

Frequency Range: A.M. 535-1700 kc. and F.M. 88-108 mc
Power Requirement: 105-125 Volts a-c 60 cycles
Power Consumption: Receiver on a-m: 103 watts
Receiver with Record Changer: 120 watts

STEP	SET BAND SWITCH ON-	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO-	SET SIGNAL GENERATOR TO-	TURN POINTER TO-	READ OUTPUT ON-	ADJUST THE FOLLOWING- (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE).
1	F.M.	PIN 1 OF 6BA6 (3) TUBE FOR 1 VOLT SIGNAL.	10.7 MC UNMODULATED SIGNAL.		VACUUM TUBE VOLTMETER ACROSS 6800 OHM RESISTOR (SEE 'A' ON CIRCUIT DIAGRAM).	L5 (RATIO DETECTOR) FOR MAXIMUM READING.
2	F.M.	PIN 7 OF 6BE6 TUBE IN SERIES WITH A .1MFD. 400 VOLT CONDENSER.		EXTREME RIGHT HAND POSITION, CONDENSER PLATES FULLY OPEN.	VACUUM TUBE VOLTMETER ACROSS 6800 OHM RESISTOR (SEE 'A' ON CIRCUIT DIAGRAM).	L6 (RATIO DETECTOR) FOR ZERO READING.
3	F.M.	R.F. SECTION OF VARIABLE CONDENSER OR PIN 7 OF THE 6BE6 TUBE IN SERIES WITH A .1MFD. 400 VOLT CONDENSER.	455 KC.		VACUUM TUBE VOLTMETER ACROSS 6800 OHM RESISTOR (SEE 'A' ON CIRCUIT DIAGRAM).	C13 AND C12 (2nd I.F. TRANSFORMER) FOR MAXIMUM READING. C11 AND C10 (1st I.F. TRANSFORMER) FOR MAXIMUM READING. C9 AND C8 (2nd I.F. TRANSFORMER) FOR MAXIMUM OUTPUT. C7 AND C6 (1st I.F. TRANSFORMER) FOR MAXIMUM OUTPUT.
4	A.M.				OUTPUT METER ACROSS SPEAKER VOICE COIL.	
5	A.M.					
6	F.M.			REPEAT STEPS 2 AND 3		
7	A.M.	ANTENNA SECTION OF VARIABLE CONDENSER OR PIN 7 OF THE 6BA6 TUBE IN SERIES WITH A .1MFD. 400 VOLT CONDENSER.	1700 KC.	1700 KC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	C3 (OSCILLATOR TRIMMER) FOR MAXIMUM OUTPUT. C2 (R.F. TRIMMER) FOR MAXIMUM OUTPUT. C4 (PADDER) ROCK VARIABLE FOR MAXIMUM SIGNAL.
8	A.M.		1500 KC.	RESONANCE, APPROXIMATELY 1500 KC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	L1 (ANTENNA LOADING COIL) ROCK VARIABLE FOR MAXIMUM SIGNAL. C1 (ANTENNA TRIMMER) FOR MAXIMUM OUTPUT.
9	A.M.		600 KC.	RESONANCE, APPROXIMATELY 600 KC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	
10	A.M.			REPEAT STEPS 7, 8 AND 9.		
11	A.M.	USE RADIATED SIGNAL (CONNECT BOTH SIDES OF SIGNAL GENERATOR TO RADIATION LOOP).	600 KC.	RESONANCE, APPROXIMATELY 600 KC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	
12	A.M.		1500 KC.	RESONANCE, APPROXIMATELY 1500 KC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	
13	A.M.			REPEAT STEPS 11 AND 12.		
14	F.M.	CONNECT LOW SIDE OF F.M. SIGNAL GENERATOR TO DIPOLE TERMINAL OF "POST" OF A.M. STRIP AND CONNECT HIGH SIDE OF F.M. GENERATOR IN SERIES WITH A 300 OHM RESISTOR TO OTHER DIPOLE TERMINAL. USE 30% MODULATED F.M. SIGNAL.	108 MC.	108 MC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	L3 (R.F. COIL) FOR MAXIMUM OUTPUT. C14 (ANTENNA TRIMMER) FOR MAXIMUM OUTPUT.
15	F.M.		88 MC.	88 MC. ON DIAL (CHECK IMAGE AT 108.4 MC.).	OUTPUT METER ACROSS SPEAKER VOICE COIL.	
16	F.M.			REPEAT STEPS 14 AND 15.		
17	F.M.		102 MC.	RESONANCE, APPROXIMATELY 102 MC. ON DIAL.	OUTPUT METER ACROSS SPEAKER VOICE COIL.	

To remove the chassis from the console, it is first necessary to disconnect the loop connector plug, the female connector plug on the speaker, the phono input plug, the motor plug and the two F.M. lugs on the F.M. antenna terminal post. Then remove the four knobs and the four screws holding the chassis to its mounting panel.

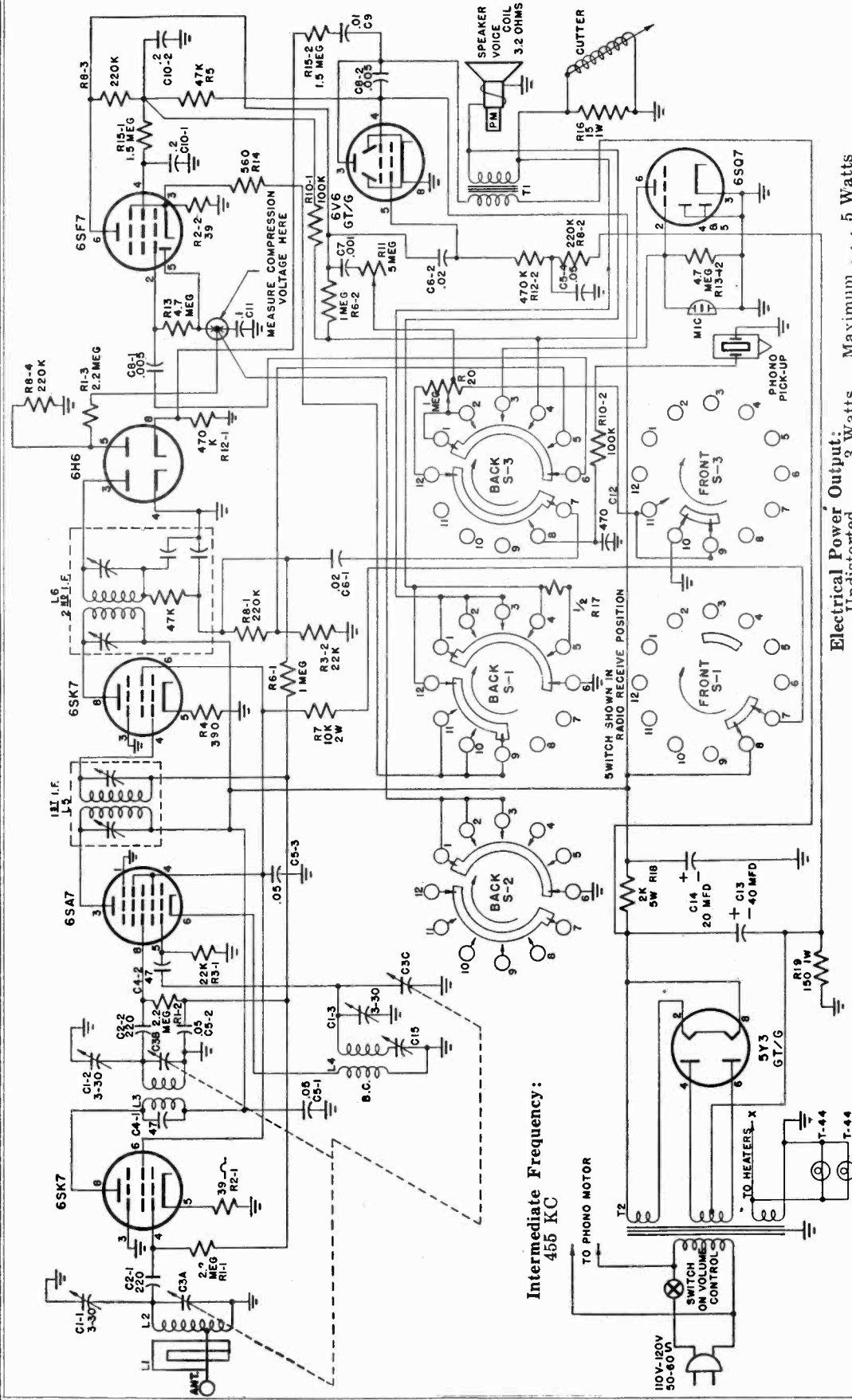
CAUTION: WHEN REMOVING THE CHANGER BE SURE TO PLACE IT IN A POSITION IN WHICH THE CHANGER MECHANISM WILL NOT BE DAMAGED.

ALIGNMENT

Equipment Required: Modulated a-m, r-f signal generator; modulated f-m signal generator covering the range from 88 to 108 megacycles; vacuum tube voltmeter; output meter; insulated screw driver; radiation loop (1 turn of about 6" to 8" diameter of #12 or #14 wire connected across output of signal generator and placed parallel to receiver loop about 8" or 10" away); one .1 mfd 400 volt condenser; two 150 ohm resistors.

With the receiver removed from the cabinet, connect output meter, or vacuum tube voltmeter and signal generator as indicated in the alignment procedure chart and keeping the output of the generator as low as possible, proceed exactly in the sequence as shown on the chart.

Before aligning, close the variable condenser fully counter clockwise (plates fully closed) and check that pointer coincides with the reference line on the dial.



Electrical Power Output:
Undistorted . . . 3 Watts
Maximum . . . 5 Watts

- Tubes:**
- 6SK7 R.F. Amplifier
 - 6SA7 Frequency Converter
 - 6SK7 I.F. Amplifier
 - 6V6-GT/G 1st Audio Amplifier
 - 6H6 Rectifier
 - 6SQ7 2nd Detector—Compressor Amplifier

Loudspeaker:
Type . . . Permanent Magnet
Outside Cone Diameter . . . 10"
Voice Coil Impedance . . . 3.2 ohms at 400 cycles
Magnet Rating . . . 4.6 Oz. Alnico 5

Electrical Rating:
Line Voltage . . . 110-120 volts, 50-60 cycle A.C.
Power Consumption . . . 80 Watts
Tuning Frequency Range:
540 to 1620 KC

SPECIAL SERVICE INFORMATION

Stage Gain Measurements:
 Measurements taken with volume and time controls maximum. — AVC shorted out.
 Standard Output . . . 50 milliwatts
 Dummy Antenna . . . 200 Mmf.
 Antenna Grid to R.F. Grid . . . 7X at 1000 KC
 R.F. Grid Converter Grid . . . 7.5X at 1000 KC
 Converter Grid to 1st I.F. Grid . . . 56X at 455 KC
 1st I.F. Grid to 2nd Detector . . . 57X at 455 KC
 Overall Audio Gain . . . 320X at .5 watts 400 cycles

OSCILLATOR CATHODE VOLTAGES:

Measured at .117 volts AC line voltage with AC vacuum tube voltmeter input loading above 10 megohms.
 1600 KC . . . 2.15 volts AC
 1000 KC . . . 2.0 volts AC
 600 KC . . . 2.2 volts AC

D.C. Resistance Measurements:

1st & 2nd I.F. Coils:
 Primary . . . 17 ohms
 Secondary . . . 17 ohms*

*NOTE: To obtain the true reading of the secondary of the 2nd I.F. Coil, it must be removed from the can. This is so because of the 47K resistor inside the can.

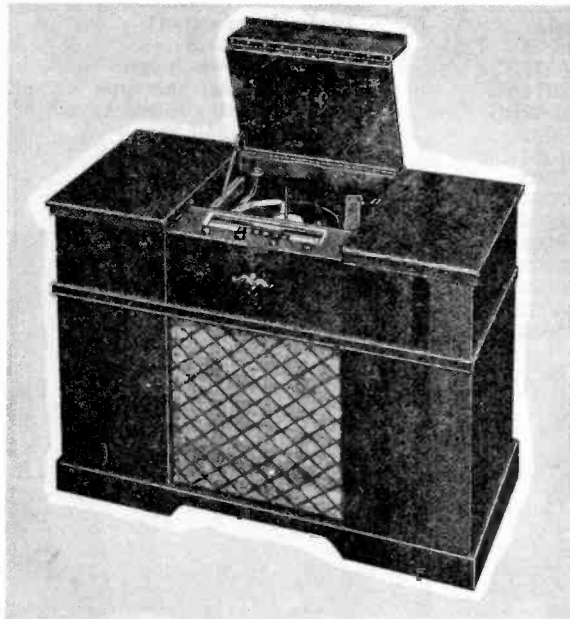
Oscillator Coil:
 Primary . . . 1 ohm
 Secondary . . . 6 ohms

Antenna Coil:
 Start to finish . . . 12.2 ohms
 Start to tap . . . 10.5 ohms

R.F. Coil:
 Primary . . . 58 ohms
 Secondary . . . 4.2 ohms

NOTICE: The D.C. Resistance measurements on all coils are subject to a 20% tolerance due to the variation of winding methods.

All D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis.—A.C. voltages measured with a 1000 ohms per volt A.C. meter from socket contacts to chassis.—Volume and tone controls maximum.—Switch in Radio Receive position.—No signal.—117V A.C. line. All voltages shown are positive D.C. unless otherwise noted.



ALIGNMENT PROCEDURE

Alignment Procedure consists of the 5 steps outlined in the Alignment Procedure Chart.

Connect the test oscillator leads to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. Upon completion of this step "Rock" the variable condenser to assure that the I.F.s have been aligned to the correct frequency. Output should remain constant for any setting of the variable condenser.

Use the Hazeltine Test Loop No. 1150 or a reasonable substitute for the balance of the alignment. Place the test loop about two feet from the receiver loop in a vertical position.

It will be noted that all alignment trimmers are accessible without removing the chassis from the cabinet.

IMPORTANT NOTICE: Make certain that each alignment step is done with a minimum input signal.

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	ADJUST POINTER SETTING	FOR MAX. OUTPUT
1	Mixer Grid & Grd. (.01 Mfd. Cap.)	455 KC	540 KC	Trimmers A, B, C & D
2	Standard Test Loop*	1620 KC	1620 KC	Trimmer E to 1620 KC
3	Standard Test Loop*	600 KC	Rock Variable	Trimmer H to 600 KC
4	Standard Test Loop*	1500 KC	1500 KC	Trimmers F & H
5	Repeat Steps 2, 3 & 4			

*NOTE: Hazeltine Test Loop No. 1150 (or a reasonable substitute).

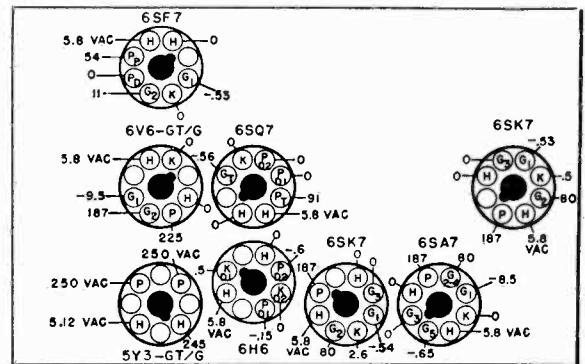


FIGURE 1—SOCKET VOLTAGES

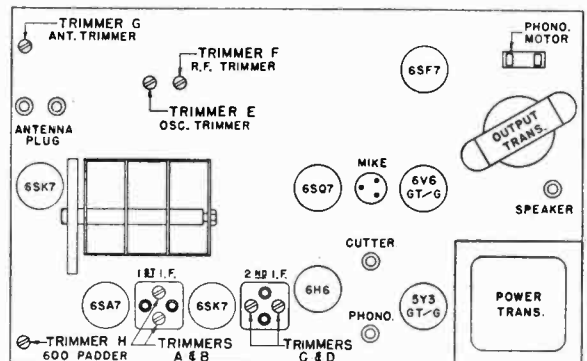


FIGURE 2—TRIMMER LOCATION

73057	R13-1	Resistor, carbon: 4.7 megohms, 20%, ½ watt	10505 10506 21040		Assembly, switch arm Assembly, pointer Cabinet
73022	R13-2 R14	Resistor, carbon: 560 ohms, 10%, ½ watt	21040-1 21040-2 21040-3 21040-4 21040-5		Cabinet back, cardboard: right Cabinet back, cardboard: center Cabinet back, cardboard: left Cabinet back, cardboard: upper center
73054	R15-1	Resistor, carbon: 1.5 megohms, 20%, ½ watt	21051A-1 21051A-2		Strip, leatherette: motor board Cabinet, mic cord holder: side Cabinet, mic cord holder: bottom
73903	R15-2 R16	Resistor, wire wound: 15 ohms, 10%, 1 watt	23001	C1-1 C1-2	Capacitor, trimmer: 3-30 Mmf.
73910	R17	Resistor, wire wound: ½ ohm, 10%, 1 watt	23406 23915	C1-3 C2-1 C2-2	Capacitor, ceramic: 220 Mmf. 20%
73902	R18	Resistor, wire wound: 2,000 ohms, 10%, 5 watt	23500C 23912	C3A, B & C C4-1	Capacitor, variable Capacitor, ceramic or mica: 47 Mmf., 20%
73081	R19	Resistor, carbon: 150 ohms, 10%, ½ watt	23009	C4-2 C5-1 C5-2 C5-3 C5-4	Capacitor, paper: .05 Mfd., 400 volt
25010B	R20	Control, volume: 1 megohm, tapped at 200,000 ohms, with A.C. switch	23007	C6-1 C6-2 C7 C8-1 C8-2	Capacitor, paper: .02 Mfd., 600 volt Capacitor, paper: .001 Mfd., 600 volt Capacitor, paper: .005 Mfd., 600 volt
77016		Shaft, dial	23006	C9	Capacitor, paper: .01 Mfd., 600 volt
78008		Shield, microphone plug	23020	C10-1 C10-2	Capacitor, paper: .2 Mfd., 400 volt
78028		Shield, dial, light	23019	C11	Capacitor, paper: .1 Mfd. 400 volt
79002		Socket, tube: 8 prong octal, wafer type	23916	C12	Capacitor, ceramic or mica: 470 Mmf., 20%
79004		Socket, microphone	24003	C13	Capacitor, electrolytic: 20 Mfd., 350 volt
79005		Socket, phonograph	24030	C14	Capacitor, electrolytic: 40 Mfd., 450 volt
79007		Socket, phono motor	23402 28016	C15	Capacitor, padder: 300-800 Mmf.
79010B		Socket, dial lamp: bayonet base	92194	L1	Clamp, mic base Loop, antenna: (19.5 feet of 300 ohm twin lead)
83703		Speaker, permanent magnet: 10"	29400A	L2	Coil, antenna
84003A		Spring, knob	29102B	L3	Coil, R.F.
84028		Spring, dial cord	29205B	L4	Coil, oscillator
86009A		Switch, rotary: 3 deck	29004D	L5	Coil, 1st I.F.: 455 KC
86802		Switch, micro: used on automatic cutter stop	29007	L6	Coil, 2nd I.F.: 455 KC
89409C	T1	Transformer, output	32003C		Cord, A.C.: 8'
89016	T2	Transformer, power	34002D		Cover, volume control
65038A		Plate, rear	36024		Cutter cartridge
66004		Plug, pin type: Speaker, phono & antenna	38038 38046 40002		Dial, glass: stationized Dial, glass: export Dial drive cord
67025		Pointer support	50079B		Insulator, switch arm
67023		Pointer wire	52014BG		Knob, plastic: bar type
68117		Instruction book	52032BG		Knob, plastic: round type
68073		PhonOcord album	54001		Dial lamp .250 MA
69001		Pulley, dial	57004		Microphone with cable
69003A		Pulley, dial	57005		Microphone handle
73055	R1-1	Resistor, carbon: 2.2 Megohm, 20%, ½ watt	57006		Microphone base
	R1-2		58004D		Automatic Record Changer
	R1-3		59001		Needle, phono
73008	R2-1	Resistor, carbon: 39 ohms, 10%, ½ watt	59002		Needle, cutter
	R2-2		65028A		Plate, mounting
73041	R3-1	Resistor, carbon: 22,000 ohms, 10%, ½ watt	65032		Plate, front
	R3-2		65033A		Plate, dial
73020	R4	Resistor, carbon: 390 ohms, 10%, ½ watt			
73045	R5	Resistor, carbon: 47,000 ohms, 10%, ½ watt			
73053	R6-1	Resistor, carbon: 1 megohm, 20%, ½ watt			
	R6-2				
73125	R7	Resistor, carbon: 10,000 ohms, 10%, 2 watt			
73049	R8-1	Resistor, carbon: 220,000 ohms, 20%, ½ watt			
	R8-2				
	R8-3				
	R8-4				
73047	R10-1	Resistor, carbon: 100,000 ohms, 20%, ½ watt			
	R10-2				
25506B	R11	Control, tone: 5 megohms			
73051	R12-1	Resistor, carbon: 470,000 ohms, 20%, ½ watt			
	R12-2				
66008		Plug, A.C.			
66013		Plug, microphone			
67026		Pointer slide			

Electrical Rating:
 Line Voltage . . . 110-120 volts 50-60 cycle A.C.
 Power Consumption . . 52 watts
Tuning Frequency Range:
 Frequency Modulation Band . . 88-108Mc
Intermediate Frequency:
 10.7 Mc

Stage Gain Measurements:

Stage gains are measured by connecting the VTVM to AVC (point A) and preceding backwards stage by stage and calculating gain of desired stage.

- Audio Gain . . . 10X at 400 cycles
- Ratio Detector Sensitivity . . . 100,000 microvolts on driver grid results in approximately 3.0 volts as measured at AVC point.
- Second I.F. Gain . . . 20X at 10.7 Mc
- First I.F. Gain . . . 20X at 10.7 Mc
- Converter Gain . . . This measurement can not be made accurately. The gain is approximately 5X at 100 Mc
- R.F. Gain . . . 5X at 100 Mc
- Antenna Gain . . . 1.2X at 100 Mc

Oscillator Cathode Voltages:

This measurement should not be made as it is impossible to connect a meter to the cathode without disturbing the proper functioning of the oscillator circuit. Fortunately, oscillators either operate or do not function at all at these frequencies. Make usual overall sensitivity measurements to determine if oscillator is functioning.

D.C. Resistance Measurements.

All three I.F. Coils are identical
 Primary . 0.6 ohms Secondary 0.6 ohms

Ratio Detector Coil

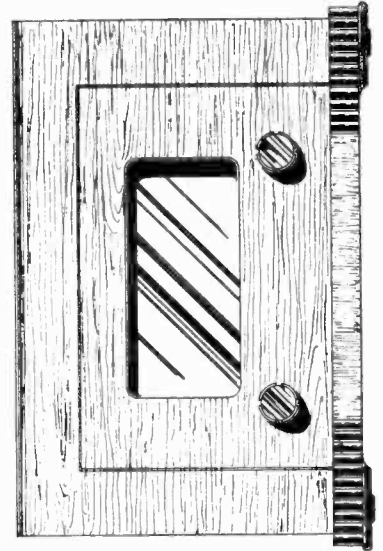
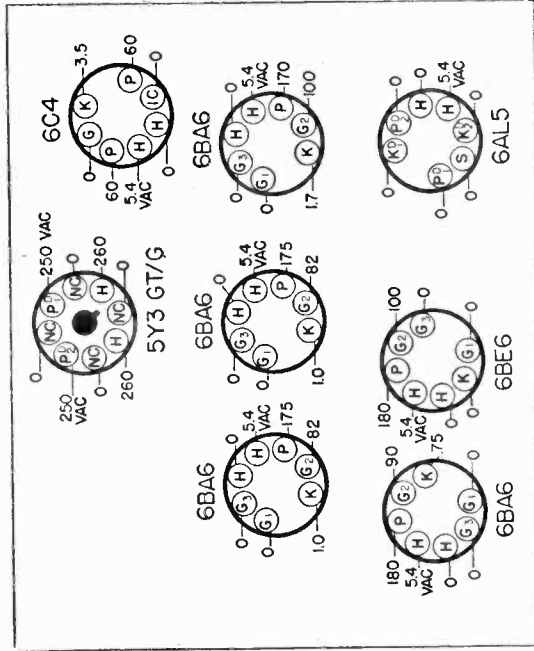
Primary . 1.2 ohms Secondary 0.2 ohms

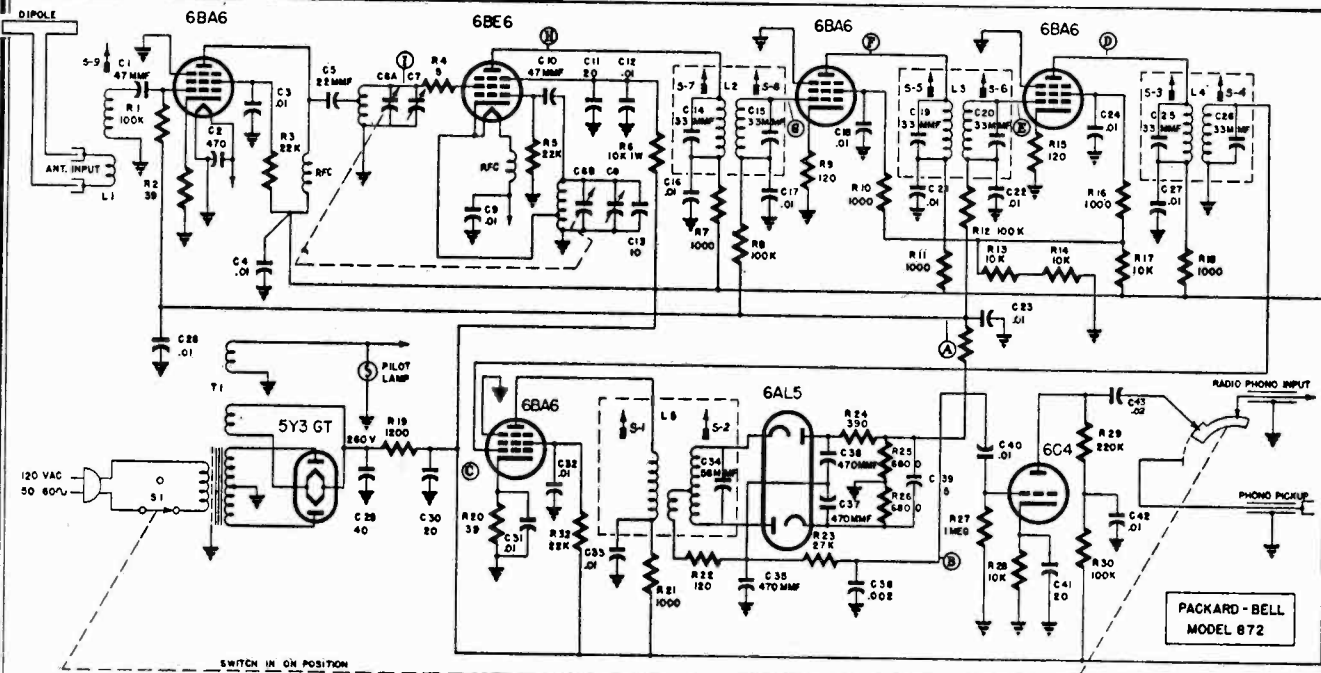
R. F. Coils

These coils are wound with heavy wire and have only a few turns. Their resistances are extremely low and will read zero on any ohm-meter test.

Brief Description of Ratio Detector and I. F. Amplifier

The ratio detector is an improved FM detector in that it is insensitive to amplitude variations and thus requires no limiter stages. It requires much less signal for normal operation and permits lower gain in the I. F. stages which results in improved circuit stability. The I. F. Amplifier Stages are overcoupled and permit reception of even the weakest stations without impairment of performance.



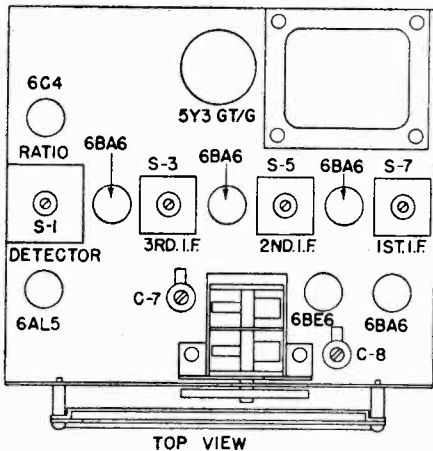
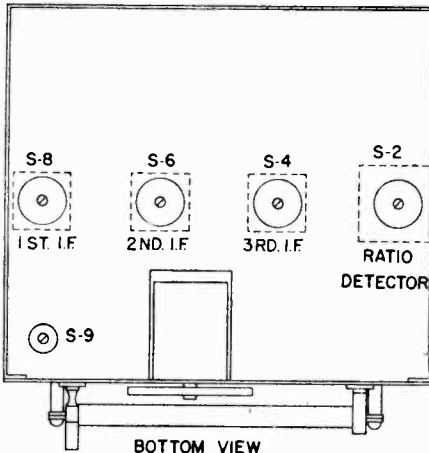


IF PEAK 10.7 MC

NOTE: * As slug S-2 (Bottom of Ratio Detector Coil) is turned back and forth, a direct-current voltage of positive or negative polarity should be observed if detector is functioning properly. Adjust for zero (center) output.

** A resistive shunt consisting of 1000 ohms in series with 100 mmf should be used. Connect shunt from point "C" (on schematic) to ground and adjust slug S-3. Move shunt from point "C" to point "D" and adjust slug S-4. Same procedure for 1st I.F. and converter.

For steps 6, 7, and 8, the tuner should be set to the required frequency.



STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	METER CONNec. TO	ADJUST-MENT
1	"C" Driver Grid	10.7 Mc	A	Slug S-1 Max. Output
2	"C" Driver Grid	10.7 Mc	B	*Slug S-2 Zero Center Output
3	"E" 2nd I.F. Grid	10.7 Mc	A	**Slugs S-3 S-4 Max. Output
4	"G" 1st I.F. Grid	10.7 Mc	A	Slugs S-5, S-6 Max. Output
5	"I" Conv. Grid	10.7 Mc	A	Slugs S-7, S-8 Max. Output
6	Antenna	108. Mc	A	Trimmer C-8 Max. Output
7	Antenna	105 Mc	A	Trimmer C-7 Max. Output
8	Antenna	96 Mc	A	Slug S-9 Max. Output

MODEL 872

PACKARD-BELL COMPANY

REPLACEABLE PARTS LIST

NO.	SYMBOL	DESCRIPTION	NO.	SYMBOL	DESCRIPTION
23912	C-1	Capacitor, mica, 47 mmf. NPO to N750	73047	R-1	Resistor, 100K ohms, ½ w, 20%
	C-10			R-8	
23229	C-2	Capacitor, mica 470 mmf. 20%		R-12	
	C-35			R-30	
	C-36			R-31	
	C-37				
23023	C-3	Capacitor, tubular, .01 mf. 500V	73008	R-2	Resistor, 39 ohm, ½ w, 10%
	C-4		73041	R-3	Resistor, 22K, ohm, ½ w, 10%
	C-9			R-5	
	C-12			R-20	
	C-16			R-32	
	C-17				
	C-18		73073	R-6	Resistor, 10 K, 1 w, 10%
	C-21			R-13	
	C-22			R-14	
	C-23				
	C-24				
	C-27		73025	R-7	Resistor, 1000 ohm, ½ w, 10%
	C-28			R-10	
	C-31			R-11	
	C-32			R-16	
	C-33			R-18	
	C-40			R-21	
	C-42				
23911	C-5	Capacitor, ceramic, 22 mmf. 20% N750	73014	R-9	Resistor, 120 ohm, ½ w, 10%
				R-15	
23519	C-6A, B	Capacitor, Variable		R-22	
23408	C-7	Trimmer, Variable, 3-12 mmf.			
	C-8		73125	R-17	Resistor, 10K ohm, 2 w, 10%
24012	C-11	Capacitor, electrolytic, 20 mf. 350V	73916	R-19	Resistor, 1200 ohm, 5w, 10%
	C-30		73042	R-23	Resistor, 27K ohms, ½ w, 10%
24006	C-41	Capacitor, Elect. 25 mfd., 25 V	73020	R-24	Resistor, 390 ohms, ½ w, 10%
23909	C-13	Capacitor, Ceramic, 10 mmf. 20% NPO to N750	73035	R-25	Resistor, 6800 ohms, ½ w, 10%
	C-14	Capacitor, enclosed in I.F. cans		R-26	
	C-15		73053	R-27	Resistor, 1 megohm, ½ w, 20%
	C-19		73037	R-28	Resistor, 10K, ½ w, 10%
	C-20		73049	R-29	Resistor, 220K, ½ w, 10%
	C-25		86003B	S-1	Switch, FM, AC, phono
	C-26		89016B	T-1	Transformer, power
24011	C-29	Capacitor, electrolytic, 40 mf. 350 V	32003C		Cord, A.C. 8'
	C-34	Capacitor, enclosed in can	38065		Dial
23002	C-38	Capacitor, tubular, .002 mf. 600 V	40115		Drive
24038	C-39	Capacitor, electrolytic, 5 mf. 50 V	52008G	BG	Knob
23007	C-43	Capacitor, tubular, .02 mf. 400 V	52032	BG	Knob
29321		Antenna, dipole assy.	54001	T-47	Lamp, pilot
29405	L-1	Coil, Antenna	66001		Plug, pin
29207		Coil Oscillator	66004		Plug, pin
29017	L-2	Coil, I.F. 10.7 Mc.	67016A		Pointer, dial
	L-3		69003B		Pulley, dial
	L-4		78033		Shield, socket ext.
			79009		Socket, dial lamp
29018	L-5	Coil, ratio Detector	79023		Socket, loop
			79043		Socket, cable ext.
			79044		Socket, coil form

ALIGNMENT PROCEDURE

Alignment Procedure consists of the 5 steps outlined in the Alignment Chart.

Connect the test oscillator leads to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. Upon completion of this step "Rock" the variable condenser to assure that the I.F.'s have been aligned to the correct frequency. Output should remain constant for any setting of the variable condenser.

Use the Hazeltine Test Loop No. 1150 or a reasonable substitute for the balance of the alignment. Place the test loop about two feet from the receiver loop in a vertical position.

It will be noted that all alignment trimmers are accessible without removing the chassis from the cabinet.

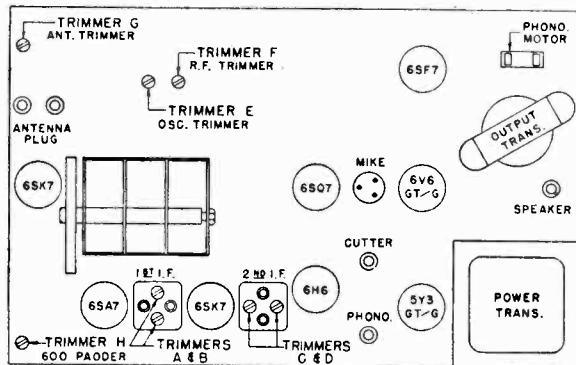
IMPORTANT NOTICE: Make certain that each alignment step is done with a minimum input signal.



ALIGNMENT CHART

CONNECT STEP	TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAX. OUTPUT
1	Mixer Grid & Grd. (.01 Mfd Cap.)	455 KC	540 KC	Trimmers A, B, C, & D
2	Standard Test Loop*	1620 KC	1620 KC	Trimmer E to 1620 KC
3	Standard Test Loop*	600 KC	Rock Variable	Trimmer H to 600 KC
4	Standard Test Loop*	1500 KC	1500 KC	Trimmers F & H
5	Repeat Steps 2, 3 & 4			

*NOTE: Hazeltine Test Loop No. 1150 (or reasonable substitute).



TRIMMER LOCATION

RECORDING HEAD PRESSURE

The proper recording head pressure is 1 1/4 oz. Adjustment of this pressure is made by turning the small screw on the top of the recording arm. This adjustment is very critical and should be made in quarter turns. **TURN THE SCREW CLOCKWISE TO INCREASE THE CUTTING DEPTH and COUNTERCLOCKWISE TO DECREASE THE CUTTING DEPTH.**

This adjustment is made at the factory with an ordinary postal scale, consequently, field adjustments should be made in a like manner.

HOW TO CHECK COMPRESSION VOLTAGE

Turn the Selector Switch to Radio Record position. Feed a 1 volt (RMS) 1000 cycle signal into the diode return of the 2nd I.F. (brown lead). Connect the leads of a vacuum tube voltmeter to the point indicated on Figure 4, Schematic Diagram,

and ground. The voltage at this point should be approximately a minus 2.25 volts.

BRIEF DESCRIPTION OF COMPRESSION CIRCUIT

One diode section of the 6H6 serves as the compressor rectifier. The compression system is automatic, and is in the circuit on both record positions. A portion of the output voltage is rectified by the 6H6 and varies grid bias of the first audio, 6SF7.

SPECIAL SERVICE INFORMATION

Stage Gain Measurements:

Measurements taken with volume and tone controls maximum.—AVC shorted out.

- Standard Output 50 milliwatts
- Dummy Antenna 200 Mmf.

- Antenna post to R.F. grid 7X at 1000 KC
- R.F. grid to Converter grid 7.5X at 1000 KC
- Converter grid to 1st I.F. grid 56X at 455 KC
- 1st I.F. grid to 2nd Detector 57X at 455 KC
- Overall Audio Gain 320X at .5 watts 400 cycles

OSCILLATOR CATHODE VOLTAGES:

Measured at 117 volts AC line voltage with AC vacuum tube voltmeter, input loading above 10 megohms.

- 1600 KC 2.15 volts AC
- 1000 KC 2.0 volts AC
- 600 KC 2.2 volts AC

D.C. RESISTANCE MEASUREMENTS:

- 1st and 2nd I.F. Coils:
- Primary 17 ohms
- Secondary 17 ohms*

*NOTE: To obtain the true reading of the secondary of the 2nd I.F. Coil, it must be removed from the can. This is because of the 47K resistor inside the can.

Oscillator Coil:

- Primary 1 ohm
- Secondary 6 ohms

Antenna Coil:

- Start to finish 12.2 ohms
- Start to tap 10.5 ohms

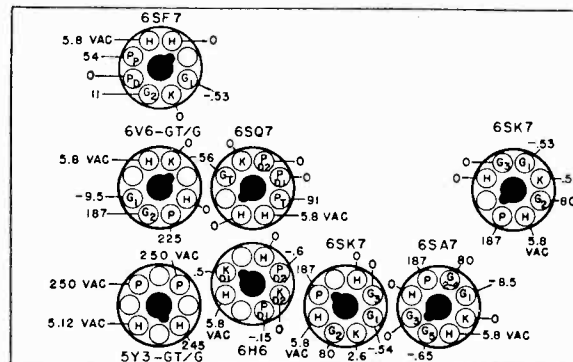
R.F. Coil:

- Primary 58 ohms
- Secondary 4.2 ohms

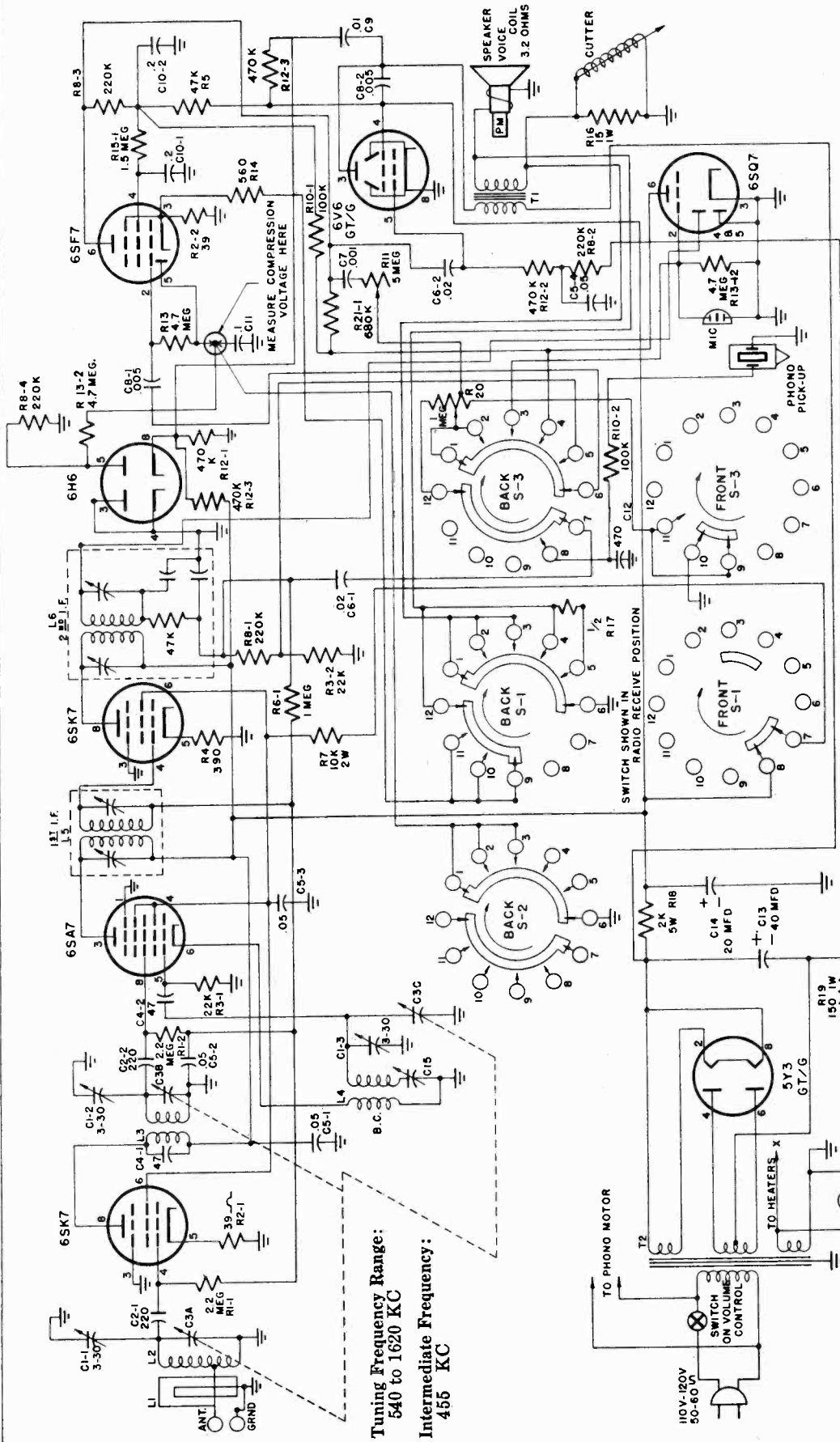
NOTICE: The D.C. Resistance measurements on all coils are subject to a 20% tolerance due to the variation of winding methods.

SOCKET VOLTAGES

All D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis.—A.C. voltages measured with a 1000 ohms per volt A.C. meter from socket contacts to chassis.—Volume and tone controls maximum.—Switch in Radio Receive position. No signal. 117 volts A.C. line. All voltages shown are positive D.C. unless otherwise noted.



SOCKET VOLTAGES



Tuning Frequency Range:
540 to 1620 KC
Intermediate Frequency:
455 KC

Electrical Rating:
Line Voltage 110-120 volts, 50-60 cycle A.C.
Power Consumption 80 Watts

Electrical Power Output:
Undistorted 3 Watts
Maximum 5 Watts

Loudspeaker
Type Permanent Magnet
Outside Cone Diameter 10"
Voice Coil Impedance 3.2 ohms at 400 cycles
Magnet Rating 4.64 Oz. Alnico V

GENERAL INFORMATION

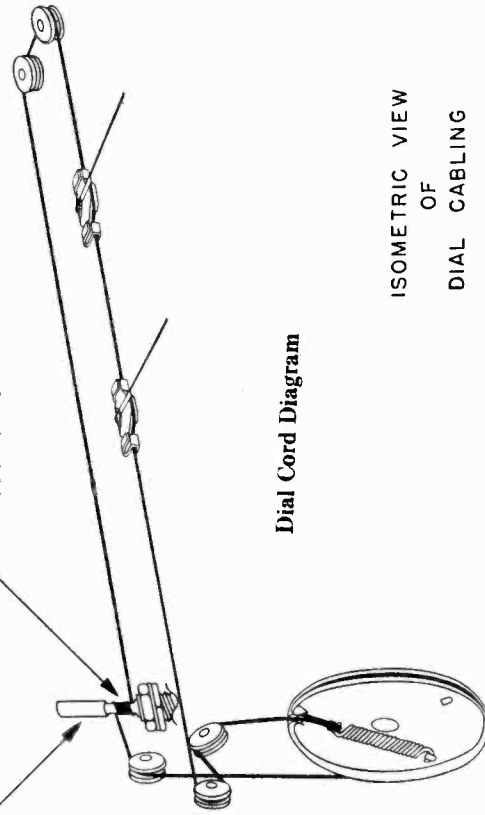
Model 881 is a PhonOcord console employing 8 tubes and a ten-inch permanent magnet speaker.

- Listed below are features contained in this model.
1. Superheterodyne receiver.
 2. Automatic Home Recording with Public Address System.
 3. Phonograph with automatic record changer.
 4. Specially designed low impedance loop antenna.
- To service tubes, reach through the hole in left back.

- Function
R.F. Amplifier
Frequency Converter
I.F. Amplifier
1st Audio Amplifier
Power Amplifier
Rectifier
Compressor Amplifier, 2nd Detector

- Tubes:
6SK7
6SA7
6SK7
6SF7
6V6-GT/G
5Y3-GT/G
6H6
6SQ7

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
21060		Cabinet	54001		Dial Lamp .250 Amp.	73910	R17	Resistor, wire wound: 1/2 ohm, 10%, 1 watt
23400	C1-1 C1-2	Capacitor, Trimmer: 3-30 mmf.	57004		Microphone with cable	73902	R18	Resistor, wire wound: 2,000 ohms, 10%, 5 watt
23406	C1-3	Capacitor Trimmer	57005		Microphone handle	73081	R19	Resistor, carbon: 150 ohms, 10%, 1 watt
23915	C2-1 C2-2	Capacitor, ceramic: 220 mmf., 20%	57006		Microphone base	25010B	R20	Control, volume: 1 megohm, tapped at 200,000 ohms, with A.C. switch
23521	C3A, B, & C	Capacitor, variable ass'y.	58004E		Automatic Record Changer	73052	R21	Resistor, carbon: 680,000 ohms, 20%, 1/2 watt
23912	C4-1 C4-2	Capacitor, ceramic mica: 47 mmf., 20%	59002		Needle, cutter	77016A		Shaft, dial
23009	C5-1 C5-2 C5-3 C5-4	Capacitor, paper: .05 mfd., 400 volt	63026		Phono Crystal, Shure Bros. #P-30	78008		Shield, microphone plug
23007	C6-1 C6-2	Capacitor, paper: .02 mfd., 600 volt	65069		Plate, dial	79002		Socket, tube: 8 prong octal, wafer type
23001	C7	Capacitor, paper: .001 mfd., 600 volt	66013		Plug, pin type: Speaker, phono & antenna	79004		Socket, microphone
23004	C8-1 C8-2	Capacitor, paper: .005 mfd., 600 volt	67026A		Plug, microphone	79005		Socket, phonograph
23006	C9	Capacitor, paper: .01 mfd., 500 volt	68169		Pointer slide Ass'y.	79007		Socket, phono motor
23020	C10-1 C10-2	Capacitor, paper: 0.2 mfd., 400 volt	69001		Instruction book	79010B		Socket, dial lamp: bayonet base
23019	C11	Capacitor, paper: 0.1 mfd. 200 volt	69003C		Pulley, dial	83703		Speaker, permanent magnet: 10"
24004B	C13	Capacitor, electrolytic: 40 mfd., 450 volt	73055	R1-1	Resistor, carbon: 2.2 Megohm, 20%, 1/2 watt	84003A		Spring, knob
24003	C14	Capacitor, electrolytic: 20 mfd., 350 volt		R1-2		84028		Spring, dial cord
23402	C15	Capacitor, padder: 300-800 mmf.		R13-3		86009A	S1	Switch, rotary, 3 deck
92194	L1	Loop, Antenna: (19.5 feet of 300 ohm twin lead)		R14	Resistor, carbon: 560 ohms, 10%, 1/2 watt	89409D	T1	Transformer, output (5000 ohm to 3.2)
29400B	L2	Coil, antenna		R15-1	Resistor, carbon: 1.5 megohms, 20%, 1/2 watt	89016B	T2	Transformer, power
29102F	L3	Coil, R.F.		R16	Resistor, wire wound: 15 ohms, 10%, 1 watt			
29205C	L4	Coil, oscillator						
29004E	L5	Coil, 1st I.F.: 455 KC						
29007	L6	Coil, 2nd I.F.: 455 KC						
32003-1		Cord, AC: 8'						
34002D		Cover, volume control						
36024		Cutter, cartridge						
38082		Dial, glass: stationized						
38083		Dial, glass: export						
40003		Dial drive cord						
52016BG		Knob, plastic: bar type, Brown						
52015BG		Knob, plastic: round type, Brown						



ISOMETRIC VIEW OF DIAL CABLING

ALIGNMENT PROCEDURE

Alignment Procedure consists of the 5 steps outlined in the Alignment Chart.

Connect the test oscillator leads to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. Upon completion of this step "Rock" the variable condenser to assure that the I.F.'s have been aligned to the correct frequency. Output should remain constant for any setting of the variable condenser.

Use the Hazeltine Test Loop No. 1150 or a reasonable substitute for the balance of the alignment. Place the test loop about two feet from the receiver loop in a vertical position.

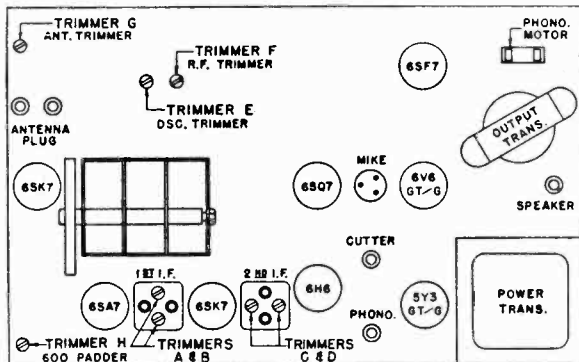
It will be noted that all alignment trimmers are accessible without removing the chassis from the cabinet.

IMPORTANT NOTICE: Make certain that each alignment step is done with a minimum input signal.

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAX. OUTPUT
1	Mixer Grid & Grd. (.01 Mfd Cap.)	455 KC	540 KC	Trimmers A, B, C, & D
2	Standard Test Loop*	1620 KC	1620 KC	Trimmer E to 1620 KC
3	Standard Test Loop*	600 KC	Rock Variable	Trimmer H to 600 KC
4	Standard Test Loop*	1500 KC	1500 KC	Trimmers F & H
5	Repeat Steps 2, 3 & 4			

*NOTE: Hazeltine Test Loop No. 1150 (or reasonable substitute).



TRIMMER LOCATION

RECORDING HEAD PRESSURE

The proper recording head pressure is 1 1/4 oz. Adjustment of this pressure is made by turning the small screw on the top of the recording arm. This adjustment is very critical and should be made in quarter turns. **TURN THE SCREW CLOCKWISE TO INCREASE THE CUTTING DEPTH and COUNTERCLOCKWISE TO DECREASE THE CUTTING DEPTH.**

This adjustment is made at the factory with an ordinary postal scale, consequently, field adjustments should be made in a like manner.

BRIEF DESCRIPTION OF COMPRESSION CIRCUIT

One diode section of the 6H6 serves as the compressor rectifier. The compression system is automatic, and is in the circuit on both record positions. A portion of the output voltage is rectified by the 6H6 and varies grid bias of the first audio, 6SF7.

HOW TO CHECK COMPRESSION VOLTAGE

Turn the Selector Switch to Radio Record position. Feed a 1 volt (RMS) 1000 cycle signal into the diode return of the 2nd I.F. (brown lead). Connect the leads of a vacuum tube voltmeter to the point indicated on Figure 4, Schematic Diagram, and ground. The voltage at this point should be approximately a minus 2.25 volts.

SPECIAL SERVICE INFORMATION

Stage Gain Measurements:

Measurements taken with volume and tone controls maximum.—AVC shorted out.

- Standard Output 50 milliwatts
- Dummy Antenna 200 Mmf.

- Antenna post to R.F. grid 7X at 1000 KC
- R.F. grid to Converter grid 7.5X at 1000 KC
- Converter grid to 1st I.F. grid 56X at 455 KC
- 1st I.F. grid to 2nd Detector 57X at 455 KC
- Overall Audio Gain 320X at 0.5 watt 400 cycles

OSCILLATOR CATHODE VOLTAGES:

Measured at 117 volts AC line voltage with AC vacuum tube voltmeter, input loading above 10 megohms.

- 1600 KC 2.15 volts AC
- 1000 KC 2.0 volts AC
- 600 KC 2.2 volts AC

D.C. RESISTANCE MEASUREMENTS:

- 1st and 2nd I.F. Coils:
- Primary 17 ohms
- Secondary 17 ohms*

*NOTE: To obtain the true reading of the secondary of the 2nd I.F. Coil, it must be removed from the can. This is because of the 47K resistor inside the can.

Oscillator Coil:

- Primary 1 ohm
- Secondary 6 ohms

Antenna Coil:

- Start to finish 12.2 ohms
- Start to tap 10.5 ohms

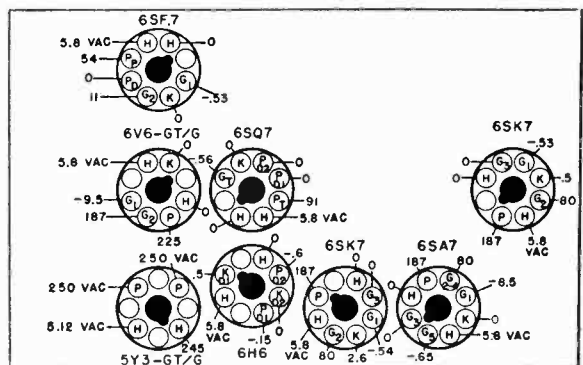
R.F. Coil:

- Primary 58 ohms
- Secondary 4.2 ohms

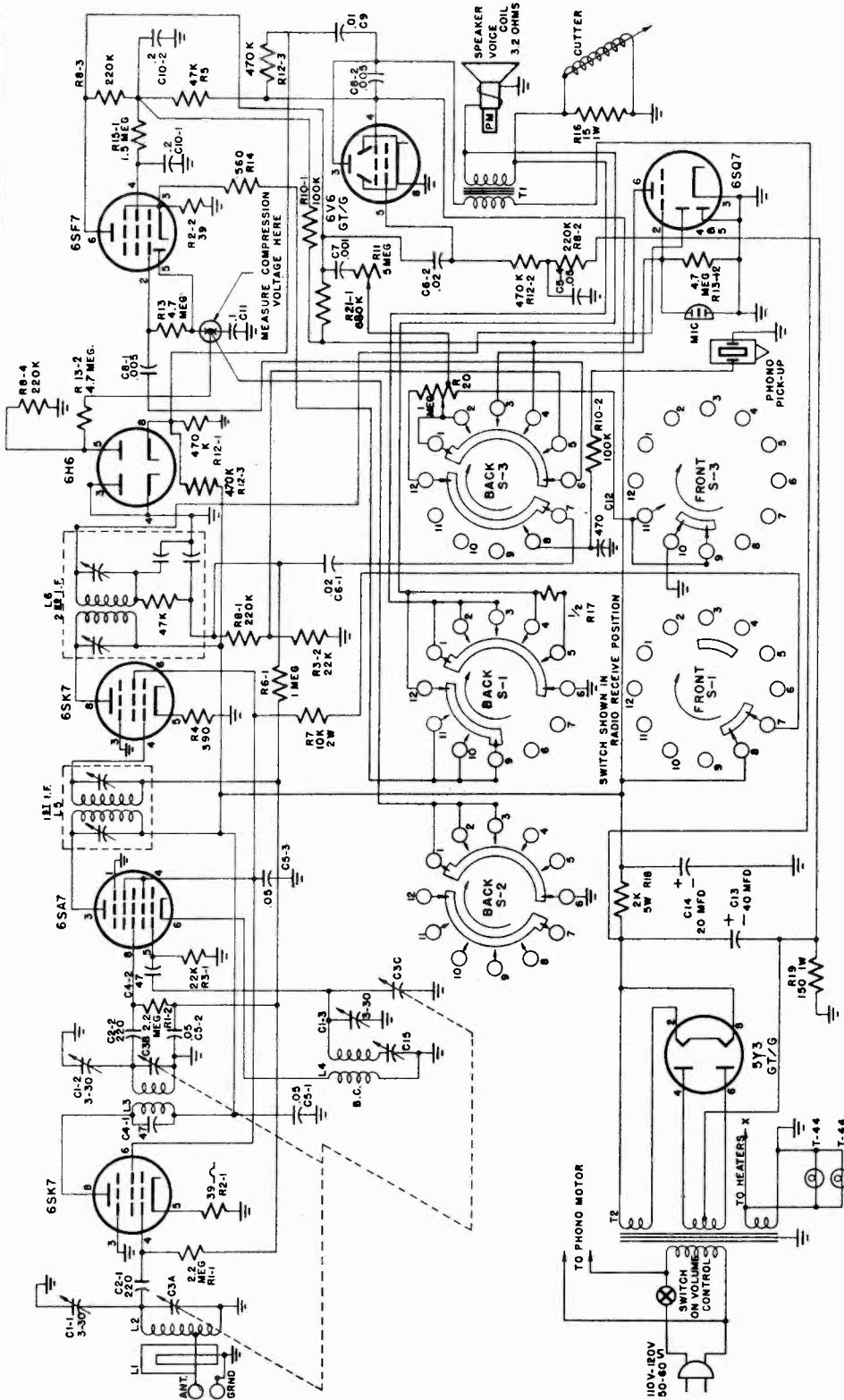
NOTICE: The D.C. Resistance measurements on all coils are subject to a 20% tolerance due to the variation of winding methods.

SOCKET VOLTAGES

All D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis.—A.C. voltages measured with a 1000 ohms per volt A.C. meter from socket contacts to chassis.—Volume and tone controls maximum.—Switch in Radio Receive position. No signal. 117 volts A.C. line. All voltages shown are positive D.C. unless otherwise noted.



SOCKET VOLTAGES



Loudspeaker
 Type Permanent Magnet
 Outside Cone Diameter . . . 12"
 Voice Coil Impedance . . . 3.2 ohms at 400 cycles
 Magnet Rating 6.8 Oz. Alnico V

Tubes:
 Tube Function
 6SK7 R.F. Amplifier
 6SA7 Frequency Converter
 6SK7 I.F. Amplifier
 6SF7 1st Audio Amplifier
 6V6-GT/G Power Amplifier
 5Y8-GT/G Rectifier
 6H6 Compressor Rectifier
 6SQ7 Microphone Amplifier, 2nd Detector

Electrical Rating:
 Line Voltage 110-120 volts, 50-60 cycle A.C.
 Power Consumption 80 Watts

Tuning Frequency Range:
 540 to 1620 KC

Intermediate Frequency:
 455 KC

Electrical Power Output:
 Undistorted 3 Watts
 Maximum 5 Watts

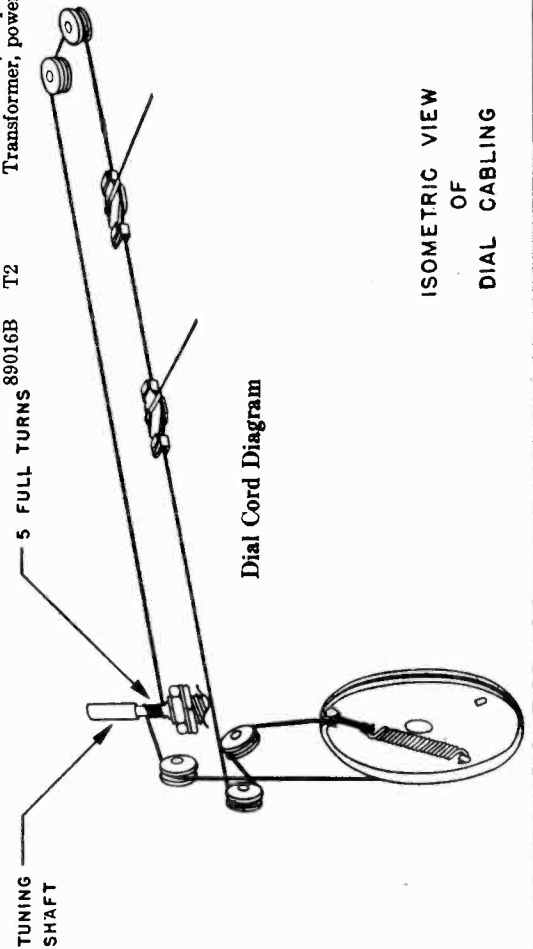
GENERAL INFORMATION

Model 882 is a Phonograph console employing 8 tubes and a twelve-inch permanent magnet speaker. Listed below are features contained in this model.

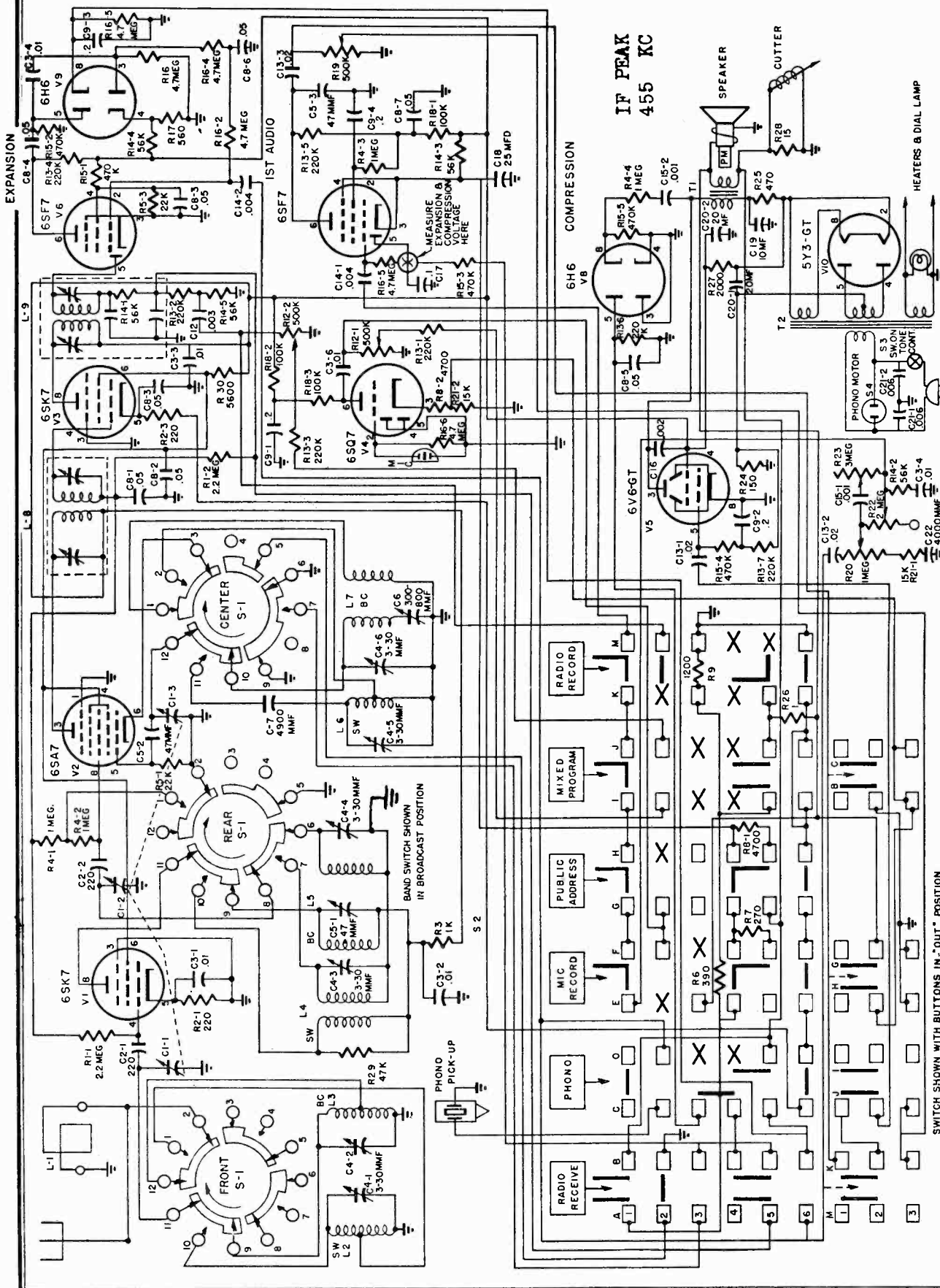
1. Superheterodyne receiver.
2. Automatic Home Recording with Public Address System.
3. Phonograph with automatic record loop antenna.
4. Specially designed low impedance loop antenna.

To service tubes, remove plate in record changer compartment.

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
21058		Cabinet	58004E		Automatic Record Changer	25506C	R11	Control—tone: 5 megohms
23400	C1-1	Capacitor, Trimmer: 3-30 mmf.	59002		Needle, cutter	73051	R12-1	Resistor—carbon: 470,000 ohms 20%, 1/2 watt
23406	C1-2	Capacitor Trimmer	63026		Phono Crystal, Shure Bros. #P-30		R12-3	
23915	C1-3	Capacitor, ceramic: 220 mmf., 20%	65059-B		Plate, dial		R13-1	Resistor—carbon: 4.7 megohms, 20% 1/2 watt
23521	C2-1	Capacitor, variable ass'y.	66004		Plug, pin type: Speaker, phono & antenna	73057	R13-2	
23912	C2-2	Capacitor, ceramic mica: 47 mmf., 20%	66013		Plug, microphone		R13-3	
23009	C3A, B, & C	Capacitor, paper: .05 mfd., 400 volt	67026A		Pointer slide Ass'y.		R14	Resistor, carbon: 560 ohms, 10%, 1/2 watt
23007	C4-1	Capacitor, paper: .02 mfd., 600 volt	68169		Instruction book	73022	R15-1	Resistor, carbon: 1.5 megohms, 20% 1/2 watt
23001	C5-1	Capacitor, paper: .001 mfd., 600 volt	69001		Pulley, dial	73054	R16	Resistor, wire wound: 15 ohms, 10%, 1 watt
23004	C5-2	Capacitor, paper: .005 mfd., 600 volt	69003C	R1-1	Resistor, carbon: 2.2 Megohm, 20%, 1/2 watt	73903	R17	Resistor, wire wound: 1/2 ohm, 10%, 1 watt
23006	C5-3	Capacitor, paper: .01 mfd., 500 volt	73055	R1-2	Resistor—carbon: 89 ohms, 10% 1/2 watt	73910	R18	Resistor, wire wound: 2,000 ohms, 10%, 5 watt
23020	C5-4	Capacitor, paper: .02 mfd., 400 volt	73008	R2-1	Resistor—carbon: 22,000 ohms 10% 1/2 watt	73902	R19	Resistor, carbon: 150 ohms, 10%, 1 watt
23019	C6-1	Capacitor, paper: .001 mfd., 600 volt	73041	R2-2	Resistor—carbon: 10,000 ohms, 10% 2 watt	73081	R20	Control, volume: 1 megohm, tapped at 200,000 ohms, with A.C. switch
24004B	C6-2	Capacitor, paper: .01 mfd., 500 volt	73020	R3-1	Resistor—carbon: 390 ohms, 10% 1/2 watt	25010B	R21	Resistor, carbon: 680,000 ohms, 20%, 1/2 watt
24003	C7	Capacitor, electrolytic: 40 mfd., 450 volt	73045	F3-2	Resistor—carbon: 47,000, 10% 1/2 watt	73052		Shaft, dial
23402	C8-1	Capacitor, electrolytic: 20 mfd., 350 volt	73053	R4	Resistor—carbon: 1 megohm 20%, 1/2 watt	77016A		Shield, microphone plug
92199	C8-2	Capacitor, padder: 300-800 mmf.	73125	R5	Resistor—carbon: 10,000 ohms, 10% 2 watt	78008		Socket, tube: 8 prong octal, wafer type
29400B	C9	Loop, Antenna.	73049	R6-1	Resistor—carbon: 220,000 ohms, 20% 1/2 watt	79002		Socket, microphone
29102F	C10-1	Coil, antenna	73047	R7	Resistor—carbon: 100,000 ohms, 20% 1/2 watt	79005		Socket, phonograph
29206C	C10-2	Coil, R.F.		R8-1		79007		Socket, phono motor
29004E	L1	Coil, oscillator		R8-2		79010B		Socket, dial lamp: bayonet base
29007	L2	Coil, 1st I.F.: 455 KC		R8-3		83802		Speaker, permanent magnet: 12"
32003-1	L3	Cord, AC: 8'		R8-4		84003A		Spring, knob
34002D	L4	Cover, volume control		R10-1		84028		Spring, dial cord
36024	L5	Cutter, cartridge		R10-2		86009A	S1	Switch, rotary, 3 deck
38082	L6	Dial, glass: stationized				89409D	T1	Transformer, output (5000 ohm to 3.2)
38083		Dial, glass: export				89016B	T2	Transformer, power
40003		Dial drive cord						
52016BG		Knob, plastic: bar type, Brown						
52016C-BG		Knob, plastic: round type, Brown						
54001		Dial Lamp 0.250 Amp.						
57004		Microphone with cable						
57005		Microphone handle						
57006		Microphone base						



ISOMETRIC VIEW OF DIAL CABLING



Restorers 16-6 (4.7 Meg.), R8-2 (4700), and R21-2 (15K), shown on this diagram, are used when the American microphone (Packard-Bell part No. 57004) is used; R16-6 becomes a 1 Meg., R8-2 becomes a 2700 ohm and R21-2 becomes a 10,000 ohm.

SWITCH SHOWN WITH BUTTONS IN "OUT" POSITION

Expansion is switched into grid of 1st audio, (6SF7) when "RADIO RECEIVE" button is depressed by connecting switch contacts B-5 and B-6.

Expansion is switched into grid of 1st audio, (6SF7) when "PHONO" button is depressed by connecting switch contacts C-4 and C-5.

Expansion is in the circuit ONLY when the "RADIO RECEIVE" and "PHONO" buttons are depressed.

ALIGNMENT PROCEDURE

Alignment procedure consists of the 7 steps outlined in the Alignment Procedure Chart.

Connect the test oscillator leads to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for step No. 1, I.F. alignment. Upon completing this step, "Rock" the variable condenser to assure that the I.F.s have not been aligned to the image frequency.

Use the Hazeltine Standard Test Loop #1150 for the balance of the alignment. Place the test loop about two feet from the receiver loop in a vertical position.

Step	Connect Test Osc. To	Test Osc. Setting	Pointer Setting	Adjustment For Maximum Output
1	Mixer Grid & Grd. .01 Mfd. Capacitor	455 KC	540 KC	Trimmers ABC & D
2	Standard Test Loop*	1750 KC	1750 KC	Trimmer F to 1750 KC
3	Standard Test Loop*	600 KC	600 KC	Trimmer G to 600 KC
4	Standard Test Loop*	1500 KC	1500 KC	Trimmers I & J
5	Repeat Steps 2, 3 & 4			
6	Standard Test Loop*	18 MC	18 MC	Trimmer E to 18 MC
7	Standard Test Loop*	15 MC	15 MC	Trimmers K & H

*REMARKS: Hazeltine Test Loop No. 1150.

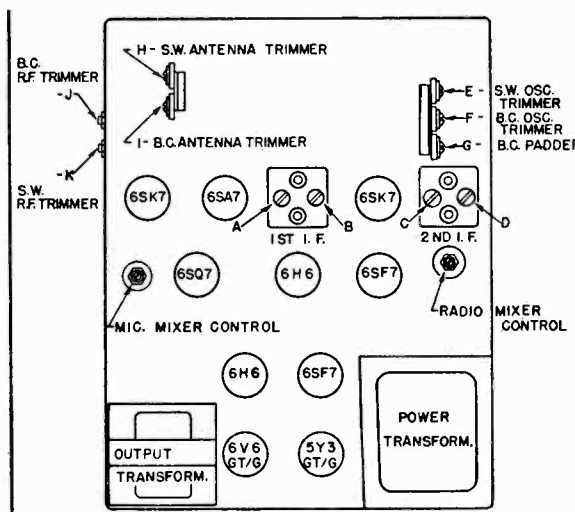


FIG. 1 TRIMMER LOCATION

Compression switched out of Radio Receive by breaking contact from B-4 to B-5.

Compression switched out of Phonograph by breaking contact from C-3 to C-4.

Compression is in circuit on ALL RECORD POSITIONS and PUBLIC ADDRESS.

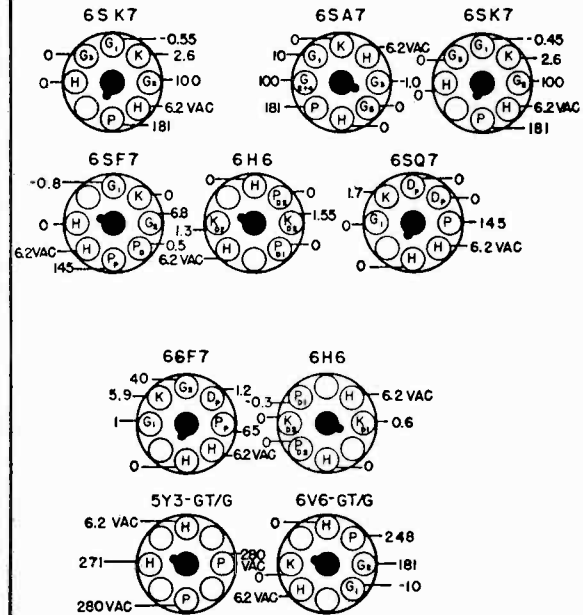


FIG. 2 VOLTAGE CHART

All D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis. A.C. voltages measured with a 1000 ohms per volt A.C. meter from socket contacts to chassis. Volume control maximum. No signal. 117 volts A.C. line voltage. All voltages shown are positive D.C. unless otherwise noted.

Recording Head Pressure

The proper recording head pressure may be identified by the small red dot painted on the indicator on the cutter arm. This pressure is 1/4 Oz.

Brief Description of Expansion and Compression Circuits

V6, 6SF7 and V9, 6H6 embrace the expansion circuit. Referring to Figure 3, Schematic Diagram, it will be noted that expansion is present in the circuit at all times on Phono and Radio Receive. V6, 6SF7 serves as the 2nd Detector and expansion amplifier, while V9, 6H6 functions as the expansion rectifier in one diode section and furnishes delayed audio AVC in the other diode section. V8, 6H6 functions as the compressor.

How to Check Expansion Voltage

The following method is suggested for checking expansion voltage.

Feed a 1 volt (RMS) 400 cycle signal into the phono input plug. Make certain the phono button is depressed. Connect the leads of a vacuum tube voltmeter* to the location indicated on Figure 3, Schematic Diagram and ground. The voltage at this point should be between 3 and 4 volts positive DC. As a cross check measure the cathode voltage of V7, 6SF7 which should read about 5 volts DC. The expansion voltage should be approximately 1 volt less.

How to Check Compression Voltage

Depress the Radio Record button. Feed a 1 volt (RMS) 400 cycle signal into the diode return of the 2nd I.F. (brown lead). In the same manner outlined in the preceding paragraph measure the compression voltage, which should be approximately a minus 2 to 3 volts DC.

*NOTE: VTVM input loading above 10 megohms.

Part No.	Ref. Symbol	Description	Part No.	Ref. Symbol	Description
23500C	C1-1	Capacitor, variable: 3 gang	12002A		Baffle, speaker
	C1-2		14004A		Base, phono pick-up
	C1-3		21005D		Cabinet, wood: fabricoid covered
23206	C2-1	Capacitor, mica: 220 Mmf., 20%	21019C		Cabinet, power cord holder
	C2-2		21020C		Cabinet, mike cord holder
23006	C3-1	Capacitor, paper: .01 Mfd., 600 volt	22001		Cable, loop antenna
	C3-2		22004A		Cable, speaker
	C3-3		22005		Cable, phono pick-up
	C3-4		73055	R1-1	Resistor, carbon: 2.2 megohm, 20%, ½ watt
	C3-5			R1-2	
	C3-6		73017	R2-1	Resistor, carbon: 220 ohms, 10%, ½ watt
23400A	C4-1	Capacitor, trimmer: dual 3-30 Mmf.		R2-2	
	C4-2		73025	R3	Resistor, carbon: 1000 ohms, 10%, ½ watt
	C4-3		73053	R4-1	Resistor, carbon: 1 megohm, 20%, ½ watt
	C4-4			R4-2	
23401	C4-5	Capacitor, trimmer: dual 3-30 Mmf.		R4-3	
	C4-6		73041	R5-1	Resistor, carbon: 22,000 ohms, 10%, ½ watt
23225	C5-1	Capacitor, mica: 47 Mmf., 20%		R5-2	
	C5-2		73020	R6	Resistor, carbon: 390 ohms, 10%, ½ watt
	C5-3		73018	R7	Resistor, carbon: 270 ohms, 10%, ½ watt
23402	C6	Capacitor, padder: 300 to 800 Mmf.	73033	R8-1	Resistor, carbon: 4700 ohms, 10%, ½ watt
23207A	C7	Capacitor, mica: 4900 Mmf., 5%		R8-2	
23010	C8-1	Capacitor, paper: .05 Mfd., 600 Volt	73026	R9	Resistor, carbon: 1200 ohms, 10%, ½ watt
	C8-2		25800	R12-1	Control, mixer: 500,000 ohms
	C8-3			R12-2	
	C8-4		73049	R13-1	Resistor, carbon: 220,000 ohms, 20%, ½ watt
23017	C8-5	Capacitor, paper: .05 Mfd., 200 volt		R13-2	
	C8-6			R13-3	
	C8-7			R13-4	
	C8-8			R13-5	
23018	C9-1	Capacitor, paper: .2 Mfd., 200 volt		R13-6	
	C9-2			R13-7	
	C9-3		73060	R14-1	Resistor, carbon: 56,000 ohms, 10%, ½ watt
	C9-4			R14-2	
23016	C12	Capacitor, paper: .003 Mfd., 600 volt		R14-3	
23007	C13-1	Capacitor, paper: .02 Mfd., 600 volt		R14-4	
	C13-2			R14-5	
	C13-3		73051	R15-1	Resistor, carbon: 470,000 ohms, 20%, ½ watt
23003	C14-1	Capacitor, paper: .004 Mfd., 600 volt		R15-2	
	C14-2			R15-3	
23001	C15-1	Capacitor, paper: .001 Mfd., 600 volt		R15-4	
	C15-2			R15-5	
23002	C16	Capacitor, paper: .002 Mfd., 600 volt	73057	R16-1	Resistor, carbon: 4.7 megohms, 20%, ½ watt
23019	C17	Capacitor, paper: .1 Mfd., 200 volt		R16-2	
24006	C18	Capacitor, electrolytic: 25 Mfd., 25 WV		R16-3	
24002	C19	Capacitor, electrolytic: 10 Mfd., 450 WV		R16-4	
24001	C20-1	Capacitor, electrolytic: 20 Mfd., 450 WV		R16-5	
	C20-2			R16-6	
23901	C21-1	Capacitor, paper: 2X .006 Mfd., 600 volt	73022	R17	Resistor, carbon: 560 ohms, 10%, ½ watt
23901	C21-2	(enclosed in metal case)	73047	R18-1	Resistor, carbon: 100,000 ohms, 20%, ½ watt
28004A		Clip, turntable holding		R18-2	
29303A	L1	Loop Ass'y, antenna		R18-3	
29401	L2	Coil, antenna: short wave	25500A	R19	Control, volume: 3 section; front 1 megohm (R20) center 2 megohm (R22) rear 500,000 ohms (R19)
29400	L3	Coil, antenna: standard broadcast		R20	
29201	L4	Coil, oscillator: short wave		R22	
29205	L5	Coil, oscillator: standard broadcast	73039	R21-1	Resistor, carbon: 15,000 ohms, 10%, ½ watt
32003B		Cord, A.C.		R21-2	
32501		Cord, waxed linen	25002A	R23 & S3	Control, tone: 3 megohm, with AC switch
36019		Recording head, (cutting head)	73081	R24	Resistor, carbon: 150 ohms, 10%, 1 watt
36021		Cartridge, recording head	73078	R25	Resistor, carbon: 470 ohms, 10%, 1 watt
38002B		Dial scale	73905	R26	Resistor, wire wound: 1 ohm, 10%, 1 watt
40002		Dial cord	73902	R27	Resistor, wire wound: 2000 ohms, 10%, 5 watt
40100A		Dial drive, vernier		R28	Resistor, wire wound: 15 ohms, 10%, 1 watt
41002		Escutcheon, motor switch	73045	R29	Resistor, carbon: 47,000 ohms, 10%, ½ watt
47004		Grille, front panel	73127	R30	Resistor, carbon: 5600 ohms, 10%, 2 watt
52001A		Knob, round: controls	78008		Shield, microphone plug
52014		Knob, bar: controls	78019		Shield, AC switch
52023		Knob, push buttons	79002		Socket, tube: 8 prong octal, wafer type
54001		Lamp, dial: T-44	79004		Socket, microphone plug
57001B		Microphone with cable	79005		Socket, speaker & recording head plugs
57002		Handle, microphone	79007		Socket, AC phono motor plug
57003		Base, microphone	79010B		Socket, dial lamp: bayonet base
58001A		Motor, A.C.: recorder & phono	79023		Socket, loop antenna plug
58006		Turntable, recorder & phono	83300		Speaker, permanent magnet: 6 ½"
59003		Needle, permanent: phono	84012		Spring, microphone holding
59001		(alternate for above)	84013		Spring, recording head holding
59002		Stylus (recording needle)	84001B		Spring, dial cord
62004D		Panel, front	84003		Spring, round & bar knobs
62005D		Panel, motorboard	84011		Spring, push button knobs
63002A		Pick-up, phono: ass'y	86001A		Switch, rotary: wafer type, band switch
63003A		Cartridge, phono pick-up	86301		Switch, push button section
66005		Plug, microphone	86701A		Switch, slide: AC motor, SPST
66008		Plug, AC motor	89400A	T1	Transformer, output
67001A		Pointer ass'y, dial scale	89003A	T2	Transformer, power
68038		Decal, bandswitch	63017		Phono pick-up rest
69001		Pulley, dial	10507		Automatic cutter arm lift, ass'y
69004		Pulley, idler			
69005		Pulley, drive			

MODEL 1052

MODEL 1054

ELECTRICAL RATING

Line Voltage . . . 110-120 volts 50-60 cycle AC
Power Consumption . . . 90 watts

TUNING FREQUENCY RANGE

Standard Broadcast . . . 540 to 1740 KC
Short Wave . . . 6 to 18 MC

INTERMEDIATE FREQUENCY

455 KC

ELECTRICAL POWER OUTPUT

Undistorted . . . 2 watts
Maximum . . . 4.5 watts

LOUDSPEAKER

Type . . . Permanent Magnet
Outside Cone Diameter . . . 6 1/4"
Voice Coil Impedance . . . 3.2 ohms at 400 cycles
Magnet Rating . . . 2.5 Oz. Alnico 5

TUBES

Tube	Function
6SK7	R.F. Amplifier
6SA7	Frequency Converter
6SK7	I.F. Amplifier
6SF7	2nd Detector & Expansion Amplifier
6H6	Expansion Rectifier & Delayed Audio AVC
6SQ7	Microphone Amplifier
6SF7	1st Audio
6H6	Compression Rectifier
6V6-GT	Power Amplifier
5Y3-GT	Rectifier

STAGE GAIN MEASUREMENTS

Measurements taken with volume and tone control maximum. Switch in RADIO position. AVC shorted out.
Standard Output . . . 50 milliwatts
Dummy Antenna . . . 200 Mmf.

Antenna Grid to R.F. Grid . . . 5X at 1000 KC
R.F. Grid to Converter Grid . . . 9X at 1000 KC
Converter Grid to 1st I.F. Grid . . . 64X at 455 KC
1st I.F. Grid to 2nd Detector . . . 150X at 455 KC
Overall Audio Gain . . . 565X at 1 watt 400 cycles

OSCILLATOR CATHODE VOLTAGES

Measured at 117 volts AC line voltage with A.C. V.T.V.M. input loading above 10 megohms.
1750 KC . . . 3.15 volts AC
1300 KC . . . 3.10 volts AC
750 KC . . . 3.00 volts AC
550 KC . . . 3.4 volts AC

D.C. RESISTANCE MEASUREMENTS

I.F. Coils

1st I.F.		2nd I.F.	
Primary . . . 17 ohms	Secondary . . . 17 ohms	Primary . . . 17 ohms	Secondary . . . 17 ohms*

*NOTE: The true reading of the secondary of the 2nd I.F. can only be obtained by removing the coil from the can. This is so because of the 56K resistor in series with the AVC lead inside the can.

Oscillator Coils

Broadcast		Short Wave	
Primary . . . 1 ohm	Secondary . . . 6 ohms	Start to Finish . . . 4 ohms	Start to Tap . . . 2 ohms

Antenna Coils

Broadcast		Short Wave	
Start to Finish . . . 12.2 ohms	Start to Tap . . . 10.5 ohms	Start to Finish25 ohms	Start to Tap20 ohms

R.F. Coils

Broadcast		Short Wave	
Primary . . . 75 ohms	Secondary . . . 6.5 ohms	Primary . . . 5.5 ohms	Secondary . . . 0.2 ohms

NOTE: Due to the variation of winding methods, the D.C. Resistance of all coils is subject to a 20% tolerance.

Electrical Rating

Line Voltage . . . 110-120 volt 50-60 cycle AC
Power Consumption . . . 106 watts

Tuning Frequency Range

Standard Broadcast . . . 540 to 1740 KC
Short Wave . . . 6 to 18 MC

Intermediate Frequency

455 KC

Electrical Power Output

Undistorted . . . 3.5 watts
Maximum . . . 6 watts

Loudspeaker

Type . . . Permanent Magnet
Outside Cone Diameter . . . 10"
Voice Coil Impedance . . . 3.2 ohms at 400 cycles
Magnet Rating . . . 6.8 Oz. Alnico 5

Tubes

Tube	Function
6SK7	R.F. Amplifier
6SA7	Frequency Converter
6SK7	I.F. Amplifier
6SF7	2nd Detector & Expansion Amplifier
6H6	Expansion Rectifier & Delayed Audio AVC
6SQ7	Microphone Amplifier
6SF7	1st Audio Amplifier
6H6	Compression Rectifier
6V6-GT/G	Power Amplifier
5Y3-GT/G	Rectifier

STAGE GAIN MEASUREMENTS

Measurements taken with volume and tone controls maximum. Band switch in standard broadcast position. AVC shorted out.

Standard Output . . . 50 milliwatts
Dummy Antenna . . . 200 Mmf.
Antenna Grid to R.F. Grid . . . 6X at 1000 KC
R.F. Grid to Converter Grid . . . 12.5X at 1000 KC
Converter Grid to 1st I.F. Grid . . . 61X at 455 KC
1st I.F. Grid to 2nd Detector . . . 120X at 455 KC
Overall Audio Gain . . . 620X at 1 watt 400 cycles

OSCILLATOR CATHODE VOLTAGES

Measured at 117 volts A.C. line voltage with A.C. V.T.V.M. input loading above 10 megohms.
1750 KC . . . 3.4 volts AC
1300 KC . . . 3.2 volts AC
750 KC . . . 3.2 volts AC
550 KC . . . 3.7 volts AC

D.C. RESISTANCE MEASUREMENTS

I.F. COILS

1st I.F.		2nd I.F.	
Primary . . . 17 ohms	Secondary . . . 17 ohms	Primary . . . 17 ohms	Secondary . . . 17 ohms*

*NOTE: To obtain the true reading of the secondary of the 2nd I.F. it must be removed from the can. This is so because of the 56,000 ohm resistor in series with the AVC lead inside the can.

OSCILLATOR COILS

Broadcast		Short Wave	
Primary . . . 1 ohm	Secondary . . . 6 ohms	Start to Finish . . . 4 ohms	Start to Tap . . . 2 ohms

ANTENNA COILS

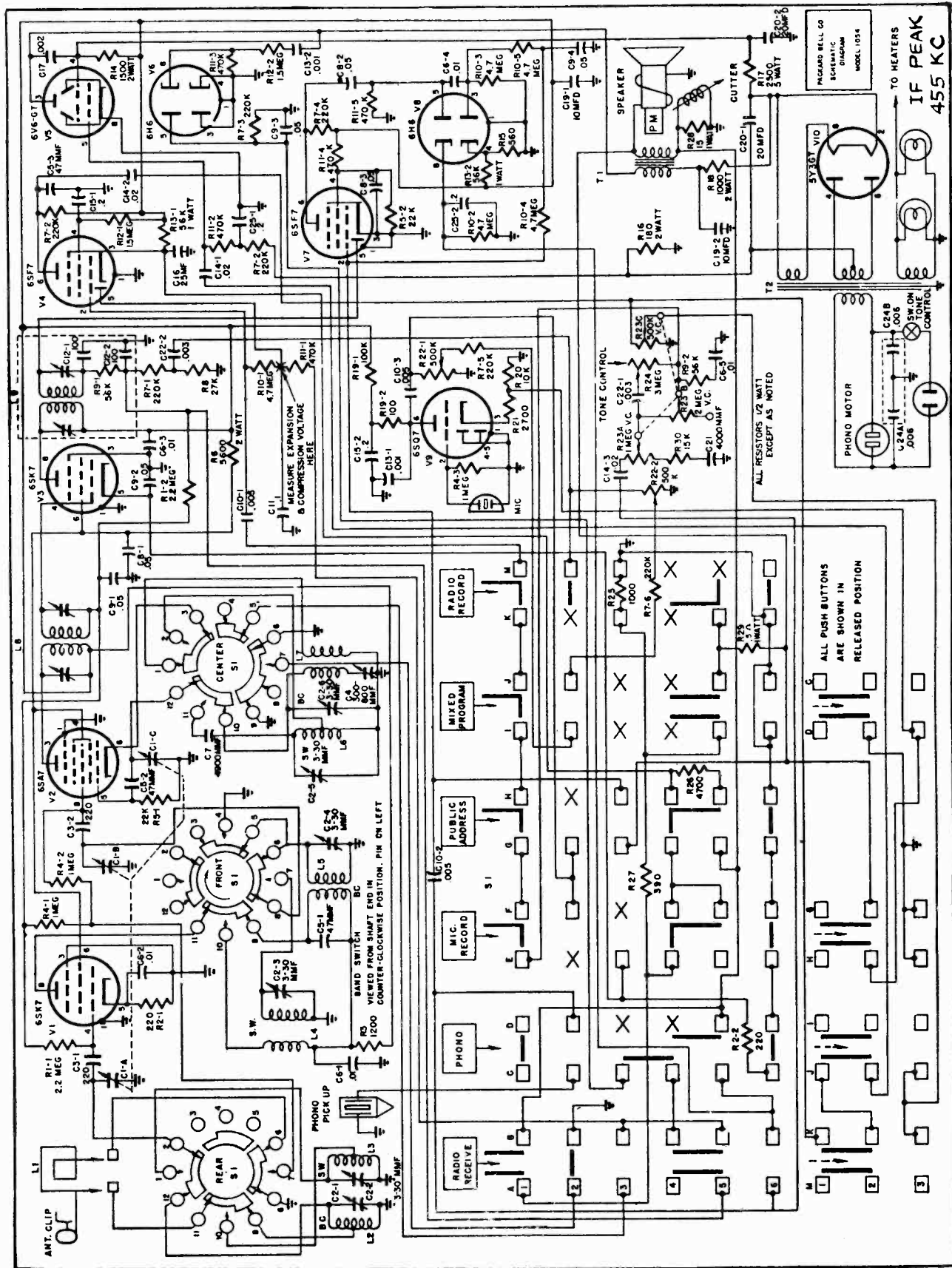
Broadcast		Short Wave	
Start to Finish . . 12.2 ohms	Start to Tap . . . 10.5 ohms	Start to Finish . . .25 ohms	Start to Tap20 ohms

R.F. COILS

Broadcast		Short Wave	
Primary . . . 75 ohms	Secondary . . . 6.5 ohms	Primary . . . 5.5 ohms	Secondary2 ohms

NOTE: Due to the variation of winding methods, the D.C. resistance on all coils is subject to a 20% tolerance.

PACKARD BELL CO.



PACKARD BELL CO.
SCHEMATIC
DIAGRAM
MODEL 1054

TO HEATERS
IF PEAK
455 KC

ALL PUSH BUTTONS
ARE SHOWN IN
RELEASED POSITION

ALL RESISTORS 1/2 WATT
EXCEPT AS NOTED

PACKARD BELL CO.

ALIGNMENT PROCEDURE

Alignment procedure consists of the 7 steps outlined in the Alignment Procedure Chart. Connect the test oscillator leads to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. Upon completing this step, "Rock" the variable condenser to assure that the I.F.'s have not been aligned to the image frequency. Use the Hazeltine Standard Test Loop #1150 for the balance of the alignment. Place the test loop about two feet from the receiver loop in a vertical position.

Table with 4 columns: STEP, CONNECT TEST OSC. TO, TEST OSC. SETTING, POINTER SETTING, ADJUST. FOR MAX. OUTPUT. Includes 7 steps for alignment.

*NOTE: Hazeltine Test Loop #1150.

BRIEF DESCRIPTION OF EXPANDER AND COMPRESSOR CIRCUITS

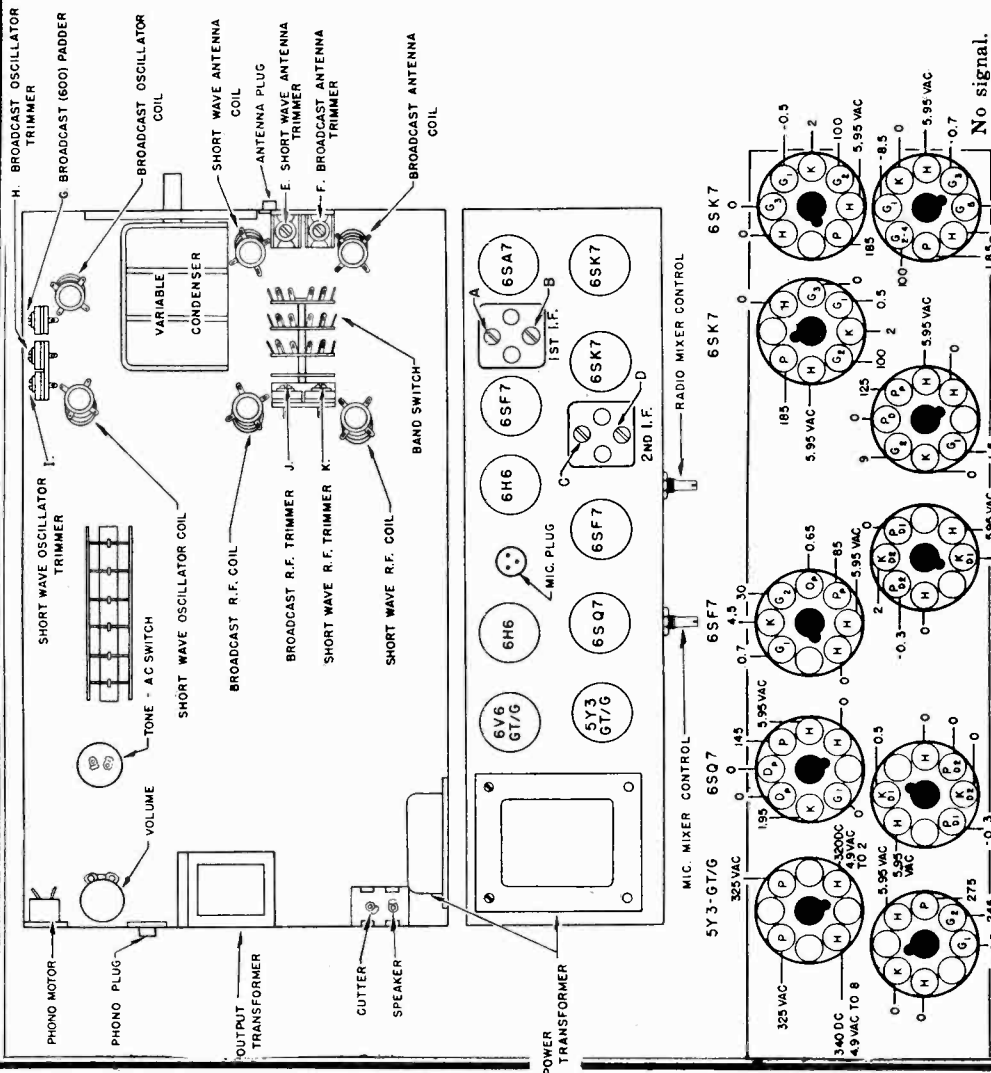
V7 6SF7 and V6 6H6 embrace the expansion circuit. Referring to Figure 3, Schematic Diagram, it will be noted that volume expansion is in the circuit at all times when the Phono or Radio receive buttons are depressed. V7, 6SF7 serves as the 2nd detector and expansion amplifier. V6, 6H6 functions as the expansion rectifier in one diode section and furnishes delayed audio AVC in the other diode section. V8, 6H6 functions as the compressor rectifier.

HOW TO CHECK EXPANSION VOLTAGE

Feed a 1 volt (RMS) 400 cycle signal into the Phono input plug. Make certain the Phono button is depressed. Connect the leads of a vacuum tube voltmeter* to the location indicated on Figure 3, Schematic Diagram and ground. The voltage at this point should be between 3 and 4 volts positive D.C. As a cross check measure the cathode voltage of V4, 6SF7, which should read about 5 volts D.C. The expansion voltage should be about 1 volt less.

HOW TO CHECK COMPRESSION VOLTAGE

Depress the Radio Record button. Feed a 1 volt (RMS) 400 cycle signal into the diode return of the 2nd I.F. (brown lead). In the same manner outlined in the preceding paragraph, measure the compression voltage, which should be approximately a minus 2 to 3 volts. *VTVM: Input loading above 10 megohms.



117 volts A.C. line voltage.

All voltages shown are positive D.C. unless otherwise noted.

Expansion is switched into grid of 1st audio, (6SF7) when "RADIO RECEIVE" button is depressed by connecting switch contacts B-5 and B-6.

Expansion is switched into grid of 1st audio, (6SF7) when "PHONO" button is depressed by connecting switch contacts C-4 and C-5.

Expansion is in the circuit ONLY when the "RADIO RECEIVE" and "PHONO" buttons are depressed.

All voltages measured from socket contacts to chassis. D.C. voltages measured with a vacuum tube voltmeter. A.C. voltages measured with a 1000 ohm per volt A.C. meter.

Volume and tone controls maximum.

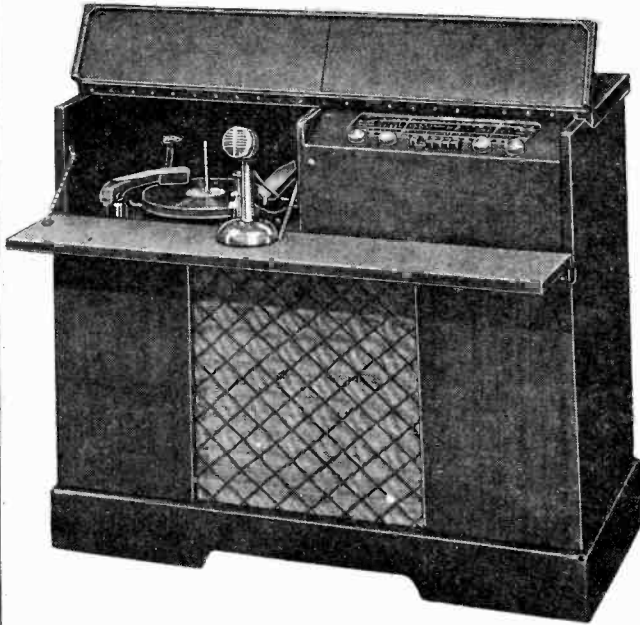
Band switch in standard broadcast position.

Compression switched out of Radio Receive by breaking contact from B-4 to B-5.

Compression switched out of Phonograph by breaking contact from C-3 to C-4. Compression is in circuit on ALL RECORD POSITIONS and PUBLIC ADDRESS.

PACKARD BELL CO.

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
10605		Assembly, switch arm	68048		Decal, band switch
10606		Assembly, pointer	69003A		Pulley, dial
11007A		Arm, band switch drive coupling	69007		Pulley, drive: 50 cycle operation
18037C		Bracket, variable capacitor Mtg.	69001		Pulley, dial
18038B		Bracket, band switch Mtg.	73055	R1-1	Resistor, carbon: 2.2 megohms, 20%, 1/2 watt
18039A		Bracket, planetary		R1-2	
18043A		Bracket, dial	73017	R2-1	Resistor, carbon: 220 ohms, 10%, 1/2 watt
18057		Bracket, record changer shipping		R2-2	
21018C		Cabinet, radio	73026	R3	Resistor, carbon: 1200 ohms, 10%, 1/2 watt
21026		Cabinet, record album			
23500C	C1-A, B & C	Capacitor, variable: 3 gang with pulley	73053	R4-1	Resistor, carbon: 1 megohm, 20%, 1/2 watt
23400A	C2-1	Capacitor, trimmer: dual 30 Mmf.		R4-2	
	C2-2			R4-3	
	C2-3		73041	R5-1	Resistor, carbon: 22,000 ohms, 10%, 1/2 watt
	C2-4			R5-2	
	C2-5		73127	R6	Resistor, carbon: 5600 ohms, 10%, 2 watt
	C2-5				
23228	C3-1	Capacitor, mica: 220 Mmf. 20%	73049	R7-1	Resistor, carbon: 220,000 ohms, 20%, 1/2 watt
	C3-2			R7-2	
23402	C4	Capacitor, padder: 300 to 800 Mmf.		R7-3	
23225	C5-1	Capacitor, mica: 47 Mmf. 20%		R7-4	
	C5-2			R7-5	
	C5-3			R7-6	
23006	C6-1	Capacitor, paper: .05 Mfd. 200 volt		R7-7	
	C6-2		73060	R9-1	Resistor, carbon: 56,000 ohms, 10%, 1/2 watt
	C6-3			R9-2	
	C6-4		73042	R8	Resistor, carbon: 27,000 ohms, 10%, 1/2 watt
	C6-5				
23207A	C7	Capacitor, mica: 4900 Mmf. 5%	73057	R10-1	Resistor, carbon: 4.7 megohms, 20%, 1/2 watt
23010	C8-1	Capacitor, paper: .05 Mfd. 600 volt		R10-2	
	C8-2			R10-3	
	C8-3			R10-4	
23017	C9-1	Capacitor, paper: .05 Mfd. 200 volt		R10-5	
	C9-2		73051	R11-1	Resistor, carbon: 470,000 ohms, 20%, 1/2 watt
	C9-3			R11-2	
	C9-4			R11-3	
23004	C10-1	Capacitor, paper: .005 Mfd. 600 volt		R11-4	
	C10-2			R11-5	
	C10-3		73054	R12-1	Resistor, carbon: 1.5 megohms, 20%, 1/2 watt
23019	C11	Capacitor, paper: .1 Mfd. 200 volt		R12-2	
23001	C13-1	Capacitor, paper: .001 Mfd. 600 volt	73076	R13-1	Resistor, carbon: 56,000 ohms, 10%, 1 watt
	C13-2			R13-2	
23007	C14-1	Capacitor, paper: .02 Mfd. 600 volt	73126	R14	Resistor, carbon: 1500 ohms, 10%, 2 watt
	C14-2		73022	R15	Resistor, carbon: 560 ohms, 10%, 1/2 watt
	C14-3				
23020	C15-1	Capacitor, paper: .2 Mfd. 400 volt	73077	R16	Resistor, carbon: 180 ohms, 10%, 2 watt
	C15-2		73907	R17	Resistor, wire wound: 2500 ohms, 10%, 5 watt
24006	C16	Capacitor, electrolytic: 25 Mfd. 25 WV			
23002	C17	Capacitor, paper: .002 Mfd. 600 volt	73120	R18	Resistor, carbon: 1000 ohms, 10%, 2 watt
24002	C19-1	Capacitor, electrolytic: 10 Mfd. 450 WV	73047	R19-1	Resistor, carbon: 100,000 ohms, 20%, 1/2 watt
	C19-2			R19-2	
24001	C20-1	Capacitor, electrolytic: 20 Mfd. 450 WV	73037	R20	Resistor, carbon: 10,000 ohms, 10%, 1/2 watt
	C20-2				
23208	C21	Capacitor, mica: 4000 Mmf. 10%	73030	R21	Resistor, carbon: 2700 ohms, 10%, 1/2 watt
23016	C22-1	Capacitor, paper: .003 Mfd. 600 volt	25800	R22-1	Control, mixer: 500,000 ohms
	C22-2		25500A	R23A, B & C	Control, volume: 3 section; section A 1 megohm, section B 2 megohms, section C 500,000 ohms
23901	C24A & B	Capacitor, paper: 2 X .006 Mfd. 600 volt (metal case)	25002A	R24	Control, tone: 3 megohms, with AC switch
23018	C25-1	Capacitor, paper: .2 Mfd. 200 volt	73025	R25	Resistor, carbon: 1000 ohms, 10%, 1/2 watt
	C25-2		73033	R26	Resistor, carbon: 4700 ohms, 10%, 1/2 watt
23005A		Clip, antenna	73020	R27	Resistor, carbon: 390 ohms, 10%, 1/2 watt
29306	L1	Loop, antenna	73903	R28	Resistor, wire wound: 15 ohms, 10%, 1 watt
29400A	L2	Coil, antenna: Std. broadcast	73910	R29	Resistor, wire wound: .5 ohm, 10%, 1 watt
29401A	L3	Coil, antenna: short wave	73039	R30	Resistor, carbon: 15,000 ohms, 10%, 1/2 watt
29101A	L4	Coil, R.F.: short wave	78008		Shield, microphone plug
29102A	L5	Coil, R.F.: Std. broadcast	79002		Socket, tube: 8 prong octal; wafer type
29201A	L6	Coil, oscillator: short wave	79004		Socket, microphone
29205A	L7	Coil, oscillator: Std. broadcast	79005		Socket, antenna & phono
29004D	L8	Coil, 1st I.F.: 455 KC	79007		Socket, phono motor
29007	L9	Coil, 2nd I.F.: 455 KC	79009		Socket, dial lamp: bayonet base
32003C		Cord, AC: 8'	79018		Socket, speaker & cutter
32015		Cord, AC: 2 1/2'	79021		Socket, tube: 8 prong octal; black bake-ite
35002		Conductor, variable capacitor ground	83701		Speaker, permanent magnet: 10"
36020		Cutter cartridge	84001B		Spring, dial
38021A		Dial scale	84011		Spring, push button knob
40101B		Drive, planetary	86001A	S1	Switch, rotary: 3 gang; wafer type; band switch
40111B		Drive, band switch	86301	S2	Switch, push button
41005		Escutcheon, dial	86802		Switch, micro: part of automatic cut- ter stop
5003R		Insulator, antenna connector	89409B	T1	Transformer, output
52019A		Knob, control: bleach (set screw)	89006C	T2	Transformer, power
52020A		Knob, control: bleach (slip on)			
52021A		Knob, control: walnut (set screw)			
52022A		Knob, control: walnut (slip on)			
52023		Knob, push button: walnut			
52024A		Knob, push button: bleach			
54001		Lamp, dial: T-44; bayonet base			
57001B		Microphone with cable			
57002		Microphone handle			
57003		Microphone base			
58004B		Record changer			
59001		Needle, permanent: phono			
59002		Needle, cutter: (stylus)			
62013A		Panel, cabinet back			
63008		Pick-up, crystal: cartridge (phono)			
66005		Plug, microphone			
68029		Operating instructions			
68042		Decal, volume control			
68043		Decal, tone control			
68044		Decal, push buttons			
68045		Decal, tuning			



Tubes:

6SK7	R.F. Amplifier
6SA7	Frequency Converter
6SK7	I.F. Amplifier
6SF7	2nd Detector & Expansion Amplifier
6H6	Expansion Rectifier & Delayed Audio AVC
6SQ7	Microphone Amplifier
6SF7	1st Audio Amplifier
6H6	Compression Rectifier
6V6-GT/G	Power Amplifier
5Y3-GT/G	Rectifier

SPECIAL SERVICE INFORMATION

STAGE GAIN MEASUREMENTS:

Measurements taken with volume and tone controls maximum. — Band Switch in Standard Broadcast position. — Push Button Switch in Radio Receive position. — AVC shorted out.
 Standard Output . . . 50 milliwatts
 Dummy Antenna . . . 200 Mmf.
 Antenna Grid to R.F. Grid . . . 6X at 1000 KC
 R.F. Grid to Converter Grid . . . 12.5X at 1000 KC
 Converter Grid to 1st I.F. Grid . . . 61X at 455 KC
 1st .F. Grid to 2nd Detector . . . 120X at 455 KC
 Overall Audio Gain . . . 620X at 1 watt 400 cycles

GENERAL INFORMATION

Model 1063 is a PhoOcord console with a two band superheterodyne receiver. This model employs ten tubes and a permanent magnet speaker.

Listed below are some of the features contained in this Model PhonOcord.

1. Two band superheterodyne receiver.
2. Automatic Home Recording with Public Address System.
3. Phonograph with automatic record changer.
4. Volume Expansion.
5. Volume Compression for Home Recording.
6. Low Level Dynamic Bass Boost.

The output of the microphone and radio on Mixed Program Record may be regulated by varying the controls on the top of the chassis. (See Figure 2, Trimmer Location).

An early run of this model utilized a 20 Mfd. filter (C18) in the input voltage instead of a 40 Mfd.

Electrical Rating:

Line Voltage . . . 110-120 volts 50-60 cycle AC
 Power Consumption . . . 106 watts

Tuning Frequency Range:

Standard Broadcast . . . 540 to 1620 KC
 Short Wave . . . 6 to 18 MC

Intermediate Frequency:

455 KC

Electrical Power Output:

Undistorted . . . 3.5 watts
 Maximum . . . 6 watts

Loudspeaker:

Type . . . Permanent Magnet
 Outside Cone Diameter . . . 10"
 Voice Coil Impedance . . . 3.2 ohms at 400 cycles
 Magnet Rating . . . 6.8 Oz. Alnico 5

OSCILLATOR CATHODE VOLTAGES:

Measured at 117 Volts AC line voltage with AC vacuum tube voltmeter input loading above 10 megohms.
 1620 KC . . . 3.4 volts AC
 1300 KC . . . 3.2 volts AC
 750 KC . . . 3.2 volts AC
 550 KC . . . 3.7 volts AC

D.C. RESISTANCE MEASUREMENTS:

I.F. COILS

	1st I.F.	2nd I.F.
Primary . . .	17 ohms	Primary . . . 17 ohms
Secondary . . .	17 ohms	Secondary . . . 17 ohms*

*NOTE: To obtain the true reading of the secondary of the 2nd I.F. coil it must be removed from the can. This is so because of the 56,000 ohm resistor in series with the AVC lead inside the can.

OSCILLATOR COILS

	Broadcast	Short Wave
Primary . . .	1 ohm	Start to Finish . . . 4 ohms
Secondary . . .	6 ohms	Start to Tap . . . 2 ohms

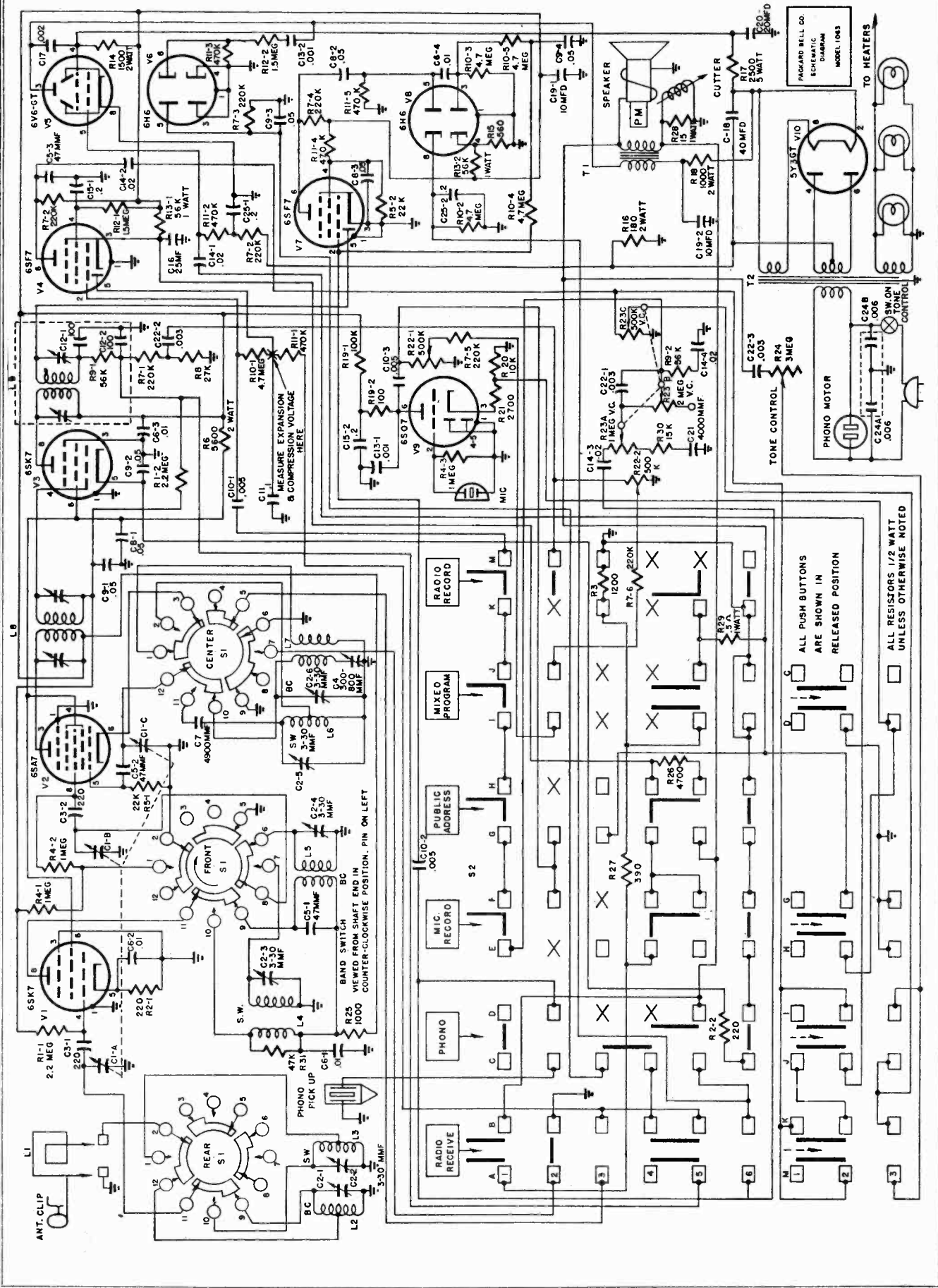
ANTENNA COILS

	Broadcast	Short Wave
Start to Finish . . .	12.2 ohms	Start to Finish . . . 25 ohms
Start to Tap . . .	10.5 ohms	Start to Tap . . . 20 ohms

R.F. COILS

	Broadcast	Short Wave
Primary . . .	5.8 ohms	Primary . . . 5.5 ohms
Secondary . . .	4.2 ohms	Secondary . . . 2 ohms

NOTE: Due to the variation of winding methods, the D.C. resistance on all coils is subject to a 20% tolerance.



ALIGNMENT PROCEDURE

Alignment procedure consists of the 7 steps outlined in the Alignment Procedure Chart.

Connect the test oscillator leads to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. Upon completing this step "Rock" the variable condenser to assure that the I.F.s have been aligned to the correct frequency. Output should remain constant at any setting of the variable condenser.

Use the Hazeltine Test Loop or a reasonable substitute for the balance of the alignment. Place the test loop about two feet from the receiver loop in a vertical position.

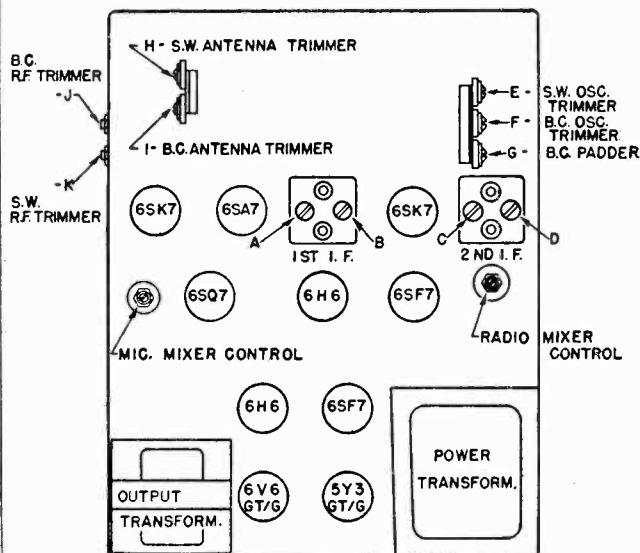
It will be noted that all trimmers are accessible without removing the chassis from the cabinet.

IMPORTANT NOTICE: Make certain that each alignment step is done with a minimum input signal.

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAX. OUTPUT
1	Mixer Grid & Grd.	455 KC	540 KC	Trimmers A, B, C & D
2	Standard* Test Loop	1620 KC	1620 KC	Trimmer F to 1620 KC
3	Standard* Test Loop	600 KC	600 KC	Trimmer G to 600 KC
4	Standard* Test Loop	1500 KC	1500 KC	Trimmers I & J
5	REPEAT STEPS 2, 3, & 4			
6	Standard* Test Loop	18 MC	18 MC	Trimmer E to 18 MC
7	Standard* Test Loop	15 MC	15 MC	Trimmers K & H

*NOTE: Hazeltine Standard Test Loop No. 1150 or a reasonable substitute.



Trimmer Location

No signal.

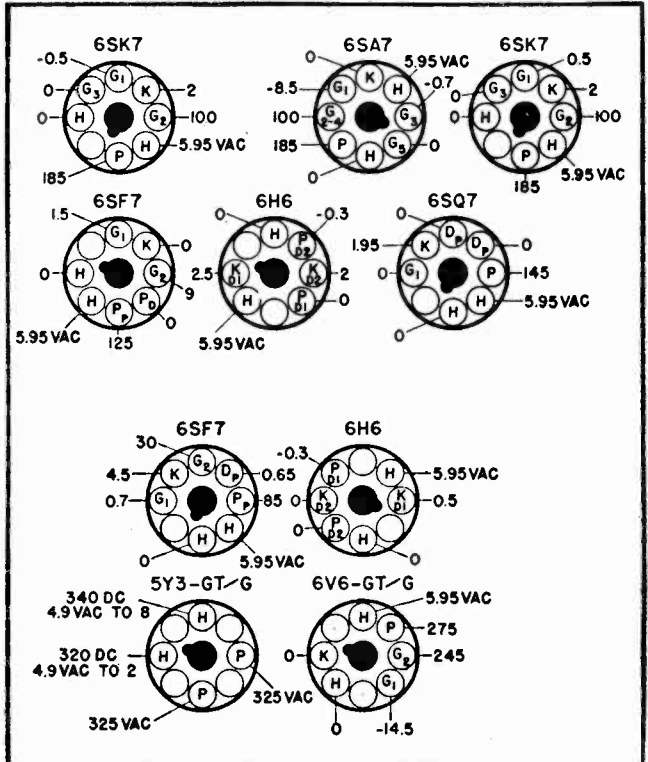
117 volts A.C. line voltage.

Band switch in standard broadcast position.

All voltages shown are positive D.C. unless otherwise noted.

All voltages measured from socket contacts to chassis. D.C. voltages measured with a vacuum tube voltmeter. A.C. voltages measured with a 1000 ohm per volt A.C. meter.

Volume and tone controls maximum.



Socket Voltages

BRIEF DESCRIPTION OF EXPANDER AND COMPRESSOR CIRCUITS:

V7, 6SF7 and V6, 6H6 embrace the expansion circuit. Referring to Figure 3, Schematic Diagram, it will be noted that expansion is in the circuit only when the "Phono" or "Radio Receive" buttons are depressed. V7, 6SF7, serves as the 2nd detector and expansion amplifier. V6, 6H6 functions as the expansion rectifier in one diode section and furnishes delayed audio AVC in the other diode section. V8, 6H6, functions as the compressor rectifier.

HOW TO CHECK EXPANSION VOLTAGE:

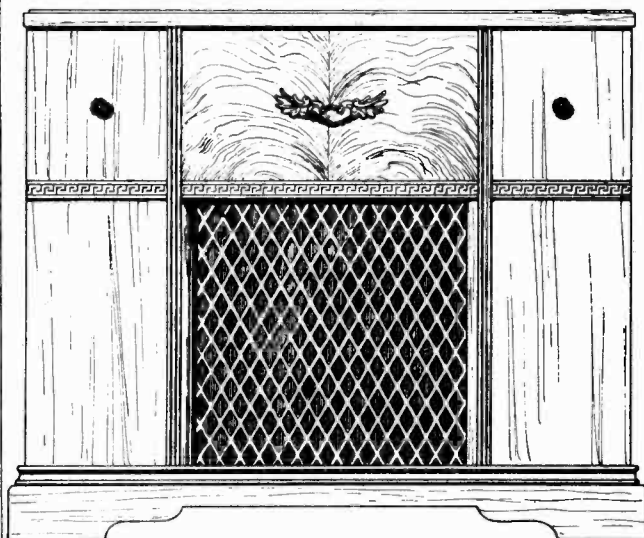
Feed a 1 volt (RMS) 400 cycle signal into the phono input plug. Make certain the Phono Button is depressed. Connect the leads of a vacuum tube voltmeter* to the location indicated on Figure 3, Schematic Diagram, and ground. The voltage at this point should be between 3 and 4 volts positive D.C. As a cross check measure the cathode voltage of V4, 6SF, which should read about 5 volts D.C. The expansion voltage should be about 1 volt less.

HOW TO CHECK COMPRESSION VOLTAGE:

Depress the "Radio Record" button. Feed a 1 volt (RMS) 400 cycle signal into the diode return of the 2nd I.F. (brown lead). In the same manner outlined in the preceding paragraph, measure the compression voltage, which should be a minus 2 to 3 volts.

*VTVM: Input loading above 10 megohms.

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
10505A		Assembly, switch arm	54001		Lamp, dial: bayonet base
10506B		Assembly, pointer	57004		Microphone with cable
10512		Assembly Kit, chassis	57005		Microphone handle
10513		Assembly Kit, record changer	57006		Microphone base
11013A		Arm, switch	58004E		Automatic record changer
11014		Arm, stop	59001		Needle, phono: permanent sapphire
18032A		Bracket, compartment light	59002		Needle, cutter
18081		Bracket, reject stop	63026		Pick-up cartridge
18039A		Bracket, planetary	64006		Escutcheon pin
18043C		Bracket, dial	65004E		Plate, dial
18068		Bracket, changer shipping	65028B		Plate, mounting
21045-1		Cabinet Back, right	66001		Plug, pin
21045-2		Cabinet Back, left	66004		Plug, pin
CU-21045		Cabinet, radio: natural mahogany	66013		Plug, microphone
BN-21045		Cabinet, radio: dark mahogany	67013A		Pointer, cutter stop
BG-21045		Cabinet, radio: walnut	68073		Phonocord playhouse
23500C	C1A, B & C	Capacitor, variable: 3 gang with pulley	68142		Decal, push buttons
23400A	C2-1	Capacitor, trimmer: dual 30 Mmf.	68144		Instruction sheet, F-M
	C2-2		68109		Instruction Book
	C2-3		69005		Pulley, drive: 60 cycle
	C2-4		69007A		Pulley, drive: 50 cycle
	C2-5		73055	R1-1	Resistor, carbon: 2.2 megohms, 20%, 1/2 watt
	C2-6			R1-2	
23228	C3-1	Capacitor, mica: 220 Mmf. 20%	73017	R2-1	Resistor, carbon: 220 ohms, 10%, 1/2 watt
	C3-2			R2-2	
23402	C4	Capacitor, padder: 300 to 800 Mmf.	73026	R3	Resistor, carbon: 1200 ohms, 10%, 1/2 watt
23225	C5-1	Capacitor, mica: 47 Mmf. 20%	73053	R4-1	Resistor, carbon: 1 megohm, 20%, 1/2 watt
	C5-2			R4-2	
	C5-3			R4-3	
23006	C6-1	Capacitor, paper: .01 Mfd. 200 volt	73041	R5-1	Resistor, carbon: 22,000 ohms, 10%, 1/2 watt
	C6-2			R5-2	
	C6-3		73127	R6	Resistor, carbon: 5600 ohms, 10%, 2 watt
	C6-4		73049	R7-1	Resistor, carbon: 220,000 ohms, 20%, 1/2 watt
23207A	C7	Capacitor, mica: 4900 Mmf. 5%		R7-2	
23010	C8-1	Capacitor, paper: .05 Mfd. 600 volt		R7-3	
	C8-2			R7-4	
	C8-3			R7-5	
23017	C9-1	Capacitor, paper: .05 Mfd. 200 volt		R7-6	
	C9-2			R7-7	
	C9-3		73042	R8	Resistor, carbon: 27,000 ohms, 10%, 1/2 watt
	C9-4		73060	R9-1	Resistor, carbon: 56,000, 10%, 1/2 watt
23004	C10-1	Capacitor, paper: .005 Mfd. 600 volt		R9-2	
	C10-2		73057	R10-1	Resistor, carbon: 4.7 megohms, 20%, 1/2 watt
	C10-3			R10-2	
23019	C11	Capacitor, paper: .1 Mfd. 200 volt		R10-3	
	C12-1	Capacitor, mica: 100 Mmf. (Part of 2nd I.F. assembly)		R10-4	
	C12-2			R10-5	
23001	C13-1	Capacitor, paper: .001 Mfd. 600 volt	73051	R11-1	Resistor, carbon: 47,000 ohms, 20%, 1/2 watt
	C13-2			R11-2	
23007	C14-1	Capacitor, paper: .02 Mfd. 600 volt		R11-3	
	C14-2			R11-4	
	C14-3			R11-5	
	C14-4		73054	R12-1	Resistor, carbon: 1.5 megohms, 20%, 1/2 watt
23020	C15-1	Capacitor, paper: .2 Mfd. 400 volt	73076	R12-2	Resistor, carbon: 56,000 ohms, 10%, 1 watt
	C15-2			R13-1	
				R13-2	
24006	C16	Capacitor, electrolytic: 25 Mfd. 25 WV	73126	R14	Resistor, carbon: 1500 ohms, 10%, 2 watt
23002	C17	Capacitor, paper: .002 Mfd. 600 volt	73022	R15	Resistor, carbon: 560 ohms, 10%, 1/2 watt
24030	C18	Capacitor, electrolytic: 40 Mfd. 450 WV	73077	R16	Resistor, carbon: 180 ohms, 10%, 2 watt
24002	C19-1	Capacitor, electrolytic: 10 Mfd. 450 WV	73907	R17	Resistor, wire wound: 2500 ohms, 10%, 5 watt
	C19-2		73120	R18	Resistor, carbon: 1000 ohms, 10%, 2 watt
			73047	R19-1	Resistor, carbon: 100,000 ohms, 20%, 1/2 watt
24001	C20	Capacitor, electrolytic: 20 Mfd. 450 WV		R19-2	
23208	C21	Capacitor, mica: 400 Mmf. 10%	73037	R20	Resistor, carbon: 10,000 ohms, 10%, 1/2 watt
23016	C22-1	Capacitor, paper: .003 Mfd. 600 volt	73030	R21	Resistor, carbon: 2700 ohms, 10%, 1/2 watt
	C22-2		25800	R22-1	Control, mixer: 500,000 ohms
	C22-3			R22-2	
23901	C24A & B	Capacitor, paper: 2 X .006 Mfd. 600 volt (in metal case)	25500A	R23A, B & C	Control, volume: 3 section; section A-1 megohm, Section B-2 megohms, Section C-500,000 ohms
92194	L1	Loop Antenna, 18' of 300 ohm twin lead	25507	R24	Control, tone: 3 megohms, with AC switch
29400A	L2	Coil, antenna: standard broadcast	73025	R25	Resistor, carbon: 1000 ohms, 10%, 1/2 watt
29401A	L3	Coil, antenna: short wave	73033	R26	Resistor, carbon: 4700 ohms, 10%, 1/2 watt
29101A	L4	Coil, R.F.: short wave	73020	R27	Resistor, carbon: 390 ohms, 10%, 1/2 watt
29102A	L5	Coil, R.F.: standard broadcast	73903	R28	Resistor, wire wound: 15 ohms, 10%, 1 watt
29201A	L6	Coil, oscillator: short wave	73910	R29	Resistor, wire wound: .5 ohm, 10%, 1 watt
29205A	L7	Coil, oscillator: standard broadcast	73039	R30	Resistor, carbon: 15,000 ohms, 10%, 1/2 watt
29004D	L8	Coil, 1st I.F.: 455 KC	73045	R31	Resistor, carbon: 47,000 ohms, 10%, 1/2 watt
29007	L9	Coil, 2nd I.F.: 455 KC	77013B		Shaft, switch arm
32003C		Cord, A.C.: 8'	78008A		Shield, microphone plug
32015		Cord, A.C.: 2 1/2'	78031A		Shield, compartment lamp
36024		Cutter cartridge	79002		Socket, tube: 8 prong octal, wafer type
38042		Dial Scale, stationized	79004		Socket, microphone
38043		Dial Scale, export	79005		Socket, speaker & cutter
40101C		Drive, planetary	79007		Socket, phono motor
41012-CU		Escutcheon, dial: mahogany	79010B		Socket, dial lamp: bayonet base
41012-BG		Escutcheon, dial: walnut	79023		Socket, loop leads
41012-BN		Escutcheon, dial: dark mahogany	79033		Socket, compartment lamp
CU-52019A		Knob, control: natural mahogany	83701A		Speaker, 10" permanent magnet
CU-52020A		Knob, control: natural mahogany	84001		Spring, push button knob
BG-52019A		Knob, control: walnut	84028		Spring, dial cord
BG-52020A		Knob, control: walnut	86001A	S1	Switch, rotary: 3 section, band switch
BN-52019A		Knob, control: dark mahogany	86301	S2	Switch, push button
BN-52020A		Knob, control: dark mahogany	86802A		Switch, micro: (part of automatic cutter stop)
AB-52023		Knob, push button: brown, (no spring)	89409D	T1	Transformer, output
AP-52024A		Knob, push button: tan, (no spring)	89006E	T2	Transformer, power
52026		Knob, automatic stop	89015		Transformer, step down



In an early run of this model, R-4 connected to the Plate of the 6C4 instead of to R-5. Also you may find two 680 ohm resistors in place of the 330 ohm 2 watt resistor. Either is satisfactory.

RECORDING HEAD PRESSURE

The proper recording head pressure is $1\frac{1}{4}$ oz. Adjustment of this pressure is made by turning the small screw on the top of the recording arm. This adjustment is very critical and should be made in quarter turns. **TURN THE SCREW CLOCKWISE TO INCREASE THE CUTTING DEPTH and COUNTERCLOCKWISE TO DECREASE THE CUTTING DEPTH.**

This adjustment is made at the factory with an ordinary postal scale, consequently, field adjustments should be made in a like manner.

BRIEF DESCRIPTION OF COMPRESSION CIRCUIT

One diode section of the 6H6 serves as the compressor rectifier. The compression system is automatic, and is in the circuit on both record positions. A portion of the output voltage is rectified by the 6H6 and varies grid bias of the first audio, 6SF7.

HOW TO CHECK COMPRESSION VOLTAGE

Turn the Selector Switch to Radio Record position. Feed a 2 volt (RMS) 1000 cycle signal into the diode return of the 2nd I.F. (brown lead). Connect the leads of a vacuum tube voltmeter to the point indicated on Figure 4, Schematic Diagram, and ground. The voltage at this point should be approximately a minus 2.5 volts.

SPECIAL SERVICE INFORMATION

STAGE GAIN MEASUREMENTS, AM:

Measurements taken with volume and tone controls maximum. Band Switch in Standard Broadcast position.

AVC shorted out.

Standard Output 50 milliwatts

Dummy Antenna 200 Mmf.

Antenna Post to R.F. grid 12X at 1000 KC

R.F. grid to Converter grid 9X at 1000 Kc

Converter grid to 1st I.F. grid 20X at 455 Kc

1st R.F. grid to 2nd Detector 40X at 455 Kc

Overall Audio Gain 4600X at 1 watt 400 cycles

STAGE GAIN MEASUREMENTS, FM:

Measurements taken with volume and tone controls maximum. Band switch in Frequency Modulation position.

AVC shorted out.

Dummy Antenna 270 ohms

Dipole Terminal to R.F. grid 0.9X at 98 Mc

Converter grid to 1st I.F. grid 12X at 10.7 Mc

1st I.F. grid to Driver grid 45X at 10.7 Mc

OSCILLATOR CATHODE VOLTAGES:

Measured at 117 volts AC line voltage with AC vacuum tube voltmeter input loading above 10 Megohms.

1620 KC 8.5 volts AC

1200 KC 8.2 volts AC

800 KC 5.5 volts AC

540 KC 2.5 volts AC

OSCILLATOR GRID CURRENT, FM:

Measured at 117 volts line voltage with DC microammeter connected in series with ground end of the 22,000 ohm grid resistor.

108 MC 190 Microamps

98 MC 200 Microamps

88 MC 220 Microamps

Electrical Rating:

Line Voltage 110-120 volts 50-60 cycle AC
Power Consumption 110 watts including phonograph

Tuning Frequency Range:

Standard Broadcast 540 to 1620 Kc
Frequency Modulation 87.5 to 108.5 Mc.

Intermediate Frequency:

AM 455 Kc
FM 10.7 Mc

Loudspeaker:

Type Permanent Magnet
Outside Cone Diameter 12"
Voice Coil Impedance 3.2 ohms at 400 cycles
Magnet Rating 6.8 Oz. Alnico V

Tubes:

Tube:	No.:	Function:
6BA6	V-1	R.F. Amplifier
6BA6	V-2	Mixer
6BA6	V-3	I.F. Amplifier
6BA6	V-4	Driver
6AL5	V-5	F.M. Detector
6H6	V-6	A.M. Detector—AVC
6SF7	V-7	Audio Amplifier
6SN7-GT	V-8	Phase Inverter
6C4	V-9	Oscillator
6V6-GT	V-10	Output
6V6-GT	V-11	Output
5Y3-GT	V-12	Rectifier
6U5-6G5	V-13	Tuning Eye

GENERAL INFORMATION

Model 1273 is a 2 band console PhonOcord. It has 13 tubes including the rectifier and tuning eye, and employs a 12-inch speaker.

Listed below are some of the features included in this model:

1. Standard Broadcast from 540 to 1620 Kc.
2. Frequency Modulation from 87.5 to 108.5 Mc.
3. Tuning Eye for accurate tuning of stations.
4. Home recording combined with an automatic record changer.

ALIGNMENT PROCEDURE

Alignment procedure consists of the steps outlined in the Alignment Chart. Make certain that each alignment step is done with a minimum input signal.

ALIGNMENT CHART A M

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAX. OUTPUT
1	Mixer grid & ground	455 Kc	540 Kc	Trimmers A, B, C, D
2	R.F. grid & ground	1500 Kc	1500 Kc	Trimmers G & H
3	R.F. grid & ground	600 Kc	600 Kc	Trimmer E
4	Repeat Step No. 2			
5	Standard Test Loop	1500 Kc	1500 Kc	Trimmer F
6	Check stationizing Slide pointer on string if stations are uniformly off in one direction.			

NOTE: 1. Rock variable condenser for Step No. 3.
 2. Standard Test Loop is Hazeltine No. 1150 or a reasonable substitute.

EQUIPMENT REQUIRED FOR FM ALIGNMENT

- Vacuum tube type voltmeter connected to point "A" (on schematic) for Step No. 1.
- Center-zero D.C. voltmeter connected to point "B" (on schematic) for step No. 2.

ALIGNMENT CHART F M

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAX. OUTPUT
1	R.F. grid & ground	10.7 Mc	88 Mc	S-1, S-3, S-4, S-5, S-6
2	Adjust S-2 for zero on zero-center meter.			
3	Repeat steps 1 and 2.			
4	Doublet terminals thru 270 ohms	108 Mc	108 Mc	Trimmers J, I, K
5	Doublet terminals thru 270 ohms	88 Mc	88 Mc	S-7, S-8
6	Repeat step No. 4.			

NOTE: Rock variable condenser for step No. 4.

D.C. RESISTANCE MEASUREMENTS:

I.F. COILS:

- 1st I.F.: Primary . . . 17 ohms Secondary . . . 10 ohms
 2nd I.F.: Primary . . . 10 ohms Secondary . . . 17 ohms*

*NOTE: To obtain the true reading of the secondary of the 2nd I.F. coil, it must be removed from the can. This is true because of the 56,000 ohm resistor in series with the AVC lead inside the can.

Oscillator Coil:

- Primary 1 ohm
 Secondary 6 ohms

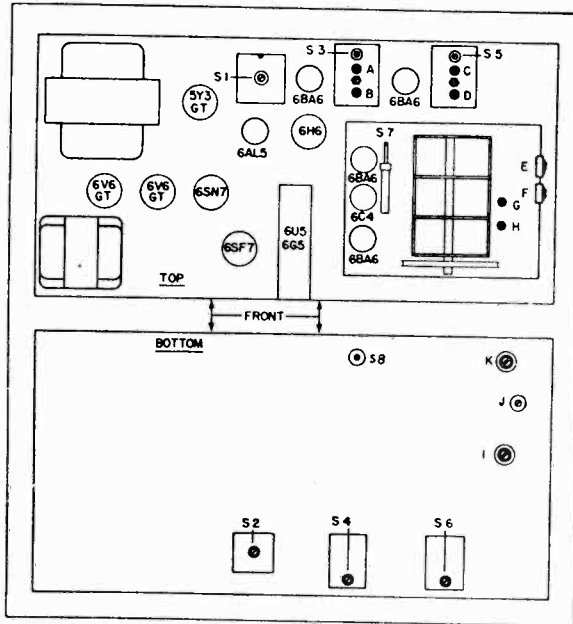
Antenna Coil:

- Start to Finish . . . 12.2 ohms
 Start to Tap 10.5 ohms

R.F. Coil:

- Primary 5.8 ohms
 Secondary 4.2 ohms

NOTE: Due to the variation of winding methods, the D.C. resistance on all coils is subject to a 20% tolerance.

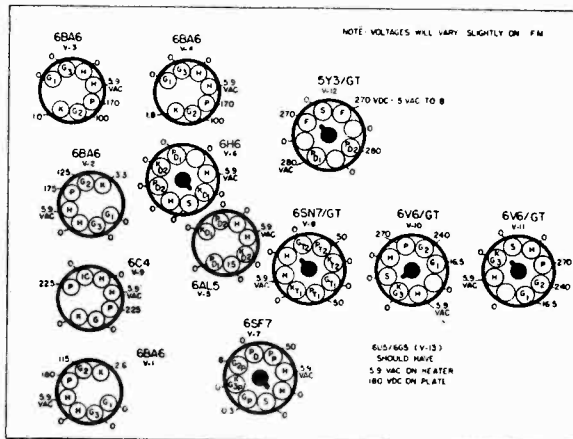


TRIMMER LOCATION

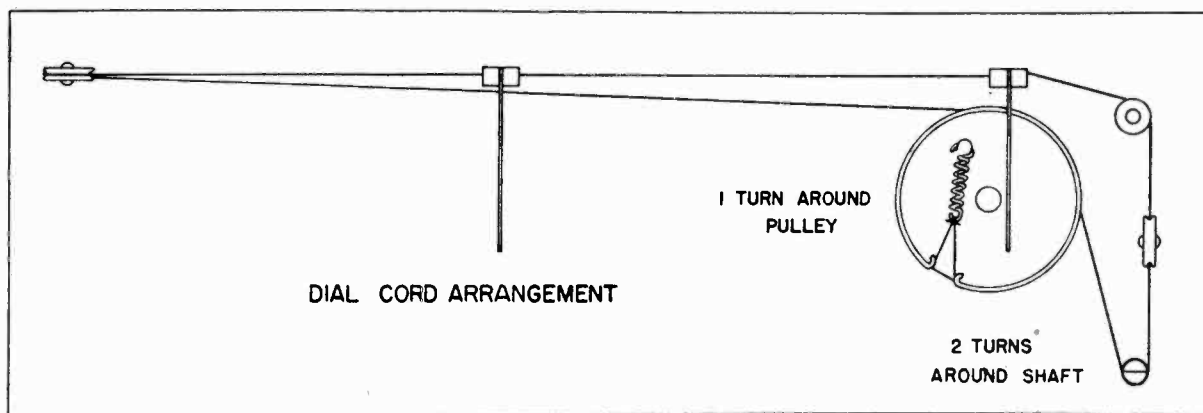
- A—I.F. trimmer
- B—I.F. trimmer
- C—I.F. trimmer
- D—I.F. trimmer
- E—B.C. padder
- F—Antenna trimmer
- G—B.C. osc. trimmer
- H—B.C. R.F. trimmer
- I—F.M. R.F. trimmer
- J—F.M. osc. trimmer
- K—F.M. antenna trimmer

SOCKET VOLTAGES

All D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis.—A.C. voltage measured with a 1000 ohms per volt A.C. meter from socket contacts to chassis.—Volume and tone controls maximum.—Switch in Radio Receive position. No signal. 117 volts A.C. line. All voltages shown are positive D.C. unless otherwise noted.



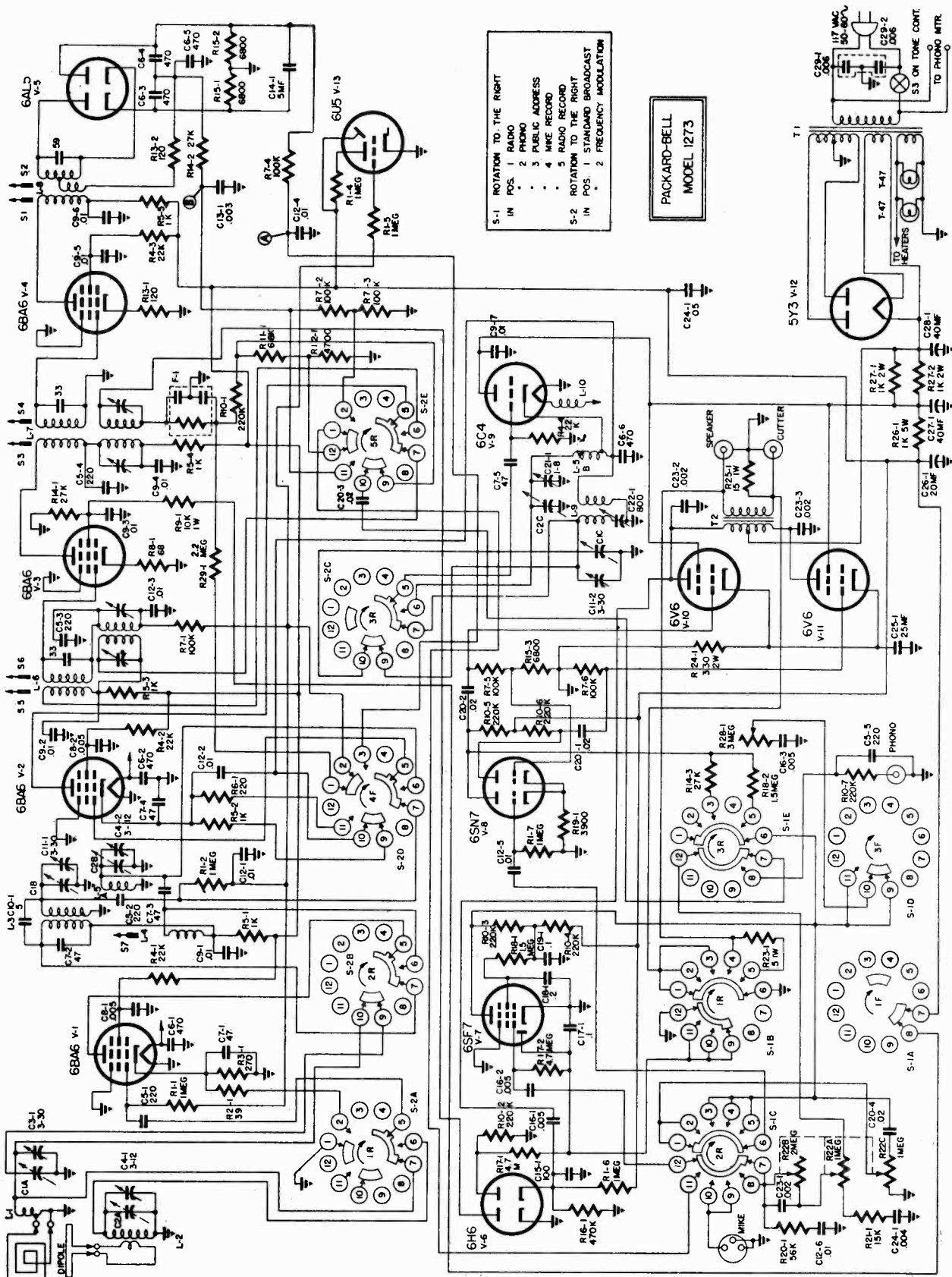
SOCKET VOLTAGE



Dial Cord Diagram

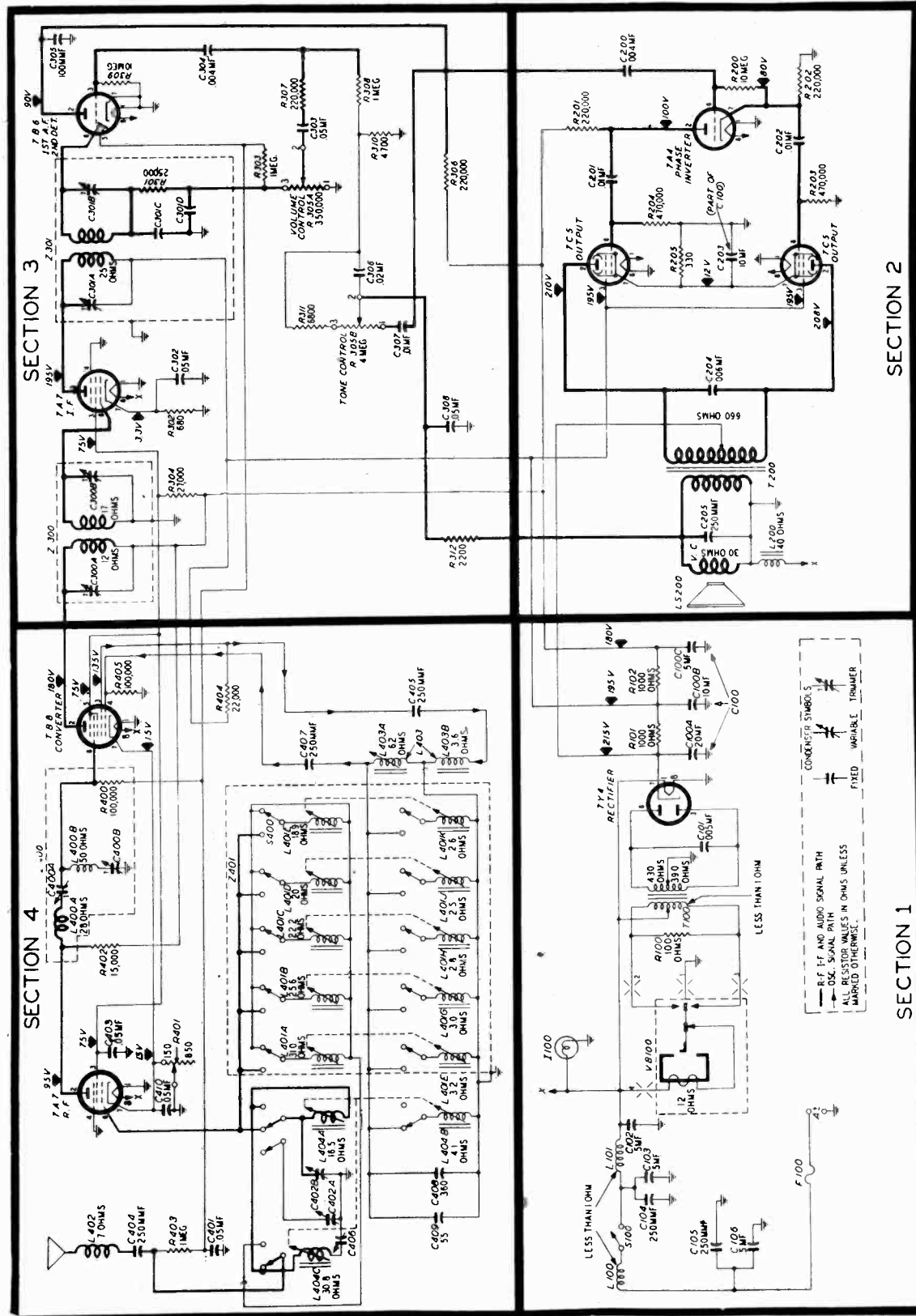
TABLE OF REPLACEABLE PARTS

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
21058		Cabinet	65065G		Plate, dial
23525	C1,A,B,C	Capacitor, variable	65066A		Plate, rear
23406	C3-1	Capacitor, trimmer, single 3-30 Mmf.	66001		Plug, pin
23408	C4-1 to 2	Capacitor, trimmer, single 3-12 Mmf.	66004		Plug, speaker
23915	C5-1 to 5	Capacitor, ceramic, 220 Mmf. 20%	66013		Plug, microphone
23916	C6-1 to 6	Capacitor, ceramic, 470 Mmf. 20%	67030		Pointer assembly
23912	C7-1 to 5	Capacitor, ceramic, 47 Mmf. 20%	68163		Instruction book
23931	C8-1 to 2	Capacitor, tubular, .005 Mmf. "HI-KAP"	69001		Pulley
23023	C9-1 to 7	Capacitor, tubular, .01 Mf. 500 V.	69013A		Pulley
23908	C10-1	Capacitor, ceramic, 5 Mmf. 20%	69006A		Pulley, variable
23401	C11-1 to 2	Capacitor, trimmer, dual 3-30 Mmf.	73053	R1-1 to 7	Resistor, carbon, 1 Meg. 1/2 w. 20%
23022	C12-1 to 6	Capacitor, tubular, .01 Mf. 400 V.	73008	R2-1	Resistor, carbon, 39 ohm, 1/2 w. 10%
23016	C13-1	Capacitor, tubular, .003 Mf. 600 V.	73018	R3-1	Resistor, carbon, 270 ohm, 1/2 w. 10%
24038	C14-1	Capacitor, electrolytic, 5 Mf. 50 V.	73041	R4-1 to 4	Resistor, carbon, 22,000 ohm, 1/2 w. 10%
23914	C15-1	Capacitor, ceramic, 100 Mmf. 500 V.	73025	R5-1 to 5	Resistor, carbon, 1,000 ohm, 1/2 w. 10%
23004	C16-1 to 3	Capacitor, tubular, .005 Mf. 600 V.	73017	R6-1	Resistor, carbon, 220 ohm, 1/2 w. 10%
23019	C17-1	Capacitor, tubular, .1 Mf. 200 V.	73047	R7-1 to 7	Resistor, carbon, 100,000 ohm, 1/2 w. 20%
23020	C18-1	Capacitor, tubular, .2 Mf. 400 V.	73011	R8-1	Resistor, carbon, 68 ohm, 1/2 w. 10%
23011	C19-1	Capacitor, .1 Mf. 400 V.	73073	R9-1	Resistor, carbon, 10,000 ohm, 1 w. 10%
23007	C20-1 to 4	Capacitor, tubular, .02 Mf. 600 V.	73049	R10-1 to 7	Resistor, carbon, 220,000 ohm, 1/2 w. 20%
23409	C21-1	Capacitor, trimmer, single 1-8 Mmf.	73046	R11-1	Resistor, carbon, 68,000 ohm, 1/2 w. 10%
23402	C22-1	Capacitor, padder, 800 Mmf.	73033	R12-1	Resistor, carbon, 4700 ohm, 1/2 w. 10%
23002	C23-1 to 3	Capacitor, tubular, .002 Mf. 600 V.	73014	R15-1 to 2	Resistor, carbon, 120 ohm, 1/2 w. 10%
23208	C24-1	Capacitor, mica, 4000 Mmf.	73042	R14-1 to 3	Resistor, carbon, 27,000 ohm, 1/2 w. 10%
24006	C25-1	Capacitor, electrolytic, 25 Mf. 25 V.	73035	R15-1 to 3	Resistor, carbon, 6800 ohm, 1/2 w. 10%
24012	C26-1	Capacitor, electrolytic, 20 Mf. 350 V.	73051	R16-1	Resistor, carbon, 470,000 ohm, 1/2 w. 20%
24004B	C27-1	Capacitor, electrolytic, 40 Mf. 350 V.	73057	R17-1 to 2	Resistor, carbon, 4.7 meg. 1/2 w. 20%
24030	C28-1	Capacitor, electrolytic, 40 Mf. 450 V.	73054	R18-1 to 2	Resistor, carbon, 1.5 meg. 1/2 w. 20%
23901	C29-1	Capacitor, dual .006 in can	73032	R19-1	Resistor, carbon, 3900 ohm, 1/2 w. 10%
23930	F1	Capacitor, tweet filter	73060	R20-1	Resistor, carbon, 56,000 ohm, 1/2 w. 10%
29400	L1	Coil, B.C. antenna	73039	R21-1	Resistor, carbon, 15,000 ohm, 1/2 w. 10%
29409	L2	Coil, F.M. antenna	25016	R22-A,B,C	Control, volume, 3 section
29102F	L3	Coil, B.C. R.F.	73910	R23-1	Resistor, wire wound, 1/2 ohm, 1 w.
29104	L4	Coil, R.F. choke	73131	R24-1	Resistor, carbon, 330 ohm, 2 w. 10%
29109	L5-A & B	Coil, F.M. R.F. oscillator	73903	R25-1	Resistor, wire wound, 15 ohm, 1 w.
29011	L6	Coil, 1st I.F. A.M., F.M.	73915	R26-1	Resistor, carbon, 1,000 ohm, 5 w. 10%
29012	L7	Coil, 2nd I.F. A.M., F.M.	73120	R27-1 to 2	Resistor, carbon, 1,000 ohm, 2 w. 10%
29018	L8	Coil, F.M. ratio detector	25510	R28-1	Control, tone
29205C	L9	Coil, B.C. oscillator	73055	R29-1	Resistor, carbon, 2.2 meg. 1/2 w. 20%
29104	L10	Coil, R.F. choke	77020		Shaft, dial
29321		F.M. dipole	79002		Socket, tube, 8 prong
32003C		Cord, A.C.	79035		Socket, tube miniature
36024		Cartridge, cutter	79004		Socket, microphone
38073		Dial, stationized	79005		Socket, pickup
38074		Dial, export	79018		Socket, speaker and cutter
41017		Escutcheon	79041		Socket, tuning eye
52001A-BG		Knob, control	79007		Socket, A.C.
52014BG		Knob, bar type	79010B		Socket, lamp
54001		Lamp, pilot, 0.250 Amp.	79045		Socket, antenna terminal strip
57004		Microphone with cable	83802		Speaker, 12" PM
57005		Microphone handle	86009A	S1	Switch, phono, etc.
57006		Microphone base	86017B	S2	Switch, band
58004E		Recorder, changer	89013	T1	Transformer, power
59002		Needle, cutter	89404	T2	Transformer, output, 10,000 ohm to 3.2 ohms
63026		Cartridge, pickup, Shure P-30			



S-1 ROTATION TO THE RIGHT
IN POS. 1 RADIO
 2 PHONO
 3 PUBLIC ADDRESS
 4 WIRE RECORD
 5 RADIO RECORD
S-2 ROTATION TO THE RIGHT
IN POS. 1 STANDARD BROADCAST
 2 FREQUENCY MODULATION

PACKARD-BELL
MODEL 1273



SECTION 2

SECTION 1

Figure 10. Complete schematic.

NOTE: All voltage, capacity, and resistance values shown are average. The voltages between B- (chassis) and other points indicated were measured with a 20,000 ohms-per-volt meter, with the volume control at minimum and the tuning control at 550 kc.

MODEL C4608, Code 121;

PHILCO CORP.

Mopar MODEL 802,
Chrysler

ALIGNMENT PROCEDURE

CONNECT THE OUTPUT METER between the voice-coil lug on the speaker and ground.

CONNECT THE SIGNAL-GENERATOR output lead as follows: For the i-f alignment (the first step in the chart), connect through a 20-mmf. condenser to pin 6 of the 7B8 converter. For the r-f alignment (all steps after the first), connect through a 20-mmf. condenser in series with an antenna lead (Part No. 95-0181) to the antenna receptacle. If the antenna lead is not available, connect a 30-mmf. condenser from the antenna receptacle to ground.

CALIBRATE THE DIAL as follows: Turn the tuning control to its maximum clockwise position. The pointer should then be at 1600 kc. If not, insert

a stiff rod 2 1/4" into the small hole on the left side of the control head, near the number 8 on the dial scale. Rotate the tuning control until the pointer mechanism is stopped by the rod, and continue rotating the control for a fraction of a turn, to slide the pointer mechanism a short distance along the drive cord. Repeat this operation until the pointer coincides with the 1600-kc. mark on the dial when the tuning control is fully clockwise.

SET THE RECEIVER CONTROLS as follows: Set the tone control at "VOICE" (maximum high position). Set the volume and sensitivity controls at maximum. Adjust the signal-generator output as alignment progresses to keep the meter needle near center scale.

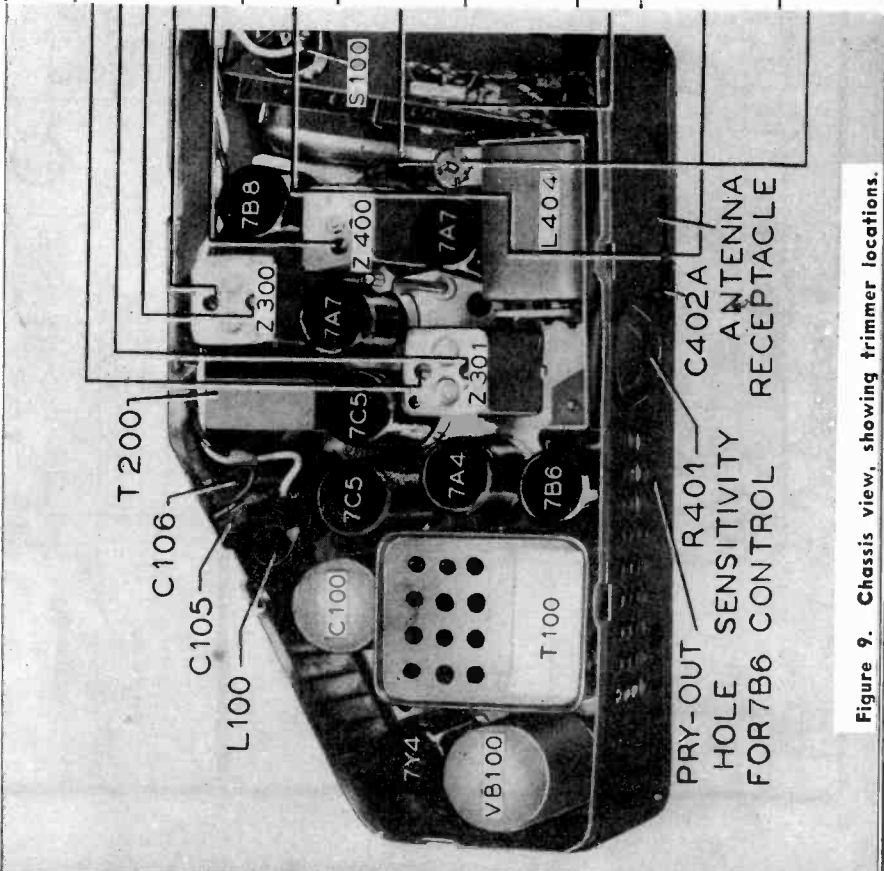
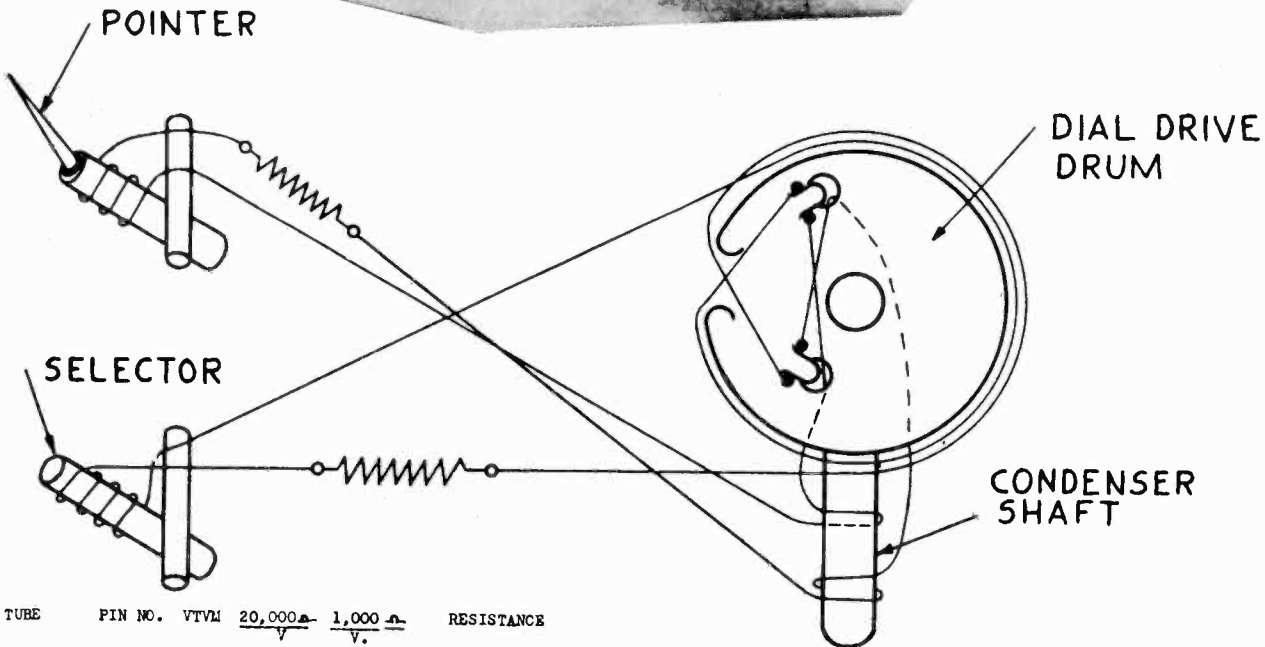
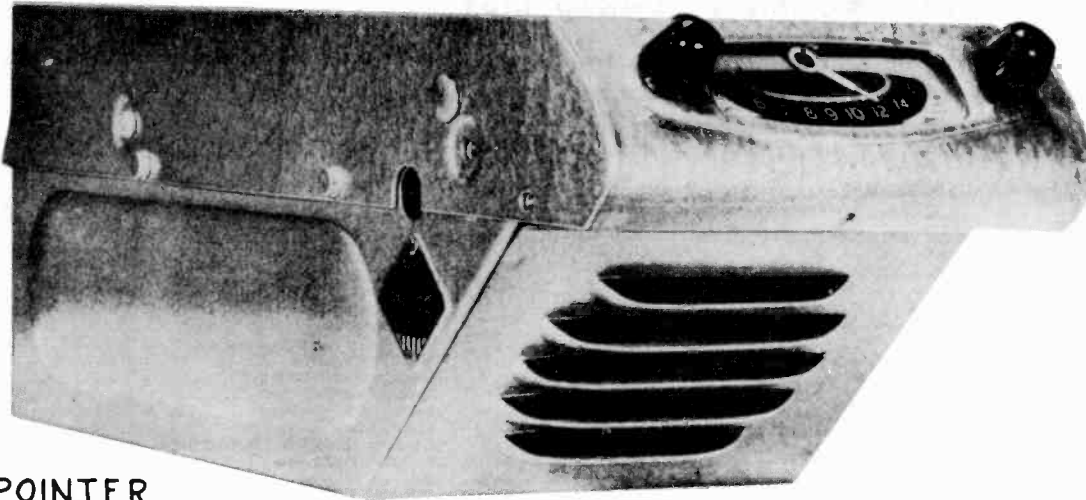


Figure 9. Chassis view, showing trimmer locations.

ADJUST IN ORDER	SPECIAL INSTRUCTIONS	SIG. GEN.	DIAL SETTINGS RECEIVER
C301B Max. C301A Max. C300B Max. C300A Max. C400B Min.	Ground pin 4 of the 7B8. Adjust the i-f trimmers for maximum in the order listed. Then adjust the i-f trap condenser (C400B) for <u>minimum</u> output.	455 kc.	1600 kc.
C402B Max.	Remove the ground from pin 4 of the 7B8. Adjust for maximum output.	1500 kc.	1500 kc.
L403A Max.	Adjust for overall maximum while rocking the tuning control.	580 kc.	580 kc.
	Tune the receiver for maximum output with the tuning control set at 550 kc.	550 kc.	550 kc. (approx.)
C406 Min.	Adjust for <u>minimum</u> output.	1460 kc.	550 kc.
C402B Max.	Adjust for maximum output. Final adjustment to be made after re-installing the set in the car.	1500 kc.	Tune in 1500 kc. signal
L403A Max.	Adjust for overall maximum while rocking the tuning control.	580 kc.	580 kc.

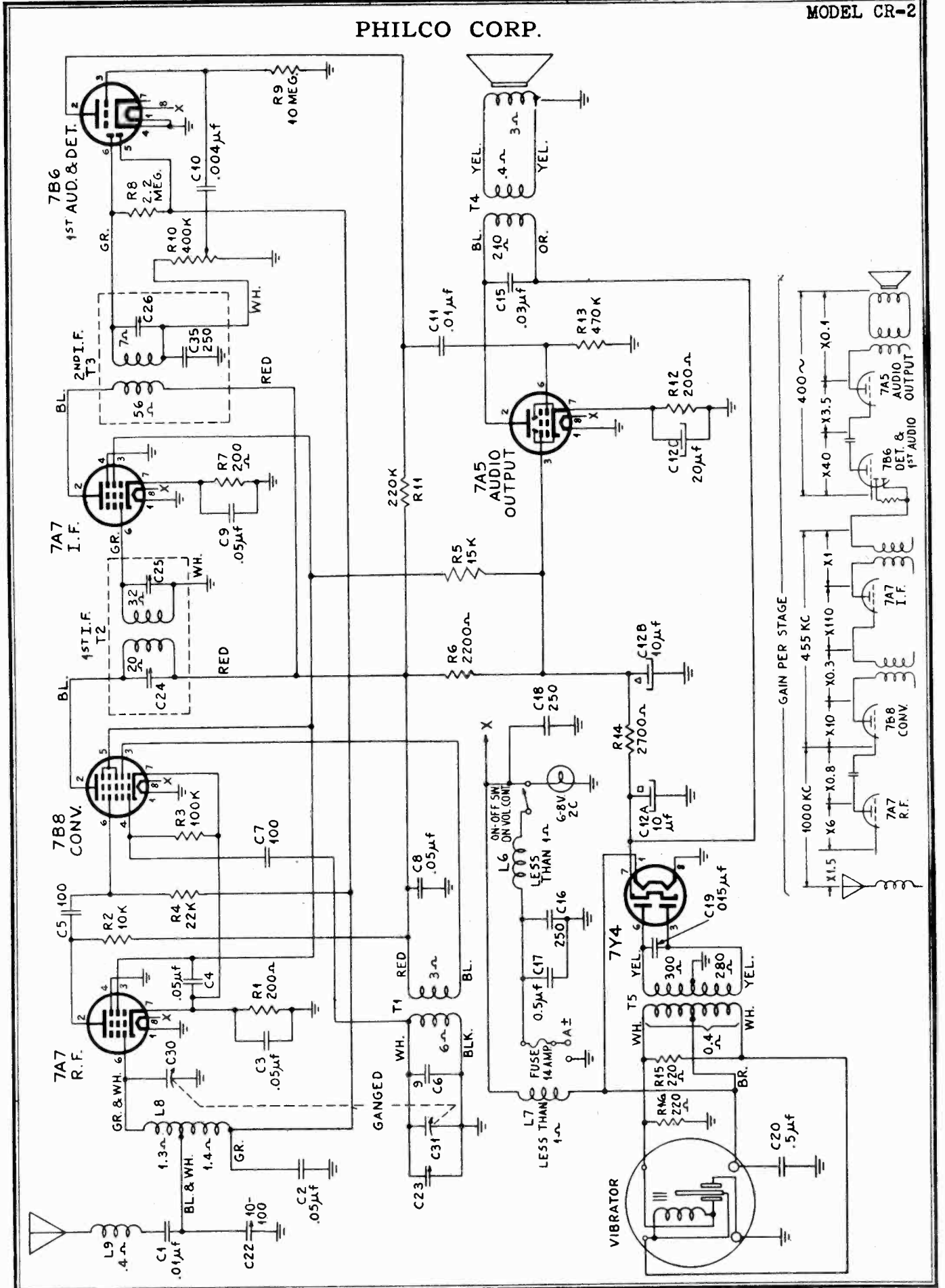


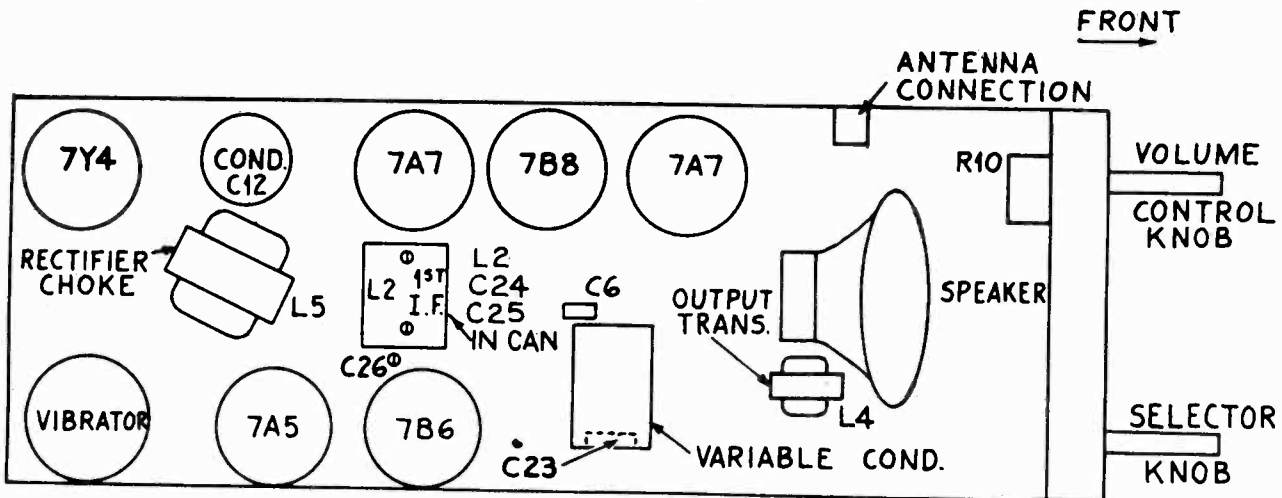
TUBE	PIN NO.	V _{TVM}	20,000 Ω V	1,000 Ω V	RESISTANCE
7 A 7 RF	1	0	0	0	0
	2	55V.	51V.	46V.	OVER 5 MEG.
	3	47V.	46V.	43V.	OVER 5 MEG.
	4	0	0	0	0
	5	0	0	0	0
	6	-1.2V.	35V.	-.04V.	2.7 MEG.
	7	1.1V.	1V.	1V.	200 Ω
	8	6.2V.	6V.	6.1V.	.3 Ω
7 B 8 CONVERTER	1	0	0	0	0
	2	78V.	77V.	72V.	OVER 5 MEG.
	3	78V.	77V.	72V.	OVER 5 MEG.
	4	-12V.	-8.3V.	-3.3V.	125 K
	5	47V.	46 V	48V.	OVER 5 MEG.
	6	-1.05V.	.16V.	-.01V.	2.8 MEG.
	7	1.15V.	1V.	1V.	200 Ω
	8	6.2V.	6V.	6V.	.3 Ω
7 A 7 IF	1	0	0	0	0
	2	78V.	76V.	71V.	OVER 5 MEG.
	3	48V.	46V.	43V.	OVER 5 MEG.
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	30 Ω
	7	1.15V.	1V.	1V.	210 Ω
	8	6.2V.	6V.	6V.	.3 Ω
7 B 6 DET. & 1st AUDIC 2	1	0	0	0	0
	2	57V.	54V.	23V.	OVER 5 MEG.
	3	-.95V.	-.36V.	-.1V.	OVER 5 MEG.
	4	0	0	0	.2 Ω
	5	-1V.	-.28V.	-.03V.	2.7 MEG.
	6	-1.2V.	-.42V.	-.05V.	380 K.
	7	0	0	0	0
	8	6.2V.	6V.	6V.	.3 Ω

7A5 AUDIO OUTPUT	1	0	0	0	0
	2	124V.	124V.	120V.	OVER 30 MEG.
	3	95V.	97V.	90V.	OVER 30 MEG.
	4	--	--	--	--
	5	--	--	--	--
	6	.05V.	0	0	650 K
	7	6.3V.	6V.	6V.	210 Ω
	8	6.2V.	6V.	6V.	.3 Ω
7Y4 RECTIFIER	1	6.2V.	6V.	6.1V.	.3 Ω
	2	--	--	--	--
	3	A C	A C	A C	240 Ω
	4	--	--	--	--
	5	--	--	--	--
	6	A C	A C	A C	260 Ω
	7	130V.	120V.	120V.	OVER 5 MEG.
	8	0	0	0	0
VIBRATOR	1	0	0	0	0
	2	6V.	5.7V.	6V.	.6 Ω
	3	6V.	5.7V.	6V.	.6 Ω
	4	6.2V.	5.9V.	6.2V.	.4 Ω

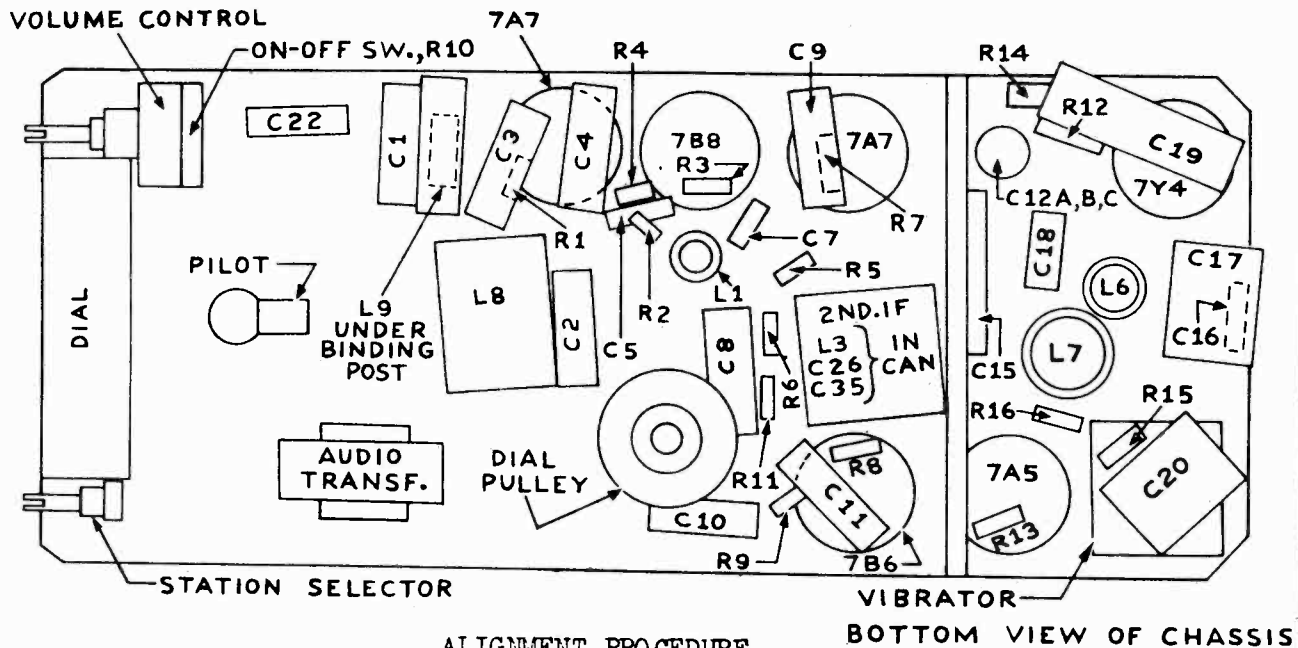
VOLTAGE MEASURED WHEN "A" VOLTAGE = 6.4V.,
THE CONDENSER FULLY MESHED AND VOLUME CONTROL AT MINIMUM.

PHILCO CORP.





TOP VIEW OF CHASSIS



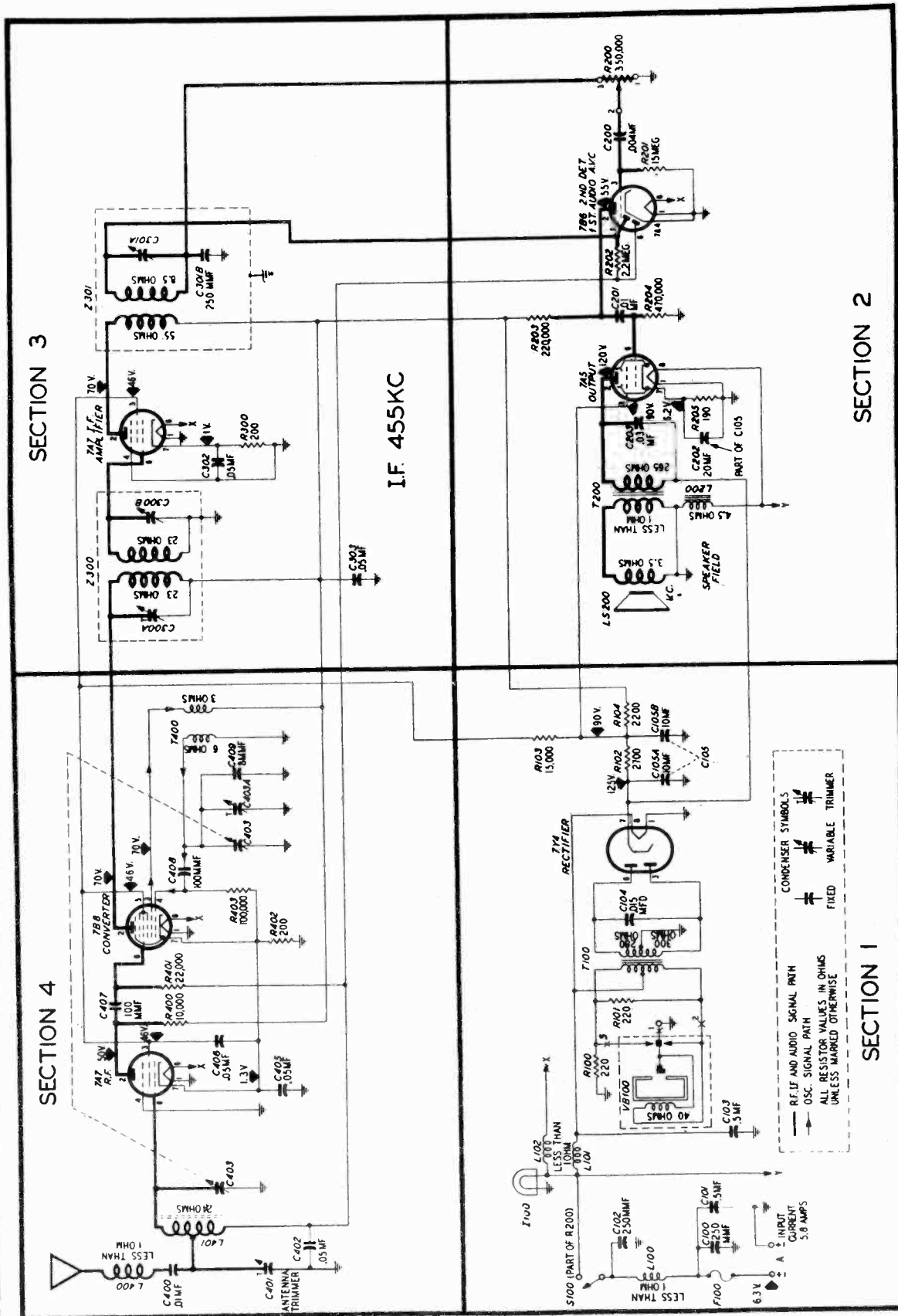
ALIGNMENT PROCEDURE

BOTTOM VIEW OF CHASSIS

CONNECT AN OUTPUT METER ACROSS THE VOICE COIL AND THE SPEAKER. CONNECT A SIGNAL GENERATOR THRU A .01 mf CONDENSER TO THE ANTENNA LEAD. MESH THE VARIABLE TUNING CONDENSER FULLY. (PIN 4 OF THE 7B8 SHOULD BE GROUNDED WHILE ALIGNING THE IF STAGE) SET THE SIGNAL GENERATOR TO 455 KC. TURN THE VOLUME CONTROL OF THE RECEIVER TO MAXIMUM. TURN UP THE OUTPUT OF THE SIGNAL GENERATOR SO THAT THERE IS A SMALL DEFLECTION ON THE OUTPUT METER. NOW ADJUST IF TRIMMERS C26, C25 AND C24 FOR A MAXIMUM DEFLECTION ON THE METER.

TO ALIGN THE OSCILLATOR STAGE, CONNECT THE SIGNAL GENERATOR THRU A 50 MMF CONDENSER TO THE ANTENNA LEAD. TUNE BOTH THE RECEIVER AND THE SIGNAL GENERATOR TO 1600 KC. TURN UP THE OUTPUT OF THE SIGNAL GENERATOR SO THAT THERE IS A SMALL DEFLECTION ON THE OUTPUT METER. ADJUST OSCILLATOR TRIMMER C23, FOR A MAXIMUM DEFLECTION ON THE METER.

TO ALIGN RF STAGE FOLLOW ABOVE PROCEDURE EXCEPT THAT THE RECEIVER AND SIGNAL GENERATOR ARE TUNED TO 1400 KC AND TRIMMER C22 IS ADJUSTED FOR MAXIMUM DEFLECTION ON THE OUTPUT METER.



NOTE: All voltage, capacity, and resistance values shown are average. The voltages were measured between the points indicated and the receiver chassis (B-), using a 20,000-ohms-per-volt meter, with 6.3 volts d-c input to the receiver power supply; the volume control was set at minimum, and the tuning condenser at 550 kc.

ALIGNMENT PROCEDURE

CONNECT THE SIGNAL-GENERATOR output lead as follows:

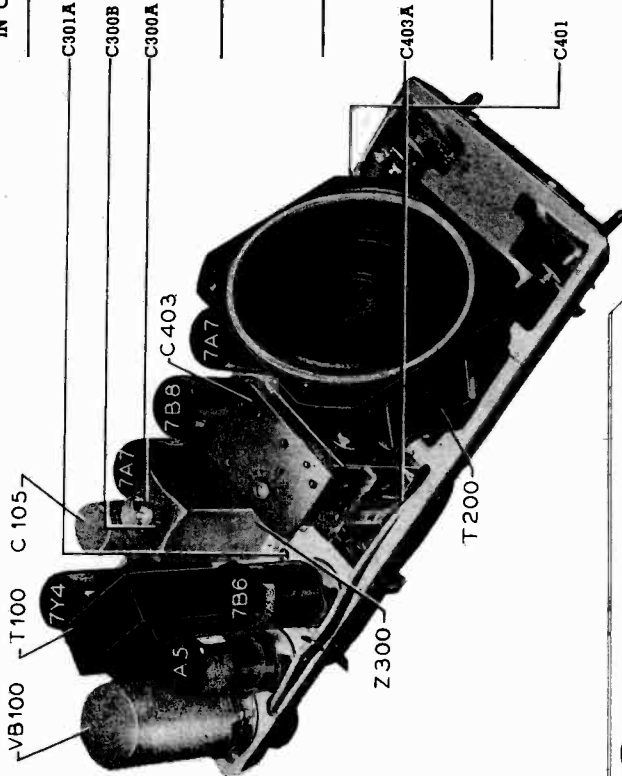
For the i-f alignment (steps 1 and 2 in the chart), apply the modulated r-f signal through a .05-mf. condenser to the aerial receptacle.

For the r-f alignment (steps 3 and 4), inject the modulated r-f signal through a 30-mmf. condenser in series with an aerial lead (Part No. 95-0185) plugged into the aerial receptacle. If an aerial lead is not available, inject the signal through the 30-mmf. condenser alone, and connect a second 30-mmf. condenser from the aerial receptacle to the receiver chassis.

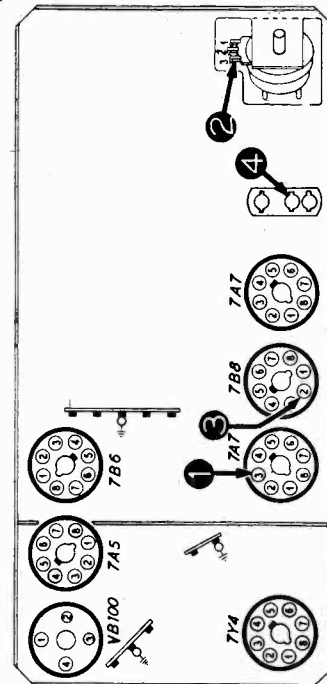
CONNECT THE OUTPUT METER across the speaker voice-coil terminals. **SET THE DIAL POINTER** to coincide with the index dot at the low-frequency end of the scale, when the tuning-condenser plates are fully meshed.

SET THE RECEIVER VOLUME CONTROL at maximum. Using the lowest range on the output meter, adjust the signal-generator output, as alignment progresses, to keep the meter needle near center scale.

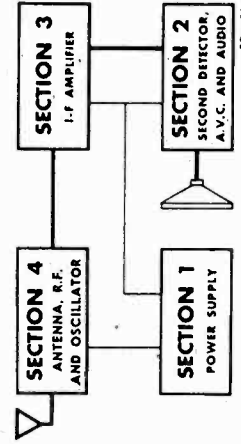
ADJUST IN ORDER	SPECIAL INSTRUCTIONS	DIAL SETTINGS SIG. GEN. RECEIVER
C301A C300B C300A	1. Ground the oscillator grid (pin 4) of the 7B8 converter. Adjust the i-f trimmers for maximum in the order listed.	455 kc. 550 kc.
C403A	2. Repeat step 1. Then remove the ground from pin 4 of the 7B8.	1600 kc. 1600 kc.
C401	3. Adjust for maximum.	1400 kc. 1400 kc.
	4. Adjust for maximum. Final adjustment to be made after the receiver has been reinstalled in the car, with the aerial connected.	



Top view, showing trimmer-condenser locations.



Bottom view, showing test points.

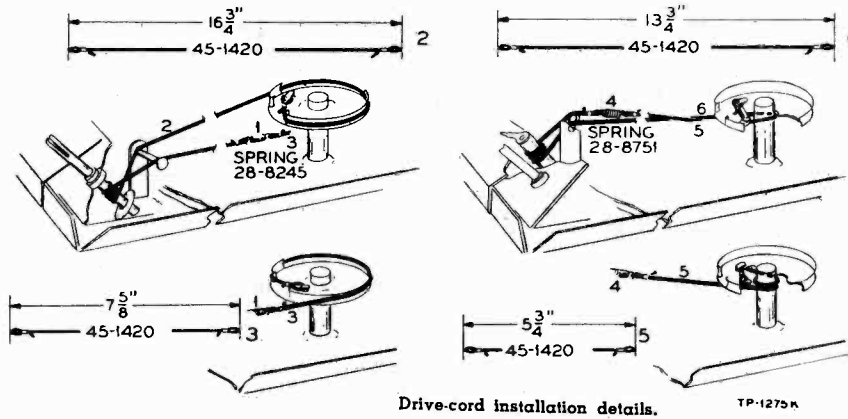


Block diagram (Heavy lines indicate signal path.)



SPECIFICATIONS

CIRCUIT.....Six-tube, superheterodyne
 FREQUENCY RANGE.....550 to 1600 kc.
 INTERMEDIATE FREQUENCY.....455 kc.
 POWER INPUT.....6.3 volts, 5.8 amperes, d.c.
 PHILCO TUBES USED.....7A7(2), 7B8, 7B6, 7A5, 7Y4
 AERIAL.....Philco universal auto radio type



Symbol designations used in the schematics and parts list are as follows:

- C—condenser
- F—fuse
- I—pilot lamp
- L—choke or coil
- LS—loud speaker
- R—resistor
- S—switch
- T—transformer
- VB—vibrator
- Z—electrical assembly

NOTE: Parts marked with an asterisk (*) are general replacement items, and the part numbers will not be identical with those used on factory assemblies. Use only the "Service Part No." shown in the parts list when ordering replacements.

REPLACEMENT PARTS LIST

SECTION 1			MISCELLANEOUS	
Reference No.	Description	Service Part No.	Description	Service Part No.
C100	Condenser, 250 mmf.	60-10245307*	"A" lead assembly	77-0217
C101	Condenser, .5 mf.	61-0137*	Bushing, pointer	57-2671FA3
C102	Condenser, 250 mmf.	60-10245307*	Clamp, vibrator	57-1637FA3
C103	Condenser, .5 mf.	61-0137*	Clip, coil mounting (oscillator)	28-5002FA1
C104	Condenser, .015 mf.	61-0138*	Cord, drive (25-foot spool)	45-1420
C105	Condenser, electrolytic, 10-10-20 mf.	61-0068*	Dial window parts	
	C105A: condenser, 10 mf.	Part of C105	Clip, brass	28-3445
	C105B: condenser, 10 mf.	Part of C105	Rivet	1W36671FA4
F100	Fuse	45-2359*	Window, glass	55-0501
I100	Lamp, pilot	34-2039*	Dial and frame assembly	
L100	Choke, "A"	32-2477	Dial	55-1200
L101	Choke, vibrator	65-0204	Frame	57-1399FA3
L102	Choke, "A"	32-2477	Fuse lead assembly	77-0235
R100	Resistor, 220 ohms	66-1224340*	Grommet, tuning condenser mounting	27-4596
R101	Resistor, 220 ohms	66-1224340*	Housing assembly	
R102	Resistor, 2,700 ohms	66-2274340*	Connector, aerial	57-0591FA3
R103	Resistor, 15,000 ohms	66-3153340*	Cover, tube side	76-1702
R104	Resistor, 2,200 ohms	66-2223340*	Cover assembly, wiring side	77-0561FJ22
S100	Switch	Part of R200	Screw, front cover	1W21813FA3
T100	Transformer, power	65-0404*	Screw, side cover	1W1586FA3
VB100	Vibrator	83-0026*	Knob, tuning control and volume control	77-0765
			Mounting parts kit	
			Bolt, bracket-to-cap	1W16117FA3
			Bracket, set mounting	57-0812FJ22
			Lockwasher, bracket-to-set	1W57223FA1
			Lockwasher, bracket-to-set	1W24516FA1
			Lockwasher, bracket-to-set	1W32403FA1
			Nut, bracket-to-set	1W21291FA3
			Nut, front mounting	1W1532FA3
			Screw, bracket-to-set	1W11510FA3
			Screw, front mounting	1W13212FA3
			Pilot lead assembly	76-1703
			Pointer	57-1940FCP
			Screw, speaker mounting	1W12922FA3
			Shaft, tuning	57-0802FA3
			Socket, tube	27-6128
			Socket, vibrator	27-6153
			Socket assembly, pilot lamp	77-0342FA3
			Spring, drive cord (music wire)	28-8245
			Spring, drive cord (spring wire)	28-8751
			Spring, pilot lamp (music wire)	57-0701
			Strap, back	28-5998FA3
			Suppression kit	
			Condenser, interference filter	30-4007
			Resistor, distributor	33-1196
			Washer, tuning shaft	1W52353FA3

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 10-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 to maximum.	Adjust while rocking tuning condenser.	C410
5	Same as 2.			Repeat steps 2, 3, and 4.	

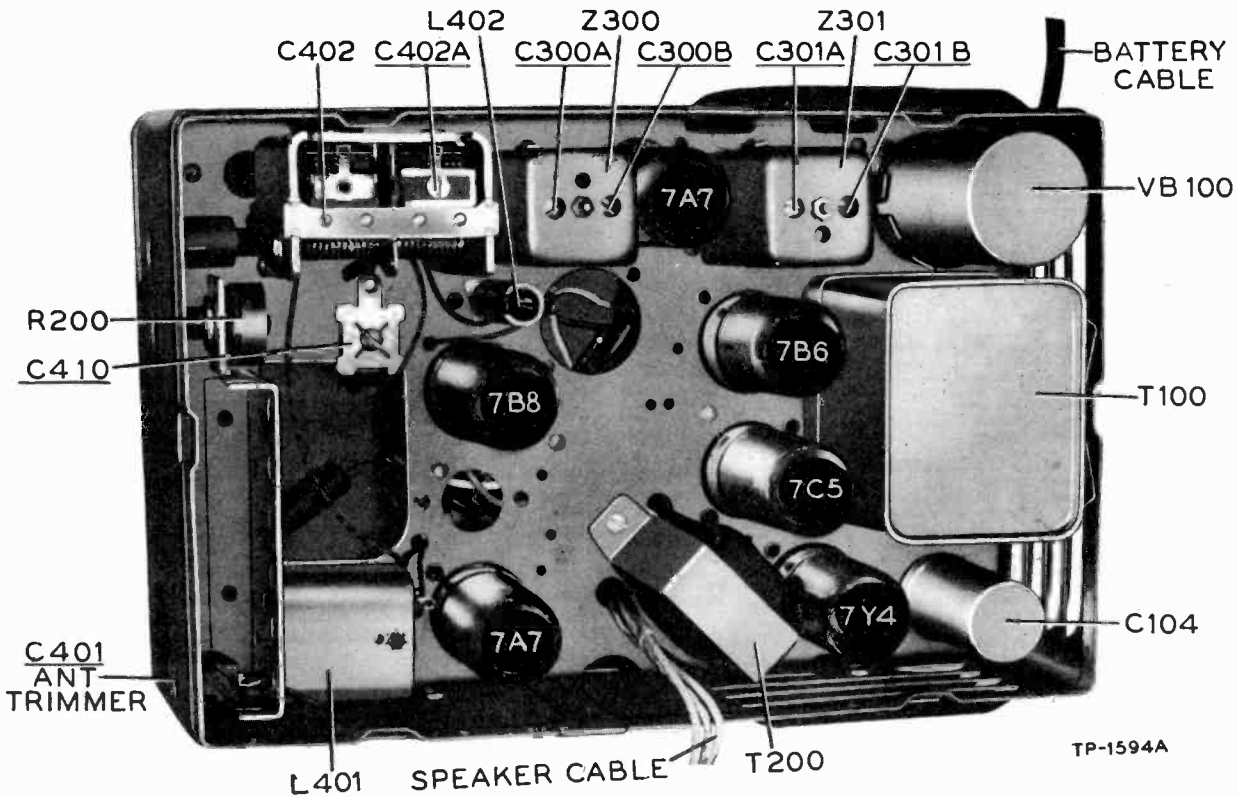


Figure 11. Top view, showing trimmer-condenser locations.

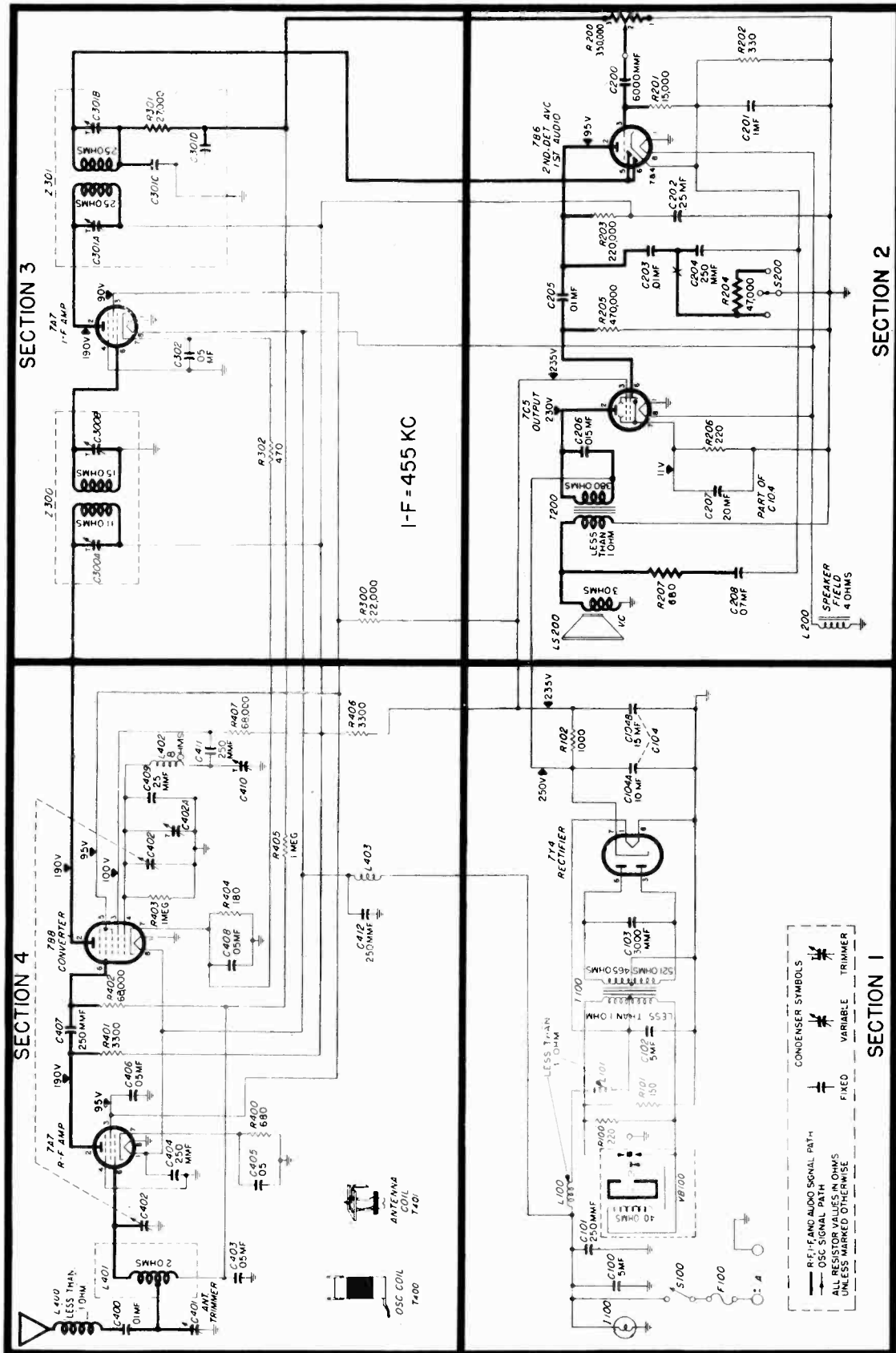


Figure 12. Complete schematic. NOTE: All voltage, capacity, and resistance values shown are average. The voltages were measured with a 20,000-ohms-per-volt meter between the indicated test points and chassis (C).

REPLACEMENT PARTS LIST — Model UN6-400

Symbol designations used in the schematic and parts list are as follows:

LA—loop antenna	L—choke or coil
LS—loudspeaker	S—switch
R—resistor	T—transformer
C—condenser	W—power cord and plug
I—pilot lamp	Z—i-f transformer assembly

NOTE: Parts marked with an asterisk (*) are general replacement items, and the numbers will not be identical with those used on factory assemblies. Use only the "Service Part No." shown in the parts list when ordering replacements.

SECTION 1

Reference	Description	Service Part No.
C100	Condenser, .5 mf.	61-0137*
C101	Condenser, 250 mmf.	60-1024037
C103	Condenser, 3,000 mmf.	61-0115
C104	Condenser, electrolytic, 10-15-20 mf.	61-0089
	C104A: condenser, 10 mf.	Part of C104
	C104B: condenser, 15 mf.	Part of C104
I100	Lamp, pilot	34-2039
L100	Choke, "A"	65-0037
L101	Choke, vibrator	65-0433
R100	Resistor, 220 ohms	66-1223340
R101	Resistor, 150 ohms	66-1153340
R102	Resistor, 1,000 ohms	66-2104340
S100	Switch	85-0112
T100	Transformer, power	65-0234*
VB100	Vibrator	83-0026*

SECTION 2

C200	Condenser, 6,000 mmf.	30-4504*
C201	Condenser, .1 mf.	30-4527*
C202	Condenser, .25 mf.	61-0125
C203	Condenser, .01 mf.	61-0120
C204	Condenser, 250 mmf.	60-10245307*
C205	Condenser, .01 mf.	61-0120
C206	Condenser, .015 mf.	61-0138
C207	Condenser, 20 mf.	Part of C104
C208	Condenser, .07 mf.	61-0152
LS200	Speaker	73-0059
	L200: coil, field	Part of LS200
R200	Control, volume, 350,000 ohms	67-0043
R201	Resistor, 15 meg.	66-6151540
R202	Resistor, 330 ohms	66-1333340
R203	Resistor, 220,000 ohms	66-4223340
R204	Resistor, 47,000 ohms	66-3473340*
R205	Resistor, 470,000 ohms	66-4473340*
R206	Resistor, 220 ohms	66-1224360
R207	Resistor, 680 ohms	66-2153340
S200	Switch, tone-control	77-0733
T200	Transformer, output	65-0419

SECTION 3

Z300	Transformer, 1st i-f	65-0319
	C300A: condenser, trimmer	Part of Z300
	C300B: condenser, trimmer	Part of Z300
Z301	Transformer, 2nd i-f	65-0320
	C301A: condenser, trimmer	Part of Z301
	C301B: condenser, trimmer	Part of Z301
	C301C: condenser, a-v-c filter	Part of Z301
	C301D: condenser, a-v-c filter	Part of Z301
	R301: Resistor, 27,000 ohms	Part of Z301
C302	Condenser, .05 mf.	30-4518*
R300	Resistor, 22,000 ohms	66-3224340
R302	Resistor, 470 ohms	66-1474360*

SECTION 4

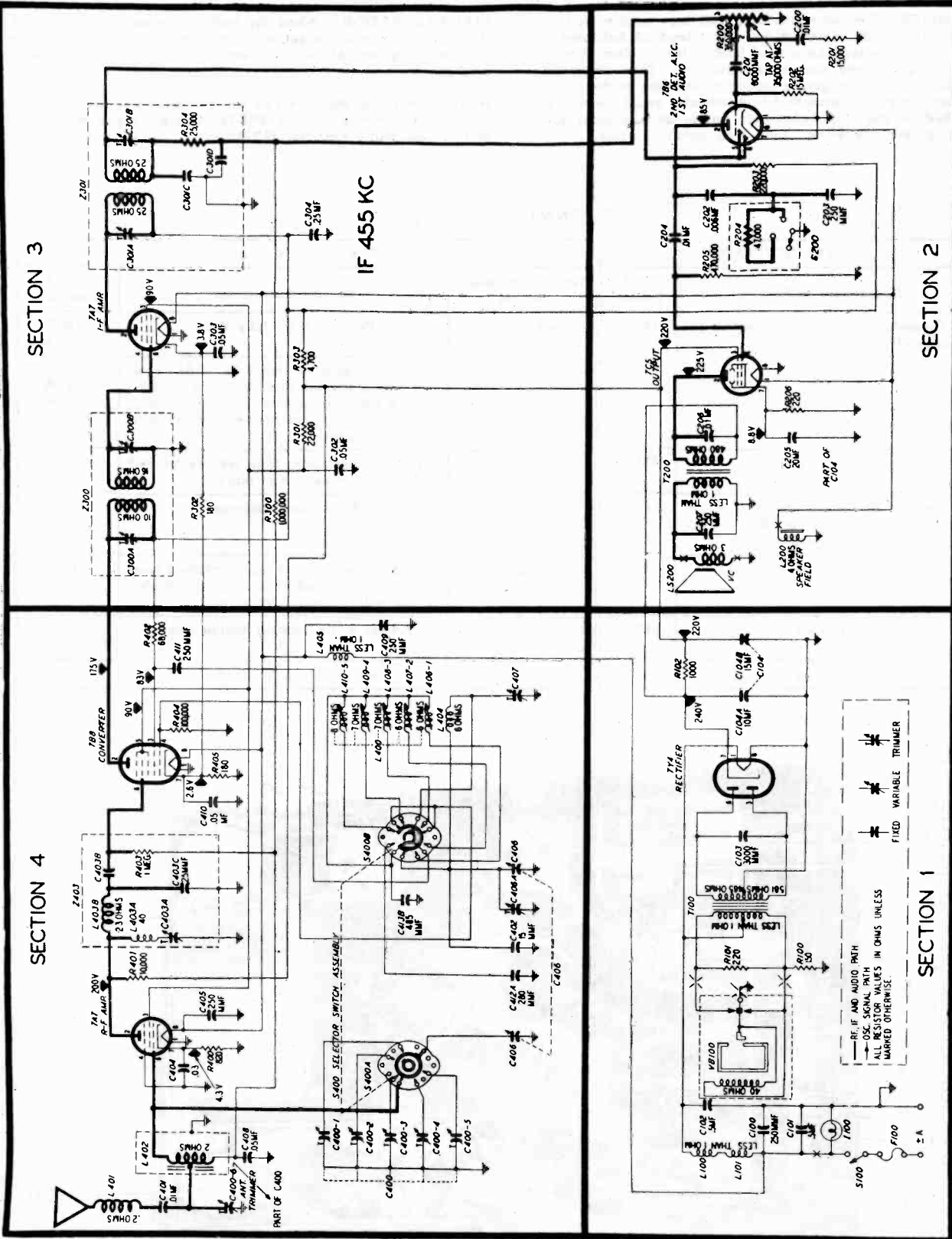
C400	Condenser, .01 mf.	61-0120*
C401	Condenser, trimmer (antenna)	77-0545
C402	Condenser, tuning	63-0077
	C402A: condenser, trimmer	Part of C402
C403	Condenser, .05 mf.	30-4518*
C404	Condenser, 250 mmf.	60-10245307*

SECTION 4 (Continued)

Reference	Description	Service Part No.
C405	Condenser, .05 mf.	30-4518*
C406	Condenser, .05 mf.	30-4518*
C407	Condenser, 250 mmf.	60-10245307*
C408	Condenser, .05 mf.	30-4518*
C409	Condenser, 25 mmf.	60-00245307*
C410	Condenser, trimmer	63-0048
C411	Condenser, 250 mmf.	60-10245307*
C412	Condenser, 250 mmf.	60-10245307*
R400	Resistor, 680 ohms	66-1684360*
R401	Resistor, 3,300 ohms	66-2333340*
R402	Resistor, 68,000 ohms	66-3683340*
R403	Resistor, 100,000 ohms	66-4103340*
R404	Resistor, 180 ohms	66-1184360*
R405	Resistor, 1 meg.	66-5103340*
R406	Resistor, 3,300 ohms	66-2334340
R407	Resistor, 68,000 ohms	66-3683340*
L400	Choke, antenna	65-0168
L401	Coil, antenna-transformer	65-0323
L402	Coil, oscillator	65-0420
L403	Choke, "A"	65-0452

MISCELLANEOUS

Description	Service Part No.
Control assembly	42-5866
Cord, drive (25-foot spool)	45-1459
Dial	55-1194
Lead, "A" (control to set)	38-8221
Lead, "A" (control to fuse)	41-3387
Lead, "A" (fuse to ammeter)	77-0235
Lead, tone-control	95-0135
Plate, dial background	57-1888
Pointer	57-1889
Shaft assembly, tuning	57-1385
Shaft assembly, volume	57-1384
Sleeve, knob	57-1324FA3
Socket assembly, pilot-lamp	77-0541
Housing assembly	77-0751FJ20
Cover, tube-and-speaker side	57-1943FJ20
Cover, wiring side	57-1345FJ20
Screw, cover mounting	1W21813FA26
Set mounting kit	40-8536
Bolt, hook, set mounting	57-1340FA3
Clamp, cable	57-1463FA1
Lockwasher, set mounting	1W57223FA1
Nut, set mounting	1W21291FA3
Speaker mounting hardware	
Cloth, grille	89-0013
Lockwasher, speaker mounting	1W24257FA1
Screw, speaker mounting	1W19672FA3
Suppressor kit	40-9102
Condenser, interference	30-4007
Resistor, distributor	33-1196
Clamp, "A" lead	57-1429
Clamp, vibrator	57-1637FA3
Clip, coil-mounting	28-5002FA1
Connector, antenna	57-0591
Grommet, tuning-condenser mounting	27-4596
Screw, tuning-coil and volume-control assembly	1W19670FA3
Shield, power	57-1744FA3
Socket, tube	27-6128*
Socket, vibrator	27-6153*



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

ALIGNMENT PROCEDURE

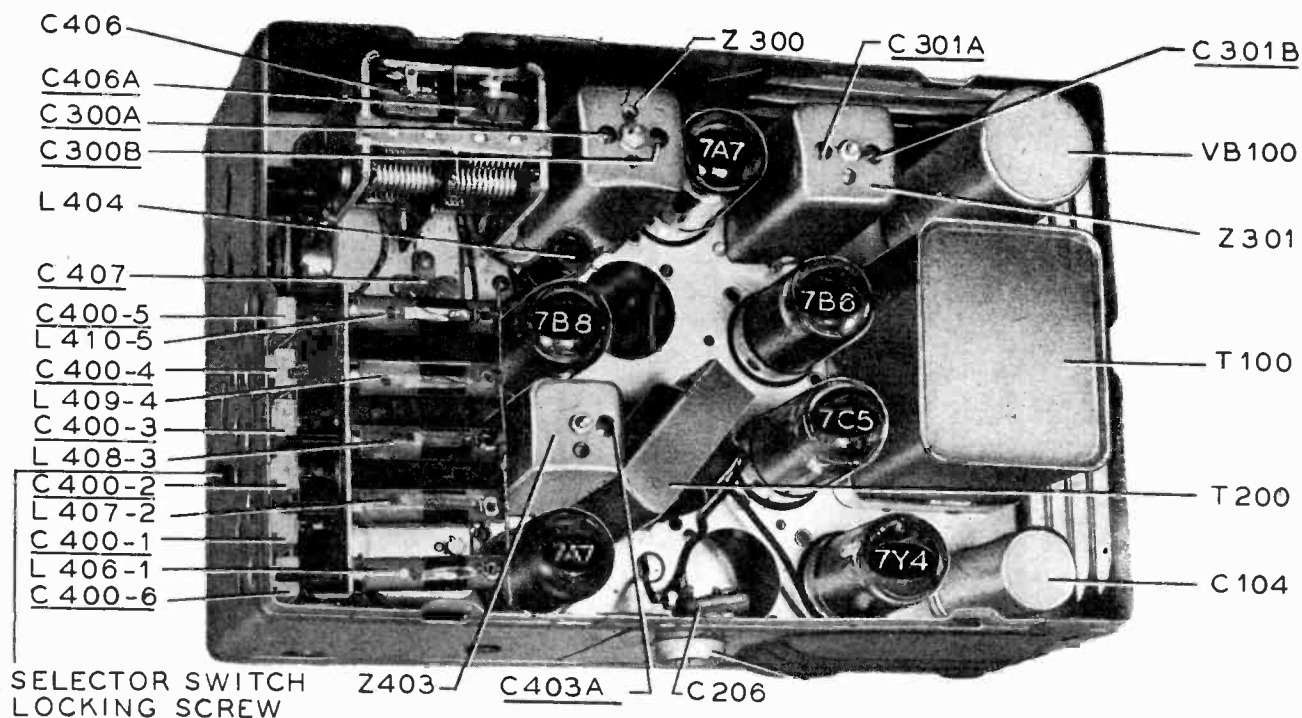
OUTPUT METER: Connect to the voice-coil lugs on the speaker.
SIGNAL GENERATOR: Connect the output lead as indicated in the chart below; connect the ground lead to the receiver chassis. Set the receiver volume control at maximum. Then adjust the signal-generator output to give a readable deflection on the output meter, using the 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.

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.

NOTE: Instructions for setting up the automatic push-button tuning control may be found in the UN6-550 Operating and Installation Instructions, Philco Part No. 39-7882.

ALIGNMENT CHART

SIGNAL GENERATOR			RECEIVER		
	Connections to Receiver	Dial Setting	Tuning-Condenser Setting	Special Instructions	Adjust Trimmers
1	Through .05 mf. to the antenna receptacle.	455 kc.	Fully meshed.	Preset C403A fully tight. Lock station-selector switch in "DIAL" position (see instructions at bottom of page 1); ground stator of oscillator section of gang. Adjust for maximum in given order; then repeat procedure.	C403A (fully tight) C301B C301A C300B C300A
2	Same as 1.	455 kc.	Fully meshed.	Adjust for minimum; then remove ground from oscillator section of gang.	C403A
3	Through 30 mmf. in series with antenna lead, Philco Part No. 95-0185 to the antenna receptacle.	1580 kc.	Fully open.	Adjust for maximum.	C406A
4	Same as 3.	1400 kc.	Tune to maximum signal.	Adjust for maximum. Final adjustment must be made after radio has been re-installed in car with antenna connected.	C400-6
5	Same as 3.	580 kc.	Tune to maximum signal.	Adjust while rocking tuning gang.	C407
6	Same as 3.			Repeat steps 3, 4, and 5.	



Top view, showing trimmer-condenser locations.

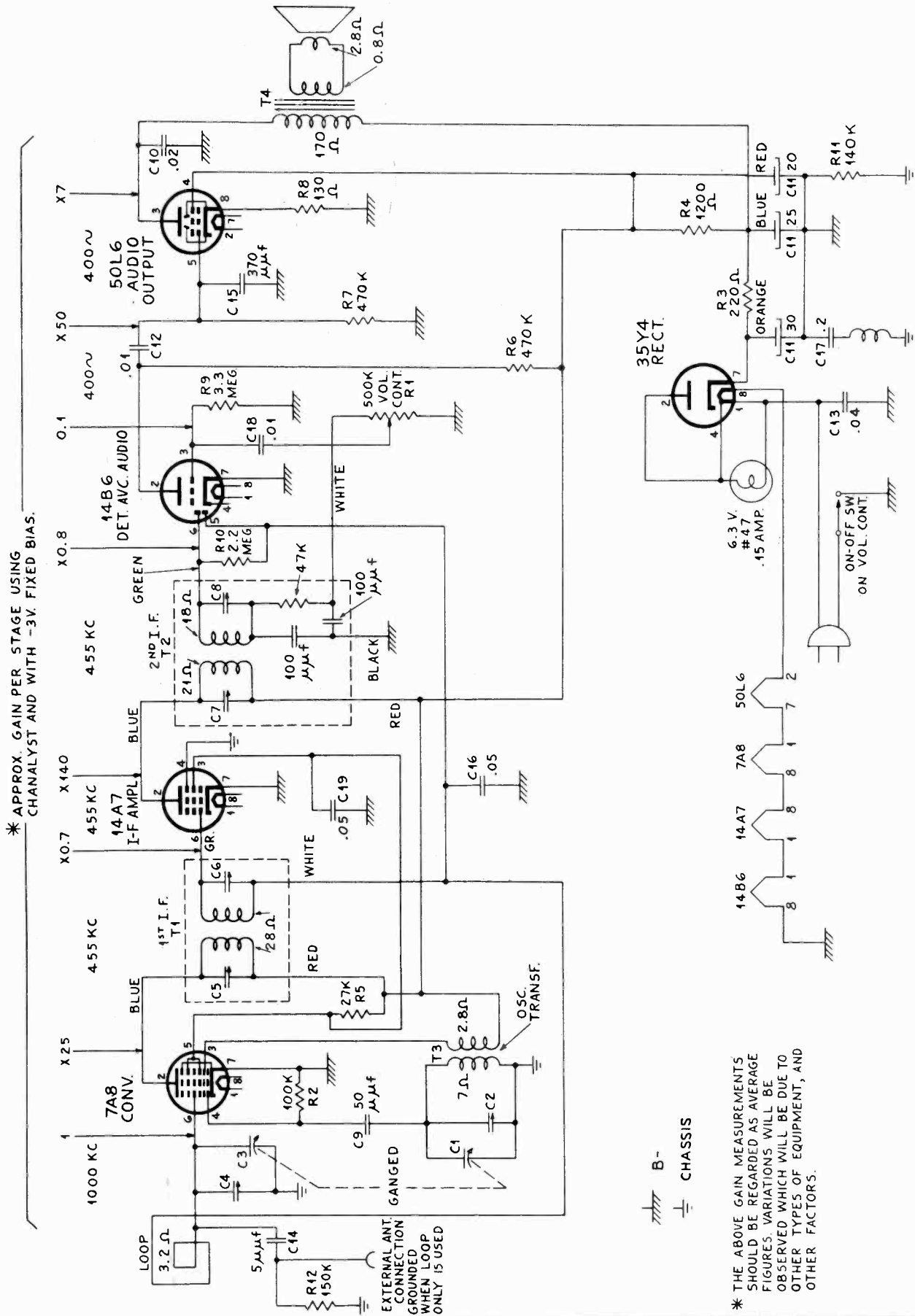
REPLACEMENT PARTS LIST

Symbol designations used in the schematics and parts list are as follows:

- C—condenser
- F—fuse
- I—pilot lamp
- L—choke or coil
- LS—loud speaker
- R—resistor
- S—switch
- T—transformer
- VB—vibrator
- Z—electrical assembly

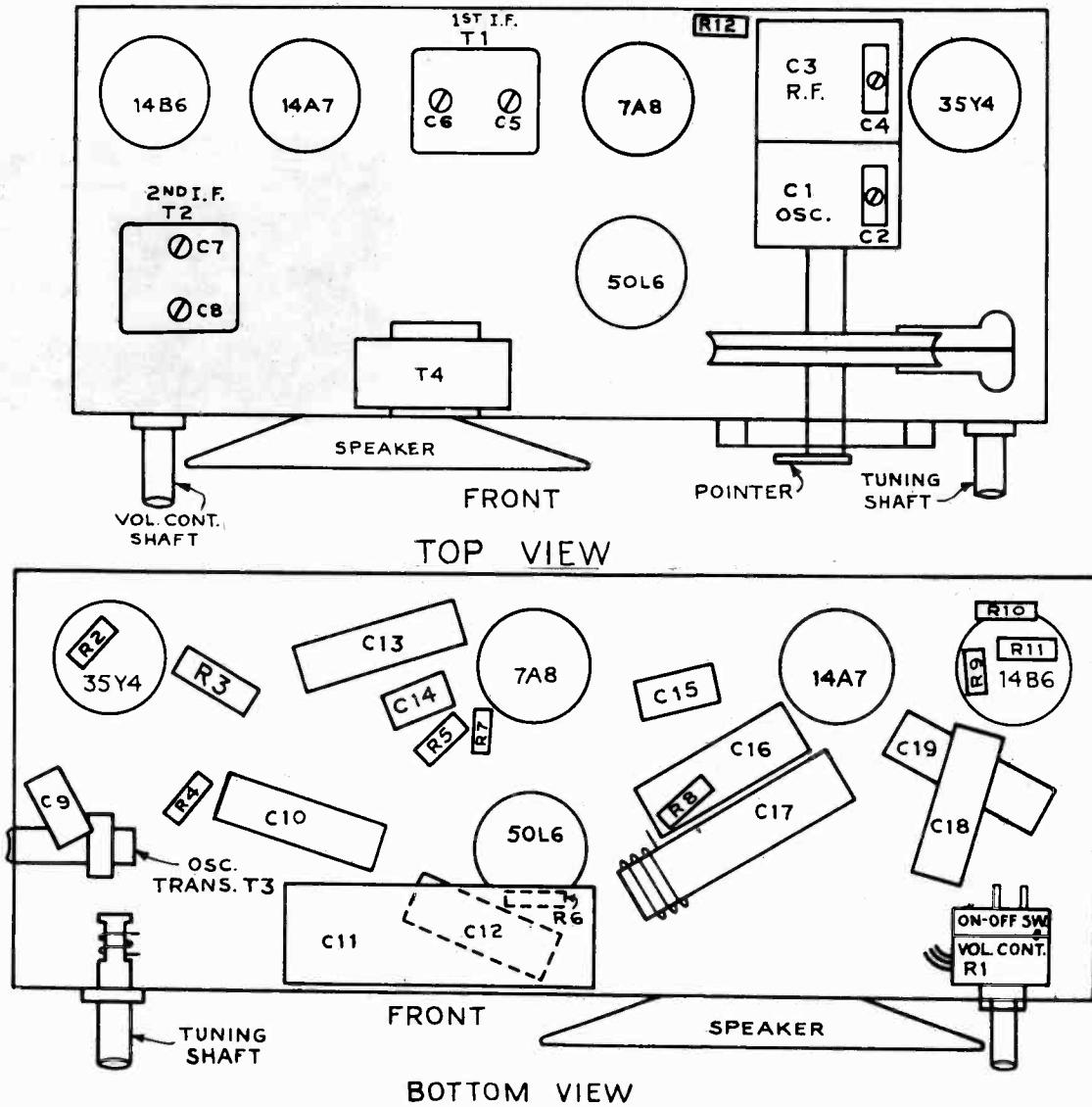
NOTE: All parts marked with an asterisk (*) are general replacement items, and the part numbers will not be identical with those used on factory assemblies. Use only the "Service Part No." shown in this parts list when ordering replacements

SECTION 1			SECTION 4 (Continued)		
Reference	Description	Service Part No.	Reference	Description	Service Part No.
C100	Condenser, 250 mmf.	60-10245307*	L401	Choke, antenna	65-0168
C101	Condenser, .5 mf.	61-0137*	L402	Coil, antenna	65-0323
C102	Condenser, .5 mf.	61-0137*	L404	Coil, manual-oscillator	65-0420
C103	Condenser, .003 mf.	61-0115*	L405	Choke, "A"	65-0452
C104	Condenser, electrolytic, 10-15-20 mf.	61-0089*	L406-1	Coil, push-button oscillator	65-0467
	C104A: condenser, 10 mf.	Part of C104	L407-2	Coil, push-button oscillator	65-0468
	C104B: condenser, 15 mf.	Part of C104	L408-3	Coil, push-button oscillator	65-0469
F100	Fuse	45-2559*	L409-4	Coil, push-button oscillator	65-0470
I100	Lamp, pilot	34-2039*	L410-5	Coil, push-button oscillator	65-0471
L100	Choke, vibrator	65-0433	R400	Resistor, 820 ohms	66-1823340*
L101	Choke, "A"	65-0037	R401	Resistor, 10,000 ohms	66-3103340*
R100	Resistor, 150 ohms	66-1153340*	R402	Resistor, 68,000 ohms	66-3683340*
R101	Resistor, 220 ohms	66-1223340*	R404	Resistor, 100,000 ohms	66-4103340*
R102	Resistor, 1,000 ohms	66-2104340*	R405	Resistor, 180 ohms	66-1183340*
S100	Switch, power	85-0112*	S400	Switch, selector	76-2432*
T100	Transformer, power	65-0234*		Wafer switch shaft	77-0936
VB100	Vibrator	83-0026*	Z403	Transformer, r-f	65-0321
				Z403A: condenser, r-f trimmer	Part of Z403
				Z403B: condenser, coupling	Part of Z403
				Z403C: condenser, 25 mmf.	Part of Z403
				Z403A: coil, r-f	Part of Z403
				Z403B: coil, r-f	Part of Z403
				R403: resistor, 1 meg. (Part of Z403)	66-5103340*
SECTION 2			MISCELLANEOUS		
C200	Condenser, .01 mf.	61-0120*	Control assembly		42-5865
C201	Condenser, .006 mf.	45-3500-7*	Case		56-3180
C202	Condenser, .006 mf.	45-3500-7*	Cord, drive (25-foot spool)		45-1459
C203	Condenser, 250 mmf.	60-10245307*	Cover		56-3181
C204	Condenser, .01 mf.	61-0120*	Dial		55-1194
C205	Condenser, 20 mf.	Part of C104	Drum assembly		77-0755
C206	Condenser, .01 mf.	61-0124*	Lead, "A" (control to set)		38-8221
C207	Condenser, 250 mmf.	60-10245307*	Lead, "A" (control to fuse)		41-3387
LS200	Field, speaker	Part of LS200	Lead, "A" (control to anmmeter)		77-0235
LS200	Speaker	73-0047*	Lead, tone-control		95-0135
R200	Control, volume, 350,000 ohms	67-0032*	Pilot-lamp assembly		77-0541
R201	Resistor, 15,000 ohms	66-3153340*	Plate, dial-background		57-1885
R202	Resistor, 15 megs.	66-6153340*	Pointer		57-1889
R203	Resistor, 220,000 ohms	66-4223340*	Shaft assembly, volume control		57-1384
R204	Resistor, 47,000 ohms	66-3473340*	Sleeve, knob		57-1324FA3
R205	Resistor, 470,000 ohms	66-4473340*	Station-indicator-shaft assembly, push-button		57-1386
R206	Resistor, 220 ohms	66-1224340*	Tuning-shaft assembly, manual		57-1385
S200	Switch, tone-control	77-0733*	Housing		77-0694FJ21
T200	Transformer, output	65-0408*	Cover, tube-side		76-1696
SECTION 3			Cover, wiring-side		57-1345FJ21
C302	Condenser, .05 mf.	61-0122*	Screw, tube-side-cover mounting		1W21813FA26
C303	Condenser, .05 mf.	61-0122*	Set mounting hardware		
C304	Condenser, .25 mf.	61-0125*	Bolt, hook, set-mounting		57-1340FA3
R100	Resistor, 1 meg.	66-5103340*	Lockwasher, set-mounting		1W57223FA1
R101	Resistor, 22,000 ohms	66-3224340*	Nut, set-mounting		1W21291FA3
R102	Resistor, 180 ohms	66-1183340*	Speaker unit		
R103	Resistor, 4,700 ohms	66-2473340*	Baffle, speaker		55-0957
R104	Resistor, 25,000 ohms	66-3253340*	Bolt, bracket-to-bracket		97-0061FA3
Z300	Transformer, 1st i-f	65-0319	Bolt, bracket-to-instrument-panel		1W17331FA4
	C300A: condenser, trimmer	Part of Z300	Bracket, speaker		57-1461FA3
	C300B: condenser, trimmer	Part of Z300	Bracket, "U"		57-2162FA3
	C300C: condenser, trimmer	Part of Z300	Gasket and screen		55-1320
Z301	Transformer, 2nd i-f	65-0320	Lockwasher, bracket-to-instrument-panel		1W35032FE7
	C301A: condenser, trimmer	Part of Z301	Lockwasher, bracket-to-bracket and bracket-to-instrument-panel		1W24260FE7
	C301B: condenser, trimmer	Part of Z301	Lockwasher, speaker-mounting and speaker-to-bracket		1W24257FE7
	C301C: condenser	Part of Z301	Nut, speaker-to-bracket		1W19988FA3
	C301D: condenser	Part of Z301	Nut, bracket-to-bracket and bracket-to-instrument-panel		1W21291FA3
	R304: resistor, 25,000 ohms (Part of Z301)	66-3253340*	Screw, speaker-to-bracket		1W10638FA4
SECTION 4			Spacer, cardboard		55-0449
C400	Trimmer-condenser assembly	77-1187	Washer, speaker-to-bracket		1W52353FA3
	C400-1: condenser, push-button trimmer	Part of C400	Suppressor kit		
	C400-2: condenser, push-button trimmer	Part of C400	Condenser, interference		30-4007
	C400-3: condenser, push-button trimmer	Part of C400	Resistor, distributor		33-1196
	C400-4: condenser, push-button trimmer	Part of C400	"A" lead		95-0227
	C400-5: condenser, push-button trimmer	Part of C400	Clamp, vibrator		57-1637FA3
	C400-6: condenser, antenna-trimmer	Part of C400	Clip, coil-mounting		28-5002FA1
C401	Condenser, .01 mf.	61-0120*	Connector, antenna		57-0591FA3
C402	Condenser, 13 mmf.	60-00155407*	Cup, core		W2032
C404	Condenser, .05 mf.	61-0122*	Grommet, "A" lead		27-4676
C405	Condenser, 250 mmf.	60-10245307*	Grommet, tuning-condenser-mounting		27-4596
C406	Condenser, tuning	63-0077	Screw and core assembly		57-1744FA3
	C406A: condenser, oscillator-trimmer	Part of C406	Shield, power		57-1744FA3
C407	Condenser, oscillator-padder	63-0048	Socket, speaker		55-1318*
C408	Condenser, .05 mf.	61-0122*	Socket, tube		27-6128*
C409	Condenser, 250 mmf.	60-10245307*	Socket, vibrator		27-6153
C410	Condenser, .05 mf.	61-0122*			
C411	Condenser, 250 mmf.	60-10245307*			
C412	Condenser, 280 mmf.	30-1220-8*			
C413	Condenser, 485 mmf.	30-1220-23*			



MODEL 46-200

PHILCO CORP.



ALIGNMENT

Remove the chassis from the cabinet and connect the output meter to the left terminal (High) and the center terminal (Low) of the three lug terminal strip on the rear of the chassis.

Connect the Signal generator to the standard Hazeltine loop, Model 1150 and couple it loosely to the receiver loop.

Set the Volume at maximum, and fully mark the tuning condenser.

The output of the signal generator should be just sufficient to give a readable deflection on the output meter.

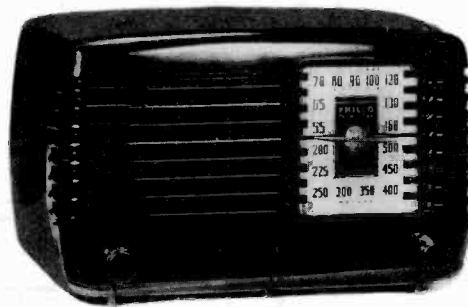
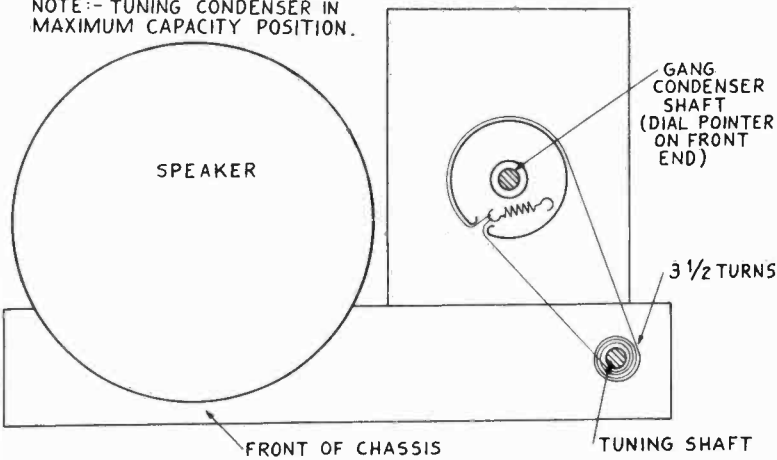
Set the signal generator to 455 KC and adjust the IF trimmers for maximum output in the following order: C8, C7, C6, C5.

Set the signal generator and receiver to 1600 KC and adjust the oscillator trimmer C2 for maximum output.

Set the signal generator and receiver to 1400 KC and adjust the RF trimmer C4 for maximum output.

PHILCO CORP.

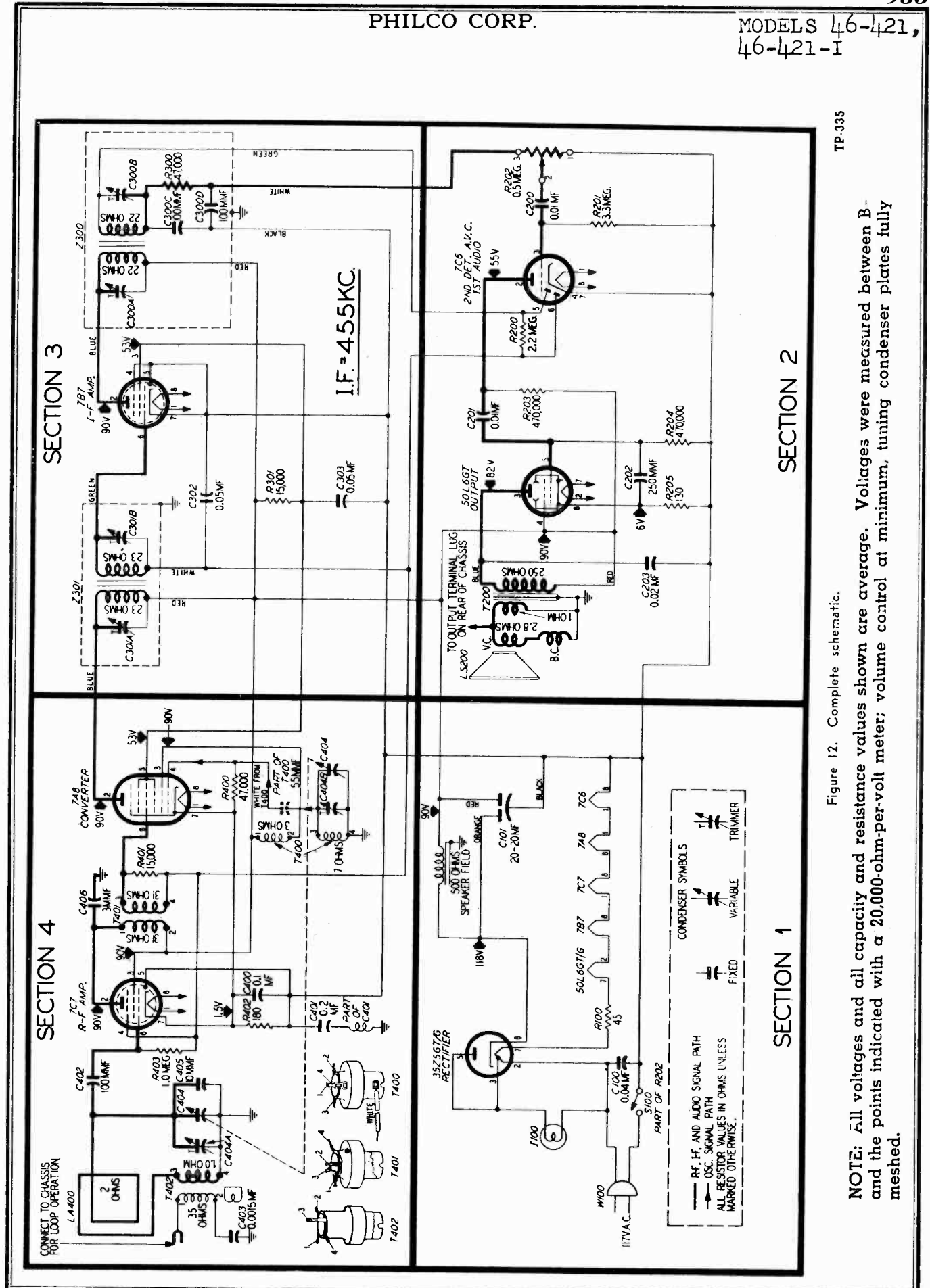
NOTE:- TUNING CONDENSER IN MAXIMUM CAPACITY POSITION.



SOCKET	PIN	VTV:	20,000 Ω / P.V.	1,000 Ω / P.V.	RESISTANCE
7A8 CONV.	1	AC	AC	AC	30 Ω
	2	100	100	100	OVER 2 MEGS.
	3	100	100	100	OVER 2 MEGS.
	4	-12	-8.6	-4.2	900 K
	5	44	44	38	OVER 2 MEGS.
	6	-1	-0.8	-0.4	2.8 MEGS.
	7	0	0	0	0
	8	AC	AC	AC	24 Ω
14A7 I-F AMPL.	1	AC	AC	AC	12 Ω
	2	100	100	100	OVER 2 MEGS.
	3	43	43	38	OVER 2 MEGS.
	4	0	0	0	0
	5	0	0	0	0
	6	-1	-0.8	-0.4	2.8 MEGS.
	7	0	0	0	0
	8	AC	AC	AC	24 Ω
14B6 DET. A.V.C. AUDIO	1	AC	AC	AC	12 Ω
	2	56	54	16	OVER 2 MEGS.
	3	-1	-0.6	-0.4	3 MEGS.
	4	0	0	0	0
	5	-1	-0.8	-0.4	2.8 MEGS.
	6	-1	-0.6	-0.3	5.2 MEGS.
	7	0	0	0	0
	8	0	0	0	0
50L6GT AUDIO OUTPUT	1	56	54	16	OVER 2 MEGS.
	2	AC	AC	AC	75
	3	105	105	105	OVER 2 MEGS.
	4	100	100	100	OVER 2 MEGS.
	5	0	0	0	400 K
	6	-1	-0.8	-0.4	2.8 MEGS.
	7	AC	AC	AC	32 Ω
	8	6	6	6	130 Ω
35Y4	1	AC	AC	AC	105 Ω
	2	AC	AC	AC	105 Ω
	3	-12	-8.6	-4.2	90 K
	4	AC	AC	AC	105
	5	100	100	100	OVER 2 MEGS.
	6	0	0	0	0
	7	125	125	125	OVER 2 MEGS.
	8	AC	AC	AC	75 Ω

All voltage and resistance measurements made with respect to B-.
And with a line voltage of 116 V.A.C.

There is a resistance of 140 K. between B- and chassis ground.



TP-335

Figure 12. Complete schematic.

NOTE: All voltages and all capacity and resistance values shown are average. Voltages were measured between B- and the points indicated with a 20,000-ohm-per-volt meter; volume control at minimum, tuning condenser plates fully meshed.

MODELS 46-421,
46-421-I

PHILCO CORP.

CONNECTING ALIGNING EQUIPMENT

OUTPUT METER. Connect to output (left hand) and ground (center) lugs of terminal panel on rear of chassis as shown in figure 11.

SIGNAL GENERATOR. Use a 100-mmf. condenser to couple the signal-generator output lead to the receiver. Adjust the output of the signal generator to give a signal strength sufficient to cause a readable deflection of the output meter, using the range on the meter which best indicates small variations in output. Reduce the output of the signal generator if the pointer of the output meter goes off scale as alignment progresses.

Make all adjustments in the order listed.

ALIGNMENT CHART

SIGNAL GENERATOR		RECEIVER				
Connections to Receiver	Dial Setting (kc.)	Dial Setting (kc.)	Volume Control Setting	Special Instructions	Adjust Trimmers in Given Order	Adjust Trimmers For
Stator plate terminal, antenna section of tuning condenser, and B-	455	540	Max	Turn C-301B down tight. Turn tuning condenser plates to full-meshed position. Make sure that dial pointer is set to the left index line (small mark stamped on lower left side of scale plate reflector). This setting corresponds to a dial setting of 540 KC.	C300A C300B C301A C301B	Maximum output
Aerial lead and B-	1600	1600	Max	Turn tuning condenser until dial pointer is on the first small index line (from right side) stamped on the scale plate reflector. This setting corresponds to a dial setting of 1600 KC.	C404B	Maximum output
Aerial lead and B-	1500	1500	Max	Turn tuning condenser until dial pointer is on the second small index line (from right side) stamped on the scale plate reflector. This setting corresponds to a dial setting of 1500 KC.	C404A	Maximum output

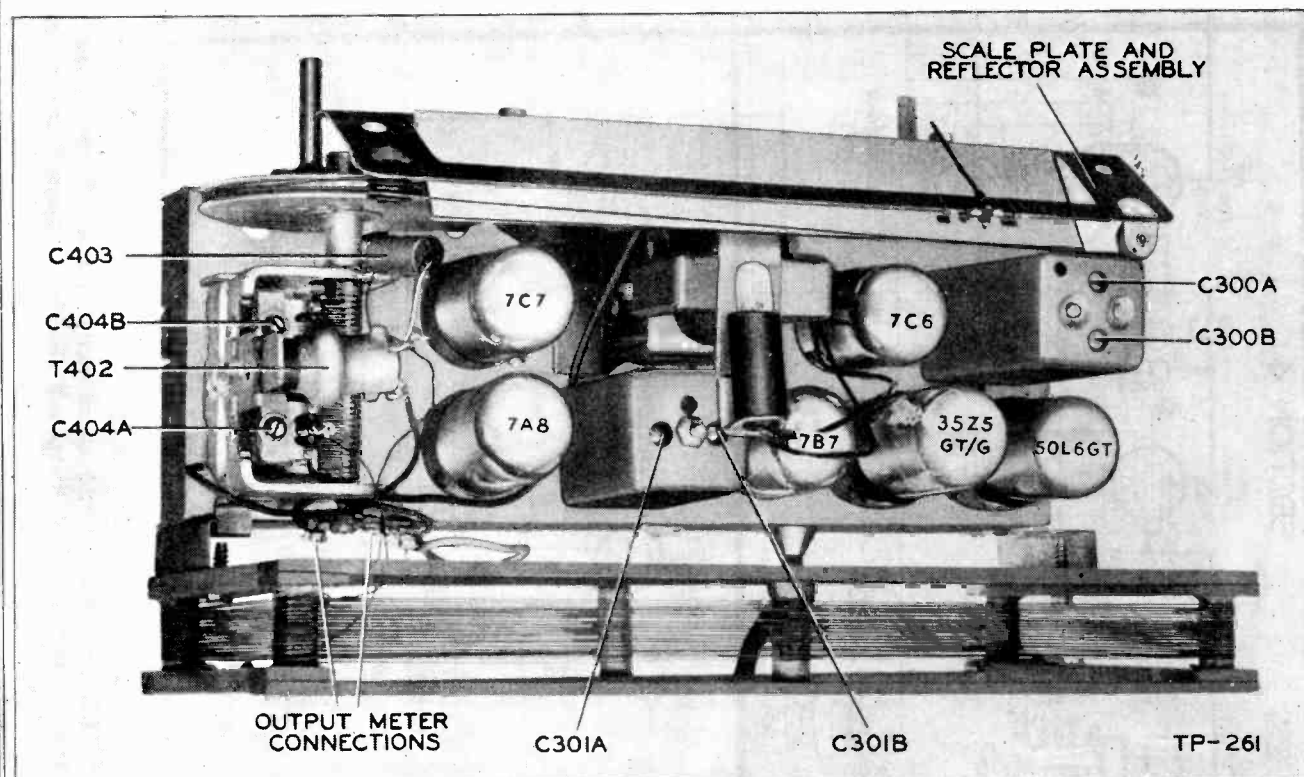


Figure 11. Top view showing trimmer condenser locations.

MODELS 46-421,
46-421-I

PHILCO CORP.

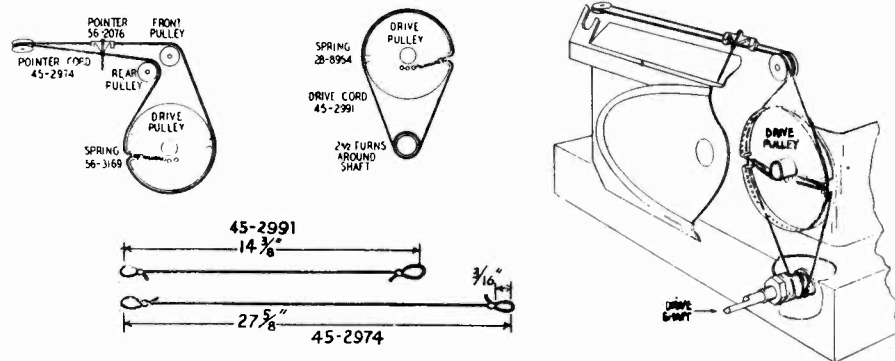


Figure 13. Drive cord installation details.

NOTE: Parts marked with an asterisk (*) are general replacement items and the numbers will not be identical with those used on factory assemblies. ALWAYS USE THE PART NUMBERS SHOWN IN THIS PARTS LIST WHEN ORDERING.

Symbol designations used in the schematics and parts list are as follows:

- C—condenser
- I—Pilot lamp
- LA—loop antenna
- LS—loudspeaker
- R—resistor
- S—switch
- T—transformer
- W—power cord and plug
- Z—i-f transformer assembly

SECTION 1

Reference Number	Description	Service Part No.
C100	Condenser, .04 mf., 400V	30-4119
C101	Condenser, 20-20 mf., 150 V.	30-2547*
I100	Pilot Lamp, 6-8V., 150 ma.	34-2068
R100	Resistor, 50 ohms	33-3432
S100	Switch, Power	Part of R-202
W100	Power Cord and Plug	L-3199

SECTION 2

C200	Condenser, .01 mf., 400V.	61-0120*
C201	Condenser, .01 mf., 403V.	61-0120*
C202	Condenser, 250 mmf.	60-10245307*
C203	Condenser, .02 mf., 400V.	30-4599*
LS200	Speaker (with output transformer)	36-1591
R200	Resistor, 2.2 meg.	66-5223340*
R201	Resistor, 3.3 meg.	66-5333340*
R202	Volume Control, .5 meg.	33-5469
R203	Resistor, 470,000 ohms	66-4473340*
R204	Resistor, 470,000 ohms	66-4473340*
R205	Resistor, 130 ohms	66-1133340
T200	Transformer, Output	Part of LS-200

SECTION 3

C300A	Condenser, Trimmer	Part of Z-300
C300B	Condenser, Trimmer	Part of Z-300
C300C	Condenser, 100 mmf.	Part of Z-300
C300D	Condenser, 100 mmf.	Part of Z-300
C301A	Condenser, Trimmer	Part of Z-301
C301B	Condenser, Trimmer	Part of Z-301
C302	Condenser, .05 mf., 200V.	30-4518*
C303	Condenser, .05 mf., 200V.	30-4518*
R300	Resistor, 47,000 ohms	Part of Z-300
R301	Resistor, 15,000 ohms	66-3153340
Z300	Transformer, 2nd I-F	32-4014
Z301	Transformer, 1st I-F	32-3962

SECTION 4

Reference Number	Description	Service Part No.
C400	Condenser, .1 mf., 200V.	30-4527*
C401	Condenser and Choke Assy.	76-1198
C402	Condenser, 100 mmf.	60-10105407*
C403	Condenser, .0015 mf., 600V.	30-4621
C404	Condenser, 2-Section Tuning	31-2659
C404A	Condenser, Trimmer	Part of C-404
C404B	Condenser, Trimmer	Part of C-404
C405	Condenser, 10 mmf.	60-00105407
C-406	Condenser, 3 mmf.	30-1221
LA400	Loop Aerial	76-1877
R400	Resistor, 47,000 ohms	66-3473340*
R401	Resistor, 15,000 ohms	Part of T-401
R402	Resistor, 180 ohms	66-1184360*
R403	Resistor, 1 meg.	66-5103340*
T400	Transformer, Oscillator	32-3613
T401	Transformer, R-F	32-3595
T402	Transformer, Antenna	32-3394

MISCELLANEOUS

Baffle and cloth assembly, Model 46-421	40-6745
Model 46-421-I	40-6747
Backing plate, tuning condenser mounting	56-2105FA3
Bracket, antenna coil mounting	56-2058FA3
Cabinet, Model 46-421	10630
Model 46-421-I	10630A
Clamp, dial scale mounting	56-2068
Clamp, electrolytic condenser mounting	56-1346FA5
Clip, coil mounting	28-5002FE7
Dial scale, Model 46-421	27-5849
Model 46-421-I	27-5845
Drive cord, tuning condenser (25 ft. Spool)	45-2991*
Drive cord, pointer (25 ft. Spool)	45-2974*
Foot, felt	W-2190
Grommet, rubber, tuning condenser mounting	27-4610
Knob and spring assembly, Model 46-421	54-4227
Model 46-421-I	54-4228
Pointer, dial scale	56-2076FCP
Rubber band, dial scale mounting	54-4176
Scale plate and light reflector assembly	76-1476
Light reflector	27-9816
Screw-washer combination, chassis mounting	1W37656FA3
Shaft, tuning drive	31-2664
Shield, loctal tube	56-2731*
Socket, loctal	27-6138*
Socket octal	27-6199*
Socket assembly, pilot lamp	76-2142
Spring, tuning condenser drive cord	28-8954
Spring, pointer drive cord	56-3167
Wiring panel, 2 lug	12W45646
Wiring panel, 3 lug	76-2148

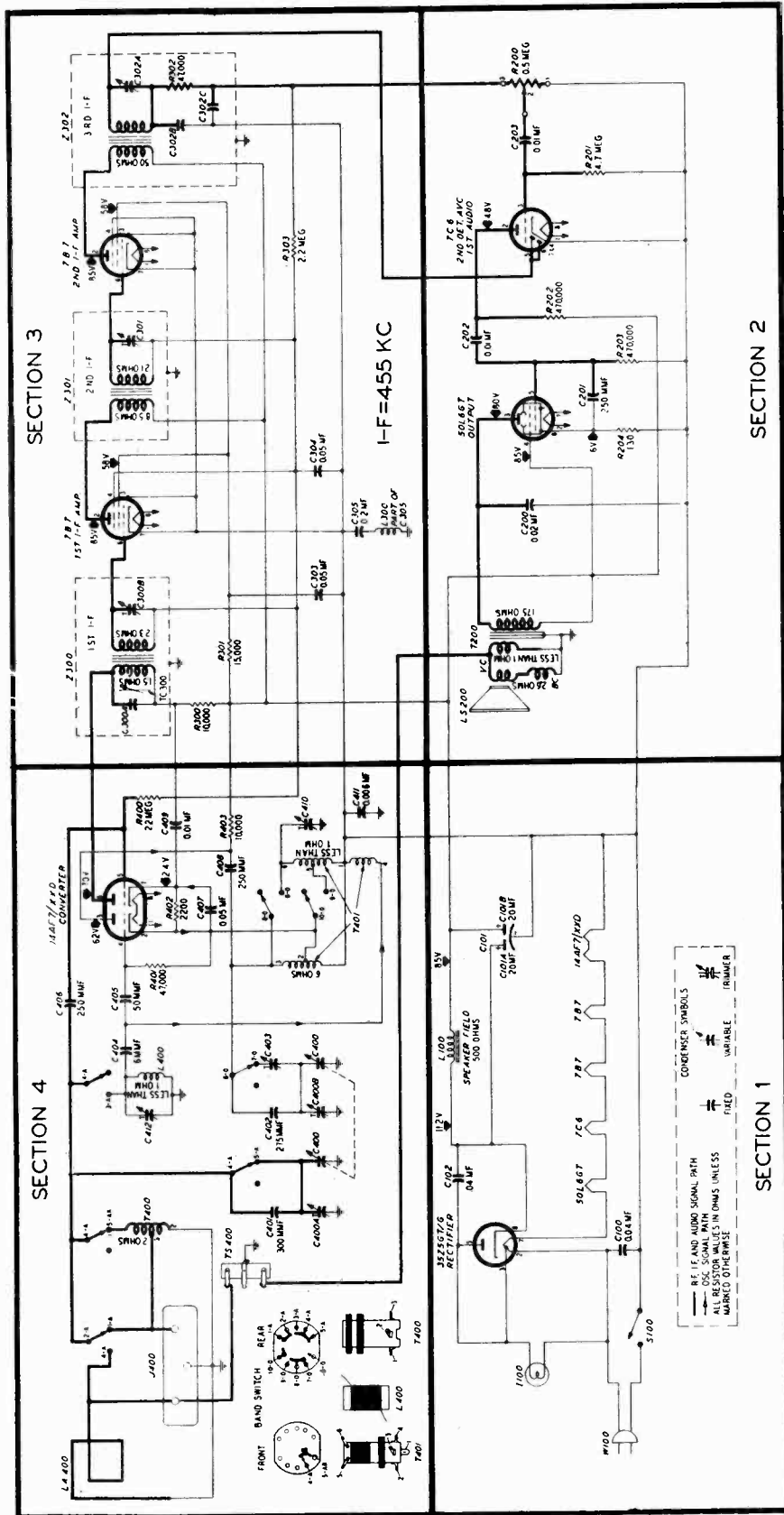


Figure 12. Complete Schematic.

NOTE: All voltage, capacity, and resistance values shown are average. The voltages shown were measured with a 20,000-ohms-per-volt meter between the indicated test points and B- (negative return of power supply).

CONNECTING ALIGNING EQUIPMENT

Output Meter: Connect between output (left hand) and ground (center) lugs of terminal strip TS-400 on rear of chassis, shown in figure 11.

Signal Generator: Connect output lead through a .05 mfd. condenser to indicated test point and ground lead to B-.

Adjust generator output to give a readable deflection on the output meter, using meter range that best indicates small changes in output. Reduce generator output as alignment progresses to prevent meter needle from going off scale.

Turn receiver volume control to maximum and adjust all trimmers, in the order listed, for maximum output.

ALIGNMENT CHART

SIGNAL GENERATOR			RECEIVER			
	Connections to Receiver	Dial Setting Kc.	Band Switch Position	Dial Setting Kc.	Special Instructions	Adjust Trimmers in Order Given
1	Stator terminal of antenna section of tuning condenser.	455	Broadcast	Plates fully meshed	Set pointer to index mark on back plate. Preset C-300-B by turning down tight; then adjust all 4 i-f trimmers for maximum, in the order listed.	C-302 C-301 TC-300 C-300B
2	Antenna connection of TS-400.	1700	Broadcast	1700	Preset C-403 by turning down tight, then backing off 1/3 turn.	C-400B
3	Same as 2	1500	Broadcast		Tune receiver to signal generator.	C-400A
4	Same as 2	1700	Broadcast	1700		C-400B
5	Same as 2	1500	Broadcast		Repeat adjustment in step 3.	C-400A
6	Same as 2	15.0 mc.	Short Wave	15.0 mc.		C-410 C-412
7	Same as 2	9.5 mc.	Short Wave	9.5 mc.		C-403

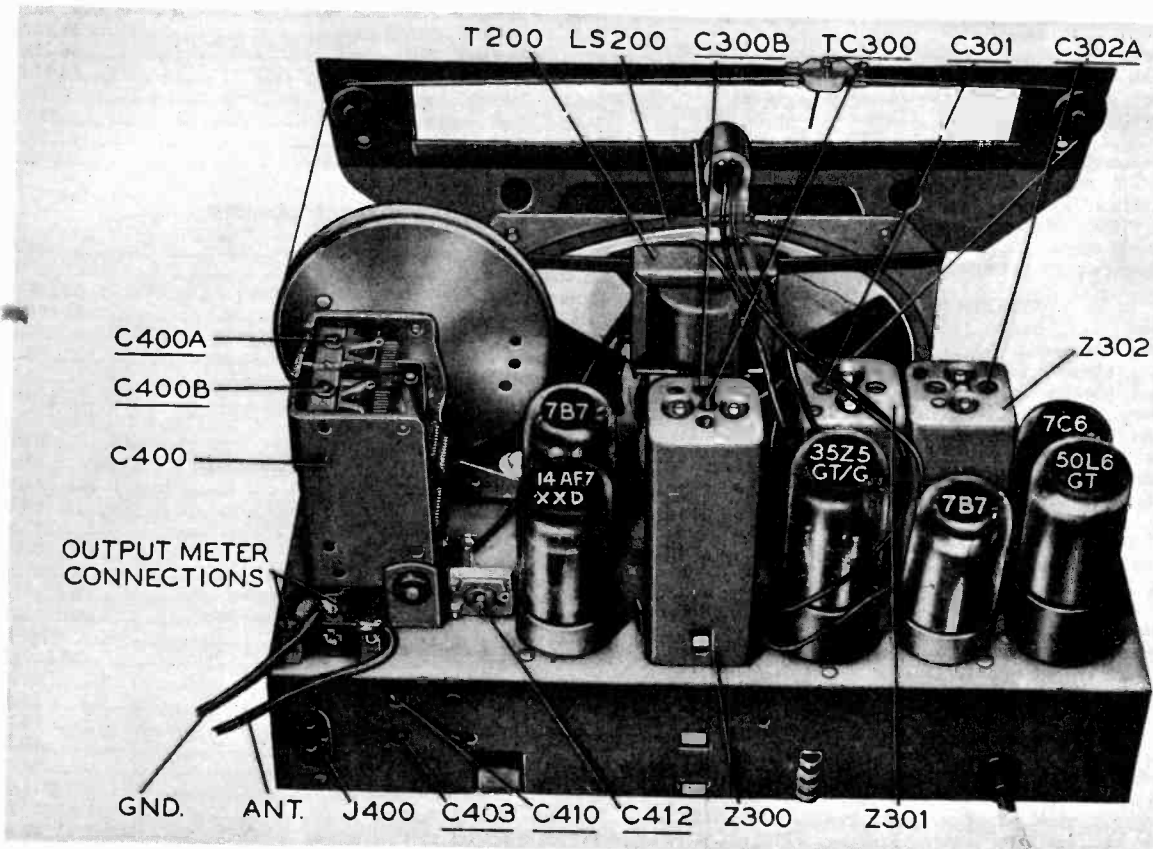


Figure 11. Top view, showing trimmer condenser locations.

Symbol designations used in the schematics and parts list are as follows:

- C—condenser
- I—pilot lamp
- LA—loop antenna
- LS—loudspeaker
- R—resistor
- S—switch
- T—transformer
- W—power cord and plug
- Z—i-f transformer assembly

NOTE: Parts marked with an asterisk (*) are general replacement items, and the part numbers will not be identical with those used on factory assemblies. Use only the "Service Part No." shown below when ordering replacements.

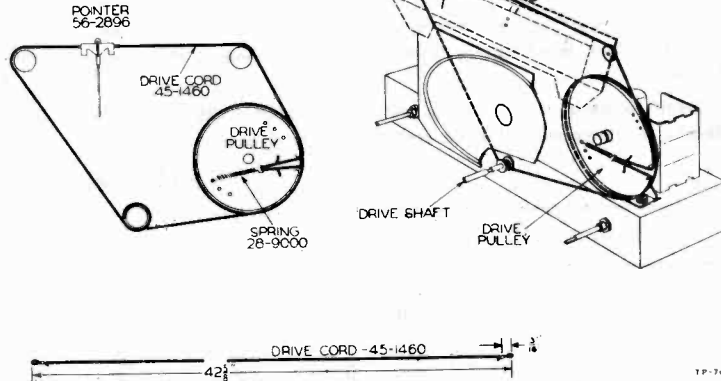


Figure 13. Drive cord installation details.

REPLACEMENT PARTS LIST

SECTION 1

Reference Number	Description	Service Part No.
C100	Condenser, .04 mf.	30-4119
C101	Condenser, electrolytic, 20-20 mf.	30-2541
C101A	Condenser, 20 mf.	Part of C101
C101B	Condenser, 20 mf.	Part of C101
C102	Condenser, .04 mf.	30-4119
I100	Lamp, pilot	34-2068
L100	Coil, field	Part of LS200
S100	Switch, a-c	Part of R200
W100	Cord, line	L3199

SECTION 2

C200	Condenser, .02 mf.	30-4599*
C201	Condenser, 250 mmf.	60-10245407*
C202	Condenser, .01 mf.	61-0120*
C203	Condenser, .01 mf.	61-0120*
LS200	Speaker	36-1533*
R200	Volume control, .5 meg.	33-5458
R201	Resistor, 4.7 meg.	66-5473340*
R202	Resistor, 470,000 ohms	66-4473340*
R203	Resistor, 470,000 ohms	66-4473540*
R204	Resistor, 130 ohms	66-1133340*
T200	Transformer, output (mounted on speaker)	Part of LS200

SECTION 3

C300A	Condenser	Part of Z300
C300B	Condenser, trimmer	Part of Z300
C301	Condenser, trimmer	Part of Z301
C302A	Condenser, trimmer	Part of Z302
C302B	Condenser	Part of Z302
C302C	Condenser	Part of Z302
C303	Condenser, .05 mf.	30-4518*
C304	Condenser, .05 mf.	30-4518*
C305	Condenser-and-choke assembly	76-1161
L300	Choke	Part of C305
R300	Resistor, 10,000 ohms	66-3103340*
R301	Resistor, 15,000 ohms	66-3153340
R302	Resistor, 47,000 ohms	Part of Z302
R303	Resistor, 2.2 meg.	66-5223340*
Z300	Transformer, 1st i-f	32-3956
Z301	Transformer, 2nd i-f	32-3957
Z302	Transformer, 3rd i-f	32-3958

SECTION 4

C400	Condenser, tuning	31-2555
C400A	Condenser, trimmer	Part of C400
C400B	Condenser, trimmer	Part of C400
C401	Condenser, 300 mmf.	60-10305307
C402	Condenser, 275 mmf.	30-1220-7
C403	Condenser bc. oscillator trimmer	Part of C-410
C404	Condenser, 6 mmf.	60-90505007*

SECTION 4 (Cont.)

Reference Number	Description	Service Part No.
C405	Condenser, 50 mmf.	60-00515307*
C406	Condenser, 250 mmf.	60-10245407*
C407	Condenser, .05 mf.	30-4518*
C408	Condenser, 250 mmf.	60-10245407*
C409	Condenser, .01 mf.	61-0120*
C410	Condenser, s-w oscillator-trimmer	31-6453
C411	Condenser, .006 mf.	30-4504*
C412	Condenser, s-w antenna-trimmer	31-6426
J400	Socket, antenna	27-6145
LA400	Loop assembly	76-1279
L400	Coil, antenna, s-w shunt	32-3716
R400	Resistor, 2.2 meg.	66-5223340*
R401	Resistor, 47,000 ohms	66-3473340*
R402	Resistor, 2200 ohms	66-2223340
R403	Resistor, 10,000 ohms	66-3103340*
S400	Switch, band	42-1772
T400	Coil, antenna	32-4008
T401	Coil, oscillator	32-3991
TS400	Wiring-panel assembly	12W45654

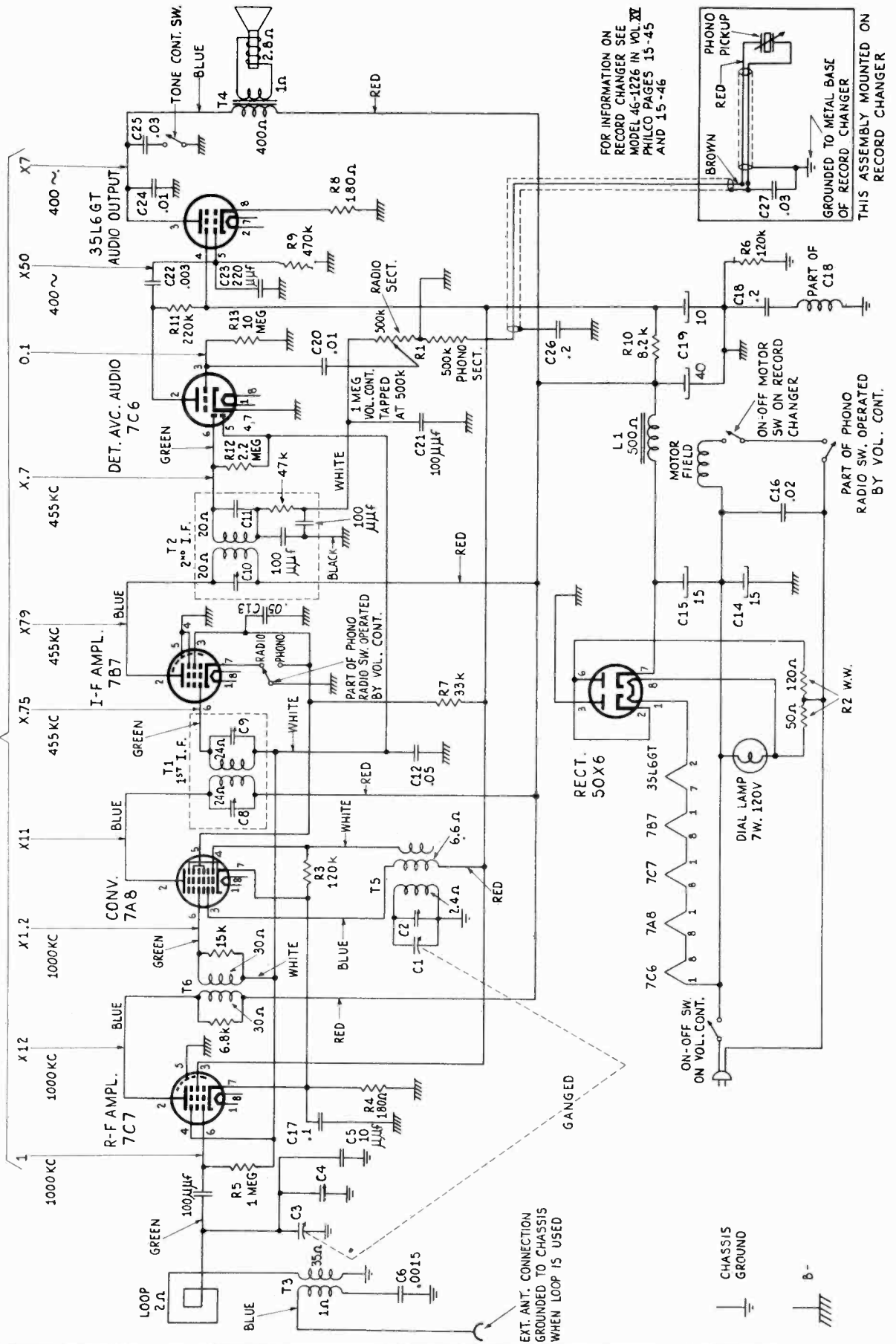
MISCELLANEOUS

Bands, rubber, scale-mounting	54-4176
Cabinet	10650
Clamp, electrolytic-condenser-mounting	56-1466FA5
Clip, antenna-coil	28-5002FA3
Dial, back-plate assembly	76-1588
Drive-shaft assembly	76-1323
Drive cord (25 ft. spools)	45-1460
Feet, felt	W2190
Grill-cloth assembly	40-6774
Grommet, rubber, tuning-condenser front mounting	27-4596
Grommet, tuning-condenser rear mounting	54-4020
Knob assembly	54-4311
Pointer	56-2896
Reflector, light	27-5730
Rivets	1W36671FA5
Scale, dial	27-5895
Screw and lockwasher, scale-mounting	1W32228FA3
Screw and lockwasher, speaker-mounting	1W32228FA3
Screw, gang-mounting	W758-FA3
Sleeve, tuning-condenser	28-5665FA3
Socket—Loktal	27-6138*
Socket—octal	27-6199*
Socket assembly, pilot-light	76-1392*
Spring, drive-cord	28-9000
Strap, scale-mounting	56-2068
Washer, chassis-mounting	1W37654FA3
Washer, gang-mounting	1W52353FA3
Wiring panel, 3 lugs	76-2148
Wiring panel, 5 lugs	12W45672

MODEL 46-1203

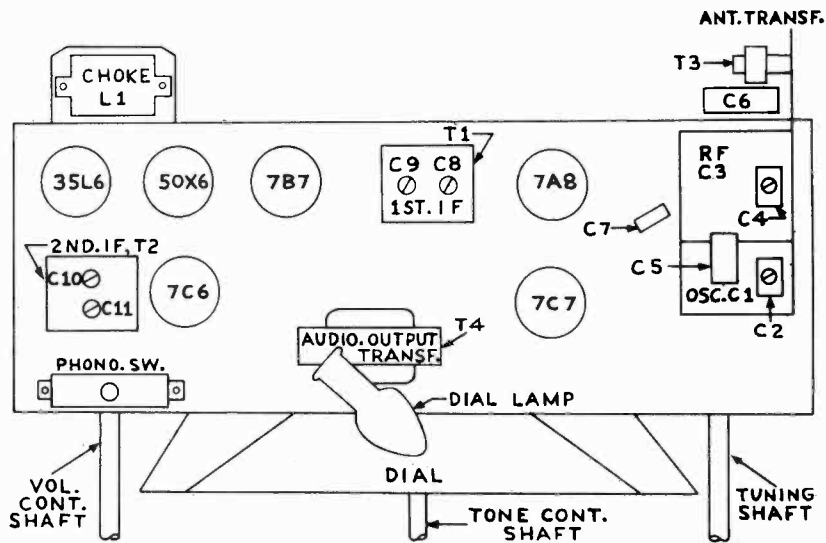
PHILCO CORP.

APPROX. GAIN PER STAGE USING CHANNELYST AND WITH A FIXED BIAS OF -3 VOLTS

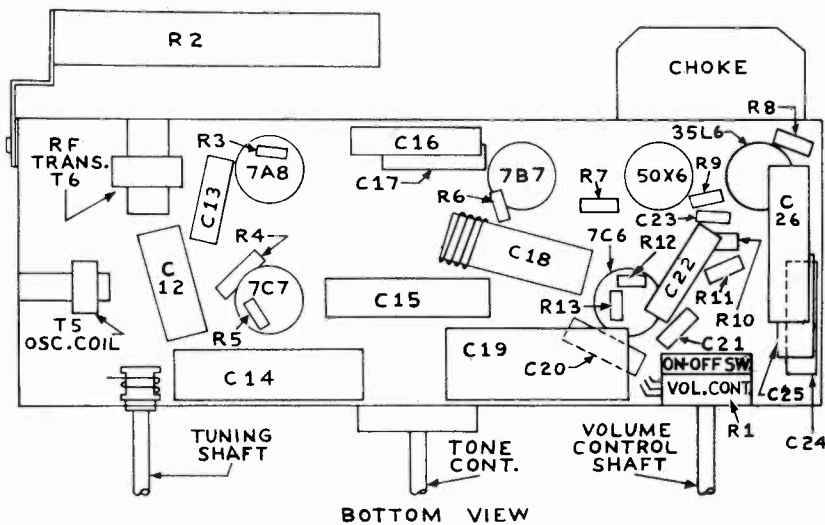


MODEL 46-1203

PHILCO CORP.



TOP VIEW



BOTTOM VIEW

ALIGNMENT

This receiver may be aligned with the chassis in the cabinet.

Connect the output meter to the center terminal (Low) and the right terminal (High) of the three lug terminal strip mounted on the rear of the chassis.

Connect the signal generator to the standard Hazeltine loop Model 1150 and couple it loosely to the receiver loop. Set the volume control at maximum, and fully mesh the tuning condenser.

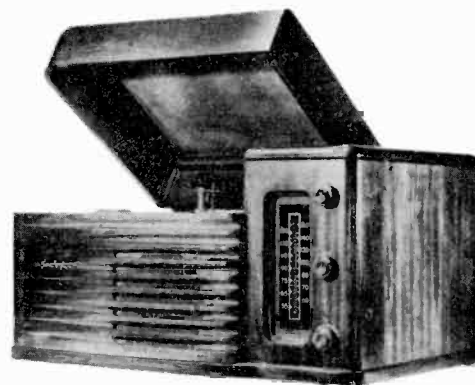
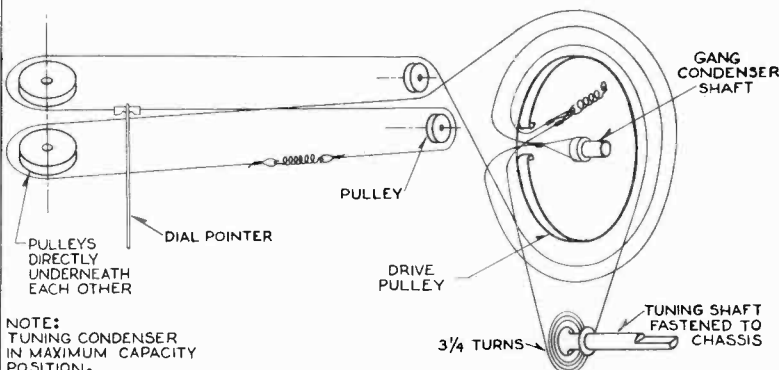
The output of the signal generator should be just sufficient to give a readable deflection on the output meter.

Set the signal generator to 455 KC and adjust the IF trimmers for maximum output in the following order: C11, C10, C9, C8.

Set the signal generator and receiver to 1600 KC and adjust the oscillator trimmer C2 for maximum output.

Set the signal generator and receiver to 1400 KC and adjust the RF trimmer C4 for maximum output.

PHILCO CORP.



NOTE:
TUNING CONDENSER
IN MAXIMUM CAPACITY
POSITION.

SOCKET	PIN NO.	VTVM	20,000 Ω / P.V.	1,000 Ω / P.V.	RESISTANCE
7C7 RF	1	100 V	100 V	100 V	OVER 5 MEG
	2	170 V	165 V	165 V	OVER 5 MEG
	3	115 V	108 V	108 V	OVER 5 MEG
	4	-4.5 V	-2.2 V	-2 V	2.8 MEG
	5	0 V	0 V	0 V	0
	6	-1.3 V	-0.3 V	0 V	3.8 MEG
	7	1.3 V	0.8 V	0.8 V	190 Ω
	8	100 V	100 V	100 V	OVER 5 MEG
7A8 CONVERTER	1	100 V	100 V	100 V	OVER 5 MEG
	2	167 V	160 V	160 V	OVER 5 MEG
	3	113 V	110 V	110 V	OVER 5 MEG
	4	-12.5 V	-4.4 V	-2 V	130 K
	5	65 V	65 V	56 V	OVER 5 MEG
	6	-4.5 V	-2 V	-0.2 V	2.8 MEG
	7	1.3 V	0.8 V	0.9 V	190 Ω
	8	100 V	100 V	100 V	OVER 5 MEG
7B7 IF	1	100 V	100 V	100 V	OVER 5 MEG
	2	170 V	160 V	160 V	4.4 MEG
	3	65 V	65 V	57 V	4.6 MEG
	4	0 V	0 V	0 V	0
	5	0 V	0 V	0 V	0
	6	-1.5 V	-0.4 V	-0.2 V	2.8 MEG
	7	0	0	0	0
	8	100 V	100 V	100 V	OVER 5 MEG
7C6 AVC DETECTOR	1	100 V	100 V	100 V	OVER 5 MEG
	2	78	74	35	OVER 5 MEG
	3	-0.8 V	-0.5 V	-0.2 V	10 MEGS.
	4	0 V	0 V	0 V	0
	5	-4.4 V	-1.2 V	-0.2 V	2.8 MEG
	6	-4.3 V	-1.5 V	-0.8 V	600 K
	7	0 V	0 V	0 V	0
	8	100 V	100 V	100 V	OVER 5 MEG
35L6GT/G	1	0 V	0 V	0 V	0
	2	100 V	100 V	100 V	OVER 5 MEG
	3	155 V	150 V	150 V	OVER 5 MEG
	4	118 V	115 V	115 V	OVER 5 MEG
	5	0 V	0 V	0 V	500 K
	6	173 V	165 V	165 V	OVER 5 MEG
	7	100 V	100 V	100 V	OVER 5 MEG
	8	7.9 V	7.6 V	7.8 V	190 Ω
50X6 RECTIFIER	1	100 V	100 V	100 V	OVER 5 MEG
	2	100 V	100 V	100 V	OVER 5 MEG
	3	0 V	0 V	0 V	0
	4	173 V	170 V	170 V	OVER 5 MEG
	5	120 V	115 V	110 V	OVER 5 MEG
	6	100 V	100 V	100 V	OVER 5 MEG
	7	200 V	200 V	200 V	OVER 5 MEG
	8	100 V	100 V	100 V	OVER 5 MEG

With respect to B-: Line Voltage 116 V

On-Off switch in off position Volume control at minimum

Radio-Phono switch on radio Tone control in left (counterclockwise position)

Circuit Description

Philco Models 48-141 and 48-145 are four-tube, battery-operated superheterodynes, providing reception on the standard broadcast band, 540-1720 kc. Manual tuning is employed. Both models are identical except for the cabinets, knobs, and dial scales, as indicated in the parts list. A 100-foot (over-all), outdoor aerial, such as Philco Part No. 45-1469, is recommended.

The converter stage employs a type 1LA6 pentagrid converter tube; in this tube, the oscillator signal is fed to the mixer section through the electron stream within the tube.

A type 1LN5 pentode tube is used in the i-f amplifier stage. The diode section of the 1LH4 tube provides detection and a-v-c voltage, and the triode section functions as the first audio amplifier.

The first audio stage is resistance-coupled to the type 3LF4 output tube, which drives the permanent-magnet dynamic loud-speaker.

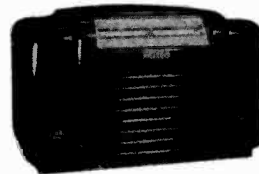
Philco TROUBLE-SHOOTING Procedure

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.

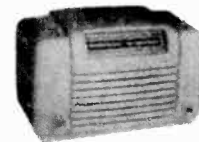
In each chart, the first step is a master check for determining whether trouble exists in that section, without going through the entire test procedure.

Failure to obtain "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;



MODEL 48-141



MODEL 48-145

SPECIFICATIONS

CABINET

Model 48-141.....Plastic, walnut finish

Model 48-145.....Plastic, ivory finish

CIRCUIT.....Four-tube superheterodyne

FREQUENCY RANGE.....540-1720 kc.

AUDIO OUTPUT.....220 mw.

POWER SUPPLY.....Battery pack, Philco P-60B-6L

PLATE VOLTAGE AND CURRENT...90 volts, 10 ma.

FILAMENT VOLTAGE AND CURRENT,

1.5 volts, .25 amp.

POWER CONSUMPTION (total,

plate and filament).....1 watt

AERIAL.....External, Philco Part No. 45-1469

INTERMEDIATE FREQUENCY.....455 kc.

PHILCO TUBES (4).....1LA6, 1LN5, 1LH4, 3LF4

TP-3125 & TP-933

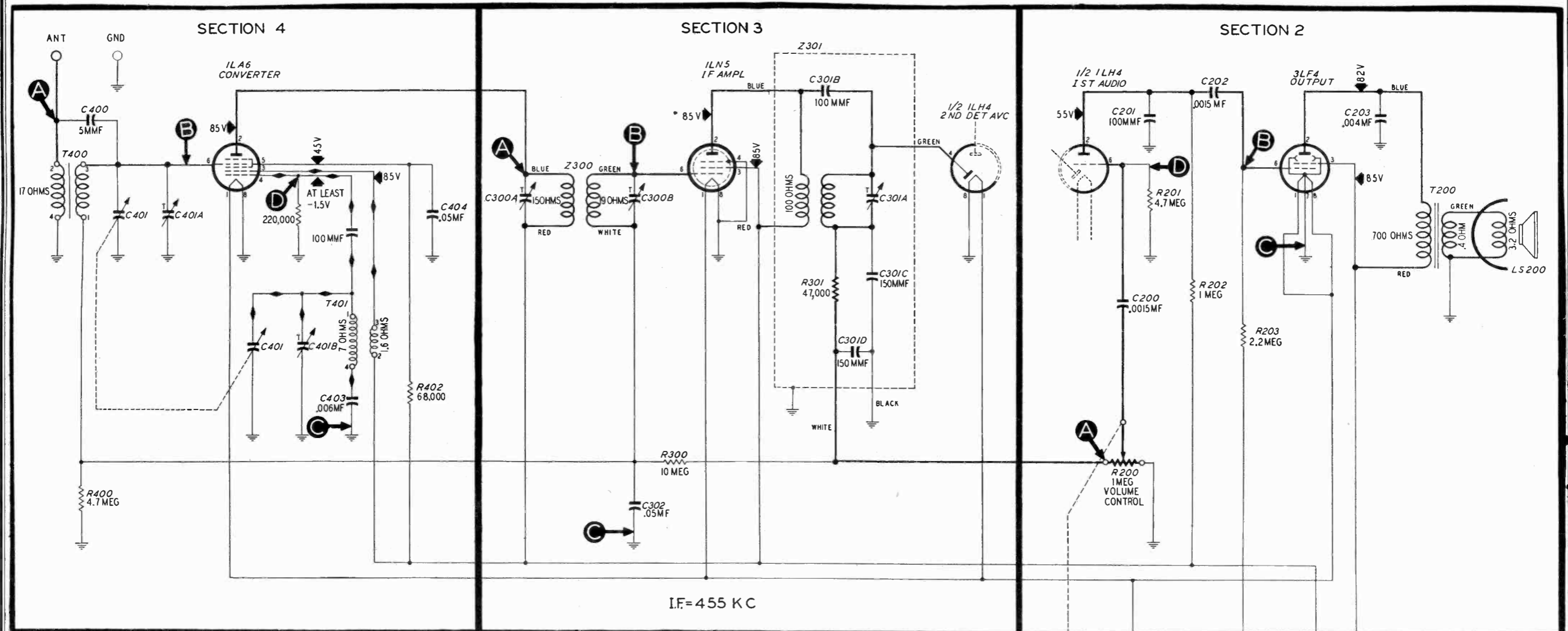
third, measuring circuit resistances; fourth, substituting condensers. The trouble revealed should be corrected before testing further.

Preliminary Checks

The following preliminary checks should be made before turning on the radio:

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

2. Disconnect the battery, and measure the resistance between B+ (red lead of battery plug) and chassis, with the ohmmeter polarity such that the highest resistance reading is obtained. If this reading is lower than 10,000 ohms, check condensers C100, C203, and C404 for leakage or shorts.



NOTE: THE VOLTAGES INDICATED ON THE SCHEMATIC DIAGRAM ARE AVERAGE VALUES. THE VOLTAGES WERE MEASURED BETWEEN THE POINTS INDICATED AND THE CHASSIS, USING A 20,000-OHMS PER-VOLT METER, WITH A FRESH BATTERY. OSCILLATOR GRID VOLTAGE WAS MEASURED BETWEEN THE CHASSIS AND OSC. GRID (PIN 4) OF THE 1LA6 TUBE, USING A 100,000-OHM ISOLATING RESISTOR IN SERIES WITH THE PROD END OF THE NEGATIVE VOLTMETER LEAD.

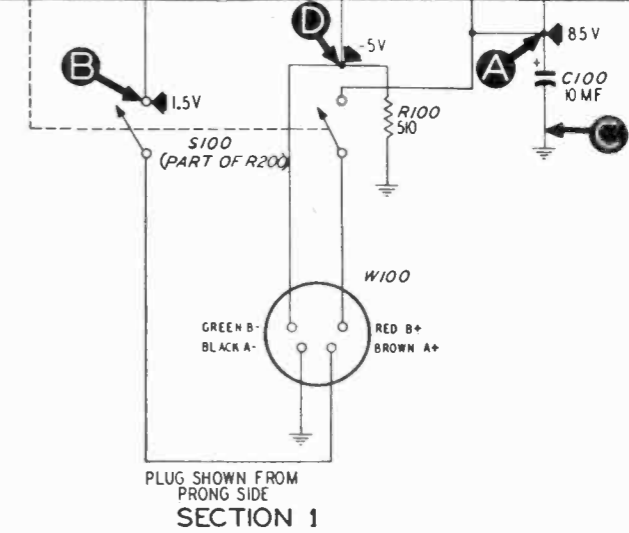
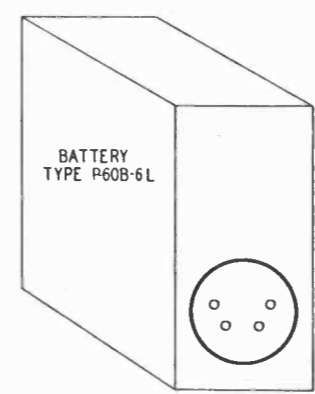
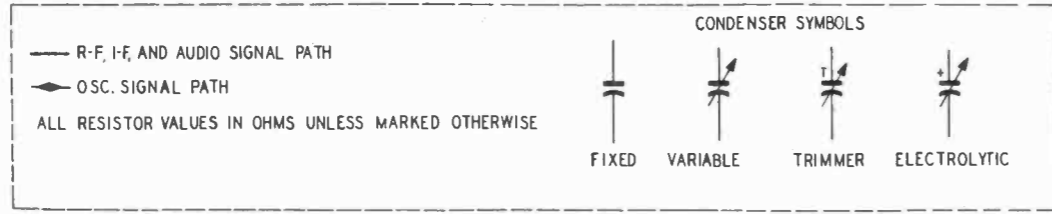
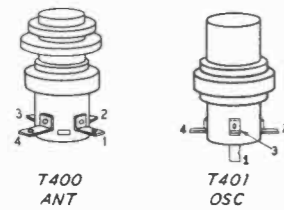


FIGURE 5. PHILCO RADIO MODELS 48-141 AND 48-145, COMPLETE SECTIONALIZED SCHEMATIC, SHOWING ALL TEST POINTS

ALIGNMENT PROCEDURE

TURN ON RADIO POWER, AND SET VOLUME CONTROL TO MAXIMUM

DIAL—Alignment points should be marked on the dial backplate. Measurements for these points are shown in the composite dial-and-backplate photo, figure 8. With tuning condensers fully meshed, set dial pointer to index mark.

OUTPUT METER—Connect across speaker voice coil.

SIGNAL GENERATOR—Connect ground lead to chassis; connect output lead as indicated in chart.

OUTPUT LEVEL—During alignment, adjust signal-generator output to maintain output-meter indication below 1 volt.

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through .1-mf. condenser to stator of aerial tuning condenser.	455 kc.	Tuning condenser fully meshed.	Adjust trimmers, in order given, for maximum output.	C301A C300A C300B
2	Through 200-mmf. condenser to external aerial connector.	1700 kc.	1700 kc.	Adjust for maximum output.	C401B
3	Same as Step 2.	1500 kc.	1500 kc. (approx.)	Tune radio to generator signal, and adjust trimmer for maximum output.	C401A

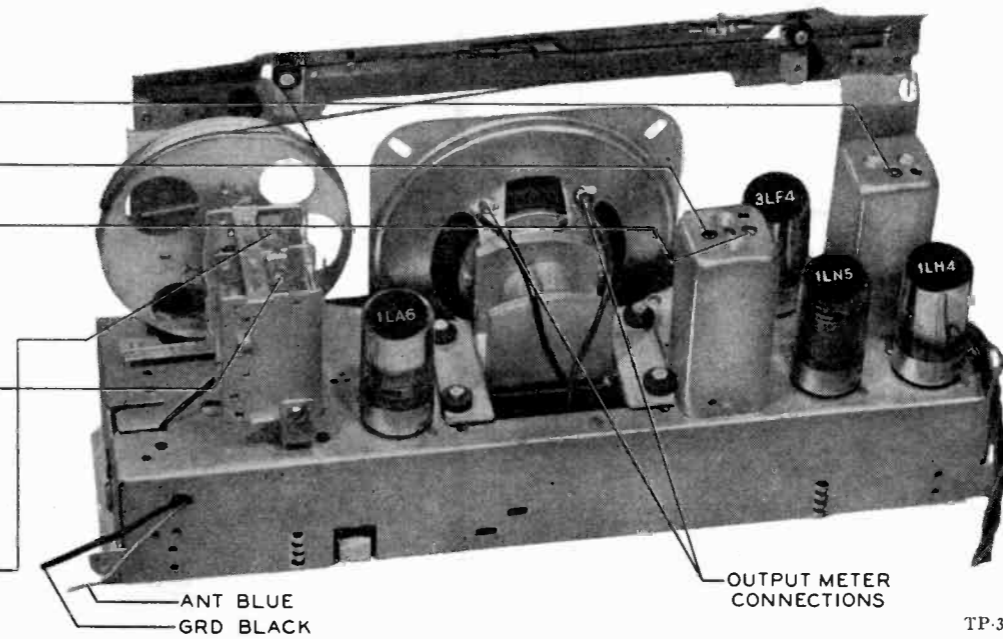


Figure 6. Top View, Showing Trimmer Locations

SYMBOLIZATION AND TERMINOLOGY

All components in the radio circuit are symbolized and located as follows:

- C—condenser
- I—pilot lamp
- L—choke or coil
- LA—loop aerial
- LS—loud-speaker
- R—resistor
- S—switch
- T—transformer
- Z—electrical assembly

100-series components are in Section 1—the power supply.

200-series components are in Section 2—the audio amplifier.

300-series components are in Section 3—the i-f amplifier, detector, and a-v-c circuits.

400-series components are in Section 4—the aerial and oscillator circuits.

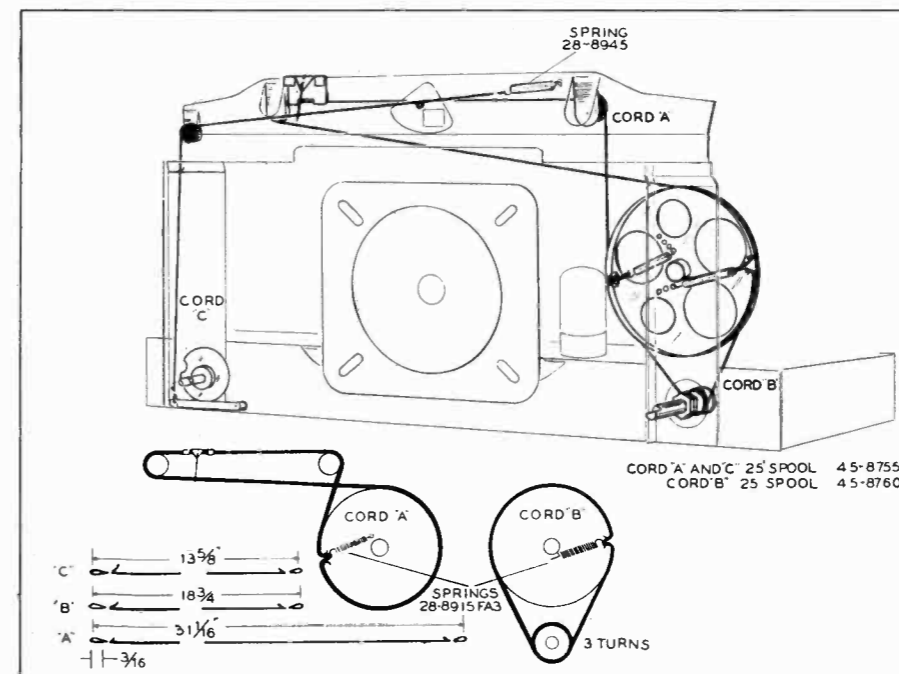


Figure 7. Drive-Cord Installation Details

TP-3320E

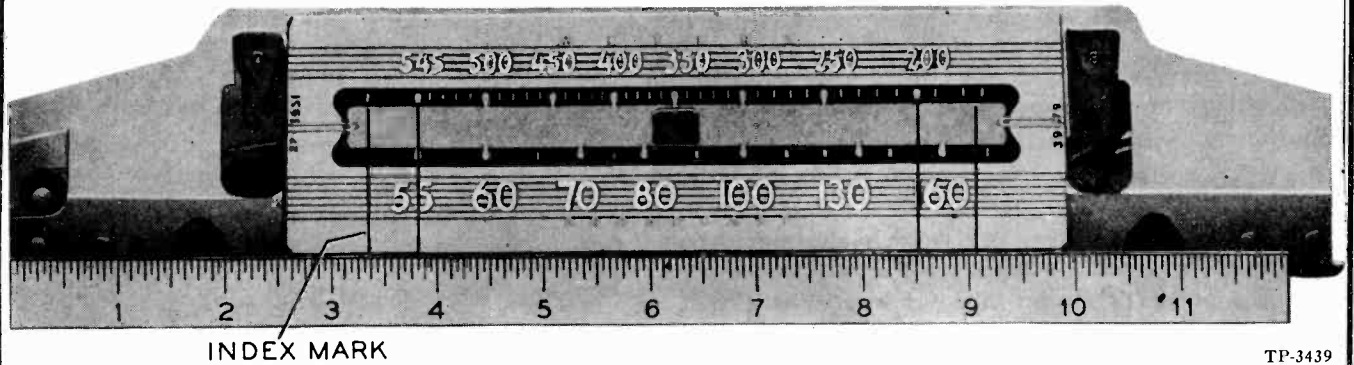


Figure 8. Composite Dial and Backplate, Calibration Details

TP-3439

REPLACEMENT PARTS LIST

NOTE: Part numbers marked with an asterisk (*) in the following parts list are general replacement items. These numbers may not be identical with those on factory assemblies; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1

Reference Symbol	Description	Service Part No.
BA100	Battery pack	P-60B-6L
C100	Condenser, electrolytic, 10 mf., a-f and r-f by-pass	30-2540*
R100	Resistor, 510 ohms, bias	66-1513340*
S100	Switch, power	Part of R200
W100	Battery-cable assembly	41-3477-1

SECTION 2

C200	Condenser, .0015 mf., d-c blocking	45-3500-6*
C201	Condenser, 100 mmf., r-f by-pass	60-10105407*
C202	Condenser, .0015 mf., d-c blocking	45-3500-6*
C203	Condenser, .004 mf., tone compensation	61-0179*
LS200	Speaker	36-1507-3
R200	Volume control, 1 megohm	33-5554
R201	Resistor, 4.7 megohms, d-c grid return	66-5473340*
R202	Resistor, 1 megohm, plate load	66-5103340*
R203	Resistor, 2.2 megohms, d-c grid return	66-5223340*
T200	Output transformer	32-8323

SECTION 3

C300A	Condenser, trimmer	Part of Z300
C300B	Condenser, trimmer	Part of Z300
C301A	Condenser, trimmer	Part of Z301
C301B	Not used	
C301C	Condenser, 150 mmf., i-f filter	Part of Z301
C301D	Condenser, 150 mmf., i-f filter	Part of Z301
C302	Condenser, .05 mf., a-v-c filter	61-0122*
C303	Condenser, 100 mmf., coupling, part of Z301	60-10105407*
R300	Resistor, 10 megohms, a-v-c filter	66-6103340*
R301	Resistor, 47,000 ohms, i-f filter, part of Z301	66-3473340*
Z300	Transformer, 1st i-f, includes C300A and C300B	32-3949-1
Z301	Transformer, 2nd i-f, includes C301A, C301C, C301D, C303, and R301	32-3897

SECTION 4

C400	Condenser, 5 mmf., coupling	30-1221-5
C401	Condenser, main tuning	31-2721
C401A	Condenser, trimmer, aerial coil	Part of C401
C401B	Condenser, trimmer, osc. coil	Part of C401
C402	Condenser, 100 mmf., osc. grid	60-10105407*

SECTION 4 (Continued)

Reference Symbol	Description	Service Part No.
C403	Condenser, .006 mf., osc. tracking	45-3500-7*
C404	Condenser, .05 mf., r-f by-pass	61-0122*
R400	Resistor, 4.7 megohms, a-v-c voltage divider	66-5473340*
R401	Resistor, 220,000 ohms, osc. grid leak	66-4223340*
R402	Resistor, 68,000 ohms, screen dropping	66-3683340*
T400	Transformer, aerial	32-3919-2
T401	Transformer, oscillator	32-3385-2

MISCELLANEOUS

Description	Service Part No.
Cabinet, Less Dial Scale	
Model 48-141	10618A
Model 48-145	10618D
Cabinet Hardware	
Baffle and cloth assembly	40-6910
Dial Scale	
Model 48-141	27-5951
Model 48-145	27-5951-1
Dial-Scale Hardware	
Band, rubber, dial scale	54-4025
Screw, strap mtg.	1W23129FA3
Strap, scale mtg., r.h.	56-2672FA3
Strap, scale mtg., l.h.	56-2671FA3
Knob	
Model 48-141	54-4323
Model 48-145	54-4375
Stud, baffle mtg.	W2235-2FA9
Scale Plate, Flag and Upright Assembly	76-3131
Cord, drive (25-ft. spool), for flag	45-8755
Cord, drive (25-ft. spool), for pointer	45-8755
Pointer	56-2896
Spring, flag drive	28-9011FA3
Spring, cam plate, flag drive	57-0701FA1
Spring, retaining	57-1468FA1
Transfer-lever assembly	76-1655-1
Socket, Loktal	27-6138
Tuning-Condenser Hardware	
Cord, drive (25-ft. spool), for tuning condenser	45-8760
Drum, drive assembly	76-2485
Mounts, rubber, tuning condenser	27-4596
Spring, tuning-condenser drive	28-8913FA3
Tuning-shaft assembly	31-2640

MODELS 48-200, 48-200-I, 48-214, PHILCO CORP.

Code 125

Codes 121 of these models use oscillator transformer part number 32-3880. Codes 122 use oscillator transformer part number 32-4263.

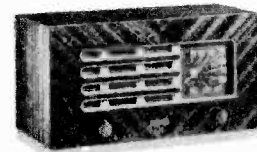
Code 121 of each of these three models is identical to Code 125 of each model, with the following exceptions:

1. The type 35Y4 rectifier tube was replaced by a type 35Z5GT tube.
2. The type 50L6GT output tube was replaced by a type 50A5 tube.



MODEL 48-200 (Walnut)

MODEL 48-200-I (Ivory)



MODEL 48-214

Circuit Description

The Philco Models 48-200, 48-200-I and 48-214 are 5-tube, table-model superheterodyne radios, providing reception in the standard broadcast band. The three models, which started in factory production as Code 125, are identical, except for cabinet and dial parts, as indicated in the parts list.

The high-impedance loop aerial normally provides adequate signal pickup. An external aerial may be connected, if desired, by detaching the aerial lead (shown in figure 6) from the chassis, and connecting the lead to an external aerial lead-in. Do not use a ground.

The loop is coupled to the 7A8 converter tube. Variable-condenser tuning is employed, the oscillator rotor-section plates being shaped to obtain tracking, thus eliminating the necessity for a series padding condenser.

The 7A8 is transformer coupled to the 14A7 i-f amplifier, which is also transformer coupled to the diodes of the 14B6 second detector—first audio-frequency amplifier. A-v-c voltage is applied to the control grids of both the i-f and converter tubes.

The triode section of the 14B6 is the first audio stage, and is resistance coupled to the 50L6GT output tube. The output tube is transformer coupled to a permanent-magnet dynamic speaker.

D-c operating voltages are obtained from a 35Y4 half-wave rectifier, the output of which is filtered by a two-section resistor—condenser filter.

Condenser C304 in Section 3, figures 3 and 5, is a special condenser, inductively wound to form a series-tuned circuit, resonant at the intermediate frequency. This special condenser offers less impedance at this frequency than a conventional condenser, thus permitting higher i-f gain, with no tendency toward instability. Since the tuning gang is connected to the chassis, by-passing at broadcast and short-wave frequencies is adequate. The inductive effect is negligible at audio frequencies.

The 150,000-ohm resistor, R100, in Section 1, prevents hum which might otherwise occur under conditions of high humidity.

SPECIFICATIONS

CABINET:	
Models 48-200 and 48-200-I	Bakelite
Model 48-214	Wood
CIRCUIT Five-tube superheterodyne	
FREQUENCY RANGE	540 to 1620 kc.
OPERATING VOLTAGE	105 to 120 volts, a.c. or d.c.
POWER CONSUMPTION	30 watts
AERIAL	Loop fastened to cabinet; terminal also provided for outside aerial
INTERMEDIATE FREQUENCY	455 kc
PHILCO TUBES (5)	7A8, 14A7, 14B6, 50L6GT, 35Y4
PANEL LAMP	6—8-volt, bayonet base, Part No. 34-2068

Philco TROUBLE-SHOOTING Procedure

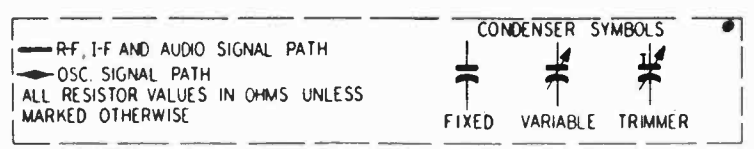
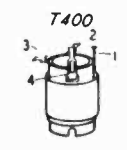
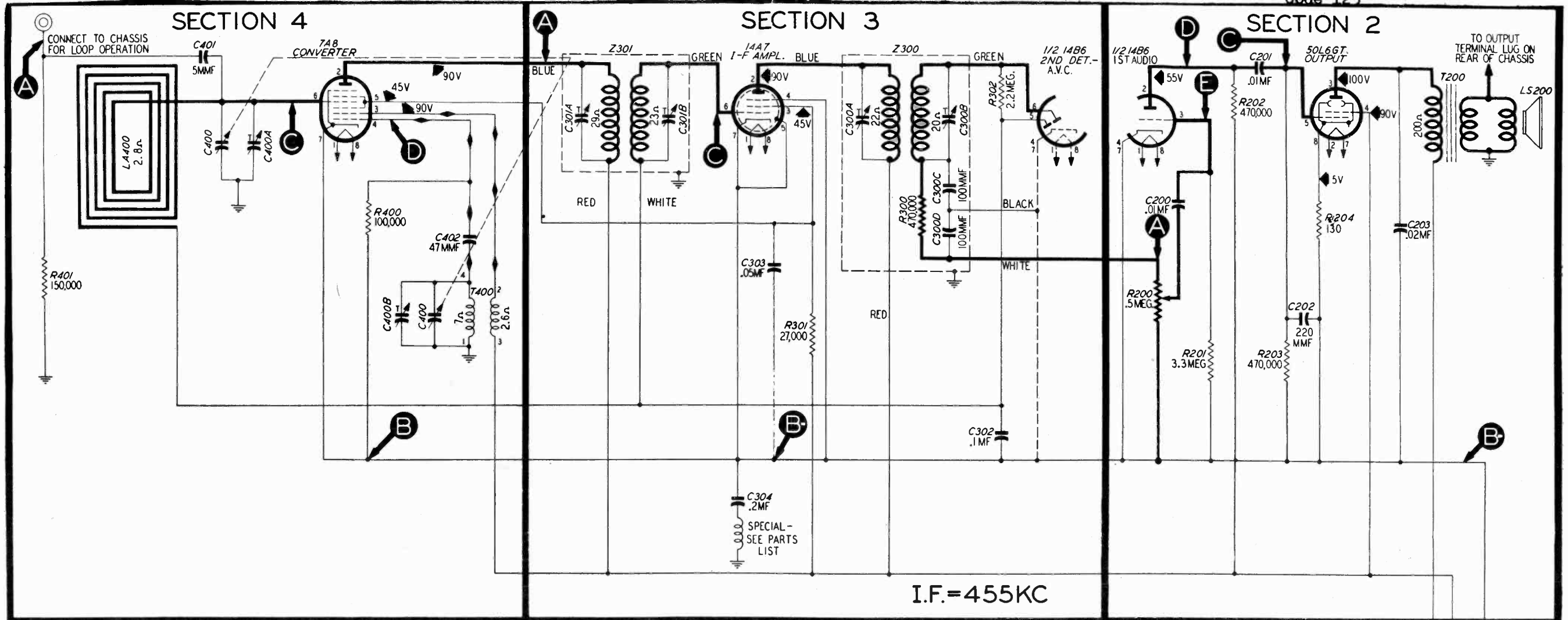
In this manual, the schematic diagram is divided into four sections, with a chassis layout for each section, showing components and test points for each section. The test points are also indicated on the schematic diagram in the corresponding section. A simplified trouble-shooting procedure is given in a chart for each section. The first step in each chart is a master check, indicating whether trouble exists in that section. Failure to obtain the "NORMAL INDICATION" in a given step indicates trouble, which should be located by voltage, resistance, or capacitance checks of parts indicated in the step, and remedied before testing further.

Preliminary Checks

The following preliminary checks are recommended before turning on the radio:

1. Carefully inspect both top and bottom of the chassis. Make sure that all tubes are secure in the proper sockets (see figure 6), and look for bad connections, burnt resistors, or other obvious sources of trouble.

2. Measure the resistance between B plus and B minus (test points C and B— in figure 1), using the ohmmeter polarity giving the highest resistance reading; if the reading is lower than 50,000 ohms, check C101A, C101B, and C101C, for leakage or shorts.



NOTE: ALL VOLTAGES AND CAPACITY AND RESISTANCE VALUES SHOWN ARE AVERAGE. THE VOLTAGES BETWEEN TEST POINT B- AND OTHER POINTS INDICATED WERE MEASURED WITH A 20,000-OHMS-PER-VOLT METER; VOLUME CONTROL AT MINIMUM AND TUNING CONDENSER PLATES FULLY MESHED.

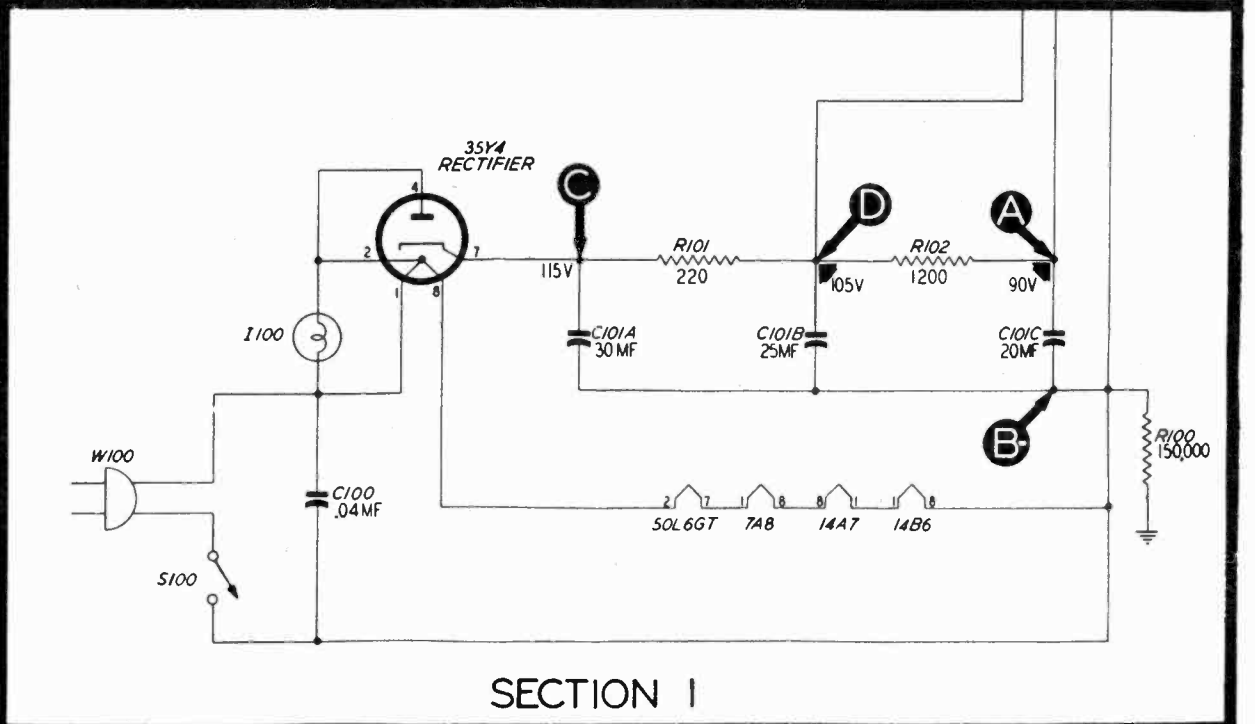


FIGURE 5. PHILCO MODELS 48-200, CODE 125, 48-200-I, CODE 125, AND 48-214, CODE 125; COMPLETE SECTIONALIZED SCHEMATIC, SHOWING ALL TEST POINTS

ALIGNMENT PROCEDURE

TURN ON THE RADIO POWER, AND SET THE VOLUME CONTROL FULL ON

DIAL POINTER—Turn tuning condensers to full-mesh position. Set dial pointer to index dot, located to the left of "55."

OUTPUT METER—Connect to left (output) lug and center (chassis) lug of terminal panel, shown in figure 6.

SIGNAL GENERATOR—Connect ground lead to B—; connect output lead as indicated in the chart.

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1				Turn C301B (copper screw) down tight.	
2	Through .1-mf. condenser to test-point C of Section 4.	455 kc.	540 kc.	Adjust trimmers, in the order given, for maximum output.	C300A C300B C301A C301B
3	Through 100-mmf. condenser to external aerial connector.	1600 kc.	1600 kc.	Disconnect external aerial lug from chassis. Adjust trimmer for maximum output.	C400B
4	Same.	1500 kc.	1500 kc.	Adjust for maximum output.	C400A

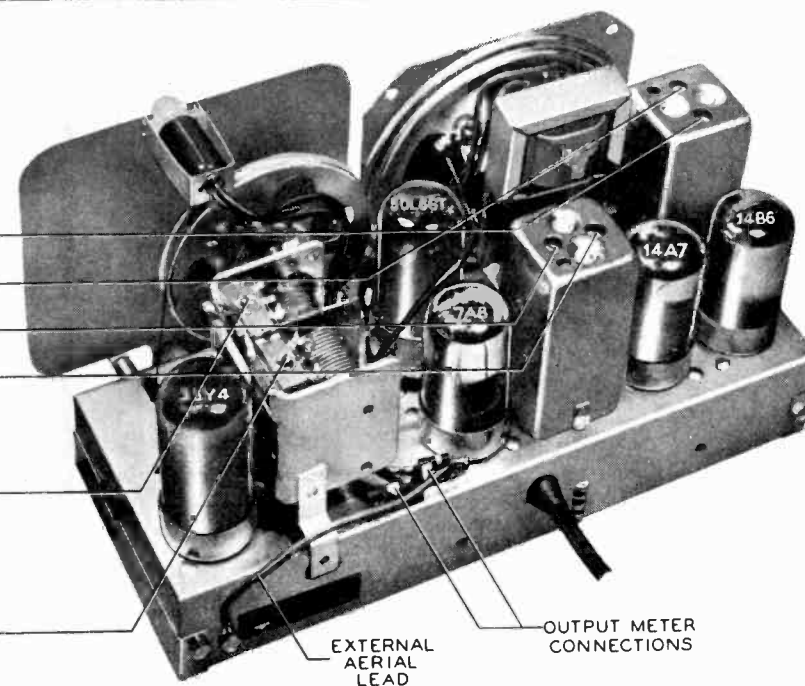


Figure 6. Chassis View, Showing Trimmer Locations

TP-3126

SYMBOLIZATION AND TERMINOLOGY

All components in the radio circuits are symbolized and located as follows:

C—condenser	LA—loop aerial	S—switch
I—pilot lamp	LS—loudspeaker	T—transformer
L—choke or coil	R—resistor	Z—electrical assembly

100-series components are in Section 1—the power supply.

200-series components are in Section 2—the second detector, a-v-c, and audio circuits.

300-series components are in Section 3—the i-f amplifier.

400-series components are in Section 4—the aerial, r-f, and oscillator circuits.

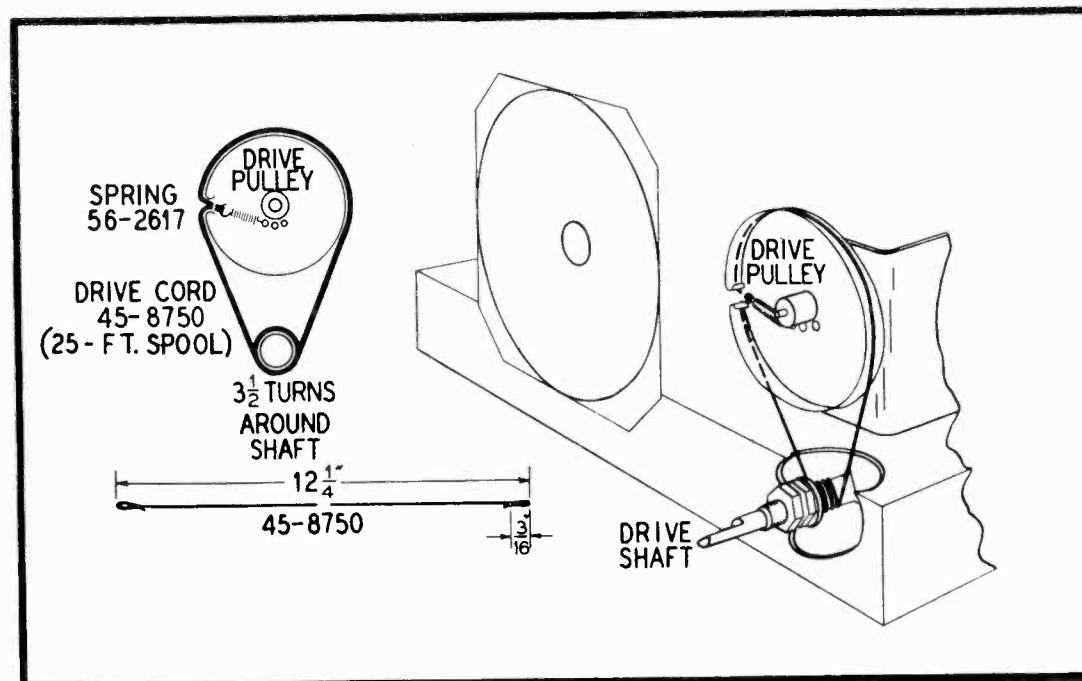


Figure 7. Drive-Cord Installation Details

TP-2698E

REPLACEMENT PARTS LIST

NOTE: Parts marked with an asterisk (*) are general replacement items, and the numbers listed may not be identical with those on factory assemblies; also, the electrical values of some replacement items furnished may differ from the values indicated in the schematic and parts list. The values substituted in any case are so chosen that the operation of the instrument will be either unchanged or improved. When ordering replacements, use only the "Service Part No." in this parts list.

SECTION 1

Symbol	Description	Service Part No.
C100	Condenser, line filter, .04 mf.	45-9500-2*
C101	Condenser, electrolytic, 3-section filter	30-2573
C101A:	Condenser, electrolytic, 30 mf.	Part of C101
C101B:	Condenser, electrolytic, 25 mf.	Part of C101
C101C:	Condenser, electrolytic, 20 mf.	Part of C101
R100	Resistor, leakage, 150,000 ohms	66-4153340*
R101	Resistor, filter, 220 ohms	66-1224340*
R102	Resistor, filter, 1200 ohms	66-2123340*
S100	Switch, power	Part of R200
W100	Power cord and plug	L3363
I100	Panel lamp	34-2068

SECTION 2

C200	Condenser, coupling, .01 mf.	61-0120*
C201	Condenser, coupling, .01 mf.	61-0120*
C202	Condenser, by-pass, 220 mmf.	60-10205307*
C203	Condenser, by-pass, .02 mf.	61-0108*
R200	Volume control (with power switch), 500,000 ohms	33-5429
R201	Resistor, grid load, 3.3 megohms	66-5333340*
R202	Resistor, plate load, 470,000 ohms	66-4473340*
R203	Resistor, grid load, 470,000 ohms	66-4473340*
R204	Resistor, bias, 130 ohms	66-1123340*
LS200	Speaker	36-1614
T200	Output transformer	Part of LS200

SECTION 3

C302	Condenser, a-v-c by-pass, .1 mf.	61-0113*
C303	Condenser, screen by-pass, .05 mf.	61-0122*
C304	Condenser, special i-f by-pass, .2 mf.	30-4644
R300	Resistor, diode load, 47,000 ohms	Part of Z300
R301	Resistor, screen, 27,000 ohms	66-3273340*
R302	Resistor, a-v-c, 2.2 megohms	66-5223340*
Z300	Transformer, 2nd i-f.	32-3952
C300A:	Condenser, trimmer	Part of Z300
C300B:	Condenser, trimmer	Part of Z300
C300C:	Condenser, by-pass, 100 mmf.	Part of Z300
C300D:	Condenser, by-pass, 100 mmf.	Part of Z300
Z301	Transformer, 1st i-f.	32-3967
C301A:	Condenser, trimmer	Part of Z301
C301B:	Condenser, trimmer	Part of Z301

SECTION 4

Symbol	Description	Service Part No.
C400	Condenser, tuning, 2-section	31-2527-2
C400A:	Condenser, trimmer	Part of C400
C400B:	Condenser, trimmer	Part of C400
C401	Condenser, coupling, 5 mmf.	60-90505007*
C402	Condenser, isolating, 47 mmf.	60-00515307*
R400	Resistor, osc., grid, 100,000 ohms	66-4103340*
R401	Resistor, aerial discharge, 150,000 ohms	66-4153340*
T400	Transformer, oscillator	32-3880
LA400	Loop aerial:	
	Models 48-200, 200-I	32-4052-5
	Model 48-214	32-4052-6

MISCELLANEOUS

Description	Service Part No.
Cabinet	
Model 48-200	10542D
Model 48-200-I	10542E
Model 48-214	10621
Cabinet Hardware	
Back	
Model 48-200	27-9879
Model 48-200-I	27-9922
Model 48-214	54-7080
Foot, felt	W2190
Knob	
Model 48-200	27-4820
Model 48-200-I	54-4118
Model 48-214	54-4154
Window, acetate	
Models 48-200, 200-I	54-4088
Model 48-214	54-4212
Clip, coil mounting	28-5002FA1
Dial-Scale Hardware	
Cord, drive (25-ft. spool)	45-8750
Pointer	
Models 48-200, 200-I	27-4891-1
Model 48-214	54-4148-2
Scale, dial	
Model 48-200	27-5965
Model 48-200-I	27-5965-1
Model 48-214	27-5839
Screw, scale mounting	1W19674FA3
Spring, drive cord	56-2617
Washer, scale mounting	2W54094
Panel, terminal, loop aerial	76-2148
Panel, lamp assembly	76-1472
Shaft, drive assembly	31-2718
Socket, Loktal	27-6138*
Socket, octal	27-6174*

MODELS 48-250, 48-251,
Codes 121, 122, 126

PHILCO CORP.

CODE 121

Model 48-250, Code 121, is identical to Model 48-250, Code 126, with the following exceptions:

1. The type 50B5 output tube was replaced by a type 50A5 tube. The 50B5 miniature socket, Part No. 27-6226, was replaced by an octal socket, Part No. 27-6199.
2. The type 35Y4 rectifier tube was replaced by a type 35Z5GT tube.

CODE 122

Model 48-250, Code 122, is identical to Model 48-250, Code 121, with the following exceptions:

1. The permanent-magnet speaker (LS200), Part No. 36-1615, was replaced by an electrodynamic speaker, Part No. 36-1591.
2. Resistor R101 was removed.
3. Resistor R102 was removed.
4. Condenser C101 was replaced by a 2-section electrolytic condenser, 20-20 mf., Part No. 30-2547.*
5. Resistors R101 and R102 were replaced by the 500-ohm field coil of the speaker.

Circuit Description

The Philco Radio, Model 48-250, is a five-tube, table-model superheterodyne, providing reception in the standard-broadcast band.

The high-impedance loop aerial normally provides adequate signal pickup. Provisions are made for the connection of an external aerial.

The loop is coupled to the 7A8 converter. Variable condenser tuning is employed; the oscillator rotor-section plates are properly shaped to obtain tracking, thus eliminating the necessary for a series padding condenser.

The 7A8 is transformer-coupled to the 14A7 i-f amplifier, which is also transformer-coupled to the diodes of the 14B6 second detector—first audio-frequency amplifier. A-v-c voltage is applied to the control grids of both the i-f and converter tubes.

The triode section of the 14B6 is the first audio stage, and is resistance-coupled to the 50B5 output stage. The output tube is transformer-coupled to the permanent-magnet dynamic speaker.

D-c operating voltages are obtained from the 35Y4 half-wave rectifier, the output of which is filtered by a two-section resistor-condenser filter.

Condenser C302 in Section 3 is a special condenser, inductively wound with wire to form a series-tuned circuit, resonant at the intermediate frequency. This special condenser offers less impedance at this frequency than a conventional condenser, thus permitting higher i-f gain, with no tendency towards instability. The inductive effect at audio frequencies is negligible. Since the tuning gang is connected to the chassis, by-passing at broadcast frequencies is adequate.

Resistor R100, the 150,000-ohm resistor in Section 1, prevents hum which might otherwise occur under conditions of high humidity.

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 without going through the entire test procedure.

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



MODEL 48-250 (Walnut)
MODEL 48-250-1 (Ivory)

SPECIFICATIONS

CABINET	Plastic (ivory or walnut)
CIRCUIT	Five-tube superheterodyne
FREQUENCY RANGE	540—1620 kc.
OPERATING VOLTAGE	105—120 volts, a.c. or d.c.
POWER CONSUMPTION	30 watts
AERIAL	Loop fastened to cabinet; terminal also provided for outside aerial
INTERMEDIATE FREQUENCY	455 kc.
PHILCO TUBES (5)	7A8, 14A7, 14B6, 50B5, 35Y4

TI 2670

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.

Preliminary Checks

To avoid possible damage to the radio, the following preliminary checks should be made before turning on the power.

1. Inspect the top and bottom of the chassis. Make sure that all tubes are secure in the proper sockets, and look for any broken or shorted connections, burned resistors, or other obvious sources of trouble.
2. Measure the resistance between B+ (pin 7 of the 35Y4 rectifier) and B— (test point B). When the ohmmeter test leads are connected in the proper polarity, the highest resistance reading will be obtained. If the reading is lower than 1500 ohms, check condenser C101A, C101B, and C101C for leakage or shorts.

The resistance value, which is must lower than normal, is not intended as a quality check of these condensers; the value given is the lowest at which the rectifier will operate safely while the voltage tests of Section 1 are performed.

PHILCO CORP.

MODELS 48-250, 48-251,
Codes 121, 122, 126

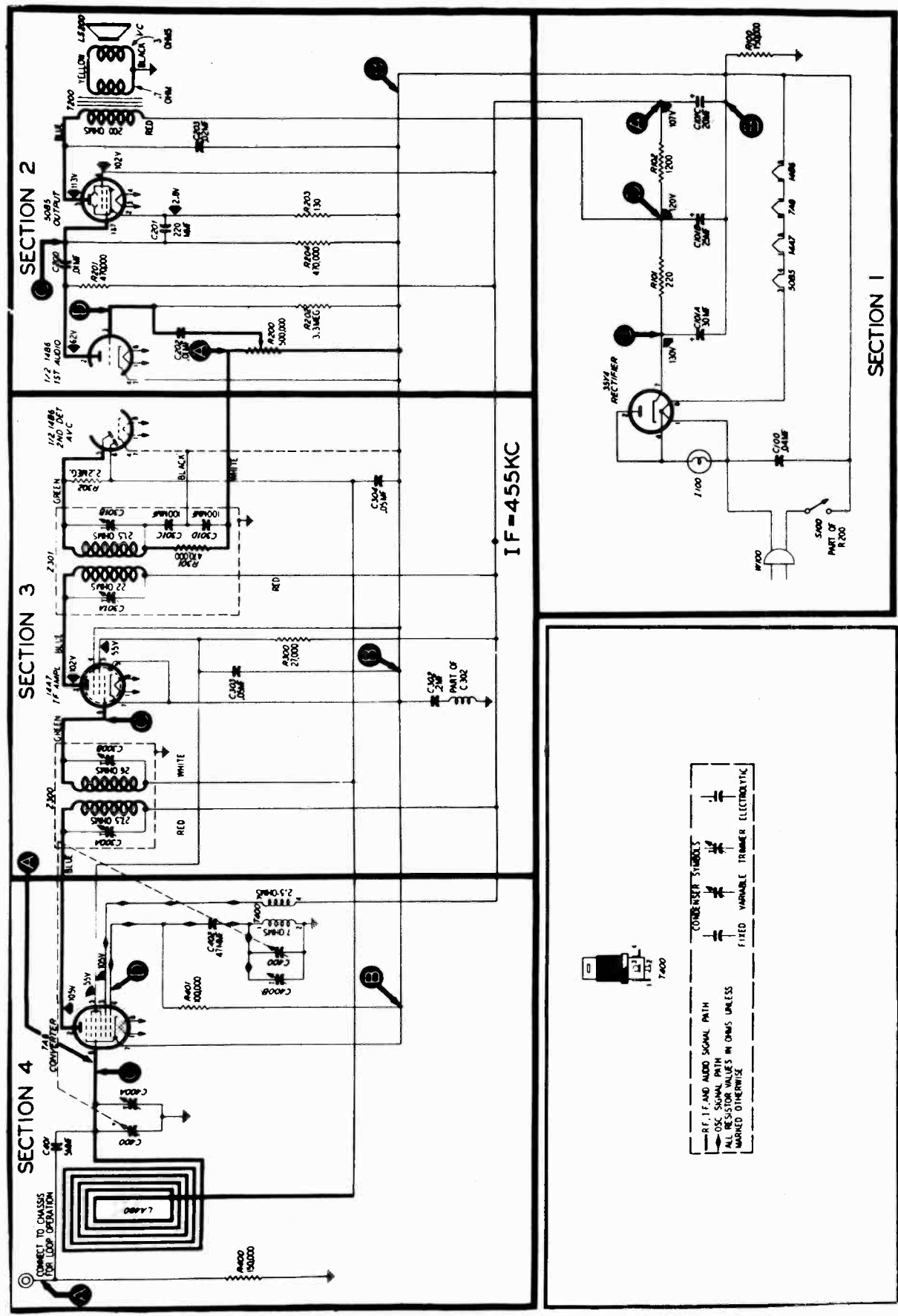


FIGURE 1. PHILCO RADIO MODELS 48-250 AND 48-251-1, SECTIONALIZED SCHEMATIC DIAGRAM, SHOWING TEST POINTS

ALIGNMENT PROCEDURE

TURN ON THE RADIO, AND SET THE VOLUME CONTROL TO MAXIMUM.

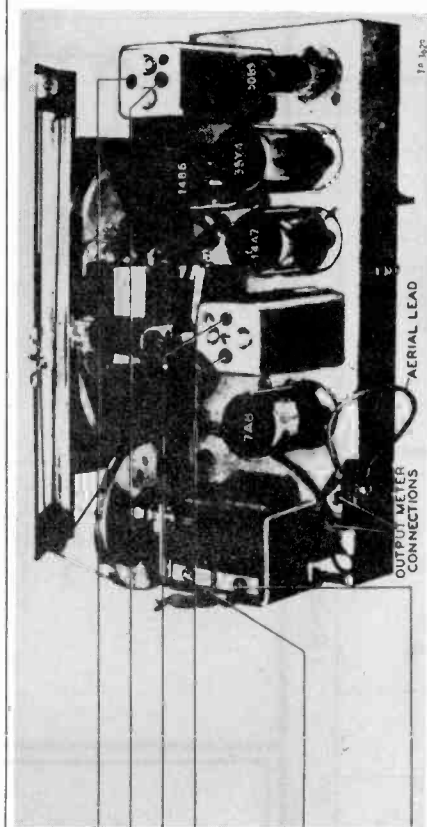
DIAL—Turn tuning condensers to full-mesh position. Set dial pointer to coincide with index mark, located to the left of "550".

OUTPUT METER—Connect to left (output) lug and center (chassis) lug of terminal panel, shown in figure 6.

SIGNAL GENERATOR—Connect as indicated in chart. Use modulated output.

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Ground lead to B-; output lead through a .1-mfd. condenser to test point C of Section 4.	455 kc.	540 kc.	Turn C300B (copper screw) fully tight, then adjust trimmers in order given for maximum output.	C301E C301A C300I C300A
2	Radiating loop (see note below).	1800 kc.	1600 kc.	Adjust for maximum.	C400I
3	Same as step 2.	1500 kc.	1500 kc.	Adjust for maximum.	C400A



NOTE: Make up a six-to-eight-turn, 6-inch-diameter loop, using insulated wire; connect to signal-generator leads and place near radio loop.

SYMBOLIZATION

The components in the radio circuit are symbolized according to the types of parts and the sections of the radio in which the parts are located. The prefix letter of the symbol designates the type of part, as follows:

- C condenser
- I pilot lamp
- L—choke or coil
- LA loop aerial
- LS loud-speaker
- R—resistor
- S switch
- T transformer
- Z electrical assembly

The number of the symbol designates the section in which the part is located, as follows:

- 100-series components are in Section 1—the power supply.
- 200-series components are in Section 2—the audio circuits.
- 300-series components are in Section 3—the i-f amplifier, detector, and a-v-c circuits.
- 400-series components are in Section 4—the aerial, r-f, and oscillator circuits.

A suffix letter identifies the part as a non-replaceable component of the assembly which bears an identical number without a suffix letter, and with perhaps a different prefix letter.

FIGURE 4. TOP VIEW, SHOWING TRIMMER LOCATIONS

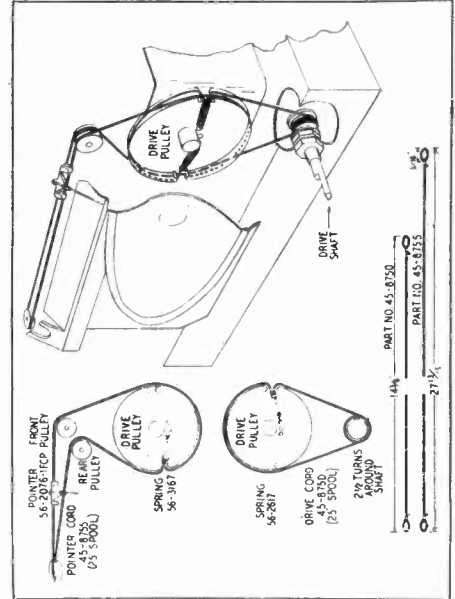


FIGURE 7. DRIVE-CORD INSTALLATION DETAILS

REPLACEMENT PARTS LIST

NOTE: Part numbers marked with an asterisk (*) are general replacement items. These numbers may not be identical with those on factory assemblies; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1

Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .04 mf.	45-3500-2*
C101	Condenser, electrolytic, 3-section	30-2573*
C101A:	Condenser, filter, 30 mf.	Part of C101
C101B:	Condenser, filter, 25 mf.	Part of C101
C101C:	Condenser, filter, 20 mf.	Part of C101
I100	Lamp, pilot	34-2068
R100	Resistor, leakage, 150,000 ohms	66-4153340*
R101	Resistor, filter, 220 ohms	66-1224340
R102	Resistor, filter, 1200 ohms	66-2123340
S100	Switch, power	Part of R200
W100	Power cord and plug	L-3199

SECTION 2

C200	Condenser, blocking, .01 mf.	61-0120*
C201	Condenser, by-pass, 220 mmf.	62-122001001*
C202	Condenser, blocking, .01 mf.	61-0120*
C203	Condenser, tone compensating, .02 mf.	61-0108*
LS200	Speaker	36-1615
R200	Volume control, .5 megohm	45-5007*
R201	Resistor, plate load, 470,000 ohms	66-4473340*
R202	Resistor, grid load, 3.3 megohms	66-5333340*
R203	Resistor, bias, 130 ohms	66-1123340*
R204	Resistor, grid load, 470,000 ohms	66-4473340*
T200	Transformer, output	Part of LS200

SECTION 3

C300A	Condenser, trimmer	Part of Z300
C300B	Condenser, trimmer	Part of Z300
C301A	Condenser, trimmer	Part of Z301
C301B	Condenser, trimmer	Part of Z301
C301C	Condenser, by-pass	Part of Z301
C301D	Condenser, by-pass	Part of Z301
C302	Condenser and choke assembly, i-f by-pass, .2 mf.	30-4644
C303	Condenser, screen by-pass, .05 mf.	61-0122*
C304	Condenser, a-v-c filter, .05 mf.	61-0122*
R300	Resistor, screen dropping, 27,000 ohms	66-3273340
R301	Resistor, i-f filter, 47,000 ohms	Part of Z301
R302	Resistor, a-v-c filter, 2.2 megohms	66-5223340*
Z300	Transformer, 1st i-f, including C300A and B300B	32-3968
Z301	Transformer, 2nd i-f, including C301A, C301B, C301C, C301D, and R301	32-3674*

SECTION 4

C400	Condenser, tuning, 2-section	31-2727-1
C400A:	Condenser, trimmer	Part of C400
C400B:	Condenser, trimmer	Part of C400

SECTION 4 (Continued)

Reference Symbol	Description	Service Part No.
C401	Condenser, coupling, 5 mmf.	60-90505007*
C402	Condenser, isolating, 47 mmf.	60-00515307*
LA400	Loop aerial	32-4052-4
R400	Resistor, aerial discharge, 150,000 ohms	66-4153340*
R401	Resistor, oscillator grid, 100,000 ohms	66-4103340*
T400	Transformer, oscillator	32-3880

MISCELLANEOUS

Description	Service Part No.
Cabinet	
Model 48-250 (less scale)	10524P
Model 48-250-I (less scale)	10524R
Cabinet Hardware	
Back	
Model 48-250	27-9817
Model 48-250-I	27-9870
Knob assembly	
Model 48-250	54-4052
Model 48-250-I	27-4805
Scale, dial	
Model 48-250	27-5907
Model 48-250-I	27-5908
Scale strap	56-2059FA3
Screw	1W23129FA3
Stud, back mounting	W2235FA9
Dial Backplate and Associated Hardware	
Cord, drive (pointer)	45-8755
Cord, drive (gang)	45-8750
Diffusing panel, Model 48-250-I	54-4343
Light reflector, Model 48-250	27-9816-1*
Pointer	56-2076-1FCP
Pulley	11W29740
Rubber band	54-4064
Screw and lock washer	1W32228FA3
Spring	
Gang drive cord	56-2617
Pointer drive cord	56-3167
Spring clip, diffusing screen, Model 48-250-I	56-3587
Panel, wiring	76-2148
Panel, wiring	12W45654
Pilot lamp socket assembly	76-1981
Shaft, assembly	31-2663
Socket, tube	
Loktal	27-8138*
Miniature	27-8226

REPLACEMENT PARTS LIST (Continued)

Section 1 (Continued)

Reference Symbol	Description	Service Part No.
C103A	Condenser, electrolytic, filter 40 mf.	Part of C103
C103B	Condenser, electrolytic, filter, 10 mf.	Part of C103
I100	Panel lamp	34-2477
R100	Resistor, filter, 500 ohms	33-3435-3
R101	Resistor, filter, 15,000 ohms	66-3154340
R102	Resistor, leakage, 150,000 ohms	66-4123340*
S100	Switch, off-on, power	Part of R200
S101	Switch, radio-phonograph	42-1736
W100	A-c power cord	L-3199

Section 2

C200	Condenser, blocking, .01 mf.	61-0120*
C201	Condenser, audio by-pass, .2 mf.	45-3500-3*
C202	Condenser, blocking, .01 mf.	61-0120*
C203	Condenser, by-pass, 240 mmf.	60-10245307*
C204	Condenser, tone compensation, .05 mf.	61-0122*
R200	Volume control, center-tapped, 1 megohm	33-5519
R201	Resistor, grid leak, 10 megohms	66-6103340*
R202	Resistor, plate load, 470,000 ohms	66-4473340*
R203	Resistor, grid leak, 470,000 ohms	66-4473340*
R204	Resistor, cathode bias, 130 ohms	66-1133340*
LS200	Loud-speaker Model 48-1201	36-1617-Z
	Model 48-1260	36-1626
T200	Output transformer Model 48-1201	32-8310
	Model 48-1260	32-8310-1

Section 3

C300A	Condenser, fixed, primary	Part of Z300
C300B	Condenser, fixed, secondary	Part of Z300
C301A	Condenser, fixed, primary	Part of Z301
C301B	Condenser, fixed, secondary	Part of Z301
C302	Condenser, screen by-pass, .05 mf.	61-0122*
C303	Condenser-and-choke assembly, by-pass, 2 mf.	76-1161
C304	Condenser, i-f by-pass, 100 mmf.	60-10105407*
C305	Condenser, i-f by-pass, 100 mmf.	60-10105407*
R300	Resistor, screen dropping, 47,000 ohms	66-3473340*
R301	Resistor, filter, 47,000 ohms	66-3473340*
R302	Resistor, a-v-c filter, 2.2 megohms	66-5223340*
S300	Switch, phono-radio	Part of S101
Z300	Transformer, 1st i.f., 455 kc., includes C300A and C300B	32-4160
Z301	Transformer, 2nd i.f., 455 kc., includes C301A and C301B	32-4161

Section 4

C400	Condenser, tuning gang	31-2527-2
C400A	Condenser, aerial trimmer	Part of C400
C400B	Condenser, oscillator trimmer	Part of C400
C401	Condenser, coupling, 5 mmf.	60-90505007*
C402	Condenser, coupling, 100 mmf.	60-10105407*
C403	Condenser, a-v-c filter, .05 mf.	61-0122*
LA400	Loop aerial Model 48-1201	76-2127-3
	Model 48-1260	76-2127-4
R400	Resistor, ext. aerial loading, 150,000 ohms	66-4153340*
R401	Resistor, grid leak, 1 megohm	66-6103340*
R402	Resistor, grid leak, 120,000 ohms	66-4123340*
T400	Oscillator transformer	32-4095-2

Miscellaneous — Model 48-1201

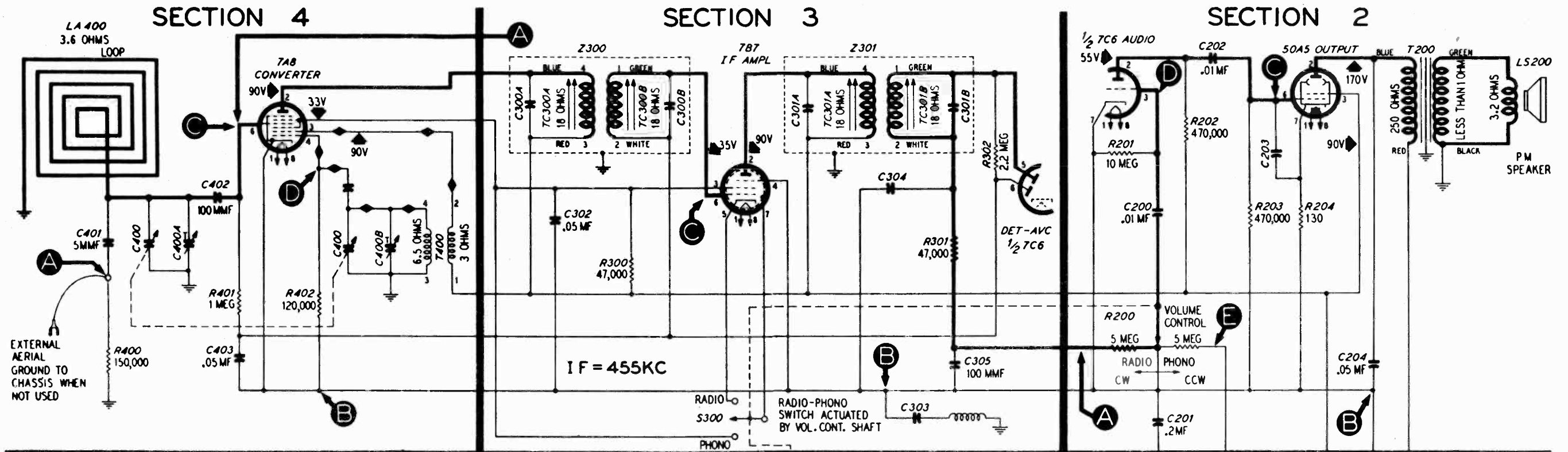
Description	Service Part No.
Aerial-lead assembly	76-1472
Cabinet (less scale)	10664B
Baffle and cloth	40-6827
Bar-and-clip assembly	76-2111
Bottom cover	54-7243
Button (2 required)	56-3920
Button, springs (2 required)	56-3919
Door	21-9058
Frame and base	76-2499
Hinge (2 required)	56-3910

Miscellaneous — Model 48-1201 (Continued)

Description	Service Part No.
Knob (2 required)	54-4255
Rubber foot (4 required)	54-4377
Rubber mount	27-4610
Snap fastener (4 required)	28-4279FA1
Scale	27-5883-1
Scale strap	56-2261
Wooden baffle	21-9055
Dial backplate	76-1940
Cam assembly	76-1638
Drive cord, gang drive (25-foot spool)	45-8740
Drive cord, pointer (25-foot spool)	45-8755
Pointer	56-2076-2
Shaft assembly	31-2680
Spring, gang drive	56-2617
Spring, pointer	28-8953
Hardware	
Bolt, speaker mounting (4 required)	W-2123
Clamp, electrolytic mounting	56-1466
Clip, coil mounting	28-5002FA1
Retainer (2 required)	56-3918
Screw, backplate mtg.	1W19670FA3
Screw (4 required)	1W22285FA9
Spring retainer	28-8658
Pickup cable	41-3708
Socket, Loktal (5 required)	27-6138
Socket, pilot lamp	27-6233
Speaker cable	41-3759
Switch-lever assembly	76-1642

Miscellaneous — Models 48-1260M (Mahogany) and 48-1260L (Light)

Cabinet (L)	10677A
(M)	10677B
Bar and clip assembly	76-2111
Baffle and cloth (L)	40-6927
(M)	40-6927-1
Bezel	56-4954
Bullet catch (L)	45-6002-1
(M)	45-6002
Door	56-4921FJ31
Door spring	56-5027FA38
Door pull (2 required) (L)	56-4796
(M)	56-4796-1
Dome (4 required)	45-6190
Knife hinge (2 required)	56-4056
Knob (2 required) (L)	54-4214-1
(M)	54-4214
Rail (2 required)	56-4797FA1
Scale	27-5883
Scale strap (2 required)	56-2261
Washer, scale strap (2 required)	1W51931
Snap fastener (4 required)	28-4279FA1
Strike plate (L)	45-6003-1
(M)	45-6003
Wood baffle	21-9087
Wood screw (12 required)	1W25223
Dial backplate assembly	76-3176
Bracket (4 required)	56-4991
Cam assembly	76-1638
Drive cord, pointer and gang drive (25-foot spool)	45-8750
Frame and bracket	76-2468-1FJ31
Pointer	56-2076-2
Shaft assembly	31-2860
Spring, pointer	28-8953
Spring, gang drive	56-2617
Screw, backplate mtg. (4 required)	1W19670FA3
Hardware	
Bolt, speaker mtg. (4 required)	W-1695
Clamp, electrolytic mtg.	56-1456
Clip, coil mtg.	28-5002FA1
Eye screw	56-4991
Nut (4 required)	1W19988FA3
Rubber mount, gang mtg.	27-4610
Screw, R. H. (4 required)	1W24984
Speed nut (4 required)	1W60108
Spring retainer	28-8658
Pickup cable	41-3735-10
Socket, Loktal (5 required)	27-6138
Socket, pilot lamp	27-6233
Switch-lever assembly	76-1642



Circuit Description

Philco Radio-Phonographs, Models 48-1201 and 48-1260 are identical electrically. The radio is a five-tube superheterodyne with a built-in loop aerial and provisions for connecting an external aerial.

The loop aerial feeds into the mixer section of a 7A8 pentagrid converter. The aerial and oscillator circuits are tuned by ganged, variable tuning condensers, and the oscillator-section rotor plates are shaped to provide proper tracking without the use of a series padding condenser.

The output of the 7A8 converter is transformer-coupled to the 7B7 i-f amplifier which, in turn, is transformer-coupled to the diode section of the 7C6 diode-triode. Each of the i-f coupling transformers has permeability-tuned primary and secondary windings.

One diode functions as the 2nd detector; the other diode develops the a-v-c voltage, which is applied to the mixer section of the converter and to the i-f amplifier. The output of the 2nd detector is resistance-coupled to the triode section of the 7C6 which, in turn, is resistance-coupled to the 50A5 beam-power output tube. The output tube is transformer-coupled to the permanent-magnet dynamic loud-speaker, to which it supplies approximately 1.8 watts of audio power.

D-c operating voltages are supplied from a voltage-doubler power supply employing a 50X6 full-wave rectifier and a resistor-condenser filter network.

A 120,000-ohm resistor, R102, is connected between B- and the chassis to prevent hum under conditions of high humidity. A series-tuned circuit consisting of a condenser, C303, and a choke is also connected between B- and the chassis. This combination is resonant at 455 kc. and, therefore, offers a lower impedance at the

i-f. than the condenser alone would offer. The more effective grounding of the i-f circuits improves the stability of the high-gain i-f stages.

Preliminary Checks

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

- 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.
- Measure the resistance between B+ (pin 7 of the 50X6 rectifier) and the B- bus, test point B. When the ohmmeter leads are connected in proper polarity, the highest resistance reading will be obtained. This reading should be not lower than 4000 ohms. If it is lower, check condensers C101, C102, C103A, C103B, and C204 for leakage or shorts.

SPECIFICATIONS

CABINET	
Model 48-1201;	wood, mahogany finish, harvest (L)
Model 48-1260;	wood, Philcote finish
CIRCUIT Five-tube superheterodyne	
FREQUENCY RANGE	540 to 1600 kc.
AUDIO OUTPUT	1.8 watts
OPERATING VOLTAGE	105-120 volts, 60 cycles, a.c.
POWER CONSUMPTION	
Radio,	45 watts; Phonograph, 60 watts
AERIAL Built-in loop; terminal also provided for external aerial	
INTERMEDIATE FREQUENCY	455 kc.
PHILCO TUBES (5)	7A8, 7B7, 7C6, 50A5, 50X6
PHONOGRAPH	

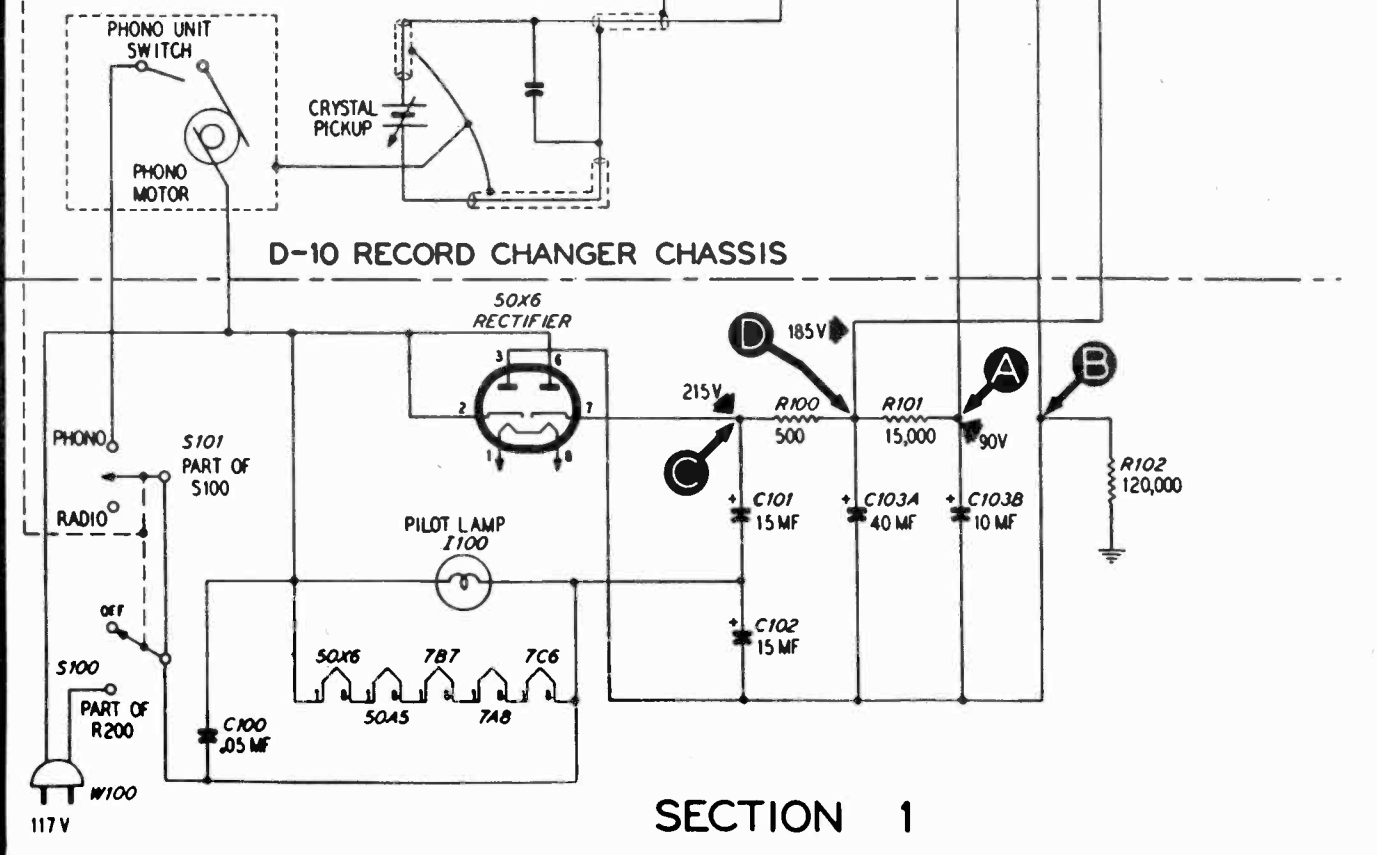


Figure 8. Philco Radio-Phonograph Models 48-1201 and 48-1260, Sectionalized Schematic Diagram, Showing Test Points

ALIGNMENT PROCEDURE

TURN VOLUME CONTROL TO MAXIMUM IN THE RADIO POSITION

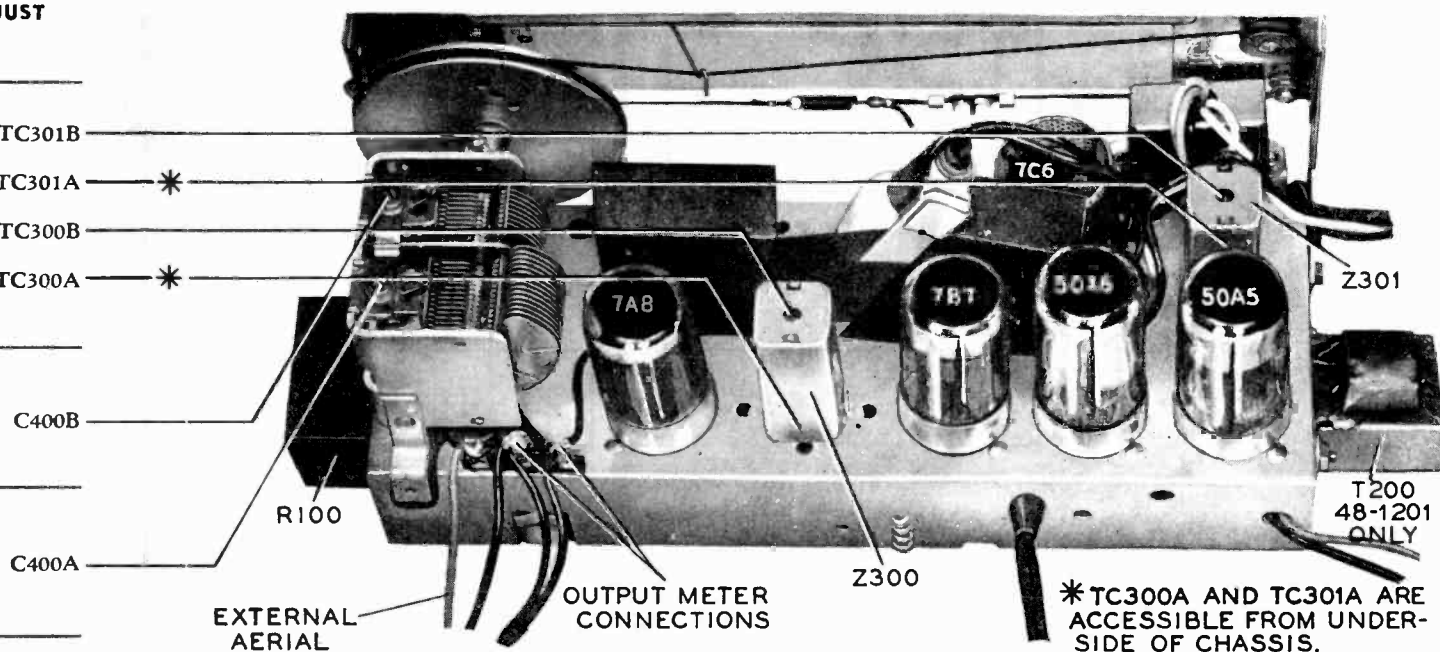
NOTE: Make alignment with loop connected to radio.
OUTPUT METER—Connect to terminals indicated in figure 7.

DIAL—Calibration and pointer-index measurements are shown in figure 8. With tuning gang fully meshed, set pointer to index mark.

SIGNAL GENERATOR—Connect ground lead to B—bus; connect output lead as indicated in chart. Use modulated output.

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through .1-mf. condenser to ext. aerial lead.	455 kc.	Gang fully meshed.	Adjust trimmers for maximum output in order given.	TC301B TC301A * TC300B TC300A *
2	Through 100 - mmf. condenser to ext. aerial lead.	1600 kc.	1600 kc.	Adjust trimmer for maximum output.	C400B
3	Same as step 1.	1500 kc.	1500 kc.	Adjust trimmer for maximum output.	C400A
4	Repeat steps 2 and 3.				



TP-3543

Figure 7. Top View, Showing Trimmer Locations

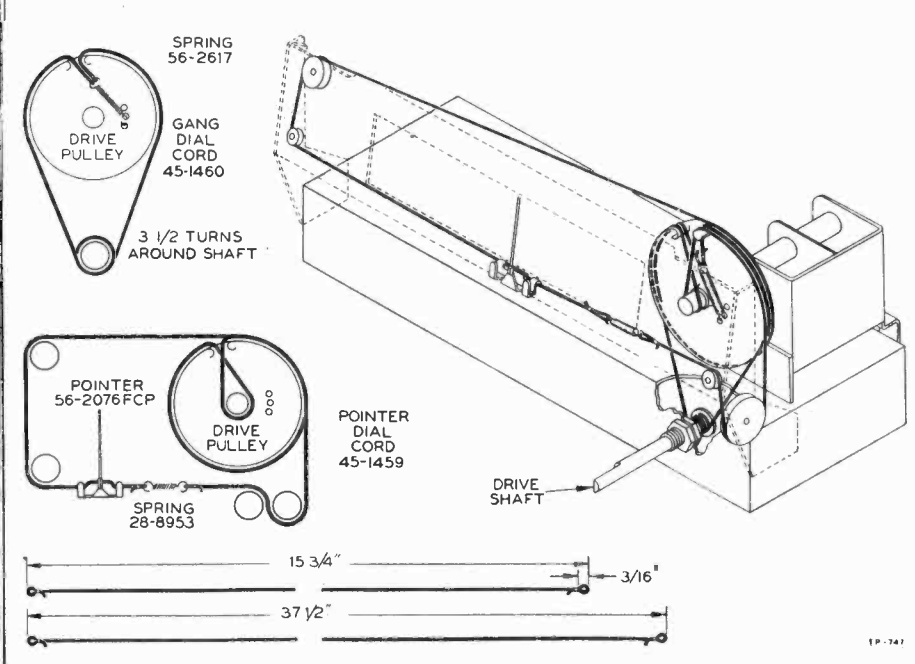
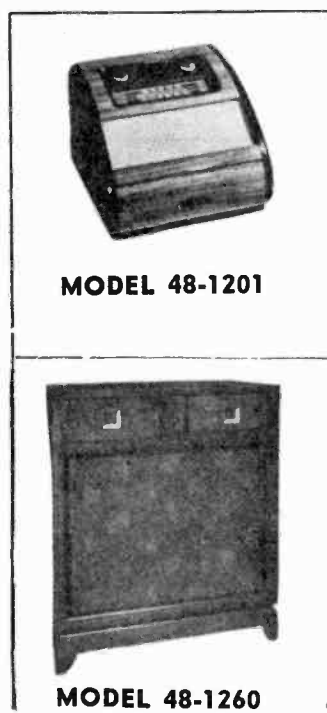


Figure 6. Drive-Cord Installation Details



MODEL 48-1201

MODEL 48-1260

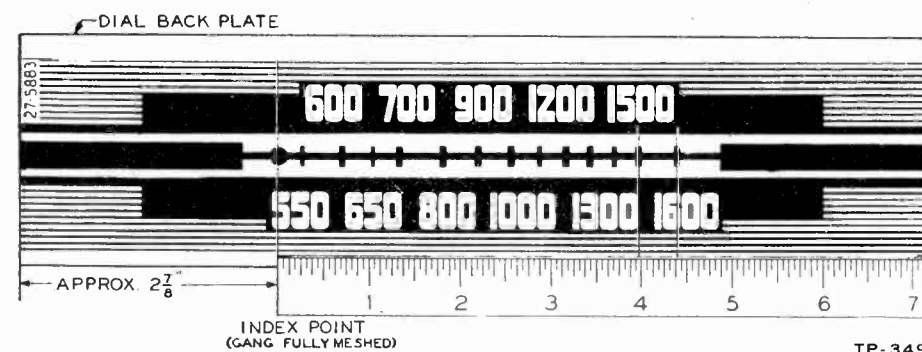


Figure 8. Calibration Measurements for Dial Backplate

TP-3490

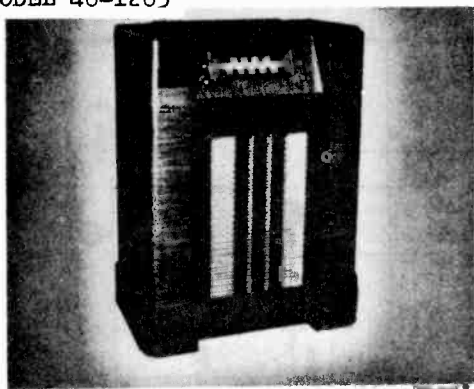
REPLACEMENT PARTS LIST

NOTE: Part numbers marked with an asterisk (*) are general replacement items. These numbers may not be identical with those on factory assemblies; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

Section 1			Section 1 (Continued)		
Reference Symbol	Description	Service Part No.	Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .05 mf.	61-0122*	C102	Condenser, electrolytic, filter, 15 mf.	45-3018-18*
C101	Condenser, electrolytic, filter, 15 mf.	45-3015-18*	C103	Condenser, dual electrolytic	30-2575-12*

MODEL 48-1262, Code 121,
MODEL 48-1283

PHILCO CORP.



MODEL 48-1262

TP-3457

SPECIFICATIONS

CABINET	Wood, walnut finish
CIRCUIT	Six-tube superheterodyne
FREQUENCY RANGE	540 to 1620 kc.
AUDIO OUTPUT	2.5 watts
OPERATING VOLTAGE	{105 to 120 volts {60-cycle, a.c. only
POWER CONSUMPTION	{Radio, 40 watts {Phonograph, 20 watts
AERIAL	{Built-in loop; terminal also {provided for external aerial
INTERMEDIATE FREQUENCY	455 kc.
PHILCO TUBES (6) 7B7(2), 7C6, 14AF7, 35L6GT, 50X6	
PHONOGRAPH	{Philco Automatic Record {Changer, Model D-10

Circuit Description

Philco Model 48-1262 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.

For service information concerning Model 48-1283

Model 48-1283 is similar to Model 48-1262, Code 121, with the exceptions given in this supplement. The radio-phonograph is contained in a cabinet which has two record shelves. The aerial loop is mounted on rails at the back of the cabinet. Automatic Record Changer Model M-8 is used, and the isolating condenser and the load resistor for the crystal pickup are mounted on a terminal strip located on the speaker baffle.

S C H E M A T I C D I A G R A M

Section 1

The .05-mf. condenser between the phono chassis and the phono-cable shield is removed, and is connected between the phono chassis and the radio chassis. This condenser is located on a terminal strip attached to the cabinet.

A 1-megohm resistor is connected across the crystal pickup.

A .01-mf. condenser is connected between the low side of the crystal pickup and the phono-cable shield.

R102 is 150,000 ohms.

Section 1

R102 is 150,000 ohms, Service Part No. 66-4153340*.

Section 2

C200 is removed.

C205 is .03 mf., Service Part No. 45-3500-1*.

LS200 is Service Part No. 36-1626-1.

Section 2

C200 is removed and the cable shield is connected directly to B—.

C205 is .03 mf.

Section 3

R302 is 150,000 ohms.

Section 4

R400 is 150,000 ohms.

LA400 is 3.5 ohms.

P A R T S L I S T

Section 3

C304 is .15 mf., Service Part No. 38-9851-5.

C305 is .05 mf., Service Part No. 38-9851-4.

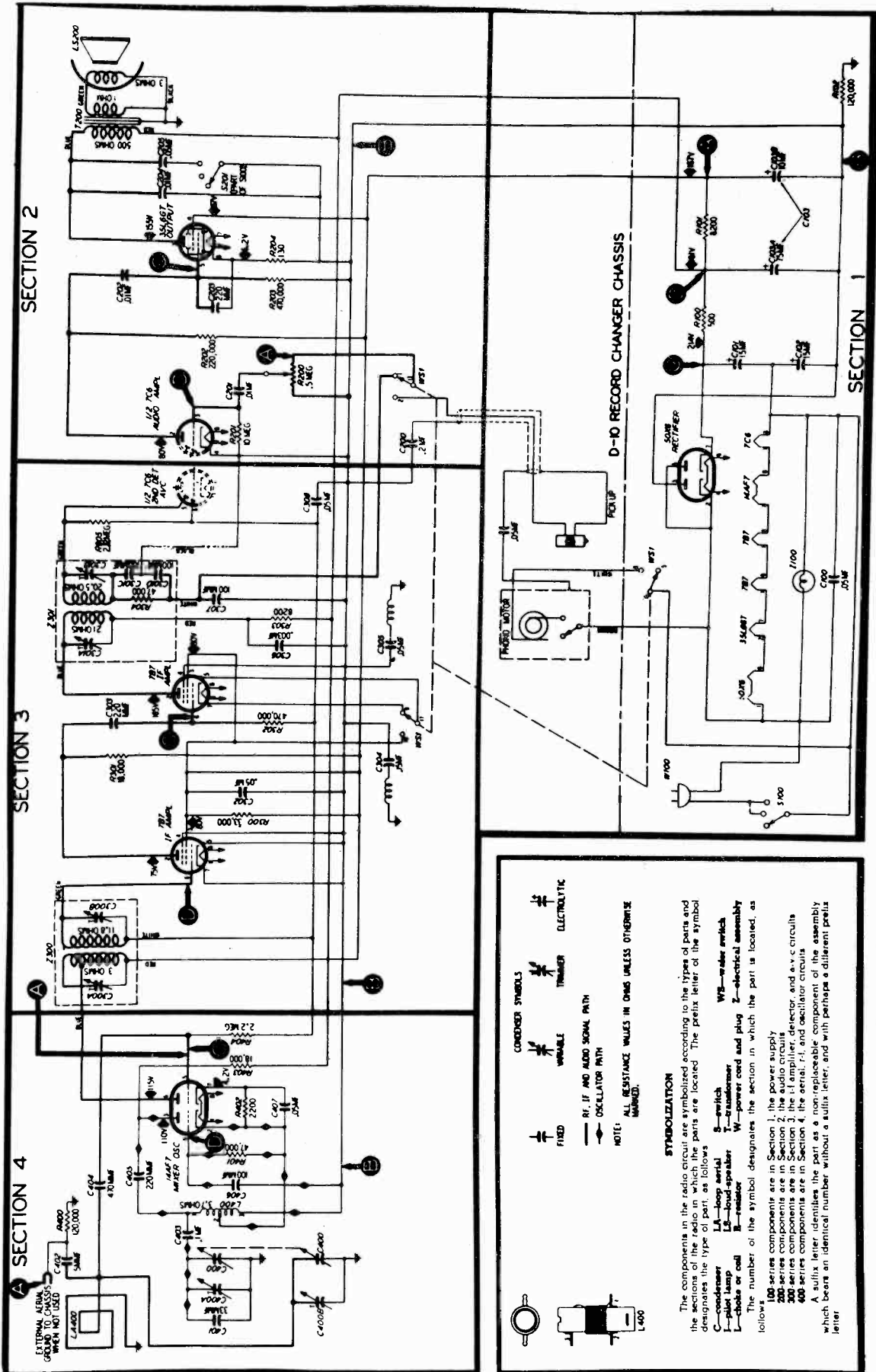
R302 is 150,000 ohms, Service Part No. 66-4153340*.

Section 4

C400 is Service Part No. 31-2715-1.

LA400 is Service Part No. 32-4273.

R400 is 150,000 ohms, Service Part No. 66-4153340*.



TP-388

CONDENSER SYMBOLS

FIXED
 VARIABLE
 RF, IF AND AUDIO SIGNAL PATH
 OSCILLATOR PATH

NOTE: ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE INDICATED.

SYMBOLIZATION

The components in the radio circuit are symbolized according to the types of parts and the sections of the radio in which the parts are located. The prefix letter of the symbol designates the type of part, as follows:

- C—condenser
- LA—loop aerial
- L—pilot lamp
- L—choke or coil
- W—resistor
- W—power cord and plug
- Z—electrical assembly

The number of the symbol designates the section in which the part is located, as follows:

- 100-series components are in Section 1, the power supply
- 200-series components are in Section 2, the audio circuit
- 300-series components are in Section 3, the i-f amplifier, detector, and a.v.c. circuits
- 400-series components are in Section 4, the aerial, r-f, and oscillator circuits

A suffix letter identifies the part as a non-replaceable component of the assembly which bears an identical number without a suffix letter, and with perhaps a different prefix letter.

CONDENSER SYMBOLS

FIXED
 VARIABLE
 RF, IF AND AUDIO SIGNAL PATH
 OSCILLATOR PATH

NOTE: ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE INDICATED.

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- 300-series components are in Section 3, the i-f amplifier, detector, and a.v.c. circuits
- 400-series components are in Section 4, the aerial, r-f, and oscillator circuits

A suffix letter identifies the part as a non-replaceable component of the assembly which bears an identical number without a suffix letter, and with perhaps a different prefix letter.

Figure 5. Philco Radio-Phonograph, Model 48-1282, Sectionalized Schematic Diagram, Showing Test Points

ALIGNMENT PROCEDURE

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

NOTE: Make alignment with loop aerial connected to radio.

DIAL—Calibration and pointer-index measurements are shown in figure 6. With tuning gang fully meshed, set pointer to index mark.

OUTPUT METER—Connect to terminals indicated in figure 7.

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

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	SPECIAL INSTRUCTIONS	DIAL SETTING	
1			Turn C300B down tight.		C301B
2	Through .1-mf. condenser to test point C, Section 4 (pin 5, 14AF7).	455 kc.	Adjust trimmers in order given for maximum output.	540 kc.	C301A C300B C300A
3	Radiating loop (see Note below).	1600 kc.	Adjust for maximum.	1600 kc.	C400B
4	Same as step 3.	1500 kc.	Adjust for maximum.	1500 kc.	C400A

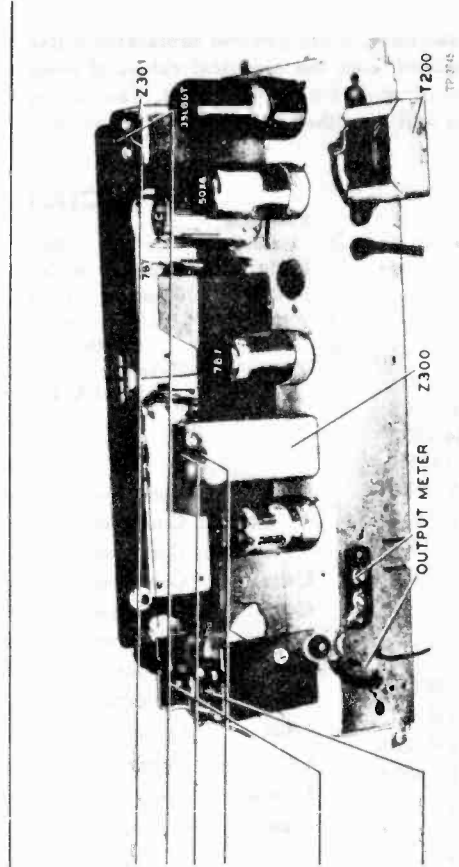


Figure 7. Top View, Showing Trimmer Locations

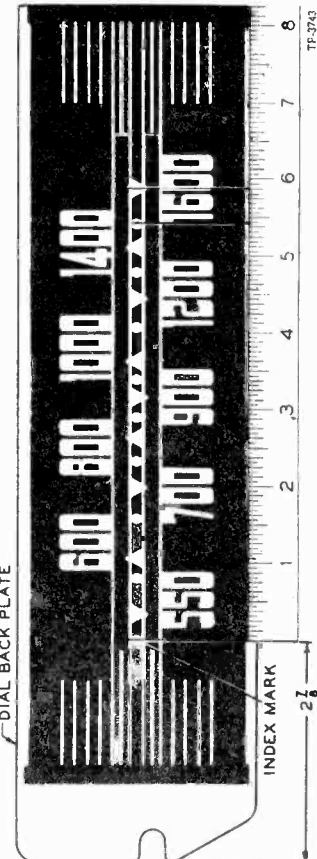


Figure 6. Calibration Measurements for Dial Backplate

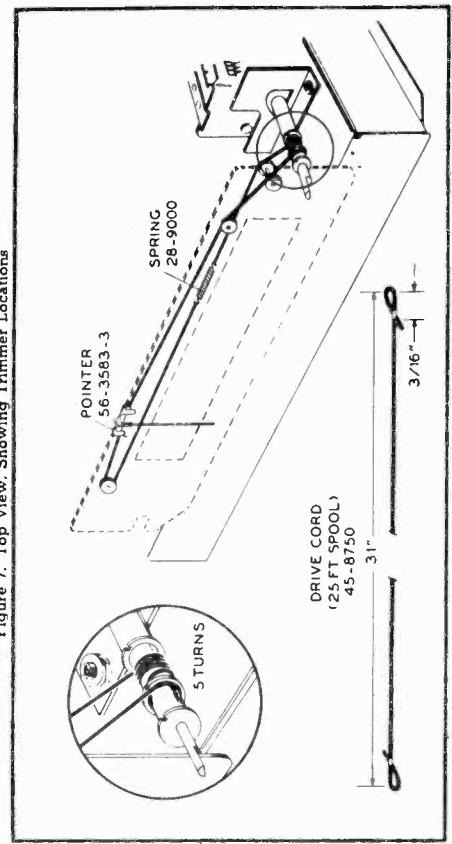


Figure 8. Drive-Cord Installation Details

REPLACEMENT PARTS LIST

NOTE: Part numbers marked with an asterisk (*) are general replacement items. These numbers may not be identical with those on factory assemblies; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1

Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .05 mf.....	61-0122*
C101	Condenser, electrolytic, filter, 15 mf....	30-2575-11
C102	Condenser, electrolytic, filter, 15 mf....	30-2575-11
C103	Condenser, electrolytic, 2-section filter	30-2575-17
C103A:	Condenser, electrolytic, filter, 75 mf..Part of C103	
C103B:	Condenser, electrolytic, filter, 10 mf..Part of C103	
I100	Panel lamp	34-2477*
R100	Resistor, filter, 500 ohms.....	33-3435-3
R101	Resistor, filter, 82,000 ohms.....	66-2824340
R102	Resistor, leakage, 120,000 ohms.....	66-4123340
S100	Switch, on-off, power.....	42-1816-1
W100	Line cord	41-3755-13

SECTION 2

C200	Condenser, audio by-pass, 2 mf.....	45-3500-3*
C201	Condenser, blocking, .01 mf.....	61-0120*
C202	Condenser, blocking, .01 mf.....	61-0120*
C203	Condenser, by-pass, 220 mmf.....	60-10205307*
C204	Condenser, tone compensator, .01 mf.....	61-0120*
C205	Condenser, tone compensator, .05 mf.....	61-0122*
LS200	Loud-speaker	36-1626
R200	Volume control, .5 megohm.....	33-5539-22
R201	Resistor, grid return, 10 megohms....	66-6103340*
R202	Resistor, plate load, 220,000 ohms....	66-4223340*
R203	Resistor, grid return, 470,000 ohms....	66-4473340*
R204	Resistor, cathode bias, 130 ohms....	66-1133260
S201	Tone-control switch	Part of S100
T200	Output transformer	32-8242-3
WS1	Wafer switch, radio-phono.....	42-1824-1

SECTION 3

C300A	Condenser, trimmer	Part of Z300
C300B	Condenser, trimmer	Part of Z300
C301A	Condenser, trimmer	Part of Z301
C301B	Condenser, trimmer	Part of Z301
C301C	Condenser, by-pass	Part of Z301
C301D	Condenser, by-pass	Part of Z301
C302	Condenser, by-pass, .05 mf.....	61-0122*
C303	Condenser, coupling, 220 mmf.....	60-10205307*
C304	Condenser-and-choke assembly, .05 mf..	38-9851-4
C305	Condenser-and-choke assembly, .15 mf..	38-9851-5
C306	Condenser, by-pass, .003 mf.....	61-0109*
C307	Condenser, by-pass, 100 mmf.....	60-10105407*
C308	Condenser, a-v-c by-pass, .05 mf.....	61-0122*
R300	Resistor, screen dropping, 33,000 ohms	66-3333340*
R301	Resistor, plate load, 18,000 ohms....	66-3183340*
R302	Resistor, grid load, 470,000 ohms....	66-4473340*
R303	Resistor, plate dropping, 82,000 ohms.	66-2823340*

SECTION 3—Continued

Reference Symbol	Description	Service Part No.
R304	Resistor, diode load, 47,000 ohms...	Part of Z301
R305	Resistor, a-v-c filter, 2.2 megohms....	66-5223340*
Z300	Transformer, 1st i. f., 455 kc., includes C300A and C300B	32-4151-1
Z301	Transformer, 2nd i. f., 455 kc., includes C301A, C301B, C301C, and C301D.	32-3948-9

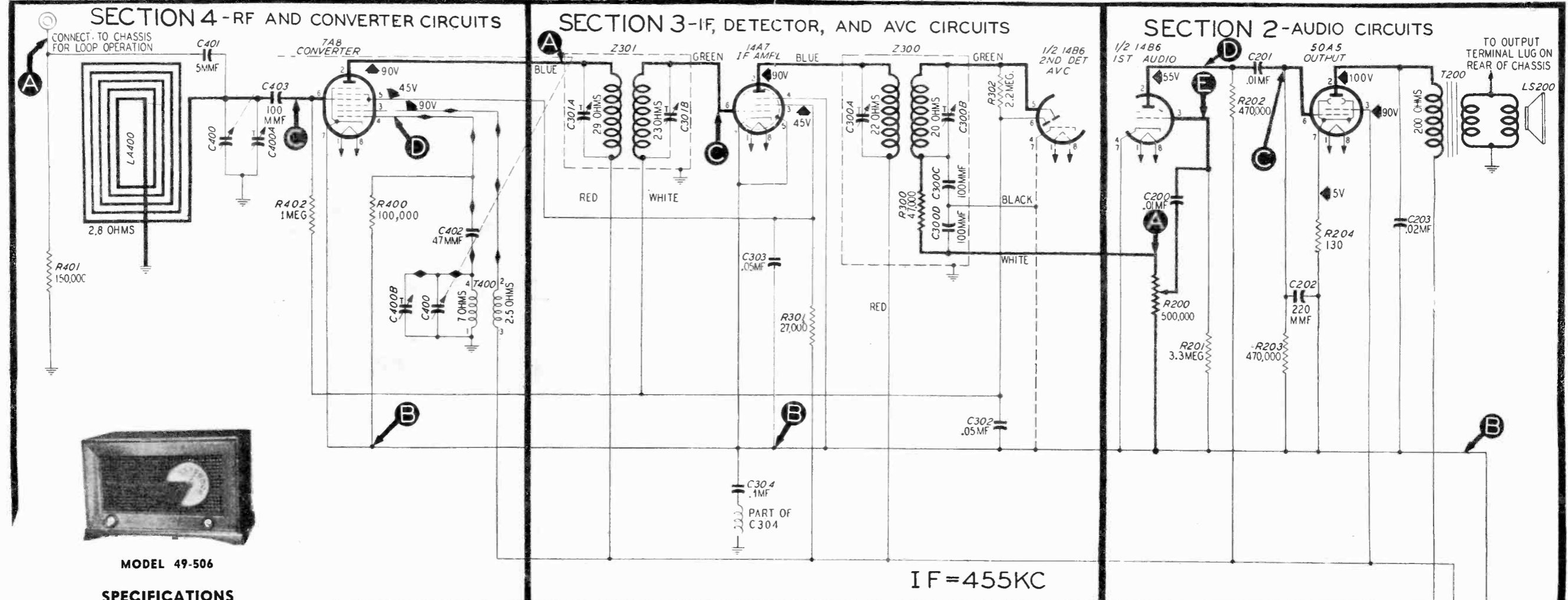
SECTION 4

C400	Condenser, tuning gang	33-5539-22
C400A:	Condenser, trimmer	Part of C400
C400B:	Condenser, trimmer	Part of C400
C401	Condenser, compensating, 33 mmf....	60-00305307*
C402	Condenser, series blocking, 4.7 mmf....	30-1221-5
C403	Condenser, isolating, .1 mf.....	61-0113*
C404	Condenser, coupling, 470 mmf.....	60-10515307*
C405	Condenser, osc. plate, 220 mmf.....	60-10205307*
C406	Condenser, osc. grid, 100 mmf.....	60-10105407*
C407	Condenser, by-pass, .05 mf.....	61-0122*
LA400	Loop aerial	76-3310
R400	Resistor, ext. aerial loading, 120,000 ohms	66-4123340
R401	Resistor, oscillator grid, 47,000 ohms..	66-3473340*
R402	Resistor, cathode bias, 2200 ohms....	66-2223340*
R403	Resistor, plate dropping, 18,000 ohms.	66-3183340*
R404	Resistor, grid return, 2.2 megohms ...	66-5223340*
L400	Coil, oscillator	32-4019-6

MISCELLANEOUS

Description	Service Part No.
Cabinet less scale, Mahogany	10705A
Cabinet less scale, Light Walnut	10706B
Back, cabinet	54-7540-1
Baffle and cloth assembly	219109
Baffle and cloth	40-6991-1
Bezel	56-5367
Bin mechanism (l.h.)	76-3223
Bin mechanism (r.h.)	76-3223-1
Dome	45-6190
Door pull	56-4420-2
Drop door	45-6447
Feet, wood	45-6423
Frame assembly (changer mtg.)	76-3222-1
Hinge	56-4066
Instrument panel	45-6422
Spring, bin mechanism	56-4978
Cable, pickup	41-3837-3
Condenser, crystal isolating, .01 mf.....	61-0120*
Dial Scale	27-5999
Backplate	76-3713
Drive cord (25-ft. spool)	45-8750*
Pointer	56-3583-3
Strap	56-4756
Spring, drive cord	28-8953
Knob	54-4486-2
Lamp bracket	56-2332
Pilot-light assembly	27-6233
Resistor, crystal load, 1 megohm	66-5103340*
Socket, octal	27-6174
Socket, Loktal	27-6138*

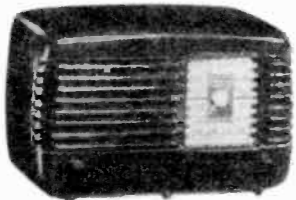
To reduce phonograph rumble, a 1 megohm resistor, part number 66-5103340, has been added across the crystal pickup.



MODEL 49-506

SPECIFICATIONS

CABINET Wood, with plastic grille;
walnut or mahogany finish



MODEL 49-500 (Walnut)

MODEL 49-500-I (Ivory)

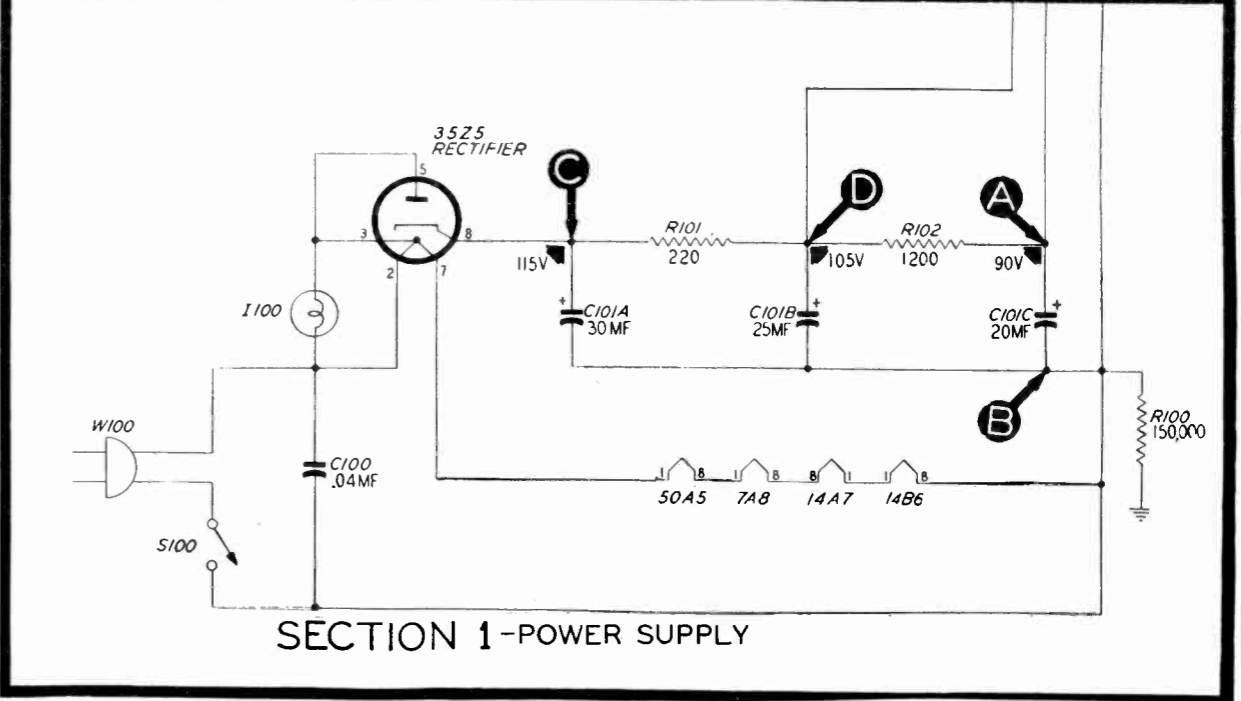
SPECIFICATIONS

CABINET Bakelite
CIRCUIT Five-tube superheterodyne
FREQUENCY RANGE 540 to 1620 kc.
OPERATING VOLTAGE 105 to 120 volts, a.c. or d.c.
POWER CONSUMPTION 30 watts
AERIAL Loop fastened to cabinet; terminal
also provided for outside aerial
INTERMEDIATE FREQUENCY 455 kc.
PHILCO TUBES (5) 7A8, 14A7, 14B6, 50A5, 35Z5GT

Preliminary Checks

To avoid possible damage to the radio, the following preliminary checks should be made before turning on the power:

- Carefully inspect both top and bottom of the chassis. Make sure that all tubes are secure in the proper sockets (see figure 6), and look for bad connections, burned resistors, or other obvious sources of trouble.
- Measure the resistance between B+ and B- (test points C and B) using the ohmmeter polarity giving the highest resistance reading; if the reading is lower than 50,000 ohms, check C101A, C101B, and C101C, for leakage or shorts. This resistance value, which is much lower than normal, does not represent a quality check of these condensers; it is the lowest value which will permit the rectifier to operate safely while the voltage tests of Section 1 (power supply) are performed.



SECTION 1 - POWER SUPPLY

SECTION 5. PHILCO RADIO MODELS 49-500 AND 49-500-I, SECTIONALIZED SCHEMATIC DIAGRAM, SHOWING TEST POINTS

ALIGNMENT PROCEDURE

TURN ON THE RADIO, AND SET THE VOLUME CONTROL TO MAXIMUM.

DIAL POINTER—Turn tuning condensers to full-mesh position. Set dial pointer to index dot, located to the left of "55."

OUTPUT METER—Connect to left (output) lug and center (chassis) lug of terminal panel, shown in figure 6.

SIGNAL GENERATOR—Connect ground lead to B; connect output lead as indicated in the chart.

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1				Turn C301B (copper screw) down tight.	
2	Through .1-mf. condenser to pin 6 of 7A8 converter.	455 kc.	540 kc.	Adjust trimmers, in order given, for maximum output.	C300A C300B C301A C301B
3	Through 100-mmf. condenser to external aerial connector.	1600 kc.	1600 kc.	Disconnect external aerial lug from chassis. Adjust trimmer for maximum output.	C400B
4	Same as step 3.	1500 kc.	1500 kc.	Adjust for maximum output.	C400A

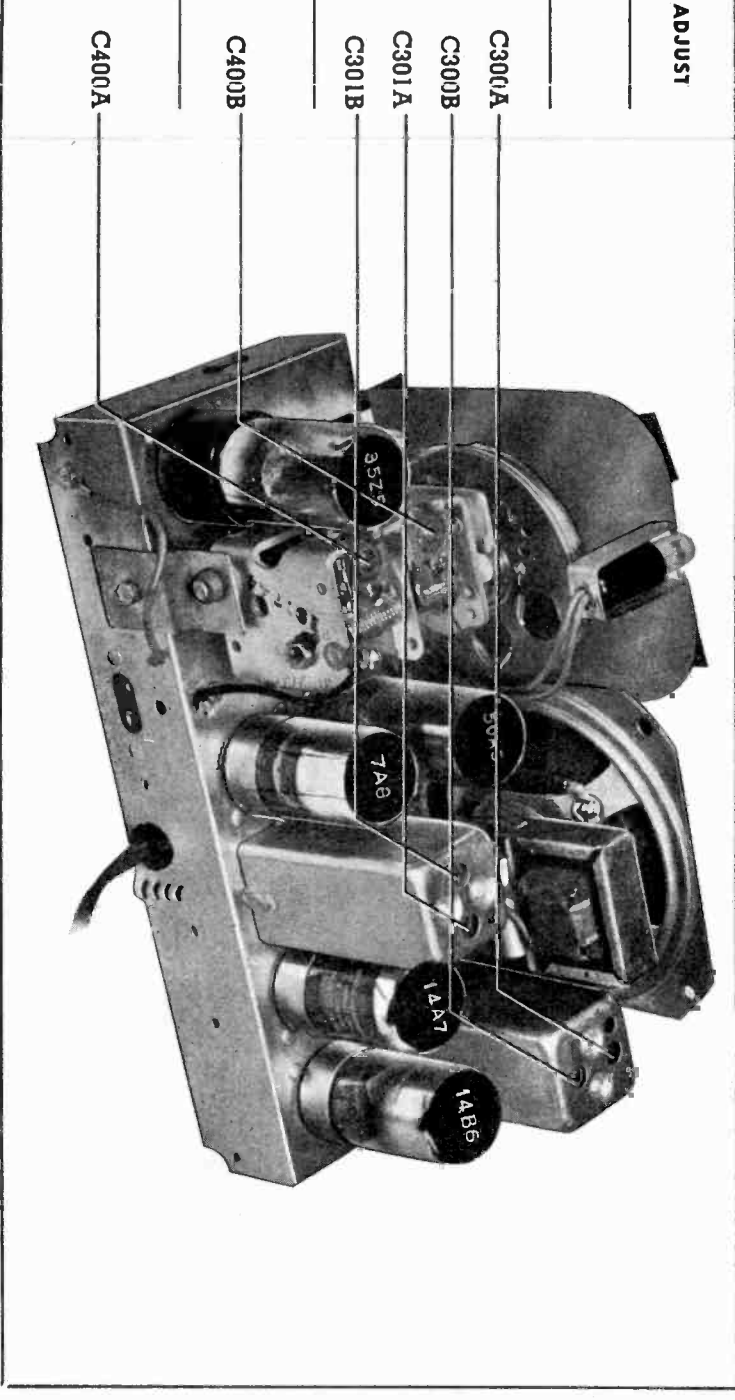


FIGURE 6. TOP VIEW, SHOWING TRIMMER LOCATIONS

TP-6000

MISCELLANEOUS

Description	Service Part No.	Description	Service Part No.	
Cabinet		Dial-Scale Hardware		
Walnut	10728	Cord, drive (25-ft. spool)	45-8750*	
Mahogany	10728A	Pointer	54-4505	
Cabinet Hardware			Replacement parts are the same as those in Models 49-500 and 49-500-I, with the exceptions listed below.	
Back	54-7682	Scale, dial	27-5978-2	
Baffle-and-cloth assembly		Spring, (drive cord)	56-2617	
Walnut	40-6945		Reference Symbol C100	
Mahogany	40-6945-1	SECTION 1		
Fastener, acetate window (4)	56-6161FE7	Pilot-lamp assembly	76-1280	
Knob		Shaft assembly, drive	31-2718 LA400	
Walnut	54-4527-11		Loop aerial	32-4052-28
Mahogany	54-4527-10	Socket, Loktal	27-6138*	
Window acetate	54-4504	Socket, octal	27-6174*	

REPLACEMENT PARTS LIST

Replacement parts are the same as those in Models 49-500 and 49-500-I, with the exceptions listed below.

SECTION 4

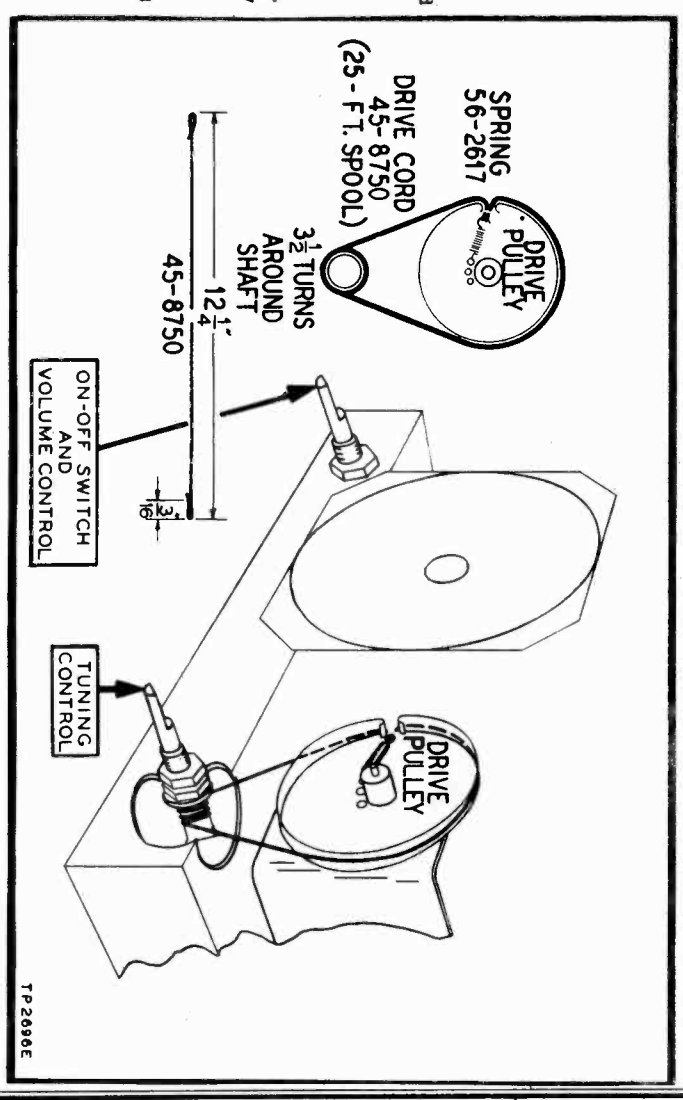


FIGURE 7. DRIVE-CORD INSTALLATION DETAILS

TP-2680E

PHILCO CORP.

MODELS 49-500,
49-500-I, 49-506

REPLACEMENT PARTS LIST

NOTE: Parts marked with an asterisk (*) are general replacement items, and the numbers listed may not be identical with those on factory assemblies; also, the electrical values of some replacement items furnished may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1

POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .04 mf.	45-3500-2*
C101	Condenser, electrolytic, 3-section filter	30-2573
C101A	Condenser, electrolytic, 30 mf.	Part of C101
C101B	Condenser, electrolytic, 25 mf.	Part of C101
C101C	Condenser, electrolytic, 20 mf.	Part of C101
I100	Panel lamp	34-2068
R100	Resistor, leakage, 150,000 ohms	66-4153340*
R101	Resistor, filter, 220 ohms	66-1224340*
R102	Resistor, filter, 1200 ohms	66-2123340*
S100	Switch, power	Part of R200
W100	Power cord and plug	L2183*

SECTION 2

AUDIO CIRCUITS

C200	Condenser, coupling, .01 mf.	61-0120*
C201	Condenser, coupling, .01 mf.	61-0120*
C202	Condenser, by-pass, 220 mmf.	62-122001001
C203	Condenser, by-pass, .02 mf.	61-0108*
LS200	Speaker	36-1614
R200	Volume control (with power switch), 500,000 ohms	33-5429
R201	Resistor, grid load, 3.3 megohms	66-5333340*
R202	Resistor, plate load, 470,000 ohms	66-4473340*
R203	Resistor, grid load, 470,000 ohms	66-4473340*
R204	Resistor, bias, 130 ohms	66-1123340*
T200	Output transformer	Part of LS200

SECTION 3

I-F, DETECTOR, AND A-V-C CIRCUITS

C302	Condenser, a-v-c by-pass, .05 mf.	61-0122
C303	Condenser, screen by-pass, .05 mf.	61-0122*
C304	Condenser, special i-f by-pass, .1 mf.	30-4644-1
R300	Resistor, diode load, 47,000 ohms	Part of Z300
R301	Resistor, screen, 27,000 ohms	66-3273340*
R302	Resistor, a-v-c, 2.2 megohms	66-5223340*
Z300	Transformer, 2nd i-f	45-6365*
C300A	Condenser, trimmer	Part of Z300
C300B	Condenser, trimmer	Part of Z300
C300C	Condenser, by-pass, 100 mmf.	Part of Z300
C300D	Condenser, by-pass, 100 mmf.	Part of Z300
Z301	Transformer, 1st i-f	45-6365
C301A	Condenser, trimmer	Part of Z301
C301B	Condenser, trimmer	Part of Z301

SECTION 4

R-F AND CONVERTER CIRCUITS

Reference Symbol	Description	Service Part No.
C400	Condenser, tuning, 2-section	31-2727-1
C400A	Condenser, trimmer	Part of C400
C400B	Condenser, trimmer	Part of C400
C401	Condenser, coupling, 5 mmf.	60-90505007*
C402	Condenser, isolating, 47 mmf.	60-00515307*
C403	Condenser, blocking, 100 mmf.	60-10105407*
LA400	Loop aerial	32-4052-5
R400	Resistor, osc., grid, 100,000 ohms	66-4103340*
R401	Resistor, aerial discharge, 150,000 ohms	66-4153340*
R402	Resistor, grid return, 1 megohm	66-5103340*
T400	Transformer, oscillator	32-4263

MISCELLANEOUS

Description	Service Part No.
Cabinet	
Model 49-500	10542D
Model 49-500-I	10542E
Cabinet Hardware	
Back	
Model 49-500	27-9879
Model 49-500-I	27-9922
Fastener, acetate window (6)	28-4279FA1
Foot, felt	W2190
Knob	
Model 49-500	27-4820
Model 49-500-I	54-4118
Window, acetate	54-4088
Dial-Scale Hardware	
Cord, drive (25-ft. spool)	45-8750
Pointer	27-4891-1
Scale, dial	
Model 49-500	27-5965
Model 49-500-I	27-5965-1
Screw, scale mounting	1W19674FA3
Spring, drive cord	56-2617
Washer, scale mounting	2W54094
Panel, terminal, loop aerial	76-2148
Panel, lamp assembly	76-1472
Shaft, drive assembly	31-2718
Socket, Loktal	27-6138*
Socket, octal	27-6174*

REPLACEMENT PARTS LIST - Continued**SECTION 2
AUDIO CIRCUITS**

Reference Symbol	Description	Service Part No.
C200	Condenser, d-c blocking, .01 mf.	61-0120*
C201	Condenser, r-f by-pass, 330 mmf.	60-10335407*
C202	Condenser, tone compensation, .02 mf.	30-4599*
C203	Condenser, d-c blocking, .01 mf.	61-0120*
LS200	Speaker	36-1627
R200	Volume control, .5 megohm	45-5019*
R201	Resistor, grid return, 3.3 megohms	66-5333340*
R202	Resistor, grid return, 470,000 ohms	66-4473340*
R203	Resistor, cathode bias, 130 ohms	66-1123340*
R204	Resistor, plate load, 470,000 ohms	66-4473340*
T200	Transformer, output	Part of LS200

SECTION 3**I-F, DETECTOR, AND A-V-C CIRCUITS**

C300A	Condenser, fixed trimmer, primary, 1st i-f	Part of Z300
C300B	Condenser, fixed trimmer, secondary, 1st i-f	Part of Z300
C301A	Condenser, fixed trimmer, primary, 2nd i-f	Part of Z301
C301B	Condenser, fixed trimmer, secondary, 2nd i-f	Part of Z301
C301C	Condenser, a-v-c filter	Part of Z301
C301D	Condenser, a-v-c filter	Part of Z301
C302	Condenser, screen by-pass, .05 mf.	30-4519*
C303	Condenser, special i-f by-pass, .2 mf.	30-4644
C304	Condenser, a-v-c filter, .05 mf.	30-4519*
L300A	Coil, primary, 1st i-f	Part of Z300
L300B	Coil, secondary, 1st i-f	Part of Z300
L301A	Coil, primary 2nd i-f	Part of Z301
L301B	Coil, secondary, 2nd i-f	Part of Z301
R300	Resistor, screen dropping, 27,000 ohms	66-3273340*
R301	Resistor, diode load, 47,000 ohms	66-3473340*
R302	Resistor, a-v-c filter, 2.2 megohms	66-5223340*
TC300A	Tuning core, primary 1st i-f	Part of Z300
TC300B	Tuning core, secondary, 1st i-f	Part of Z300

**SECTION 3 (Continued)
I-F, DETECTOR, AND A-V-C CIRCUITS**

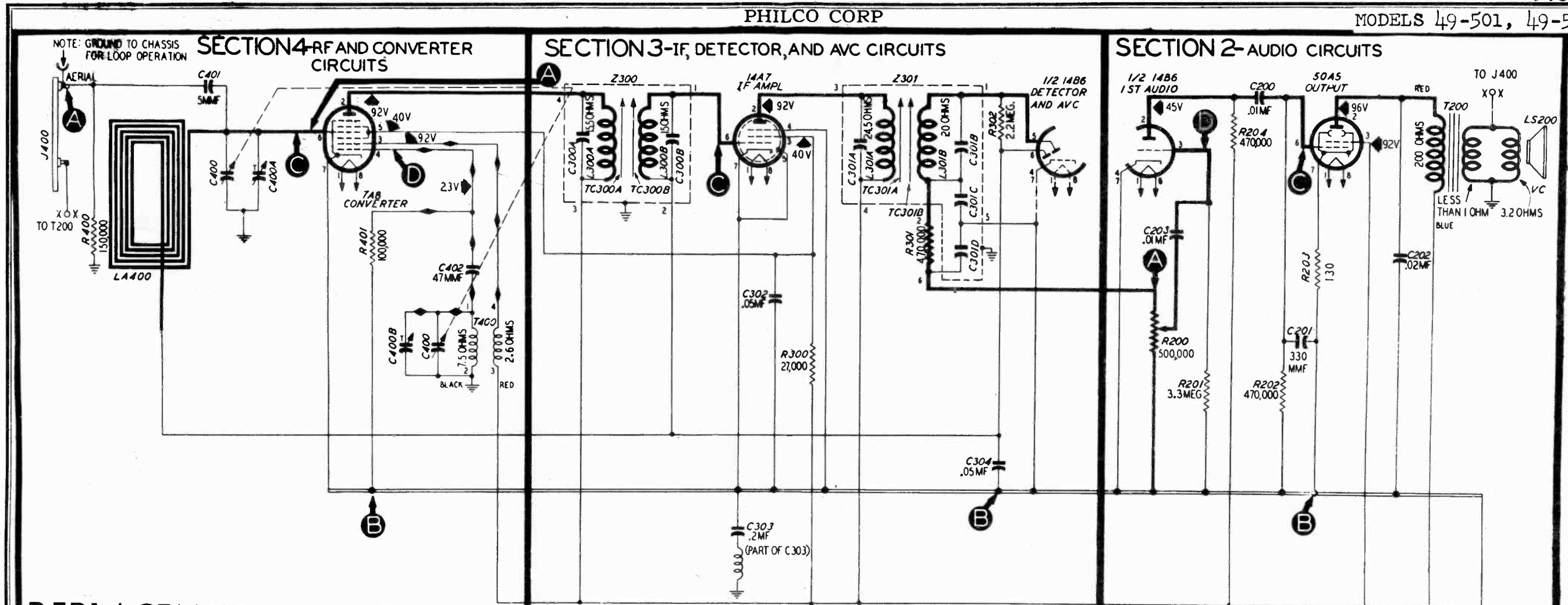
Reference Symbol	Description	Service Part No.
TC301A	Tuning core, primary 2nd i-f	Part of Z301
TC301B	Tuning core, secondary, 2nd i-f	Part of Z301
Z300	Transformer, 1st i-f	32-4160-6*
Z301	Transformer, 2nd i-f	32-4240*

SECTION 4**R-F AND CONVERTER CIRCUITS**

C400	Condenser, tuning gang	31-2731*
C400A	Condenser, trimmer, aerial	Part of C400
C400B	Condenser, trimmer, osc.	Part of C400
C401	Condenser, isolating, 5 mmf.	30-1223*
C402	Condenser, isolating, 47 mmf.	30-1224-2*
LA400	Aerial, loop	32-4052-19
R400	Resistor, isolating, 150,000 ohms	66-4153340*
R401	Resistor, grid return, 100,000 ohms	66-4103340*
T400	Coil, oscillator	32-4263

MISCELLANEOUS

Description	Service Part No.
Bracket, speaker	56-5653FA3
Cabinet (less scale)	
Model 49-501	10710
Model 49-501-I	10710A
Cabinet Hardware	
Back	
Model 49-501	54-7619
Model 49-501-I	54-7619-1
Baffle, speaker	54-4586
Fastener, cabinet back	2W2235-2FA9
Grille, metal	
Model 49-501	56-5769-FCP
Model 49-501-I	56-5769-1FCP
Knob	
Model 49-501	27-4815-3
Model 49-501-I	54-4118
Knob assembly	
Model 49-501	54-4581
Model 49-501-I	54-4581-1
Pilot-light assembly	27-6233-18
Scale, dial	
Model 49-501	54-5008
Model 49-501-I	54-5008-1
Speed fastener, baffle mounting	56-5857FE7
Speed fastener, baffle mounting	1W60211FE7
Socket, Loktal	27-6138*



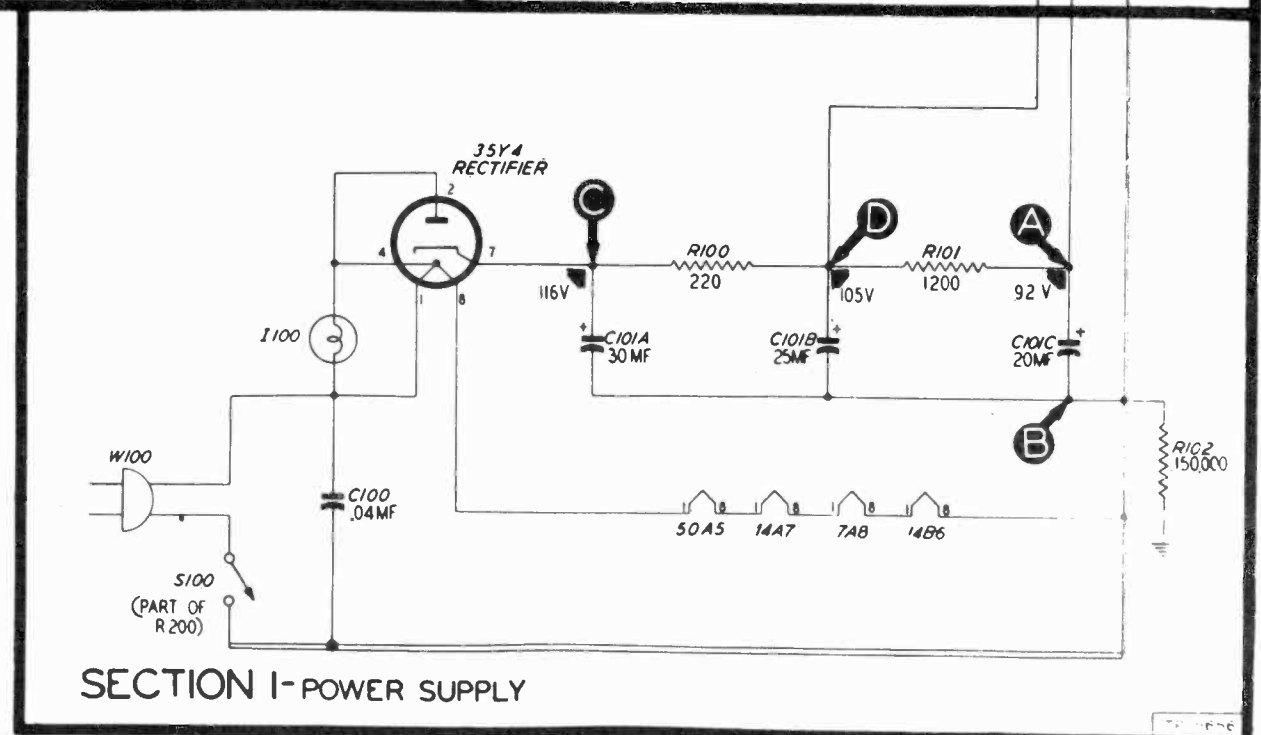
REPLACEMENT PARTS LIST

NOTE: Part numbers identified by an asterisk (*) indicate general replacement items. These numbers may not be identical with those on factory assemblies; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and replacement parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1 POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .04 mf.	30-4119*
C101	Condenser, electrolytic, 3-section	30-2575-10*
C101A	Condenser, filter, 30 mf.	Part of C101
C101B	Condenser, filter, 25 mf.	Part of C101
C101C	Condenser, filter, 20 mf.	Part of C101
I100	Lamp, pilot, 6.3v	34-2068
R100	Resistor, filter, 220 ohms	66-1224340*
R101	Resistor, filter, 1200 ohms	66-2123340*
R102	Resistor, leakage, 150,000 ohms	66-4153340*
S100	Switch, on-off	Part of R200
W100	Line cord	L-2183*

IF = 455KC



Philco Radio Models 49-501 and 49-501-I, Sectionalized Schematic Diagram, Showing Test Points

ALIGNMENT PROCEDURE

OUTPUT METER — Connect across voice-coil terminals.

SIGNAL GENERATOR—Connect as indicated in chart. Use modulated output.

RADIO CONTROLS—Set volume control to maximum, and rotate tuning control until tuning condenser is fully meshed.

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Ground lead to B-; output lead through .1-mf. condenser to pin 6 of 7A8.	455 kc.	Tuning condenser fully meshed.	Adjust tuning cores, in order given, for maximum output	TC301B—2nd i-f sec. TC301A—2nd i-f pri. — SEE NOTE TC300B—1st i-f sec. TC300A—1st i-f pri. — SEE NOTE
2	Radiating loop (see note below).	1600 kc.	1600 kc.	Adjust trimmer for maximum output.	C400B—Oscillator
3	Same as step 2.	1500 kc.	1500 kc.	Adjust trimmer for maximum output.	C400A—Aerial

NOTE: TC300A AND TC301A ARE ACCESSIBLE FROM UNDERSIDE OF CHASSIS.

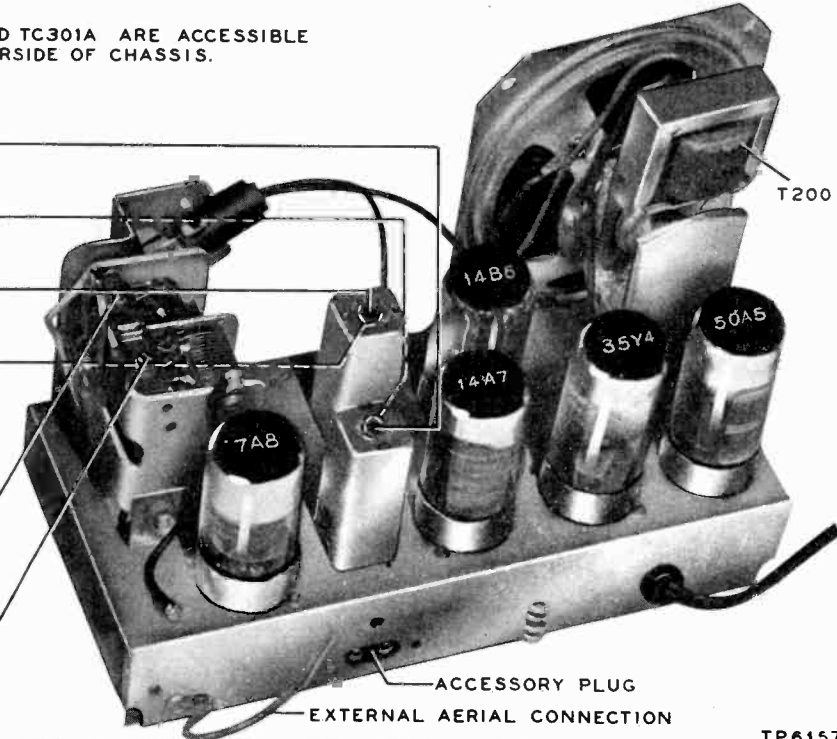
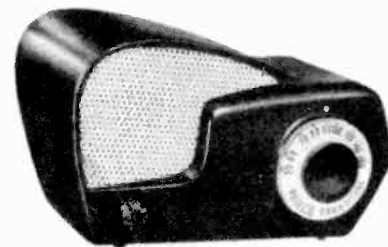


Figure 6. Top View, Showing Trimmer Locations

RADIATING LOOP: Make up a 6 to 8 turn, 6-inch-diameter loop from insulated wire; connect to signal-generator leads and place near radio loop aerial. The loop aerial must be connected.



MODEL 49-501 (Brown)
MODEL 49-501-I (Ivory)

SPECIFICATIONS

CABINET	
Model 49-501	Phenolic plastic, brown
Model 49-501-I	Phenolic plastic, ivory
CIRCUIT	
	Five-tube superheterodyne
FREQUENCY RANGE	540—1620 kc.
AUDIO OUTPUT	1 watt
OPERATING VOLTAGE	117 volts, a.c. or d.c.
POWER CONSUMPTION	30 watts
AERIAL	Loop fastened to cabinet; terminal provided for external aerial.
INTERMEDIATE FREQUENCY	455 kc.
PHILCO TUBES (5)	7A8, 14A7, 14B6, 50A5, 35Y4

TP-5859

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

Circuit Description

Philco Radio Models 49-501 and 49-501-I are 5-tube, table-model superheterodynes, providing reception in the standard broadcast band.

A high-impedance loop aerial normally provides adequate signal pickup. An external aerial may be connected, if desired, by detaching the aerial lead from the chassis, and connecting it to the external aerial lead-in. Do not use a ground.

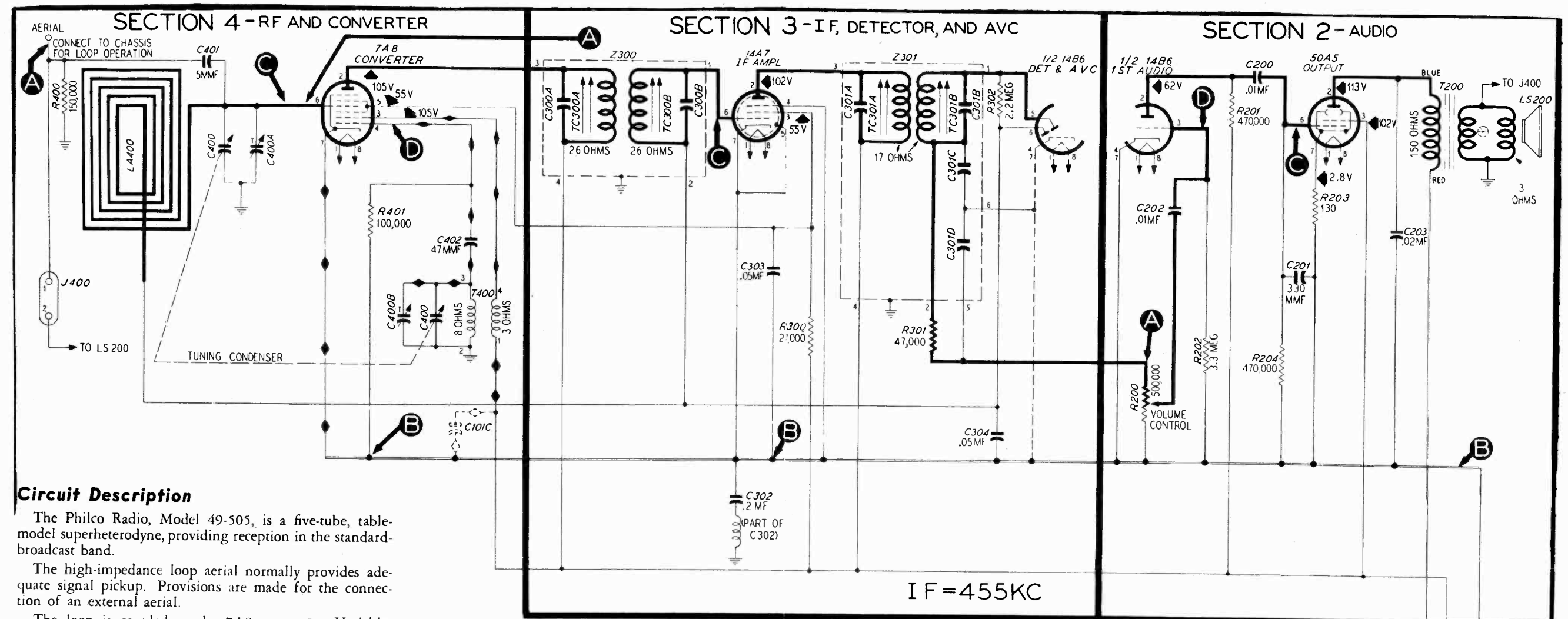
The loop aerial is coupled to the 7A8 converter. The aerial and oscillator circuits are tuned by ganged, variable condensers, and the oscillator rotor-section plates are properly shaped to obtain tracking, thus eliminating the necessity for a series padding condenser.

The 7A8 converter is transformer-coupled to the 14A7 i-f amplifier, which is also transformer-coupled to the diodes of the 14B6 second detector—first audio amplifier. A-v-c voltage is applied to the control grids of both the i-f amplifier and converter tubes. The triode section of the 14B6 is the first audio stage, and is resistance-coupled to the 50A5 output tube. The output tube is transformer-coupled to a permanent-magnet speaker.

D-c operating voltages are supplied from a 35Y4 half-wave rectifier, and filtered by a three-section resistor-condenser network.

Condenser C303 is a special condenser inductively wound to form a series-tuned circuit, resonant at the intermediate frequency. This condenser offers less impedance at this frequency than a conventional condenser, and thus permits higher i-f gain, with no tendency toward instability.

The 150,000-ohm resistor, R102, prevents hum which might otherwise occur under conditions of high humidity.



Circuit Description

The Philco Radio, Model 49-505, is a five-tube, table-model superheterodyne, providing reception in the standard-broadcast band.

The high-impedance loop aerial normally provides adequate signal pickup. Provisions are made for the connection of an external aerial.

The loop is coupled to the 7A8 converter. Variable-condenser tuning is employed; the oscillator rotor-section plates are properly shaped to obtain tracking, thus eliminating the necessity for a series padding condenser.

The 7A8 is transformer-coupled to the 14A7 i-f amplifier, which is also transformer-coupled to the diodes of the 14B6 second detector—first audio-frequency amplifier. A-v-c voltage is applied to the control grids of both the i-f and converter tubes.

The triode section of the 14B6 is the first audio stage, and is resistance-coupled to the 50A5 output stage. The output tube works into a permanent-magnet dynamic speaker.

D-c operating voltages are obtained from the 35Y4 half-wave rectifier, the output of which is filtered by a two-section resistor-condenser filter.

Condenser C302 in Section 3 is a special condenser, inductively wound to form a series-tuned circuit, resonant at the intermediate frequency. This special condenser offers less impedance at this frequency than a conventional condenser, thus permitting higher i-f gain, with no tendency toward instability. The inductive effect at audio frequencies is negligible. Since the tuning gang is connected to the chassis, by-passing at broadcast frequencies is adequate.

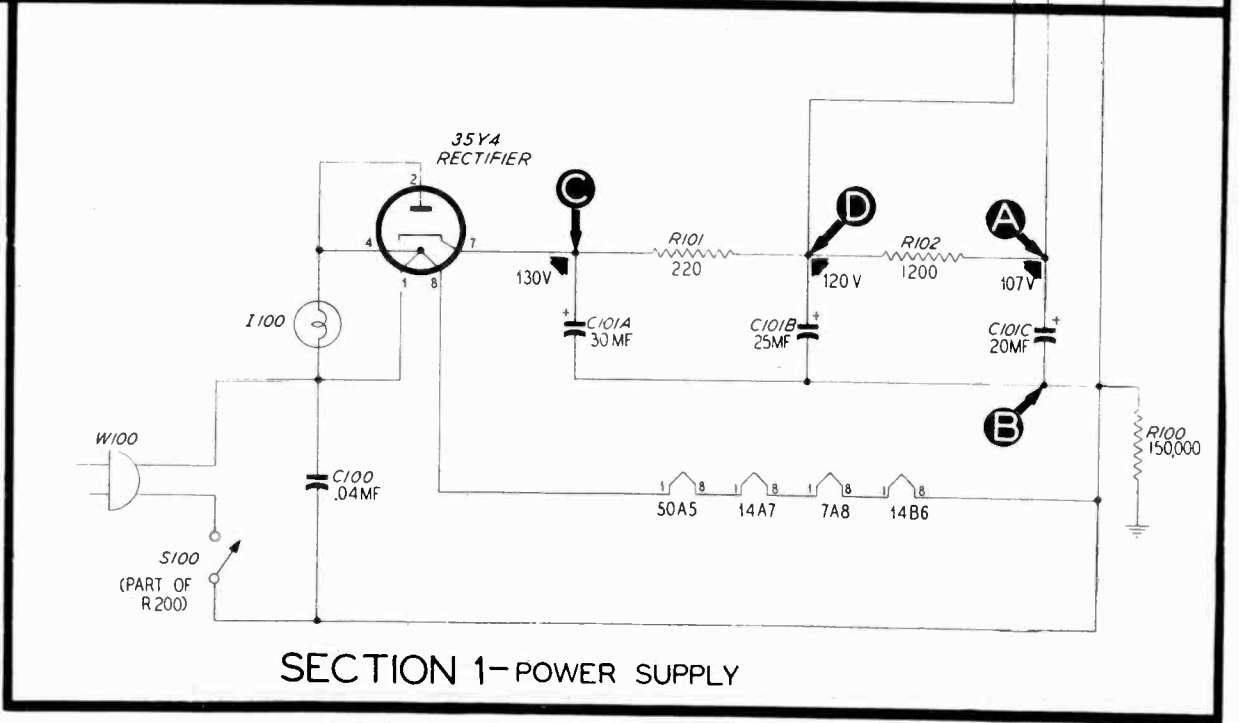
Resistor R100, the 150,000-ohm resistor in Section 1, prevents hum which might otherwise occur under conditions of high humidity.

Preliminary Checks

To avoid possible damage to the radio, the following preliminary checks should be made before turning on the power.

1. Inspect the top and bottom of the chassis. Make sure that all tubes are secure in the proper sockets, and look for any broken or shorted connections, burned resistors, or other obvious sources of trouble.
2. Measure the resistance between B+ (pin 7 of the 35Y4 rectifier) and B- (test point B). When the ohmmeter test leads are connected in the proper polarity, the highest resistance reading will be obtained. If the reading is lower than 1500 ohms, check condensers C101A, C101B, and C101C for leakage or shorts.

The resistance value, which is much lower than normal, is not intended as a quality check of these condensers; the value given is the lowest at which the rectifier will operate safely while the voltage tests of Section 1 (power supply) are performed.



SECTION 1—POWER SUPPLY

Figure 5. Philco Radio Model 49-505, Sectionalized Schematic Diagram, Showing Test Points

TP-6425

ALIGNMENT PROCEDURE

TURN ON THE RADIO, AND SET THE VOLUME CONTROL TO MAXIMUM

DIAL—Turn tuning condensers to full-mesh position. Set dial pointer to coincide with index mark; see figure 7.

OUTPUT METER—Connect to left (output) terminal of J400 and chassis.

SIGNAL GENERATOR—Connect as indicated in chart. Use modulated output.

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Ground lead to B-; output lead through .1-mf. condenser to test point C of Section 4.	455 kc.	540 kc.	Adjust tuning cores, in order given, for maximum output.	TC301B—2nd i-f sec. TC301A—2nd i-f pri. TC300B—1st i-f sec. TC300A—1st i-f pri.
2	Radiating loop (see note below).	1600 kc.	1600 kc.	Adjust for maximum.	C400B—osc.
3	Same as step 2.	1500 kc.	1500 kc.	Adjust for maximum.	C400A—aerial

NOTE: TC300A AND TC301A ARE ACCESSIBLE FROM UNDERSIDE OF CHASSIS.

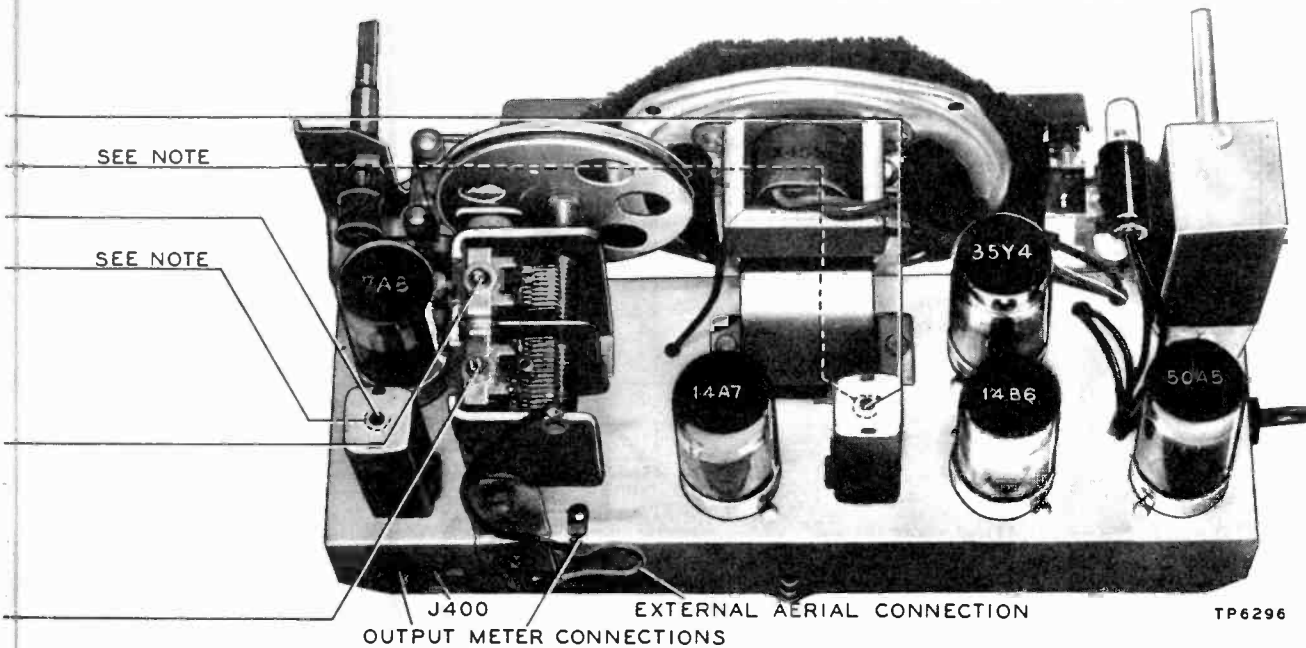
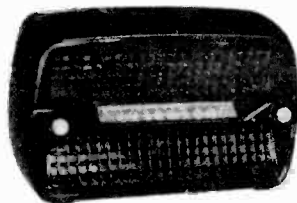


Figure 6. Top View, Showing Trimmer Locations

RADIATING LOOP: Make up a six-to-eight-turn, 6-inch-diameter loop, using insulated wire; connect to signal-generator leads and place near radio loop.

SPECIFICATIONS

- CABINETPlastic (walnut)
- CIRCUITFive-tube superheterodyne
- FREQUENCY RANGE.....540—1620 kc.
- OPERATING VOLTAGE.....105—120 volts, a.c. or d.c.
- POWER CONSUMPTION.....30 watts
- AERIAL.....Loop fastened to cabinet; connection also provided for outside aerial
- INTERMEDIATE FREQUENCY.....455 kc.
- PHILCO TUBES (5).....7A8, 14A7, 14B6, 50A5, 35Y4



MODEL 49-505

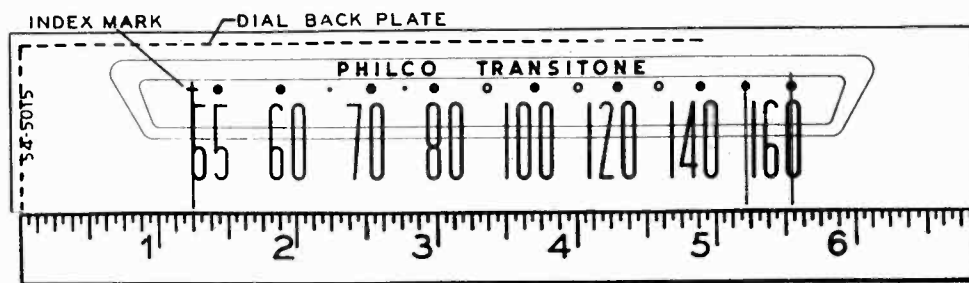


Figure 7. Calibration Measurements for Dial Backplate

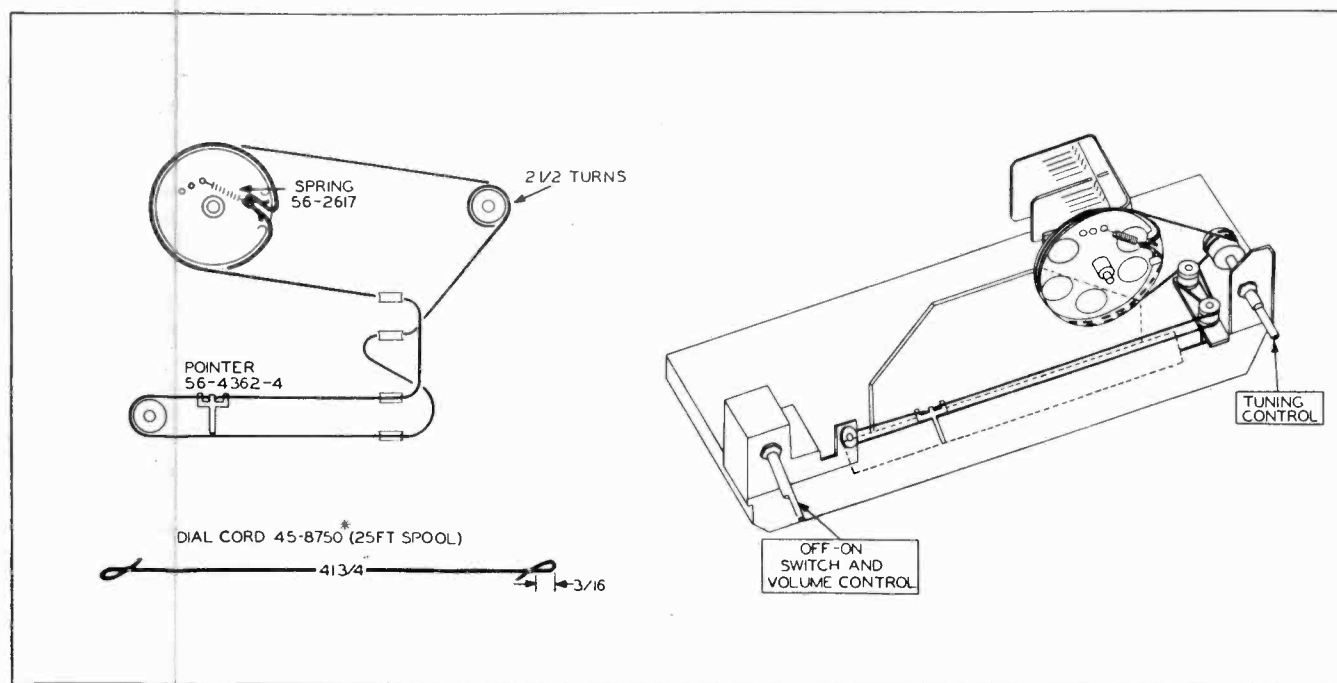


Figure 8. Drive-Cord Installation Details

REPLACEMENT PARTS LIST

NOTE: An asterisk (*) indicates a general replacement item. The part numbers of these items may not be identical with those on factory parts; also, the electrical values of some replacement items may differ from the values given in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1—POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .04 mf.	45-3500-2*
C101	Condenser, electrolytic, 3-section	30-2574*
C101A:	Condenser, filter, 30 mf.	Part of C101
C101B:	Condenser, filter, 25 mf.	Part of C101
C101C:	Condenser, filter, 20 mf.	Part of C101
I100	Lamp, pilot	34-2068
R100	Resistor, leakage, 150,000 ohms	66-4153340*
R101	Resistor, filter, 220 ohms	66-1224340
R102	Resistor, filter, 1200 ohms	66-2124340
S100	Switch, power	Part of R200
W100	Power cord and plug	L-2183*

SECTION 2—AUDIO

C200	Condenser, blocking, .01 mf.	61-0120*
C201	Condenser, by-pass, 330 mmf.	62-133001001*
C202	Condenser, blocking, .01 mf.	61-0120*
C203	Condenser, tone compensating, .02 mf.	61-0108*
LS200	Speaker	36-1625-6
R200	Volume control, .5 megohm	45-5007*
R201	Resistor, plate load, 470,000 ohms	66-4473340*
R202	Resistor, grid load, 3.3 megohms	66-5333340*
R203	Resistor, bias, 130 ohms	66-1123340*
R204	Resistor, grid load, 470,000 ohms	66-4473340*
T200	Transformer, output	Part of LS200

SECTION 3—I-F, DET., AND A-V-C

C300A	Condenser, fixed trimmer	Part of Z300
C300B	Condenser, fixed trimmer	Part of Z300
C301A	Condenser, fixed trimmer	Part of Z301
C301B	Condenser, fixed trimmer	Part of Z301
C301C	Condenser, by-pass	Part of Z301
C301D	Condenser, by-pass	Part of Z301
C302	Condenser and choke assembly, i-f by-pass, 2 mf.	30-4644
C303	Condenser, screen by-pass, .05 mf.	61-0122*
C304	Condenser, a-v-c filter, .05 mf.	61-0122*
R300	Resistor, screen dropping, 27,000 ohms	66-3273340
R301	Resistor, i-f filter, 47,000 ohms	66-3473340*
R302	Resistor, a-v-c filter, 2.2 megohms	66-5223340*
TC300A	Tuning core	Part of Z300

SECTION 3—I-F, DET., AND A-V-C (Continued)

Reference Symbol	Description	Service Part No.
TC300B	Tuning core	Part of Z300
TC301A	Tuning core	Part of Z301
TC301B	Tuning core	Part of Z301
Z300	Transformer, 1st i-f, including TC300A, TC300B, C300A, and C300B	32-4160-6
Z301	Transformer, 2nd i-f, including TC301A, TC301B, C301A, C301B, C301C, and C301D	32-4240

SECTION 4—R-F AND CONVERTER

C400	Condenser, tuning, 2-section	31-2727-1
C400A:	Condenser, trimmer	Part of C400
C400B:	Condenser, trimmer	Part of C400
C401	Condenser, coupling, 5 mmf.	30-1224-5*
C402	Condenser, isolating, 47 mmf.	30-1224-2*
LA400	Loop aerial	32-4052-24
R400	Resistor, aerial discharge, 150,000 ohms	66-4153340*
R401	Resistor, oscillator grid, 100,000 ohms	66-4103340*
T400	Transformer, oscillator	32-4263

MISCELLANEOUS

Description	Service Part No.
Baffle-and-cloth assembly	40-7525
Bracket, rear condenser mounting	56-5701FA3
Bracket, scale	56-5698FA3
Cabinet	10717
Cord, drive (25-foot spool)	45-8750*
Cover, bottom	56-5706FA3
Cover, handle	54-4596
Cover, volume control	56-5699FA3
Knob	54-4609
Pilot-lamp-socket assembly	27-6233-12
Plate, guard	54-7709
Pointer	56-4362-4FCP
Rail, pointer	56-5697FCP
Rubber mount	27-4771-1
Scale-and-backplate assembly	76-4167
Shaft assembly, drive	78-4075
Socket, tube	27-6177
Spring	56-2617
Stud, baffle	W2235-1FA9

REPLACEMENT PARTS LIST

NOTE: Part numbers identified by an asterisk (*) are general replacement items. These numbers may not be identical with those on factory parts; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1—POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, by-pass, .04 mf.	45-3500-2*
C101	Condenser, electrolytic, 3-section	30-2575-24
C101A:	Condenser, filter, 40 mf.	Part of C101
C101B:	Condenser, filter, 30 mf.	Part of C101
C101C:	Condenser, filter, 30 mf.	Part of C101
C102	Condenser, by-pass, .04 mf.	45-3500-2*
I100	Panel lamp	34-2068*
R100	Resistor, 1st B+ filter, 220 ohms.	66-1224340*
R101	Resistor, 2nd B+ filter, 1200 ohms.	66-2123340*
R102	Resistor, leakage, 150,000 ohms.	66-4153340*
S100	Switch, a-c power	Part of R201
W100	Line-cord and plug	L2183*

SECTION 2—AUDIO CIRCUITS

C200	Condenser, d-c blocking, .01 mf.	61-0121*
C201	Condenser, d-c blocking, .01 mf.	61-0120*
C202	Condenser, parasitic suppressor, 220 mmf.	30-1224-20*
C203	Condenser, tone control, .006 mf.	45-3500-7*
C204	Condenser, tone compensation, .02 mf.	61-0108*
C205	Condenser, electrolytic, cathode by-pass, 25 mf.	45-3001*
LS200	Loud-speaker, PM	36-1625
R200	Volume control, .5 megohm.	33-5539-46
R201	Tone control (including a-c switch), .5 megohm	33-5538-35
R202	Resistor, grid return, 3.3 megohms.	66-5333340*
R203	Resistor, plate load, 470,000 ohms.	66-4473340*
R204	Resistor, grid return, 470,000 ohms.	66-4473340*
R205	Resistor, cathode bias, 130 ohms.	66-1133340*
T200	Transformer, output	32-8310-5

SECTION 3—I-F, DETECTOR, AND A-V-C CIRCUITS

C300A	Condenser, fixed	Part of Z300
C300B	Condenser, fixed	Part of Z300
C301A	Condenser, fixed	Part of Z301
C301B	Condenser, fixed	Part of Z301
C301C	Condenser, i-f filter	Part of Z301
C301D	Condenser, i-f filter	Part of Z301
C302	Condenser, r-f by-pass, .05 mf.	61-0122*
C303	Condenser, r-f by-pass, .01 mf.	61-0120*
C304	Condenser, a-v-c filter, .1 mf.	61-0113*
C305	Condenser, r-f by-pass, .01 mf.	61-0120*
C306	Condenser (inductively wound), i-f by-pass, .1 mf.	30-4644-1
C307	Condenser, cathode by-pass, .001 mf.	45-3500-5*
C308	Condenser, screen by-pass, .05 mf.	61-0122*
C309	Condenser, d-c blocking, 220 mmf.	30-1224-20*
C310	Condenser, screen by-pass, .05 mf.	61-0122*
C311	Condenser, r-f by-pass, .05 mf.	61-0122*
R300	Resistor, plate decoupling, 2200 ohms.	66-2223340*
R301	Resistor, cathode bias, 220 ohms.	66-1223340*
R302	Resistor, screen dropping, 47,000 ohms	66-3473340*
R303	Resistor, plate load, 15,000 ohms	66-3153340*
R304	Resistor, grid return, 150,000 ohms.	66-4153340*
R305	Resistor, cathode bias, 220 ohms	66-1223340*
R306	Resistor, plate and screen decoupling, 1000 ohms	66-2103340*
R307	Resistor, i-f filter, 47,000 ohms	66-3473340*

SECTION 3 (Cont.)

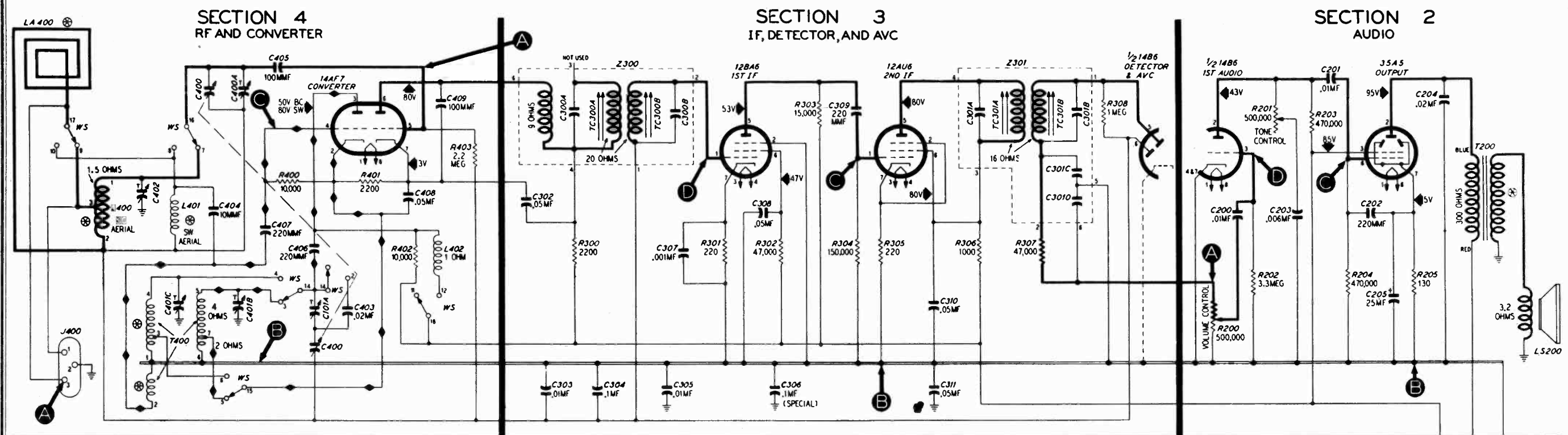
Reference Symbol	Description	Service Part No.
R308	Resistor, a-v-c load, 1 megohm.	66-5103340*
TC300A	Tuning core, 1st i-f primary	Part of Z300
TC300B	Tuning core, 1st i-f secondary	Part of Z300
TC301A	Tuning core, 2nd i-f primary	Part of Z301
TC301B	Tuning core, 2nd i-f secondary	Part of Z301
Z300	Transformer, 1st i-f	32-4258
Z301	Transformer, 2nd i-f	32-4240-3

SECTION 4—R-F AND CONVERTER CIRCUITS

C400	Condenser, tuning, 2-gang	31-2727-4
C400A:	Condenser, trimmer, SW aerial	Part of C400
C401	Condenser strip, trimmer, 3-section	31-6477-2
C401A:	Condenser, series padder, BC osc.	Part of C401
C401B:	Condenser, trimmer, BC osc.	Part of C401
C401C:	Condenser, trimmer, SW osc.	Part of C401
C402	Condenser, trimmer, BC aerial	31-6474
C403	Condenser, isolating, .02 mf.	61-0108*
C404	Condenser, blocking, 10 mmf.	30-1224-26*
C405	Condenser, isolating, 100 mmf.	30-1225-2
C406	Condenser, d-c blocking, 220 mmf.	30-1224-20
C407	Condenser, d-c blocking, 220 mmf.	30-1224-20
C408	Condenser, cathode by-pass, .05 mf.	61-0122*
C409	Condenser, r-f by-pass, 100 mmf.	30-1225-2
J400	Jack, external aerial connector	27-6126
L400	Coil, BC aerial	32-4033-8
L401	Coil, shunt, SW aerial	32-3858
L402	Coil, choke, SW plate	32-4143-4
LA400	Loop-aerial assembly	Part of Cabinet
R400	Resistor, grid return, 10,000 ohms.	66-3103340*
R401	Resistor, cathode bias, 2200 ohms.	66-2223340*
R402	Resistor, plate load, 10,000 ohms.	66-3103340*
R403	Resistor, grid return, 2.2 megohms.	66-5223340*
T400	Coils, BC and SW oscillator	32-4311
WS	Wafer (band) switch	42-1869

MISCELLANEOUS

Description	Service Part No.
Baffle, speaker	54-4585
Bracket, pointer support rivet assembly	76-4027
Bracket, speaker	56-5690FA3
Cabinet-and-loop assembly	76-4026
Cabinet back	54-7639
Cord, drive (25-ft. spool)	45-8750*
Fastener (7)	1W56913FA3
Grille (ornamental)	56-5694FCP
Knob, SW—BC	54-4527-7
Knob, tone—on-off	54-4527-5
Knob, tuning	54-4527-1
Knob, volume	54-4527-6
Pilot-lamp-socket assembly	76-1280
Pointer	76-3972
Scale, dial	54-5012
Shaft, tuning	56-5688FA11
Bushing, tuning shaft	27-9437
Socket, loktal	27-6177
Socket, miniature	27-6203
Spring, pointer drive	28-8953
Spring, tuning-condenser drive	56-2617
Stud (4)	W2235FA9
Stud, trimount (4)	W2235-1FA9



SPECIFICATIONS

- CABINET Plastic, brown
- CIRCUIT 6-tube superheterodyne
- FREQUENCY RANGES
 - Broadcast 540—1620 kc.
 - Short Wave 5.8—15.5 mc.
- AUDIO OUTPUT 1 watt
- OPERATING VOLTAGE 105—120 volts, a.c. or d.c.
- POWER CONSUMPTION 30 watts
- AERIAL Built-in loop; terminal also provided for external aerial
- INTERMEDIATE FREQUENCY 455 kc.
- PHILCO TUBES (6) 14AF7, 12BA6, 12AU6, 14B6, 35A5, 35Y4

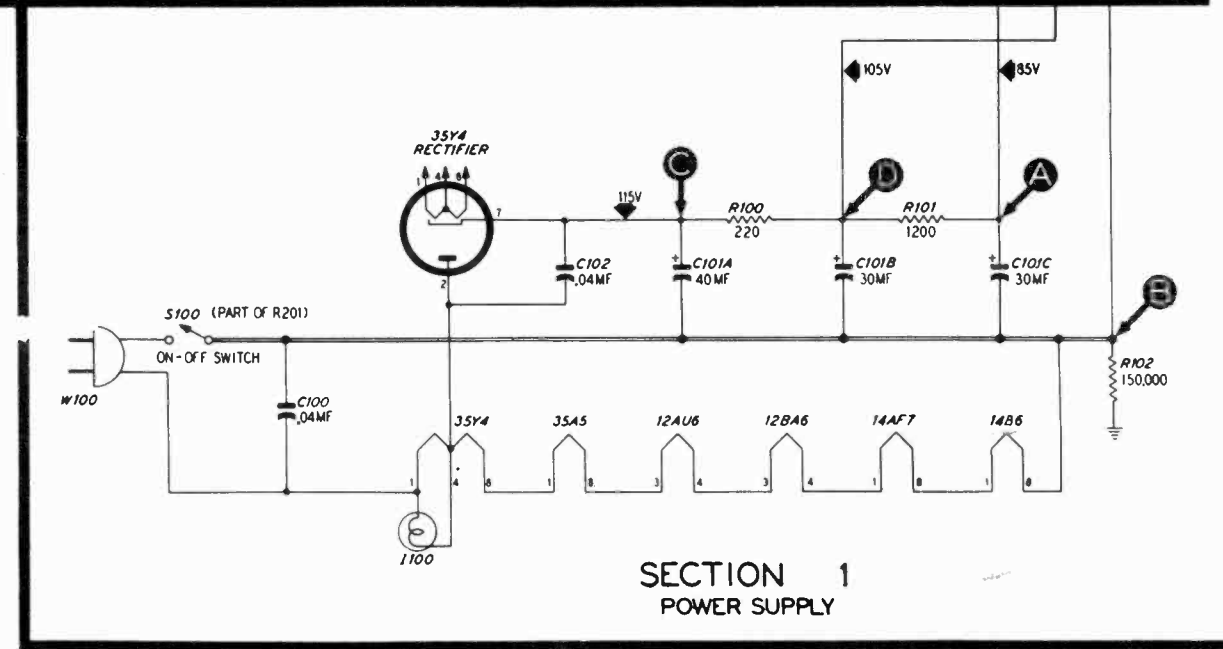


Figure 5. Philco Radio Model 49-904, Sectionalized Schematic Diagram, Showing Test Points

SW CIRCUITS

STEP	TEST POINT	SIG. GEN. FREQ.	BAND SWITCH	RADIO TUNING	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
4	A	15 mc.	SW	15 mc.	Same as step 1.	Trouble in SW circuits. Isolate by steps 5 and 6.
5	C Osc. test; (see note on p. 5)		SW	Rotate through range.	-8v to -2v	Defective: 14AF7. Open: C403, L402, T400, WS. Shorted: C401C, T400, WS.

SW CIRCUITS

STEP	TEST POINT	SIG. GEN. FREQ.	BAND SWITCH	RADIO TUNING	NORMAL INDICATION	POSSIBLE CAUSE OF ABNORMAL INDICATION
6	A	15 mc.	SW	15 mc.	Same as step 1.	Defective: 14AF7. Open: L401, C404, WS. Shorted: WS, L401.

OSCILLATOR TEST: Connect the positive lead of a high-resistance voltmeter to B-, test point B; connect the prod end of the negative lead through a 100,000-ohm isolating resistor to the oscillator grid (pin 4 of 14AF7), test point C. Use a suitable meter range, such as 0—10 volts. Proper operation of the oscillator is indicated by negative voltage, of approximately the value given in the chart (measured with 20,000-ohms-per-volt meter), throughout the tuning range.

ALIGNMENT PROCEDURE

DIAL—Calibration and pointer-index measurements are shown in figure 8. With tuning condenser fully meshed, set pointer to index mark.

OUTPUT METER—Connect to terminals indicated in figure 7.

SIGNAL GENERATOR—Connect as indicated in chart. Use modulated output.

RADIO CONTROLS—Set volume control to maximum, and tone control fully counterclockwise (treble). Set band switch and tuning control as indicated in chart.

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

STEP	SIGNAL GENERATOR		RADIO			ADJUST
	CONNECTION TO RADIO	DIAL SETTING	BAND SWITCH	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Ground lead to B-; output lead through .1-mf. condenser to tuning-condenser stator (aerial section).	455 kc.	BC	540 kc.	Adjust, in order given, for maximum output.	TC301B—2nd i-f sec. TC301A—2nd i-f pri. TC3008—1st i-f sec. TC300A—1st i-f pri.
2	Radiating loop (see note below).	580 kc.	BC	580 kc.	Adjust for maximum.	C401A—BC osc. (series)
3	Same as step 2.	1600 kc.	BC	1600 kc.	Adjust for maximum.	C401B—BC osc. (shunt)
4	Same as step 2.	15 mc.	SW	15 mc.	Adjust for maximum on first peak from loose position. Image should be heard with signal generator set at 14.1 mc.	C401C—SW osc.
5	Same as step 2.	15 mc.	SW	15 mc.	Adjust for maximum from tight position.	C400A—SW aerial
6	Same as step 2.	1500 kc.	BC	1500 kc.	Adjust for maximum.	C402—BC aerial
7	Same as step 2.	580 kc.	BC	580 kc.	Adjust for maximum while rocking tuning control.	C401A—BC osc. (series)
8	Same as step 2.				Repeat steps 3 and 7 until no further improvement is noted, then repeat step 3.	

NOTE:— TC300A AND TC301A ARE LOCATED ON UNDERSIDE OF CHASSIS.

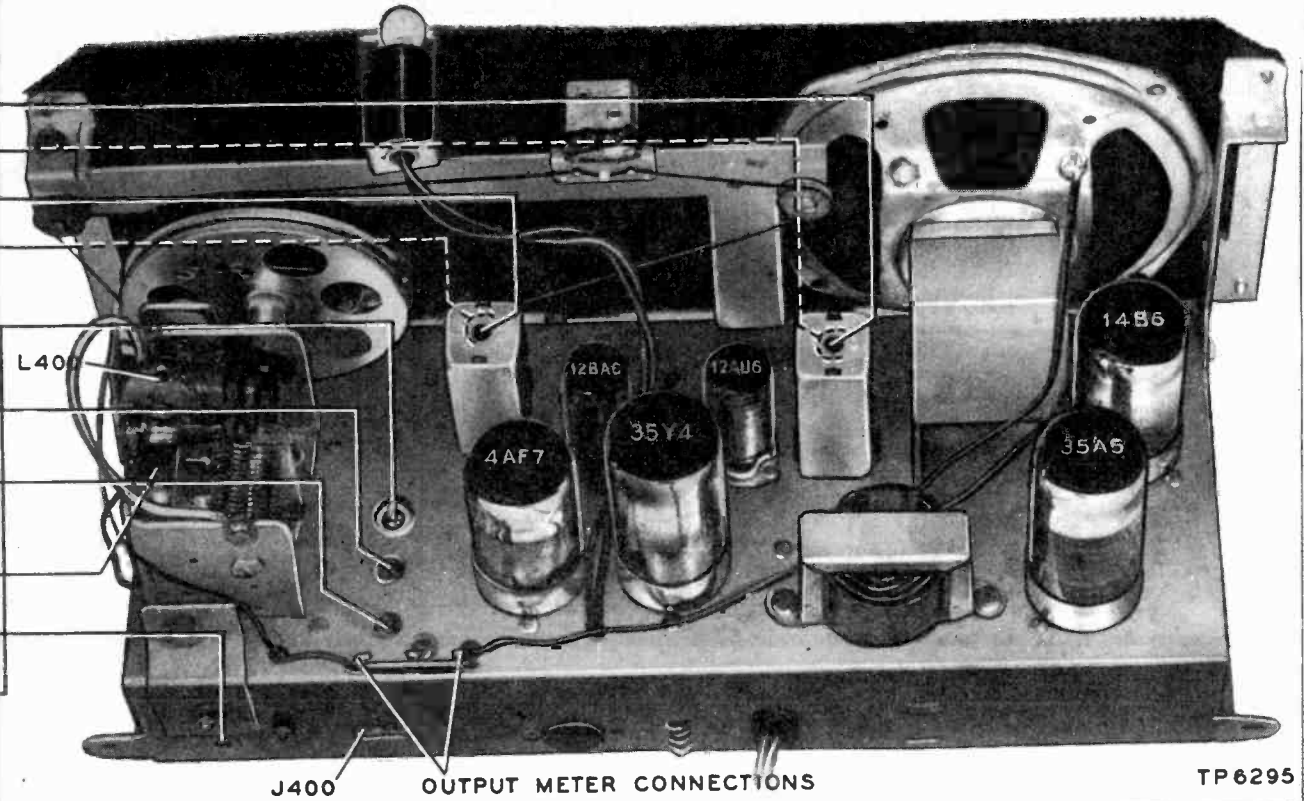


Figure 6. Top View, Showing Trimmer Locations

RADIATING LOOP: Make up a 6–8 turn, 6-inch-diameter loop from insulated wire; connect to signal-generator leads and place near radio loop aerial. Make sure that loop aerial is connected to radio.

Circuit Description

Philco Model 49-904 is a six-tube, manually tuned superheterodyne radio, providing reception on the standard broadcast band, 540–1620 kc., and on the short-wave range between 5.8 mc. and 15.5 mc. A low-impedance loop within the cabinet normally provides adequate signal pickup. Where additional pickup is required, an external aerial may be used. Do not use a ground.

The converter, employing a type 14AF7 twin triode, provides high signal-to-noise ratio and high conversion efficiency. The oscillator section of the tuning-condenser gang is shaped for correct tracking on the short-wave band. An adjustable series tracking padder is used for tracking on the broadcast band.

The i-f circuit employs two tubes; a 12BA6 1st i-f amplifier is resistance-coupled to a 12AU6 2nd i-f amplifier. Both i-f transformers have permeability-tuned primary and secondary windings.

The diode section of the 14B6 provides detection and a-v-c voltage, the triode section functions as the first audio amplifier, which is resistance-coupled to the type 35A5 audio output tube. A tone control is connected across the plate circuit of the 14B6 triode section.

The d-c operating voltages are furnished by a 35Y4 half-wave rectifier, working into a resistance-capacitance filter

system. A 150,000-ohm resistor is connected between the B- bus and the chassis, to prevent hum which might otherwise occur under conditions of high humidity.

C306 is a special condenser, inductively wound to act as a series-resonant circuit at the intermediate frequency (455 kc.). This condenser provides an exceptionally low-impedance i-f by-pass between B- and the chassis.

Preliminary Checks

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

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

2. Measure the resistance between B+ (pin 7 of 35Y4 rectifier) and B-, test point B. When the ohmmeter test leads are connected in the proper polarity, the highest resistance reading will be obtained. If the reading is lower than 1500 ohms, check condensers C102, C101A, C101B, and C204 for leakage or shorts. The resistance value given is much lower than normal, and is not intended as a quality check of these condensers; the value given is the lowest at which the rectifier will operate safely while the voltage checks of Section 1 (power supply) are performed.

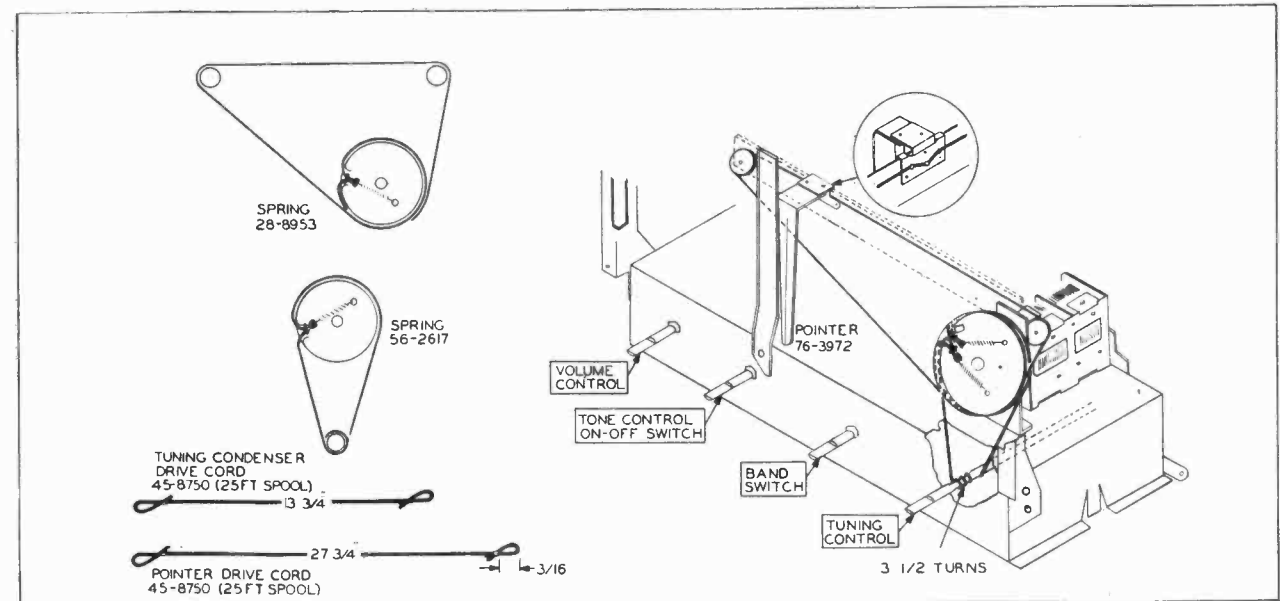
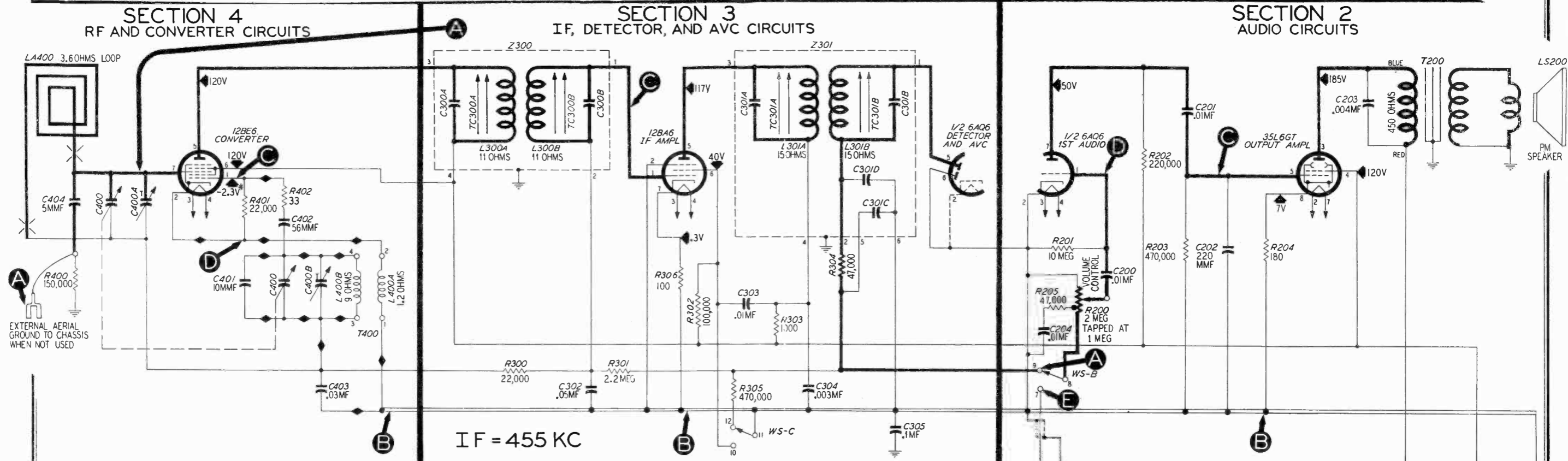


Figure 8. Drive-Cord Installation Details

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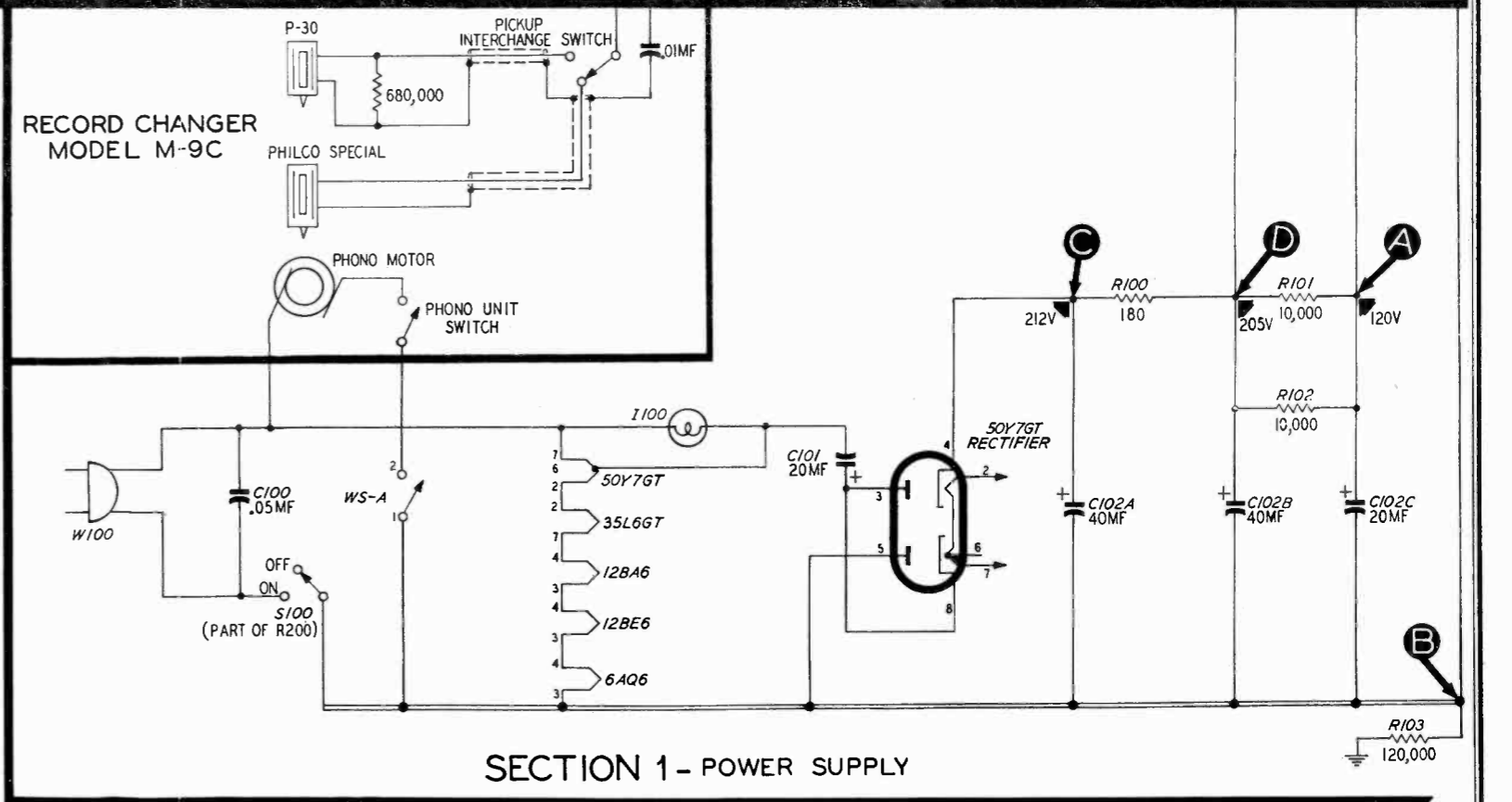


SPECIFICATIONS

- CABINET..... Wood, mahogany finish
- RADIO CIRCUIT..... Five-tube superheterodyne
- FREQUENCY RANGE..... 540—1600 kc.
- AUDIO OUTPUT..... .2 watts
- OPERATING VOLTAGES..... 105—120 volts, 60 cycles, a.c.
- POWER CONSUMPTION
 - Radio only..... 35 watts
 - Radio-phonograph..... 50 watts
- AERIAL..... Built-in loop; terminal also provided for external aerial
- INTERMEDIATE FREQUENCY..... 455 kc.
- PHILCO TUBES (5)..... 12BE6, 12BA6, 6AQ6, 35L6GT, 50Y7GT
- PHONOGRAPH..... Philco Automatic Record Player Model M-9C



MODEL 49-1405



RECORD CHANGER MODEL M-9C

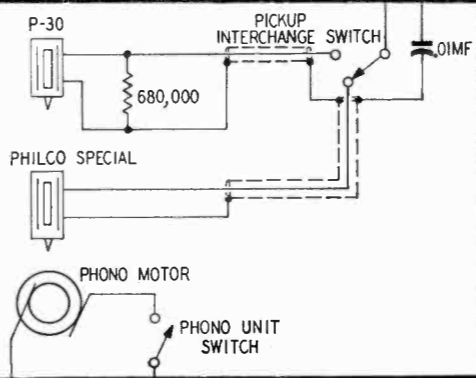


Figure 5. Philco Model 49-1405, Sectionalized Schematic Diagram, Showing Test Points

ALIGNMENT PROCEDURE

DIAL—With tuning condenser fully meshed, set pointer to index mark at low-frequency end of dial, beyond "55".

RADIO CONTROLS—Set volume control to maximum, and radio-phono switch to radio position.

OUTPUT METER—Connect to terminals indicated in figure 6.

SIGNAL GENERATOR—Connect ground lead to B—, test point B in figure 4, and connect output lead as indicated in chart. Use modulated output.

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

STEP	SIGNAL GENERATOR		RADIO		ADJUST
	CONNECTION TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through .1-mf. condenser to external-aerial lead. Make sure that radio loop aerial is connected to radio.	455 kc.	Tuning condenser fully meshed.	Adjust, in order given, for maximum output.	TC301B—2nd i-f sec. TC301A—2nd i-f pri.—SEE NOTE TC300B—1st i-f sec. TC300A—1st i-f pri.—SEE NOTE
2	Radiating loop (see note below).	1600 kc.	1600 kc.	Adjust for maximum output.	C400B—osc.
3	Same as step 2.	1500 kc.	1500 kc.	Adjust for maximum output.	C400A—aerial

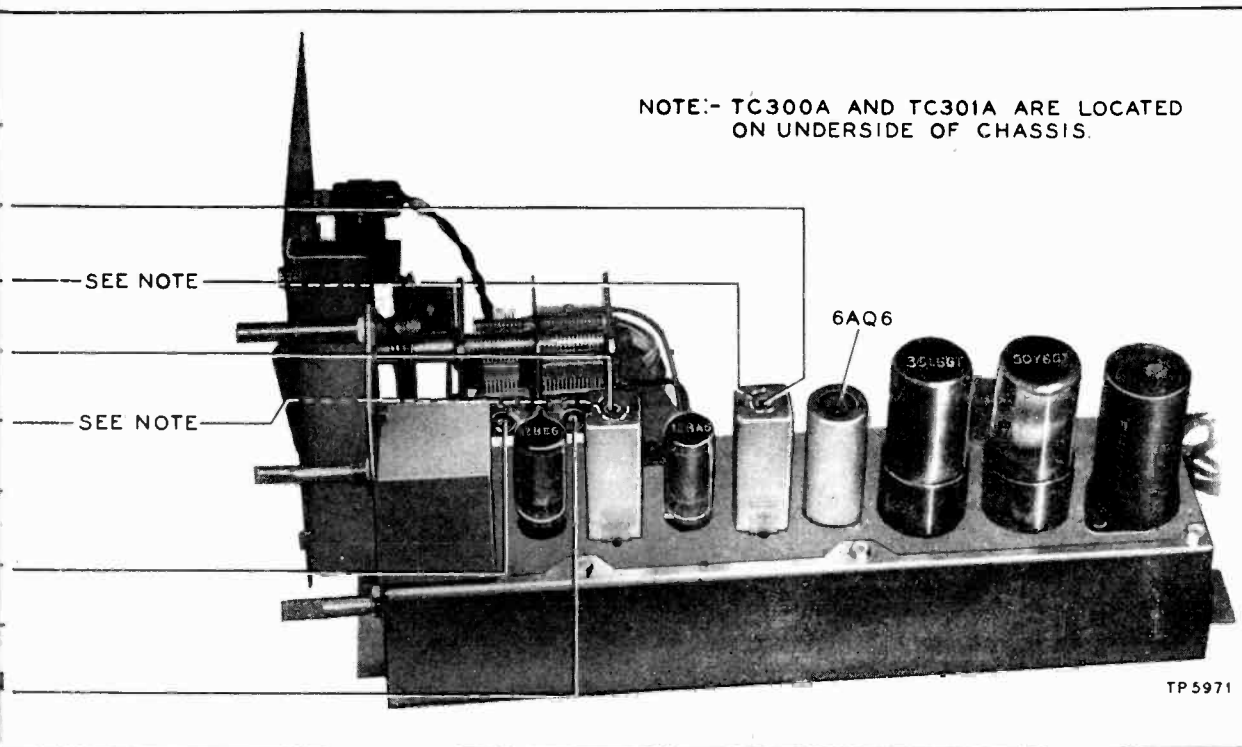


Figure 6. Top View, Showing Trimmer Locations

RADIATING LOOP: Make up a 6–8-turn, 6-in-diameter loop, using insulated wire; connect to signal-generator leads and place near radio loop aerial.

Circuit Description

Philco Radio-Phonograph Model 49-1405 is a table-model 5-tube superheterodyne radio with a Model M-9C Automatic Record Changer. For service information on the record changer, refer to the Service Manual (PR-1599) for Model M-9C Automatic Record Changer.

Reception is provided on the standard broadcast band.

The built-in loop aerial normally provides adequate signal pickup; however, a terminal is provided for an external aerial, if additional pickup is required.

The loop works directly into a 12BE6 converter; no series padder is required for the oscillator, as the tuning-condenser plates are shaped for tracking.

The i-f stage employs a 12BA6, operating at 455 kc. Both transformers are permeability-tuned in both primary and secondary windings.

The diode section of a 6AQ6 provides detection and a-v-c voltage; the triode section is the 1st audio amplifier, and is resistance-coupled to a 35L6GT beam-power output amplifier, which works into a PM speaker.

The d-c operating voltages are supplied by a voltage-doubling circuit using a 50Y7GT rectifier and a resistance-capacitance filter.

The 120,000-ohm resistor, R103, is connected between B— and the chassis, to prevent hum due to condenser leakage under high-humidity conditions.

Preliminary Checks

To avoid possible damage to the radio, the following preliminary checks should be made before turning on the power:

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

2. Measure the resistance between B+ (pin 4 of the 50Y6GT) and B—, test point B. When the ohmmeter leads are connected in the proper polarity, the highest resistance reading will be obtained. If the reading is lower than 2000 ohms, check condenser C102A for leakage or a short. This resistance value, which is much lower than normal, does not represent a quality check of this condenser; it is the lowest value which will permit the rectifier to operate safely while the voltage checks of Section 1 (power supply) are performed.

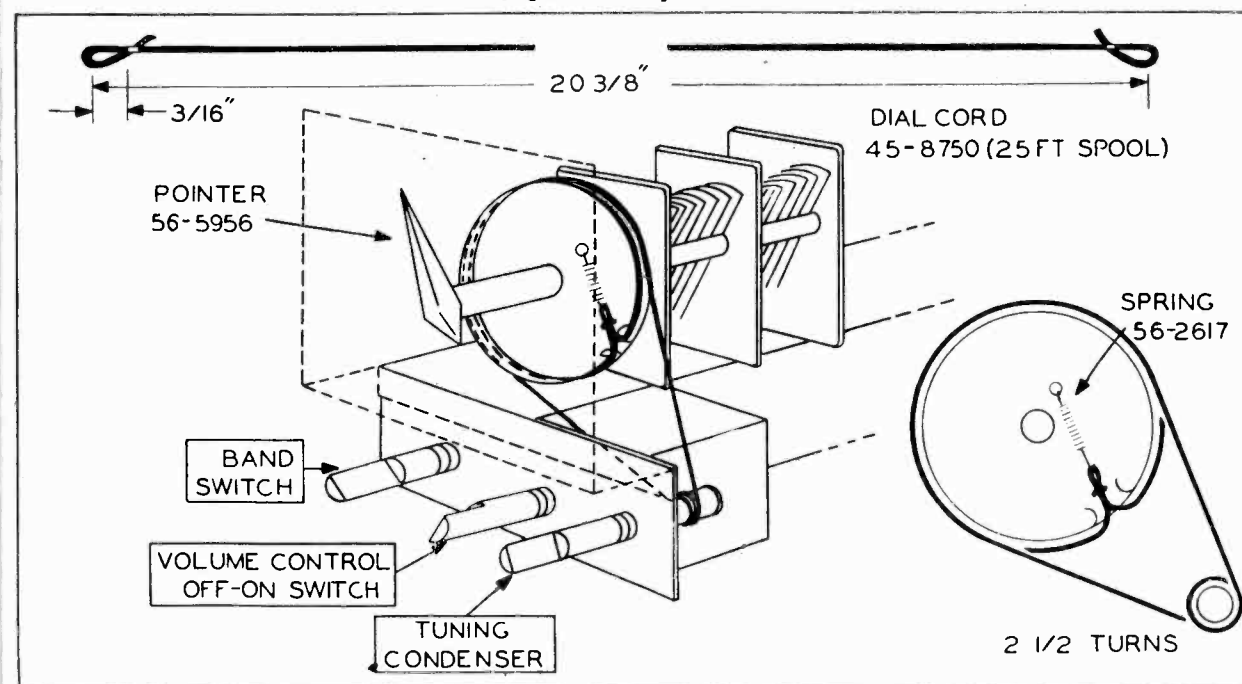


Figure 7. Drive-Cord Installation Details

MODEL 49-1405

PHILCO CORP.

REPLACEMENT PARTS LIST

NOTE: Part numbers identified by an asterisk (*) indicates a general replacement item. The part numbers of these items may not be identical with those on factory parts; also, the electrical values of some replacement items may differ from the values given in the schematic diagram and parts list. The values substituted in any case are so chosen that the operation of the radio will be either unchanged or improved. When ordering replacements, use only the "Service Part No."

SECTION 1

POWER SUPPLY

Reference Symbol	Description	Service Part No.
C100	Condenser, line filter, .05 mf.	61-0107*
C101	Condenser, electrolytic, filter, 20 mf.	30-2568-22
C102	Condenser, electrolytic, 3-section	30-2575-26
C102A:	Condenser, filter, 40 mf.	Part of C102
C102B:	Condenser, filter, 40 mf.	Part of C102
C102C:	Condenser, filter, 20 mf.	Part of C102
I100	Pilot lamp	34-2605
R100	Resistor, filter, 180 ohms	66-1184340*
R101	Resistor, filter, 10,000 ohms	66-3103340*
R102	Resistor, filter, 10,000 ohms	66-3103340*
R103	Resistor, isolating, 120,000 ohms	66-4123340*
S100	Switch, power on-off	Part of R200
W100	Line cord and plug	L2183*
WS-A	Switch-wafer section	Part of 42-1847-1†

SECTION 2

AUDIO CIRCUITS

C200	Condenser, d-c blocking, .01 mf.	61-0120*
C201	Condenser, d-c blocking, .01 mf.	61-0120*
C202	Condenser, r-f by-pass, 220 mmf.	66-122001001*
C203	Condenser, tone compensation, .004 mf.	30-4623*
C204	Condenser, tone compensation, .01 mf.	61-0120*
R200	Volume control (with power on-off witch), 2 megohms, tapped at 1 megohm	33-5535-15
R201	Resistor, grid return, 10 megohms	66-6103340*
R202	Resistor, plate load, 220,000 ohms	66-4223340*
R203	Resistor, grid return, 470,000 ohms	66-4473340*
R204	Resistor, cathode bias, 180 ohms	66-1183340*
R205	Resistor, tone compensation, 47,000 ohms	66-3473340*
LS200	Loud-speaker, PM	36-1629
T200	Transformer, output	32-8242-2
WS-B	Switch-wafer section	Part of 42-1847-1†

† 42-1847-1 Wafer switch, single wafer, radio-phonograph (includes WS-A, WS-B, WS-C)

SECTION 3

I-F, DETECTOR, AND A-V-C CIRCUITS

C300A	Condenser, fixed, 1st i-f primary	Part of Z300
C300B	Condenser, fixed, 1st i-f secondary	Part of Z300
C301A	Condenser, fixed, 2nd i-f primary	Part of Z301
C301B	Condenser, fixed, 2nd i-f secondary	Part of Z301
C301C	Condenser, fixed, i-f filter	Part of Z301
C301D	Condenser, fixed, i-f filter	Part of Z301
C302	Condenser, a-v-c filter, .05 mf.	61-0122*
C303	Condenser, screen by-pass, .01 mf.	61-0120*
C304	Condenser, plate by-pass, .003 mf.	61-0109*
C305	Condenser, r-f by-pass, .1 mf.	61-0113*
R300	Resistor, a-v-c filter, 22,000 ohms	66-3223340*
R301	Resistor, a-v-c filter, 2.2 megohms	66-5223340*
R302	Resistor, screen dropping, 100,000 ohms	66-4103340*
R303	Resistor, plate dropping, 1000 ohms	66-2103340*
R304	Resistor, a-v-c filter, 47,000 ohms	66-3473340*

SECTION 3 (Cont.)

Reference Symbol	Description	Service Part No.
R305	Resistor, diode load, 470,000 ohms	66-4473340*
R306	Resistor, bias, 100 ohms	66-1103340*
TC300A	Tuning core, 1st i-f primary	Part of Z300
TC300B	Tuning core, 1st i-f secondary	Part of Z300
TC301A	Tuning core, 2nd i-f primary	Part of Z301
TC301B	Tuning core, 2nd i-f secondary	Part of Z301
WS-C	Switch-wafer section	Part of 42-1847-1†
Z300	Transformer, 1st i-f	32-4160
Z301	Transformer, 2nd i-f	32-4240

SECTION 4

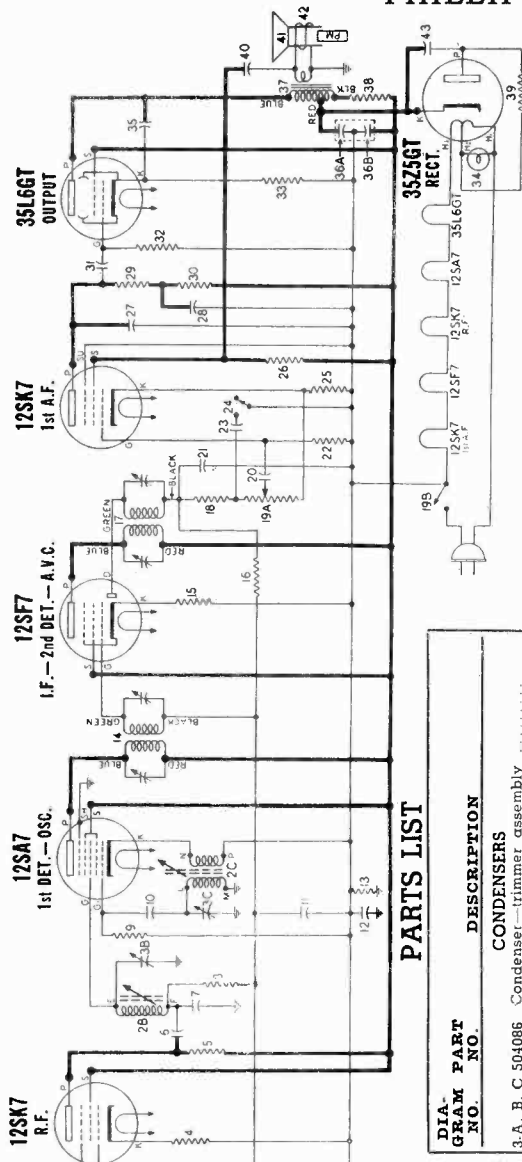
R-F AND CONVERTER CIRCUITS

C400	Condenser, tuning gang	31-2727
C400A:	Condenser, trimmer, aerial	Part of C400
C400B:	Condenser, trimmer, oscillator	Part of C400
C401	Condenser, ceramic, 10 mmf.	30-1224-6
C402	Condenser, ceramic, 56 mmf.	60-00515307*
C403	Condenser, r-f by-pass, .03 mf.	45-3500-1*
C404	Condenser, aerial coupling, 5 mmf.	60-90505007*
LA400	Loop aerial	76-2127-9
R400	Resistor, leakage, 150,000 ohms	66-4153340*
R401	Resistor, grid return, 22,000 ohms	66-3223340*
R402	Resistor, parasitic suppressor, 33 ohms	66-0333340*
T400	Transformer, oscillator	32-4190-2

† 42-1847-1 Wafer switch, single wafer, radio-phonograph (includes WS-A, WS-B, WS-C)

MISCELLANEOUS

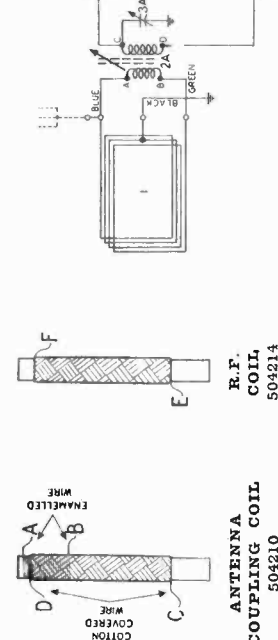
Description	Service Part No.
Cabinet and Cabinet Parts	
Bezel	56-5931
Cabinet	10727
Knob (3)	54-4527-9
Phonograph cover	45-6454
Window, acetate	54-4630
Dial Scale and Hardware	
Dial cord (25-ft. spool)	45-8750*
Pointer	56-5956FCP
Spring, pointer	56-6299
Scale	54-5022
Shaft assembly, drive	76-3731-1
Spring, drive cord	56-2617
Pilot-lamp-socket assembly	27-6233-1
Bracket-and-clip assembly	76-4164
Bracket	56-5928FA3
Clip	56-3545-6FA3
Bracket, rear	27-9508
Socket, octal	27-6174
Socket, miniature	27-6226
Wafer, condenser mounting	27-9508
Crystal pickup cartridge, P-30	35-2671-1
Needle for P-30 crystal	35-2670
Pickup cartridge and needle assembly	45-1609



PARTS LIST

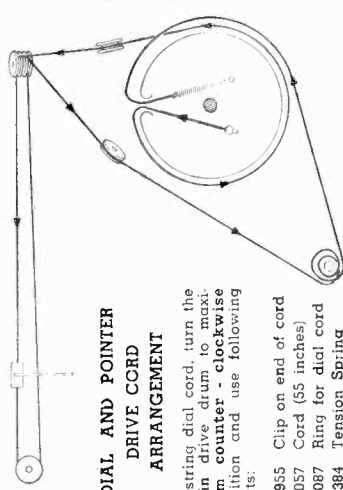
DIA-GRAM NO.	PART NO.	DESCRIPTION
CONDENSERS		
3-A, B, C	504086	Condenser—trimmer assembly
		A—20 to 270 Mmfd.
		B—40 to 370 Mmfd.
		C—40 to 370 Mmfd.
6	502271	Condenser—mica 250 Mmfd. 500 volt.
7	502165	Condenser—mica 1,000 Mmfd. 500 volt.
10	502159	Condenser—mica 50 Mmfd. 500 volt.
11	502158	Condenser—1 Mfd. 200 volt.
12	502157	Condenser—1 Mfd. 400 volt.
20	502439	Condenser—0.02 Mfd. 400 volt.
21	502160	Condenser—0.01 Mfd. 500 volt.
23	502170	Condenser—0.008 Mfd. 400 volt.
27	502160	Condenser—0.01 Mfd. 500 volt.
28	502153	Condenser—0.05 Mfd. 200 volt.
31	502156	Condenser—0.04 Mfd. 400 volt.
35	502151	Condenser—0.1 Mfd. 400 volt.
36-A, B	500256	Condenser—electrolytic
		A—40 Mfd. 150 volt.
		B—20 Mfd. 150 volt.
40	502152	Condenser—0.2 Mfd. 400 volt.
43	502157	Condenser—0.5 Mfd. 400 volt.
RESISTORS		
4	502140	Resistor—carbon 380 ohms 1/4 watt
5	502231	Resistor—carbon 470 ohms 1/4 watt
8	502134	Resistor—carbon 470,000 ohms 1/4 watt
9	502130	Resistor—carbon 22,000 ohms 1/4 watt
13	502133	Resistor—carbon 220,000 ohms 1/4 watt
15	502254	Resistor—carbon 47 ohms 1/4 watt
16	502269	Resistor—carbon 3.3 Meg. 1/4 watt
18	502145	Resistor—carbon 47,000 ohms 1/4 watt
19-A, B	502145	Volume control 500,000 ohms (with switch)
		A—20 Mfd. 150 volt.
		B—20 Mfd. 150 volt.
22	502136	Resistor—carbon 10 Meg. 1/4 watt
25	502128	Resistor—carbon 220 ohms 1/4 watt
26	502135	Resistor—carbon 2.2 Meg. 1/4 watt
29, 30	502133	Resistor—carbon 220,000 ohms 1/4 watt
32	502134	Resistor—carbon 470,000 ohms 1/4 watt
33	502138	Resistor—carbon 150 ohms 1/4 watt
38	502469	Resistor—carbon 35 ohms 1/4 watt
39	502574	Resistor—carbon 33 ohms 1/4 watt
COILS & TRANSFORMERS		
1	502246	Loop antenna
2-A, B, C	504096	Tuning unit; complete assembly
		Coil—antenna (less slug)
2-B	504210	Coil—R.F. (less slug)
2-C	504214	Coil—oscillator (less slug)
		Slug core for Ant. coil (yellow end)
		Slug core for Osc. coil (white end)
504212		Coil—oscillator (less slug)
504211		Slug core for Ant. coil (yellow end)
504213		Slug core for Osc. coil (white end)
504215		Slug core for R.F. coil (purple end)

DIA-GRAM NO.	PART NO.	DESCRIPTION
14	502102	Transformer—1st I.F.
17	502103	Transformer—2nd I.F.
		Transformer—output (for R-502998 spkr.)
		Transformer—output (for A-502998 spkr.)
37	502904	Transformer—output (for W-502998 spkr.)
		Transformer—output (for W-502998 spkr.)
OTHER ELECTRICAL PARTS		
24	500546	Switch—tone control
34	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.
		Cone & voice coil for R-502998 spkr.
		Cone & voice coil for A-502998 spkr.
41	502303	Cone & voice coil for W-502998 spkr.
		Cone & voice coil for W-502998 spkr.
42	502998	Speaker—P.M. dynamic (5 inch)
MISCELLANEOUS PARTS		
502502		Back for cabinet
116467		Base for mtg. electrolytic condenser
502476		Cabinet—ivory (Model 3-1A)
502477		Cabinet—mahogany (Model 3-2A)
502506		Clamp—dial scale mtg.
500487		Clip—retainer for cabinet back
116566		Cone & voice coil for R-502998 spkr.
117057		Cone & voice coil for A-502998 spkr.
500324		Cover—cardboard, for elect. cond.
504146		Dial scale—glass
501186		Grounding plate (under I.F. trans. can)
502564		Knob—ivory (Model 3-1A)
502563		Knob—mahogany (Model 3-2A)
502367		Pointer
81145		Retaining ring for tuning shaft
119087		Ring for dial cord
85078		Rubber grommet; Ant. & R.F. coil mtg.
504045		Rubber grommet; Osc. coil mtg.
17063		Screw—No. 6 x 1/4 chassis mtg.
114628		Screw—No. 8 x 1/2 chassis mtg.
502173		Shaft—tuning control
116690		Socket—octal base
160392		Socket—octal lamp
500499		Socket—dial lamp (with leads)
504012		Spring for tuning slug drive cord
161384		Spring—dial cord tension
111456		Washer—spring washer for tuning shaft



I.F. 455 KC.

Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, turn the main drive drum to maximum counter-clockwise position and use following parts:

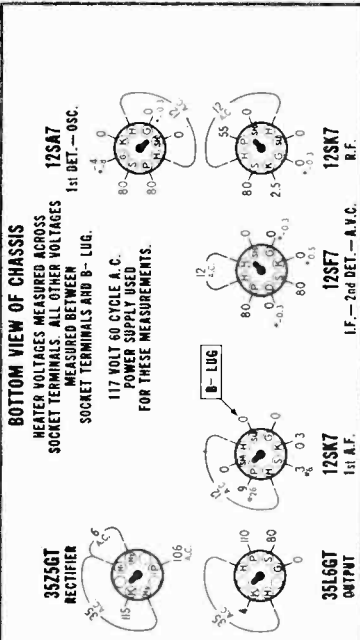
- 114955 Clip on end of cord
- 117057 Cord (55 inches)
- 119087 Ring for dial cord
- 161384 Tension Spring

- OSCILLATOR COIL** 504212
- SLUG CORES FOR COILS**
- ANT.—504211
- R.F.—504215
- OSC.—504213

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL. DIAL TUNED TO 540 KC.



BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND B- LUG.

117 VOLT 60 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.

*—Measured with vacuum tube voltmeter

PHILLIPS PETROLEUM CO.

Remove chassis and loop from cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side for convenient B— location). Then reinstall chassis and loop in cabinet. The B— lead should extend from under the chassis at the back.

Connect ground lead of signal generator to B— lead.

Connect output meter across the speaker voice coil (terminals at back of speaker.)

Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
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Set tuner mechanism to maximum open position by turning the tuning control knob clockwise as far as it will go (Dial pointer at 1600 Kc). Then check whether the positions of the tuning slugs correspond to the positions shown in Fig. 1 below. If settings are incorrect, rotate the individual core and threaded stem until desired position is reached. Note that threaded stem is prevented from moving by a dab of speaker cement at top.

.1 MFD. Condenser	Ungrounded terminal of trimmer No. 6 (see Fig. 2 below for location of trimmer.)	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	1600 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
				7	Broadcast Antenna	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	Ant. coil tuning slug		Adjust position of slug for maximum output.
				R.F. coil tuning slug		Adjust position of slug for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Recheck adjustment for maximum output.
				7	Broadcast Antenna	Recheck adjustment for maximum output.

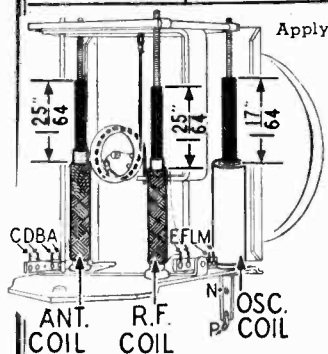


FIG. 1
SLUG TUNER ASSEMBLY (Drive Parts)
117057 Cord (8")
114955 Clip on cord
504012 Spring

Apply a coating of speaker cement at top of each tuning core stem to prevent movement

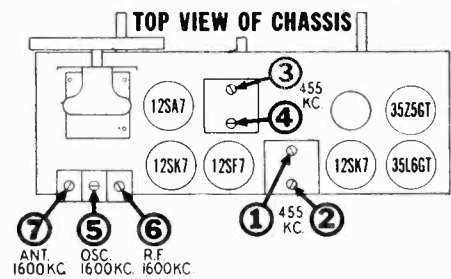


FIG. 2

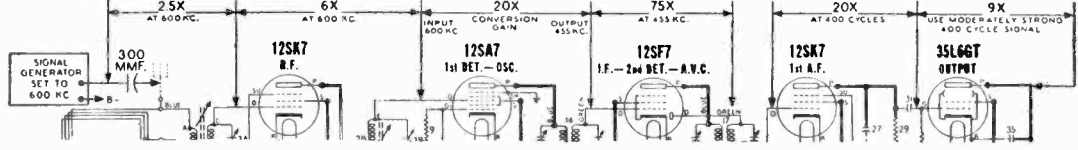
AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under those conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the secondary of the output transformer.

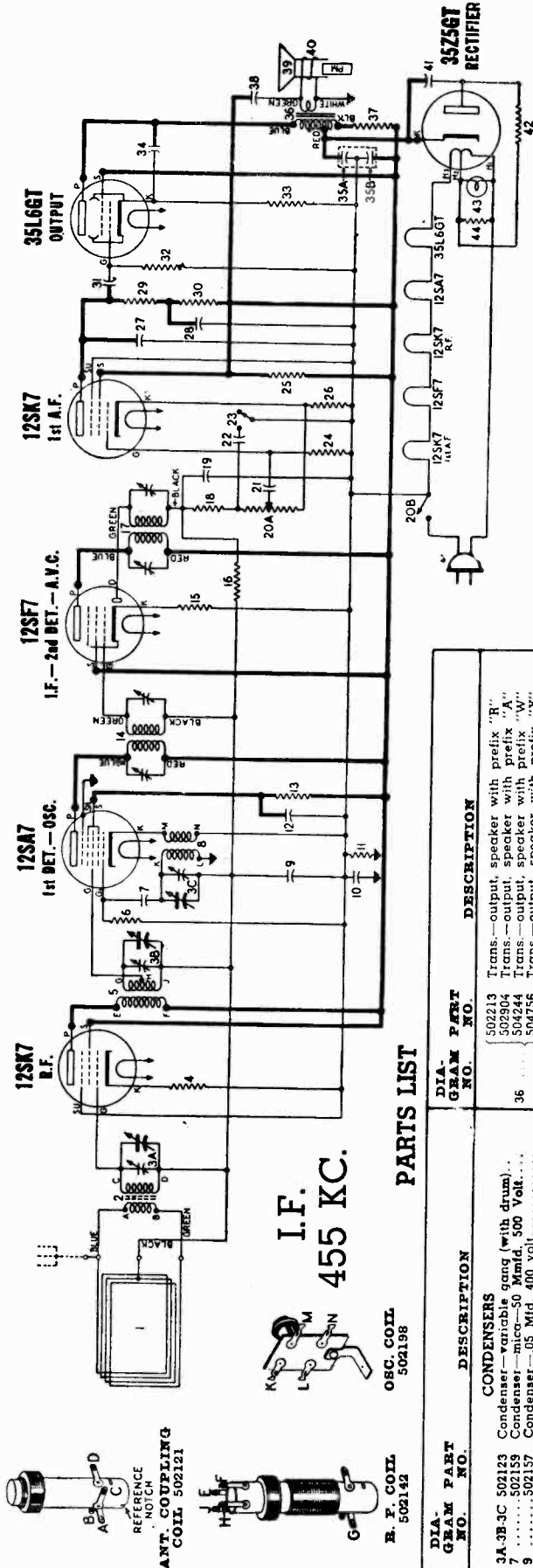
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1 1/2 volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



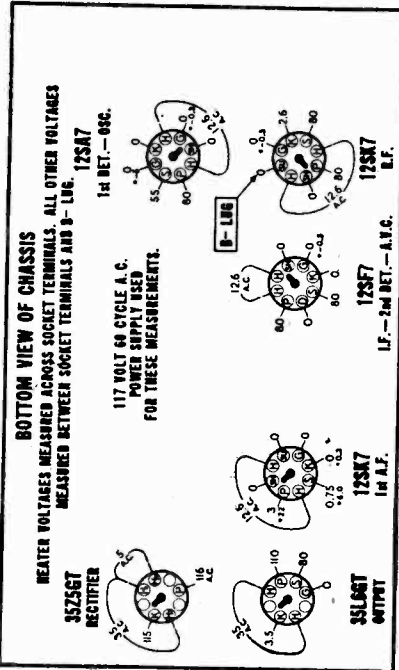
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.



PARTS LIST

DIA-GRAM NO.	PART NO.	DESCRIPTION
3A-3B-3C	502123	Condenser—variable gang (with drum).
6	502153	Condenser—mica—50 Mmf., 500 Volt.
9	502156	Condenser—.05 Mfd., 400 Volt.
10	502158	Condenser—.25 Mfd., 400 Volt.
11	502282	Condenser—.25 Mfd., 400 Volt.
12	502180	Condenser—mica—10 Mmf., 500 Volt.
21	502453	Condenser—.002 Mfd., 400 Volt.
22	502470	Condenser—.0008 Mfd., 400 Volt.
27	502150	Condenser—.05 Mfd., 200 Volt.
28	502153	Condenser—.004 Mfd., 400 Volt.
31	502153	Condenser—.01 Mfd., 400 Volt.
34	502151	Condenser—electrolytic
35A-35B	500256	A-40 Mid. 150 Volt
		B-20 Mid. 150 Volt
38	502152	Condenser—.02 Mfd., 400 Volt.
41	502157	Condenser—.05 Mfd., 400 Volt.
4	502125	Resistor—carbon 220 Ohms 1/4 watt
6	502135	Resistor—carbon 220,000 Ohms 1/4 Watt
11	502133	Resistor—carbon 220,000 Ohms 1/4 Watt
13	502291	Resistor—carbon 470 Ohms 1/4 Watt
15	502264	Resistor—carbon 33 Ohms 1/4 Watt
16	502269	Resistor—carbon 3.3 Meg. 1/4 Watt
18	502131	Volume control 500,000 Ohms 1/4 Watt
20A-20B	502145	Resistor—carbon 10 Meg. 1/4 Watt
24	502136	Resistor—carbon 2.2 Meg. 1/4 Watt
25	502135	Resistor—carbon 2200 Ohms 1/4 Watt
26	502128	Resistor—carbon 2200 Ohms 1/4 Watt
29-30	502133	Resistor—carbon 220,000 Ohms 1/4 Watt
32	502134	Resistor—carbon 470,000 Ohms 1/4 Watt
33	502138	Resistor—carbon 130 Ohms 1/4 Watt
37	502469	Resistor—carbon 1500 Ohms 1/2 Watt
42	502574	Resistor—carbon 33 Ohms 1/2 Watt
44	502140	Resistor—carbon 380 Ohms 1/4 Watt
COILS & TRANSFORMERS		
1	502504	Loop Antenna
2	502121	Coil—antenna coupling
5	502198	Coil—R.F.
8	502199	Coil—oscillator
14	502109	Transformer 1st I.F.
17	502103	Transformer 2nd I.F.
502213		Trans.—output, speaker with prefix "R"
502304		Trans.—output, speaker with prefix "A"
504244		Trans.—output, speaker with prefix "W"
504756		Trans.—output, speaker with prefix "Y"
504758		Trans.—output, speaker with prefix "Z"
504781		Trans.—output, speaker with prefix "C"
OTHER ELECTRICAL PARTS		
500546		Switch—tone control
502214		Cone & voice coil, spkr. with prefix "R"
502303		Cone & voice coil, spkr. with prefix "A"
504245		Cone & voice coil, spkr. with prefix "W"
504757		Cone & voice coil, spkr. with prefix "Y"
504759		Cone & voice coil, spkr. with prefix "Z"
504782		Cone & voice coil, spkr. with prefix "C"
502998		Speaker—P.M. dynamic (5 inch)
118921		Lamp—dial (Mazda 47 6-8V, 150 Ma.)
MISCELLANEOUS PARTS		
502502		Back for cabinet
116467		Box for cabinet
502476		Cabinet—ivory (Model 3-1AX)
502477		Cabinet—mahogany (Model 3-2AX)
502506		Clamp—dial scale mtg.
112745		Clip—coil mtg.
114955		Clip—retainer on end of dial cord
500497		Connector—for antenna leads
116563		Cord—dial drive (55 in. required), per ft.
502524		Cover—cardboard, for elect. cond.
501186		Dial scale—glass
502564		Knob—ivory (under I.F. trans. can)
502563		Knob—mahogany (Model 3-2AX)
502367		Painter
81145		Retaining ring for tuning shaft
119087		Ring for dial cord
17083		Screw—No. 6 x 1/4
114628		Screw—No. 8 x 1/2 chassis mtg.
502173		Shaft—tuning control
116650		Socket—control base
160382		Socket—coil (rectifier)
500489		Socket—dial lamp (with leads)
161384		Spring—dial cord tension
111456		Washer—spring washer for tuning shaft

I.F. 455 KC.

OSC. COIL 502198

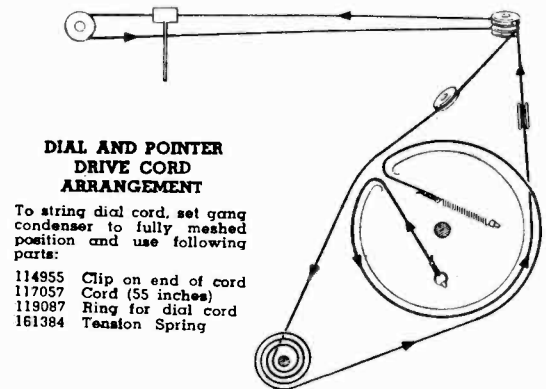
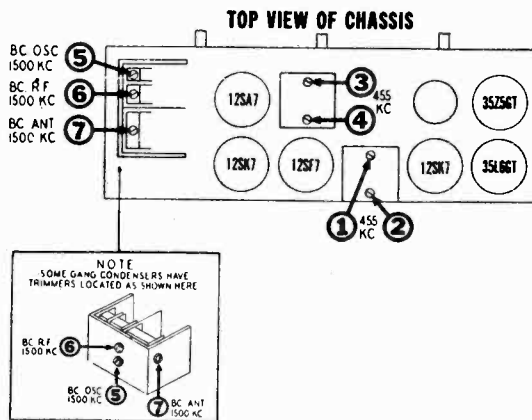
B. F. COIL 502142

ANT. COUPLING COIL 502121

ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.

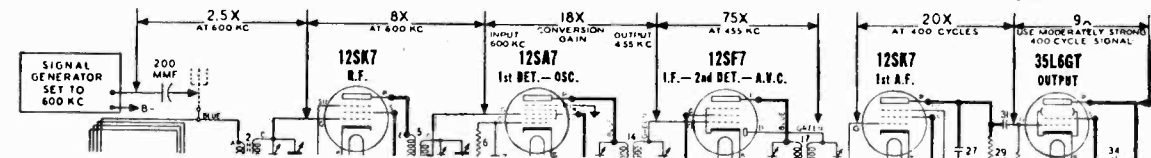


APPROXIMATE STAGE GAIN DATA

Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. **IMPORTANT: Disconnect battery when measuring audio stage gains.**
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

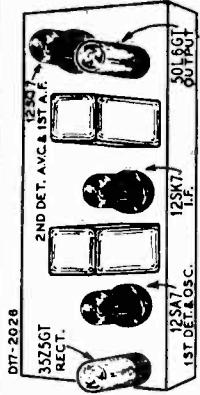
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.

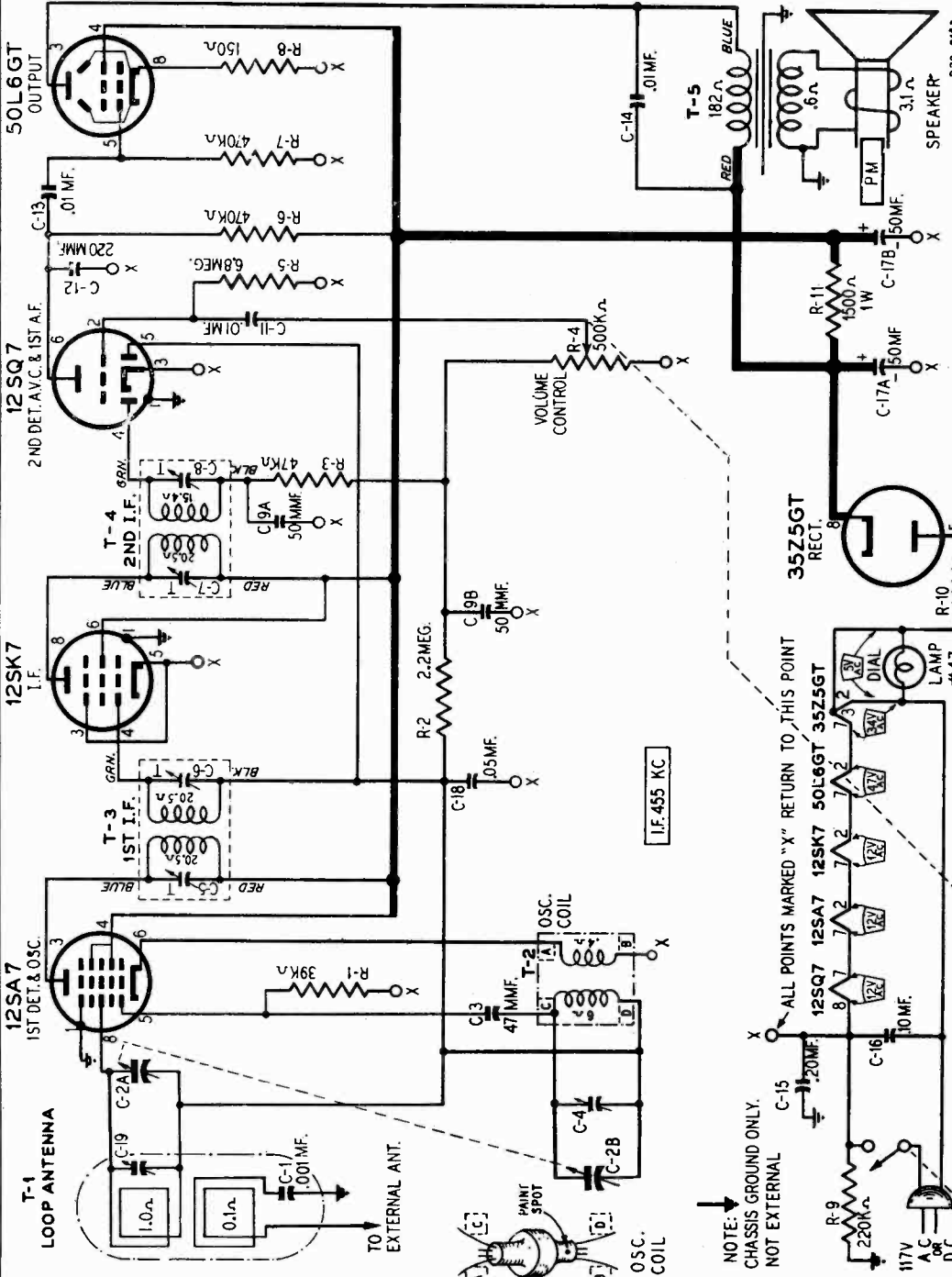
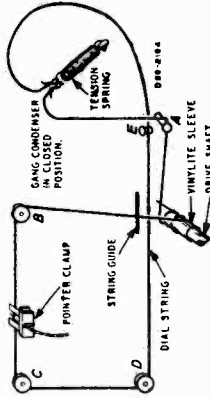
MODELS 3-9A, 3-10A,
Late

PHILLIPS PETROLEUM CO.



DRIVE CORD REPLACEMENT

Turn the large drive pulley to the maximum counterclockwise position. Use a new 53 inch drive cord, tie one end to the tension spring and fasten the other end of the spring to the drive pulley. Install the cord as shown in the illustration. Wind 2 3/4 turns counterclockwise around the tuning shaft, with the turns progressing away from the chassis. After string is installed, stretch the tension spring and tie the free end of cord to spring. Cut off excess string.



Tuning Frequency Range	540 to 1600 KC
Power Consumption	30 watts (At 117 volts AC)
Power Output	1.5 watt maximum, .9 watt (10% harmonics)
Selectivity	55 KC Broad at 1000 Times Signal
Intermediate Frequency	455 KC
Speaker	5" PM Dynamic
Sensitivity (for .05 watt output)	.25 microvolts average

NOTE: ALL POINTS MARKED "X" RETURN TO THIS POINT
CHASSIS GROUND ONLY. NOT EXTERNAL

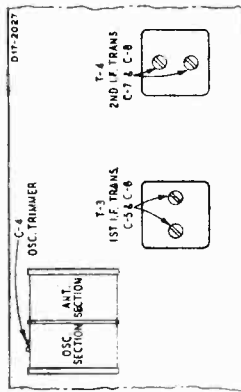
LINE VOLTAGE - 117 VOLTS A.C. ALL VOLTAGES EXCEPT HEAT-SINK VOLTAGES ARE TAKEN FROM THE READING TAKEN WITH 1000 OHM-PER-VOLT METER, PLATE AND "X" POINT. SEE SCHEMATIC FOR HEAT-SINK AND SCREEN VOLTAGES READ ON 500 VOLT SCALE.

517-2028

ALIGNMENT PROCEDURE

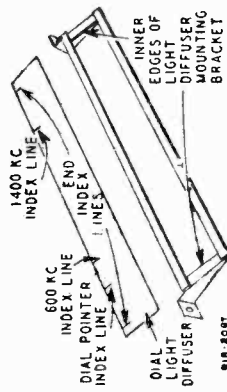
Check dial pointer position, see DIAL CALIBRATION paragraph. Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Volume Control—Maximum All Adjustments.
Allow Chassis and Signal Generator to "Heat Up" for several minutes.
The equipment in column at right is required for aligning:
Output Indicating Meter: Non-Metallic Screw-driver.
Dummy Antennas—.1 mf., 50 mmf.

SIGNAL GENERATOR		GANG ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)	
FREQUENCY SETTING	ANTENNA CONNECTION	DUMMY ANTENNA CONNECTION	CONDENSER SETTING
455 KC	Control Grid 12SK7—1.F. Prong No. 4	Point "X" 12SK7—1.F. Prong No. 3	Turn Rotor to full open
455 KC	Control Grid 12SA7—1st Det. Prong No. 8	Same As Above	Turn Rotor to full open
1620 KC	Control Grid 12SA7—1st Det. Prong No. 8	Same As Above	Turn Rotor to full open
1400 KC	External Antenna Clip On Loop	Chassis	Turn Rotor to maximum output See Note A



Note A—Set dial pointer to 1400 KC Index line on dial light diffuser.

DIAL CALIBRATION



In order to align the receiver, the dial pointer must be positioned on the dial string correctly with reference to the dial. Index lines are provided on the dial light diffuser for this purpose.

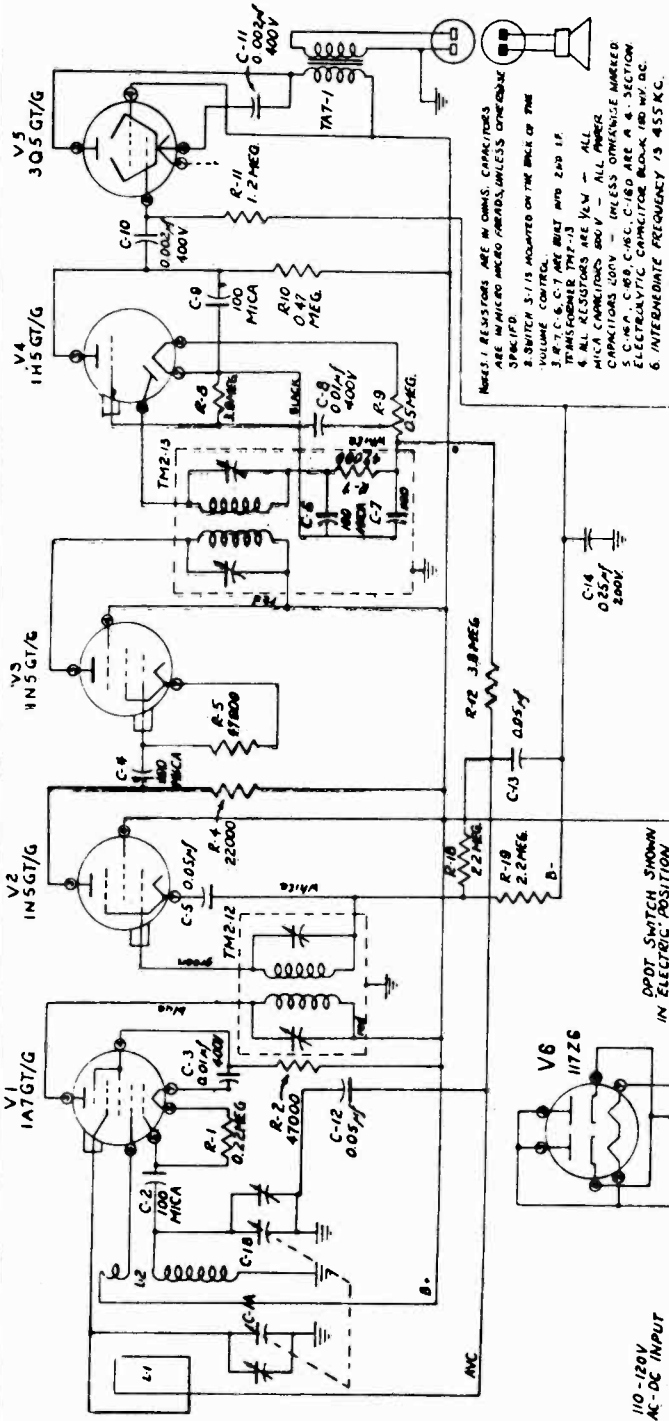
Before aligning the receiver (or when replacing the dial light diffuser) check the position of the diffuser strip, making certain that the two extreme index lines are aligned with the inner edges of the diffuser mounting bracket opening. The bracket should be crimped to prevent movement of the diffuser strip. To position

the dial pointer, turn the large drive pulley to the maximum counterclockwise position. The dial pointer should be directly over the dial pointer index line. (See illustration).

NOTICE: There is a power rating label on the chassis. This label specifies the power supply on which the radio may be used, and identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information appearing on this label.

REPLACEMENT PARTS LIST

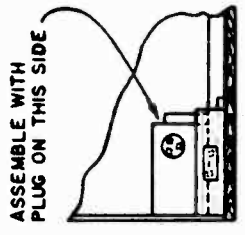
26A406	T-1	"B" Range Loop Antenna Assembly	36X352	R-4	500,000 ohms	Volume control and line switch
9A1805	T-2	Oscillator Coil Assembly	885685	R-5	6.8 meg.	0.5 watt Carbon
9A1808	T-3	1st I-F Coil Assembly	884474	R-6	470,000 ohms	0.5 watt Carbon
9A1809	T-4	2nd I-F Coil Assembly	885474	R-7	470,000 ohms	0.5 watt Carbon
51X123	T-5	Output Transformer	883151	R-8	150 ohms	0.5 watt Carbon
D67102	C-1	.001 mf. 400 V Capacitor	883224	R-9	220,000 ohms	0.5 watt Carbon
26A402	C-2A	C-2B Gang Capacitor with Drive Pulley	884722	R-10	100 ohms	0.5 watt Carbon
47X446	C-3	47 mmf. Molded	688192	R-11	1500 ohms	1.0 watt Carbon
47X112	C-5	Part of C-2 (Gang Capacitor)				
B66103	C-6	Part of T-3 (1st I-F Transformer)				
47X468	C-9A	C-9B 50 mmf. (Dial Trimmer)				
B67204	C-11	C-13 .01mf. 200 V Tubular				
D67104	C-12	220 mf. Molded				
45X34	C-15	200 V Tubular				
B66503	C-16	400 V Tubular				
17A123	C-17A	50 mf. 150 V Dry Electrolytic				
B65225	C-18	50 mf. 150 V Trimmer				
B85473	C-19	1.0-12 mmf. Resistor				
B84393	R-1	39,000 ohms				
B85225	R-2	2.2 meg.				
B85473	R-3	47,000 ohms				
26A401		Pointer Bracket Assembly complete with light diffuser holder, string guide and idler pulleys	26A401			
41X24		Dial light diffuser	41X24			
15X23		Rubber Grommet	15X23			
26X289		Cond. Cushion Stud	26X289			
10X182		Drive shaft (for drive shaft)	10X182			
28X95		53" Drive cord (18 lb. test)	28X95			
7A194		Pilot light socket assembly	7A194			
58X507		No. 47 Pilot light	58X507			
30X300		Dial clamp (upper)	30X300			
		Dial clamp (lower)				



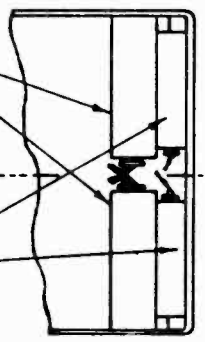
NOTES: 1. RESISTORS ARE IN OHMS, CAPACITORS ARE IN MICRO MICRO FARADS, UNLESS OTHERWISE SPECIFIED.
 2. SWITCH S-1 IS MOUNTED ON THE BACK OF THE VOLUME CONTROL.
 3. R-7, C-6, C-7 ARE BUILT INTO ZND IF TRANSFORMER TM7-13.
 4. ALL RESISTORS ARE 1/2W - ALL CAPACITORS ARE 50V UNLESS OTHERWISE MARKED.
 5. C-16A, C-16B, C-16C, C-16D ARE A 4 SECTION ELECTROLYTIC CAPACITOR BLOCK 100 WV. D.C.
 6. INTERMEDIATE FREQUENCY IS 455 KC.

4.5V "A"
 E. R. No. 744

45.5V "B"
 E. R. No. 488

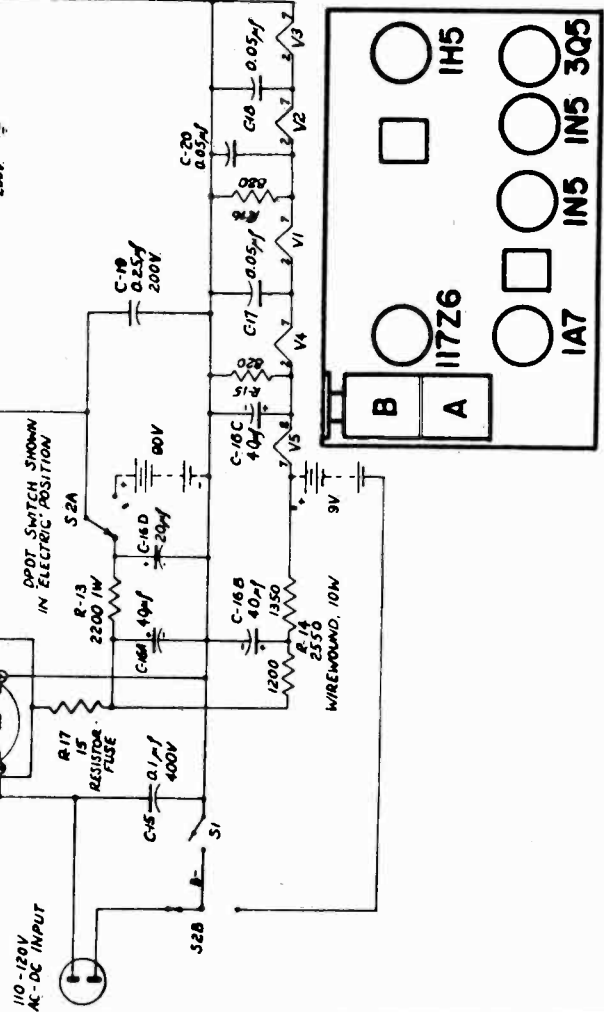


SECTION A-A

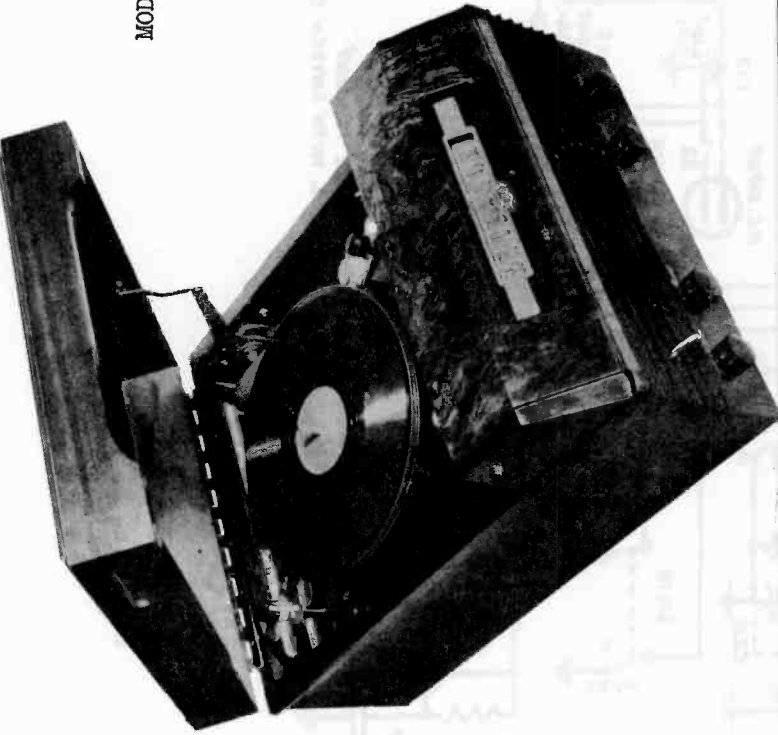


NOTE: BE SURE TO REMOVE BOLT FROM BOTTOM OF CABINET BEFORE ATTEMPTING TO INSERT BATTERIES

POSITION OF BATTERIES



LOCATION OF TUBES



Alignment: No attempt should be made to align this receiver until it has been determined that a poor tube, or some local condition is not responsible for the faulty reception.

The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section (B) of tuning capacitor. Connect ground clip of generator directly to chassis. Align the I. F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad. An output meter may be clipped directly across the voice coil lugs.

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (A) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (B) (on rear section) for maximum response. With tuning capacitor plates fully meshed, the receiver should tune to 532 kc; however, no adjustment is required at this point. For checking purposes, four fine marks are engraved on the dial plate. These represent, in order, the pointer position with capacitor plates fully meshed, and the pointer setting for 600, 1000 and 1550 kc.

Alignment: No attempt should be made to re-align this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception.

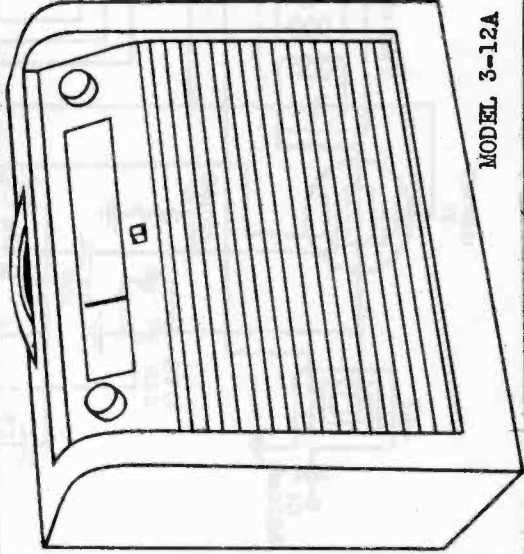
The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section A of tuning capacitor. Connect ground clip of generator to a convenient B-minus point (such as the case of the electrolytic capacitor, or one of the switch terminals on the back of the volume control). An output meter may be clipped directly across the voice coil lugs. Align the I.F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad.

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-

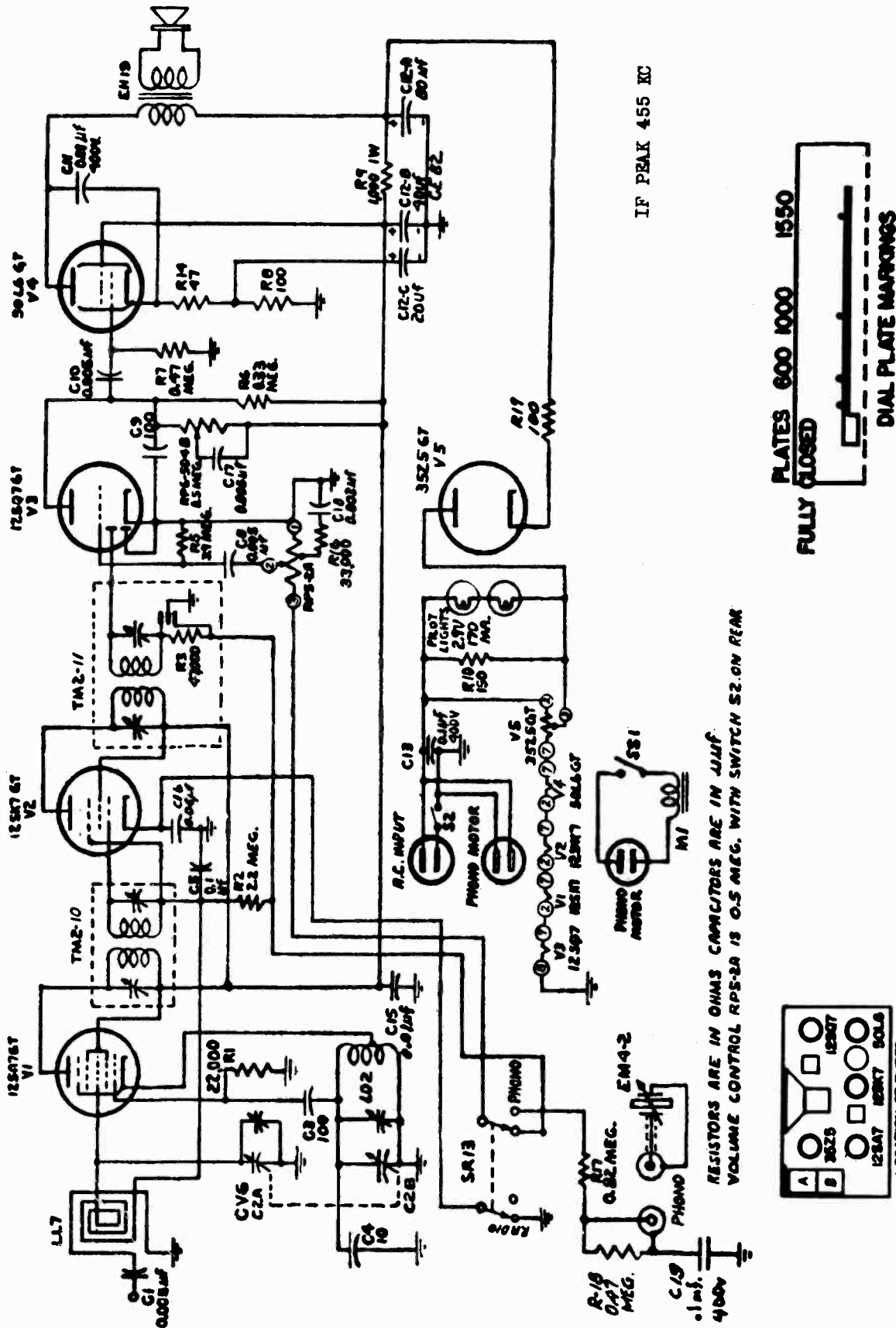
supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (B) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (A) (on rear section) for maximum response.

Batteries: The batteries comprise: two 4½ volt "A" units, Eveready type 746 or equivalent, and two 45 volt "B" units, Eveready type 482 or equivalent.

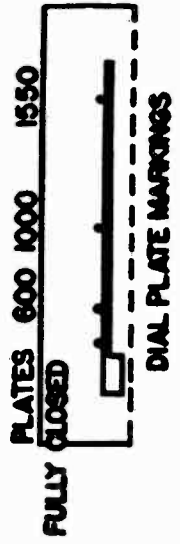
They should be mounted in the compartment provided in the bottom of the cabinet, as shown in sketch. Batteries should be removed when they are dead or if the set is not to be used on battery operation for several months.



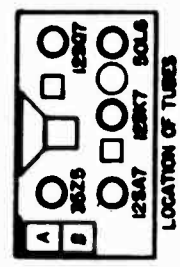
MODEL 3-12A

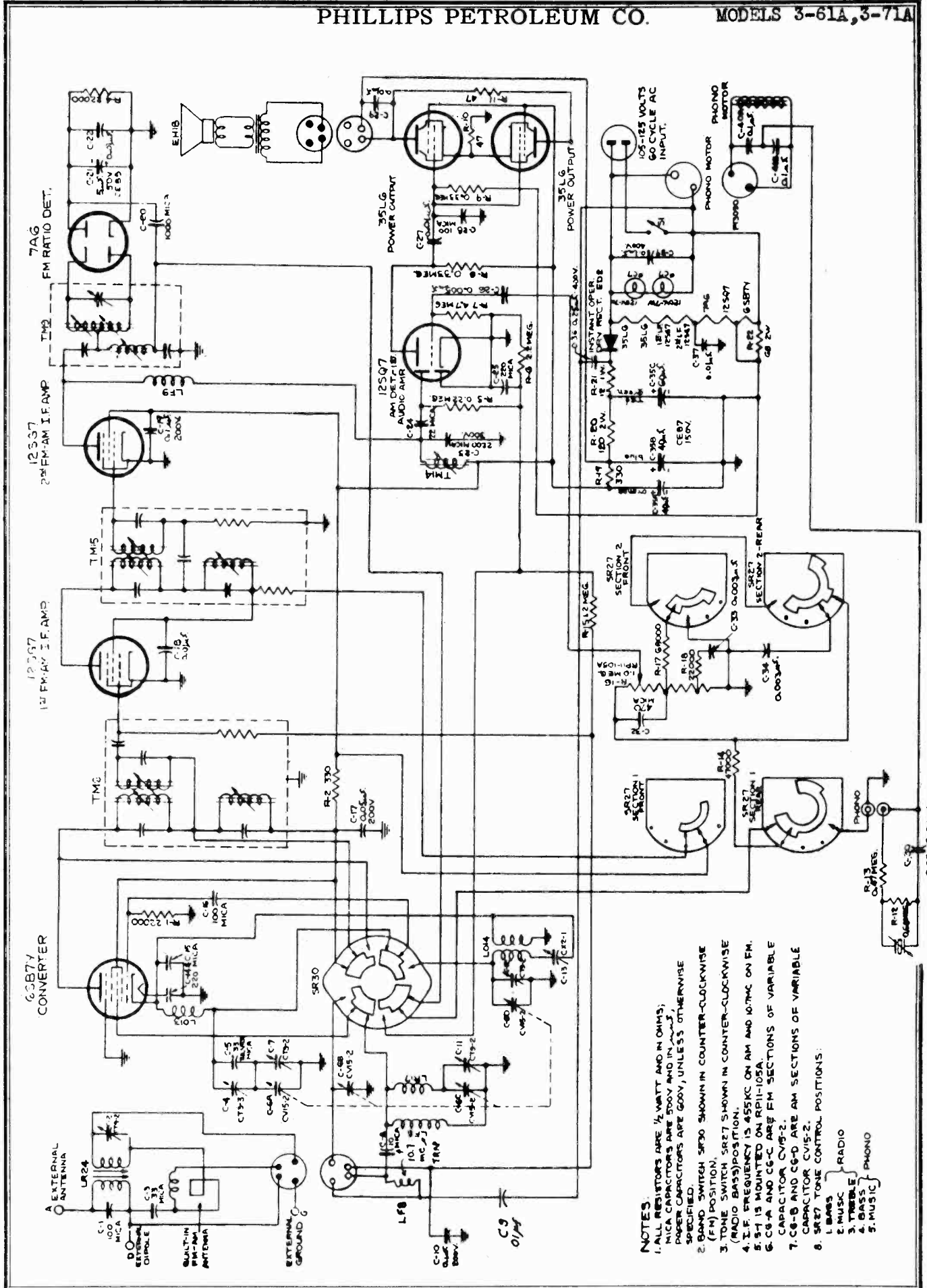


IF PEAK 455 KC



RESISTORS ARE IN OHMS CAPACITORS ARE IN μ MUF.
 VOLUME CONTROL RPS-2A IS 0.5 MEG. WITH SWITCH S2 ON REAR





- NOTES**
1. ALL RESISTORS ARE 1/2 WATT AND IN OHMS, UNLESS OTHERWISE SPECIFIED.
 2. BAND SWITCH SR30 SHOWN IN COUNTER-CLOCKWISE (FM) POSITION.
 3. TONE SWITCH SR27 SHOWN IN COUNTER-CLOCKWISE (RADIO BASS) POSITION.
 4. I.F. FREQUENCY IS 455KC ON AM AND 10.7MC ON FM.
 5. S1 IS MOUNTED ON RP11-105A.
 6. C6-A AND C6-C ARE FM SECTIONS OF VARIABLE CAPACITOR CV6-2.
 7. C6-B AND C6-D ARE AM SECTIONS OF VARIABLE CAPACITOR CV6-2.
 8. SR27 TONE CONTROL POSITIONS:
 - 1. BASS
 - 2. MUSIC
 - 3. TREBLE
 - 4. BASS
 - 5. MUSIC

ALIGNMENT PROCEDURE:

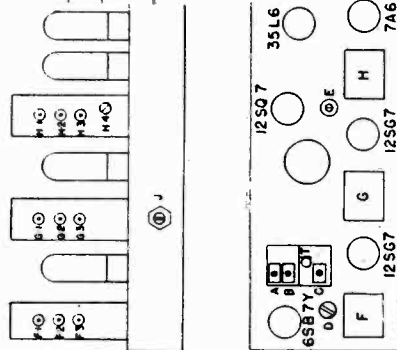
Signal Generator Connection	Signal Generator Frequency	Band Switch Position	Radio Dial Setting	Adjust	Remarks
Terminal T	455 KC AM	Broadcast	1025 KC	E G-1 F-1	Adjust for maximum output Repeat for fine adjustment
Pin 4 of 12SG7 2nd FM-AM IF with FM Signal Gen.	10.7 MC FM	FM	108 MC	H-2	Adjust for maximum output (Broad adjustment)
"	10.7 MC FM	FM	108 MC	H-4	Adjust for maximum output
"	10.7 MC AM	FM	108 MC	H-1 or H-3	Adjust whichever is required for minimum output
Pin 8 of 6SB7Y Converter	10.7 MC FM	FM	108 MC	G-3 — G-2	Repeat last two steps for fine adjustment until settings for maximum FM output coincide with settings for minimum AM output.
"	"	FM	108 MC	F-3 — F-2	Adjust for maximum output
"A" Post on Cabinet	600 KC AM	Broadcast	535 KC	Pointer	Adjust for maximum output
"	1550 KC AM	"	600 KC	J and Core on Ant. Coil in Cab.	Adjust for maximum output
"	92 MC FM	FM	1550 KC	B and trimmer on Ant. Coil	Adjust for maximum output
"	106 MC FM	FM	92 MC	D	Adjust for maximum output
"	106 MC FM	FM	106 MC	A and C	Adjust for maximum output

Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube or some local condition is not responsible for faulty reception. The following is a list of the minimum equipment necessary to realign this receiver

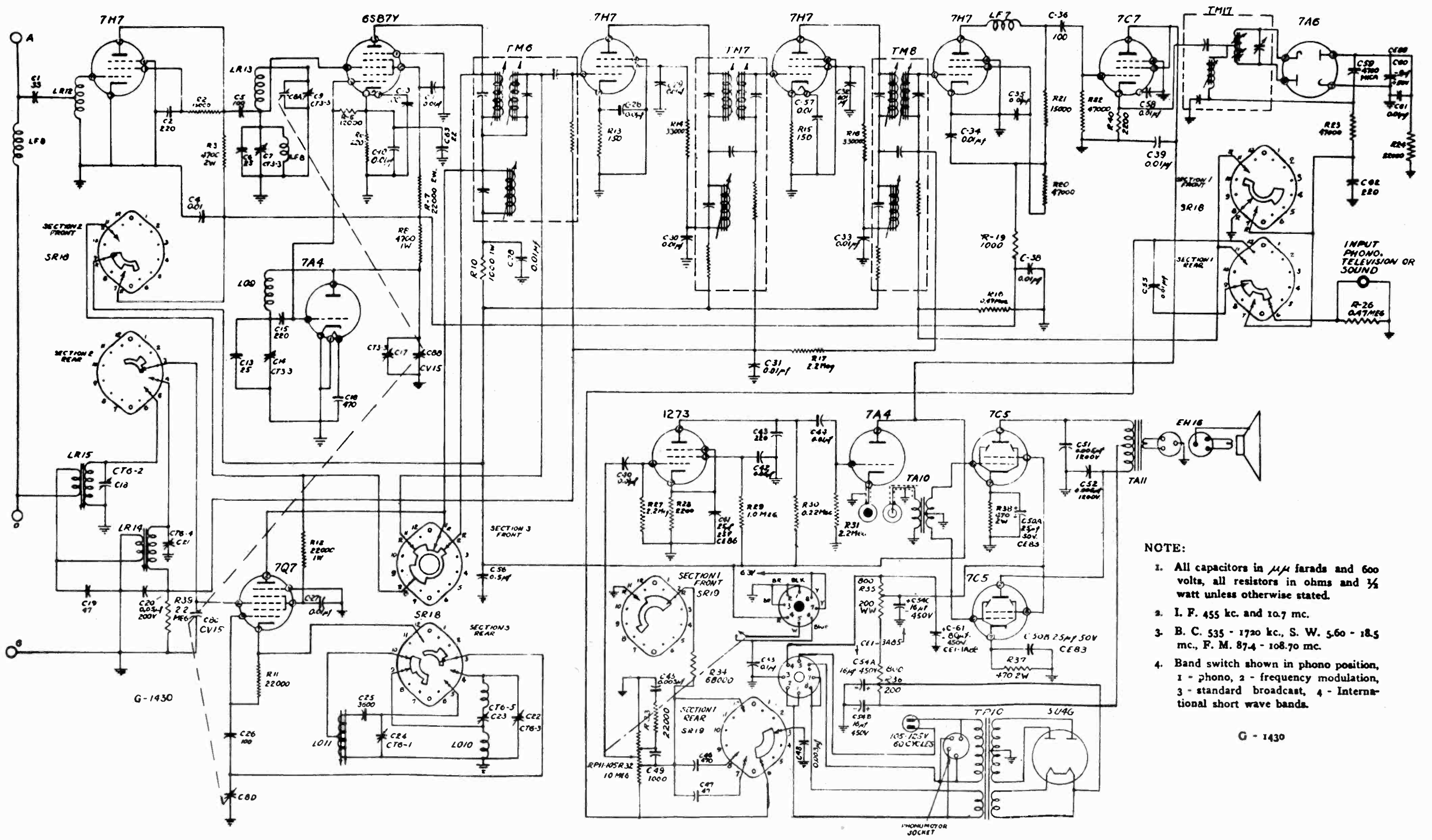
In the following alignment procedure the high side of the signal generator is connected to the terminal indicated in the "Signal Generator Coupling" column below. The ground side of the signal generator is connected directly to the chassis. The output meter should be connected across the voice coil of the speaker for all measurements.

- 1—AM signal generator covering 455 KC, 600 KC, 1550 KC and 10.7 MC
- 2—FM signal generator covering 10.7 MC, 92 MC and 106 MC
- 3—Output meter, rectifier type, approximately 0 to 2 volts RMS
- 4—Dummy antennas
- 0.01 MFD Capacitor
- 100MFD Mica Capacitor
- 300 Ohm Resistor

In adjusting the radio frequency trimmers and padders it is advisable to "rock" the variable capacitor gang slightly across the signal being delivered by the signal generator until that particular signal has been accurately peaked.



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- NOTE:
1. All capacitors in $\mu\mu$ farads and 600 volts, all resistors in ohms and $\frac{1}{2}$ watt unless otherwise stated.
 2. I. F. 455 kc. and 10.7 mc.
 3. B. C. 535 - 1720 kc., S. W. 5.60 - 18.5 mc., F. M. 87.4 - 108.70 mc.
 4. Band switch shown in phono position, 1 - phono, 2 - frequency modulation, 3 - standard broadcast, 4 - International short wave bands.

G - 1430

Alignment:

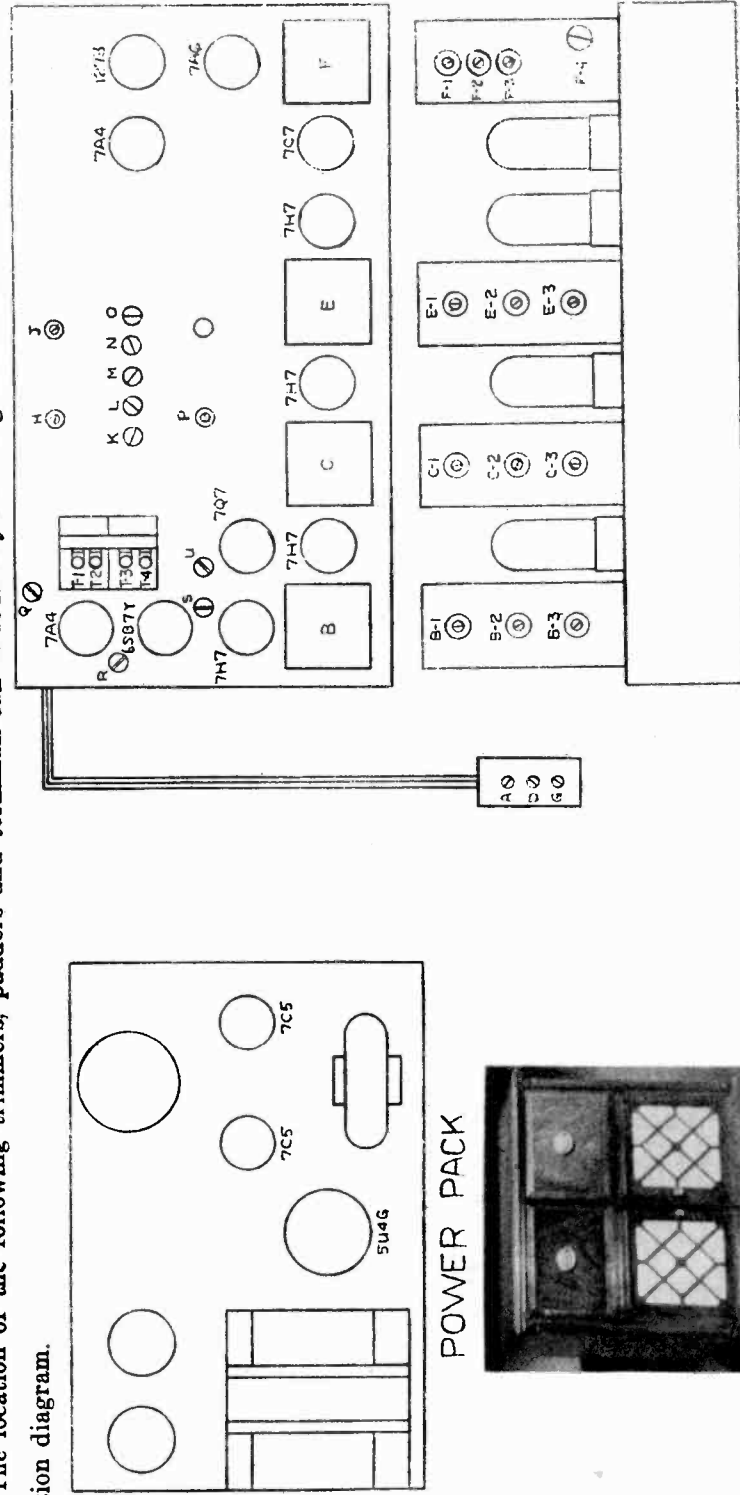
No attempt should be made to realign this receiver until it has been determined that a poor tube or some local condition is not responsible for faulty reception. The following is a list of minimum equipment necessary to realign this receiver:

- 1—AM signal generator covering 455KC, 600KC, 1550KC, 6 MC, 10.7 MC and 18 MC
- 2—FM signal generator covering 10.7 MC, 92 MC and 106 MC
- 3—Output meter, rectifier type, approximately 0 to 2 volts RMS

In the following alignment procedure the high side of the signal generator is connected to the terminal indicated in the "Signal Generator Coupling" column below. The ground side of the signal generator is connected directly to the chassis unless otherwise noted. The output meter should be connected across the voice coil of the speaker for all measurements.

In adjusting the radio frequency trimmers and padders it is advisable to "rock" the variable capacitor gang slightly across the signal being delivered by the signal generator until that particular signal has been accurately peaked.

The location of the following trimmers, padders and terminals can be found by referring to the tube and trimmer location diagram.



TUBE AND TRIMMER LOCATION

Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Position	Radio Dial Setting	Adjust	Remarks
0.01 MFD	Terminal T-2	455 KC	Broadcast	1700 KC	E-1 C-1 B-1	Adjust for maximum output Repeat for fine adjustment
"	Pin 6 of 7C7 IF tube with FM Signal Generator	10.7MC	FM	108 MC	F-2	Adjust for maximum output (Broad adjustment)
"	"	"	"	"	F-4	Adjust for maximum output
"	AM Signal Generator	"	"	"	F-1 or F-3	Adjust whichever is required for minimum output
"	"	"	"	"		Repeat last two steps for fine adjustment until settings for maximum FM output coincides with settings for minimum AM output.
"	"	"	"	"	E-3, E-2	Adjust for maximum output
"	"	"	"	"	C-3, C-2	" " " "
"	"	"	"	"	B-3, B-2	" " " "
"	"	"	"	"		Repeat last three steps for fine adjustment
200 MMF	Terminal D	600 KC	Broadcast	535 KC	Pointer	Adjust pointer to reference mark
"	"	1550 KC	Broadcast	600 KC	O, J.	Adjust for maximum output
400 Ohm Resistor	"	6 MC	"	1550 KC	M, N	" " " "
"	"	18 MC	Shortwave	6 MC	P, H	" " " "
"	"	92 MC	"	18 MC	K, L	" " " "
300 Ohm Resistor	Terminal A Ground Side of Signal Generator to Terminal D	92 MC	FM	92 MC	R, S	" " " "
"	"	106 MC	"	106 MC	Q, U	" " " "

ALIGNMENT PROCEDURE:

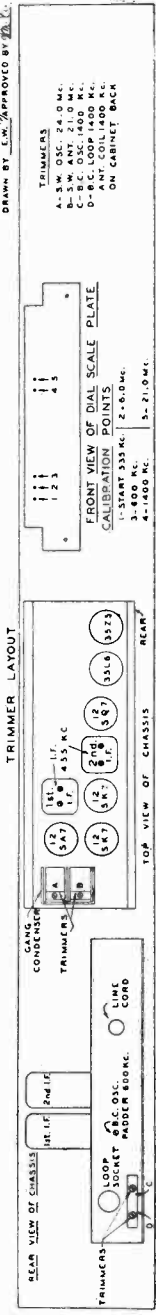
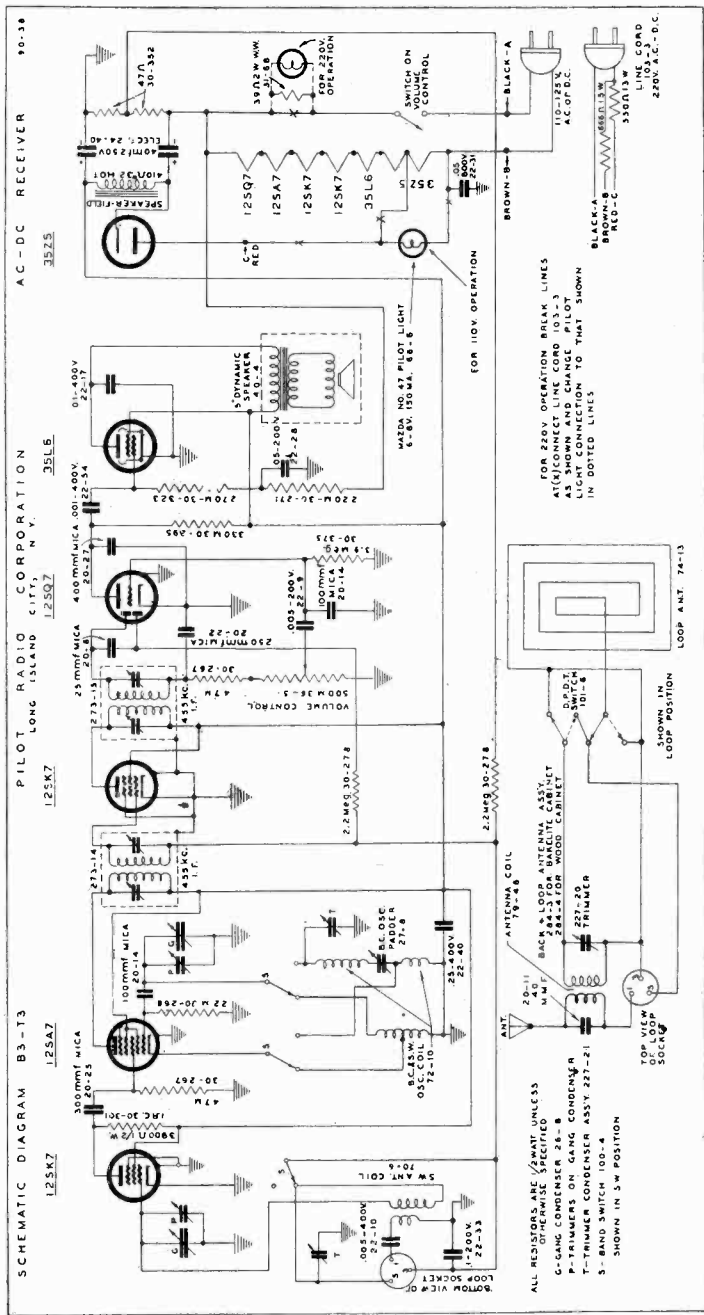
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To align the "LOOP" antenna the receiver should be in the cabinet with the back in place and the Antenna Selector Switch set for "LOOP". Through the slot in the lower left-hand side of the cabinet back adjust the trimmer on the extreme left for maximum signal strength at about 1400 kc. Then set the Antenna Selector Switch for "OUTSIDE ANTENNA" and adjust the trimmer located next to the switch for maximum signal strength at 1400 kc.

The screws for adjusting both the R.F. and I.F. amplifiers of this receiver, together with the frequencies at which they should be adjusted, are pictured in the diagram. Before aligning the I.F. amplifier, the generator must be connected to the grid of the 12SK7 R.F. tube through a .1 mfd. condenser. Before aligning the short wave band, connect the signal generator to the "OUTSIDE ANTENNA" post through a 400 ohm resistor.

Broadcast Band—535 to 1720 kc.

Short Wave Band—5.6 to 24.0 mc.



OPERATION OF PUSHBUTTONS

Four pushbuttons are provided. These pushbuttons operate in pairs, the left two control the choice of either battery or AC-DC power supply. The right two select either the Shortwave or the Broadcast band, as desired.

For example, when it is desired to operate the Broadcast band from house current, plug the electric cord into the light socket. Rotate the left-hand knob approximately half way to the right and push the button marked A.C.-D.C. and the button marked B.C. If after a period of one minute the dial light does not light or the electric hum is too apparent, reverse the plug in the light socket. WHEN OPERATING THIS RECEIVER FROM THE HOUSE CURRENT BE ABSOLUTELY SURE THAT THE DIAL LIGHT IS LIT AND THAT THE A.C.-D.C. PUSHBUTTON IS PUSHED.

To turn off the receiver it is only necessary to turn the left-hand knob to the left until the red indicator disappears, regardless of the position of the buttons.

In order to light the pilot light for the dial ON BATTERY OPERATION, the switch button on the lower left-hand ledge inside the front door must be pressed down. When the button is released the light is switched off automatically to save the batteries.

Short Wave Band: 5.63 to 16.56 mc.; or 18.2 to 53.2 meters

BATTERY INSTALLATION

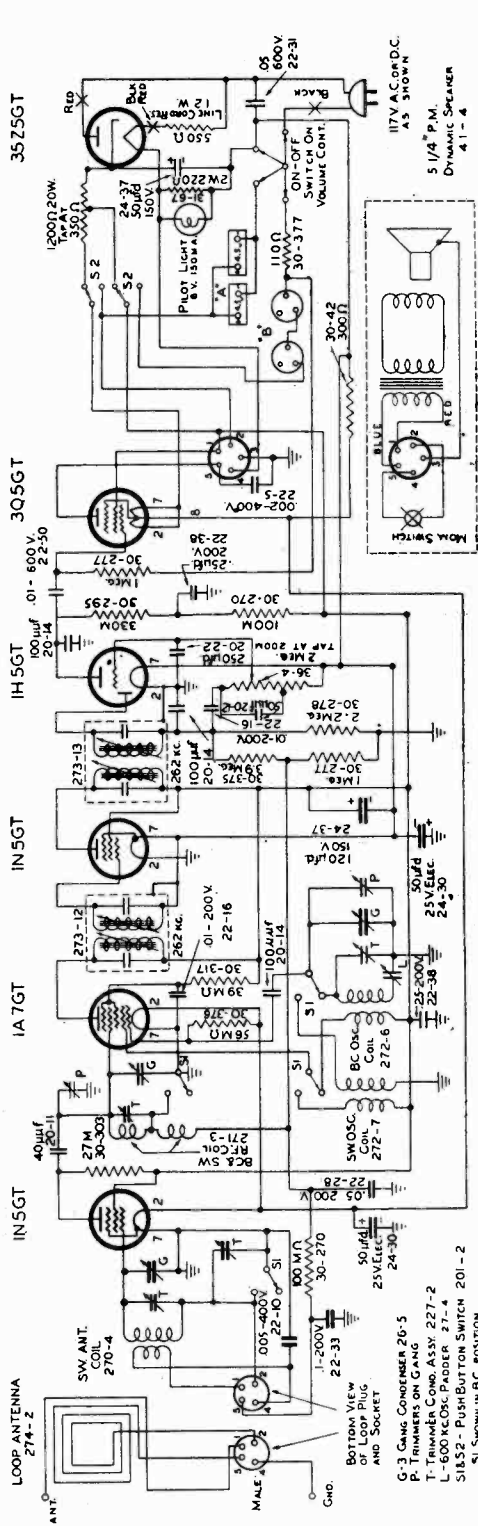
Remove the screws from the back and carefully lift off the back. When removing the batteries, first unscrew clamps, and then remove battery plugs. Be sure not to pull on the cables, but on the plugs themselves.

Place the new "A" and "B" batteries in position shown on diagram below and replace clamps in position shown below.

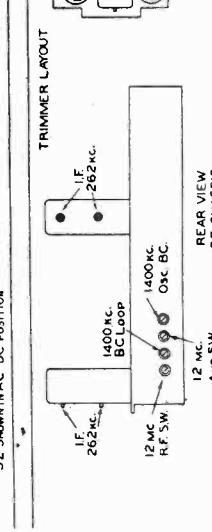
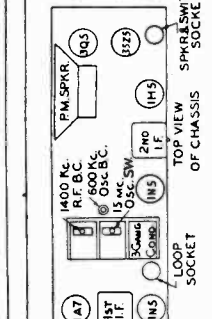
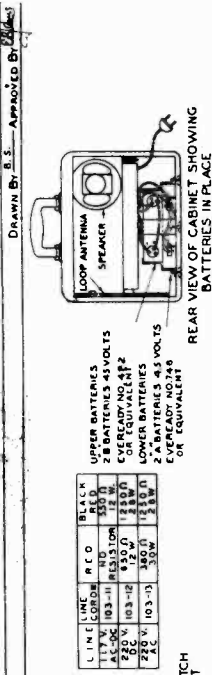
The blue and white cable, coming from the chassis, has two 2-prong plugs which are then plugged into the "A" batteries. The red and black cable has two 3-prong plugs, both of which are plugged into the "B" batteries.

The I.F. amplifier may be aligned with the chassis out of the cabinet but with the loop antenna plugged in. For the I.F. alignment the signal generator must be connected to the grid of the 1A7GT tube through the .1 mfd. condenser. The R.F. trimmers should also be peaked for maximum with the chassis out of the cabinet. When aligning the ANT. trimmers, the "A" and "B" batteries must be in place, the loop antenna and receiver correctly mounted in the cabinet. The receiver may be aligned on either batteries or house current. When the receiver is aligned on the broadcast band, connect the signal generator to the ANT. post at the back through a .0002 mfd. condenser, and on the shortwave band use a 400 ohm carbon resistor.

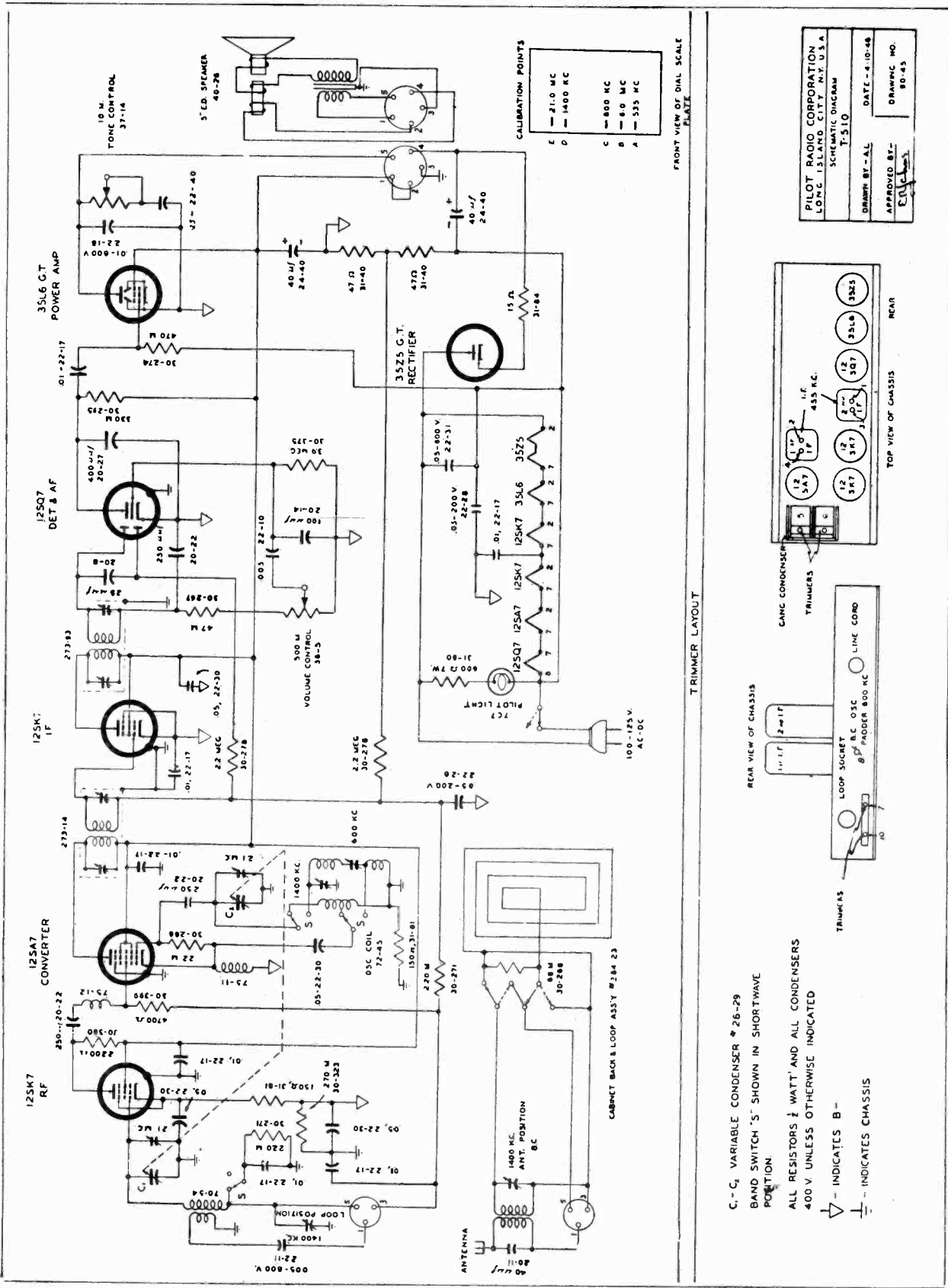
Broadcast Band: 187 to 561 meters; or 535 to 1605 kc.



ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED



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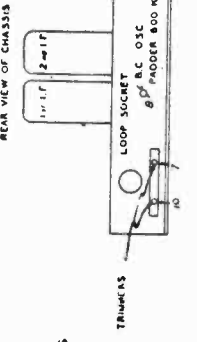
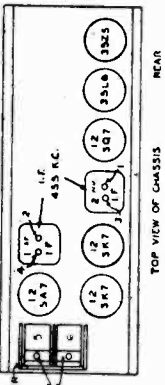


CALIBRATION POINTS

E	21.0 MC
D	1400 KC
C	800 KC
B	6.0 MC
A	535 KC

FRONT VIEW OF DIAL SCALE PLATE

PILOT RADIO CORPORATION
 1000 E. CHRYSLER BLDG.
 CHICAGO, ILL. U.S.A.
 SCHEMATIC DIAGRAM
 T-511
 DRAWN BY - AL
 DATE - 4-10-48
 APPROVED BY - [Signature]
 DRAWING NO. 80-45



C₁ - C₂ VARIABLE CONDENSER # 26-29
 BAND SWITCH 'S' SHOWN IN SHORTWAVE POSITION
 ALL RESISTORS 1/2 WATT AND ALL CONDENSERS 400 V UNLESS OTHERWISE INDICATED
 ∇ - INDICATES B -
 ⊥ - INDICATES CHASSIS

Alignment should be attempted only if a low range A.C. meter, a signal generator, and insulated alignment tools are at your disposal. The A.C. meter is used as an outputmeter. The signal generator must cover a frequency range from 450 kc to 24 mc. It is essential that the signal generator be connected to the points indicated in the alignment chart through the proper dummy antenna.

A good ground connection, secured between the groundpost of the signal generator and the chassis, is necessary.

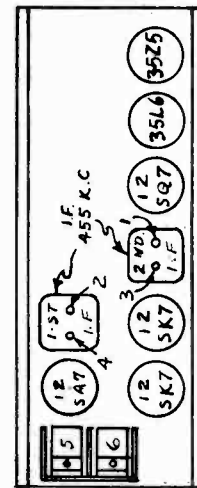
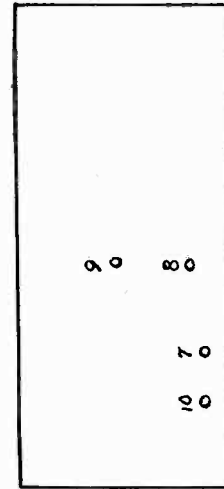
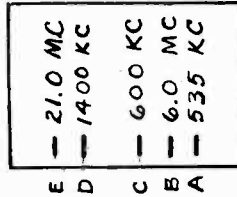
During alignment, the line voltage feeding the receiver power supply should be kept at approximately 117 volts.

The locations of adjustment screws are indicated clearly on the schematic diagram. Alignment adjustments should be made only in the sequence given in the chart.

For all alignments, connect the outputmeter across the voice coil. With the volume control turned fully clockwise, tune for a maximum reading.

ALIGNMENT CHART

STEP	RECEIVER		SIGNAL GENERATOR		DUMMY ANTENNA	ADJUSTMENTS (All maximum output)
	CIRCUIT ALIGNED	BAND SWITCH	DIAL POINTER	FREQUENCY		
1	IF	BC	Low end of dial	455 KC	0.1 mfd.	#1, 2, 3, 4
2	SW	SW	E	21 MC	400 ohm carbon resistor	First #5 Then #6
3	BC	BC	D	1400 KC	200 mmfd. mica capacitor	#7
4	BC	BC	C	600 KC	200 mmfd. mica capacitor	#8
5	Repeat steps 3 and 4					
6	BC	BC	Set for broadcast station near 1400 KC		—	#9 and #10

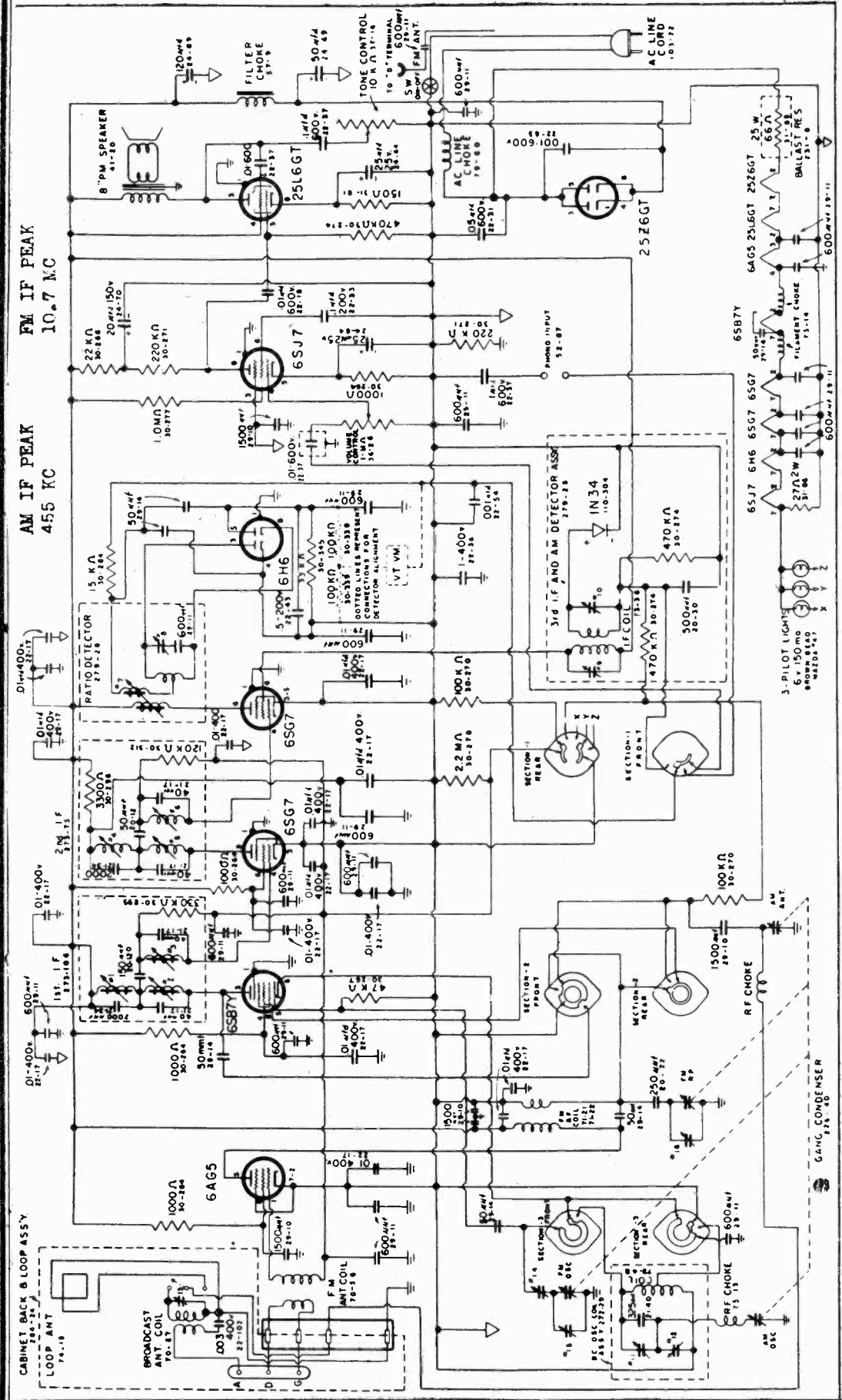


TOP

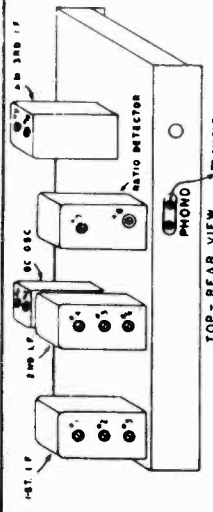
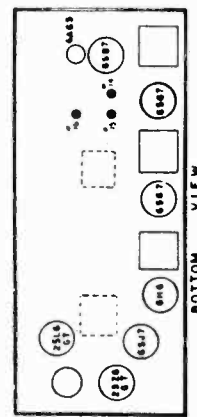
BACK

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MODEL T-521



- NOTES**
- Band Switch Shown in FM Position
- 9- AM 3rd IF 455 Kc, Primary
 - 10- AM 3rd IF 455 Kc, Secondary
 - 11- BC Dtc Padder
 - 12- BC Osc Trimmer
 - 13- Ant BC Trimmer (on rear cover)
 - 14- FM Osc Padder
 - 15- FM Osc Trimmer
 - 16- FM R.F. Trimmer
- ALIGNMENT ADJUSTMENTS**
- 1- 1st IF 455 Kc
 - 2- 1st IF 10.7mc, Primary
 - 3- 1st IF 10.7mc, Secondary
 - 4- 2nd IF 455 Kc
 - 5- 2nd IF 10.7mc, Primary
 - 6- 2nd IF 10.7mc, Secondary
 - 7- Ratio Detector 10.7mc, Primary
 - 8- Ratio Detector 10.7mc, Secondary

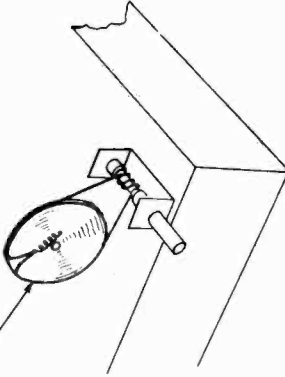


ALIGNMENT CHART

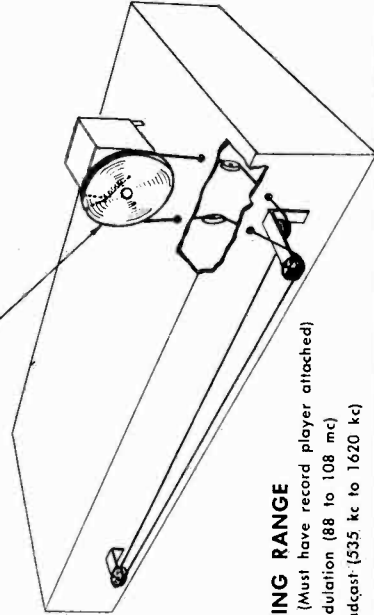
(FOLLOW SEQUENCE AS INDICATED)

CIRCUIT ALIGNED	RECEIVER		SIGNAL GENERATOR		METER CONNECTIONS		TRIMMER OR SLUG ADJUST	PROCEDURE
	STEP	BAND SWITCH	DIAL POINTER	FREQ.	CONNECTIONS	TYPE See List		
AM I.F.	1	BC	55	435 KC	Through .1 MFD cap. to Grid of 6SB7Y	A	1, 4, 9, 10	Adjust for Maximum Output
FM I.F.	2	FM	88	10.7 MC	Through .1 MFD cap. to Grid of 6SB7Y	A	2, 3, 5, 6, 7, 8	Adjust for Maximum Output
Radio-detector	3	FM	88	10.7 MC	Through .1 MFD cap. to Grid of 6SB7Y	B	8	Adjust meter to zero. (Check proper zero set. Meters should register reverse polarity when trimmer is turned slightly to the right, and then to the left of zero output)
Broadcast R.F.	4	BC	150	1500 KC	Through 200 mmf. cap. to Antenna "A" Post on back.	A	12, 13	Adjust for maximum output
	5	BC	60	600 KC	Through 200 mmf. cap. to Antenna "A" Post on back.	A	11	Adjust for maximum output while rocking variable condenser
6 REPEAT STEPS 4 AND 5 AND REPLACE BOTTOM COVER OF CHASSIS								
Frequency Modulation R.F.	7	FM	106	106 MC	To "D" and "G" Antenna Terminals	A	15, 16	Adjust for maximum output
	8	FM	90	90 MC	To "D" and "G" Antenna Terminals	A	14	Adjust for maximum output
9 REPEAT STEPS 7 AND 8								

FRONT SECTION OF PULLEY



REAR SECTION OF PULLEY



TUNING RANGE

- Band (1) — Phonograph - (Must have record player attached)
- Band (2) — Frequency Modulation (88 to 108 mc)
- Band (3) — Standard Broadcast (535 kc to 1620 kc)

FM Antenna

Special attention should be given to the selection of the antenna used on F.M. The receiver as shipped from the factory contains a built-in "line-cord" aerial that is connected by a spade lug to terminal "D" on the rear of the receiver. This aerial will be found satisfactory for many conditions.

Improved results on weak or distant stations, or in locations unfavorable to F.M. reception, can be had by using the "Pilot" F.M. antenna, packed with each set.

To install the special "Pilot" F.M. antenna, connect the spade lugs at the base of the "T" shaped aerial to terminals "D" and "G" on the rear of the receiver. The two remaining ends may be stretched out under a rug or fastened to a moulding. Try to locate a favorable position in the room, preferably near the window, in order to take advantage of the directional effect of this antenna.

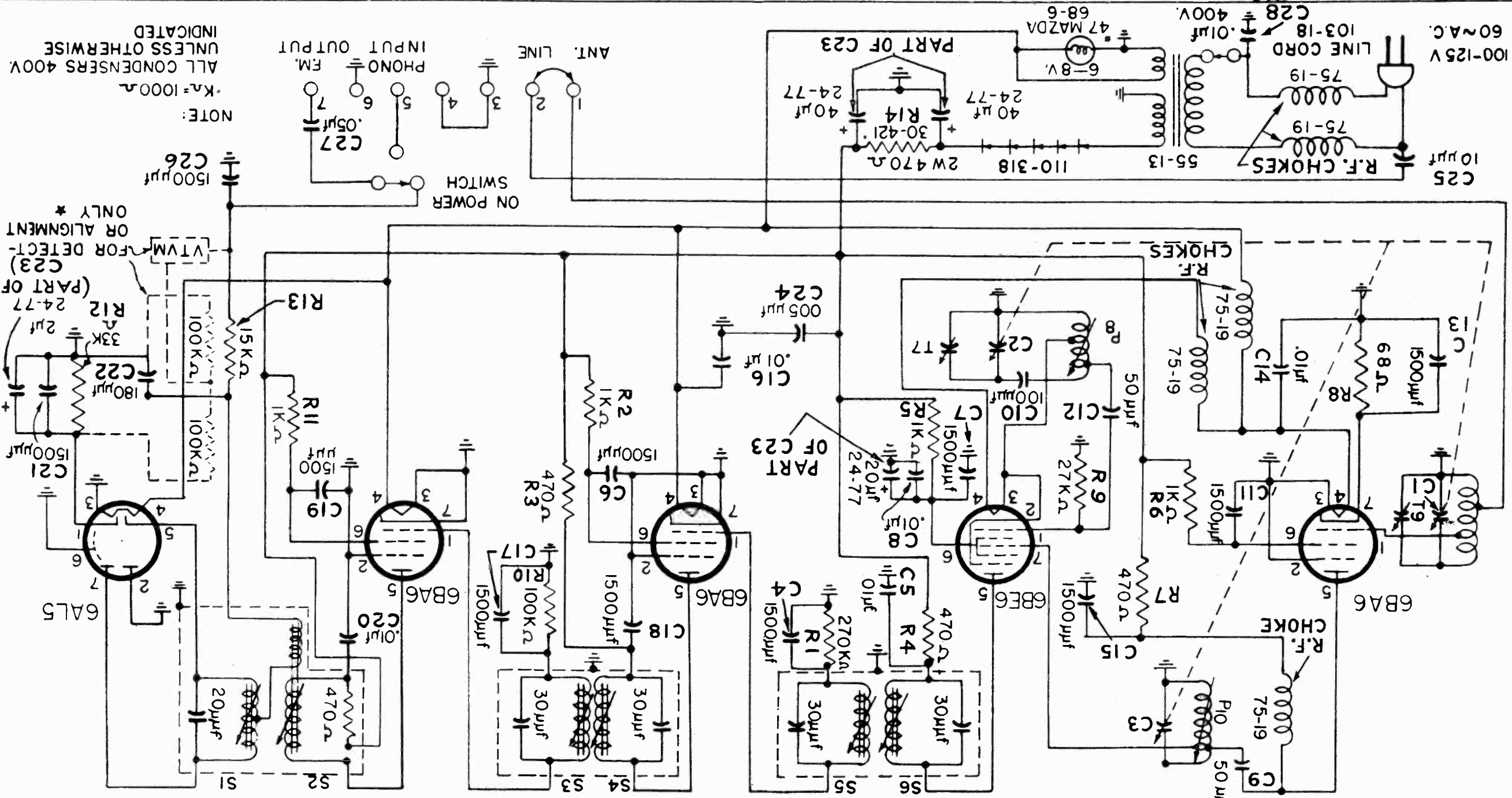
In rare cases, where the receiver is located a great distance from the station or is centrally located in a steel building, an outside dipole antenna may be found necessary. Where an outside dipole is used, the ends of the lead-in, should be connected to "D" and "G" terminals on the rear of the receiver.

PILOT RADIO CORP.

RATIO DETECTOR & CAN ASSY
279-34

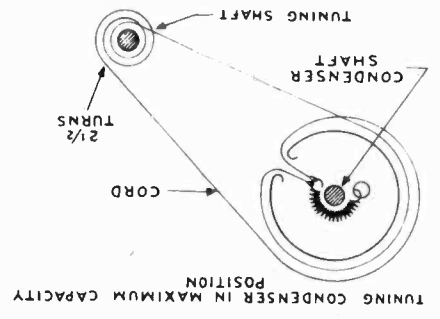
2nd I.F. & CAN ASSY
273-119

1st I.F. & CAN ASSY
273-117



NOTE:
 * $k_a = 1000\Omega$
 ALL CONDENSERS 400V
 UNLESS OTHERWISE
 INDICATED

TO ALIGN RECEIVER USE FREQUENCIES AS
 INDICATED ON LEFT. ADJUST ALL TRIMMERS
 FOR MAX. D.C. OUTPUT ACROSS $33k\Omega$ RESISTOR
 IN 6AL5 CIRCUIT.
 * TO ALIGN SECONDARY OF RATIO DETECTOR
 CONNECT METER AS INDICATED IN SCHEMATIC
 AND ADJUST S_1 FOR ZERO OUTPUT.



- S1 RATIO DETECTOR SEC. 10.7 MC
- S2 RATIO DETECTOR PRI. 10.7 MC
- S3 2ND I.F. SEC. 10.7 MC
- S4 2ND I.F. PRI. 10.7 MC
- S5 1ST I.F. SEC. 10.7 MC
- S6 1ST I.F. PRI. 10.7 MC
- S7 OSC. TRIMMER 106 MC
- S8 OSC. PADDER 90 MC
- S9 ANT. TRIMMER 106 MC
- S10 R.F. PADDER 90 MC

DRAWN BY: [illegible] CHECKED BY: [illegible] DATE: 5/18/47

PILOT RADIO CORP. LONG ISLAND CITY, N.Y. U.S.A.

DWG. NO. 90-58 MODEL NO. 1601

ALIGNMENT CHART
(Follow sequence as indicated)

CIRCUIT ALIGNED	STEP	RCVR. DIAL POINTER	SIGNAL GEN. CONNECTIONS	METER	METER CONNECTIONS	TRIMMER OR SLUG ADJUSTMENT	PROCEDURE
IF	1	88 mc	10.7 mc	VTVM	Across two 100K resistors indicated by dotted lines in schematic	S2, S1, S4, S3, S6, S5	Adjust for maximum output
	2		Repeat Step No. 1				
Ratio Detector	3	88 mc	10.7 mc	VTVM	Same as No. 1	S1	Adjust meter to zero (Check proper zero set) Meter should register reverse polarity when slug is rotated through zero output.
Oscillator	4	90 mc	90 mc	VTVM	From: Junction of two 100K resistors TO: Audio output of ratio detector. Connections indicated by dotted lines in schematic	P8	Same as Step No. 1
	5	106 mc	106 mc	VTVM	Same as No. 1	T7	Same as No. 1
	6		Repeat Steps No. 4 & 5				
	7	90 mc	90 mc	VTVM	Same as No. 1	P10	Same as No. 1
	8	106 mc	106 mc	VTVM	Same as No. 1	T9	Same as No. 1

SENSITIVITY

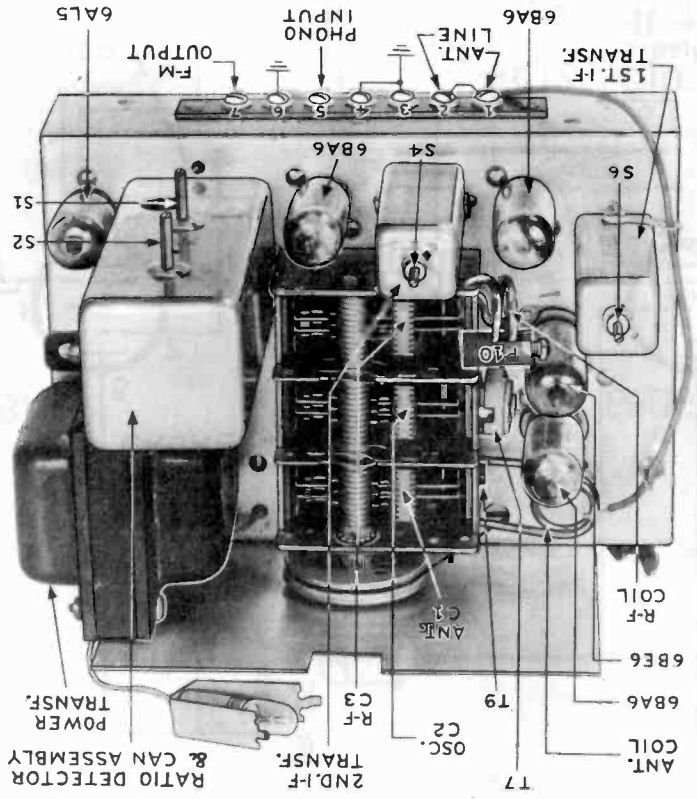
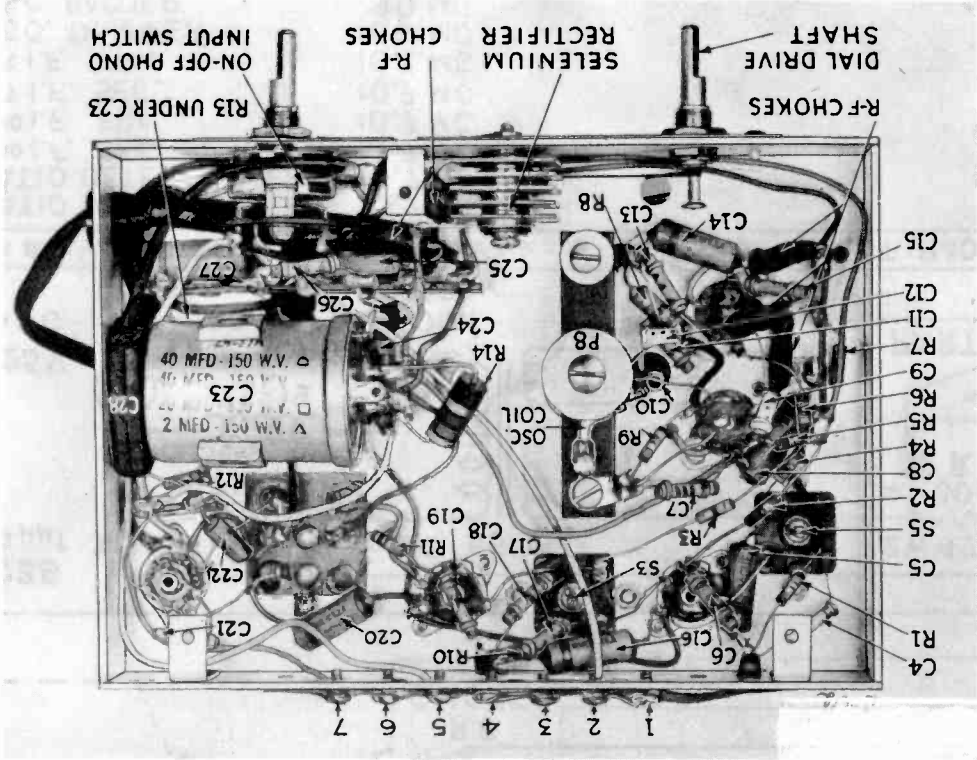
Approximately 25 Microvolts for $\frac{1}{2}$ watt output when coupled to an audio amplifier consisting of a triode and power pentode. Perfect quieting.

AUDIO RESPONSE

All frequencies up to 12000 cycles. Less de-emphasis than required by transmitter standards, in order to equalize possible deficiencies in the frequency response of audio amplifiers in old AM receivers.



MODEL 7601
Pilotuner



MODEL 7601
Pilotuner

PILOT RADIO CORP.

MODEL T601
Pilotuner

PILOTUNER MODEL T-601

TUBE	PIN	VTVM	20,000 P.V.	1,000 P.V.	RESISTANCE
6AB6 RF Ampl	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	AC	AC	AC	0.2 Ω
	5	98	98	98	Over 1 meg
	6	98	98	98	Over 1 meg
	7	0.8	0.8	0.8	70 Ω
6BE6 Conv	1	-1.5	-0.4	-0.2	28 K
	2	0	0	0	0
	3	0	0	0	0
	4	AC	AC	AC	0.2 Ω
	5	98	98	98	Over 1 meg
	6	92	92	92	Over 1 meg
	7	0	0	0	0
6BA6 IF Ampl	1	0	0	0	270 K
	2	0	0	0	0
	3	0	0	0	0
	4	AC	AC	AC	0.2 Ω
	5	94	94	94	Over 1 meg
	6	94	94	94	Over 1 meg
	7	0	0	0	0
6BA6 IF Ampl	1	0	0	0	100 K
	2	C	0	0	0
	3	0	0	0	0
	4	AC	AC	AC	0.2 Ω
	5	94	94	94	Over 1 meg
	6	94	94	94	Over 1 meg
	7	0	0	0	0
6AL5 Ratio Detector	1	1	0.6	0.4	33 K
	2	0	0	0	0
	3	0	0	0	0
	4	AC	AC	AC	0.2 Ω
	5	0.5	0.3	0.2	Infinite
	6	0	0	0	0
	7	0.5	0.3	0.2	Infinite

NOTE: Selenium rectifier D.C. voltage output in 125 V.

NOTE: All voltage and resistance measurements made with respect to chassis ground and with a line voltage of 116 V.A.C.

NOTE: All values are positive unless indicated otherwise.

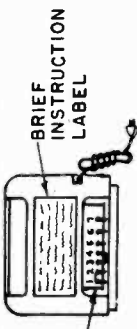
**MODEL T601
Pilotuner**

PILOT RADIO CORP.

GENERAL

The FM PILOTUNER is a complete, superheterodyne frequency modulation unit, consisting of 5 miniature tubes and a selenium rectifier. It contains its own power supply, designed for AC operation only. However, it does not contain a loudspeaker and audio system. Therefore, the FM PILOTUNER must be connected and operated through your own radio receiver, or separate phonograph record player or amplifier system. All installation connections, from and to the FM PILOTUNER are made to the terminals on the back of the cabinet, numbered from 1 to 7.

TERMINAL CONNECTIONS



A brief resume of the installation instructions is printed on the label attached to the back of the cabinet. For complete explanation, follow the detailed instructions contained in this booklet.

ANTENNA CONNECTIONS

The choice of antenna to be used for the best FM reception depends on many factors: your location, the type of building, power, and distance of the FM station. The three main types of antennas are explained below. Test your FM PILOTUNER and choose the one most practical for your use.

A. For local high-powered FM stations: The PILOTUNER, when shipped from the factory, is equipped with a permanent built-in antenna that will be satisfactory for good reception of most local FM stations. This built-in antenna is connected internally through a wire link between terminals No. 1 and No. 2. For best results when using the built-in antenna, keep the electric line cord extended to its full length and separated from the connector cable of the PILOTUNER.



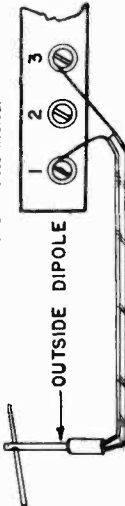
WIRE LINK

B. For local weak-powered FM stations: Improved reception of weak FM stations may be obtained, in some localities, by disconnecting the wire link between terminals No. 1 and No. 2, and attaching a 4 ft. length of wire to terminal No. 1. Keep this wire stretched out at full length in order to secure the maximum signal pick-up.



4 FT. WIRE

C. For distant FM stations: In a few cases, an outside FM dipole antenna may be found to be necessary when the FM PILOTUNER is operated at a great distance from the broadcasting station, or under unusual operating conditions. The outside dipole antenna (equipped with a 300 ohm flat lead-in) should be connected to terminals No. 1 and No. 3, after the wire link between terminals No. 1 and No. 2 has been disconnected.



CONNECTIONS FROM PILOTUNER TO RADIO RECEIVER

A 5 ft. shielded cable is furnished with the FM PILOTUNER to facilitate connecting the tuner to your radio receiver, or separate phonograph, record player or amplifying system. One end of this cable is provided with spade lugs for easy connection to the terminals at the back of the PILOTUNER.



Attach the center wire of one end of the connector cable to terminal No. 7; attach the outside shielded wire of the same end of the connector cable to terminal No. 6.



Now, the FM PILOTUNER is ready for attachment to your radio receiver. The method of connecting the PILOTUNER will depend on whether the radio receiver is a combination set with phonograph, a radio with phonograph outlet only, or a radio without phonograph or phonograph outlet.

A. Combination Radio Receiver with Phonograph: Locate the phonograph terminal at the back of your radio receiver chassis. Usually it will be marked PHONO or TELEVISION. There are, in general, three different types of phonograph terminals on standard receivers, as follows:

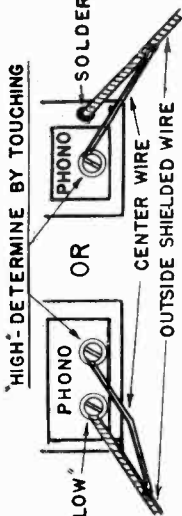


1. Screw-type Phono Terminal:

Disconnect any wires attached to this type of phono terminal, and mark them for future reference.

SCREW TYPE

Attach center wire of the free end of the PILOTUNER connector cable to the "high" side of the phono terminal. You can determine the "high" side by touching each of the screws of the phono terminal with the radio receiver in operation, and the selector switch on PHONO position: the "high" side will cause speaker hum. Then attach the outside shielded wire of the phono terminal, if there is only one screw on the phono terminal of your radio receiver, it will be the "high" side.

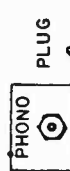


HIGH - DETERMINE BY TOUCHING

Therefore, connect the outside shielded wire of the PILOTUNER connector cable firmly, preferably by soldering, to the radio receiver chassis.

2. One-hole Plug Phono Terminal:

Remove plug from phono terminal. Disconnect wires attached to the plug, and mark for future reference.



Connect center wire of PILOTUNER connector cable firmly, preferably by soldering, into center stem of plug ("high" side), and then connect outside shielded wire of connector cable firmly to the outside shield cap of plug ("low" side). Replace plug into single-hole phono terminal.

3. Two-hole Plug Phono Terminal:



Remove plug from phono terminal. Disconnect wires attached to the plug, and mark for future reference. Connect center wire of PILOTUNER connector cable firmly, preferably by soldering, into one stem of the plug ("high" side), and outside shielded wire of connector cable into other stem of plug ("low" side). Replace two-hole plug into phono terminal.

B. Radio receiver with Phono Outlet only (no Phonograph):

Connection of the PILOTUNER will be made similar to the instructions outlined in paragraph III A above, except that no phonograph leads have to be disconnected.

C. Receiver without Phonograph or Phono Outlet

THIS INSTALLATION MUST BE MADE BY A COMPETENT RADIO SERVICE TECHNICIAN SINCE IT IS NECESSARY TO WIRE THE PILOTUNER DIRECTLY INTO THE CIRCUIT OF YOUR RADIO RECEIVER.

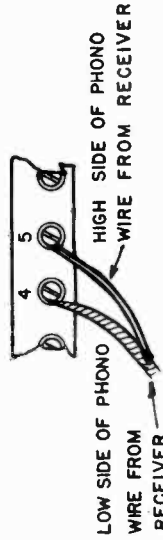
IV. CONNECTIONS FROM PILOTUNER TO SEPARATE PHONOGRAPH, RECORD PLAYER OR AMPLIFIER SYSTEM

Connection of the PILOTUNER is possible in accordance with instructions outlined in paragraphs III A, 1, 2 and 3 above, provided there is a phono terminal available. However, if there is no phono terminal, this type of installation must be made by a radio service technician, following the instructions given in paragraph III C, above.

CONNECTIONS FROM RADIO RECEIVER PHONOGRAPH TO PILOTUNER

If you disconnected any wires from the phonograph terminal of your radio receiver in order to connect the FM PILOTUNER (paragraph III A, 1, 2 and 3, above), locate these wires which you marked for future reference.

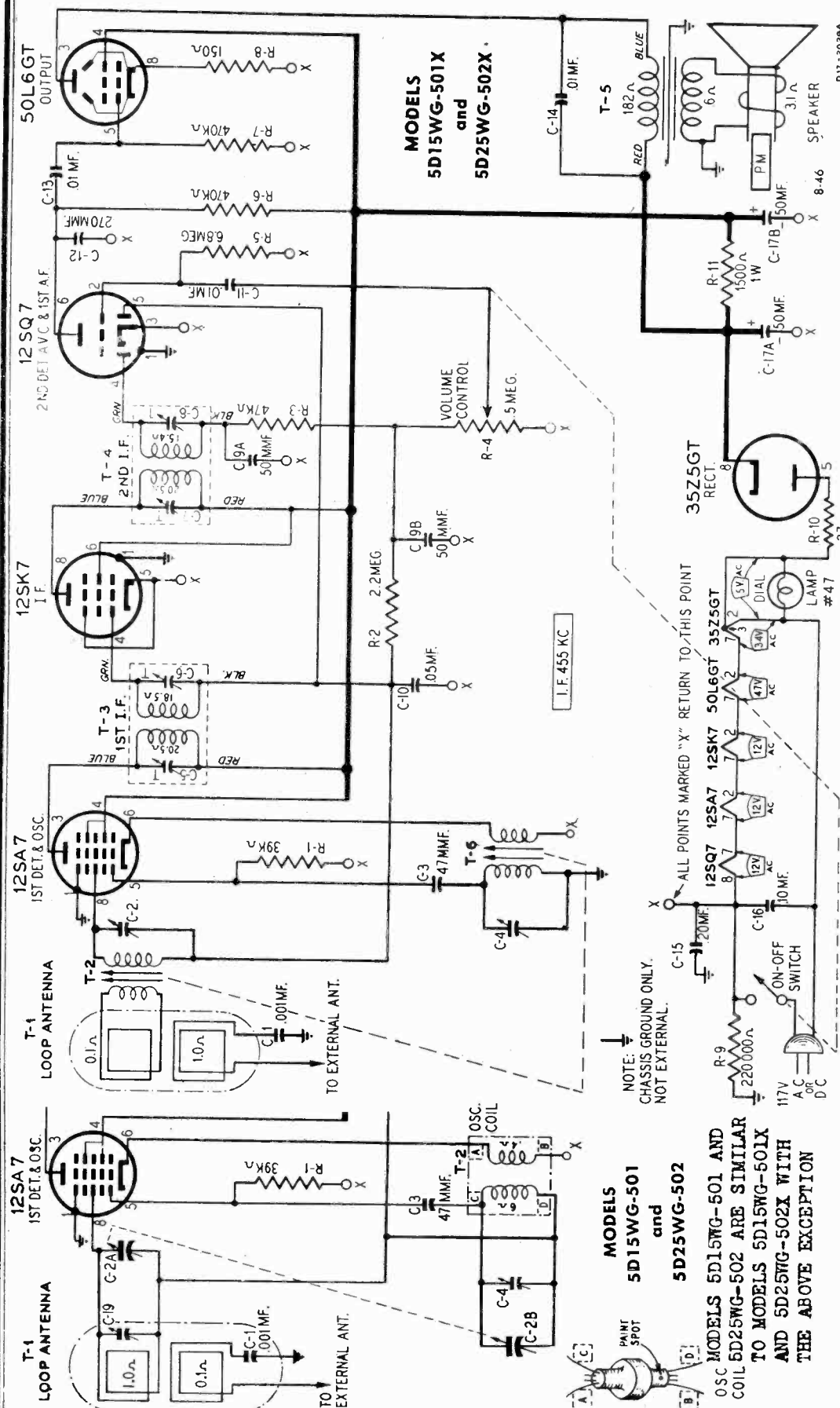
Attach the "high" side of the phonograph wire from your radio receiver to terminal No. 5 of the PILOTUNER, and attach the "low" side of the phonograph wire from your radio receiver to terminal No. 4 of the PILOTUNER. The phonograph of your combination radio will operate normally when the ON-OFF switch of the PILOTUNER is in the OFF position.



LOW SIDE OF PHONO WIRE FROM RECEIVER
HIGH SIDE OF PHONO WIRE FROM RECEIVER

PURE OIL CORP.

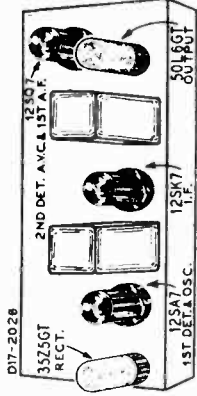
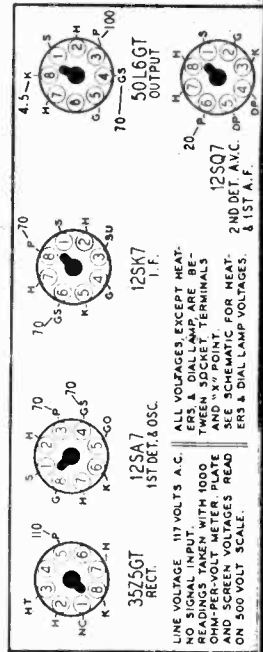
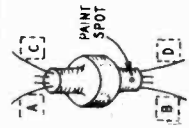
MODELS 5D15WG-501,
5D25WG-502
MODELS 5D15WG-501X,
5D25WG-502X



MODELS
5D15WG-501X
and
5D25WG-502X

MODELS
5D15WG-501
and
5D25WG-502

OSC COIL MODELS 5D15WG-501 AND 5D25WG-502 ARE SIMILAR TO MODELS 5D15WG-501X AND 5D25WG-502X WITH THE ABOVE EXCEPTION



NOTE: CHASSIS GROUND ONLY. NOT EXTERNAL.

ALL POINTS MARKED "X" RETURN TO THIS POINT

Tuning Frequency Range.....540 to 1600 KC
Power Consumption.....30 watts (At 117 volts AC)
Power Output...1.5 watt maximum, .9 watt (10% harmonics)

PARTS LIST

26A404	T-1	"B" Range Loop Antenna Assembly (for walnut cabinet)
9A1805	T-2	Oscillator Coil Assembly
9A1808	T-3	1st I-F Coil Assembly
9A1809	T-4	2nd I-F Coil Assembly
51X123	T-5	Output Transformer
CAPACITORS		
D67102	C-1	.001 mf 400 V Tubular
26A402	C-2A	C-2B Gang Capacitor Assembly
47X446	C-3	75 mf C-2 (Gang Capacitor) Moulded
	C-5	Part of T-3 (2nd I-F Transformer)
	C-6	Part of T-4 (2nd I-F Transformer)
47X112	C-7	C-8 Part of T-4 (2nd I-F Transformer) Dual mica
B66103	C-9A	C-9B 50 mf 200 V Moulded
47X468	C-10	200 V Tubular
B67104	C-11	200 V Tubular
	C-12	220 mf 150 V Dry Electrolytic
	C-13	150 V Tubular
	C-14	.01mf 200 V Tubular
	C-15	10 mf 400 V Tubular
	C-16	10 mf 400 V Tubular
	C-17A	50 mf 150 V Dry Electrolytic
	C-17B	50 mf 150 V Dry Electrolytic
B66503	C-18	.05 mf 200 V Tubular
17A123	C-19	1.0-12 mfm 200 V Trimmer

RESISTORS		
B81393	R-1	39,000 ohms 0.5 watt Carbon
B85225	R-2	2.2 mfu 0.5 watt Carbon
B85473	R-3	37,000 ohms 0.5 watt Carbon
36X352	R-4	500,000 ohms Volume control and line switch
B85685	R-5	6.8 meg ohms 0.5 watt Carbon
B85474	R-6	470,000 ohms 0.5 watt Carbon
B83151	R-7	150 ohms 0.5 watt Carbon
B85224	R-8	220,000 ohms 0.5 watt Carbon
B84270	R-9	220,000 ohms 0.5 watt Carbon
B84270	R-10	27 ohms 0.5 watt Carbon
C85152	R-11	1500 ohms 1.0 watt Carbon

DIAL AND DRIVE ASSEMBLY

26A401	Pointer Bracket Assembly complete with light diffuser holder, string guide and idler pulleys
41X74	Dial light diffuser
6X21	Pointer
20X329	Rubber Grommet
26X482	Drive shaft (for drive shaft)
19X192	53" Drive cord (18 lb test)
28X95	Drive cord tension spring
7A194	Pilot light socket assembly No. 47 Pilot light
58X599	Dial clamp (upper)
30X508	Dial clamp (lower)
30X509	Dial clamp

MISCELLANEOUS

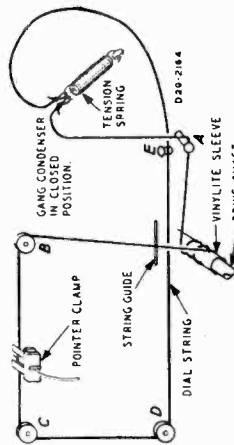
12A432	5" P.M. speaker
	See coil assembly (specify part number and letters stamped on speaker)
3A303	Tube socket (8 prong) moulded
10A300	Knob (ivory)
10A297	Knob (walnut)
55X255	Cabinet (ivory)
55X267	Cabinet (walnut)
28X292	Chassis button (mounting loop to chassis)
	No. 6 screw (mounting loop to chassis)
	No. 6 screw (mounting loop to cabinet)
14X335	Grille metal
	Grille, cloth No. 426 Egg Shell (for ivory cab)
	Grille, cloth No. 418 Brown (for walnut cab)
13X328	Line cord and plug assembly
26A403	T-1 "B" Range Loop Antenna Assembly (for ivory cabinet)

ALIGNMENT PROCEDURE

Check dial pointer position, see DIAL CALIBRATION paragraph.
Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Volume Control—Maximum All Adjustments.
Output Indicating Meter: Non-Metallic Screw-driver.
Allow Chassis and Signal Generator to "Heat Up" for several Minutes.
The equipment in column at right is required for aligning:

FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	GANG CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
455 KC	Control Grid 12SK7—I.F. Prong No. 4	Point "X" 12SK7—I.F. Prong No. 3	.1 mf. Turn Rotor to full open	Turn Rotor to full open	2nd I.F. (C7) & (C8)
455 KC	Control Grid 12SA7—1st Det. Prong No. 8	Same As Above	.1 mf. Turn Rotor to full open	Turn Rotor to full open	1st I.F. (C5) & (C6)
1620 KC	Control Grid 12SA7—1st Det. Prong No. 8	Same As Above	.1 mf. Turn Rotor to full open	Turn Rotor to full open	Oscillator (C4)
1400 KC	External Antenna Clip On Loop	Chassis	50 mfm. Turn Rotor to maximum output See Note A	Turn Rotor to maximum output See Note A	Antenna (C-19)

stalled, stretch the tension spring and tie free end of cord to spring. Cut off excess string.

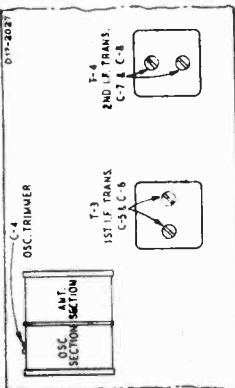


DRIVE CORD REPLACEMENT

Turn the large drive pulley to the maximum counterclockwise position. Use a new 53 inch drive cord, tie one end to the tension spring and fasten the other end of the spring to the drive pulley. Install the cord as shown in the illustration. Wind 2 3/4 turns counterclockwise around the tuning shaft with the turns progressing away from the chassis. After string is in-

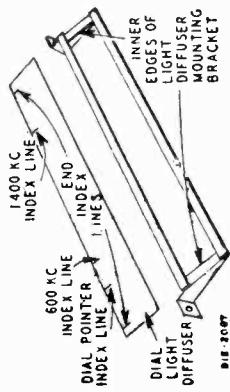
NOTICE: There is a power rating label on the chassis. This label specifies the power supply on which the radio may be used, and identifies the radio as to chassis, dial and issue letter. When ordering parts or writing, give ALL information appearing on this label.

- Selectivity.....55 KC Broad at 1000 Times Signal
- Intermediate Frequency.....455 KC
- Speaker.....5" PM Dynamic
- Sensitivity (for .05 watt output).....25 microvolts average



Note A—Set dial pointer to 1400 KC Index line on dial light diffuser.

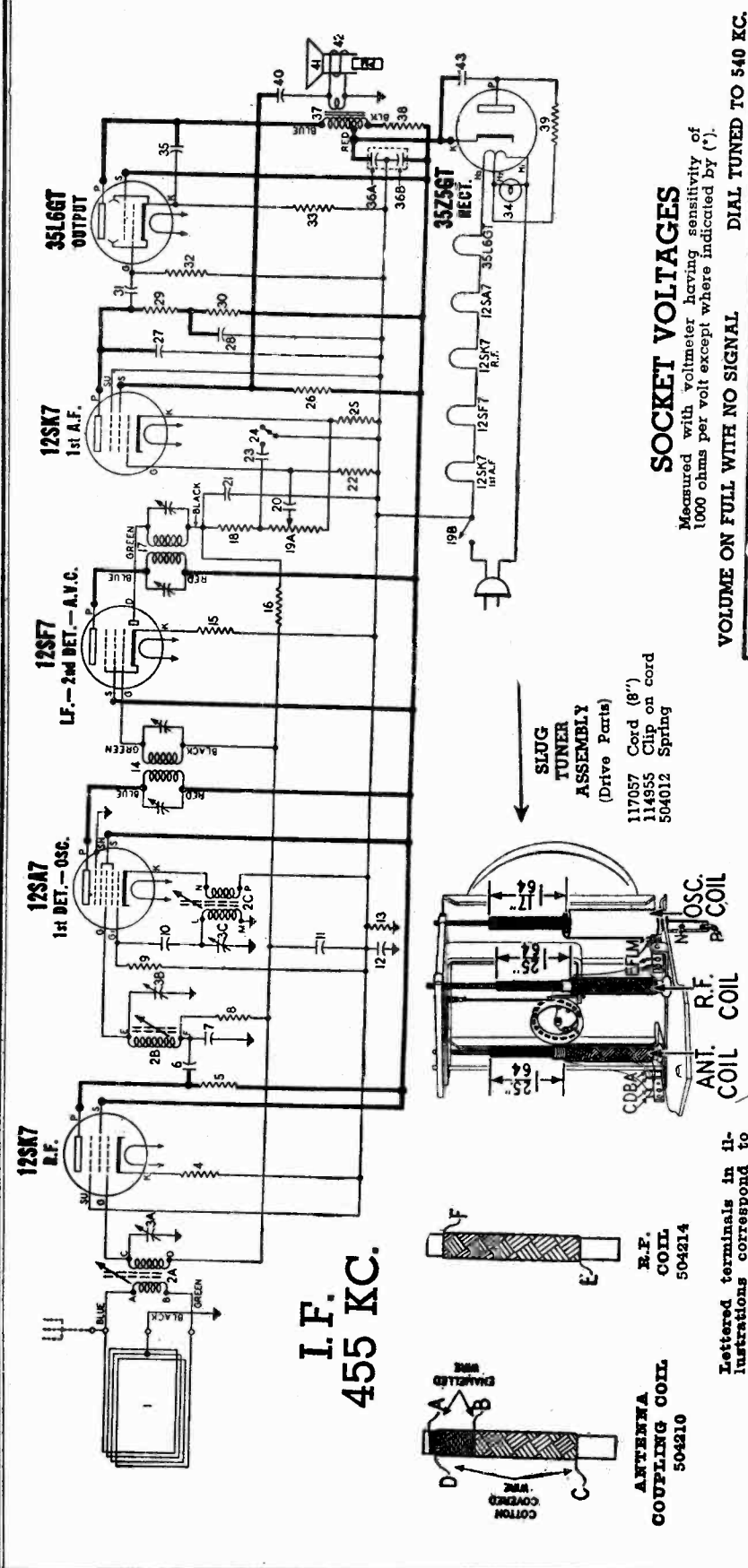
DIAL CALIBRATION



In order to align the receiver, the dial string must be positioned on the dial string correctly with reference to the dial. Index lines are provided on the dial light diffuser for this purpose.

Before aligning the receiver (or when replacing the dial light diffuser) check the position of the diffuser strip, making certain that the two extreme index lines are aligned with the inner edges of the diffuser mounting bracket opening. The bracket should be crimped to prevent movement of the diffuser strip. To position

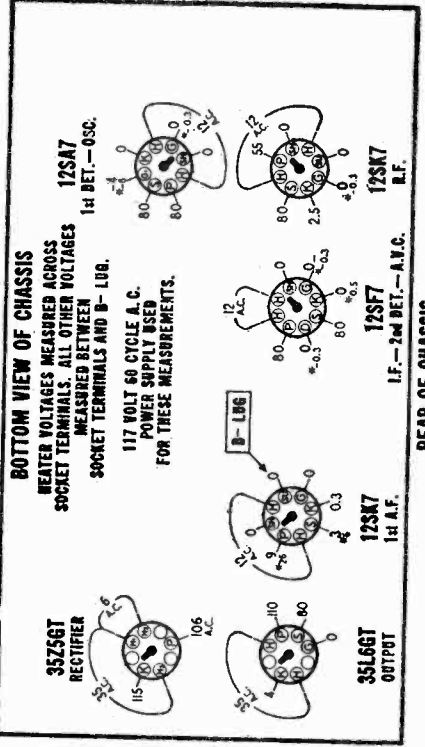
PURE OIL CORP.



SOCKET VOLTAGES

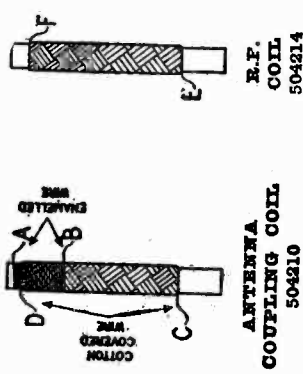
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.

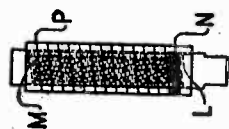


REAR OF CHASSIS

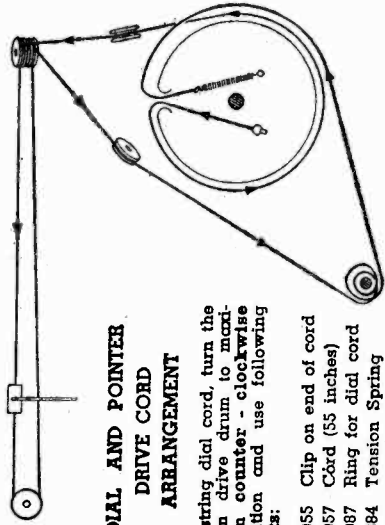
*—Measured with vacuum tube voltmeter



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

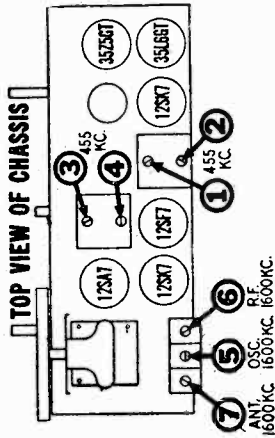


DIAL AND POINTER DRIVE CORD ARRANGEMENT



To string dial cord, turn the main drive drum to maximum counter-clockwise position and use following parts:
 114955 Clip on end of cord
 117057 Cord (55 inches)
 119087 Ring for dial cord
 181384 Tension Spring

- SLUG CORES FOR COILS**
- ANT.—504211**
- R.F.—504215**
- OSC.—504213**



AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong side of the output transformer secondary, the system will become regenerative instead of degenerative. Under these conditions audio oscillation may result. If that occurs, oscillation may be prevented by reversing the connections to the secondary of the output transformer.

DUMMY AMT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
1 MFD. Condenser	Ungrounded terminal of trimmer No. 6 (see Fig. 2 below for location of trimmer.)	455 KC	Any point where it does not affect the signal.	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	1600 KC	3-4	1st I.F.	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
					Ant. coil tuning slug	Adjust position of slug for maximum output.
					R.F. coil tuning slug	Adjust position of slug for maximum output.
				6	Broadcast R.F.	Recheck adjustment for maximum output.
				7	Broadcast Antenna	Recheck adjustment for maximum output.

Apply a coating of speaker cement at top of each tuning core stem to prevent movement.

1. Remove chassis and loop from cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side of convenient B— location). Then reinstall chassis and loop in cabinet. The B— lead should extend from under the chassis at the back.
2. Connect ground lead of signal generator to B— lead.
3. Connect output meter across the speaker voice coil (terminals at back of speaker.)
4. Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

PARTS LIST

DIA-GRAM NO.	PART NO.	DESCRIPTION
CONDENSERS		
3-A, B, C	504086	Condenser—trimmer assembly A—20 to 270 Mmfd. B—40 to 370 Mmfd. C—40 to 370 Mmfd.
6	502271	Condenser—mica 250 Mmfd. 500 volt.
7	502185	Condenser—mica 1,000 Mmfd. 500 volt.
10	502159	Condenser—mica 50 Mmfd. 500 volt.
11	502155	Condenser—.1 Mfd. 200 volt.
12	502158	Condenser—.2 Mfd. 400 volt.
20	502453	Condenser—.002 Mfd. 400 volt.
21	502160	Condenser—mica 110 Mmfd. 500 volt.
23	502470	Condenser—.0008 Mfd. 400 volt.
27	502160	Condenser—mica 110 Mmfd. 500 volt.
28	502153	Condenser—.05 Mfd. 200 volt.
31	502156	Condenser—.004 Mfd. 400 volt.
35	502151	Condenser—.01 Mfd. 400 volt.
36-A, B	500256	Condenser—electrolytic A—40 Mfd. 150 volt. B—20 Mfd. 150 volt.
40	502152	Condenser—.02 Mfd. 400 volt.
43	502157	Condenser—.05 Mfd. 400 volt.
RESISTORS		
4	502140	Resistor—carbon 390 ohms 1/4 watt.
5	502291	Resistor—carbon 4700 ohms 1/4 watt.
8	502134	Resistor—carbon 470,000 ohms 1/4 watt.
9	502130	Resistor—carbon 22,000 ohms 1/4 watt.
13	502133	Resistor—carbon 220,000 ohms 1/4 watt.
15	502264	Resistor—carbon 47 ohms 1/4 watt.
16	502269	Resistor—carbon 3.3 Meg. 1/4 watt.
18	502131	Resistor—carbon 47,000 ohms 1/4 watt.
19-A, B	502145	Volume control 500,000 ohms (with switch)
22	502136	Resistor—carbon 10 Meg. 1/4 watt.
25	502128	Resistor—carbon 2200 ohms 1/4 watt.
26	502135	Resistor—carbon 2.2 Meg. 1/4 watt.
29, 30	502133	Resistor—carbon 220,000 ohms 1/4 watt.
32	502134	Resistor—carbon 470,000 ohms 1/4 watt.
33	502138	Resistor—carbon 130 ohms 1/4 watt.
38	502489	Resistor—carbon 1500 ohms 1 watt.
39	502574	Resistor—carbon 33 ohms 1/2 watt.
COILS & TRANSFORMERS		
1	502246	Loop antenna
2-A, B, C	504096	Tuning unit; complete assembly.
2-A	504210	Coil—antenna (less slug).
2-B	504214	Coil—R.F. (less slug).
2-C	504212	Coil—oscillator (less slug).
	504211	Slug core for Ant. coil (yellow end).
	504213	Slug core for Osc. coil (white end).
	504215	Slug core for R.F. coil (purple end).

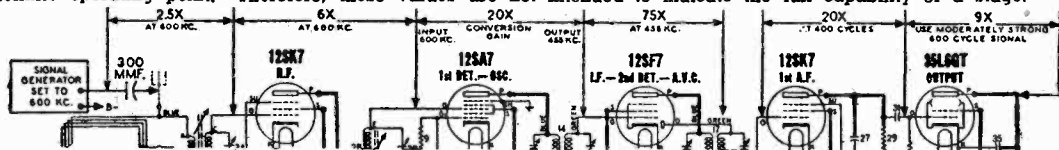
DIA-GRAM NO.	PART NO.	DESCRIPTION
14	502102	Transformer—1st I.F.
17	502103	Transformer—2nd I.F.
37	502213	Transformer—output (for R-502998 spkr.).
	502904	Transformer—output (for A-502998 spkr.).
	504244	Transformer—output (for W-502998 spkr.).
OTHER ELECTRICAL PARTS		
24	500548	Switch—tone control
34	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.
41	502214	Cone & voice coil for R-502998 spkr.
	502903	Cone & voice coil for A-502998 spkr.
42	504245	Cone & voice coil for W-502998 spkr.
	502998	Speaker—P.M. dynamic (5 inch)
MISCELLANEOUS PARTS		
	502502	Back for cabinet.
	116467	Base for mtg. electrolytic condenser.
	502476	Cabinet—ivory (Model 506).
	502477	Cabinet—mahogany (Model 507).
	502506	Clamp—dial scale mtg.
	500497	Clip—retainer for cabinet back.
	114955	Clip—retainer on end of dial cord.
	116563	Connector—for antenna leads.
	117057	Cord—dial drive (55 in. required), per ft.
	500324	Cover—cardboard, for elect. cond.
	504147	Dial scale—glass
	501186	Grounding plate (under I.F. trans. can)
	502564	Knob—ivory (Model 506).
	502563	Knob—mahogany (Model 507).
	502367	Pointer
	81145	Retaining ring for tuning shaft.
	119087	Ring for dial cord.
	85079	Rubber grommet; Ant. & R.F. coil mtg.
	504045	Rubber grommet; Osc. coil mtg.
	17063	Screw—No. 6 x 1/4
	114628	Screw—No. 8 x 1/2 chassis mtg.
	502173	Shaft—tuning control
	116890	Socket—octal base
	160392	Socket—octal (rectifier)
	500499	Socket—dial lamp (with leads).
	504012	Spring for tuning slug drive cord.
	161384	Spring—dial cord tension.
	111458	Washer—spring washer for tuning shaft

APPROXIMATE STAGE GAIN DATA

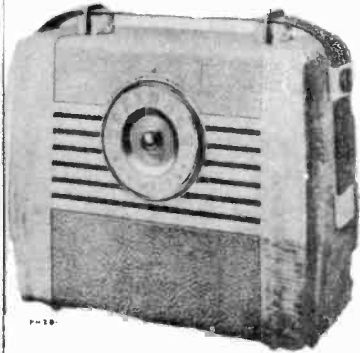
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

- For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
- For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1 1/2 volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. **IMPORTANT:** Disconnect battery when measuring audio stage gains.
- Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
- When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

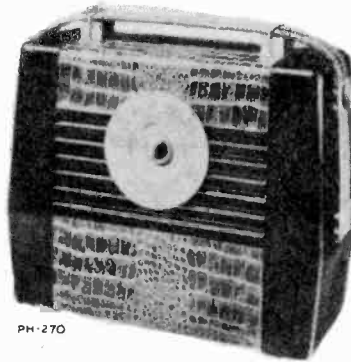
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create considerable variation in gain measurements.



Model 8BX54



Model 8BX5



Model 8BX55

Specifications

Frequency Range540-1,600 kc

Intermediate Frequency455 kc

Power Supply Rating
110 to 125 volts, AC 50 or 60 cycles, or DC...18 watts

Batteries required.....One RCA Battery Pack VS050

Tube Complement

- (1) RCA—1R5 Converter
- (2) RCA—1T4 I. F.-Amplifier (1U4 in RC-1059A)
- (3) RCA—1U5 2nd Det. AVC. & A.F.-Amplifier
- (4) RCA—3V4 Power Output
- (5) RCA—117Z3 Rectifier

Current Consumption

Battery Operation.....“A” 60 ma.; “B” 10 ma.
(Average life of RCA VS050 Battery
100 hrs. intermittent service.)

Total Rect. Current (117 volt, 60 cycle) 60 ma.

Power Output (AC Operation)

Undistorted15 watt
Maximum25 watt
(Output is slightly lower on battery operation)

Loudspeaker 4 in. P.M. 3.4 ohms at 400 cycles

Cabinet Dimensions

Height.....9½ in. Width.....11 in. Depth.....5 in.

Critical Lead Dress

1. Dress output plate bypass C20 capacitor against chassis
2. Dress output plate lead to output transformer against chassis.
3. Dress audio coupling capacitor C14 (volume control to grid of 1U5) away from chassis, away from audio limiting resistor R8 and to permit adjustment of second I.F. Transformer.
4. Dress all exposed leads away from each other, and away from chassis to prevent short circuits.
5. Dress all filament and ground leads against chassis.
6. Dress filament bypass capacitor C23 and accompanying compensating resistor R15 (volume control to IT4 [or 1U4] socket) against volume control.
7. Dress power line cord away from line-battery switch mechanism.
8. Dress all capacitors and wiring away from oscillator coil.
9. Dress 4 mmf. neutralizing capacitor C7 against A.V.C. bypass capacitor C8 (IT4 [or 1U4] filament to first I.F. trans.).

Alignment Procedure

Cathode Ray Alignment is the preferable method. Connections for the oscilloscope are shown on the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis and keep the oscillator output as low as possible to avoid AVC action.

Battery operation of the receiver is preferable during alignment: on AC operation an isolation transformer (117v./117v.) may be necessary for the receiver if the test oscillator is also AC operated.

NOTE: Battery or substitute must be in place for ant. alignment (step 5).

Alignment Tabulation

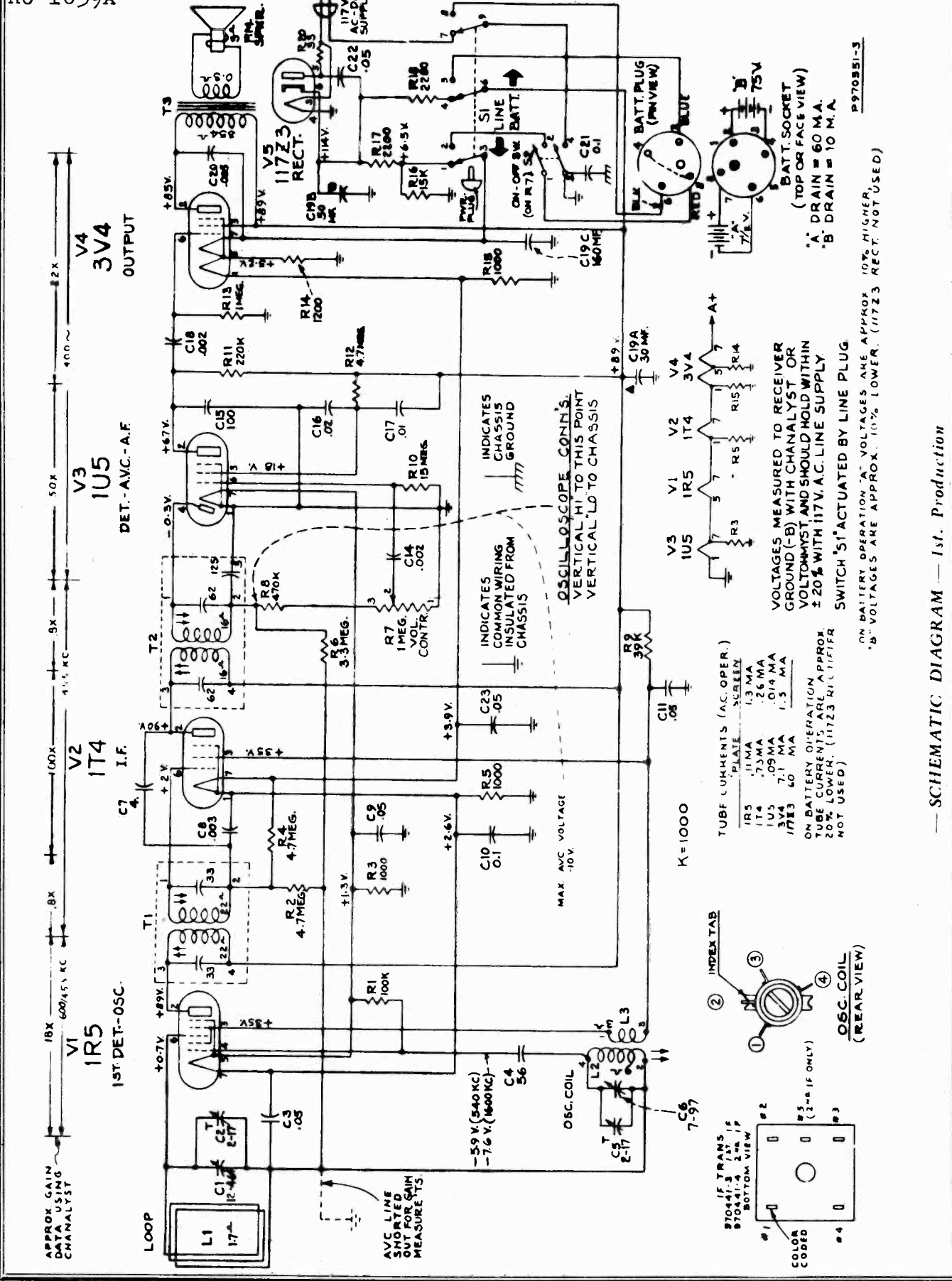
Step	Connect high side of test oscillator to—	Test oscillator output—	Turn receiver dial to—	Adjust for maximum peak output
1	Disconnect loop—remove chassis—remove bottom plate, connect a 10,000 ohm resistor from C1 stator terminal to tuning condenser frame.			
2	Stator terminal of C1 thru #01 mf. capacitor	455 kc	65	*Top and bottom T2 (2nd. I-F trans.) *Top and bottom T1 (1st. I-F trans.)
3	Remove the 10,000 ohm resistor. Replace bottom cover and install chassis in cabinet. Re-connect loop.			
4		1600 kc	160	†C5 (osc.)
5	Short wire placed near receiver (for radiated signal)	1400 kc	140	†C2 (ant.)
6		600 kc	60	*L2 (osc.) while rocking gang
7	Repeat steps 4, 5 and 6			

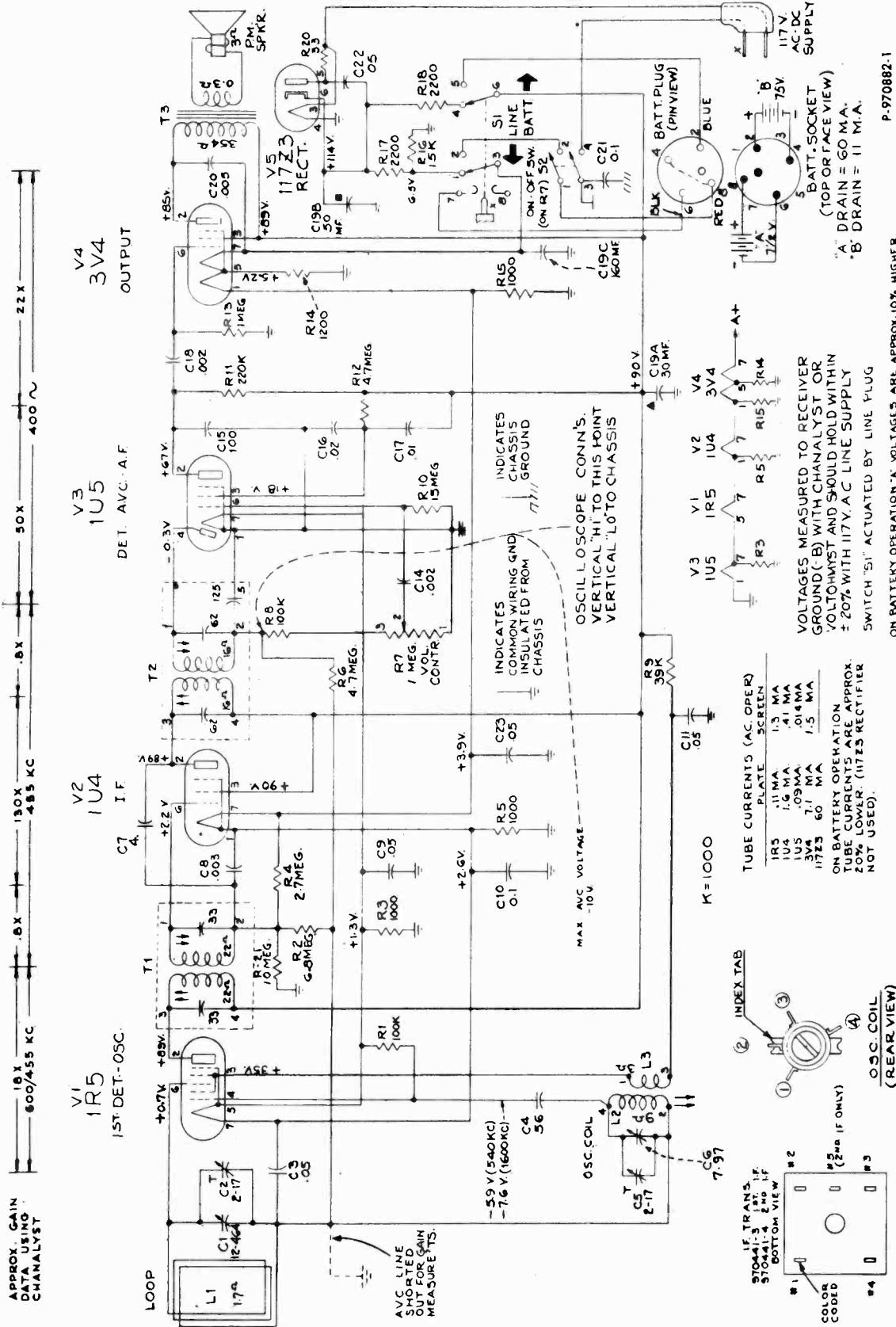
NOTES:

*The magnetite cores of L2 and some T2 and T1 do not have visible adjusting screws. The cores have screw driver slots to permit adjustment (use non-metallic screwdriver).

†Adjustable thru hole in side of case which is accessible after unfastening one end of the carrying handle.

MODELS 8BX5, 8BX54, 8BX55, CHASSIS RC-1059A RADIO CORP. OF AMERICA





P-970882-1

— SCHEMATIC DIAGRAM — 2nd. Production

MODELS 8BX5, 8BX54,
8BX55

RADIO CORP. OF AMERICA

CHASSIS RC-1059,
RC-1059A

To Remove Carrying Handle

1. Pull off the volume control knob.
2. Insert a small knife blade between one side of a spring clip and the cabinet as shown below, push upward on the slip shield to disengage the locking of the slip shield to the spring clip. Repeat this procedure on the other side of the spring clip. The slip shield may then be removed by pushing it upward thus disengaging it from the spring clip.
3. Repeat step 2 for each slip shield.
4. Remove the four screws (2 on each side) which hold the carrying handle to the case.

Caution: When re-assembling—make certain that the slip shield and the spring clip is assembled with their locks in the correct relation to each other.

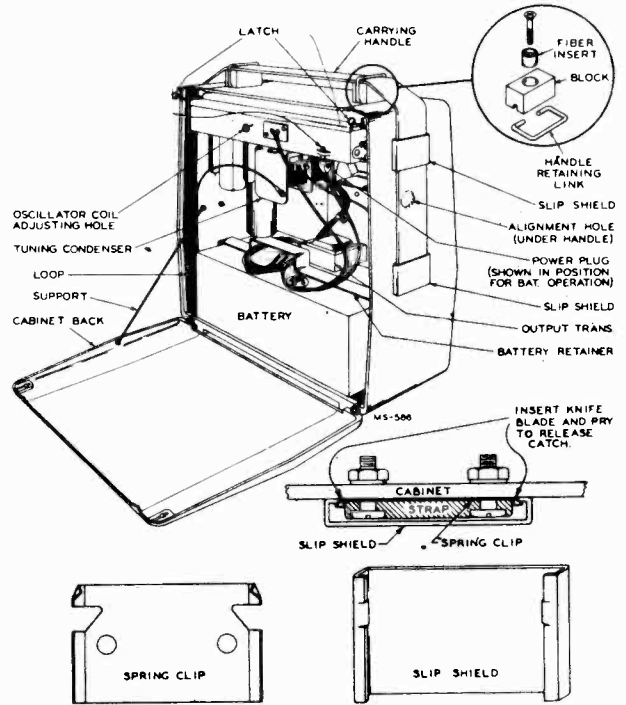
To Remove Chassis

1. Pull off the volume control knob.
2. Close tuning condenser (dial at 55) to prevent possible damage to tuning condenser.
3. Remove dial knob by grasping both sides with the tips of the fingers of both hands and pull to the front—or—close the tuning condenser, open the back, reach in and push outward on the hub of the dial knob.

NOTE: When re-assembling—press inward on the back of the tuning condenser and on the front of the knob to properly seat the hub on the shaft.

4. Remove the two slip shields on the R.H. side of the cabinet (opposite the volume control) and unfasten the end of the carrying handle using the procedure described under, "To Remove Carrying Handle."
5. Unsolder the loop leads.
6. Remove the two screws holding the bottom edge of the speaker to the cabinet.
7. Remove the plug from the battery.
8. Remove the two screws at the top of the cabinet while supporting the chassis with one hand.

NOTE: When re-installing—replace speaker holding screws first but do not securely tighten until the two screws at the top of the cabinet have been tightened.



Cabinet Hinges

The cabinet hinges may be readily removed, they are secured to the cabinet and back by force fit. To remove back from cabinet—pull straight outward on both hinges at the same time.

Replacement Parts—1st. Production

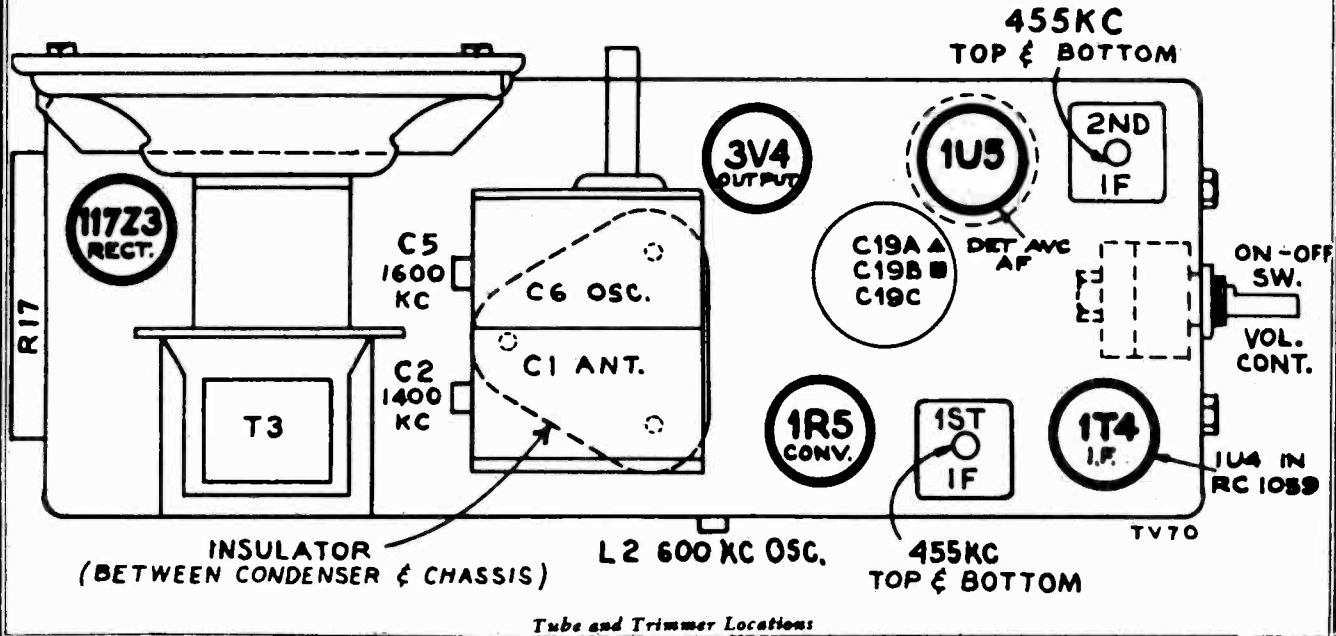
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1059		
73153	Capacitor—Ceramic, 4 mmf. (C7)	73103	Shield—Tube shield for 1U5
71924	Capacitor—Ceramic, 56 mmf. (C4)	73117	Socket—Tube socket
73152	Capacitor—Ceramic, 100 mmf. (C15)	73133	Switch—"Line Battery" change switch T.P.D.T. (S1)
72315	Capacitor—Tubular, .002 mfd., 200 volts (C14, C18)	73129	Transformer—First I-F transformer (T1)
71921	Capacitor—Tubular, .003 mfd., 200 volts (C8)	73130	Transformer—Second I-F transformer (T2)
72791	Capacitor—Tubular, .005 mfd., 400 volts (C20)	71047	Transformer—Output transformer (T3)
71923	Capacitor—Tubular, .01 mfd., 200 volts (C17)	73131	Washer—Insulating washer—extruded—to mount tuning condenser (3 required)
71928	Capacitor—Tubular, .02 mfd., 200 volts (C16)		SPEAKER ASSEMBLIES 92577-1
72596	Capacitor—Tubular, .05 mfd., 200 volts (C9, C23)	71059	Gasket—Speaker gasket (black tubing)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C3, C11, C22)	73123	Speaker—4" PM speaker complete with cone and voice coil
54788	Capacitor—Tubular, 0.1 mfd., 200 volts (C10)		MISCELLANEOUS
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C21)	73134	Back—Cabinet back—less hinges—for Model 8BX5
73127	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts; 1 section of 30 mfd., 150 volts and 1 section of 160 mfd., 25 volts (C19A, C19B, C19C)	73721	Back—Cabinet back—blonde—less hinges—for Model 8BX54
73114	Coil—Oscillator coil complete with core and stud (L2, L3)	73723	Back—Cabinet back—walnut—less hinges—for Model 8BX55
73126	Condenser—Variable tuning condenser (C1, C2, C5, C6)	73147	Ball—Metal ball with groove for back cover latch mechanism
73125	Control—Volume control and power switch (R7, S2)	73137	Block—Chassis mounting block (with groove for link)—less fiber insert (2 required)—fits on top of cabinet
73128	Card—Power cord and plug (72" long)	73136	Button—Center button for dial knob
73482	Insulator—Mounting insulator for tuning condenser	73142	Button—Station selector indicator button
73275	Plug—5 prong male plug for battery cable	Y1464	Case—Carrying case with loop—less hinges, latch mechanism, back cover and carrying handle—for Model 8BX5
73237	Resistor—Wire wound, 33 ohms, 150 MA (R20)	Y2016	Case—Carrying case—blonde—with loop—less hinges, latch mechanism, back cover and carrying handle—for Model 8BX54
	Resistor—Fixed composition, 1000 ohms, ±10%, ½ watt (R3, R5, R15)	Y2017	Case—Carrying case—walnut—with loop—less hinges, latch mechanism, back cover and carrying handle—for Model 8BX55
	Resistor—Fixed composition, 1200 ohms, ±10%, ½ watt (R14)	73195	Clip—Spring clip for slip shield (3 required)
73132	Resistor—Voltage divider, 2200 ohms, 7 watt (R17)	70425	Clip—Spring clip for volume control and power switch knob
	Resistor—Fixed composition, 2200 ohms, ±10%, ½ watt (R18)	73143	Handle—Carrying handle—for Model 8BX5
	Resistor—Fixed composition, 15,000 ohms, ±10%, ½ watt (R16)	73724	Handle—Carrying handle—tan—for Model 8BX54
	Resistor—Fixed composition, 39,000 ohms, ±10%, ½ watt (R9)	73725	Handle—Carrying handle—light brown—for Model 8BX55
	Resistor—Fixed composition, 100,000 ohms, ±20%, ½ watt (R1)	73144	Hinge—Cabinet hinge (2 required)
	Resistor—Fixed composition, 220,000 ohms, ±20%, ½ watt (R11)	73149	Insert—Fibre insert for chassis mounting block (2 required)
	Resistor—Fixed composition, 470,000 ohms, ±20%, ½ watt (R8)	73135	Knob—Dial knob complete with center button and calibrations
	Resistor—Fixed composition, 1 megohm, ±20%, ½ watt (R13)	73138	Knob—Volume control and power switch knob
	Resistor—Fixed composition, 3.3 megohms, ±10%, ½ watt (R6)	73459	Link—Carrying handle retaining link (2 required)
	Resistor—Fixed composition, 4.7 megohms, ±10%, ½ watt (R2, R4)	73141	Loop—Antenna loop (L1)
	Resistor—Fixed composition, 4.7 megohms, ±20%, ½ watt (R12)	73145	Nut—Hex nut with groove for back cover latch mechanism
	Resistor—Fixed composition, 15 megohms, ±20%, ½ watt (R10)	73139	Shield—Slip shield for carrying strap—(bottom R. H. and L. H. and upper L. H.)
		73140	Shield—Slip shield for carrying strap—with hole for volume control knob shaft (upper R. H.)
		73146	Spring—Extension spring for back cover latch mechanism—R. H.
		73148	Spring—Extension spring for back cover latch mechanism—L. H.
		30900	Spring—Retaining spring for dial knob
		73483	Support—Flexible drop support for back cover

RADIO CORP. OF AMERICA MODELS 8BX5, 8BX54,
8BX55, CHASSIS RC-1059,
RC-1059A

Replacement Parts—2nd. Production

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1059A		
73153	Capacitor—Ceramic, 4 mmf. (C7)		Resistor—Fixed composition, 10 megohms, $\pm 10\%$, $\frac{1}{2}$ watt (R21)
71924	Capacitor—Ceramic, 56 mmf. (C4)		Resistor—Fixed composition, 15 megohms, $\pm 20\%$, $\frac{1}{2}$ watt (R10)
73152	Capacitor—Ceramic, 100 mmf. (C15)	73103	Shield—Shield for 1U5 tube
72315	Capacitor—Tubular, .002 mfd., 200 volts (C14, C18)	73117	Socket—Tube socket
71921	Capacitor—Tubular, .003 mfd., 200 volts (C8)	71039	Switch—"Line-Battery" change switch (S1)
72791	Capacitor—Tubular, .005 mfd., 400 volts (C20)	73129	Transformer—First I.F. transformer (T1)
71923	Capacitor—Tubular, .01 mfd., 200 volts (C17)	73130	Transformer—Second I.F. transformer (T2)
71928	Capacitor—Tubular, .02 mfd., 200 volts (C16)	71047	Transformer—Output transformer (T3)
72596	Capacitor—Tubular, .05 mfd., 200 volts (C9, C23)		
70615	Capacitor—Tubular, .05 mfd., 400 volts (C3, C11, C22)		SPEAKER ASSEMBLY 92577-1
*73784	Capacitor—Tubular, 0.1 mfd., 200 volts (C10)		
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C21)	71059	Gasket—Speaker gasket (black tubing)
73127	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts; 1 section of 30 mfd., 150 volts and 1 section of 160 mfd., 25 volts (C19A, C19B, C19C)	73123	Speaker—4" PM speaker complete with cone and voice coil
*73935	Clip—Mounting clip for I.F. transformers		
73114	Coil—Oscillator coil complete with core and stud (L2, L3)		MISCELLANEOUS
73126	Condenser—Variable tuning condenser (C1, C2, C5, C6)	73134	Back—Cabinet back—less hinges—Model 8BX5
73125	Control—Volume control and power switch (R7, S2)	73731	Back—Cabinet back—less hinges—Model 8BX54
70022	Cord—Power cord and plug	73723	Back—Cabinet back—less hinges—Model 8BX55
72283	Grommet—Rubber grommet for mounting tuning condenser (3 required)	73147	Ball—Metal ball with groove for back cover latch mechanism
73275	Plug—5 prong male plug for battery cable	73137	Block—Chassis mounting block (with groove for link)—less fiber insert (2 required)—fits on top of cabinet
73237	Resistor—Wire wound, 33 ohms, 150 MA (R20)	73136	Button—Center button for dial knob
	Resistor—Fixed composition, 1000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R3, R5, R15)	73142	Button—Station selector indicator button
	Resistor—Fixed composition, 1200 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R14)	Y1464	Case—Carrying case complete with loop—less hinges, latch mechanism, back cover and carrying handle—Model 8BX5
	Resistor—Fixed composition, 2200 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R18)	Y2016	Case—Carrying case complete with loop—less hinges, back cover, latch mechanism and carrying handle
73132	Resistor—Voltage divider, 2200 ohms, 7 watts (R17)	Y2017	Case—Carrying case complete with loop—less hinges, back cover, latch mechanism and carrying handle
	Resistor—Fixed composition, 15,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R16)	70425	Clip—Spring clip for volume control and power switch knob
	Resistor—Fixed composition, 39,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R9)	73195	Clip—Spring clip for slip shield (4 req'd)
	Resistor—Fixed composition, 100,000 ohms, $\pm 20\%$, $\frac{1}{2}$ watt (R1)	73143	Handle—Carrying handle—Model 8BX5
	Resistor—Fixed composition, 100,000 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R8)	73724	Handle—Carrying handle—Model 8BX54
	Resistor—Fixed composition, 220,000 ohms, $\pm 20\%$, $\frac{1}{2}$ watt (R11)	73725	Handle—Carrying handle—Model 8BX55
	Resistor—Fixed composition, 1 megohm, $\pm 20\%$, $\frac{1}{2}$ watt (R13)	*74180	Hinge—Cabinet hinge (2 required)
	Resistor—Fixed composition, 2.7 megohms, $\pm 10\%$, $\frac{1}{2}$ watt (R4)	73149	Insert—Fibre insert for chassis mounting block (2 required)
	Resistor—Fixed composition, 4.7 megohms, $\pm 20\%$, $\frac{1}{2}$ watt (R12)	73135	Knob—Dial knob complete with center button and calibrations
	Resistor—Fixed composition, 4.7 megohms, $\pm 10\%$, $\frac{1}{2}$ watt (R6)	73138	Knob—Volume control and power switch knob
	Resistor—Fixed composition, 6.8 megohms, $\pm 10\%$, $\frac{1}{2}$ watt (R2)	73459	Link—Carrying handle retaining link (2 required)
		73141	Loop—Antenna loop (L1)
		73145	Nut—Hex nut with groove for back cover latch mechanism
		73139	Shield—Slip shield for carrying strap (bottom R.H. and L.H. and upper L.H.)
		73140	Shield—Slip shield for carrying strap—with hole for volume control shaft (upper R.H.)
		30900	Spring—Retaining spring for dial knob
		73146	Spring—Extension spring for back cover latch mechanism—R.H.
		73148	Spring—Extension spring for back cover latch mechanism—L.H.
		73483	Support—Flexible drop support for back cover

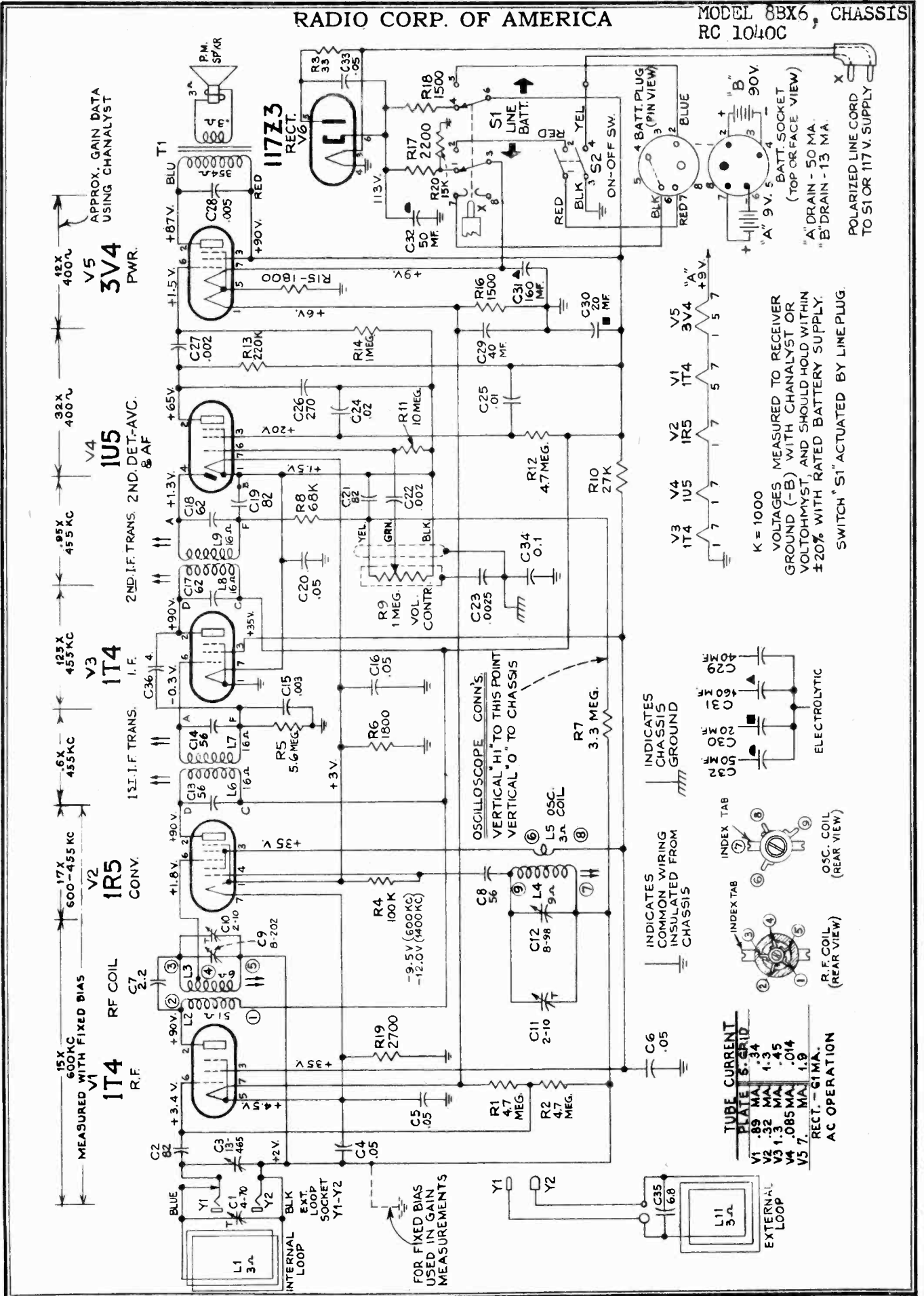
* This is the first time that this Stock No. has appeared in Service Data.



Tube and Trimmer Locations

RADIO CORP. OF AMERICA

MODEL 8BX6, CHASSIS RC 1040C



Alignment Procedure

Cathode Ray Alignment is the preferable method. Connections for the oscilloscope are shown on the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis and keep the oscillator output as low as possible to avoid AVC action.

Battery operation of the receiver is preferable during alignment; on AC operation an isolation transformer (117v./117v.) may be necessary for the receiver if the test oscillator is also AC operated.

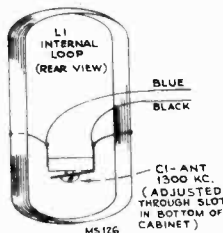
Calibration Scale.—The calibrated dial scale is attached to the chassis. It can be used directly as a reference for alignment.

With the gang at full mesh set the dial pointer so that the pointer is in line with the left hand vertical of the first figure 5 of the figures 55 on the dial scale as illustrated below.

Alignment Tabulation

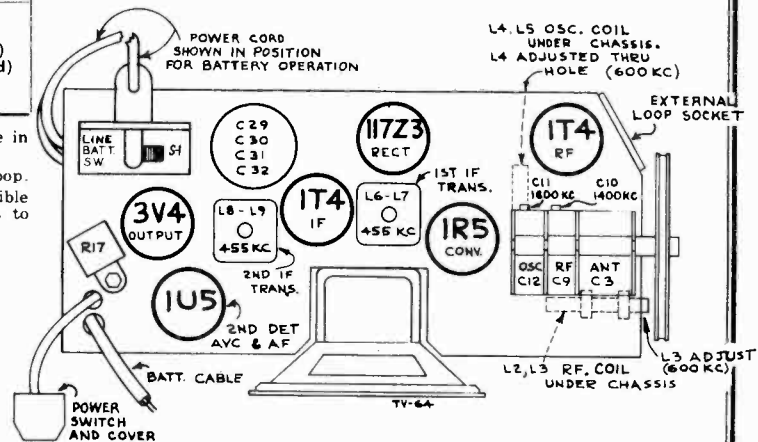
Steps	Connect high side of sig. gen. to—	Sig. gen. output	Turn radio dial to—	Adjust for peak output
1	Pin No. 6 of 1T4 I.F. Amplifier thru .01 mfd.	455 kc	Quiet point near 1600 kc	2nd I.F. Trans. L8, L9 top & bottom
2	Pin No. 6 of 1R5 Converter thru .01 mfd.			1st I.F. Trans. L6, L7 top & bottom
3				2nd I.F. Trans. L8 bottom core
4	High side of loop (Blue lead) in series with .01 mfd. Bottom shield cover in place	1600 kc	1600 kc	C11 (osc.)
5		1400 kc	1400 kc	C10 (r.f.)
6		600 kc	600 kc	L4 (osc.) L3 (r.f.)
7	Repeat steps 4, 5 and 6			
8	Short wire placed near loop. (Chassis in cabinet and internal loop connected)	1400 kc	1400 kc	C1†† (loop) (Cabinet closed)

† Two peaks may be found, the correct peak is that with the core in the outer position (counter-clockwise).
 †† Accessible thru slot in case provided for cable of external loop.
 NOTE: Adjustments L8, L9, L6, L7, L4 and L3 do not have visible adjusting screws. The magnetite cores have a screw driver slot to permit adjustment (use non-metallic screw driver).



Critical Lead Dress

1. Dress all filament leads next to chassis.
2. Keep the leads short on the end of the three components which connect to the grid terminal (#6) of the r.f. socket. (R-1, R-2, C-2).
3. Keep lead to center section of gang as short as possible.
4. Dress loop leads away from tuning drum and battery.
5. Dress lead to pin #4 of 1U5 tube away from other wiring.
6. Dress r.f. plate lead away from r.f. grid circuit.
7. Dress components and wiring near external loop socket to clear external loop pins.
8. Dress avc lead away from 2nd IF transformer and associated components.
9. Dress converter plate lead away from chassis and away from output leads.
10. Dress output leads up and away from other wiring.
11. Dress neutralizing capacitor C36, flat against chassis.
12. Dress 1st audio plate lead up and away from other wiring.
13. Dress 33 ohm resistor (R3) over bottom of rectifier socket and clear of other wiring.
14. Dress R.F. tube plate lead slightly away from chassis base.



Tube and Trimmer Locations

Specifications

Frequency Range540-1,600 kc
 Intermediate Frequency455 kc
 Power Supply Rating
 110 to 125 volts, AC 50 or 60 cycles, or DC.....18 watts
 Batteries required
 One RCA Battery Pack VS019 or equivalent

Tube Complement
 (1) RCA—1T4 R.F.
 (2) RCA—1R5 Converter
 (3) RCA—1T4 I.F.-Amplifier
 (4) RCA—1U5 2nd Det. AVC. & A.F.-Amplifier
 (5) RCA—3V4 Power Output
 (6) RCA—117Z3 Rectifier

Current Consumption

Battery Operation.....“A” 50 ma., “B” 13 ma.
 (Average life of RCA VS019 Battery
 125 hrs. intermittent service.)
 Total Rect. Current (117 volt, 60 cycle).....61 ma.

Power Output

Undistorted150 watt
 Maximum275 watt

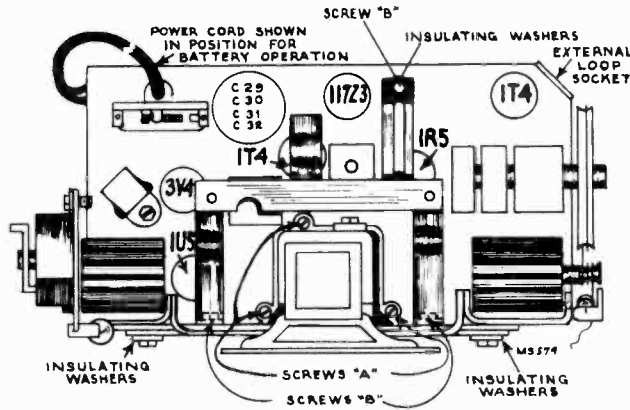
Loudspeaker.....4 in. P.M. 3.4 ohms at 400 cycles

Cabinet Dimensions

Height...13¼ in. Width...9½ in. Depth...5½ in.

CAUTION.—

1. Do not remove any tubes from the chassis with the set operating and the plug connected to the power line. Damage to tubes may result.
2. When cleaning the aluminum portion of the case use soap and water or cleaning fluid. Do not use abrasive cleansers.



Insulating Washers:

The mounting bracket and dial frame are insulated from the chassis with insulating washers. This serves to insulate the case from the chassis. In servicing make certain that these washers are in place and properly positioned.

To Remove Chassis from Cabinet:

1. Disconnect battery plug and remove battery.
2. Disconnect antenna in cabinet.
3. Remove the two screws in the top of the cabinet (beneath handle).
4. Remove the two battery clips.
5. Remove the chassis from the cabinet

To Remove Speaker:

1. Remove tubes 3V4 and 1U5.
2. Remove the three screws “B” holding power cord bracket assembly and remove bracket.
3. Remove the three screws “A” holding speaker bracket assembly.
4. Disconnect voice coil leads.
5. The speaker and speaker bracket may now be removed.

Using External Loop.—

A loop antenna is mounted inside the cabinet. Under normal conditions this will give satisfactory reception. If however, the receiver is used in a shielded compartment such as an automobile, airplane or railroad train, an RCA VICTOR EXTERNAL LOOP ANTENNA can be used.

This external loop antenna has a strap connector cord with identical two prong plugs on either end, this makes it convenient in connecting it to the circuit through the receptacle located in the left hand side of the chassis.

Open the case, plug the external loop antenna cord into the socket (it will only go in one way), bring the strap out through the slot in the case and attach the external loop antenna by means of the suction cup to any convenient vertical surface.

This external loop antenna can be stored in the cabinet, in the compartment below the battery pack, and the cord in the small compartment in the lower right hand corner of the cabinet.

AC-DC Operation.—

This receiver will operate on 105 to 125 volts, AC 50 or 60 cycles, or DC.

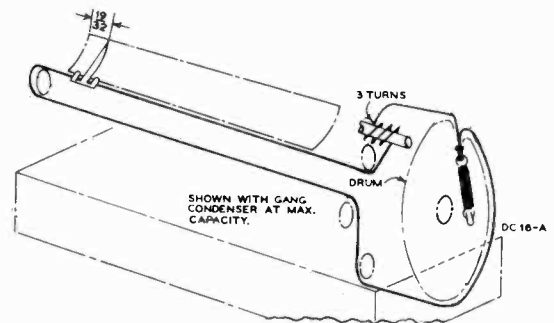
A power cord is stored in the fiber tube which is clamped above the chassis inside the cabinet. To open the cabinet, push the wire latch on the bottom of the case to the right, and raise the back cover upward on its hinges. Then pull the power cord plug out of the socket on the top of the chassis as shown, and take out and unroll the power cord. A slot in the bottom of the cabinet allows the closing of the cabinet with the power cord passing through. Close the cabinet with the cord extending through the slot and insert the plug into a convenient electrical outlet.

When returning to battery operation, be sure to replace the power plug in its socket inside the case with the cord stored in the fiber tube.

NOTE. If reception is not obtained on DC, reverse plug in outlet receptacle. This may also reduce hum on AC operation.



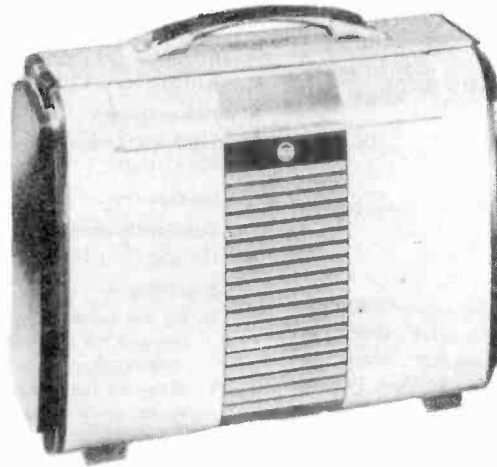
Dial Pointer Setting



Dial-Indicator and Drive Mechanism

MODEL 8BX6, CHASSIS
RC 1040C

RADIO CORP. OF AMERICA



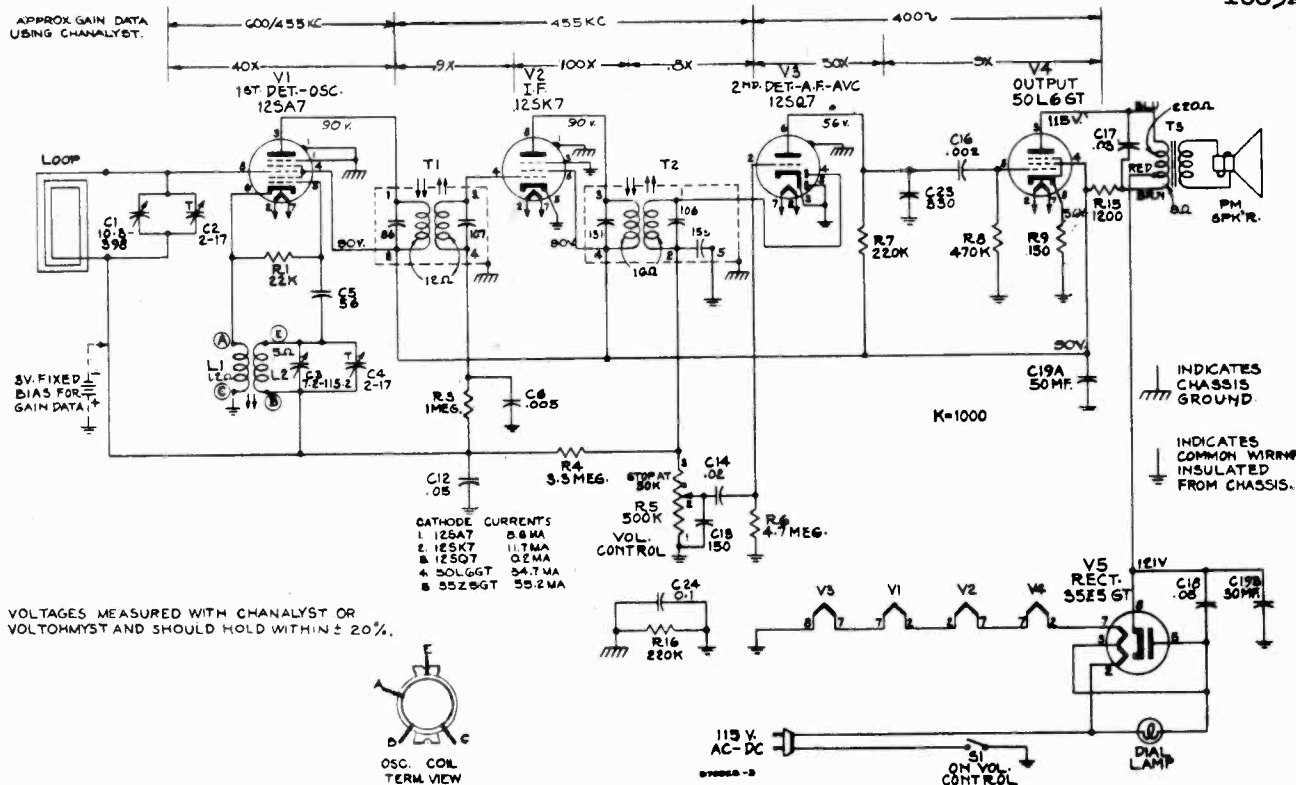
Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1040C			
71056	Bracket—Drive cord pulley bracket complete with pulley (volume control side)	*73120	Shield—R.H. end shield for dial
71054	Bracket—Drive cord pulley bracket complete with two (2) pulleys	*73115	Socket—Tube socket—miniature—7/8" mounting center—moulded (no center shield)
71044	Bracket—Power switch bracket complete with actuating lever less switch	*73116	Socket—Tube socket—miniature—7/8" mounting center—moulded (center shield)
71042	Button—Plug button	*73117	Socket—Tube socket—miniature—1" mounting center—wafer
71502	Capacitor—Ceramic, 2.2 mmf. (C7)	70390	Spring—Drive cord tension spring
*73153	Capacitor—Ceramic, 4 mmf. (C36)	30900	Spring—Retaining spring for knob
71924	Capacitor—Ceramic, 56 mmf. (C8)	71039	Switch—"Line-Battery" change switch (S1)
71514	Capacitor—Ceramic, 82 mmf. (C2, C21)	71045	Switch—Power switch (S2)
71540	Capacitor—Ceramic, 270 mmf. (C26)	*73174	Transformer—First I-F transformer (L6, L7, C13, C14)
70602	Capacitor—Tubular, .0025 mfd., 400 volts (C23)	*73175	Transformer—Second I-F transformer (L8, L9, C17, C18, C19)
71552	Capacitor—Tubular, .002 mfd., 400 volts (C22, C27)	71047	Transformer—Output transformer (T1)
71921	Capacitor—Tubular, .003 mfd., 200 volts (C15)	71081	Washer—"C" washer for tuning knob shaft
71553	Capacitor—Tubular, .005 mfd., 400 volts (C28)	*73332	Washer—Insulating washer (flat) for mounting base holder bracket (1 required) and dial support to chassis base (4 required)
70610	Capacitor—Tubular, .01 mfd., 400 volts (C25)	*73333	Washer—Insulating washer (extruded) for mounting base holder bracket (1 required) and dial support to chassis base (4 required)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C24)	71049	Window—Dial window only
71551	Capacitor—Tubular, .05 mfd., 200 volts (C5, C16, C20)	SPEAKER ASSEMBLY 92577-3	
70615	Capacitor—Tubular, .05 mfd., 400 volts (C4, C6, C33)	71059	Gasket—Speaker gasket (black tubing)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C34)	*73123	Speaker—4" PM speaker complete with cone and voice coil
*73113	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts; 1 section of 20 mfd., 150 volts; 1 section of 160 mfd., 25 volts and 1 section of 40 mfd., 25 volts (C29, C30, C31, C32)	SPEAKER ASSEMBLY 92258-2	
*73176	Coil—R-F coil complete with core and stud (L2, L3)	71059	Gasket—Speaker gasket (black tubing)
*73114	Coil—Oscillator coil complete with core and stud (L4, L5)	71058	Speaker—4"x6" PM speaker complete with cone and voice coil
*73112	Condenser—Variable tuning condenser (C3, C9, C10, C11, C12)	NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.	
71057	Control—Volume control (R9)	MISCELLANEOUS	
72953	Cord—Drive cord (approx. 38" overall required)	71074	Arm—Shutter arm lever.
70022	Cord—Power cord	*73243	Back—Case back complete with center strip, feet and case spring latch
*73118	Dial—Dial scale and window assembly	71073	Bracket—Beating bracket for shutter arm lever
72283	Grommet—Rubber grommet for mounting tuning condenser (3 required)	71070	Bracket—Mounting bracket for capacitor
71031	Holder—Power cord holder (fibertube)	71069	Capacitor—Adjustable trimmer, 3-35 mmf. (C1)
*73111	Indicator—Station selector indicator	71080	Clip—Case side spring clip & screw (2 required)
*73121	Knob—Tuning knob (roller-type) or volume control knob (roller-type)	71061	Foot—Case foot for rear section of case (2 required)
18469	Plate—Mounting plate for electrolytic capacitor	71068	Foot—Case foot for front section of case—(2 required)
71041	Plug—5 prong male plug for battery cable	*73124	Front—Case front complete less shutter
36230	Pulley—Drive cord pulley	71063	Handle—Carrying handle
*73237	Resistor—Wire wound, 33 ohms, 150 MA (R3)	*73244	Latch—Latch to mount rear feet (2 required)
	Resistor—Fixed composition, 1500 ohms, ±10%, 1/2 watt (R16)	71065	Link—Carrying handle link consisting of two (2) links, two (2) shafts and four (4) drive screws (2 required)
	Resistor—Fixed composition, 1500 ohms, ±10%, 1 watt (R18)	71079	Loop—Antenna loop (L1)
	Resistor—Fixed composition, 1800 ohms, ±10%, 1/2 watt (R6, R15)	71064	Retainer—Battery retainers spring bracket (2 required)
*73238	Resistor—Ballast resistor, 2200 ohms, 6 watts (R17)	71066	Screw—No. 8—32x5/16" long screw to hold case together (located under carrying handle) (2 required)
	Resistor—Fixed composition, 2700 ohms, ±10%, 1/2 watt (R19)	71077	Screw—Screw complete with washer and nut to secure case side to case front or to mount rear feet
	Resistor—Fixed composition, 15,000 ohms, ±20%, 1/2 watt (R20)	71071	Shutter—Case shutter
	Resistor—Fixed composition, 27,000 ohms, ±10%, 1/2 watt (R10)	72980	Side—Case side—L.H.
	Resistor—Fixed composition, 68,000 ohms, ±20%, 1/2 watt (R8)	72979	Side—Case side—R.H. (loop side)—less capacitor and bracket
	Resistor—Fixed composition, 100,000 ohms, ±20%, 1/2 watt (R4)	71072	Spring—Case shutter compression spring
	Resistor—Fixed composition, 220,000 ohms, ±20%, 1/2 watt (R13)	31608	Washer—"C" washer for shutter shafts
	Resistor—Fixed composition, 1 megohm, ±20%, 1/2 watt (R14)	71078	Washer—Dampening washer for shutter shafts (2 required)
	Resistor—Fixed composition, 3.3 meg., ±10%, 1/2 watt (R7)		
	Resistor—Fixed composition, 4.7 meg., ±10%, 1/2 watt (R1, R2, R12)		
	Resistor—Fixed composition, 5.6 meg., ±10%, 1/2 watt (R5)		
	Resistor—Fixed composition, 10 meg., ±20%, 1/2 watt (R11)		
*73122	Shaft—Tuning knob shaft		
*73119	Shield—L.H. end shield for dial		

*This is the first time this Stock No. has appeared in Service Data.

RADIO CORP. OF AMERICA

MODELS 8X541, 8X542,
8X547; CHASSIS RC-1065,
1065A



Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

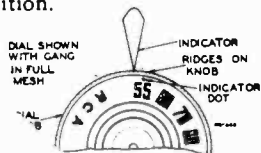
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

On AC operation an isolation transformer (115 v./115 v.) may be necessary for the receiver if the test oscillator is also AC operated.

Dial Centering:

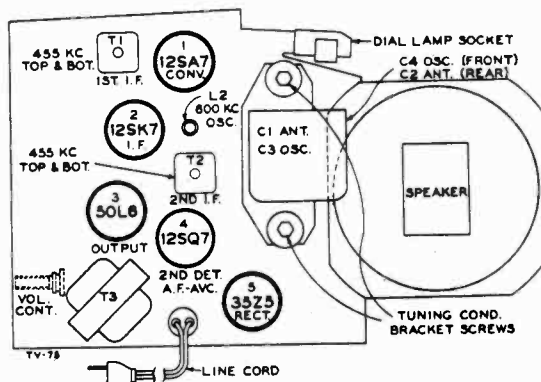
If the mounting of the tuning condenser has been disturbed, it may be necessary to adjust its position after replacing the chassis in the cabinet. This may be done in the following manner:

1. Install chassis and tighten the three mounting screws.
2. Replace tuning knob.
3. Loosen the two screws which hold the tuning condenser mounting bracket to the chassis.
4. Adjust the position of the tuning condenser mounting bracket so that the tuning knob may be rotated without binding on the cabinet. With tuning condenser plates fully meshed the dial should be in the position indicated below.
5. The two screws should then be tightened to maintain this position.



Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. output
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc	Quiet-point 1800 kc end of dial	T2 (Top and bottom) 2nd I-F trans.
2	Stator of C1 through 0.1 mfd.			*T1 (top and bottom) 1st I-F trans.
3	Short wire placed near loop to radiate signal	1800 kc	1800 kc	C4 (osc.)
4		1400 kc	1400 kc	†C2 (ant.)
5		600 kc	600 kc	L2 (osc.) Rock gang
6	Repeat steps 3, 4 and 5.			

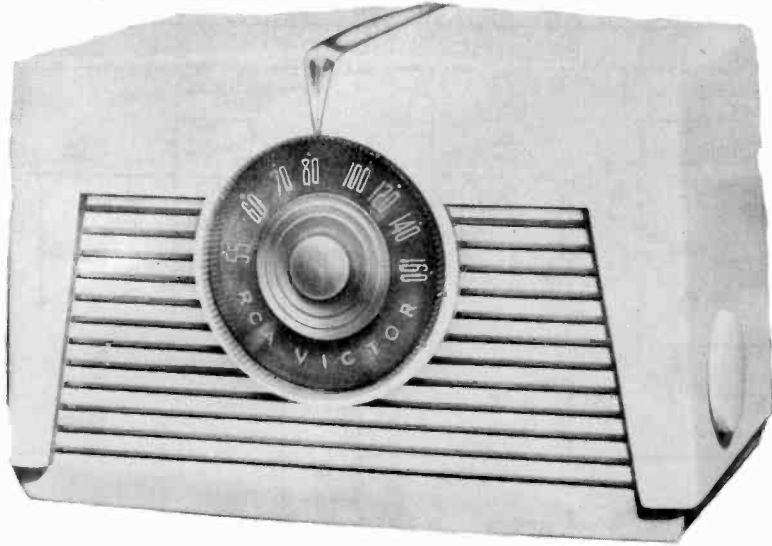
*Do not readjust T2 when test oscillator is connected to C1.
†When adjusting C2 (ant. trimmer) it is necessary to have the loop in the same position and spacing as it will have when assembled in the cabinet. This spacing is 3/4" from chassis to loop.



Tube and Trimmer Locations

MODELS 8X541, 8X542,
8X547; CHASSIS RC-1065,
1065A

RADIO CORP. OF AMERICA



Specifications

Tuning Range540-1600 kc
 Intermediate Frequency 455 kc
 Power Output
 Undistorted.....1.0 watt
 Maximum1.5 watts
 Tube Complement
 (1) RCA-12SA7..... Converter
 (2) RCA-12SK7..... I.F. Amplifier
 (3) RCA-12SQ7..... 2nd Det., A.V.C., and A.F. Amplifier
 (4) RCA-50L6GT..... Output
 (5) RCA-35Z5GT..... Rectifier
 Pilot Lamp..... Mazda No. 47, 6-8 volts, 0.15 amp.
 Loudspeaker (92577-5)
 Type..... 4-inch PM
 V. C. Impedance.....3.2 ohms at 400 cycles

Cabinet Dimensions
 Height.....7" Width.....10³/₄" Depth.....5⁷/₈"
 Power Supply Rating
 115 volts, AC, 50 or 60 cycles, or DC..... 30 watts

POWER SUPPLY POLARITY.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

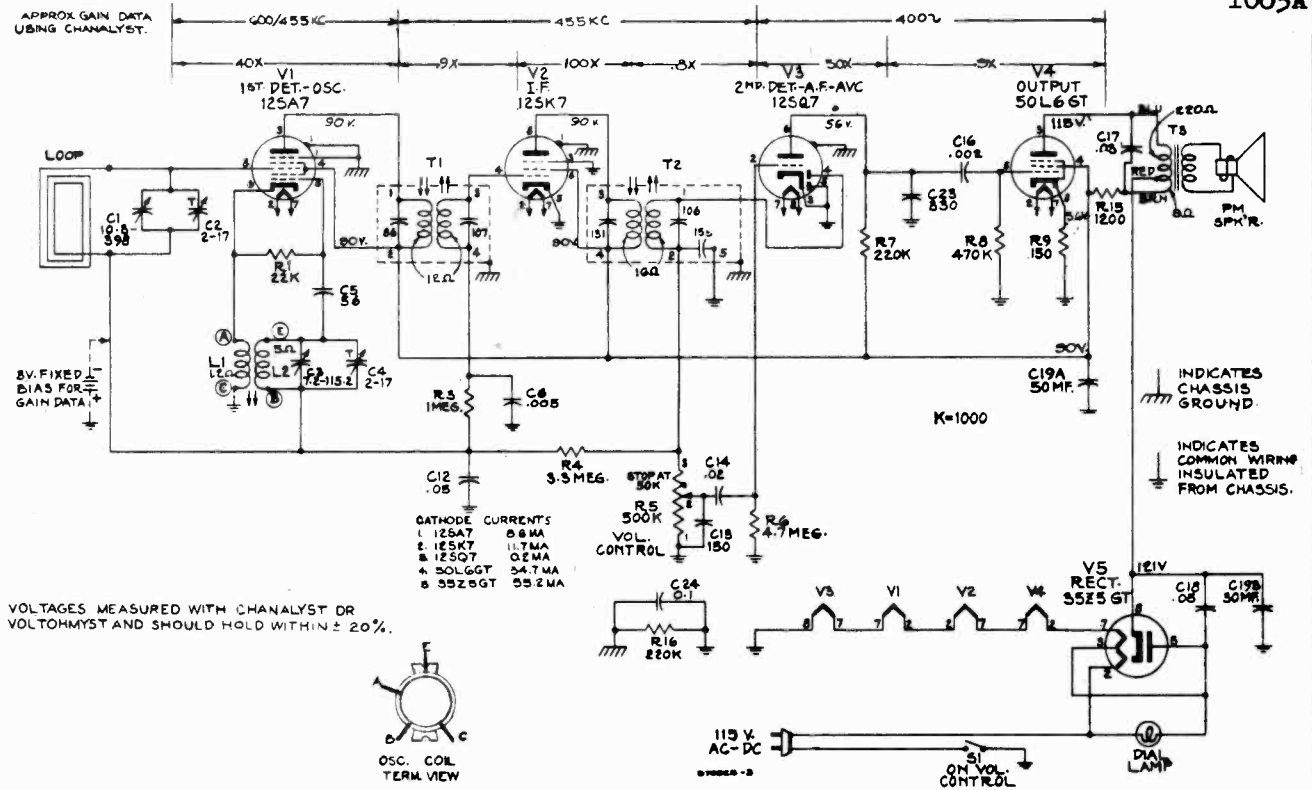
Critical Lead Dress
 1. Dress all heater leads close to chassis.
 2. Dress pilot light leads away from speaker cone.
 3. Dress lead to low side of loop between the two gang condenser leads.
 4. Dress C5 (AVC by-pass) close to the bend in the base and clear of the 2nd I.F. transformer.

Replacement Parts

Stock No.	DESCRIPTION	Stock No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1065—8X541 RC 1065A—8X542, 8X547		
73499	Capacitor—Ceramic, 56 mmf. (C5)	34449	Resistor—Fixed, composition, 3.3 megohm, ±20%, ½ watt (R4)
73501	Capacitor—Ceramic, 150 mmf. (C13)	54414	Resistor—Fixed, composition, 4.7 megohm, ±20%, ½ watt (R6)
72571	Capacitor—Mica, 330 mmf. (C23)		Socket—Lamp socket
70601	Capacitor—Tubular, .002 mfd., 400 volts (C16)	73036	Socket—Tube socket
70606	Capacitor—Tubular, .005 mfd., 400 volts (C6)	73037	Transformer—First I-F transformer (T1)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14)	71111	Transformer—Second I-F transformer (T2)
70613	Capacitor—Tubular, .03 mfd., 400 volts (C17)		Transformer—Output transformer (T3)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C12, C18)		SPEAKER ASSEMBLY 92577-5W
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)	73919	Speaker—4" P.M. speaker complete with cone and voice coil
73500	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts and 1 section of 30 mfd., 150 volts (C19a, C19b)		MISCELLANEOUS
73935	Clip—Spring clip for mounting I.F. transformers (2 required)	Y1495	Cabinet—Plastic cabinet—maroon—complete with station indicator and dial backing disc for Model 8X541
70133	Coil—Oscillator coil (L1, L2)	Y1496	Cabinet—Plastic cabinet—ivory—complete with station indicator and dial backing disc for Model 8X542
*73485	Condenser—Variable tuning condenser (C1, C2, C3, C4)	Y2053	Cabinet—Plastic cabinet—white—complete with station indicator and dial backing disc—for Model 8X547
38410	Control—Volume control and power switch (R5, S1)	73494	Clip—Spring clip to hold cabinet back and loop assembly to cabinet (4 required)
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	73489	Dial—Dialing knob
*73486	Loop—Loop and back cover assembly for Model 8X541	73493	Disc—Dial backing disc
*73487	Loop—Loop and back cover assembly for Models 8X542 or 8X547	73492	Indicator—Station selector indicator
	Resistor—Fixed, composition, 150 ohms, ±10%, ½ watt (R9)	73490	Knob—Volume control and power switch knob—maroon—for Model 8X541
	Resistor—Fixed, composition, 1,200 ohms, ±10%, 1 watt (R15)	73491	Knob—Volume control and power switch knob—ivory—for Model 8X542
	Resistor—Fixed, composition, 22,000 ohms, ±20%, ½ watt (R1)	74007	Knob—Volume control and power switch knob—white—for Model 8X547
	Resistor—Fixed, composition, 220,000 ohms, ±20%, ½ watt (R7, R16)	31480	Lamp—Dial lamp—Mazda 47
	Resistor—Fixed, composition, 470,000 ohms, ±20%, ½ watt (R8)	38458	Nut—Speed nut to fasten indicator (required)
	Resistor—Fixed, composition, 1 megohm, ±20%, ½ watt (R3)	*73914	Spring—Retaining spring for
		14270	Spring—Retaining spring for

RADIO CORP. OF AMERICA

MODELS 8X541, 8X542,
8X547; CHASSIS RC-1065,
1065A



Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

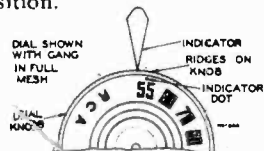
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

On AC operation an isolation transformer (115 v./115 v.) may be necessary for the receiver if the test oscillator is also AC operated.

Dial Centering:

If the mounting of the tuning condenser has been disturbed, it may be necessary to adjust its position after replacing the chassis in the cabinet. This may be done in the following manner:

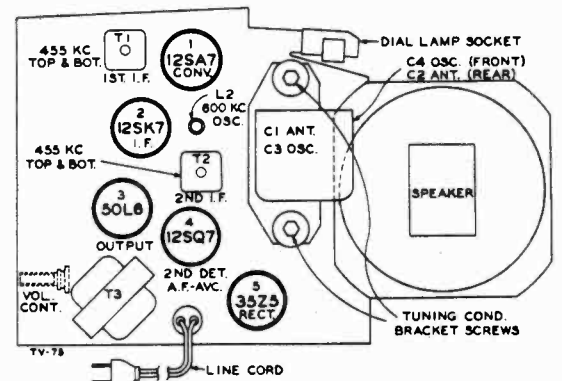
1. Install chassis and tighten the three mounting screws.
2. Replace tuning knob.
3. Loosen the two screws which hold the tuning condenser mounting bracket to the chassis.
4. Adjust the position of the tuning condenser mounting bracket so that the tuning knob may be rotated without binding on the cabinet. With tuning condenser plates fully meshed the dial should be in the position indicated below.
5. The two screws should then be tightened to maintain this position.



Dial and Indicator

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. output
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc	Quiet-point 1600 kc end of dial	T2 (Top and bottom) 2nd I-F trans.
2	Stator of C1 through 0.1 mfd.			*T1 (top and bottom) 1st I-F trans.
3	Short wire placed near loop to radiate signal	1600 kc	1600 kc	C4 (osc.)
4		1400 kc	1400 kc	†C2 (ant.)
5		600 kc	600 kc	L2 (osc.) Rock gang
6	Repeat steps 3, 4 and 5.			

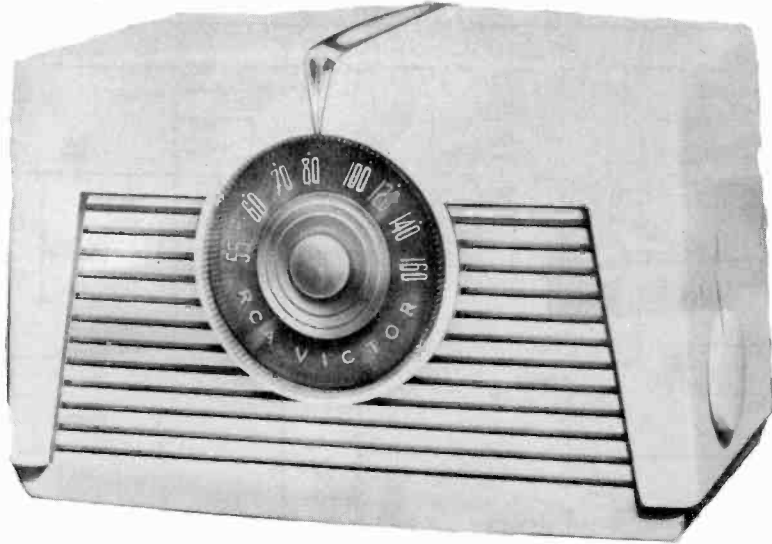
*Do not readjust T2 when test oscillator is connected to C1.
†When adjusting C2 (ant. trimmer) it is necessary to have the loop in the same position and spacing as it will have when assembled in the cabinet. This spacing is 3/4" from chassis to loop.



Tube and Trimmer Locations

MODELS 8X541, 8X542,
8X547; CHASSIS RC-1065,
1065A

RADIO CORP. OF AMERICA



Specifications

Tuning Range 540-1600 kc

Intermediate Frequency 455 kc

Power Output

Undistorted 1.0 watt

Maximum 1.5 watts

Tube Complement

(1) RCA-12SA7 Converter

(2) RCA-12SK7 I.F. Amplifier

(3) RCA-12SQ7 2nd Det., A.V.C., and A.F. Amplifier

(4) RCA-50L6GT Output

(5) RCA-35Z3GT Rectifier

Pilot Lamp Mazda No. 47, 6-8 volts, 0.15 amp.

Loudspeaker (92577-5)

Type 4-inch PM

V. C. Impedance 3.2 ohms at 400 cycles

Cabinet Dimensions

Height 7" Width 10 $\frac{3}{4}$ " Depth 5 $\frac{7}{8}$ "

Power Supply Rating

115 volts, AC, 50 or 60 cycles, or DC 30 watts

POWER SUPPLY POLARITY.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Critical Lead Dress

1. Dress all heater leads close to chassis.
2. Dress pilot light leads away from speaker cone.
3. Dress lead to low side of loop between the two gang condenser leads.
4. Dress C5 (AVC by-pass) close to the bend in the base and clear of the 2nd I.F. transformer.

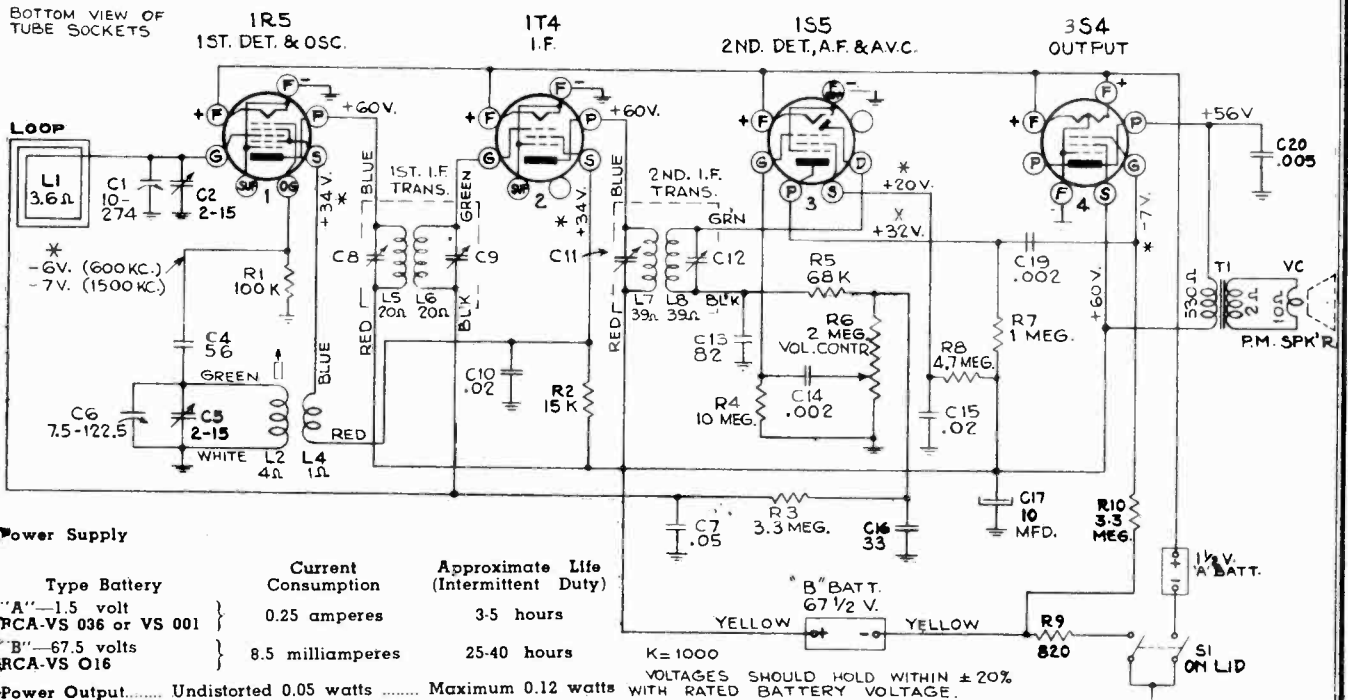
Replacement Parts

Stock No.	DESCRIPTION	Stock No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1065—8X541 RC 1065A—8X542, 8X547		
73499	Capacitor—Ceramic, 56 mmf. (C5)		Resistor—Fixed, composition, 3.3 megohm, $\pm 20\%$, $\frac{1}{2}$ watt (R4)
73501	Capacitor—Ceramic, 150 mmf. (C13)	34449	Resistor—Fixed, composition, 4.7 megohm, $\pm 20\%$, $\frac{1}{2}$ watt (R6)
72571	Capacitor—Mica, 330 mmf. (C23)	54414	Socket—Lamp socket
70601	Capacitor—Tubular, .002 mfd., 400 volts (C16)	73036	Socket—Tube socket
70606	Capacitor—Tubular, .005 mfd., 400 volts (C6)	73037	Transformer—First I-F transformer (T1)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14)	71111	Transformer—Second I-F transformer (T2)
70613	Capacitor—Tubular, .03 mfd., 400 volts (C17)		Transformer—Output transformer (T3)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C12, C18)		SPEAKER ASSEMBLY 92577-5W
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)	73919	Speaker—4" P.M. speaker complete with cone and voice coil
73500	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts and 1 section of 30 mfd., 150 volts (C19a, C19b)		MISCELLANEOUS
73935	Clip—Spring clip for mounting I.F. transformers (2 required)	Y1495	Cabinet—Plastic cabinet—maroon—complete with station indicator and dial backing disc for Model 8X541
70133	Coil—Oscillator coil (L1, L2)	Y1496	Cabinet—Plastic cabinet—ivory—complete with station indicator and dial backing disc for Model 8X542
*73485	Condenser—Variable tuning condenser (C1, C2, C3, C4)	Y2053	Cabinet—Plastic cabinet—white—complete with station indicator and dial backing disc for Model 8X547
38410	Control—Volume control and power switch (R5, S1)	73494	Clip—Spring clip to hold cabinet back and loop assembly to cabinet (4 required)
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	73489	Dial—Dialing knob
*73486	Loop—Loop and back cover assembly for Model 8X541	73493	Disc—Dial backing disc
*73487	Loop—Loop and back cover assembly for Models 8X542 or 8X547	73492	Indicator—Station selector indicator
	Resistor—Fixed, composition, 150 ohms, $\pm 10\%$, $\frac{1}{2}$ watt (R9)	73490	Knob—Volume control and power switch knob—maroon—for Model 8X541
	Resistor—Fixed, composition, 1,200 ohms, $\pm 10\%$, 1 watt (R15)	*73491	Knob—Volume control and power switch knob—ivory—for Model 8X542
	Resistor—Fixed, composition, 22,000 ohms, $\pm 20\%$, $\frac{1}{2}$ watt (R1)	74007	Knob—Volume control and power switch knob—white—for Model 8X547
	Resistor—Fixed, composition, 220,000 ohms, $\pm 20\%$, $\frac{1}{2}$ watt (R7, R16)	31480	Lamp—Dial lamp—Mazda 47
	Resistor—Fixed, composition, 470,000 ohms, $\pm 20\%$, $\frac{1}{2}$ watt (R8)	38458	Nut—Speed nut to fasten indicator to cabinet (2 required)
	Resistor—Fixed, composition, 1 megohm, $\pm 20\%$, $\frac{1}{2}$ watt (R3)	73914	Spring—Retaining spring for dial knob
		14270	Spring—Retaining spring for volume control knob

RADIO CORP. OF AMERICA

MODELS 54B1, 54B1-N, 54B2, 54B3, Ch. RC-589

BOTTOM VIEW OF TUBE SOCKETS



Power Supply

Type Battery	Current Consumption	Approximate Life (Intermittent Duty)
"A"—1.5 volt RCA-VS 036 or VS 001	0.25 amperes	3-5 hours
"B"—67.5 volts RCA-VS 016	8.5 milliamperes	25-40 hours

Power Output..... Undistorted 0.05 watts Maximum 0.12 watts

Loudspeaker

Type Permanent-Magnet Dynamic Elliptical 2 x 3 in.

Voice Coil Impedance 11 3/4 ohms at 500 cycles

Cabinet Dimensions (inches)..... 3-3/16 x 6 1/2 x 4-3/16

Weight..... 3 1/4 lbs. (net) Tuning Drive Ratio 1 to 1

Frequency Range 550-1,600 kc
Intermediate Frequency 455 kc

Test Oscillator.—Connect test oscillator as indicated in chart keeping the output as low as possible to avoid A V C action.

Output Meter.—Connect meter from top lug of T1 (plate of 354) to ground. Turn volume control to maximum position.

Fig. 1 shows the modifications necessary to convert the center strip portion of a case into a convenient shield to be used as a substitute for the regular case center strip in the RF, Osc. alignment.

Steps	Connect the high side of test osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Connection lug of C2, located on rear of gang in series with .01 mf.	455 kc	Quiet point near 1,600 kc	C11, C12 2nd I-F trans.
2		455 kc	Quiet point near 1,600 kc	C8, C9 1st I-F trans.
3		1,600 kc	1,600 kc	C5 (osc.)
4	*Antenna coupling loop thru 200 mmf. capacitor	1,500 kc	1,500 kc	C2 (ant.)
5		600 kc	600 kc	L2 (osc.)
6	Repeat steps 4 and 5 for final adjustments.			

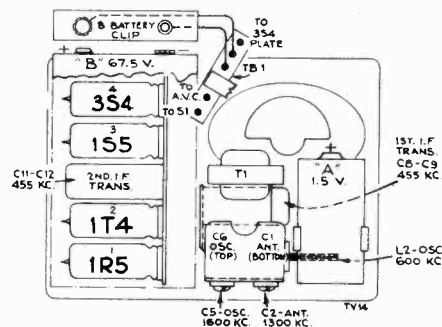
Steps 3, 4 and 5 require a coupling loop from the signal generator to feed a signal into the receiver loop located in the lid. This loop should be approximately one turn of 6 x 3 1/2 inches coupled to the signal generator through a 200 mmf. capacitor, and loosely coupled to the receiver loop antenna at about 1 3/4 inches distance, so as not to disturb the receiver loop inductance. Ground test oscillator through .1 mf. capacitor to receiver chassis.

Tools required:

1. One Phillips No. 1 screwdriver.
2. One small neutralizing alignment tool.

CRITICAL LEAD DRESS

1. Dress blue, green and black leads of second I-F transformer as direct as possible. If excess lead exists, dress down side of socket and flat against chassis to transformer opening.
2. Cross the green and the black leads inside the first I-F transformer can, keeping the green lead to the outside. Keep the blue and the green leads separated as far as possible throughout their length.
3. Dress audio coupling capacitor (C14; .002 mf.) and the lead to the volume control up and underneath the shelf supporting the output transformer.
4. Dress the three capacitors pyramided behind the speaker, parallel to the complete assembly and with enough room behind the battery holder to allow the holder to move when a battery is installed or removed.
5. Dress the "B" battery leads behind the gang frame and over the top of the output transformer.
6. Observe the outside foil connections on all paper capacitors, also the polarity of the electrolytic capacitor (C17).
7. Keep blue and red leads of output transformer above the mounting shelf.



Note: DO NOT install "A" battery without cardboard cover. A rubber band should be placed around each tube for cushioning.

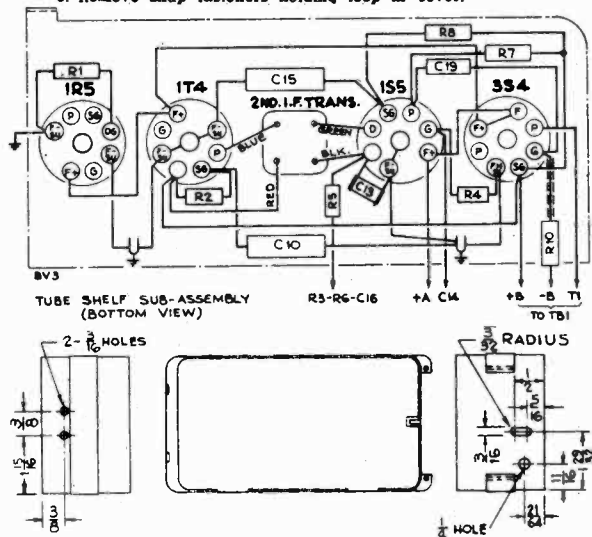
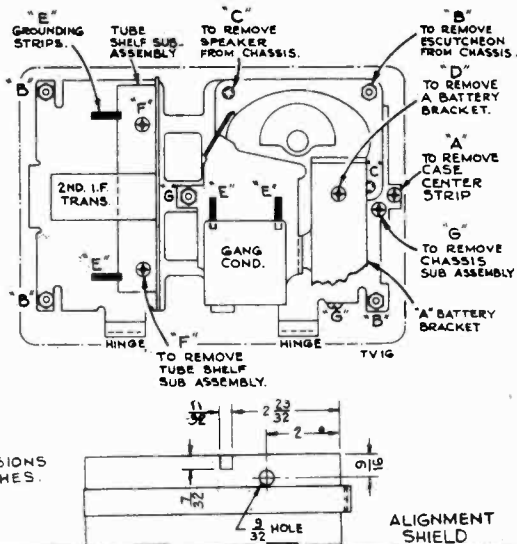
MODELS 54B1, 54B1-N,
54B2, 54B3, Ch. RC-589

RADIO CORP. OF AMERICA

Replacement of Component Parts

- I. To remove back cover:
 - a. Depress locking spring clip through hole in top of case.
 - b. With spring clip depressed, pull cover carefully out and up off the locking lug in the bottom of the case.
- II. To replace batteries:
 - a. Remove back cover.
 - b. Remove, either or both, the "A" and "B" battery as the case may warrant. The "B" battery snap fasteners can best be removed by inserting a screwdriver under the snap fastener strip and prying upward.
- III. To remove the case center strip:
 - a. Remove one screw on the inside near the back cover.
 - b. Tilt case center strip and lift.
- IV. To replace tubes:
 - a. Remove back cover.
 - b. Remove "B" battery.
 - c. Remove case center strip.
 - d. Remove and replace tubes as required.
- V. To remove the escutcheon plate (top cover):
 - a. Remove the main dial knob, just pull.
 - b. Remove the four corner nuts (B), rear.
 - c. The plate may either be removed from the stay arm or folded into the lid.
- VI. To remove speaker:
 - a. Remove escutcheon plate (see item V above).
 - b. Remove two Phillips screws (C) on chassis front of panel assembly holding speaker.
 - c. Unsolder voice coil leads.
 - d. Slide forward away from hinge side.
- VII. To remove output transformer:
 - a. Remove speaker (see item VI).
 - b. Remove rivet (when replacing use small brass bolt).
 - c. Unsolder mounting lug and leads.
 - d. Pull out transformer.
- VIII. To remove volume control:
 - a. Remove speaker (item VI).
 - b. Unsolder (disconnect) lead to positive terminal of "A" battery holder.
 - c. Lift up the "A" battery holder by removing the one screw in its base. This holder has a hinge action and must be lifted up and back to remove.
 - d. Remove front plate (panel) as follows:
 1. Unsolder two copper strips (E) (from end of tube shelf to front plate) located under tubes 1R5 3S4.
 2. Remove two screws (F) holding tube shelf to front plate. These screws are located between tubes 1R5 and 1T4, also 3S4 and 1S5. Rubber shock mounts may stick on studs, pry loose.
 3. Remove nut (G) beneath tube shelf below second I-F transformer.
 4. Remove screw (G) beneath the negative terminal of "A" battery holder, near cover hinge and also screw (G) adjacent to volume control below "A" battery holder near release catch.
- IX. To remove oscillator coil:
 - a. Same procedure and steps as covered in item VIII for removal of volume control plus the following.
 - b. Unsolder oscillator coil leads.
 - c. Remove coil by unsnapping spring mounting clips from angle bracket.
- X. To remove 1st I-F transformer:
 - a. Remove speaker.
 - b. Unsolder four leads from 1st I-F transformer.
 1. Blue to plate (screen used as plate) of 1R5 tube.
 2. Green to grid of 1T4 tube.
 3. Red to B+ terminal of 5 lug terminal board adjacent output transformer.
 4. Black to AVC terminal of same strip as above.
 - c. Remove connections as required from two lug terminal board adjacent to 1st I-F transformer to permit this terminal board to be moved to a position free of the 1st I-F transformer.
 - d. Unsolder and bend mounting lugs straight on the I-F transformer can. These lugs are immediately below the 2nd I-F transformer on tube shell.
 - e. Slip 1st I-F transformer forward toward volume control and out.

Note: It is possible to fold the 1st I-F transformer out the front of the chassis if the front plate is removed. This will eliminate the unsoldering of leads from the two lug terminal board.
- XI. To remove 2nd I-F transformer:
 - a. Carefully remove the two 0.02 uf C10, C15 capacitors.
 - b. Carefully depress the two leads (B+ and A+) near the I-F transformer case mounting lugs and unsolder these lugs from the tube mounting shelf and bend out.
 - c. Unsolder the blue (plate of 1T4), green (grid of 1S5), red (B+ on terminal board), and black leads.
 - d. Remove 2nd I-F transformer.
- XII. To remove condenser tuning gang:
 - a. Loosen oscillator coil.
 - b. Unsolder leads to tuning gang.
 - c. Unsolder grounding straps.
 - d. Remove three screws holding gang assembly to chassis.
 - e. Remove gang from rear of chassis.
- XIII. To remove loop assembly:
 - a. Unsolder loop leads in chassis.
 - b. Remove screw holding fish paper insulating envelope to chassis switch.
 - c. Remove snap fasteners holding loop in cover.



RADIO CORP. OF AMERICA RCA 54B1, Chassis RC-589, 54B1-N, Chassis RC-589D, 54B2, Chassis RC-589A, 54B3, Chassis RC-589B, Second Production, Chassis RC-589U, RC-589UA, RC-589UB

first production, with the exception of the following.

Stock No.	Description
72230	Support—tube support less tube sockets and transformers

These models are the same as Model 54B1, Chassis RC-589,

except for the following changes. These models have been produced with loops of two types of construction: "taped"—the coil is fastened to the loop cover with scotch tape; and "cemented"—the coil is fastened to the loop cover with coil cement. The models with the "cemented" loops have been produced with and without the 2—15- μ f antenna trimmer capacitor C2. Receivers with the "taped" loop all have C2. The three combinations are listed below with the correct alignment procedure specified. CAUTION: A "taped" type loop should never be used as a replacement on those models which do not have antenna trimmer capacitor C2.

Loop Construction	C2 Ant. Trimmer	Alignment Procedure
Taped	With	As given on page 15-22
Cemented	With*	See following alignment table
Cemented	Without	See following alignment table

*Remove antenna trimmer capacitor C2 by removing C2 alignment screw and cut off C2 capacitor plate.

*Steps 3, 4, and 5 require a coupling loop from the signal generator to feed a signal into the receiver loop located in the lid. This loop should be approximately one turn of 6x3½ inches coupled to the signal generator through a 200- μ f capaci-

The following changes should be made in the parts list shown to conform to all first production models.

Delete:

Stock No.	Description
60954	Capacitor—ceramic, 56 μ f (C4)
65405	Capacitor—ceramic, 82 μ f (C13)

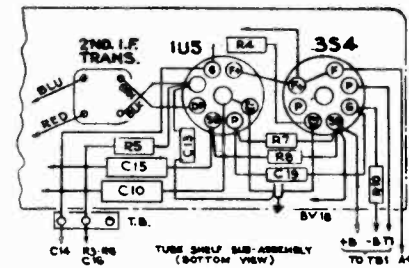
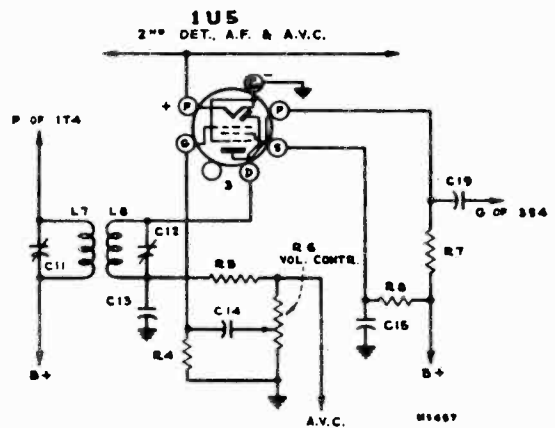
Add:

Stock No.	Description
70448	Fastener—push fastener to hold loop (two required)
71563	Hinge—lid hinge—Model 54B3, —Red (two required)
71565	Lid—case lid complete with lid support less loop—Model 54B3—Red
71564	Loop—antenna loop complete with connectors less lid — Model 54B3—Red
71562	Plate—backing plate for mounting hinge on lid—Model 54B3—Red (two required)
71725	Screw—case cover mounting screw (one set)—Model 54B3
71567	Bottom—case bottom—Model 54B3—red
71566	Center—case center—Model 54B3—red
71568	Handle—carrying handle—Model 54B3—red
71569	Link—handle link—Model 54B3—red (two required)

Steps	Connect the high side of test osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Connection lug of C1 located on rear of gang in series with .01 mf.	455 kc	Quiet point near 1,600 kc	C11, C12 2nd I-F trans.
2		455 kc	Quiet point near 1,600 kc	C8, C8 1st I-F trans.
3	*Antenna coupling loop thru 200 mmf. capacitor	1,500 kc	Rock gang	C5 (osc.)
4		600 kc	Rock gang	L2 (osc.)
5	Repeat steps 3 and 4 for final adjustments.			

tor, and loosely coupled to the receiver loop antenna at about 1¾ inches distances, so as not to disturb the receiver loop inductance. Ground test oscillator through 0.1- μ f capacitor to receiver chassis.

The second production of these models use a type 1U5 tube in place of the type 1S5 (second detector, a-f, ave). They may be identified by the letter U in the chassis number which is stamped on the tuning capacitor or chassis. The accompanying diagrams show a partial schematic and a parts layout and wiring diagram for this tube. The replacement parts for these models are the same as those for the



Alignment instructions for sets with cemented loop are shown in the table. The wiring changes for the type 1U5 tube used in the second production are shown on the right.

MODELS 54B1, 54B1-N,
54B2, 54B3, Ch. RC-589
MODELS 55U, 55AU, Ch. RC-1017

RADIO CORP. OF AMERICA

MODELS 54B1, 54B1-N, 54B2, 54B3

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 589 54B1 BLACK RC 589A 54B2 BROWN	70983	Plate—Backing plate for mounting hinge on lid—Model 54B2—Brown (2 required)
70444	Board—Speaker terminal board (5 contact)	14076	Resistor—820 ohms, 1/4 watt (R9)
70445	Board—Terminal board (1 contact)	36714	Resistor—15,000 ohms, 1/4 watt (R2)
33111	Capacitor—Ceramic, 33 mmf (C16)	14138	Resistor—68,000 ohms, 1/4 watt (R5)
60954	Capacitor—Ceramic, 56 mmf. (C4)	3252	Resistor—100,000 ohms, 1/4 watt (R1)
65405	Capacitor—Ceramic, 82 mmf. (C13)	30652	Resistor—1 megohm, 1/4 watt (R7)
70454	Capacitor—Tubular, .002 mfd., 150 volts (C14, C19)	12928	Resistor—3.3 megohms, 1/4 watt (R3, R10)
70627	Capacitor—Tubular, .005 mfd., 600 volts (C20)	30931	Resistor—4.7 megohms, 1/4 watt (R8)
70453	Capacitor—Tubular, .02 mfd., 100 volts (C10, C15)	30992	Resistor—10 megohms, 1/4 watt (R4)
71013	Capacitor—Tubular, .05 mfd., 400 volts (C7)	70421	Screw—Case cover mounting screw (1 set)—Model 54B1
36718	Capacitor—Electrolytic, 10 mfd., 60 volts (C17)	71150	Screw—Case cover mounting screw—Model 54B2
70443	Coil—Oscillator coil (L2, L4)	70446	Screw—26-32 x 1/4" long self-tapping screw to mount battery holder
70438	Condenser—Variable tuning condenser (C1, C2, C5, C6)	70436	Socket—Tube socket
70452	Connector—Loop connector (1 set)	70423	Spacer—Rubber shock spacer
70439	Control—Volume control (R6)	70428	Speaker—2" x 3" elliptical P.M. speaker
70449	Fastener—Push fastener to hold loop—(2 required)	70425	Spring—Tuning knob spring clip
70429	Grommet—Rubber grommet for tube support (2 required), and to mount variable condenser (3 required)	70426	Stud—Lid support stud
70434	Hinge—Lid hinge—Model 54B1—Black (2 required)	70451	Support—Lid support
70984	Hinge—Lid hinge—Model 54B2—Brown (2 required)	70435	Support—Tube support less tube sockets and transformer
70441	Holder—Battery holder	70430	Switch—Power switch (S1)
70424	Knob—Tuning knob	70442	Transformer—First I-F transformer (L5, L6, C8, C9)
70432	Knob—Volume control knob	70440	Transformer—Output transformer (T1)
70708	Lead—Battery lead complete	70437	Transformer—Second I-F transformer (L7, L8, C11, C12)
70450	Lid—Case lid complete with lid support less loop—Model 54B1—Black	70433	Washer—Spring washer for volume control knob
70986	Lid—Case lid complete with lid support less loop—Model 54B2—Brown		MISCELLANEOUS ASSEMBLIES
70447	Loop—Antenna loop complete with connectors less lid—Model 54B1—Black	70456	Bottom—Case bottom—54B1—Black
70985	Loop—Antenna loop complete with connectors less lid—Model 54B2—Brown	70988	Bottom—Case bottom—54B2—Brown
70449	Nameplate—"RCA" nameplate	70457	Catch—Spring catch assembly
70427	Nut—Retaining nut for lid support stud	70455	Center—Case center—Model 54B1—Black
70420	Panel—Chrome panel	70987	Center—Case center—Model 54B2—Brown
70422	Plate—Backing plate for mounting hinge on lid—Model 54B1—Black (2 required)	70459	Handle—Carrying handle—Model 54B1—Black
		70989	Handle—Carrying handle—Model 54B2—Brown
		70461	Link—Handle link—Model 54B1—Black (2 required)
		70990	Link—Handle link—Model 54B2—Brown (2 required)
		70458	Nameplate—"His Master's Voice" nameplate
		70460	Screw—24-40 x 1/8" fillister head screw for case center strip

MODELS 55U, 55AU

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLY (RC 1017)	70388	Shaft—Tuning knob shaft
70389	Bearing—Tuning knob shaft bearing	34449	Socket—Lamp socket
70407	Button—Plug button (2 required)	35787	Socket—Phono input socket
70997	Capacitor—Ceramic, 5.6 mmf. (C24)	37605	Socket—Tube socket—moulded
39650	Capacitor—Mica, 820 mmf. (C15)	70390	Spring—Drive cord tension spring
70601	Capacitor—Tubular, .002 mfd., 400 volts (C5, C9)	70396	Spring—Volume control gear tension spring
70606	Capacitor—Tubular, .005 mfd., 400 volts (C1, C11)	70394	Switch—Power or radio phono switch (S1)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C8)	70386	Transformer—First I.F. transformer (L6, L7; C20, C21)
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10)	70387	Transformer—Second I.F. transformer (L8, L9; C22, C23; C6, C7)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C2, C14)	70385	Transformer—Output transformer
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C3, C4)	33726	Washer—"C" washer for tuning knob shaft
70408	Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C12, C13)	70406	Washer—Spring washer for volume control
70403	Coil—Oscillator coil		SPEAKER ASSEMBLY 922279-1
70383	Condenser—Variable tuning condenser complete with drum (C18, C16)	70405	Speaker—4" x 6" P.M. speaker complete
70322	Control—Volume control, 0.5 megohms (R10)		NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.
32634	Cord—Drive cord (approx. 48" overall length)		MISCELLANEOUS ASSEMBLIES
70392	Cord—Power cord	X1635	Board—Baffle board and grille
70384	Drum—Drive drum	70398	Clamp—Dial clamp (1 set)
70397	Gear—Power or radio-phono switch gear	35392	Decal—Trademark decal (RCA Victor)
70395	Gear—Volume control gear and spring assembly	70575	Decal—Trademark decal (Dog)
70404	Indicator—Station selector indicator	70402	Dial—Dial scale
70391	Insulator—Bakelite insulator for phono input socket	70707	Hinge—Cabinet lid hinge (2 required)
11765	Lamp—Dial lamp	70401	Knob—Power or radio-phono switch knob
70393	Loop—Antenna Loop (L1, L2)	70400	Knob—Tuning knob
70382	Plate—Dial back plate complete with pulleys less dial	70399	Knob—Volume control knob
30868	Plug—2 contact female plug for AC cable	14270	Spring—Retaining spring for tuning knob and volume control knob
36230	Pulley—Drive cord pulley	30545	Support—Lid support
30880	Resistor—150 ohms, 1/4 watt (R7)		
6134	Resistor—1200 ohms, 1 watt (R0)		
30492	Resistor—22,000 ohms, 1/4 watt (R2)		
14583	Resistor—220,000 ohms, 1/4 watt (R1, R5)		
30648	Resistor—470,000 ohms, 1/4 watt (R8)		
12928	Resistor—3.3 megohm, 1/4 watt (R4)		
31455	Resistor—5.6 megohm, 1/4 watt (R6)		
14974	Screw—#8-32 x 3/16" long set screw for lower gear		

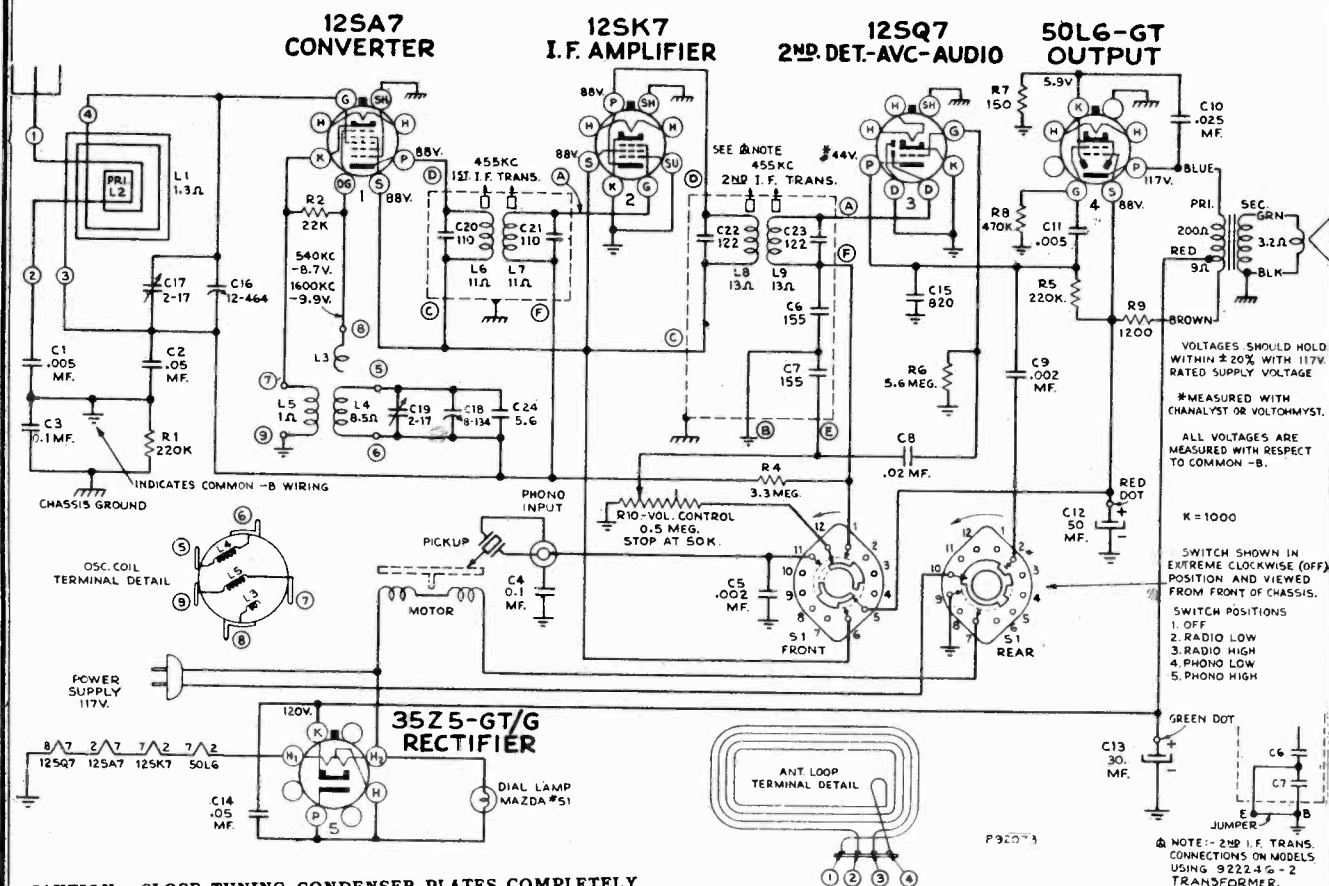
POWER OUTPUT
Undistorted..... 1.5 watts
Maximum..... 2.4 watts

LOUDSPEAKER (M922279-1) "PM"
Size..... 4 x 6 inch elliptical
V.C. Impedance..... 3.4 ohms at 400 cycles
Some models may have..... 5 inch PM

PHONOGRAPH
Type..... Automatic (T960015)
Record Capacity..... Twelve 10-in., Ten 12-in.
Turntable Speed..... 78 r.p.m.
Type Pickup..... Crystal
Motor Power Consumption..... 25 watts

RADIO CORP. OF AMERICA

MODELS 55U, 55AU,
Ch. RC-1017



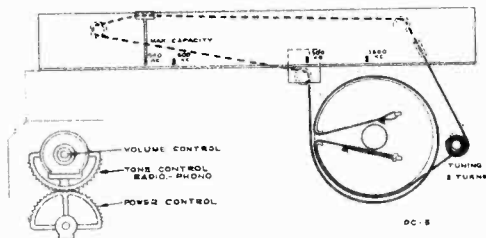
VOLTAGES SHOULD HOLD WITHIN $\pm 20\%$ WITH 117V. RATED SUPPLY VOLTAGE
*MEASURED WITH CHANALYST OR VOLTOHMYST.
ALL VOLTAGES ARE MEASURED WITH RESPECT TO COMMON -B.
K = 1000
SWITCH SHOWN IN EXTREME CLOCKWISE (OFF) POSITION AND VIEWED FROM FRONT OF CHASSIS.
SWITCH POSITIONS
1. OFF
2. RADIO LOW
3. RADIO HIGH
4. PHONO LOW
5. PHONO HIGH

CAUTION.—CLOSE TUNING CONDENSER PLATES COMPLETELY (C-C-W) BEFORE REMOVING CHASSIS FROM CABINET.

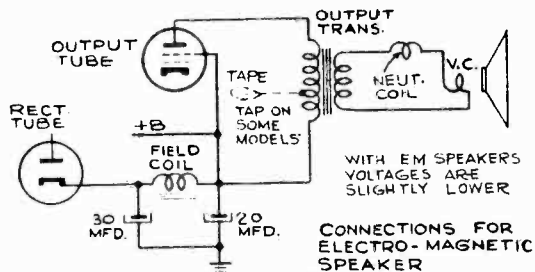
Take off both wooden strips on bottom of cabinet by removing wood screws before loosening chassis bolts.

CRITICAL LEAD DRESS.—

1. All filament wires should be dressed close to chassis.
2. Dress lead from switch to phono jack close to chassis and away from power cord.
3. Dress capacitor between 12SQ7 grid and terminal board away from chassis and away from other parts.
4. Dress all exposed leads away from each other and away from chassis to prevent short circuits.
5. In instrument assembly the lead from the rear section of gang to loop shall be dressed away from chassis and other wires to loop.



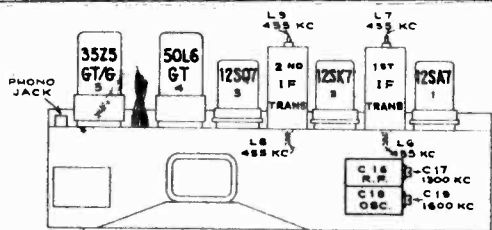
Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise plates (fully meshed). Adjust indicator pointer to left (max. cap.) mark on dial back plate.



Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "—B". Keep the output signal as low as possible to avoid a.v.c. action.

Output Meter.—Connect meter across speaker voice coil. Turn volume control clockwise to radio maximum high position (3) for alignment.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I.F. grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I.F. transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I.F. transformer
NOTE.—ANTENNA LOOP MUST BE IN CABINET				
3	Antenna terminal in series with 220 mmfd.	1600 kc	Gang at minimum	C19 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C17 (ant.)
5	Repeat steps 3 and 4.			



FREQUENCY RANGE..... 540-1,600 kc

INTERMEDIATE FREQUENCY..... 455 kc

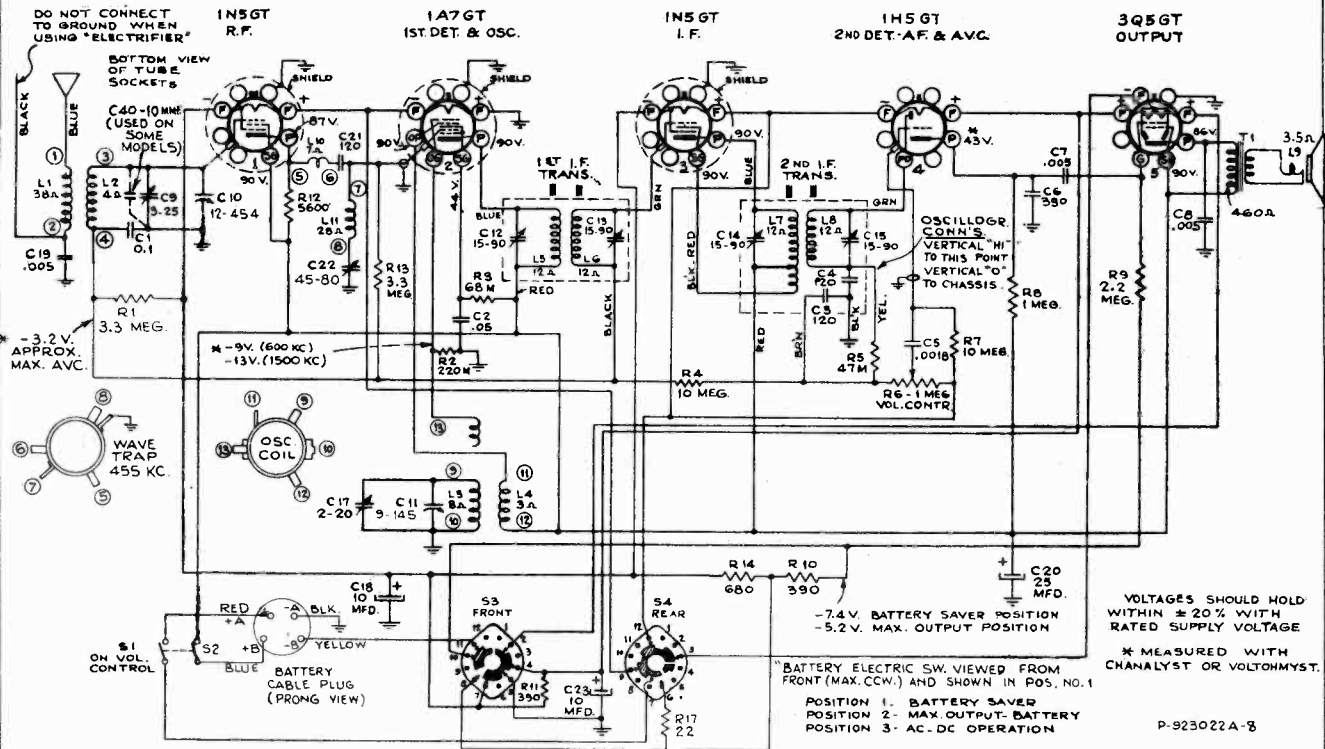
POWER SUPPLY RATING
105-125 volts, AC, 60 cycles..... 60 watts

IMPORTANT.—Do not plug chassis into a d.c. power supply.

MODEL 55F, CV-42

RADIO CORP. OF AMERICA

Electrifier
Ch. RC-1004E



NOTE: FOR BATTERY OPERATION TAPE LUG FOR ELECTRIFIER OPERATION, CONNECT LUG TO CHASSIS.

Precautionary Lead Dress.—

1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. All filament wires should be dressed close to chassis.
3. Keep AVC lead connecting C1, (0.1 mfd. filter) to antenna coil away from the 1A7GT plate.
4. Keep blue plate leads coming from I.F. transformers short and close to chassis.
5. Keep yellow leads connecting to oscillator coil away from trap coil.
6. Keep grid lead of 1N5GT RF tube away from 1A7GT grid.
7. Keep green lead from second I.F. transformer short and close to ground.

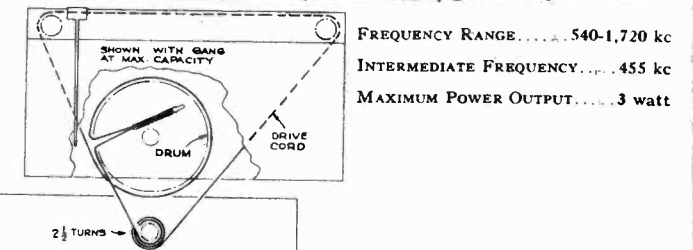
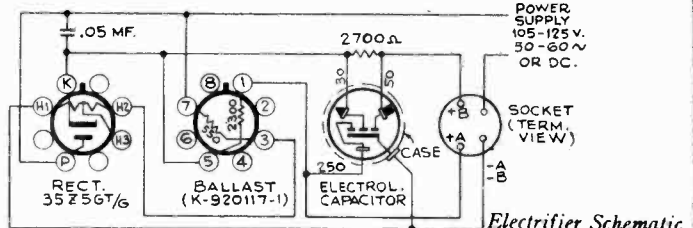
Cathode Ray Alignment is the preferable method. Connections for the oscillograph are shown in the diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid AVC action.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be set at the left-hand end dial calibration mark.

Step	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid in series with .01 mfd.	455 kc	Quiet point between 550 and 750 kc	C14, C15 (2nd I-F Trans.)
2	1A7GT grid in series with .01 mfd.			C12, C13 (1st I-F Trans.)
3		1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4	Antenna terminal in series with 200 mmfd.	1,300 kc	1,300 kc signal	C9 (ant.)
5		455 kc	Quiet point between 550 and 750 kc	Adjust C22 for minimum output on strong 455 kc signal



IMPORTANT

Remove any external ground connections when using the Electrifier. CAUTION: Turn power switch off (counter-clockwise) when installing or replacing tubes or batteries.

RECEIVER IS SHIPPED READY FOR BATTERY OPERATION. FOR ELECTRIFIER OPERATION, REMOVE TAPE FROM LUG AT REAR OF CHASSIS AND CONNECT LUG TO CHASSIS.

On a DC power supply, if no reception is obtained, reverse the plug in the outlet and retune. On an AC supply, reversal of the plug may reduce hum. CAUTION! Do not touch Radio Chassis unless power plug is removed from socket.

MODEL 55F, CV-42
Ch. RC-1004E

RADIO CORP. OF AMERICA
Model 55F and CV-42 Electrifier

MODELS 56X, 56X2,
56X3, Ch. RC-1011

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1004E		SPEAKER ASSEMBLIES Stamped 92515-1K	
38675	Arm—"On-Off" indicator arm	70381	Speaker—5" P.M. speaker less output transformer
39604	Capacitor—Mica, 10 mmf. (C40)	70991	Transformer—Output transformer
38672	Capacitor—Mica trimmer, 1 section 120 mmf. 1 section 45-80 mmf. (C21, C22)	SPEAKER ASSEMBLIES Stamped 92515-1P	
39640	Capacitor—Mica, 330 mmf. (C6)	70381	Speaker—5" P.M. speaker less output transformer
70627	Capacitor—Paper, .005 mfd., 1200 volts (C7, C8, C19)	70992	Transformer—Output transformer
70712	Capacitor—Paper, .0018 mfd., 700 volts (C5)	SPEAKER ASSEMBLIES Stamped 92515-1F	
70615	Capacitor—Paper, .05 mfd., 200 volts (C2)	70381	Speaker—5" P.M. speaker less output transformer
70617	Capacitor—Paper, 0.1 mfd., 400 volts (C1)	70992	Transformer—Output transformer
36718	Capacitor—Electrolytic, 10 mfd., 10 volts (C18, C23)	SPEAKER ASSEMBLIES Stamped 92515-1F	
38705	Capacitor—Electrolytic, 25 mfd., 90 volts (C20)	70381	Speaker—5" P.M. speaker less output transformer
38344	Coil—Antenna coil (L1, L2)	70993	Transformer—Output transformer
38345	Coil—Oscillator coil (L3, L4)	NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.	
70378	Coil—Wave trap (L10, L11)	MISCELLANEOUS ASSEMBLIES	
38599	Condenser—Variable tuning condenser (C9, C10, C11, C17)	X1606	Board—Baffle board and grille cloth
36080	Control—Volume control and power switch (R6, S1, S2)	36462	Clamp—Dial clamp
34662	Cord—Drive cord (approx. 59" overall length)	35915	Escutcheon—Dial escutcheon less dial
38821	Dial—Dial scale	36886	Knob—Power switch knob
35069	Fastener—Push fastener for dial plate	36722	Knob—Tuning knob
36090	Indicator—Station selector indicator	71281	Knob—Volume control knob
38350	Lever—Indicator arm actuating lever	30900	Spring—Retaining spring for knob
38673	Plate—Dial back plate complete with drive cord pulleys and indicator arm	38679	Window—Glass window for dial scale
30550	Plug—4 prong male plug for battery cable	CV-42 ELECTRIFIER	
32289	Pulley—Drive cord pulley	38702	Ballast—Plug-in ballast tube resistor
39930	Resistor—22 ohms, 1 watt (R17)	38701	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts, 1 section of 30 mfd., 150 volts, and 1 section of 250 mfd., 10 volts
30498	Resistor—390 ohms, 1/2 watt (R10, R11)	30847	Capacitor—.05 mfd., 400 volts
12262	Resistor—680 ohms, 1/2 watt (R14)	28451	Cover—Insulating cover for electrolytic capacitor
30734	Resistor—5600 ohms, 1/2 watt (R12)	35069	Fastener—Push fastener for bottom cover
30787	Resistor—47,000 ohms, 1/2 watt (R5)	28452	Plate—Bakelite mounting plate for electrolytic capacitor
14138	Resistor—68,000 ohms, 1/2 watt (R3)	38702	Resistor—Ballast tube resistor
14583	Resistor—220,000 ohms, 1/2 watt (R2)	30730	Resistor—2,700 ohms, 1/2 watt
30652	Resistor—1 megohm, 1/2 watt (R8)	31027	Socket—Power output socket
30649	Resistor—2.2 megohm, 1/2 watt (R9)	31251	Socket—Tube or ballast resistor socket
12928	Resistor—3.3 megohm, 1/2 watt (R1, R13)	38702	Tube—Ballast tube resistor
30992	Resistor—10 megohm, 1/2 watt (R4, R7)		
36897	Shaft—Tuning knob shaft		
70377	Shield—Tube shield for 1N5GT/G and 1H5GT/G tubes		
31251	Socket—Tube socket		
31418	Spring—Drive cord tension spring		
38349	Spring—Indicator arm return spring		
38670	Switch—"Battery-Electric" power switch (S3, S4)		
70379	Transformer—First I.F. transformer (L5, L6, C12, C13)		
70380	Transformer—Second I.F. transformer (L7, L8, C3, C4, C14, C15)		
33726	Washer—"C" for tuning knob shaft		

CIRCUIT DESCRIPTION.—Superheterodyne with one stage of radio frequency amplification, automatic volume control and class "A" beam power output. Battery operation, with optional AC-DC socket power attachment available. Model 55F can be operated on 105-125 volts AC, 50-60 cycles, or 105-125 DC, by means of an RCA CV-42 Electrifier.

LOUDSPEAKER (5 inch) 92515-1
Voice coil impedance at 400 cycles..... 3.4 ohms

POWER SUPPLY
Battery..... RCA VS022 or equivalent
Battery Drain.....
"A" 1 1/2 volt section..... .3 ampere
"B" 90 volt section..... 10 m.a. (Switch in "Battery Saver Position")
14 m.a. (Maximum Output Position)

POWER CONSUMPTION
With CV-42 Electrifier Unit (switch in "Electric" position)..... 22.5 watts
Cabinet Dimensions (inches)..... 18 x 9 1/4 x 10 1/2

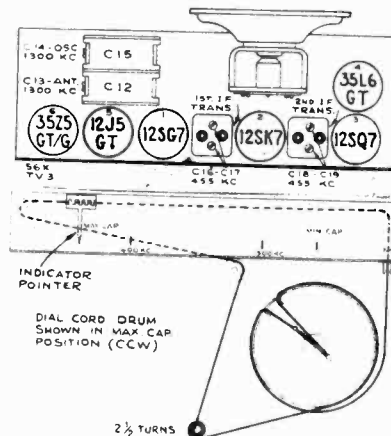
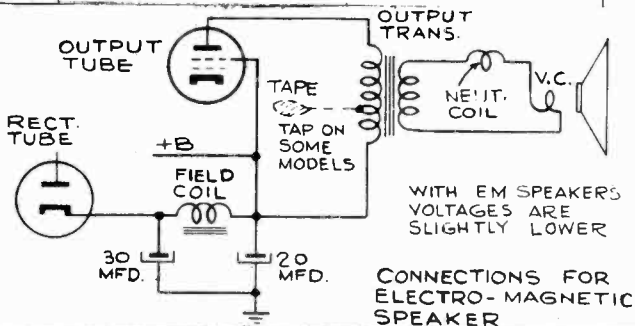
Models 56X, 56X2, 56X3

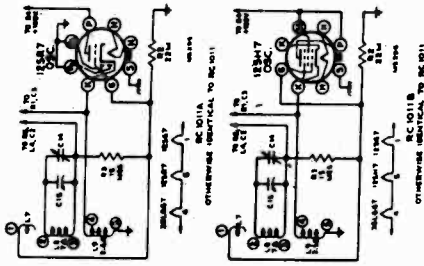
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	Stator of C-12 in series with .01 mfd.	455 kc	Quiet-point 1,600 kc end of dial	C18 and C19 2nd I.F. transformer
2				C16 and C17 1st I.F. transformer
3	Ant. lead in series with 200 mmfd.	1,300 kc	1,300 kc	C14 (osc.) C13 (ant.)
4	Repeat step 3.			

Test Oscillator. Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "B". Keep the output signal as low as possible to avoid AVC action.

Output Meter. Connect leads between speaker voice coil and chassis. Turn volume control to maximum clockwise, tone control to maximum highs (clockwise).

Dial Pointer Adjustment. Rotate tuning condenser fully counter-clockwise (plates closed). Adjust indicator pointer to left max. Cap.) mark on dial back plate.





Changes in the oscillator circuit of RCA Chassis RC1011A, above, and Chassis RC1011B, below.

In chassis RC 1011A and chassis RC 1011B, the 12J5GT oscillator tube has been replaced with a 12SR7 in the former and a 12SR7 in the latter. The wiring changes in respect to these tube changes are shown in the accompanying partial schematic. Otherwise chassis RC 1011A and RC 1011B are identical to chassis RC 1011.

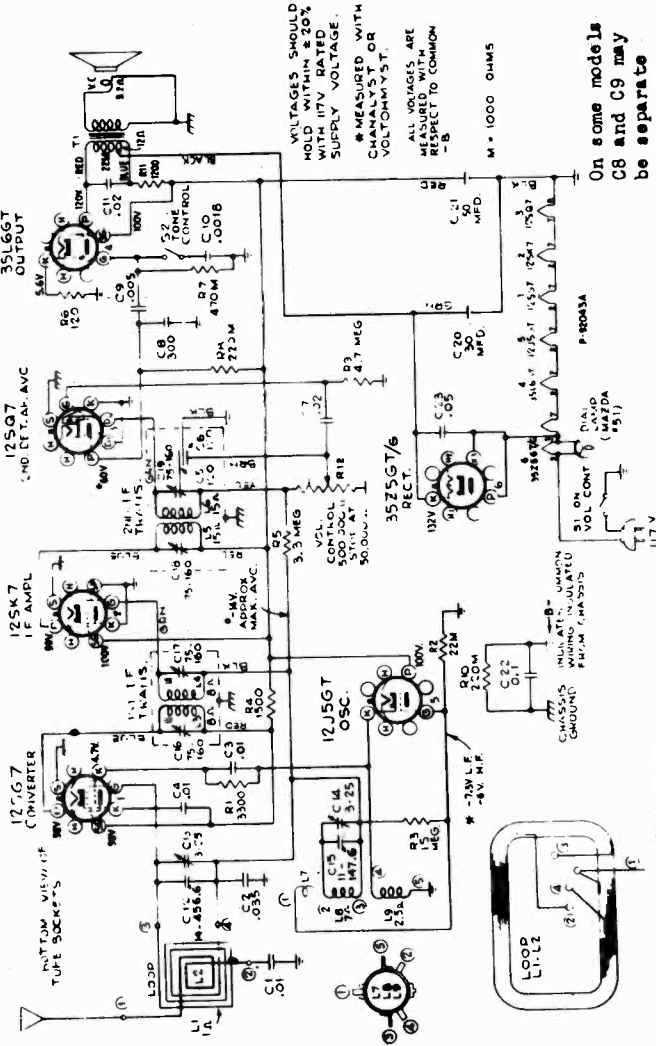
RCA 56X, 56X2, 56X3, Chassis RC-1011, A, B

These models are the same as Model 56X, except for the following changes. Some sets have a 200,000-ohm resistor in shunt with the primary of the first IF transformer. The replacement transformers may not need this resistor if the IF amplifier seems stable. Some sets have a 20-ohm, 1-watt resistor as a fuse in series with the electrolytic capacitor.

Some sets have a 56- μ f capacitor from terminal 1 of the oscillator coil to terminal 2. This is not necessary on replacement coils, as they have a built-in capacity windup.

In some models, the 500,000-ohm volume control is not furnished with a stop, 50,000 ohms from the high end of the control. Controls having no stop can be identified by a dot of red lacquer on the left side of the control, viewing the shaft end with terminals up. In models using this completely covered with spaghetti tubing, it is connected between the high end of the control and the yellow lead on the second IF transformer.

Replacement controls equipped with a stop do not need this external 50,000-ohm resistor, so when replacing a volume control, check the resistance between the stop and the high end of the replacement control with the arm turned fully clockwise. A reading of 50,000 ohms will indicate that the control is equipped with a stop and that the 50,000-ohm resistor should be removed before installing the new control.



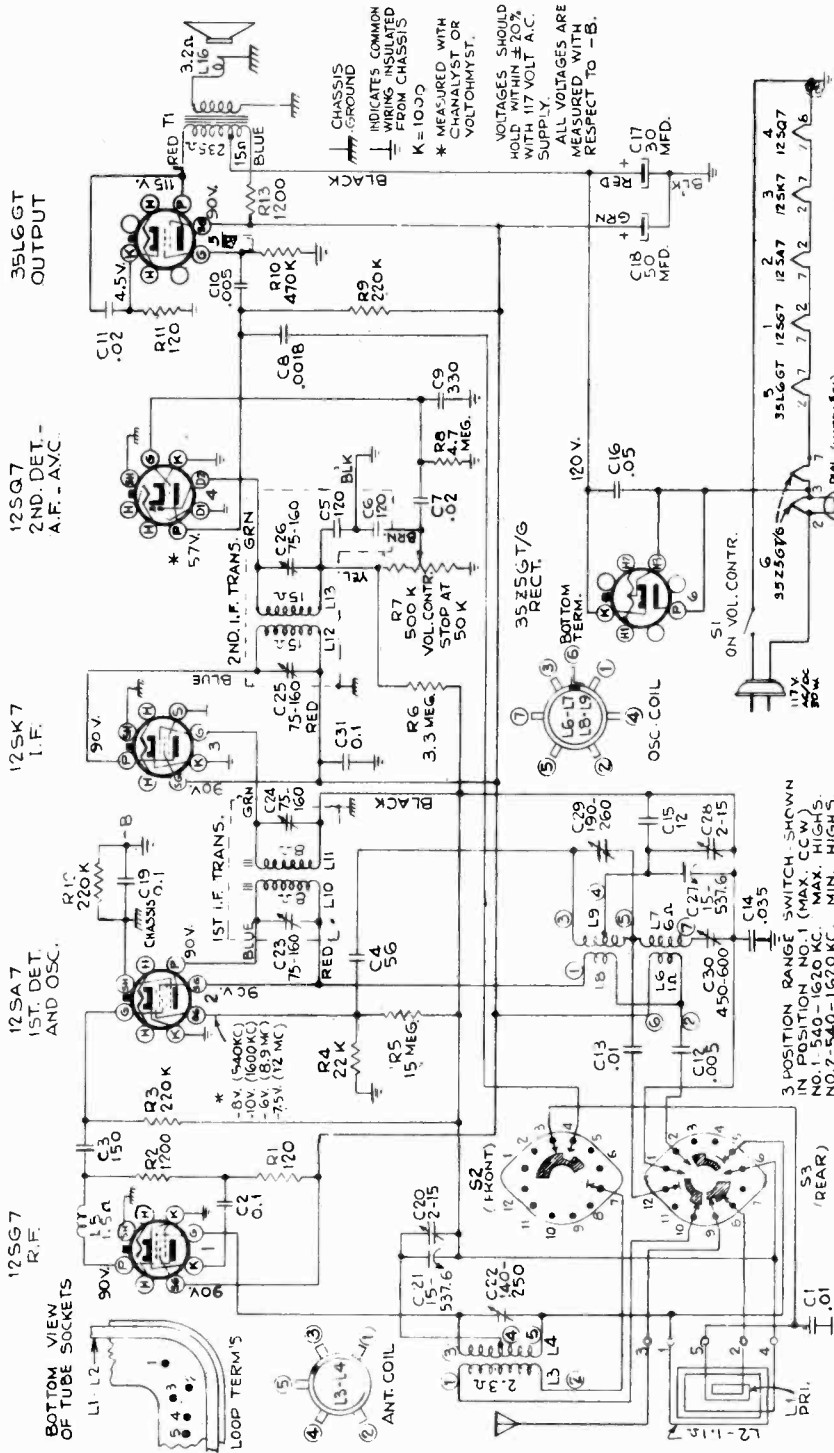
On some models C8 and C9 may be separate capacitors

- Critical Lead Dress**
1. Dress output plate bypass capacitor (C11 .02 mfd) against chassis.
 2. Dress 35L6GT plate lead (red) against chassis and away from volume control, leads and terminals.
 3. 35L6GT grid-leaking capacitor (C7 .02 mfd) away from volume control.
 4. Dress tone control lead against front apron.
 5. Dress 2nd IF yellow and brown leads away from output plate bypass capacitor (C11 .02 mfd) and away from all heater leads.
 6. Dress lead to speaker voice coil away from tuning shaft washer.
 7. Dress tone control capacitor (C10, .018 mfd) away from oscillator coil.
 8. Dress all unshielded leads away from each other and away from chassis to prevent short circuits.
 9. Dress blue and green leads at both IF transformers back in shield, leaving exposed lengths as short as possible.
- Frequency Range 540-1600 kc
Intermediate Frequency 415 kc
Power Output
Undistorted 1.0 watt
Maximum 1.5 watts
Loudspeaker (92510-1)
Type 3-inch PM
V.C. Impedance 3.4 ohms at 400 cycles
Power Supply Rating
105-125 volts, AC, 50 or 60 cycles, or DC
in watts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
3448	Socket—Loop socket	3448	Socket—Loop socket
3763	Socket—Tube socket	3763	Socket—Tube socket
3118	Spring—Drive cord tension spring	3118	Spring—Drive cord tension spring
7011	Transformer—First IF transformer (L-3, L-4, C-18, C-17)	7011	Transformer—First IF transformer (L-3, L-4, C-18, C-17)
3680	Transformer—Second IF transformer (L-3, L-4, C-3, C-4)	3680	Transformer—Second IF transformer (L-3, L-4, C-3, C-4)
3776	Weather—C weather for tuning knob shaft	3776	Weather—C weather for tuning knob shaft
			SPEAKER ASSEMBLY
			9618-1
7043	Speaker—3-inch PM speaker, complete	7043	Speaker—3-inch PM speaker, complete
			NOTE: If attempting an speaker in instrument does not agree with above speaker number, order replacement speaker with correct number and full description of part required.
			MISCELLANEOUS ASSEMBLIES
3883	Beck—Cabinet back for 56X	3883	Beck—Cabinet back for 56X
7600	Beck—Cabinet back for 56X2	7600	Beck—Cabinet back for 56X2
2104	Board—Beck board and grille cloth	2104	Board—Beck board and grille cloth
3881	Clamp—Dial clamp, for back, for 56X and 56X2	3881	Clamp—Dial clamp, for back, for 56X and 56X2
3882	Dial—Glass dial scale for 56X and 56X2	3882	Dial—Glass dial scale for 56X and 56X2
7610	Dial—Glass dial scale for 56X2	7610	Dial—Glass dial scale for 56X2
3791	Indicator—Push testifier (1 set) for cabinet back on 56X	3791	Indicator—Push testifier (1 set) for cabinet back on 56X
3306	Knob—Push test for cabinet (4 required)	3306	Knob—Push test for cabinet (4 required)
7614	Knob—Control knob (lever) for 56X2	7614	Knob—Control knob (lever) for 56X2
3875	Knob—Control knob (lever) for 56X and 56X2	3875	Knob—Control knob (lever) for 56X and 56X2
3000	Spring—Retaining spring for knob	3000	Spring—Retaining spring for knob

RADIO CORP. OF AMERICA

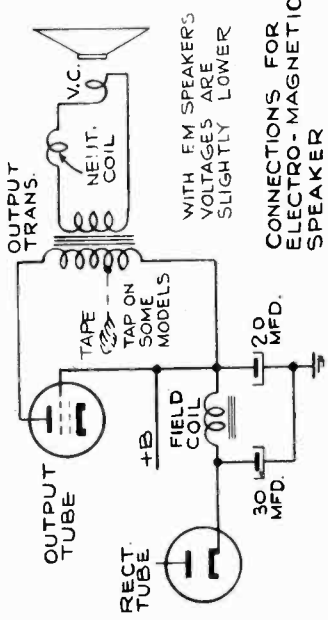
MODEL 56X5
Ch.RC-1023



Frequency Range
Broadcast 540-1600 kc
Short Wave 8.9-32 mc
Intermediate Frequency 455 kc

Tube Complement
(1) RCA-12SG7 R-F Amplifier
(2) RCA-12SA7 1st Det.-Osc.
(3) RCA-12SK7 I-F Amplifier
(4) RCA-12SQ7 2nd Det., A.V.C., and A-F Amplifier
(5) RCA-35L6-GT Power Output
(6) RCA-35Z5-GT/G Rectifier

Pilot Lamp Mazda No. S1, 6.8 volts, 0.2 amp.
Power Output Undistorted 1.0 watts
Maximum 1.5 watts
Loudspeaker (92510-1) "PM"
Size 5-inch
V.C. Impedance 3.4 ohms at 400 cycles
Power Supply Rating 105-125 volts, A.C. 50 or 60 cycles, or D.C. 30 watts



3 POSITION RANGE SWITCH SHOWN IN POSITION NO. 1 (MAX. C.C.W.)
NO. 1-540-1620 KC. MAX. HIGHS.
NO. 2-540-1620 KC. MIN. HIGHS.
NO. 3-8.9-12.0 MC. MIN. HIGHS.

CHASSIS GROUND
INDICATES COMMON WIRING SUBSTITUTED FROM CHASSIS
K=1000
* MEASURED WITH CHANNELYST OR VOLTOHMST.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT A.C. SUPPLY.
ALL VOLTAGES ARE MEASURED WITH RESPECT TO -B.

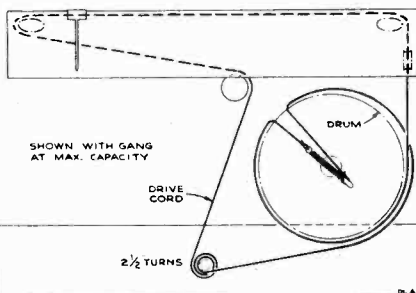
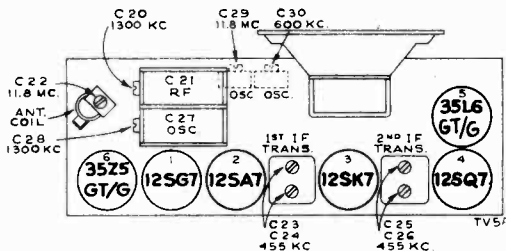
MODEL 56X5, Ch. RC-1023
 MODEL 56X10, Ch. RC-1023B

RADIO CORP. OF AMERICA

Models 56X5 and 56X10

Critical Lead Dress

1. Dress blue and green leads of both I-F transformers back in shield cans, leaving them as short as possible
2. Dress R-F plate filter capacitor (C2, 0.1 mf.) back against rear chassis apron.
3. Dress yellow and brown leads from 2nd I-F away from all other leads.
4. Dress all heater leads next to chassis.
5. Dress capacitor (C13, .01 mf.) parallel to osc. coil and approximately 3/16 inch from coil.
6. Dress tone control lead and speaker field leads next to chassis and front apron.
7. Dress pilot lamp leads away from ant. coil.
8. Dress leads from loop ant. coil around rectifier tube towards end of chassis.
9. Dress output plate lead against chassis.



Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf. capacitor to common "B." Keep the output signal as low as possible to avoid A.V.C. action.

Output Meter.—Connect meter across speaker voice coil. Turn volume control to maximum clockwise position, station selector switch to broadcast maximum high position (pos. 1), for broadcast alignment and to position 3 for high frequency band.

Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates fully meshed). Adjust indicator pointer to left (max. cap.) mark on dial back plate.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate.

Power Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Pin #8 of 12SA7 in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C25, C26 2nd I-F trans.
2		600 kc	600 kc "A" Band	C23, C24† 1st I-F trans.
3		1300 kc	1300 kc "A" Band	C30 (osc.) C30 Rock gang
4	Ant. terminal in series with 220 mmf.			C28 (osc.) C20 (R-F)
5		Repeat 3 Rocking gang		
6		Repeat 3, 4 and 5 for exact cal.		
7	Ant. terminal in series with 0.1 mfd.	11.8 mc	11.8 mc	C29 (osc.)* Rock gang
8	Ant. terminal in series with 47 mmf.	11.8 mc	11.8 mc	C22 (R-F) Rock gang
9	Repeat steps 7 and 8			

* Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver to approximately 10.9 mc where a weaker signal should be received.

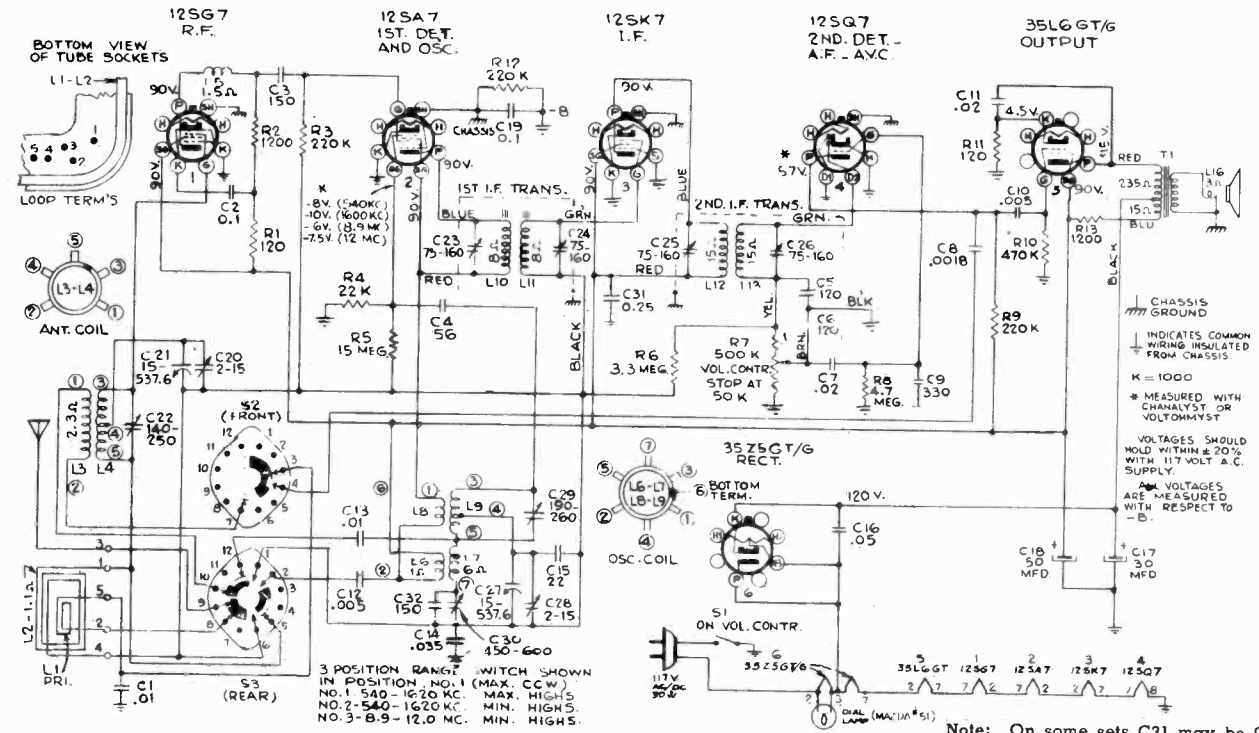
† Do not readjust C25 or C26.

Model 56X5

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1023			
39606	Capacitor—Mica, 12 mmf. (C15)	14583	Resistor—220,000 ohms, 1/4 watt (R3, R9, R12)
39622	Capacitor—Mica, 56 mmf. (C4)	30648	Resistor—470,000 ohms, 1/4 watt (R10)
39632	Capacitor—Mica, 150 mmf. (C3)	12928	Resistor—3.3 megohms, 1/4 watt (R6)
70417	Capacitor—Mica trimmer, 140-250 mmf., mounted on antenna coil (C22)	30931	Resistor—4.7 megohms, 1/4 watt (R8)
39839	Capacitor—Adjustable mica, comprising 1 section of 190-260 mmf. and 1 section of 450-600 mmf. (C29, C30)	38785	Resistor—15 megohms, 1/4 watt (R5)
39640	Capacitor—Mica, 330 mmf. (C9)	36897	Shaft—Tuning knob shaft
70627	Capacitor—Paper, .005 mfd. (C10, C12)	34449	Socket—Lamp socket
70712	Capacitor—Paper, .0018 mfd. (C8)	37605	Socket—Tube socket, moulded
70652	Capacitor—Paper, .01 mfd. (C1, C13)	31251	Socket—Tube socket, wafer
70711	Capacitor—Paper, .02 mfd. (C7, C11)	31418	Spring—Drive cord tension spring
70635	Capacitor—Paper, .035 mfd. (C14)	39837	Switch—Range switch (S2, S3)
70615	Capacitor—Paper, .05 mfd. (C16)	36800	Transformer—Output transformer (T1)
70617	Capacitor—Paper, 0.1 mfd. (C2, C19, C31)	70411	Transformer—First I-F transformer (L10, L11, C23, C24)
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C17, C18)	70412	Transformer—Second I-F transformer (L12, L13, C5, C6, C25, C26)
70416	Coil—Antenna coil (L3, L4, C22)	33726	Washer—"C" washer for tuning knob shaft
39892	Coil—Oscillator coil (L6, L7, L8, L9)	SPEAKER ASSEMBLY 92510-1	
70418	Coil—Peaking coil (L5)	70413	Speaker—5-inch P.M. speaker complete with cone and voice coil
39838	Condenser—Variable tuning condenser (C20, C21, C27, C28)	NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.	
36242	Control—Volume control and power switch (R7, S1)		
32634	Cord—Drive cord (approx. 49 inches overall length)	MISCELLANEOUS ASSEMBLIES	
70392	Cord—Power cord	39777	Back—Cabinet back
36237	Drum—Drive drum	70419	Dial—Glass dial scale
37068	Indicator—Station selector indicator	33006	Feet—Rubber feet for cabinet (4 required)
11765	Lamp—Dial lamp	X1337	Grille—Cabinet grille cloth
70980	Lead—Antenna lead	36886	Knob—Range switch knob
39841	Loop—Antenna loop (L1, L2)	36722	Knob—Volume control or tuning knob
36229	Plate—Dial back plate complete with drive cord pulleys less dial	30900	Spring—Retaining spring for knob
36230	Pulley—Drive cord pulley		
30189	Resistor—120 ohms, 1/4 watt (R1, R11)		
30731	Resistor—1200 ohms, 1/4 watt (R2)		
6134	Resistor—1200 ohms, 1 watt (R13)		
30492	Resistor—22,000 ohms, 1/4 watt (R4)		

RADIO CORP. OF AMERICA

MODEL 56X10
Ch.RC-1023B



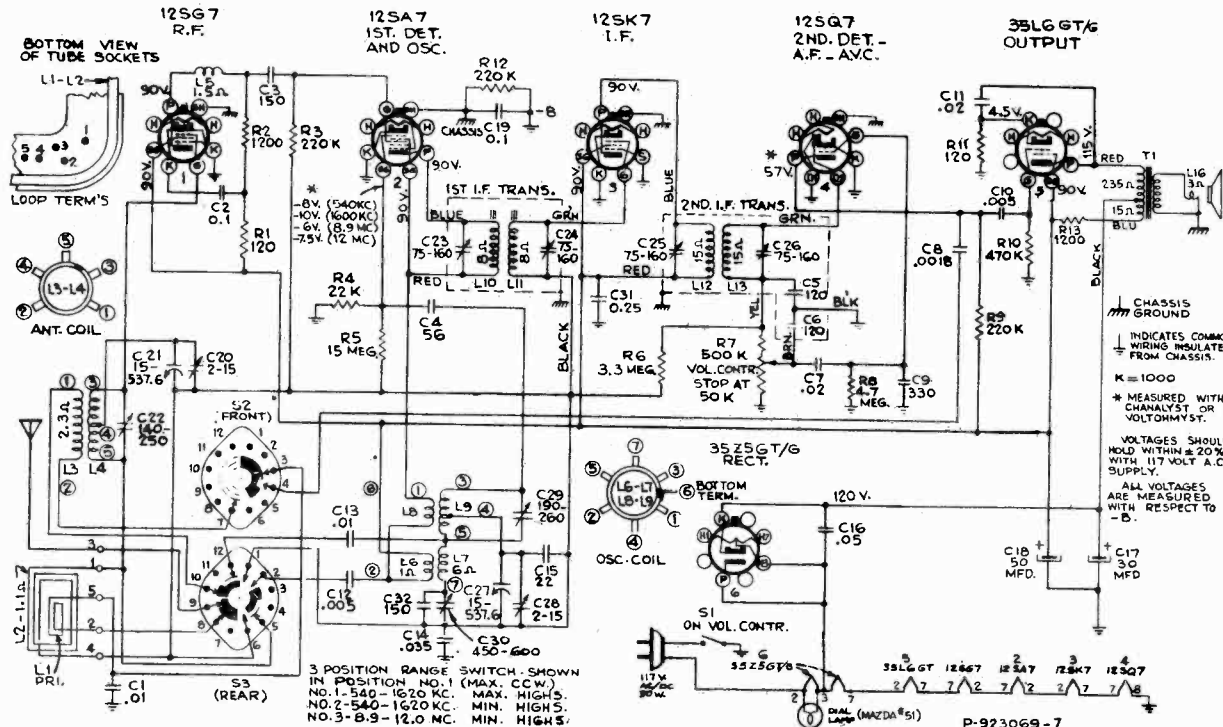
STOCK No.	DESCRIPTION	IF PEAK 455 KC	DESCRIPTION
CHASSIS ASSEMBLIES RC 1023B			
39612	Capacitor—Mica, 22 mmf. (C15)	30492	Resistor—22,000 ohms, 1/4 watt (R4)
39622	Capacitor—Mica, 55 mmf. (C4)	14583	Resistor—220,000 ohms, 1/4 watt (R3, R9, R12)
39632	Capacitor—Mica, 150 mmf. (C3, C32)	30648	Resistor—470,000 ohms, 1/4 watt (R10)
70417	Capacitor—Mica trimmer, 140-250 mmf., mounted on antenna coil (C22)	12928	Resistor—3.3 megohms, 1/4 watt (R6)
39839	Capacitor—Adjustable mica, comprising 1 section of 190-260 mmf. and 1 section of 450-600 mmf. (C29, C30)	30931	Resistor—4.7 megohms, 1/4 watt (R8)
39640	Capacitor—Mica, 330 mmf. (C9)	38785	Resistor—15 megohms, 1/4 watt (R5)
70712	Capacitor—Tubular, .0018 mfd. 800 volts (C8)	36897	Shaft—Tuning knob shaft
70627	Capacitor—Tubular, .005 mfd. 600 volts (C10, C12)	34449	Socket—Lamp socket
70652	Capacitor—Tubular, .01 mfd. 1000 volts (C1, C13)	37605	Socket—Tube socket, moulded
70711	Capacitor—Tubular, .02 mfd. 700 volts (C7, C11)	31251	Socket—Tube socket, wafer
70635	Capacitor—Tubular, .035 mfd. 600 volts (C14)	31418	Spring—Drive cord tension spring
70615	Capacitor—Tubular, .05 mfd. 400 volts (C16)	39837	Switch—Range switch (S2, S3)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C2, C19)	36800	Transformer—Output transformer (T1)
70618	Capacitor—Tubular, 0.25 mfd., 400 volts (C31)	70411	Transformer—First I-F transformer (L10, L11, C23, C24)
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C17, C18)	70412	Transformer—Second I-F transformer (L12, L13, C5, C6, C25, C26)
70416	Coil—Antenna coil (L3, L4, C22)	33726	Washer—"C" washer for tuning knob shaft
39892	Coil—Oscillator coil (L6, L7, L8, L9)	SPEAKER ASSEMBLY 92510-1	
70418	Coil—Peaking coil (L5)	70413	Speaker—5-inch P.M. speaker complete with cone and voice coil
70700	Condenser—Variable tuning condenser (C20, C21, C27, C28)	NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.	
36242	Control—Volume control and power switch (R7, S1)	MISCELLANEOUS ASSEMBLIES	
32634	Cord—Drive cord (approx. 49 inches overall length)	39953	Back—Cabinet back
70392	Cord—Power cord	36890	Clamp—Dial clamp—left hand
36237	Drum—Drive drum	36891	Clamp—Dial clamp—right hand
37068	Indicator—Station selector indicator	71323	Decal—Trade mark decal
11765	Lamp—Dial lamp (Mazda 51)	71310	Dial—Glass dial scale
70980	Lead—Antenna lead	37831	Fastener—Push fastener for cabinet back (1 set)
39841	Loop—Antenna loop (L1, L2)	36886	Knob—Range switch knob
36229	Plate—Dial back plate complete with drive cord pulleys less dial	36722	Knob—Tuning knob
36230	Pulley—Drive cord pulley	71281	Knob—Volume control knob
30189	Resistor—120 ohms, 1/4 watt (R1, R11)	30900	Spring—Retaining spring for knobs
30731	Resistor—1200 ohms 1/4 watt (R2)		
6134	Resistor—1200 ohms, 1 watt (R13)		

Frequency Range
Broadcast 540-1600 kc
Short Wave 8.9-12 mc
Intermediate Frequency 455 kc

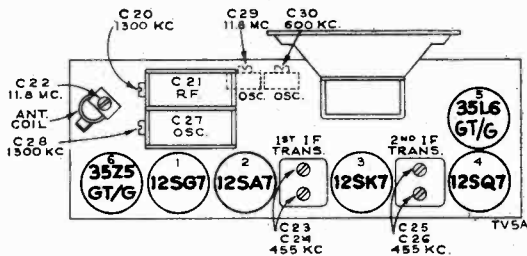
Power Output
Undistorted 1.0 watts
Maximum 1.5 watts

Loudspeaker (92510-1) "PM"
Size 5-inch
V.C. Impedance 3.4 ohms at 400 cycles

Power Supply Rating
105-125 volts, AC, 50 or 60 cycles, or DC 30 watts

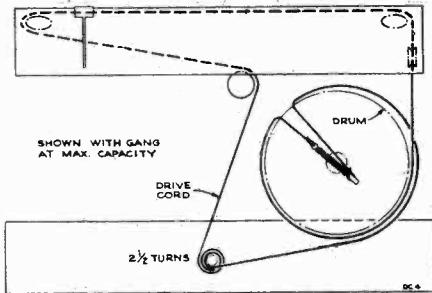


Note: On some sets C31 may be 0.1 mfd. or 0.2 mfd.



Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates fully meshed). Adjust indicator pointer to left (max. cap.) mark on dial backing plate.

Calibration Scale.—The glass tuning dial may be removed from the cabinet and temporarily attached to the dial backing plate.



Critical Lead Dress

1. Dress blue and green leads of both I-F transformers back in shield cans, leaving them as short as possible.
2. Dress R-F plate filter capacitor (C2, 0.1 mfd.) back against rear chassis apron.
3. Dress yellow and brown leads from 2nd I-F away from all other leads.
4. Dress all heater leads next to chassis.
5. Dress capacitor (C13, .01 mfd.) parallel to osc. coil and approximately 3/16 inch from coil.
6. Dress tone control lead and speaker field leads next to chassis and front apron.
7. Dress pilot lamp leads away from ant. coil.
8. Dress leads from loop to ant. coil around rectifier tube towards end of chassis.
9. Dress output plate lead against chassis.

Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mfd. capacitor to common "B." Keep the oscillator output signal as low as possible to avoid A.V.C. action.

Output Meter.—Connect meter across speaker voice coil. Turn volume control to maximum clockwise position, station selector switch to broadcast maximum high position (pos. 1), for broadcast alignment and to position 3 for high frequency band.

Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Pin 28 of 12SA7 in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C25, C26 2nd I-F trans.
2				*C23, C24 1st I-F trans.
3		600 kc	600 kc "A" Band	C30 (osc.) Rock gang
4	Ant. terminal in series with 220 mmf	1300 kc	1300 kc "A" Band	C28 (osc.) C20 R-F
5			Repeat 3 Rocking gang	
6			Repeat 3, 4 and 5 for exact cal.	
7	Ant. terminal in series with 0.1 mfd.	11.8 mc	11.8 mc	C29 (osc.)† Rock gang
8	Ant. terminal in series with 47 mmf.	11.8 mc	11.8 mc	C22 (R-F) Rock gang
9			Repeat steps 7 and 8	

† Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver to approximately 10.9 mc where a weaker signal should be received.

* Do not readjust C25 or C26.

Frequency Range	Broadcast	540-1600 kc
	Short Wave	8.9-12 mc
	Intermediate Frequency	455 kc
Power Output	Undistorted	1.0 watts
	Maximum	1.5 watts
Loudspeaker (92510-1) "PM"	Size	5-inch
	V.C. Impedance	3.4 ohms at 400 cycles
Power Supply Rating	105-125 volts, AC, 50 or 60 cycles, or DC	30 watts

RCA 56X5, 56X10

In some of these models the 15-megohm resistor R5 has been omitted. This does not affect the basic operation of the set, the primary effect being to make the set more sensitive.

RCA Radiola 61-10 (RC-1023A and RC-1023C)

In some of the 1023A chassis, two 10- μ f capacitors are used in parallel in place of the specified 22- μ f capacitor, C-15.

In the case of the 1023C chassis, service data given for the 1023A chassis will apply in toto.

RCA 56X5, 56X10, 61-5, 61-10

Changes in the schematic should be made on RCA Model 56X5 Models 56X10, 61-5 and 61-10.

Change the location of C9 from the grid of the 12SQ7 to ground, so that it is connected from the plate of the 12SQ7 to ground.

Earlier models may still have C9 connected from grid to ground; in these sets an increase in sensitivity will be obtained by reconnecting C9 in accordance with the above change in the schematic.

R6 has been changed from 3.3 to 2.2 megohms.

RCA 56 SERIES, 61 — SERIES

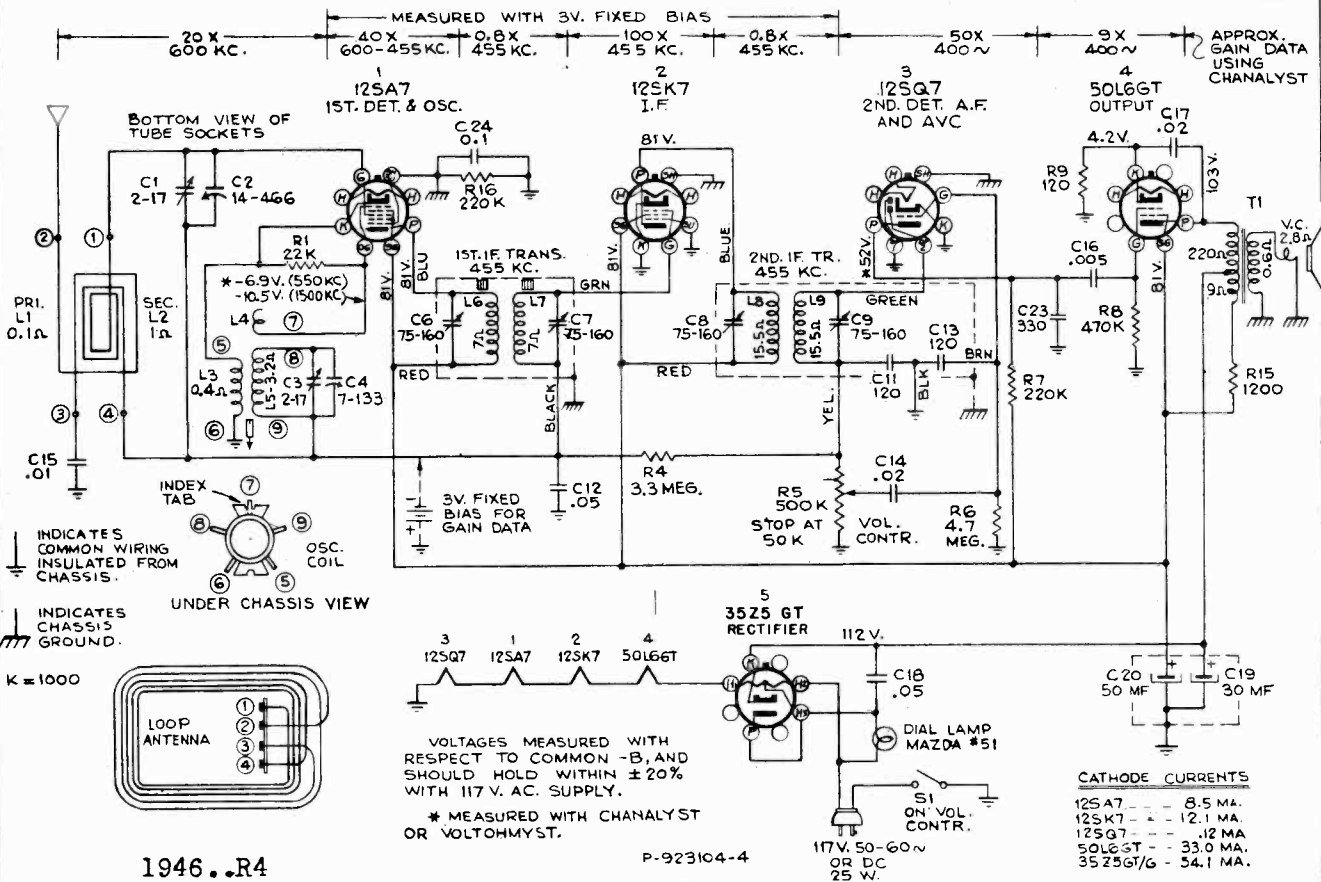
On some models of these series, the 500,000-ohm volume control is not furnished with a stop 50,000 ohms from the high end of the control. Volume controls having no stop can be identified by a dot of red lacquer on the left side of the control, viewing the shaft end with terminals up. In models using this control, a 56,000-ohm $\frac{1}{2}$ -watt resistor, completely covered with spaghetti tubing, is connected between the high end of the control and the yellow lead on the second i-f transformer.

Replacement controls equipped with a stop do not need this external 56,000-ohm resistor, so when replacing a volume control, check the resistance between the arm and the high end of the replacement control with the arm turned fully clockwise. A reading of 50,000 ohms will indicate that the control is equipped with a stop, and that the 56,000-ohm resistor in the set should be removed before installing the new control.

-MODELS 61-5, 61-10-

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC-1023 and RC-1023B	12928	Resistor—3.3 megohms, $\frac{1}{4}$ watt (R6)
39612	Capacitor—Mica, 22 mmf. (C15)	30931	Resistor—4.7 megohms, $\frac{1}{4}$ watt (R8)
39622	Capacitor—Mica, 56 mmf. (C4)	38785	Resistor—15 megohms, $\frac{1}{4}$ watt (R5)
39632	Capacitor—Mica, 150 mmf. (C3, C32)	36897	Shaft—Tuning knob shaft
70417	Capacitor—Mica trimmer, 140-250 mmf., mounted on antenna coil (C22)	34448	Socket—Lamp socket
39839	Capacitor—Adjustable mica, comprising 1 section of 190-260 mmf. and 1 section of 450-600 mmf. (C29, C30)	37605	Socket—Tube socket, moulded
39640	Capacitor—Mica, 330 mmf. (C9)	31251	Socket—Tube socket, water
70712	Capacitor—Tubular, .0018 mfd., 600 volts (C8)	31418	Spring—Drive cord tension spring
70627	Capacitor—Tubular, .005 mfd., 800 volts (C10, C12)	39837	Switch—Range switch (S2, S3)
70652	Capacitor—Tubular, .01 mfd., 1000 volts (C1, C13)	36800	Transformer—Output transformer (T1)
70711	Capacitor—Tubular, .02 mfd., 700 volts (C7, C11)	70411	Transformer—First I-F transformer (L10, L11, C23, C24)
70635	Capacitor—Tubular, .035 mfd., 800 volts (C14)	70412	Transformer—Second I-F transformer (L12, L13, C5, C6, C25, C26)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C16)	33726	Washer—"C" washer for tuning knob shaft
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C2, C19)		SPEAKER ASSEMBLY 92510-1
70618	Capacitor—Tubular, 0.25 mfd., 400 volts (C31)	70413	Speaker—5-inch P.M. speaker complete with cone and voice coil
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C17, C18)		NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.
70416	Coil—Antenna coil (L3, L4, C22)		MISCELLANEOUS ASSEMBLIES RC-1023 (61-5)
39892	Coil—Oscillator coil (L6, L7, L8, L9)	39777	Back—Cabinet back
70418	Coil—Peaking coil (L5)	X1603	Cloth—Grille cloth
70700	Condenser—Variable tuning condenser (C20, C21, C27, C28)	70706	Dial—Glass dial scale
36242	Control—Volume control and power switch (R7, S1)	33006	Feet—Rubber feet for cabinet (4 required)
32634	Cord—Drive cord (approx. 49 inches overall length)	36886	Knob—Range switch knob
70382	Cord—Power cord	38722	Knob—Tuning or volume control knob
36237	Drum—Drive drum	30900	Spring—Retaining spring for knobs
37068	Indicator—Station selector indicator		RC-1023B (61-10)
11765	Lamp—Dial lamp (Mazda 51)	39953	Back—Cabinet back
70980	Lead—Antenna lead	36890	Clamp—Dial clamp—left hand
39841	Loop—Antenna loop (L1, L2)	36891	Clamp—Dial clamp—right hand
36229	Plate—Dial back plate complete with drive cord pulleys less dial	71324	Dial—Glass dial scale
36230	Pulley—Drive cord pulley	37831	Fastener—Push fastener (1 set) for cabinet back
30189	Resistor—120 ohms, $\frac{1}{4}$ watt (R1, R11)	71016	Knob—Control knob
30731	Resistor—1200 ohms, $\frac{1}{4}$ watt (R2)	30900	Spring—Retaining spring for knobs
8134	Resistor—1200 ohms, 1 watt (R13)		
30492	Resistor—22,000 ohms, $\frac{1}{4}$ watt (R4)		
14583	Resistor—220,000 ohms, $\frac{1}{4}$ watt (R3, R9, R12)		
30648	Resistor—470,000 ohms, $\frac{1}{4}$ watt (R10)		

IF PEAK 455 KC



1946..R4

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn receiver the volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action:

Calibration Scale.—The glass tuning dial may be removed from the cabinet and mounted above the pointer for reference during alignment. The extreme left hand mark of the Standard Broadcast scale must be in line with the left hand mark on the dial backing plate.

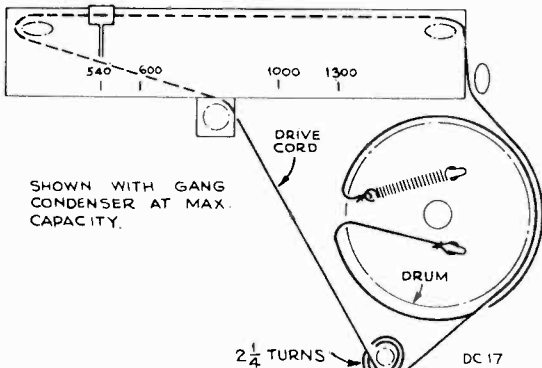
Dial Backing Plate.—In the event that only the chassis is returned for service, the marks on the dial backing plate may be used during alignment; refer to the Dial Indicator and Drive Mechanism drawing for corresponding frequencies.

Dial Pointer.—With the gang condenser in full mesh the dial pointer should be set to the left hand reference mark on the dial backing plate.

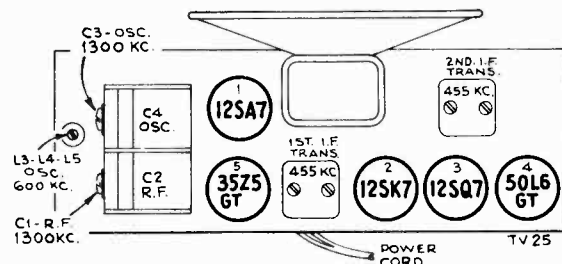
For additional information refer to booklet, "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc	Quiet-point 1,600 kc end of dial	C8 and C9 2nd I-F transformer
2	Stator of C2 through 0.1 mfd.			*C6 and C7 1st I-F transformer
3	Ant. lead in series with 200 mmfd.	1,300 kc	1,300 kc	C3 (osc.) C1 (ant.)
4		600 kc	600 kc "A" Band	L5 (osc.) Rock gang
5	Repeat steps 3 and 4			

*Do not readjust C8 or C9 when test oscillator is connected to C2.



Dial-Indicator and Drive Mechanism



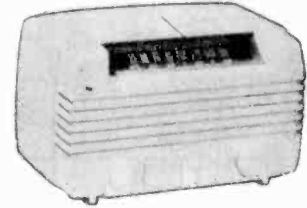
Tube and Trimmer Locations

MODELS 61-8, 61-9

RADIO CORP. OF AMERICA



61-8
(Brown Plastic)



61-9
(Ivory Plastic)

Specifications

Frequency Range 540-1600 kc
 Intermediate Frequency 455 kc
 Power Output
 Undistorted 1.0 watt
 Maximum 1.5 watts
 Tube Complement
 (1) RCA Radiotron 12SA7 Converter
 (2) RCA Radiotron 12SK7 I-F Amplifier
 (3) RCA Radiotron 12SQ7 2nd Det., A.V.C., and A-F Amplifier
 (4) RCA Radiotron 50L6GT Power Output
 (5) RCA Radiotron 35Z5GT Rectifier
 Pilot Lamp Mazda No. 51, 6-8 volts, 0.2 amp.
 Loudspeaker (922258-1)
 Type 4" x 6" PM
 V. C. Impedance 3.4 ohms at 400 cycles
 Cabinet Dimensions
 Height 7"
 Width 11 3/4"
 Depth 7 1/2"
 Shipping Weight 9 lbs.
 Tuning Drive Ratio 20:1
 Power Supply Rating
 105-125 volts, AC, 50 or 60 cycles, or DC 30 watts

POWER SUPPLY POLARITY.—For operation on DC, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On AC, reversal of the plug may reduce hum.

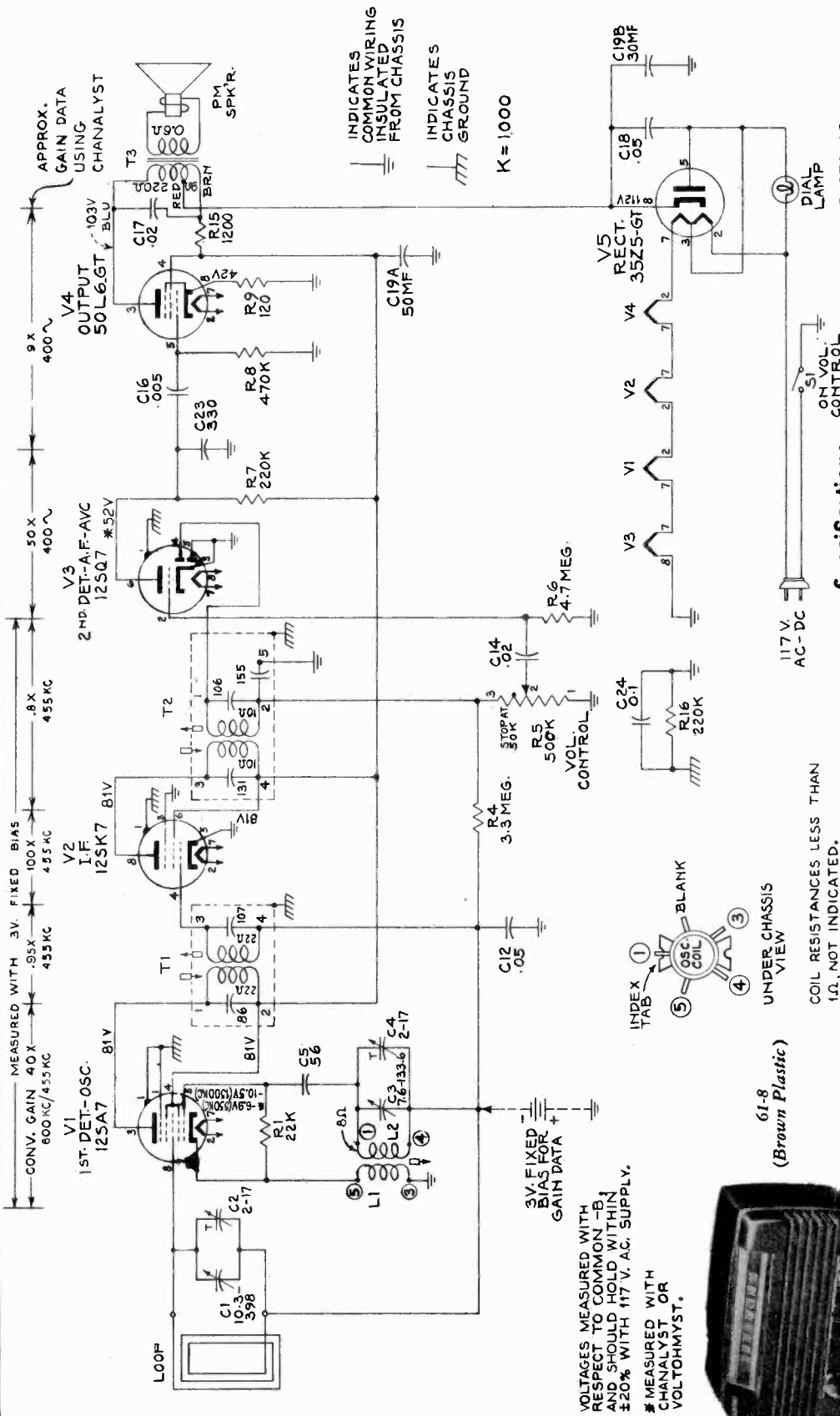
Critical Lead Dress

1. Dress blue and green leads of both I-F transformers back in shield cans, leaving them as short as possible.
2. Dress all heater leads next to chassis.
3. Dress power cord toward output transformer away from volume control and audio circuits.
4. Dress capacitor (C14) toward switch and parallel to chassis length.
5. Dress capacitor (C16) back against rear chassis apron.
6. Dress capacitor (C17) over and towards 50L6 socket perpendicular to capacitor (C14) and (C16).
7. Dress pilot lamp leads over second I-F transformer and away from tubes.
8. Dress blue lead from output transformer against front apron and away from I-F leads.
9. Dress contact on oscillator section of gang condenser back away from oscillator coil (L3, 4, 5) adjustment.

Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1034			
70389	Bearing—Tuning knob shaft bearing	34449	Socket—Lamp socket
39640	Capacitor—Mica, 330 mmf. (C23)	37605	Socket—Tube socket—moulded
70606	Capacitor—Tubular, .005 mfd., 400 volts (C16)	70390	Spring—Drive cord tension spring
70610	Capacitor—Tubular, .01 mfd., 200 volts (C15)	70465	Transformer—First I.F. transformer (L6, L7, C6, C7)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14, C17)	70466	Transformer—Second I.F. transformer (L8, L9, C8, C9, C11, C13)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C12, C18)	70385	Transformer—Output transformer (T1)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)	33726	Washer—"C" washer for tuning knob shaft
70408	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts and 1 section of 30 mfd., 150 volts (C19, C20)	SPEAKER ASSEMBLY 922258-1	
70477	Coil—Oscillator coil (L3, L4, L5)	70470	Speaker—4" x 6" P.M. elliptical speaker complete
70463	Condenser—Variable tuning condenser complete with drum (C1, C2, C3, C4)	NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.	
70322	Control—Volume control and power switch (R5, S1)	MISCELLANEOUS	
32634	Cord—Drive cord (approximately 38")	*71794	Back—Cabinet back for Radiola 61-8
70464	Drum—Drive drum	*71795	Back—Cabinet back for Radiola 61-9
70469	Indicator—Station selector indicator	Y1365	Cabinet—Brown plastic cabinet for Radiola 61-8
11765	Lamp—Dial lamp—Mazda 51	Y1366	Cabinet—Ivory plastic cabinet for Radiola 61-9
70468	Loop—Antenna loop (L1, L2)	70475	Clamp—Dial clamp (1 set)
70462	Plate—Dial back plate complete with drive cord pulleys less dial	*71796	Dial—Glass dial scale
36230	Pulley—Drive cord pulley	37831	Fastener—Push fastener (1 set) for cabinet back
30189	Resistor—120 ohms, 1/4 watt (R9)	70474	Knob—Control knob—ivory—for Radiola 61-9
6134	Resistor—1200 ohms, 1 watt (R15)	70473	Knob—Control knob—mottled walnut—for Radiola 61-8
30492	Resistor—22,000 ohms, 1/4 watt (R1)	30900	Spring—Retaining spring for knob
14583	Resistor—220,000 ohms, 1/4 watt (R7, R16)		
30648	Resistor—470,000 ohms, 1/4 watt (R8)		
31417	Resistor—3.3 megohms, 1/4 watt (R4)		
30931	Resistor—4.7 megohms, 1/4 watt (R6)		
70467	Shaft—Tuning knob shaft		

*THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN PRINT.



Specifications

POWER SUPPLY POLARITY.—For operation on DC, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On AC, reversal of the plug may reduce hum.

Loudspeaker (922258-1)
 Type 4" x 6" PM
 V. C. Impedance 3.4 ohms at 400 cycles

Cabinet Dimensions
 Cabinet (Outside) 7"
 Shipping Weight 9 lbs.
 Tuning Drive Ratio 20:1

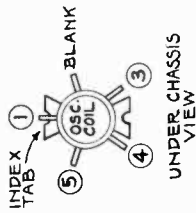
Power Supply Rating
 105-125 volts, AC, 50 or 60 cycles, or DC 30 watts

Frequency Range 540-1600 kc
Intermediate Frequency 455 kc
Power Output
 Undistorted 1.0 watt
 Maximum 1.5 watts

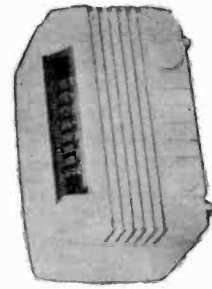
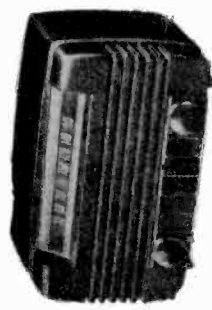
Tube Complement
 (1) RCA Radiotron 12SA7 Converter
 (2) RCA Radiotron 12SK7 I-F Amplifier
 (3) RCA Radiotron 12SQ7 2nd Det., A.V.C. and A-F Amplifier
 (4) RCA Radiotron 56L6GT Power Output
 (5) RCA Radiotron 35Z5GT Rectifier

Pilot Lamp Mazda No. 51, 6-8 volts, 0.2 amp.

COIL RESISTANCES LESS THAN 1Ω, NOT INDICATED.



61-8
(Brown Plastic)



61-9
(Ivory Plastic)

VOLTAGES MEASURED WITH RESPECT TO COMMON -B1 AND SHOULD HOLD WITHIN ±20% WITH 117 V. AC SUPPLY.
 * MEASURED WITH CHANNELYST OR VOLTOHMYST.

MODELS 61-8, 61-9,
CHASSIS RC-1064

RADIO CORP. OF AMERICA

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn receiver the volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

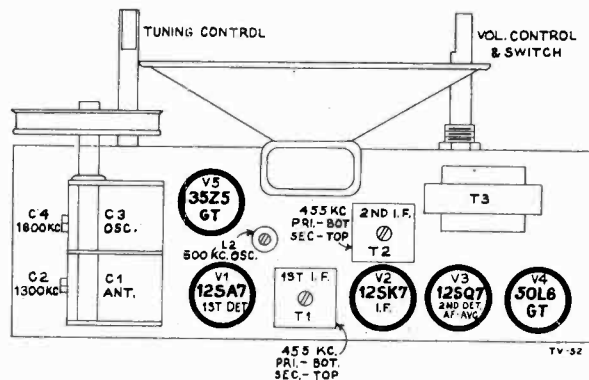
Calibration Scale.—The glass tuning dial may be removed from the cabinet and mounted above the pointer for reference during alignment. The extreme left hand mark of the Standard Broadcast scale must be in line with the left hand mark on the dial backing plate.

Dial Backing Plate.—In the event that only the chassis is returned for service, the marks on the dial backing plate may be used during alignment; refer to the Dial Indicator and Drive Mechanism drawing for corresponding frequencies.

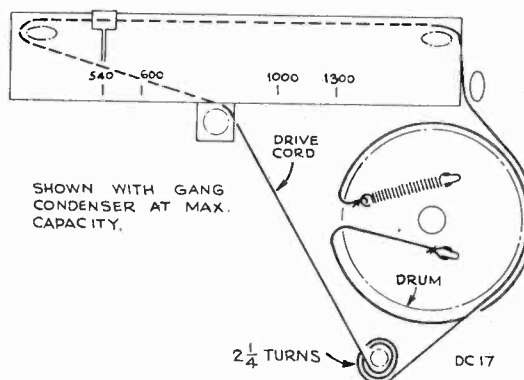
Dial Pointer.—With the gang condenser in full mesh the dial pointer should be set to the left hand reference mark on the dial backing plate.

For additional information refer to booklet, "RCA Victor Receiver Alignment."

- Dress capacitor (C16) back against rear chassis apron.
- Dress capacitor (C17) over and towards 50L6 socket perpendicular to capacitor (C14) and (C16).
- Dress pilot lamp leads over second I-F transformer and away from tubes.
- Dress blue leads from output transformer against front apron and away from I-F leads.
- Dress contact on oscillator section of gang condenser back away from oscillator coil adjustment.



TUBE AND TRIMMER LOCATIONS RC-1064



Dial-Indicator and Drive Mechanism

ALIGNMENT TABULATION RC-1064

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc	Quiet-point 1,600 kc end of dial	T2 Top & bottom 2nd. I-F trans.
2	Stator of C1 through 0.1 mfd.			*T1 Top & bottom 1st. I-F trans.
3	Short wire placed near loop antenna	1,300 kc	1,300 kc	C4 (osc.) C2 (ant.)
4		600 kc	600 kc "A" Band	L2 (osc.) Rock gang
5	Repeat steps 3 and 4			

* Do not readjust T2 when test oscillator is connected to C2.

Critical Lead Dress

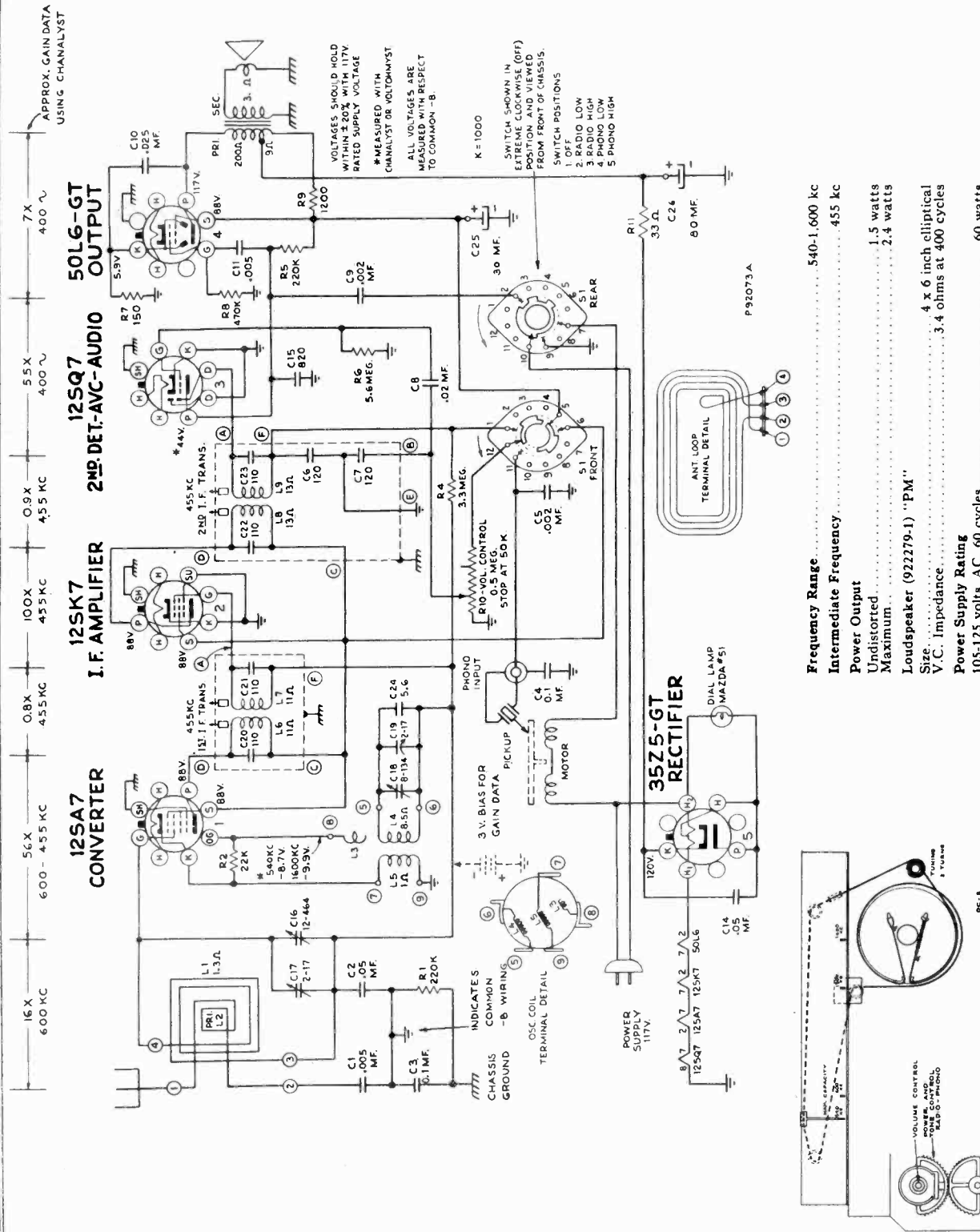
- Dress blue and green leads of both I-F transformers back in shield cans, leaving them as short as possible.
- Dress all heater leads next to chassis.
- Dress power cord toward output transformer away from volume control and audio circuits.
- Dress capacitor (C14) toward switch and parallel to chassis length.

Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1034—RC 1064			
39622	Capacitor—Mica, 56 mmf. (for RC-1064 & some RC-1034) (C5)	70467	Resistor—Fixed composition, 3.3 megohms ±20%, ½ watt (R4)
72571	Capacitor—Mica, 330 mmf. (C23)	34449	Resistor—Fixed composition, 4.7 megohms ±20%, ½ watt (R6)
70606	Capacitor—Tubular, .005 mfd., 400 volts (C16)	70477	Shaft—Tuning knob shaft
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14, C17)	34449	Socket—Lamp socket
70615	Capacitor—Tubular, .05 mfd., 400 volts (C12, C18)	37605	Socket—Tube socket, molded
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)	70390	Spring—Drive cord tension spring
70408	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C19A, C19B or C19, C20)	70465	Transformer—First I.F. transformer (for RC-1034) (L6, L7, C6, C7)
70477	Coil—Oscillator coil (for some RC-1034) (L3, L4, L5)	73036	Transformer—First I.F. transformer (for RC-1064) (T1)
71406	Coil—Oscillator coil (for some RC-1034) (L3, L4)	70466	Transformer—Second I.F. transformer (for RC-1034) (L8, L9, C8, C9)
73048	Coil—Oscillator coil (for RC-1064) (L1, L2)	73037	Transformer—Second I.F. transformer (for RC-1064) (T2)
70643	Condenser—Variable tuning condenser complete with drive drum (for RC-1034) (C1, C2, C3, C4)	70385	Transformer—Output transformer (for RC-1034) (T1)
73047	Condenser—Variable tuning condenser complete with drive drum (for RC-1064) (C1, C2, C3, C4)	72296	Transformer—Output transformer (for RC-1064) (T3)
70322	Control—Volume control and power switch (R-5, S-1)	33726	Washer—"C" washer for tuning knob shaft
72913	Cord—Drive cord (approx. 40" overall length)	SPEAKER ASSEMBLY 922258-1	
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	70470	Speaker—4" x 6" elliptical speaker complete with cone and voice coil
70469	Indicator—Station selector indicator	MISCELLANEOUS	
11765	Lamp—Dial lamp—Mazda #51	71794	Back—Cabinet back for Radiola 61-8
70468	Loop—Antenna loop (for RC-1034) (L1, L2)	71795	Back—Cabinet back for Radiola 61-9
73049	Loop—Antenna loop complete (for RC-1064)	X1365	Cabinet—Brown plastic cabinet for Radiola 61-8
70462	Plate—Dial back plate complete with drive cord pulleys less dial	Y1366	Cabinet—Ivory plastic cabinet for Radiola 61-9
36230	Pulley—Drive cord pulley	70475	Clamp—Dial clamp (1 set)
	Resistor—Fixed composition, 120 ohms ±10%, ½ watt (R9)	71796	Dial—Glass dial scale
	Resistor—Fixed composition, 1200 ohms ±10%, 1 watt (R15)	37831	Fastener—Push fasteners (1 set) for cabinet back
	Resistor—Fixed composition, 22,000 ohms ±20%, ½ watt (R1)	70473	Knob—Control knob—red-brown—for Radiola 61-8
	Resistor—Fixed composition, 220,000 ohms ±20%, ½ watt (R7, R16)	70474	Knob—Control knob—ivory—for Radiola 61-9
	Resistor—Fixed composition, 470,000 ohms ±20%, ½ watt (R8)	30900	Spring—Retaining spring for knob

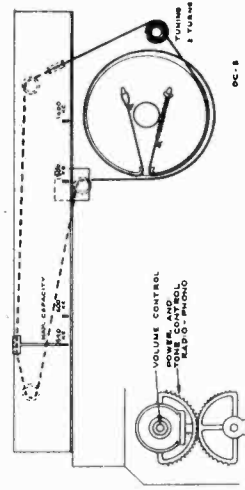
MODELS 65U, 65AU
Chassis RC-1017A,
1017B

RADIO CORP. OF AMERICA



Frequency Range	540-1,600 kc
Intermediate Frequency	455 kc
Power Output	1.5 watts
Undistorted Maximum	2.4 watts
Loudspeaker (92279-1) "PM"	4 x 6 inch elliptical
Size	3.4 ohms at 400 cycles
V.C. Impedance	60 watts
Power Supply Rating	105-125 volts, AC, 60 cycles

IMPORTANT—Do not plug chassis into a d-c power supply.
REFER TO SERVICE DATA FOR MODEL 960260-2 FOR INFORMATION AND PARTS ON RECORD CHANGER



Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates fully meshed). Adjust indicator pointer to left (max. cap.) mark on dial back plate.

RADIO CORP. OF AMERICA

MODELS 65U, 65AU,
Chassis RC-1017A,
RC-1017B

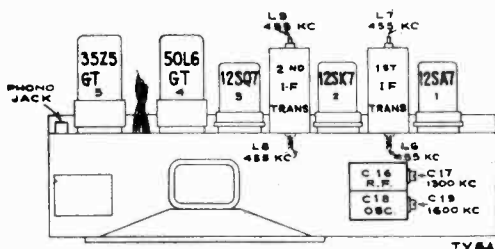
Alignment Procedure

CAUTION.—CLOSE TUNING CONDENSER PLATES COMPLETELY (C-C-W) BEFORE REMOVING CHASSIS FROM CABINET.

Take off both wooden strips on bottom of cabinet by removing wood-screws before loosening chassis bolts.

CRITICAL LEAD DRESS.—

1. All filament wires should be dressed close to chassis.
2. Dress lead from switch to phono jack close to chassis and away from power cord.
3. Dress capacitor between 12SQ7 grid and terminal board away from chassis and away from other parts.
4. Dress all exposed leads away from each other and away from chassis to prevent short circuits.
5. In instrument assembly the lead from the rear section of gang to loop shall be dressed away from chassis and other wires to loop.



Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on d-c, as this would damage the motor.
Reversal of plug in outlet receptacle may reduce hum.

Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "B". Keep the output signal as low as possible to avoid a-v-c action.

Output Meter.—Connect meter across speaker voice coil. Turn volume control clockwise to radio maximum high position (3) for alignment.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I.F. grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I.F. transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I.F. transformer *
NOTE.—ANTENNA LOOP AND RECORD CHANGER MUST BE IN CABINET				
3	Antenna terminal in series with 220 mmfd.	1600 kc	Gang at minimum	C19 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C17 (ant.)
5	Repeat steps 3 and 4.			

*Do not readjust L8 or L9 when test oscillator is connected to 1st Det.

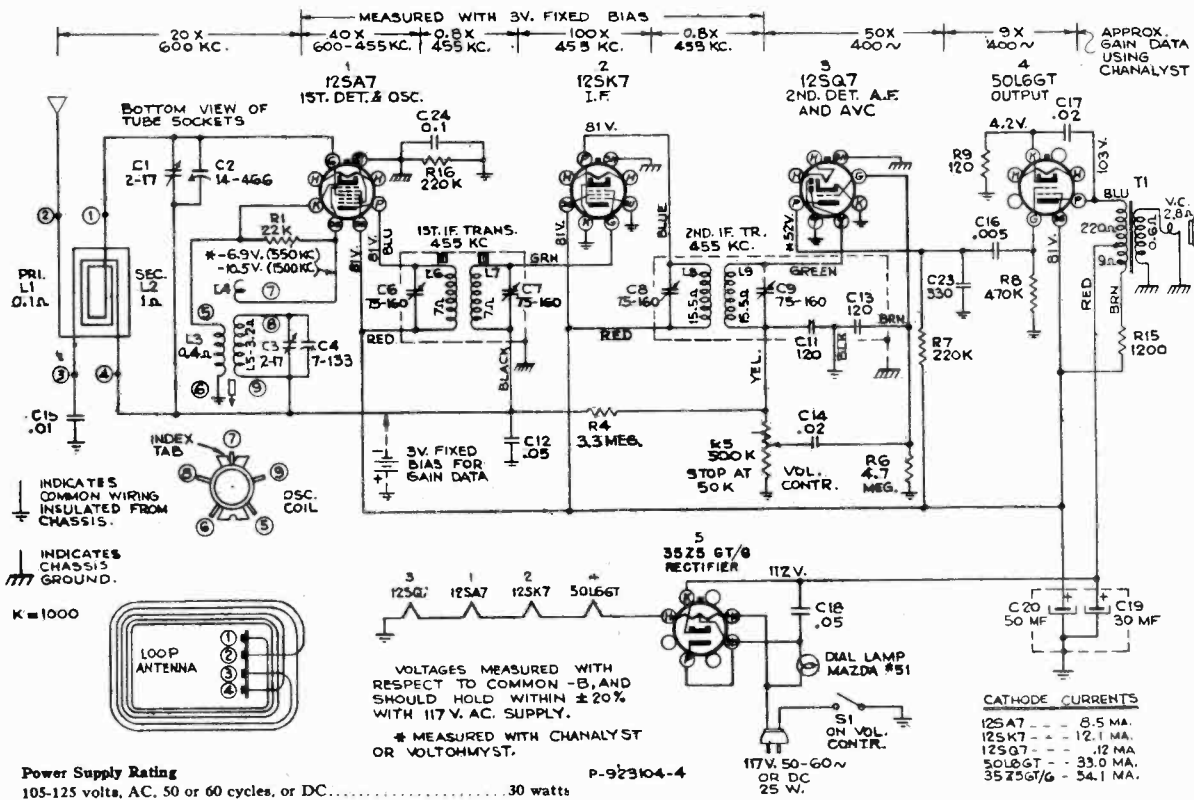
Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1017A RC 1017B		
70389	Bearing—Tuning knob shaft bearing	70390	Spring—Drive cord tension spring
70407	Button—Plug button (2 required)	70396	Spring—Volume control gear tension spring
70997	Capacitor—Mica, 5.6 mmf. (C24)	70394	Switch—Power or radio phono switch
39650	Capacitor—Mica, 820 mmf. (C15)	70386	Transformer—First I.F. transformer
70601	Capacitor—Tubular, .002 mfd., 400 volts (C5, C9)	70387	Transformer—Second I.F. transformer
70606	Capacitor—Tubular, .005 mfd., 400 volts (C1, C11)	70385	Transformer—Output transformer
70611	Capacitor—Tubular, .02 mfd., 400 volts (C8)	33726	Washer—"C" washer for tuning knob shaft
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10)	70406	Washer—Spring washer for volume control
70615	Capacitor—Tubular, .05 mfd., 400 volts (C2, C14)		SPEAKER ASSEMBLY 922279-1
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C3, C4)	70405	Speaker—4" x 6" P.M. speaker complete
*72312	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 80 mfd., 150 volts (C25, C26)		SPEAKER ASSEMBLY 922258-2
70403	Coil—Oscillator coil	71058	Speaker—4" x 6" P.M. speaker complete
70383	Condenser—Variable tuning condenser complete with drum		SPEAKER ASSEMBLY 922258-1
70322	Control—Volume control	70470	Speaker—4" x 6" P.M. elliptical speaker complete
32634	Cord—Drive cord (approx. 48" overall length)		NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.
70392	Cord—Power cord		MISCELLANEOUS
70384	Drum—Drive drum	70398	Clamp—Dial clamps (1 set)
70397	Gear—Power or radio-phono switch gear	71984	Decal—Trade mark decal (RCA Victor)
70395	Gear—Volume control gear and spring assembly	71966	Decal—Trade mark decal (Victrola)
70404	Indicator—Station selector indicator	70402	Dial—Glass dial
70391	Insulator—Bakelite insulator for phono input socket	71595	Feet—Rubber feet (4 required)
11765	Lamp—Dial lamp	X1630	Grille—Baffle board and grille cloth
*72311	Loop—Antenna loop	70707	Hinge—Lid hinge (2 required)
70382	Plate—Dial back plate complete with pulleys less dial	70401	Knob—Power switch and radio-phono switch knob
30868	Plug—2 contact female plug for "AC" cable	70400	Knob—Tuning knob
36230	Pulley—Drive cord pulley	70399	Knob—Volume control knob
*72313	Resistor—33 ohms, 1 watt (R11)	71815	Mounting—One set of hardware consisting of four springs, two spring washers and two rubber washers to mount record changer.
30880	Resistor—150 ohms, 1/4 watt (R7)	14270	Spring—Retaining spring for knobs
6134	Resistor—1200 ohms, 1 watt (R9)	71824	Stud—Stud and screw to mount lid hinge (1 set)
30492	Resistor—22,000 ohms, 1/4 watt (R2)	39545	Support—Lid support
14583	Resistor—220,000 ohms, 1/4 watt (R1, R5)	X1386	Cabinet—Cabinet for Model 65U
30648	Resistor—470,000 ohms, 1/4 watt (R8)		
12928	Resistor—3.3 megohms, 1/4 watt (R4)		
31455	Resistor—5.6 megohms, 1/4 watt (R6)		
14974	Screw—#8-32 x 3/8" long set screw for lower gear		
70388	Shaft—Tuning knob shaft		
34449	Socket—Lamp socket		
35787	Socket—Phono input socket		
37605	Socket—Tube socket—moulded		

*THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN PRINT.
APPLY TO YOUR RCA DISTRIBUTOR FOR PRICES OF REPLACEMENT PARTS

MODELS 65X1, 65X2
Ch. RC-1034

RADIO CORP. OF AMERICA



Power Supply Rating
105-125 volts, AC, 50 or 60 cycles, or DC..... 30 watts

POWER SUPPLY POLARITY.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Critical Lead Dress

1. Dress blue and green leads of both I-F transformers back in shield cans, leaving them as short as possible.
2. Dress all heater leads next to chassis.
3. Dress power cord toward output transformer away from volume control and audio circuits.
4. Dress capacitor (C14) toward switch and parallel to chassis length.
5. Dress capacitor (C16) back against rear chassis apron.
6. Dress capacitor (C17) over and towards 50L6 socket perpendicular to capacitor (C14) and (C16).
7. Dress pilot lamp leads over second I-F transformer and away from tubes.

- Frequency Range 540-1600 kc
Intermediate Frequency 455 kc
Power Output
Undistorted 1.0 watt
Maximum 1.5 watts
Tube Complement
(1) RCA-12SA7 Converter
(2) RCA-12SK7 I.F. Amplifier
(3) RCA-12SQ7 2nd Det., A.V.C., and A.F. Amplifier
(4) RCA-50L6GT Power Output
(5) RCA-35Z5GT Rectifier
Pilot Lamp Mazda No. 51, 6-8 volts, 0.2 amp.
Loudspeaker (922258-1)
Type 4" x 6" PM
V. C. Impedance 3.4 ohms at 400 cycles

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1034		
70389	Bearing—Tuning knob shaft bearing	*70467	Shaft—Tuning knob shaft
39640	Capacitor—Mica, 330 mmf. (C23)	34449	Socket—Lamp socket
70606	Capacitor—Tubular, .005 mfd., 400 volts (C16)	37605	Socket—Tube socket—moulded
70610	Capacitor—Tubular, .01 mfd., 200 volts (C15)	70390	Spring—Drive cord tension spring
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14, C17)	*70465	Transformer—First I.F. transformer (L6, L7, C6, C7)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C12, C18)	*70466	Transformer—Second I.F. transformer (L8, L9, C8, C9)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)	70385	Transformer—Output transformer (T1)
70408	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C19, C20)	33726	Washer—"C" washer for tuning knob shaft
*70477	Coil—Oscillator coil (L3, L4, L5)		SPEAKER ASSEMBLY 922258-1
*70463	Condenser—Variable tuning condenser complete with drum (C1, C2, C3, C4)	*70470	Speaker— NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of parts required.
70322	Control—Volume control and power switch (R5, S1)		MISCELLANEOUS ASSEMBLIES
32634	Cord—Drive cord (approximately 38")	*70471	Back—Cabinet back for 65X1
*70464	Drum—Drive drum	*70472	Back—Cabinet back for 65X2
*70469	Indicator—Station selector indicator	*70475	Clamp—Dial clamps (1 set)
11765	Lamp—Dial lamp—Mazda 51	*70476	Dial—Glass dial scale
*70468	Loop—Antenna loop (L1, L2)	37831	Fastener—Push fastener (1 set) for cabinet back
*70462	Plate—Dial back plate complete with drive cord pulleys less dial	*70474	Knob—Control knob—ivory for 65X2
36230	Pulley—Drive cord pulley	*70473	Knob—Control knob—mottled walnut—for 65X1
30189	Resistor—120 ohms, 1/4 watt (R9)	*71821	Knob—Control knob—maroon—for 65X1
6134	Resistor—1200 ohms, 1 watt (R15)	30900	Spring—Retaining spring for knob
30492	Resistor—22,000 ohms, 1/4 watt (R1)		
14583	Resistor—220,000 ohms, 1/4 watt (R7, R16)		
30648	Resistor—470,000 ohms, 1/4 watt (R8)		
31417	Resistor—3.3 megohms, 1/4 watt (R4)		
30931	Resistor—4.7 megohms, 1/4 watt (R6)		

*THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN PRINT.

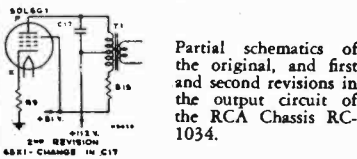
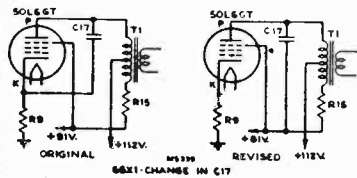
**RCA 65X1, 65X2, 65X8 and 65X9,
Chassis RC-1034**

Models 65X8 and 65X9 are the same, except for the cabinets, as models 65X1 and 65X2, chassis RC-1034.

The following changes are applicable to all models. Capacitor C17, which was originally connected between plate and cathode of the 50L6GT output tube and later connected between plate and screen grid of the 50L6GT output tube, is now connected between plate of the 50L6GT output tube and center tap of the output transformer. These changes are shown in the accompanying schematic.

Some chassis use a part No. 71406 oscillator coil instead of the one indicated on the schematic. When this oscillator coil is used, a part No. 39622 mica capacitor (56 μ f) is used in place of the capacitance winding L4 (gimmick) shown in the schematic. This capacitor is connected between 7 and 8 of the oscillator coil.

The lead coloring of the output transformer may not correspond with the coloring given on the schematic. It is, therefore, necessary to rely on resistance measurements rather than the color coding given on the schematic to determine lead connections.



Partial schematics of the original, and first and second revisions in the output circuit of the RCA Chassis RC-1034.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Scale.—The glass tuning dial may be removed from the cabinet and mounted above the pointer for reference during alignment. The extreme left hand mark of the Standard Broadcast scale must be in line with the left hand mark on the dial backing plate.

Dial Backing Plate.—In the event that only the chassis is returned for service, the marks on the dial backing plate may be used during alignment; refer to the Dial Indicator and Drive Mechanism drawing for corresponding frequencies.

Dial Pointer.—With the gang condenser in full mesh the dial pointer should be set to the left hand reference mark on the dial backing plate.

For additional information refer to booklet "RCA Victor Receiver Alignment."

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc [†]	Quiet-point 1,600 kc end of dial	C8 and C9 2nd I-F transformer
2	Stator of C2 through 0.1 mfd.			*C6 and C7 1st I-F transformer
3	Ant. lead in series with 200 mmfd.	1,300 kc	1,300 kc	C3 (osc.) C1 (ant.)
4		600 kc	600 kc "A" Band	L5 (osc.) Rock gang
5	Repeat steps 3 and 4			

* Do not readjust C8 or C9 when test oscillator is connected to C2.

RADIO CORP. OF AMERICA

RCA 66BX, Chassis RC-1040B

This model is the same as model 66BX, Chassis RC-1040 appearing on pages 15-87 and 15-88 of Rider's Volume XV, except for the following changes:

Chassis RC-1040B uses a 3V4 output tube and a selenium rectifier. Resistor R3 and capacitor C8 in the converter stage are omitted.

Resistor R17 in the power supply has been changed in value to 2650 ohms. Resistor R20 (2700 ohms) replaces resistor R18 in the power-supply circuit. A 33-ohm resistor (R31) has been added between the selenium rectifier and the "hot" side of capacitor C33. Capacitor C33 is now grounded. See Fig. 1.

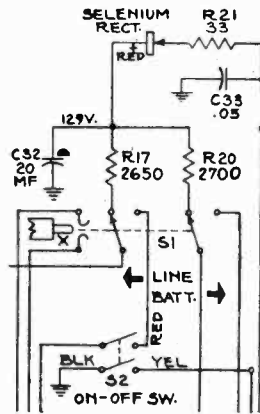


Fig. 1. Power supply of the RCA Chassis RC-1040B.

If the volume control needs replacement, the following steps should be followed. See Figs. 2 and 3.

1. Remove the 3V4 power output tube.
2. Remove the three screws holding the power cord bracket assembly. (Do not damage insulating washers.)
3. Remove the screw holding the switch assembly and remove the switch.
4. Remove the dial cord from the pulley.
5. Remove the screw holding the volume control bracket assembly.

65X1, 65X2

**MODELS 65X1, 65X2,
Chassis RC-1034**

6. Loosen the screw which maintains pressure on the expansion assembly.
7. Remove the drum.
8. Remove the expansion assembly from the volume control shaft.

9. Remove the nut holding the volume control to the bracket.
- The following changes should be made in the parts list. Delete the following:

Stock No.	Description
38875	Resistor—1800 ohms, 1 watt (R18)
71038	Resistor — ballast resistor, 2300 ohms, 6 watt (R17)
30649	Resistor — 2.2 megohms, 1/4 watt (R3)
70392	Cord — power cord
31709	Capacitor — ceramic 6.8- μ f (C7)
Add the following parts to the parts list.	
Stock No.	Description
39043	Capacitor—Ceramic, 6.8- μ f (C7)
70022	Cord — power cord
72283	Grommet — rubber grommet to mount tuning capacitor (4 required)
72543	Rectifier — selenium rectifier
71290	Resistor—33 ohms, 1 watt (R21)
30930	Resistor — 1800 ohms, 1/4 watt (R6, R15)
72760	Resistor — ballast resistor, 2650 ohms, 7 watt (R17)
14421	Resistor—2700 ohms, 1 watt (R20)
72541	Socket — tube socket - miniature 7 prong bottom mounted with shield
72980	Side — case side — l.h. with decorative ribs at top, bottom, and both sides.
72979	Side — case side — r.h. (loop side) less capacitor assembly with decorative ribs at top, bottom, and both sides.

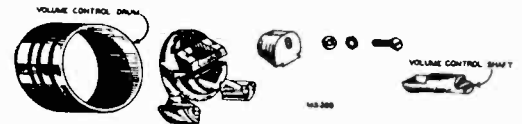
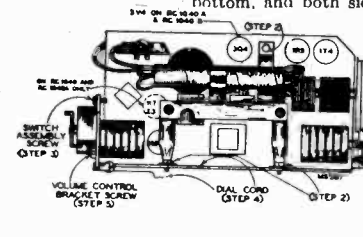
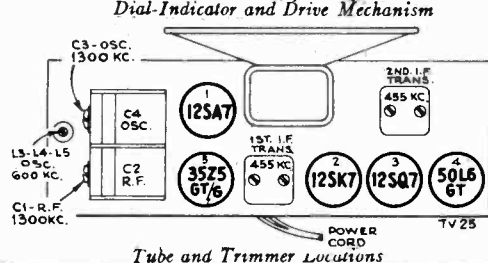
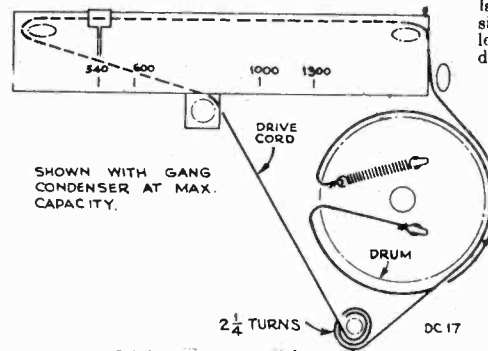


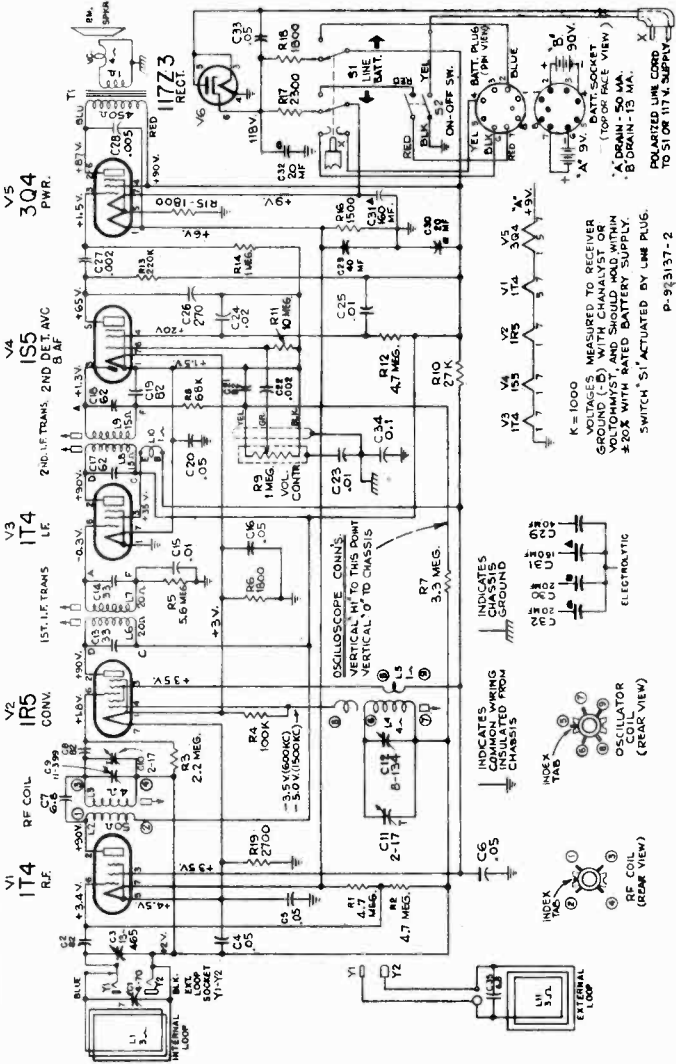
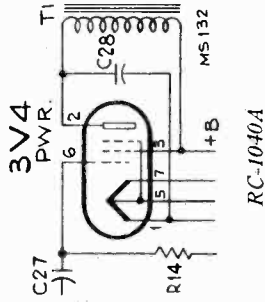
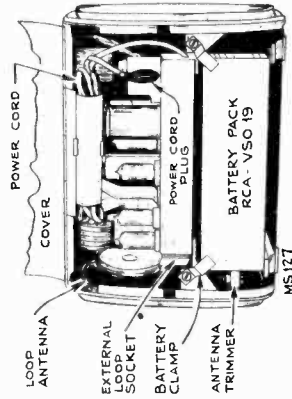
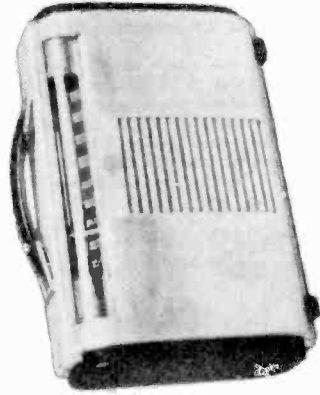
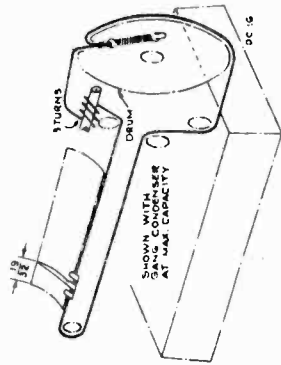
Fig. 2, above. Parts layout of RCA chassis RC-1040B. Fig. 3, left. Volume control disassembly.



MODEL 66BX
Chassis RC-1040,
RC-1040A

RADIO CORP. OF AMERICA

CAUTION—
1. Do not remove any tubes from the chassis with the set operating and the plug connected to the power line. Damage to tubes may result.
2. When cleaning the aluminum portion of the case use soap and water or cleaning fluid. Do not use abrasive cleansers.



NOTE—The Chassis marked RC-1040A have R-3 and C-8 omitted and have the power tube socket connected for a 3V4 tube.

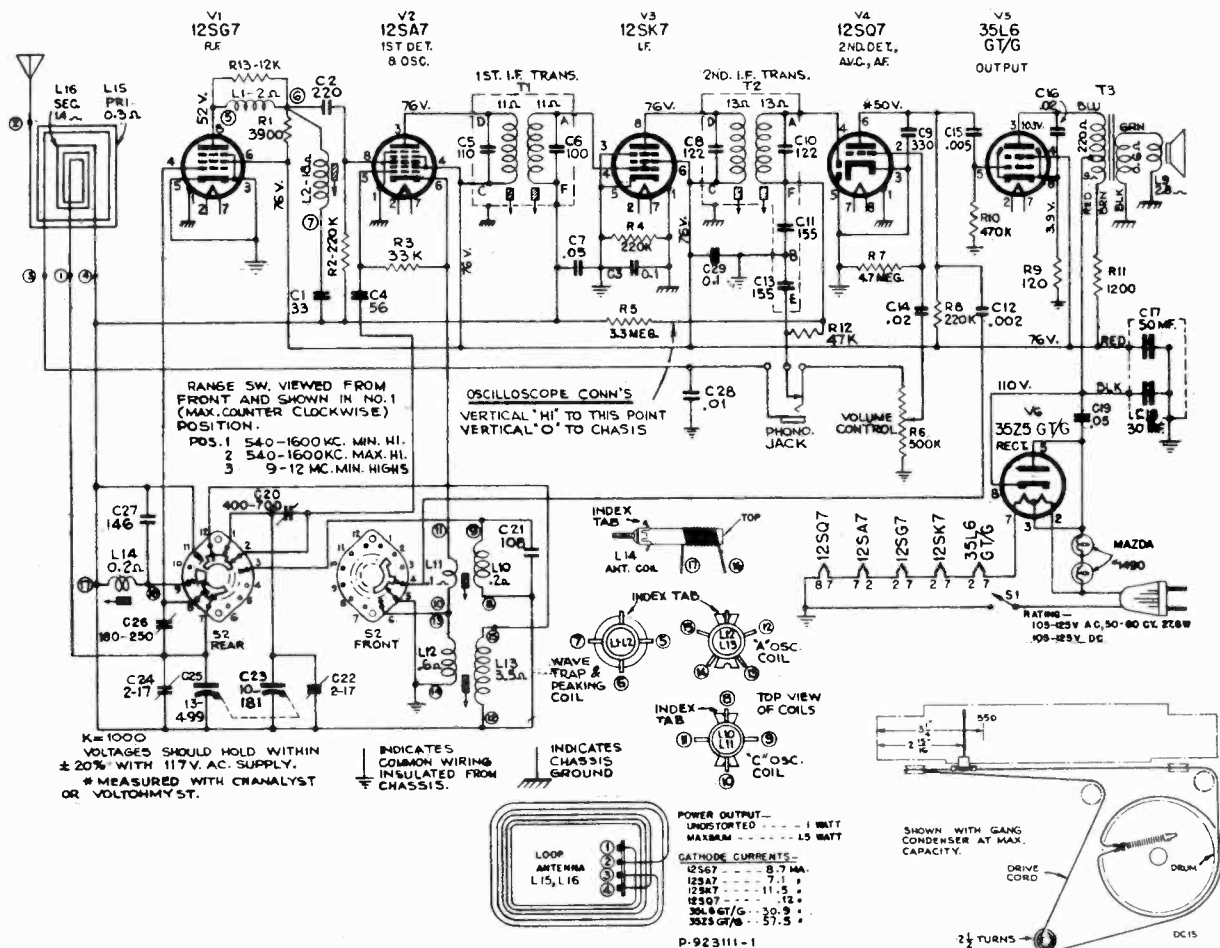
Frequency Range	540-1,600 kc
Intermediate Frequency	455 kc
Batteries required	14 watts One RCA Battery Pack VS019 or equivalent
Tube Complement	(1) RCA-1T4 (2) RCA-1R5 (3) RCA-1T4 (4) RCA-1S5 (5) RCA-3Q4—RC-1040 RCA-3V4—RC-1040A (6) RCA-117Z3
Current Consumption	4 x 6 in. elliptical P.M. 3.4 ohms at 400 cycles
Battery Operation	"A" 50 milliamperes, "B" 13 milliamperes
Total Rect. Current	(117 volt, 60 cycle) 61 mils.
Power Output	.23 watt
Maximum	
Loudspeaker	

CRITICAL LEAD DRESS

1. Dress all filament leads next to chassis.
2. Keep the leads short on the ends of the three components which connect to the grid terminal (#6) of the r.f. socket. (R-1, R-2, C-2).
3. Separate leads to front and center sections of gang as far as possible and away from tubes.
4. Dress loop leads away from tuning drum and battery.
5. Dress output transformer leads away from rear section of gang.
6. Dress r.f. plate lead away from r.f. grid circuit.
7. Dress components and wiring near external loop socket to clear external loop pins.
8. Dress avc lead away from 2nd IF transformer and associated components.
9. Dress converter plate lead away from chassis and away from output twisted leads.
10. Dress twisted output leads up and away from other wiring.
11. Dress volume control cable, switch cable, and line receptacle leads away from rectifier tube and resistor case.
12. Dress 1st audio plate lead up and away from other wiring.
13. Do not restrict floating action of sockets by tight wiring.

Using External Loop—
A loop antenna is housed inside the cabinet. Under normal conditions this will give satisfactory reception. If however the receiver is used in a location remote from broadcasting stations where signals are weak, or where interference is excessive, or in a shielded compartment such as an automobile, airplane or railroad train, an RCA external loop can be used. This loop antenna has a strap connector cord with identical two prong plugs on either end, this makes it convenient in connecting it to the circuit through the receptacle located in the left hand side of the chassis.
Open the case, plug the antenna cord into the socket (it will only go in one way), bring the strap out through the slot in the case and attach the Loop Antenna by means of the suction cup to any convenient vertical surface.
This loop antenna can be stored in the cabinet, in the compartment below the battery pack, and the cord in the small compartment in the lower right hand corner of the cabinet.

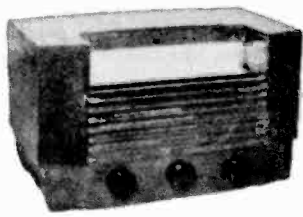
RADIO CORP. OF AMERICA MODELS 66X1, 66X2, 66X3, 66X4, 66X9, Chassis RC-1038



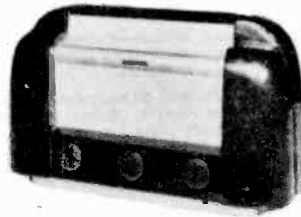
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1038		
39616	Capacitor—Mica, 33 mmf. (C1)	30931	Resistor—4.7 megohms, ¼ watt (R7)
39622	Capacitor—Mica, 56 mmf. (C4)	*70467	Shaft—Tuning knob shaft
*71156	Capacitor—Ceramic, 108 mmf. (C21)	*71118	Shell—Protecting shell for loop spacing spring (2 required)
*71157	Capacitor—Ceramic, 146 mmf. (C27)	*71115	Socket—Lamp socket
*71121	Capacitor—Mica trimmer, 180-250 mmf. (C26)	37605	Socket—Tube socket
39636	Capacitor—Mica, 220 mmf. (C2)	*71120	Spacer—Tubular spacer to mount antenna loop (2 required)
39640	Capacitor—Mica, 330 mmf. (C9)	70390	Spring—Drive cord spring
*71113	Capacitor—Mica trimmer, 400-700 mmf. (C20)	*71119	Spring—Loop assembly spacing spring (2 required)
70601	Capacitor—Tubular, .002 mfd., 400 volts (C12)	*71112	Switch—Range and tone switch (S2)
70606	Capacitor—Tubular, .005 mfd., 400 volts (C15)	*71111	Transformer—Output transformer (L7, L8)
70610	Capacitor—Tubular, .01 mfd., 400 volts (C28)	71558	Transformer—First I.F. transformer (L3, L4, C5, C6)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14, C16)	70387	Transformer—Second I.F. transformer (L5, L6, C8, C10, C11, C13)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C7, C19)	33726	Washer—"C" washer for tuning knob shaft
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C3, C29)		SPEAKER ASSEMBLY 922258-2
70408	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts and 1 section of 30 mfd., 150 volts (C17, C18)	71058	Speaker—4" x 6" elliptical P.M. speaker complete with cone and voice coil NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.
*71405	Coil—Antenna coil (L14)		MISCELLANEOUS
*71406	Coil—Oscillator coil—"A" band (L12, L13)	*71835	Back—Cabinet back for Model 66X3
*71408	Coil—Oscillator coil—"C" band (L10, L11)	*71122	Baffle—Speaker baffle assembly for 66X1 and 66X2
*71407	Coil—Wave trap (L1, L2)	*71124	Clamp—Dial clamp for 66X1 and 66X2 (2 required)
*71110	Condenser—Variable tuning condenser (C22, C23, C24, C25)	*71131	Clamp—Dial clamp for 66X3 and 66X4
38410	Control—Volume control and power switch (R6, S1)	*71132	Dial—Glass dial scale
34662	Cord—Drive cord (approx. 51" overall length)	*71127	Foot—Cabinet foot—walnut—for 66X1 (4 required)
70384	Drum—Drive drum	*71128	Foot—Cabinet foot—ivory—for 66X2 (4 required)
70391	Insulator—Insulator for phono jack	70473	Knob—Control knob (mottled walnut) for 66X1, 66X3, 66X4
*71114	Indicator—Station selector indicator	70474	Knob—Control knob (ivory) for 66X2
*71116	Lamp—Dial lamp—Mazda 1490	*71126	Nut—Speed nut to fasten screen (4 required)
*71117	Loop—Antenna loop (L15, L16)	*71125	Screen—Protective screen for hand grip for 66X1 and 66X2
*71108	Plate—Dial back plate complete with four (4) pulleys less dial pulley—Drive cord pulley	30000	Spring—Retaining spring for control knobs
30189	Resistor—120 ohms, ½ watt (R9)	*71130	Spring—Retaining spring for front strip for 66X1 and 66X2
30731	Resistor—1200 ohms, ½ watt (R11)	*71129	Strip—Finished strip for cabinet front for 66X1 and 66X2
30694	Resistor—3900 ohms, ¼ watt (R1)		
30436	Resistor—12,000 ohms, ¼ watt (R13)		
30685	Resistor—33,000 ohms, ¼ watt (R3)		
30787	Resistor—47,000 ohms, ¼ watt (R12)		
14583	Resistor—220,000 ohms, ¼ watt (R2, R4, R8)		
30648	Resistor—470,000 ohms, ¼ watt (R10)		
31417	Resistor—3.3 megohms, ¼ watt (R5)		

*This is the first time this stock No. has appeared in service data.

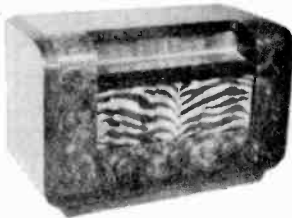
RADIO CORP. OF AMERICA MODELS 66X1, 66X2, 66X3, 66X4, 66X9, Chassis RC-1C38



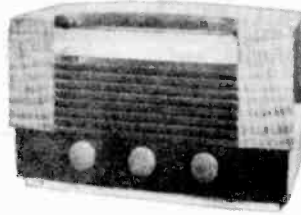
66X9—(Plastic)



66X1—(Brown Plastic)
66X2—(Ivory Plastic)



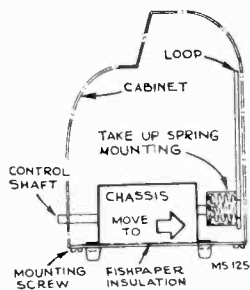
66X3—(Wood)



66X4—(Wood)

Specifications

Frequency Range	
Broadcast	540-1600 kc
Short Wave	9-12 mc
Intermediate Frequency	455 kc
Tube Complement	
(1) RCA-12SG7	R-F Amplifier
(2) RCA-12SA7	1st Det.—Osc.
(3) RCA-12SK7	I-F Amplifier
(4) RCA-12SQ7	2nd Det., A.V.C., and A-F Amplifier
(5) RCA-35L6-GT/G	Power Output
(6) RCA-35Z5-GT/G	Rectifier
Pilot Lamps	Mazda No. 1490, 3.2 volts
Power Output	
Undistorted	1.0 watts
Maximum	1.5 watts
Loudspeaker (922258-2)	
Size	4 x 6" elliptical P.M.
V.C. Impedance	3.4 ohms at 400 cycles
Power Supply Rating	
105-125 volts, AC, 50 or 60 cycles, or DC	27.6 watts



The construction of the cabinets for Models 66X1 and 2 makes it necessary to remove the chassis for replacing tubes. To do this, proceed as follows:

1. Remove the power plug from the service receptacle.
2. Remove control knobs.
3. Remove the six slotted screws around the edge of the metal base plate. (Do not remove the four feet from the base plate as this will separate the base plate from the chassis.)
4. Tilt the cabinet forward so that the bottom rear edge of the cabinet raises above base plate.
5. Hold the chassis with one hand while pushing the cabinet forward and upward to clear the control shafts.

Lead Dress

1. Dress all filament and power leads down to chassis and as far as possible from all audio grid and plate wiring.
2. Dress power cord back and away from C-14 (1st audio coupling condenser).
3. Dress C-14 toward 12SQ7 socket and away from the switch.
4. Dress C-16 (output by-pass condenser) down to chassis.
5. Dress blue lead from phono jack to volume control in air and away from output transformer.
7. Dress all leads and parts away from oscillator coils.
8. Dress C-2 (R.F. coupling condenser) back to chassis.
9. Avoid excessive lead lengths in C-27 (short wave fixed timer) and short wave antenna coil.
10. Dress pilot light leads (above chassis) toward dial support and away from the 35Z5 tube.

Alignment Procedure

Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a 0.1 mfd. capacitor to common "B." Keep the output signal as low as possible to avoid A.V.C. action.

Output Meter.—Connect meter across speaker voice coil. Turn volume control to maximum clockwise position, station selector switch to broadcast maximum high position (pos. 2), for broadcast alignment and to position 3 for high frequency band.

Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates fully meshed). Adjust indicator to 2 1/4 in. from end of backplate as indicated in drawing.

On models 66X1 and 2 the dial indicator is accessible for adjustment by removing the metal strip below the dial glass. (Lift and swing the top forward).

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial back plate.

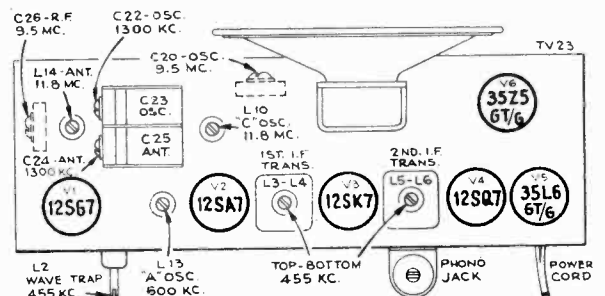
Power Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Pin #4 (signal grid) 12SK7 IF tube in series with 0.1 mfd.			T2† 2nd I-F trans.
2	Pin #8 (signal grid) 12SA7 1st det. in series with 0.1 mfd.	455 kc	Quiet point at 1600 kc end of the dial	T1 1st I-F trans.
3				L2 for minimum output (Wave trap)
4	Antenna in series with 200 mmf.	1300 kc	1300 kc	C22 (osc.) C24 (ant.)
5		600 kc	600 kc	L13 While rocking gang
6	Repeat steps 4 and 5.			
7		9.5 mc.	9.5 mc.	C20 (Osc.)*
8	Antenna in series with 50 mmf.	9.5 mc.	9.5 mc.	C26 Ant. while rocking gang
9				L10 (Osc.)**
10		11.8 mc.	11.8 mc.	L14 while rocking gang
11	Repeat steps 9 and 10.			

*If two peaks are obtained use minimum cap peak.

**If two peaks are obtained use minimum inductance peak.

†Do not repeat step No. 1.



RADIO CORP. OF AMERICA MODELS 66X11, Ch. RC1046A; 66X12, Ch. RC-1046; 66X13, 66X14, 66X15, Ch. RC1046B

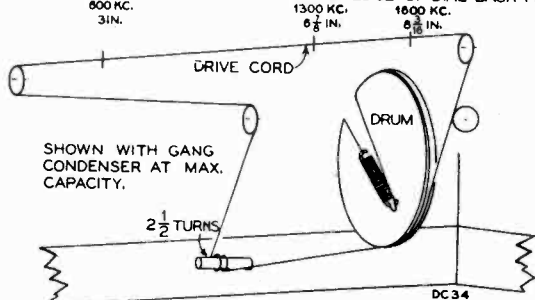
Alignment Procedure

Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "—B." Keep the output signal as low as possible to avoid AVC action.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	Stator of C-12 in series with .01 mfd.	455 kc	Quiet-point 1,600 kc end of dial	Sec. and pri. 2nd I-F trans.
2				Sec. and pri. 1st I-F trans.
3	Ant. lead in series with 200 mmfd.	1,600 kc	1,600 kc	C14 (osc.)*
4		1,300 kc	1,300 kc	C13 ant.
5		600 kc	600 kc	L4 (osc.) Rock in
6	Repeat steps 3, 4 and 5.			

*Left hand osc. trimmer should be pre-set approx. 1/4 turn from tight.

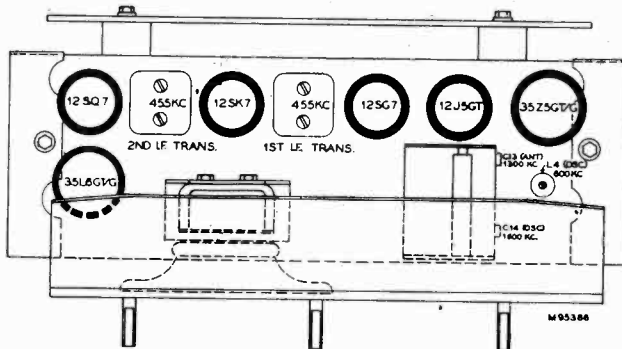
DISTANCES IN INCHES FROM LEFT HAND EDGE OF DIAL BACK PLATE



DIAL INDICATOR AND DRIVE MECHANISM

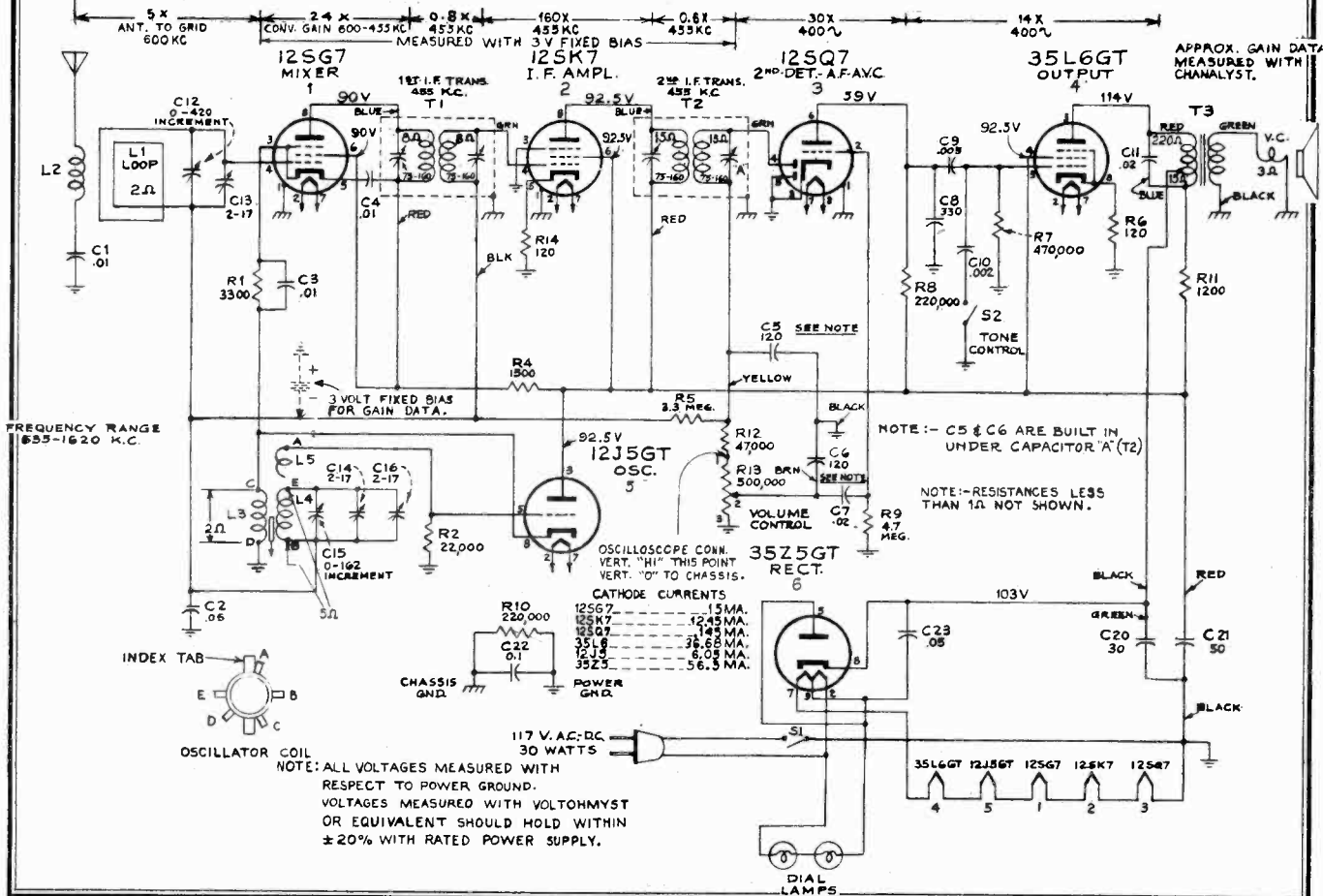
Output Meter.—Connect leads between speaker voice coil and chassis. Turn volume control to maximum clockwise, tone control to maximum highs (clockwise).

Dial Pointer Adjustment.—Rotate tuning condenser fully counterclockwise (plates closed). Adjust indicator pointer to 2 1/8" from left hand edge of dial back plate.

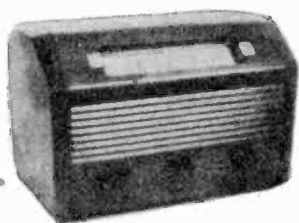


Critical Lead Dress

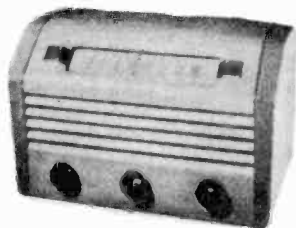
1. Dress output plate bypass capacitor (C-11 .02 mf) against chassis.
2. Dress 35L6GT plate lead (red) against chassis and away from volume control, leads and terminals.
3. Dress audio coupling capacitor (C-7 .02 mf) away from 35L6GT heater leads.
4. Dress tone control lead against front apron.
5. Dress 2nd i-f yellow and brown leads away from output plate bypass capacitor (C-11, .02 mf.) and away from all heater leads.
6. Dress lead to speaker voice coil away from tuning shaft "C" washer.
7. Dress tone control capacitor (C-10, .002 mf.) away from oscillator coil.
8. Dress all uninsulated leads away from each other and away from chassis to prevent short circuits.
9. Dress blue and green leads of both i-f transformers back in shields leaving exposed lengths as short as possible.



Models 66X11, 66X12, 66X13, RADIO CORP. OF AMERICA
66X14, 66X15



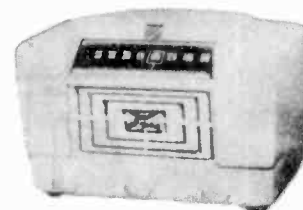
← 66X13—(Wood Walnut)



66X14—(Wood Blonde)
66X15—(Wood Mahogany)

Circuit Description

The superheterodyne circuit is used, incorporating separate mixer, and oscillator stages; one stage of intermediate frequency amplification, a combined second detector-AVC-first audio stage, a beam power output stage, and a half wave rectifier. A loop antenna with provisions for an external antenna is used. A new standard two section variable capacitor of the cut plate type is used. The oscillator coil has a movable powdered iron core for inductance adjustment. Both I.F. transformers are compression tuned and AVC is applied to both the R.F. and I.F. stages. Optimum signal to noise ratio and I.F. stability is obtained by low initial bias on 1st detector and degenerative cathode resistor in the I.F. stage.



66X11—(Brown Plastic)
66X12—(Ivory Plastic)

Specifications

Frequency Range.....	540-1600 kc
Intermediate Frequency.....	455 kc
Power Output	
Undistorted.....	1.0 watt
Maximum.....	1.5 watts
Tube Complement	
(1) RCA-12SG7.....	Converter
(2) RCA-12SK7.....	I.F. Amplifier
(3) RCA-12SQ7.....	2nd Det., A.V.C., and A.F. Amplifier
(4) RCA-35L6GT.....	Power Output
(5) RCA-12J5GT.....	Oscillator
(6) RCA-35Z5GT.....	Rectifier

Loudspeaker (92572-2)			
Type.....		5-inch PM	
V. C. Impedance.....		3.2 ohms at 400 cycles	
Cabinet Dimensions	Height	Width	Depth
66X11 (Brown Plastic).....	8 ³ / ₈ "	13 ⁵ / ₈ "	7 ¹ / ₈ "
66X12 (Ivory Plastic).....	8 ³ / ₈ "	13 ⁵ / ₈ "	7 ¹ / ₈ "
66X13 (Wood—Walnut).....	9 ¹ / ₈ "	14 ¹ / ₄ "	7 ¹ / ₈ "
66X14 (Wood—Blonde).....	9 ¹ / ₈ "	14 ¹ / ₄ "	7 ¹ / ₈ "
66X15 (Wood—Mahogany).....	9 ¹ / ₈ "	14 ¹ / ₄ "	7 ¹ / ₈ "
Power Supply Rating			
105-125 volts, AC, 50 or 60 cycles, or DC.....			30 watts
Pilot Lamp.....	2 type 1490	3.2 volts, 0.16 amp.	
Tuning Drive Ratio.....			20:8:1

Replacement Parts

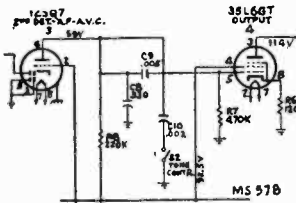
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES		SPEAKER ASSEMBLIES
	RC-1046—66X12		92572-2
	RC-1046A—66X11	72201	Speaker—5" P.M. speaker complete with cone and voice coil
	RC-1046B—66X13, 66X14, 66X15		SPEAKER ASSEMBLIES
72571	Capacitor—Mica, 330 mmf. (C8)		92510-1D
70601	Capacitor—Tubular, .002 mfd., 200 volts (C10)		92510-1F
70606	Capacitor—Tubular, .005 mfd., 400 volts (C9)		92510-1M
70610	Capacitor—Tubular, .01 mfd., 400 volts (C1, C3, C4)		92510-1R
70611	Capacitor—Tubular, .02 mfd., 400 volts (C7, C11)		92510-1W
70615	Capacitor—Tubular, .05 mfd., 400 volts (C2, C23)		
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C22)	70413	Speaker—5" P.M. speaker complete with cone and voice coil
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C20, C21)		
*72604	Coil—Oscillator coil (L3, L4, L5, C15)		NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.
*72607	Condenser—Variable tuning condenser (C12, C13, C14, C16)		MISCELLANEOUS ASSEMBLIES
36228	Control—Tone control (S2)	*72646	Back—Cabinet back for 66X11
38410	Control—Volume control and power switch (R13, S1)	*72647	Back—Cabinet back for 66X12
34662	Cord—Drive cord (approx. 56" overall length)	*72829	Back—Cabinet back for 66X13
	(NOTE: Before assembling, stretch to full length)	*72830	Back—Cabinet back for 66X14
*72798	Dial—Dial scale (polystyrene) for 66X13, 66X14, and 66X15	*72897	Back—Cabinet back for 66X15
*72603	Drum—Drive drum	*72648	Baffle—Baffle board for 66X11 and 66X12
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	Y1400	Cabinet—Brown plastic cabinet for 66X11
*72799	Indicator—Station selector indicator for 66X13, 66X14, and 66X15	Y1401	Cabinet—Ivory plastic cabinet for 66X12
*72606	Indicator—Station selector indicator for 66X11 and 66X12	36890	Clamp—Dial clamp—L.H.—for 66X11 and 66X12
71116	Lamp—Dial lamp—Type No. 1490	36891	Clamp—Dial clamp—R.H.—for 66X11 and 66X12
*72697	Loop—Antenna loop complete (L1, L2)	*72802	Clamp—Dial clamp (1 set) for 66X13, 66X14, and 66X15
*72765	Nut—Speed nut to fasten dial logotype for 66X13, 66X14, and 66X15 (2 required)	*72652	Dial—Glass dial scale for 66X11 and 66X12
*72601	Plate—Dial back plate complete with four (4) pulleys less dial for 66X12	37831	Fastener—Push fastener for backs for 66X11 and 66X12
*72797	Plate—Dial back plate complete with four (4) pulleys less dial for 66X13, 66X14, 66X15	71595	Feet—Rubber feet for 66X13, 66X14 and 66X15 cabinets (4 required)
*72896	Plate—Dial back plate complete with four (4) pulleys less dial for 66X11	X1650	Grille—Grille cloth for 66X13, and 66X15
72602	Pulley—Drive cord pulley	X1651	Grille—Grille cloth for 66X14
30189	Resistor—120 ohms, 1/2 watt (R6, R14)	*72651	Holder—Jewel holder for 66X11 and 66X12
38896	Resistor—1200 ohms, 1 watt (R11)	*72650	Jewel—Decorative polystyrene jewel for cabinet front for 66X11, and 66X12
30654	Resistor—1500 ohms, 1/2 watt (R4)	71821	Knob—Control knob—maroon—for 66X11, 66X13, and 66X15
30733	Resistor—3300 ohms, 1/2 watt (R1)	*72645	Knob—Control knob—ivory—for 66X12
10492	Resistor—22,000 ohms, 1/2 watt (R2)	*72800	Knob—Control knob—brown—for 66X14
30787	Resistor—47,000 ohms, 1/2 watt (R12)	*72649	Motif—Decorative motif cabinet top for 66X11 and 66X12
14583	Resistor—220,000 ohms, 1/2 watt (R8, R10)	*72803	Motif—Decorative motif for cabinet for 66X13, 66X14 and 66X15
30648	Resistor—370,000 ohms, 1/2 watt (R7)	71126	Nut—Speed nut for fastening motif for 66X11 and 66X12
31417	Resistor—3.3 megohms, 1/2 watt (R5)	72765	Nut—Speed nut for fastening motif for 66X13, 66X14, and 66X15
30931	Resistor—4.7 megohms, 1/2 watt (R9)	30900	Spring—Retaining spring for knobs
71798	Screw—No. 8—32 x 5/8" square head set screw for drive drum	*72804	Window—Dial window for 66X13, 66X14, and 66X15
*72608	Shaft—Tuning knob shaft		
*72605	Socket—Lamp socket		
37605	Socket—Tube socket		
31418	Spring—Drive cord spring		
70411	Transformer—First I.F. transformer (T1)		
70412	Transformer—Second I.F. transformer (T2) (C5, C6)		
36800	Transformer—Audio transformer (T3)		
33726	Washer—"C" washer for tuning shaft		

RADIO CORP. OF AMERICA

RCA 66X11, 66X12, 66X13, Chassis RC-1046C, RC-1046D, RC-1046E

These models are the same as Model 66X11, chassis RC-1046A,

except for the following change. The capacitor C10 (tone-control circuit) which was connected



Capacitor C10 is here connected to the plate of the 12SQ7 a-f amplifier tube.

to the grid of the 35L6GT output tube, is now connected to the plate of the 12SQ7 a-f amplifier tube, as shown.

RCA 66X11, 66X12, 66X13

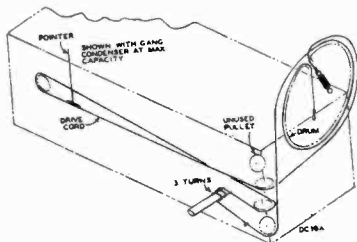
Some oscillator coils which were specified for the first production (RC-1046A, RC-1046, RC-1046B) of these models have been used on the second production (RC-1046C, RC-1046D, RC-1046E).

Some oscillator coils and associated coupling capacitors (C19) which were specified for the second production have been used on the first production.

If replacement is necessary — use the specified parts — the range of inductance adjustment may be insufficient if used otherwise.

RCA 68R1, 68R2, 68R3, 68R4, Chassis RC-608

the dial cord assembly has been redesigned. The revised design uses a simpler method, and the length of the dial cord has been reduced to approximately 67 inches



Revised method for dial cord stringing in RCA models 68R series.

rather than the original 80 inches. See accompanying illustration for method of restringing.

RCA 66X11, 66X12, 66X13, Chassis RC-1046C, RC-1046D, RC-1046E, Second Production

These models are similar to Model 66X11, chassis RC-1046A, in addition to the following changes. The parts list should be amended as follows:

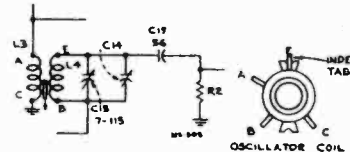
CHASSIS ASSEMBLIES

- Change: 72896 Plate—to read
72896 Plate—dial back plate complete with drive cord pulleys for Model 66X11.
- Add: 72601 Plate—dial back plate complete with drive cord pulleys for Model 66X12.

MISCELLANEOUS

- Change: 73169 Back—to read
73169 Back—cabinet back for Model 66X13—walnut
- Add: 73278 Back—cabinet back for Model 66X13 mahogany
71893 Decal—trade mark decal

The stock number of the dial cord should be 72953 instead of 72913. This cord is supplied in 250 foot reels. Approximately 56 inches are required for the first

**Oscillator Circuit RC-1046C, RC-1046E**

Schematic otherwise identical to RC-1046-A, B except ant. tuning cond. C12 is 10-399 mmfd., only one dial lamp used on RC-1046E.

production and approximately 49 inches for the second production.

The differences between these various chassis are as follows. Chassis RC-1046C uses oscillator coil without capacity winding, L5. Capacitor C19 is used and a tuning capacitor without C16 is used. Two dial lamps type number 1490 are used. Chassis RC-1046E is the same as RC-1046C, except that only one dial lamp, Type 47, is used. For oscillator circuit see accompanying diagram.

- 73172 Capacitor—ceramic, 56 μ f (C19)
73163 Coil—Oscillator coil complete with adjustable core and stud (L3, L4)
73164 Capacitor—Variable tuning capacitor (C12, C13, C14, C15)

RCA 67V1, Chassis RC-606C

Resistor R18 which was originally 470,000 ohms, appears in some chassis as 330,000 ohms and in some chassis as 220,000 ohms.

RCA 67V1, 67AV1

In late production models, resistor R18 connected from the phono jack to ground has been changed from 120,000 ohms to 330,000 ohms.

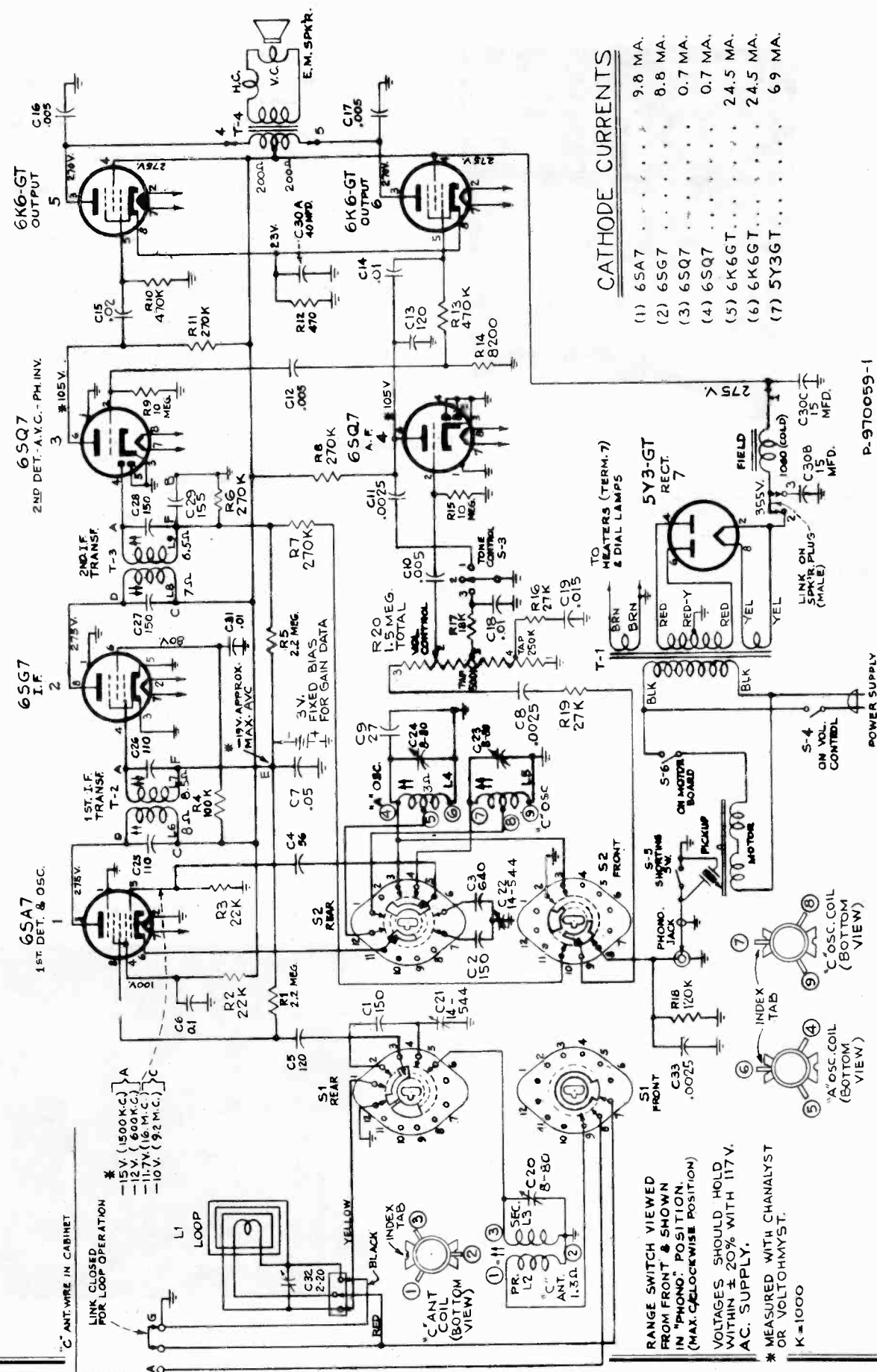
RADIO CORP. OF AMERICA

MODELS 67V1, 67AV1,
Chassis RC606

1945 No. 10

3X 600 KC
15X 600 - 455 KC
0.7X 455 KC
220X 455 KC
0.6X 455 KC
60X 400 V
9X 400 V

APPROX. GAIN DATA USING CHANALYST



CATHODE CURRENTS

(1) 6SA7	9.8 MA.
(2) 65Q7	8.8 MA.
(3) 65Q7	0.7 MA.
(4) 65Q7	0.7 MA.
(5) 6K6GT	24.5 MA.
(6) 6K6GT	24.5 MA.
(7) 5Y3GT	6.9 MA.

RANGE SWITCH VIEWED FROM FRONT & SHOWN IN "PHONO" POSITION. (MAX. COUNTERWISE POSITION)

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

K=1000



Critical Lead Dress:

1. Dress speaker cable leads down next to chassis.
2. Dress output plate capacitors next to chassis.
3. Dress plate lead of output tube away from grid of audio amplifier.
4. Dress all a-c leads away from volume control down next to chassis.
5. Dress R16 away from a-c leads at on-off switch.
6. Dress R2 away from side of chassis.

Note.—In order to remove the chassis from the cabinet, remove the knobs and the connecting cables, then unscrew the four slotted hex head screws from the two "L" brackets bolted to the rear of the chassis. The chassis may then be slid out toward the bottom rear of the cabinet. Do not remove the hinge screws or the two large nuts in the rear of the chassis. When replacing the chassis, make sure that the tapered pins on the front of the chassis fit into the holes on the metal runners screwed to the cabinet door.

Specifications

Circuit Description

The receiver is a seven tube superheterodyne employing push-pull power output. AVC is applied to the converter and i-f tubes. The broadcast band utilizes a standard loop antenna, and the short wave antenna is a wire tacked in the cabinet.

Dimensions

	Cabinet	Chassis (overall)
Height (inches)	34	5 ⁵ / ₈
Width (inches)	31	11 ¹ / ₈
Depth (inches)	16 ¹ / ₄	8
Tuning Drive Ratio		14:1

Frequency Ranges

Standard Broadcast "A"	540-1,600 kc
Short Wave "C"	9.2-16 mc

Intermediate Frequency 455 kc

Tube Complement

- (1) RCA-6SA7 1st Det., Oscillator
- (2) RCA-6SG7 I-F Amplifier
- (3) RCA-6SQ7 2nd Det., A. V. C. and Phase Inverter
- (4) RCA-6SQ7 A-F Amplifier
- (5) RCA-6K6-GT Power Output
- (6) RCA-6K6-GT Power Output
- (7) RCA-5Y3-GT Rectifier

Power Supply Rating (including Phono Motor)

105-125 volts, 60 cycles 95 watts

Pilot Lamps (2) Mazda No. 51, 6-8 volts, 0.2 amp.

Compartment Lamp (1) Mazda No. 55, 6-8 volts, 0.4 amp.

Loudspeaker

Electrodynamic 92566-1W

Size 12-inch

V. C. impedance at 400 cycles 2.2 ohms

Power Output Rating

Undistorted 5 watts

Maximum 6.5 watts

Phonograph

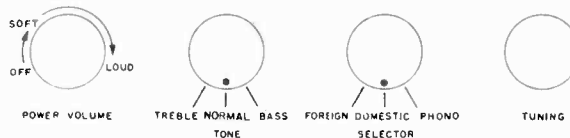
Type Automatic 960260-1

Record Capacity Twelve 10-in., Ten 12-in.

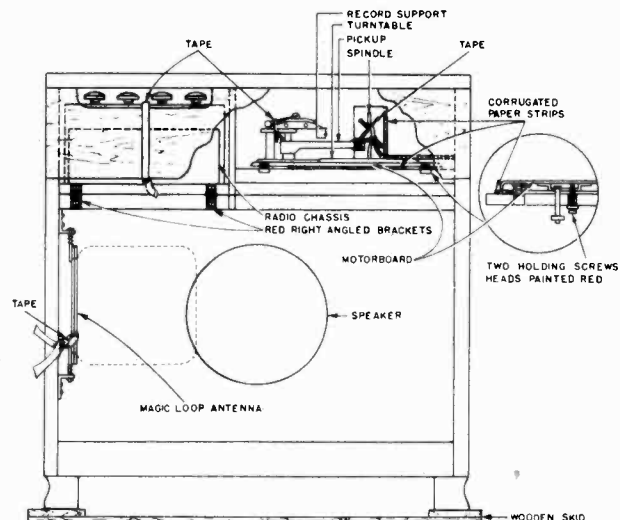
Turntable 78 r.p.m. type

Type Pickup Crystal

Motor Power consumption (115 v., 60 cycles) 30 watts

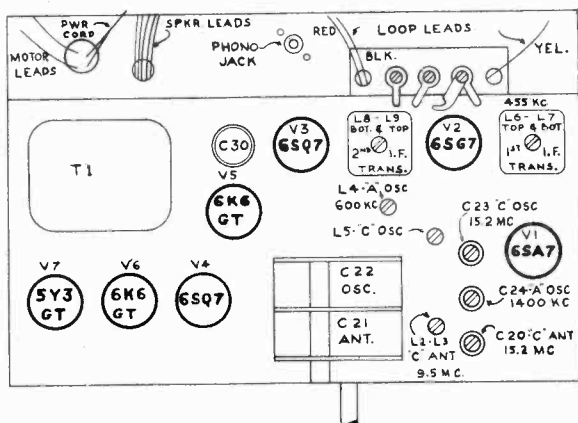


FRONT PANEL CONTROLS



BACK VIEW

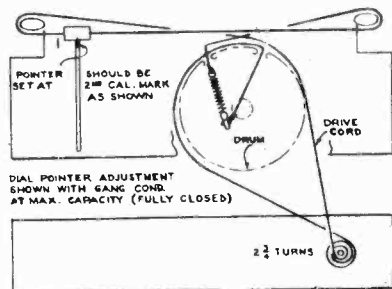




TOP VIEW

Steps	Connect high side of test oscillator to—	Tune test oscillator to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SG7 grid in series with .01 mfd.	455 kc.	Broadcast Quiet Point at 550 kc. end of dial	L8, L9 (2nd I-F Trans.)
2	6SA7 grid in series with .01 mfd.			L6, L7 (1st I-F Trans.)
3		1,400 kc.	Broadcast 1400 kc.	C24 (osc.)
4	Yellow lead on loop in series with 200 mmfd. (link closed)	600 kc.	Broadcast 600 kc.	L4 (osc.) Rock gang
5	Repeat steps 3 and 4.			
6		15.2 mc.	Short Wave 15.2 mc.	C23 (osc.)* C20 (ant.)
7	Antenna terminal in series with 47 mmfd.	9.5 mc.	Short Wave 9.5 mc.	L5 (osc.) L3 (ant.)
8	Repeat steps 6 and 7			
9	Install and connect chassis in cabinet with link closed. Tune in a radiated signal of 1400 kc. on broadcast band and peak C32 on loop.			

* Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning the receiver to approximately 14.3 mc., where a weaker signal should be received. Oscillator tracks 455 kc. above signal on both bands.



DIAL INDICATOR AND DRIVE MECHANISM

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action

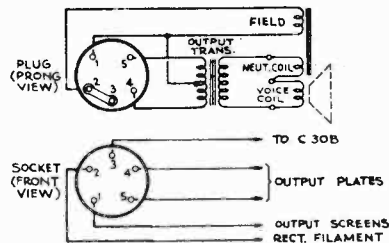
Calibration Scale.—The dial scale printed in this service note may be temporarily attached to the chassis for quick reference during alignment.

Using Printed Dial Scale.—

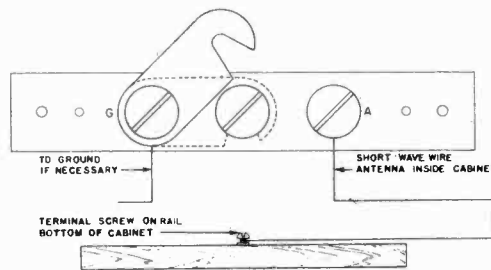
1. Cut out the printed dial scale, or, better still, make a tracing of the scale.
2. With gang at full mesh the pointer should be set to the second reference mark from the left hand end of the dial backing plate.
3. Place the printed dial scale or the tracing under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the dial scale in place.

Note.—It is not recommended that the glass dial scale in the cabinet be removed as an alignment reference. This glass dial scale is fastened to the bezel with sheet metal lugs bent over the scale to hold it in place. Removing the glass dial scale will necessitate bending the lugs, resulting in their weakening and subsequent breakage.

"C" Band Reception.—For best reception on "C" band with an outside antenna, adjust the trimmer screw of C20 on the antenna coil. Turn screw carefully with an insulated screwdriver (RCA Stock No. 31031) while the receiver is tuned to a station in the 31-meter band. If returning to internal antenna at any time, close the link on the center terminal and readjust "C" band antenna trimmer C20 for best reception on 31-meter band.



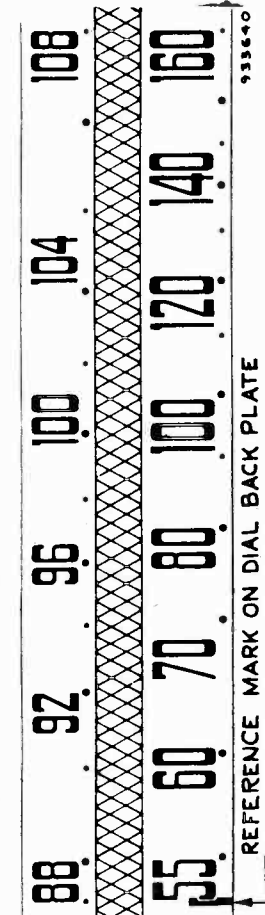
SPEAKER CONNECTIONS



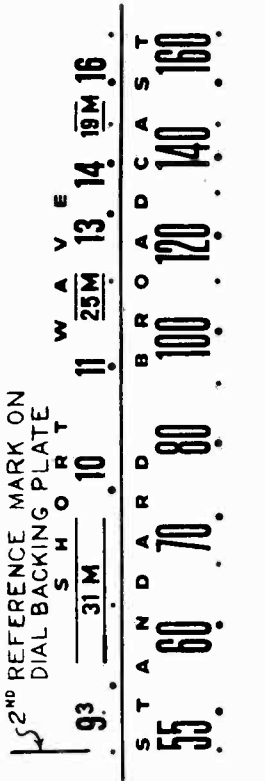
EXTERNAL ANTENNA CONNECTIONS
FIG. 3

WHEN USING EXTERNAL ANTENNA, OPEN LINK AND CONNECT LEAD-IN TO TERMINAL SCREW

MODELS 68R1, 68R2, 68R3, 68R4



MODELS 67V1, 67AV1



The dial scale drawing shown is a full size reproduction. It can be used as a reference in alignment procedure.

The dial scale drawing shown is a full size reproduction. It can be used as a reference in alignment procedure.

Replacement Parts

Table with columns: STOCK No., DESCRIPTION, STOCK No., DESCRIPTION. Lists various electronic components like resistors, capacitors, coils, and transformers.

Replacement Parts

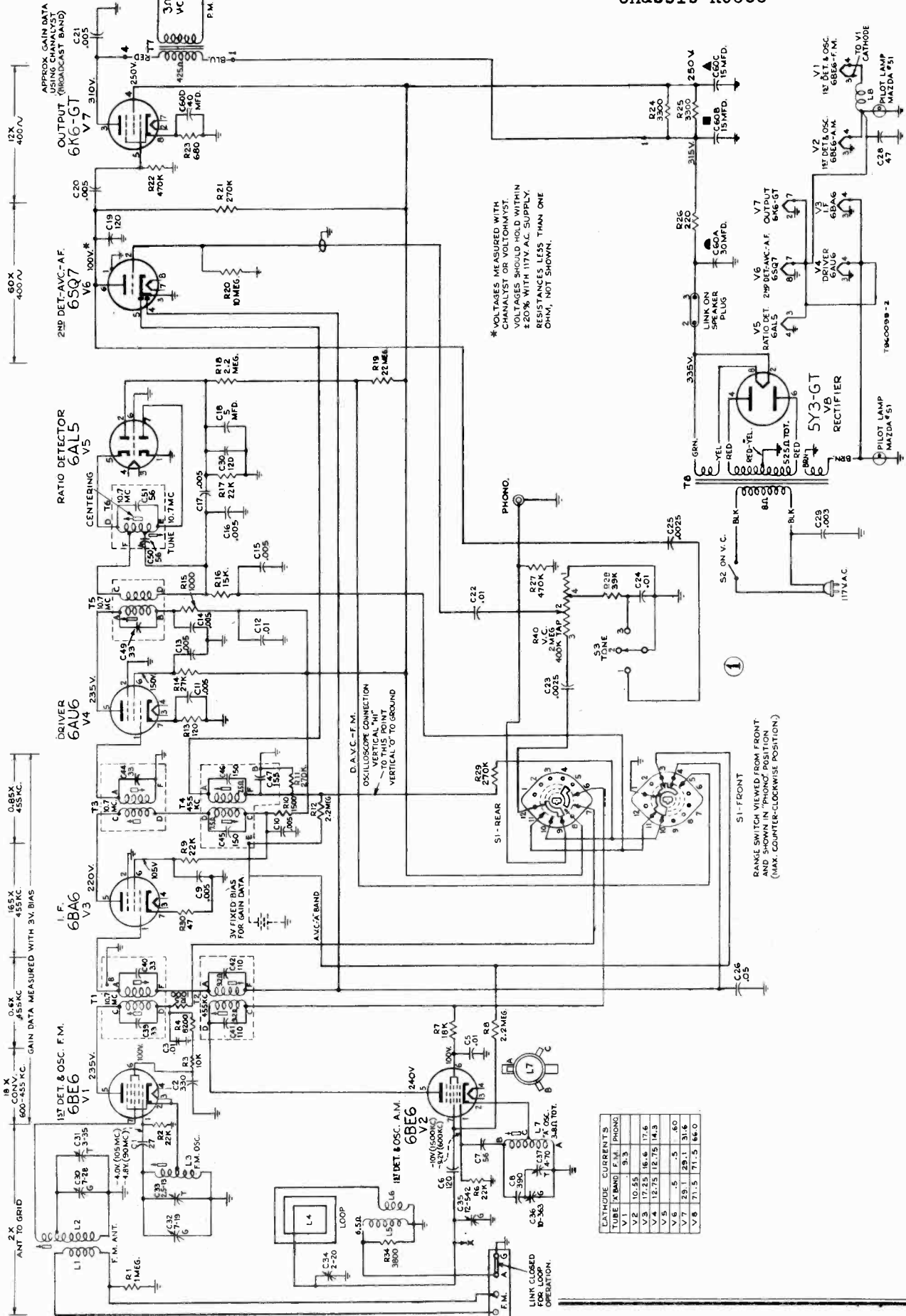
Table with columns: STOCK No., DESCRIPTION, STOCK No., DESCRIPTION. Lists mechanical and electrical parts like brackets, knobs, switches, and assemblies.

APPLY TO YOUR RCA DISTRIBUTOR FOR PRICES OF REPLACEMENT PARTS
*This is the first time this Stock No. has appeared in print.

*THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN PRINT.

RADIO CORP. OF AMERICA MODELS 68R1, 68R2, 68R3, 68R4
Chassis RC608

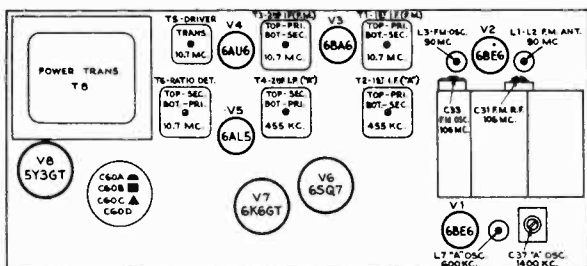
1946 No. 7



* VOLTAGES MEASURED WITH CHANNELYST OR VOLTHOMYST. VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117V. A.C. SUPPLY. RESISTANCES LESS THAN ONE OHM, NOT SHOWN.

1
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "PHONO" POSITION (MAX. COUNTER-CLOCKWISE POSITION)

TUBE	X-BAND	F.M. PHONO
V1	10.55	9.3
V2	17.25	16.4
V3	12.75	14.3
V4	5	5
V5	29.1	31.6
V6	71.5	71.5
V7	160	160



Tube and Trimmer Locations (Top View)

Alignment Procedure

Test Oscillator—

For all alignment operations, unless specified, keep the output as low as possible to avoid A.V.C. action. Ground lead of test-osc. to chassis ground, unless specified.

Output Meter—

To correctly observe the point of minimum a-f output, it is necessary to connect an output meter across the voice coil, and turn the receiver volume control to maximum.

"A" Band Alignment*

Range Switch in BC Position

Steps	Connect the high side of the test osc. to—	Tune test osc. to—	Turn the radio dial to—	Adjust for max. peak output.
1	AM converter grid, pin 1, 6BE6 in series with .01 mfd.	455 kc.	"A" Band Quiet point at high freq. end.	†T4—Top core
2				T4—Bottom core
3	Antenna lead in series with 200 mmf.	1400 kc.	"A" Band 1400 kc calibration pt.	C37—Osc.
4		600 kc.	"A" Band 600 kc calibration pt.	C34—Ant. (Loop)
5	Repeat steps 3 and 4 until aligned			
6	When chassis is installed, readjust C34 on the loop for max. output at 1400 kc.			

FM I.F. R.F. Alignment*

Range Switch in FM Position

Steps	Connect the high side of the test-osc. to—	Connect the ground side of the test-osc. to—	Tune test-osc. to—	Radio dial turned to—	Adjust
1	Connect the d-c probe of a VoltOhmyst to the negative lead of the 5 mfd. electrolytic condenser, C18, and the common lead of the meter to chassis ground.				
2	To one terminal of the FM antenna in series with .01 mfd.	To the other terminal of the FM antenna.	10.7 mc. 30% mod. at 400 cycles. (AM)	Maximum capacity. (Fully meshed)	†T3, bottom core for maximum d-c across C 18. Load the plate winding of T3 with a 680 ohm resistor.‡
3	Same as 2.				T3, top core for maximum d-c across C 18. Load the grid winding of T3 with the 680 ohm resistor used in Step 2.
4	Same as 2.				T1, bottom core for maximum d-c across C 18. Load the plate winding of T1 with the 680 ohm resistor.
5	Same as 2.				T1, top core for maximum d-c across C 18. Load the grid winding of T1 with the 680 ohm resistor.
6	To one terminal of the FM antenna in series with a 120 ohm resistor.	To the other terminal of the antenna in series with a 120 ohm resistor.	106 mc.	106 mc. §	Condensers C33 and C31 for maximum d-c output across C18.
7	Same	Same	90 mc.	90 mc.	Coils L2 and L3 for maximum d-c output across C18.
8	Repeat steps 6 & 7 until further adjustment no longer improves calibration.				

*Correct alignment of the 455 kc. I.F. requires that the 10.7 mc. FM I.F. be aligned previously.

†This method is known as alternate loading which involves the use of a 680 ohm resistor to load the plate winding while the grid winding of the same transformer is peaked. Then the grid winding is loaded with the resistor while the plate winding is peaked.

‡When the windings are loaded it may be necessary to increase the 10.7 mc input since the gain will decrease resulting in a small or no reading across C18. This reading should be maintained at 2-4 volts, by adjusting the input, as each transformer is aligned.

§Completely mesh the gang and see that the pointer goes to mechanical maximum calibration point at low end of band. (Reference mark on dial back plate).

FM Ratio Detector Alignment

Range Switch in FM Position

Steps	Connect the high side of the test osc. to—	Tune test-osc. to—	Turn volume control to—	Adjust
1	Connect a 680 ohm resistor between pins 5 & 7 of the ratio detector tube 6AL5. Connect the d-c probe of a VoltOhmyst to the negative lead of the 5 mfd. electrolytic condenser, C18. The common lead of the meter to ground.			
2	Driver grid, pin 1, of the 6AU6 in series with .01 mfd.	10.7 mc. 30% mod. 400 cycles (AM) Approx. .25 Volt output	Maximum Volume	*Driver transformer, T5 for maximum d-c across C18.
3	Remove the meter leads and disconnect the 680 ohm resistor from the 6AL5. Connect two 68,000 ohms (±1%) resistors in series, across the 22,000 ohm ratio detector load resistor, R17. Connect the common lead of the VoltOhmyst to the center point of the 68,000 ohm resistors, and the d-c probe to terminal "A" of the ratio detector transformer, T6. Set the meter to the 0-30 VDC scale.			
4	Same as in Step 2.	Same as in Step 2. Approx. .25 Volt output.	Maximum volume.	†T6 bottom core for zero d-c balance. T6 top core for min. audio output.‡
5	Reconnect VoltOhmyst as in Step 1, omitting 680 ohm resistor.			
6	Repeat Step 2.			
7	Remove ALL connections.			

*Approximately 14.5 volts.

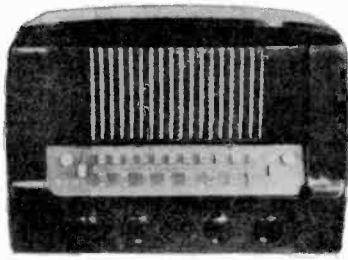
†Near the correct core position the zero point is approached rapidly and continued adjustment causes the indicated polarity to reverse. A slow approach to the zero point is an indication of severe detuning, and the bottom core should be turned in the opposite direction.

‡The zero d-c balance and the minimum a-f output should occur at the same point. If such is not the case, the two cores should be adjusted until both occur with no further adjustment of either core. It may be advantageous to adjust both cores simultaneously, watching the VoltOhmyst, and the output meter, hooked across the voice coil, for the point at which both zero d-c and minimum a-f output occur.

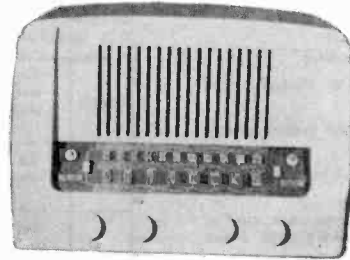
Note:—Two or more points may be found which will satisfy the condition required in Step 4. T6 top core should be correctly adjusted when approximately 1/8 inch of threads extend above the can, therefore, it is desirable to start adjustment with the top core in its furthest "in" position and turn out, while adjusting the bottom core, until the first point of minimum a-f and zero d-c is reached.

RADIO CORP. OF AMERICA

MODELS 68R1, 68R2,
68R3, 68R4



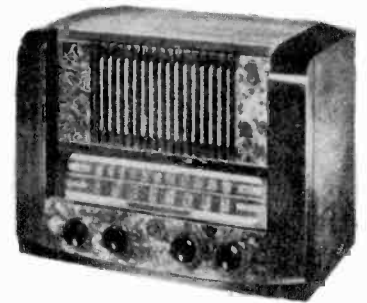
68R1



68R2



68R3



Circuit Description

These receivers are eight tube, table model, superhetrodyne radios, incorporating two separate converters, one for the FM band and the other for the broadcast band. The range switch has a position in which these models can be operated as a phonograph sound channel.

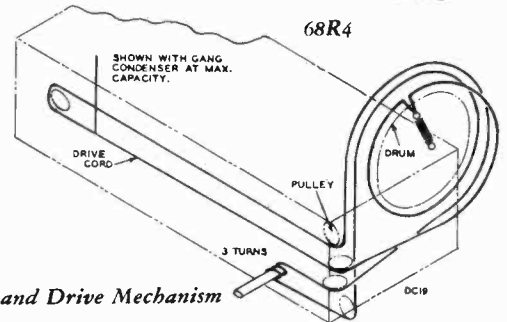
Ratio Detector—

These sets utilize a FM detector known as the "Ratio Detector." This type of circuit eliminates the necessity for a limiting stage preceding the detector, and has an inherent insensitivity to amplitude modulated signals. It is desirable, that before attempting to service these receivers, that this type of circuit be completely understood. Special care should be taken in alignment, and all precautions should be carefully observed.

Note:—Two antennas, a loop for broadcast reception and a folded dipole for FM, are contained in the cabinet. Because of the directional characteristic of these antennas, it may be necessary, when interference is encountered, to rotate the cabinet until a point of minimum interference is found. In some locations, a phenomenon known as "Multi-Path Reception" exists which produces distortion on FM. This is not a fault of the receiver. If this condition is suspected, remove the set to another location, and check it there. An external FM antenna, such as the RCA Dipole and Reflector, Stock #225, will eliminate, or appreciably reduce this effect.

Standard Broadcasts—

To install an external antenna for Standard Broadcasts, the link on the terminal board on the chassis in the back of the cabinet must be opened. Then connect the antenna, which should be a wire 40 to 60 feet long, to the terminal marked "A". A connection from "G" to ground should not be necessary but may be advantageous.



Electrical and Mechanical Specifications

Frequency Range

Broadcast ("A" Band) 540-1600 kc
Frequency Modulation (FM Band) 88-108 mc.

Intermediate Frequency

Broadcast 455 kc.
Frequency Modulation 10.7 mc.

Tube Complement

- (1) RCA 6BE6 1st Det. & Osc. FM
- (2) RCA 6BE6 1st Det. & Osc. AM
- (3) RCA 6BA6 I-F Amplifier
- (4) RCA 6AU6 Driver
- (5) RCA 6AL5 Ratio Detector
- (6) RCA 6SQ7 2nd Det., A.V.C., and A-F Amplifier
- (7) RCA 6K6 GT Power Output
- (8) RCA 5Y3 GT Rectifier

Power Supply Rating

105-125 volts, 60 cycles 64 watts

Pilot Lamps

(2) Mazda No. 51, 6-8 volts, 0.2 amp.

Loudspeaker 940923-7

Size 5" x 7" elliptical PM
V.C. Impedance 3.4 ohms at 400 cycles

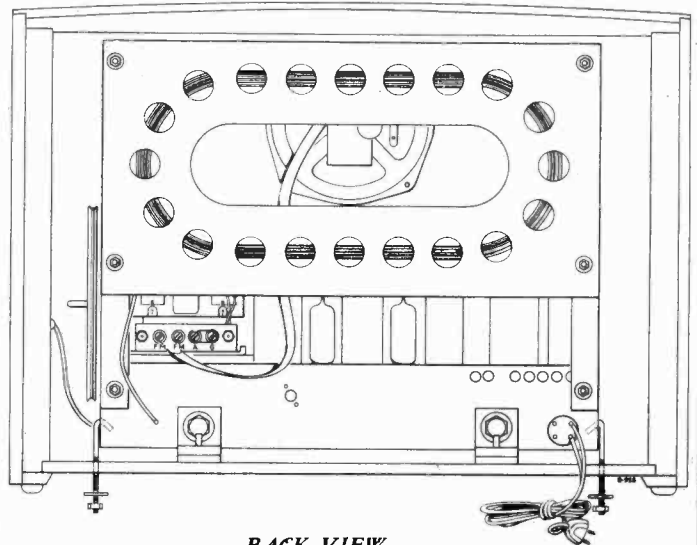
Power Output

Undistorted 2.0 watts
Maximum 4.0 watts

Critical Lead Dress

1. Dress capacitor C-1 near chassis base.
2. Dress lead from pin No. 5, No. 1 6BE6 to terminal C, of transformer T1, as near the bottom of the FM shelf as possible.
3. Dress capacitor C-23 next to chassis.
4. The lead from capacitor C-23 to the high side of the volume control must be dressed next to chassis along front apron.
5. Dress resistor R-20 near chassis base.

Dial-Indicator and Drive Mechanism



BACK VIEW

6. Dress all a-c leads away from volume control.
7. Solder FM antenna coil primary leads to terminal board with as short a lead length as practical.
8. Make all FM leads as short as possible. Dress of all other leads should be similar to original wiring.
9. The lead from pin No. 2, 6BA6, to ground must be dressed as close to the base and as near to the back apron as possible. This lead provides degeneration for the IF stage and neither its length, nor the point at which it is grounded to the chassis should be changed.

MODEL 75ZU,
CHASSIS RC-1063A

RADIO CORP. OF AMERICA

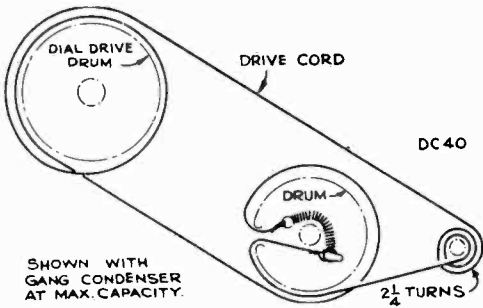
Alignment Procedure

CAUTION.—CLOSE TUNING CONDENSER PLATES COMPLETELY (C-C-W) BEFORE REMOVING CHASSIS FROM CABINET.

Take off both wooden strips on bottom of cabinet by removing wood screws before loosening chassis bolts.

CRITICAL LEAD DRESS.—

1. All heater wires should be dressed close to chassis.
2. Dress lead from switch to phono jack close to chassis and away from power cord.
3. Dress capacitor between 12SQ7 grid and terminal board away from chassis and away from other parts.
4. Dress lead from arm of volume control to terminal board against front apron and away from other leads.
5. In instrument assembly the lead from the rear section of gang to loop shall be dressed away from chassis and other wires to loop.



Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf. capacitor to common "B." Keep the output signal as low as possible to avoid a.v.c. action.

Speaker and Dial Adjustment.—If the speaker should require replacement or if the position of the speaker mounting bracket is disturbed, reposition as follows:

Mount speaker on bracket, adjust bracket so that front edge of speaker extends 3/4 inch in front of chassis base and tighten bracket screws.

Mount chassis on wood base with mounting screws loose, install in cabinet and push chassis forward until speaker contacts grille and then tighten chassis mounting screw. Adjust dial back plate mounting bracket so that the plate is parallel with cabinet.

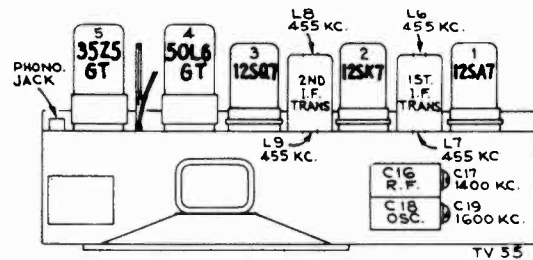
The two wood buttons at the top of the dial back plate should be adjusted to provide the best illumination of the dial and pointer.

Output Meter.—Connect meter across speaker voice coil. Turn volume control clockwise to radio maximum high position (3) for alignment.

Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates fully meshed). Adjust indicator pointer to position illustrated on front page.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I.F. grid, in series with .01 mfd.	455 kc	Quiet point 600 kc end of dial	L8 and L9 2nd I.F. transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 *1st I.F. transformer
NOTE.—ANTENNA LOOP AND RECORD CHANGER MUST BE IN CABINET FOR STEPS 3, 4 AND 5				
3	Antenna terminal in series with 220 mmfd.	1600 kc	160	C19 (osc.)
4	Radiated signal	1400 kc	Signal frequency	C17 (ant.)
5	Repeat steps 3 and 4.			

* Do not readjust L8 or L9 when test oscillator is connected to 1st Det.



1st I.F. Trans. Substitution.—The first I.F. transformer may differ from that shown in the schematic diagram. Transformers stamped 970441-1 are as shown in the schematic. Transformers stamped 970441-5 are connected as follows: term. #4 to plate of 12SA7, term. #3 to B+, term. #1 to grid of 12SK7, term. #2 to A.V.C. The d-c resistance of each winding is 16 ohms. The primary capacitor C20 is 131 mmf., the secondary capacitor is 106 mmf.

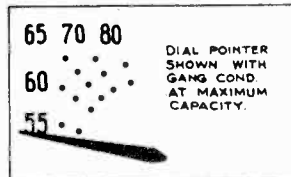
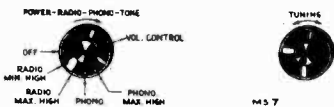
Electrical and Mechanical Specifications

Frequency Range	540-1,600 kc
Intermediate Frequency	455 kc
Tube Complement	
(1) RCA Radiotron 12SA7	Converter
(2) RCA Radiotron 12SK7	I-F Amplifier
(3) RCA Radiotron 12SQ7	2nd Det., A.V.C., and A-F Amplifier
(4) RCA Radiotron 50L6GT	Power Output
(5) RCA Radiotron 35Z5GT	Rectifier
Pilot Lamp	Mazda No. 51, 6-8 volts, 0.2 amp.
Power Output	
Undistorted	1.5 watts
Maximum	2.4 watts
Loudspeaker	
Type 922258-2	"PM" 4 x 6 inch elliptical
V.C. Impedance	3.4 ohms at 400 cycles
Power Supply Rating	
105-125 volts, A-C, 60 cycles	60 watts

Cabinet dimensions (inches)	Height	Width	Depth
	10 1/4	17 1/4	19
Chassis overall (inches)	9	14	6 1/4
Chassis base (inches)	1 5/8	14	3 3/4
Tuning Drive Ratio	11:1		

Phonograph	
Type	RP-178 or Type 960276-1
Record Capacity	Twelve 10-in., Ten 12-in.
Turntable Speed	78 r.p.m.
Type Pickup	Crystal

IMPORTANT: Do not plug instrument into a d-c supply.
Access to dial lamp may be obtained by removing sloping panel in record changer compartment.

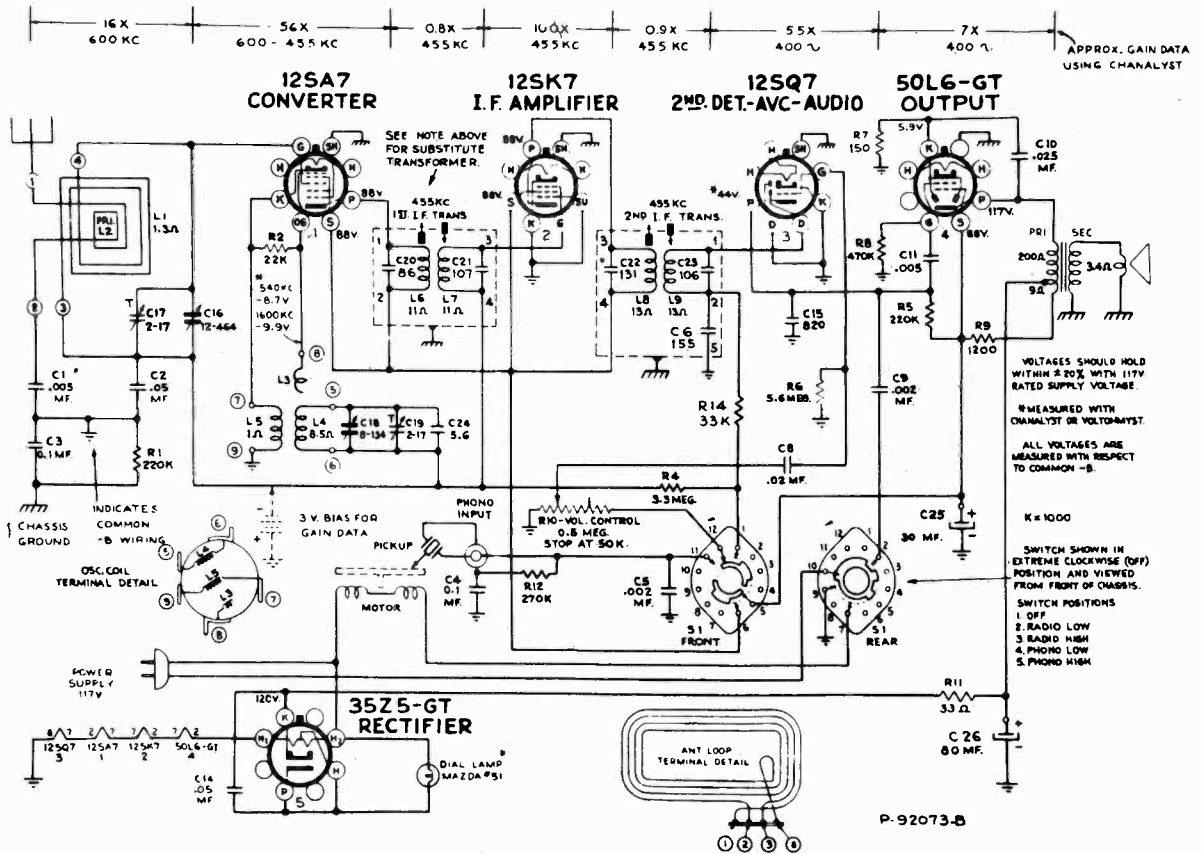


Control Positions

DC 43



PH 239

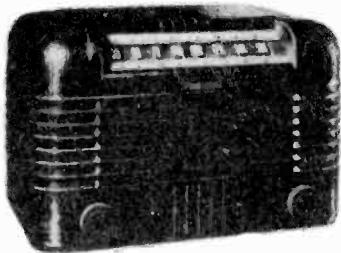


Replacement Parts

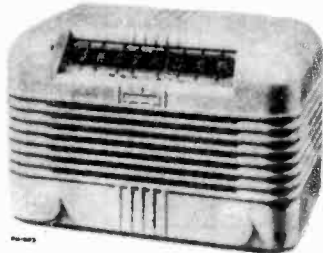
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1063A			
70407	Button—Plug button to cover holes for i-f transformers adjustment	*73058	Resistor—Fixed composition, 5.6 megohms $\pm 10\%$, 1/2 watt (R6)
70997	Capacitor—Ceramic, 5.6 mmf. (C24)	*73062	Shaft—Tuning knob shaft
39650	Capacitor—Mica, 820 mmf. (C15)	35787	Socket—Lamp socket
70601	Capacitor—Tubular, .002 mfd., 400 volts (C5, C9)	37605	Socket—Phono input socket
70606	Capacitor—Tubular, .005 mfd., 400 volts (C1, C11)	370390	Socket—Tube socket
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10)	*73061	Spring—Drive cord tension spring
70611	Capacitor—Tubular, .02 mfd., 400 volts (C8)	70396	Spring—Station selector indicator pulley retaining spring
70615	Capacitor—Tubular, .05 mfd., 400 volts (C2, C14)	70394	Spring—Volume control gear tension spring
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C3, C4)	70394	Switch—Power, radio and phono switch (S1)
72312	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 80 mfd., 150 volts (C25, C26)	73036	Transformer—First I.F. transformer (L6, L7, C20, C21)
70403	Coil—Oscillator coil (L3, L4, L5)	73037	Transformer—Second I.F. transformer (L8, L9, C8, C22, C23)
*73056	Condenser—Variable tuning condenser and drive drum (C16, C17, C18, C19)	72296	Transformer—Output transformer (T1)
*73057	Control—Volume control (R10)	33726	Washer—"C" washer for tuning knob shaft
70392	Cord—Power cord and plug	SPEAKER ASSEMBLIES 922258-2	
72953	Cord—Drive cord (approx. 38" overall length required)	71058	Speaker—4" x 6" P.M. speaker complete with cone and voice coil
*73063	Dial—Dial scale	MISCELLANEOUS	
70397	Gear—Power, radio and phono switch gear	71105	Cable—Shielded pickup cable for use with RP-178 record changer
*73014	Gear—Volume control gear—less spring	72437	Cable—Shielded pickup cable for use with 960276 record changer
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	*73077	Crystal—Vinylite dial crystal
*73059	Indicator—Station selector indicator	X1661	Cloth—Grille cloth
*73010	Loop—Antenna loop complete (L1, L2)	*72894	Foot—Rubber foot (4 required)
*73055	Plate—Dial back plate less dial	*72856	Grommet—Rubber grommet to mount record changer (3 required for RP-178) (4 required for 960276)
30868	Plug—2 contact female plug for motor cable	72692	Hinge—Lid hinge
*73060	Pulley—Station selector indicator pulley	*73064	Knob—Power, radio and phono switch knob
72313	Resistor—Wire wound, 33 ohms, 1/4 watt (R11)	*73065	Knob—Tuning knob
	Resistor—Fixed composition, 150 ohms, $\pm 10\%$, 1/2 watt (R7)	*73078	Knob—Volume control knob
	Resistor—Fixed composition, 1200 ohms $\pm 10\%$, 1 watt (R9)	11765	Lamp—Dial lamp
	Resistor—Fixed composition, 22,000 ohms $\pm 20\%$, 1/2 watt (R2)	73109	Nut—T nut for mounting record changer (3 required for RP-178) (4 required for 960276)
	Resistor—Fixed composition, 33,000 ohms $\pm 20\%$, 1/2 watt (R14)	73110	Screw—1/4-20 x 1 3/4 fillister head machine screw for mounting RP-178 record changer (3 required)
	Resistor—Fixed composition, 220,000 ohms $\pm 20\%$, 1/2 watt (R1, R5)	73234	Screw—1/4-20 x 1 1/2 oval head machine screw for mounting 960276 record changer (4 required)
	Resistor—Fixed composition, 470,000 ohms $\pm 20\%$, 1/2 watt (R8)	14270	Spring—Retaining spring for knobs
	Resistor—Fixed composition, 3.3 megohms $\pm 20\%$, 1/2 watt (R4)	71824	Stud—Stud and screw to mount one lid hinge
		*73067	Support—Lid support

* THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN SERVICE DATA.

MODELS 76ZX11, 76ZX12 RADIO CORP. OF AMERICA



76ZX11
(Walnut)



76ZX12
(Ivory)

Critical Lead Dress

1. Dress output plate bypass capacitor (C-11 .02 mf) against chassis.
2. Dress 35L6GT plate lead (red) against chassis and away from volume control, leads and terminals.
3. Dress audio coupling capacitor (C-7 .02 mf) away from 35L6GT heater leads.
4. Dress 2nd i-f yellow and brown leads away from output plate bypass capacitor (C-11, .02 mf) and away from all heater leads.
5. Dress blue and green leads of both i-f transformers back in shields leaving exposed lengths as short as possible.

Specifications

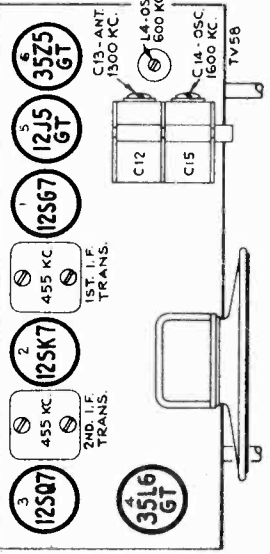
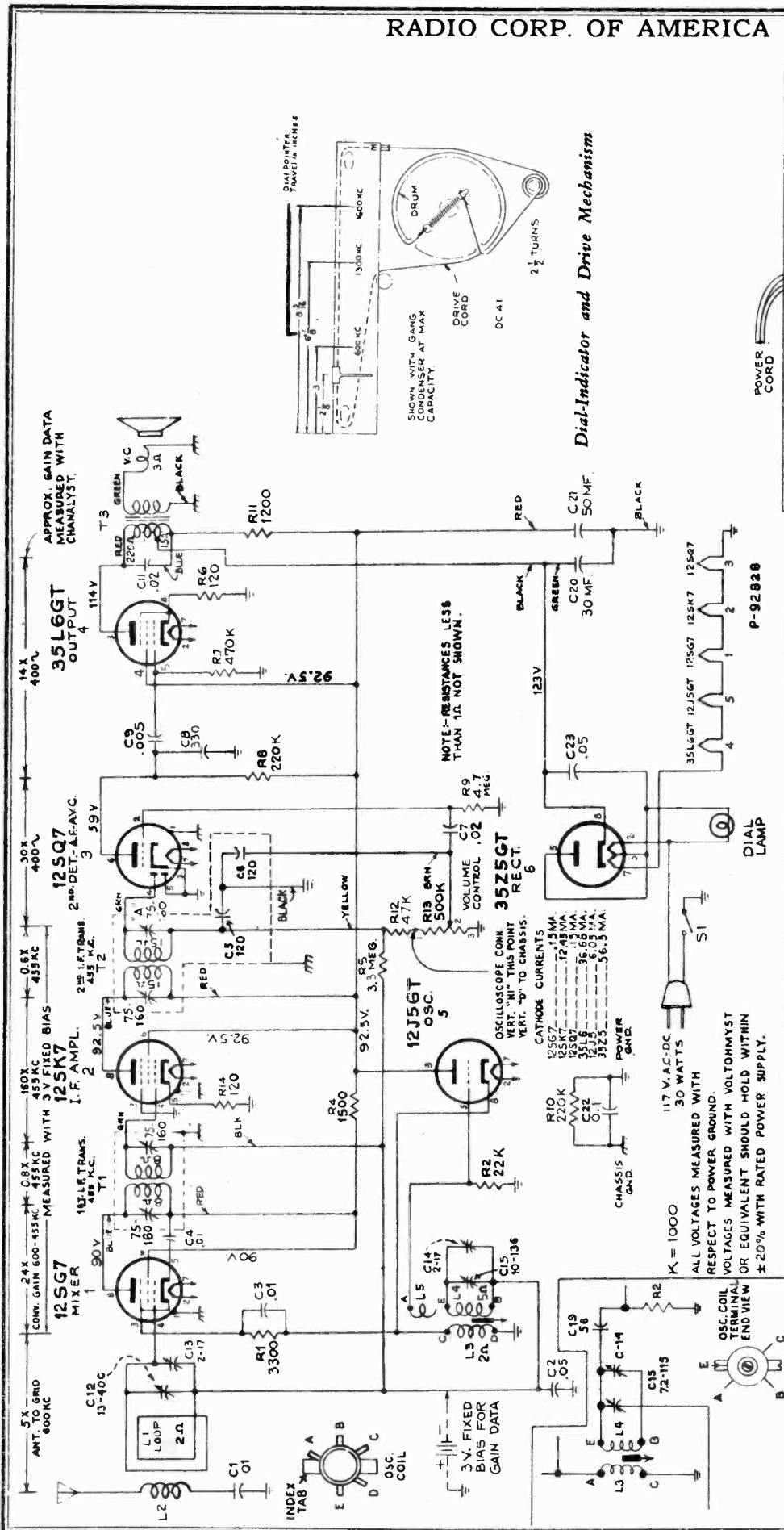
Frequency Range540-1600 kc
 Intermediate Frequency455 kc
 Power Output
 Undistorted1.0 watt
 Maximum1.5 watts
 Tube Complement
 (1) RCA Radiotron 12SG7Mixer
 (2) RCA Radiotron 12SK7I.F. Amplifier
 (3) RCA Radiotron 12SQ72nd Det., A.V.C., and A.F. Amplifier
 (4) RCA Radiotron 35L6GTPower Output
 (5) RCA Radiotron 12J5GTOscillator
 (6) RCA Radiotron 35Z5GTRectifier

Loudspeaker (92572-2)
 Type5-inch PM
 V. C. Impedance3.2 ohms at 400 cycles
 Cabinet Dimensions Height, 7¾; Width, 12½; Depth, 6¾
 Power Supply Rating
 105-125 volts, AC, 50 or 60 cycles, or DC36 watts
 Pilot Lamp type 51, 6-8 volts, 0.20 amp.
 Tuning Drive Ratio 14.5:1
 POWER SUPPLY POLARITY.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC-1058—RC-1058A			
*73172	Capacitor—Ceramic, 56 mmfd., (C19)—for RC-1058A		Resistor—Fixed composition, 470,000 ohms, ±20%, ½ watt (R7)
72571	Capacitor—Mica, 330 mmfd. (C8)		Resistor—Fixed composition, 3.3 megohms, ±20%, ½ watt (R5)
70606	Capacitor—Tubular, .005 mfd., 400 volts (C9)	*72886	Shaft—Tuning knob shaft
70610	Capacitor—Tubular, .01 mfd., 400 volts (C1, C3, C4)	34449	Socket—Lamp socket
70611	Capacitor—Tubular, .01 mfd., 400 volts (C7, C11)	37605	Socket—Tube socket, moulded
70615	Capacitor—Tubular, .05 mfd., 400 volts (C2, C23)	32299	Socket—Tube socket—wafer
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C22)	31418	Spring—Drive cord tension spring
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C20, C21)	70411	Transformer—First I. F. transformer (T1)
*73704	Coil—Oscillator coil (L3, L4, L5)—for RC-1058	70412	Transformer—Second I. F. transformer (T2, C5, C6)
*73163	Coil—Oscillator coil (L3, L4)—for RC-1058A	36800	Transformer—Output transformer (T3)
*72991	Condenser—Variable tuning condenser complete with drive pulley (C12, C13, C14, C15)—for RC-1058	35969	Washer—"C" washer for tuning shaft
*73171	Condenser—Variable tuning condenser, complete with drive pulley (C12, C13, C14, C15)—for RC-1058A	SPEAKER ASSEMBLY 92572-2W RL 101-3	
38410	Control—Volume control and power switch (R13, S1)	72201	Speaker—5" P.M. speaker complete with cone and voice coil
72953	Cord—Drive cord (approx. 50" overall length)	MISCELLANEOUS	
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	39953	Back—Cabinet back for 76ZX11
37068	Indicator—Station selector indicator	70409	Back—Cabinet back for 76ZX12
*73030	Loop—Antenna loop complete (L1, L2)	Y1429	Cabinet—Brown plastic cabinet for 76ZX11
*72872	Plate—Dial back plate complete with drive cord pulleys	Y1430	Cabinet—Ivory plastic cabinet for 76ZX12
72602	Pulley—Drive cord pulley	36890	Clamp—Dial clamp—L.H.
	Resistor—Fixed composition, 120 ohms, ±10%, ½ watt (R8, R14)	36891	Clamp—Dial clamp—R.H.
	Resistor—Fixed composition, 1200 ohms, ±10%, 1 watt (R11)	*72903	Dial—Glass dial scale
	Resistor—Fixed composition, 1500 ohms, ±20%, ½ watt (R4)	37831	Fastener—Push fastener to hold cabinet back (1 set)
	Resistor—Fixed composition, 3300 ohms, ±20%, ½ watt (R1)	36886	Knob—Control knob—ivory—for 76ZX12
	Resistor—Fixed composition, 22,000 ohms, ±10%, ½ watt (R2)	*72981	Knob—Control knob—maroon—for 76ZX11
	Resistor—Fixed composition, 47,000 ohms, ±20%, ½ watt (R12)	11765	Lamp—Dial lamp—Maxda #51
	Resistor—Fixed composition, 220,000 ohms, ±20%, ½ watt (R8, R10)	30900	Spring—Retaining spring for knobs

* THIS IS THE FIRST TIME THAT THIS STOCK NO. HAS APPEARED IN SERVICE DATA.



Tube and Trimmer Locations

Steps	Connect the high side of test-oscillator to--	Tune test-osc. to--	Turn radio dial to--	Adjust the following for max. peak output
1	Stator of C-12 in series with .01 mfd.	455 kc	Quiet-point 1,600 kc end of dial	Sec. and pri. 2nd I.F. trans.
2		1,600 kc	1,600 kc	Sec. and pri. 1st I.F. trans.
3	Ant. lead in series with 200 mmfd.	1,300 kc	600 kc	C14 (osc.)
4		600 kc	1,300 kc	C13 ant.
5				L4 (osc.) Rock in
6	Repeat steps 3, 4 and 5.			

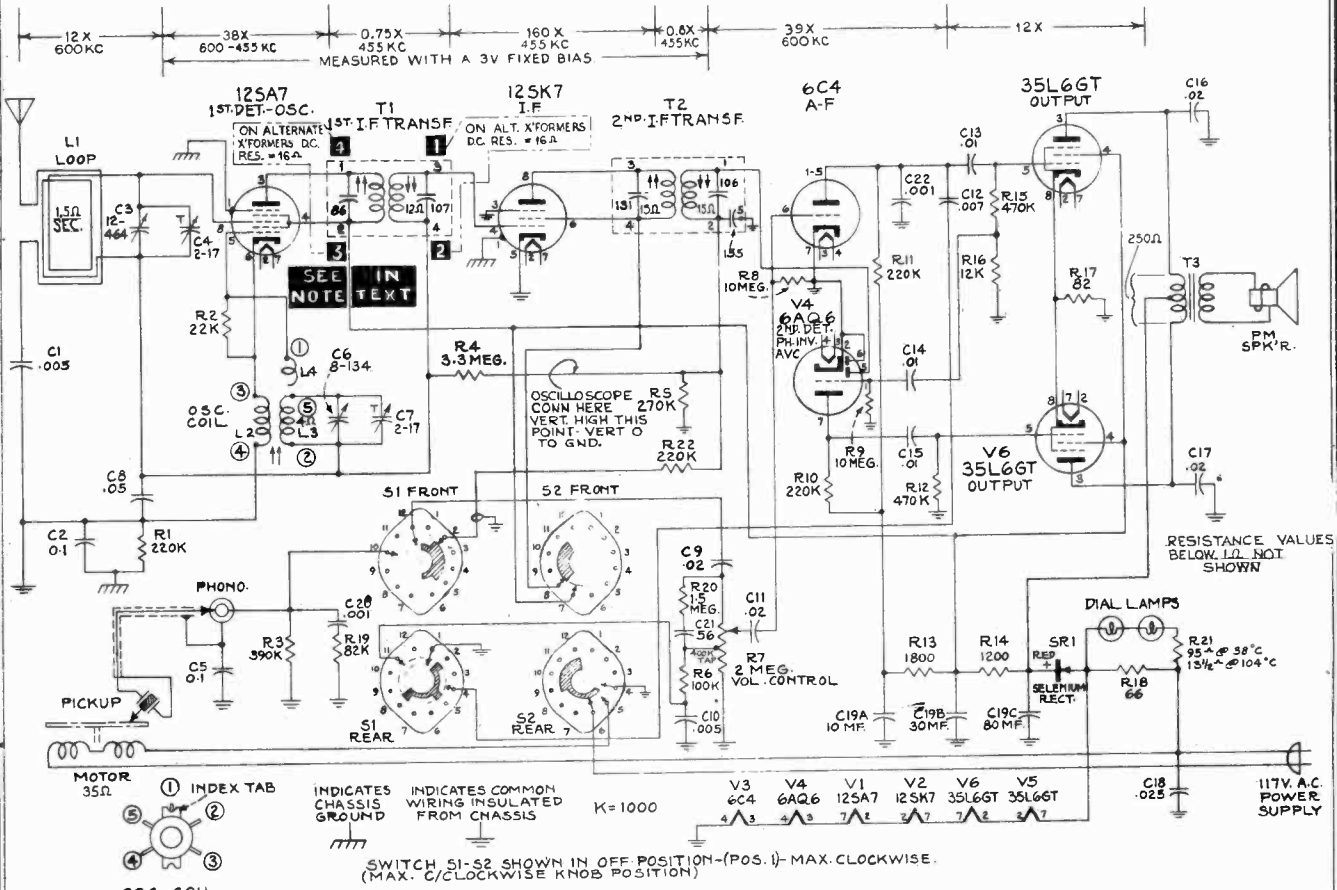
Oscillator Circuit--
Chassis No. RC-1058A
Otherwise identical to Chassis No. RC-1058, except C12 (10-398)

Alignment Procedure

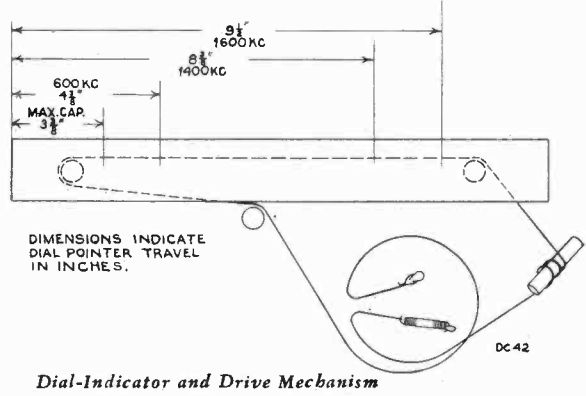
Test Oscillator--Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "B". Keep the output signal as low as possible to avoid AVC action.

Output Meter--Connect leads between speaker voice coil and chassis. Turn volume control to maximum.

Dial Pointer Adjustment--Rotate tuning condenser fully counter-clockwise (plates closed). Adjust indicator to 2 1/2" from left hand edge of dial back plate.



The first I-F transformer shown in the schematic is stamped 970441-1. Some chassis will have a first I-F transformer stamped 970441-5. Connections to this alternate transformer are as shown in the block letters. Performance will be identical for both sets.



Electrical and Mechanical Specifications

Six-Tube, Single-Band, Superheterodyne Receiver

Frequency Range 540-1,600 kc

Intermediate Frequency 455 kc

Power Output

Undistorted 2.2 watts

Maximum 3 watts

Loudspeaker "PM"

Size 5x7 inch elliptical

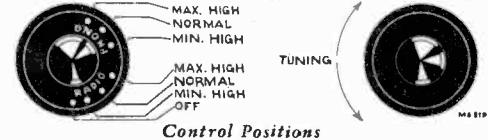
V.C. Impedance 3.4 ohms at 400 cycles

Power Supply Rating

105-125 volts, AC, 60 cycles with RP-178 record changer 60 watts

IMPORTANT--Do not plug chassis into a d-c power supply.

Cabinet dimensions (inches)	Height 10 3/4"	Width 18 3/4"	Depth 18 3/4"
Tube Complement	(1) RCA-12SA7	1st Det.—Osc.	
	(2) RCA-12SK7	I-F Amplifier	
	(3) RCA-6C4	A-F Amplifier	
	(4) RCA-6AQ6	2nd Det., AVC, Ph. Inv.	
	(5) RCA-35L6-GT	Power Output	
	(6) RCA-35L6-GT	Power Output	



MODEL 77U, CHASSIS
RC-1057A

RADIO CORP. OF AMERICA

Alignment Procedure

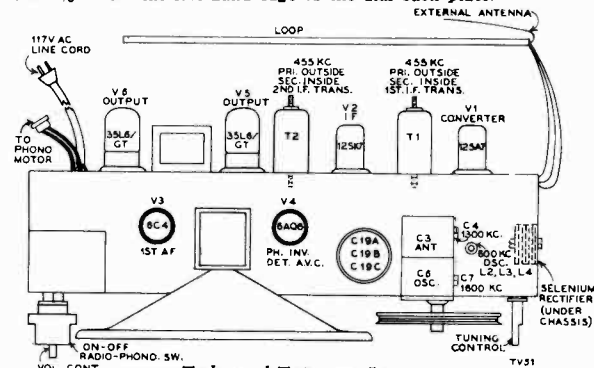
CAUTION.—CLOSE TUNING CONDENSER PLATES COMPLETELY (C-C-W) BEFORE REMOVING CHASSIS FROM CABINET.

Take off both wooden strips on bottom of cabinet by removing wood-screws before loosening chassis bolts.

CRITICAL LEAD DRESS.—

1. Dress output plate bypasses as near chassis as possible.
2. Dress all filament leads down to chassis.
3. Dress all exposed leads away from each other and away from chassis to prevent short circuits.
4. Dress R-6 away from shield.
5. Dress AVC resistor away from R-13 and R-14.
6. Dress output plate leads down to chassis.
7. Dress R-18 away from R-15.
8. Dress R-16 away from V4 socket.
9. Dress R-10 away from V4 socket.
10. Dress high side of line cord down to front apron.
11. Dress lead of C-3 which connects to phono input away from side of chassis.

Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise (plates fully meshed). Adjust indicator pointer so that it is 3% from the left hand edge of the dial back plate.



Tube and Trimmer Locations

Tubes 6C4 and 6AQ6 may be replaced by removing the sloping panel (remove four wood screws) in the front of the record changer compartment. Before removing the chassis from the cabinet it is advis-

Output Meter.—Connect meter across speaker voice coil. Turn volume control clockwise to radio maximum high position (3) for alignment.

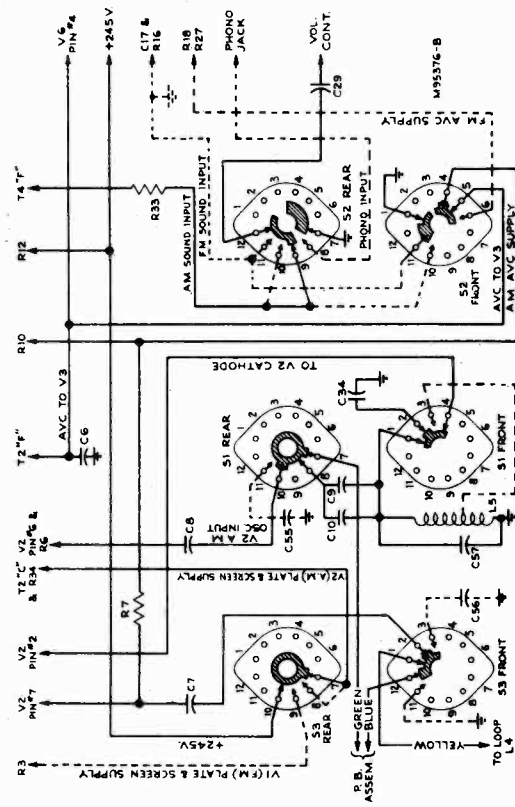
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I.F. grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	Pri. & Sec. 2nd I.F. transformer
2	1st Det. grid in series with .01 mfd.			Pri. & Sec. 1st I.F. transformer
NOTE.—ANTENNA LOOP AND RECORD CHANGER MUST BE IN CABINET				
3		1,600 kc	1,600 kc	C7 (osc.)
4	Antenna terminal in series with 220 mmfd.	1,400 kc	1,400 kc	C4 (ant.)
5		600 kc	600 kc	Osc. Coil L2, L3 Rock gang
6	Repeat steps 3, 4, & 5 if necessary			

Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "—B". Keep the output signal as low as possible to avoid a-v-c action.

able to loosen the two hex screws holding the speaker horizontally. This will allow the chassis to be removed and replaced easily. When the chassis is replaced the dial lights should be adjusted so as not to be visible from the front of the cabinet, and yet to give correct dial lighting. Move the speaker so it is flush against the baffle before retightening the hex nuts. The chassis mounting board should be flush against the front of the cabinet, and the chassis mounting holes should be centered over the holes in the board.

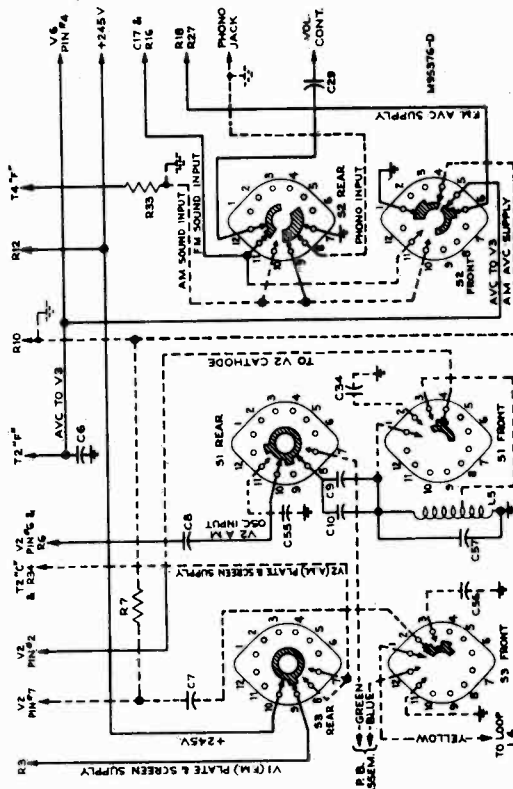
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1057A		
70407	Button—Plug button to cover holes for I. F. transformers' adjustment		Resistor—Fixed composition, 470,000 ohms, ±20%, 1/2 watt (R12)
39622	Capacitor—Mica, 56 mmf. (C21)		Resistor—Fixed composition, 470,000 ohms, ±10%, 1/2 watt (R15)
70600	Capacitor—Tubular, .001 mfd., 400 volts (C20, C22)		Resistor—Fixed composition, 1.5 megohms, ±10%, 1/2 watt (R20)
70606	Capacitor—Tubular, .005 mfd., 400 volts (C1)		Resistor—Fixed composition, 3.3 megohms, ±20%, 1/2 watt (R4)
72791	Capacitor—Tubular, .005 mfd., 400 volts (C10)		Resistor—Fixed composition, 10 megohms, ±20%, 1/2 watt (R8, R9)
70608	Capacitor—Tubular, .007 mfd., 400 volts (C12)	*73012	Shaft—Tuning knob shaft
70612	Capacitor—Tubular, .025 mfd., 400 volts (C18)	*73103	Shield—Tube shield for miniature tubes (2 required)
70610	Capacitor—Tubular, .01 mfd., 400 volts (C13, C14, C15)	*72998	Socket—Dial lamp socket and lead assembly
71928	Capacitor—Tubular, .02 mfd., 400 volts (C9)	35787	Socket—Phono input socket
70611	Capacitor—Tubular, .02 mfd., 400 volts (C11, C16, C17)	72516	Socket—Tube Socket, miniature
70615	Capacitor—Tubular, .05 mfd., 400 volts (C8)	37605	Socket—Tube socket, molded
70617	Capacitor—Tubular, .01 mfd., 400 volts (C2, C5)	70390	Spring—Drive cord tension spring
*73013	Capacitor—Electrolytic, comprising 1 section of 80 mfd., 150 volts; 1 section of 30 mfd., 150 volts; and 1 section of 10 mfd., 150 volts (C19A, C19B, C19C)	70396	Spring—Volume control gear tension spring
38201	Clamp—Drive cord clamp	*73011	Switch—Power, radio and phono switch (S1, S2)
70477	Coil—Oscillator coil (L2, L3)	73036	Transformer—First I. F. transformer (T1)
*73007	Condenser—Variable tuning condenser (C3, C4, C6, C7)	73037	Transformer—Second I. F. transformer (T2)
38403	Control—Volume control (R7)	*73008	Transformer—Output transformer (T3)
72953	Cord—Drive cord (approx. 52" overall length)	33726	Washer—"C" washer for tuning knob shaft
70392	Cord—Power cord and plug	34457	Washer—Spring washer for tuning knob shaft
70397	Gear—Power, radio and phono switch gear		SPEAKER ASSEMBLIES 92573-1K
73014	Gear—Volume control gear—less spring	72728	Cone—Cone and voice coil assembly
72283	Grommet—Rubber grommet to mount tuning condenser (3 required)	72727	Speaker—5"x7" PM speaker complete with cone and voice coil
*73015	Indicator—Station selector indicator		NOTE: If stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required.
73010	Loop—Antenna loop complete (L1)		MISCELLANEOUS
*73006	Plate—Dial back plate complete with (3) pulleys	71105	Cable—Shielded pickup cable
30868	Plug—2 contact female plug for motor cable	73017	Clamp—Dial clamp (2 required)
*73009	Rectifier—Selenium rectifier (SR1)	X1660	Cloth—Grille cloth
*73038	Resistor—Normal value 66 ohms with positive temperature coefficient (R18)	*73051	Decal—Styling line decal (2 required)
	Resistor—Fixed composition, 82 ohms ±10%, 1 watt (R17)	71966	Decal—Trade mark decal (Victrola)
*73072	Resistor—Normal value 95 ohms ±38°C with negative temperature coefficient (R21)	71984	Decal—Trade mark decal (RCA Victor)
	Resistor—Fixed composition, 1200 ohms, ±10%, 1 watt (R14)	*73039	Dial—Glass dial scale
	Resistor—Fixed composition, 1800 ohms, ±10%, 1/2 watt (R13)	72894	Foot—Rubber mounting foot (4 required)
	Resistor—Fixed composition, 12,000 ohms, ±10%, 1/2 watt (R16)	72856	Grommet—Rubber grommet to mount record changer (3 required)
	Resistor—Fixed composition, 22,000 ohms, ±20%, 1/2 watt (R2)	*73052	Handle—Cabinet lid handle
	Resistor—Fixed composition, 82,000 ohms, ±10%, 1/2 watt (R19)	72692	Hinge—Cabinet lid hinge (2 required)
	Resistor—Fixed composition, 100,000 ohms, ±10%, 1/2 watt (R6)	*73016	Knob—Power, radio and phono switch knob
	Resistor—Fixed composition, 220,000 ohms, ±20%, 1/2 watt (R1, R10, R11, R22)	73065	Knob—Tuning knob
	Resistor—Fixed composition, 270,000 ohms, ±10%, 1/2 watt (R5)	73078	Knob—Volume control knob
	Resistor—Fixed composition, 390,000 ohms, ±10%, 1/2 watt (R3)	11765	Lamp—Dial lamp
		14270	Spring—Retaining spring for knobs
		71824	Stud—Stud and screw to mount lid hinge (1 set)
		*73050	Support—Cabinet lid support

*THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN SERVICE DATA



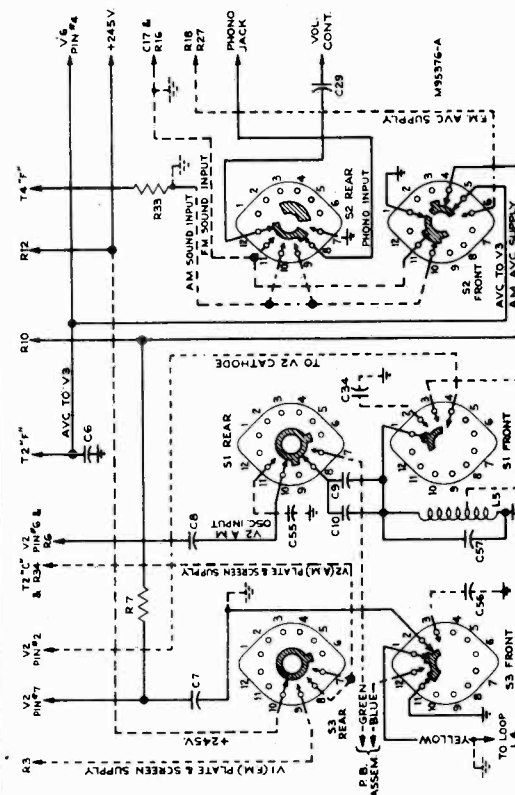
PUSH BUTTON

Simplified schematic diagram of band switch
 Broken lines (---) indicate circuits not in use, some of which may be grounded (indicated by dashed ground symbols) through range switch contacts.



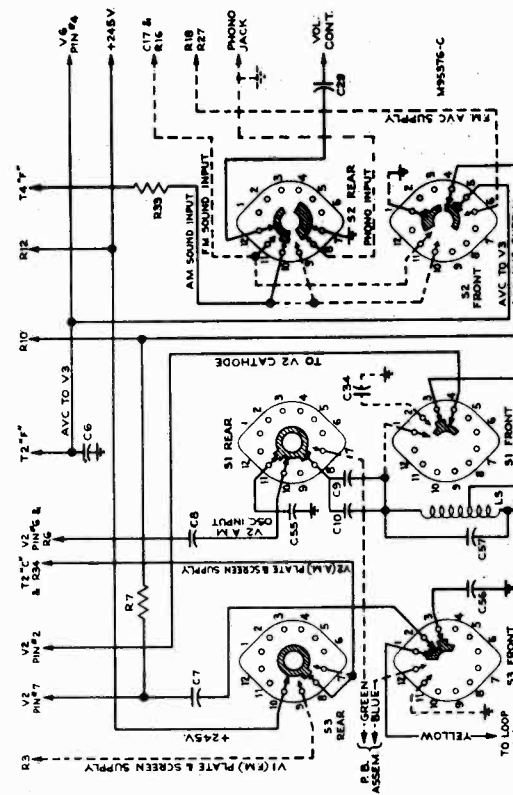
FM

Simplified schematic diagram of band switch
 Broken lines (---) indicate circuits not in use, some of which may be grounded (indicated by dashed ground symbols) through range switch contacts.



PHONO

Simplified schematic diagram of band switch
 Broken lines (---) indicate circuits not in use, some of which may be grounded (indicated by dashed ground symbols) through range switch contacts.

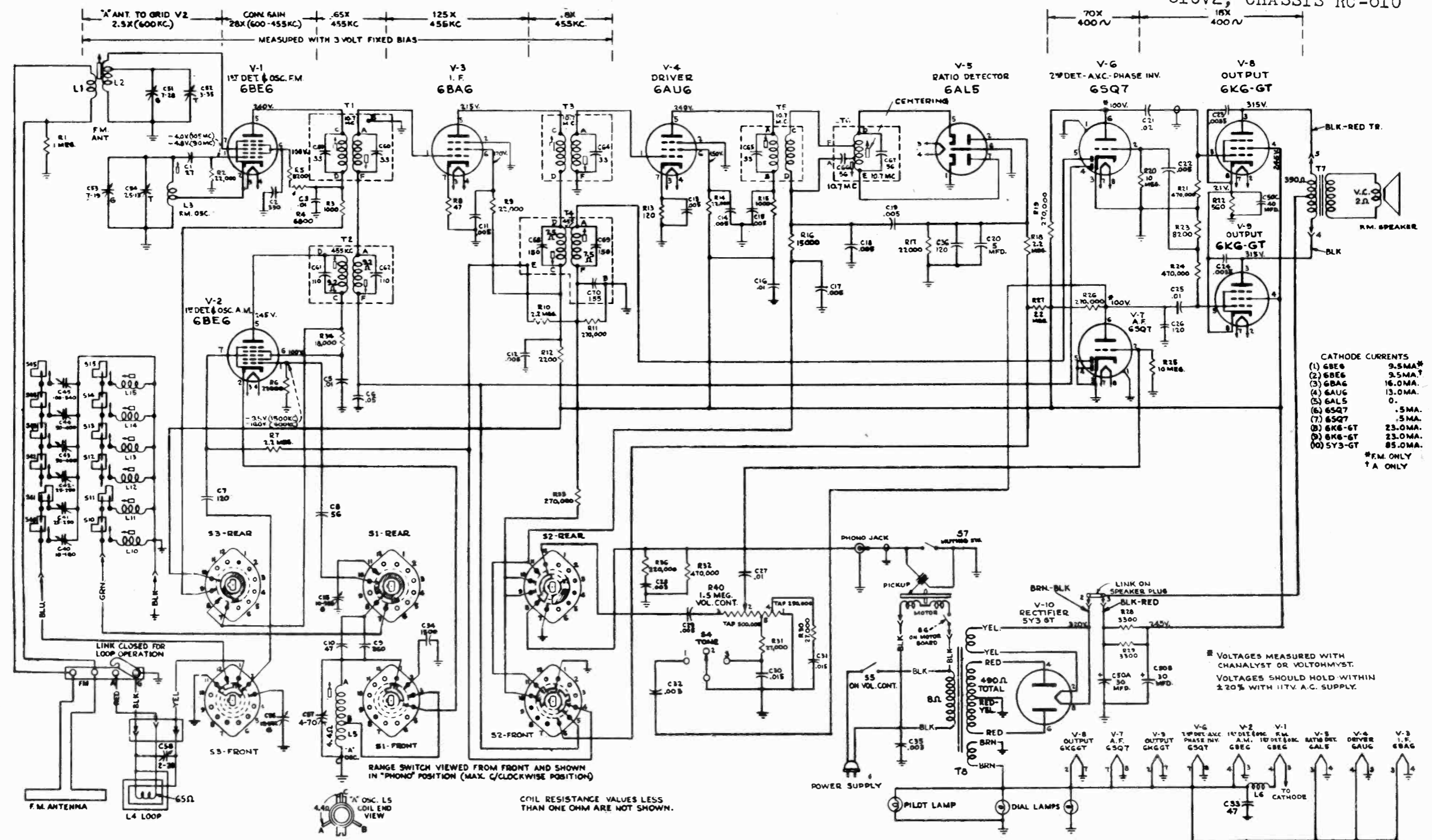


DIAL TUNING (BC)

Simplified schematic diagram of band switch
 Broken lines (---) indicate circuits not in use, some of which may be grounded (indicated by dashed ground symbols) through range switch contacts.

RADIO CORP. OF AMERICA

MODELS 610V1, CHASSIS RC-610C;
610V2, CHASSIS RC-610



CATHODE CURRENTS

(1) 6BE6	9.5MA*
(2) 6BE6	9.5MA*
(3) 6BAG	16.0MA
(4) 6AUG	13.0MA
(5) 6AL5	0.
(6) 6SQ7	.5MA
(7) 6SQ7	.5MA
(8) 6K6-GT	23.0MA
(9) 6K6-GT	23.0MA
(10) 5Y3-GT	85.0MA

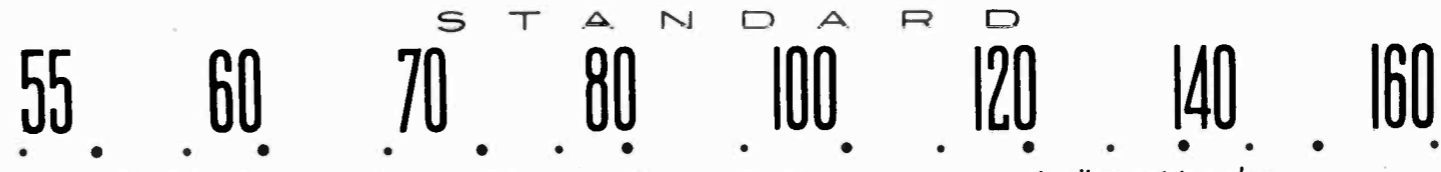
*FM ONLY
†A ONLY

VOLTAGES MEASURED WITH
CHANNALYST OR VOLTOHMIST.
VOLTAGES SHOULD HOLD WITHIN
±20% WITH 117V. A.C. SUPPLY.



Model 610V1 (RC-610C)

The schematic diagram of RC-610C chassis is similar to that shown above, the major difference being in the ratio detector circuit the schematic diagram of which is shown on page 3, in addition C59 of T1 (1st I.F. FM) is omitted, R13 is 68 ohms, R14 is 33,000 ohms, R18 is 1.5 megohms and C36 is .005 mfd.



The dial scale drawing shown is a full size reproduction. It can be used as a reference in alignment procedure.

RADIO CORP. OF AMERICA MODELS 610V1, CHASSIS RC-610C; 610V2, CHASSIS RC-610

Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast (BC)	540-1600 kc.
Frequency Modulation (FM)	88-108 mc.
Push Button Tuning (PB)	6 stations
1 Station	540-1030 kc.
2 Stations	610-1250 kc.
2 Stations	740-1430 kc.
1 Station	880-1600 kc.
Intermediate Frequency (AM)	455 kc.
Intermediate Frequency (FM)	10.7 mc.

TUBE COMPLEMENT

(1) RCA 6BE6	FM 1st Det.-Osc.
(2) RCA 6BE6	AM 1st Det.-Osc.
(3) RCA 6BA6	IF Amplifier
(4) RCA 6AU6	Driver
(5) RCA 6AL5	FM Ratio Detector
(6) RCA 6SQ7	AM 2nd Det.-AVC-Phase Inverter
(7) RCA 6SQ7	AF Amplifier
(8) RCA 6K6GT	Output
(9) RCA 6K6GT	Output
(10) RCA 5Y3GT	Rectifier

POWER OUTPUT

Undistorted	5 watts
Maximum	6.5 watts

LOUDSPEAKER

Type (92569-1)	12 inch PM
Voice Coil Impedance	2.2 ohms at 400 cycles

POWER SUPPLY RATING (including phono motor)
105-125 volts, 60 cycles max. 116 watts
(This instrument can be converted to operate on 50 cycles.)
Pilot Lamps (3) Mazda No. 51 6-8 volts 0.2 amp.
Tuning Drive Ratio 16.25:1

CABINET DIMENSIONS

	Height	Width	Depth
610V1	36"	35-1/16"	18"
610V2	36"	34-9/16"	17-5/8"

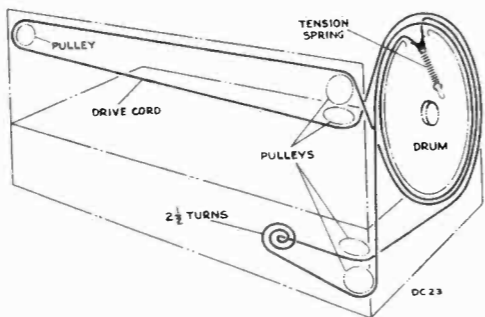
Antennas

Under conditions of normal field strength and interference, the RCA Victor antennas installed inside the cabinet will be effective for Frequency Modulation and Standard Broadcasts.

If reception is not satisfactory on one or both of the bands using the built-in cabinet antennas, one or two external antennas may be used. Connections are made to the antenna terminal board in the back of the cabinet. External antennas may be



erected indoors or outdoors and should be oriented in direction for requirements of best reception. RCA Television Antenna Stock No. 225 or 226 or the equivalent with 300 ohm transmission line is recommended for an FM external antenna. In this case, disconnect the two leads at the two terminals marked "FM" and attach the ends of the two lead wires from the RCA Television Antenna transmission line in their places. To replace the Standard Broadcast antenna, open the link across the terminals A-G and connect the lead-in from the antenna to terminal A. This antenna should consist of a wire 30 to 60 feet or so in length, mounted in a convenient location as high as possible. A ground connection to G should not be necessary but a flexible wire to a waterpipe or other good ground may be used.



DIAL INDICATOR AND DRIVE MECHANISM



Model 610V1



Model 610V2

Circuit Description

Models 610V1 and 610V2 have individual built-in antennas for FM and AM coupled to individual 1st Det.-Osc. tubes (6BE6 V1 and V2). The outputs of these two tubes are connected to separate IF transformers (T1 and T2) whose secondaries are in series and connected to the IF amplifier tube (6BA6 V3). The output of V3 is connected to separate IF transformers (T3 and T4) whose primaries are in series. The secondary of T3 (FM IF) is connected to the driver tube (6AU6 V4). The secondary of T4 (AM IF) is connected to the AM second detector (6SQ7 V6). The output of the driver tube (V4) is coupled thru the driver transformer (T5) and ratio detector transformer (T6) to the FM ratio detector tube (6AL5 V5). [In 610V1 the functions of both T5 and T6 are combined in one unit (T5).]

The audio outputs of the AM second detector and the FM ratio detector are connected thru a section of the range switch to the volume control input.

The B+ supply (+245 V) to the plates and screen grids of V1 and V2 is controlled thru a section of the range switch.

Simple AVC is used on AM and is applied to both the IF amplifier (V3) and the AM 1st detector (V2). Delayed AVC is used on FM and is applied only to the IF amplifier (V3). The AVC distribution is controlled thru a section of the range switch.

MODEL 610V1, CHASSIS RADIO CORP. OF AMERICA RC-610C Alignment Procedure

MODEL 610V2, CHASSIS RC-610 FM Ratio Detector Alignment

Alignment Indicators:

An RCA VoltOhmyst or equivalent meter is necessary for measuring developed d-c voltage during FM alignment. Connections are specified in the alignment tabulation below. An output meter is also necessary to indicate minimum audio output during FM Ratio Detector alignment. Connect the output meter across the speaker voice coil.

The RCA VoltOhmyst can also be used as an AM alignment indicator, either to measure audio output or to measure a-v-c voltage.

When audio output is being measured the volume control should be turned to maximum.

Signal Generator:

For all alignment operations, except FM IF-RF, connect the low side of the signal generator to the receiver chassis. The output should be adjusted to provide accurate resonance indication at all times. If output measurement is used for AM alignment the output of the signal generator should be kept as low as possible to avoid a-v-c action.

Calibration Scale.—The dial scale printed in this service note may be temporarily attached to the chassis for quick reference during alignment.

Using Printed Dial Scale.—

1. Cut out the printed dial scale, or, better still, make a tracing of the scale.
2. With gang at full mesh the pointer should be set to the first reference mark from the left hand end of the dial backing plate.
3. Place the printed dial scale or the tracing under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the dial scale in place.

Note.—It is not recommended that the glass dial scale in the cabinet be removed as a alignment reference. This glass dial scale is fastened to the bezel with sheet metal lugs bent over the scale to hold it in place. Removing the glass dial scale will necessitate bending the lugs, resulting in their weakening and subsequent breakage.

610V1 (RC-610C) FM Ratio Detector Alignment
RANGE SWITCH IN FM POSITION—VOL. CONT. MAXIMUM

Steps	Connect high side of sig. gen. to—	Signal generator output	Adjustments and indications
1			Connect the d-c probe of a VoltOhmyst to the negative lead of the 5 mfd. capacitor, C20, the common lead of the VoltOhmyst to chassis.
2	Pin 1 of driver tube 6AU6 in series with .01 mfd.	10.7 mc. modulated 30% 400 cycles AM (Approx. .1 volt)	Top core T5 for max. d-c across C20 (Approx. 4 volts) Bottom core T5 for minimum audio output
3			Repeat Step 2 until further adjustment does not improve alignment.

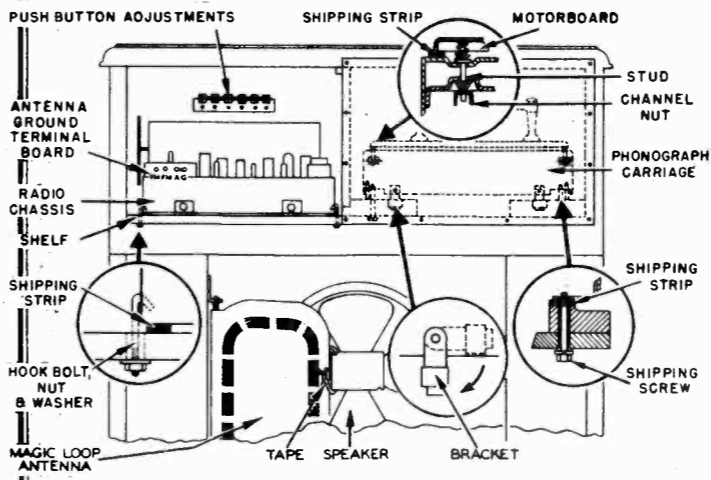
FM IF-RF Alignment

(FM Ratio Detector must be aligned first.)

RANGE SWITCH IN FM POSITION

Steps	Connect sig. gen.	Sig. gen. output	Turn radio dial to—	Adjustment for peak output
1				Connect the d-c probe of a VoltOhmyst to the negative lead of the 5 mfd. capacitor C20 and the common lead to chassis. Turn gang condenser to max. capacity (fully meshed).
2	High side to one FM ant. term. in series with .01 mfd. Low side to the other FM ant. term.	10.7 mc 30% modulation, 400 cycles AM. Adjust to provide 2 to 3 volts indication on VoltOhmyst during alignment.	Max. capacity (fully meshed)	*Using alternate loading: T3 bottom core (sec.) T3 top core (pri.) T1 bottom core (sec.) T1 top core (pri.)
3	High side to one FM ant. term. in series with a 120 ohm resistor. Low side to the other FM ant. term. in series with a 120 ohm resistor.	106 mc	106 mc	C54 osc. C52 ant.
4	Same as Step 3.	90 mc	90 mc	L3 osc. L2 ant.
5				Repeat Steps 3 and 4 until further adjustment does not improve calibration.

* Alternate loading involves the use of a 680 ohm resistor to load the plate winding while the grid winding of the SAME TRANSFORMER is being peaked. Then the grid winding is loaded with the resistor while the plate winding is peaked. Only one winding is loaded at any one time. Remove the 680 ohm resistor after T3 and T1 have been aligned.



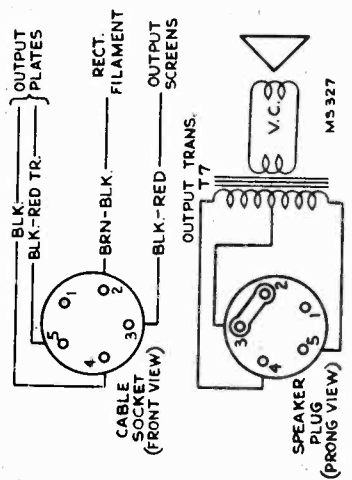
Back View

RADIO CORP. OF AMERICA

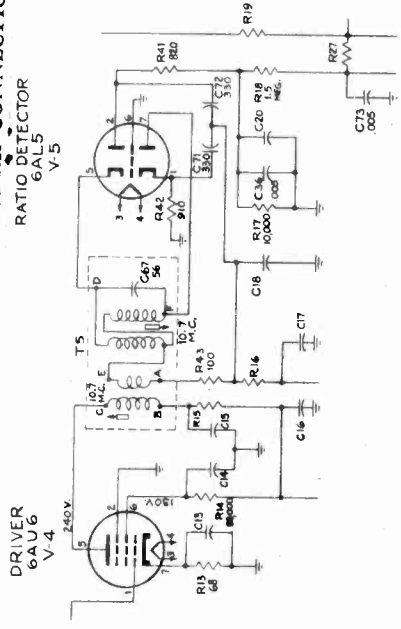
MODELS 610V1, CHASSIS RC-610C; 610V2, CHASSIS RC-610

Critical Lead Dress

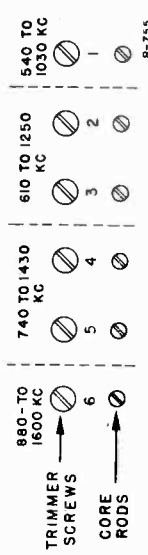
1. Dress capacitor C1 near chassis base.
2. T1, as near bottom of FM shelf as possible.
3. The lead from capacitor C23 to the high side of the volume control must be dressed next to chassis along front apron.
4. Dress resistor R20 near chassis base.
5. Dress all A.C. leads away from volume control.
6. Solder FM antenna coil primary leads to terminal board with as short a lead length as is practical.
7. Make all FM leads as short as possible.
8. The lead from pin 2, V-3, to chassis ground must be dressed close to base and as near to the back apron as possible. This lead provides degeneration for the IF stage and neither its length nor the point at which it is grounded to the chassis should be changed.
9. Dress all leads away from the 3300 ohm resistors R28 and R29.



SPEAKER CONNECTIONS



Push Button Adjustment



The push buttons connect to separate magnetic-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

1. Make a list of the desired stations, arranged in order from low to high frequencies.
 2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
 3. Turn range switch to push-button position and press in the left-hand button.
 4. Adjust core rod No. 1 to receive the first station. To secure the best adjustment, rotate the loop for least pickup, and adjust core rod No. 1 for peak output.
 5. Adjust trimmer screw No. 1 for peak output on the first station.
 6. Proceed in the same manner to adjust for the remaining stations.
 7. Repeat adjustments for best results.
- On the 880 to 1,600 kc push-button, the higher frequency stations may be received with core rod No. 6 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

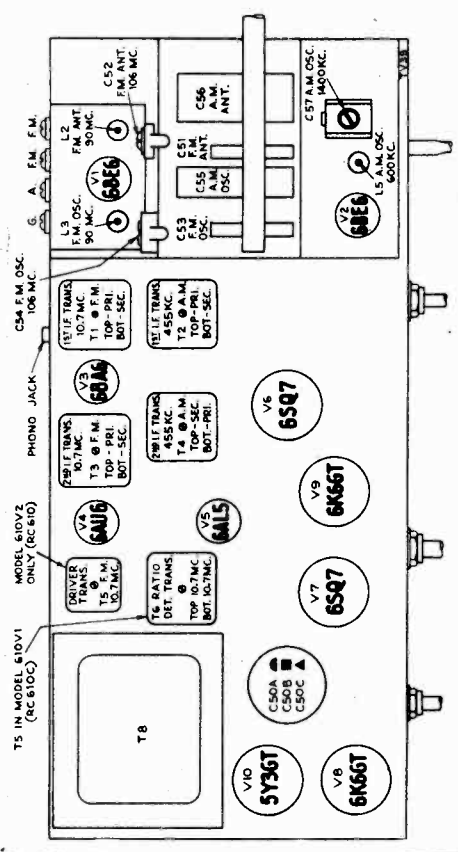
AM Alignment

(Correct alignment of the 455 kc. IF requires that the 10.7 mc. IF be aligned previously.)

RANGE SWITCH IN BC POSITION

Steps	Connect high side of sig. gen. to—	Sig. gen. output	Turn radio dial to—	Adjust for peak output
1	AM converter grid 6BE6 V-2 in series with .01 mfd.	455 kc	Quiet point at low freq. end.	*T4 top core (sec.) *T4 bottom core (pri.) *T2 bottom core (sec.) *T2 top core (pri.)
2				
3	"A" terminal of terminal board at rear of chassis in series with 200 mmf. (link open)	1400 kc	1400 kc	C57 osc. C58 ant. (loop)
4		600 kc	600 kc	I5 osc. (Rock gang)
5	Repeat Step 3.			
6	After chassis and loop have been installed in cabinet, adjust C58 for max. output on a weak station near 1400 kc.			

*Align T4 and T2 by means of alternate loading as explained under FM IF-F alignment. Use a 47,000 ohm resistor instead of a 680 ohm resistor.
Oscillator frequency is above signal frequency on both AM and FM.



RATIO DETECTOR CIRCUIT 610V1 (RC-610C)

Schematic Diagram otherwise same as 610V2 (RC-610), except C59 of 1st I.F. Trans (FM) is omitted.

Top View Chassis

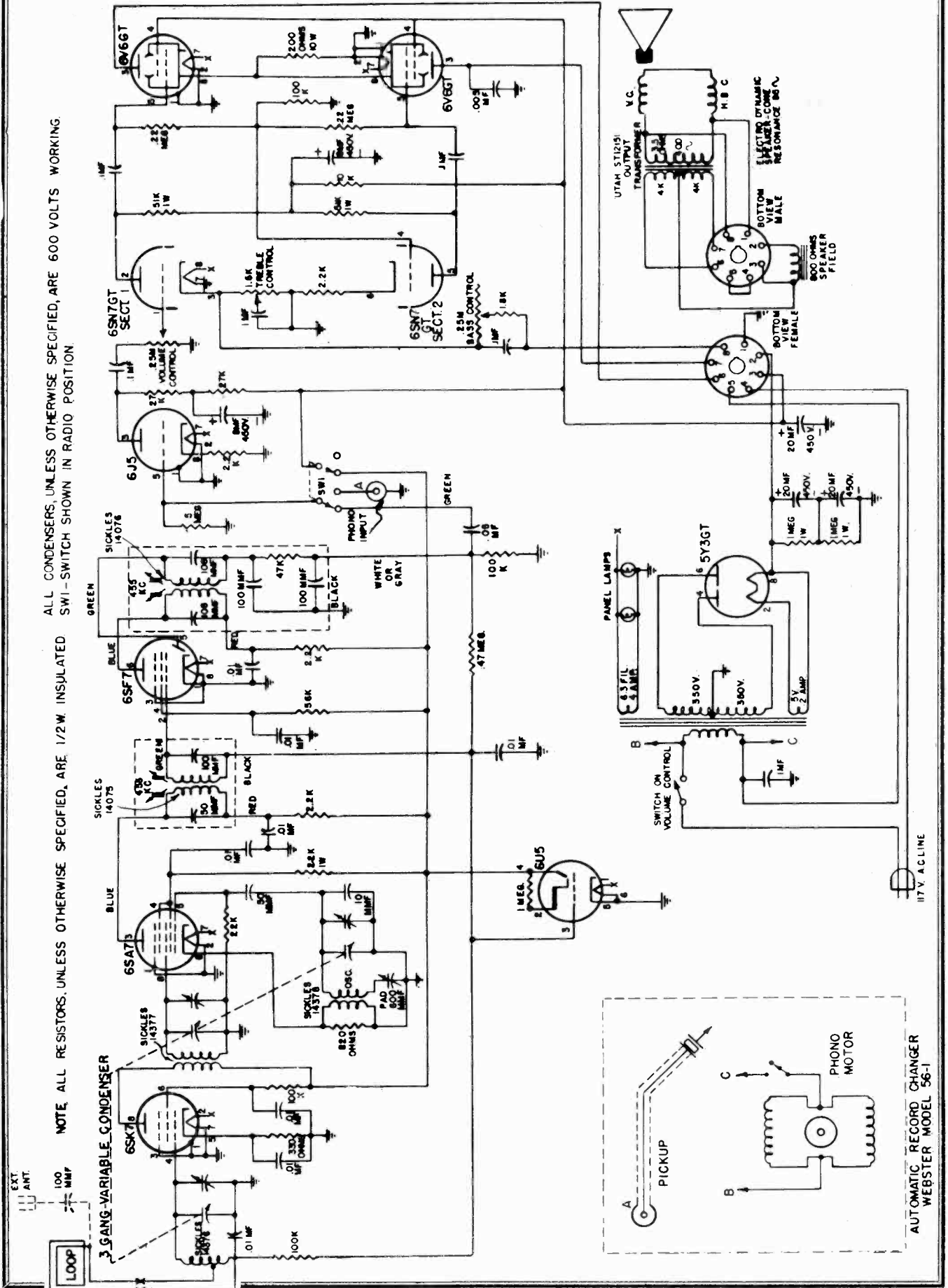
MODELS 610V1, CHASSIS
 RC-610C; 610V2, CHASSIS
 RC-610

Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES			
RC-610			
70258	Board—"FM-Antenna-Ground" board	*72887	Transformer—1st I.F. transformer—F.M. (T1)
72046	Capacitor—Mica trimmer, 2.5-13 mmf. (C54)	*72888	Transformer—2nd I.F. transformer—F.M. (T3)
71808	Capacitor—Mica trimmer, 3-35 mmf. (C52)	*72889	Transformer—Ratio detector transformer (T5)
72334	Capacitor—Mica trimmer, 4-70 mmf. (C57)		Stock Nos. 71614—(120 mmf., C36), 72480 Capacitor, .005
72570	Capacitor—Ceramic, 27 mmf. (C1)		mf. (C19), 30189—(120 ohms, R13), 30492—(22,000 ohms,
35042	Capacitor—Ceramic, 47 mmf. (C10, C33)		R14, R17), 30649—(2.2 meg., R18), 72593 Trans. (T1),
71924	Capacitor—Ceramic, 56 mmf. (C8)		72723 Trans. (T3), 71935 Trans. (T5), 71934 Trans. (T6)—
71614	Capacitor—Ceramic, 120 mmf. (C7, C26, C36)		Not used in RC-610C.
72571	Capacitor—Mica, 330 mmf. (C2)	SPEAKER ASSEMBLIES	
*72572	Capacitor—Mica, 360 mmf. (C9)	92569-1W—RL103-1	
39856	Capacitor—Mica, 1500 mmf. (C34)		Cap—Dust cap
70646	Capacitor—Tubular, .0035 mfd., 1000 volts (C23, C24)	13867	Cone—Cone and voice coil assembly
72573	Capacitor—Tubular, .003 mfd., 400 volts (C28, C32)	36145	Plug—5 prong male plug for speaker
71087	Capacitor—Molded paper, .003 mfd., 1000 volts (C35)	71560	Speaker—12" PM speaker complete with cone and voice
72490	Capacitor—Tubular, .005 mfd., 200 volts (C17, C18, C19, C22, C28)	71961	coil less output transformer and plug
	71553	71145	Suspension—Metal cone suspension
	72120	37899	Transformer—Output transformer (T7)
	71925		
	70611	MISCELLANEOUS	
	71551	*72555	Antenna—Di-pole antenna
	72212	*72750	Back—Cabinet back for walnut instruments
*72052	Capacitor—Electrolytic, 5 mfd., 50 volts (C20)	*72751	Back—Cabinet back for mahogany instruments
	72121	*72907	Back—Cabinet back for blonde instruments
	72335	72146	Bezel—Push button bezel—walnut or mahogany instru-
	72336		ments
	72574	*72906	Bezel—Push button bezel—blonde instruments
	72333	71599	Bracket—Pilot lamp bracket
	72059	70556	Bumper—Rubber bumper for tray—walnut or mahog-
	70342		any instruments
	34662	*72908	Bumper—Rubber bumper for tray—blonde instruments
	71799	*72144	Button—Push button
	72069	*72583	Cable—Shielded pickup cable complete with pin plug
	71608	13103	Cap—Pilot lamp cap
	30868	38684	Capacitor—Mica trimmer, 2-20 mmf. (C58)
	12493	36424	Capacitor—Mica trimmer, comprising 1 section of 10-
			mmf., 2 sections of 25-250 mmf., 2 sections of
			50-400 mmf., and 1 section of 100-540 mmf. (C40, C41,
		71892	C42, C43, C44, C45)
		72157	Catch—Door catch
		72050	Clip—Push button bezel spring clip
		72051	Coil—P.B. oscillator coil—H.F. (L10, L11, L12)
		*72558	Coil—P.B. oscillator coil—L.F. (L13, L14, L15)
			Decal—Control marker decal—walnut or mahogany in-
			struments
32641	Plug—3 prong male plug for selector cable or loop	*72910	Decal—Control marker decal—blonde instruments
		71966	Decal—Trade mark decal (Victrola)
36230	Pulley—Drive cord pulley	71984	Decal—Trade mark decal (RCA Victor)
30732	Resistor—47 ohms, ½ watt (R8)	*72682	Dial—Glass dial scale
30189	Resistor—120 ohms, ½ watt (R13)	*72513	Escutcheon—Dial escutcheon less dial
44632	Resistor—560 ohms, 2 watts (R22)	X1632	Grille—Grille cloth for walnut cabinet for Model 610V2
34766	Resistor—1000 ohms, ½ watt (R3, R15)	X1633	Grille—Grille cloth for mahogany cabinet for Model
71991	Resistor—2200 ohms, 1 watt (R12)		610V2
19525	Resistor—3300 ohms, 2 watts (R28, R29)	X1649	Grille—Grille cloth for blonde cabinet for 610V2
38887	Resistor—6800 ohms, 1 watt (R4)	X1643	Grille—Grille cloth for Model 610V1
14250	Resistor—8200 ohms, ½ watt (R23)	*72808	Grille—Metal grille for Model 610V1
38888	Resistor—8200 ohms, 1 watt (R5)	*72557	Grille—Metal grille for Model 610V2
38714	Resistor—15,000 ohms, ½ watt (R16)	72441	Guide—Carriage guide, R.H.—walnut or mahogany in-
39153	Resistor—18,000 ohms, 2 watts (R34)		struments
30492	Resistor—22,000 ohms, ½ watt (R2, R6, R14, R17)	*72904	Guide—Carriage guide, L.H.—blonde instruments
71989	Resistor—22,000 ohms, 1 watt (R9)	72442	Guide—Carriage guide, L.H.—walnut or mahogany in-
30409	Resistor—27,000 ohms, ½ watt (R30, R31)		struments
14583	Resistor—220,000 ohms, ½ watt (R36)	*72905	Guide—Carriage guide, L.H.—blonde instruments
30651	Resistor—270,000 ohms, ½ watt (R11, R19, R26, R33)	39352	Hinge—Cabinet door hinge—walnut or mahogany in-
30648	Resistor—470,000 ohms, ½ watt (R21, R24, R32)		struments
30652	Resistor—1 megohm, ½ watt (R1)	*72911	Hinge—Cabinet door hinge—blonde instruments
30649	Resistor—2.2 megohms, ½ watt (R7, R10, R18)	71921	Knob—Control knob—walnut or mahogany instruments
30992	Resistor—10 megohms, ½ watt (R20, R25)	72800	Knob—Control knob—blonde instruments
71917	Resistor—22 megohms, ½ watt (R27)	*72807	Knob—Record storage compartment door knob for Model
72055	Shaft—Tuning knob shaft		610V1
35787	Socket—Phono input socket	71890	Knob—Record storage compartment door knob for Model
31364	Socket—Lamp socket		610V2
72516	Socket—Tube socket, miniature	11765	Lamp—Dial lamp—Mazda S1
31251	Socket—Tube socket, octal	70544	Loop—Antenna loop (L4, C58)
31418	Spring—Tension spring for drive cord	72563	Marker—Call letter marker
*72056	Support—Dial support and pulley bracket complete	70546	Mounting—One set of hardware to mount record
	with four pulleys—R.H.		changer
*72057	Support—Dial support and pulley bracket complete	30888	Plug—2 contact female plug for extension cable
	with one pulley—L.H.	30870	Plug—2 prong male plug for extension cable
*72054	Switch—Range switch (S1, S2, S3)	31048	Plug—Pin plug for pickup cable
71603	Switch—Tone switch (S4)	*72556	Pull—Door pull for record changer compartment or
72593	Transformer—First I.F. transformer—F.M. (T1, C59, C60)		radio compartment door for Model 610V2
71625	Transformer—First I.F. transformer—A.M. (T2, C61, C62)	*72806	Pull—Door pull for record changer compartment or
72723	Transformer—Second I.F. transformer—F.M. (T3, C64)		radio compartment door for Model 610V1
71631	Transformer—Second I.F. transformer—A.M. (T4, C68, C69, C70)	70551	Retainer—Tray roller retaining strip—L.H.
71935	Transformer—Driver transformer (T5, C65)	70552	Retainer—Tray roller retaining strip—R.H.
71934	Transformer—Ratio detector transformer (T6, C66, C67)	70554	Roller—Record changer tray roller (6 required)
71975	Transformer—Power transformer, 117 volts, 50/60 cycle (T8)	36422	Socket—3 contact female socket for loop leads or for
35969	Washer—"C" washer for tuning shaft	72156	selector switch cable
CHASSIS ASSEMBLIES			
RC-610C			
Same as RC-610 except:			
72571	Capacitor—Mica, 330 mmf. (C71, C72)	72156	Spring—Push button bezel spring
72490	Capacitor—Tubular, .005 mfd., 200 volts (C36, C73)	34053	Spring—Push button retaining spring
34763	Resistor—68 ohms, ½ watt (R13)	30900	Spring—Retaining spring for knob
34765	Resistor—100 ohms, ½ watt (R43)	*72582	Stop—Mechanism tray stop
30158	Resistor—820 ohms, ½ watt (R41)	39360	Support—Drop support for record changer compartment
12531	Resistor—910 ohms, ½ watt (R42)		door—walnut or mahogany instruments
3078	Resistor—10,000 ohms, ½ watt (R17)	*72912	Support—Drop support for record changer compartment
30685	Resistor—33,000 ohms, ½ watt (R14)		door—blonde instruments
31449	Resistor—1.5 megohms, ½ watt (R18)	70545	Support—Loop support bracket (2 required)
		*72512	Switch—Push button switch only (S10, S11, S12, S13
		70555	S14, S15, S40, S41, S42, S43, S44, S45)
		70553	Tire—Rubber tire for record changer tray roller
			Tray—Record changer tray—walnut or mahogany in-
		*72909	struments
		2917	Tray—Record changer tray—blonde instruments
			Washer—"C" washer to fasten rollers

ALL CONDENSERS, UNLESS OTHERWISE SPECIFIED, ARE 600 VOLTS WORKING.
SWI-SWITCH SHOWN IN RADIO POSITION

NOTE ALL RESISTORS, UNLESS OTHERWISE SPECIFIED, ARE 1/2W. INSULATED.



AUTOMATIC RECORD CHANGER
WEBSTER MODEL 56-1

RADIO & TELEV. INC.

POWER SUPPLY: 110 to 115 volts, 60 cycle A.C. only.
POWER OUTPUT: 14 watts.
POWER CONSUMPTION: 105-140 watts.

Amplifier output: 10 watts undistorted, 14 watts peak.

Amplifier gain: 72 db from phono input jack.

Frequency range: 530 KC to 1750 KC (566 to 171.4 meters).

Amplifier frequency range: 30 to 11,000 cycles.

Bass and treble controls are provided in the inverse feedback network.

A Webster Type 56-8 automatic record changer using a crystal pickup is built into the cabinet.

Alignment: The intermediate frequency used in this receiver is 455 kilocycles. Connect Vacuum Tube Voltmeter capable of reading 20 volts negative DC to the AVC bus. This connection may be made at the black lead coming from the input IF transformer (#14075). The ground side of the meter will connect to the chassis. Connect output of Signal Generator to grid of converter tube (Pin #8). Adjust Signal Generator to 455 kilocycles. Increase output of generator until some deflection is noted on the Vacuum Tube Voltmeter. Carefully adjust IF transformer tuning slugs (screws in sides of cans) starting at output transformer for maximum reading on voltmeter. Repeat this process for best alignment. Remove Signal Generator allowing Vacuum Tube Voltmeter to remain connected. Connect output of Signal Generator to receiver loop in the following manner: Connect ground side of Signal Generator to receiver chassis. Connect live side of generator output to the loop lead which is knotted through a condenser of 100 to 500mf.

Set receiver dial and Signal Generator to 600 kilocycles. Adjust oscillator paddler for maximum reading on the Vacuum Tube Voltmeter. The oscillator paddler is situated on the side of the RF tuner chassis beneath the amplifier chassis and is reached with a screwdriver having a shank at least 9" long. Care should be used in making this adjustment not to short circuit amplifier wiring beneath the chassis.

Turn the receiver dial to 1500 kilocycles and reset the Signal Generator to the same frequency. Adjust the oscillator trimmer (mounted on the rear section of the variable condenser) for maximum AVC voltage as read on the Vacuum Tube Voltmeter. Proceed without readjusting receiver tuning or Signal Generator frequency to trim the RF coil and antenna coil by adjusting trimmers mounted on front two sections of the variable condenser. Adjust these trimmers for maximum AVC voltage.

Instructions for Removing Radio Chassis, Record Changer and Speaker

1. Unscrew and remove back of radio compartment.
2. Pull out speaker plug from back of chassis.
3. Pull out phono pickup lead at rear of chassis.
4. Remove the four screws from underneath bottom of radio compartment.
5. Disconnect phono motor plug located underneath chassis compartment.
6. Disconnect aerial from loop.
7. Remove all knobs in front of chassis.

To remove record changer (only after chassis has been removed), unscrew the three bolts holding changer on motor board, lift out and pull gently the motor and pick up lead lines through rear cut out in Phono compartment.

Caution: When making these adjustments, the voltage output of the Signal Generator should be reduced to the point where the AVC voltage generated does not exceed 5 or 6 volts. Using larger AVC voltages may result in inaccurate alignment due to saturation and consequent broad tuning.

Service Notes: If replacement of components becomes necessary, lead dress may be disturbed and oscillation may result. The following lead dress should be observed:

1. Green wire on second IF transformer. Dress any slack toward chassis side away from oscillator coil and as close to chassis as possible.
2. 50 mfd. in oscillator grid circuit. Dress away from shield partition as far as possible.

In case of failure of input electrolytic condensers in filter, equalizing resistors (1 meg.) should be checked for value and replaced if more than 20% from coded value. Faulty resistors will result in improper voltage distribution across the condensers.

Powdered iron core in antenna coil is preset at laboratory for proper inductance and should not be readjusted. This core may not be present in all production runs.

The following is a table of operating voltages taken with 1000 and 20,000 ohms per volt meters. The receiver should be tuned between stations so no signal is being received during measurement.

Tube	Pin #	1000 ohm volt	20,000 ohm volt
6SK7	6(S)	70.0	80
	8(P)	220	225
	5(K)	2.0	2.25
6SA7	4(S)	70	75
	3(P)	205	215
	4(S)	70	75
6SF7	6(P)	200	200
	3(P)	100	110
	8(K)	4.0	4.3
6SN7	2(P)	70	80
	3(K)	1.9	2.5
	5(P)	80	90
6V6	6(K)	3.4	4.0
	4(S)	210	215
	3(P)	190	200
6V6	8(K)	14	14
	4(S)	210	215
	3(P)	200	210
5Y3	8(K)	13.8	14.0
	2(F)	300	305
	8(F)	300	305
6U5	4(P)	305 AC	
	6(P)	305 AC	
	4(G)	200	205
	5(G)	0.25	0.6

To remove speaker (only after radio chassis and phonograph have been removed):

1. Remove phono motor board.
2. Unscrew rear panel of speaker compartment.
3. Remove four speaker nuts.

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MODELS D-1000,
D-1100, T-9000,
T-2200, T-2200X

TUBE COMPLEMENT

Type	Function	Type	Function
6AG5	FM RF Amplifier	6H6	Ratio Detector
6SB7Y	FM Converter	6SK7	AM RF amplifier
6SK7	FM 1st I.F. Amplifier	6SA7	AM Converter
6SK7	{ FM 2nd I.F. Amplifier AM 1st I.F. Amplifier	6SQ7	AM Detector and 1st Audio
		6SN7	Audio Driver and phase Inverter
6SK7	FM 3rd I.F. Amplifier	6K6GT	Push Pull Output
6U5	Tuning Indicator	6K6GT	Push Pull Output
		5Y3GT	Rectifier

ELECTRICAL SPECIFICATIONS

117 volt 60 cycle AC. operation. Power consumption 85 watts. Built in AM Loop and folded Dipole FM antenna. FM tuning range 88mc to 108mc. FM dial calibration in channel numbers and Frequency in megacycles. AM tuning range 540 KC to 1620 KC.

Speaker: 12" PM or two 6" x 9" oval PM Voice Coil Impedance 6 ohms. Power output 9 watts undistorted 12 watts maximum.

ON-OFF SWITCH AND VOLUME CONTROL

Rotate the knob on the extreme right clockwise to turn receiver on. Continued rotation to the right increases volume.

BAND SWITCH

The second knob from the left has 4 positions. Each function is marked on the instrument panel. AM extreme left, FM 2nd position from left, PH for Phono 3rd position from left and TV. for Television sound on extreme right.

TONE CONTROL

The knob on the extreme left consists of two independently variable controls. The larger sec-

tion varies the high frequency response and the smaller controls bass.

TUNING AND TUNING INDICATOR

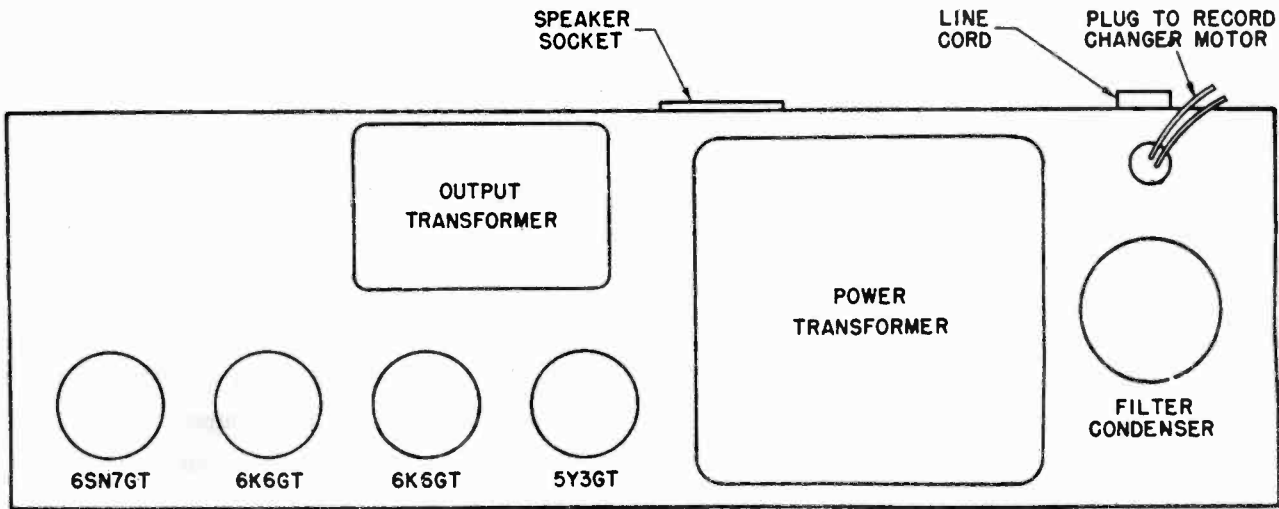
The second knob from the right tunes the receiver. In selecting stations tune for maximum closing of the tuning indicator on both AM and FM. The tuning indicator does not operate on Phono or TV.

ALIGNMENT

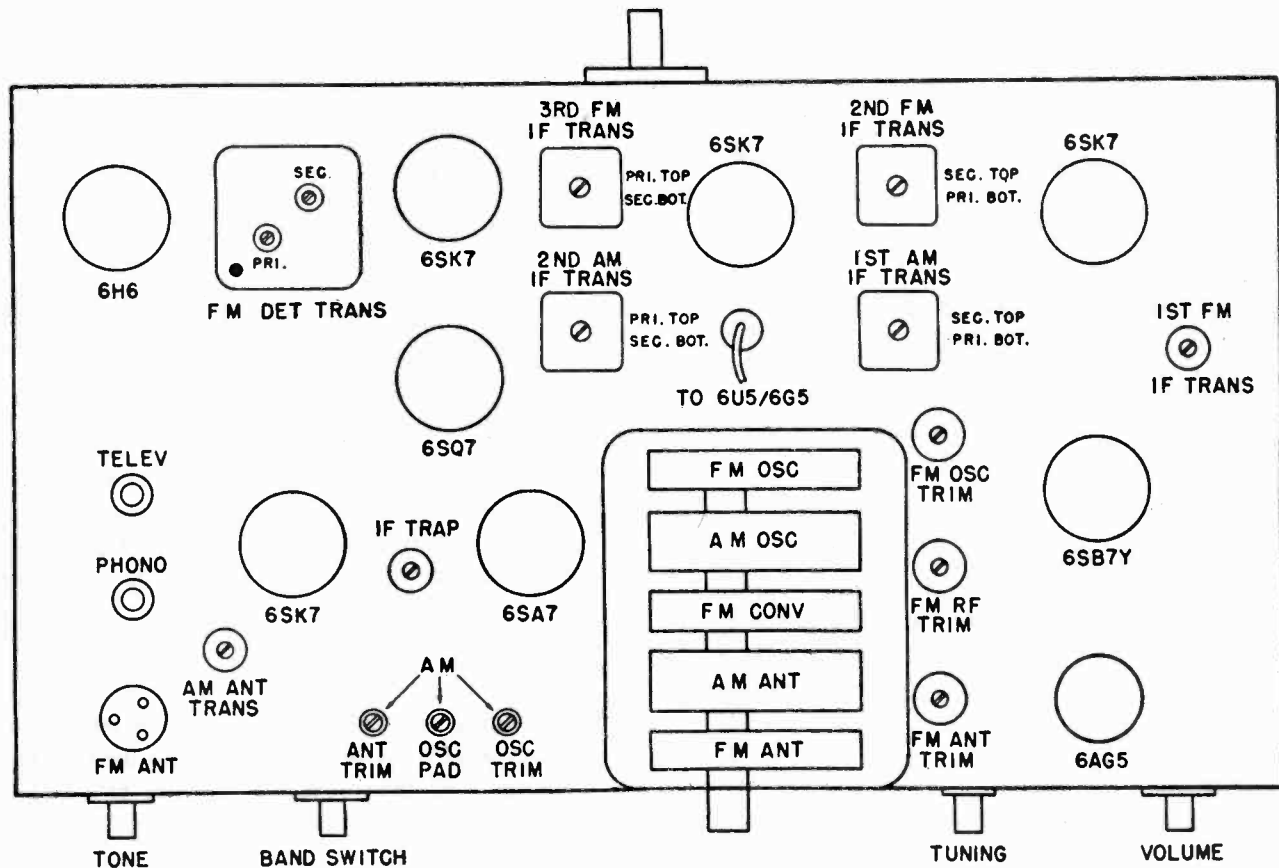
Before proceeding with alignment of set calibration point must be checked. This is the first line beyond 88 MC. Set Dial pointer to this line with tuning condenser fully meshed.

MODELS D-1000,
D-1100, T-9000,
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OUTPUT SOCKET TO TUNER



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MODELS D-1000,
D-1100, T-9000,
T-2200, T-2200X

RESISTANCE READINGS (Ohms)

K-1000
M-1,000,000

Symbol	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6AG5	0	70	0	2	400K	400K	70	—
2	6SB7	0	0	400K	400K	20K	0	0	0
3	6SK7	0	0	180	150K	180	400K	0	400K
4	6SK7	0	0	0	650K	0	400K	0	400K
5	6SK7	0	0	180	150K	180	400K	0	400K-FM INF-AM
6	6SK7	0	0	0	2.5M	0	400K	0	400K-AM INF-FM
7	6SA7	0	0	400K-AM INF-FM	400K-AM INF-FM	20K	1.0	0	85K
8	6SQ7	0	10M	0	75K	75K	1M	0	0
9	6H6	0	0	130K	0	24K	—	0	130K
10	6U5	0	1.5M	700K	400K	0	0	—	—
11	6SN7	120K Tone Mx. 200K " Min.	500K	3.3K	42K	500K	3.3K	0	0
12	6K6GT	—	0	500K	400K	500K	—	0	410
13	6K6GT	—	0	500K	400K	540K	42K	0	410
14	5Y3GT	—	400K	—	120	—	120	400K	400K

VOLTAGE READINGS

Symbol	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6AG5	OV.	0.7V DC	OV.	6.3V AC	85V DC	85V DC	0.7V DC	—
2	6SB7Y	OV.	6.3V AC	85V DC	85V DC	-6.0	OV.	OV.	OV.
3	6SK7	OV.	6.3V AC	OV.	OV.	OV.	85V DC	OV.	85V DC
4	6SK7	AM	OV.	OV.	OV.	OV.	110V DC	6.3V AC	107V DC
		FM	OV.	OV.	OV.	OV.	85V DC	6.3V AC	85V DC
5	6SK7	OV.	OV.	OV.	OV.	OV.	90V DC	6.3V AC	95V DC
6	6SK7	OV.	OV.	OV.	OV.	OV.	110V DC	6.3V AC	60V DC
7	6SA7	OV.	OV.	120V DC	85V	-12.0(VTVM)	OV.	6.3V AC	OV.
8	6SQ7	OV.	OV.	OV.	OV.	OV.	70V DC	OV.	6.3V AC
9	6H6	OV.	OV.	OV.	OV.	1.9V DC	—	6.3V AC	15V DC
10	6U5	6.3VAC	105V DC	OV.	130V DC	OV.	OV.	—	—
11	AM	OV.	94V DC	2.0V DC	OV.	94V DC	2.0V DC	OV.	6.3V AC
	FM	OV.	82V DC	1.8V DC	OV.	82V DC	1.8V DC	OV.	6.3V AC
	PH.	OV.	135V DC	2.6V DC	OV.	133V DC	2.6V DC	OV.	6.3V AC
12-13	AM	NC	6.3V AC Bet. 2 & 7	318V DC	245V DC	OV.	NC	6.3V AC Bet. 2 & 7	18.5V DC
	FM	NC	"	305V DC	207V DC	OV.	NC	"	16.0V DC
	PH.	NC	"	340V DC	310V DC	OV.	NC	"	24.5V DC
14	AM	NC	5.0V AC Bet. 2 & 7	NC	320V AC	NC	320V AC	5.0V AC Bet. 2 & 7	320V DC
	FM	NC	"	NC	320V AC	NC	320V AC	"	310V DC
	PH.	NC	"	NC	320V AC	NC	320V AC	"	340V DC

Line at 117 Volts AC. All DC Readings taken with 20,000 Ohms per Volt Meter unless otherwise indicated. AC Readings taken at 1000 Ohms per volt. Allow ± 10%.

MODELS D-1000,
D-1100, T-9000,
T-2200, T-2200X

RADIO & TELEVISION INC.

AM ALIGNMENT INSTRUCTION SHEET

Steps	Connect Generator	Set Generator at	Set Gang at	Adjust	To Obtain
1	Pin No. 4 6SK7 R.F. Tube with .05 Mfd. Series Cond.	455 Kc	Quiet point	1st and 2nd I.F. Pri. & Sec.	Max. output
2	"	"	"	Wave trap	Min. output
3	"	1500 Kc	1500 Kc	BC OSC trimmer	Max. output
4	"	600 Kc	600 Kc	OSC. padder	"
5	"	1500 Kc	1500 Kc	BC. OSC. trimmer	"
6	Use Coupling Coil between Generator and Loop	600 Kc	600 Kc	Ant. Loading Coil	"
7	"	1500 Kc	1500 Kc	Ant. Trimmer	"

Set Band switch to AM.

Set Tone control to maximum left.

Set Volume control to maximum right.

Place AM loop in same relative position as in cabinet.

Keep output of signal generator low to prevent
AVC Action.

Use output meter across voice coil.

FM ALIGNMENT INSTRUCTION SHEET

Steps	Connect Generator	Set Generator at	Set Gang at	Adjust	To Obtain
1	Pin No. 8 6SB7Y	10.7 MC	Hi. Freq. Stop	Ratio Det. Primary (Red Dot)	Max. output from point P to Gnd.
2	"	"	"	3rd IF Pri. & Sec.	"
3	"	"	"	2nd IF Pri. & Sec.	"
4	"	"	"	1st IF	"
5	"	"	"	Ratio Det. Sec.	Zero Balance on VTVM from C to A
6	Clip on to FM Dipole	108 MC	108 MC	Osc. Trimmer	Max output from point B to Gnd.
7	"	88 MC	88 MC	Osc Coil*	"
8	"	103 MC	103 MC	RF Trimmer	"
9	"	103 MC	103 MC	Ant. Trimmer	"

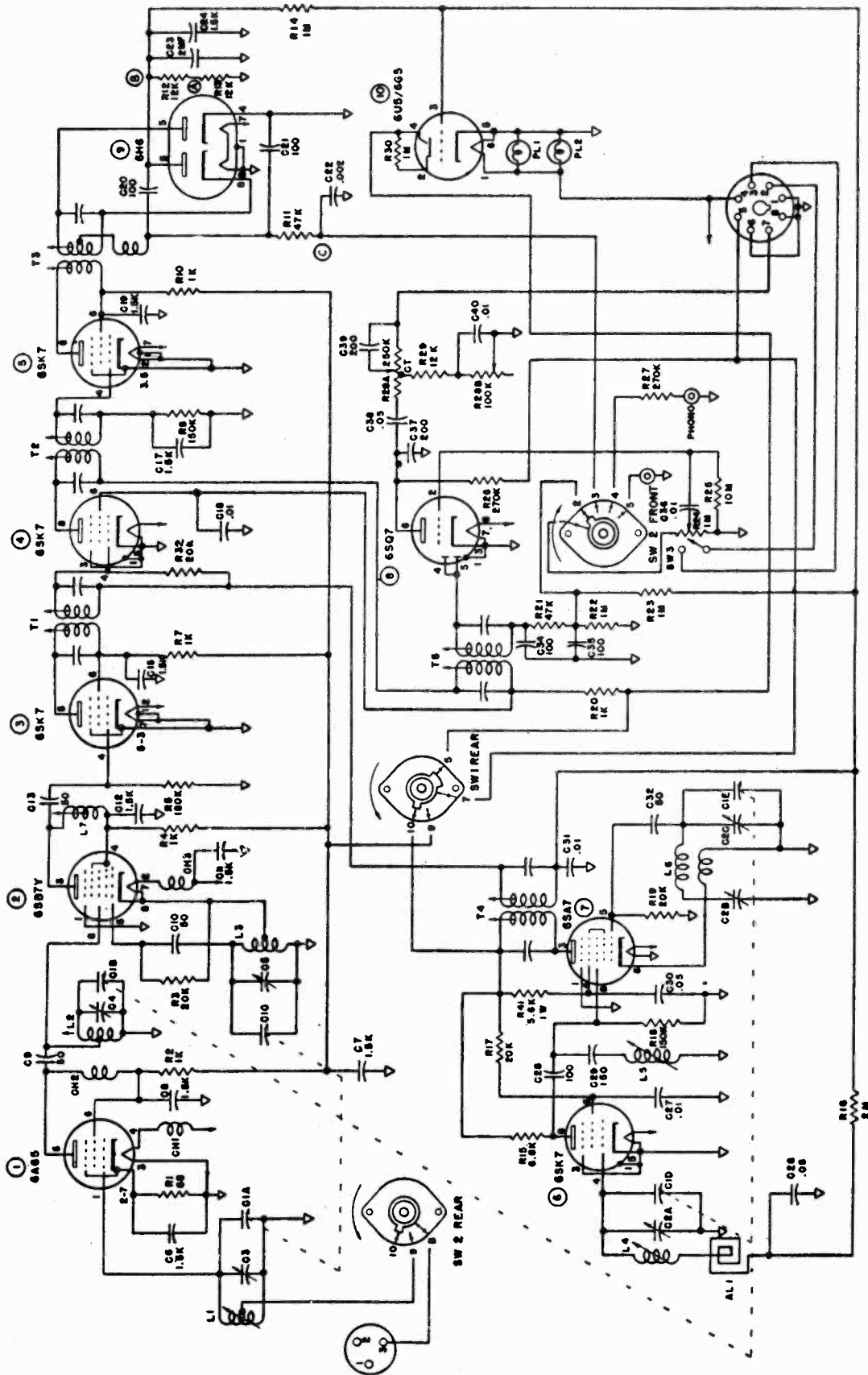
Set Band Switch to FM

See Circuit Diagram for VTVM Connections.

For Steps 1 through 5 use .01 Mfd. condenser in
Series with High side of generator.

Use V.T.V.M for output Indication

*This adjustment is made by pushing turns together
or pulling apart. Use insulated tool.

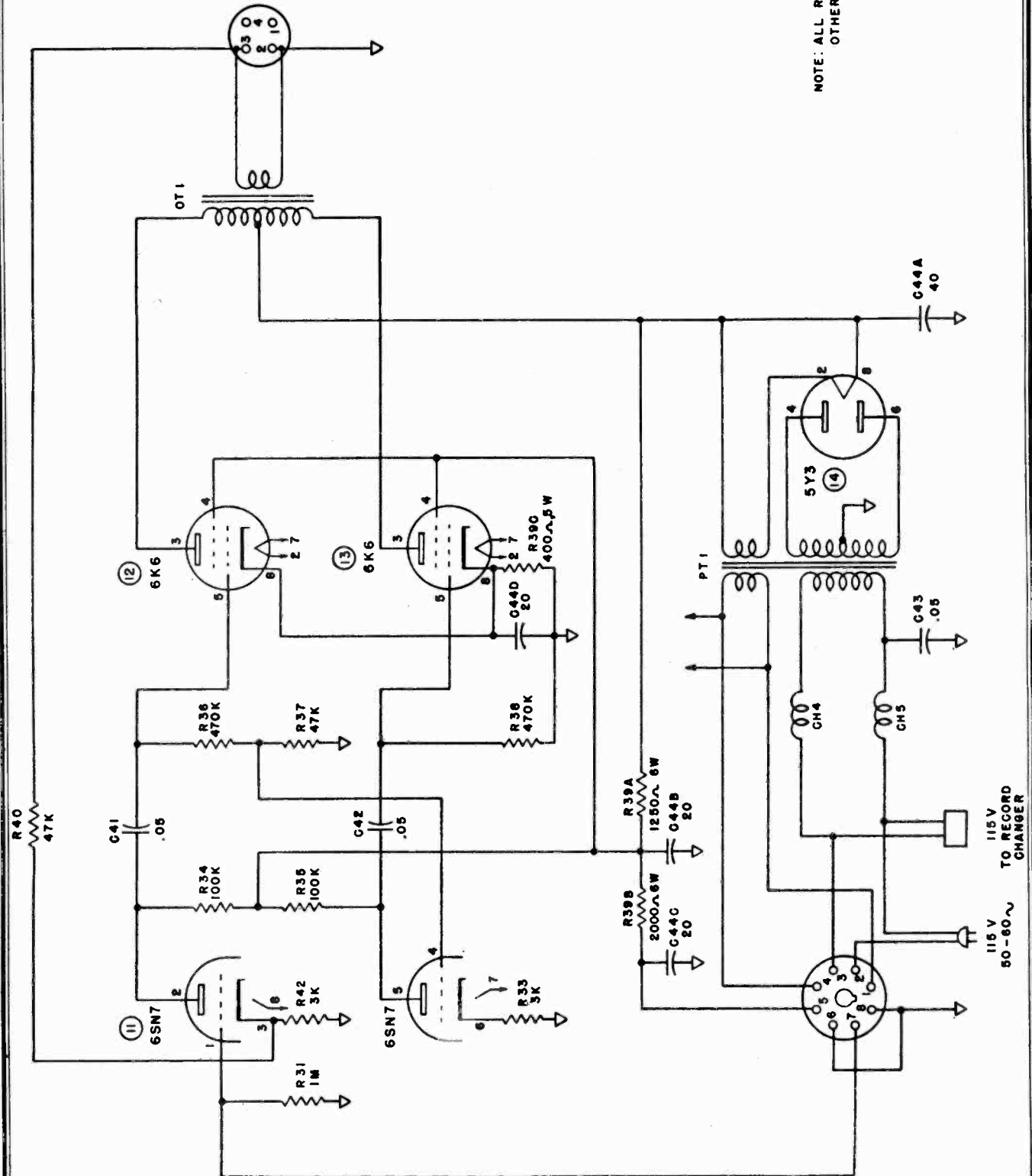


NOTE: SW 1 & SW 2 ON COMMON SHAFT.
RESISTORS IN OHMS, 1/2 WATT
UNLESS OTHERWISE SPECIFIED.

MODELS D-1000,
D-1100, T-9000,
T-2200, T-2200X

RADIO & TELEVISION INC.

NOTE: ALL RESISTORS 1/2 W UNLESS
OTHERWISE SPECIFIED.

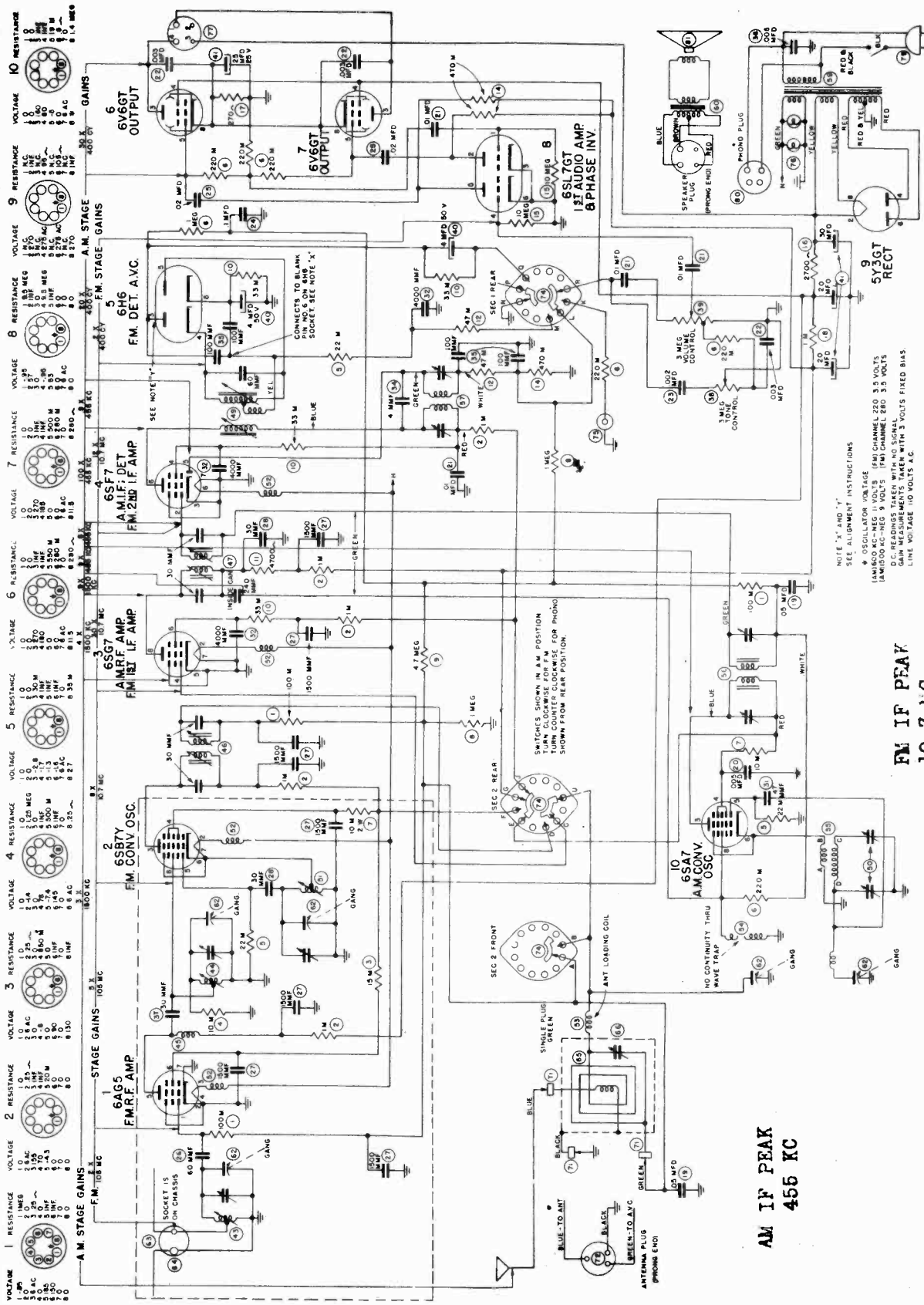


RADIO & TELEVISION INC.

MODELS D-1000,
D-1100, T-9000,
T-2200, T-2200X

PARTS LIST

Symbol	Part No.	DESCRIPTION	Symbol	Part No.	DESCRIPTION
C1A-B-C-D-E	CV106	AM-FM Tuning Condenser	R11-40-21-37	RS473B	47K ½ W. ±10%
C2A-B-C	CT107	3 Section Trimmer Assembly	R12-13-29	RS123B	12K ½ W. ±10%
C3	CT174	FM RF Trimmer 1-8 Mmfd.	R14-22-23-30-31	RS105B	1 Meg. ½ W. ±10%
C4	CT174	FM Mixer Trimmer 1-8 Mmfd.	R15	RS682B	6.8K ½ W. ±10%
C5	CT175	FM Oscillator Trimmer 1-12 Mmfd.	R16	RS225B	2.2 Meg. ½ W. ±10%
C6-7-8-11-12-15-17-19-24	CC144	1500 Mmfd. Ceramic ±20%	R24	VC150	1 Meg. Volume Control and Switch
C9-10-13-32	CC141	51 Mmfd. Ceramic ±20%	R25	RS106B	10 Meg. ½ W. ±10%
C16-27	CP102	.01 Mfd. 400 V.	R26-27	RS274B	270K ½ W. ±10%
C20-21-28-34-35	CC142	100 Mmfd. Ceramic ±20%	R28A-B	VC151	Dual Tone Control
C22	CC145	200 Mmfd. Ceramic ±20%	R33-42	RS322B	3000 ½ W. ±10%
C23	CE101	2 Mfd. Electrolytic 25 V	R34-35	RS104B	100K ½ W. ±10%
C26-31-43	CP105	.05 Mfd. 200 V.	R36-38	RS474B	470K ½ W. ±10%
C29	CC178	150 Mmfd. Ceramic	R39A-B-C	RD123	Voltage Divider and Bias Res.
C30-38-41-42	CP104	.05 Mfd. 400 V.	R41	RS562	5.6K 1 W. ±10%
C36-40-37-39	CP103	.01 Mfd. 200 V. 200 Mmfd. Ceramic ±20%	L1	FM221	FM Antenna Coil
C44A-B-C-D	CE100	Electrolytic Cond. 40 20-20 Mfd. 450 V. 20 Mfd. 25 V.	L2	FM221	FM RF Coil
R1	RS68B	68 ½ W. ±10%	L3	FM222	FM Osc. Coil
R2-4-7-10-20	RS102B	1000 ½ W. ±10%	L4	AN183	AM Ant. Coil
R3-17-19-32	RS203B	20K ½ W. ±10%	L5	TR184	AM IF Trap
R5-8-18	RS151B	150K ½ W. ±10%	L6	OS182	AM Osc. Coil
			CH1-2-3-4-5	LC181	Choke
			AL1	AL236	AM Loop
			L7	IF180	FM 1st I.F.T.
			T1	KT161	FM 2nd I.F.T.
			T2	KT162	FM 3rd I.F.T.
			T3	RD168	FM Ratio Detector
			T4	KT163	AM 1st I.F.T.
			T5	KT164	AM 2nd I.F.T.
			SW1-2	SW124	Band Switch
			PT1	PT119	Power Transformer
			OT1	OT120	Output Transformer
			PL1-2	PL147	No. 47 Pilot Light



NOTE "X" AND "Y"
SEE ALIGNMENT INSTRUCTIONS
* OSCILLATOR VOLTAGE
1AM1000 KC-MED 11 VOLTS (FM CHANNEL 220 3.5 VOLTS
1AM1000 KC-MED 9 VOLTS (FM CHANNEL 280 3.5 VOLTS
GAIN MEASUREMENTS TAKEN WITH 200 VOLTS FIXED BIAS
LINE VOLTAGE 110 VOLTS A.C.

AM IF PEAK
456 KC

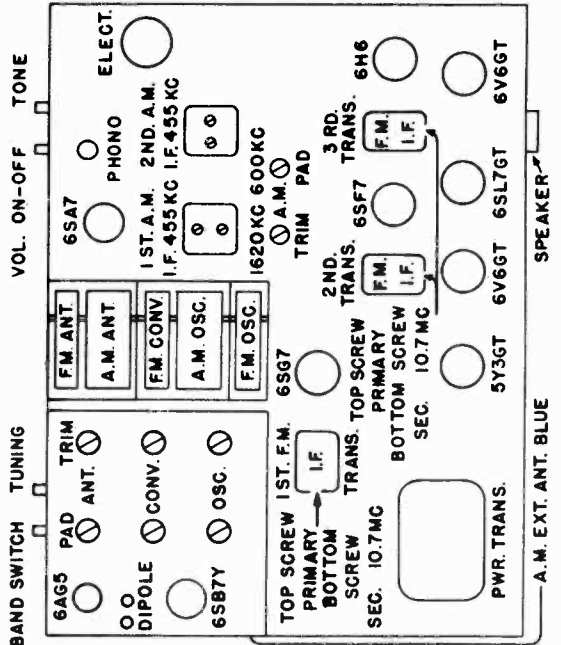
FM IF PEAK
10.7 MC

BAND SWITCH DECKS



Letters on terminals of switches and coils shown on this page correspond to similarly lettered terminals on the switches and coils shown in the circuit diagram.

CHASSIS LAYOUT



GROUND

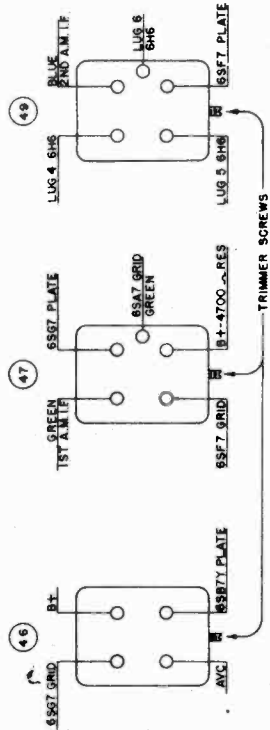
A ground connection is not normally required unless an outside aerial is used. The ground connection is made by attaching one end of a length of wire to a water pipe, radiator or pipe driven into the ground, and connecting the other end to the black wire found at the rear of the receiver. A gas pipe or electrical conduit must not be used for a ground.

ELECTRICAL SPECIFICATIONS:

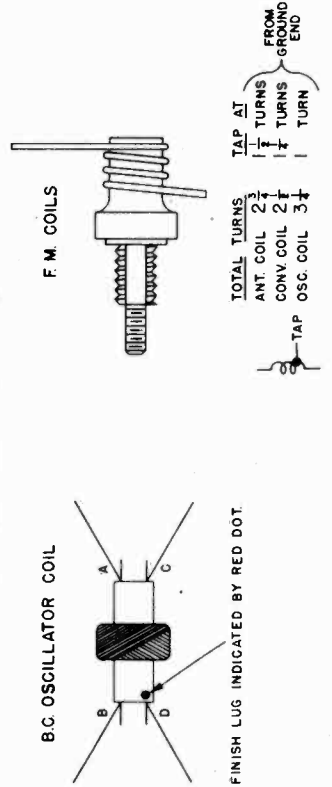
Ten tube, 60 cycle A. C., 105-125 volt operated superheterodyne receiver with built-in loop antenna and FM folded dipole. AM Broadcast band tuning range 540 Kc. to 1620 Kc. FM band range 87.5 Mc. to 108 Mc. calibrated in channel numbers from 200 to 300.

Speaker 12" PM
Voice coil impedance 3.5 ohms
Power output
Radio-7 watts
Phono-9 watts

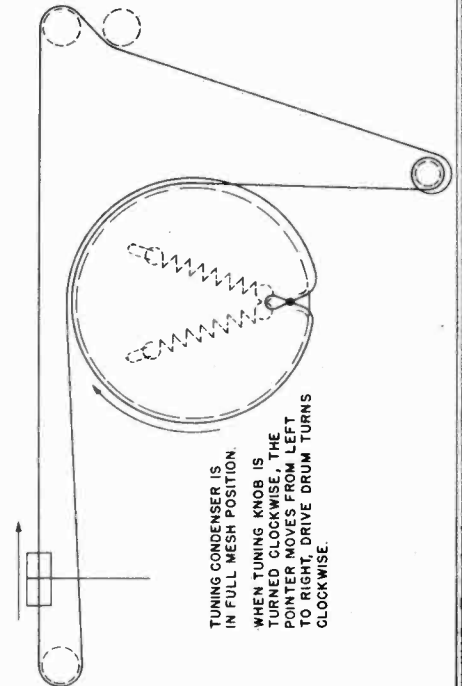
BOTTOM VIEW FM I.F. TRANS.



BROADCAST AND FM COILS



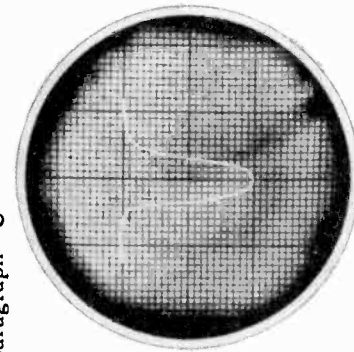
DIAL STRINGING



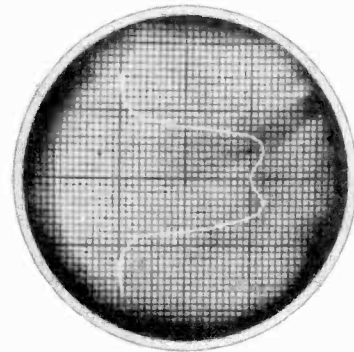
TUNING CONDENSER IS IN FULL MESH POSITION. WHEN TUNING KNOB IS TURNED CLOCKWISE, THE POINTER MOVES FROM LEFT TO RIGHT, DRIVE DROM TURNS CLOCKWISE.

OSCILLOSCOPE ALIGNMENT OF FM BAND

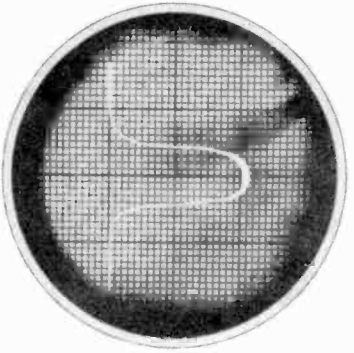
- A. Equipment required will be an oscilloscope, a frequency modulated signal generator covering the range 87.5 to 108.5 mc on fundamentals, a sweep generator producing a signal of 10.7 mc and sweeping at least 150 kc each side of 10.7 mc, and an output meter.
- B. The vertical or "Y" axis terminals of the oscilloscope should be connected between pin 3 of the 6H6 discriminator and ground. The sweep voltage of the sweep generator should be fed to the horizontal or "X" axis terminals of the 6SF7 tube through a condenser of approximately 3300 mmfd.
- C. Remove the negative lead of the 4 mfd. electrolytic from pin #3 of 6H6 socket. Remove 6SL7 tube from socket. Turn the set on and turn both the tone control and the volume control all the way to the right. Detune the secondary of the third FM I.F. transformer by turning the bottom slug screw out as far as possible. Adjust the primary, top slug screw, until pattern (a) appears on the oscilloscope. Adjust the secondary, bottom slug screw, until pattern "b" is obtained on the oscilloscope and until both sides of this pattern are symmetrical.
- D. Remove the 10.7 mc output of the sweep generator from the grid of the 6SF7 tube and connect to the grid of the 6SG7. Align the second FM I.F. transformer as in paragraph "C".
- E. Connect the 10.7 ms output of the sweep generator to the signal grid of the 6SB7Y, (pin 8). Detune secondary of the first FM I.F. transformer and tune primary as before for pattern (a). Tune secondary for pattern "c" and make both sides of pattern as symmetrical as possible. This completes alignment of the FM I.F. transformers.
- F. Reconnect the negative lead of the 4 mfd. electrolytic to pin #3 of the 6H6 socket and move the oscilloscope leads to pin #6 of the 6H6 socket and ground. With the sweep generator connected to the 6SB7Y signal grid as before, the discriminator pattern (d) should appear on the oscilloscope if the I.F. alignment instructions have been followed carefully. Remove the oscilloscope and sweep generator leads and reinstall 6SL7 tube in socket. Never adjust AM I.F. transformers without rechecking FM I.F. alignment.
- G. Connect the 87.5 to 108.5 mc signal generator to the antenna socket of the receiver through a 300 ohm resistor. The generator should be frequency modulated at some frequency in the audible range. Connect output meter across secondary of output transformer. Tune receiver to channel 300 on FM dial. With signal generator set at 107.9 mc adjust oscillator trimmer condenser, third from front, for maximum reading on output meter. Set signal generator to 87.9 mc and tune receiver to channel 200 on FM dial. Adjust oscillator coil screw, third from front, (see chassis layout) for maximum reading on output meter. Recheck oscillator setting for channel 300.
- H. Tune signal generator and receiver to 5 mc (channel 285 approx.). Adjust converter signal grid trimmer condenser, second from front, for maximum reading on output meter. Tune signal generator and receiver to 92 mc, (channel 220 approx.) and adjust converter coil screw, (second from front), to maximum reading on output meter. Recheck converter trimmer setting at 105 mc (channel 285 approx.).
- I. Repeat operations of paragraph (G) for antenna trimmer condenser and coil. This completes FM R.F. alignment.



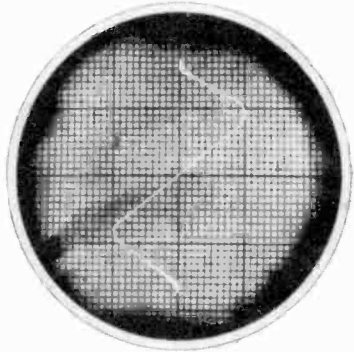
A



B



C



D

MODELS SF-6810, T-4000,
T-4000-1/2, D-6876

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ALIGNMENT INSTRUCTIONS AM BAND

An output meter and a signal generator calibrated at 455 Kc., 600 Kc., 1500 Kc. and 1600 Kc. are required to properly align these receivers on AM band. Keep the output of the signal generator as low as possible to prevent AVC action and false settings. Connect the high side of the generator to the blue wire found at rear of set and low side to the black wire.

STEPS	DUMMY ANTENNA	SET GENERATOR AT	SET GANG AT	ADJUST	LOCATED
SET VOLUME AND TONE CONTROLS AT MAXIMUM					
1					
2		455 Kc.	Minimum	2nd. I.F. Trimmers*	Top of I.F. Transformers
3				1st. I.F. Trimmers*	
4	200 MMF.	1600 Kc.	1600 Kc.	B. C. Osc. Trimmer	See Chassis Layout
5		1500 Kc.	1500 Kc.	B. C. R. F. Trimmer	On Loop
6		600 Kc.	600 Kc. Rock Gang	600 Kc. Padder	See Chassis Layout
7				Recheck 1500 Kc.	

MAXIMUM OUTPUT

* Recheck after FM alignment.

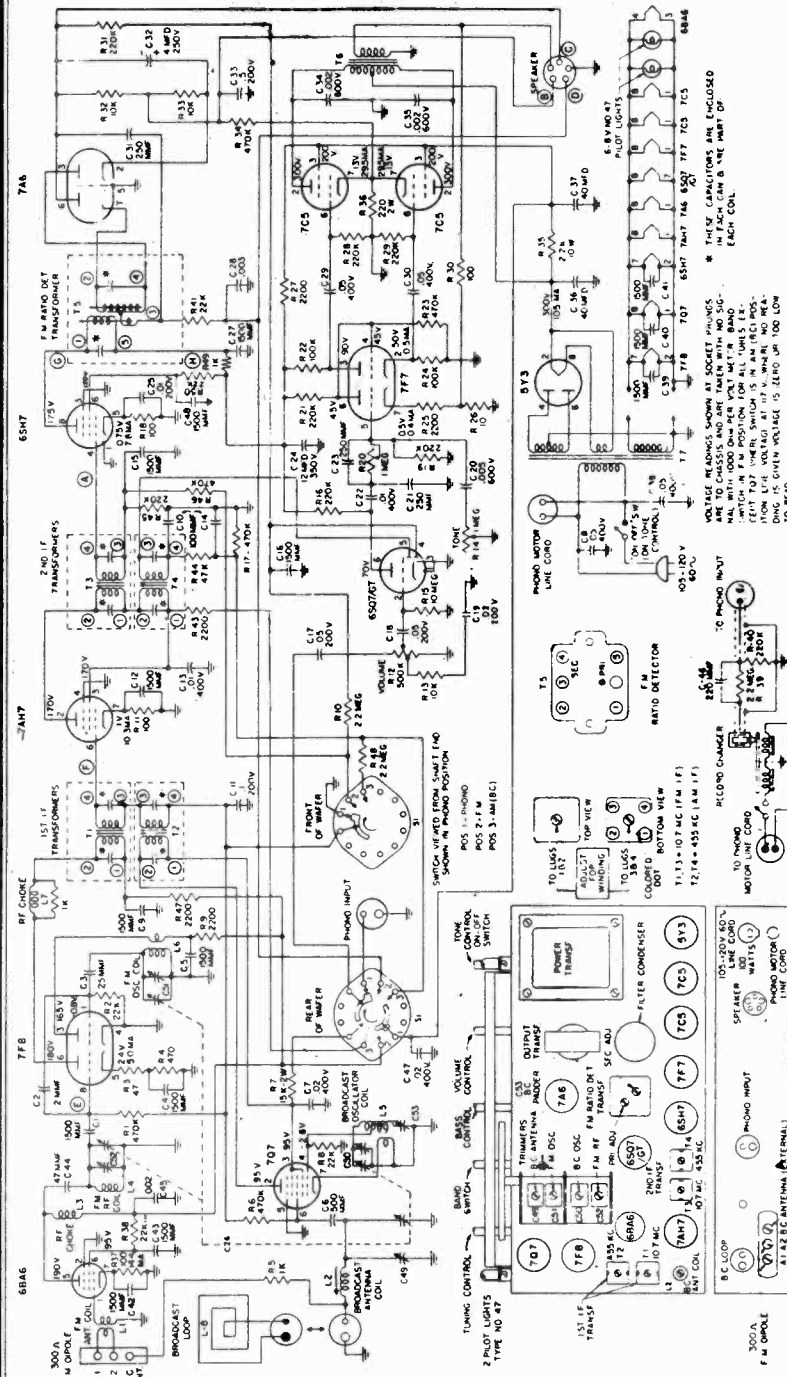
ALTERNATE FM ALIGNMENT PROCEDURE

Necessary Equipment:
Signal Generator
Voltohmmyst

RF ALIGNMENT:
Connect Voltohmmyst from ground to pin 6 of 6H6 (audio, marked X on Schematic). Connect generator tuned to 10.7 mc. to pin #4 on 6SG7. Turn secondary slug of 3rd FM I.F. (closest to chassis) out as far as it will go. Tune Primary of 3rd I.F. for maximum negative voltage. Next tune Secondary slug for zero voltage. (As Sec. slug is turned voltage will go up slowly then start decreasing rapidly, tune slug till it reaches zero). Next connect voltmeter between ground and pin #3 (marked Y on Schematic) on 6H6 socket (AVC). Turn Secondary slug of 2nd FM I.F. out as far as it will turn. Tune primary for maximum negative voltage. Then tune secondary for maximum negative voltage. Move generator to pin #8 of 6SB7Y socket. Follow same procedure as on 2nd I.F. for the 1st. I.F. transformer. I.F. is now aligned.

MODEL SF-6810—PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	77214	100M Ohms
2	77262	1000 Ohms
3	77265	15 M Ohms
4	77212	10 M Ohms
5	77266	250 M Ohms
6	77013	10 M Ohms 2 Watt
7	77218	1 Megohm
8	77272	4.7 Megohms
9	77267	33 M Ohms
10	77211	4700 Ohms
11	77213	47 M Ohms
12	77214	10 Megohms
13	77243	2700 Ohm Molded Resistor 4.7 Watt
14	77243	270 Ohms 2 Watt
15	77189	1000 Ohms 2 Watt
16	77304	1000 Ohms 2 Watt
17	25196	.05 Mfd. 600 Volt
18	25183	.01 Mfd. 600 Volt
19	25194	.01 Mfd. 600 Volt
20	25185	.01 Mfd. 600 Volt
21	25185	.01 Mfd. 600 Volt
22	25185	.01 Mfd. 600 Volt
23	25215	1 Mfd. 600 Volt
24	25031	.005 Mfd. Buffer Capacitor, 600 Volt
25	25333	60 MMF. Ceramic Capacitor
26	25273	1500 MMF. Ceramic Capacitor
27	25329	30 MMF. Ceramic Capacitor, N-150
28	25393	47 MMF. Ceramic Capacitor
29	25397	47 MMF. Ceramic Capacitor
30	25397	47 MMF. Ceramic Capacitor
31	25397	47 MMF. Ceramic Capacitor
32	25397	47 MMF. Ceramic Capacitor
33	25397	47 MMF. Ceramic Capacitor
34	25397	47 MMF. Ceramic Capacitor
35	25397	47 MMF. Ceramic Capacitor
36	25397	47 MMF. Ceramic Capacitor
37	25397	47 MMF. Ceramic Capacitor
38	78072	Tone Control, 3 Megohms
39	78120	Volume Control, 3 Megohms
40	25316	4 Mfd., 50 V. Electrolytic Capacitor
41	25214	Electrolytic Capacitor, 20 Mfd., 450 volt, 25 mfd., 25 Volt
42	38890	FM Antenna Coil
43	38891	FM Converter Coil
44	58471	FM RF Choke
45	38883	1st. FM I.F. Transformer
46	38884	2nd. FM I.F. Transformer
47	38885	3rd. FM I.F. Transformer
48	38890	FM Oscillator Strip
49	38891	FM Oscillator Coil
50	38892	Heater Choke
51	38893	Antenna Loading Coil
52	38894	Wave Trap Coil
53	38484	BC Oscillator Coil
54	38604	1st. AM I.F. Transformer
55	38681	2nd. AM I.F. Transformer
56	38682	3rd. AM I.F. Transformer
57	81204	Output Transformer
58	81205	Speaker
59	81206	Gang Capacitor
60	81207	FM Dipole Plug
61	28237	FM Dipole Socket
62	11325	Loop Antenna Trimmer
63	80361	Loop Antenna Socket
64	38835	Loop Antenna Socket
65	28031	Antenna 3-Prong Plug
66	80259	Antenna 3-Prong Plug
67	80259	Antenna 3-Prong Plug
68	80214	Band Switch
69	80030	Phono Input Socket
70	42185	Dial Lamp, 250 Ma.
71	80385	Speaker Socket
72	27118	Line Cord
73	11274	Phono Dial Socket
74	04089	Phono Dial
75	04090	Glass Dial
76	11257	Dial Background
77	17019	Dial Pointer
78	05089	Drive Drum
79	87444	Drive Cord (42 inches) and springs
80	80325	Knob Slotted Octal Socket for 6SB7Y
81	80326	Mica Octal Socket
82	80327	Molded Octal Socket
83	80328	Molded Octal Socket
84	80329	2-Prong FM Antenna Plug
85	80330	Miniature Tube Socket
86	80331	Pickup Cable
87	80332	Phono Needle



- Tube Complement:**
- 1 Type 6BA6—FM RF Amplifier.
 - 1 Type 7F8—FM Mixer, Oscillator.
 - 1 Type 7AH7—1st IF Amplifier.
 - 1 Type 6SH7—FM Detector Driver.
 - 1 Type 7A6—FM Detector.
 - 1 Type 6SQ7/GT—AM Det., A.V.C. and 1st Audio Amplifier.
 - 1 Type 7F7—2nd Audio, Phase Inverter.
 - 2 Type 7C5—Push-pull Power Amplifiers.
 - 1 Type 5Y3—Rectifier.
 - 1 Type 7Q7—AM Mixer Oscillator.

Power:
 This receiver operates on 105-125 volts, 60 cycle, AC. Do not plug this radio receiver into a direct current socket. Power consumption is 80 watts.

This receiver features the latest in post-war engineering design. It employs 10 tubes plus a rectifier in an AM-FM superheterodyne circuit. Four of the tubes are the dual-purpose type giving the set 15-tube performance. The tuning ranges are:
 A.M. — 540 Kc. to 1700 Kc.
 F.M. — 88 Mc. to 108 Mc.

The receiver has two built-in antennas; a loop antenna for the AM broadcast band and a folded dipole for the FM broadcast band. Provisions are made for external antenna connections. The easy-to-read "slide-rule" type dial is illuminated when the set is on; a dial pointer of red plastic reflects illumination from the two pilot lights. A high ratio drive on the tuning condenser provides smooth tuning. High Fidelity reproduction on FM and AM is the result of well-engineered circuits and the use of high quality parts.

ALIGNMENT PROCEDURE FOR A.M.:

Equipment Required:

- a) Broadcast Band Signal Generator.
- b) Output Meter.

1. Set band switch to AM. Advance volume control to full volume setting.
2. Connect output meter across voice coil.
3. Connect the Signal Generator across the broadcast band antenna section of the variable condenser. The "high" side of the Generator should connect to the stator section and the "ground" side to the frame or chassis. Adjust the Signal Generator to 455 kc and with the receiver switched on, adjust the first and second I.F. transformers for peak output, as shown on the output meter. The signal injected into the receiver should be as small in magnitude as possible, consistent with a useful deflection on the output meter.
4. Connect the "high" side of the Generator to the antenna terminal with a 200 mmf condenser inserted in series. Connect the "ground" side of the Generator to the chassis. Tune receiver to 60 on the dial, adjust Signal Generator to 600 kc. Adjust the BC padder and the BC antenna coil for maximum deflection on the output meter. Use a weak signal.
5. Tune receiver to 160 on the dial. Adjust Signal Generator to 1600 kc. Adjust BC oscillator and BC antenna trimmers for maximum output.
6. Repeat operations 4 and 5.

V ALIGNMENT PROCEDURE FOR F.M.:

Note: Points A, B, C, D, E, F, G, and H are noted on circuit diagram.

Points B, C, and D have been brought out to the unused contacts of the speaker socket at the rear of the chassis.

Equipment Required:

- a) High frequency Signal Generator with 88-108 Mc tuning range.
- b) Signal Generator capable of delivering .1V at 10.7 mc.
- c) Audio output meter.
- d) D.C. vacuum tube voltmeter with zero center scale.

a. Ratio Detector Alignment:

1. Connect V.T.V.M. across points "B" and "C" (A.V.C. Voltage).
2. Feed 10.7 mc unmodulated R.F. signal into 6SH7 grid (point A) through .01 μ f.d. condenser. This signal should be .1 volt.
3. Adjust primary of Ratio Detector (T-5) for maximum voltage indication on V.T.V.M.
4. Connect zero centered V.T.V.M. across points "B" and "D".
5. Adjust secondary of Ratio Detector (T-5) for zero indication.
6. Tune 10.7 mc Signal Generator higher in frequency (about 200 kc) until maximum voltage reading is obtained on V.T.V.M.; note this voltage, then tune signal generator lower in frequency until maximum voltage of the opposite polarity is ob-

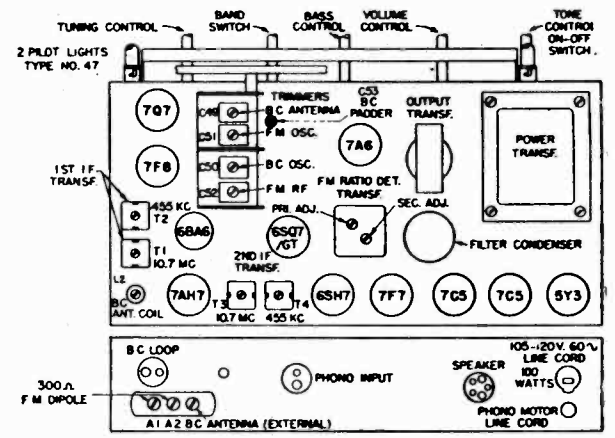
tained. Note this voltage, then if necessary re-adjust primary of the Det. (T-5) until the detector voltages are about equal on either the high or low side of 10.7 mc.

b. 10.7 I.F. Alignment:

1. Shunt a 1,000-ohm carbon resistor across the primary of the detector (T-5) (Points G and H).
2. Connect output meter across speaker voice coil.
3. Volume and tone controls at maximum clockwise position.
4. Connect 10.7 mc (modulated 30% signal generator through .01 μ f.d. condenser across point "F" and ground.
5. Adjust secondary, then primary of (T-3) for maximum audio output. (Reduce input signal to maintain output at .5-watt level.)
6. Connect 10.7 mc 30% modulated signal generator across point "E" and ground.
7. Adjust secondary, then primary of (T-1) for maximum audio output. (Reduce input signal to maintain output at .5-watt level.)
8. Remove 1000-ohm shunting resistor from across primary of (T-5).

c. Oscillator and R.F. Alignment:

1. Connect V.T.V.M. across "B" and "C" (A.V.C. voltage).
2. Connect 108 mc signal generator to FM antenna terminals. If generator impedance is low, put one 150-ohm carbon resistor in series with each of the generator leads. Tune receiver dial to 108 mc.
3. Adjust FM oscillator trimmer (C-51) for maximum V.T.V.M. reading.
4. Adjust FM R.F. trimmer (C-52) for maximum V.T.V.M. reading. During alignment reduce input signal to maintain A.V.C. voltage at 2 V.
5. Repeat steps 3 and 4.
6. Feed a 90 mc signal into antenna terminals (as in C-2), tune receiver dial to signal.
7. Adjust spacing of FM R.F. coil (L-4) for maximum V.T.V.M. reading at 90 mc. During alignment reduce input signal to maintain A.V.C. voltage at 2 V.
8. Repeat steps 2 and 4 if necessary.



Tube and Trimmer Locations.

MODELS T4400, T4400½

RADIO & TELEVISION INC.

MODEL T5000

- C 1—1,500 mmfd., ±300 mmfd.
- C 2—2 mmfd., 20%
- C 3—25 mmfd., 10%
- C 4—1,500 mmfd., ±300 mmfd.
- C 5—1,500 mmfd., ±300 mmfd.
- C 6—500 mmfd., 20%
- C 7—.02 mfd., 400 V.
- C 8—.05 mfd., 400 V.
- C 9—1,500 mmfd., ±300 mmfd.
- C10—100 mmfd., 20%
- C11—.1 mfd., 400 V.
- C12—1,500 mmfd., ±300 mmfd.
- C13—.01 mfd., 400 V.
- C14—100 mmfd., 20%
- C15—1,500 mmfd., ±300 mmfd.
- C16—1,500 mmfd., ±300 mmfd.
- C17—.05 mfd., 200 V.
- C18—.05 mfd., 200 V.
- C19—.02 mfd., 200 V.
- C20—.005 mfd., 600 V.
- C21—250 mmfd., 20%
- C22—.01 mfd., 400 V.
- C23—250 mmfd., 20%
- C24—12 mfd., 350 V.
- C25—.01 mfd., 200 V.
- C26—Var. cond. (AM-FM) *C-6.042
- C27—1,500 mmfd., ±300 mmfd.
- C28—.003 mfd., 20%
- C29—.05 mfd., 400 V.
- C30—.05 mfd., 400 V.
- C31—250 mmfd., 20%
- C32—4 mfd., 250 V.
- C33—.5 mfd., 200 V.
- C34—.002 mfd., 600 V.
- C35—.002 mfd., 600 V.
- C36 & C37—40 mfd. x 40 mfd., electrolytic, 400 V.
- C38—.05 mfd., 400 V.
- C39—1,500 mmfd., ±300 mmfd.
- C40—1,500 mmfd., ±300 mmfd.
- C41—1,500 mmfd., ±300 mmfd.
- C42—1,500 mmfd., ±300 mmfd.
- C43—1,500 mmfd., ±300 mmfd.

Part No. GN-559

- C44—47 mmfd., 10%
- C45—.002 mfd., 400 V.
- C46—100 mmfd., 20%
- C47—.02 mfd., 400 V.
- C48—1,500 mmfd., ±300 mmfd.
- C49—Trimmer, compression, 3-35 mmfd.
- C50—Trimmer, compression, 3-35 mmfd.
- C51—Trimmer, ceramic, 1.5-7 mmfd.
- C52—Trimmer, compression, 1.6-18 mmfd.
- C53—Padder condenser, 275-1,000 mmfd.
- R 1—470KΩ, ¼W., 20%
- R 2—22KΩ, ¼W., 20%
- R 3—47Ω, ¼W., 20%
- R 4—470Ω, ¼W., 20%
- R 5—1KΩ, ¼W., 20%
- R 6—470KΩ, ¼W., 20%
- R 7—15KΩ, ¼W., 20%
- R 8—22KΩ, ¼W., 20%
- R 9—2,200Ω, ¼W., 20%
- R10—2.2 Meg.Ω, ¼W., 20%
- R11—100Ω, ¼W., 20%
- R12—.5 Meg.Ω Volume Control (Audio Taper) tapped at 50KΩ *RA-9.069
- R13—10KΩ, ¼W., 20%
- R14—1 Meg.Ω Tone Control, with power switch *RA-9.070
- R15—10 Meg.Ω, ¼W., 20%
- R16—220KΩ, ¼W., 20%
- R17—470KΩ, ¼W., 20%
- R18—100Ω, ¼W., 20%
- R19—220KΩ, ¼W., 20%
- R20—1 Meg.Ω Bass Control *RA-9.112
- R21—220KΩ, ¼W., 20%
- R22—100KΩ, ¼W., 20%
- R23—470KΩ, ¼W., 20%
- R24—100KΩ, ¼W., 20%
- R25—2,200Ω, ¼W., 20%
- R26—10Ω, ¼W., 20%

*Mfg. Part No.

- R27—2,200Ω, ¼W., 20%
- R28—220KΩ, ¼W., 20%
- R29—220KΩ, ¼W., 20%
- R30—100Ω, ¼W., 20%
- R31—220KΩ, ¼W., 20%
- R32—10KΩ, ¼W., 20%
- R33—10KΩ, ¼W., 20%
- R34—470KΩ, ¼W., 20%
- R35—2,200Ω, 10W., wirewound, 10%
- R36—220Ω, 2W., 20%
- R37—100Ω, ¼W., 20%
- R38—22KΩ, 1W., 20%
- R39—2.2 Meg.Ω, ¼W., 20%
- R40—47KΩ, ¼W., 20%
- R41—22KΩ, ¼W., 20%
- R42—100KΩ, ¼W., 20%
- R43—2,200KΩ, ¼W., 20%
- R44—47KΩ, ¼W., 20%
- R45—220KΩ, ¼W., 20%
- R46—470KΩ, ¼W., 20%
- R49—1KΩ, ¼W., 20%
- R50—22KΩ, ½W., 20%
- T 1—FM I.F. Trans., 10.7 Mc. *ZB-2.276
- T 2—AM I.F. Trans., 455 Kc. *ZB-2.275
- T 3—FM I.F. Trans., 10.7 Mc. *ZB-2.276
- T 4—AM I.F. Trans., 455 Kc. *ZB-2.275
- T 5—FM Ratio Detector Trans-former, 10.7 Mc. *ZC-2.278
- T 6—Output Trans. *ZB-15.019
- T 7—Power Trans. *TA-18.053
- S 1—Band Switch *SA-12.060
- L 1—FM Antenna Coil *LA-2.241
- L 2—Antenna Coil, Broadcast *LA-2.273
- L 3—R.F. Plate Choke *LA-2.279
- L 4—R.F. Coil, FM *LA-2.243
- L 5—Oscillator Coil, Broadcast *LA-2.221
- L 6—Oscillator Coil, FM *LA-2.222
- L 7—R.F. Choke, Conv. Plate *LA-2.242
- L 8—Loop, Broadcast *LC-5.018
- Antenna, FM, Folded Dipole (300Ω) *LA-5.010
- Pilot Lamp, No. 47, 6-8 V.

MODELS T4400, T4400½

- C 1—1,500 mmfd., ±300 mmfd.
- C 2—2 mmfd., 20%
- C 3—25 mmfd., 10%
- C 4—1,500 mmfd., ±300 mmfd.
- C 5—1,500 mmfd., ±300 mmfd.
- C 6—500 mmfd., 20%
- C 7—.02 mfd., 400 V.
- C 8—.05 mfd., 400 V.
- C 9—1,500 mmfd., ±300 mmfd.
- C10—100 mmfd., 20%
- C11—.1 mfd., 200 V.
- C12—1,500 mmfd., ±300 mmfd.
- C13—.01 mfd., 400 V.
- C14—100 mmfd., 20%
- C15—1,500 mmfd., ±300 mmfd.
- C16—1,500 mmfd., ±300 mmfd.
- C17—.05 mfd., 200 V.
- C18—.05 mfd., 200 V.
- C19—.02 mfd., 200 V.
- C20—.005 mfd., 600 V.
- C21—250 mmfd., 20%
- C22—.01 mfd., 400 V.
- C23—250 mmfd., 20%
- C24—12 mfd., 350 V.
- C25—.01 mfd., 200 V.
- C26—Var. cond. (AM-FM) *C-6.012
- C27—1,500 mmfd., ±300 mmfd.
- C28—.003 mfd., 20%
- C29—.05 mfd., 400 V.
- C30—.05 mfd., 400 V.
- C31—250 mmfd., 20%
- C32—4 mfd., 250 V.
- C33—.5 mfd., 200 V.
- C34—.002 mfd., 600 V.
- C35—.002 mfd., 600 V.
- C36 & C37—40 mfd. x 40 mfd., electrolytic, 400 V.
- C38—.05 mfd., 400 V.
- C39—1,500 mmfd., ±300 mmfd.
- C40—1,500 mmfd., ±300 mmfd.
- C41—1,500 mmfd., ±300 mmfd.
- C42—1,500 mmfd., ±300 mmfd.
- C43—1,500 mmfd., ±300 mmfd.

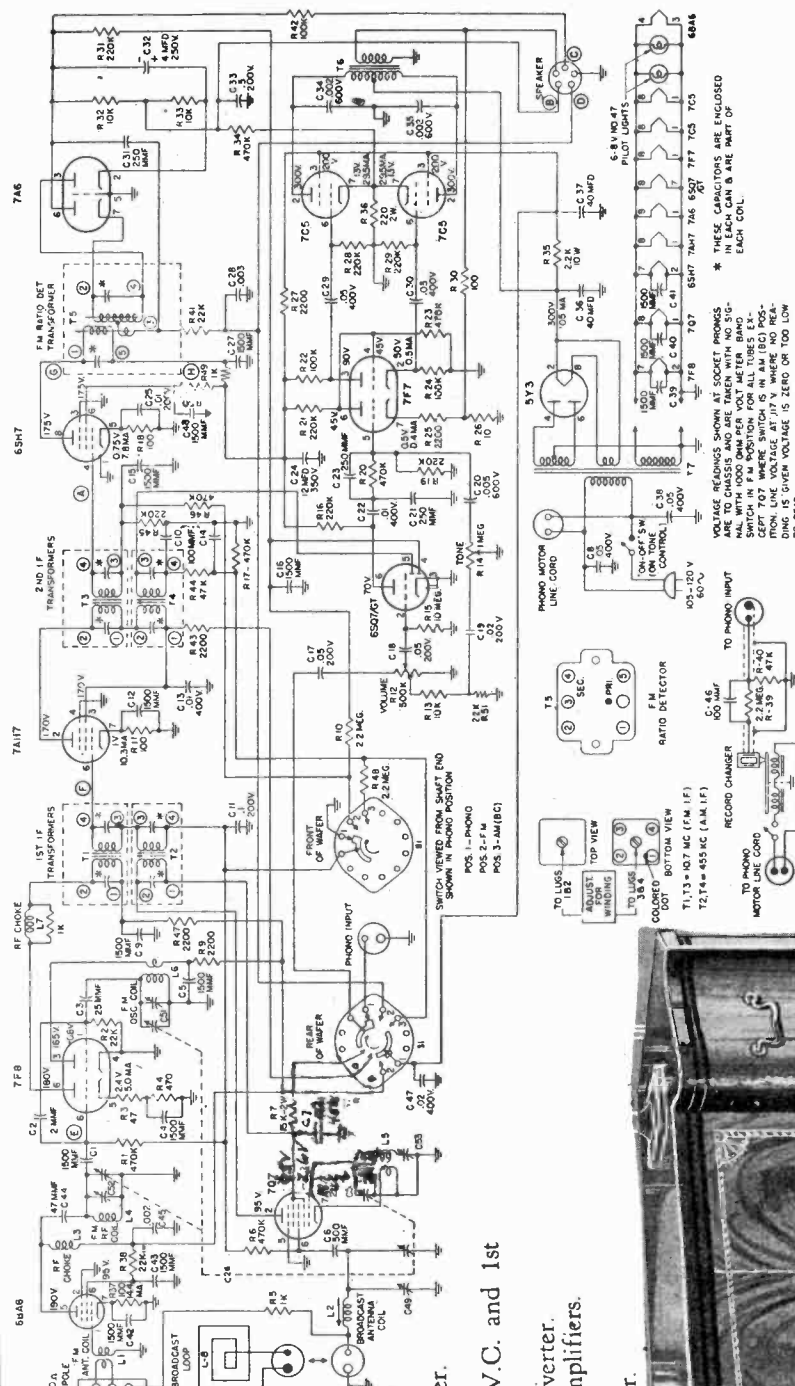
Part No. GN-569—Rev. 2-5-48

- C44—47 mmfd., 10%
- C45—.002 mfd., 400 V.
- C46—100 mmfd., 20%
- C47—.02 mfd., 400 V.
- C48—1,500 mmfd., ±300 mmfd.
- C49—Trimmer, compression, 3-35 mmfd.
- C50—Trimmer, compression, 3-35 mmfd.
- C51—Trimmer, ceramic, 1.5-7 mmfd.
- C52—Trimmer, compression, 1.6-18 mmfd.
- C53—Padder condenser, 275-1,000 mmfd.
- R 1—470KΩ, ¼W., 20%
- R 2—22KΩ, ¼W., 20%
- R 3—47Ω, ¼W., 20%
- R 4—470Ω, ¼W., 20%
- R 5—1KΩ, ¼W., 20%
- R 6—470KΩ, ¼W., 20%
- R 7—15KΩ, 2W., 20%
- R 8—22KΩ, ¼W., 20%
- R 9—2,200Ω, ¼W., 20%
- R10—2.2 Meg.Ω, ¼W., 20%
- R11—100Ω, ¼W., 20%
- R12—.5 Meg.Ω Volume Control (Audio Taper) tapped at 50KΩ *RA-9.069
- R13—10KΩ, ¼W., 20%
- R14—1 Meg.Ω Tone Control, with power switch *RA-9.070
- R15—10 Meg.Ω, ¼W., 20%
- R16—220KΩ, ¼W., 20%
- R17—470KΩ, ¼W., 20%
- R18—100Ω, ¼W., 20%
- R19—220KΩ, ¼W., 20%
- R20—470KΩ, ¼W., 20%
- R21—220KΩ, ¼W., 20%
- R22—100KΩ, ¼W., 20%
- R23—470KΩ, ¼W., 20%
- R24—100KΩ, ¼W., 20%
- R25—2,200Ω, ¼W., 20%
- R26—10Ω, ¼W., 20%
- R27—2,200Ω, ¼W., 20%

* Mfg. Part No.

- R28—220KΩ, ¼W., 20%
- R29—220KΩ, ¼W., 20%
- R30—100Ω, ¼W., 20%
- R31—220KΩ, ¼W., 20%
- R32—10KΩ, ¼W., 20%
- R33—10KΩ, ¼W., 20%
- R34—470KΩ, ¼W., 20%
- R35—2,200Ω, 10W., wirewound, 10%
- R36—220Ω, 2W., 20%
- R37—100Ω, ¼W., 20%
- R38—22KΩ, 1W., 20%
- R39—2.2 Meg.Ω, ¼W., 20%
- R40—47KΩ, ¼W., 20%
- R41—22KΩ, ¼W., 20%
- R42—100KΩ, ¼W., 20%
- R43—2,200Ω, ¼W., 20%
- R44—47KΩ, ¼W., 20%
- R45—220KΩ, ¼W., 20%
- R46—470KΩ, ¼W., 20%
- R47—2,200Ω, ¼W., 20%
- R48—2.2 Meg.Ω, ¼W., 20%
- R49—1KΩ, ¼W., 20%
- R 50—22KΩ, ½W., 20%
- T 1—FM I.F. Trans., 10.7 Mc. *ZB-2.276
- T 2—AM I.F. Trans., 455 Kc. *ZB-2.275
- T 3—FM I.F. Trans., 10.7 Mc. *ZB-2.276
- T 4—AM I.F. Trans., 455 Kc. *ZB-2.275
- T 5—FM Ratio Detector Trans-former, 10.7 Mc. *ZC-2.278
- T 6—Output Trans. *ZB-15.019
- T 7—Power Trans. *TA-18.053
- S 1—Band Switch *SA-12.060
- L 1—FM Antenna Coil *LA-2.241
- L 2—Antenna Coil, Broadcast *LA-2.273
- L 3—R.F. Plate Choke *LA-2.279
- L 4—R.F. Coil, FM *LA-2.243
- L 5—Oscillator Coil, Broadcast *LA-2.221
- L 6—Oscillator Coil, FM *LA-2.222
- L 7—R.F. Choke, Conv. Plate *LA-2.242
- L 8—Loop, Broadcast *LC-5.018
- Antenna, FM, Folded Dipole (300Ω) *LA-5.010
- Pilot Lamp, No. 47, 6-8 V.

MODEL T5000

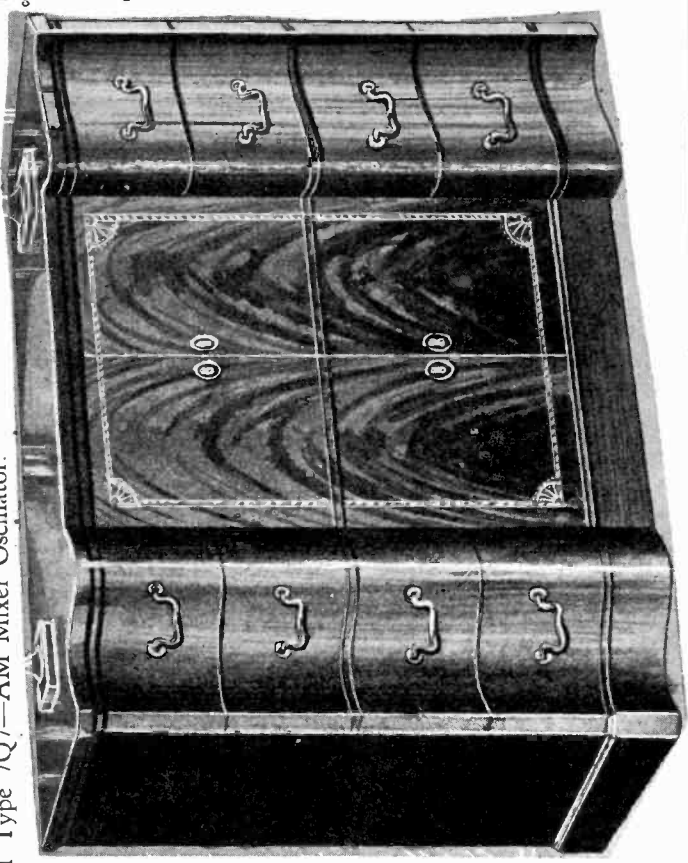


Tube Complement:

- 1 Type 6BA6—FM RF Amplifier.
- 1 Type 7F8—FM Mixer, oscillator.
- 1 Type 7AH7—1st IF Amplifier.
- 1 Type 6SQ7/GT—AM Det., A.V.C. and 1st Audio Amplifier.
- 1 Type 7F7—2nd Audio, Phase Inverter.
- 2 Type 7C5—Push-pull Power Amplifiers.
- 1 Type 5Y3—Rectifier.
- 1 Type 7Q7—AM Mixer Oscillator.

This receiver features the latest in post-war engineering design. It employs 10 tubes plus a rectifier in an AM-FM superheterodyne circuit. Four of the tubes are the dual-purpose type giving the set 15-tube performance. The tuning ranges are:
 A.M. — 540 Kc. to 1700 Kc.
 F.M. — 88 Mc. to 108 Mc.

The receiver has two built in antennas; a loop antenna for the AM broadcast band and a folded dipole for the FM broadcast band. Provisions are made for external antenna connections. The easy-to-read "slide-rule" type dial is illuminated when the set is on; a dial pointer of red plastic reflects illumination from the two pilot lights. A high ratio drive on the tuning condenser provides smooth tuning. High Fidelity reproduction on FM and AM is the result of well-engineered circuits and the use of high quality parts.



ALIGNMENT PROCEDURE FOR A.M.:

Equipment Required:

- a) Broadcast Band Signal Generator.
- b) Output Meter.

1. Set band switch to AM. Advance volume control to full volume setting.
2. Connect output meter across voice coil.
3. Connect the Signal Generator across the broadcast band antenna section of the variable condenser. The "high" side of the Generator should connect to the stator section and the "ground" side to the frame or chassis. Adjust the Signal Generator to 455 kc and with the receiver switched on, adjust the first and second I.F. transformers for peak output as shown on the output meter. The signal injected into the receiver should be as small in magnitude as possible, consistent with a useful deflection on the output meter.
4. Connect the "high" side of the Generator to the antenna terminal with a 200 mmf condenser inserted in series. Connect the "ground" side of the Generator to the chassis. Tune receiver to 60 on the dial, adjust Signal Generator to 600 kc. Adjust the BC padder and the BC antenna coil for maximum deflection on the output meter. Use a weak signal.
5. Tune receiver to 160 on the dial. Adjust Signal Generator to 1600 kc. Adjust BC oscillator and BC antenna trimmers for maximum output.
6. Repeat operations 4 and 5.

ALIGNMENT PROCEDURE FOR F.M.:

Note: Points A, B, C, D, E, F, G, and H are noted on circuit diagram.

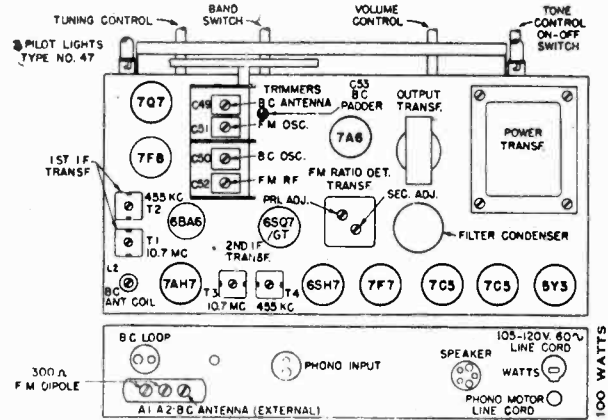
Points B, C, and D have been brought out to the unused contacts of the speaker socket at the rear of the chassis.

Equipment Required:

- a) High frequency Signal Generator with 88-108 Mc tuning range.
- b) Signal Generator capable of delivering .1 V at 10.7 mc.
- c) Audio output meter.
- d) D.C. vacuum tube voltmeter with zero center scale.

a. Ratio Detector Alignment:

1. Connect V.T.V.M. across points "B" and "C" (A.V.C. Voltage).
2. Feed 10.7 mc unmodulated R.F. signal into 6SH7 grid (point A) through .01 μ fd. condenser. This signal should be .1 volt.
3. Adjust primary of Ratio Detector (T-5) for maximum voltage indication on V.T.V.M.
4. Connect zero centered V.T.V.M. across points "B" and "D".
5. Adjust secondary of Ratio Detector (T-5) for zero indication.
6. Tune 10.7 mc Signal Generator higher in frequency (about 200 kc) until maximum voltage reading is obtained on V.T.V.M.; note this voltage, then tune signal generator lower in frequency until maximum voltage of the opposite polarity is obtained. Note this voltage, then if necessary re-adjust primary of the Det. (T-5) until the detector voltages are about equal on either the high or low side of 10.7 mc.



Tube and Trimmer Locations.

b. 10.7 I.F. Alignment:

1. Shunt a 1,000-ohm carbon resistor across the primary of the detector (T-5) (Points G and H).
2. Connect output meter across speaker voice coil.
3. Volume and tone controls at maximum clockwise position.
4. Connect 10.7 mc (modulated 30% signal generator through .01 μ fd. condenser across point "F" and ground.
5. Adjust secondary, then primary of (T-3) for maximum audio output. (Reduce input signal to maintain output at .5-watt level.)
6. Connect 10.7 mc 30% modulated signal generator across point "E" and ground.
7. Adjust secondary, then primary of (T-1) for maximum audio output. (Reduce input signal to maintain output at .5-watt level.)
8. Remove 1000-ohm shunting resistor from across primary of (T-5).

c. Oscillator and R.F. Alignment:

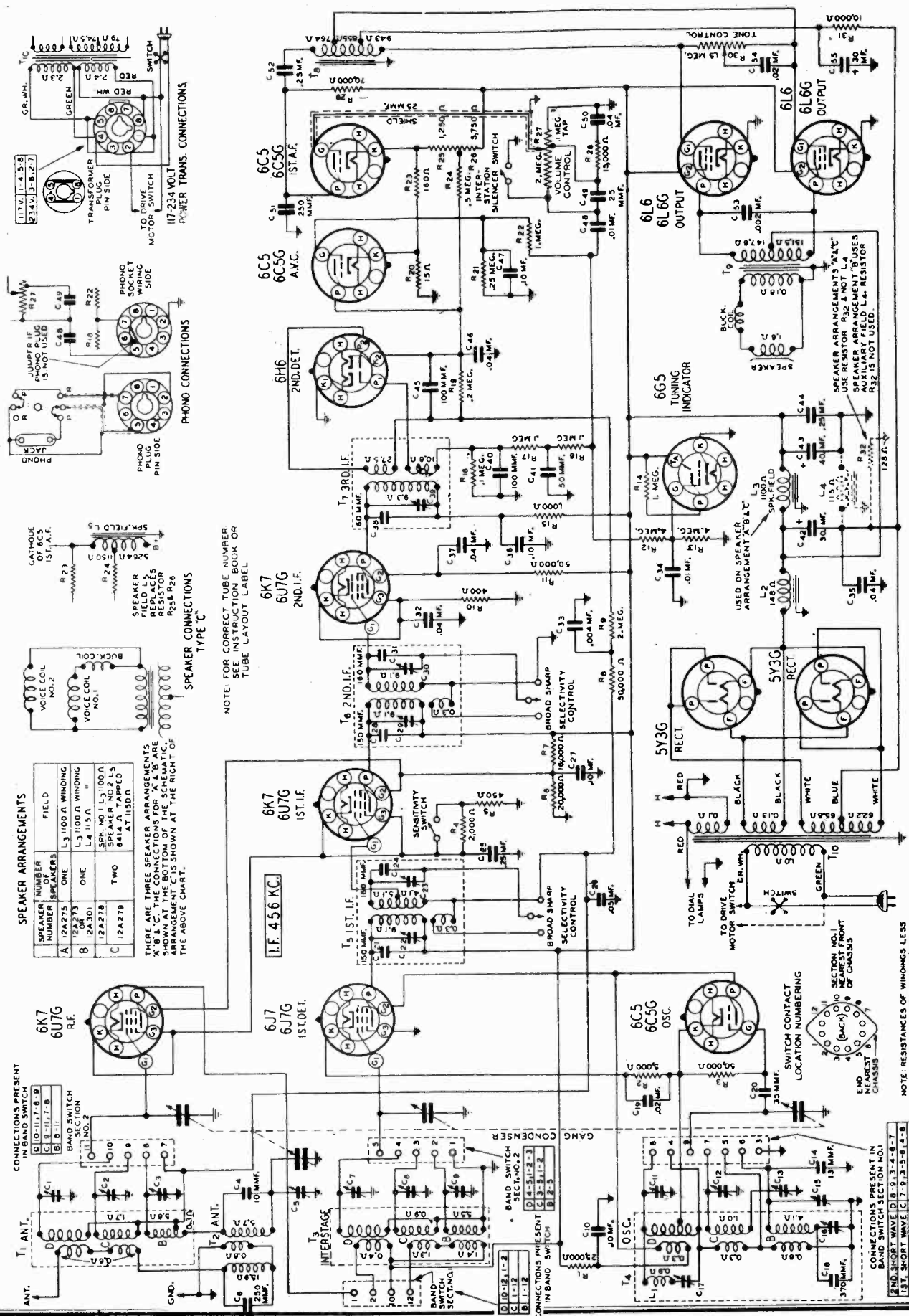
1. Connect V.T.V.M. across "B" and "C" (A.V.C. voltage).
2. Connect 108 mc signal generator to FM antenna terminals. If generator impedance is low, put one 150-ohm carbon resistor in series with each of the generator leads. Tune receiver dial to 108 mc.
3. Adjust FM oscillator trimmer (C-51) for maximum V.T.V.M. reading.
4. Adjust FM R.F. trimmer (C-52) for maximum V.T.V.M. reading. During alignment reduce input signal to maintain A.V.C. voltage at 2 V.
5. Repeat steps 3 and 4.
6. Feed a 90 mc signal into antenna terminals (as in C-2), tune receiver dial to signal.
7. Adjust spacing of FM R.F. coil (L-4) for maximum V.T.V.M. reading at 90 mc. During alignment reduce input signal to maintain A.V.C. voltage at 2 V.
8. Repeat steps 2 and 4 if necessary.

Power:

This receiver operates on 105-125 volts, 60 cycle, AC. Do not plug this radio receiver into a direct current socket. Power consumption is 80 watts.

MODELS B43, BB60, BB61

RADIO WIRE TELEVISION



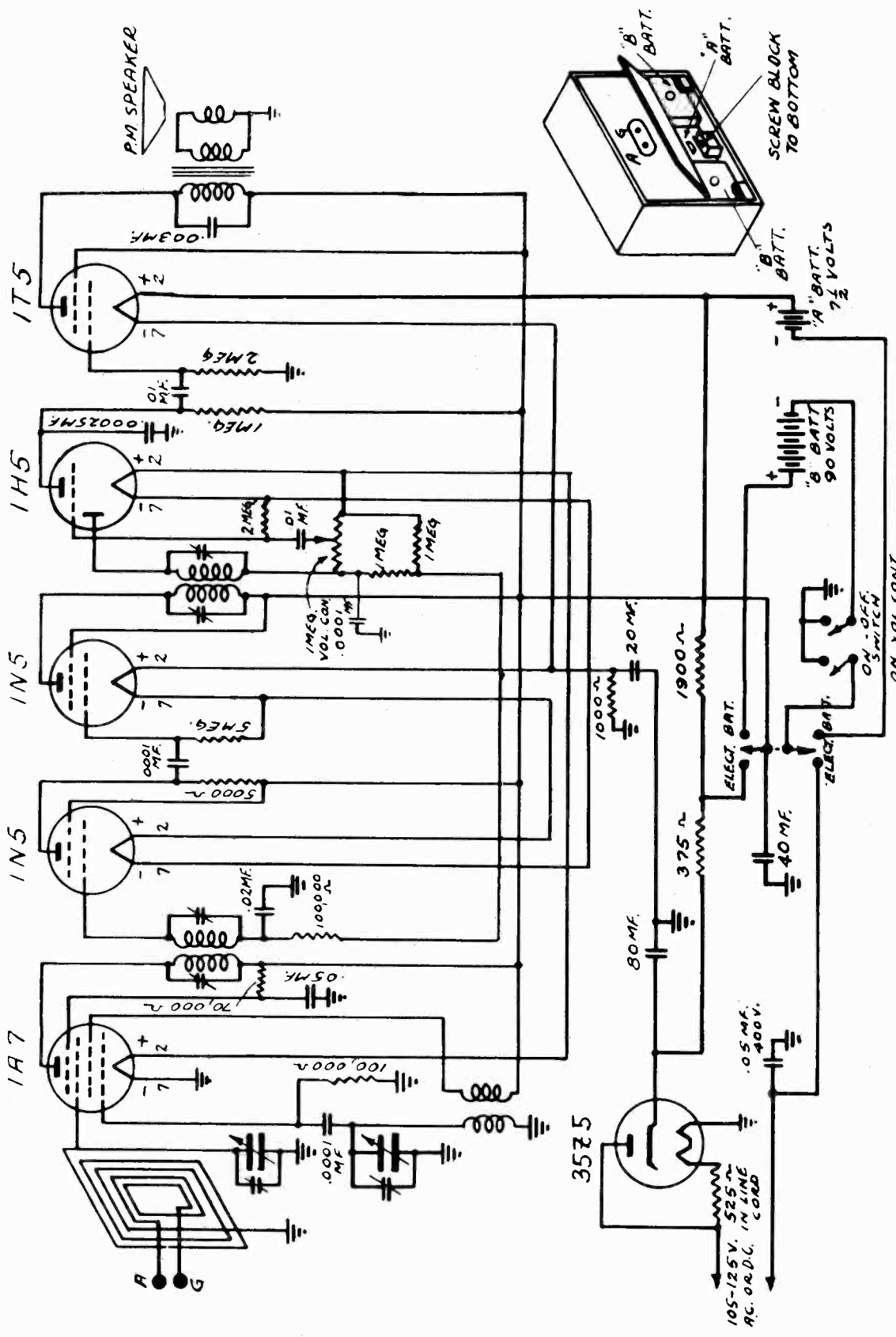
SPEAKER ARRANGEMENTS

SPEAKER NUMBER	FIELD
A (12A275)	L3 1100 Ω WINDING
B (12A273)	L3 1100 Ω WINDING
C (12A270)	L4 115 Ω
D (12A278)	SPK. NO. 1 L3 100 Ω
E (12A279)	SPK. NO. 2 L5 64 Ω AT 150 Ω

THERE ARE THREE SPEAKER ARRANGEMENTS 'A', 'B', & 'C'. THE CONNECTIONS FOR 'A', 'B', & 'C' ARE SHOWN AT THE RIGHT OF THE ABOVE CHART.

NOTE: FOR CORRECT TUBE NUMBER SEE INSTRUCTION BOOK OR TUBE LAYOUT LABEL

NOTE: RESISTANCES OF WINDINGS LESS THAN 0.1 Ω ARE NOT SHOWN



SCHEMATIC CIRCUIT DIAGRAM
MODEL BP-12

I.F. = 455 K.C.

MODEL BP-12

RADIO WIRE TELEVISION

This receiver will operate either from batteries contained within the case or from the regular Electric mains (AC or DC) on voltages from 105 to 125. A self-contained antenna is built in and will give good performance from stations not too remote. Where signal strength is poor or where reception from great distances is required, Antenna (A) and Ground (G) terminals are provided. These are located on the rear of the case. An antenna from 50 to 100 feet long may be used.

BATTERIES - The following batteries are required where no electric power is available:

7½ Volt "A" - USALITE #687, BURGESS #G5, GENERAL #5-H-5 - or equivalent
(4-3/8" X 3½" X 2-3/4") - 1 Required

45 Volt "B" - USALITE #624, BURGESS #B30, GENERAL #V-30-B, EVEREADY #762
ADVANCE #267 - or equivalent
(5-11/32" X 2-17/32" X 4-3/16") - 2 Required

TO INSTALL BATTERIES - Access to the battery compartment may be had by opening the bottom flap on the back of the cabinet. Insert the "B" batteries on each side, slide the "A" into place, then screw the wood block to the bottom to hold batteries. (See diagram).

With the ELEC-BATT switch on the front panel in the BATT position, the receiver is now ready for operation as a portable unit. When prolonged operation in the "ELECTRIC" position is contemplated (as during the winter season), it is advisable to remove the batteries and store them in a cool, dry place. DO NOT leave exhausted batteries in the carrying case as chemical action may expand the batteries and make it difficult to remove them.

WAVE BAND: The range covered is as follows:
175 - 555 METERS (1720 - 540 KC)

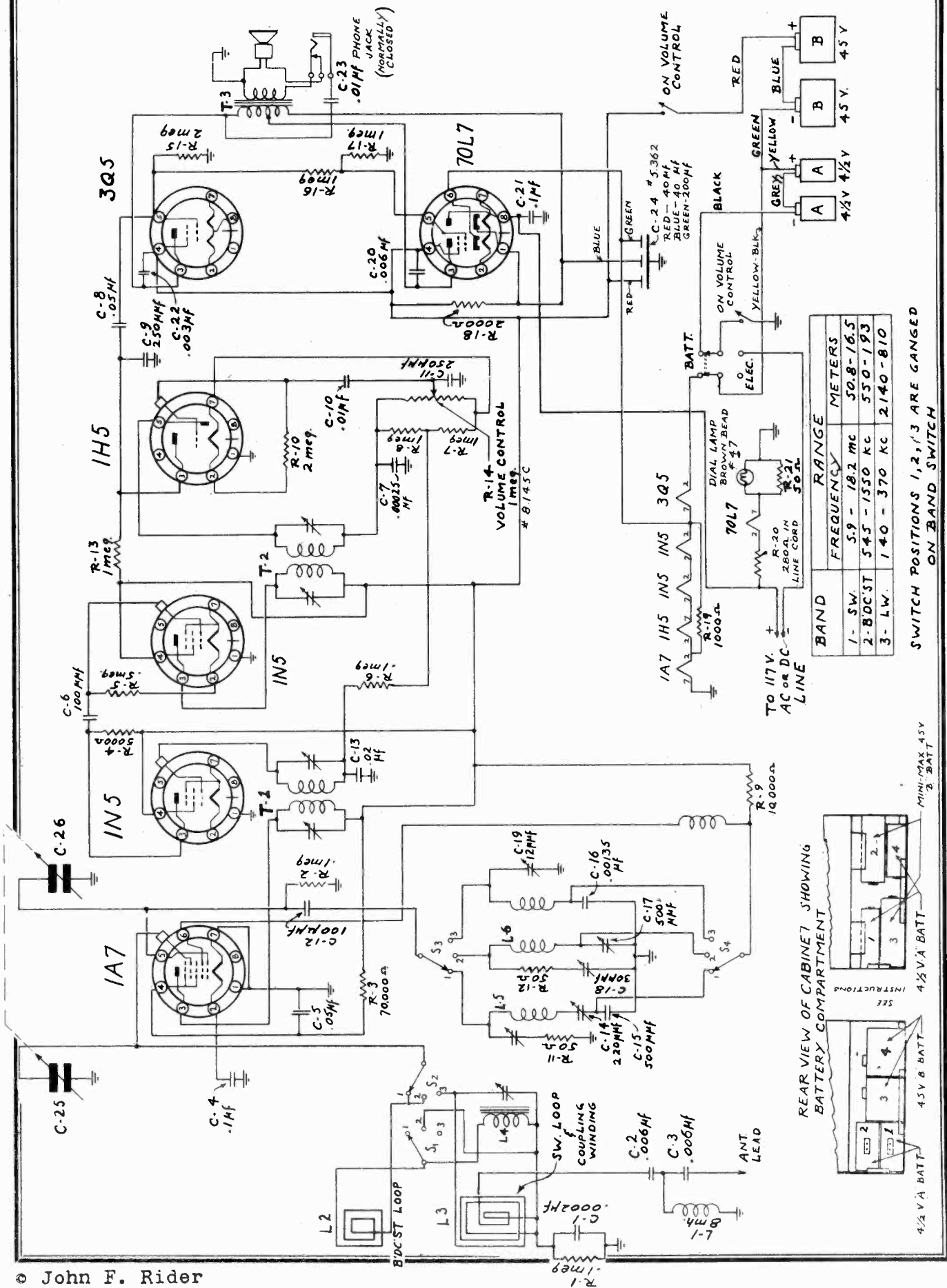
OPERATION

BATTERY
After the batteries have been installed in accordance with the instructions given above, set the slide switch on the front of the cabinet to the right.

ELECTRIC
Open the small door on the rear of the cabinet providing access to the power cord which can be plugged into any outlet (105 to 125 Volts AC or DC.) Slide the switch on the front of the cabinet to the left.

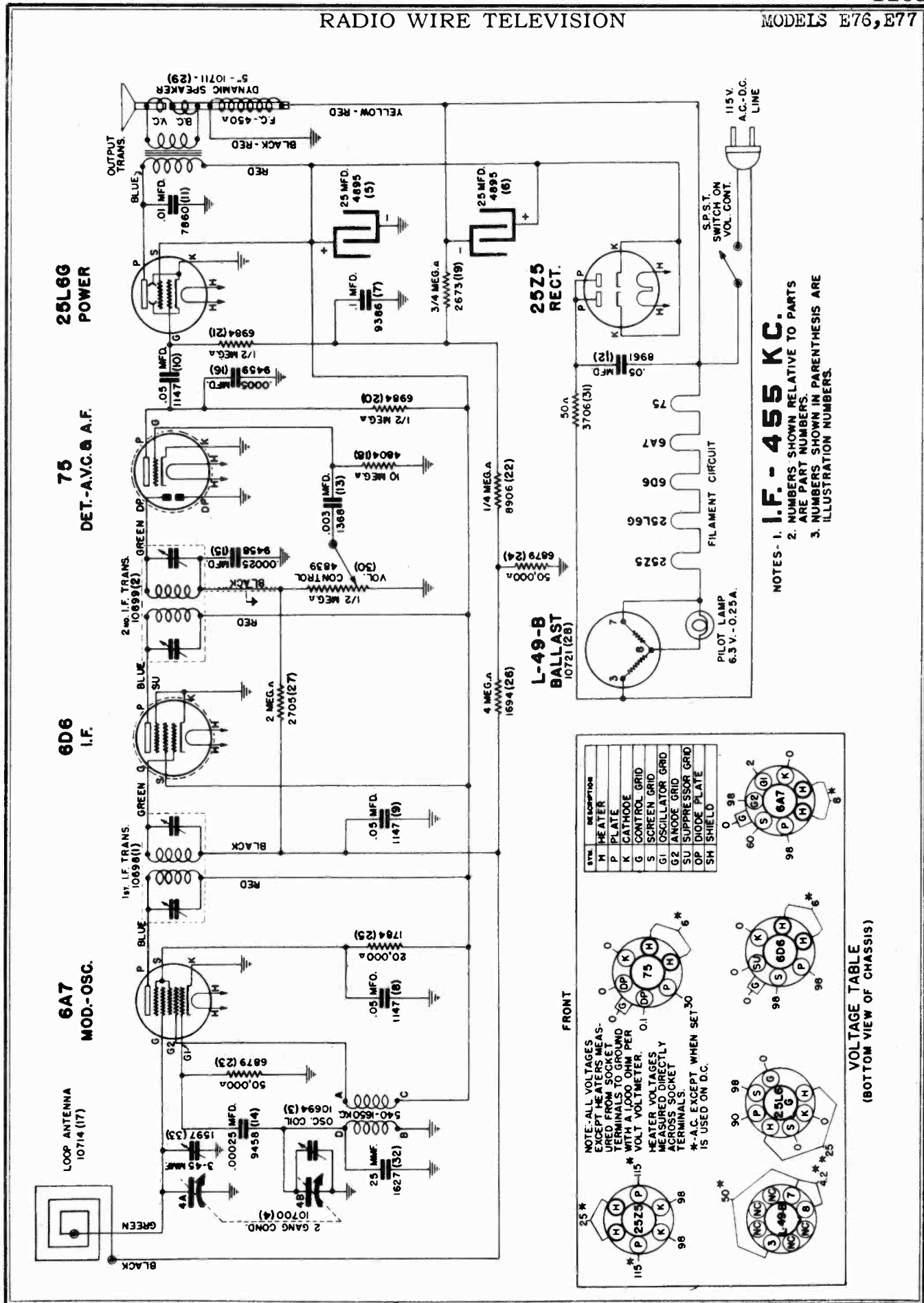
The receiver may now be operated by turning the LEFT hand knob to the right, (Clockwise). The Volume is turned up and the station tuned in. (Right hand knob). By rotating the cabinet slowly (when the self-contained loop is used) maximum signal with minimum noise may be obtained. The direction effect is lost when a large antenna is used, but in this case, ample signal is obtained to be heard above the noise level. The volume is adjusted for the desired level.

NOTE:- When this set is to be operated from the 115-125 Volt DC line and no signal can be tuned in with the power switch in the "ELECTRIC" position, reverse the plug in the light socket one-half turn. When operating on AC, a slight hum may be heard on some stations. Reversing the line plug one-half turn in the socket will alleviate this condition.



RADIO WIRE TELEVISION

MODELS E76, E77



VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

SYM.	DESCRIPTION
H	HEATER
P	PLATE
K	CATHODE
G	CONTROL GRID
S	SCREEN GRID
G1	OSCILLATOR GRID
SU	ANODE GRID
OP	SUPPRESSOR GRID
SH	DIODE PLATE SHIELD

NOTE: ALL VOLTAGES EXCEPT HEATERS MEASURED FROM SOCKET AND TERMINALS TO GROUND WITH VOLT METER. HEATER VOLTAGES MEASURED DIRECTLY FROM SOCKET TERMINALS. * A.C. EXCEPT WHEN SET TO IS USED ON D.C.

I.F. - 455 KC.

NOTES - 1. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
2. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.

ALIGNMENT PROCEDURE IN TABULATED FORM

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

- Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.
- Use an accurately calibrated test oscillator with some type of output measuring device.

IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME APPROXIMATE POSITION IN THE BACK OF CHASSIS IT WILL BE IN WHEN THE SET IS IN THE CABINET AND THE BACK ATTACHED.

When adjusting 1650 K.C. oscillator trimmer and 1400 K.C. antenna trimmer, couple test oscillator to set loop by placing lead from high side of test oscillator on top of or near set loop. Be sure that neither the loop or test oscillator lead moves during alignment.

DO NOT ATTACH LOW SIDE OF TEST OSCILLATOR TO RECEIVER—LEAVE UNCONNECTED.

Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below—and:
	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	

I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 6A7 tube DO NOT REMOVE CAP.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
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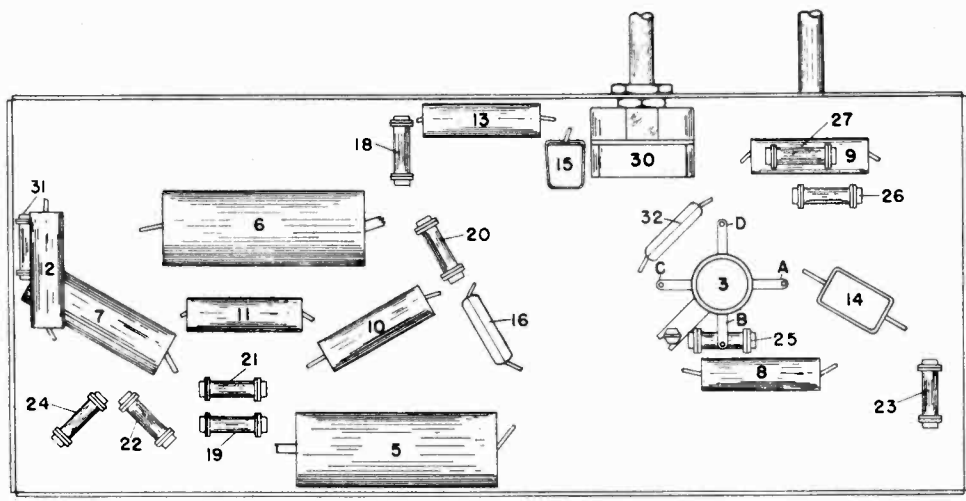
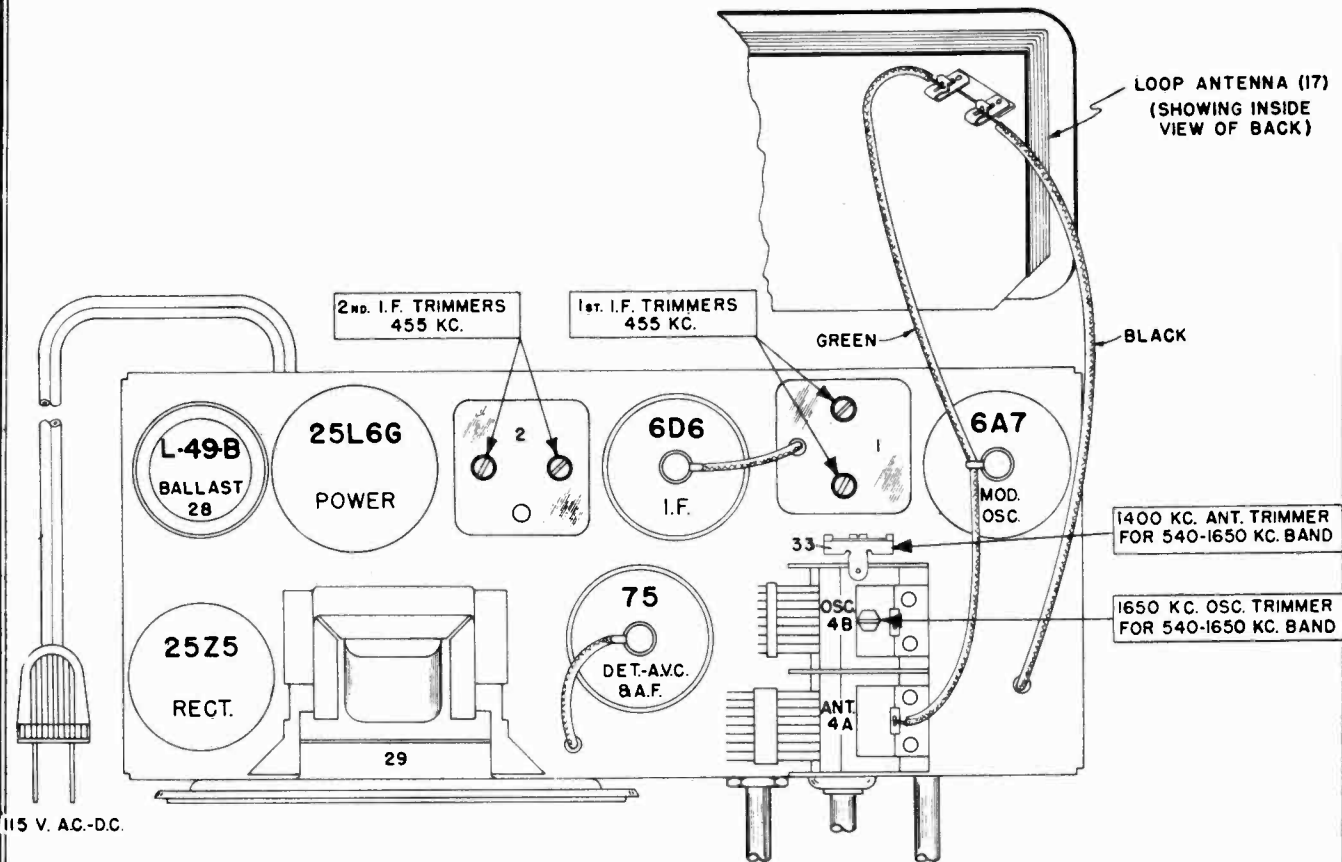
(1) Exactly 1650 K. C.	Exactly 1650 K. C.	None	Lay lead on top of or close to loop	Adjust 1650 K. C. oscillator trimmer for maximum output.
(2) Approx. 1400 K. C.	Exactly 1400 K. C.	None	Lay lead on top of or close to loop	Adjust 1400 K. C. antenna trimmer for maximum output.

PARTS LIST

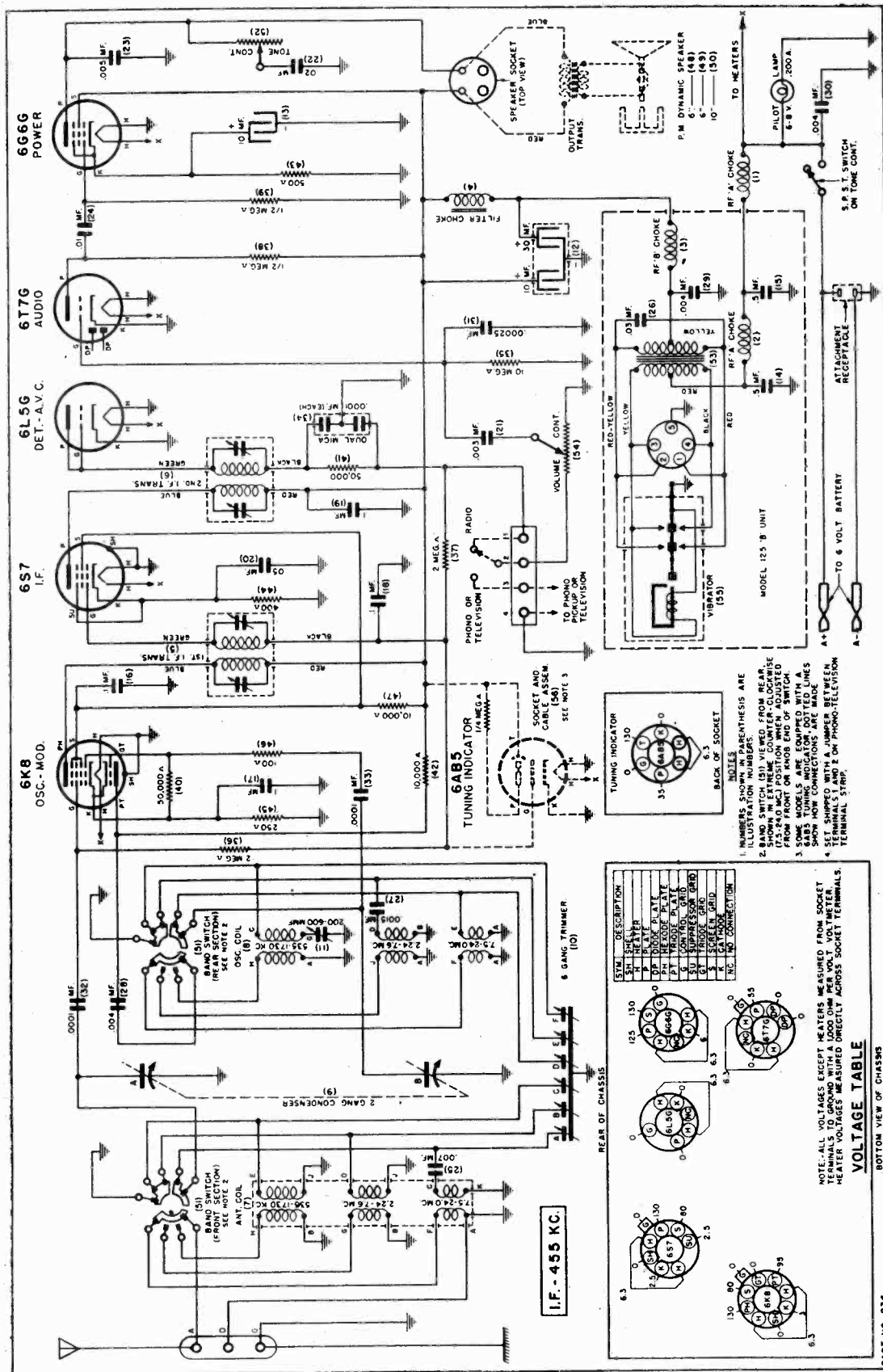
Illus. No.	Part No.	Part Name	Description	Illus. No.	Part No.	Part Name	Description
1	10698	Coil	1st I.F. Transformer.....	24	6879	Resistor	Carbon 50,000 Ohm 1/2 Watt
2	10699	Coil	2nd I.F. Transformer....	25	1784	Resistor	Carbon 20,000 Ohm 1/2 Watt
3	10694	Coil	Oscillator	26	1694	Resistor	Carbon 4 Meg Ohm 1/2 Watt
4	10700	Condenser	Tuning Two Gang.....	27	2705	Resistor	Carbon 2 Meg Ohm 1/2 Watt
5	4895	Condenser	Tubular Dry Electrolytic 25 Mfd. 200 Volt.....	28	10721	Resistor	Line Ballast Type L-55-B
6	4895	Condenser	Tubular Dry Electrolytic 25 Mfd. 200 Volt.....	29	10711	Speaker	Electro Dynamic 5".....
7	9386	Condenser	Tubular .1 Mfd. 200 Volts	30	4839	Volume Control	With Switch
8	1147	Condenser	Tubular .05 Mfd. 200 Volts	31	3706	Resistor	Carbon 50 Ohm 1/2 Watt..
9	1147	Condenser	Tubular .05 Mfd. 200 Volts	32	1627	Condenser	Mica .000025 Mfd.....
10	1147	Condenser	Tubular .05 Mfd. 200 Volts	33	1597	Condenser	Trimmer 3-45 Mmf.....
11	7860	Condenser	Tubular .01 Mfd. 400 Volts	MISCELLANEOUS PARTS			
12	8961	Condenser	Tubular .05 Mfd. 400 Volts	10292	Bulb	6-8 Volt .250 Ampere Dial Light	
13	1368	Condenser	Tubular .003 Mfd. 400 Volts	10707	Dial Scale	Calibrated Glass Scale...	
14	9458	Condenser	Mica .00025 Mfd.....	3814	Dial Cord	Dial Drive Cord.....	
15	9458	Condenser	Mica .00025 Mfd.....	4975	Dial Shaft	Dial Drive Shaft.....	
16	9459	Condenser	Mica .0005 Mfd.....	4762	Dial Pulley	With Bushing	
17	10714	Loop Antenna	Cabinet Back with Loop Aerial	10654	Dial Pointer	For Dial	
18	4804	Resistor	Carbon 10 Meg Ohm 1/2 Watt	10650	Escutcheon	For Dial Used With Wood Cabinet Only....	
19	2673	Resistor	Carbon 750,000 Ohm 1/2 Watt	10208	Knob	For Use With Wood Cabinet Only	
20	6984	Resistor	Carbon 500,000 Ohm 1/2 Watt	4784	Knob	Walnut Finish	
21	6984	Resistor	Carbon 500,000 Ohm 1/2 Watt	10207	Knob	Ivory Finish	
22	8906	Resistor	Carbon 250,000 Ohm 1/2 Watt	8117	Shaft Clamp	"C" Retainer Washer for Drive Shaft	
23	6879	Resistor	Carbon 50,000 Ohm 1/2 Watt	10712	Cabinet Handle	Walnut Plastic	
							Ivory Plastic
							Mention Required Finish.

RADIO WIRE TELEVISION

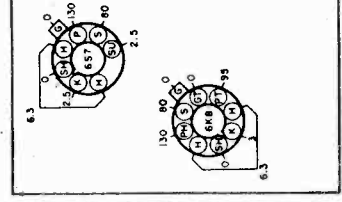
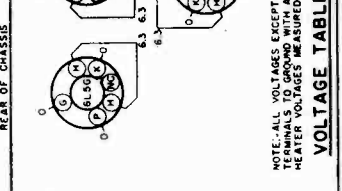
MODELS E76, E77



RADIO WIRE TELEVISION



VIEW	DESCRIPTION
1	REAR VIEW
2	FRONT VIEW
3	TOP VIEW
4	PHENOLIC PLATE
5	PT. TRODOR PLATE
6	5.0 SUPPLY SOCKET
7	5.0 TRODOR GRID
8	SCREEN GRID
9	W.C. NO. CONNECTION



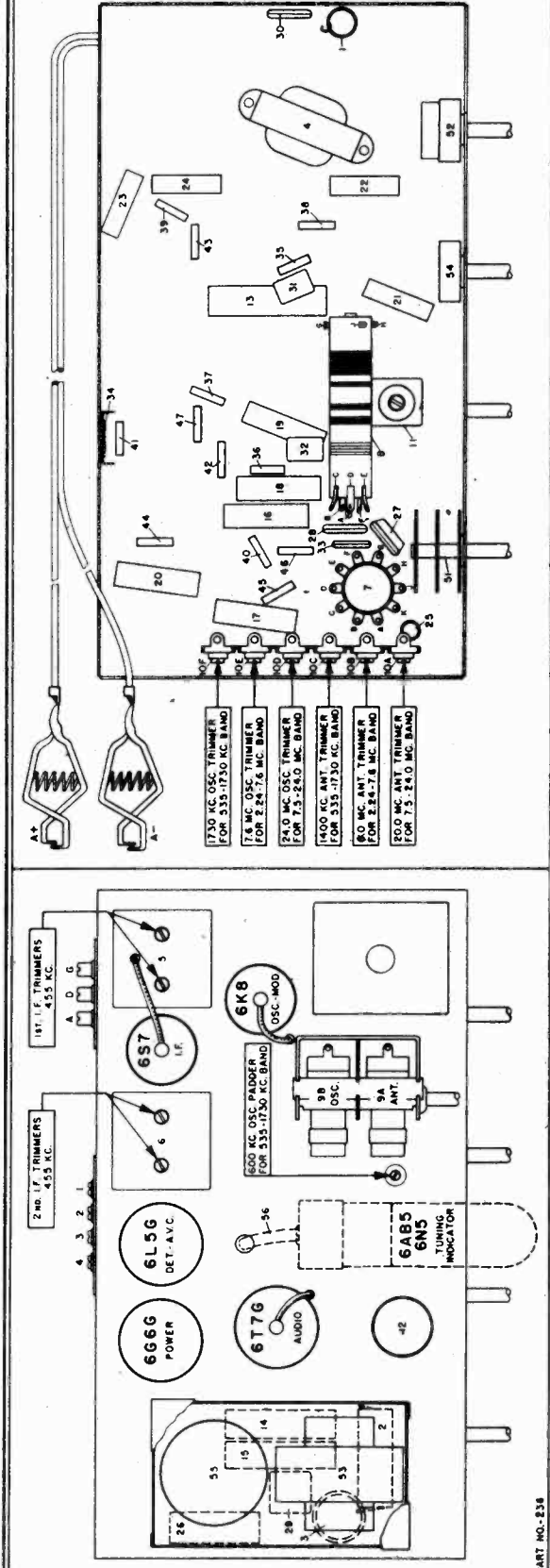
NOTES:
 1. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
 2. BAND SWITCH IS IN VIEW FROM REAR (7.5-24.0 MC) POSITION WHEN ADJUSTED FROM FRONT ON RADIO END OF SWITCH.
 3. 6G6S TUNING INDICATOR DOTTED LINES SHOW HOW CONNECTIONS ARE MADE.
 4. SET SHIPPED WITH A JUMPER BETWEEN TERMINAL STRIP ON PHONO-TELEVISION

ALIGNMENT PROCEDURE

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first. Before starting alignment:

- Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle to correct position.
- Use an accurately calibrated test oscillator with some type of output measuring device.
- Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator, consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band, position.	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1 Exactly 1730 K.C. 2 Approx. 1400 K.C.	Exactly 1730 K.C. Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A", post	Adjust 1730 K.C. oscillator trimmer for maximum output.
224 to 7.6 M.C. Band	1 Exactly 7.6 M.C. 2 Approx. 6 M.C.	Exactly 7.6 M.C. Exactly 6 M.C.	400 Ohm carbon resistor	Receiver antenna "A", post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
7.5 to 21 M.C. Band	1 Exactly 21 M.C. 2 Approx. 20 M.C.	Exactly 21 M.C. Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A", post	While rocking gang condenser adjust 600 K.C. oscillator padler for maximum output. Adjust 7.6 M.C. oscillator trimmer for maximum output. While rocking gang condenser adjust 6 M.C. antenna trimmer for maximum output.



WARNING: Check power line for voltage and frequency (cycles) to make certain they are the same as specified on label located at rear of the receiver chassis before inserting the receiver power line in electric outlet.

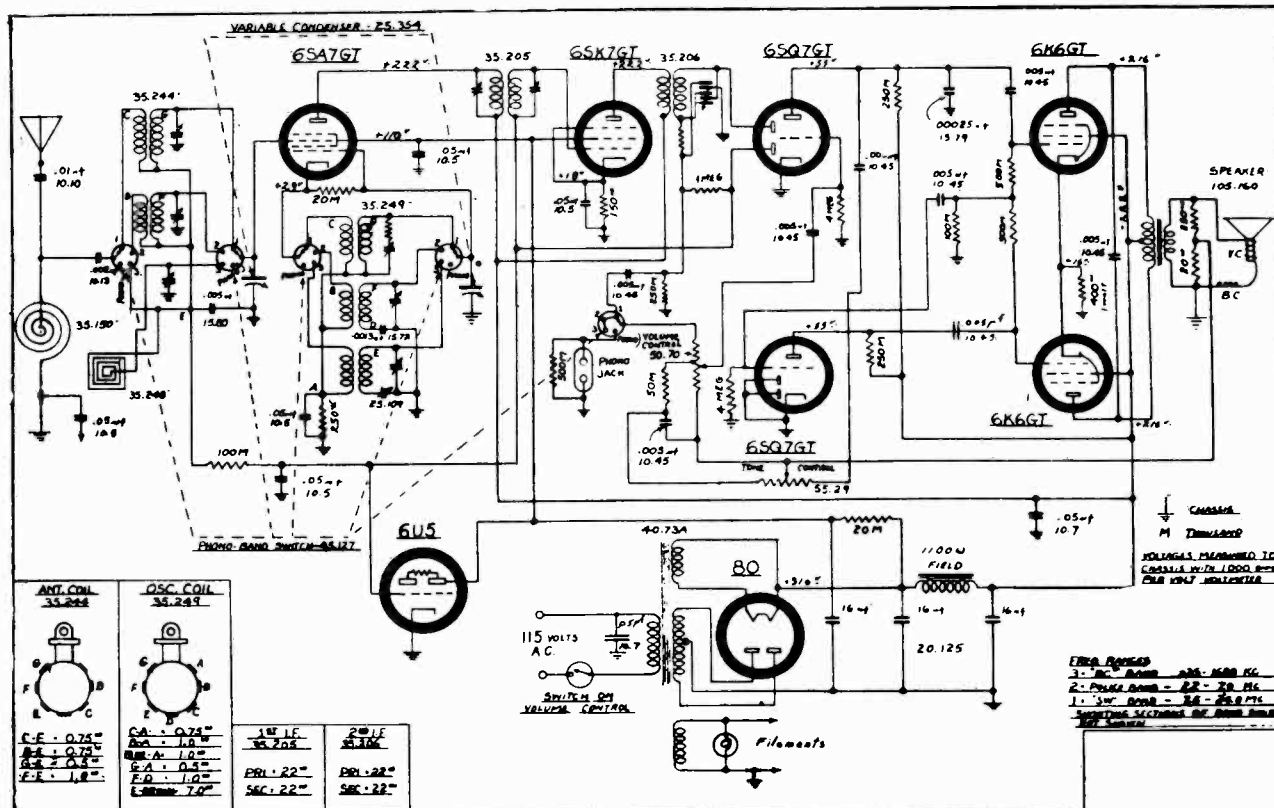
These Receivers must be operated on 60 Cycles, 120 Volt current. Any other type Voltage, if used will result in damage to the receiver.

SHORT WAVE RECEPTION: An external Antenna is absolutely necessary for good reception on either of the Short Wave Bands. This antenna may consist of a short wire strung indoors or preferably a good **OUTSIDE ANTENNA.**

In installing an antenna to be used with a sensitive short wave receiver every precaution should be observed to keep interfering noises at a minimum. The lead-in and antenna proper should be located as far as possible from any potential source of interference, such as electric signs, elevators, trolley wires, motors, power lines, etc. The antenna should also be as remote as possible from pick up from the ignition systems of passing automobiles. For connection to the antenna, a yellow wire is brought out through the rear of the receiver. Insert the power line plug in the electric outlet and turn the "ON-OFF" switch and Volume Control knob to the right. A few seconds will be required for the tubes to reach operating temperature.

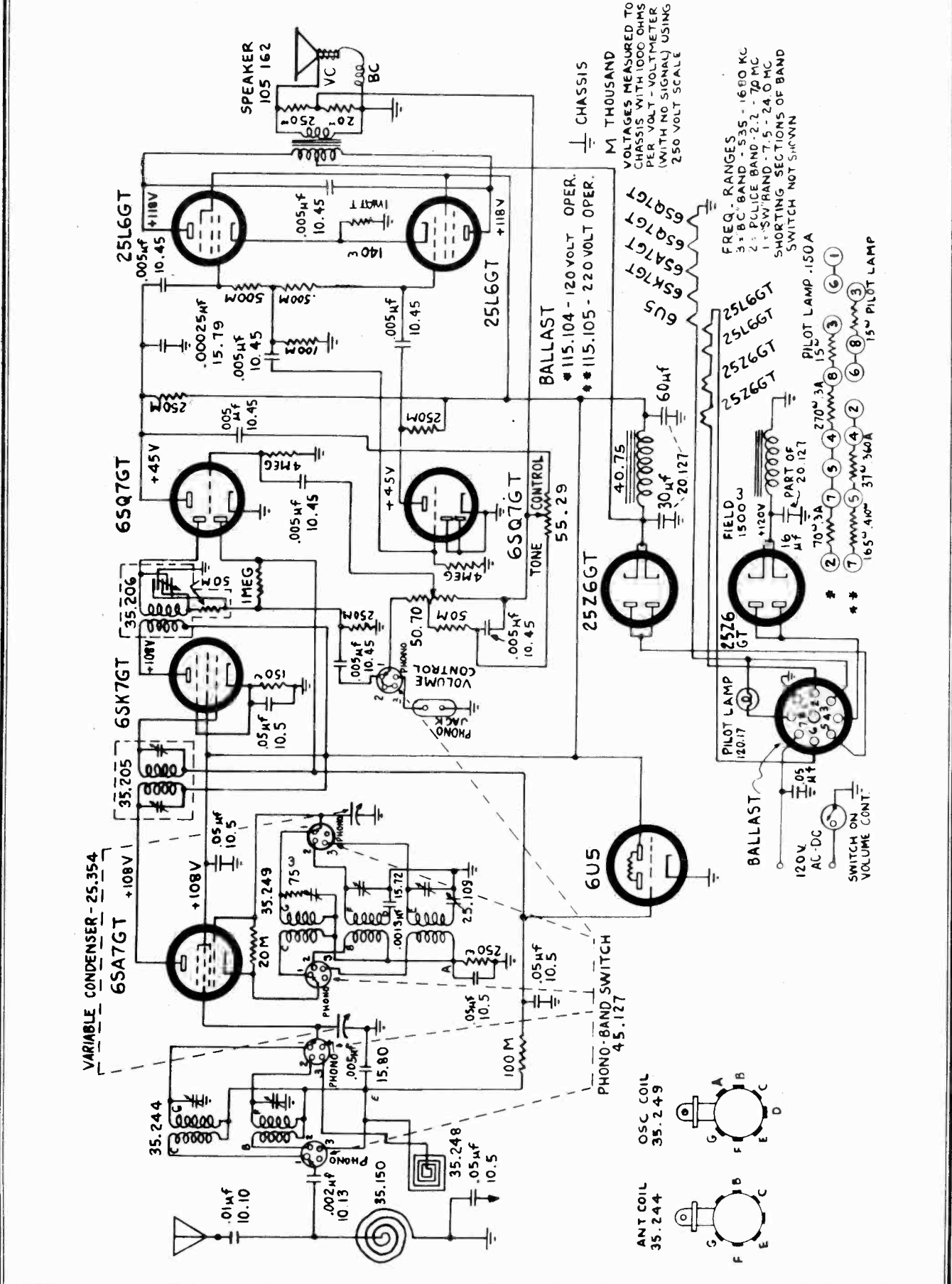
DIAL LAMP: These models use one 6-8 Volt, 150 M. A. Lamp. Use similar lamps when replacing or damage will result.

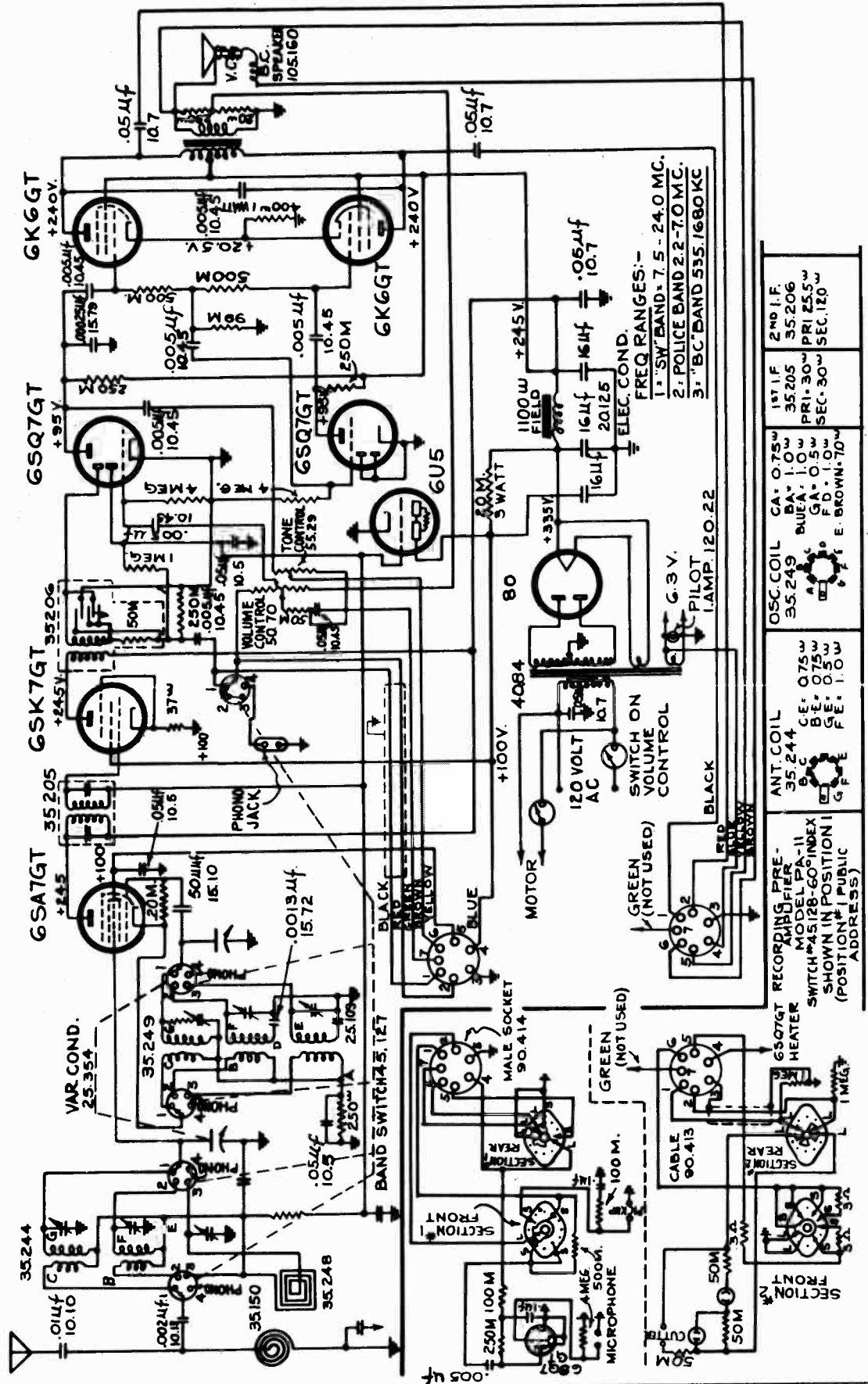
CAUTION: When pilot lamp burns out, replace at once.



RADIO WIRE TELEVISION

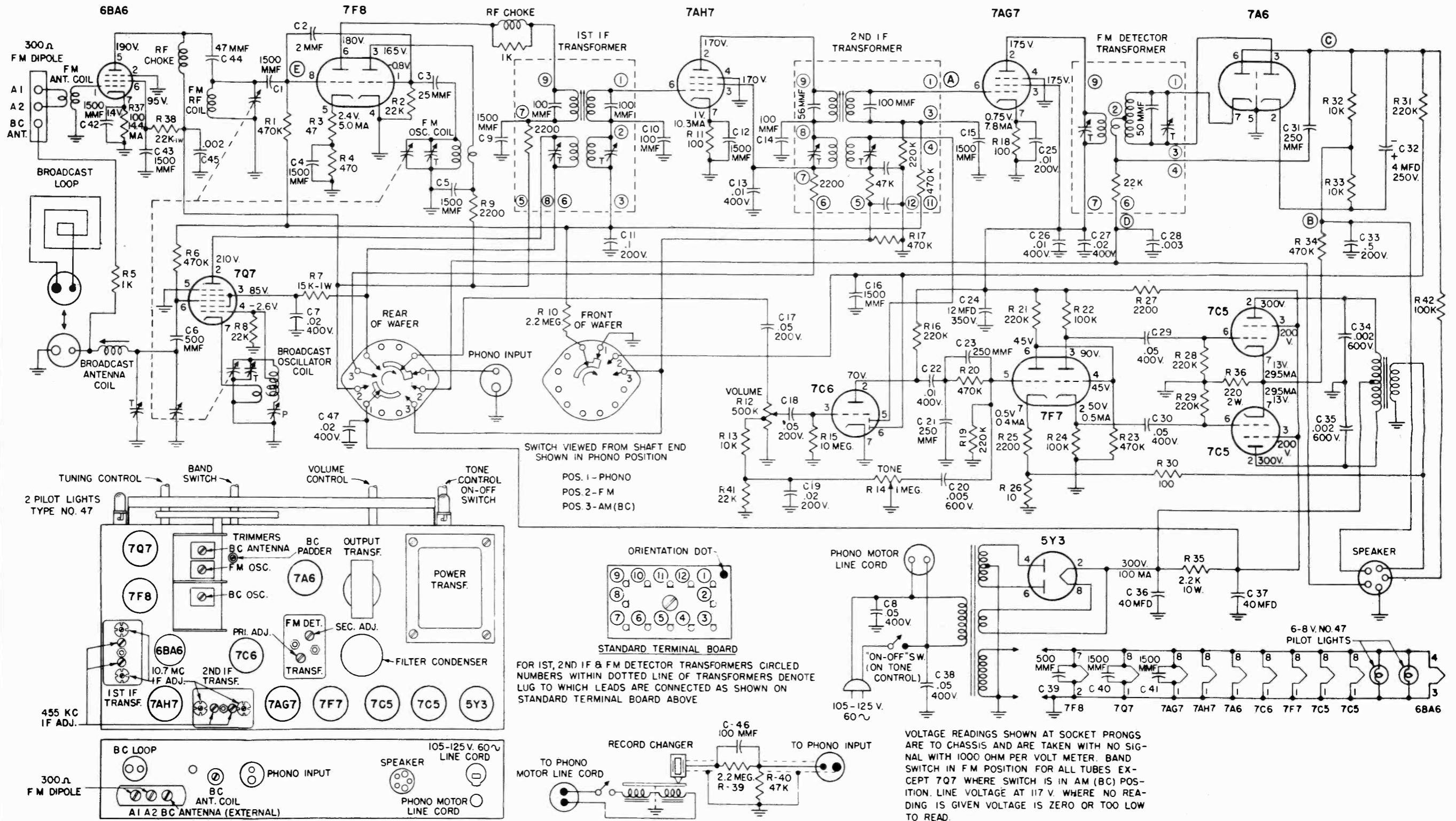
MODEL JS-174

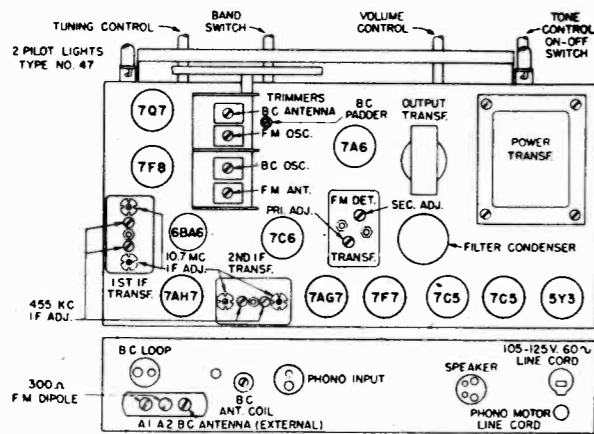




ANT. COIL 35.244	OSC. COIL 35.249	1ST I.F. 35.205	2ND I.F. 35.206
CE: 0.75w BE: 0.5w FE: 1.0	CA: 0.75w BA: 1.0w GA: 0.5w FD: 1.0w E: BROWN-70w	35.205 PRI: 30w SEC: 30w	35.206 PRI: 25.5w SEC: 12.0w
REC. PRE-AMPLIFIER MODEL JS-176 INDEX SWITCH IN POSITION I (POSITION II PUBLIC ADDRESS)			

RADIO WIRE TELEVISION





Tube and Trimmer Locations.

ALIGNMENT PROCEDURE FOR A.M.:

Set band switch to AM. Connect output meter across voice coil. Turn Volume Control on full volume.

1. Connect generator to tuning condenser stator (BC Antenna) in series with .01 mfd.; tune generator to 455 Kc.; tune radio to quiet point on high frequency end of dial, and adjust 1st and 2nd IF transformers (455 Kc.) for maximum peak output.

2. Connect generator to antenna terminal in series with 200 mmf. Turn tuning control to extreme full mesh position of tuning condenser. Set pointer to line located just below 55 calibration on Best. Band. Tune receiver to 60 on dial; tune generator to 600 Kc. Adjust BC padder, BC Ant. Coil Inductance (1/2 screw on rear of chassis) for maximum output.

3. Tune receiver to 160 on dial; tune generator to 1600 Kc. Adjust BC. Osc. and BC. Ant. trimmers for maximum output. Repeat 2 and 3 for best alignment.

ALIGNMENT PROCEDURE FOR F.M.:

Note: Points A, B, C, D, E, and F, are noted on circuit diagram.

Only a highly skilled technician with the correct equipment can properly align this receiver.

1. Set Band Switch to FM.
2. Connect vacuum tube voltmeter (VTVM) across points B and C.
3. Connect 10.7 Mc. signal generator through .01 mfd. condenser to point A and ground.
4. Adjust primary of FM Detector Transformer for maximum VTVM reading.
5. Connect VTVM across points B and D
6. Adjust secondary of FM Detector Transformer for zero VTVM reading.

7. Connect 10.7 Mc. Signal Generator to point F and ground.
8. Connect VTVM across points B and C.

9. Rotate 10.7 Mc. adjustment screw of 2nd IF Transformer Secondary maximum number of turns counterclockwise.

10. Adjust primary of 2nd IF Transformer for maximum VTVM reading. Decrease signal generator output as IF transformers are adjusted to keep VTVM reading between 2 and 3 volts.

11. Adjust secondary of 2nd IF transformer, keeping reading between 2 and 3 volts.

12. Connect 10.7 Mc generator to point E and ground. Rotate 10.7 Mc adjustment screw of 1st IF Transformer Secondary maximum number of turns counter clockwise. Adjust primary of 1st IF Transformer for maximum VTVM reading, decreasing signal generator output to keep VTVM reading between 2 and 3 volts.

13. Adjust secondary of 1st IF Transformer for maximum VTVM reading, keeping the voltage between 2 and 3.

DO NOT READJUST IF TRANSFORMERS AGAIN.

14. Connect 106 Mc. Signal Generator to FM antenna terminals. If generator impedance is low, put one 150-ohm carbon resistor in series with each of the generator leads. Tune receiver dial to 106 Mc.

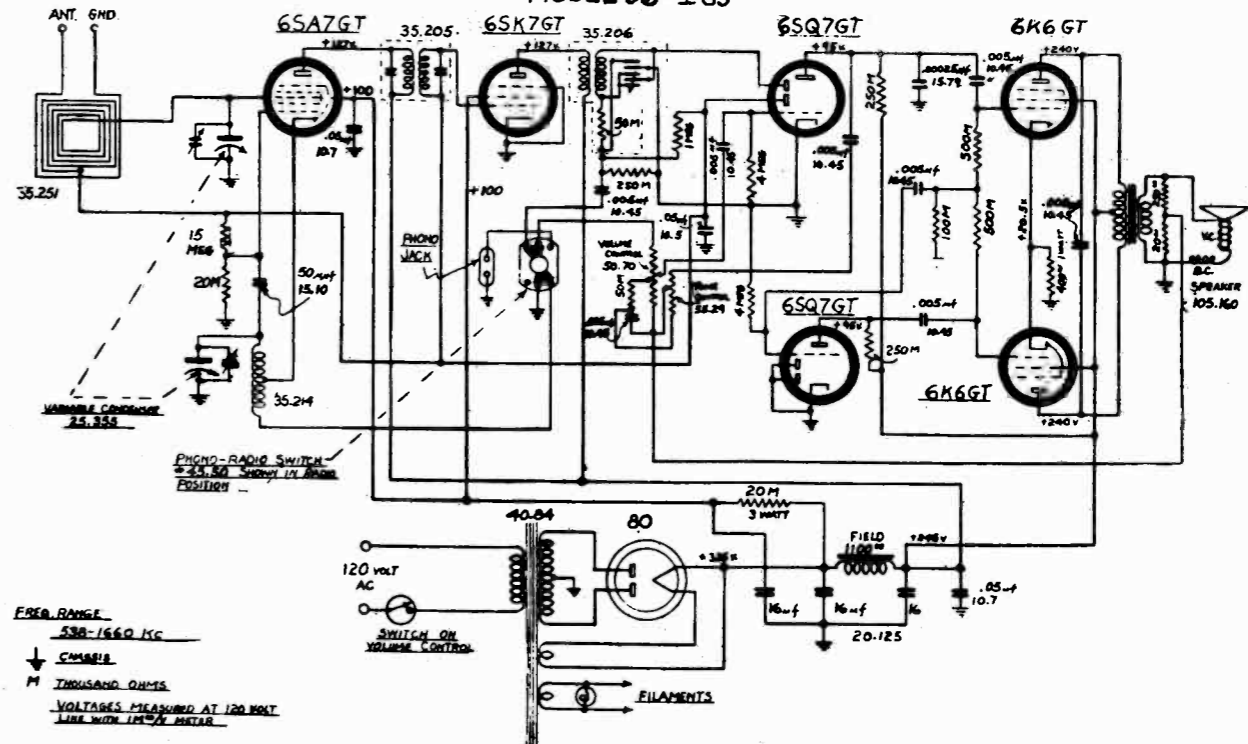
15. Adjust FM Oscillator Trimmer for maximum VTVM reading.

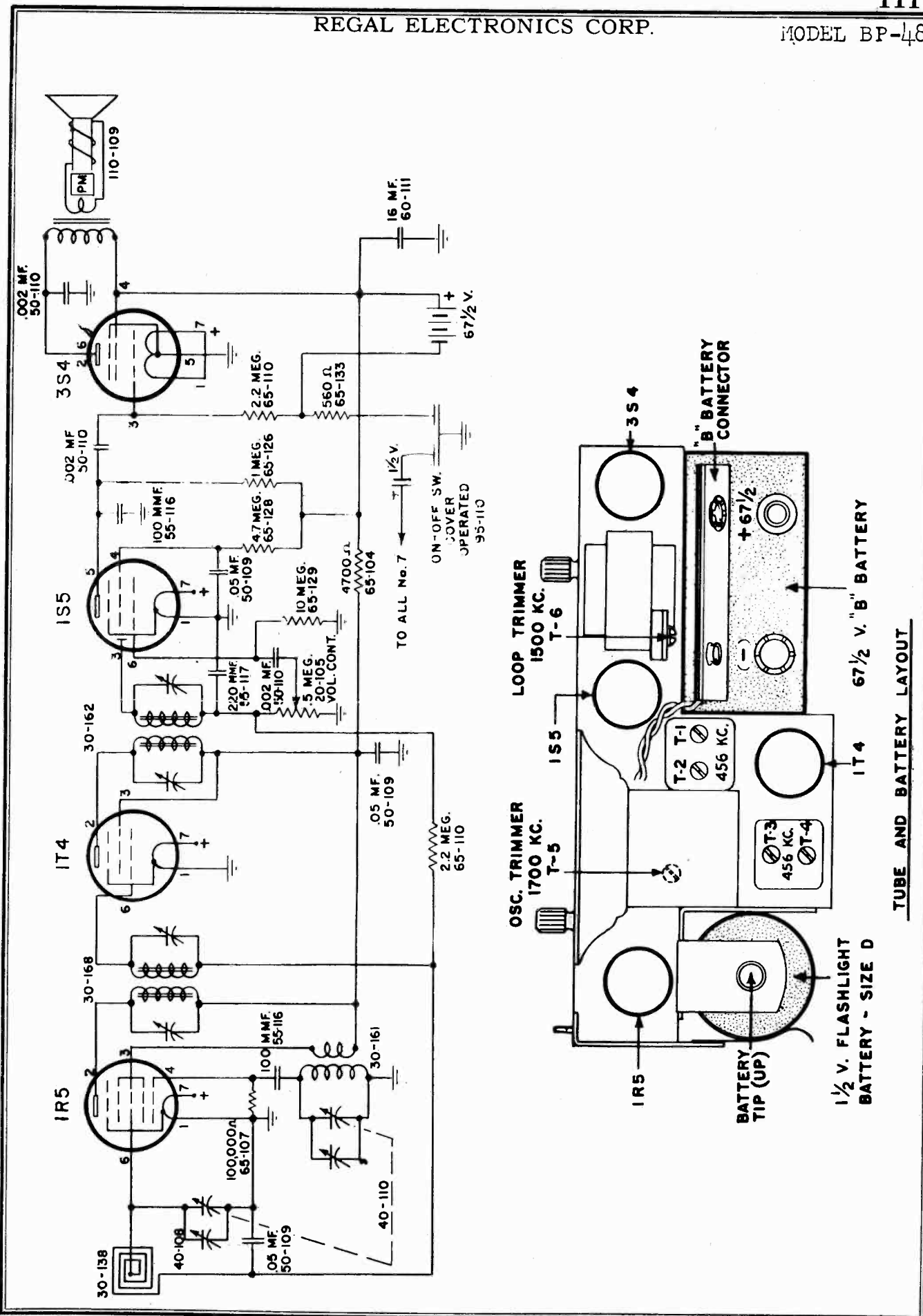
16. Adjust FM Antenna Trimmer for maximum VTVM reading.

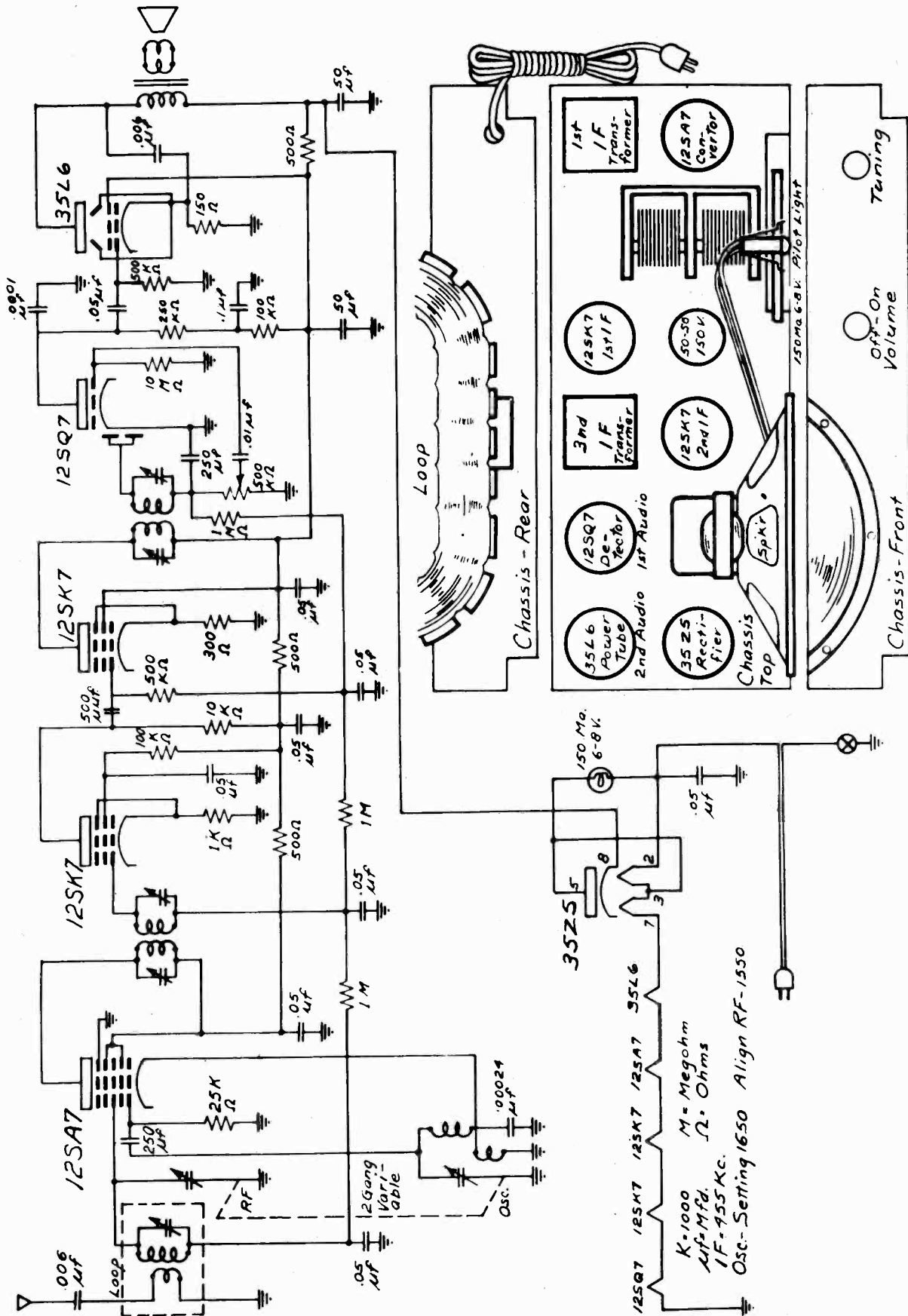
MODELS M70, M71 PARTS LIST:

- | | | |
|--------------------------|---|--|
| C 1—1500 mmf., ±300 mmf. | C36—40 mfd., 400V. | R23—470K, 1/4W., 20%. |
| C 2—2 mmf., 20% | C37—40 mfd., 400V. | R24—100K, 1/4W., 20%. |
| C 3—25 mmf., 10% | C38—.05 mfd., 400V. | R25—2200 ohm, 1/4W., 20%. |
| C 4—1500 mmf., ±300 mmf. | C39—500 mfd., ±100 mfd. | R26—10 ohm, 1/4W., 20%. |
| C 5—1500 mmf., ±300 mmf. | C40—1500 mmf., ±300 mmf. | R27—2200 ohm, 1/4W., 20%. |
| C 6—500 mmf., 20%. | C41—1500 mmf., ±300 mmf. | R28—220K, 1/4W., 20%. |
| C 7—.02 mfd., 400V. | C42—1500 mmf. ±300 mmf. | R29—220K, 1/4W., 20%. |
| C 8—1500 mmf., ±300 mmf. | C43—1500 mmf. ±300 mmf. | R30—100 ohm, 1/4W., 20%. |
| C 9—1500 mmf., ±300 mmf. | C44—47 mfd., 10%. | R31—220K, 1/4W., 20%. |
| C10—100 mmf., 20% | C45—1500 mfd. ±300 mmf. | R32—10K, 1/4W., 20%. |
| C11—.1 mfd., 200V. | C46—100 mmf. 20%. | R33—10K, 1/4W., 20%. |
| C12—1500 mmf., ±300 mmf. | C47—.02 mfd., 400V. | R34—470K. |
| C13—.01 mfd., 400V. | R 1—470K, 1/4W., 20%. | R35—2200Ω wirewound 10W 10%. |
| C14—100 mmf., 20%. | R 2—22K, 1/4W., 20%. | R36—220Ω 2W 20%. |
| C15—1500 mmf., ±300 mmf. | R 3—47 ohm, 1/4W., 20%. | R37—100Ω 1/4W 20%. |
| C16—1500 mmf., ±300 mmf. | R 4—470 ohm, 1/4W., 20%. | R38—22K 1W 20%. |
| C17—.05 mfd., 200V. | R 5—1K, 1/4W., 20%. | R39—1.2 meg. 1/4W 20%. |
| C18—.05 mfd., 200V. | R 6—470K, 1/4W., 20%. | R40—47K 1/4W 20%. |
| C19—.02 mfd., 200V. | R 7—15K, 1W., 20%. | AM-FM I.F. Input Transformer (*ZC2.208) |
| C20—.005 mfd., 600V. | R 8—22K, 1/4W., 20%. | AM-FM I.F. Output Transformer (*ZC2.214) |
| C21—250 mmf., 20%. | R 9—2200 ohm, 1/4W., 20%. | FM Ratio Det. Transformer (*ZC2.209) |
| C22—.01 mfd., 400V. | R10—2.2 meg., 1/4W., 20%. | RF Choke (*LA2.210). |
| C23—250 mmf., 20%. | R11—100 ohm, 1/4W., 20%. | FM Antenna Coil—*LA-2.241. |
| C24—12 mfd., 350V. | R12—500K, Variable Volume Control, tapped at 50K. | RF Plate choke—*LA-2.242. |
| C25—.01 mfd., 200V. | R13—10K, 1/4W., 20%. | FM-RF Coil—*LA-2.243. |
| C26—.01 mfd., 400V. | R14—1 meg. variable tone control w/s PST. | FM osc. coil—*LA-2.222. |
| C27—.02 mfd., 400V. | R15—10 meg., 1/4W., 20%. | Best. Loop. |
| C28—.003 mfd., 20%. | R16—220K, 1/4W., 20%. | Best. Antenna coil—*LA-13.997. |
| C29—.05 mfd., 400V. | R17—470K, 1/4W., 20%. | Best. Osc. coil—*LA-2.221. |
| C30—.05 mfd., 400V. | R18—100 ohm, 1/4W., 20%. | FM Dipole. |
| C31—250 mmf., 20%. | R19—220K, 1/4W., 20%. | Power transformer—*TA-18.043. |
| C32—4 mfd., 250V. | R20—470K, 1/4W., 20%. | Audio output transformer—*ZA-15.019. |
| C33—.5 mfd., 200V. | R21—220K, 1/4W., 20%. | |
| C34—.002 mfd., 600V. | R22—100K, 1/4W., 20%. | |
| C35—.002 mfd., 600V. | | |

MODEL JS-183

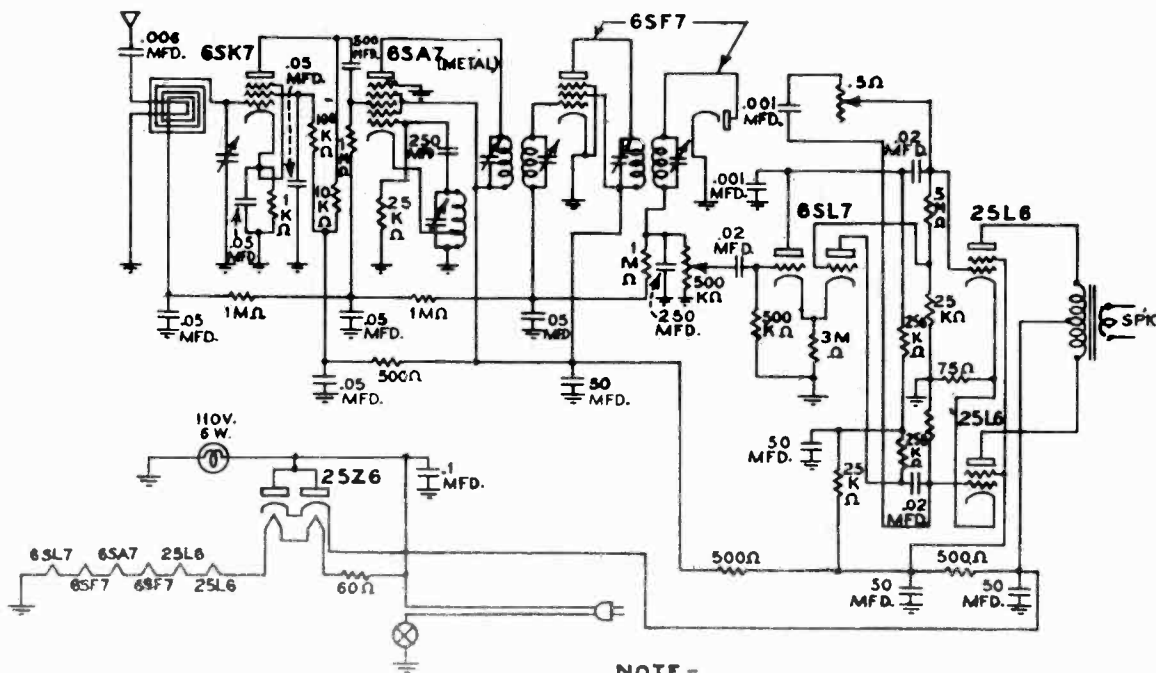




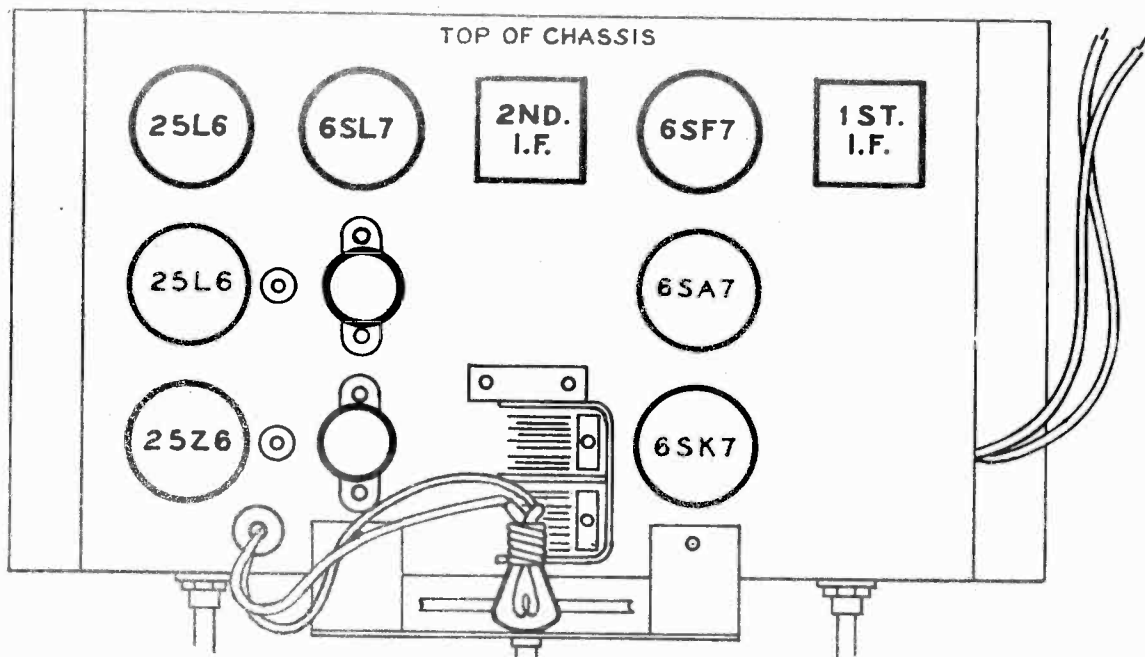


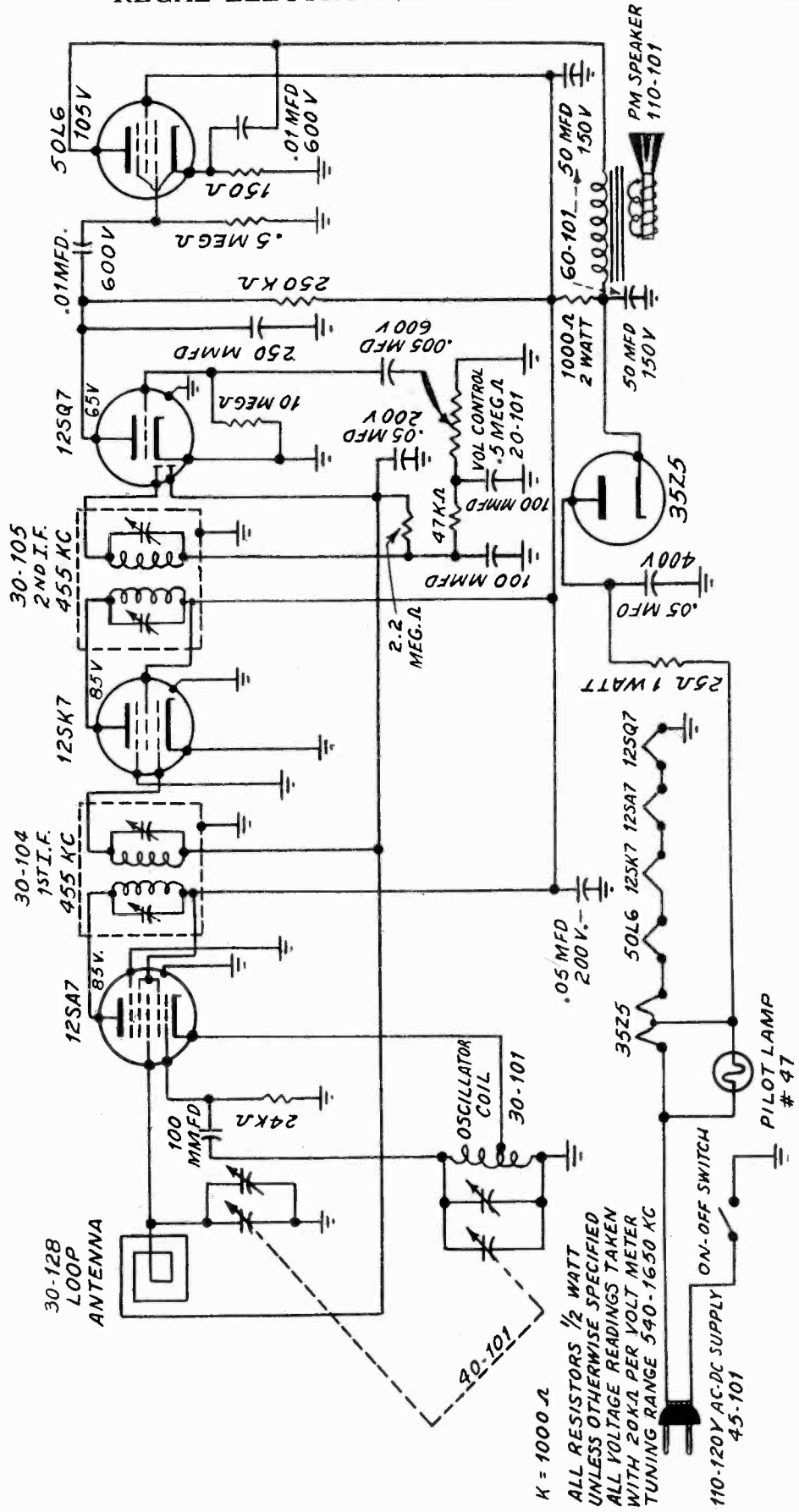
MODEL L-47

REGAL ELECTRONICS CORP



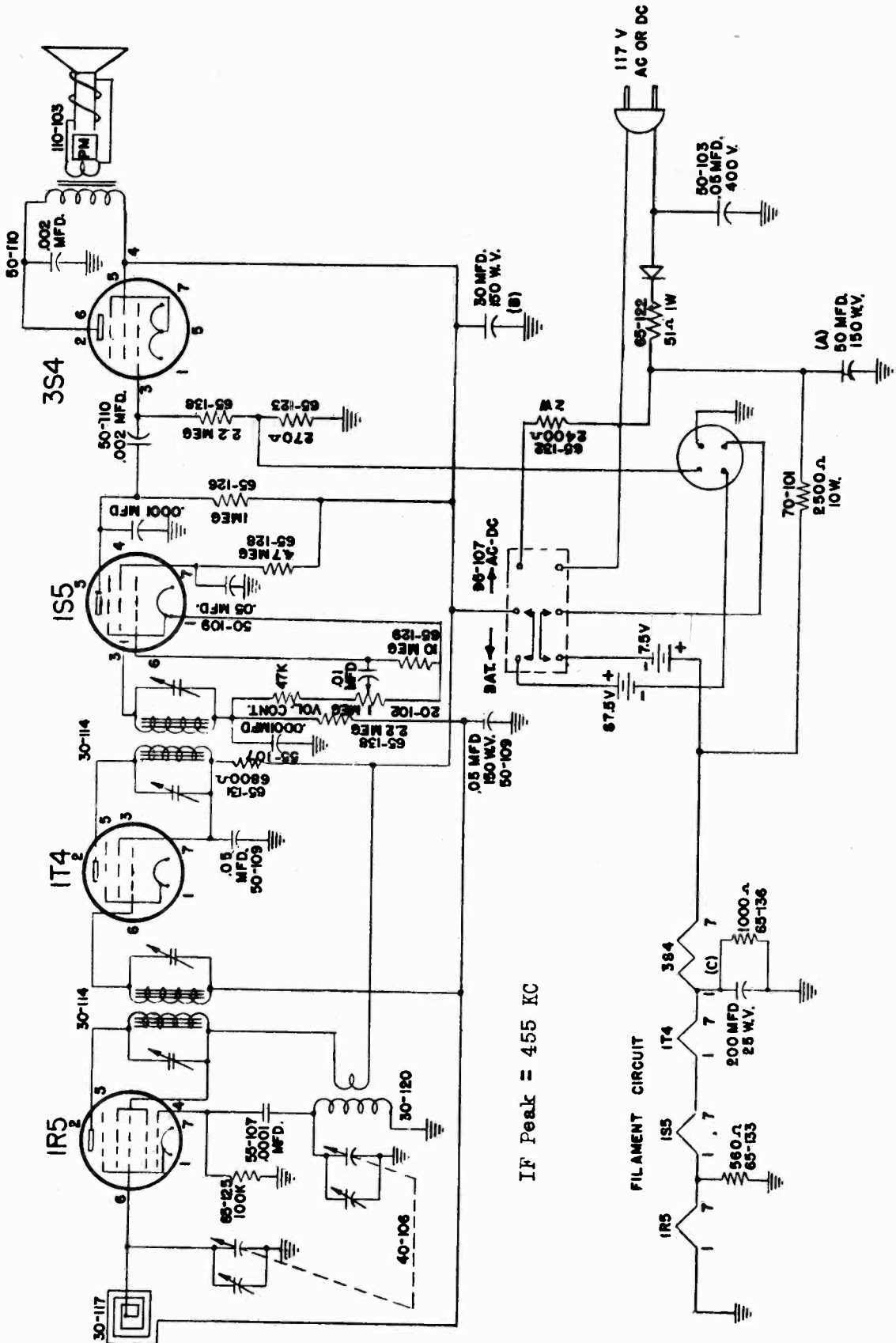
NOTE -
 1. - I.F. - 455 Kc.
 2. - OSC. SET 1650 Kc.
 3. - R.F. - ALIGN 1550 Kc.



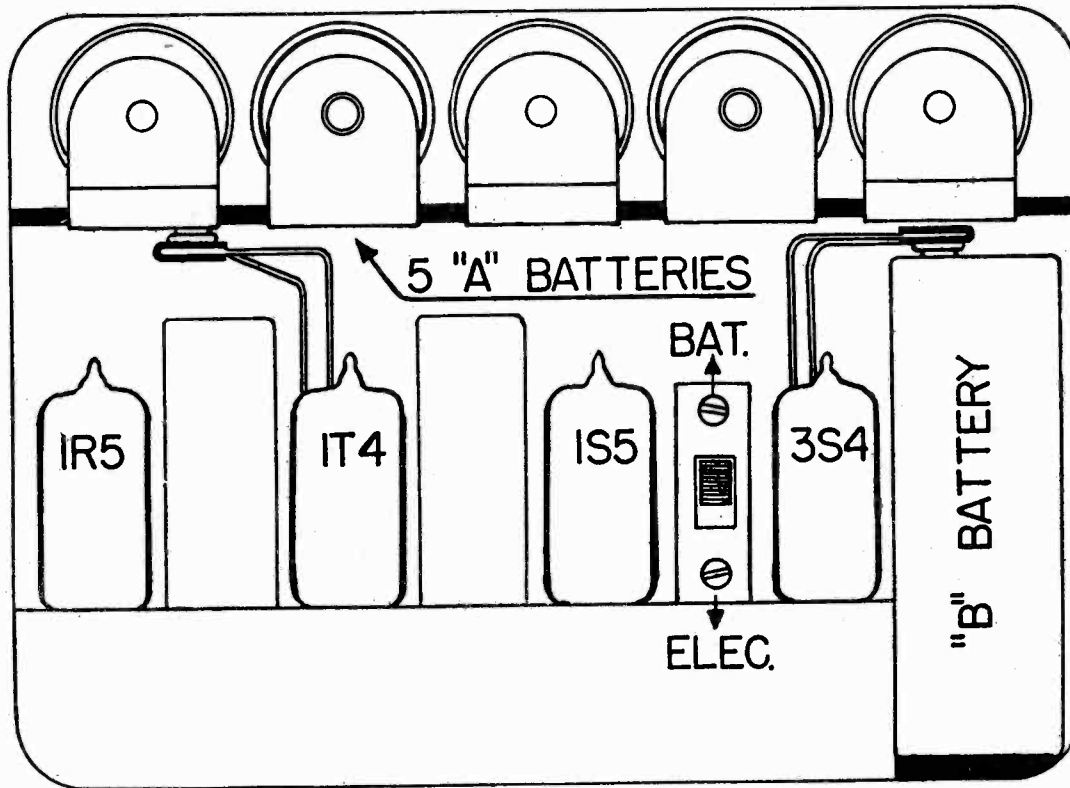


K = 1000 Ω
ALL RESISTORS 1/2 WATT
UNLESS OTHERWISE SPECIFIED
ALL VOLTAGE READINGS TAKEN
WITH 20KΩ PER VOLT METER
TUNING RANGE 540-1650 KC

110-120V AC-DC SUPPLY 45-101
ON-OFF SWITCH
PILOT LAMP # 47



IF Peak = 455 KC



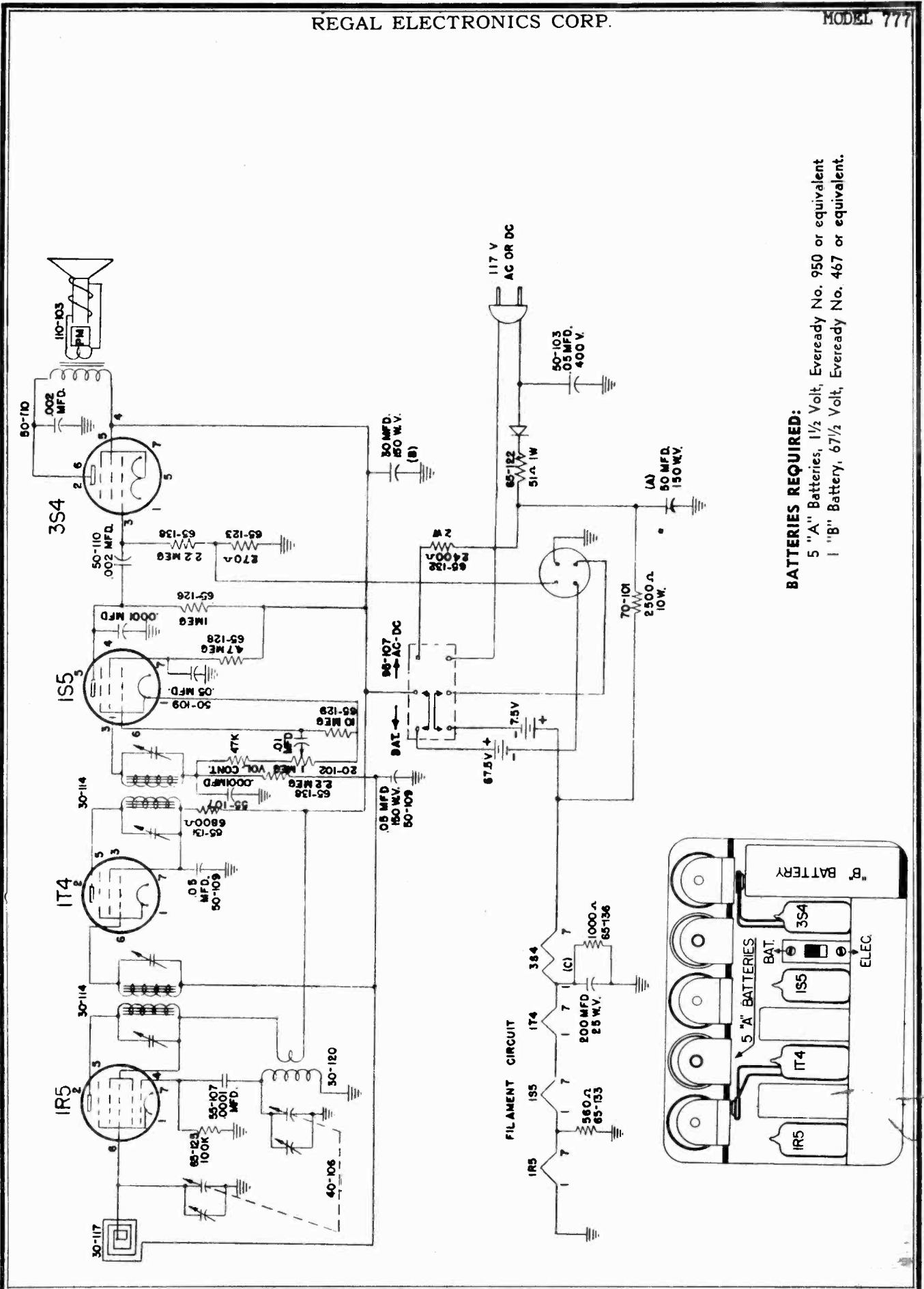
REMOVAL OF SET

First remove chassis from its present case by first removing "B" batteries and also "A" battery tray. Remove 2 screws on baffle inside case. Remove screw from bottom of cabinet. Carefully slide out chassis. Take the new case and with chassis outside the case note that one of the wires from the Regalloop in front cover is color coded. Solder this wire to the lug on top of variable condenser, right hand side looking at it from rear. This is the oscillator section. The remaining wire from the Regalloop should be soldered to the lug on the terminal strip mounted on the variable condenser mounting bracket.

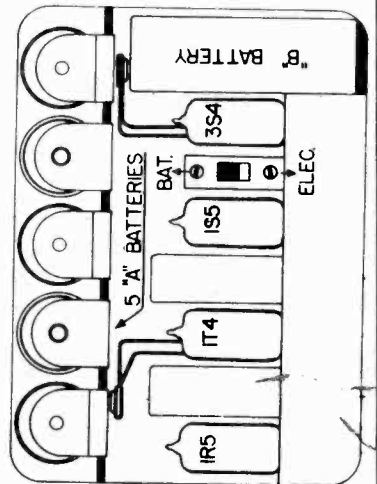
ALIGNMENT OF RECEIVER TO MATCH REGALOOP

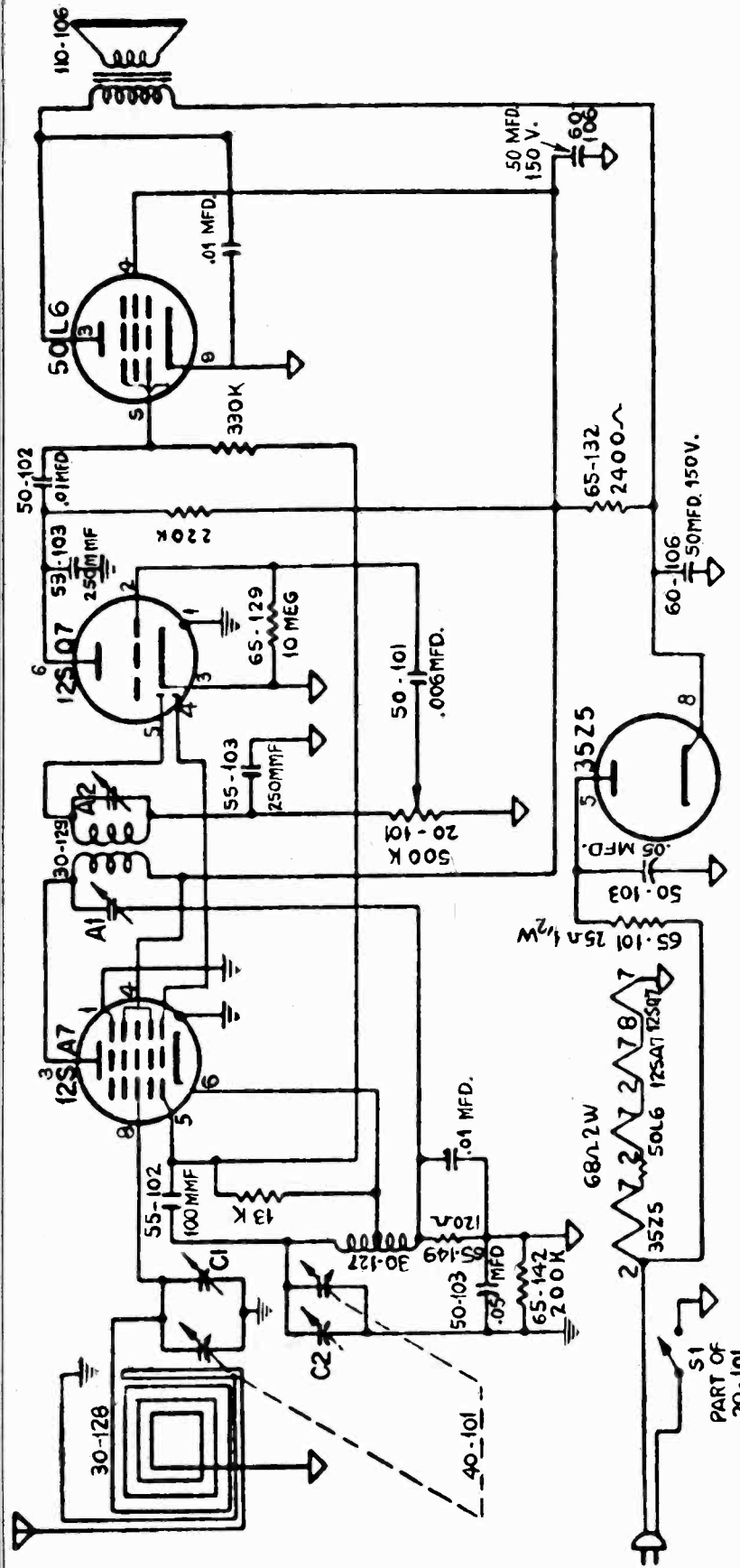
Use a signal generator and output meter. Connect output meter to voice coil leads on speaker. Make a loop consisting on one or two turns of wire and connect ends to signal generator, and place "loop" near enough to the Regalloop (located in front cover) to effect a signal transfer. Set signal generator to 1650 KC. Open variable condenser all the way so that rotor plates are entirely out of stator plate assembly. Use a non-metallic screw driver and adjust oscillator trimmer for maximum output. Now set signal generator to 1500 KC—tune receiver to 1500 KC and adjust the remaining R.F. trimmer for maximum output.

Your chassis is now tuned to the Regalloop in the new case. Place the chassis back in the case and install batteries.



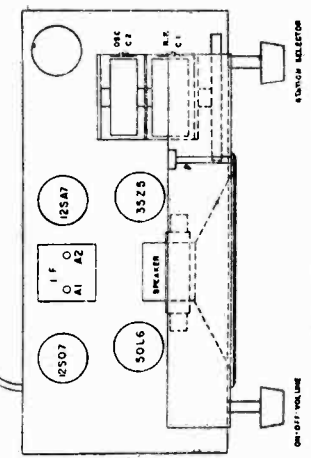
BATTERIES REQUIRED:
5 "A" Batteries, 1 1/2 Volt, Eveready No. 950 or equivalent
1 "B" Battery, 6 7/8 Volt, Eveready No. 467 or equivalent.





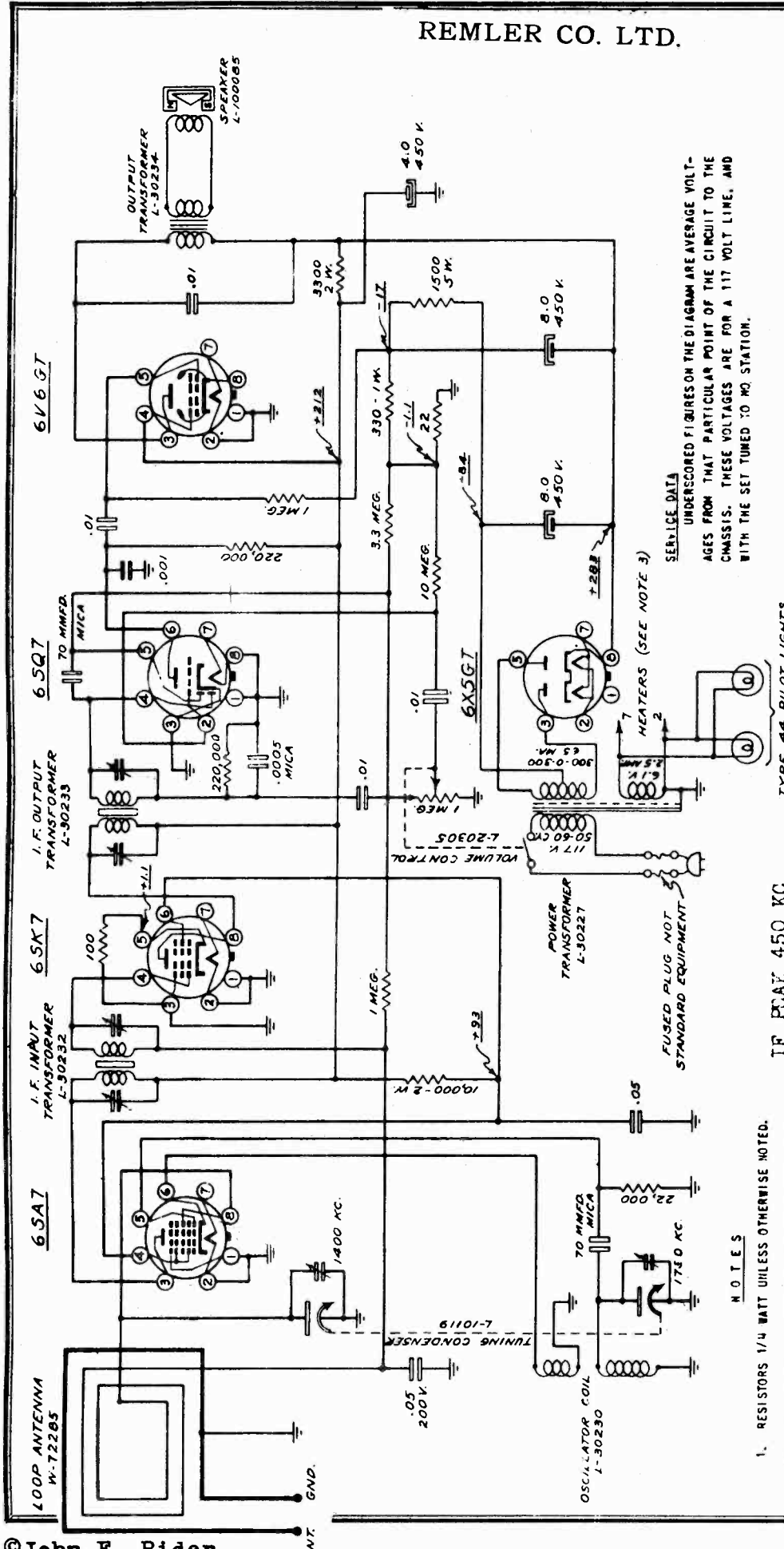
⏏ DENOTES CHASSIS GROUND

B



The Model 1107 is a 4 tube, 1 Band super-heterodyne with a built in Regaloop Antenna. The tuning range of the Broadcast frequency is 540 to 1650 kilocycles or 560 to 182 meters. This receiver operates on 105-125 volts, 50-60 cycles alternating current or on 105-125 volts direct current.

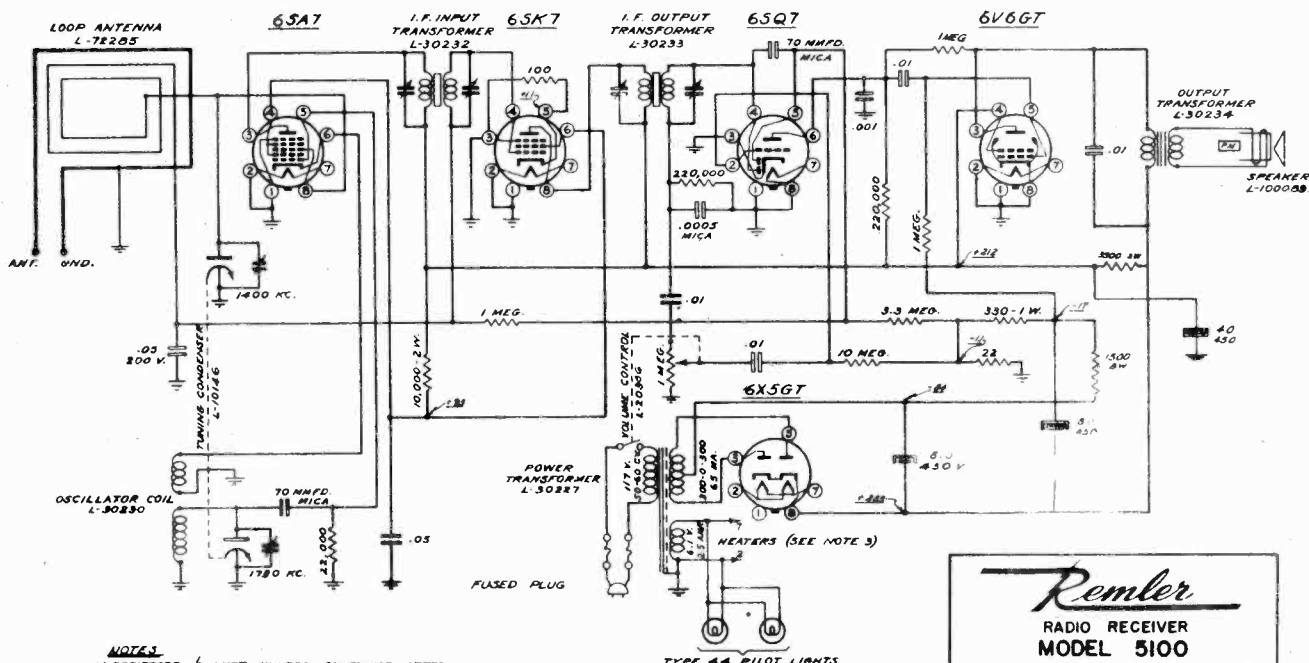
REMLER CO. LTD.



SERVICE DATA
 UNDERSCORED FIGURES ON THE DIAGRAM ARE AVERAGE VOLTAGES FROM THAT PARTICULAR POINT OF THE CIRCUIT TO THE CHASSIS. THESE VOLTAGES ARE FOR A 117 VOLT LINE, AND WITH THE SET TUNED TO NO. STATION.
 I.F. PLAY: 450 KC
 THE INTERMEDIATE FREQUENCY IS 450 KC. OTHER ALIGNMENT FREQUENCIES ARE INDICATED ON THE DIAGRAM. THE FREQUENCY RANGE OF THE RADIO IS 540-1730 KILOCYCLES.
 A FUSED PLUG IS ATTACHED TO THE POWER CORD OF SOME SETS. FUSES MAY BE REMOVED BY INSERTING A SMALL DIAMETER INSTRUMENT (PENCIL, STIFF WIRE, ETC.) IN THE PRONG END OF THE PLUG. IN NO CASE SHOULD A FUSE OF GREATER CAPACITY THAN 3 AMPERE BE USED. LOWER CAPACITY FUSES SUCH AS 1 AMPERE MAY BE USED, BUT LOWER CAPACITY TYPES MAY BURN OUT MORE FREQUENTLY ON CURRENT SURGES NORMALLY ENCOUNTERED WHEN THE SET IS TURNED ON.

- NOTES**
1. RESISTORS 1/4 WATT UNLESS OTHERWISE NOTED.
 2. CONDENSERS 500 VOLT UNLESS OTHERWISE NOTED.
 3. HEATER CONNECTIONS OF TUBE 65Q7 ARE B AND 7.

REMLER
 CO. LTD.
 MODEL MP5-5-3
 RADIO RECEIVER
 110-120 VOLTS 50-60 CYCLES
 50 WATTS



NOTES.
 1 RESISTORS $\frac{1}{2}$ WATT UNLESS OTHERWISE NOTED
 2 CAPACITORS 500 VOLT UNLESS OTHERWISE NOTED
 3 HEATER CONNECTIONS OF TUBE 6SQ7 ARE 6 AND 7

Remler
**RADIO RECEIVER
 MODEL 5100**
 110-120 VOLTS 50-60 CYCLES
 50 WATTS

INSTALLATION

RECEPTION OF LOCAL STATIONS IN THE MAJORITY OF LOCATIONS WILL BE ENTIRELY SATISFACTORY WITH THE BUILT-IN ANTENNA. WHERE GREATER DISTANCE IS REQUIRED OR WHERE RECEIVING CONDITIONS ARE NOT SATISFACTORY WITH THE BUILT-IN ANTENNA, AN OUTSIDE ANTENNA MAY BE USED. THIS OUTSIDE ANTENNA SHOULD BE FROM 50 TO 100 FEET IN LENGTH AND SHOULD BE CONNECTED TO THE TERMINAL MARKED "A", WHICH IS INSIDE OF THE BACK COVER. THIS ANTENNA SHOULD BE RUN IN AS STRAIGHT A LINE AS POSSIBLE AND BE KEPT CLEAR OF WIRE AND OTHER METAL OBJECTS. A GOOD GROUND CONNECTION TO A WATER PIPE IS ESSENTIAL FOR THE CLEAREST RECEPTION. THE GROUND WIRE SHOULD BE CONNECTED TO THE TERMINAL MARKED "B", WHICH IS ALSO INSIDE OF THE BACK COVER. THE BACK COVER MAY BE TAKEN OFF AFTER THE FOUR SCREWS IN THE CORNERS HAVE BEEN REMOVED.

CONTROLS

THE CONTROL ON THE LEFT SIDE OF THE CABINET IS THE

VOLUME CONTROL. AND ON-OFF SWITCH WHEN IN THE EXTREME LEFT POSITION. THE RIGHT HAND CONTROL IS THE STATION SELECTOR.

OPERATION

WITH THE LINE CORD CONNECTED, TURN THE VOLUME CONTROL ABOUT ONE-QUARTER TURN TO THE RIGHT AND ALLOW ONE-HALF MINUTE FOR THE TUBES TO PROPERLY HEAT. SELECT THE DESIRED STATION WITH THE TUNING CONTROL. FOR THE BEST REPRODUCTION, THE STATION SELECTOR MUST BE ADJUSTED TO THE CENTER OF THE RANGE ON THE DIAL WITHIN WHICH THE STATION IS HEARD AND THE VOLUME ADJUSTED WITH THE VOLUME CONTROL ONLY.

SERVICE DATA

UNDERScoreD FIGURES ON THE DIAGRAM ARE AVERAGE VOLTAGES FROM THAT PARTICULAR POINT OF THE CIRCUIT TO THE CHASSIS. THESE VOLTAGES ARE FOR A 117 VOLT LINE, AND WITH THE SET TUNED TO NO STATION.

THE INTERMEDIATE FREQUENCY IS 450 K.C. OTHER ALIGNMENT FREQUENCIES ARE INDICATED ON THE DIAGRAM. THE FREQUENCY RANGE OF THE RADIO IS 540-1730 KILOCYCLES.

A FUSED PLUG IS ATTACHED TO THE POWER CORD. FUSES MAY BE REMOVED BY INSERTING A SMALL DIAMETER INSTRUMENT (PENCIL, STIFF WIRE, ETC.) IN THE PRONG END OF THE PLUG. IN NO CASE SHOULD A FUSE OF GREATER CAPACITY THAN 3 AMPERE BE USED. LOWER-CAPACITY FUSES SUCH AS 1 AMPERE MAY BE USED, BUT LOWER-CAPACITY TYPES MAY BURN OUT MORE FREQUENTLY ON CURRENT SURGES NORMALLY ENCOUNTERED WHEN THE SET IS TURNED ON.

THE CHASSIS IS SECURED BY THE FOUR SCREWS WHICH ARE A PART OF THE FELT FEET. THE CHASSIS MAY BE REMOVED AFTER FIRST TAKING OFF THE BACK AND KNOBS. THE CARRYING HANDLE MUST BE RAISED AS FAR AS POSSIBLE IN ORDER THAT IT WILL CLEAR THE CHASSIS WHILE THE LATTER IS BEING REMOVED.

1. If a hum becomes evident after the radio has been operating about 30 minutes, and is more noticeable at low set volumes, it is probably due to loose laminations in the transformer.

To correct, allow the set to warm up for at least one hour, and then tighten the two screws which hold the laminations between the power transformer and caps.

2. The 4.0 mfd 450 v electrolytic condenser shown in the circuit diagram has been omitted in some sets. It should be added in all cases.

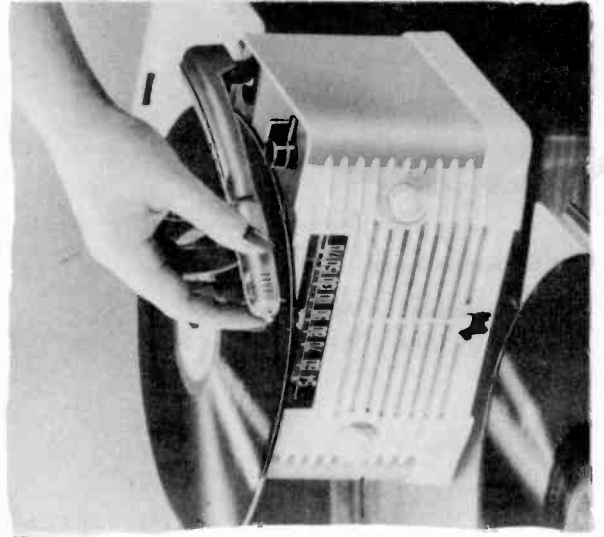
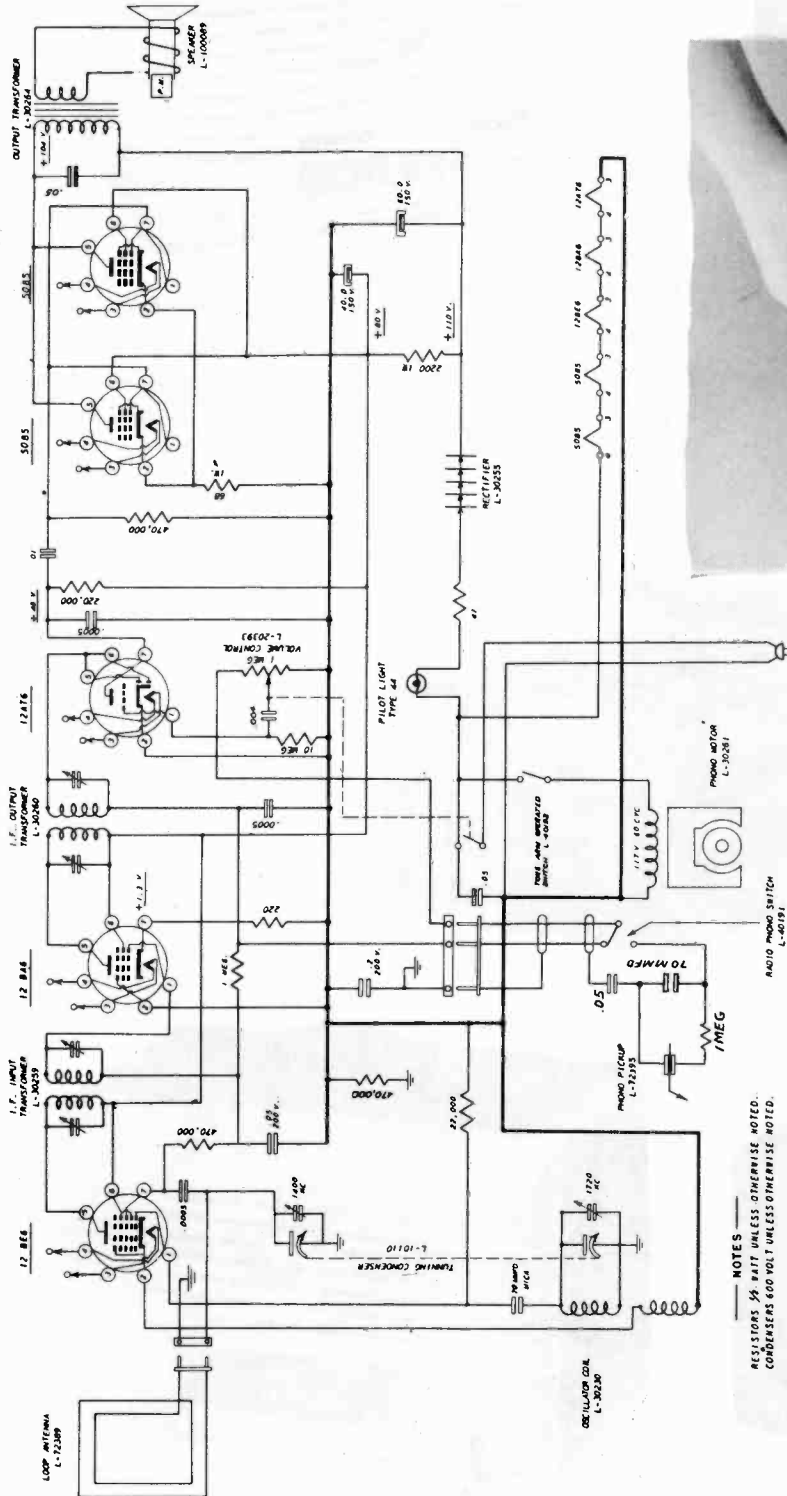
3. In receivers installed in locations where unusual conditions in the ac power supply cause hum, the first filter condenser can be changed from 8.0 mfd to 16 mfd.

4. The power transformer has a grounded shield winding between the primary and secondary. The shield winding ground lead is brought out between the laminations and the end-cap, either at the side or the bottom of the transformer. Frequently the ground lead does not make good contact because the laminations and the end-caps were painted before assembly of the transformer. This will cause static when the connection makes and breaks, and it also allows the power transformer to conduct more of the power-line static into the receiver circuit when the shield is not grounded.

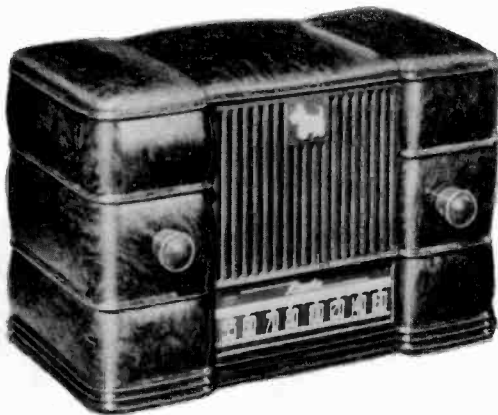
To identify this defect, tune the receiver to a point between stations and tap the power transformer firmly on top and sides. An ungrounded shield will produce noise when jarred.

The easiest and best way to correct this trouble is to make a positive ground of the transformer shield winding by soldering another wire to it which may then be soldered to the radio chassis.

5. Where the radio is used in locations where the line static is unusually bad, one or two .05 mfd 600 v condensers can be added, installed from both sides of the line to the chassis, or from one side of the line to chassis, or directly across the line. The method which gives best results will depend upon local line conditions, and will have to be determined by experimentation. If the method which gives best results is not effective when the line cord plug is reversed, be sure the radio owner is made aware of this condition and the line cord plug is marked so it can always be inserted with the correct polarity.



NOTES
RESISTORS 5% TOLERANCE UNLESS OTHERWISE NOTED.
CONDENSERS 400 VOLT UNLESS OTHERWISE NOTED.



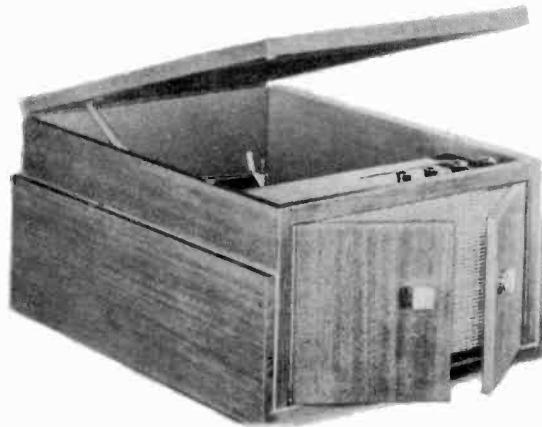
REMLER Scottie Junior

- # 5520 - De Luxe - Walnut
- # 5530 - De Luxe - White



REMLER Scottie Pup

- # 5500 - Walnut Plastic
- # 5505 - Ebony with White Grille and Knobs
- # 5510 - White Plastic
- # 5515 - Red with White Grille and Knobs
- # 5535 - Red with White Grille and Knobs



REMLER AUTOMATIC
Table Combination

- # 5310 M - Mahogany
- # 5310 BL - Blonde

Base and Record Cabinet

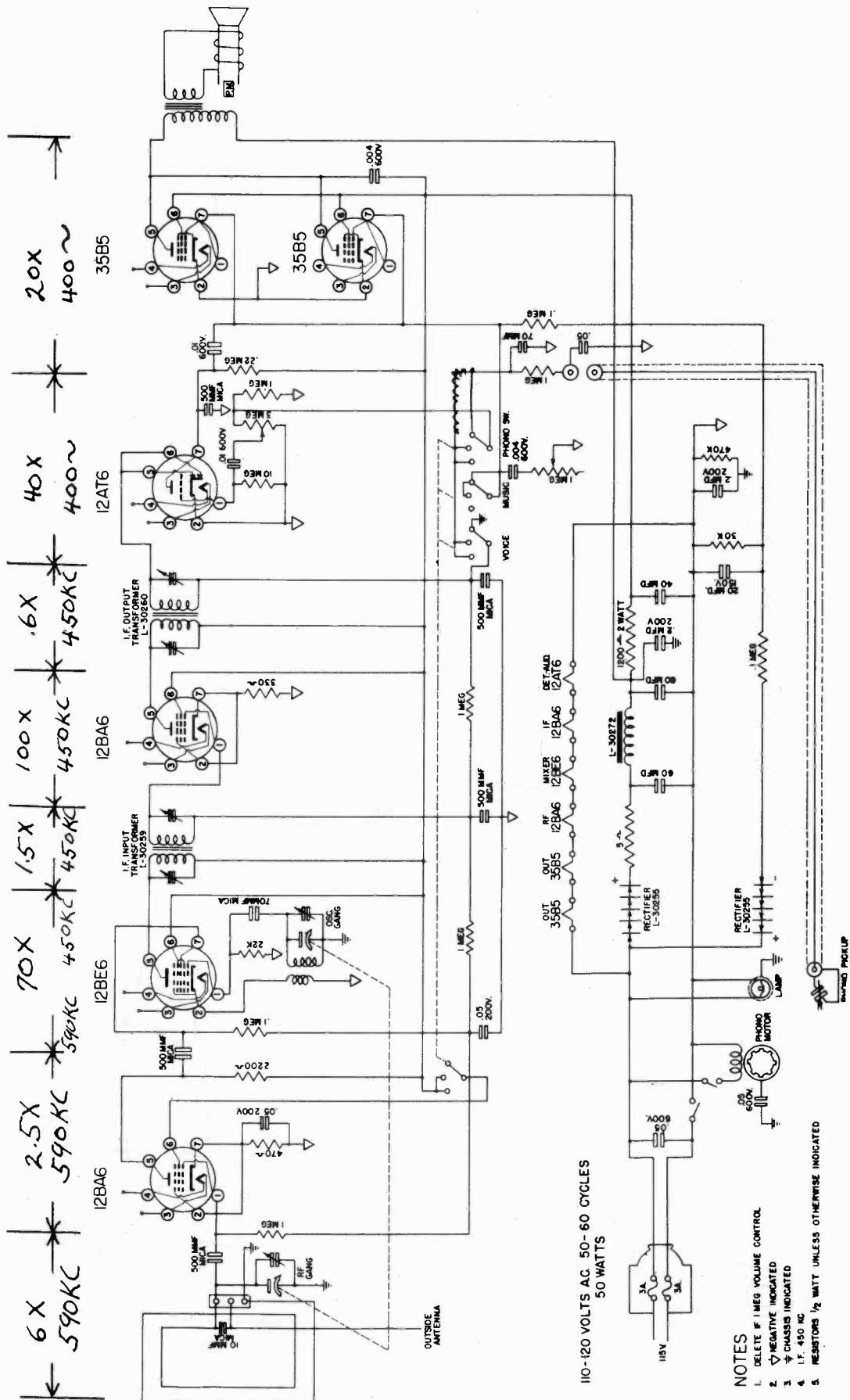
- # 110 - Mahogany
- # 111 - Blonde



5400 - Walnut with matching leatherette



5410 - White with brown leatherette

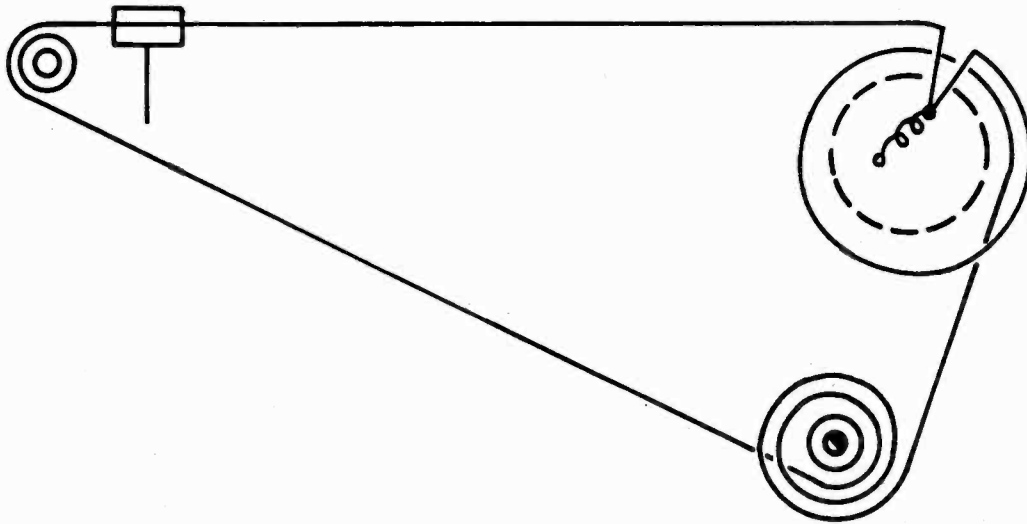


110-120 VOLTS AC. 50-60 CYCLES
50 WATTS

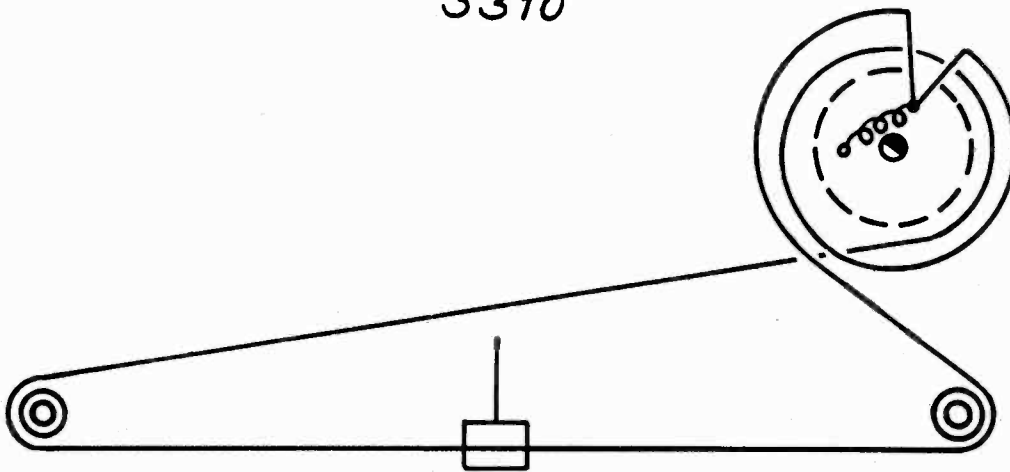
NOTES

- 1. DELETE IF 1 MEG VOLUME CONTROL
- 2. ∇ NEGATIVE INDICATED
- 3. \rightarrow CHASSIS INDICATED
- 4. I.F. 450 KC
- 5. RESISTORS $\frac{1}{2}$ WATT UNLESS OTHERWISE INDICATED

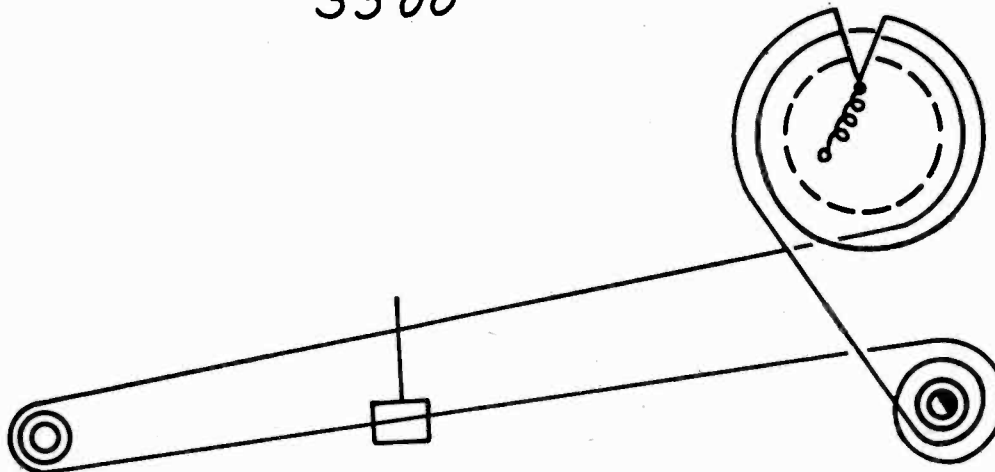
DIAL CORD DRIVES



5310



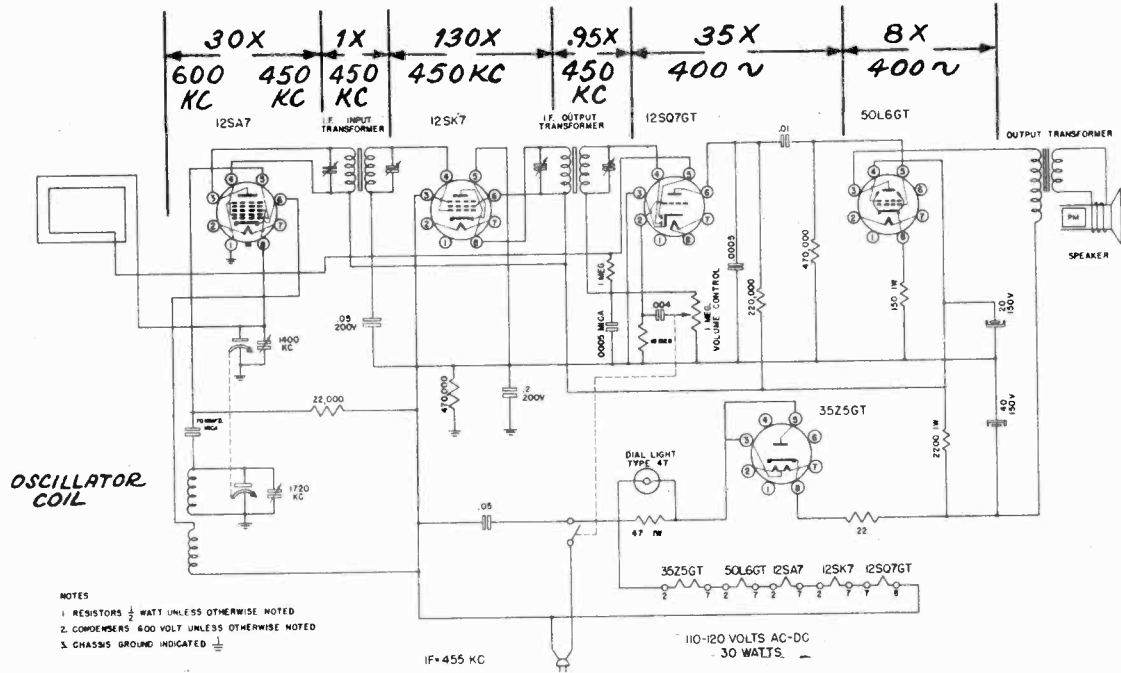
5500



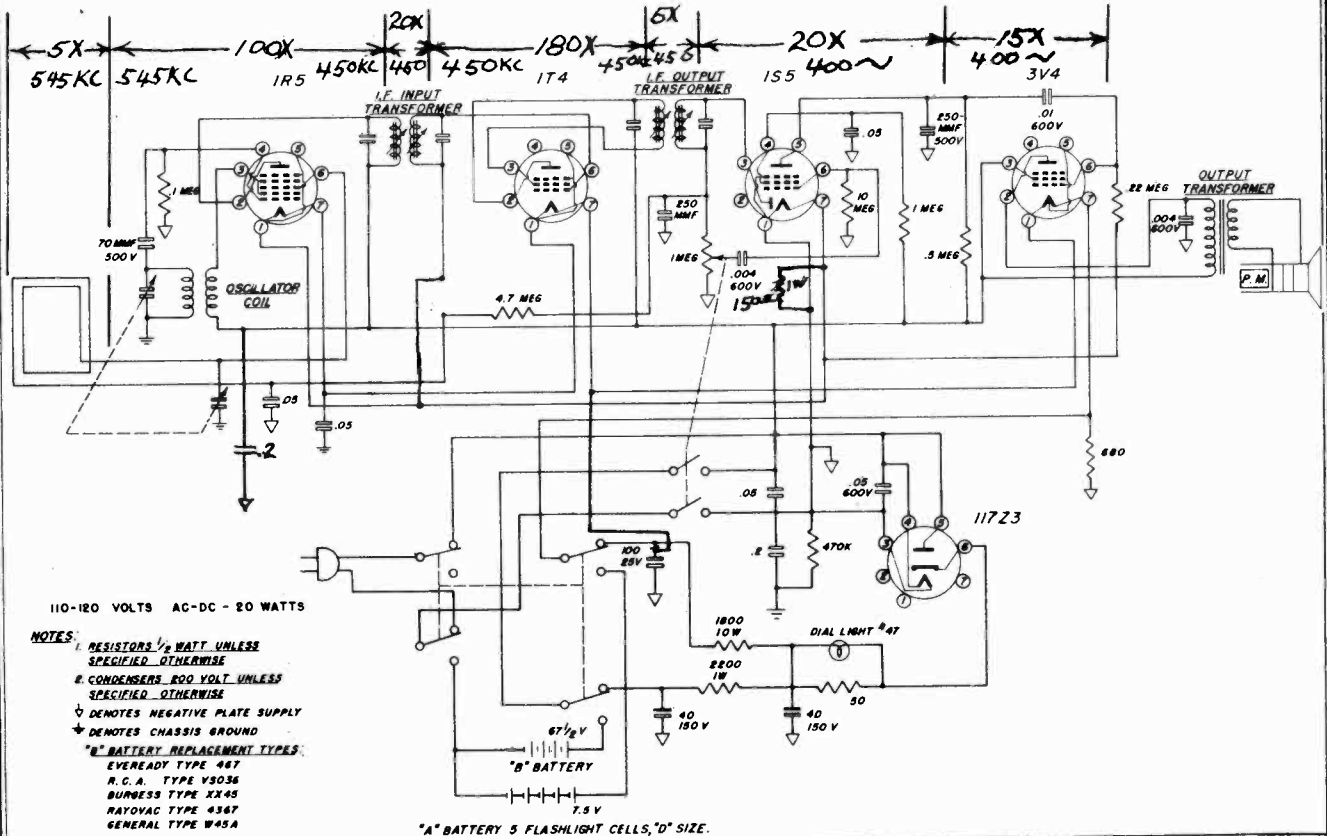
5400-5520-30-60-65

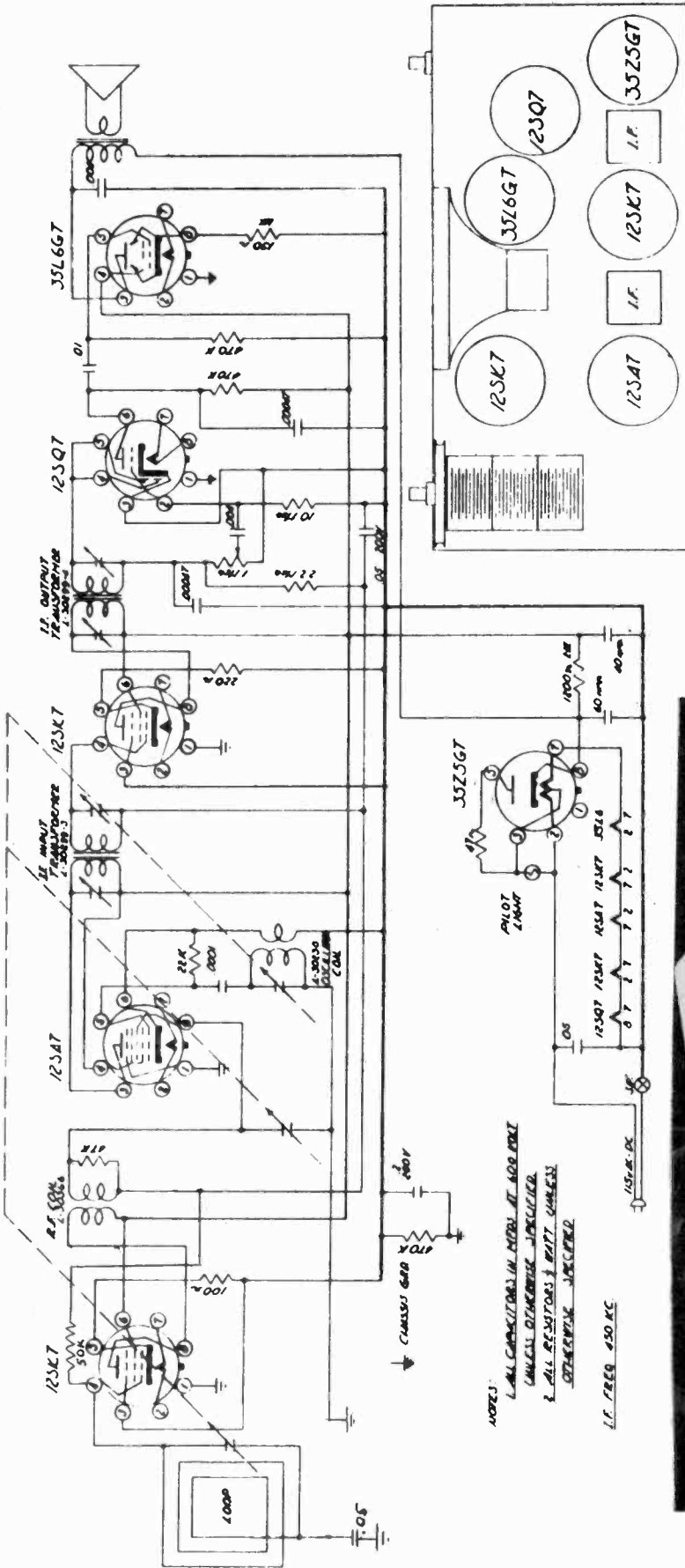
REMLER COMPANY LTD. MODELS 5500, 5505, 5510,
5515, 5520, 5530, 5535,
5560, 5565
MODELS 5400, 5410

MODELS 5500, 5505, 5510, 5515, 5520,
5530, 5535, 5560, 5565



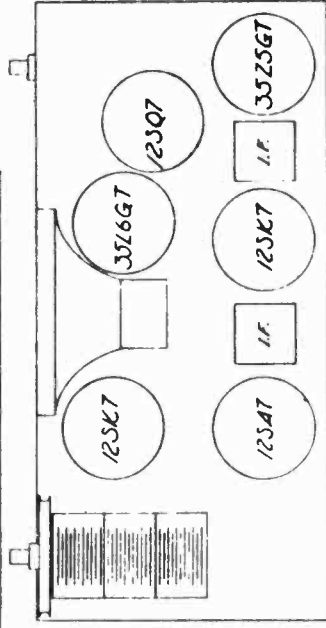
MODELS 5400, 5410





NOTES:
 1. ALL CONNECTIONS IN HERE AT 100 PERCENT UNLESS OTHERWISE SPECIFIED.
 2. ALL RESISTORS 1/2 WATT UNLESS OTHERWISE SPECIFIED.
 I.F. FREQ. 450 KC

TUBE LOCATION



110 - 120 VOLTS A.C.-D.C. 35 WATTS

