

COLONIAL RADIO CORP.

MODEL 400
Notes, Voltage

SERVICE NOTES
MODEL 400

The Colonial Model 400 is a six tube superheterodyne with frequency range from 540 kc to 4300 kc.

A 78 RF stage precedes the 6A7 oscillator-translator. A 78 IF amplifier feeds into the 85 tube which provides AVC, detection and audio amplification. A 41 output tube and an 84 rectifier complete the tube complement.

725M ohms of the volume control. Since the current flows from the diode plates to the cathode, point (A) is negative with respect to point (B). But since the grid returns of the 78 RF and IF tubes are connected to point (A), the potential across A and B is applied to these grids. Any increase in signal strength increases the current through the diode part of the 85 tube, increases the drop from A to B, increases the negative bias on the 78 tubes and so decreases their amplification. Increases in signal strength are offset by the decrease in amplification so that the input to the detector tends to remain at a constant level.

Residual bias for the 78 tubes is supplied by the 600 ohm "power" or sensitivity control.

The larger the proportion of the 600 ohms included in the circuit, the higher the residual negative bias on the 78 tubes, and the less the sensitivity of the receiver. This sensitivity control should not be advanced more than necessary to secure satisfactory reception in any particular location. Excessive sensitivity will result in undue between-station noise.

The audio voltage existing across the volume control resistance is picked off by the moveable arm of the volume control, and fed through the .02 mfd. condenser to the grid of the triode portion of the 85 tube.

A low value of output from the test oscillator should be used when peaking the IF stage, as explained in the Model 250AC notes.

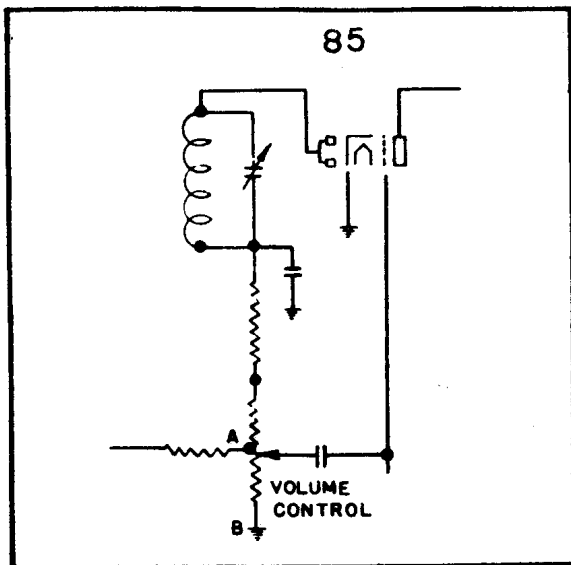


FIG. 28

The AVC-Det-AF circuit is shown in Fig.28. The 175 kc IF signal from the 78 tube is impressed between the diode plates and the cathode of the 85 tube, in series with the 100M resistor and the

TUBE VOLTAGE AND CURRENT CHART

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
78 - RF	155	70	*	4.25	1
78 - IF	155	85	*	5	1.25
85 - AVC-Det-AF	120		*	.75	
41 - Output	155	160	*	12	1.75
6A7 - Osc-Transl	Ep=155v; Eg #2=155v; Eg #3&5=65v; Eg #4=*; Ip=2ma; Ig #2=3.5ma; Ig #3&5=2.5ma.				
84 - Rect	Plate current = 17m.a. per plate				

* - Indicates high series resistance.

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MODEL 400
Socket layout

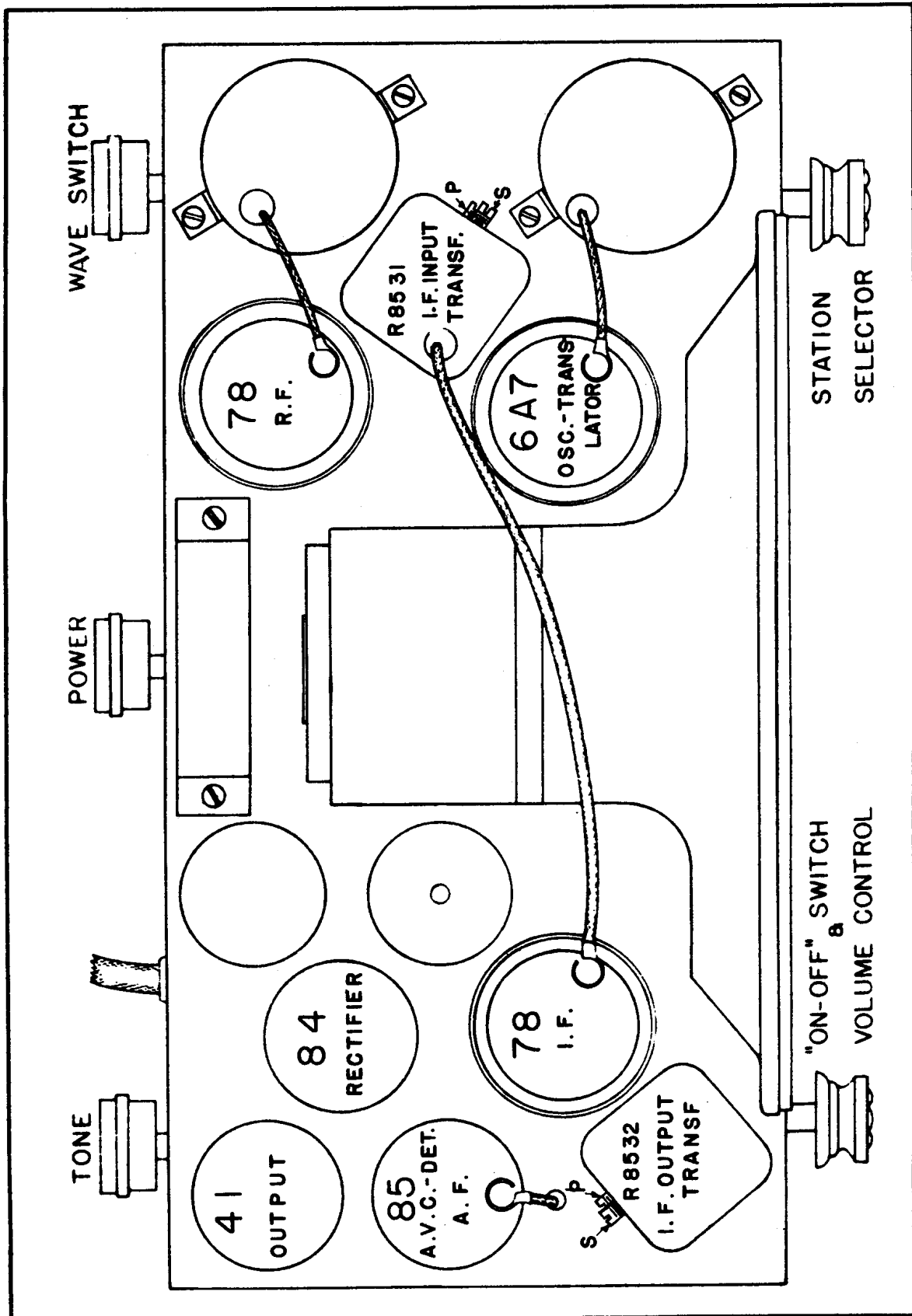


FIG. 30. SERVICE ILLUSTRATION - MODEL 400

MODEL 400
Coil wiring data
Parts List

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<p>R-8624 Condenser-Electrolytic 8 mfd.</p> <p>R-8614 Condenser-Block of 4-.1 mfd. and 1.2 mfd.</p> <p>R-6444 Condenser-.1 mfd.-200v</p> <p>R-6761 Condenser-.02 mfd.-600v</p> <p>R-6461 Condenser-.003 mfd.-800v</p> <p>R-7681 Condenser-.003 mfd.-600v</p> <p>R-8612 Condenser-.0018 mfd.- 600v</p> <p>R-4592 Condenser-.00025 mica</p> <p>R-4303 Condenser-.0001 mica</p>	<p>R-6179 Resistor 500m ohm, 1/2 watt carbon</p> <p>R-5822 Resistor-400M ohm, 1/2 watt carbon</p> <p>R-5830 Resistor-200M ohm, 1/2 watt carbon</p> <p>R-5819 Resistor-100M ohm, 1/2 watt carbon</p>	<p>COILS MOUNTED ON TOP OF CHASSIS</p> <p>D - R 8505 TRANSLATOR COIL - BROADCAST LUG 1 - TO SWITCH LUG 5 & PLATE OF 78 TUBE LUG 2 TO SWITCH LUG 6 LUG 3 - TO 100M OHM RESISTOR & .1 MFD. COND. LUG 4 - TO #4 GRID OF 6AT</p> <p>E - R 8504 ANTENNA COIL - BROADCAST LUG 1 - TO GRID. LUG 2 - TO ANT & SWITCH LUG 4 LUG 3 - TO 100M OHM RESISTOR & .1 MFD. COND LUG 4 - TO CONTROL GRID OF 78 & STATOR, REAR SECTION OF VARIABLE TUNING COND.</p>	<p>BOTTOM OF CHASSIS</p> <p>R 8529 - WAVE SWITCH</p> <p>LUG 1 - TO COIL A LUG 3 LUG 2 - TO STATOR, MIDDLE SECTION OF VARIABLE COND LUG 3 - TO COIL A LUG 1 LUG 4 - TO ANT. & COIL E LUG 2. LUG 5 - TO COIL D, LUG 1 & PLATE OF 78 TUBE. LUG 6 - TO COIL LUG 2, COIL B LUG 2, & 2-OF I-F INPUT TRANSFORMER & 8 + LUG 7 - TO COIL C LUG 4 & COIL & LUG 3 LUG 8 - TO END. & COIL & LUG 1</p>
<p>R-6156 Resistor-30M ohm, 1/2 watt carbon</p> <p>R-6504 Resistor-15M ohm, 1 watt carbon</p> <p>R-8522 Resistor-400 ohms, 1 watt carbon</p> <p>R-6632 Resistor-50 ohms, 1/3 watt</p>	<p>A - R 8507 ANTENNA COIL - SHORT WAVE LUG 1 - TO COIL B LUG 1 LUG 2 - TO SWITCH LUG 3 LUG 3 - TO SWITCH LUG 1 LUG 4 - TO 100M RESISTOR & IMFD. COND.</p> <p>B - R 8506 OSCILLATOR COIL BROADCAST LUG 1 - TO SWITCH LUG 5 & GRID. LUG 2 - TO SWITCH LUG 6 LUG 3 - TO COIL C LUG 4 LUG 4 - TO COIL C LUG 1</p> <p>C - R 8508 OSCILLATOR COIL SHORT WAVE LUG 1 - TO COIL B LUG 4 LUG 2 - TO 6AT GRID 2 LUG 3 - TO .00025 COND. & STATOR OF FRONT SECTION OF VARIABLE TUNING CONDENSER LUG 4 - TO COIL B LUG 5 & SWITCH LUG 7</p>	<p>COILS MOUNTED ON TOP OF CHASSIS</p> <p>D - R 8505 TRANSLATOR COIL - BROADCAST LUG 1 - TO SWITCH LUG 5 & PLATE OF 78 TUBE LUG 2 TO SWITCH LUG 6 LUG 3 - TO 100M OHM RESISTOR & .1 MFD. COND. LUG 4 - TO #4 GRID OF 6AT</p> <p>E - R 8504 ANTENNA COIL - BROADCAST LUG 1 - TO GRID. LUG 2 - TO ANT & SWITCH LUG 4 LUG 3 - TO 100M OHM RESISTOR & .1 MFD. COND LUG 4 - TO CONTROL GRID OF 78 & STATOR, REAR SECTION OF VARIABLE TUNING COND.</p>	<p>S-8466C Speaker-2500 ohm</p> <p>R-7586 Resistor-100M ohm, 1/3 watt carbon</p> <p>R-6445 Resistor-50M ohm, 1/2 watt carbon</p>

FIG. 31. SERVICE ILLUSTRATION - MODEL 400