



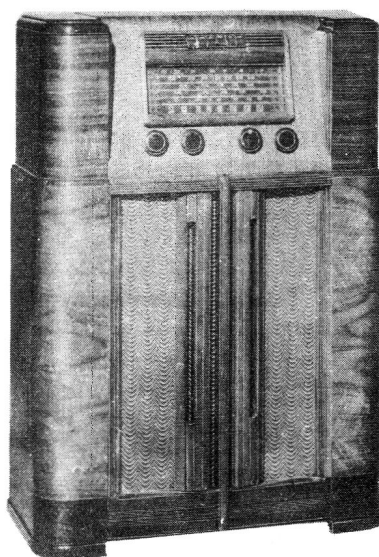
RCA Victor

MODEL A-30

Six-Tube, Five-Band, A-C, Superheterodyne Receiver

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



Electrical Specifications

FREQUENCY RANGES

Standard Broadcast (A)	530-1,580	k.c.
Short Wave (B)	2,700-9,900	k.c.
31 M	9,450-12,400	k.c.
25 M	11,650-15,800	k.c.
19-13 M	15,060-22,700	k.c.

Intermediate Frequency 455 k.c.

RADIOTRON COMPLEMENT

(1) Type-6SK7	 R-F Amplifier
(2) Type-6SA7	 First Detector-Oscillator
(3) Type-6SK7	 Intermediate Amplifier

Pilot Lamps (2) Mazda No. 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS

Rating A	 105-125 volts, 50-60 cycles, 75 watts
Rating B	 105-125 volts, 25-60 cycles, 75 watts

POWER OUTPUT

Undistorted	 3 watts
Maximum	 4.5 watts

PUSH BUTTON TUNING RANGES

Button No. 1	 Phonograph
Button No. 2	 540 k.c.-1000 k.c.
Button No. 3	 540 k.c.-1000 k.c.

R. F. ALIGNMENT FREQUENCIES

"B" (49 Meters)	9,550 k.c. (osc.)
31 M (31 Meters)	 9,550 k.c. (osc., ant.)
25 M (25 Meters)	11,800 k.c. (osc.)
19-13M (19-13 Meters)	 15,200 k.c. (osc., & ant.)
Standard Broadcast (A)	600 k.c. (osc.), 1400 k.c. (osc., ant.)

LOUDSPEAKER

Type	 12 inch Electrodynamic
Impedance (V.C.)	 3 ohms at 400 cycles

Button No. 4	 620 k.c.-1200 k.c.
Button No. 5	 750 k.c.-1400 k.c.
Button No. 6	 900 k.c.-1570 k.c.

General Description

This receiver employs a six-tube, five band super-heterodyne circuit, the arrangement of which is shown in the Schematic Circuit Diagram. Features of design include: —Loop antenna as the first tuned circuit; high gain R.F. stage; stabilized oscillator circuit resulting in less frequency drift; magnetite core I.F. transformers; magnetite core oscillator coils on all bands;

automatic volume control; A.C. outlet on chassis back apron; variable tone control circuit; push button tuning of five Standard Broadcast stations by means of pre-set oscillator coils; dust proof electrodynamic loudspeaker; temperature stabilized capacitors in the oscillator circuits; and a large, edge lighted dial individually calibrated for each band.

Circuit Arrangement

The circuit consists of an R.F. amplifier stage incorporating the Loop Antenna as the first tuned circuit; first detector (oscillator) stage; I.F. amplifier stage; second detector, A.V.C. and first Audio stage with a single pentode output operating in Class A ; and a well regulated power supply.

Temperature compensated capacitors are used in the oscillator circuits to reduce oscillator drift.

The intermediate frequency amplifier consists of a Type 6SK7 tube in a single stage transformer-coupled circuit. The windings of all I.F. Transformers are resonated by fixed capacitors and are adjusted by moulded magnetite cores to tune to 455K.C.

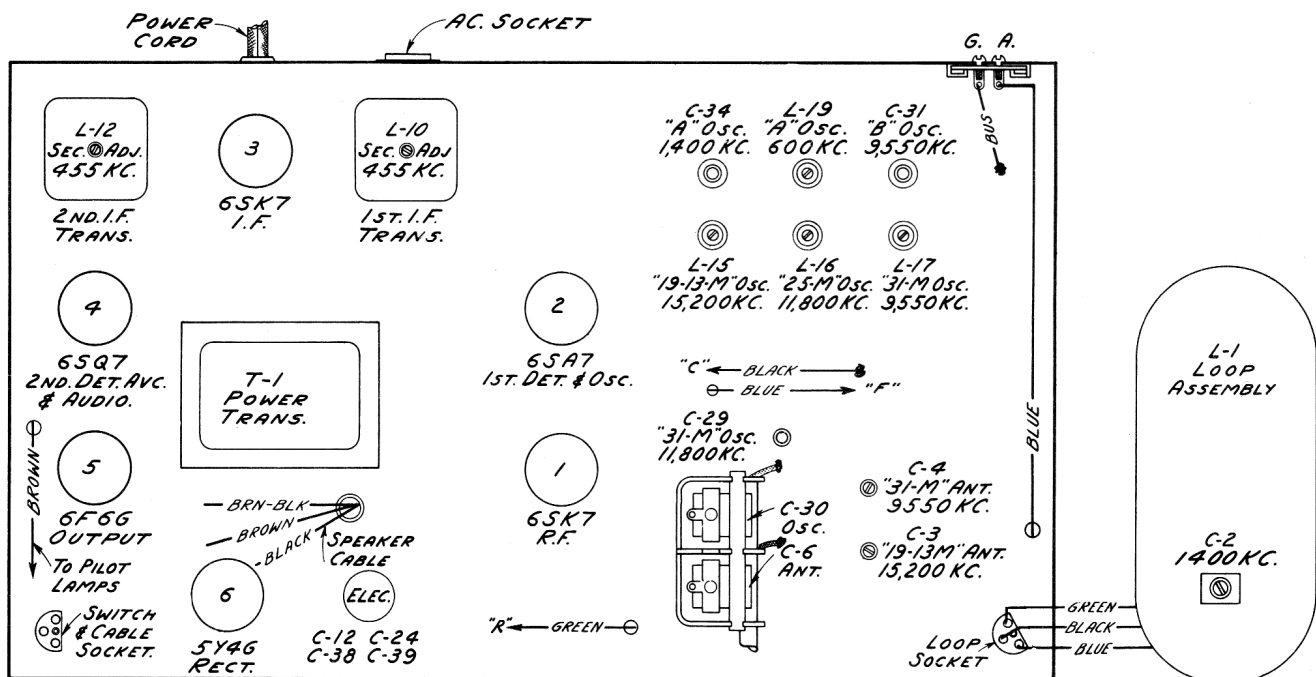


Fig. 1—Chassis Layout and Alignment Adjustments

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang

in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Order of Alignment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	6SK7 2nd I.F. Grid	.1 Mfd.	455 kc	"A"	No. Signal 1600 kc	2nd I.F. Trans.	L11 & L12
2	6SA7 Det. Grid	.1 Mfd.	455 kc	"A"	No. Signal 1600 kc	1st I.F. Trans.	L9 & L10
3	Antenna Terminal	300 Ohms	9,550 kc	31 M	9.55 mc (40°)	31 M Osc.	L17
4	Antenna Terminal	300 Ohms	11,800 kc	31 M	11.8 mc (166.5°)	31 M Osc.	C29
5	Antenna Terminal	300 Ohms	9,550 kc	31 M	9.55 mc (40°)	31 M Ant.	C4
6	Antenna Terminal	300 Ohms	15,200 kc	19-13 M	15.2 mc (25.5°)	19-13 Osc.	L15
7	Antenna Terminal	300 Ohms	15,200 kc	19-13 M	15.2 mc (25.5°)	19-13 M Ant.	C3
8	Antenna Terminal	300 Ohms	11,800 kc	25 M	11.8 mc (42°)	25 M Osc.	L16
9	Antenna Terminal	300 Ohms	9,550 kc	"B"	9.55 mc (170°)	B Osc.	C31
10	Antenna Terminal	300 Ohms	1,400 kc	"A"	1400 kc (155°)	"A" H-F Osc.	C34
11	Antenna Terminal	300 Ohms	600 kc	"A"	600 kc (33.5°)	"A" L-F Osc.	L19
12	Radiation Loop	....	1,400 kc	"A"	1400 kc (155°)	"A" Ant.	C2* (on Loop)

NOTE:—Align the I.F. Circuits by means of the oscillograph, for a symmetrical curve. Peak R.F. stages of all bands. * Radiation loop comprising two turns of wire 18 inches in diameter should be placed 4 feet from receiver loop, before aligning "C2".

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band scales. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave

stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

NOTE:—Whenever possible spread band adjustments should be made with the chassis fastened in the cabinet and the pointer accurately aligned to the dial.

Spread-band Adjustments.—Alignment of the spread bands requires special procedure since test oscillators used alone are not ordinarily sufficiently accurate for this purpose. The RCA Stock No. 9572 Crystal Calibrator affords a convenient and accurate alignment standard. Wrap a few turns of wire around the crystal calibrator and connect one free end to the antenna terminal of the receiver. Using the crystal calibrator to obtain the necessary accuracy, follow the tabulated alignment procedure for the "31M.", "25M.", and "19M." bands.

For the "B" band snap crystal calibrator "Hi-Lo" switch to "Hi", turn the range selector to "B" band, and set receiver dial pointer to 9.0 mc. Adjust oscillator capacitor C31 for maximum signal. Snap "Hi-Lo" switch to "Lo" and locate 9500 kc (the fifth 100 kc harmonic above 9000 kc.) Adjust for maximum signal on 9500 kc.

RADIOTRON SOCKET VOLTAGES

Type	Plate	Screen Grid	Control Grid	Cathode	Heater
6SK7 R.F.	200V	95V	....	....	6.8V
6SA7 Conv.	215V	95V	....	....	6.8V
6SK7 I.F.	230V	95V	-2V	....	6.8V
6SQ7 Audio	*65V	....	....	....	6.8V
6F6G Output	320V	330V	....	22V	6.8V
5Y4G Rectifier	output measured across C39			330V	5.0V

* Actual voltage will be higher depending on internal resistance of voltmeter used.

Note:—All the above values hold within plus or minus 20% when measured with a 1,000 ohm-per-volt meter, on a line voltage of 115 volts. All voltages are measured to chassis.

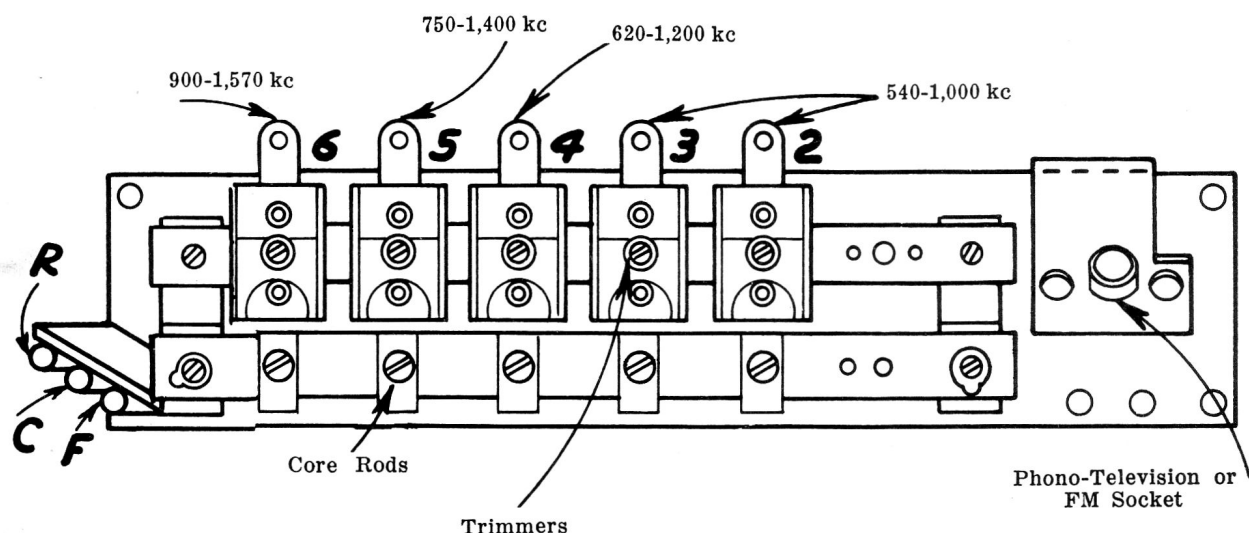


Fig. 4

Push Button Adjustment

The push buttons may be adjusted for any five stations on the "A" band. The preferable arrangement is to adjust for stations in order of frequency.

Proceed as follows:—

- (1) Turn "Range selector" to "A" position and manually tune in the first station, say 560 k.c.
- (2) Turn "Range selector" to "P.B." position, press button No. 2 located second from left on front panel.

(3) Referring to Figure 4, adjust core and trimmer No. 2 for a peak at 560 k.c.

(4) Proceed to adjust the other four stations in order of frequency, as outlined above.

When a station is inaudible due to reception conditions a test oscillator should be substituted for the station signal.

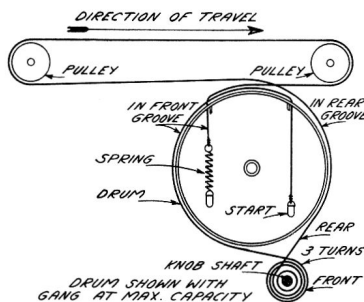


Fig. 5—Dial Drive Cord.

REPLACEMENT PARTS

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

STOCK NO.	DESCRIPTION	STOCK NO.	DESCRIPTION
RECEIVER ASSEMBLIES			
S-2876	Board-Antenna and Ground Terminal Board.....	30992	Resistor- 10 megohm 1/4 watt (R13)..
12714	Capacitor-Adjustable trimmer 2-12 mmfd.(C29,C31,C34).....	14887	Retainer-Drive cord pulley retainer (Pkg.10).....
S-2991	Capacitor-Adjustable trimmer 2 of 2-10 mmfd (C3,C4).....	35633	Shaft-Range indicator shaft.....
S-3007	Capacitor- 8.2 mmfd (Temp.comp.) (C36).....	S-2888	Shaft-Station selector drive shaft..
12948	Capacitor- 33 mmfd (C35).....	S-2824	Socket-A.C. Socket.....
35644	Capacitor- 47 mmfd (Temp.comp.) (C27).....	36422	Socket-Loop antenna or push button switch cable socket.....
S-3008	Capacitor- 47 mmfd (Close Tol.) (C5).....	31364	Socket-Dial lamp socket.....
12723	Capacitor- 56 mmfd (C11).....	31251	Socket-Tube socket.....
35645	Capacitor- 68 mmfd(Temp.comp.)(C28)	13638	Spring-Drive cord tension spring (Pkg.2).....
S-3009	Capacitor- 68 mmfd(Close Tol.)(C1,C7)	S-2990	Switch-Range switch (S1,S2,S3).....
12720	Capacitor- 100 mmfd(C9,C20).....	S-2892	Tone Control and Power Switch (R14,S4).....
12724	Capacitor- 120 mmfd(C45).....	35636	Transformer-1st I.F. Transformer (L9,L10,C14,C15).....
12694	Capacitor- 220 mmfd (C8).....	35628	Transformer-2nd I.F. Transformer (L11,L12,C18,C19).....
S-2988	Capacitor- 680 mmfd (Close Tol.) (C37).....	S-2903	Transformer-Power, 110 volt 25/60 cycle (T1).....
35643	Capacitor-3000 mmfd (C32).....	S-2904	Transformer-Power, 110 volt 50/60 cycle (T1).....
13895	Capacitor-5600 mmfd (C33).....	S-2906	Volume Control (R11).....
5107	Capacitor-.0025 mfd (C21).....	SPEAKER ASSEMBLIES	
33584	Capacitor-.005 mfd (C22,C25).....	31825	Cap-Dust cap for cone centre(Pkg.5).
4937	Capacitor-.01 mfd (C10,C23).....	S-2458	Coil-Field coil (L20).....
32787	Capacitor-.05 mfd (C16,C26).....	11469	Coil-Neutralizing coil (L14).....
4839	Capacitor-.1 mfd (C13,C17).....	31275	Cone-Speaker cone and voice coil (L13).....
33014	Capacitor-Electrolytic, 3 sections of 10 mfd, 1 section of 20 mfd. (C12,C24,C38,C39).....	5118	Plug-3 contact plug (male).....
S-2992	Coil-Antenna coil "B", "31" (L5,L6, L7).....	S-2827	Speaker complete.....
S-2993	Coil-Antenna coil 25, 19, 13 M (L2,L3,L4).....	S-2855	Transformer-Output Transformer (T2).
35876	Coil-Choke (L8,R1).....	PUSH BUTTON SWITCH ASSEMBLY	
S-2994	Coil-Oscillator coil "A and B" (L18, L19).....	S-2907	Cable-Shielded phono cable less plug
S-2995	Coil-Oscillator coil 19, 13 M (L15).	S-2908	Capacitor-Trimmed capacitor bank (C40 to C44).....
35625	Coil-Oscillator coil 25 M (L16).....	35803	Coil-Oscillator coil (L21 to L25)....
S-2996	Coil-Oscillator coil 31 M (L17).....	32641	Plug-3 prong male plug for phono cable.....
S-2989	Condenser-Two gang variable tuning condenser (C6,C30).....	31347	Socket-Phono input socket.....
S-2897	Cord-Indicator pointer drive cord (53 1/2").....	S-2911	Switch-Push Button switch assembly (S5 to S15).....
31273	Drum-Drive cord drum.....	MISCELLANEOUS ASSEMBLIES	
S-2886	Indicator-Station selector indicator pointer.....	35883	Button-Station selector push button.
11765	Lamp-Dial Lamp (Mazda 51).....	S-3012	Dial-Station selector dial scale....
5119	Plug-3 contact female speaker plug..	34489	Knob-Volume, tone or tuning knob.....
31280	Pulley-Drive cord pulley.....	S-3316	Knob-Range switch knob(Outer section)
30929	Resistor- 270 ohm 1/2 watt (R7).....	S-3010	Knob-Range switch knob(Inner section)
31388	Resistor- 390 ohm 1 watt (R17).....	S-2916	Loop-Antenna loop assembly(L1,C1,C2)
14720	Resistor-1000 ohm 1/4 watt (R3).....	36149	Marker-Push button call letter marker (1 set).....
30694	Resistor-3900 ohm 1/2 watt (R2).....	34053	Spring-Push button retaining spring (Pkg.5).....
14559	Resistor-10,000 ohms 1/4 watt (R12).	14270	Spring-Knob retaining spring (Pkg.2).....
S-2587	Resistor-10,000 ohm 4 watt (R9).....	S-2542	Tool-Push button tuning set up tool.....
13998	Resistor-22,000 ohm 1/4 watt (R10)..		
12454	Resistor-33,000 ohm 1/4 watt (R6)...		
12412	Resistor-47,000 ohm 1/4 watt (R5)...		
30648	Resistor-470,000 ohm 1/4 watt (R15,R16).....		
12679	Resistor-2.2 megohms 1/4 watt(R4,R8)		