

# PHILCO RADIO-PHONOGRAPH MODEL 52-1733

## SPECIFICATIONS

CABINET .....	Wood console, mahogany finish
CIRCUIT .....	8-tube superheterodyne
FREQUENCY RANGES	
Standard broadcast .....	540—1630 kc.
FM .....	88—108 mc.
AUDIO OUTPUT .....	5 watts
OPERATING VOLTAGE .....	117 volts, 60 cycles, a.c.
POWER CONSUMPTION	
Radio .....	95 watts
Phonograph .....	110 watts
AERIALS .....	Built-in broadcast loop; FM line-cord aerial; provision for connection of external aerials
INTERMEDIATE FREQUENCIES	
AM .....	455 kc.
FM .....	9.1 mc.
PHILCO TUBES (8) .....	6BA6 r-f ampl., 7F8/S osc.-mixer-phono preampl., 6BA6 1st i-f ampl., 6AU6 2nd i-f ampl., 6BC7 FM det.-a.v.c., 6AV6 AM det.-1st audio, 6Y6G output, 5AZ4 rectifier
RECORD PLAYER .....	Philco Model M-22 All-Speed Automatic Record Changer (for service information, refer to the Record Changer section of this Yearbook).

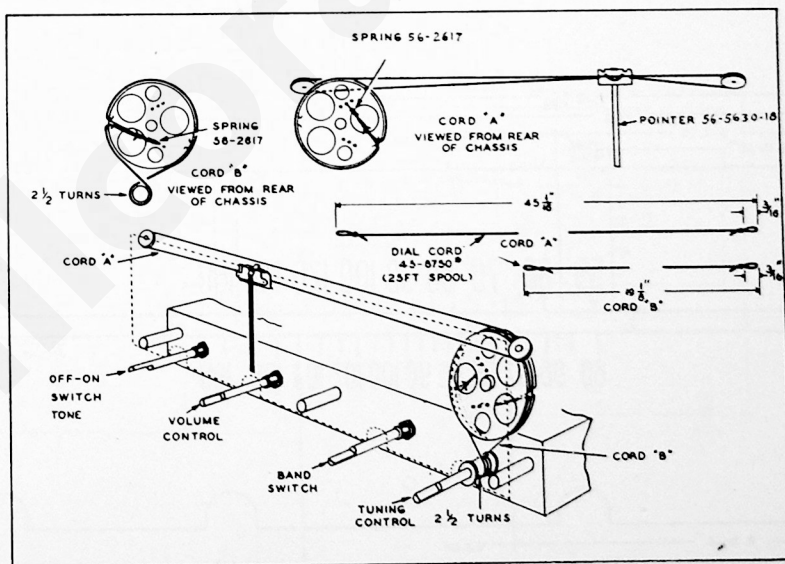


Figure 1. Drive-Cord Installation Details

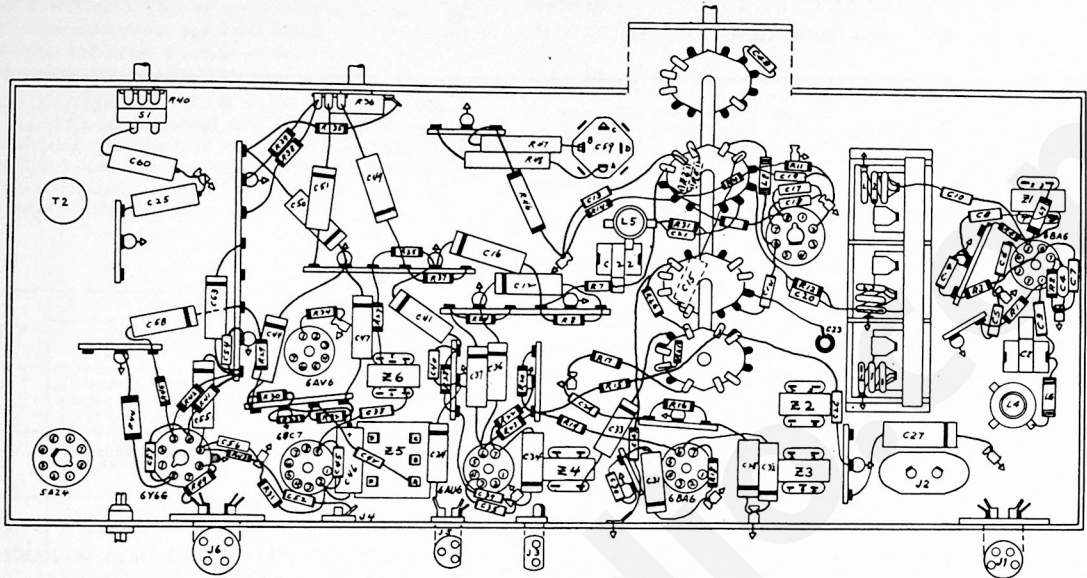


Figure 2. Symbolized Chassis. Showing Parts Placement

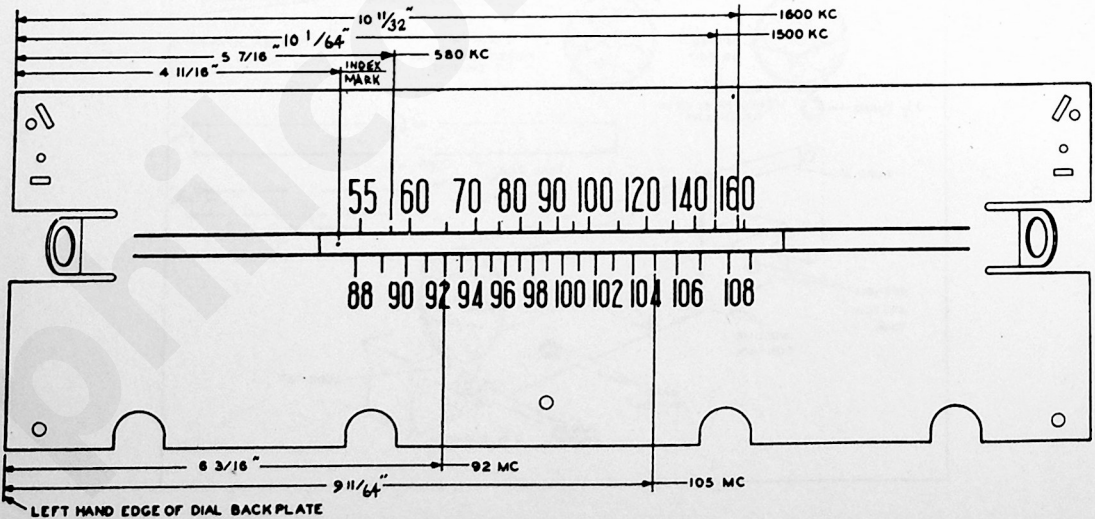


Figure 3. Dial-Backplate Calibration Measurements

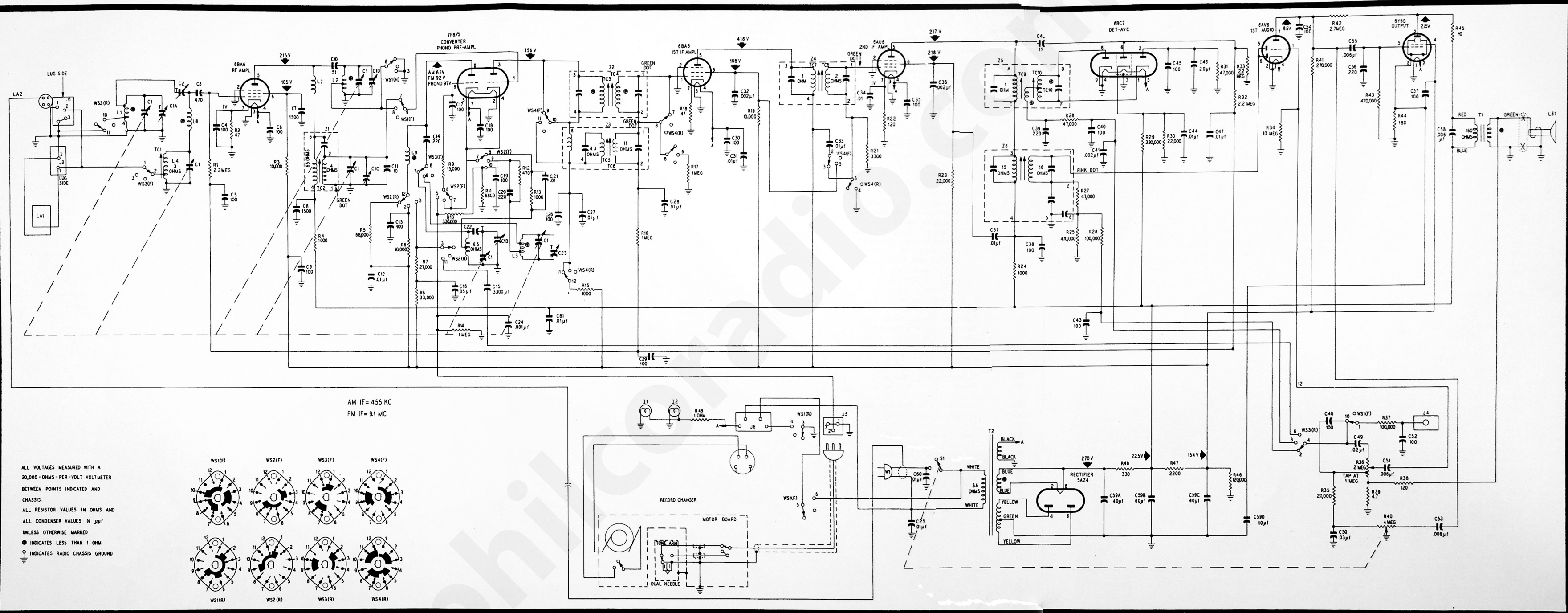


Figure 4. Philco Radio-Phonograph Model 52-1733, Schematic Diagram

Note: A 15 μf condenser was added from pin 1 of the 6AV6 1st audio tube to ground.

## REPLACEMENT PARTS LIST

## NOTE

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 equipment will be unchanged. When ordering replacements, use only the "Service Part No."

Reference Symbol	Description	Service Part No.	Reference Symbol	Description	Service Part No.
C1	Condenser, 6-gang tuning	31-2750	C46	Condenser, electrolytic, diode load filter, 2 $\mu$ f.	30-2417-7
C2	Condenser, trimmer, ant. shunt	31-6473-6	C47	Condenser, a-v-c filter, .01 $\mu$ f.	61-0120*
C3	Condenser, d-c blocking, 470 $\mu$ f.	62-147001001	C48	Condenser, tone compensation, 100 $\mu$ f.	62-110001001
C4	Condenser, cathode by-pass, 100 $\mu$ f.	60-10105017	C49	Condenser, d-c blocking, .02 $\mu$ f.	61-0108*
C5	Condenser, a-v-c filter, 100 $\mu$ f.	62-110001001	C50	Condenser, bass boost, .03 $\mu$ f.	30-4517
C6	Condenser, filament by-pass, 100 $\mu$ f.	62-110001001	C51	Condenser, d-c blocking, .006 $\mu$ f.	45-3500-7*
C7	Condenser, screen by-pass, 1500 $\mu$ f.	62-215001001	C52	Condenser, i-f by-pass, 100 $\mu$ f.	62-110001001
C8	Condenser, plate decoupling, 1500 $\mu$ f.	62-215001001	C53	Condenser, treble out, .006 $\mu$ f.	45-3500-7*
C9	Condenser, by-pass, 100 $\mu$ f.	62-110001001	C54	Condenser, plate by-pass, 100 $\mu$ f.	62-110001001
C10	Condenser, d-c blocking, 51 $\mu$ f.	62-051009001	C55	Condenser, d-c blocking, .006 $\mu$ f.	45-3500-7*
C11	Condenser, temperature compensating, 10 $\mu$ f.	62-010009001	C56	Condenser, grid by-pass, 220 $\mu$ f.	62-122001001
C12	Condenser, by-pass, .01 $\mu$ f.	61-0120*	C57	Condenser, neutralization, 100 $\mu$ f.	62-110001001
C13	Condenser, plate decoupling, 100 $\mu$ f.	62-110001001	C58	Condenser, tone compensation, .006 $\mu$ f.	45-3500-7*
C14	Condenser, d-c blocking, 220 $\mu$ f.	62-122001001	C59	Condenser, electrolytic, 4-section	30-2570-64
C15	Condenser, d-c blocking, phono coupling, .0033 $\mu$ f.	45-3505-55*	C59A	Condenser, filter, 40 $\mu$ f., 400 wv.	Part of C59
C16	Condenser, plate decoupling, .05 $\mu$ f.	61-0122*	C59B	Condenser, filter, 60 $\mu$ f., 400 wv.	Part of C59
C17	Condenser, grid by-pass, 100 $\mu$ f.	62-110001001	C59C	Condenser, filter, 40 $\mu$ f., 350 wv.	Part of C59
C18	Condenser, filament by-pass, 100 $\mu$ f.	62-110001001	C59D	Condenser, cathode by-pass, 10 $\mu$ f., 25 wv.	Part of C59
C19	Condenser, cathode by-pass, 100 $\mu$ f.	62-110001001	C60	Condenser, line by-pass, .01 $\mu$ f.	45-3505-41
C20	Condenser, d-c blocking, 220 $\mu$ f.	62-122001001	C61	Condenser, grid by-pass, 15 $\mu$ f.	62-015009001
C21	Condenser, d-c blocking, .01 $\mu$ f.	30-1226-10	I1	Pilot lamp	34-2064
C22	Condenser, osc. series padder	31-6473-7	I2	Pilot lamp	34-2064
C23	Condenser, trimmer, FM osc.	31-6511	J1	Socket, FM aerial	27-6214-1
C24	Condenser, phono tone compensation, .001 $\mu$ f.	45-3500-5*	J2	Socket, AM aerial	27-6214-14
C25	Condenser, line by-pass, .01 $\mu$ f.	45-3505-41*	J3	Socket, speaker	27-6214-12
C26	Condenser, plate decoupling, 100 $\mu$ f.	62-110001001	J4	Socket, FM test	27-6180
C27	Condenser, plate decoupling, .01 $\mu$ f.	61-0120*	J5	Socket, phono input	27-6252
C28	Condenser, a-v-c decoupling, .01 $\mu$ f.	61-0120*	J6	Socket, phono power	27-6182
C29	Condenser, a-v-c filter, 100 $\mu$ f.	62-110001001	L1	Coil, FM aerial	32-4415
C30	Condenser, filament by-pass, 100 $\mu$ f.	62-110001001	L2	Coil, FM r-f	32-4416
C31	Condenser, filament by-pass, .01 $\mu$ f.	61-0120*	L3	Coil, FM osc.	32-4414
C32	Condenser, screen by-pass, .002 $\mu$ f.	61-0062*	L4	Coil, AM aerial	32-4413
C33	Condenser, plate decoupling, .01 $\mu$ f.	61-0120*	L5	Coil, AM osc.	32-4153-11
C34	Condenser, cathode by-pass, .01 $\mu$ f.	61-0120*	L6	Choke, aerial isolating	32-4061-2
C35	Condenser, filament by-pass, 100 $\mu$ f.	62-110001001	L7	Choke, plate load	32-4061-2
C36	Condenser, screen by-pass, .003 $\mu$ f.	61-0109*	L8	Choke, plate load	32-4061-2
C37	Condenser, neutralization, .01 $\mu$ f.	61-0120*	LA1	Loop aerial, AM	76-4337-8
C38	Condenser, plate decoupling, 100 $\mu$ f.	62-110001001	LA2	Line cord aerial FM	41-3791-1
C39	Condenser, i-f filter, 220 $\mu$ f.	62-122001001	LS1	Speaker	36-1610-6
C40	Condenser, i-f filter, 100 $\mu$ f.	62-110001001	R1	Resistor, grid return, 2.2 megohms	66-5228340*
C41	Condenser, de-emphasis, .002 $\mu$ f.	61-0062*	R2	Resistor, cathode bias, 47 ohms	66-0478340*
C42	Condenser, d-c blocking, a-v-c rectifier coupling, 15 $\mu$ f.	62-015400021*	R3	Resistor, screen dropping, 10,000 ohms	66-3108340*
C43	Condenser, i-f filter, 100 $\mu$ f.	62-110001001	R4	Resistor, plate isolating, 1000 ohms	66-2108340*
C44	Condenser, by-pass, .01 $\mu$ f.	61-0120*	R5	Resistor, plate load, 68,000 ohms	66-3688340*
C45	Condenser, by-pass, 100 $\mu$ f.	62-110001001			

## REPLACEMENT PARTS LIST (Cont.)

Reference Symbol	Description	Service Part No.	Reference Symbol	Description	Service Part No.
R6	Resistor, plate load, 10,000 ohms	66-3108340*	T1	Transformer, output	32-8407
R7	Resistor, plate load, 27,000 ohms	66-3278340*	T2	Transformer, power	32-8406
R8	Resistor, plate isolating, 33,000 ohms	66-3338340*	W1	Line cord	L-2183*
R9	Resistor, grid return, 15,000 ohms	66-3158340*	WS	Wafer switch	42-1910
R10	Resistor, grid return (phono) 330,000 ohms	66-4338340*	Z1	Transformer, AM r-f	32-4399-3A
R11	Resistor, cathode bias, 6800 ohms	66-2688340*	Z2	Transformer, 1st FM i-f	32-4372A
R12	Resistor, parasitic suppressor, 470 ohms	66-1478340*	Z3	Transformer, 1st AM i-f	32-4258-3A
R13	Resistor, parasitic suppressor, 1000 ohms	66-2108340*	Z4	Transformer, 2nd FM i-f	32-4372-2A
R14	Resistor, crystal load, 1 megohm	66-5108340*	Z5	Transformer, 3rd FM i-f	32-4417
R15	Resistor, plate isolating, 1000 ohms	66-2108340*	Z6	Transformer, 2nd AM i-f	32-4240-3A
R16	Resistor, a-v-c isolating, 1 megohm	66-5108340*	<b>MISCELLANEOUS</b>		
R17	Resistor, grid return, 1 megohm	66-5108340*	<b>Description</b>	<b>Service Part No.</b>	
R18	Resistor, cathode bias, 47 ohms	66-0478340*	Cabinet, Model 52-1733		10825
R19	Resistor, screen dropping, 1500 ohms	66-2158340*	Changer mounting parts		
R20	Resistor, plate isolating, 1000 ohms	66-2108340*	Bumper (2)		55-0890
R21	Resistor, grid return, 3300 ohms	66-2338340*	Clip, bottom mounting (4)		W2235-1FA9
R22	Resistor, cathode bias, 120 ohms	66-1128340*	Drive screws (8)		1W19432FA3
R23	Resistor, screen dropping, 1000 ohms	66-2108340*	Frame		76-6257
R24	Resistor, plate isolating, 1000 ohms	66-2108340*	Knob, pull		56-8496
R25	Resistor, diode load, 470,000 ohms	66-4478340*	Screw, knob mounting		1W10078FA3
R26	Resistor, audio filter, 100,000 ohms	66-4108340*	Rail assembly (LH)		76-6258
R27	Resistor, i-f filter, 47,000 ohms	66-3478340*	Rail assembly (RH)		76-6259
R28	Resistor, i-f filter, 47,000 ohms	66-3478340*	Sleeve, rubber (3)		54-7798
R29	Resistor, voltage divider, 330,000 ohms	66-4338340*	Speed nut (3)		W-2554
R30	Resistor, voltage divider, 22,000 ohms	66-3228340*	Spring, changer mounting (3), top (heavy)		56-7059-1FJ47
R31	Resistor, FM diode load, 47,000 ohms	66-3478340*	Spring, changer mounting (3), bottom (light)		56-7059-1FCP
R32	Resistor, a-v-c load, 2.2 megohms	66-5228340*	Dial backplate assembly		76-6311
R33	Resistor, a-v-c filter, 2.2 megohms	66-5228340*	Pilot lamp socket assembly (2)		27-6233-33
R34	Resistor, grid return, 10 megohms	66-6108340*	Drive shaft assembly		76-5139-1
R35	Resistor, bass boost, 27,000 ohms	66-3278340*	Bushing, drive shaft		27-9437
R36	Volume control	33-5535-27	Dial cord, 25 foot spool		45-8750*
R37	Resistor, isolating, 100,000 ohms	66-4108340*	Spring, drive cords (2)		56-2617
R38	Resistor, feedback, 120 ohms	66-1128340*	Spring, hairpin, drive shaft retainer		57-1468FA3
R39	Resistor, voltage divider, feedback, 4.7 ohms	66-9478340*	Knob (3)		54-4718-6
R40	Tone control, 4 megohms with switch	33-5566-12	Knob, band switch		54-4718-12
R41	Resistor, plate load, 270,000	66-4278340*	Pointer		56-5630-18
R42	Resistor, inverse feedback, 2.7 megohms	66-5278340*	Scale strap		56-4756FE11
R43	Resistor, grid return, 470,000 ohms	66-4478340*	Scale strap (2)		56-2234-2
R44	Resistor, cathode bias, 180 ohms, 1 watt	66-1184340*	Socket, Loktal, SAZ4		27-6207
R45	Resistor, parasitic suppressor, 10 ohms	66-0108340*	Socket, Loktal, 7F8/s		27-6207-1
R46	Resistor, bleeder, 120,000 ohms, 2 watts	66-4125340*	Socket, miniature, 7 pin (4)		27-6265-1
R47	Resistor, filter, 2200 ohms, 2 watts	33-1335-97	Socket, miniature, 9 pin		27-6203-5
R48	Resistor, filter, 330 ohms, 7 watts	33-1335-90	Socket, octal		27-6174
R49	Resistor, pilot lamp dropping, 1 ohm	66-9108340*	Speaker bolts (4)		W-700-2
S1	Switch, on-off	Part of R40	Washer, fibre, speaker mounting (4)		27-7467

## AM ALIGNMENT PROCEDURE

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

**DIAL POINTER:** Calibration and pointer-index measurements are shown in figure 5. With tuning gang fully meshed, set pointer to index mark.

**OUTPUT METER:** Connect across speaker voice-coil terminals.

**SIGNAL GENERATOR:** Connect AM r-f signal generator as indicated in chart. Use modulated output.

**RADIO CONTROLS:** Set volume control to maximum, tone control counterclockwise, and band switch to broadcast position.

**OUTPUT LEVEL:** During alignment; adjust signal-generator output to hold output-meter indicator below 1.25 volts.

## AM ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through a .1- $\mu$ f. condenser to mixer grid, pin 1, of 7F8/S.	455 kc.	Gang fully meshed	Adjust, in order given, for maximum output.	TC12—2nd AM i-f sec. TC11—2nd AM i-f pri. TC6—1st AM i-f sec. TC5—1st AM i-f pri.
2	Radiating loop. (See note below.)	1600 kc.	1600 kc.	Adjust for maximum.	C1B—AM osc. shunt
3	Same as step 2.	580 kc.	580 kc.	Adjust, in order given, for maximum while rocking tuning control.	C22—AM osc. series TC2—AM r-f tuning core TC1—AM ant. tuning core
4	Same as step 2.	1500 kc.	1500 kc.	Adjust, in order given, for maximum.	C1C—AM r-f shunt C2—AM ant. shunt
5	Repeat steps 2, 3, and 4 until no further increase is obtained.				

**Radiating Loop:** Make up a 6-to-8 turn, 6-inch-diameter loop, using insulated wire; connect to signal generator leads, and place near radio loop aerial.

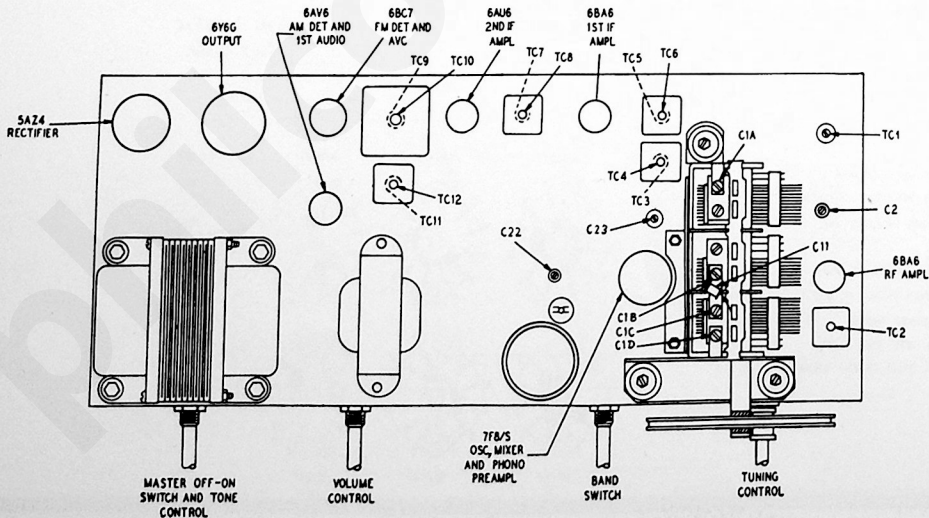


Figure 5. Top View, Showing Trimmer Locations

## FM ALIGNMENT PROCEDURE

Make the AM alignment first.

**RADIO CONTROLS:** Set volume control to maximum, tone control counterclockwise, and band switch to FM position. Allow radio and signal generator to warm up for at least 15 minutes before making alignment.

**SIGNAL GENERATOR:** Use a signal generator capable of delivering a 9.1-mc. FM signal with a deviation of  $\pm 80$  kc., and modulated AM signals of 92 mc., 105 mc., and 108 mc. Philco Model 7008 Precision Visual Alignment Generator fulfills these requirements. NOTE: Model 7008 must be well bonded to radio chassis.

**OSCILLOSCOPE:** Connect to FM TEST jack. Model 7008 is suggested.

**OUTPUT METER:** Connect across speaker voice-coil terminals.

**R-F COIL NOTE:** Check resonance of circuits containing coils L1, L2, and L3 by inserting each end of a tuning wand, such as Philco Part No. 45-8885, into coil. If signal strength increases when powdered-iron end is inserted, compress turns slightly. If signal strength increases when brass end is inserted, spread turns slightly. If signal strength decreases when each end is inserted, no adjustment is necessary. Do not spread or compress turns excessively; only a small change is required at these high frequencies.

## 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 pin 1 of 6AU6*.	9.1 mc. $\pm 80$ kc. deviation.	Gang fully meshed.	Adjust TC10 for correct crossover. Adjust TC 9 for maximum and equal peaks. Repeat.	TC10—FM det. sec. TC9—FM det. pri.
2	1- $\mu$ f. condenser to pin 1 of 6BA6*.	9.1 mc. $\pm 80$ kc. deviation.	Gang fully meshed.	Adjust, in order given, for maximum and equal peaks. Repeat.	TC8—FM 2nd i-f sec. TC7—FM 2nd i-f pri.
3	Through a .1- $\mu$ f. condenser to pin 1 of 7F8/S*.	9.1 mc. $\pm 80$ kc. deviation.	Gang fully meshed.	Adjust, in order given, for maximum and equal peaks. Repeat.	TC4—FM 1st i-f sec. TC3—FM 1st i-f pri.
4	Through a 300-ohm dummy aerial to FM aerial socket.	108 mc.	108 mc.	Adjust trimmer for maximum reading on output meter.	C23—FM osc.
5	Same as step 4.	105 mc.	105 mc.	Adjust for maximum while rocking gang.	C1D—FM r-f C1A—FM aerial
6	Same as step 4.	92 mc.	92 mc.	Adjust coils, in order given, for proper resonance (see R-F COIL NOTE).	L3—FM osc. coil L2—FM r-f coil L1—FM aerial coil

\*CAUTION: Do not overload! When aligning the i-f stages, the curve will be distorted or destroyed if too great a signal is used. To check, attenuate the signal input. If the curve changes in form, rather than merely decreasing in multitude, the stage is overloaded.

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**1952 TROPIC RADIOS  
AND RADIO-PHONOGRAPHS**

PARTS LIST AND SERVICE INFORMATION

FOR

PHILCO TROPIC RADIO MODEL 3022

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