

# REALISTIC

## “MINI-23” CB TRANSCEIVER

### MODEL TRC-50

### CATALOG NO. 21-136

# SERVICE MANUAL



## SPECIFICATIONS

### RECEIVER

Sensitivity	Less than 1.0 $\mu$ V @ 10db S+N/N
Selectivity	40db $\pm$ 10KHz
Squelch	Adjustable
IF Frequency	10.615MHz/455KHz
Audio Output	3 Watts

### TRANSMITTER

Power Input	5 Watts maximum
Modulation	{ 90% minimum 100% maximum
RF Frequency Stability	0.005%

### TRANSISTORS

Q 1 2SC 460	RF Amp. (Rec.)
Q 2 2SC 460	1 st Mixer (Rec.)
Q 3 2SC 454	2 nd Mixer (Rec.)
Q 4 2SC 454	1 st IF Amp.
Q 5 2SC 454	2 nd IF Amp.
Q 6 2SC 458	Microphone Amp. (Trans.)
Q 7 2SC 458	1 st Audio Amp. (Rec.)
Q 8 2SC 458	Audio Driver (Trans./Rec.)
Q 9 2SC1061	Audio Output/Modulator
Q10 2SC1061	Audio Output/Modulator
Q11 2SC 460	Master Oscillator
Q12 2SC 454	Receive Oscillator
Q13 2SB 77	Squelch Amp.
Q14 2SC 454	Transmit Oscillator

Q15 2SC 717	Transmit Mixer
Q16 2SC 150 (2SC1213)	Transmit Buifer Amp.
Q17 2SC 608 (2SC781)	Transmit Driver
Q18 2SC 609 (2SC799)	Transmit RF Power Output
Q19 2SC 458	Switching

### DIODES

D 1 1S2076	Overload Protector
D 2 1N34A	Switching
D 3 1N60	Detector
D 4 1N60	Noise Limiter
D 5 1N31A	Switching
D 6 1A34A	Over Modulation Limiter
D 7 1S2076	Over Modulation Limiter
D 8 1N34A	Switching
D 9 HR-5A	Temperature and Voltage Compensator
D10 VO6A	Switching
D11 VO6A	Reverse Polarity Protection
D12 VO6A	Voltage Compensator

### GENERAL POWER

### REQUIREMENT

### MAXIMUM POWER

### CONSUMPTION

DIMENSIONS	1 $\frac{1}{2}$ " (H) $\times$ 5 $\frac{5}{8}$ " (W) $\times$ 7 $\frac{7}{8}$ " (D)
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## ACCESSORIES

Microphone	1
Microphone hanger	1
3mm $\phi$ $\times$ 5mm Binding screw	2
5mm $\phi$ $\times$ 16mm Hexagonal bolt	2

5mm $\phi$ Washer	2
5mm $\phi$ Spring washer	2
5mm $\phi$ Nut	2
5mm $\phi$ $\times$ 20mm Tapping screw	2

**CONTROLS**



Fig. 1

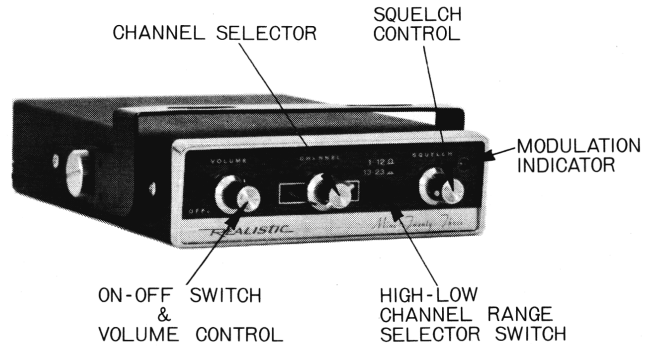


Fig. 2

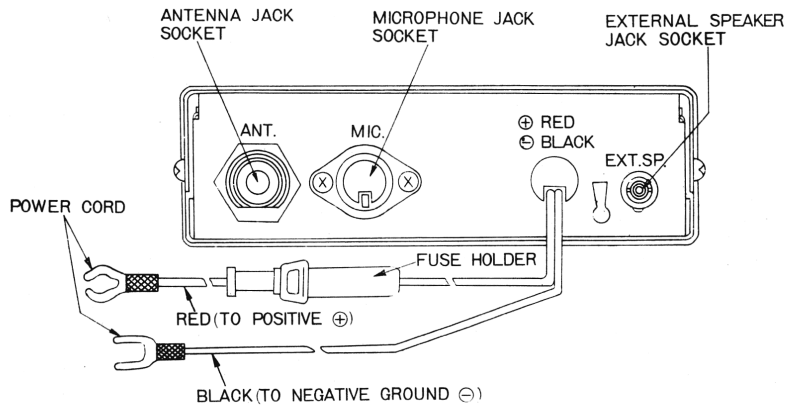


Fig. 3

**BLOCK DIAGRAM**

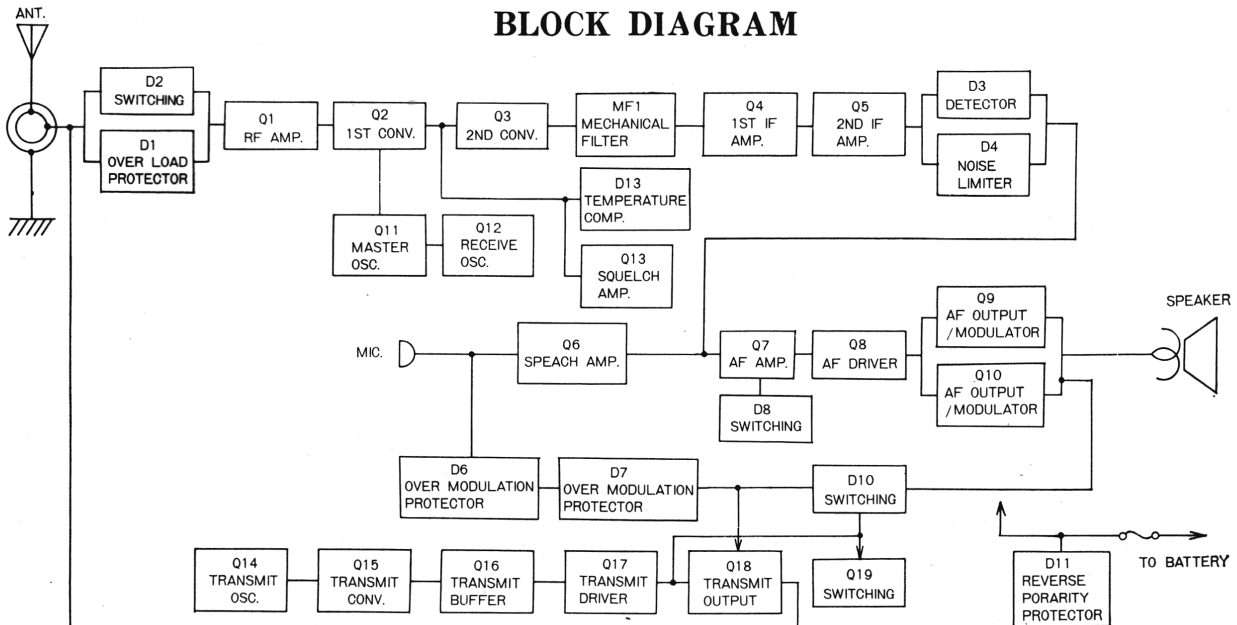


Fig. 4

**DISASSEMBLY**

**1. Removal of metal case**

After removing set from the mounting bracket, remove the four screws as shown in Fig. 5.

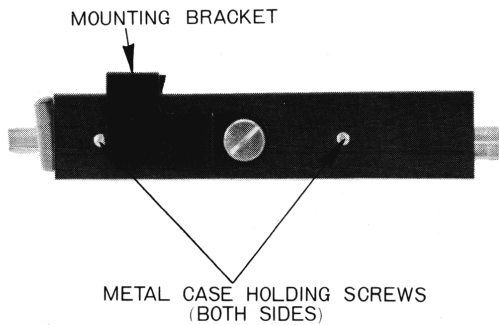


Fig. 5

**2. Removal of circuit board**

Remove five screws holding circuit board as shown in Fig. 6.

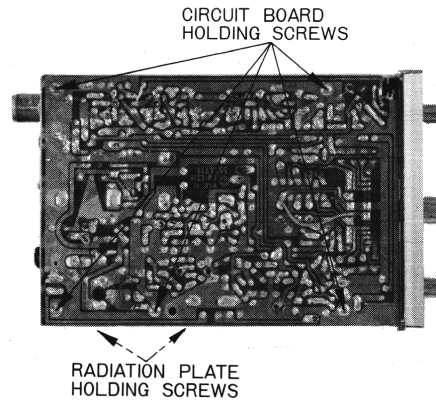


Fig. 6

**ALIGNMENT OF RECEIVER SECTION**

**EQUIPMENT REQUIRED**

- Signal generator 27MHz Band. 1,000Hz, 30% AM modulated,
- Output impedance 50Ω
- AF Output Meter (V.T.V.M)
- DC Power Supply 13.2 Volts, 1.5A
- Oscilloscope
- Dummy Load 8Ω, 5 Watts (Resistive)

**PROCEDURE**

Allow test equipment and set at least 15 minutes to warm up before starting the alignment.  
 Output Level: Keep signal generator output low enough to prevent AGC overload (Below 2 Volts on AF output meter)

Step	Signal Generator Connection	Signal Generator Frequency	Set Conditions	Output Meter Connection	Adjustment	Remarks
1.	To Ant. connector J1	27.085MHz	Channel selector at C Squelch: min. Volume: max.	From external SP jack, J3	T2 thru T6	Adjust for max. output
2.	Same as Step 1	Same as Step 1	Same as Step 1	Same as Step 1	R17	Adjust for 2 volts output with signal generator input of 0.25μV at J1.

**ALIGNMENT OF TRANSMITTER SECTION**

**NOTE:**

This transceiver meets all requirements of F.C.C. Rules and Regulations, Part 95. In order to operate the transceiver the user must be licensed. Obtaining an operator's license is a simple procedure. However, only those persons properly licensed by the F.C.C. are permitted to repair or adjust any malfunctioning unit found to be transmitting illegally (refer to F.C.C. Rules and Regulations, Part 95, Subpart C and D).

**EQUIPMENT REQUIRED**

RF Output Meter 50Ω 5 Watts, DC 500/1,000 milliamperemeter, DC Power Supply 13.2 Volts, 1.5A, Field strength meter.

**PROCEDURE**

Allow test equipment and set at least 15 minutes to warm up before starting the alignment.

RF Output meter or 50Ω HF dummy load must be connected to antenna connector.

Step	Set Condition	RF Output Meter Connection	Adjustment	Remarks
1.	Transmitting non mod.	To Ant. jack J1	T14 thru T16	Adjust for max. output
2.	Same as Step 1	Remove "current check point" jumper and insert milliammeter. Readjust T15 if necessary to obtain no greater than 5 watts input. (voltage at collector of Q18 × current = power input)		

**INTERNAL VIEW**

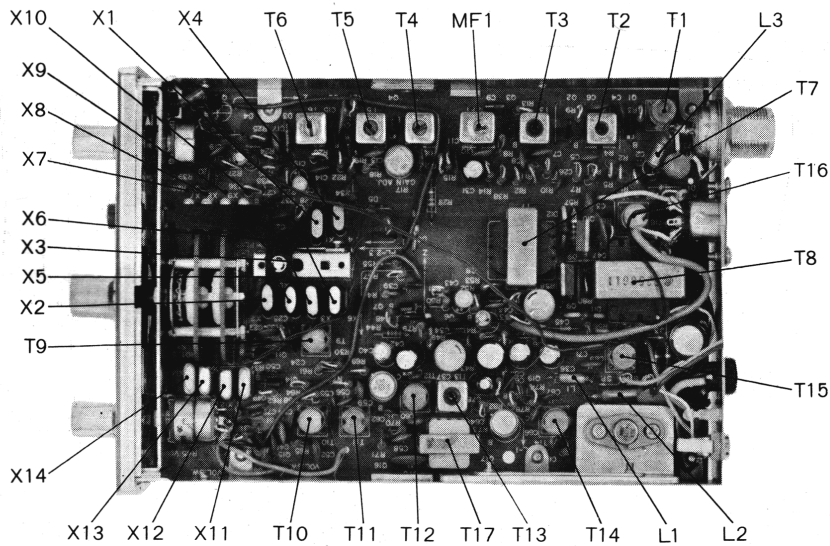
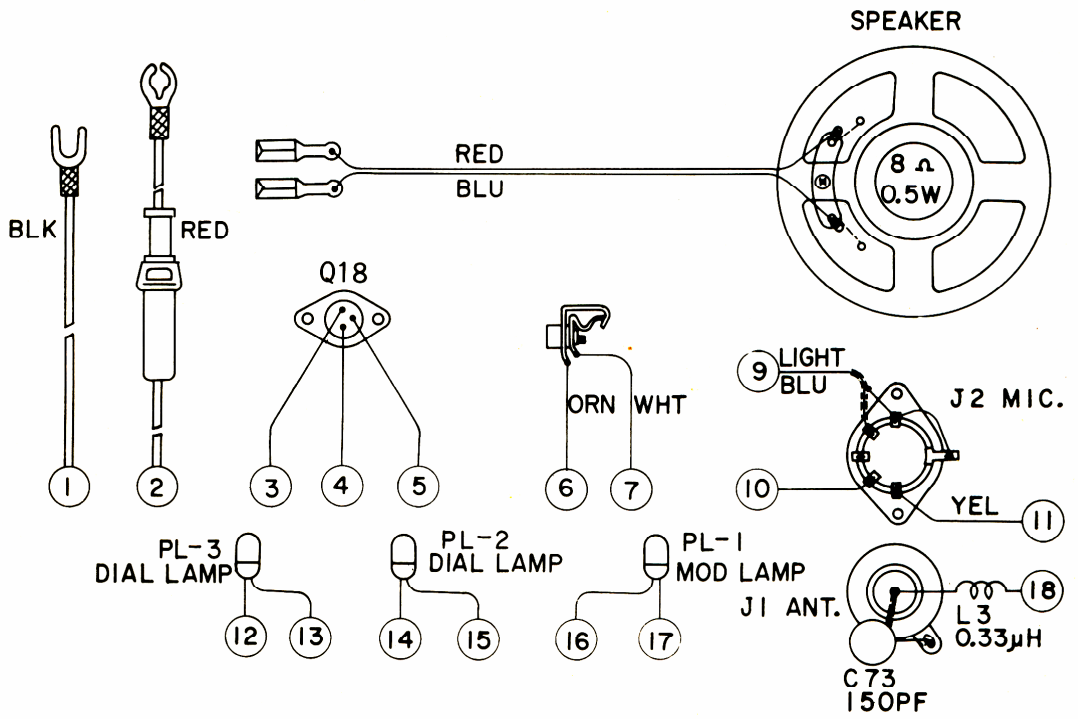
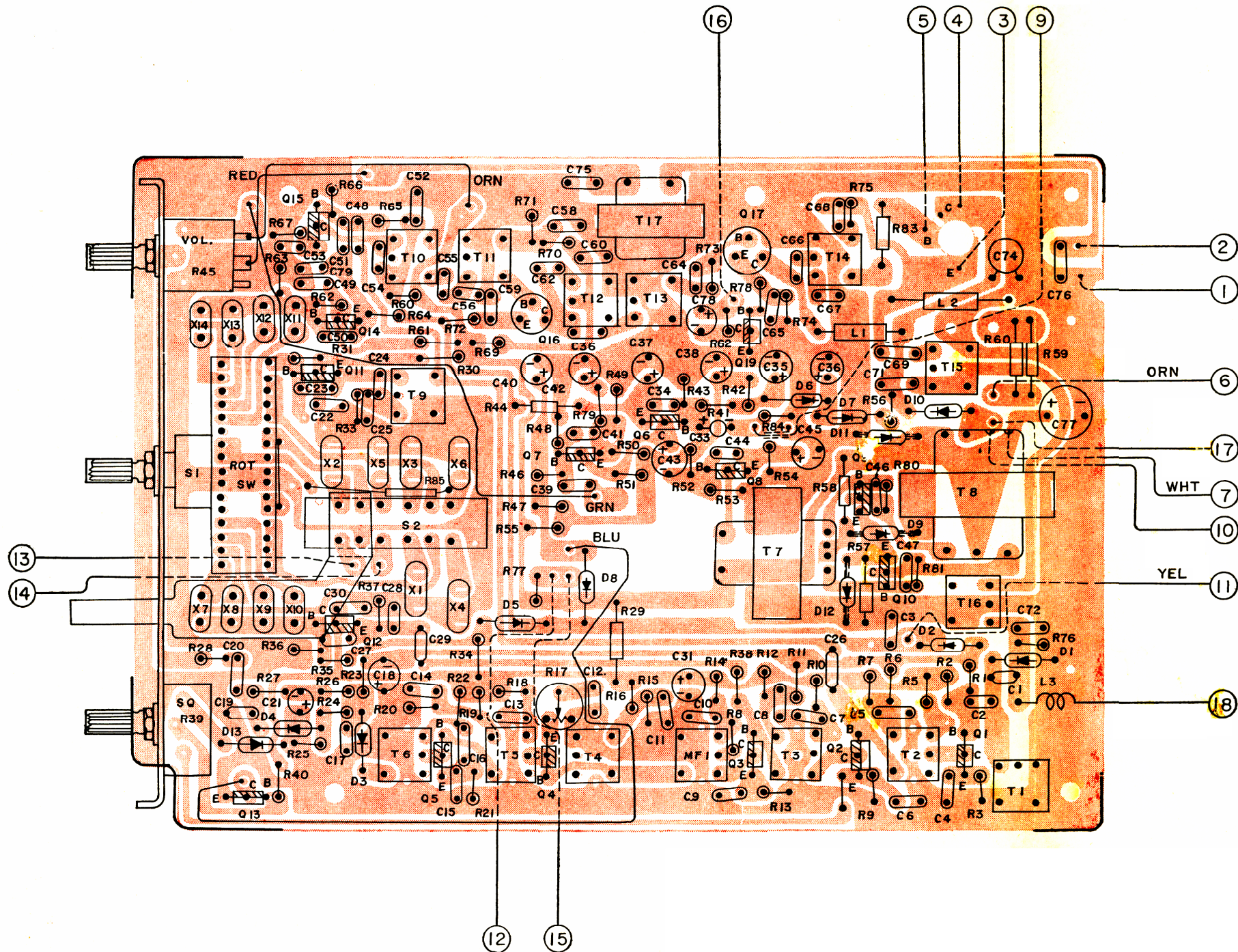
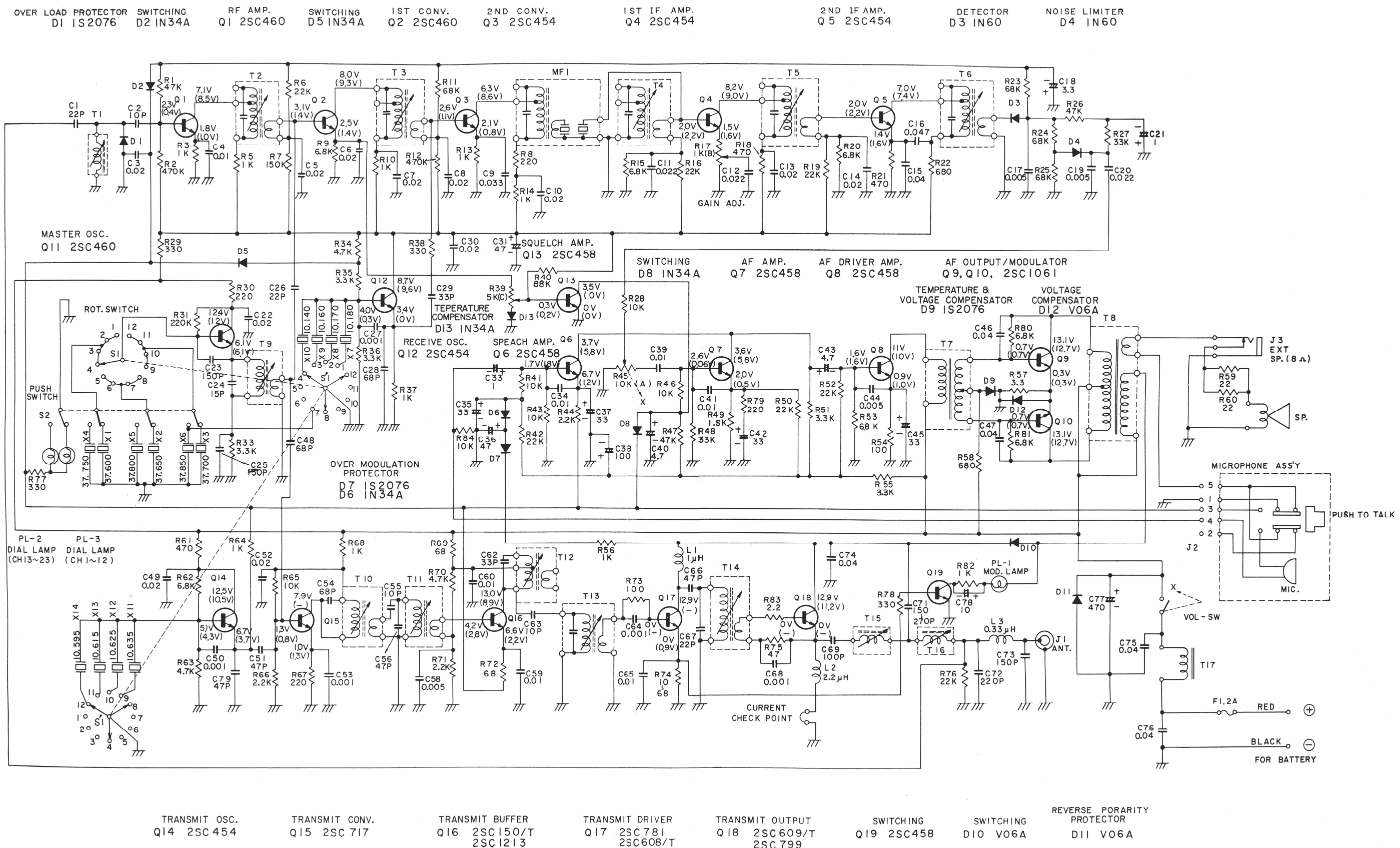


Fig. 7

CIRCUIT BOARD DIAGRAM



**CIRCUIT DIAGRAM**



NOTE: 1. POWER SUPPLY VOLTAGE = 13.2V  
 2. NUMERALS SHOWN IN ( ) INDICATE VOLTAGES WITH TRANSMIT POSITION.

**REPLACEMENT PARTS**

Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
<b>CAPACITORS:</b>			<b>RESISTORS:</b>		
C 1	0248708	Ceramic 22pF	R 1	0137009	Carbon film 47kΩ±10%
C 2	0248660	Ceramic 10pF	R 2	0137959	Carbon film 470kΩ±10%
C 3	0245018	Ceramic 0.02μF	R 3	0137851	Carbon film 1kΩ±10%
C 4	0245017	Ceramic 0.01μF	R 5	0137851	Carbon film 1kΩ±10%
C 5	0245018	Ceramic 0.02μF	R 6	0137905	Carbon film 22kΩ±10%
C 6	0245018	Ceramic 0.02μF	R 7	0137953	Carbon film 150kΩ±10%
C 7	0245018	Ceramic 0.02μF	R 8	0137805	Carbon film 220Ω±10%
C 8	0245018	Ceramic 0.02μF	R 9	0137855	Carbon film 2.2kΩ±10%
C 9	0275114	Mylar 0.033μF	R 10	0137851	Carbon film 1kΩ±10%
C 10	0245018	Ceramic 0.02μF	R 11	0137911	Carbon film 68kΩ±10%
C 11	0275113	Mylar 0.022μF	R 12	0137959	Carbon film 470kΩ±10%
C 12	0275113	Mylar 0.022μF	R 13	0137851	Carbon film 1kΩ±10%
C 13	0245018	Ceramic 0.02μF	R 14	0137851	Carbon film 1kΩ±10%
C 14	0245018	Ceramic 0.02μF	R 15	0137861	Carbon film 6.8kΩ±10%
C 15	0245019	Ceramic 0.04μF	R 16	0137905	Carbon film 22kΩ±10%
C 16	0275115	Mylar 0.047μF	R 17	0151883	Adjustable 1kΩ
C 17	0244018	Ceramic 0.005μF	R 18	0137809	Carbon film 470Ω±10%
C 18	0252613	Electrolytic 3.3μF	R 19	0137905	Carbon film 22kΩ±10%
C 19	0244018	Ceramic 0.005μF	R 20	0137861	Carbon film 6.8kΩ±10%
C 20	0275113	Mylar 0.022μF	R 21	0137809	Carbon film 470kΩ±10%
C 21	0252811	Electrolytic 1μF	R 22	0137811	Carbon film 680Ω±10%
C 22	0245018	Ceramic 0.02μF	R 23	0137911	Carbon film 68kΩ±10%
C 23	0248728	Ceramic 150pF	R 24	0137911	Carbon film 68kΩ±10%
C 24	0248704	Ceramic 15pF	R 25	0137911	Carbon film 68kΩ±10%
C 25	0248728	Ceramic 150pF	R 26	0137909	Carbon film 47kΩ±10%
C 26	0248708	Ceramic 22pF	R 27	0137907	Carbon film 33kΩ±10%
C 27	0274111	Mylar 0.001μF	R 28	0137901	Carbon film 10kΩ±10%
C 28	0248710	Ceramic 68pF	R 30	0137805	Carbon film 220Ω±10%
C 29	0248712	Ceramic 33pF	R 31	0137955	Carbon film 220kΩ
C 30	0245018	Ceramic 0.02μF	R 33	0137857	Carbon film 3.3kΩ±10%
C 31	0252525	Electrolytic 47μF	R 34	0137859	Carbon film 4.7kΩ±10%
C 32			R 35	0137857	Carbon film 3.3kΩ±10%
C 33	0252811	Electrolytic 1μF	R 36	0137857	Carbon film 3.3kΩ±10%
C 34	0275111	Mylar 0.01μF	R 37	0137851	Carbon film 1kΩ±10%
C 35	0252623	Electrolytic 33μF	R 38	0137807	Carbon film 330Ω±10%
C 36	0252525	Electrolytic 47μF	R 39	0151418	Variable 5kΩ(C)
C 37	0251080	Electrolytic 3.3μF	R 40	0137911	Carbon film 68kΩ±10%
C 38	0252531	Electrolytic 100μF	R 41	0137901	Carbon film 10kΩ±10%
C 39	0275111	Mylar 0.01μF	R 42	0137905	Carbon film 22kΩ±10%
C 40	0252815	Electrolytic 4.7μF	R 43	0137901	Carbon film 10kΩ±10%
C 41	0275111	Mylar 0.01μF	R 45	0151747	Variable 10kΩ(A)
C 42	0252623	Electrolytic 33μF	R 46	0137901	Carbon film 10kΩ±10%
C 43	0252815	Electrolytic 4.7μF	R 47	0137909	Carbon film 47kΩ±10%
C 44	0244018	Ceramic 0.005μF	R 48	0137907	Carbon film 33kΩ±10%
C 45	0251080	Electrolytic 3.3μF	R 49	0137853	Composition 1.5kΩ±10%
C 46	0245019	Ceramic 0.04μF	R 50	0137905	Carbon film 22kΩ±10%
C 47	0245019	Ceramic 0.04μF	R 51	0137857	Carbon film 3.3kΩ±10%
C 48	0248720	Ceramic 68pF	R 52	0137905	Carbon film 22kΩ±10%
C 49	0245018	Ceramic 0.02μF	R 53	0137861	Carbon film 6.8kΩ±10%
C 50	0274111	Mylar 0.001μF	R 54	0137801	Carbon film 100Ω±10%
C 51	0248716	Ceramic 47pF	R 55	0137857	Carbon film 3.3kΩ±10%
C 52	0245018	Ceramic 0.02μF	R 56	0137851	Carbon film 1kΩ±10%
C 53	0244016	Ceramic 0.001μF	R 57	0134283	Composition 3.3Ω
C 54	0248720	Ceramic 68pF	R 58	0134371	Composition 680Ω
C 55	0248660	Ceramic 10pF	R 59	0134293	Composition 22Ω
C 56	0248716	Ceramic 47pF	R 60	0134293	Composition 22Ω
C 57			R 61	0137809	Carbon film 470Ω±10%
C 58	0244018	Ceramic 0.005μF	R 62	0137861	Carbon film 6.8kΩ±10%
C 59	0245017	Ceramic 0.01μF	R 63	0137859	Carbon film 4.7kΩ±10%
C 60	0245017	Ceramic 0.01μF	R 64	0137851	Carbon film 1kΩ±10%
C 62	0248712	Ceramic 33pF	R 65	0137901	Carbon film 10kΩ±10%
C 63	0248660	Ceramic 10pF	R 66	0137855	Carbon film 2.2kΩ±10%
C 64	0274111	Mylar 0.001μF	R 67	0137805	Carbon film 220Ω±10%
C 65	0275111	Mylar 0.01μF	R 68	0137851	Carbon film 1kΩ±10%
C 66	0248716	Ceramic 47pF	R 69	0137769	Carbon film 68Ω±10%
C 67	0248708	Ceramic 22pF	R 70	0137859	Carbon film 4.7kΩ±10%
C 68	0274111	Mylar 0.001μF	R 71	0137855	Carbon film 2.2kΩ±10%
C 69	0248724	Ceramic 100pF	R 72	0137769	Carbon film 68Ω±10%
C 70	0248704	Ceramic 15pF	R 73	0137801	Carbon film 100Ω±10%
C 71	0248728	Ceramic 150pF	R 74	0137759	Carbon film 10Ω±10%
C 72	0248732	Ceramic 150pF	R 75	0137767	Carbon film 47Ω±10%
C 73	0248728	Ceramic 150pF	R 76	0137905	Carbon film 22kΩ±10%
C 74	0245019	Ceramic 0.04μF	R 77	0137807	Carbon film 330Ω±10%
C 75	0245019	Ceramic 0.04μF	R 78	0137807	Carbon film 330Ω±10%
C 76	0245019	Ceramic 0.04μF	R 79	0137805	Carbon film 220Ω±10%
C 77	0252535	Electrolytic 470μF			
C 78	0252621	Electrolytic 10μF			

# REALISTIC CAT. NO. 21-136 SERVICE MANUAL

Symbol No.	Stock No.	Description			Symbol No.	Stock No.	Description		
R 80	0137861	Carbon film	6.8k $\Omega$ ±10%	¼SD	MF 1	5132081	Mechanical Filter		
R 81	0137861	Carbon film	6.8k $\Omega$ ±10%	¼SD	<b>COILS:</b>				
R 82	0137851	Carbon film	1k $\Omega$ ±10%	¼SD	L 1	5150123	Choke	3.3 $\mu$ H	
<b>TRANSISTORS:</b>					L 2	0318546	Choke	2.2 $\mu$ H	
Q 1	0573487	Transistor	2SC460(C)		L 3	5150071	Choke	0.33 $\mu$ H	
Q 2	0573487	Transistor	2SC460(C)		<b>for Final assembly</b>				
Q 3	0573492	Transistor	2SC454(C)		5420134	Microphone			
Q 4	0573492	Transistor	2SC454(C)		7183331	Mic hanger			
Q 5	0573492	Transistor	2SC454(C)		8741405	Binding screw-3mm $\phi$ ×5mm			
Q 6	0573481	Transistor	2SC458(C)		8832116	Bolt-5mm $\phi$ ×16mm			
Q 7	5320023	Transistor	2SC458(LG)C		8811117	Washer-5mm $\phi$			
Q 8	0573481	Transistor	2SC458(C)		8813127	Spring washer-5mm $\phi$			
Q 9	5320432	Transistor	2SC1061(B)		8821117	Nut-5mm $\phi$			
Q 10	5320432	Transistor	2SC1061(B)		8785720	Tapping screw-5mm $\phi$ ×20mm			
Q 11	0573487	Transistor	2SC460(C)		6166901	Cover (A)			
Q 12	0573492	Transistor	2SC454(C)		6166921	Cover (B) ass'y			
Q 13	5320034	Transistor	2SC458(D)		5410361	Speaker-7.7cm			
Q 14	0573492	Transistor	2-C454(C)		8745406	Binding screw-3mm $\phi$ ×6mm			
Q 15	5320051	Transistor	2SC717		7183322	Bracket ass'y			
Q 16	0573517	Transistor	2SC150(T)		7502423	Lock screw			
Q 17	5320501	Transistor	2SC781		8811118	Washer-6mm $\phi$			
Q 18	5320511	Transistor	2SC799		7628101	Spacer			
Q 19	0573481	Transistor	2SC458(C)		6215041	Escutcheon ass'y			
D 1	5330131	Diode	1S2076		6215031	Escutcheon			
D 2	0575001	Diode	1N34A		7734871	Spacer (A)			
D 3	0575005	Diode	1N60		6716311	Indicator			
D 4	0575005	Diode	1N60		6270631	Knob			
D 5	0575001	Diode	1N34A		6263772	Knob			
D 6	0575001	Diode	1N34A		<b>for Frame assembly</b>				
D 7	5330131	Diode	1S2076		7217651	Frame			
D 8	0575001	Diode	1N34A		7217671	Radiation plate			
D 9	5330104	Diode	1S2076		8711410	Pan head screw-3mm $\phi$ ×10mm			
D 10	5330104	Diode	VO6A		8811114	Washer-3mm $\phi$			
D 11	5330104	Diode	VO6A		8821114	Nut-3mm $\phi$			
D 12	5330104	Diode	VO6A		8721408	Flat screw-3mm $\phi$ ×8mm			
X 1	0599783	Quartz crystal			7217841	Bracket (A)			
X 2	0599784	Quartz crystal			0541358	5P Socket			
X 3	0599785	Quartz crystal			5670611	Antenna connector			
X 4	0599786	Quartz crystal			0948783	Rubber plate 8mm $\phi$			
X 5	0599787	Quartz crystal			5760072	Lamp (blue)			
X 6	0599788	Quartz crystal			0043793	Bushing			
X 7	0599792	Quartz crystal			5741191	Power cord			
X 8	0599791	Quartz crystal			5740612	Earth cord			
X 9	0599790	Quartz crystal			0591138	Fuse (2A)			
X 10	0599783	Quartz crystal			8745406	Binding screw-3mm $\phi$ ×6mm			
X 11	0599796	Quartz crystal			6268841	Push button			
X 12	0599795	Quartz crystal			<b>for Printed circuit board assembly</b>				
X 13	0599794	Quartz crystal			0541354	Crystal socket			
X 14	0599793	Quartz crystal			5631651	Push push switch			
<b>TRANSFORMERS:</b>					7217661	Front plate			
T 1	5123008	Filter			6716321	Lever			
T 2	5120099	High Frequency			0542109	Pinjack			
T 3	0322341	IF				Rotary switch			
T 4	0322146	IF							
T 5	0322146	IF							
T 6	5136022	IF							
T 7	0441114	Driver							
T 8	5250611	Modulation							
T 9	0317194	OSC							
T 10	0317192	High Frequency							
T 11	0317193	High Frequency							
T 12	0317194	High Frequency							
T 13	0317175	High Frequency							
T 14	0317195	High Frequency							
T 15	0317196	Filter							
T 16	5123007	Filter							
T 17	5220001	Choke							