

Engineering Data

Stromberg-Carlson No. 229-P Radio Receivers

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
Rochester, New York

ELECTRICAL SPECIFICATIONS

Type of Circuit.....	Superheterodyne
Tuning Ranges.....	A—540 to 1500 Kc.; B—1450 to 3500 Kc.; C—5600 to 18,000 Kc.
Number and Types of Tubes.....	2 No. 6K7, 1 No. 6A8, 1 No. 6H6, 1 No. 6F5, 1 No. 6F6, 1 No. 80, 1 No. 6G5
Power Supply Voltage.....	105 to 125 Volts
Power Supply Frequency.....	See Receivers Listed under "Apparatus Specifications"
Input Power Rating.....	90 Watts
Frequency of Intermediate Amplifier.....	465 Kilocycles

APPARATUS SPECIFICATIONS

No. 229-P.....	60 Cycles Only; P-27936 Chassis; P-27834 Loud Speaker; P-27835 Phonograph Unit
No. 229-PB.....	25 Cycles Only; P-27937 Chassis; P-27834 Loud Speaker; P-27836 Phonograph Unit
No. 229-PD.....	50 Cycles Only; P-27936 Chassis; P-27834 Loud Speaker; P-27837 Phonograph Unit
No. 229-PE.....	40 Cycles Only; P-27937 Chassis; P-27834 Loud Speaker; P-27838 Phonograph Unit

CIRCUIT DESCRIPTION

The Stromberg-Carlson No. 229-P Radio Receivers are eight tube, superheterodyne receivers employing metal tubes and a highly efficient dynamic speaker. These receivers have three tuning ranges which are quickly interchangeable by means of a rotary switch, the control knob of which is located on the control panel. Ease and convenience of operation are assured by the vernier drive with its associated double knob. Resonance with a signal is indicated by means of the tuning indicator tube which operates on the cathode-ray principle. The strength of a received signal may be determined by observing the size of the aperture appearing on the target of the tuning indicator tube, the stronger a received signal the greater the reduction in the size of the aperture. A low level bass frequency compensating circuit is also provided in the volume control circuit of these receivers, which operates to give balanced reproduction at any setting of the volume control.

These receivers are also equipped with a single record playing phonograph unit which uses a crystal type pick-up in conjunction with a specially equalized circuit.

In order to obtain maximum performance from these receivers, a sensitivity control is provided for use on the standard broadcast range only. Its control knob is located on the rear of the chassis base. When either the "B" or "C" ranges are in operation, this sensitivity control is automatically cut out of the circuit so that the receiver will function at its maximum sensitivity on these two ranges. In some localities it will be found that without the use of this control, it will be impossible to eliminate adjacent channel interference. When this condition is obtained, the receiver should be tuned accurately to the desired station, and this sensitivity control adjusted so that minimum interference is obtained from the interfering station. See Figure 1.

The various tubes are used in these receivers as follows: One No. 6K7 tube is used in the R. F. Amplifier, and the other No. 6K7 tube is used in the I. F. Amplifier. The No. 6A8 tube functions as both Oscillator and Modulator tube. The No. 6H6 tube is used as a Demodulator and Automatic Volume Control tube. The No. 6F5 tube is used in the Audio Frequency Amplifier Stage (Driver), and the No. 6F6 tube is used in the Audio Power Output Stage. The No. 80 tube is the Rectifier tube of the power supply unit, and the No. 6G5 tube is used for indicating resonance in the Tuning Indicator System.

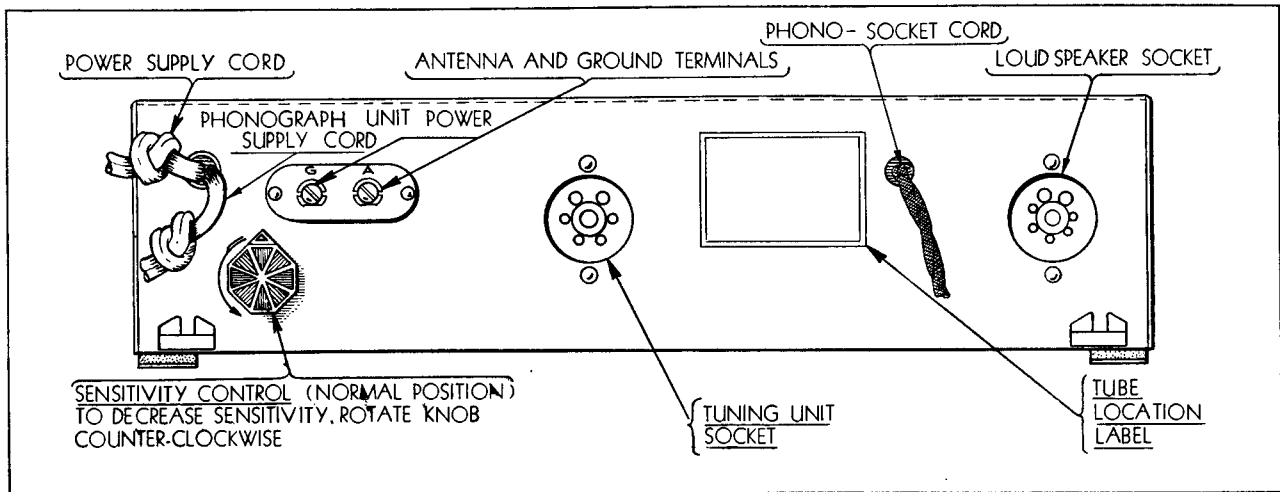


Fig. 1. Location and Operation of Sensitivity Control.

NORMAL VOLTAGE READINGS

The various values of voltages listed in the following table are obtained by measuring between the various tube socket contacts and the chassis base, with the tubes in their respective sockets. The receiver is, therefore, in operation when the measurements are made. Figure 2 shows the terminal layout of the sockets with the proper terminal numbers.

Voltages are given for a line voltage of 120 volts, and allowance should be made for differences when the line voltage is higher or lower. A meter having a resistance of 1000 ohms per volt should be used for measuring the D. C. voltages. Voltage values shown are those obtained on the lowest possible scale of a meter having the following ranges: 0-2.5, 0-10, 0-100, 0-250, 0-500, 0-1000 volts except when an asterisk appears after any given voltage value in which case the 1000 volt scale was used.

Tube	Circuit	Cap	Terminals of Sockets								Heater Voltages Between Heater Terminals	
			1	2	3	4	5	6	7	8	Socket Terminal Numbers	Volts
6K7	R. F. Amp.	0	0	0	+54	+96	+7.6	+4.5	6.3	+7.6	2-7	6.3
6A8	Osc.-Mod.	0	0	0	+222	+72	-1.0	+143	6.3	+6.1	2-7	6.3
6K7	I. F. Amp.	0	0	0	+240	+96	+7.4	+4.5	6.3	+7.4	2-7	6.3
6H6	Dem.—A.V.C.	—	0	0	0	0	0	—	6.3	+4.5	2-7	6.3
6F5	Audio Amp.	0	0	0	—	+122*	—	—	6.3	+.75	2-7	6.3
6F6	Audio Output	—	0	0	+226	+237	0	0	6.3	+15	2-7	6.3
80	Rectifier	—	+330	325	325	+330	—	—	—	—	1-4	4.8
Tuning Indicator Plug's Socket			6.3	0	+7.6	+235	+7.8	0	—	—	1-6	6.3
Speaker Socket			+327	0	0	+327	+327	0	+237	—	—	—

Receiver tuned to 1000 Kc., no signal. A. C. voltages are indicated by italics.

ALIGNMENT DATA

All alignment adjustments are accurately made at the factory on these receivers and ordinarily no readjustments are necessary. However, should it become necessary to make any readjustments, this alignment procedure should be carefully followed.

In making any alignment adjustments always adjust the signal generator's output to the minimum value where a good alignment may still be obtained. Never attempt to make any alignment adjustments using a strong signal.

Figure 2 shows the location of all the aligning capacitors used in this receiver.

Intermediate Frequency Amplifier Adjustments

The intermediate frequency used in these receivers is 465 kilocycles. In making these I. F. circuit adjustments always align in the following order:

1. Secondary of 2nd I. F. Transformer (Capacitor C-13).
2. Primary of 2nd I. F. Transformer (Capacitor C-12).
3. Secondary of 1st I. F. Transformer (Capacitor C-11).
4. Primary of 1st I. F. Transformer (Capacitor C-10).

Radio Frequency Adjustments

The adjustments of the aligning capacitors used in the radio frequency circuits in this receiver should be very carefully made in the following order and at the frequencies specified below:

1. Oscillator's "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-7).
2. R. F. Interstage "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-6).
3. Antenna "C" Band Shunt Aligner at 17 Megacycles (Capacitor C-3).
4. Oscillator's "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-8).
5. R. F. Interstage "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-5).
6. Antenna "B" Band Shunt Aligner at 3.4 Megacycles (Capacitor C-2).
7. Oscillator's "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-9).
8. R. F. Interstage "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-4).
9. Antenna "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-1).
10. Oscillator's "A" Band Series Aligner at 0.6 Megacycles (Capacitor C-23).
11. Oscillator's "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-9).
12. R. F. Interstage "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-4).
13. Antenna "A" Band Shunt Aligner at 1.4 Megacycles (Capacitor C-1).

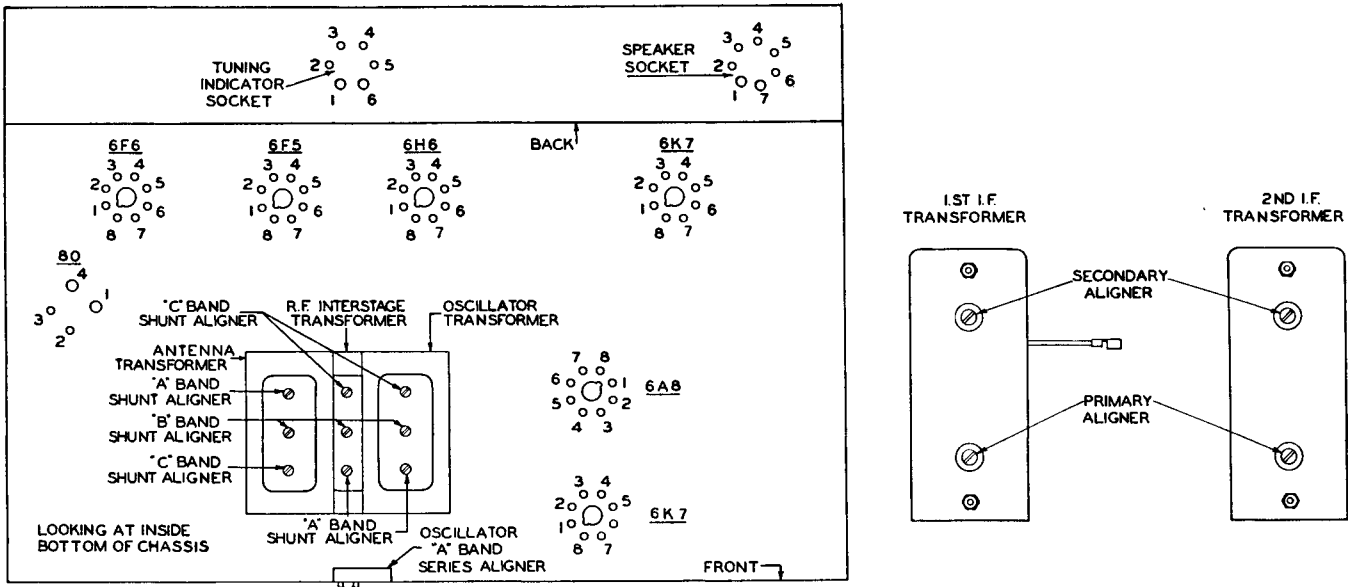


Fig. 2. Terminal Layout for Voltage Measurement Chart and Location of the Various Aligning Capacitors.

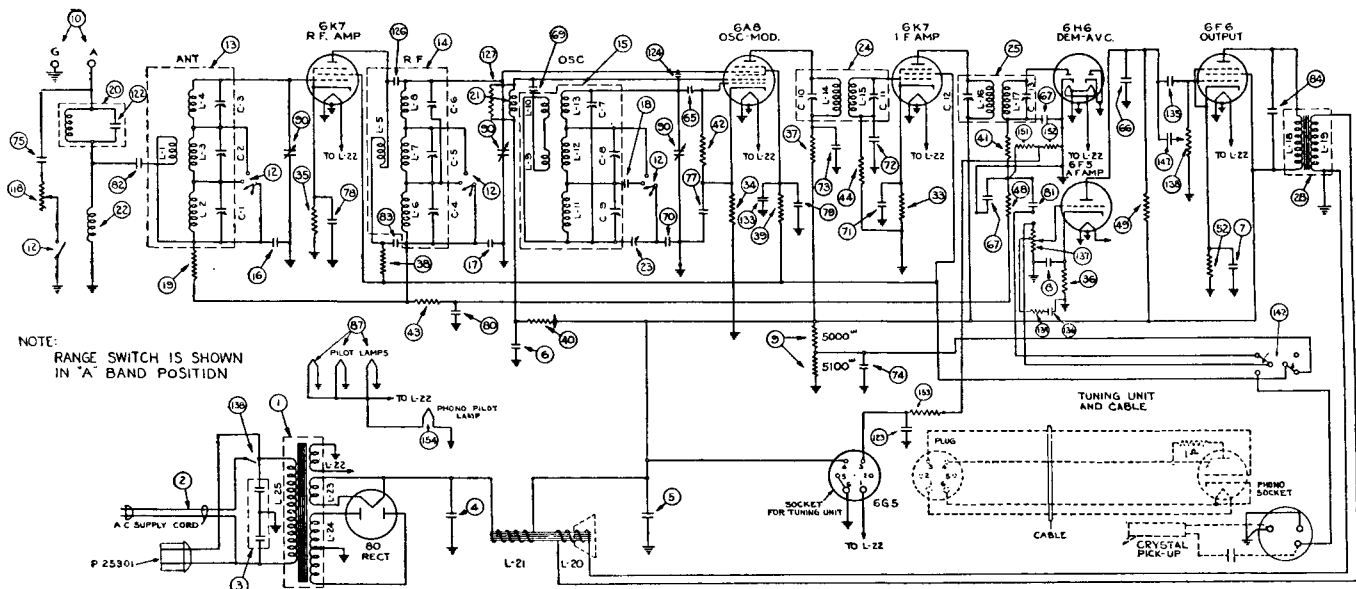


Fig. 3. Schematic Circuit of Receiver.

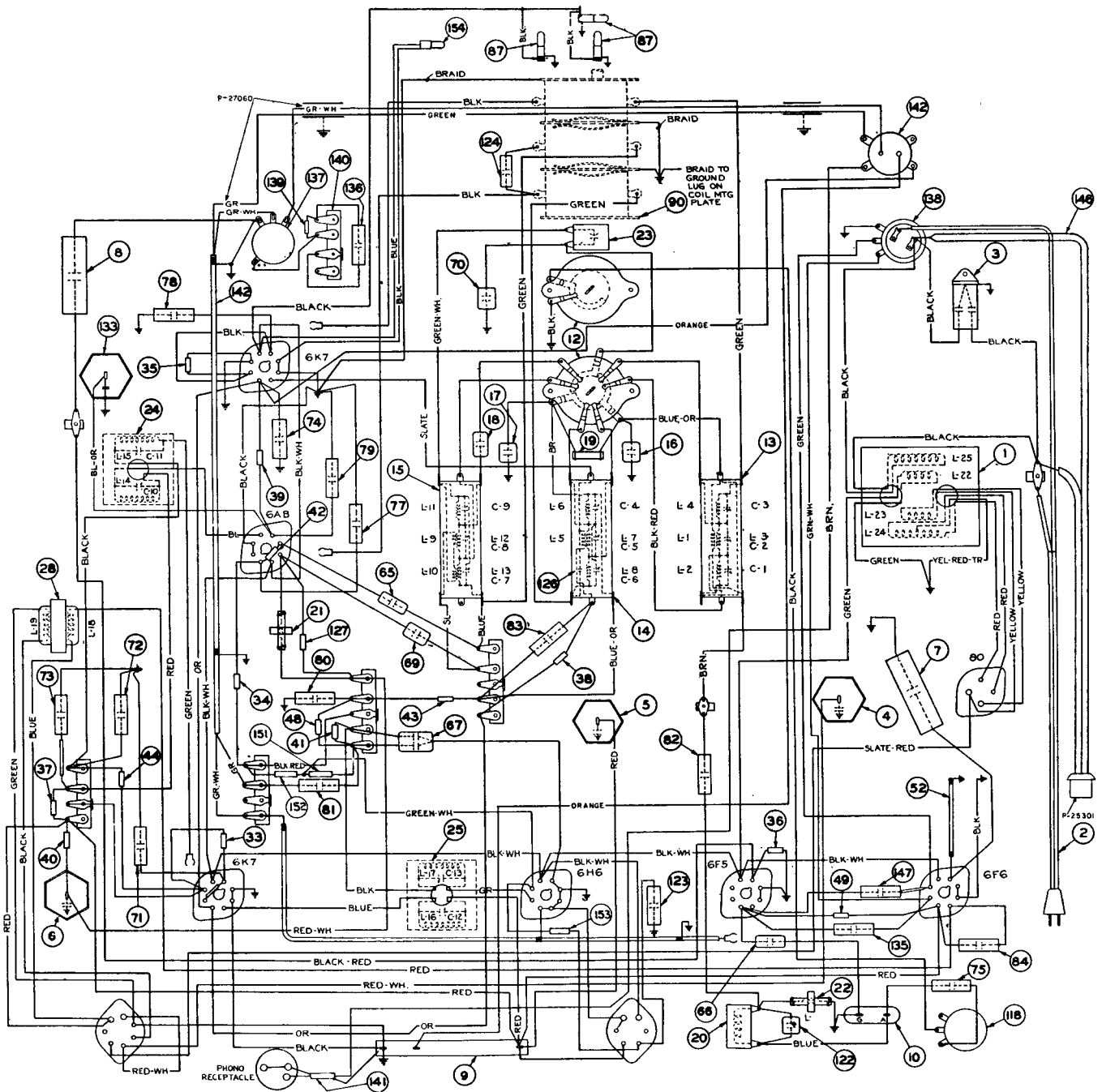


Fig. 4. Wiring Diagram of Chassis.

REPLACEMENT PARTS

Item Number	Piece Number	Part	Item Number	Piece Number	Part
1	26248	Power Transformer (50 to 60 Cycles)	75	25149	Capacitor Assembly, .01 Mf.
1	26249	Power Transformer (25 to 60 Cycles)	77	25150	Capacitor Assembly, .02 Mf.
2	24268	Cord, A. C. Supply	78	25150	Capacitor Assembly, .02 Mf.
3	21535	Capacitor Assembly (2-.01 Mf. Capacitors)	79	25150	Capacitor Assembly, .02 Mf.
4	26403	Capacitor, Electrolytic, 25 Mf.	80	25150	Capacitor Assembly, .02 Mf.
5	25458	Capacitor, Electrolytic, 16 Mf.	81	25150	Capacitor Assembly, .02 Mf.
6	26880	Capacitor, Electrolytic, 16 Mf.	82	25150	Capacitor Assembly, .02 Mf.
7	24207	Capacitor, Electrolytic, 10 Mf., 25 Volts	83	25481	Capacitor Assembly, .002 Mf.
8	24207	Capacitor, Electrolytic, 10 Mf., 25 Volts	84	25533	Capacitor Assembly, .006 Mf.
9	26405	Resistor, "B" Voltage Divider	87	26287	Pilot Lamp
12	26402	Range Switch	89	26285	Dial Assembly
13	25510	Coil Assembly, Antenna	90	26414	Gang Tuning Capacitor
14	25511	Coil Assembly, R. F.	118	26095	Potentiometer (Sensitivity Control)
15	25512	Coil Assembly, Oscillator	120	26499	Knob (For Sensitivity Control)
16	25488	Capacitor, .602 Mf.	122	25488	Capacitor, .002 Mf.
17	25527	Capacitor, .0027 Mf.	123	24402	Capacitor Assembly, .01 Mf.
18	25490	Capacitor, .0038 Mf.	124	26417	Capacitor, Gimmle
19	26383	Resistor, Type "E1", .1 Megohm	127	26350	Resistor, Type "E", 27,000 Ohms
20	25513	Coil Assembly, Wave Trap	133	27554	Electrolytic Capacitor, 16 Mfd., 100 Volts
21	25814	Coil Assembly, R. F. Choke	135	25487	Capacitor, .001 Mfd.
22	25814	Coil Assembly, R. F. Choke	136	27782	Capacitor, .03 Mfd.
23	26047	Capacitor, Osc. Series Aligner	137	27610	Potentiometer (Volume Control)
24	26406	1st I. F. Transformer	138	27311	Potentiometer, "Off-On" Switch and Tone Control
25	25506	2nd I. F. Transformer	139	26350	Resistor, Type "E", 27,000 Ohms
28	26411	Transformer, Audio Output	141	27988	Shielded Cord and Receptacle Assembly, Phono. Pick-up Circuit
29	22988	Socket, 4 Prong	142	26472	Switch, Phono.
30	22974	Socket, 6 Prong	143	27060	Shielded Cable Assembly
31	23517	Socket, 7 Prong	144	27820	Lamp Socket Assembly
32	25539	Socket, 8 Prong	146	25301	Power Supply Cord Assembly for Phono. Unit
33	26327	Resistor, Type "E", 330 Ohms	147	25149	Capacitor, .01 Mfd.
34	26826	Resistor, Type "E", 270 Ohms	151	26362	Resistor, Type "E", .27 Megohm
35	26381	Resistor, Type "E", 680 Ohms	152	26362	Resistor, Type "E", .27 Megohm
36	26340	Resistor, Type "E", 3,000 Ohms	153	26369	Resistor, Type "E", 1 Megohm
37	26341	Resistor, Type "E", 4,700 Ohms	154	28118	Lamp Socket Assembly for Phono. Unit
38	26345	Resistor, Type "E", 10,000 Ohms			Compartment
39	26345	Resistor, Type "E", 10,000 Ohms			
40	26350	Resistor, Type "E", 27,000 Ohms			
41	26353	Resistor, Type "E", 47,000 Ohms			
42	26353	Resistor, Type "E", 47,000 Ohms			
43	26357	Resistor, Type "E", .1 Megohm			
44	26357	Resistor, Type "E", .1 Megohm			
47	26365	Resistor, Type "E", .47 Megohm			
48	26369	Resistor, Type "E", 1 Megohm			
49	26362	Resistor, Type "E", .27 Megohm			
52	25500	Resistor, 400 Ohms, 1 Watt			
60	25998	Bracket Assembly			
65	25504	Capacitor, 160 Mmf.			
66	25504	Capacitor, 160 Mmf.			
67	26512	Capacitor Assembly, 2—160 Mmf.			
69	25487	Capacitor, .601 Mf.			
70	25489	Capacitor, .00125 Mf.			
71	24402	Capacitor Assembly, .1 Mf.			
72	24402	Capacitor Assembly, .1 Mf.			
73	25483	Capacitor Assembly, .1 Mf., 400 Volts			
74	25468	Capacitor Assembly, .1 Mf., 400 Volts			

Piece Number	Part
26643	Plug (For Loud Speaker Cable)
26491	Plug (For Tuning Unit Cable)
26369	Resistor, Type "E", 1 Megohm (Used at Socket of No. 6G5 Tube)
26147	Pilot Lamp Socket
26302	Knob (For Volume Control)
26385	Knob (For Range Switch)
26384	Knob (For Off-On-Tone Control)
26305	Knob (For Large Portion of Tuning Shaft)
26306	Knob (For Vernier Portion of Tuning Shaft)
26697	Knob (For Radio-Phono. Control)
26071	Felt Washer (Used on "Volume", "Radio-Phono.," "Range Switch" and "Off-On-Tone" Controls Shafts)
26073	Felt Washer (Used on "Station Selector" Control Shaft)

MISCELLANEOUS PARTS

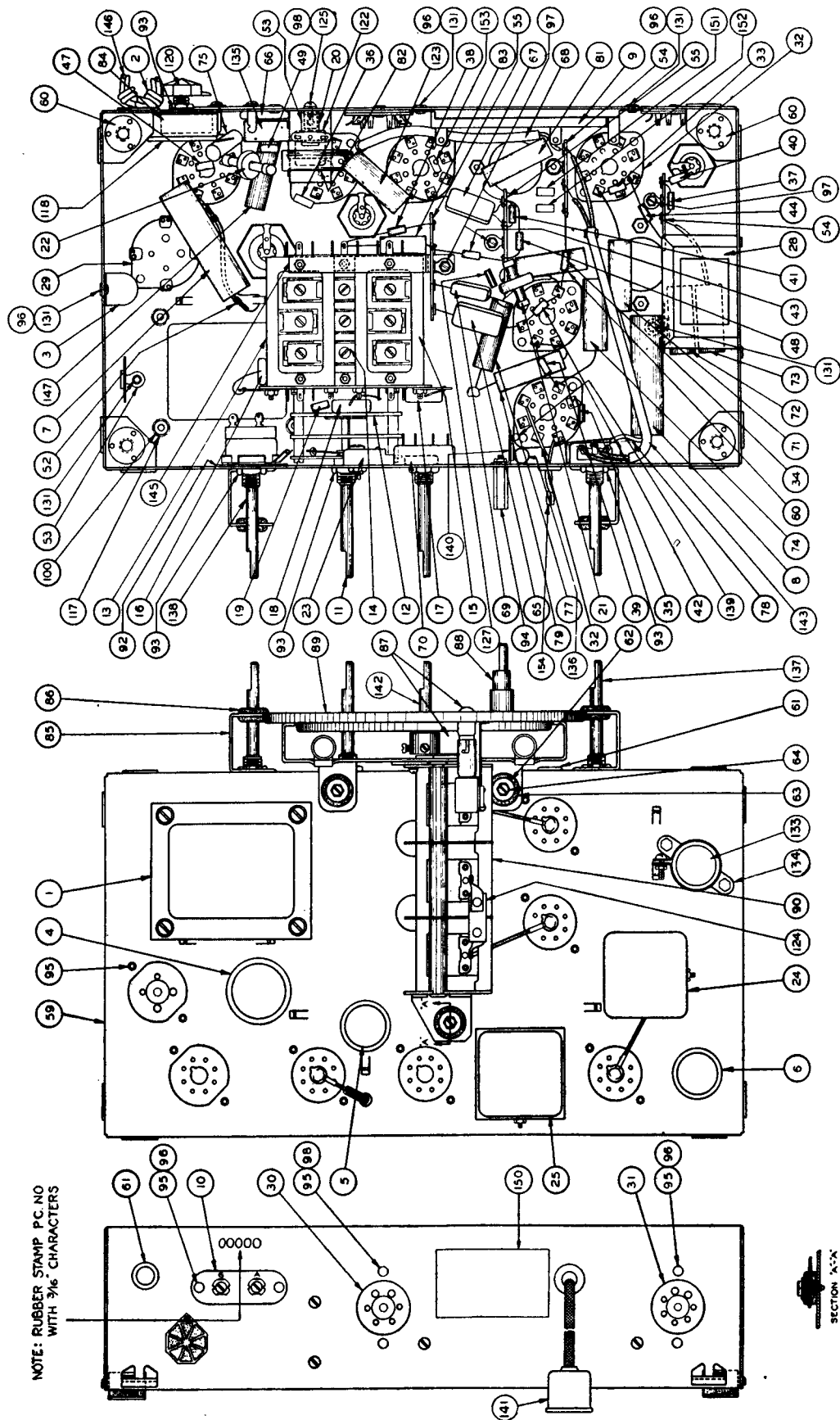


Fig. 5. Chassis Assembly.