MODEL F-82

Eight-Tube, Three-Band, A-C Superheterodyne Receiver

Electrical Specifications

Frequency Ranges

"Broadcast" (A)	530-1,800 kc
"Medium Wave" (B)	1,800-6,300 kc
"Short Wave" (C)	6,300-22,000 kc

R-F Alignment Frequencies

"Broadcast" (A)	600 kc (osc.), 1,500 kc (osc.)
"Medium Wave" (B)	6,000 kc (osc.)
"Short Wave" (C)	20,000 kc (osc., det., ant.)

Intermediate Frequency ..... 460 kc

Radiotron Complement

(1) Type-6L7	First Detector
(2) Type-6J7	Oscillator
(3) Type-6K7	Intermediate Amplifier
(4) Type-6H6	Second Detector and A.V.C.
(5) Type-6F5	Audio Voltage Amplifier
(6) Type-6F6	Power Output
(7) Type-6G5	Tuning Tube
(8) Type-5W4	Full-Wave Rectifier

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

Power Supply Ratings

Rating A	105-125 volts, 50-60 cycles, 90 watts
Rating B	105-125 volts, 25-60 cycles, 90 watts

Power Output

Undistorted	2.5 watts
Maximum	4.5 watts

Loudspeaker

Type	12-inch Electrodynamic
Impedance (v.c.)	2.2 ohms at 400 cycles

Mechanical Specifications

Height	12 13/32 inches
Width	20 3/8 inches
Depth	9 3/8 inches
Weight (net)	26 pounds
Weight (shipping)	33 pounds
Chassis Base Dimensions	12 inches x 7 inches x 2 1/2 inches
Over-all Chassis Height	8 3/8 inches
Operating Controls	(1) Power Switch—Tone; (2) Tuning, Range Selector; (3) Volume
Tuning Drive Ratio	20 to 1

General Description

This receiver employs an eight-tube, three-band superheterodyne circuit, the arrangement of which is shown by the Schematic Circuit Diagram. Features of design include magnetite-core i-f transformers and low-frequency oscillator tracking; full automatic volume control; phonograph terminal board; "Tuning Eye" tuning tube; 8-inch, dust-proof electrodynamic loudspeaker; plunger-type, air-dielectric trimming capacitors; aural-compensated audio volume control; variable, high-frequency tone control; and a new index dial with short-wave stations listed by name.

Service Data

The various diagrams of this booklet contain such information as will be needed to isolate causes for defective operation if such develops. The ratings of the resistors, capacitors, coils, etc., are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles such as R1, L1, C1, etc., provide reference between the illustrations and Replacement Parts List. The coils, transformer windings, and reactors are rated in terms of d-c resistance to permit continuity checks.

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow 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. The dust cover should be cemented back in place with ambroid upon completion of adjustment.

Phonograph Attachment.—A terminal board is provided for connecting a phonograph into the audio amplifying circuit. Model R-93 Record Player should be connected as follows: Remove link between terminals 1 and 2 on terminal board. Connect green wire in Radio-Record switch cable to terminal 1, yellow 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.

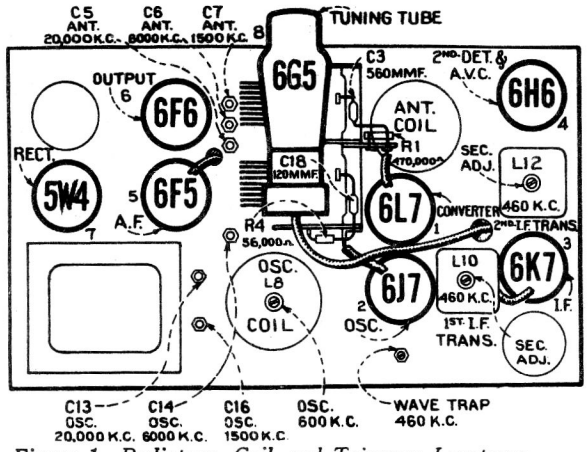


Figure 1—Radiotron, Coil, and Trimmer Locations

Alignment Procedure

Calibrate the tuning dial by adjusting main dial pointer to the low-frequency (end) calibration mark on dial with the gang tuning-condenser plates in full-mesh position; then the small (vernier) pointer to "O." These are friction adjustments.

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 2.

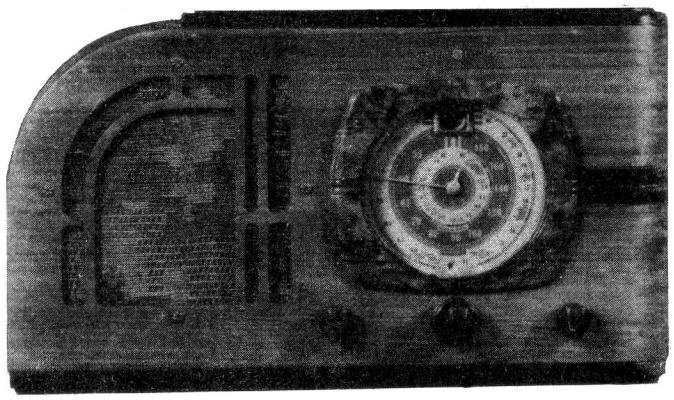
Cathode-ray alignment is highly preferable; the connections to the chassis as shown on figure 4. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

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 Alignment	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.	460 kc	"Broadcast"	No Signal 550-750 kc	2nd I-F Trans.	L11 and L12	Max. (peak)
2	6L7 Det. Grid Cap	.001 Mfd.	460 kc	"Broadcast"	No Signal 550-750 kc	1st I-F Trans.	L9 and L10	Max. (peak)
3	Ant. Term	300 Ohms	20,000 kc	"Short"	20,000 kc	"C" Osc.	C13	Max. (peak)*
4	Ant. Term	300 Ohms	20,000 kc	"Short"	20,000 kc	"C" Ant.	C5	Max. (peak)†
5	Ant. Term	300 Ohms	6,000 kc	"Medium"	6,000 kc	"B" Ant.	C6	Max. (peak)
6	Ant. Term	300 Ohms	6,000 kc	"Medium"	6,000 kc	"B" Osc.	C14	Max. (peak)*
7	Ant. Term	200 Mmfd.	460 kc	"Broadcast"	600 kc	Wave Trap	L1	Min. (signal)
8	Ant. Term	200 Mmfd.	600 kc	"Broadcast"	600 kc	"A" L-F Osc.	L8	Max. (peak)
9	Ant. Term	200 Mmfd.	1,500 kc	"Broadcast"	1,500 kc	"A" H-F Osc.	C16	Max. (peak)
10	Ant. Term	200 Mmfd.	1,500 kc	"Broadcast"	1,500 kc	Ant.	C7	Max. (peak)
11	Ant. Term	200 Mmfd.	600 kc	"Broadcast"	600 kc	"A" L-F Osc.	L8	Max. (peak)
12	Ant. Term	200 Mmfd.	1,500 kc	"Broadcast"	1,500 kc	"A" H-F Osc.	C16	Max. (peak)

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



Model F82

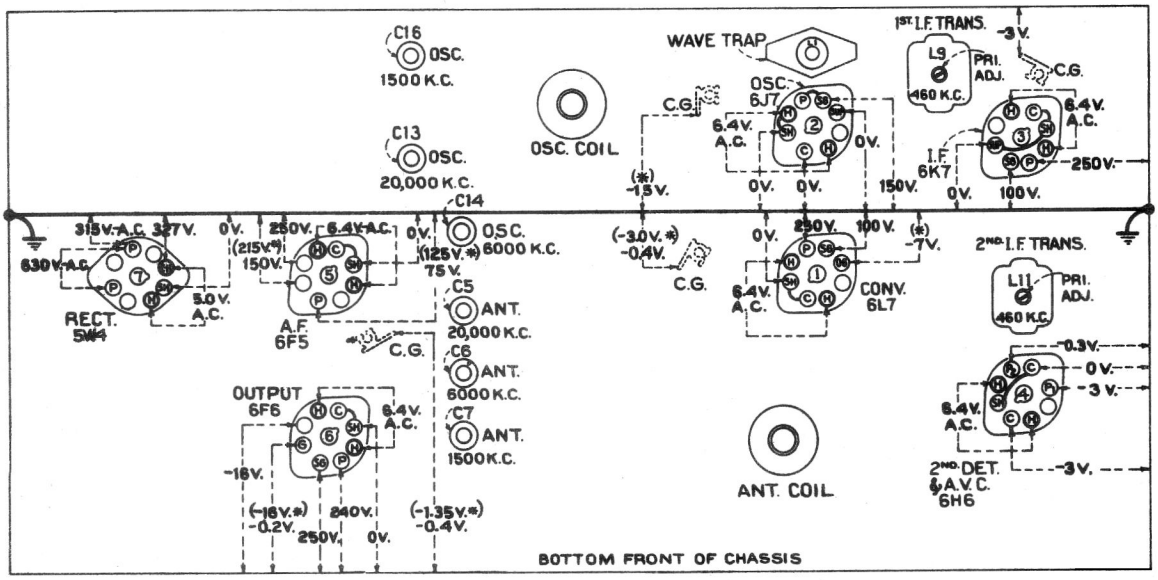


Figure 2—Radiotron Socket Voltages, Coil, and Trimmer Locations

Measured at 115 volts, 60-cycle supply—Tuned to approximately 1,000 kc—No signal being received—Volume control minimum

Radiotron Socket Voltages

Note: *Two voltage values are shown for some readings. The higher value shown in parenthesis with asterisk (*) indicates operating conditions without voltmeter loading. The lower value is the actual measured voltage and differs from the higher value because of the additional loading of the voltmeter through the high series circuit resistance.*

The voltage values indicated from the Radiotron socket contacts, grid caps, resistors, and terminals to receiver chassis ground on figure 2 will assist in locating cause for faulty operation. Each value as specified should hold within $\pm 20\%$ when the receiver is normally operative at its rated line voltage. Variations in excess of this limit will usually be indicative of trouble in the basic circuits. These voltages were measured with receiver tuned to approximately 1,000 kc, no signal being received and volume control set at maximum. To duplicate the conditions under which the voltages were measured requires a 1,000-ohm-per-volt d-c meter, having ranges of 10, 50, 250, 500, and 1,000 volts. Use the nearest range above the voltage to be measured. A-c voltages were measured with a corresponding a-c meter.

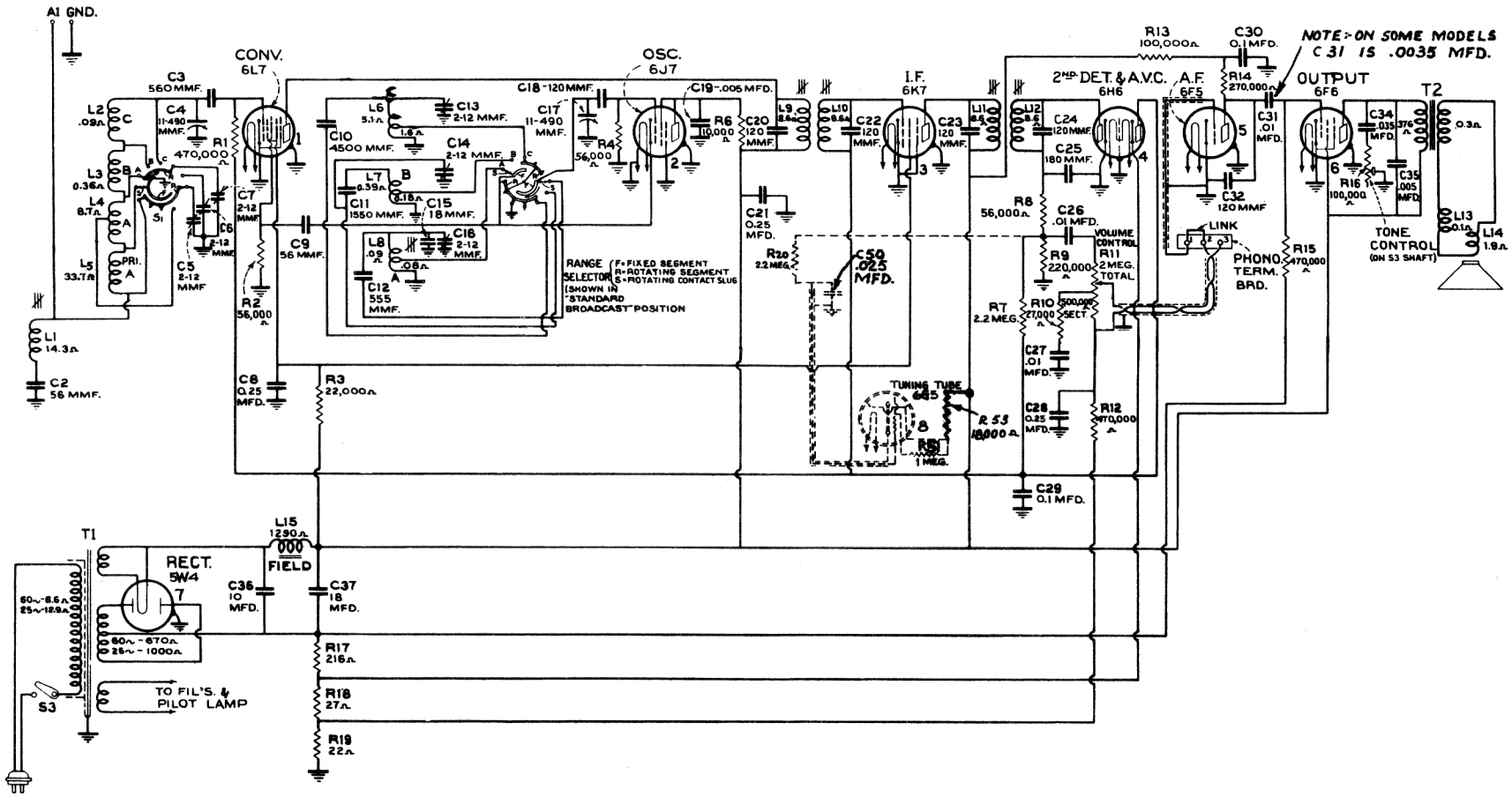


Figure 3—Schematic Circuit Diagram

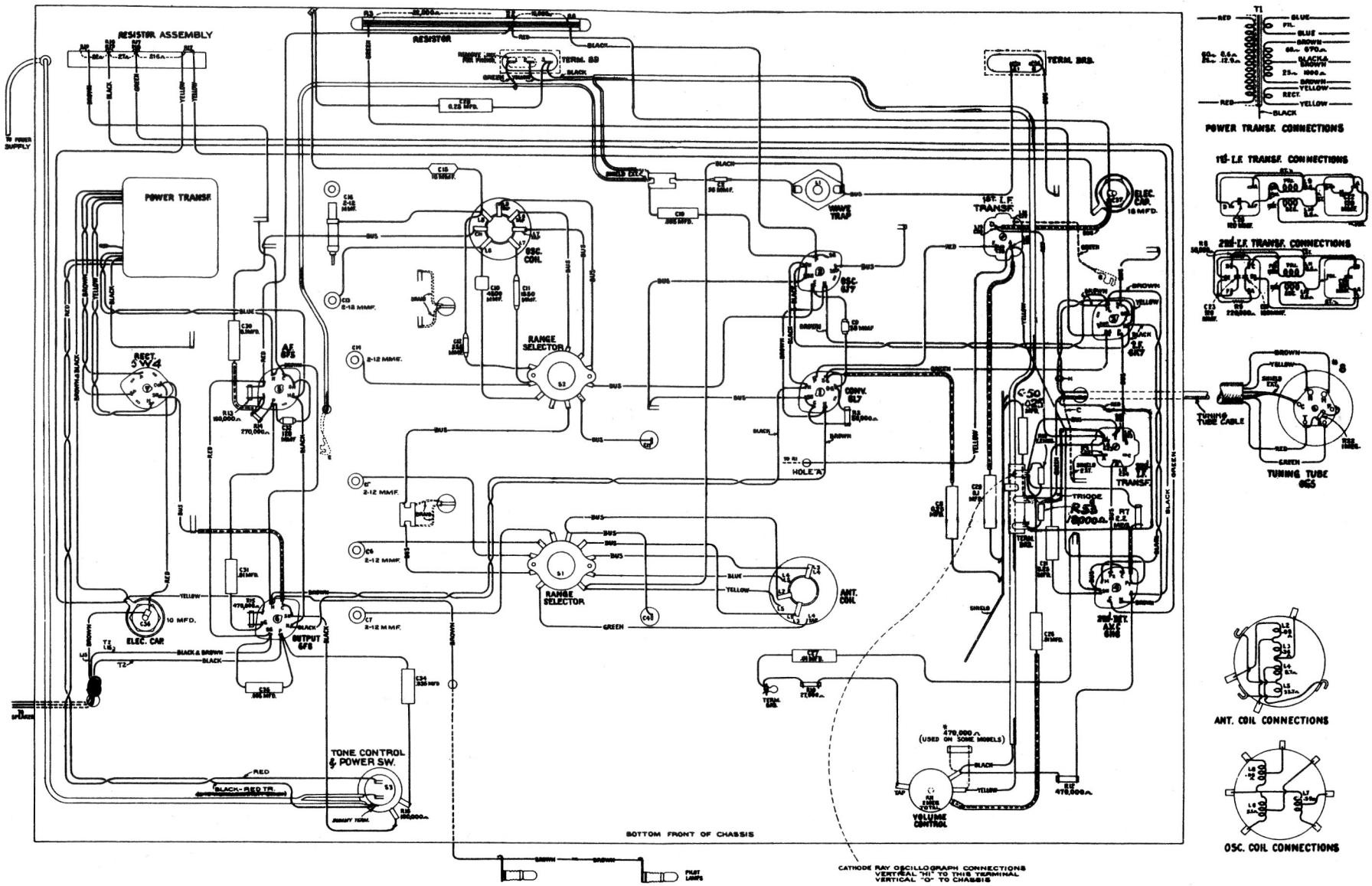


Figure 4—Chassis Wiring Diagram

REPLACEMENT PARTS—F-82

STOCK No.	DESCRIPTION
	RECEIVER ASSEMBLIES
12038	Band-Rubber band for tuning tube-Pkg.of 10
14388	Belt-Variable condenser drive belt-Pkg.of 2
12717	Board-Phonograph terminal board.....
S-1809	Board-Antenna and ground terminal board...
14338	Bushing-Variable condenser mounting bushing assembly.....
S-1810	Cable-Tuning tube cable and socket.....
11350	Cap-Grid contact cap-Pkg. of 5.....
12714	Capacitor-Adjustable capacitor (C5,C6,C7, C13,C14,C16).....
12722	Capacitor- 18 Mmfd. (C15).....
12723	Capacitor- 56 Mmfd. (C9).....
12726	Capacitor- 56 Mmfd. (C2).....
12724	Capacitor- 120 Mmfd. (C18,C32).....
12404	Capacitor- 120 Mmfd. (C20,C22,C23,C24)....
12406	Capacitor- 180 Mmfd. (C25).....
12727	Capacitor- 555 Mmfd. (C12).....
12537	Capacitor- 560 Mmfd. (C3).....
12729	Capacitor-1550 Mmfd. (C11).....
12728	Capacitor-4500 Mmfd. (C10).....
S-1811	Capacitor-.0035 Mfd. (C31).....
4868	Capacitor-.005 Mfd. (C19,C35).....
4883	Capacitor-.01 Mfd. (C22,C31).....
4858	Capacitor-.01 Mfd. (C27).....
4870	Capacitor-.025 Mfd. (C50).....
12670	Capacitor-.035 Mfd. (C34).....
4791	Capacitor-.01 Mfd. (C29).....
11414	Capacitor-0.1 Mfd. (C30).....
S-1592	Capacitor-0.25 Mfd. (C28).....
5170	Capacitor-0.25 Mfd. (C8,C21).....
11240	Capacitor-10 Mfd. (C36).....
5212	Capacitor-18 Mfd. (C37).....
12708	Coil-Antenna coil and shield(L2,L3,L4,L5).
12709	Coil-Oscillator coil and shield(L6,L7,L8).
S-1807	Condenser-2-gang variable tuning condenser (C4,C17).....
5119	Connector-3-contact female connector for speaker cable.....
12711	Core-Adjustable core and stud for Stock No.12709.....
12006	Core-Adjustable core and stud for Stock No.12652 and 12653.....
12664	Core-Adjustable core and stud for Stock No.12654.....
S-1799	Dial-Station selector dial scale complete with tuning tube escutcheon.....
S-1812	Drive-Variable condenser vernier drive pinion gear and shaft.....
14345	Drum-Variable condenser drive belt drum complete with set screws.....
S-1795	Escutcheon-Tuning tube escutcheon.....
S-1781	Escutcheon-Station selector escutcheon and crystal complete.....
11982	Fastener-Dial scale fastener-Pkg. of 25...
30085	Gear-Indicator drive gear and hub assembly and indicator pointer stem and gear assembly.....
14341	Idler-Station selector drive belt idler...
S-1784	Indicator-Station selector indicator pointer.....
S-1785	Indicator-Vernier indicator pointer.....
12699	Knobs-Station selector knob.....
11347	Knob-Volume control,tone control or range switch knob.....
5226	Lamp-Dial lamp-Pkg. of 2.....
14028	Nut-Jamb nut for adjustable trimmer capacitor-Stock No.12714-Pkg.of 10.....
14340	Pulley-Station selector drive belt pulley and knob shaft.....
3219	Resistor-18,000 ohms,carbon type,½ watt (R53).....
12738	Resistor-27,000 ohms,insulated,¼ watt(R10)
11282	Resistor-56,000 ohms,carbon type,1/10 watt (R8,R4).....
12286	Resistor-56,000 ohms,carbon type,¼ watt (R2).....
11281	Resistor-100,000 ohms,carbon type,1/10 watt (R13).....
11398	Resistor-220,000 ohms,carbon type,1/10 watt (R9).....
11453	Resistor-270,000 ohms,carbon type,1/10 watt (R14).....
11452	Resistor-470,000 ohms,carbon type,1/10 watt (R1,R15).....
12285	Resistor-470,000 ohms,insulated,¼ watt (R12).....
11382	Resistor-1 Meg.,carbon type,1/10 watt(R22)
11626	Resistor-2.2 Meg.,carbon type,¼ watt (R7,R20).....
12004	Resistor-Voltage divider comprising one 216 ohm,one 27 ohm,and one 22 ohm sections (R18,R17,R19).....
12715	Resistor-Wire wound comprising one 22,000 ohm and one 10,000 ohm sections (R3,R6).....
12651	Shield-Coil shield for Stock No.12708..
12710	Shield-Coil shield for Stock No.12709..
12008	Shield-I.F.transformer shield for Stock No.12652 and 12653.....
12581	Shield-Shield top for I.F.transformer Stock No.12653.....
12607	Shield-Shield top for I.F.transformer Stock No.12652.....
11195	Socket-5-contact 5W4 radiotron socket..
11196	Socket-8-contact 6J7,6K7,6L7,6F5,6F6 or 6H6 radiotron socket.....
14114	Socket-Dial lamp socket.....
14350	Screw-#8-32x3/16 square head set screw for drum stock No.14345,or Gear Stock #30085-Pkg.of 10.....
12007	Spring-Tension spring for core Stock Nos.12006,12664 and 12711-Pkg.of 10..
12907	Spring-Tension spring for indicator drive gear Stock No.30085-Pkg.of 10..
14342	Spring-Tension spring for idler Stock No.14341-Pkg.of 10.....
14270	Spring-Retaining spring for knob Stock No.11347-Pkg.of 5.....
4982	Spring-Retaining spring for knob Stock No.12699-Pkg. of 10.....
S-1800	Switch-Range switch (S1,S2).....
S-1801	Tone control and (operating switch) (R16,S3).....
12652	Transformer-First I.F.transformer complete (L9,L10,C20,C22).....
12653	Transformer-Second I.F.transformer complete (L11,L12,C23,C24,C25,R8,R9)....
S-1802	Power transformer 105-125 volts 60 cycle (T1).....
S-1803	Power transformer 105-125 volts 25 cycle (T1).....
12654	Trap-Wave trap complete (L1).....
14335	Volume control (R11).....
14379	Washer felt washer for indicator-Pkg.of 10.....
	REPRODUCER ASSEMBLIES (RL-63F-501)
13866	Cap-Cone center dust cap - Pkg. of 5.....
14354	Coil-Field coil (L15).....
11469	Hum neutralizing coil.....
12642	Cone-Reproducer cone and dust cap (L14).....
5118	Plug-3-contact male plug for reproducer.....
14360	Reproducer-Reproducer complete.....
14355	Transformer-Output transformer (T2)....
14357	Washer-Spring washer to hold field coil-Pkg.of 5.....