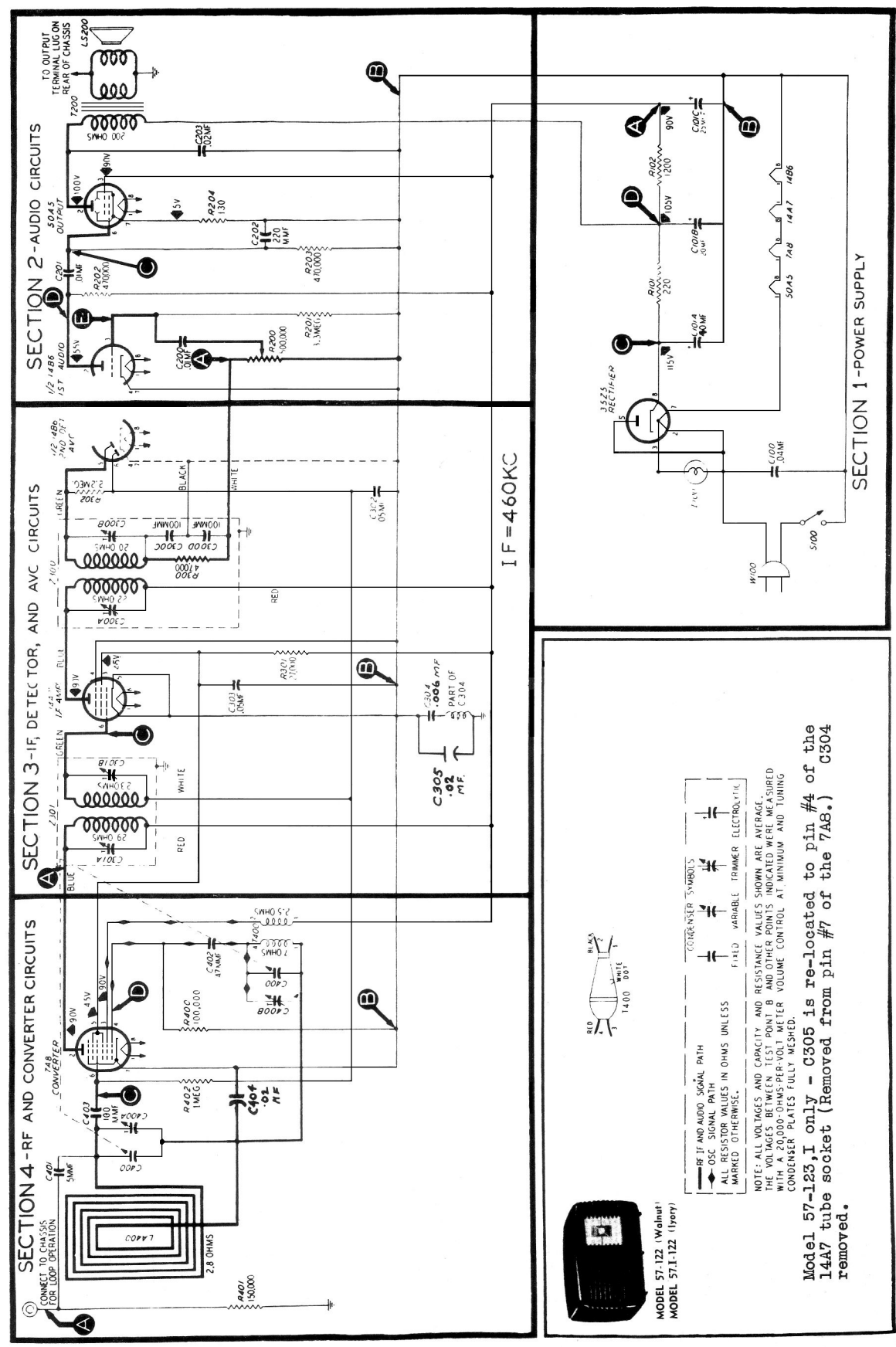




SECTION 5. PHILCO RADIO MODELS 57-122 AND 57.1-122, SECTIONALIZED SCHEMATIC DIAGRAM, SHOWING TEST POINTS

All components in the radio circuits are symbolized and located as follows:

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

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, detector, and a-v-c circuits.
400-series components are in Section 4—the r-f and converter circuits.

Philco TROUBLE-SHOOTING Procedure

In this manual, the schematic diagram is divided into four sections, with a chassis layout for each section, showing component and test points for each section. The test points are also indicated on the schematic diagram in the corresponding section. A simplified trouble-shooting procedure is given in a chart for each section. The first step in each chart is a master check, indicating whether trouble exists in that section. Failure to obtain the "NORMAL INDICATION" in a given setup indicates trouble, which should be located

by voltage, resistance, or capacitance checks of parts indicated in the step, and remedied before testing further.

Preliminary Checks

To avoid possible damage to the radio, the following preliminary checks should be made before turning on the power:

1. Carefully inspect both top and bottom of chassis. Make sure that all tubes are secure in the proper sockets (see figure 6), and look for bad connections, burned resistors, or other obvious sources of trouble.

TROUBLE SHOOTING

Section 1 — Power Supply

For the tests in this section, use a dc voltmeter; connect the leads to the test points indicated in the chart. The voltages shown were taken with a 20,000-ohms-per-volt meter at a line voltage of 117 volts, 60 cycles.

Turn the volume control to minimum, and set the dial pointer at 540 kc.

If the "NORMAL INDICATION" is obtained in step 1, proceed with tests for Section 2 (audio circuits); if not, isolate and correct the trouble within this section.

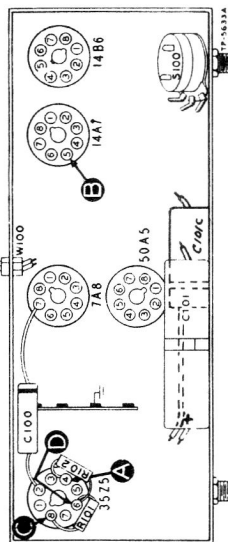


FIGURE 1. BOTTOM VIEW, SHOWING SECTION 1 TEST POINTS

STEP	TEST POINT	NORMAL INDICATION	ABNORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A to B	90v		Trouble within this section; isolate by the following tests:
2	C to B	115v	No voltage Low voltage High voltage	Defective 35Z5GT. Shorted: C101A. Defective 35Z5GT. Open: C101A. Leaky: C101A. Open: R101.
3	D to B	105v	No voltage Low voltage High voltage	Shorted: C101B. Open: C101B. Leaky: C101B or C203. Open: R102. T200, or R204.
4	A to B	90v	No voltage Low voltage High voltage	Shorted: C101C. Open: C101C. Leaky: C101C. Open: R204.

Listening Test: Abnormal hum may be caused by open C101A, C101B, or C101C.

Section 2 — Audio Circuits

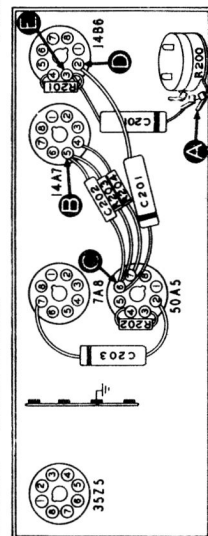


FIGURE 2. BOTTOM VIEW, SHOWING SECTION 2 TEST POINTS

STEP	TEST POINT	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	Load, clear signal with weak signal generator input.	Trouble within this section; isolate by the following tests.
2	C	Clear, signal with weak signal generator input.	No signal — Open or shorted: L2000 or T200. Shorted: C203. Open: R204. Defective: 50A5. Weak or distorted signal — Shorted: R204.
3	D	Same as step 2.	No signal — Open: C201. Weak or distorted signal — Leaky: C201.
4	E	Same as step 1.	No signal — Open: R202. Defective: 14B6. Weak or distorted signal — Shorted: C200. Open: R201. Defective: 14B6.
5	A	Same as step 1.	No signal — Open: C200. Shorted: C200D. Weak or distorted signal — Open: R200 (rotate through range).

2. Measure the resistance between B+ and B— (test points C and B in figure 1), using the ohmmeter polarity, giving the highest resistance reading; if the reading is lower than 50,000 ohms, check C101A, C101B, and C101C, for leakage or shorts. This resistance value, which is much lower than normal, does not represent a quality check of these condensers; it is the lowest value which will permit the rectifier to operate safely while the voltage tests of Section 1 (power supply) are performed.

Section 3 — I-F, Detector, and A-V-C Circuits

For the tests in this section, use an r-f signal generator, with modulated output, set to 460 kc. Connect the ground lead of the signal generator to B; connect the output lead through a .1-mf. condenser to the test points indicated in the chart. Set the volume control at maximum. If the "NORMAL INDICATION" is obtained in step 1, proceed with the tests for Section 4 (r-f and converter circuits); if not, isolate and correct the trouble within this section.

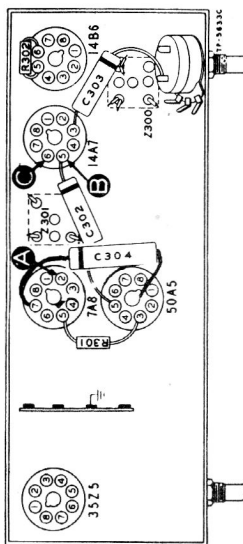


FIGURE 3. BOTTOM VIEW, SHOWING SECTION 3 TEST POINTS

STEP	TEST POINT	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	Clear signal with weak signal generator input.	Trouble within this section; isolate by the following tests.
2	C	Same as step 1.	No signal — Open or shorted: Z300. Defective: 14B6 or 14A7. Open: R301. Shorted: C303. Weak or distorted signal — Leaky: C303. Open: C303 or C304. Defective: 14B6 or 14A7. Misaligned: Z300. Leaky or open: C302.
3	A	Same as step 1.	No signal — Open or shorted: Z301. Weak or distorted signal — Misaligned: Z301.

Section 4 — R-F and Converter Circuits

For the tests in this section, use an r-f signal generator, with modulated output. Connect the generator ground lead to B; connect the output lead through a .1-mf. condenser to the test points indicated in the chart.

Inspect the tuning condensers for bent plates, dirt, or poor wiper contacts; any or all of these will cause noise. If the "NORMAL INDICATION" is not obtained in step 1, proceed with the tests for Section 3 (i-f, detector, and a-v-c circuits); if not, isolate and correct the trouble within this section.

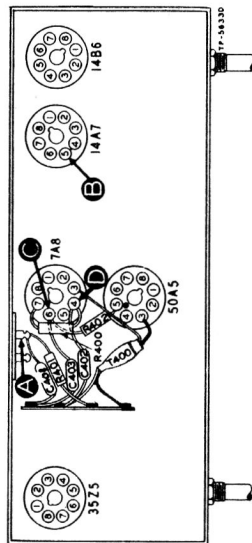


FIGURE 4. BOTTOM VIEW, SHOWING SECTION 4 TEST POINTS

STEP	TEST POINT	DIAL SETTING	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	SIG. GEN. 540 kc. RADIO 540 kc.	Clear signal with weak signal generator input.	Trouble within this section; isolate by the following tests.
2	D (Osc. test; see note below.)	540 to 1620 kc.	Negative 9 to 12 volts.	Open or shorted: T100, C402 or R400. Shorted: C400 or C400B. Defective: 7A8.
3	C	540 kc.	Same as step 1.	No signal — Open or shorted: Z301. Shorted: C400, C400A, or C400B. Weak or distorted signal — Shorted or open: L1400. Defective: 7A8.
4	A	540 kc.	Same as step 1.	Weak signal — Open: C401.

OSCILLATOR TEST NOTE: Connect positive lead of a 20,000-ohms-per-volt meter to B; connect prod end of negative lead through a 100,000-ohm isolating resistor to test point D. Proper operation of oscillator is indicated by a negative voltage of 9 to 12 volts throughout range of tuning condenser.

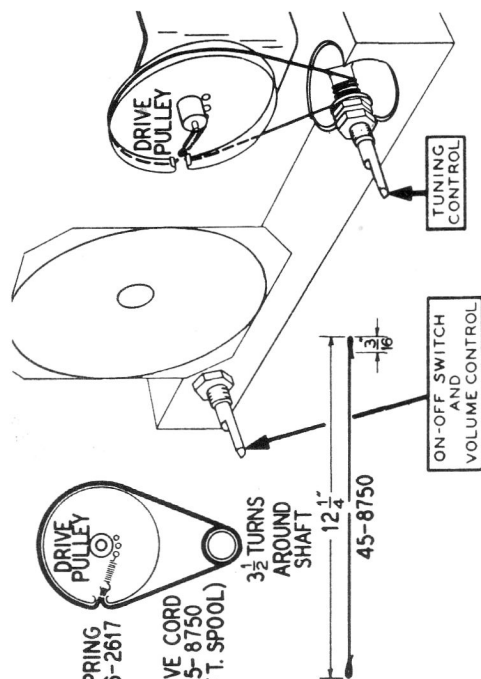


FIGURE 7. DRIVE-CORD INSTALLATION DETAILS

OUTPUT LEVEL — During alignment, adjust signal-generator output to maintain output-meter indication below 1.25 volts.

SIGNAL GENERATOR—Connect ground lead to B; connect output lead as indicated in the chart.

FREQUENCY RANGE 540—1620 kc.
OPERATING VOLTAGE 105—120 volts, a.c. or d.c.
POWER CONSUMPTION 30 watts
AUDIO OUTPUT 1 watt
AERIAL Built-in loop; connection for external aerial
INTERMEDIATE FREQUENCY 460 kc.
PHILCO TUBES (5) 7A8, 14A7, 14B6, 50A5, 35Z5GT

ALIGNMENT PROCEDURE

TURN ON THE RADIO, AND SET THE VOLUME CONTROL TO MAXIMUM.

OUTPUT METER — Connect to left (output) lug and center (chassis) lug of terminal panel, shown in figure 6.

DIAL POINTER — Turn tuning condensers to full-mesh position. Set dial pointer to index dot, located to the left of "55."

Circuit Description

The high-impedance loop aerial normally provides adequate signal pick-up. An external aerial may be connected, if desired, by detaching the aerial lead (shown in figure 6) from the chassis, and connecting the lead to an external aerial lead-in. Do not use a ground.

The loop is coupled to the 7A8 converter tube. Variable-condenser tuning is employed; the oscillator rotor-section plates being shaped to obtain tracking, thus eliminating the necessity for a series padding condenser.

The 7A8 is transformer coupled to the 14A7 i-f amplifier, which is also transformer coupled to the diodes of the 14B6 second detector — first audio-frequency amplifier. A-v-c voltage is applied to the control grids of both the i-f and converter tubes.

The triode section of the 14B6 is the first audio stage, and is resistance coupled to the 50A5 output tube. The output tube is transformer coupled to a permanent-magnet dynamic speaker.

D-c operating voltages are obtained from a 35Z5GT half-wave rectifier; the output of which is filtered by a three-section resistor-condenser filter.

Condenser C304 in Section 3 is a special condenser, inductively wound to form a series-tuned circuit, resonant at the intermediate frequency. This special condenser offers less impedance at this frequency than a conventional condenser, thus permitting higher i-f gain, with no tendency toward instability.

STEP	SIGNAL GENERATOR		RADIO	
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS
1				Turn C301B (copper screw) down tight.
2 Through .1-mf. condenser to pin 6 of 7A8 converter.	460 kc.	540 kc.		Adjust trimmers, in order given, for maximum output.
3 condenser to external aerial connector.	1600 kc.	1600 kc.		Disconnect external aerial lug from chassis. Adjust trimmer for maximum output.
4 Same as step 3.	1500 kc.	1500 kc.		Adjust for maximum output.

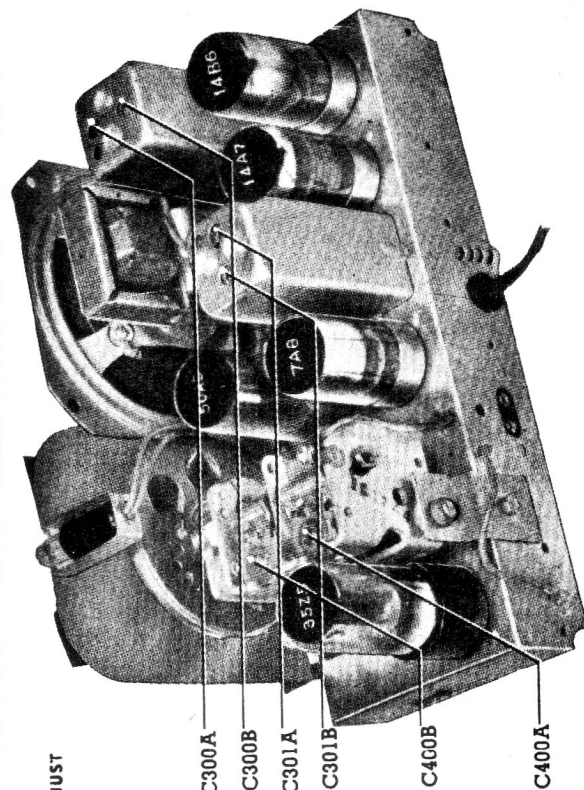


FIGURE 6. TOP VIEW, SHOWING TRIMMER LOCATIONS