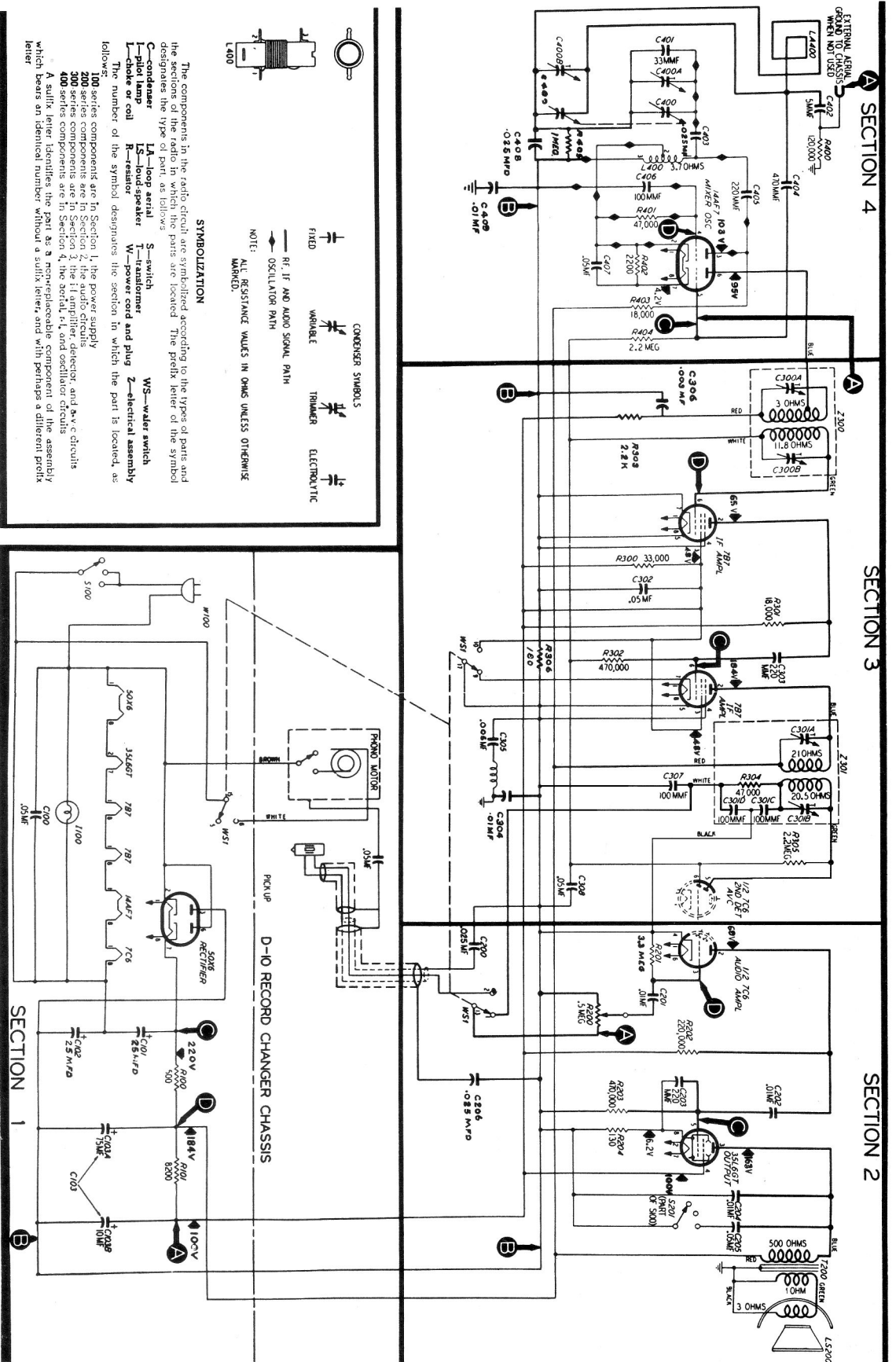


SECTION 4

SECTION 3

SECTION 2



Preliminary Checks

To avoid possible damage to the radio, the following preliminary checks should be made before it is turned on:

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

2. Measure the resistance between B+ (pin 7 of the 50X6 rectifier) and the B— bus, test point B. When the ohm-meter leads are connected in the proper polarity, the highest resistance reading will be obtained. This reading should be not lower than 3000 ohms. If it is lower, check condensers C101, C102, C103A, and C204 for leakage or shorts.

The above resistance value is not intended as a quality check for these condensers. It is the lowest value at which the rectifier will operate safely while the voltage tests of Section 1 are being performed.

Figure 5. Philco Radio-Phonograph, Model 717-717A, Sectionalized Schematic Diagram, Showing Test Points

1947-48
IF = 460 KC.

ALIGNMENT DATA
ON SHEET 163

TROUBLE SHOOTING
DATA ON SHEET 164

AC
MODELS
717-717A

PHILCO

ALIGNMENT PROCEDURE

SET RADIO-PHONO SWITCH TO RADIO POSITION AND TURN VOLUME CONTROL TO MAXIMUM

NOTE: Make alignment with loop aerial connected to radio.

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1				Turn C300B down tight.	
2	Through .1-mf. condenser to test point C, Section 4 (pin 5, 14AF7).	460 kc.	540 kc.	Adjust trimmers in order given for maximum output.	C301B C301A C300B C300A
3	Radiating loop (see Note below).	1600 kc.	1600 kc.	Adjust for maximum.	C400B C400A
4	Same as step 3.	1500 kc.	1500 kc.	Adjust for maximum.	OUTPUT METER Z300 Z301 787 50X6 39-66T 1200 TP-3745

RADIATING-LOOP NOTE: Make up a 6—8-turn, 6-inch-diam after loop, using insulated wire; connect to signal-generator leads and place near radio loop aerial.

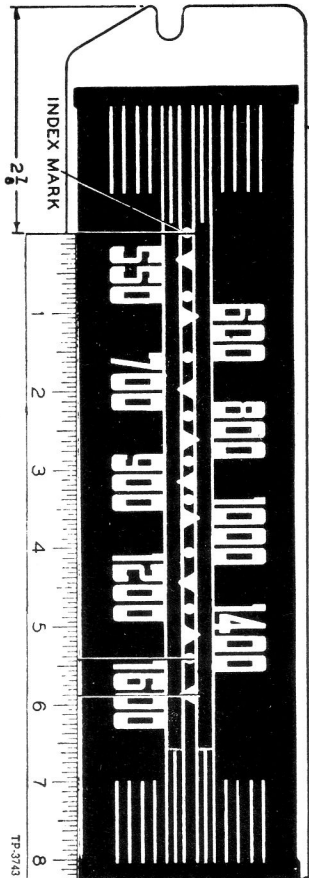


Figure 6. Calibration Measurements for Dial Backplate

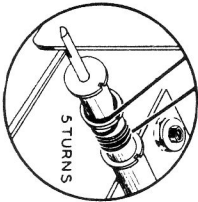


Figure 8. Drive-Cord Installation Details

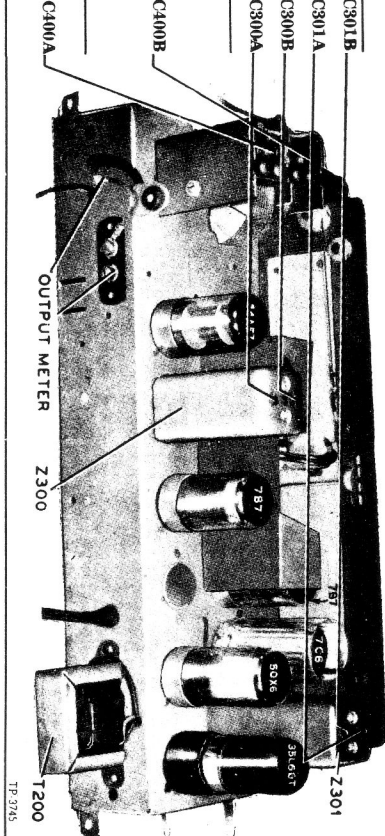
DRIVE CORD
(25 FT. SPCL.)
45-8750

3 1/16"

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

SIGNAL GENERATOR (modulated)—Connect as indicated in chart.

OUTPUT METER — Connect to terminals indicated in figure 7.



A C
MODELS
717 & 717A

IF = 460Kc

1947-48

CIRCUIT ON DATA
SHEET 162
TROUBLE SHOOTING
DATA ON SHEET 164

Circuit Description

Philco Model 717-717A is a console combination of a Philco Model D-10 Automatic Record Changer and a six-tube superheterodyne radio which provides reception within the Standard Broadcast Band.

The loop aerial normally provides adequate signal pickup. If greater pickup is required, an external aerial may be connected.

The loop works into a 14AF7 converter, and variable-condenser tuning is used. The two I-F stages employ 71B7 high-transconductance tubes. To obtain good stability,

resistance coupling is employed between the first and second I-F tubes. The diodes of the 7C6 provide detection and a-v-c voltage. The triode section of this tube functions as the first audio amplifier, and is resistance-coupled to the 35L6GT output tube. The loud-speaker is a permanent-magnet dynamic type. The power supply employs a 50X6 full-wave voltage-doubling rectifier and a resistor-condenser filter network.

The series-resonant circuit, C305, functions as a by-pass of exceptionally low impedance, is resonant at the I.F., 460 kc.

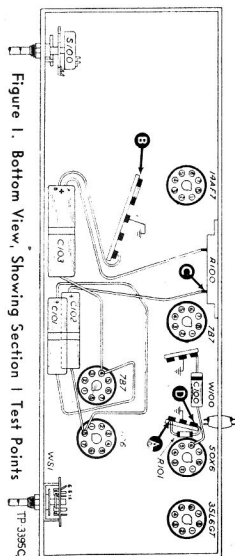
Section 1

TROUBLE SHOOTING

For the tests in this section, use a d-c voltmeter. Connect the negative lead to the B—bus, 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.

With the radio-phonograph switch set to the radio position, turn the volume control to minimum and turn the tone control fully clockwise.

Follow the steps in sequence; if the "NORMAL INDICATION" is on the trouble in this section.



STEP	TEST	ABNORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	167 v.	Trouble within this section. Escalate by the following tests.
2	C	214 v. No voltage. Low voltage. High voltage.	Defective: 80X6, S100, W100. Shorted: C101, C102, C108A, C108B. Open: C101, C102. Leaky: C101, C102. Open: R100, T290*, R204.*
3	D	181 v. No voltage. Low voltage. High voltage.	Shorted: C108A. Open: C108A, Leaky: C108A, C204.* Open: R101, R204, T290.*
4	A	167 v. No voltage. High voltage.	Shorted: C108B. Leaky: C108B. Open: R204.* T290.*

Listening Test: Abnormal hum may be caused by open C108A or C108B.

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

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

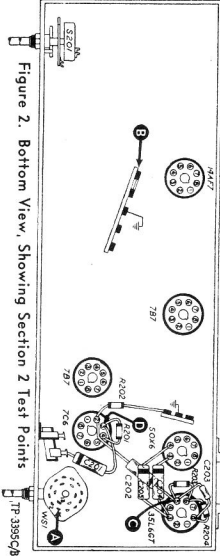
Section 2

TROUBLE SHOOTING

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

mum, and the tone control fully clockwise. Adjust the signal-generator output as required for each step.

If the "NORMAL INDICATION"



STEP	TEST POINT	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	Load, clear signal with weak signal input.	Trouble within this section. Isolate by the following tests.
2	C	Load, clear signal with strong signal input.	Defective: 351/667T, LS300, Shorted: C302, C306, C204, C205, Leaky: C302, C303, C304, C205, Open: R303, R204.
3	D	Load, clear signal with weak signal input.	Defective: 706, Open: C302, R302, R301, Leaky: C302.
4	A	Load, clear signal with weak signal input. (Rotate R2300 through its range).	Defective: WS1, R300, Open: C301, Shorted: C301D,*

* This part, located in another section, may cause abnormal indication in this section.
Listening Test: Distortion or strong signals may be caused by short-circuited or leaky C201, or open-circuited B201.

Listening Test: Distortion or strong signals may be caused by short-circuited or leaky C201, or open-circuited R201.

**CIRCUIT ON DATA SHEET 162
ALIGNMENT DATA
ON SHEET 163**

Philco TROUBLE-SHOOTING Procedure

For rapid trouble shooting, the radio circuit is divided into four sections, with test points specified for each section; these sections and test points are indicated in the 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 with-

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

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

After isolating the trouble to a single stage, the defect is located by: first, testing the tube; second, measuring tube-electrode voltages; third, measuring circuit resistances; fourth, substituting condensers. The trouble revealed should be corrected before testing further.

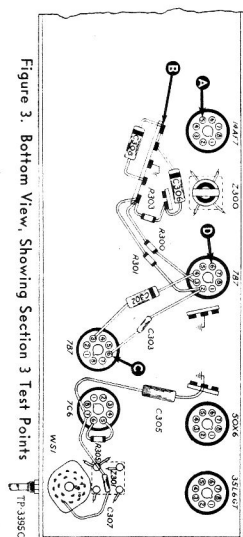
Section 3

TROUBLE SHOOTING

For the tests in this section, use an r-f signal generator, with modulated output, set at 460 k.c. Connect the generator ground lead to the B₁ bus, test point B; connect the generator output lead through a .1- μ f. condenser to the test points indicated in the chart. Set the radio-phonograph to radio, turn the volume control to maximum, and set the tone control fully clockwise.

If the "NORMAL INDICATION" is obtained in step 1, proceed with the tests for Section 4; if not, isolate and correct the trouble in this section.

NOTE: Since the circuit location of test point A for this section is the same as that of test point C for Section 4, the effectiveness of step 1 as a master check is



STEP	TEST POINT	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	Load, clear signal with weak sig- nal input.	Trouble within this section. Isolate by following tests: Defective: MS1, T87 (2nd LT), 748, Z301, Open: C302, C306, R300, Shorted: C302, C306, Leads: C302, C306.
2	C	Load, clear signal with strong signal input.	Defective: T87 (1st LT), Open: C308, C305, C308, R301, R302, Shorted: C308, Leads: C308.
3	D	Load, clear signal with moderate signal input.	Defective: 14A7, Z300, Misaligned: Z300, Open: R402,* R401.*
4	A	Load, clear signal with weak sig- nal input.	* This part, located in another section, may cause abnormal indication in this section.

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

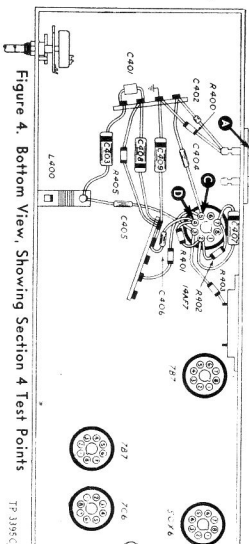
Section 4

TROUBLE SHOOTING

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 the B—bus; test point B₃; connect the generator output lead through a 1-mf. condenser to the test points indicated in the chart.

turn the volume control to maximum, and set the tone control fully clockwise.

Except as noted for the oscillator test, set the radio and signal-generator dials to 540 kc.



STEP	TEST POINT	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
1	A	Load, clear signal with weak signal input.	Trouble within this section. Isolate by the following tests: C407, Leaky: C407.
2	C	Load, clear signal with weak signal input.	Defective: 1A4P7, osc. circuit. Open: C407, R402. Shorted: C407, Leaky: C407.
3	(Osc. test; see below)	Negative 8.3 to 4.2 volts.	Defective: L406. Open: C403, C405, C406, R401, R403. Shorted: C400, C404, C401, C405, C406, C406.
4	A	Load, clear signal with weak signal input.	Defective: L4100. Shorted: C400, C403, C404, C407. Open: C402, C404, Leaky: C402, C404.

OSCILLATOR-RENO Connect positive lead of high-resistance coil (containing a 100,000-ohm isolating resistor) to oscillator grid, test point D. Use suitable meter range, such as 0—10 volts, for proper operation of oscillator. Indicated by negative voltage of 3.3 to 4.2 volts (measured with 20,000-ohms-per-volt meter) throughout range of tuning control.

$f = 460\text{Kc}$

1941-48

AC
MODELS
717-717A