



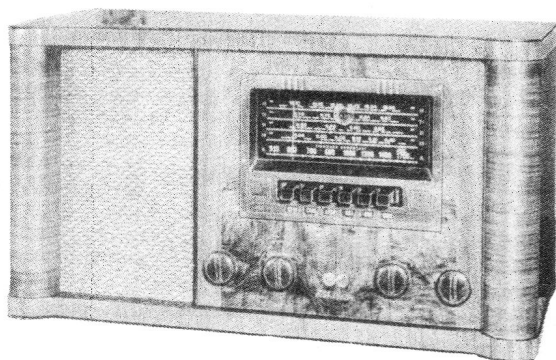
RCA Victor

MODELS A3 and A4

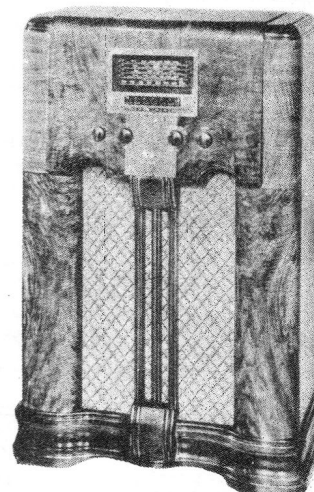
Seven-Tube, Five-Band, A-C, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



Model A3



Model A4

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast (A) 540-1,720 kc
 "49 M" (49 Meters) 5,900-6,240 kc
 "31 M" (31 Meters) 9,410-9,690 kc
 "25 M" (25 Meters) 11,680-11,920 kc
 "19 M" (19 Meters) 15,090-15,380 kc

R-F ALIGNMENT FREQUENCIES

"49 M" (49 Meters) 6,100 kc. (osc., det., ant.)
 "31 M" (31 Meters) 9,550 kc. (osc.)
 "25 M" (25 Meters) 11,800 kc. (osc.)
 "19 M" (19 Meters) 15,200 kc. (osc.)
 "Standard Broadcast" 600 kc. (osc.), 1,500 kc.
 (osc., Det., Ant.)

Intermediate Frequency 455 kc.

TUBE COMPLEMENT

(1) Type-6SK7 R-F Amplifier
 (2) Type-6SA7 First Detector, Oscillator
 (3) Type-6SK7 Intermediate Amplifier
 (4) Type-6SQ7 ..Second det., A-F Amp., and A.V.C.

(5) Type-6F6G Power Output
 (6) Type-6U5 Tuning Tube
 (7) Type-5Y4-G Full wave Rectifier

Pilot Lamps (2) Mazda No. 44, 6.3 volts, 0.25 amp.

POWER SUPPLY RATINGS

Rating A.....105-125 volts, 50-60 cycles, 80 watts
 Rating B.....105-125 volts, 25-60 cycles, 80 watts

POWER OUTPUT

Undistorted 2 watts
 Maximum 5 watts

LOUDSPEAKER (RL79-1) (A3)

Type 6 inch Electrodynamic
 Impedance (V.C.) 3.4 ohms at 400 cycles

LOUDSPEAKER (RL70H-1) (A4)

Type 12 inch Electrodynamic
 Impedance (V.C.) 3.4 ohms at 400 cycles

General Description

These receivers employ a seven-tube, five band, superheterodyne circuit, the arrangement of which is shown by the Schematic Circuit Diagram. Features of design include: Spread Band "Overseas" dial; an r-f amplifier stage with "cumulative-wound" antenna and detector "A" Band coil for high signal to noise ratio; magnetite-core i-f transformers and

low frequency oscillator tracking; full automatic volume control; phonograph television sockets; "Magic Eye" Tuning Tube; dust-proof electrodynamic loudspeaker; plunger-type, air dielectric trimming capacitors; temperature-stabilized capacitors; radio-phonotelevision tone control switch, and an edge lighted horizontal dial and pointer.

Circuit Arrangement

The circuit consists of an r-f amplifier stage; first detector, oscillator stage; i-f amplifier stage; second detector, audio voltage amplifier, and automatic volume control stage; power-amplifier stage; tuning indicator; and a full-wave rectifier.

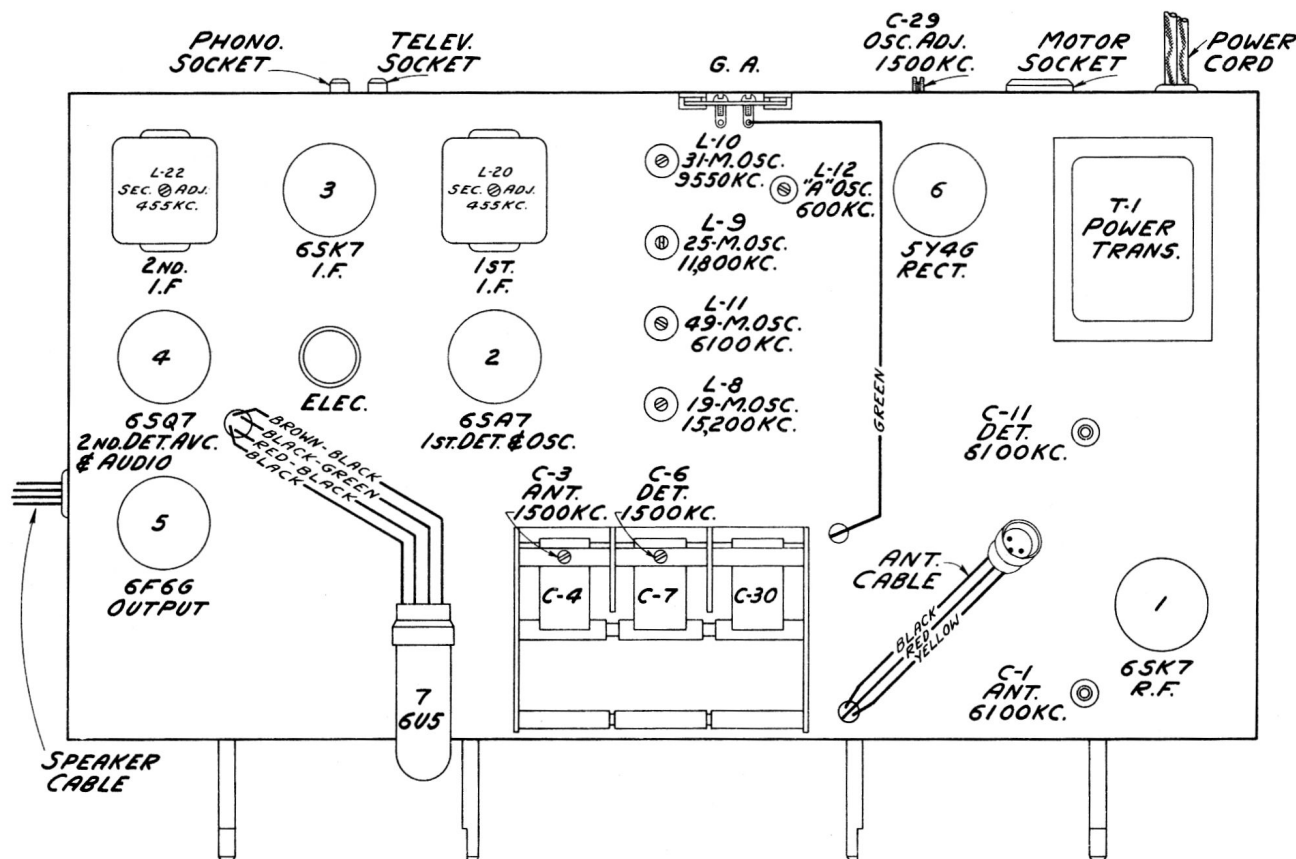
The antenna and first-detector coils are constructed with a special type of winding (cumulative) to provide increased sensitivity and selectivity on the "Standard Broadcast" band. Special capacitors shunting the spread-band oscillator coils compensate for temperature variations to reduce oscillator frequency drift.

Spread-band tuning is accomplished electrically by shunting the oscillator section of the variable capacitor with relatively large temperature-stabilized fixed capacitors for tuning the oscillator coils on the

"19M," "25M," "31M" and "49M" bands. Antenna and first-detector coils are designed to be sufficiently broad-tuned to require no variable tuning over the narrow frequency range of the spread-bands.

The spread-band oscillator coils and the "Standard Broadcast" band oscillator, first detector, and antenna coils are all wound on separate forms. The antenna and first detector spread-band coils are tapped. Undesirable interaction between coils is avoided by shorting the unused sections by means of the range selector.

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 455 kc.



Chassis Layout and Alignment Adjustments

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

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 240° 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.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

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 240° 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	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	2nd I.F. Trans.	L21 & L22
2	6SA7 Det. Grid	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	1st I.F. Trans.	L19 & L20
3	Ant. Term	300 Ohms	6,100 kc	"49 M"	6.1 mc (95°)	"49M" Osc.	L11
4	Ant. Term	300 Ohms	6,100 kc	"49 M"	6.1 mc (95°)	"49M" Det.	C-11
5	Ant. Term	300 Ohms	6,100 kc	"49 M"	6.1 mc (95°)	"49M" Ant.	C-1
6	Ant. Term	300 Ohms	9,550 kc	"31 M"	9.55 mc (137°)	"31M" Osc.	L10
7	Ant. Term	300 Ohms	11,800 kc	"25 M"	11.8 mc (115°)	"25M" Osc.	L9
8	Ant. Term	300 Ohms	15,200 kc	"19 M"	15.2 mc (130°)	"19M" Osc.	L8
9	Ant. Term	200 Mmfd.	1,500 kc	"A"	1,500 kc (42°)	"A" H-F Osc.	C29
10	Ant. Term	200 Mmfd.	600 kc	"A"	600 kc (201°)	"A" L-F Osc.	L12
11	Ant. Term	200 Mmfd.	1,500 kc	"A"	1,500 kc (42°)	"A" Det.	C6
12	Ant. Term	200 Mmfd.	1,500 kc	"A"	1,500 kc (42°)	"A" Ant.	C3

NOTE:—Align the I.F. Circuits by means of the oscillograph, for a symmetrical curve. Peak R.F. stages of all bands.

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

Spread-band Adjustments.—Bottom shield-pan must be in place before attempting spread-band alignment. Alignment of the spread bands requires special procedure since test oscillators used alone are not ordinarily sufficiently accurate for this purpose.

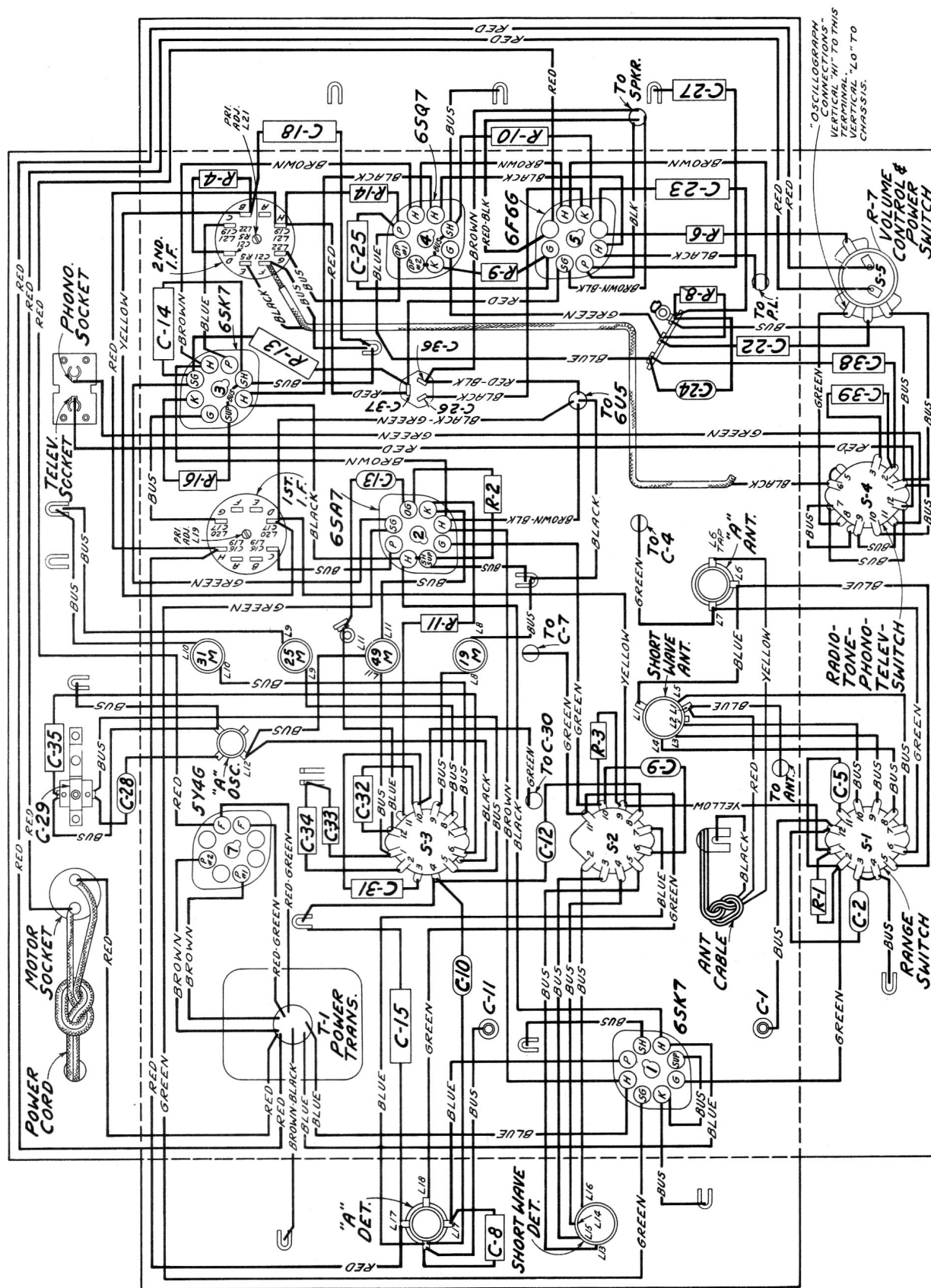
The RCA Stock No. 9572 Crystal Calibrator affords a convenient and accurate alignment standard. Wrap a few turns of wire around the crystal calibrator and connect one free end to the antenna terminal of the receiver. Using the crystal calibrator to obtain the necessary accuracy, follow the tabulated alignment procedure for the "31M.", "25M.", and "19M." bands.

For the "49M." band, snap crystal calibrator "Hi-Lo" switch to "Hi", turn the range selector to "49M." band, and set receiver dial pointer to 6.0 mc. Adjust oscillator adjusting core L11 for minimum "Tuning Tube" opening. Use the peak indicated by the alignment table. Snap "Hi-Lo" switch to "Lo" and locate 6,100 kc (the first 100 kc harmonic above 6,000 kc) by slightly readjusting L11 with the dial pointer set at 6.1 mc. This method insures selection of correct crystal-calibrator harmonic.

When aligning with the RCA Stock No. 150 Test Oscillator use the variable (unmodulated) oscillator† and "Magic Eye" indication of receiver output. Set test-oscillator dial 800 kc lower than the desired signal for the four lower frequency ranges and 800 kc higher than the desired signal for the two high ranges and use in same manner as TMV-97-C. Insert an open-circuit telephone plug in the test oscillator "Ext. Mod." jack, so the modulated fixed-frequency oscillator will be cut off, and align on the unmodulated variable oscillator signal, which will close the "Tuning Tube" and evidence itself by a rushing noise in the speaker.

If the crystal calibrator signals are weak, disconnect test oscillator while using the crystal calibrator.

† The No. 150 Test Oscillator employs a fixed-frequency (800 kc), modulated oscillator and a variable, unmodulated oscillator. The scale is calibrated to the sum frequency for the two higher frequency ranges and to the difference frequency for the four lower frequency ranges.



Chassis Wiring Diagram

RADIOTRON SOCKET VOLTAGES

Type	Plate	Screen Grid	Cathode	Heater
6SK7 R.F.	250V	90V	.....	6.6V
6SA7 Conv.	250V	90V	.....	6.6V
6SK7 I.F.	250V	90V	.....	6.6V
6SQ7 A.F.	90*V	.....	.....	6.6V
6F6G Output	240V	250V	17V	6.6V
6U5 Indicator	358V	.....	.....	6.6V
5Y4G Rectifier	345/345V	.....	358V	5.0V

*Cannot be accurately measured with an ordinary voltmeter due to the high value of series resistance. All the above values hold within + 20% when measured with a 1000 ohm-per-volt type of meter, on a line voltage of 115 volts.

Precautionary Lead Dress

(1) Dress speaker cable leads against chassis side apron, away from 6SQ7 grid circuit leads.

(2) Twist red A.C. leads together—dress along chassis apron, below phono-television sockets, upwards to clamp on chassis side apron and across to power switch on volume control.

(3) Dress filament leads away from 6SQ7 tube.

(4) Dress 6SQ7 grid lead against chassis below all crossing leads. Remove any excess length of this lead.

(5) Dress 6SQ7 plate lead close to chassis.

Push Button Adjustments

The push buttons should be adjusted for six favorite stations after the receiver has had a brief warm-up period.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high.

Proceed as follows:—

1. Set the accessory tone knob to "Radio" and turn the range selector to "A" band position.

2. Remove the six push buttons by inserting a small screwdriver blade in the slot provided on the under side of the button. Press the screwdriver blade upwards at the same time pull the button forward.

3. Loosen the push arm adjusting screws accessible through the push button openings.

4. Press in the tuning knob and accurately tune in the first station.

5. With station accurately tuned in, press in the first push button and tighten screw.

6. Proceed in a similar manner to adjust the remainder of the push buttons.

7. Replace push buttons by inserting in the escutcheon openings, spring side down. Press button in as far as possible to securely lock button in escutcheon.

8. Place call letter tabs in openings provided.

Note:—When difficulty is experienced in setting up the push buttons due to sticking cams, unscrew cam screw $\frac{1}{2}$ turn and rotate gang back and forth until the cam plate moves freely.

RCA Victor "Magic Rodtenna"—The Model A4 receiver is designed for use with Stock No. S-2477 Rodtenna. A three prong plug is provided on the chassis for convenient connection of this antenna, wherever the conventional type of outdoor antenna, is not practical. It is not advisable to replace a conventional type of antenna with the Rodtenna. Read the instructions enclosed with the Rodtenna for complete details.

REPLACEMENT PARTS FOR MODELS A3 TABLE & A4 CONSOLE

7 TUBE, 5 BAND AC RECEIVER

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-2524	Arm-Trip arm located on range switch shaft.....	32086	Roller-Drive shaft rubber roller...
14517	Board-Ant.-Gnd.terminal board.....	33438	Screw-Thumb screw for tuning indi- cator bracket (Pkg.2).....
14394	Cable-Tuning indicator cable assembly.....	31364	Socket-Dial lamp socket.....
30766	Cap-Tuning indicator rubber cap.....	S-2447	Socket-AC input socket.....
12714	Capacitor-Air-trimmer 2-12 mmfd. (C1,C11).....	31251	Socket-tube socket.....
S-2578	Capacitor-Mica trimmer 3-30 mmfd. (C3,C6,C29).....	33514	Socket-Phono-Television socket.....
13001	Capacitor-8.2 mmfd. (C2,C10).....	31418	Spring-Drive cord tension spring (Pkg.2).....
31350	Capacitor-18 mmfd. (C35).....	S-2583	Switch-Range Switch (S1,S2,S3).....
31354	Capacitor-33 mmfd. (Temp.Comp.)(C33)	S-2584	Switch-Tone,Phono,Television Switch (S4).....
12723	Capacitor-56 mmfd. (C12).....	S-2534	Transformer-1st I.F. Transformer (L19,L20,C16,C17).....
31349	Capacitor-62 mmfd. (C32).....	33761	Transformer-2nd I.F. Transformer (L21,L22,C19,C20,C21).....
31352	Capacitor-120 mmfd. (C31).....	S-2535	Transformer-Power Transformer, 105-125 volts,25-60 cycles (T1)...
12724	Capacitor-120 mmfd. (C13).....	S-2476	Transformer-Power transformer, 105-125 volts 50-60 cycles (T1)...
31351	Capacitor-190 mmfd. (C34).....		REPRODUCER ASSEMBLIES (RL79-1)
30608	Capacitor-510 mmfd. (C28).....	32907	Cap-Dust cap for cone center (Pkg.5).....
12537	Capacitor-560 mmfd. (C5,C9,C24).....	31647	Coil-Field coil (L25).....
5107	Capacitor-.0025 mfd. (C22,C39).....	32906	Coil-Hum neutralizing coil (L23)...
4838	Capacitor-.005 mfd. (C27,C38).....	32934	Cone-Reproducer cone & voice coil (L24).....
4937	Capacitor-.01 mfd. (C25).....	31302	Plug-4 contact male plug.....
14393	Capacitor-.01 mfd. (C8).....	33078	Reproducer complete.....
4886	Capacitor-.05 mfd. (C18).....	32905	Transformer-Output transformer (T2).....
11414	Capacitor-0.1 mfd. (C14,C15,C23)...		REPRODUCER ASSEMBLIES(RL70H-1)
S-2579	Capacitor-Electrolytic capacitor consisting of one 10 mfd.,one 15 mfd., and one 20 mfd.sections (C26, C36,C37).....	13866	Cap-Dust cap for cone center - (Pkg. 5).....
S-2585	Coil-Antenna "A" band coil (L6,L7)...	12012	Coil-Field coil (L25).....
S-2580	Coil-Antenna "Spread Band" coil (L1, L2,L3,L4,L5).....	11469	Coil-Hum neutralizing coil (L23)...
S-2586	Coil-R.F. "A" band coil (L17,L18)...	31275	Cone-Reproducer cone & voice coil (L24).....
31266	Coil-R.F. "Spread Band" coil (L13, L14,L15,L16).....	31302	Plug-4 contact male plug.....
S-2581	Coil-Oscillator "A" band coil (L12)...	31592	Reproducer complete.....
S-2582	Coil-19M band oscillator coil (L8)...	14355	Transformer-Output transformer (T2).....
31254	Coil-25M band oscillator coil (L9)...		MISCELLANEOUS ASSEMBLIES
31255	Coil-31M band oscillator coil (L10)...	S-2537	Button-Station selector push button.....
31256	Coil-49M band oscillator coil (L11)...	S-2576	Dial-Glass dial scale.....
S-2536	Control-Volume control & power switch (R7,S5).....	S-2539	Escutcheon-Station selector dial escutcheon.....
S-2529	Cord-Drive Cord.....	S-2540	Knob-Volume,tone,range or tuning control knob.....
S-2530	Drive-Friction drive assembly.....	S-2541	Marker-Push button call letters markers (1 set).....
34267	Drum-Drive cord drum complete with set screws and calibrator dial.....	14270	Spring-Knob retaining spring - (Pkg. 10).....
S-2531	Indicator-Station selector indicator pointer.....	S-2543	Spring-Push button retaining spring (Pkg.3).....
11891	Lamp-Pilot lamp.....	S-2542	Tool-Push button adjusting tool.....
5040	Plug-4 contact female speaker plug..		
14459	Resistor-100 ohm, 1/4 watt (R15,R16)		
12261	Resistor-390 ohm, 1/4 watt (R11)....		
31388	Resistor-390 ohm, 1 watt (R10).....		
S-2587	Resistor-10,000 ohm, 4 watt (R13)...		
S-1894	Resistor-5,600 ohm, 1/4 watt (R6)...		
13998	Resistor-22,000 ohm, 1/4 watt (R2,R5)		
12285	Resistor-470,000 ohm,1/4 watt (R9)...		
12013	Resistor-1 meg.,1/10 watt (R1,R3)...		
12679	Resistor-2.2 meg.,1/4 watt (R4).....		
13601	Resistor-10 meg., 1/4 watt (R8).....		
S-2446	Retainer-AC female socket retainer (Pkg.3).....		