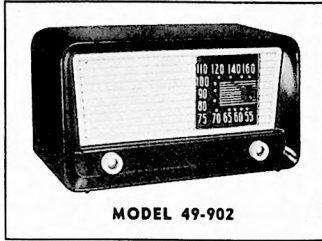


# PHILCO RADIO MODEL 49-902

## SPECIFICATIONS



CABINET .....	Plastic
CIRCUIT .....	6-tube superheterodyne
FREQUENCY RANGE .....	540—1620 kc.
AUDIO OUTPUT .....	1 watt
OPERATING VOLTAGE .....	105—125 volts, a.c. or d.c.
POWER CONSUMPTION .....	30 watts
AERIAL .....	Built-in loop; also connector for external aerial
INTERMEDIATE FREQUENCY .....	455 kc.
PHILCO TUBES (6) .....	14AF7, 12BA6, 12AU6, 14B6, 35A5, 35Y4

TP-5852A

## 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:

C—condenser	R—resistor
I—pilot lamp	S—switch
L—choke or coil	T—transformer
LA—loop aerial	Z—electrical assembly
LS—loud-speaker	

The number of the symbol designates the section in which the part is located, as follows:

- 100-series components are in Section 1—the power supply.
- 200-series components are in Section 2—the audio circuits.
- 300-series components are in Section 3—the i-f amplifier, detector, and a-v-c circuits.
- 400-series components are in Section 4—the r-f and converter circuits.

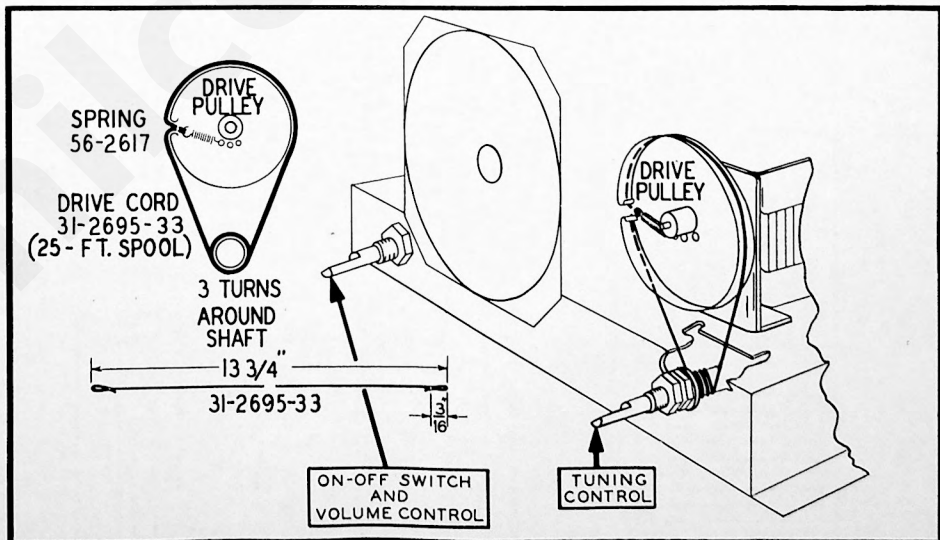
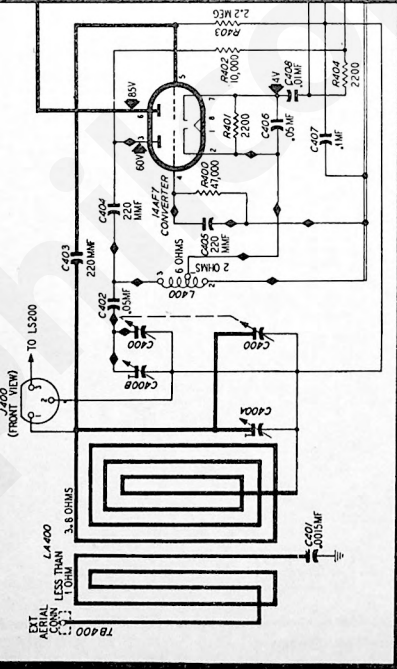


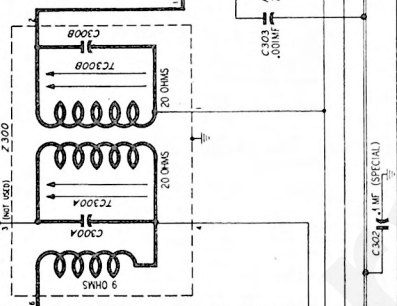
Figure 1. Drive-Cord-Installation Details

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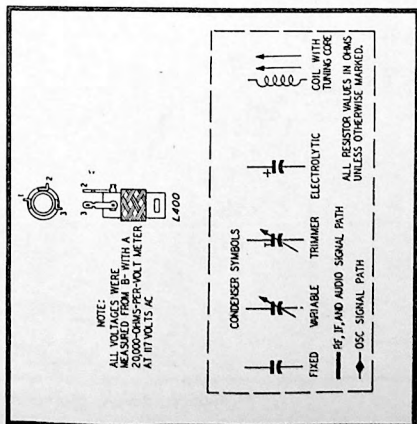
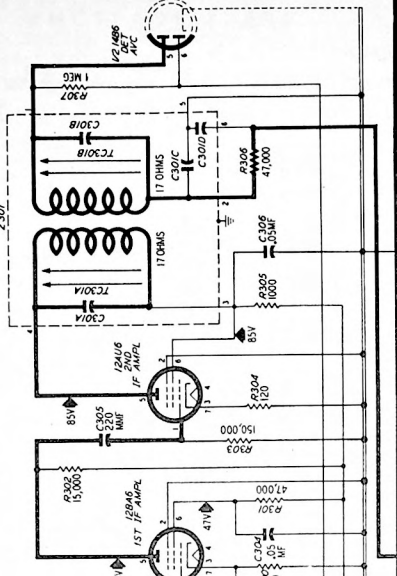
SECTION 4-RF AND CONVERTER



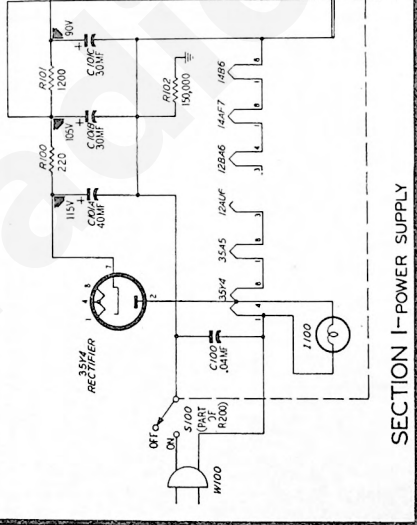
IF-455KC



SECTION 3 - IF, DETECTOR, AND AVC



SECTION 2-AUDIO



SECTION 1-POWER SUPPLY

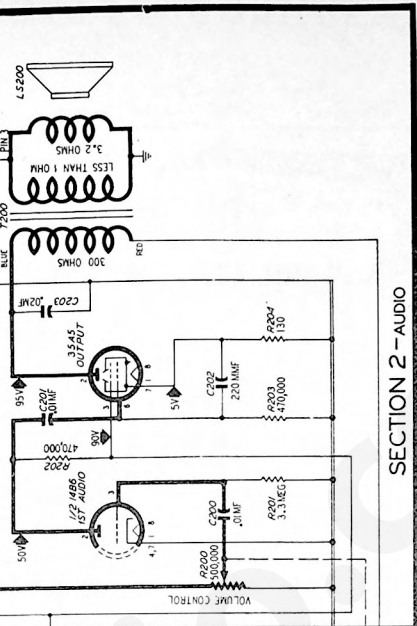


Figure 2. Philco Radio Model 49-902, Sectionalized Schematic Diagram.

OSCILLATOR TEST

Connect the positive lead of a high-resistance voltmeter to B- test point B; connect the prod end of the negative lead through a 100,000-ohm isolating resistor to the oscillator grid (pin 4 of 12V6B), test-point D. Use a suitable meter range, such as 0-10 volts. Proper operation of the oscillator is indicated by measured voltage of approximately the value given in the chart (measured with 20,000-ohms-per-volt meter) throughout the tuning range.

# ALIGNMENT PROCEDURE

**NOTE:** The loop should be connected to the radio during alignment.

**RADIO CONTROLS**—Set volume control to maximum. Set tuning control as indicated in chart.

**SIGNAL GENERATOR**—Use modulated output. Connect leads and set frequency as indicated in chart.

STEP	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	ADJUST TRIMMER
1	Ground lead to B-; output lead through .1-mf. condenser to external aerial terminal.	455 kc.	Tuning gang fully meshed	Adjust, in order given, for maximum output.	TC301B—2nd i-f sec.  TC301A—2nd i-f pri.  TC300B—1st i-f sec.  TC300A—1st i-f pri.
2	Radiating loop. (See note below.)	1600 kc.	1600 kc.	Adjust for maximum.	C400B—Osc.
3	Radiating loop. (See note below.)	1500 kc.	1500 kc.	Adjust for maximum.	C400A—Aerial

**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.

**OUTPUT METER**—Connect across speaker voice-coil terminals (figure 3).

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

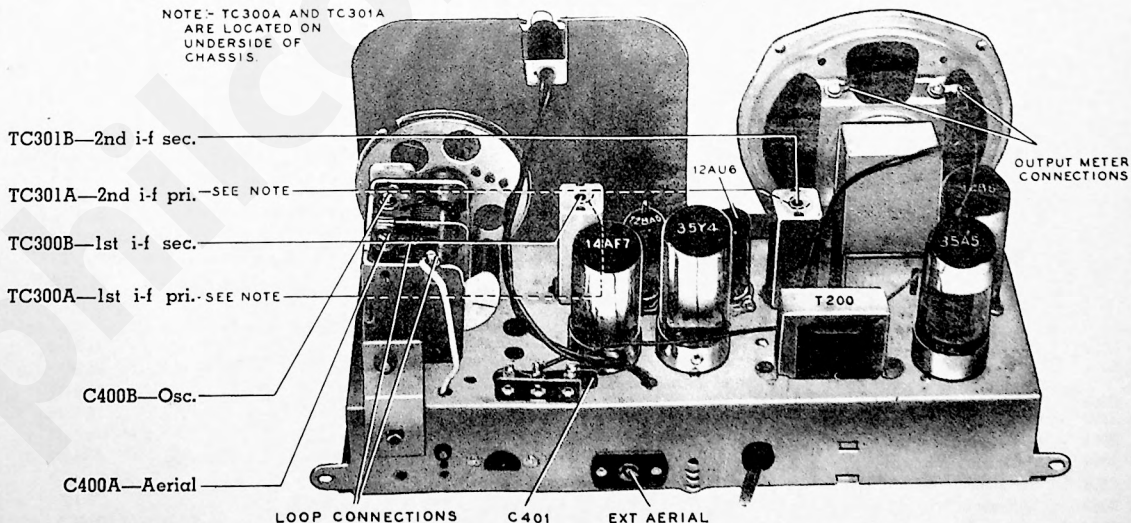


Figure 3. Top View of Chassis, Showing Trimmer Locations

# 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."

SECTION 1

POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, line by-pass, .04 mf. ....	45-3500-2*
C101	Condenser, electrolytic, 3-section ....	30-2575-27
C101A	Condenser, filter, 40 mf., 150v .....	Part of C101
C101B	Condenser, filter, 30 mf., 150v .....	Part of C101
C101C	Condenser, filter, 30 mf., 150v .....	Part of C101
I100	Pilot lamp .....	34-2068*
R100	Resistor, filter, 220 ohms .....	66-1225340*
R101	Resistor, filter, 1200 ohms .....	66-2124340*
R102	Resistor, isolating, 150,000 ohms .....	66-4153340*
S100	Switch, power on-off .....	Part of 33-5538-21†
W100	Line cord and plug assembly .....	L2183*

SECTION 2  
AUDIO CIRCUITS

Reference Symbol	Description	Service Part No.
C200	Condenser, d-c blocking, .01 mf. ....	61-0120*
C201	Condenser, d-c blocking, .01 mf. ....	61-0120*
C202	Condenser, parasitic suppressor, 220 mmf. ....	62-122001001*
C203	Condenser, tone compensation, .02 mf. ....	61-0108*
LS200	Loud-speaker, p-m .....	36-1625
R200	Volume control (with on-off switch), 500,000 ohms .....	33-5538-21*
R201	Resistor, grid return, 3.3 megohms .....	66-5333340*
R202	Resistor, plate load, 470,000 ohms .....	66-4473340*
R203	Resistor, grid return, 470,000 ohms .....	66-4473340*
R204	Resistor, cathode bias, 130 ohms .....	66-1133340*
T200	Transformer, output .....	32-8310-3

SECTION 3  
I-F, DETECTOR, AND A-V-C CIRCUITS

Reference Symbol	Description	Service Part No.
C300A	Condenser, fixed, 1st i-f primary ....	Part of Z300
C300B	Condenser, fixed, 1st i-f secondary ..	Part of Z300
C301A	Condenser, fixed, 2nd i-f primary ..	Part of Z301
C301B	Condenser, fixed, 2nd i-f secondary ..	Part of Z301
C301C	Condenser, i-f filter .....	Part of Z301
C301D	Condenser, i-f filter .....	Part of Z301
C302	Condenser, i-f by-pass (inductively wound), .1 mf. ....	30-4644-1
C303	Condenser, cathode by-pass, .001 mf. ....	45-3500-5*
C304	Condenser, screen by-pass, .05 mf. ....	61-0122*
C305	Condenser, d-c blocking, 220 mmf. ....	62-122001001*
C306	Condenser, screen by-pass, .05 mf. ....	61-0122*
R300	Resistor, cathode bias, 220 ohms .....	66-1223340*
R301	Resistor, screen drooping, 47,000 ohms .....	66-3473340*
R302	Resistor, plate load, 15,000 ohms .....	66-3153340*
R303	Resistor, grid return, 150,000 ohms .....	66-4153340*
R304	Resistor, cathode bias, 120 ohms .....	66-1123340*
R305	Resistor, decoupling, 1000 ohms .....	66-2103340*
R306	Resistor, i-f filter, 47,000 ohms .....	66-3473340*
R307	Resistor, a-v-c filter, 1 megohm .....	66-5103340*
TC300A	Tuning core, 1st i-f primary .....	Part of Z300
TC300B	Tuning core, 1st i-f secondary .....	Part of Z300
	† 33-5538-21 Volume control switch with a-c switch.	

SECTION 3 (Cont.)

Reference Symbol	Description	Service Part No.
TC301A	Tuning core, 2nd i-f primary .....	Part of Z301
TC301B	Tuning core, 2nd i-f secondary .....	Part of Z301
Z300	Transformer, 1st i-f .....	32-4258
Z301	Transformer, 2nd i-f .....	32-4240-3

SECTION 4

R-F AND CONVERTER CIRCUITS

Reference Symbol	Description	Service Part No.
C400	Condenser, tuning gang, 2-section ....	31-2727-1
C400A	Condenser, trimmer, aerial section ..	Part of C400
C400B	Condenser, trimmer, osc. section ..	Part of C400
C401	Condenser, isolating, .0015 mf. ....	45-3500-6*
C402	Condenser, isolating, .05 mf. ....	61-0122*
C403	Condenser, blocking, 220 mmf. ....	62-122001001*
C404	Condenser, d-c blocking, 220 mmf. ....	62-122001001*
C405	Condenser, osc. grid, 220 mmf. ....	62-122001001*
C406	Condenser, cathode by-pass, .05 mf. ....	61-0122*
C407	Condenser, a-v-c filter, .1 mf. ....	61-0113*
C408	Condenser, plate decoupling, .01 mf. ....	61-0120*
LA400	Loop aerial .....	32-4052-25
L400	Coil, osc. ....	32-4153*
R400	Resistor, grid return, 47,000 ohms ..	66-3473340*
R401	Resistor, cathode bias, 2200 ohms ..	66-2223340*
R402	Resistor, plate load, 10,000 ohms ..	66-3103340*
R403	Resistor, grid return, 2.2 megohms ..	66-5223340*
R404	Resistor, decoupling, 2200 ohms .....	66-2223340*

MISCELLANEOUS

Description	Service Part No.
<b>Cabinet and Cabinet Parts</b>	
Baffle-and-cloth assembly .....	40-7546
Baffle-assembly fastener (4) .....	1W56920FE7
Cabinet .....	10693A
Cabinet back .....	54-7492-1
Grille .....	54-4600
Grille fastener (7) .....	1W56913FA3
Stud, back mtg. (4) .....	W2235FA9
Window .....	54-4608
Window fastener (5) .....	56-6161FE7
<b>Dial-Scale Hardware</b>	
Cord, drive (25-ft. spool) .....	45-8750
Drive-cord spring .....	56-2617
Pointer .....	54-4617
Scale .....	54-5018
Tuning shaft .....	56-5688FE11
Tuning-shaft bushing .....	27-9437
Knob (2) .....	54-4527-8
Pilot-lamp assembly .....	76-1280
Speaker bracket .....	56-5690FA3
Socket, miniature (2) .....	27-6203
Socket, octal (4) .....	27-6138