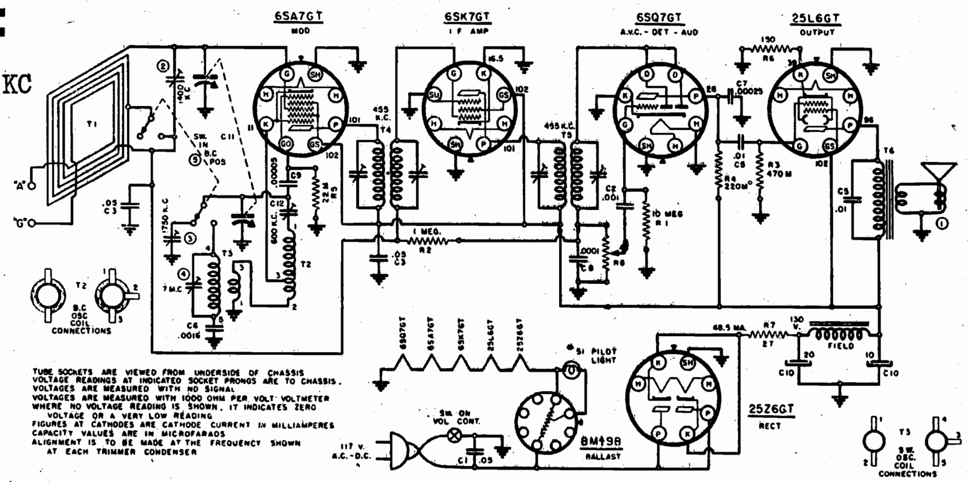
MODEL NO. 0-620 TO 0-629, INCLUSIVE
Model No. 0-62

IF PEAK 455 KC



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

Bands
540 K.C. to 1750 K.C.
2.2 to 7 megacycles.

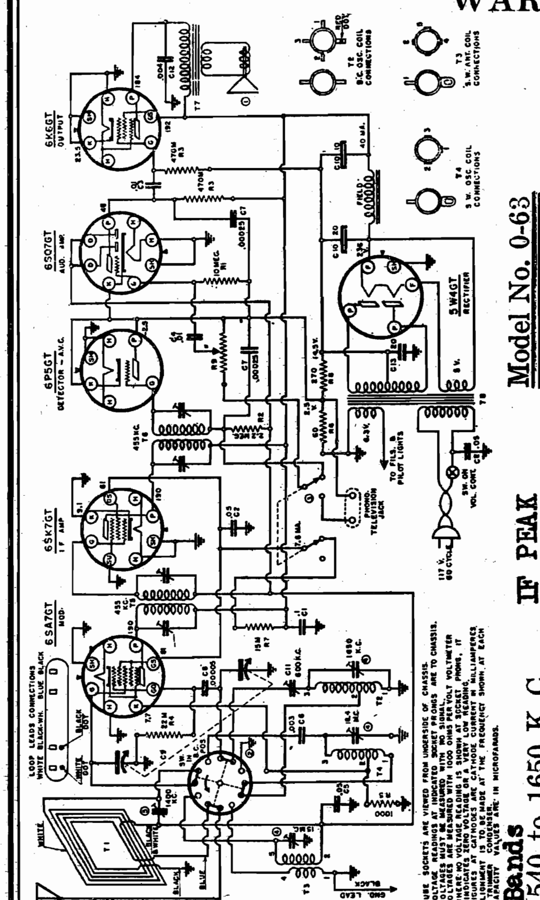


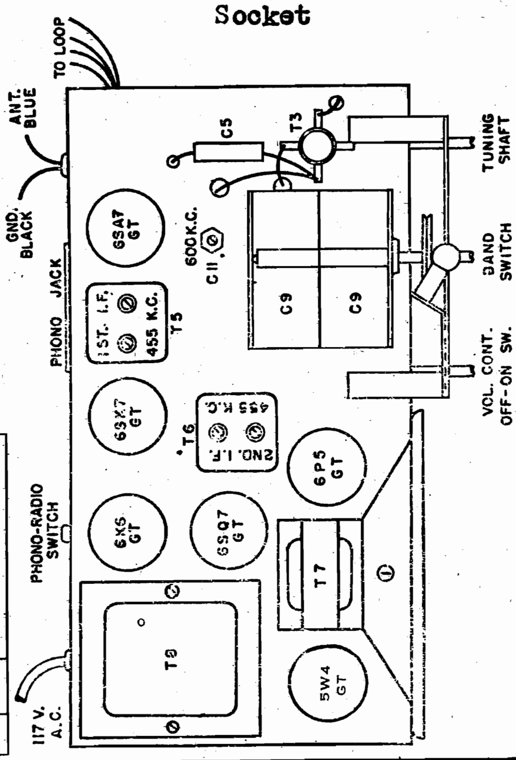
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES ARE MEASURED WITH NO SIGNAL
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER
WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES
CAPACITY VALUES ARE IN MICROFARADS
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER

CODE	PART NO	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO	DESCRIPTION 0-62
R 1	60-193	10 MEGOHM 1/4 W RESISTOR	C 1	1607	05 MFD. 400 V. TUBULAR COND.	T 1	82-9	LOOP ANTENNA
R 2	60-195	1 " " "	C 2	16-124	001 " " " "	T 2	10-330	B.C. OSCILLATOR COIL
R 3	60-178	470M OHM " "	C 3	1622	05 " 800 V. " "	T 3	10-331	S.W. " "
R 4	60-180	220M " " "				T 4	10-333	1 ST I.F. TRANSFORMER
R 5	60-185	22M " " "	C 5	16-121	01 " " " "	T 5	10-201	2 NO. " "
R 6	60-184	150 " " "	C 6	15-116	0016 MFD. MICA CONDENSER	T 6	------	OUTPUT TRANSFORMER (ON SPKR.)
R 7	60-220	27 " " "	C 7	1504	00025 " " "	1	79-283	5" DYNAMIC SPEAKER
R 8	24-142	500M " VOLUME CONTROL (WITH SW)	C 8	1501	0001 " " "	2	20-129	TRIMMER (ON LOOP)
			C 9	1503	00005 " " "	3	2050	2 PLATE TRIMMER
			C 10	18-241	20 x 10 " 150 W.V. ELECTROLYTIC	4	20-128	1 1/2 PLATE TRIMMER
			C 11	19-155	2 GANG VARIABLE CONDENSER	5	89-139	BAND SWITCH
			C 12	20-126	PADDING CONDENSER			

MODEL 0-51
MODEL 0-63
Schematic, Voltage Alignment, Trimmers Socket

WARWICK MFG. CORP.



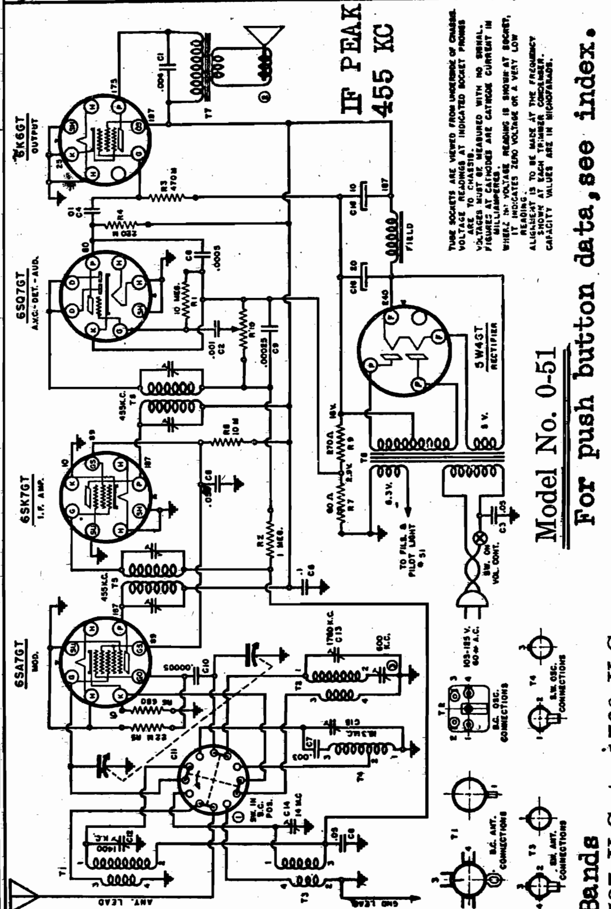


Model No. 0-63

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

IF PEAK 455 KC

Bands 540 to 1650 K.C. 5.7 to 18.4 M.C.

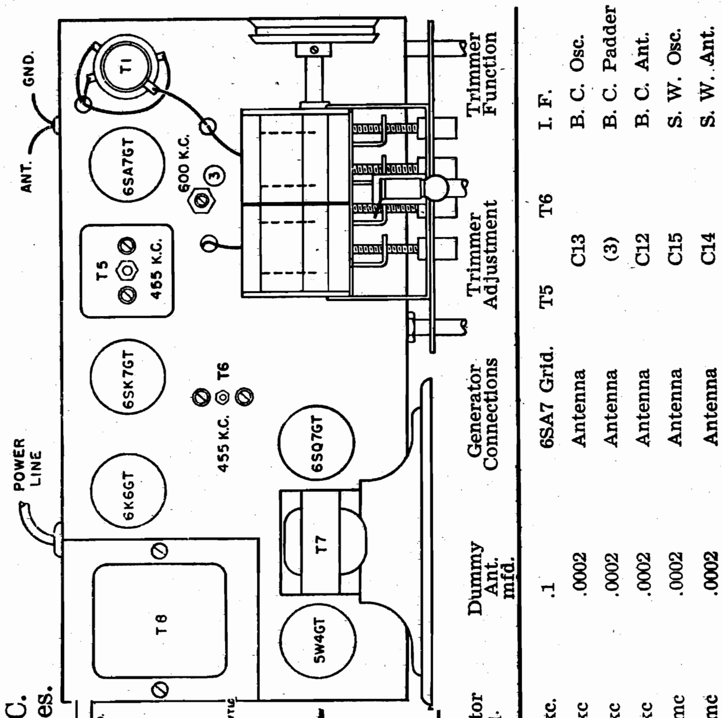


IF PEAK 455 KC

Model No. 0-51

For push button data, see index.

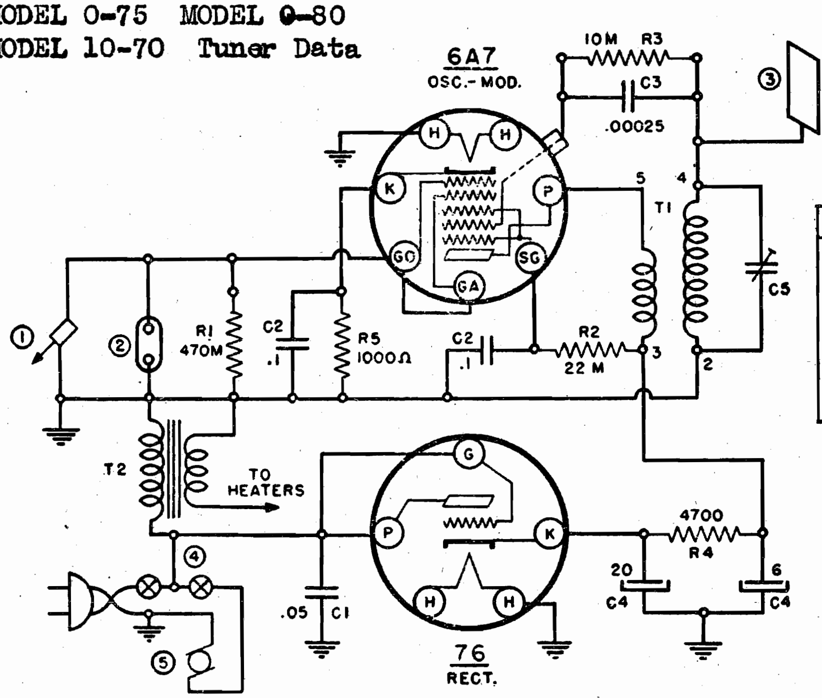
Bands 537 K.C. to 1760 K.C. 5.7 to 18.3 megacycles.

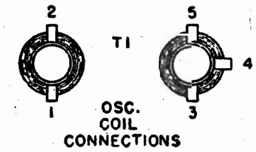


Position of Variable	Generator Freq.	Generator Connections	Dummy Ant. mfd.	Trimmer Adjustment	Trimmer Function
Closed	455 kc.	6SA7 Grid.	.1	T5 T6	I. F.
Fully Open	1760 kc	Antenna	.0002	C13	B. C. Osc.
600 kc	600 kc	Antenna	.0002	(3)	B. C. Padder
1400 kc	1400 kc	Antenna	.0002	C12	B. C. Ant.
Fully Open	18.3 mc	Antenna	.0002	C15	S. W. Osc.
14 mc	14 mc	Antenna	.0002	C14	S. W. Ant.

MODEL 9-21 Phono.Osc.
Schematic,Notes
MODEL 0-51 MODEL 0-70
MODEL 0-75 MODEL 0-80
MODEL 10-70 Tuner Data

WARWICK MFG. CORP.





CODE	PART NO.	DESCRIPTION 9-21
C1	1607	.05 MFD. 400V. TUB. COND.
C2	16-115	.1 " 200V. " "
C3	1504	.00025 MFD. MICA "
C4	18-241	20 X 6 MFD. 150V. ELECT.
C5	20-119	3 PLATE TRIMMER
T1	10-240	OSCILLATOR TRANS
T2	80-170	FILAMENT TRANS.
5	59-1	PHONOGRAPH MOTOR

CODE	PART NO.	DESCRIPTION
R1	60-178	470M. OHM 1/3 W. RES.
R2	60-185	22 M. " " "
R3	60-215	10 M. " " "
R4	60-189	4700 " " "
R5	60-217	1000 " " "
1	83-130	PICKUP
2	12-1	MICROPHONE TERMINAL
3	82-1	ANTENNA PLATE
4	69-129	SWITCH (DUAL)

PHONO-OSCILLATOR

DESCRIPTION

This unit is a Two Tube Phono-Oscillator. The tubes used are a 6A7 as an oscillator and a 76 as a power rectifier.

This unit should be operated between 1500 K.C. and 1700 K.C. and is so designed that the playing of a record on the unit makes it possible that you receive this same recording from any radio set within a nearby vicinity.

ADJUSTING PUSH BUTTONS FOR MODELS 0-51, 0-70, 0-75, 0-80, and 10-70.

Cut the call letters of your four selected stations from the list supplied with your receiver and slip them into the top of the Push-Buttons, with the clear celluloid on top of the call letters to protect them. Arrange the call letters in the buttons from left to right, having the lowest frequency station (that is, the station closest to 600 K.C. at the left and work progressively towards the right, so that the highest frequency station is toward the right.

Follow the procedure outline below, in order to adjust the push-buttons properly:

1. By means of the tuning knob, tune in with the right hand as accurately as possible the desired station having the lowest frequency.

2. Continuing to hold the tuning control knob in its exact position with the right hand, loosen with the left hand the push-button to be set up for that station, (the one farthest toward the left) by unscrewing the push-button about one turn to the left (counter-clockwise).

3. Push the push-button in all the way, and then tighten it gently toward the right (clockwise). Release push-button slowly and when in normal position grip button and tighten firmly.

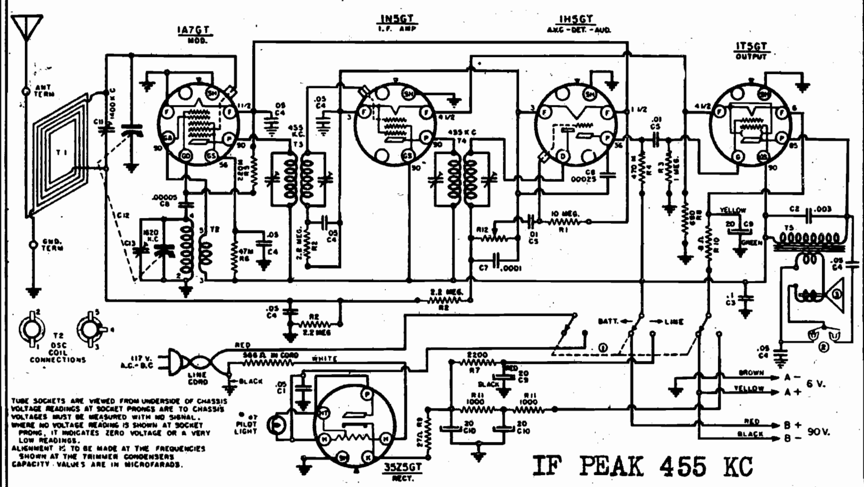
The push-button tuning system is now correctly set up for your first selected station of lowest frequency.

Follow through with this same procedure, setting up the other three stations in the order of their frequency, that is, the second station set up will be second lowest in frequency, etc.

WARWICK MFG. CORP.

MODEL 0-53
MODEL 652B
Schematics, Voltage, Socket
Alignment, Trimmers

MODEL 0-53



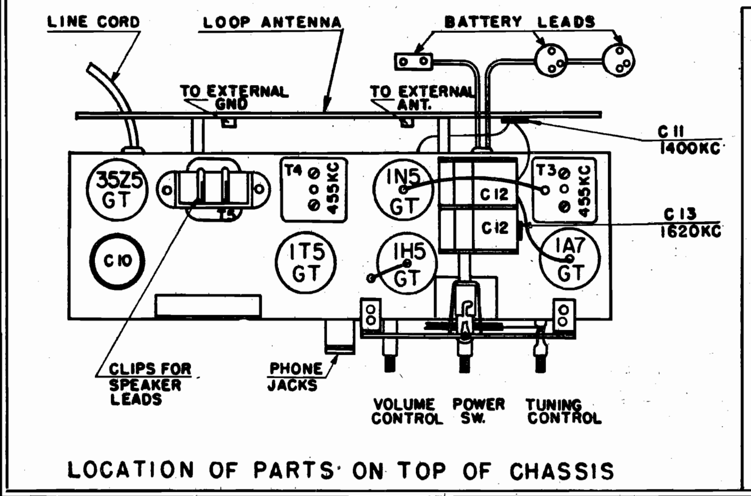
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT SOCKET PRONGS ARE TO CHASSIS
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READINGS.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS
CAPACITY VALUES ARE IN MICROFARADS.

IF PEAK 455 KC

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-53
C1	1607	.05 MFD. 400 V. TUBULAR COND	R1	60-193	10 MEGOHM 1/4 W. RESISTOR	T1	82-17	LOOP ANTENNA
C2	16 139	.003 " " " "	R2	60-179	2.2 " " "	T2	10-310	OSCILLATOR COIL
C3	16 115	.1 " 200 V. " "	R3	60-185	1 " " "	T3	10-355	1 ST. I.F. TRANSFORMER
C4	1622	.05 " " " "	R4	60-178	470 M OHM " "	T4	10-343	2 ND. " "
C5	16-121	.01 " " " "	R5	60-180	220 M " " "	T5	80-196	OUTPUT TRANSFORMER
C6	1504	.00025 MFD. MICA CONDENSER	R6	60-177	47 M " " "			
C7	1501	.0001 " " "	R7	60-383	2200 " " "	1	69-151	POWER SWITCH
C8	1503	.00005 " " "	R8	60-379	680 " " "	2	12-3	PHONE JACK
C9	18-263	20 X 20 " 150 W.V. ELECTROLYTIC	R9	60-220	27 " " "	3	79-299	5" P.M. SPEAKER
C10	18-262	20 X 20 " 150 W.V. "	R10	60-128	8 " 1/2 W. "			
C11	20-129	TRIMMER ON LOOP	R11	60-644	1000 " 3 W. "			
C12	19-167	2 GANG VARIABLE COND. ALSO C13	R12	24-150	1 MEGOHM VOLUME CONTROL			

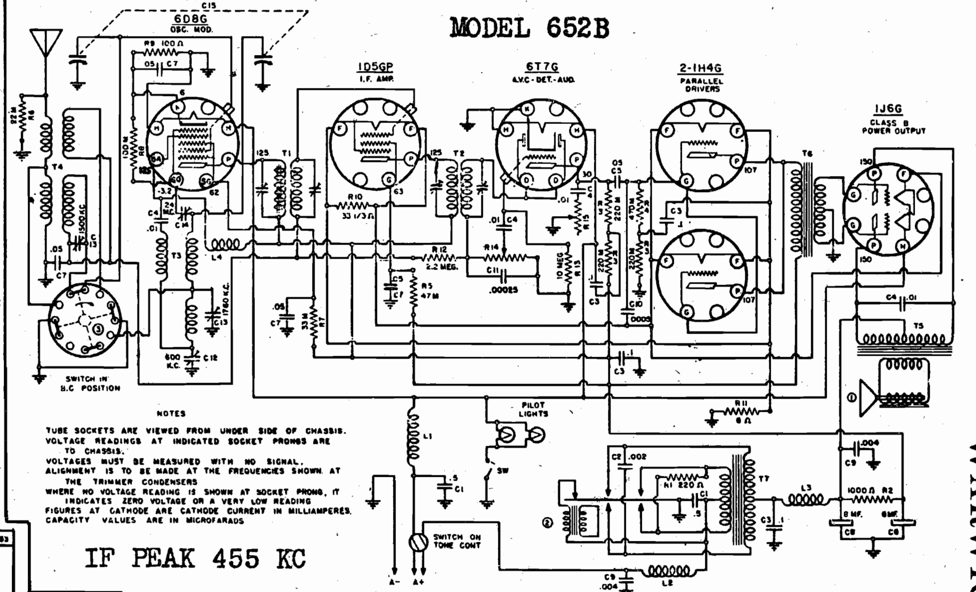
Model No. 0-53 radio receiver is a portable five (5) tube, 117 volt, 50-60 cycle A.C. or 117 volt D.C. or battery operated superheterodyne with self-contained loop antenna and batteries, designed to cover the standard broadcast band from 1620 to 535 K.C.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII



LOCATION OF PARTS ON TOP OF CHASSIS

MODEL 652B



NOTES

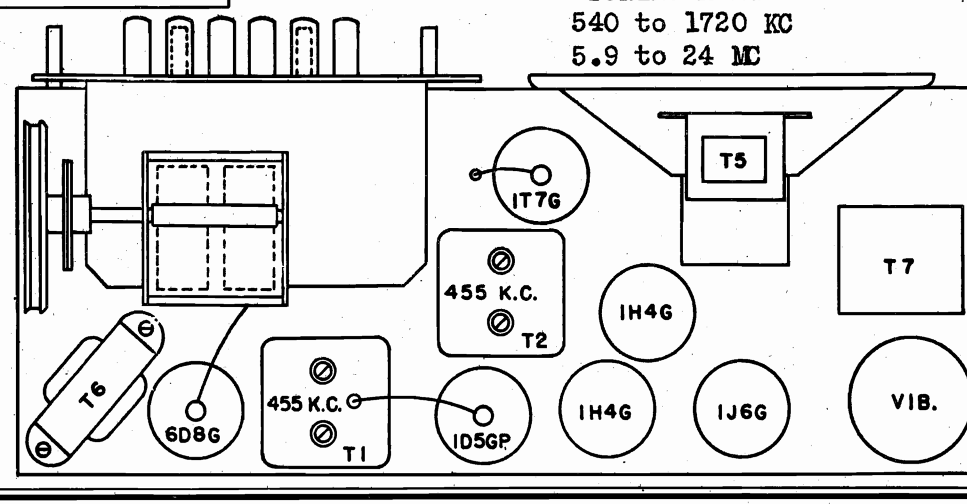
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING
FIGURES AT CATHODE ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS

IF PEAK 455 KC

CODE	PART NO	DESCRIPTION	CODE	PART NO	DESCRIPTION	CODE	PART NO.	DESCRIPTION 652B
R1	60-199	220 OHM 1/2 W RESISTOR	C1	16-112	.5 MFD. 200 V. TUB. CONDENSER	1	79-254	SPEAKER 6" P.M.
R2	60-200	1000 " 1W "	C2	16-126	.002 " 1000 V. BUFFER "	2	34-103	VIBRATOR
R3	60-180	220 M " 1/3 W "	C3	16-115	.1 " 200V TUB. "	3	69-125	WAVE BAND SWITCH
R4	60-178	470 M " " "	C4	16-119	.01 " 400 V. " "	L1	33-216	FILAMENT CHOKE
R5	60-177	47 M " " "	C5	1607	.05 " " " "	L2	33-215	VIBRATOR "
R6	60-185	22 M " " "				L3	10-246	R.F. B "
R7	60-186	33 M " " "	C7	1622	.05 " 200 V. " "	L4	10-243	OSC. CHOKE (R.F.)
R8	60-196	100 M " " "	C8	18-233	8 X 8 MFD 350 V. ELECTROLYTIC	T1	10-247	1 ST. I.F. TRANSFORMER
R9	60-197	100 " " "	C9	1505	.004 " MICA CONDENSER	T2	10-248	2 ND. I.F "
R10	60-102	33 1/3 " 1/2W "	C10	15-112	.0005 " " "	T3	10-238	OSCILLATOR "
R11	60-128	8 " " "	C11	1504	.00025 " " "	T4	10-237	ANTENNA "
R12	60-179	2.2 MEG 1/3W "	C12	20-117	300-600 MFD. PADDING CONDENSER	T5		SPEAKER "
R13	60-193	10 " " "	C13	2052	2 PLATE TRIMMER	T6	80-164	AUDIO "
R14	24-126	VOLUME CONTROL 1 MEG.	C14	20-118	3 PLATE "	T7	80-161	VIBRATOR "
R15	26-118	TONE CONTROL .5 MEG.	C15	19-133	VARIABLE CONDENSER			

FOR PUSH BUTTON DATA SEE WARWICK PAGE 10-30.
FOR ALIGNMENT SEE MODEL 749, WARWICK PAGE 10-26.

TUNING RANGE
540 to 1720 KC
5.9 to 24 MC



MODEL 0-60,
MODEL 10-70

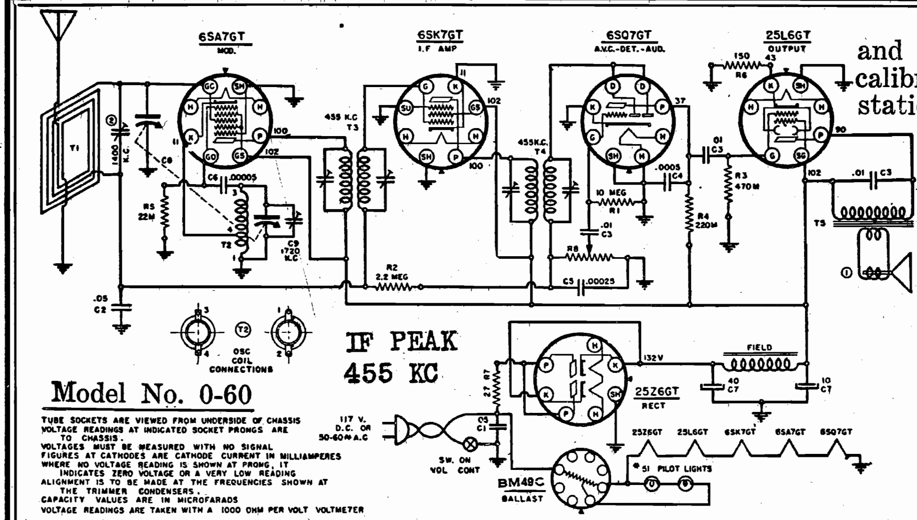
WARWICK MFG. CORP.

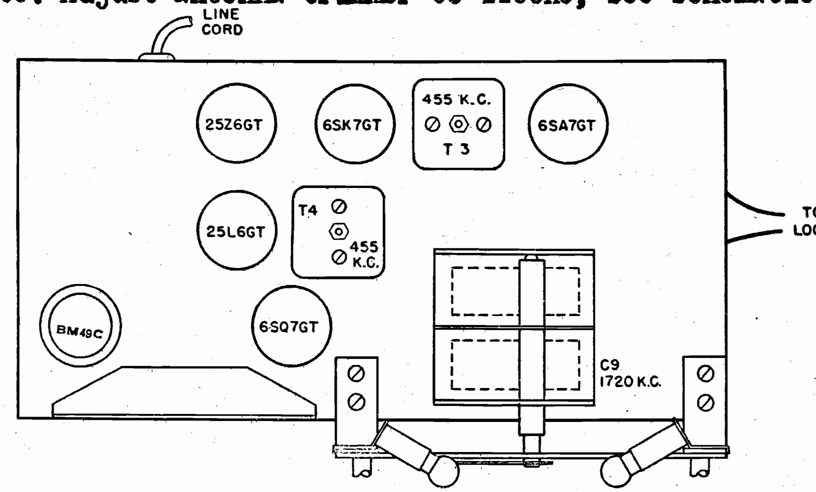
Schematics, Voltage, Socket
Alignment, Trimmers

This model has been designed to cover the standard broadcast band and the first police band from 538 K.C. to 1720 K.C. The dial scale is calibrated directly in kilocycles (less the final 0). Standard broadcast stations are listed in kilocycles in most station lists.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII.

Note: Adjust antenna trimmer to 1400KC, see schematic.

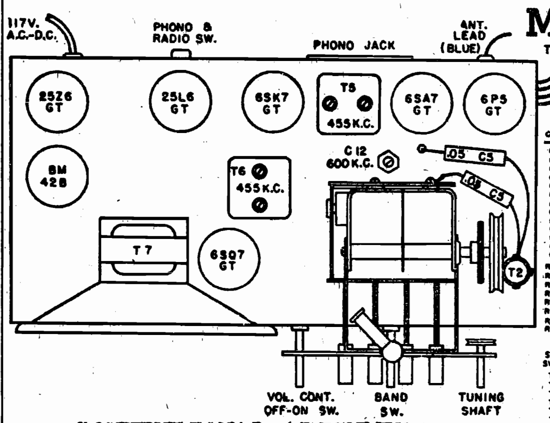




Model No. 0-60

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES
WHERE NO VOLTAGE READING IS SHOWN AT PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
CAPACITY VALUES ARE IN MICROFARADS
VOLTAGE READINGS ARE TAKEN WITH A 1000 OHM PER VOLT VOLTMETER

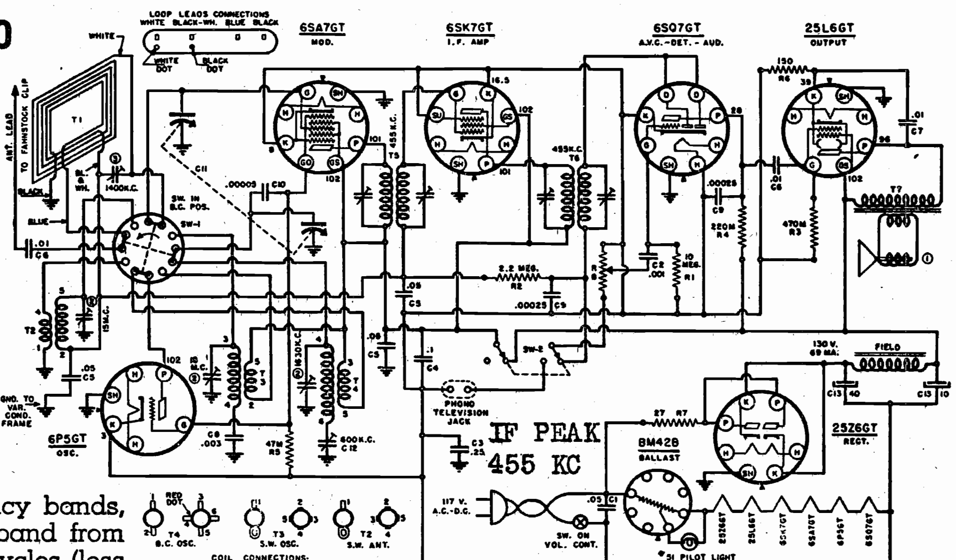
CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-60
C1	1607	.05 MFD 400 V TUBULAR COND	R1	60-193	10 MEGOHM 1/4 W RESISTOR	T1	82-6	ANTENNA LOOP
C2	1622	.05 " 200 V. " "	R2	60-179	2.2 " " "	T2	10-311	OSCILLATOR COIL
C3	16-121	.01 " " " "	R3	60-178	470M OHM " "	T3	10-305	1 ST. I.F. TRANSFORMER
C4	15-112	.0005 MFD. MICA CONDENSER	R4	60-180	220M " "	T4	10-312	2 ND. " "
C5	1504	.00025 " " "	R5	60-185	22M " " "	T5	------	OUTPUT TRANS. (ON SPKR.)
C6	1503	.00005 " " "	R6	60-184	150 " " "			
C7	18-255	40 X 10 " 150 W.V. ELECTROLYTIC	R7	60-220	27 " " "	1	79-277	6 1/2" DYNAMIC SPEAKER
C8	19-153	2 GANG VARIABLE COND. ALSO C9	R8	24-140	500M " VOLUME CONTROL & SW.	2	20-124	TRIMMER



MODEL NO. 10-70

For push button data, see index.

CODE	PART NO.	DESCRIPTION
C1	1607	.05 MFD. 400V. TUBULAR CONDENSER
C2	16-124	.001 " " " "
C3	16-120	.25 " 200 V. " "
C4	16-115	.1 " " " "
C5	1622	.05 " " " "
C6	16-121	.01 " " " "
C7	16-119	.01 " 400 V " "
C8	15-118	.003 MFD. MICA CONDENSER
C9	1504	.00025 " " "
C10	1503	.00005 " " "
C11	19-162	2 GANG VARIABLE CONDENSER
C12	20-130	PADDING CONDENSER
C13	18-255	40 X 10 MFD. 150 W.V. ELECTROLYTIC
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-179	2.2 " " "
R3	60-178	470M OHM " "
R4	60-180	220M " " "
R5	60-177	47M " " "
R6	60-184	150 " " "
R7	60-220	27 " " "
R8	24-146	500M " VOLUME CONTROL
SW1	69-145	BAND SWITCH
SW2	69-140	PHONO "
T1	82-11	LOOP ANTENNA (B.C.)
T2	10-337	S.W. ANTENNA COIL
T3	10-338	S.W. OSCILLATOR COIL
T4	10-318	B.C. " "
T5	10-317	1 ST. I.F. TRANSFORMER
T6	10-312	2 ND. " "
T7	------	OUTPUT TRANS. (ON SPKR.)
1	79-283	5" DYNAMIC SPEAKER
2	20-127	TRIMMER BLOCK
3	20-129	TRIMMER (ON LOOP)



TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO COMMON GND.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOLUME VIII

This model has been designed to cover two seperate frequency bands, a broadcast band from 540 K.C. to 1630 K.C. and a short wave band from 5.7 to 18 M.C. The dial scale has been calibrated directly in kilocycles (less the final 0) on the broadcast band, while the short wave band is calibrated directly in megacycles.

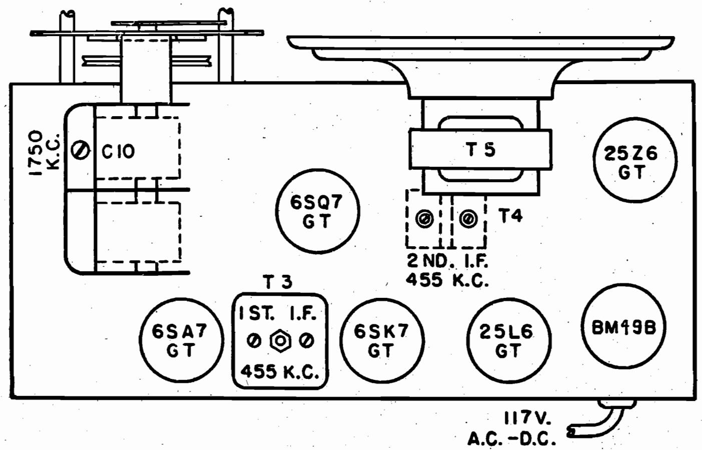
MODELS 0-50, 0-501
MODELS 0-61, 0-610 to 0-619
Schematics, Voltage, Socket Alignment, Trimmers

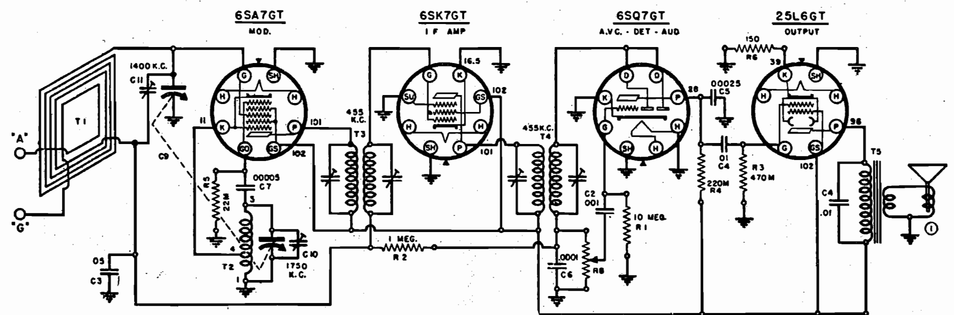
WARWICK MFG. CORP.

MODEL NO. 0-610 TO 0-619, INCLUSIVE

Model No. O-61

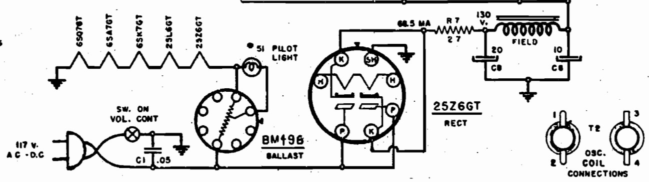
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII





IF PEAK 455 KC

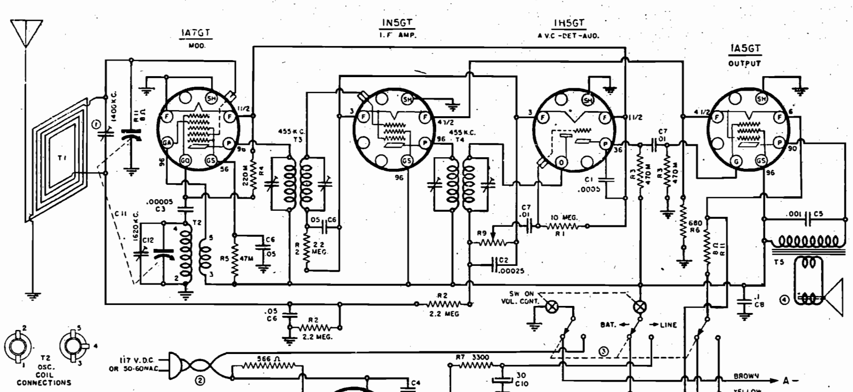
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL
WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS.
VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER



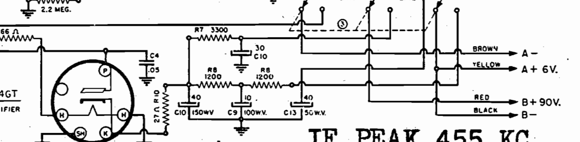
CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 W. RESISTOR
R 2	60-195	1 " " "
R 3	60-178	470M OHM " "
R 4	60-180	220M " " "
R 5	60-185	22M " " "
R 6	60-184	150 " " "
R 7	60-220	27 " " "
R 8	24-142	500M " VOLUME CONTROL (WITH SW.)

CODE	PART NO.	DESCRIPTION
C 1	1607	.05 MFD 400V TUBULAR COND
C 2	16-124	.001 " " " "
C 3	1622	.05 " 200V " "
C 4	16-121	.01 " " " "
C 5	1504	.00025 MFD MICA CONDENSER
C 6	1501	.0001 " " "
C 7	1503	.00005 " " "
C 8	18-241	20 X 10 " 150 W.V. ELECTROLYTIC
C 9	19-134	2 GANG VARIABLE COND. ALSO C10
C 11	20-129	TRIMMER (ON LOOP)

CODE	PART NO.	DESCRIPTION 0-61
T 1	82-8	LOOP ANTENNA
T 2	10-332	OSCILLATOR COIL
T 3	10-333	1 ST. I.F. TRANSFORMER
T 4	10-281	2 ND. " "
T 5	------	OUTPUT TRANSFORMER (ON SPKR.)
1	79-283	5" DYNAMIC SPEAKER



TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT SOCKET PRONGS ARE TO CHASSIS
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
CAPACITY VALUES ARE IN MICROFARADS.



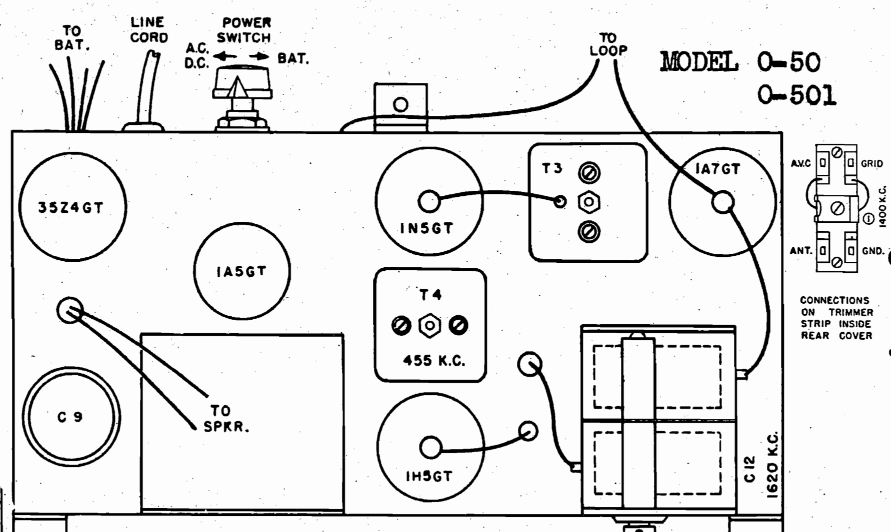
IF PEAK 455 KC

CODE	PART NO	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 W RESISTOR
R 2	60-179	2.2 " " "
R 3	60-178	470 M OHM " "
R 4	60-180	220 M " " "
R 5	60-177	47 M " " "
R 6	60-246	680 " " "
R 7	60-244	3300 " 1/2 W. "
R 8	60-242	1200 " 3 W. "
R 9	24-138	1 MEGOHM VOLUME CONTROL
R 10	60-226	27 OHM 1/4 W RESISTOR
R 11	60-128	8 " 1/2 W "

CODE	PART NO.	DESCRIPTION
C 1	15-112	.0005 MFD. MICA CONDENSER
C 2	1504	.00025 " " "
C 3	1503	.00005 " " "
C 4	1607	.05 MFD. 400 V. TUBULAR CONDENSER
C 5	16-124	.001 " " " "
C 6	1622	.05 " 200 V. " "
C 7	16-121	.01 " " " "
C 8	16-115	.1 " " " "
C 9	18-258	10 " 100 W.V. ELECTROLYTIC
C 10	18-257	30 X 40 MFD. 150 W.V. ELECTROLYTIC
C 11	19-152	2 GANG VARIABLE CONDENSER ALSO C12

CODE	PART NO	DESCRIPTION 0-50
T 1	82-6	ANTENNA LOOP
T 2	10-310	OSCILLATOR TRANSFORMER
T 3	10-303	1 ST. I.F. "
T 4	10-304	2 ND. " "
C 13	18-259	40 MFD. 50 W.V. ELECTROLYTIC
1	20-124	TRIMMER
2	23-138	LINE CORD (WITH RESISTOR)
3	69-135	SWITCH
4	79-274	5" P.M. SPEAKER } OR 79-276 SPEAKER
T 5	80-178	OUTPUT TRANS.

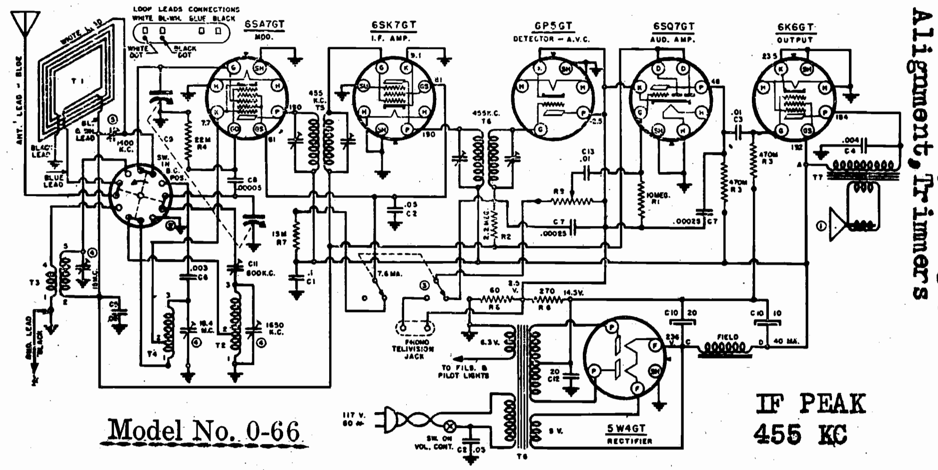
MODEL 0-50
0-501



CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII

MODEL 0-64
MODEL 0-66
Schematics, Voltage, Socket
Alignment, Trimmers

WARWICK MFG. CORP.



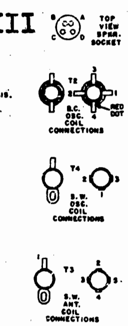
Model No. 0-66

Bands
540 to 1650 K.C.
5.7 to 18.4 M.C.

IF PEAK
455 KC

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOLUME VIII

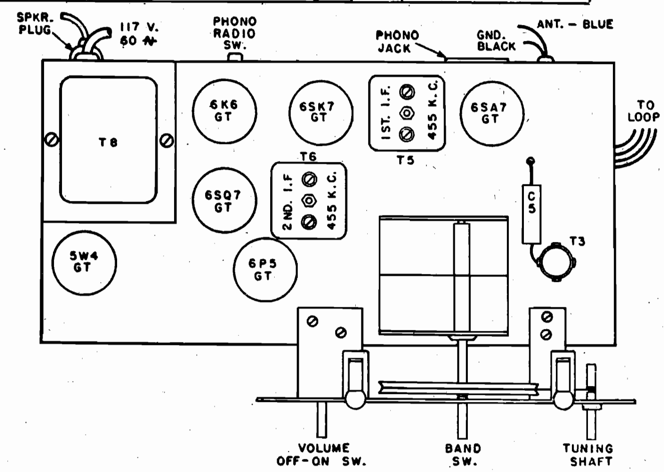
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.

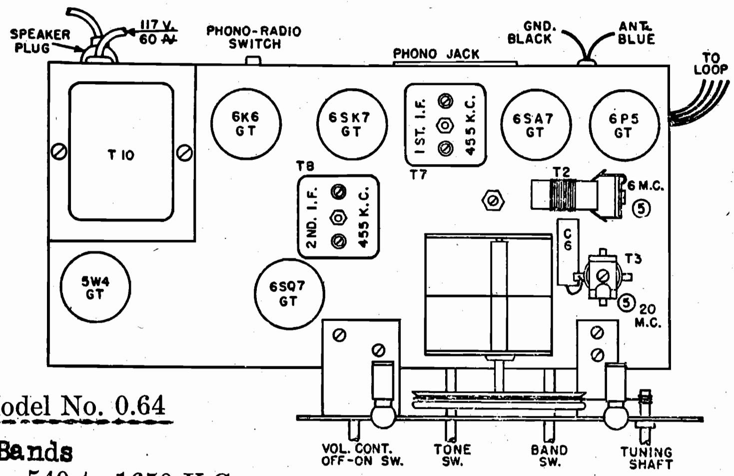


CODE	PART NO.	DESCRIPTION
C1	16-116	.1 MFD. 400 V. TUBULAR CONDENSER
C2	1607	.05 " " " "
C3	16-119	.01 " " " "
C4	1651	.004 " 600 V. " "
C5	1622	.05 " 200 V. " "
C6	15-116	.003 MFD. MICA CONDENSER
C7	1504	.00025 " " "
C8	1503	.00005 " " "
C9	19-156	2 GANG VARIABLE CONDENSER
C10	18-254	20 X 10 MFD. 350 W.V. ELECTROLYTIC
C11	20-126	PADDING CONDENSER
C12	18-243	20 MFD. 25 V. ELECTROLYTIC
C13	16-121	.01 " 200V. TUBULAR CONDENSER

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-175	2.2 " " "
R3	60-176	470M OHM " "
R4	60-185	22M " " "
R6	60-182	60 " 1/2 W. "
R7	60-236	15M " 1 W. "
R8	60-245	270 " " "
R9	24-144	500M " VOLUME CONTROL (WITH SW.)

CODE	PART NO.	DESCRIPTION 0-66
T1	62-13	LOOP ANTENNA
T2	10-326	B.C. OSCILLATOR COIL
T3	10-323	S.W. ANTENNA COIL
T4	10-320	S.W. OSCILLATOR COIL
T5	10-315	1 ST. I.F. TRANSFORMER
T6	10-312	2 ND. "
T7	------	OUTPUT TRANSFORMER (ON SPKR.)
T8	60-175	POWER
1	75-278	6 1/2" DYNAMIC SPEAKER
2	69-141	BAND SWITCH
3	69-140	PHONO SWITCH
4	20-127	TRIMMER BLOCK
5	20-129	TRIMMER (ON LOOP)

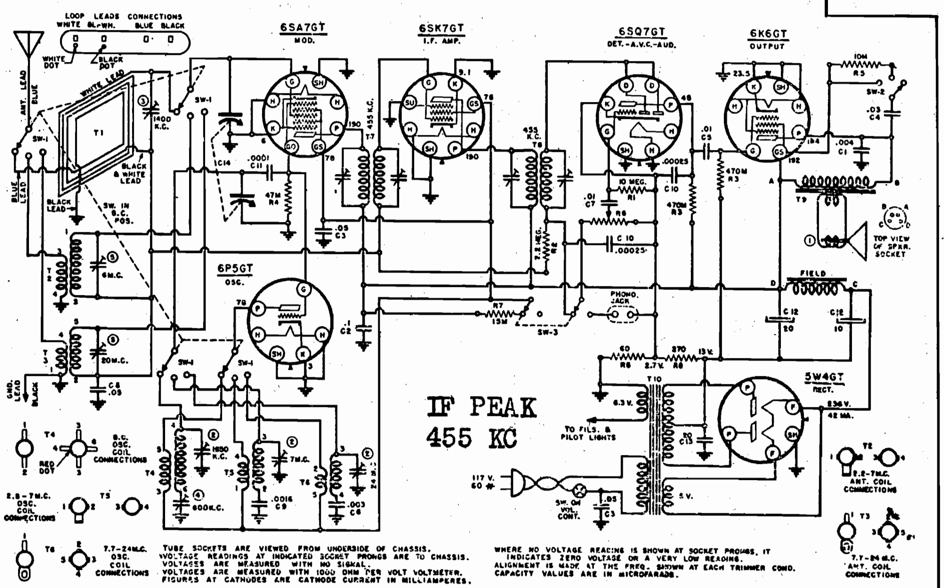




Model No. 0.64

Bands
540 to 1650 K.C.
2.22 to 7 M.C.
7.7 to 24 M.C.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOLUME VIII



IF PEAK
455 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES ARE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQ. SHOWN AT EACH TRIMMER COND.
CAPACITY VALUES ARE IN MICROFARADS.

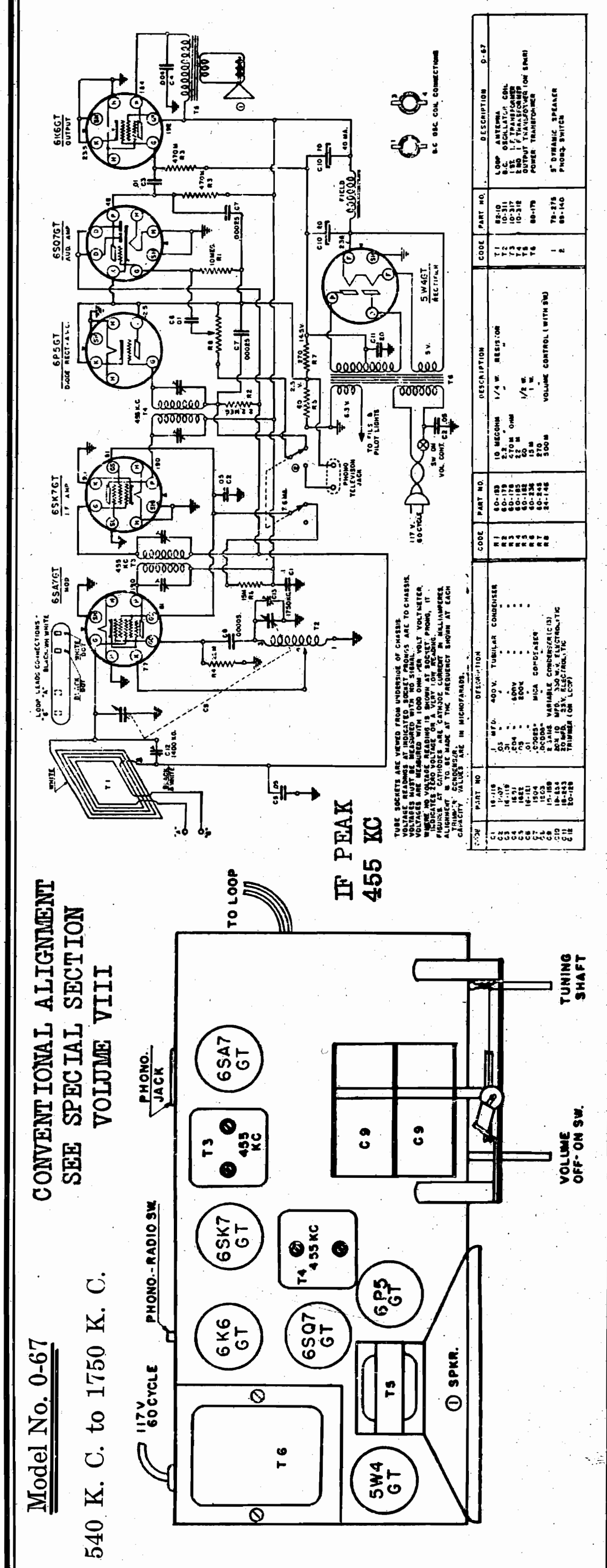
CODE	PART NO.	DESCRIPTION
C1	1651	.004 MFD. 600V. TUBULAR CONDENSER
C2	16-116	.1 " 400V. " "
C3	1607	.05 " " " "
C4	1648	.03 " " " "
C5	16-119	.01 " " " "
C6	1622	.05 " 200 V. " "
C7	16-121	.01 " " " "
C8	15-118	.003 MFD. MICA CONDENSER
C9	15-119	.0016 " " "
C10	1504	.00025 " " "
C11	1501	.0001 " " "
C12	18-254	20 X 10 " 350 W.V. ELECTROLYTIC
C13	18-243	20 MFD. 25 W.V. ELECTROLYTIC
C14	19-156	2 GANG VARIABLE CONDENSER

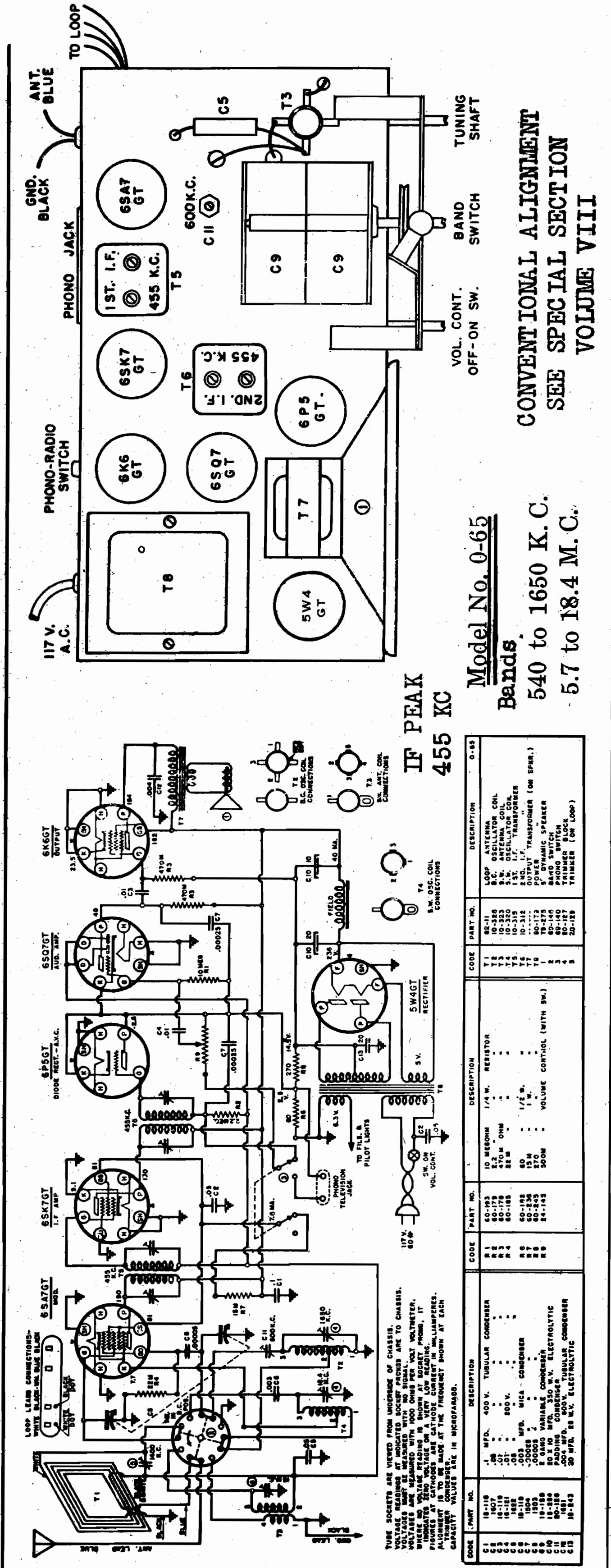
CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-173	2.2 " " "
R3	60-176	470M OHM " "
R4	60-177	47M " " "
R5	30-215	10M " " "
R6	60-182	60 " 1/2 W. "
R7	60-236	15M " 1 W. "
R8	60-245	270 " " "
R9	24-144	500M " VOLUME CONTROL
SW-1	69-142	BAND SWITCH
SW-2	69-143	TONE "
SW-3	69-140	PHONO "

CODE	PART NO.	DESCRIPTION 0-64
T1	62-13	ANTENNA LOOP
T2	10-324	ANTENNA TRANSFORMER (2.2-7M.C.)
T3	10-322	" " (7.7-24M.C.)
T4	10-318	OSCILLATOR " (B.C.)
T5	10-327	" " (2.2-7M.C.)
T6	10-329	" " (7.7-24M.C.)
T7	10-317	1ST. I.F. TRANSFORMER
T8	10-312	2ND. I.F. "
T9	------	OUTPUT TRANS. (ON SPKR.)
T10	80-173	POWER TRANSFORMER
1	79-278	6 1/2" DYNAMIC SPEAKER.
2	20-127	TRIMMER BLOCK
3	20-129	TRIMMER (ON LOOP)
4	20-126	PADDING CONDENSER
5	2082	2 PLATE TRIMMER

WARWICK MFG. CORP.

MODEL 0-65
MODEL 0-67
Schematics, Voltage, Socket
Alignment, Trimmers



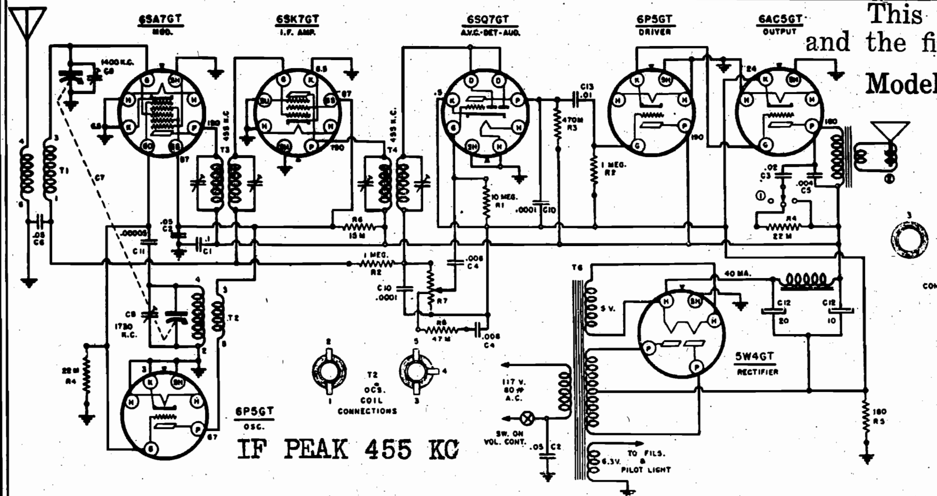


MODEL 0-70
MODEL 0-71
Schematics, Voltage, Socket
Alignment, Trimmers

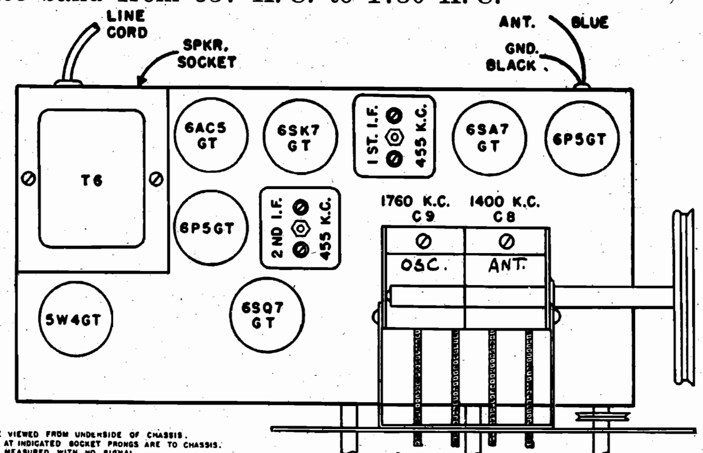
WARWICK MFG. CORP.

This model has been designed to cover the standard broadcast band and the first police band from 537 K.C. to 1730 K.C.

Model 0-70



IF PEAK 455 KC



CODE	PART NO.	DESCRIPTION
C1	16-116	.1 MFD. 400 V. TUBULAR CONDENSER
C2	1607	.05 " " " "
C3	1603	.02 " " " "
C4	16-114	.006 " " " "
C5	16-123	.004 " " " "
C6	1622	.05 " 200 V. " "
C7	93-9	2 GANG VARIABLE CONDENSER ALSO C8 & C9
C10	1501	.0001 MFD. MICA CONDENSER
C11	1503	.00005 " " "
C12	16-234	20 X 10 - 350 W.V. ELECTROLTIC COND.
C13	16-119	.01 MFD 400 V. TUBULAR CONDENSER

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-195	1 " " "
R3	60-176	470 M OHM " "
R4	60-185	22 M " " "
R5	60-230	160 " " "
R6	60-236	15 M " 1 W. "
R7	24-147	500 M " VOLUME CONTROL
R8	60-177	47 M " 1/4 W. RESISTOR

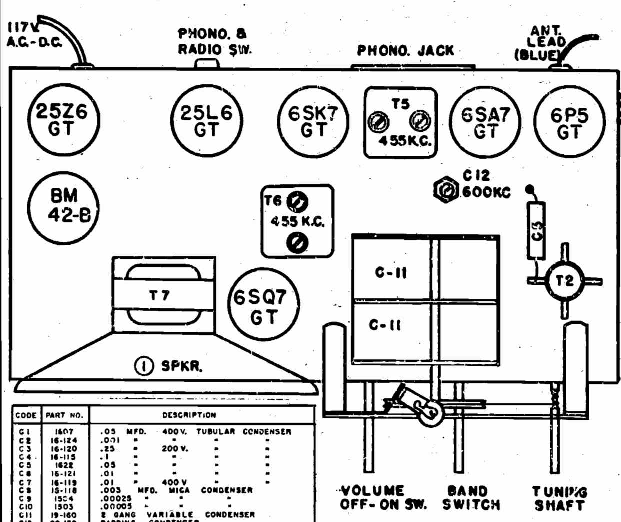
CODE	PART NO.	DESCRIPTION 0-70
T1	10-235	ANTENNA COIL
T2	10-316	OSCILLATOR COIL
T3	10-315	1ST I.F. TRANSFORMER
T4	10-312	2 ND. " "
T5	------	OUTPUT TRANS. (ON SPKR)
T6	80-179	POWER TRANSFORMER
1	69-137	TONE CONTROL SWITCH
2	79-278	6 1/2 DYNAMIC SPEAKER

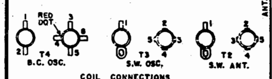
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
CAPACITY VALUES ARE IN MICROFARADS

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

For Push Button Data, see Index

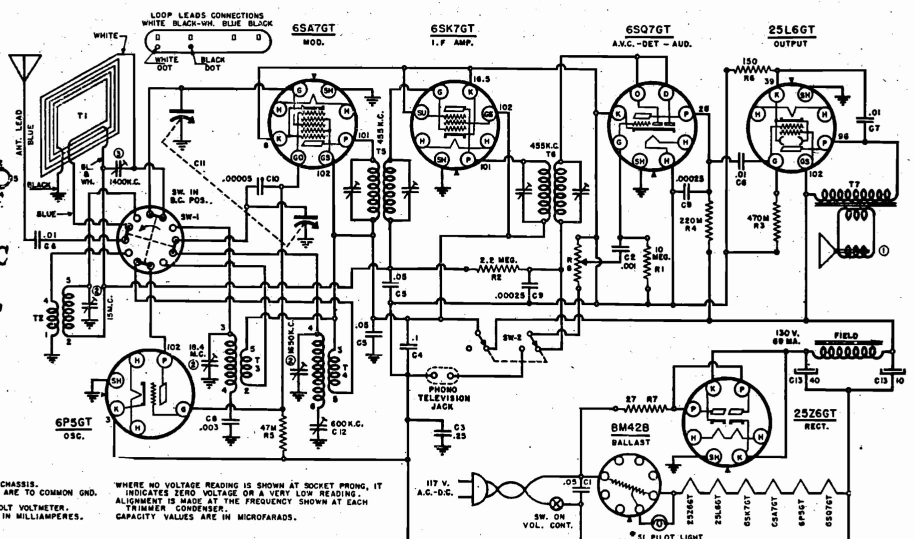
Model No. 0-71





IF PEAK 455 KC

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII



TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO COMMON GND.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.

CODE	PART NO.	DESCRIPTION
C1	1607	.05 MFD. 400 V. TUBULAR CONDENSER
C2	16-124	.001 " " " "
C3	16-120	.25 " 200 V. " "
C4	16-115	.1 " " " "
C5	1622	.05 " " " "
C6	16-121	.01 " " " "
C7	16-119	.01 " 400 V " "
C8	15-118	.003 MFD. MICA CONDENSER
C9	1504	.00025 " " "
C10	1503	.00005 " " "
C11	19-160	2 GANG VARIABLE CONDENSER
C12	20-130	PADDING CONDENSER
C13	18-255	40 X 10 MFD. 150 W.V. ELECTROLYTIC

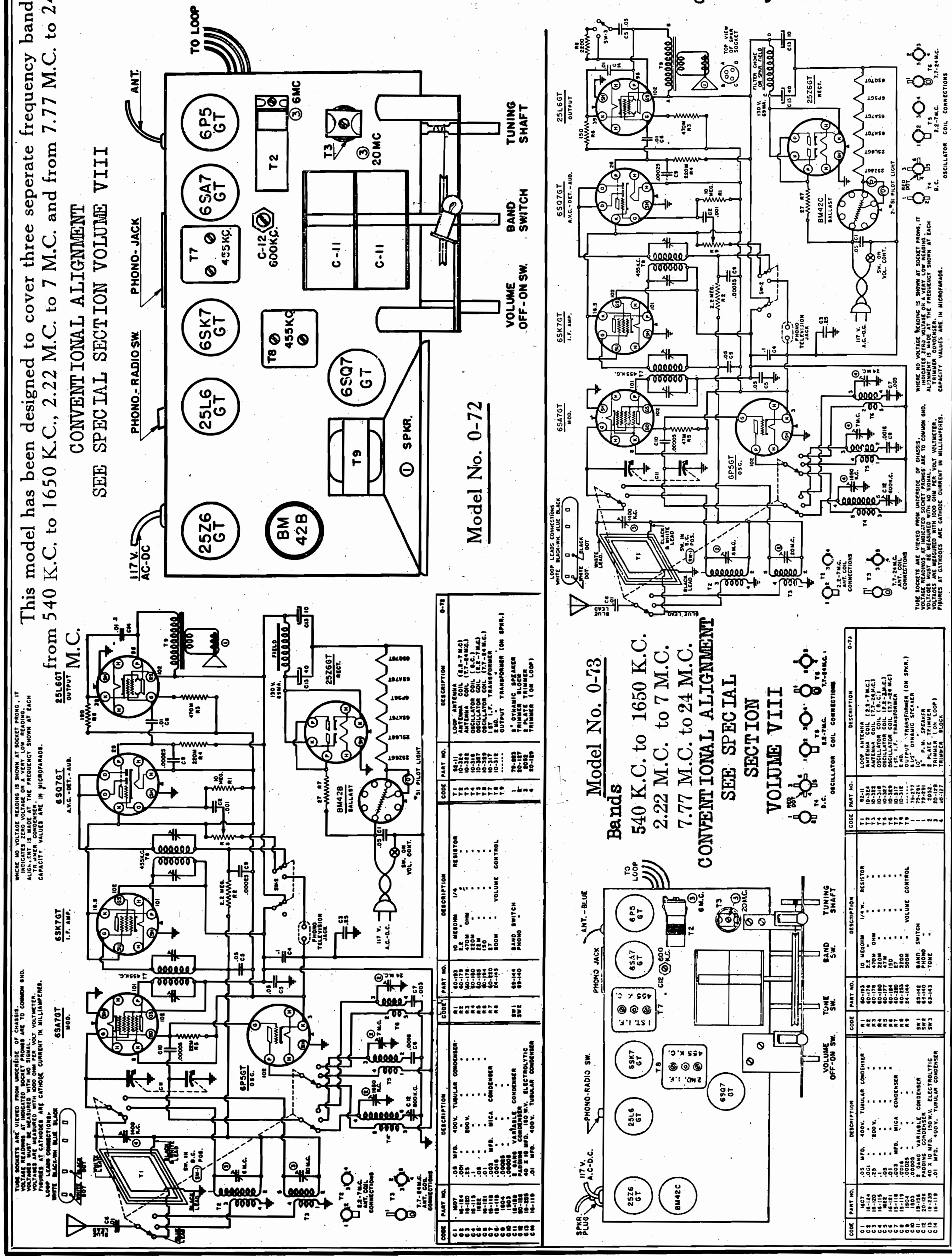
This model has been designed to cover two separate frequency bands, a broadcast band from 540 K.C. to 1650 K.C. and a short wave band from 5.7 to 18.4 M.C.

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-179	2.2 " " "
R3	60-178	470M OHM " "
R4	60-180	220M " " "
R5	60-177	47M " " "
R6	60-184	150 " " "
R7	60-220	27 " " "
R8	24-146	500M " VOLUME CONTROL
SW1	69-145	BAND SWITCH.
SW2	69-140	PHONO "

CODE	PART NO.	DESCRIPTION 0-71
T1	82-11	LOOP ANTENNA (B.C.)
T2	10-323	S.W. ANTENNA COIL
T3	10-328	S.W. OSCILLATOR COIL
T4	10-318	B.C. " "
T5	10-317	1 ST. I.F. TRANSFORMER
T6	10-312	2 ND. " "
T7	------	OUTPUT TRANS. (ON SPKR.)
1	79-283	5" DYNAMIC SPEAKER
2	20-127	TRIMMER BLOCK
3	20-129	TRIMMER (ON LOOP)

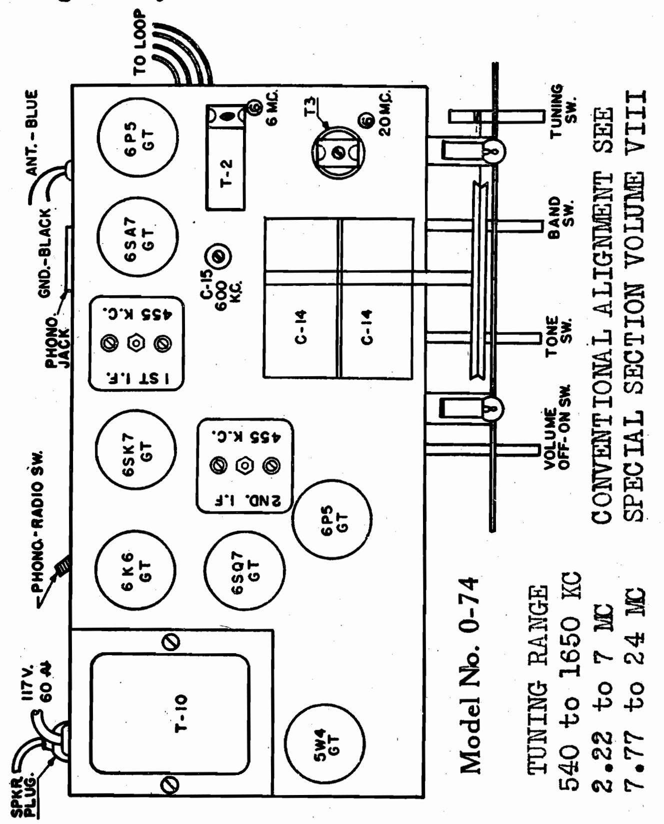
WARWICK MFG. CORP.

MODEL 0-72
MODEL 0-73
Schematics, Voltage, Socket Alignment, Trimmers



MODEL 0-74
MODEL 0-75
Schematics, Voltage, Socket
Alignment, Trimmers

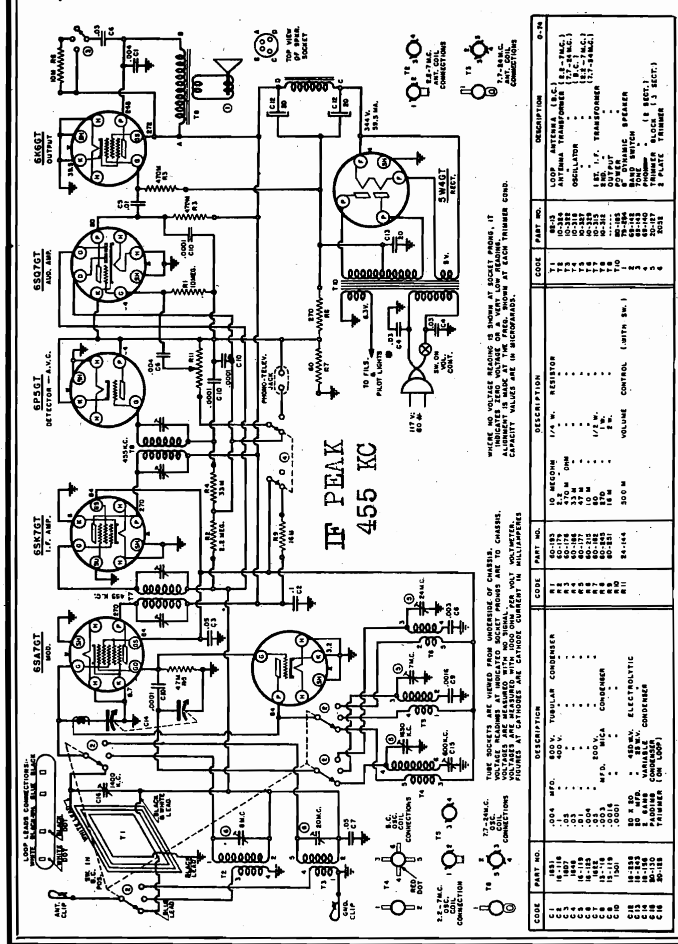
WARWICK MFG. CORP.

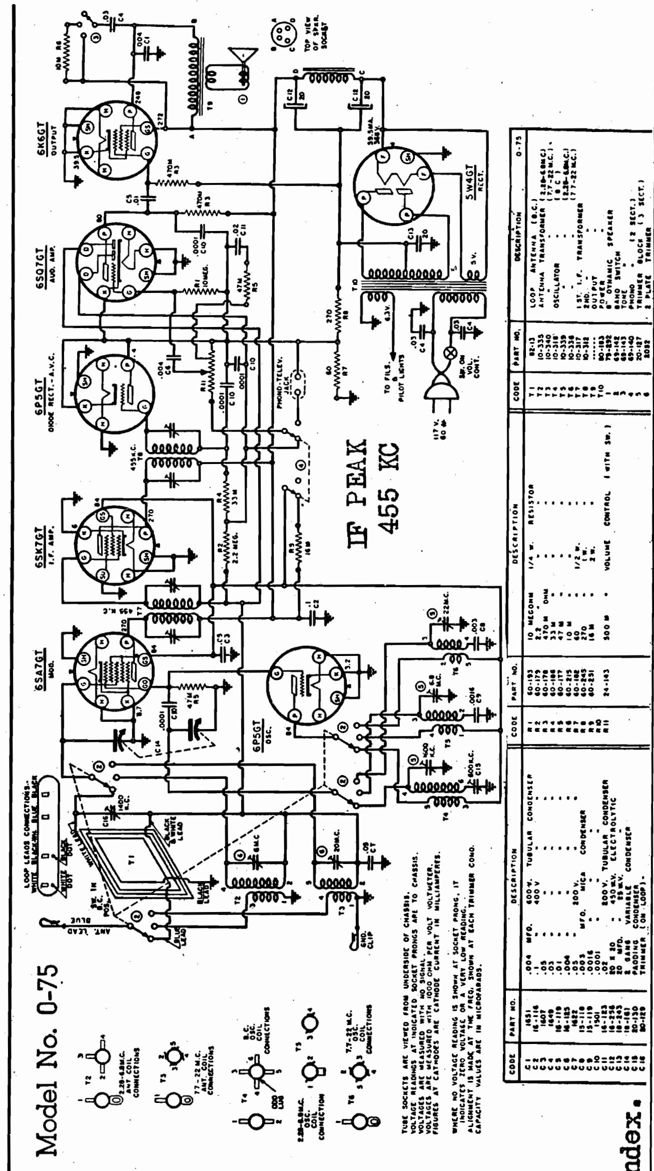


Model No. 0-74

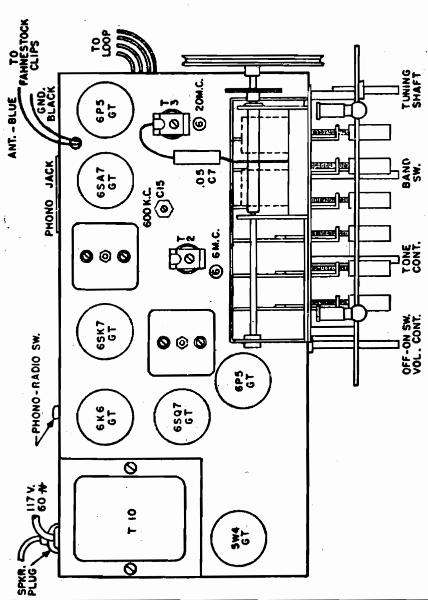
TUNING RANGE
540 to 1650 KC
2.22 to 7 MC
7.77 to 24 MC

CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII





Model No. 0-75



TUNING RANGE
540 to 1600 KC
2.28 to 6.8 MC
7.7 to 22 MC

CONVENTIONAL
ALIGNMENT
SEE SPECIAL
SECTION
VOLUME VIII

For Push Button Data, see Index.

WARWICK MFG. CORP.

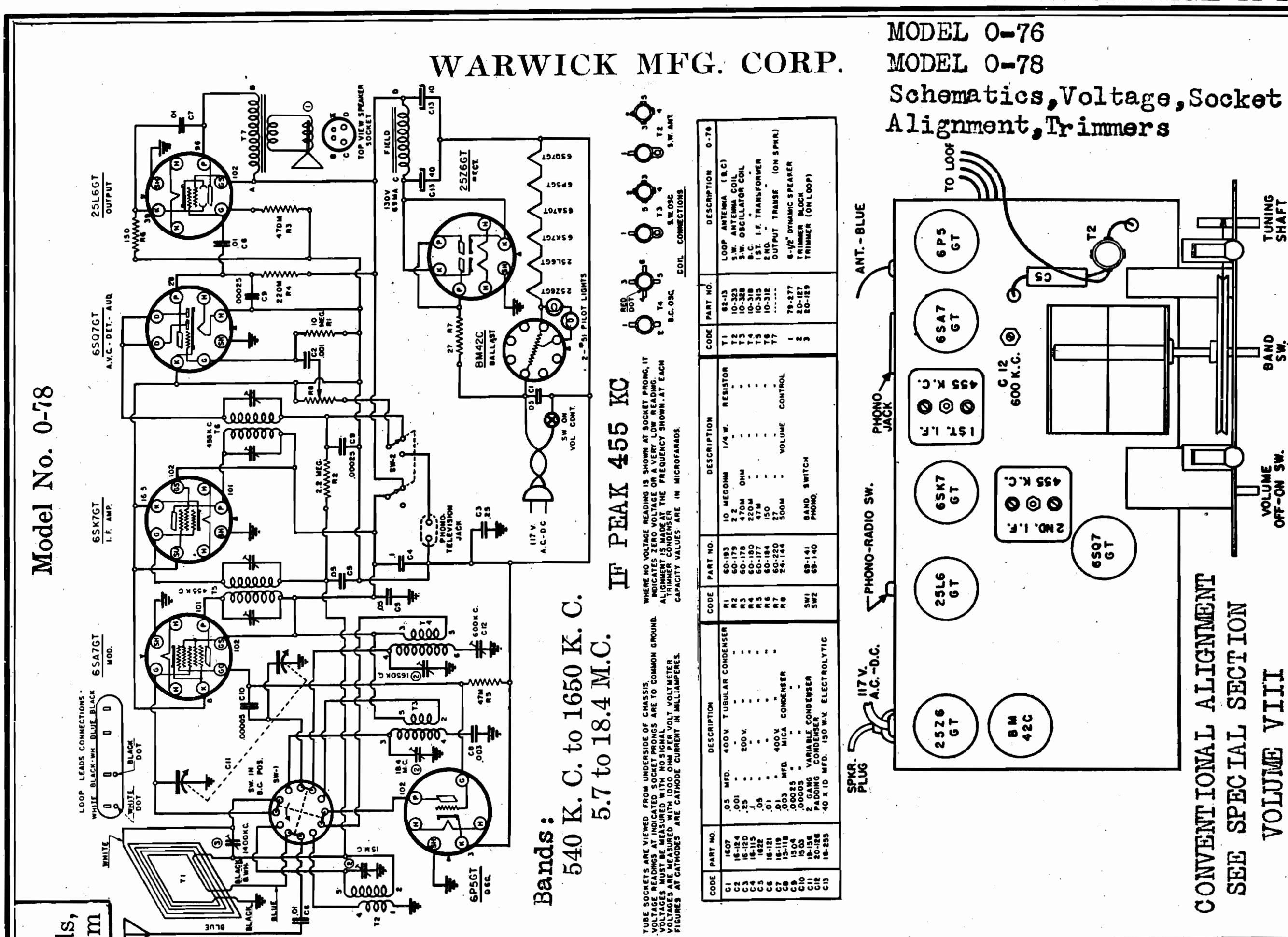
MODEL 0-76
MODEL 0-78
Schematics, Voltage, Socket Alignment, Trimmers

Model No. 0-78

Bands: 540 K. C. to 1650 K. C.
5.7 to 18.4 M.C.

IF PEAK 455 KC

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

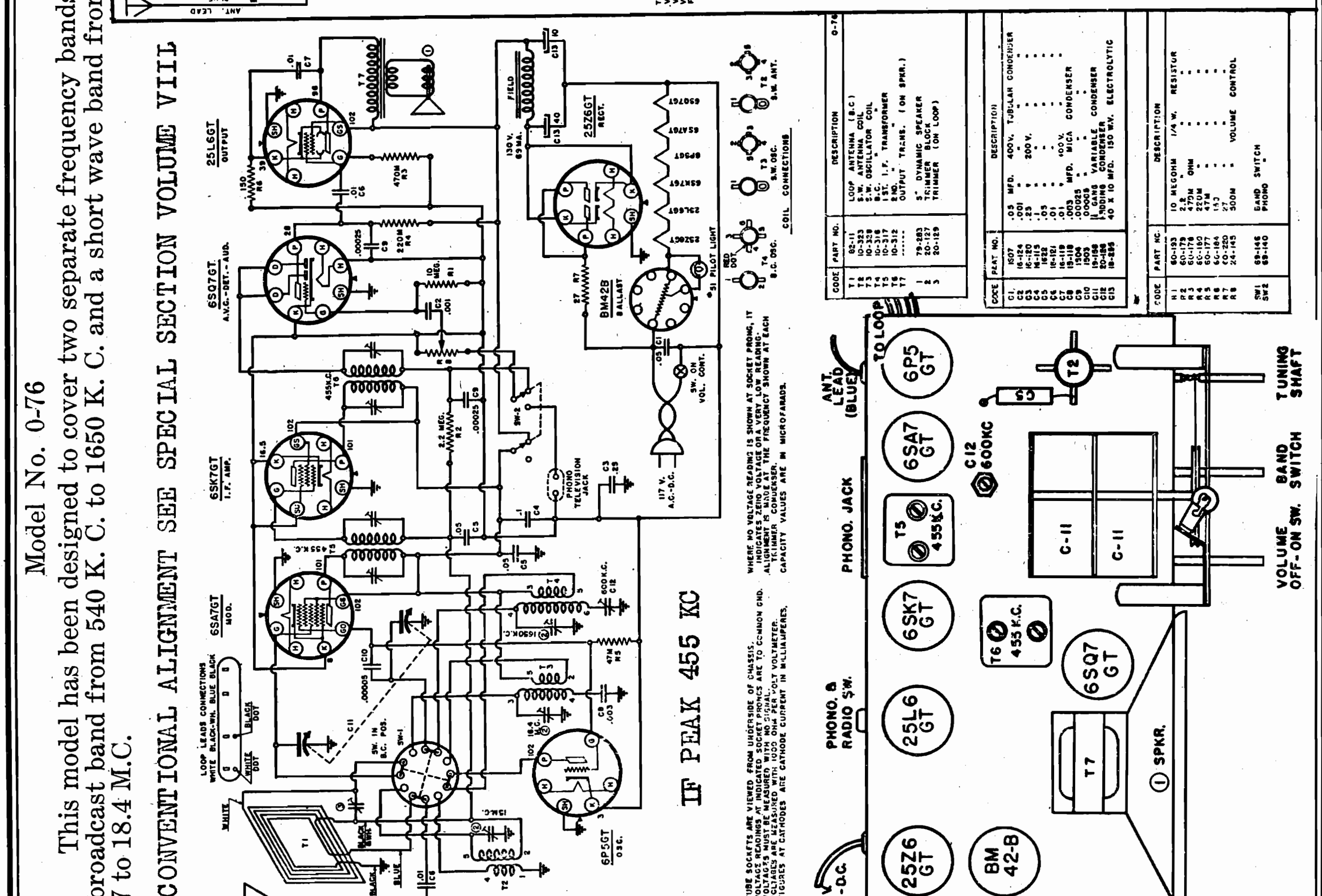


Model No. 0-76

This model has been designed to cover two separate frequency bands, a broadcast band from 540 K. C. to 1650 K. C. and a short wave band from 5.7 to 18.4 M.C.

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

IF PEAK 455 KC

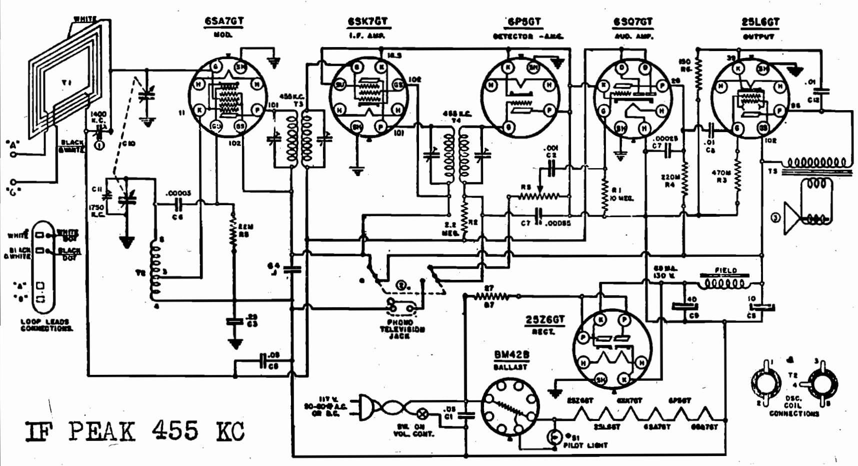


MODEL 0-77
MODEL 0-80

WARWICK MFG. CORP.

Schematics, Voltage, Socket
Alignment, Trimmers

Model No. 0-77

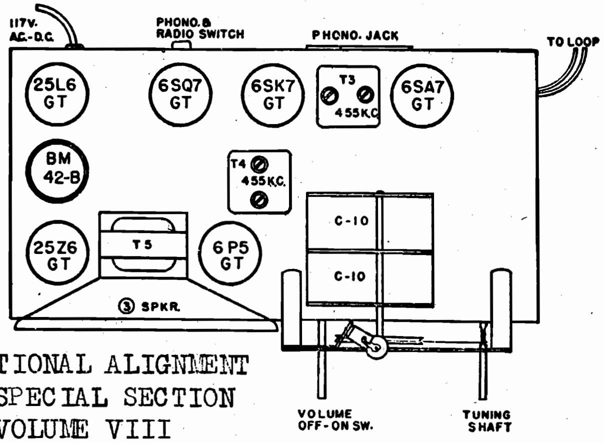


IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO COMMON GROUND.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.

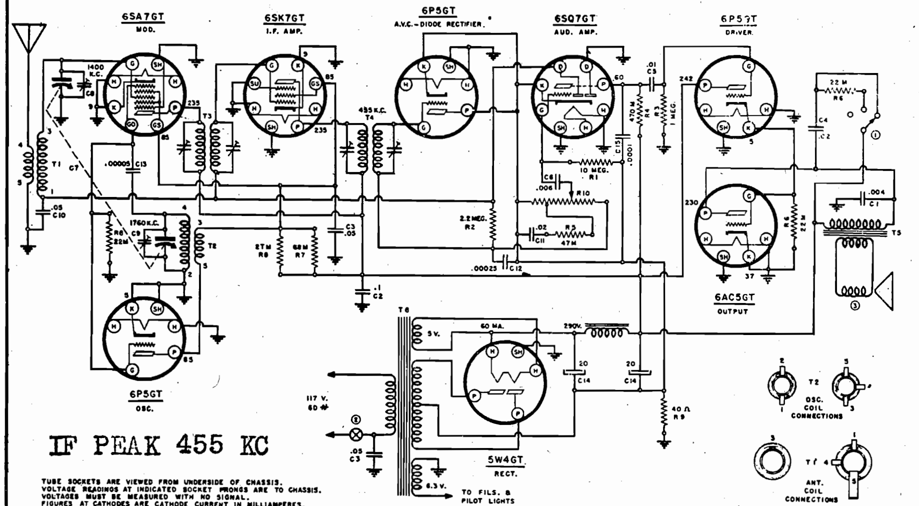
TUNING RANGE: 540 to 1750 KC

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-77
C1	1607	.05 MFD. 400 V. TUBULAR COND.	R1	60-193	10 MEGOHM 1/4 W. RESISTOR	T1	62-10	LOOP ANTENNA
C2	16-124	.001 " " " "	R2	60-179	2.2 " " "	T2	10-311	OSCILLATOR COIL
C3	16-120	.25 " 200 V. " "	R3	60-178	470M OHM " "	T3	10-317	1 ST. I.F. TRANSFORMER
C4	16-115	.1 " " " "	R4	60-180	220M " " "	T4	10-312	2 ND. " "
C5	1622	.05 " " " "	R5	60-185	22M " " "	T5	------	OUTPUT TRANSFORMER (ON SPKR.)
C6	16-121	.01 " " " "	R6	60-184	150 " " "			
C7	1504	.00025 MFD. MICA CONDENSER	R7	60-220	27 " " "	1	20-129	TRIMMER (ON LOOP)
C8	1503	.00005 " " "	R8	24-146	500M VOLUME CONTROL & SW.	2	69-140	PHONO SWITCH
C9	18-255	40 X 10 " 150 W.V. ELECTROLYTIC				3	79-283	5" DYNAMIC SPEAKER
C10	19-159	2 GANG VARIABLE CONDENSER (ALSO C11)						
C12	16-115	.01 MFD 400 V. TUBULAR CONDENSER						



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

Model No. 0-80



IF PEAK 455 KC

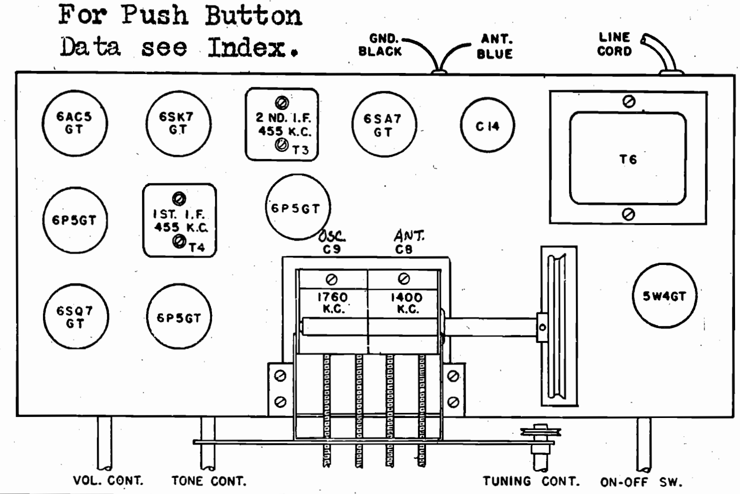
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN, AT THE TRIMMER CONDENSERS.
CAPACITY VALUES ARE MICROFARADS.

TUNING RANGE: 537 to 1730 KC

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-80
C1	16-125	.004 MFD. 600 V. TUBULAR CONDENSER	R1	60-193	10 MEGOHM 1/4 W. CARBON RESISTOR	T1	10-235	ANTENNA COIL
C2	16-116	.1 " 400 V. " "	R2	60-179	2.2 " " " "	T2	10-316	OSCILLATOR COIL
C3	1607	.05 " " " "	R3	60-195	1 " " " "	T3	10-315	1 ST. I.F. TRANSFORMER
C4	1605	.02 " " " "	R4	60-178	470M OHM " " "	T4	10-312	2 ND. " "
C5	16-119	.01 " " " "	R5	60-177	47M " " " "	T5	------	OUTPUT TRANSFORMER
C6	16-114	.006 " " " "	R6	60-185	22M " " " "	T6	80-180	POWER TRANSFORMER
C7	95-10	2 GANG VARIABLE CONDENSER (ALSO C8 & C9)	R7	60-248	68M " 1/2 W. " "			
C10	1622	.05 MFD. 200 V. TUBULAR CONDENSER	R8	60-249	27M " 1 W. " "	1	69-137	TONE CONTROL
C11	16-123	.02 " " " "	R9	60-133	40 " 1/2 W. WIRE WOUND RESISTOR	2	69-138	A.C. SWITCH
C12	1504	.00025 MFD. MICA CONDENSER	R10	24-131	500 M " VOLUME CONTROL	3	79-279	8" DYNAMIC SPEAKER
C13	1503	.00005 " " "						
C14	18-256	20 X 20 " 450 V. ELECTROLYTIC						
C15	1501	.0001 " MICA CONDENSER						

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

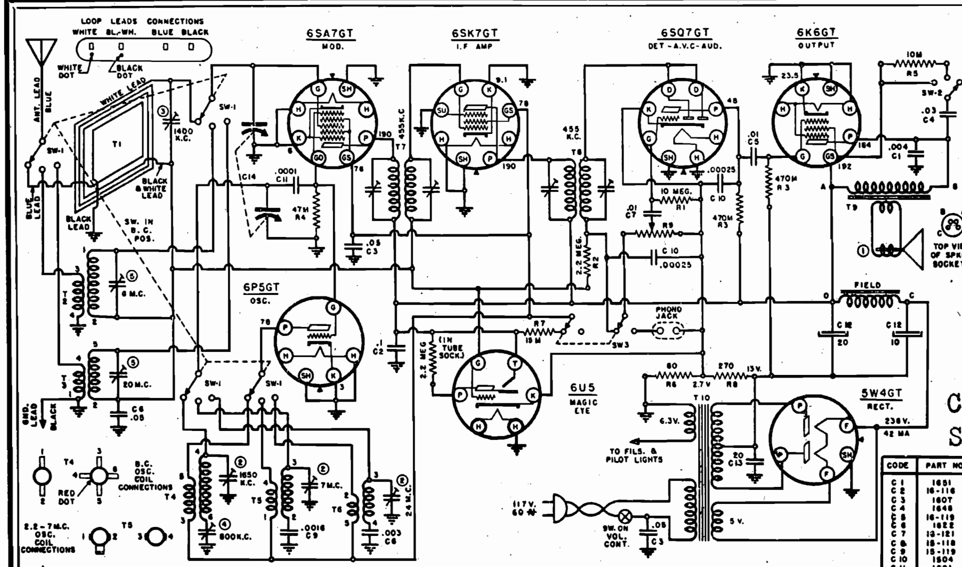
For Push Button
Data see Index.



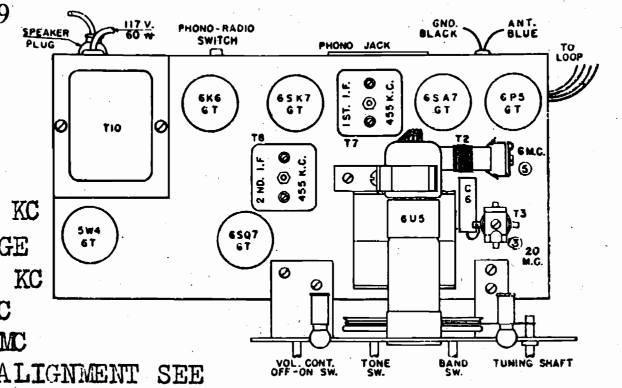
WARWICK MFG. CORP.

MODEL 0-79
MODEL 0-81
Schematics, Voltage, Socket
Alignment, Trimmers

Model No. 0-79



TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES ARE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQ. SHOWN AT EACH TRIMMER COND.
CAPACITY VALUES ARE IN MICROFARADS.



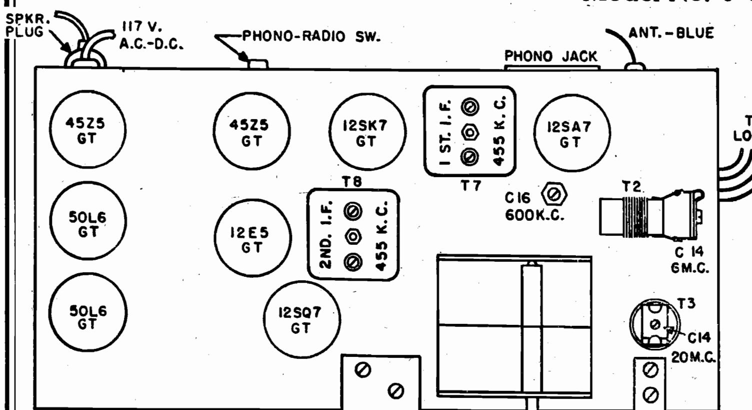
IF PEAK 455 KC
TUNING RANGE
540 to 1650 KC
2.22 to 7 MC
7.77 to 24 MC
CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII

CODE	PART NO.	DESCRIPTION
C 1	1651	.004 MFD. 600V. TUBULAR CONDENSER
C 2	16-116	.1 " 400V. " "
C 3	1607	.05 " " " "
C 4	1648	.03 " " " "
C 5	16-119	.01 " " " "
C 6	1622	.05 " 200V. " "
C 7	16-121	.01 " " " "
C 8	15-118	.003 MFD. MICA CONDENSER
C 9	15-119	.0016 " " "
C 10	1504	.00025 " " "
C 11	1501	.0001 " " "
C 12	18-284	20 X 10 " 350 W.V. ELECTROLYTIC.
C 13	18-243	20 MFD. 25 W.V. ELECTROLYTIC
C 14	19-156	2 GANG VARIABLE CONDENSER

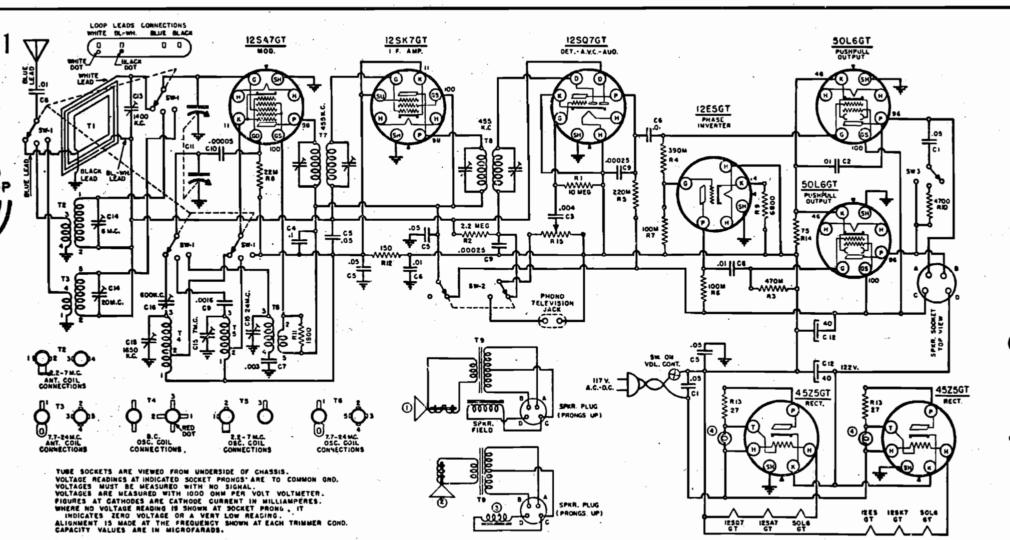
CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 W. RESISTOR
R 2	60-179	2.2 " " "
R 3	60-178	470M OHM " "
R 4	60-177	47M " " "
R 5	60-215	10M " " "
R 6	60-182	60 " 1/2 W. "
R 7	60-236	15M " 1 W. "
R 8	60-245	270 " " "
R 9	24-144	500M " VOLUME CONTROL
SW-1	69-142	BAND SWITCH
SW-2	69-143	TONE "
SW-3	69-140	PHONO "

CODE	PART NO.	DESCRIPTION 0-79
T 1	82-13	ANTENNA LOOP
T 2	10-324	ANTENNA TRANSFORMER (2.2-7 M.C.)
T 3	10-322	" " (7.7-24 M.C.)
T 4	10-318	OSCILLATOR " (B.C.)
T 5	10-327	" " (2.2-7 M.C.)
T 6	10-329	" " (7.7-24 M.C.)
T 7	10-315	1ST. I.F. TRANSFORMER
T 8	10-312	2ND. I.F. "
T 9	------	OUTPUT TRANS. (ON SPKR.)
T 10	80-179	POWER TRANSFORMER
1	79-278	6 1/2" DYNAMIC SPKR.
2	20-127	TRIMMER BLOCK
3	20-129	TRIMMER (ON LOOP)
4	20-128	PADDING CONDENSER
5	2052	2 PLATE TRIMMER

Model No. 0-81



IF PEAK 455 KC
TUNING RANGE
540 to 1650 KC
2.22 to 7 MC
7.77 to 24 MC
CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII



TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO COMMON GND.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER COND.
CAPACITY VALUES ARE IN MICROFARADS.

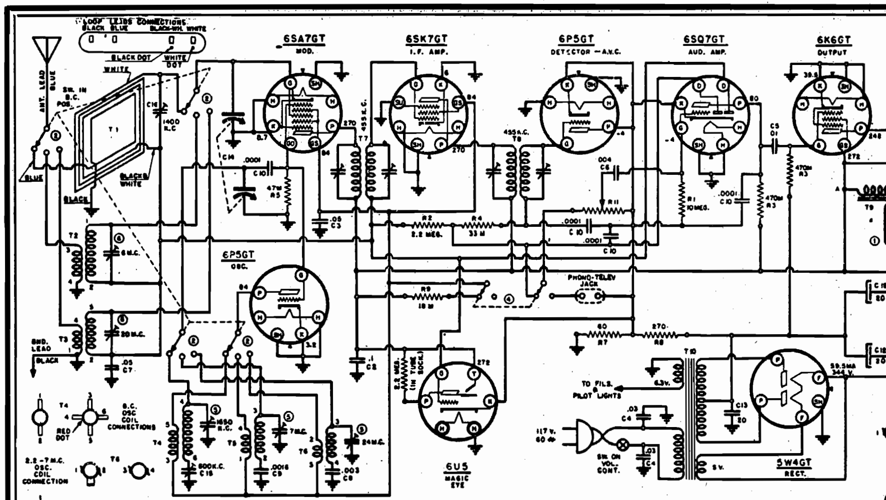
CODE	PART NO.	DESCRIPTION
C 1	1607	.05 MFD. 400 V. TUBULAR CONDENSER
C 2	16-119	.01 " " " "
C 3	16-125	.004 " " " "
C 4	16-115	.1 " 200 V. " "
C 5	1622	.05 " " " "
C 6	16-121	.01 " " " "
C 7	15-118	.003 MFD. MICA CONDENSER
C 8	15-119	.0016 " " "
C 9	1504	.00025 " " "
C 10	1503	.00005 " " "
C 11	19-158	2 GANG VARIABLE CONDENSER
C 12	18-261	40 MFD 150 W.V. ELECTROLYTIC
C 13	20-129	TRIMMER (ON LOOP)
C 14	2052	2 PLATE TRIMMER
C 15	20-127	TRIMMER BLOCK
C 16	20-130	PADDING CONDENSER

CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R 2	60-179	2.2 " " "
R 3	60-178	470M OHM " "
R 4	60-256	390M " " " ±10%
R 5	60-180	220M " " "
R 6	60-195	100M " " "
R 7	60-254	100M " " " ±10%
R 8	60-165	22M " " "
R 9	60-255	6800 " " " ±10%
R 10	60-188	4700 " " "
R 11	60-257	1800 " " "
R 12	60-184	150 " " " ±10%
R 13	60-220	27 " " " ±10%
R 14	60-252	75 " 1/2 WATT " ±10%
R 15	24-144	500M " VOLUME CONTROL (WITH SW.)

CODE	PART NO.	DESCRIPTION 0-81
T 1	82-13	ANTENNA LOOP (B.C.)
T 2	10-324	ANTENNA COIL (2.2-7 M.C.)
T 3	10-322	ANTENNA COIL (7.7-24 M.C.)
T 4	10-326	OSCILLATOR COIL (B.C.)
T 5	10-321	OSCILLATOR COIL (2.2-7 M.C.)
T 6	10-334	OSCILLATOR COIL (7.7-24 M.C.)
T 7	10-317	1ST. I.F. TRANSFORMER
T 8	10-312	2ND. I.F. TRANSFORMER
T 9	------	OUTPUT TRANSFORMER (ON SPKR.)
SW-1	69-142	BAND SWITCH
SW-2	69-140	PHONO SWITCH
SW-3	69-143	TONE SWITCH
1	79-298	8" DYNAMIC SPEAKER
2	79-290	5 1/2" P.M. SPEAKER
3	------	CHOKE (ON P.M. SPKR. ONLY)
4	85-3	#51 PILOT LIGHT 200 MA.

MODELS 0-82,0-82B,0-82C
MODEL 0-83
Schematics,Voltage,Socket
Alignment,Trimmers

WARWICK MFG. CORP.



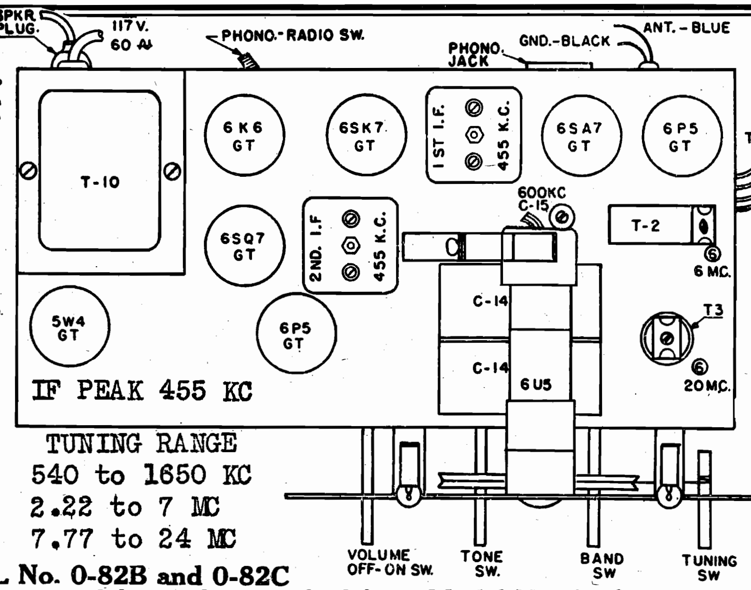
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES ARE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQ. SHOWN AT EACH TRIMMER COND.
CAPACITY VALUES ARE IN MICROFARADS

CODE	PART NO	DESCRIPTION
C1	1651	.004 MFD. 600 V. TUBULAR CONDENSER
C2	16-116	.1 " 400 V. " "
C3	1807	.05 " " " "
C4	1648	.03 " " " "
C5	16-119	.01 " " " "
C6	16-125	.004 " " " "
C7	1622	.05 " 200 V. " "
C8	15-116	.003 MFD. MICA CONDENSER
C9	15-119	.0016 " " "
C10	1501	.0001 " " "
C12	16-256	20 X 20 - 450W.V. ELECTROLYTIC
C13	16-243	20 MFD. - 25 W.V. "
C14	19-186	2 GANG VARIABLE CONDENSER
C15	20-124	PADDING CONDENSER
C16	20-128	TRIMMER (ON LOOP)

CODE	PART NO	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W RESISTOR
R2	60-179	2.2 " " "
R3	60-178	470 M OHM " "
R4	60-186	33 M " " "
R5	60-177	47 M " " "
R6	60-215	10 M " " "
R7	80-182	60 " 1/2 W. "
R8	60-245	270 " 1 W. "
R9	60-251	16 M " 2 W. "
R11	24-144	500 M " VOLUME CONTROL (WITH SW.)

CODE	PART NO.	DESCRIPTION
T1	82-13	LOOP ANTENNA (B.C.)
T2	10-324	ANTENNA TRANSFORMER (2.2-7M.C.)
T3	10-322	" " (7.7-24M.C.)
T4	10-318	OSCILLATOR " (B.C.)
T5	10-327	" " (2.2-7M.C.)
T6	10-329	" " (7.7-24M.C.)
T7	10-315	1ST I.F. TRANSFORMER
T8	10-312	2ND. " "
T9	--	OUTPUT TRANSFORMER (ON SPKR.)
T10	80-185	POWER TRANSFORMER
1	79-284	8" DYNAMIC SPEAKER
2	69-142	BAND SWITCH
3	69-143	TONE "
4	69-140	PHONO "
5	20-127	TRIMMER BLOCK
6	2082	2 PLATE TRIMMER



IF PEAK 455 KC

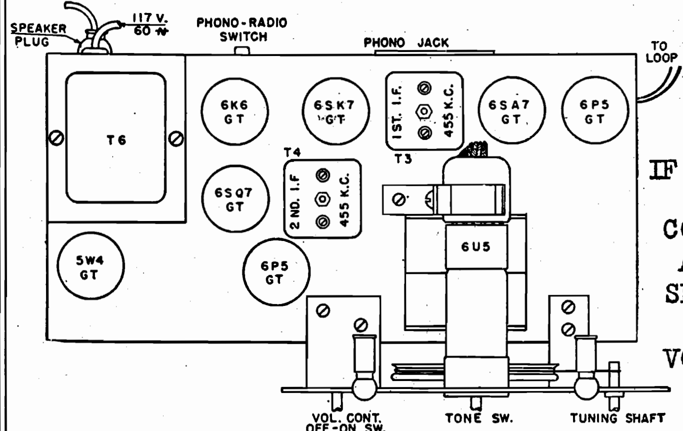
TUNING RANGE
540 to 1650 KC
2.22 to 7 MC
7.77 to 24 MC

MODEL No. 0-82B and 0-82C

These models are distinguished from Model No. 0-82 in that the Phono-Radio attachment is wired thru a cable, directly to Phonograph unit. The Phono-Radio switch will therefore be found mounted to the motor board of the phonograph instead of to the radio chassis.

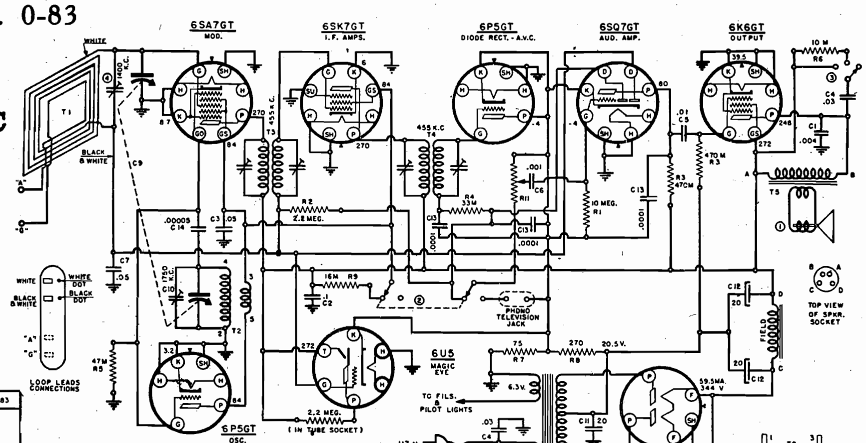
CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

Model No. 0-83



IF PEAK 455 KC

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII



TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES ARE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
ALIGNMENT IS TO BE MADE AT THE FREQ. SHOWN AT EACH TRIMMER COND.
CAPACITY VALUES ARE IN MICROFARADS

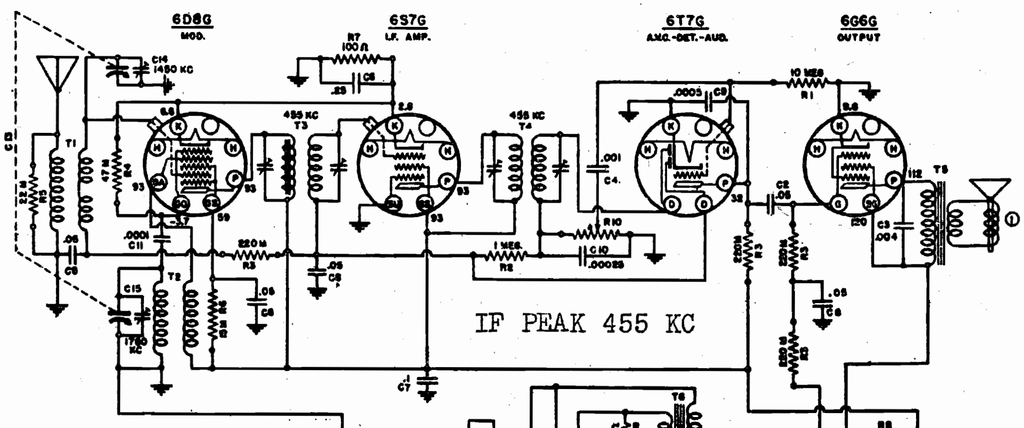
CODE	PART NO.	DESCRIPTION
C1	1651	.004 MFD. 600 V TUBULAR CONDENSER
C2	16-116	.1 400 V " "
C3	1607	.05 " " " "
C4	1648	.03 " " " "
C5	16-119	.01 " " " "
C6	16-124	.001 " " " "
C7	1622	.05 " 200 V. " "
C9	19-157	2 GANG VARIABLE CONDENSER (ALSO C10)
C11	18-243	20 MFD. 25 V ELECTROLYTIC
C12	18-256	20 X 20 MFD. 450 W.V. ELECTROLYTIC.
C13	1501	.0001 MFD. MICA CONDENSER
C14	1503	.00005 " " "

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-179	2.2 " " "
R3	60-178	470M OHM " "
R4	60-186	33 M " " "
R5	60-177	47 M " " "
R6	60-215	10 M " " "
R7	60-252	75 " 1/2 W "
R8	60-245	270 " 1 W. "
R9	60-251	16 M " 2 W "
R11	24-144	500 M " VOLUME CONTROL WITH SW.

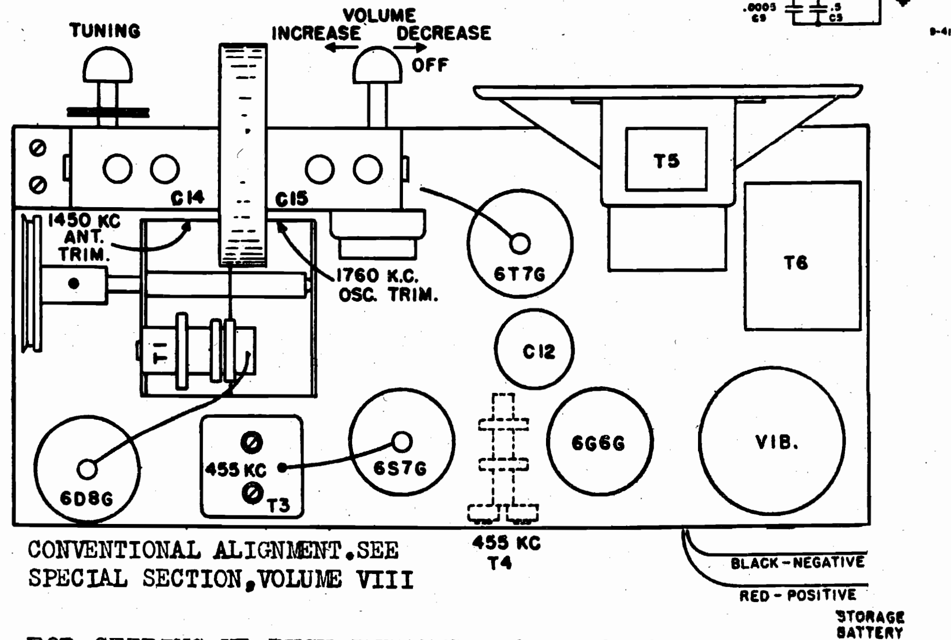
CODE	PART NO.	DESCRIPTION 0-83
T1	82-12	LOOP ANTENNA
T2	10-325	OSCILLATOR COIL
T3	10-315	1 ST I.F. TRANSFORMER
T4	10-312	2 ND " "
T5	------	OUTPUT TRANSFORMER (ON SPKR.)
T6	80-185	POWER TRANSFORMER
1	79-284	8" DYNAMIC SPEAKER
2	69-140	PHONO SWITCH
3	69-143	TONE SWITCH
4	20-129	TRIMMER (ON LOOP)

WARWICK MFG. CORP.

MODELS 9-41, 9-44, 406
Schematic, Voltage, Socket
Alignment, Trimmers



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS.



CONVENTIONAL ALIGNMENT. SEE
SPECIAL SECTION, VOLUME VIII

FOR SETTING UP PUSH BUTTONS - SEE INDEX

Schematic Location	Part No.	Description	Selling Price Each
	1011323128	Cable—Battery	.45
	101373509	Caps—Grid Small ....Doz.	.10
	1012739257	Drum & Lever Assem.	.40
	1014052127	Knob—Tuning, Ivory or Cream & Tan	.15
	1014052132	Knob—Volume, Ivory or Cream & Tan	.15
	101318901	Lamp—Pilot No. 40	.15
	1012739248	Lever—Driver	.05
	1012739247	Link—Connecting	.05
L3	1011633218	Choke—Filament	.20
L2	1011610246	Choke—R.F. (B)	.20
L1	1011633217	Choke—Vibrator	.20
	101373516	Clamps—Battery	.20
C1	1012216127	Condenser—Buffer .004 mfd. 1000V	.25
C2		Condenser—.05 mfd. 400V Tub.	.25
C3		Condenser—.004 mfd. 400V Tub.	.25
C4		Condenser—.001 mfd. 400V Tub.	.25
C5		Condenser—.5 mfd. 200V Tub.	.25
C6		Condenser—.25 mfd. 200V Tub.	.25
C7		Condenser—.1 mfd. 200V Tub.	.25
C8		Condenser—.05 mfd. 200V Tub.	.25
C9		Condenser—.0005 mfd. Mica	.25
C10		Condenser—.00025 mfd. Mica	.25
C11		Condenser—.0001 mfd. Mica	.25
C12	1012118236	Condenser—Electrolytic 40x16 mfd. 200V	1.00
C13	1012019132	Condenser—Variable C14 & C15	2.05
	1012524124	Control—Volume 500M ohm	.75
1	1015179256	Speaker—5" P.M. with	5.00
T5	*	Output Transformer	
	1012770110	Spring—Drive	.05
	1012670111	Spring—Ribbon	.05
	1012770105	Spring—String	.05
T1	1011810239	Transformer—Antenna	.45
T2	1011810240	Transformer—Oscillator	.30
T3	1015510253	Transformer—1st I.F.	1.25
T4	1015710252	Transformer—2nd I.F.	.80
T6	1016580160	Transformer—Power, Virb.	1.75
	1013722112	Tripoints—Back Panel ....Doz.	.15
	1013722103	Tripoints—Ribbon ....Doz.	.15
	10127957	Tuner—4 Button	1.20
2	1016234103	Vibrator	4.00
	10128866	Washers—"C" ....Doz.	.10

*When ordering Speaker output transformer refer to number stamped on speaker frame.

Schematic Location	Part No.	Description	Selling Price Each
	1012752131	Push Button & Stems, Cream & Tan or Ivory	.15
R1		Resistors—10 meg ohm 1/3W	.20
R2		Resistors—1 meg ohm 1/3W	.20
R3		Resistors—220M ohm 1/3W	.20
R4		Resistors—47M ohm 1/3W	.20
R5		Resistors—22M ohm 1/3W	.20
R6		Resistors—15M ohm 1/3W	.20
R7		Resistors—100 ohm 1/3W	.20
R8		Resistors—1500 ohm 1/2W	.20
R9		Resistors—220 ohm 1/2W	.20

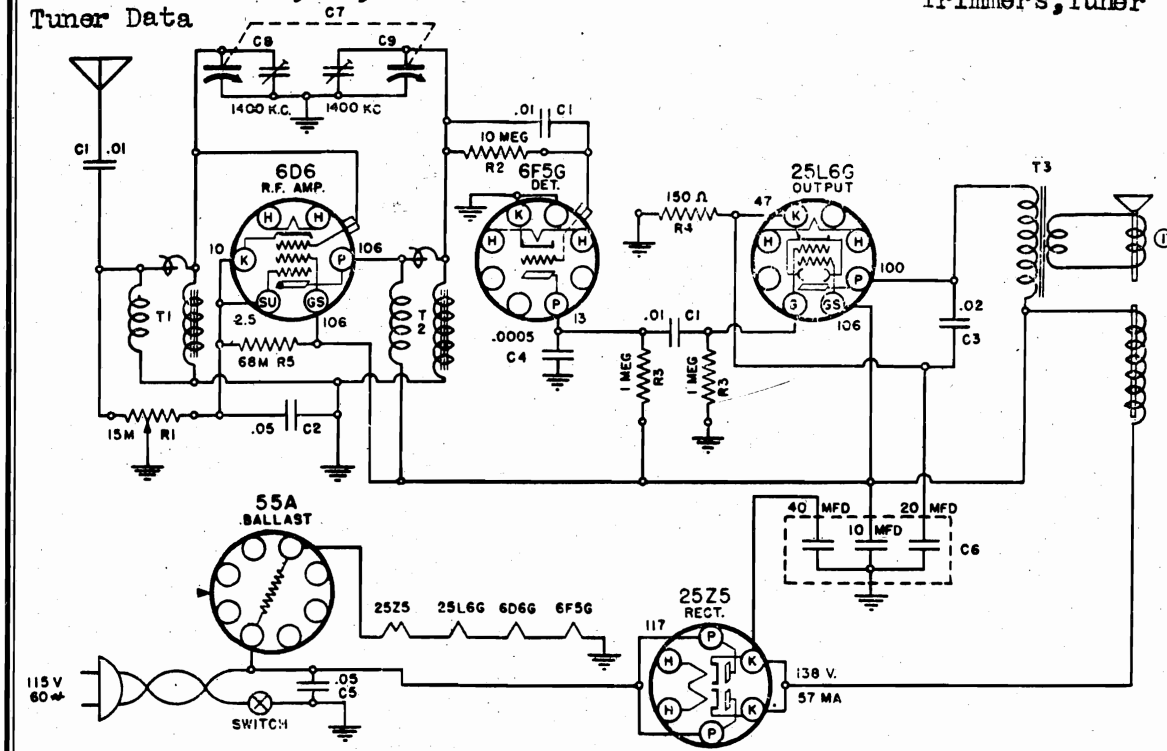
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 9-41,9-44,406
MODEL 9-42 MODELS 9-61,
9-63,630,631

WARWICK MFG. CORP.

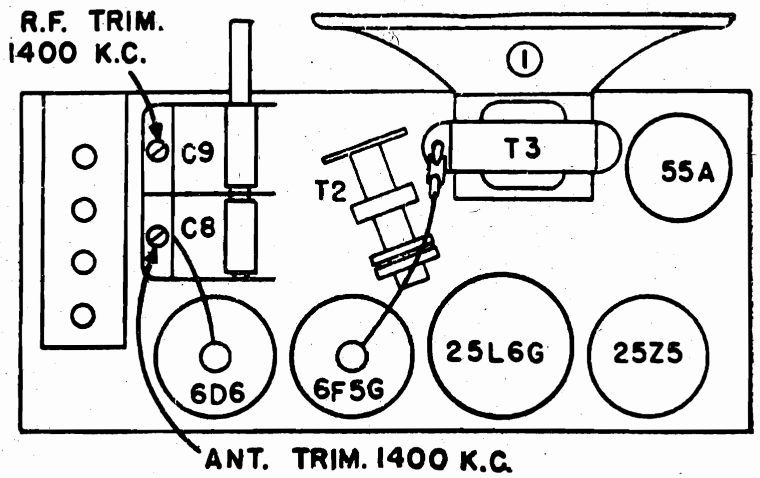
MODELS 9-51,9-52,9-54,542
Schematic,Voltage,Socket
Trimmers,Tuner

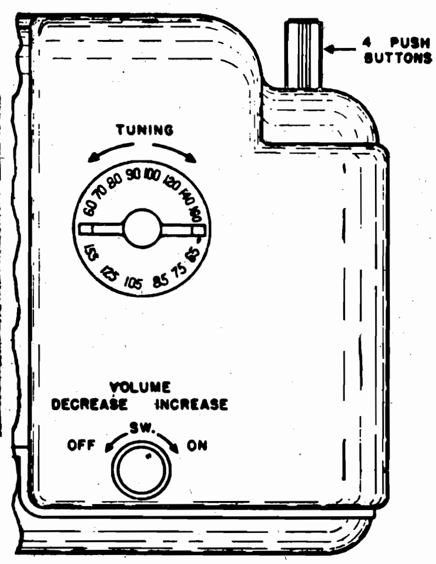
Tuner Data



A ground connection is of no importance and therefore has been eliminated

WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
CAPACITY VALUES ARE IN MICROFARADS.





TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS WITH A 1000 OHM PER VOLT VOLTMETER.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.

PUSH BUTTON DATA for MODELS 9-41, 9-44, 406; 9-42; 9-61, 9-63, 9-64, 630, 631; 9-51, 9-52, 9-54, 542(1938):

SETTING PUSH-BUTTONS

1. By means of the Station Selector Knob, tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the highest frequency—that is, your selected station which is tuned in nearest number 160 on the Station Selector Knob.
2. After the station has been tuned in accurately with the right hand, continue to hold it in its exact position firmly, and with the left hand loosen the Push-Button to be set up for that station by unscrewing the Push-Button about one turn to the left (counter-clockwise).
3. Continuing to hold the Station Selector Knob in its exact position, PUSH THE PUSH-BUTTON IN ALL THE WAY with the left hand.
4. After the Push-Button has been depressed all the way, tighten it gently toward the right (clockwise). Release Push-Button slowly and when in normal position grip button and tighten firmly.

The Push-Button tuning system is now correctly set up for your first selected station of highest frequency and the Call Letter Tab for this station should be in the Push-button nearest the rear of the receiver.

Follow through with this same procedure, setting up the other 3 stations in the order of their frequency—that is, the second station set up will be second highest in frequency and the third station set up will be third highest in frequency.

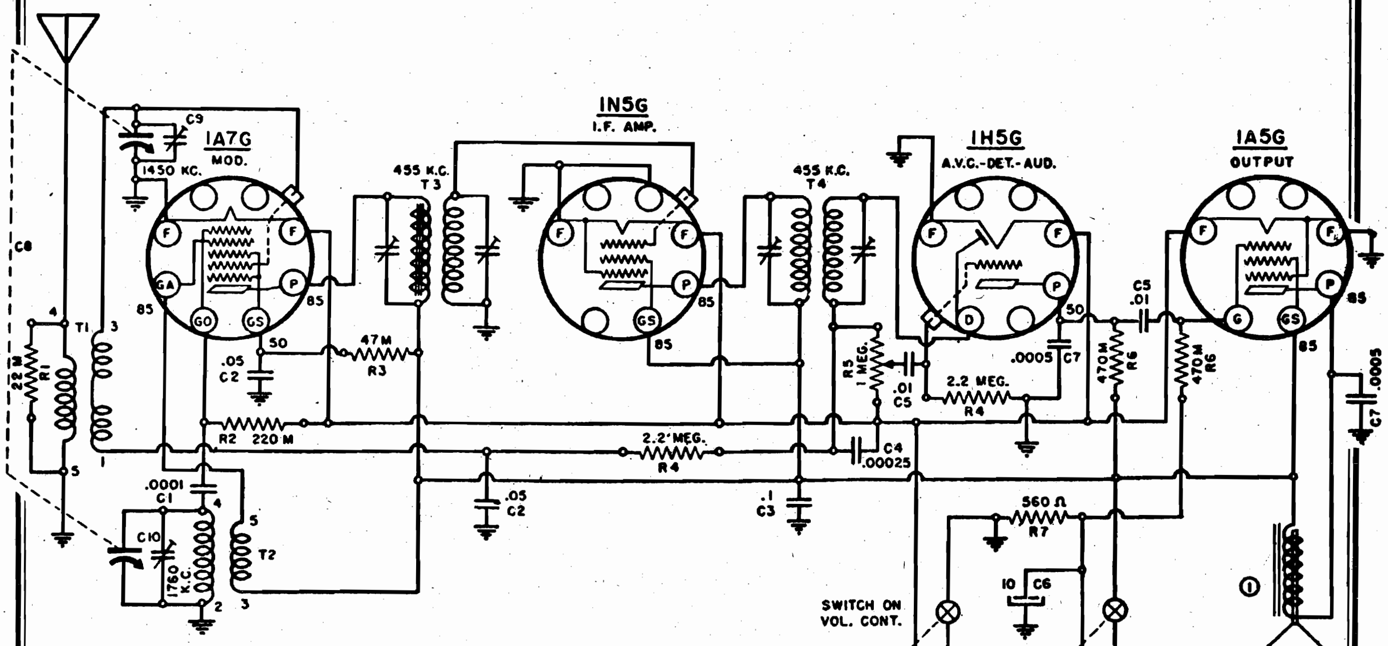
Carefully check each Push-Button for the accuracy of its setting. If, when tuning in any station with its Automatic Push-Button it does not have equal volume or clarity to that obtained with manual tuning, this may indicate the automatic adjustment for that station was not made accurately. Should there be any inaccuracy in any one of the Push-Button adjustments, correction can be made by repeating the above procedure for that button only. Do not reset those Push-Buttons that are accurately adjusted.

No further adjustments are necessary to operate your radio automatically or manually. To receive any one of your selected stations for automatic operation, merely push in ALL THE WAY the Button set up for that station.

To receive all other stations in the regular manner turn the tuning knob to the frequency of the station desired.

WARWICK MFG. CORP.

MODEL 9-42
Schematic, Voltage, Socket
Alignment, Trimmers



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER COND.
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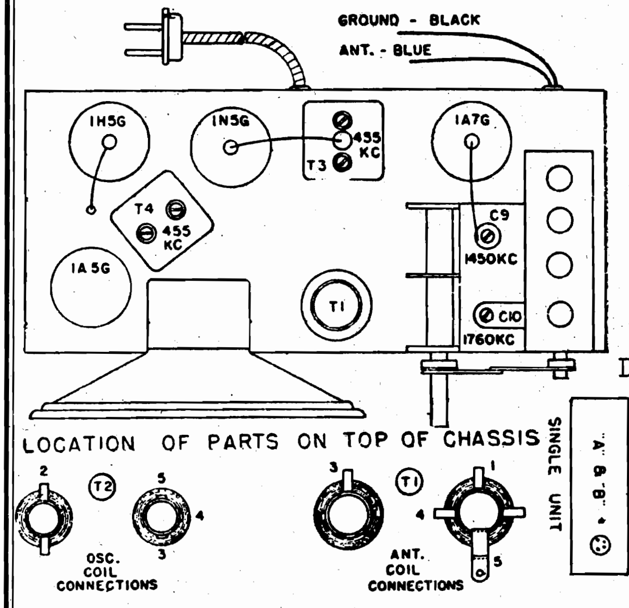
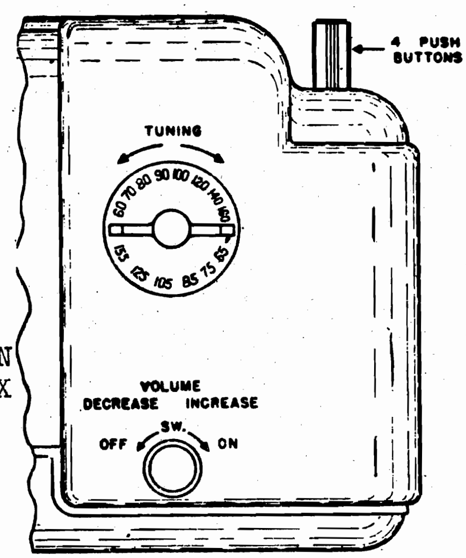
CAPACITY VALUES ARE IN MICROFARADS.



IF PEAK 455 KC

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

FOR PUSH BUTTON DATA - SEE INDEX



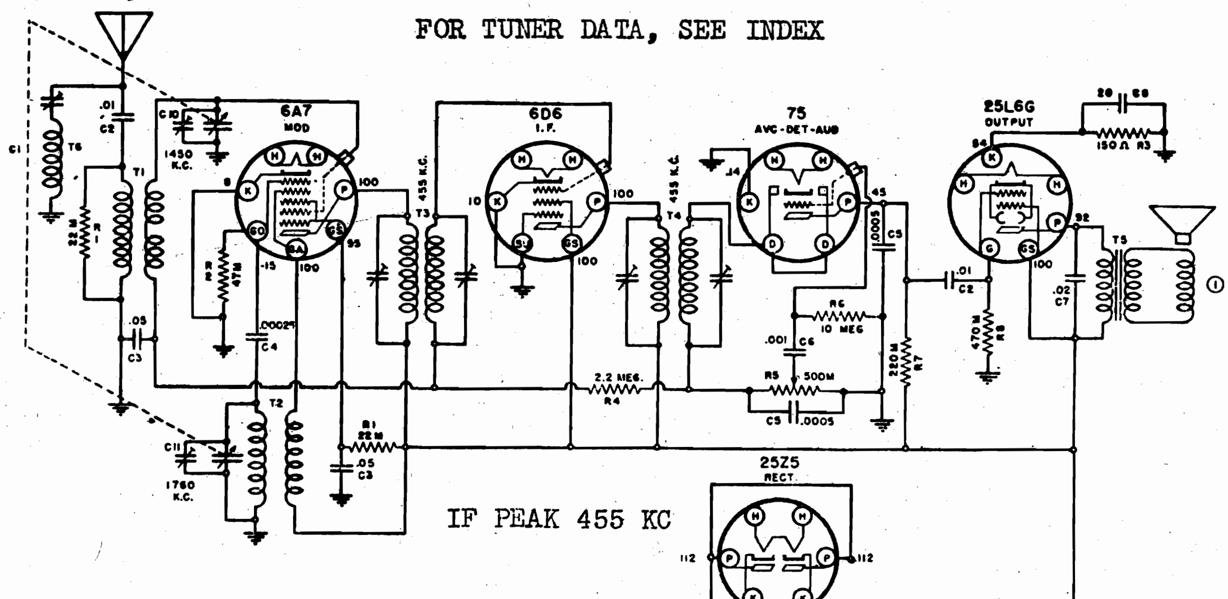
	Part No.	Description	Price Each
	1011242184	Cabinet—Molded, Walnut	2.65
	1011323130	Cable—Battery	.62
	101373509	Clips—Grid ....Doz.	.15
C1		Condenser—.0001 mfd. Mica	.25
C2		Condenser—.05 mfd. 200 V. Tub.	.25
C3		Condenser—.1 mfd. 200 V. Tub.	.25
C4		Condenser—.00025 mfd. Mica	.25
C5		Condenser—.01 mfd. 400 V. Tub.	.25
C6	1012118235	Condenser—Elec. 10 mfd. 35 Volts	.50
C7		Condenser—.0005 mfd. Mica	.25
C8	1012019134	Condenser—Variable C9 and C10	.80
R5	1012524126	Control—Volume 1 meg ohm	.90
	101374710	Grommet—Rubber ⅜" ....Doz.	.20
	101374700	Grommet—Rubber ¼" ....Doz.	.20
	1014067367	Knob—Tuning, Ivory or Cream & Tan	.38
	1014052116	Knob—Volume, Ivory or Cream & Tan	.15
	1012752129	Knob—(Push Button) & Stem, Ivory or Cream and Tan	.15
R1		Resistor—22 M ohm 1/3 W	.20
R2		Resistor—220 M ohm 1/3 W	.20
R3		Resistor—47 M ohm 1/3 W	.20
R4		Resistor—2.2 meg ohm 1/3 W	.20
R6		Resistor—470 M ohm 1/3 W	.20
R7		Resistor—560 ohm 1/3 W	.20
1	10151179260	Speaker—5" Permanic	2.40
	1012770109	Spring	.05
T1	1011810258	Transformer—Antenna	.75
T2	1011810257	Transformer—Oscillator	.75
T3	1015510251	Transformer—1st I.F.	1.50
T4	1015710259	Transformer—2nd I.F.	1.25
	1013722112	Tri-points—Back panel ....Doz.	.15
	101289956	Tuner	1.30

ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 9-61, 9-63, 9-64
630, 631
Schematic, Voltage, Socket
Alignment, Trimmers

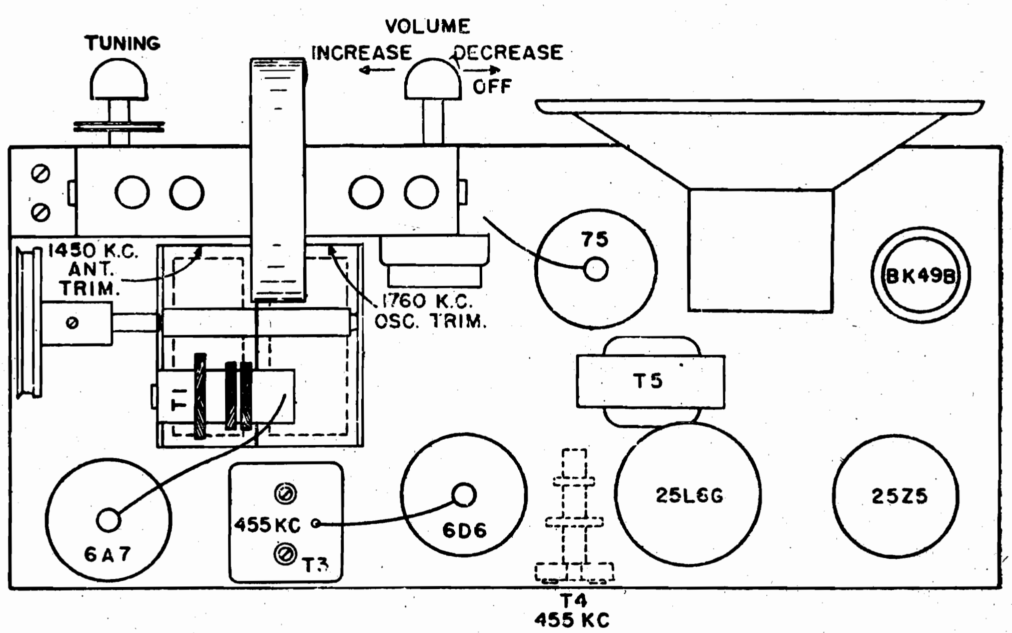
WARWICK MFG. CORP.

FOR TUNER DATA, SEE INDEX



NOTES

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS.



FOR CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

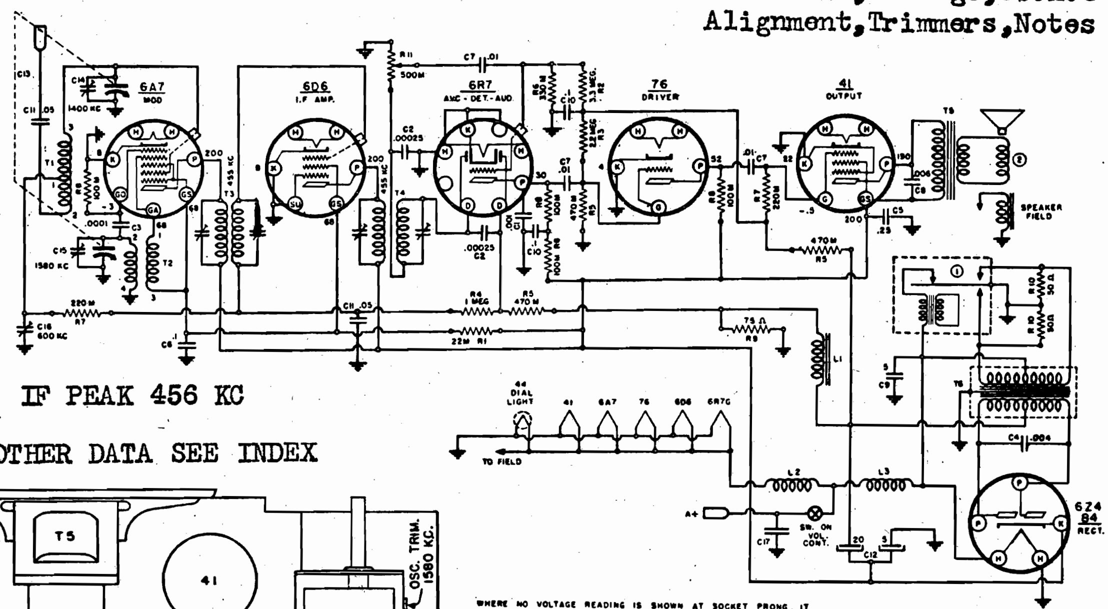
POWER SUPPLY

The receiver is designed for operation from 105-130 volt Alternating Current (A.C.) supply or a 105-130 volt Direct Current (D.C.) supply. Never connect the receiver to any supply having a higher voltage than that specified on the sticker. If you are not sure of the power supply voltage at your home, your Power Company will furnish the information.

When using a D.C. supply allow sufficient time for tubes to warm up (approximately 1½ minutes), and if at that time the receiver does not operate, remove the line cord plug from the socket and reverse. Replace plug in the reverse position and allow tubes to warm up, at which time the receiver will operate.

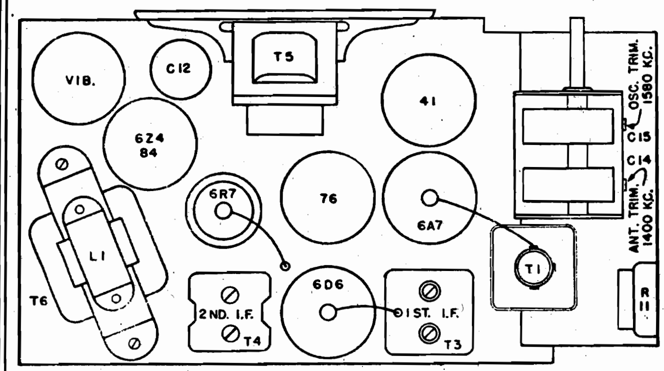
WARWICK MFG. CORP.

MODEL 9-627
Schematic, Voltage, Socket
Alignment, Trimmers, Notes



IF PEAK 456 KC

FOR OTHER DATA SEE INDEX



LOCATION OF PARTS ON TOP OF CHASSIS

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FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS
VOLTAGES TAKEN WITH A 6V. INPUT.

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS
VOLTAGES MUST BE MEASURED WITH NO SIGNAL
ALIGNMENT IS TO MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.

CODE	PART NO.	DESCRIPTION 9-62
T1	10-223	ANTENNA TRANSFORMER
T2	10-224	OSCILLATOR "
T3	10-221	1 ST. I.F. "
T4	10-222	2 ND I F "
T5		OUTPUT TRANS. (ON SPKR.)
T6	80-169	POWER TRANSFORMER } 84-7
L1	33-219	FILTER CHOKE } 84-7
L2	33-210	FILAMENT CHOKE
L3	33-211	VIBRATOR CHOKE
1	34-102	VIBRATOR
2	78-240	5" SPEAKER

CODE	PART NO.	DESCRIPTION
R1	60-214	22 M OHM 1 W CARBON RES.
R2	60-209	3.3 MEGOHM 1/2 W. " "
R3	60-208	2.2 " " " "
R4	60-167	1 " " " "
R5	60-206	470 M OHM " " "
R6	60-210	330 M " " " "
R7	60-207	220 M " " " "
R8	60-172	100 M " " " "
R9	60-211	75 " " " "
R10	60-212	50 " " " "
R11	24-119	VOLUME CONTROL 500 M OHMS

CODE	PART NO.	DESCRIPTION
C1	15-111	.001 MFD. MICA CONDENSER
C2	1504	.00025 " " "
C3	1501	.0001 " " "
C4	16-129	.004 MFD 1600 V. BUFFER COND.
C5	16-117	.25 " 400 V. TUB. CONDENSER
C6	16-116	.1 " " " "
C7	16-119	.01 " " " "
C8	16-128	.006 " " " "
C9	16-112	.5 " 200 V. OVAL "
C10	16-115	.1 " " TUB. "
C11	1622	.05 " " " "
C12	16-240	20 & 5 MFD. ELECTROLYTIC 300 V.
C13	19-127	2 GANG VARIABLE COND. ALSO C14 & C15
C16	20-117	300-600 MFD. PADDING CONDENSER
C17	99-1	SPARK PLATE

ALIGNMENT PROCEDURE

PRELIMINARY

Output Meter Connections	Across Loud Speaker Voice Coil
Output Meter Reading to Indicate 1 Watt	1.85 Volts
Generator Ground Lead Connection	Receiver Chassis
Dummy Antenna Value to Be in Series with Generator Output	See Chart Below
Connection of Generator Output Lead	See Chart Below
Generator Modulation	30%, 400 Cycles
Position of Volume Control	Fully On

Position of Variable	Generator Frequency	Dummy Antenna	Generator Connections	Trimmer Adjustment (In Order Shown)	Trimmer Function
Closed	455 Kc.	.1 mfd.	6A7 Grid	T3 T4	I. F.
Fully Open	1580 K. C.	.0002 mfd.	Antenna Conn.	C15	Osc. Trimmer
1400 K.C.	1400 K.C.	.0002 mfd.	Antenna Conn.	C14	Ant. Trimmer
600 K. C.	600 K. C.	.0002 mfd.	Antenna Conn.	C16	Antenna Padder

The variable condenser should be at 600 k.c. for antenna adjustment.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy. A final adjustment of antenna padder condenser C16 is always made after the receiver is installed in the car, in order to match the car antenna.

Always keep the output power from the generator at its lowest possible value to prevent the A.V.C. of the receiver from interfering with accurate alignment.

THE AMMETER LEAD

The ammeter cable (See "H" in Fig. 1) has a spring clip at one end and a fuse receptacle at the other. Compress the spring clip and slide it over the ammeter stud on the back of the car's ammeter. When the clip is released it will spring out and grip the stud securely. (See fig 1.) (The cable clip may be connected to either stud of the ammeter. If connected to one stud, the current taken by the radio will register on the ammeter. If connected to the other stud, it will not register.) In a few cars such as the first models of the Ford V-8 the ammeter does not have terminals. In such cases the spring clip should be fastened to any available terminal behind the dash which is connected to the ungrounded side of the battery at all times. Some terminals will be so connected only when the ignition or light switches are turned "On." Insert the fibre sleeve and fuse (See "J" and "K" in Fig. 1) in the other end of the ammeter cable. The black wire coming from the radio receiver has a plug at its end which should be inserted into the fuse receptacle after the fuse sleeve and fuse have been inserted.

THE GENERATOR CONDENSER

The Generator Condenser should be mounted to the generator frame by means of any one of the generator assembly bolts. Scrape all dirt and paint away so that a clean metal to metal contact is made. The flexible lead from the Generator Condenser should be connected to the output terminal of the generator.

MODEL 9-627
Assembly, Notes
Tuner Data

WARWICK MFG. CORP.

ANTENNA

Insert the single prong of the antenna cable (See "G" in Fig. 1) into its receptacle located on the bottom of the receiver case and near the front left hand corner. Note that the other end of this cable has a white covered wire protruding from its end and a bright metal pigtail. The white covered inner-wire and the bright metal pigtail are to be connected to the car's antenna in the following manner:

If an antenna was located coming from the corner post of the car, it will probably have an inner wire covered with the metal braid. (If it has a plug at its end, cut off the plug). Scrape clean and solder the white wire of the receiver's antenna lead to the inner wire of the car antenna lead. Be certain these inner wires do not at any time touch the outer shield. (See Fig. 5.)

After the connection is cleaned and connected, cover the joint carefully with tape. (See Fig. 6.)

Connect the pigtail of the receiver's antenna wire to the pigtail braid of the car's antenna lead-in. Wrap pigtails and solder together using rosin core solder. IMPORTANT—Make certain when bolting soldered pigtail ends to car that the section is scraped clean and a good chassis ground. (See Fig. 7.)

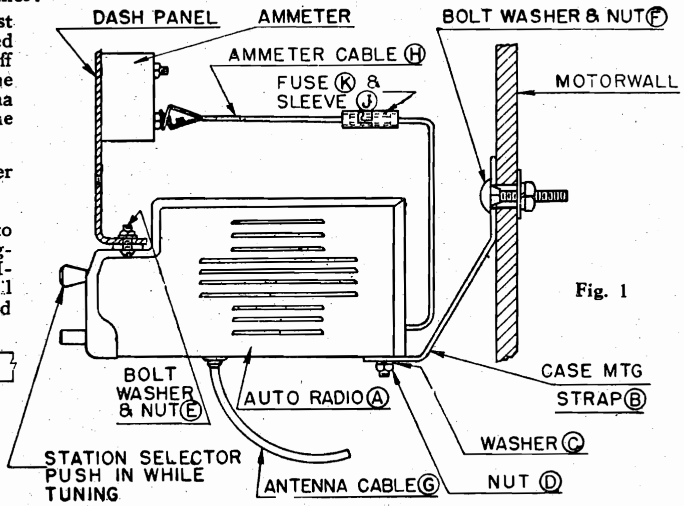
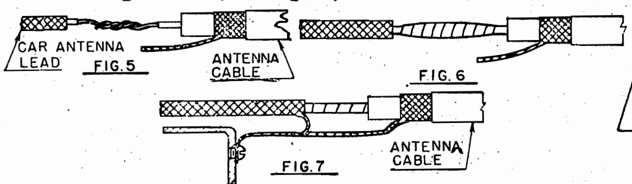


Fig. 1



If the lead-in from the car antenna is not shielded, it is advisable to do so to overcome motor noise. Slip a shielded loom over the entire length of the car antenna lead-in. In some cases where a roof antenna is used, the lead-in is brought down through a corner post of the car frame at the end of the windshield (See Figure 2). If the radio antenna cable is long enough to be inserted several inches into the corner post, connect antenna lead-in and the radio antenna cable as shown in Figures 5, 6 and 7, and after taping, insert the splice and all the unshielded portion of the lead-in up into the corner post. If this cannot be done, this type of lead-in should be covered with a shielded loom several inches into the corner post. Connect the lead-in and shielding as illustrated in Figures 5, 6 and 7. The other end of the shielding at the car antenna should be grounded. To eliminate crackling and noisy reception due to antenna lead-in pick-up, the shielded antenna lead-in should be either insulated from chassis (or car body) or grounded at interval points, leading from the radio antenna cable to the car antenna. Be sure to use car chassis or grounded section of body only for grounding

THE DISTRIBUTOR SUPPRESSOR

To install the distributor suppressor, cut the CENTER lead from the distributor cap in two, as close as possible to the distributor cap. Screw the Distributor Suppressor to one end of the cut cable and then to the other end leading to the distributor cap.

SETTING PUSH-BUTTONS

1. By means of the Station Selector Knob, tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the lowest frequency—that is, your selected station which is tuned in nearest the right-hand side of the dial.
2. After the station has been tuned in accurately with the right hand, continue to hold it in its exact position firmly, and with the left hand loosen the Push-Button to be set up for that station by unscrewing the Push-Button about one turn to the left (counter-clockwise).

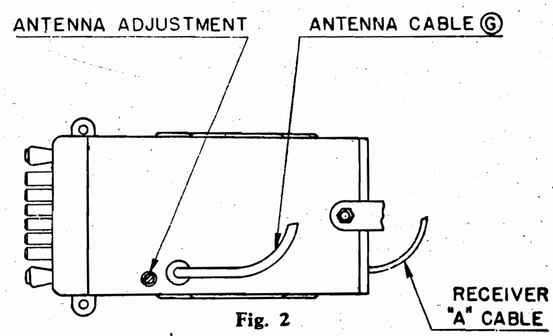


Fig. 2

3. Continuing to hold the Station Selector Knob in its exact position, PUSH THE PUSH-BUTTON IN ALL THE WAY with the left hand.
4. After the Push-Button has been depressed all the way, tighten it gently toward the right (clockwise). Release Push-Button slowly and when in normal position grip button and tighten firmly.

The Push-Button tuning system is now correctly set up for your first selected station of lowest frequency and the Call Letter Tab for this station should be at the extreme right of the Call Letter Holder.

Follow through with this same procedure, setting up the other 5 stations in the order of their frequency—that is, the second station set up will be second lowest in frequency and the third station set up will be third lowest in frequency.

Carefully check each Push-Button for the accuracy of its setting. If, when tuning in any station with its Automatic Push-Button it does not have equal volume or clarity to that obtained with manual tuning, this may indicate the automatic adjustment for that station was not made accurately. Should there be any inaccuracy in any one of the Push-Button adjustments, correction can be made by repeating the above procedure for that button only. Do not reset those Push-Buttons that are accurately adjusted.

No further adjustments are necessary to operate your auto radio automatically or manually. To receive any one of your six selected stations for automatic operation, merely push in ALL THE WAY the Button set up for that station.

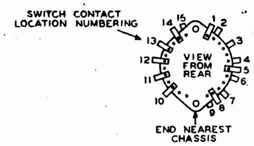
To receive all other stations in the regular manner, push in the Station Selector Knob and turn it to the frequency of the station desired.

IMPORTANT: ANTENNA ADJUSTMENT

The antenna adjustment control is located close to the antenna cable receptacle as shown in Figure 2. To make the adjustment first, remove plug button from bottom of case by inserting a screwdriver between case and plug button, then tune in a weak station with full volume at or very close to 600 kilocycles (60) on the dial. Second, insert a small screwdriver into the antenna adjustment screw shown in Figure 2 and turn the screwdriver either to the left or right until the volume of the station is at its maximum point. While adjusting the antenna adjustment screw it is advisable to vary the station selector knob a degree or two to obtain the best adjustment. Now insert plug button into case. The receiver is now balanced and no further radio electrical adjustments are necessary.

WELLS-GARDNER & CO.

MODEL 1A17
Schematic, Voltage, Socket
Sensitivity, Coils



RANGE "B" 528 TO 1,600 KILOCYCLES.
RANGE "C" 1,585 TO 5,400 KILOCYCLES.
RANGE "D" 5,350 TO 18,300 KILOCYCLES.

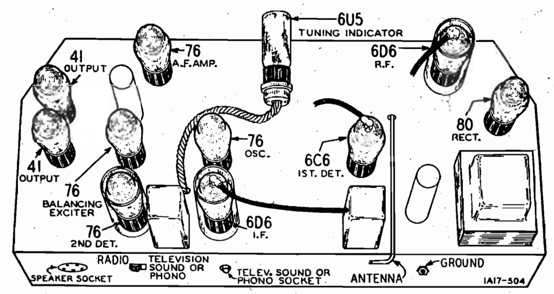
Power Consumption - 80 Watts **(At 117 volts 60 cycles)**

Power Output - - - - - - **5.0 Watts Undistorted** / **5.5 Watts Maximum**

Selectivity - - 32 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - 456 KC.

Speaker - - - - - - - - 10" Electro-Dynamic

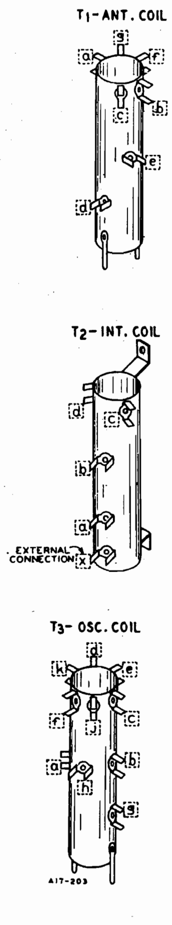


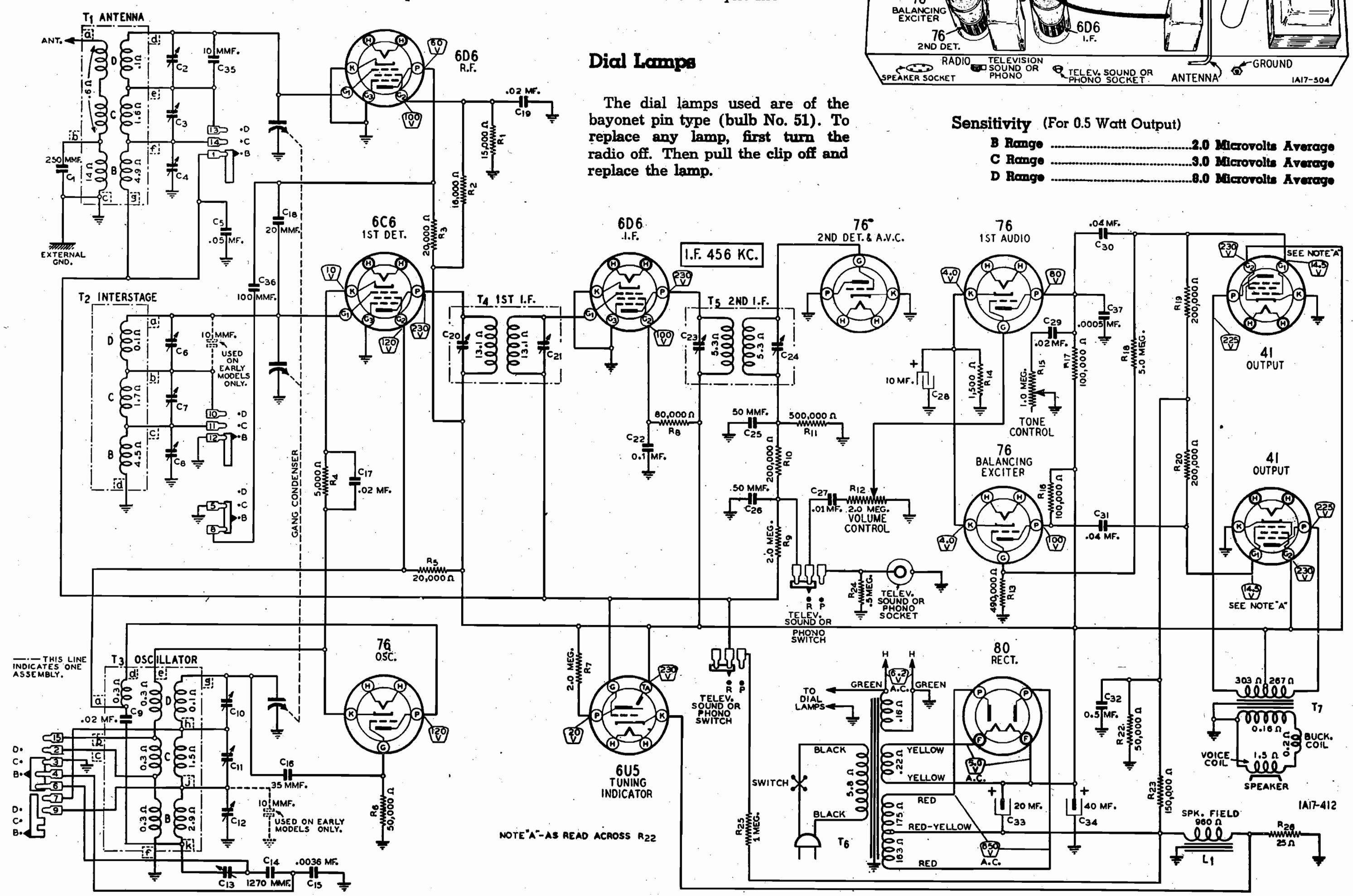
Dial Lamps

The dial lamps used are of the bayonet pin type (bulb No. 51). To replace any lamp, first turn the radio off. Then pull the clip off and replace the lamp.

Sensitivity (For 0.5 Watt Output)

B Range ....2.0 **Microvolts Average**
C Range ....3.0 **Microvolts Average**
D Range ....8.0 **Microvolts Average**





MODEL 1A17
Alignment, Trimmers
Drive Cord Data

WELLS-GARDNER & CO.

Voltages at Sockets

The voltages at sockets are shown on the schematic circuit diagram. Unless otherwise specified, the voltage indicated is between the socket terminal and ground.

These voltages are read under the following conditions:
Line Voltage—117.
Volume Control—Maximum.
Antenna Shorted to Ground.

Readings taken with 1000 ohm-per-volt meter. Plate and screen voltages are read on 500 volt scale.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

Allow Chassis and Signal Generator to "Heat Up" for several minutes.

IMPORTANT—Follow procedure in the order shown.

The following equipment is required for aligning:

An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 200 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	2nd I.F. (C23) & (C24) 1st I.F. (C20) & (C21)
RANGE D					
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C10)
15,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C2) Int. Range D (C6) Rock Rotor—See Note A
RANGE C					
5400 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C11)
5000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Antenna Range C (C3) Int. Range C (C7)
RANGE B					
1600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C12)
1400 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note B	Ant. Range B (C4) Int. Range B (C8)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C13) Rock Rotor—See Note A

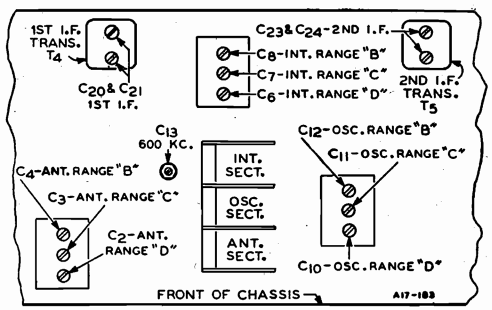
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE B—If the pointer is not at 1400 KC on the dial, loosen the 2 clamps which hold the pointer assembly on the cord, move the pointer, to the 1400 KC mark, and tighten the clamps.

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image.



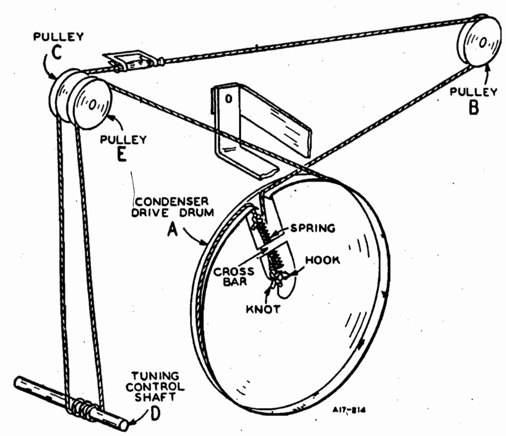
Drive Cord Replacement

Tie a knot with a small loop at one end of the new drive cord. Slide a 1¾ inch length of fabric tubing on the cord. The free end of the drive cord should be tied to the tension spring in such a manner that there is a distance of 56⅝ inches between the knots.

Turn the gang condenser to full open position.

Place the looped end of the drive cord over the hook on condenser drive drum A—See illustration. Bring the cord up through the slot in the drum rim and pass to the right (from back of chassis) and around pulley B. Then bring the cord to the left and over pulley C. See that the fabric tubing is now between pulleys B and C. Continue cord down to control shaft D and wind 3½ turns counter-clockwise (from back of chassis) on shaft D. Bring cord up to and over pulley E. Bring cord down to top of drive drum A and wind one turn clockwise around the drum rim.

Pass the remaining drive cord and tension spring through the slot in the drum. Place free end of spring over the hook on the condenser drive drum.



ATTACHING DIAL POINTER—Tune in a 1500 KC signal. Move the pointer to the 1500 KC mark on the dial and clamp it tightly over the fabric tubing on the cord.

WELLS-GARDNER & CO.

MODEL 1A29 (Early)
Schematic, Voltage, Socket, Sensitivity

Power Consumption - 100 Watts (At 117 volts 60 cycles)

Power Output - - - - - - 9 Watts Undistorted, 10 Watts Maximum

Selectivity (Sharp) - 26 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - 456 KC

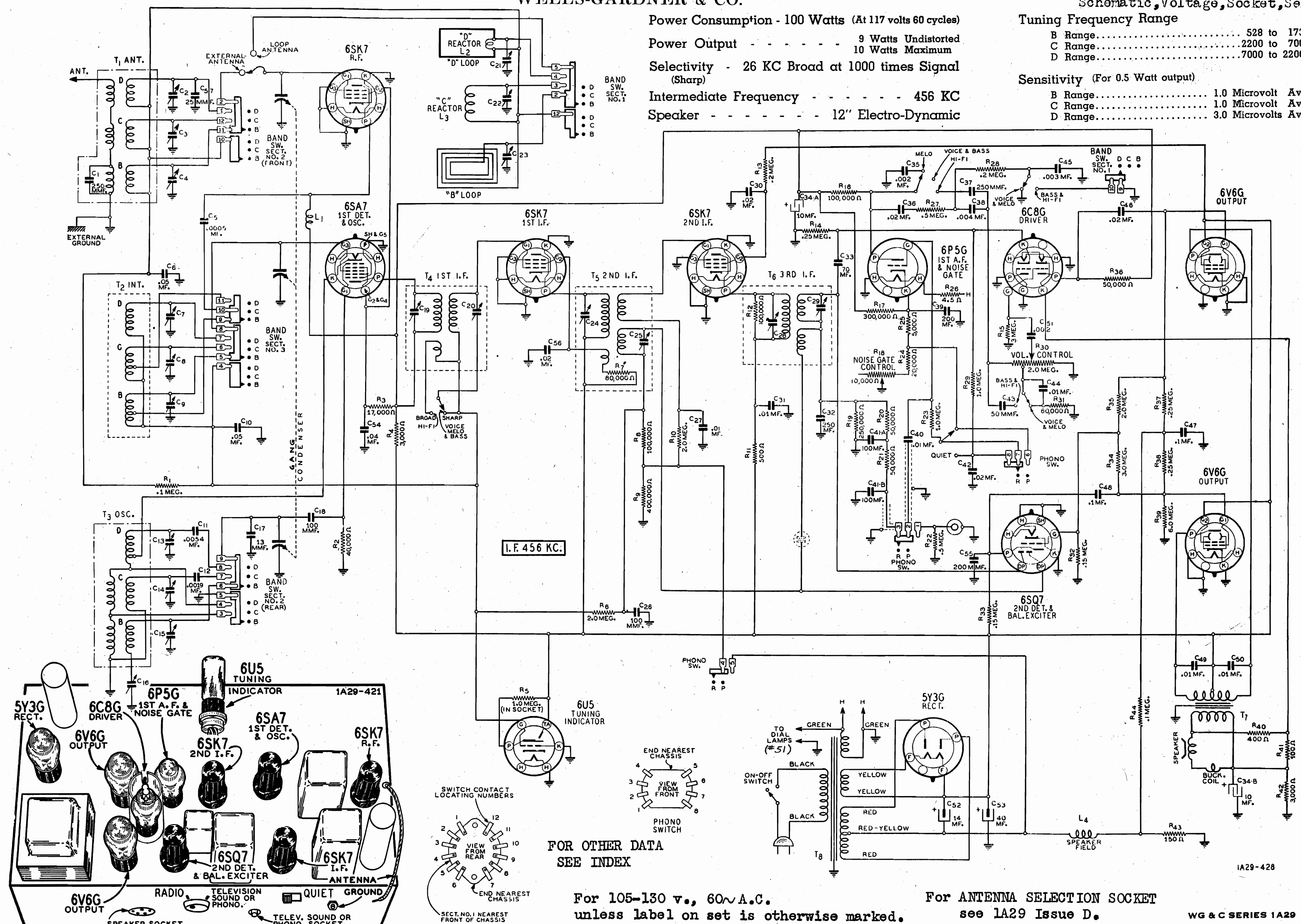
Speaker - - - - - - - - 12" Electro-Dynamic

Tuning Frequency Range

B Range.......................... 528 to 1730 KC
C Range..........................2200 to 7000 KC
D Range..........................7000 to 22000 KC

Sensitivity (For 0.5 Watt output)

B Range.................... 1.0 Microvolt Average
C Range.................... 1.0 Microvolt Average
D Range.................... 3.0 Microvolts Average



FOR OTHER DATA SEE INDEX

For 105-130 v., 60~A.C. unless label on set is otherwise marked.

For ANTENNA SELECTION SOCKET see 1A29 Issue D.

WG & C SERIES 1A29

MODEL 1A29, Issue D
Schematic, Voltage, Socket, Sensitivity
Antenna, Coil Data

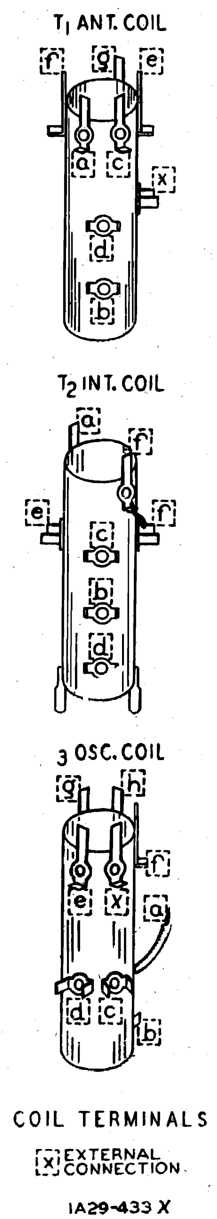
WELLS-GARDNER & CO.

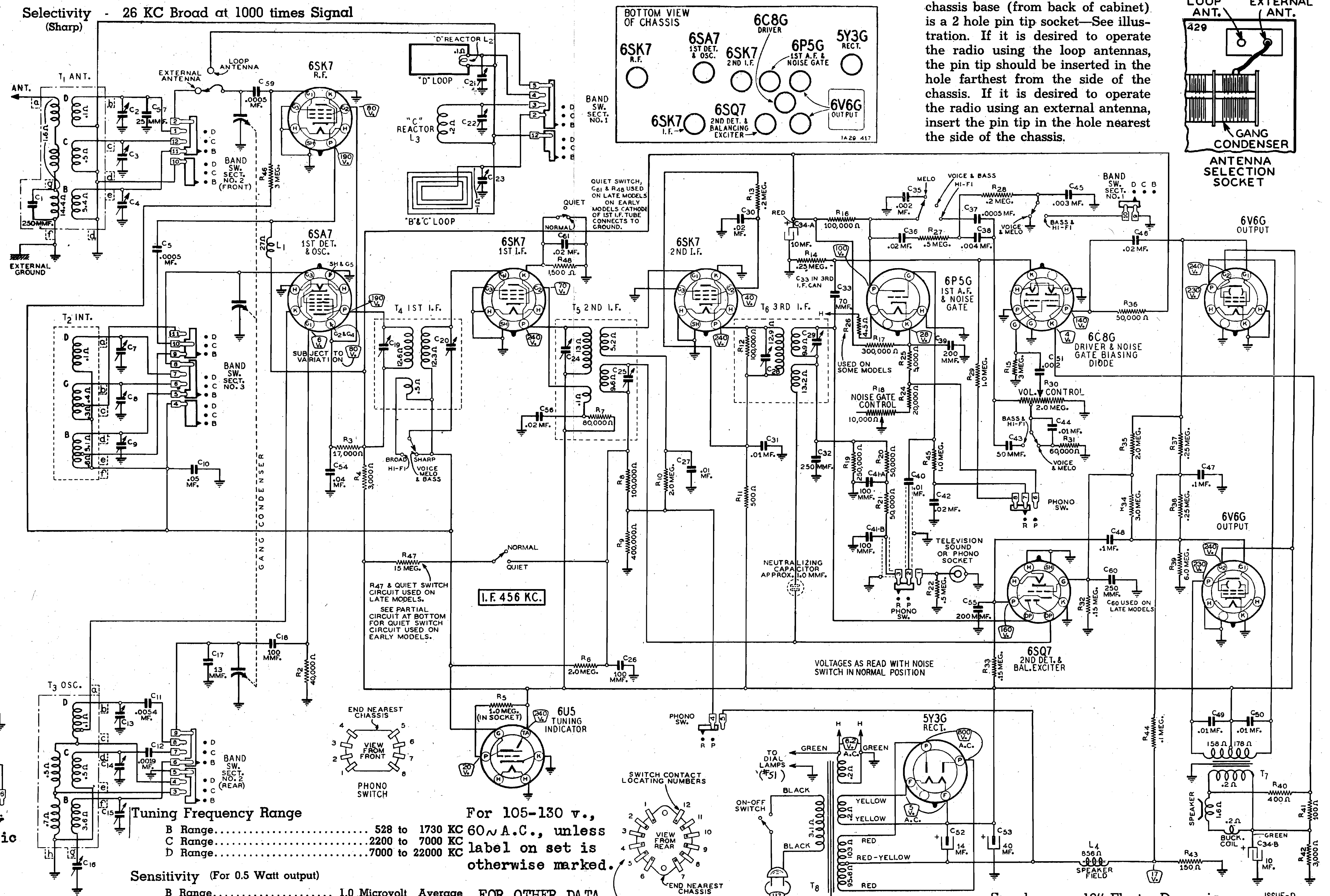
Power Output - - - - - - 9 Watts Undistorted
10 Watts Maximum

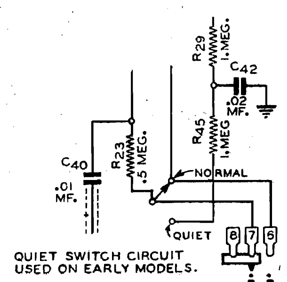
Selectivity - 26 KC Broad at 1000 times Signal (Sharp)

Power Consumption - 100 Watts (At 117 volts 60 cycles)

ANTENNA SELECTION SOCKET —At the right front corner of the chassis base (from back of cabinet) is a 2 hole pin tip socket—See illustration. If it is desired to operate the radio using the loop antennas, the pin tip should be inserted in the hole farthest from the side of the chassis. If it is desired to operate the radio using an external antenna, insert the pin tip in the hole nearest the side of the chassis.







See also schematic of early 1A29.

Tuning Frequency Range

B Range	528	to	1730	KC
C Range	2200	to	7000	KC
D Range	7000	to	22000	KC

Sensitivity (For 0.5 Watt output)

B Range	1.0 Microvolt	Average
C Range	1.0 Microvolt	Average
D Range	3.0 Microvolts	Average

For 105-130 v., 60∿A.C., unless label on set is otherwise marked.

FOR OTHER DATA SEE INDEX

Speaker - 12" Electro-Dynamic

WG & C SERIES 1A29—ISSUE D

WELLS-GARDNER & CO.

MODEL 1A29, Issues B, C, D
Changes in Chassis
MODEL 8A30 Record Changer Notes

Series 1A29 CHANGES MADE FOR "B" ISSUE SETS TO REDUCE HUM MODULATION. Sept. 8, 1939

In order to reduce hum modulation, the following circuit changes have been made. These changes are shown schematically on the back of this sheet. Models on which these changes have already been made can be identified by the Chassis Number 1A29-2B or 1A29-3B.

Resistor R1, 400,000 Ohms, in series with the AVC connection to the antenna coil, has been removed from the circuit.

The AVC line is no longer connected to the antenna coil at terminal "D." Instead, this terminal is connected to ground. The bypass condenser C6, .05 mf., formerly connected between the same terminal and ground, has been removed from the circuit.

The AVC line which formerly connected to the "D" terminal of the antenna coil and C6, is now connected through a 3 megohm resistor R46 to G1 of the 6SK7 R.F. tube.

G1 of the 6SK7 R.F. tube, which was formerly connected directly to the stator of the gang condenser, is now connected to this point through a .0005 mf. condenser C59.

Series 1A29 CHANGES MADE FOR ISSUE "C" Sept. 26, 1939

In order to obtain Underwriters' approval, the issue letter will be advanced to "C" when the following changes are made:

A cardboard shield is used with the electrolytic condenser which is insulated from the chassis.

The tube socket clip tension is reduced.

A wiring change was made to remove high voltage from pin No. 1 on the 6V6G tube socket. A terminal strip has been added to eliminate the use of the pin connection for this purpose.

Series 1A29 CHANGES FOR "D" ISSUE October 27, 1939

The following changes are made in the "D" issue of this model:

Condenser C37 is changed from 250 mmf. to 500 mmf. to add high frequencies in the high fidelity position.

The noise gate switch has been eliminated so that the noise gate circuit functions all of the time.

The Quiet switch, however, is still continued at the same position on the back panel of the chassis. When this switch is in the quiet position, two circuits are affected in the following manner:

The 6SK7 1st I.F. tube is biased with a 1500 ohm resistor connected between cathode and ground to reduce sensitivity.

A positive voltage secured from the B+line through a 15 Megohm resistor is applied to the AVC diode circuit. Under no signal conditions, this loads the AVC diode circuit, effectively short circuiting both the signal and AVC secondaries of the 2nd I.F. transformer (T5 in schematic).

When a signal of predetermined intensity is received, the voltage developed in the AVC circuit offsets this positive voltage. The signal is amplified through the transformer and normal reception is obtained.

The effect of the circuits mentioned above, with the switch in the quiet position, is to reduce sensitivity and to "squelch" all signals, both noise and station, until a signal of a certain intensity or greater is received.

Series 1A29 DISTORTION February 21, 1940

Reference is made to a distortion in this model which manifests itself as a rasping sound and is heard on a signal of moderate volume. This may be an overload condition caused by a signal of high modulation.

It can be corrected by changing the signal diode load resistor, R19, from 250,000 ohms to 125,000 ohms.

Series 8A30 SERVICING AUTOMATIC RECORD CHANGER November 20, 1939

IF LANDING POSITION OF NEEDLE IS NOT CONSTANT OR PICKUP ARM CANNOT BE ADJUSTED TO SET NEEDLE DOWN IN STARTING GROOVE OF RECORD

In the first production of the automatic record changer, the pickup arm may display the following symptoms:

1. After the pickup arm has been set for the correct landing position, the needle does not lower consistently to the starting groove of a record during the playing of any one size of records.
2. The needle lowers so far away from the starting groove of the record that turning the needle landing adjusting screw does not bring the needle to the starting groove.

In early production, the pickup lead was permitted to hang down directly below the foot of the pickup. In such instances, the lead may become entangled with the rotating mechanism for the pickup arm. This will produce either one of the above actions.

To remedy the condition, clamp the pickup lead to the bracket - See Fig. 1, leaving enough slack in the lead to permit free action of the pickup arm. That portion of the lead under the clamp should be covered with tape.

The clamping arrangement consists of a small clamp, a No.6 shakeproof lockwasher, and a 6-32 shakeproof self-tapping machine screw. On request, these items will be supplied free of charge by the factory.

IF PICKUP ARM DOES NOT SET NEEDLE DOWN IN STARTING GROOVE OF BOTH 10" AND 12" RECORDS

It may be found that any one setting of the needle landing adjusting screw will not cause the phono pickup arm to set the needle down in the starting groove for both 10" and 12" records.

This condition may be remedied as follows: Set the automatic record changer for 10" record operation. Turn the needle landing adjusting screw so that the pickup arm sets the needle down in the starting groove of a 10" record.

Replace the 10" record with a 12" record and set the automatic record changer for 12" record operation. Start the mechanism. Note the landing position of the needle.

MODEL 1A29
MODEL 8A30
MODEL 8A31
Alignment, Trimmers

WELLS-GARDNER & CO.

ALIGNMENT PROCEDURE

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range See Note A	Turn Rotor to Full Open	1A29 ONLY: 1st I.F. (C19) & (C20) 2nd I.F. (C24) & (C25) 3rd I.F. (C28) & (C29) 1st I.F. (C17) & (C18) 2nd I.F. (C24) & (C25)
RANGE B					
1730 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C15)
1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note B	Ant. Range B (C4) Int. Range B (C9)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C43) (C16 on 1A29) Rock Rotor—See Note C
RANGE C					
7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C14)
6000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Antenna Range C (C3) Int. Range C (C8)
RANGE D					
22,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C13)
21,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C2) Int. Range D (C7) Rock Rotor—See Note C
LOOP RANGE B					
1500 KC See Note D	None—See Note D		B Range	Turn Rotor to Max. Output	Loop Trimmer (C23) See Note E
LOOP RANGE C					
6000 KC See Note D	None—See Note D		C Range	Turn Rotor to Max. Output	Loop Trimmer (C22) See Note E
LOOP RANGE D					
21,000 KC See Note D	None—See Note D		D Range	Turn Rotor to Max. Output	Loop Trimmer (C21) Rock Rotor—See Note C

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—For all adjustments, with the exception of the 3 loop range adjustments, the pin tip should be in the external antenna hole of the Antenna Selection Socket—See illustration on page one.

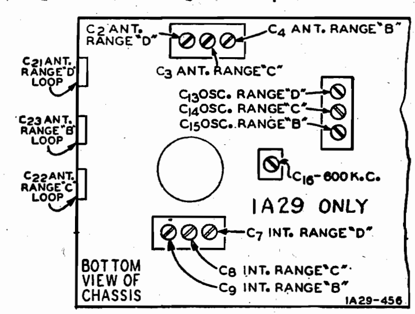
NOTE B—If the pointer is not at 1500 KC on the dial remove pointer from drive cord. Tune in a 1500 KC signal. Set pointer at the 1500 KC mark on the dial scale. Attach pointer to drive cord.

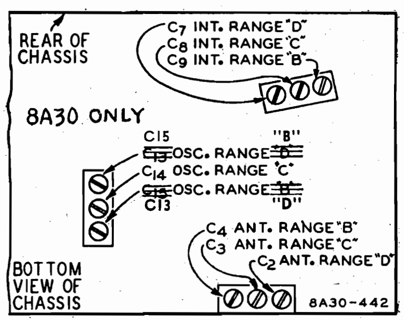
NOTE C—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

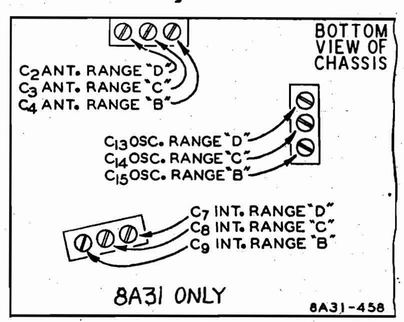
NOTE D—Re-install set in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Place signal generator so that this loop is between 3 and 10 feet from loop in cabinet. Insert pin tip in loop antenna hole of Antenna Selection Socket—See illustration on schematic page.

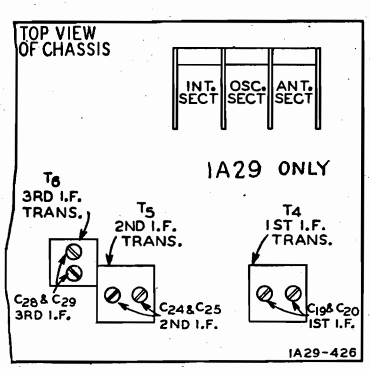
Note E (CONSOLE MODELS)—Turn knob of loop until output is maximum.

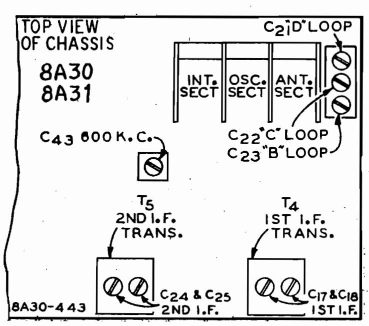
CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image.

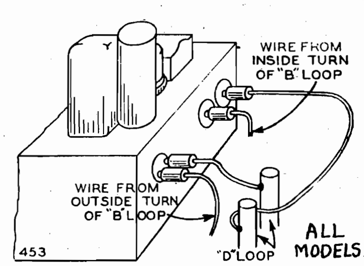










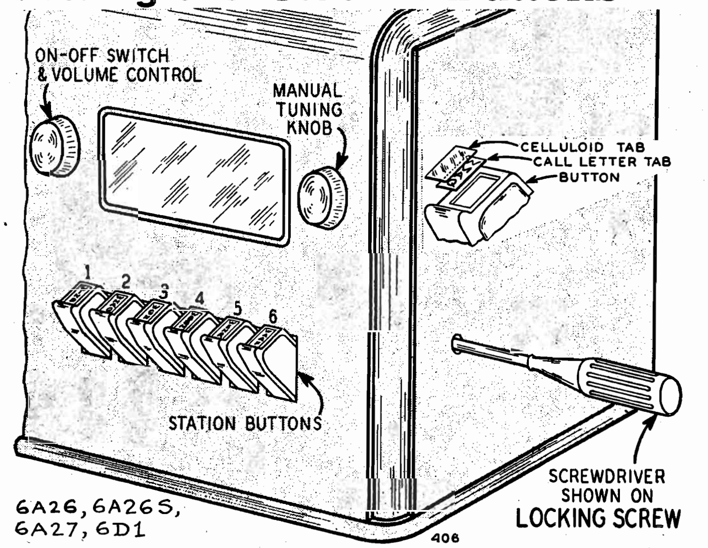


LOOP CONNECTIONS

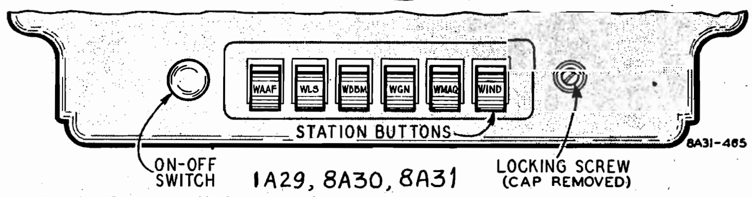
WELLS-GARDNER & CO.

MODEL 1A29 MODEL 6A27
MODELS 6A26, 6A26S
MODEL 6D1 MODEL 8A30
MODEL 8A31 Tuner Data

Procedure for Setting the Station Buttons



6A26, 6A26S, 6A27, 6D1



1A29, 8A30, 8A31

ALL MODELS

There are 6 buttons on the automatic tuning dial by means of which 6 stations may be set for quick tuning.

It is better to list the station with the lowest kilocycle number first, the station with the next higher kilocycle number next, and so on.

Any button may be used for any station you can receive, although it will be more convenient to set the stations so that the kilocycle numbers decrease from left to right.

Setting a Station Button

6A26, 6A26S, 6A27, 6D1

At the right side of the cabinet (from the front) will be seen a cap which covers a hole in the cabinet—See illustration. Pry off this cap being careful not to scratch the cabinet. Removal of the cap will expose a large locking screw. Using a screwdriver, loosen the mechanism by turning this screw in a counter-clockwise direction. The screw will turn easily until the dial pointer stops moving. Then exert a slight amount of additional pressure and continue to turn the screw about one and one-half complete turns.

1A29 ONLY

Turn the tone and selectivity control to any of the sharp positions.

1A29, 8A30, 8A31

Turn the manual tuning knob so that the pointer moves toward 1700 KC until the stop is reached.

At the right side of the escutcheon (from the front) will be seen a cap which covers a hole in the escutcheon—See illustration. Pull off this cap. At the end of the tube in back of the hole in the escutcheon is the locking screw. Using a small handle screwdriver, unlock the mechanism by turning this screw several turns in a counter-clockwise direction.

ALL MODELS

Select the first station from the list you have prepared, and carefully tune in this station by means of the manual tuning knob using the tuning eye as a guide.

With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration *all the way down.* It will go down easily at first and then a firm gentle pressure must be applied to push it down the rest of the way. It is better to start with the left hand button.

Hold *this* button all the way down. With the other hand, see whether or not this station is still accurately tuned in by moving the tuning knob a slight amount back and forth while observing the tuning eye. *Be sure to hold the button all the way down.*

Release the button after the station is tuned in.

Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way down. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

6A26, 6A26S, 6A27, 6D1

After all the ... will be necessary to lock the mechanism so that the settings will not change. Do this by turning the locking screw in a clockwise direction until it is tight. It will turn easily until the dial pointer stops moving. Then additional pressure must be exerted. Tighten firmly but not excessively. Replace the cap over the hole.

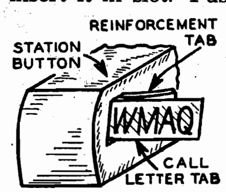
Remove the correct station call letter tab from the sheets supplied by bending the sheet back and forth at the score mark until the tab can be broken off. Press this tab all the way to the bottom of the space provided in the button. Cover the call letter tab with a celluloid tab, pressing this in until it snaps into place.

1A29, 8A30, 8A31

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Turn the **manual tuning** knob so that the pointer moves toward 1700 KC until the stop is reached. Then, with the **SMALL HANDLE** screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid stripping the threads. Replace the cap over the hole.

Insert a celluloid reinforcement tab half way in the slot at the front of the first station button.

Remove the correct station call letter tab for this button from the sheet supplied by bending the sheet back and forth at the score marks. Place the call letter tab in front of the celluloid reinforcement tab and insert it in slot. Push both tabs all the way in the button slot. **Follow** the same procedure for inserting the station call letter tabs **in** any other buttons.



ALL MODELS

If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.

MODEL 1A29 MODEL 8A30
MODEL 8A31
Drive Cord, Phono. Data
MODEL 5A25S
Drive Cord Data

WELLS-GARDNER & CO.

MODELS 6A26, 6A26S
MODEL 6A27 MODEL 6D1
Phonograph Data

MODEL 1A29 Issue D

Drive Cord Replacement

Turn gang condenser to completely closed position. Remove 5Y3G tube from socket. Remove guide arm from front of chassis—See illustration.

Use a drive cord approximately 70 inches in length. Tie a large knot with a small loop at one end of the new drive cord. Thread other end of cord up through hole in rim of condenser drive pulley. Pull cord through hole until large knot is flush against pulley rim.

Wind ¾ turn in a clockwise direction (from right side of chassis) around condenser drive pulley. Wind cord over pulleys A, B, and C as shown. Wind 3½ turns in a clockwise direction (from front of chassis) around tuning control shaft. Turns should progress toward the chassis.

Wind 1¼ turns in a clockwise direction (from right side of chassis) around condenser drive pulley. This turn should be at left side (from front of chassis) of pulley groove. Pass cord through hole in pulley rim. Secure tension spring to cord loop. Knot other end of cord to spring. Stretch spring and secure free end to hook on drive pulley.

Replace 5Y3G tube. Replace guide arm.

Dial Pointer Attachment—Tune in a signal of known frequency. Set the pointer at this frequency on the dial scale. Secure pointer to cord—See illustration.

MODELS 8A30, 8A31.

Drive Cord Replacement

Use a drive cord approximately 70 inches in length. Tie a large knot with a small loop at one end of the new drive cord. Thread other end of cord up through hole in rim of condenser drive pulley. Pull cord through hole until large knot is flush against pulley rim.

Turn gang condenser to completely closed position. Remove guide arm from front of chassis—See illustration.

Wind ¼ turn in a clockwise direction (from right side of chassis) around condenser drive pulley. Wind cord over pulleys A, B, and C as shown. Wind 4½ turns in a clockwise direction (from front of chassis) around tuning control shaft. Turns should progress toward the chassis.

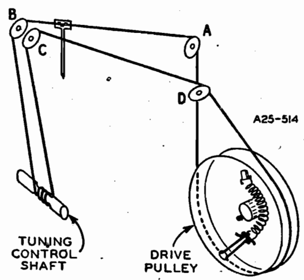
Wind 1¾ turns in a clockwise direction (from right side of chassis) around condenser drive pulley. This turn should be at left side (from front of chassis) of pulley groove. Pass cord through hole in pulley rim. Secure tension spring to cord loop. Knot other end of cord to spring. Stretch spring and secure free end to hook on drive pulley. Replace guide arm.

Dial Pointer Attachment—Tune in a signal of known frequency. Set the pointer at this frequency on the dial scale. Secure pointer to cord—See illustration.

MODEL 5A25S

Drive Cord Replacement

Remove dial lamp socket and bracket from dial mounting plate.



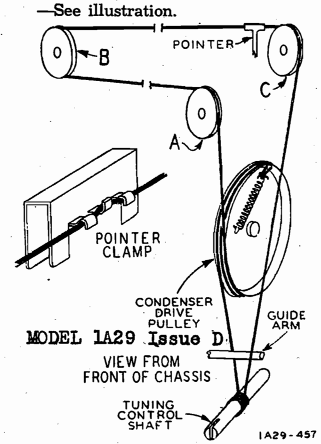
Remove tension spring from pulley. Double new drive cord and knot both ends to same loop on tension spring. There should be a distance of 13 inches between knot and looped end of cord.

Secure other end of spring to hook on pulley. Thread looped end of cord, starting from inside of drive pulley, through hole in rim of drive pulley.

Turn gang condenser to completely closed position. Remove any twists in doubled cord. Pass one portion of cord over pulleys A and B as shown in illustration. Then wind 3½ turns counter-clockwise (from rear of chassis) around tuning control shaft—See illustration.

Loop ½ turn around bottom half of drive pulley. Continue cord over pulley D. Pull remaining portion of cord and place over pulley C.

Dial Pointer Attachment—Tune in a station of known frequency. Set the pointer at this frequency on the dial scale and secure pointer to cord—See illustration.



MODEL 1A29 Issue D

Adjusting Audio Noise Gate Control

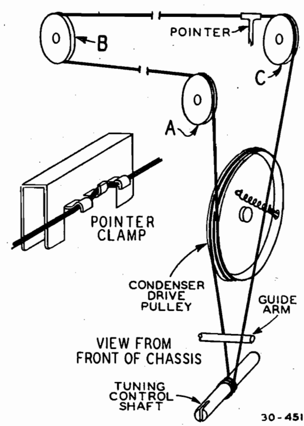
MODEL 1A29 Issue D.

CAUTION—Ordinarily the setting of the noise gate control should not be changed unless the 6P5G tube is replaced.

To adjust this control, use external antenna connection and short circuit the antenna lead. The noise switch on back panel of the chassis should be in the normal position. Turn the gang condenser to the completely closed position. Open the plate circuit of the 6P5G noise gate tube and insert a microammeter in series. On the back panel of the chassis near the noise gate switch will be seen an adjusting screw. This is the adjustment for variable resistance R18. Rotate this screw until the plate current is between 5 and 10 microamperes.

ALTERNATE METHOD—Turn band switch to B range. Use external antenna connection and short circuit antenna lead. Noise switch should be in the normal position. Turn the gang condenser to the completely closed position. **Turn** the noise gate control screw (R18) in a clockwise direction as far as it will go. All of the resistance will be in the circuit. Then turn the screw until tube noise starts to come through.

Disconnect antenna lead from ground and connect it to an external antenna. Tune in a weak station. If signal appears to be distorted, decrease the resistance by turning the adjusting screw in a counter-clockwise direction until the distortion is eliminated.



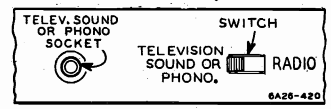
FOR MODELS 8A-30, 8A31.

Television Sound or Phonograph Connections

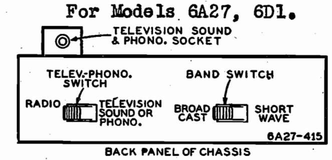
FOR MODELS 1A29(Early), 1A29 Issue D, 6A26, 6A26S, 6A27, 6D1, 8A30, 8A31.

If Television programs ever become available in your community, the audio amplifier and speaker of this radio may be used to reproduce

For Models 6A26, 6A26S



For Models 6A27, 6D1.



Television sound in conjunction with any "Television Picture Receiver and Sound Converter." Phonograph records may also be played through the radio.

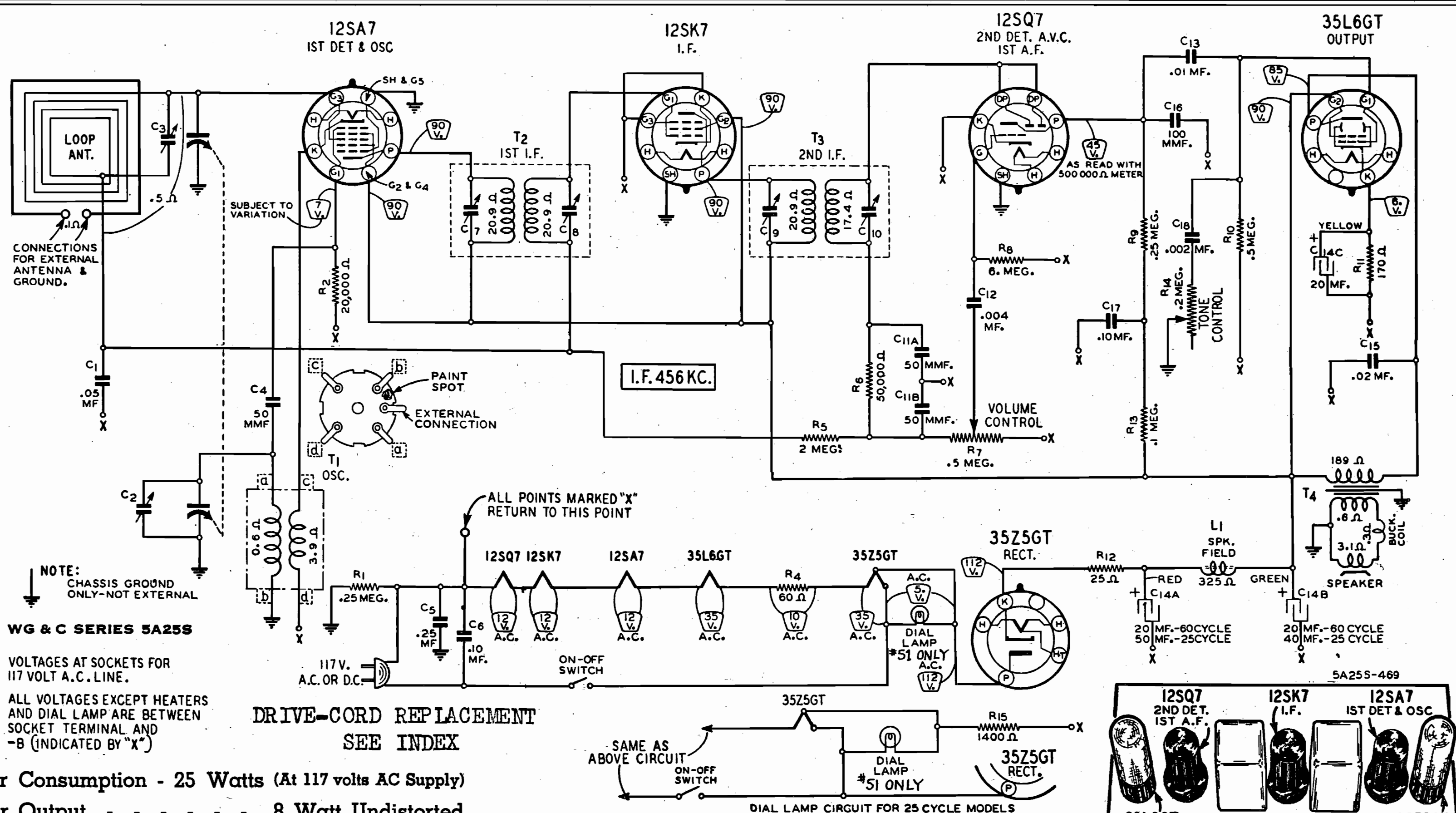
On the back panel of the chassis base is a switch and a socket for a single shielded pin tip at which connections are made. The connector on the cable from a television receiver or from a phono pickup can be inserted in the socket. (The cable connector must be a single shielded pin tip type, *Part No. M93.)

When phonograph or television sound reproduction is desired, the switch should be moved to the "Phono-Television Sound" position. For radio reception, the switch should be in the "Radio" position.

*For Model 1A29 Issue D use Part No. 6A224.

WELLS-GARDNER & CO.

MODEL 5A25S
Schematic,Voltage,Socket
Alignment,Trimmers
Sensitivity



NOTE: CHASSIS GROUND ONLY-NOT EXTERNAL

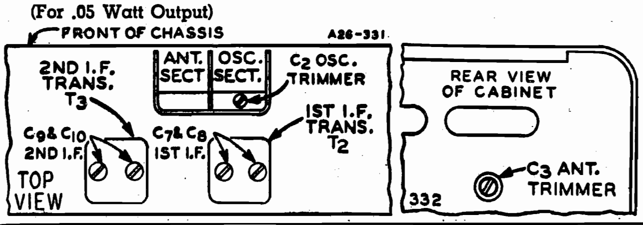
WG & C SERIES 5A25S

VOLTAGES AT SOCKETS FOR 117 VOLT A.C. LINE.

ALL VOLTAGES EXCEPT HEATERS AND DIAL LAMP ARE BETWEEN SOCKET TERMINAL AND -B (INDICATED BY "X")

DRIVE-CORD REPLACEMENT SEE INDEX

Power Consumption - 25 Watts (At 117 volts AC Supply)
Power Output - - - - - - .8 Watt Undistorted
Selectivity - - 50 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - - 456 KC
Speaker - - - - - - - - - 5" Electro Dynamic
Tuning Frequency Range - - - 528 to 1730 KC
Sensitivity - - - 50 Microvolts per Meter Average
(For .05 Watt Output)



ALIGNMENT PROCEDURE

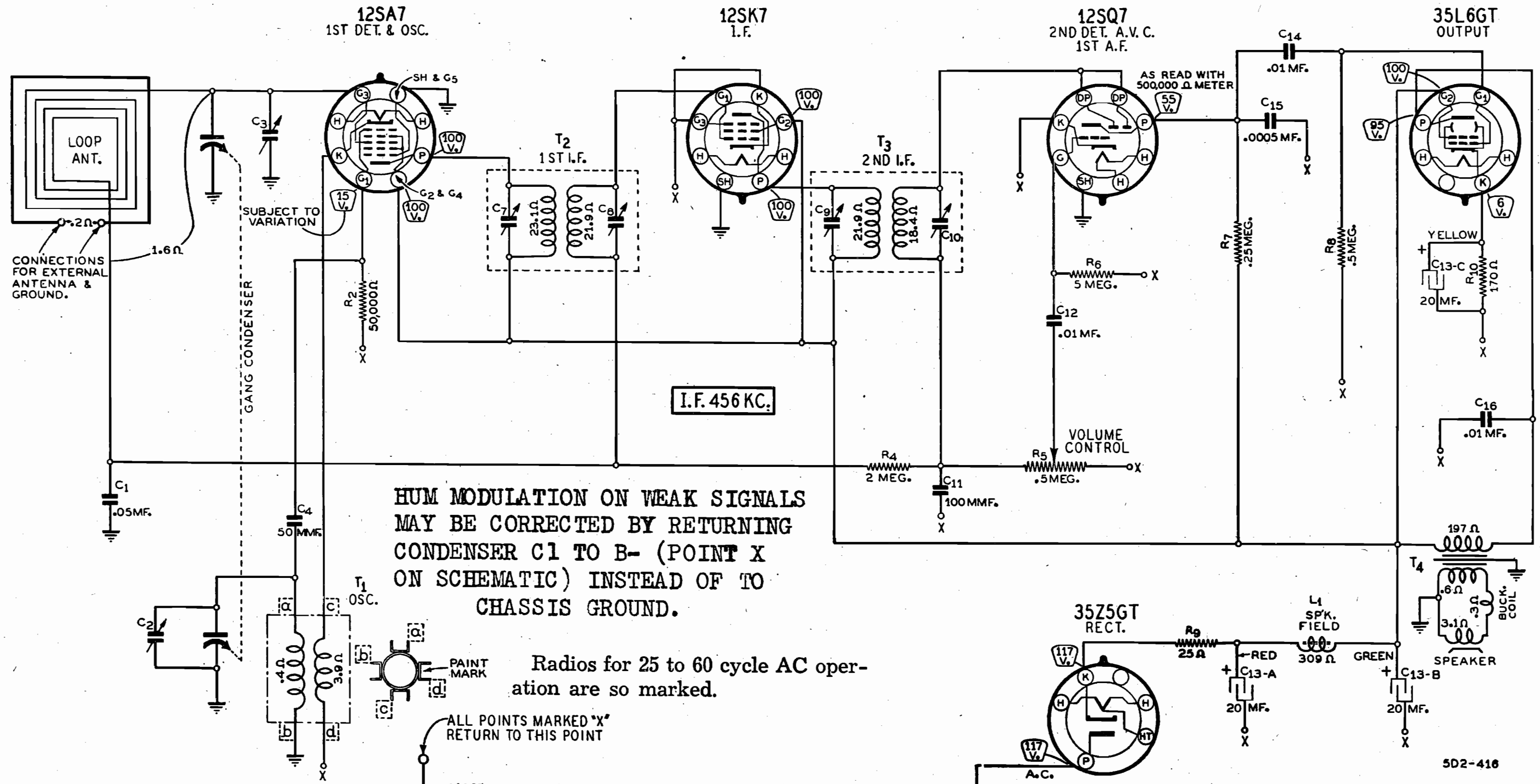
GENERATOR*	FEED INTO	DUMMY	GANG	ADJUST
456 KC * CONNECT GEN. GND. TO B- (PRONG No. 3 OF 12SK7 TUBE).	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	.1 mf.	Turn Rotor to full open	1st I.F. (C7) & (C8) 2nd I.F. (C9) & (C10)
1730 KC	Signal Grid of 1st Det.	.1 mf.	Turn Rotor to full open	Oscillator (C2)
1500 KC	None—See Note		Turn Rotor to max. output	Antenna (C3)

NOTE—Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Secure the back in place on the cabinet. Place radio approximately 3 feet from loop so as to pick up signal. Radio should not be in proximity to any metal (metal bench, etc.).

CALIBRATION—If it is necessary to calibrate the radio, remove the radio from the cabinet. Tune in an 800 KC signal. If the pointer is not at 800 KC on the dial, loosen the 2 clamps which hold the pointer assembly on the cord, move the pointer to the 800 KC mark, and tighten the clamps.

MODEL 5D2
Schematic, Voltage, Socket
Alignment, Trimmers
Sensitivity

WELLS-GARDNER & CO.



HUM MODULATION ON WEAK SIGNALS MAY BE CORRECTED BY RETURNING CONDENSER C1 TO B- (POINT X ON SCHEMATIC) INSTEAD OF TO CHASSIS GROUND.

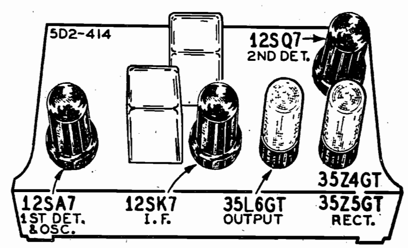
Radios for 25 to 60 cycle AC operation are so marked.

NOTE: CHASSIS GROUND ONLY - NOT EXTERNAL

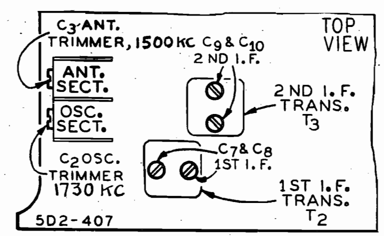
VOLTAGES AT SOCKETS FOR 117 VOLT A.C. LINE.

ALL VOLTAGES EXCEPT HEATERS ARE BETWEEN SOCKET TERMINAL & -B (INDICATED BY "X")

Power Consumption - 28 Watts (At 117 volts AC Supply)
Power Output - - - - - - .8 Watt Undistorted
Selectivity - - 60 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - - - 456 KC
Speaker - - - - - - - - 5" Electro Dynamic
Tuning Frequency Range - - - 528 to 1730 KC
Sensitivity - - 35 Microvolts per Meter Average
(For .05 Watt Output)



WG & C SERIES 5D2

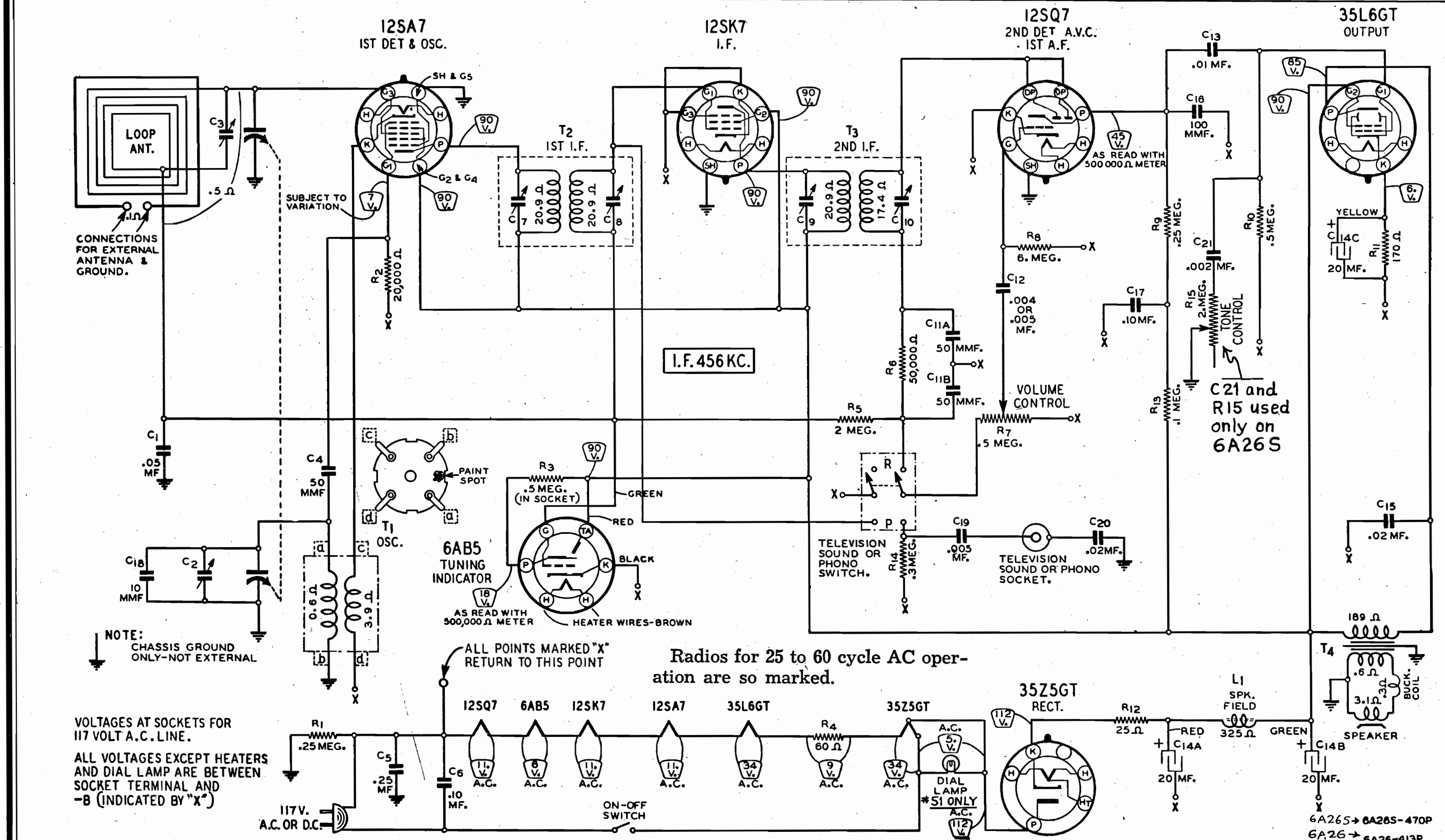


CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

NOTE—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, first remove the celluloid crystal by taking out the 4 buttons at the corner. Hold the tuning knob and shift the pointer to the 800 KC mark.

WELLS-GARDNER & CO., INC.

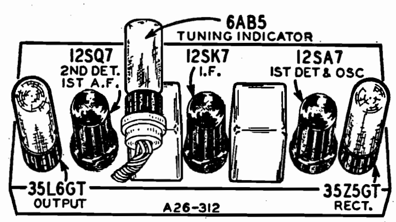
MODELS 6A26, 6A26S
Schematic, Voltage, Socket
Sensitivity, Notes



WG & C SERIES 6A26 WG & C SERIES 6A26S

Power Consumption - 28 Watts (At 117 volts AC Supply)
Power Output - - - - - - - .8 Watt Undistorted
Selectivity - - 50 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - - - 456 KC
Speaker - - - - - - - - - - 5" Electro Dynamic
Tuning Frequency Range - - - 528 to 1730 KC
Sensitivity - - - 40 Microvolts per Meter Average
(For .05 Watt Output)

TO REDUCE MODULATION HUM:
Insulate dial-lamp clip from mounting bracket.
Return condenser C1 to B- (point X on schematic) instead of to chassis ground.
Dress lead from condenser C12 to volume control as far as possible from heater leads.
Use ground connection with external antenna.
DISTORTION and BLOCKING:
Check whether resistor R10 has open circuited due to loose pigtail connection to resistor proper.



FOR OTHER DATA SEE INDEX

MODELS 6A26,6A26S
MODEL 6A27
MODEL 6D1
Alignment,Trimmers

WELLS-GARDNER & CO.

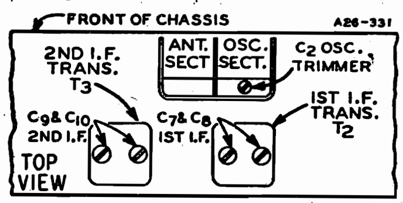
ALIGNMENT PROCEDURE: 6A26, 6A26S

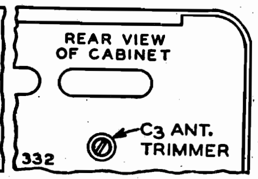
Connect Ground Post of Signal Generator to B—(12SK7—Prong No. 3) in Chassis.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
456 KC	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	.1 mf.	Turn Rotor to full open	1st I.F. (C7) & (C8) 2nd I.F. (C9) & (C10)
1730 KC	Signal Grid of 1st Det.	.1 mf.	Turn Rotor to full open	Oscillator (C2)
1500 KC	None—See Note		Turn Rotor to max. output	Antenna (C3)

NOTE—Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Secure the back in place on the cabinet. Place radio approximately 3 feet from loop so as to pick up signal. Radio should not be in proximity to any metal (metal bench, etc.).

CALIBRATION—If it is necessary to calibrate the radio, remove the radio from the cabinet. Tune in an 800 KC signal. If the pointer is not at 800 KC on the dial, loosen the 2 clamps which hold the pointer assembly on the cord, move the pointer to the 800 KC mark, and tighten the clamps.





ALIGNMENT PROCEDURE: 6A27, 6D1

Remove Jumper on Loop Antenna for All Adjustments.

Connect Ground Post of Signal Generator to B—(12SK7—Prong No. 3) in Chassis.

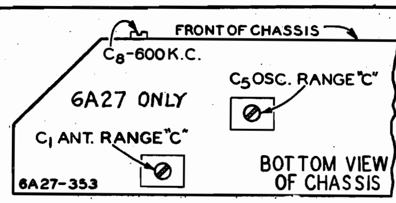
SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustrations)
I. F.					
456 KC	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	.1 mf.	B Range	Turn Rotor to full open	1st I.F. (C11) & (C12) 2nd I.F. (C13) & (C14)
RANGE B					
1730 KC	Signal Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to full open	Oscillator Range B (C4)
1500 KC	Red Antenna Screw at Back of Loop	.1 mf.	B Range	Turn Rotor to max. output	Antenna Range B (C6)—See Illustration below.
600 KC	Same as Above	.1 mf.	B Range	Turn Rotor to max. output	600 KC (C8) Rock Rotor—See Note A
RANGE C (6A27 ONLY)					
6500 KC	Same as Above	.1 mf.	C Range	Turn Rotor to full open	Oscillator Range C (C5)
6000 KC	Same as Above	.1 mf.	C Range	Turn Rotor to max. output	Ant. Range C (C1) Rock Rotor—See Note A
RANGE D (6D1 ONLY)					
12,200 KC	Same as Above	.1 mf.	D Range	Turn Rotor to full open	Oscillator Range D (C3)
11,000 KC	Same as Above	.1 mf.	D Range	Turn Rotor to max. output	Ant. Range D (C2) Rock Rotor—See Note A

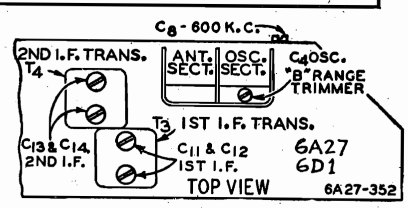
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

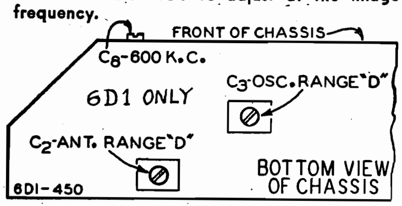
After each range is completed, repeat the procedure as a final check.

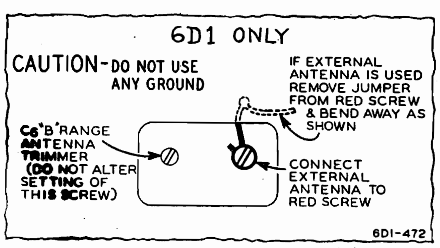
NOTE A—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

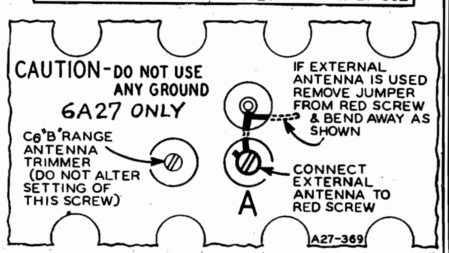
CAUTION—When aligning the short wave bands be sure NOT to adjust at the image frequency.





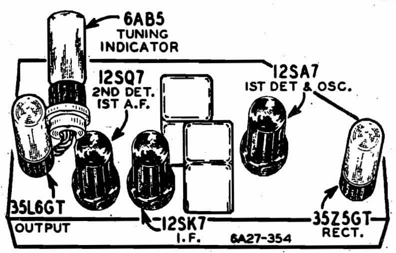






WELLS-GARDNER & CO., INC.

MODEL 6A27
Schematic, Voltage, Socket
Sensitivity



Tuning Frequency Range

B Range.................................. 528 to 1730 KC
C Range..................................2200 to 6500 KC

Sensitivity (For .05 watt output)

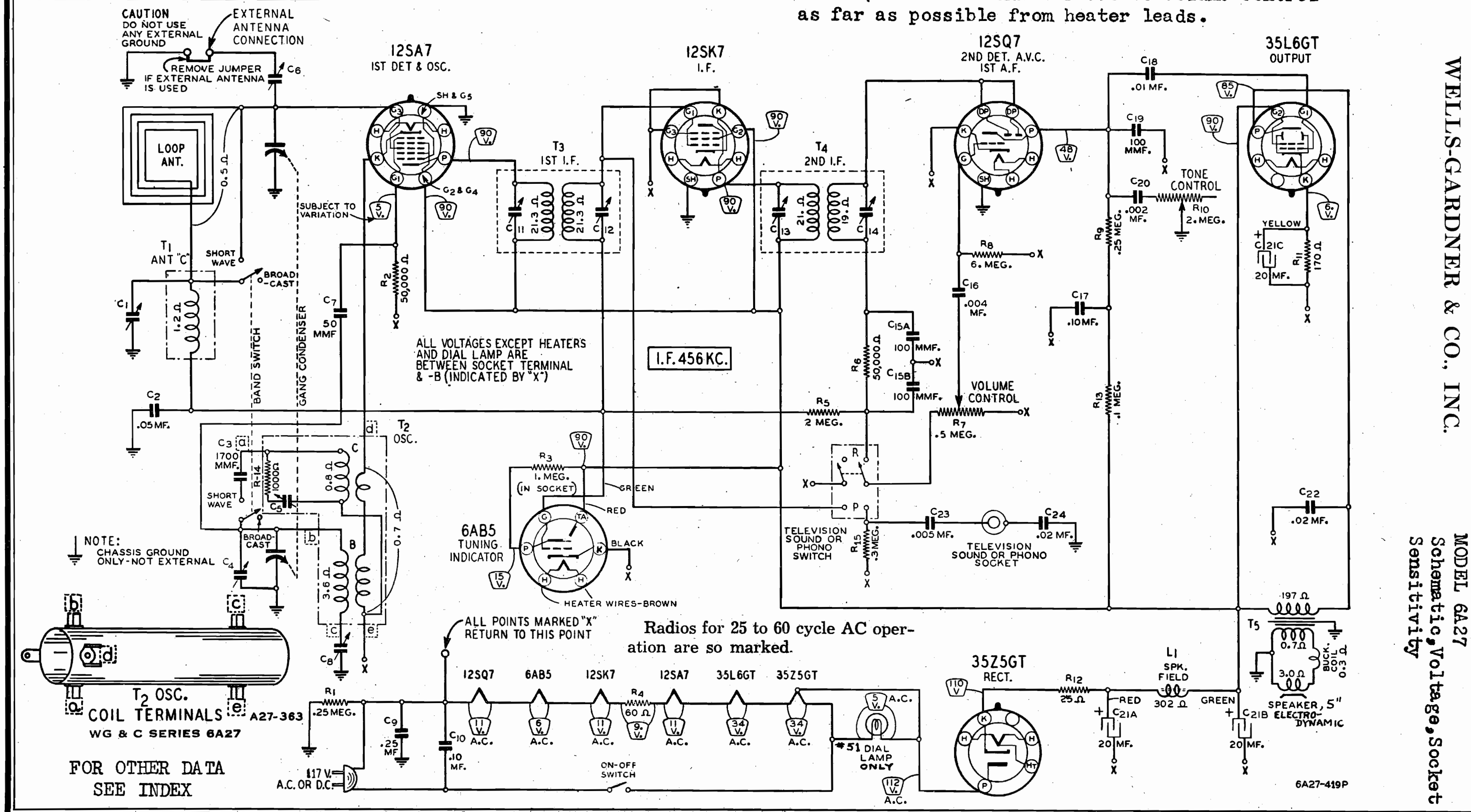
B Range..........................35 Microvolts Average
C Range..........................25 Microvolts Average

Power Consumption - 28 Watts (At 117 volts AC Supply)

Power Output - - - - - - .8 Watt Undistorted
1.25 Watts Maximum

Selectivity - - 50 KC Broad at 1000 times Signal

TO REDUCE MODULATION HUM:
Insulate dial-lamp clip from mounting bracket.
Return condenser C2 to B- (point X on schematic) instead of to chassis ground.
Dress lead from condenser C16 to volume control as far as possible from heater leads.



FOR OTHER DATA
SEE INDEX

MODEL 6B7(Early)
Schematic, Voltage, Socket
Sensitivity
MODEL 6B7, Issues B, C, D
Socket Layout

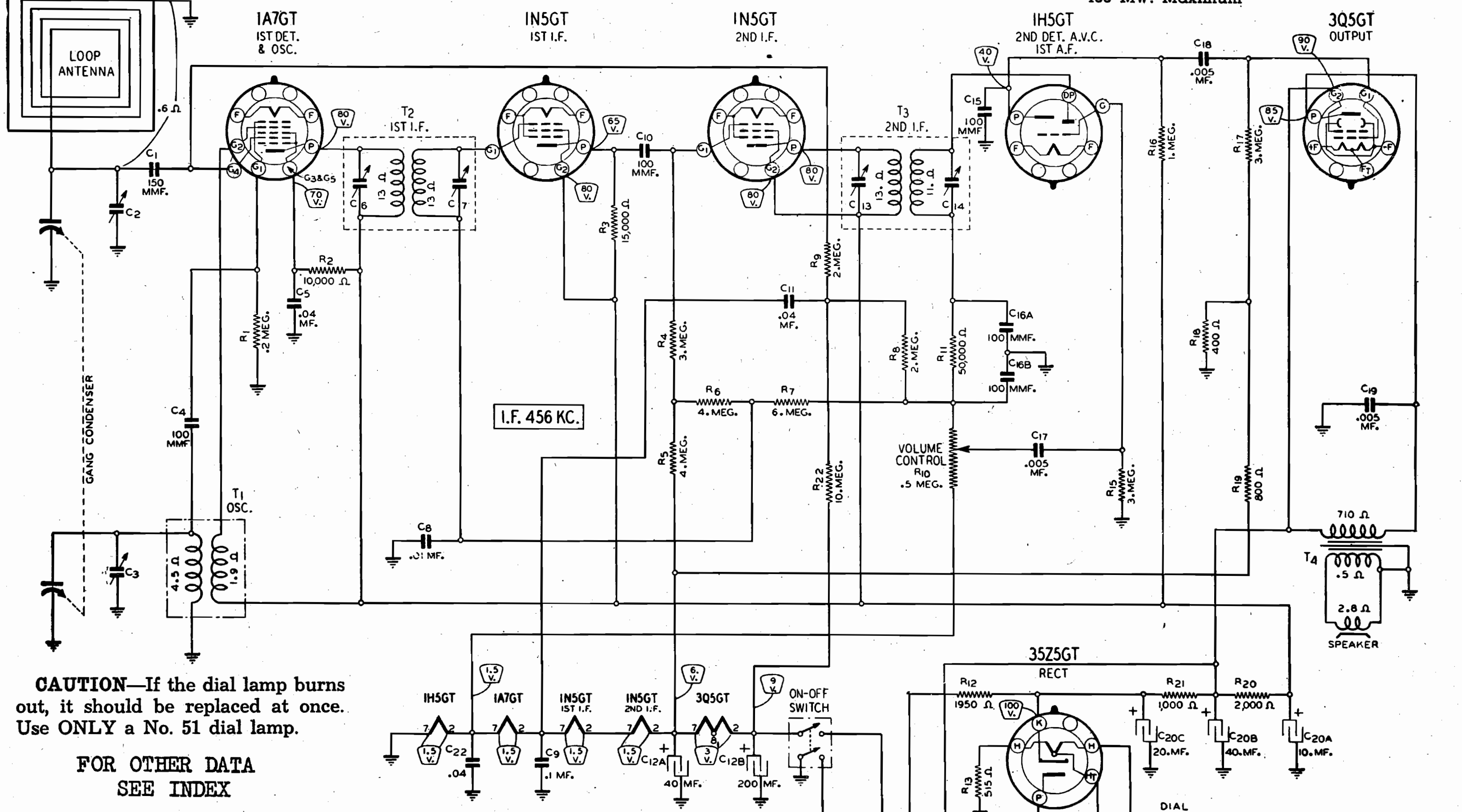
WELLS-GARDNER & CO.

Input Voltages and Currents—Battery Operation

"A" Battery........................ 9 Volts—50 Ma.
"B" Battery........................90 Volts—11.5 Ma.
Power Consumption (At 117 volts AC Supply) 28 Watts

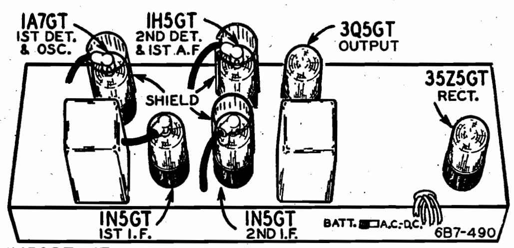
Power Output

Battery Operation - - - -	150 Mw. Undistorted 350 Mw. Maximum
AC Operation - - - - -	200 Mw. Undistorted 400 Mw. Maximum



CAUTION—If the dial lamp burns out, it should be replaced at once. Use ONLY a No. 51 dial lamp.

FOR OTHER DATA
SEE INDEX



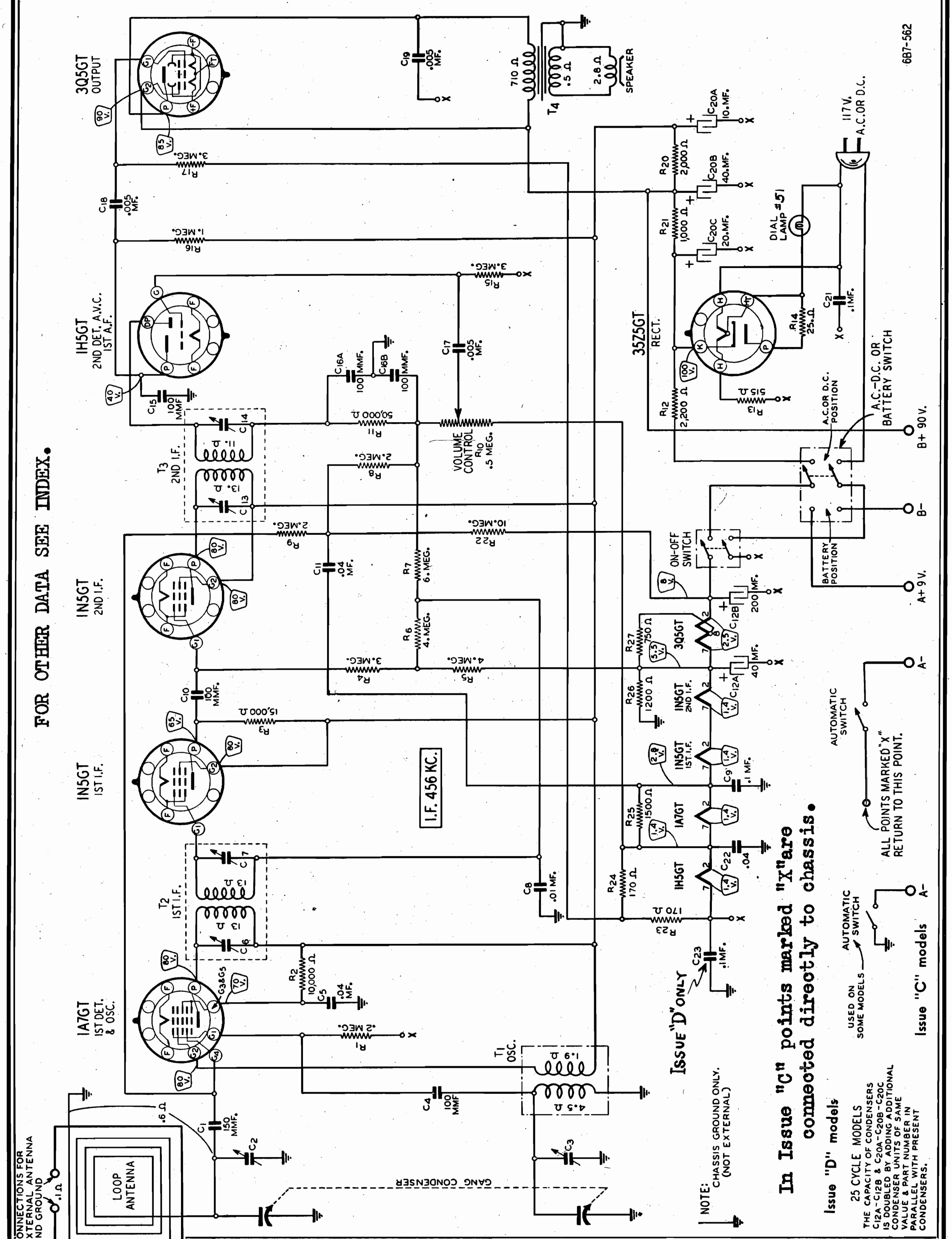
IMPORTANT- METAL BASE TUBES MUST BE USED IN THOSE SOCKETS AT WHICH SHIELDS ARE SHOWN.

Tuning Frequency Range - - 540 to 1600 KC
Sensitivity (For .05 Watt Output)
External Antenna - - - 10 Microvolts Average

Selectivity - 50 KC Broad at 1000 Times Signal
Intermediate Frequency - - - - - 456 KC
Speaker - - - - - - - - - 6" P.M. Dynamic

WELLS-GARDNER & CO.

MODEL 6B7, Issues C, D
6B7-3, 6B7-4
Schematic, Voltage



MODELS 6B7, Issues B, C, D
6B7-3, 6B7-4
Alignment, Trimmers, Changes
Notes

WELLS-GARDNER & CO.

Removing Chassis from Cabinet

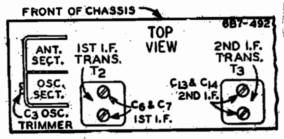
Take out the 2 screws, one at each side on the outside of the cabinet. Grasp the chassis shelf at each rear corner and edge it away from the cabinet front until the chassis shelf and chassis slide easily out of the cabinet.

To remove the shelf from the chassis, take out the bolt and the 2 screws at the bottom of the shelf.

Using Radio Without Batteries—The radio may be used without batteries when it is operated on AC-DC. If this is done, tape the prongs of the battery plugs to prevent them from **accidentally touching each other, and place the plugs and cables in the battery compartment.**

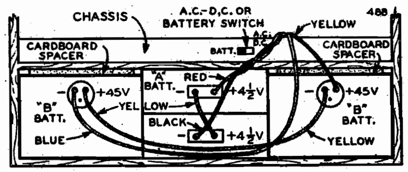
NOTE A—**Chassis must be in cabinet. Connect a loop** approximately one foot in diameter across the antenna and ground posts of the signal generator. The back of the cabinet must be in place. Place radio approximately 3 feet from loop so as to pick up signal. Radio should not be in proximity to any metal (metal bench, etc.).

CALIBRATION (For models with pointer in front of dial scale)—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, hold the pulley at the back of the dial and loosen the pointer screw. Set the pointer at the 800 KC mark. Hold the pointer and retighten the pointer screw.



Two 4½ Volt "A" batteries—Portable Size 4" x 1⅜" x 4⅝" High

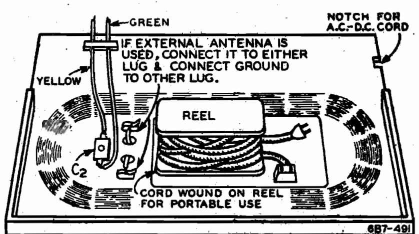
Two 45 Volt "B" batteries—Portable Size 4⅛" x 2½" x 5⅞" High



Caution

The metal chassis is connected to one side of the line through a .10 mfd. condenser. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis through this condenser is grounded and the metal chassis comes in contact with an external ground, this condenser will be connected across the line and there will be an increase in hum.

Therefore, in any service work on the chassis, keep it on a wood or other insulated surface to avoid contacts with ground. The person working on the set should avoid getting in contact with any ground.



INSIDE VIEW OF BACK COVER

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

Allow Chassis and Signal Generator to "Heat Up" for several minutes.

The following equipment is required for aligning:

A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antenna—.1 mf.

SIGNAL GENERATOR				
FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration below and Illustration of Back—Page 1)
456 KC	Signal Grid of 1st Det. (Top Cap)	.1 mf.	Turn Rotor to full open	1st I.F. (C6) & (C7) 2nd I.F. (C13) & (C14)
1600 KC	Signal Grid of 1st Det.	.1 mf.	Turn Rotor to full open	Oscillator (C3)
1500 KC	None—See Note A		Turn Rotor to max. output	Antenna (C2)

Series 6B7 CHANGES MADE FOR ISSUE "B" November 28, 1939

To satisfy Underwriter's requirements, the chassis issue will become "B" when several changes in the routing of wires and the arrangement of parts in the chassis have been made.

Chassis with these changes have had the 6 lug terminal strip 4A98 removed.

PROLONGING TUBE LIFE Jan. 9, 1940
CHANGES FOR ISSUE "C"

To compensate for variations in tube characteristics as well as high line voltages, the following changes have been made in the filament series circuit to reduce the voltages across the tube filaments and to prolong tube life.

Resistor R12, which is in series with the filament series, has been changed from 1950 ohms to 2200 ohms.

There was unequal emission from the 2 sections of the filament of the 3Q5GT output tube. This caused unequal voltages across the 2 sections of the filament and shortened the tube life. There is now a 750 ohm resistor (R27) across one section which equalizes the currents through both portions.

The four 1½ volt tube filaments were shunted with 1200 ohms - Resistors R19 - 800 ohms and R18 400 ohms (See old schematic). The connecting point between these 2 resistors established the grid (bias) voltage for the output tube. These 4 tubes are now shunted by one 1200 ohm Resistor R26.

The 1A7GT 1st Detector Filament is now shunted with a 1500 ohm resistor - R25.

The 1H5GT 2nd Detector Filament is now shunted with 340 ohms - Resistors R24 and R23 in series. The connecting point between these 2 resistors establishes the grid (bias) voltage for the output tube.

Series 6B7-3, 6B7-4 CHANGES MADE FOR ISSUE "D" March 11, 1940

To satisfy additional Underwriters requirements, the chassis has been isolated from the AC-DC line except for a connection through a .1 mf. condenser - See schematic. On these models the battery wires are held by a clamp located under the chassis shelf. On previous issues this clamp was above the shelf. The battery compartment cardboard fillers have been made smaller to clear the above mentioned clamp.

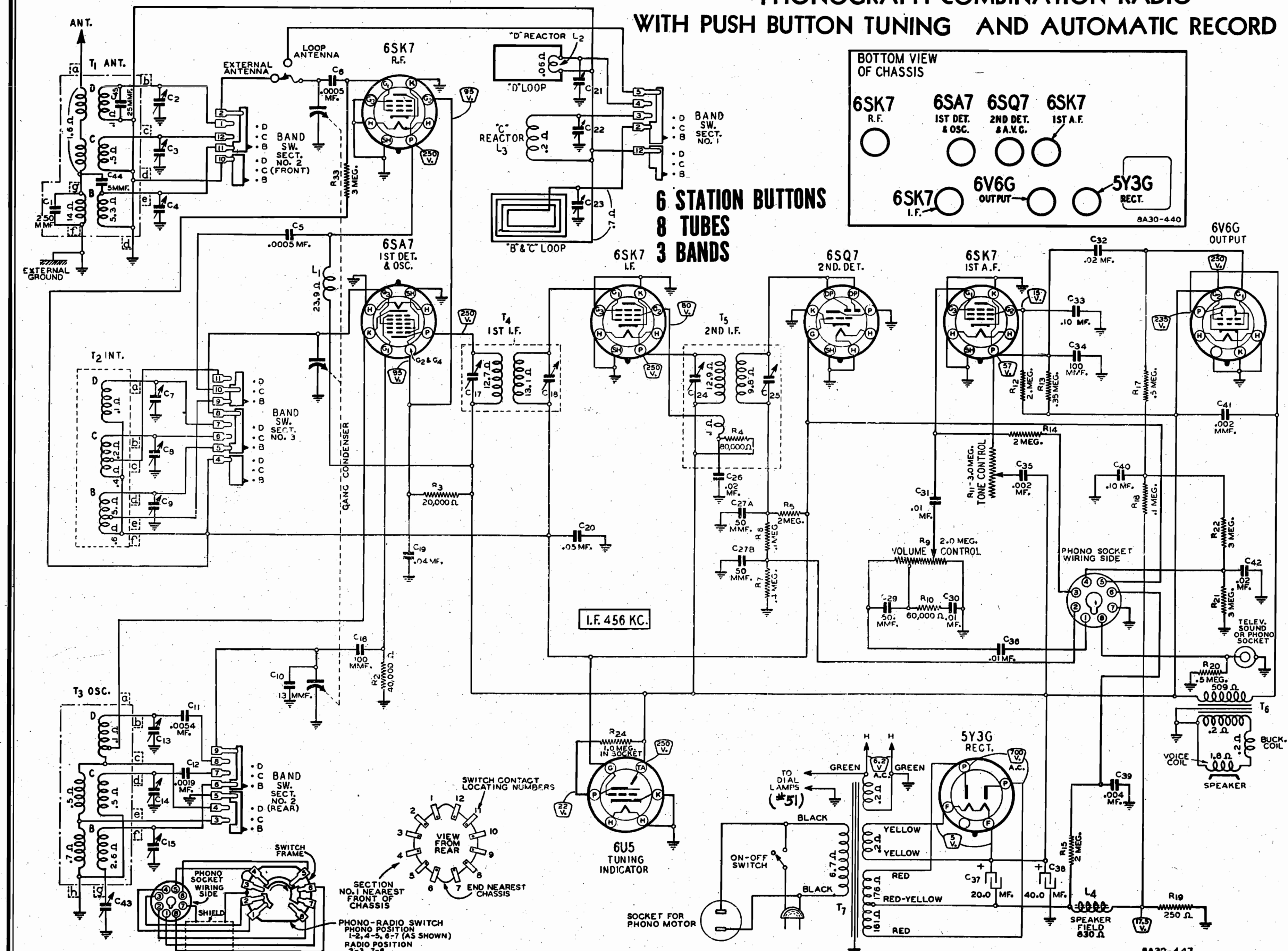
On chassis with the above changes incorporated, the issue letter becomes "D."

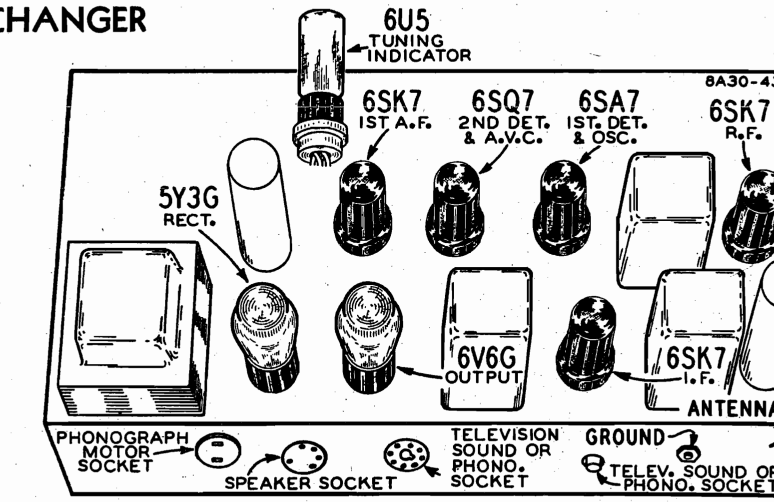
All voltages on this issue chassis except the heaters and dial lamp are measured between socket terminal and B- (indicated by "X") - See schematic

MODEL 8A30
Schematic, Voltage, Socket, Sensitivity
Antenna Data, Coils

WELLS-GARDNER & CO.

PHONOGRAPH COMBINATION RADIO WITH PUSH BUTTON TUNING AND AUTOMATIC RECORD CHANGER





Antenna and Ground

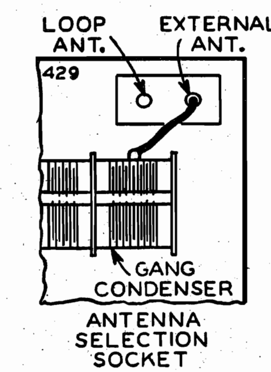
Two loop antennas are incorporated in the speaker chamber and may be used for broadcast band and short wave reception. For the reception of local or nearby stations, an outside antenna is usually not required. The use of the loop antenna may, in some locations, provide best broadcast band operation.

In general, however, more stations will be heard and noise will sometimes be reduced by using an outside antenna.

For best reception of short wave stations, an outside antenna is recommended.

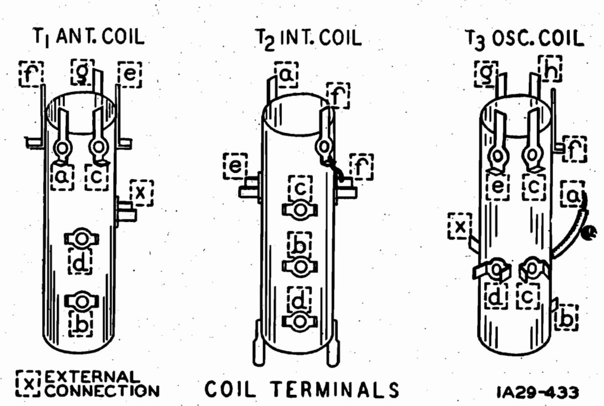
A white wire will be found coming out of the chassis. Connect this wire to the outside antenna lead.

On the back panel of the chassis base is a screw (marked GND) under which the ground wire should be fastened.



ANTENNA SELECTION SOCKET

ANTENNA SELECTION SOCKET—At the right front corner of the chassis base (from back of cabinet) is a 2 hole pin tip socket—See illustration. If it is desired to operate the radio using the loop antennas, the pin tip should be inserted in the hole farthest from the side of the chassis. If it is desired to operate the radio using an external antenna, insert the pin tip in the hole nearest the side of the chassis. The socket may be reached after removing the four wing nuts holding the cover over the opening in the cabinet back.



COIL TERMINALS

SPECIFICATIONS

Power Consumption 71 Watts (At 117 volts 60 cycles)
88 Watts (Phonograph Operating)

Power Output - - - - - - 4.0 Watts Undistorted
5.0 Watts Maximum

Selectivity - - 30 KC Broad at 1000 times Signal

Intermediate Frequency - - - - - - - 456 KC

Speaker - - - - - - - - 10" Electro-Dynamic

Receivers of this model which are to be used on 25 cycle, 230 volt, or other service are so marked on label.

Tuning Frequency Range

B Range	528 to 1730 KC
C Range	2200 to 7000 KC
D Range	7000 to 22000 KC

Sensitivity (For 0.5 Watt output)

B Range	1.0 Microvolt Average
C Range	1.0 Microvolt Average
D Range	3.0 Microvolts Average

FOR OTHER DATA SEE INDEX

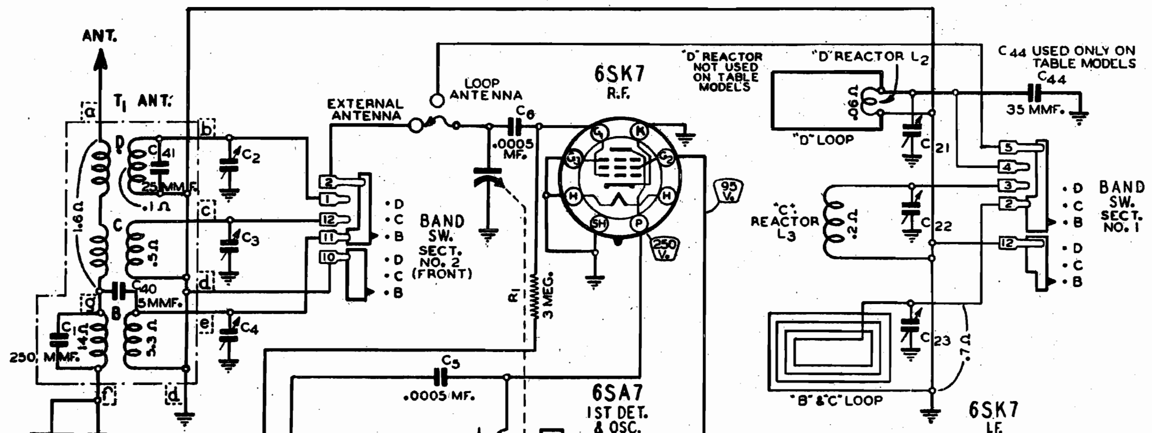
Important—A good antenna and ground are essential for best operation of this radio. Connections should be clean and tight. Do not use an old outside antenna as in most cases it will be unsatisfactory.

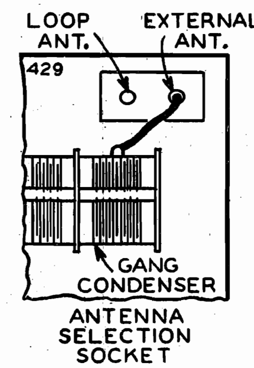
Voltages at Sockets

Line Voltage—117.
Volume Control—Maximum.
Antenna Shorted to Ground.
Readings taken with 1000 ohm-per-volt meter. Plate and screen voltages are read on 500 volt scale.

MODEL 8A31
Schematic, Voltage, Socket, Coils
Sensitivity, Notes

WELLS-GARDNER & CO.

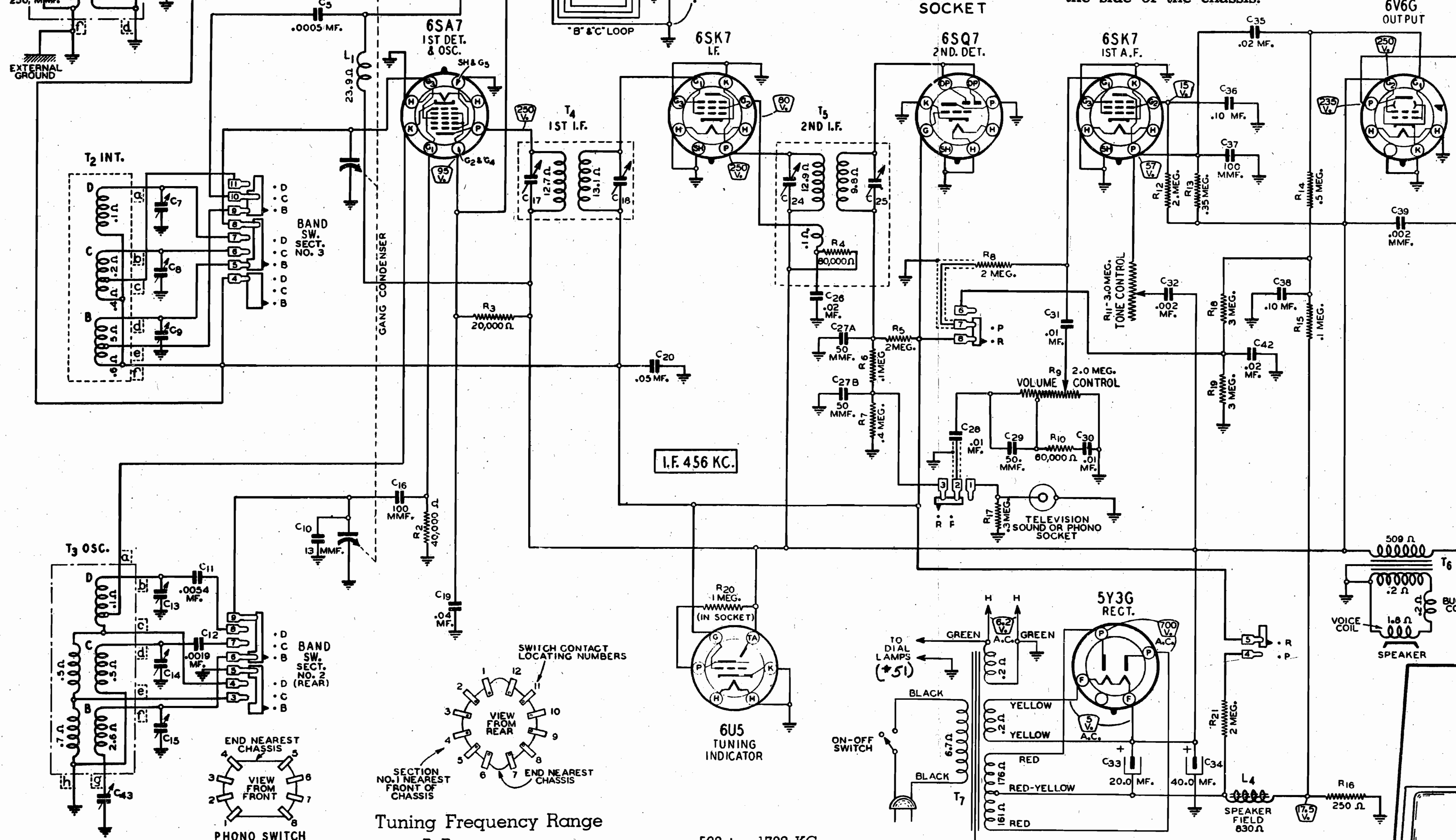


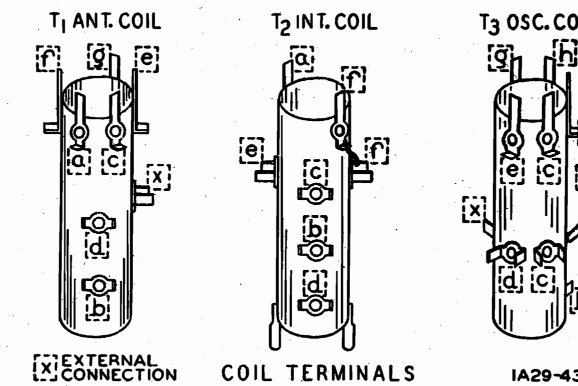


ANTENNA SELECTION SOCKET

ANTENNA SELECTION SOCKET—At the right front corner (from back of cabinet) of the chassis base is a 2 hole pin tip socket—See illustration. If it is desired to operate the radio using the loop antennas, the pin tip should be inserted in the hole farthest from the side of the chassis. If it is desired to operate the radio using an external antenna, insert the pin tip in the hole nearest the side of the chassis.

Power Consumption 70 Watts (At 117 volts 60 cycles)
Power Output - - - - - - 4.0 Watts Undistorted, 5.0 Watts Maximum
Selectivity - - 30 KC Broad at 1000 times Signal
Intermediate Frequency - - - - - - 456 KC
Speaker - - - - 8" or 10" Electro-Dynamic





TO REDUCE MODULATION·HUM:
Interchange 1st A-F tube with R-F and I-F tubes; select tube position which reduces hum. If appreciable hum remains, try several new 6SK7 1st A-F tubes and use the one which reduces hum to a minimum.

Tuning Frequency Range

B Range	528 to	1730 KC
C Range	2200 to	7000 KC
D Range	7000 to	22000 KC

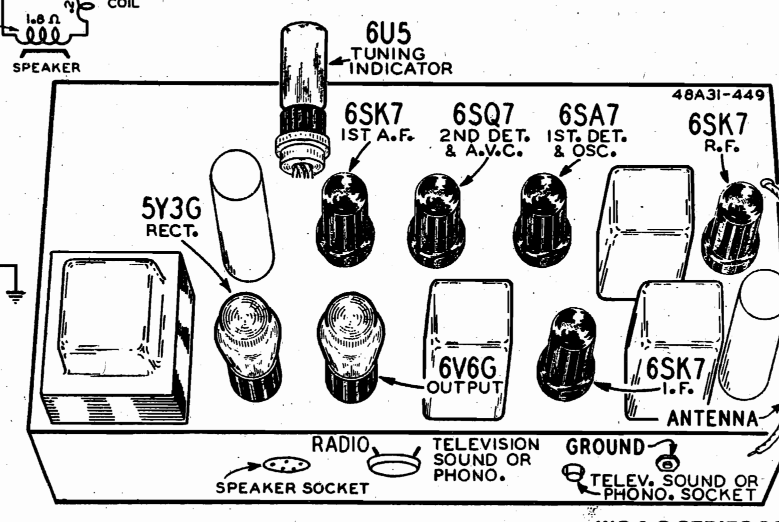
Sensitivity —External Antenna—(For 0.5 Watt output)

B Range	1.0 Microvolt	Average
C Range	1.0 Microvolt	Average
D Range	3.0 Microvolts	Average

FOR OTHER DATA SEE INDEX

Dial Lamps

The dial lamps used are of the bayonet pin type (bulb No. 51). To replace any lamp, first turn the radio off. Then pull the clip off and replace the lamp.



Automatic Record Changer

(Patents Pending)

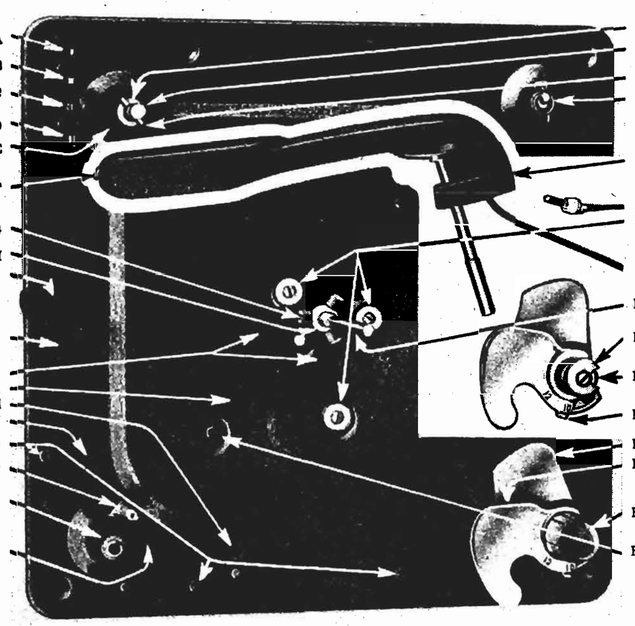


PHOTO A-B. Top View.

For the Service Man

This Manual is designed for the use of the service mechanic only, and is intended to facilitate as far as possible his work of caring for the Changer mechanism, whether he is called in for the purpose of assuring its continued satisfactory operation, or to remedy some difficulty which has appeared. For his convenience, the "Operating Instructions," supplied to user by the factory, may be summarized as follows:

The Changer plays twelve 10" or ten 12" records. . . . To reload, revolve the two posts slightly, grasping them underneath the Shelf Plates. Turn them back after the played records are removed; they will fall and lock when in proper position. Then place the new records on the Shelf Plates, and push "R" button to put Changer in operation. . . . To play the other size records, turn the knob at top of each post until proper figure is opposite pointer, and press the "10" or "12" button, to agree with pointer setting. . . . To reject a record (or to start a change cycle as for testing purposes) simply press the "R" (Release or Reject) button, at any time while needle is upon a record. . . . To play manually, turn plates out of the way as for reloading, and press "M" button.

(What are here called the "plates" of the Changer are frequently known among mechanics as "blades"--a name best avoided when talking with users because it may convey to some an exaggerated impression of danger in the movement of these parts).

Illustrations

The three photos illustrate all vital parts of the Changer. Letters are used alphabetically, to refer to points on the photos; thus, Motor Oiling Holes "AK" are found by simply glancing down Column A (left side of Photo A-B) to letters AK. Reference letters must NOT be used for ordering parts: order only by the factory numbers. Where no number is given, part cannot be separately supplied; order the Assembly containing it.

Oiling (reprinted from Operating Instructions)

The Changer should be lubricated once a year with about a dozen drops of a good light machine oil at each of the following 6 points. All points can be reached from above, through holes in the mounting plate, as follows:

No. 1) No. 2) No. 3)	Three oil holes on motor gear housing. Reach all three through two holes AK.
No. 4	Through hole marked AL, drop the oil upon flat surface of cam. It will distribute itself to proper points.
No. 5	Through hole marked AM, see felt wick, and drop the oil directly upon it.
No. 6	Through hole marked AN, see felt wick, and drop the oil directly upon it.

To Check Oiling

If squeaks are heard compare the squeak with and without a load of records; any stack of wax records in motion is likely to squeak a little against a pin through their center. See that all five wicks are in position, including three 1/4" round wicks in frame of Motor, one washer-shaped wick ("No. 5") on Lift CV, and one ("No. 6") on Cam Lever CS. See that each wick is thoroughly saturated (as it may not be if insufficient oil or too heavy oil has been used). Lift out all three motor wicks, with tweezers; see if old oil has become gummy (commonly due to use of low-grade oil or low-viscosity oil). If necessary, clean gummed-up wicks with kerosene. See that each is saturated with good oil; then, before replacing them, drop a little good oil into the holes. The gearbox of the Motor is packed with a semi-fluid grease at the factory, and it should never be necessary to take it apart for lubrication purposes.

General Description of the Change Cycle

An automatic record player for records of two sizes has three principal duties to perform. These duties are here performed by three mechanisms, interconnected and built together but largely separate in their operation.

(1) The record-changing mechanism--brought into operation originally by the contact of Lifter Cam DG with Pawl DH--is the simplest of the three. It is driven by the cam groove (not visible) on under side (in Photo C-D) of Cam Gear DF. As Cam Lever CS is forced, by the Pawl, out underneath Lift CV (which is shown revolved to the right for visibility) the Lift rises and forces roller DJ into the under groove in Cam Gear. The motion is transferred to Rear Changer Shaft (at ED) through Cam Connecting Rod DE (EC), thence through Changer Connecting Rod FD to Front Changer Shaft BB.

(2) The pickup-operating mechanism--likewise brought into operation originally by the cam-and-pawl action upon Cam Lever CS--is driven in part by the groove in upper (visible) side of Cam Gear DF. As Cam Lever is forced out, at the beginning of the change cycle, against Link CG, it causes the Link to push upward upon Pickup Plunger DA, thus lifting needle from record. The same pressure upon Link CG works, through Guide Arm CD, to force Stud DD down into the groove on the Cam Gear. This rotates the pickup arm, while Pickup Plunger DA holds it up off of record. It is rotated first out beyond the turntable until Selector Plates BL have dropped the next record, then rotated back to proper position to start playing.

(3) The mechanism for bringing needle into correct starting position must operate accurately for both 10" and 12" records. Partly due to this requirement, the starting position is not determined by the cam action. The upper groove on Cam Gear is designed so that it, acting alone, would carry the needle farther back toward record pin than would ever be desirable as a starting adjustment. Travel of pickup arm toward Record Pin is then stopped, at proper point for lowering onto the record, by action of Lever Hub CL. The stopping takes place as lug EW (upon the Lever Hub) strikes the shoulder on Rod EX. This enables the entire mechanism rotated by cam action on Guide Arm CD to travel on past the proper point of rotation for record-starting, while the pickup arm itself, which is held rigid to Lever Hub CL, is accurately stopped at proper record-starting point.

Correct adjustment for starting position of needle requires therefore only correct adjustment of Rods EX and FK; the radial difference of 1 inch between correct starting position for 10" and 12" records is taken care of by exact dimensioning, at the factory, of surfaces at right end of Rod FK which stop against the "10" and "12" key stems. Due to this, when Adjusting Cam at FP is turned (as directed below under Adjustment A) the starting position of needle is simultaneously altered for both 10" and 12" records.

Adjustments

There are three adjustments that can be made. Except on certain early Changers (See B, below), ALL THREE CAN BE MADE FROM ABOVE: CHANGER NEED NOT BE REMOVED FROM CABINET. All adjustments are correctly made at the factory, and ordinarily need never be altered. Should it become necessary to readjust, due to accident or tampering, proceed as follows:

A. ADJUSTING LANDING POSITION OF NEEDLE ON THE RECORD. If needle comes down on the sound track, playing of records will not start at their beginning. Insert screw-driver through hole AJ. Turn screw head on Needle Landing Adjusting Cam FP very slightly counter-clockwise. If needle comes down too close to outer edge of record, or out beyond edge of record, turn Adjusting Cam clockwise.

The factory adjustment of needle landing is 1/8" in from outer edge of record.

Compare also Paragraph 12 below.

B. ADJUSTING DISTANCE FROM RECORD PIN AT WHICH TRIGGER WILL TRIP AND CHANGE CYCLE WILL BEGIN. Insert screwdriver through hole AR. Turn screw head on Trip Adjusting Cam CJ clockwise for earlier tripping, or counter-clockwise for later tripping. (Effect is to alter position of the Cam which strikes Trigger CP. It may be found that Cam has been revolved through a half-turn; in this case, above directions would apply only after Cam has been returned to correct position by revolving screw head one-half turn).

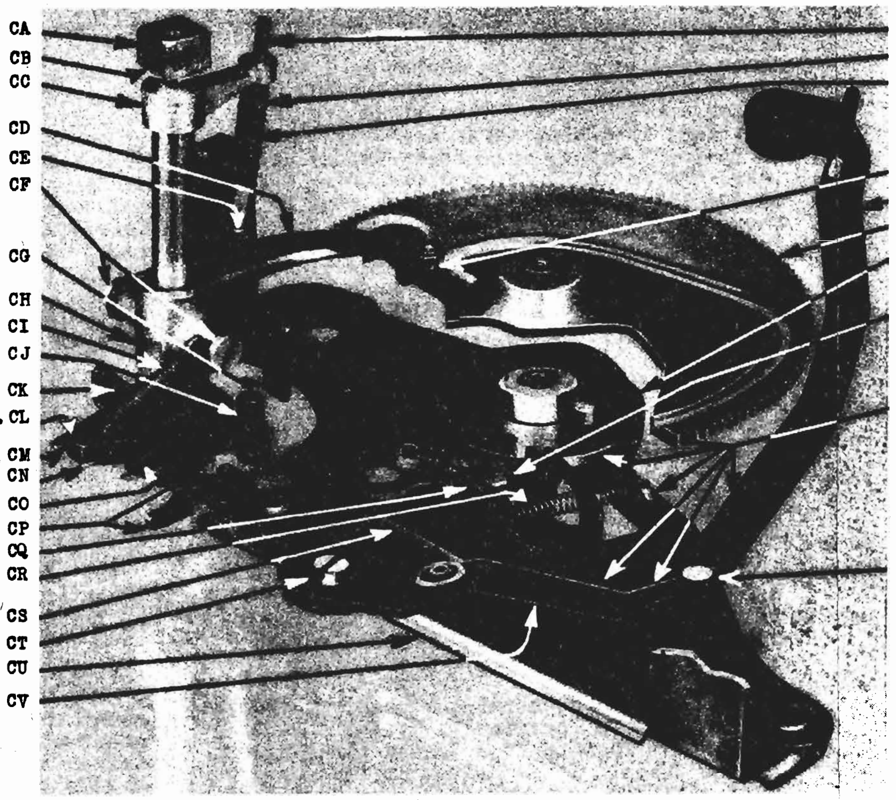
On some models of this Changer no hole will be found in Main Plate at AR. To make the adjustment on these Changers, access must be had to the under-side of the mechanism. Instead of Cam CJ, there will be found a Trip Adjustment Screw, so placed that its end strikes the trigger directly. For earlier tripping, turn this Screw clockwise; for later tripping turn it counter-clockwise.

This Changer does not depend, for automatic tripping, on the records being provided with any special grooves at end; it trips whenever needle comes within a certain distance of Record Pin. The factory adjustment is for 1¾" to 1-7/8" from center of Record Pin. This is the most generally satisfactory distance; no modern record will then be cut off before playing is finished, and none will fail to trip at end. For certain records of

MODEL 8A30, Automatic Record Changer
Assembly Views, Adjustments

WELLS-GARDNER & CO.

P-12123 Swivel Shaft and Head Assem. . . CA
P-2522 Fibre Washer (2 required) . . . CB
P-12048 Lifter Guide CC
P-12111 Swivel Guide Arm Assembly . . . CD
P-12003 Lifter Rod Nut (AP) . . . . . . CE
P-12072 Trunnion Shoulder Screw (2 reqd) CF
Link . . . . CG
P-12701 Swivel Tube and Trunnion Assem. CH
P-12087 Swivel Guide Arm Spring CI
Trip Adjusting Cam . . . . CJ
P-12089 Swivel Spreader Spring . . . . . CK
P-12703 Stop Lever and Trigger Adj.Assem. CL
P-12026 Upper Swivel Spreader . . . . . CM
P-12027 Lower Swivel Spreader . . . . . CN
P-12099 Pickup Leader Spring (ER) . . . CO
Trigger. . . . . CP
P-12084 Pawl Spring . . . . CQ
P-12085 Cam Lever Spring . . . . CR
Cam Lever . . . . CS
P-12007 Shoulder Screw . . . . CT
Sub-Plate . . . . CU
Cam Connecting Rod Lift CV



DA Pickup Plunger P-12095
DB Pickup Plunger Sleeve P-12096
DC Pickup Plunger Spring P-12097
DD Stud
DE Cam Connecting Rod
DF Cam Gear
DG Lifter Cam
DH Pawl
DI Sub-Plate and Gear Assembly . . P-12709
DJ Roller

Photo C-D. View of Sub-Plate Assembly, Together with Certain Other Assemblies

early manufacture, it may be impossible to find an adjustment that will always trip and never cut off, but these may always be played manually.

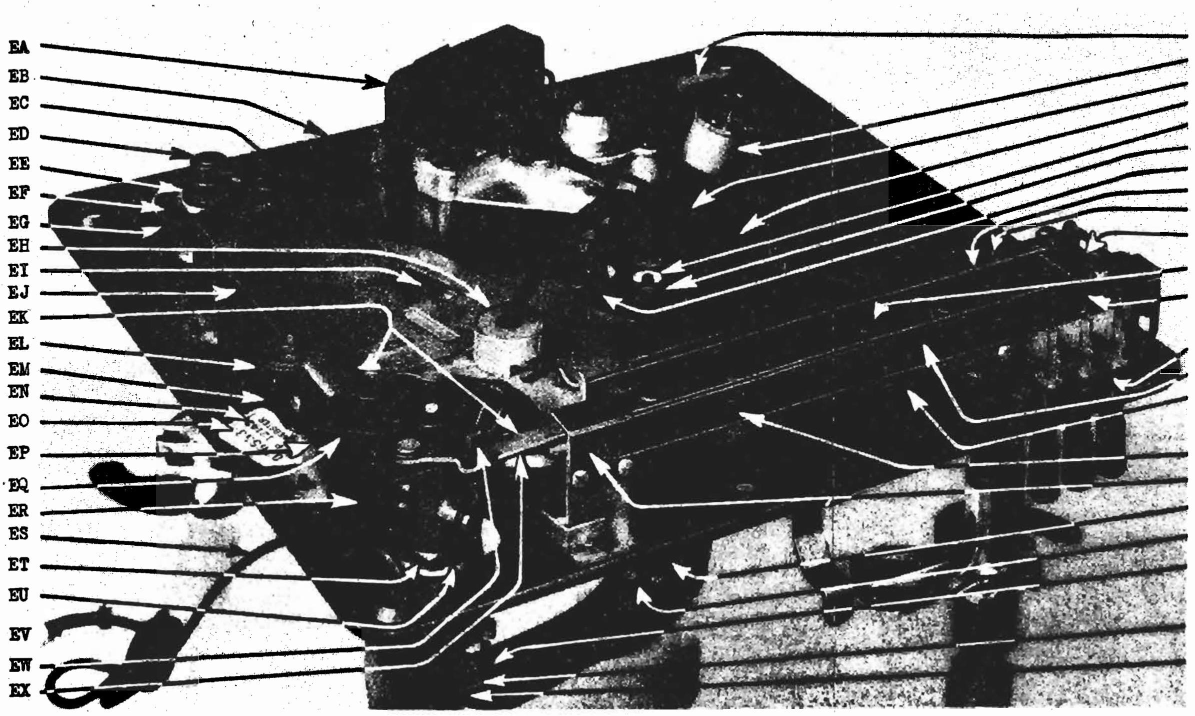
C. ADJUSTING HEIGHT TO WHICH PICKUP ARM RISES. The arm should rise, during the change cycle, high enough so that it clears by only 1/4" the record above it, next to be played. (Be careful, before deciding that readjustment is necessary, to see that the record at bottom of stack is not a warped one.) To make this adjustment, loosen Lock-Nut AP (CE) and turn Pickup Sleeve DB to lengthen or shorten Pickup Plunger DA. However, if Pickup is made to rise too close to bottom record, Stud DD may never clear the groove in Cam Gear. In making this adjustment, therefore, care must be taken to see that Pickup arm does not keep moving back and forth continuously (due to Stud DD remaining in engagement with groove). When correct adjustment is found, tighten Lock Nut securely.

Replacing Motor

The service mechanic may be called upon to adapt the Changer to a different power supply. For this purpose, or in case of any serious fault within Motor, remove entire Motor EA (with Record Pin and connecting gear drive) from the Changer, and replace it with a suitable new Motor. (In ordering a replacement Motor, specify the power supply and give Model Number at EN; also make and model number of phono-radio or other type of installation.)

When mounting replacement Motor, it is most important to see that Record Pin is centered between the two Posts of the Changer, that it stands perpendicular to Main Plate EB, and that it has not become bent. When the new Motor has been attached, with three screws through Grommet Sleeves FF into its frame, and Record Pin is seen to revolve without appreciable wobble (a wobble would indicate that it has been bent in transit from factory) the correct position of Pin midway between the Posts can be accurately checked in this way: Place a single 12" record on the Shelf Plates BK, press "R" button, and turn Turntable forward by hand. Immediately after the Shelf Plates open and let it fall, turn Turntable slightly backward, and with other hand support the record between the Shelf Plates; it can then be readily seen whether Record Pin is off center. If it is, remove the record and Turntable, and loosen slightly the screw or screws BF nearest the Shelf Plate to which record appeared closest. This should improve evenness of operation. However, unless the unevenness was slight, it will be necessary for a permanent repair to insert a shim or two on one or more of the three screws (or change shims from one screw to another). The shims used are shaped like an ordinary washer, cut out at one side (see cut-away view at FE, showing a shim in place upon one of the Grommet Sleeves). Shims can readily be cut out with shears and punch from thin metal or cardboard--or an assortment of shims of different thicknesses can be had from factory (order "Assortment of P-1397 Shims"). They should be inserted, around proper screws (when screws have been sufficiently loosened) between Motor Frame and the metal Grommet Sleeve. Do not insert shims next to rubber grommet.

(Give Model No. as at EN). Changer Motor EA
(Give Model No.). Main Mounting Plate Assm. EB
Cam Connecting Rod . . . EC
P-12400 Changer Shaft Collar . . . . . . ED
Spreader Hub Assembly . . . . . . EE
P-12045 Spring Roller . . . . EF
P-12088 Changer Spreader Spring . . . . . EG
Cycling Switch . . . . EH
P-12085 Cam Lever Spring . . . . EI
P-12709 Sub-Plate and Gear Assem. (DI) . . EJ
P-12116 Adjusting Rod Assembly . . . . . EK
Cam Connecting Rod Lift (CV). . . EL
P-12083 Cam Connecting Rod Lift Spring . EM
Changer Model Number . . . . . . EN
Changer Serial Number . . . . . . EO
P-12505 Rejection Rod Support . . . . . . EP
P-12084 Adjusting Rod Lever Spring . . . EQ
P-12099 Pickup Leader Spring (CO) . . . . ER
(Give Model No. as at EN) Pickup Cord . . . . ES
P-12053 Post Nut . . . . ET
#1228 Shakeproof Washer . . . . EU
M-93 Male Plug (on end of cord) . . . EV
Lug on Lever-Hub Assem. . . . . . EW
Adjusting Rod . . . . EX



FA On-Off Switch (Give Model No., see at EN)
FB Male Plug with #7002 Shell . . M-21
FC Cord Clamp 292-8
FD Changer Connecting Rod Assem.. P-12122
FE Shim . . . . . . (Assortment) P-1397
FF Grommet Sleeve (3 reqd.) . . . P-12059
FG Idler Gear
FH Manual Key Rod P-12077
FI Rejection Rod P-12510
FJ Manual and Rejection Rod Spring P-12090
FK Extension Rod
FL Key Control Bracket P-12038
FM Key Control Unit P-12079
FN Adjusting Rod Spring P-12087
FO Control Unit Truss Bar P-12094
FP Needle Landing Adjusting Cam
FQ Adjusting Rod Bracket P-12036
FR Pickup Cartridge (Give Model No. as at EN)
FS Cartridge Clamp P-2218
FT Tone Arm Lift Plate P-2223
FU Hinge Pin Spring P-2236
FV Tone Arm Hinge Pin P-2234

Photo E-F. Bottom View

WELLS-GARDNER & CO.

MODEL 8A30 Record Changer Service Notes

Before tightening screws, drop Drive Pinion Assembly AH into mesh with Idler Gear (but not down far enough to seat upon drive pin). Then make sure that when the three screws are tightened, Drive Pinion and Idler still work freely together and do not bind. If necessary, loosen screws again, and shift them until proper tooth clearance is obtained. Then tighten screws, and test, as above directed, the centering of Record Pin between Changer Posts.

In wiring up, consult wiring diagram for particular installation. Use only Underwriters' approved wire. See that Motor Frame is well grounded by wire soldered to lugs, as shown on Bottom View photo.

Trouble Shooting

Cases of failure to operate satisfactorily will generally be found due either to neglect of proper lubrication, or to tampering with the mechanism after it leaves the factory, or to injuries accidentally sustained as by external vibration or by impact of some heavy object. In addition there is always the possibility that any kind of spring may "go dead" (cease to operate without any visible breakage) even though the utmost factory precautions are taken against it--or that setscrews may work loose due to some external vibration. For tightening setscrews, a No. 8 size Allen (hexagon) wrench is required: be sure that setscrews are properly seated on the holes or flats provided. Damage from tampering is likely to take the form of bent parts; never bend any part during examination. Be careful, especially, never to push upward from below on Cam Connecting Rod Lift CV while mechanism is operating; bending may result, and even slight bending here might interfere with correct timing of the cycle operations.

Among the principal trouble symptoms to which such causes may give rise, are the following:

1. MECHANISM IS SLOW IN STARTING, OR STALLS DURING A CHANGE CYCLE, BUT A SLIGHT FORWARD PUSH WITH THE HAND STARTS IT AGAIN. May be caused by

a. Failure to lubricate properly. Oil thoroughly, per instructions above.

b. Loose setscrews.

c. Weakness of drive: line voltage may be abnormally low, or motor windings damaged. If windings are found damaged, remove motor and return it to factory for repair or replacement. See above: "Replacing Motor."

2. MOTOR FAILS TO RUN, EVEN WHEN IT IS ENTIRELY DISCONNECTED FROM OTHER WIRING AND PROPER VOLTAGE IS APPLIED DIRECTLY TO THE TWO ENDS OF ITS WINDINGS. This indicates trouble in Motor windings. Unless the damage is easily seen and repaired, replace Motor, as above described.

3. MOTOR IS SLOW IN STARTING.

a. Check oiling, as directed above. It may not have been properly done; old oil may have become gummy.

b. Changer may have been in a very cold place, and may not yet have reached room temperature. Give it a fair chance to get warmed up before concluding that Motor is defective, and proceeding as in Paragraph 2 above.

4. SQUEAKS OR OTHER NOISES, DURING PLAYING OF RECORDS.

a. Check oiling, as directed above. (If squeaks are heard, they will usually be found to come from the records--not from the mechanism).

b. See that all setscrews are tight.

5. CHANGER IS NOISY WHEN IN CYCLE. Check oiling.

6. MOTION OF PICKUP TOWARD RECORD PIN WILL NOT TRIP CHANGER MECHANISM.

a. (Only on models not having Trip Adjustment Hole AR) It may be found that, instead of trigger being actuated, there is stretching of Swivel Spring CK, allowing the spreaders to open. Increase tension of the Spring, by bending slightly the lug on either Spreader. If this increased tension causes needle to jump across the record, needle may be a little out of vertical, radially--it may "lean" toward center of record. To remedy this, grasp Pickup arm and twist it, very slightly, in a clockwise direction (looking from needle end) so that it stands vertical, or even leans a little in outward direction.

b. If trigger is being properly actuated, probably Cam Lever CS is binding against Sub-Plate CU. Look for dirt or obstructions; see that Pawl DH and Trigger CP are working freely on their rivets. If the Lever engages the Pawl so that Lift CV forces roller DJ up into the under groove on Cam Gear, and if setscrews are tight, the change cycle must operate, as Cam Gear turns.

7. PRESSING "R" BUTTON DOESN'T TRIP CHANGER MECHANISM.

a. Check Key Control Unit FM: see whether there is an obstruction or a bent part which prevents "R" button from going clear down to the end of its travel.

b. Examine Reject Rod FI. If it does not trip, even when properly revolved by complete depressing of "R" button, the rod has probably been bent, and must be restored in same way. Grasp the two ends and twist it slightly.

c. If Trigger CP is being properly actuated but without starting a change cycle, see directions above, Paragraph 6-b.

8. PRESSING "M" BUTTON FAILS TO PUT CHANGER MECHANISM OUT OF ACTION SO AS TO ENABLE MANUAL OPERATION. First see that button goes clear down; then follow its action through Manual Rod FH.

9. MOTOR STOPS IMMEDIATELY WHEN CHANGER SWITCH IS TURNED OFF DURING A CHANGE CYCLE (instead of continuing to run, as it should, until needle is again upon a record, and then stopping). Or--

10. TURNING ON-OFF SWITCH FAILS TO STOP CHANGER AT ALL. Either of these two conditions would indicate failure of Cycling Switch EH. Cycling Switch operates normally to short-circuit the manual On-Off Switch (which may be located in position shown at FA or elsewhere) during change cycle only. Such damage to Cycling Switch (not likely to occur) would necessitate returning either the Sub-Plate Assembly or the entire Changer to factory.

11. CHANGER FAILS TO REPEAT LAST RECORD. See Paragraph 6, above.

12. NEEDLE LANDS PROPERLY ON RECORD BUT FAILS TO MOVE OVER INTO RECORD GROOVE. Pickup arm is normally impelled toward center of records by Lead Spring FR. Should a slight increase in its tension be found necessary, this can be easily obtained by bending the lug, to which it is attached, down against Main Plate. If tendency then appears for needle to jump across record, check angle of needle (see Paragraph 6-a above).

13. RECORDS FALL UNEVENLY UPON TURNTABLE. Seldom objectionable (some unevenness may even be advantageous) this is due to Record Pin not being correctly centered between Changer Posts. If necessary, it can be corrected as described above; see "Replacing Motor."

14. LAST RECORD DROPS ON ONE SIDE ONLY. This suggests a Changer Post bent out of perpendicular to Main Plate. Test as directed above under "Replacing Motor." If Post must be straightened, be careful not to bend other parts.

15. CHANGER CONTINUES CYCLING. Probably due to failure of Lift CV to be drawn back out of engagement with Cam Gear. Check the various rivets at which motion occurs, to find the point where friction or binding is interfering with freedom of motion.

16. RECORD IS DRIVEN, BUT NOT HEARD, or NOT HEARD WITH PROPER VOLUME. See that Pickup cord is plugged in. Check amplifier and speaker and connections to them, thoroughly. If then trouble is still suspected in pickup, test its output with a vacuum-tube voltmeter. Playing an average record, output should test 1 to 2.5 volts if pickup cartridge is of crystal type, or 0.5 volt if of magnetic type. If pickup cartridge is found not to deliver proper output, remove it and install another.

17. SELECTOR PLATE FAILS TO SEPARATE BOTTOM RECORD FROM STACK. This is due either to a badly warped condition of the record, or to its being of a thickness very considerably different from those now in standard use. The design of both Selector and Shelf Plates is such as to accommodate a maximum variation in thickness and flatness of records, but certain records may be found which are so far out as to be impracticable for use in automatic changers.

If Necessary to Disassemble the Changer

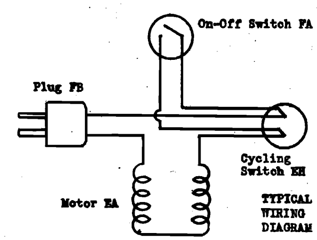
First detach the entire changer mechanism (except Changer Connecting Rod Assembly FD and Cam Connecting Rod Assembly DE, also seen at EC) from Main Plate EB. To do this, first take out Shoulder Screw CT, to free the rest of the mechanism from Assembly DE. Then remove the three screws AO, which hold Sub-plate Assembly DI to Main Plate EB. Also remove Screw BN, which holds Cam Gear DF. Pull off the four Key Control Buttons. Remove, then, the two screws that hold Key Control Unit FM to Main Plate. Now remove Control Unit Truss Bar FO, Rejection Rod Support EP, and Extension Rod Bracket FQ--this means taking out five screws. Remove Flat Spring FJ, by taking out one screw. Rods FH and FI can then, with due care, be extracted without bending. Free the Cam Connecting Rod Assembly DE, by loosening setscrew holding Spreader Hub EE to Rear Changer Shaft. In reassembling, reverse the procedure, taking care to get all springs properly connected as shown in the photos, without stretching any of them.

Replacement Parts

When spare parts or sub-assemblies are required, order them direct from the factory, by factory number and name as given on photos --not by reference letters. Where no number is given, order by full and exact description. Always specify Serial Number as seen at EO, and Model Number as seen at EN. Parts shown in above photographs, but not given factory numbers, are furnished only in assemblies as shown with factory numbers.

Handy Reference

Shops having frequent occasion to service this Changer can obtain on request a second copy of this Manual, for posting, both sides visible, above bench.



MODEL 6D1
Schematic, Voltage, Socket
Sensitivity

WELLS-GARDNER & CO.

Power Consumption - 28 Watts (At 117 volts AC Supply)

Power Output - - - - - .8 Watt Undistorted
1.25 Watts Maximum

Selectivity - - 55 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - - 456 KC

Speaker - - - - - - - 5" Electro-Dynamic

Tuning Frequency Range

B Range .... 528 to 1600 KC

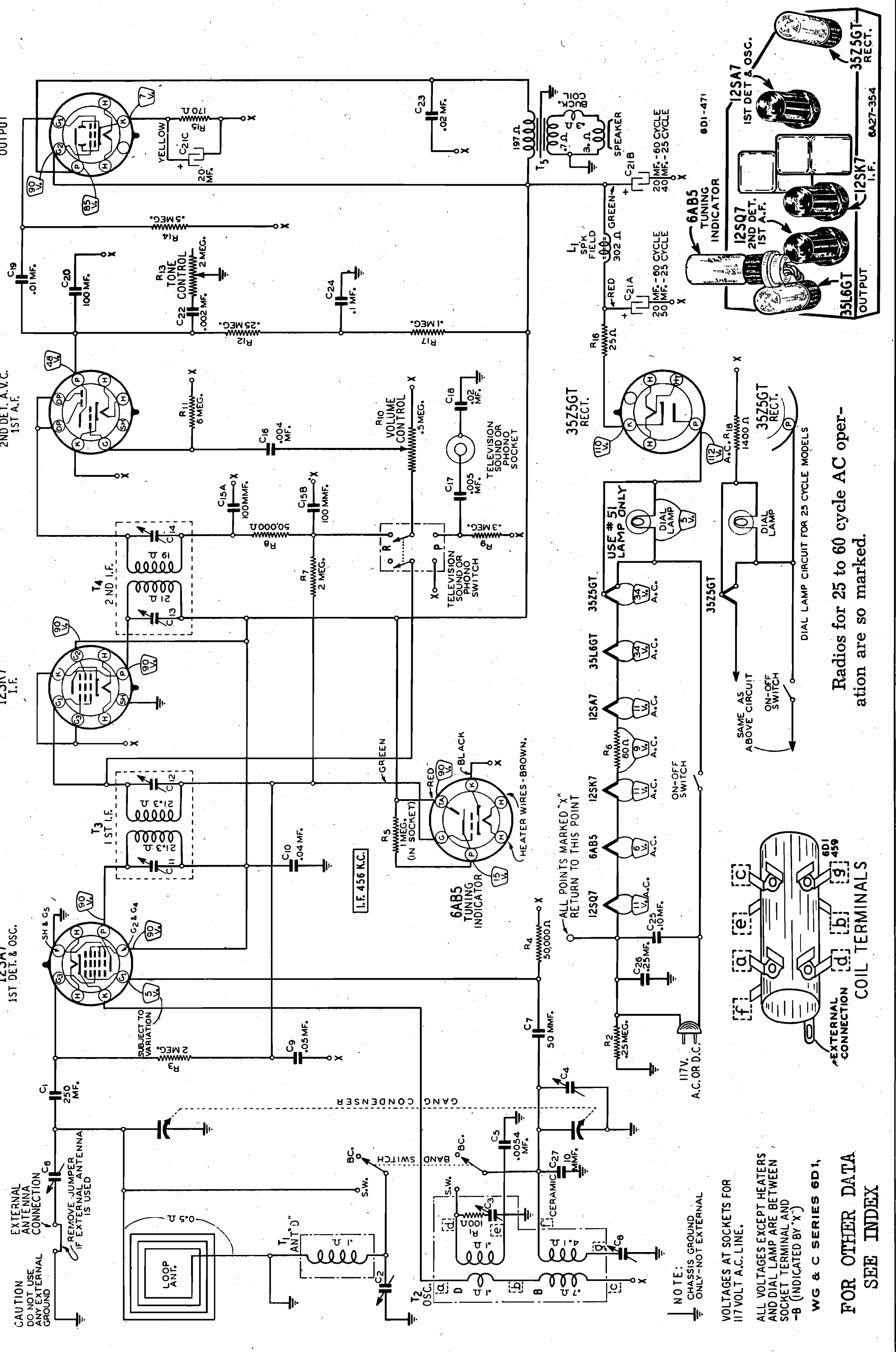
D Range .... 4600 to 12,200 KC

Sensitivity (For .05 watt output)

B Range .... 35 Microvolts Average

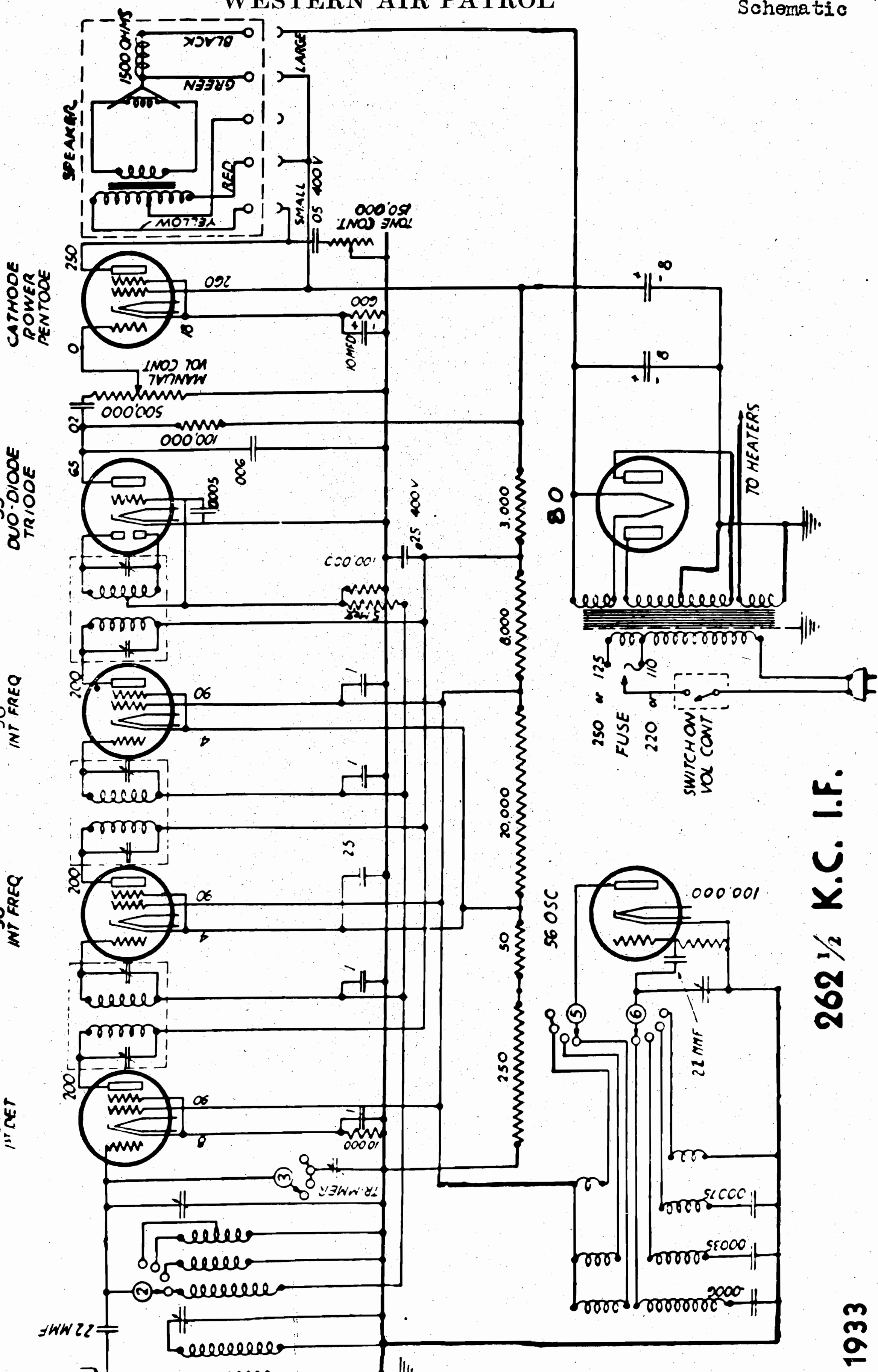
D Range .... 30 Microvolts Average

CAUTION—DO NOT USE A GROUND OF ANY KIND ON THIS RADIO. DO NOT USE A GROUNDED OBJECT, SUCH AS A RADIATOR, FOR AN EXTERNAL ANTENNA.



MODEL W221
Schematic

WESTERN AIR PATROL

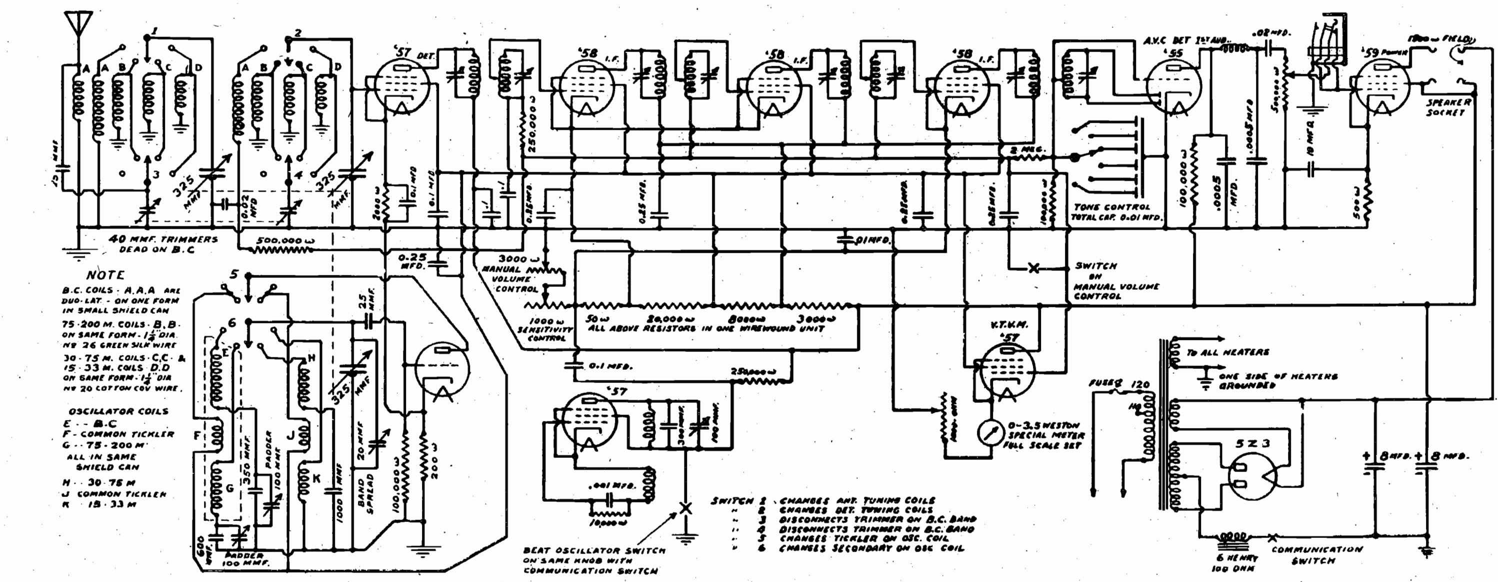


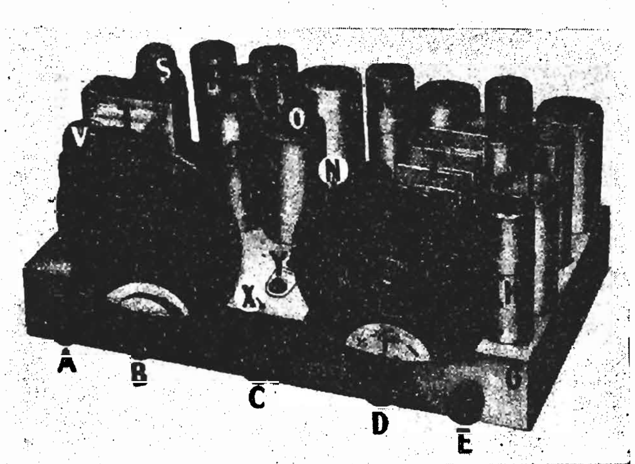
262½ K.C. I.F.

1933

MODEL W403
Schematic, Alignment
Socket, Trimmers

WESTERN AIR PATROL





PR-10 Chassis

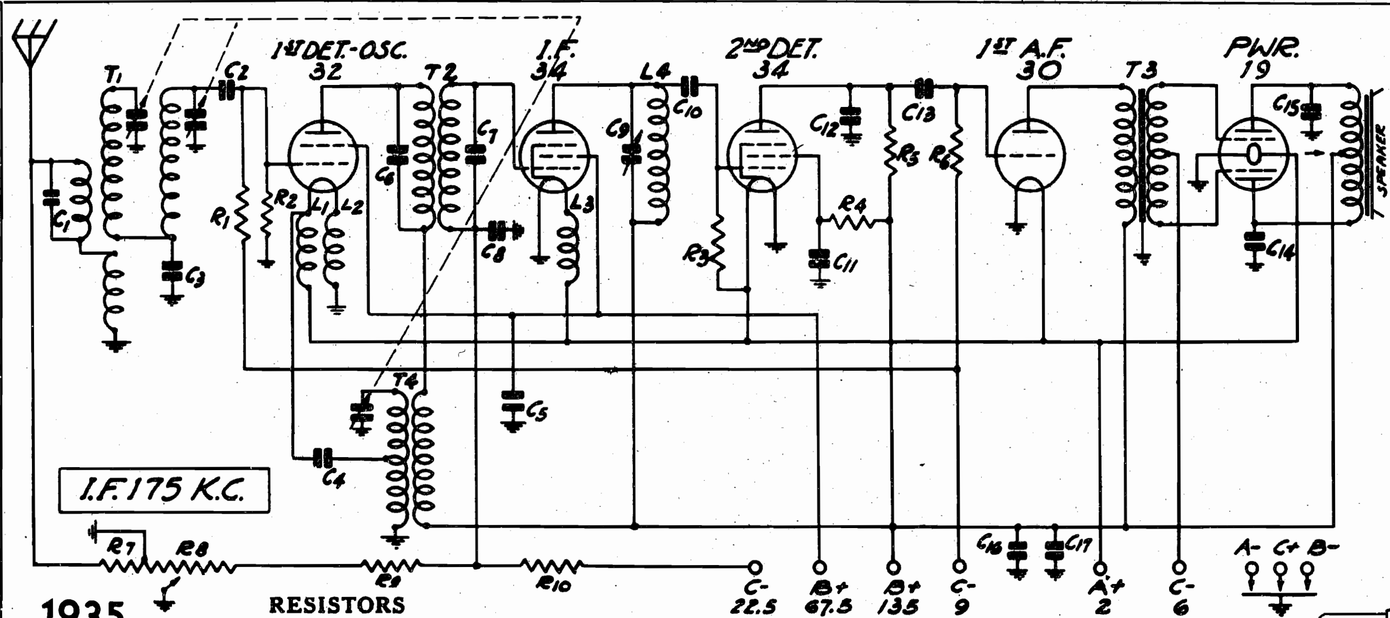
A—"B" on and off, Beat Oscillator switch.
B—Push, Tone Control. Normal, Band Spread.
C—Volume Control, Power Switch.
D—Push, Band Change. Normal, Main Tuning.
E—Short-Wave Trimmer, two gang.
F—Band Indicator.
G—Heavy 18-gauge Chromium Plated Chassis.
H—First Detector—#57.
I—First I. F. Tube—#58.
J—B. C. and 75 Meter Oscillator.
K—Second I. F. Tube—#58.
L—Three Stages I. F.
M—Third I. F. Tube—#58.
N—High Frequency Oscillator Tube —#56.
O—Beat Oscillator Control.
P—Second Detector and AVC Tube —#55.
Q—Beat Oscillator Tube—#57.
R—Vacuum Tube Volt Meter—#57.
S—Output Tube—#59.
T—Heavy Duty Power Supply.
U—Moisture-proof Filter.
V—Rectifier Tube—5Z3.
W—Patterson Velvet Tuning Dials.
X—Manual Control Mounts Here.
Y—Sensitivity, "R" Meter Adjustments.
Z—Three-gang Condenser, Rubber Mounted.

To rebalance the receiver does not require any equipment. The meter will indicate the exact resonance point of the I.F. trimmers and also the condenser gang. Proceed as follows: Set band spread dial at "O," then tune in a station on the high frequency end of the Broadcast band (any station around 1400 K.C. is okay). Next, adjust the trimmer on the condenser section nearest the dial until the station reads exactly on its known K.C. Now, tune in a station in around 600 K.C. and be careful to be on the exact center of the carrier. All of the above operations must be made with the manual control in off position. Next, turn the sensitivity control toward minimum so that the meter reads about R-9. Now, adjust each of the eight I.F. trimmers very carefully until the meter swings the farthest to the right. You probably will not be able to increase the gain more than 1.5-R. It should not be necessary to turn any trimmer more than ⅛ of a turn.

1934

MODEL W409
Schematic
Socket

WESTERN AIR PATROL



1935

Fig. 1—Schematic Circuit Diagram.

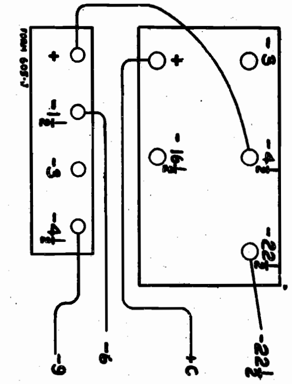


Fig. 3—Optional "C" Battery Connections

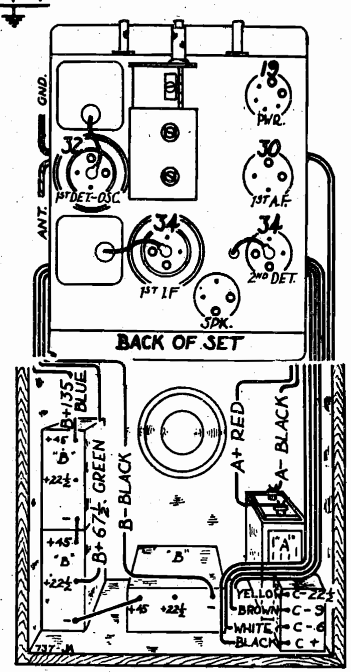


Fig. 2—Tube Arrangement and Battery Connections.

RESISTORS

Part No.	Code	Resistance	Wattage	Type
P-A94505	R1	5 Megohm	0.2	Carbon
P-A94105	R2	1 Megohm	0.2	Carbon
P A94205	R3	2 Megohm	0.2	Carbon
P-B94104	R4	100,000 Ohm	0.5	Carbon
P-B94403	R5	40,000 Ohm	0.5	Carbon
P-A95105	R6	1 Megohm	0.2	Carbon
P-96001	R7 / R8	3,000 Ohm / 60,000 Ohm		Volume Control
P-A94901ww	R9	900 Ohm	0.2	Wire Wound
P-A94652	R10	6,500 Ohm	0.2	Carbon
*P-A94106	R1	10 Megohm	0.2	Carbon
*P-A94205	R2	2 Megohm	0.2	Carbon

*These resistors were used on first models.

CONDENSERS

Part No.	Code	Capacity	Voltage	Type
P-81812	C1	200 mmf		Wire—Part of Ant. Assem
P-81801	C2	35 mmf		Wire—Part of Ant. Assem.
P-80862	C3	0.05 mf	200V	Tubular
P-80862	C4	0.05 mf	200V	Tubular
P-80862	C5	0.05 mf	200V	Tubular
P-81806	C6	70 mmf		Wire
P-81804	C7	45 mmf		Wire
P-80862	C8	0.05 mf	200V	Tubular
P-1685	C9	70 ± 30 mmf		I. F. Trimmer
P-81800	C10	50 mmf		Wire
P-81045	C11	0.25 mf	200V	Tubular
P-80863	C12	0.004 mf	600V	Tubular
P-80898	C13	0.006 mf	600V	Tubular
P-80969	C14 / C15	0.01 mf / 0.01 mf	400V / 400V	Dual Tubular
P-80864	C16	0.1 mf	200V	Tubular
P-80968	C17	4.0 mf	150V	Electrolytic
P-81036	3 Gang Condenser			

MISCELLANEOUS

Part No.	ITEM
P-2131	No. 32 Socket
P-1645	No. 34 Socket
P-1644	No. 30 Socket
P-1833	No. 19 Socket
P-1640	Speaker Socket
P-20406-A	Tube Shield for 34 and 32 Tubes
P-20786	Tube Shield Base
P-50586-D	Audio Input Transformer T3
P-5168	Double Tuned Ant. Trans. Assem. Comp. with resistors and condensers T1 less can
P-40432	Can for above Assem.
P-5199	1st I.F. Coil and Can Assem. T2
P-5187	Oscillator Coil and Can Assem. T4
P-5188	2nd I.F. Coil and Can Assem. L4
P-5172	Double Filament Reactor L1, L2
P-5189	Single Filament Reactor L3
P-30342-A	Grid Cap Only
P-2060	Knob, plain
P-2122	Knob, Arrow Indicator
P-1441-A	Double Insulated Terminal Strip
P-1786	Five Lug Terminal Strip
P-1831	On-Off Switch
P-20711	Gang Condenser Shield
P-10272	Rubber Chassis Cushions
P-70703	Antenna and Ground Wire
P-70749	"B" Battery Wire Assem.
P-70771	"A" Battery Wire Assem.
P-70772	"C" Battery Wire Assem.
P-2124	Speaker 6"
P-2125	Speaker 8"

MODEL W409
Circuit Data, Voltage
Alignment, Resistance

WESTERN AIR PATROL

Circuit

This receiver is designed to operate from a battery power supply the values of which are shown in Fig. 1. All of the tubes used are of the 2 volt type. The receiver is designed to operate at a very low current drain from the batteries and still have a very satisfactory quality of output.

The circuit has a preselector stage incorporating 2 tuned circuits for image rejection. This couples into the type 32 first detector-oscillator tube through a combination of inductive coupling in T1 and capacitive coupling through C3. In Fig. 1 the two coils to the right of the 32 1st detector tube are the primary and secondary of the 1st I. F. transformer while below this tube are the oscillator coils. The oscillating circuit is tuned by the oscillator section of the gang condenser and is always resonant at a frequency of 175 K. C. above the frequency to which the R. F. circuit is tuned.

One stage of I. F. amplification is employed using a 34 tube. Fixed condensers tune the primary and secondary of the first I. F. transformer. A second I. F. unit of the impedance coupled type is provided in which the inductance L4 is tuned by a trimmer condenser C9. The volume control is of the variable antenna input and I. F. bias type. Referring to Fig 1 it will be noted that one end of the volume control strip is connected to the antenna and the other end is connected to resistor R9. Also note that the volume control strip is tapped. Bias voltage for the 34 I. F. tube is obtained from a potentiometer consisting of resistors R9, R10 and the 60,000 ohm section of the volume control R8 which resistors are connected across the 22½ volt "C" battery.

As the slider of the volume control is moved away from the antenna end, the signal input to the antenna stage is increased. The bias voltage of the I. F. tube is not affected until the tap is reached. As the slider moves from this point to the end of the strip the I. F. bias is decreased, thus increasing the sensitivity. When this happens the plate current goes up and more battery current is used.

A 34 tube is used as the 2nd detector or demodulator. Demodulation takes place in the grid circuit of this tube.

Resistance coupling is used between the 2nd detector and the 1st audio stage which uses a 30 tube. The 1st audio stage is transformer coupled to the output stage. Class "B" amplification is employed in the output stage which uses a type 19 tube. This consists of two output tubes in one envelope. A magnetic reproducer is used.

A 3 pole switch controls all three sources of battery supply.

Condenser Alignment

Misalignment or mistracking of condensers generally manifests itself as broad tuning and lack of volume at portions or all of the broadcast band. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment. A signal generator that will provide accurately calibrated signals over the broadcast band and at the intermediate frequency, and an output meter are required for indicating the effect of adjustments.

First set the signal generator to a frequency of 175 K. C. Connect the antenna lead of the signal generator to the grid of the 1st detector thru a .05 mfd. condenser. The ground lead from the signal generator goes to the ground lead of the receiver. Adjust trimmer condenser C9 on the back panel of the chassis until maximum output is obtained. **A non-metallic screw driver should be used in making this adjustment as the I. F. trimmer is at B+ potential.**

Next set the signal generator for 1730 K. C. Turn the rotor to the full open position. The antenna lead from the signal generator is in this instance connected to the antenna lead of the receiver. Adjust the trimmer of the oscillator section of the 3 gang condenser until maximum output is obtained. The oscillator section is the one with the cut plate rotor.

Then set the signal generator for 1400 K. C. and turn the rotor until maximum output is obtained. Adjust the other two trimmers on the gang condenser for maximum output.

To obtain dial scale calibration tune in an 800 K. C. signal and set the dial pointer at that mark on the dial scale. When calibrated in this manner, the setting will be approximately correct at both ends of the scale.

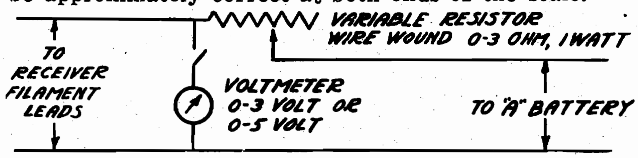


Fig. 4—Using Voltage Regulator with 3 Volt "A" Battery

The use of the cut plate type of condenser eliminates the necessity of a 600 K. C. padder and no adjustment at this frequency, therefore, is required.

D. C. Resistance of Windings

Following are the D.C. resistances of the various windings in the chassis.

Part No.	Item	Code	D. C. Resistance in Ohms
P-5168	Double Tuned Ant. Coil Pri.	T1	19.2
	Double Tuned Ant. Coil Sec. (Preselector)	T1	3.2
	Double Tuned Ant. Coil Sec. (1st Det.)	T1	3.2
P-5199	1st I.F. Coil Pri.	T2	90.0
	1st I.F. Coil Sec.	T2	116.0
P-50586-D	Audio Input Trans. Pri.	T3	1010.
	Audio Input Trans. Sec. Cent. Tap to outside end	T3	648.
	Audio Input Trans. Sec. Cent. Tap to inside end	T3	588.
P-5187	Oscillator Coil, Grid Winding	T4	4.1
	Oscillator Coil, Plate Winding	T4	10.4
P-5172	Double Filament Reactor Assem.	L1	.61
	Double Filament Reactor Assem.	L2	.61
P-5189	Single Filament Reactor Assem.	L3	.61
P-5188	2nd I.F. Reactor Coil	L4	52.1
P-2124	6" Magnetic Speaker, Center Tap to outside end		272.
	6" Magnetic Speaker, Center Tap to inside end		225.
P-2125	8" Magnetic Speaker (same as P-2124)		

VOLTAGES AT SOCKETS

Volume Control at Maximum—Antenna Shorted to Ground
B+135 Volts
Voltages to Chassis

Type of Tube	Function	Across Filament	Plate to Cath.	Screen to Cath.	Grid to Cath.	Normal Plate M. A.
32	1st Det. & Osc.	2.0	135	67.5	7.5 (1) (2)	2.5
34	I. F	2.0	135	67.5	2.5 (3)	2.8
34	2nd Det.	2.0	50	40 (1)	0	1.8
30	1st Audio	2.0	135		9 (4)	3.0
19	Output	2.0	135		6	1.8 Total

(1) With 250,000 ohm meter.
(2) Subject to variation due to oscillatory current.
(3) With 25,000 ohm meter.
(4) As read at "C" battery.

Voltages

Check the voltages at the sockets to see if correct values are being delivered to the tubes. The antenna and ground should be disconnected and the antenna and ground leads from the set connected together. The volume control should be turned to the right or maximum position.

The voltage chart gives the voltages with all tubes in, the speaker connected and the set in operating condition. These voltages are typical of the sets but will vary slightly with variations in individual receivers, tubes, test equipment used and battery voltages.

WESTERN AIR PATROL

MODEL W416
Schematic

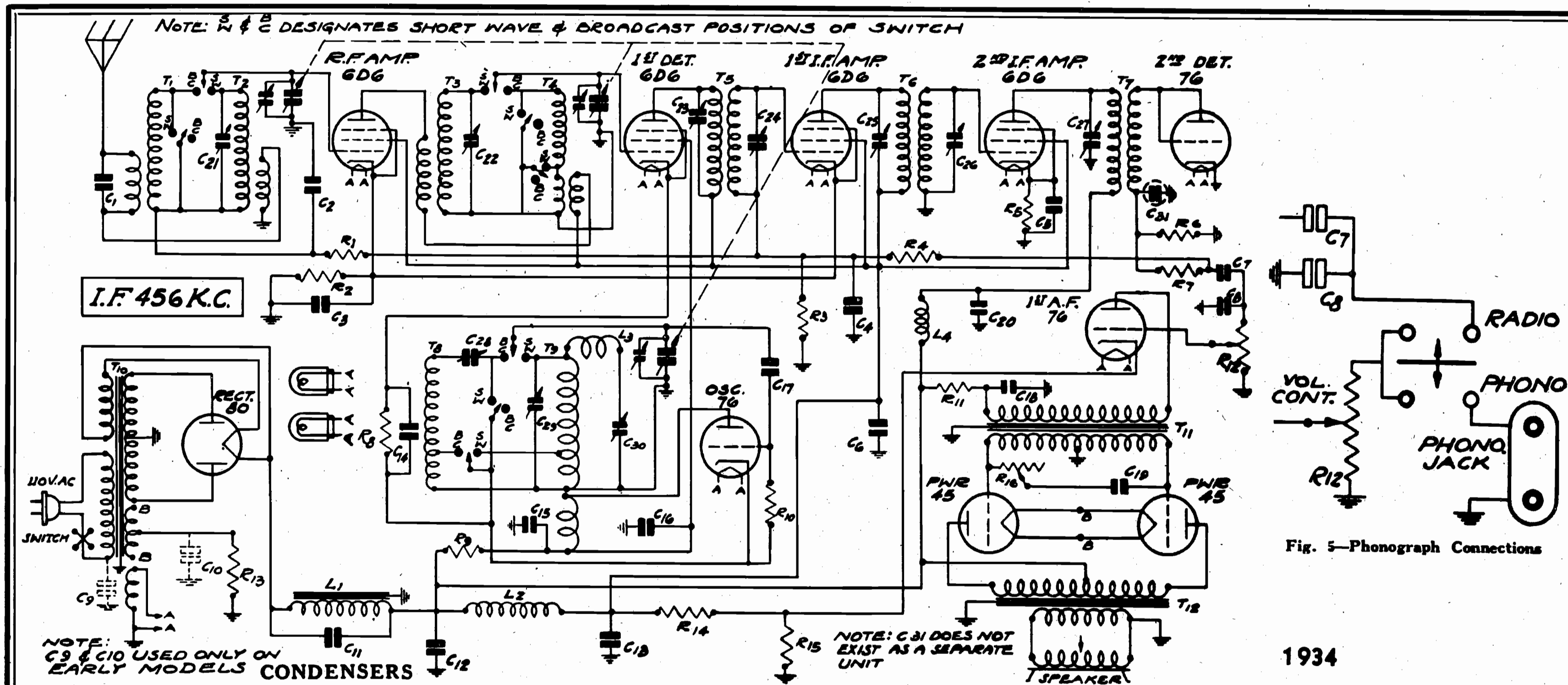


Fig. 1—Schematic Circuit Diagram

Fig. 5—Phonograph Connections

1934

CONDENSERS

Part No.	Code	Capacity	Volts	Type
P-80919	C1	250 mmfd.		Moulded
P-80862	C2	.05 mfd.	200V.	Tubular
P-80888	C3	.25 mfd.	200V.	Tubular
P-80862	C4	.05 mfd.	200V.	Tubular
P-80862	C5	.05 mfd.	200V.	Tubular
P-80888	C6	.25 mfd.	200V.	Tubular
P-80862	C7	.05 mfd.	200V.	Tubular
P-81005	C8	35 mmfd.	600V.	Moulded
*P-80997	C9	.01 mfd.	600V.	Condenser in metal can
*P-80888	C10	.25 mfd.	200V.	Tubular
P-80985	C11	.15 mfd.	200V.	Tubular
P-81039	C12	16.0 mfd.	400V.	Wet Electrolytic
P-81018	C13	6.0 mfd.	150V.	Dry Electrolytic
	C16	2.0 mfd.	300V.	
	C18	2.0 mfd.	300V.	
P-80862	C14	.05 mfd.	200V.	Tubular
P-80864	C15	.10 mfd.	200V.	Tubular
P-81005	C17	35 mmfd.	600V.	Moulded
P-80863	C19	.004 mfd.	600V.	Tubular
P-81041	C20	.10 mfd.	400V.	Tubular
P-2102	C21	3-40 mmfd.		Ant. S.W. Trimmer
P-2102	C22	3-40 mmfd.		1st Det. S.W. Trimmer
P-2103	C23	200± 50 mmfd.		Dual Trimmer
	C24	200± 50 mmfd.		Part of I.F. Assem.
P-2103	C25	200± 50 mmfd.		Dual Trimmer
	C26	200± 50 mmfd.		Part of I.F. Assem.
P-1685	C27	70± 30 mmfd.		3rd I.F. Coil Trimmer
P-2112	C28	300-500 mmfd.		600 K.C. Trimmer
P-2102	C29	3-40 mmfd.		Osc. S.W. Trimmer
P-1685	C30	70± 30 mmfd.		6000 K.C. Trimmer
P-81027		Three Gang Condenser		

RESISTORS

Part No.	Code	Resistance	Watts	Type
P-A95204	R1	200,000 ohm	.2	Carbon
P-98023	R2	150 ohm	.5	Flex. Wire Wound
P-A95105	R3	1 megohm	.2	Carbon
P-A95205	R4	2 megohm	.2	Carbon
P-98024	R5	400 ohm	.5	Flex. Wire Wound
P-A94304	R6	300,000 ohm	.2	Carbon
P-A95104	R7	100,000 ohm	.2	Carbon
P-A94252	R8	2,500 ohm	.2	Carbon
P-98022	R9	30,000 ohm	2.0	Carbon
P-A95104	R10	100,000 ohm	.2	Carbon
P-C94303	R11	30,000 ohm	1.0	Carbon
P-96005	R12	2 megohm		Volume Control and Switch
P-98006	R13	780 ohm	3.0	Armored Wire Wound
	R14	6000 ohm	1.4	
	R15	460 ohm	.2	
P-97003	R16	3 megohm		Tone Control

*Used in Early Models only.

Part No.	Item
P-50638	Power Transformer 115V. 60 cycles T 10
P-50639	Power Transformer 115V. 25 cycles T 10
P-50640	Power Transformer 115-230V. 40-60 cycles T 10
P-50641	Power Choke L 1
P-50642	Audio Output Transformer T 12
P-50643	Audio Input Transformer T 11
P-5176	Antenna R.F. Trans. T 1 and T 2 less can
P-5177	Interstage R.F. Trans. T3 and T4 less can
P-5178	Oscillator Coil Assembly T8 and T9 less can
P-5186	3rd I. F. Coil T7 less can
P-40433	Cans for the above coils
P-5184	1st I.F. Coil & Can Assembly T5
P-5185	2nd I.F. Coil & Can Assembly T6
P-5190	H. F. Oscillator Tracking Coil L3
P-5151	I.F. Plate Isolating Reactor L4
P-70702	A.C. Cord & Plug
P-1421	Single Insulated Terminal Strip
P-1441	Double Insulated Terminal Strip
P-2060	Small Knob
P-2062	Large Knob
P-30342A	Grid Cap only
P-30456	Small Pointer
P-20912	Large Double End Pointer
P-2012	Pilot Light Bulb
P-10272	Rubber Mounting Feet
P-10320	Glass Crystal
P-20875	Crystal Retaining Ring
P-2152	8" Dynamic Speaker Mantel L2
P-1968	10" Dynamic Speaker Console L2
P-2101	Three Position Band Change Switch
P-20905	Condenser Shield
	8" Black Drive Cord (V.C. or T.C. Ind.)
	29" Black Drive Cord (Cond. Drive)
P-2126	Pilot Lamp Socket & Clip Assembly
P-20911	Bottom Shield
P-1011A	Phono-Radio Switch
P-1193	Phono Jack
P-2025	No. 80 Socket
P-1643	No. 45 Socket
P-2022	No. 76 Socket
P-1885	No. 6D6 Socket
P-1637	Speaker Socket
P-40434	Tube Shield—Aluminum (for earlier models)
P-40424	Tube Shield Base—Aluminum (for earlier models)

MODEL W416
Voltage, Socket, Changes
Alignment, Trimmers
Drive Cord Data

WESTERN AIR PATROL

Replacing Drive Cord

Remove chassis from cabinet.

Take off the pilot light assembly by lifting off the two sockets and spring clips.

Detach the large pointer by removing the screw at the center of the dial.

Loosen the dial assembly by taking out the two screws which secure the bottom of this assembly to the chassis.

Then lay the complete dial assembly face downward in front of the chassis. It is not necessary to remove the volume control and tone control collars which hold the indicator cords of these two controls in position.

Turn the drive drum until the opening in this drum is approximately vertical and with the hole at the top as shown in Fig. 4.

Remove the tension spring and the old drive cord.

See that the eyelet is in the hole in the drive drum as shown in Fig. 4. Insert one end of the drive cord from the outside through the hole in the eyelet in the drive drum.

Tie the end of the cord which has been inserted in the hole to one end of the tension spring.

Wrap the cord in a clockwise direction (facing front of chassis) around the drive drum approximately one-half turn.

Then tilt the chassis up on its back panel and bring the cord mentioned in the previous paragraph down to the drive shaft. Wrap it two and one-half times around the drive shaft as shown in Fig. 4.

Then bring this cord up from the drive shaft and wrap it around the drive drum approximately one and one fifth

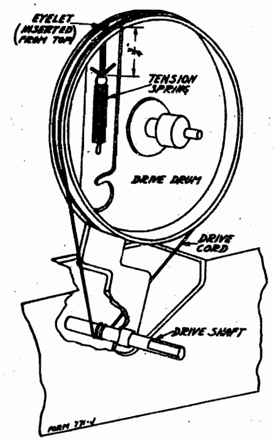


Fig. 4—Drive Cord Replacement

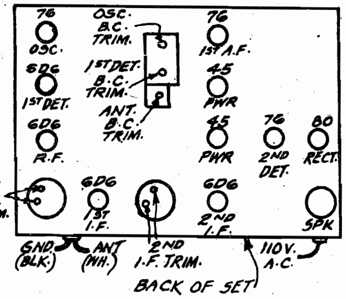
turns in a clockwise direction until it is up to the hole in this drum as illustrated.

Insert the free end of the cord through the hole in the eyelet and tie it to the end of the tension spring. The end of the spring, when hanging free, should be approximately ¾" from the flange of the drum as shown in Fig. 4. Cut off the surplus length of cord after it is knotted.

Then secure the other end of the tension spring over the spur on the drive drum.

Replace the dial assembly and pointer.

Replace the pilot light assembly after which the chassis may be reinstalled in the cabinet.



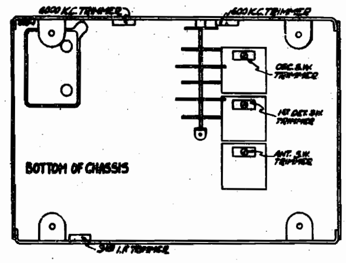


Fig. 2—Tube Arrangement & Location of Trimmers

Voltages at Sockets
LINE VOLTAGE — 115
ANTENNA SHORTED TO GROUND

Type of Tube	Function	Across Fila. or Heater	Plate to Cath.	Screen to Cath.	Cath. to Ground	Normal Plate M. A.
6D6	R. F.	6.3	95	95	2.8	7.0
6D6	1st Det.	6.3	88	95	9.2	2.9
76	Osc.	6.3	110	—	—	5.0
6D6	1st I. F.	6.3	95	95	2.8	7.0
6D6	2nd I. F.	6.3	300	95	3.3	6.0
76	2nd Det.	6.3	—	—	—	—
76	1st Audio	6.3	160	—	9.0	4.0
45	Output	2.5	245	—	48.0	30.0
80	Rectifier	5.0	890 V. A. C. pl. to pl.			58.0 per plate

Phono Connections

Phonograph connections can be made as shown in Fig. 5. A single pole double throw switch and double pin jack are required. These should be mounted on the back panel of the chassis close to the 2nd detector. The connections are made by opening the diode circuit at the point shown in the illustration and completing the connections to the switch and pin jacks as indicated. A high impedance pick-up should be used. If a low impedance pick-up is used a step-up transformer will be required for sufficient volume. The volume control of the set will regulate the phono volume.

Change in Early Models

In the early models of this receiver the side of the trimmer condenser C27 which is shown in Fig. 1 as connected to ground was connected to the B+ side of the 3rd I. F. coil primary.

Condenser Alignment

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and re-alignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment. A signal generator that will provide an accurately calibrated signal of 456 K. C. and accurately calibrated signals over the broadcast and short wave bands, 530-1740 K. C. and 5.8-18.3 M. C., is required. An output indicating meter is also necessary. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screw driver for the adjustments. The complete procedure is as follows:

Intermediate Frequency Adjustment

Set the signal generator for 456 K. C. Connect the antenna lead of the signal generator to the grid of the 1st detector through a .05 mfd. condenser. Turn the tuning condenser rotor until the plates are completely out. The ground lead from the signal generator goes to the ground lead of the receiver. The volume control should be at the maximum position. Reduce the signal so that A. V. C. action is not obtained.

Then adjust the five I. F. trimmer condensers until maximum output is obtained. The adjusting screws for the 1st and 2nd trimmer condensers are reached from the top of the chassis and are in the round I. F. cans - See Fig. 2. The openings to these trimmer condensers are covered over by small cover plates which are held in position by screws. Loosen these screws until the cover plates can be swung around. **CAUTION - Use an insulated screwdriver for adjusting trimmers to prevent short circuiting to ground.** In the 3rd I. F. coil, only the primary has a variable trimmer condenser. This condenser is mounted on the back panel of the chassis as shown in Fig. 2 and the adjustment screw is reached through a hole in the back panel.

Broadcast Band Adjustment

The broadcast short wave switch should be in the broadcast position. Set the signal generator for 1740 K. C. Turn the rotor to the full open position. The antenna lead from the signal generator is in this instance connected to the antenna lead of the receiver. Reduce the signal so that A. V. C. action is not obtained. Adjust the oscillator broadcast trimmer until maximum output is obtained. This trimmer is on the tuning condenser and its location is shown in Fig. 2.

Then set the signal generator for 1500 K. C. Turn the rotor until maximum output is obtained. Loosen the set screw in the pointer hub and set the pointer at the 1500 K. C. mark on the broadcast band scale. Retighten the hub set screw. Then adjust the antenna and 1st detector broadcast trimmers until maximum output is obtained.

Next set the signal generator for 600 K. C. and adjust the 600 K. C. trimmer. The adjusting screw is reached through a hole in the front panel of the chassis as shown in Fig. 2. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over this setting at the same time adjusting the 600 K. C. trimmer screw until the highest output is obtained.

Short Wave Band Adjustment

CAUTION—After the broadcast band alignment as described above has been made, do not change the adjustment of any of the broadcast band trimmers.

In aligning the short wave band of the receiver, it will be noted that the signal will be heard with the signal generator set at two points 912 K. C. apart. That is, if the receiver is tuned to 15,000 K. C. a signal will be heard when the signal generator is set at 15,000 K. C. and again at approximately 15,912 K. C. This is due to image reception or the fact that a 456 K. C. beat is obtained when the signal is 456 K. C. lower than the receiver oscillator and also when the signal is 456 K. C. higher than the receiver oscillator. Care should be taken to see that the receiver is tracked with the signal generator adjusted to the lower of the two frequencies at which a signal is heard, in order that the oscillator in the receiver will be 456 K.C. higher in frequency than the signal.

Turn the broadcast short wave switch to the short wave position. Turn the rotor to the full open position. As explained above, the volume control should be at the maximum position and the signal should be reduced to prevent A. V. C. action. Set the signal generator for 18,300 K. C. Then adjust the oscillator short wave trimmer for maximum output. This trimmer is reached from under the chassis and its position is shown in Fig. 2. If a maximum output peak cannot be reached, it may be due to the fact that the antenna and 1st detector short wave trimmers are screwed down too far. Back off these two trimmer screws two or three turns and then adjust the oscillator short wave trimmer for maximum output.

Next set the signal generator for 15,000 K. C. Turn the rotor until maximum output is obtained. Then adjust the antenna and 1st detector short wave trimmers for maximum output.

Next set the signal generator for 6000 K. C. and adjust the 6000 K. C. trimmer. This condenser is mounted on the front panel of the chassis as shown in Fig. 2 and is reached through a hole in the front panel. Turn the tuning condenser rotor until maximum output is obtained. Then turn the rotor slowly back and forth over this setting, at the same time adjusting the 6000 K. C. trimmer screw until the highest output is obtained.

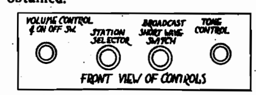


Fig. 3—Arrangement of Controls

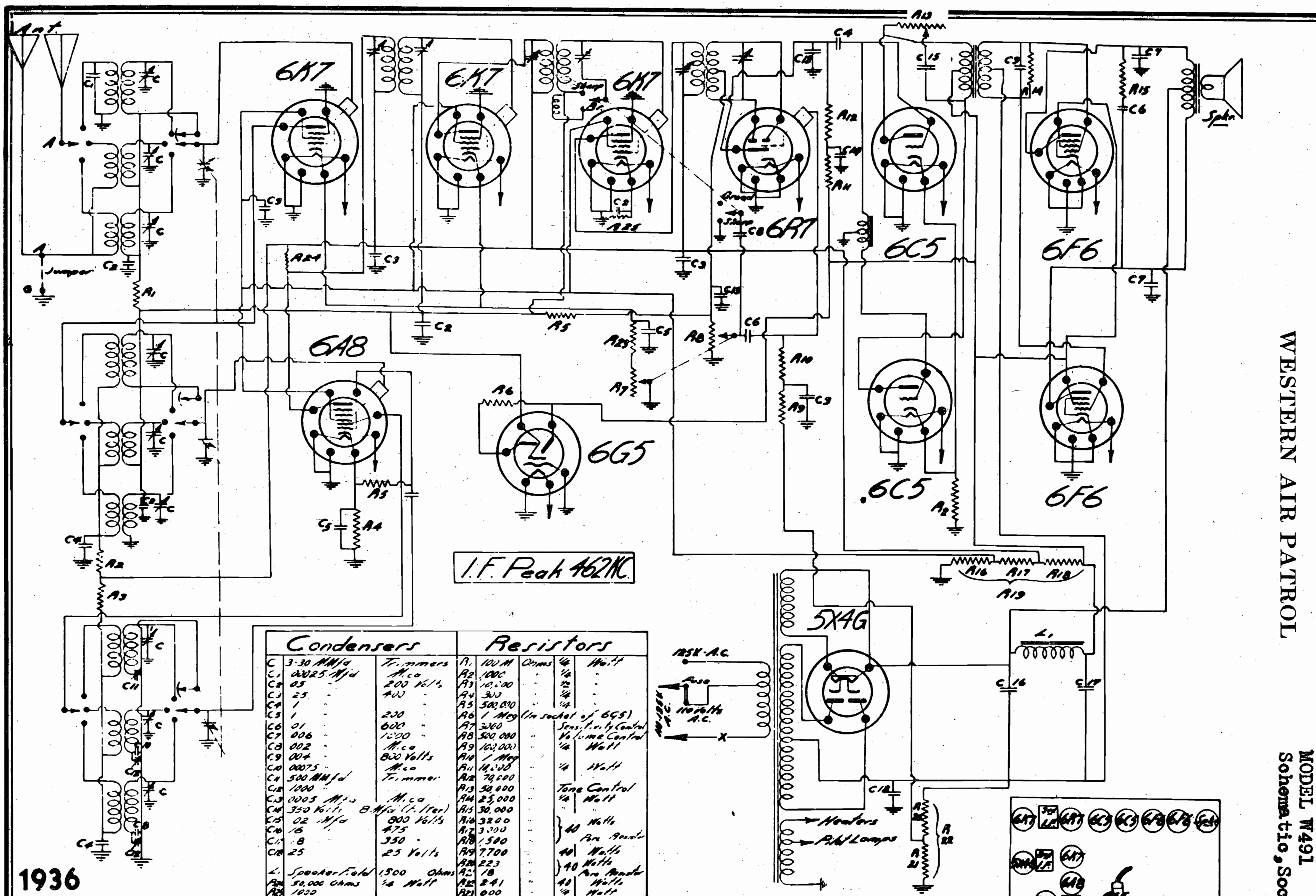
D. C. Resistance of Windings

Following are the D.C. resistances of the various windings in the chassis.

Part No.	Item	Code	D.C. Resistance in Ohms
P-5176	S.W. and B.C. Antenna R.F. Transformer Primaries (in series)	T1 T2	27.9
	B.C. Antenna R.F. Transformer Secondary	T1	5.0
	S.W. Antenna R.F. Transformer Secondary	T2	Small
P-5177	S.W. and B.C. Interstage R.F. Transformer Primaries (in series)	T3 T4	2.7
	B.C. Interstage R.F. Transformer Secondary	T4	4.4
	S.W. Interstage R.F. Transformer Secondary	T3	Small
P-5178	S.W. Oscillator Grid Coil	T9	Small
	S.W. Oscillator Plate Coil	T9	.25
	B.C. Oscillator Grid Coil	T8	3.5
P-5190	S.W. Oscillator Tracking Coil	L3	1.27
P-5184	1st I.F. Coil Primary	T5	5.0
	1st I.F. Coil Secondary	T5	5.0
P-5185	2nd I.F. Coil Primary	T6	5.0
	2nd I.F. Coil Secondary	T6	5.0
P-5186	3rd I.F. Coil Primary	T7	9.3
	3rd I.F. Coil Secondary	T7	26.3
P-50643	Audio Input Transformer Primary	T11	2300.
	Audio Input Transformer Secondary Center Tap to Outside	T11	2600.
	Audio Input Transformer Secondary Center Tap to Inside	T11	2000.
P-50642	Audio Output Transformer Primary Center Tap to Outside	T12	360.
	Audio Output Transformer Primary Center Tap to Inside	T12	320.
	Audio Output Transformer Secondary	T12	.44
P-1968	Speaker Voice Coil		3.0
	Speaker Field Coil	L2	5000.
P-50641	Filter Choke	L1.	150.
P-50638	Power Transformer 115V. 60 Cycles Pri.	T10	5.3
	Power Transformer 115V. 60 Cycles H.T. Sec. Center Tap to Outside	T10	120.
	Power Transformer 115V. 60 Cycles H.T. Sec. Center Tap to Inside	T10	110.
	Power Transformer 115V. 60 Cycles Sec. (80 Fil.)	T10	Small
	Power Transformer 115V. 60 Cycles Sec. (AA Fil.)	T10	Small
	Power Transformer 115V. 60 Cycles Sec. (BB Fil.)	T10	Small

WESTERN AIR PATROL

MODEL W491
Schematic, Socket



Condensers			Resistors				
C	3-30 MMfd	Trimmers	R1	100 M	Ohms	1/4	Watt
C1	.00025 Mfd	Mica	R2	1000	"	1/4	"
C2	.05 "	200 Volts	R3	10,000	"	1/2	"
C3	.25 "	400 "	R4	300	"	1/4	"
C4	.1 "	"	R5	500,000	"	1/4	"
C5	.1 "	200 "	R6	1 Meg	(In socket of 6G5)		
C6	.01 "	600 "	R7	3000			Sensitivity Control
C7	.006 "	1000 "	R8	500,000	"		Volume Control
C8	.002 "	Mica	R9	100,000	"	1/4	Watt
C9	.004 "	800 Volts	R10	1 Meg			
C10	.00075 "	Mica	R11	10,000	"	1/4	Watt
C11	500 MMfd	Trimmer	R12	70,000	"		
C12	1000 "		R13	50,000	"		Tone Control
C13	.0005 Mfd	Mica	R14	25,000	"	1/4	Watt
C14	350 Volts	8 Mfd (Filter)	R15	30,000	"	"	"
C15	.02 Mfd	800 Volts	R16	3200	"	40	Watts
C16	16 "	475 "	R17	3000	"		
C17	8 "	350 "	R18	1500	"		Pure Resistor
C18	25	25 Volts	R19	7700	"	40	Watts
			R20	223	"	40	Watts
L1	Speaker Field	1500 Ohms	R21	18	"		Pure Resistor
R24	50,000 Ohms	1/4 Watt	R22	241	"	40	Watts
R25	1000		R23	600	"	1/4	Watt

1936

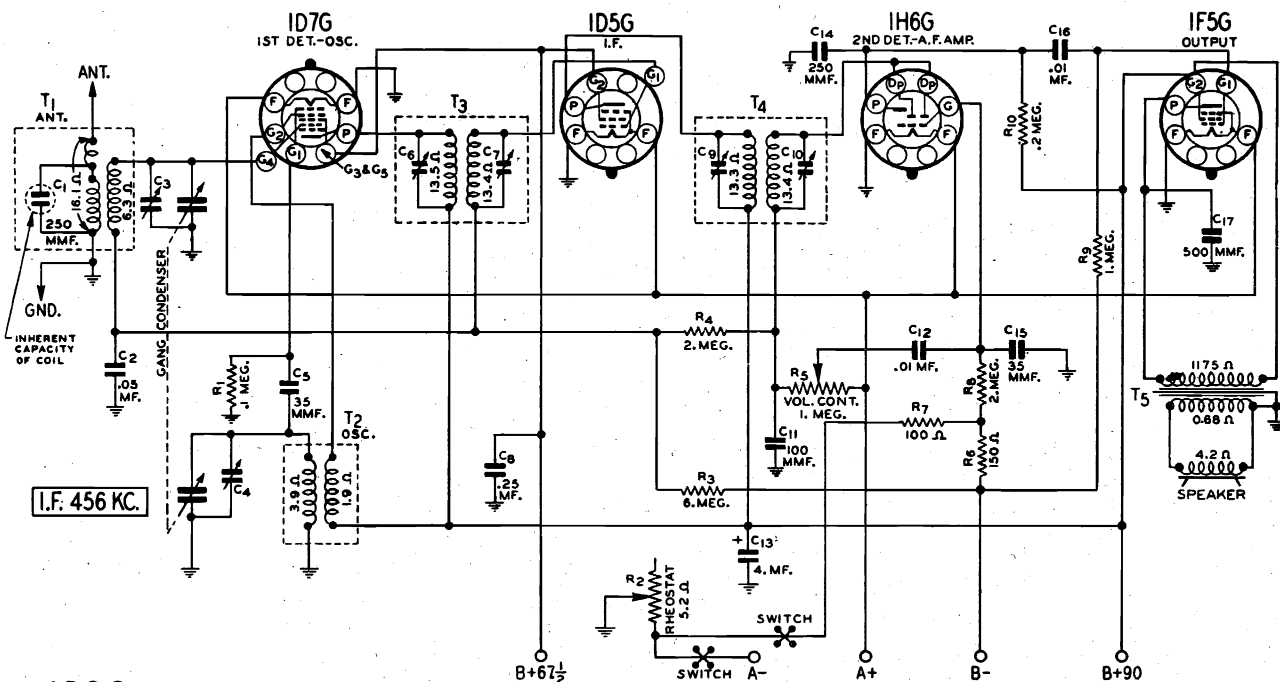
DOUBLET ANTENNA. For regular antenna use put terminal marked "A" on left side of ground connection. To use doublet antenna connect the two leads of doublet to terminals marked "A"—if no doublet antenna is used, put jumper wire from center terminal marked "A" to "G" and use regular antenna

MODEL W831
Schematic, Voltage, Socket
Alignment, Trimmers

WESTERN AIR PATROL

Input Voltages and Currents
"A" Battery .... 2 Volts—.3 Amperes
"B" Battery .... 90 Volts—11.5 to 15 Ma.
Power Output - - - 135 Milliwatts Undistorted
Selectivity - - 40 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - - 456 KC.
Speaker - - - - - - - - - - 6" Dynamic
Tuning Frequency Range - - - 528 to 1730 KC.
Sensitivity - - - - - - - - - 40 Microvolts



1938

Fig. 1—Schematic Circuit Diagram

VOLTAGES AT SOCKETS Volume Control: Maximum — Antenna Shorted to Ground "A" Battery — 2 Volts					
Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Control Grid
ID7G	1st Det.-Osc.	2.0	87 87(1)	64	3.5(2)
ID5G	I.F.	2.0	87	64	3.5(2)
IH6G	2nd Det.-1st Audio	2.0	32(3)		1.25(4)
IF5G	Power	2.0	82	87	3.5(2)

(1) Anode Grid (G2) to ground
(2) As read across R6 and R7
(3) As read on 100 volt scale (1000 ohm per volt meter). Subject to variation.
(4) As read across R7

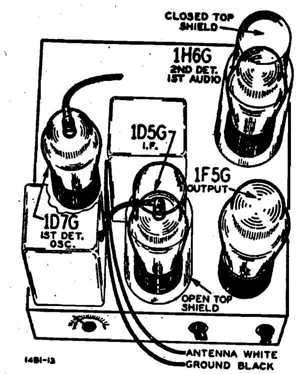


Fig. 2—Tube Arrangement

ALIGNMENT PROCEDURE

STEP (Follow Order as Given)	DUMMY ANTENNA	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	TRIMMERS ADJUSTED See Illustration	PROCEDURE INITIAL STEPS	PROCEDURE ADJUSTMENT
I. F.	.1 mf.	456 KC	Grid of 1st Det.	2nd I. F. (C9) & (C10) 1st I. F. (C6) & (C 7)	Turn rotor to full open	Adjust to Maximum Output
1730 KC Adj.	200 mmf.	1730 KC	Antenna Lead	Osc. (C4)	Turn rotor to full open	Adjust to Maximum Output
1500 KC Adj.	200 mmf.	1500 KC	Antenna Lead	Ant. (C3)	Turn Rotor to Max. Output	Adjust to Maximum Output

Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

NOTE—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, note the position of the pointer and remove the chassis from the cabinet. Loosen the pointer screw and set the pointer so that it will be at the 800 KC mark. Tighten the pointer screw and replace the chassis in the cabinet. If the pointer is not at the 800 KC mark another adjustment will be necessary.

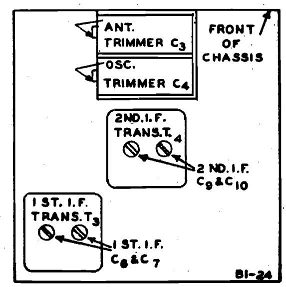
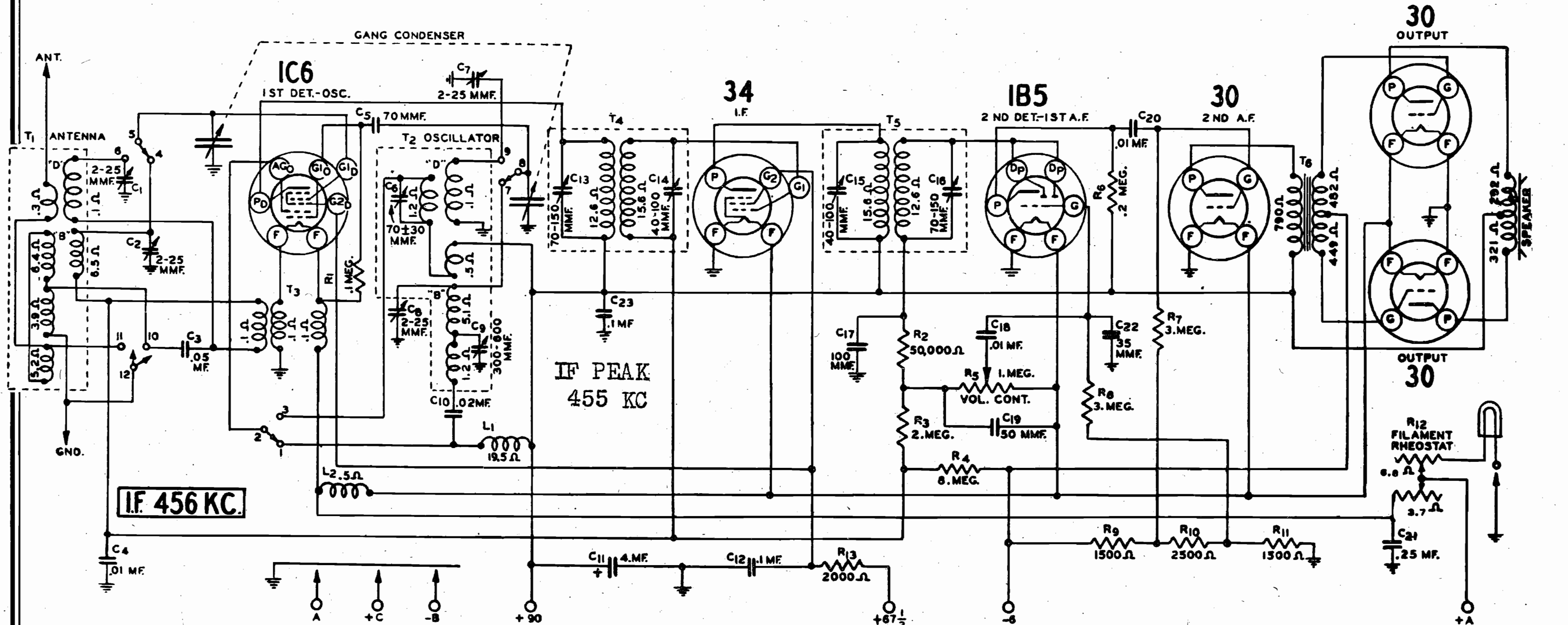


Fig. 3—Trimmer Location

MODEL W493
Schematic

WESTERN AIR PATROL



TUBE ELEMENT LEGEND

F - FILAMENT
P - PLATE
G - CONTROL GRID
G_1 - CONTROL GRID
G_2 - SCREEN GRID
D_P - DIODE PLATE

$G1_O$ - CONTROL GRID (OSC.)
$G1_D$ - CONTROL GRID (DET.)
$G2_O$ - SCREEN GRID (DET.)
AG_O - ANODE GRID (OSC.)
P_D - PLATE (DET.)

ARROWS INDICATE CONNECTIONS PRESENT IN BAND SWITCH WHEN IN POSITION SHOWN.

	POSITION 1 STANDARD WAVE "B"	POSITION 2 SHORT WAVE "D"
FRONT	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12
BACK		

IN MODELS WHICH DO NOT HAVE THE FILAMENT RHEOSTAT THE "+A" CONNECTION IS MADE DIRECTLY TO THE "+A" LINE AND THE PILOT LAMP.

SPECIFICATIONS

Input Voltages and Currents

"A" Battery - - - - - - - 2 Volts—.42 Amperes
"B" Batteries - 90 & 67½ Volts—11.5 to 25.5 Ma.
"C" Battery - - - - - - - - - - - - - 6 Volts

Power Output - - - 400 Milliwatts Undistorted

Selectivity - - 30 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - - - 456 KC

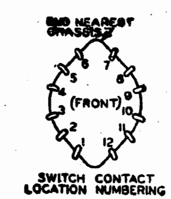
Speaker - - - 6 inch Magnetic—Mantel Models
8 inch Magnetic—Console Models

Tuning Frequency Range

B Range - - - - - - - - - - 528 to 1730 KC
D Range - - - - - - - - - - 5650 to 16,000 KC

Sensitivity

B Range Average - 25 to 35 Microvolts Absolute
D Range Average - 25 to 60 Microvolts Absolute



1937

MODEL W493
Voltage, Socket, Trimmers
Alignment

WESTERN AIR PATROL

Standard and Short Wave Battery Radio

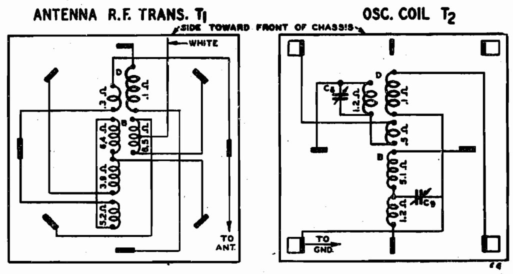


Fig. 8—R.F. and Oscillator Coil Base Terminal Arrangement and D.C. Resistance of Windings

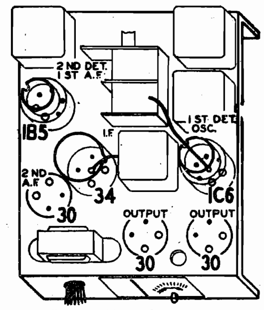


Fig. 9—Tube Arrangement

6 Tube - 2 Band

Tubes

The tubes used in this receiver are of the 2 volt series. All of them are of the filament or directly heated types. All of them have a 2 volt filament and should not be connected to a power supply not intended for this type of tube. **Maximum filament voltage range is 1.8 to 2.0 volts. Operation of the tubes at under or over this value will be injurious to the tubes and may affect operation of the receiver.**

VOLTAGES AT SOCKETS
Volume Control at Maximum — Antenna Shorted to Ground — Band Switch in Standard Wave Position

Type of Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Grid to Ground
1C6	1st Det.-Osc.	2.0	90 90(1)	60	6(2)
34	I.F.	2.0	90	60	6(2)
1B5	2nd Det.-1st A.F.	2.0	30(3)		1.5(4)
30	2nd A.F.	2.0	90		4.0(5)
30	Power	2.0	90		6

(1) Anode Grid to ground.
(2) As read at "C" Battery.
(3) As read with 500,000 ohm meter.
(4) As read from negative end of R11 to ground.
(5) As read from negative end of R10 to ground.

Alignment Procedure

Correct alignment is extremely important in connection with all wave receivers. The receivers are all properly aligned at the factory with precision instruments and re-alignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 16,000, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

I. F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator through a .1 mf. condenser to the grid of the 1st detector.

Connect the ground lead of the radio to the ground post of the signal generator.

Turn the band switch to the Range B position (standard wave band).

Turn the volume control to the maximum position.

Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC.

Then adjust the four I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 7.

Range B Alignment

After the procedure for the alignment of each range, as explained below, is completed, it is advisable to repeat the procedure as a final check.

1730 KC Adjustment

Set the signal generator for 1730 KC.

Turn the rotor of the tuning condenser to the full open position.

Keep the band switch in the standard wave position.

Connect the antenna lead of the radio through a 200 mmf. condenser to the output of the signal generator.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the oscillator Range B trimmer (C8) until maximum output is obtained. The location of this trimmer is shown in Fig. 7.

1500 KC Adjustment

S the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer screw and set the pointer at the 1500 KC mark on the standard wave band scale. Retighten the screw.

Adjust the antenna Range B trimmer (C2) to maximum.

Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 600 KC trimmer (C9) until the peak of greatest intensity is obtained. See Fig. 7 for location of this trimmer.

Range D Alignment

CAUTION—When aligning the short wave band be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC. It may be necessary to increase the input signal to hear the image.

16,000 KC Adjustment

Set the signal generator for 16,000 KC.

Connect the antenna lead of the radio through a 400 ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band switch to the Range D position (short wave band).

Adjust the oscillator Range D trimmer (C7) until maximum output is obtained. See Fig. 7 for location of this trimmer.

15,000 KC Adjustment

Set the signal generator for 15,000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the antenna Range D trimmer (C1) to maximum. When adjusting this trimmer, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of greatest intensity is obtained.

Do not change the setting of the oscillator Range D trimmer.

6000 KC Adjustment

Set the signal generator for 6000 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 6000 KC (C6) trimmer until the peak of greatest intensity is obtained. See Fig. 7 for location of this trimmer.

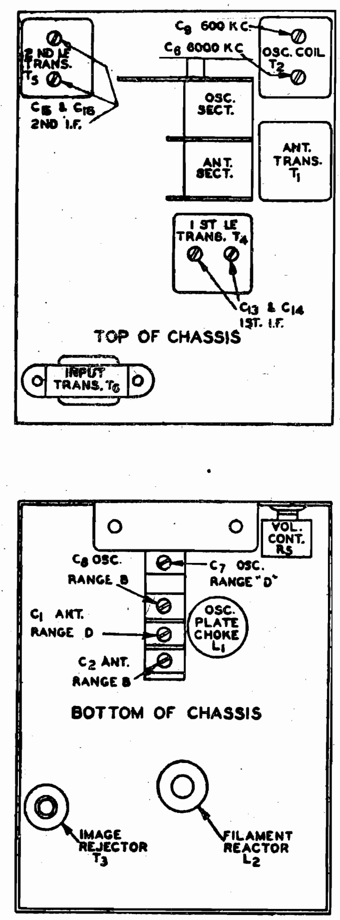
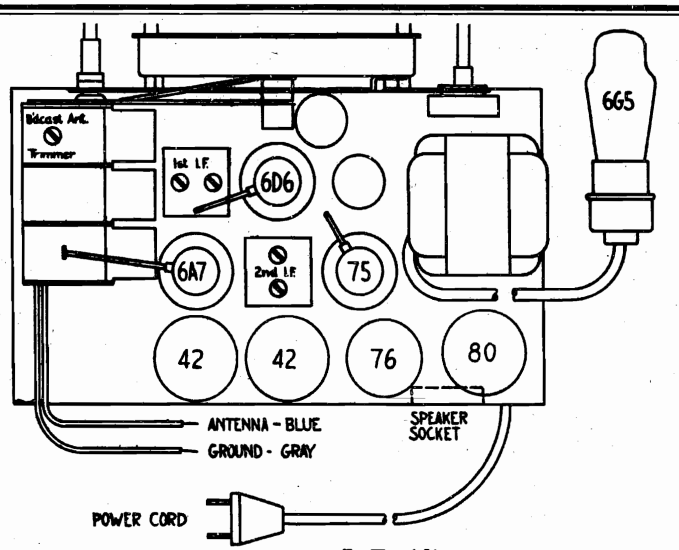
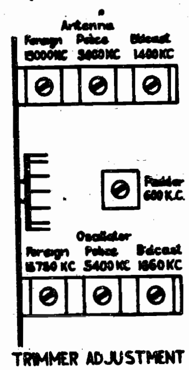


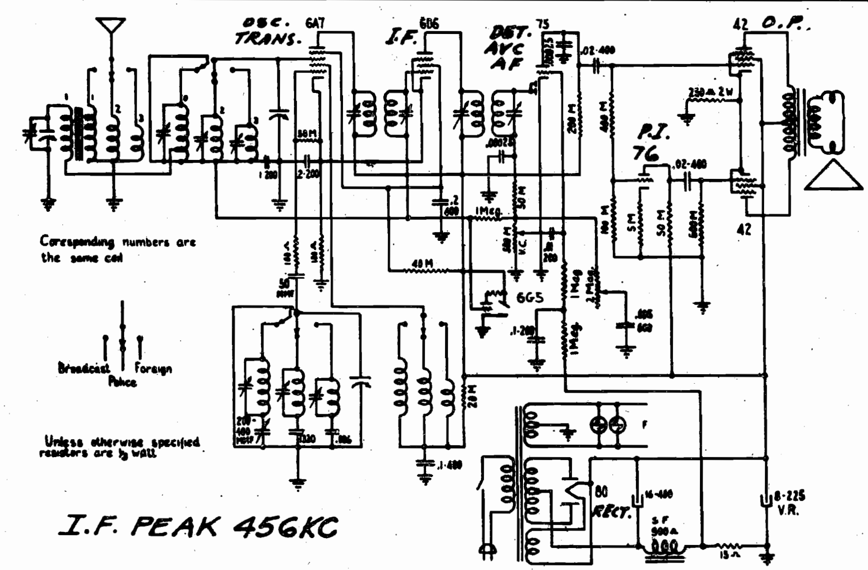
Fig. 7—Location of Trimmers

WESTERN AUTO SUPPLY CO.

MODELS D699,D724(1938)
Schematic,Socket
Alignment,Trimmers







I. F. Alignment

The I.F. frequency of this receiver is 456 K.C. For realignment, use the following procedure.

It is necessary to use an accurately calibrated signal generator. Couple the signal generator to the grid of the 6A7 tube with a tenth microfarad condenser in series with the "high" lead of the signal generator. Connect the ground side of the signal generator to the chassis. Set the signal generator to 456 K.C. Be sure the wave switch of the set is in the broadcast position and the volume control set at maximum. Attenuate the signal generator so that the signal is just audible in the speaker. If an ouput meter is used, it should be connected across the voice coil terminals of the speaker. Use ½ volt as standard output.

Adjust the 2nd I.F. transformer first. Each screw should be adjusted for maximum output. After number two I.F. has been adjusted, number one I.F. should be adjusted for maximum output. After both transformers have been adjusted, it is necessary to recheck No. 2 transformer and then recheck No. 1.

See TUBE LAYOUT for location of I.F. and R.F. trimmers and padder.

RF. (See above diagram for location of trimmers.) Using 200 mmf condenser in series with the generator, feed 1660 kc to antenna lead and adjust broadcast oscillator trimmer for top frequency. Set generator to 1400 kc, tune receiver and adjust the *two* antenna trimmers. Set generator to 600 kc, tune receiver to signal and adjust padder. The tuning condenser should be rocked back and forth through the signal while the padder is being set in order to secure perfect alinement.

Using 400 ohm resistor in series with generator, set band selector in center position, set generator to 5400 kc and adjust oscillator trimmer for top frequency. Set generator to 5000 kc, tune receiver to signal and adjust antenna trimmer.

Turn band selector to extreme clockwise position. Using 400 ohm resistor in series with generator, set oscillator top frequency for 15,750 kc—screw trimmer down tight, then unscrew to *second* peak. Set generator to 15,000 kc, tune receiver to signal and adjust antenna trimmer—Screw trimmer down tight, then unscrew to *first* peak, rocking the tuning condenser back and forth through the signal while the adjustment is being made. **Above procedure for alinement at 15,000 kc must be followed exactly to insure proper tracking. A dead spot at about 12,000 kc will result if antenna and oscillator circuits are not set in proper relation to each other.**

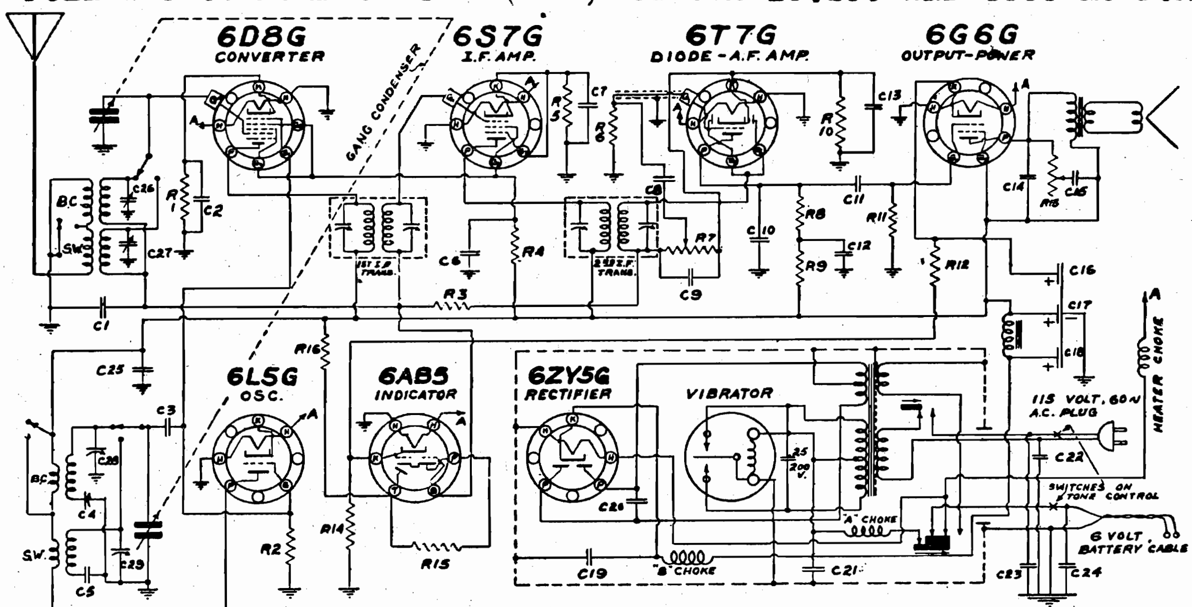
Part No.	Req.	Description
2163		Cable, Drive, Approx. 20"
3351	1	Cond. 8 MF. 225 V. Reg. Wet El.
3774		Schematic Diagram
3775		Tube Sticker
2560	1	Condenser, Padder
2597	4	Condenser, Trimmer, 1-10
1611	1	Condenser, Trimmer, 5-35
3157	1	Condenser, Trimmer
1286	1	Condenser, Mica, .00025
2780	1	Condenser, Mica, .00005
2741	1	1 Condenser, Mica, 1330
2872	1	Variable Condenser
576	2	Condenser, .02, 400 V., Paper
572	2	Condenser, .1, 200 V., Paper
565	1	Condenser, .01, 200 V., Paper
581	1	Cond., .005, 600 V., Paper
2792	1	Condenser, .2, 200 V., Paper
2793	1	1 Cond., .006, 600 V., Paper
3352	1	Condenser, .2, 400 V., Paper
575	1	Condenser, .1, 400 V., Paper
624	2	Resistor, 1/3 W., 1 Meg.
2731	1	Resistor, 1/3 W., 500 M.
2730	1	Resistor, 1/3 W., 200 M.
631	2	Resistor, 1/3 W., 50 M.
617	1	Resistor, 1/3 W., 20 M.
3353	1	Resistor, 2 W., 250 Ohm
2689	2	Resistor, 1/3 W., 100 Ohm
2883	1	Resistor, 1/3 W., 5 M.
2882	1	Resistor, 1/3 W., 15 Ohm
2881	1	Resistor, 1/3 W., 400 M.
2880	1	Resistor, 1/3 W., 100 M.
636	1	Resistor, 1/3 W., 40 M.
2724	1	Switch, Band
2837	1	Coil, Antenna
2772	1	Coil, Oscillator
2845	1	Coil, B. C. Antenna
3343	1	Transformer, Power
3344	1	Transformer, 1st I. F.
3345	1	Transformer, 2nd I. F.
3375	1	Cond. Elec. 16 MF., 400 V
2908	1	Spring, Drive Cable
3374	1	Indicator
2378	1	Pointer
2726	1	Control, Vol. & Switch
2737	1	Control, Tone
1732	1	A. C. Cord
3778	1	Book, Instruction
2897	1	Escutcheon Tuning Tube
2981	1	Tuning Tube Cable
3710	1	Speaker, 8"
3377	1	Escutcheon

MODEL D716(1938-9)
Schematic,Socket
Trimmers,Alignment

WESTERN AUTO SUPPLY CO.

Seven Tube Combination 6 Volt Battery and 110-120 Volt AC 60 Cycle Dual Wave Superheterodyne

ALIGNMENT:
FOLLOW PROCEDURE OF D709 (1938) BUT USE 18.100 AND 6000 KC FOR S.W.



This receiver requires a good ground.

IF PEAK 456 KC

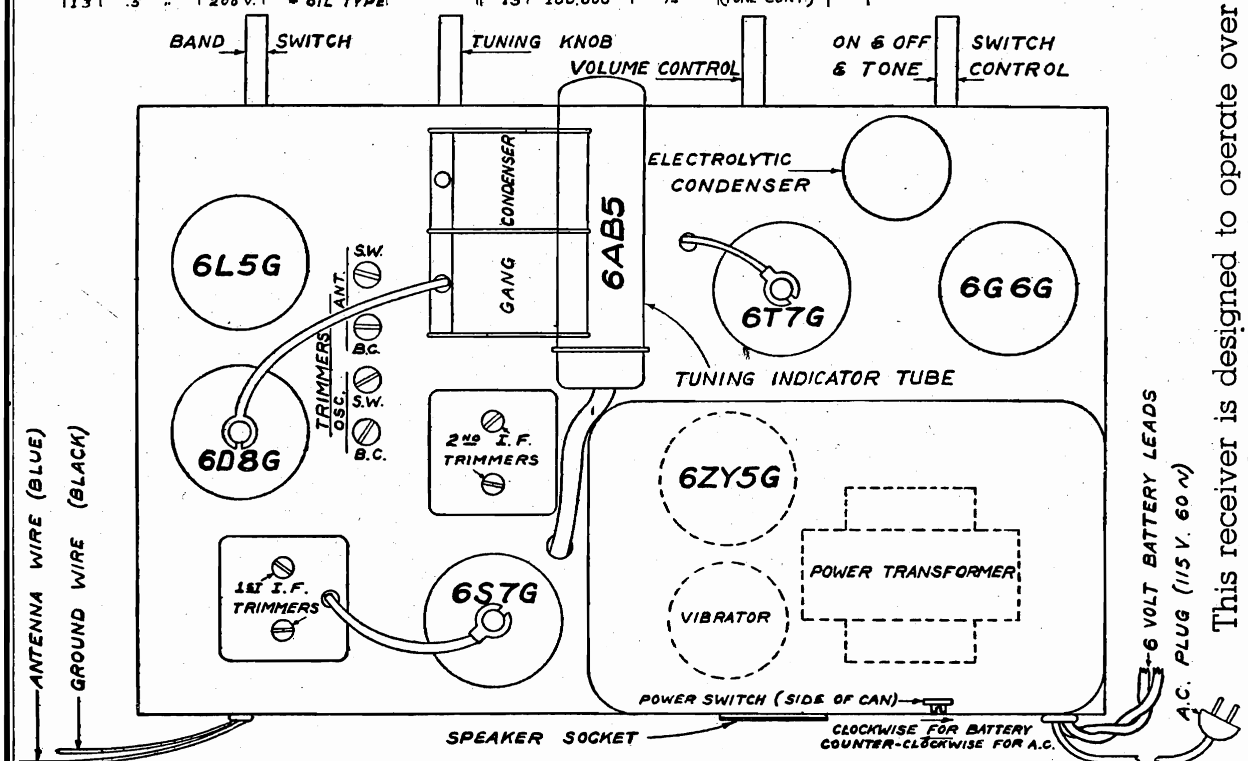
CONDENSERS

Nº	CAPACITY	TYPE	Nº	CAPACITY	TYPE
1	.05 Mfd.	200 V.	14	.005 Mfd.	600 V.
2	.05 Mfd.	200 V.	15	.05 "	400 V.
3	50 uuf.	MICA	16	5. "	25 V.
4	300-600 uuf	MICA	17	8. "	200 V.
5	4000 uuf	M. ±5%	18	8. "	200 V.
6	.1 Mfd.	200 V.	19	.01 "	600 V.
7	.05 "	200 V.	20*	.015 "	1000 V.
8	.01 "	400 V.	21	.5 "	10 V.
9	250 uuf	MICA	22	.05 "	400 V.
10	250 "	"	23	.01 "	600 V.
11	.01 Mfd.	400 V.	24	.5 "	10 V.
12	.1 "	200 V.	25	.1 "	200 V.
13	.5 "	200 V.		* OIL TYPE	

RESISTORS

Nº	OHMS	WATTS	SPL. TOL.
1	1500	¼	± 10%
2	40,000	¼	± 10%
3	1,000,000	¼	
4	30,000	¼	
5	1,500	¼	± 10%
6	1,000,000	¼	
7	500,000	¼	(VOL. CONT.)
8	500,000	¼	
9	200,000	¼	
10	10,000	¼	± 10%
11	500,000	¼	
12	325	¼	± 10%
13	100,000	¼	(TONE CONT.)
14	110	¼	± 10%
15	250,000	¼	
16	15,000	¼	

BAND SWITCH IN BROADCAST POSITION
POWER SWITCH IN BATTERY POSITION.
I.F. - 456 K.C.
C26 TO C29, 2-20 uuf TRIMMERS.



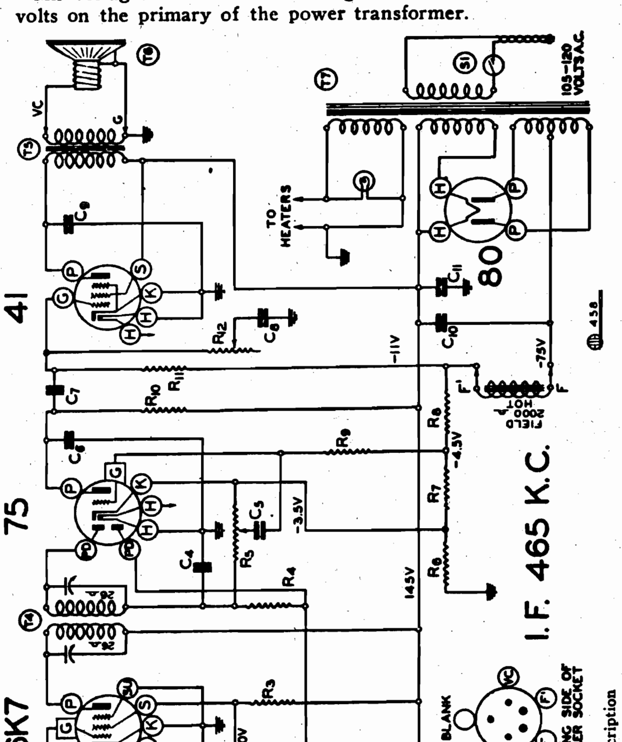
This receiver is designed to operate over two tuning ranges; from 535 to 1730 Kilocycles (KC) (173.4 to 561 meters), and from 5650 to 18,100 Kilocycles (KC) (16.5 to 53 Meters).

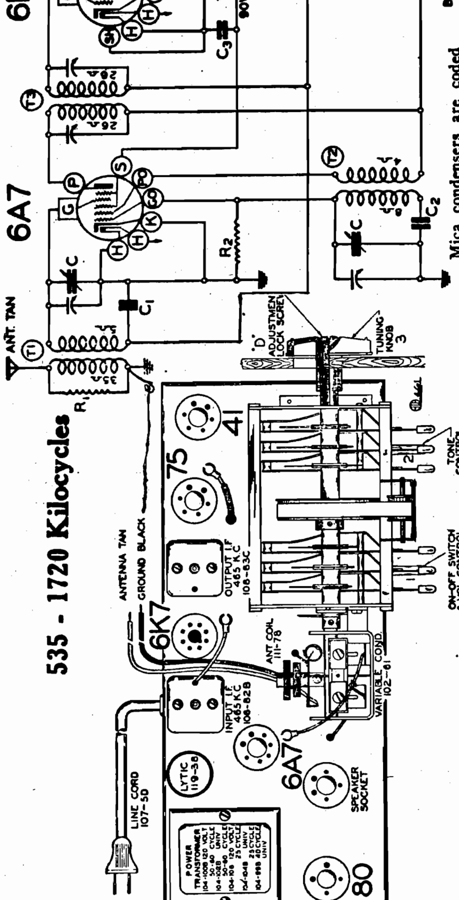
MODEL D717(1937)
Schematic,Voltage Alignment,Trimmers Socket,Tuner

WESTERN AUTO SUPPLY CO.

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

All voltages as indicated on diagram are measured with 115 volts on the primary of the power transformer.





PROCEDURE FOR SETTING THE "PRESTO-MATIC" LEVERS:

There are six levers on the dial by means of which six stations may be selected.

Press down any one of the six "Presto-matic" levers. Holding it down, tune in by means of knob No. 3 any one of your favorite stations. Turn the tuning knob very slowly back and forth until the signal is clearest. The station will then be accurately tuned in.

Release the lever and press down any other "Presto-matic" lever and again hold it down, tune in by means of knob No. 3 another favorite station.

When you have selected all your favorite stations, hold tuning knob No. 3 securely and with a coin or a screw driver, tighten the special locking screw ("D") in the center of the tuning knob, (See Fig. 1).

This screw will lock in place all the stations you have selected on the "Presto-matic" levers. (Note: Locking Screw "D" is loose when radio is shipped from factory).

If you should desire to change any station you selected to another, hold tuning knob No. 3 securely, loosen locking screw ("D") and select the new station as explained.

ALIGNING I.F. TRANSFORMERS: (465 K.C.):

Part No. 108-83C Output I.F. Transformer
Part No. 108-82B Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

1. With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
   (a) Connect external oscillator set at 465 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6K7 tube, and adjust the output I.F. transformer (No. 108-83C) to resonance.
   (b) Move oscillator output clip from grid of 6K7 to grid of 6A7 and adjust input I.F. transformer (No. 108-82B) to resonance.
   (c) With oscillator still connected to 6A7, readjust output I.F. transformer (108-83C) if necessary.

R.F. ALIGNMENT: (535-1720 K.C.)

1. With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 200 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
   (a) With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
   (b) Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
   (c) Check sensitivity at 600 and 1000 kilocycles.

Mica condensers are coded with an additional dot indicating tolerance:

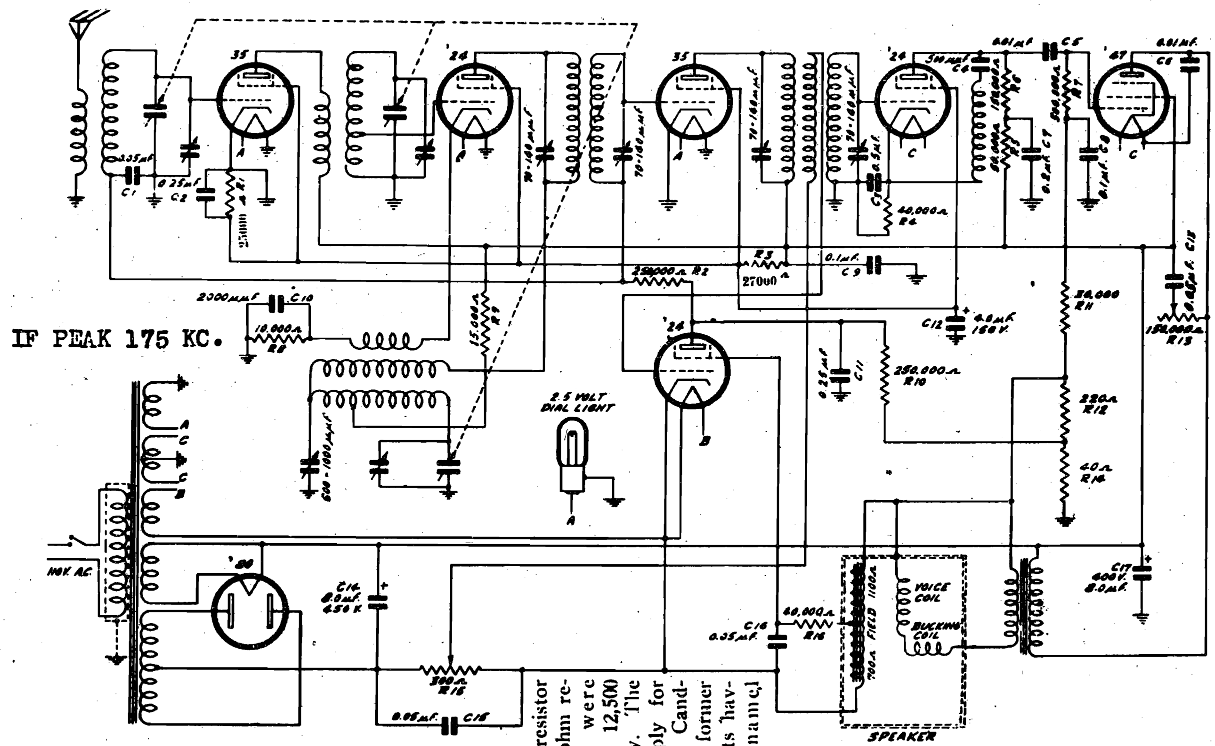
Color of Dot	Tolerance percent
White	2½%
Green	5%
Blue	10%
Yellow	15%
Red	20%
None	More Than 20%

(No. 7K 866000 and up)

Part No.	Circuit Diagram Reference	Description
		CONDENSERS
100-9	C1	.05 x 200 Volt Tubular
100-11	C5	.01 x 400 Volt Tubular
100-19	C9	.006 x 600 Volt Tubular
100-26	C7	.02 x 400 Volt Tubular
100-71	C8	.004 x 600 Volt Tubular
100-74	C3	.1 x 400 Volt Tubular (with Bracket)
119-38	C10, C11	5MFD x 200 w.v.; 5MFD x 250 w.v. Electrolytic Filter
129-2	C6	.0005 Mica - Type MT - 20%
129-5	C4	.0001 Mica - Type MT - 20%
129-75	C2	.0003386 Mica Compression Type Padder
		RESISTORS
106-29	R6, R7, R8	100 Ohm; 33 Ohm; 200 Ohm Metal Clad Resistor
130-4	R4, R9	3 Meg Ohm - 1/3 Watt - 20%
130-9	R10	200M Ohm - 1/3 Watt - 20%
130-12	R2	50M Ohm - 1/3 Watt - 20%
130-17	R1	10M Ohm - 1/3 Watt - 20%
130-118	R11	600M Ohm - 1/3 Watt - 20%
130-149	R3	15M Ohm - 1/3 Watt - 20%
		COILS
108-82B	T3	Input I.F. Coil Assembly Complete With Can
108-83C	T4	Output I.F. Coil Assembly Complete With Can
110-62	T2	Oscillator Coil Assembly Complete
111-78	T1	Antenna Coil Assembly Complete
		SOCKETS
121-6		Six Prong Socket - Marked "41"
121-6		Six Prong Socket - Marked "75"
121-7		Seven Prong Socket - Marked "6A7"
121-8		Five Prong Socket - Marked "SPKR"
121-9		Four Prong Socket - Marked "80"
121-27		Eight Prong Octal Socket - Marked "6K7"
		TRANSFORMERS
104-100B	T7	Power Transformer 50/60 Cycle 105-115 Volt
104-102B		Universal 50/60 Cycle Transformer
104-108		Power Transformer 25/60 Cycle - 105-115 Volts
104-104B		Universal 25/60 Cycle Transformer
104-99B		Universal 40/60 Cycle Transformer
		SPEAKER
114-97	T6	Five Inch Dynamic Speaker (Field 2000 Ohm)
		MISCELLANEOUS
101-59	R12	Tone Control (1 Meg Ohm)
101-94	R5, S1	Volume Control and Switch (1 Meg Ohm)
102-61	C	Two Gang Variable Condenser
105-53	T5	Output Transformer (For Speaker)
107-5D		Line Cord and Plug
128-109		Wood Knob (Spring Type)
128-126		Special Tuning Knob

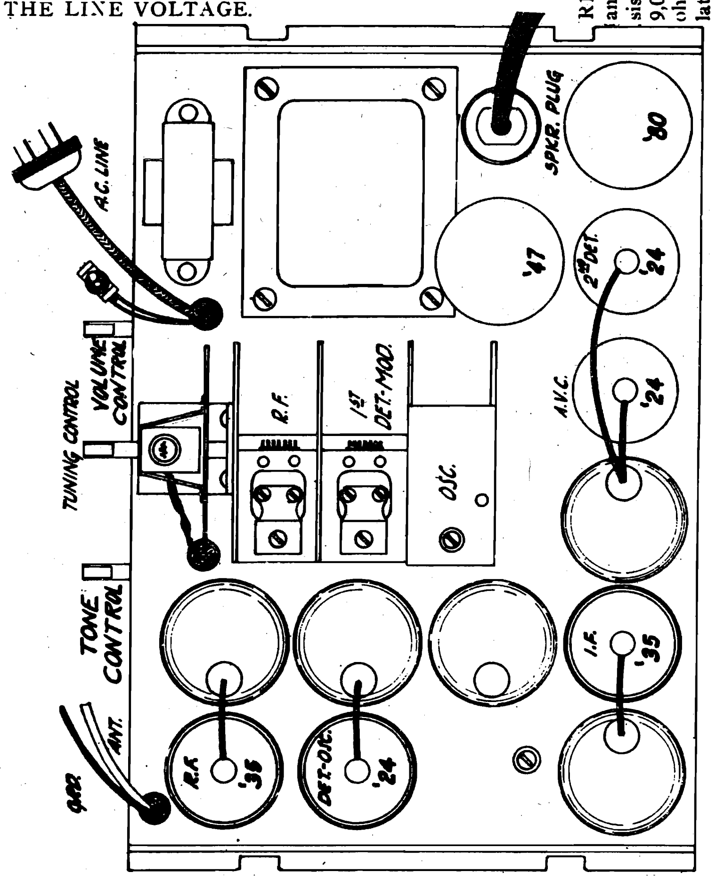
MODEL S720
Schematic, Voltage
Socket, Trimmers

WESTERN AUTO SUPPLY CO.



IF PEAK 175 KC.

TURN THE VOLUME CONTROL ALL THE WAY ON, CONNECT THE ANTENNA AND GROUND LEADS TOGETHER AND TURN THE GANG CONDENSER PLATES ALL THE WAY OUT. CHECK THE LINE VOLTAGE.



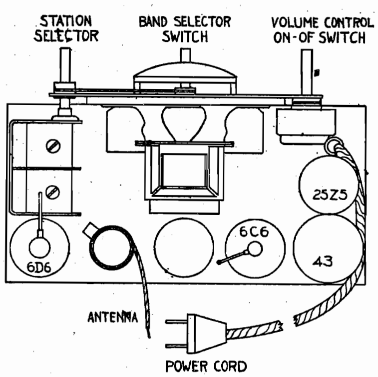
R1—25,000 ohm resistor and R3—27,000 ohm resistor formerly were 9,000 ohms and 12,500 ohms respectively. The latter values apply for all sets having Cand-ohm units; the former values for all sets having vitreous enamel units.

The voltages shown are measured to the cathode of the heater type tubes and to filament of the '47 Pentode.

TUBE	CIRCUIT	LINE VOLTAGE 90 V.	100 V.	110 V.	120 V.	130 V.
R.F. '35	Screen-Grid Plate	70 192	78 213	85 234	92 256	100 277
Det.-Modulator '24	Screen-Grid Plate	70 192	78 213	85 234	92 256	100 277
I.F. '35	Screen-Grid Plate	70 192	78 213	85 234	92 256	100 277
2nd Detector '24	Screen-Grid Plate	70 154	78 171	85 187	92 204	100 221
Audio '47	Accelerating Grid Plate	199 181	221 200	244 220	267 240	289 260
A. V. C. '24	Grid Screen-Grid	12.3 34.5	13.7 38.5	15.1 42	16.5 46	17.8 50
Rectifier '80	Plate to Plate Current (both plates)	308 52.3 MA	342 58.1 MA	376 64 MA	410 69.7 MA	445 75.5 MA

WESTERN AUTO SUPPLY CO.

MODEL D729(1937)
MODEL D730(1938-9)
Schematics, Socket
Trimmers, Alignment



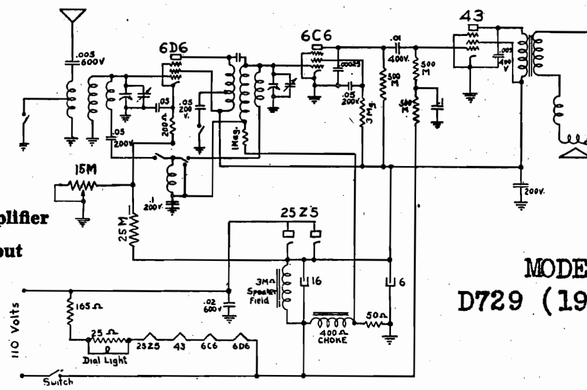
Ranges

540 and 1600 K.C.

75 to 200 meters

Tubes

1—No. 6D6 R. F. Amplifier
1—No. 6C6 Detector
1—No. 43 Power Output
1—No. 25Z5 Rectifier

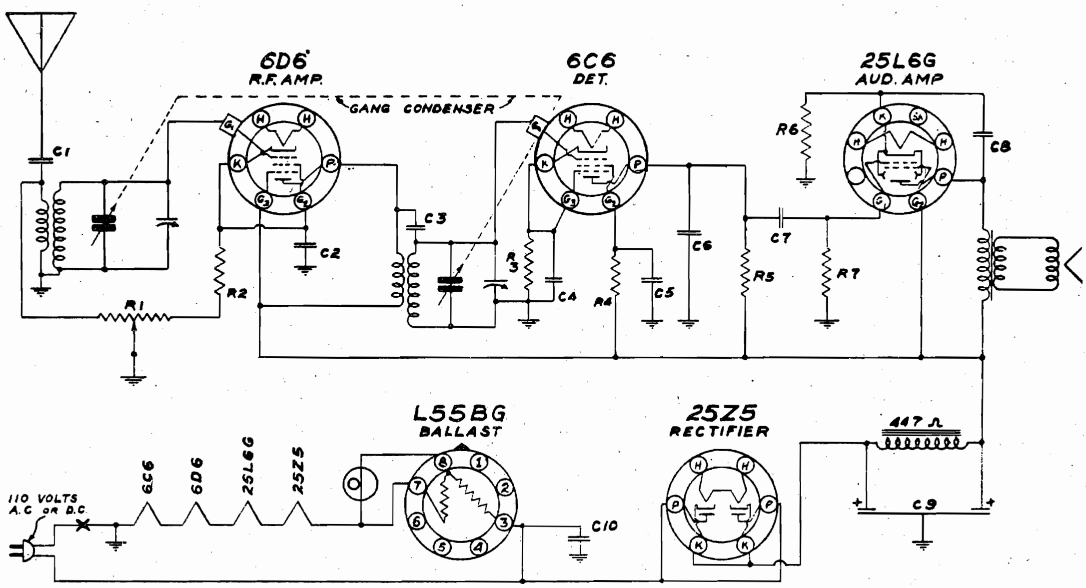


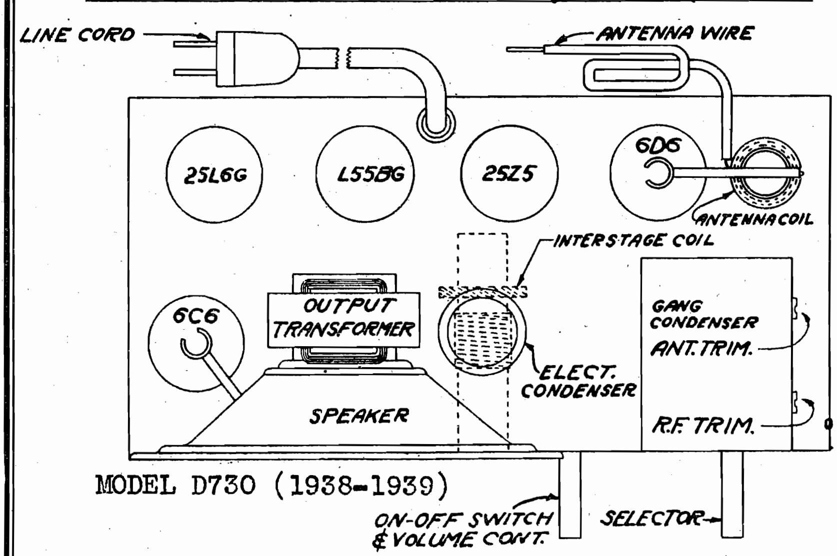
MODEL D729 (1937)

MODEL D729 (1937)

If this receiver should fail to operate when connected to direct current, reverse the attachment plug in the light socket.

This receiver is designed to operate on 105 to 125 volts, direct or alternating current.





MODEL D730 (1938-1939)

MODEL D730 (1938-1939)

CONDENSERS

No	CAPACITY	TYPE
C1	.002 MFD.	400 V.
C2	.1 "	200 V
C3	1.5 μμf.	GIMMIK
C4	.25 Mfd.	200 V.
C5	.1 "	200 V.
C6	.0002 "	600 V.
C7	.01 "	400 V.
C8	.02 "	400 V.
C9	16.0-16.0	150 V. ELECT.

RESISTORS

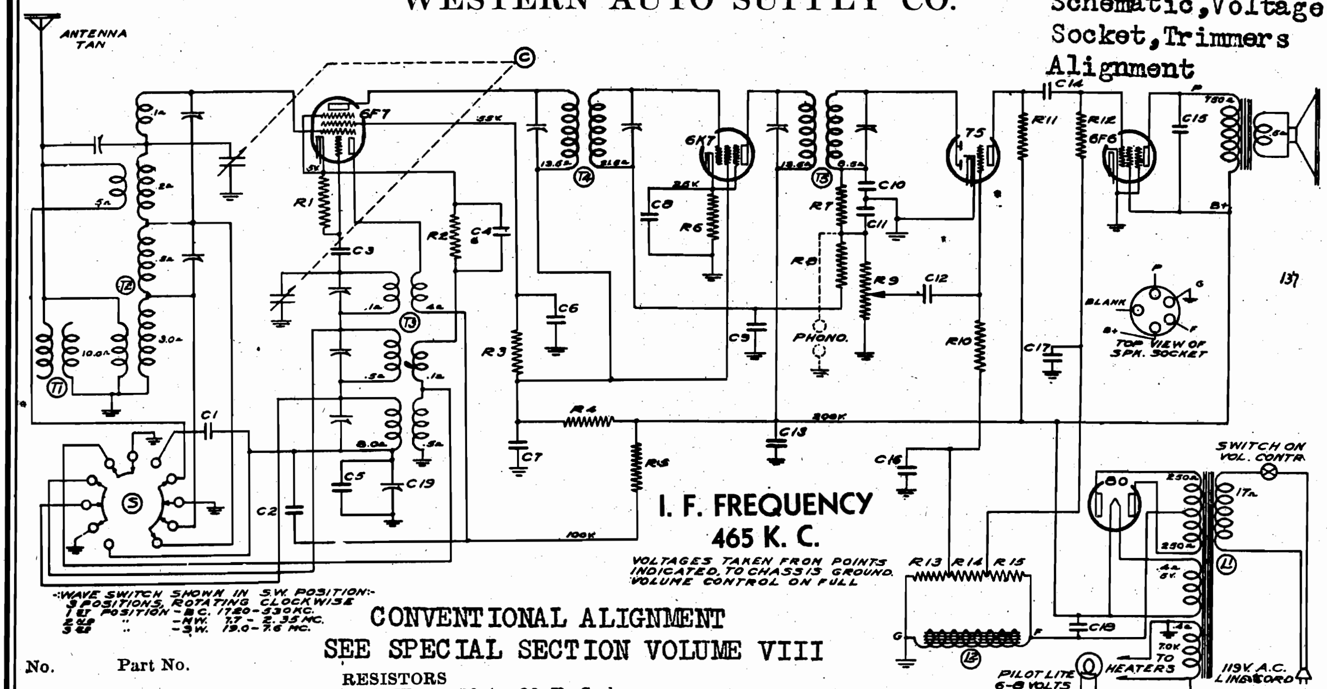
No	OHMS R.	WATTS	
R1	75,000		VOL. CONT.
R2	250	1/4	
R3	25,000	1/4	
R4	2,000,000	1/4	
R5	500,000	1/4	
R6	110	1/2	WIRE WOUND
R7	500,000	1/4	
C10	.1 Mfd.	400 V.	

ALIGNMENT DATA AND SERVICING

Connect a signal generator to the antenna lead of the receiver through a 100 Mmf. condenser. Set the dial pointer at 1400 KC. Set the generator at 1400 KC. Now adjust the antenna and RF trimmers of the gang condenser to maximum output.

WESTERN AUTO SUPPLY CO.

MODEL D731(1935)
Schematic, Voltage
Socket, Trimmers
Alignment

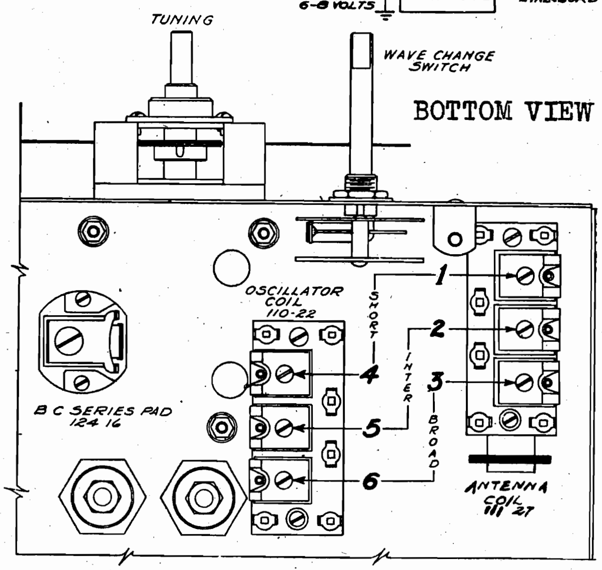


CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOLUME VIII

No.	Part No.	
		RESISTORS
R1.	130-12	50M Ohm—⅓ Watt—20%—20 V. Carbon
R2.	130-39	700 Ohm—⅓ Watt—20%—20 V. Carbon
R3.	130-20	100M Ohm—⅓ Watt—20%—50 V. Carbon
R4.	130-44	25M Ohm—½ Watt—20%—150 V. Carbon
R5.	130-42	20M Ohm—½ Watt—20%—100 V. Carbon
R6.	130-32	250 Ohm—⅓ Watt—20%—10 V. Wire Wound
R7.	130-12	50M Ohm—⅓ Watt—20%—20 V. Carbon
R8.	130-3	500M Ohm—⅓ Watt—20%—100 V. Carbon
R9.	101-18	500M Ohm Volume Control
R10.	130-19	1 meg Ohm—⅓ Watt—20%—100 V. Carbon
R11.	130-11	250M Ohm—⅓ Watt—10%—100 V. Carbon
R12.	130-11	250M Ohm—⅓ Watt—10%—100 V. Carbon
R13.	130-48	15M Ohm—⅓ Watt—10%—20 V. Carbon
R14.	130-47	180M Ohm—⅓ Watt—10%—100 V. Carbon
R15.	130-46	800M Ohm—⅓ Watt—10%—100 V. Carbon
		CONDENSERS
C1.	129-23	.002 Mica—MW—5%
C2.	100-20	.1 x 120 V.—25%
C3.	129-5	.0001 Mica—MT—20%
C4.	100-20	.1 x 200 V.—25%
C5.	129-24	.00038—MT—5%
C6.	118-1	.1x 200 V.—Dual Plus 50%; Minus 10%
C7.	118-1	.1 x 200 V.—Dual Plus 50%; Minus 10%
C8.	118-1	.1 x 200 V.—Dual Plus 50%; Minus 10%
C9	118-1	.1 x 200 V.—Dual Plus 50%; Minus 10%
C10.	129-51	.000125—Mica MT—20%
C11.	129-51	.000125—Mica MT—20%
C12.	100-22	.05 x 200 V.—25%
C13.	103-7	.8 mfd. x 300 V. Electrolytic
C14.	100-11	.01 x 400 V.—25%
C15.	100-19	.006 x 600 V.—25%
C16.	118-1	.1 x 200 V.—Dual Plus 50%: Minus 10%
C17.	118-1	.1 x 200 V.—Dual Plus 50%: Minus 10%
C18.	103-6	.8 mfd. x 350 V. Electrolytic
C19.	124-5	B. C. Series Pad J-3-S.
		MISCELLANEOUS
T1.	105-10	Antenna Choke Coil
T2.	111-27	Antenna Coil
T3.	110-22	Oscillator Coil
T4.	108-38A	Input I.F. Transformer
T5.	108-40	Output I.F. Transformer
C	102-12	Two Gang Variable Cond.
S	125-6	Wave Change Switch
L1.	104-14A	Power Transformer 50/60 Cycle
L1.	104-18	Power Transformer 25 Cycle
L2.	114-11	Speaker—Field Resistance 1550 Ohms
L1.	104-17	Power Trans. Universal 50/60 Cycle
L1.	104-41	Power Trans. Universal 25 Cycle.

Transformers are available and chassis are sometimes equipped with universal transformers for operation on 40 and 60 cycles and with primary taps for 108, 125, 150, 220 and 250 volts (see instructions) and also sometimes equipped with 25 cycle transformers with 105-115 volt, or 220 volt primaries, not universals.

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the circuit diagrams
IN ORDER TO PREVENT SIGNAL FROM ACTING UPON AVC AND AFFECTING ACCURACY OF VOLTAGE MEASUREMENTS, AERIAL AND GROUND LEADS SHOULD BE SHORT CIRCUITED WHILE MAKING MEASUREMENTS.
All voltages are to be measured with 119 volts on the primary of the power transformer.
Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagrams.
To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.



ALIGNMENT FREQUENCIES

Intermediate Frequency 465 KC
Adjust output then input transformers

Broadcast Band
Adjust trimmer number 6 at 1720 KC
Adjust trimmer number 3 at 1400 KC.
Adjust series pad at 600 KC
Tracking and sensitivity check- 1000 KC

Short wave Band
Adjust trimmer number 4 at 18 MC
Adjust trimmer number 1 at 18 MC
Tracking and sensitivity check- 9 MC

Intermediate Band
Adjust trimmer number 5 at 7 MC
Adjust trimmer number 2 at 7 MC
Tracking and sensitivity check-2.5 MC

Schematic, Voltage
Socket, Trimmers

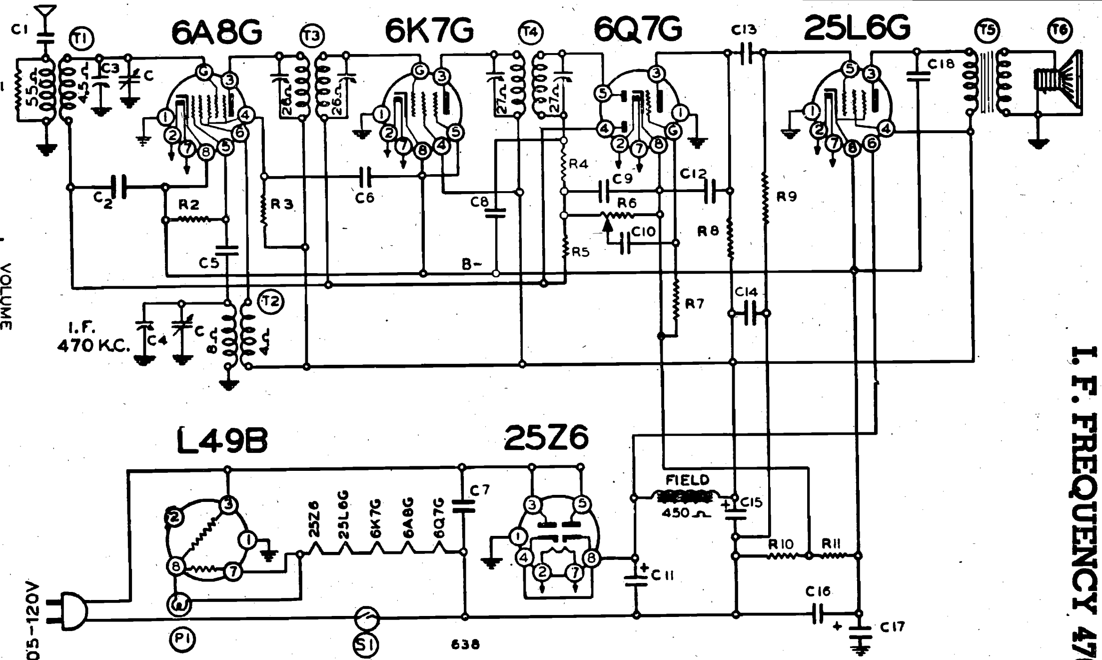
MODEL D731 (1938-9)
5-Lever Model

WESTERN AUTO SUPPLY CO.

FOR TUNER DATA
SEE INDEX

Frequency Range — 535 - 1720 Kilocycles

I. F. FREQUENCY 470 KILOCYCLES



WIRING SIDE OF OCTAL TUBE SOCKET SHOWING LOCATION OF PINS

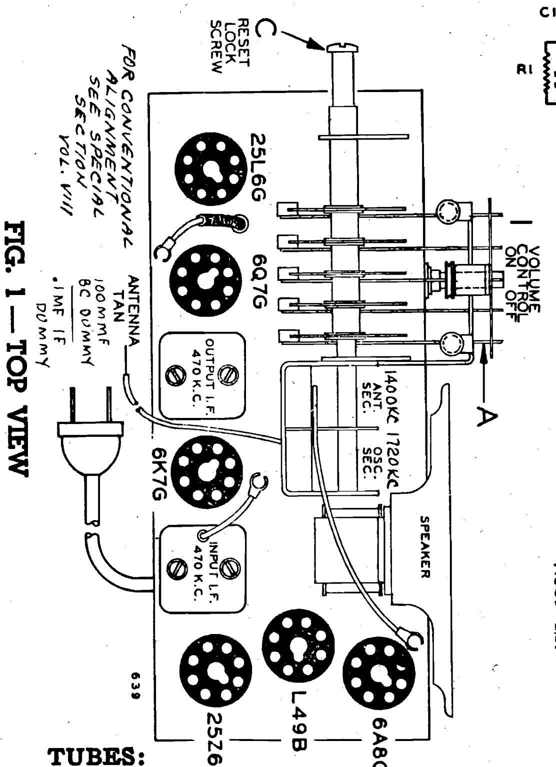


FIG. 1 — TOP VIEW

TUBES:

DESCRIPTION:

The tube complement of this chassis consists of the following octal base glass tubes.

The type and function of each tube is as follows:

1—Type 6A8G Pentagrid Mixer, First Detector-oscillator.
1—Type 6K7G Remote Cut-Off Pentode, I. F. Amplifier (470 K.C.).
1—Type 6Q7G Duplex-Diode Triode Second Detector, A.V.C. and First Audio.
1—Type 25L6G Beam Output Amplifier.
1—Type 25Z6G High Vacuum Rectifier.
1—Type L49B Ballast Tube.

Code No.	Part No.	Description
		RESISTORS
R1	13017	10M ohm—⅓ w.
R2	13012	50M ohm—⅓ w.
R3	130149	15M ohm—⅓ w.
R4	13012	50M ohm—⅓ w.
R5	130170	3 megohm—⅓ w.
R6	101127	Volume control (1 megohm)
R7	130225	15 megohm—⅓ w.
R8	130100	150M ohm—⅓ w.
R9	13011	250M ohm—⅓ w.
R10	130231	75 ohm—⅓ w.
R11	130174	50 ohm—⅓ w.
		CONDENSERS
C	10284	2 gang variable condenser
C1	1292	.0005 mica
C2	10026	.02 x 400 v.
C3		Antenna Trimmer—on gang
C4		Oscillator Trimmer—on gang
C5	12912	.00025 mica
C6	1009	.05 x 200 v.
C7	1001	.1 x 400 v.
C8	1295	.0001 mica
C9	1295	.0001 mica

Code No.	Part No.	Description
C10	10011	.01 x 400 v.
C11	11953C	30 mfd. lytic
C12	12912	.00025 mica
C13	10011	.01 x 400 v.
C14	1009	.05 x 200 v.
C15	11953C	30 mfd. lytic
C16	11953C	40 mfd. lytic
C17	10091	.15 x 400 v.
C18	10067	.025 x 400 v.

NOTE:—C11, 15 and 16—One unit for 60 cycle Use 11953C (30 mfd. 30 mfd. 40 mfd.)
C11, 15 and 16—One unit for 25 cycle Use 11962C (60 mfd. 60 mfd. 40 mfd.)

Code No.	Part No.	Description
		PARTS
T1	111108	Antenna Coil complete
T2	11073	Oscillator Coil complete
T3	10882F	Input I. F.—470 kc. complete
T4	10883F	Output I. F.—470 kc. complete
T5	10560	Output Transformer
T6	114116E	5 inch Dynamic Speaker (450 ohm field)
S1		Off-on switch on volume control
P1	10794	T-44 Pilot Light

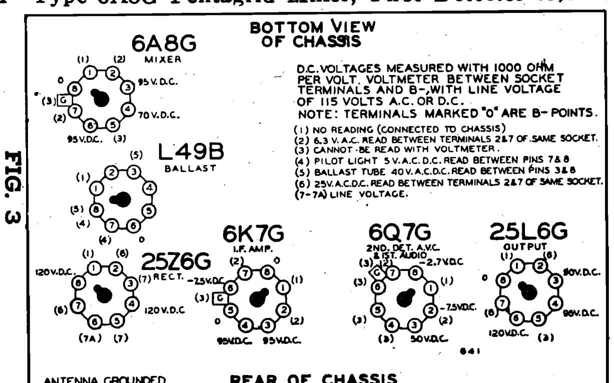
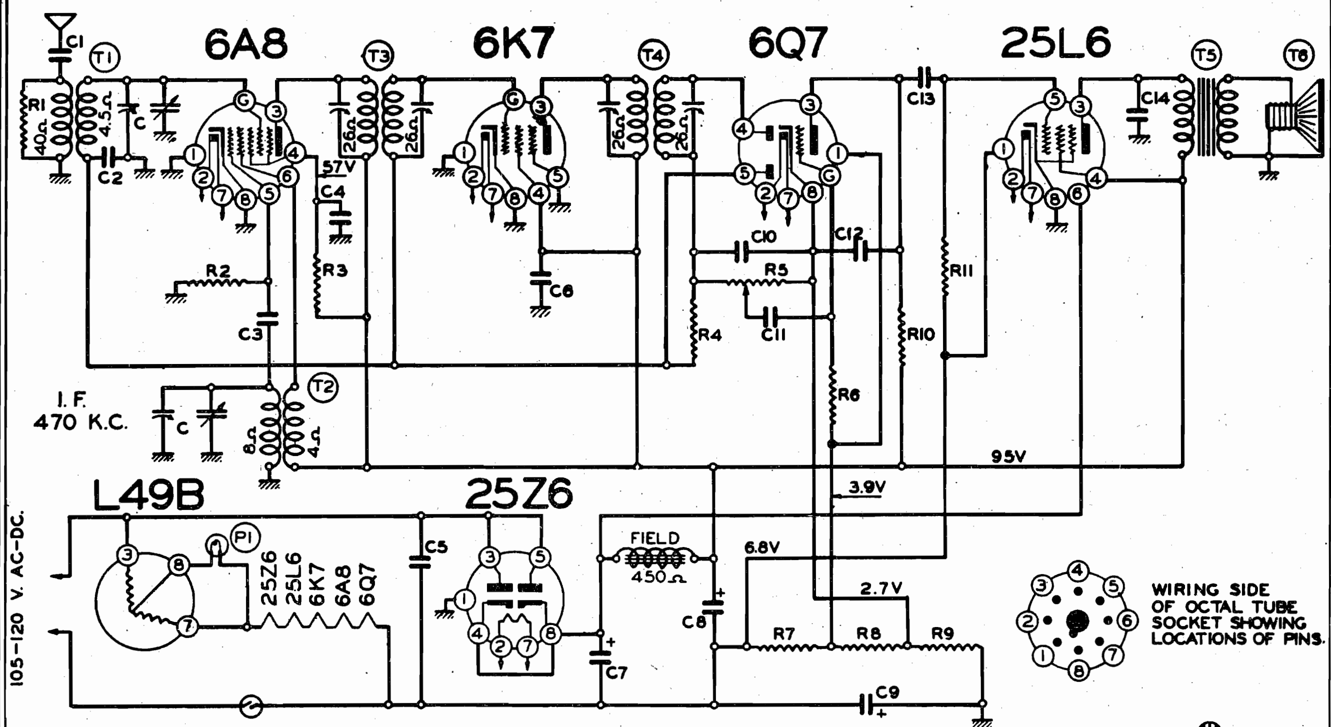


FIG. 3

MODEL D731(1938-9)
4-Lever Model
Schematic,Voltage
Socket,Trimmers

WESTERN AUTO SUPPLY CO.



Frequency Range —
530 - 1720 Kilocycles

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

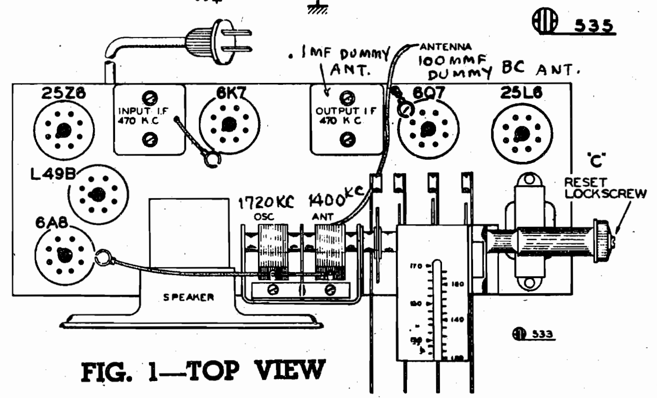


FIG. 1—TOP VIEW

LIST OF REPAIR PARTS (No. 175500 and up)

Part No.	Circuit Diagram Reference	Description	List Price Each
		CONDENSERS	
1001	C5	.1 x 400 Volt Tubular Condenser	$ .25
1009	C2, C4	.05 x 200 Volt Tubular Condenser	.25
10011	C11, C13	.01 x 400 Volt Tubular Condenser	.25
10020	C6	.1 x 200 Volt Tubular Condenser	.25
10067	C14	.025 x 400 Volt Tubular Condenser	.25
11953	C7 C8, C9	30MFD—30MFD—40MFD Lytic Filter Condenser	1.50
1292	C1	.0005 Mica Type Condenser—20%	.25
1295	C10	.0001 Mica Type Condenser—20%	.25
12912	C3, C12	.00025 Mica Type Condenser—20%	.25
		RESISTORS	
13011	R11	250M Ohm—1/3 Watt Resistor—20%	.20
13012	R2	50M Ohm—1/3 Watt Resistor—20%	.20
13019	R6	1 Meg. Ohm—1/3 Watt Resistor—20%	.20
13021	R1	20M Ohm—1/3 Watt Resistor—20%	.20
130100	R10	150M Ohm—1/3 Watt Resistor—20%	.20
130149	R3	15M Ohm—1/3 Watt Resistor—20%	.20
130170	R4	3 Meg. Ohm—1/4 Watt Resistor—25%	.20
130174	R7, R9	50 Ohm—1/3 Watt Resistor—10%	.20
130215	R8	25 Ohm—1/3 Watt Resistor—10%	.20
		COILS	
10882F	T4	Input I. F. Coil Assembly Complete with Can	1.25
10883F	T3	Output I. F. Coil Assembly Complete with Can	1.25
11073	T2	Oscillator Coil Assembly Complete	.50
11192B	T1	Antenna Coil Assembly Complete	.60

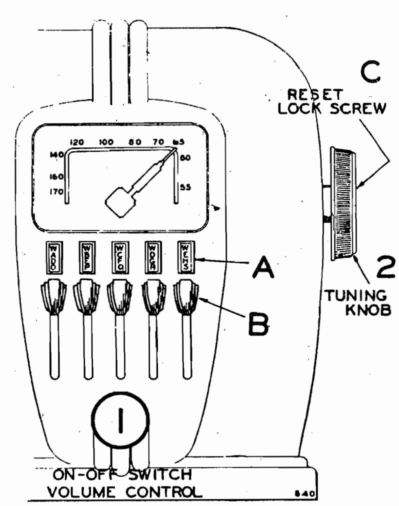


FIG. 2.—FRONT VIEW

FOR SETTING PUSH BUTTONS
SEE INDEX

MODELS D731(1938-9)
4 and 5-Lever Models
Alignment, Tuner Data

WESTERN AUTO SUPPLY CO.

PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:

There are four, or five levers on the dial by means of which stations my be selected, (See "B" Fig. 2) see note

Make a list of local stations you tune in regularly; any number up to and including four.

Punch out from the set of station call letter tabs supplied, the call letters of the stations you have selected.

Above each automatic tuner lever an opening in the cabinet is provided for inserting the call letter tabs, (See "A" Fig. 2).

Insert the call letter tabs in the rectangular openings in the cabinet above each of the automatic tuner levers. One of the small celluloid tabs supplied should be snapped into place over each of the station call letter tabs.

Press DOWN ALL THE WAY any one of the automatic tuner levers. Holding it down FIRMLY, tune in by means of the tuning knob (No. 2) the station indicated on the station call letter tab above this lever. Turn the tuning knob very slowly back and forth (while still holding lever in downward position) until the signal is clearest. The station will then be accurately tuned in. Release the lever.

Press down another automatic tuner lever. Holding it down FIRMLY, carefully tune in the station indicated on the call letter tab above this lever. Release this lever.

Follow this procedure until you have selected all of your favorite stations.

Now rotate the tuning knob (No. 2) to the right (clockwise) as far as it will turn, and with a coin (half dollar), tighten the special locking screw ("C") in the center of the tuning knob, (See Fig. 1).

It is VERY IMPORTANT that this locking screw is turned until it is ABSOLUTELY TIGHT.

This screw will lock in place all the stations you have selected on the automatic tuner levers. (Note: Locking screw "C" is loose when radio is shipped from factory).

If you should desire to change any station you selected to another, hold the tuning knob No. 2 securely and with a coin loosen the locking screw "C" one or two turns; select the new station as explained. **Be sure to retighten the locking screw,** otherwise the stations you have selected will not stay adjusted to the levers.

The automatic dial is now set up for quick tuning.

NOTE:
For arrangement of levers for 5 lever model see Fig. 2 on schematic page for 5 lever model.

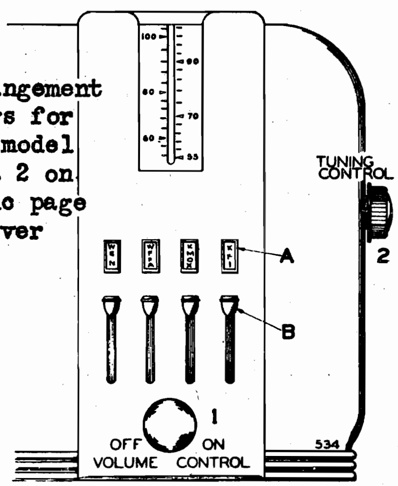


FIG. 2—FRONT VIEW

DESCRIPTION:

The tube complement of this chassis consists of the following octal base glass tubes which are interchangeable with metal tubes.

The type and function of each tube is as follows:

1—Type 6A8G Pentagrid Mixer, First Detector-oscillator.
1—Type 6K7G Remote Cut-Off Pentode, I.F. Amplifier (470 K.C.)
1—Type 6Q7G Duplex-Diode Triode Second Detector, A.V.C. and First Audio.
1—Type 25L6G Beam Output Amplifier.
1—Type 25Z6G High Vacuum Rectifier.
1—Type L49B Ballast Tube.

SERVICE NOTES:

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

All voltages as indicated on diagram are measured with 117 volt A.C. or D.C. line.

Resistances of coil windings are indicated in ohms on the schematic circuit diagram.

To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating which is known to be good, until the defective unit is located.

Excessive hum, stuttering, low volume and a reduction in all D.C. voltages is usually caused by a shorted electrolytic condenser; open by-pass condensers frequently cause oscillation and distorted tone.

ALIGNING INSTRUCTIONS:

CAUTION:—No aligning adjustments should be attempted without first thoroughly checking over all other possible causes of trouble, such as poor installations, open or grounded antenna systems, low line voltages, defective tubes, condensers and resistors. In order to properly align this chassis, an oscillator (generator) is absolutely necessary. No aligning adjustments should be attempted with the chassis in the cabinet.

All adjustments should be made with a non-metallic screw driver.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer or by means of an adapter between the plate and screen terminals of the type 25L6G output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

ALIGNING I.F. TRANSFORMERS: (470 K.C.):

Part No. 108-83F Output I.F. Transformer
Part No. 108-82F Input I.F. Transformer

These I.F. transformers have two adjustments, both of which are accessible from the top of chassis (see Fig. 1).

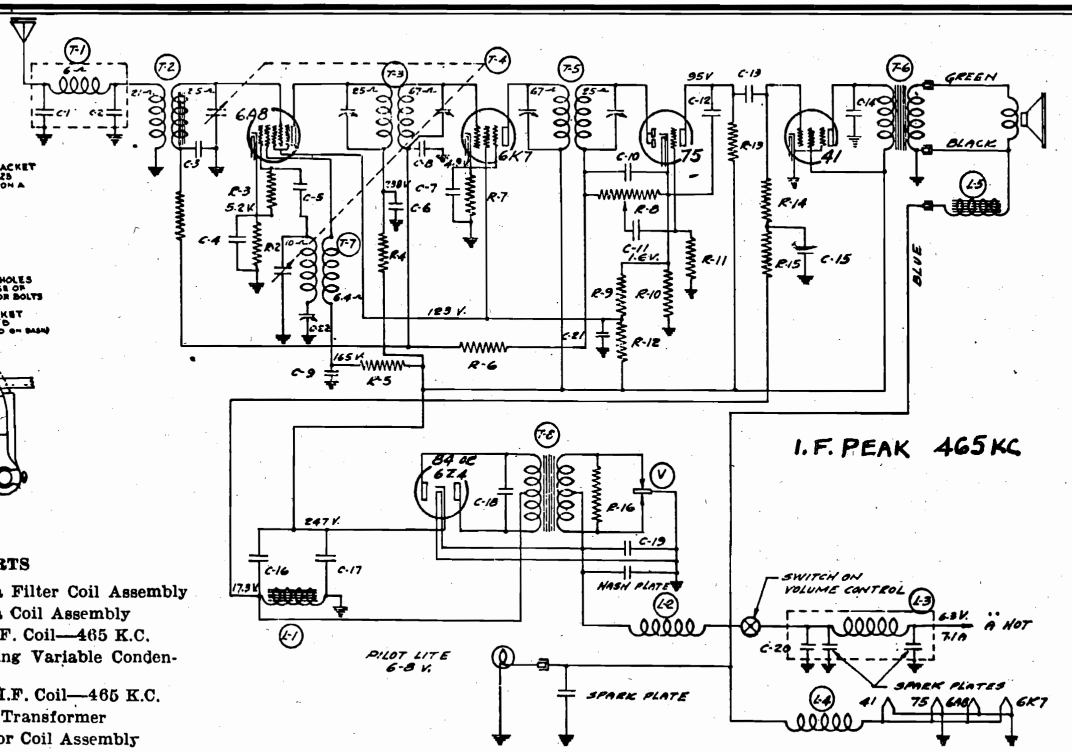
1. With volume control full on (the extreme right of its rotation), and with the variable condenser set to approximately 1400 kilocycles, make the following adjustments:
   (a) Connect external oscillator set at 470 kilocycles, in series with .1 mfd. condenser, to the control grid cap of the type 6K7G tube, and adjust the output I.F. transformer (No. 108-83F) to resonance.
   (b) Move oscillator output clip from grid of 6K7G to grid of 6A8G and adjust input I.F. transformer (No. 108-82F) to resonance.
   (c) With oscillator still connected to 6A8G, readjust output I.F. transformer (108-83F) if necessary.

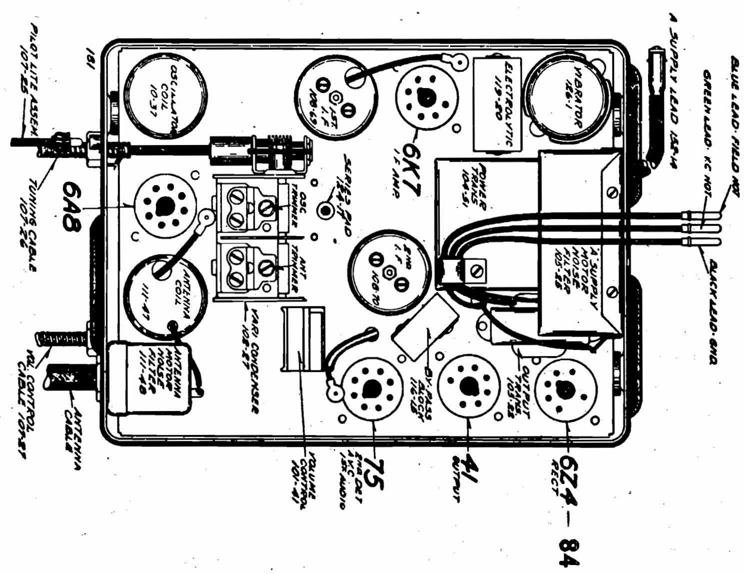
R.F. ALIGNMENT: (530-1720 K.C.)

1. With gang condenser in its minimum capacity position, plates entirely out of mesh, connect an external oscillator in series with a 100 mmf. condenser to the antenna lead and chassis ground and make the following adjustments:
   (a) With external oscillator set at 1720 kilocycles, adjust oscillator trimmer to resonance. This adjustment is on the top of rear section of variable gang condenser. (See Fig. 1).
   (b) Re-set external oscillator to 1400 kilocycles, rotate condenser, pick up oscillator signal and adjust antenna trimmer to resonance. (Top of front section of gang condenser).
   (c) Check sensitivity at 600 and 1000 kilocycles.

MODEL D734(1935)
Schematic, Voltage
Socket, Trimmers

WESTERN AUTO SUPPLY CO.





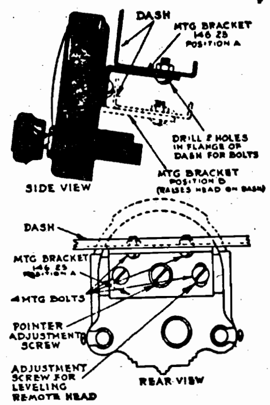
CONDENSERS

C1	129-3	.00002 Mica—"0"—20%
C2	129-49	.00009 Mica—"0"—5%
C3	100-9	.05x200 Volt
C4	100-6	.25x200 Volt
C5	129-21	.0002 Mica—"MT"—"0"—20%
C6	100-1	.1 x400 Volt 50%—10%
C7	100-33	.1 x200 Volt 50%—10%
C8	100-9	.05x200 Volt 25%—25%
C9	100-1-B	.1 x400 Volt 50%—10%
C10	129-12	.00025 Mica—"MT"—"0"—20%
C11	100-9	.05 x200 Volt 25%—25%
C12	129-5	.0001 Mica—"MT"—"0"—20%
C13	116-15	.05 x400 Volt
C14	116-15	.007x800 Volt
C15	100-33	.1x200 Volt 50%—10%
C16	119-20	8.0 Mfd. Electrolytic Condenser—350 Working Volts
C17	119-20	4.0 Mfd. Electrolytic Condenser—350 Working Volts
C18	100-36	.01x1400 Volt—10%
C19	100-35	.5 x 200 Volt 50%—10%
C20	100-35	.5 x 200 Volt 50%—10%
C21	100-33	.1 x 200 Volt 50%—10%
C22	124-17	Single Padder J-4-S

NOTE: C-13 and C-14 in one unit—part number 116-15.

RESISTORS

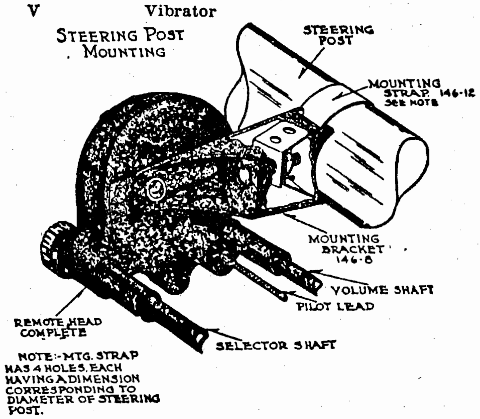
R1	130-20	100M Ohm—⅓ Watt—20% 50 Volt—Carbon
R2	130-79	400 Ohm—⅓ Watt—10% 10 Volt—Carbon
R3	130-94	50M Ohm—⅓ Watt—10% 10 Volt—Carbon—Ins.
R4	130-23	2M Ohm—⅓ Watt—20% 10 Volt—Carbon
R5	130-42	20M Ohm—⅓ Watt—20% 100 Volt—Carbon—Ins.
R6	130-68	1 Meg Ohm—⅓ Watt—10% 20 Volt—Carbon
R7	130-79	400 Ohm—⅓ Watt—10% 10 Volt—Carbon
R8	101-41	500M Ohm—Volume Control and Switch
R9	130-106	50M Ohm—½ Watt—10% 100 Volt—Carbon—Ins.
R10	130-101	600 Ohm—⅓ Watt—10% 10 Volt—Carbon—Ins.
R11	130-68	1 Meg Ohm—⅓ Watt—10% 20 Volt—Carbon
R12	130-95	12M Ohm—⅓ Watt—10% 100 Volt—Carbon
R13	130-3	500M Ohm—⅓ Watt—20% 100 Volt—Carbon
R14	130-5	300M Ohm—⅓ Watt—20% 10 Volt—Carbon
R15	130-45	250M Ohm—⅓ Watt—20% 20 Volt—Carbon—Ins.
R16	130-84	200 Ohm—⅓ Watt—20% 10 Volt—Carbon—Ins.



PARTS

T1	111-48	Antenna Filter Coil Assembly
T2	111-47	Antenna Coil Assembly
T3	108-69	Input I.F. Coil—465 K.C.
T4	102-27	Two Gang Variable Condenser
T5	108-70	Output I.F. Coil—465 K.C.
T6	105-22	Output Transformer
T7	110-37	Oscillator Coil Assembly
T8	104-51	Power Transformer
L1	105-23	Filter Choke
L2	105-19	"A" Choke
L3	105-25	"A" Filter Assembly
L4	105-24	"A" Choke
L5	114-34	5¼" Speaker (Field resistance 4 ohms)
V		Vibrator

STEERING POST MOUNTING



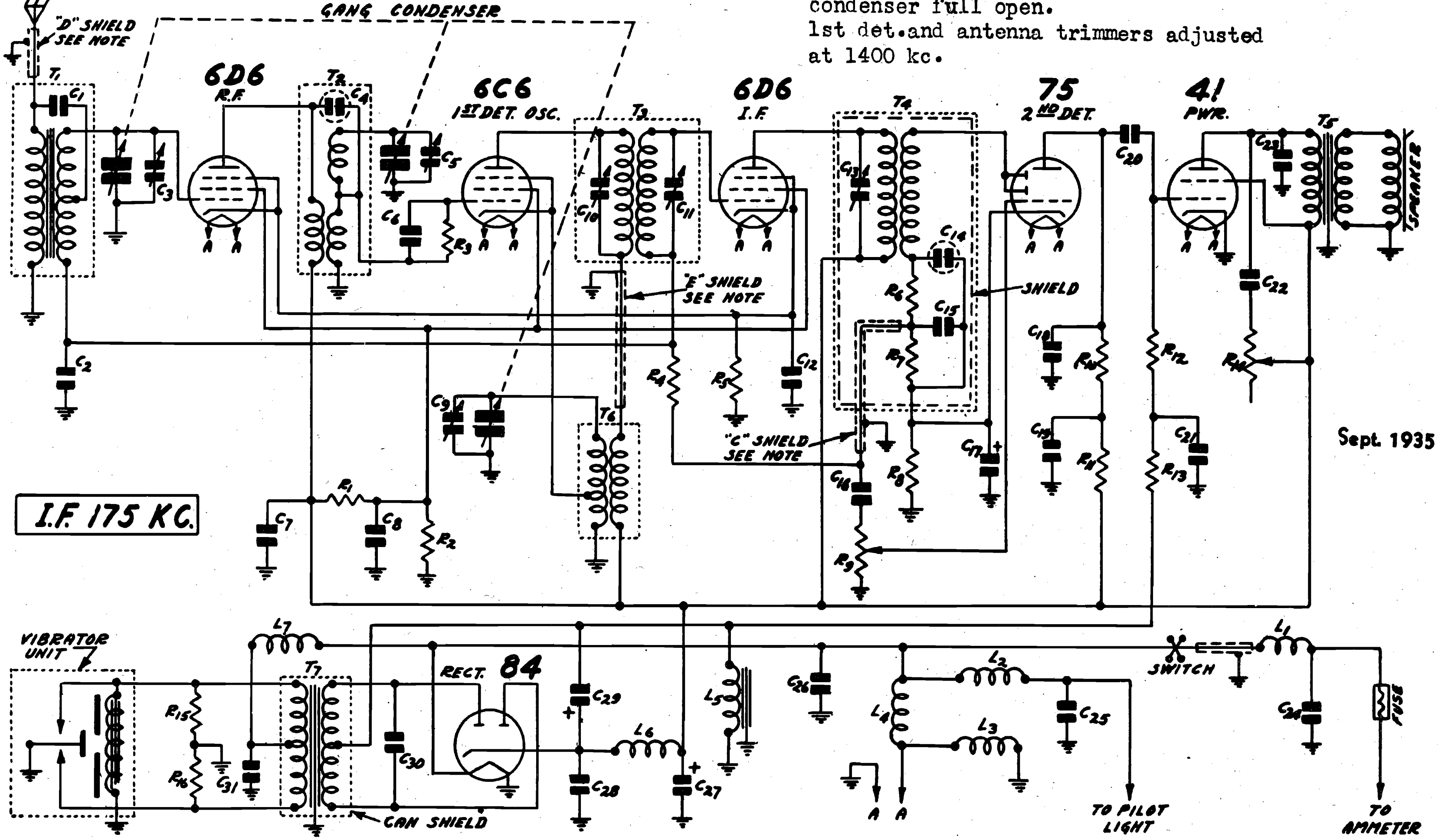
MODEL D737(1935)
Schematic

WESTERN AUTO SUPPLY CO.

Power Consumption - - - 6.5 Amperes at 6.3 Volts
Power Output - - - - - 3 Watts Undistorted
Tuning Frequency Range - - - - 530-1650 KC

Osc.trimmer adjusted at 1650 kc.with condenser full open.
1st det.and antenna trimmers adjusted at 1400 kc.

Sept. 1935



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES.
CIRCUIT ELEMENTS ENCLOSED IN DOTTED CIRCLES DO NOT EXIST AS DISTINCT UNITS BUT OCCUR AS A RESULT OF THE MUTUAL POSITION OF OTHER CIRCUIT ELEMENTS OR THEIR PARTS.
THE CAPACITY OF "C" SHIELD IS 37 MMF, THE CAPACITY OF "D" SHIELD IS 85 MMF AND THE CAPACITY OF "E" SHIELD IS 15 MMF.

C 1	21 mmf.
C 2	.05 mf. 180 V.
C 3	Gang Trimmer
C 4	40 mmf.
C 5	Gang Trimmer
C 6	35 mmf.
C 7	.10 mf. 360 V.
C 8	.10 mf. 180 V.
C 9	Gang Trimmer
C10	70-150 mmf. } One
C11	70-150 mmf. } Unit
C12	.10 mf. 180 V.
C13	70-150 mmf.
C14	250 mmf.
C15	250 mmf.
C16	.01 mf. 360 V.
C18	250 mmf.
C19	.10 mf. 360 V.
C20	.01 mf. 360 V.
C21	.25 mf. 180 V.
C22	.02 mf. 600 V.
C23	.002 mf. 600 V.
C24	.50 mf. 180 V.
C25	2000 mmf.
C26	2000 mmf.
C28	.01 mf. 360 V.
C30	.0075 mf. 1600 V.
C31	.50 mf. 180 V.
C17	4.0 mf. 25 V. } Electrolytic Block
C27	5.0 mf. 350 V
C29	8.0 mf. 350 V

R 1	17000 ohm 1.0 W.
R 2	20000 ohm ohm .5 W.
R 3	.50 Megohm .2 W.
R 4	1.0 Megohm .2 W.
R 5	350 ohm .2 W.
R 6	50000 ohm .2 W.
R 7	500000 ohm .2 W.
R 8	6000 ohm .2 W.
R 9	2.0 Megohm Volume Control
R10	150000 ohm .2 W.
R11	50000 ohm .2 W.
R12	.50 Megohm .2 W.
R13	100000 ohm .2 W.
R14	150000 ohm Tone Control
R15	50 ohm .5 W.
R16	50 ohm .5 W.

T 1	Antenna Trans.
T 2	R. F. Interstage Trans.
T 3	1st I. F. Trans.
T 4	2nd I. F. Trans.
T 5	Output Trans.
T 6	Osc. Inductor
T 7	Power Trans.
L 1	Motor Noise Reactor
L 2	Pilot Light Reactor
L 3	Speaker Field 5.3
L 4	Filament Reactor
L 5	Filter Choke
L 6	"B" Reactor
L 7	Vibrator Reactor

MODEL D737(1935)
Voltage,Socket
Trimmers,Coils
Changes

WESTERN AUTO SUPPLY CO.

Receivers of this series having this change incorporated can be identified by a green paint mark on the battery lead. There will also be a letter "C" stamped on the chassis.

It will be necessary in many Ford V8 installations to take the steps described above. If motor noise persists after the regular procedure has been followed, make this change in the "A" line circuit in Ford V8s or any other cars.

If motor noise still persists, it may be radiated through the openings in the chassis case on the tuning condenser side. Remove the chassis from the case and solder a piece of tin plate on the inside of the case over the openings on the tuning condenser side to completely cover these openings.

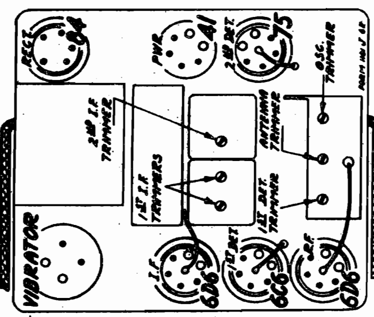


Fig. 2—Location of Tubes and Trimmers

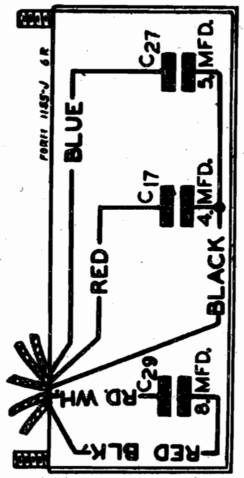
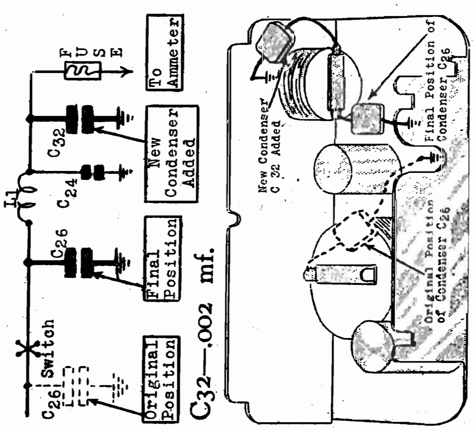


Fig. 4—Condenser Block—Internal Wiring



C32—.002 mf.

Schematic, Fig. 1, shows changes to eliminate motor noise. Fig. 2, below, shows new parts positions

VOLTAGES AT SOCKETS

Antenna Disconnected **Battery 6 Volts Under Load**

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground	Cathode Current M. A.
6D6	R. F. Amp.	5.8	220	90	4.5	6.3
6C6	1st Det. Osc.	5.8	220	90	0	2.4
6D6	I. F. Amp.	5.8	220	90	4.5	6.3
75	2nd Det.	5.8	130(1)		1.2	0.3
41	Power	5.8	210	220	16(2)	25.[illegible]
84	Rectifier	5.8				50.0

(1) With 250,000 Ohm Meter
(2) As read across filter choke.

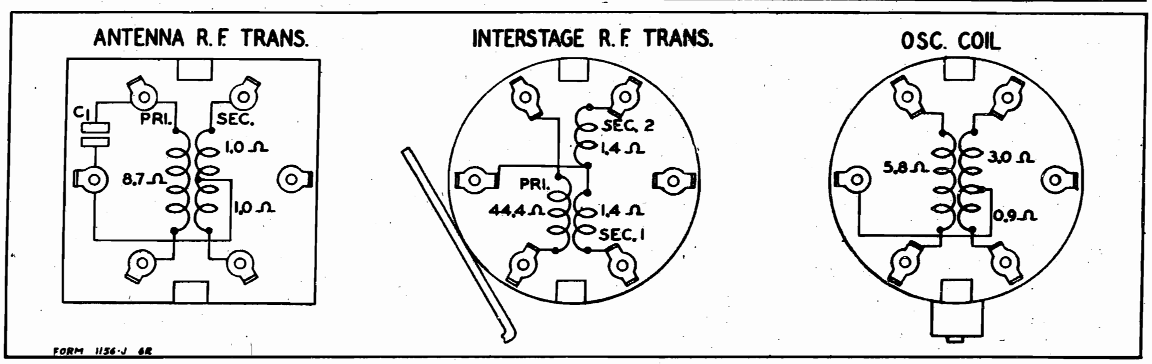


Fig. 3—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

D. C. Resistance of Windings

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

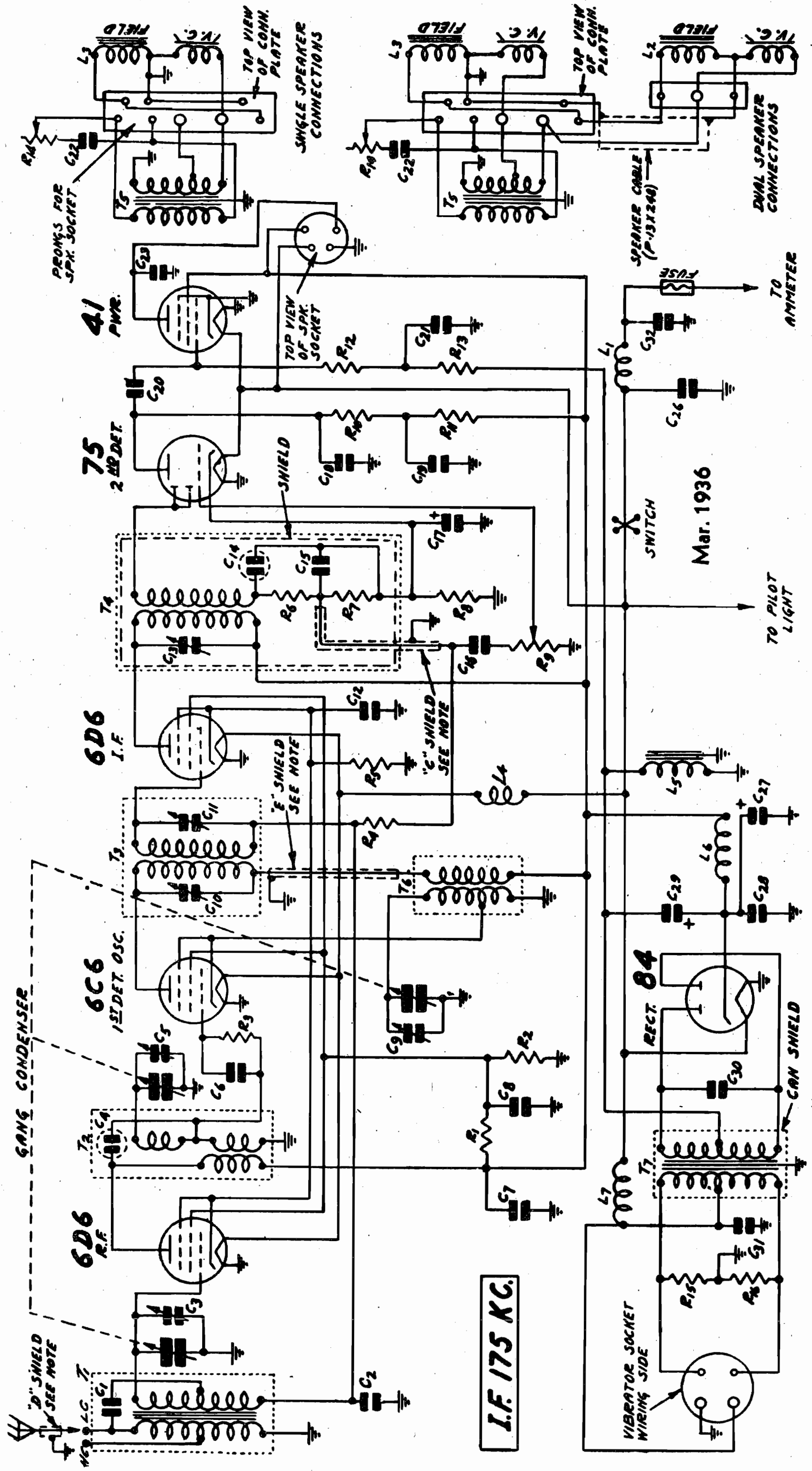
Part No.	Winding	Code	D. C. Resistance in Ohms
P-9A443	Antenna Transformer	T1	
	Primary Winding		8.7
	Secondary Winding—Either Portion		1.0
P-9A439	Interstage Transformer	T2	
	Primary Winding		44.4
	Secondary Winding—Either Portion		1.4
P-9A441	1st I. F. Transformer	T3	
	Primary Winding		93.5
	Secondary Winding		97.6
P-9A442	2nd I. F. Transformer	T4	
	Primary Winding		44.1
	Secondary Winding		49.6

Part No.	Winding	Code	D. C. Resistance in Ohms
P-12A227	Dynamic Speaker		
	Output Transformer Primary	T5	416.6
	Output Transformer Secondary	T5	Small
	Speaker Field	L3	5.3
	Speaker Voice Coil		Small
P-9A440	Oscillator Coils	T6	
	Grid Coil		
	Long Portion		3.0
	Short Portion		0.9
	Plate Coil		5.8
P-53X108	Power Transformer	T7	
	Primary Winding		
	Center Tap to Inside		Small
	Center Tap to Outside		Small
	Secondary Winding		
	Center Tap to Inside		200.
	Center Tap to Outside		200.
P-9A444	Motor Noise Reactor	L1	Small
P-9A448	Pilot Light Line Reactor	L2	Small
P-9A446	Filament Reactor	L4	Small
P-52X42	Filter Choke	L5	312.5
P-9A447	R. F. "B" Plate Reactor	L6	4.1
P-9A445	Vibrator Filter Reactor	L7	Small

WESTERN AUTO SUPPLY CO.

MODEL D737-C (1936)
Schematic, Socket
Trimmers

Power Consumption - - 7.0 Amperes at 6.0 Volts	Tuning Frequency Range - - - 530 to 1650 KC
Power Output - - - - - - 3 Watts Undistorted	Intermediate Frequency - - - - - - - 175 KC
Sensitivity - - - - - - 1.0 Microvolt Absolute	Speaker - - - - - - - - - - 6 inch Dynamic
Selectivity - - 45 KC Broad at 1000 Times Signal	



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES.
CIRCUIT ELEMENTS ENCLOSED IN DOTTED CIRCLES DO NOT EXIST AS DISTINCT UNITS BUT OCCUR AS A RESULT OF THE MUTUAL POSITION OF OTHER CIRCUIT ELEMENTS OR THEIR PARTS.
THE CAPACITY OF "C" SHIELD IS 37 MMF, THE CAPACITY OF "D" SHIELD IS 85 MMF AND THE CAPACITY OF "E" SHIELD IS 15 MMF.

C 1	10 mmf.
C 2	.05 mf. 180 V.
C 3	Gang Trimmer
C 4	40 mmf.
C 5	Gang Trimmer
C 6	35 mmf.
C 7	.10 mf. 360 V.
C 8	.10 mf. 180 V.
C 9	Gang Trimmer
C10	70-150 mmf. } Dual
C11	70-150 mmf. } Dual
C12	.10 mf. 180 V.
C13	70-150 mmf.
C14	250 mmf.
C15	250 mmf.
C16	.01 mf. 360 V.
C18	250 mmf.
C19	.10 mf. 360 V.
C20	.01 mf. 360 V.
C21	.25 mf. 180 V.
C22	.02 mf. 600 V.
C23	.002 mf. 600 V.
C26	2000 mmf.
C28	2000 mmf.
C30	.0075 mf. 1600 V.
C31	.50 mf. 180 V.
C32	2000 mmf.
C17	4.0 mf. 25 V. } Electrolytic Block
C27	5.0 mf. 350 V. } Electrolytic Block
C29	8.0 mf. 350 V. } Electrolytic Block
R 1	17000 ohm 1.0 W.
R 2	20000 ohm .5 W.
R 3	.50 Megohm .2 W.
R 4	1.0 Megohm .2 W.
R 5	350 ohm .2 W.
R 6	50000 ohm .2 W.
R 7	500000 ohm .2 W.
R 8	6000 ohm .2 W.
R 9	2.0 Megohm Vol. Control
R10	150000 ohm .2 W.
R11	50000 ohm .2 W.
R12	.50 Megohm .2 W.
R13	100000 ohm .2 W.
R14	150000 ohm Tone Control
R15	50 ohm .5 W.
R16	50 ohm .5 W.
T 1	Antenna Trans.
T 2	R.F. Inter. Trans.
T 3	1st I.F. Trans.
T 4	2nd I.F. Trans.
T 5	Output Trans.
T 6	Osc. Inductor
T 7	Power Trans.
L 1	Motor Noise Reactor
L 2	Speaker Field 4.9 ohm
L 3	Speaker Field 5.3 ohm
L 4	Filament Reactor
L 5	Filter Reactor
L 6	"B" Reactor
L 7	Vibrator Reactor

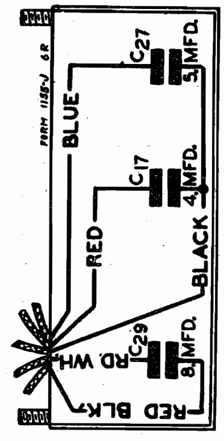


Fig. 4—Condenser Block—Internal Wiring

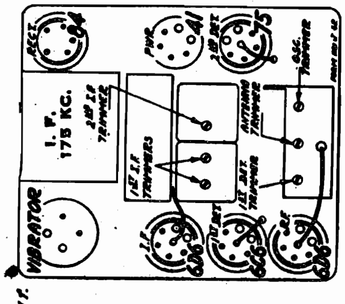


Fig. 2—Location of Tubes and Trimmers

MODEL D737-C (1936)
Voltage, Resistance
Coils, Antenna Data

WESTERN AUTO SUPPLY CO.

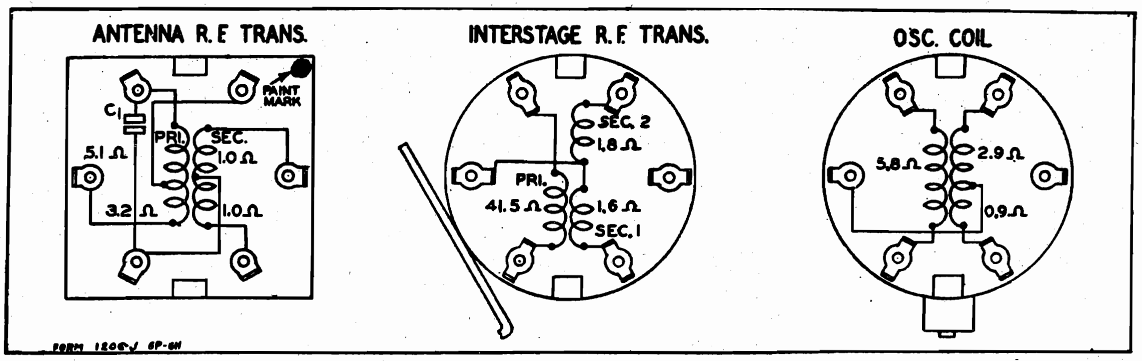


Fig. 3—R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

D. C. Resistance of Windings

Following are the D. C. resistances of the various windings in the chassis. The values given below will vary slightly in different sets.

Code	Winding	D. C. Resistance in Ohms
T1	Antenna Transformer	
	Primary Winding	
	Long Portion	5.1
	Short Portion	3.2
	Secondary Winding—Either Portion	1.0
T2	Interstage Transformer	
	Primary Winding	41.5
	Secondary Winding	
	No. 1	1.6
	No. 2	1.8
T3	1st I. F. Transformer	
	Primary Winding	88.0
	Secondary Winding	87.0
T4	2nd I. F. Transformer	
	Primary Winding	43.0
	Secondary Winding	48.2

Code	Winding	D. C. Resistance in Ohms
	Dynamic Speaker	
T5	Output Transformer	
	Primary	416.6
	Secondary	Small
L3	Speaker Field	5.3
	Speaker Voice Coil	Small
T6	Oscillator Coils	
	Grid Coil	
	Long Portion	2.9
	Short Portion	0.9
	Plate Coil	5.8
T7	Power Transformer	
	Primary Winding	
	Center Tap to Inside	Small
	Center Tap to Outside	Small
	Secondary Winding	
	Center Tap to Inside	200.0
	Center Tap to Outside	200.0
L1	Motor Noise Reactor	Small
L4	Filament Reactor	.22
L5	Filter Choke	300.0
L6	R. F. "B" Plate Reactor	4.0
L7	Vibrator Filter Reactor	Small

VOLTAGES AT SOCKETS

Antenna Disconnected Battery 6 Volts Under Load

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground	Cathode Current M. A.
6D6	R. F. Amp.	5.6	245	105	5.2	7.5
6C6	1st Det. Osc.	5.6	245	105	0	2.9
6D6	I. F. Amp.	5.6	245	105	5.2	7.5
75	2nd Det.	5.8	120(1)		1.4	0.14
41	Power	5.8	235	245	15.0(2)	30.0
84	Rectifier	5.8				52.0

(1) With 250,000 Ohm Meter
(2) Read Across Filter Choke

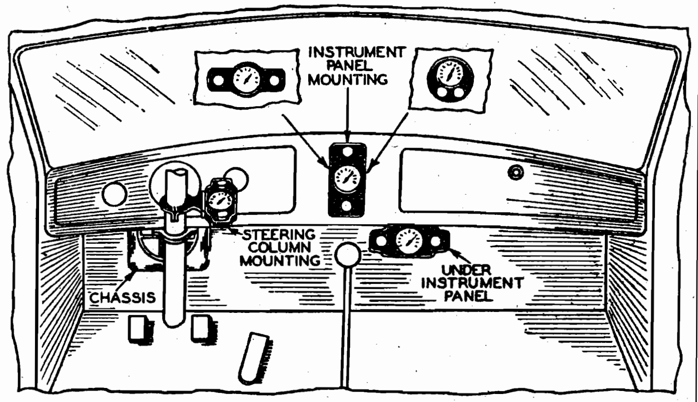


Fig. 1—Various Control Head Mountings

Antenna

IMPORTANT—If the car antenna is of high capacity (600 mmf. or higher) insert the antenna plug with the mark on the HC side—See Fig. 10. If it is a low capacity antenna, insert the plug with the mark on the LC side.

The General Motors cars have steel roofs, and a running board or other under car antenna must be used. These are low capacity antennas. The Chrysler motor cars (except Plymouth) have a steel roof separated from the body proper, which is used as an antenna. These are high capacity antennas. Other cars without steel roofs such as Ford and Plymouth have a built-in roof antenna which is of low capacity.

If a running board or under-car antenna is used, it must be one which is covered with a suitable insulation, to prevent short circuiting in wet weather.

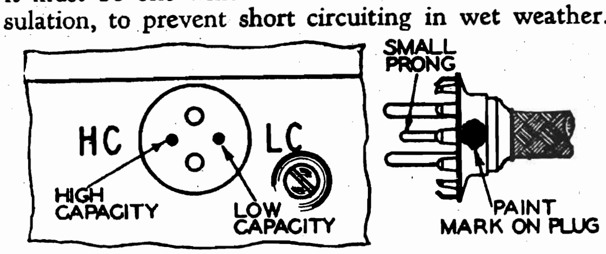


Fig. 10—Antenna Plug Insertion

MODEL D737-C (1936)
Alignment, Noise Data
Notes

WESTERN AUTO SUPPLY CO.

Alignment and Calibration

Misalignment or mistracking of condensers generally manifests itself as broad tuning and lack of volume at portions or all of the standard wave band. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide accurately calibrated signals over the standard wave band and at the intermediate frequency, and an output meter are required for indicating the effect of adjustments.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

I. F. Adjustment

Set the signal generator for a signal of 175 KC.

Connect the antenna lead of the signal generator thru a .05 mf. condenser to the stator of the 1st detector section of the tuning condenser. (See Fig. 2 for location of this section.) This can be done by pushing a wire or conductor between the stator plates or by extending an insulated wire thru the hole in the shield over the stator and pushing the wire thru the hole in the lug which extends up from the insulated stator assembly.

Connect the ground lead of the signal generator to the chassis ground.

Short out the oscillator section of the tuning condenser.

Set the volume control at the maximum position. Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC.

Then adjust the three I.F. trimmers until maximum output is obtained. The location of these trimmers is shown in Fig. 2.

1650 KC Adjustment

Set the signal generator for 1650 KC.

Turn the rotor of the tuning condenser to the full open position.

If a low capacity antenna is used connect the shielded antenna lead from the chassis through a 150 mmf. condenser to the antenna post of the signal generator. (If high capacity, use 1500 mmf.)

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained—see Fig. 2 for location of this trimmer.

1400 KC Adjustment

Set the signal generator for 1400 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the 1st detector and antenna trimmers for maximum output.

Do not change the setting of the oscillator trimmer.

Adjusting Antenna Trimmer

After the receiver is installed and the car antenna is connected it will be necessary to adjust the antenna trimmer. Tune in a weak signal between 1200 and 1400 KC with the volume control about three-fourths on. Remove the cover of the chassis case. **The antenna trimmer is on the center tuning condenser section—see Fig. 2.** Turn the adjusting screw of this condenser up or down until maximum output is obtained. CAUTION—Do not turn any of the other trimmer adjusting screws for this adjustment.

Calibrating the Receiver

To calibrate the receiver, tune in a station of known frequency. At the back of the control head is the calibration screw. Remove the pilot lamp assembly. Insert a fine blade screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received. The knob must be held during this adjustment.

If the control head is inaccessible it may be calibrated by setting the pointer from the front. Remove the crystal by inserting a knife blade under the lower edge. Loosen the pointer screw, set the pointer and retighten.

Suppression of Ignition and Generator Noise

The two units mentioned below must be used in every case:

Distributor Suppressor—Remove the high tension lead to the distributor. Insert a distributor suppressor and connect the wire to the other end of the suppressor (see Fig. 13). If this is not practical, cut the high tension lead *close to the distributor* and use a wood screw end type distributor suppressor in this line.

Generator Condenser—The generator condenser is installed at the cut-out as shown in Fig. 13. The lead from the condenser goes to the terminal on the cut-out.

In some of the new cars the cut-out relay is on the front of the dash or in some other location. It will be most convenient to mount this generator condenser at the relay.

Withdraw Antenna Cable Plug

Turn on the receiver and start the engine.

If motor noise is heard, proceed as follows:

Shielding High Tension Lead—In some cars when the coil is mounted on the dash, the high tension lead from the coil to within about four inches of the distributor must be covered with braided shielding and the shield grounded to the motor block or frame.

Bypass Condenser—Try a .25 or .5 mfd. condenser from the ammeter to ground. Try a condenser from the car fuse to ground, switch to ground, windshield wiper connections and various other 6 volt connections to ground noting what effect these condensers have on the noise pick-up.

Try a .25 or .5 mfd. condenser from the "Hot" side of the coil primary to ground. In some cases this condenser may not help. It can be tried out, however, experimentally.

Spark Plug Suppressors—If motor noise persists, spark plug suppressors must be installed. One suppressor is put on each plug as shown in Fig. 13. These are not regularly supplied with the receiver and must be purchased extra. Seventy percent of all cars will not require spark plug suppressors.

Care should be taken that a good mechanical and electrical connection is made between the spark plugs, suppressors and plug wires.

Then Reinsert Antenna Cable Plug

If motor noise is heard when the antenna cable is reconnected, proceed as follows until the noise is satisfactorily reduced:

Dome Light Lead—To determine the amount of noise due to the dome light lead, disconnect this lead at the ammeter, block, or where it is connected, coil it up, and tuck it as far as possible up in the column at which it comes down. Then, with the engine running, ground the end of this wire. If this is found to reduce the noise noticeably, interference is being radiated by the dome light lead. Reconnect the dome light lead and try a .25 or .5 mfd. condenser from the connecting point of the lead to ground. If this does not cure the noise, disconnect the lead and encase it in braided copper shield from the point where it leaves the column post to the point of connection. Keep the lead as far away as possible from car ignition wires and ground the shield.

If the noise due to the dome light lead still persists, disconnect this lead and remove it from the front corner post, at which point it is generally run down. Run the lead down one of the side posts in back of the door and direct to the storage battery. If done in this manner this lead should be fused.

Bonding Cables—Try grounding to the dash all cables and tubing which pass through it, such as oil lines, gas lines, etc. By means of a file, contact can be established between any of the lines and the dash, in order to determine whether such a ground will reduce the noise. To bond the cables to the dash, clean the point of contact, wrap a length of braided shielding around the cable and solder the connection. Then solder the end of the shielding to the dash or ground it under a screw head if one is convenient.

Sufficient play should be left in the bonding shielding so that movement of the cables or tubing will not loosen this shielding from the dash.

High and Low Tension Leads—In some cases, the high and low tension leads between the coil and distributor are run close together. In some cars they are in the same conduit. If this is the case, remove the low tension lead from this conduit. In any event, keep the high and low tension leads as far apart from each other as possible. Shield and ground the shield of the low tension lead, if separating the two leads is not sufficient.

Steering Column, Etc.—It is possible for the steering column, foot pedals and brake lever to carry interference to the back of the dash at which point it may affect the radio receiver. See if each of these items are well grounded to the frame of the car. By means of a file or a braided shielding jumper, contact can be established between any of these items and the frame in order to determine whether such a ground will reduce the noise. A piece of one inch braided shielding should be used if such a ground is necessary and this shielding may be grounded under a screw head, nut or may be soldered in position.

Grounding Engine and Other Parts—The engine must, in every case, be well grounded to the frame of the car. If it is not, use a very heavy braided lead for this purpose, similar to a storage battery ground lead. In like manner it may be necessary to check the grounding of the metal dash, instrument panel, radiator and hood to the frame of the automobile.

Weak Pick-up—Noise, on occasion, may be due to weak pick-up caused by the automobile being in a shielded location or by a faulty antenna system. The action of the automatic volume control, due to the low pick-up, causes the set to operate at its maximum sensitivity, thereby increasing noisy reception, due both to external pick-up and internal conditions.

Loose Parts in Car—Noisy operation is also caused in some instances by loose parts in the car body or frame. These loose parts rubbing together affect the grounding and cause noises, due to the rubbing or wiping action. Tightening up the frame and body at all points and in some cases, the use of a copper jumper will eliminate noise of this nature.

Making Final Adjustments and Bolting Chassis in Place

Battery Cable

The battery connection is made at the ammeter. The end of the battery cable with the connecting lug is secured to one of the posts at the back of the ammeter in the instrument panel.

The other end of the battery cable has a fuse receptacle with bayonet fitting. **Insert the fuse shield** and fuse into the receptacle and connect it to the bayonet pin connector in the end of the battery lead coming from the chassis case as shown in Fig. 11.

Fuse

A 20 ampere automobile fuse is used in the battery cable. This fuse is placed in an insulating shield and is in the receptacle provided for it at the chassis end of the battery cable. **CAUTION—Be sure the fuse shield is on the fuse before the latter is inserted in the receptacle.** ***If a fuse blows, do not replace it without first investigating the cause.***

Bolting Chassis in Place

Place the nuts and flat washers on the mounting bolts and put the chassis in place on the dash, extending the mounting bolts through the drilled holes in the dash.

On one of the mounting bolts assemble the extra shakeproof lockwasher as shown in Fig. 9. Then complete the assembly to the dash as illustrated.

After the chassis is in place, secure the flexible shafts and electrical cables into position at the nearest convenient point.

Advancing Generator Charging Rate

The installation of the automobile radio imposes an additional drain on the car storage battery. This can be compensated for by advancing the charging rate of the car generator. Check the state of charge of the storage battery about a week after the installation of the automobile radio is made and have the charging rate adjusted accordingly.

Readjusting Flexible Shafts

When the receiver is in position on the dash, loosen the flexible shaft casing set screws on the chassis. Allow the casing to position itself so that it does not bind. Then retighten the set screws.

MODELS D-740,S740(1934)
(Mallory Vibrator 296)

WESTERN AUTO SUPPLY CO.

Schematic,Voltage,Socket
Alignment,Trimmers

ALIGNMENT

1. Connect output meter across voice coil of speaker.
2. Set volume control on full.
3. Set tone control to bass position.
4. Connect dial light.

(A) I. F. Adjustment

1. Connect a .1 mfd. condenser in series with antenna lead of test oscillator.
2. Set test oscillator to 175 K. C.
3. Connect test oscillator to grid of 1st I. F. tube #6 (see Fig. #2) and adjust #7 to maximum output.
4. Connect test oscillator to grid of 1st Det. #12 and adjust condensers #4 and 5 to maximum output.
5. Repeat the above adjustments for accuracy.

(B) Oscillator Adjustment

1. Set test oscillator to 1500 K. C.
2. Connect test oscillator leads to grid of 1st Det. #12.
3. Set gang condenser to 1500 K. C. as follows:
   (a) Open gang to fullest extent.
   (b) Close slowly to the thickness of a thin cardboard strip or approximately .015 thousands of an inch.
4. Peak oscillator condenser #3 on end of gang.

(C) R. F. Adjustment

1. Set test oscillator to 1400 K. C.
2. Change antenna condenser in oscillator lead from .1 mfd. to .0002 mfd., and connect test oscillator to antenna lead of set.
3. Set condenser gang at 1400 K. C.
4. Peak condensers #1 and 2 on gang.
5. Do not touch oscillator trimmer #3 at 1400 K.C. setting of gang.

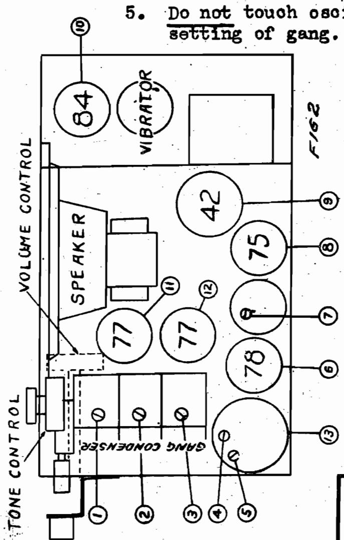
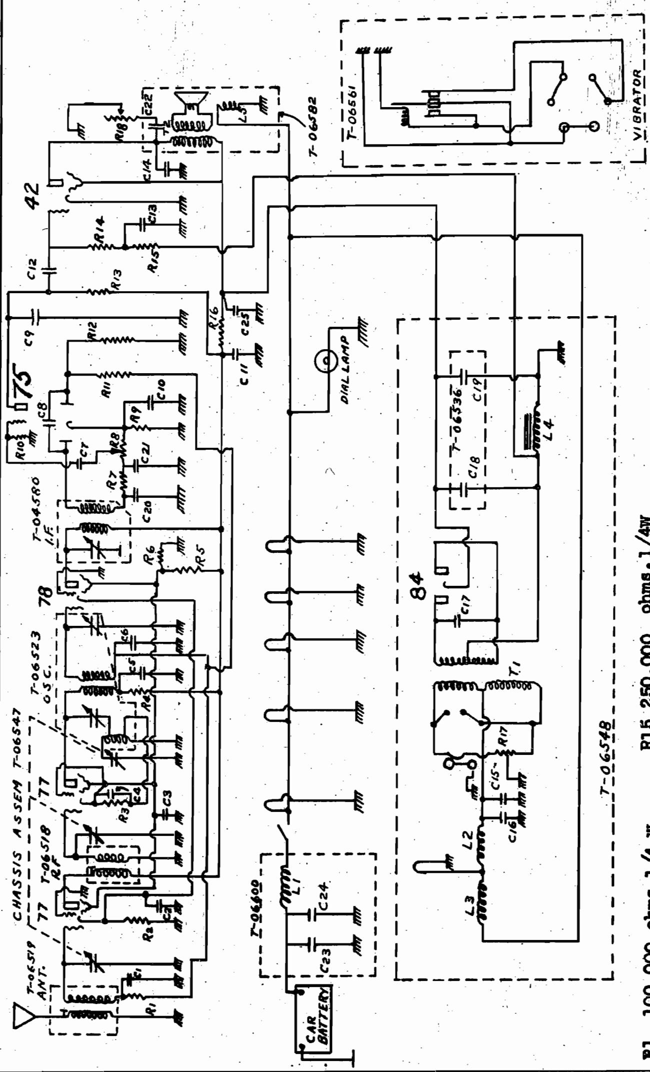


FIG 2

#1 RF Trimmer Condenser
#2 1st Det. Trimmer Cond.
#3 Osc. Trimmer Cond.
#4)
#5) 1st IF Trimmer Cond.
#6 IF Amplifier
#7 2nd IF Trimmer Cond.
#8 2nd Det. AVC & AF Amplifier
#9 Power Output
#10 Rectifier
#11 RF Amplifier
#12 Det. and Osc.
#13 1st IF & Osc. Coil



R1	100,000 ohms 1/4 W	R15	250,000 ohms.1/4W
R2	500 " "	R16	4,000 " 1 W
R3	7500 " "	R17	200 Center tapped
R4	2000 " "	R18	1/2 meg. Tone Control
R5	40,000 " "	T1	Power Trans.
R6	75,000 " "	T2	Output Trans.
R7	50,000 " "	L1	Filter Choke
R8	1/2 meg. Vol. Control	L2	" "
R9	5000 ohms 1/4 W	L3	" "
R10	1 meg. " "	L4	Power "
R12	1/2 meg. " "	L5	Field Coil
R13	100,000 " "		
R14	250,000 " "		

C1	.05 mfd. 2 ply	C14	.005 mfd. 3 ply
C2	.25 " "	C15	.5 " 2 ply
C3	.25 " "	C16	.5 " 2 ply
C4	.002 " 4 ply	C17	.02 " 4 ply
C5	.05 " 3 ply	C18	6. mfd.)
C6	.05 " 2 ply	C19	10. ")
C7	.005 " 3 ply	C20	10 mmfd. mica
C8	100 mmfd. mica	C21	100 " "
C9	.002 mfd. 4 ply	C22	.05 mfd. 3 ply
C10	.5 " 2 ply	C23	.001 mica
C12	.005 " 3 ply	C24	.5 mfd. 2 ply
C13	.1 " 2 ply	C25	.001 mica

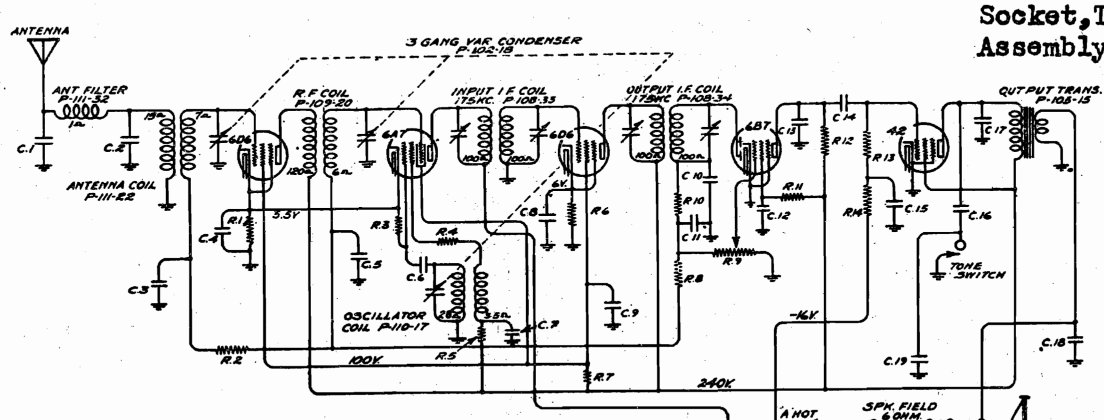
MODEL S740 SOCKET VOLTAGES
(Car Battery 6 Volts Under Load)

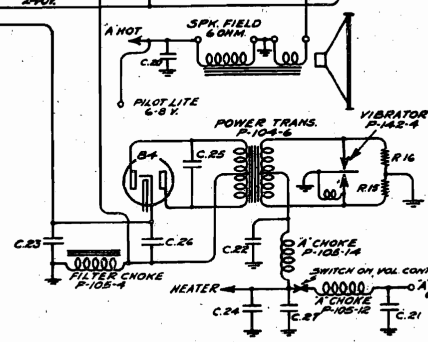
Tube	Use	Fil.	Plate	Screen	Cathode	Bias
77	RF	5.3	179	79	2.9	
77	Det. Osc.	5.3	178	79	4.3 to 8.4	
78	IF	5.3	179	79	2.9	
75	2nd Det. AVC	5.3	113			
42	AF	5.3	201	217	1.2	13.0

The above readings were taken from ground or metal of chassis to socket terminals and will vary slightly with different types of voltmeters used.

WESTERN AUTO SUPPLY CO.

MODEL D739
Schematic, Voltage Socket, Trimmers Assembly





CONDENSERS

No.	Value	No.	Value
C.1:	-20 MMF MICA	C.15:	-.25x400V.
C.2:	-20 MMF MICA	C.16:	-.025x400V.
C.3:	-.01x400V.	C.17:	-.015x400V.
C.4:	-.1x200V.	C.18:	-500 MMF MICA
C.5:	-.05x200V.	C.19:	-500 MMF MICA
C.6:	-100 MMF MICA	C.20:	-500 MMF MICA
C.7:	-.1x200V.	C.21:	-2000 MMF MICA
C.8:	-.1x200V.	C.22:	-.5 MFD.x120V.
C.9:	-.1x200V.	C.23:	-8 MFD.x300V.
C.10:	-100 MMF MICA	C.24:	-.01x400V.
C.11:	-100 MMF MICA	C.25:	-.01x1400V.
C.12:	-.1x200V.	C.26:	-8 MFD.x300V.
C.13:	-100 MMF MICA	C.27:	-.5 MFD.x120V.
C.14:	-.01x400V.		

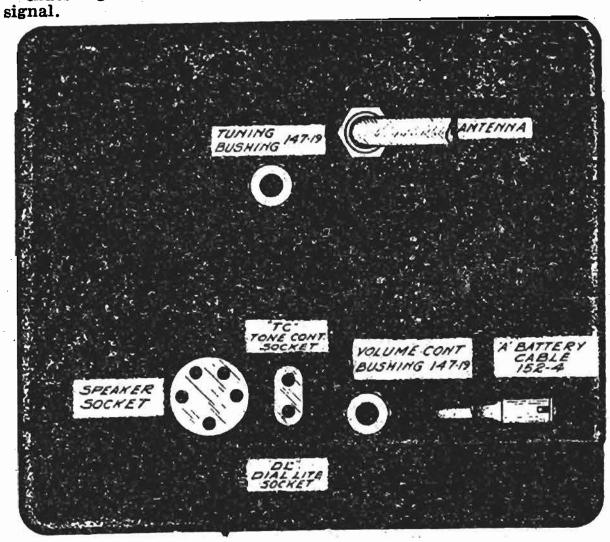
RESISTORS

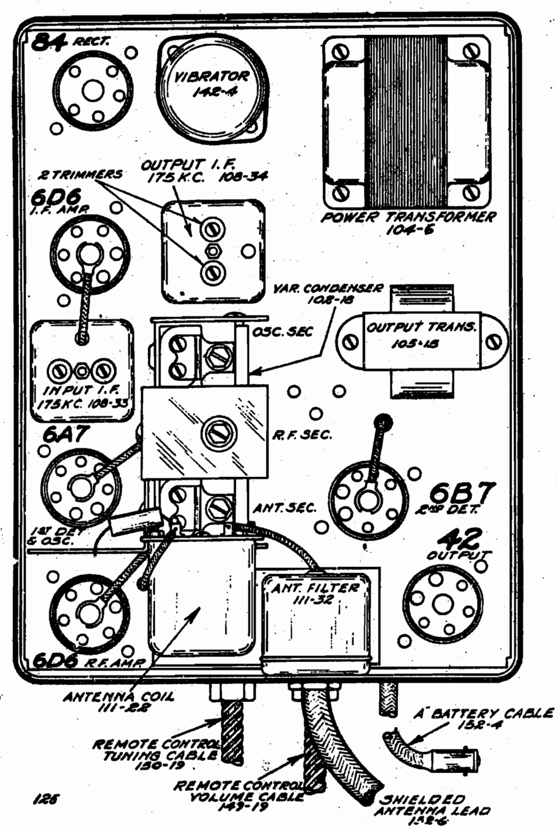
No.	Value	
R.1:	-500	1/3 W.
R.2:	-100M	1/3 W.
R.3:	-50M	1/3 W.
R.4:	-3500	1/3 W.
R.5:	-20M	1/2 W.
R.6:	-1500	1/3 W.
R.7:	-25M	1 W.
R.8:	-500M	1/3 W.
R.9:	-1 Meg. Vol. Control P-101-21	
R.10:	-100M	1/3 W.
R.11:	-1 MEG.	1/3 W.
R.12:	-250M	1/3 W.
R.13:	-301M	1/3 W.
R.14:	-301M	1/3 W.
R:15:	-100	
R.16:	-100	

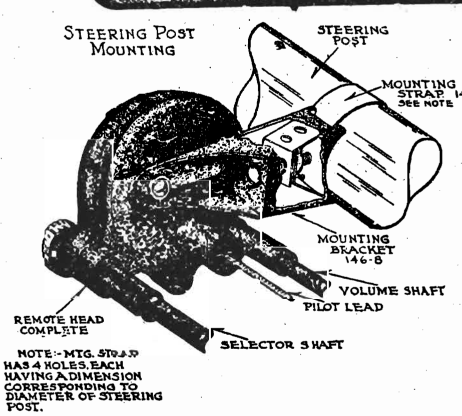
NOTE:
C.4 and C.9 are in one unit P-118-1
C.7 and C.8 are in one unit P-118-1
C.26 and C.23 are in one unit P-119-17
R.16 and R.15 are in one unit P-106-6
Numbers prefixed by letter "P" are part numbers.
Voltages taken from points indicated to chassis ground. Vol. control on full, no signal.

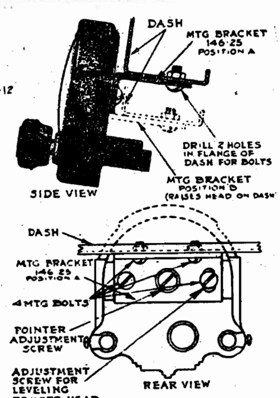
Serial No. 60001 and up.

IF PEAK 175 KC.









MODEL D739
Alignment, Notes
Parts

WESTERN AUTO SUPPLY CO.

DUMMY ANTENNAS:

The dummy antennas referred to in the following instructions are:

"I.F. Dummy" —A .1 mfd. condenser connected in series with the test oscillator output lead.

"Broadcast Dummy"—A 200 mmfd. condenser connected in series with the output lead of the test oscillator.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and the screen of the type 42 output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

I.F. ALIGNMENT:

1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 175 K.C., in series with I.F. dummy antenna, to the grid cap of the type 6A7 tube.
2. Adjust trimmer condensers of both input (108-33) and output (108-34) I.F. transformers to resonance with oscillator. See top view for location of these transformers. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver.

BROADCAST ALIGNMENT:

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. and in series with broadcast dummy, to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance (this adjustment is on the end section of the three gang condenser—see top view).
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust R.F. (center) and antenna (front) trimmers to resonance, see top view.

(a) Check for sensitivity at 1000, 800 and 600 K.C. by setting test oscillator to these frequencies and picking up the signal by rotating variable condenser. Under no circumstances bend plates of oscillator section, bend R.F. and antenna plates only if absolutely necessary.

SERVICE NOTES:

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the circuit diagram.

In order to prevent signal from acting upon A.V.C. and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

All voltages are to be measured with 6.3 volts input to receiver. Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.

Failure to operate, noisy or weak reception is usually due to defective tubes, the tubes making poor contact with sockets or grid clips making poor contact with the caps of the tubes. Tubes may be checked very easily by replacing with other tubes which are known to be good. If fuse blows out frequently and insulating sleeve has been properly placed over fuse, the trouble is probably in the vibrator, it should be replaced. Do not attempt to make any adjustments on the vibrators.

REPAIR PARTS

Serial No. 60001 and up

When ordering parts, always specify part and model number as well as serial number of chassis.

Part No.	Description	List Price Ea.
	CONDENSERS	
	Unless otherwise listed, all single section tubular paper by-pass condensers	$ .25
	Unless otherwise listed, all dual section tubular paper by-pass condensers	.50
	Unless otherwise listed, all molded mica condensers	.25
119-17	Dual 8 mfd. electrolytic filter condenser	2.25
148-1	.5 Mfd. Generator Condenser	.50
148-3	.5 Mfd. Ammeter Condenser	.40
148-5	.5 Mfd. x 120 Volt Condenser	.50
148-6	Special Ford Ignition Coil Condenser	.60
	COILS	
105-12	"A" Choke - 28 Turns No. 12 Wire	.10
105-14	"A" Choke - 37 Turns No. 12 Wire	.10
108-33	Input I.F. Transformer Complete with Shield	1.50
108-34	Output I.F. Transformer Complete with Resistors and Condensers, Mounted in Shield	2.50
109-20	R.F. Coil Complete - Less Shield	1.00
110-17	Oscillator Coil Complete with Bracket	.75
111-22	Antenna Coil Complete - Less Shield	1.00
111-32	Antenna Filter Assembly Complete with Shield and Antenna Cable	1.50
	RESISTORS	
	Unless otherwise listed, all carbon resistors	.20
106-6	200 Ohm Center Tapped Resistor	.25
168-2	Distributor Suppressor	.40
168-3	Cable Type Suppressor	.40
	TRANSFORMERS	
104-6	Power Transformer	3.00
105-4	380 Ohm Filter Choke	.85
105-15	Output Audio Transformer	1.50
	MISCELLANEOUS	
101-21	Volume Control with Switch	1.35
102-18	Three Gang Variable Condenser	4.00
113-30	Two Lug Terminal Strip	.05
113-37	Terminal Strip	.05
115-34	Antenna and R.F. Coil Shield	.15
114-21	Speaker Chassis Only	5.00
114-22	Ford Header speaker chassis only	5.00
128-4	Complete Speaker Housing for 114-21	2.50
128-5	Ford speaker housing for 114-22	2.50
140-5	Set Case less Covers	1.00
140-6	Covers for Above	1.25
142-4	Plug-in Vibrator	4.50
147-19	Flexible Cable Control Bushing	.10
152-2	Battery Cable & Fuse Assembly	.35
152-3	Fuse Insulating Sleeve	.05
152-4	Chassis Battery Cable Assembly	.30
152-6	Antenna Cable	.50
152-8	Speaker Cable with Plug for 114-21	1.00
152-9	Special Ford Header speaker cable and plug	1.25
153-4	Special Speaker-Tone Control-Dial Light Socket Assembly	.25
160-11	Mounting Studs Complete with Nut & Washer	.05
169-1	15 Amp. Fuse (3AG-15)	.05

Part No.	Description	List Price Ea.
	All Sockets	.10
123-1	Dome Lite Filter	.90
	Plate Antenna	3.50
	REMOTE CONTROL PARTS	
112-39	Selector Control Shaft	.20
112-41	Idler Gear	.15
112-42	Pointer Shaft	.05
112-85	Volume Control Shaft	.10
112-45	Bezel (Crystal Retainer)	.15
112-46	Celluloid Dial Crystal	.15
112-48	Pointer Shaft Gear	.05
112-96	Celluloid dial	.25
116-13	6-8 Volt, T-51 Bulb Bayonet Base	.10
116-14	6-8 volt T-51 frosted glass bayonet lamp	.13
116-9	Pilot Light Assembly	.45
116-11	Tone Control Assembly Unit Complete	.35
131-5	Black Bakelite Remote Control Knobs	.15
146-8	Die Cast Remote Control Mounting Bracket	.30
146-12	Steering Column Strap	.15
146-25	Dash Mounting Bracket	.15
147-3	Selector Control Bushing for 112-39 Shaft	.10
147-4	Volume Control Bushing for 112-43 Shaft	.10
149-25	Flexible Volume Control Cable - 24"	1.50
150-25	Flexible Selector Control Cable - 24"	1.50
151-7	Remote Control Head complete with Steering Column Bracket	5.00
	Dash Mounting Kit (specify make and year of car)	1.25
151-8	Special General Motors Control Head	7.00
	Dash Mounting Kits for 1935 Chevrolet and Pontiac for use with 151-8 head	1.50
	Dash Mounting Kits for 1935 Oldsmobile for use with 151-8 head	1.75

Vibrators can be reconditioned at a cost of $3.00 each, if the old unit is returned.

All resistors are RMA color coded - specify value and/or resistor number (per schematic diagram) and model number.

When ordering condensers, specify part number, model number and/or capacitor (per schematic diagram) and model number.

Mica condensers are coded with an additional dot indicating tolerance:

Tolerance Percent	Color of Dot
2½%	White
5%	Green
10%	Blue
15%	Yellow
20%	Red
More Than 20%	None.

All prices quoted are list and are subject to the usual trade discounts. Shipments are F.O.B. our Factory. When remitting in advance, please include postage.

WE CANNOT SUPPLY SPEAKER PARTS, CONES, TRANSFORMERS OR FIELDS SEPARATELY. WE CAN REPLACE OR REPAIR A DAMAGED SPEAKER FOR $2.00 NET, IF IT IS RETURNED TO OUR FACTORY TRANSPORTATION CHARGES PREPAID.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

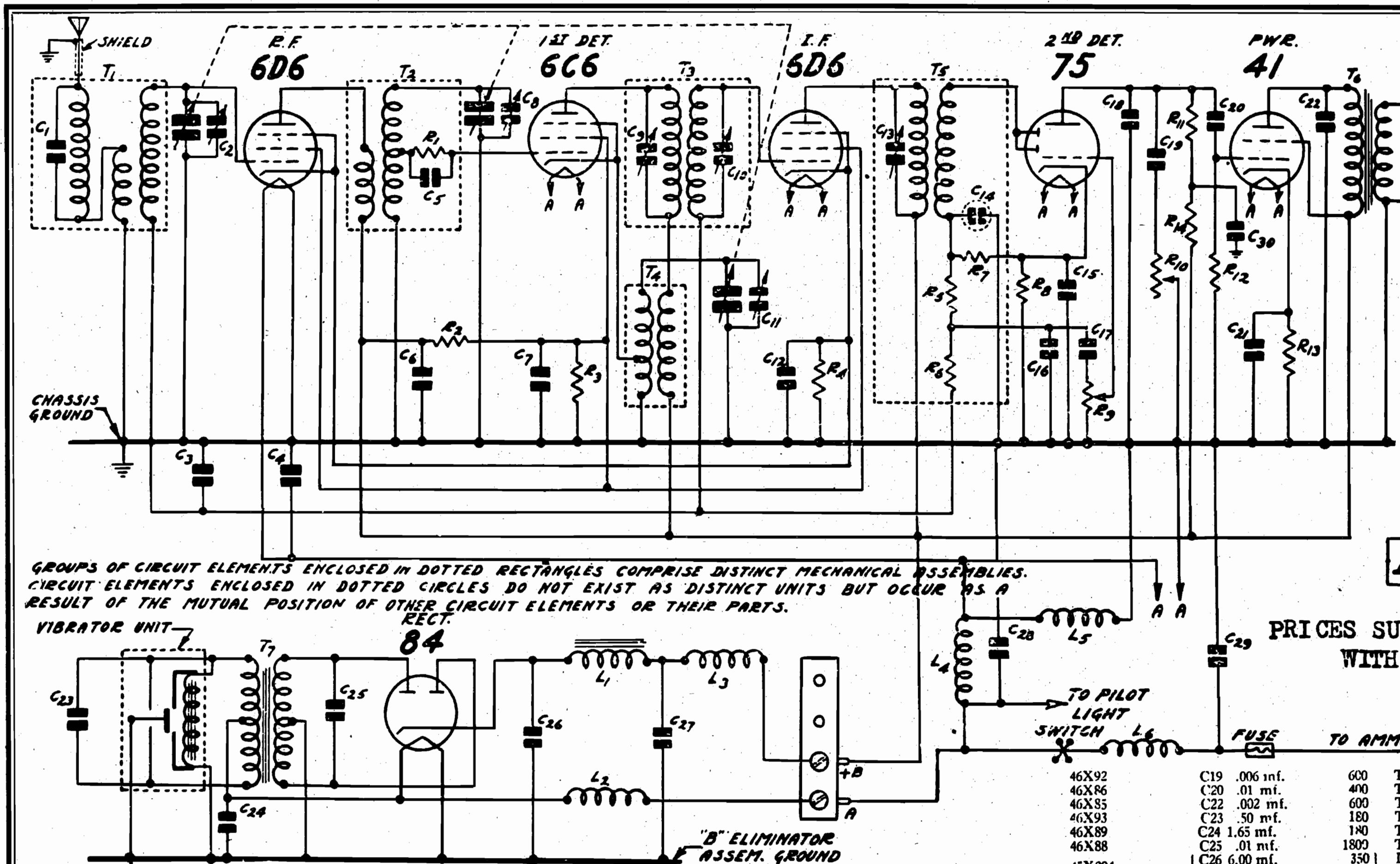
BRC - CHICAGO

WESTERN AUTO SUPPLY CO

MODELS S743,D743-W(1935)
Schematic

Power Output - 3 Watts Maximum
Sensitivity - 1.5 Microvolts Absolute
Frequency Range - 530 to 1650 KC
Speaker - 6 Inch Dynamic
Power Consumption - 5.75 Amperes at 6 Volts

I.F. 175 KC.



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES. CIRCUIT ELEMENTS ENCLOSED IN DOTTED CIRCLES DO NOT EXIST AS DISTINCT UNITS BUT OCCUR AS A RESULT OF THE MUTUAL POSITION OF OTHER CIRCUIT ELEMENTS OR THEIR PARTS.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

April, 1935

TRANSFORMERS AND COILS

New Part No.	Old Part No.	Description	Code	List Price
51X17-6S	50632	Output Transformer	T6	1.65
9A368-6S		Antenna Coil Assembly (Less Can)	T1	.90
9A369-6S		R.F. Interstage Coil Assembly (Less Can)	T2	1.25
1A23-6S		Dual-Coil Can Assembly Only (for above two coils)		.30
9A371-6S		1st I.F. Coil & Can Assembly Complete	T3	1.70
9A370-6S		Oscillator Coil & Can Assembly Complete	T4	.60
9A372-6S		2nd I.F. Coil & Can Assembly Complete	T5	2.05
9A375-6S		Pilot Light Choke Assembly	L4	.15
9A373-6S		Motor Noise Choke	L6	.25
9A268-6S	5174	R.F. "B" Choke Coil Assembly	L3	.10
9A374-6S		Filament Reactor	L2	.30
53X72-6S	50633	Power Transformer	T7	3.20
52X27-6S	50637	Filter Choke	L1	.90

CONDENSERS

New Part No.	Old Part No.	Code	Capacity	Voltage	Type	List Price
47X54		C1	.0005 mf.		Moulded	.15
		C2	Antenna Trimmer-Part of Gang Condenser			
46X80		C3	.05 mf.	180	Tubular	.15
47X50		C4	.003 mf.		Moulded	.25
47X53		C5	.000035 mf.		Moulded	.10
46X81		C6	.10 mf.	400	Tubular	.25
46X83		C7	.10 mf.	180	Tubular	.25
		C8	1st Detector Trimmer-Part of Gang Condenser			
*17A32		C9 / C10	130-300 mmf. / 130-300 mmf.		1st I. F. Trimmer Condensers	.50
†17A33		C9 / C10	70-150 mmf. / 70-150 mmf.		1st I. F. Trimmer Condensers	.50
		C11	Oscillator Trimmer-Part of Gang Condenser			
46X82		C12	.10 mf.	180	Tubular	.25
17A18	1965	C13	70-140 mmf.		2nd I.F. Trimmer Condenser	.35
		C14	.00025 mf.		Part of 2nd I.F. Coil Assembly	
45X203		C15 / C21	12.00 mf. / 12.00 mf.	25 / 25	Dry Electrolytic Block	1.05
4 X52		C16	.00025 mf.		Moulded	.15
46X84		C17	.01 mf.	180	Tubular	.15
47X52		C18	.00025 mf.		Moulded	.15
46X92		C19	.006 mf.	600	Tubular	.20
46X86		C20	.01 mf.	400	Tubular	.20
46X85		C22	.002 mf.	600	Tubular	.20
46X93		C23	.50 mf.	180	Tubular	.35
46X89		C24	1.65 mf.	180	Tubular	.80
46X88		C25	.01 mf.	1800	Tubular	.30
45X204		C26 / C27	6.00 mf. / 8.00 mf.	350 / 350	Dry Electrolytic Block	2.10
46X93		C28	.50 mf.	180	Tubular	.35
4 X50		C29	.003 mf.		Moulded	.25
46X94		C30	.25 mf.	300	Tubular	.30
14A39					3 Section Gang Condenser	4.20

RESISTORS

New Part No.	Code	Resistance	Wattage	Type	List Price
A95504	R1	500,000 Ohm	0.2	Carbon	.10
B94153	R2	15,000 Ohm	0.5	Carbon	.15
B94203	R3	20,000 Ohm	0.5	Carbon	.15
43X41	R4 / R13	450 Ohm / 800 Ohm	0.2 / 0.3	Armored Wire Wound	.30
A95503	R5	50 000 Ohm	0.2	Carbon	.10
A95105	R6	1.0 Megohm	0.2	Carbon	.10
A94504	R7	500,000 Ohm	0.2	Carbon	.10
A95752	R8	7,500 Ohm	0.2	Carbon	.10
36X200	R9	2.0 Megohm		Volume Control & Switch	1.15
40X201	R10	300,000 Ohm		Tone Control	.75
*A95201	R11	200,000 Ohm	0.2	Carbon	.10
†A95154	R11	150,000 Ohm	0.2	Carbon	.10
A95504	R12	500,000 Ohm	0.2	Carbon	.10
†A95503	R14	50,000 Ohm	0.2	Carbon	.10

MODELS S743,D743-W(1935)
Alignment,Voltage,Socket
Trimmers,Resistance

WESTERN AUTO SUPPLY CO.

Remove chassis from case.

Establish ground connection between chassis and power supply.

Reconnect A and B wires from power supply to chassis.

Set the signal generator for a signal of 175 KC.

Connect the antenna lead of the signal generator thru a .05 mf. condenser to the stator of the 1st detector (middle) section of the tuning condenser. This can be done by pushing a wire or conductor between the stator plates or by extending an insulated wire thru the hole in the shield over the stator and pushing the wire thru the hole in the lug which extends up from the insulated stator assembly.

Connect the ground lead of the signal generator to the chassis ground.

Short out the oscillator section of the tuning condenser.

Set the volume control at the maximum position.

Attenuate the signal from the signal generator to prevent the levelling off action of the A.V.C.

Then adjust the three I.F. trimmers until maximum output is obtained. The location of these trimmers are shown in Fig. 2.

1650 KC. Adjustment

Set the signal generator for 1650 KC.

Turn the rotor of the tuning condenser to the full open position.

Connect the shielded antenna lead from the chassis through a 250 mmf. condenser to the antenna post of the signal generator.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A. V. C. action.

Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained—see Fig. 2 for location of this trimmer.

1400 K C. Adjustment

Set the signal generator for 1400 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the 1st detector and antenna trimmers for maximum output.

Do not change the setting of the oscillator trimmer.

Voltages at Sockets

Antenna Disconnected - Voltage at Battery 6.1

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cath. to Ground	Normal Plate M.A.
6D6	R. F.	5.8	218	100	5.2	5.8
6C6	1st Det. and Osc.	5.8	218	100		2.0
6D6	I. F.	5.8	218	100	5.2	5.8
75	2nd Det. & 1st A. F.	5.8	160 (1)		1.4	2.8
41	Output	5.8	210	220	16.0	16.0
84	Rectifier	5.8				20.0 per plate

Speaker Field ...1.15 Amperes "B" Unit ......3.00 Amperes
Chassis ..... 1.50 Amperes Pilot Lamp ....0.1 Amperes

(1) Measured on 1000 V. Scale (1000 Ohms per volt)

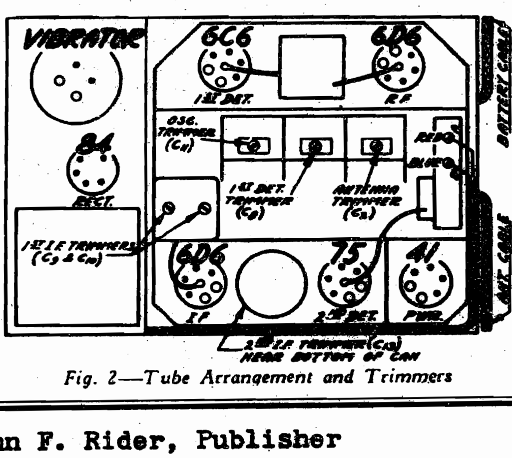


Fig. 2—Tube Arrangement and Trimmers

Adjusting Antenna Trimmer

After the receiver is installed and the car antenna is connected it will be necessary to adjust the antenna trimmer. Tune in a weak signal between 1200 and 1400 KC. with the volume control about three-fourths on. Remove the cover of the chassis case. The antenna trimmer is the trimmer condenser closest to the terminal strip—see Fig. 2. Turn the adjusting screw of this condenser up or down until maximum output is obtained. CAUTION—Do not turn any of the other trimmer adjusting screws for this adjustment.

Calibrating the Receiver

After installing the receiver in the car, it will be necessary to calibrate the control unit. Tune in a station of known frequency at about the center of the dial. At the back of the control unit is a calibration screw—See Fig. 4 in the installation manual enclosed with each receiver. Remove the pilot light assembly.

The calibration screw will be seen at the bottom of the receptacle from which the pilot light assembly is withdrawn. Insert a screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received. The knob must be held during this adjustment.

Voltages At Sockets

On the voltage chart are given the voltages at the sockets with all tubes in and the set in operating condition. The antenna should be disconnected.

The voltages can be read with the chassis in the case, by means of an analyzer plug.

If the chassis unit is taken out of the case all of the socket terminals can easily be reached under the chassis with test prods.

If the chassis is taken out, a jumper wire must be connected from the chassis base to the metal wall of the "B" power unit, in order to complete the ground circuit.

D. C. Resistance of Windings

Following are the D. C. resistances of the various windings in the chassis.

New Part No.	ITEM	Code	D. C. Resistance in Ohms
9A368-6S	Antenna Trans. Primaries in Series	T1	6.3
	Antenna Trans. Secondary	T1	2.5
9A369-6S	R.F. Interstage Trans. Pri.	T2	4.5
	R.F. Interstage Trans. Sec.	T2	
	(Center Tap to inside)		1.8
	(Center Tap to ground)		1.3
9A371-6S	1st I.F. Trans. Primary	T3	58.
	1st I.F. Trans. Secondary	T3	58.
9A370-6S	Oscillator Cathode Coil (Total)	T4	3.
	Oscillator Plate Coil	T4	6.
9A372-6S	2nd I.F. Trans. Primary	T5	46.
	2nd I.F. Trans. Secondary	T5	46.
3X17-6S	Output Trans. Primary	T6	440.
	Output Trans. Sec. and Voice coil in paralle	T6	.4
53X72-6S	Power Trans. Primary	T7	.3
	Power Trans. Secondary	T7	500.
52X27-6S	Filter Choke	L1	300.
9A374-6S	Filament Reactor	L2	Small
9A268-6S	R.F. "B" Choke	L3	3.5
9A375-6S	Pilot Light Choke Assembly	L4	Small
12A62A	Speaker Field	L5	5.
9A373-6S	Motor Noise Choke	L6	Small

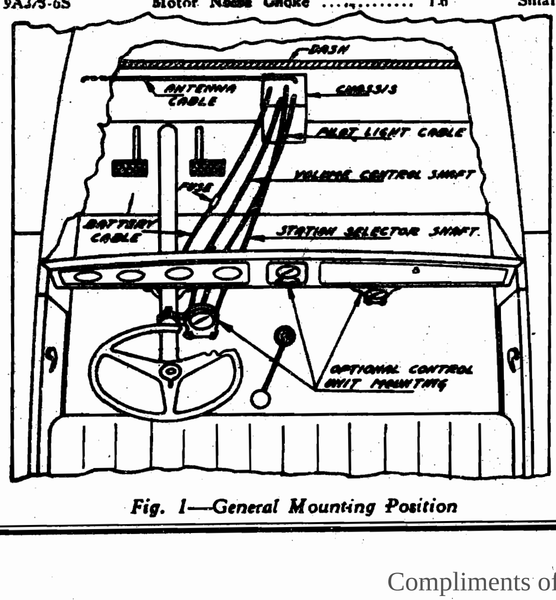
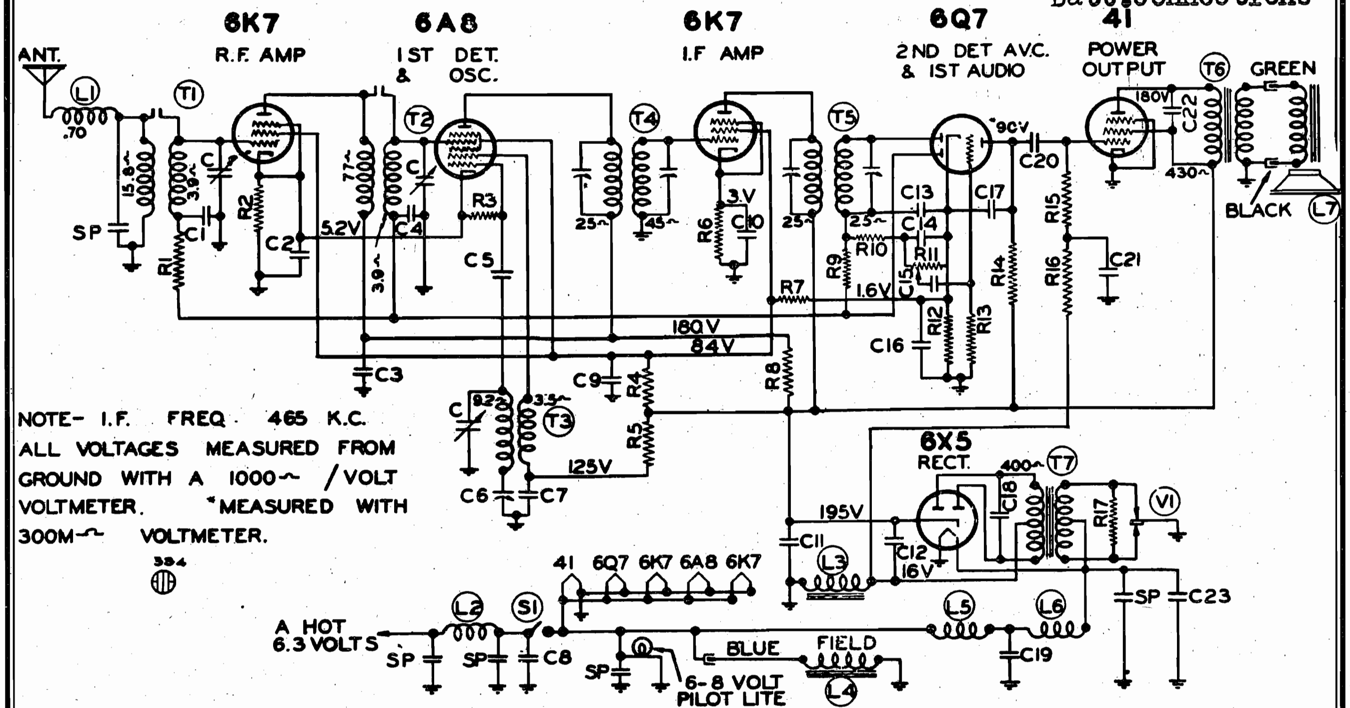


Fig. 1—General Mounting Position

MODEL D743(1936)
Schematic,Voltage
Socket,Trimmers
Batt.Connections

WESTERN AUTO SUPPLY CO.



NOTE- I.F. FREQ. 465 K.C.
ALL VOLTAGES MEASURED FROM GROUND WITH A 1000~ /VOLT VOLTMETER. *MEASURED WITH 300M~ VOLTMETER.

No.	Part No.	Description
		CONDENSERS
C	102-26	3 Gang Variable Condenser
C1	100-63	.05 x 200v. 50 - 10%
C2	100-63	.1 x 200v. 50 - 10%
C3	100-13	.05 x 400v. 25%
C4	100-22	.05 x 200v. 25%
C5	129-12	.00025 Mica - 20%
C6	124-37	Series Pad
C7	100-20	.1 x 200 v. 25%
C8	100-31	.5 x 120 v. 10 50%
C9	100-62	.25 x 200 v. 50 - 10%
C10	100-20	.1 x 200 v. 25%
C11	119-37	8 mfd. lytic 300 wv.
C12	119-37	4 mfd. lytic 300 wv.
C13	129-5	.0001 Mica 20%
C14	129-5	.0001 Mica 20%
C15	100-11	.01 x 400 v. 25%
C16	100-11	.01 x 400 v. 25%
C17	129-5	.0001 Mica 20%
C18	100-58	.005 x 1200 v. 20 - 10%
C19	100-31	.5 x 120 v. - 10 50%
C20	100-11	.01 x 400 v. 25%
C21	100-62	.25 x 200 v. 50 - 10%
C22	100-54	.006 x 600 v. 25%
C23	100-31	.5 x 120 v. - 10 50%
SP		Spark Plate

		RESISTORS
R1	130-20	100M - 1/3 w. - 20%
R2	130-54	500 ohm - 1/3 w. - 20%
R3	130-12A	50M ohm - 1/3 w. insulated 20%
R4	130-165	15M ohm - 1 w. - 20%
R5	130-131A	20M ohm - 1/2 w. - insulated - 10%
R6	130-24	400 ohm - 1/3 w. - 20%
R7	130-139A	40M ohm - 1/3 w. Insulated - 20%
R8	130-31A	1500 ohm - 1/3 w. insulated - 20%
R9	130-19	1 megohm - 1/3 w. - 20%
R10	130-52	50M ohm - 1/3 w. - 20%
R11	101-41	500M ohm - Volume Control
R12	130-153	700 ohm - 1/3 w. - 20%
R13	130-19	1 megohm - 1/3 w - 20%
R14	130-11A	250M - 1/3 w. Insulated - 20%
R15	130-5A	300M ohm - 1/3 w. insulated - 20%
R16	130-11A	250M ohm - 1/3 w. insulated - 20%
R17	130-84	200 ohm - 1/3 w. insulated - 20%

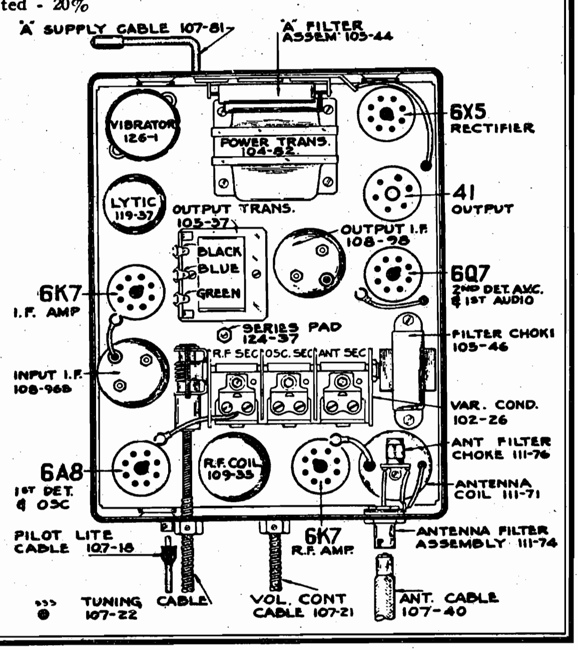
		PARTS
T1	111-71	Antenna Coil Complete
T2	109-35	R.F. Coil Complete
T3	110-57	Oscillator Coil Complete
T4	108-96B	Input I.F. Complete
T5	108-98	Output I. F. Complete
T6	105-37	Output Transformer
T7	104-82	Power Transformer
L1	111-76	Antenna Filter Choke
L2	105-26	"A" Choke
L3	105-46	"B" Filter Choke, 335 ohm
L4		Speaker Field, 4 ohm
L5	105-24	"A" Choke
L6	105-19	"A" Choke
L7	114-59	Dynamic Speaker
S1		Switch on Volume Control
V1	126-1	Vibrator

C1, C2 in same block
C11 and C12 in same block
C9 and C21 in same block

CONNECTIONS TO BATTERY

The battery cable, number 107-82, (red wire with fuse receptacle at one end and terminal lug at other end) must be connected to battery terminal of ammeter. At the same time connect ammeter capacitor, number 148-3, to battery terminal of ammeter, other end of condenser to any convenient grounded screw on back of instrument panel. Make certain that insulating sleeve is slipped over fuse when fuse is placed in receptacle, before connecting to short battery cable from receiver.

When connected properly, the discharge due to current drawn by the receiver should not indicate on the ammeter. This is important, since if improperly connected, as shown by the deflection of ammeter, additional motor interference may be encountered.



MODEL D743(1936)
Alignment,Notes

WESTERN AUTO SUPPLY CO.

SERVICE NOTES

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the circuit diagram.

In order to prevent signal from acting upon A.V.C. and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

All voltages are to be measured with 6.3 volts input to receiver. Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.

DESCRIPTION

Model No. 661 is a six-tube superheterodyne receiver having a tuning range of 530 K.C. to 1550 K.C., operates from a 6.0 volt storage battery and uses the automotive type 6.3 volt tubes. The "B" supply is obtained from a vibrator with a tube rectifier.

The I.F. frequency used is 465 K.C., the R.F. end of the receiver consisting of a high gain iron core antenna coil which gives high signal to noise ratio and an R.F. stage especially designed to give high image rejection and high I.F. attenuation. The I.F. transformers are designed to give high gain and selectivity and yet to have a broad nose for ease of tuning and hi-fidelity response. They are of the air core type and wound with solid wire to give *minimum* drift and variation of gain due to climatic changes.

This receiver has been carefully designed to facilitate servicing, the top and bottom covers are both removable and are fastened in place by spring clips, self tapping screws and trimount buttons.

DUMMY ANTENNAS

The dummy antennas referred to in the following instructions are:

"I.F. Dummy" —A .5 mfd. condenser connected in series with the test oscillator output lead.

"Broadcast Dummy"—A 175 mmfd. condenser connected in series with the output lead of the test oscillator.

RESONANCE INDICATOR

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 41 output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

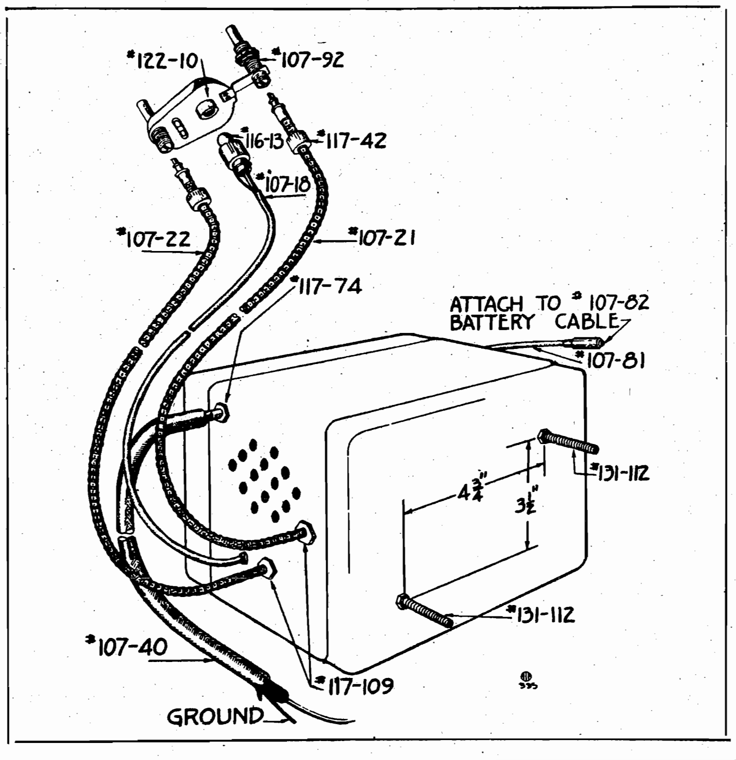
I.F. ALIGNMENT: (465 K.C.)

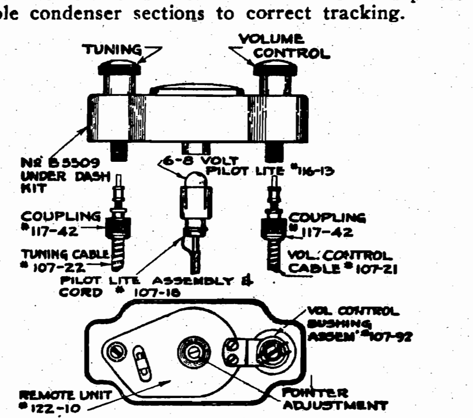
1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 465 K.C. in series with I.F. dummy antenna, to grid of 6K7 I.F. tube.
2. Adjust trimmer condensers of output I.F. transformer No. 108-98 to resonance with oscillator.
3. Move test oscillator connection to grid of 6A8 tube and adjust trimmer condensers of input I.F. transformer No. 108-96B to resonance with oscillator. See top view for location of these transformers. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver.

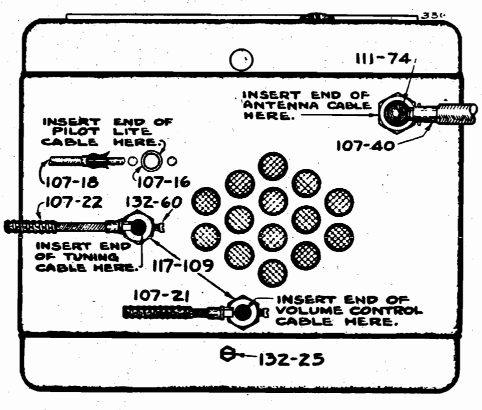
BROADCAST ALIGNMENT

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. in series with broadcast dummy to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance. (This adjustment is on the middle section of the three-gang condenser—see top view, Fig. 2).
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust R.F. and antenna trimmers to resonance (see top view, Fig. 2).
4. Re-set test oscillator to 600 K.C. and rotate variable condenser to 600 K.C. Adjust series pad, rocking gang condenser to and fro, at the same time adjusting series pad for maximum gain. This adjustment is accessible from the top of chassis—see top view.
5. Go back and check 1400 K.C. If adjustment is made here, check 600 K.C. again.
6. Check for sensitivity at 1000 K.C. by setting test oscillator to this frequency and picking up the signal by rotating variable condenser. Under no circumstances bend plates of variable condenser sections to correct tracking.

WIRING CONNECTIONS AND ASSEMBLY

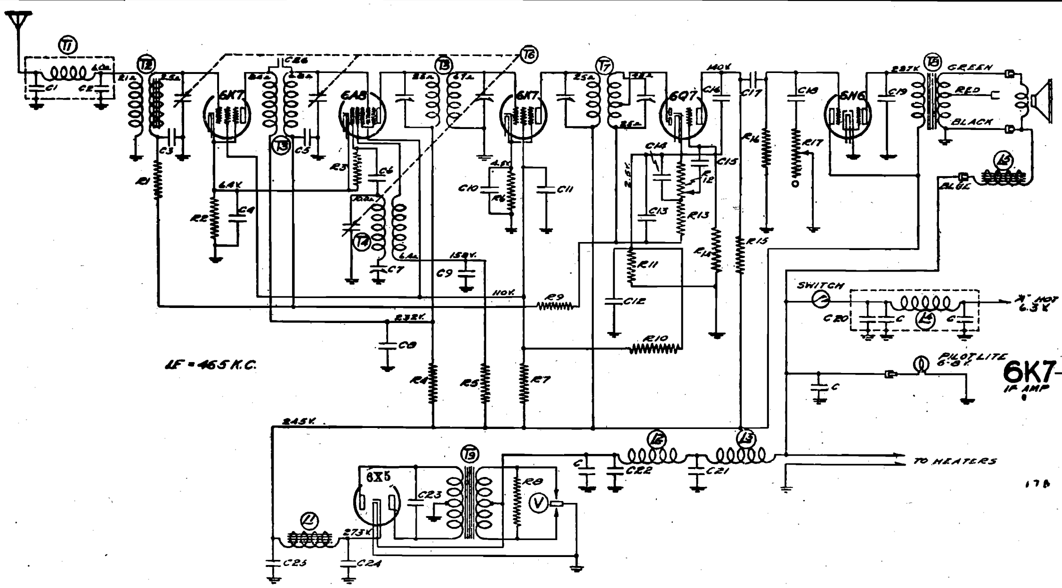


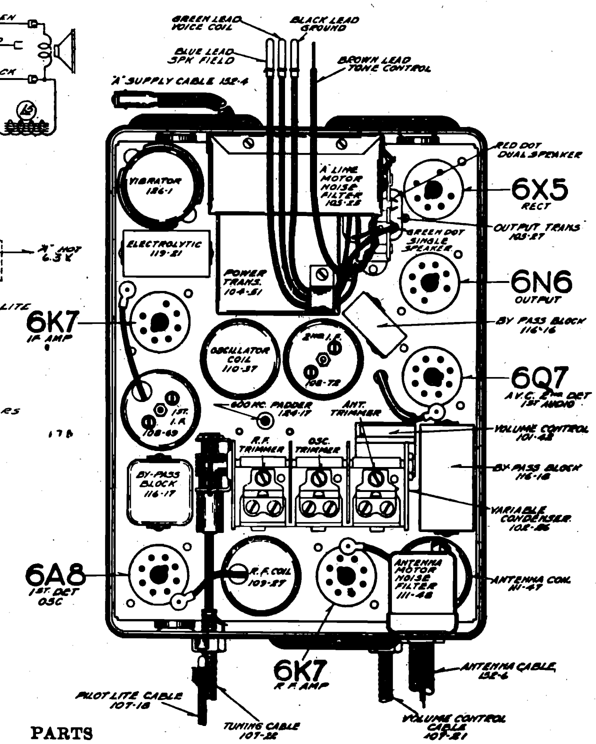




MODEL D744(1936)
Schematic, Voltage
Socket, Trimmers

WESTERN AUTO SUPPLY CO.





No.	Part No.	Description
		RESISTORS
R1	130-20	100M Ohm - ½ Watt 20% - 50 Volt - Carbon
R2	130-99	300 Ohm - ⅓ Watt - 20% - 10 Volt - Carbon
R3	130-94	50M Ohm - ⅓ Watt - 10% - 10 Volt - Carbon
R4	130-98	1500 Ohm - ⅓ Watt 20% - 25 Volt - Carbon
R5	130-42	20M Ohm - ⅓ Watt - 20% - 100 Volt - Carbon
R6	130-70	500 Ohm - ⅓ Watt - 10% - 10 Volt - Carbon
R7	130-95	12M Ohm - 1.2 Watt - 10% - 100 Volt - Carbon
R8	130-97	200 Ohm - ⅓ Watt - 10% - 10 Volt - Carbon
R9	130-3	500M Ohm - ⅓ Watt - 20% - 100 Volt - Carbon
R10	130-108	40M Ohm - ⅓ Watt - 10% - 100 Volt - Carbon
R11	130-107	800 Ohm - ⅓ Watt - 10% - 10 Volt - Carbon
R12	101-42	50M Ohm - Volume Control and Switch
R13	130-22	5M Ohm - ⅓ Watt - 20% -10 Volt - Carbon
R14	130-68	1 Meg Ohm - ⅓ Watt - 10% - 20 Volt - Carbon
R15	130-9	200M Ohm - ⅓ Watt - 20% - 20 Volt - Carbon
R16	130-3	500M Ohm - ⅓ Watt - 20% - 100 Volt - Carbon
R17	101-45	1 Meg Ohm - Tone Control

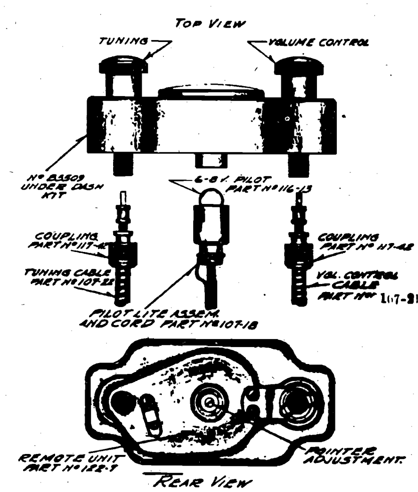
CONDENSERS

C		Spark Plate
C1	129-3	.00002 Mica - "O" - 20%
C2	129-49	.00009 Mica - "O" - 5%
C3	116-18	.05 x 200 Volt
C4	116-18	.25 x 200 Volt
C5	116-17	.05 x 200 Volt
C6	129-21	.0002 Mica - MT - "O" - 20%
C7	124-17	Single Padder J-4-S
C8	116-17	.1 x 400 Volt
C9	116-18	.1 x 400 Volt
C10	116-17	.1 x 200 Volt
C11	116-17	.1 x 200 Volt
C12	116-16	.05 x 200 Volt
C13	129-5	.0001 Mica - MT - "O" - 20%
C14	129-2	.0005 Mica - MT - "O" - 20%
C15	116-18	.02 x 200 Volt
C16	129-5	.0001 Mica - MT - "O" - 20%
C17	116-16	.05 x 400 Volt
C18	100-37	.003 x 600 Volt - 10%
C19	116-16	.01 x 800 Volt
C20	100-35	.5 x 200 Volt - 50% - 10%
C21	100-35	.5 x 200 Volt - 50% - 10%
C22	100-35	.5 x 200 Volt - 50% - 10%
C23	100-36	.01 x 1400 Volt - 10%
C24	119-21	8.0 mfd. Lytic Cond. 350 Working Volts
C25	119-21	4.0 mfd. Lytic Cond. 350 Working Volts
C26		5.0 mmf. Gimmick

PARTS

T1	111-48	Antenna Filter Coil Assembly
T2	111-47	Antenna Coil Assembly
T3	109-27	R.F. Coil Assembly
T4	110-37	Oscillator Coil Assembly
T5	108-69	Input I.F. Coil—465 Kc.
T6	102-26	Three Gang Variable Condenser
T7	108-72	Output I.F. Coil—465 Kc.
T8	105-27	Output Transformer
T9	104-51	Power Transformer
L1	105-23	Filter Choke
L2	105-19	"A" Choke
L3	105-24	"A" Choke
L4	105-26	"A" Choke
L5	114-34	5¼" Speaker (Field Resistance—4 Ohms)
V	126-1	Vibrator

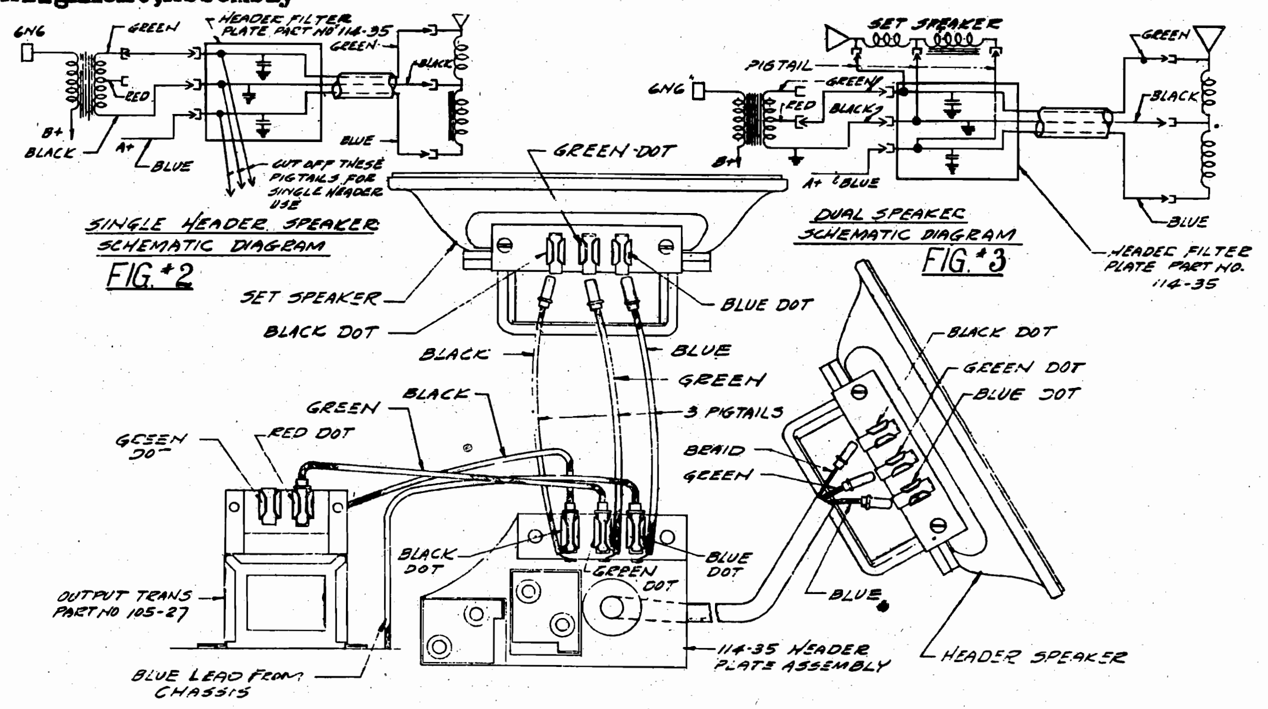
C3, C4, C9, C15, in one unit—part No. 116-18.
C5, C8, C10, C11, in one unit—part No. 116-17.
C12, C17, C19, in one unit—part No. 116-16.
C24, C25, in one unit—part No. 119-21.



MODEL D744(1936)
Alignment,Assembly

WESTERN AUTO SUPPLY CO.

Notes



NO SPARK PLUG SUPPRESSORS ARE REQUIRED

DESCRIPTION:

Model No. 666 is a six-tube superheterodyne receiver having a tuning range of 530 K.C. to 1550 K.C., operates from a 6.0 volt storage battery and uses the automotive type 6.3 volt tubes. The "B" supply is obtained from a vibrator with a tube rectifier.

The I.F. frequency used is 465 K.C., the R.F. end of the receiver consisting of a high gain iron core antenna coil which gives high signal to noise ratio and an R.F. stage especially designed to give high image rejection and high I.F. attenuation. The I.F. transformers are designed to give high gain and selectivity and yet to have a broad nose for ease of tuning and hi-fidelity response. They are of the air core type and wound with solid wire to give *minimum* drift and variation of gain due to climatic changes.

The receiver is so designed that it may be used as either a single or two unit installation. Taps are provided on the output transformer to a pin jack terminal board, a red dot distinguishing dual speaker tap and green dot for single speaker operation.

For complete details see illustration and Header speaker data chart.

Dash kits for the remote control head are available for 1936 cars drilled for dash plates.

This receiver has been carefully designed to facilitate servicing, the top and bottom covers are both removable and are fastened in place by spring clips, self tapping screws and trimount buttons.

All adjustments are accessible and any part replaceable without removing the chassis from the case.

TUBE COMPLEMENT

1—Type No. 6K7—Remote Cut-off Pentode as an R.F. Amplifier
1—Type No. 6A8—Pentagrid Converter (composite first detector and oscillator)
1—Type No. 6K7—Remote Cut-off Pentode as an I.F. Amplifier (465 K.C.)
1—Type No. 6Q7—Duplex Diode Triode Second Detector, A.V.C. and First Audio
1—Type No. 6N6—Twin Triode Output Amplifier
1—Type No. 6X5—High Vacuum Rectifier

The tube complement consists of the latest "Metal-Glass" tubes which are interchangeable with metal tubes.

Cars with floating power must have the motor bonded to the bulkhead and again to the frame to provide a direct path for the high frequency interference developed in the ignition system. ⅝" copper braid will be necessary, SMALL DIAMETER WIRE WILL NOT DO. Bond flexible shaft leads, such as free wheeling, choke wires, etc., which pick up motor noise and reradiate it into the car. Free wheeling cables should be grounded at the point at which they go through the fire wall of the car. In extreme cases it has been found necessary to ground the steering column.

I.F. ALIGNMENT

1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 465 K.C. in series with I.F. dummy antenna, to grid of 6K7 I.F. tube.
2. Adjust trimmer condensers of output I.F. transformer No. 108-72 to resonance with oscillator.
3. Move test oscillator connection to grid of 6A8 tube and adjust trimmer condensers of input I.F. transformer No. 108-69 to resonance with oscillator. See top view for location of these transformers. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver.

BROADCAST ALIGNMENT

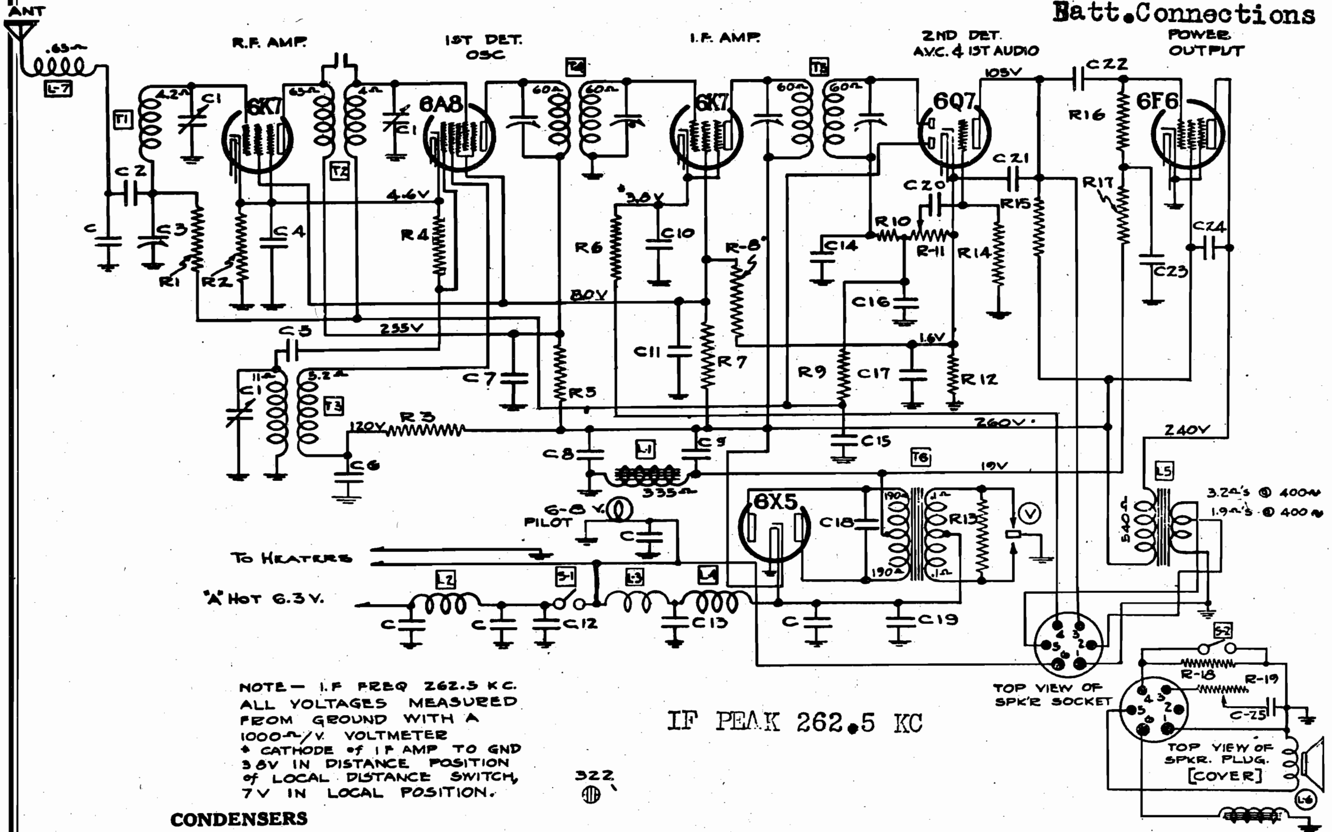
1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. in series with broadcast dummy to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance. (This adjustment is on the middle section of the three-gang condenser—see top view).
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust R.F. and antenna trimmers to resonance (see top view).
4. Re-set test oscillator to 600 K.C. and rotate variable condenser to 600 KC. Adjust series pad rocking gang condenser to and fro at the same time adjusting series pad for maximum gain. This adjustment is accessible from the top of chassis (see top view.
5. Go back and check 1400 K.C. If adjustment is made here, check 600 K.C. again.
6. Check for sensitivity at 1000 K.C. by setting test oscillator to this frequency and picking up the signal by rotating variable condenser. Under no circumstances bend plates of variable condenser sections to correct tracking.

Make certain that the instrument panel has a ground connection to the frame of the car.

NOTE—Where ignition coils are mounted in motor compartments a .5 mfd cond (148-1 or 148-3) connected between primary coil terminal and receiver mounting bolt will often reduce motor noise.

MODEL D744(1937)
Schematic, Voltage
Socket, Trimmers
Batt. Connections

WESTERN AUTO SUPPLY CO.



CONDENSERS

C		Spark Plate
C1	102-45	3 Gang Condenser
C2	129-73	.002 Mica - MW-W - 10%
C3	124-36	Series Pad
C4	116-20	.1 x 200 v. - 20%
C5	129-12	.00025 Mica - MT - 20%
C6	116-19	.1 x 400 - 20%
C7	116-19	.1 x 400 - 20%
C8	119-34	8. mfd. - 350 W v.
C9	119-34	4 mfd. 350 W v.
C10	116-19	.05 x 200 v. - 20%
C11	116-20	.25 x 200 v. - 20%
C12	100-31	.5 x 120 v. - 10-50% - Braid leads
C13	100-31	.5 x 120 v. - 10-50%
C14	129-5	.0001 Ceramicon - 20%
C15	116-19	.05 x 200 v. - 20%
C16	129-5	.0001 Ceramicon - 20%
C17	116-20	.02 x 200 - 20%
C18	100-36	.01 x 1400 v. - 20% - 10% "A"
C19	100-31	.5 x 120 v. - 10% - 50%
C20	116-20	.02 x 200 - 20%
C21	129-5	.0001 Ceramicon - 20%
C22	100-55	.01 x 400 - 25%
C23	100-48	.25 x 200 - 20%
C24	100-54	.006 x 600 - 25%
C25	100-11	.01 x 400 - 25%

C4, C11, C17, C20 All in Block 116-20
C7, C6, C10, C15 All in Block 116-19

RESISTORS

R1	130-141	250M ohm - 1/3 w. Insulated
R2	130-54	500 ohm - 1/3 w.
R3	130-138	50M ohm - 1/2 w. Insulated
R4	130-52	50M ohm - 1/3 w.
R5	130-137	1500 ohm - 1/3 w. Insulated
R6	130-154	1000 ohm - 1/3 w. Insulated
R7	130-143	30M ohm - 1.2 w.
R8	130-139	40M ohm - 1/3 w. Insulated
R9	130-19	1 meg - 1/3 w.
R10	130-162	50M ohm - 1/3 w. Insulated
R11	101-73	250M ohm - Volume Control
R12	130-153	700 ohm - 1/3 w.
R13	130-84	200 ohm - 1/3 w.
R14	130-19	1 meg ohm - 1/3 w.
R15	130-11	250M ohm - 1/3 w.
R16	130-5	300M ohm - 1/3 w.
R17	130-11	250M ohm - 1/3 w.
R18	130-161	4000 ohm - 1/3 w. Insulated
R19	101-45	Tone Control 1 Meg ohm.

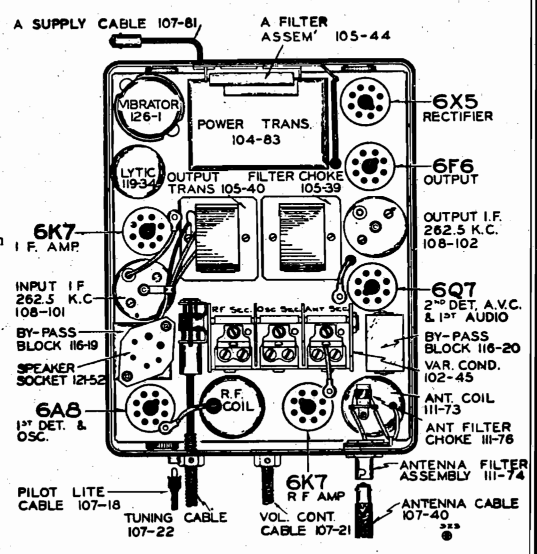
CONNECTIONS TO BATTERY

The battery cable, number 107-82, (red wire with fuse receptacle at one end and terminal lug at other end) must be connected to battery terminal of ammeter. At the same time connect ammeter capacitor, number 148-3, to battery terminal of ammeter, other end of condenser to any convenient grounded screw on back of instrument panel. Make certain that insulating sleeve is slipped over fuse when fuse is placed in receptacle, before connecting to short battery cable from receiver.

When connected properly, the discharge due to current drawn by the receiver should not indicate on the ammeter. This is important, since if improperly connected, as shown by the deflection of ammeter, additional motor interference may be encountered.

PARTS

L7	111-76	Antenna Filter Choke Assem
T1	111-73	Antenna Coil Complete
T2	109-36	R.F. Coil Complete
T3	110-59	Oscillator Coil Complete
T4	108-101	I.F. Input
T5	108-102	I.F. Output
T6	104-83	Power Transformer
L1	105-39	Filter Choke (335 ohms)
L2	105-26	"A" Choke
L3	105-24	"A" Choke
L4	105-19	"A" Choke
L5	105-40	Output transformer
L6	114-62	Speaker. Dynamic
S1		Switch on Volume Control
S2	125-28	Sensitivity switch.



MODEL D744(1937)
Alignment,Notes

WESTERN AUTO SUPPLY CO.

Assembly

SERVICE NOTES

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the circuit diagram.

In order to prevent signal from acting upon A.V.C. and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

All voltages are to be measured with 6.3 volts input to receiver. Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.

DESCRIPTION

Model No. 667 is a six-tube superheterodyne receiver having a tuning range of 530 K.C. to 1550 K.C., operates from a 6.0 volt storage battery and uses the automotive type 6.3 volt tubes. The "B" supply is obtained from a vibrator with a tube rectifier.

The I.F. frequency used is 262.5 K.C., the R.F. end of the receiver consisting of a high gain iron core antenna coil which gives high signal to noise ratio and an R.F. stage especially designed to give high image rejection and high I.F. attenuation. The I.F. transformers are designed to give high gain and selectivity and yet to have a broad nose for ease of tuning and hi-fidelity response. They are of the air core type and wound with solid wire to give *minimum* drift and variation of gain due to climatic changes.

This receiver has been carefully designed to facilitate servicing, the top and bottom covers are both removable and are fastened in place by spring clips, self tapping screws and trimount buttons.

DUMMY ANTENNAS

The dummy antennas referred to in the following instructions are:

"I.F. Dummy" —A .5 mfd. condenser connected in series with the test oscillator output lead.

"Broadcast Dummy"—A 175 mmfd. condenser connected in series with the output lead of the test oscillator.

RESONANCE INDICATOR

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the plate and screen terminals of the type 6F6 output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

I.F. ALIGNMENT: (262.5 K.C.)

1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 262.5 K.C. in series with I.F. dummy antenna, to grid of 6K7 I.F. tube.
2. Adjust trimmer condensers of output I.F. transformer No. 108-102 to resonance with oscillator.
3. Move test oscillator connection to grid of 6A8 tube and adjust trimmer condensers of input I.F. transformer No. 108-101 to resonance with oscillator. See top view for location of these transformers. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver.

BROADCAST ALIGNMENT

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. in series with broadcast dummy to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance. (This adjustment is on the middle section of the three-gang condenser—see top view, Fig. 2).
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust R.F. and antenna trimmers to resonance (see top view, Fig. 2).
4. Re-set test oscillator to 600 K.C. and rotate variable condenser to 600 K.C. Adjust series pad in the antenna circuit, rocking gang condenser to and fro at the same time adjusting series pad for maximum gain. This pad is mounted on the side of the antenna can.
5. Go back and check 1400 K.C. If adjustment is made here, check 600 K.C. again.
6. Check for sensitivity at 1000 K.C. by setting test oscillator to this frequency and picking up the signal by rotating variable condenser. Under no circumstances bend plates of variable condenser sections to correct tracking.

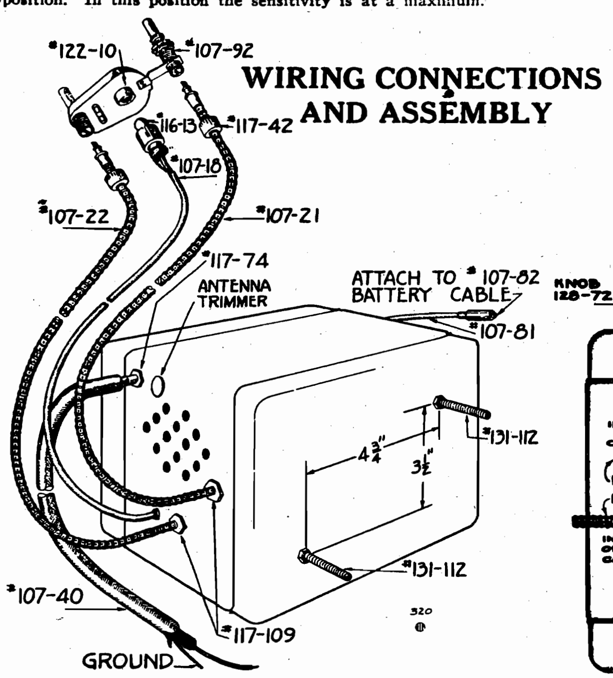
CITY-COUNTRY SWITCH

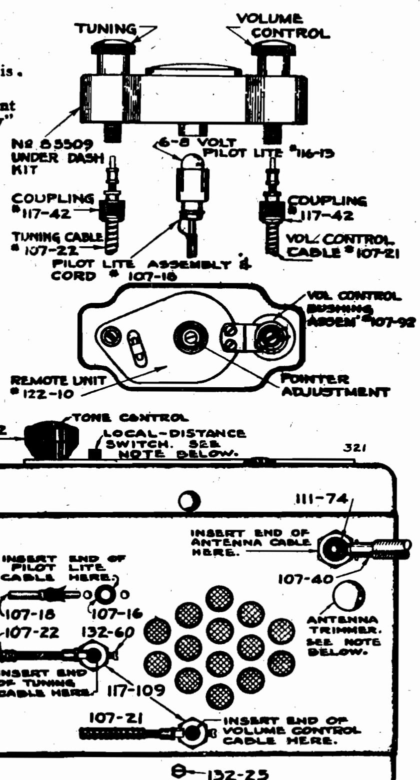
This switch is located on the chassis cover.

City—While driving in the city or close to broadcasting stations, it is best to turn the knob to the "city" position for least noise.

Country—When driving in the country, or when listening to distant stations, best results are obtained with the knob turned to the "country" position. In this position the sensitivity is at a maximum.

WIRING CONNECTIONS AND ASSEMBLY





ADJUSTING ANTENNA TRIMMER

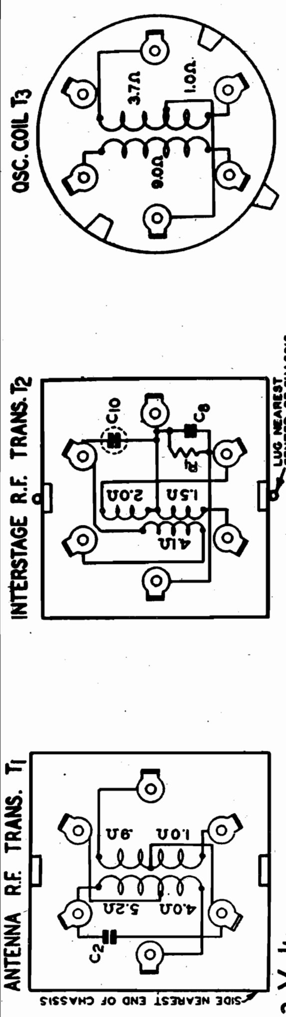
Tune in a weak signal at approximately 600 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna trimmer up or down until maximum output is obtained. See Fig. 1 for location of this trimmer.

DIAL ADJUSTMENT

Tune set to some station of a known frequency (between 800 and 1200 K.C.), hold selector knob, then remove pilot light assembly from back of remote head and with a screw driver adjust the slotted screw through this opening and in this way adjust the dial pointer to the correct frequency setting.

MODEL D745 (1936)
Schematic, Socket
Trimmers, Coils

WESTERN AUTO SUPPLY CO.



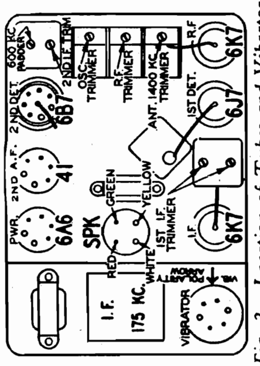


Fig. 2—Location of Tubes and Vibrator

Power Consumption - - - 7.8 Amperes at 6.3 Volts

Power Output - - - 6 Watts Undistorted at 6.3 Volts

Sensitivity - - - - - 1.0 Microvolt Absolute
(LD switch in distant position)

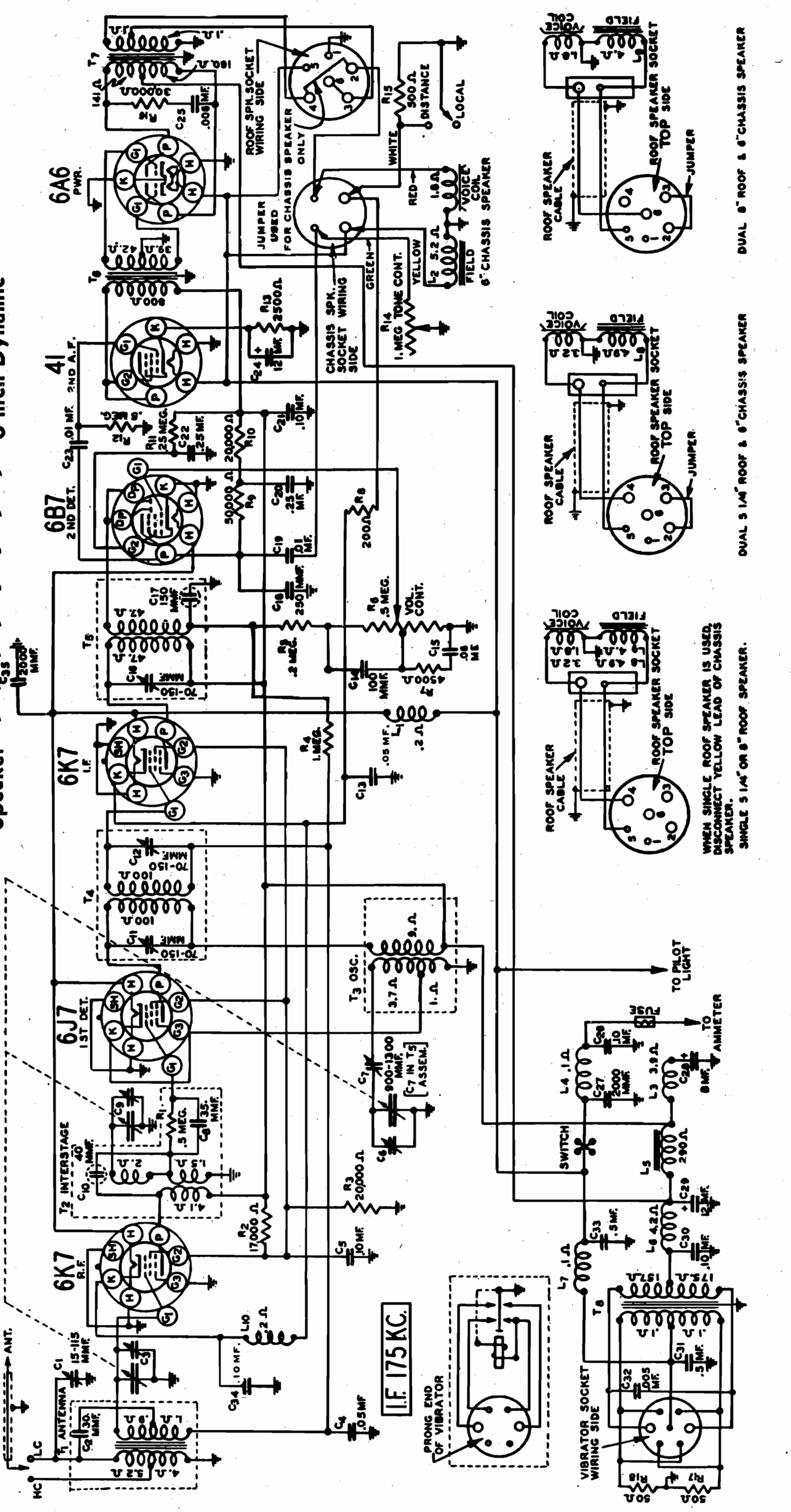
Selectivity - - - 45 KC Broad at 1000 Times Signal

Tuning Frequency Range - - - - 530 to 1575 KC

Intermediate Frequency - - - - - - 175 KC

Speaker - - - - - - - 6 inch Dynamic

June 1936



MODEL D745 (1936)
Voltage, Alignment
Notes, Parts

WESTERN AUTO SUPPLY CO.

6 Tube Synchronous Vibrator Automobile Radio

VOLTAGES AT SOCKETS
Antenna Plug Withdrawn — L-D Switch in Distant Position, Battery 6.2 Volts under Load

Type of Tube	Function	Across Heater	Plate to Ground	Screen to Ground	Cathode to Ground
6K7	R.F.	5.6	260	110	3
6J7	1st Det.	5.6	260	110	
6K7	I.F.	5.6	260	110	3
6B7	2nd Det.	5.6	55	50	
41	2nd A.F.	5.7	255	55	30
6A6	Pwr.	5.7	275		

I. F. Adjustment

Set the signal generator for a signal of 175 KC.

Connect the output of the signal generator through a .05 mf. condenser to the stator of the R.F. interstage section of the tuning condenser. (See Fig. 2 for location of this section.)

Connect the ground lead of the signal generator to the chassis ground.

Turn the Local-Distance switch to the Distance position and keep it in this position for all adjustments.

Set the volume control at the maximum position.

Attenuate the signal from the signal generator to prevent the levelling-off action of the AVC.

Then adjust the three I.F. trimmers until maximum output is obtained. The location of these trimmers is shown in Fig. 2.

1575 KC Adjustment

Set the signal generator for 1575 KC.

Turn the rotor of the tuning condenser to the full open position.

If a low capacity antenna is used, connect the shielded antenna lead from the chassis through a 150 mmf. condenser to the antenna post of the signal generator. (If high capacity, use 1500 mmf.) The antenna plug must be correctly inserted, dependent on the capacity of the antenna used.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent AVC action.

Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained—see Fig. 2 for location of this trimmer.

1400 KC Adjustment

Set the signal generator for 1400 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the R.F. interstage and antenna 1400 KC trimmers for maximum output.

Do not change the setting of the oscillator trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Connect the output of the signal generator through a .05 mf. condenser to the control grid of the 6K7 R.F. tube.

Turn the tuning condenser rotor until maximum output is obtained. Then turn the tuning condenser rotor back and forth, at the same time adjusting the 600 KC padder (see Fig. 2) until the peak of greatest intensity is obtained.

Re-connect the output of the signal generator to the shielded antenna lead through a 150 mmf. condenser (1500 mmf. if antenna is high capacity).

Adjust the 600 KC antenna trimmer to maximum. This trimmer is reached from the outside of the case

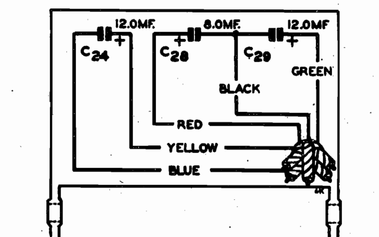


Fig. 5—Condenser Block—Internal Wiring

Adjusting Antenna 600 KC Trimmer

After the receiver is installed and the car antenna is connected, it will be necessary to adjust the antenna trimmer. Tune in a weak signal at approximately 600 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna 600 KC trimmer up or down until maximum output is obtained. See Fig. 3 for location of this trimmer.

As shown in this illustration, the antenna plug is inserted in one of two ways, depending on whether the car has a high or low capacity antenna. Full instructions are in the installation manual packed with each radio.

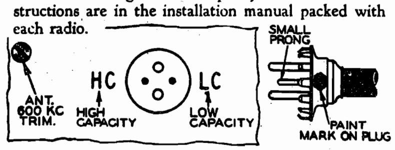


Fig. 3—Antenna Plug Insertion

Calibrating the Radio

To calibrate the radio, tune in a station of known frequency. At the back of the control head is the calibration screw. Remove the pilot lamp assembly. Insert a fine blade screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received. The knob must be held during this adjustment.

If the control head is inaccessible it may be calibrated by setting the pointer from the front. Remove the crystal by inserting a knife blade under the lower edge. Loosen the pointer screw, set the pointer and retighten.

Replacement Parts

There is a large letter on the chassis which identifies the set as to major part changes. When ordering parts please be sure to mention the series number and this large letter.

Part No.	Description	List Price
P-3A223	6J7 Tube Socket	$0.15
P-3A211	6K7 Tube Socket	.15
P-3A205	6A6 Tube Socket	.15
P-3A116	41 Tube Socket	.10
P-3A120	6B7 Tube Socket	.15
P-3A229	6 Prong Socket (External Speaker)	.15
P-3A226	Antenna Socket	.10
P-3A228	Vibrator Socket	.15
P-3A231	4 Prong Socket (Internal Speaker)	.10

SPEAKER

Part No.	Description	List Price
P-12A242	6" Dynamic Speaker	$4.35

Part No.	Code	Description	List Price
P-9A598	L4	"A" Line Reactor	.20
P-52X45	L5	"B" Reactor	.80
P-9A585	L6	"B" Reactor	.30
P-9A587	L7	Vibrator Reactor	.50
P-9A614	L10	Filament Choke	.20

RESISTORS

CARBON

Part No.	Code	Resistance	Wattage	List Price
P-A94504	R1	500,000 Ohms	0.2	$0.15
P-C94173	R2	17,000 Ohms	1.0	.15
P-B94203	R3	20,000 Ohms	0.5	.15
P-A95106	R4	1 Megohm	0.2	.10
P-A95204	R5	200,000 Ohms	0.2	.10
P-A94452	R7	4,500 Ohms	0.2	.15
P-A94201	R8	200 Ohms	0.2	.15
P-B95503	R9	50,000 Ohms	0.5	.10
P-A95203	R10	20,000 Ohms	0.2	.10
P-A95254	R11	250,000 Ohms	0.2	.10
P-A95504	R12	500,000 Ohms	0.2	.10
P-B94252	R13	2,500 Ohms	0.5	.15
P-B95101	R15	500 Ohms	0.5	.10
P-C95303	R16	30,000 Ohms	1.0	.10
P-B94500	R17	50 Ohms	0.5	.15
P-B94500	R18	50 Ohms	0.5	.15

VARIABLE

Part No.	Code	Resistance	Description	List Price
P-36X217	R6	500,000 Ohms	Volume Control & Switch	1.00
P-40X212	R14	1 Megohm	Tone Control	.70

CONDENSERS

TUBULAR

Part No.	Code	Capacitance	Voltage	List Price
P-46X80	C4	.05 mf.	180	$0.15
P-46X181	C5	.10 mf.	240	.15
P-46X80	C13	.05 mf.	180	.15
P-46X186	C15	.06 mf.	180	.15
P-46X161	C19	.01 mf.	600	.15
P-46X189	C20	.25 mf.	360	.30
P-46X105	C21	.10 mf.	360	.20
P-46X143	C22	.25 mf.	360	.30
P-46X120	C23	.01 mf.	360	.15
P-46X101	C25	.006 mf.	600	.15
P-46X98	C26	.10 mf.	180	.20
P-46X105	C30	.10 mf.	360	.20
P-46X135	C31	.5 mf.	180	.40
P-46X183	C32	.0056 mf.	1,600	.20
P-46X135	C33	.5 mf.	180	.40
P-46X98	C34	.10 mf.	180	.20

ELECTROLYTIC

Part No.	Code	Capacitance	Voltage	Description	List Price
P-45X211	C24	12 mf.	25	Electrolytic Block	2.70
	C28	8 mf.	450		
	C29	12 mf.	450		

MOLDED

Part No.	Code	Capacitance	List Price
P-47X66	C2	30 mmf.	.15
P-47X53	C8	35 mmf.	.10
P-47X57	C14	100 mmf.	.10
P-47X65	C18	250 mmf.	.15
P-47X41	C27	2,000 mmf.	.20
P-47X41	C35	2,000 mmf.	.20

TRIMMER

Part No.	Code	Description	List Price
P-17A48	C1	25-115 mmf. Antenna Trimmer	.20
	C3	Antenna Trimmer—Part of Gang Condenser	
	C6	Oscillator Trimmer—Part of Gang Condenser	
P-17A46	C7	900-1,300 mmf. 600 KC Oscillator Padding Cond.	.55
	C16	70-150 mmf. 2nd I. F. Primary Trimmer	
	C9	Interstage Trimmer Part of Gang Condenser	
P-17A33	C11	70-150 mmf. 1st I. F. Trimmer	.40
	C12	70-150 mmf.	

MISCELLANEOUS

Part No.	Code	Description	List Price
	C10	40 mmf. Integral Part of Interstage Transformer Assembly	
	C17	150 mmf. Integral Part of 2nd I. F. Transformer Assembly	
P-14A51		Three Section Gang Condenser Assembly complete with Drive Gears	$4.50

Part No.	Description	List Price
P-19A26	Vibrator Unit	$4.10
Specify Name and Model of Receiver	Chassis Case Only	3.80
	Chassis Case Cover Only	3.05
	Spring Clamp Button	.10
	Tone Control Knob	.10
	Local-Distance Switch Knob	.10
	8-32 x 3/16" Headless Cup Point Set Screw ... Doz.	.15
P-30X14	Grid Clip only—Glass Tube	.10
P-30X44	Grid Clip only—Metal Tube	.10
P-32X30	Tube Shield Base	.10
P-32X58	Tube Shield	.15
P-2A54	Local-Distance Switch	.40

TRANSFORMERS AND COILS

Part No.	Code	Description	List Price
P-9A580	T1	Antenna Transformer & Can Assembly	$1.60
P-9A581	T2	Interstage Transformer & Can Assembly	1.55
P-9A582	T3	Oscillator Coil & Can Assembly	.85
P-9A583	T4	1st I. F. Coil & Can Assembly	1.45
P-9A584	T5	2nd I. F. Coil & Can Assembly	1.80
P-50X32	T6	Input Transformer	1.30
P-51X43	T7	Output Transformer	1.40
P-53X124	T8	Power Transformer	3.10
P-9A586	L1	Filament Reactor — One Assembly	.55
	L3	R.F. "B" Reactor	

CABLE AND FLEXIBLE SHAFT ASSEMBLIES

Part No.	Quan. Used	Description	List Price
P-18A40	2	20" Volume Control or Tuning Control Flexible Drive Shaft ... ea.	$1.10
P-18A42	2	25" Volume Control or Tuning Control Flexible Drive Shaft ... ea.	1.30
P-18A44	2	36" Volume Control or Tuning Control Flexible Drive Shaft ... ea.	1.45
P-13X252	1	Pilot Light Cable less Lamp	.65
P-13X253	1	48" Antenna Cable & Plug	.95
P-13X227	1	Battery Cable (long section with fuse receptacle)	.35
P-13X234	1	"A" Cable—Short Section Connected to Chassis (Part of Chassis Assembly)	.35

MOUNTING BOLT ASSEMBLY

Part No.	Quan. Used	Description	List Price
P-20X59	3	Double End Hex Bolts for Mounting Chassis to Dash ... ea.	.10
	3	5/16"—18 Spring Locknut for above Mounting Assembly ... doz.	.10
P-19X18	6	Flat Washers for above Mounting Assembly ... doz.	.15
	6	5/16"—18 Hex Nuts for above Mounting Assembly ... doz.	.15
	1	5/16" Shakeproof Lockwasher to Ground Chassis Case to Metal Dash Surface on Engine Side ... doz.	.10

MISCELLANEOUS MOUNTING ITEMS

Part No.	Quan. Used	Description	List Price
P-7A32	1	Pilot Light Bulb	.20
P-16X14	1	20 Ampere Fuse	.10
P-16X3	1	Fuse Shield	.10
P-21A6	1	Distributor Suppressor	.35
P-48X27	1	Generator Condenser	.45
P-21A5	1	Choke Condenser Unit (Not Shipped with Set)	1.50
P-21A7		Spark Plug Suppressors (Not Shipped with Set) ... ea.	.35

CONTROL HEAD AND PLATE ASSEMBLY

Part No.	Quan. Used	Description	List Price
*P-20A27	1	No. 4 Control Head only with 3/8" Hex Nut	3.00
*P-20A28	1	Volume Control Fitting complete with Retaining Spring, 3/8" Hex Nut and Lock Washer	.25
*	1	Dial Scale (Specify Name and Model of Radio)	.10
*P-15X45	1	Pointer	.10
*	1	Pointer Screw 3-48 x 5/16" ... doz.	.10
†P-17X13	1	Dial Crystal	.25
†		Control Knobs—Specify Car, Year and Model ... ea.	.25

NOTE: Prices of Instrument Panel Plate Kits are shown in Chart on Page 5.

* Shipped with each Set
† Shipped with Panel Kit

ROOF MOUNTING SPEAKER KITS

1936 BUICK, CHEVROLET, PONTIAC, OLDSMOBILE

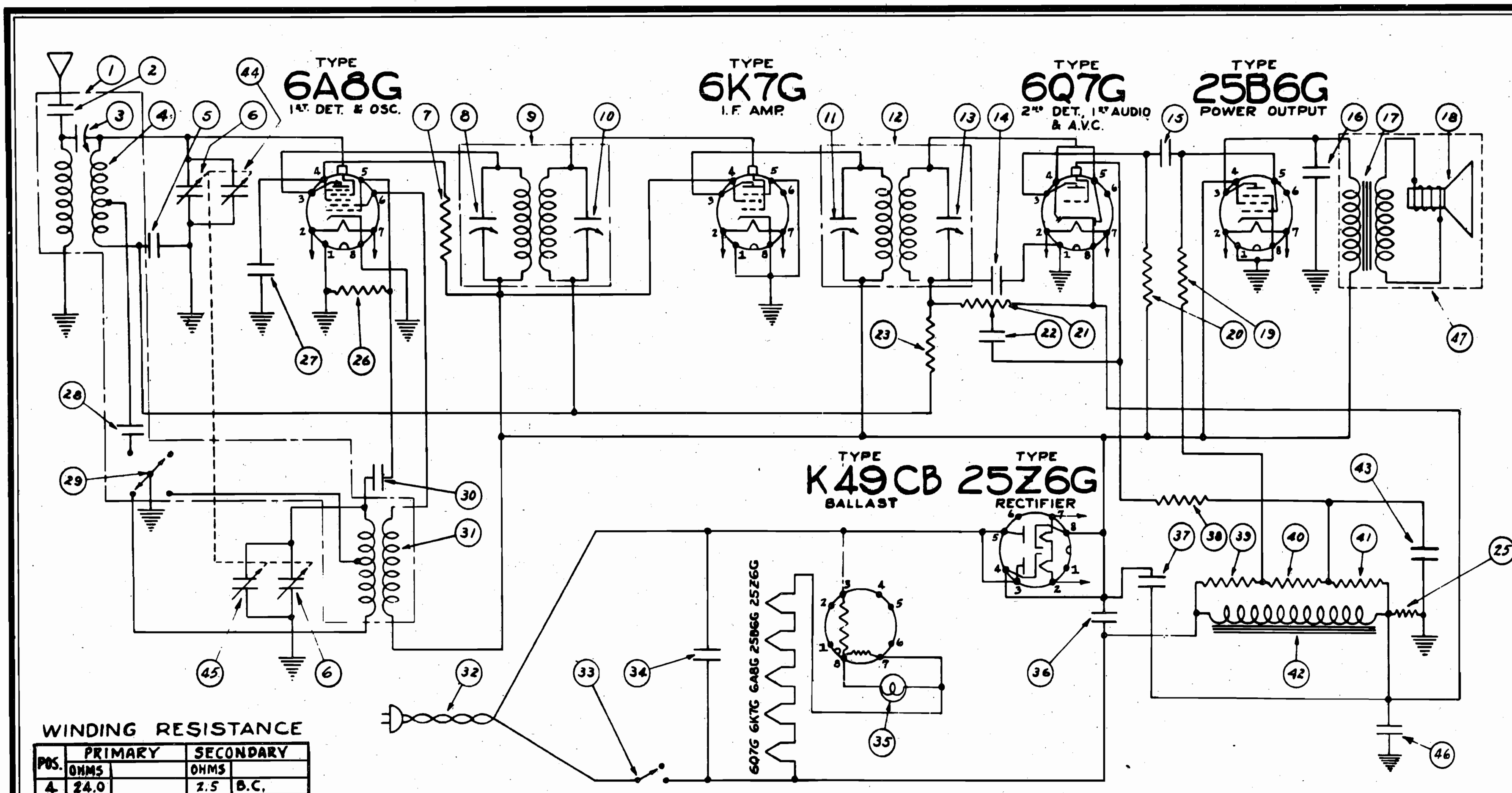
Part No.	Description	List Price
P-21A27	SPEAKER KIT ASSEMBLY COMPLETE	$5.35
	Includes	
P-12A234	5¼" Dynamic Speaker	3.05
P-23A56	Mounting Kit—Includes Trim Ring, Speaker Housing, Self Tapping Screws & Clamp Springs	2.00
P-13X248	Speaker Cable Assembly Complete	1.05
P-21A28	SPEAKER KIT ASSEMBLY COMPLETE	9.65
	Includes	
P-12A233	8" Dynamic Speaker	6.65
P-23A57	Mounting Kit—Includes Trim Ring and Self Tapping Screws	3.00
P-13X248	Speaker Cable Assembly Complete	1.05

1936 FORD—STANDARD AND DELUXE

Part No.	Description	List Price
P-21A29	SPEAKER KIT ASSEMBLY COMPLETE	4.15
	Includes	
P-12A234	5¼" Dynamic Speaker	3.05
P-23A58	Mounting Kit—Includes Hex Nuts, Lockwashers and Bolts	.40
P-13X248	Speaker Cable Assembly Complete	1.05

MODEL WR120
Schematic, Voltage

WESTINGHOUSE ELEC. SUPPLY CO.



INT. FREQ. 455 KC.

WINDING RESISTANCE

POS.	PRIMARY OHMS		SECONDARY OHMS	
4	24.0		2.5	B.C.
			1.5	POLICE
9	9.5		9.5	
12	18.5		18.5	
17	155			
18	4.5			
31	3.0		4.0	B.C.
			2.0	POLICE
42	375			

SOCKET VOLTAGES

TUBE	STAGE	FIL.	PIN NO.	PLATE	PIN NO.	SCREEN	PIN NO.	BIAS
6A8G	1ST. DET. & OSC.	6.3	2 To 7	98	1 To 3	48	1 To 4	
6K7G	I.F. AMPLIFIER	6.3	2 To 7	98	1 To 3	98	1 To 4	
6Q7G	2ND. DET., 1ST. AUD., AVC	6.3	2 To 7	52	1 To 3			-1.2
25B6G	POWER OUTPUT	23.5	2 To 7	90	1 To 3	98	1 To 4	
25Z6G	RECTIFIER	23.5	2 To 7					
K49C	BALLAST							

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes .... 1 #6A8G, 1 #6K7G, 1 #6Q7G, 1 #25B6G, 1 #25Z6G, 1 #K49CB (Ballast) - Total 6
Power Supply Characteristics 105-125 volts D.C., or 105-125 volts, 50-60 cycle A.C.
Power Consumption .... 48 Watts
Total Power Output .... 2.3 Watts
Undistorted Power Output .... 1.35 Watts
Tuning Ranges .... (Broadcast Band 540-1500 KC.
(Short-wave Band 1500-3000 KC.
Line-Up Frequencies .... I.F. 455 KC., 1400 KC.

MODEL WR120
Alignment, Parts

WESTINGHOUSE ELEC. SUPPLY CO.

GENERAL DESCRIPTION

This model is a five-tube (plus a ballast tube), two-band superheterodyne receiver, designed to operate over the standard broadcast band, extending from 540 to 1500 KC., and a short-wave band extending from 1500 to 3000 KC.

The receiver uses a type 6A8G tube as a first detector-oscillator, a type 6K7G as an I.F. amplifier, a type 6Q7G as a second detector, A.V.C., and first audio, a type 25B6G as an output, a type 25Z6G as a rectifier and a K49CB as a ballast tube.

LINE-UP CAPACITOR ADJUSTMENTS

To properly align the circuits of this receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied and reduced sufficiently to prevent overload as the individual circuits of the receiver are brought into alignment. A conventional output meter should be connected across the terminals of the speaker voice coil to indicate when the individual circuits are correctly aligned. The sensitivity of the meter must be sufficient to give satisfactory reading with low input signals.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, location of the various tubes and alignment condensers.

ALIGNMENT OF I.F. (455 KC.)

1. Set the volume control to maximum position and wave-change switch to standard broadcast band.

2. Connect the output meter across the voice coil terminals of the speaker.

3. Set the test oscillator to 455 KC., and adjust its output to produce a measureable reading on the output meter when the test signal is applied to the grid of the type 6A8G first detector-oscillator tube through a 0.5 mfd. blocking condenser.

4. Adjust the four trimmer condensers on the top of the two I.F. coils (square housings) to maximum output.

ALIGNMENT OF OSCILLATOR AND R.F.

1. Check the pointer setting to be sure that it is exactly horizontal when the tuning condenser is completely closed.

2. Set the test oscillator and dial indicator to 1400 KC., and adjust the oscillator trimmer condenser (rear section of gang) to maximum output.

3. Apply the test signal to coil end of the antenna cable through a .0001 mfd. blocking condenser and adjust trimmer condenser (front section of gang) to maximum output.

4. Check sensitivity over the band.

5. Turn wave-change switch to the short-wave band and check the sensitivity over scale.

TRAP ALIGNMENT

This receiver is provided with a tuned trap which can be adjusted from the bottom without removing the receiver from the cabinet. This trimmer does not need to be adjusted unless there is code interference, in which case, adjustment is made to eliminate the undesired signal.

SERVICE PARTS LIST

Dia. #	Part #	Description of Parts	List Price
1	RC 95298	Composite coil	$ 2.35
2	CW 6-005	.005 mfd., 600 V. condenser	.15
3		Trimmer condenser - part of RC 95298	
4		Preselector coil - part of RC 95298	
5	SA 105327	.05 mfd., 200 V. dual condenser	.30
6	CG 9562	Variable condenser	3.00
7	RE 3333	33,000 ohm, 1/2 W. resistor	.10
8		Trimmer condenser - 80-200 mmf. - part of IC 95107	
9	IC 95107	1st I.F. coil - 455 KC.	1.50
10		Trimmer condenser - 80-200 mmf. - part of IC 95107	
11		Trimmer condenser - 35-130 mmf. - part of IC 95108	
12	IC 95108	2nd I.F. coil - 455 KC.	1.20
13		Trimmer condenser - 35-130 mmf. - part of IC 95108	
14	CM 956	.00025 mfd. mica condenser	.20
15	CW 6-005	.005 mfd., 600 V. condenser	.15
16	CW 6-005	.005 mfd., 600 V. condenser	.15
17	TR 9588	Output transformer	1.35
18	DM 9512	Diaphragm and coil assembly	1.50
19	RE 4743	470,000 ohm, 1/2 W. resistor	.10
20	RE 2243	220,000 ohm, 1/2 W. resistor	.10
21	VR 9549	Volume control	.80
22	CW 6-005	.005 mfd., 600 V. condenser	.15
23	RE 4743	470,000 ohm, 1/2 W. resistor	.10
25	RE 1003	10 ohm, 1/2 W. resistor	.10
26	RE 4733	47,000 ohm, 1/2 W. resistor	.10
27		.05 mfd., 200 V. dual condenser - part of SA 105327	
28	CW 6-005	.005 mfd., 600 V. condenser	.15
29	SW 9576	Wave-change switch	.35
30	CM 9513	.0001 mfd. mica condenser	.10
31		Oscillator coil assembly - part of RC 95298	
32	CB 9512	Line cable	.50
33		On-off switch - part of VR 9549	
34	CW 4-05	.05 mfd., 400 V. condenser	.15
35	LP 951	Dial lamp - 6-8 V.	.20
36	CE 9559	40 mfd., 150 V. electrolytic condenser	.75
37	CE 9560	30 mfd., 150 V. electrolytic condenser	.75
38	RE 4743	470,000 ohm, 1/2 W. resistor	.10
39	RE 4743	470,000 ohm, 1/2 W. resistor	.10
40	RE 4743	470,000 ohm, 1/2 W. resistor	.10
41	RE 6833	68,000 ohm, 1/2 W. resistor	.10
42		Field coil - part of SK 9567	
43	CW 2-25	.25 mfd., 200 V. condenser	.20
44		Trimmer condenser - part of CG 9562	
45		Trimmer condenser - part of CG 9562	
46	CW 2-10	.1 mfd., 200 V. condenser	.15
47	SK 9567	Speaker	4.00

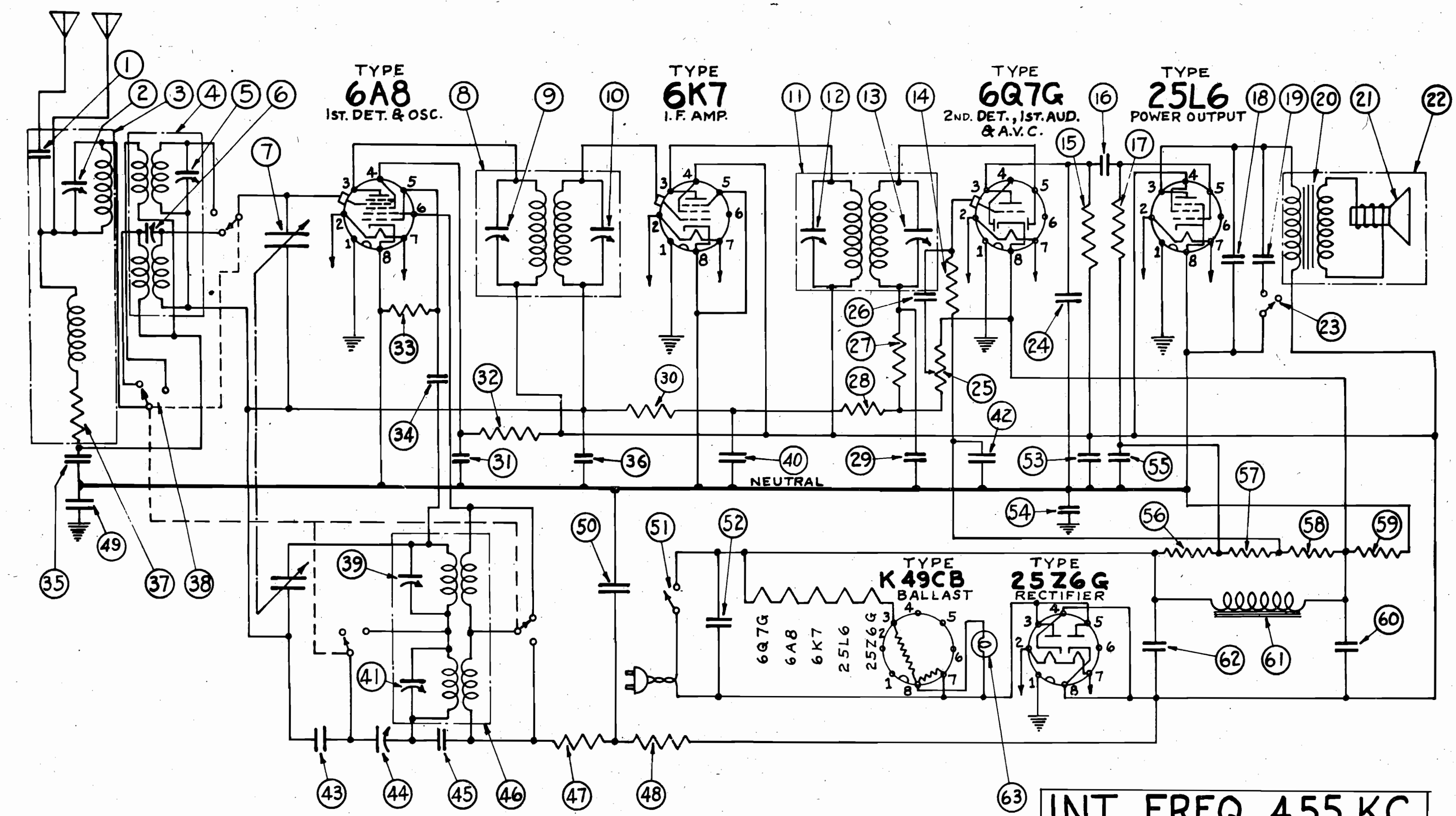
MISCELLANEOUS

Part #	Description of Parts	List Price
CV 95229	Celluloid cover for dial	.35
DS 9589	Celluloid dial scale	.70
FA 9519	Silk grill cloth	.15
FP 101869	Felt foot (4 used)	.05
IS 95216	Rubber pulley on drive shaft	.05
KA 9583	Cabinet	
KL 105344	"Hank" antenna cable	.20
KN 95127	Knob (3 used)	.12
NT 958	3/8" Pal nut for volume and switch	.05
PL 95112	Dial supporting plate	.25
PR 97160	Cord for dial drive ....Per Yard	.05
PU 9529	Dial drive pulley assembly	.25
SI 9571	Dial indicator pointer	.20
SP 9551	Spring for dial drive cord	.05
SP 9553	Spring clip for celluloid dial cover	.05
SO 956	Octal base tube socket (6 used)	.20
SO 9529	Dial light socket assembly	.15
TU 95170	Insulation tube for electrolytic condenser	.05

PRICES SUBJECT TO CHANGE
WITHOUT NOTICE

MODEL WR140

WESTINGHOUSE ELEC. SUPPLY CO. Schematic, Voltage



INT. FREQ. 455 K.C.

WINDING RESISTANCE

POS.	PRIMARY OHMS		SECONDARY OHMS	
3	10.0		10.0	
4	34.5	B.C.	4.0	B.C.
	0.5	S.W.	0.2	S.W.
8	9.0		9.0	
11	9.0		9.0	
20	155		0.2	
21			4.5	
46	1.0	B.C.	4.0	B.C.
	1.0	S.W.	0.5	S.W.
61	375			

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes . 1 #6A8, 1 #6K7, 1 #6Q7G, 1 #25L6, 1 #25Z6G, 1 #K49CB - Total 6
Power Supply Characteristics .... 105-125 V., DC. or 105-125 V., 50-60 cycle A.C.
Power Consumption .... 45 Watts
Total Power Output .... 2.2 Watts
Undistorted Output .... 1.2 Watts
Tuning Ranges .... (Broadcast Band 535- 1,720 KC.
(Short-wave Band 5,800-17,500 KC.
Line-Up Frequencies .... I.F. 455 KC., 1500 KC., 600 KC., 15,000 KC.

SOCKET VOLTAGES

TUBE	STAGE	FIL.	PIN NO.	PLATE	PIN. NO.	SCREEN	PIN. NO.	OSC. PLATE	CATH
6A8	1ST. DET. & OSC.	6.1	2 TO 7	105	3 TO 8	45	4 TO 8	97	—
6K7	I.F. AMP.	5.9	2 TO 7	105	3 TO 8	105	4 TO 8	—	—
6Q7G	2ND. DET. 1ST. AUD. A.V.C.	6.3	2 TO 7	45	3 TO 8	—	—	—	0.7
25L6	POWER OUTPUT	21.2	2 TO 7	98	3 TO 8	105	4 TO 8	—	—
25Z6G	RECTIFIER	22.3	2 TO 7	—	—	—	—	—	105
K49CB	BALLAST	—	—	—	—	—	—	—	—

MODEL WR140
Alignment, Parts

WESTINGHOUSE ELEC. SUPPLY CO.

GENERAL DESCRIPTION

This model is a five-tube (plus ballast tube), A.C.-D.C., two-band superheterodyne receiver designed to operate over the standard broadcast band, extending from 535-1720 KC., and a short-wave band extending from 5800-17,500 KC.

LINE-UP CAPACITOR ADJUSTMENTS

To properly align the circuits of this receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied and reduced sufficiently to prevent overload as the individual circuits of the receiver are brought into alignment. A conventional output meter should be connected across the terminals of the speaker voice coil to indicate when the individual circuits are correctly aligned. The sensitivity of the meter must be sufficient to give satisfactory readings with low input signals.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, location of the various tubes and alignment condensers.

ALIGNMENT OF I.F. (455 KC.)

1. Set the volume control to maximum position, the wave-change switch to standard broadcast band and the dial pointer to approximately 600 KC.

2. Connect the output meter across the voice coil terminals of the speaker.

3. Set the test oscillator to 455 KC., and adjust its output to produce a measurable reading on the output meter when the test signal is applied to the grid of the first detector-oscillator tube through a 0.5 mfd. blocking condenser.

4. Adjust the four I.F. trimmer condensers underneath the chassis (under the square coil housings) to maximum output.

BROADCAST BAND

1. Check the pointer setting to be sure that it is exactly horizontal when the tuning condenser is completely closed.

2. Set the test oscillator and dial indicator at 1500 KC., and adjust the oscillator trimmer (the rear trimmer on the coil fastened to the back plate of the chassis).

3. Set the test oscillator and dial pointer to 600 KC.

4. Adjust the oscillator lag condenser (on the base near the antenna coil) for maximum output, at the same time rocking the gang condenser.

5. Reset test oscillator and dial pointer to 1500 KC., and recheck operation #2.

6. Connect the test oscillator to the blue antenna lead through a .0002 mfd. condenser and adjust the antenna trimmer (the bottom condenser on the coil on the top of the chassis).

7. Check sensitivity and calibration over the scale.

ALIGNMENT OF THE SHORT-WAVE BAND

1. Turn the wave-change switch to the short-wave position.

2. Set the test oscillator and dial pointer to 15,000 KC., and adjust the short-wave oscillator trimmer (the trimmer on the inside end of the coil on the back plate of the chassis). Two positions may be found. Use the one with the least capacity, that is, with the trimmer screw farthest out.

3. Adjust the short-wave antenna trimmer (the top condenser on the coil on the top of the chassis).

4. Check sensitivity and calibration over the scale.

TRAP ALIGNMENT

This receiver is provided with a tuned trap (the upright coil under the chassis) which is adjusted to eliminate a signal at the I.F. frequency (455 KC.) applied to the antenna. If there is code interference which is known to originate near the 455 KC. channel, this trimmer may be adjusted to minimize the undesired signal.

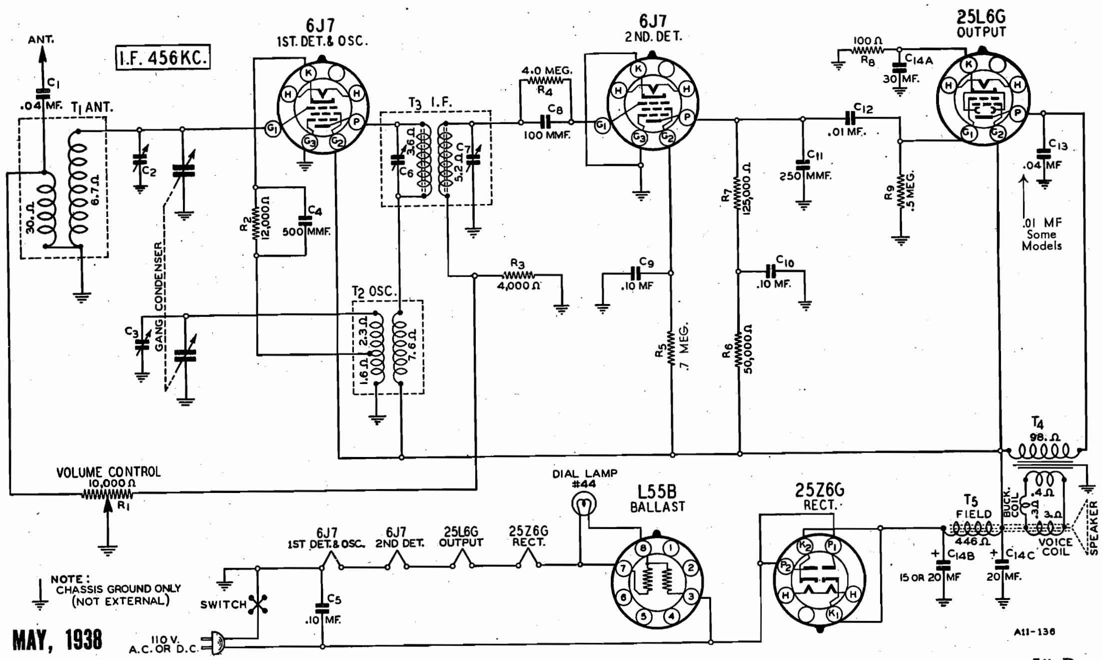
BA 9525	Speaker baffle	$ .05
CV 954	Tube shield	.10
CV 95232	1st I.F. coil cover	.25
CV 95233	2nd I.F. coil cover	.25
CV 95261	Base plate	1.25
DS 9585	Dial scale	1.60
FP 108003	Felt knob washer	.05
IS 95216	Rubber drive bushing	.05
KA 9593	Cabinet	
KN 95128	Knob - small (push-on type)	.12
KN 95129	Knob - large (push-on type)	.12
KN 95150	Knob - small (set screw type)	.12
KN 95151	Knob - large (set screw type)	.12
PL 95115	Escutcheon dial plate	1.50
PL 95128	Dial supporting plate	.30
PR 97160	Dial drive cord Per Yard	.05
PU 9544	Dial drive pulley	.40
SC 953	Felt foot and mounting screw	.05
SH 9550	Dial drive shaft	.20
SI 9575	Dial pointer	.20
SO 956	Octal tube socket (5 used)	.20
SO 9539	Dial lamp socket	.35
SP 9551	Dial cord spring	.05

PARTS LIST

Dia. #	Part #	Description of Parts	List Price
1		.00005 mfd. mica condenser - part of RC 95296	$
2		Trimmer condenser 100-200 mmf. - part of RC 95296	
3	RC 95296	Trap coil assembly	1.25
4	RC 95356	Preselector coil assembly	1.60
5		Trimmer condenser 4-25 mmf. - part of RC 95356	
6		Trimmer condenser 4-25 mmf. - part of RC 95356	
7	CG 9565	Gang condenser	3.75
8	IC 95109	1st I.F. coil - 455 KC.	1.20
9		Trimmer condenser - part of IC 95109	
10		Trimmer condenser - part of IC 95109	
11	IC 95110	2nd I.F. coil - 455 KC.	1.20
12		Trimmer condenser - part of IC 95110	
13		Trimmer condenser - part of IC 95110	
14	RE 1053	1 meg., 1/2 W. resistor	.10
15	RE 2243	220,000 ohm, 1/2 W. resistor	.10
16	CW 6-005	.005 mfd., 600 V. condenser	.15
17	RE 4743	470,000 ohm, 1/2 W. resistor	.10
18	CW 4-01	.01 mfd., 400 V. condenser	.15
19	CW 2-10	.1 mfd., 200 V. condenser	.15
20	TR 9588	Output transformer	2.00
21	DM 9537	Speaker diaphragm	1.75
22	SK 9596	Speaker	.55
23	SW 9595	Tone control	.15
24	CW 6-001	.001 mfd., 600 V. condenser	.15
25	VR 9547	Volume control - .5 meg.	.80
26	CW 6-005	.005 mfd., 600 V. condenser	.15
27	RE 4733	47,000 ohm, 1/2 W. resistor	.10
28	RE 1053	1 meg., 1/2 W. resistor	.10
29	CM 9513	100 mmf. mica condenser	.10
30	CW 2-10	.1 mfd., 200 V. condenser	.15
31	CW 2-10	.1 mfd., 200 V. condenser	.15
32	RE 3933	39,000 ohm, 1/2 W. resistor	.10
33	RE 4733	47,000 ohm, 1/2 W. resistor	.10
34	CM 9513	100 mmf. mica condenser	.10
35	CW 4-01	.01 mfd., 400 V. condenser	.15
36	CW 2-05	.05 mfd., 200 V. condenser	.15
37		10,000 ohm, 1/2 W. resistor - part of RC 95296	
38	SW 9574	Wave-change switch	.70
39		Trimmer condenser 4-35 mmf. - part of RC 95301	
40	CW 2-10	.1 mfd., 200 V. condenser	.15
41		Trimmer condenser 4-35 mmf. - part of RC 95301	
42	CW 2-10	.1 mfd., 200 V. condenser	.15
43	CM 959	2000 mmf. mica condenser	.25
44	CS 9585	Oscillator series (lag) condenser - 225-700 mmf.	.35
45	CW 6-005	.005 mfd., 600 V. condenser	.15
46	RC 95301	Oscillator coil assembly	1.50
47	RE 2223	2200 ohm, 1/2 W. resistor	.10
48	RE 2223	2200 ohm, 1/2 W. resistor	.10
49	CW 6-10	.1 mfd., 600 V. condenser	.15
50	CE 9575	8 mfd., 150 V. electrolytic condenser	.70
51		On-off switch - part of VR 9547	
52	CW 6-10	.1 mfd., 600 V. condenser	.15
53	CW 2-10	.1 mfd., 200 V. condenser	.15
54	CW 6-10	.1 mfd., 600 V. condenser	.15
55	CW 2-25	.25 mfd., 200 V. condenser	.20
56	RE 8243	820,000 ohm, 1/2 W. resistor	.10
57	RE 2243	220,000 ohm, 1/2 W. resistor	.10
58	RE 3333	33,000 ohm, 1/2 W. resistor	.10
59	RE 1003	10 ohm, 1/2 W. resistor	.10
60	CE 9574	30 mfd., 150 V. electrolytic condenser	.90
61		Speaker field (not serviced)	
62	CE 9557	40 mfd., 150 V. electrolytic condenser	1.00
63	LP 951	Dial lamp - 6-8 V., .2 Amp.	.20
64	RE 4723	4700 ohm, 1/2 W. resistor	.10
65	RE 1053	1 meg., 1/2 W. resistor	.10

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR150
Early, Late
Schematic, Voltage
Alignment, Socket
Trimmers, Notes



MAY, 1938

CIRCUIT

This radio, popularly known as an AC-DC set, is, as the name implies, built to operate from either a 117 volt AC or DC power supply.

An R.F. transformer with tuned secondary feeds into a 6J7 tube which functions as the 1st detector and oscillator. The oscillating circuit is resonant at 456 KC above the frequency to which the R.F. transformer secondary is tuned.

The output of this tube is fed through an iron core I.F. transformer into another 6J7 tube which functions as the 2nd detector.

The volume control is of the variable antenna input and I.F. gain type.

Resistance coupling is used between the 2nd detector and the output stage which uses a 25L6G tube.

A 25Z6G rectifier tube is used. For AC operation, the filter unit consists of the rectifier tube, filter condensers and the speaker field which serves as a choke. For DC operation, the rectifier tube acts as a low resistance series resistor.

The heaters of the 4 tubes and the ballast tube are in series across the line. The dial lamp is in parallel with one section of the ballast tube resistance.

CAUTION—The metal chassis is connected to one side of the line through the switch. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis is grounded, and the metal chassis comes in contact with an external ground, a line short circuit will result.

In any service work, therefore, on the AC-DC chassis, keep it on a wood or other insulated surface to avoid contacts with ground.

The person working on the set should avoid coming in contact with any ground.

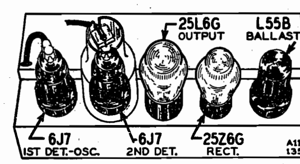
Pilot Lamp—Use ONLY a No. 44 dial lamp. This lamp draws .25 amperes at 6.3 volts.

25 Cycle Models—For 25 cycle operation, the 3 section electrolytic condenser is replaced by one with values as shown:

C14A	30 mf.	25	Dry Electrolytic—60 CYCLE MODELS
C14B	15 or 20 mf.	200	
C14C	20 mf.	120	
C14A	30 mf.	25	Dry Electrolytic—25-40 CYCLE MODELS
C14B	60 mf.	200	
C14C	30 mf.	200	

DISTORTION — Early Models — If distortion is encountered at medium or low volume levels in the early models, change the .5 megohm 2nd detector screen series resistor (R 5) to a .7 megohm resistor.

Speaker	5" Dynamic
Tuning Frequency Range	530 to 1730 KC
Sensitivity	180 Microvolts Average
Power Consumption	48 Watts (At 117 volts AC Supply)
Power Output	.8 Watts Undistorted
Selectivity	30 KC Broad at 100 times Signal
Intermediate Frequency	456 KC



ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments. Allow Chassis and Signal Generator to "Heat Up" for Several Minutes.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Illustration)
456 KC	Grid of 1st Det.	.1 mf.	Turn rotor to full open	I.F. (C6) & (C7)
1730 KC	Antenna Lead	200 mmf.	Turn rotor to full open	Oscillator (C3)
1500 KC	Antenna Lead	200 mmf.	Turn rotor to max. output	Antenna (C2)

The following equipment is required for aligning:
Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter; Non-Metallic Screwdriver.
Dummy Antennas — .1 mf. and 200 mmf.

NOTE—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, loosen the pointer screw, set the pointer at the 800 KC mark and retighten the pointer screw.

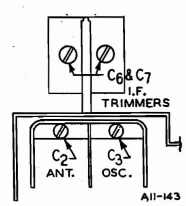
VOLTAGES AT SOCKETS FOR 117 VOLT AC LINE

See Note Below Regarding Voltages when Operated on DC
Volume Control Maximum—Antenna Lead Grounded—Readings taken with 1000 Ohm-per-volt Meter.

TUBE	FUNCTION	Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
		Voltage Between Socket Prong and Ground (Unless Otherwise Indicated)							
6J7	1st Det. & Osc.		6.3(1)	98	98			6.3(1)	6.0
6J7	2nd Det.		6.3(1)	10	13			6.3(1)	
25L6G	Output		24(1)	92	98			24(1)	5
25Z6G	Rectifier		24(1)	117(2)	125	117(2)		24(1)	125
L55B	Ballast			56.6(3)				56.6(3)	4.5(4)

(1) AC voltage across terminals 2 and 7.
(2) AC voltage to ground.
(3) AC voltage across terminals 3 and 7.
(4) AC voltage across terminals 7 and 8.

DC OPERATION—Filament and ballast tube voltages will be the same as AC (for 117 volt line). The plate, screen and bias voltages will be slightly lower than those shown above. When operated on DC, the rectifier tube acts as a low resistance series resistor with a drop of approximately 6 volts between plate and cathode.

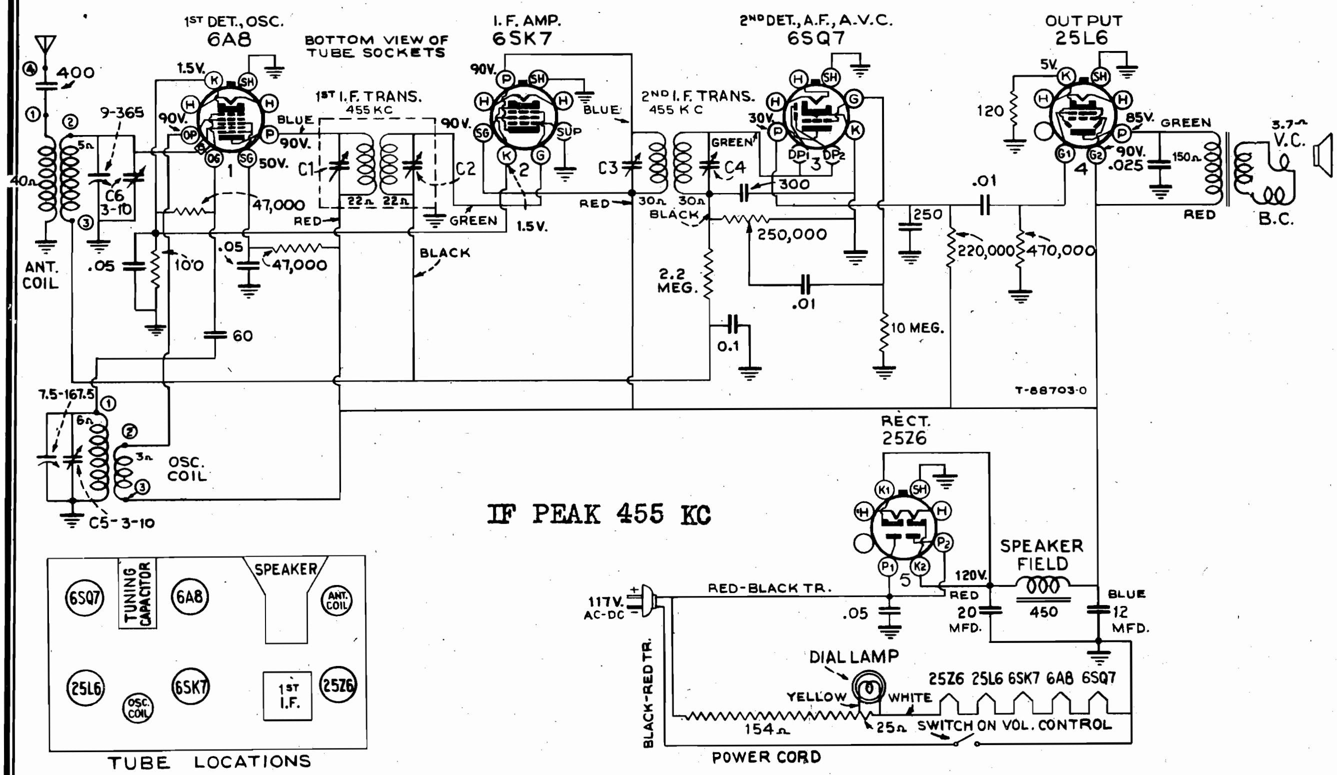


CAUTION—In any service work on the AC-DC chassis, keep it on a wood or other insulated surface to avoid contacts with ground.

MODELS WR165W, WR165I, WR165M

WESTINGHOUSE ELEC. SUPPLY CO.

Schematic, Voltage Alignment, Socket Trimmers, Lead Dress



Electrical and Mechanical Specifications

Frequency Range .... 530-1,720 kc

Intermediate Frequency .... 455 kc

WR-165-W, Molded plastic cabinet, walnut finish, with ivory dial and walnut knobs.

WR-165-I, Molded ivory plastic cabinet with ivory dial and red knobs.

WR-165-M, Solid mahogany wood cabinet, maple finish, with ivory dial and walnut knobs.

Power Supply Ratings
A-C Rating .... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating .... 105-125 volts, direct current, 50 watts

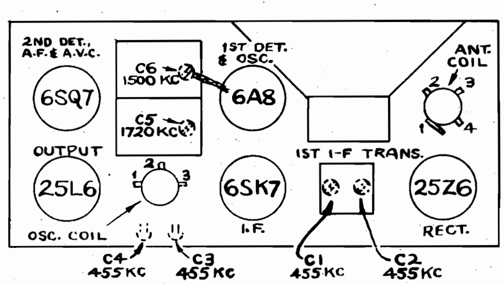
Power Output (125 volt, 60 cycle supply)
Undistorted .... 1.5 watts
Maximum .... 2.0 watts

Loudspeaker
Type .... 4-inch Electrodynamic

Dial Lamp (1) .... Mazda 47, 6.3 volts, .15 amp.

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.



Trimmer Locations

Test Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible. The antenna should be rolled up and kept at least one foot from chassis during alignment.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6A8 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal.	C6 (antenna)

Precautionary Lead Dress

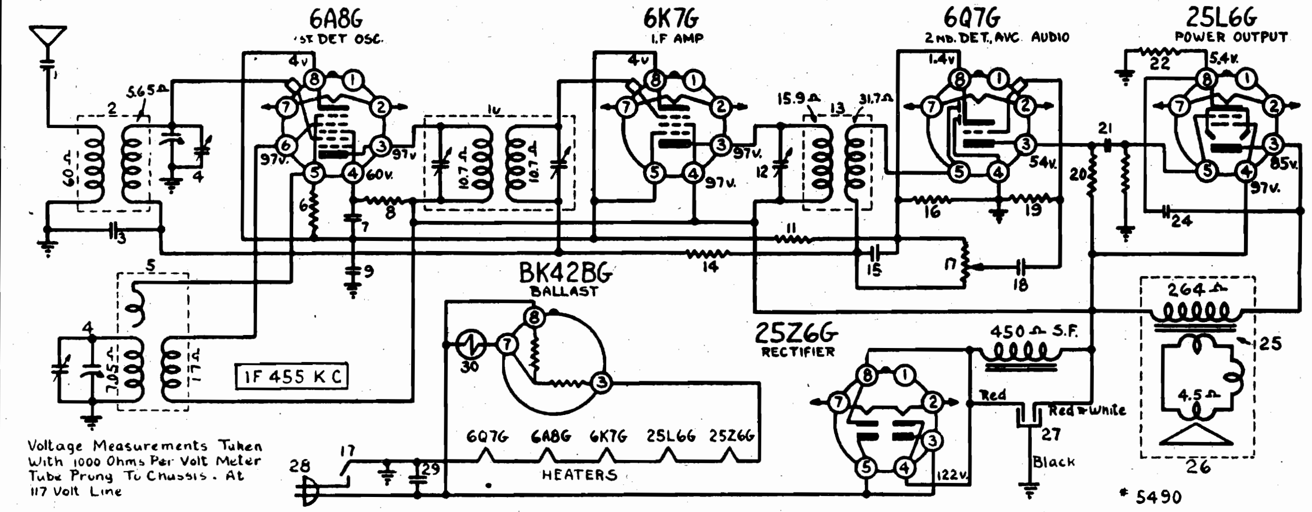
1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 6SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.
3. Keep leads away from adjusting screws to allow easy access.
4. Dress output plate lead along front apron and away from 6A8.
5. Dress parts at ends of chassis to clear cabinet bosses.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

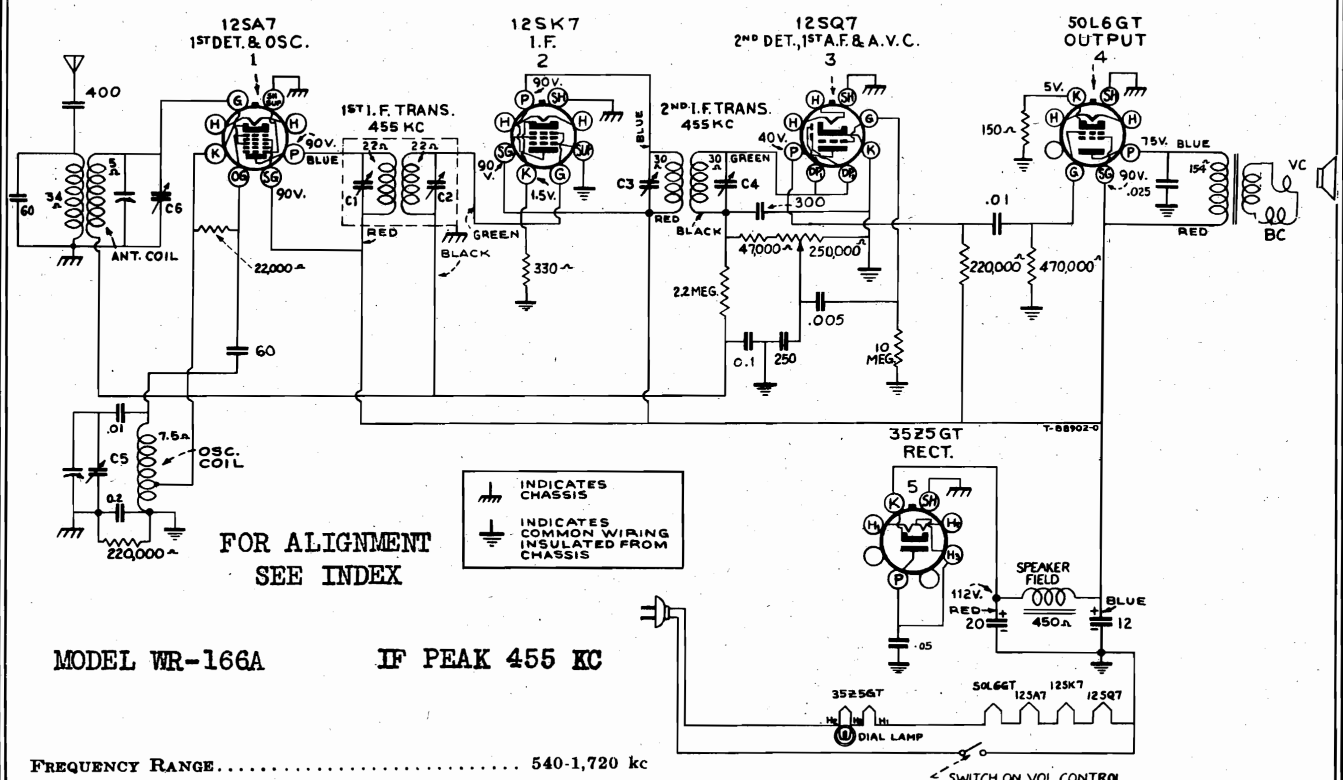
MODEL WR152
WESTINGHOUSE ELEC. SUPPLY CO. MODEL WR166A
Schematics, Voltage



Readings should hold within ± 20%.

MODEL – W R 152

Power Supply . . . . 105—125 volts, DC or 50—60 cycles AC
Tuning Range . . . . 540—1720 K.C.
Line up Frequencies . . . . I.F. 455 K.C., 1720 K.C., 1400 K.C.
Power Output . . . . Two watts



FOR ALIGNMENT SEE INDEX

MODEL WR-166A IF PEAK 455 KC

FREQUENCY RANGE . . . . 540-1,720 kc

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted . . . . 0.5 watts
Maximum . . . . 1.25 watts

LOUDSPEAKER
Type . . . . 4-inch Electrodynamic

Dial Lamp (1) . . . . Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS
A-C Rating . . . . 105-125 volts, 50-60 cycles, 30 watts
D-C Rating . . . . 105-125 volts, direct current, 30 watts

MODEL WR152
Alignment, Chassis
Socket, Trimmers, Parts

WESTINGHOUSE ELEC. SUPPLY CO.

FIG. No. 1

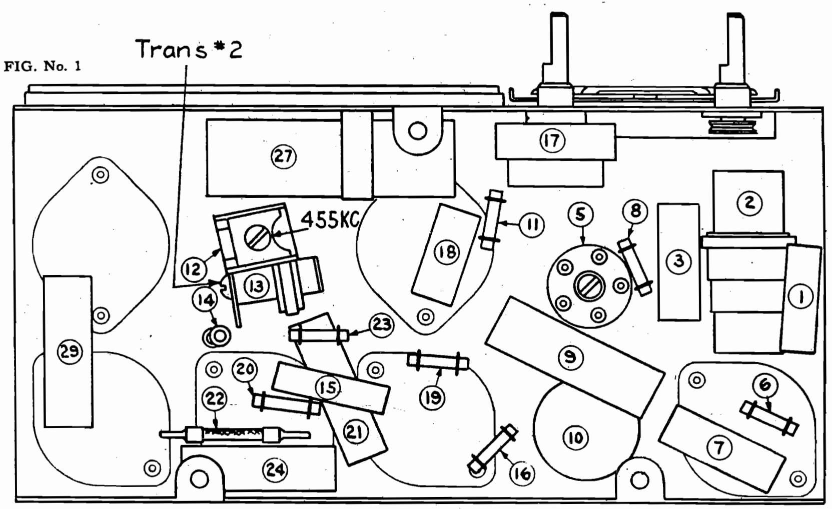


DIAGRAM NO.	PART NO.	DESCRIPTION OF PARTS	LIST PRICE
1	D3137	.001 mf.—400 v. Condenser	.15
2	D5497	Antenna Coil Assembly	1.00
3	D580	.05 mf.—200 v. Condenser	.15
4	D5485	Variable Condenser inc. Trimmers	1.75
5	D4875	Oscillator Coil Assembly	1.00
6	D631	50,000 ⅓ watt Resistor	.15
7	D580	.05 mf.—200 v. Condenser	.15
8	D617	20,000 ⅓ watt Resistor	.15
9	D2792	.2 mf.—200 v. Condenser	.15
10	D2972	1 St. I.F. Transformer Assembly	2.00
11	D2605	200 ohm ⅓ watt Resistor	.15
12	D1611	5—35 mmf. Trimmer Condenser	.15
13	D5004	2 nd. I.F. Transformer Assembly	1.00
14	D624	1 meg.⅓ watt Resistor	.15
15	D4810	.0005 mf.—400 v. Condenser	.15
16	D2689	100 ohm ⅓ watt Resistor	.15
17	D5486	½ meg. Volume Control and ON-OFF Switch	1.25
18	D565	.01 mf.—200 v. Condenser	.15
19	D624	1 meg. ⅓ watt Resistor	.15
20	D598	200,000 ohm ⅓ watt Resistor	.15
21	D2600	.02 mf.—600 v. Condenser	.15
22	D4813	120 ohm ½ watt Flexohm Resistor	.15
23	D615	½ meg. ⅓ watt Resistor	.15
24	D5500	.04 mf.—600 v. Condenser	.15
25	D5484T	Output Transformer	1.00
26	D5484	Speaker, 5 in., complete	3.00
27	D5499	16—20 mf. CCCW 150 WV Condenser	1.00
28	D1732	Line Cord and Plug	.25
29	D5500	.04 mf.—600 v. Condenser	.15
30	D530	Dial Lamp, .15 amp., 6.3 volt, Mazda No. 40	.10
	D3268	8 Prong Tube Socket	.10
	D4395	Drive Cable, 9 in.	.10
	D2908	Drive Cable Spring	.10
	D5488	Dial Scale	.30
	D5489	Pointer	.15
	D5493	Knob	.05
	D5503	Dial Escutcheon	.30
	D3333	Escutcheon Screws, set of 4	.05

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Alinement Procedure

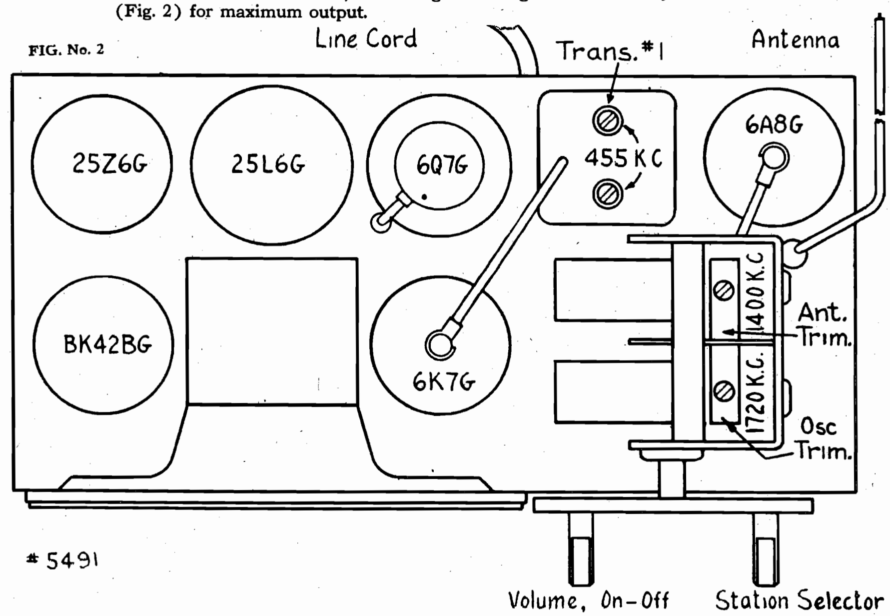
Connect a high impedance AC voltmeter across the voice coil terminals of the loud speaker. The volume control should be set a few degrees back of maximum volume position. Always use a weak signal from the signal generator, strong signals tend to cause improper adjustment.

See Fig. 1 and 2 for location of all trimmers.

I.F.: Connect the generator ground to receiver chassis through a .1 mf condenser. Using a .1 mf condenser in series with the high side of the generator, apply a 455 K.C. signal to the grid of the 6K7G I.F. amplifier tube, and aline transformer Trimmer No. 12 (Fig. 1) to maximum output. Next connect generator to the grid of the 6A8G tube and aline both trimmers of transformer No. 1 (Fig. 2) for maximum output.

R.F.: Connect the high side of the generator to the antenna through a 100 mmf. condenser. Turn the variable condenser to minimum capacity, feed a 1720 K.C. signal in from the generator and adjust oscillator trimmer (Fig. 2) for top frequency. Next tune the receiver to about 1400 K.C., feed in signal from generator and adjust the antenna trimmer (Fig. 2) for maximum output.

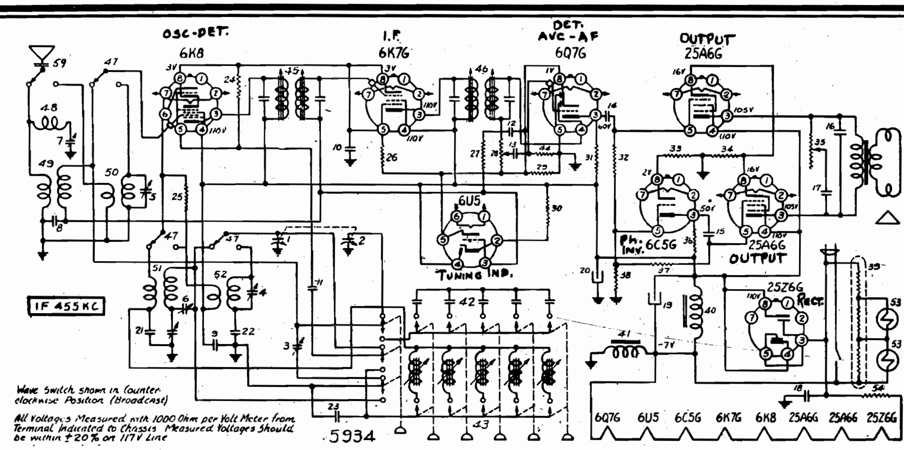
FIG. No. 2



MODEL WR475
Schematic, Socket
Trimmers, Alignment

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR162
Schematic, Voltage
Alignment, Socket
Trimmers, Dial Data



WR162

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

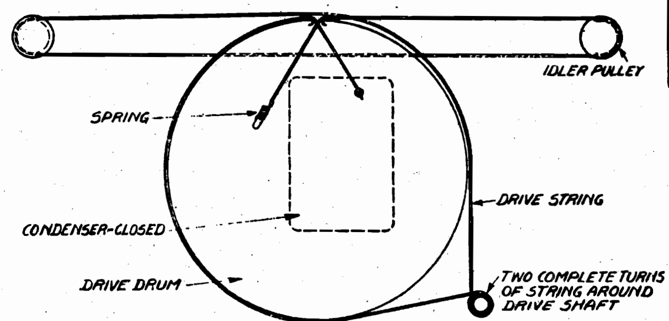


DIAGRAM SHOWING METHOD OF STRINGING DRIVE DRUM

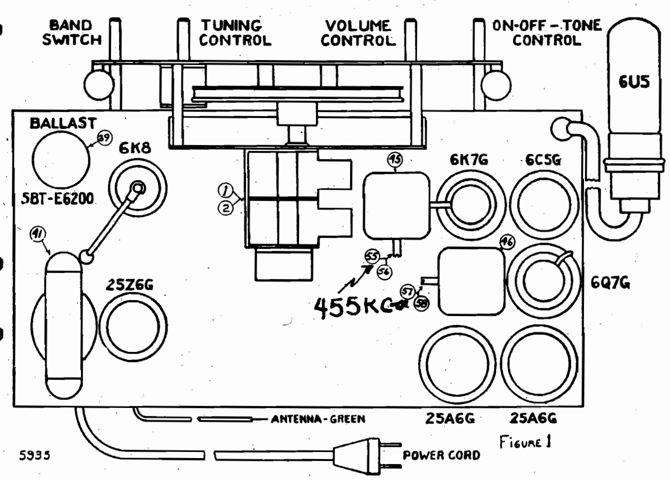


Figure 1

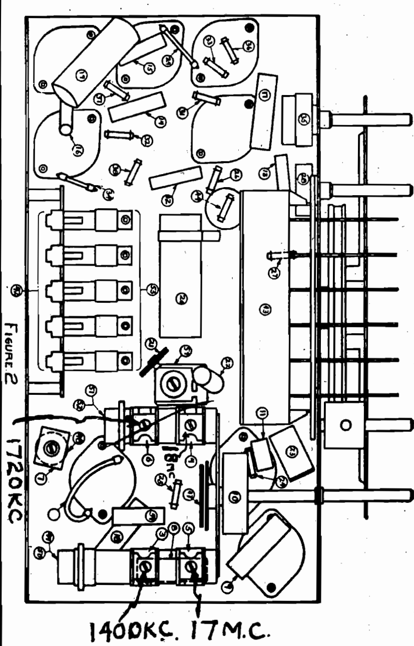
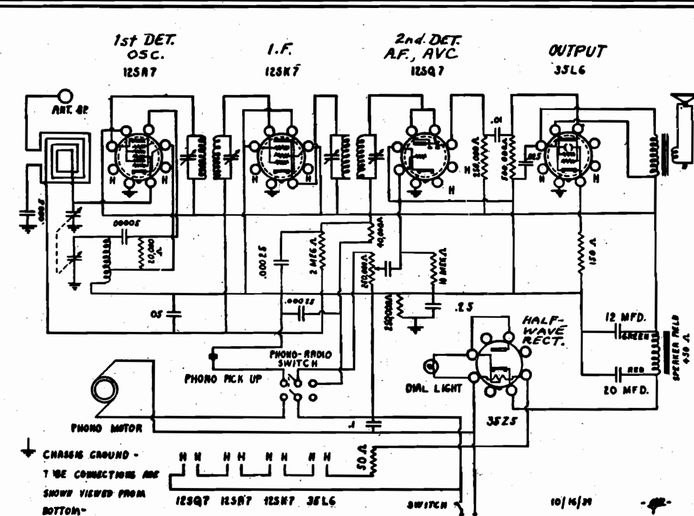


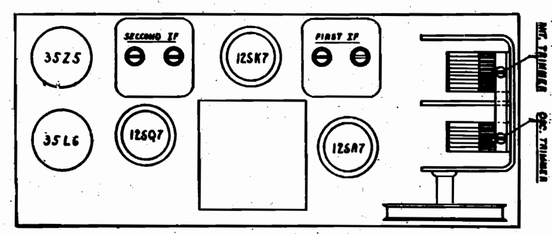
Figure 2



WESTINGHOUSE RADIO
Model WR-475

Frequency Range....................540-1,720 kc

Intermediate Frequency.................455 kc



CONVENTIONAL ALIGNMENT SEE
SPECIAL SECTION VOLUME VIII

Dial Lamp (1)......Mazda 47, 6-8 Volt, .15 amp.
Power Supply Ratings
105-125 Volts, 60 cycles, Radio 30 Watts and
Phonograph motor 30 watts.

LOUDSPEAKER
Type....................4-inch electro dynamic
Voice-coil impedance.....3.2 ohms at 400 cycles
Power Output (125 volt, 60 cycle supply)
Undistorted............................0.5 watts
Maximum................................1.2 watts

PHONOGRAPH.........Synchronous (Self starting)
Records.........10-inch and 12-inch, 78 r.p.m.
Pickup, crystal, 200,000 ohms at 1,000 c.p.s.
Average output of pickup...........$2\frac{1}{2}$ volts at 1,000 c.p.s.

MODEL WR162
MODEL WR262
Parts Lists

WESTINGHOUSE ELEC. SUPPLY CO.

MODELS WR-162 and WR-262

Electrical Specifications

Power Supply....105-125 volts, 60 cycles A.C.—unless otherwise specified.
Tuning Range....540 to 1720, 5800 to 18,000 K.C.
Line up Frequencies....I.F. 455 K.C., 1720 K.C., 1400 K.C., 600 K.C., 18,000 K.C., 17,000 K.C.
Power Output....Three watts

MODEL WR-162

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION OF PARTS	LIST PRICE
1, 2	D-5531	Variable Condenser	$2.60
3, 4, 5	D-5562	1-10 MMF Trimmer	.20
59	D-824	.002 MF 600V Condenser	.15
6	D-3157	3-35 MMF Trimmer	.20
7	D-3272	30-140 MMF Trimmer	.25
8, 9, 10	D-572	.1 MF 200V Condenser	.15
11	D-2780	50 MMF Mica Condenser	.20
12	D-4810	.0005 MF 400V Condenser	.15
13	D-568	.01 MF 400V Condenser	.15
14, 15	D-576	.02 MF 400V Condenser	.15
16	D-3138	.001 MF 800V Condenser	.15
19	D-5780	20 MF 150V Electrolytic Condenser	1.00
17, 18	D-2600	.02 MF 600V Condenser	.15
19	D-5780	20 MF 150 V Electrolytic Condenser	2.00
20	D-5968	45 MF 150V Electrolytic Condenser	1.25
21	D-5565	500 MMF Special 3% Tolerance	.20
22	D-2793	.006 MF 600V 5% Condenser	.15
23	D-5564	270 MMF Special 2% Tolerance	.25
24	D-631	50,000 ohm 1/3 Watt Resistor	.15
25	D-617	20,000 ohm 1/3 watt Resistor	.15
26	D-3004	150,000 ohm 10% 1/3 watt Resistor	.15
27, 44	D-624	1 Megohm 1/3 watt Resistor	.15
28	D-5576	500,000 ohm Volume Control	1.00
29	D-3808	50 ohm ¾ watt Resistor	.20
31, 32	D-2730	200,000 ohm 1/3 watt Resistor	.15
33	D-2883	5,000 ohm 1/3 watt Resistor	.15
34	D-3937	500 ohm ½ watt Resistor	.20
35	D-5575	100,000 ohm Tone Control and Switch	1.25
36	D-2880	100,000 ohm 1/3 watt 10% Resistor	.15
37	D-602	250,000 ohm 1/3 watt Resistor	.15
38	D-2688	60,000 ohm 1/3 watt Resistor	.15
39	D-5938	Ballast Lamp	1.00
48	D-5556	Wave Trap Coil	.30
49, 50	D-5554	Antenna Coil	1.65
51, 52	D-5555	Oscillator Coil	1.50
45	D-5548	1st IF Transformer	2.20
46	D-5549	2nd IF Transformer	2.20
47	D-5551	Wave Switch	.80
41	D-4295	Filter Choke, 130 Ohm	1.25
42	D-5542	5 Gang Trimmer	1.35
54	D-4301	35 ohm 4 watt Resistor	.30
43	D-5544	Push Button Switch	2.75
53	D-5557A	Push Button Coil Assembly	3.00
		(These coils cannot be furnished separately)	

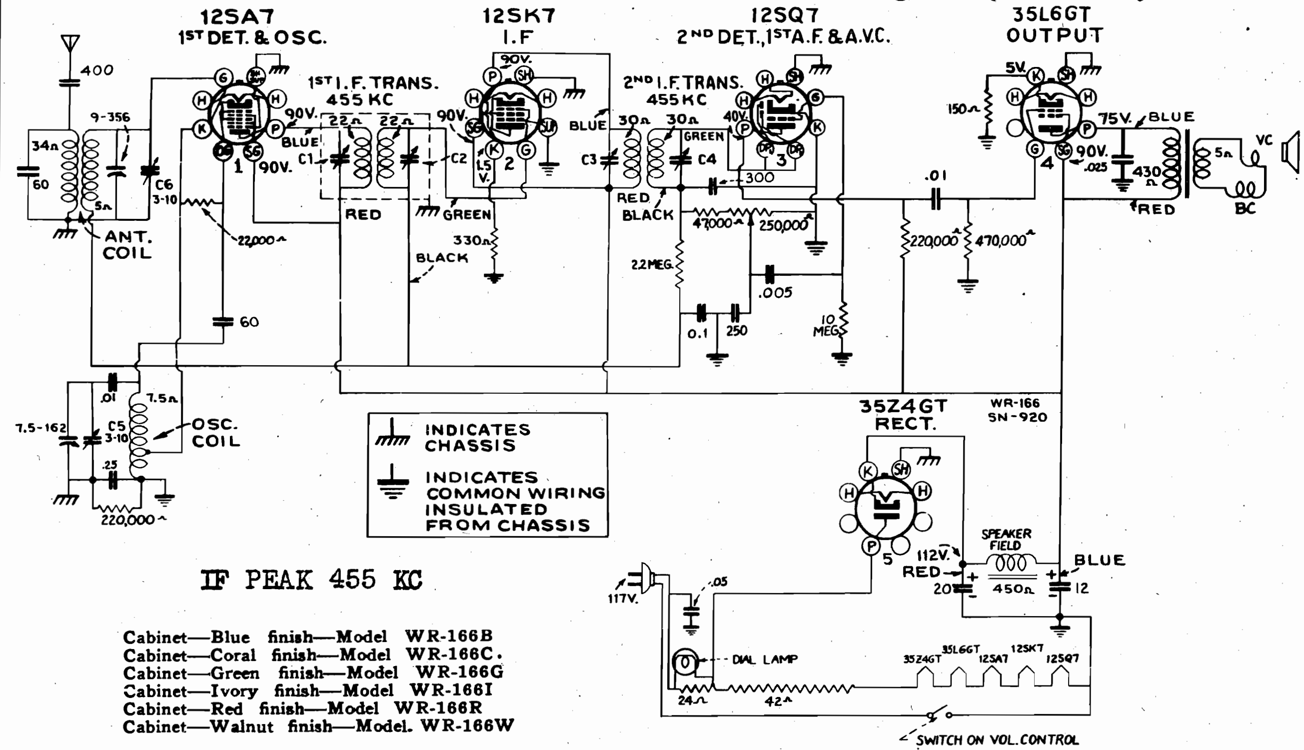
MODEL WR-262

DIAGRAM NO.	PART NO.	DESCRIPTION OF PARTS	LIST PRICE
1, 2	D-5531	410 MMF Variable Condenser	$2.60
3, 4, 5	D-5562	1-10 MMF Trimmer	.20
6	D-3157	3-35 MMF Trimmer	.20
7	D-3272	10-140 MMF Trimmer	.25
8, 9, 68	D-572	.1 MF 200V Condenser	.15
10	D-2792	.2 MF 200V Condenser	.15
11	D-2780	50 MMF Mica Condenser	.20
12, 13	D-4810	.0005 MF 400V Condenser	.15
14, 15	D-576	.02 MF 400V Condenser	.15
16	D-2695	.003 MF 600V Condenser	.15
17	D-5563	.03 MF 600V Condenser	.15
18	D-3135	.003 MF 800V Condenser	.15
19	D-2793	.006 MF 600V Condenser	.15
20	D-5565	.0005 MF Special Condenser	.20
21	D-5564	270 MMF Special Condenser	.25
22	D-5553	8 MF 200 W.V., 20 MF 35 W.V.— Electrolytic Condenser	1.00
23	D-598	20,000 ohm 1/3 W. Resistor	.15
24	D-4530	30,000 ohm 1 W. Resistor	.20
25	D-636	40,000 ohm 1/3 W. Resistor	.15
26, 27	D-2689	100 ohm 1/3 W. Resistor	.15
28, 29, 35	D-624	1 Megahm 1/3 W. Resistor	.15
30	D-598	200,000 ohm 1/3 W. Resistor	.15
31	D-615	500,000 ohm 1/3 W. Resistor	.15
32	D-3353	250 ohm 2 W. Resistor	.20
33	D-5576	500,000 ohm Volume Control	1.00
34	D-5575	100,000 ohm Tone Control and ON-OFF Switch	1.25
36	D-631	50,000 ohm 1/3 W. Resistor	.15
37	D-5101	16 MF 225 W.V. Reg. Electrolytic Condenser	1.00
38	D-3285	16 MF 350 W.V. Electrolytic Condenser	1.00
40	D-2560	400 MMF Padder Condenser	.35
67	D-634	500 ohm 1/3 W. Resistor	.15
65, 66	D-563	.05 MF 400V Condenser	.15
69	D-2688	60,000 ohm 1/3 W. Resistor	.15
70	D-603	100,000 ohm 1/3 W. Resistor	.15
41	D-5548	First I.F. Assembly	2.20
42	D-5549	Second I.F. Assembly	2.20
43	D-5550	Power Transformer	3.60
44	D-5567-T	Output Transformer	1.10
45	D-5567	6-inch Speaker	3.75
46	D-1732	Line Cord and Plug	.25
47		Push Button Oscillator Coils—	
	D-5557	Low Frequency	.60
	D-5558	Medium Frequency	.60
	D-5559	High Frequency	.60
48	D-5542	Trimmer Condenser Assembly For Push Buttons	1.35
49	D-5551	Band Switch	.80
50	D-5544	Push Button Switch	2.75
51	D-530	Dial Lamps, 6.3 V., .15 amp., Mazda No. 40	.10
52, 53	D-5554	Antenna Coil Assembly	1.65
54, 55	D-5555	Oscillator Coil Assembly	1.50
56	D-5556	Wave Trap Coil	.30
	D-2163	Dial Drive Cable, 36"	.10
	D-5560	Dial Pointer	.15
61	D-2981	Tuning Tube Cable and Socket	.60
	D-3268	8-prong Octal Tube Socket	.10
	D-5569	Dial Escutcheon	1.90
	D-5573	Tuning Tube Escutcheon	.60

MODEL WR166A
Socket, Trimmers
Alignment
MODEL 166L
Alignment, Lead Dress

WESTINGHOUSE ELEC. SUPPLY CO.

MODELS WR166B, WR166C
WR166G, WR166I, WR166R
WR166W
Schematic, Socket, Voltage
Alignment, Trimmers, Lead Dress



IF PEAK 455 KC

Cabinet—Blue finish—Model WR-166B
Cabinet—Coral finish—Model WR-166C
Cabinet—Green finish—Model WR-166G
Cabinet—Ivory finish—Model WR-166I
Cabinet—Red finish—Model WR-166R
Cabinet—Walnut finish—Model WR-166W

Electrical and Mechanical Specifications

FREQUENCY RANGE.......... 530-1,720 kc

Dial Lamp (1).......... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating.......... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating.......... 105-125 volts, direct current, 30 watts

INTERMEDIATE FREQUENCY.......... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted.......... 0.75 watts
Maximum.......... 1.5 watts

LOUDSPEAKER
Type.......... 4-inch Electrodynamic

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Precautionary Lead Dress

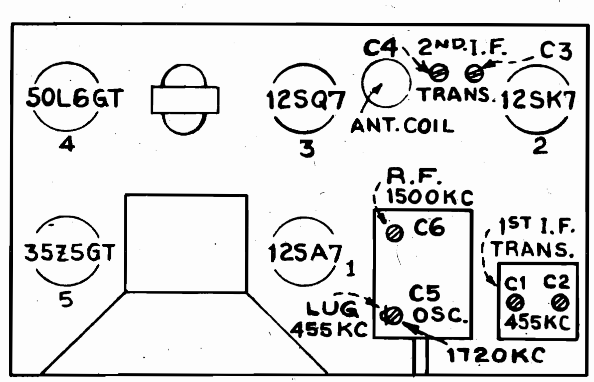
1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Antenna.—The set is equipped with a length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

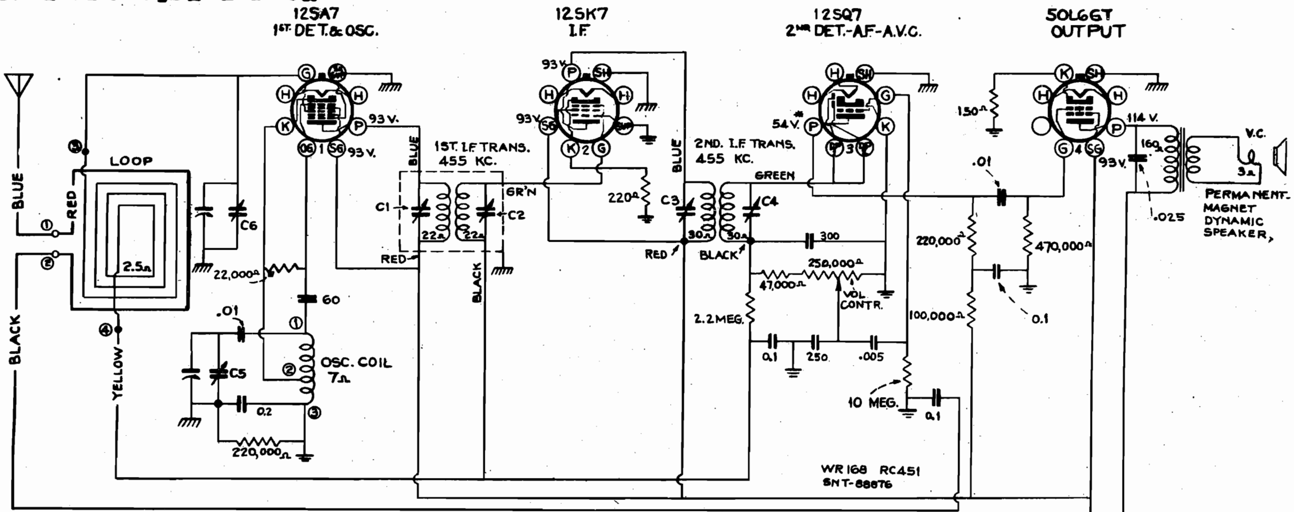


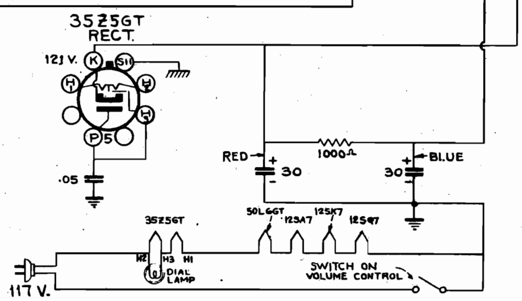
TUBE AND TRIMMER LOCATIONS

NOTE: 35L6GT is used in No.4 socket in Model WR-166.

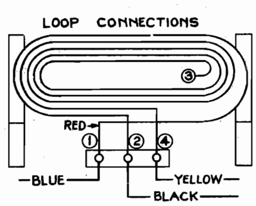
MODELS WR168,WR168A
Schematic,Voltage,Socket Alignment,Trimmers Lead Dress,Dial Data

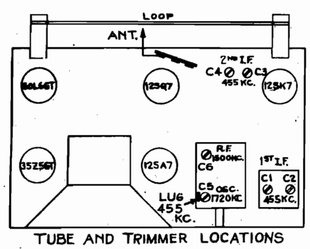
WESTINGHOUSE ELEC. SUPPLY CO.

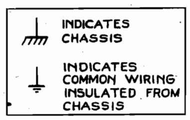


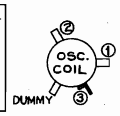


IF PEAK
455 KC









POWER OUTPUT (125 volt, 60 cycle supply)

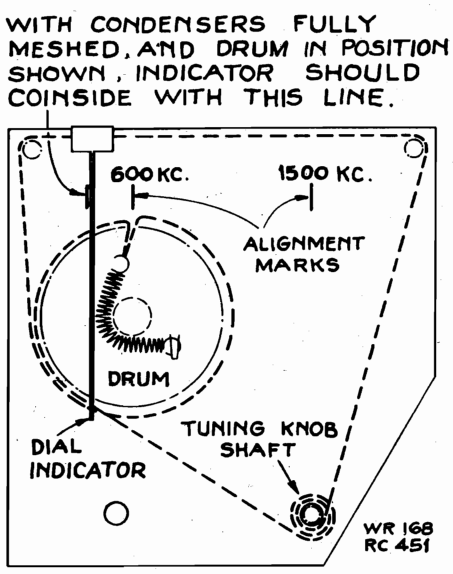
Undistorted	0.75 watts
Maximum	1.5 watts

LOUDSPEAKER

Type .... 5-inch permanent magnet dynamic

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, and 1,500 kc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left mark on the dial scale.



Dial Drive Hookup and Alignment Marks

Models WR-168 and WR-168A are identical with the exception of the cabinet and dial scale.

FREQUENCY RANGE .... 530-1,720 kc

INTERMEDIATE FREQUENCY .... 455 kc

Dial Lamp (1)................ Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS

A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts

D-C Rating .... 105-125 volts, direct current 30 watts

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

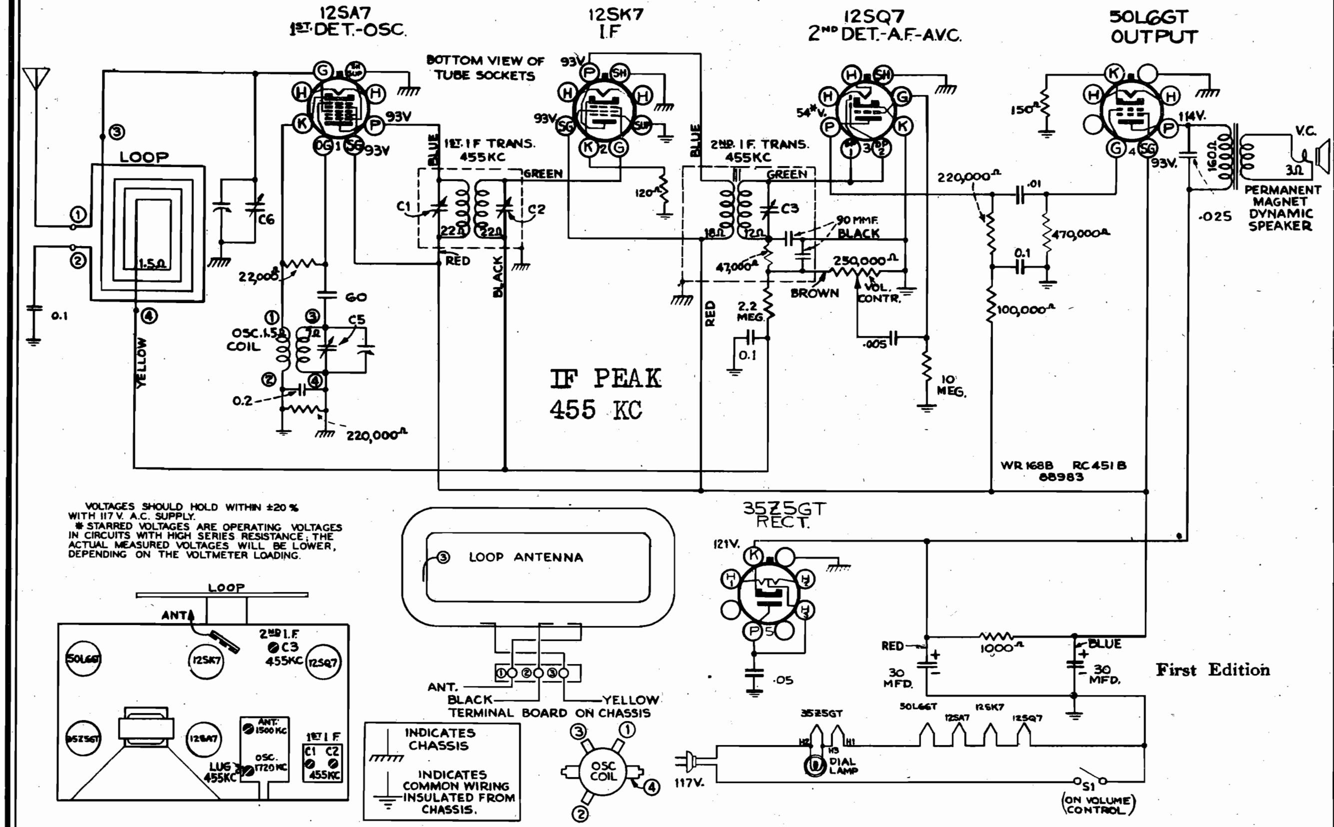
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. loop in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	1,500 kc cal. mark	C6 (antenna)

Precautionary Lead Dress.—1. The oscillator grid lead, R-F grid lead and diode plate lead should be kept separated as far as possible. 2. Dress blue 1st I-F lead under volume control close to chassis. 3. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

WESTINGHOUSE ELEC. SUPPLY CO.

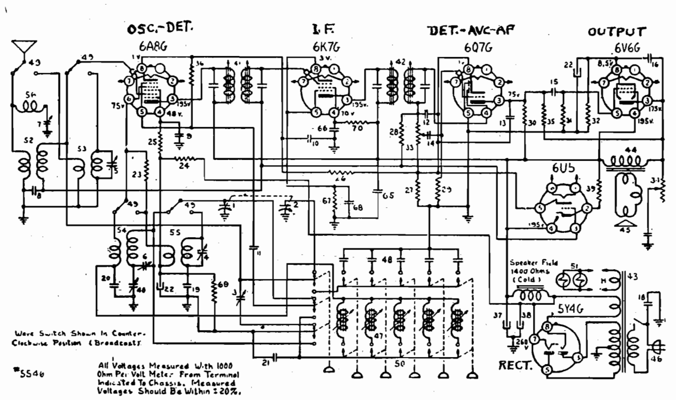
MODEL WR168B
MODEL WR262
Schematics, Voltage Socket, Trimmers

MODEL WR-168B



First Edition

For SPECIFICATIONS, ALIGNMENT, LEAD DRESS and DIAL DRIVE DATA, see MODEL WR-168.



MODEL – WR262

FOR SPECIFICATIONS AND PARTS SEE INDEX
FOR STRINGING DRIVE DRUM SEE MODEL WR-162
CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII
IF PEAK 455 KC

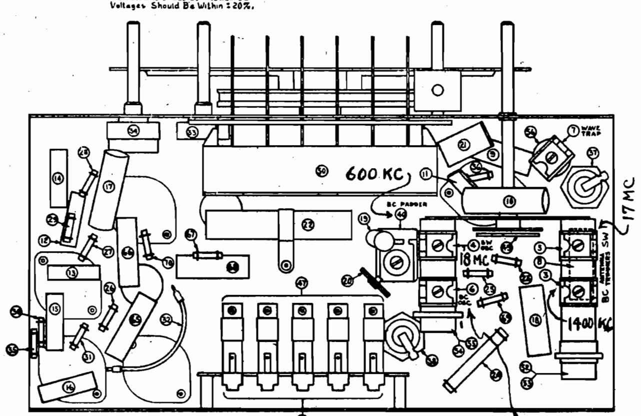


Figure 2.

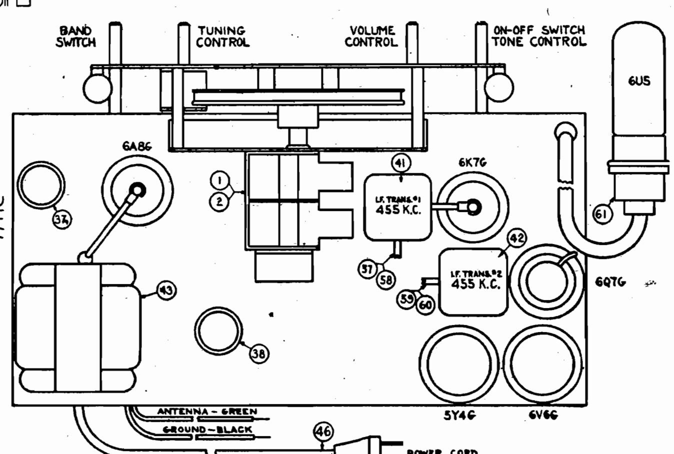
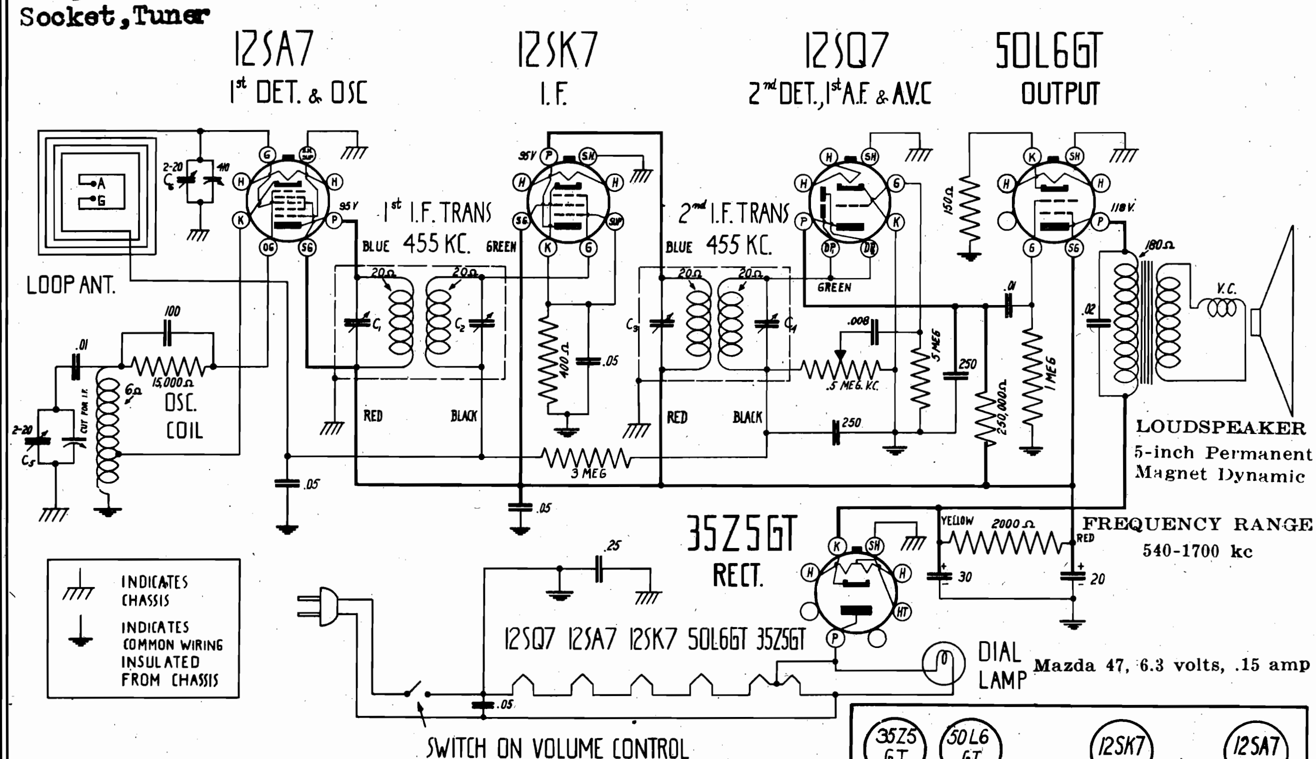


Figure 1

MODEL WR169
Schematic, Voltage
Alignment, Trimmers
Socket, Tuner

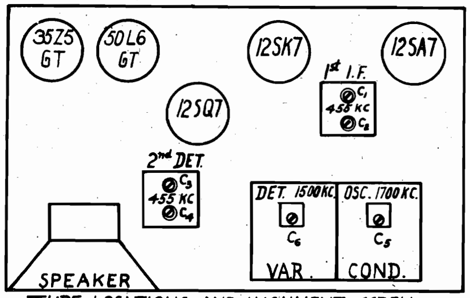
WESTINGHOUSE ELEC. SUPPLY CO.



POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted .... 1.0 watts
Maximum .... 1.75 watts

POWER SUPPLY RATINGS

A-C Rating..........................105-125 volts, 40-60 cycles, 30 watts
D-C Rating ....105-125 volts, direct current, 30 watts



TUBE LOCATIONS AND ALIGNMENT SCREW POSITIONS

Tube Changing

The tubes can be changed by removing the back and taking off the wing nuts which hold the loop antenna in place. The loop antenna may then be detached from the back of the chassis.

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator

Connect the low side of the test oscillator to the binding post on the loop antenna marked "GND."

Steps	Connect high side of test-oscillator to—	Tune test-osc. to—	Adjust dial pointer to—	Adjust the following for max. peak output—
1	Binding post marked "ANT."	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd 1-F transformers)
2		1,700 kc	Right end of scale (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Important

When aligning the receiver, it is important to keep the loop antenna attached to the receiver by means of the wing nuts. Keep metallic objects away from the loop. Keep the output signal from the test-oscillator as low as possible during alignment of the receiver.

Push Button Adjustment

The five buttons above the two control knobs are the push button knobs. To adjust any one of these knobs to the desired station, proceed as follows. Pull out the square knob. Loosen up the adjusting screw by turning it one or two complete turns counterclockwise. The screw should not be loosened more than two turns as it may come out. Tune in the desired station with the tuning control. Replace the screw driver blade in the adjusting screw slot and push the screw in as far as it will go. Hold the screw driver in this position and at the same time readjust the tuning knob to be sure the station is tuned to exact resonance. Tighten the screw while holding the tuning control so that the station setting doesn't shift. Replace the knob with the proper station tab placed in the recess.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c reversal of the plug may reduce hum.

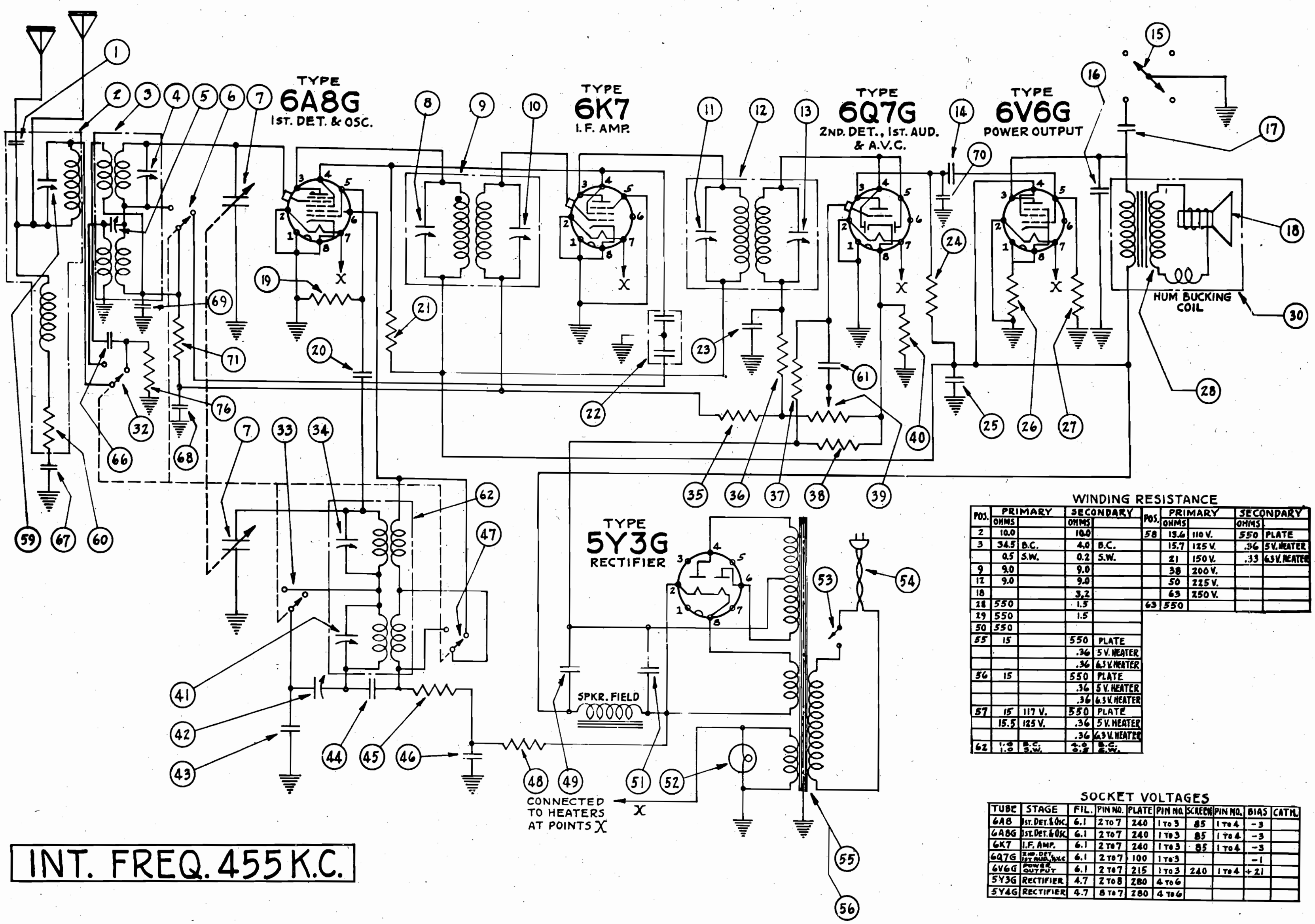
Loop Antenna

This receiver is equipped with a loop antenna which makes the use of an outside aerial unnecessary. In some locations additional radio pick-up may be desired. To accomplish this, an antenna may be attached to the binding post marked "ANT." on the back of the cabinet. A ground wire should be connected to the binding post marked "GND."

Since the loop antenna has a directional effect, it may be found necessary at times to turn the receiver for best reception.

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR224
Schematic, Voltage Resistance



INT. FREQ. 455 K.C.

WINDING RESISTANCE

POS.	PRIMARY OHMS		SECONDARY OHMS	
2	10.0		10.0	
3	34.5	B.C.	4.0	B.C.
	0.5	S.W.	0.2	S.W.
9	9.0		9.0	
12	9.0		9.0	
18			3.2	
28	550		1.5	
29	550		1.5	
50	550			
55	15		550	PLATE
			.36	5 V. HEATER
			.36	6.3 V. HEATER
56	15		550	PLATE
			.36	5 V. HEATER
			.36	6.3 V. HEATER
57	15	117 V.	550	PLATE
	15.5	125 V.	.36	5 V. HEATER
			.36	6.3 V. HEATER
62	1.0 1.0	B.C. S.W.	4.0 0.2	B.C. S.W.

POS.	PRIMARY OHMS		SECONDARY OHMS	
58	13.6	110 V.	550	PLATE
	15.7	125 V.	.36	5 V. HEATER
	21	150 V.	.33	6.3 V. HEATER
	38	200 V.		
	50	225 V.		
	63	250 V.		
63	550			

SOCKET VOLTAGES

TUBE	STAGE	FIL.	PIN NO.	PLATE	PIN NO.	SCREEN	PIN NO.	BIAS	CATH.
6A8	1ST. DET. & OSC.	6.1	2 TO 7	240	1 TO 3	85	1 TO 4	-3	
6A8G	1ST. DET. & OSC.	6.1	2 TO 7	240	1 TO 3	85	1 TO 4	-3	
6K7	I.F. AMP.	6.1	2 TO 7	240	1 TO 3	85	1 TO 4	-3	
6Q7G	2ND. DET. 1ST AUD. A.V.C.	6.1	2 TO 7	100	1 TO 3			-1	
6V6G	POWER OUTPUT	6.1	2 TO 7	215	1 TO 3	240	1 TO 4	+21	
5Y3G	RECTIFIER	4.7	2 TO 8	280	4 TO 6				
5Y4G	RECTIFIER	4.7	8 TO 7	280	4 TO 6				

MODEL WR224
Alignment, Parts

WESTINGHOUSE ELEC. SUPPLY CO.

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes .... 1 #6A8G 1 #6K7, 1 #6Q7G, 1 #6V6G, 1 #5Y3G - Total 5
Power Supply Characteristics .... 105-125 volts, 50-60 cycle A.C.
Power Consumption .... 50 Watts
Total Power Output .... 4 Watts
Undistorted Power Output .... 2.25 Watts
Tuning Ranges .... (Broadcast Band 535 to 1,720 KC. (Short-wave Band 5,800 to 17,000 KC.
Line-Up Frequencies .... I.F. 455 KC., 600 KC., 1500 KC., 15,500 KC.

GENERAL DESCRIPTION

This model is a five-tube, alternating current, two-band superheterodyne receiver designed to operate over the standard broadcast band, extending from 535 to 1720 KC., and a short-wave band, extending from 5800 to 17,000 KC.

LINE-UP CAPACITOR ADJUSTMENTS

To properly align the circuits of this receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied and reduced sufficiently to prevent overload as the individual circuits of the receiver are brought into alignment. A conventional output meter should be connected across the terminals of the speaker voice coil to indicate when the individual circuits are correctly aligned. The sensitivity of the meter must be sufficient to give satisfactory readings with low input signals.

Before attempting to align the receiver, the service man should familiarize himself with the general layout of the chassis, location of the various tubes and alignment condensers.

ALIGNMENT OF I.F. (455 KC.)

1. Set the volume control to maximum position, the wave-change switch to standard broadcast band and the dial pointer to approximately 600 KC.

2. Connect the output meter across the voice coil terminals of the speaker.

3. Set the test oscillator to 455 KC., and adjust its output to produce a measurable reading on the output meter when the test signal is applied to the grid of the first detector-oscillator tube through a 0.5 mfd. blocking condenser.

4. Adjust the four I.F. trimmer condensers underneath the chassis (under the square coil housings) to maximum output.

ALIGNMENT OF OSCILLATOR AND R.F.

1. Check the pointer setting to be sure that it is exactly horizontal when the tuning condenser is completely closed.

2. Set the test oscillator and dial indicator at 1500 KC., and adjust the oscillator trimmer (the rear trimmer on the coil fastened to the back plate of the chassis).

3. Set the test oscillator and dial pointer to 600 KC.

4. Adjust the oscillator lag condenser (on the base near the antenna coil) for maximum output, at the same time rocking the gang condenser.

5. Reset test oscillator and dial pointer to 1500 KC., and recheck operation #2.

6. Connect the test oscillator to the blue antenna lead through a .0002 mfd. condenser and adjust the antenna trimmer (the bottom condenser on the coil on the top of the chassis).

7. Check sensitivity and calibration over the scale.

ALIGNMENT OF THE SHORT-WAVE BAND

1. Turn the wave-change switch to the short-wave position.

2. Set the test oscillator and dial pointer to 15,500 KC., and adjust the short-wave oscillator trimmer (the trimmer on the inside end of the coil on the back plate of the chassis). Two positions may be found. Use the one with the least capacity, that is, with the trimmer screw farthest out.

3. Adjust the short-wave antenna trimmer (the top condenser on the coil on the top of the chassis).

4. Check sensitivity and calibration over the scale.

TRAP ALIGNMENT

This receiver is provided with a tuned trap (the upright coil under the chassis) which is adjusted to eliminate a signal at the I.F. frequency (455 KC.) applied to the antenna. If there is code interference which is known to originate near the 455 KC. channel, this trimmer may be adjusted to minimize the undesired signal.

PARTS LIST

Dia. #	Part #	Description of Parts	List Price
1	CM 9546	.00005 mfd. mica condenser	$ .15
2	RC 95296	Wave trap coil assembly	1.25
3	RC 95300	Antenna coil assembly	1.60
4		Trimmer condenser - part of RC 95300	
5		Trimmer condenser - part of RC 95300	
6,32 33,47	SW 9574	Switch (wave-change)	.70
7	CG 9565	Variable condenser	3.75
8		Trimmer condenser - part of IC 95109	
9	IC 95109	1st I.F. coil assembly (455 KC.)	1.20
10		Trimmer condenser - part of IC 95109	
11		Trimmer condenser - part of IC 95110	
12	IC 95110	2nd I.F. coil assembly (455 KC.)	1.20
13		Trimmer condenser - part of IC 95110	
14	CW 6-005	.005 mfd., 600 V. condenser	.15
15	SW 9572	Switch (tone control)	.40
16	CW 6-01	.01 mfd., 600 V. condenser	.15
17	CW 6-05	.05 mfd., 600 V. condenser	.15
18	DM 9526	Speaker diaphragm assembly	1.50
19	RE 4733	47,000 ohm, 1/2 W. resistor	.10
20	CM 9513	.0001 mfd. mica condenser	.10
21	RE 3333	33,000 ohm, 1/2 W. resistor	.10
22	CW 9535	.1-.1 mfd., 400 V. dual condenser	.30
23	CM 9513	.0001 mfd. mica condenser	.10
24	RE 2243	220,000 ohm, 1/2 W. resistor	.10
25	CW 4-10	.1 mfd., 400 V. condenser	.15
26	RE 271412	.270 ohm, 1 W. resistor	.12
27	RE 4743	470,000 ohm, 1/2 W. resistor	.10
28	TR 95141	Output transformer	1.50
30	SK 9572	Speaker	4.75
34		Trimmer condenser - part of RC 95301	
35	RE 1053	1 meg., 1/2 W. resistor	.10
36	RE 4733	47,000 ohm, 1/2 W. resistor	.10
37	RE 1053	1 meg., 1/2 W. resistor	.10
38	RE 1803	18 ohm, 1/2 W. resistor	.10
39	VR 9553	Volume control, 1/2 meg.	1.00
40	RE 1803	18 ohm, 1/2 W. resistor	.10
41		Trimmer condenser - part of RC 95301	
42	CS 9585	Trimmer condenser (225-700 mmf.)	.35
43	CM 959	.002 mfd. mica condenser	.25
44	CW 6-005	.005 mfd., 600 V. condenser	.15
45	RE 223413	22,000 ohm, 1 W. resistor	.12
46	CE 9568	8 mfd., 450 V. electrolytic condenser	.70
46	RE 1033	10,000 ohm, 1/2 W. resistor	.10
49	CE 9562	18 mfd., 300 V. electrolytic condenser	.80
50		Speaker field coil (not serviced separately)	
51	CE 9554	18 mfd., 450 V. electrolytic condenser	.85
52	LP 9510	Dial lamp - 6.3 V. .25 amp.	.15
53		Switch - part of VR 9553	
54	CB 9512	Line cable assembly	.50
55	TR 95128	Power transformer - 105-125 V., 50-60 cycle	5.00
56	TR 95131	Power transformer - 105-125 V., 25 cycle	6.00
59		Trimmer condenser - part of RC 95296	
60	RE 1033	10,000 ohm, 1/2 W. resistor	.10
61	CW 6-005	.005 mfd., 600 V. condenser	.15
62	RC 95301	Oscillator coil assembly	1.50
66	CW 2-02	.02 mfd., 200 V. condenser	.15
67	CM 9546	.00005 mfd. mica condenser	.15
68	CW 2-05	.05 mfd., 200 V. condenser	.15
69	CM 9525	.0027 mfd. mica condenser	.30
70	CW 6-001	.001 mfd., 600 V. condenser	.15
71	RE 4743	470,000 ohm, 1/2 W. resistor	.10
76	RE 1033	10,000 ohm, 1/2 W. resistor	.10

Runs A,B,C,etc.
Socket,Trimmers
Drive Cord,Notes

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR258
MODEL WR260

General Description

Model WR-258 is a five-tube, a-c, superheterodyne receiver employing push-button tuning for five stations in the broadcast band. The tuning range covers standard broadcast and state police calls. Features of this receiver are: Automatic volume control, magnetically tuned i-f transformers, magnetically tuned oscillator coils for each push button, 6-to-1 ratio vernier tuning, illuminated slide-rule dial, and a 5-inch dust-proofed dynamic speaker.

Model WR-260 employs all features of the WR-258 and in addition has a tuning band covering from 1,550 to 3,500 kc for aviation and police reception. It also has a two-point tone control.

Electrical Specifications

Frequency Range (Model WR-258)
Broadcast .... 540-1,720 kc

Frequency Ranges (Model WR-260)
Broadcast .... 540-1,550 kc
Police .... 1,550-3,500 kc

Five Electric Tuning Positions .... 550-1,500 kc

(Runs A and B,
1 station between approximately 550-980 kc
2 stations between approximately 650-1,080 kc
2 stations between approximately 850-1,500 kc

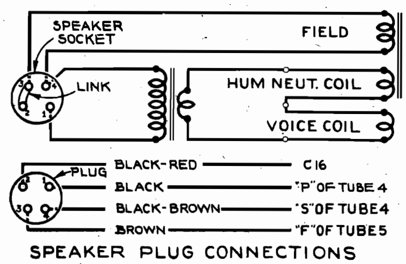
(Runs C and above,
2 stations between approximately 550-980 kc
1 station between approximately 650-1,080 kc
2 stations between approximately 850-1,500 kc

Pilot Lamp (1) .... Mazda No. 44, 6.3 volts, 0.25 ampere

Power Supply Ratings
Rating A .... 105-125 volts, 50-60 cycles, 50 watts
Rating B .... 105-125 volts, 25-60 cycles, 50 watts

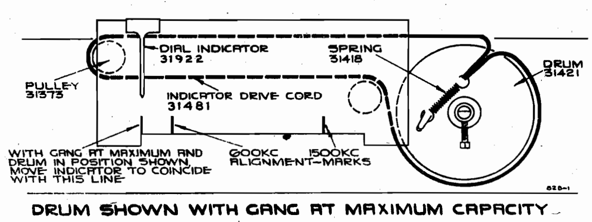
Power Output
Undistorted .... 1.0 watt
Maximum .... 1.5 watts

Loudspeaker
Type .... 5-inch Electrodynamic
Voice Coil Impedance ...... { 84326-2 4.4 ohms at 400 cycles; 84377-1 3.4 ohms at 400 cycles }

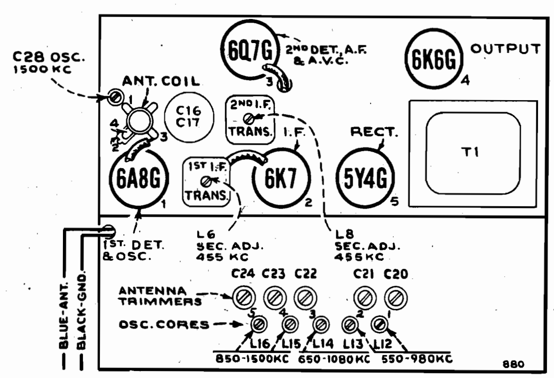


WR-260 Loudspeaker Wiring

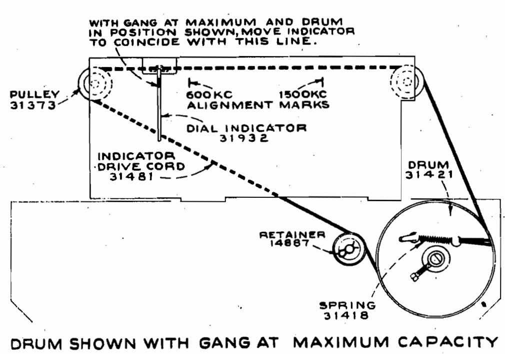
Loudspeaker.—The loudspeaker voice-coil may be centered in the normal manner by using three narrow feelers to obtain equal spacing of the air-gap. The dust cover must be removed before centering, and may be done by gently cutting it free from the cone, being careful not to cut or damage the cone while doing so.



WR-258 Arrangement of Pointer Drive Cord

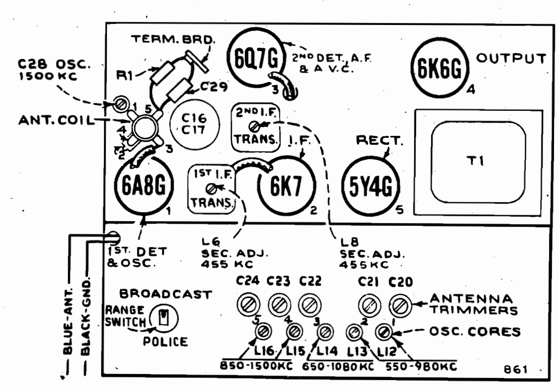


WR-258 Tube and Trimmer Locations



WR-260 Arrangement of Pointer Drive Cord

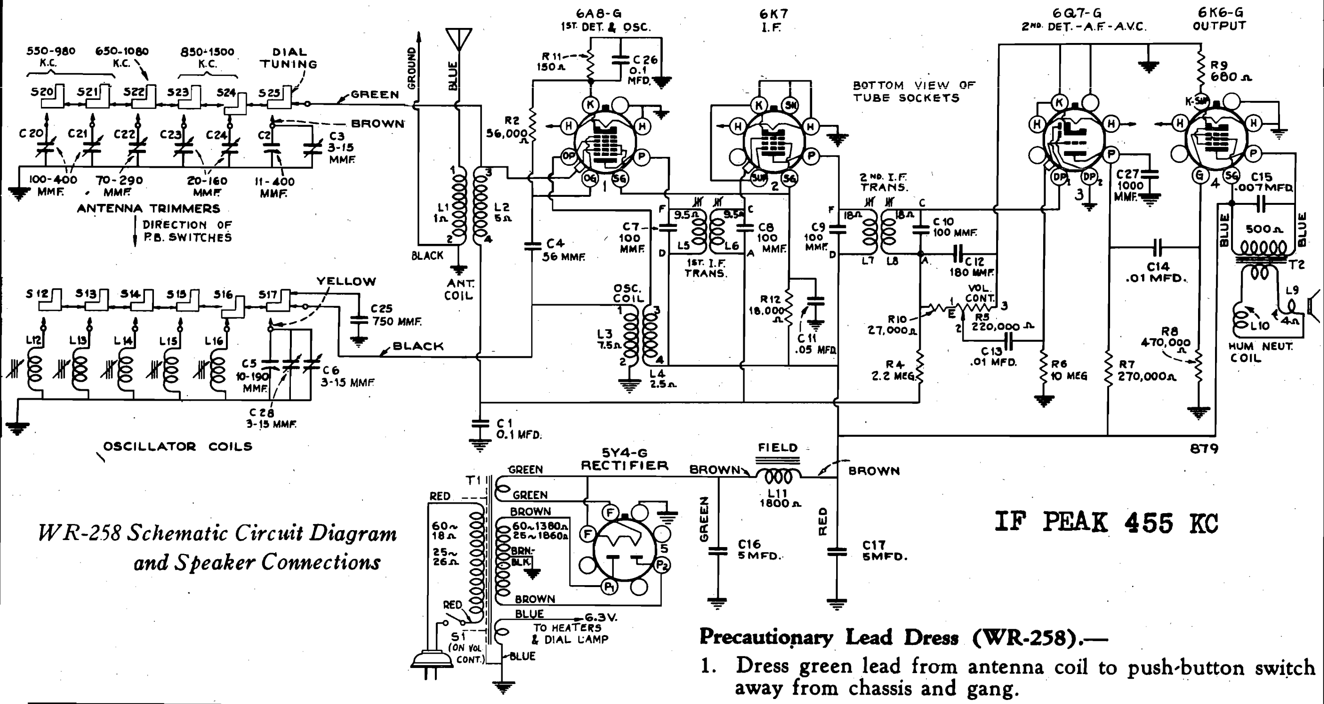
Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing



WR-260 Tube and Trimmer Locations

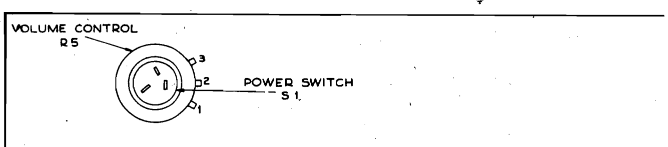
MODEL WR258(All Runs)
Schematic, Voltage
Chassis Wiring
Lead Dress

WESTINGHOUSE ELEC. SUPPLY CO.



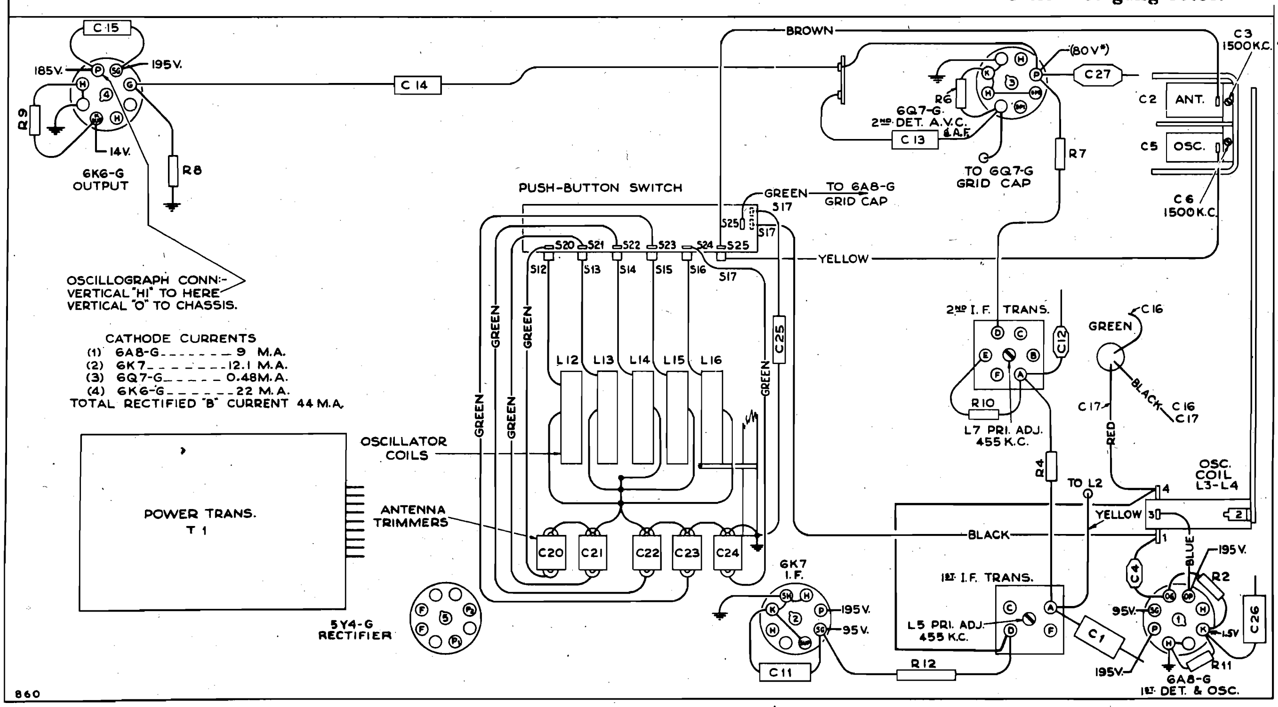
WR-258 Schematic Circuit Diagram and Speaker Connections

IF PEAK 455 KC



Precautionary Lead Dress (WR-258).—

1. Dress green lead from antenna coil to push-button switch away from chassis and gang.
2. Dress green leads on push-button unit close to coils and away from adjustment screws.
3. Dress power cord and transformer primary leads toward left end of chassis.
4. Dress C27 close to chassis and clear of gang rotor.



WR-258 Bottom View of Chassis Showing Socket Voltages, Parts Location, and R-F Wiring

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

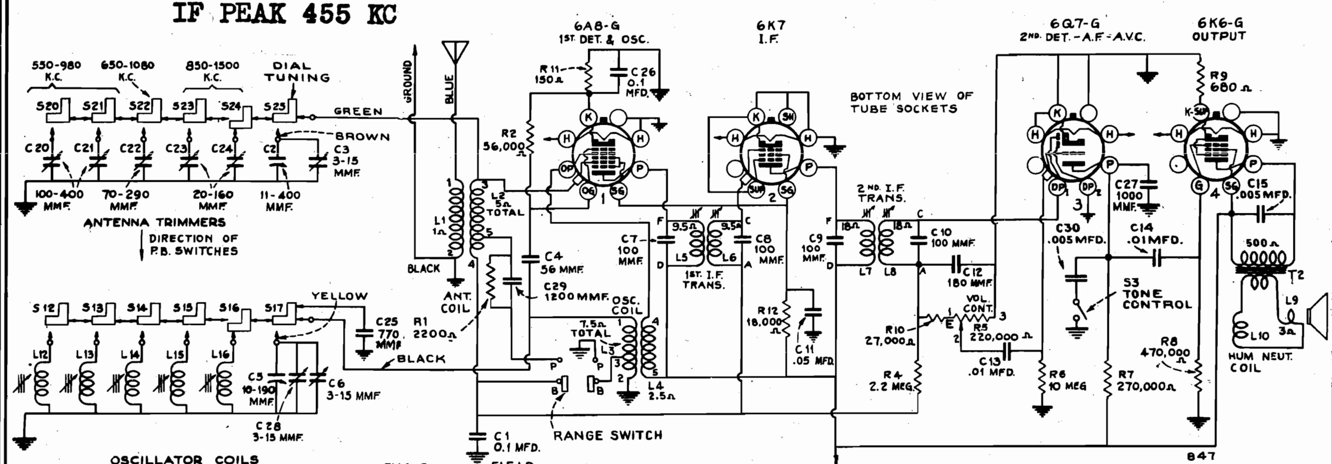
*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. These voltages will be lower when measured with a voltmeter drawing current through the circuit. Exact voltage may be measured with a vacuum-tube voltmeter if desired. The other values will not be affected by measuring with an ordinary high-resistance voltmeter.

Chassis Wiring
Lead Dress

WESTINGHOUSE ELEC. SUPPLY CO

MODEL WR260(All Runs)
Schematic, Voltage

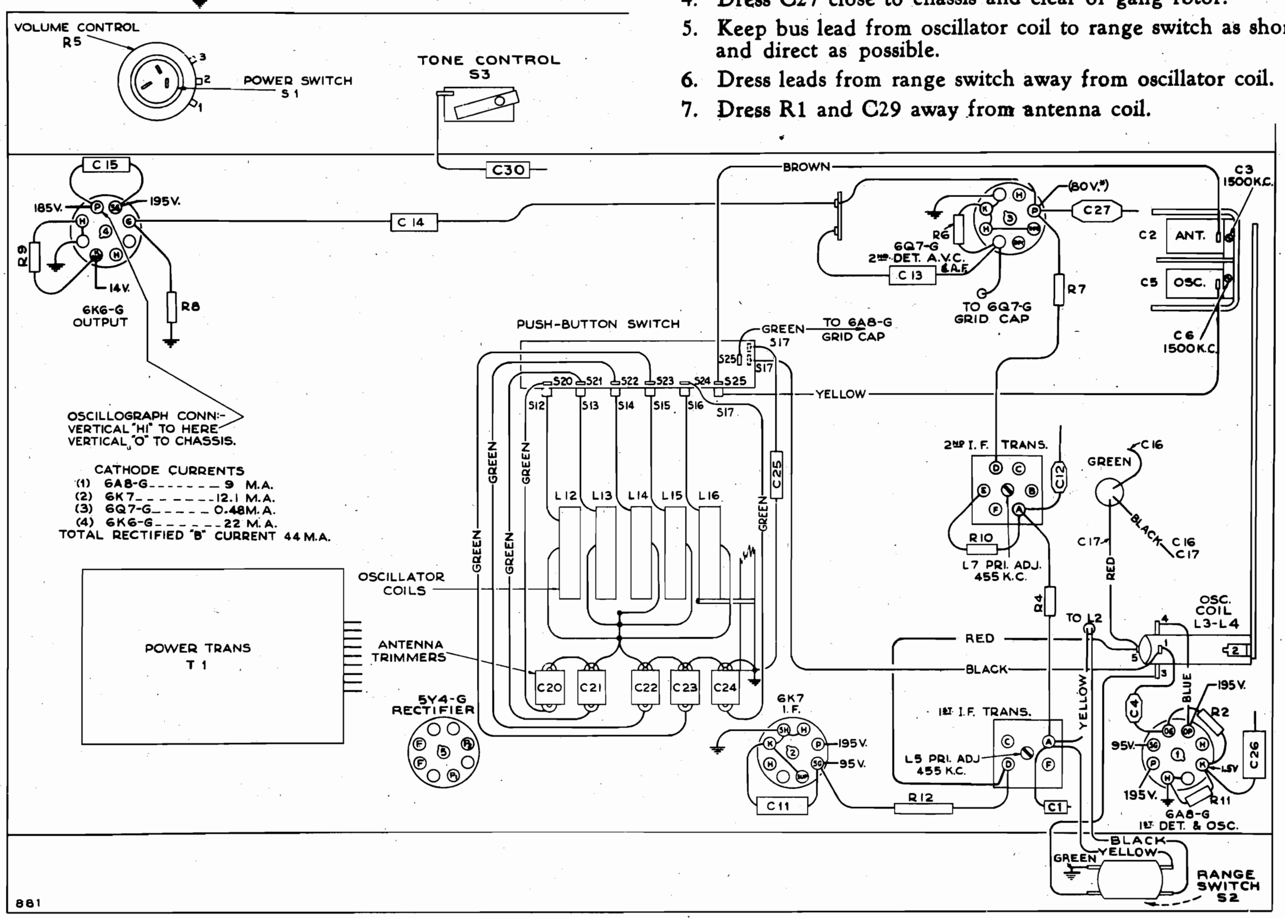
IF PEAK 455 KC



WR-260 Schematic Circuit Diagram

Precautionary Lead Dress (WR-260).—

1. Dress green lead from antenna coil to push-button switch away from chassis and gang.
2. Dress green leads on push-button unit close to coils and away from adjustment screws.
3. Dress power cord and transformer primary leads toward left end of chassis.
4. Dress C27 close to chassis and clear of gang rotor.
5. Keep bus lead from oscillator coil to range switch as short and direct as possible.
6. Dress leads from range switch away from oscillator coil.
7. Dress R1 and C29 away from antenna coil.



WR-260 Bottom View of Chassis Showing Socket Voltages, Parts Location, and R-F Wiring

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

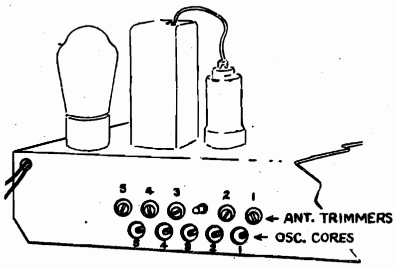
*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. These voltages will be lower when measured with a voltmeter drawing current through the circuit. Exact voltage may be measured with a vacuum-tube voltmeter if desired. The other values will not be affected by measuring with an ordinary high-resistance voltmeter.

MODEL WR258
MODEL WR260

WESTINGHOUSE ELEC. SUPPLY CO.

Runs A,B,C,etc.
Alignment,Tuner

Adjustments for Electric Tuning



Nos. 1, 2*—Approximately 550-980 kc.
No. 3—Approximately 650-1,080 kc.
Nos. 4, 5—Approximately 850-1,500 kc.

Push Button Adjustments

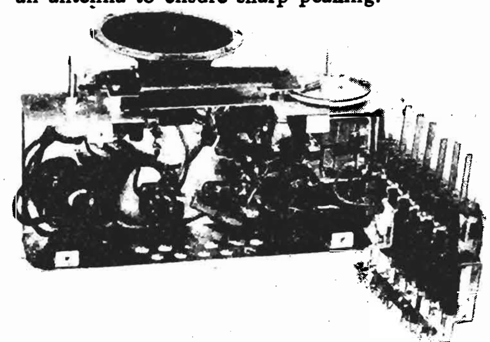
*** NOTE: On runs A and B, the range of No. 2 push button is approx. 650 to 1,080 kc. C21 is 70-290 mmfd. Use Part No. 31416 capacitor bank and Part No. 31384 coil (L13) for replacements. On runs C and above, the range of No. 2 push button is approx. 550 to 980 kc. C21 is 100-400 mmfd. Use Part No. 32066 capacitor bank and Part No. 31415 coil (L13) for replacements. The run letter is stamped on rear apron of chassis after code number — examples: 8T29B, 8023C, etc., also the letters "MOD" are stamped on rear apron of runs C or later.**

These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetically tuned oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments. The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list. On Model WR-260, set range switch on rear of set to "Broadcast" position (switch up).
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.



The Push-Button Assembly is fastened to the chassis by only two screws, and may be quickly and easily swung out for convenient access to the sockets and other parts, as shown in the above illustration.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Marks. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment. — As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing in the direction shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

After completion of alignment, seal the i-f core-adjustment screws with household cement.

The dial tuning (right hand) push button must be pushed in for steps 1 to 3, inclusive.

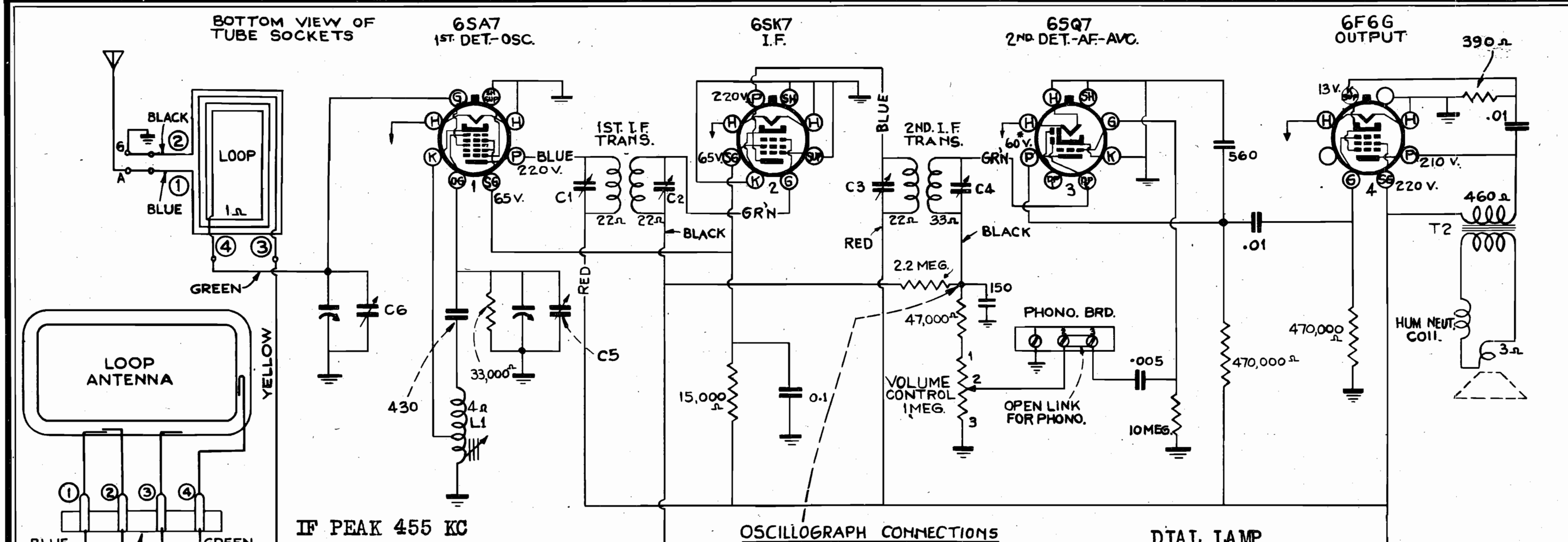
On Model WR-260, set range switch to "Broadcast" position (switch up) and tone control clockwise.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark	C6 (osc.)† C3 (ant.)
4	Follow "Adjustments for Electric Tuning."			

† The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.

WESTINGHOUSE ELEC. SUPPLY CO.

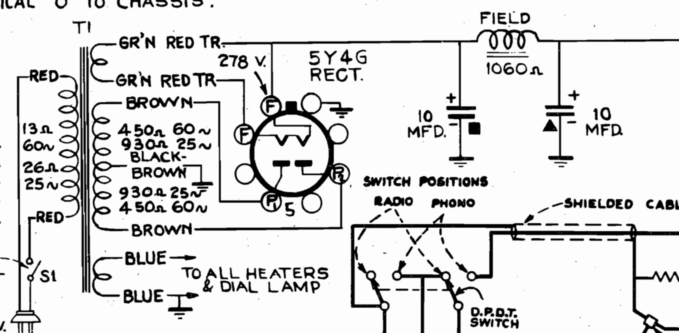
MODEL WR270
Schematic, Voltage
Phono. Data



VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY.
* STARRED VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.

OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL,
VERTICAL "O" TO CHASSIS.

DIAL LAMP
Mazda No. 51, 7.5 volts, 0.2 amp.



CATHODE CURRENTS

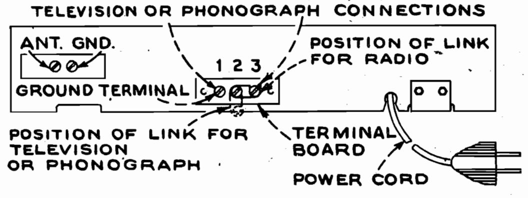
(1)	6SA7	6.6	MA.
(2)	6SK7	10.2	MA.
(3)	6SQ7	.35	MA.
(4)	6F6G	29.9	MA.
	TOTAL "B" CURRENT	46.7	MA.

Frequency Range........................ 540-1,720 kc
Intermediate Frequency........................ 455 kc
Power Supply Ratings
Rating A............ 105-125 volts, 50-60 cycles, 60 watts
Rating B............ 105-125 volts, 25-60 cycles, 60 watts

Loudspeaker (RL-79-3)
Type........................ 6-inch Electrodynamic
Voice Coil Impedance............ 3.4 ohms at 400 cycles
Power Output (125-volt supply)
Undistorted........................ 1.4 watts
Maximum........................ 2.3 watts

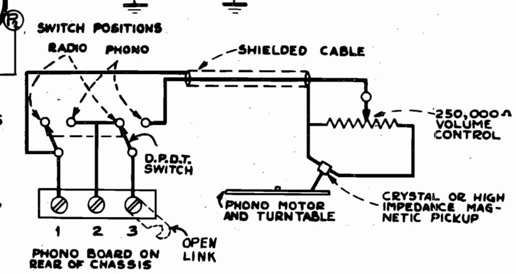
Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

TELEVISION OR PHONOGRAPH CONNECTIONS



Back of Chassis

First Edition



Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch

Phonograph Terminal Board.—A 3-terminal board is located on the rear of the chassis for connecting a phonograph pickup, or Record Player, into the audio amplifier of the receiver. The accompanying schematic shows connections for a high-impedance pickup with a switch for changing from radio to records. For low-impedance pickups, a suitable step-up transformer should be used to provide proper impedance matching, and should be connected between the pickup and radio-phono switch.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "A" terminal on the rear of the chassis. The "G" terminal may be connected to a good ground such as a water pipe.

Phonograph or Television Attachment.—A terminal board is provided on the rear of the chassis for connecting a record player or television attachment into the audio-amplifying circuit. The cable from the attachment should be connected to terminals 1 and 3. The shielded or ground lead going to terminal 1. When using the attachment the connection link is disconnected and volume is controlled by the control on the phonograph or television attachment.

MODEL WR270
Alignment, Socket
Trimmers, Tuner
Lead Dress

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR170
Tuner Data

Alignment Procedure

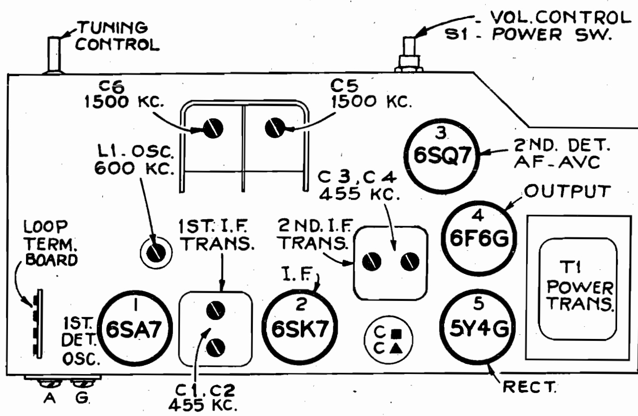
Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.



Tube and Trimmer Locations

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Antenna Terminal	455 kc	Quiet Point between 1,720-1,500 kc	C3 and C4 (2nd I-F Trans.)
2				C1 and C2 (1st I-F Trans.)
3	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc calibration mark	C5 (osc.) C6 (ant.)
4		600 kc	600 kc calibration mark	L1 (osc.)*
5	Repeat step 3.			

Note.—Oscillator tracks above signal.

* Rock gang condenser slightly while adjusting L1.

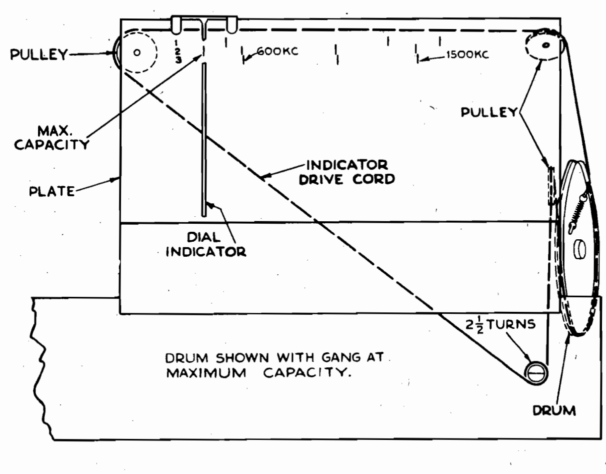
PRECAUTIONARY LEAD DRESS.—

1. Power cord leads must be dressed away from 6SQ7 socket, and toward end of chassis.
2. Green lead 2nd I.F. to 6SQ7 must be dressed against base.
3. Blue lead 2nd I.F. to 6SK7 must be dressed close to base.
4. Green and blue leads from 1st I.F. transformer must be dressed close to base.
5. Green lead from gang to 6SA7 socket must be dressed toward side apron away from other parts.

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push buttons by turning counter-clockwise about one turn from their tight position so they turn freely.
2. Check to be sure the link connection on back of chassis is in "Radio" position (connected between terminals 2 and 3).
3. Press in push-button No. 1 (left) as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the button. Do not tighten more than 1/4 turn after the screw begins to grip or damage to the mechanism may result.
4. Proceed in a similar manner for the remainder of the push-buttons.
5. Insert the station marker tabs in the recesses above the push-buttons.

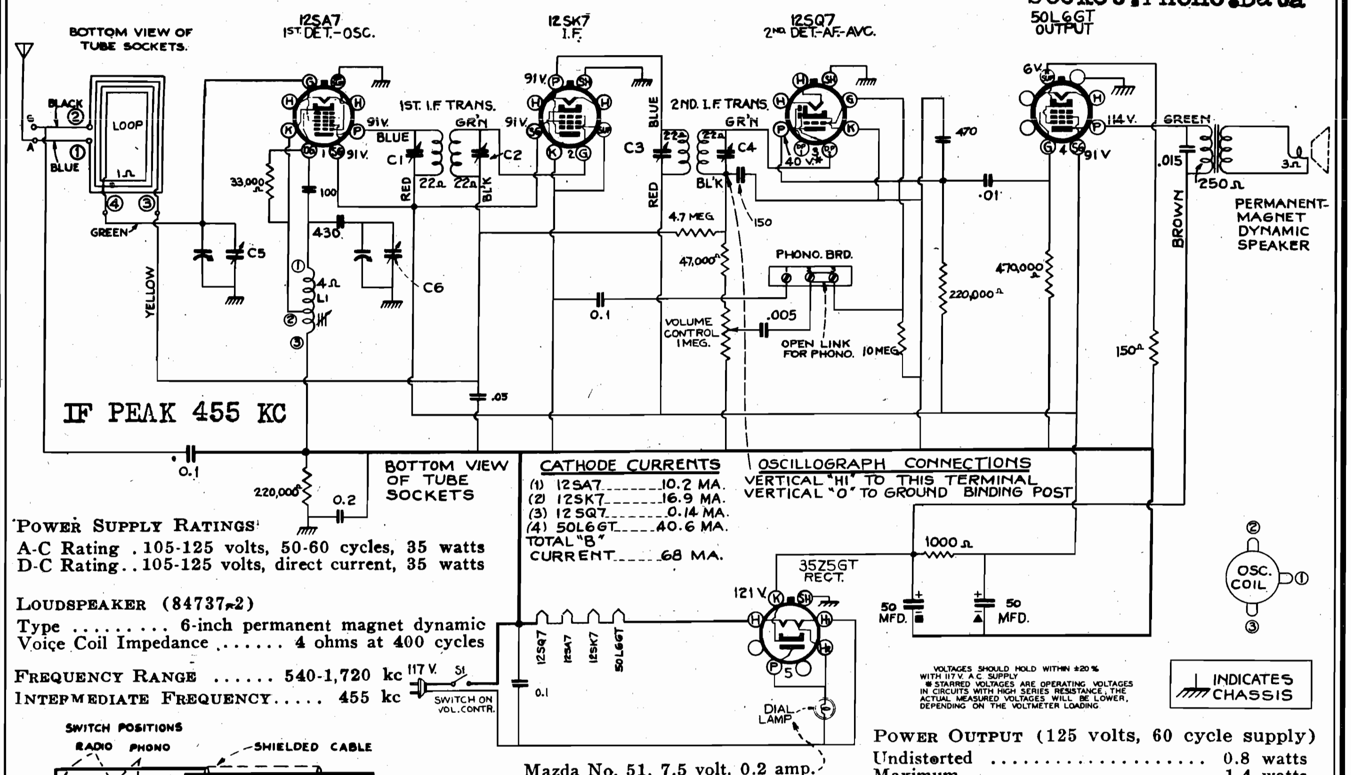


Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing.

MODEL WR170
Schematic, Voltage Alignment, Trimmers Socket, Phono, Data

WESTINGHOUSE ELEC. SUPPLY CO.



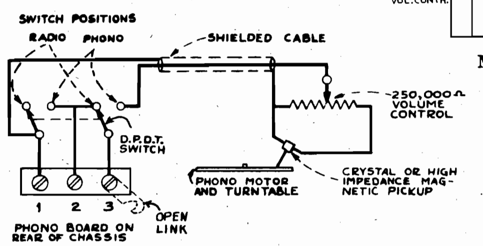
Power Supply Ratings
A-C Rating . 105-125 volts, 50-60 cycles, 35 watts
D-C Rating . . 105-125 volts, direct current, 35 watts

Loudspeaker (84737-2)
Type . . . . 6-inch permanent magnet dynamic
Voice Coil Impedance . . . . 4 ohms at 400 cycles

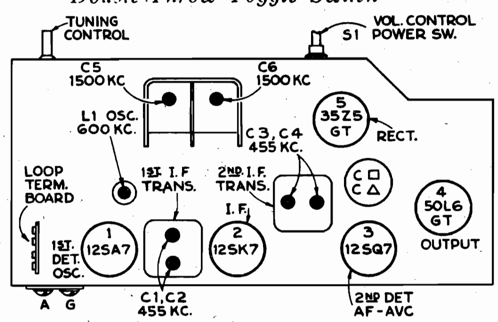
Frequency Range . . . . . . 540-1,720 kc
Intermediate Frequency . . . . . 455 kc

Mazda No. 51, 7.5 volt, 0.2 amp.

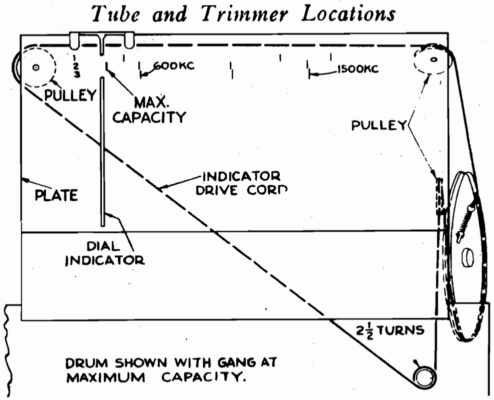
Power Output (125 volts, 60 cycle supply)
Undistorted . . . . 0.8 watts
Maximum . . . . 1.4 watts



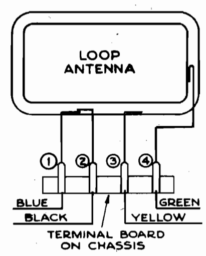
Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch

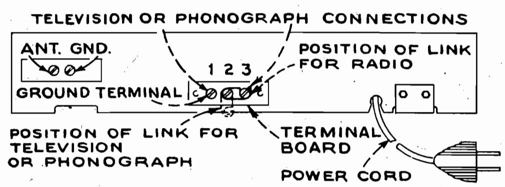


Tube and Trimmer Locations



Dial-Indicator and Drive Mechanism





Back of Chassis

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the schematic drawing.

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver ground binding post, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should be set 1/16 inch to the left of the extreme left (low frequency) mark on the dial scale.

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	Ant. terminal	455 kc	Quiet Point between 1,720-1,500 kc	C3 and C4 (2nd I-F trans.)
2	Ant. terminal			C1 and C2 (1st I-F trans.)
3	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc calibration mark	C6 (osc.) C5 (ant.)
4		600 kc	600 kc calibration mark	L1 (osc.) (Rock in)
5	Repeat step 3.			

NOTE.—Oscillator tracks above signal.

MODEL WR366
Schematic, Lead Dress

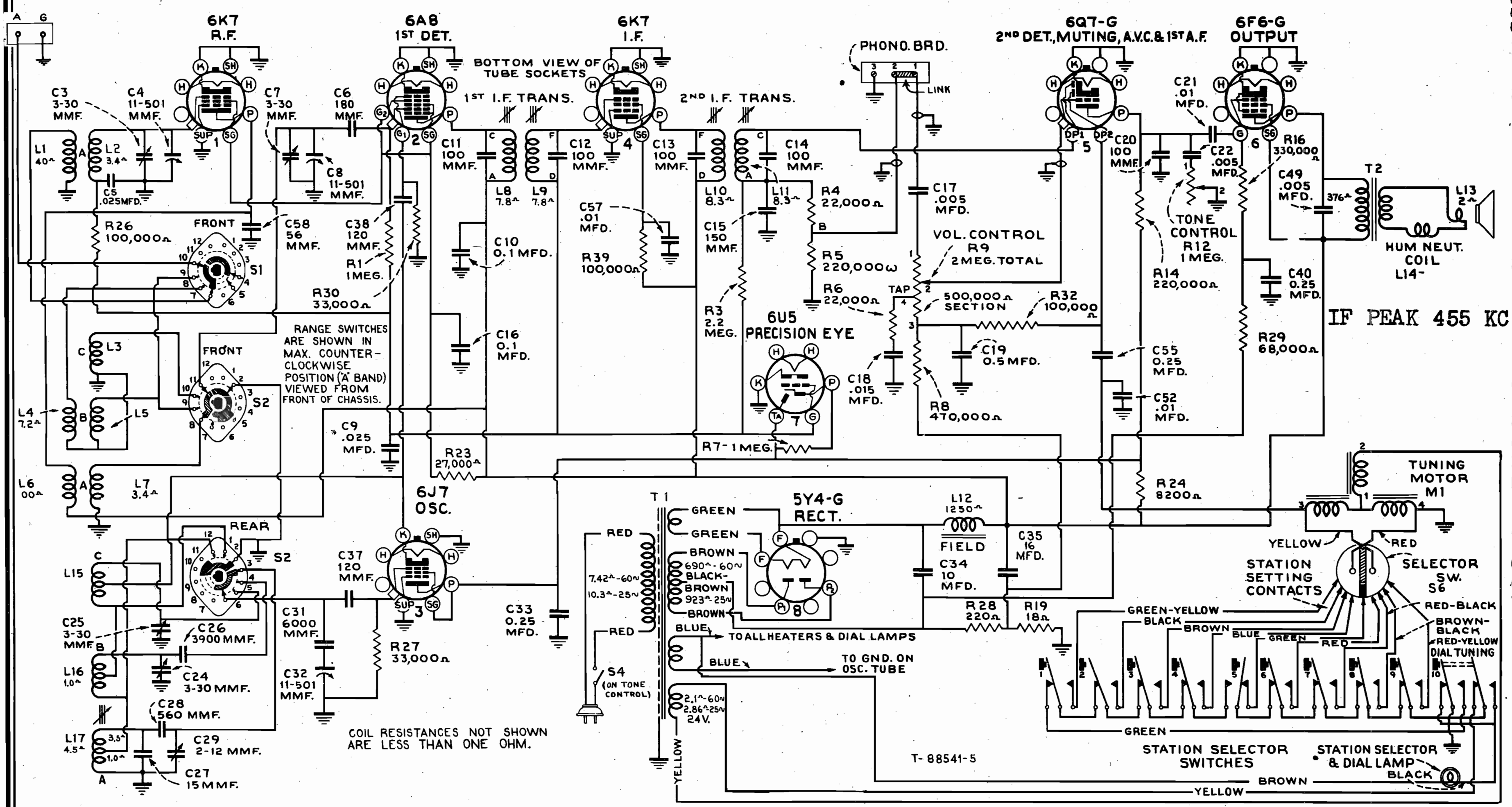
WESTINGHOUSE ELEC. SUPPLY CO.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. These voltages will be lower when measured with a voltmeter drawing current through the circuit. Exact voltage may be measured with a vacuum-tube voltmeter if desired. The other values will not be affected by measuring with an ordinary high-resistance voltmeter.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

Precautionary Lead Dress.—

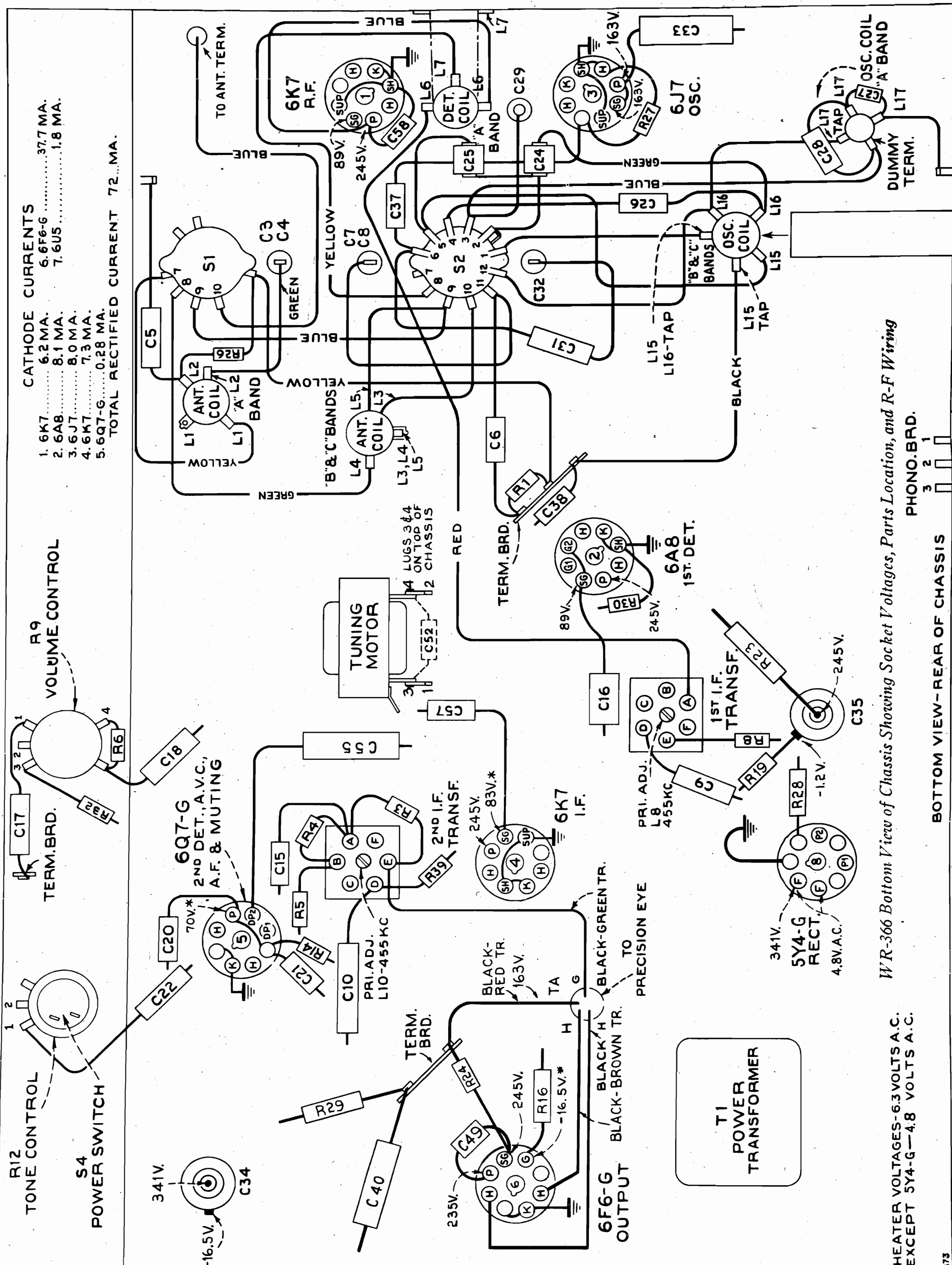
1. Leads from the oscillator section of the range switch to the oscillator coils and mica trimmers should be kept as short as possible and dressed away from other parts and wiring.
2. The leads on C31 connecting between the range switch and the oscillator section of the gang should be made as short as possible.
3. The leads from the power transformer and the power cord to the power switch (S4) should be twisted together and dressed away from other wiring.
4. The yellow lead connecting to the transformer motor winding at the rectifier socket should be dressed away from the phono terminals.



WR-366 Schematic Circuit Diagram

MODEL WR366
Chassis Wiring
Voltage

WESTINGHOUSE ELEC. SUPPLY CO.



WR-366 Bottom View of Chassis Showing Socket Voltages, Parts Location, and R-F Wiring

MODEL WR366
MODEL WR368
Socket, Trimmers
Drive Cord Data

WESTINGHOUSE ELEC. SUPPLY CO.

Electrical Specifications

FREQUENCY RANGES
"Standard Broadcast" (A) .... 540-1,720 kc
"Medium Wave" (B) .... 2.3-7 mc
"Short Wave" (C) .... 7-22 mc

R-F ALIGNMENT FREQUENCIES
"Short Wave" (C) .... 20 mc (osc., ant.)
"Medium Wave" (B) .... 6.1 mc (osc.)
"Standard Broadcast" (A). 600 kc (osc.), 1,500 kc (osc., ant.)

Intermediate Frequency .... 455 kc

TUBE COMPLEMENT (WR-366)
(1) RCA-6K7 .... R-F Amplifier
(2) RCA-6A8 .... First Detector
(3) RCA-6J7 .... Heterodyne Oscillator
(4) RCA-6K7 .... I-F Amplifier
(5) RCA-6Q7-G .... 2nd Det., 1st A.F., A.V.C.
(6) RCA-6F6-G .... Power Output
(7) RCA-6U5 .... Precision Eye
(8) RCA-5Y4-G .... Rectifier

TUBE COMPLEMENT (WR-368)
(1) RCA-6K7 .... R-F Amplifier
(2) RCA-6A8 .... First Detector
(3) RCA-6J7 .... Heterodyne Oscillator
(4) RCA-6K7 .... I-F Amplifier
(5) RCA-6Q7-G .... 2nd Det., 1st A.F., A.V.C.
(6) RCA-6F5 .... Phase Inverter
(7) RCA-6F6-G .... Power Output
(8) RCA-6F6-G .... Power Output
(9) RCA-6U5 .... Precision Eye
(10) RCA-5U4-G .... Rectifier

Pilot Lamps (3) .... Center, Mazda No. 47, 6-8 V., 0.15 amp.; Sides, Mazda No. 44, 6.3 V., 0.25 amp.

POWER SUPPLY RATINGS
Rating A .... 105-125 volts, 50-60 cycles, 80 watts (WR-366), 120 watts (WR-368)
Rating B .... 105-125 volts, 25-30 cycles, 80 watts (WR-366), 120 watts (WR-368)

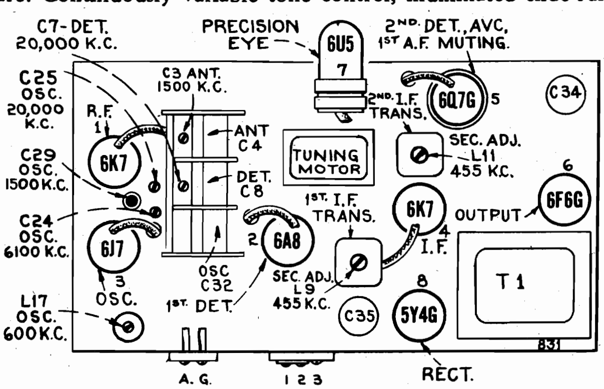
POWER OUTPUT	WR-366	WR-368
Undistorted	2.5 watts	10 watts
Maximum	5 watts	12 watts

LOUDSPEAKER
Type .... 12-inch Electrodynamic
Voice Coil Impedance .... 2.2 ohms at 400 cycles

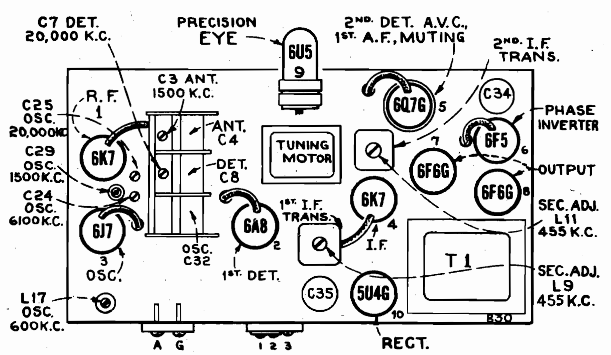
General Description

Model WR-366 is an eight-tube, three-band, superheterodyne receiver employing electric motor tuning for nine broadcast stations and a Precision Eye for precise manual tuning. The tuning ranges cover the standard broadcast band, Municipal and State Police bands, and the American and Foreign short-wave broadcast bands. Among its features are: Continuously variable tone control, illuminated slide-rule dial, automatic volume control, magnetically-tuned i-f transformers, r-f amplifier stage, phonograph terminal board, separate oscillator tube, and bass compensation.

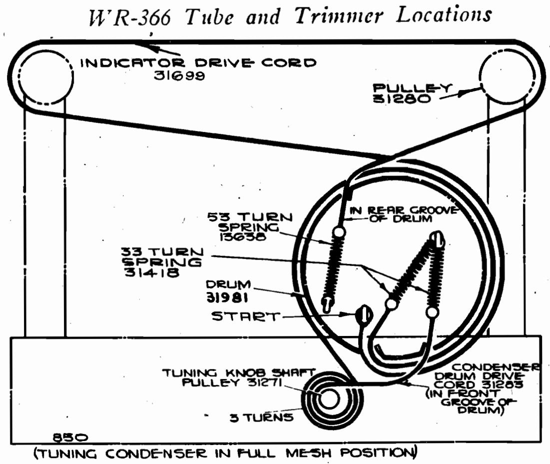
The Model WR-368 is a ten-tube, three-band, superheterodyne receiver with all of the features of the WR-366 and in addition employing push-pull output with a phase inverter and a power output of 12 watts.



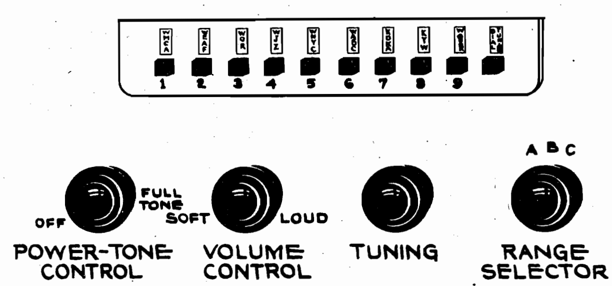
WR-366 Tube and Trimmer Locations



WR-368 Tube and Trimmer Locations



Drive Cord Arrangement for Tuning Condenser and Dial Indicator



Location of Controls

Tuner Assembly Data, Part 1

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR366
MODEL WR368
MODEL WR370

Electric Tuning Mechanism

The circuit of the electric tuning mechanism is shown in the schematic diagram, and the mechanical details are illustrated.

The action can be understood by following a cycle of operation:

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken. Inertia carries the insulation line past the station-setting contact which then makes contact to the other half of the disc: This completes the circuit to the other side of the motor field coil, causing the motor to reverse. The floating flywheel is still turning in the original direction and therefore slows down the reversal movement of the motor; as a result the selector disc is moved slowly back until the insulation line is under the station-setting contact, when the circuit is broken and the mechanism stops.

Oscillation of Tuning Mechanism

The principal of operation necessitates that the mechanism go through several quick reversals on arriving at the desired station frequency and before reaching a dead stop. Three of four reversals are normal. The number of reversals and consistency of operation depends mainly on the flywheel friction adjustment, however, in some cases the selector disc and station setting contacts are involved. The following suggestions may be helpful where excessive pointer oscillation is experienced.

Oscillation on Certain Buttons Only

(1) Check contact tip of selector assembly for loose fit in body. See that nose of contact is not burned nor distorted out of correct shape. Replace tip if necessary; do not attempt to file the tips.

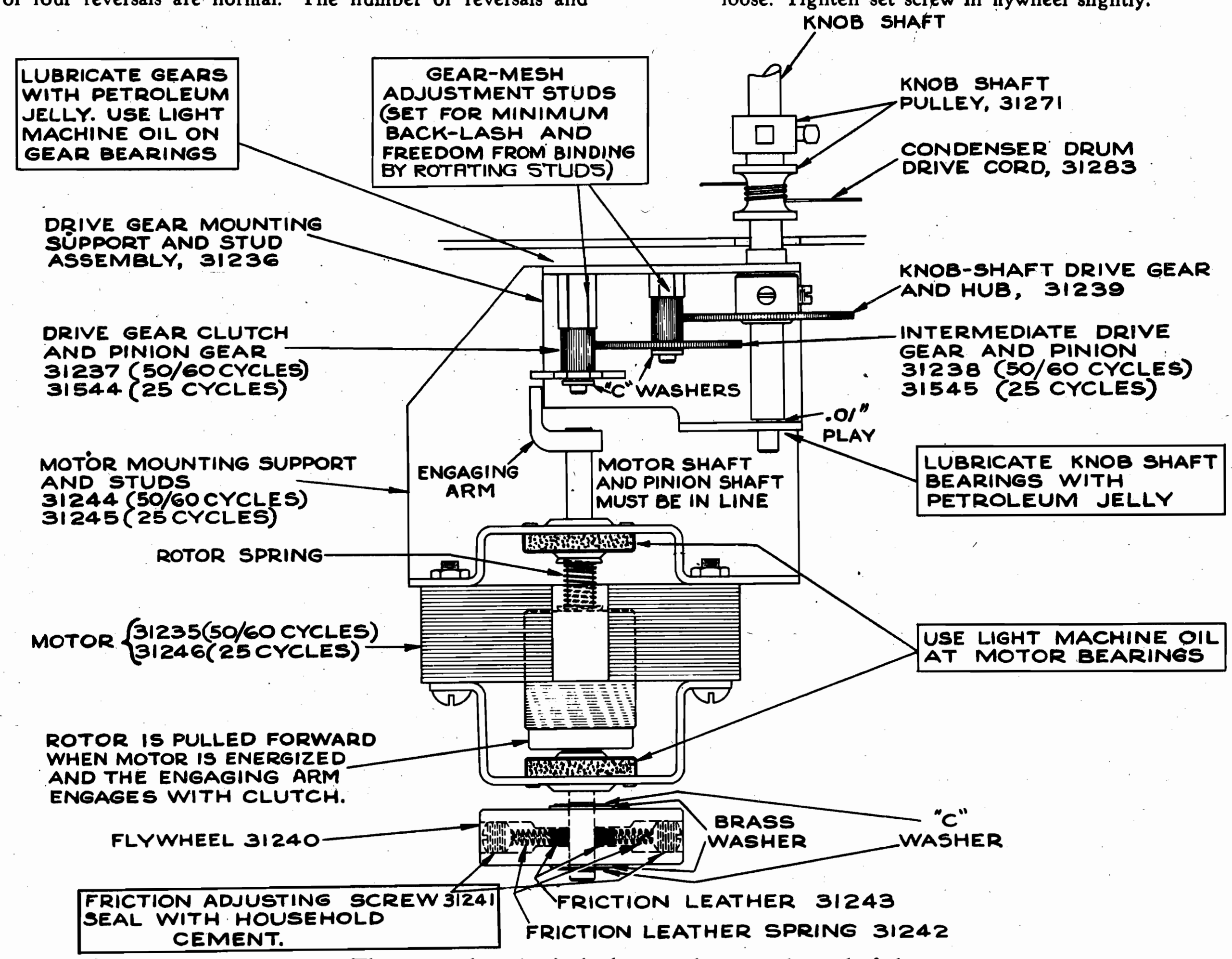
(2) Clean the insulating gap of selector disc, being sure to remove all metal particles and metallic fragments from beveled edges of the brass. Each contact should be checked to assure that clearance exists (approx. .010-in) between it and the disc when stopped in position on the station.

(3) Inspect the insulating gap to see that it has not changed shape due to bending or warping. Replace the disc if cleaning and adjustment fail to give correct operation.

Oscillation On All Buttons

(1) Slow oscillation indicates friction adjustment of flywheel is too tight. Loosen set screw in flywheel slightly.

(2) Rapid oscillation indicates friction adjustment is too loose. Tighten set screw in flywheel slightly.



There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.

Motor and Gear Mechanism

MODEL WR366
MODEL WR368
MODEL WR370

WESTINGHOUSE ELEC. SUPPLY CO.

Data, Part 2
Tuner, Notes

(3) If definite adjustment cannot be reached, remove spring from behind flywheel set screw and increase its length by stretching; replace and make the necessary adjustments. Install a new spring if necessary.
(4) See that leather friction pad is not binding in its hole, and that it is saturated with lubricant. "Neats-Foot" oil should be used for this purpose.
(5) Incorrect balance of the flywheel sometimes prevents correct adjustment. The standard service replacement flywheel Part No. 31240 may be used to definitely eliminate this cause.
(6) The number of oscillations varies somewhat with line voltage. Avoid making adjustments at very low (105v) or very high (125v) voltages. Adjustments made at 115-118 volts provide good operation of the rated range.
(7) Stability of adjustment is slightly better if made after a brief run-in period.

Adjustment of Selector Disc

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the beveled operating-end at the left (viewed from rear).

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

Muting Circuit

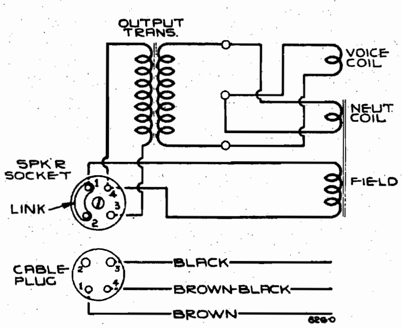
When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

Lubrication

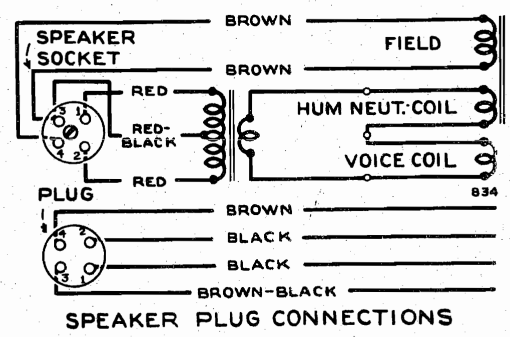
Motor bearings and **gear bearings;** use light machine oil.
Gear faces; use "Pure Oil No. 611" or petroleum jelly.
Dial indicator pulleys and **rails;** use "Castordag" or petroleum jelly.
Selector disc; apply **thin** film of petroleum jelly.
Friction leather on flywheel; apply "neats-foot" oil. When replacing leather, soak it for at least 24 hours in neats-foot oil, and insert in flywheel while dripping.

Push Button Adjustments

Push buttons which stick in the escutcheon may be corrected by centering the rubber retainer-bumper in the rear of the buttons and cementing the rubber in place with plasticon. If the buttons do not lock in place, the chassis may be too far back in the cabinet or the latch bar spring may be out of place.



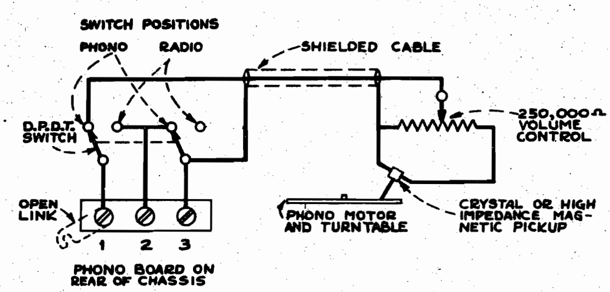
WR-366 Loudspeaker Wiring



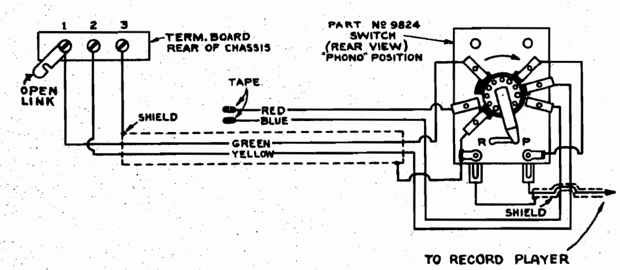
WR-368 Loudspeaker Wiring

Removing Speaker from Cabinet.—Hold the nuts, located between the speaker and baffle, with a pair of long-nose pliers while removing the speaker nuts. Normal shrinkage of the wood baffle may loosen the nuts so that the screws will otherwise turn while removing the speaker.

Centering the Speaker Voice-Coil.—The speaker voice-coil may be centered in the normal manner by using three narrow feelers to obtain equal spacing of the air-gap. The dust cover must be removed before centering. This may be done by gently cutting it free from the cone, being careful not to cut or damage the cone while doing so. After adjustment, a dust cover should be carefully cemented in place to prevent entrance of foreign material.



Phonograph Connections, Using a Double-Pole, Double-Throw Switch



Model WR-366 Model WR-368
Phonograph Connections, Using a Part No. 9824 Switch

Phonograph Terminal Board.—A 3-terminal board is located on the rear of the chassis for connecting a phonograph pickup, or Record Player, into the audio amplifier of the receiver. The upper diagram shows connections for a high-impedance pickup with a switch for changing from radio to records. For low-impedance pickups, a suitable step-up transformer should be used to provide proper impedance matching, and should be connected between the pickup and radio-phono switch. The volume control is optional since the radio volume control may be used to control record volume. The lower diagram shows Part No. 9824 switch and cable, and connections from cable to the phono terminal board. The pickup leads connect to terminals on the switch as shown.

MODEL WR370
Tuner Adjustments

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR366
MODEL WR368
Alignment
Tuner Adjustments

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connect vertical "Hi" input to terminal No. 2 on phono board and vertical "0" to terminal No. 3.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Dial-Indicator Adjustment.—Before aligning this receiver it is essential to slide the indicator pointer along the drive cable until it points to the lowest frequency mark on "A" band, (520 kc) with the gang condenser fully meshed.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L10, L11 (2nd I-F Transformer)
2	6A8 det. grid cap, in series with .01 mfd.	455 kc		L8, L9 (1st I-F Transformer)
3	Antenna Terminal in series with 300 ohms.	20 mc	20 mc "C" band	C25 (osc.)* C7 (det.)†
4	Antenna Terminal in series with 300 ohms.	6.1 mc	6.1 mc "B" band	C24 (osc.)**
5	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc "A" band	C29 (osc.) C3 (ant.)
6	Antenna Terminal in series with 200 mmf.	600 kc	600 kc "A" band	L17 (osc.)
7	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc "A" band	C29 (osc.)

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 19.09 mc, at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 5.19 mc, at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C7.

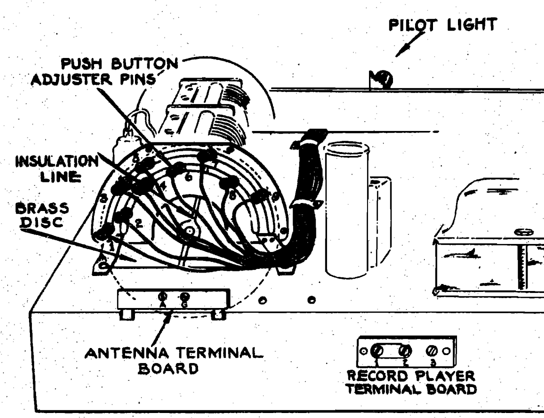
Note that oscillator tracks above (higher frequency) signal on all bands.

ADJUSTMENTS FOR ELECTRIC TUNING

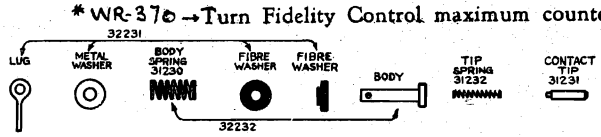
Push buttons No. 1 to 9 are electric tuning station buttons. The right hand push button is for dial tuning.

1. Make a list of the desired nine stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.*
4. Manually tune in the first station on the list, using the Precision Eye for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (left). Both buttons will stay down, central dial lamp will light brightly or dully, depending on which side of the disc the contact is located. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

*WR-370 → Turn Fidelity Control maximum counter-clockwise.



Station Button	Color of Lead To Station-Setting Contact
No. 1	Green-yellow
No. 2	Black
No. 3	Brown
No. 4	Blue
No. 5	Green
No. 6	Red
No. 7	Red-black
No. 8	Brown-black
No. 9	Red-yellow

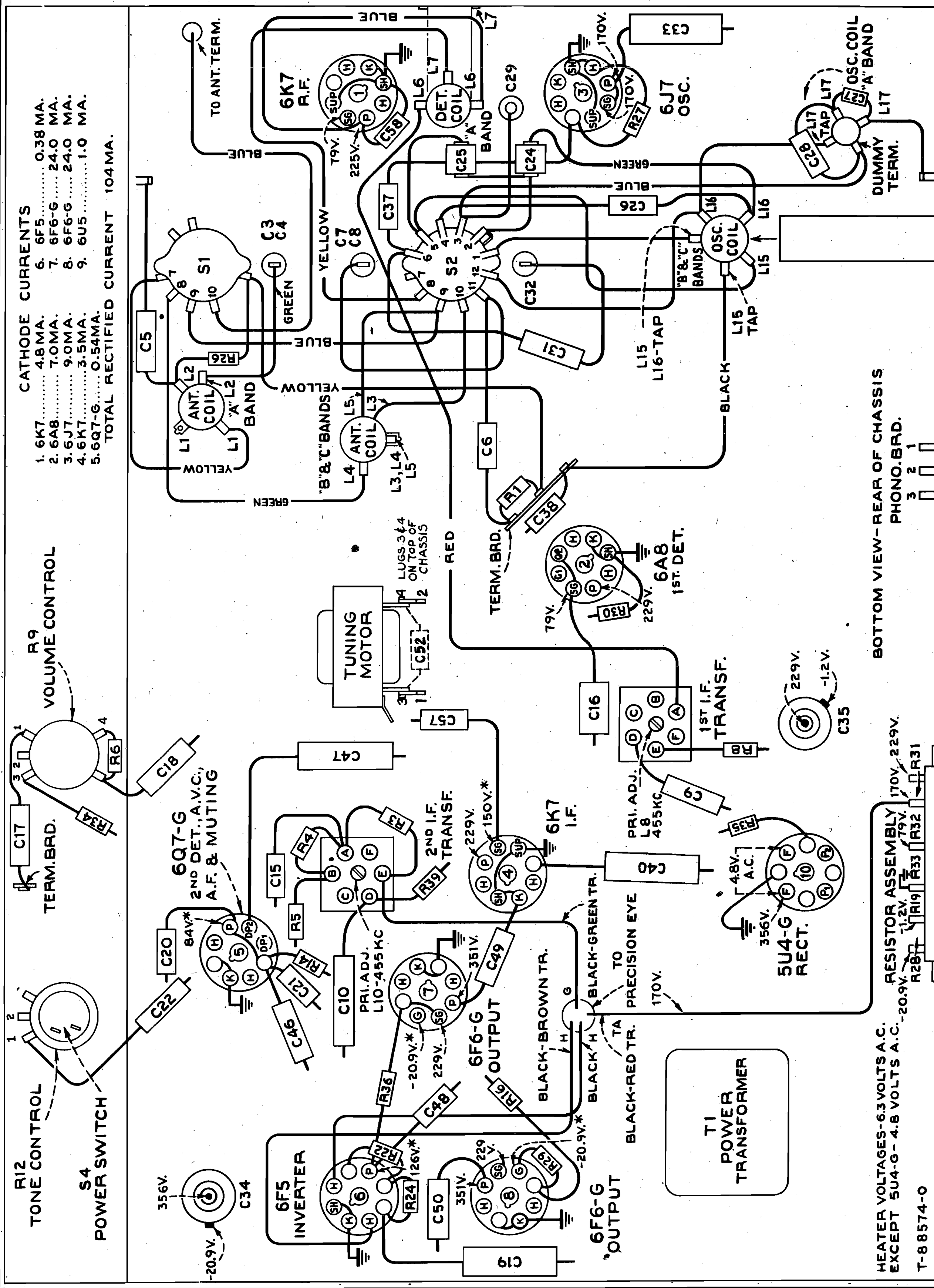


Component Parts of Station-Setting Contact

Station-Setting Contacts and Selector Disc

MODEL WR368
Chassis Wiring
Voltage

WESTINGHOUSE ELEC. SUPPLY CO.



WR-368 Bottom View of Chassis Showing Socket Voltages, Parts Location, and R-F Wiring

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR368

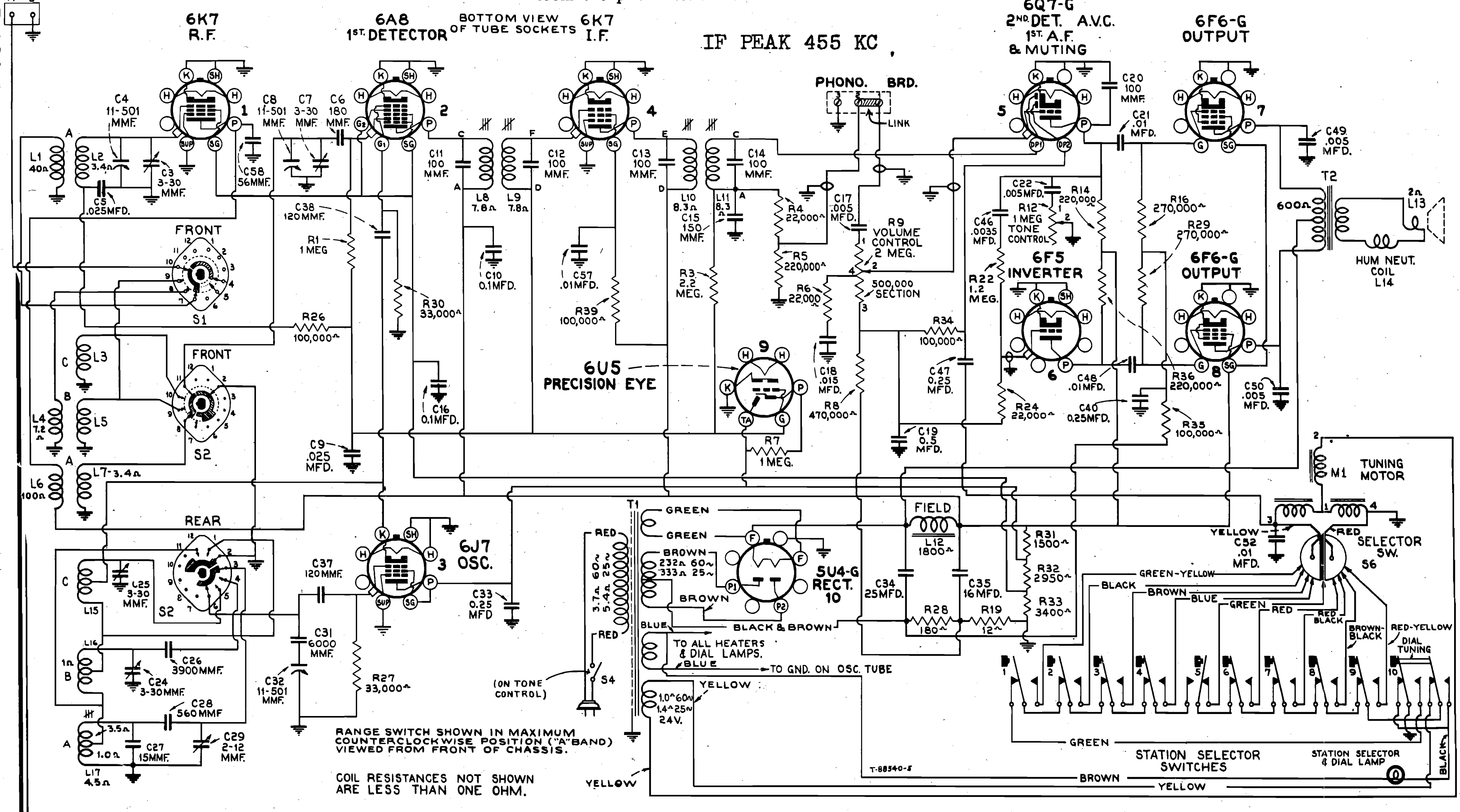
Schematic Lead Dress

Precautionary Lead Dress.—

1. Leads from the oscillator section of the range switch to the oscillator coils and mica trimmers should be kept as short as possible and dressed away from other parts and wiring.
2. The leads on C31 connecting between the range switch and the oscillator section of the gang should be made as short as possible.
3. The leads from the power transformer and the power cord to the power switch (S4) should be twisted together and dressed away from other wiring.
4. The .005 capacitor (C50) from the plate of tube No. 8 to chassis must be dressed away from the grid lead and R22 on tube No. 6.
5. The yellow lead connecting to the transformer motor winding at the rectifier socket should be dressed away from the phono terminals.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. These voltages will be lower when measured with a voltmeter drawing current through the circuit. Exact voltage may be measured with a vacuum-tube voltmeter if desired. The other values will not be affected by measuring with an ordinary high-resistance voltmeter.

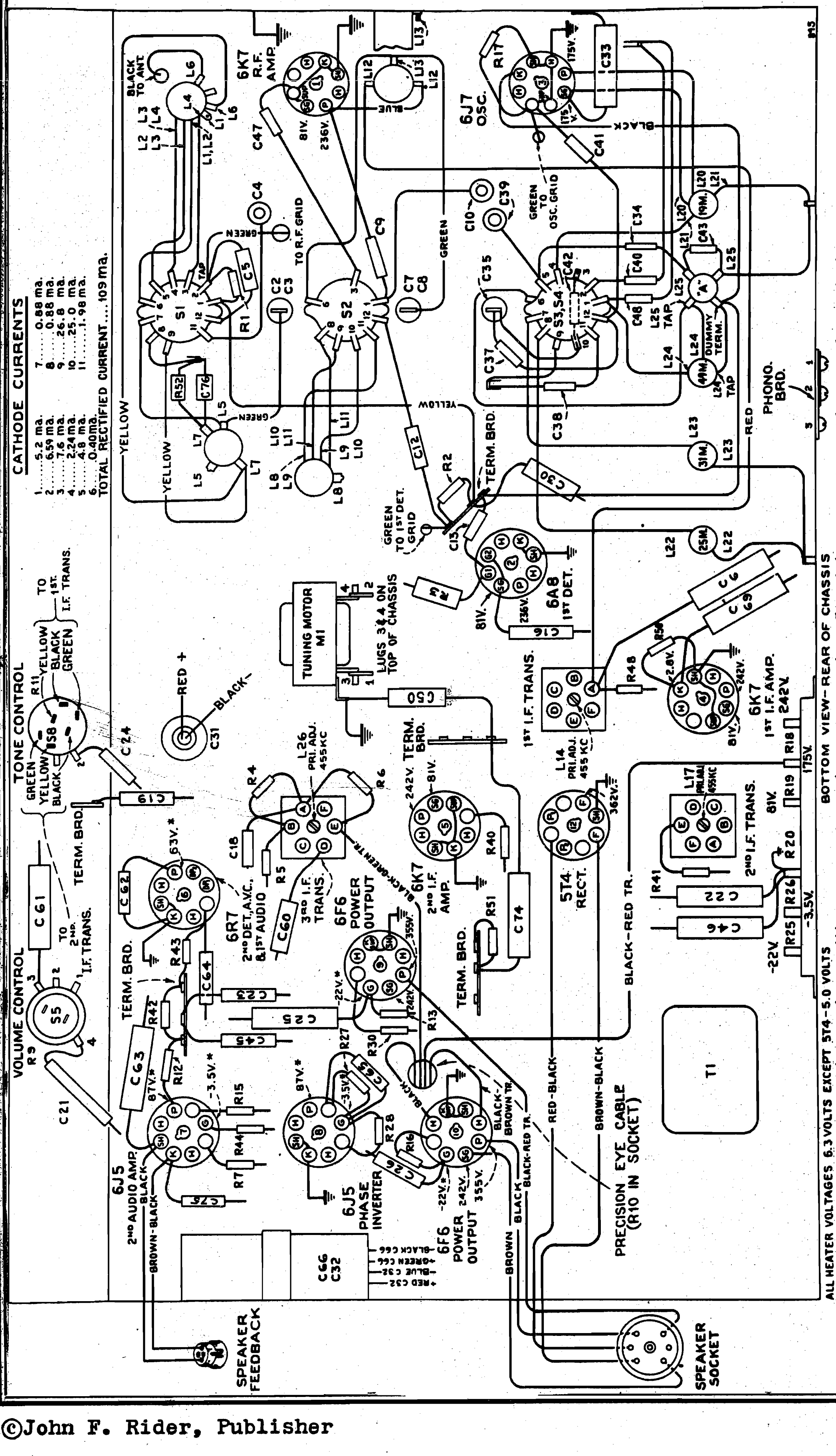
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.



WR-368 Schematic Circuit Diagram

MODEL WR370
Chassis Wiring
Voltage, Lead Dress

WESTINGHOUSE ELEC. SUPPLY CO.



* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. These voltages will be lower when measured with a voltmeter drawing current through the circuit. Exact voltage may be measured with a vacuum-tube voltmeter if desired. The other values will not be affected by measuring with an ordinary high-resistance voltmeter.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately $\pm 20\%$ with 117-volt a-c supply.

Precautionary Lead Dress.—

(1) Leads on spread-band antenna and r-f coils and trimming capacitors should be kept short as possible and separated from each other.

(2) Keep black lead from L25 away from C38 and L24.

(3) Keep black lead from L25 to cathode lug on 6J7 away from chassis and adjacent parts.

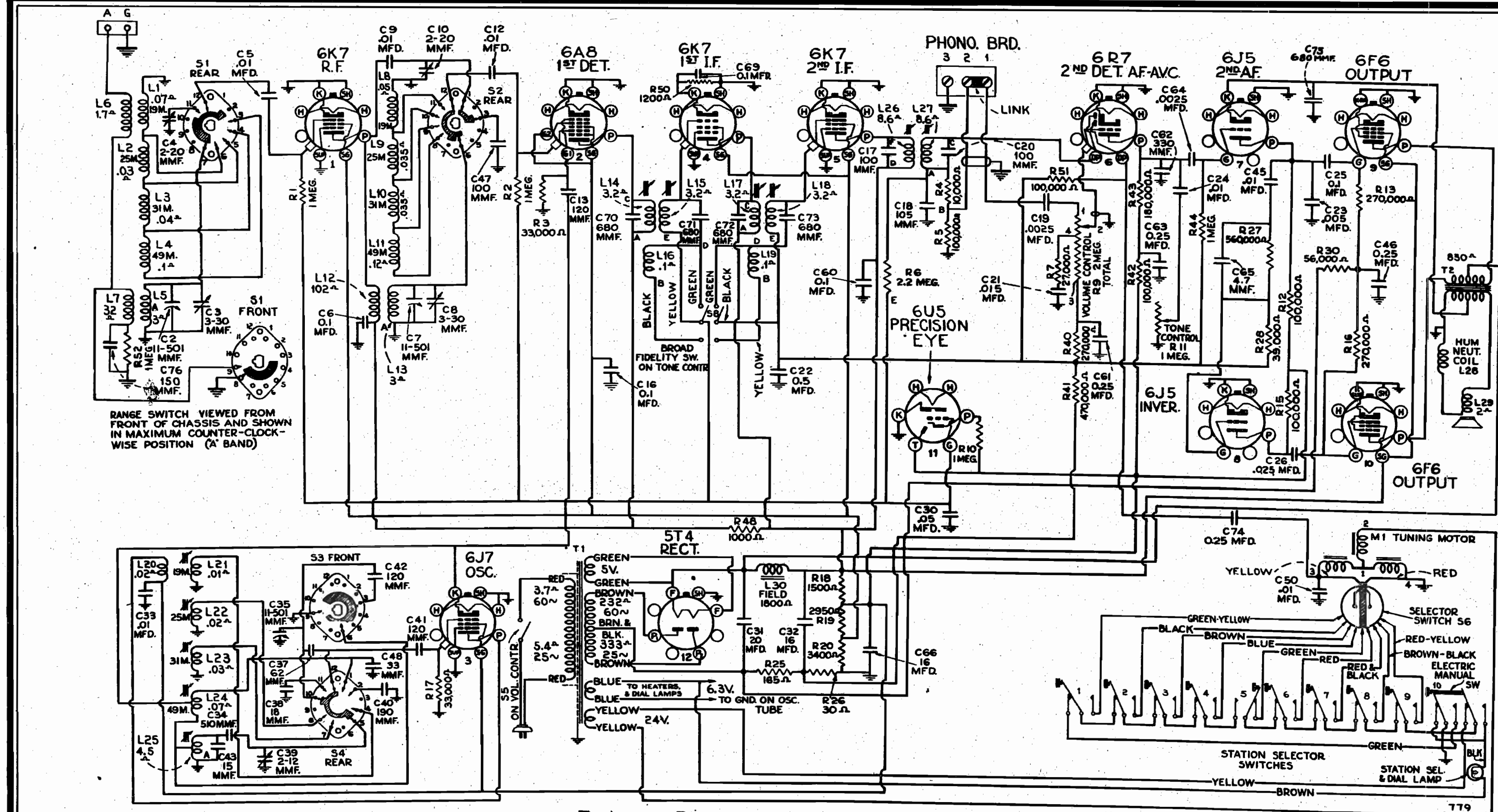
(4) The power cord lead and the primary lead of the power transformer which connect to the power switch should be twisted together, and kept away from Volume Control terminals.

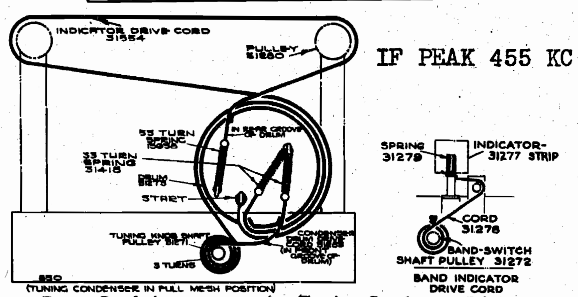
(5) Keep C13 away from the 6A8 control grid lead and from the chassis.

(6) The three leads from the first i-f transformer to fidelity switch should be twisted and kept short but away from adjacent parts. The same applies to the leads from second i-f transformer to fidelity switch.

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR370
Schematic, Drive Cord Speaker Data





Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch

IF PEAK 455 KC

Frequency Ranges

"Standard Broadcast" (A) .... 540-1,720 kc
"49 Meter" Band .... 5.92-6.23 mc
"31 Meter" Band .... 9.48-9.69 mc
"25 Meter" Band .... 11.68-11.94 mc
"19 Meter" Band .... 15.08-15.39 mc

Loudspeaker

Type .... 12-inch Electrodynamic
Voice Coil Impedance .... 2.2 ohms at 400 cycles

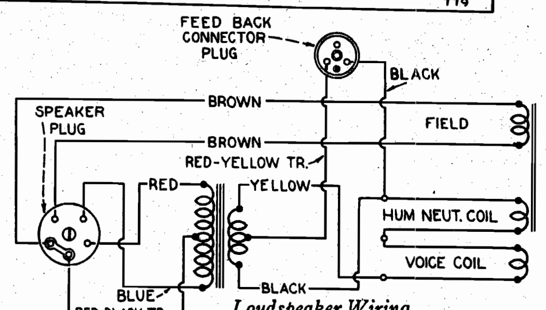
Power Output

Undistorted .... 10 watts
Maximum .... 12 watts

Power Supply Ratings

Rating A .... 105-125 volts, 50-60 cycles, 125 watts
Rating B .... 105-125 volts, 25-30 cycles, 125 watts

Pilot Lamps (5) .... Center top and center bottom, Mazda No. 47, 6-8 V., 0.15 amp.; Top left, top right and bottom right, Mazda No. 44, 6.3 V., 0.25 amp.



Loudspeaker Wiring

NOTE: Due to inverse feedback used on this receiver, it is very important to connect speaker, speaker cable, and feedback cable, exactly as shown.

MODEL WR370
Alignment, Trimmers

WESTINGHOUSE ELEC. SUPPLY CO.

Socket, Notes

Cathode-Ray Alignment is the preferable method. Connect vertical "Hi" input to terminal No. 2 on phono board and vertical "0" to terminal No. 3.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

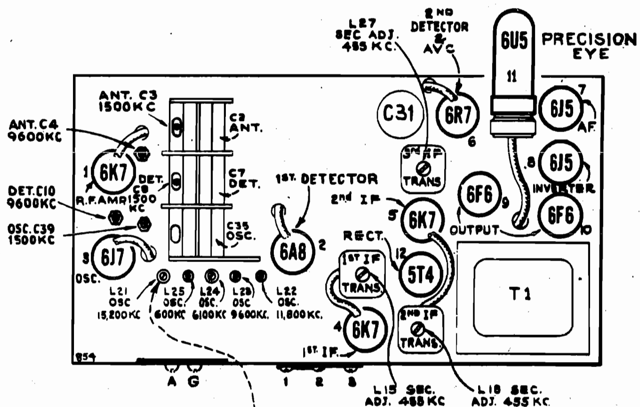
As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the core of the oscillator coil for each band so that these stations come in at the correct points on the dial.



Tube and Trimmer Locations

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator, or by zero-beating against standard broadcast stations.

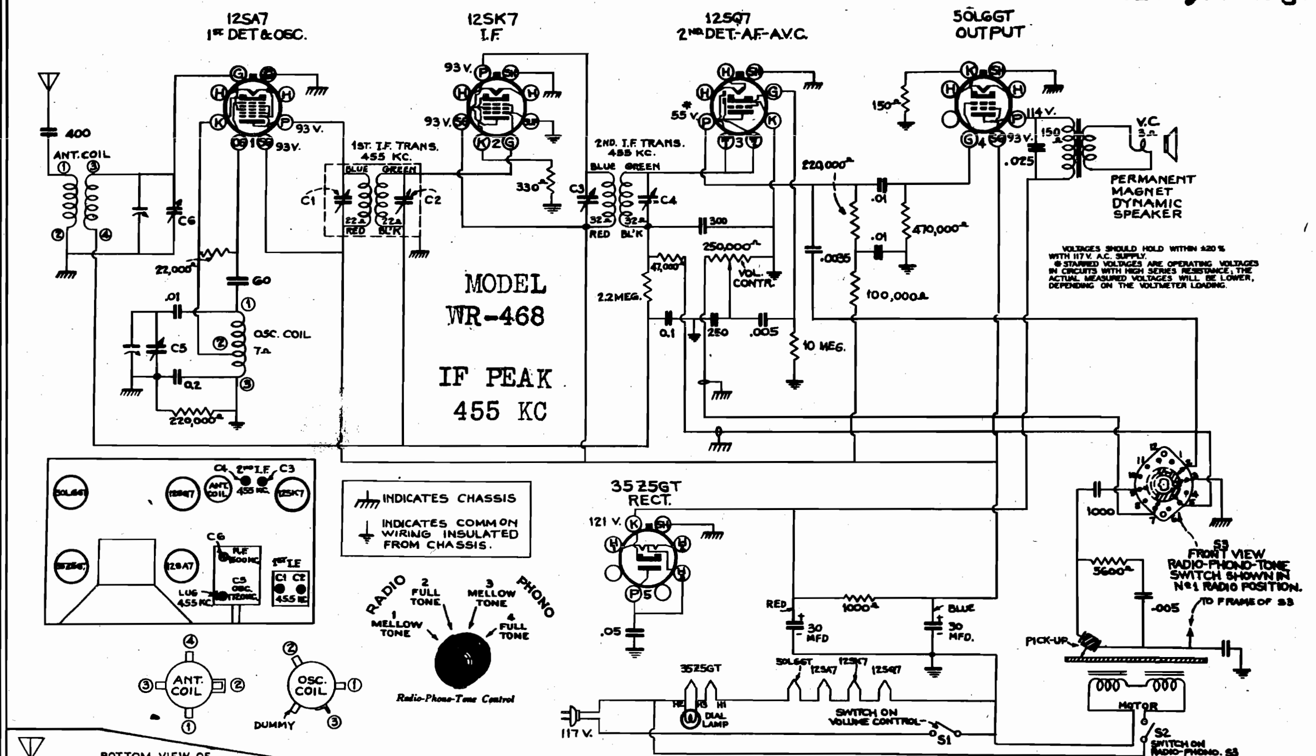
When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the core of the oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

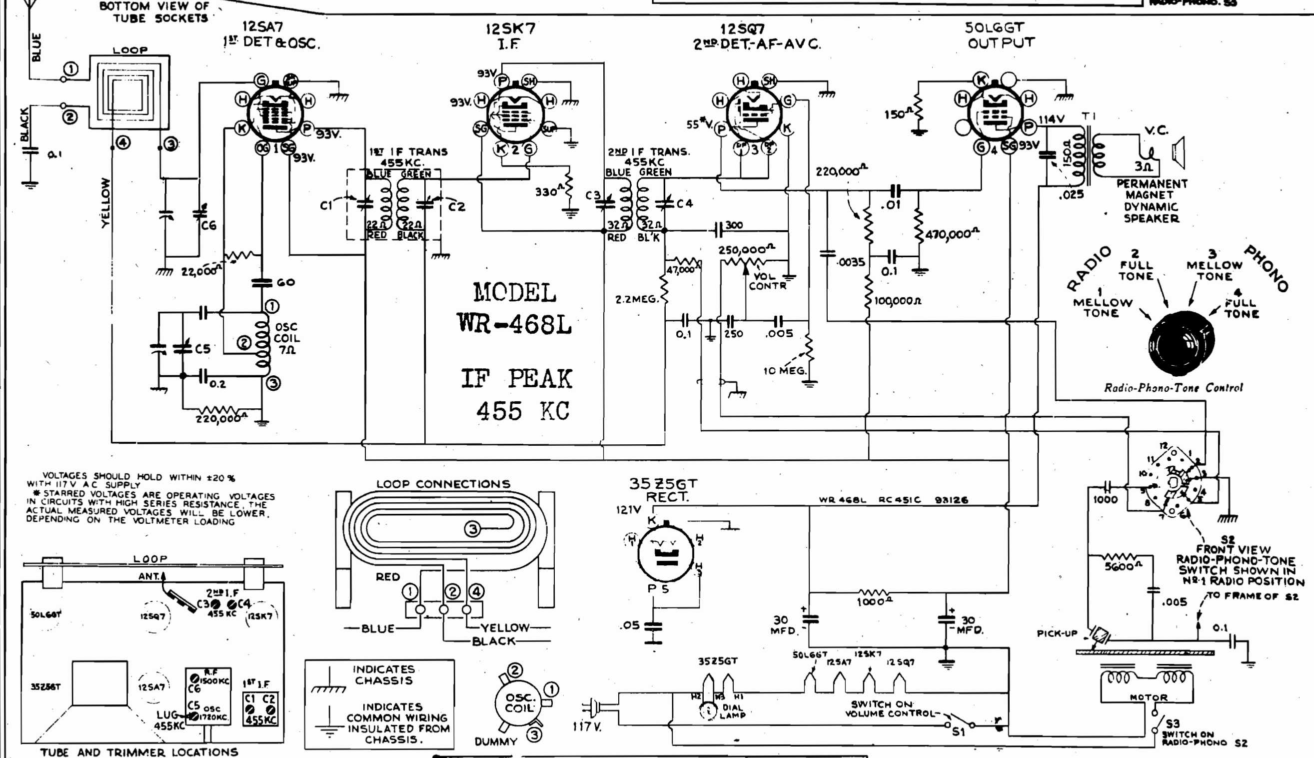
Steps	Connect the high side of test-oscillator to—	Tune Test-Oscillator to—	Range Selector	Set Tuning Gang to—	Adjust the following for max. peak output
1	Turn Fidelity Control to Maximum Counter-clockwise position.				
2	6K7 2nd I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet Point between 550-750 kc	L26, L27 (3rd I-F transformer)
3	6K7 1st I-F grid cap in series with .01 mfd.	455 kc	"A"	Quiet Point between 550-750 kc	L17, L18 (2nd I-F transformer)
4	6A8 1st-det. grid cap in series with .01 mfd.	455 kc	"A"		L14, L15 (1st I-F transformer)
5	Antenna Terminal in series with 200 mmf.	1,500 kc	"A"	1,500 kc (151.5°)	C39 (osc.) C8 (det.) C3 (ant.)
6	Antenna Terminal in series with 200 mmf.	600 kc	"A"	600 kc (30.0°)	L25 (osc.)
7	Antenna Terminal in series with 200 mmf.	1,500 kc	"A"	1,500 kc (151.5°)	C39 (osc.)
8	Antenna Terminal in series with 300 ohms.	6,100 kc	"49M"	6,100 kc (106°)	L24 (osc.)*
9	Antenna Terminal in series with 300 ohms.	9,600 kc	"31M"	9,600 kc (102°)	L23 (osc.)** C10 (det.) C4 (ant.)
10	Antenna Terminal in series with 300 ohms.	11,800 kc	"25M"	11,800 kc (90.0°)	L22 (osc.)**
11	Antenna Terminal in series with 300 ohms.	15,200 kc	"19M"	15,200 kc (78.0°)	L21 (osc.)**

* Use maximum inductance peak (plunger in) if two peaks can be obtained.
** Use minimum inductance peak (plunger out) if two peaks can be obtained.
Note that oscillator tracks **above** signal frequency on all bands except "49M," where it tracks **below**.

MODEL WR468
MODEL WR468L
Schematics, Voltage

WESTINGHOUSE ELEC. SUPPLY CO.





MODELS WR-468 and WR-468L

Frequency Range .... 540-1,720 kc

Power Output (125 volt, 60 cycle supply)
Undistorted .... .75 watts
Maximum.. 1.3 watts

Loudspeaker
Type........................ 5-inch Permanent Magnet Dynamic
Voice-Coil Impedance..................... 3.4 ohms at 400 cycles

Phonograph .... Synchronous (manual starting)
Records......................... 10-inch and 12-inch, 78 r.p.m.
Pickup.................... Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup.............. $1\frac{1}{2}$ volts at 1,000 c.p.s. across $\frac{1}{2}$ meg. load

Dial Lamp (1)..................... Mazda 51, 7.5 volts, 0.2 amp.

Power Supply Ratings **First Edition**
A-6......................... 105-125 volts, 60 cycles, 40 watts

WR-468

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

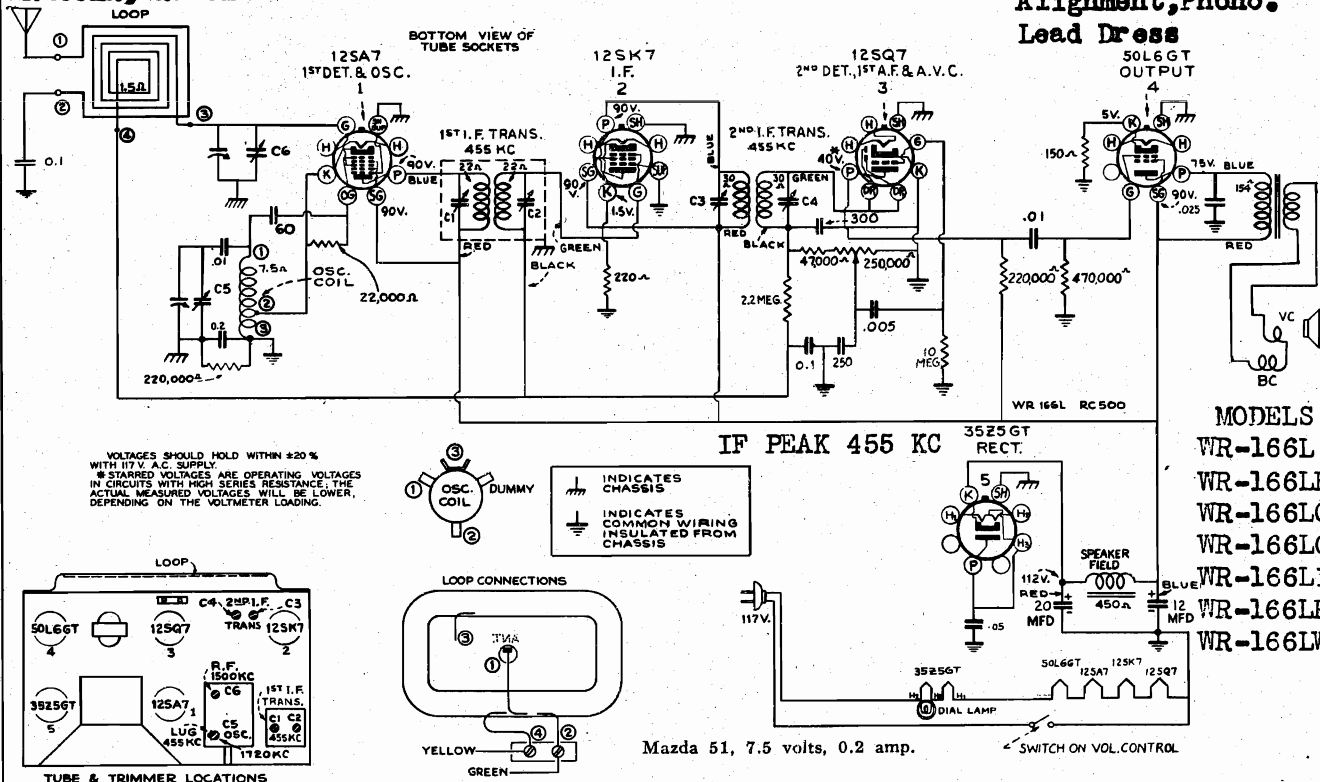
WR-468L

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it should be connected to the blue antenna lead on the rear of the chassis.

**MODELS WR166L
WR166LB, WR166LC
WR166LG, WR166LI
WR166LR, WR166LW**

WESTINGHOUSE ELEC. SUPPLY CO.

**Schematic, Voltage Socket, Trimmers
MODELS WR468, WR468L
Alignment, Phono. Lead Dress**



IF PEAK 455 KC

Mazda 51, 7.5 volts, 0.2 amp.

MODELS
WR-166L
WR-166LB
WR-166LC
WR-166LG
WR-166LI
WR-166LR
WR-166LW

Frequency Range .... 540-1,720 kc

Intermediate Frequency .... 455 kc

Power Output (125 volt, 60 cycle supply)
Undistorted .... 0.5 watts
Maximum .... 1.25 watts

Loudspeaker
Type .... 4-inch Electrodynamic

Power Supply Ratings

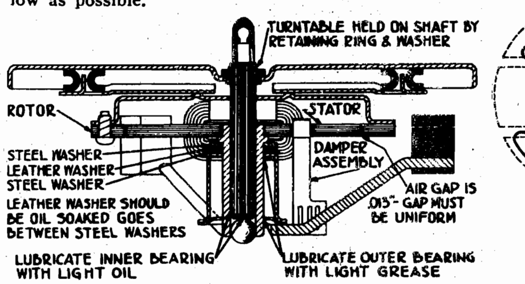
A-C Rating .... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating .... 105-125 volts, direct current, 30 watts

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT." terminal on rear of cabinet. It should not be longer than 100 feet. including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

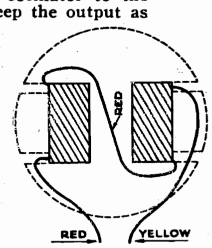
Alignment Procedure WR-468, WR-468L

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.



Cross Section of Motor Assembly



Motor Coil Assembly and Connections

Phonograph Service Data

The motor is started by turning the radio-phono tone control to either 3rd or 4th position clockwise and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather and steel washers are in the proper position.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against chassis apron.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on dc, as this would damage the motor.

5. **The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.**

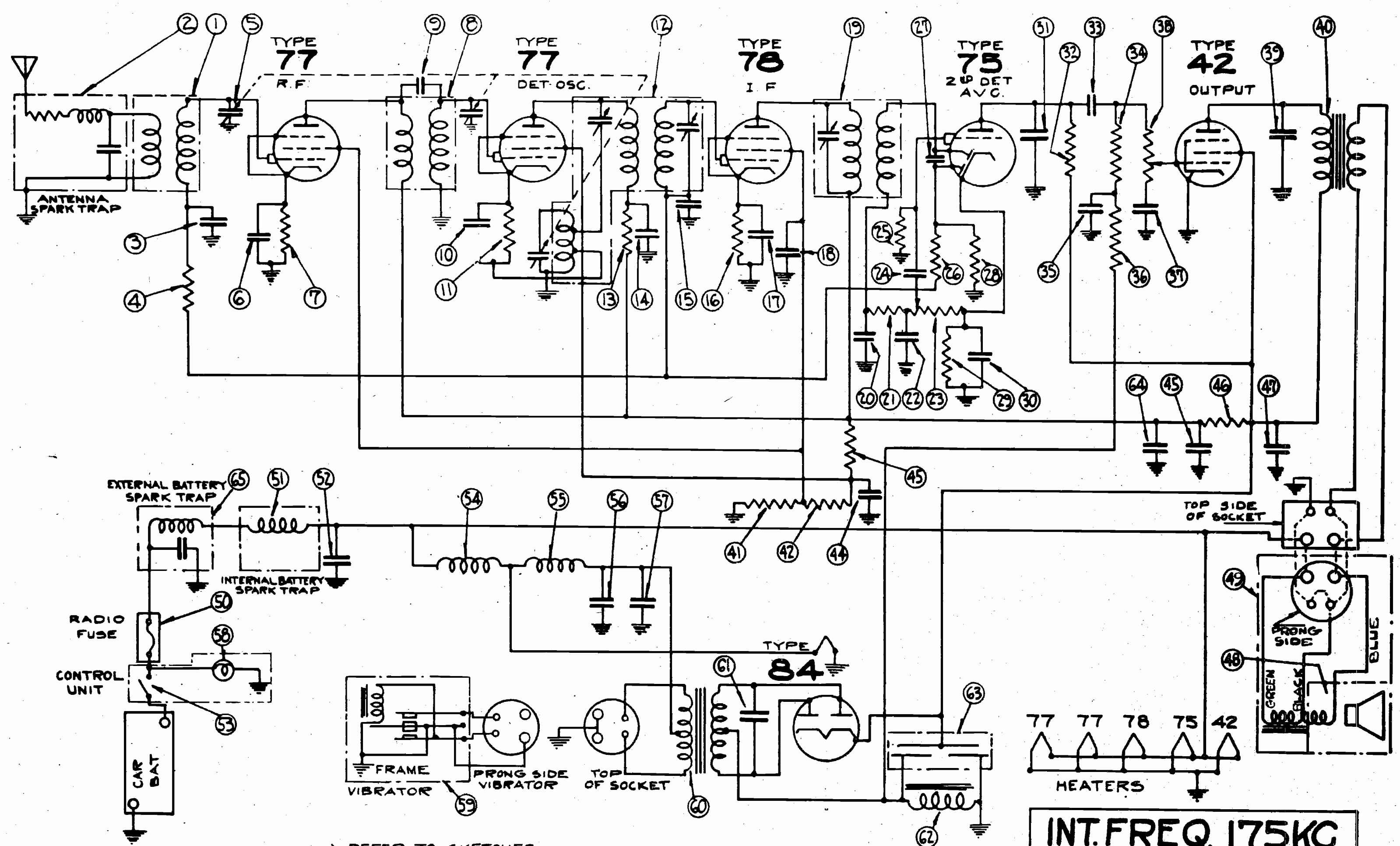
Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting up.

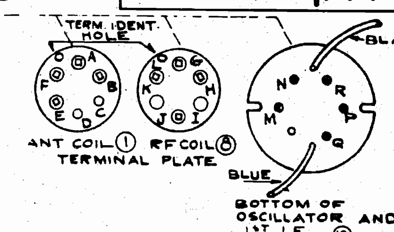
Rotor Adjustment.—Loosen the three screws that hold the rotor to the turntable, insert three 13-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws.

Lubrication.—Oiling points are indicated in the diagram.

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR502
Schematic, Voltage





★ REFER TO SKETCHES

WINDING RESISTANCE

PART	FUNCTION	PRIMARY RESIST.	PRIMARY IDENT ★	SECONDARY RESIST.	SECONDARY IDENT ★
(1)	ANT. COIL	21Ω	A To B	2.5Ω	E To F
(8)	R.F. COIL	72Ω	L To G	4Ω	H To J
(12)	OSCILLATOR	6Ω	M To P		
(12)	1ST I F	70Ω	R To BLUE	67Ω	BLACK To GREEN
(19)	2ND I F	90Ω	RED To BLUE	86Ω	GREEN To BLACK
(40)	OUTPUT	550Ω	GREEN To BROWN		
(62)	CHOKE	325Ω	BLACK To GND.		
(60)	POWER	3Ω	BLACK To GREEN	860Ω	RED To BLUE

SOCKET VOLTAGE

TUBE	STAGE	FIL.	PLATE	CATH.	SCREEN	OUTPUT GRID BIAS MEASURED ACROSS POWER PACK CHOKE (62)
77	RF	6.0	186	1.8	84	
77	DET-OSC	6.0	185	9	135	
78	I F	6.0	190	6.5	84	
75	2ND DET	6.0	117	1.5		
42	OUTPUT	6.0	226	0	242	−15
84	RECTIFIER	6.0				

NOTE ALL VOLTAGE READINGS WITH A VOLT METER HAVING A RESISTANCE OF 1000 Ω PER VOLT

MODEL WR502
Service Data
Vibrator Adjustments

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR 503
Service Notes

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes	2 #77, 1 #78, 1 #75, 1 #42, 1 #84 - Total 6
Battery Current (6.3 Volt Battery)	6.5 Amperes
Tuning Range	540 to 1600 K.C.
Maximum Undistorted Output	3.0 Watts
Maximum Output	4.0 Watts
Line-Up Frequencies	I.F. 175 K.C., 1400 K.C., 1600 K.C.

GENERAL DESCRIPTION

The Model WR 502 Car-Radio has been designed, manufactured, and tested with special regard for the requirements of automobile radio. The electrical, mechanical and acoustical features of the set have been decided upon after extensive tests in automobiles to determine the proper requirements for greatest satisfaction.

The Model WR 502 receiver is a single-unit compact radio chassis, power pack, and speaker with a separate remote control. The set is contained in a cylindrical housing and is provided with many features which result in improved tone quality, attractive appearance, mechanical stability and desirable service features.

CIRCUIT DESCRIPTION

The circuit is of the superheterodyne type, using a type 77 tube as an R.F. amplifier, a type 77 as a combined first detector-oscillator, a type 78 as an I.F. amplifier, a type 75 used as a combination second detector, A.V.C., and first audio amplifier, a type 42 as an output amplifier, and a type 84 as a rectifier in the power supply.

The Model WR 502 is equipped with three spark traps: an internal, tuned spark trap in the battery circuit to assist in the suppression of ignition interference; an external spark trap, connected in series with the battery cable; and an antenna spark trap, provided in the antenna circuit. These spark traps make the installation of auxiliary suppression equipment unnecessary in most cars.

SERVICE DATA

TROUBLES THAT CAN BE LOCATED AND REMEDIED WITHOUT REMOVING THE RECEIVER FROM THE HOUSING OR CAR

DIAL LIGHT DOES NOT LIGHT

Dial light may be loose in socket, broken or burned out. Socket on end of lead in rear of control head can be pulled straight out.

FUSE BLOWN

Check the fuse in the container on the receiver ammeter feed lead.

SET INOPERATIVE AND TUBES DO NOT LIGHT

Remove the speaker cover and disconnect the speaker plug. Remove the vibrator, all the tubes, and disconnect the dial light cable from the chassis. Check with an ohmmeter from "Hot A" side of battery cable (male bayonet connector inside the fuse-container housing) to ground. Should this show an open circuit when the line switch is closed, obviously a tube or the vibrator is shorted and these parts can be checked separately to determine which is defective. On the other hand, if the ohmmeter shows a closed circuit, the chassis should be removed from the housing and checked.

INSENSITIVE OR WEAK

Check the car antenna for poor connections and grounds. Also check tubes and the receiver alignment.

INTERMITTENT RECEPTION

This is usually caused by a poor connection from the set antenna lead to the car antenna lead-in, and this joint should always be checked when intermittent reception occurs.

MICROPHONIC OR INTERMITTENT

Tap each tube lightly with a small piece of wood or an insulated screw driver handle. The offending tube when tapped will usually howl very loudly if microphonic or will give intermittent results if defective.

LOW POWER OUTPUT

Check tubes and the vibrator. Usually caused by the latter.

RECEPTION CUTS OFF AT CERTAIN SETTINGS OF DIAL-SCALE POINTER

This condition is usually caused by some foreign metallic substance shorting a section of the condenser gang. These particles are often too small to be seen but can be removed by blowing them out with an air pressure hose or an ordinary hand pump. Great care must be taken not to destroy the thin mica insulators assembled under the trimmers on top of the condenser gang.

POOR TONE QUALITY

Foreign material is apt to become lodged between the speaker voice coil and the field core. This hampers the movement of the speaker diaphragm. As the rear of the speaker is open, this space can be blown out clean with an air hose.

BUZZING SOUND IN SPEAKER

This can be remedied in many cases by the method described above. It can also be caused by a loose winding on the voice coil. In such a case the turns of this winding should be carefully pushed together, and a thin coating of collodion or coil cement should be applied to hold the windings in place.

RATTLES

Check receiver for loose cover thumb screws, tube shield, and housing screws. Rattles seemingly in the radio receiver, are often traced to loose parts in the bulkhead or dashboard of the car.

VIBRATOR NOISE

(Be sure that this is checked with the car engine OFF and the antenna disconnected.) Check the spring contact on the receiver housing and cover, and particularly the vibrator top spring. Clean and adjust the vibrator according to the instructions given in another section of these service notes.

SET INOPERATIVE
TUBES LIGHT AND VIBRATOR BUZZES

A. Check the B voltage (approximately 240 volts) from the middle terminal of the electrolytic filter condenser to ground on the chassis. This point is easily reached with the speaker cover removed. If no voltage or low voltage is observed, test the vibrator and 84 rectifier tube. If voltage is still incorrect, the receiver should be removed from the housing.

B. With the speaker plugged in, remove the clip from the grid of the 75 tube and touch the clip to the grid cap of the 75 tube several times in succession. A clicking noise should be heard in the speaker. This is a practical test for the audio amplifier and speaker. If this clicking noise is not heard, the 75 and 42 tubes should be tested and the voltage checked at the plates of these tubes. The speaker should be checked with a volt-ohmmeter by testing across the prongs of the speaker plug for continuity. While making this test, the cable should be moved back and forth to show up any possible intermittent open circuit in the speaker cable. Check the voice coil and field coil for resistance.

If the audio and speaker are still dead, the chassis should be removed from the housing.

If the audio and speaker are working correctly, test the remaining tubes and check the voltage at each socket.

In the event that the chassis has to be removed from the car for repairs, this can easily be done as follows: Disconnect all external cables and the flexible shafts from the receiver. Remove the speaker cover and pull out the speaker plug. Remove the screws around the outside of the housing and pull the chassis straight out, being careful not to damage the antenna cable. The chassis can be removed in many cars in this manner without the necessity of unbolting the chassis housing from the car.

LOCATING TROUBLE IN CHASSIS

To locate a short, open or defective unit which causes low or no "B" voltage, isolate the power pack from the receiver section by disconnecting the two red leads (coming from the receiver section) from each end of the 5000-ohm resistor, #46, in the power pack. Check the voltage from the input side of the resistor to ground, which should be approximately 250 volts. If this voltage is incorrect, the trouble is definitely in the power pack and all component parts should be checked.

Conversely, if the voltage reading proves to be correct, the trouble is in the receiver section and all its parts should be checked.

In locating a short or open in the filament circuit, the power pack can be disconnected from the filament supply of the receiver section by removing the red wire on the top terminal of the "off" and "on" switch connected to the 42 tube. This will connect only the power pack in the filament circuit and if the short or open no longer exists, it will prove that the trouble is in the receiver section.

WEAK OR INSENSITIVE AFTER RE-ALIGNMENT

Check coils and associated circuits in the deficient "stage" of the receiver for proper resistance values.

LOW POWER OUTPUT WITH B VOLTAGE CORRECT

Check the speaker field coil, voice coil and associated audio circuit for resistance continuity and defective condensers.

All riveted component parts can be removed by merely punching out the rivets with a small diameter straight side punch. Replacement parts can be secured with small machine screws and nuts.

In changing the power transformer, it is necessary only to remove the four drive screws, two located directly over the resistor and condenser strip and the other two in back of the condenser gang on the power pack shield. In replacing the power transformer be sure to tighten the screws securely and replace the shield braid bond or vibrator noise will be present.

INSTRUCTIONS FOR ADJUSTING VIBRATOR
MODEL WR-502 ONLY.

After the vibrator has been in use for some time, it may refuse to start operating. This is an indication of worn Tungsten contact points; but, since a reserve of Tungsten has been provided, a simple adjustment can be made to prolong the life of the vibrator.

1. Remove the vibrator unit from its housing by removing the tension spring with a pair of round nosed pliers.

2. Remove the rubber sock, being careful not to bend the wires at the soldered connections.

3. Lay the vibrator on a piece of white paper so that when viewed from above it appears exactly as shown in Fig. 1.

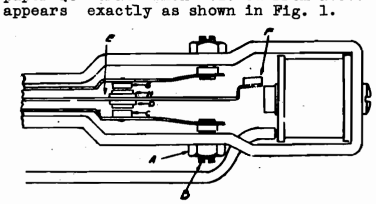


Figure No. 1

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MODEL WR502
Alignment, Socket Trimmers, Parts

4. Loosen lock nut "A" and turn screw "B" clockwise until .005" of light can be seen between contacts "C" and "D". If the contact points are somewhat roughened, light cannot be seen across their entire diameter, even though they are correctly re-spaced, that is within .005" of touching each other.

5. A simple check on the correctness of the spacing adjustment is obtained by pressing lightly against the center of the read with a small nail in the direction and location shown by arrow "E". When the reed is thus moved so as to close contacts "C" and "D", the weight "F" on the free end of the reed should move 1/64" from its "at rest" position. This check should be made after lock nut "A" has been firmly retightened.

6. Do not readjust the spacing between contacts "G" and "H" unless the Tungsten is nearly all worn away. In this case, re-adjustment may be made the same as for contacts "C" and "D".

7. In re-inserting the vibrator into its rubber sock, be very careful to turn the "flats" of the sock hole so that they are parallel to the flat side of the vibrator frame. This provides ample space in the sock for the free movement of the reed. Make certain that the slot in the prong terminal plate engages the small projection on the inside edge of the housing. Then replace the tension spring. THESE INSTRUCTIONS DO NOT APPLY TO ANY OTHER TYPES OF VIBRATORS.

LINE-UP CAPACITOR ADJUSTMENTS

All the adjustable capacitors, commonly called trimmer condensers, are very accurately adjusted at the factory and will not need any further adjustment unless a coil or I.F. transformer is changed or the adjustments are tampered with in the field. Therefore, DO NOT attempt to change the setting of any of the trimmer condensers unless it is definitely known that adjustment is necessary, and a high grade modulated test oscillator is available. In such a case, proceed as follows, referring to Fig. #2.

1. Set test oscillator to 175 K.C.

2. Set condenser gang to approximately 600 K.C. This will be at a point where the condenser plates are nearly all in mesh.

3. Connect output meter across voice coil of speaker. This may be done by connecting one lead of the output meter to the blue lead of the speaker terminal strip and the other lead to the frame of the chassis. The impedance of the voice coil is 3. ohms.

4. Apply test signal to grid of 78 I.F. tube through a .5 mfd. blocking condenser and adjust trimmer "A" to maximum output reducing output of test oscillator as required.

5. Apply test signal to grid of 77 first detector-oscillator and adjust trimmers "B" and "C" to maximum output.

6. Set test oscillator to 1600 K.C. and rotate condenser gang until the plates are wide open. Place a piece of paper (approximately .015" thick) between the rotor and stator plates at the bottom of the gang and close the rotor down to this spacing. This is the exact setting of the condenser gang for the receiver oscillator at 1600 K.C. and should be carefully set as the resultant alignment of the receiver is directly dependent upon it.

7. Adjust trimmer "D" to maximum output and then remove the paper gauge.

8. Set test oscillator and condenser gang to 1400 K.C.

9. Apply test signal to grid of 77 R.F. tube and adjust trimmer "E" to maximum output.

10. Apply test signal to antenna lead through a .0002 mfd. condenser and adjust trimmer "F" to maximum output.

11. Check sensitivity at several points.

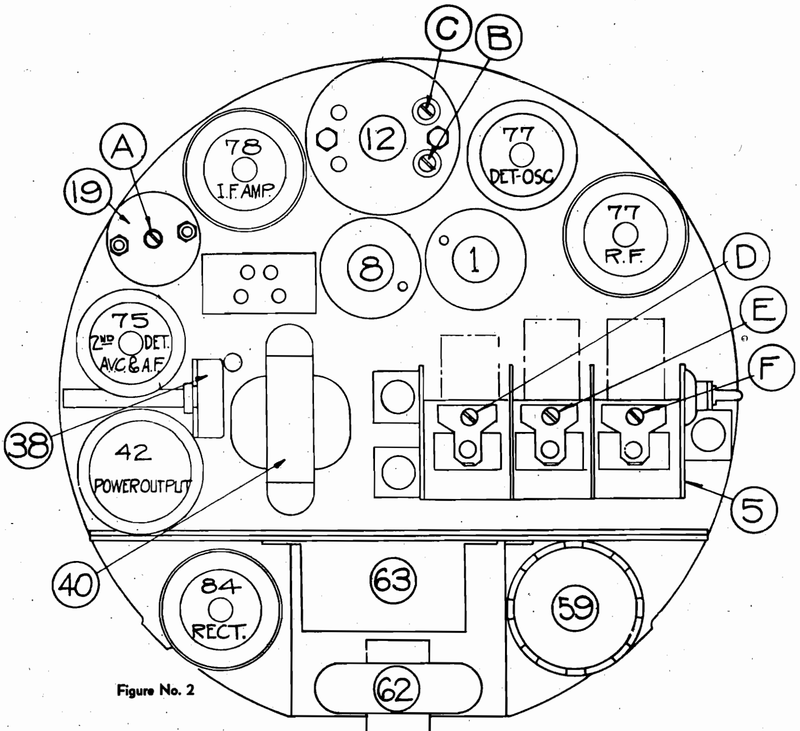

Figure No. 2

Part #	Description	Price
CH 9592	Chassis assembly	$
CU 9517	Tuning unit (less shafts)	2.75
SK 955	Speaker	5.50
	NUTS	
FP 106639	Thumb nut for antenna and battery cable	.10
NT 104935	Nut for mounting studs	.05
	SCREWS & STUDS	
FP 104892	Thumb screws on housing cover	.05
FP 106571	Mounting studs	.05
SC 1026 CA	Self-tapping screw (#6 x 1 inch long)	.05
SC 101700	Self-tapping screw (#7 x 1/4 inch long)	.05
	SOCKETS	
SA 104617	Tube socket - 6 prong	.20
SA 104616	Tube socket - 5 prong	.15
SO 953	Tube socket - 4 prong	.15
BE 956	Base for tube shield	.05
CV 954	Tube shield - long	.10
CV 9516	Tube shield - short	.10
	WASHERS, BUSHINGS & SPACERS	
WA 2-12 CA	Mounting washer	.05
WA 7-10	Mounting lock washer	.05
IS 1002	Rubber bushing for variable condenser	.05
FP 104086	Spacer for speaker plug	.05
SR 953	Spacer for variable condenser rubber bushing	.05
	SPEAKER PARTS (SK 955)	
CL 9513	Speaker field coil	1.10
DM 951	Diaphragm and voice coil assembly	1.25
FA 958	Silk speaker grill cloth	.15
CB 9528	Speaker cable with 4 prong plug	.45
SA 107279	Cover for speaker plug	.10
SA 107278	Speaker plug	.10
	MISCELLANEOUS	
SH 9537	Variable condenser shaft with pinion	.30
KT 956	Spark plug suppressor kit	2.60
DS 956	Dial indicator disc	.35
SW 9541	Switch assembly complete with cables	1.95
SP 958	Spring base for vibrator	.20
FP 105425	Cover for female section of antenna connector	.05
SH 9533	Drive shafts (2 used)	1.50
SA 106754	Coil suppressor	.45
SA 105300	Condenser	.80
FP 105426	Bushing and ferrule for antenna and fuse connectors	.05
FP 105427	Spring in antenna and fuse connector	.05
IS 105428	Insulation washer for fuse and antenna connectors	.05
FP 105429	Fuse container	.05
IS 105430	Insulation tube in fuse container	.05
FP 105431	Male section of antenna connector	.05
FP 79381	Clamp for spark trap and antenna cables	.05
KN 9531	Knob for tone control	.10
GE 9512	Split gear on variable tuning condenser	.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODEL WR502
Chassis,Parts

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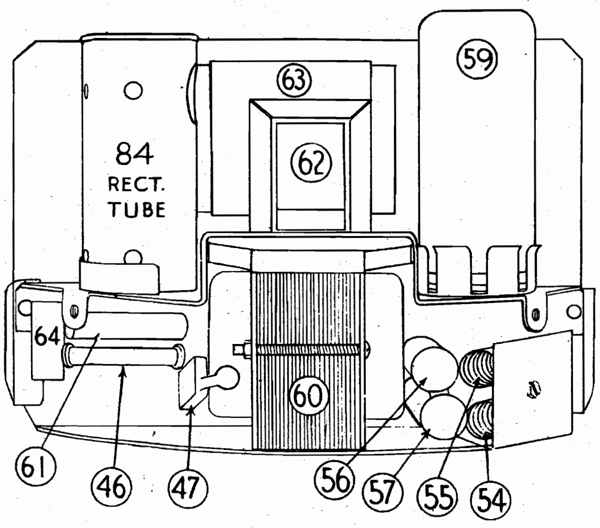


Figure No. 3

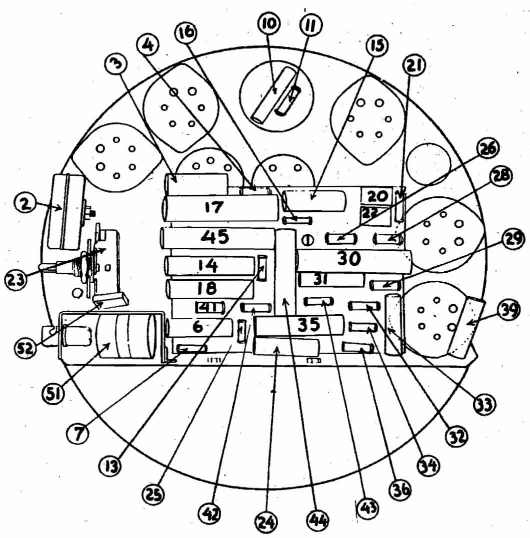


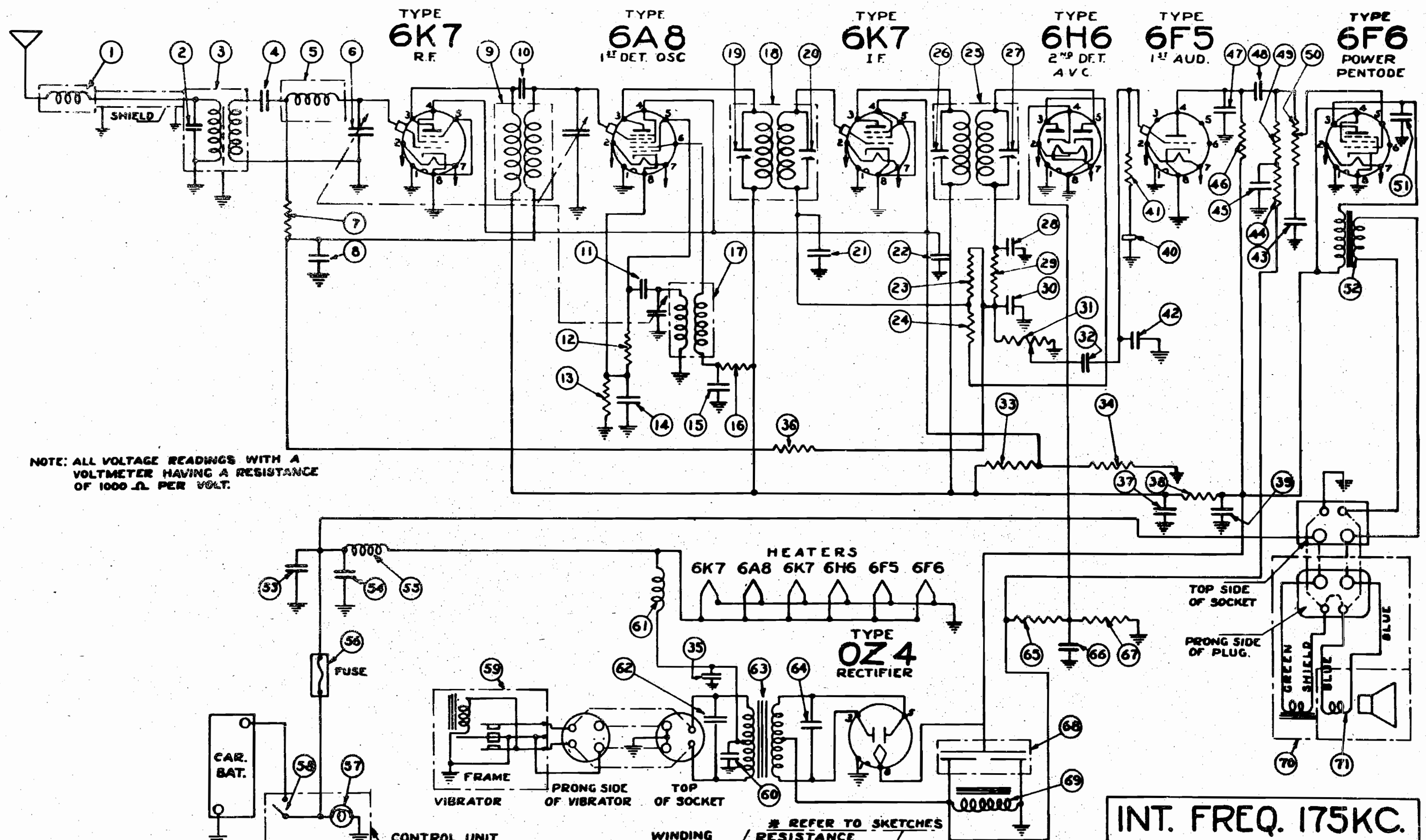
Figure No. 4

PRICES SUBJECT TO CHANGE
WITHOUT NOTICE

Dia. #	Part #	Description	Price
1	RC 95128	Antenna coil	$ .75
2	CC 958	Antenna spark trap	1.80
3	SA 106386	.05 mfd., 200 V. condenser	.20
4	SA 105278	100,000 ohm, 1/4 W. resistor	.15
5	CG 9542	3 gang condenser	3.75
6	SA 106386	.05 mfd., 200 V. condenser	.20
7	SA 105264	500 ohm, 1/4 W. resistor	.15
8	RC 95130	R.F. coil	.95
9		Twisted wire	
10	SA 103852	.002 mfd., 600 V. condenser	.20
11	SA 105247	7500 ohm, 1/4 W. resistor	.15
12	RC 95132	Composite coil	2.20
13	SA 105245	2000 ohm, 1/4 W. resistor	.15
14	SA 102492	.05 mfd., 400 V. condenser	.20
15	SA 106386	.05 mfd., 200 V. condenser	.20
16	SA 105270	2500 ohm, 1/4 W. resistor	.15
17	SA 102497	.25 mfd., 200 V. condenser	.20
18	CW 951	.1 mfd., 200 V. condenser	.20
19	IC 951	I.F. coil	1.50
20	CM 9513	.0001 mfd. mica condenser	.10
21	SA 105276	50,000 ohm, 1/4 W. resistor	.15
22	CM 9513	.0001 mfd. mica condenser	.10
23	VR 9524	Volume control	.85
24	SA 103659	.005 mfd., 400 V. condenser	.20
25	SA 105281	1 meg., 1/4 W. resistor	.15
26	SA 105246	1/2 meg., 1/4 W. resistor	.15
27	CM 9513	.0001 mfd. mica condenser	.10
28	SA 105246	1/2 meg., 1/4 W. resistor	.15
29	SA 105249	5000 ohm, 1/4 W. resistor	.15
30	SA 102497	.25 mfd., 200 V. condenser	.20
31	SA 103852	.002 mfd., 600 V. condenser	.20
32	SA 105278	100,000 ohm, 1/4 W. resistor	.15
33	SA 103659	.005 mfd., 400 V. condenser	.20
34	SA 105279	1/4 meg., 1/4 W. resistor	.15
35	CW 951	.1 mfd., 200 V. condenser	.20
36	SA 105279	1/4 meg., 1/4 W. resistor	.15
37	SA 106403	.001 mfd., 600 V. condenser	.20
38	VR 9525	Tone control	.75
39	CW 952	.005 mfd., 600 V. condenser	.20
40	TR 952	Output transformer	1.15
41	SA 105277	75,000 ohm, 1/4 W. resistor	.15
42	SA 105274	20,000 ohm, 1/4 W. resistor	.15
43	SA 105274	20,000 ohm, 1/4 W. resistor	.15
44	SA 102492	.05 mfd., 400 V. condenser	.20
45	SA 102496	.25 mfd., 400 V. condenser	.20
46	SA 107572	5000 ohm, 1 W. resistor	.20
47	CM 951	.001 mfd. mica condenser	.25
48	DM 951	Speaker diaphragm	1.25
49	SK 955	Speaker	5.50
50	FU 951	Fuse (20 amperes)	.05
51	RC 9512	Filter choke	.35
52	CM 953	.00005 mfd. mica condenser	.15
53	SW 9539	Switch assembly complete less cables	1.10
54	SA 105452	Filter choke	.20
55	SA 105452	Filter choke	.20
56	CW 958	.5 mfd., 200 V. condenser	.35
57	CW 958	.5 mfd., 200 V. condenser	.35
58	LP 956	Pilot light - (6 V.-.20 amperes)	.20
59	VI 951	Vibrator	3.75
60	TR 953	Power transformer	3.50
61	SA 106804	.008 mfd., 1600 V. condenser	.20
62	TR 951	"B" choke	.95
63	CE 951	6 and 10 mfd. electrolytic condenser	2.60
64	CM 951	.001 mfd. mica condenser	.25
65	CC 954	Spark trap	1.65

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR503
Schematic
Voltage



NOTE: ALL VOLTAGE READINGS WITH A VOLTMETER HAVING A RESISTANCE OF 1000 Ω PER VOLT.

SOCKET VOLTAGE

TUBE	STAGE	FIL.	PLATE	CATH.	SCREEN	BIAS	ANODE GRID
6K7	R.F.	5.8	182		83		
6A8	1ST DET. OSC.	5.8	182	4.4	83		138
6K7	I.F.	5.8	182		83		
6H6	2ND DET. AVC	5.8		11.0			
6F5	1ST AUD.	5.8	77			-.8	
6F6	POWER PEN.	5.8	228		244	-17	
0Z4	RECTIFIER	5.8		244			

WINDING / RESISTANCE

\# REFER TO SKETCHES

PART	FUNCTION	PRIMARY RESIST.	PRIMARY IDENT. #	SECONDARY RESIST.	SECONDARY IDENT. #
17	OSC. COIL	3.5 Ω	B TO GND.		
9	R.F. COIL	68 Ω	F TO G	2 Ω	I TO GND.
5	PRE-SEL. COIL			2 Ω	J TO K
3	REC. COUP.	4 Ω	BAYONET CONN. TO GND.	.1 Ω	N TO O
18	1ST I.F. COIL	100 Ω	BLUE TO RED	100 Ω	BK. TO GRID (6K7)
25	2ND I.F. COIL	100 Ω	BLUE TO RED	100 Ω	BK. TO GREEN
52	OUTPUT	520 Ω	GR. TO BROWN		
61	B CHOKE	310 Ω	BLACK TO GND.		
63	POWER	.24 Ω	BLACK TO GR.	840 Ω	RED TO BLUE
1	ANT.-LOAD.	5 Ω	BLACK TO BLACK		

MODEL WR503
Alignment
Parts

WESTINGHOUSE ELEC. SUPPLY CO.

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes .... 1#6A8, 2#6K7, 1#6H6, 1#6F5, 1#6F6, 1#0Z4 - Total 7
Battery Current (6.3 Volt Battery) .... 6.5 Amperes
Tuning Range .... 540 to 1600 K.C.
Maximum Undistorted Output .... 3.0 Watts
Maximum Output .... 4.0 Watts
Line-Up Frequencies .... I.F. 175 K.C., 1400 K.C., 1600 K.C.

GENERAL DESCRIPTION

The Model WR-503 Westinghouse All-Metal Tube Car-Radio is a seven tube superheterodyne receiver, which has been designed, manufactured and tested with special consideration for the requirements of automobile radio. The electrical, mechanical and acoustical features of this set have been developed only after extensive tests in automobiles to determine the proper requirements for greatest satisfaction.

CIRCUIT DESCRIPTION

The circuit is of the superheterodyne type, employing a type 6K7 tube as a R.F. amplifier, a type 6A8 as a combined first detector-oscillator, a type 6K7 as an I.F. amplifier, a type 6H6 used as a combination second detector and A.V.C., a type 6F5 tube as a first audio amplifier, a type 6F6 as an output amplifier, and a type 0Z4 as a rectifier in the power supply.

The Model WR-503 is equipped with two spark traps: an internal, tuned spark trap in the battery circuit to assist in the suppression of ignition interference; and an antenna spark trap provided in the antenna circuit. The use of these spark traps makes the installation of additional suppression equipment unnecessary in most cars.

LINE-UP CAPACITOR ADJUSTMENTS

All the adjustable capacitors, commonly called trimmer condensers, are very accurately adjusted at the factory and will not need any further adjustment unless a coil or I.F. transformer is changed or the adjustments tampered with in the field. Therefore, DO NOT attempt to change the setting of any of the trimmer condensers unless it is definitely known that adjustment is necessary, and a high grade modulated test oscillator and an output meter are available. Then proceed as follows, referring to Figs. 1 and 2. NOTE: Before aligning the gang-condenser trimmers on the bottom of the gang condenser, it will be necessary to remove the three rubber plugs from the bottom of the receiver housing. The setting of the trimmer on the TOP of the gang condenser should NOT BE DISTURBED.

1. Set test oscillator to 175 K.C.

2. Set gang condenser to approximately 600 K.C. This will be at a point where the condenser plates are nearly all in mesh.

3. Connect output meter across voice coil of speaker. This may be done by connecting one lead of the output meter to the blue lead of the speaker terminal strip and the other lead to the frame of the chassis. The impedance of the voice coil is 3.0 ohms.

4. Apply test signal to grid cap of 6K7 I.F. tube through a .5 mfd. blocking condenser and adjust trimmers #26 and #27 to maximum output, reducing output of test oscillator as required.

5. Apply test signal to grid cap of 6A8 first detector-oscillator and adjust trimmers #19 and #20 to maximum output.

6. Set test oscillator to 1600 K.C. and rotate gang condenser until the plates are wide open. Place a piece of paper (approximately .015" thick) between the rotor and stator plates at the top of the gang and close the rotor down to this spacing. This is the exact setting of the gang condenser for the receiver oscillator at 1600 K.C. and should be carefully set as the resultant alignment of the receiver is directly dependant upon it.

7. Adjust trimmer "A" to maximum output and then remove the paper gauge.

8. Set test oscillator and gang condenser to 1400 K.C.

9. Apply test signal to grid cap of 6K7 R.F. tube and adjust trimmer "B" to maximum output.

10. Apply test signal to antenna lead thru a .0002 mfd. condenser and adjust trimmer "C" to maximum output.

11. Check sensitivity at several points.

SERVICE DATA

TROUBLES THAT CAN BE LOCATED AND REMEDIED WITHOUT REMOVING THE RECEIVER FROM THE HOUSING OR CAR. SEE MODEL WR-502.

LOCATING TROUBLE IN CHASSIS

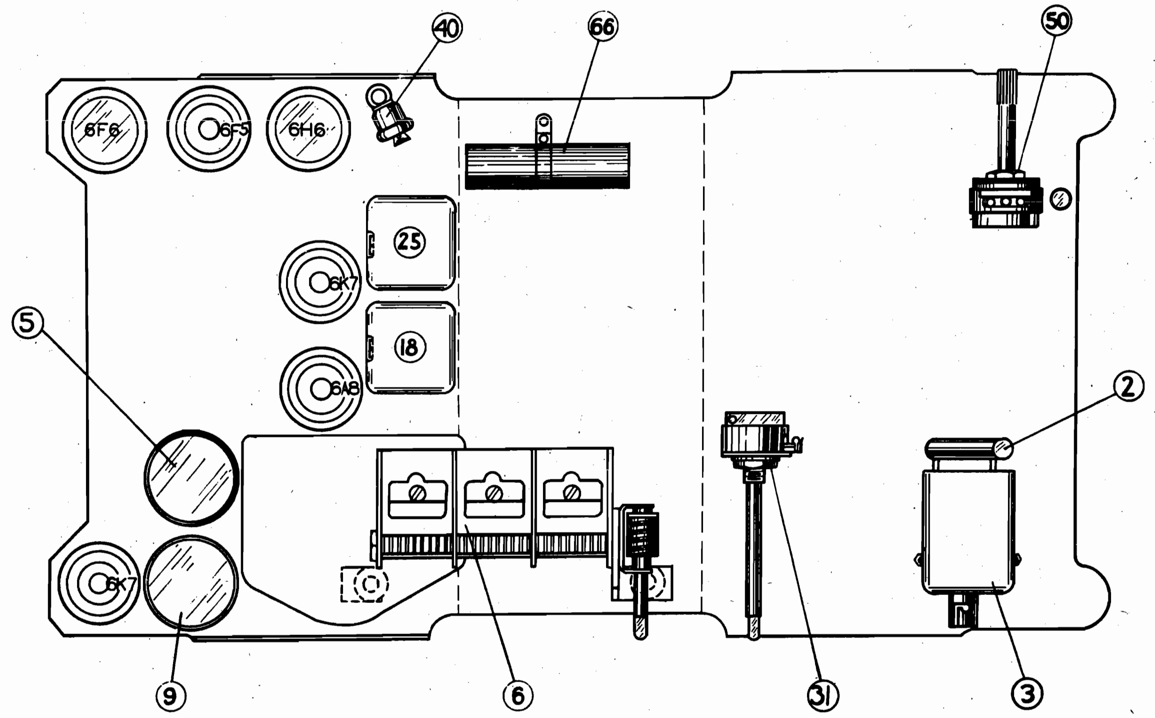
SEE MODEL WR-502.

Dia. #	Part #	Description	List Prices
1		Antenna loading coil - part of RC 95155	$
2		.000075 mfd. condenser - part of RC 95147	
3	RC 95147	Receiver coupler	1.20
4	SA 106277	.01 mfd., 400 V. condenser	.20
5	RC 95149	Preselector coil	.95
6	CG 9537	Variable condenser assembly	3.75
7	RE 9534	100,000 ohm, 1/4 W. resistor	.10
8	SA 106386	.05 mfd., 200 V. condenser	.20
9	RC 95151	R.F. coil	1.25
10	CM 952	.00001 mfd., mica condenser	.20
11	CM 9513	.0001 mfd., mica condenser	.10
12	SA 105276	50,000 ohm, 1/4 W. resistor	.15
13	SA 105264	500 ohm, 1/4 W. resistor	.15
14	SA 106386	.05 mfd., 200 V. condenser	.20
15	SA 106277	.01 mfd., 400 V. condenser	.20
16	SA 105272	10,000 ohm, 1/4 W. resistor	.15
17	RC 95153	Oscillator coil assembly	.70
18	IC 9555	1st I.F. coil	1.75
19		30-100 mmf. condenser - part of IC 9555	
20		30-100 mmf. condenser - part of IC 9555	
21	SA 106386	.05 mfd., 200 V. condenser	.20
22	CW 951	.1 mfd., 200 V. condenser	.20
23	SA 105246	1/2 meg., 1/4 W. resistor	.15
24	SA 105281	1 meg., 1/4 W. resistor	.15
25	IC 9556	2nd I.F. coil	1.75
26		30-100 mmf. condenser - part of IC 9556	
27		30-100 mmf. condenser - part of IC 9556	
28	CM 9513	.0001 mfd. mica condenser	.10
29	SA 105276	50,000 ohm, 1/4 W. resistor	.15
30	CM 9513	.0001 mfd. mica condenser	.10
31	VR 9527	.25 meg. volume control	.75
32	SA 103659	.005 mfd., 400 V. condenser	.20
33	SA 99777	25,000 ohm, 1 W. resistor	.20
34	SA 100512	50,000 ohm, 1/2 W. resistor	.15
35	CW 958	.05 mfd., 200 V. condenser	.35
36	SA 105246	1/2 meg., 1/4 W. resistor	.15
37	SA 102496	.25 mfd., 400 V. condenser	.20
38	SA 106531	4000 ohm, 1 W. resistor	.20
39	CM 951	.001 mfd. mica condenser	.25
40	BY 952	Grid bias cell	.20
41	SA 105281	1 meg., 1/4 W. resistor	.15
42	CM 9519	.0005 mfd. mica condenser	.20
43	SA 106403	.001 mfd., 600 V. condenser	.20
44	SA 105279	250,000 ohm, 1/4 W. resistor	.15
45	SA 102497	.25 mfd., 200 V. condenser	.20
46	SA 105279	250,000 ohm, 1/4 W. resistor	.15
47	SA 106403	.001 mfd., 600 V. condenser	.20
48	CW 9524	.008 mfd., 600 V. condenser	.20
49	SA 105279	250,000 ohm, 1/4 W. resistor	.15
50	VR 9525	250,000 ohm tone control	.75
51	CW 9524	.008 mfd., 600 V. condenser	.20
52	TR 9543	Output transformer	1.15
53	CW 957	.5 mfd., 120 V. condenser	.40
54	CM 953	.00005 mfd. mica condenser	.15
55	RC 95157	Choke coil	.25
56	FU 951	20 ampere fuse	.05
57	LP 951	Pilot light	.20
58	SW 9539	On-off switch assembly	1.10
59	VI 955	Vibrator	3.45
60	CW 958	.5 mfd., 200 V. condenser	.35
61	RC 95156	Choke coil	.25
62	CW 9523	.5 mfd., 120 V. condenser	.40
63	TR 9547	Power transformer	3.50
64	CW 9522	.005 mfd., 1600 V. condenser	$ .20
65	SA 105272	10,000 ohm, 1/4 W. resistor	.15
66	CE 9524	10 mfd. electrolytic condenser	.70
67	SA 105284	30,000 ohm, 1/4 W. resistor	.15
68	CE 951	6 & 10 mfd. electrolytic condenser	2.60
69	TR 951	"B" choke	.95
70	SK 955	Speaker assembly	5.50
71	DM 951	Diaphragm assembly	1.25

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

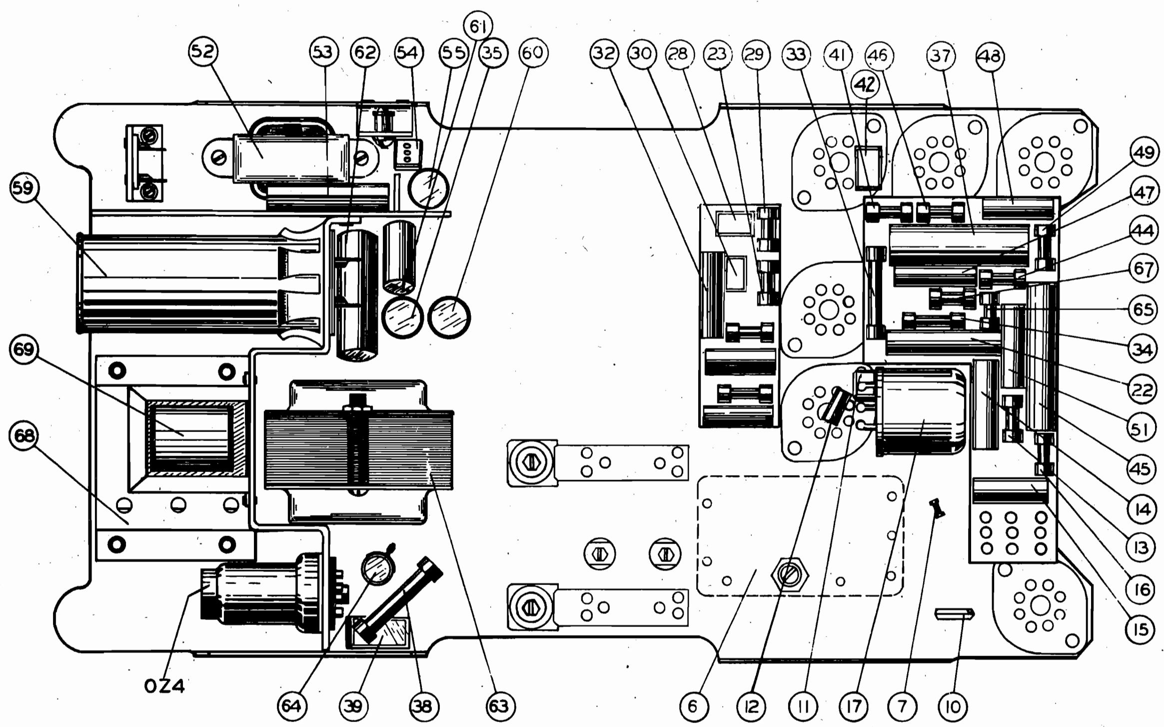
WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR503
Chassis, Socket
Trimmers



OUTSIDE VIEW OF CHASSIS WITH END BASE PLATES OPENED OUT

Figure No. 1

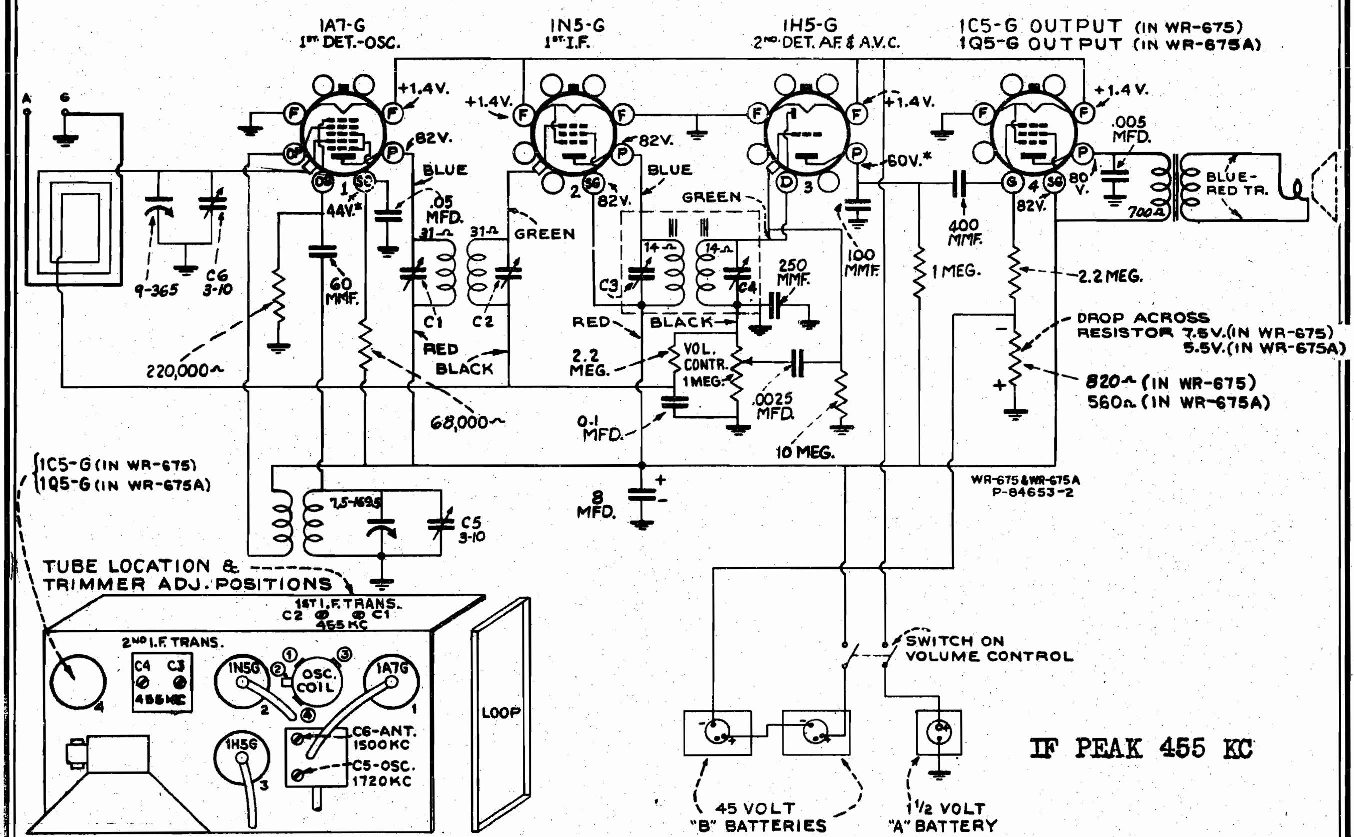


INSIDE VIEW OF CHASSIS WITH END BASE PLATES OPENED OUT

Figure No. 2

MODELS WR675,WR675A
Schematic,Voltage
Socket,Trimmers
Alignment

WESTINGHOUSE ELEC. SUPPLY CO.



IF PEAK 455 KC

Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages. Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.

Frequency Range .... 550-1,720 kc
Intermediate Frequency .... 455 kc

Batteries Required

"A," one 1.5 volt dry plug-type "A," 2⅝-in. x 3⅞-in. x 5⅝-in. (Eveready No. 741 or equivalent)
"B," two 45 volt dry plug-type "B," 2½-in. x 4-in. x 5½-in. (Eveready No. 762 or equivalent)

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action. Connect low side of oscillator to ground terminal on bottom of set.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be at calibration mark above "55" on dial.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1A7G 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 550 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna terminal thru 220 mmf. capacitor	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

Current Consumption

"A," 0.24 ampere—"B," 9.0 milliamperes

Power Output

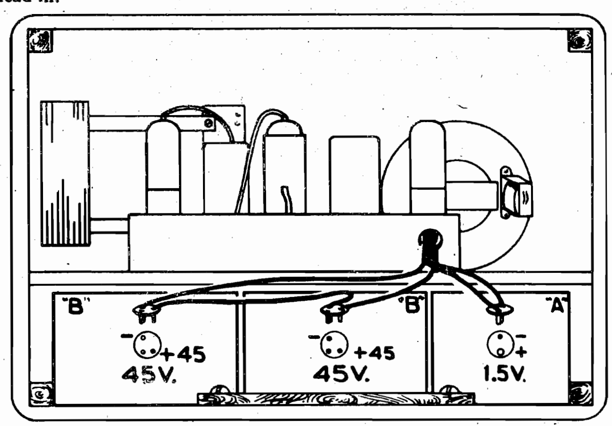
Undistorted .... 0.10 watt
Maximum .... 0.21 watt

Loudspeaker

Type .... 5-inch permanent-magnet dynamic
Voice-coil Impedance .... 3.2 ohms at 400 cycles

Precautionary Lead Dress.—The spiral shield on the I.F. grid lead should be brought as close as possible to the grid cap.

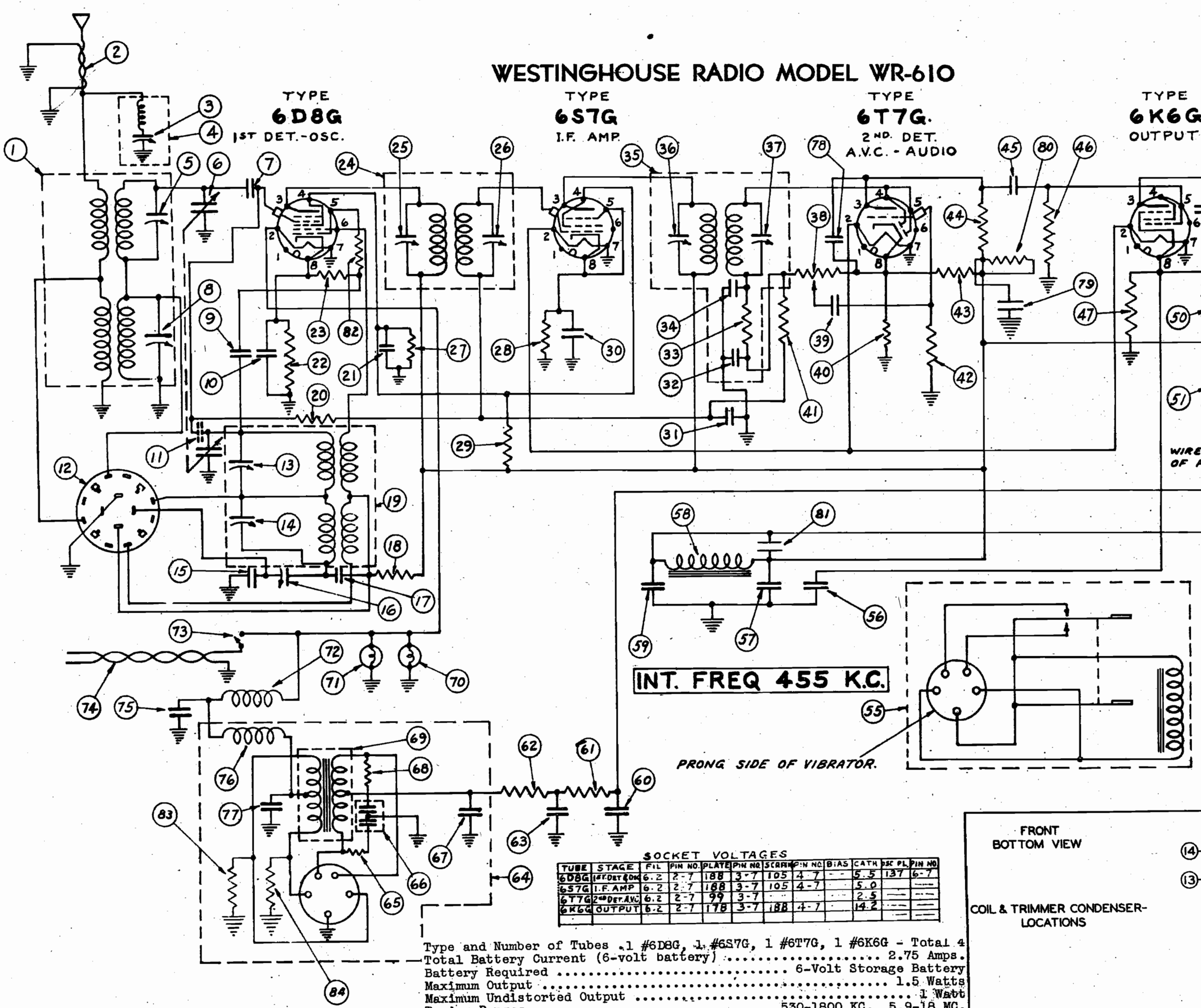
Antenna.—An antenna and ground may be connected to "A" and "G" at bottom of cabinet. If total length of antenna and lead-in is more than 150 feet, connect a 300 mmf capacitor in series with lead-in.



WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR610
Schematic, Voltage
Trimmers

WESTINGHOUSE RADIO MODEL WR-610



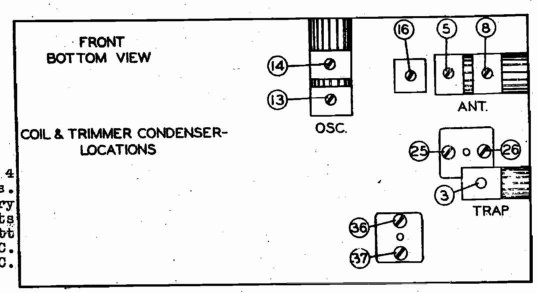
WINDING RESISTANCE

POS	PRIMARY OHMS		SECONDARY OHMS	
1	36.0	B.C	3.4	B.C.
	0.5	S.W.	0.03	S W.
4	28.0	TRAP		
19	1.5	B.C.	3.6	B.C.
	0.5	S.W	0.03	S.W.
24	9.0	1ST I.F	9.0	1ST. I.F
35	16.5	2ND. I.F.	16.5	2ND I.F
52	300.0	OUTPUT	0.2	OUTPUT
53	2.3	VOICE		
58	75.0	CHOKE		
69	0.3	TAP AT 0.15	500.0	TAP AT 250
72	0.05	CHOKE		

SOCKET VOLTAGES

TUBE	STAGE	FIL	PIN NO.	PLATE	PIN NO.	SCREEN	PIN NO.	BIAS	CATH	OSC PL.	PIN NO.
6D8G	1ST DET & OSC	6.2	2-7	188	3-7	105	4-7	- -	5.5	137	6-7
6S7G	I.F. AMP	6.2	2-7	188	3-7	105	4-7		5.0		—
6T7G	2ND DET. AVC	6.2	2-7	99	3-7	- -		- -	2.5	—	- -
6K6G	OUTPUT	6.2	2-7	178	3-7	188	4-7		14.2	—	—

Type and Number of Tubes .1 #6D8G, 1 #6S7G, 1 #6T7G, 1 #6K6G - Total 4
Total Battery Current (6-volt battery) .... 2.75 Amps.
Battery Required .... 6-Volt Storage Battery
Maximum Output .... 1.5 Watts
Maximum Undistorted Output .... 1 Watt
Tuning Ranges .... 530-1800 KC., 5.9-18 MC.
Line-Up Frequencies ....455 KC. I.F., 1600 KC., 600 KC., 17 MC.



MODEL WR610
Alignment
Parts

WESTINGHOUSE ELEC. SUPPLY CO.

GENERAL DESCRIPTION

This model is a four-tube, two-band superheterodyne receiver designed to be operated with only a six-volt storage battery. The receiver employs a type 6D8G tube as a combined first detector-oscillator, a type 6S7G tube as an intermediate frequency amplifier, a type 6T7G tube as a combined second detector, A.V.C. first audio amplifier, and a type 6K6G tube as an audio output amplifier. The power for this model is supplied by a six-volt storage battery. The plate voltage is secured by the use of a combined vibrator and mechanical rectifier built as a part of the chassis.

LINE-UP CAPACITOR ADJUSTMENTS

To properly align this receiver, it is essential to use a high grade modulated test oscillator and a sensitive output meter. The R.F. signal fed into the receiver must be relatively weak or it will cause the A.V.C. to function, making proper alignment difficult. The sensitivity of the output meter must be sufficient to give satisfactory reading with a low input signal. Before attempting to align the chassis, the service man should familiarize himself with the general layout of the chassis, the location of the tubes and the various alignment condensers.

I.F. ADJUSTMENTS (455 KC.)

1. Connect the receiver to the storage battery by connecting the red lead to the positive terminal and the black lead to the negative terminal of the battery.

2. Set the volume control to the maximum position, the tone control to the treble position, the wave-change switch to the broadcast band position and the dial indicator to approximately 600 KC.

3. Set the test oscillator to 455 KC., and apply the test signal to the grid of the type 6D8G detector-oscillator tube through a .5 mfd. condenser.

4. Adjust the four I.F. trimmer condensers #26, #36 and #37 to maximum output.

BROADCAST BAND ADJUSTMENTS

1. With the gang condenser closed, check the dial pointer to make sure that it is exactly horizontal.

2. Set the test oscillator and dial pointer to 1000 KC.

3. With the oscillator still connected to the grid of the detector-oscillator tube, adjust the broadcast oscillator trimmer #14.

4. Connect the test oscillator to the blue antenna lead through a .0002 condenser.

5. Adjust the antenna trimmer #8.

6. Turn the test oscillator and dial pointer to 600 KC.

7. Adjust the oscillator series (lag) condenser #16. This is accomplished by turning the gang condenser back and forth slightly, at the same time adjusting the series (lag) condenser until a maximum is reached.

8. Recheck operation #3 and #5.

9. Check calibration and sensitivity over the scale.

SHORT-WAVE BAND ADJUSTMENTS

1. Turn the wave-change switch to the short-wave position.

2. Set the test oscillator and dial pointer to 17 MC. (17,000 KC.).

3. Adjust the oscillator trimmer #13. Two positions on the trimmer condenser will be found. The one with the least capacity or with the plates farthest out should be used.

4. Adjust the antenna trimmer condenser #5.

WAVE TRAP ADJUSTMENTS

This receiver is provided with a wave trap and the trimmer condenser #3 on this coil should be adjusted to minimize a 455 KC. signal applied to the antenna.

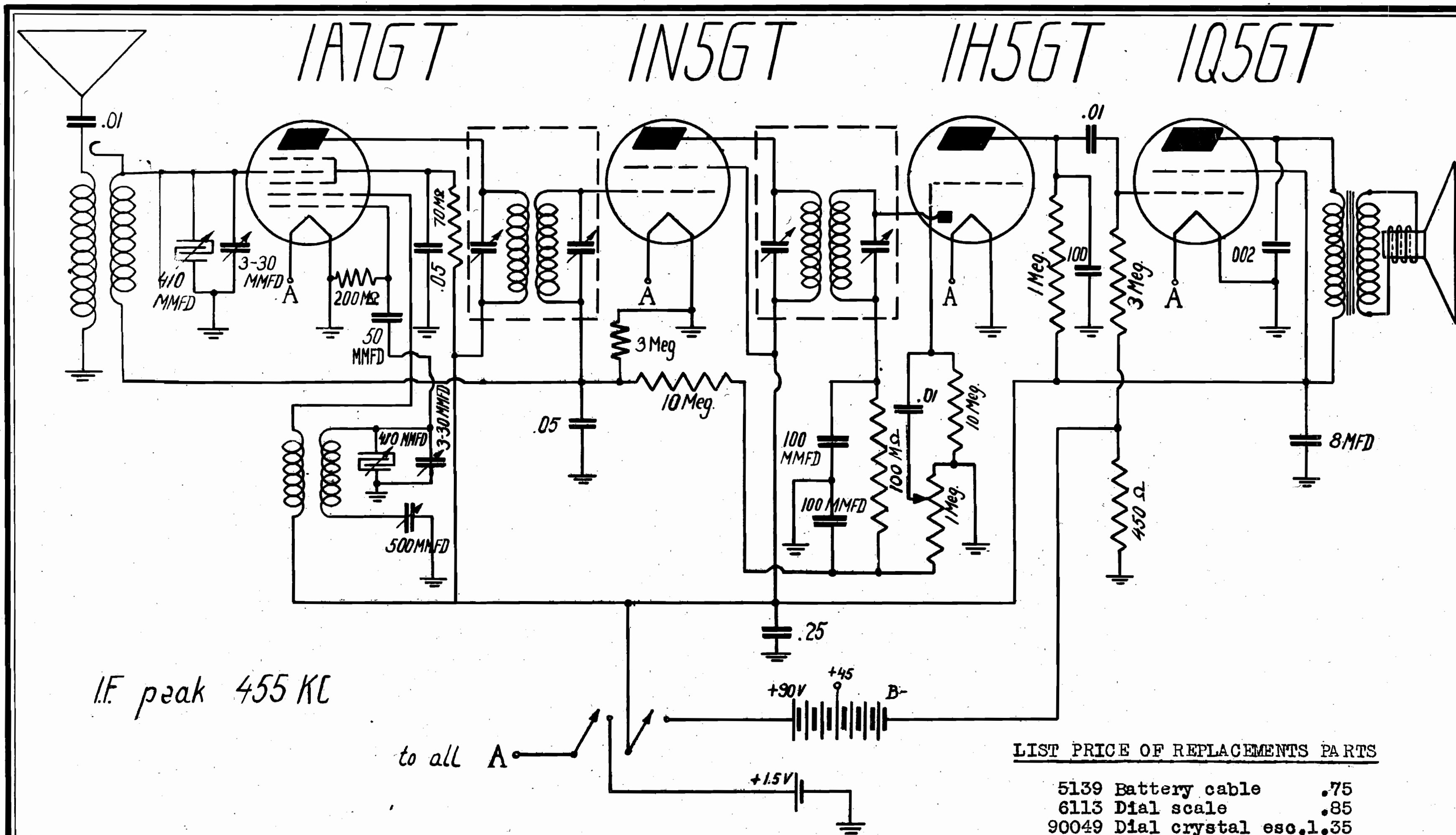
Under actual operating conditions, this trimmer may be adjusted slightly to minimize interfering signals which are known to be on or near the 455 KC. channel.

Dia. #	Part #	Description of Parts	List Price
1	RC 95290	Preselector coil assembly	$ 1.75
2	CB 95159	Cable assembly	.20
3		Trimmer condenser 30-80 mmf. - part of RC 95289	
4	RC 95289	Trap coil assembly	.75
5		Trimmer condenser 4-35 mmf. - part of RC 95290	
6	CG 9567	Variable condenser	3.75
7	CM 9513	100 mmf. mica condenser	.10
8		Trimmer condenser 4-35 mmf. - part of RC 95290	
9	CM 9513	100 mmf. mica condenser	.10
10	CW 4-05	.05 mfd., 400 V. condenser	.15
11		Capacity turn	
12	SW 9591	Wave-change switch	.85
13		Trimmer condenser 2-12 mmf. - part of RC 95291	
14		Trimmer condenser 4-35 mmf. - part of RC 95291	
15	SA 107801	.0025 mfd. mica condenser	.30
16	CS 9585	Oscillator series (lag) condenser 225-700 mmf.	.35
17	CW 4-01	.01 mfd., 400 V. condenser	.15
18	RE 1033	10,000 ohm, 1/4 W. resistor	.10
19	RC 95291	Oscillator coil assembly	1.60
20	RE 1053	1 meg., 1/2 W. resistor	.10
21	CW 4-10	.1 mfd., 400 V. condenser	.15
22	RE 4713	470 ohm, 1/2 W. resistor	.10
23	RE 4733	47,000 ohm, 1/2 W. resistor	.10
24	IC 95122	1st I.F. coil assembly	1.75
25-26		Trimmer condenser 80-200 mmf. - part of IC 95122	
27	RE 4733	47,000 ohm, 1/2 W. resistor	.10
28	RE 4713	470 ohm, 1/2 W. resistor	.10
29	RE 1533	15,000 ohm, 1/2 W. resistor	.10
30	CW 9537	.05 mfd., 400 V. condenser	.30
31		.05 mfd., 400 V. condenser - part of CW 9537	
32		100 mmf. mica condenser - part of IC 95123	
33		47,000 ohm, 1/2 W. resistor - part of IC 95123	
34		100 mmf. mica condenser - part of IC 95123	
35	IC 95123	I.F. coil assembly (diode)	2.25
36-37		Trimmer condenser 30-100 mmf. - part of IC 95123	
38	VR 9560	Volume control - .5 meg.	1.10
39	CW 4-02	.02 mfd., 400 V. condenser	.15
40	RE 4723	4700 ohm, 1/2 W. resistor	.10
41	RE 1053	1 meg., 1/2 W. resistor	.10
42	RE 1053	1 meg., 1/2 W. resistor	.10
43	RE 4743	470,000 ohm, 1/2 W. resistor	.10
44	RE 2243	220,000 ohm, 1/2 W. resistor	.10
45	CW 4-02	.02 mfd., 400 V. condenser	.15
46	RE 4743	470,000 ohm, 1/2 W. resistor	.10
47	RE 6813	680 ohm, 1/2 W. resistor	.10
48	CW 4-02	.02 mfd., 400 V. condenser	.15
49	CW 6-002	.002 mfd., 600 V. condenser	.15
50	RE 1023	1000 ohm, 1/2 W. resistor	.10
51	VR 9559	Tone control - 20,000 ohm	.75
52	TR 95157	Output transformer	2.00
53	DM 9535	Diaphragm assembly	2.75
54	SK 9589	Speaker assembly	5.00
55	VI 9512	Vibrator	4.25
56	CE 9550	40 mfd., 25 V. electrolytic condenser	.75
57	CE 9573	8 mfd., 250 V. electrolytic condenser	.75
58	TR 9526	Choke	1.25
59	CE 9573	8 mfd., 250 V. electrolytic condenser	.75
60	CW 4-10	.1 mfd., 400 V. condenser	.15
61-62	RE 3903	39 ohm, 1/2 W. resistor	.10
63	CW 2-50	.5 mfd., 200 V. condenser	.25
64	PP 952	Power pack assembly (not serviced complete)	
65	RE 6803	68 ohm, 1/2 W. resistor	.10
66	CW 9539	.02-.02 mfd., 1000 V. condenser	.40
67	CW 9513	.05 mfd., 200 V. condenser	.10
68	RE 6803	68 ohm, 1/2 W. resistor	.10
69	TR 95106	Power transformer	1.50
70-71	LP 9516	Dial lamp - 6.3 V., .15 Amp.	.20
72	RC 95288	Choke	.25
73		On-off switch - part of VR 9560	
74	CB 9556	"A" battery cable	.80
75	CW 2-50	.5 mfd., 200 V. condenser	.15
76	RC 95288	Choke	.25
77	CW 9523	.5 mfd., 120 V. condenser	.40
78	CM 9519	500 mmf. mica condenser	.20
79	CW 4-25	.25 mfd., 400 V. condenser	.20
80	RE 2233	220,000 ohm, 1/2 W. resistor	.10
81	CW 4-25	.25 mfd., 400 V. condenser	.20
82-83-84	RE 1013	100 ohm, 1/2 W. resistor	.10

Part #	Description	Part #	Description
BE 956	Tube shield base		
BK 95182	Electrolytic condenser bracket (large)		
BK 95283	Electrolytic condenser bracket (small)		
CV 954	Tube shield		
CV 95226	I.F. coil cover		
DS 95124	Dial scale		
FP 108003	Felt washer under knob		
IS 1002	Rubber bushing (dial bracket)		
IS 95123	Gang condenser mounting bushing		
IS 95228	Rubber mounting bushing (power pack and chassis)		
IS 95231	Rubber dial drive bushing	SA 104616	Socket (vibrator)
KA 95115	Cabinet	SA 107257	Socket (speaker)
KN 95129	Knob (3 used)	SA 107395	Speaker mounting screw
KN 95151	Knob (wave-change - 1 used)	SH 9557	Drive shaft
PI 95116	Dial escutcheon plate	SI 9579	Dial pointer
PL 95130	Dial plate	SO 956	Socket (octal)
PR 97160	Dial drive cord	SO 9534	Dial lamp socket
PU 9533	Dial drive pulley	SP 9545	Spring cup (vibrator)
NT 958	3/8" Pal nut	SP 9551	Dial drive cord spring

WESTINGHOUSE ELEC. SUPPLY CO.

MODEL WR677
Schematic



LIST PRICE OF REPLACEMENTS PARTS

5139	Battery cable	.75
6113	Dial scale	.85
90049	Dial crystal esc.	1.35
7254	Speaker	5.50
8819	Knob	.10
9944	Drive drum	.15
9945	Drive spring	.08
9943	Pointer	.30
1481	Antenna coil	.50
1515	Oscillator coil	.50
1496A	I.F. Coil	1.25
1497A	Second detector coil	1.25
2422A	Two gang Var. cond.	2.50
2463	8 mfd. elect.	.70
3480	comb. vol. cont.	1.00

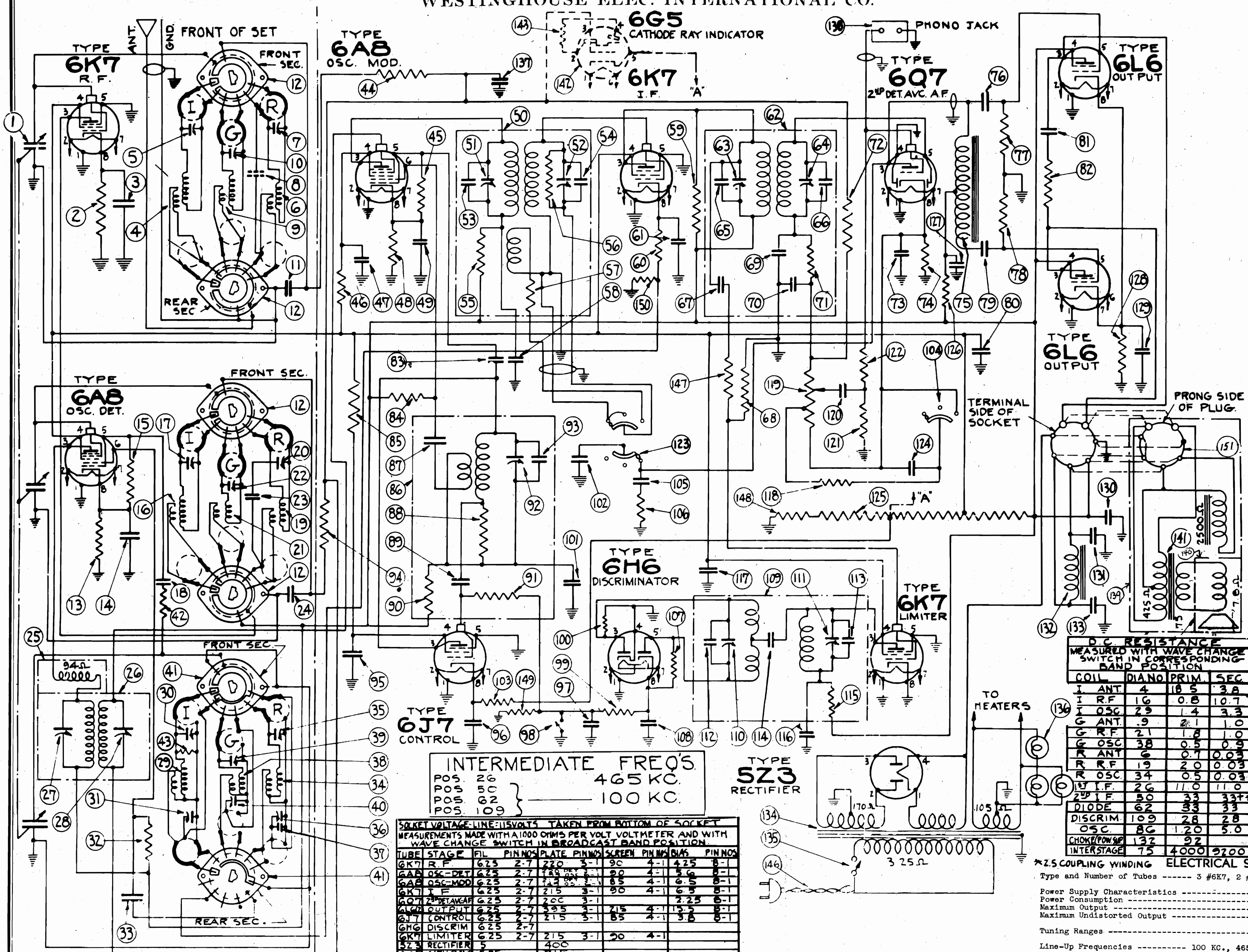
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

This is a battery operated superheterodyne receiver with full automatic volume control. It is designed to function with an "A" supply of 1.5 volts and a "B" supply of 90 volts. The broadcast range coverage is **530-1650** kilocycles. The battery recommended is the EVEREADY #748, BURGESS #17GD60, RAY-O-VAC #AB82, or the equivalent. **A permanent magnet dynamic speaker is used in this receiver.**

TUBES

R C A - 1A7GT (1), R C A - 1N5GT (1), R C A - 1H5GT (1), R C A-1Q5GT (1). See diagram on label under cabinet for location of tubes.

WESTINGHOUSE ELEC. INTERNATIONAL CO.



INTERMEDIATE FREQ'S

POS. 26	465 KC.
POS 50, POS. 62, POS. 109	100 KC.

SOCKET VOLTAGE-LINE: 115 VOLTS TAKEN FROM BOTTOM OF SOCKET
MEASUREMENTS MADE WITH A 1000 OHMS PER VOLT VOLTMETER AND WITH WAVE CHANGE SWITCH IN BROADCAST BAND POSITION

TUBE	STAGE	FIL	PIN NOS	PLATE	PIN NOS	SCREEN	PIN NOS	BIAS	PIN NOS
6K7	R.F.	6.25	2-7	220	3-1	90	4-1	4.25	8-1
6A8	OSC-DET	6.25	2-7	220 DET / 135 OSC	3-1 / 6-1	90	4-1	5.6	8-1
6A8	OSC-MOD	6.25	2-7	[illegible] DET / [illegible] OSC	[illegible]	85	4-1	6.5	8-1
6K7	I.F.	6.25	2-7	215	3-1	90	4-1	6.5	8-1
6Q7	2ND DET AVC AF	6.25	2-7	200	3-1			2.25	8-1
6L6	OUTPUT	6.25	2-7	395	3-1	215	4-1	15.5	8-1
6J7	CONTROL	6.25	2-7	215	3-1	85	4-1	3.8	8-1
6H6	DISCRIM	6.25	2-7						
6K7	LIMITER	6.25	2-7	215	3-1	90	4-1		
5Z3	RECTIFIER	5		400					
6G5	CATH RAY	6.25		215					

D.C. RESISTANCE
MEASURED WITH WAVE CHANGE SWITCH IN CORRESPONDING BAND POSITION

COIL	DIA. NO.	PRIM.	SEC.
I ANT.	4	18.5	3.8
I R.F.	16	0.8	10.7
I OSC.	29	1.4	3.3
G ANT.	.9	2.1	1.0
G R.F.	21	1.8	1.0
G OSC.	38	0.5	0.9
R ANT.	6	0.7	0.03
R R.F.	19	2.0	0.03
R OSC.	34	0.5	0.03
1ST I.F.	26	11.0	11.0
2ND I.F.	50	33	33*
DIODE	62	33	33
DISCRIM.	109	28	28
OSC.	86	1.20	5.0
CHOKE (POW. SUP.)	132	92	
INTERSTAGE	75	4000	9200

*2.5 COUPLING WINDING

MODEL WR315

Schematic Alignment

ADJUSTMENT OF I.F., CONTROL OSCILLATOR AND DISCRIMINATOR

1. Set the volume control on full and turn the bass control to the bass position (position immediately after set is turned

2. Connect the output meter across the voice coil of the speaker.

3. Set the test oscillator to 100 KC., and adjust the output to give a readable deflection on the output meter when the signal is applied to the grid of the 6K7 I.F. amplifier tube through a 0.5 mfd. blocking condenser.

4. Connect a 10,000 ohm resistor across the primary winding of the third I.F. coil #62. This should be connected to terminals marked "A" and "B" in Figure #2.

5. Adjust trimmer #64 to maximum output, reducing the output of the test oscillator as required.

6. Remove the 10,000 ohm resistor from the primary side of I.F. coil #62 and connect across the secondary winding from terminals marked "C" and "D".

7. Adjust trimmer #63 to maximum output, reducing the output of the test oscillator as required. Remove 10,000 ohm resistor.

8. Turn switch #98 to the left-hand position (viewed from rear of chassis).

9. Set the output of the test oscillator to a high level.

10. Connect a 0 to 5 microammeter across resistor #149 and adjust trimmer condenser #111 to maximum swing of the microammeter, keeping the output of the signal generator set to apoint which will give a deflection of approximately 5 microamperes when condenser #111 is tuned to maximum deflection. WHEN THE SIGNAL GENERATOR IS SET TO THIS OUTPUT, DO NOT ALTER THE OUTPUT OF THE SIGNAL GENERATOR UNTIL THE ALIGNMENT OF THE DISCRIMINATOR CIRCUIT IS COMPLETED.

11. Adjust trimmer #110 until the microammeter reading is reduced exactly to zero.

12. Turn switch #98 to the right-hand position and proceed with the alignment of the I.F.

13. Apply the test signal to the grid of the 6A8 oscillator-modulator tube.

14. Connect the 10,000 ohm resistor across the primary of I.F. coil #50 by connecting it to the terminals marked "E" and "F" in Figure #2.

15. Adjust trimmer #52 to maximum output, reducing the output of the test oscillator as required.

16. Remove the 10,000 ohm resistor and connect across the secondary of I.F. transformer #50. Connect to terminals marked "G" and "H".

17. Adjust trimmer #51 to maximum output, reducing the output of the test oscillator as required.

18. Remove the 10,000 ohm resistor.

19. Set the test oscillator to 465 KC., and adjust the control oscillator trimmer #92 to maximum output.

20. Apply the test signal to the grid of the type 6A8 oscillator-detector tube.

21. Connect the 10,000 ohm resistor across the primary of I.F. transformer #26 by connecting it to the points marked "J" and "K" in Figure #2.

22. Adjust trimmer #28 to maximum output, reducing the output of the test oscillator as required.

23. Remove the 10,000 ohm resistor and connect across the secondary of the I.F. transformer #26 by connecting it to the points marked "L" and "M" in Figures #1 and #2.

24. Adjust trimmer #27 to maximum output, reducing the output of the test oscillator as required. Remove the 10,000 ohm resistor.

ELECTRICAL SPECIFICATIONS

Type and Number of Tubes ------ 3 #6K7, 2 #6A8, 1 #6Q7, 2 #6L6, 1 #6H6, 1 #6J7, 1 #5Y3, 1 #6G5 - Total 12
Power Supply Characteristics ---------- 105 to 125 volt, 50 to 60 cycle A.C.
Power Consumption ---------- 125 Watts
Maximum Output ---------- 21 Watts
Maximum Undistorted Output ---------- 12.5 Watts
Tuning Ranges ---------- (White Band - 525 to 1,800 KC. (Green Band - 1750 to 6,000 KC. (Red Band - 5800 to 18,500 KC.
Line-Up Frequencies ---------- 100 KC., 465 KC., 1600 KC., 570 KC., 5500 KC., 1900 KC., 17,000 KC., and 6000 KC.

continued

WESTINGHOUSE ELEC. INTERNATIONAL CO.

MODEL WR315
Socket,Trimmers Chassis

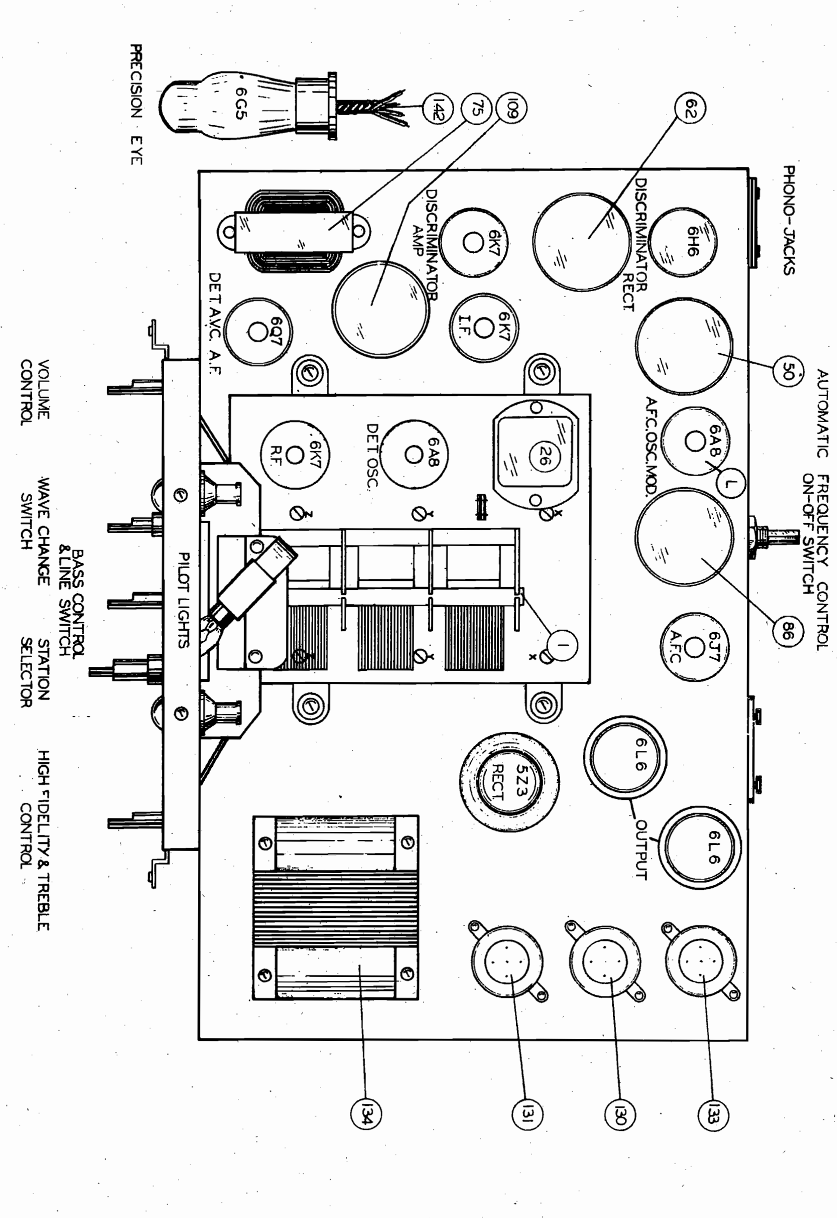


Figure No. 1

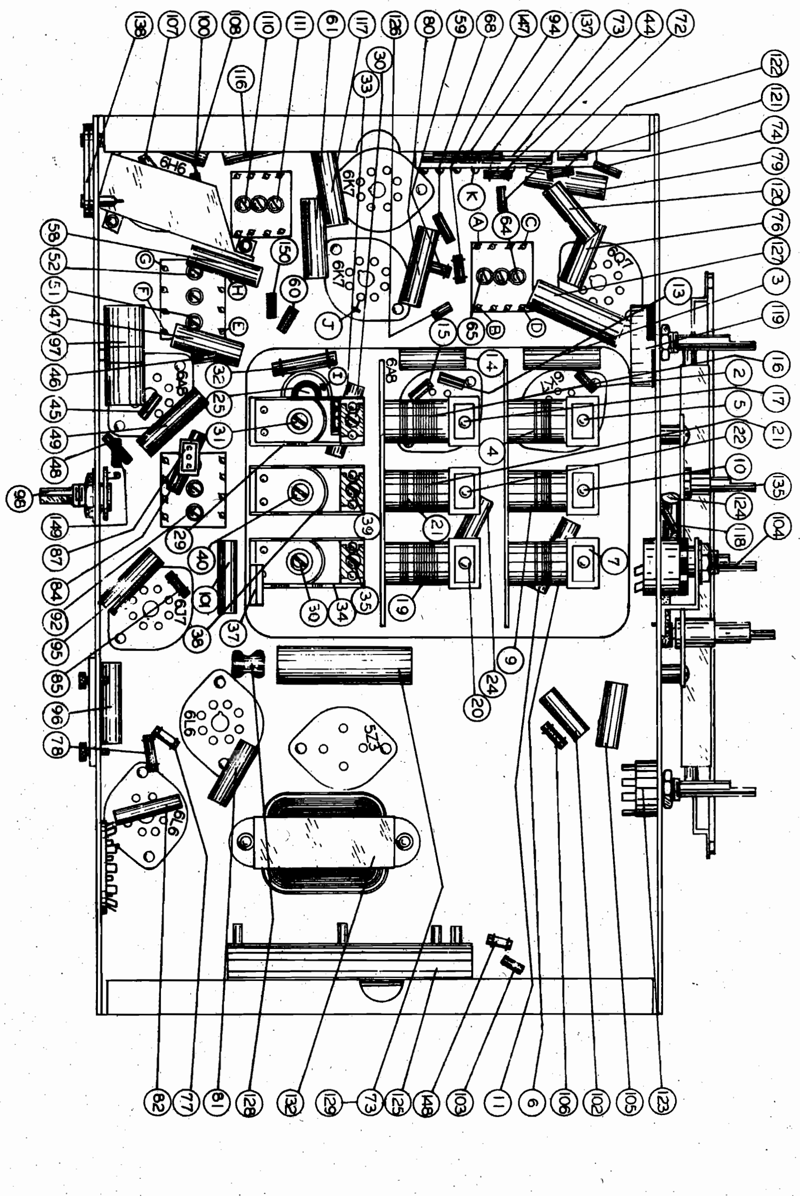


Figure No. 2

MODEL WR315
Alignment,Part 2
Parts List

WESTINGHOUSE ELEC. INTERNATIONAL CO.

ADJUSTMENT OF BROADCAST BAND (CONT.)

1. Set the wave-change switch to the White or Broadcast Band position.

2. Set the test oscillator and dial indicator to 1600 KC.

3. Apply the test signal to the antenna terminal of the chassis through a .0002 mfd. series condenser and adjust the oscillator trimmer condenser #30 until the signal is received at a maximum.

4. Adjust trimmers #17 and #5 to maximum output.

5. Set the test oscillator and dial indicator to 570 KC., and adjust the oscillator series condenser #31 to maximum output, at the same time rocking the condenser gang.

6. Return both the test oscillator and dial indicator to 1600 KC., and check the adjustment of trimmers #30, #17 and #5 for accuracy.

ADJUSTMENT OF GREEN BAND

NOTE: In adjusting the two short-wave bands (Green and Red) a .0002 mfd. condenser and a 400 ohm resistor connected in series should be inserted in the high side of the test oscillator leads. This condenser-resistor combination is the approximate equivalent of a short-wave antenna.

1. Set the wave-change switch to the Green Band position.

2. Set the test oscillator and dial indicator to 5500 KC., and adjust the oscillator trimmer condenser #39 until the signal is received at a maximum.

3. Adjust trimmer condensers #22 and #10 to maximum output.

4. Set the test oscillator and dial indicator to 1900 KC., and adjust the oscillator series condenser #40 to maximum output, at the same time rocking the condenser gang.

5. Return both the test oscillator and dial indicator to 5500 KC., and check the adjustment of trimmers #39, #22 and #10 for accuracy.

ADJUSTMENT OF RED BAND

1. Set the wave-change switch to the Red Band position.

2. Set the test oscillator and dial indicator to 17000 KC., and adjust the oscillator trimmer condenser #35 until the signal is received.

NOTE: When adjusting the oscillator trimmer condenser #35 it will be possible to secure two peaks. The peak secured with the trimmer screw turned farthest out should be used. When aligned on the correct peak a strong signal will be heard at 17000 KC., and a weaker signal at approximately 16000 KC. No signal should be heard at 18000 KC.

3. Adjust trimmer condensers #20 and #7 to maximum output.

4. Set the test oscillator and dial indicator to 6000 KC., and adjust the oscillator series condenser #36 to maximum output, at the same time rocking the condenser gang.

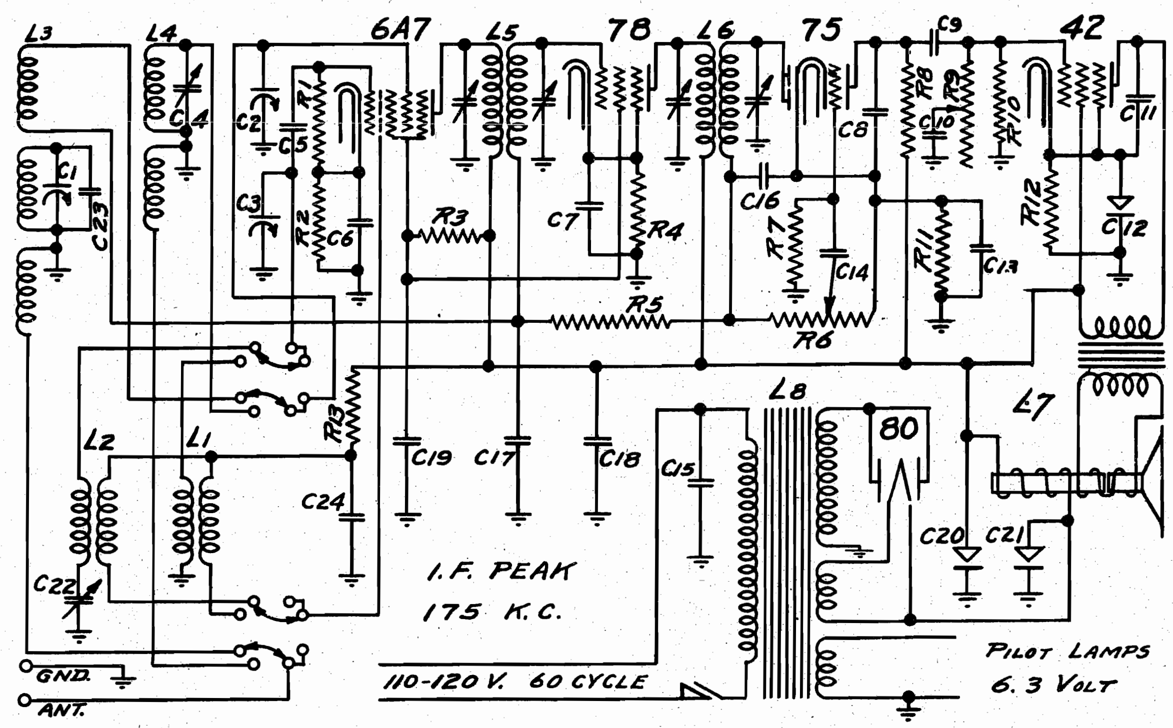
5. Return both the test oscillator and dial indicator to 17000 KC., and check adjustment of trimmers #35, #20 and #7 for accuracy.

IMPORTANT: While testing or making repairs on this receiver, the chassis should not be turned upside down or on its side for any long period of time while the set is turned on as the chemicals in the electrolytic filter condensers will come out through the air vents, making the condenser appear to be defective. If left in this position too long the condenser may be injured.

Dia. #	Part #	Description of Parts
1	CG 9551	Variable condenser
2	RE 95102	600 ohm, 1/4 W. resistor
3	CW 2-05	.05 mfd., 200 V. condenser
4	RC 95209	Antenna coil - Broadcast
5	CS 9554	4-30 mmf. trimmer condenser
6	RC 95206	Antenna coil - Red Band
7	CS 9554	4-30 mmf. trimmer condenser
8		Twisted wire - part of RC 95206
9	RC 95212	Antenna coil - Green Band
10	CS 9554	4-30 mmf. trimmer condenser
11	CW 9513	.05 mfd., 200 V. condenser
12	SW 9553	Switch and bracket assembly - antenna and R.F.
13	RE 95102	600 ohm, 1/4 W. resistor ....sections
14	CW 2-05	.05 mfd., 200 V. condenser
15	RE 9563	50,000 ohm, 1/2 W. insulated resistor
16	RC 95210	R.F. coil - Broadcast
17	CS 9554	4-30 mmf. trimmer condenser
18	CM 9511	.000065 mfd. mica condenser
19	RC 95207	R.F. coil - Red Band
20	CS 9554	4-30 mmf. trimmer condenser
21	RC 95214	R.F. coil - Green Band
22	CS 9553	1.5-10 mmf. trimmer condenser
23	CM 9512	6 mmf. mica condenser
24	CW 9513	.05 mfd., 200 V. condenser
25	RC 95266	Choke coil assembly
26	IC 9582	1st I.F. coil (465 KC.)
27		35-130 mmf. trimmer condenser - part of IC 9582
28		35-130 mmf. trimmer condenser - part of IC 9582
29	RC 95272	Oscillator coil - Broadcast
30		5-25 mmf. trimmer condenser - part of CS 9540
31		300-600 mmf. trimmer condenser - part of CS 9540
32	RE 9526	5000 ohm, 1 W. resistor
33	CW 9513	.05 mfd., 200 V. condenser
34	RC 95208	Oscillator coil - Red Band
35		3-15 mmf. trimmer condenser - part of CS 9520
36		800-1600 mmf. trimmer condenser - part of CS 9520
37	CM 959	.002 mfd. mica condenser
38	RC 95213	Oscillator coil - Green Band
39		3-15 mmf. trimmer condenser - part of CS 9520
40		800-1600 mmf. trimmer condenser - part of CS 9520
41	SW 9554	Switch and bracket assembly - oscillator section
42	RE 9537	50 ohm, 1/4 W. resistor
43	RE 95125	20,000 ohm, 1/2 W. insulated resistor
44	RE 95103	100,000 ohm, 1/2 W. insulated resistor
45	RE 9563	50,000 ohm, 1/2 W. insulated resistor
46	RE 95106	1000 ohm, 1/2 W. insulated resistor
47	CW 2-05	.05 mfd., 200 V. condenser
48	RE 9567	600 ohm, 1/2 W. insulated resistor
49	CW 2-05	.05 mfd., 200 V. condenser
50	IC 9584	2nd I.F. coil (100 KC.)
51		80-200 mmf. trimmer condenser - part of IC 9584
52		80-200 mmf. trimmer condenser - part of IC 9584
53	CM 9528	350 mmf. mica condenser
54	CM 9528	350 mmf. mica condenser
55	RE 95106	1000 ohm, 1/2 W. insulated resistor
56	RE 95103	100,000 ohm, 1/2 W. insulated resistor
57	RE 95104	75 ohm, 1/2 W. insulated resistor
58	CW 4-05	.05 mfd., 400 V. condenser
59	RE 95103	100,000 ohm, 1/2 W. insulated resistor
60	RE 9567	600 ohm, 1/2 W. insulated resistor
61	CW 2-05	.05 mfd., 200 V. condenser
62	IC 9585	3rd I.F. coil (100 KC.)
63		80-200 mmf. trimmer condenser - part of IC 9585
64		80-200 mmf. trimmer condenser - part of IC 9585
65	CM 9528	350 mmf. mica condenser
66	CM 9528	350 mmf. mica condenser
67	CM 953	50 mmf. mica condenser
68	RE 95105	1 meg., 1/2 W. insulated resistor
69		100 mmf. mica condenser - part of IC 9585
70		100 mmf. mica condenser - part of IC 9585
71	RE 9524	50,000 ohm, 1/4 W. resistor
72	RE 95113	1/2 meg., 1/2 W. insulated resistor
73	CE 9515	12 mfd., 25 V. electrolytic condenser
74	RE 95114	2000 ohm, 1/2 W. insulated resistor
75	TR 9579	Interstage transformer
76	CW 4-02	.02 mfd., 400 V. condenser
77	RE 95112	1/4 meg., 1/2 W. insulated resistor
78	RE 95112	1/4 meg., 1/2 W. insulated resistor
79	CW 4-02	.02 mfd., 400 V. condenser
80	CW 2-05	.05 mfd., 200 V. condenser
81	CW 4-005	.005 mfd., 400 V. condenser
82	RE 95111	20,000 ohm, 1 W. insulated resistor
83	CM 953	50 mmf. mica condenser
84	RE 95110	15,000 ohm, 1 W. insulated resistor
85	RE 95106	1000 ohm, 1/2 W. insulated resistor
86	RC 95265	Oscillator coil (365 KC.)
87	CM 9519	500 mmf. mica condenser
88	RE 95107	75 ohm, 1/8 W. resistor
89	CM 953	50 mmf. mica condenser
90	RE 95106	1000 ohm, 1/2 W. insulated resistor
91	RE 95105	1 meg., 1/2 W. insulated resistor
92		45-135 mmf. trimmer condenser - part of RC 95265
93	CM 956	250 mmf. mica condenser
94	RE 95103	100,000 ohm, 1/2 W. insulated resistor
95	CW 2-05	.05 mfd., 200 V. condenser
96	CW 2-05	.05 mfd., 200 V. condenser
97	CW 9525	1 mfd., 100 V. condenser
98	SW 9563	A. F. C. switch
99	RE 95105	1 meg., 1/2 W. insulated resistor
100	RE 95105	1 meg., 1/2 W. insulated resistor
101	CW 4-05	.05 mfd., 400 V. condenser
102	CW 4-01	.01 mfd., 400 V. condenser
103	RE 95126	300 ohm, 1/2 W. insulated resistor
104	VR 9542	Bass control
105	CW 4-02	.02 mfd., 400 V. condenser
106	RE 95103	100,000 ohm, 1/2 W. insulated resistor
107	RE 95105	1 meg., 1/2 W. insulated resistor
108	CW 2-05	.05 mfd., 200 V. condenser
109	IC 9583	Discriminator coil
110		80-200 mmf. trimmer condenser - part of IC 9583
111		80-200 mmf. trimmer condenser - part of IC 9583
112	CM 9528	350 mmf. mica condenser
113	CM 9528	350 mmf. mica condenser
114	CM 9519	500 mmf. mica condenser
115	RE 95106	1000 ohm, 1/2 W. insulated resistor
116	CW 4-05	.05 mfd., 400 V. condenser
117	CW 2-05	.05 mfd., 200 V. condenser
118	RE 95124	5000 ohm, 1/2 W. insulated resistor
119	VR 9536	Volume control - 1/2 meg.
120	CW 4-02	.02 mfd., 400 V. condenser
121	RE 95105	1 meg., 1/2 W. insulated resistor
122	RE 95103	100,000 ohm, 1/2 W. insulated resistor
123	SW 9564	Treble control
124	CW 2-05	.05 mfd., 200 V. condenser
125	RE 9597	140-4500-4500 ohm tapped resister
126	RE 95124	5000 ohm, 1/2 W. insulated resistor
127	CW 4-25	.25 mfd., 400 V. condenser
128	RE 9598	170 ohm, 4 W. resistor
129	CE 9515	12 mfd., 25 V. electrolytic condenser
130	CE 9535	16 mfd., 300 V. electrolytic condenser
131	CE 9528	8 mfd., 450 V. electrolytic condenser
132	TR 9573	Choke coil
133	CE 9536	12 mfd., 450 V. electrolytic condenser
134	TR 9580	Power transformer
135		On-Off switch - part of VR 9542
136	LP 9515	Dial lamp (3.2 V., - 0.35 amp.)
137	CW 2-05	.05 mfd., 200 V. condenser
138	SA 100050	Phono-jack
139	SK 9546	Speaker
140	DM 9518	Diaphragm and voice coil
141	TR 9595	Output transformer
142	CB 9598	Cable to "precision eye"
143		1 meg., 1/4 W. resistor - part of CB 9598
146	CB 9512	Line cable
147	RE 95103	100,000 ohm, 1/2 W. insulated resistor
148	RE 9556	25 ohm, 1/4 W. resistor
149	RE 95113	1/2 meg., 1/2 W. insulated resistor
150	RE 95108	3000 ohm, 1/2 W. insulated resistor
151	PG 9567	Speaker plug

WILCOX-GAY CORP.

MODELS 7G5,7GB5
Schematic,Socket
Trimmers



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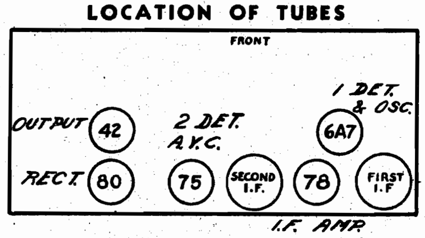
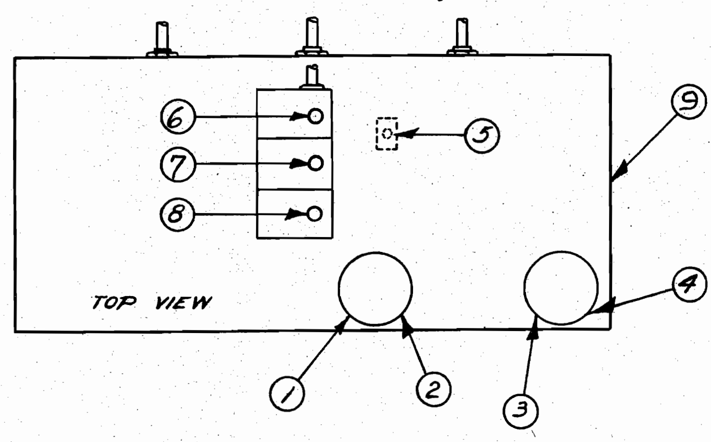
LOCATION OF TUBES





FOR VOLTAGE and ALIGNMENT
SEE INDEX

CODE	PART NO.	RESISTORS
R1	53-941	20,000 Ohm Type M Resistor
R2	53-2014	200 Ohm Type M Resistor
R3	53-1042	25,000 Ohm Type M Resistor
R4	53-1062	250 Ohm Wirewound Resistor
R5	53-926	1 Meg Ohm Type M Resistor
R6	19-2007	500,000 Ohm Volume Control & Switch
R7	53-925	500,000 Ohm Type M Resistor
R8	53-924	250,000 Ohm Type M Resistor
R9	19-2009	250,000 Ohm Tone Control
R10	53-925	500,000 Ohm Type M Resistor
R11	53-919	5,000 Ohm Type M Resistor
R12	53-1063	500 Ohm Wirewound Resistor
R13	53-920	10,000 Ohm Type M Resistor

CODE	PART NO.	CONDENSERS
C1,C2,C3	77-2011	3 Gang Tuning Condenser
C4	78-2010	3-30 Mmfd. Trimmer Condenser
C5	76-2002	.00005 Mfd. Condenser
C6	75-2005	.1 Mfd. 200 V. Paper Condenser
C7	75-2005	.1 Mfd. 200 V. Paper Condenser
C8	76-265	.001 Mfd. Mica Condenser
C9	75-2005	.1 Mfd. 200 V. Paper Condenser
C10	75-2003	.01 Mfd. 400 V. Paper Condenser
C11	75-2001	.002 Mfd. 600 V. Paper Condenser

CODE	PART NO.	CONDENSERS (Cont'd.)
C12	18-928	25 Mfd. 25 V. Dry Elect. Condenser
C13	75-2005	.1 Mfd. 200 V. Paper Condenser
C14	75-2005	.1 Mfd. 200 V. Paper Condenser
C15	75-2003	.01 Mfd. 400 V. Paper Condenser
C16	76-307	.0005 Mfd. Mica Condenser
C17	75-2005	.1 Mfd. 200 V. Paper Condenser
C18	75-2012	.5 Mfd. 400 V. Paper Condenser
C19	75-2005	.1 Mfd. 200 V. Paper Condenser
C20	18-2006	16 Mfd. 250 W. V. Elect. Condenser
C21	18-2005	12 Mfd. 325 W. V. Elect. Condenser
C22	78-2031	600-1350 Mmfd. Trimmer Condenser
C23	76-2003	.00001 Mfd. Mica Condenser
C24	75-2003	.01 Mfd. 400 V. Paper Condenser

		INDUCTANCES
L1	17-2149	Foreign Band Oscillator Coil Assembly
L2	17-2150	Broadcast Oscillator Coil Assembly
L3	17-2151	Broadcast Preselector Coil Assembly
L4	17-2152	Foreign Band Preselector Coil Assembly
L5	68-2031	First I. F. Transformer Assembly
L6	68-2042	Second I. F. Transformer Coil Assembly
L7	64-2045	5" Speaker, 1500 Ohm Field, 42 Tube Trans.-7G5
L7	64-2046	6½" Speaker, 1500 Ohm Field, 42 Tube Trans.-7GB5
L8	80-2009	Power Transformer for 110-120 V. 60 Cycle

MODELS 7G5,7GB5
MODEL 7J7
MODEL 7K7
Alignment,Voltage

WILCOX-GAY CORP.

MODEL 7J7 - 7K7

TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	CATHODE TO GROUND	2 PLATE TO GROUND	2 GRID TO GROUND
78	R-F Amplifier	290	90	3.8		
6A7	1st Det. & Osc.	290	90	3.6	180	- 18
78	I-F Amplifier	290	90	3.7		
78	I-F Amplifier	260	90	3.4		
75	2nd Det. & AVC	145		15.		
42	Power Output	275	290	20.		
80	Rectifier					

B+ Voltage 290 V. - Speaker Field Drop 85 V.
Meter 1000 ohms per volt - 750 volt Scale

SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT SIGNAL
Connect a 100,000 ohm resistor from plate of 2nd I-F tube to gnd. Remove grid clip from 6A7					
Control Grid of 6A7	456 KC	1400 KC	Broadcast (Left)	1	Max.[1]
" " " "	" "	" "	" "	2,3,4,5,6[2]	Max.
Disconn. 100,000 ohm resistor and DO NOT make any other adj. of I-F Amp. Conn. Grid Clip to 6A7.					
*Antenna & Ground Post	1400 KC	1400 KC	Broadcast (Left)	7,8,9	Max.
" " "	600 "	600 "	" "	10[3]	Max.
" " "	5 MC	5 MC	Police (Center)	11,12,13	Max.
" " "	2 "	2 "	" "	14	Max.
" " "	15 "	15 "	Foreign (Right)	15,16,17[4]	Max.

Volume Control in "Full On" position at all times.
(*) Connect a standard dummy antenna between signal generator and receiver.
NOTES - (1) Maintain a midscale reading on output meter across primary of output transformer by adjustment of the signal generator. (2) Repeat above procedure and critically trim each adjustment to absolute resonance to insure perfect alignment. The I.F. sensitivity should be from 15 to 25 microvolts. (3) Investigate ganging of trimmers No. 7, 8, 9 and 10 at 600 KC, 800 KC, 1000 KC, 1200 KC and 1400 KC and any discrepancy of ganging or scale tracking should be corrected by bending slotted side plates of the variable condenser. (4) Investigate ganging of trimmers 15, 16, and 17 at 10 MC and 6 MC to ascertain whether or not the circuits are tracked.

MODEL 7G5 - 7GB5

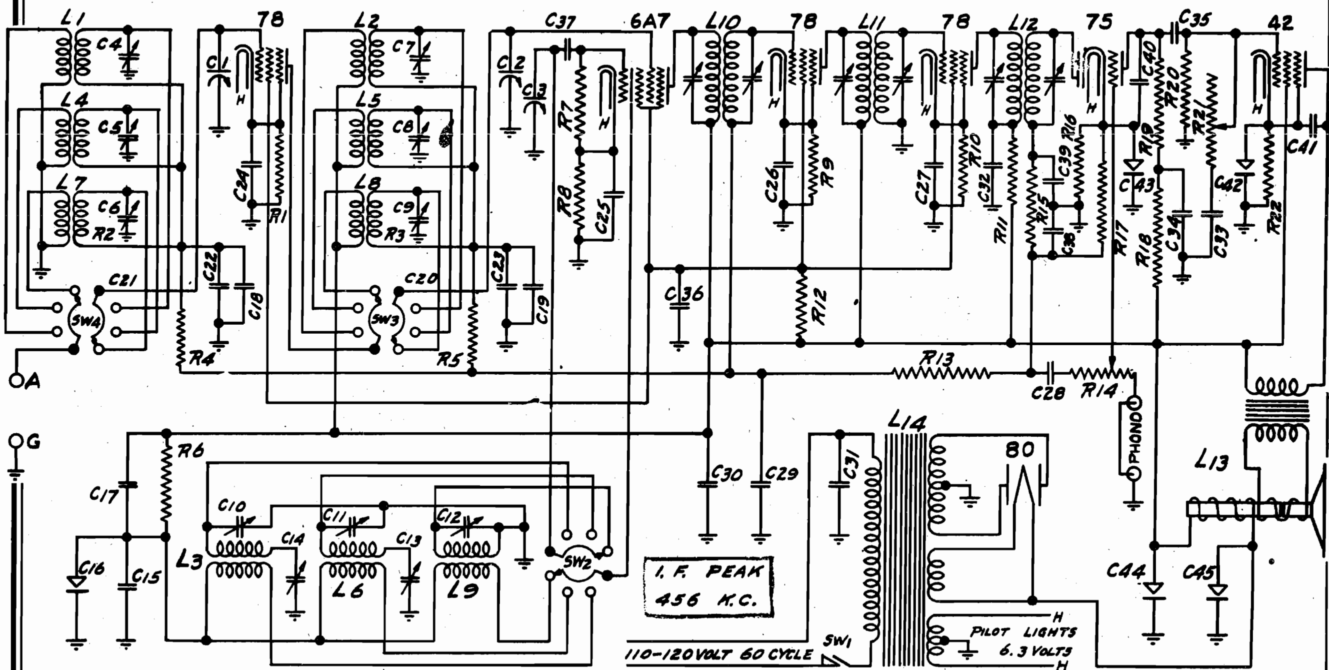
TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	CATHODE TO GROUND	2 PLATE TO GROUND	2 GRID TO GROUND
6A7	1st Det. & Osc.	205	72	2.4	155	- 6.5
78	I-F Amplifier	205	72	2.		
75	2nd Det. & AVC	72		1.3		
42	Power Output	190	207	14		
80	Rectifier					

B+ Voltage 207 - Speaker Field Voltage 70
Line Voltage was 120 - Meter 1000 ohms per volt

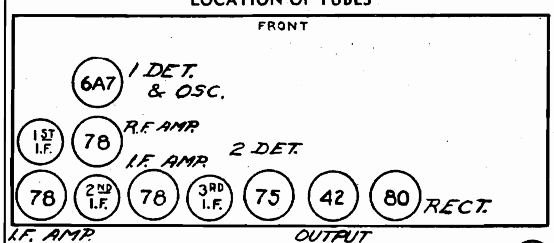
SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT SIGNAL
Remove Grid Clip from 6A7.					
Control Grid of 6A7	175 KC	1400 KC	Broadcast (Left)	1,2,3,4[2]	Max.[1]
Connect Grid Clip to 6A7.					
*Antenna & Ground Post	600 "	600 "	" "	5	Max.[1]
" " "	1400 "	1400 "	" "	6,7,8	Max.[1]
" " "	600 "	600 "		5	Max.[1]
" " "	15 MC	15 MC	Foreign (Right)	9	Max.[1]

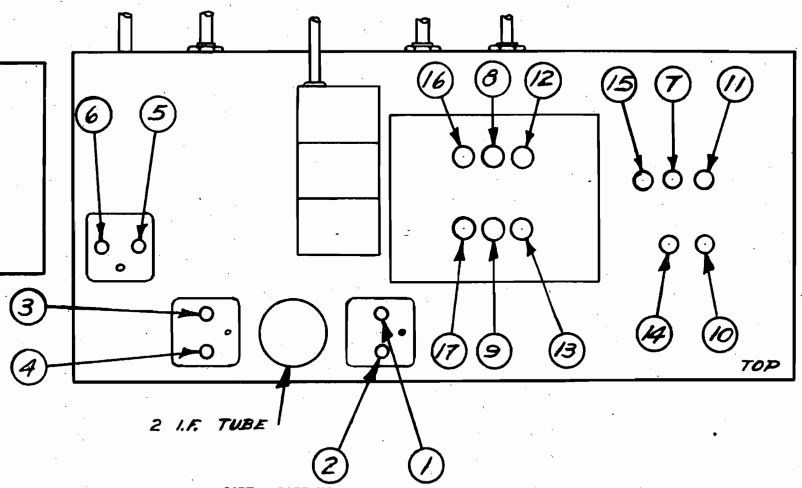
WILCOX-GAY CORP.

MODEL 7J7
Schematic, Socket Trimmers



LOCATION OF TUBES





FOR ALIGNMENT AND VOLTAGE DATA SEE INDEX

CODE	PART NO.	RESISTORS
R1	53-1063	500 Ohm Wirewound Resistor
R4	53-923	100,000 Ohm Type M Resistor
R5	53-923	100,000 Ohm Type M Resistor
R6	53-941	20,000 Ohm Type M Resistor
R7	53-941	20,000 Ohm Type M Resistor
R8	53-1062	250 Ohm Wirewound Resistor
R9	53-1063	500 Ohm Wirewound Resistor
R10	53-1063	500 Ohm Wirewound Resistor
R11	53-919	5,000 Ohm Type M Resistor
R12	53-195	25,000 Ohm Type J Resistor
R13	53-926	1 Meg Ohm Type M Resistor
R14	19-2008	500,000 Ohm Volume Control
R15	53-898	50,000 Ohm Type M Resistor
R16	53-925	500,000 Ohm Type M Resistor
R17	53-919	5,000 Ohm Type M Resistor
R18	53-923	100,000 Ohm Type M Resistor
R19	53-924	250,000 Ohm Type M Resistor
R20	53-925	500,000 Ohm Type M Resistor
R21	19-2009	250,000 Ohm Tone Control
R22	53-1063	500 Ohm Wirewound Resistor

CONDENSERS

C1, C2, C3	77-2011	3 Gang Tuning Condenser
C4, C5, C6	78-2030	3-50 Mmfd. 3 Gang Trimmer Cond.
C7, C8, C9	78-2030	3-50 Mmfd. 3 Gang Trimmer Cond.
C10,C11,C12	78-2030	3-50 Mmfd. 3 Gang Trimmer Cond.
C13, C14	78-2028	600 and 1600 Mmfd. 2 Gang Trimmer Cond.
C15	75-2003	.01 Mfd. 400 V. Paper Condenser
C16	18-2004	4 Mfd. 450 W. V. Electrolytic Condenser
C17	76-662	.002 Mfd. Mica Condenser
C18	76-662	.002 Mfd. Mica Condenser
C19	76-662	.002 Mfd. Mica Condenser
C22	75-2005	.1 Mfd. 200 V. Paper Condenser
C23	75-2005	.1 Mfd. 200 V. Paper Condenser
C24	75-2005	.1 Mfd. 200 V. Paper Condenser
C25	75-2005	.1 Mfd. 200 V. Paper Condenser
C26	75-2005	.1 Mfd. 200 V. Paper Condenser
C27	75-2005	.1 Mfd. 200 V. Paper Condenser
C28	75-2005	.1 Mfd. 200 V. Paper Condenser
C29	75-2005	.1 Mfd. 200 V. Paper Condenser
C30	75-2012	.5 Mfd. 400 V. Paper Condenser

CODE	PART NO.	CONDENSERS (Cont'd.)
C31	75-2003	.01 Mfd. 400 V. Paper Condenser
C32	75-2003	.01 Mfd. 400 V. Paper Condenser
C33	75-2003	.01 Mfd. 400 V. Paper Condenser
C34	75-2007	.1 Mfd. 400 V. Paper Condenser
C35	75-2007	.1 Mfd. 400 V. Paper Condenser
C36	75-2007	.1 Mfd. 400 V. Paper Condenser
C37	76-2002	.00005 Mfd. Mica Condenser
C38	76-2001	.0001 Mfd. Mica Condenser
C39	76-2001	.0001 Mfd. Mica Condenser
C40	76-265	.001 Mfd. Mica Condenser
C41	75-2002	.004 Mfd. 600 V. Paper Condenser
C42	18-928	25 Mfd. 25 V. Electrolytic Condenser
C43	18-928	25 Mfd. 25 V. Electrolytic Condenser
C44	18-2005	12 Mfd. 325 W. V. Elect. Condenser
C45	18-721	8 Mfd. 450 W. V. Elect. Condenser

INDUCTANCES

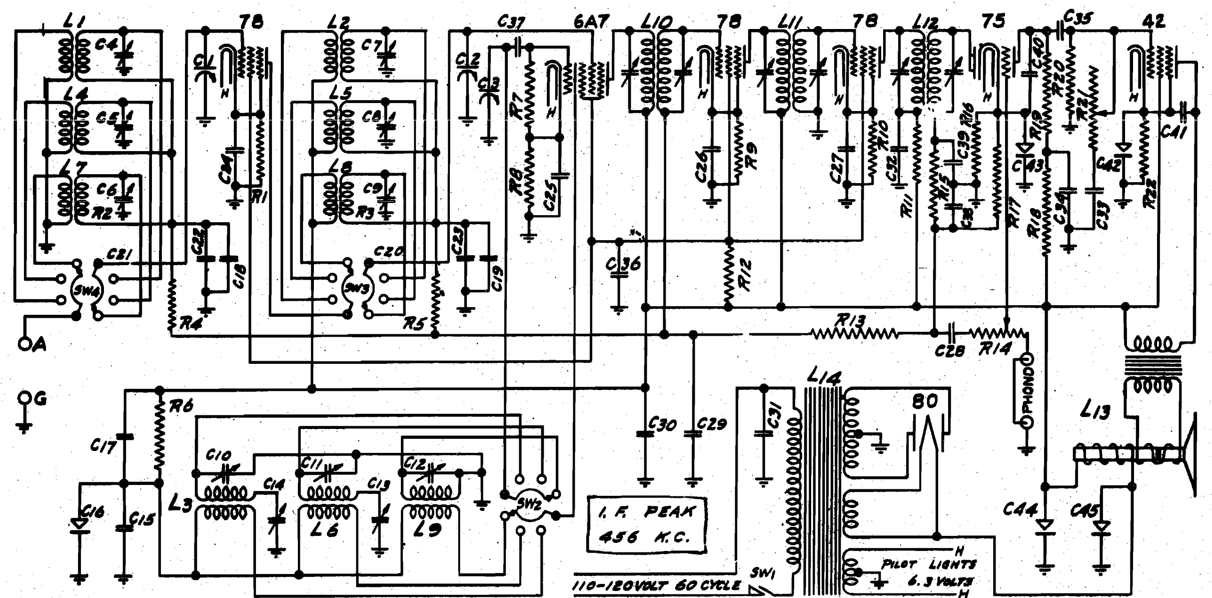
L1	17-2163	Broadcast Antenna Coil Assembly
L2	17-2165	Broadcast R. F. Coil Assembly
L3	17-2176	Broadcast Oscillator Coil Assembly
L4	17-2168	Police Band Antenna Coil Assembly
L5	17-2169	Police Band R. F. Coil Assembly
L6	17-2177	Police Band Oscillator Coil Assembly
L7	17-2171	Foreign Band Antenna Coil Assembly
L8	17-2172	Foreign Band R. F. Coil Assembly
L9	17-2178	Foreign Band Oscillator Coil Assembly
L10	68-2049	First I. F. Transformer Assembly
L11	68-2049	Second I. F. Transformer Assembly
L12	68-2050	Third I. F. Transformer Assembly
L13	64-2050	8" Speaker, 1000 Ohm Field, 42 Tube Trans.
L14	80-2022	110-120 V. 60 Cycle Power Transformer

SWITCHES

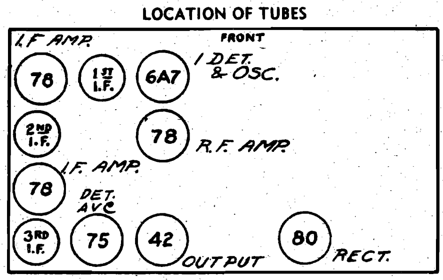
SW1	66-2014	Power Line Off-On Switch
SW2	66-2015	Front Panel of Band Switch
SW3	66-2015	Center Panel of Band Switch
SW4	66-2015	Rear Panel of Band Switch

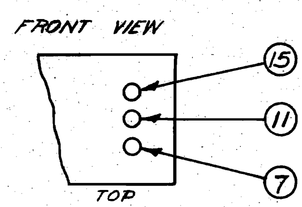
MODEL 7K7
Schematic, Socket
Trimmers

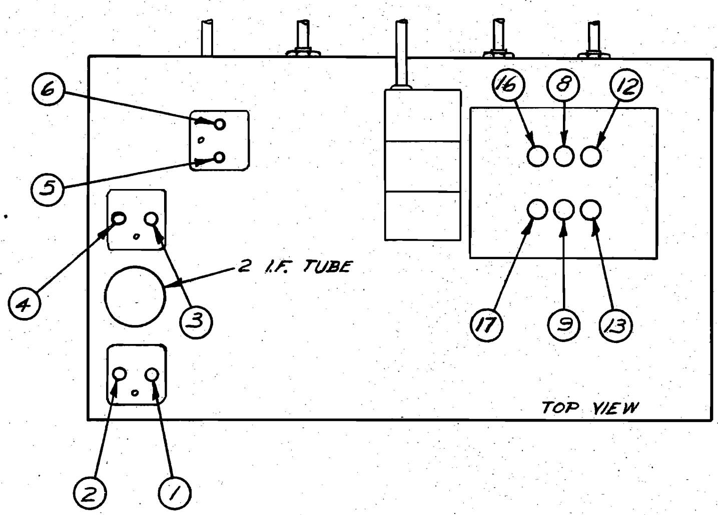
WILCOX-GAY CORP.

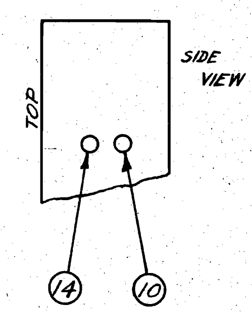


LOCATION OF TUBES









FOR ALIGNMENT AND VOLTAGE
DATA SEE INDEX

CODE	PART NO.	RESISTORS
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R9	53-1063	500 Ohm Wirewound Resistor
R10	53-1063	500 Ohm Wirewound Resistor
R11	53-919	5,000 Ohm Type M Resistor
R12	53-195	25,000 Ohm Type J Resistor
R13	53-926	1 Meg Ohm Type M Resistor
R14	19-2008	500,000 Ohm Volume Control
R15	53-898	50,000 Ohm Type M Resistor
R16	53-925	500,000 Ohm Type M Resistor
R17	53-919	5,000 Ohm Type M Resistor
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R19	53-924	250,000 Ohm Type M Resistor
R20	53-925	500,000 Ohm Type M Resistor
R21	19-2009	250,000 Ohm Tone Control
R22	53-1063	500 Ohm Wirewound Resistor

CONDENSERS

C1, C2, C3	77-2011	3 Gang Tuning Condenser
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C7, C8, C9	78-2030	3-50 Mmfd. 3 Gang Trimmer Cond.
C10, C11, C12	78-2030	3-50 Mmfd. 3 Gang Trimmer Cond.
C13, C14	78-2028	600 and 1600 Mmfd. 2 Gang Trimmer Cond.
C15	75-2003	.01 Mfd. 400 V. Paper Condenser
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C24	75-2005	.1 Mfd. 200 V. Paper Condenser
C25	75-2005	.1 Mfd. 200 V. Paper Condenser
C26	75-2005	.1 Mfd. 200 V. Paper Condenser
C27	75-2005	.1 Mfd. 200 V. Paper Condenser
C28	75-2005	.1 Mfd. 200 V. Paper Condenser
C29	75-2005	.1 Mfd. 200 V. Paper Condenser
C30	75-2012	.5 Mfd. 400 V. Paper Condenser
C31	75-2003	.01 Mfd. 400 V. Paper Condenser
C32	75-2003	.01 Mfd. 400 V. Paper Condenser
C33	75-2003	.01 Mfd. 400 V. Paper Condenser
C34	75-2007	.1 Mfd. 400 V. Paper Condenser
C35	75-2007	.1 Mfd. 400 V. Paper Condenser
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C43	18-928	25 Mfd. 25 V. Elect. Condenser
C44	18-2005	12 Mfd. 325 W. V. Elect. Condenser
C45	18-721	8 Mfd. 450 W. V. Elect. Condenser

INDUCTANCES

L1	17-2163	Broadcast Antenna Coil Assembly
L2	17-2165	Broadcast R. F. Coil Assembly
L3	17-2167	Broadcast Oscillator Coil Assembly
L4	17-2168	Police Band Antenna Coil Assembly
L5	17-2169	Police Band R. F. Coil Assembly
L6	17-2170	Police Band Oscillator Coil Assembly
L7	17-2171	Foreign Band Antenna Coil Assembly
L8	17-2172	Foreign Band R. F. Coil Assembly
L9	17-2173	Foreign Band Oscillator Coil Assembly
L10	68-2049	First I. F. Transformer Assembly
L11	68-2049	Second I. F. Transformer Assembly
L12	68-2050	Third I. F. Transformer Assembly
L13	64-2051	12" Speaker, 1000 Ohm Field, 42 Tube Trans.
L14	80-2022	110-120 V. 60 Cycle Power Transformer

SWITCHES

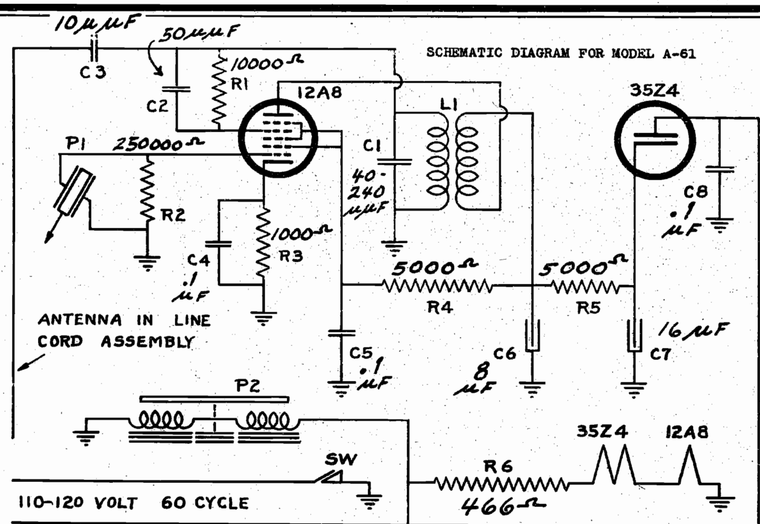
SW1	56-2014	Power Line Off-On Switch
SW2	66-2015	Front Panel of Band Switch
SW3	66-2015	Center Panel of Band Switch
SW4	66-2015	Rear Panel of Band Switch

Wireless Record Players
Schematics, Notes

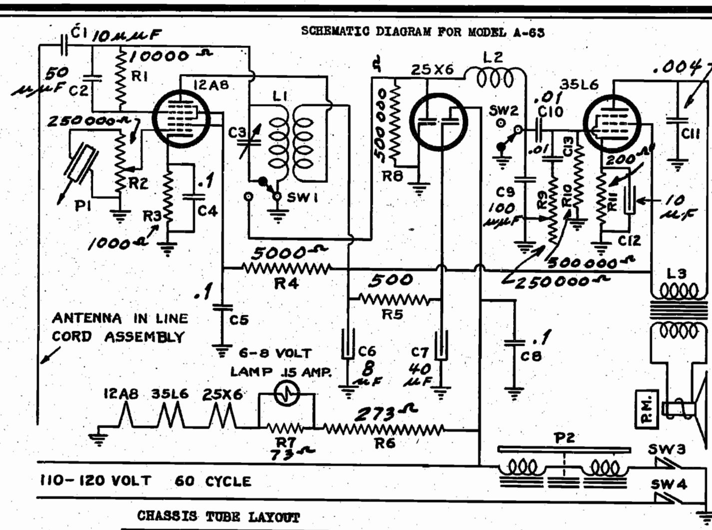
WILCOX-GAY CORP.

MODEL A61
MODEL A63
MODEL A64

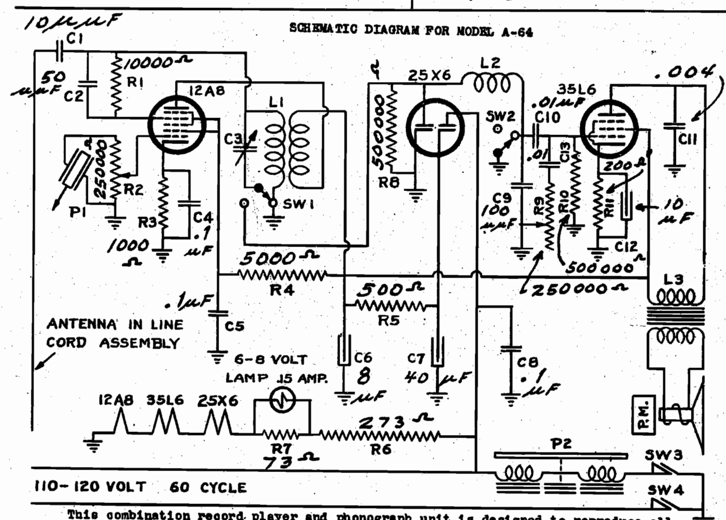
SCHEMATIC DIAGRAM FOR MODEL A-61



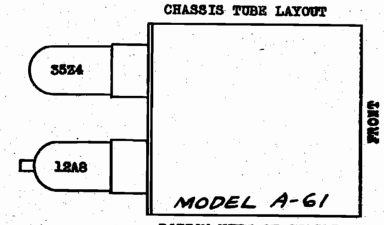
SCHEMATIC DIAGRAM FOR MODEL A-63



SCHEMATIC DIAGRAM FOR MODEL A-64

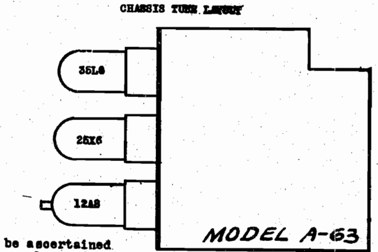


CHASSIS TUBE LAYOUT



BOTTOM VIEW OF CHASSIS

CHASSIS TUBE LAYOUT



BOTTOM VIEW OF CHASSIS

This combination record player and phonograph unit is designed to reproduce all current brands of laterally cut records through any radio receiver, or through the unit itself. (MODEL A-61 IS NOT A COMBINATION UNIT BUT SIMPLY A WIRELESS RECORD PLAYER) *

The unit when used with a radio receiver does not need the connection of any wires, and the clarity and faithfulness of the reproduction will depend on the qualities of the radio receiver. With the use of the "Remote Phono" switch it can also be used as a phonograph, thus enabling one to enjoy this fine unit when radio receiver reproduction is not desired or available.

On the front of the record player toward the right hand side, will be noted three knobs. The knob farthest to the right is the "Master" switch and volume control. Turned to the right a slight click will be heard, and the pilot light will be seen to have become lighted under the tone arm. The remainder of the right hand turn of the control will be for volume control purposes. Rotated to the right, it increases volume; and rotated to the left, the volume is decreased. It should initially be set to the maximum right hand position so that the maximum volume from the record player is obtainable. The control farthest to the left is the "Motor" switch and tone control and operates the table. This knob should be turned to the right when it is desired that the table revolve, and turned to the left when it is desired to stop the table to change records. The center knob is the "Remote-Phono" switch. This switch when turned to "Remote" adjusts the unit for reproduction through a radio receiver, and when turned to "Phono", the adjustment is such that the unit itself will reproduce the record being played.

The radio receiver should now be turned on, and first, it should be ascertained whether or not there is a vacant space at 540 kilocycles, if not, the scale reading of the radio receiver should be varied across the dial from 540 to 750 kilocycles, and a place selected that is free from a radio station. The volume and tone controls should be adjusted as usual.

To place the unit in operation, the master switch and volume control should be turned to its maximum right hand position, a record should then be placed on the table, and the motor switch and tone control turned on so that the table will rotate. The "Remote-Phono" switch should then be turned to "Remote" position.

A new needle should be placed in the pickup arm and the arm set gently on the outside of the record.

To the left of the motor control knobs is a small metal cap. This should be pried up with the screw driver furnished for adjustment, the screw driver inserted into the screw immediately below the hole thus opened. This adjustment should be revolved first in a left hand direction until the record is heard to play from the radio receiver, then it should be varied back and forth across this point until the record player is tuned exactly to the radio receiver. The metal cap can then snapped into the adjustment hole. At any subsequent time the record player may be tuned in at this dial position on the receiver.

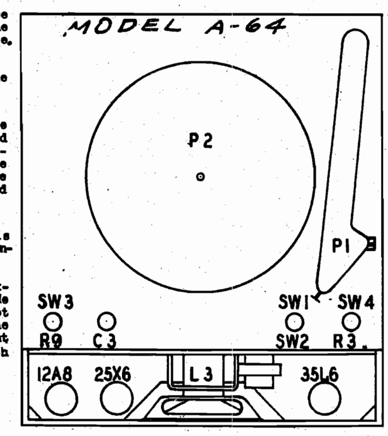
The volume control should be operated mainly on the receiver, however if it is more convenient to bring about this control at the record player, the right hand control may be used, otherwise it should always be left in its maximum position.

When it is desired to operate the record player when radio interference is extremely high, it may be necessary to connect a wire from the wire seen to protrude from the plug of the record player, to the antenna of the radio receiver. Do not make a metallic connection at this point, but simply wrap the wire around the antenna wire to the receiver three or four turns. This will provide sufficient signal intensity to conquer any static condition, and will in no way interfere with the normal operation of the radio receiver.

In case it is difficult to find a cleared channel, or if noise is present, the player may be moved closer to the radio set or its antenna to overcome these conditions.

Change needles regularly for best results.

Be sure to tune your set accurately to the record player and don't overlook the necessity of having a cleared channel for operation.



*NOTES SIMILAR FOR MODEL A-61

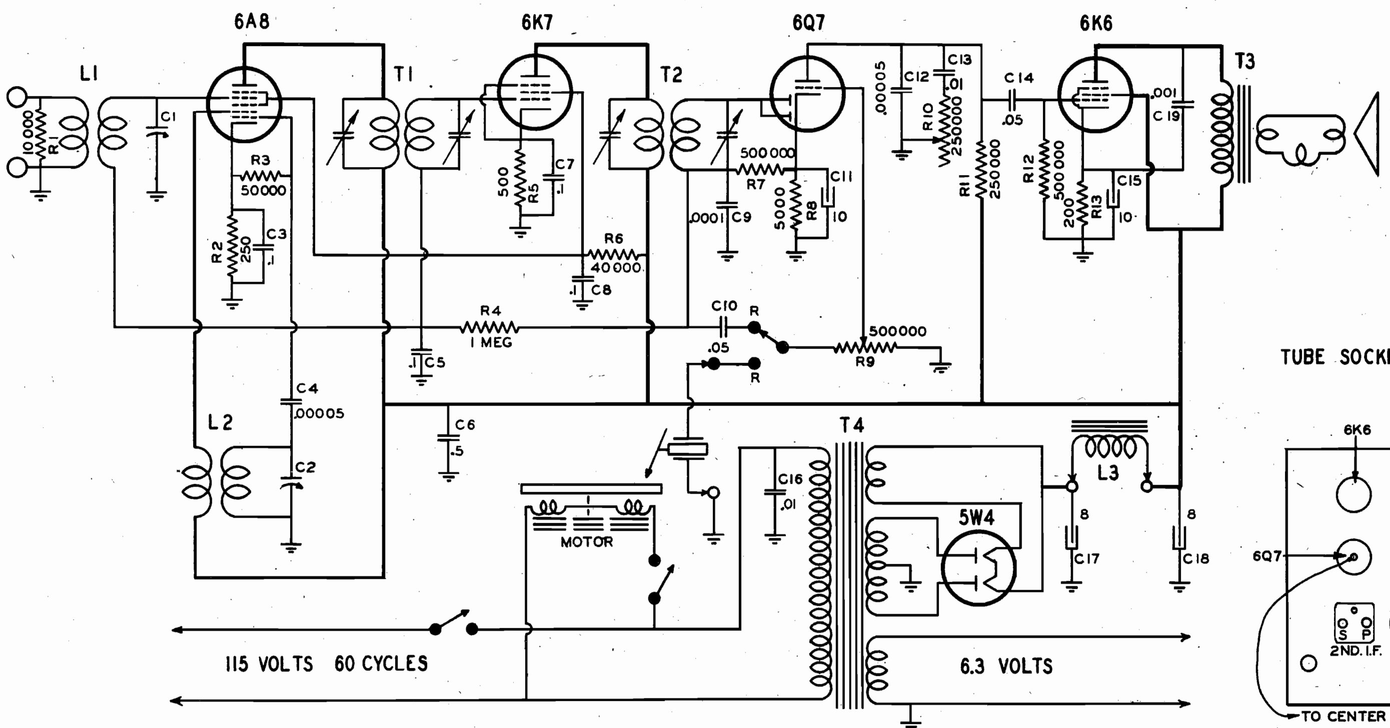
MODEL A69
Schematic, Socket
Trimmers

WILCOX-GAY CORP.

25-2169

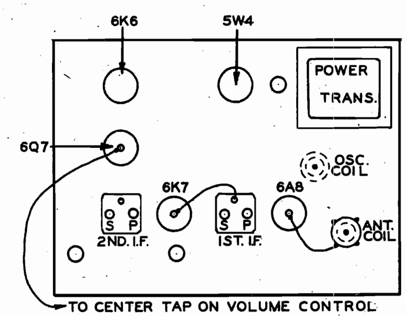
SCHEMATIC DIAGRAM

MODEL A-69



NOTE: To obtain the correct part quickly, please specify Model Number; Serial Number; and Part Number desired. See List.

TUBE SOCKET LAYOUT MODEL A-69



77-2007	C1	R.F. TUNING COND.
	C2	OSC. TUNING COND.
75-2005	C3	.1 MFD. 200 V. PAPER COND.
76-2011	C4	.00005 MFD. 1000 V. MICA COND.
75-2005	C5	.1 MFD. 200 V. PAPER COND.
75-2012	C6	.5 MFD. 400 V. PAPER COND.
75-2005	C7	.1 MFD. 200 V. PAPER COND.
75-2005	C8	.1 MFD. 200 V. PAPER COND.
76-2012	C9	.0001 MFD. 1000 V. MICA COND.
75-2004	C10	.05 MFD. 400 V. PAPER COND.
18-2012	C11	10 MFD. 25 V. DRY ELECT. COND.
76-2011	C12	.00005 MFD. 1000 V. MICA COND.
75-2003	C13	.01 MFD. 400 V. PAPER COND.
75-2004	C14	.05 MFD. 400 V. PAPER COND.
18-2012	C15	10 MFD. 25 V. DRY ELECT. COND.
75-2003	C16	.01 MFD. 400 V. PAPER COND.
18-2015	C17	8 MFD. 400 W.V. DRY ELECT. COND.
18-2015	C18	8 MFD. 400 W.V. DRY ELECT. COND.
75-2014	C19	.001 MFD. 600 V. PAPER COND.
17-2219	L1	ANTENNA COIL ASSEMBLY
17-2210	L2	OSCILLATOR COIL ASSEMBLY
64-2068	L3	8" SPKR. - 1500 OHM FIELD COIL
53-920	R1	10,000 OHM 1/4 WATT RESISTOR
53-1062	R2	250 OHM 1/2 WATT RESISTOR
53-898	R3	50,000 OHM 1/4 WATT RESISTOR
53-926	R4	1 MEGOHM 1/4 WATT RESISTOR

53-1063	R5	500 OHM 1/2 WATT RESISTOR
53-921	R6	40,000 OHM 1/4 WATT RESISTOR
53-925	R7	500,000 OHM 1/4 WATT RESISTOR
53-919	R8	5,000 OHM 1/4 WATT RESISTOR
19-2014	R9	500,000 OHM VOLUME CONT. & SWITCH
19-2009	R10	250,000 OHM TONE CONTROL
53-924	R11	250,000 OHM 1/4 WATT RESISTOR
53-925	R12	500,000 OHM 1/4 WATT RESISTOR
53-2031	R13	500 OHM 1 WATT RESISTOR
68-2053	T1	FIRST I.F. TRANS. ASSEMBLY
68-2054	T2	SECOND I.F. TRANS. ASSEMBLY
64-2068	T3	8" SPKR. WITH SINGLE 6K6 TRANS.
80-2030	T4	POWER TRANSFORMER
26-2067		DIAL DRIVE ASSEMBLY
56-2133		DIAL SCALE
58-2032		DRIVE SHAFT ASSEMBLY
23-2017		NEEDLE CUP
52-2146		PHONOGRAPH PICKUP ARM ASSEM.
52-2113		PHONOGRAPH MOTOR
52-2114		TURNTABLE
28-2038		ESCUTCHEON & CRYSTAL
23-2024		CRYSTAL CARTRIDGE
57-2056		NEEDLE SCREW
20-2034		INDEX CORD & SPRING ASSEM.
27-2021		DIAL DRIVE DRUM ASSEM.

52-2093	POINTER ASSEMBLY.
40-2027	KNOB, PLAIN
40-2044	KNOB WITH YELLOW DOT
67-2041	SCALE MOUNTING STUDS
57-2072	TOP CHASSIS MTG. SCREW 8-32 X 1¼ BRONZE
73-2038	MOTOR MTG. CUSHIONS WITH SHOULDER
73-2039	MOTOR MTG. CUSHIONS WITHOUT SHOULDER
66-2029	PHONO-RADIO SWITCH
73-2047	FINISHING WASHERS FOR CHASSIS MTG. SCREWS
66-2026	MOTOR "OFF-ON" SWITCH
5-2250	ARM REST BRACKET

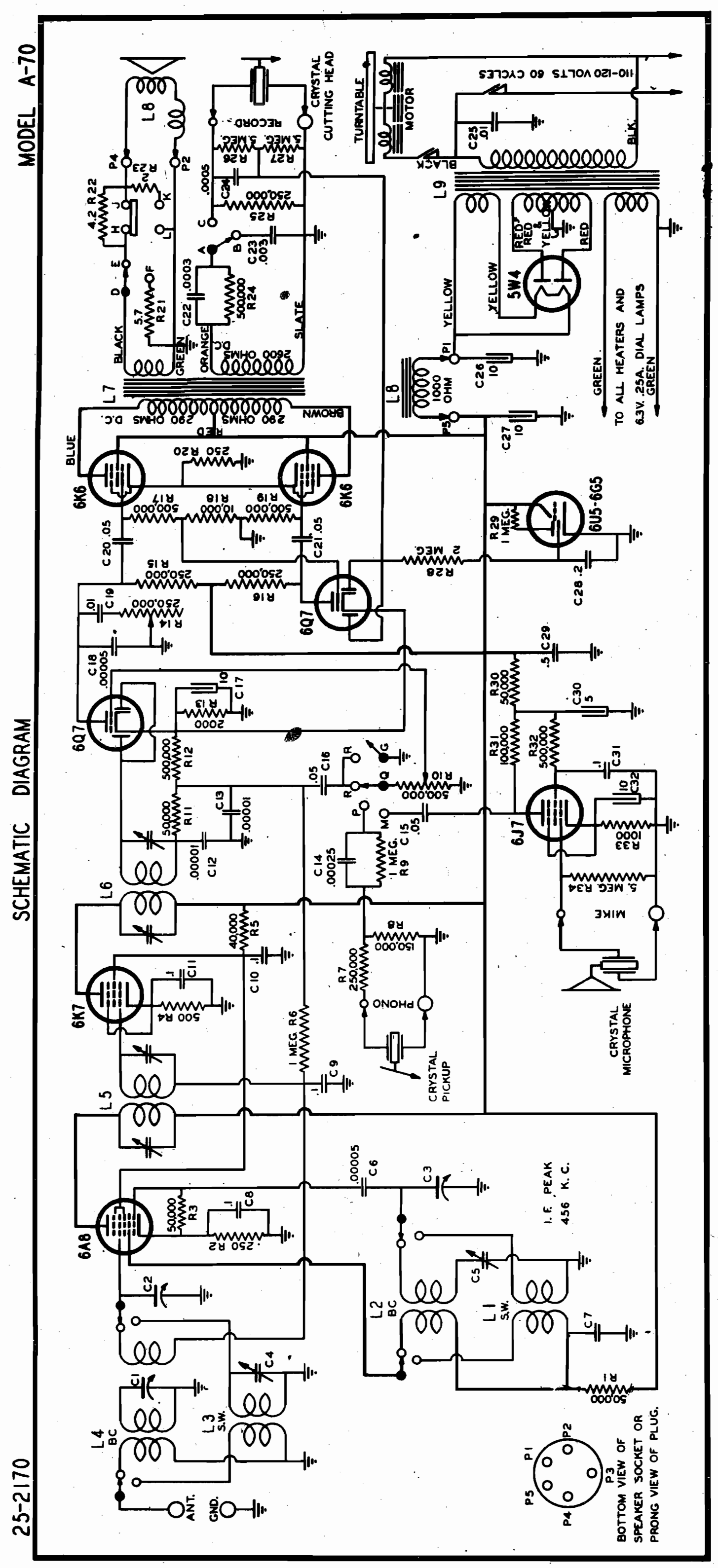
WILCOX-GAY CORPORATION
CHARLOTTE, MICHIGAN, U. S. A.

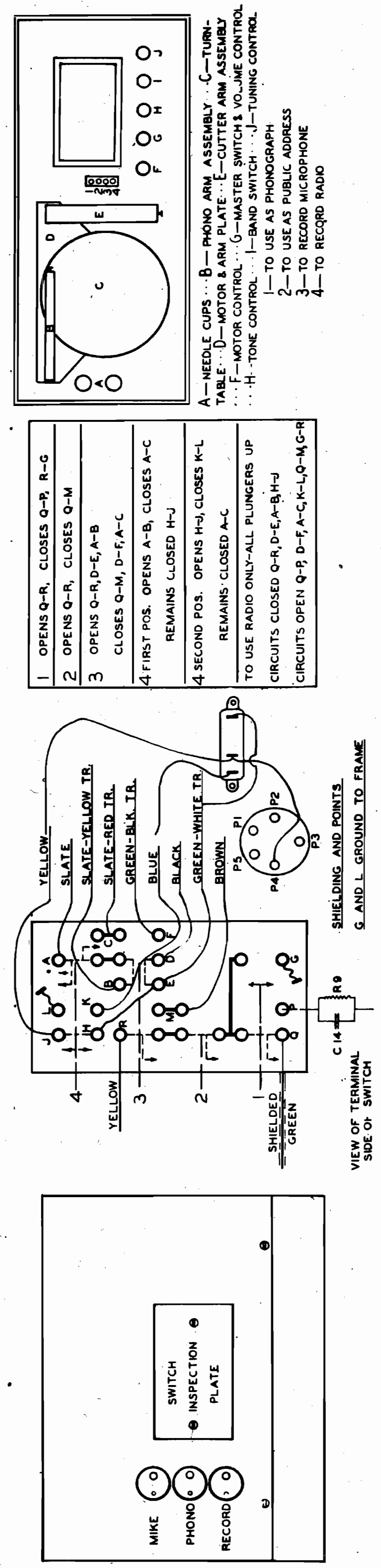
MODEL A-69

WILCOX-GAY CORP.

MODELS A70, A81, A82
Chassis 9J9
Schematic, Switch Data

CHASSIS MODEL 9J9





1	OPENS Q-R, CLOSES Q-P, R-G
2	OPENS Q-R, CLOSES Q-M
3	OPENS Q-R, D-E, A-B; CLOSES Q-M, D-F, A-C
4 FIRST POS.	OPENS A-B, CLOSES A-C; REMAINS CLOSED H-J
4 SECOND POS.	OPENS H-J, CLOSES K-L; REMAINS CLOSED A-C
TO USE RADIO ONLY-ALL PLUNGERS UP	
CIRCUITS CLOSED Q-R, D-E, A-B, H-J	
CIRCUITS OPEN Q-P, D-F, A-C, K-L, Q-M, G-R	

DATE DEC. 12, '39

MODELS A70,A81,A82
Chassis 9J9
Chassis,Voltage

WILCOX-GAY CORP.

VOLTAGE CHART

MODEL A-70 RECORDIO - Line Voltage 115 V. - P1 to Gnd. 360 V. - P5 to Gnd. 260 V. P1 to P5 (spkr. field) 100 V. - Aerial disconnected. All voltages measured against chassis ground except as noted.

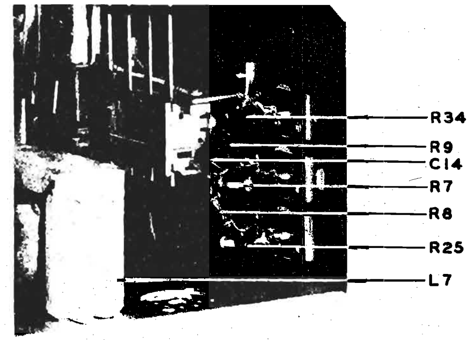
TUBE	POSITION	PLATE	SCREEN	CATHODE
6A8	1st Det.	260	80	2.8
	Osc.	260		
6K7	I.F.	260	80	3.8
6Q7	2nd Det.	100*		1.8
6Q7	Inverter	100*		1.8
6J7	Mike Amp.	35 to 60*	35*	1.3
6K6	Output	250	260	17.5

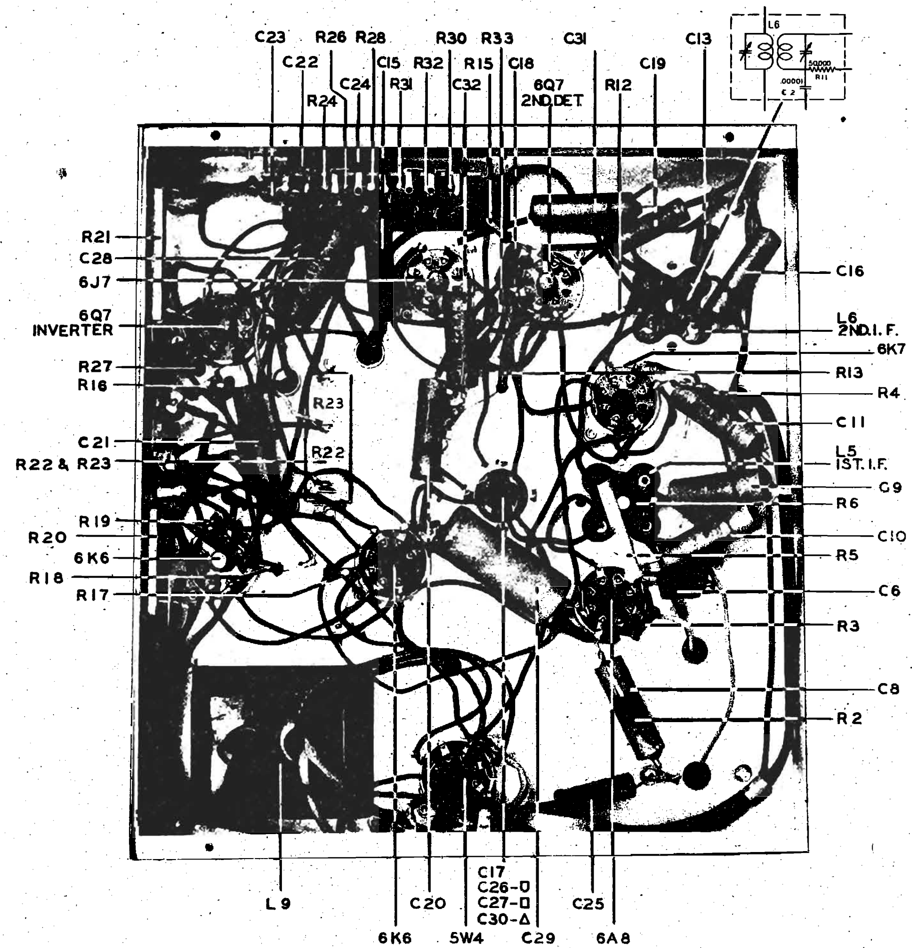
* Not actual voltages due to large values of resistance in circuit between supply voltage and point of measurement. These voltages may vary considerably, depending upon the resistance of voltmeter used.

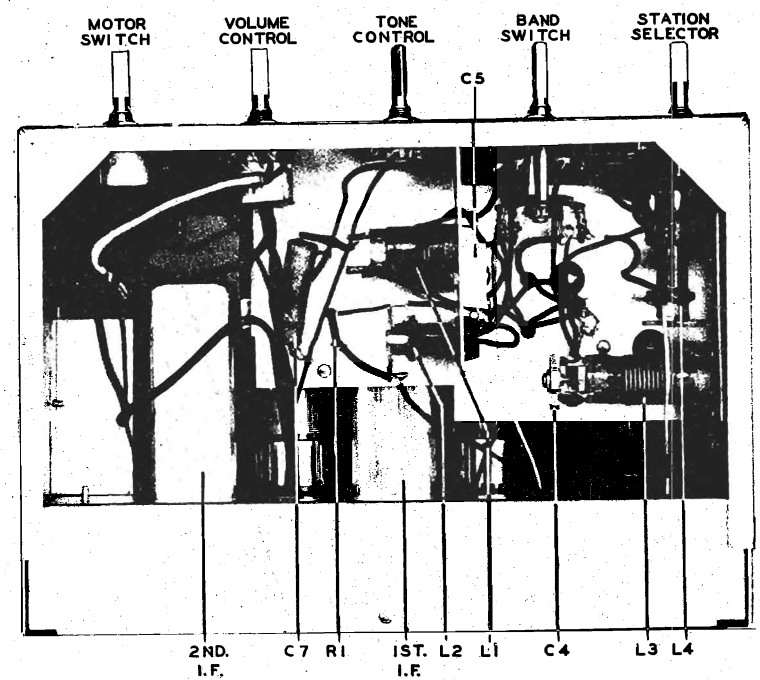
MODEL No.A70-A81-A82
DATE 1-17-40

CHASSIS 9J9

PARTS LAYOUT -







WILCOX-GAY CORP.

FOLLOWER ARM AND LATERAL FEED SCREW ADJUSTMENT

The follower arm assembly shown in FIGURE 7, consists of a steel channel, at one end of which is attached the pivot post, and at the other end a flat phosphor bronze spring, with a portion of the spring bent at a right angle to form the knife-edge tongue which engages the lateral feed screw.

The worm of the turn-table spindle engages the pinion at the end of the lateral feed screw within the gear housing, and as the feed screw revolves, the knife-edge tongue follows the spiral grooves of the feed screw, causing the follower arm to be moved laterally toward the center of the assembly.

The recording arm assembly is mounted at the upper end of the follower arm pivot post, so that as the follower arm moves in a horizontal plane beneath the recorder assembly mounting plate, the recording arm is caused to move laterally above the mounting plate, in the same direction and at the same rate of travel.

The lateral movement of the recording arm, as related to the rotation of the turn-table is such that 109 grooves per inch are cut into the record surface.

ADJUSTMENT OF PIVOT POST HEIGHT

The recording arm assembly is mounted on the upper end of the pivot post, and held in correct position by means of the two hex-head set screws as illustrated in FIGURE 8.

The end of the pivot post should be flush with the bushing on the top side of the arm platform (FIGURES 4,7, and 8) and when the recording arm is lowered to its horizontal position, a small gap should exist between the pivot post bushings X and Y, FIGURE 4. A few drops of light lubricating oil applied to the pivot post between the bushings will provide smooth movement in the raising and lowering of the recording arm.

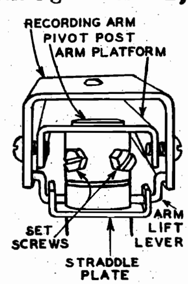


FIG. 8

FOLLOWER ARM HORIZONTAL ADJUSTMENT

Before tightening the hex-head set screws, note that the recording arm is in correct position with respect to the follower arm, so that as the follower arm touches the follower arm stop, the cutting stylus will rest on the outside black line near the center of the record. This will provide a maximum playing time of approximately 2-1/5 minutes for the 6½ inch disc, 3-1/2 minutes for the 8 inch, and 5 minutes for the 10 inch disc.

NOTE: Removal of the straddle plate will allow for greater ease in making the above adjustments.

In the event any adjustment is made which necessitates re-setting the hex-head set screws, it is recommended that a check is made as to the height of the recording arm above the record surface and an adjustment of the arm height made if necessary,

FOLLOWER ARM VERTICAL ADJUSTMENT

With the recording arm lowered to a position so that the bottom of the nose of the arm is 2 inches above the turn-table, the tongue of the phosphor bronze spring should just clear the lateral feed screw.

The adjustment for this height may be accomplished by slightly bending up or down, as required, the flat part of the follower arm near the riveted end of the phosphor bronze spring.

PHOSPHOR BRONZE SPRING ADJUSTMENT

As the recording arm is lowered to recording position, it will be noted that the follower arm is also lowered, causing the phosphor bronze spring tongue to become firmly seated in the bottom of the spiral groove of the lateral feed screw.

The pressure of the phosphor bronze spring, bearing against the lateral feed screw should be sufficiently great so that the knife-edge tongue will not have a tendency to climb out of the grooves in the feed screw, which would result in unevenly spaced grooves cut into the record surface. In extreme cases of insufficient spring pressure bearing against the lateral feed screw, the cutting stylus may have a tendency to cut through into the adjacent previously cut groove.

The pressure should not be so great, however (caused by the follower arm being bent downward too far) that the phosphor bronze spring will be lifted away from the end of the adjusting screw, as the arm is lowered.

It can be seen from the preceeding paragraphs covering the follower arm vertical adjustment and the phosphor bronze spring adjustment, that these two adjustments are somewhat interlocking that is - one adjustment slightly affects the other. An adjustment of the phosphor bronze spring screw, so that the phosphor bronze spring assumes the shape and position shown in FIGURE 7, is usually satisfactory, provided the vertical adjustment has been correctly made.

LATERAL FEED SCREW ADJUSTMENT

An adjustment is provided on the worm and gear housing, to take up the end play of the lateral feed screw. To make this adjustment, loosen the large hexagonal lock nut and turn the slotted screw slowly to the right until all end play of the feed screw is eliminated. Then back off the adjustment slightly and tighten the lock nut. A very slight amount of end play in the feed screw should be noticeable after the lock nut has been tightened.

MODELS A70,A81,A82
MODEL A72
Recorder Notes,Part 1

WILCOX-GAY CORP.

ADJUSTMENT OF CUTTING ARM AND HEAD

When the RECORDIO leaves the factory, all adjustments have been correctly made. To assure this condition, a final check, by observing the over-all performance of the instrument in the making of recordings, is given each RECORDIO before being released for shipment.

It is realized, however, that during shipment, or due to improper handling after installation has been made, adjustments may become altered so that the instrument will not function properly without correction.

These bulletins have been prepared to serve as an aid to the service man in placing the equipment in proper operating condition, when necessary. Also instructive information is included, which may be passed on to other users of RECORDIO, to promote a better understanding of its operation and care.

DEPTH OF CUT

The depth of cut may be observed by holding the record in such a position that a light is reflected from the grooves. If the depth of cut is correct, the grooves will appear to be about as wide as the spaces between them.

The correct depth of cut will produce a thread cut from the record surface that is firm, altho' neither coarse and stiff, nor light and "fluffy".

Provided a new cutting stylus, or one known to be in perfect condition, is being used, the correct depth of cut may be gauged by permitting the cuttings to remain upon the record until completed, then rolling the cuttings in to a hard ball. The size of the ball thus obtained should be approximately, 3/8 inch in diameter, for the 6½ inch record.

EFFECT OF DULL CUTTING STYLUS

With proper care, the cutting stylus will cut dozens of records satisfactorily, before being dulled so that replacement is necessary.

Many times it may be apparent from casual observation, that because an incorrect cut is being made, an adjustment is in order to bring about correct depth of cut, -whereas the trouble may be due to the cutting stylus having become dulled, either accidentally, or through natural wear.

It is well to FIRST TRY A NEW CUTTING STYLUS before making any adjustments, to preclude the necessity for a complete readjustment. Adjustments made with a dulled cutting stylus being used, will have very little effect upon the depth of cut.

The point and cutting edges of the stylus are razor sharp, and it is obvious that if the cutting stylus should bump or scrape against the turn-table or other metal object, it would be dulled and rendered useless.

During periods of inoperation, the recording arm should always be returned to its normal horizontal position to the right of the turn-table.

THE CUTTING STYLUS SHOULD NEVER BE PERMITTED TO REST ON THE TURN-TABLE Its point is infinitesimally small, and compared to its normal pressure of approximately 1½ ounces against the record surface (equivalent to several hundred pounds per square inch) it can readily be realized that if this stylus pressure were exerted against a metal surface, its razor sharp point would be crushed or flattened. A magnifying glass is usually required to observe the damaged condition of the stylus point.

A study of FIGURE 1 will serve to stress the importance of careful adjustment of the depth of cut, and the necessity for using a sharp cutting stylus.

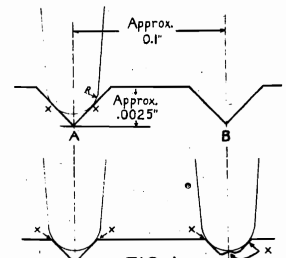


FIG. 1

Line R represents radius of ball-point play-back needle.

A and B - perfectly cut grooves.

C- shallow groove due to improper adjustment

D- shallow imperfect groove due to dulled cutting stylus.

Note width of space between grooves as compared to width of grooves.

Note points of contact X between play back needle point and groove surface.

DEPTH OF CUT ADJUSTMENT

The depth of cut is regulated by an adjustment of the flat head screw on the top of the recording arm, FIGURE 2.

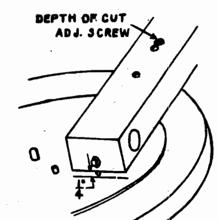


FIG. 2

Turning the screw to the right (clockwise) increases the depth of cut.

Turning the screw to the left (counter-clockwise) decreases the depth of cut.

An examination of the recording arm assembly will show the function of the coil spring attached to the cutting head is to oppose the weight or pressure of the cutting stylus against the record surface, so as to allow cutting a groove of definite depth. For example, it will be seen that turning the screw to the right changes the angle on which the spring acts, so that the groove depth is increased. Turning the screw to the left changes the angle on which the spring acts, so that the groove depth is decreased. It will be seen that the actual spring tension remains very nearly the same and the angle of the axis on which it operates is changed to bring about the possibility of adjusting the depth of cut. (CONTINUED)

WILCOX-GAY CORP.

In some of the early RECORDIO models the adjusting screw was threaded throughout its full length, altho' only the lower portion of the screw over a span of approximately 3/8 inch contributes to the useful range of adjustment. If the adjusting screw is turned in a clockwise direction so as to raise the spring holding lug to the upper threaded portion of the screw, the adjustment will have passed through a "dead-center" position, which will cause a bobbing up-and-down movement of the cutting head.

If it is found that when using a new cutting stylus, the depth of cut is too shallow, and the adjusting screw has been turned to the full clockwise position in the later models, or to the upper limit of the useful range in the older models, this is an indication that the balance spring is too strong. Its tension may be decreased by spreading the coils of the spring with a pair of diagonal cutting pliers.

CAUTION: Care should be used in removing and replacing the cutting head, when occasion arises, so that the balance spring is not stretched to a length that will prevent its returning to normal length and tension.

When the cutting head is in proper adjustment, and the recording arm is raised to a position approximately 25 to 30 degrees from the vertical plane, the cutting head should float freely in its mounting, with equal up and down movement. The balance spring holding lug should be in a position on the adjusting screw approximately 1/4 inch from the shelf which holds the riveted end of the screw. (FIG.7)

Observe that the leads connecting to the cutting head are shaped to form an "S", FIGURE 3, and that these wires are kept in the clear - not touching the balance spring. Also, the wire leads should not be permitted to droop (arm horizontal) so that they will rub on the turn-table. Also observe that the holding tongues of the finger grips on the nose of the recording arm, are bent back sufficiently so as not to interfere with free movement of the cutting head.

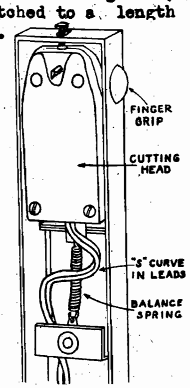


FIG. 3

HEIGHT OF RECORDING ARM ADJUSTMENT

The components of the recording arm assembly are positioned so that the cutting head is parallel, and the stylus is perpendicular to the record surface (FIGURE 7), which condition obtains ONLY with the nose of the recording arm adjusted to the correct height of 1/4 inch above the record surface.

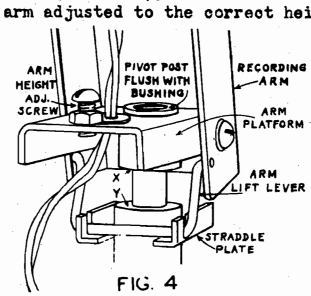


FIG. 4

An adjustable stop (arm height adjusting screw, FIGURES 4 & 7) is mounted on the arm platform to provide a means for adjusting the height of the recording arm. With a blank record on the turn-table and a Wilcox-Gay cutting stylus inserted in the cutting head, the arm height adjustment should be made so that the bottom of the recording arm is 1/4 inch from the record surface as shown in FIGS. 2&7.

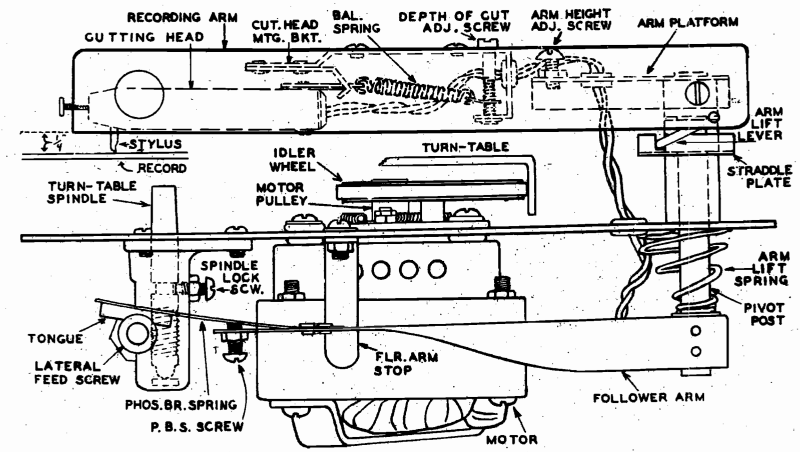


FIG. 7

The connecting wires from the cutting head should not be allowed to double up between the arm and arm platform, but should feed freely through the hole in the platform as the arm is lowered. Otherwise, the wires doubled up may prevent the arm from coming to rest on the head of the height adjusting screw.

There is little likelihood that the arm height adjusting screw will get out of adjustment due to the lock nut becoming loosened. However, there is the possibility that the recording arm may be roughly handled by the operator. If the arm were to be forced backwards after having been raised to its vertical position,- or if, while being lowered to its horizontal position to the right of the turn-table, the arm were dropped or forced downward, the plate on which all of the recording mechanism is mounted, may be bent or sprung slightly. This would destroy the 1/4 inch height adjustment, and readjustment of the arm height adjusting screw would be necessary to bring the nose of the recording arm to exactly 1/4 inch above the record surface.

Also, the straddle plate (FIGURES 4 and 7) may be bent down, which would effect the arm height adjustment. In this event, the straddle plate should be removed and straightened. This is most easily accomplished with the recording arm in the lowered position. Grasp the heel of the arm with the left hand and raise the arm horizontally, at the same time removing the arm lift lever from the slots in the straddle plate. The straddle plate may now be removed by sliding it towards the rear.

The importance of the arm height adjustment may be judged by a study of FIGURE 7. Note that the balance spring serves to hold the knife-edge

(CONTINUED)

MODELS A70, A81, A82
Record Notes, Part 3
Alignment, Trimmers

WILCOX-GAY CORP.

MODEL A72
Recorder Notes, Part 3

MODELS A70. A81 and A82 NOTES CONTINUED

pivot of the cutting head mounting, fully seated in the "V" shape trunnion bearing of the cutting head mounting bracket. Also, that the "pull of the spring is slightly downward, as well as horizontal.

The initial tension and length of the balance spring must be such that when adjusted to the proper tension to produce the correct depth of cut, the spring holding lug will be positioned on the adjusting screw as shown, to create a slight downward "pull" on the cutting head mounting.

As the stylus end of the cutting head is raised and lowered slightly, when cutting records which are not perfectly flat, the cutting stylus varies from its perpendicular plane, and the angle of the cutting edges of the stylus also vary. This tends to produce a varying depth of cut which would place a varying load on the motor, resulting in a variation in the average pitch or tone of the recorded music or speech. This effect is commonly called "wow". However the spring tension, and consequently the stylus pressure, also varies. This variation in stylus pressure opposes the effect of the varying stylus position, resulting in a substantially uniform depth of cut.

It can be seen that if the balance spring were adjusted to a horizontal position with respect to the plane of the cutting head - -

(a) - the downward "pull" of the spring would be lost, resulting in a pronounced variation in the depth of cut when cutting a record having a slightly warped surface.

(b) - the cutting stylus would have a tendency to chatter or dig into the record, due to the "dead-center" position of the spring.

It can also be seen that if the arm were adjusted to an incorrect height above the record surface, the cutting stylus would not be perpendicular, and the tendency towards a greater variation in the depth of cut, which would be more pronounced, would not be fully compensated by the counteracting effect of the varying tension of the balance spring.

MODEL No. A-70
DATE DEC. 12, '39

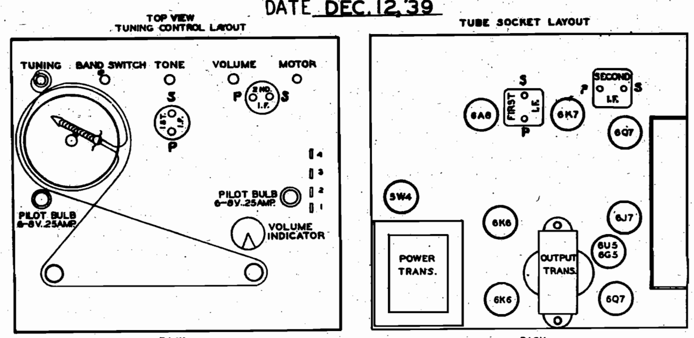


FIGURE 5

MODEL A70

Chassis Model 9J9

An OUTPUT METER or other indicating device should be used for accuracy in making ganging adjustments.

If an output meter is not available, the magic eye (6U5) may be used as an output indicator as follows:

(a) Depress push-button No. 4 "To Record Radio".

(b) Disconnect cutting-head from chassis.

(c) Adjust volume control to near maximum.

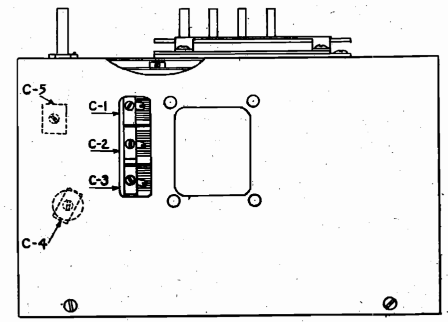


FIG. 6

Connect signal generator to control grid of 6A8 tube. Make connection to side of middle section, (C2) of condenser gang. (FIG. 6)

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	FIGURE NUMBER
456 K.C.	1500 K.C.	Broadcast	2nd. I.F.-S*	5
" "	" "	"	" " -P	5
" "	" "	"	1st. I.F.-S	5
" "	" "	"	" " -P	5

Connect signal generator to ANT. and GND. terminals.

Turn condenser gang to full maximum capacity and check position of dial pointer with reference line on the scale, just to the right of 550 K.C. calibration.

600 K.C.	600 K.C.	Broadcast	L.F. Pad. (C-5)	6
1400 K.C.	1400 K.C.	"	Osc. (C-3)	6
1400 K.C.	1400 K.C.	"	Det. (C-2)	6
1400 K.C.	1400 K.C.	"	Pre-Sel. (C-1)	6
Not used. **	15-16 M.C.	Short Wave	Pre-Sel. (C-4)	6

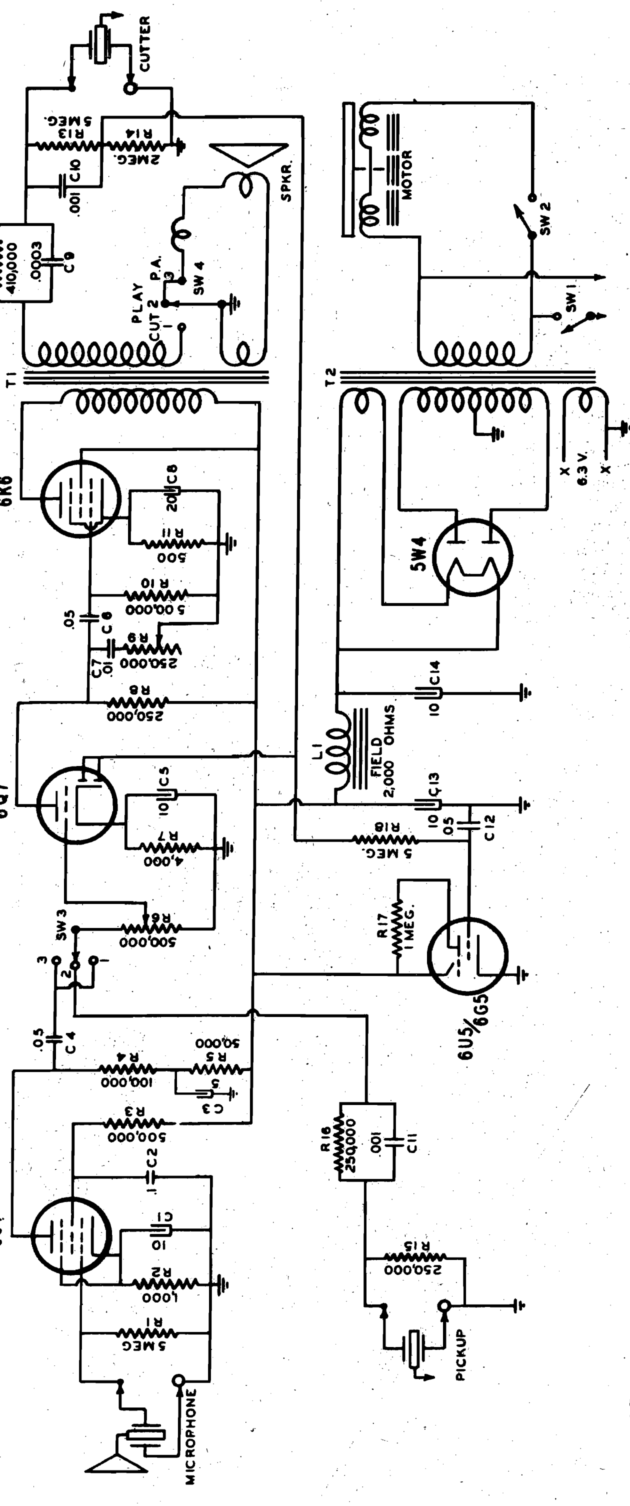
*If the trimming condenser on the secondary of the second I.F. transformer is adjusted throughout its full range, two "peaks" will be observed. The correct peak is the one of lowest capacity in the adjustment of the trimmer. The I.F. trimming condensers when properly adjusted will rest at approximately one and one half turns from the fully closed position.

**Connect antenna to receiver, and adjust dial so that no station is received. Advance volume control until a fair volume of noise is received. Adjust trimmer for greatest noise.

MODEL A72 Recordio
Chassis 9Q5
Schematic

WILCOX-GAY CORP.

CHASSIS 9Q5 SCHEMATIC DIAGRAM MODEL A-72

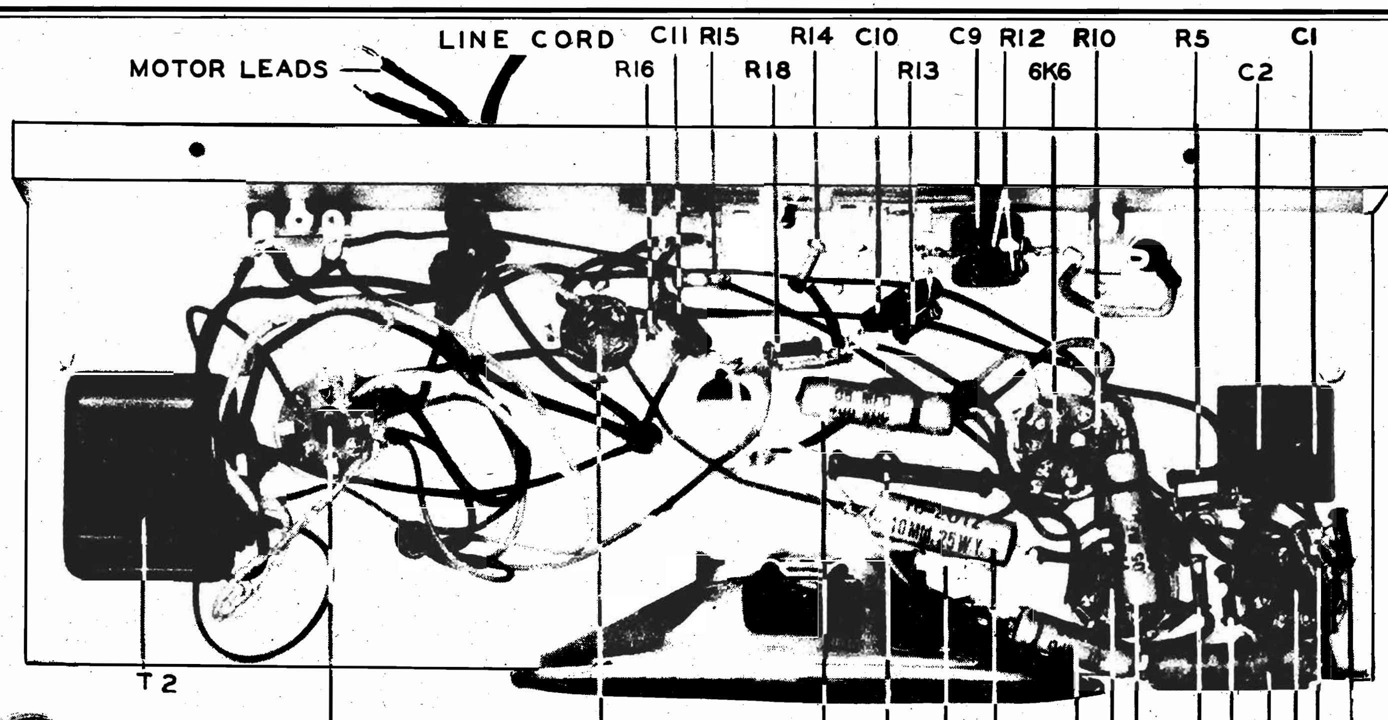


PART NO.	CODE	NAME
18-2012	C1	10 MFD. 25 W.V. ELECT. COND.
75-2005	C2	.1 MFD. 200 VOLT PAPER COND.
18-2017	C3	5 MFD. 350 W.V. ELECT. COND.
75-2004	C4	.05 MFD. 400 W.V. PAPER COND.
18-2012	C5	10 MFD. 25 W.V. ELECT. COND.
75-2004	C6	.05 MFD. 400 W.V. PAPER COND.
75-2003	C7	.01 MFD. 400 W.V. PAPER COND.
18-2017	C8	20 MFD. 25 W.V. ELECT. COND.
76-2017	C9	.0003 MFD. 3000 VOLT MICA COND.
76-2015	C10	.001 MFD. 1000 VOLT MICA COND.
76-2015	C11	.001 MFD. 1000 VOLT MICA COND.
75-2004	C12	.05 MFD. 400 W.V. PAPER COND.
18-2017	C13	10 MFD. 450 W.V. ELECT. COND.
18-2017	C14	10 MFD. 450 W.V. ELECT. COND.
84-2069	L1	6½" SPEAKER WITH 2000 OHM FIELD
53-2020	R1	5 MEGOHM 1/4 WATT RESISTOR
53-2023	R2	1,000 OHM 1/4 WATT RESISTOR
53-925	R3	500,000 OHM 1/4 WATT RESISTOR
53-923	R4	100,000 OHM 1/4 WATT RESISTOR
53-898	R5	50,000 OHM 1/4 WATT RESISTOR
19-2014	R6	500,000 OHM VOL. CONTROL & SWITCH
53-1149	R7	4,000 OHM 1/4 WATT RESISTOR
53-924	R8	250,000 OHM 1/4 WATT RESISTOR
19-2009	R9	250,000 OHM TONE CONTROL
53-925	R10	500,000 OHM 1/4 WATT RESISTOR
53-2031	R11	500 OHM 1 WATT RESISTOR
53-926 53-1235	R12	410,000 OHM 1 MEGOHM / 700,000 Ohm } IN PARALLEL
53-2020	R13	5 MEGOHM 1/4 WATT RESISTOR
53-2024	R14	2 MEGOHM 1/4 WATT RESISTOR
53-924	R15	250,000 OHM 1/4 WATT RESISTOR
53-924	R16	250,000 OHM 1/4 WATT RESISTOR
53-926	R17	1 MEGOHM 1/4 WATT RESISTOR
53-2020	R18	5 MEGOHM 1/4 WATT RESISTOR
19-2014	SW1	MASTER SWITCH ON VOLUME CONTROL
66-2023	SW2	MOTOR OFF-ON SWITCH
66-2028	SW3 SW4	P.A. - CUT - PLAY SWITCH
81-2008	T1	OUTPUT TRANSFORMER
80-2030	T2	POWER TRANSFORMER
2-2007		FOLLOWER ARM ASSEMBLY
2-2008		RECORDER ARM ASSEMBLY
2-2009		PICKUP ARM ASSEMBLY
2-2010		IDLER ARM
5-2321		CUTTING HEAD MTG. BRACKET ASSEM.
7-2037		SNAP BUTTON (NICKLE PLATED)
9-2012		SHIELDED MICROPHONE CABLE ASSEM.
16-2005		IDLER WHEEL STUD CLIP
20-2026		LINE CORD
20-2027		MOTOR CORD
23-2022		NEEDLE CUP & COVER
23-2023		CRYSTAL CUTTING HEAD
23-2024		M22 CRYSTAL CARTRIDGE
23-2029		CUTTING HEAD CUSHIONS
27-2024		2 7/8 DIA. DISC
40-2045		SELECTOR SWITCH KNOB
40-2046		VOLUME CONTROL KNOB
40-2047		MOTOR SWITCH KNOB
40-2049		TONE CONTROL KNOB
46-2002		ARM LIFT LEVER
47-2002		MICROPHONE
47-2003		MICROPHONE STAND
47-2005		MICROPHONE HANDLE
47-2006		RECORDER MOTOR 110 V. 60 CYCLE AC
48-409		8-32 X 5/16 HEX NUTS
48-1393		WING NUT (10/32)
48-2009		PICKUP ARM MTG. NUT
48-2010		MOTOR ASSEMBLY NUTS
51-2059		ROCKER PLATE
51-2063		PIVOT POST STRADDLE PLATE
51-2065		ROCKER CLAMPING PLATE
51-2075		PIVOT SADDLE PLATE & BUSHING ASSEM.
51-2083		ESCUTCHEON PLATE
52-2128		10" TURNTABLE
52-2129		2 PRONG PLUG (MALE)
52-2133		RECORD DRAG PIN
52-2139		MOTOR PULLEY
55-2007		RECORDER ASSEM. UNIT
57-2030		BINDING HEAD SCREW
57-2056		NEEDLE SCREW
57-2069		MACHINE SCREW (8-32 X 5/8)
57-2070		MACHINE SCREW (8-32 X 1/4)
57-2077		FEED SCREW ASSEM.
57-2080		FEED SCREW
58-2036		TURNTABLE SHAFT
66-2023		OFF-ON SWITCH
66-2028		TWO POLE THREE POSITION SWITCH
67-2046		PIVOT POST RETURN SPRING
67-2048		BAFFLE SCREEN
67-2049		CUTTING ARM SPRING
67-2050		DRAG PIN SPRING
67-2053		VENTILATING SCREEN
67-2057		TURNTABLE DRIVE WHEEL TENSION SPRING
73-1335		LOCKWASHERS (9/16 O.D.)
73-2051		THRUST WASHER FOR IDLER WHEEL
73-2052		MOUNTING WASHER FOR IDLER ARM
[illegible]-2010		IDLER WHEEL
87-2004		LID SUPPORT
87-2010		FINGER GRIPS (5/8 DIA.)

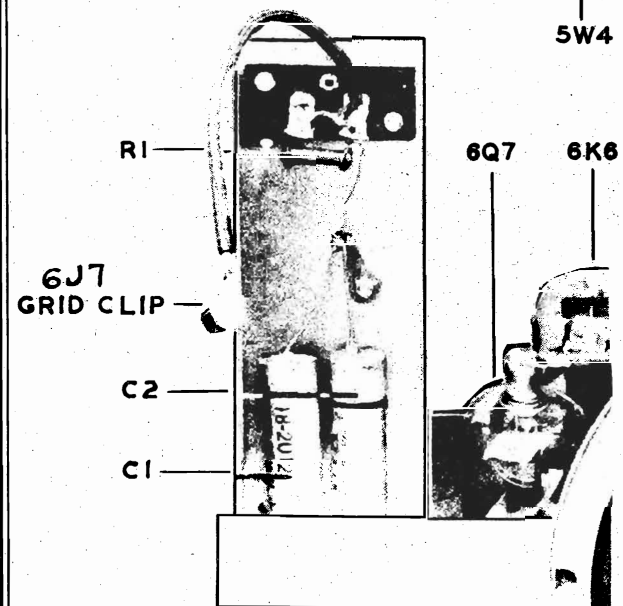
DATE 1-17-40

MODEL A72 Recordio
Chassis, Voltage
Socket

WILCOX-GAY CORP.



CAP. CODE
C3 - Δ
C8
C13 - □
C14 - □



VOLTAGE CHART

Line Voltage 118
C-14 to Gnd. 315
C-13 to Gnd. 235
C-13 to C-14 (spkr. field) 80

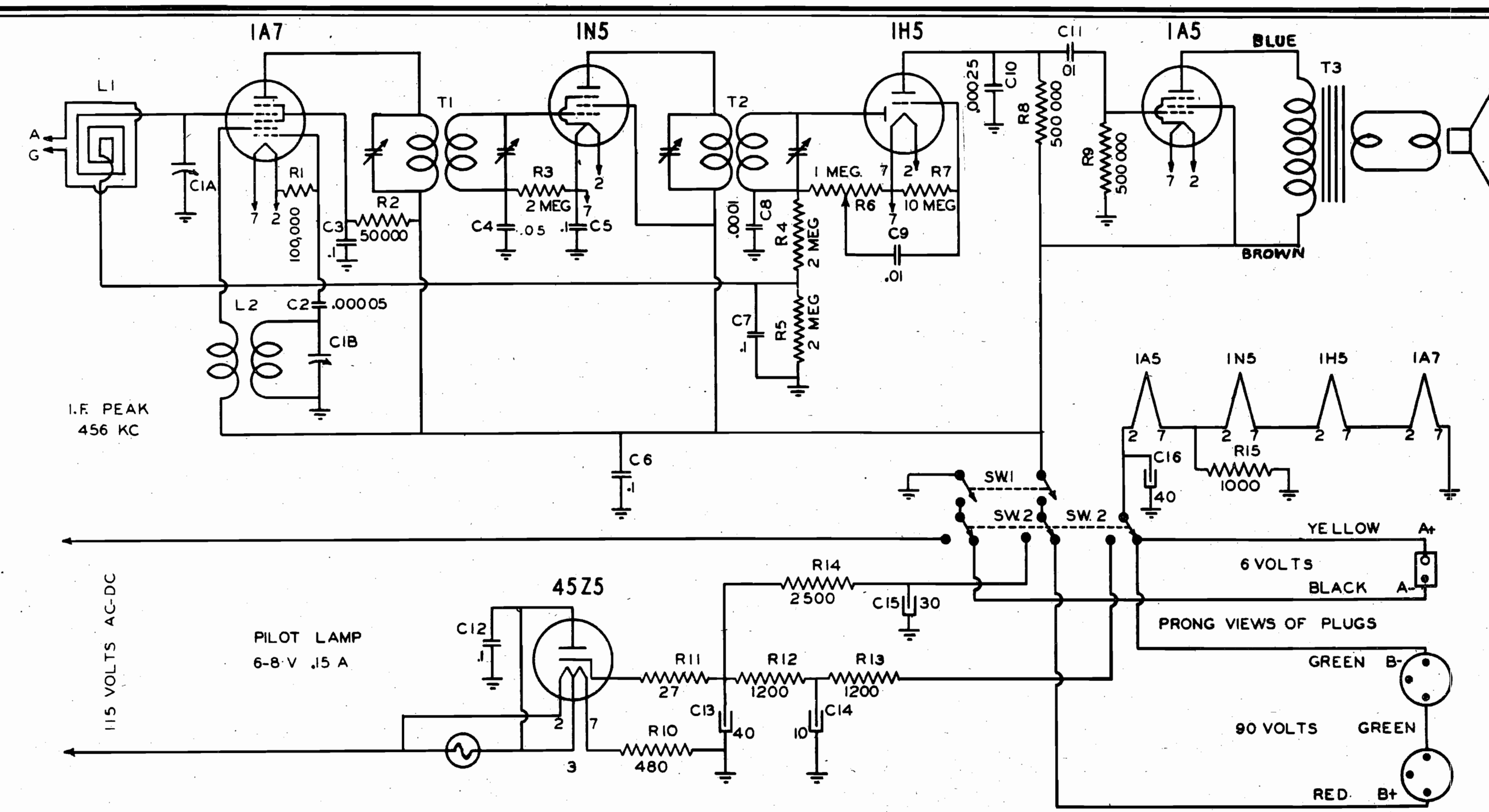
Volume Control at min.
All voltage measurements made against Gnd.(chassis) except as noted.

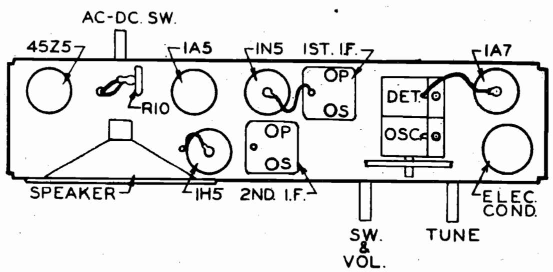
TUBE	POSITION	PLATE	SCREEN	Cathode
6J7	Mike Amp.	45*	40*	1.2
6Q7	Amp.-Vol. Ind. Rect.	72*		1.4
6K6	Output	222	235	15.0

*Not actual voltages due to large values of resistance in the circuit between supply voltage and point of measurement. These voltage values may vary considerably, depending upon the resistance of voltmeter used.

WILCOX-GAY CORP.

MODEL A73
Chassis 9E5
Schematic, Socket Trimmers



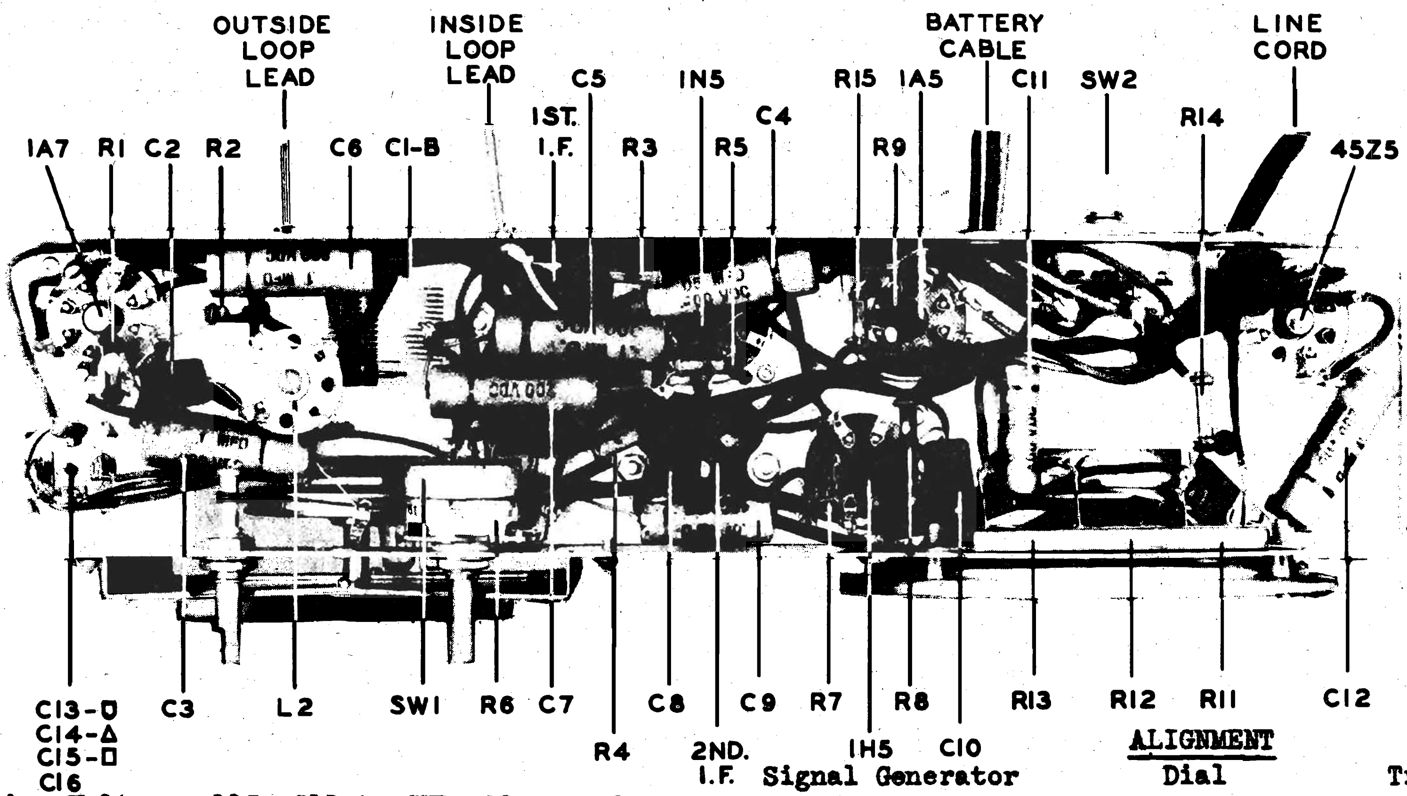


MODEL No. A-73
DATE 2-5-40

77-2022	C1	2 GANG VARIABLE COND.
76-2011	C2	.00005 MFD. 1000 V. MICA COND.
75-2005	C3	.1 MFD. 200 V. PAPER COND.
75-2005	C4	.05 MFD. 200 V. PAPER COND.
75-2005	C5	.1 MFD. 200 V. PAPER COND.
75-2005	C6	.1 MFD. 200 V. PAPER COND.
75-2005	C7	.1 MFD. 200 V. PAPER COND.
76-2012	C8	.0001 MFD. 1000 V. MICA COND.
75-2003	C9	.01 MFD. 400 V. PAPER COND.
76-2013	C10	.00025 MFD. 1000 V. MICA COND.
75-2003	C11	.01 MFD. 400 V. PAPER COND.
75-2005	C12	.1 MFD. 200 V. PAPER COND.
18-2018	C13	40 MFD. 150 V. DRY ELECT. COND.
18-2018	C14	10 MFD. 150 V. DRY ELECT. COND.
18-2018	C15	30 MFD. 150 V. DRY ELECT. COND.
18-2018	C16	40 MFD. 50 V. DRY ELECT. COND.
17-2246	L1	LOOP ANTENNA ASSEMBLY
17-2251	L2	OSCILLATOR COIL ASSEMBLY
53-924	R1	100,000 OHM 1/4 WATT RESISTOR
53-898	R2	50,000 OHM 1/4 WATT RESISTOR
53-2024	R3	2 MEGOHM 1/4 WATT RESISTOR
53-2024	R4	2 MEGOHM 1/4 WATT RESISTOR
53-2024	R5	2 MEGOHM 1/4 WATT RESISTOR
19-2017	R6	1 MEGOHM VOL. CONT. & SWITCH
53-2008	R7	10 MEGOHM 1/4 WATT RESISTOR
53-925	R8	500,000 OHM 1/4 WATT RESISTOR
53-925	R9	500,000 OHM 1/4 WATT RESISTOR
53-2036	R10	480 OHM 10 WATT RESISTOR
53-2035	R11	27 OHM 1/4 WATT RESISTOR
53-2035	R12	1,200 OHM 3 WATT RESISTOR
53-2035	R13	1,200 OHM 3 WATT RESISTOR
53-2002	R14	2,500 OHM 1/4 WATT RESISTOR
53-2023	R15	1,000 OHM 1/4 WATT RESISTOR
68-2051	T1	FIRST I.F. TRANSFORMER
68-2052	T2	SECOND I.F. TRANSFORMER
64-2073	T3	5" SPKR. SINGLE 1A5 TRANS. & PERM. MAG. FIELD
19-2017	SW1	D.P.S.T. SWITCH & VOL. CONT.
66-2033	SW2	3 P.D.T. SWITCH, BATT. AC-DC
7-2038		DIAL BEZEL
20-2032		INDEX CORD & SPRING ASSEM.
39-2010		OFF-ON INDICATOR
40-2028		CONTROL KNOBS.
40-2050		BATT. AC-DC SWITCH KNOB
51-2089		BEZEL PLATE
52-2141		TWO PRONG PLUG
52-2142		THREE PRONG PLUG
52-2144		POINTER
56-2149		DIAL SCALE

MODEL A73
Voltage, Alignment
Chassis, Socket

WILCOX-GAY CORP.



VOLTAGE: Line Voltage, 115; C13 to GND, 113.5; C14 to GND, 60; C16 to GND, 5.6; C15 to GND, 90. Aerial disconnected. Vol. cont. at min. All volt. measurements made against ground (chassis).

Tube	Position	Plate	Screen	Cathode*
1A7	1st. Det.	88	45	1.4
	Oscillator	88		
1N5	I.F.	88	90	4.2
1H5	2nd. Det.	32.5**		2.8
1A5	Output	83.5	90	5.6
45Z5	Rectifier			115.0

(*) Cath. volt. of all tubes with exception of 45Z5 is measured from filament prong #2 to ground.
(**) Not actual volt. due to large value of resistance in plate cir. May vary considerably due to resistance of voltmeter used.

ALIGNMENT

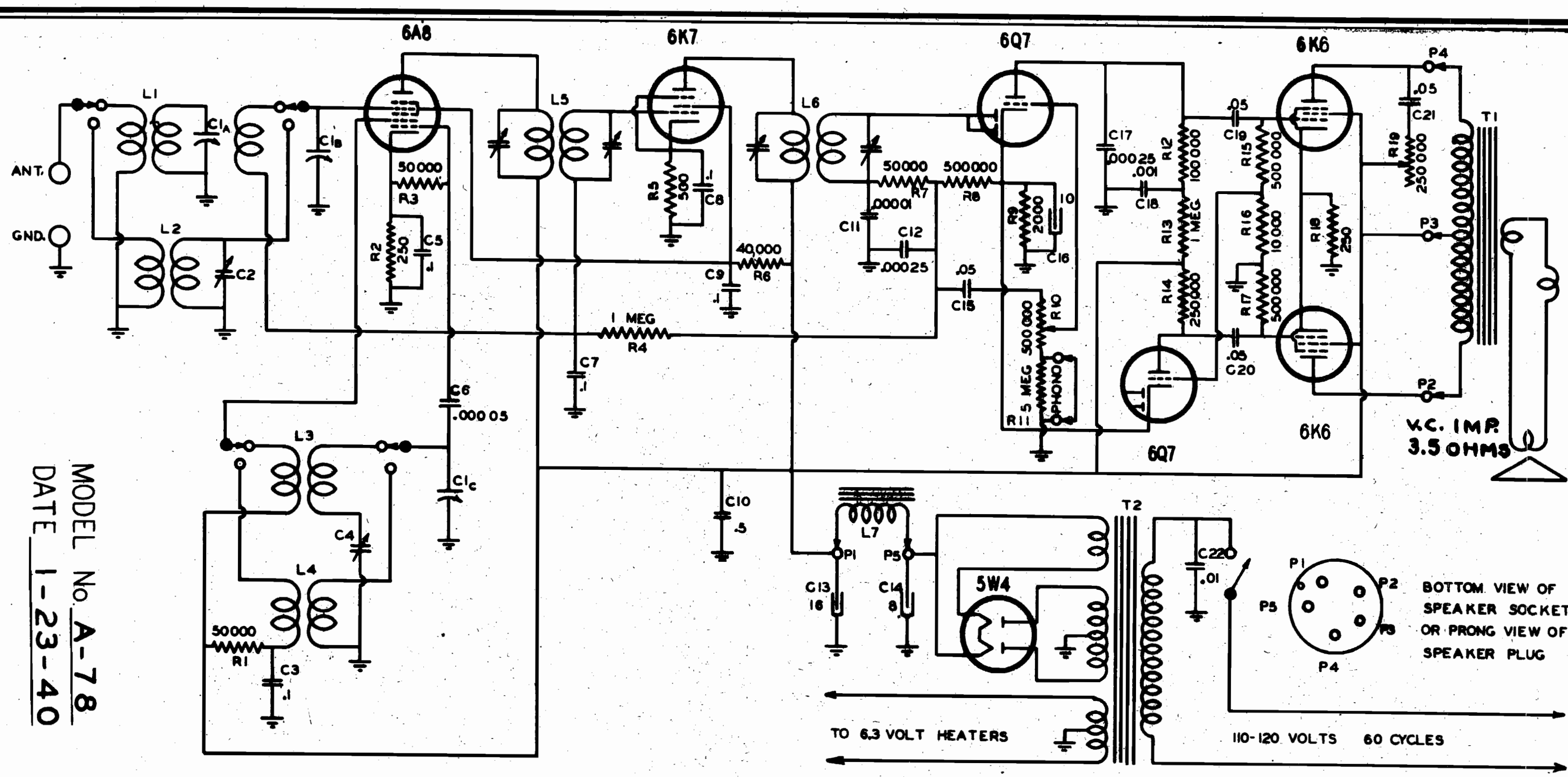
Signal Generator Frequency	Dial Position	Trimmer Location
456 KC	1500 KC	2nd I.F.--S
" "	" "	" " P
" "	" "	1st I.F.--S
" "	" "	" " P
1400 KC	1400 KC	Osc. C1-B
1400 KC	1400 KC	Det. C1-A*

(*) C1-A trimmer is located on rear cover, and is connected across loop antenna. NOTE: An adj. of this trimmer should be made each time the receiver is changed from use with loop antenna to use with outside antenna, and vice versa. As resonance is approached by adj. of trims., sig. gen. attenuator should be adj. for min. sig. that will provide a low reading on the output indicator.

MODEL A79
Alignment, Voltage

WILCOX-GAY CORP.

MODEL A78
Chassis 9P7
Schematic, Socket, Voltage
Trimmers, Alignment



MODEL No. A-78
DATE 1-23-40

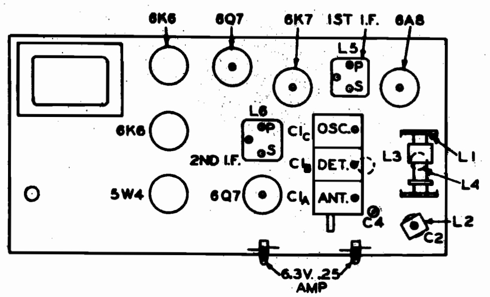
VOLTAGE AND ALIGNMENT DATA

SIGNAL GENERATOR	DIAL	WAVE BAND SWITCH	TRIMMER
456 KC	1500 KC	Broadcast	(4) I-F
600 "	600 "	"	Padder C-4
1400 "	1400 "	"	Det. C1-B; Ant. C1-A
			Osc. C1-C
Not Used*	15-16 MC	Short Wave	Ant. C-2

(*) Conn. Ant. to receiver & adj. dial so no station is received. Advance vol. cont. until fair noise vol. is received. Adj. trim. for greatest noise.

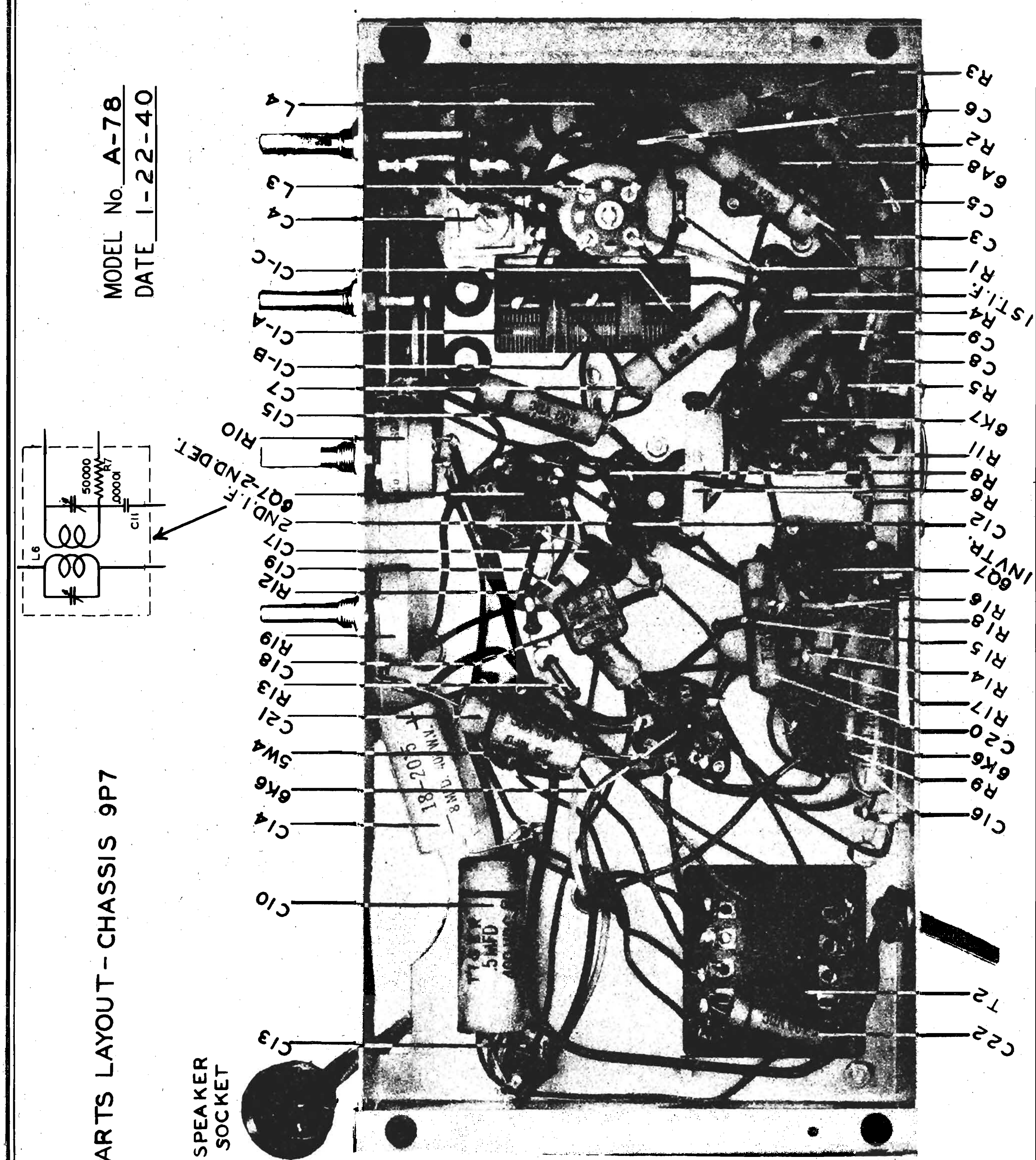
TUBE	POSITION	PLATE	SCREEN	CATHODE	TUBE	POSITION	PLATE	SCREEN	CATHODE
6A8	1st Det.	225	80	2.8	6Q7	2nd Det.	33*		1.2
	Osc.	225			6Q7	Inverter	65*		1.2
6K7	I.F.	225	80	3.2	6K6	Output	220	225	15.0

(*) Not actual voltages due to large values of resistance in circuit bet. supply volt. & point of measurement. Values vary considerably depending upon resistance of voltmeter used.



MODEL A78
Chassis

WILCOX-GAY CORP.

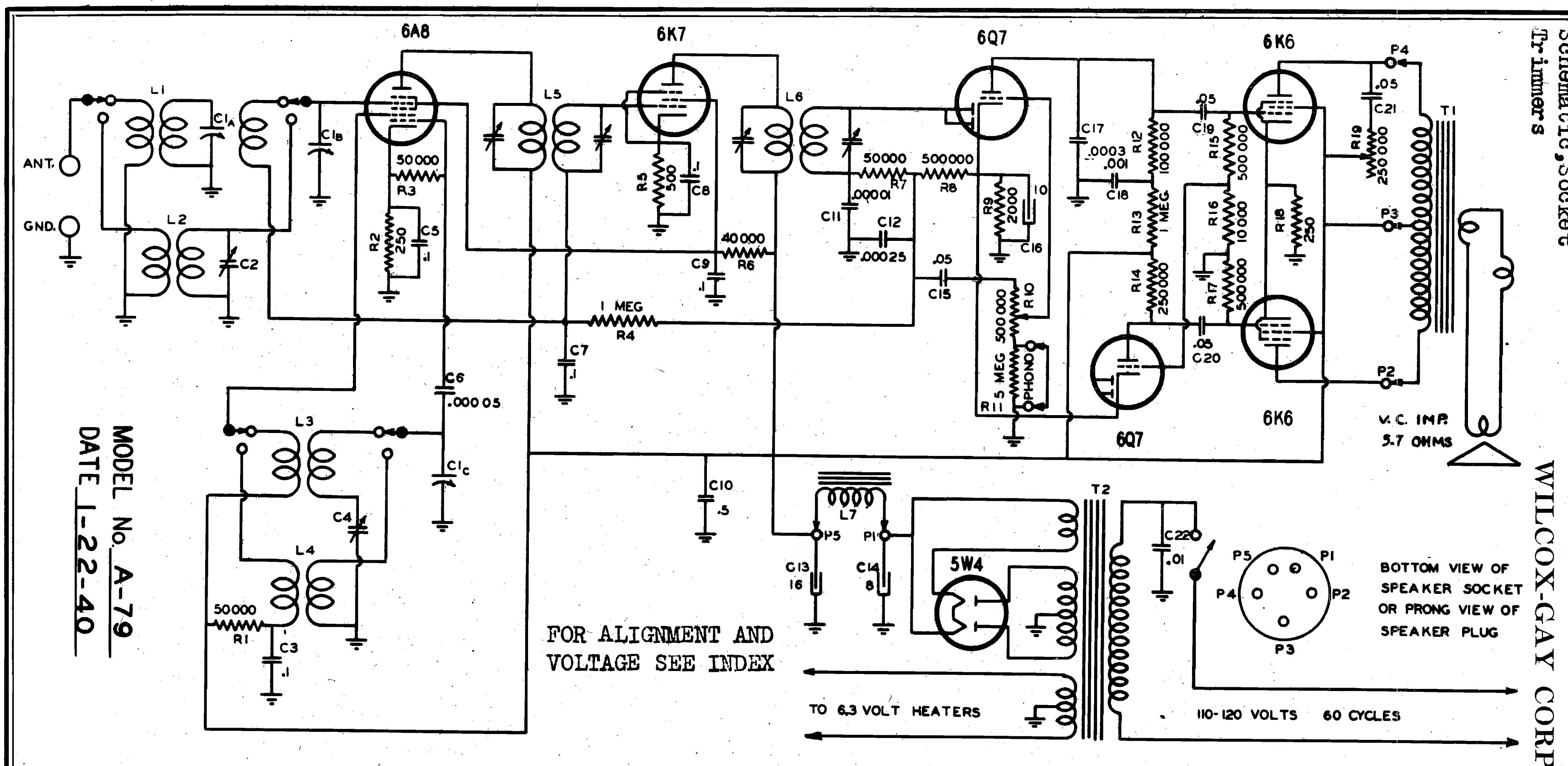


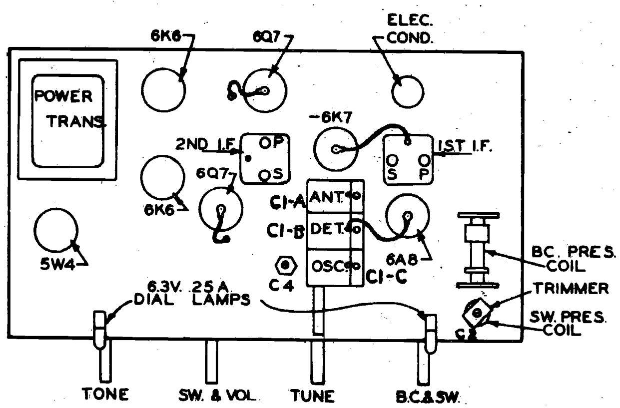
PARTS LAYOUT - CHASSIS 9P7

Schematic, Socket
Trimmers

WILCOX-GAY CORP.

MODEL A79
Chassis 9N7





PART NO	CODE	NAME
77-2019	C1	3 GANG VARIABLE COND.
78-2010	C2	SHORT WAVE R.F. TRIMMER COND.
75-2005	C3	.1 MFD. 200 VOLT PAPER COND.
78-2035	C4	BC OSC. SERIES TRIMMER
75-2005	C5	.1 MFD. 200 VOLT PAPER COND.
76-2011	C6	.00005 MFD. 1000 VOLT MICA COND.
75-2005	C7	.1 MFD. 200 VOLT PAPER COND.
75-2005	C8	.1 MFD. 200 VOLT PAPER COND.
75-2005	C9	.1 MFD. 200 VOLT PAPER COND.
75-2012	C10	.5 MFD. 400 VOLT PAPER COND.
76-2010	C11	.00001 MFD. 1000 VOLT MICA COND.
76-2013	C12	.00025 MFD. 1000 VOLT MICA COND.
19-2006	C13	16 MFD. 250 W.V. ELECT. COND.
18-2015	C14	8 MFD. 400 W.V. ELECT. COND.
75-2004	C15	.05 MFD. 400 VOLT PAPER COND.
18-2012	C16	10 MFD. 25 VOLT ELECT. COND.
76-2009	C17	.0003 MFD 1,000 VOLT MICA
76-2015	C18	.001 MFD. 1000 VOLT MICA COND.
75-2004	C19	.05 MFD. 400 VOLT PAPER COND.
75-2004	C20	.05 MFD. 400 VOLT PAPER COND.
75-2004	C21	.05 MFD. 400 VOLT PAPER COND.
75-2003	C22	.01 MFD. 400 VOLT PAPER COND.

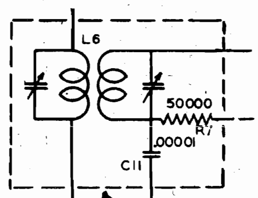
PART NO.	CODE	NAME
64-2070	T1	12" SPEAKER 6K6 PP OUTPUT TRANS.
80-2022	T2	POWER TRANSFORMER
53-898	R1	50,000 OHM 1/4 WATT RESISTOR
53-1062	R2	250 OHM 1/2 WATT RESISTOR
53-898	R3	50,000 OHM 1/4 WATT RESISTOR
53-926	R4	1 MEGOHM 1/4 WATT RESISTOR
53-1063	R5	500 OHM 1/2 WATT RESISTOR
53-2032	R6	40,000 OHM 1 WATT RESISTOR
53-898	R7	50,000 OHM 1/4 WATT RESISTOR
53-925	R8	500,000 OHM 1/4 WATT RESISTOR
53-1144	R9	2,000 OHM 1/4 WATT RESISTOR
19-2014	R10	500,000 OHM VOLUME CONTROL
53-2020	R11	5 MEGOHM 1/4 WATT RESISTOR
53-923	R12	100,000 OHM 1/4 WATT RESISTOR
53-926	R13	1 MEGOHM 1/4 WATT RESISTOR
53-924	R14	250,000 OHM 1/4 WATT RESISTOR
53-925	R15	500,000 OHM 1/4 WATT RESISTOR
53-920	R16	10,000 OHM 1/4 WATT RESISTOR
53-925	R17	500,000 OHM 1/4 WATT RESISTOR
53-2011	R18	250 OHM 2.5 WATT RESISTOR
19-2009	R19	250,000 TONE CONTROL

PART NO.	CODE	NAME
17-2243	L1	BROADCAST ANT. COIL ASSEM.
17-2242	L2	SHORT WAVE ANT. COIL ASSEM.
17-2227	L3	BROADCAST OSC. COIL ASSEM.
17-2149	L4	SHORT WAVE OSC. COIL ASSEM.
68-2051	L5	FIRST I.F. TRANS. ASSEM.
68-2056	L6	SECOND I.F. TRANS. ASSEM.
64-2070	L7	12" SPEAKER; 1,000 OHM FIELD
5-2182		SCALE MTG. SADDLE BRACKET
5-2183		SCALE MTG. CLAMP BRACKET
20-2029		INDEX CORD & SPRING ASSEM.
27-2021		DRIVE DRUM ASSEM.
28-2038		ESCUTCHEON & CRYSTAL
57-2078		ESCUTCHEON SCREWS
40-2027		KNOBS
52-2143		POINTER ASSEMBLY
56-2145		GLASS SCALE
66-2013		WAVE BAND SWITCH

MODEL A79
Chassis

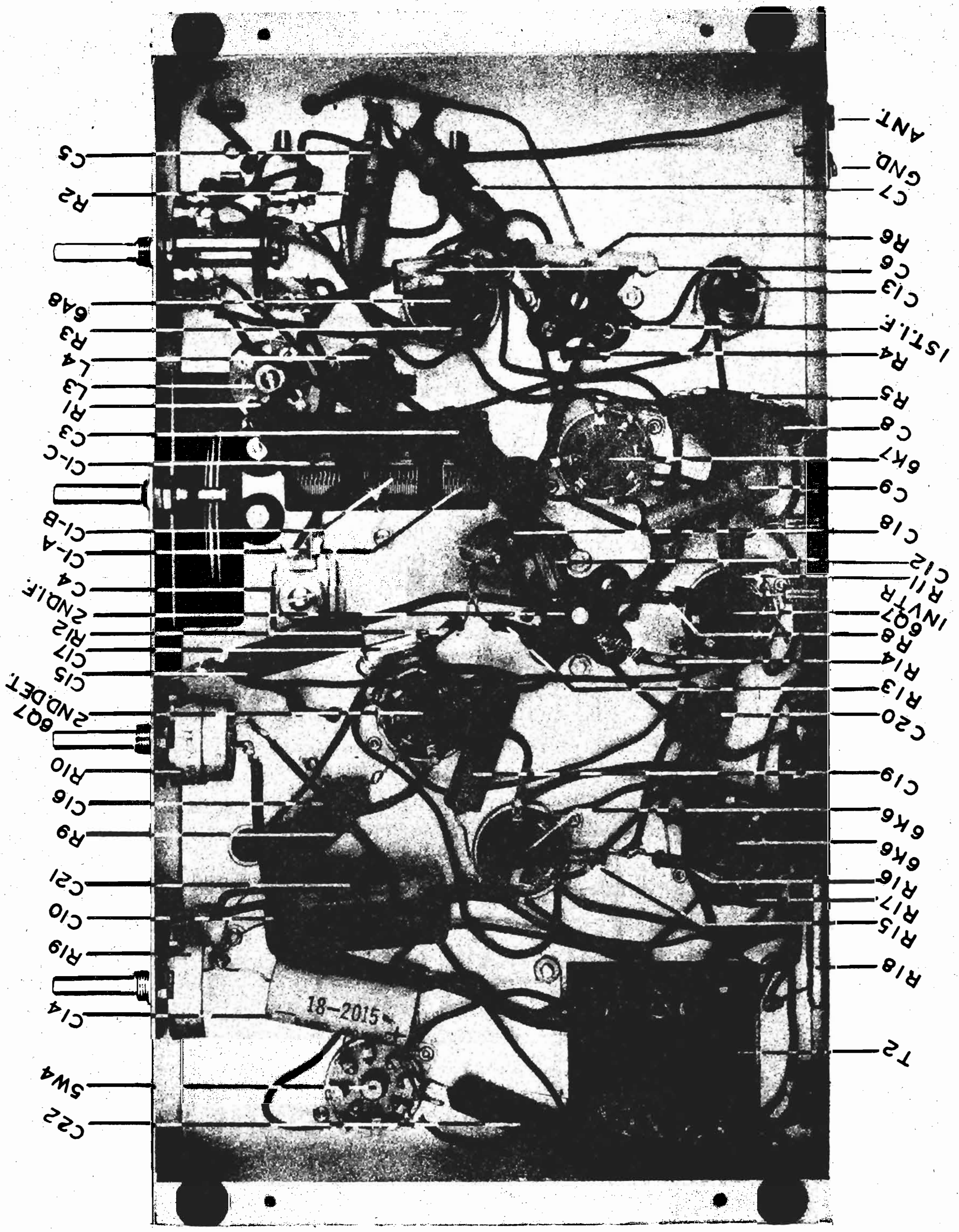
WILCOX-GAY CORP.

CHASSIS 9N7



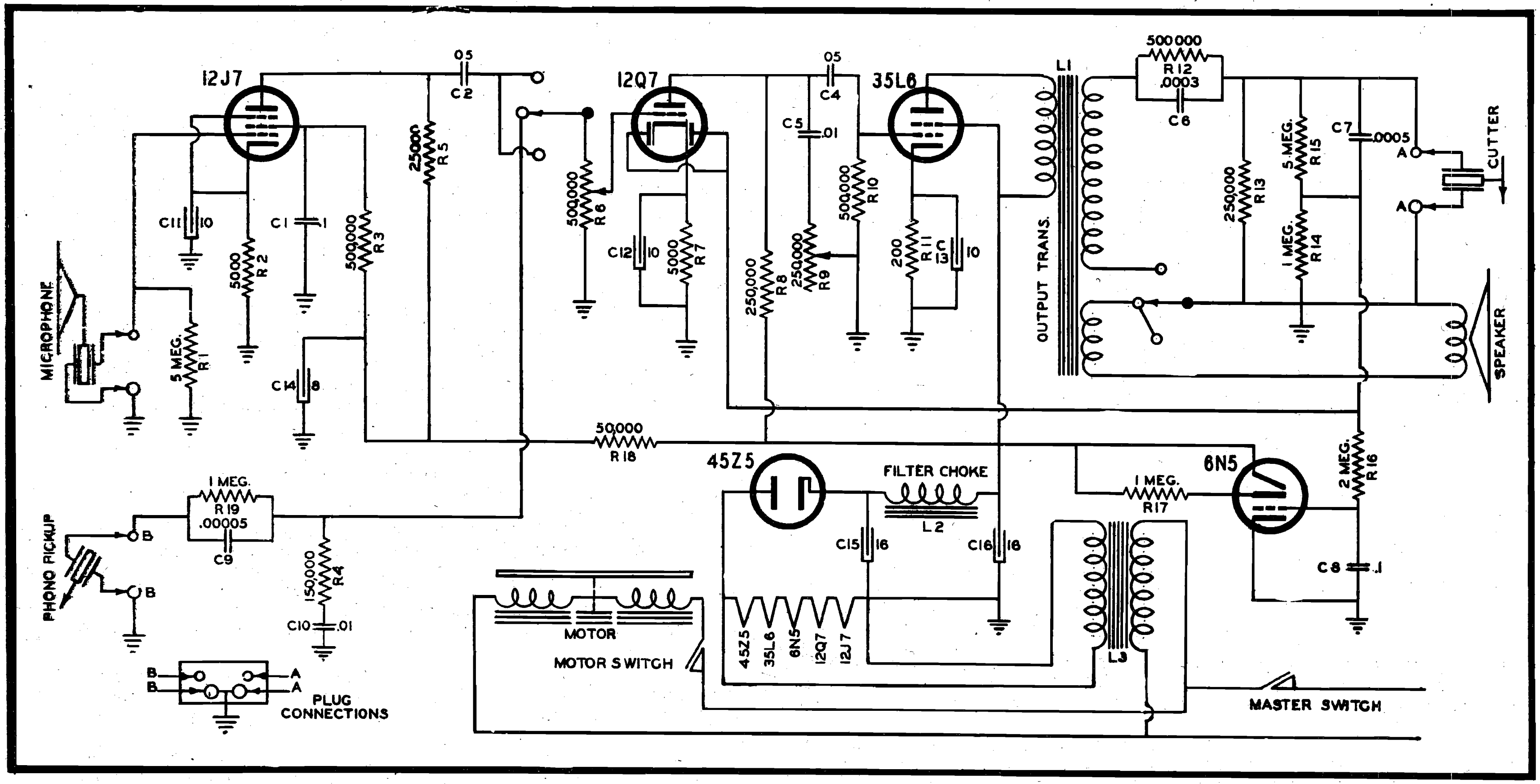
2ND IF

MODEL No. A-79
DATE 1-22-40

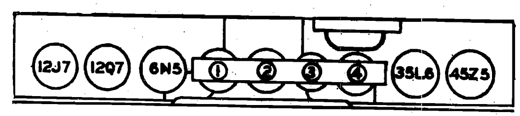


MODEL A71
Schematic

WILCOX-GAY CORP.



PART NO.	CODE	NAME
53-2020	R1	5 Meg. 1/4 Watt Carbon Resistor
53-919	R2	5,000 Ohm Resistor
53-925	R3	500,000 Ohm Resistor
53-2033	R4	150,000 Ohm Resistor
53-898	R5	50,000 Ohm Resistor
19-2007	R6	500,000 Ohm Volume Control & Switch
53-919	R7	5,000 Ohm Resistor
53-924	R8	250,000 Ohm Resistor
19-2009	R9	250,000 Ohm Tone Control
53-925	R10	500,000 Ohm Resistor
53-2014	R11	200 Ohm Resistor
53-925	R12	500,000 Ohm Resistor
53-924	R13	250,000 Ohm Resistor
53-926	R14	1 Megohm Resistor
53-2020	R15	5 Meg. 1/4 Watt Carbon Resistor
53-2024	R16	2 Megohm Resistor
53-926	R17	1 Megohm Resistor
53-898	R18	50,000 Ohm Resistor
53-926	R19	1 Megohm Resistor
75-2005	C1	.1 Mfd. 200 Volt Cond.
75-2004	C2	.05 Mfd. 400 Volt Cond.
75-2004	C4	.05 Mfd. 400 Volt Cond.
75-2003	C5	.01 Mfd. 400 Volt Cond.
76-2009	C6	.0003 Mfd. Mica 1000 Volt Cond.
76-2014	C7	.0005 Mfd. Mica 1000 Volt Cond.
75-2005	C8	.1 Mfd. 200 Volt Cond.
76-2011	C9	.00005 Mfd. Mica 1000 Volt Elect. Cond.
75-2003	C10	.01 Mfd. 400 Volt Cond.
18-2012	C11	10 Mfd. 25 Volt Elect. Cond.
18-2012	C12	10 Mfd. 25 Volt Elect. Cond.
18-2012	C13	10 Mfd. 25 Volt Elect. Cond.
18-2011	C14	8 Mfd. 150 Volt Elect. Cond.
18-2010	C15	20 Mfd. 150 Volt Elect. Cond.
18-2010	C16	20 Mfd. 150 Volt Elect. Cond.
64-2067		Speaker
66-2023		Switch, 110 Volt
66-2028		Switch, 2 Pole, 3 Position
14-2002	L2	Filter Choke
81-2007	L1	Output Transformer
80-2038	L3	Isolation Transformer



1—MASTER SWITCH & VOLUME CONTROL
2—MOTOR SWITCH
3—TONE CONTROL
4—PUBLIC ADDRESS—PHONOGRAPH—RECORDING SWITCH

MODEL A72
A-F Service Note
MODELS Record Players
Motor Data

WILCOX-GAY CORP.

ALL RECORD PLAYERS
DATE 4-30-40

LUBRICATION OF ELECTRIC MOTORS IN WILCOX-GAY RECORD PLAYERS AND PHONOGRAPHS

In record player and phonograph models in which the turn-table shaft is driven directly through a reduction worm gearing housed within the motor assembly - -

1 - The motor should be demounted from the motor board.

2 - Remove the three screws surrounding the turn-table shaft.

3 - Remove the shaft and worm gear assembly, and clean the assembly by washing in kerosene or other grease solvent.

4 - Wash out the worm and gear housing of the motor assembly in a similar manner.

5 - Make an application of 600-W motor lubricant to both the worm and gear, and place a small quantity of the same lubricant in the gear housing.

NOTE: An oil hole is provided on some of the motors in these models, so that lubricant may be added, however it is better to follow the above procedure especially in cases where the increased power demand placed upon the motor, because of a "dried out" condition of the lubricant, has become great enough to cause a noticeable reduction in turn-table r.p.m.

Motors used in those models in which the turn-table is rim driven through an idler wheel, may be lubricated as follows:

1 - Remove turn-table.

2 - Apply several drops of electric motor oil to the side of the motor shaft, allowing the oil to run down into the upper bearing.

3 - Oil the idler wheel bearing, using only one or two drops of the oil so that it will not run out onto the rubber rim of the wheel.

4 - Oil the turn-table spindle bearing.

5 - The lower motor bearing may be lubricated by saturating the felt wick which surrounds the lower end of the motor shaft.

NOTE: Electric motor oil may be procured at any automobile service station.

AUDIO OSCILLATION

MODEL No. A-72
DATE 4-24-40

In some of the earlier model A-72 Portable Recordios, an audio oscillation may be noticed to occur with the volume control turned to near maximum position, when the 3-position switch is in the "CUT" position.

This oscillation manifests itself by a flickering of the magic eye (6U5) and will appear in the playback of records which have been cut under this condition, as a "motor-boating" sound of an intensity nearly equal to that of the recorded voice or music.

To correct this audio oscillation, disconnect the 500,000 ohm 6J7 screen grid resistor (R3) from the hum filter composed of C3 and R5, and connect it directly to B+.

Figure 9 shows the original circuit, and Figure 10 represents the circuit after the change has been made. It will be observed that this change has been incorporated in the schematic diagram appearing in Service Bulletin No. 10.

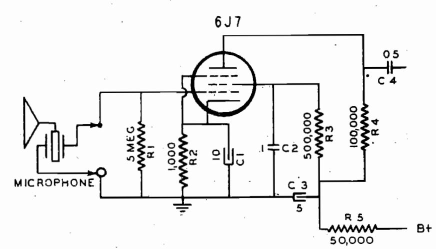


FIG. 9

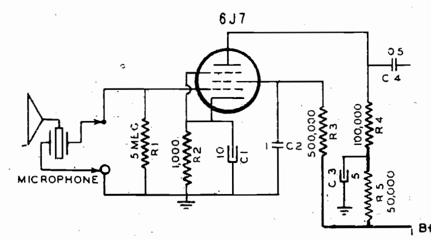
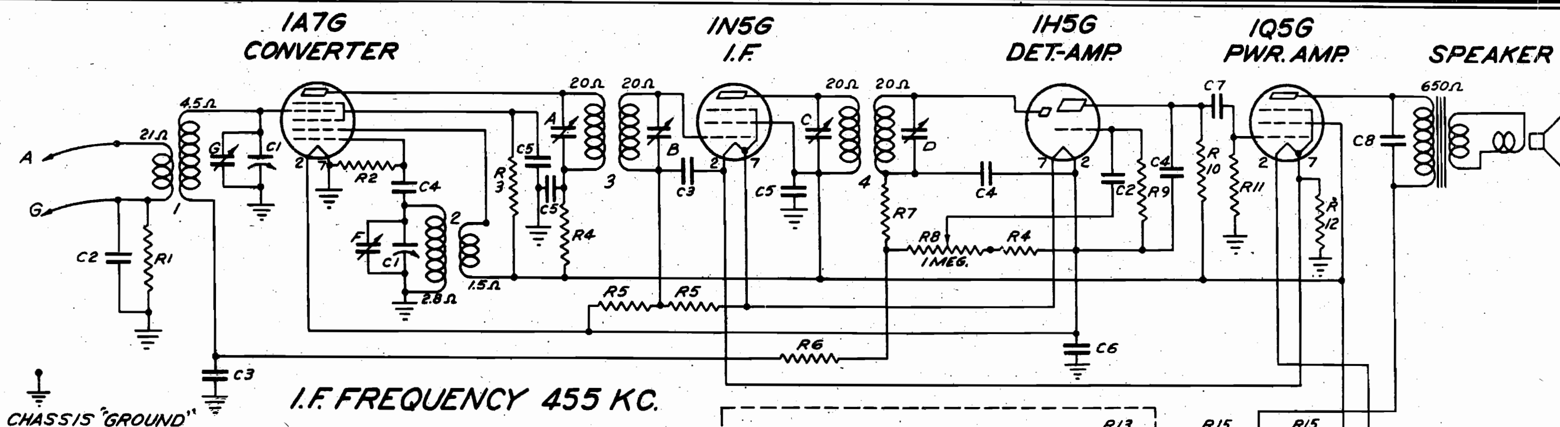
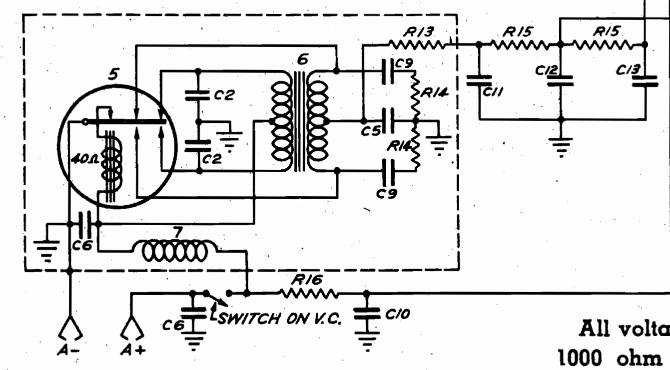


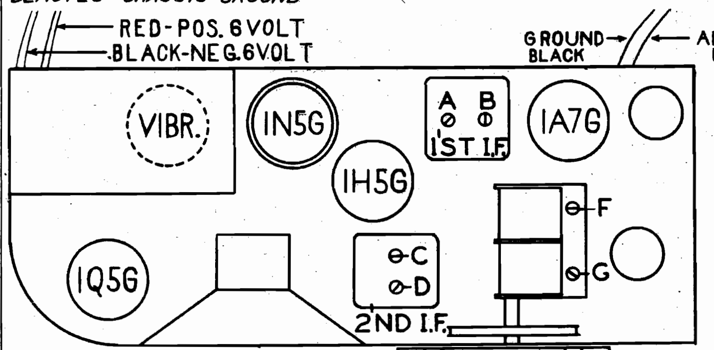
FIG. 10

ZENITH RADIO CORP.

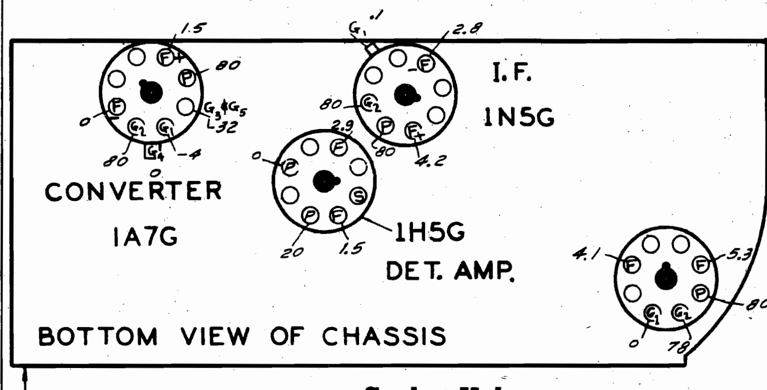
MODELS 4B422, 4B466, 4B468, 4B437
Chassis 5417
Schematic, Socket, Voltage
Trimmers







Location of Tubes and Trimmers



Socket Voltages

CHASSIS Nº 5417-6V.-SINGLE BAND

MODEL	SPEAKER	
4B422	49-345	5"
4B437	49-328	6½"
4B466	49-342	10"
4B468	49-359	8"

FOR ALIGNMENT

SEE INDEX

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to socket contacts.

Voltage readings are all positive D.C. unless otherwise indicated.

Antenna disconnected volume control full on.

Battery voltage 6 volt.

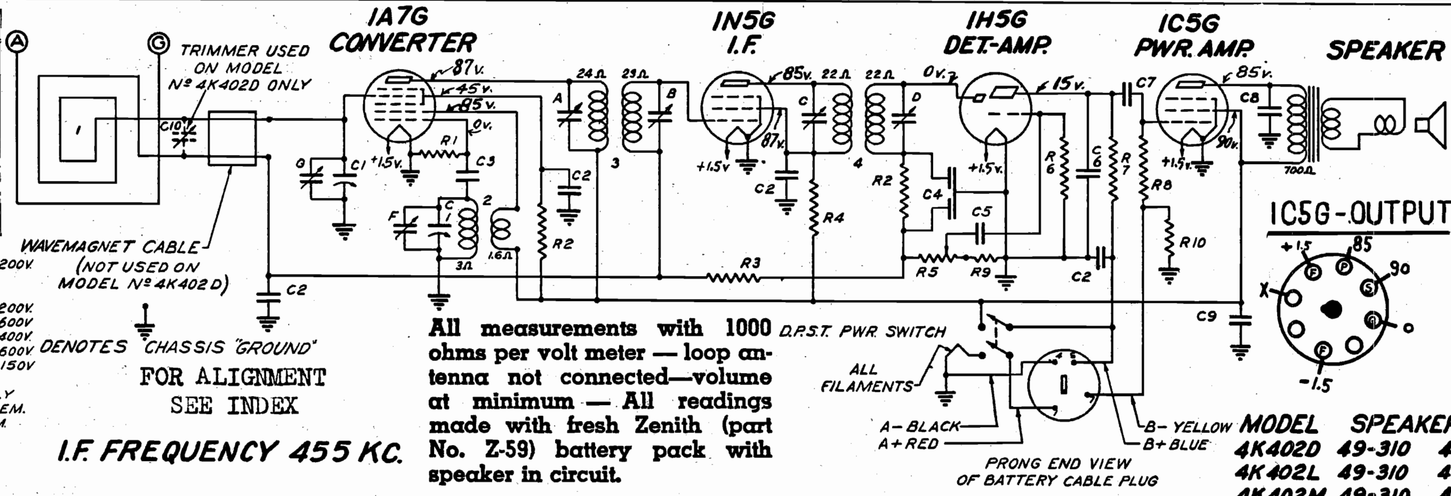
Battery consumption — .4 ampere.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-695	TWO GANG VARIABLE		R2	63-595	100M OHM	¼W.			
C2	22-826	.01 MFD.	200V.	R3	63-594	68M OHM	¼W.	1	20-208	ANTENNA COIL ASSEMBLY
C3	22-829	.05 MFD.	200V.	R4	63-583	1000 OHM	¼W.	2	S 6381	OSCILLATOR COIL ASSEM.
C4	22-162	.0001 MFD.	600V.	R5	63-296	220M OHM	¼W.	3	95-589	1ST. I.F. TRANS.
C5	22-828	.05 MFD.	400V.	R6	63-669	3.9 MEGOHM	¼W.	4	95-590	2ND I.F. TRANS.
C6	22-199	.5 MFD.	200V.	R7	63-593	47M OHM	¼W.	5	190-17	VIBRATOR
C7	22-243	.01 MFD.	400V.	R8	63-1079	VOLUME CONTROL		6	95-635	POWER TRANSFORMER
C8	22-448	.004 MFD.	600V.	R9	63-604	10 MEGOHM	¼W.	7	S 5043	CHOKE ASSEMBLY
C9	22-966	.04 MFD.	600V.	R10	63-271	1 MEGOHM	¼W.			
C10	22-961	500 MFD. ELECTROLYTIC	15V.	R11	63-600	2.2 MEGOHM	¼W.			
C11	22-742	15 MFD. "	250V.	R12	63-1060	90 OHM WIREWOUND	1W.			
C12	22-742	15 MFD. "	250V.	R13	63-577	100 OHM	¼W.	A		1ST I.F. TRANS. PRI.
C13	22-742	10 MFD. "	250V.	R14	63-697	100 OHM	¼W.	B		1ST I.F. TRANS. SEC.
				R15	63-605	1000 OHM	½W.	C		2ND I.F. TRANS. PRI.
				R16	63-1061	7 OHM	½W.	D		2ND I.F. TRANS. SEC.
								F		B'DCAST OSC. (ON GANG)
R1	63-597	470M OHM	¼W.					G		ANT. B'DCAST (ON GANG)

MODELS 4K402D, 4K402L, 4K402M, 4K402Y
Chassis 5419
MODELS 5G401D, 5G401L, 5G401M, 5G401Y
Chassis 5537
Schematics, Voltage

ZENITH RADIO CORP.

DIAG. No	PART No	DESCRIPTION	
R1	63-652	120 M OHM	¼ W.
R2	63-593	47 M OHM	¼ W.
R3	63-669	3.9 MEGOHM	¼ W
R4	63-583	1000 OHM	¼ W
R5	63-1034	VOLUME CONTROL	
R6	63-604	10 MEGOHM	¼ W.
R7	63-271	1 MEGOHM	¼ W
R8	63-600	2.2 MEGOHM	¼ W.
R9	63-587	4700 OHM	¼ W
R10	63-238	1000 OHM	¼ W.
C1	22-885	TWO-GANG VARIABLE	
C2	22-829	.05 MFD.	200V.
C3		100 MMFD.	
C4		DUAL 100 MMFD	
C5	22-826	.01 MFD.	200V.
C6	22-162	.0001 MFD.	600V
C7	22-243	.01 MFD.	400V.
C8	22-448	.004 MFD.	600V
C9	22-684	8 MFD. ELECTROLYTIC	150V
C10	22-882	TRIMMER COND	
1		WAVEMAGNET ASSEMBLY	
2	S7029	OSCILLATOR COIL ASSEM.	
3	S7030	1ST I.F TRANS. ASSEM.	
4	95-606	2ND I.F TRANS.	
A		1ST I.F TRANS. PRI.	
B		1ST I.F TRANS. SEC.	
C		2ND I.F TRANS. PRI.	
D		2ND I.F TRANS. SEC	
F		BROADCAST OSC. (ON GANG)	
G		ANTENNA BROADCAST (ON GANG)	



FOR ALIGNMENT SEE INDEX

I.F. FREQUENCY 455 KC.

CHASSIS No 5419

All measurements with 1000 ohms per volt meter — loop antenna not connected—volume at minimum — All readings made with fresh Zenith (part No. Z-59) battery pack with speaker in circuit.

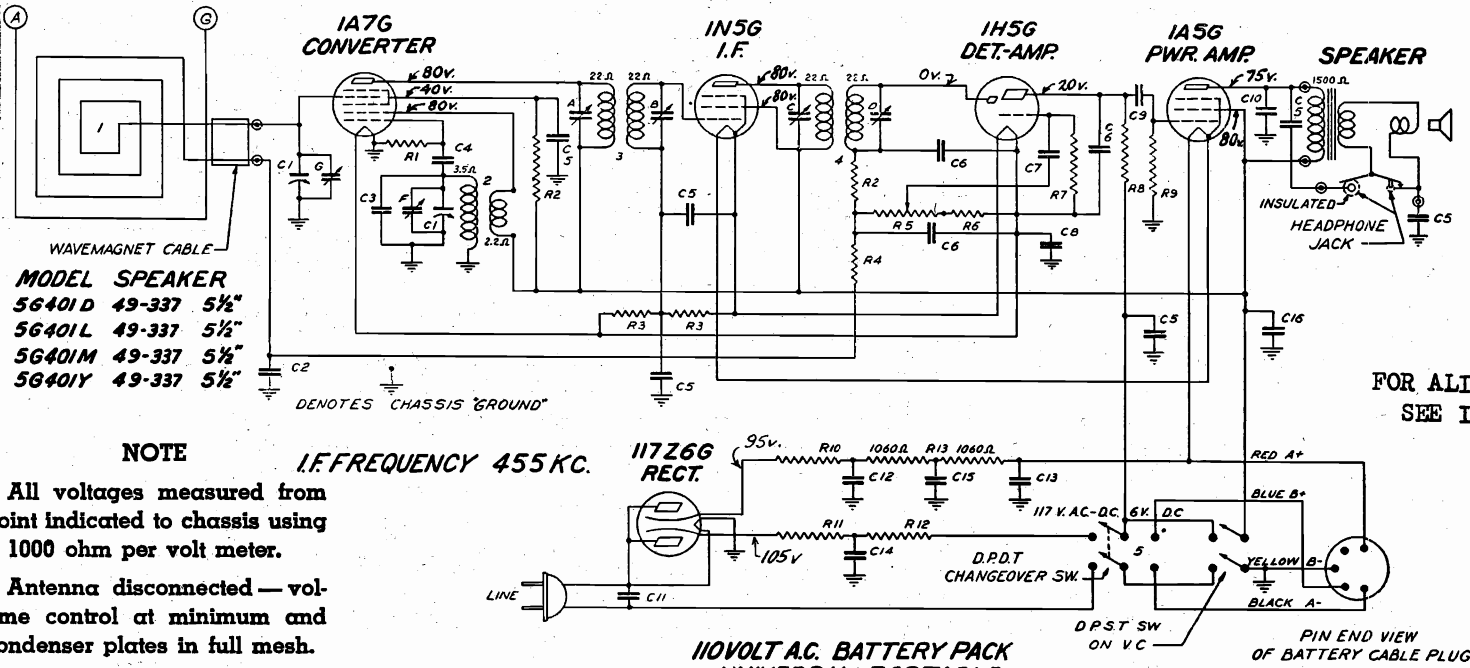
All voltages measured from contact X on 1C56 tube socket to point indicated.

1½V. BATTERY PORTABLE

MODEL	SPEAKER	
4K402D	49-310	4"
4K402L	49-310	4"
4K402M	49-310	4"
4K402Y	49-310	4"

DIAG No	PART No	DESCRIPTION	
C1	22-800	TWO GANG VARIABLE	
C2	22-138	.2 MFD.	200V
C3	22-802	30 MMFD.	600V
C4	22-182	.00025 MFD.	600V
C5	22-829	.05 MFD	200V
C6	22-162	.0001 MFD	600V
C7	22-826	.01 MFD	200V
C8	22-350	25 MFD	200V
C9	22-243	.01 MFD	400V
C10	22-492	.002 MFD	600V
C11	22-869	.05 MFD	400V
C12	22-918	40 MFD ELECTROLYTIC	150 V
C13	22-918	20 MFD "	25 V
C14	22-871	20 MFD. ELECTROLYTIC	150V
C15	22-871	20 MFD "	150V
C16	22-871	20 MFD	150V
R1	63-652	120 M OHM	¼ W
R2	63-593	47 M OHM	¼ W
R3	63-296	220 M OHM	¼ W
R4	63-669	3.9 MEGOHM	¼ W
R5	63-1026	VOLUME CONTROL	
R6	63-587	4700 OHM	¼ W
R7	63-604	10 MEGOHM	¼ W
R8	63-271	1 MEGOHM	¼ W
R9	63-600	2.2 MEGOHM	¼ W
R10	63-1022	150 OHM WIREWOUND	1 W
R11	63-605	1000 OHM	½ W
R12	63-803	2200 OHM	½ W
R13	63-1033	2-SECTION CANDOHM	
1		WAVEMAGNET ASSEMBLY	
2	S7027	OSC COIL ASSEMBLY	
3	95-593	1ST IF TRANS	
4	95-594	2ND IF "	
5	85-190	POWER SWITCH	
A		1ST I.F. TRANS PRI	
B		1ST IF " SEC	
C		2ND I.F " PRI	
D		2ND IF " SEC	
F		BROADCAST OSC. (ON GANG)	
G		ANTENNA B'DCAST ( )	

CHASSIS No 5537



MODEL	SPEAKER	
5G401D	49-337	5½"
5G401L	49-337	5½"
5G401M	49-337	5½"
5G401Y	49-337	5½"

I.F. FREQUENCY 455 KC.

FOR ALIGNMENT SEE INDEX

NOTE

All voltages measured from point indicated to chassis using a 1000 ohm per volt meter.

Antenna disconnected — volume control at minimum and condenser plates in full mesh.

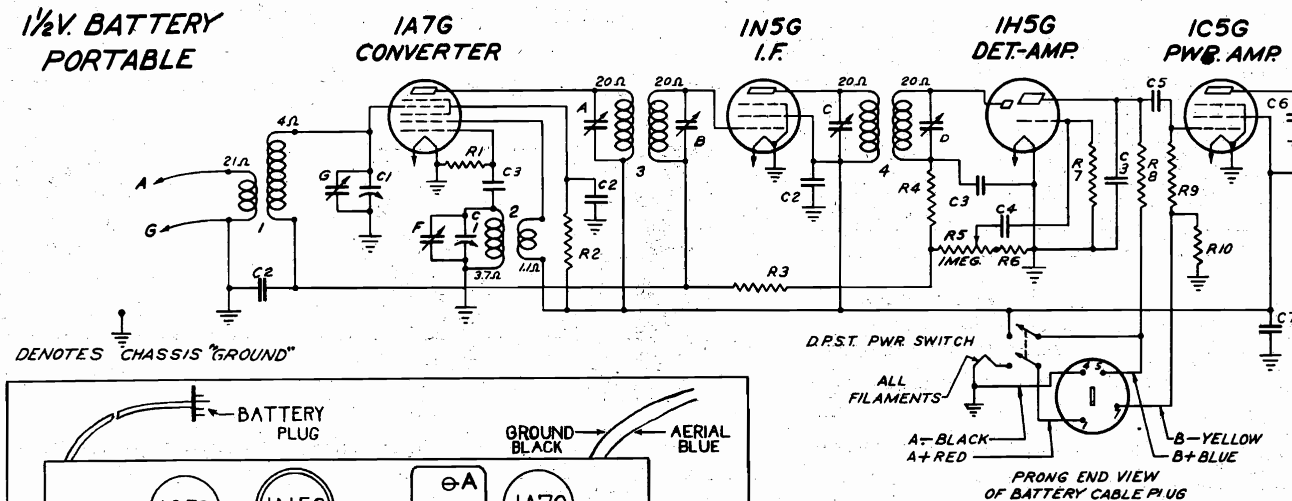
Line voltage — 110v.

110 VOLT A.C. BATTERY PACK UNIVERSAL PORTABLE

CHASSIS 5417
CHASSIS 5536
Alignment

ZENITH RADIO CORP.

MODELS 4K422, 4K435, 4K465, 4K466
Chassis 5420
Schematic, Voltage, Socket
Alignment, Trimmers



CHASSIS No. 5420

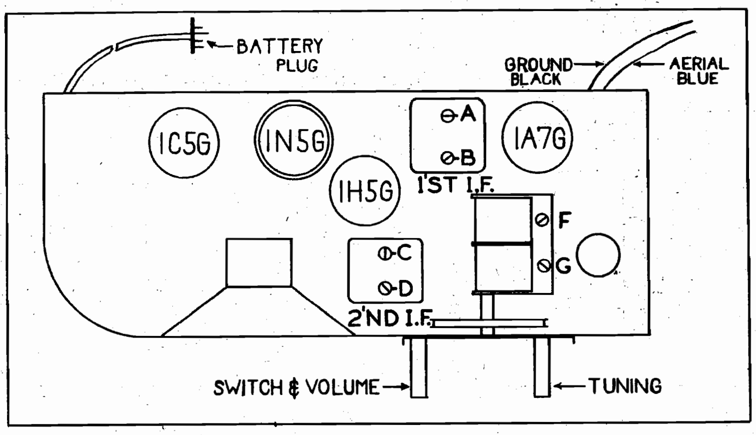
I.F. FREQUENCY 455 KC.

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to socket contacts using a fresh Z28 battery pack.

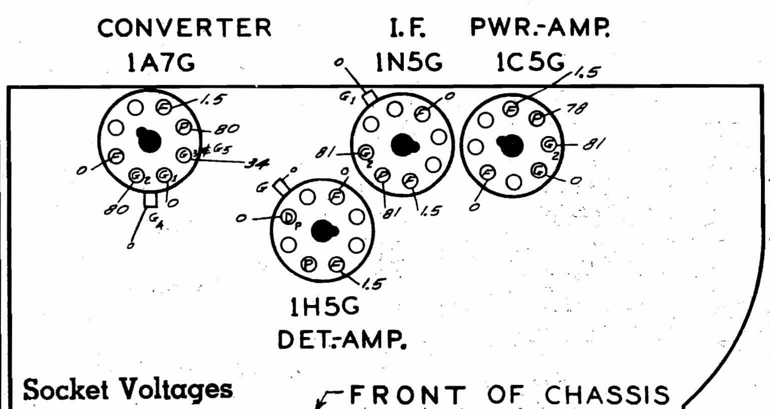
Antenna disconnected — volume control full on.

MODEL	SPEAKER	
4K422	49-286	5"
4K435	49-328	6½"
4K465	49-359	8"
4K466	49-342	10"



DIAG. No.	PART No.	DESCRIPTION		DIAG. No.	PART No.	DESCRIPTION		DIAG. No.	PART No.	DESCRIPTION
C1	22-695	TWO GANG VARIABLE		R4	63-593	47M OHM	¼ W	4	95-590	2ND I.F. TRANS. ASSEM.
C2	22-829	.05 MFD.	200V.	R5	63-1072	VOLUME CONTROL				
C3	22-162	.0001 MFD.	600V.	R6	63-587	4700 OHM	¼ W.			
C4	22-826	.01 MFD.	200V.	R7	63-604	10 MEGOHM	¼ W.			
C5	22-243	.01 MFD.	400V.	R8	63-271	1 MEGOHM	¼ W.	A		1ST I.F. TRANS. PRI.
C6	22-448	.004 MFD.	600V.	R9	63-600	2.2 MEGOHM	¼ W.	B		1ST I.F. TRANS. SEC.
C7	22-684	8 MFD. ELECTROLYTIC	150V.	R10	63-238	1000 OHM	¼ W.	C		2ND I.F. TRANS. PRI.
								D		2ND I.F. TRANS. SEC.
								F		B'DCAST OSC. (ON GANG)
								G		ANT. B'DCAST (ON GANG)
R1	63-654	180M OHM	¼ W.	1	20-208	ANTENNA COIL				
R2	63-594	68M OHM	¼ W.	2	S-7815	OSCILLATOR COIL ASSEM.				
R3	63-669	3.9 MEGOHM	¼ W.	3	95-589	1ST I.F. TRANS. ASSEM.				

Location of Tubes and Trimmers



ALIGNMENT PROCEDURE
For Chassis 5417, 5420 and 5536

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	1A7 Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	Antenna	200 Mmf.	1500 Kc.	Broadcast	1500 Kc.	F	Set Oscillator to Scale
3	Antenna	200 Mmf.	1400 Kc.	Broadcast	1400 Kc.	G	Alignment of Scale

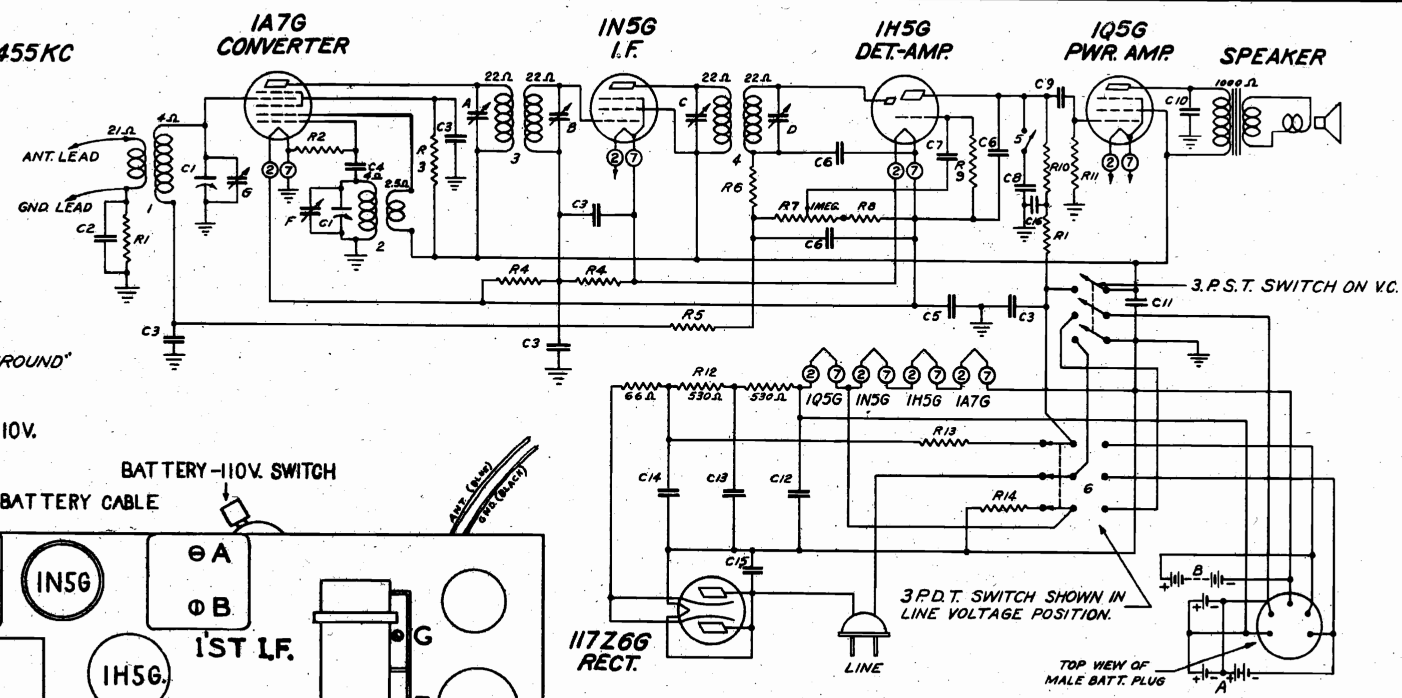
MODELS 5G438, 5G467
Chassis 5536
Schematic, Voltage, Socket
Trimmers

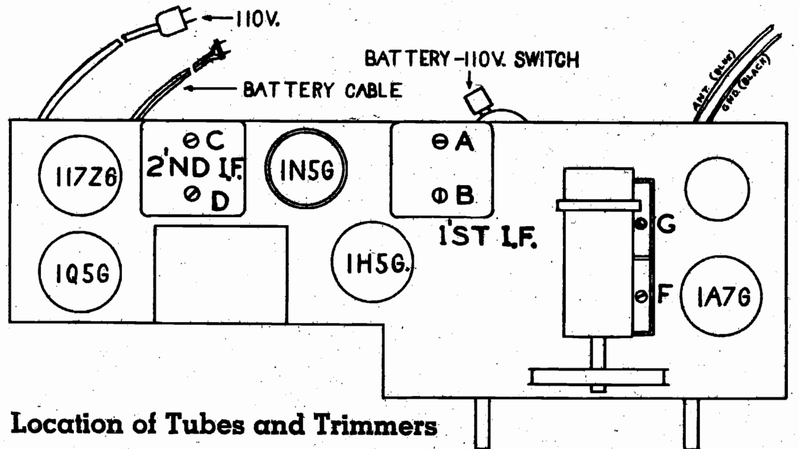
ZENITH RADIO CORP.

I.F. FREQUENCY 455KC

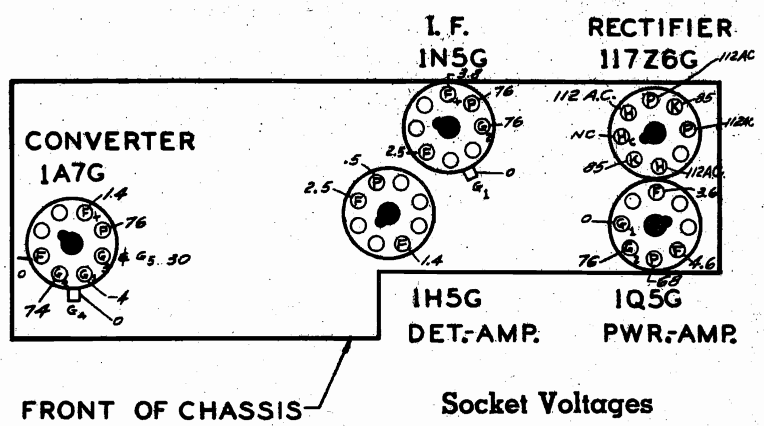
FOR ALIGNMENT SEE INDEX

DENOTES CHASSIS "GROUND"





Location of Tubes and Trimmers



Socket Voltages

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control on full.

Line voltage 112 v. A.C.

CHASSIS Nº 5536

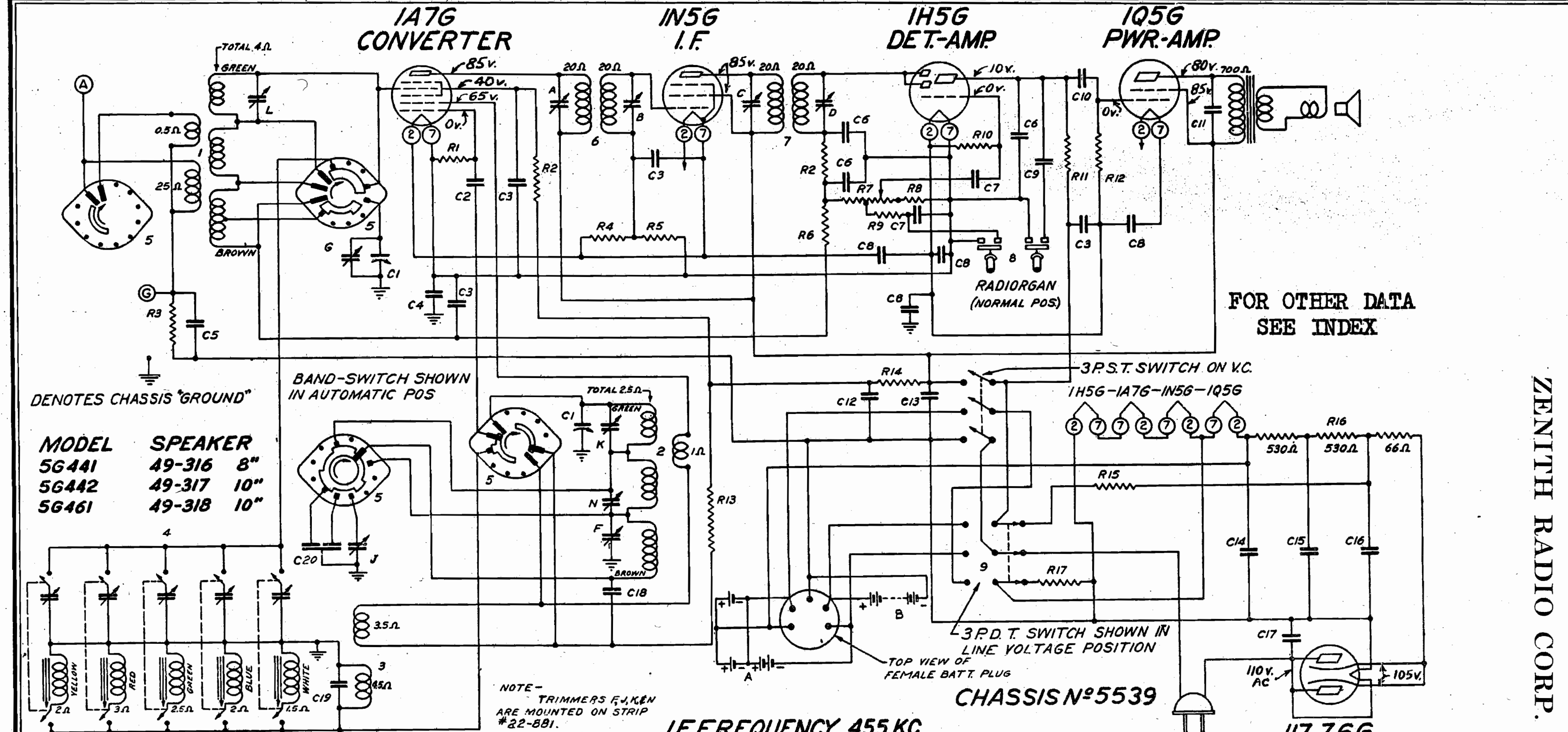
5 TUBE SUPERHETERODYNE
110 V. A.C.-BATT. PACK-UNIVERSAL

MODEL	SPEAKER	
5G438	49-332	8"
5G467	49-333	10"

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-910	TWO GANG VARIABLE		R1	63-597	470 M OHM	¼ W.	1	20-208	ANTENNA COIL
C2	22-196	.01 MFD.	600V.	R2	63-652	120 M OHM	¼ W.	2	S-6381	OSC. COIL ASSEMBLY
C3	22-829	.05 MFD.	200V.	R3	63-713	47 M OHM	¼ W.	3	95-593	1ST I.F. TRANS.
C4	22-182	.00025 MFD.	600V.	R4	63-296	220 M OHM	¼ W.	4	95-594	2ND I.F. TRANS.
C5	22-350	.25 MFD.	200V.	R5	63-669	3.9 MEGOHM	¼ W.	5	85-187	TONE CONTROL SWITCH
C6	22-162	.0001 MFD.	600V.	R6	63-593	47 M OHM	¼ W.	6	85-198	POWER SWITCH
C7	22-826	.01 MFD.	200V.	R7	63-1081	VOLUME CONTROL				
C8	22-887	TONE CONTROL COND.		R8	63-583	1000 OHM	¼ W.			
C9	22-249	.01 MFD.	400V.	R9	63-604	10 MEGOHM	¼ W.	A		1ST I.F. TRANS. PRI.
C10	22-448	.004 MFD.	600V.	R10	63-271	1 MEGOHM	¼ W.	B		1ST I.F. " SEC.
C11	22-928	40 MFD. ELECTROLYTIC	150V.	R11	63-600	2.2 MEGOHM	¼ W.	C		2ND I.F. " PRI.
C12		20 MFD. "	25V.	R12	63-1041	3 SECTION CANDOHM		D		2ND I.F. " SEC.
C13	22-879	60 MFD. "	150V.	R13	63-605	1000 OHM	½ W.	F		BROADCAST OSC. (ON GANG)
C14		60 MFD. "	150V.	R14	63-1012	90 OHM WIREWOUND	½ W.	G		ANTENNA BDCAST (ON GANG)
C15	22-869	.05 MFD.	400V.							
C16	22-138	.2 MFD.	200V.							

ZENITH RADIO CORP.

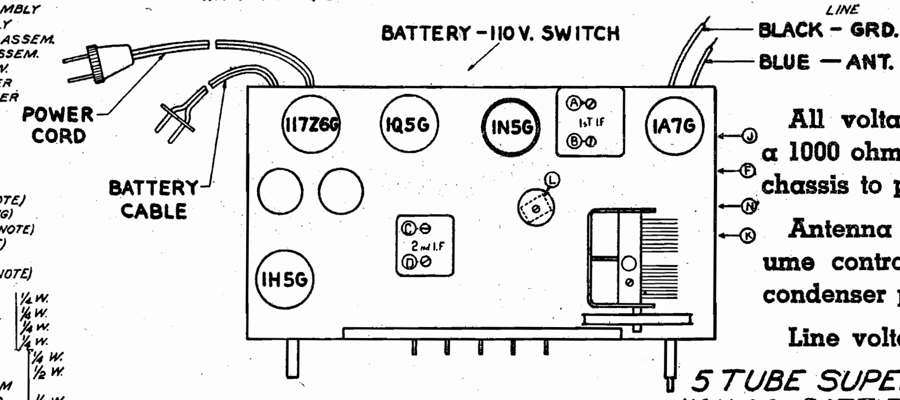
MODELS 5G441, 5G442, 5G461
Chassis 5539
Schematic, Voltage, Socket
Trimmers



FOR OTHER DATA
SEE INDEX

MODEL	SPEAKER	
5G441	49-316	8"
5G442	49-317	10"
5G461	49-318	10"

C1	22-878	TWO-GANG VARIABLE		1	S7257	ANTENNA COIL ASSEMBLY	
C2	22-289	50 MMFD.	600V.	2	S7252	OSC. COIL ASSEMBLY	
C3	22-829	.05 MFD.	200V.	3	S6992	OSC. COUPLING COIL ASSEM.	
C4	22-350	.25 MFD.	200V	4	S7044	AUTO TUNING UNIT ASSEM.	
C5	22-196	.01 MFD.	600V.	5	85-195	BAND SELECTOR SW.	
C6	22-162	100 MMFD.	600V.	6	95-607	1ST I.F. TRANSFORMER	
C7	22-826	.01 MFD.	200V.	7	95-614	2ND I.F. TRANSFORMER	
C8	22-827	.1 MFD.	200V.	8	S6994	TONE CONTROL SW.	
C9	22-887	.001 MFD.	600V.	9	85-196	POWER SW.	
C10	22-243	.01 MFD.	400V.	A		1ST I.F. TRANS. PRI.	
C11	22-448	.004	600V.	B		1ST I.F. " SEC.	
C12	22-880	20 MFD. ELECTROLYTIC	150V.	C		2ND I.F. " PRI.	
C13	22-880	20 " "	150V.	D		2ND I.F. " SEC.	
C14	22-880	20 " "	25V.	F		B'DCAST OSC. (SEE NOTE)	
C15	22-879	60 MFD "	150V	G		ANT. B'DCAST (ON GANG)	
C16	22-879	60 " "	150V.	J		B'DCAST PADDER (SEE NOTE)	
C17	22-869	.05 MFD.	400V.	K		S.W. OSC. (SEE NOTE)	
C18	22-358	.002 MFD.	600V.	L	22-788	S.W. DETECTOR	
C19	22-868	COMPENSATING COND.		N		POL BAND OSC. (SEE NOTE)	
C20	22-708	OSC PADDER					
R1	63-654	180M OHM	¼ W	R10	63-604	10 MEGOHM	¼ W.
R2	63-593	47M OHM	¼ W	R11	63-271	1 MEGOHM	¼ W.
R3	63-597	470M OHM	¼ W	R12	63-600	2.2 MEGOHM	¼ W.
R4	63-649	56M OHM	¼ W.	R13	63-640	8200 OHM	¼ W.
R5	63-296	220M OHM	¼ W.	R14	63-586	3300 OHM	¼ W.
R6	63-669	3.9 MEGOHM	¼ W.	R15	63-605	1000 OHM	½ W.
R7	63-1080	VOLUME CONTROL		R16	63-1036	3-SECTION CANDOHM	
R8	63-587	4700 OHM	¼ W.	R17	63-1012	90 OHM WIREWOUND	½ W.
R9	63-591	22M OHM	¼ W.				



Location of tubes and trimmers

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to point indicated.

Antenna disconnected — volume control at minimum and condenser plates in full mesh.

Line voltage — 110v.

5 TUBE SUPERHETERODYNE
110 V. A.C.-BATT. PACK-UNIVERSAL

MODELS 5G484, 5G484-M
Chassis 5538
Schematic, Voltage
MODELS S7000 to S7003
Wireless Record Player
Schematic

ZENITH RADIO CORP.

C1	22-800	TWO-GANG VARIABLE	
C2	22-138	.2 MFD.	200V.
C3	22-802	30 MMFD.	600V.
C4	22-182	.00025 MFD.	600V.
C5	22-829	.05 MFD.	200V.
C6	22-162	.0001 MFD.	600V.
C7	22-826	.01 MFD.	200V.
C8	22-350	.25 MFD.	200V.
C9	22-243	.01 MFD.	400V.
C10	22-492	.002 MFD.	600V.
C11	22-869	.05 MFD.	400V.
C12	22-827	.1 MFD.	200V.
C13	22-918	40 MFD. ELECTROLYTIC	150V.
C14		20 MFD. "	25V.
C15	22-871	20 MFD. ELECTROLYTIC	150V.
C16		20 " "	150V.
C17		20 " "	150V.

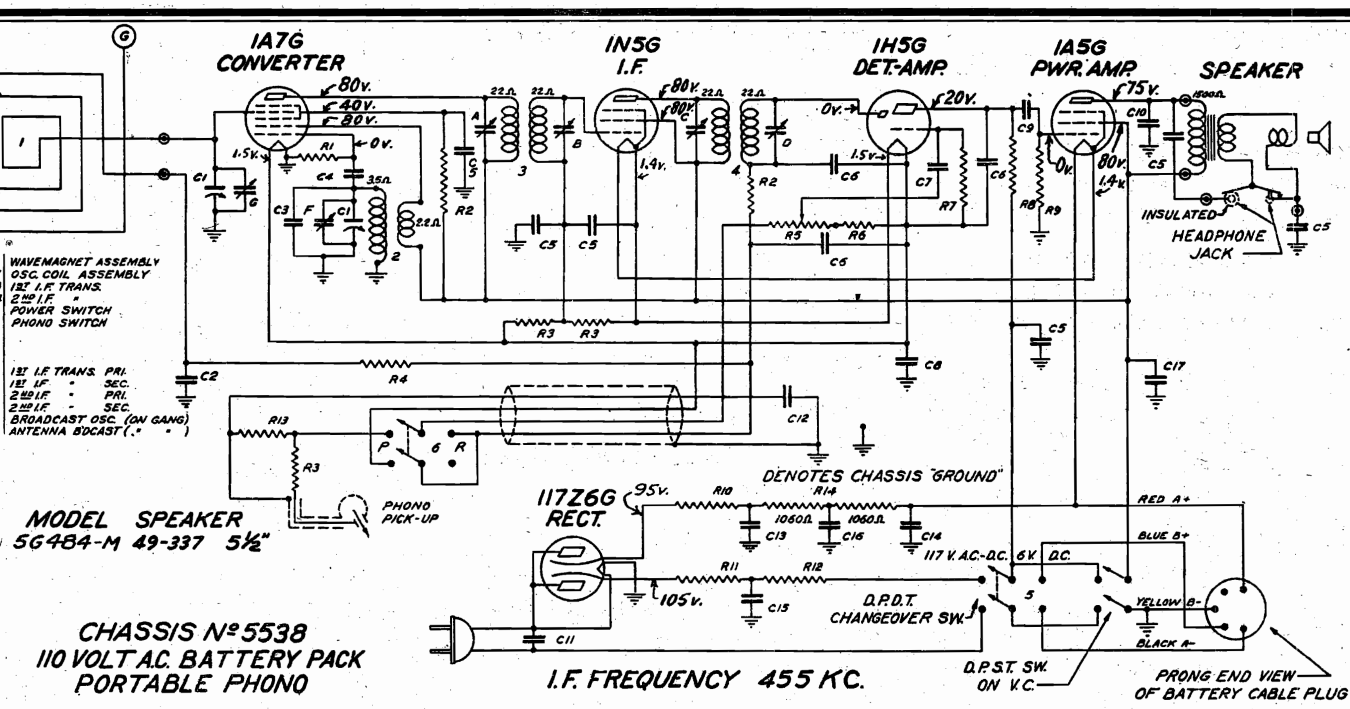
R1	63-652	120 M OHM	¼ W.
R2	63-593	47 M OHM	¼ W.
R3	63-296	220 M OHM	¼ W.
R4	63-669	3.9 MEGOHM	¼ W.
R5	63-1026	VOLUME CONTROL	
R6	63-587	4700 OHM	¼ W.
R7	63-604	10 MEGOHM	¼ W.
R8	63-271	1 MEGOHM	¼ W.
R9	63-600	2.2 MEGOHM	¼ W.
R10	63-1022	150 OHM WIREWOUND	1 W.
R11	63-605	1000 OHM	½ W.
R12	63-803	2200 OHM	½ W.
R13	63-591	22 M OHM	¼ W.
R14	63-1033	2-SECTION CANDOHM	

1		WAVEMAGNET ASSEMBLY
2	S7027	OSC. COIL ASSEMBLY
3	95-593	1ST I.F. TRANS.
4	95-594	2ND I.F. "
5	85-190	POWER SWITCH
6	85-197	PHONO SWITCH
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
F		BROADCAST OSC. (ON GANG)
G		ANTENNA B'DCAST (" ")

All voltages measured from point indicated to chassis using a 1000 ohm per volt meter.

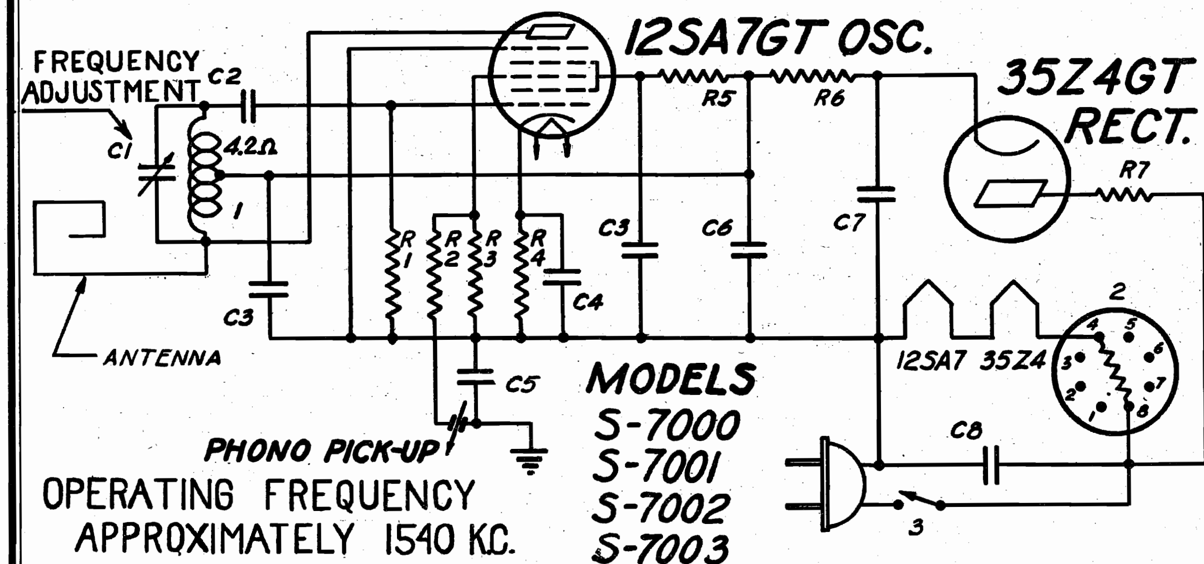
Antenna disconnected — volume control at minimum and condenser plates in full mesh.

All voltages measured using Zenith No. Z659 battery pack.



CHASSIS Nº 5538
110 VOLT A.C. BATTERY PACK
PORTABLE PHONO

I.F. FREQUENCY 455 KC.



OPERATING FREQUENCY
APPROXIMATELY 1540 KC.

MODELS
S-7000
S-7001
S-7002
S-7003

PHONOGRAPH OSCILLATOR

C1	22-690	TUNING CONDENSER	
C2	22-182	.00025 MFD.	600V.
C3	22-243	.01 MFD.	400V.
C4	22-829	.05 MFD.	200V.
C5	22-827	.1 MFD.	200V.
C6	22-876	8 MFD. ELECTROLYTIC	150V.
C7		40 MFD. "	150V.
C8	22-670	.1 MFD.	400V.

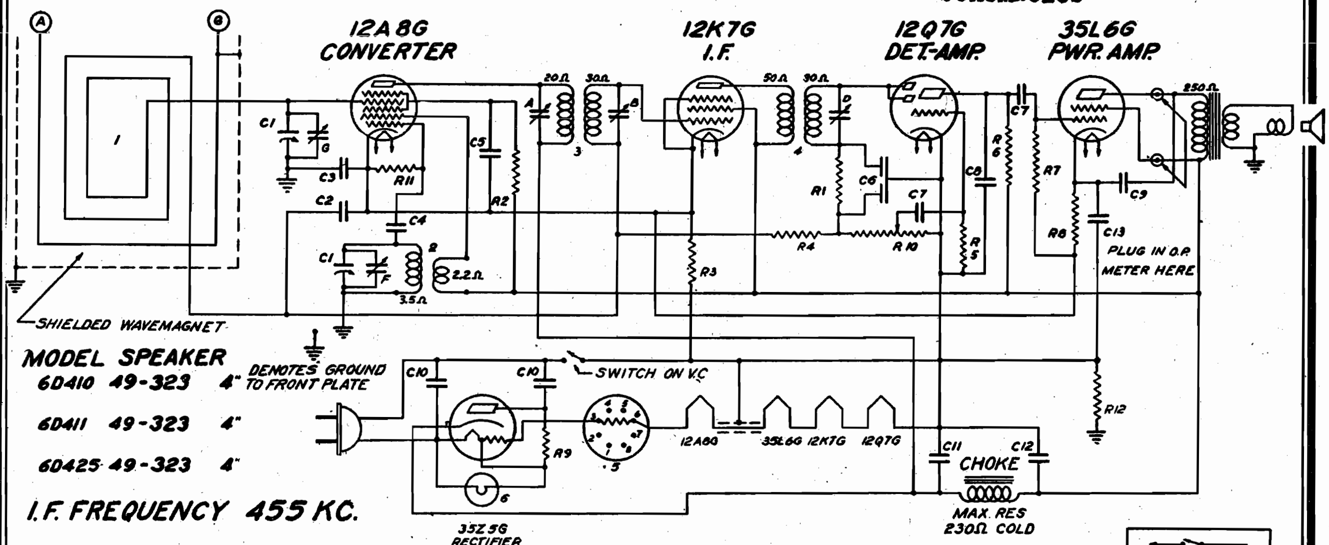
R1	63-591	22 M OHM	¼ W.
R2	63-658	390 M OHM	¼ W.
R3	63-260	100 M OHM	¼ W.
R4	63-583	1000 OHM	¼ W.
R5	63-964	4700 OHM	½ W.
R6	63-803	2200 OHM	½ W.
R7	63-575	47 OHM	¼ W

1	S6854	OSC. COIL ASSEM
2	100-76	BALLAST TUBE
3	85-170	A C SWITCH

FOR ALIGNMENT SEE INDEX

ZENITH RADIO CORP.

MODELS 6D410, 6D411, 6D425
Chassis 5659, 5663
MODELS 6P418, 6P419, 6P428
6P429, 6P430, 6P447, 6P448
6P457
Chassis 5662, 5666
Schematics



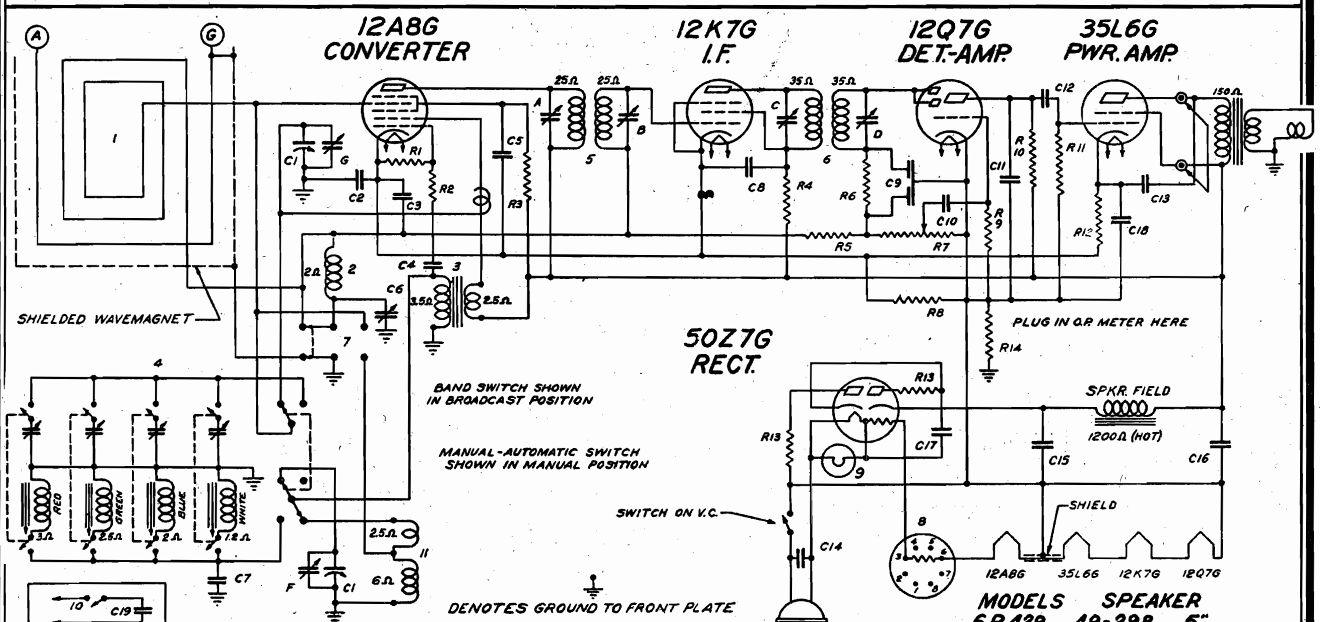
MODEL	SPEAKER	
6D410	49-323	4"
6D411	49-323	4"
6D425	49-323	4"

I.F. FREQUENCY 455 KC.

FOR OTHER DATA SEE INDEX

6 TUBE SUPERHETERODYNE
CHASSIS No 5659-5663 AC-DC

C1	22-885	2-GANG VARIABLE		R1	63-593	47 M OHM	¼ W.	4	S6903	2ND I.F. TRANS
C2	22-250	.05 MFD.	200V.	R2	63-591	22 M OHM	¼ W.	5	100-77	BALLAST TUBE
C3	22-190	.1 MFD.	200V.	R3	63-572	15 OHM	¼ W.	6	100-67	PILOT LIGHT 6.3 V. .15 A.
C4		100 MMFD.		R4	63-600	2.2 MEGOHM	¼ W	7	MS 517	TONE CONTROL SWITCH
C5	22-841	.02 MFD.	200V	R5	63-602	4.7 MEGOHM	¼ W.			
C6		DUAL 100 MMFD.		R6	63-296	220 M OHM	¼ W			
C7	22-837	.01 MFD.	400V	R7	63-597	470 M OHM	¼ W.			
C8	22-833	.0005 MFD.	600V	R8	63-686	150 OHM WIREWOUND	½ W	A		1ST I.F. TRANS PRI
C9	22-836	.03 MFD	400V.	R9	63-1017	27 OHM "	½ W	B		1ST I.F. TRANS SEC
C10	22-839	.05 MFD.	400V.	R10	63-1028	VOLUME CONTROL		D		2ND I.F. TRANS SEC
C11	22-835	40 MFD.	150V	R11	63-713	47 M OHM	¼ W.	F		BROADCAST OSC. (ON GANG)
C12	22-835	16 MFD.	150V	R12	63-717	220 M OHM	¼ W	G		" ANT (" ")
C13	22-835	20 MFD.	25V	1		WAVEMAGNET ASSEM.				
C14	22-844	TONE CONTROL COND.		2	S6901	OSC. COIL " "				
				3	S6902	1ST I.F. TRANS				



MODELS	SPEAKER	
6P429	49-298	5"
6P430	49-298	5"
6P447	49-298	5"
6P448	49-305	5"
6P457	49-307	10"

6 TUBE SUPERHETERODYNE
VOLTAGE DOUBLER A.C.
CHASSIS No 5662 & 5666

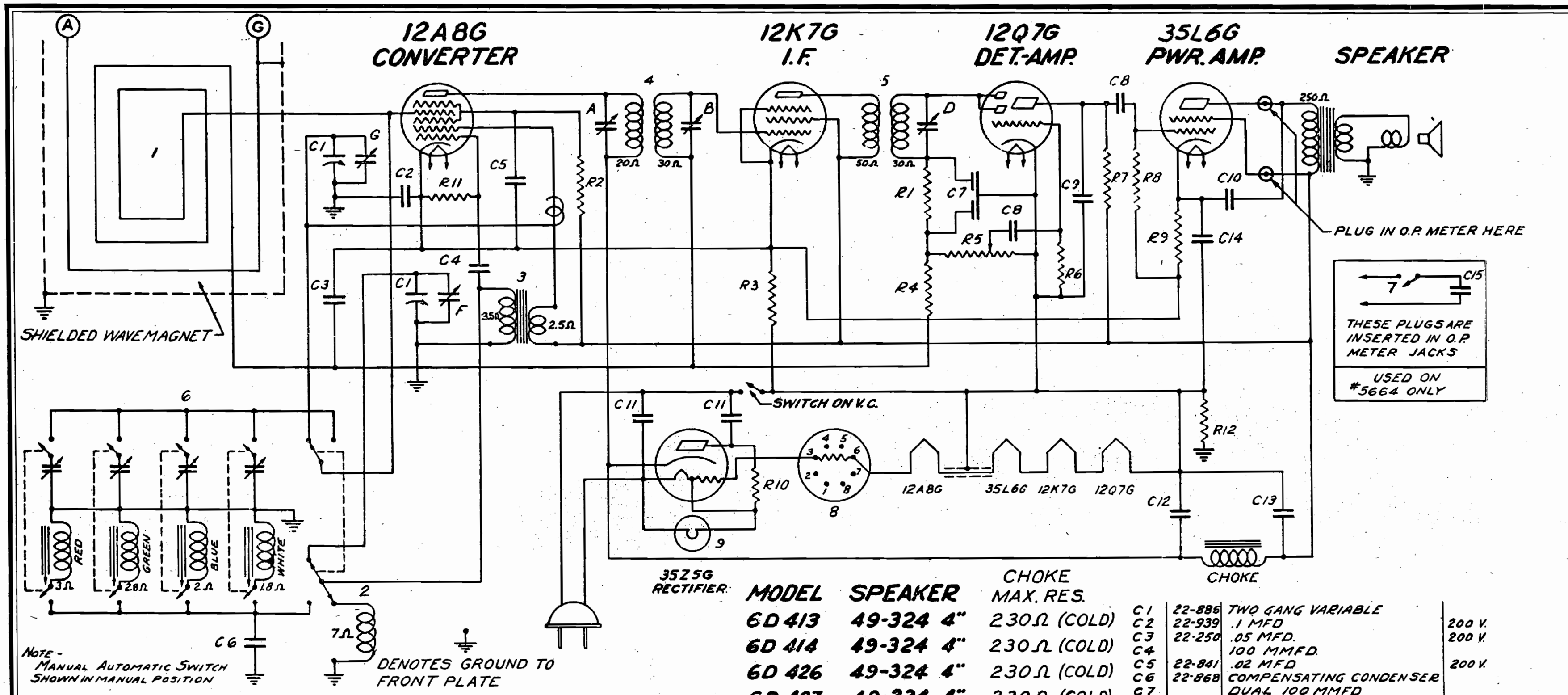
FOR OTHER DATA SEE INDEX

C1	22-845	TWO-GANG VARIABLE		C15	22-840	20 MFD ELECTROLYTIC	350V.	R9	63-976	15 MEGOHM	¼ W	9	100-39	PILOT LIGHT 2.9 V. - .17 A.
C2	22-190	.1 MFD.	200V.	C16	22-840	20 " "	250V.	R10	63-296	220 M OHM	¼ W	10	MS-517	TONE CONTROL SWITCH
C3	22-250	.05 MFD	200V.	C17	22-840	20 " "	200V.	R11	63-597	470 M OHM	⅓ W	11	S-7006	OSCILLATOR COIL ASSEMBLY
C4		100 MMFD.		C18	22-840	20 " "	25V	R12	63-686	150 OHM WIREWOUND	½ W			
C5	22-842	.02 MFD.	400V	C19	22-948	TONE CONTROL COND.		R13	63-1023	22 OHM WIREWOUND	½ W			
C6	22-877	TRIMMER CONDENSER						R14	63-717	220 M OHM	¼ W.			
C7	22-868	COMPENSATING COND.										A		1ST I.F. TRANS. PRI
C8	22-212	.05 MFD.	400V.									B		1ST I.F. " SEC
C9		DUAL 100 MMFD.		R1	63-712	33 M OHM	¼ W	1		WAVEMAGNET ASSEMBLY		C		2ND I.F. PRI
C10	22-838	.005 MFD	600V.	R2	63-581	470 OHM	¼ W	2	S7004	ANTENNA SHUNT COIL ASSEMBLY		D		2ND I.F. " SEC.
C11	22-833	.0005 MFD.	600V	R3	63-591	22 M OHM	¼ W	3	S6942	OSC. COUPLER COIL ASSEMBLY		F		BROADCAST OSC. (ON GANG)
C12	22-837	.01 MFD.	400V	R4	63-583	1000 OHM	¼ W	4	S7024	AUTOMATIC TUNING UNIT ASSEM.		G		ANTENNA BROADCAST (" ")
C13	22-836	.03 MFD.	400V	R5	63-722	2.2 MEGOHM	¼ W	5	S6915	1ST I.F. TRANS. ASSEMBLY				
C14	22-875	15 MFD	400V.	R6	63-593	47 M OHM	¼ W.	6	95-598	2ND I.F. TRANSFORMER				
				R7	63-1028	VOLUME CONTROL		7	MS-515	BAND SWITCH				
				R8	63-572	15 OHM	¼ W	8	100-79	BALLAST TUBE				

I.F. FREQUENCY 455KC

MODELS 6D413,6D414,6D426
6D427,6D446,6D455
Chassis 5660,5664
Schematic,Voltage,Socket

ZENITH RADIO CORP.



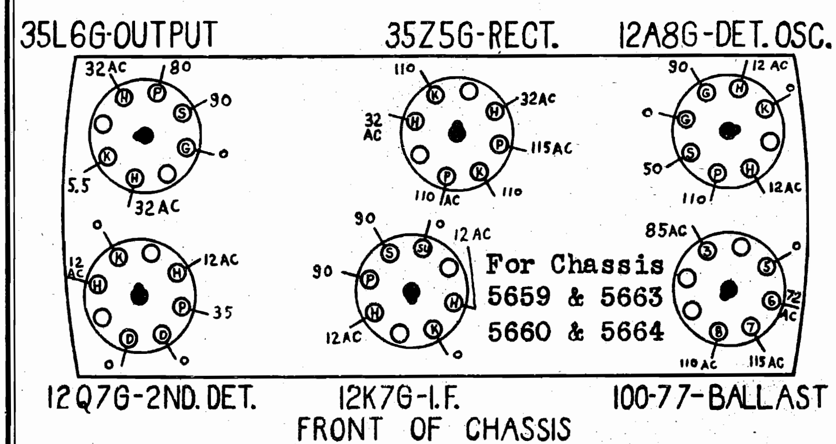
MODEL	SPEAKER		CHOKE MAX. RES.
6D413	49-324	4"	230Ω (COLD)
6D414	49-324	4"	230Ω (COLD)
6D426	49-324	4"	230Ω (COLD)
6D427	49-324	4"	230Ω (COLD)
6D446	49-336	5"	325Ω (HOT)
6D455	49-324	4"	230Ω (COLD)

C1	22-885	TWO GANG VARIABLE	
C2	22-939	.1 MFD	200 V.
C3	22-250	.05 MFD.	200 V.
C4		100 MMFD.	
C5	22-841	.02 MFD	200 V.
C6	22-868	COMPENSATING CONDENSER	
C7		DUAL 100 MMFD	
C8	22-837	.01 MFD.	400 V.
C9	22-833	.0005 MFD	600 V.
C10	22-836	.03 MFD	400 V.
C11	22-839	.05 MFD.	400 V.
C12	22-835	40 MFD ELECTROLYTIC	150 V.
C13		16 " "	150 V
C14		20 "	25 V.
C15	22-844	TONE CONTROL CONDENSER	
R1	63-593	47 M OHM	¼ W
R2	63-591	22 M OHM	¼ W
R3	63-572	15 OHM	¼ W
R4	63-600	2.2 MEGOHM	¼ W.
R5	63-1028	VOLUME CONTROL	
R6	63-602	4.7 MEGOHM	¼ W.
R7	63-296	220 M OHM	¼ W
R8	63-597	470 M OHM	¼ W.
R9	63-686	150 OHM WIREWOUND	½ W
R10	63-1017	27 OHM WIREWOUND	½ W
R11	63-713	47 M OHM	¼ W.
R12	63-717	220 M OHM	¼ W.
1		WAVEMAGNET ASSEMBLY	
2	S 6927	OSCILLATOR COIL ASSEMBLY	
3	S 6942	OSC COUPLER COIL ASSEMBLY	
4	S 6902	1ST I.F. TRANS. ASSEMBLY	
5	S 6903	2ND I.F. TRANS. ASSEMBLY	
6	S 6997	AUTOMATIC TUNING UNIT ASSEM.	
7	MS 517	TONE CONTROL SWITCH	
8	100-77	BALLAST TUBE	
9	100-67	PILOT LIGHT BULB 6.3V.-.15 AMP	
A		1ST I.F. TRANS. PRI	
B		1ST I.F. TRANS. SEC.	
D		2ND I.F. TRANS. SEC.	
F		BROADCAST OSC. (ON GANG)	
G		ANTENNA BROADCAST (ON GANG)	

6 TUBE SUPERHETERODYNE
CHASSIS #5660 & #5664 A.C.-D.C.

FOR OTHER DATA
SEE INDEX

I.F. FREQUENCY 455 KC.



NOTE

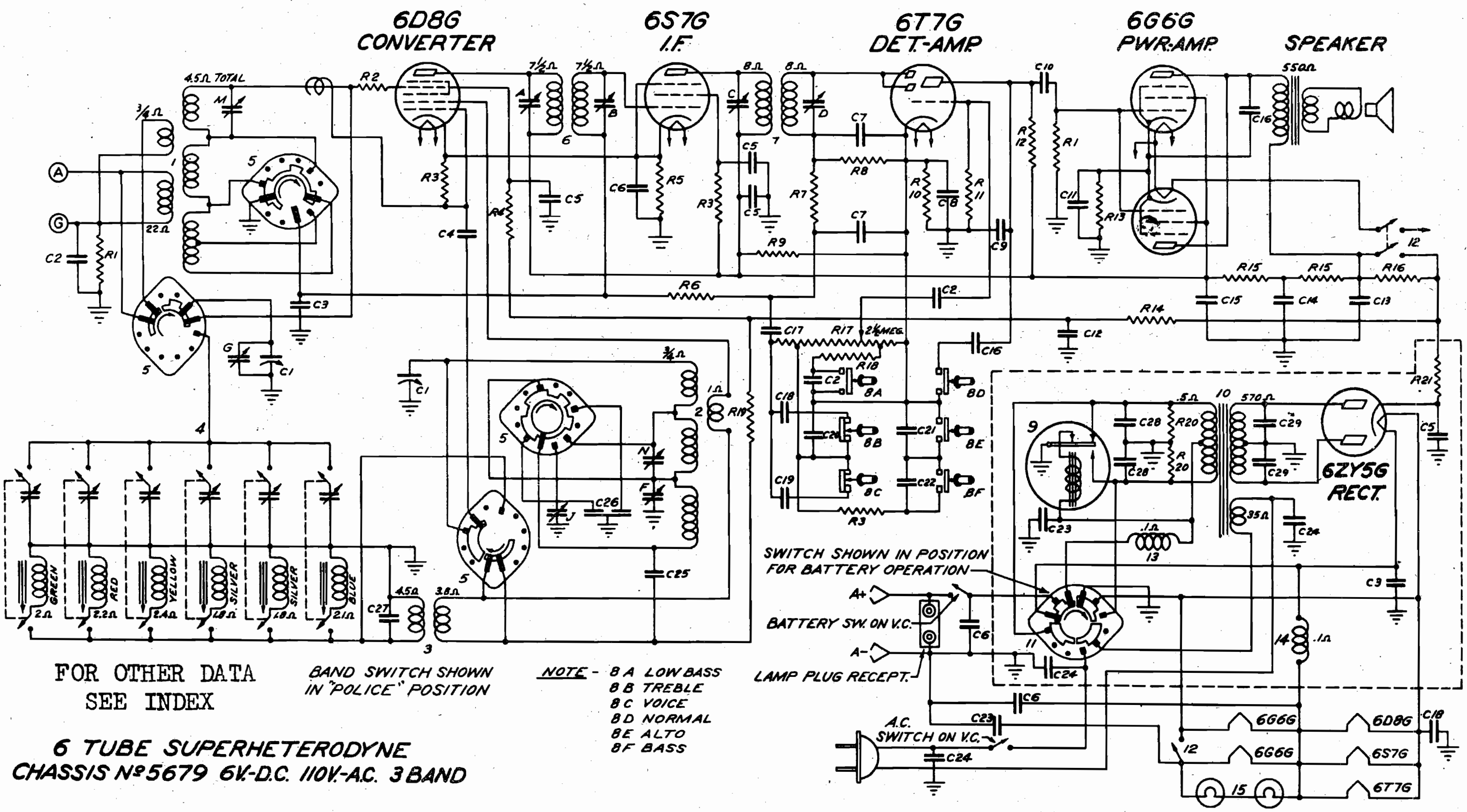
Voltages measured from No. 7 pin on ballast tube to point indicated using a 1000 ohm per volt meter. Vol. control at minimum. Antenna disconnected.

All filament voltages measured across each respective tube, using an A.C. volt-meter.

Line voltage — 110v.

ZENITH RADIO CORP.

MODELS 6J436, 6J463
Chassis 5679
Schematic



DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-964	TWO GANG VARIABLE	
C2	22-826	.01 MFD.	200V.
C3	22-829	.05 MFD.	200V.
C4	22-289	50 MMFD.	600V.
C5	22-828	.05 MFD.	400V.
C6	22-350	.25 MFD.	200V.
C7	22-162	.0001 MFD.	600V.
C8	22-827	.1 MFD.	200V.
C9	22-854	.0005 MFD.	600V.
C10	22-188	.02 MFD.	400V.
C11	22-974	20 MFD. ELECTROLYTIC	25V.
C12		20 MFD. "	250V.
C13	22-771	30 MFD. ELECTROLYTIC	250V.
C14		15 MFD. "	250V.
C15		10 MFD. "	250V.
C16	22-448	.004 MFD.	600V.
C17	22-327	.02 MFD.	200V.
C18	22-182	.00025 MFD.	600V.
C19	22-470	.00015 MFD.	600V.
C20	22-716	.0005 MFD.	600V.
C21	22-458	.006 MFD.	600V.
C22	22-326	.003 MFD.	400V.
C23	22-199	.5 MFD.	200V.

DIAG. Nº	PART Nº	DESCRIPTION	
C24	22-830	.02 MFD.	600V.
C25	22-358	.002 MFD.	600V.
C26	22-973	DUAL OSC. PADDER	
C27	22-868	COMPENSATING COND.	
C28	22-319	.005 MFD.	200V.
C29	22-972	.015 MFD.	600V.
R1	63-597	470M OHM	¼ W.
R2	63-576	68 OHM	¼ W.
R3	63-593	47M OHM	¼ W.
R4	63-649	56M OHM	¼ W.
R5	63-628	270 OHM	¼ W.
R6	63-599	1.5 MEGOHM	¼ W.
R7	63-711	22M OHM	¼ W.
R8	63-659	470M OHM	¼ W.
R9	63-160	100M OHM	½ W.
R10	63-634	820 OHM	¼ W.
R11	63-271	1 MEGOHM	¼ W.
R12	63-296	220M OHM	¼ W.
R13	63-977	270 OHM WIREWOUND	½ W.
R14	63-796	10M OHM	½ W.

DIAG. Nº	PART Nº	DESCRIPTION	
R15	63-605	1000 OHM	½ W.
R16	63-966	4700 OHM	2 W.
R17	63-990	VOLUME CONTROL	
R18	63-591	22M OHM	¼ W.
R19	63-675	5600 OHM	½ W.
R20	63-963	120 OHM	½ W.
R21	63-577	100 OHM	¼ W.
1	S7811	ANTENNA COIL ASSEMBLY	
2	S8007	OSCILLATOR COIL ASSEMBLY	
3	S7507	OSC. COUPLER COIL ASSEMBLY	
4	S7649	AUTOMATIC TUNING UNIT ASSEM.	
5	85-210	BAND SELECTOR SWITCH	
6	95-649	1ST I.F. TRANSFORMER	
7	95-650	2ND I.F. TRANSFORMER	
8	S8013	TONE CONTROL SWITCH	
9	190-11	VIBRATOR	
10	95-645	POWER TRANSFORMER	
11	85-177	POWER SUPPLY SWITCH	
12	85-171	BATT. CONSERVER SWITCH	
13	S5043	CHOKE ASSEMBLY	

DIAG. Nº	PART Nº	DESCRIPTION
14	S2778	CHOKE ASSEMBLY
15	100-39	PILOT LIGHT 2.9V. .17A.
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
F		B'DCAST OSC. (SEE NOTE)
G		ANT. B'DCAST (ON GANG)
J		B'DCAST PADDER (SEE NOTE)
M	22-788	S.W. ANTENNA
N		POL. BAND OSC. (SEE NOTE)

NOTE- TRIMMERS F, J & N ARE MOUNTED ON STRIP #22-1002

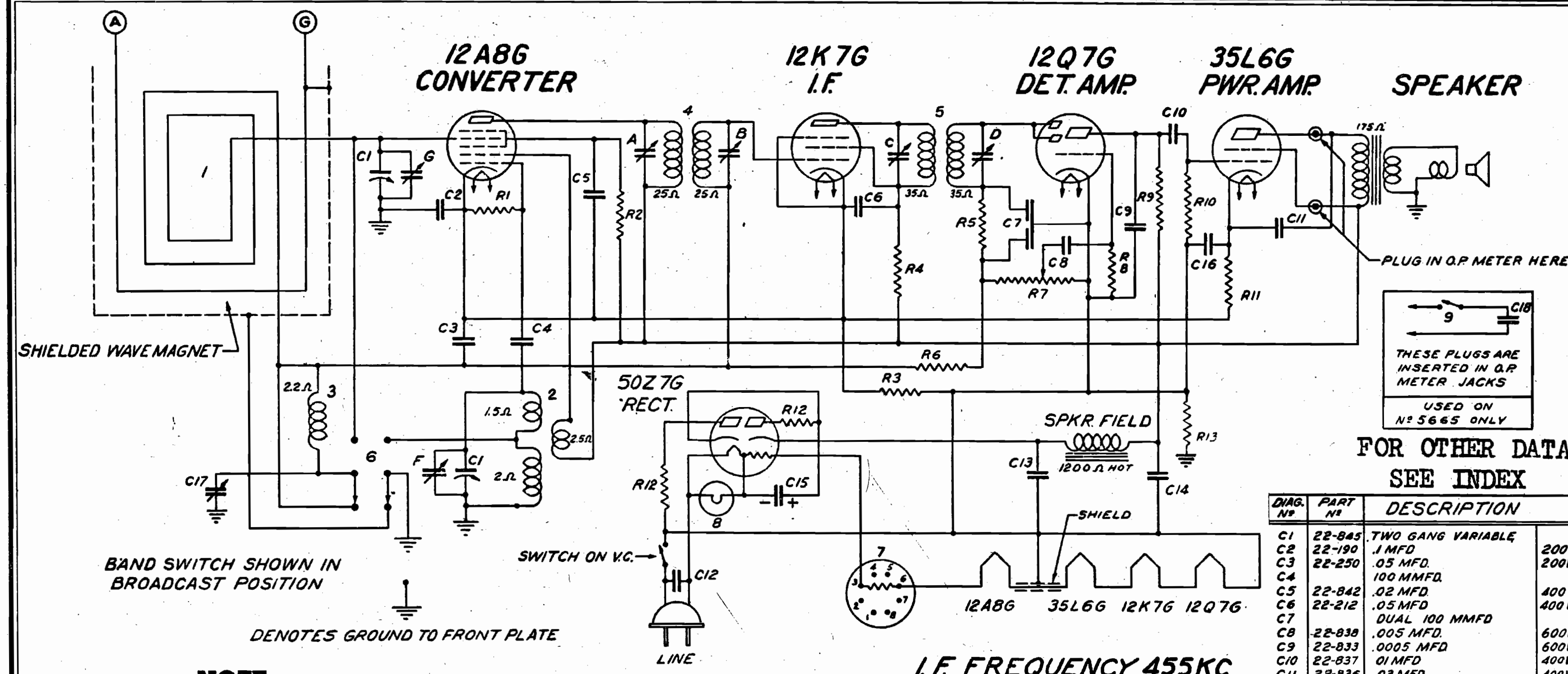
⏚ DENOTES CHASSIS "GROUND"

I.F. FREQUENCY 455 KC.

MODEL	SPEAKER
6J436	49-350 8"
6J463	49-348 10"

MODELS 6P416 to 6P419,6P428
Chassis 5661,5665
Schematic,Voltage,Socket
CHASSIS 5662,5666
Voltage,Socket

ZENITH RADIO CORP.



FOR OTHER DATA
SEE INDEX

DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-845	TWO GANG VARIABLE	
C2	22-190	.1 MFD	200V
C3	22-250	.05 MFD.	200V
C4		100 MMFD.	
C5	22-842	.02 MFD.	400V
C6	22-212	.05 MFD	400V
C7		DUAL 100 MMFD	
C8	22-838	.005 MFD.	600V
C9	22-833	.0005 MFD	600V
C10	22-837	.01 MFD	400V
C11	22-836	.03 MFD	400V
C12	22-875	.15 MFD	400V
C13	22-840	20 MFD ELECTROLYTIC	350V.
C14	22-840	20 MFD "	250V.
C15	22-840	20 MFD "	200V.
C16	22-840	20 MFD	25V.
C17	22-788	TRIMMER CONDENSER	
C18	22-867	TONE CONTROL COND.	
R1	63-712	33 M OHM	¼ W
R2	63-591	22 M OHM	¼ W
R3	63-572	15 OHM	¼ W
R4	63-583	1000 OHM	¼ W
R5	63-593	47 M OHM	¼ W
R6	63-722	2.2 MEGOHM	¼ W
R7	63-1028	VOLUME CONTROL	
R8	63-976	15 MEGOHM	¼ W.
R9	63-296	220 M OHM	¼ W.
R10	63-597	470 M OHM	¼ W
R11	63-686	150 OHM WIREWOUND	½ W.
R12	63-1023	22 OHM "	½ W
R13	63-717	220 M OHM	¼ W
1		WAVEMAGNET ASSEMBLY	
2	S6913	OSCILLATOR COIL ASSEM.	
3	S6914	SHUNT ANT " "	
4	S6915	1ST I.F TRANS.	
5	95-598	2ND I F TRANS	
6	MS515	BAND SWITCH	
7	100-79	BALLAST TUBE	
8	100-39	PILOT LIGHT 2.9V-.17A	
9	MS517	TONE CONTROL SWITCH	
A		1ST I.F TRANS PRI.	
B		1ST I.F " SEC.	
C		2ND I F PRI.	
D		2ND I.F " SEC	
F		BROADCAST OSC. (ON GANG)	
G		ANTENNA B'DCAST (" ")	

NOTE

Voltages measured from No. 7 pin on ballast tube to point indicated using a 1000 ohm per volt meter. Vol. control at minimum. Antenna disconnected.

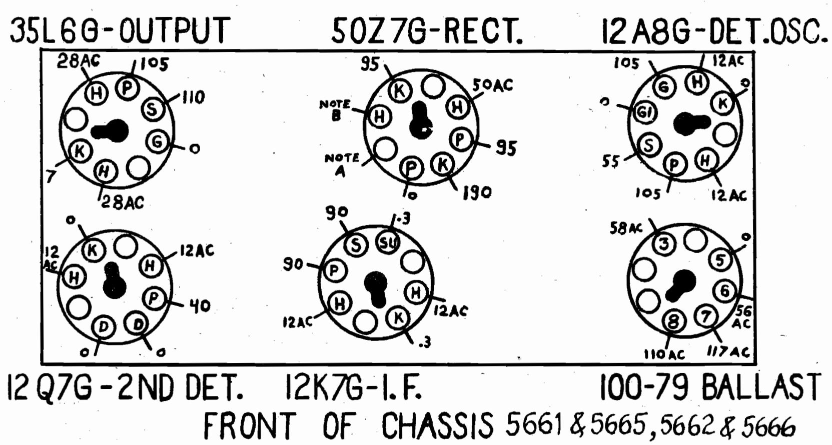
All filament voltages measured across each respective tube, using a 0-50 A.C. voltmeter.

A. This lug is C.T. of fil. and is one side of pilot light supply line.
Lug No. 7 is return for pilot light.

B. This lug (No. 8) has a 50 v. A. C. potential with respect to lug No. 2 and also a 117 v. A.C. potential with respect to line switch.

MODEL	SPEAKER
6P416	49-303 5"
6P417	49-303 5"
6P428	49-303 5"

6 TUBE SUPERHETERODYNE
VOLTAGE DOUBLER A.C.
CHASSIS Nº5661 & 5665



FRONT OF CHASSIS 5661 & 5665, 5662 & 5666

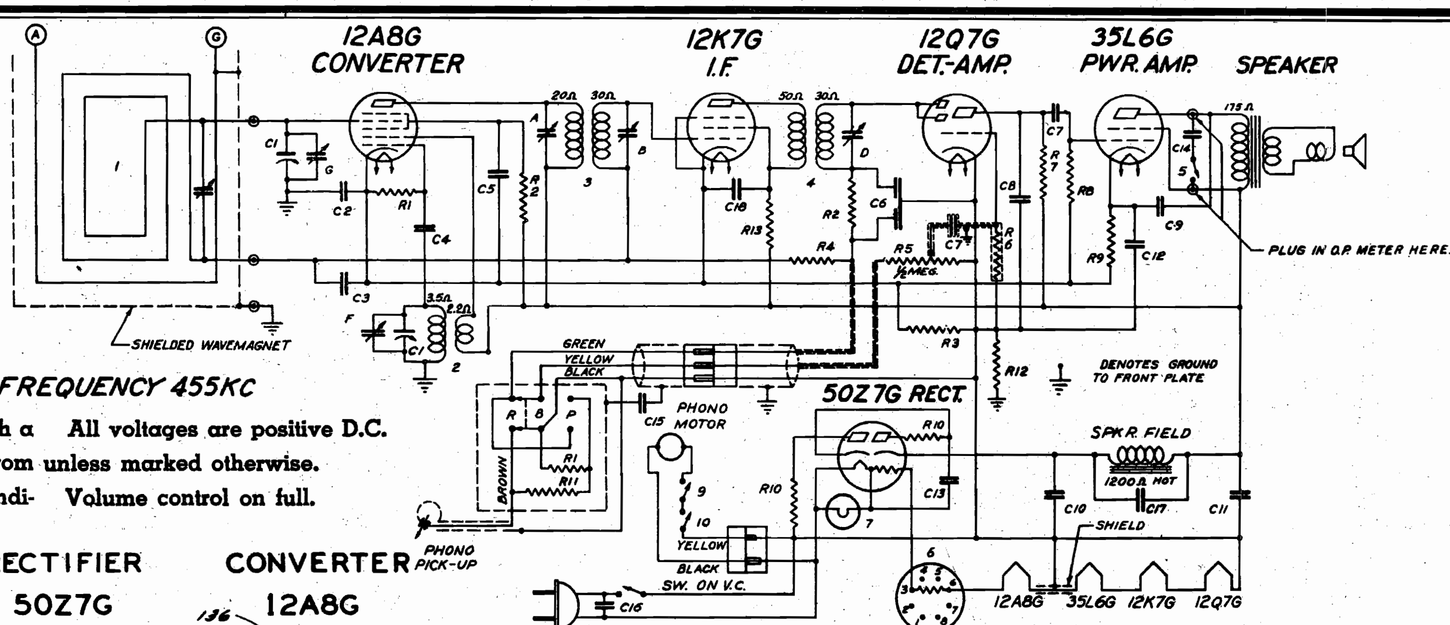
CHASSIS 5672-P
Alignment,Trimmers,Socket

ZENITH RADIO CORP.

MODEL 6R481
Chassis 5675
Schematic,Voltage,Socket
Alignment,Trimmers

LEGEND

F—Filament
H—Heater
D—Diode
G1—Control Grid
G2—Screen Grid
G3—Suppressor Grid
P—Plate
K—Cathode



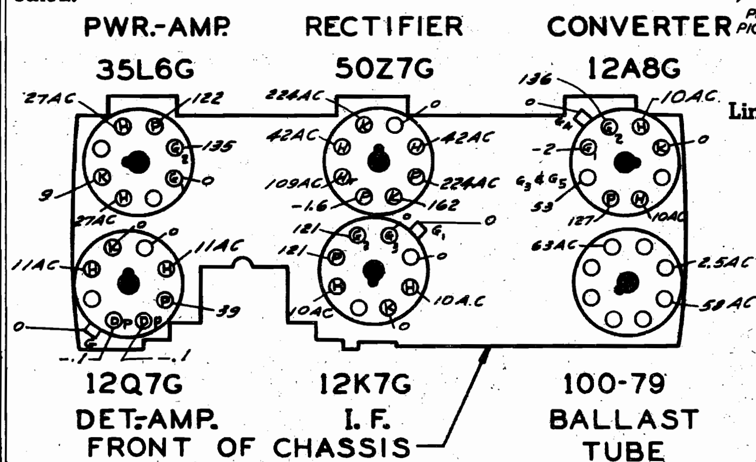
I.F. FREQUENCY 455KC

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise. Volume control on full.

Line voltage 120 A.C.



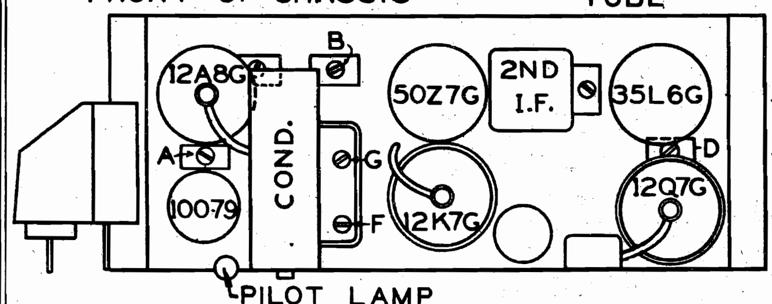
MODEL 6R481 SPEAKER 49-326 5"

DIAG. №	PART №	DESCRIPTION	
C1	22-885	TWO-GANG VARIABLE	
C2	22-938	.2 MFD.	200V.
C3	22-250	.05 MFD.	200V.
C4		100 MMFD.	
C5	22-841	.02 MFD.	200V.
C6		DUAL 100 MMFD.	
C7	22-837	.01 MFD.	400V.
C8	22-833	.0005 MFD.	600V.
C9	22-836	.03 MFD.	400V.
C10	22-894	20 MFD. ELECTROLYTIC	250V.
C11	22-894	20 " "	150V.
C12	22-894	20 " "	25V.
C13	22-893	20 MFD. "	200V.
C14	22-844	TONE CONTROL COND.	
C15	22-185	.01 MFD.	200V.
C16	22-875	.15 MFD.	400V.
C17	22-980	.04 MFD.	400V.
C18	22-212	.05 MFD.	400V.

R1	63-713	47M OHM	¼ W.
R2	63-593	47 M OHM	¼ W.
R3	63-572	15 OHM	¼ W.
R4	63-600	2.2 MEGOHM	¼ W.
R5	63-1028	VOLUME CONTROL	
R6	63-724	4.7 MEGOHM	¼ W.
R7	63-296	220M OHM	¼ W.
R8	63-597	470 M OHM	¼ W.
R9	63-686	150 OHM WIREWOUND	½ W.
R10	63-1023	22 OHM WIREWOUND	½ W.
R11	63-719	470M OHM	¼ W.
R12	63-717	220M OHM	¼ W.
R13	63-583	1000 OHM	¼ W.

1		WAVEMAGNET ASSEMBLY
2	S6901	OSC. COIL "
3	S6902	1ST I.F. TRANS. "
4	S6903	2ND I.F. TRANS. "
5	MS 517	TONE CONTROL SWITCH
6	100-79	BALLAST TUBE
7	100-39	PILOT LIGHT 2.9V. 0.17A.
8	85-192	PHONO SWITCH
9	85-181	AUTOMATIC STOP SW.
10	85-191	A.C. SWITCH
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
D		2ND I.F. " SEC.
F		B'DCAST OSC. (ON GANG)
G		ANT. B'DCAST (ON GANG)

6 TUBE SUPERHETERODYNE
VOLTAGE DOUBLER A.C.
CHASSIS №5675



Location of Tubes and Trimmers

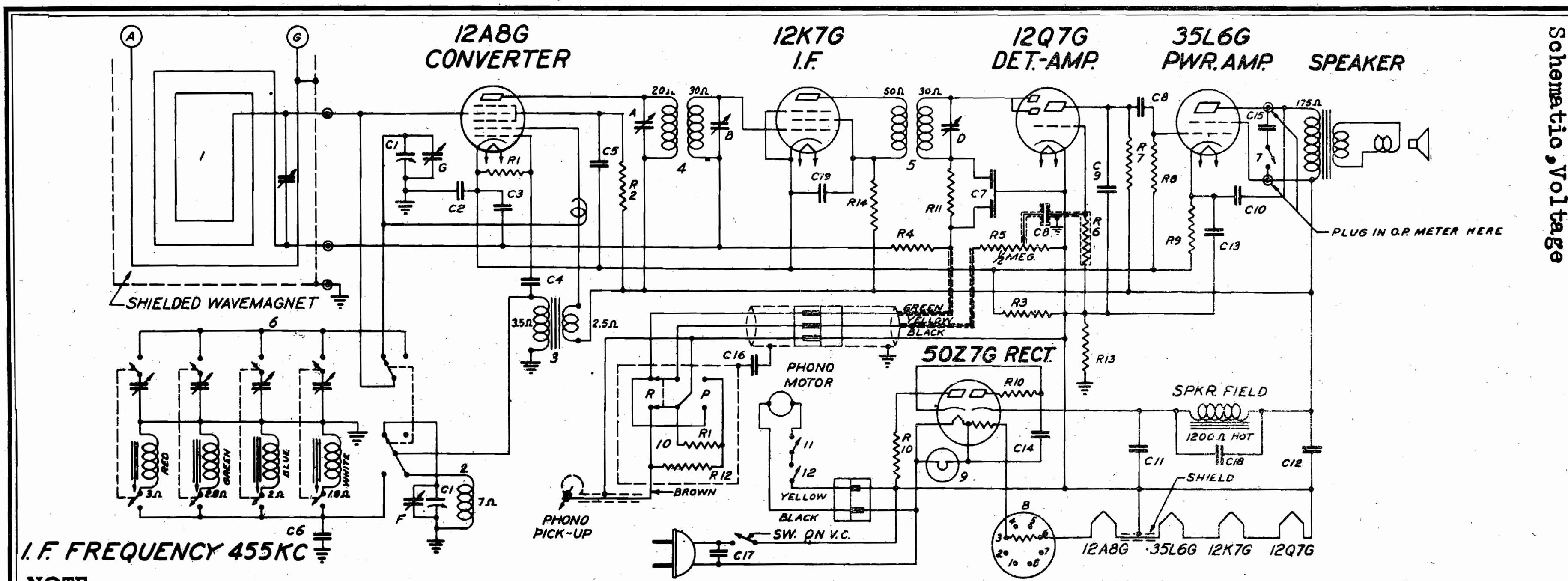
For Chassis
5672-P
5675

ALIGNMENT PROCEDURE

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	.5 Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C	I. F. Alignment
2	Single Turn Loop Loosely	—	1500 Kc.	Broadcast	1500 Kc.	F	Set Oscillator to Scale
3	Coupled to Wave Magnet	—	1500 Kc.	Broadcast	1500 Kc.	G	Alignment of Antenna

MODEL 6R485
Chassis 5672-P
Schematic, Voltage

ZENITH RADIO CORP.



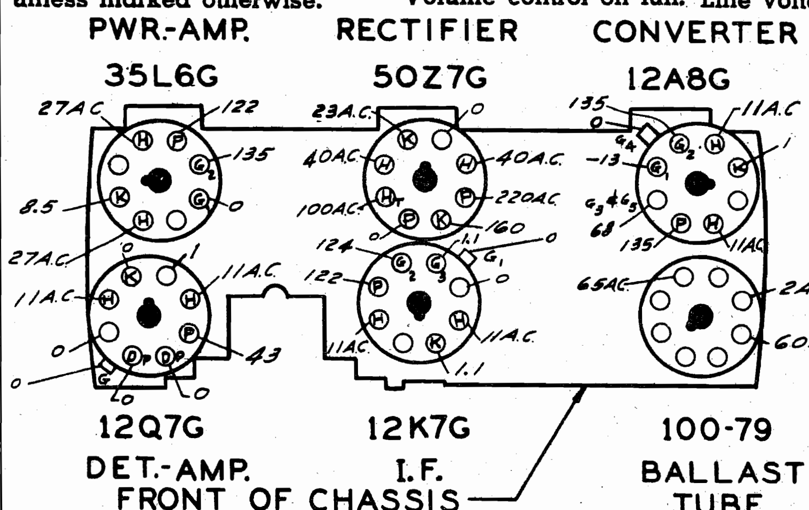
I.F. FREQUENCY 455KC

MANUAL AUTOMATIC SWITCH SHOWN IN MANUAL POSITION.

DENOTES GROUND TO FRONT PLATE

MODEL 6R485 SPEAKER 49-320 8"

NOTE
All voltages are positive D.C. unless marked otherwise. Volume control on full. Line voltage 112 v. A.C.



All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-885	TWO-GANG VARIABLE	
C2	22-938	.2MFD.	200V.
C3	22-250	.05MFD.	200V.
C4		100 MMFD.	
C5	22-841	.02 MFD.	200V.
C6	22-868	COMPENSATING COND.	
C7		DUAL 100 MMFD.	
C8	22-837	.01 MFD.	400V.
C9	22-833	.0005 MFD.	600V.
C10	22-836	.03 MFD.	400V.
C11	22-894	20 MFD. ELECTROLYTIC	250V.
C12		20 " "	150V.
C13		20 " "	25V.
C14	22-893	20 MFD. "	200V.
C15	22-844	TONE CONTROL COND.	
C16	22-185	.01 MFD.	200V.
C17	22-875	.15 MFD.	400V.
C18	22-980	.04 MFD.	400V.
C19	22-212	.05 MFD.	400V.

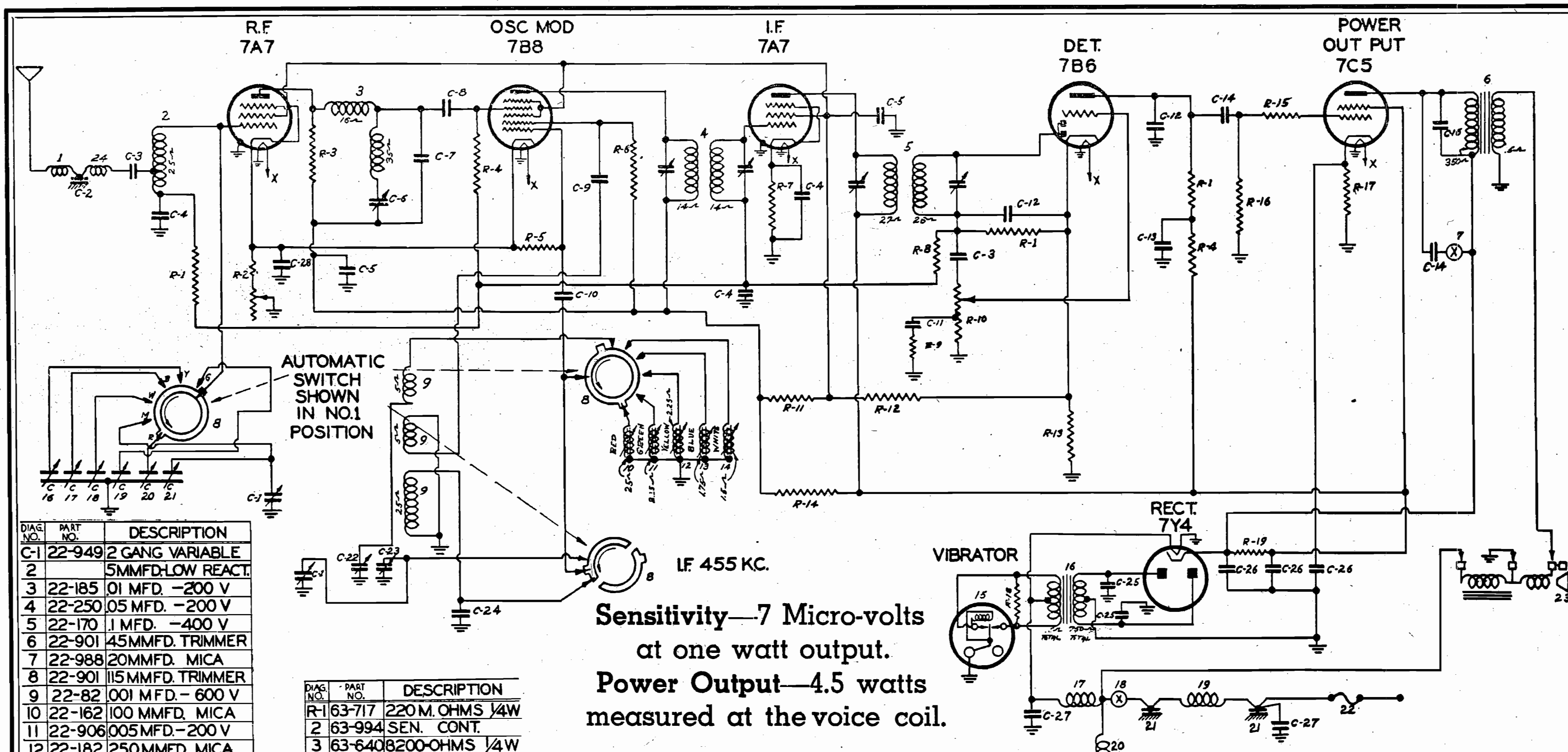
DIAG. Nº	PART Nº	DESCRIPTION	
R1	63-713	47M OHM	¼W.
R2	63-591	22M OHM	½W.
R3	63-572	15 OHM	¼W.
R4	63-600	2.2 MEGOHM	¼W.
R5	63-1028	VOLUME CONTROL	
R6	63-724	4.7 MEGOHM	¼W.
R7	63-296	220 M OHM	¼W.
R8	63-597	470 M OHM	¼W.
R9	63-686	150 OHM WIREWOUND	½W.
R10	63-1023	22 OHM "	½W.
R11	63-593	47 M OHM	¼W.
R12	63-719	470 M OHM	¼W.
R13	63-717	220 M OHM	¼W.
R14	63-583	1000 OHM	¼W.
1		WAVEMAGNET ASSEMBLY	
2	S6927	OSCILLATOR COIL ASSEM.	
3	S6942	OSC. COUPLER COIL ASSEM.	
4	S6902	1ST I.F. TRANS. ASSEMBLY	
5	S6903	2ND I.F. TRANS. "	
6	S6997	AUTOMATIC TUNING UNIT ASSEM.	
7	MS517	TONE CONTROL SWITCH	
8	100-79	BALLAST TUBE	
9	100-39	PILOT LIGHT BULB 2.9V. .17A.	
10	85-192	PHONO SWITCH	
11	85-181	AUTOMATIC STOP SWITCH	
12	85-191	A.C. SWITCH	
A		1ST I.F. TRANS. PRI.	
B		1ST I.F. " SEC.	
D		2ND I.F. " SEC.	
F		BROADCAST OSC. (ON GANG)	
G		ANTENNA BROADCAST (ON GANG)	

6 TUBE SUPERHETERODYNE
VOLTAGE DOUBLER A.C.
CHASSIS Nº 5672-P

FOR OTHER DATA SEE INDEX

ZENITH RADIO CORP.

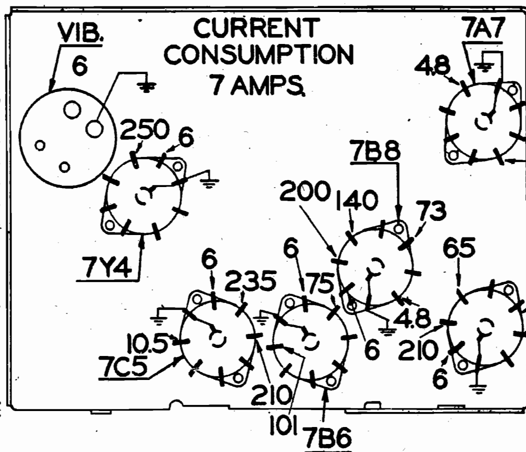
MODEL 6MF490
Ford Roto-Matic, 01A18805
Schematic, Voltage



Sensitivity—7 Micro-volts at one watt output.
Power Output—4.5 watts measured at the voice coil.

MODEL - 6MF490
FORD ROTO-MATIC
01A-18805

Tuning Range—540-1520 K.C.



DIAG. NO.	PART NO.	DESCRIPTION
C-1	22-949	2 GANG VARIABLE
2		5MMFD. LOW REACT.
3	22-185	.01 MFD. -200 V
4	22-250	.05 MFD. -200 V
5	22-170	.1 MFD. -400 V
6	22-901	45MMFD. TRIMMER
7	22-988	20MMFD. MICA
8	22-901	115 MMFD. TRIMMER
9	22-82	.001 MFD. - 600 V
10	22-162	100 MMFD. MICA
11	22-906	.005 MFD. - 200 V
12	22-182	250 MMFD. MICA
13	22-212	.05 MFD. - 400 V
14	22-435	.02 MFD. - 600 V
C-15	22-838	.005 MFD. - 600 V
16	22-947	70-375MMFD. ANTENNA AUTO. TRIMMER STRIP
17		50-300MMFD.
18		35-250MMFD.
19		18-160MMFD.
20		13-160MMFD.
21		2-18 MMFD.
22	22-902	MAN. OSC. PADDER
23	22-902	MAN. OSC. TRIMMER
24	22-956	500MMFD. SILVER MICA
25	22-782	.012 MFD. - 800 V
26	22-955	10-10-20MMFD.-400-350-25-V
27	22-908	.5 MFD. - 120 V
28	22-190	.1 MFD. - 200 V

DIAG. NO.	PART NO.	DESCRIPTION
R-1	63-717	220 M. OHMS 1/4W
2	63-994	SEN. CONT.
3	63-640	8200-OHMS 1/4W
4	63-595	100 M. OHMS 1/4W
5	63-695	47 M. OHMS 1/4W
6	63-972	15 M. OHMS 1 W
7	63-410	1200-OHMS 1/4W
8	63-271	1 MEG OHM 1/4W
9	63-592	33 M. OHMS 1/4W
10	63-1073	VOL. CONT. & SW.
R-11	63-947	27 M. OHMS 2 W
12	63-1059	39 M. OHMS 1/2W
13	63-632	560-OHMS 1/4W
14	63-584	1500-OHMS 1/4W
15	63-695	47-OHMS 1/4W
16	63-719	470M. OHMS 1/4W
17	63-94	330-OHMS 1 W
18	63-971	220-OHMS 1/4W
19	63-968	1800-OHMS 2 W

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
1	S-6868	ANT. MOTOR NOISE CHOKE	15	190-15	VIBRATOR
2	S-7588	ANT. COIL ASSEM.	16	95-641	POWER TRANS.
3	S-7572	R.F. COIL ASSEM.	17	20-213	MAIN HASH CHOKE
4	S-7573	1ST I.F. TRANS.	18		SWITCH ON VOL. CONT.
5	S-7574	2ND I.F. TRANS.	19	S-5844	MOTOR NOISE CHOKE
6	95-640	OUTPUT TRANS.	20	20-217	HEATER LINE CHOKE
7	85-208	TONE CONT. SWITCH	21		LOW REACTOR
8	85-207	AUTOMATIC SWITCH	22	136-11	FUSE
9	S-7544	MAN. OSC. COIL ASSEM.	23	49-341	SPEAKER
10	S-7745	AUTO. OSC. COIL ASSEM.	24	S-7760	MOTOR NOISE CHOKE
11	S-7746				
12	S-7747				
13	S-7748				
14	S-7749				

ALL MEASUREMENTS WITH 1000 OHM PER VOLT METER FROM CHASSIS GROUND TO POINT INDICATED

ANTENNA DISCONNECTED
VOL. AT MIN.
BATTERY VOLTS-6

MODEL 6MF490
Ford Roto-Matic
Alignment, Trimmers, Socket
Tuning Adjustments

ZENITH RADIO CORP.

NOTE:

This receiver is equipped with a fixed-variable sensitivity control located on the side of the chassis as shown in Fig. 3B. The control is set at the factory to a position which gives sensitivity of 7 micro-volts at one watt output. It is found advisable to hold the receiver at this level as any higher sensitivity may result in motor noise or excessive background noise and unless laboratory equipment is available for measuring sensitivity, it is not advisable to change this setting.

MANUAL DIAL CALIBRATION:

If the frequency of a station does not correspond with the dial reading, it may be corrected by holding the tuning control securely and turning the dial drum with the forefinger until it reads correctly.

ALIGNMENT:

The signal for the entire alignment procedure, both I.F. and R.F., is fed through a special Zenith dummy. Part number S7832. The capacities in the Zenith dummy antenna as shown in Fig. 2 are identical with the standard Ford antenna. If the Zenith dummy is not available at your Zenith distributor, you can substitute the values shown.

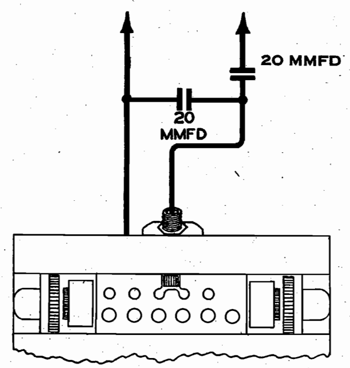


FIG. 2

CAUTION:

Care should be taken while making all adjustments on the receiver to have the volume control turned full on. The intensity of the signal should be reduced only at the signal generator.

I.F.:

The tuning condenser is fully meshed (540 K.C.). The word "dial" must appear in the Roto-matic window. The signal generator is set at 455 K.C. and fed through the special Zenith antenna dummy to the receiver. The wave trap adjustment screw A, see Fig. 3A-3B, is adjusted for maximum response. The adjusting screws B, C, D and E are then adjusted in order for maximum response on the output meter. (See Fig. 3A-3B.)

The wave trap A is then adjusted for minimum response.

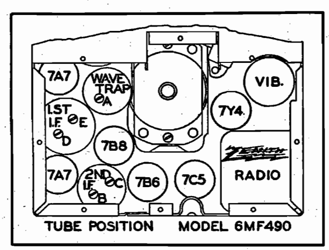


FIG. 3A

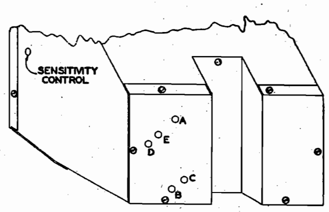


FIG. 3B

R.F.:

The tuning control is rotated until the condenser plates are completely out of mesh (1520 K.C.). Set the signal generator to 1520 K.C. Adjust the 1520 K.C. trimmer shown in Fig. 4 for maximum response.

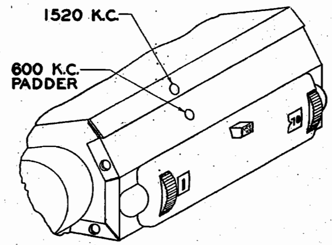


FIG. 4

Set the signal generator to 1400 K.C. Rotate the tuning control until the signal is heard and adjust the 1400 antenna trimmer (see Fig. 5), for maximum response.

Reset the signal generator to 600 K.C. and rotate the tuning control until a signal is heard. The condenser gang is then rocked slightly while adjusting the 600 K.C. padder (see Fig. 4) to maximum reading on the output meter.

The opening below the speaker on the front of the receiver is provided so that the output meter may be connected to the voice coil (see Fig. 6).

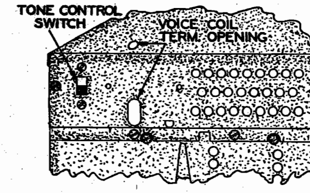


FIG. 6

If you have the type of output meter which is usually connected to the plate of the output tube, it may be adapted for this type of connection by following the instructions shown in Fig. 7.

ROTO-MATIC TUNING ADJUSTMENT:

The receiver should be turned on and allowed to warm up at least 30 minutes before the automatic tuning controls are adjusted.

It is essential that the adjusting screws be set on a weak signal in order to obtain accuracy and the maximum sensitivity. If

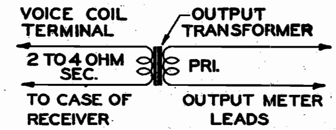


FIG. 7

the received signal is too strong, the antenna should be collapsed to its shortest position. The two screws which hold the escutcheon to the instrument panel are now removed (see Fig. 8). The escutcheon plate is removed, making the adjustment screws accessible. They are then adjusted in the following order:

For a station close to 580 K.C. the adjustment screw over 1 (see Fig. 5) is first adjusted to the desired station. The adjustment screw below 1 is then adjusted for maximum amount of signal.

Number 1 on the adjustment screw (see Fig. 5) corresponds to Fig. 1 on the Roto-matic tuner. For stations 2, 3, etc., on the Roto-matic tuner, set the adjusting screws 2 and 3, the same as for station 1.

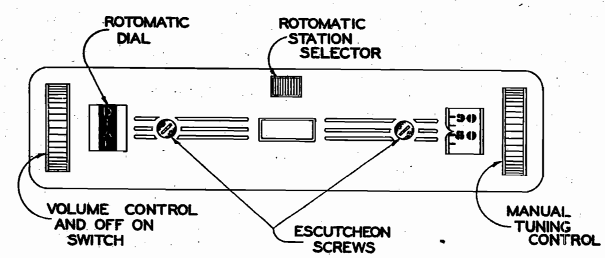


FIG. 8

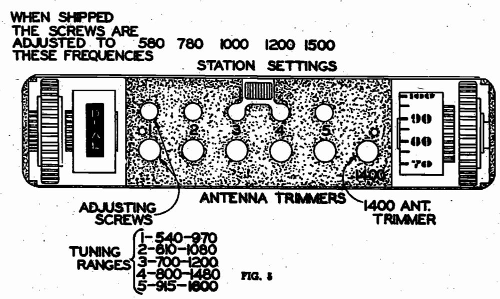


FIG. 5

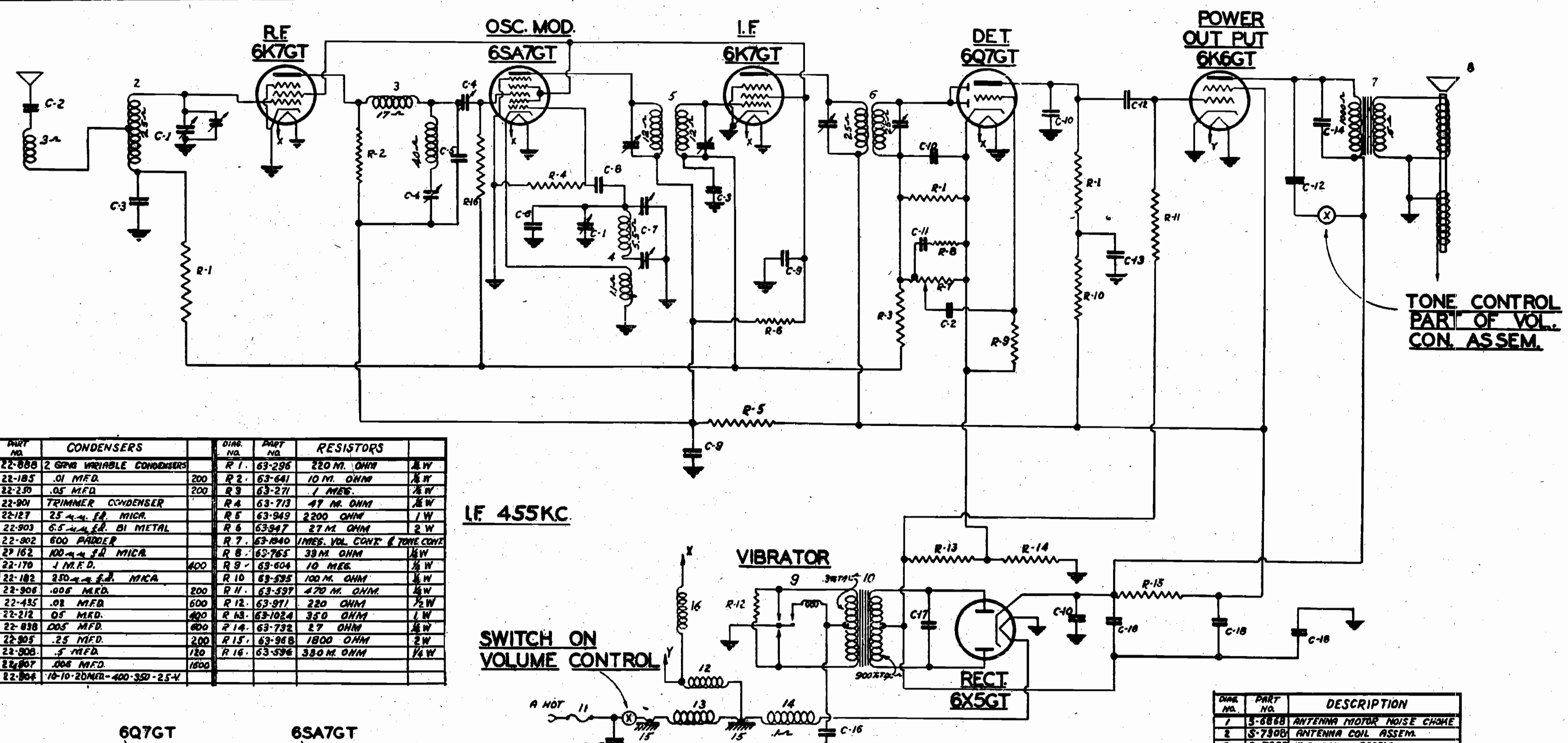
IMPORTANT:

The above procedure should be repeated after the entire five stations are set. This is necessary to make sure that the adjustment screws are peaked for maximum performance.

If difficulty is experienced in setting up the adjusting screws for a desired station, first turn the bottom adjustment screw down tight and then adjust the top screw to the station and follow with an adjustment of the bottom screw for greatest volume.

ZENITH RADIO CORP.

MODEL 6MN495
Nash Special AC4389
Chassis 5673
Schematic, Voltage, Socket
Trimmers

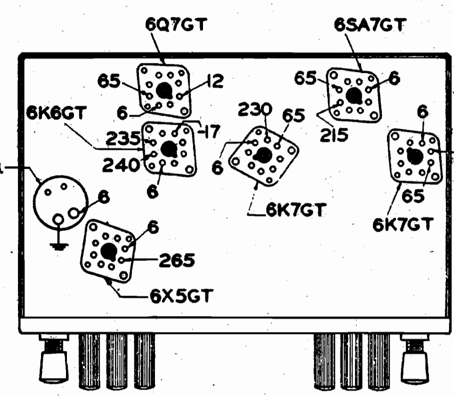


DIAG. NO.	PART NO.	CONDENSERS	
C1	22-888	2 GANG VARIABLE CONDENSERS	
C2	22-185	.01 MFD.	200
C3	22-250	.05 MFD.	200
C4	22-901	TRIMMER CONDENSER	
C5	22-127	25 μμ fd. MICA.	
C6	22-903	6.5 μμ fd. BI METAL	
C7	22-902	600 PADDER	
C8	27 162	100 μμ fd. MICA	
C9	22-170	.1 M.F.D.	400
C10	22-182	250 μμ fd. MICA	
C11	22-906	.006 MFD.	200
C12	22-435	.02 MFD.	600
C13	22-212	.05 MFD.	400
C14	22-838	.005 MFD.	600
C15	22-905	.25 MFD.	200
C16	22-908	.5 MFD.	120
C17	22-907	.008 MFD.	1600
C18	22-904	10-10-20 MFD.-400-350-25 V.	

DIAG. NO.	PART NO.	RESISTORS	
R1	63-296	220 M. OHM	¼ W
R2	63-641	10 M. OHM	¼ W
R3	63-271	1 MEG.	¼ W
R4	63-713	47 M. OHM	¼ W
R5	63-949	2200 OHM	1 W
R6	63-947	27 M. OHM	2 W
R7	63-1040	1 MEG. VOL. CONT. & TONE CONT.	
R8	63-765	33 M. OHM	¼ W
R9	63-604	10 MEG.	¼ W
R10	63-595	100 M. OHM	¼ W
R11	63-597	470 M. OHM	¼ W
R12	63-971	220 OHM	½ W
R13	63-1024	350 OHM	1 W
R14	63-732	27 OHM	¼ W
R15	63-968	1800 OHM	2 W
R16	63-596	330 M. OHM	¼ W

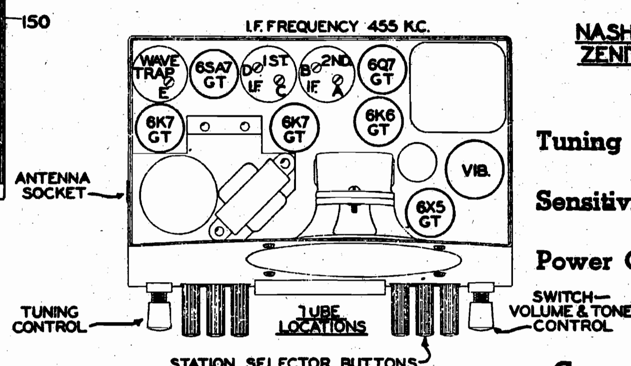
I.F. 455 KC.

DIAG. NO.	PART NO.	DESCRIPTION
1	S-6868	ANTENNA MOTOR NOISE CHOKE
2	S-7308	ANTENNA COIL ASSEM.
3	S-7367	R.F. COIL ASSEM.
4	S-7340	OSC. COIL ASSEM.
5	S-7346	1ST I.F. TRANSFORMER
6	S-7359	2ND I.F. TRANSFORMER
7	95-615	OUT PUT TRANSFORMER
8	49-325	ELECTRODYNAMIC SPEAKER
9	190-15	VIBRATOR
10	95-613	POWER TRANSFORMER
11	136-11	FUSE
12	20-214	FIL. "A" CHOKE
13	S-5844	MOTOR NOISE FILTER CHOKE
14	20-213	MAIN HASH CHOKE
15		LOW REACTORS
16	20-222	FIL. CHOKE



ANTENNA DISCONNECTED, VOL AT MIN BATTERY 6 VOLTS MEASURMENTS MADE FROM CHASSIS TO POINT INDICATED WITH 1000 OHM PER VOLT METER

FOR OTHER DATA SEE INDEX



Chassis 5673

NASH SPECIAL AC 4389
ZENITH MODEL- 6MN495

Tuning Range: 540 to 1580 K.C.

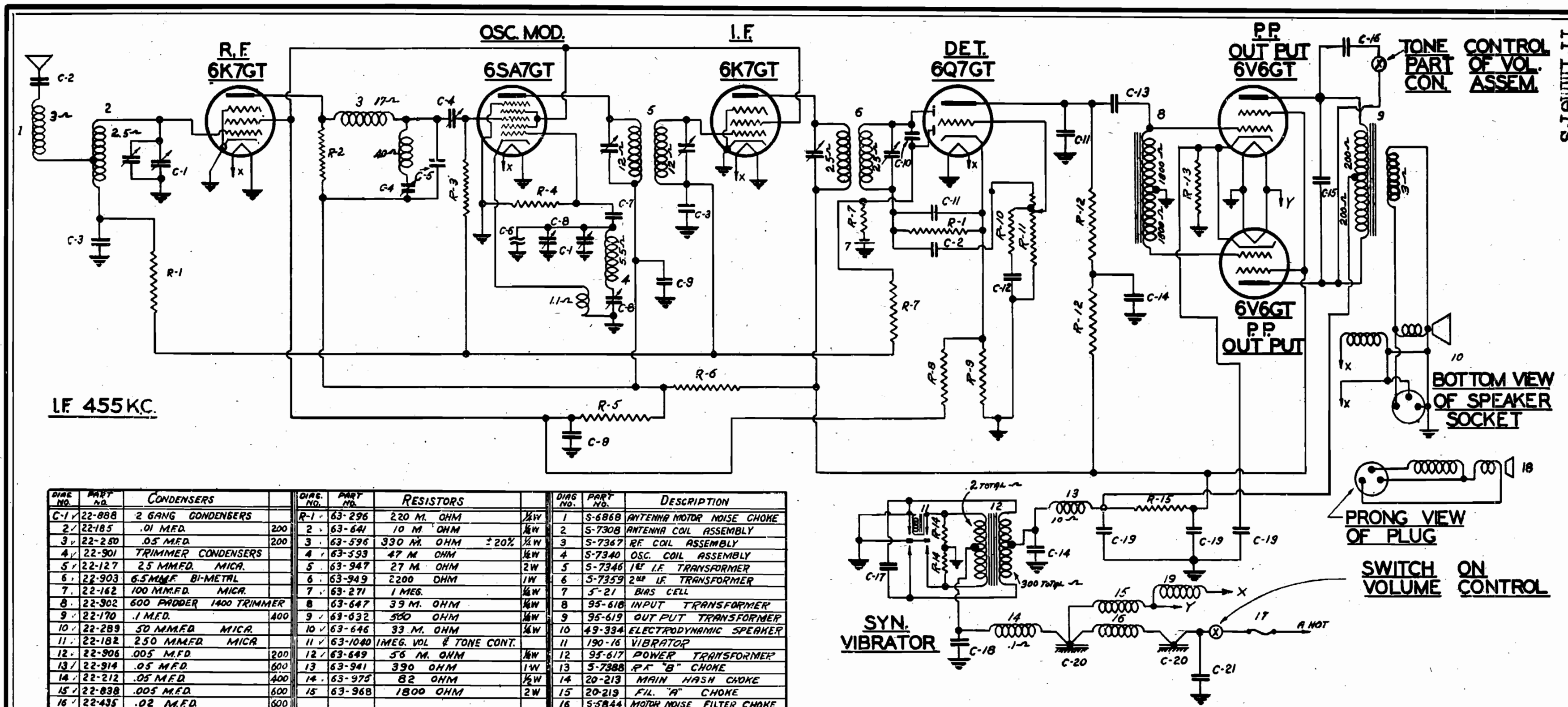
Sensitivity: 10 microvolts at 1 watt output

Power Output: 3.5 watts measured at the voice coil

Current Consumption: 6.8 amperes at 6 volts

MODEL 6MN496
Nash Deluxe AC4289
Chassis 5676
Schematic,Voltage,Socket
Trimmers

ZENITH RADIO CORP.



DIAG. NO.	PART NO.	CONDENSERS	
C-1	22-888	2 GANG CONDENSERS	
2	22-185	.01 M.F.D.	200
3	22-250	.05 M.F.D.	200
4	22-901	TRIMMER CONDENSERS	
5	22-127	2.5 MMF.D. MICA.	
6	22-903	6.5MMF. BI-METAL	
7	22-162	100 MMF.D. MICA.	
8	22-902	600 PADDER 1400 TRIMMER	
9	22-170	.1 M.F.D.	400
10	22-289	50 MMF.D. MICA.	
11	22-182	250 MMF.D. MICA	
12	22-906	.005 M.F.D.	200
13	22-914	.05 M.F.D.	600
14	22-212	.05 M.F.D.	400
15	22-838	.005 M.F.D.	600
16	22-435	.02 M.F.D.	600
17	22-913	.007 M.F.D. BUFFER	1600
18	22-908	.5 M.F.D.	120
19	22-917	20-10-20 450-400-25	
20		LOW REACTOR	
21	22-905	.25 M.F.D.	200

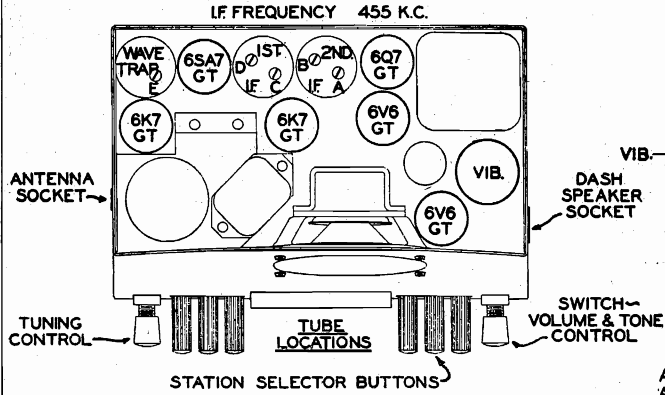
DIAG. NO.	PART NO.	RESISTORS	
R-1	63-296	220 M. OHM	1/2W
2	63-641	10 M. OHM	1/4W
3	63-596	330 M. OHM ±20%	1/4W
4	63-593	47 M. OHM	1/4W
5	63-947	27 M. OHM	2W
6	63-949	2200 OHM	1W
7	63-271	1 MEG.	1/4W
8	63-647	39 M. OHM	1/4W
9	63-632	560 OHM	1/4W
10	63-646	33 M. OHM	1/4W
11	63-1040	1MEG. VOL & TONE CONT.	
12	63-649	56 M. OHM	1/4W
13	63-941	390 OHM	1W
14	63-975	82 OHM	1/2W
15	63-968	1800 OHM	2W

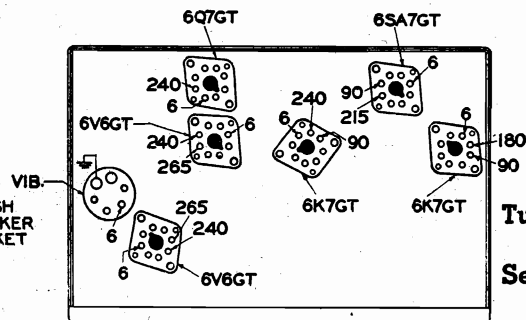
DIAG. NO.	PART NO.	DESCRIPTION
1	S-6868	ANTENNA MOTOR NOISE CHOKE
2	S-7308	ANTENNA COIL ASSEMBLY
3	S-7367	R.F. COIL ASSEMBLY
4	S-7340	OSC. COIL ASSEMBLY
5	S-7346	1ST I.F. TRANSFORMER
6	S-7359	2ND I.F. TRANSFORMER
7	S-21	BIAS CELL
8	95-618	INPUT TRANSFORMER
9	95-619	OUT PUT TRANSFORMER
10	49-334	ELECTRODYNAMIC SPEAKER
11	190-16	VIBRATOR
12	95-617	POWER TRANSFORMER
13	S-7388	R.F. "B" CHOKE
14	20-213	MAIN HASH CHOKE
15	20-219	FIL. "A" CHOKE
16	S-5844	MOTOR NOISE FILTER CHOKE
17	136-11	FUSE
18	49-335	DASH SPEAKER
19	20-220	HASH CHOKE

Chassis 5676

NASH DELUXE AC 4289
ZENITH MODEL-6MN496

I.F. FREQUENCY 455 K.C.





ANTENNA DISCONNECTED VOL AT MIN BATTERY 6 VOLTS MEASUREMENTS MADE FROM CHASSIS TO POINT INDICATED WITH 1000 OHM PER. VOLT METER

Tuning Range: 540 to 1580 K.C.

Sensitivity: 8 microvolts at 1 watt output

Power Output: 9 watts measured at the voice coil

Current Consumption: 8 amperes at 6 volts.

FOR OTHER DATA
SEE INDEX

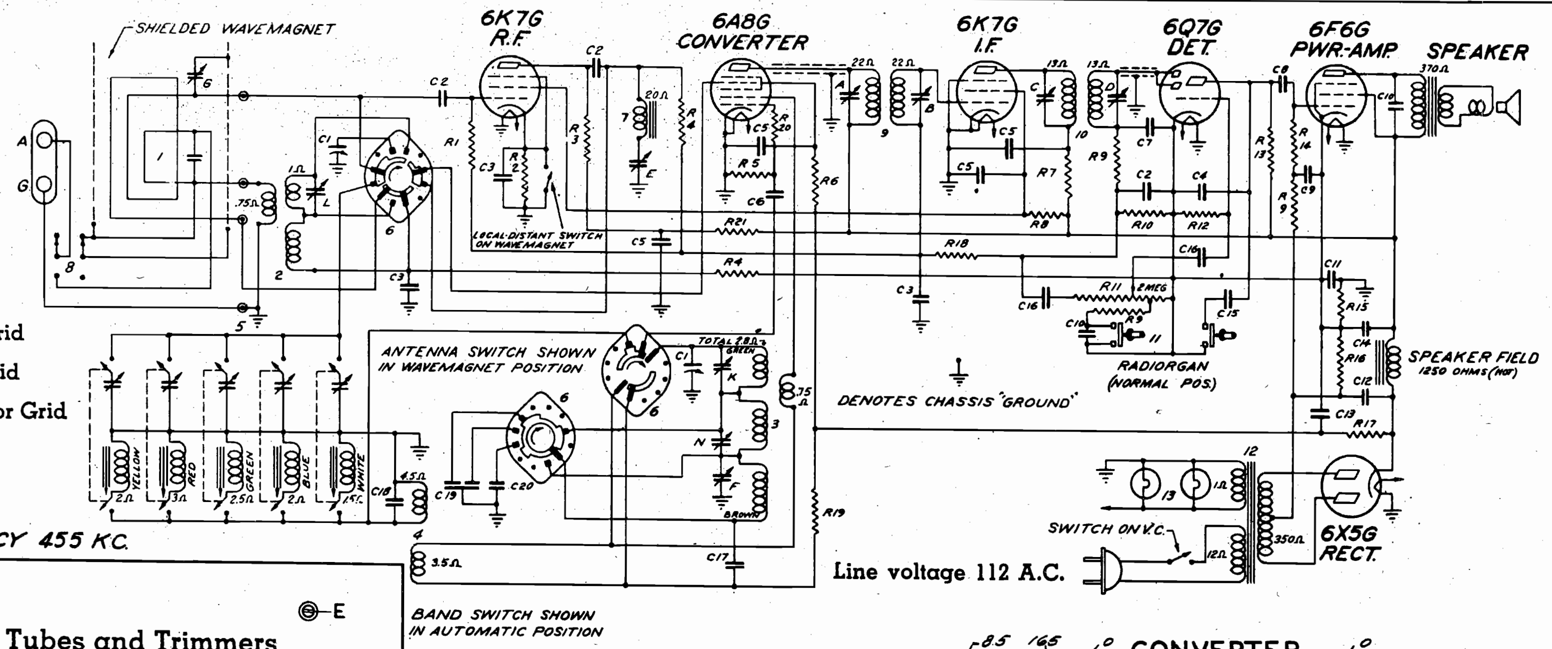
ZENITH RADIO CORP.

MODELS 6S439, 6S469
Chassis 5678
Schematic, Voltage, Socket
Trimmers

LEGEND

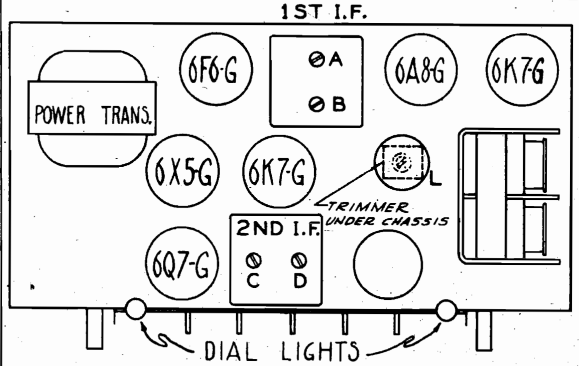
F—Filament
H—Heater
D—Diode
G1—Control Grid
G2—Screen Grid
G3—Suppressor Grid
P—Plate
K—Cathode

I.F. FREQUENCY 455 KC.



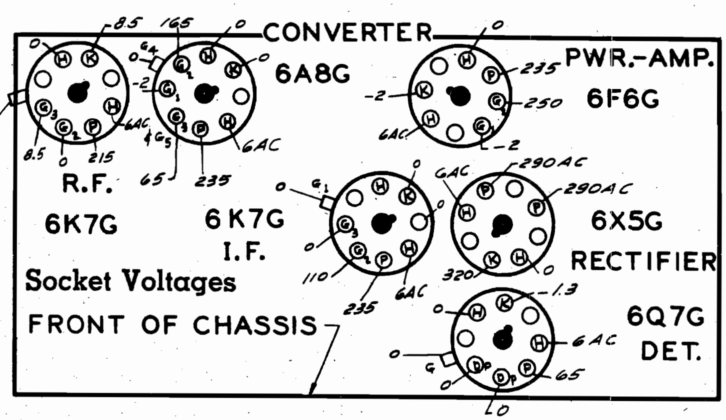
Line voltage 112 A.C.

Location of Tubes and Trimmers



MODEL	SPEAKER
6S439	49-364 6"
6S469	49-344 10"

FOR OTHER DATA
SEE INDEX



6 TUBE SUPERHETERODYNE
CHASSIS Nº 5678 3BAND

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

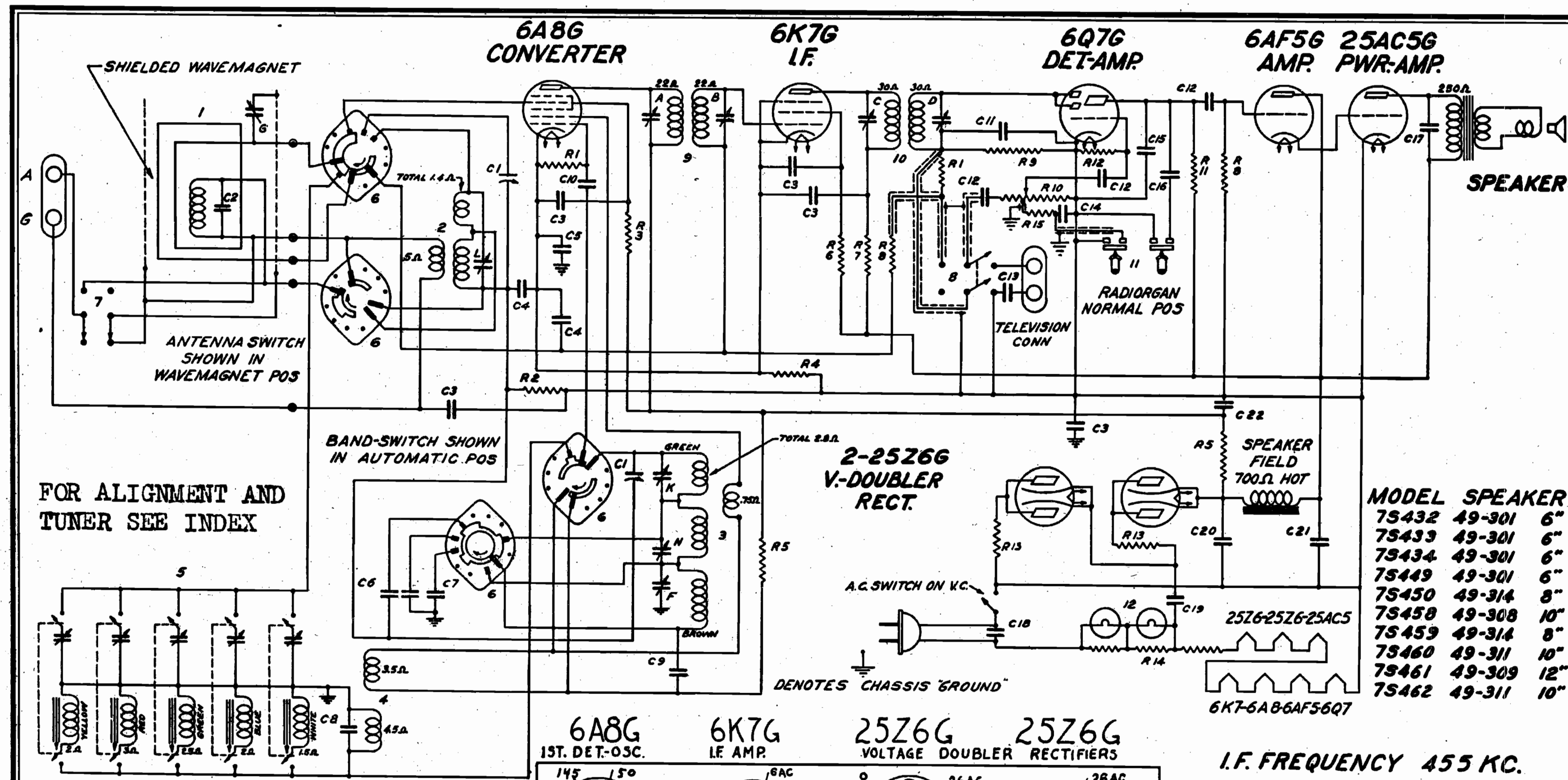
Volume control full on.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-849	2 GANG VARIABLE		C20	22-866	OSCILLATOR PADDER		R16	63-1056	280 OHM WIREWOUND	1½ W.	13	100-36	PILOT LIGHT 6.3V. .25A.
C2	22-162	.0001 MFD.	600V.					R17	63-151	15M OHM	1 W.			
C3	22-829	.05 MFD.	200V.					R18	63-599	1.5 MEGOHM	¼ W.			
C4	22-716	.0005 MFD.	600V.					R19	63-1054	10M OHM	½ W.			
C5	22-828	.05 MFD.	400V.	R1	63-271	1 MEGOHM	¼ W.	R20	63-739	100 OHM	¼ W.	A		1ST I.F. TRANS. PRI.
C6	22-289	50 MMFD.	600V.	R2	63-588	6800 OHM	¼ W.	R21	63-585	2200 OHM	¼ W.	B		1ST I.F. " SEC.
C7	22-182	.00025 MFD.	600V.	R3	63-607	15M OHM	½ W.					C		2ND I.F. " PRI.
C8	22-830	.02 MFD.	600V.	R4	63-595	100M OHM	¼ W.	1		WAVEMAGNET ASSEMBLY		D		2ND I.F. " SEC.
C9	22-219	.03 MFD.	200V.	R5	63-592	33M OHM	¼ W.	2	S7546	ANTENNA COIL ASSEMBLY		E		WAVE TRAP
C10	22-229	.005 MFD.	600V.	R6	63-381	100M OHM	½ W.	3	S6937	OSCILLATOR COIL ASSEMBLY		F		BROADCAST OSC. (SEE NOTE)
C11	22-827	.1 MFD.	200V.	R7	63-583	1000 OHM	¼ W.	4	S6992	OSC. COUPLER COIL ASSEM.		G		ANTENNA BROADCAST
C12	22-975	20 MFD. ELECTROLYTIC	450V.	R8	63-961	47M OHM	1 W.	5	S7044	AUTOMATIC TUNING ASSEM.		K		SHORT WAVE OSC. (" ")
C13	22-976	10 MFD. ELECTROLYTIC	450V.	R9	63-593	47M OHM	¼ W.	6	85-205	BAND SELECTOR SWITCH		L	22-788	SHORT WAVE DET.
C14		15 MFD. ELECTROLYTIC	350V.	R10	63-659	470M OHM	¼ W.	7	S7500	WAVE TRAP COIL ASSEMBLY		N		POLICE BAND OSC. (" ")
C15	22-448	.004 MFD.	600V.	R11	63-1030	VOLUME CONTROL	¼ W.	8	85-171	WAVEMAGNET SWITCH				
C16	22-196	.01 MFD.	600V.	R12	63-976	15 MEGOHM	¼ W.	9	95-600	1ST I.F. TRANS.				NOTE:
C17	22-358	.002 MFD.	600V.	R13	63-296	220M OHM	¼ W.	10	95-596	2ND I.F. TRANS.				TRIMMERS F, K & N
C18	22-868	COMPENSATING COND.		R14	63-597	470M OHM	¼ W.	11	S6994	TONE CONTROL SW. ASSEM.				ARE MOUNTED ON
C19	22-853	DUAL OSC. PADDER		R15	63-1057	47 OHM WIREWOUND	½ W.	12	95-634	POWER TRANS. 60~ 115V.				STRIP #22-850

MODELS 7S432, 7S433, 7S434
7S449, 7S450, 7S458 to 7S462
Chassis 5719
Schematic, Voltage, Socket

ZENITH RADIO CORP.

CHASSIS 5721
Voltage, Socket



FOR ALIGNMENT AND TUNER SEE INDEX

MODEL	SPEAKER	
7S432	49-301	6"
7S433	49-301	6"
7S434	49-301	6"
7S449	49-301	6"
7S450	49-314	8"
7S458	49-308	10"
7S459	49-314	8"
7S460	49-311	10"
7S461	49-309	12"
7S462	49-311	10"

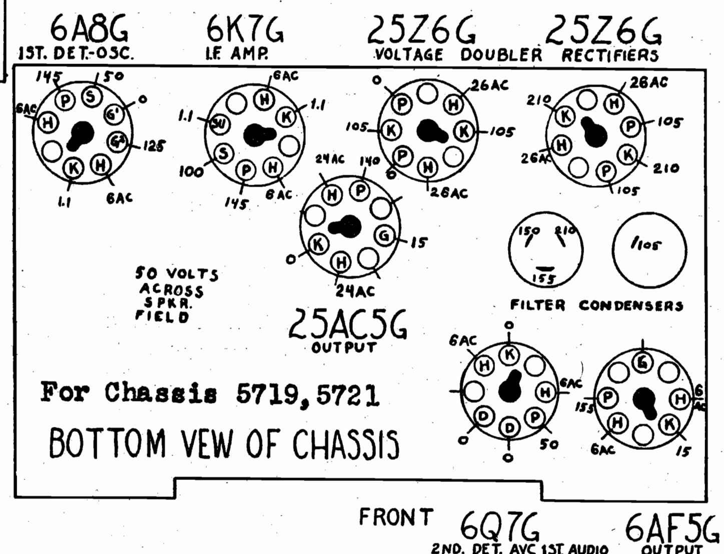
I.F. FREQUENCY 455 KC.

Voltages measured from line switch to point indicated using a 1000 ohm per volt meter. Vol. control at minimum. Antenna disconnected.

All filament voltages measured across each respective tube, using an A.C. volt-meter.

VOLTAGE DOUBLER A.C.

CHASSIS No 5719



C-1	22-849	TWO-GANG VAR					
C-2	22-182	.00025 MFD.	600V.	R-12	63-976	15 MEGOHMS	¼ W.
C-3	22-828	.05 MFD.	400V.	R-13	63-1023	22 OHM WIREWOUND	½ W.
C-4	22-829	.05 MFD.	200V.	R-14	63-1039	3-SECTION CANDOHM	
C-5	22-594	.15 MFD.	200V.	R-15	63-713	47 M OHM	¼ W.
C-6	22-863	OSC PADDER					
C-7	22-866	" "		1		WAVEMAGNET ASSEMBLY	
C-8	22-868	COMPENSATING COND.		2	S6936	ANTENNA COIL "	
C-9	22-358	.002 MFD.	600V.	3	S6937	OSCILLATOR " "	
C-10	22-289	50 MMFD.	600V.	4	S6992	OSC. COUPLER " "	
C-11	22-162	.0001 MFD.	600V.	5	S7044	AUTOMATIC TUNING	
C-12	22-196	.01 MFD.	600V.			UNIT ASSEMBLY	
C-13	22-327	.02 MFD.	200V.	6	85-185	BAND SELECTOR SWITCH	
C-14	22-229	.005 MFD.	600V.	7	85-171	WAVEMAGNET "	
C-15	22-854	.0005 MFD.	600V.	8	85-171	TELEVISION "	
C-16	22-448	.004 MFD.	600V.	9	95-600	1ST I.F TRANSFORMER	
C-17	22-669	.01 MFD.	600V.	10	95-612	2ND I.F TRANSFORMER	
C-18	22-670	.1 MFD.	400V.	11	S-6994	TONE CONTROL SWITCH	
C-19	22-852	30 MFD. ELECTROLYTIC	250V.	12	100-36	PILOT LIGHT 6.3V. .25A.	
C-20	22-851	30 MFD. ELECTROLYTIC	350V.	A		1ST. I.F TRANS PRI	
C-21	22-851	20 " "	250V.	B		1ST. I.F " SEC	
C-22	22-851	10 " "	250V.	C		2ND I.F " PRI	
R-1	63-593	47 M OHM	¼ W.	D		2ND I.F " SEC	
R-2	63-325	150 M OHM	¼ W.	F		BROADCAST OSC. (SEE NOTE)	
R-3	63-1019	68 M OHM	½ W	G	22-865	ANTENNA BROADCAST	
R-4	63-1020	68 OHM WIREWOUND	½ W.	K		SHORT WAVE OSC. (SEE NOTE)	
R-5	63-150	10 M OHM	½ W.	L	22-788	SHORT WAVE DETECTOR	
R-6	63-591	22 M OHM	¼ W.	N		POLICE BAND OSC (SEE NOTE)	
R-7	63-605	1000 OHM	½ W			NOTE.	
R-8	63-271	1 MEGOHM	¼ W			TRIMMERS F, K & N	
R-9	63-655	220 M OHM	¼ W.			ARE MOUNTED ON STRIP	
R-10	63-1030	VOLUME CONTROL				#22-850	
R-11	63-296	220 M OHM	¼ W.				

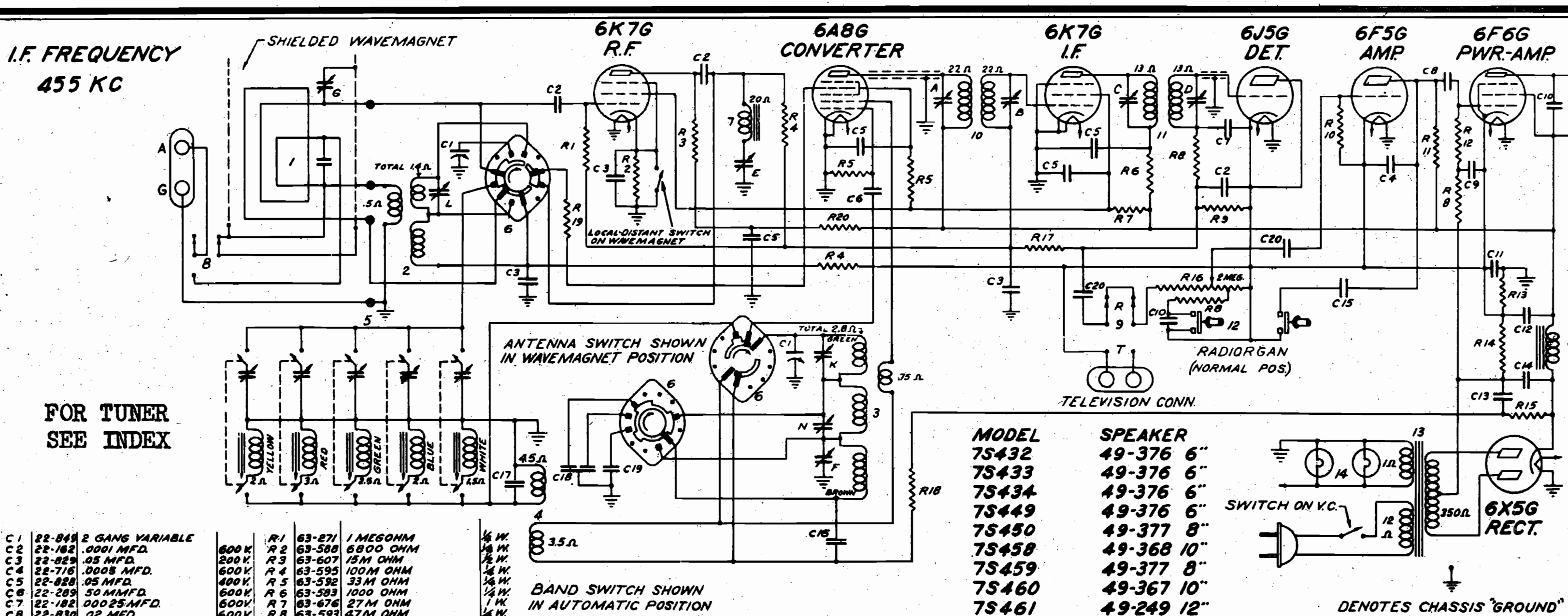
CHASSIS 5678 Alignment

CHASSIS 5725 Alignment Trimmers

ZENITH RADIO CORP.

MODELS 7S432, 7S433, 7S434, 7S449 7S450, 7S458 to 7S462 Chassis 5724 Schematic, Alignment, Socket Trimmers

I.F. FREQUENCY 455 KC



FOR TUNER SEE INDEX

MODEL	SPEAKER
7S432	49-376 6"
7S433	49-376 6"
7S434	49-376 6"
7S449	49-376 6"
7S450	49-377 8"
7S458	49-368 10"
7S459	49-377 8"
7S460	49-367 10"
7S461	49-249 12"
7S462	49-367 10"

DENOTES CHASSIS "GROUND"

For SOCKET VOLTAGES See Index

C1	22-849	2 GANG VARIABLE	
C2	22-162	.0001 MFD.	600V.
C3	22-829	.05 MFD.	200V.
C4	22-716	.0005 MFD.	600V.
C5	22-828	.05 MFD.	400V.
C6	22-289	50 MMFD.	600V.
C7	22-182	.00025 MFD.	600V.
C8	22-830	.02 MFD.	600V.
C9	22-219	.03 MFD.	200V.
C10	22-229	.005 MFD.	600V.
C11	22-827	.1 MFD.	200V.
C12	22-719	16 MFD. ELECTROLYTIC	350V.
C13	22-941	5 MFD. ELECTROLYTIC	450V.
C14	22-941	5 MFD. ELECTROLYTIC	450V.
C15	22-448	.004 MFD.	600V.
C16	22-358	.002 MFD.	600V.
C17	22-868	COMPENSATING COND.	
C18	22-853	DUAL OSC. PADDER	
C19	22-866	OSCILLATOR PADDER	
C20	22-196	.01 MFD.	600V.

R1	63-271	1 MEGOHM	1/4 W.
R2	63-588	6800 OHM	1/4 W.
R3	63-607	15M OHM	1/2 W.
R4	63-595	100M OHM	1/4 W.
R5	63-592	33M OHM	1/4 W.
R6	63-583	1000 OHM	1/4 W.
R7	63-676	27M OHM	1 W.
R8	63-593	47M OHM	1/4 W.
R9	63-659	470M OHM	1/4 W.
R10	63-976	15 MEGOHM	1/4 W.
R11	63-296	220M OHM	1/4 W.
R12	63-597	470M OHM	1/4 W.
R13	63-1057	47 OHM WIREWOUND	1/2 W.
R14	63-1056	280 OHM WIREWOUND	1 1/2 W.
R15	63-1055	22M OHM	1 W.
R16	63-1030	VOLUME CONTROL	
R17	63-599	1.5 MEGOHM	1/4 W.
R18	63-1054	10M OHM	1/2 W.
R19	63-577	100 OHM	1/4 W.
R20	63-705	2200 OHM	1/4 W.

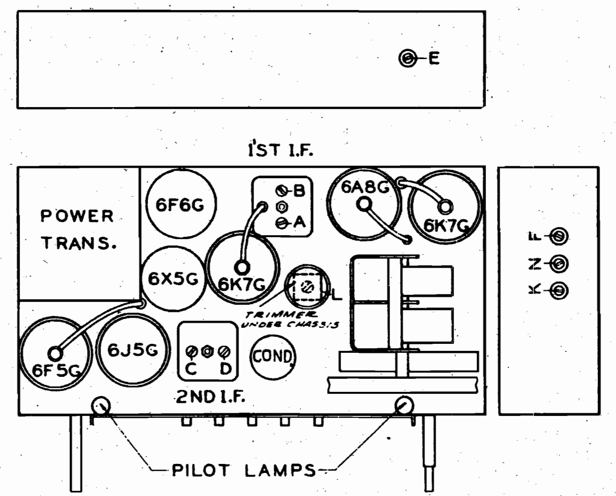
A	1ST I.F. TRANS. PRI.
B	1ST I.F. " SEC.
C	2ND I.F. " PRI.
D	2ND I.F. " SEC.
E	WAVE TRAP
F	BROADCAST OSC. (SEE NOTE)
G	ANTENNA B'DCAST
K	SHORT WAVE OSC. (" ")
L	SHORT WAVE DET.
N	POLICE BAND OSC. (" ")

1		WAVEMAGNET ASSEMBLY
2	S6936	ANTENNA COIL ASSEMBLY
3	S6937	OSCILLATOR COIL ASSEMBLY
4	S6992	OSC. COUPLER COIL ASSEM.
5	S7044	AUTOMATIC TUNING ASSEM.
6	85-205	BAND SELECTOR SWITCH
7	S7500	WAVE TRAP COIL ASSEMBLY
8	85-171	WAVEMAGNET SWITCH
9	85-171	TELEVISION SWITCH
10	95-600	1ST I.F. TRANS.
11	95-596	2ND I.F. TRANS.
12	S6994	TONE CONTROL SW. ASSEM.
13	95-634	POWER TRANS. 60~ 115V.
14	100-36	PILOT LIGHT 6.3V. .25A.

NOTE: TRIMMERS F, K & N ARE MOUNTED ON STRIP #22-850

ALIGNMENT PROCEDURE
For Chassis 5678, 5724 and 5725

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	6A8 Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	R. F. 6K7 Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	J	Adjust Wavetrap for Minimum
3	Antenna Post (On Loop)	400 Ohms	18000 Kc.	S. W.	18000 Kc.	F	Set Oscillator to Scale
4	Antenna Post (On Loop)	400 Ohms	16000 Kc.	S. W.	16000 Kc.	L	Rock Gang and Adjust for Max.
5	Antenna Post (On Loop)	400 Ohms	4500 Kc.	Police	4500 Kc.	G	Rock Gang and Adjust for Max.
6	Generator Loosely Coupled to Loop		1500 Kc.	Broadcast	1500 Kc.	H	Set Oscillator to Scale
7	Thru One or Two Turns		1400 Kc	Broadcast	1400 Kc.	K	Alignment of Antenna

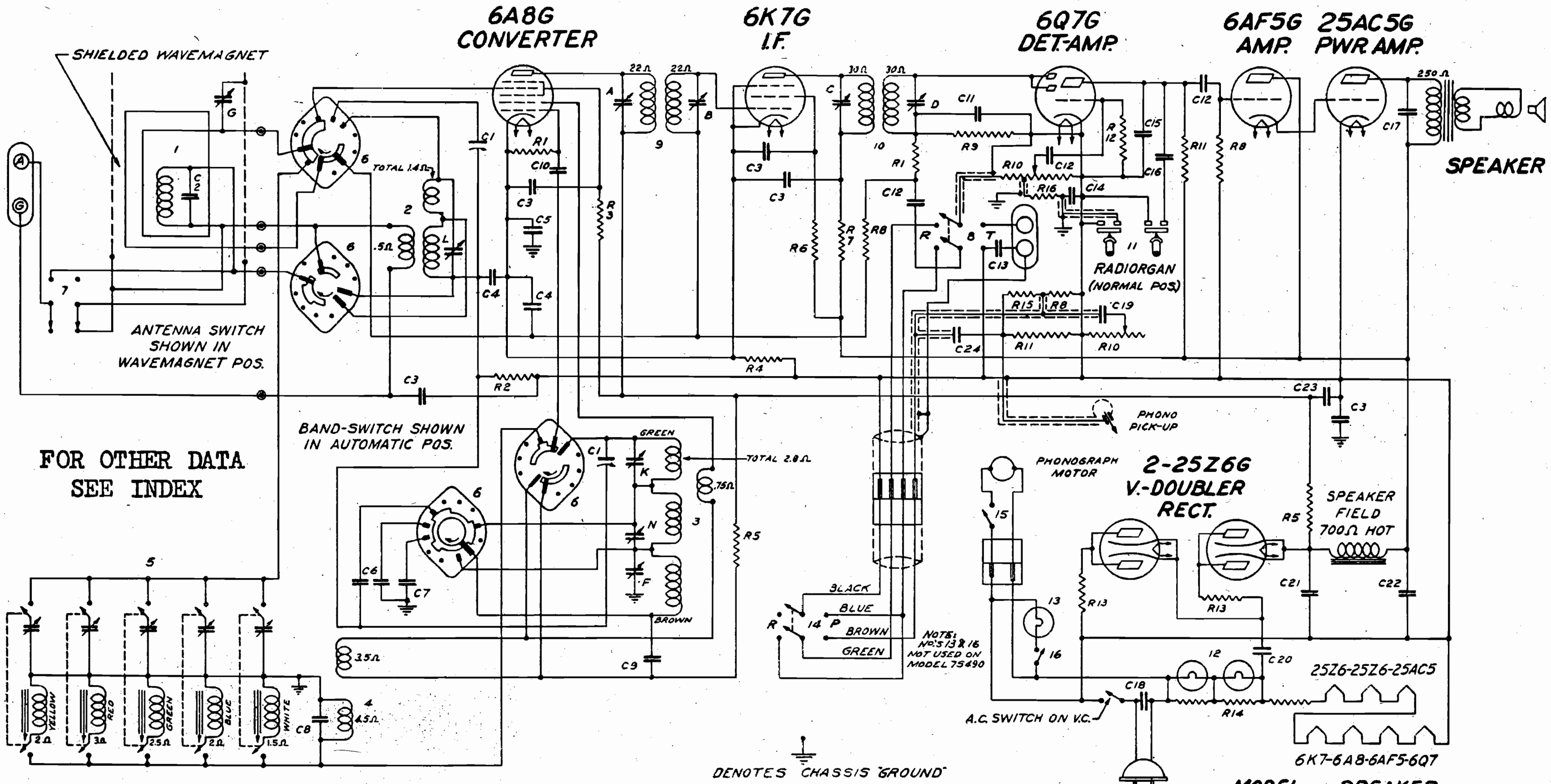


Location of Tubes and Trimmers
For Chassis 5724 and 5725

7 TUBE SUPERHETERODYNE
CHASSIS Nº 5724 3BAND

MODELS 7S487, 7S488, 7S490
Chassis 5721
Schematic

ZENITH RADIO CORP.



FOR OTHER DATA
SEE INDEX

MODEL	SPEAKER	
7S487	49-312	10"
7S488	49-309	12"
7S490	49-314	8"

I.F. FREQUENCY 455KC

7 TUBE SUPERHETERODYNE
CHASSIS No. 5721 3 BAND
VOLTAGE DOUBLER A.C.

DIAG. No.	PART No.	DESCRIPTION	
C1	22-849	TWO GANG VARIABLE	
C2	22-182	.00025 MFD	600V.
C3	22-828	.05 MFD	400V.
C4	22-829	.05 MFD.	200V.
C5	22-594	.15 MFD	200V.
C6	22-863	OSCILLATOR PADDER	
C7	22-866	OSCILLATOR PADDER	
C8	22-868	COMPENSATING COND.	
C9	22-358	.002 MFD.	600V.
C10	22-289	50 MMFD	600V
C11	22-162	.0001 MFD.	600V.
C12	22-196	.01 MFD.	600V.
C13	22-827	.1 MFD.	200V
C14	22-229	.005 MFD.	600V.
C15	22-854	.0005 MFD	600V
C16	22-448	.004 MFD	600V
C17	22-669	.01 MFD.	600V
C18	22-670	.1 MFD.	400V
C19	22-326	.003 MFD.	400V
C20	22-852	30 MFD. ELECTROLYTIC	250V.

DIAG. No.	PART No.	DESCRIPTION	
C21	22-851	30 MFD. ELECTROLYTIC	350V.
C22	22-851	20 MFD. "	250V.
C23	22-851	10 MFD. "	250V.
C24	22-470	150 MMFD.	600V.
R1	63-593	47 M OHM	¼ W.
R2	63-325	150 M OHM	¼ W.
R3	63-1019	68 M OHM	½ W
R4	63-1020	68 OHM WIREWOUND	½ W.
R5	63-150	10 M OHM	½ W
R6	63-591	22 M OHM	¼ W
R7	63-605	1000 OHM	½ W
R8	63-271	1 MEGOHM	¼ W
R9	63-655	220 M OHM	¼ W
R10	63-1035	VOLUME CONTROL	
R11	63-296	220 M OHM	¼ W.
R12	63-976	15 MEGOHM	¼ W
R13	63-1023	22 OHM WIREWOUND	½ W
R14	63-1039	3 SECTION CANDOHM	

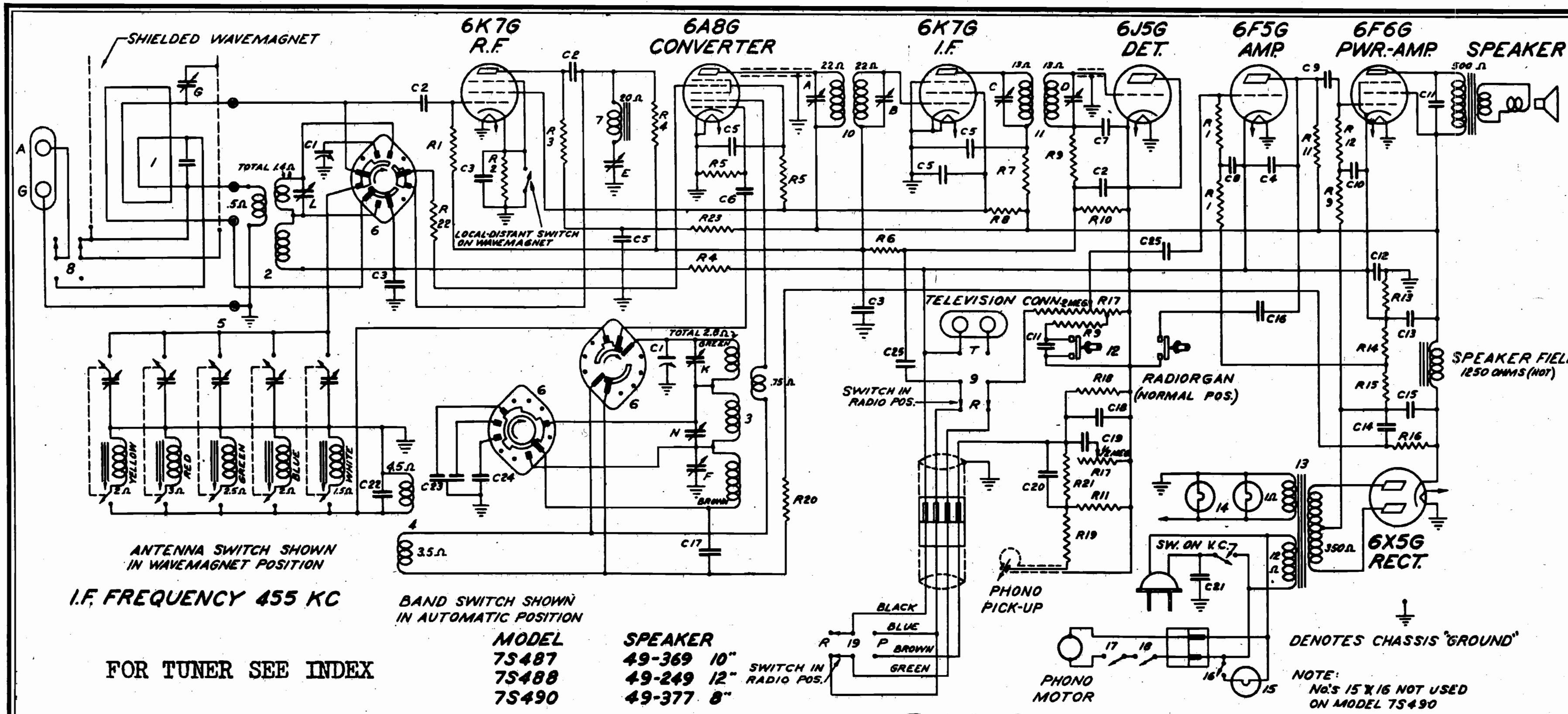
DIAG. No.	PART No.	DESCRIPTION	
R15	63-596	330 M OHM	¼ W.
R16	63-713	47 M OHM	¼ W.
1		WAVEMAGNET ASSEMBLY	
2	S6936	ANTENNA COIL ASSEMBLY	
3	S6937	OSCILLATOR COIL ASSEM.	
4	S6992	OSC. COUPLER COIL ASSEM.	
5	S7044	AUTO. TUNING UNIT ASSEM.	
6	85-185	BAND SELECTOR SWITCH	
7	85-171	WAVEMAGNET SWITCH	
8	85-171	TELEVISION SWITCH	
9	95-600	1ST I.F. TRANS.	
10	95-612	2ND I.F. TRANS	
11	S6994	TONE CONTROL SWITCH	
12	100-36	PILOT LIGHT 6.3 V. .25A	
13	100-80	PILOT LIGHT 110 V. 7 W.	
14	85-192	PHONO SWITCH	
15	85-191	MOTOR SWITCH	

DIAG. No.	PART No.	DESCRIPTION
16	85-204	DOOR SWITCH MODEL 7S487
16	85-203	DOOR SWITCH MODEL 7S488
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC
F		BROADCAST OSC. (SEE NOTE)
G	22-865	ANTENNA BROADCAST
K		SHORT WAVE OSC. (SEE NOTE)
L	22-788	SHORT WAVE DETECTOR
N		POLICE BAND OSC. (SEE NOTE)

NOTE:
TRIMMERS F, K & N
ARE MOUNTED ON STRIP
#22-850

ZENITH RADIO CORP.

MODELS 7S487,7S488,7S490
Chassis 5725
Schematic,Voltage,Socket
CHASSIS 5724
Voltage



NOTE:
No.'s 15 & 16 NOT USED ON MODEL 7S490

I.F. FREQUENCY 455 KC

FOR TUNER SEE INDEX

MODEL	SPEAKER	
7S487	49-369	10"
7S488	49-249	12"
7S490	49-377	8"

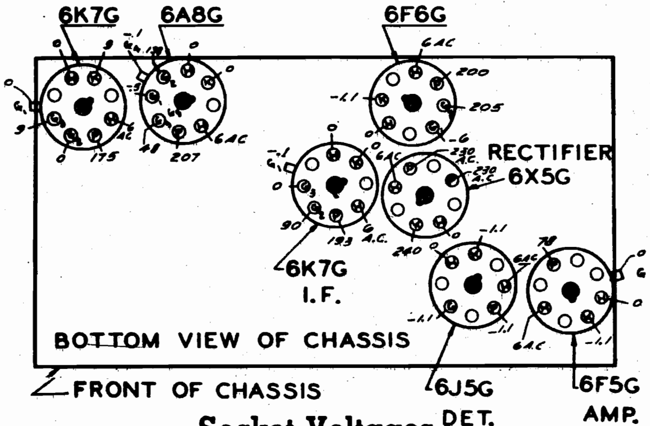
7 TUBE SUPERHETERODYNE CHASSIS Nº 5725 PHONO

DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-849	TWO GANG VARIABLE	
C2	22-162	.0001 MFD.	600V.
C3	22-829	.05 MFD.	200V.
C4	22-716	.0005 MFD.	600V.
C5	22-828	.05 MFD.	400V.
C6	22-289	50 MMFD.	600V.
C7	22-182	.00025 MFD.	600V.
C8	22-190	.1 MFD.	200V.
C9	22-830	.02 MFD.	600V.
C10	22-219	.03 MFD.	200V.
C11	22-229	.005 MFD.	600V.
C12	22-827	.1 MFD.	200V.
C13	22-719	16 MFD. ELECTROLYTIC	350V.
C14	22-941	5 MFD. "	450V.
C15	22-941	15 MFD. "	450V.
C16	22-448	.004 MFD.	600V.
C17	22-358	.002 MFD.	600V.
C18	22-954	.00035 MFD.	600V.
C19	22-326	.003 MFD.	400V.
C20	22-953	.0002 MFD.	600V.
C21	22-525	.005 MFD.	1000V.
C22	22-868	COMPENSATING COND.	
C23	22-853	DUAL OSC. PADDER	
C24	22-866	OSCILLATOR PADDER	
C25	22-196	.01 MFD.	600V.

R1	63-271	1 MEGOHM	1/4 W.
R2	63-588	6800 OHM	1/4 W.
R3	63-607	15M OHM	1/2 W.
R4	63-595	100M OHM	1/4 W.
R5	63-592	33M OHM	1/4 W.
R6	63-599	1.5 MEGOHM	1/4 W.
R7	63-583	1000 OHM	1/4 W.
R8	63-676	27M OHM	1 W.
R9	63-593	47M OHM	1/4 W.
R10	63-659	470M OHM	1/4 W.
R11	63-296	220M OHM	1/4 W.
R12	63-597	470M OHM	1/4 W.
R13	63-1057	47 OHM WIREWOUND	1/2 W.
R14	63-1056	280 OHM WIREWOUND	1 1/2 W.
R15	63-1066	18 OHM WIREWOUND	1/2 W.
R16	63-1055	22M OHM	1 W.
R17	63-1035	VOLUME CONTROL	
R18	63-464	1 MEGOHM	1/4 W.
R19	63-717	220M OHM	1/4 W.
R20	63-1054	10M OHM	1/4 W.
R21	63-719	470M OHM	1/4 W.
R22	63-577	100 OHM	1/4 W.
R23	63-705	2200 OHM	1/4 W.

1		WAVEMAGNET ASSEMBLY
2	S6936	ANTENNA COIL ASSEMBLY
3	S6937	OSCILLATOR COIL ASSEMBLY
4	S6992	OSC. COUPLER COIL ASSEM.
5	S7044	AUTOMATIC TUNING ASSEM.
6	85-205	BAND SELECTOR SWITCH
7	S7500	WAVE TRAP COIL ASSEMBLY
8	85-171	WAVEMAGNET SWITCH
9	85-171	TELEVISION SWITCH
10	95-600	1ST I.F. TRANS.
11	95-596	2ND I.F. TRANS.
12	S6994	TONE CONTROL SW. ASSEM.
13	95-634	POWER TRANS. 60~ 115V.
14	100-36	PILOT LIGHT 6.3V. .25A.
15	100-80	PILOT LIGHT 110V. 7W.
16	85-204	DOOR SWITCH MODEL 7S487
16	85-203	DOOR SWITCH MODEL 7S488
17	85-181	AUTOMATIC STOP SW.
18	85-191	MOTOR SWITCH
19	85-192	PHONO SWITCH
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
E		WAVE TRAP
F		BROADCAST OSC. (SEE NOTE)
G		ANTENNA BROADCAST
K		SHORT WAVE OSC. (" ")
L		SHORT WAVE DET.
N		POLICE BAND OSC. (" ")

NOTE:
TRIMMERS F, K & N ARE MOUNTED ON STRIP #22-850.

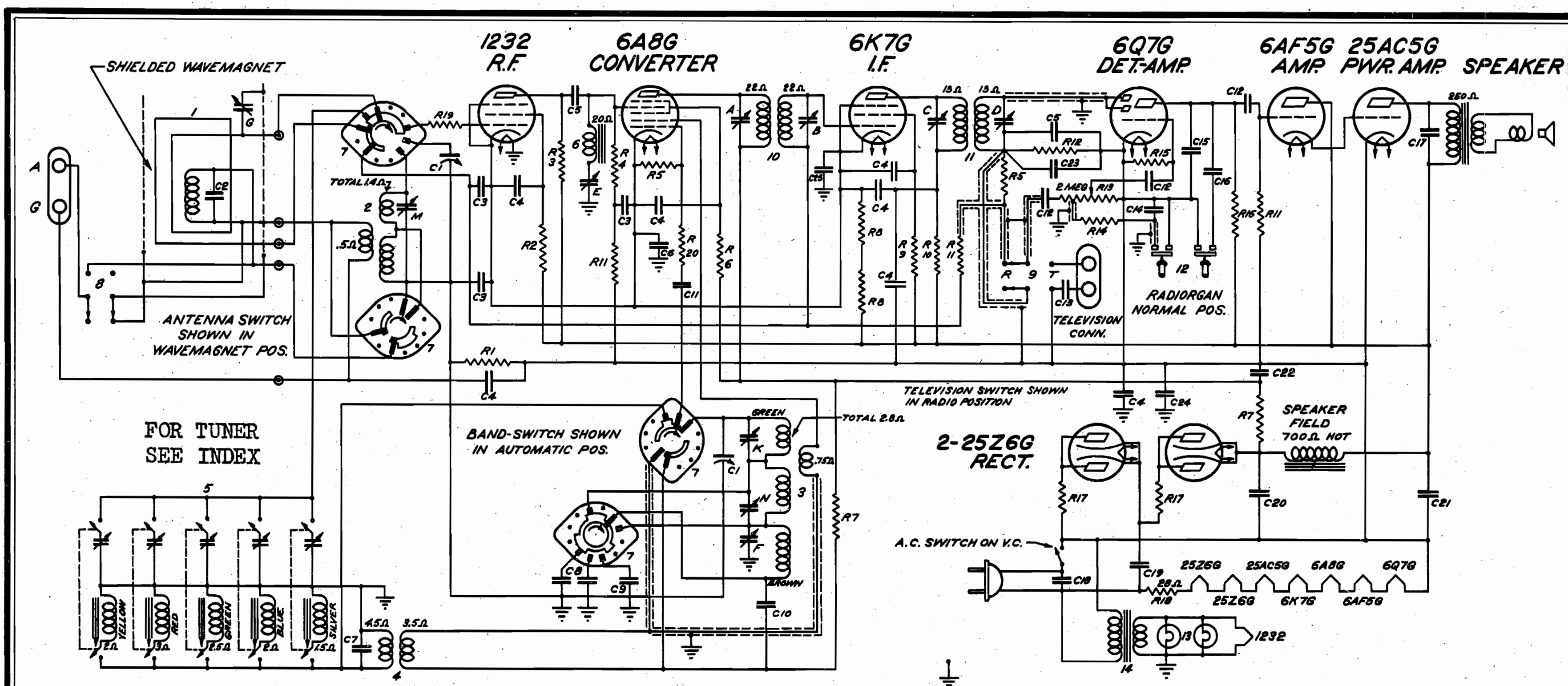


Socket Voltages
For Chassis 5724 and 5725

For ALIGNMENT and LOCATION of TUBES and TRIMMERS See Index

MODELS 8S432,8S433,8S434,8S449
8S450,8S458 to 8S462
Chassis 5810
Schematic,Voltage,Socket
Trimmers

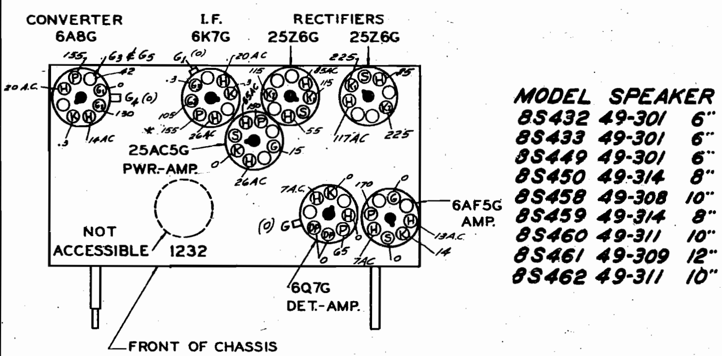
ZENITH RADIO CORP.



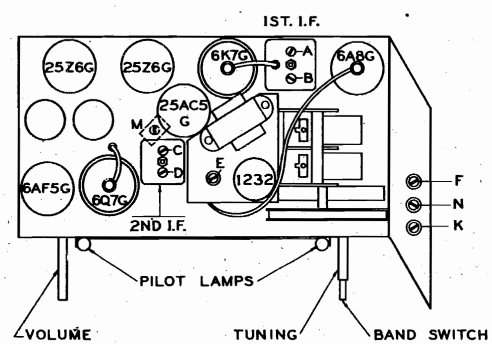
All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise. Volume control on full. Line voltage 120 A.C.

I.F. FREQUENCY 455 KC.
8 TUBE SUPERHETERODYNE
CHASSIS Nº5810 A.C. 3 BAND
ZENITH RADIO CORPORATION
CHICAGO, ILL.



MODEL	SPEAKER	
8S432	49-301	6"
8S433	49-301	6"
8S449	49-301	6"
8S450	49-314	8"
8S458	49-308	10"
8S459	49-314	8"
8S460	49-311	10"
8S461	49-309	12"
8S462	49-311	10"

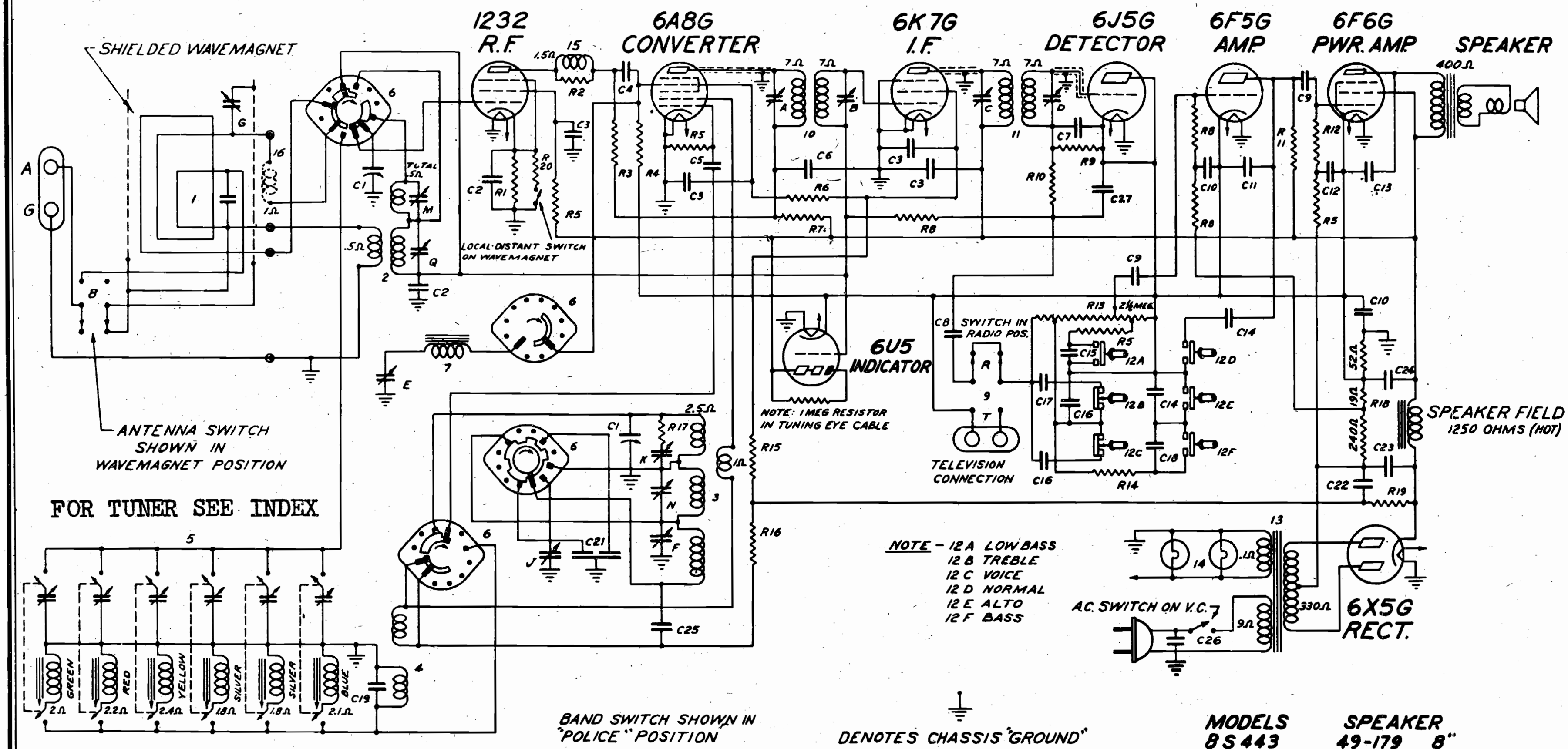


DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-849	TWO-GANG VARIABLE		C20	22-851	30MFD. ELECTROLYTIC	350V.
C2	22-182	.00025 MFD.	600V.	C21	22-851	20MFD. ELECTROLYTIC	250V.
C3	22-829	.05 MFD.	200V.	C22	22-851	10MFD. ELECTROLYTIC	250V.
C4	22-828	.05 MFD.	400V.	C23	22-470	150 MMFD.	600V.
C5	22-162	.0001 MFD.	600V.	C24	22-350	.25 MFD.	200V.
C6	22-594	.15 MFD.	200V.	C25	22-827	.1 MFD.	200V.
C7	22-868	COMPENSATING COND.		R 1	63-325	150M OHM	1/4W.
C8	22-863	DUAL OSC. PADDER		R 2	63-712	33M OHM	1/4W.
C9	22-866	OSCILLATOR PADDER		R 3	63-709	.10M OHM	1/4W.
C10	22-358	.002 MFD.	600V.	R 4	63-715	100M OHM	1/4W.
C11	22-289	50 MMFD.	600V.	R 5	63-593	47M OHM	1/4W.
C12	22-196	.01 MFD.	600V.	R 6	63-1019	68M OHM	1/2W.
C13	22-327	.02 MFD.	200V.	R 7	63-150	10M OHM	1/2W.
C14	22-229	.005 MFD.	600V.	R 8	63-1020	68 OHM WIREWOUND	1/4W.
C15	22-854	.0005 MFD.	600V.	R 9	63-591	22M OHM	1/4W.
C16	22-448	.004 MFD.	600V.	R 10	63-605	1000 OHM	1/2W.
C17	22-669	.01 MFD.	600V.	R 11	63-271	1 MEGOHM	1/4W.
C18	22-670	.1 MFD.	400V.	R 12	63-655	220M OHM	1/4W.
C19	22-852	30 MFD. ELECTROLYTIC	250V.	R 13	63-1030	VOLUME CONTROL	
				R 14	63-713	47M OHM	1/4W.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
R15	63-976	15 MEGOHMS	1/4W.	14	95-678	FILAMENT TRANS. 117 VOLTS 50-60 CYCLE
R16	63-296	220 M OHM	1/4W.			
R17	63-1023	22 OHM WIREWOUND	1/2W.			
R18	63-1039	CANDOHM				
R19	63-577	100 OHM	1/4W.	A		1ST I.F. TRANS. PRI.
R20	63-576	68 OHM	1/4W.	B		1ST I.F. TRANS. SEC.
				C		2ND I.F. TRANS. PRI.
1		WAVEMAGNET ASSEMBLY		D		2ND I.F. TRANS. SEC.
2	S6936	ANTENNA COIL ASSEMBLY		E		WAVE TRAP
3	S6937	OSCILLATOR COIL ASSEM.		F		BROADCAST OSC. (SEE NOTE)
4	S6992	OSC. COUPLER COIL ASSEM.		G	22-865	ANTENNA BROADCAST
5	S7044	AUTOMATIC TUNING ASSEM.		K		SHORT WAVE OSC. (SEE NOTE)
6	S7500	WAVE TRAP ASSEMBLY		M	22-788	SHORT WAVE ANTENNA
7	85-185	BAND SELECTOR SWITCH		N		POLICE BAND OSC. (SEE NOTE)
8	85-171	WAVEMAGNET SWITCH				
9	85-171	TELEVISION SWITCH				
10	95-600	1ST I.F. TRANSFORMER				NOTE: TRIMMERS F, K & N ARE MOUNTED ON STRIP #22-850.
11	95-596	2ND I.F. TRANSFORMER				
12	S6994	TONE CONTROL SWITCH				
13	100-36	PILOT LIGHT 6.3V. .25 A.				

MODELS 8S443, 8S451, 8S463
Chassis 5808
Schematic

ZENITH RADIO CORP.



MODELS	SPEAKER
8S443	49-179 8"
8S451	49-179 8"
8S463	49-380 10"

DIAG. No.	PART No.	DESCRIPTION	
C1	22-927	TWO GANG VARIABLE	
C2	22-829	.05 MFD.	200V
C3	22-828	.05 MFD.	400V.
C4	22-716	.0005 MFD.	600V
C5	22-127	25 MMFD.	600V.
C6	22-825	.1 MFD.	400V
C7	22-182	.00025 MFD.	600V
C8	22-327	.02 MFD.	200V.
C9	22-830	.02 MFD.	600V
C10	22-827	.1 MFD.	200V.
C11	22-854	.0005 MFD.	600V.
C12	22-219	.03 MFD.	200V
C13	22-627	.002 MFD.	1000V.
C14	22-448	.004 MFD.	600V.
C15	22-229	.005 MFD.	600V.
C16	22-470	.00015 MFD.	600V.
C17	22-954	.00035 MFD.	600V.
C18	22-492	.002 MFD.	600V.
C19	22-868	COMPENSATING COND.	
C21	22-930	DUAL OSC. PADDER	

DIAG. No.	PART No.	DESCRIPTION	
C22	22-933	16 MFD. ELECTROLYTIC	450V.
C23	22-933	16 MFD. "	450V.
C24	22-719	16 MFD.	350V.
C25	22-358	.002 MFD.	600V.
C26	22-525	.005 MFD.	1000V.
C27	22-162	.0001 MFD.	600V.
R1	63-589	10 M OHM	1/4 W.
R2	63-1077	18 M OHM	1 W.
R3	63-587	4700 OHM	1/4 W.
R4	63-595	100 M OHM	1/4 W.
R5	63-593	47 M OHM	1/4 W.
R6	63-643	18 M OHM	1/4 W.
R7	63-605	1000 OHM	1/2 W.
R8	63-271	1 MEGOHM	1/4 W.
R9	63-774	220 M OHM	1/4 W.
R10	63-711	22 M OHM	1/4 W.
R11	63-296	220 M OHM	1/4 W.
R12	63-597	470 M OHM	1/4 W.
R13	63-1075	VOLUME CONTROL	

DIAG. No.	PART No.	DESCRIPTION	
R14	63-594	68 M OHM	1/4 W.
R15	63-677	33 M OHM	1 W.
R16	63-796	10 M OHM	1/2 W.
R17	63-576	68 OHM	1/4 W.
R18	63-992	3 SECTION CANDOHM	
R19	63-151	15 M OHM	1 W.
R20	63-574	33 OHM	1/4 W.
1		WAVEMAGNET ASSEMBLY	
2	S7504	ANTENNA COIL ASSEMBLY	
3	S7641	OSCILLATOR COIL ASSEMBLY	
4	S7507	OSC. COUPLER COIL ASSEM.	
5	S7649	AUTOMATIC TUNING UNIT "	
6	85-20C	BAND SELECTOR SWITCH	
7	S7559	WAVE TRAP COIL ASSEMBLY	
8	85-171	WAVEMAGNET SWITCH	
9	85-171	TELEVISION SWITCH	
10	95-625	1ST I.F. TRANS.	
11	95-663	2ND I.F. TRANS.	
12	S7643	TONE CONTROL SW. ASSEM.	

DIAG. No.	PART No.	DESCRIPTION
13	95-627	POWER TRANS. 60~115V.
14	100-36	PILOT LIGHT 6.3V. .25A.
15	S7526	R.F. CHOKE
16	S8142	LOOP LOADING COIL ASSEM. (NOTE: USED ON SOME MODELS)
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
E		WAVE TRAP
F		BROADCAST OSC. (SEE NOTE)
G		ANTENNA BROADCAST
K		SHORT WAVE OSC. (SEE NOTE)
M	22-982	SHORT WAVE DET.
N		POLICE BAND OSC. (SEE NOTE)
Q	22-982	POLICE BAND DET.
J	22-463	BROADCAST PADDER
		NOTE: TRIMMERS F.K & N ARE MOUNTED ON STRIP # 22-850

I.F. FREQUENCY 455 KC

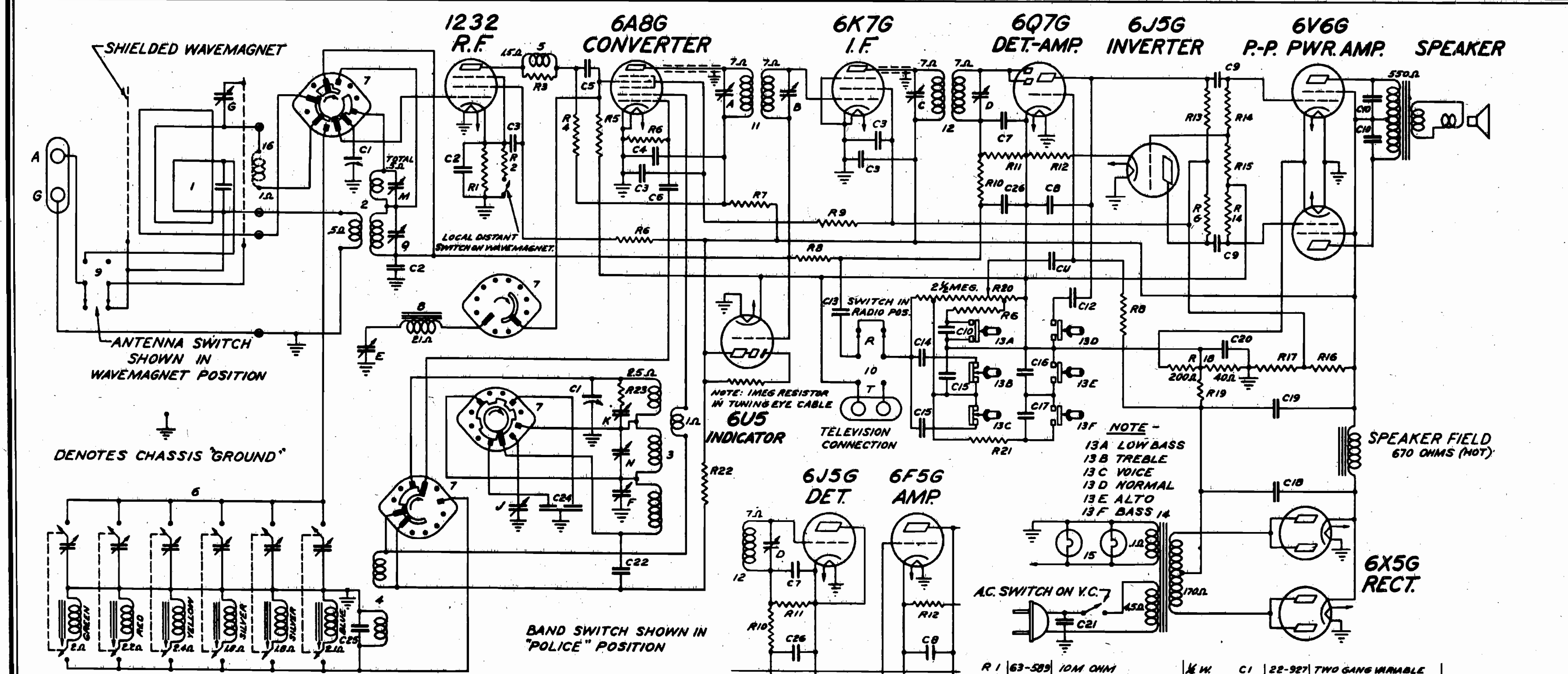
FOR OTHER DATA SEE INDEX

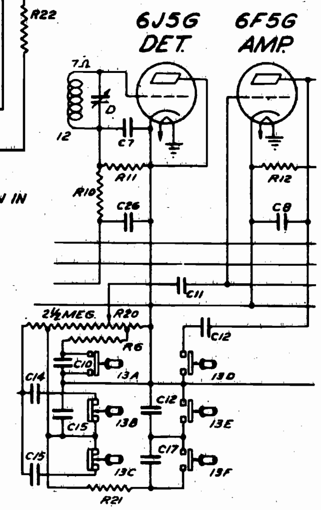
8 TUBE SUPERHETERODYNE
CHASSIS No. 5808 3BAND

MODELS 10S443, 10S452, 10S464
10S470, 10S491, 10S492
Chassis 1005

ZENITH RADIO CORP.

MODEL 11S474
Chassis 1103
Schematics





1		WAVEMAGNET ASSEMBLY
2	S7504	ANTENNA COIL ASSEMBLY
3	S7505	OSCILLATOR COIL ASSEMBLY
4	S7507	OSC. COUPLER COIL ASSEM.
5	S7526	R.F. CHOKE
6	S7649	AUTOMATIC TUNING UNIT
7	85-202	BAND SELECTOR SWITCH
8	S7559	WAVE TRAP COIL ASSEMBLY
9	85-171	WAVEMAGNET SWITCH
10	85-171	TELEVISION SWITCH
11	95-625	1ST I.F. TRANSFORMER
12	95-664	2ND I.F. TRANSFORMER
13	S7643	TONE CONTROL SW. ASSEM.
14	95-630	POWER TRANS. 60~ 115V.
15	100-36	PILOT LIGHT 6.3V .25A.
16	S8142	LOOP LOADING COIL ASSEM.

NOTE: USED ON SOME MODELS.

A		1ST I.F. TRANS. PRI.
B		1ST I.F. - SEC.
C		2ND I.F. - PRI.
D		2ND I.F. - SEC.
E		WAVE TRAP
F		BROADCAST OSC. (SEE NOTE)
G		ANTENNA BROADCAST
K		SHORT WAVE OSC. (SEE NOTE)
M	22-982	SHORT WAVE ANTENNA
N		POLICE BAND OSC. (SEE NOTE)
Q	22-982	POLICE BAND ANTENNA
J	22-463	BROADCAST PADDER

NOTE: TRIMMERS F, K & N ARE MOUNTED ON STRIP #22-850

R1	63-589	10M OHM	¼ W.
R2	63-574	33 OHM	¼ W.
R3	63-1077	18M OHM	1 W.
R4	63-587	4700 OHM	¼ W.
R5	63-595	100M OHM	¼ W.
R6	63-593	47M OHM	¼ W.
R7	63-605	1000 OHM	½ W.
R8	63-271	1 MEGOHM	¼ W.
R9	63-643	18M OHM	¼ W.
R10	63-711	22M OHM	¼ W.
R11	63-774	220M OHM	¼ W.
R12	63-585	2200 OHM	¼ W.
R13	63-296	220M OHM	¼ W.
R14	63-657	330M OHM	¼ W.
R15	63-648	47M OHM	¼ W.
R16	63-1058	22M OHM	2 W.
R17	63-676	27M OHM	1 W.
R18	63-1048	2-SECTION CANDOHM	
R19	63-1062	10 OHM WIREWOUND	½ W.
R20	63-1074	VOLUME CONTROL	
R21	63-594	68M OHM	¼ W.
R22	63-151	15M OHM	1 W.
R23	63-576	68 OHM	¼ W.

C1	22-927	TWO GANG VARIABLE	
C2	22-829	.05 MFD.	200V.
C3	22-828	.05 MFD.	400V.
C4	22-825	.1 MFD.	400V.
C5	22-147	.0005 MFD.	600V.
C6	22-127	25 MMFD.	600V.
C7	22-182	.00025 MFD.	600V.
C8	22-854	.0005 MFD.	600V.
C9	22-171	.05 MFD.	600V.
C10	22-229	.005 MFD.	600V.
C11	22-830	.02 MFD.	600V.
C12	22-448	.004 MFD.	600V.
C13	22-327	.02 MFD.	200V.
C14	22-954	.00035 MFD.	600V.
C15	22-470	.00015 MFD.	600V.
C16	22-448	.004 MFD.	600V.
C17	22-492	.002 MFD.	600V.
C18	22-934	20 MFD. ELECTROLYTIC	450V.
C19	22-934	20 MFD. ELECTROLYTIC	350V.
C20	22-827	.1 MFD.	200V.
C21	22-525	.005 MFD.	1000V.
C22	22-358	.002 MFD.	600V.
C24	22-930	DUAL OSC. PADDER	
C25	22-868	COMPENSATING COND.	
C26	22-162	.0001 MFD.	600V.

10 TUBE SUPERHETERODYNE
CHASSIS Nº 1005 A.C. 3 BAND

MODEL	SPEAKER
10S443	49-346 8"
10S452	49-351 10"
10S470	49-353 12"
10S464	49-379 10"
10S491	49-356 15"
10S492	49-352 12"

11 TUBE SUPERHETERODYNE
CHASSIS Nº 1103 A.C. 3 BAND

MODEL	SPEAKER
11S474	49-352 12"

Schematic of Chassis 1103 same as for Chassis 1005 except that two tubes are used in place of the 6Q7G.

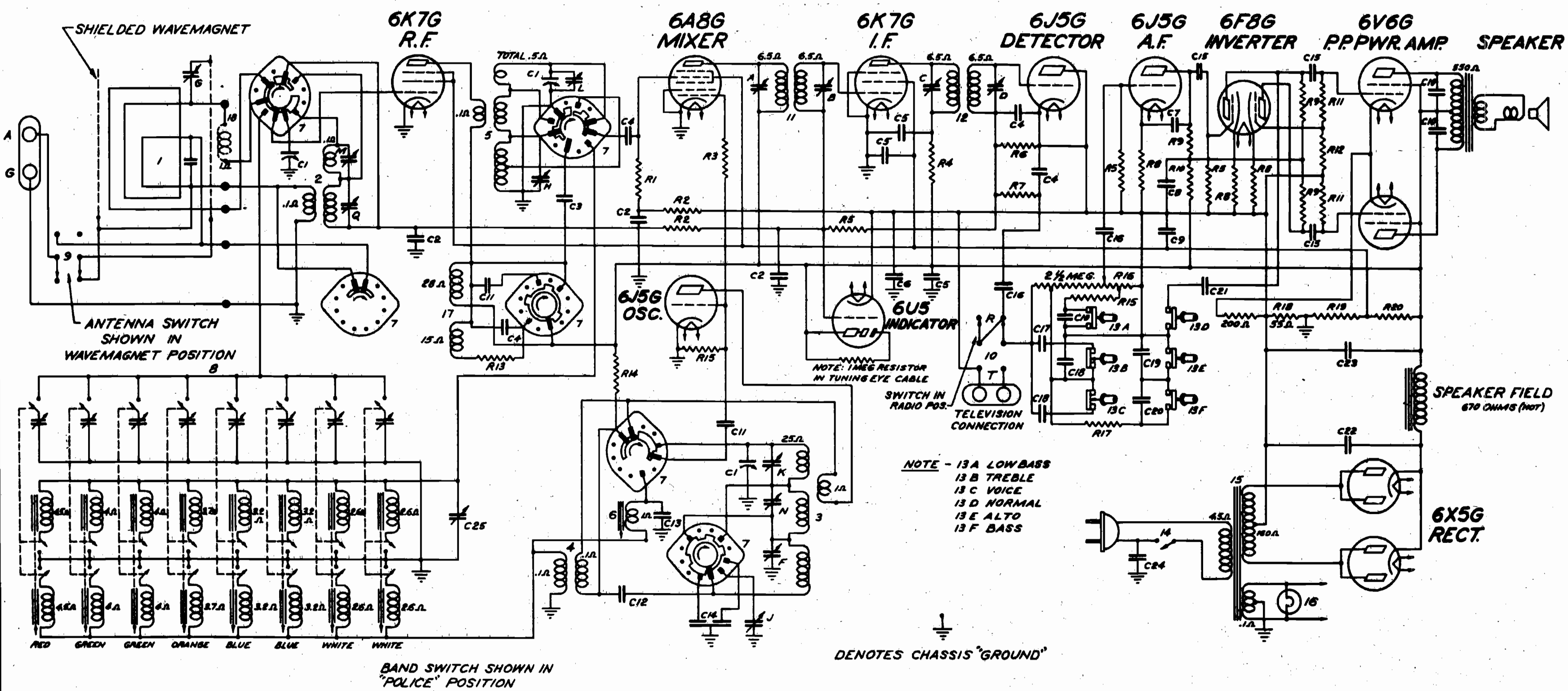
Above partial schematic applies to Chassis 1103 only.

I.F. FREQUENCY 455 KC.

FOR OTHER DATA SEE INDEX

ZENITH RADIO CORP.

MODELS 12S445, 12S453, 12S471
12S475, 12S494
Chassis 1207
Schematic



I.F. FREQUENCY 455 KC.

MODEL	SPEAKER	
12 S 445	49-346	8"
12 S 453	49-351	10"
12 S 471	49-352	12"
12 S 475	49-354	15"
12 S 494	49-355	15"

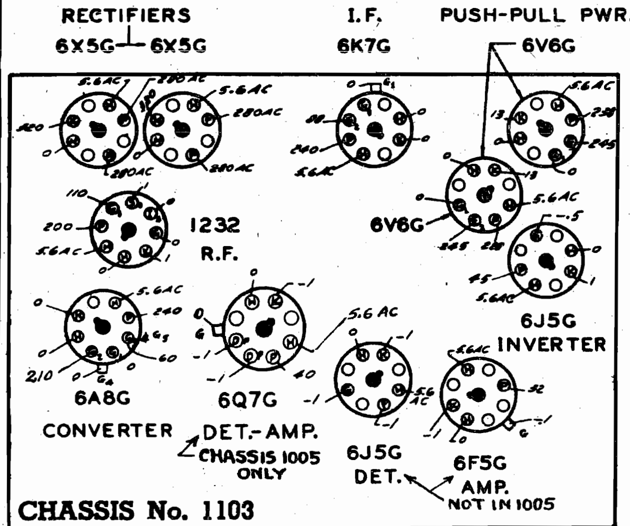
DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-951	THREE GANG VARIABLE		C24	22-992	.02 MFD.	600 V.	R19	63-676	27 M OHM	1 W.			
C2	22-829	.05 MFD.	200 V.	C25		TRIMMER COND. (SEE NOTE)		R20	63-1058	22 M OHM	2 W.			
C3	22-289	50 MMFD.	600 V.									A		1ST I.F. TRANS. PRI.
C4	22-162	.0001 MFD.	600 V.									B		1ST I.F. - SEC.
C5	22-828	.05 MFD.	400 V.									C		2ND I.F. - PRI.
C6	22-827	.1 MFD.	200 V.	R1	63-597	470 M OHM	½ W.	1		WAVEMAGNET ASSEMBLY		D		2ND I.F. - SEC.
C7	22-854	.0005 MFD.	600 V.	R2	63-595	100 M OHM	¼ W.	2	S7798	ANTENNA COIL ASSEMBLY		F		BROADCAST OSC. (SEE NOTE)
C8	22-991	16 MFD. ELECTROLYTIC	350 V.	R3	63-581	470 OHM	¼ W.	3	S7666	OSCILLATOR COIL ASSEMBLY		G		ANTENNA BROADCAST
C9		16 MFD.	200 V.	R4	63-605	1000 OHM	½ W.	4	S7666	OSC. COUPLER COIL ASSEM.		H		DETECTOR BROADCAST
C10	22-229	.005 MFD.	600 V.	R5	63-271	1 MEGOHM	¼ W.	5	S7667	DETECTOR COIL ASSEMBLY		K		SHORT WAVE OSC. (SEE NOTE)
C11	22-127	25 MMFD.	600 V.	R6	63-655	220 M OHM	¼ W.	6	S7656	TRIMMER COIL ASSEMBLY		L		SHORT WAVE DET. (ON GANG)
C12	22-358	.002 MFD.	600 V.	R7	63-591	22M OHM	¼ W.	7	85-209	BAND SELECTOR SWITCH		M		SHORT WAVE ANTENNA
C13	22-944	COMPENSATING COND.		R8	63-282	2200 OHM	¼ W.	8	S7807	AUTOMATIC TUNING UNIT		N		POLICE BAND OSC. (SEE NOTE)
C14	22-930	DUAL OSC. PADDER		R9	63-648	47 M OHM	¼ W.	9	85-171	WAVEMAGNET SWITCH		Q		POLICE BAND ANTENNA
C15	22-171	.05 MFD.	600 V.	R10	63-680	10 M OHM	1 W.	10	85-171	TELEVISION SWITCH		J	22-463	BROADCAST PADDER
C16	22-327	.02 MFD.	200 V.	R11	63-657	330 M OHM	¼ W.	11	95-637	1ST I.F. TRANSFORMER				NOTE:
C17	22-954	.00035 MFD.	600 V.	R12	63-647	39 M OHM	¼ W.	12	95-638	2ND I.F. TRANSFORMER				(1) TRIMMERS F.K.N & C25
C18	22-470	.00015 MFD.	600 V.	R13	63-586	3300 OHM	¼ W.	13	S7776	TONE CONTROL SW. ASSEM.				ARE MOUNTED ON
C19	22-448	.004 MFD.	600 V.	R14	63-1065	15M OHM	1 W.	14	85-148	A.C. SWITCH				STRIP #22-881
C20	22-492	.002 MFD.	600 V.	R15	63-593	47 M OHM	¼ W.	15	95-639	POWER TRANS. 60~ 117V.				
C21	22-196	.01 MFD.	600 V.	R16	63-1078	VOLUME CONTROL		16	100-36	PILOT LIGHT 6.3V .25A.				(2) TRIMMERS M & Q
C22	22-970	20 MFD. ELECTROLYTIC	450 V.	R17	63-594	68M OHM	¼ W.	17	20-216	PLATE CHOKE COIL				ARE MOUNTED ON
C23		20 MFD. ELECTROLYTIC	350 V.	R18	63-1052	2 SECTION CANDOHM		18	S8111	LOOP LOADING COIL ASSEM. (NOTE: USED ON SOME MODELS)				STRIP #22-982

12 TUBE SUPERHETERODYNE
CHASSIS Nº 1207 A.C. 3 BAND

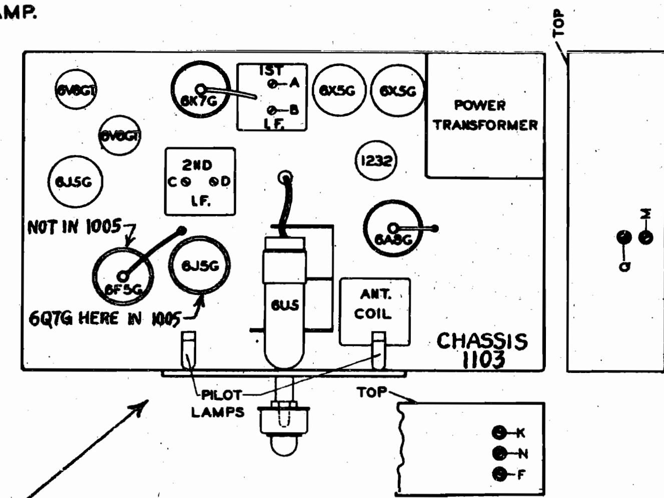
FOR OTHER DATA SEE INDEX

CHASSIS 1005 CHASSIS 1103
CHASSIS 1207 CHASSIS 5808
Voltage, Socket, Trimmers

ZENITH RADIO CORP.



FRONT OF CHASSIS

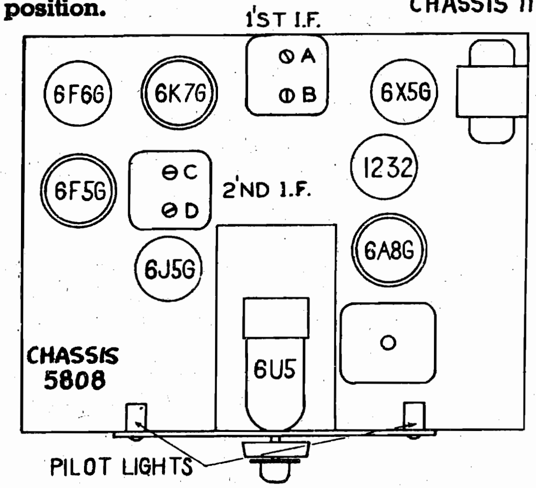


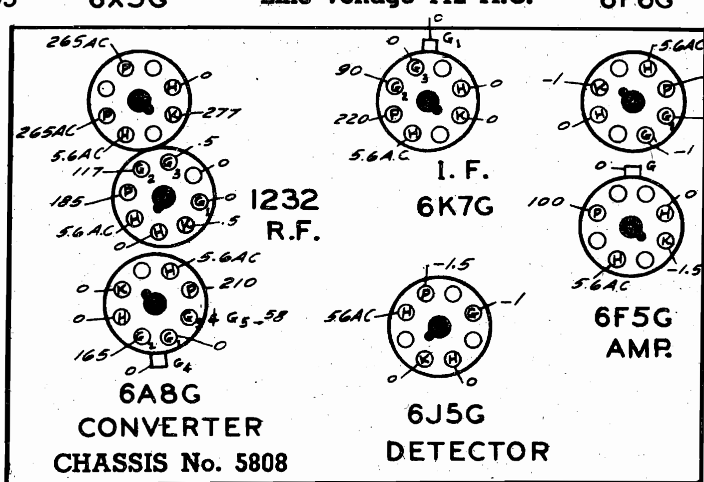
All voltages measured from socket terminal to chassis ground using 1000 ohm per volt meter.

CHASSIS 5808: TRIMMERS Q,M, K,N & F AS IN CHASSIS 1103

Sensitivity switch in distance position.

Volume control full on.
Line voltage 112 A.C.





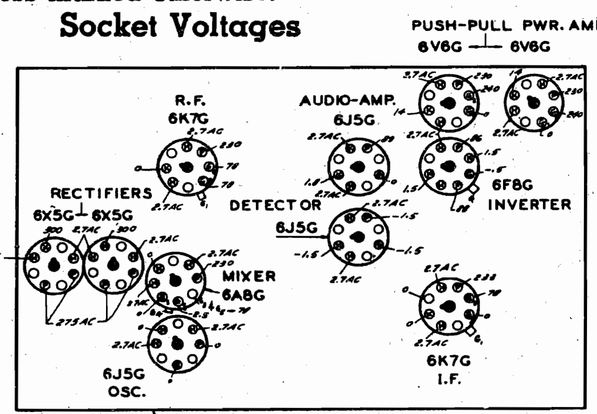
FRONT OF CHASSIS

All voltages are positive D.C. unless marked otherwise.

Socket Voltages

Socket Voltages

Location of Tubes and Trimmers



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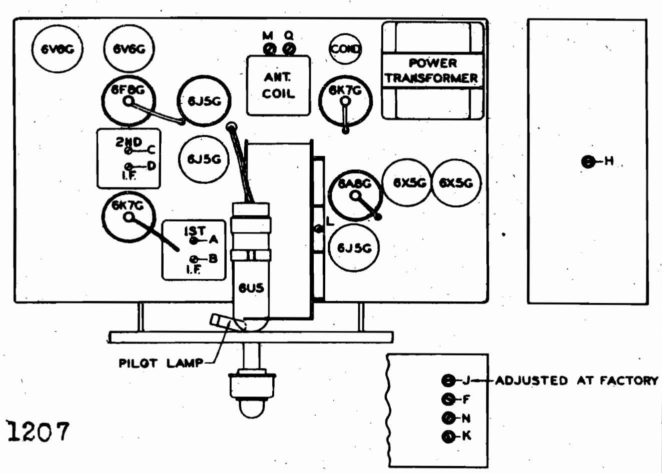
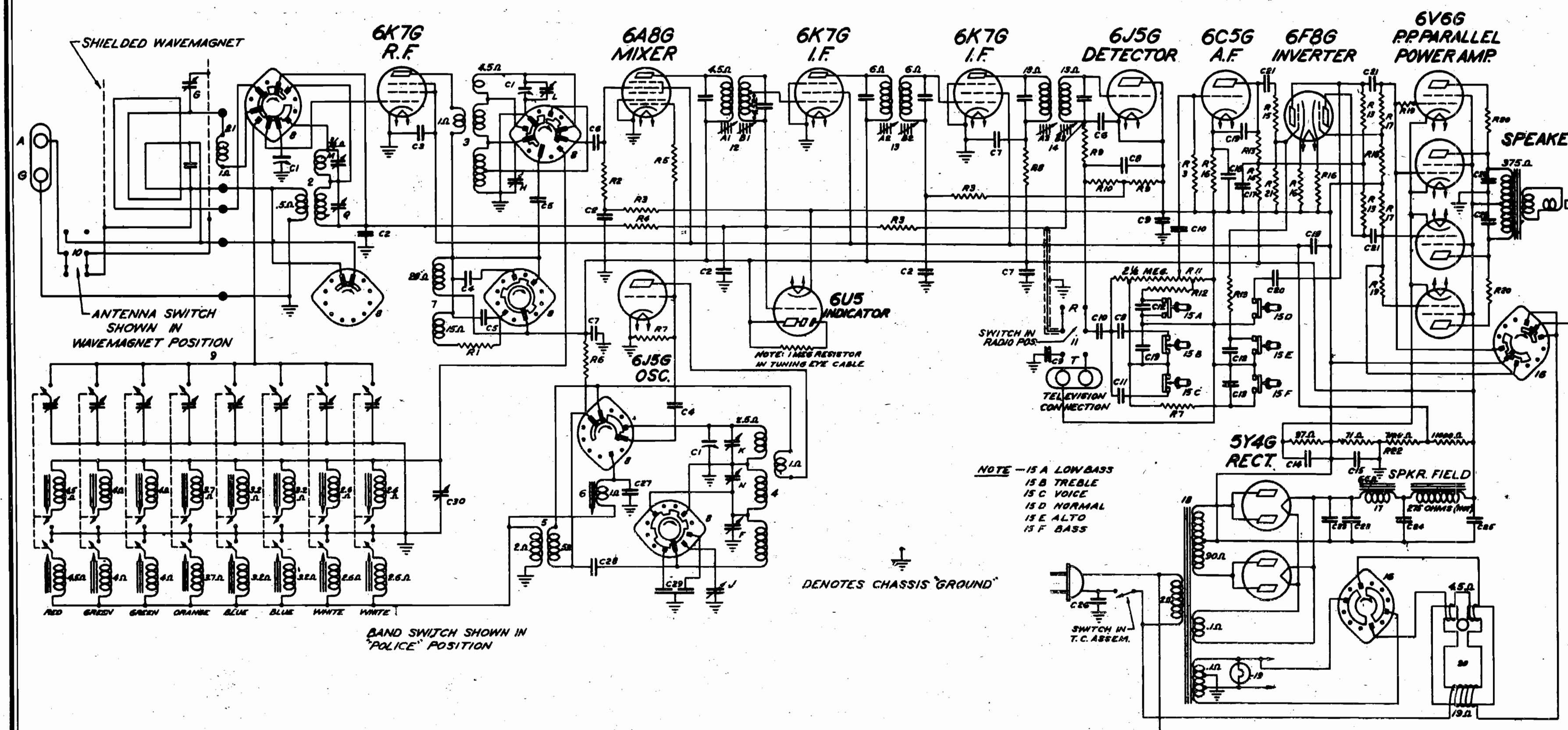


CHASSIS 1207

ZENITH RADIO CORP.

MODELS 15S479, 15S495
Chassis 1503
Schematic



DIAG. NO.	PART NO.	DESCRIPTION	
C1	22-951	THREEGANG VARIABLE	
C2	22-829	.05 MFD.	200V.
C3	22-825	.1 MFD.	400V.
C4	22-127	25 MMFD.	600V.
C5	22-289	50 MMFD.	600V.
C6	22-162	.0001 MFD.	600V.
C7	22-828	.05 MFD.	400V.
C8	22-182	.00025 MFD.	600V.
C9	22-827	.1 MFD.	200V.
C10	22-327	.02 MFD.	200V.
C11	22-470	.00015 MFD.	600V.
C12	22-326	.003 MFD.	400V.
C13	22-448	.004 MFD.	600V.
C14	22-960	40 MFD. ELECTROLYTIC	25 V.
C15		40 MFD. "	25 V.
C16		20 MFD. "	25 V.
C17	22-747	16 MFD. "	450 V.
C18		40 MFD. "	200V.
C19	22-147	.0005 MFD.	600V.
C20	22-196	.01 MFD.	600V.
C21	22-171	.05 MFD.	600V.
C22	22-455	.01 MFD.	1800V.
C23	22-569	12 MFD. ELECTROLYTIC	450V.
C24	22-727	10 MFD. "	450 V.
C25		10 MFD. "	450 V.
C26	22-932	.02 MFD.	600V.
C27	22-944	COMPENSATING COND.	

DIAG. NO.	PART NO.	DESCRIPTION	
C28	22-358	.002 MFD.	600V.
C29	22-930	DUAL OSC. PADDER	
C30		TRIMMER CONDENSER (SEE NOTE 1)	
R1	63-586	3300 OHM	¼ W.
R2	63-597	470 M OHM	¼ W.
R3	63-271	1 MEGOHM	¼ W.
R4	63-595	100 M OHM	¼ W.
R5	63-581	470 OHM	½ W.
R6	63-608	15 M OHM	1 W.
R7	63-593	47 M OHM	¼ W.
R8	63-605	1000 OHM	½ W.
R9	63-649	56 M OHM	¼ W.
R10	63-655	150 M OHM	¼ W.
R11	63-980	VOLUME CONTROL	
R12	63-591	22 M OHM	¼ W.
R13	63-648	47 M OHM	¼ W.
R14	63-680	10 M OHM	1 W.
R15	63-655	220 M OHM	¼ W.
R16	63-282	2200 OHM	¼ W.
R17	63-657	330 M OHM	¼ W.
R18	63-647	39 M OHM	¼ W.
R19	63-577	100 OHM	¼ W.
R20	63-618	22 OHM	¼ W.

DIAG. NO.	PART NO.	DESCRIPTION	
R21	63-660	560 M OHM	¼ W.
R22	63-986	4 SECTION CANDOHM	
1		WAVEMAGNET ASSEMBLY	
2	S7959	ANTENNA COIL ASSEMBLY	
3	S7960	DETECTOR COIL ASSEMBLY	
4	S7666	OSCILLATOR COIL ASSEMBLY	
5	S7759	OSC. COUPLER COIL ASSEM.	
6	S7656	TRIMMER COIL ASSEMBLY	
7	20-216	PLATE CHOKE COIL	
8	85-209	BAND SELECTOR SWITCH	
9	S7807	AUTOMATIC TUNING UNIT	
10	85-171	WAVEMAGNET SWITCH	
11	85-171	TELEVISION SWITCH	
12	S8103	1ST I.F. TRANSFORMER	
13	S6375	2ND I.F. TRANSFORMER	
14	S6376	3RD I.F. TRANSFORMER	
15	S7992	TONE CONTROL SW. ASSEM.	
16	85-156	MOTOR CONTROL SWITCH	
17	95-442	POWER CHOKE	
18	95-533	POWER TRANS. 50-60~, 117 V	
19	100-36	PILOT LIGHT 6.3 V. .25 A	
20	M1-51	MOTOR	
21	S8111	LOOP LOADING COIL ASSEM.	

DIAG. NO.	PART NO.	DESCRIPTION
A1		1ST I.F. TRANS. PRI.
B1		1ST I.F. " SEC.
A2		2ND I.F. " PRI.
B2		2ND I.F. " SEC.
A3		3RD I.F. " PRI.
B3		3RD I.F. " SEC.
F		BROADCAST OSC. (SEE NOTE 1)
G		ANTENNA BROADCAST
H	22-959	DETECTOR BROADCAST
K		SHORT WAVE OSC. (SEE NOTE 1)
L		SHORT WAVE DET. (ON GANG)
M		SHORT WAVE ANT. (SEE NOTE 2)
N		POLICE BAND OSC. (SEE NOTE 1)
Q		POLICE BAND ANT. (SEE NOTE 2)
J	22-463	BROADCAST PADDER

NOTE:
(1) TRIMMERS F, K, N & C30 ARE MOUNTED ON STRIP #22-881
(2) TRIMMERS M & Q ARE MOUNTED ON STRIP #22-982

MODEL	SPEAKER
15S479	49-374 15"
15S495	49-375 15"

I.F. FREQUENCY 455 KC.

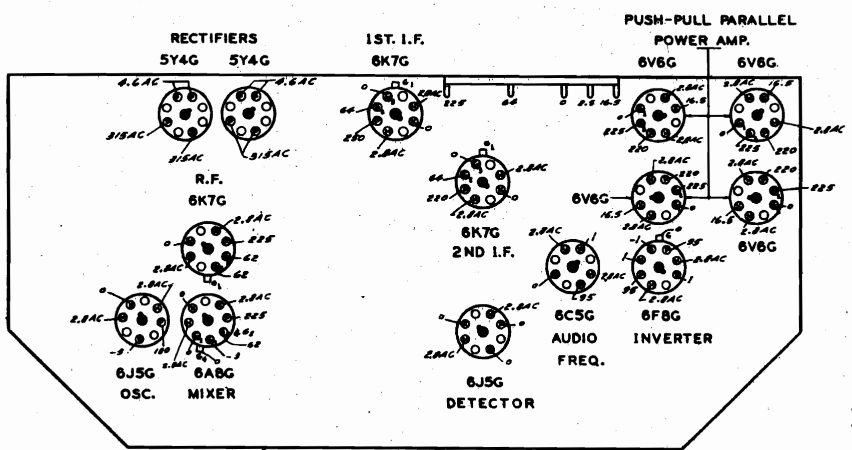
15 TUBE SUPERHETERODYNE
CHASSIS No. 1503 A.C. 3 BAND

FOR OTHER DATA
SEE INDEX

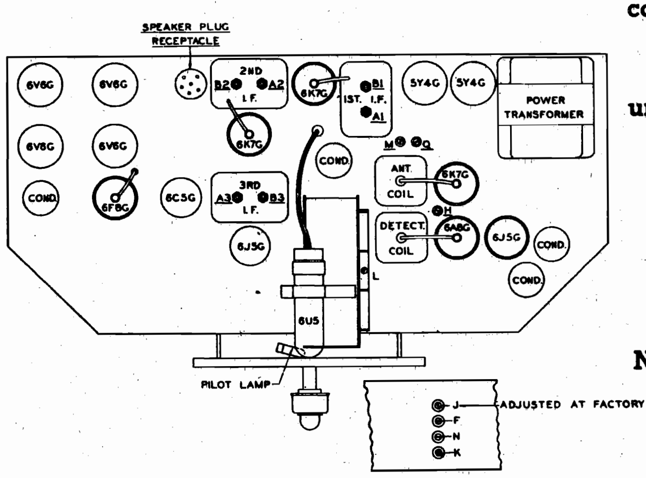
CHASSIS 1503
CHASSIS 5679
Voltage, Socket
Trimmers

ZENITH RADIO CORP.

CHASSIS No. 1503



Socket Voltages



Location of Tubes and Trimmers

NOTE

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

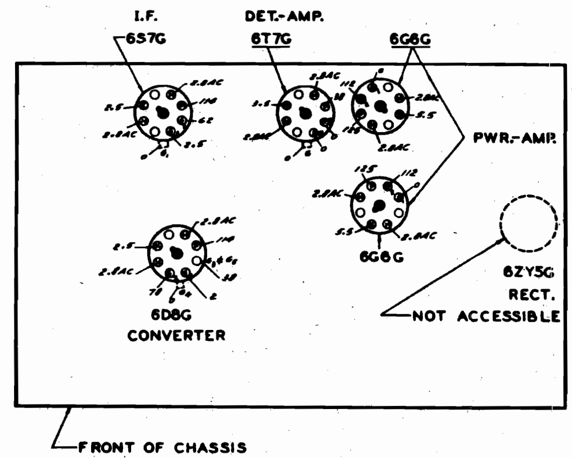
Volume control full on.

Line voltage 112 A.C.

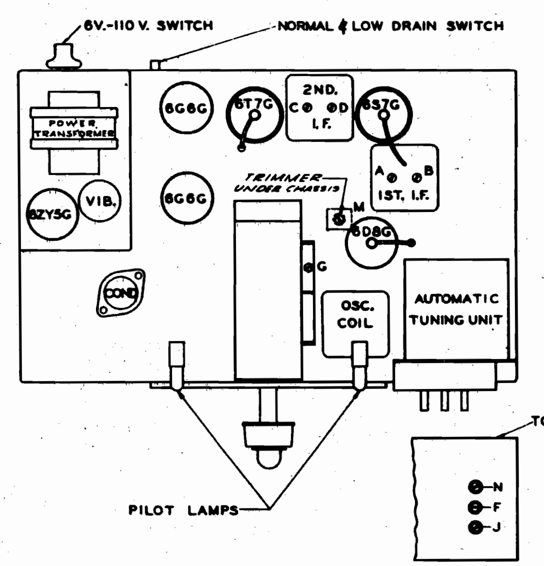
Model 5679 Only

Battery conserver switch in NORMAL position.

CHASSIS No. 5679



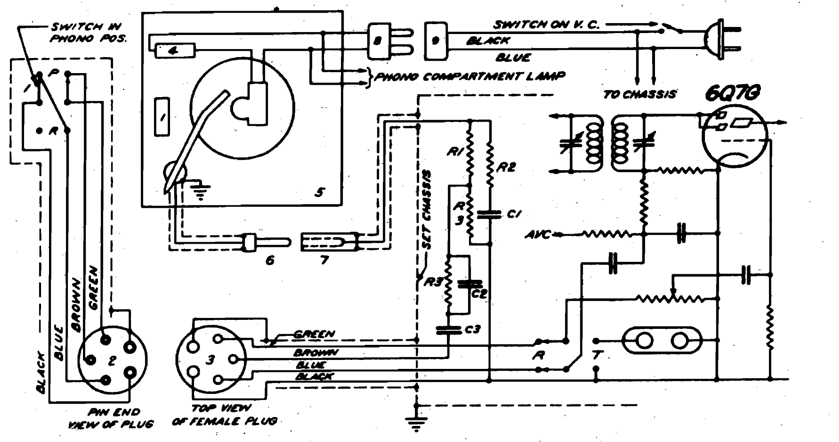
Socket Voltages



Location of Tubes and Trimmers

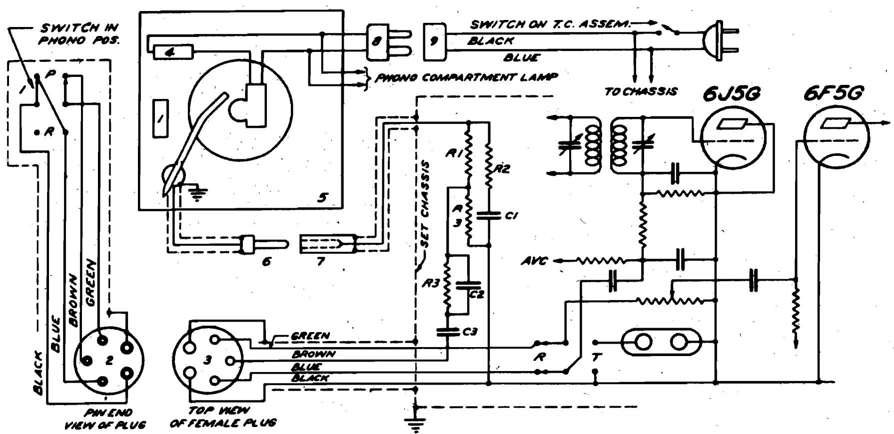
ZENITH RADIO CORP.

MODELS 10S491,10S492
Chassis 1007
MODEL 12S494,Ch.1208
MODEL 15S495,Ch.1504
Phono.Circuit Schematics



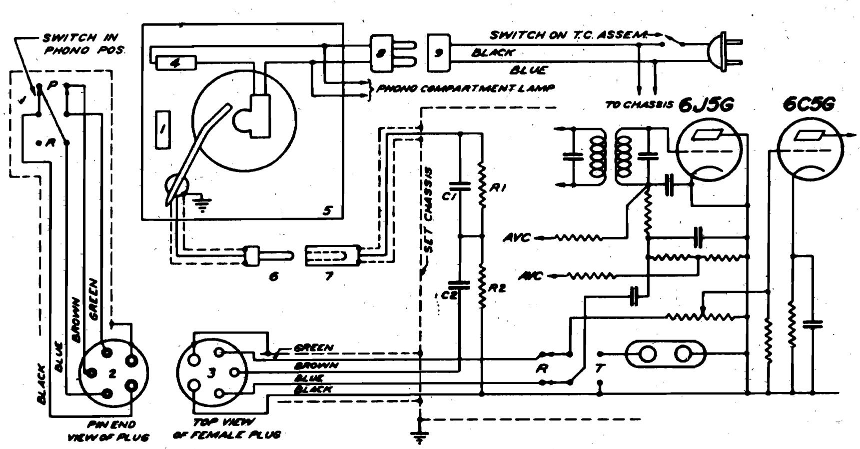
DIAG. NO	PART NO	DESCRIPTION	
C1	22-319	.005 MFD.	200V.
C2	22-954	.00035 MFD.	600V.
C3	22-887	.001 MFD.	600V.
R1	63-719	470 M OHM	½W.
R2	63-649	56 M OHM	½W.
R3	63-271	1 MEGOHM	½W.
1, 2	S7224	PHONO SW. & WIRE ASSEMBLY	
3	S8070	PLUG & WIRE ASSEMBLY	
4	85-191	A.C. SWITCH	
5	169-36	WEBSTER AUTOMATIC RECORD PLAYER	
6		CINCH #M-93 PLUG	
7	S8069	RECEPTACLE & WIRE ASSEM.	
8		CINCH #M-21 PLUG WITH P-7002 CAP & LINER	
9	S8068	PLUG & WIRE ASSEMBLY	

PHONO CIRCUIT DATA
MODEL SPEAKER
10S491 49-356 15"
10S492 49-352 12"
CHASSIS No 1007



DIAG. NO	PART NO	DESCRIPTION	
C1	22-319	.005 MFD.	200V.
C2	22-954	.00035 MFD.	600V.
C3	22-887	.001 MFD.	600V.
R1	63-719	470 M OHM	½W.
R2	63-649	56 M OHM	½W.
R3	63-271	1 MEGOHM	½W.
1, 2	S7224	PHONO SW. & WIRE ASSEMBLY	
3	S8094	PLUG & WIRE ASSEMBLY	
4	85-191	A.C. SWITCH	
5	169-36	WEBSTER AUTOMATIC RECORD PLAYER	
6		CINCH #M-93 PLUG	
7	S8093	RECEPTACLE & WIRE ASSEM.	
8		CINCH #M-21 PLUG WITH P-7002 CAP & LINER	
9	S8092	PLUG & WIRE ASSEMBLY	

PHONO CIRCUIT DATA
MODEL SPEAKER
12S494 49-355 15"
CHASSIS No 1208



DIAG. NO	PART NO	DESCRIPTION	
C1	22-182	.00025 MFD.	600V.
C2	22-887	.001 MFD.	600K
R1	63-597	470 M OHM	½W.
R2	63-649	56 M OHM	½W.
1, 2	S7224	PHONO SW. & WIRE ASSEMBLY	
3	S8108	PLUG & WIRE ASSEMBLY	
4	85-191	A.C. SWITCH	
5	169-36	WEBSTER AUTOMATIC RECORD PLAYER	
6		CINCH #M-93 PLUG	
7	S8107	RECEPTACLE & WIRE ASSEM.	
8		CINCH #M-21 PLUG WITH P-7002 CAP & LINER	
9	S8106	PLUG & WIRE ASSEMBLY	

PHONO CIRCUIT DATA
MODEL SPEAKER
15S495 49-375 15"
CHASSIS No 1504

MODELS See Below
Alignment, Trimmers, Socket

ZENITH RADIO CORP.

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	½ Mfd.	455 Kc.	Broadcast	600 Kc.	A, B, C, D	I. F. Alignment
2	Antenna Post (On Loop)	200 Mmf.	18000 Kc.	S. W.	18000 Kc.	K	Set Oscillator to Scale
3	Antenna Post (On Loop)	200 Mmf.	16000 Kc.	S. W.	16000 Kc.	M	Alignment of Antenna
4	Antenna Post (On Loop)	200 Mmf.	4500 Kc.	Police	4500 Kc.	N	Set Oscillator to Scale
5	Antenna Post (On Loop)	200 Mmf.	4500 Kc.	Police	4500 Kc.	Q	Alignment of Antenna
6	Single Turn Coupled Loosely to Loop		1400 Kc.	Broadcast	1400 Kc.	F	Set Oscillator to Scale
7	Loop Switch in Wave Magnet Position		1400 Kc.	Broadcast	1400 Kc.	G (On Loop)	Alignment of Antenna

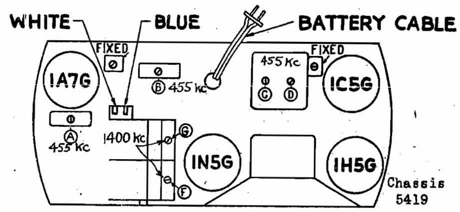
Chassis 1005, 1103, 5808

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Loop Switch	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	½ Mfd.	455 Kc.	Broadcast	....	600 Kc.	SEE *BELOW A, B, C, D	I. F. Alignment
2	Antenna Post (On Loop)	200 Mmf.	18000 Kc.	S. W.	Ant.	18000 Kc.	K	Set Oscillator to Scale
3	Antenna Post (On Loop)	200 Mmf.	16000 Kc.	S. W.	Ant.	16000 Kc.	L-M	Alignment of Det.—Rock Gang & Adjust for Max.
4	Antenna Post (On Loop)	200 Mmf.	4500 Kc.	Police	Ant.	4500 Kc.	N	Rock Gang & Adjust for Max. Output
5	Antenna Post (On Loop)	200 Mmf.	4500 Kc.	Police	Ant.	4500 Kc.	Q	Alignment of Antenna
6	Single Turn Coupled Loosely to Loop		1400 Kc.	Broadcast	Wave Magnet	1400 Kc.	F	Set Oscillator to Scale
7	Single Turn Coupled Loosely to Loop		1400 Kc.	Broadcast	Wave-Magnet	1400 Kc.	H	Alignment of R. F.
8	Single Turn Coupled Loosely to Loop		1400 Kc.	Broadcast	Wave-Magnet	1400 Kc.	G (On Loop)	Alignment of Loop
9			Chassis 1207, 1503				J Adjusted at Factory	*1503 TRIMMERS: A1,B1;A2,B2;A3,B3

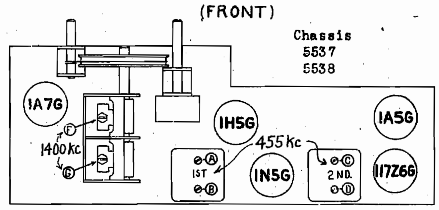
Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	1/2 mfd.	455	Br'dc't	600	A B C D	I. F. Alignment
2	Rec. Ant. Wire	400 ohms	18000	S. W.	18000	K	Set. Osc. to Scale
3	" " "	400 ohms	16000	S. W.	16000	L	Rock gang & adj. for max. output Alignment of Ant.
4	" " "	400 ohms	6000	Police	6000	N	Rock gang & adj. for max. output
5	" " "	200 mmf.	1400	Br'dc't	1400	F	Rock gang & adj. for max. output
6	" " "	200 mmf.	600	"	600	J	Rock gang & adj. for max. output
7	" " "	200 mmf.		"		Repeat F & J	Chassis 5539

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Adjust Trimmers	Purpose
1	6D8 R. F. Grid	0.5 Mfd.	455 Kc.	I. F.	600 Kc.	A, B, C, D	I. F. Alignment
2	Rec. Ant. Post	200 Mfd.	1500 Kc.	Broadcast	1500 Kc.	F	Set Oscillator to Scale
3	Rec. Ant. Post	200 Mfd.	1500 Kc.	Broadcast	1500 Kc.	G	Alignment of Antenna
4	Rec. Ant. Post	200 Mfd.	600 Kc.	Broadcast	600 Kc.	J	Rock Gang and Adjust for Max. Output
5	Rec. Ant. Post	200 Mfd.		Broadcast		F, G	Repeat 2 and 3
6	Rec. Ant. Post	400 Ohms	18000 Kc.	S. W.	18000 Kc.	K	Set Oscillator to Scale
7	Rec. Ant. Post	400 Ohms	16000 Kc.	S. W.	16000 Kc.	L	Rock Gang and Adjust for Max. Output
8	Rec. Ant. Post	400 Ohms	6000 Kc.	Police	6000 Kc.	N	Rock Gang and Adjust for Max. Output

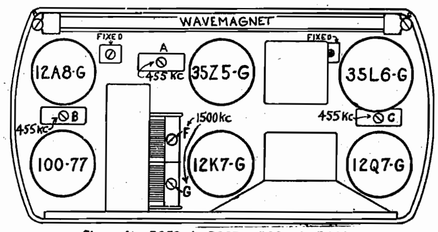
Chassis 5679



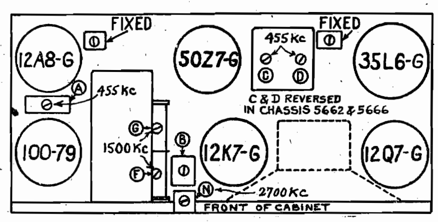
Chassis 5419



Chassis 5537 5538



Chassis 5659 & 5663, 5660 & 5664



Chassis 5661 & 5665, 5662 & 5666

ALIGNMENT PROCEDURE

Chassis 5419, 5537, 5538
5659 & 5663, 5660 & 5664
5661 & 5665, 5662 & 5666

Set dial at 600 kc; connect 0.5-mf dummy to 1st det. grid and align I.F. at 455 kc.

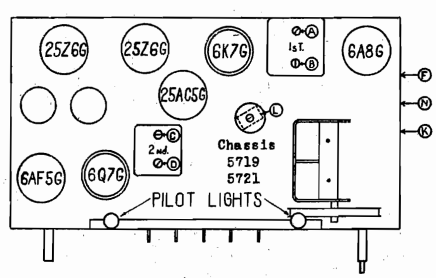
Connect test oscillator to single-turn loop loosely coupled to Wave Magnet.

Set receiver dial to aligning frequency and adjust trimmers to maximum as follows:
(1) Osc. trimmer F
(2) Ant. trimmer G
(3) S-W trimmer N

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	5 mfd.	455	B'dcast	600	A B C D	I. F.
2	Single *x Turn Coil	—	1500	"	1500	F	Set Osc. to Scale
3	" "	—	1500	"	1500	On Wave Magnet	Alignment of Wave Magnet
4	Rec. Ant. Post **	400 ohms	18000	S.W.#2	18000	K	Set Osc. to Scale
5	"	"	16000	"	16000	L	Rock gang & adj. for max. output
6	"	"	4.500	S.W. #1	4.500	N	"

* Loosely coupled to Wave Magnet
x Switch in Wave Magnet Position
** Switch in Antenna Position

CHASSIS 5719, 5721, 5810.



Chassis 5719 5721

ZENITH RADIO CORP.

CHASSIS 1005,1103,1207,1503
5539,5660,5664,5662,5666
5672P,5678,5679,5719,5721
5724,5725,5808 Tuner

AUTOMATIC TUNING ADJUSTMENTS

GENERAL:

Each button and its associated tuning adjustment will tune over a portion of the broadcast band, and any station within its tuning range may be selected for automatic tuning on that button.

To adjust the automatic tuning proceed as follows:

PRELIMINARY OPERATIONS:

TUNING RANGES of BUTTONS:

For Chassis 1005, 1103, 5679, 5808:

Remove the automatic cover plate by pressing the catch pin on the inner side and lifting away from the escutcheon.

Place sensitivity switch in LOCAL position.

Select a station within the range of the No.1 button. See list of frequency ranges at right.

Turn the band switch to Broadcast and then tune in the selected station on the dial - then turn band switch to Automatic position.

No. 1 button—upper left ......545 K.C. to 940 K.C.
No. 2 button—upper center ...600 K.C. to 1050 K.C.
No. 3 button—upper right ....660 K.C. to 1150 K.C.
No. 4 button—lower left ......740 K.C. to 1300 K.C.
No. 5 button—lower center ...880 K.C. to 1550 K.C.
No. 6 button—lower right ....880 K.C. to 1550 K.C.

For Chassis 1207, 1503:

Remove the automatic cover plate by pressing on latch pin and lifting away from escutcheon.

Select a station within the range of the No. 1 button. See list of frequency ranges at right.

Turn the band switch to Broadcast and then tune in the selected station on the dial - return band switch to Automatic position.

No. 1 button......545 K.C. to 850 K.C.
No. 2 " ......620 K.C. to 970 K.C.
No. 3 " ......620 K.C. to 970 K.C.
No. 4 button.....680 K.C. to 1090 K.C.
No. 5 " .....790 K. C. to 1290 K.C.
No. 6 " .....790 K.C. to 1290 K.C.
No. 7 button.....980 K.C. to 1550 K.C.
No. 8 " .....980 K.C. to 1550 K.C.

For Chassis 5539, 5678, 5719, 5721, 5724, 5725:

Remove the automatic cover plate by gently lifting it under one end.

Select a station within the range of the No. 1 button. See list of frequency ranges at right.

Turn the band switch to Broadcast and then tune in the selected station on the dial.

No. 1 or left hand button 545 K.C. to 930 K.C.
No. 2 or second button 600 K.C. to 1050 K.C.
No. 3 or third button 650 K.C. to 1200 K.C.
No. 4 or fourth button 750 K.C. to 1370 K.C.
No. 5 or right hand button 900 K.C. to 1550 K.C.

For Chassis 5660 & 5664, 5662 & 5666, 5672-P:

Remove the automatic cover plate by gently lifting it under one end.

Select a station within the range of the top or No. 1 button. See list of frequency ranges at right.

Press the lowest or "Dial" button, and then tune in the selected station on the dial.

1 or top button — 545 K.C. to 1040 K.C.
2 or second button — 620 K.C. to 1170 K.C.
3 or third button — 720 K.C. to 1370 K.C.
4 or fourth button — 850 K.C. to 1550 K.C.
5 or bottom button—Dial or manual tuning.

ADJUSTMENT PROCEDURE - ALL Chassis:

Press the No. 1 button and tune in the same station on the adjacent automatic adjustments by using the special wrench furnished with the receiver. First, adjust the screw and then the hexagonal nut to the setting which gives the loudest and clearest reception on the desired station (See Fig. 2). Repeat the operation for greatest accuracy.

Select and remove the call letters of the station selected from call letter sheets in this booklet. Moisten the rear surface and place in position on the automatic cover plate opposite the corresponding button.
Follow the above procedure in setting remaining buttons, always selecting a station within the range of the button being set.

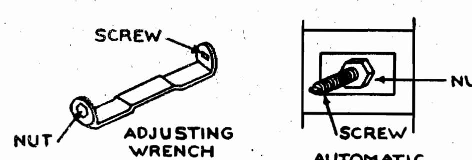


Fig. 2

CHASSIS See Below
Tuner Data, Notes

ZENITH RADIO CORP.

SERVICE NOTES

GENERAL:

Noisy when jarred — orange resistor on loop loading coil grounding against chassis.

Broken or loose leads in 6U5 socket.

Black wire on S.W. antenna coil not grounded properly to aeroplane terminal.

Noisy wavemagnet—rubber insulation of loop lead touching trimmer lug, antenna terminal, or other end of loop winding. Noise will be most noticeable at higher frequencies.

Poor connection to loop shields.

CHASSIS 5808 — 1005 — 1103

Oscillates at 550 K.C.—improper adjustment of wave trap—too high resistance in plate circuit of 1232 tube.

Automatic dead or antenna trimmer won't peak—usually due to open winding on compensating coil.

Noisy tuning—Ground braid of gang rubbing against flywheel—Burrs on drive shaft shorting to volume control shaft.

Dial pulley rubbing against dial or chassis.

Tuning Indicator inoperative—resistor inside socket shorting to socket prong—loose lead in socket—cathode lug on voltage divider grounded by solder.

Set blocks—usually due to broken resistor in A.V.C. circuit of first detector.

CHASSIS 5724 — 5725

Noisy tuning on automatic.

- Poor contact in speaker socket.
- Washer on latch bar grounding lug.
- Poor contact on band switch.
- Aeroplane lug on automatic grounding to No. 5 push rod.
- Automatic trimmer shorting.

Signal cuts out above 1400 K.C.

- 5 megacycle trimmer screwed in too tight.

Signal cuts out on local—distance switch.

- Defective 6A8 tube.

No change on treble button.

- Insulation of blue tone control lead cut by fastening lug.

Weak audio.

- Poor contact in television switch.
- Open coupling condenser.

Oscillates.

- Open screen bypass.
- Grid lead of 6K7 near A.V.C. lug or near plate lead of 6A8.
- Wave trap open or not properly adjusted.

PHONO MODELS

Insensitivity—check phono switch and plug contacts.

Weak phono—check shield on lead from crystal for poor ground.

1205 — 1503 CHASSIS

Improper action of volume control is usually caused by 6J5G in audio stage.

Poor radiorgan action is often caused by defective 6F8G in audio.

In many cases a ground lead may be eliminated by connecting the ground terminal on the wavemagnet to the chassis base.

The operation of the bass radiorgan button in chassis 5719-5721 can often be improved by connecting a 1 megohm resistor from the high side of the volume control to the tap on same.

Noisy operation of the automatic tuning may be caused by the leads to the automatic assembly or coil leads laying against the metal frame of the assembly.

Excessive oscillation in Model 4K401 will be caused by the 1A7 tube which should be replaced.

Motorboating in Model 4K401 will be due to a poor ground connection on the electrolytic condenser at the rivet which fastens it to the chassis.

Care should be taken that the leads from the tone control condenser and switch in all six tube bakelite models be kept away from the 6Q7 tube, otherwise the tone will be affected.

Excessive hum in AC-DC or voltage doubler chassis can be corrected by reversing the power plug in the light socket.

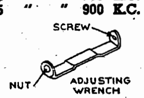
Cutting out in the portable receivers will usually be due to poor connections at the battery pack plug. Slight bending of the prongs will correct this condition.

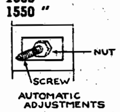
Excessive regeneration in 5659 chassis may be corrected in most cases by moving the 12A8G grid lead away from the oscillator section of the gang condenser.

AUTOMATIC RANGES

Button No. 1	tunes from	550 K.C.	to 950 K.C.
" 2	" "	600 K.C.	" 1100 "
" 3	" "	650 K.C.	" 1200 "
" 4	" "	730 K.C.	" 1390 "
" 5	" "	900 K.C.	" 1550 "

The use of a wavemagnet requires two adjustments for each automatic button. These adjustments are made with a special wrench (part No. 68-1) supplied with each receiver. The center or screw adjustment controls the oscillator circuit and the nut tunes the wavemagnet or antenna input — see illustration at right.





The minimum tuning range covered by each pair of adjustments is shown above and will usually exceed the frequencies shown.

The adjustments covering the highest frequency range is in all cases either at the bottom when the buttons are vertical or closest to the band switch when the buttons are arranged horizontally.

ALIGNMENT

ZENITH 6MN495
ZENITH 6MN496
NASH SPECIAL AC 4389
NASH DELUXE AC 4289

We would suggest that the service man procure a 3/8" box wrench (small size) for removing the cap screws from the grille of the car.

I.F. — The volume control is placed in the maximum position, and the tone control in the brilliant position for all the following adjustments:

A weak signal at 455 K.C. is fed directly into the grid cap of the 6K7GT R.F. tube through a .1 mfd condenser. The wave trap trimmer, E, (see Fig. 1 and 2) is adjusted for maximum response. The I.F. trimmers are then adjusted in the following order A, B, C and D, for greatest output. The signal level is then increased double or more and the wave trap trimmer, E, see Fig. 1 and 2, is adjusted to minimum response on the output meter.

IMPORTANT — Unless certain dummy antenna capacities are employed with either the signal generator, or in making the adjustments on stations, a receiver will not respond properly. The capacities provided in the Zenith dummy antenna part No. S7694 shown in Fig. 3 are identical with the conditions found in the Nash car, and if adjusted accordingly, the instrument will operate properly when reinstalled in the automobile.

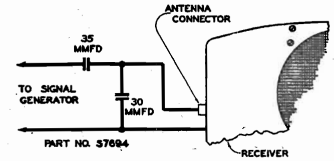


Fig. 3. Dummy Antenna

R.F. — The tuning condenser is rotated until the plates are completely out of mesh (1580 K.C.) Set the signal generator to 1580 K.C. Remove the generator leads from the R.F. tube, remove the .1 mfd. condenser from the leads, and connect the leads to a Zenith dummy antenna, part No. S-7694 to the antenna socket on the receiver. The high frequency oscillator trimmer F (See Fig. 4) is then peaked for maximum response on the output meter. Reset the signal generator to 1400 K.C., rotate the tuning control until a signal is heard, and adjust the 1400 antenna trimmer G (Fig. 4) for maximum response.

Reset the signal generator to 600 K.C. and rotate the tuning control until a signal is heard. The condenser gang is then rocked slightly when adjusting the 600 K.C. oscillator padder H (see Fig. 4) to maximum resonance on the output meter.

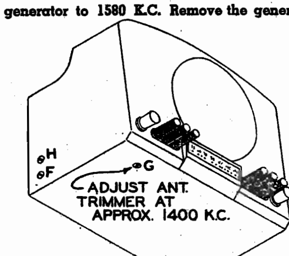


Fig. 4. Antenna Adjustment

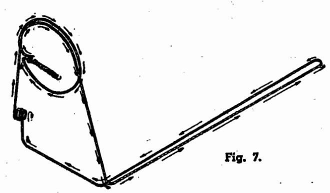


Fig. 7.

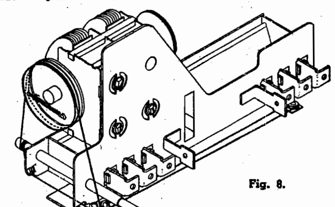


Fig. 8.

Figures 7 and 8 show how the dial cable is strung on both receivers.

AUTOMATIC TUNING — The automatic tuning mechanism, being entirely mechanical and extremely simple in construction, will require no attention except the original adjustments for the desired stations.

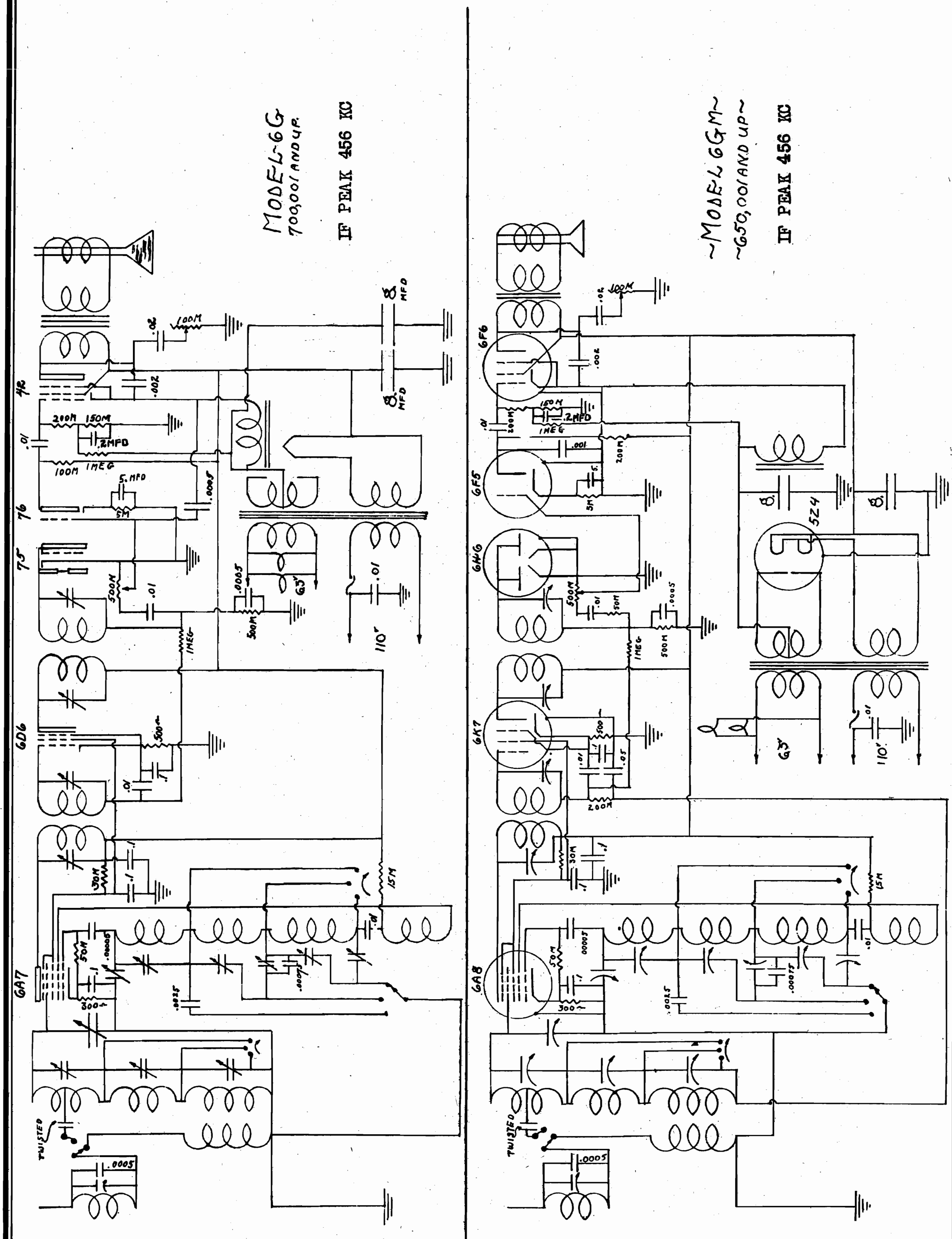
It consists of push rods which operate a cam and gear assembly which rotates the tuning condenser to any prearranged position. Each automatic button or push rod may be set for any station in the tuning range of the receiver.

To set the automatic buttons, first select six desired stations. Unscrew the left hand automatic button one-half turn and press all the way in. While holding the button in this position, manually tune in the selected station of lowest frequency. Then release the button and tighten. This button will then automatically tune this station whenever it is pushed in.

The same procedure should be followed on the five remaining buttons and stations. The station which has been tuned automatically will be indicated by the dial pointer.

ZEPHYR RADIO CO.

MODEL 6G
MODEL 6GM
Schematics

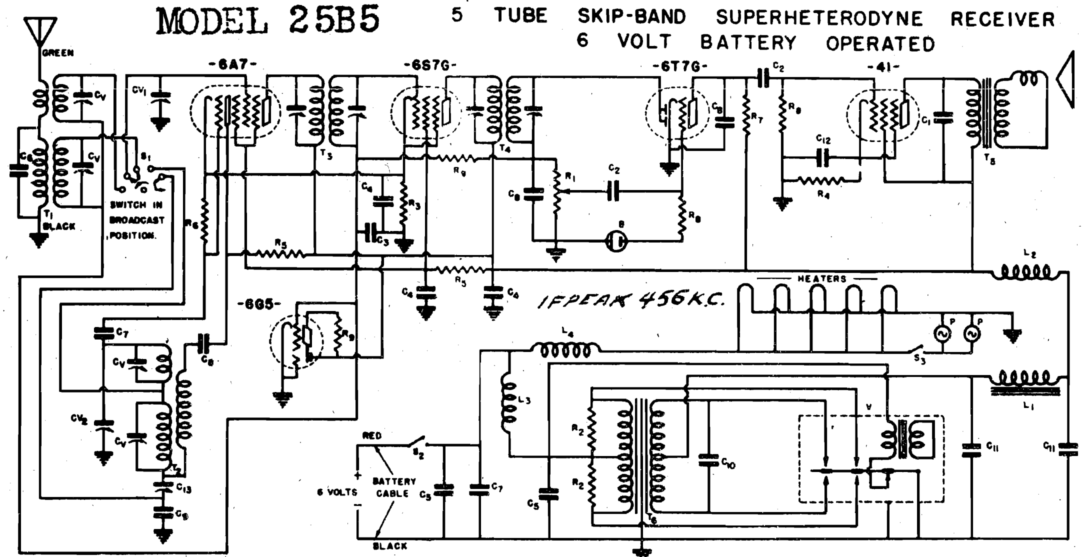


MODEL 25B5
Schematic
MODEL 43X5
Schematic, Socket

ZEPHYR RADIO CO.

MODEL 25B5

5 TUBE SKIP-BAND SUPERHETERODYNE RECEIVER
6 VOLT BATTERY OPERATED

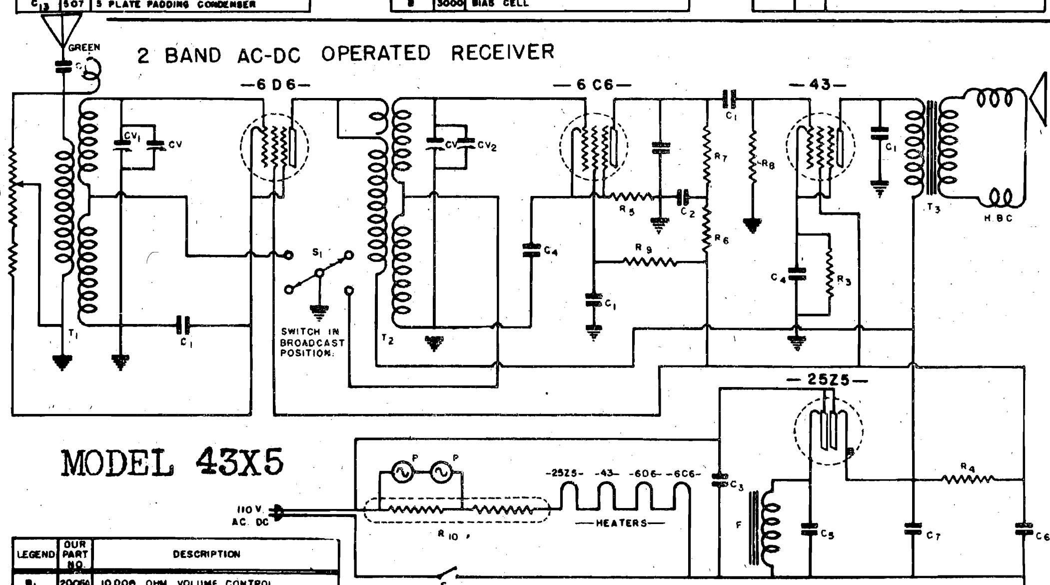


LEGEND	OUR PART NO.	DESCRIPTION
C_1	218	.002 MFD. 600 V TUBULAR CONDENSER
C_2	211	.01 MFD. 400 V. TUBULAR CONDENSER
C_3	203	.1 MFD. 200 V. TUBULAR CONDENSER
C_4	204	.25 MFD. 200 V TUBULAR CONDENSER
C_5	217	.5 MFD. 100 V. TUBULAR CONDENSER
C_6	412	50 MMFD. MICA CONDENSER
C_7	400	100 MMFD. MICA CONDENSER
C_8	401	250 MMFD. MICA CONDENSER
C_9	411	.0018 MFD. MICA CONDENSER
C_{10}	219	.01 MFD. 1000 W.V. OIL FILLED BUFFER. COND.
C_{11}	324	9 MFD. 250 W.V. WET ELECTROLYTIC COND.
C_{12}	304	10 MFD. 35 W.V. WET ELECTROLYTIC COND.
C_{13}	507	5 PLATE PADDING CONDENSER

CV_{1-2}	612-A	2 GANG VARIABLE CONDENSER
C_V	500	5-30 MMFD. TRIMMER CONDENSER.
T_1	1225	SKIP-BAND ANTENNA COIL
T_2	1412	SKIP-BAND OSCILLATOR COIL
T_3	1503	INPUT I.F. TRANSFORMER
T_4	1507	DIODE I.F. TRANSFORMER
T_5	IN 813	8" P.M. DYNAMIC SPEAKER TRANSFORMER
T_6	1018	VIBRATOR TRANSFORMER
S_1	1920	BAND SELECTOR SWITCH
S_2	—	LINE SWITCH ON VOLUME CONTROL
S_3	—	PILOT LIGHT SPRING SWITCH
P	2901	MAZDA #40 PILOT LIGHTS
V	2501	PLUG IN VIBRATOR
B	3000	BIAS CELL

R_1	2009B	500,000 OHM VOLUME CONTROL
R_2	148	100 OHM ½ WATT CARBON RESISTOR
R_3	101	150 OHM ½ WATT CARBON RESISTOR
R_4	104	600 OHM ½ WATT CARBON RESISTOR
R_5	109	10,000 OHM ½ WATT CARBON RESISTOR
R_6	113	50,000 OHM ½ WATT CARBON RESISTOR
R_7	116	250,000 OHM ½ WATT CARBON RESISTOR
R_8	117	500 000 OHM ½ WATT CARBON RESISTOR
R_9	119	1 MEGOHM ½ WATT CARBON RESISTOR
L_1	1100	FILTER CHOKE
L_2	1618	R.F. "B" CHOKE
L_3	1619	R.F. "A" CHOKE
L_4	1620	R.F. "A" CHOKE

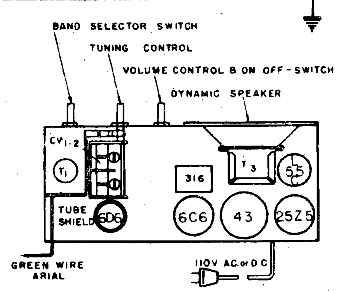
2 BAND AC-DC OPERATED RECEIVER



MODEL 43X5

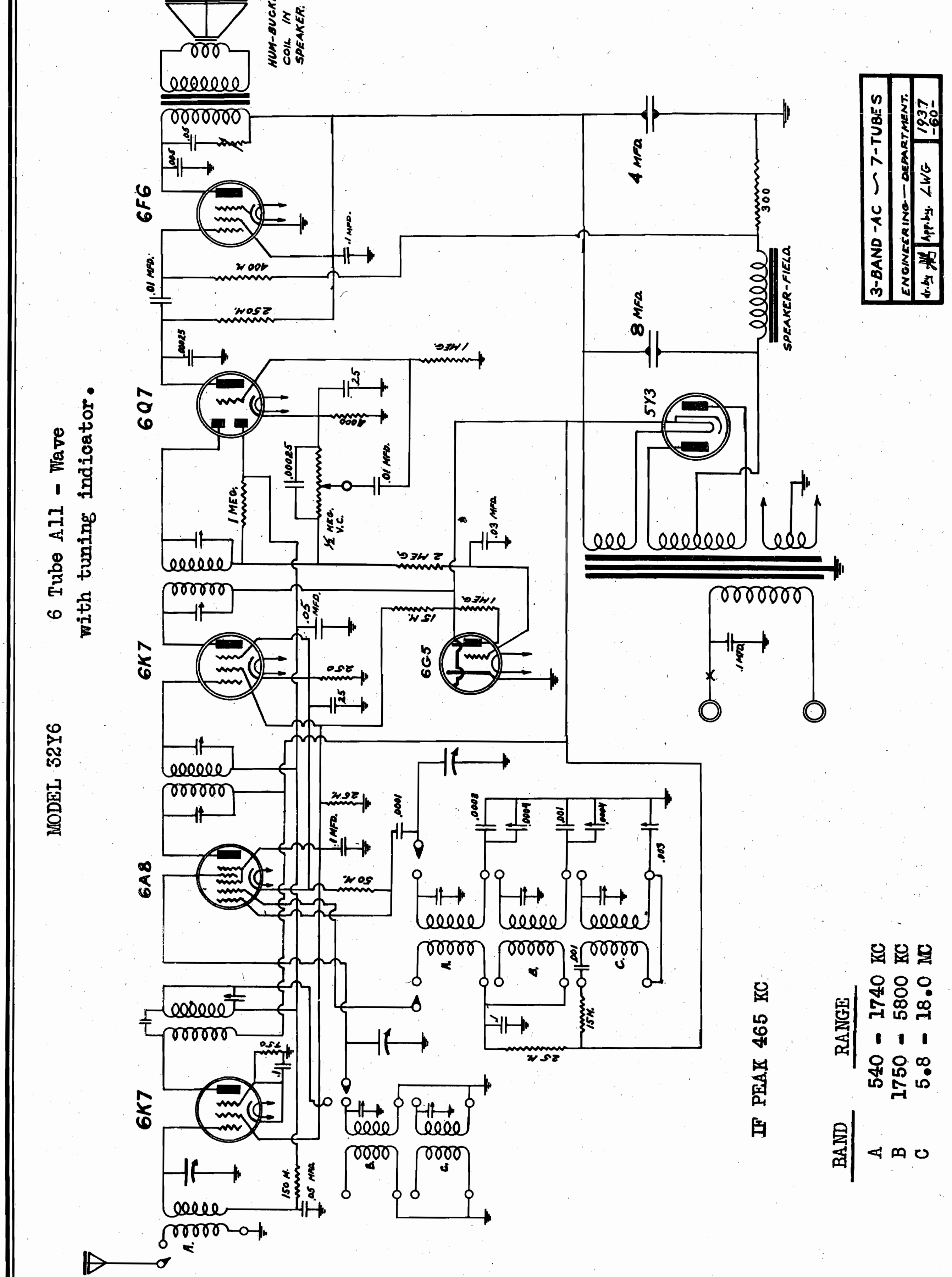
LEGEND	OUR PART NO.	DESCRIPTION
R_1	2006A	10,000 OHM VOLUME CONTROL
R_2	IN 2006A	275 OHM (Minimum on Volume Control)
R_3	104	600 OHM ¼ WATT CARBON RESISTOR
R_4	108	5000 OHM ¼ WATT CARBON RESISTOR
R_5	111	25,000 OHM ¼ WATT CARBON RESISTOR
R_6	142	51,000 OHM ¼ WATT CARBON RESISTOR
R_7	116	250,000 OHM ¼ WATT CARBON RESISTOR
R_8	117	500,000 OHM ¼ WATT CARBON RESISTOR
R_9	120	3 MEGOHM ¼ WATT CARBON RESISTOR
R_{10}	2904	L-55-C BALLAST TUBE
T_1	1224	ANTENNA COIL
T_2	1316	INTERSTAGE COIL
T_3	IN 808	OUTPUT TRANSFORMER

F	IN 808	SPEAKER FIELD (2500 OHMS)
C_1	211	.01 MFD. 400 V. TUBULAR CONDENSER
C_2	216	.018 MFD. 400 V. TUBULAR CONDENSER
C_3	210	.1 MFD 400 V TUBULAR CONDENSER
C_4	IN 316	5 MFD. 35 V ELECTROLYTIC COND
C_5	IN 316	4 MFD 200 V ELECTROLYTIC COND
C_6	IN 316	8 MFD. 200 V. ELECTROLYTIC COND.
C_7	IN 316	14 MFD. 200 V ELECTROLYTIC COND.
S_1	1919	BAND SWITCH
CV_{1-2}	615	2 GANG VARIABLE CONDENSER
S_2	IN 2006A	SWITCH ON VOLUME CONTROL
P	2921	MAZDA #44 PILOT LIGHTS



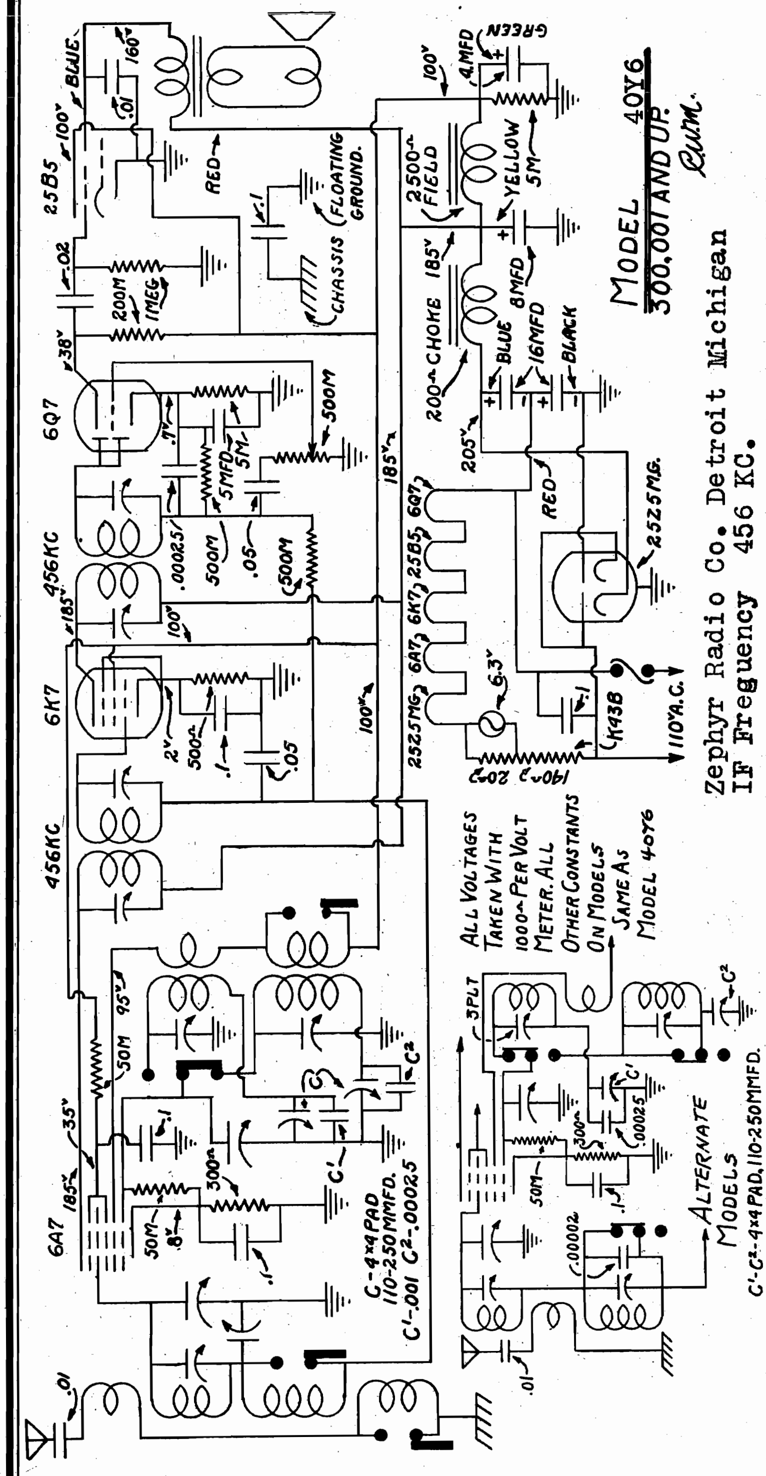
ZEPHYR RADIO CO.

MODEL 32Y6
Schematic

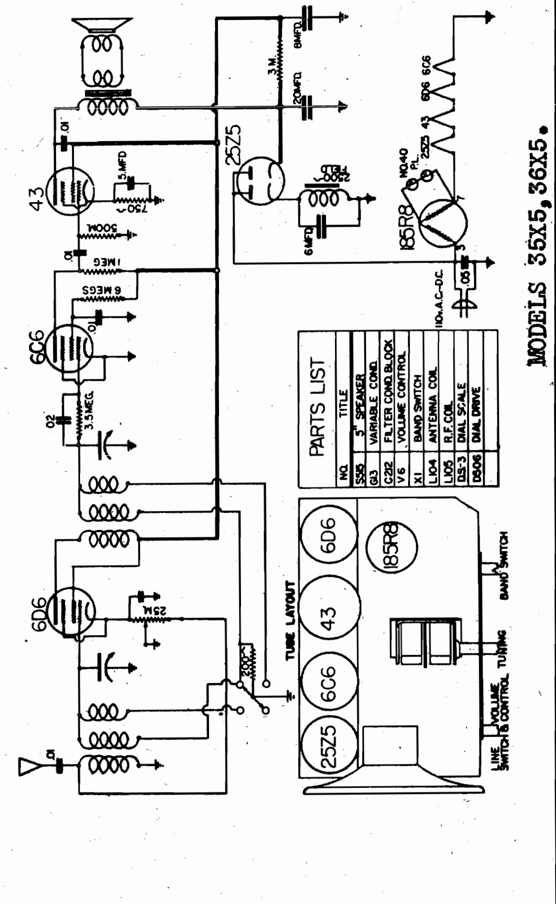


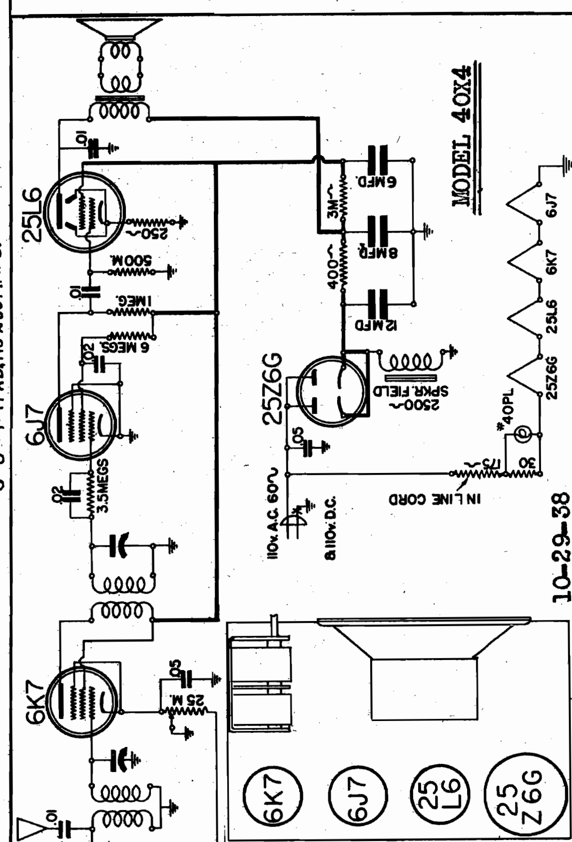
MODELS 35X5,36X5
MODEL 40X4
Schematics,Socket
MODEL 40Y6
Schematic,Voltage

ZEPHYR RADIO CO.



Zephyr Radio Co. Detroit Michigan
IF Frequency 456 KC.





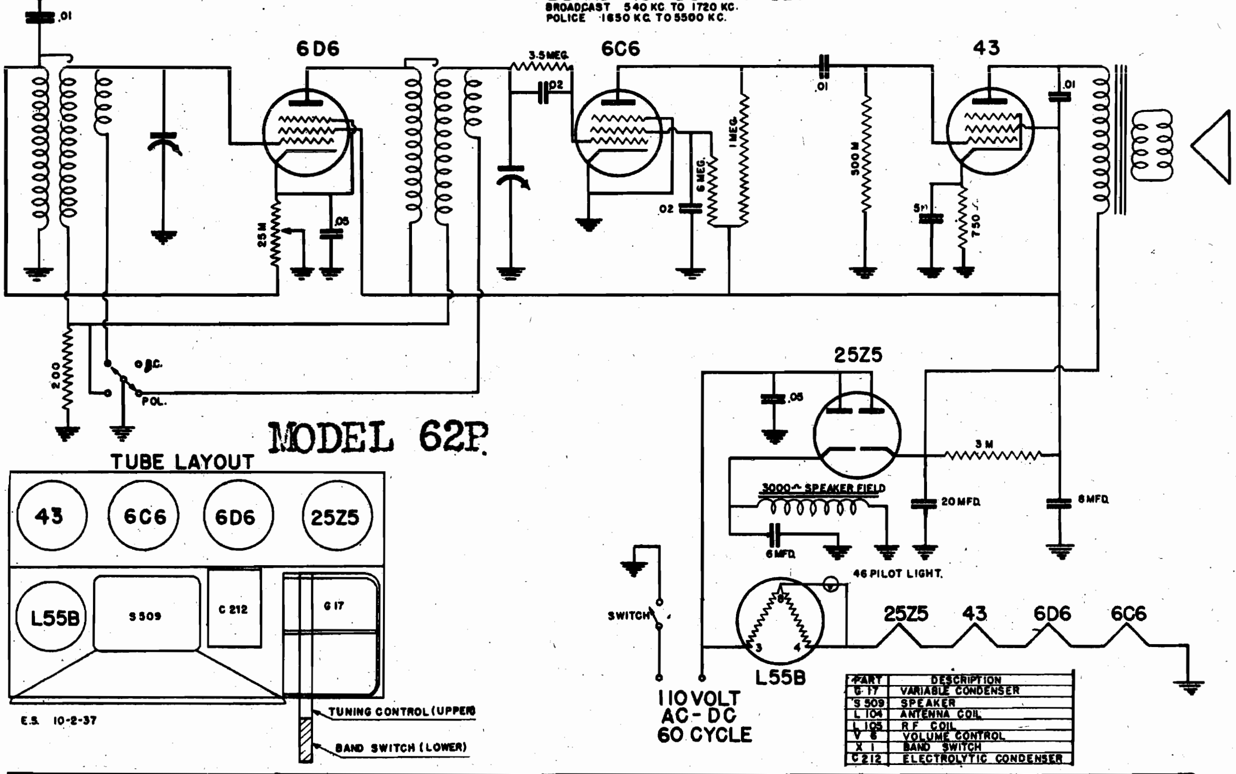
10-29-38

ZEPHYR RADIO CO.

MODEL 62P
MODEL 62X8
Schematics, Socket

2 BAND AC DC TRF SET

BROADCAST 540 KC TO 1720 KC.
POLICE 1650 KC TO 5500 KC.

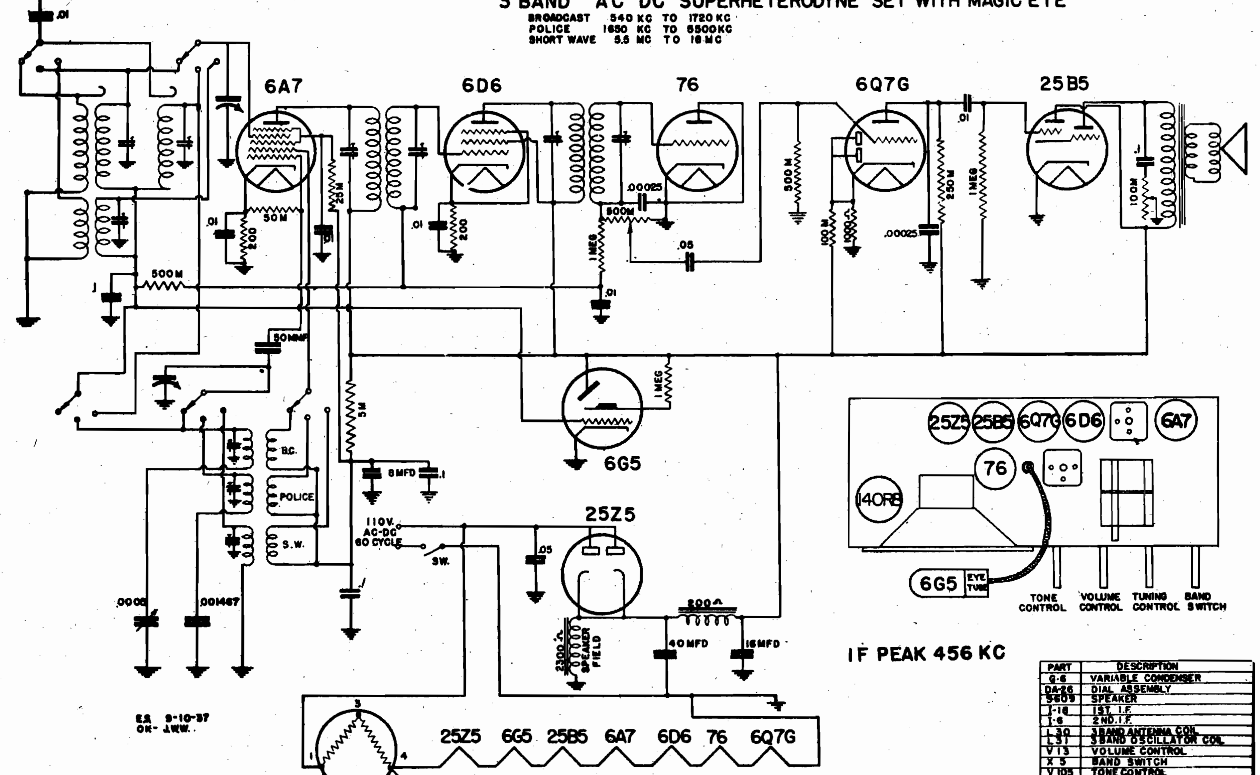


MODEL 62P

PART	DESCRIPTION
G 17	VARIABLE CONDENSER
S 509	SPEAKER
L 104	ANTENNA COIL
L 105	R F COIL
V 6	VOLUME CONTROL
X 1	BAND SWITCH
C 212	ELECTROLYTIC CONDENSER

3 BAND AC DC SUPERHETERODYNE SET WITH MAGIC EYE

BROADCAST 540 KC TO 1720 KC
POLICE 1650 KC TO 5500 KC
SHORT WAVE 5.5 MC TO 18 MC



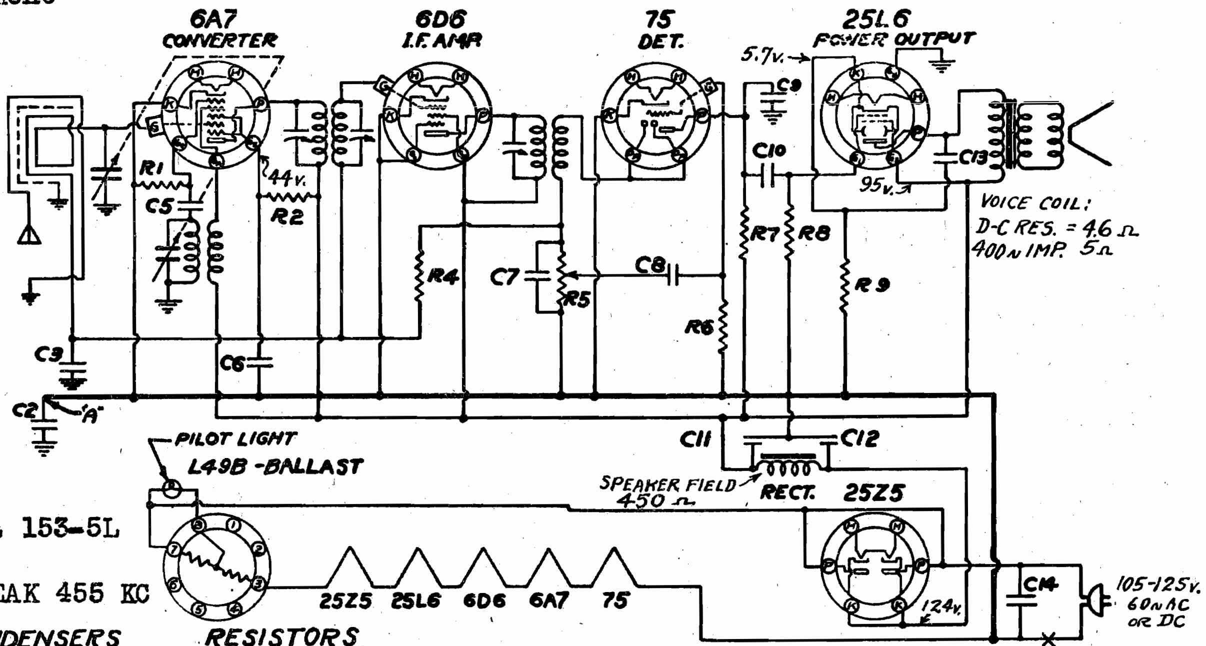
IF PEAK 456 KC

PART	DESCRIPTION
G-6	VARIABLE CONDENSER
DA-26	DIAL ASSEMBLY
S605	SPEAKER
I-16	1ST. I.F.
I-6	2ND. I.F.
L 30	3 BAND ANTENNA COIL
L 31	3 BAND OSCILLATOR COIL
V 13	VOLUME CONTROL
X 5	BAND SWITCH
V 105	TONE CONTROL
H 3	CHOKE
C226	40 MFD. ELECTROLYTIC
C204	8 MFD. ELECTROLYTIC
C200	16 MFD. TUBULAR CONDENSER

MODEL 62X8

MODEL 153-5L
MODEL 352-5R
Schematics, Voltage
Alignment

ZEPHYR RADIO CO.



MODEL 153-5L

IF PEAK 455 KC

CONDENSERS

Nº	MFD.	VOLTS
C2	.25	200
C3	.02	400
C5	.00005	MICA
C6	05	400
C7	.00025	MICA
C8	.01	400
C9	.00025	MICA
C10	.01	400
C11	20.	150
C12	20.	
C13	.005	600
C14	.05	400

RESISTORS

Nº	OHMS	WATTS
R1	50,000	½
R2	30,000	½
R4	2,000,000	½
R5	500,000	VOL CONT
R6	5,000,000	½
R7	250,000	½
R8	500,000	½
R9	150	½ ±10%

⏚ IND. CHASSIS GND.

NOTE: C2 USED ON MODEL 5LL ONLY.
ON MODEL 5L POINT "A" IS CONNECTED TO CHASSIS

VOLTAGES: Line 115 v. AC; meter 1000 ohms per volt.

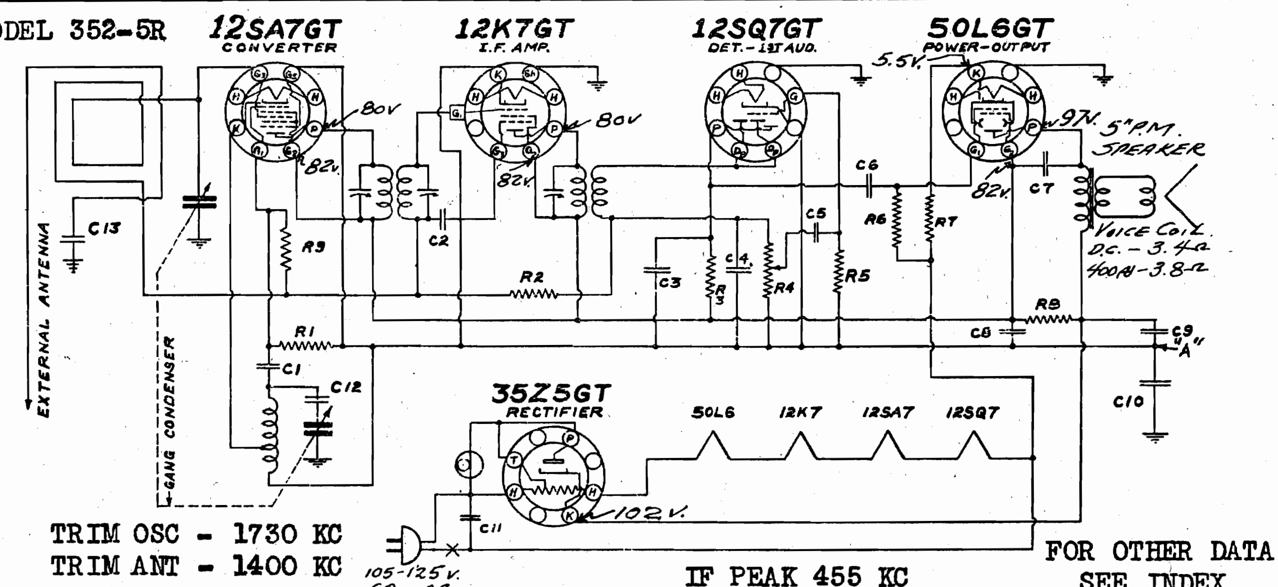
POWER CONSUMPTION: 44 watts.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

TRIM OSC. - 1730 KC
TRIM ANT. - 1400 KC

FOR SOCKET LAYOUT
SEE INDEX

MODEL 352-5R



TRIM OSC - 1730 KC
TRIM ANT - 1400 KC

IF PEAK 455 KC

FOR OTHER DATA
SEE INDEX

RESISTORS

Nº	OHMS	WATTS	Nº	OHMS	WATTS
R1	20,000	½	R6	500,000	½
R2	2 MEG.	½	R7	150± 10%	½
R3	250,000	½	R8	1,000	1
R4	500,000	V.C	R9	15 MEG.	½
R5	5 MEG.	½			

CAPACITORS

Nº	MFD.	VOLTS	Nº	MFD.	VOLTS
C1	.0001	MICA	C7	.01	400
C2	.02	400	C8	20.0	150
C3	.0005	MICA	C9	30.0	150
C4	.00025	MICA	C10	.25	200
C5	.01	400	C11	.05	400
C6	.002	600	C12	.02	400
			C13	.001	600

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

C10 and C14 used in model 5RL only   On model 5R point "A" is connected to ground.

Voltages: From point indicated to "A"; line 115 v. AC; meter 1000 ohms per volt - 150-volt scale. Power consumption: 30 watts.

MODELS 666-6J-669-6J inc.
MODELS 696-6M, 697-6M
Socket, Trimmers

ZEPHYR RADIO CO.

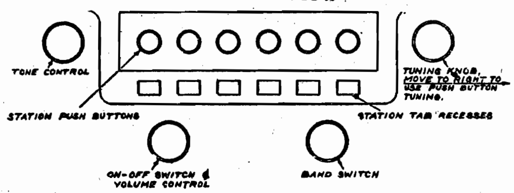
MODEL 381-7H
MODEL 605-7C
Tuner, Socket, Trimmers
MODEL 153-5L

PROCEDURE FOR SETTING UP PUSH BUTTONS

FOR MODELS 381 - 7H and 605 - 7C

There are six push buttons by means of which six stations may be selected (See Fig. 1). Make a list of six stations tuned in regularly. Push the tuning knob to the right until it clicks, this throws it out of engagement with the dial drum, thus when the push buttons are used the tuning knob does not turn. (A slight turn of the knob will automatically throw it back into engagement with the dial drum for manual tuning.)

Fig. 1—Front View



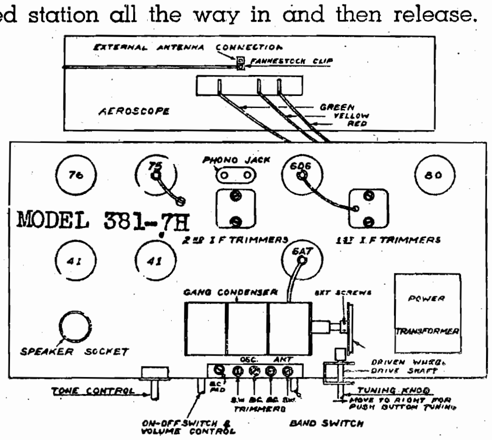
Loosen one of the push buttons by turning the push button knob counter clockwise a turn or less and push it in; while holding the button in, tune in a desired station by means of the station selector wheel. Turn the selector very slowly back and forth until the signal is clearest. Now while holding the push button in, tighten it by turning clockwise. Release the push button and turn the station selector to one end of the dial; push the tuning knob to the right and then check the button by pushing it in and if the station is tuned to the center of the area on the dial covered by the station the adjustment is correct.

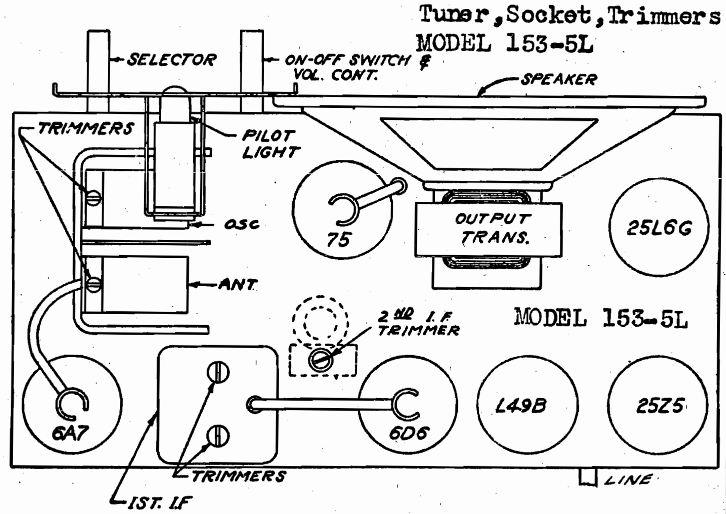
Release the push button and loosen another push button and repeat the above procedure, doing this for the remaining buttons.

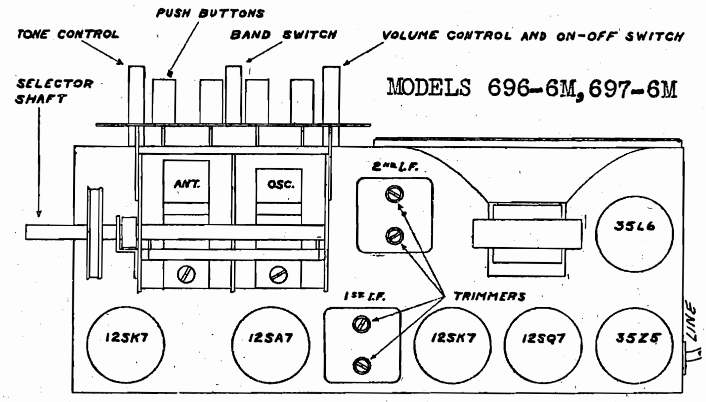
If it is desired to change a button to a different station simply loosen the push button and re-set.

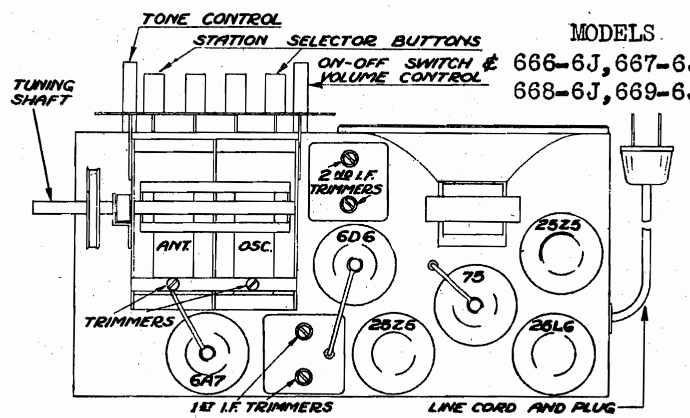
Punch the correct station call letter tabs from the set of sheets supplied and insert them into the recesses under the push buttons.

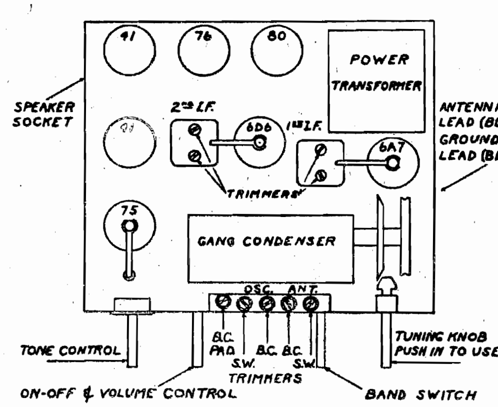
The dial is now set up for quick tuning and all that is necessary is to push the tuning knob to the right until it clicks and then push the button above the desired station all the way in and then release.







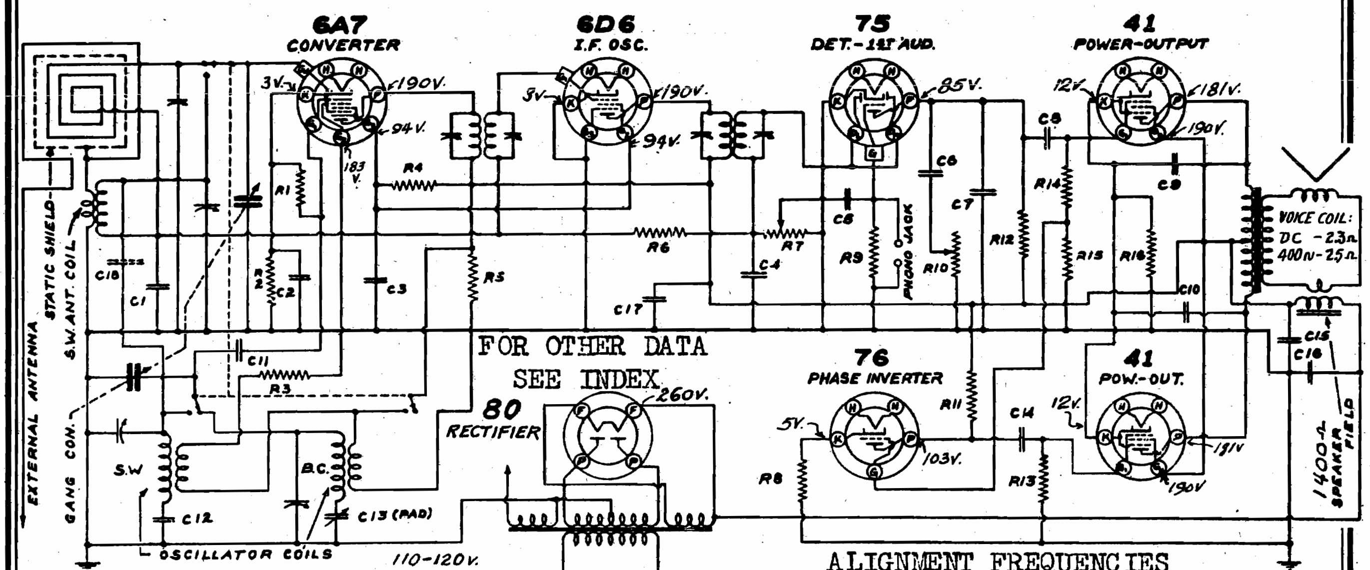




MODEL 605-7C

MODEL 381-7H
MODEL 605-7C
Schematics, Voltage
Alignment

ZEPHYR RADIO CO.



IF PEAK 455 KC

SWITCHES SHOWN IN BROADCAST POSITION
BOTTOM VIEW OF SOCKETS SHOWN.

MODEL 381-7H

ALIGNMENT FREQUENCIES
BC OSC.- 1550 KC SW OSC.- 18.1 MC
BC ANT.- 1400 KC SW OSC.- 16.0 MC
BC PAD - 600 KC

GANG CONDENSER CAPACITY 443 $\mu\mu$fds.

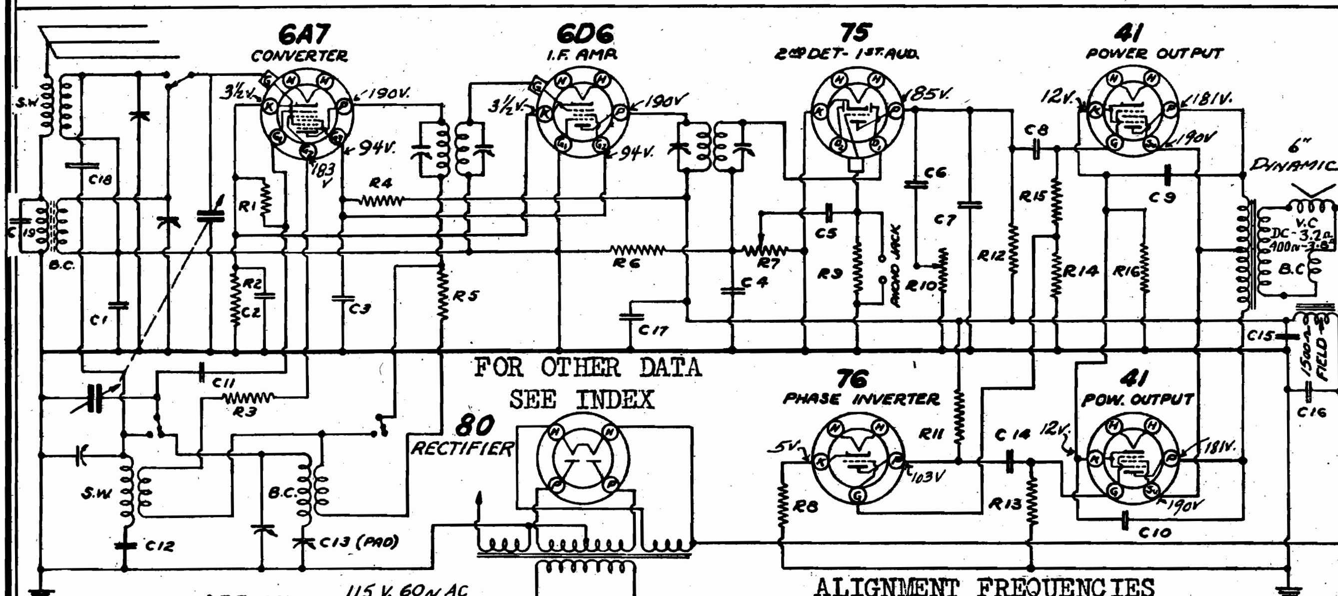
No	MFDS	VOLTS	No	MFDS.	VOLTS
C1	.05	200	C10	.005	600
C2	.25	200	C11	.0001	MICA
C3	.05	400	C12	.004 ±5%	MICA
C4	.00025	MICA	C13	300-600 $\mu\mu$fds.	
C5	.01	400	C14	.01	400
C6	.005	600	C15	10.0	350
C7	.00025	MICA	C16	10.0	350
C8	.01	400	C17	.05	400
C9	.005	600	C18	GIMMICK	

No	OHMS	WATTS
R1	50,000	½
R2	300	½
R3	250	½
R4	20,000	½
R5	1,000	½
R6	2 MEG.	½
R7	500,000	VOL.CON.
R8	3,000	½
R9	5 MEG.	½
R10	500,000	TONE CON.
R11	50,000	½
R12	250,000	½
R13	500,000	½
R14	400,000	½
R15	100,000	½
R16	300	½

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

POWER CONSUMPTION: 60 watts.

VOLTAGES: Taken from socket terminals to ground; 20,000 ohms-per-volt meter.



IF PEAK 455 KC

BAND SWITCHES SHOWN IN BROADCAST POSITION
BOTTOM VIEW OF TUBE SOCKETS SHOWN

MODEL 605-7C

ALIGNMENT FREQUENCIES
BC OSC.- 1730 KC SW OSC.- 18.1 MC
BC ANT.- 1400 KC SW ANT.- 16.0 MC
BC PAD - 600 KC

GANG CONDENSER CAPACITY 443 $\mu\mu$fds.

No.	MFDS	VOLTS	No.	MFDS	VOLTS
C1	.06	200	C11	.0001	MICA
C2	.25	200	C12	.004±5%	MICA
C3	.05	400	C13	300-600 $\mu\mu$fd	PADDER
C4	.00025	MICA	C14	.01	400
C5	.01	400	C15	10.0	350
C6	.005	600	C16	10.0	350
C7	.00025	MICA	C17	.05	400
C8	.01	400	C18	GIMMICK	
C9	.005	600	C19	.0001	MICA
C10	.005	600			

No.	OHMS	WATTS
R1	50,000	½
R2	200	½
R3	250	½
R4	20,000	½
R5	1,000	½
R6	2 MEG	½
R7	500,000	VOL. CON.
R8	3,000	½
R9	5 MEG	½
R10	500,000	TONE CON.
R11	50,000	½
R12	250,000	½
R13	500,000	½
R14	100,000	½
R15	400,000	½
R16	300	½

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

POWER CONSUMPTION: 60 watts.

VOLTAGES: Taken from socket terminals to ground; 20,000 ohms-per-volt meter.

MODEL 352-5R
Tuner, Socket, Trimmers

ZEPHYR RADIO CO.

MODELS 576-5Q, 577-5Q
Schematic, Voltage, Socket
Alignment, Trimmers, Tuner

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

ALIGNMENT FREQUENCIES

BC OSC ------- 1730 KC
BC ANT ------- 1400 KC

RESISTORS

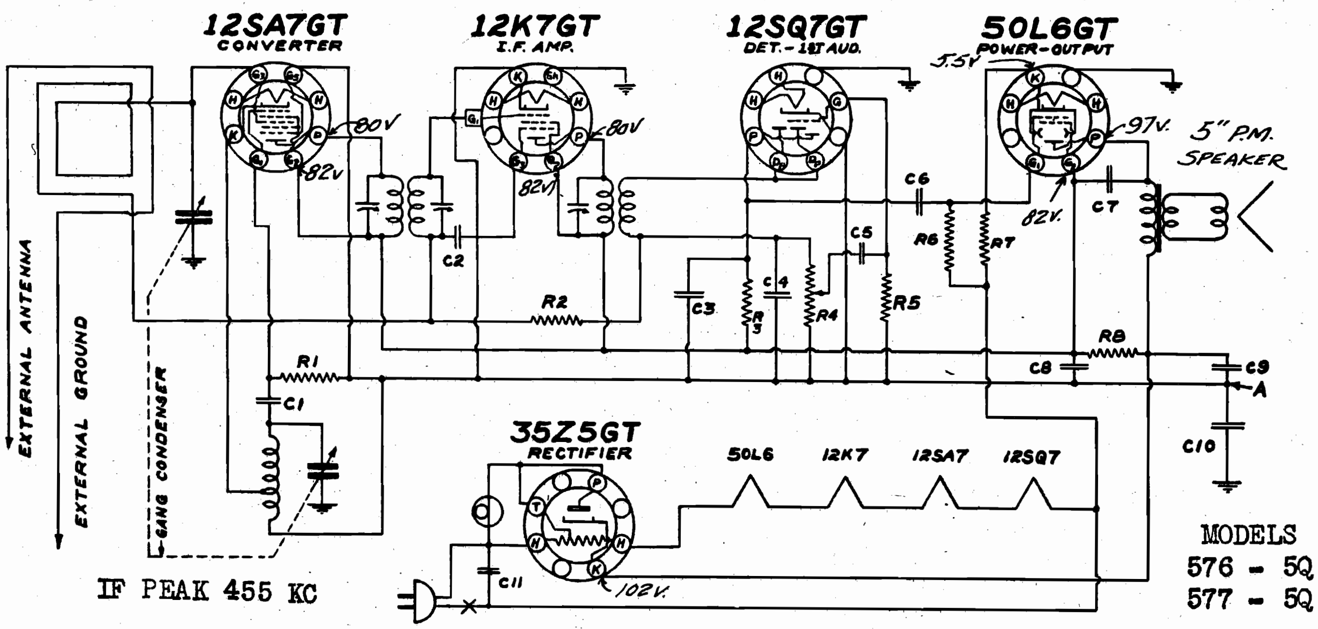
NO	OHMS	WATTS	NO	OHMS	WATTS
R1	20,000	½	R6	500,000	½
R2	2 MEG.	½	R7	150 ± 10%	½
R3	250,000	½	R8	1,000	1
R4	500,000	V.C.			
R5	5 MEG.	½			

CAPACITORS

NO	MFD.	VOLTS	NO	MFD.	VOLTS
C1	.0001	MICA	C7	.01	400
C2	.02	400	C8	20.0	150
C3	.0005	MICA	C9	30.0	150
C4	.00025	MICA	C10	.25	200
C5	.01	400	C11	.05	400
C6	.002	600			

TUBES SHOW BOTTOM VIEW

C10 USED ON MODEL 5QL ONLY. ON MODEL 5Q, POINT "A" IS CONNECTED TO CHASSIS.



IF PEAK 455 KC

MODELS
576 - 5Q
577 - 5Q

VOLTAGES:- Taken from socket terminals to point "A"; 115 V. line; AC power consumption 30 watts; volume control at maximum ; antenna shorted to ground; using a 100 ohm per volt meter.

Voice Coil
DC Resistance - 3.4 Ω
At 400 cycles - 3.8 Ω

MODELS 352-5R; 576-5Q, 577-5Q.

PROCEDURE FOR SETTING UP PUSH BUTTONS

There are four push buttons located on the top by means of which four stations may be selected (See Fig. 1). Make a list of four stations tuned in regularly. Loosen one of the push buttons by turning the push button knob counter clockwise a turn or less and push it in; while holding the button in, tune in a desired station by means of the station selector. Turn the selector very slowly back and forth until the signal is clearest. Now while holding the push button in, tighten it by turning clockwise. Release the push button and turn the station selector to one end of the dial; then check the button by pushing it in and if the station is tuned to the center of the area on the dial covered by the station the adjustment is correct.

Release the push button and loosen another push button and repeat the above procedure, doing this for the remaining buttons.

If it is desired to change a button to a different station simply loosen the push button and re-set.

MODELS 352-5R, 576-5Q, 577-5Q.

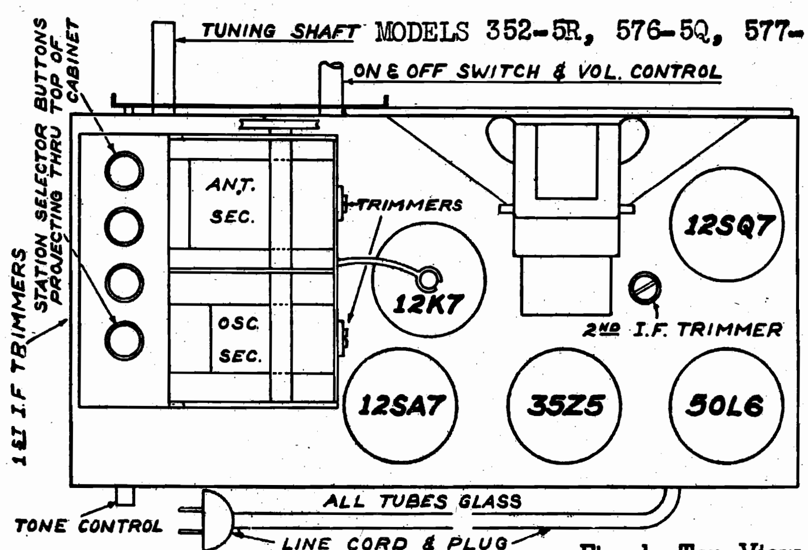
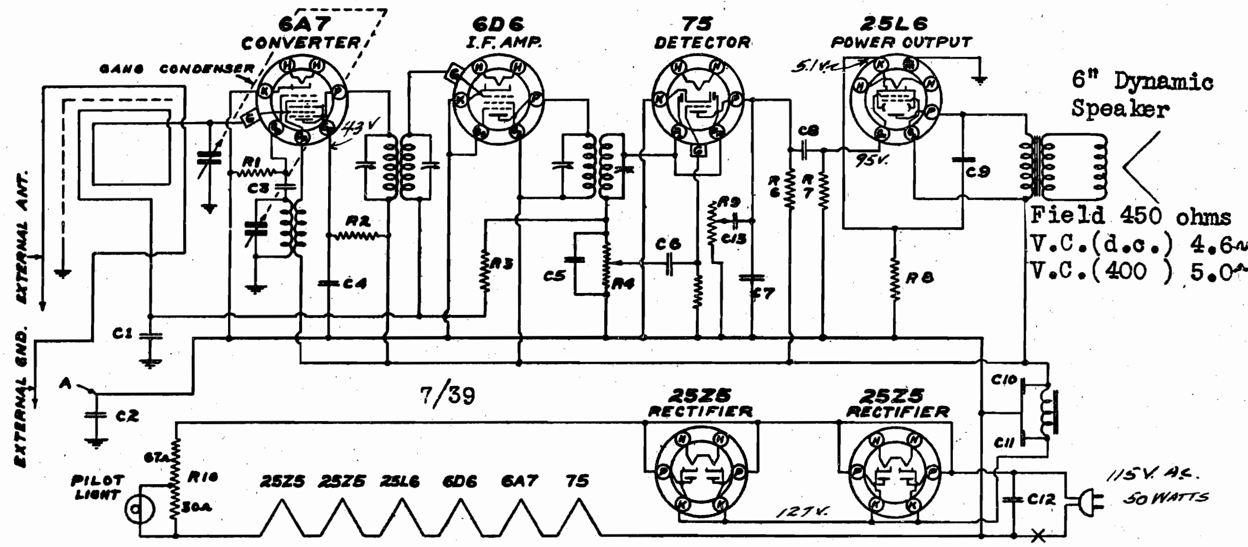


Fig. 1—Top View

MODELS 666-6J to 669-6J
MODELS 696-6M, 697-6M
Schematics, Voltage

ZEPHYR RADIO CO.



RESISTORS		
NO	OHMS	WATTS
R1	50,000	½
R2	30,000	½
R3	2,000,000	½
R4	500,000	VOL. CONT.
R5	5,000,000	½
R6	250,000	½
R7	500,000	½
R8	150 ± 10%	½
R9	500,000	TONE CONT.
R10	67 & 30	10

CONDENSERS					
NO	MFDS.	VOLTS	NO	MFDS.	VOLTS
C1	.02	200	C10	20.	150
C2	.25	200	C11	20.	150
C3	.00005	MICA	C12	0.05	400
C4	.05	200	C13	0.005	600
C5	.00025	MICA			
C6	.01	400			
C7	.00025	MICA			
C8	.01	400			
C9	.02	400			

NOTE:- C2 USED ON MODEL 6JL ONLY ON MODEL 6J POINT "A" IS CONNECTED TO CHASSIS.

I.F. 455 K.C.
⏚ INDICATES CHASSIS GROUND

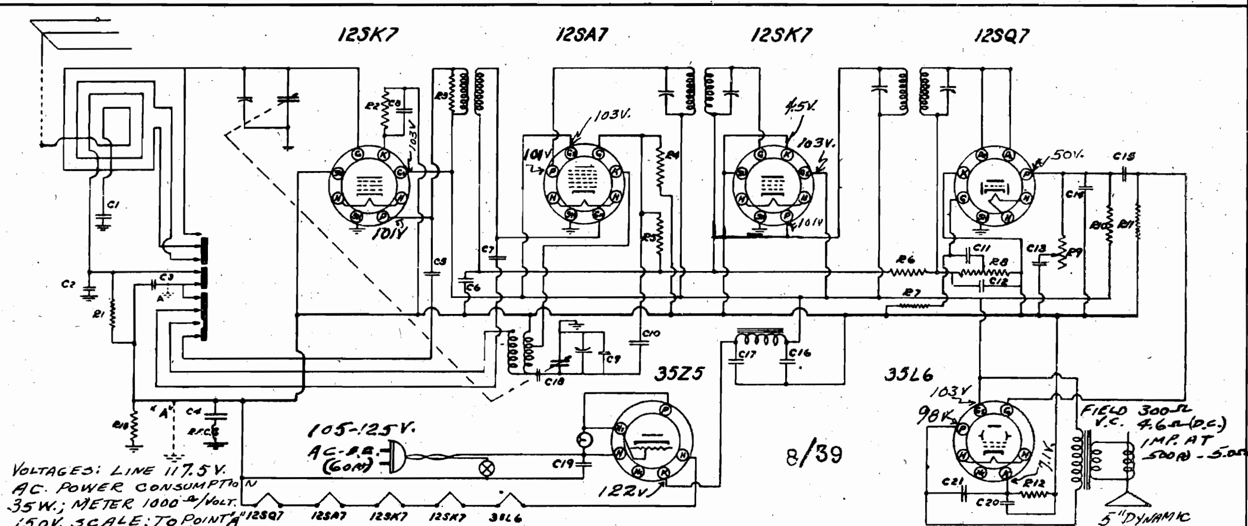
VOLTAGES: Taken with 1000 ohms per volt meter to ground; antenna shorted to ground.

MODELS 666-6J, 667-6J, 668-6J, 669-6J.

I.F. ALIGNMENT CONVENTIONAL
BROADCAST BAND
TRIM OSC 1630 KC
TRIM ANT 1400 KC

SEE SPECIAL SECTION
VOLUME VIII

(See Index for tube layout)



RESISTORS					
NO	OHMS	WATTS	NO	OHMS	WATTS
R1	150K±10%	½	R8	500K-V.C.	½
R2	600±10%	½	R9	500K-T.C.-	½
R3	5K±10%	½	R10	150K	½
R4	15 MEG.	½	R11	250K	½
R5	25K	½	R12	200±10%	½
R6	2 MEG	½	R13	150K	½
R7	5 MEG	½			

CAPACITORS								
NO	MFD.	VOLTS	NO	MFD.	VOLTS.	NO	MFD.	VOLTS
C1	.001	600	C8	.05	200	C15	.01	400
C2	.00127±5%	Mica	C9	.000010	Mica.	C16	20.	150
C3	.05	400	C10	.00005	Mica.	C17	20.	150
C4	.25	200	C11	.01	400	C18	.02	400
C5	.00006±5%	Mica.	C12	.00025	Mica	C19	.05	400
C6	.05	200	C13	.005	600	C20	20.	25
C7	.00006±5%	Mica	C14	.0005	Mica.	C21	.02	400

I.F. 455 K.C.

In model 6M only C3, C4, C18, R13 and the R.F. choke (RFC) are not used and points "A" are connected to chassis.

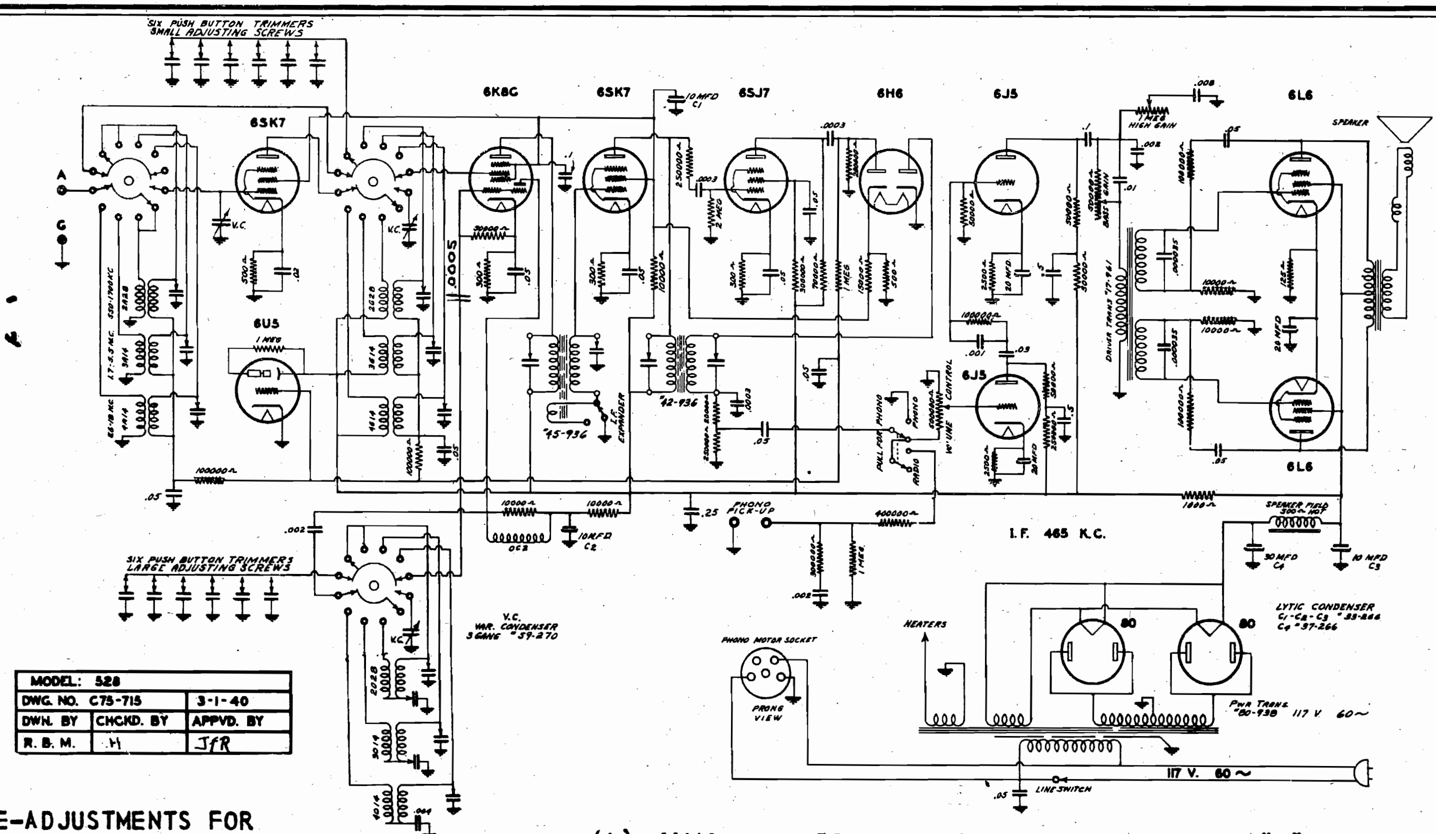
I.F. ALIGNMENT CONVENTIONAL
BROADCAST BAND
TRIM OSC 1630 KC
TRIM ANT 1400 KC

SEE SPECIAL SECTION
VOLUME VIII

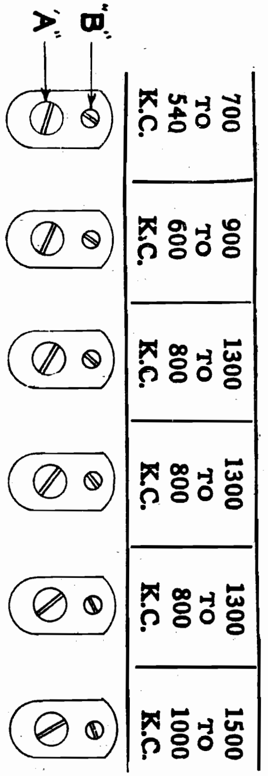
MODELS 696-6M, 697-6M
(See Index for tube layout)

BARKER BROS.

MODEL Tempo Tone
Schematic, Tuner



MODEL: 528		
DWG. NO. C75-715		3-1-40
DWN. BY	CHCKD. BY	APPVD. BY
R. B. M.	H	JfR



PRE-ADJUSTMENTS FOR PUSH BUTTON OPERATION

(1) Leave set turned on at least twenty minutes allowing receiver circuits to reach their normal operating condition before starting push button adjustment.

(2) Remove screws holding escutcheon plate for push buttons.

(3) Note the ranges shown on label above adjusting screws. For example: 700 to 540 KC means you should adjust this set of screws for any station having a frequency between 700 and 540 KC. This rule applies for the other five ranges. There is, of course, some overlapping of range coverage.

(4) Select a station by manual tuning in the regular way. Assuming it is within the 700 to 540 KC range, turn Band Switch to "Push Button" position and push in on button covering the range.

As will be noted, the adjustments consist of two screws, one with a large head (A) and one with a small head (B).

(A) With a small screw driver, turn screw "A" back and forth until you locate the station. It is suggested that you switch back to manual tuning if necessary to recognize the particular type program to help you find it when you again turn the adjusting screw.

(B) After the "A" Screw has been set to exact resonance by watching the tuning eye deflection, turn the small screw "B" for the maximum deflection of the tuning eye. Now recheck screw "B". When all six buttons have been set, repeat the "trimming" process for accuracy.

IT WILL BE OF IMPORTANCE TO NOTE THAT IF THE STATION CANNOT AT FIRST BE LOCATED BY MOVING SCREW "A" IN AND OUT, PERHAPS YOU WILL FIND ADJUSTMENT "B" TOO FAR IN OR TOO FAR OUT. In such a case, check its position by turning it in all the way (to the right) then reverse it about a turn or two and try screw "B" again.

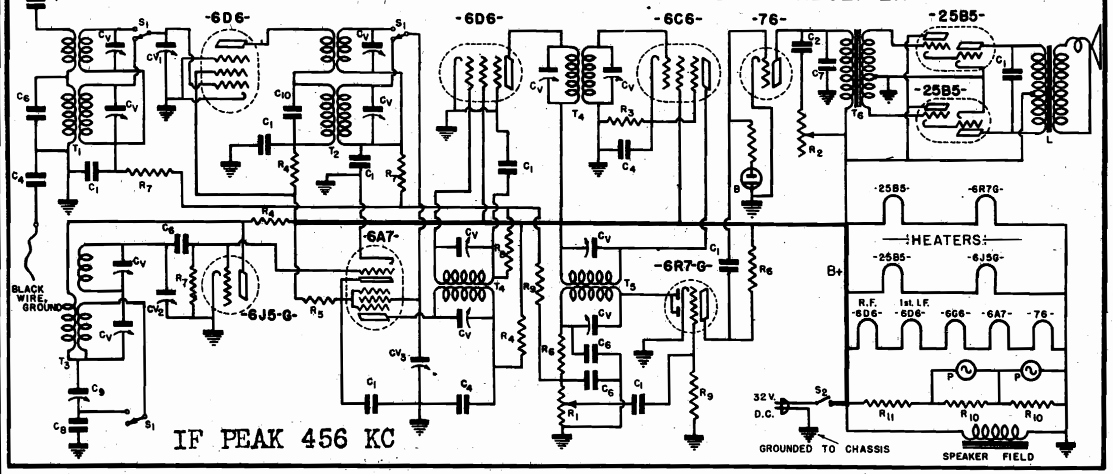
MODEL BC
MODEL 289
MODELS 9722,9822
Schematics,Socket
Alignment,Trimmers

F. J. FITZGERALD CO.
HAMILTON RADIO CO.
KENT

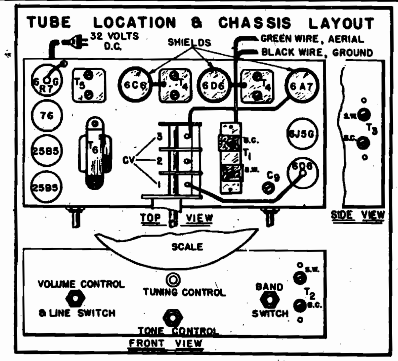
F. J. FITZGERALD CO.

MODEL BC

32 VOLT OPERATED 2 BAND SUPERHETERODYNE RECEIVER



IF PEAK 456 KC



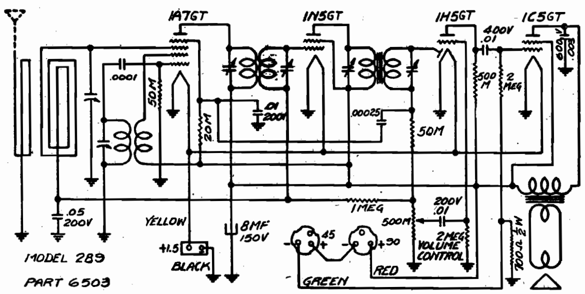
W.F.S.

LEGEND	OUR PART NO.	DESCRIPTION
C_1	211	.01 MFD. 400 V. TUBULAR CONDENSER
C_2	216	.02 MFD. 400 V. TUBULAR CONDENSER
C_3	212	.05 MFD. 200 V. TUBULAR CONDENSER
C_4	203	.1 MFD. 200 V. TUBULAR CONDENSER
C_5	204	.25 MFD. 200 V. TUBULAR CONDENSER
C_6	400	100 MMFD. MICA CONDENSER
C_7	401	250 MMFD. MICA CONDENSER
C_8	408	4600 MMFD. MICA CONDENSER
C_9	507	5 PLATE PADDING CONDENSER
C_{10}	402	50 MMFD. MICA CONDENSER
$CV_{1\text{-}2\text{-}3}$	636	3 GANG VARIABLE CONDENSER
C_V	500	5-30 MMFD. TRIMMER CONDENSER
R_1	2025	500,000 OHM VOLUME CONTROL
R_2	2024	TONE CONTROL (7500 OHMS)
R_3	103	250 OHM ¼ WATT CARBON RESISTOR
R_4	134	2000 OHM ¼ WATT CARBON RESISTOR
R_5	111	25,000 OHM ¼ WATT CARBON RESISTOR

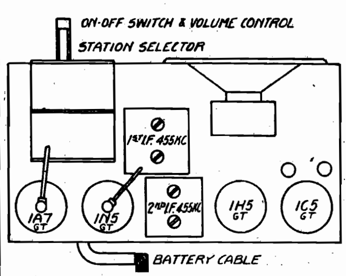
LEGEND	OUR PART NO.	DESCRIPTION
T_1	1226	ANTENNA COIL
T_2	1322	INTERSTAGE COIL
T_3	1417	OSCILLATOR COIL
T_4	1515	1st. I.F. TRANSFORMER
T_5	1507	2nd. I.F. TRANSFORMER
T_6	1021	PUSH PULL A.F. TRANSFORMER
S_1	1924	BAND SELECTOR SWITCH
S_2	IN 2025	ON-OFF SWITCH ON VOLUME CONTROL
P	2901	MAZDA #40 PILOT LIGHT
B	3000	BIAS BUTTON
L	IN 856	SPEAKER TRANSFORMER
R_6	113	50,000 OHM ¼ WATT CARBON RESISTOR
R_7	115	100,000 OHM ¼ WATT CARBON RESISTOR
R_8	117	½ MEGOHM ¼ WATT CARBON RESISTOR
R_9	119	1 MEGOHM ¼ WATT CARBON RESISTOR
R_{10}	IN 150	VOLTAGE DIVIDER STRIP (110 OHM 2 WATT)
R_{11}	IN 150	VOLTAGE DIVIDER STRIP (110 OHM 5 WATT)

HAMILTON RADIO COMPANY

Model 289

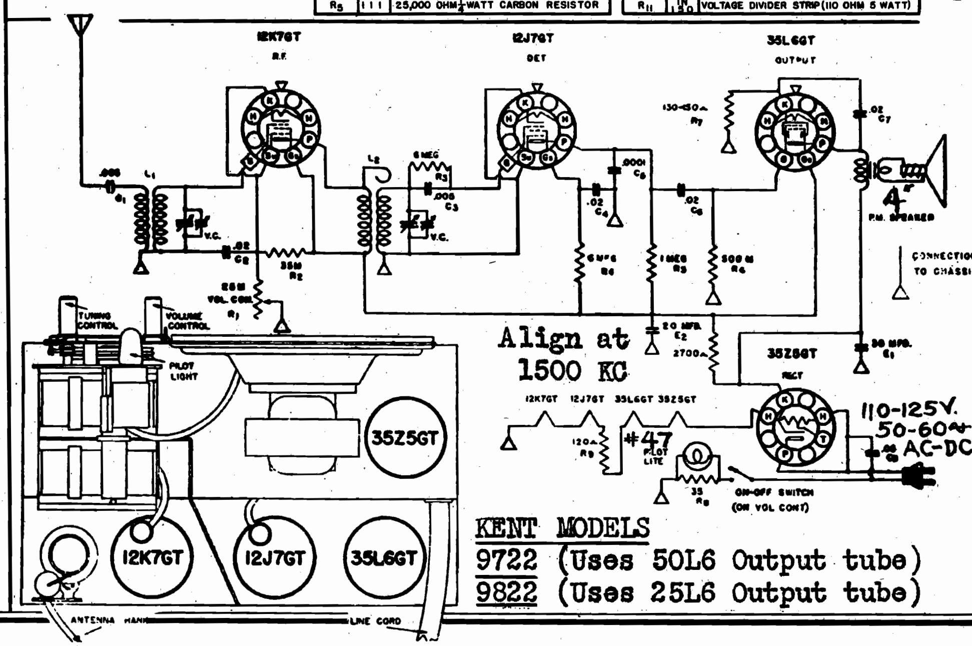


IF PEAK 455 KC



ALIGNMENT PROCEDURE

I.F. Frequency 455 KC. Set Range 540 1600 KC. Connect the test oscillator, or signal generator, to the set as follows: Connect the "hot" side of the signal generator to the grid of the 1A7GT tube, and the ground side to the terminal on the back of the chassis. An output meter should be connected across the voice coil leads of the speaker to indicate resonance. Align the I.F. trimmers at 455 KC for maximum meter reading.
Adjust the trimmer on the back of the variable condenser at or near 1400 KC at full volume on a weak broadcast signal. When aligning the set do not set the receiver on or near a metal work bench or other large metal object, as it will affect the tracking of the receiver.

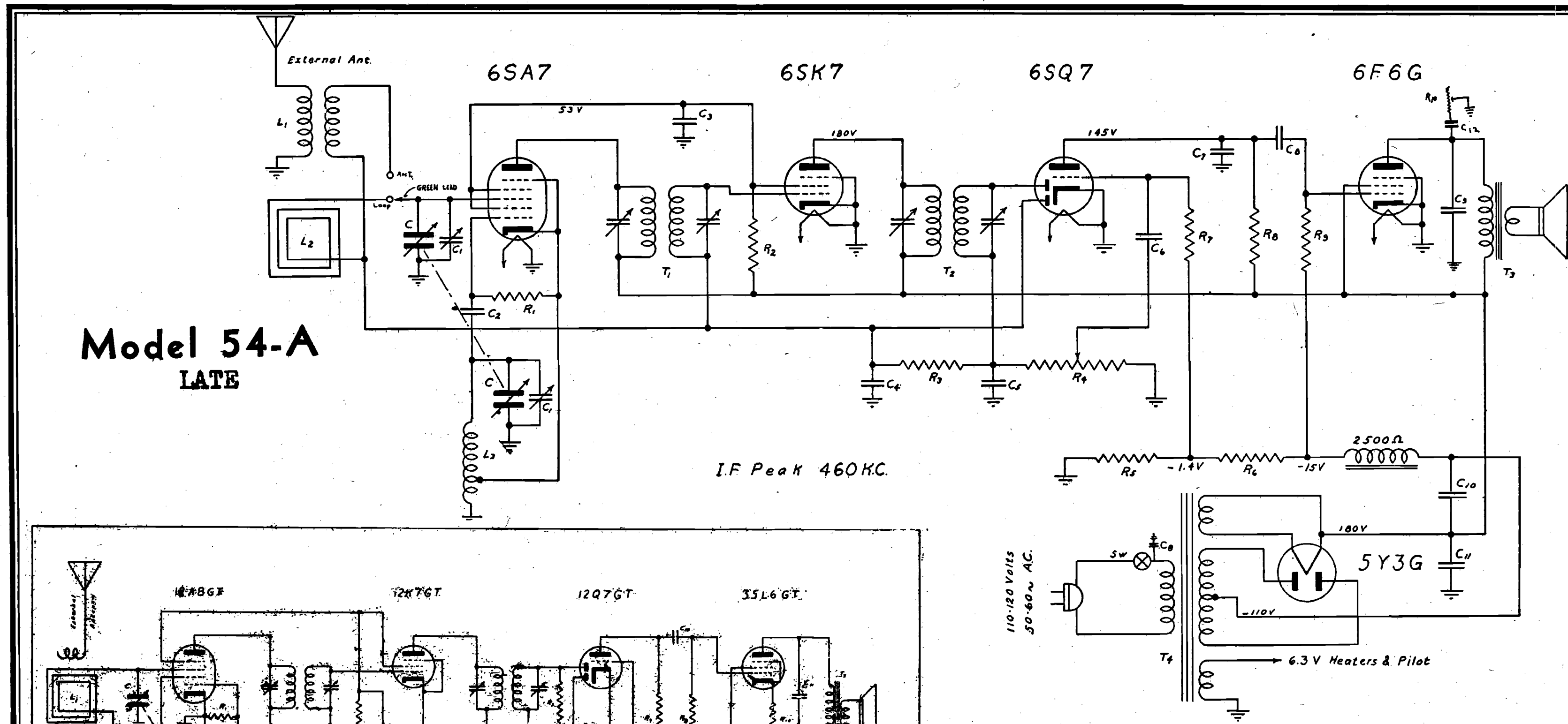


Align at 1500 KC

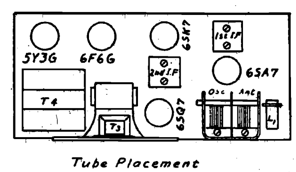
KENT MODELS
9722 (Uses 50L6 Output tube)
9822 (Uses 25L6 Output tube)

GILFILLAN BROS., INC.

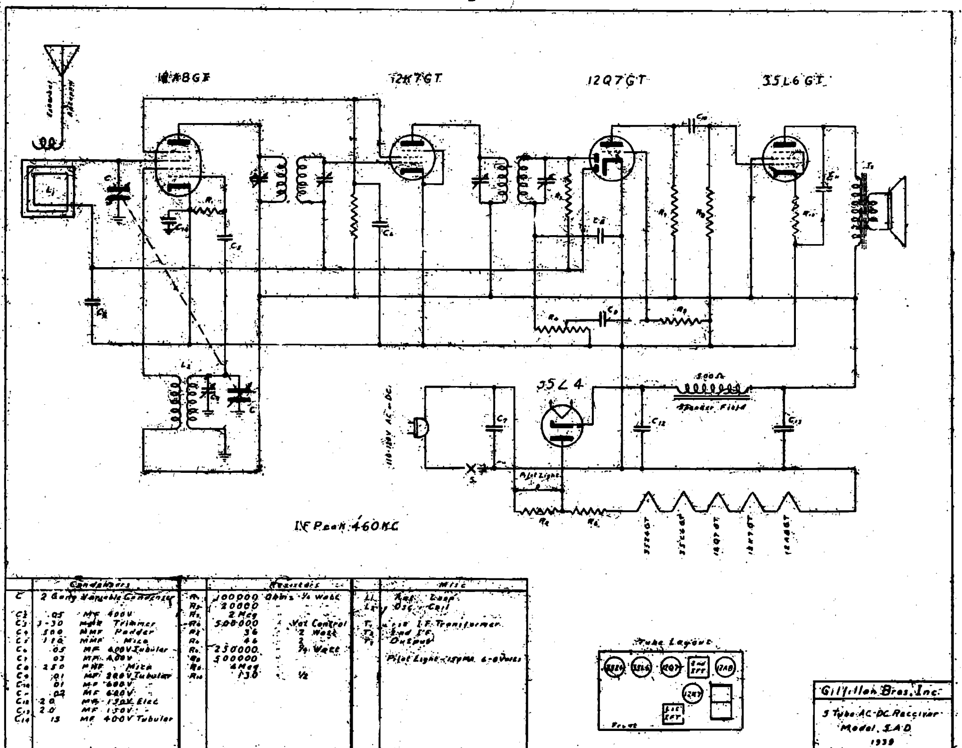
MODEL 5AD
MODEL 54-A Late
Schematics, Socket



Model 54-A
LATE



Gilfillan Bros. Inc.
Model 54 A (LATE)



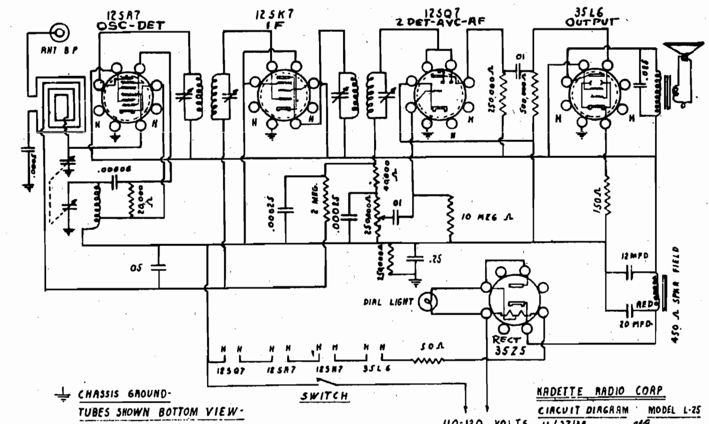
Condensers		Resistors		Misc.	
C	2 Gang Variable Condenser	R_1	25000 Ohms ¼ Watt	L_1	Antenna Coil
C_1	Variable Trimmer	R_2	250/00 " "	L_2	Loop Antenna
C_2	250 MMF Mica	R_3	2 Meg. " "	L_3	Oscillator Coil
C_3	.01 MF 600V Tubular	R_4	500000 " Vol. Control	T_1	1st I.F. Transformer
C_4	.05 MF 200V "	R_5	40 " ¼ Watt	T_2	2nd I.F. "
C_5	250 MMF Mica	R_6	350 " ½ "	T_3	Output "
C_6	.01 MF 200V Tubular	R_7	2 Meg " ¼ "	T_4	Power "
C_7	.001 MF 600V "	R_8	250000 " " "		
C_8	.05 MF 400V "	R_9	500000 " "		
C_9	.006 MF 800V "	R_{10}	50,000 " TONE CONTROL		
C_{10}	8. MF } Dual Unit 450V				
C_{11}	8. MF } Electrolytic				
C_{12}	.03 MFD. 600 V Tubular				

Power Consumption at 115V - 60 cycle supply is 40 Watts.
All voltages measured to ground with a 1000 Ohms-per-volt meter at 115 Volts 60~ Supply

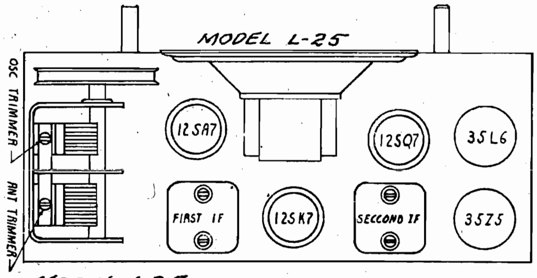
MODEL L25
MODEL L40
MODEL L41

KADETTE RADIO CORP.

Schematics, Socket Trimmers, Notes, Voltage



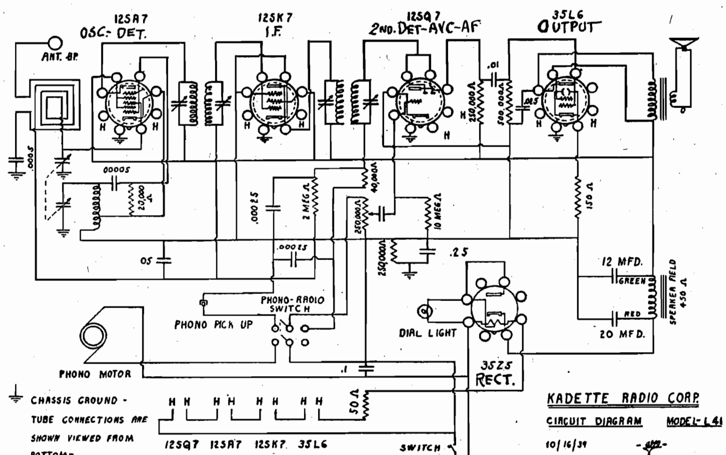
Kadette Model No. **L-25**



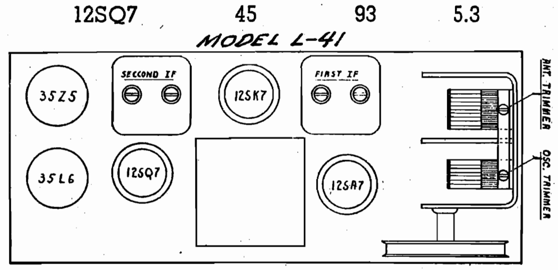
MODEL L-25 Voltage Readings

The following are the approximate readings when using a 1000 ohms per volt voltmeter. Line voltage should be 117 volts.

Voltmeter Scale	300 Volt Plate To B—	300 Volt Screen To B—	30 Volt Cathode To B—
12SA7	93	93	
12SK7	93	93	
12SQ7	45	93	5.3



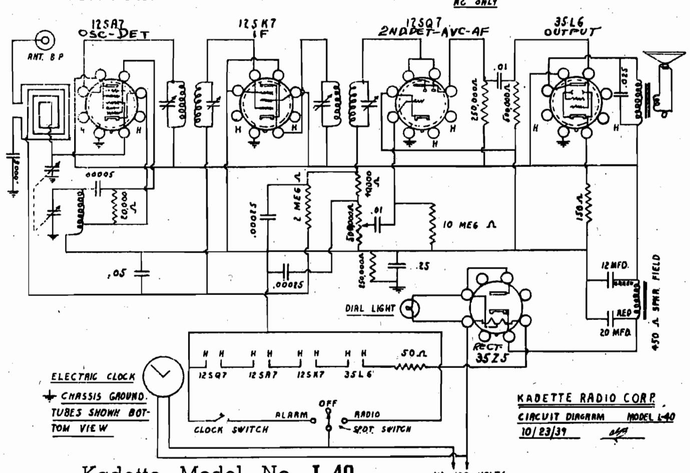
Kadette Model No. **L-41**



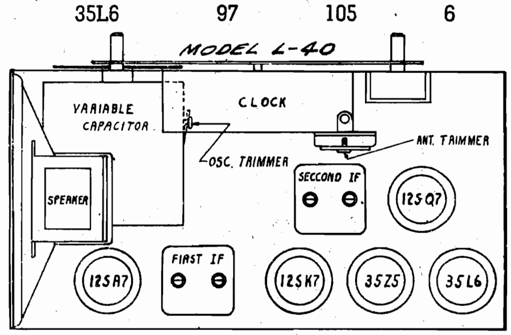
MODEL L-40 L-41 Voltage Readings

The following are the approximate readings when using a 1000 ohms per voltmeter. Voltage across speaker field is approximately 30 volts. Line voltage 117 volts.

Voltmeter	300 Volt Plate To B—	300 Volt Screen To B—	30 Volt Cathode To B—
12SA7	105	105	
12SK7	105	105	
12SQ7	49		
35L6	97	105	6



Kadette Model No. **L-40**



Start clock by turning starting knob (at rear) in direction of arrow. Set clock by turning "Set" knob (at rear) in direction of arrow. Clock remains running regardless of any power switch position, including "OFF", and will continue to run as long as cord is plugged into a power supply outlet. Power current interuptions will stop the clock and it must be re-started.

For continuous operation on radio, throw toggle switch (at rear) to RADIO. Note this switch has three positions, "RADIO", "OFF" and "ALARM"

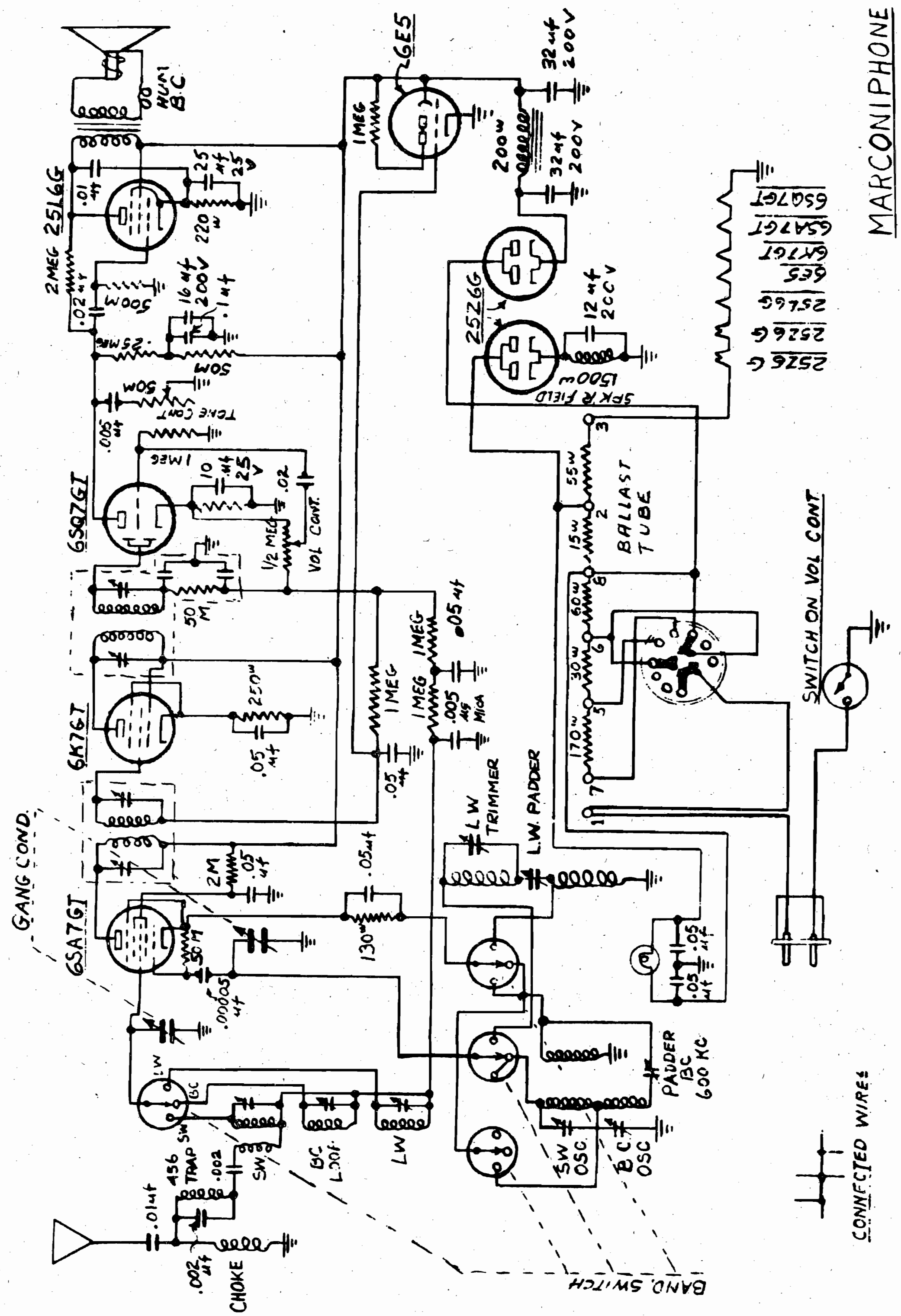
To pre-set a desired station: (1) Throw toggle switch to "RADIO" (2) Tune in station desired with selector knob. (3) Turn volume well up (volume control knob). (4) Turn "ALARM" setting knob, at rear, in direction of arrow until the desired time for radio to turn appears at the calibration mark in the alarm set window on the clock dial (top-center of clock face). (5) Throw the toggle switch to "ALARM". (6) Radio will turn "ON" at the time thus set, and will continue to operate for about 1½ hours—then turn off. (7) Do not pre-set more than ten hours prior to the time of desired program.

To pre-set radio to TURN OFF at a predetermined time: (1) With radio playing, place toggle switch at rear, at "ALARM" position. (2) Turn "ALARM" set-knob, at rear, in direction of arrow until the desired time to shut off is indicated by the small **Roman numerals** in the upper portion of the alarm set window on the clock face.

NOTE: Do not pre-set to turn off for longer than 1½ hours.

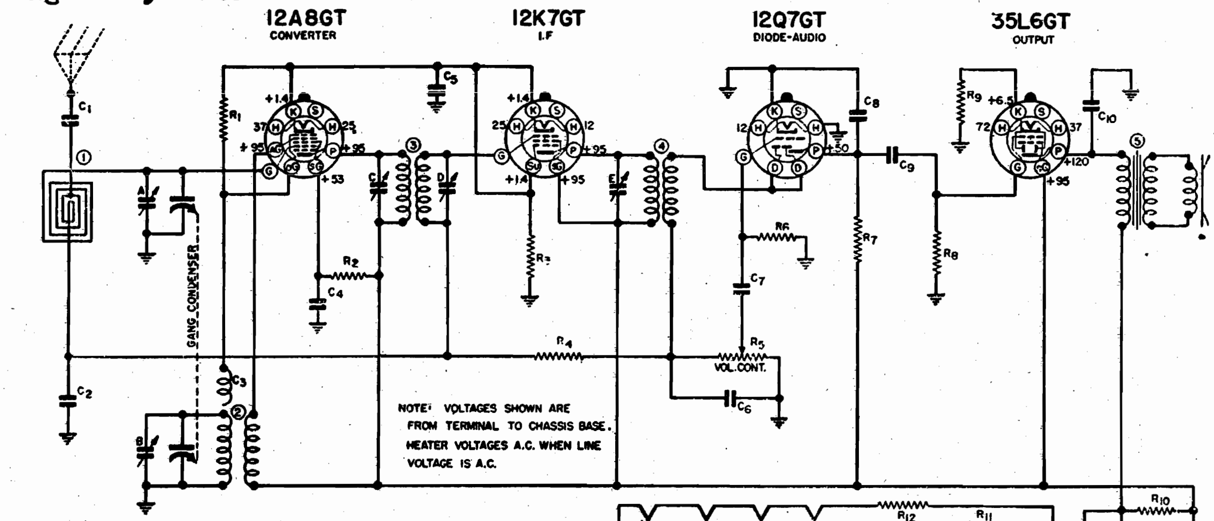
MARCONIPHONE INC.

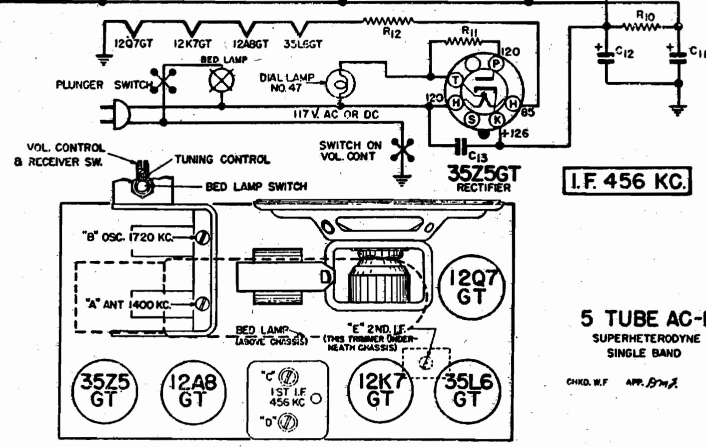
MODEL D-11
Schematic



MODEL Lullaby Combination and Bed Lamp
Schematic, Voltage, Socket
Alignment, Trimmers

MITCHELL MFG. CO.





I.F. 456 KC.

5 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND

CHKD. W.F. APP.

TS8

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R_1	N-1260	50,000 OHM 5W 20%	C_7	N-1344	.01 MFD. 400 V.
R_2	N-1627	20,000 OHM .5W 20%	C_8	N-1447	.0005 MFD. 400 V.
R_3	N-1742	25 OHM 5W. 20%	C_9	N-1344	.01 MFD. 400 V.
R_4	N-1262	1 MEGOHM 5W. 20%	C_{10}	N-1376	.02 MFD 400V
R_5	N-1595	0.5 MEGOHM VOL. CONT.	C_{11}	N-1366	25 MFD. 150V. ELECTRO.
R_6	N-1263	10 MEGOHM .5W. 20%	C_{12}		15 MFD. 150V
R_7	N-1377	200,000 OHM .5W. 20%	C_{13}	N-1346	.05 MFD 400V.
R_8	N-1264	500,000 OHM .5W 20%			
R_9	N-1616	250 OHM 5W. 10%			
R_{10}	N-1617	2500 OHM 5W. 20%	1	N-1594	ANTENNA COIL LOOP
R_{11}	N-1614	50 OHM .5W. 20%	2	N-1452	OSCILLATOR COIL
R_{12}	N-1618	80 OHM 2W 10%	3	N-1598	1ST. I.F TRANSFORMER
			4	N-1596	2ND. I.F TRANSFORMER
			5	N-1585	4" P.M. SPEAKER & TRANS.
C_1	N-1344	.01 MFD. 400V.	E	N-1597	2ND. I.F TRIMMING COND.
C_2	N-1345	.05 MFD. 200V.			
C_3		CAPACITY INCLUDED IN OSCILLATOR COIL		N-1431	GANG CONDENSER
C_4	N-1345	.05 MFD 200V.		N-2096	BED LAMP
C_5	N-1351	.1 MFD 200V.		N-2094	BED LAMP SWITCH
C_6	N-1374	100 MMFD.			

Voltages shown on the circuit diagram are from socket terminals to chassis base. In measuring voltages use a voltmeter having a resistance of at least 1000 ohms per volt. Allowances should be made for variations in line voltage.

POWER SUPPLY. This receiver is designed to operate on any alternating current supply (AC) ranging from 110 to 120 volts, 50 to 60 cycles; or on any direct current supply (DC) ranging from 110 to 120 volts.

LAMP USED. Show case reflector lamp 120 volt, 25 watts with medium screw base with spring contact. (Never use a lamp larger than 25 watts.)

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 600, 1400 and 1720 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

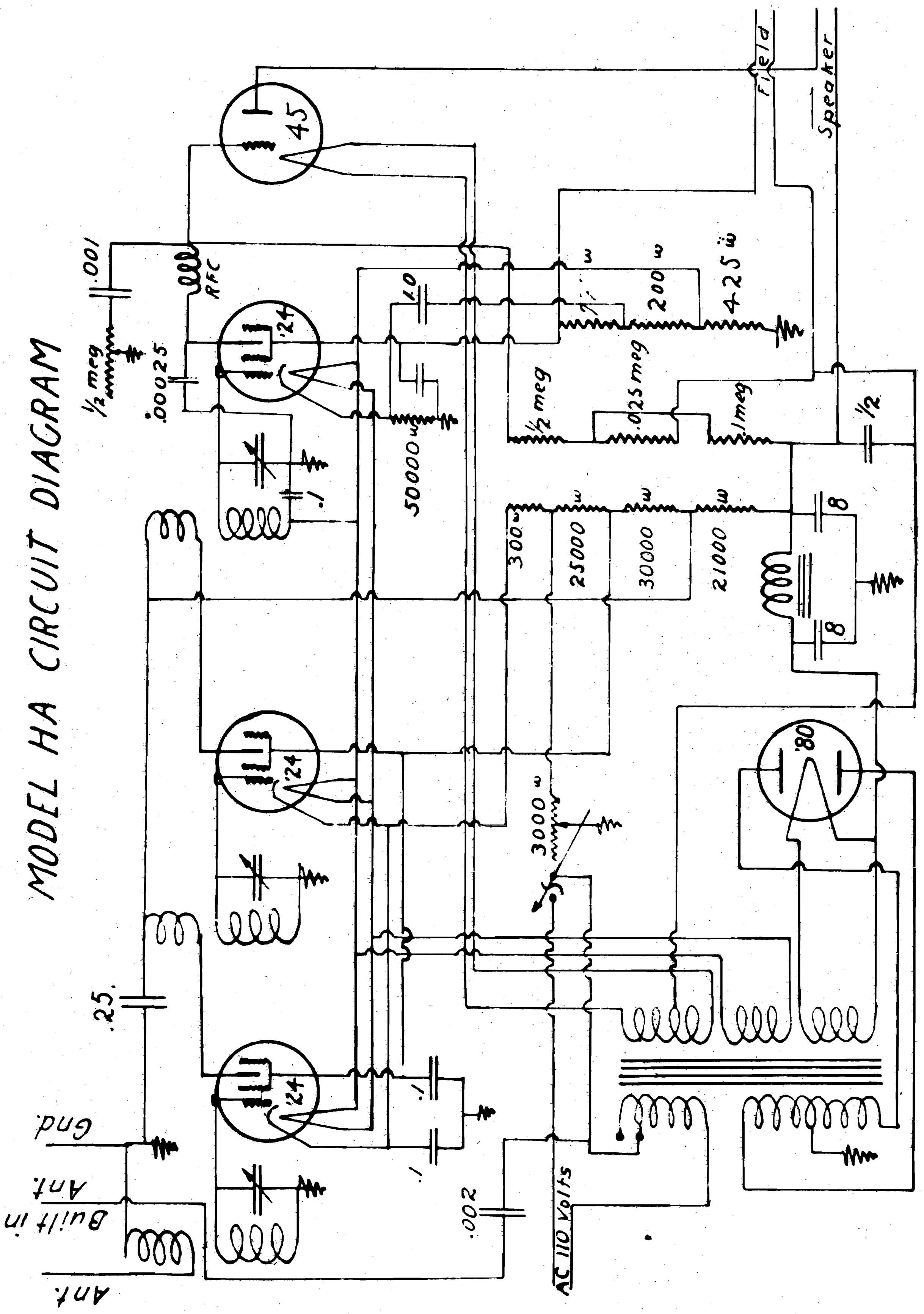
I. F. ALIGNMENT. With the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (12A8GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Remove chassis from cabinet and set it up on the bench. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench.

Connect the test oscillator to the antenna of the set through a 200 mmfd. (.0002) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1720 KC, and adjust the oscillator (or 1720 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

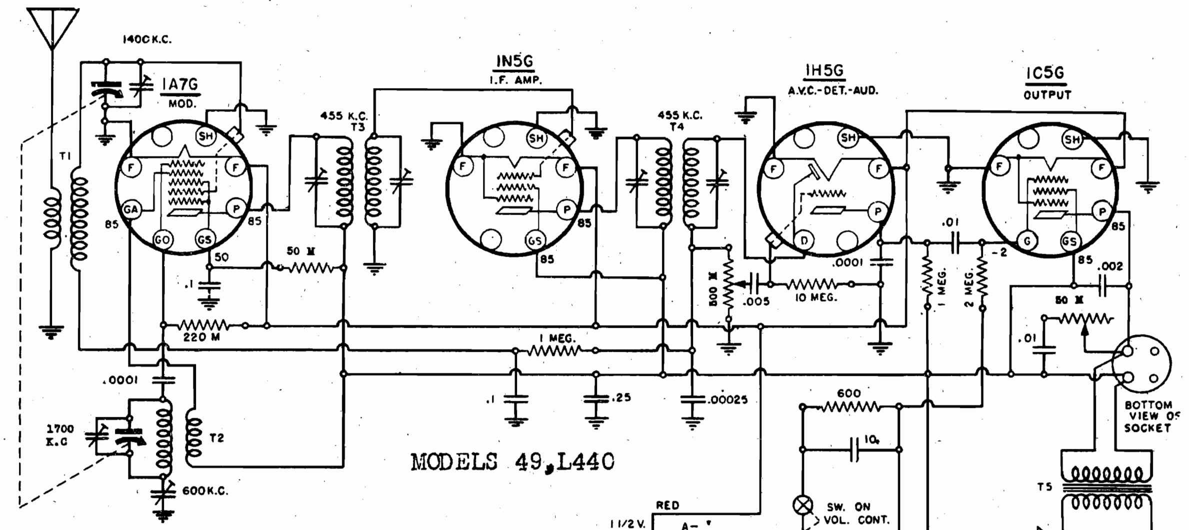
SIMPLEX RADIO CO.

MODEL HA
Schematic

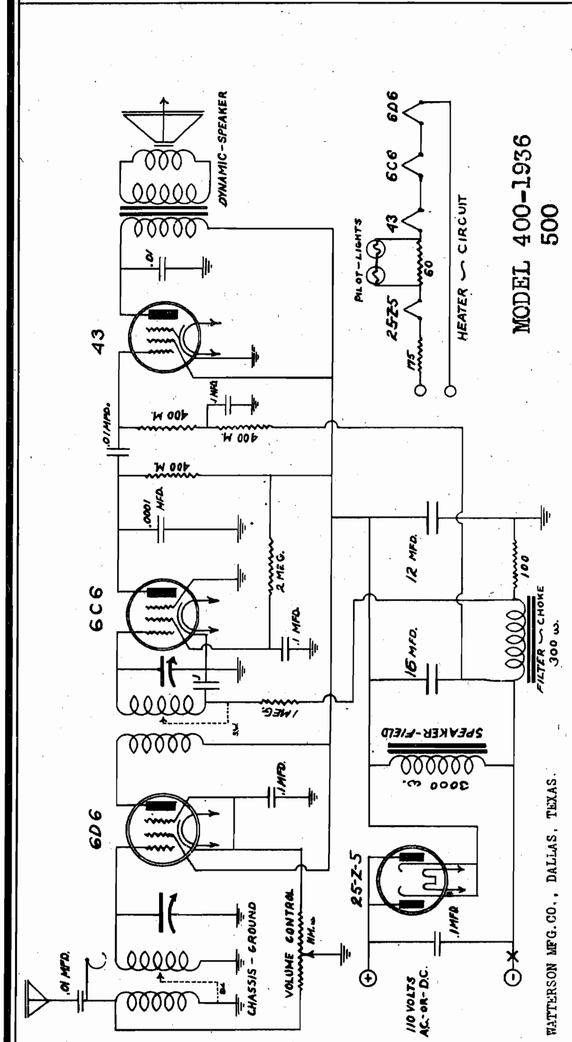


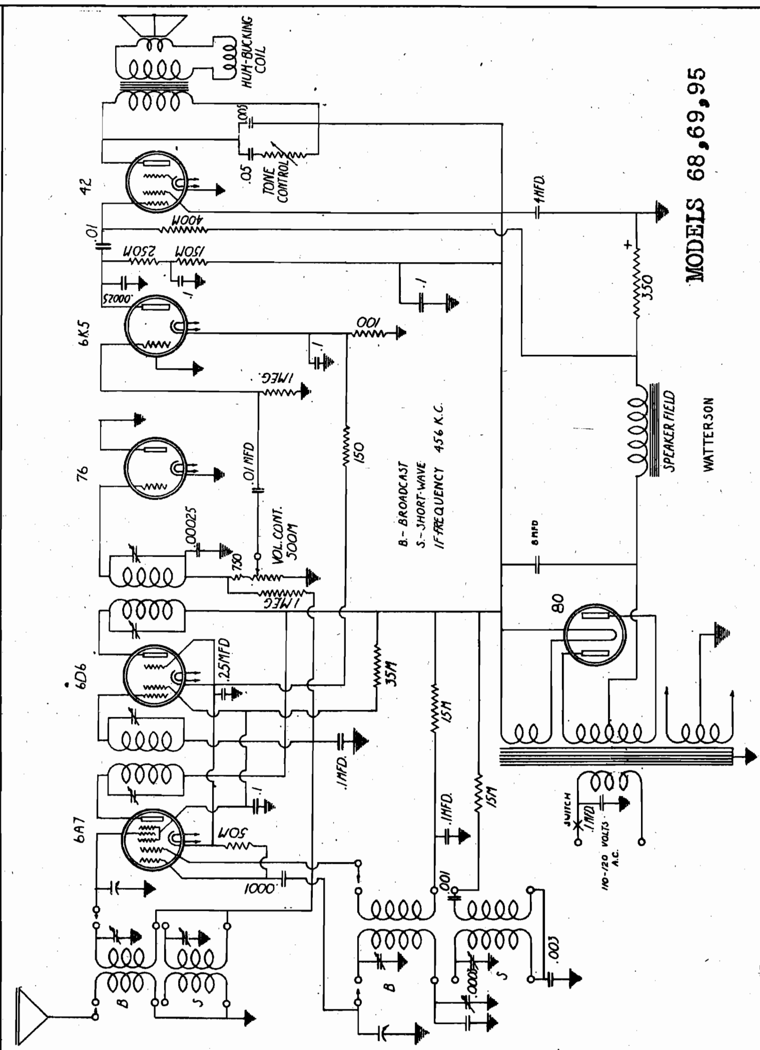
MODELS 49, L440
MODELS 68, 69, 95
MODELS 400-1936, 500
Schematics

WATTERSON RADIO MFG. CO.



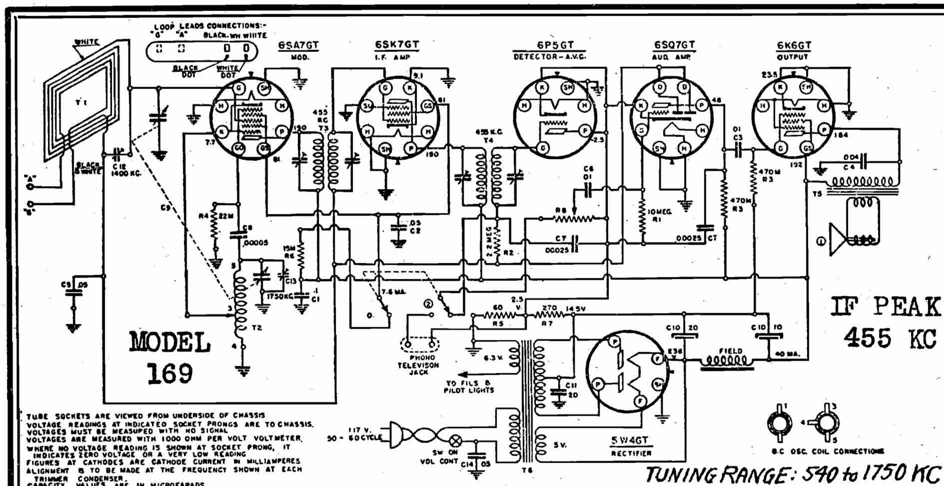
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIM. CONDS.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
CAPACITY READINGS ARE IN MICROFARADS.





WESTERN AUTO SUPPLY OF CALIF.

MODEL 169
MODEL 279
Schematics, Voltage
Socket, Trimmers
Alignment, Tuner



MODEL 169

IF PEAK 455 KC

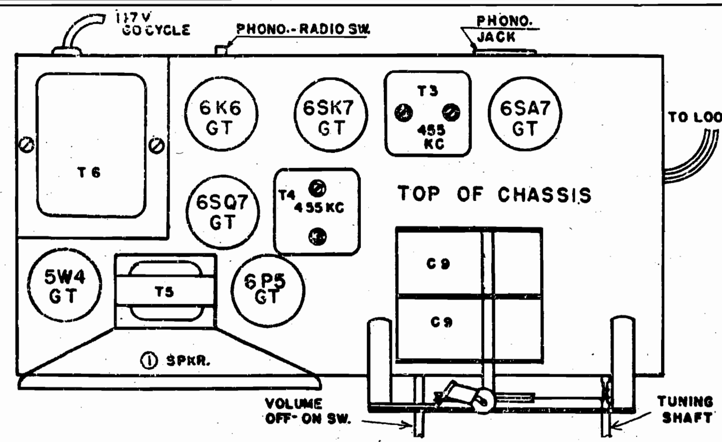
TUNING RANGE: 540 to 1750 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS

CODE	PART No	DESCRIPTION-
C1	16-116	1 MFD. 400 V. TUBULAR CONDENSER
C2	1607	.05 " " " "
C3	16-119	.01 " " " "
C4	1651	004 " 600V " "
C5	1622	05 " 200V " "
C6	16-121	01 " " " "
C7	1504	00025 " MICA CONDENSER
C8	1503	00005 " " "
C9	19-164	2 GANG VARIABLE CONDENSER (C13)
C10	18-254	20 X 10 MFD. 350 W.V. ELECTROLYTIC
C11	18-243	20 MFD 25 V. ELECTROLYTIC
C12	20-129	TRIMMER (ON LOOP)
C14	17-100	.05 MFD. 600 V. MOLDED CONDENSER

CODE	PART NO	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W. RESISTOR
R2	60-179	2.2 " " "
R3	60-178	470M OHM " "
R4	60-185	22 M " " "
R5	60-182	60 " 1/2 W "
R6	60-236	15 M " 1 W. "
R7	60-245	270 " " "
R8	24-145	500M " VOLUME CONTROL (WITH SW)

CODE	PART NO	DESCRIPTION 0-68
T1	82-10	LOOP ANTENNA
T2	10-311	B.C. OSCILLATOR COIL
T3	10-317	1ST. I.F. TRANSFORMER
T4	10-312	2ND I.F. TRANSFORMER
T5		OUTPUT TRANSFORMER (ON SPKR)
T6	80-193	POWER TRANSFORMER
1	79-294	5" DYNAMIC SPEAKER
2	69-140	PHONO. SWITCH



Follow the procedure outlined below, in order to adjust the push-buttons properly:

1. By means of the Station Selector Knob tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the lowest frequency

2. After the station has been tuned in accurately with the right hand, continue to hold it in its exact position firmly, and with the left hand loosen the Push-Button to be set up for that station by unscrewing the Push-Button about one turn to the left (counter-clockwise).

3. Continuing to hold the Station Selector Knob in its exact position, PUSH THE PUSH-BUTTON IN ALL THE WAY with the left hand.

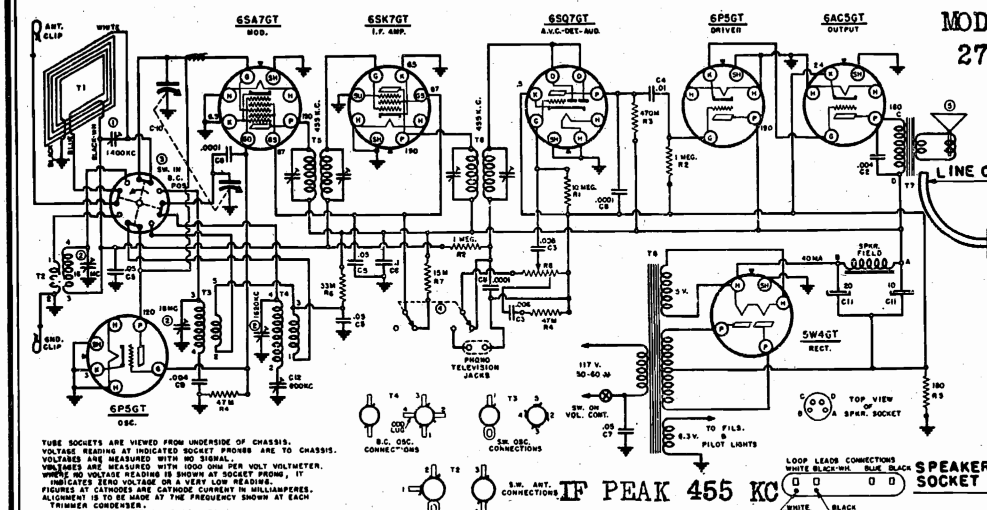
4. After the Push-Button has been depressed all the way, tighten it gently toward the right (clockwise). Release Push-Button slowly and when in normal position grip button and tighten firmly.

The Push-Button tuning system is now correctly set up for your first selected station of lowest frequency and the Call Letter Tab for this station should be at the extreme right of the Call Letter Holders.

Follow through with this same procedure, setting up the other 3 stations in the order of their frequency—that is, the second station set up will be second lowest in frequency and the third station set up will be third lowest in frequency.

—FOR CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII—

MODEL 279



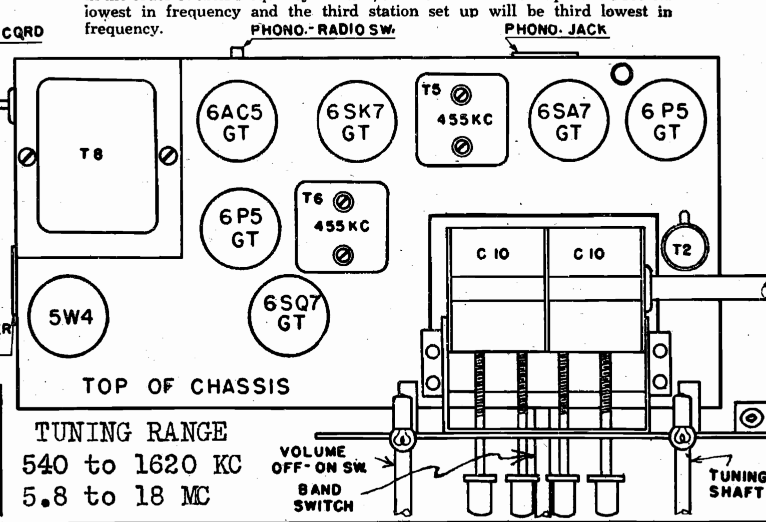
IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READING AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES ARE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.

CODE	PART NO.	DESCRIPTION
C1	1622	.05 MFD. 200 V. TUBULAR CONDENSER
C2	16-125	.004 " 400 V. " "
C3	16-128	.006 " " " "
C4	16-119	.01 " " " "
C5	1607	.05 " " " "
C6	16-118	.1 " " " "
C7	17-100	.05 " 600 V. MOLDED
C8	15-121	.0001 " MICA CONDENSER
C8	15-145	.004 " " "
C10	95-13	2 GANG TUNING CONDENSER
C11	18-254	20 X 10 MFD. 350 W.V. ELECTROLYTIC
C12	20-130	PADDING CONDENSER

CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 W RESISTOR
R2	60-195	1 " " "
R3	60-178	470M OHM " "
R4	60-177	47 M " " "
R5	60-230	180 " " " ± 10%
R6	60-451	33 M " 1/2 W. " "
R7	60-238	15 M " 1 W. " "
R8	24-147	500 M " VOLUME CONTROL (WITH SW.)

CODE	PART NO.	DESCRIPTION 10-71
T1	82-18	LOOP ANTENNA (B.C.)
T2	10-347	ANTENNA COIL (S.W.)
T3	10-346	OSCILLATOR COIL (S.W.)
T4	10-345	OSCILLATOR COIL (B.C.)
T5	10-317	1ST. I.F. TRANSFORMER
T6	10-312	2ND. " "
T7	------	OUTPUT TRANSFORMER (ON SPKR.)
T8	80-193	POWER TRANSFORMER
1	20-129	TRIMMER (ON LOOP)
2	20-127	TRIMMER BLOCK
3	89-148	BAND SWITCH
4	89-140	PHONO "
5	79-295	DYNAMIC SPEAKER 6 1/2"



TUNING RANGE
540 to 1620 KC
5.8 to 18 MC

Andrea Television Model I-F-5

Before carrying out any type of service work, remove the 2Y2 or 879 high-voltage rectifier tube from the socket. Be certain that the high-voltage cover plate on bottom of chassis is in place, and remove both sides of high-voltage transformer primary leads from the terminal strip connecting them to power line input before adjustments of any nature are attempted. In this way, no danger from shock from the high-voltage supply is possible.

Bear in mind that the high-voltage supply plays no part in your service work. Therefore, no need exists for this section of the receiver functioning during any work you may undertake. Should repairs be necessary on the high voltage section, all tests may be conducted accurately by resistive or continuity measurements to localize the difficulty without resorting to any voltage measurements.

Remember, first thoroughly investigate the nature of the complaint to determine if the effect is in the receiver before attempting adjustments.

Sound I-F System

See notes on high voltage.

The 6J5 oscillator must be stopped by connecting 70 or 120 ohms from the junction of HC-143 and HC-147 to ground. Do not short the oscillator or remove tube. The schematic will be found on *Andrea page* 10-1, 2, *in Rider's Volume X.*

Connect the high side of signal generator through a .1-mf, 600 V. condenser to prong 4 of 1852 modulator tube See *page* 10-4 *of Rider's Volume X* for socket layout. Set signal generator frequency very accurately to 8.25 mc. (8250 kc). Connect rectifier type a-c voltmeter across voice coil of sound speaker. Allow receiver to warm up 15 minutes before making any realignment settings.

After carefully carrying out the above, adjust television sound trimmer condensers D, C and B, located as shown in socket layout, for maximum deflection on the rectifier output meter across the speaker voice coil.

Be certain your generator frequency and trimmer adjustments are accurate or poor sound performance will result.

This completes the television sound i-f alignment.

Video I-F System and 14.25-MC Adjacent Sound-Trap Adjustment

See notes on high voltage.

The video intermediate frequency is 12.75 megacycles (12,750 kc) for the position of the video carrier and extends substantially flat to 10 mc and requires no alignment adjustment, as all tuning is of a fixed type which will not develop misalignment. In order to signal-trace this circuit to locate any defective tubes or component parts, the following procedure may be used:

Remove the picture-tube socket cable from the 1805P4 tube. Connect a .5-mf600 V. condenser in series with one side of a rectifier type output meter (0-1 or 0-1.5 volts). Connect the side of rectifier meter containing the condenser to pin No. 10 of the picture-tube cable socket; the other connection from meter to ground.

The 6J5 oscillator must be stopped by connecting 70 or 100 ohms from the junction of HC-143 and HC-147 to ground. Do not short the oscillator or remove tube.

Turn contrast control to maximum contrast. Connect the signal generator high lead in series with .1-mf600 V. condenser to pin No. 4 of modulator tube; ground side of generator to chassis and note the output reading on picture-tube output meter. If no signal results, replace generator connection to pin No. 4 of first video i-f tube. If a signal is obtained, trouble exists between modulator and 1st video i-f tube. Should no signal result, replace generator lead to pin No. 4 of 2nd video i-f tube. Use same reasoning as above. In this manner the video i-f continuity can be checked.

In the event that no signal is obtained, a check of the video system itself can be made as follows:

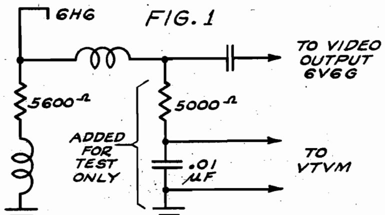


FIG. 1

Leave generator connected to pin No. 4 of 2nd video i-f tube and connect the circuit shown in Fig. 1. A reading on the VTVM will prove continuity of video detector system. Be sure in this test signal-generator output is on maximum. Also that the VTVM will read a minimum of .25 volt. If not, this method cannot be used.

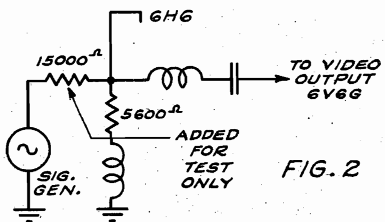


FIG. 2

To test the video system from video detector output to output of video output tube, connect a 15,000-ohm resistor in series with lug 8 of the 6H6 tube. Remove this tube from circuit—between one side of 15,000-ohm resistor and ground, connect standard signal generator (Fig. 2)—set for 300 or 500 kc and increase output attenuator until a signal is obtained on the output meter. Obviously, no signal indicates trouble in the associated parts proceeding or following the video output tube or the picture-tube connecting cable. Hence, test continuity of parts in input and output of 6V6G video output tube along with checking output tube and voltages.

When the above test indicates an actual signal up to picture-tube pin No. 10 (grid), and trouble still exists, the difficulty is then in picture tube.

14.25-MC Adjacent Sound Traps

With rectifier meter connected from pin No. 10 of picture-tube cable to ground, connect signal generator from pin No. 4 of the 1852 modulator tube and ground through a .1-mf, 600V. condenser. Set generator accurately to 14.25-mc (14,250 kc).

Use highest output of the signal generator and adjust 14.25-mc trimmers "A" and "E" (see tube layout) for minimum output. This test must be carried out accurately, or picture quality will be materialyl impaired.

Radio-Frequency Alignment

Since the r-f unit of this receiver is aligned with great precision at the factory, and because the designs of the parts have been found exceedingly staple under all operating conditions, it is most unlikely that realignment will be necessary. However, in case the adjustments are changed for any reason, realignment should be carried out in the following manner:

Note: These instructions apply to television channels 1 and 2. If your set is equipped for receiving other channels, follow the special data supplied by the Andrea factory. Accurate realignment will result only when the bottom plate is fastened to the chassis during adjustment.

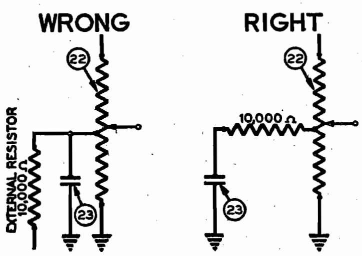
1. Because of the design of the r-f unit, band 2 must be aligned first, and band 1 last. Incorrect settings will be obtained if band 1 is aligned first.
2. Be sure that the sound i-f system has been adjusted accurately to 8.25 mc. Otherwise, the r-f alignment will not be correct.
3. Set sound sensitivity trimmer so that rotor plate is half maximum capacity (half-open)
4. A signal generator capable of generating accurately frequencies from 40 to 60 mc. (40,000 to 60,000 kc), 400 cycles modulated, is required for the r-f alignment. Bear in mind that accurate frequency setting is essential and any attempt to use harmonics will invariably produce bad misalignment and poor or no results.
5. Connect ground side of signal generator in series with 70-ohm carbon resistor to terminal "A" of antenna post. Connect high side of generator directly to other terminal "A" on antenna strip. Do not connect a ground to the receiver. Set generator accurately to 55.75 mc. (55,750 kc).
6. Turn channel switch to channel 2.
7. Connect a rectifier-type meter 0-1 volt across the voice coil of the loudspeaker.
8. Loosen the brass top cup locknut on oscillator condenser 2, tube layout, so that the plunger moves easily but is not loose. A tool with a side pin to hook into hole in the plunger will provide more accurate adjustment.
9. Adjust the oscillator condenser 2 (tube layout) plunger for maximum output deflection on the meter across speaker voice coil. Tighten the brass top cup locknut part way. When the brass top cup locknut is nearly tight, readjust the plunger. Then tighten the brass top cup locknut firmly and watch output deflection on meter to see that tuning is not changed. If so, readjust.
10. Connect a rectifier type meter 0-1.0 volt from pin No. 10 on the picture-tube socket to the ground through a .5-mf, 600V. paper condenser.
11. Adjust the signal generator frequency to 52.5 mc (52,500 kc).
12. Turn the chassis on its side for ease of alignment. Set antenna trimmer so plunger is all in (max. cap.) and slip a metal Spintite wrench through the hole in the under shield cover of chassis so that end of metal spintite fits over the tubular bottom end of antenna condenser 2, thereby detuning the circut. Be certain that metal spintite does not ground to chassis.

Note: If this is not carried out, no realignment can be made.

13. Leave metal spintite as above and loosen the brass top cup locknut on grid condenser 2 (socket layout), and adjust this plunger for maximum output as indicated on the meter in the picture cable circuit. Then tighten the brass top cup locknut part way, readjust plunger again, and tighten the brass top cup locknut firmly, noting that peak tuning point is not reduced by tightening If so, readjust.
14. Remove the metal spintite from antenna condenser 2, and put it on grid condenser 2.
15. Loosen the brass top cup locknut on antenna condenser 2, and adjust the plunger for maximum picture output, as indicated by the meter. Then tighten the brass top cup locknut part way, readjust the plunger, and tighten the brass top cup locknut firmly, noting that peak tuning is not reduced by tightening.
16. To align Band 1, carry out the same steps to 15 using 49.75 mc for the signal generator (step 5), put the band switch on channel 1 (step 6), and adjust oscillator condenser 1 (step 9).
17. Use 46.5 mc for the signal generator (step 11) and use antenna condenser 1 for step 12, and adjust grid 1 for step 13. For step 14 use grid condenser 1, and antenna 1 for step 15.

Philco 39-25

A few of the early production Model 39-25 Philco receivers had the bass-compensating condenser in the volume-control circuit improperly con-



If a Philco 39-25 lacks high notes at low settings of the volume control, check to see how the bass-compensating condenser is connected. These partial schematics tell the story.

nected. The indication of such incorrect connection is a lack of high notes at low settings of the volume control. Above is shown the incorrect and the correct connections. The schematic of this receiver shown on *page 10-9 of Rider's Volume X* shows the correct connections.

●

Majestic 11056, 11057, 11058

Models 11056 and 11058 are found on *pages 9-8 to 9-10 of Rider's Volume IX*. The data given there also apply to Model 11057. A new electric tuning system has been incorporated in later runs of all these receivers, and is illustrated in Fig. 1. The procedure for indexing the tuning system for desired stations is as follows:

(1) Set receiver to Standard Broadcast band.
(2) Place "Manual-Electric" lever in "Manual" position, which is extreme counter-clockwise. Be sure the tone control is in the "Normal" position as shown by the indicator.
(3) Pull out Indexing Rod located at the center bottom half of the escutcheon. This rod has numbers on it which correspond to the push buttons (counting from left to right).
(4) Set Indexing Rod so that the number on the rod corresponding to the push button you wish to index is in line with the escutcheon plate.
(5) Turn tuning knob until the pointer has covered the entire dial. This is essential to engage the tuning disc.
(6) Tune in the desired station accurately, using the tuning eye.
(7) Push Indexing Rod all the way in, and that particular station will always be tuned in automatically when that particular button is depressed while the "Manual-Electric" lever is in the "Electric" position.
To index more than one station, go through steps (3) to (6) for each station desired and when finished, push the Indexing Rod back as far as it will go.

Caution: When using electric tuning, do not **depress more** than one button at a time. Depressing two buttons will cause the motor to run continuously or until the automatic thermal switch operates to prevent the motor from burning out. If this happens it may take fifteen minutes for the motor to become cool enough for the electric tuning to become operative again.

●

Philco 620

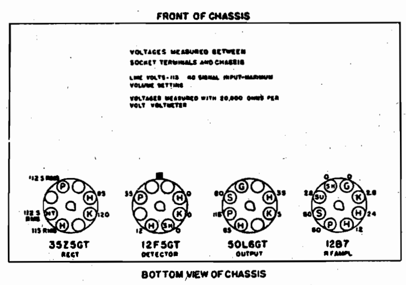
Certain oscillator trimmers are incorrectly numbered on *pages 6-26 and 6-27 of Rider's Volume VI* (early Model 620 Philco). In the parts list on *page 6-26,* the reference numbers should be changed as follows: Change 13 to 16; change 14 to 17; change 16 to 13; change 17 to 14. The same changes should be made on *page 6-27* in Fig. 2 and in the alignment instructions located below this figure. These changes must be made so that the reference numbers will agree with those shown on the schematic which appears on *page 6-25*. Do NOT alter the numbers on the schematic.

These errors in numbering also appear in the parts list for the late Model 620 Philco. Therefore the reference numbers on *page 7-90 of Rider's Volume VII* must be changed as follows: Change 13 to 16; change 14 to 17; change 16 to 13; change 17 to 14.

●

G.E. H-400

The final service bulletin on this receiver was not available at the time *Rider's Volume X* went to press and the preliminary schematic, chassis layout, and alignment notes were run on *page 10-45*. The final service notes show no changes in any of these data. Herewith will be found the socket layout showing the voltages. Make a



Socket layout and voltages for the General Electric model H-400.

note on the schematic that the power consumption of this receiver is 25 watts and that the impedance at 400 cycles of the voice coil is 3.5 ohms.

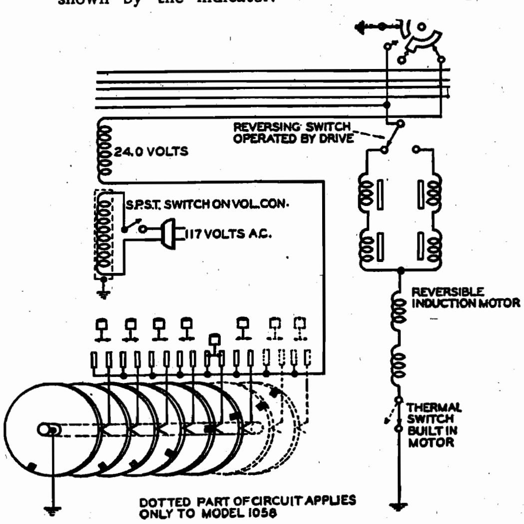
●

Emerson CF-255

Two different type speakers have been used during production of this receiver. In the specifications listed on *page 10-23 of Rider's Volume X,* mention is made of a 4-inch magnetic speaker, but in some chassis a permanent magnet dynamic speaker has been used. In those chassis which employ the latter, the condenser, C-10, in the output circuit, has been changed to 0.024 mf. When the magnetic speaker is used, C-10 is 0.005 mf.

On receivers having serial numbers above 2,637,480, the detector coil, T2, has been changed. The part number is now 6FT-462A.

●



●

A new electric tuning system has been incorporated in later runs of Majestic models 11056, 11057, and 11058, the schematic being shown at the left. Note that the dotted portion of the drawing applies only to the last named model number.

●

Remler 49, 171

The Remler Model 171 is identical with Model 49, shown on *page 9-3 of Rider's Volume IX*. The following additional information, not included on *page 9-3*, is now available.

The antenna-RF coil is located near the back of the chassis and is trimmed by the trimmer on the rear section of variable condenser. The detector coil is located under the chassis and is trimmed by the trimmer on the front section of the variable condenser.

The following table shows the d-c voltages to ground with no signal and the volume control at full volume.

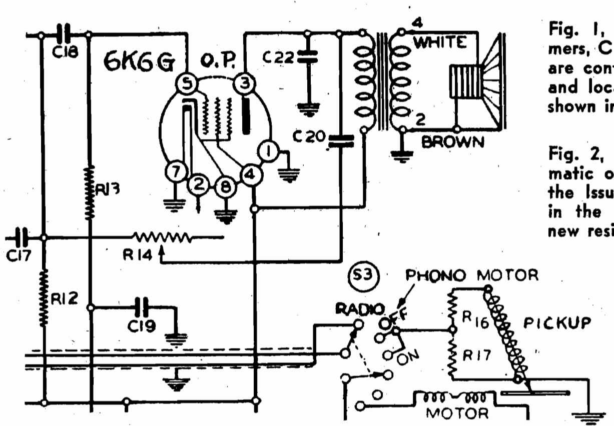
Tube	Plate	Screen	Cathode
6D6	180	180	4.5
6C6	70	180	9.0
41	170	180	0

The d-c voltage of the bias supply for the 41 grid is a 15-volt drop across resistor (9) in the negative side of the power supply.

Airline 62-362 Issue B

Several changes are included in Issue B of the Model 62-362 Airline receiver (above serial number 8J285-200) as compared with the Model 62-362 shown on *Montgomery-Ward pages 9-45 to 9-47 of Rider's Volume IX*. Fig. 1 shows that condensers C1, C4, C5, C6, and C9 are mounted in the same unit in Model 62-362, Issue B. Fig. 1 of course corresponds to the layout shown in the upper left-hand corner of *page 9-45*.

Fig. 2 shows the output end of the schematic for Issue B of Model 62-362. By comparing Fig. 2 with the corresponding portion of the schematic shown on *page 9-45*, you will notice the new position of the tone control consisting of R14 and C20, and also the two resistors R16 and R17 added across the winding of the phonograph pickup coil.



The accompanying table lists the part numbers and descriptions for Model 62-362 Issue B which are different from those listed on *page 9-45*.

Schematic Reference	Part Number	Description
R5	BE130144	15,000 ohms, 1 w.
R16	BE130238	400,000 ohms, ⅓ w.
R17	BE13020	100,000 ohms, ⅓ w.
C1	BE12456	3-35 mmf adjustable trimmer
C4	BE12456	2-15 mmf " "
C5	BE12456	2-15 mmf " "
C6	BE12456	2-15 mmf " "
C9	BE12456	450 mmf working capacity, series pad
C20	BE1292	.0005 mf, mica
C22	BE10092	.001 mf, 600 v

Philco 630, 630PF

Certain oscillator trimmers are incorrectly numbered on *pages 6-32 and 6-33 of Rider's Volume VI* (early model 630 Philco). In Fig. 2 and in the alignment instructions, both on *page 6-32*, the reference numbers should be changed as follows: Change 13 to 16; change 14 to 17; change 16 to 13; change 17 to 14. The same changes should be made in the parts list on *page 6-33*. These changes must be made so that the reference numbers will agree with those shown on the schematic which appears on *page 6-31*. Do NOT alter the numbers on the schematic.

These errors in numbering also appear in the parts list for the late Model 630 and the Model 630PF Philco. Therefore the reference numbers on *page 7-98 of Rider's Volume VII* must be changed as follows: Change 13 to 16; change 14 to 17; change 16 to 13: change 17 to 14.

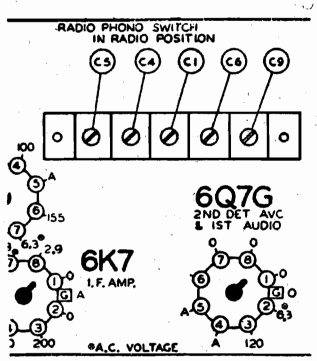
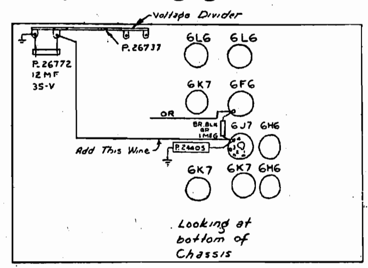


Fig. 1, above. The five trimmers, C1, C4, C5, C6, and C9 are contained in a single unit and located on the chassis as shown in Issue B of the Airline model 62-362.

Fig. 2, left. The partial schematic of the output circuit of the Issue B shows the change in the tone control and two new resistors across the pickup coil.

Stromberg 160-L

Variations in new 6J7 tubes have occasionally caused distortion in the automatic tone-control circuit of the Stromberg Model 160-L receiver as first released. These tubes function correctly after "aging" a few hours.



By adding the wire indicated, distortion can be eliminated from the automatic tone control circuit of the Stromberg Model 160-L

This possibility of distortion can also be eliminated by adding a wire as shown in the accompanying layout. This change stabilizes the screen voltage; it was put in effect at the factory in all 160-P and 180-L receivers, and in all 160-L receivers produced after October 23, 1936.

Philco 37-62

In order to eliminate oscillation, the screen resistor, No. 11, has been changed from 25,000 ohms to 32,000 ohms. See schematic on *page 8-19 in Rider's Volume VIII*.

Fairbanks-Morse 12A

Refer to the schematic shown on *page 8-11 of Rider's Volume VIII*. During production, the 47,000-ohm resistor in the AVC line which was connected to the bottom of the antenna coil secondary, and the condenser (4) were removed. The r-f secondary was then grounded directly, thus removing AVC from the 6L7G mixer tube, and the bottom of the antenna coil secondary was connected directly to the resistor (16). The condenser (33) in the grid circuit of the 6C5G oscillator was changed from 50 mmf to 100 mmf to increase sensitivity on the u-h-f band.

Wells Gardner Tuning Indicators

It may happen in some 1938 and 1939 receivers in which is incorporated either a 6U5 or 6AB5 tuning indicator tube that distortion or overloading will result when strong signals are tuned in. Such troubles may be caused by grid current in the tuning indicator tube. An example of such receivers are those whose schematics appear on *page 10-13 and 10-27 of Rider's Volume X.*

It will be noted that the control grid of the triode section of the 6U5 and 6AB5 tubes is connected to the avc circuit and consequently any grid current that flows will affect the avc voltage. It is suggested by the manufacturer that if such troubles occur, that one or more new tubes be tried and the results checked.

•

RCA 9TX-31, -32, -33

In cases where repeated failure of the 24-ohm, dial lamp resistor, and the lamp itself have occurred, the following revisions are suggested:

Remove all the connections from terminals Nos. 2 and 4 of the terminal board—see Fig. 1—and from terminals Nos. 2, 5 and 6 of the 35Z4GT tube socket.

Resolder the pilot lamp lead, which was removed from the No. 4 terminal of the terminal board, and the power lead that was removed from No. 6 terminal of the tube socket, to the No. 2 terminal of the rectifier socket. See Fig. 2.

Resolder the pilot lamp lead that was removed from the No. 6 terminal of the socket, to the No. 3 terminal. Add a jumper between the Nos. 3 and 5 terminals of this same socket.

Resolder the 0.05-mf condenser lead that was removed from the No. 6 terminal to the No. 5 terminal of the same socket. The other side of this condenser remains connected to the No. 1 terminal of the terminal board.

Insert an 86-ohm resistor in the lead between the No. 7 terminal of the rectifier tube socket and the No. 2 terminal of the 35L6GT output tube socket.

Replace the 35Z4GT rectifier tube with a 35Z5GT and the No. 47 pilot lamp with a No. 51.

The schematic of this receiver will be found on *page 10-43 of Rider's Volume X.*

•

Silvertone 6109, 6110, 6111

A later production run of these models, which is identified by the chassis No. 101.508-1, has had a new model number assigned, 6109. Please add that to your index and on *page 10-78 of Rider's Volume X.*

The condenser, C9, in the cathode circuit of the detector, has been changed in this new chassis from 0.25 mf to 10 mf. This is a 10-volt electrolytic condenser, the part number being 101209144.

If trouble should be experienced from hum in the original chassis, 101.508, it can be corrected by connecting a 10-mf condenser across the 0.25-mf condenser, C9, mentioned above. The positive lead of the condenser should be connected to the cathode of the 6J7 detector tube and the negative lead to the chassis.

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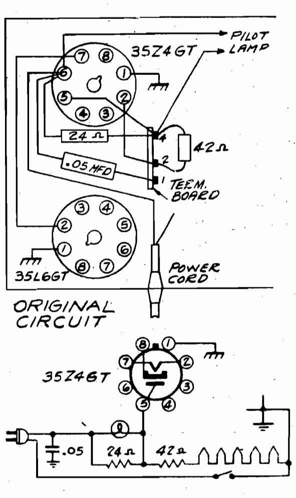

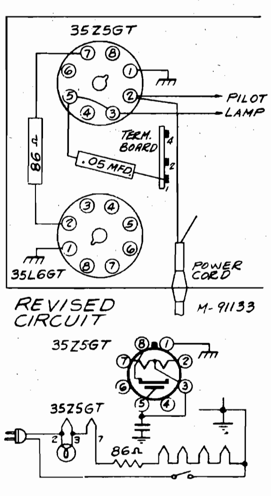

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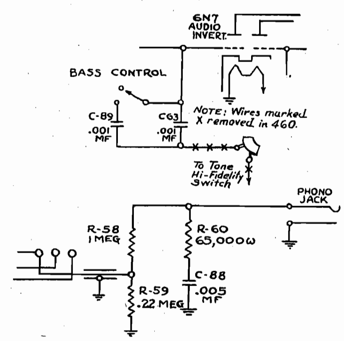
Fig. 1, left, shows the rectifier circuit of the RCA 9TX-31 series before changes were made and Fig. 2, right, the revised rectifier circuit.

•

Stromberg-Carlson 460-PF

The servicing data for the model 360 which appeared on *pages 10-35 to 10-39 inclusive in Rider's Volume X,* apply to this new model with the following exceptions:

A volume-control motor is installed in these receivers and a remote control unit that is identified as P-31860 may be easily connected if so desired. This unit permits the operation of the receiver from a remote point.



Additional phonograph compensation is incorporated in the Stromberg-Carlson Model 460-PF as shown in the above partial schematics.

An automatic record changer is used in this receiver, which will automatically play up to eight records, 10 or 12 inch, in any order. Additional phonograph compensation has been added, as shown in the accompanying diagrams.

•

Halson 40A1X

The same schematic applies to this model as applied to models 104, 106 which was published on *Halson page 8-4 in Rider's Volume VIII,* with the exception that a 6K8G replaces the 6A7 first detector-oscillator tube.

The socket layout, which appears on the same page as the schematic, can be also applied to this new model if the following exceptions are taken into consideration: The positions of the 80 and 41 tubes are interchanged, i.e., the 80 is now immediately beside the power transformer. The 76 and 6F5 tubes are interchanged, i.e., the 76 is now at the rear of the chassis. The wave-trap trimmer is now reached from the back of the chassis—between the 6D6 tube socket and the first i-f transformer—instead of the right side and the broadcast oscillator series trimmer is now located just to the left of the gang condenser on the top of the chassis, instead of the front.

•

G.E. H-500, 501, 510, 511, 520, 521

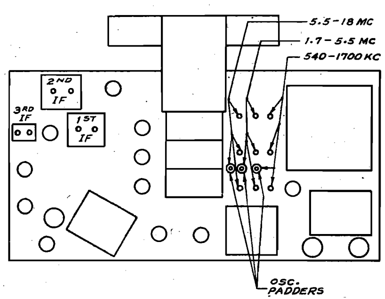
The preliminary data on these receivers that were published in *Rider's Volume X, page 10-47,* are the same as the final with the exception of the condenser, C-12, in the volume control circuit. This has been changed from 0.002 mf to 0.03 mf for the improvement of performance.

At the time *Volume X* went to press, the voltage data and the chassis wiring diagram were not available. These are reproduced in the accompanying illustrations. The special servicing information that is the subject of the article on page 1 of this issue applies to these receivers and should be used when checking over the circuits.

The following notations apply to the chassis wiring diagram. The parts shown in solid lines are those of Model 520. The same parts apply to Model 521 with the addition of R-11 and C-19, which are shown in dotted lines. For Models 500 and 510, the parts are the same as for Model 520, except that the Beamascope parts and C-20 are omitted but C-1, shown in dotted lines, is included. Models 501 and 511 have the same parts as Model 521 with the exception of the Beamascope and C-20, which are omitted, and the inclusion of C-1.

Capehart 200-F

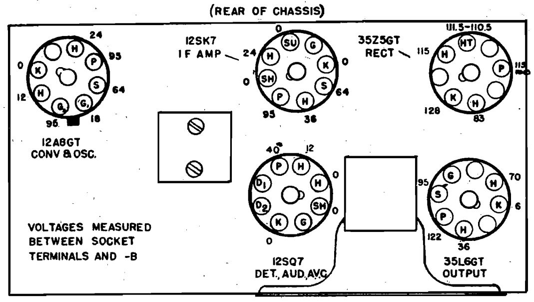
The alignment procedure for Model 200-F is the same as that for Model 110-G, shown on *page 10-4 of Rider's volume X,* the only exception being that Model 200-F uses a 6L7 first detector instead of a 6A8. The accompanying simplified chassis layout shows where the trimmers are located in Model 200-F.



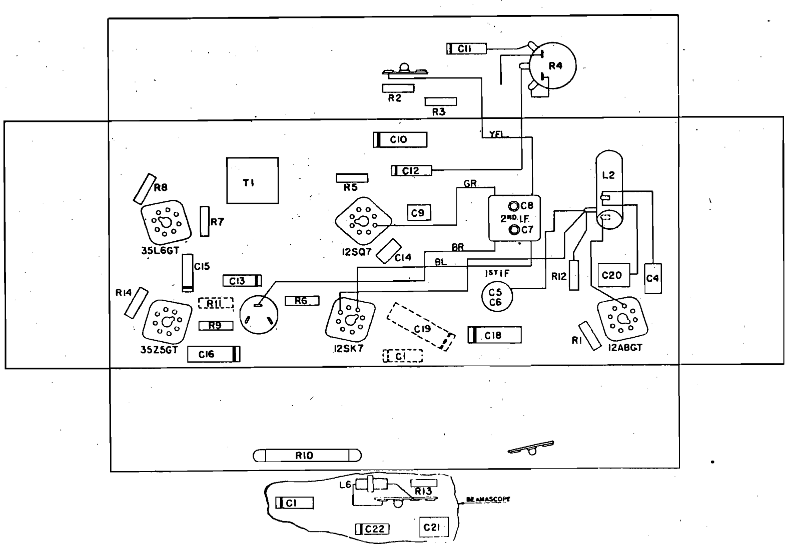
Location of trimmers on Capehart Model 200-F

On the right is the socket layout for the G.E. Models H-500, H-501, H-510, H-511, H-520, and H-521 with the voltages indicated at the prongs. Below is the chassis wiring diagram for the same models. See accompanying text for exceptions.

(REAR OF CHASSIS)



BOTTOM VIEW OF CHASSIS



G.E. GM-125

A second method for aligning the frequency-modulated General Electric receiver Model GM-125, the service data for which appear *on pages 10-34 to 10-36 inclusive in Rider's Volume X,* will be found below. This method of alignment does not require the special signal generator mentioned in the first published instructions.

To align the i-f amplifier, connect an electronic voltmeter (or any other d-c voltmeter which has a high input resistance) across R15. Feed a 3-mc signal to the grid of the third i-f tube. Temporarily shunt the secondary winding of T7 with a 10,000 or 15,000-ohm resistor and adjust C48 until the voltmeter reading is a maximum. Then remove the secondary shunting resistor and adjust C49 for maximum reading on the voltmeter. Then connect the shunting resistor across T6 secondary, feed the 3-mc signal to the second i-f grid and peak the trimmers of T6 in the same manner. Repeat this process for each of the i-f transformers in turn until all are aligned.

The frequency demodulator circuit may also be aligned with the voltmeter and signal generator. Feed a 3-mc signal to the input of the i-f amplifier and connect the voltmeter from the cathode connection of R18 to ground. A small voltage reading usually will be indicated if the circuit is slightly out of adjustment. If not, adjust C51 until a reading is secured. Then adjust C50 until the voltage reading is a maximum. After this is done, adjust C51 until the voltmeter reads zero. The discriminator alignment is then complete.

The r-f and oscillator stages are aligned by feeding a 42.8 mc signal to the antenna terminals and, with the receiver tuned to this point on the dial scale, adjusting the oscillator trimmer C4 for maximum reading on the voltmeter, which should be connected across R15. Then peak the antenna and r-f trimmers (C2 and C3) in the same manner.

RCA R-98

If a complaint is received of excessive hum in this model, the schematic of which will be found on *page 10-95 of Rider's Volume X,* the dress of the lead to the pilot light should be checked. This lead should be placed towards the rear of the chassis base, well away from the audio circuits.

Crosley 758

The alignment instructions for this receiver were released too late for publication in *Rider's Volume X* in which the schematic and chassis layouts will be found on *page 10-23*. It should be noted that two sets of i-f transformers are used; one set is tuned to 455 kc and the i-f peak of the other set is 3000 kc, the latter being designated as "H.F." in the layout.

The output meter is connected to the two plates of the 6N6 output tube with a 0.1-mf or larger (non-electrolytic) condenser in series with one of the leads.

I-F Alignment at 455 kc:

Connect the signal generator through a 0.02-mf condenser to the grid cap of the 6K8, leaving the grid clip in place and the ground lead to the black lead of the receiver. Keep the generator leads as far away as possible from the grid leads of the other screen grid tubes. Tuning condenser plates out of mesh. Volume control to right, "on." Band switch to broadcast. Signal generator set at 455 kc.

Adjust the two rear trimmers on top of the third i-f diode transformer for maximum output. Adjust both trimmers on top of the first B.C. i-f transformer for maximum output.

I-F Alignment at 3000 kc:

Connect signal generator set at 3000 kc to the grid of the 6SK7 tube through a 0.02-mf condenser. Clip on the green lead with spade lug soldered to the band switch. Condenser gang all the way open; band switch to H.F.

Open the front trimmer on the 2nd H.F. i-f transformer. Adjust the front trimmer on the 3rd i-f diode transformer and then the rear trimmer on the 2nd H.F. i-f transformer for maximum output. Align front trimmer on the 2nd H.F. i-f transformer for minimum output. Touch up the front trimmer only on the 3rd i-f (diode).

Transfer the signal generator to the top cap of the 6K8 tube, leaving grid cap in place. Align both trimmers on top of H.F. 1st i-f transformer for maximum output.

B.C. R-F Alignment:

Connect output lead of signal generator set to 1570 kc to blue lead of receiver through a 0.0002-mf condenser; ground lead of generator to black lead. Band switch to B.C. and gang condenser open full.

Adjust B.C. oscillator trimmer (second from end on rear chassis flange) for maximum output. Set generator to 1400 kc and adjust B.C. antenna trimmer (first from end on rear chassis flange) for maximum output.

H.F. R-F Alignment:

Connect signal generator set to 24 megacycles through a 250-ohm resistor to the blue antenna lead. Close gang condenser and open H.F. oscillator shunt trimmer (right trimmer on top of gang) ¾ turn.

Peak 24-mc signal by adjusting the position of the insulated lead, fastened from oscillator trimmer to gang, with relation to the end of the coil.

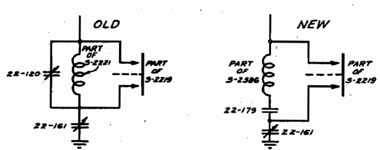
Set generator to 47 mc and open gang condenser. Adjust H.F. oscillator shunt trimmer for maximum output.

Set generator to 45 mc and tune in this signal with gang condenser and then adjust antenna shunt trimmer (left on top of gang) for maximum output.

Set generator to 25 mc and tune in with gang. Repeak antenna circuit by adjusting position of wire from antenna trimmer to gang with relation to the end of the antenna coil. If this wire requires much moving, the antenna alignment at 45 mc should be checked.

Zenith 210-5, 211-5, 270-5, 510-5

Chassis 2046, used in Zenith Models 210-5, 211-5, 270-5 and 510-5, contains a few changes as compared with the schematic shown on *page 3-1 of Rider's Volume III and on page 2729 of the Rider-Combination Manual.* The only changes in the schematic are found in the oscillator circuit; the accompanying illustration shows these



Old and new oscillator circuits in the Zenith chassis 2046.

changes, including both the early and more recent designs. Note that a new part has been added, Part No. 22-179, a series padder; Part No. 22-120 has been removed. In the more recent design, the oscillator coil has been changed from Part No. S-2221 to Part No. S-2586, and the preselector coil has been changed from Part No. S-2222 to Part No. S-2587. Condenser Part No. 22-137, listed on *pages 3-1 and 2729* as having a value of 0.5 mf, should be listed as 0.05 mf; please make this change in your Manual. Also note the additional model, Model 510-5, using Chassis 2046.

The following table of d-c voltages applies to Chassis 2046. All readings are taken from socket connections to ground, using a 1000 ohms-per-volt meter; the volume control is turned to the maximum position and the line voltage corresponding to these readings is 117 volts.

Tube Type	Position	Plate Volt.	Cath. Volt.	Screen Volt.	Supp. Volt.	Plate Current
58	RF	260	3.5	120	3.5	9.0
24A	1st Det.	260	5.5	120	..	0.2
27	Osc.	120	0	..	..	4.2
58	IF	260	3.5	120	3.5	8.4
27	2nd Det.	180	10.	..	..	0.3
47	Power	240	..	260	..	30.
80	Rect.	120	..	..	..	30.
		120	..	..	..	30.

The trimmers on the condenser gang should be adjusted at 1500 kc, the series oscillator padder at 600 kc.

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Montgomery-Ward 62-403

If distortion occurs of a type which seems as if the receiver were being overloaded and which can not be accounted for in any other way, check the capacity of the 5-mmf coupling condenser, C-33, in the i-f circuit. If this can not be done, substitute another of the same capacity. This condenser has a tolerance of 5% and some cases have been encountered in which the capacity has been raised from 12 to 20 mmf due to an internal short circuit. The schematic diagram of this receiver will be found on *page 9-59, 9-60 in Rider's Volume IX.*

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Wells-Gardner A-12

If mushy reproduction is encountered on a medium or strong signal after the receiver has been operating about ten minutes, it probably is due to grid current in the 6U7G r-f and i-f tubes. Change the 4-megohm resistor, R-14, to a 2-megohm resistor. If this does not clear up the signals, replace either the 6U7G r-f or i-f tubes or perhaps both of them. The schematic of this receiver will be found on *page 9-35 of Rider's Volume IX.*

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