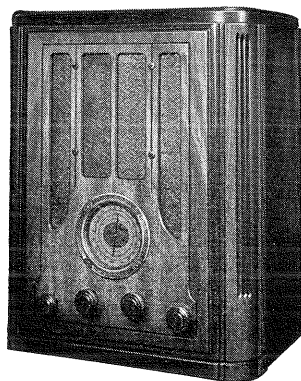


RCA Victor Models 118 and 211

Five-Tube, Two-Band A. C. Receivers

SERVICE NOTES



SERVICE DIVISION

RCA Victor Company, Inc.

Camden, N. J., U. S. A.

A RADIO CORPORATION OF AMERICA SUBSIDIARY

REPRESENTATIVES IN PRINCIPAL CITIES

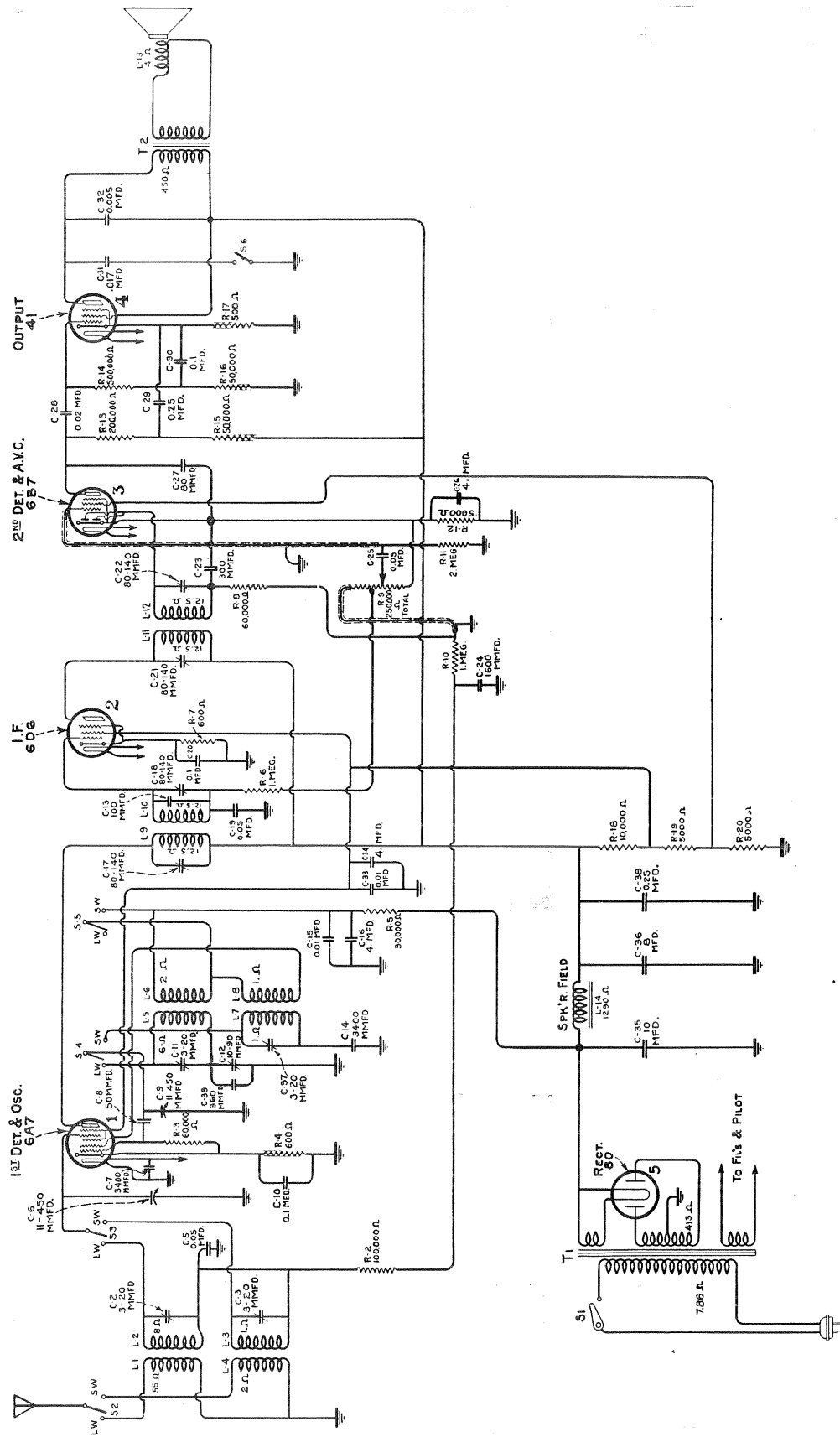


Figure 1—Schematic Circuit Diagram

RCA VICTOR MODELS 118 AND 211

5-Tube, 2-Band A. C. Receivers

SERVICE NOTES

ELECTRICAL SPECIFICATIONS

Voltage Rating	105-125 Volts and 100-130/195-250 Volts (double range transformer)
Frequency Rating	25-60 and 50-60 Cycles
Power Consumption (All Frequencies)	85 Watts
Number and Types of Radiotrons	1 RCA-6A7, 1 RCA-6D6, 1 RCA-6B7, 1 RCA-41, 1 RCA-80—Total, 5
Undistorted Output	1.9 Watts
Maximum Output	3.5 Watts
Tuning Frequency Ranges	540 K. C.—1720 K. C.—5400 K. C.—18,000 K. C.
Line-up Frequencies	460 K. C., 600 K. C., 1720 K. C. and 18,000 K. C.

PHYSICAL SPECIFICATIONS

	MODEL 118	MODEL 211
Height	17 $\frac{5}{8}$ Inches	40 Inches
Width	14 $\frac{3}{8}$ Inches	23 $\frac{1}{2}$ Inches
Depth	9 $\frac{3}{4}$ Inches	11 $\frac{1}{8}$ Inches

This receiver is a five-tube, two-band A. C. operated superheterodyne having tuning ranges that cover both the standard and short-wave broadcasting bands. Features include an "Airplane" type dial, two-point tone control, double reduction vernier drive, dynamic type loudspeaker and excellent performance in all respects. The entire mechanism is housed in a cabinet of pleasing design.

A special feature of this receiver is the accessibility of all parts for inspection and repair. This will be of interest to the service man, as the removal and replacement of any part can be quickly and easily done. All parts are rigidly held in place, thus preventing the rigors of handling and transportation from damaging the receiver.

DESCRIPTION OF ELECTRICAL CIRCUIT

The circuit is of the superheterodyne type and consists of a combined oscillator and first detector, an I. F. stage, a combined second detector and automatic volume control and a Pentode output stage. An RCA-80 is used as a rectifier for providing grid and plate power to all other tubes.

The signal enters the receiver through the antenna system and is applied through a tuned circuit to the grid of the first detector. Combined with the signal is the local oscillator signal, which is at a constant frequency difference (460 K. C. higher) throughout the tuning range. The combined signals after passing through the first detector produce the I. F. signal, which is 460 K. C. The RCA-6A7 is the combined detector and oscillator.

The I. F. amplifier consists of a single RCA-6D6 and two transformers, having a total of four tuned circuits. The high I. F. frequency (460 K. C.) is used to reduce image frequency response and to improve the short-wave performance.

The output of the I. F. amplifier is then applied to the diode sections of the RCA-6B7, which is a combined second detector, automatic volume control and A. F. amplifier. The direct current component of the rectified signal produces a voltage drop across resistor R-9. The full voltage drop constitutes the automatic bias voltage for the first detector while a tap is provided for the I. F. voltage. These automatic bias voltages for the detector and I. F. give the automatic volume control action of the receiver. The volume

control selects the amount of audio voltage that is applied to the grid of the RCA-6B7 and thereby regulates the audio output of the entire receiver.

The output of the RCA-6B7 is resistance coupled to the grid of the RCA-41 tube, which is the power output amplifier. This tube is operated as a Pentode and provides high audio gain and satisfactory output power. The plate circuit of the output stage is matched to the cone coil of the reproducer by means of a step-down transformer.

The tone control consists of a 0.017 mfd. capacitor connected from the plate of the output tube to ground through a single pole switch. Closing the switch reduces the high-frequency output of the receiver.

Plate and grid voltages for all tubes are supplied from the output of the rectifier-filter system. An RCA-80 is used as a rectifier and a suitable network of capacitors and resistors gives the necessary filtering and voltages. The loudspeaker field is used as a filter reactor.

SERVICE DATA

(1) Line-Up Capacitor Adjustments:

To properly align this receiver, it is essential that a modulated R. F. oscillator, such as Stock No. 9050, an output indicator and an alignment tool (Stock No. 4160) be available. Figure 6 shows the location of the various line-up capacitors.

oscillator output at a low value so that only a slight deflection is obtained on the output meter at all times. Go over these adjustments a second time, as there is a slight interlocking of adjustments. This completes the I. F. adjustments.

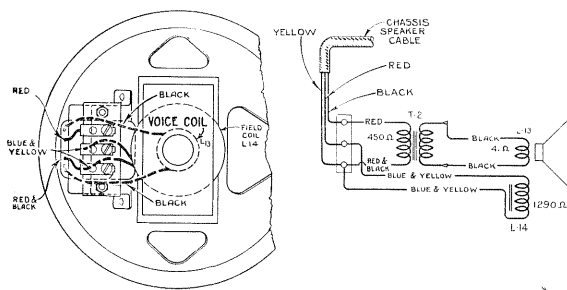


Figure 3—Table Model Loudspeaker Wiring

I. F. Tuning Adjustments:

Two transformers comprising four tuned circuits are used in the intermediate amplifier. These are tuned to 460 K. C. and the adjustment screws are accessible as shown in Figure 6. Proceed as follows:

- (a) Short-circuit the antenna and ground terminals and tune the receiver so that no signal is heard. Set the volume control at maximum and connect a ground to the ground terminal.
- (b) Connect the test oscillator output between the first detector control grid and chassis ground. Connect the output meter across the voice coil of the loudspeaker and adjust the oscillator output so that, with the receiver volume control at maximum, a slight deflection is obtained in the output meter.
- (c) Adjust the secondary and primary of the first and then the second I. F. transformers until a maximum deflection is obtained. Keep the

R. F. and Oscillator Adjustments:

The R. F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual position on the gang capacitor. They are all accessible

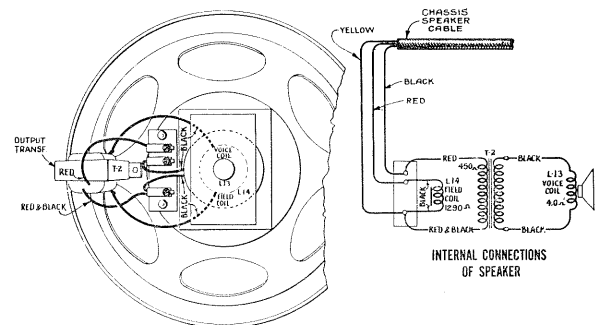


Figure 4—Console Model Loudspeaker Wiring

from the bottom of the chassis except the 600 K. C. series capacitor, which is accessible from the top of the chassis. Proceed as follows:

- (a) Connect the output of the oscillator to the antenna and ground terminals of the receiver. Check the position of the indicator pointer when the tuning capacitor plates are fully meshed. It should be coincident with the radial line adjacent to the dial reading of 540. Then set the Test Oscillator at 1720 K. C., the dial indicator at 1720 and the oscillator output so that a slight deflection will be obtained in the output meter when the volume control is at its maximum position.

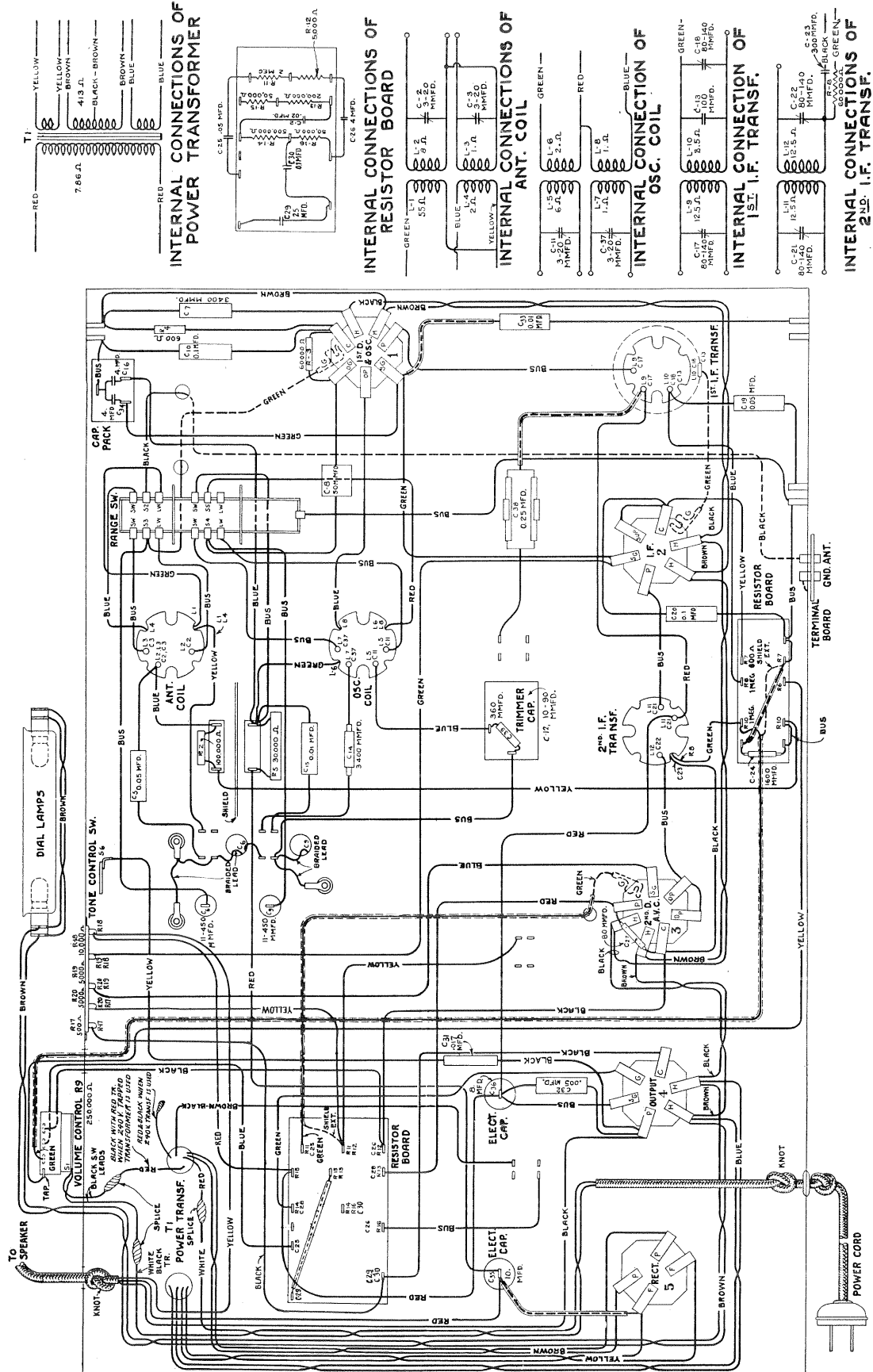


Figure 5—Wiring Diagram—Late Production

- (b) With the Range Switch at the "in" position, adjust the two trimmers under the two R. F. coils, designated as BC in Figure 6, until a maximum deflection is obtained in the output meter. Then shift the Test Oscillator frequency to 600 K. C. The trimmer capacitor, accessible from the top of the chassis, should now be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Then repeat the 1720 K. C. adjustment.
- (c) Now place the Range Switch at the "out" position, shift the Test Oscillator to 18,000 K. C. and set the dial at 18M. Adjust the two trimmer capacitors designated as SW in Figure 6 for maximum output, beginning with the oscillator trimmer. It will be noted that the oscillator and first detector trimmers will have two positions at which the signal will give maximum output. The position which uses the lower trimmer capacitance, obtained by turning the screw counter-clock-

wise, is the proper adjustment for the oscillator, while the position that uses a higher capacitance is correct for the detector. The detector trimmer *must* be adjusted for maximum output while rocking the main tuning capacitor back and forth through the signal. Both of these adjustments must be made as indicated irrespective of output.

The important points to remember are the need for using the minimum oscillator output to obtain a deflection in the output meter with the volume control at its maximum position and the manner of obtaining the proper high frequency oscillator and detector adjustments.

(2) Radiotron Socket Voltages:

The following voltages are those at the various tube sockets while the receiver is in operating condition. No allowance has been made for currents drawn by the meter, and if lower resistance meters are used, such allowances must be made:

RADIOTRON SOCKET VOLTAGES

115-Volt, A. C. Line—Maximum Volume Control—No Signal

Radiotron No.		Cathode to Ground Volts, D. C.	Screen Grid to Ground Volts, D. C.	Plate to Ground Volts, D. C.	Plate Current, M. A.	Heater Volts, A. C.
RCA-6A7	Detector	6.0	105	265	3.5	6.3
	Oscillator		—	220	4.5	
RCA-6D6 I. F.		6.0	105	265	9.0	6.3
RCA-6B7 2nd Det. AVC		3.0	50*	90*	0.7	6.3
RCA-41 Power		16.5	265	245	30.0	6.3
RCA-80 Rectifier		—	—	690 (Plate to Plate)	64.0	5.0

* Voltage calculated from 265V+B.

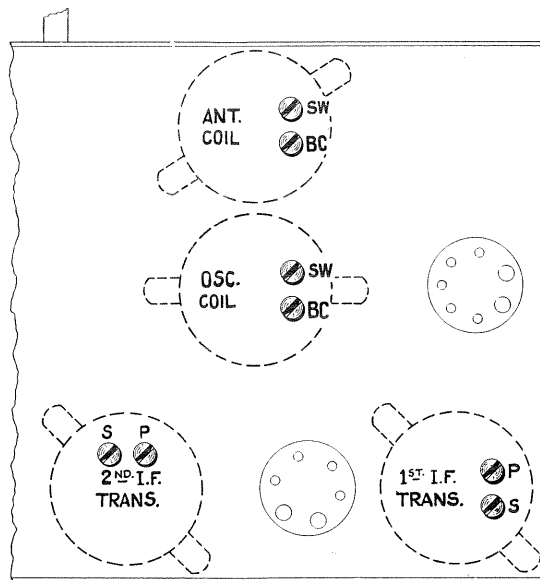


Figure 6—Location of Line-Up Capacitors

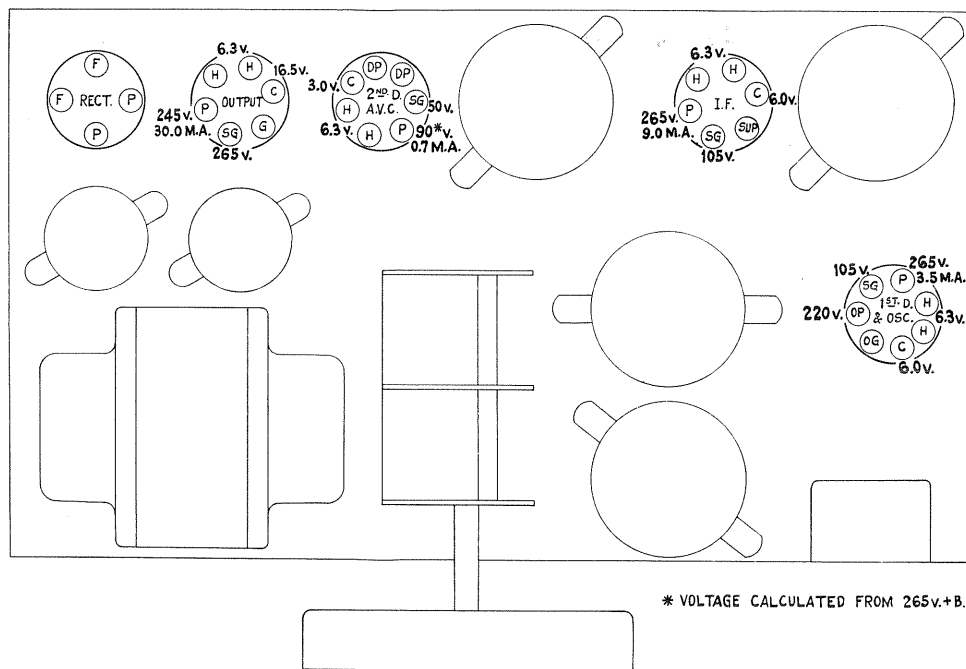


Figure 7—Radiotron Socket Voltages

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
RECEIVER ASSEMBLIES					
10194	Ball—Steel ball for condenser drive assembly—Package of 20.....	\$0.25	3993	Screw—No. 6-32- $\frac{5}{32}$ " square head set screw for condenser drive—Package of 10.....	\$0.25
4358	Bracket—Capacitor mounting bracket.....	.15	7800	Shield—Antenna, oscillator or I. F. transformer coil shield.....	.45
4427	Bracket—Volume control mounting bracket.....	.18	4145	Shield—First detector and oscillator Radiotron shield.....	.30
2747	Cap—Contact cap—Package of 5.....	.50	4103	Shield—I. F. Radiotron shield.....	.20
4428	Capacitor—8 mfd. (C36).....	1.05	4438	Shield—Second detector—AVC Radiotron shield.....	.25
7790	Capacitor—10 mfd. (C35).....	1.05	3529	Socket—Dial lamp socket.....	.32
4442	Capacitor—50 mmfd. (C8).....	.22	3859	Socket—4-contact Radiotron socket.....	.30
4509	Capacitor—80 mmfd. (C27).....	.15	7485	Socket—6-contact Radiotron socket.....	.40
4413	Capacitor—360 mmfd. (C39).....	.22	6676	Socket—6-contact output Radiotron socket.....	.40
4441	Capacitor—1600 mmfd. (C24).....	.35	3572	Socket—7-contact Radiotron socket.....	.38
4439	Capacitor—3400 mmfd. (C14).....	.35	4426	Switch—Tone control switch (S6).....	.35
4471	Capacitor—3400 mmfd. (C7).....	.44	4437	Switch—Range switch (SW-BC) (S2, S3, S4, S5).....	2.35
6512	Capacitor—.005 mfd. (C32).....	.28	9511	Transformer—105-125 volts—50-60 cycles.....	4.78
4443	Capacitor—0.01 mfd. (C15).....	.25	4431	Transformer—First intermediate frequency transformer (L9, L10, C13, C17, C18).....	2.28
4444	Capacitor—0.01 mfd. (C33).....	.22	9512	Transformer—Power transformer—105-125 volts—25-40 cycles.....	6.58
4752	Capacitor—.017 mfd. (C31).....	.26	9513	Transformer—Power transformer—105-250 volts—40-60 cycles (T1).....	4.85
4435	Capacitor—0.02 mfd. (28).....	.25	4433	Transformer—Second intermediate frequency transformer (L11, L12, R8, C21, C22, C23).....	2.15
3888	Capacitor—0.05 mfd. (C25).....	.25	4429	Volume control (R9).....	1.40
4417	Capacitor—0.05 mfd. (C5).....	.25	REPRODUCER ASSEMBLIES (CONSOLE)		
3901	Capacitor—0.05 mfd. (C19).....	.36	4473	Board—Reproducer terminal board.....	.26
3877	Capacitor—0.1 mfd. (C20, C30).....	.32	4445	Cable—3-conductor-reproducer cable.....	.36
4415	Capacitor—0.1 mfd. (C10).....	.30	9460	Coil—Field coil—Magnet and cone support.....	6.00
3597	Capacitor—0.25 mfd. (C29, C38).....	.40	8935	Cone—Reproducer cone—Package of 5.....	5.25
3796	Capacitor—4.0 mfd. (C26).....	.60	9527	Reproducer complete.....	8.00
3861	Capacitor—Adjustable trimmer capacitor (C12).....	.78	4472	Transformer—Output transformer.....	1.40
7589	Capacitor pack—Comprising two 4.0 mfd. capacitors (C16, C34).....	1.64	REPRODUCER ASSEMBLIES (TABLE)		
4422	Clutch—Condenser drive clutch assembly complete.....	.88	4448	Board—Reproducer terminal board.....	.25
4430	Coil—Antenna coil (L1, L2, L3, L4, C2, C3).....	1.92	4445	Cable—3-conductor-reproducer cable.....	.36
4432	Coil—Oscillator coil (L5, L6, L7, L8, C11, C37).....	1.65	9531	Coil—Field coil magnet and cone support.....	2.75
4504	Condenser—2-gang variable tuning condenser (C6, C9).....	2.78	9492	Cone—Reproducer cone (L13)—Package of 5.....	3.70
4434	Drive—Tuning condenser drive assembly complete.....	2.42	9514	Reproducer complete.....	6.00
3632	Resistor—500 ohms—Carbon type— $\frac{1}{4}$ watt (R17)—Package of 5.....	1.10	4447	Shield—Terminal board shield.....	.18
3218	Resistor—600 ohms—Carbon type— $\frac{1}{4}$ watt (R4, R7)—Package of 5.....	1.00	4505	Transformer—Output transformer (T2).....	1.55
4436	Resistor—5,000 ohms—Carbon type— $\frac{1}{4}$ watt (R12)—Package of 10.....	2.00	MISCELLANEOUS ASSEMBLIES		
3114	Resistor—50,000 ohms—Carbon type— $\frac{1}{4}$ watt (R16)—Package of 5.....	1.00	6706	Bezel—Station selector dial escutcheon bezel—Model 118.....	.42
3602	Resistor—60,000 ohms—Carbon type— $\frac{1}{4}$ watt (R3)—Package of 5.....	1.00	4450	Dial—Station selector dial—Model 211.....	.52
3118	Resistor—100,000 ohms—Carbon type— $\frac{1}{4}$ watt (R2)—Package of 5.....	1.00	4474	Dial—Station selector dial—Model 118.....	.76
6186	Resistor—500,000 ohms—Carbon type— $\frac{1}{4}$ watt (R14)—Package of 5.....	1.00	6840	Escutcheon—Station selector escutcheon—Model 211.....	.56
3033	Resistor—1 megohm—Carbon type— $\frac{1}{4}$ watt (R6, R10)—Package of 5.....	1.00	6707	Glass—Station selector dial glass—Model 118.....	.20
6242	Resistor—2 megohms—Carbon type— $\frac{1}{4}$ watt (R11)—Package of 5.....	1.00	6614	Glass—Station selector dial glass—Model 211.....	.30
3594	Resistor—50,000 ohms—Carbon type— $\frac{1}{2}$ watt (R15)—Package of 5.....	1.00	4449	Knob—Station selector, volume control, tone or range switch knob—Package of 5.....	.60
6228	Resistor—200,000 ohms—Carbon type— $\frac{1}{2}$ watt (R13)—Package of 5.....	1.00	4348	Lamp—Pilot lamp.....	.38
3891	Resistor—5,000 ohms—Carbon type—1 watt (R19, R20)—Package of 5.....	1.10	4363	Pointer—Station selector indicator pointer—Model 211.....	.18
2240	Resistor—30,000 ohms—Carbon type—1 watt (R5).....	.22	4475	Pointer—Station selector indicator pointer—Model 118.....	.18
6318	Resistor—10,000 ohms—Porcelain type (R18).....	.80	6708	Ring—Spring retaining ring for dial glass—Package of 5—Model 118.....	.44
4721	Resistor—Tapped resistor—One 10,000 ohm, two 5,000 ohm and one 500 ohm section—(R17, R18, R19, R20).....	.88	6615	Ring—Spring retaining ring for dial glass—Package of 5—Model 211.....	.34
3943	Screen—Translucent screen for dial lamps—Package of 2.....	.18	4613	Screw—8-32- $\frac{1}{16}$ " headless set screw for knob—Package of 10.....	.25
4446	Screen—Chassis mounting screw assembly—Comprising 4 screws, 4 lockwashers, 4 washers, 4 spacers and 4 cushions.....	.28			