

SEEBURG

33-1/3 TRANSISTORIZED AUTO-SPEED UNIT, Type 33-1/3 TASU2

The 33-1/3 Transistorized Auto-Speed Unit Type 33-1/3 TASU2 supplies 44-cycle AC power to the motor of the Select-O-Matic phonograph mechanism when 33-1/3 RPM records are played. It is fully transistorized with power generated by a power converter that is controlled through circuits associated with the phonograph.

In addition to the power converter and its regulated power supply, the Unit includes a Power Relay and controls for power output and frequency. The directional speakers and audio amplifier of the phonograph are connected through a socket on the rear of the Auto-Speed Unit to two contacts on the Power Relay.

The regulator transistor, Q752, and the zener diode, CR753, are mounted in clips. These clips are heat sinks, the function of which is to conduct heat from the transistor and diode. The Unit should not be operated unless the parts are fully inserted in the clips.

The converter transistors, Q754 and Q755, use the Unit chassis for heat dissipation and must be held firmly to it with the mounting screws. The cases of these transistors are insulated from the chassis with mica washers. If one of the transistors is removed or changed, a new mica washer should be used and the washer should be coated with a liberal amount of silicone grease on both sides. Excess grease should be wiped off after the transistor is securely fastened in place. The regulator series transistor, Q751, is mounted on a black, vertical-ribbed heat sink. A silicone grease coated washer must also be used under the transistor for electrical insulation which does not retard heat-conduction. The air space between the fins of this sink must not be blocked.

In the application of the TASU2 the desired frequency for turntable speed of 33-1/3 RPM is approximately 44.5 cycles and is determined by using a strobe disc on the turntable. A 7 inch strobe disc, Part No. 508487 is used for 60 cycles and Part No. 508478 is for 50 cycles.

The adjustment should be made as follows:

1. Operate the phonograph motor from the TASU2 for approximately three minutes.
2. Set the SPEED control for correct speed as indicated by the strobe disc.

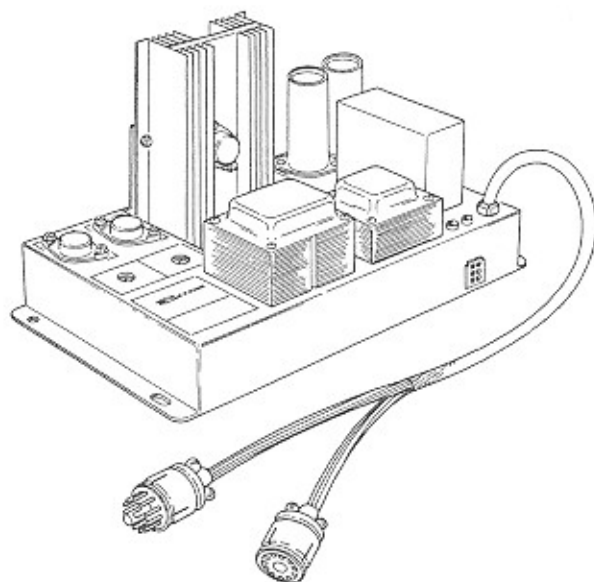


Figure 1.

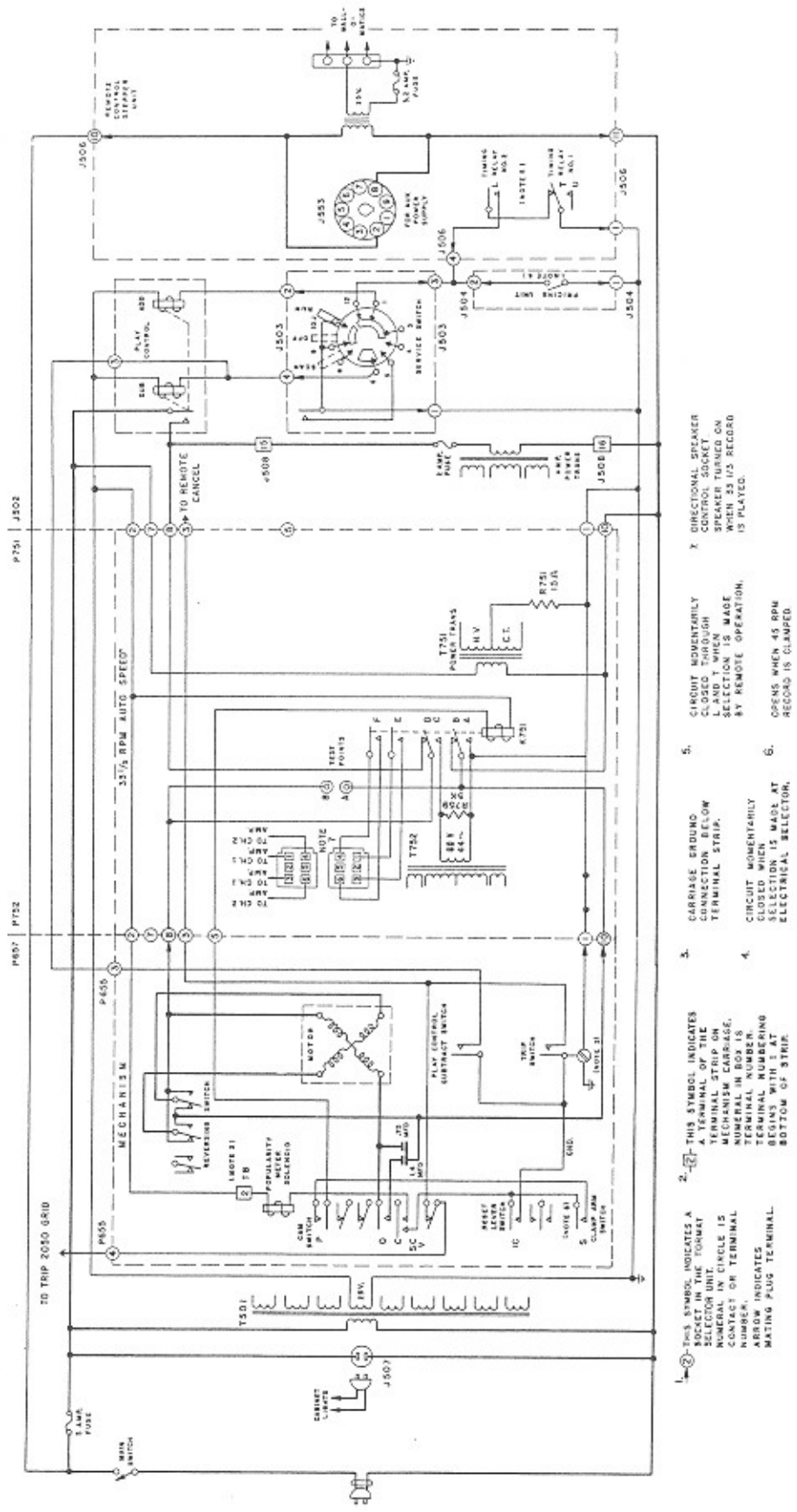
3. If there is no position of the SPEED control that will give the correct motor speed, turn the DRIVE control 1/8 turn to the right to increase speed or to the left to decrease speed, whichever is needed, and repeat step No. 2.
4. Repeat steps No. 3 and 2 as required until correct motor speed is obtained.

Steps No. 4 and 3 will not be necessary unless the DRIVE control has been altered or unless a component part of the Auto-Speed Unit has been changed. Correct speed adjustments will result in regulated DC voltage to the converter (as read across C752) of from 20.5 to 26 and an output voltage as read at the test jacks adjacent to the controls of from 70 to 90 volts.

The output voltage and frequency remain relatively constant over a wide range of supply line voltage and load conditions because of the inherent stability achieved by regulating the AC power to the converter.

The Power Relay, K751, when energized transfers the phonograph motor connections from 60 to 44 cycle supply. It is controlled by a circuit that includes a single-pole, normally closed clamp arm switch that is actuated by the record clamp arm on the mechanism. The size of the record spindle hole determines how far the clamp arm moves and whether or not the switch is actuated.

33-1/3 TRANSISTORIZED AUTO-SPEED UNIT, Type 33-1/3 TASU2



1. THIS SYMBOL INDICATES A SOCKET IN THE FORMAT SELECTOR UNIT. THE NUMBER IN CIRCLE IS CONTACT OR TERMINAL NUMBER. AN ARROW INDICATES MATING PLUG TERMINAL.
2. THIS SYMBOL INDICATES A TERMINAL STRIP ON MECHANISM CARTRIDGE. NUMBER IN BOX IS TERMINAL NUMBER BEGINNING WITH 1 AT BOTTOM OF STRIP.
3. GARRAGE BEGINS CONNECTION BELOW TERMINAL STRIP.
4. CIRCUIT MOMENTARILY CLOSING ON ELECTRICAL SELECTOR.
5. CIRCUIT MOMENTARILY CLOSING ON L AND T WHEN BY REMOTE OPERATION.
6. OSCENS WHEN 45 RPM RECORD IS CLAMPED.
7. DIRECTIONAL SPEAKER CLOSING ON SPEAKER TURNED ON WHEN 33 1/3 RECORD IS PLAYED.

Figure 2. Power and Control Wiring with 33-1/3 TASU2.

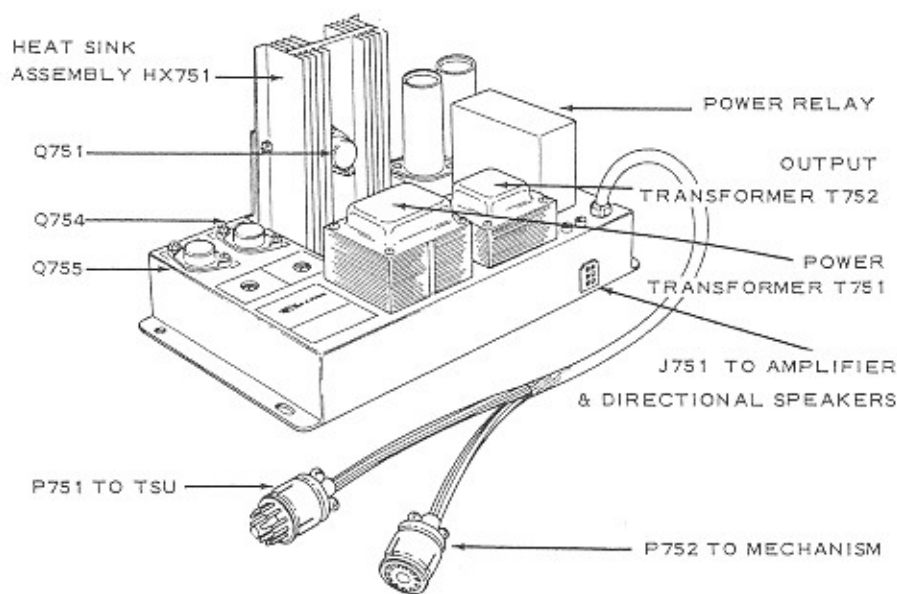
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The 33-1/3 RPM record has a 5/16 inch spindle hole. It centers on the turntable with a 5/16 inch clamp arm centering pin and is held against the turntable by the face of the concentric 1-1/2 inch, 45 RPM centering "pin". When a 45 RPM record, with its 1-1/2 inch spindle hole, is played, the 1-1/2 inch diameter pin passes through it and the record is held against the turntable by the flat surface of the clamp disc. When a 45 RPM record is clamped, the clamp arm moves inward far enough to open the clamp arm switch. There is less arm movement when a 33-1/3 RPM record is clamped and the switch remains closed.

The clamp arm switch, as shown in Figure 2, is in series with a contact on the cam switch and the IC contact on the reset lever switch. It provides a 25 volt circuit for the Power Relay.

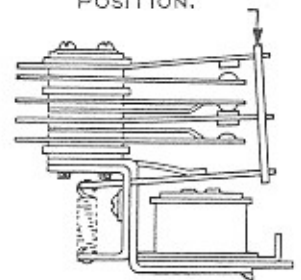
The IC contact is closed when a record is playing and opened when the mechanism is tripped from play. The cam switch contact is closed only in the playing position. The clamp arm switch is closed when a 33-1/3 RPM record is clamped. The only time the relay is energized, then, is when the mechanism is playing a 33-1/3 RPM record. At all other times - during transfer, scan and while playing a 45 RPM record, the relay is not energized and the motor is operating at 60 cycles.

Contacts "E" and "F" on the Power Relay are used for control of the directional stereo speakers in the phonograph. The contacts are normally open and switch in the directional speakers when the Power Relay is energized for playing a 33-1/3 RPM record. Connection to these contacts is made through a 6-contact socket (J751) in the TASU2.

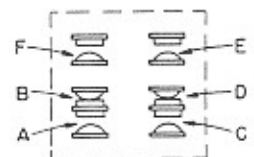


POWER RELAY ADJUSTMENTS

1 OZ. FORCE TO START ARMATURE FROM REST POSITION.



COIL RESISTANCE
24 OHMS



"E" CONTACT GAP 1/32"
CONTACTS "D & B" TO BE
1/32" MIN. WHEN "C & A"
ARE CLOSED.

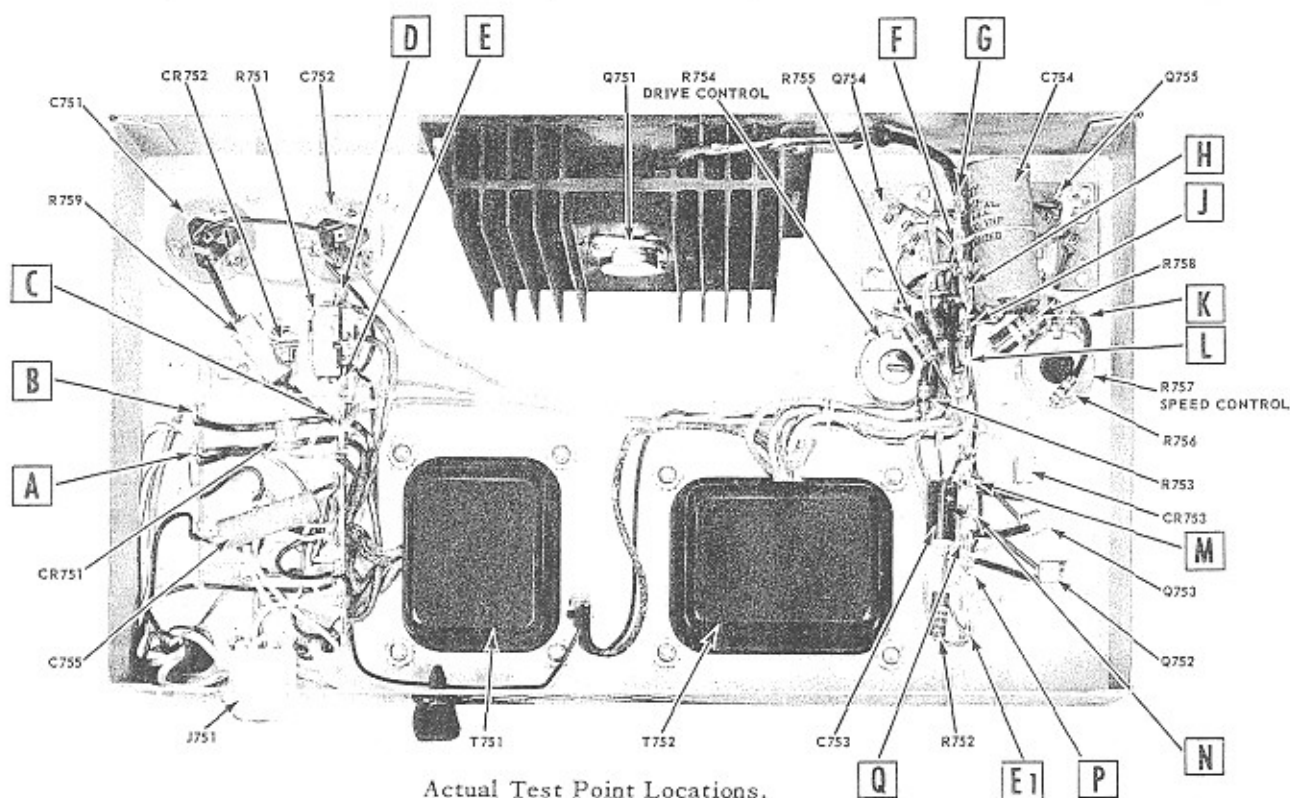
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The chart lists the values of Voltage and Resistance at various Test Points in the TASU2. These represent values on a normal unit. Defects in an abnormal unit can be isolated by comparing the readings of the abnormal unit with the values on this chart.

Voltage and resistance measurements indicated will differ from unit to unit and should be used as a comparative reference. It should be recognized that meter tolerances vary but are usually 3% to 5% of Full Scale.

Check resistance measurements before applying power to unit. Use an ohmmeter on only those test points that have resistance measurements indicated on the chart below. Use of an ohmmeter on the other points has no significance and may damage the transistors in the circuit.

Before checking voltages, adjust Drive Control (R754) so Test Point "L" is -24VDC with no load. A normal load for the Auto-Speed Unit would be either a Select-O-Matic mechanism motor or a 500 ohm, 50 watt resistor across the output of the Auto-Speed Unit.



Actual Test Point Locations.

TEST POINTS	REVERSE RESISTANCE	FORWARD RESISTANCE	VOLTAGE (No. Load)	VOLTAGE (Load)
A to B	13 ohms		117 VAC	
C to ground	4.6 ohms		87 VAC	82 VAC
D to ground	1.5 ohms		.57 VDC	1.3 VDC
E to ground	More than 20K (note 1)	Less than 1K (note 1)	-43 VDC	-37.5 VDC
F to ground	-	-	1.55 VAC	1.35 VAC
G to J	1.4 ohms		51 VAC	48 VAC
G to ground	-	-	-24.5 DC	-23.5 DC
H to ground	-	-	1.55 VAC	1.35 VAC

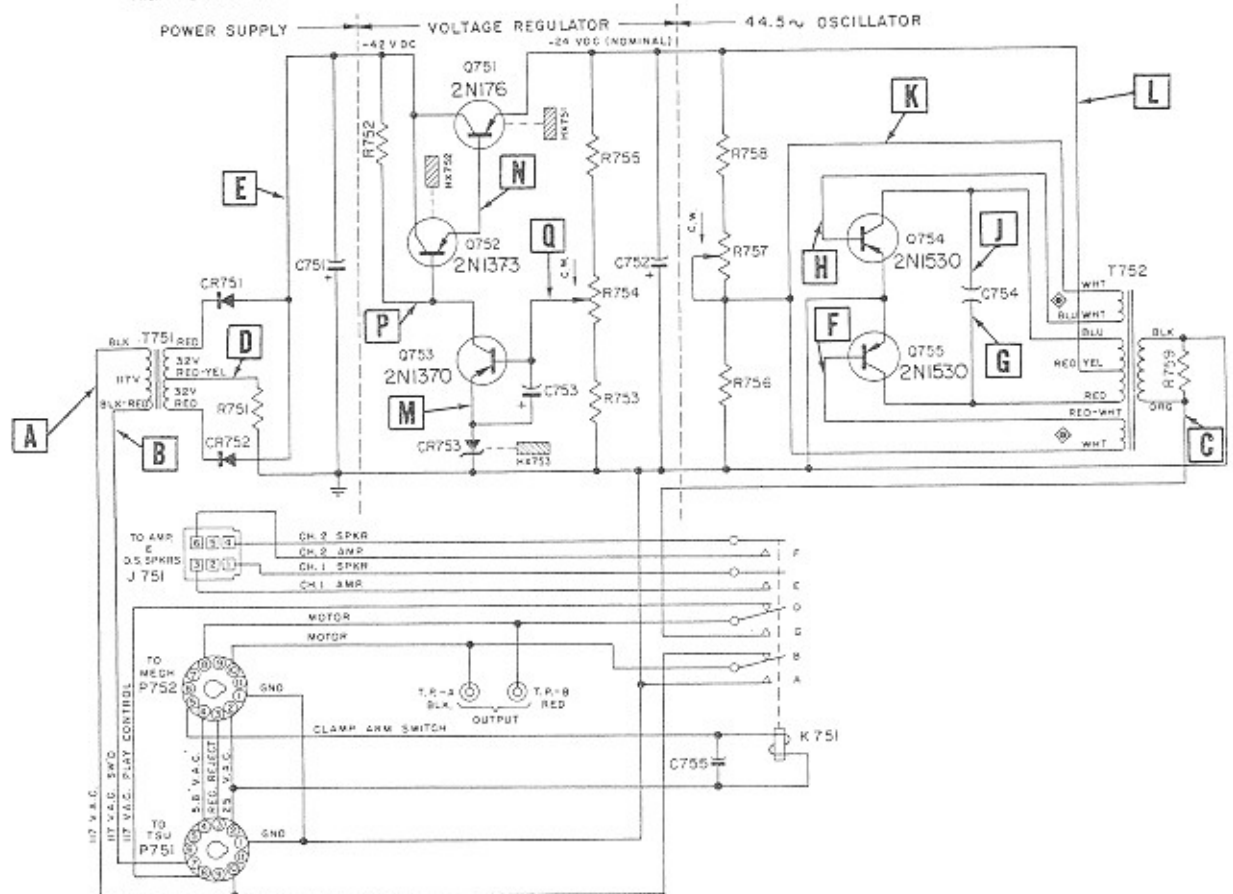
TEST POINTS	REVERSE RESISTANCE	FORWARD RESISTANCE	VOLTAGE (No Load)	VOLTAGE (Load)
J to ground	-	-	-24.5 VDC	-23.5 VDC
K to ground	-	-	-	-
L to ground	160 to 320 ohms (note 2)	8 ohms	-24 VDC (note 3)	-23.8 VDC (note 3)
M to ground	-	-	14 VDC	
N to ground	-	-	-24.2 VDC	-24 VDC
P to ground	-	-	-16.5 VDC	-23.5 VDC
Q to ground	-	-	-14.5 VDC	
-	-	-	-	-

NOTES: (1) With input to Regulator disconnected at E1; (2) Dependent on Speed Control (R757) setting; (3) Dependent on Drive Control (R754) setting.

33-1/3 TRANSISTORIZED AUTO-SPEED UNIT, Type 33-1/3 TASU2

NOTES:
 1. ALL RECEPTACLES ARE AS VIEWED FROM THE CABLE END.
 2. ALL POT DIRECTIONS ARE AS VIEWED FROM TOP OF CHASSIS.

DRAWING NO. 307532



Item	Part No.	Description	Item	Part No.	Description
—	307472	33-1/3 Transistorized Auto-Speed Unit	*Q751	309406	2N176 Transistor
C751	87704	500 Mfd. 50 V. Lytic	Q752	309409	2N1373 Transistor
C752	87705	800 Mfd. 30 V. Lytic	Q753	309408	2N1370 Transistor
C753	87697	9 Mfd. 6 V. Lytic	*Q754	309407	2N1530 Transistor
C754	87708	100 Mfd. 100 V. Non-Polarized Lytic	*Q755	309407	2N1530 Transistor
C755	86235	0.05 Mfd. 200 V. Paper	*	84312	Power Transistor Socket
CR751	309387	Silicon Rectifier	*	375074	Mica Insulator
CR752	309387	Silicon Rectifier	*	53015	Silicone Grease (2 oz. tube)
CR753	309395	1N3024A Silicon Zener Diode			
HX751	307489	Heat Sink Assembly	R751	81218	1.5 Ohm 5 W. 10%
HX752	307505	Heat Sink Clamp	R752	82865	1,100 Ohm 1 W. 5%
HX753	307504	Heat Sink Clamp	R753	82612	2,000 Ohm 1/2 W. 5%
J751	305632	6 Contact Socket	R754	307487	1,500 Ohm Potentiometer
			R755	82867	360 Ohm 1 W. 5%
K751	307530	Power Relay	R756	82404	22 Ohm 1/2 W. 10%
	307442	Coil & Frame	R757	307487	1,500 Ohm Potentiometer
	307441	Switch Stack (E, D, C)	R758	82858	680 Ohm 2 W. 10%
	307534	Switch Stack (B, A)	R759	81219	5,000 Ohm 5 W. 10%
P751	249936	11 Prong Plug	T751	307483	Power Transformer
P752	307457	8 Contact Socket	⊕T752	307484	Output Transformer

* USE MICA INSULATOR COATED WITH LIBERAL AMOUNT OF SILICONE GREASE ON BOTH SIDES WHEN MOUNTING POWER TRANSISTORS INDICATED WITH (*).

⊕ SOME TRANSFORMERS HAVE BLUE-WHITE AND RED-WHITE LEADS REVERSED.