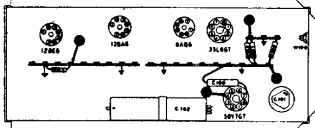


Section 1—Power Supply

For the tests in this section, use a d-c voltmeter. Connect the negative lead to B—, test point B; connect the positive lead to the test points indicated in the chart. The voltage readings given were taken with a 20,000-ohms-per-volt meter at a line voltage of 117 volts, a.c.

Figure 1. Bottom View, Showing Section 1 Test Points



TROUBLE SHOOTING

Turn on the power, and set the volume control to minimum.

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

STEP	TEST POINT	NORMAL INDICATION	ABNORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	120 volts		Trouble in this section. Isolate by the following tests.
2	C	212 volts	No voltage	Defective: 50Y7GT, 1100.
			Low voltage	Shorted: C10A, C1B1, C102A.
			High voltage	Leaky: R100, C10A, C1B1, C102A.
3	D	205 volts	No voltage	Open: R100.
			Low voltage	Defective: 50Y7GT.
			High voltage	Shorted: C102B.
4	A	120 volts	No voltage	Open: R100.
			Low voltage	Leaky: C102B.
			High voltage	Open: R101, R1B2, T200*.
			No voltage	Shorted: C102C.
			Low voltage	Open: R101 and R1B2 (in parallel).
				Leaky: C102C.

* This part, located in another section, may cause abnormal indication in this section.

Section 2—Audio Circuits

For the tests in this section, use an audio-frequency signal generator. Connect the generator ground lead to B—, test point B; connect the output lead through a .1-mf. condenser to the test points indicated in the chart.

Set the radio volume control to maximum, and the radio

TROUBLE SHOOTING

phono switch as indicated in the chart.

If the "NORMAL INDICATION" is 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 in this section.

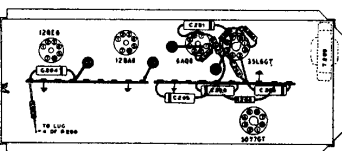
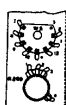


Figure 2. Bottom View, Showing Section 2 Test Points

TROUBLE SHOOTING

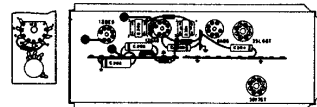


Figure 3. Bottom View, Showing Section 3 Test Points

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 at 455 kc. Connect the generator ground lead to B—, test point B; connect the output lead through a .1-mf. condenser to the test points indicated in the chart.

Set the radio volume control to maximum, and the radio-phono switch to the radio position. Rotate the tuning control until the tuning condenser is fully meshed.

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 in this section.

To provide a complete i-f amplifier check, test point A for this section is placed at the grid of the mixer in Section 4; therefore, the effectiveness of step 1 as a master check is dependent upon the condition of certain parts in the mixer circuit. These parts are listed below under "POSSIBLE CAUSE OF ABNORMAL INDICATION."

STEP	TEST POINT	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	Load, clear speaker output with weak generator input.	Trouble in this section. Isolate by the following tests.
2	C	Load, clear output with strong input.	Defective: 12BA6, 6AQ6. Shorted: C300B, C301A, C301B, C301C, C301D, C303, C304, WS, L300B, L301A, L301B. Open: R302, R303, R304, R305, L300B, L301A, L301B, R301, C301A, C301B. Leaky: C303, C304. Misaligned: Z301.
3	A	Load, clear output with weak input.	Defective: 12BE6*. Shorted: C400A*, C400B*, C300A, L300A, L300B, C302. Open: L300A, R306, C300A, C300B. Misaligned: Z306.

* This part, located in another section, may cause abnormal indication in this section.

Section 4—R-F and Converter Circuits

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

Set the radio volume control to maximum, and the radio-phono switch to the radio position. Set the tuning control and signal-generator frequency as indicated in the chart.

If the "NORMAL INDICATION" is obtained in step 1, further tests should be unnecessary; if not, isolate and correct the trouble in this section. If the trouble is not revealed by the tests for this section, check the alignment.

TROUBLE SHOOTING

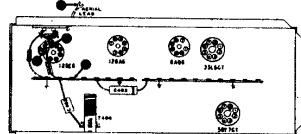


Figure 4. Bottom View, Showing Section 4 Test Points

STEP	TEST POINT	RADIO-PHONO SWITCH	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1 (a)	A	Radio	Load, clear speaker output with moderate generator input.	Trouble in this section. Isolate by the following tests.
1 (b)	E	Phono	Clear output with strong input.	Defective: L5200, 35L6GT. Shorted: T200, C203, C2B1, C304, C202. Open: T200, R204, R2B5, R200. Leaky: C2B3.
3	D	Radio	Load, clear output with moderate input.	Defective: 6AQ6. Shorted: C206, C205. Open: C201, R202, R201, R206. Leaky: C201.
4	A	Radio	Load, clear output with moderate input.	Open: R200 (rotate), C200, WS. Shorted: WS.
5	E	Phono	Same as step 4.	Open or shorted: WS.

Listening Test: Distortion may be caused by leaky C201. Distortion on strong signals may be caused by shorted or leaky C200.

STEP	TEST POINT	SIG. GEN. FREQ.	RADIO TUNING	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	1000 kc.	Tune to signal.	Load, clear speaker output with weak generator input.	Trouble in this section. Isolate by the following tests.
2	C—D	Osc. Test (see note below).	Rotate through range.	Negative 1.8 to 3.2 volts.	Defective: 12BE6. Shorted: C400, C400B, C402, C401, L400A, L400B. Open: C402, L400A, L400B, R401, R402.
3	A	1000 kc.	Tune to signal.	Same as step 1.	Shorted: L400, C400, C400A. Open: L400, C404.

OSCILLATOR TEST: Connect the positive lead of a high-resistance voltmeter to the oscillator cathode (pin 2 of 12BE6), test point D; connect the prod end of the negative lead through a 100,000-ohm isolating resistor to the oscillator grid (pin 1 of 12BE6), test point C. Use a suitable meter range, such as 0–10 volts. Proper operation of the oscillator is indicated by negative voltage within the range given in the chart (measured with a 20,000-ohms-per-volt meter) throughout the tuning range.

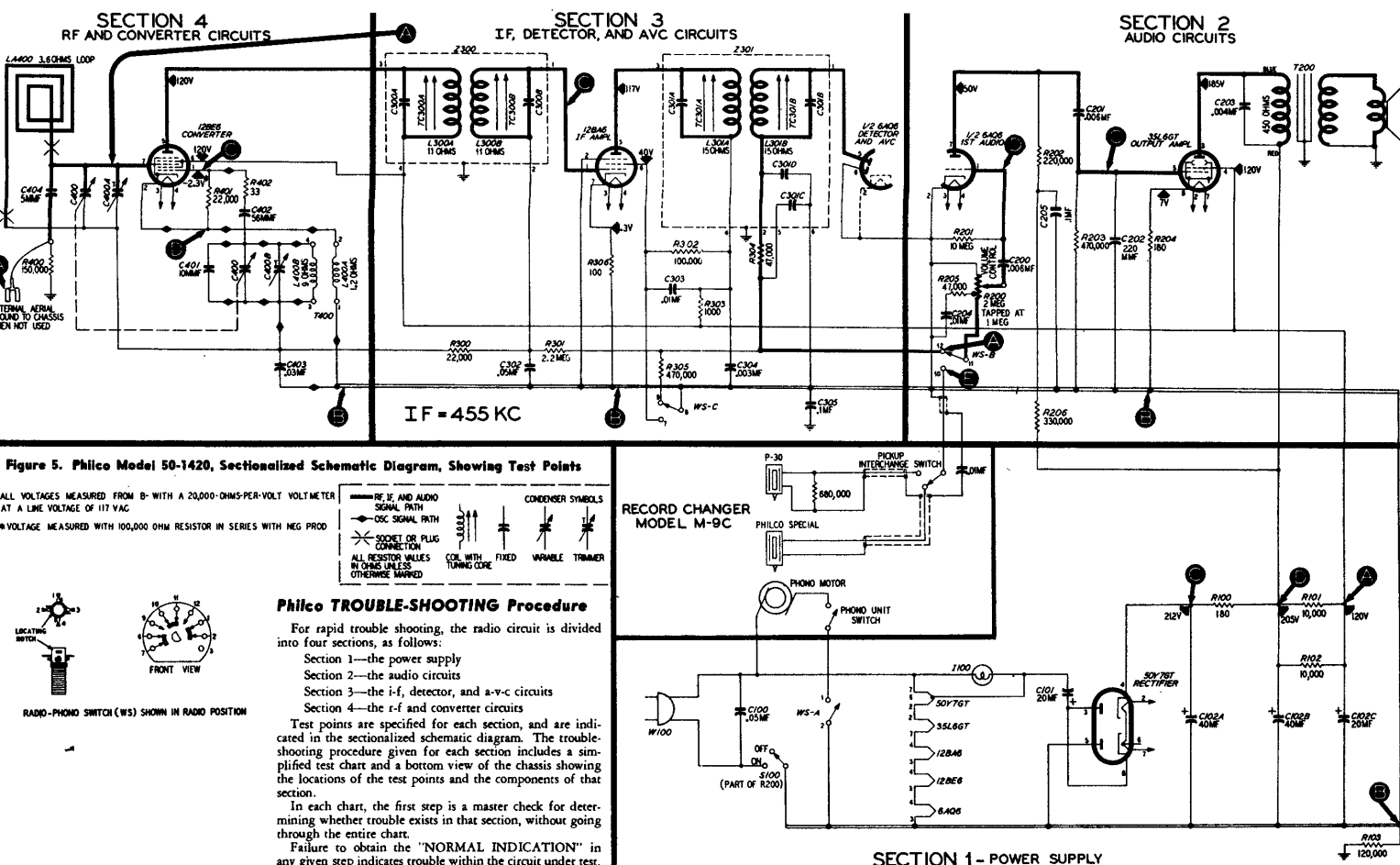


Figure 5. Philco Model 50-1420, Sectionalized Schematic Diagram, Showing Test Points

ALL VOLTAGES MEASURED FROM B— WITH A 20,000-OHMS-PER-VOLT METER AT A LINE VOLTAGE OF 117 VAC
* VOLTAGE MEASURED WITH 100,000 OHM RESISTOR IN SERIES WITH NEG PROD

— RF, IF, AND AUDIO SIGNAL PATH
— OSC. SIGNAL PATH
— SOCKET OR PLUG CONNECTION
ALL RESISTOR VALUES IN OHMS UNLESS OTHERWISE MARKED
CONDENSER SYMBOLS
COIL WITH FIXED TUNING COIL
VARIABLE TRIMMER

Philco TROUBLE-SHOOTING Procedure

For rapid trouble shooting, the radio circuit is divided into four sections, as follows:

Section 1—the power supply

Section 2—the audio circuits

Section 3—the i-f, detector, and a-v-c circuits

Section 4—the r-f and converter circuits

Test points are specified for each section, and are indicated in the sectionalized schematic diagram. The trouble-shooting procedure given for each section includes a simplified test chart and a bottom view of the chassis showing the locations of the test points and the components of that section.

In each chart, the first step is a master check for determining whether trouble exists in that section, without going through the entire chart.

Failure to obtain the "NORMAL INDICATION" in any given step indicates trouble within the circuit under test.

SECTION 1—POWER SUPPLY