

# RCA VICTOR MODEL T 5-2

## Five-Tube, Two-Band, A-C, Superheterodyne Receiver

### SERVICE NOTES

#### ELECTRICAL SPECIFICATIONS

Voltage and Frequency Ratings.....	$\left\{ \begin{array}{l} 105-125 \text{ Volts, } 50-60 \text{ Cycles} \\ 105-125 \text{ Volts, } 25-60 \text{ Cycles} \\ 100-130/140-160/195-250 \text{ Volts, } 50-60 \text{ Cycles} \end{array} \right.$
Power Consumption.....	80 Watts
Radiotrons and Functions.....	$\left\{ \begin{array}{l} (1) \text{ RCA-6A7, First Detector and Oscillator} \\ (2) \text{ RCA-6D6, I.F. Amplifier} \\ (3) \text{ RCA-6B7, Second Detector—Audio Amplifier—A.V.C.} \\ (4) \text{ RCA-41, Power Output} \\ (5) \text{ RCA-80, Rectifier} \end{array} \right.$
Tuning Frequency Ranges.....	540 kc. to 1720 kc. and 1600 kc. to 3500 kc.
Alignment Frequencies.....	460 kc. (I.F.), 1720 kc. (R.F. and Oscillator) 600 kc. (Oscillator)
Undistorted Output.....	1.75 Watts
Maximum Output.....	3.50 Watts
Loudspeaker.....	6-Inch, Electro-Dynamic

#### PHYSICAL SPECIFICATIONS

Height.....	15 Inches
Width.....	13 <sup>5</sup> / <sub>8</sub> Inches
Depth.....	8 <sup>3</sup> / <sub>8</sub> Inches

This model contains a five-tube chassis, mounted in a table-type cabinet. The superheterodyne type of circuit is used, with such features of design as: Automatic volume control, diode detection, two-point tone control, illuminated full-vision dial scale, resistance-coupled audio system, electrodynamic loudspeaker, six to one tuning ratio, antenna wave trap and other important points of improvement.

Service convenience has been an especial requirement in the layout and construction of this receiver. A plug-connector attachment is used in the chassis to speaker cable which will allow ready removal of either unit without disturbing the other. Trimmer adjustments are located at accessible points. Their number is reduced to the least that is consistent with efficient operation.

#### ELECTRICAL CIRCUIT

Five Radiotrons are associated in combination with a superheterodyne circuit. Two of the Radiotrons are applied so as to obtain plural functions. In the first stage of the circuit, an RCA-6A7 pentagrid converter tube is employed as an r-f amplifier and local oscillator, the related external high-frequency circuits consisting of a tuned antenna transformer with a short-wave tap. The oscillator second harmonic is used for the short-wave position. Within the first detector tube, mixing of signal and oscillator voltages is accomplished through electron coupling, the i-f appearing in the plate circuit.

The combined second detector—audio amplifier—a.v.c. stage, utilizes an RCA-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 RCA-6B7 and conveyed to a resistance-capacitance coupling network.

A power-amplifier pentode, RCA-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.

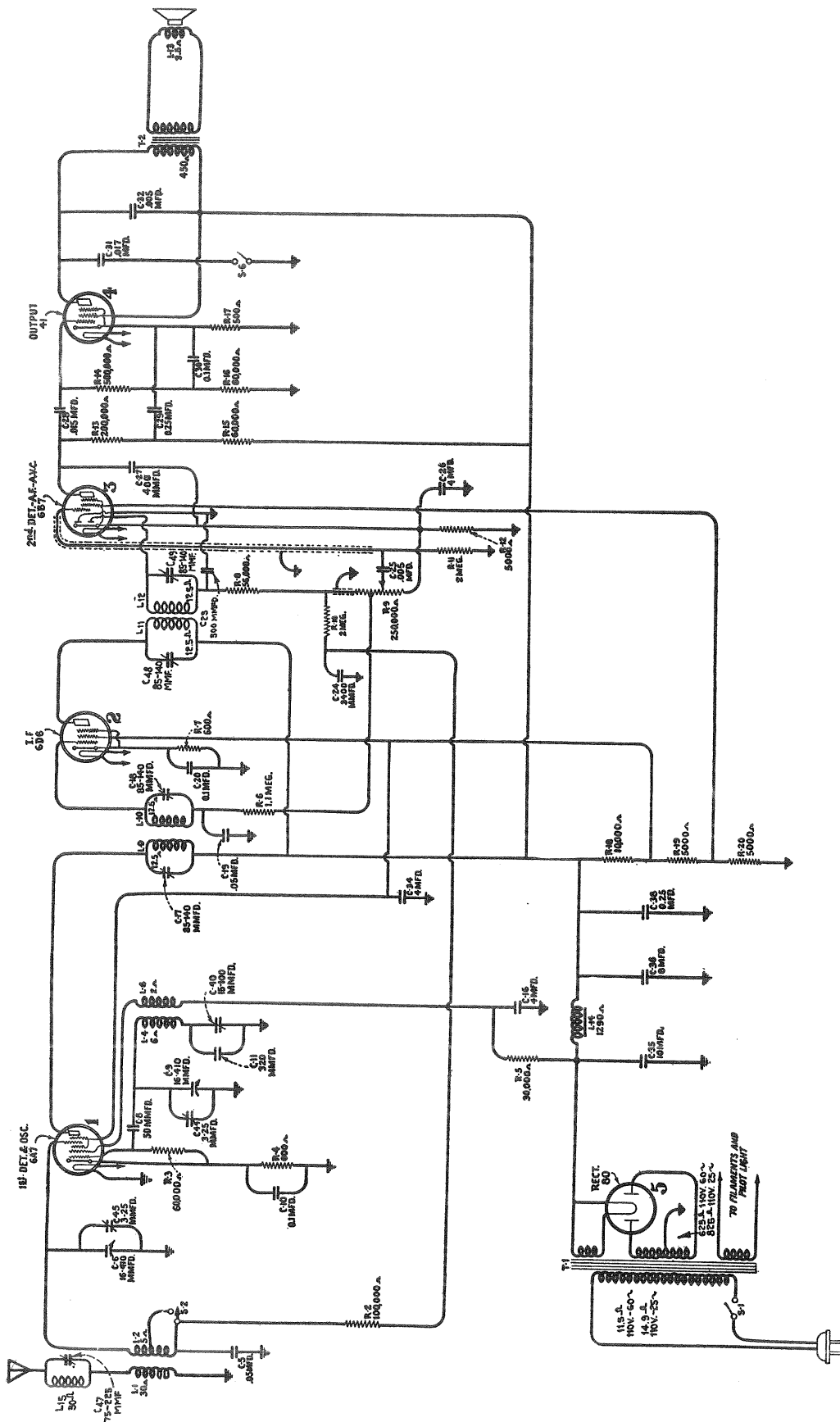
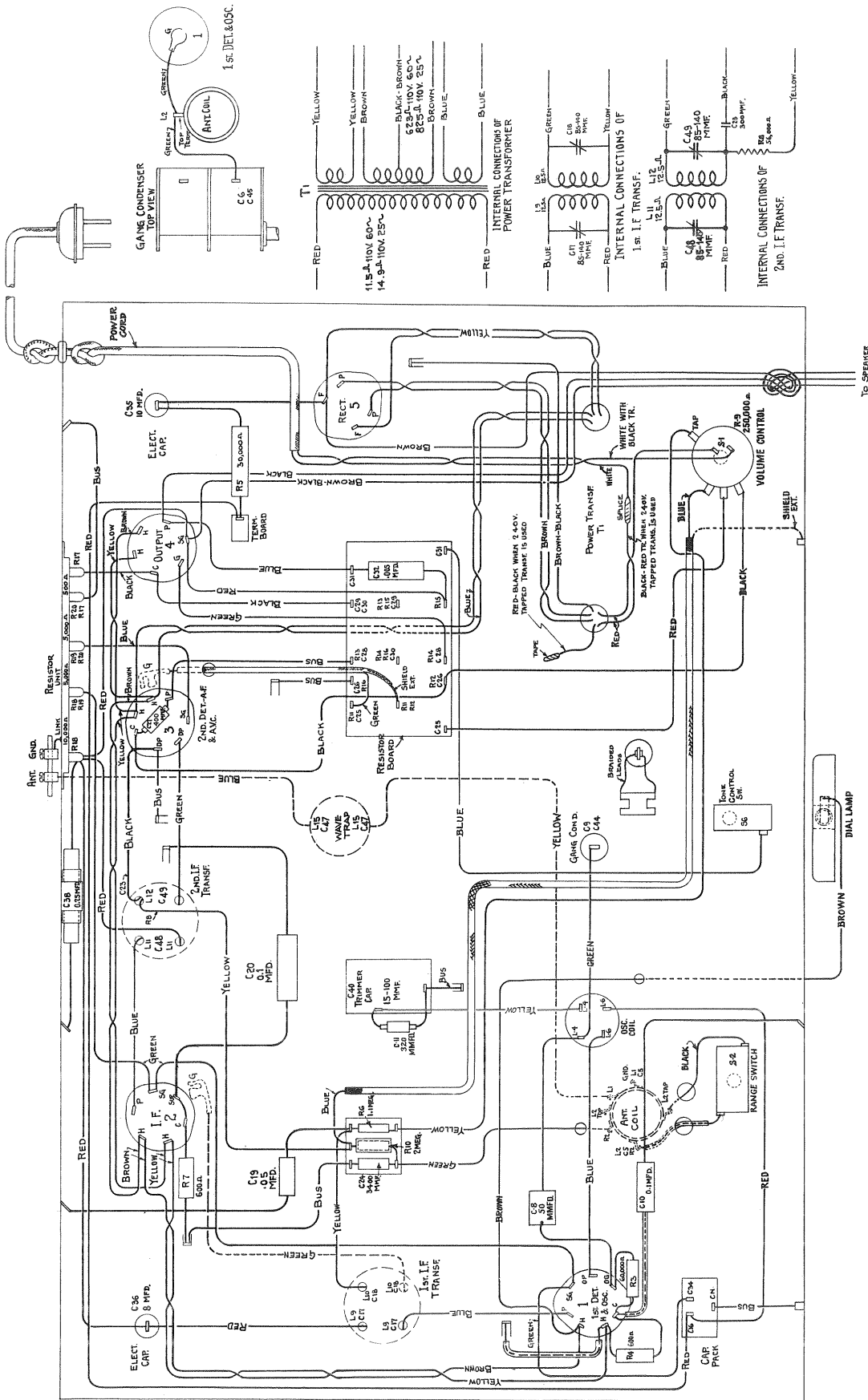
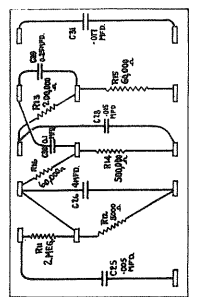


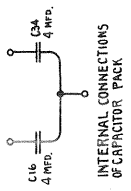
Figure 1—Schematic Circuit Diagram



SN-411



RESISTOR BOARD CONNECTIONS



INTERNAL CONNECTIONS OF CAPACITOR PACK

Figure 2—Chassis Wiring Diagram

# SERVICE DATA

## ALIGNMENT PROCEDURE

This receiver must be in correct electrical alignment in order to obtain maximum efficiency and best quality of performance. The circuits should be realigned 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. A number of standard service instruments, which are useful for receiver adjustments, have been designed and made available by the manufacturer of this receiver. These are illustrated and described on a separate page.

### I-F Tuning Adjustments

There are two i-f transformers associated in the intermediate amplifier system. They are both 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.
- Connect the output of the test oscillator between the first detector control grid and chassis ground. Attach an indicating meter, such as is illustrated, to the speaker circuit.
- 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 trimmers, C-49, C-48, C-18 and C-17 in order, for maximum receiver output.

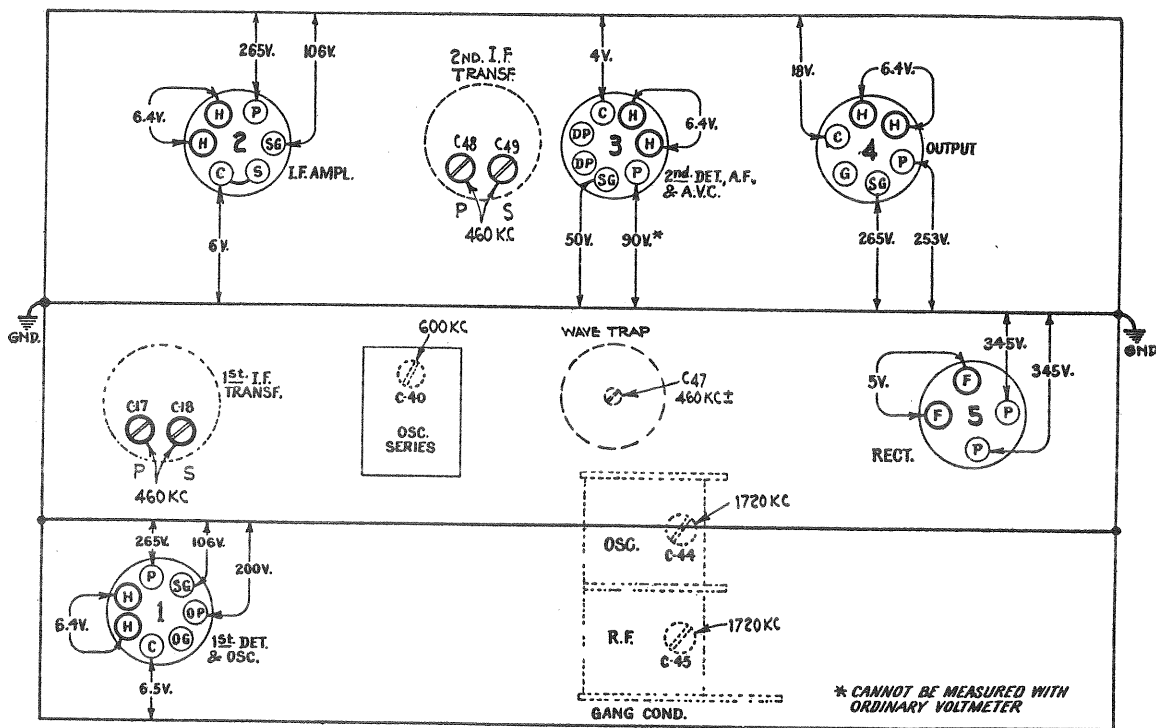


Figure 3—Trimmer Locations and Radiotron Socket Voltages (Measured at 115 volts A. C. Supply—Maximum Volume Control—No Signal)

### R-F and Oscillator Adjustments

Three trimmers are provided, two for adjustment at 1720 kc. and one for oscillator line-up at 600 kc. No adjustments are required on the medium wave band. Locations of the trimmers are shown on Figure 3. They should be adjusted in the following manner:

- (a) Connect the output of the modulated Full Range Oscillator to the antenna and ground terminals of the receiver. Check the position of the dial pointer. 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., advance the volume control to maximum and turn the range switch to its broadcast position.
- (b) 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.
- (c) Re-tune the test oscillator, setting its frequency to 600 kc. Turn the receiver selector control to the point where the incoming oscillator

adjust the low-frequency trimmer, C40, simultaneously rocking the tuning capacitor slowly through the signal until maximum receiver output results from these combined operations. This adjustment must be made irrespective of dial calibration. 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.

### Wave Trap Adjustment

With receiver in operation using its normal antenna, tune the station selector to the point at which the intermediate-wave interference is most intense. Then adjust the wave-trap trimmer to the point which cause maximum suppression of the interference.

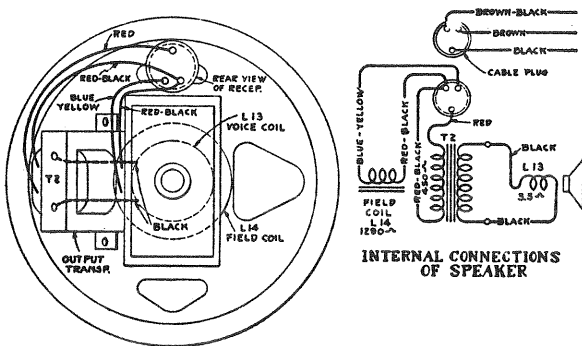


Figure 4—Loudspeaker Wiring

signal is received best. This point will not always be exactly at 600 on the dial. Then

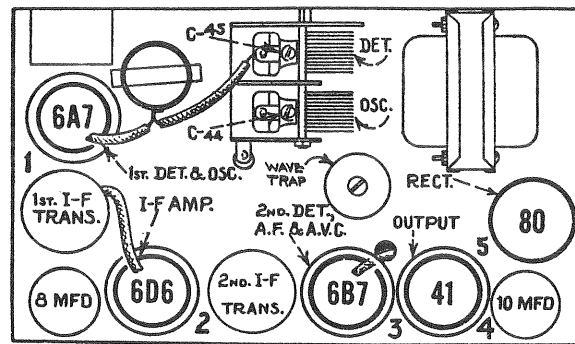


Figure 5—Radiotron Locations

### RADIOTRON SOCKET VOLTAGES

The various normal operating voltages are given on Figure 3. 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.

## T 5-2 REPLACEMENT PARTS

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

STOCK No.	DESCRIPTION	LIST PRICE	STOCK No.	DESCRIPTION	LIST PRICE
<b>RECEIVER ASSEMBLIES</b>					
4244	Cap—Contact cap—Package of 5.....	\$0.20	3584	Ring—Oscillator coil retaining ring—Pack- age of 5.....	\$0.40
3861	Capacitor—Adjustable capacitor (C40)....	.78	3623	Shield—Oscillator coil shield.....	.30
5094	Capacitor—50 MMfd. (C8).....	.20	3942	Shield—First detector and output Radiotron shield.....	.18
5151	Capacitor—320 MMfd. (C11).....	.20	3782	Shield—Second detector Radiotron shield..	.26
4297	Capacitor—400 MMfd. (C27).....	.30	7487	Shield—I.F. Radiotron shield.....	.25
4881	Capacitor—3400 MMfd. (C24).....	.20	5186	Shield—I.F. Transformer shield.....	.28
4868	Capacitor—0.005 Mfd. (C25, C32).....	.20	3858	Socket—Dial lamp socket.....	.26
11315	Capacitor—0.015 Mfd. (C28).....	.20	4784	Socket—4-contact Radiotron socket.....	.15
4906	Capacitor—0.017 Mfd. (C31).....	.25	4785	Socket—6-contact output Radiotron socket..	.15
4836	Capacitor—0.05 Mfd. (C5, C19).....	.30	4786	Socket—6-contact Radiotron socket.....	.15
4841	Capacitor—0.1 Mfd. (C10, C20, C30)....	.22	4787	Socket—7-contact Radiotron socket.....	.15
3597	Capacitor—0.25 Mfd. (C29, C38).....	.40	5053	Switch—Range switch (S2).....	.50
3796	Capacitor—4.0 Mfd. (C26).....	.60	4905	Switch—Tone control switch (S6).....	.30
4428	Capacitor—8.0 Mfd. (C36).....	1.05	4900	Transformer—First intermediate frequency transformer—(L9, L10, C17, C18).....	2.25
7790	Capacitor—10.0 Mfd. (C35).....	1.05	11477	Transformer—Second intermediate fre- quency transformer (L11, L12, C23, C48, C49, R8).....	2.02
7589	Capacitor Pack—Comprising two 4.0 Mfd. capacitors (C16, C34).....	1.64	4898	Transformer—Power transformer—105-125 volts—25-60 cycles.....	5.55
4358	Clamp—Capacitor mounting clamp for Stock No. 4428 and No. 7790.....	.15	4897	Transformer—Power transformer—105-125 volts—50-60 cycles (T1).....	3.98
5051	Coil—Antenna coil (L1, L2, C5, R2).....	1.28	4899	Transformer—Power transformer—105- 125/200-240 volts—40-60 cycles.....	4.05
5050	Coil—Oscillator coil (L4, L6).....	.56	11479	Trap—Wave trap (L15, C47).....	1.02
11475	Condenser—2-gang variable tuning con- denser (C6, C9, C44, C45).....	3.25	4429	Volume Control—(R9, S1).....	1.40
11476	Drive—Variable condenser drive.....	.65	<b>REPRODUCER ASSEMBLIES</b>		
3708	Resistor—600 Ohm—Carbon type—1/4 watt (R4, R7)—Package of 5.....	1.00	9587	Coil—Field coil, magnet and cone support (L14).....	2.18
4436	Resistor—5000 Ohm—Carbon type—1/4 watt (R12)—Package of 10.....	2.00	9588	Cone—Reproducer cone (L13)—Package of 5.....	3.55
2240	Resistor—30,000 Ohm—Carbon type—1 watt (R5).....	.22	5118	Connector—3-contact male connector for reproducer cable.....	.25
3602	Resistor—60,000 Ohm—Carbon type—1/4 watt (R3, R15, R16)—Package of 5....	1.00	5119	Connector—3-contact female connector for reproducer cable.....	.25
3118	Resistor—100,000 Ohm—Carbon type—1/4 watt (R2)—Package of 5.....	1.00	9586	Reproducer—Complete.....	5.95
3116	Resistor—200,000 Ohm—Carbon type—1/4 watt (R13)—Package of 5.....	1.00	4893	Transformer—Output transformer (T2)...	1.48
6186	Resistor—500,000 Ohm—Carbon type—1/4 watt (R14)—Package of 5.....	1.00	<b>MISCELLANEOUS ASSEMBLIES</b>		
4783	Resistor—1,100,000 Ohm—Carbon type— 1/4 watt (R6)—Package of 5.....	1.00	11835	Dial—Station selector dial scale.....	.32
6242	Resistor—2 Megohm—Carbon type—1/4 watt (R10, R11)—Package of 5.....	1.00	11478	Indicator—Station selector indicator pointer	.12
4721	Resistor—Tapped resistor—One 500 Ohm, two 5,000 Ohm, and one 10,000 Ohm sections (R17, R18, R19, R20).....	.88	4340	Lamp—Station selector dial lamp—Package of 5.....	.60