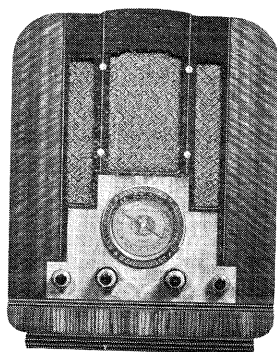


RCA Victor

Direct Current Radio Model 127

Six-Tube, 220-Volt D. C., Two-Band Receiver

SERVICE NOTES



SERVICE DIVISION

RCA Victor Company, Inc.

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

A RADIO CORPORATION OF AMERICA SUBSIDIARY

REPRESENTATIVES IN PRINCIPAL CITIES

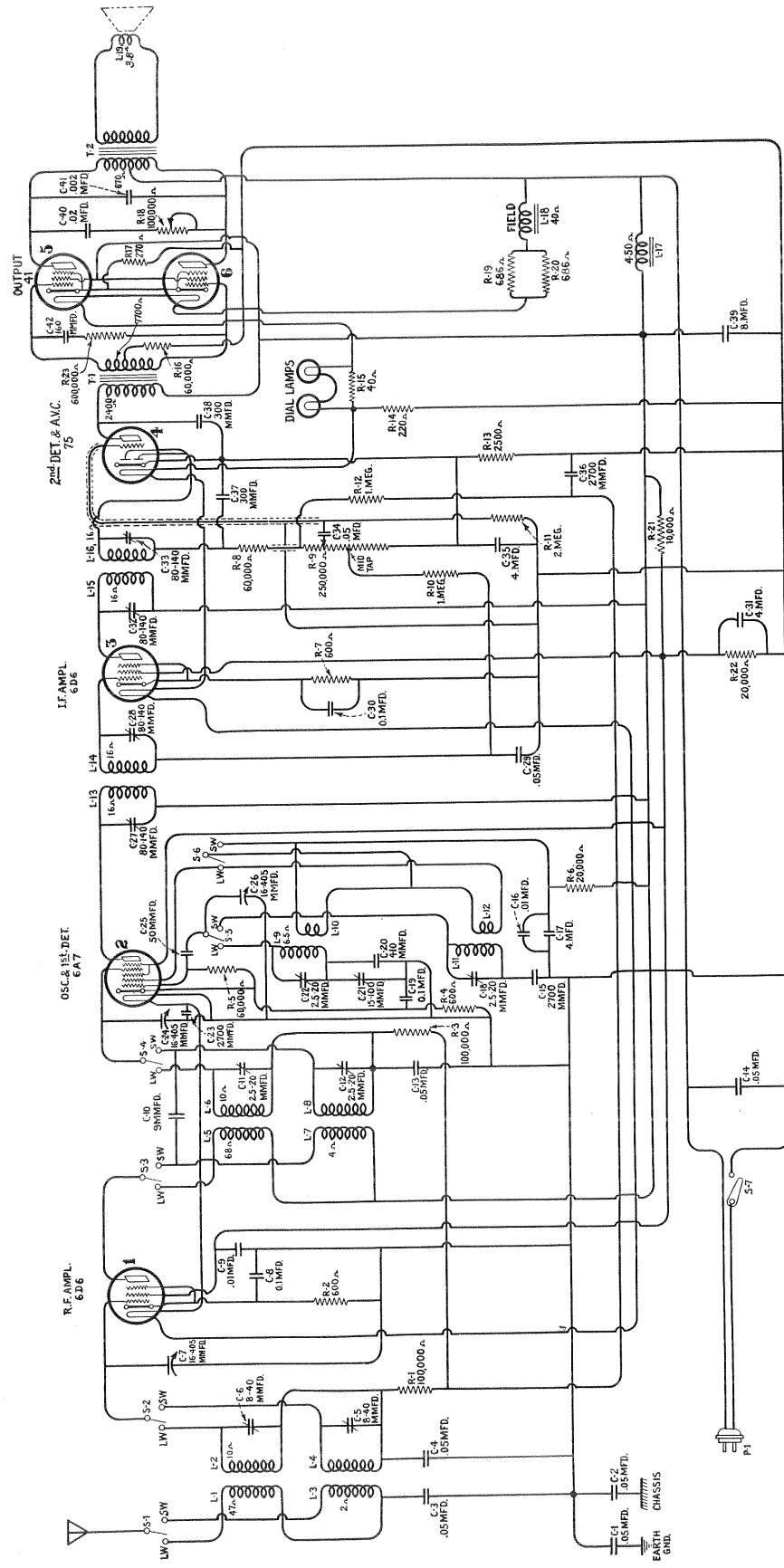


Figure 1—Schematic Circuit

RCA VICTOR MODEL 127

Six-Tube, 220 Volt D. C., Two-Band Receiver

SERVICE NOTES

ELECTRICAL SPECIFICATIONS

Voltage Rating	200-250 Volts D. C.
Power Consumption	145 Watts Maximum
Number and Types of Radiotrons	2 RCA-6D6, 1 RCA-6A7, 1 RCA-75, 2 RCA-41—Total, 6
Tuning Ranges	540 K. C.—1500 K. C. and 5400 K. C.—15,350 K. C.
Maximum Undistorted Power Output	2.5 Watts
Line-up Frequencies	370 K. C., 600 K. C., 1400 K. C., 15,000 K. C.

PHYSICAL SPECIFICATIONS

Height	17½ Inches
Width	13½ Inches
Depth	6½ Inches

This receiver is a six-tube, two-band, 220-volt direct current superheterodyne designed to receive both the standard and short-wave broadcasting bands. A range switch provides an easy means of changing to either band desired. Special features include a double reduction vernier drive giving either a 10-1 or 50-1 ratio of speed reduction, a continuously variable tone control, electro-dynamic type loudspeaker, automatic volume control and a high gain push-pull power amplifier.

Excellent sensitivity, selectivity and tone quality are characteristic of this instrument. An "airplane" type dial, calibrated in frequency and showing the location of the short-wave bands, is a special feature of this instrument. Small, compact size and unusual accessibility of parts are important service features. Figure 1 shows the schematic circuit, Figure 2 the chassis wiring, and Figure 3 the speaker wiring.

ELECTRICAL DESCRIPTION OF CIRCUIT

The signal enters the receiver through the antenna coupling transformer, the secondary of which is tuned and is applied to the grid of the RCA-6D6 R. F. amplifier. The output of this stage is then coupled through a tuned stage to the grid of the RCA-6A7, which is a combined first detector and oscillator. The oscillator maintains a constant frequency difference (370 K. C. higher) from the R. F. signal, with which it is combined in the first detector grid circuit. The output of the first detector is a 370 K. C. signal, which is of course the intermediate frequency.

Two sets of coils are provided for the R. F., oscillator and first detector coils for the two tuning ranges provided. A push-pull switch permits selection of the desired band.

The intermediate frequency amplifier consists of a single RCA-6D6 and two transformers, comprising four circuits, all of which are tuned.

The output of the I. F. amplifier is then applied to the RCA-75, which is the combined second detector, automatic volume control and A. F. amplifier. The signal is applied to the diode sections of the tube, which act as a two-element rectifier. The direct current component of the rectified signal produces a voltage drop across resistors R-8 and R-9. This voltage drop constitutes the automatic bias voltage for the R. F., first detector and I. F. amplifier, which gives the automatic volume control action of the receiver. The volume control selects the amount of audio voltage that is applied to the RCA-75 and

thereby regulates the audio output of the entire receiver.

The output of the RCA-75 is transformer coupled to the grid of the RCA-41 tubes, which constitute the output amplifier of the receiver. These are operated as a push-pull Pentode stage and give the receiver a high gain audio amplifier (necessary for short-wave reception) and a large undistorted power output. The plate circuit of the output stage is matched to the cone coil of the reproducer by means of a step-down output transformer.

SERVICE DATA

CAUTION—This receiver operates on 220-volt direct current without a transformer between the line and the various parts of the receiver, such as A. C. receivers use. It is therefore extremely important to use the utmost caution when operating the receiver outside of the cabinet. Also a knob must always be placed on the shaft of the main tuning capacitor, as under certain conditions the full line voltage is obtained between this point and ground.

(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 4 shows the location of the various line-up capacitors.

I. F. Tuning Adjustments

Two transformers comprising four tuned circuits are used in the intermediate amplifier. These are tuned to 370 K. C. and the adjustment screws are accessible as shown in Figure 4. Proceed as follows:

- (a) Short-circuit the antenna and ground leads 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, preferably through a series condenser. 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

The tone control consists of a variable resistor and capacitor connected in series and placed across the plates of the output stage. Reducing the amount of resistance attenuates the high frequency response of the receiver.

The power supply is taken direct from the line. All tube heaters, the speaker field and the dial lamps are connected in series with a resistor and placed across the line. Plate and grid voltages use the same source, although suitable filters and resistors are used to properly filter the line and provide correct voltages.

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.

R. F. and Oscillator Adjustments

The R. F. line-up capacitors are located at the bottom of the coil assemblies instead of their usual

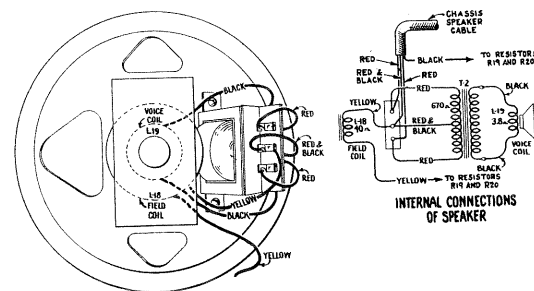


Figure 3—Loudspeaker Wiring

position on the gang capacitor. They are all accessible from the bottom of the chassis except the 600 K. C. series capacitor, which is accessible from the rear 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 54. Then set the Test Oscillator at 1400 K. C., the dial indicator at 140 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.

- (b) With the Range Switch at the "in" position, adjust the three trimmers under the three R. F. coils, designated as L in Figure 4, 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 rear 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 1400 K. C. adjustment.
- (c) Now place the Range Switch at the "out" position, shift the Test Oscillator to 15,000 K. C. and set the dial at 150. Adjust the three trimmer capacitors designated as S in Figure 4 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-clockwise, is the

proper adjustment for the oscillator, while the position that uses a higher capacitance is correct for the detector. *Both of these adjustments must be made as indicated irrespective of output.* The R. F. is merely peaked. In conjunction with the detector adjustment, it is necessary to rock the main tuning capacitor back and forth while making the adjustment. This completes the line-up adjustments.

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

220-Volt, D. C. Line—No Signal

Radiotron No.		Cathode to B— Volts, D. C.	Screen Grid to B— Volts, D. C.	Plate to B— Volts, D. C.	Plate Current, M. A.	Heater Volts, A. C.
RCA-6D6 R. F.		3.0	90	200	6.0	6.4
RCA-6A7	1st Detector	4.0	90	200	2.6	6.4
	Oscillator	—	—	125	3.3	
RCA-6D6 I. F.		3.0	90	200	6.0	6.4
RCA-75 2nd Detector		1.5	—	200	0.7	6.4
RCA-41 Power		13.0	190	205	25.0	6.4
RCA-41 Power		13.0	190	205	25.0	6.4

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	3991	Resistor—10,000 ohms—Porcelain type (R21)	\$0.60
2747	Cap—Contact cap—Package of 5 . . . . .	.50	3943	Screen—Translucent celluloid screen—For dial lamps—Package of 2 . . . . .	.18
3938	Capacitor—9 mmfd. (C10) . . . . .	.25	3878	Screw—No. 8-32- $\frac{3}{8}$ headless cup point set screw for fastening station selector pointer—Package of 20 . . . . .	.25
3849	Capacitor—50 mmfd. (C25) . . . . .	.30	3768	Screw—Square head No. 6-32- $\frac{1}{4}$ set screw for condenser drive—Package of 10 . . . . .	.35
6314	Capacitor—160 mmfd. (C23)—Package of 5	2.00	6704	Shaft—Tuning condenser drive shaft assembly . . . . .	.64
4352	Capacitor—300 mmfd. (C37, C38) . . . . .	.25	4145	Shield—First detector and oscillator Radiotron shield . . . . .	.30
4297	Capacitor—410 mmfd. (C20) . . . . .	.30	4103	Shield—I. F. amplifier Radiotron shield . . . . .	.20
4031	Capacitor—2700 mmfd. (C15, C23, C36) . . . . .	.50	3950	Shield—R. F. amplifier Radiotron shield . . . . .	.26
3701	Capacitor—0.01 mfd. (C9, C16) . . . . .	.30	4216	Shield—Radiotron shield top . . . . .	.10
4211	Capacitor—0.05 mfd. (C1, C2, C3, C14, C34) . . . . .	.30	4215	Shield—Second detector Radiotron shield . . . . .	.15
3901	Capacitor—0.05 mfd. (C4, C13) . . . . .	.36	3529	Socket—Dial lamp socket . . . . .	.32
3888	Capacitor—0.05 mfd. (C29) . . . . .	.25	6676	Socket—6-contact Radiotron socket . . . . .	.40
3877	Capacitor—0.1 mfd. (C8, C19, C30) . . . . .	.32	7485	Socket—6-contact second detector and AVC Radiotron socket . . . . .	.40
3796	Capacitor—4.0 mmfd. (C35) . . . . .	.60	3572	Socket—7-contact Radiotron socket . . . . .	.38
6986	Capacitor—8.0 mmfd. (C39)	1.60	6696	Switch—Range switch (S1, S2, S3, S4, S5, S6)	2.24
3861	Capacitor—Adjustable trimmer capacitor (C21) . . . . .	.78	6697	Transformer—First intermediate frequency transformer (L13, L14, C27, C28)	1.80
6985	Capacitor—Comprising two 4.0 mmfd. capacitors (C17, C31)	1.50	6698	Transformer—Second intermediate frequency transformer (L15, L16, C32, C33)	1.78
4373	Capacitor pack—Comprising one 0.002 mfd. and one 0.02 mfd. capacitors (C40, C41) . . . . .	.30	6987	Transformer pack—Audio transformer pack—Comprising one reactor and one inter-stage transformer (T1, L17)	4.50
6983	Coil—Antenna coil (L1, L2, L3, L4, C5, C6)	2.68	6705	Tone control (R18, S7)	1.20
6700	Coil—Oscillator coil (L9, L10, L11, L12, C18, C22)	2.30	6695	Volume control (R9)	1.20
6699	Coil—R. F. coil (L5, L6, L7, L8, C11, C12)	2.44	REPRODUCER ASSEMBLIES		
6694	Condenser—3-gang variable tuning condenser (C7, C24, C26)	3.75	7811	Cable—Reproducer cable . . . . .	.45
3941	Dial—Station selector dial scale—Package of 5	1.75	9498	Coil—Field coil, magnet and cone support (L18)	3.50
6702	Drive—Variable tuning condenser drive assembly complete	1.86	9499	Cone—Reproducer cone (L19)—Package of 5	6.10
4340	Lamp—Dial lamp—Package of 5 . . . . .	.60	9497	Reproducer complete	6.75
3906	Mounting assembly—Variable condenser mounting assembly—Comprising 3 bushings, 3 lock-washers, 3 nuts and 3 washers—Package of 1 set . . . . .	.28	6988	Transformer—Output transformer (T2)	1.60
3940	Pointer—Station selector indicator—Package of 5 . . . . .	.50	MISCELLANEOUS ASSEMBLIES		
3218	Resistor—600 ohms—Carbon type— $\frac{1}{4}$ watt (R2, R4, R7)—Package of 5	1.00	6706	Bezel—Metal bezel for station selector dial . . . . .	.42
4338	Resistor—2500 ohms—Carbon type— $\frac{1}{4}$ watt (R13)—Package of 10	2.00	6707	Glass—Station selector dial glass . . . . .	.20
3602	Resistor—60,000 ohms—Carbon type— $\frac{1}{4}$ watt (R5, R8, R16)—Package of 5	1.00	6989	Knob—Range switch or tone control knob—Package of 5 . . . . .	.65
3118	Resistor—100,000 ohms—Carbon type— $\frac{1}{4}$ watt (R1, R3)—Package of 5	1.00	6991	Knob—Station selector knob—Package of 5	1.15
3439	Resistor—600,000 ohms—Carbon type— $\frac{1}{4}$ watt (R23)—Package of 5	1.00	6990	Knob—Volume control knob—Package of 5	1.15
3033	Resistor—1 megohm—Carbon type— $\frac{1}{4}$ watt (R10, R12)—Package of 5	1.00	9050	Oscillator—Test oscillator—90-25,000 K. C.	29.50†
6242	Resistor—2 megohms—Carbon type— $\frac{1}{4}$ watt (R11)—Package of 5	1.00	4341	Resistor—Porcelain type—686 ohms (R19, R20)	2.12
4337	Resistor—270 ohms—Carbon type—1 watt (R17)—Package of 10	2.20	6708	Ring—Retaining ring for dial glass—Package of 5 . . . . .	.44
6114	Resistor—20,000 ohms—Carbon type—1 watt (R6, R22)—Package of 5	1.10	4342	Screw—Receiver mounting screw assembly—Comprising four bushings, four screws and four washers . . . . .	.30
4339	Resistor—260 ohms—Porcelain type—Tapped at 220 ohms (R14, R15) . . . . .	.52	4160	Screwdriver—Combination insulated screwdriver and socket wrench for I. F. and R. F. adjustments	1.00

† Full discount not allowed.