

National HRO-7

To eliminate oscillator drift occurring during stand-by periods, the following changes have been made. These changes allow the h-f oscillator, bfo oscillator and output tubes to remain on all the time whether the B+ switch is turned on or off.

1. Move the B+ end of R24 from the B+ tie-point to pin 6 of V9, 6J7.
2. Connect pin 6 of V9 to pin 5 of S1 using 8 $\frac{3}{4}$ inches of red wire.
3. Move red lead supplying pin 4 of S1 from the cold terminal of bsw to the hot terminal.
4. Move red lead running to tie-point located on chassis between C31 and C37 from pin 4 of S1 to the cold terminal of bsw.
5. Change the value of R21 to 3500 ohms, 5 watts.

National 686S, 686SB, SPU686S, 1286S

The 686SB power unit is the same as the 686S except that it is equipped with mounting brackets. The SPU686S is the same as the 686S except that it is designed for rack mounting. The 1286S is similar to the 686S except that it is designed to operate from 12 volts d.c. The voltages available at the output socket are 12 volts d.c. and 165 volts at 45 milliamperes d.c.

The following capacitors have been added to the 686S and 1286S power units:

1. C203, 0.01 μ f, 300 vdcw, added from the junction of fuse F101 and switch S101 to ground.
2. C204, 0.0043 μ f, 500 vdcw, from the B+ terminal to ground.
3. C205, 0.0001 μ f, 500 vdcw, across output socket, from L201 to A+.

RCA A-82, Ch. RC-1094; A-91, Ch. RC-1095; A-108, Ch. RC-1096; 45-W-9; Ch. RC-1095A

The original carriage in all of the above models used a pull-out handle on the top front, the carriage now in use has a handle under the lower front edge. The same plastic frame may be used for all models. A plug button (supplied with each plastic frame) is used to cover a center hole which is unused on all models except A-108.

Frame—Stock No. 76161 is used as a replacement for frame Stock No. 75549 or 75571 (maroon).

Frame—Stock No. 76162 is used as a replacement for frame Stock No. 75683 or 75684 (light brown).

The new type of pull-out handle (lower front) is available as Stock No. 76125. If the original pull-out handle (top front) is desired it will be necessary to drill two holes in the frame. The holes are .203" diameter and are located .625" each side of the center line and 13/64" down from the top.

In Models A-91 and A-108 the color of wire used in the connecting cable has been changed. A black-white wire has been used as a substitute for the black wire (pin 1 to speaker) and a brown-white wire has been used as a substitute for the brown wire (pin 8 to speaker). A brown wire goes from pin 2 to the jewel lamp and a black wire goes from pin 3 to the jewel lamp.

In Model A-82 a substitute speaker (stamped 92569-9B) has been used in some instruments. It requires a different speaker cone than the one listed in the A-82 Parts List. Speaker 92569-9B uses Stock No. 75875 cone. Speaker 92569-9W uses Stock No. 74901 cone.

RCA Q10-3, Q10 Series, Ch. RC-549C

Model Q10-3 is identical to other sets of the Q10 series with the exception of the cabinet which is black and uses ivory color knobs.

The output transformer mounting has been revised to minimize the possibility of breakdown, especially in tropical areas. The transformer in later production sets is mounted on insulation board which is, in turn, mounted on the dial back plate support.

RCA BX55, Ch. RC-1088; BX57, Ch. RC-1088A

Capacitor C11, 0.047 μ f, must be dressed away from the metal chassis and in such position that inserting the chassis into the case will not change its position. The side of C11 which may short to chassis is the side which connects directly to the selenium rectifier. If this side contacts the chassis it will place the chassis at power line potential.

The 2600-ohm, 6-watt resistor R13 now being used in Model BX57 is of improved design. The original resistor was a ceramic type and the type now being used is a flat armored type. When the new type is used to replace the original type, it is necessary to drill a .120" diameter hole in the front apron of the chassis to accommodate a self-tapping screw for mounting purposes.

RCA Ch. RC-1065C, RC-1065D

The value of capacitor C3 in these chassis is 9.1-113.8 μ f. C3 is located across oscillator coil L2.

RCA Record Changers RP-176A, RP-176B

The record changers are the same as the RP-176 except for the following differences. The pickup and arm assembly for the RP-176A is: Stock No. 72716, Arm, Pickup arm complete, less pivot arm, crystal and cable. The motorboard sub-assemblies, complete with all welded and riveted parts, less detachable operating parts, are designated as stock numbers 72717 and 70844, for RP-178A and RP-178B, respectively.

RCA X551, Ch. RC-1089B; X552, Ch. RC-1089C

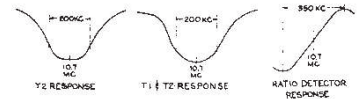
R4, the 3.3-megohm avc filter resistor previously connected to the junction of R12, 47,000 ohms, and the phono jack J1, is now connected to the junction of R12 and terminal 2 of the 2nd i-f transformer T2.

RCA 8V90, Ch. RC-618, RC-618A; 8V91, Ch. RC-616A, RC-616H

Under Alignment Procedure, Critical Lead Dress, the following additions should be made:

17. The f-m oscillator coil should be cemented to its support. Amphenol No. 912 cement is recommended for this purpose. If it is necessary to loosen the coil, use Amphenol No. 916 solvent.

18. Capacitor C41 should be waxed or cemented to the chassis apron. The f-m response curves are shown in the accompanying diagram.



f-m response curves for Models 8V90 and 8V91.

In Chassis RC-618 the value of R35 is 560 ohms; and R31, the 1-megohm resistor across C4, is used only on early chassis.

Chassis RC-618A is the same as Chassis RC-618 except for the following changes which have been made. A filament choke coil L6 has been added from pin 2 of V8 to pin 2 of the 6AV6 a-f amplifier V5. A 0.005- μ f ceramic capacitor has been added from pin 3 of the 6AU6 driver V3 to ground. A 0.005- μ f ceramic capacitor has been added from pin 5 of V7 to ground. A 100-ohm, 1/2-watt, fixed composition resistor R36 has been added from pin 4 of V8 to pin 4 of V6. Capacitor C11, 5 μ f, has been added in parallel with C12, and C13 across taps D and B of the oscillator coil L4.

RCA 8R71, 8R74, 8R75, Ch. RC-1060; 8R72, 8R76, Ch. RC-1060A

A 15,000-ohm 1/2-watt resistor, R1, is sometimes used between pin 7 of S1 Rear and the phono outlet. R33, 1000 ohms, 1/2 watt, has been added from F to G of the a-m oscillator coil. A 0.005- μ f capacitor, C10, has been added from pin 3 of the 6AU6 driver, V3, to ground. Filament choke coil L6 has been added from pin 3 of V5 to pin 2 of V6. A 5- μ f capacitor, C11, has been added in parallel across C12 and C13. A 0.005- μ f capacitor, C44, has been added from pin 5 of tube V5 to ground.

RCA 8X541, Ch. RC-1065L; 8X542, 8X547, Ch. RC-1065M

These instruments are almost identical to the previous production of these instruments which used Chassis RC-1065J and RC-1065K.

RCA 9EY3, Ch. RS13 $\frac{1}{2}$

To aid in hum reduction in Record Changer 9EY3, resistor R8 and capacitor C4 have been changed in value. R8 has been changed from 470,000 ohms to 270,000 ohms. C4 has been changed from 0.002 μ f to 0.0047 μ f, 600 volts, tubular.

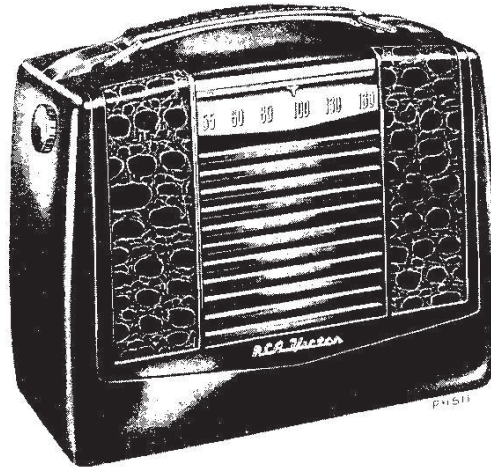
Regal 7151

Model 7151 is electrically the same as Model 205.

Sparton 130, 132, 135, 139, Ch. 5A10

Inability to procure type 12AV6 tubes in production quantities for the above models using radio chassis type 5A10 made it necessary to make the following production substitution. In the future, these models will use a 12AT6 tube in the 2nd detector and avc circuit in place of the original 12AV6 as shown in the schematic diagram. As these tubes are interchangeable, a change in other components of the circuit is not necessary.

MODEL BX55,
Ch. RC-1088



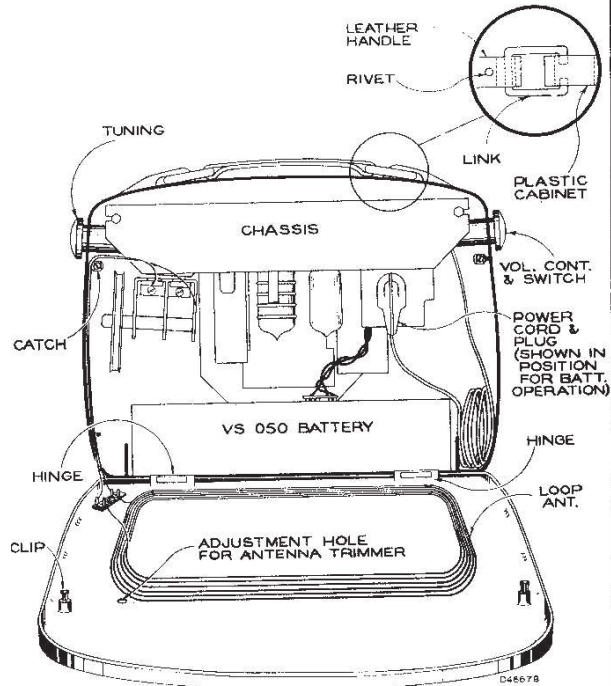
Specifications

Tuning Range 540-1600 kc.
Intermediate Frequency 455 kc.
Tube Complement
 (1) RCA 1R5 Converter
 (2) RCA 1T4 I. F. Amplifier
 (3) RCA 1U5 Det.—A.V.C.—A. F. Amp.
 (4) RCA 3V4 Output
 A selenium rectifier is used
Power Supply Rating
Power Line Operation
 115 volts, d. c. or 50 to 60 cycles a. c. 18 watts
 or
Battery Operated VS 050 Battery
 (Average life—100 hrs. intermittent service)
Loudspeaker (92577-3)
Size and type 4 in. P.M. dynamic
Voice coil impedance 3.2 ohms at 400 cycles
Tuning Drive Ratio 8:1 (4 turns of knob)
Power Output
 Undistorted—170 milliwatts Maximum—350 milliwatts
 (Output is slightly lower on battery operation)
Cabinet Dimensions
 Height 8¼ in. Width 10¾ in. Depth 5 in.
Weight (Approx.)
 5 lb. less battery 8 lb. 2 oz. with battery

AC-DC Operation

A power cord is stored inside the cabinet. To open the cabinet, pull backwards on the top of the cabinet back. It is secured by means of two spring clips and catches on the inside of the cabinet. Remove the plug of the power cord from its socket on the chassis and insert the plug into a convenient electrical power outlet. A notch in the right side of the cabinet allows the back to be closed with the cord passing through.

- Notes:**
1. Maximum performance is obtained with the battery in place. Receiver sensitivity will be lowered if the battery is not in place during AC-DC operation since the battery affects the loop inductance.
 2. If reception is not obtained on DC, reverse plug in power outlet. On AC operation, reversal of the plug may reduce hum.



To Remove Carrying Handle

1. Remove rivets from handle.
2. Turn link and slip out of handle and cabinet.

Cabinet Back and Hinges

The cabinet back and hinges may be readily detached from the cabinet. See back page for detailed instructions on their removal.

Battery Operation

Replace the power cord plug in the socket provided on the back of the chassis. Coil up the power cord and place it alongside of the battery. Make certain that it will not interfere with the tuning condenser.

Note: Make certain that the plug is fully inserted (base of plug touching chassis) to assure proper operation of the Batt-Line switch.

MODEL BX55,
Ch. RC-1088'

Alignment Procedure

Signal Generator.—For all alignment operations, connect the low side of the signal generator to the receiver chassis and keep the output as low as possible to avoid AVC action.

Battery operation of the receiver is preferable during alignment; on a c. operation an isolation transformer (117v./117v.) may be necessary for the receiver if the signal generator is also a c. operated.

Note: Battery must be in place for ant. alignment (step 6).

Dial Pointer Position.—With the tuning condenser fully meshed the center of the dial pointer should be in line with the score mark on the chassis.

Alignment Tabulation

Step	Connect high side of signal generator to—	Signal generator output	Dial pointer setting	Adjust for maximum output—
1	Disconnect loop	remove chassis	remove bottom plate, connect a 10,000 ohm resistor from C1-1 stator terminal to tuning condenser frame.	
2	Grid of 1T4 (pin No. 6) thru .01 mf. capacitor	455 kc	Quiet point near 1600 kc	T2 (top) 2nd. I-F trans.
3	Stator term. of C1-1 thru .01 mf. capacitor			T1 (top & bottom) 1st. I-F trans.
4	Remove the 10,000 ohm resistor. Replace bottom cover and install chassis in cabinet. Re-connect loop.			
5	Short wire placed near receiver (for radiated signal)	1620 kc	Tuning condenser fully open	C1-2 trimmer (osc.)
6		1300 kc	1300 kc signal	†C1-1 trimmer (ant.)

† With back closed. Trimmer is accessible thru hole in back.

NOTE:
The magnetite cores of T2 and T1 may not have visible adjusting screws. The cores have screw driver slots to permit adjustment (use non-metallic screwdriver).

Critical Lead Dress

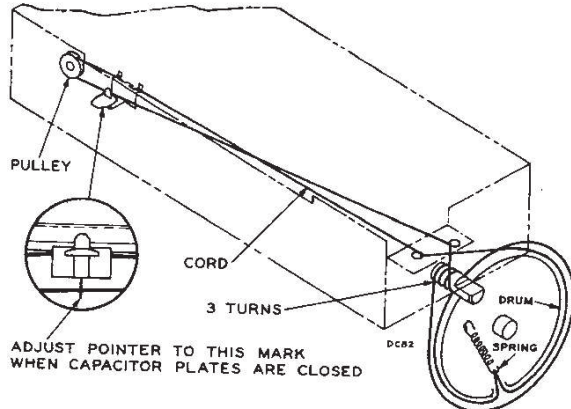
1. Dress antenna loop leads away from adjusting screws on tuning condenser.
2. Dress all capacitors against chassis base.
3. Dress oscillator coil away from chassis and bottom cover.
4. Dress output transformer primary leads against chassis.
5. Dress all leads and components away from selenium rectifier.
6. Dress loop antenna leads into recesses provided in the side of the cabinet. Leave slack at hinged edge of cabinet.

Note: This instrument is designed to be operated with a battery in position inside the cabinet. Reception will be below normal unless the battery is in its normal location.

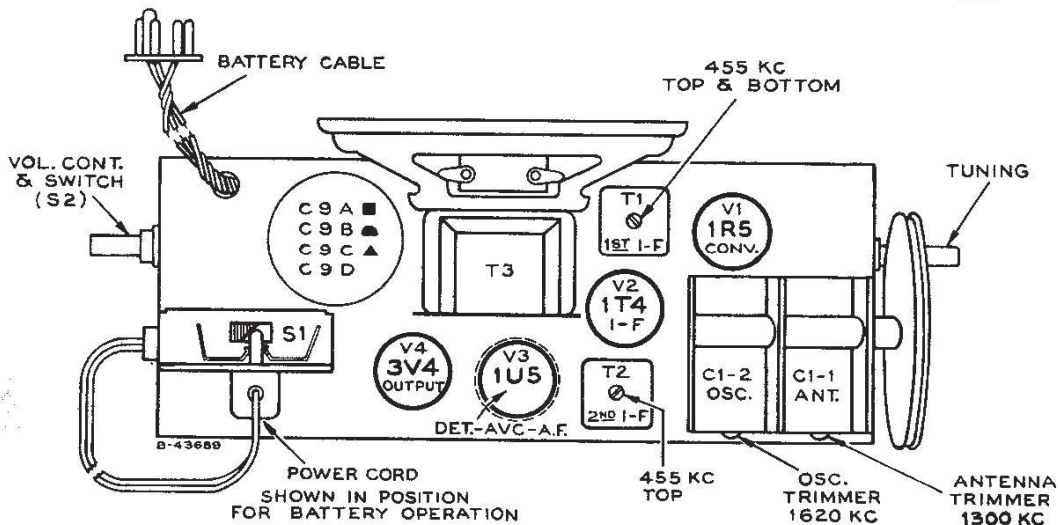
The position of the battery pack affects the loop inductance. Therefore, when the battery is removed, the loop inductance will change (increase) and the sensitivity will be slightly worse because of improper electrical tracking of the loop circuit with the heterodyne oscillator of the receiver.

CAUTION.—

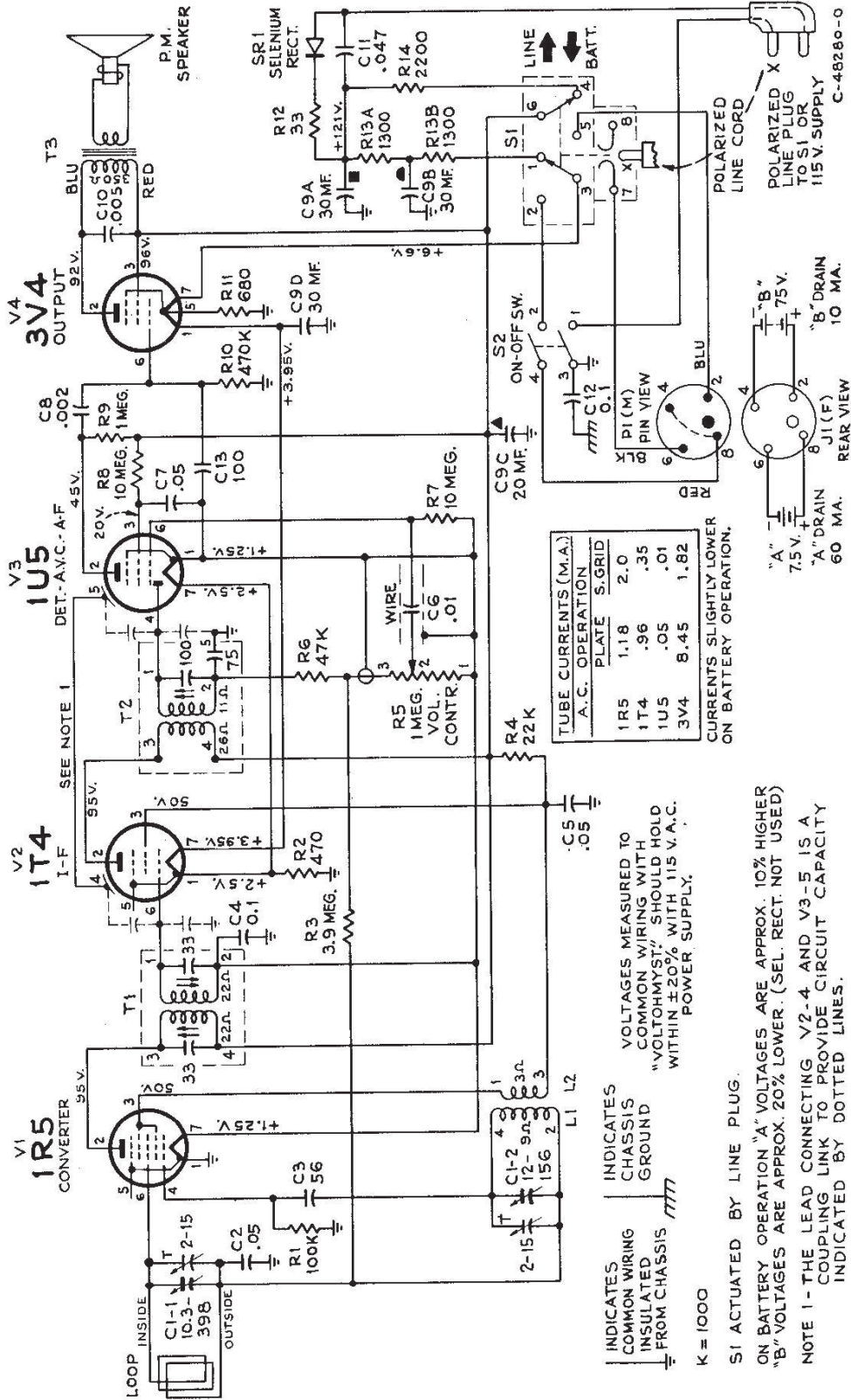
Do not remove any tubes from the chassis with the set operating and the plug connected to the power line. Damage to tubes may result.



Dial Indicator and Drive Mechanism



Tube and Trimmer Locations



SCHEMATIC DIAGRAM

MODEL BX55,
Ch. RC-1088

Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1088			
74778	Capacitor—Variable tuning capacitorC1-1,C1-2		3.9 megohm, ±10%, ½ wattR3
39622	Capacitor—Mica, 56 mmf.C3	74773	Shaft—Tuning knob shaftR7, R8
39628	Capacitor—mica, 100 mmf.C13	73103	Shield—Tube shield for 1U5 tube
74774	Capacitor—Electrolytic, comprising 2 sections of 30 mfd., 150 volts, 1 section of 20 mfd., 150 volts and 1 section of 30 mfd., 25 volts..C9A, C9B, C9C, C9D	73117	Socket—Tube socket, miniature
72315	Capacitor—Tubular, paper, .002 mfd., 200 voltsC8	74038	Spring—Drive cord tension spring
73920	Capacitor—Tubular, paper, .005 mfd., 400 voltsC10	71039	Switch—"Line-Battery" change switchS1
73561	Capacitor—Tubular, paper, .01 mfd., 400 voltsC6	73129	Transformer—First I.F. transformerT1
75071	Capacitor—Tubular, moulded paper, .047 mfd., 400 voltsC11	74775	Transformer—Second I.F. transformerT2
73553	Capacitor—Tubular, paper, .05 mfd., 400 voltsC2, C5, C7	74779	Transformer—Output transformerT3
70617	Capacitor—Tubular, paper, 0.1 mfd., 400 voltsC4, C12	33726	Washer—"C" washer for tuning knob shaft
73935	Clip—Mounting clip for I.F. transformer	SPEAKER ASSEMBLY 92577-3	
74780	Coil—Oscillator coilL1, L2	74165	Speaker—4" P.M. speaker complete with cone and voice coil
73275	Connector—5 contact male connector for battery cableP1	MISCELLANEOUS	
73125	Control—Volume control and power switchR5, S2	75048	Back—Cabinet back complete with loop
71457	Cord—Power cord and plug	74787	Board—Terminal board—2 contact
†72953	Cord—Drive cord (approx. 40" overall length req'd)	Y2220	Case—Cabinet front less back, emblem, handle, and dial
72283	Grommet—Rubber grommet to mount tuning capacitor (3 required)	74339	Catch—Cabinet back catch (part of cabinet front)
74838	Grommet—Power cord strain relief grommet (1 set)	74734	Clip—Spring clip for knob
74776	Indicator—Station selector indicator	74792	Clip—Striking clip for catch (part of cabinet back) (2 required)
18469	Plate—Mounting plate for electrolytic capacitor	74784	Dial—Metal dial scale
72602	Pulley—Drive cord pulley	74782	Emblem—"RCA Victor" emblem
74322	Rectifier—Selenium rectifierSR1	74785	Handle—Carrying handle
73237	Resistor—Wire wound (fuse type) 33 ohmsR12	74790	Hinge—Cabinet hinge (2 required)
74777	Resistor—Voltage divider, dual, 1300 ohms, 3.5 wattsR13A, R13B	74666	Knob—Tuning or volume control and power switch knob
	Resistor—Fixed, composition:—	74786	Link—Link for carrying handle (2 required)
	470 ohms, ±20%, ½ wattR2	74789	Loop—Antenna loop winding
	680 ohms, ±20%, ½ wattR11	74788	Nut—Speed nut to mount terminal board
	2200 ohms, ±10%, ½ wattR14	73203	Nut—Speed nut to fasten dial (2 required) or decorative plate (2 required) to cabinet
	22,000 ohms, ±20%, ½ wattR4	75448	Rivet—Bevel pointed rivet for handle (2 required)
	47,000 ohms, ±20%, ½ wattR6	75435	Screen—Crimoline screen for speaker grille
	100,000 ohms, ±20%, ½ wattR1	74783	Plate—Decorative plate (satin finish) for cabinet (above dial)
	470,000 ohms, ±20%, ½ wattR10	74301	Screw—No. 8-32 x ¾" pan head cross recessed screw for chassis mounting (2 required)
	1 megohm, ±20%, ½ wattR9	74791	Screw—No. 4 x 5/16" pan head cross recessed screw to fasten catch to cabinet front.

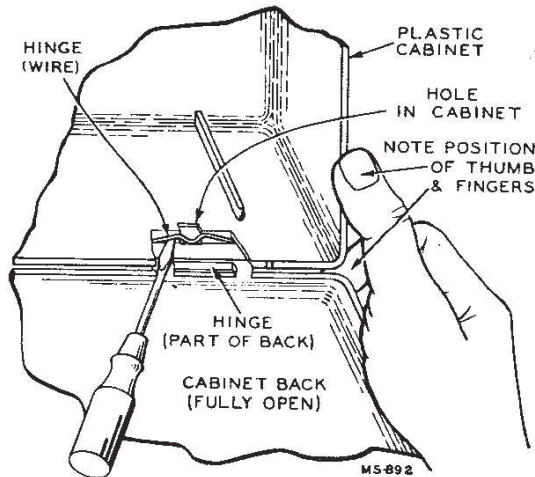
† Stock No. 72953 is a reel which contains 250 ft. of cord.

To Remove Cabinet Back

Disconnect the loop antenna leads. With the back fully open, grip the cabinet as illustrated. Insert a screwdriver under one hinge and pry the center of the hinge out of the opening in the cabinet while maintaining pressure on the back with the fingers and on the cabinet with the thumb. Repeat this procedure with the other hinge. Pull the back straight to the rear using both hands.

To Remove Hinges

Remove back from cabinet as described above. Spread the hinge apart to remove it from the cabinet back.



Removal of Cabinet Back