Instructions for

RCA Victor Models 142-B and 241-B

8-Tube Battery-Operated Superheterodyne Receivers

INSTALLATION

Location — After unpacking the instrument, select a location where connections can be made conveniently to the antenna and ground. If the instrument is of the *table mounting* type, it should preferably be located where the battery cable will reach a compartment suitable for concealing the batteries (the *console* model provides space within the cabinet for all batteries).

Chassis — The four chassis-retaining screws (accessible beneath the cabinet of the table model and beneath the interior support shelf of the console model) must be loosened *just* sufficiently to permit the chassis to float freely on the rubber cushions. *Correct performance can be assured only when this adjustment has been properly made.*

Antenna and Ground—A well-insulated outdoor antenna, having a length of from 50 to 100 feet, including the lead-in wire, is recommended. It should be erected as high as conveniently possible and, in the event that electrical transmission lines are present in the immediate vicinity, should be located at a sufficient distance from such lines to prevent excessive interference. Although an outdoor antenna will provide best reception, especially in localities remote from broadcasting stations, an indoor antenna of short or medium length often will render satisfactory results and in certain cases may be the most practical.

A *good* ground connection is necessary for best performance of this receiver. The ground wire should be as short as possible and preferably attached to a cold-water pipe. In locations where a piped water supply is not available, an excellent alternative ground can be procured by attachment to a metallic stake driven 4 to 6 feet into moist earth. The surface of the pipe or metal stake should be scraped clean and an approved ground clamp used to insure a tight and permanent connection.

Two flexible leads are provided at the rear of the receiver for connection to the antenna and ground. Connect the *black* lead to the antenna wire or lead-in and the *yellow* lead to the ground wire. Both joints should be soldered and wrapped with insulating tape.

Batteries—The following batteries are required:

"*A*" *Battery*—One Eveready Air Cell No. A-600, or 2-volt storage battery (individual cells of a 6-volt storage battery can be used if desired).

"*B*" *Battery*—Four 45-volt dry batteries. The cabinet of the *console* model is designed to hold large-size (heavy-duty) batteries, such as: Eveready No. 486 or 870; Burgess No. 21308 or 10308; or equivalent. Standard-size batteries, such as: Eveready No. 485 or 872; Burgess No. 22308 or 2308; or equivalent may be used if preferred, but will be less economical.

Make certain that the On-Off switch (small knob on left-hand side panel of table model—right-hand side panel of console model), is in the "off" position. Then connect the batteries *exactly* as shown by the battery connection diagram attached to the inside of the cabinet. Separate insulated wires are furnished for necessary connections between the "B" batteries. Make certain that the wire connected to the positive (+) terminal of the "A" battery is correct for the type of battery employed; the *solid-brown* wire must be used with the Air Cell and the *brown-and-black* wire with a storage battery. Insulate the end of the unused wire with tape.

Tubes—The instrument is equipped and tested at the factory with RCA Radiotrons and is shipped with these tubes installed. The set, therefore, is ready to operate when it is removed from the shipping container and external connections are made as heretofore described.

If, when first installed, the receiver either performs imperfectly or fails to operate, it is probable that one or more of the tubes, shields, or dome terminal leads have been jarred loose in shipment. With the On-Off switch in the "off" position, refer to the tube location diagram on the license label (located on the bottom of the table model—inside the cabinet of the console model) and ***make certain:***

(1) That all tubes are in the proper sockets and pressed down firmly.
(2) That all shields are rigidly in place over the tubes shown by double circles on the diagram.
(3) That the spring connectors of the short flexible (grid) leads, shown on the diagram, are securely attached to the dome terminals of the proper tubes.

Fuses—The circuits are protected by two 0.5 ampere fuses connected in the "B+" (red and yellow) leads from the On-Off switch. Should the receiver at any time fail to operate, separate in turn each coupling-type fuse holder and examine the fuse (being careful not to lose the tubular spacer, which is necessary to insulate the fuse from its metal holder). If either fuse is burned out, check all battery connections and have all tubes tested by your dealer before installing a new fuse. Since these are special fuses, replacements should be obtained from your dealer—*do not use any other type fuse as a substitute.*

OPERATION

The operating controls on the front panel are shown in Figure 1. Proceed as follows:

1. Set the On-Off switch to the "on" position and the Local-Distant switch ("toggle" or "snap" switch on left-hand side panel near front of table model—on right-hand side panel near top of console model) to the "distant" position (upward on table model—toward front on console model).

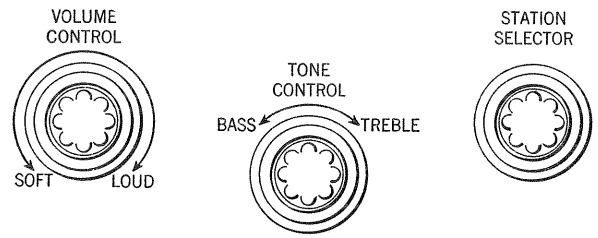

Figure 1

2. Advance the Volume Control to "Medium" and turn the Station Selector in either direction until a station is heard. (The dial scale is calibrated to facilitate location and identification of stations—add one cipher to scale markings to obtain frequency in kilocycles). If no station is heard, advance the Volume Control further in a clockwise direction and again rotate the selector.

3. After receiving a desirable signal, turn the Volume Control counter-clockwise until the volume is reduced to a low level. Now readjust the Station Selector accurately to the position mid-way between the points where the quality becomes poor or the signal disappears. *This setting provides the fine quality of reproduction possible with this instrument.*

NOTE—If the signal is extremely strong (as when received from a local broadcasting station), the effective range of the Volume Control may be found insufficient or the adjustment too critical. This condition usually can be remedied by changing the Local-Distant switch to the "local" position (downward on table model—toward rear on console model); in extreme cases it may be necessary to disconnect the antenna lead-in wire from the instrument.

4. Adjust the Volume Control to obtain the desired volume.

5. Set the Tone Control switch for the preferred tone quality. In the clockwise position, *full-range* reproduction will be obtained. To decrease treble response or to reduce noise interference (static), turn the knob to the counter-clockwise position.

6. When through operating, turn the On-Off switch to the "off" position.

IMPORTANT—To avoid damage to the tubes, always set the On-Off switch to the "off" position while changing tubes, batteries or fuses.

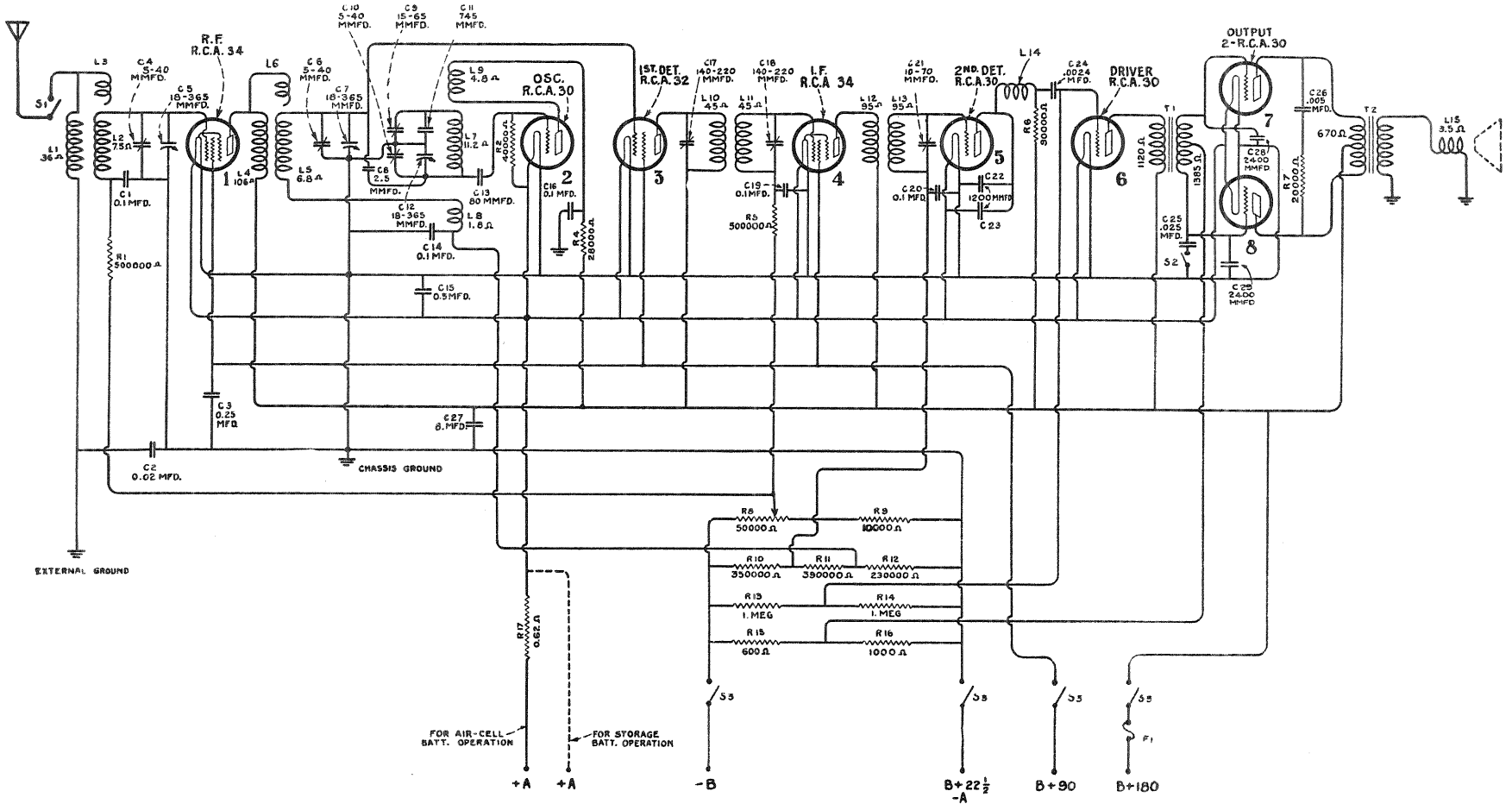

Figure A—Schematic Diagram—Note – Some models have additional fuse in 90-volt lead

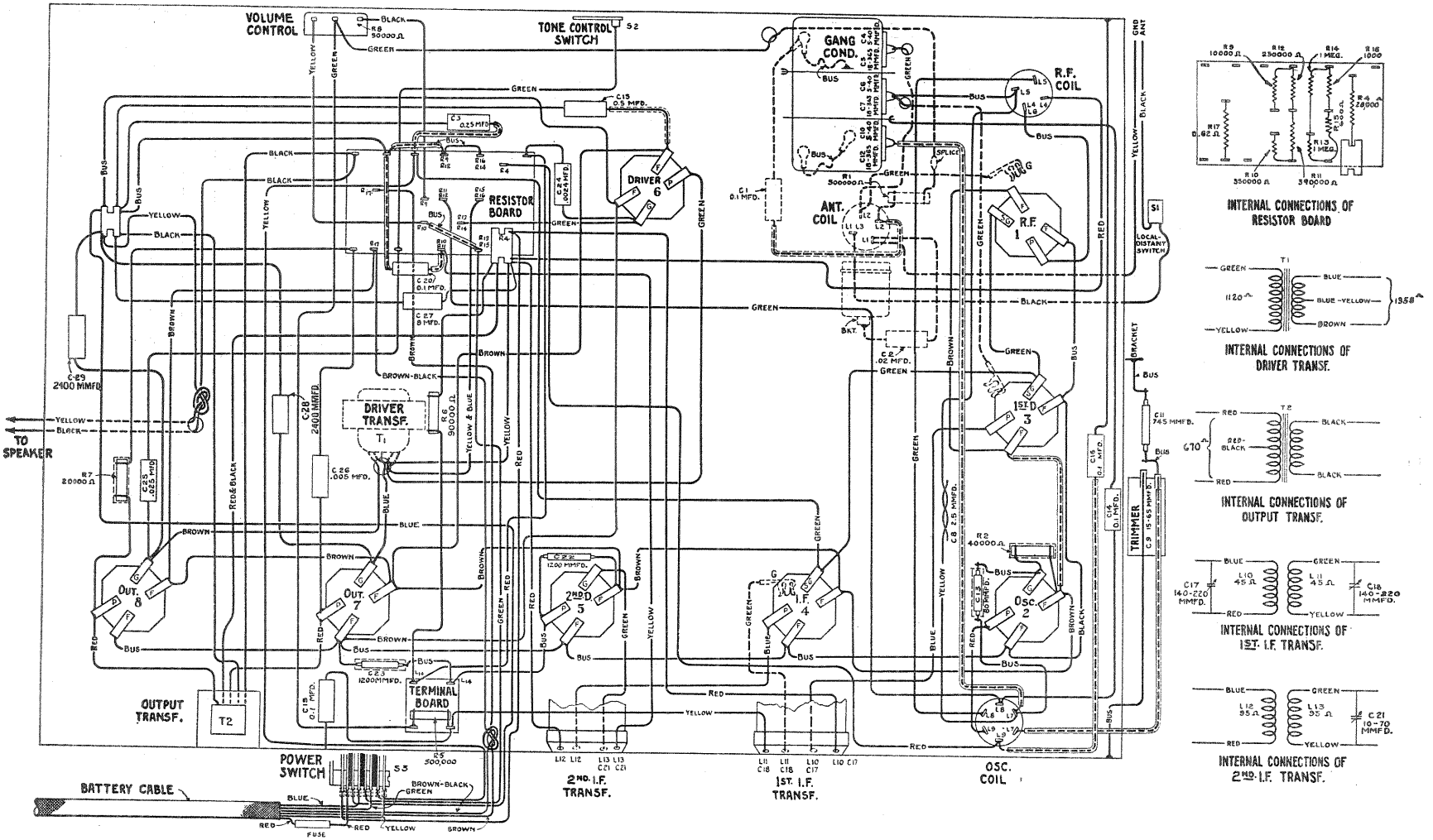

Figure B—Wiring Diagram. Note—Some models have additional fuse in 90-volt lead

SERVICE DATA

Total "A" Battery Current.....0.48 Ampere
Average "B" Battery Current.....15 M. A.
Type and Number of Radiotrons:
2 RCA-34, 1 RCA-32, 5 RCA-30—Total, 8
Tuning Range.....540–1500 K. C.
Maximum Undistorted Output.....1.0 Watt

This receiver is an eight tube battery operated Superheterodyne giving excellent performance. Features such as Class "B" output stage, two point tone control, permanent magnet dynamic loudspeaker, local-distant switch, adaptability for either Air Cell or storage battery operation and the inherent sensitivity, selectivity and tone quality of the Superheterodyne are incorporated in this instrument.

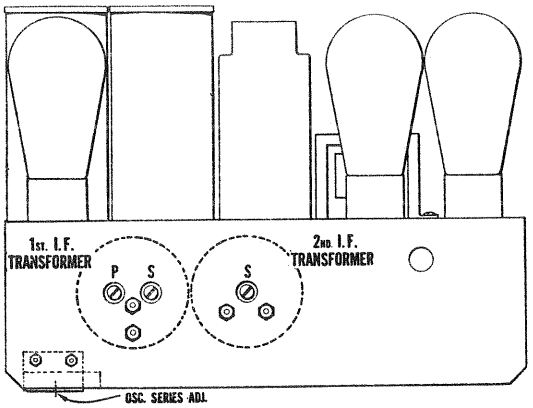

Figure C—Location of Line-up Capacitor

The circuit consists of an R. F. stage using Radiotron RCA-34, a Radiotron RCA-32 as a first detector, an oscillator using Radiotron RCA-30, an I. F. using Radiotron RCA-34, and a second detector utilizing Radiotron RCA-30. Two audio stages are used, the first using an RCA-30 and the second using two RCA-30 as a Class "B" output stage. The local distance switch is in the antenna circuit so that the antenna may be disconnected when receiving strong local stations. The volume control varies the control grid bias on the R. F. and I. F. Radiotrons. The tone control consists of a capacitor that is connected across one half of the secondary of the input audio transformer at the maximum low position. At the maximum high position this capacitor is disconnected.

Line-up Adjustments

I. F. Adjustments: Two transformers comprising three tuned circuits and one untuned circuit are used in the intermediate amplifier. These circuits are all tuned to 175 K. C. The screws are accessible from the rear of the chassis. Proceed as follows:

(a) Procure a modulated oscillator giving a signal at 175 K. C., a non-metallic screw driver, such as Stock No. 7065, and an output meter.

(b) Remove the oscillator tube and connect a ground to the chassis.

(c) Connect the oscillator output between the first detector control grid and ground. Connect the output meter across the voice coil of the loudspeaker and adjust the oscillator output so that a slight deflection is obtained in the output meter.

(d) Adjust the secondary of the second and then the primary and secondary of the first I. F. transformers until a maximum deflection is obtained. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I. F. adjustments.

R. F. and Oscillator Adjustments: The three gang capacitor screws and 600 K. C. oscillator trimmer are accessible from beneath the receiver chassis. Proceed as follows:

(a) Procure a modulated oscillator giving a signal at 1400 K. C. and 600 K. C., a non-metallic screw driver, such as Stock No. 7065, and an output meter.

(b) Connect the output of the oscillator to the antenna and ground lead of the receiver. Check the dial at the extreme maximum position of the tuning capacitor. The indicator should point toward the small arrow at the edge of the dial. Then set the dial at 1400 K. C., the oscillator at 1400 K. C. and connect the output meter across the cone coil. Adjust the oscillator output so that a slight deflection is obtained.

(c) With a non-metallic screw driver, adjust the three line-up capacitors accessible at the bottom of the receiver until maximum deflection is obtained in the output meter.

(d) Shift the oscillator frequency to 600 K. C. and tune the signal. Then adjust the 600 K. C. capacitor, until maximum deflection is obtained. The main tuning capacitor must be rocked back and forth while making this adjustment.

(e) Then realign at 1400 K. C. This completes the adjustments.

RADIOTRON SOCKET VOLTAGES

New "A" and "B" Batteries—No Signal Received—Volume Control at Maximum

Radiotron No.	Control Grid to Filament Volts	Screen Grid to Filament Volts	Plate to Filament Volts	Plate Current M. A.	Filament Volts
1. R. F.—RCA-34	*3.0	65	155	2.5	2.0
2. Oscillator—RCA-30	—	—	55	4.0	2.0
3. 1st Detector—RCA-32	*4.0	65	155	0.5	2.0
4. I. F.—RCA-34	*3.0	65	155	2.5	2.0
5. 2nd Detector—RCA-30	*10.0	—	*130	0.25	2.0
6. A. F.—RCA-30	*7.0	—	150	2.5	2 0
7. Power—RCA-30	*14.0	—	155	2.0 Total	2.0
8. Power—RCA-30	*14.0	—	155		2.0

*Voltages are obtained by means of high resistance dividers and it is not possible to accurately measure them with ordinary equipment.

REPLACEMENT PARTS

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers

Stock No.	DESCRIPTION	List Price
	RECEIVER ASSEMBLIES	
2012	Capacitor—1,200 mmfd. (C22, C23)	$0.55
2734	Capacitor—745 mmfd. (C11)—Package of 5	1.50
2737	Escutcheon—Local-Distant switch escutcheon—Package of 5	.40
2747	Cap—Contact cap—Package of 5	.50
2816	Resistor — 1,000 ohms — Carbon type — ½ watt (R16)—Package of 5	1.00
2966	Resistor — 28,000 ohms — Carbon type — 1 watt (R4)—Package of 5	1.10
3048	Resistor—500,000 ohms—Carbon type—½ watt (R1, R5)—Package of 5	1.00
3056	Shield—Radiotron shield—R. F. or oscillator—Package of 2	.40
3076	Resistor—1 megohm—Carbon type—½ watt (R13, R14)—Package of 5	1.00
3078	Resistor — 10,000 ohms — Carbon type—½ watt (R9)—Package of 5	1.00
3088	Knob—Operating switch knob—Package of 5	.50
3238	Screw—Set screw for switch knob—Package of 10	.25
3472	Capacitor—2,400 mmfd. (C24)	.32
3584	Ring—R. F., oscillator or antenna coil retaining ring—Package of 5	.40
3592	Knob—Station selector, tone or volume control knob—Package of 5	.80
3623	Shield—R. F., oscillator or antenna coil shield	.30
3639	Capacitor—0.02 mfd. (C2)	.25
3702	Capacitor—0.25 mfd. (C3)	.42
3711	Capacitor—80 mmfd. (C13)	.40
3748	Fuse—½ ampere fuse (F1)—Package of 5	.40
3765	Capacitor—0.025 mfd. (C25)	.34
3768	Screw—Volume indicator or station selector dial scale set screw—Package of 10	.35
3859	Socket—4-contact Radiotron socket—Audio driver and output Radiotrons	.30
3877	Capacitor—0.1 mfd. (C1, C14, C16, C19, C20)	.32
3881	Escutcheon—Station selector escutcheon	.42
3892	Resistor—600 ohms—Carbon type—½ watt (R15)—Package of 5	1.00
3899	Escutcheon—Volume control escutcheon	.42
3908	Switch—Local-Distant switch—For table models	.68
3909	Switch—Local-Distant switch—For console models	.68
3910	Screw assembly—Chassis mounting screw assembly—Comprising 4 screws, 4 washers and 4 spacers	.36
3911	Resistor—40,000 ohms—Carbon type—½ watt (R2)—Package of 5	1.00
3912	Resistor—90,000 ohms—Carbon type—½ watt (R6)—Package of 5	1.00
3913	Switch—Operating switch—4-pole, single throw	2.18
3932	Capacitor—2,400 mmfd. (C28, C29)	$0.30
3946	Resistor—230,000 ohms—Carbon type—½ watt (R12)—Package of 5	1.00
3947	Resistor—390,000 ohms—Carbon type—½ watt (R11)—Package of 5	1.00
3948	Resistor—350,000 ohms—Carbon type—½ watt (R10)—Package of 5	1.00
3950	Shield—Radiotron shield	.26
6176	Escutcheon—Operating switch escutcheon—Package of 5	.50
6300	Socket—4-contact Radiotron socket	.35
6303	Resistor—20,000 ohms—Carbon type—½ watt (R7)—Package of 5	1.00
6489	Coil—Antenna coil (L1, L2, L3)	.86
6512	Capacitor—0.005 mfd. (C26)	.28
6516	Connector—Fuse connector	.16
6548	Capacitor—8.0 mfd. (C27)	.95
6604	Capacitor—0.5 mfd. (C15)	.50
6709	Transformer—Output transformer (T2)	2.18
6710	Transformer—Audio driver transformer (T1)	2.22
6711	Coil—Choke coil (L14)	.66
6712	Transformer—First intermediate frequency transformer (L10, L11, C17, C18)	1.70
6713	Transformer—Second intermediate frequency transformer (L12, L13, C21)	1.92
6714	Volume control (R8)	1.20
6715	Dial—Volume indicator dial assembly	.44
6716	Switch—Tone control switch	.38
6717	Condenser—3-gang variable tuning condenser (C4, C5, C6, C7, C10, C12)	3.50
6718	Scale—Station selector dial scale assembly	.46
6719	Coil—R. F. coil (L4, L5, L6)	.90
6720	Coil—Oscillator coil (L7, L8, L9)	.78
6721	Cable—Main cable—For table models	1.18
6737	Resistor—0.62 ohms—Wire wound (R17)	.56
7062	Capacitor—Adjustable capacitor—15 to 70 mmfd. (C9)	.50
7065	Screw-driver—For R. F. and I. F. adjustments	.80
9050	Oscillator—Test oscillator—15 to 20,000 K. C.	33.50
	REPRODUCER ASSEMBLIES	
3949	Magnet	1.40
9428	Cone—Reproducer cone—Package of 5	5.00
9453	Reproducer complete	5.58
9454	Housing—Cone housing and core assembly	4.35

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