

Instructions for RCA Victor 100

Four-Tube Double-Range Superheterodyne

INSTALLATION

Location—The instrument should be placed convenient to the antenna and ground connections and to an electrical outlet.

Tubes—The instrument is equipped and tested at the factory with RCA Radiotrons and is shipped with the tubes in the sockets. Before making the necessary external connections, remove the cardboard covers used to protect the two unshielded tubes at the rear of the receiver, then refer to the chassis diagram printed on the license label attached to the cabinet and *make certain*:

- (a) That all tubes are in the proper sockets and pressed down firmly.
- (b) That all shields are rigidly in place over the tubes shown by double circles on the diagram.
- (c) That the short flexible leads shown on the diagram are attached to the dome terminals of the proper tubes as indicated, and that the spring contact clips are pressed down firmly.

Antenna and Ground—An antenna 25 to 75 feet long, including the lead-in and ground connections, is recommended.

The antenna should be well insulated from all objects and run neither close nor parallel to electric circuits inside or outside the building. Generally, an indoor antenna of short or medium length will be found satisfactory. An outdoor antenna of greater length, however, should improve reception and is recommended for use in localities remote from broadcasting stations. When the receiver is installed in a building of metallic construction, an outdoor antenna is *required* for satisfactory results.

A *good* ground connection is essential for best performance. The ground lead should be as short as possible and attached preferably to a cold water pipe. An approved ground clamp should be 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.

Power Supply—Connect the power cord to an electrical outlet supplying alternating current at the proper voltage and frequency (cycles), as specified on the license label.

OPERATION

The instrument has four operating controls, located on the front panel of the cabinet, as follows:

- (1) **Power Switch and Volume Control (Left-hand Knob)**—In the extreme counter-clockwise position, the power switch is "off." Rotating the knob slightly clockwise turns on the power—further rotation increases the volume.
- (2) **Tone Range Switch (Lower Middle Knob)**—This switch has two positions. The clockwise position provides full-range reproduction. When the knob is turned counter-clockwise, treble response and static interference (when latter is present) will be reduced.
- (3) **Station Selector (Upper Middle Knob)**—This control is equipped with an illuminated dial, calibrated to facilitate location and identification of stations (add one cipher to scale numerals to obtain frequency in kilocycles).
- (4) **Frequency Range Switch (Right-hand Knob)**—With this knob in the *counter-clockwise* position, broadcasting stations in the 540–1500 kilocycle range will be received (frequencies in this range are indicated by the large numerals adjacent to the scale graduations). With the knob in the *clockwise* position, stations operating in the 1600–3500 kilocycle range will be received (frequencies in this range are indicated approximately by the small outer numerals), as follows:

- (a) **Police Calls**—At dial settings near "170" for stations transmitting at 1712 kilocycles and between "240" and "260" for stations operating in the 2450 kilocycle band.
- (b) **Amateur Radio "Phone"**—At dial settings between "180" and "200" (assigned band 1800–2000 kilocycles).

- (c) **Aviation Communications "Phone"**—At dial settings above "240" (2500–3500 kilocycles).

To operate the receiver, proceed as follows:

1. Set the Frequency Range Switch for the desired frequency band—see preceding paragraph (4).
2. Apply power by turning the Volume Control knob slightly clockwise from the "off" position until the "on" click of the power switch is heard and the dial is illuminated. Several seconds will be required for the tubes to heat before reproduction is possible. Set the Volume Control fully clockwise for maximum volume—reduce the setting if too noisy.
3. Rotate the Station Selector slowly over the range of the dial until a desirable station program is heard.

NOTE—The majority of stations in the 1600–3500 kilocycle band do not offer continuous programs. Police calls are usually intermittent at regular or irregular intervals. Local or strong stations in the 540–1500 kilocycle broadcast band may be audible (sometimes at more than one point on the dial) when the Frequency Range Switch is set for 1600–3500 kilocycles.

4. After receiving a 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 minimizes the proportion of background noise and provides the fine quality of reproduction possible with this instrument.

5. Adjust the Volume Control to the desired volume level and set the Tone Range Switch for the preferred tone quality.

6. When through operating, switch off the power by turning the Volume Control knob to the extreme counter-clockwise position.

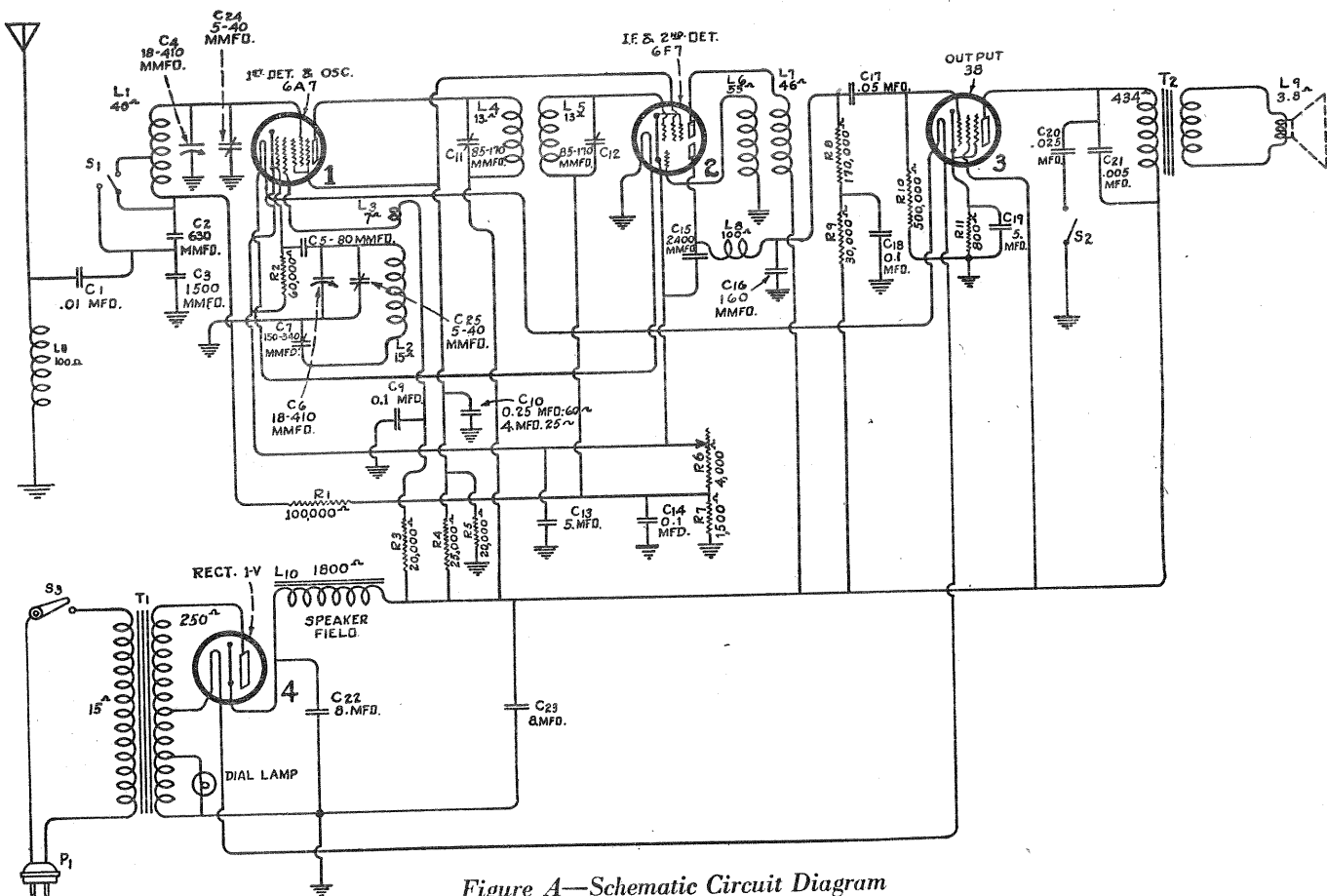


Figure A—Schematic Circuit Diagram

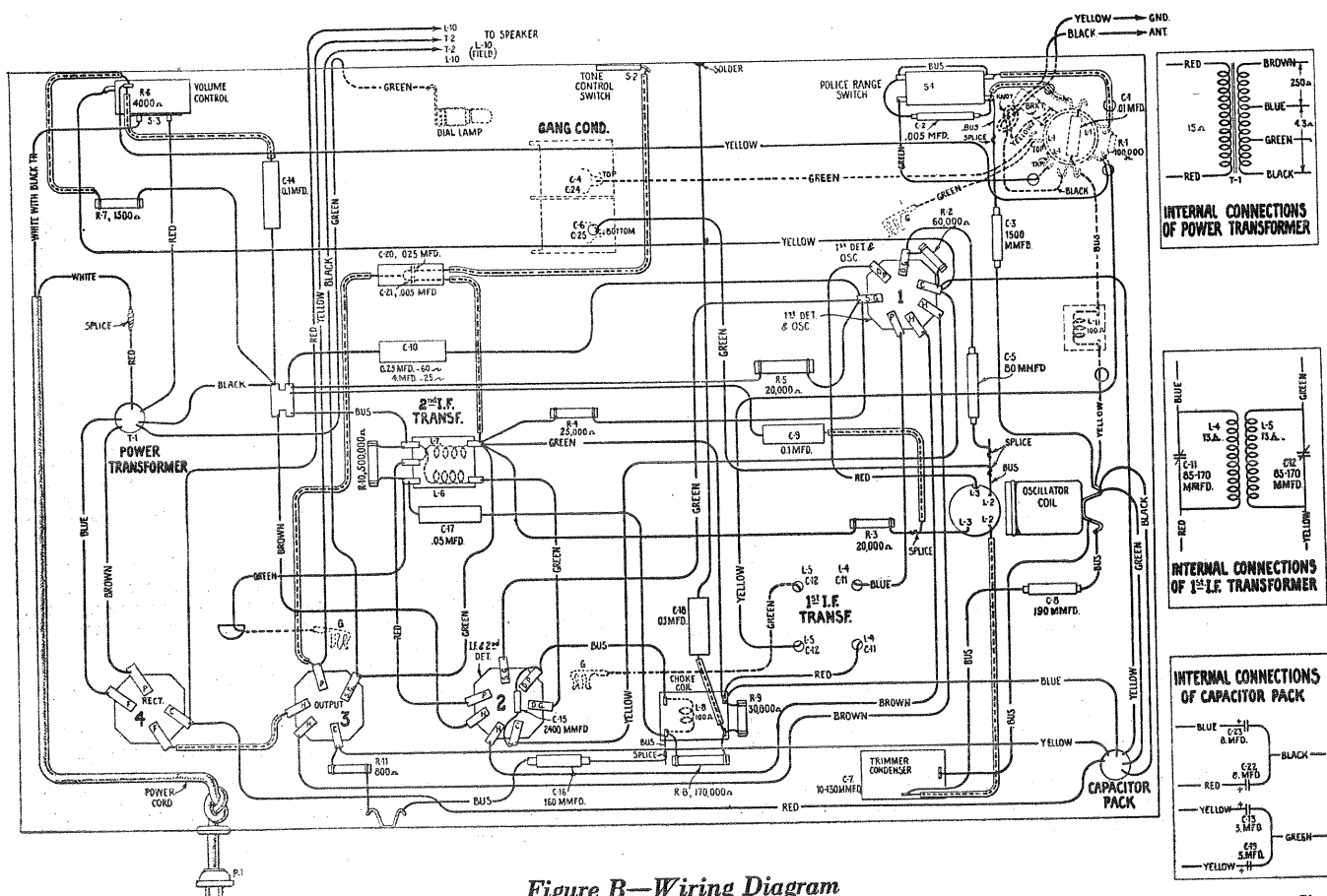


Figure B—Wiring Diagram

SERVICE DATA

Voltage Rating.....105-125 Volts
 Frequency Rating.....25-60 or 50-60 Cycles
 Power Consumption.....40 Watts
 Number and Types of Radiotrons—

1 RCA-6A7, 1 RCA-6F7, 1 RCA-38, 1 RCA-1-V
 Undistorted Output.....1.6 Watts
 Frequency Range.....540-1500 K. C. and 1600-3500 K. C.

This receiver is a four-tube superheterodyne incorporating features such as wide tuning range, electro-dynamic loudspeaker, two-point tone control, illuminated dial and the inherent sensitivity, selectivity and tone quality of the superheterodyne.

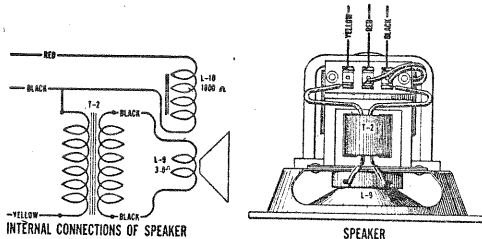


Figure C—Loudspeaker Wiring

The following description of the circuit describes several new design features which are incorporated in this receiver.

The first tube is a combined first detector and oscillator using Radiotron RCA-6A7. Separate tuned circuits are provided for each function. The detector coil is tapped so that

the tuning range may be extended merely by shorting out a portion of the coil. The oscillator circuit is not tapped, the high frequency range being obtained by use of its second harmonic instead of the fundamental for obtaining the I. F. frequency.

The next tube is a combined I. F. stage and second detector using Radiotron RCA-6F7. It has two sets of elements, one being used as a screen grid I. F. amplifier and one as a triode detector. The I. F. frequency in this receiver is 460 K. C. The output stage is a single Pentode RCA-38.

The rectifier is an RCA-1-V used in a half-wave rectifying circuit. A feature of this circuit is that only one transformer secondary is used. This is accomplished by having a cathode type rectifier, a series arrangement of filaments and a tapped secondary winding.

Figure A shows the schematic circuit, Figure B the wiring diagram and Figure C the loudspeaker wiring.

Line-Up Adjustments

The detector and oscillator line-up trimmer capacitors are adjusted by setting both the dial and an external oscillator first at 1400 K. C. and adjusting the tuning capacitor trimmer capacitors for maximum output, then changing the oscillator frequency and dial setting to 600 K. C. and adjusting the sub-mounted trimmer capacitor for maximum output. The I. F. adjustments are made by adjusting the two trimmer capacitors located on the first I. F. transformer for maximum output when a 460 K. C. signal is connected between the control grid of the first detector and ground. Be sure and set the station selector at a point where no signal is being received when making I. F. adjustments.

RADIOTRON SOCKET VOLTAGES

120 Volt, 60 Cycle Line—Maximum Volume Control Setting

Radiotron No.		Cathode to Control Grid, Volts D. C.	Cathode to Screen Grid, Volts D. C.	Cathode to Plate, Volts D. C.	Plate Current, M. A.	Heater or Filament, Volts
RCA-6A7	First Detector	3.0	95	235	5.0	6.3
	Oscillator	—	—	165	3.5	
RCA-6F7	I. F.	3.0	95	235	7.0	6.3
	Second Detector	20.0	—	150*	0.25	
RCA-38	Output	20.0	240	230	22	6.3
RCA-1-V	Rectifier	—	—	340 RMS	50	6.3

*Actual voltage cannot be measured with ordinary voltmeter. Voltage supplied is 260.

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					
2747	Contact cap—Package of 5.....	\$0.50	3887	Dial—Station selector dial—Package of 5.....	\$0.60
3047	Resistor—1,500 ohms—Carbon type— $\frac{1}{2}$ watt (R7)— Package of 5.....		1.00	3889	Resistor—25,000 ohms—Carbon type—3 watt (R4).....
3048	Resistor—500,000 ohms—Carbon type— $\frac{1}{2}$ watt (R10)— Package of 5.....	1.00	3932	Capacitor—190 mmfd. (C8).....	.30
3077	Resistor—30,000 ohms—Carbon type— $\frac{1}{2}$ watt (R9)— Package of 5.....	1.00	3933	Capacitor—2,400 mmfd. (C15).....	.30
3118	Resistor—100,000 ohms—Carbon type— $\frac{1}{4}$ watt (R1)— Package of 5.....	1.00	3942	Capacitor—630 mmfd. (C2).....	.32
3459	Capacitor—80 mmfd. (C5).....	.44	4000	Shield—Radiotron shield.....	.18
3572	Socket—7-contact Radiotron socket.....	.38	4018	Capacitor—Adjustable capacitor (C7).....	.78
3584	Ring—Oscillator coil retaining ring—Package of 5.....	.40	4104	Coil—Choke coil (L11).....	.90
3592	Knob—Tone control switch knob—Package of 5.....	.80	6114	Shield—Radiotron shield—1st detector.....	.20
3602	Resistor—60,000 ohms—Carbon type— $\frac{1}{4}$ watt (R2)— Package of 5.....	1.00	6114	Resistor—20,000 ohms—Carbon type—1 watt (R3, R5)— Package of 5.....	1.10
3606	Capacitor—Comprising one 0.005 and one 0.025 mfd. capacitors (C20, C21).....	.40	6660	Capacitor—2-gang variable condenser.....	2.78
3615	Knob—Volume control or range switch knob—Package of 5.....	.60	6661	Capacitor pack—Comprising two 5.0 mfd. and two 8.0 mfd. capacitors (C13, C19, C22, C23).....	2.70
3641	Capacitor—0.1 mfd. (C9).....	.35	6662	Transformer—First intermediate frequency transformer (L4, L5, C11, C12).....	2.34
3701	Capacitor—0.01 mfd. (C1).....	.30	6663	Transformer—Second intermediate frequency transformer (L6, L7).....	1.06
3702	Capacitor—0.25 mfd. (C10) (60 cycle).....	.42	6664	Coil—Oscillator coil (L2, L3).....	.94
3713	Capacitor—0.05 mfd. (C17).....	.32	6665	Shield—Oscillator coil shield and mounting bracket.....	.34
3749	Capacitor—0.1 mfd. (C18).....	.30	6666	Coil—Antenna coil (L1, C1, R1).....	1.08
3857	Coil—Detector choke coil (L8).....	.90	6667	Volume control (R6, S3).....	1.58
3858	Socket—Dial lamp socket and bracket.....	.26	6668	Switch—Range switch (S1).....	.58
3859	Socket—4-contact Radiotron socket.....	.30	6669	Switch—Tone control switch (S2).....	.50
3860	Socket—5-contact Radiotron socket.....	.32	7487	Shield—Radiotron shield.....	.25
3862	Screw—Chassis mounting screw and washer—Package of 4.....	.24	7641	Capacitor—4.0 mfd. (C10) (25 cycle).....	.86
3865	Capacitor—160 mmfd. (C16).....	.30	9045	Transformer—Power transformer—105-125 volts—50-60 cycles (T1).....	4.84
3868	Resistor—800 ohms—Carbon type— $\frac{1}{2}$ watt (R11)— Package of 5.....	1.00	9047	Transformer—Power transformer—105-125 volts—25-40 cycles.....	5.25
3869	Resistor—170,000 ohms—Carbon type— $\frac{1}{2}$ watt (R8)— Package of 5.....	1.00	9048	Transformer—Power transformer—200-250 volts—50-60 cycles.....	5.50
3873	Capacitor—1,500 mmfd. (C3).....	.30	REPRODUCER ASSEMBLIES		
3877	Capacitor—0.1 mfd. (C14).....	.32	6659	Transformer—Output transformer (T2).....	1.60
3885	Knob—Station selector knob—Package of 5.....	1.00	8987	Cone—Reproducer cone (L9)—Package of 5.....	5.00
3886	Reflector—Dial light reflector.....	.30	9436	Reproducer complete.....	5.30
			9437	Coil assembly—Comprising field coil, magnet and cone support (L10).....	2.72

RCA Victor Company, Inc.
CAMDEN, N. J., U. S. A.