

# PHILCO

## RADIO MODELS 50-925, Code 123, and 50-926

### SPECIFICATIONS

**CABINET**

Model 50-925, Code 123 \_\_\_\_\_ Plastic, brown finish

Model 50-926 \_\_\_\_\_ Wood, mahogany with brown leatherette, and blonde with green leatherette

**CIRCUIT** \_\_\_\_\_ 6-tube superheterodyne plus selenium rectifier

**FREQUENCY RANGES**

Broadcast \_\_\_\_\_ 540—1620 kc.

FM \_\_\_\_\_ 88—108 mc.

**AUDIO OUTPUT** \_\_\_\_\_ 1 watt

**OPERATING VOLTAGE** \_\_\_\_\_ 105—120 volts, a.c. or d.c.

**POWER CONSUMPTION** \_\_\_\_\_ 35 watts

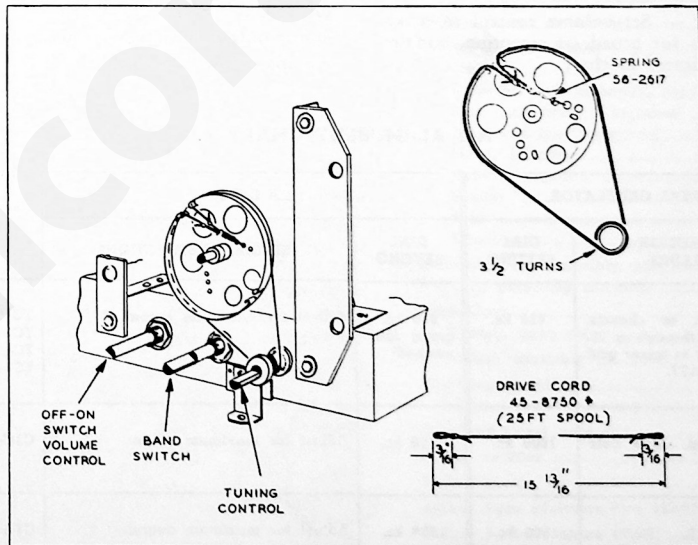
**AERIAL** \_\_\_\_\_ Built-in, high-impedance loop for AM; line cord for FM; provision for connection of external aerials

**INTERMEDIATE FREQUENCIES**

AM \_\_\_\_\_ 455 kc.

FM \_\_\_\_\_ 9.1 mc.

**PHILCO TUBES (6)** \_\_\_\_\_ 12BA6 FM r-f ampl., 12AT7 osc.-mixer, 12BA6 1st i-f ampl., 12BA6 2nd i-f ampl., 19C8 AM-FM det.-1st audio-a.v.c., 50C5 output, plus selenium rectifier



TP9-669A

Figure 1. Dial-Cord Installation Details

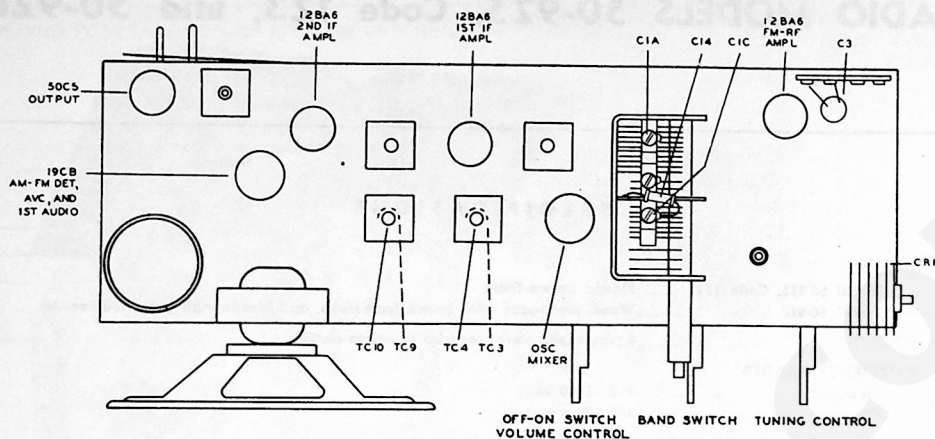


Figure 2. Top View, Showing AM Trimmer Locations

TP9-669C

## AM ALIGNMENT PROCEDURE

Make alignment with loop aerial connected to radio. The AM alignment should be completed before the FM alignment is made.

**DIAL POINTER** — With tuning-condenser plates fully meshed, adjust pointer to coincide with index mark at low-frequency end of scale.

**RADIO CONTROLS** — Set volume control to maximum, set band switch for broadcast reception, and set tuning control as indicated in chart.

**OUTPUT METER** — Connect across voice-coil terminals.

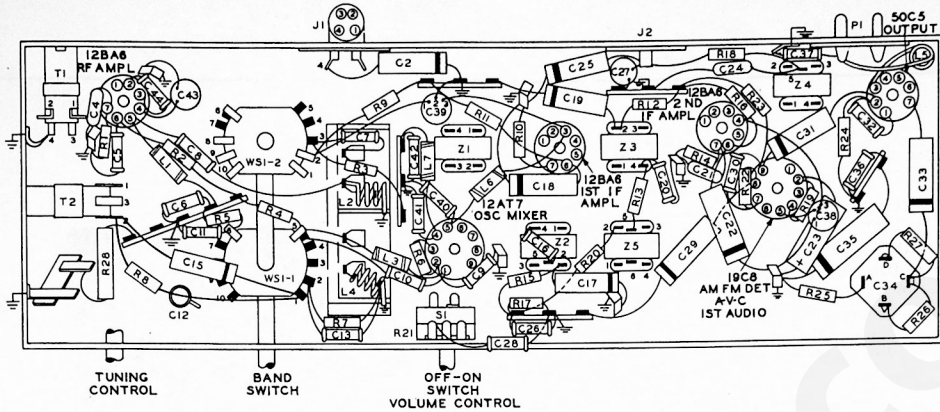
**SIGNAL GENERATOR** — Use AM r-f signal generator, with modulated output. Connect generator and set frequency as indicated in chart.

**OUTPUT LEVEL** — During alignment, signal-generator output must be attenuated to hold output-meter reading below 1.25 volts.

### AM ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Ground lead to chassis. Output lead through a .1- $\mu$ f. condenser to mixer grid (pin 7) of 12AT7.	455 kc.	540 kc. (gang fully meshed)	Adjust for maximum output.	TC10—2nd AM i-f sec. TC9—2nd AM i-f pri. TC4—1st AM i-f sec. TC3—1st AM i-f pri.
2	Radiating loop. (See note below.)	1600 kc.	1600 kc.	Adjust for maximum output.	C1C—osc. trimmer
3	Same as step 2.	1500 kc.	1500 kc.	Adjust for maximum output.	C1A—aerial trimmer

**RADIATING LOOP:** Make up a six-to-eight-turn, 8-inch-diameter loop from insulated wire; connect to generator terminals, and place near radio loop aerial. Radio loop aerial must be connected.



CRITICAL LEAD DRESS:  
 FM IF REGENERATION WILL RESULT UNLESS  
 (1) THE RED #4 LEAD BETWEEN LUG 3 OF Z4 AND LUG 3 OF Z5 IS DRESSED AROUND  
 THE GRID SIDE OF THE LAST 12BA6, AND BETWEEN THE GROUND LEAD AND THE TUBE, AND  
 (2) THE RED LEAD BETWEEN PIN 6 OF THE LAST 12BA6 AND LUG 4 OF Z5 IS DRESSED  
 AWAY FROM Z3 AND HORIZONTAL TO THE CHASSIS (NOT DRESSED DOWN TO THE CHASSIS)

TP9-669B

Figure 4. Symbolized Chassis, Showing Parts Placement

## REPLACEMENT PARTS LIST

NOTE: Part numbers identified by an asterisk (\*) are general replacement items. These numbers may not be identical with those on factory parts; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

Reference Symbol	Description	Service Part No.	Reference Symbol	Description	Service Part No.
C1	Condenser, tuning, 4-section (2 for AM, 2 for FM)	31-2733-4	C19	Condenser, coupling (in FM position, neutralization), .01 $\mu$ f.	61-0120*
C1A	Condenser, trimmer, AM aerial	Part of C1	C20	Condenser, by-pass, 100 $\mu$ f.	62-110009001*
C1B	Condenser, trimmer, FM r-f	Part of C1	C21	Condenser, cathode by-pass, molded, .01 $\mu$ f.	30-1226-10
C1C	Condenser, trimmer, AM oscillator	Part of C1	C22	Condenser, screen by-pass, .002 $\mu$ f.	61-0062*
C2	Condenser, aerial isolating, .01 $\mu$ f.	61-0120*	C23	Condenser, electrolytic, FM-detector filter, 2 $\mu$ f., 50v	30-2417-7
C3	Condenser, aerial isolating, ceramic button, .005 $\mu$ f.	30-1238-1	C24	Condenser, de-emphasis	
C4	Condenser, cathode by-pass, 100 $\mu$ f.	60-10105407*	C25	Condenser, de-emphasis, molded,	
C5	Condenser, screen by-pass, 1500 $\mu$ f.	62-215001011*	C26	Condenser, by-pass, 100 $\mu$ f.	62-110009001*
C6	Condenser, r-f by-pass, 100 $\mu$ f.	62-110009001*	C27	Condenser, d-c blocking, ceramic button, .005 $\mu$ f.	30-1238-1
C7	Condenser, d-c blocking, 220 $\mu$ f.	62-122001001*	C28	Condenser, i-f by-pass, 100 $\mu$ f.	62-110009001*
C8	Condenser, d-c blocking, 220 $\mu$ f.	62-122001001*	C29	Condenser, d-c blocking, .02 $\mu$ f.	61-0108*
C9	Condenser, by-pass, 100 $\mu$ f.	62-110009001*	C30	Condenser, plate by-pass, 680 $\mu$ f.	62-168001001
C10	Condenser, d-c blocking, 220 $\mu$ f.	62-122001001*	C31	Condenser, d-c blocking, .006 $\mu$ f.	45-3500-7*
C11	Condenser, r-f by-pass, 100 $\mu$ f.	62-110009001*	C32	Condenser, by-pass, 100 $\mu$ f.	62-110009001*
C12	Condenser, trimmer, FM oscillator	31-6511	C33	Condenser, tone compensation, .02 $\mu$ f.	61-0108*
C13	Condenser, cathode by-pass, FM,		C34	Condenser, electrolytic, 4-section	30-2570-46
C14	Condenser, fixed trimmer, AM oscillator, 13 $\mu$ f.	30-1224-42	C34A	Condenser, cathode by-pass, 25 $\mu$ f., 25v	Part of C34
C15	Condenser, cathode by-pass, AM, .01 $\mu$ f.	61-0120*	C34B	Condenser, filter, 40 $\mu$ f., 150v	Part of C34
C16	Condenser, fixed trimmer, i-f, 100 $\mu$ f.	62-110009001*	C34C	Condenser, filter, 70 $\mu$ f., 150v	Part of C34
C17	Condenser, a-v-c filter, .01 $\mu$ f.	61-0120*			
C18	Condenser, screen by-pass, .002 $\mu$ f.	61-0062*			

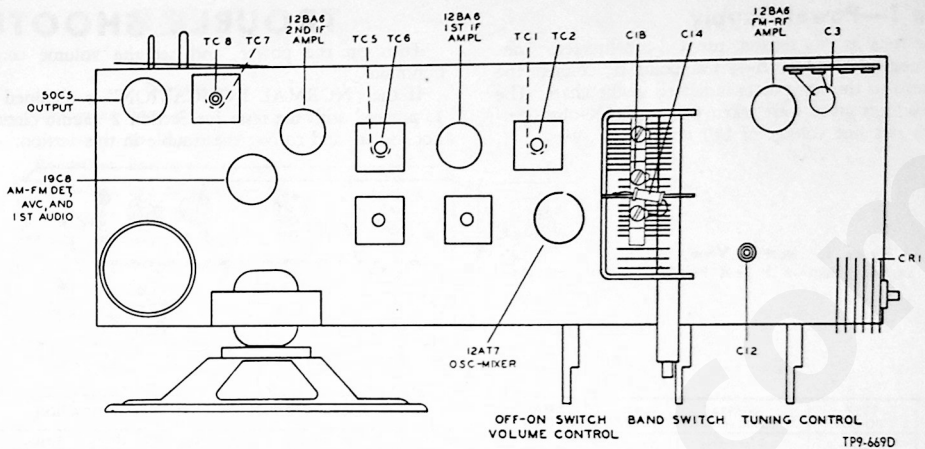


Figure 3. Top View, Showing FM Trimmer Locations

## FM ALIGNMENT PROCEDURE

Make AM alignment first.

**RADIO CONTROLS** — Set volume control to maximum, set band switch for FM reception, and set tuning control as indicated in chart.

**OUTPUT METER** — Connect across voice-coil terminals. (This meter is used only for step 3.)

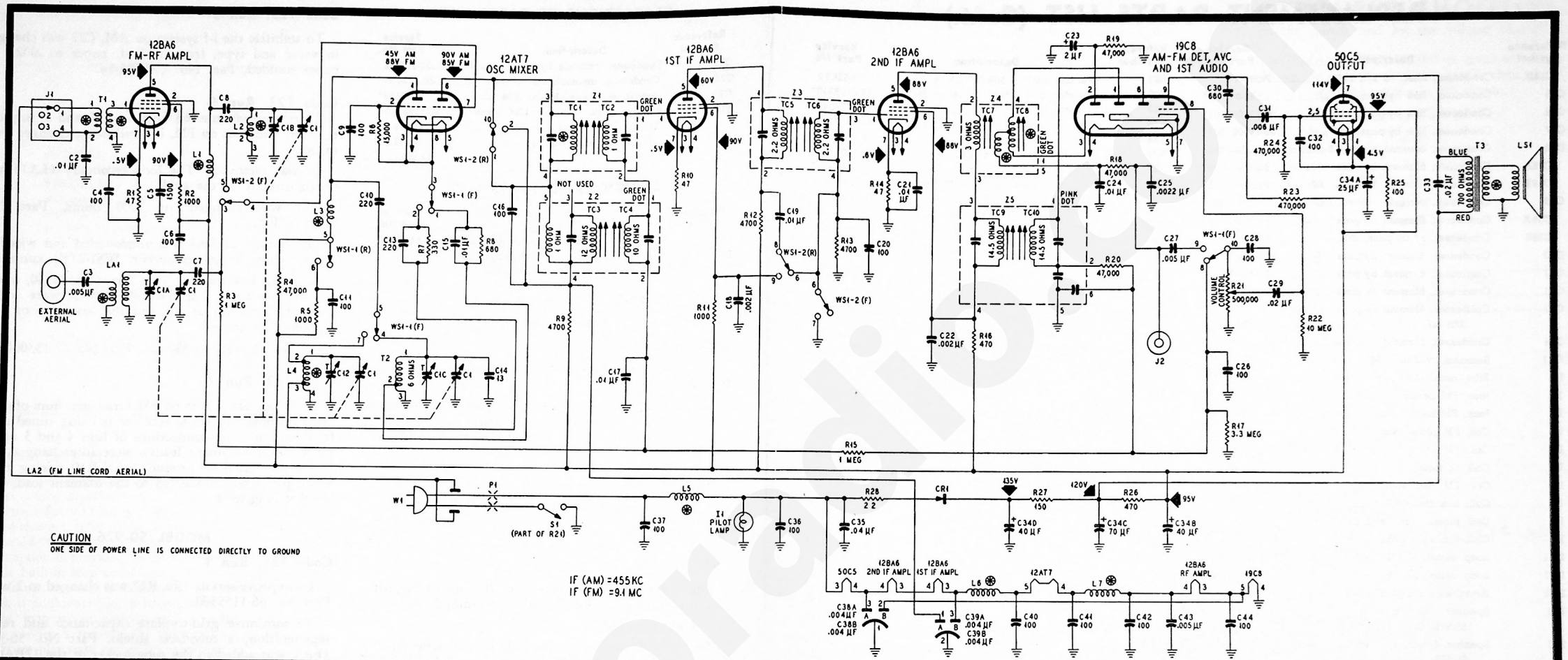
**D-C VOLTMETER** — Connect negative lead of d-c voltmeter (resistance of at least 20,000 ohms per volt) to pin 2 of 19C8 tube, and positive lead to chassis. Use 0—10-volt range.

**SIGNAL GENERATOR** — Use AM r-f signal generator, with modulated output. Connect ground lead to chassis. Connect output lead and set frequency as indicated in chart. Generator must have sufficient output to give reading of approximately 8.5 volts on d-c voltmeter; during alignment, generator output must be attenuated to hold meter reading at this value.

**NOTE:** Before starting FM alignment, allow radio and signal generator to warm up for 15 minutes.

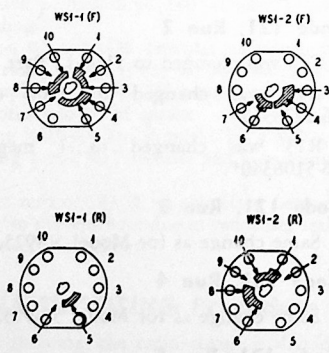
### FM ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through a .1- $\mu$ f. condenser to control grid (pin 1) of 12BA6 1st i-f ampl.	9.1 mc.	88 mc.	Adjust tuning cores for maximum reading on d-c voltmeter. Attenuate signal generator to maintain a reading of approximately 10 volts. Repeat adjustments until no further improvement is noted. After this step, do not disturb these tuning cores except as directed in step 3.	TC8—discriminator sec. TC7—discriminator pri. TC6—FM 2nd i-f sec. TC5—FM 2nd i-f pri.
2	Through a .1- $\mu$ f. condenser to mixer grid (pin 7) of 12AT7.	9.1 mc.	88 mc.	Adjust tuning cores for maximum reading on d-c voltmeter. Repeat adjustments until no further improvement is noted. Do not disturb these tuning cores after this step.	TC2—FM 1st i-f sec. TC1—FM 1st i-f pri.
3	Same as step 1.	9.1 mc.	88 mc.	Adjust tuning core for minimum reading on output meter. This adjustment is critical; repeat to make certain it is correct.	TC8—discriminator sec.
4	To terminal 1 of J1.	105 mc.	105 mc.	Adjust trimmer for maximum reading on d-c voltmeter.	C12—FM osc.
5	Same as step 4.	105 mc.	105 mc.	Same as step 4.	C1B—FM r-f
6	Same as step 4.	92 mc.	92 mc.	Adjust coil for maximum reading on d-c voltmeter.	L4—osc. (tracking)
7	Same as step 4.	92 mc.	92 mc.	Same as step 6.	L2—FM r-f (tracking)
8	Same as step 4.	105 mc.	105 mc.	Same as step 4.	C12—FM osc.
9	Repeat steps 4 through 8 until no further improvement is noted.				

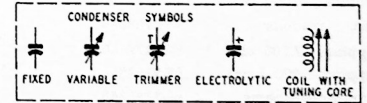
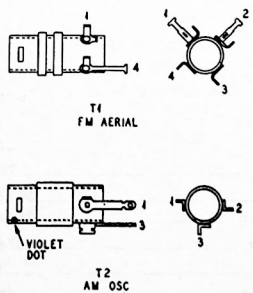
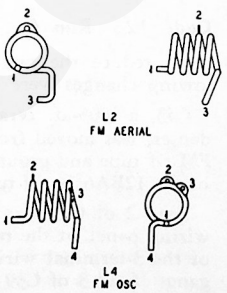


**CAUTION**  
ONE SIDE OF POWER LINE IS CONNECTED DIRECTLY TO GROUND

IF (AM) = 455 KC  
IF (FM) = 9.1 MC



WSI 2 POSITION WAFER SWITCH SHOWN IN BROADCAST POSITION  
SECTIONS OF SWITCH NUMBERED WSI-1 AND WSI-2 FROM FRONT TO REAR  
(F) INDICATES FRONT CONTACTS LOOKING FROM KNOB END  
(R) INDICATES REAR CONTACTS LOOKING THROUGH FROM KNOB END



ALL RESISTOR VALUES IN OHMS AND ALL CONDENSER VALUES IN  $\mu$ UF UNLESS MARKED OTHERWISE  
VOLTAGE READINGS WERE MEASURED WITH A 20,000-OHMS-PER-VOLT METER FROM POINTS INDICATED TO GROUND, AT A LINE VOLTAGE OF 117VAC  
⊙ INDICATES LESS THAN 1 OHM

Figure 5. Philco Radio Models 50-925, Code 123, and 50-926, Schematic Diagram

# REPLACEMENT PARTS LIST (Cont.)

Reference Symbol	Description	Service Part No.	Reference Symbol	Description	Service Part No.
C34D	Condenser, filter, 40 $\mu$ f., 150v	Part of C34	R21	Volume control, 500,000 ohms	33-5566-8
C35	Condenser, line by-pass, .04 $\mu$ f.	45-3500-2*	R22	Resistor, grid return, 10 megohms	66-6108340*
C36	Condenser, line by-pass, 100 $\mu$ f.	62-110009001*	R23	Resistor, plate load, 470,000 ohms	66-4478340*
C37	Condenser, line by-pass, 100 $\mu$ f.	62-110009001*	R24	Resistor, grid return, 470,000 ohms	66-4478340*
C38	Condenser, ceramic button, 2-section	30-1239	R25	Resistor, cathode bias, 100 ohms	66-1108340*
C38A	Condenser, filament by-pass, .004 $\mu$ f.	Part of C38	R26	Resistor, filter, 470 ohms, 1 w	66-1474340*
C38B	Condenser, filament by-pass, .004 $\mu$ f.	Part of C38	R27	Resistor, filter, 150 ohms, 1 w	66-1154340*
C39	Condenser, ceramic button, 2-section	30-1239	R28	Resistor, current limiting, 22 ohms, 2 w	66-0225360*
C39A	Condenser, filament by-pass, .004 $\mu$ f.	Part of C39	S1	Switch, off-on	Part of R21
C39B	Condenser, r-f by-pass, .004 $\mu$ f.	Part of C39	T1	Transformer, FM aerial	32-4390
C40	Condenser, filament by-pass, 100 $\mu$ f.	62-110009001*	T2	Transformer, BC oscillator	32-4153-7
C41	Condenser, filament by-pass, 100 $\mu$ f.	62-110009001*	T3	Transformer, output	Part of LS1
C42	Condenser, filament by-pass, 100 $\mu$ f.	62-110009001*	W1	Line cord	L-2183*
C43	Condenser, filament by-pass, ceramic button, .005 $\mu$ f.	30-1238-1	WS	Switch, band	42-1896-1
C44	Condenser, filament by-pass, 100 $\mu$ f.	62-110009001*	Z1	Transformer, 1st FM i-f	32-4372A
CR1	Selenium rectifier, 150 ma.	34-8003-2	Z2	Transformer, 1st AM i-f	32-4258-2A
I1	Pilot lamp, 110-125v, 7 w	34-2605	Z3	Transformer, 2nd FM i-f	32-4372-2A
J1	Jack, FM aerial	27-6214-8	Z4	Transformer, FM discriminator	32-4310
J2	Jack, FM test	27-6180	Z5	Transformer, 2nd AM i-f	32-4240A
L1	Coil, FM plate load	32-4061-2	<b>MISCELLANEOUS</b>		
L2	Coil, FM r-f	32-4392-3	<b>Description</b>	<b>Service Part No.</b>	
L3	Coil, r-f isolating	32-4061-2	Cabinet (50-925, Code 123)	10714-4	
L4	Coil, FM oscillator	32-4391-3	Back	54-7819	
L5	Coil, line choke	32-4089-3	Baffle-and-cloth assembly	40-7535-1	
L6	Coil, filament choke	32-4061-2	Speed nut, baffle mounting (4 required)	1W60210FE7	
L7	Coil, filament choke	32-4061-2	Knob, FM-AM	54-4527-21	
LA1	Loop aerial, 50-925, Code 123	32-4052-48	Knob, tuning	54-4527-1	
LA1E	Loop aerial, 50-926	32-4052-47	Knob, volume-on-off	54-4527	
LA2	Aerial-wire-and-plug assembly, FM	41-3791-1	Pointer	54-4704	
LS1	Speaker, 5-inch, p.m., with output transformer, 50-925, Code 123		Scale	54-5011-2	
LS1E	Speaker, 5-inch, p.m., with output transformer, 50-926	36-1625-12	Window, acetate	54-4595-2	
P1	Plug, line input	27-4785-7	Clip, window mounting (6 required)	56-7181FE7	
R1	Resistor, cathode bias, 47 ohms	66-0478340*	Cabinet (50-926 mahogany)		
R2	Resistor, screen dropping, 1000 ohms	66-2108340*	Cabinet (50-926 blonde)		
R3	Resistor, grid return, 1 megohm	66-5108340*	Back	54-8028	
R4	Resistor, plate dropping, 47,000 ohms	66-3478340*	Baffle-and-cloth assembly, masonite	40-7844	
R5	Resistor, plate dropping, 1000 ohms	66-2108340*	Foot, front, brass (2 required)	56-7778	
R6	Resistor, grid return, 15,000 ohms	66-3158340*	Foot, rear, felt (2 required)	W2190	
R7	Resistor, cathode bias, 330 ohms	66-1338340*	Jewel, telltale	54-4304-3	
R8	Resistor, cathode bias, 680 ohms	66-1688340*	Knob (3 required)		
R9	Resistor, plate dropping, 4700 ohms	66-2478340*	Pointer	54-4758	
R10	Resistor, cathode bias, 47 ohms	66-0478340*	Scale	54-5080	
R11	Resistor, screen dropping, 1000 ohms	66-2108340*	Window	54-8034	
R12	Resistor, plate dropping, 4700 ohms	66-2478340*	Bracket-and-clip assembly, pilot-lamp mounting	76-5102	
R13	Resistor, grid return, 4700 ohms	66-2478340*	Clip, pilot-lamp mounting	56-3545FA3	
R14	Resistor, cathode bias, 47 ohms	66-0478340*	Drive Cord	45-8750*	
R15	Resistor, a-v-c filter, 1 megohm	66-5108340*	Spring, gang drive	56-2617	
R16	Resistor, decoupling, 470 ohms	66-1478340*	Drive-shaft assembly	76-4034-2	
R17	Resistor, a-v-c load, 3.3 megohms	66-5338340*	Pilot-lamp shield	56-6331FA3	
R18	Resistor, de-emphasis filter, 47,000 ohms	66-3478340*	Spring, shield mounting	28-2488	
R19	Resistor, FM-detector load, 47,000 ohms	66-3478340*	Pilot-lamp-socket assembly	27-6233-53	
R20	Resistor, i-f filter, 47,000 ohms	66-3478340*	Shield, rectifier	54-7818	
			Socket, female, a-c interlock	27-6200-1	
			Socket, 7-pin miniature (two 12BA6 i-f amplifiers)	27-6203	
			Socket, 7-pin miniature (50CS)	27-6203-12	
			Socket, 7-pin miniature, low-loss (12BA6 r-f amplifier)	27-6203-1	
			Socket, 9-pin miniature (19C8)	27-6203-5	
			Socket, 9-pin miniature, low-loss (12AT7)	27-6203-6	

**CORRECTIONS TO PARTS LIST**

Reference Symbol	Description	Service Part No.
C13	Condenser, cathode by-pass, 51 $\mu\text{f.}$ .....	30-1224-2
C24	Condenser, de-emphasis, 47 $\mu\text{f.}$ .....	30-1224-27
C25	Condenser, de-emphasis, .004 $\mu\text{f.}$ .....	61-0179*
R12	Resistor, plate dropping, 1000 ohms .....	66-1028340*
	Cabinet, mahogany, 50-926 .....	10786-2
	Cabinet, blonde, 50-926 .....	10786-3
	Knob, (3) 50-926 .....	54-4674-4

**ADDITIONS TO PARTS LIST**

Reference Symbol	Description	Service Part No.
C45	Condenser, filament by-pass, .01 $\mu\text{f.}$ .....	61-0120*
LS1	Speaker, 5-inch p.m., with output transformer (50-925, Code 123) .....	36-1614

**PRODUCTION CHANGES  
MODEL 50-925**

**Code 123, Run 1**

To improve service life, R27 was changed to 2 watts, Part No. 66-1155360.

To minimize grid-to-plate capacitance and reduce regeneration, a tube-base shield, Part No. 56-3978-1FA3, was added to the tube socket of the 12BA6 1st i-f amplifier.

**Code 123, Run 2**

To increase FM sensitivity, R14, the cathode resistor of 12BA6, 2nd i-f tube, was changed to 68 ohms, Part No. 66-0688340.

**Code 123, Run 3**

The wiring panel connections of R2 and L1, shown in the base view in the manual, were interchanged.

C44 was removed.

The .01- $\mu\text{f.}$  condenser (not shown in schematic) from pin 5 of the 12AT7 to ground was changed to wire from pin 3 of the 12BA6 FM r-f amplifier to the ground lug of the nearest wiring panel.

**Code 123, Run 4**

To reduce the possibility of oscillations, the following changes were made:

C43, a .005- $\mu\text{f.}$  ceramic disc filament by-pass condenser, was moved from between pin 4 of the 12BA6 FM r-f tube and ground and connected between pin 3 of the 12BA6 1st i-f tube and ground.

Lead 2 of C39 was changed from ground of 3-lug wiring panel, at the rear of the set, to the ground lug of the 3-terminal wiring panel parallel to the tuning gang. Lead 3 of C39 was changed from pin 3 of the 12BA6 1st i-f tube to the rear lug of the wiring panel parallel to the gang (same lug to which L7 is wired).

C42 was removed from the wiring panel near the tuning gang, and was wired from lug 7 of WS1-2(F) to the ground lug near the 12BA6 FM r-f socket. (Keep switch lead of condenser as short as possible.)

**Code 123, Run 5**

To stabilize the i-f system on AM, C22 was changed in value and type, from .002  $\mu\text{f.}$  paper to .0022  $\mu\text{f.}$  paper molded, Part No. 45-3505-54.

**Code 123, Run 6**

To remove modulation hum on AM, and to improve ignition rejection on FM, the following changes were made:

C7 was removed. The loop secondary (LA1) was wired directly to the grid.

R12 was changed to 1000 ohms, Part No. 66-2108340\*.

The bottom of LA1 was ungrounded and wired to R3, which no longer connects to WS1-2(F), contact 3.

A 1-megohm resistor, Part No. 66-5108340, and a .047- $\mu\text{f.}$  condenser, Part No. 45-3505-45, were added, from the junction of R3 and the low side of LA1 secondary to ground.

C24 was changed to 330  $\mu\text{f.}$ , Part No. 62-133001001.

**Code 123, Run 7**

To reduce delay hum on FM (transient hum of short duration observed while receiver is being tuned away from station), the connections of lugs 4 and 5 of the 19C8 socket (filament leads) were interchanged. Pin 5 was connected to ground, with R19 wiring to it, while pin 4 was connected to the filament lead, with C38B wiring to it.

**MODEL 50-926**

**Code 121, Run 1**

To improve service life, R27 was changed to 2 watts, Part No. 66-1155360.

To minimize grid-to-plate capacitance and reduce regeneration, a tube-base shield, Part No. 56-3978-1FA3, was added to the tube socket of the 12BA6 1st i-f amplifier.

**Code 121, Run 2**

C20 was changed to 51  $\mu\text{f.}$ , Part No. 30-1224-2.

R12 was changed to 2200 ohms, Part No. 66-2228340\*.

R13 was changed to 1 megohm, Part No. 66-5108340\*.

**Code 121, Run 3**

Same change as for Model 50-925, Code 123, Run 4.

**Code 121, Run 4**

Same change as for Model 50-925, Code 123, Run 5.

**Code 121, Run 5**

Same change as for Model 50-925, Code 123, Run 6.

**Code 121, Run 6**

Same change as for Model 50-925, Code 123, Run 7.