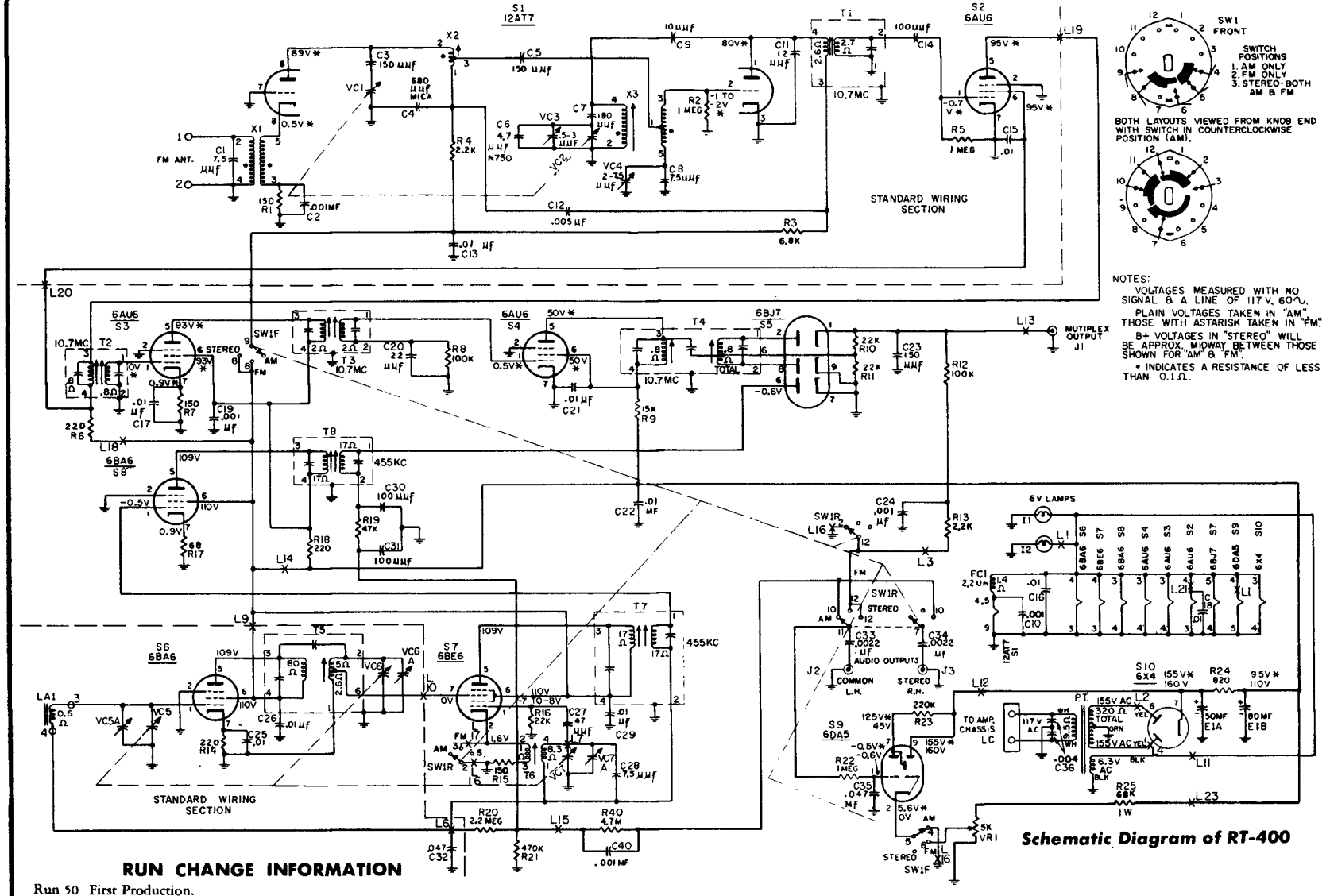


Schematic Diagram of RT-400

RUN CHANGE INFORMATION

Run 50 First Production.

Run 51 To prevent AM oscillation. The AM i-f amplifier cathode resistor, R17, was changed in value from 68 ohms to 110 ohms, part number 66-1108340.

Run 52 To facilitate production. The FM tuning condenser was changed to 31-2789-1. This is a three section gang; the center section is grounded. For replacement purposes use the gang listed in the parts list, part number 31-2789-3.

ADJUSTMENT OF TUNING INDICATOR

Remove S5, the 6BJ7 discriminator tube, or ground the cathode, pin 1 of the 6BJ7.

Adjust indicator balance pot, VR1, for parallel beams on the 6DA5.

Replace S5 (or remove ground).

(More material on pages 112 and 113)

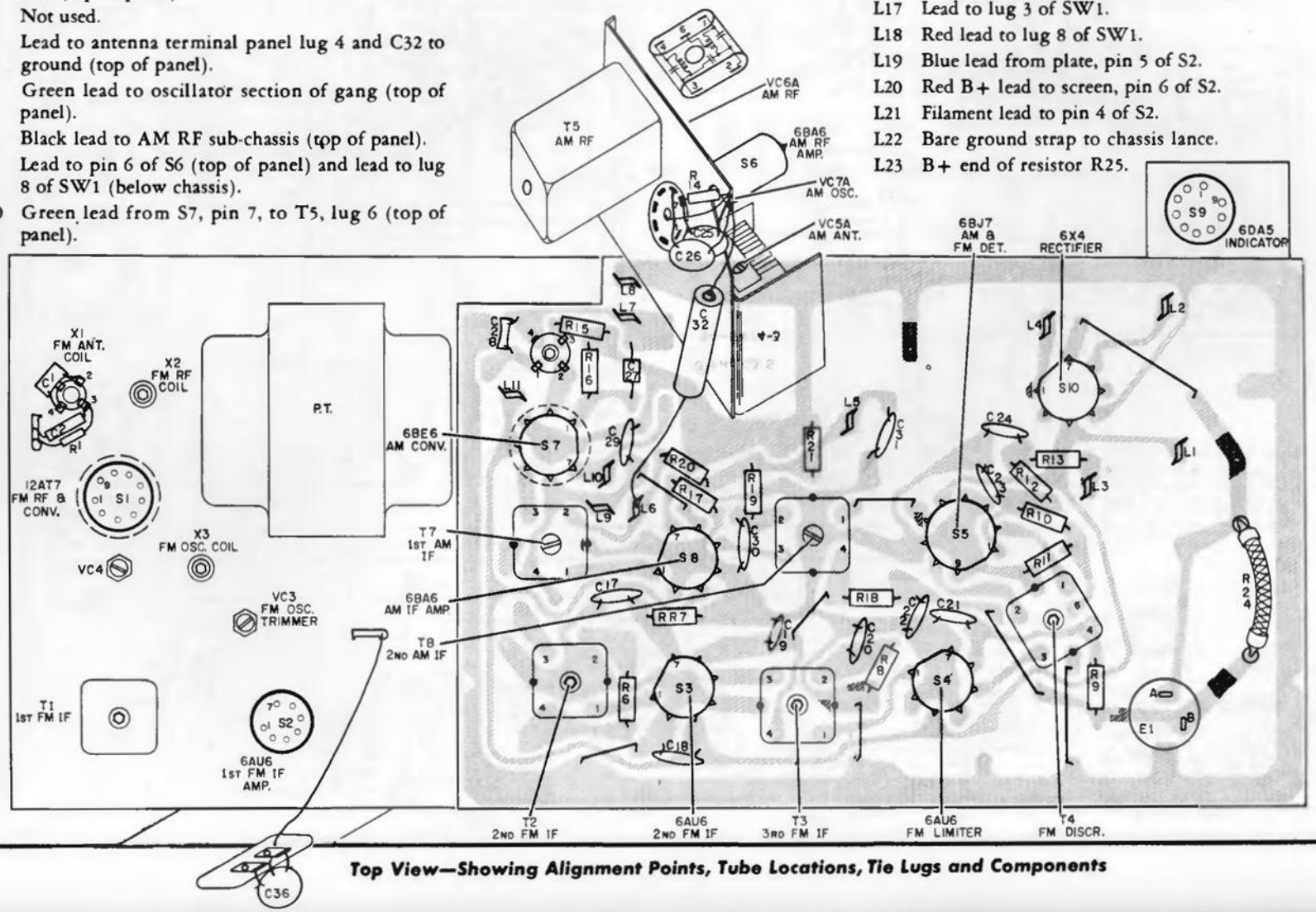
(Continued on pages 112 and 113)

IDENTIFICATION OF "PERMA-CIRCUIT" TIE LUGS

L1 Filament lead to pin 4 of 6DA5 (below panel) and pilot lamp lead (top of panel).
L2 Yellow lead from power transformer to pin 6 of 6X4 (top of panel).
L3 Lead from R13 to lug 12 of SW1 (below panel).
L4 Yellow lead from power transformer to pin 1 of 6X4 (top of panel).
L5 Not used.
L6 Lead to antenna terminal panel lug 4 and C32 to ground (top of panel).
L7 Green lead to oscillator section of gang (top of panel).
L8 Black lead to AM RF sub-chassis (top of panel).
L9 Lead to pin 6 of S6 (top of panel) and lead to lug 8 of SW1 (below chassis).
L10 Green lead from S7, pin 7, to T5, lug 6 (top of panel).
L11 Black filament lead from power transformer, brown pilot lamp lead and brown lead to pin 4 of S6 (top of panel).
L12 Red lead to pin 9 of S9.
L13 Lead to J1, the multiplix output jack.
L14 Red lead to lug 8 of SW1.
L15 R40 and C40 to SW1-10.
L16 Bare wire to lugs 2 and 4 of SW1.
L17 Lead to lug 3 of SW1.
L18 Red lead to lug 8 of SW1.
L19 Blue lead from plate, pin 5 of S2.
L20 Red B+ lead to screen, pin 6 of S2.
L21 Filament lead to pin 4 of S2.
L22 Bare ground strap to chassis lance.
L23 B+ end of resistor R25.

PHILCO

STEREO AM/FM TUNER
MODEL RT-400



Top View—Showing Alignment Points, Tube Locations, Tie Lugs and Components

SPECIFICATIONS

This tuner is equipped with a front panel and mounting board and is intended for quick installation in the space provided in the "H" line Philco Hi-Fidelity Phonographs.

CIRCUIT—Nine-tube superheterodyne plus rectifier. Function switch allows reception on AM only, FM only, or AM/FM stereo.

FREQUENCY RANGES—AM broadcast 540 KC to 1620 KC
FM broadcast 88 MC to 108 MC

TUNING DRIVE RATIO—10:1 on both AM and FM

OPERATING VOLTAGE—105 to 120 volts, 60 cycle AC only.

POWER CONSUMPTION—45 watts

INTERMEDIATE FREQUENCIES—AM—455 KC
FM—10.7 MC

AM ALIGNMENT PROCEDURE

The AM alignment should be completed before the FM alignment is performed. Before beginning the alignment, allow the receiver and test equipment to warm up for fifteen minutes.

Dial Pointer—With the gang fully closed, adjust the pointer to coincide with the first small index mark to the left of the "54" (540 kc) on the scale.

Tuner Controls—Set the function switch to the AM position and the AM tuning control as indicated.

Output Indicator—Connect a scope to output jack, J2.

Signal Generator—Use an AM r-f signal generator with 30% modulation.

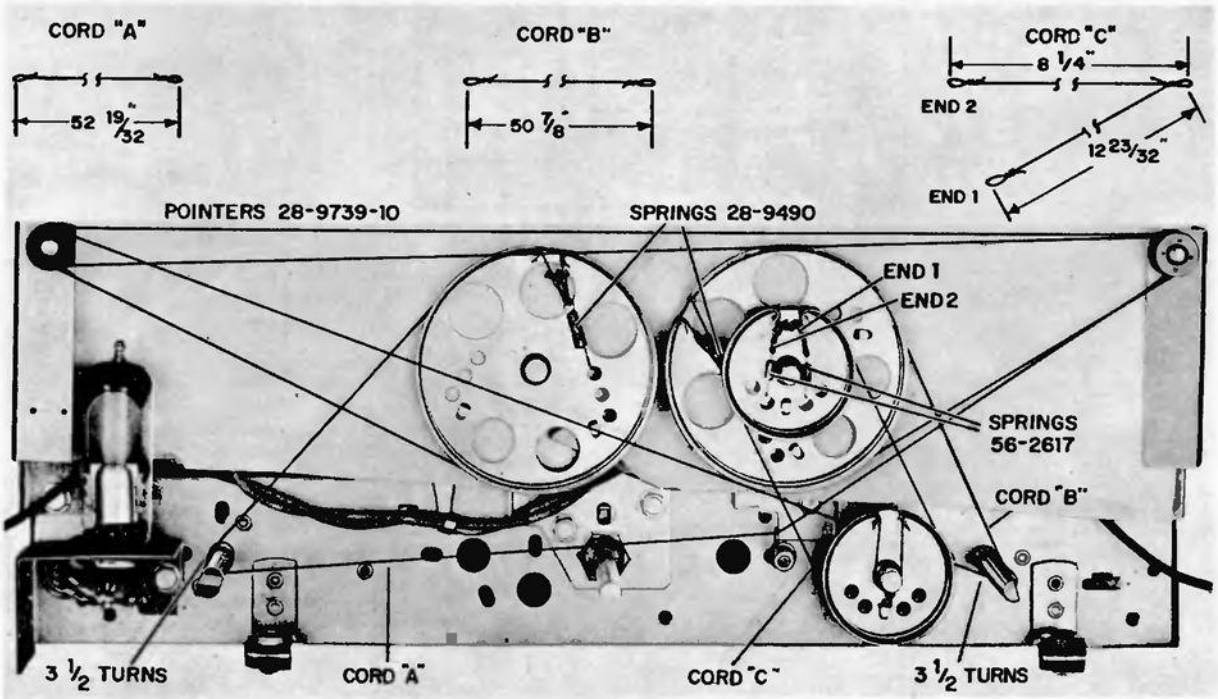
1. Connect generator, through a .05 μfd condenser, to the signal grid, pin 7 of the AM converter, S7 (6BE6). Connect the ground lead to chassis.
2. Set generator to 455 kc. Fully open tuning gang. Adjust, in order given, top of T8, bottom of T7, bottom of T8, and top of T7 for maximum output. Repeat until no further gain is indicated.
3. Connect generator to radiating loop. Set generator to 1600 kc. Set receiver to 1600 kc as indicated by pointer. Adjust VC7A (osc. trimmer) for maximum output.
4. Set generator to 1400 kc. Tune receiver to signal and adjust VC5A (antenna trimmer) and VC6A (r-f trimmer) for maximum output.
5. Set generator to 580 kc and tune receiver to signal; adjust core of r-f transformer (T5) for maximum output.
6. Repeat steps 4 and 5 until no further gain is indicated.

FM ALIGNMENT PROCEDURE

The AM alignment should be completed before the FM alignment is performed.

1. With the gang fully closed, adjust the pointer to coincide with the first small index mark to the left of the "88" (88mc) on the scale.
2. Set the function switch to the FM position and the FM tuning control as indicated.
3. Connect an oscilloscope, through a 100,000-ohm isolating resistor, to junction of R8 and C20. Connect the oscilloscope ground lead to the chassis.
4. Connect the signal generator to the cathode of the FM, RF amplifier, pin 8 of S1. Connect the ground lead to the chassis.
5. Inject a 10.7 MC marker signal and a 10.7 MC sweep signal, approximately 150 KC total deviation (do not over sweep). Adjust cores in top and bottom of T3, T2 and T1 for maximum-amplitude, symmetrical curve with the 10.7 MC marker at the top of the curve. Adjust input signal to maintain output, as indicated on scope, below 2 volts peak during alignment. Repeat this step until no further gain is obtained.
6. Change scope connections to the output connector J2. Inject a 10.7 MC, 30% AM modulated signal to the grid of the 6AU6, pin 1 of S4. Adjust top of T4 for minimum indication between peaks. Inject 10.7 MC sweep signal, approximately 150 KC total deviation, to pin 1 of S4 and adjust bottom of T4 for maximum-amplitude, symmetrical output. Adjust input signal to maintain output, as indicated on scope, below 5 volts peak during alignment. (See NOTE below.)
7. Open tuning capacitor. Insert a 6-mil, non-metallic shim between stator and rotor of the FM gang and then close the capacitor against the shim. Inject 108.5 MC sweep signal (approx. 150 KC total deviation), through an antenna matching network, to the receiver antenna terminals. Adjust VC3 for maximum output.
8. Close (mesh) the tuning capacitor. Inject 87.75 MC sweep signal (approx. 150 KC total deviation) through an antenna matching network, to the receiver antenna terminals, and adjust X3 for maximum output (see NOTE below).
9. Set pointer to 91 MC and inject a 91 MC sweep signal. Adjust X2 for maximum output. (See NOTE below.)
10. VC4 is the oscillator bridge capacitor used to minimize oscillator radiation. This is a factory adjustment and should not require further adjustment in the field.

NOTE: The signal input must be as low as possible in order to obtain a sharp indication. In some cases it may be necessary to set the signal generator to the first sub-harmonic.



Drive Cord Installation Details