

MODELS A-50 & A-55

Five-Tube, Broadcast and 49M Band, A-C Receivers

ELECTRICAL SPECIFICATIONS

Voltage and Frequency Ratings	{ 105-125 Volts, 50-60 Cycles 105-125 Volts, 25-30 Cycles
Power Consumption	80 Watts
Radiotrons and Functions	{ (1) Type-6A7 First Detector and Oscillator (2) Type-6K7 I.F. Amplifier (3) Type-6B7 Second Detector, Audio Amplifier, A.V.C. (4) Type-41 Power Output (5) Type-80 Rectifier
Tuning Frequency Ranges	540 to 1720 KC. and 2250 to 6850 KC.
Alignment Frequencies	460 KC.(I.F.), (W.T.) 1720 KC.(R.F.& Oscillator) & 600 KC.(Oscillator)
Undistorted Output	1.75 Watts
Maximum Output	3.5 Watts
Loudspeaker	Electrodynamic

PHYSICAL SPECIFICATIONS

	A-50	A-55
Height	16 1/8 Inches . . .	37 1/4 Inches
Width	13 1/4 Inches . . .	21 1/2 Inches
Depth	9 1/4 Inches . . .	11 Inches

The chassis employed in these two receivers are identical. Such distinctions as:- Short-wave reception--Wave Trap--Superheterodyne circuit--all metal tube--Diode detection--Automatic volume control--Resistance coupled audio--Tone control--Airplane selector dial--and Electro-dynamic speaker, characterize the design.

Particular mounting methods are used for supporting the chassis to the cabinet to ex-

clude undesirable microphonic reaction between the speaker, and the Radiotrons and the variable tuning capacitor plates.

Antenna-ground screw terminals are used to simplify and insure positive connection of the input leads. The terminals are also arranged to permit convenient mounting of a "Double-Doublé" antenna transformer available from the manufacturer of these receivers for use with the highly efficient "General Electric All-Wave" Antenna.

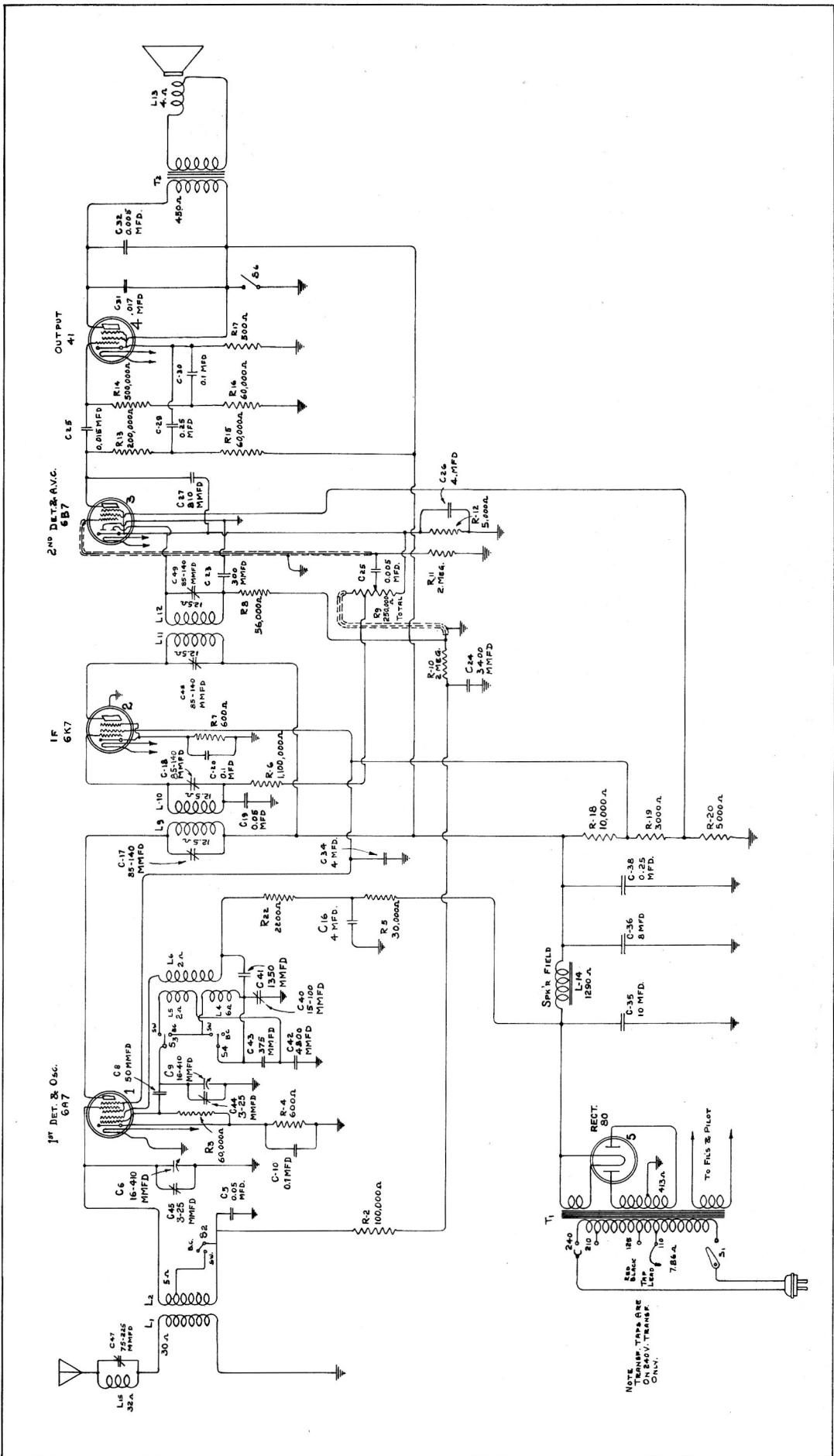
DESCRIPTION OF ELECTRICAL CIRCUIT

Five radiotrons are associated in combination with a Superheterodyne circuit. Two of the Radiotrons are applied so as to obtain plural functions, thereby gaining more than the adequate results normally expected of a five-tube receiver. In the first stage of the circuit a Type-6A7 pentagrid converter tube is employed as detector and local oscillator, the related external high-frequency circuits consisting of a tuned antenna transformer with a short-wave tap, a 460

cycle Wave Trap and a three-winding oscillator coil assembly with changeover switches ganged to the antenna transformer s-w switch. Within the first detector tube, mixing of the signal and oscillator voltages is accomplished through electron coupling, the i-f appearing in the plate circuit.

The i-f system operates at 460 kc. as the basic frequency.

Figure 1 – Schematic Circuit Diagram



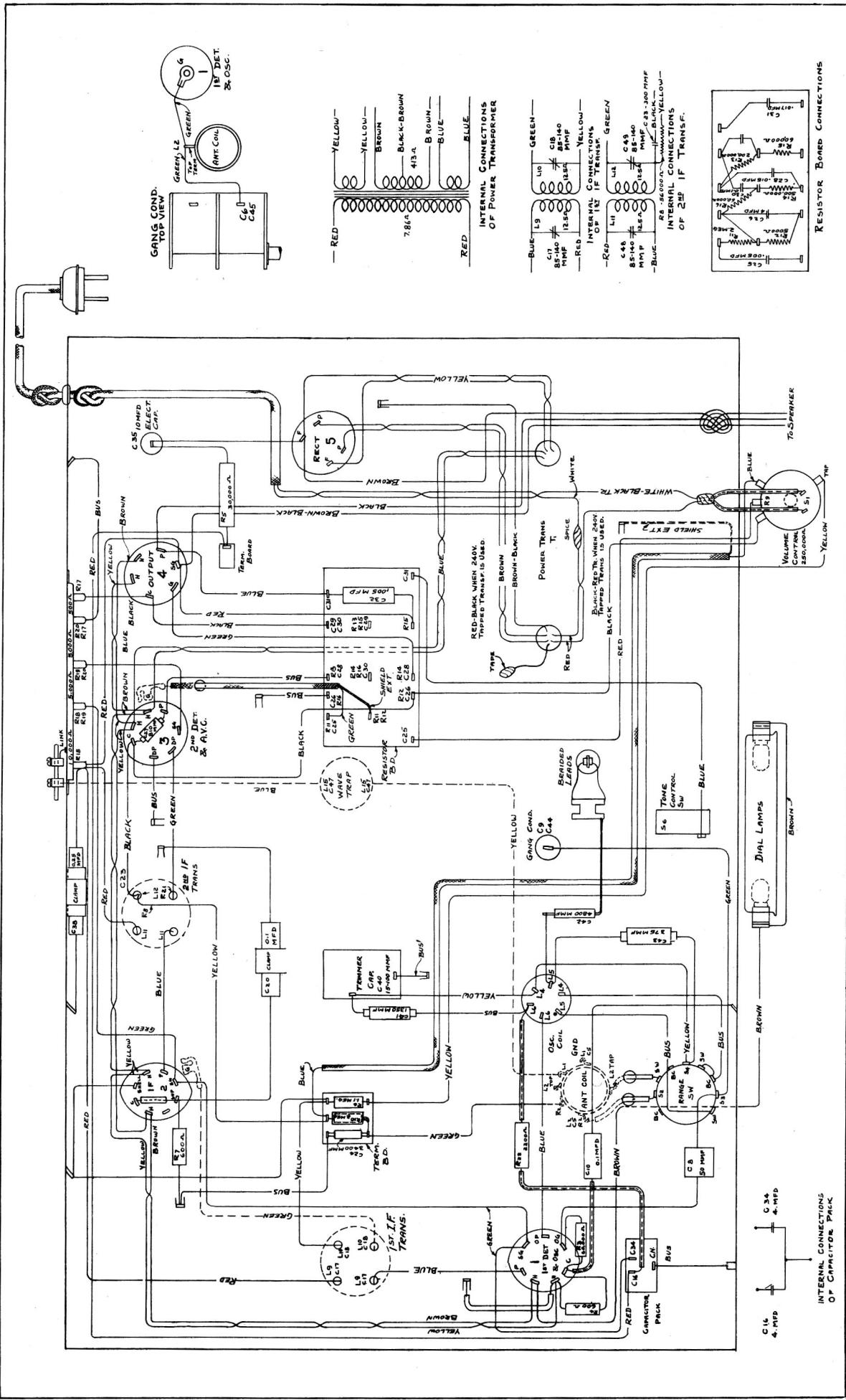


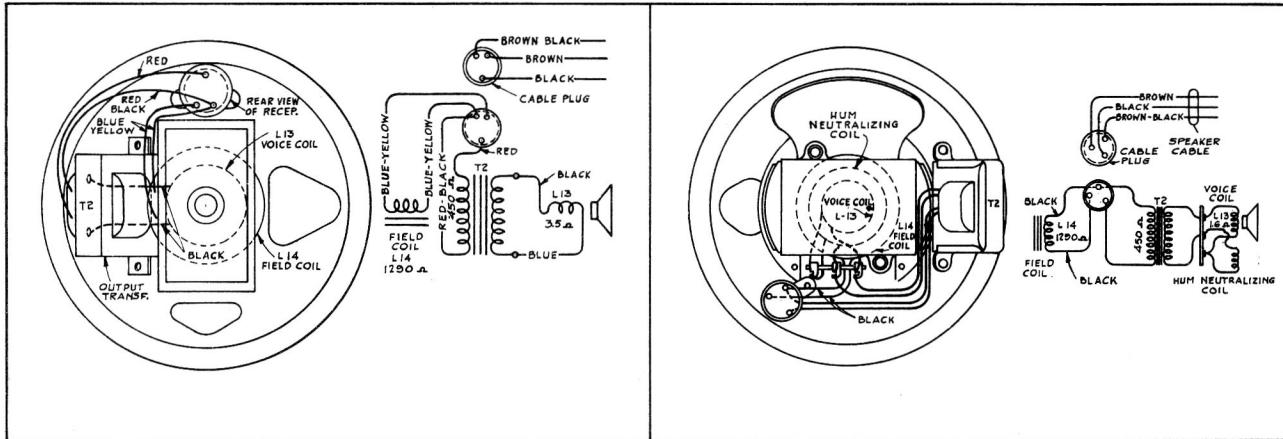
Figure 2 - Chassis Wiring Diagram

The combined second detector-audio amplifier-a.v.c. stage utilizes a Type-6B7, a duplex-diode pentode Radiotron. One diode connects directly to ground, the other is used for detection. Part of the detected signal is filtered to remove the audible fluctuations and is applied to the first and second stages as a means of providing automatic volume control. The audio component of the detected signal is amplified by the Type-6B7 and conveyed to a resistance-

capacitance coupling net work.

A power amplifier pentode, Type-41, is used in the output stage and is coupled by a transformer to the low impedance voice coil of the speaker.

Full-wave rectification is employed in the power-supply stage. The speaker field winding serves in the filter circuit as a reactor.



SERVICE DATA

(1) Line-up Capacitor Adjustments

This receiver must be in correct electrical alignment in order to obtain maximum efficiency and best quality of performance. The circuits should be re-aligned after each major service or repair operation, and whenever there are positive indications that the adjustments have deviated from normal by ordinary usage. These indications will be present together and will have the nature of: low sensitivity, poor tone quality and irregular double-peaked tuning.

A definite procedure must be applied in readjusting the line-up trimmers. The proper oscillator and indication equipment must also be used. Certain standard service instruments, which are useful for receiver adjustment, have been designed and made available by the manufacturer of this receiver. These are illustrated and described on page 2.

(2) I-F Tuning Adjustments

There are two i-f transformers associated in the intermediate amplifier system. These transformers are tuned by accessible trimmers. To obtain the correct alignment, proceed as follows:

- Short circuit the antenna and ground terminals and tune the receiver so that no signal is received. Set the volume control to its maximum position. Ground the receiver.

(b) Connect the output of the test oscillator between the first detector control grid and chassis ground. Attach an indicating meter, such as is illustrated on page 2, to the speaker circuit.

(c) Place the external oscillator into operation at 460 kc. Adjust the output so that a slight registration occurs on the output indicator. The output should be set at as low a value as will give a convenient indication during adjustment; this requirement is important in that the a.v.c. action is voided by such a method. Adjust the secondary and primary trimmers (C18, C17), and (C48, C49) of the i-f transformers for maximum receiver output.

R-F, Oscillator and Wave Trap Adjustments

Four trimmers are provided, two for adjustment at 1720 kc., one for oscillator line-up at 600 kc. and one for wave trap at 460 kc. No adjustments are required on the short-wave bands. Locations of the trimmers are shown on Figure 5. They should be adjusted in the following manner:

- Connect the output of the modulated Full Range Oscillator to the antenna and ground terminals of the receiver. Set condenser gang at approximately

600 kc. Tune oscillator to 460 kc. and adjust wave trap for (*minimum*) signal.

- (b) Check the position of the dialpointer. It should set exactly on the radial line, adjacent to the dial reading of 540 when the tuning capacitor plates are at full mesh. After correcting the dial pointer, place the receiver in operation and set the selector at 1720 kc. (600 trimmer should be set at approximately half way) advance the volume control to maximum and turn the range switch to its broadcast position.
- (c) Adjust the frequency of the external oscillator to 1720 kc. and regulate its output until a perceptible indication appears on the output indicator. This indication should be held at a minimum during the adjustments. The trimmers C44 and C45 should then be tuned to the point giving peak receiver output.
- (d) Retune the test oscillator, setting

its frequency to 540 kc. Turn the receiver selector control to maximum. Then adjust the low-frequency trimmer C40 until 540 signal is just audible. It is advisable to repeat the 1720 kc. adjustment of the oscillator trimmer C44 in order to correct for any change caused by the tuning of C40.

Radiotron Socket Voltages

The various normal operating voltages are given on Figure 5. As specified, they are referred to the chassis ground. Accuracy of measurements will be a function of the internal resistance of the voltmeter used. It is advisable to employ a meter having at least 1000 ohms per volt, and for each reading use the highest range which will give an acceptably accurate reading. General deviations from the values given, due to line voltage difference, should not be taken as indicating a defective condition. The erratic departure from normal of a single value or group of values should form the basis of circuit diagnosis.

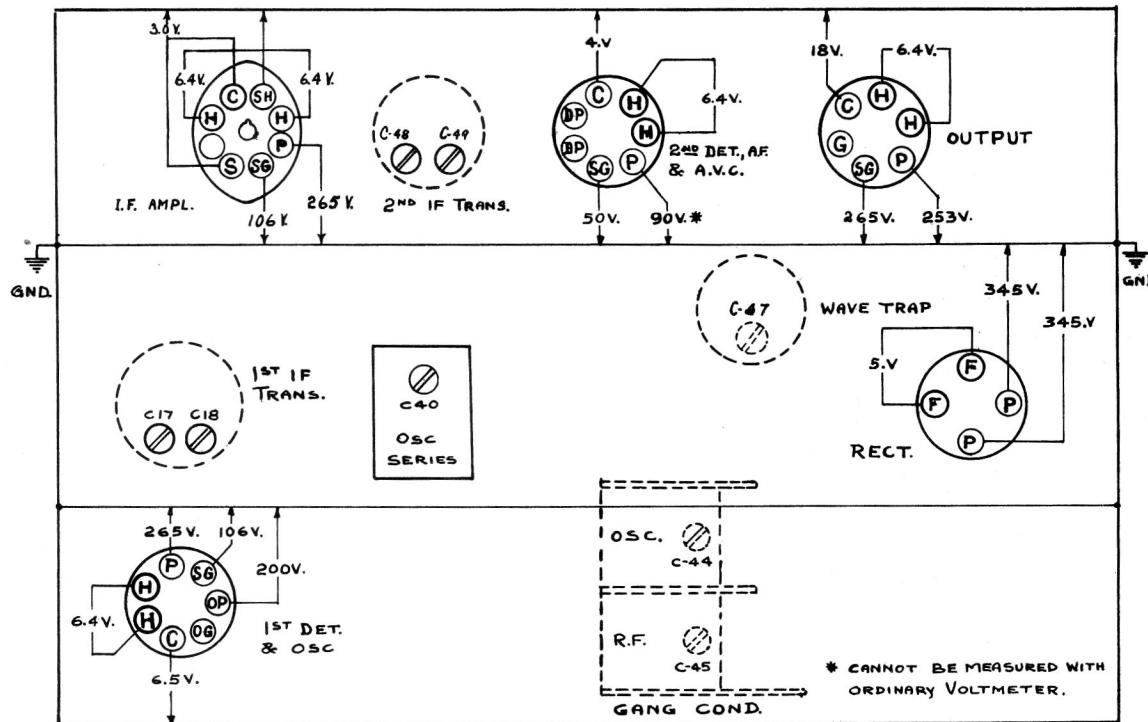


Figure 5—Trimmer Locations and Radiotron Socket Voltages
(Measured at 115 volts line supply--Maximum Volume Control--No Signal)

REPLACEMENT PARTS—MODELS A-50 & A-55

Key No.	Stock No.	Description		Key No.	Stock No.	Description	
RECEIVER ASSEMBLIES							
4379	Board-Terminal Board - engraved "Ant-Gnd"			3782	Shield - Second Detector radiotron shield.		
5043	Bracket - First I.F. Transformer Mounting bracket - package of 2.....			S-1415	Shield - First Detector and output radiotron shield.....		
4880	Bracket - Tone control switch mounting bracket - package of 2.....			3858	Socket - Dial lamp socket assembly.....		
4427	Bracket - Volume Control mounting bracket.			6300	Socket - 4 contact radiotron socket.....		
S-1404	Cap - Grid contact cap, Package of 2.			S-1151	Socket - 6 contact output radiotron socket		
C-40	S-1360 Capacitor - Adjustable capacitor.....			3572	Socket - 7 contact radiotron socket.....		
C-8	4442 Capacitor - 50 mmfd.....			S-1542	Socket - 6 contact socket for all-metal tube.....		
C-43	4913 Capacitor - 375 mmfd.....						
C-27	S-1547 Capacitor - 400 mmfd.....						
C-41	4914 Capacitor - 1,350 mmfd.....						
C-24	4881 Capacitor - 3,400 mmfd.....						
C-42	4912 Capacitor - 4,800 mmfd.....			S-2			
C-25	4793 Capacitor - 0.005 mfd.....			S-3	4904 Switch - Range switch.....		
C-32	4868 Capacitor - 0.005 mfd.....			S-4			
C-28	4792 Capacitor - 0.015 mfd.....			S-6	5052 Switch - Tone control switch.....		
C-31	4906 Capacitor - 0.017 mfd.....			L-9			
C-5				L-10			
C-19	4836 Capacitor - 0.05 mfd.....			C-17	4900 Transformer - First I.F. transformer.....		
C-10				C-18			
C-20	4791 Capacitor - 0.1 mfd.....			L-11			
C-30				L-12			
C-29				C-48	S-1543 Transformer - Second I.F. transformer.....		
C-38	3597 Capacitor - 0.25 mfd.....			C-49			
C-26	3796 Capacitor - 4.0 mfd.....			T-1	4898 Transformer - Power transformer, 105-125 Volts - 25-30 cycle.....		
C-36	4428 Capacitor - 8.0 mfd.....			T-1	4897 Transformer - Power transformer, 105-125 Volts - 50-60 cycle.....		
C-35	7790 Capacitor - 10.0 mfd.....						
C-16	S-1435 Capacitor pack - comprising two 4.0 mfd. Capacitors.....						
C-34							
L-1							
L-2	4903 Coil - Antenna Coil.....						
C-5							
L-4							
L-5	4902 Coil - Oscillator Coil.....						
L-6							
L-15							
C-47	S-1544 Wave Trap						
C-6	4896 Condenser - 2 gang variable tuning condenser.....						
C-9							
R-9	4790 Volume Control and Operating Switch.....						
S-1	5045 Lead - single conductor-shielded lead from volume control to resistor.....						
R-4	3218 Resistor - 600 ohms - Carbon type-1/4 Watt						
R-22	5185 Resistor - 2200 ohms - Carbon type-1/2 Watt						
R-12	4436 Resistor - 5000 ohms - Carbon type-1/4 Watt						
R-5	2240 Resistor - 30,000 ohms-Carbon type-1 Watt..						
R-3							
R-15	3602 Resistor - 60,000 ohms-Carbon type-1/4 Watt						
R-16							
R-2	3118 Resistor - 100,000 ohms-Carbon type-1/4Watt						
R-13	3116 Resistor - 200,000 ohms-Carbon type-1/4Watt						
R-7	6135 Resistor - 270 ohms - Carbon type 1/4 Watt.						
R-14	S-1067 Resistor - 500,000 ohms-Carbon type-1/4Watt						
R-6	4783 Resistor - 1,100,000 ohms - Carbon type - 1/4 Watt.....						
R-10							
R-11	6242 Resistor - 2 megohms - Carbon type - 1/4 Watt.....						
R-17							
R-18	4721 Resistor - Tapped resistor, one 10,000 ohms two 5000 ohms and one 500 ohm sections..						
R-19							
R-20							
	3584 Ring - Oscillator coil retaining ring - package of 2.....						
	5186 Shield - Second I.F. transformer shield....						
	5186 Shield - First I.F. transformer shield....						
	3623 Shield - Oscillator coil shield.....						
CONDENSER DRIVE ASSEMBLIES							
				S-1549	Dial - Station selector dial.....		
				5075	Bezel - Metal bezel and station selector dial glass.....		
				G-5080	Drive - Tuning condenser drive assembly complete.....		
				4256	Lamp - Station selector dial lamp - package of 2..		
				6672	Screen - Translucent screen for dial light - package of 3.....		
REPRODUCER ASSEMBLIES (Console Model)							
				L-14	S-1546 Coil - Field coil magnet and cone support.		
				L-13	Cone - Reproducer cone.....		
				T-2	9578 Reproducer - complete.....		
					4472 Transformer - output transformer.....		
					5118 Connector - 3 contact male connector plug for reproducer.....		
					5119 Connector - 3 contact female connector for reproducer cable.....		
REPRODUCER ASSEMBLIES (Table Model)							
				L-14	S-1545 Coil - Field coil magnet and cone support.		
				L-13	9588 Cone - Reproducer cone.....		
				T-2	9586 Reproducer - complete.....		
					4472 Transformer - Output transformer.....		
					5118 Connector - 3 contact male connector plug for reproducer		
					5119 Connector - 3 contact female connector for reproducer cable.....		
MISCELLANEOUS ASSEMBLIES							
				4449	Knob - Volume control knob, Tone control knob - package of 2 - Switch Knob Tuning knob.....		
				4917	Screw - Chassis mounting screw and washer assembly - package of 4(For table model)		
				5178	Screw - Chassis mounting screw and washer assembly - package of 4(for console model).....		