

Instructions for RCA Victor R-28-BWC

Five-Tube Superheterodyne Receiver

INSTALLATION

Preliminary—After unpacking the instrument, take off the rear panel (held by screws) to obtain access to the upper portion of the chassis. Remove the interior packing material used to protect the Radiotrons during shipment. Uncoil and extend the power cord, also the antenna and ground leads. Refer to the tube location diagram on the license label inside the cabinet, and **make certain**:

- (a) That all tubes are in the proper sockets and pressed down firmly. *Never apply power to the instrument unless all Radiotrons are in place.*
- (b) That all shields are rigidly in place over the Radiotrons shown by double circles on the diagram.
- (c) That the spring connectors at the ends of the short flexible leads are securely attached to the dome terminals of the proper Radiotrons as indicated on the diagram.

Replace the rear panel.

Location—The instrument should be located close to the antenna lead-in and ground connections, and near an electrical outlet.

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 should not be run

close to or parallel with electric circuits inside or outside the building. Generally, an indoor antenna of short or medium length should be found satisfactory. An outdoor antenna of greater length may provide some increase in the receiving range, and is recommended for localities remote from broadcasting stations. When the receiver is installed in a building of metallic construction, an outdoor antenna is essential for satisfactory results.

A good ground connection is necessary for best performance of this receiver. It should be as short and direct as possible and preferably should be made 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 connecting 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 connections should be soldered and wrapped with insulating tape.

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

OPERATION

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

- (1) **Volume Control (Combined with Power Switch) (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 (Middle Knob)**—This switch has two positions. The counter-clockwise position gives full range reproduction. In the clockwise position, high-frequency (treble) response is decreased; also in this position, static interference (when present) is reduced.
- (3) **Station Selector (Right-Hand 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).

To operate the receiver, proceed as follows:

1. Turn on the power and set the Volume Control fully clockwise for maximum volume—reduce the setting if too noisy.
2. Allow approximately one-half minute for the tubes to heat, then turn the Station Selector slowly over the range of the dial until a desirable station program is heard.
3. For best reproduction reduce the Volume Control setting and adjust the Station Selector accurately for loudest volume. Always use the Volume Control—never the Station Selector—for regulation of volume.
4. Set the Tone Range Switch for the preferred tone quality.
5. When through operating, turn the Volume Control knob fully counter-clockwise until the "off" click of the power switch is heard.

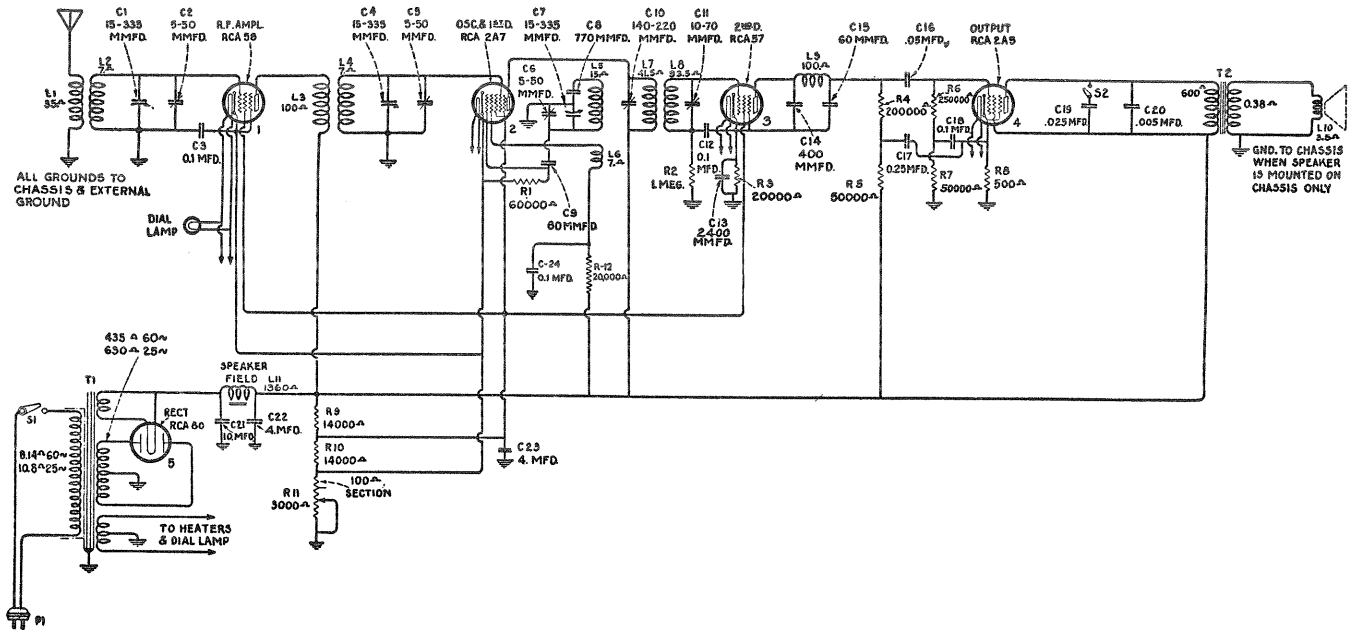


Figure 1—Schematic Circuit Diagram. Note—Sign lamps are connected across R. F. heater

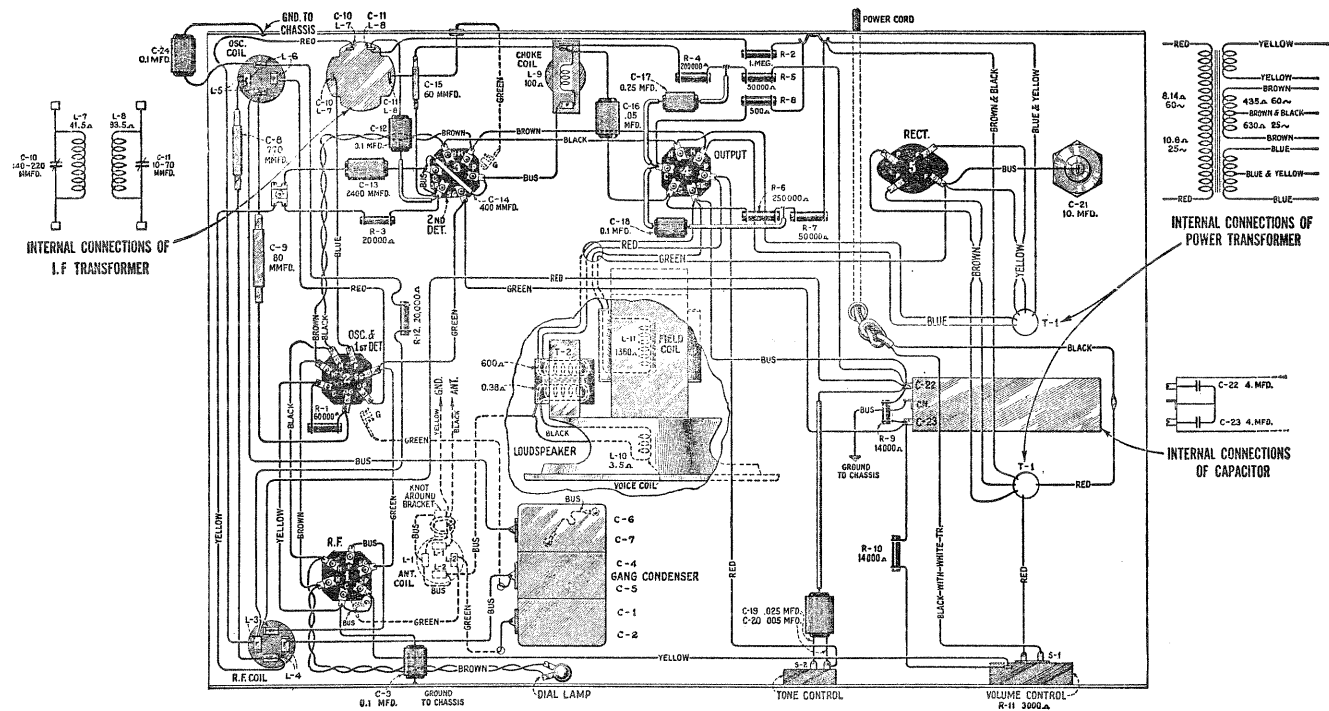


Figure 2—Wiring Diagram. Note—Speaker is not mounted on chassis and sign lamps are connected to R. F. heater

SERVICE DATA

Voltage Rating	115 Volts
Frequency Rating	25-40 Cycles and 50-60 Cycles
Power Consumption	70 Watts
Number and Types of Radiotrons	1 UX-280, 1 RCA-2A5, 1 RCA-58, 1 RCA-57, 1 RCA-2A7—Total, 5
Undistorted Output	1.75 Watts
Frequency Range	540 K. C. to 1500 K. C.

This receiver is a five-tube Super-Heterodyne incorporating a Dynamic Loudspeaker, two-point tone control, single heater type Pentode Output and the inherent sensitivity, selectivity and tone quality of the Super-Heterodyne.

The circuit consists of an R. F. stage, a combined oscillator and first detector in the RCA-2A7 tube, an intermediate stage consisting of a transformer only using two tuned circuits, a second detector, an output tube and a rectifier.

Service work in conjunction with this receiver will be similar to that of other Super-Heterodyne receivers of the small compact type construction. The line-up adjustments are made in conjunction with an external oscillator and an output meter. The line-up capacitors on the gang capacitor are adjusted for maximum output when the oscillator is coupled to the antenna and the set and oscillator are both set at 1400 K. C. The I. F. frequency is 175 K. C. and the two circuits that comprise it are adjusted for maximum output at 175 K. C.

RADIOTRON SOCKET VOLTAGES

115 Volt A. C. Line

MAXIMUM VOLUME CONTROL SETTING—NO SIGNAL

Radiotron No.	Cathode to Control Grid, Volts	Cathode to Screen Grid, Volts	Cathode to Plate, Volts	Plate Current, M. A.	Heater Volts
1. RCA-58 R. F. Amplifier	3.0	95	250	5.0	2.33
2. RCA-2A7 First Detector Oscillator	3.0	95	250	3.0	2.33
3. RCA-57 Second Detector	6.0	89	170	0.3	2.33
4. RCA-2A5 Power Amplifier	18.0	235	220	32.0	2.33
5. RCA-80 Rectifier	725 Volts PLATE TO PLATE—60 M. A. TOTAL				4.82
TOTAL CATHODE CURRENT—11 M. A.					

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					
2269	Capacitor—720 mmfd.	\$0.75	3739	Knob—Station selector or volume control knob—Package of 5	\$0.80
2747	Contact cap—Package of 5 . . . . .	.50	3740	Knob—Operating switch knob—Package of 5 . . . . .	.75
3050	Resistor—14,000 ohms—Carbon type—3 watts . . . . .	.25	3741	Escutcheon—Station selector escutcheon . . . . .	.30
3076	Resistor—1 megohm—Carbon type—½ watt—Package of 5	1.00	3742	Screen—Ivory colored screen—Located behind front panel covering aperture "wings"—Package of 2 . . . . .	.54
3456	Capacitor—0.05 mfd. . . . .	.44	6228	Resistor—200,000 ohms—Carbon type—½ watt—Package of 5	1.00
3459	Capacitor—80 mmfd. . . . .	.44	6303	Resistor—20,000 ohms—Carbon type—½ watt—Package of 5	1.00
3472	Capacitor—0.0024 mfd. . . . .	.32	6306	Resistor—14,000 ohms—Carbon type—1 watt—Package of 5	1.10
3514	Resistor—250,000 ohms—Carbon type—½ watt—Package of 5	1.00	6464	Transformer—I. F. transformer	1.88
3555	Capacitor—0.1 mfd. . . . .	.36	6470	Coil—Antenna coil	1.08
3572	Socket—Radiotron 7 contact socket . . . . .	.38	6471	Coil—Oscillator coil assembly . . . . .	.74
3573	Socket—Radiotron 4 contact socket . . . . .	.32	6472	Coil—R. F. coil assembly . . . . .	.94
3574	Coil—Choke coil . . . . .	.68	6473	Scale—Dial scale . . . . .	.50
3575	Socket—Dial lamp socket and bracket . . . . .	.34	7485	Socket—Radiotron 6 contact socket . . . . .	.40
3584	Ring—R. F. or oscillator coil retaining ring—Package of 5	1.40	7487	Shield—Radiotron tube shield . . . . .	.25
3588	Volume control—Complete with mounting nut	1.40	7589	Capacitor—Filter capacitor—Two 4.0 mfd. in container	1.64
3589	Switch—Tone control switch . . . . .	.54	7590	Capacitor—10 mfd.	1.40
3593	Screw—Chassis mounting screw—Package of 10 . . . . .	.30	7592	Condenser—3 gang variable tuning condenser	3.35
3594	Resistor—50,000 ohms—Carbon type—½ watt—Package of 5	1.00	8986	Transformer—Power transformer—200-250 volts—60 cycles	4.38
3596	Capacitor—60 mmfd. . . . .	.36	9002	Transformer—Power transformer—105-125 volts—25-50 cycles	6.00
3597	Capacitor—0.25 mfd. . . . .	.40	9025	Transformer—Power transformer—105-125 volts—50-60 cycles	4.26
3598	Capacitor—0.1 mfd. . . . .	.36	REPRODUCER ASSEMBLIES		
3602	Resistor—60,000 ohms—Carbon type—½ watt—Package of 5	1.00	6467	Transformer—Output transformer	1.44
3603	Resistor—500 ohms—Carbon type—1 watt—Package of 5	1.10	8987	Cone—Reproducer cone—Package of 5	5.00
3604	Capacitor—400 mmfd. . . . .	.30	9004	Coil assembly—Comprising field coil, magnet and cone support	2.35
3605	Capacitor—770 mmfd. . . . .	.30			
3606	Capacitor—Comprising one 0.005 mfd. and one .025 mfd. capacitors . . . . .	.40			
3623	Shield—Antenna or R. F. Coil Shield . . . . .	.30			
3624	Socket—Lamp socket and bracket—Located behind aperture wings . . . . .	.40			

RCA Victor Company, Inc.

CAMDEN, N. J., U. S. A.