

SPECIFICATIONS

CABINET	Plastic table model
CIRCUIT	Six-tube superheterodyne plus selenium rectifier
FREQUENCY RANGES	
Broadcast	540—1630 kc.
FM	88—108 mc.
AUDIO OUTPUT	1 watt
OPERATING VOLTAGE	105—125 volts, a.c./d.c.
POWER CONSUMPTION	35 watts
AERIAL	Built-in high-impedance loop for AM, line cord for FM; provision for connecting external aerial.
INTERMEDIATE FREQUENCY	
AM	455 kc.
FM	9.1 mc.
PHILCO TUBES (6)	12AU6 r-f ampl., 12AT7 converter, 12BA6 1st i-f ampl., 12AU6 2nd i-f ampl., 19C8 det.—a.v.c.—1st audio, 50C5 output

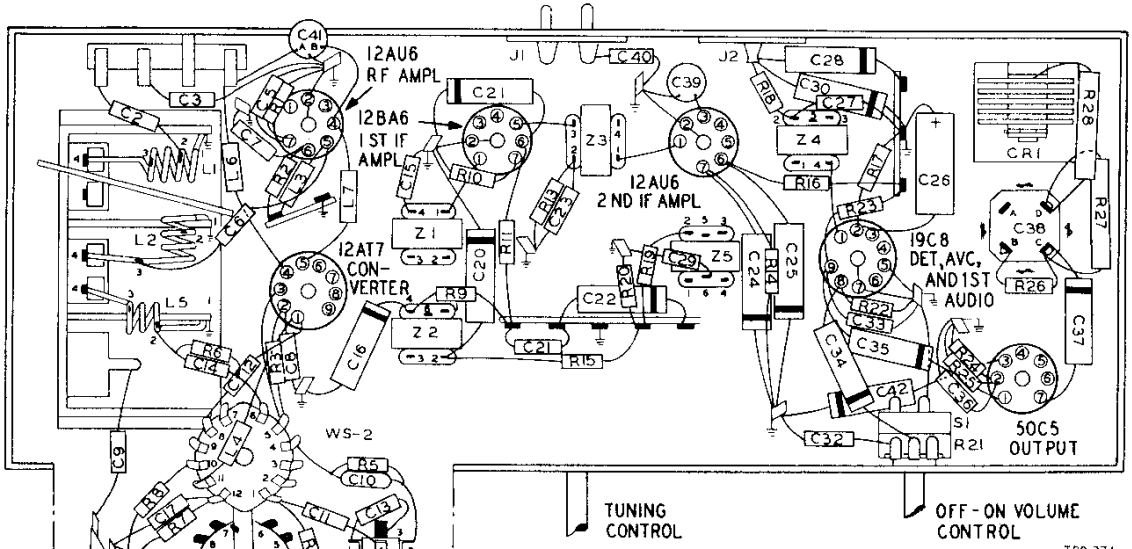


Figure 2. Symbolized Chassis, Showing Parts Placement

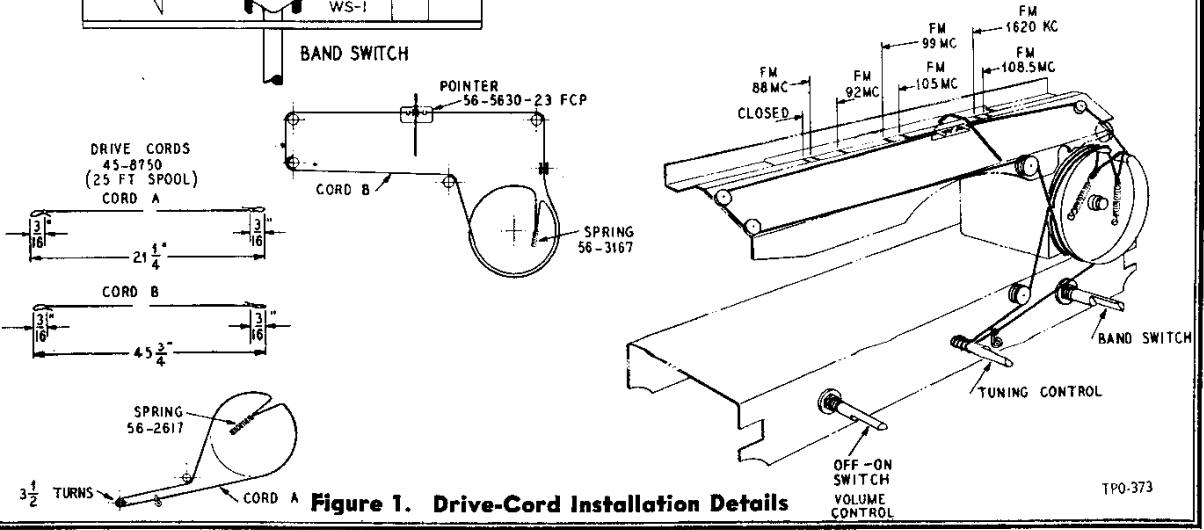


Figure 1. Drive-Cord Installation Details

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 dial backplate.

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- μ 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.	1620 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, 6-inch-diameter loop from insulated wire; connect to generator terminals, and place near radio loop aerial. Radio loop aerial must be connected.

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- μ 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.

FM ALIGNMENT CHART (Cont.)

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
2	Through a .1- μ 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 TB1.	105 mc.	105 mc.	Adjust trimmer for maximum reading on d-c voltmeter.	C18—FM osc.
5	Same as step 4.	105 mc.	105 mc.	Same as step 4.	C1B—FM r-f C1D—FM aerial.
6	Same as step 4.	92 mc.	92 mc.	Adjust coil for maximum reading on d-c voltmeter.	L5—osc. (tracking)
7	Same as step 4.	92 mc.	92 mc.	Same as step 6.	L2—FM r-f (tracking) L1—FM aerial. (tracking)
8	Same as step 4.	105 mc.	105 mc.	Same as step 4.	C18—FM osc.
9	Repeat steps 4 through 8 until no further improvement is noted.				

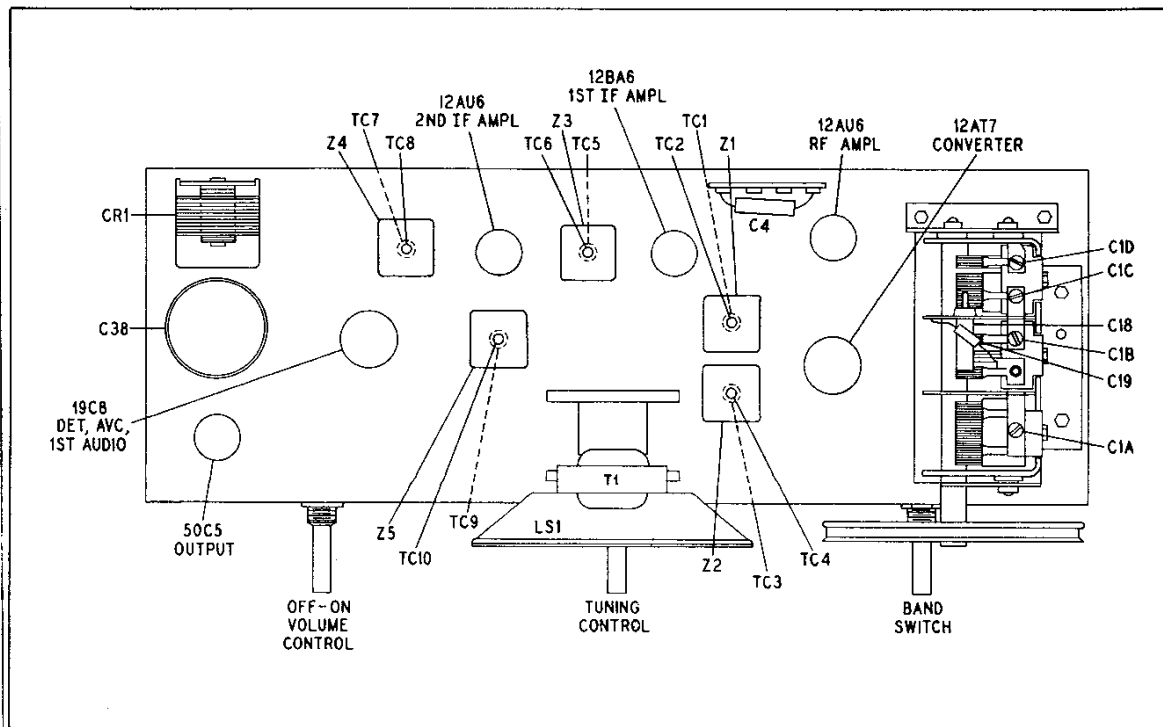


Figure 4. Top View, Showing Trimmer Locations

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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.	LA2 LS1	Line-cord aerial, FM Speaker, 4" p.m. including output transformer	Part of W1 32-1614-6
C1	Condenser, tuning gang, 5-section	31-2756			
C1A	Condenser, trimmer, BC aerial	Part of C1	R1	Resistor, cathode bias, 120 ohms	66-1128340*
C1B	Condenser, trimmer, FM r-f	Part of C1	R2	Resistor, screen decoupling, 470 ohms	66-1478340*
C1C	Condenser, trimmer, BC oscillator	Part of C1	R3	Resistor, grid return, 15,000 ohms	66-3158340*
C1D	Condenser, trimmer, FM aerial	Part of C1	R4	Resistor, grid return, 1 megohm	66-5108340*
C2	Condenser, aerial isolating, 100 μ f.	62-110009001*	R5	Resistor, parasitic suppressor, 680 ohms	66-1688340*
C3	Condenser, aerial isolating, 100 μ f.	62-110009001*	R6	Resistor, parasitic suppressor, 470 ohms	66-1478340*
C4	Condenser, aerial isolating, .01 μ f.	45-3505-41	R7	Resistor, plate dropping, FM, 1000 ohms	66-2108340*
C5	Condenser, cathode by-pass, 100 μ f.	62-110009001*	R8	Resistor, plate dropping, AM, 47,000 ohms	66-3478340*
C6	Condenser, d-c blocking, 220 μ f.	62-122001001	R9	Resistor, plate dropping, 4700 ohms	66-2478340*
C7	Condenser, screen by-pass, 1500 μ f.	62-215001011*	R10	Resistor, cathode bias, 47 ohms	66-0478340*
C8	Condenser, oscillator grid, 100 μ f.	62-110009001*	R11	Resistor, screen decoupling, 1000 ohms	66-2108340*
C9	Condenser, d-c blocking, 220 μ f.	62-122001001	R12	Resistor, plate decoupling, 2200 ohms	66-2228340*
C10	Condenser, d-c blocking, .01 μ f.	30-1226-10	R13	Resistor, grid return, 1 megohm	66-5108340*
C11	Condenser, neutralizing, 6.5 μ f.	30-1224-6	R14	Resistor, cathode bias, 120 ohms	66-1128340*
C12	Condenser, d-c blocking, 220 μ f.	62-122001001	R15	Resistor, a-v-c filter, 1 megohm	66-5108340*
C13	Condenser, fixed trimmer, temperature compensating, 7.5 μ f.	30-1224-8	R16	Resistor, decoupling, 470 ohms	66-1478340*
C14	Condenser, d-c blocking, 220 μ f.	62-122001001*	R17	Resistor, FM diode load, 47,000 ohms	66-3478340*
C15	Condenser, r-f by-pass, 100 μ f.	62-110009001*	R18	Resistor, de-emphasis, 47,000 ohms	66-3478340*
C16	Condenser, plate decoupling, .01 μ f.	30-4572	R19	Resistor, i-f filter, 47,000 ohms	66-3478340*
C17	Condenser, r-f by-pass, 100 μ f.	62-110009001*	R20	Resistor, a-v-c load, 3.3 megohms	66-5338340*
C18	Condenser, trimmer, FM oscillator	31-6511	R21	Volume control (with off-on switch), 500,000 ohms	33-5566-20
C19	Condenser, fixed trimmer, temperature compensating, 7.5 μ f.	30-1224-8	R22	Resistor, grid return, 10 megohms	66-6108340*
C20	Condenser, a-v-c decoupling, .01 μ f.	30-4572	R23	Resistor, plate load, 470,000 ohms	66-4478340*
C21	Condenser, screen by-pass, .002 μ f.	61-0062*	R24	Resistor, grid return, 470,000 ohms	66-4478340*
C22	Condenser, neutralizing, .006 μ f.	45-3500-7*	R25	Resistor, cathode bias, 150 ohms	66-1158340*
C23	Condenser, i-f by-pass, 100 μ f.	62-110009001*	R26	Resistor, filter, 470 ohms, 1 watt	66-1474340*
C24	Condenser, cathode by-pass, .01 μ f.	30-4572	R27	Resistor, filter, 150 ohms, 2 watts	66-1185340*
C25	Condenser, screen by-pass, .002 μ f.	61-0062*	R28	Resistor, current limiting, 22 ohms, 2 watt	66-0225360
C26	Condenser, electrolytic diode-load filter, 2 μ f., 50v	30-2417-7	S1	Switch, off-on	Part of R21
C27	Condenser, i-f by-pass, 330 μ f.	62-133001001	T1	Transformer, AM oscillator	32-4458
C28	Condenser, d-c blocking, .006 μ f.	45-3500-7*	T2	Transformer, output	Part of LS1
C29	Condenser, i-f by-pass, 100 μ f.	62-110009001*	W1	Line cord	41-3791-2
C30	Condenser, de-emphasis, .004 μ f.	61-0179*	W2	Cable, FM aerial, 72-ohm twin lead	41-3987
C31	Condenser, i-f by-pass, 100 μ f.	62-110009001*	WS	Switch, band, 2-wafer	42-1924
C32	Condenser, i-f by-pass, 100 μ f.	62-110009001*	Z1	Transformer, FM, 1st i-f	32-4372A
C33	Condenser, plate by-pass, 680 μ f.	62-168001001	Z2	Transformer, AM, 1st i-f	32-4258-2A
C34	Condenser, d-c blocking, .02 μ f.	61-0108*	Z3	Transformer, FM, 2nd i-f	32-4372-A
C35	Condenser, d-c blocking, .006 μ f.	61-0105*	Z4	Transformer, FM, 3rd i-f	32-4310-1A
C36	Condenser, grid by-pass, 100 μ f.	62-110009001*	Z5	Transformer, AM, 2nd i-f	32-4240A
C37	Condenser, tone compensation, .006 μ f.	61-0105*	MISCELLANEOUS		
C38	Condenser, electrolytic, 4-section	30-2570-46	Cabinet		10796
C38A	Condenser, cathode by-pass, 25 μ f., 25v	Part of C38		Back, flange, and socket assembly	76-5738
C38B	Condenser, filter, 40 μ f., 150v	Part of C38		Fastener, back mtg. (4)	W 2235FA9
C38C	Condenser, filter, 70 μ f., 150v	Part of C38		Baffle	54-8069
C38D	Condenser, filter, 40 μ f., 150v	Part of C38		Fastener, baffle mtg. (2)	W 2235-2FA9
C39	Condenser, filament by-pass, .005 μ f.	30-1238-1		Dial Scale	54-5089
C40	Condenser, line by-pass, 100 μ f.	62-110009001*		Clip, scale mtg. (4)	56-7808FE11
C41	Condenser, ceramic, 2-section	30-1239		Knob, FM-AM	54-4774-2
C41A	Condenser, filament by-pass, .004 μ f.	Part of C41		Knob, tuning	54-4774
C41B	Condenser, filament by-pass, .004 μ f.	Part of C41		Knob, volume-off-on	54-4774-1
C42	Condenser, line by-pass, .04 μ f.	45-3500		Dial Backplate Assembly	76-5733
CR1	Selenium rectifier, 100 ma., 117v	34-8003-1		Drive cord, 25-foot spool	45-8750*
I1	Pilot lamp, frosted, 117v, 7 watts	34-2605		Pointer	56-5630-23FCP
J1	Jack, male, a-c	27-4785-13		Shaft, drive	56-7931FA11
J2	Socket, FM test	27-6180		Spring, gang drive	56-2617
L1	Coil, FM aerial	32-4415-1		Spring, pointer drive	56-3167
L2	Coil, FM r-f	32-4416-1		Rubber mounts, gang (5)	27-4771-1
L3	Choke, r-f, 3.3 μ h.	32-4422-10		Rubber mounts, speaker (2)	54-4651-1
L4	Choke, r-f, 3.3 μ h.	32-4422-10		Socket, 12BA6, 12AU6 (i-f ampl.), 50C5	27-6203
L5	Coil, FM oscillator	32-4414-1		Socket, 12AU6 (r-f ampl.)	27-6203-1
L6	Choke, filament, 2.2 μ h.	32-4422-8		Socket, 12AT7	27-6203-6
L7	Choke, filament, 2.2 μ h.	32-4422-8		Socket, 19C8	27-6203-5
LA1	Loop aerial, AM	52-4052-49		Spacer, "T", speaker mtg. (2)	1W29155FA3
				Washer, speaker mtg. (2)	1W52224FA3