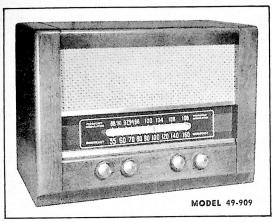
PHILCO RADIO MODELS 49-909 AND 49-1101



SPECIFICATIONS

CABINET
Model 49-909Table model, wood, mahogany
Model 49-1101
CIRCUIT9-tube superheterodyne
FREQUENCY RANGES
Broadcast
AUDIO OUTPUT 3 watts
OPERATING VOLTAGE. 105—120 volts, 50/60 cycles, a.c.
POWER CONSUMPTION45 watts
AERIALSBuilt-in loop (semi-high-impedance for Model 49-909; low-impedance for Model 49-1101); FM line-cord aerial; provision for external aerial
INTERMEDIATE FREQUENCY
AM
PHILCO TUBES (9)12AU6, 12AU7, 14F8, 6BJ6(2), 19T8, 50L6GT, 117Z3(2)
PANEL LAMP110-volt, screw-base, Part No. 34-2477

SYMBOLIZATION

The components in the radio circuit are symbolized according to the types of parts and the sections of the radio in which the parts are located. The prefix letter of the symbol designates the type of part, as follows:

S-switch

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C-condenser
I-pilot lamp
                                                  T-transformer
L-choke or coil
                                                  W-line cord
LA—loop aerial
LS—loud-speaker
                                                  WS-wafer switch
                                                  Z-electrical assembly
R-resistor
                              INDEX MARK
      LEFT HAND EDGE
      OF DIAL BACK PLATE
                                                                          FREQUENCY
MODULATION
               FREQUENCY
                              38 90 92 94 96 100 104 106 108
               MODULATION
                                        70 80 100 120
                                   60
                                                             40 160
                                                                          BROADCAST
               BROADCAST
                                                                         TP-6349
           -3 II/16-
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Figure 1. Dial-Backplate Calibration Measurements

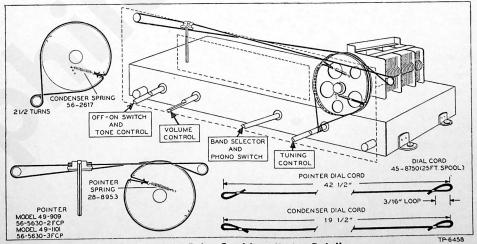


Figure 2. Drive-Cord Installation Details 354

AM ALIGNMENT CHART

	SIGNAL GENERATOR	ATOR		RADIO	NOTE: TC301A TC303A AND TC305A ARE LOCATED
È	COMMECTION TO EADIO	PIAL	BIAL	SPECIAL INSTRUCTIONS	ADJUST ON UNDERSIDE OF CHASSIS.
	Ground lead to B., test point B; output lead through J.mf. condensen. J.mf. TB400.	455 kc.	540 kc.	Adjust each trimmer, in order given, for maximum output. Do not repeat adjustments.	TC3018—3rd if pri. — SEE NOTE TC3018—2nd if pri. — SEE NOTE TC3018—1nd if pri. — SEE NOTE TC3018—1nd if pri. — SEE NOTE
7	Radiating loop (see note be- low).	1600 kc.	1600 kc.	1600 ke. Adjust for maximum output.	CADIR—BC ove
-	Same as step 2.	1500 kc.	1500 kc.	1500 kc. Adjüst for nustimum output.	C401A—BC aerial
RAD!	RADIATING LOOP: Make up	ke up a six-	to-eight-turn,	RADIATING LOOP: Make up a stx-to-eight-turn, binch-diameter loop, using insulated wire; connect to the signal-generator	the signal-generator Figure 3. Top View, Showing AM Trimmer Locations

FM ALIGNMENT CHART

lop view, snowing AM Irimmer Locations

ALCOCAT ACCOCAT COST COST COST COST	ARE LOCATED ON UNDERSIDE OF CHASSIS.								TP6504		LOOP CONNECTIONS
1511144	ISOCOW	TC304B—3rd id sec. TC304A—3rd id pri. — SEE NOTE TC302B—2rd id sec. — SEE. TC302A—2rd id pri. — NOTE.	T(3008—1st id sec. T(300A—1st id pris	TC304B-3rd i-f sec.	C400C—FM 045.	C400B—FM r-f	C400A—FM acrial	L403-FM osc. (tracking)	1.402-FM r-f (tracking) - SEE NOTE	L401-FM aerial (tracking)	
RADIO	SPECIAL INSTRUCTIONS	Adjust for maximum reading on alignment indi- cator. Attenuate signal generator to maintain reading of approximately 10 volts. Repeat ad- justments until no further improvement is noted. After this step, do not disturb any of these trimmers except as directed in step 3.	Adjust for maximum reading on alignment indi- eator. Repeat adjustments until no further im- provement is nated. Do not disturb these trimmers after this step.	Adjust for minimum reading on output meter. This adjustment is critical; repeat to make sure that it is correct.	Adjust for maximum reading on alignment indi- cator.	Same as step 4. Rock tuning control.	Same as step 4.	Same as step 4. See note on page 10.	Same as step 7.	Same as step 7.	ovement is obtained.
	SETTING	88 mc.	88 mc.	88 mc.	105 mc.	105 mc.	105 mc.	92 mc.	92 шс.	92 mc.	o further impro
ERATOR	SETTING	9.1 mc.	9.1 inc.	9.1 mc.	105 mc.	105 mc.	105 nrc.	92 mc.	92 mc.	92 nic.	ugh 9 until n
SIGNAL GENERATOR	CONNECTION TO RADIO	Through .1-mf. condenser to pin 1 of 6BJ6 1st i-f amplifier.	Through .1-mf. condenset to pin 8 of 14F8.	Same as step 2.	To terminal 2 of J400.	Same as step 4.	Same as atep 4.	Same as step 4.	Same as step 4.	Same as step 4.	Repent steps 4 through 9 until no further improvement is obtained
1		ehā	2	8		5	9	1	*	•	10

Figure 4. Top View, Showing FM Trimmer Locations

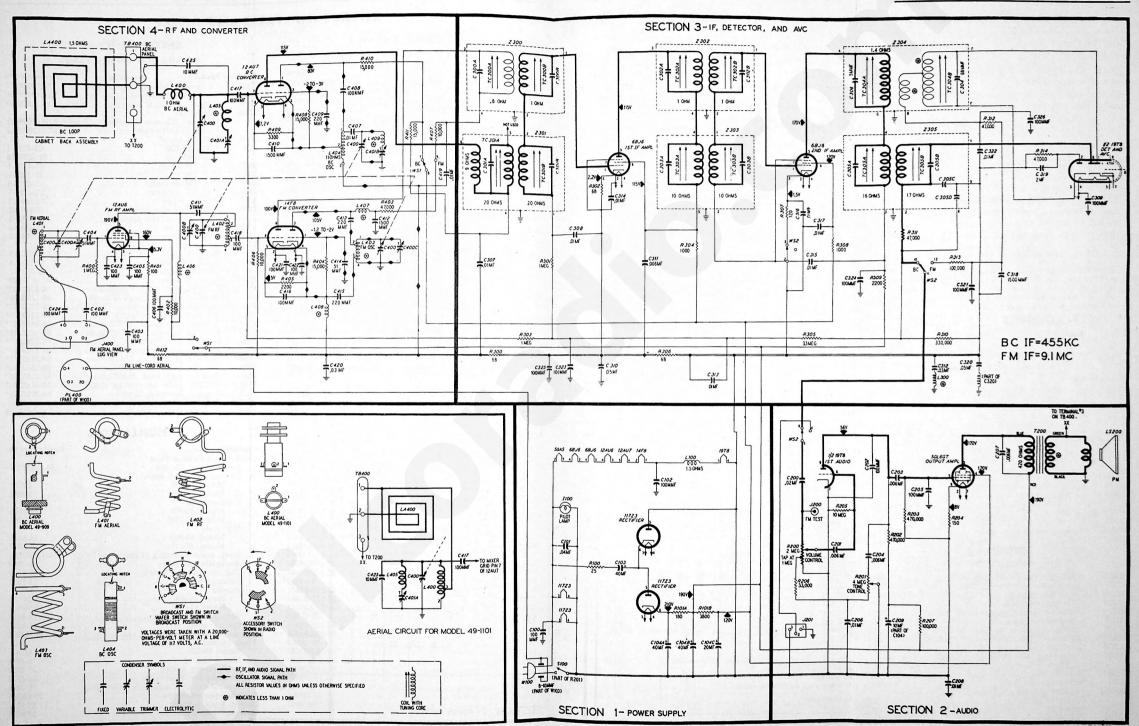


Figure 5. Philco Radio Models 49-909 and 49-1101, Sectionalized Schematic Diagram,

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ALIGNMENT OF AM CIRCUITS

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 fully meshed, adjust dial pointer to coincide with index mark at low-frequency end of dial. See figure 7.

OUTPUT METER—Connect between terminal 3 (voice-coil connection) of aerial terminal panel TB400 and chassis.

AM SIGNAL GENERATOR—Connect as indicated in chart. Use modulated output.

OUTPUT LEVEL-During alignment, signal-generator output must be attenuated to hold radio output below 1.25 volts, as read on output meter.

CONTROLS-Set volume control to maximum, turn tone control for maximum treble response (fully counterclockwise), and set band switch to broadcast position.

ALIGNMENT OF FM CIRCUITS

Align the AM circuits first.

OUTPUT METER—Connect between terminal 3 (voice-coil connection) of aerial terminal panel TB400 and chassis.

ALIGNMENT INDICATOR—Connect negative lead of a 20,000-ohms-per-volt, d-c voltmeter to pin 2 of 19T8 tube connect positive lead to B-, test point B in Section 2. Use 10-volt range.

AM SIGNAL GENERATOR—Generator must have sufficient output to give a reading of at least 8.5 volts on alignment indicator. Connect generator ground lead to B-, test point B; connect output lead as indicated in chart. Use modulated output.

CONTROLS—Same as for alignment of AM circuits, except set band switch to FM position.

Allow radio and signal generator to warm up for at least 15 minutes before starting alignment.

NOTE: Check resonance of circuits using coils L401, L402, and L403 by inserting each end of a powdered iron tuning core, such as Phileo Part No. 56-6100, in the coil. If the signal strength increases when the iron end is inserted, compress the turns slightly. If the signal strength increases when the threaded brass end is inserted, spread the turns slightly. If the signal strength decreases when either the iron or the brass end is inserted, no adjustment is necessary. Do not spread or compress the turns of the coil excessively; only a small change is required at these high frequencies.

REPLACEMENT PARTS LIST

Referen C100 C101

C102

C104

L100

R100

C201 C202 C203 C204

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."

SECTION 1 POWER CURRLY CIRCUIT

Resistor, current-limiting, 25 ohms.......33-1334-5 Switch, power on-off Part of R201 Line-cord-and-plug assembly 41-3755-19* F. M. Ant:41-3791-1 SECTION 2 AUDIO CIRCUITS Condenser, d-c blocking, .02 mf.....

Condenser, d-c blocking, .006 mf........45-3500-7* Condenser, plate by-pass, 100 mmf.....62-110009001 Condenser, d-c blocking, .006 mf........45-3500-7* Condenser, tone compensation, .006 mf....45-3500-7* Condenser, r-f by-pass, 100 mmf......62-110009001 Condenser, bass compensation, 01 mf. 61-0120* Condenser, tone compensation, .006 mf....45-3500-7*

Resistor, grid return, 470,000 ohms......66-4473340*

Condenser, electrolytic, filter, 10 mf.,

Tone control (with power on-off switch),

Speaker, permanent-magnet

	rot	MEK SUPPLI CIRCUITS				AUDIO CIRCUITS	
Reference	Symbol	Description	Service Part No.	Reference	Symbol	Description	Service Part No.
C100	Condenser,	r-f by-pass, 100 mmf	. 62-110009001	R204	Resistor.	cathode bias, 150 ohms	
		line filter, .04 mf				grid return, 10 megohms.	
C102	Condenser,	r-f by-pass, 100 mmf	62-110009001			tone compensation, 33,000	
C103	Condenser,	electrolytic, voltage doub	oler,			plate decoupling, 100,000 d	
		200 v		T200	Transform	ner, output	32-8242
		electrolytic, 4-section		WS2	Switch-w	afer section	Part of 42-1745-2+
		filter, 40 mf., 250 v		+ 42-17	45-2 Swit	ch, accessory.	
		filter, 40 mf., 250 v				SECTION 3	
		filter, 20 mf., 250 v	Part of C104			TESTOR AND A V C OU	

C323 358

I-F, DETECTOR, AND A-V-C CIRCUITS

SECTION 2 (Cont.)

C300 A C300 B C300 B C301 B C301 B C301 B C302 A C302 B C302 B C303 B C303 B C303 B C305 B C305 C C C305 C C305 C C C C305 C C C C305 C C C C C305 C C C C C C C C C C C C C C C C C C C	Condenser, shunt
	Condenser, r-t by-pass, .03 mf. 45-3500 1+
	Condenser, a-v-c by-pass, .01 mf R1-n120*
	Condenser, r-1 by-pass, .Ul mt
C316	Condenser, cathode by-pass, .01 mf
C317	Condenser, screen by-pass, 01 mf . gi nione
C318	Condenser, decoupling, 1500 mmf 62-215001011
C319	FM detector, 2 mf., 50 v. 30.2417.2
C320	Condenser-and-choke assembly 05 mf
C321	Condenser, r-f by-pass, 100 mmf62-110009001
C322 C323	Condenser, compensating, .01 mf
-020 -0	Ochdenser, 1-1 Dy-pass, 100 mmi62-110009001

MODELS 49-909 AND 49-1101

REPLACEMENT PARTS LIST (Cont.)

SECTION 3 (Cont.)

I-F. DETECTOR, AND A-V-C CIRCUITS

SECTION 4 (Cont.) R-F AND CONVERTER CIRCUITS

Reference	Symbol Desc	ription	Service Part No.	Reference		Description		Service Part No
C324	Condenser, r-f by-pa	ss 100 mmf	62-110009001	C422	Condenser,	r-f by-pass, 100	mmf	.62-110009001
C325	Condenser, r-f by-pa	ss 100 mmf	62-110009001	C423	Condenser.	r-f by-pass, 100	mmf	.62-110009001
C326	Condenser, r-f by-pa	ss 100 mmf	62-110009001	C424	Condenser.	aerial coupling,	100 mmf	. 62-110009001
300	Choke, r-f by-pass	55, 100 mm	32-4061-2	C425	Condenser			
1300	Resistor, decoupling,	68 ohms	66-0683340*	0.20	Model 49-90	9-aerial coupling	a. 10 mmf.	. 62-010009001
1301	Resistor, grid return,	l megohm	66-5103340*			01-fixed trimme		
302	Resistor, cathode bias	68 ohms	66-0683340*	L400	Coil. BC ae			
303	Resistor, grid return,	l mogohm	66-5103340*	2400		09		32-4217-1
304	Resistor, decoupling,					01		
1305	Resistor, a-v-c filter, 3	3 magahma	CC 5333340*	L401		rial		
306	Resistor, isolating, 68	ohma	CC 0C03340*	L402		[
307	Resistor, cathode bias			L402		cillator		
308	Resistor, screen drop			L404		cillator		
309	Resistor, plate decour			L405		ke :		
310	Resistor, diode load,			L406		plate load		
311	Resistor, diode load,			L407		cillator plate loa		
	Resistor, decoupling,			L408	Coil - f cho	ke	u	22 (001-2
	Resistor, decoupling,			L409		ke		
314	Resistor, FM-detector			LA400	Loop acrial	ke		32-4001-2
	Switch-wafer section			LA400	Madal 40 00	9		20 4050 07
					Model 49-30	01		70 0500 5
	Switch-wafer section			1400				
	Tuning core, primary,			PL400		ocket		
	Tuning core, seconda					rial		
	Tuning core, primary			R400		d return, l megol		
	Tuning core, seconda			R401		thode bias, 100 ol		
	Tuning core, primary,			R402		een dropping, 10		
	Tuning core, seconda			R403		te decoupling, 4		
	Tuning core, primary,			R404		id return, 15,000 d		
	Tuning core, secondar			R405		thode bias, 2200 d		
	Tuning core, primary,			R406		d return, 10,000 d		
	Tuning core, seconda			R407		te decoupling, l		
	Tuning core, primary,			R408		d return, 15,000 d		
	Tuning core, seconda			R409		thode bias, 3300 d		
	Transformer, 1st FM i			R410		te load, 15,000 ol		
	Transformer, 1st AM i			R411		te decoupling, l		
	Transformer, 2nd FM			R412	Resistor, iso	lating, 68 ohms		66-0683340*
	Transformer, 2nd AM			TB400	Terminal pa	nel, aerial		38-9942
	Transformer, 3rd FM			WS1	Switch-wafe	r section	Par	t of 42-1834-2#
305	Transformer, 3rd AM	i-t	32-4240-2					

SECTION 4

R-F AND CONVERTER CIRCUITS

C400	Condenser, tuning gang31-2724-3
	Condenser, trimmer, FM aerial Part of C400
	Condenser, trimmer, FM r-f
	Condenser, trimmer, FM oscillator Part of C400
C401	Condenser, trimmer, 2-section31-6476-18
C401A	: Condenser, trimmer, BC aerial Part of C401
C401B	: Condenser, trimmer, BC oscillatorPart of C401
C402	Condenser, aerial coupling, 100 mmf 62-110009001
C403	Condenser, r-f by-pass, 100 mmf 62-110009001
C404	Condenser, blocking, 51 mmf30-1224-2
C405	Condenser, cathode by-pass, 100 mmf. 62-110009001
C406	Condenser, screen by-pass, 100 mmf 62-110009001
C407	Condenser, isolating, .01 mf
	Condenser, blocking, 100 mmf62-110009001
C408	Condenser, r-f by-pass, 220 mmf 62-122001001
C409	Condenser, cathode by-pass, 100 mmi. 62-110009001
C410	Condenser, cathode by-pass, 100 mmi 62-110009001
C411	Condenser, r-f by-pass, 51 mmf30-1224-2
C412	Condenser, r-f by-pass, 1500 mmf 62-215001011
C413	Condenser, d-c blocking, 220 mmf 62-122001001
C414	Condenser, d-c blocking, 51 mmf30-1224-2
C415	Condenser, d-c blocking, 220 mmf 62-122001001
C416	Condenser, cathode by-pass, 100 mmf. 62-110009001
C417	Condenser, isolating, 100 mmf 62-110009001
	Condenser, d-c blocking, 100 mmf 62-110009001
C418	Condenser, plate decoupling, .01 mf
C419	Condenser, r-f by-pass, .03 mf
C420	Condenser, r-f by-pass, 100 mmf 62-110009001
C421	Condenser, 1-1 by-pass, 100 mmi 62-110003001

^{+ 42-1745-2} Switch, accessory. # 42-1834-2 Switch, band, BC-FM.

MISCELLANEOUS	
Description	Service Part No.
Cabinet and Cabinet Parts	
Bezel, Model 49-1101	56-5855FCP
Cabinet (less dial scale)	
Model 49-909	10722
Model 49-1101	
Cabinet back	
Model 49-909	54-7635
Model 49-1101	
Dial scale	
Model 49-909	54-5025
Model 49-1101	
Strap, scale mounting (2 required)	
Dial-backplate assembly	76-3918
Dial cord (25-foot spool)	45-8750*
Diffusing panel	54-7593
Pointer	
Model 49-909	
Model 49-1101	56-5630-3
Spring, pointer	28-8953
Spring, gang	56-2617
Dial drive-shaft assembly	76-3479-1
Knob, control (4 required)	
Model 49-909	
Model 49-1101	
Knob, accessory switch	27-4809
Socket assembly, pilot lamp	27-6233
Bracket-and-clip assembly, pilot lamp	76-3919
Socket, 9-pin miniature	27-6203-5
Socket, 8-pin Loktal	27-6138*
Socket, 7-pin miniature	27-6226

[#] Switch, band, BC-FM.