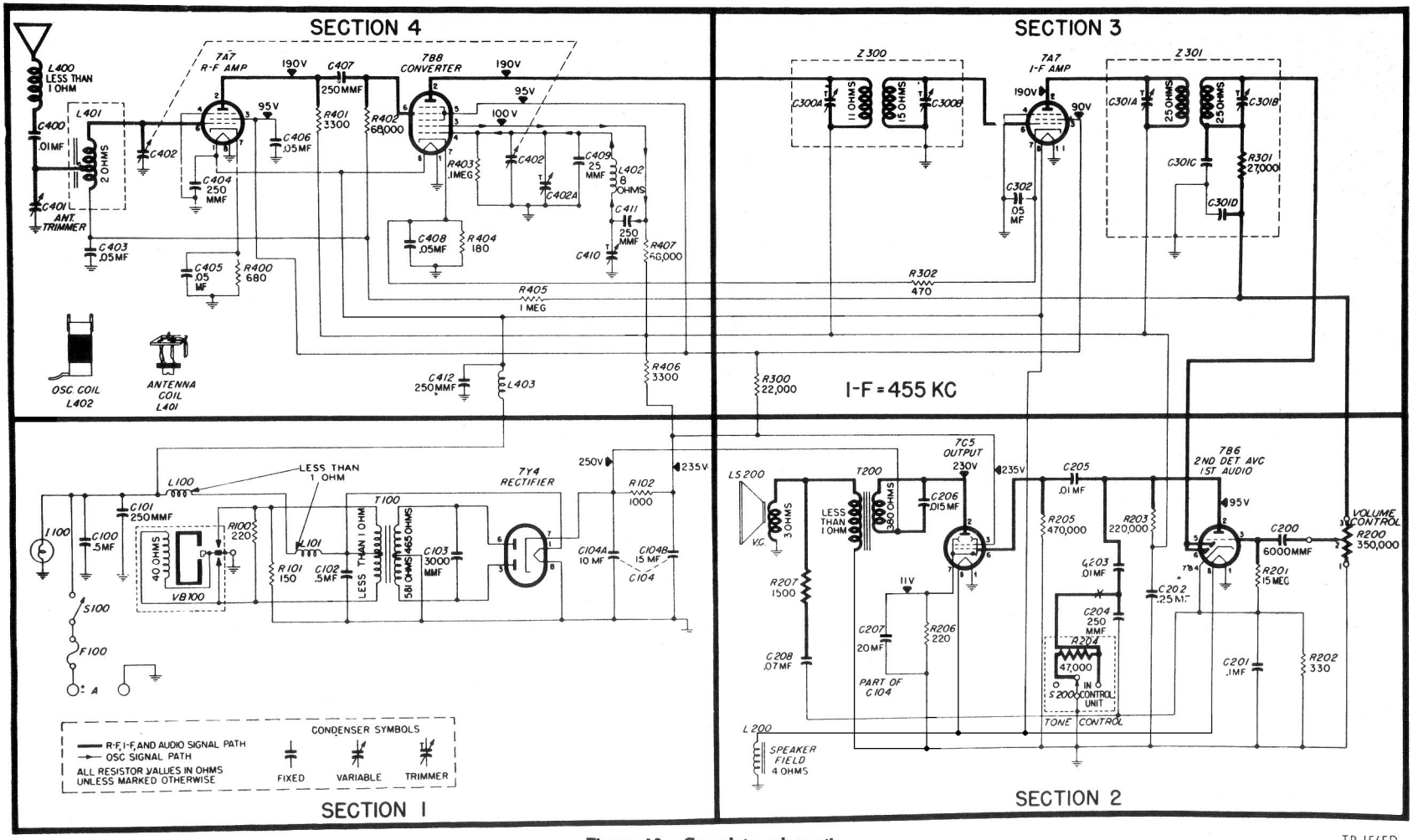
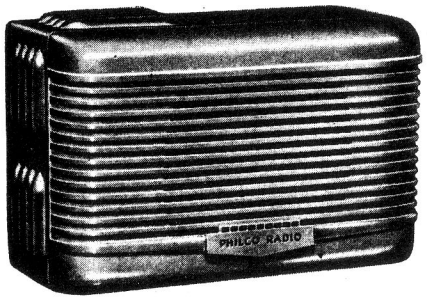


Figure 12. Complete schematic.

TP-1565D

NOTE: All voltage, capacity, and resistance values shown are average. The voltages were measured with a 20,000-ohms-per-volt meter between the indicated test points and chassis (B), with 6.3 volts d-c input to the receiver power supply.



MODEL UN6-400

IF=455KC

1948-49

TROUBLE SHOOTING DATA ON SHEETS 216 to 220 ALIGNMENT DATA ON DATA SHEET 221

AUTO RADIO MODEL UN6-400

PHILCO DATA SHEET 215

PHILCO TROUBLE SHOOTING PROCEDURE

In this manual, the receiver circuit is divided into four sections, as shown in figure 1. One test point is designated for each section, as shown in figure 2. Normal indications, secured when checking these points, eliminate the section under test as a source of trouble. Isolation of the faulty part is accomplished by testing in the order shown in the sectional test charts. A high-quality signal generator and volt-ohmmeter, an ammeter (0-30 amperes, d.c.), and a 6.3-volt d-c power source are required. The voltage readings shown were taken with a 20,000-ohms-per-volt meter.

To localize trouble, connect the receiver to the 6.3-volt d.c. power source, and turn the receiver volume control to maximum; see that all tube filaments are lighted; then proceed in the order given in the following chart. When abnormal indications appear, make voltage and resistance checks of the circuit under test. Remedy any defect encountered before proceeding with the next step.

IMPORTANT

The aerial and aerial lead-in form part of the r-f tuning circuit. When testing or aligning this receiver on the bench it is important that an aerial dummy load of equal capacity be used.

TESTS TO LOCALIZE TROUBLE TO ONE SECTION

SECTION	TEST	NORMAL RESULTS
1	Place ammeter in series with power source and check current drain. Measure voltage between point 1 and chassis (C).	Approximately 8.3 amps. 235 volts.
2	Apply audio signal between point 2 and chassis, through a condenser (.01 to .25 mf.).	Loud, clear signal from speaker.
3	Apply a weak, modulated r-f signal (455 kc.) between point 3 and chassis, through a condenser (.01 to .25 mf.).	Loud, clear signal.
4	Turn tuning condenser to half-meshed position. Apply weak, modulated r-f signal between point 4 and chassis, through a condenser (.01 to .25 mf.). Tune signal generator until the signal is heard in the speaker.	Loud, clear signal.

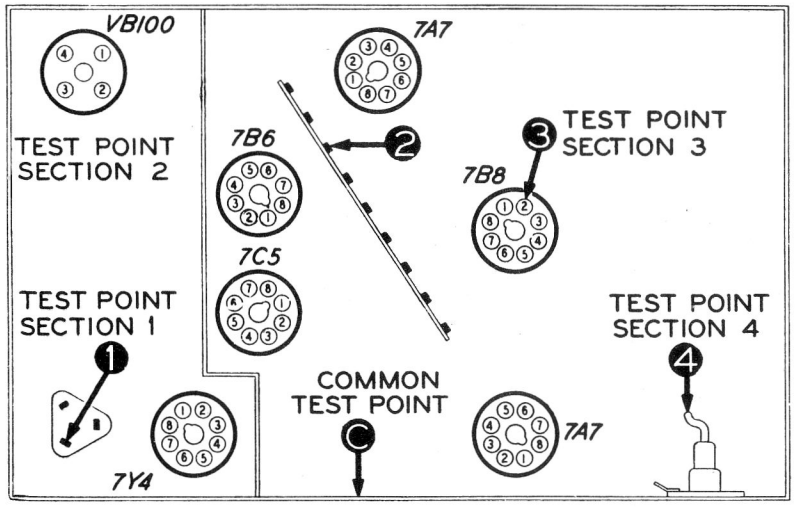


Figure 2. Bottom view, showing test points.

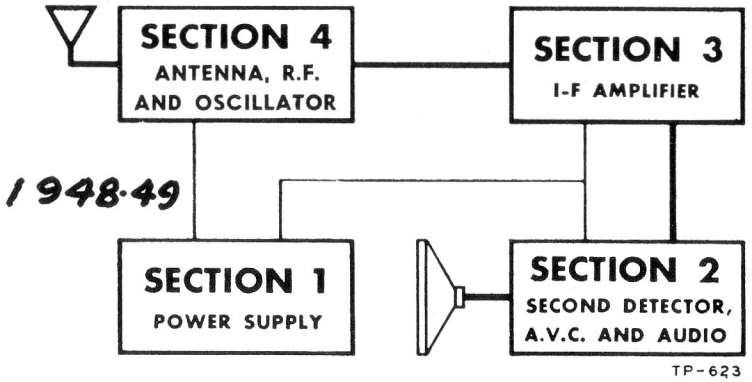


Figure 1. Block diagram (Heavy lines indicate signal path.)

CIRCUIT DATA ON SHEET 215 ALIGNMENT DATA ON 221 FURTHER DATA 217 to 220

IF = 455 KC

AUTO RADIO MODEL UN6 400

DATA SHEET 216

PHILCO

TESTS TO ISOLATE TROUBLE WITHIN SECTION 1

With the exception of the first, make all measurements for this section with a volt-ohmmeter, using the applicable d-c range. The voltages given were taken with 6.3 volts d-c input to the receiver power supply, and with the volume control set at minimum.

TEST POINTS	NORMAL READING	POSSIBLE CAUSE OF ABNORMAL INDICATION
Connect ammeter (0-30) in series with power source.	8.3 amps	Excessively high or low current indicates defective VB100, T100, C103, or 7Y4.
A to C	250 volts	Defective 7Y4 or C104.
B to C	235 volts	Defective C104, open R102, or shorted C202 (see Section 2 for location).

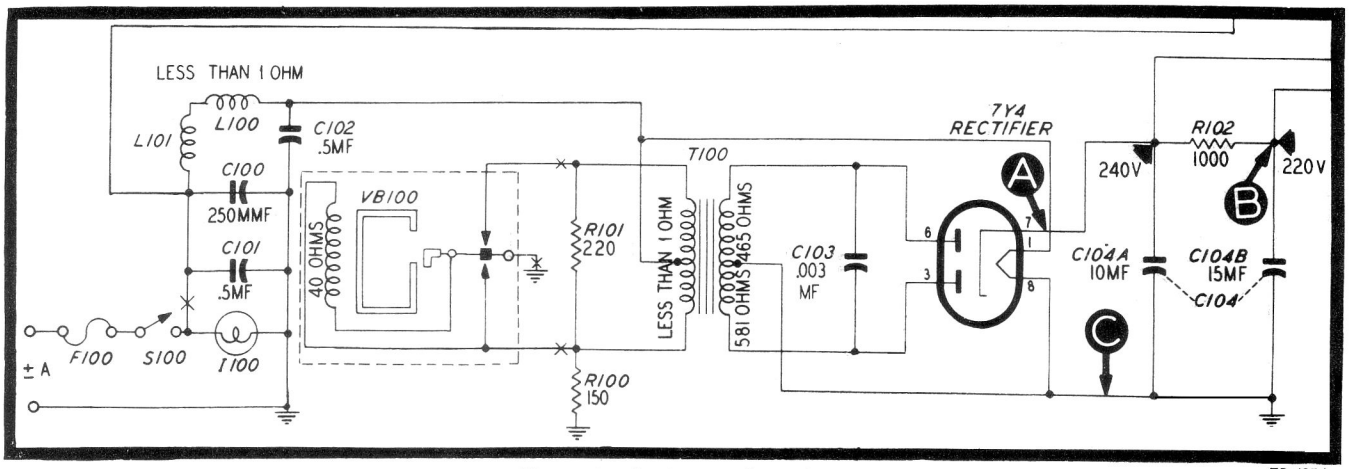


Figure 3. Section 1 schematic.

TP-435A

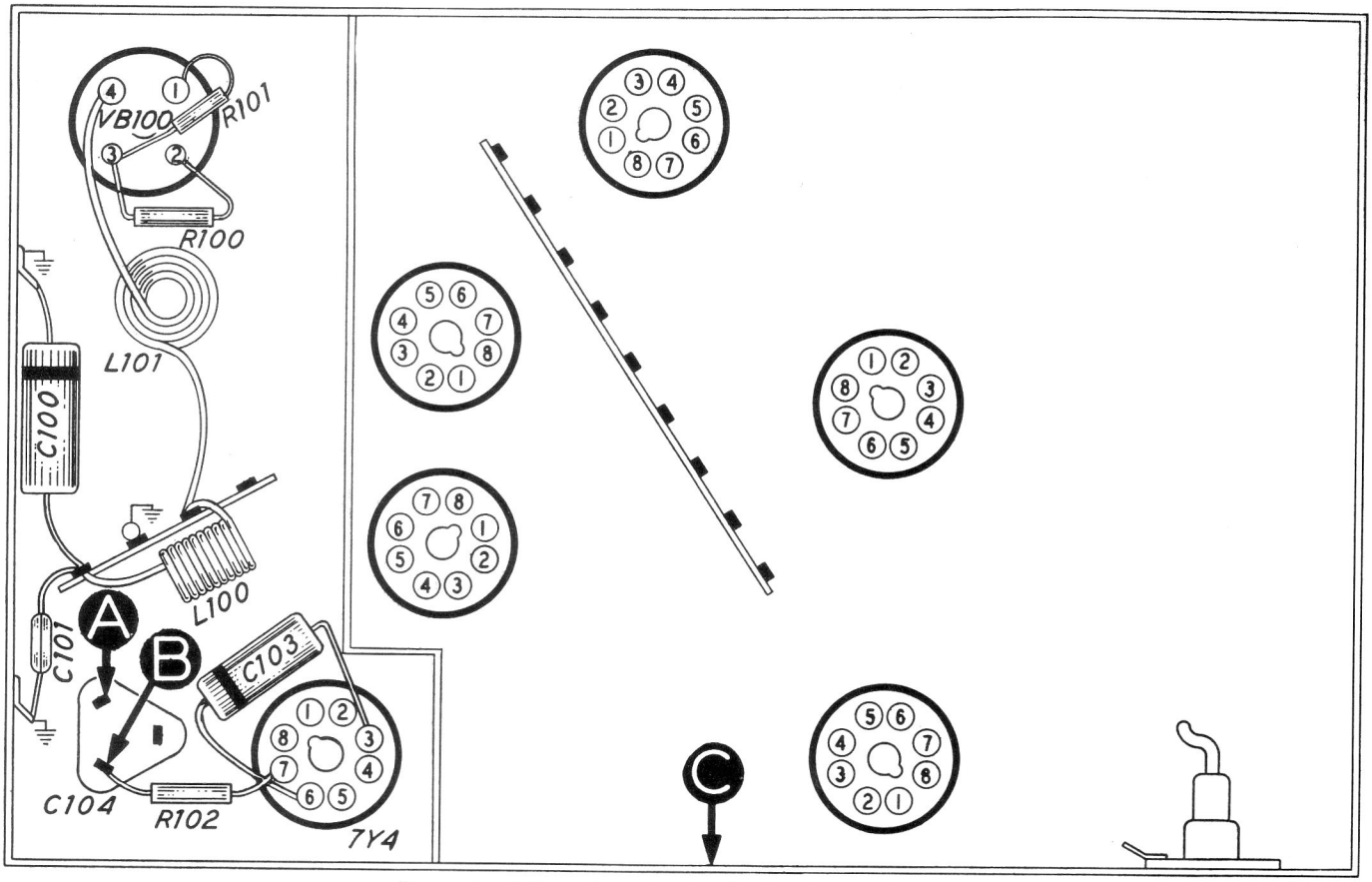


Figure 4. Bottom view, showing Section 1 test points.

CIRCUIT DATA ON SHEET 215
ALIGNMENT DATA ON SHEET 221
FURTHER DATA ON SHEETS 216 to 220

TESTS TO ISOLATE TROUBLE WITHIN SECTION 2

For all tests in this section, use an audio signal. Connect the generator output lead through a condenser (.01 to .25 mf.) to the points indicated; connect the ground lead to the receiver chassis (C). Set the receiver volume control at maximum and adjust the signal-generator output for a loud, clear signal.

TEST POINTS	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
D to C	Loud, clear signal from speaker.	Defective 7C5, T200, LS200, C205, C206, C207, R205, or R206.
E to C	Loud, clear signal.	Open C205.
F to C (Short out C204.)	Clear signal, noticeably louder than preceding test.	Defective 7B6, shorted C203, or open R203, R202, or R406 (shown in Section 4).
G to C	Loud, clear signal, same as preceding test.	Open C200, or defective R200 (rotate R200 through its entire range for complete check).

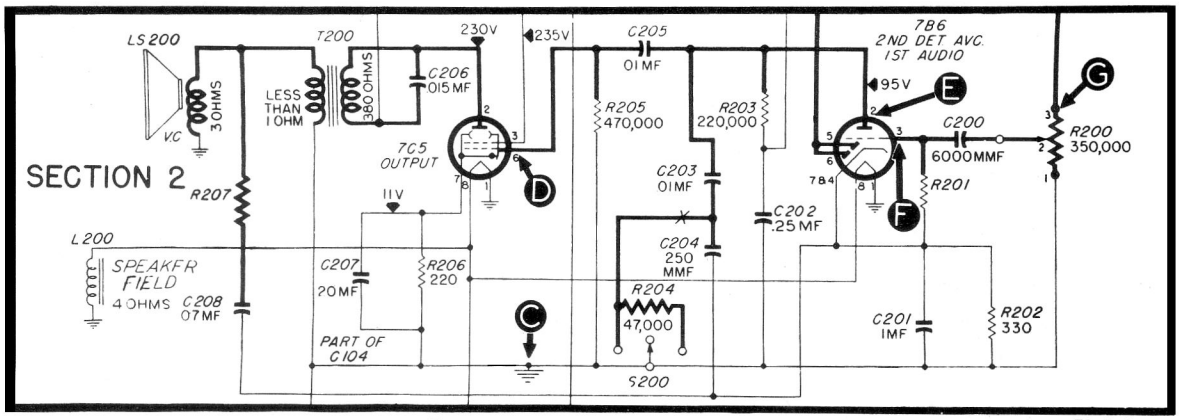


Figure 5. Section 2 schematic.

NOTE: The connection of R204 and S200 (in control unit) may vary.

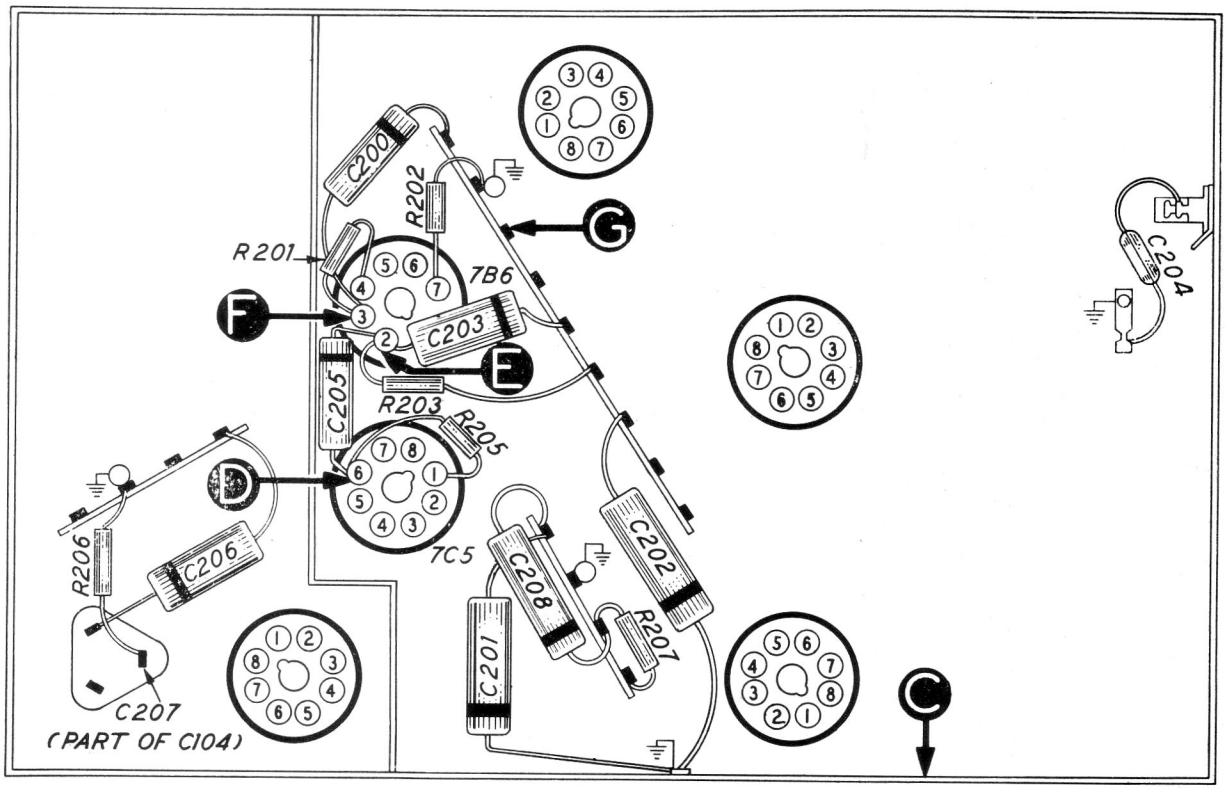


Figure 6. Bottom view, showing Section 2 test points.

TESTS TO ISOLATE TROUBLE WITHIN SECTION 3

For all tests in this section, set the signal generator at 455 k.c., with modulation on. Connect the generator output lead through a condenser (.01 to .25 mf.) to the points indicated; connect the ground lead to the receiver chassis (C). Set the receiver volume control at maximum and adjust the signal-generator output for a loud, clear signal.

TEST POINTS	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
H to C	Loud, clear signal from speaker.	Defective 7A7 or Z301, open R300, R302, or R404, or shorted C406 (R404 and C406 shown in Section 4, next page).
J to C	Loud, clear signal.	Defective or misaligned Z300.

CIRCUIT DATA ON SHEET 215
ALIGNMENT DATA ON 221
FURTHER DATA ON 216 to 218

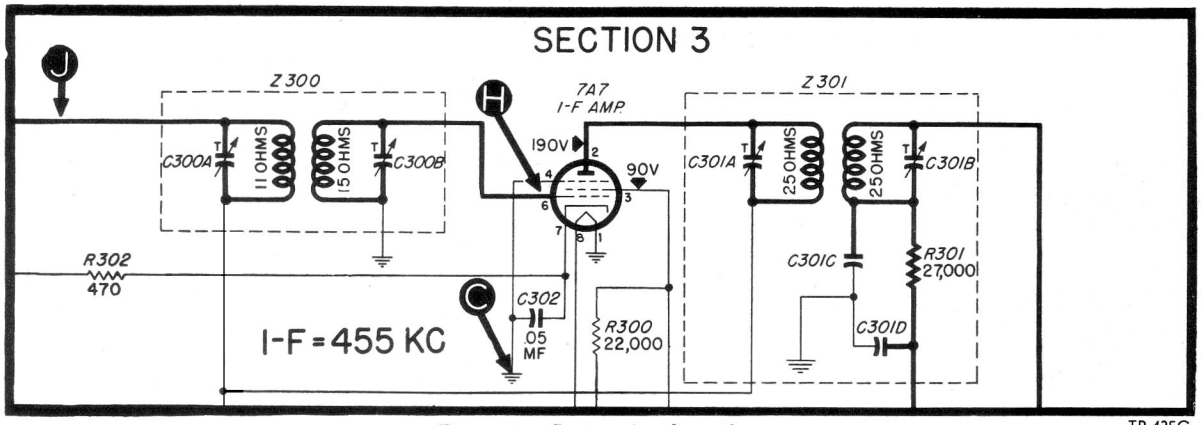


Figure 7. Section 3 schematic.

TP-435C

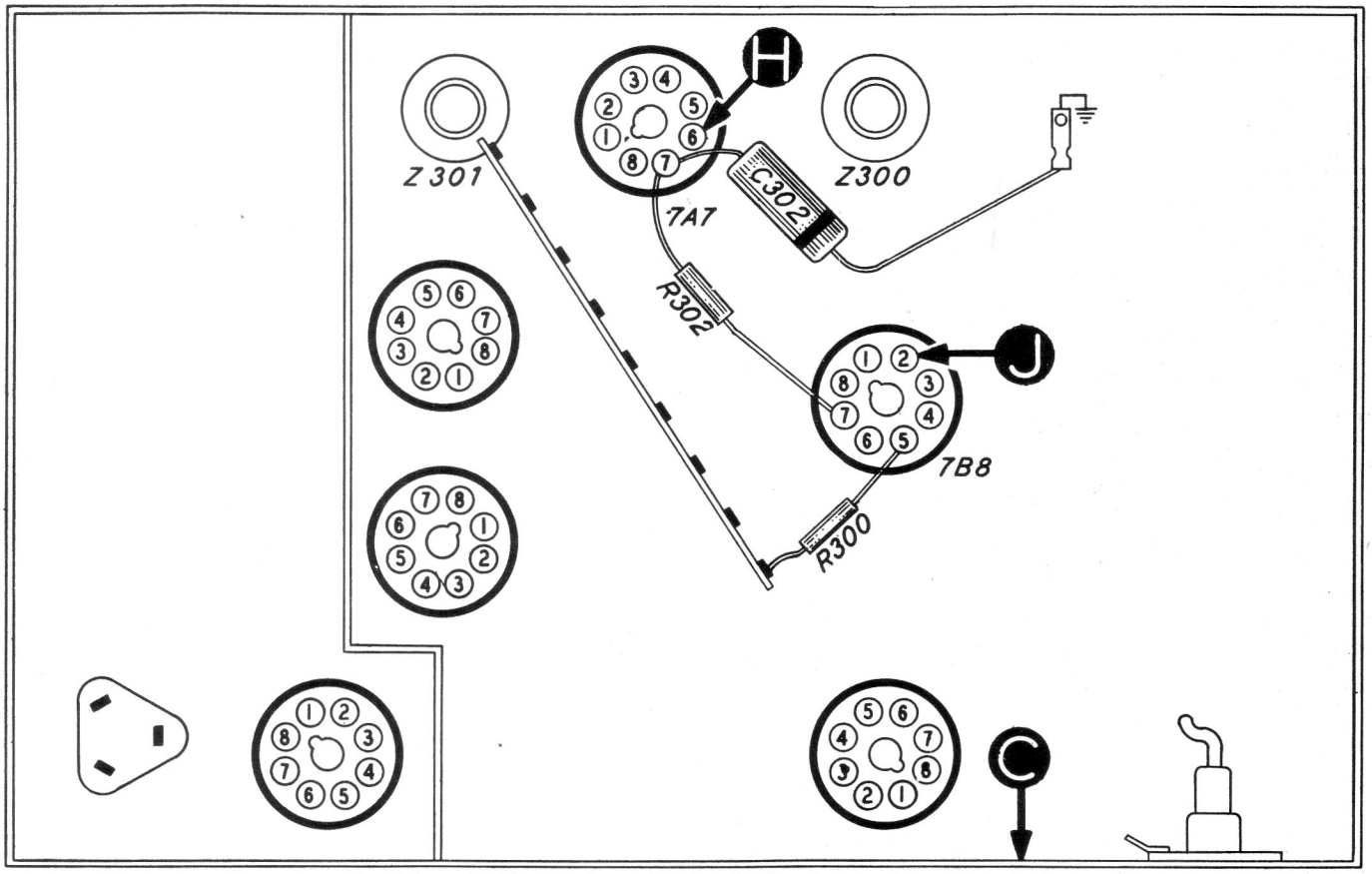


Figure 8. Bottom view, showing Section 3 test points.

CIRCUIT DATA ON SHEET 215
ALIGNMENT DATA ON 221
FURTHER DATA ON SHEETS
216 to 219

TESTS TO ISOLATE TROUBLE WITHIN SECTION 4

1. Set the volume control at maximum. Rotate the tuning condenser through its entire range. Any scraping noise from the speaker indicates bent plates, or dirt between plates or on wiper contacts. Remedy such conditions before proceeding further.

2. Attach the positive lead of a 20,000-ohms-per-volt meter to chassis and the prod end of the negative lead through a 50,000-ohm resistor to point P. Set the meter on a 10-volt or similar range, and rotate the tuning condenser through its entire range. Absence of voltage at any point indicates that the oscillator is not functioning. If this is the case, check the components listed in the first test below.

3. Connect the signal-generator output lead through a condenser (.01 to .25 mf.) to the points indicated; connect the ground lead to the receiver chassis (C). Tune the generator and receiver to 1000 kc., with modulation on, set the receiver volume control at maximum and adjust the generator output for a loud, clear signal.

TEST POINTS	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
K to C (chassis)	Loud, clear signal from speaker.	Defective 7B8, L402, C402, C407, C408, C409, C411, R402, R403, R404, R405, or R407.
L to C	Loud, clear signal.	Open C407.
M to C	Loud, clear signal.	Defective 7A7, C402, C405, R400, R401, C406, or C404.
N to C	Loud, clear signal.	Defective L400, C400, C401, or L401.

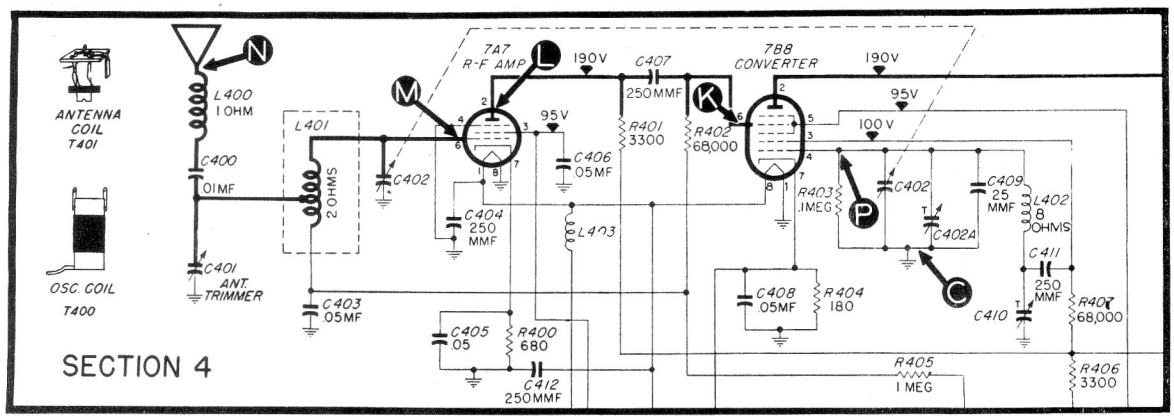


Figure 9. Section 4 schematic. TP-435D

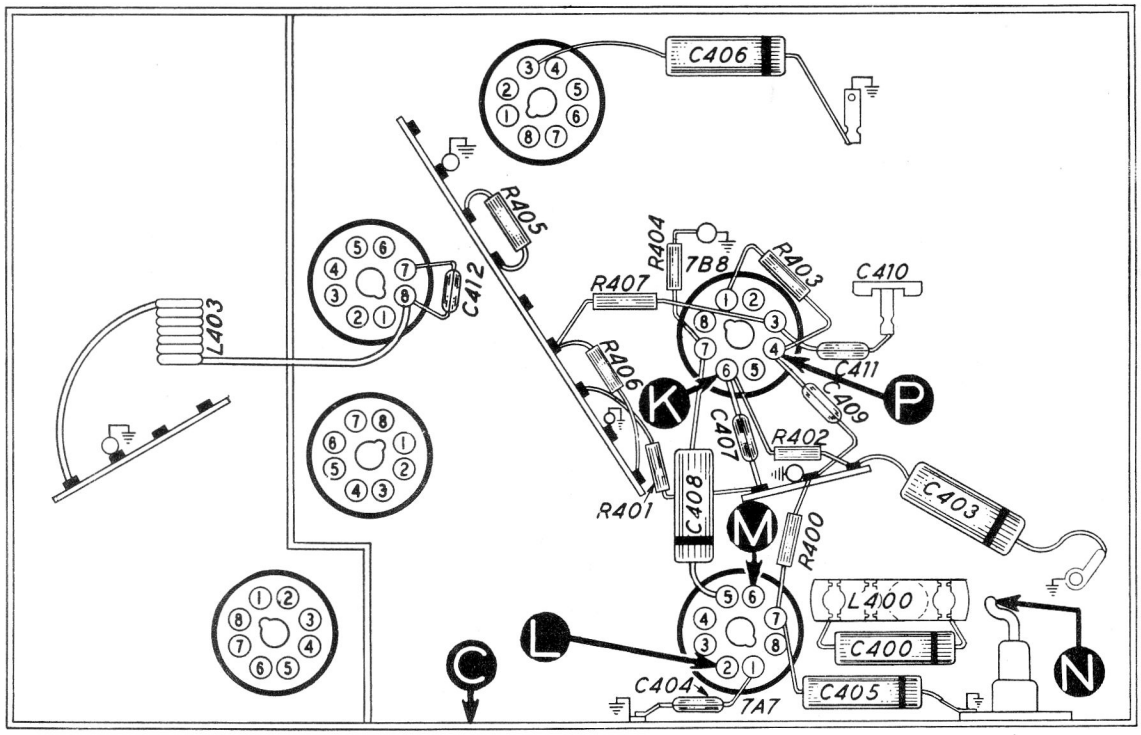


Figure 10. Bottom view, showing Section 4 test points.

ALIGNMENT DATA

CIRCUIT DATA ON SHEET 215
FURTHER DATA ON SHEETS 216 to 220

IF = 455 KC.

1948-49 AUTO RADIO

MODEL UN6-400

PRELIMINARY INSTRUCTIONS

Remove the top chassis cover to reach adjustments.

OUTPUT METER:

Connect to the voice-coil lugs on the speaker.

SIGNAL GENERATOR:

Set the receiver volume control at maximum. Adjust the signal-generator output to give a readable deflection on the output meter, using a meter range that best indicates small changes in output. Reduce the signal-generator output as alignment progresses, to prevent the meter needle from going off scale. Adjust all trimmers listed for maximum output.

DIAL CALIBRATION:

When the radio is re-installed in the car, the dial pointer must be set to coincide with the index dot at the low-frequency end of the dial, with the tuning condenser fully meshed.

ALIGNMENT CHART

SIGNAL GENERATOR			RECEIVER		
	Connections to Receiver	Dial Setting	Tuning-Condenser Setting	Special Instructions	Adjust Trimmers
1	Through a .05 mf. condenser to stator of antenna section of tuning gang.	455 kc.	Fully meshed.	Ground stator of oscillator section of gang. Adjust in given order, and then repeat adjustment.	C301B C301A C300B C300A
2	Through a 30-mmf. condenser in series with antenna lead, Philco Part No. 95-0185, to antenna connector.	1580 kc.	Fully open.	Remove ground from oscillator section of gang. Adjust for maximum.	C402A
3	Same as 2.	1400 kc.	Tune in 1400 kc. signal.	Adjust for maximum. (Final adjustment should be made with receiver in car, connected to car antenna.)	C401
4	Same as 2.	580 kc.	Tune in 580-kc. signal.	Adjust while rocking tuning condenser.	C410
5	Same as 2.			Repeat steps 2, 3, and 4.	

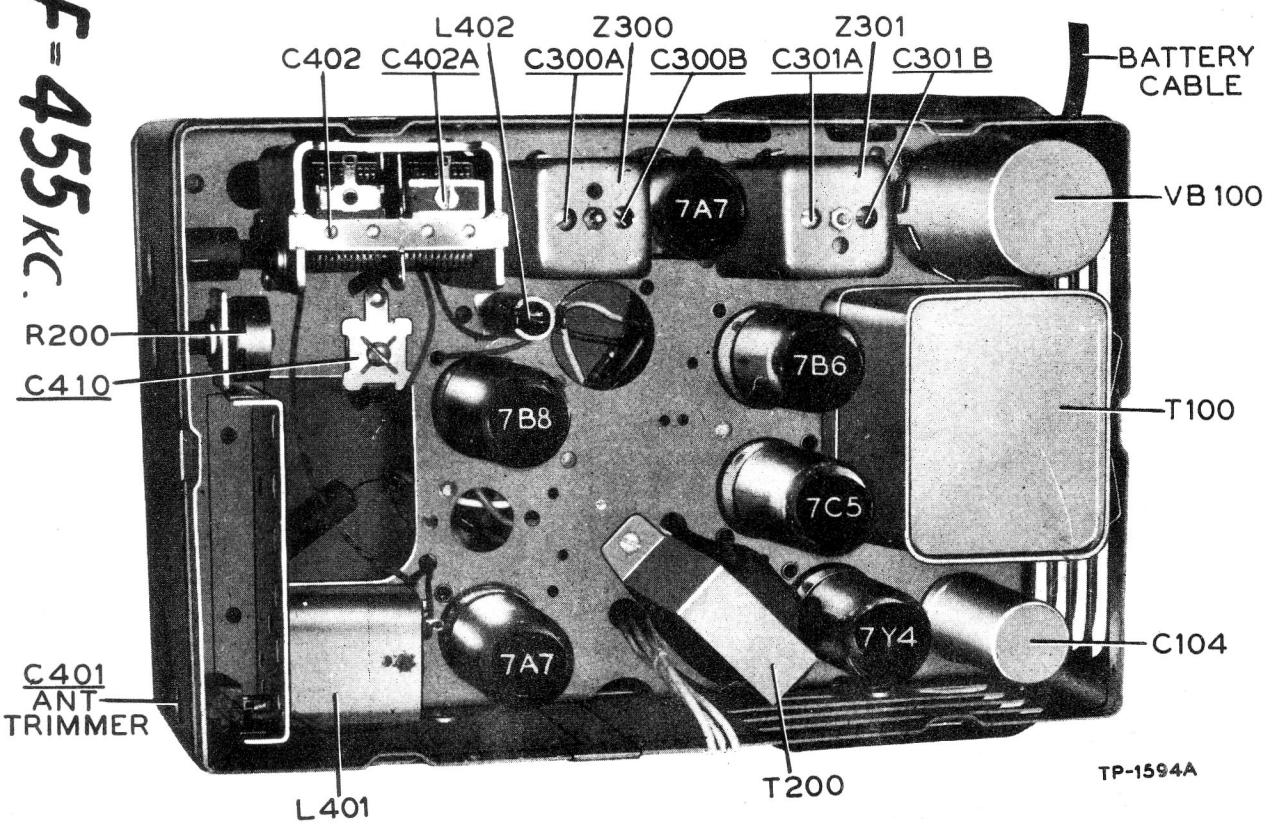


Figure 11. Top view, showing trimmer-condenser locations.