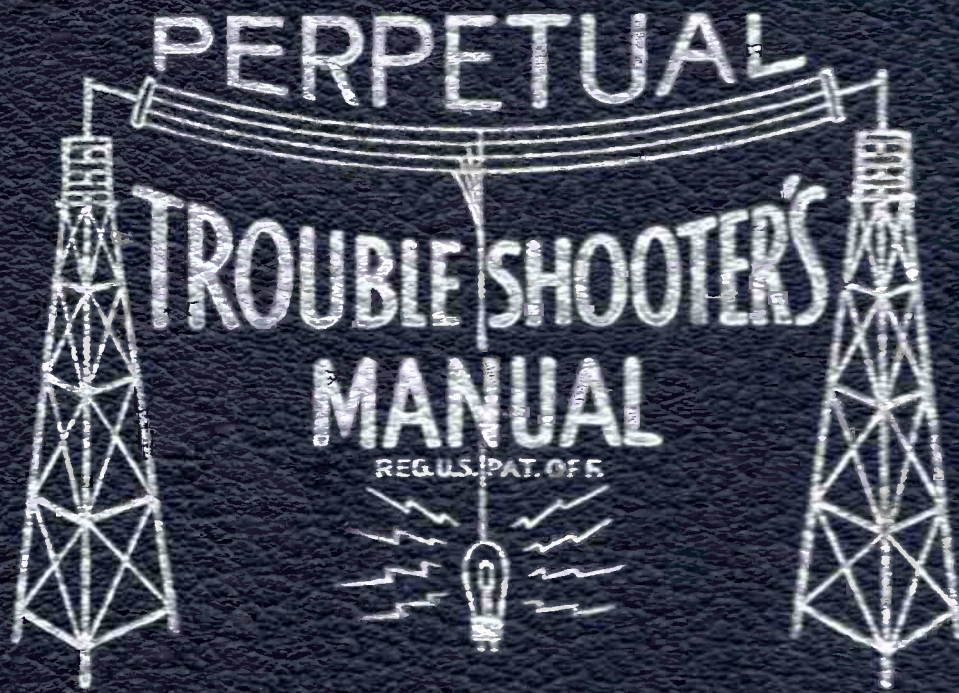
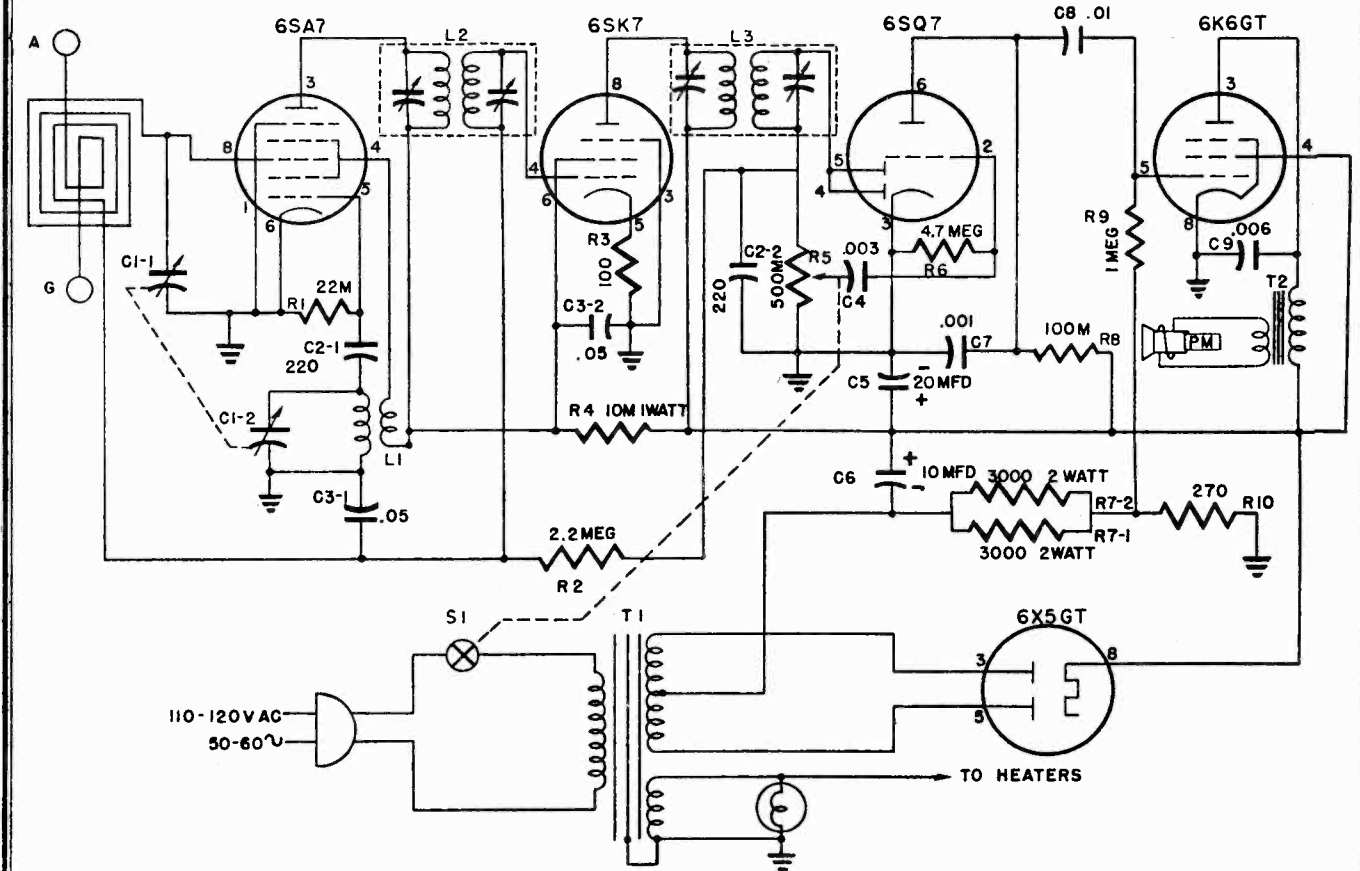


VOLUME XV



JOHN F. RIDER

PACKARD BELL CO.



ALIGNMENT PROCEDURE

Alignment procedure consists of the four steps outlined in the Alignment Procedure Chart. Test oscillator leads should be connected to the mixer grid and ground in series with an .01 Mfd. capacitor (dummy load) for the I. F. alignment (Step No. 1).

The alignment procedure outlined in steps 2 to 4 utilizes a standard test loop.* The test oscillator leads should be connected across this loop. The loop should be placed about two feet from the receiver loop in a vertical position.

Upon completion of the I. F. Alignment the variable condenser should be "Rocked" to gain assurance that the I. F.'s have not been aligned to the image frequency.

*NOTE: Hazeltine Test Loop #1150

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mfd Dummy Load	455 KC	550 KC	Trimmers A, B, C & D
2	Standard* Test Loop	1750 KC	1750 KC	Trimmer F to 1750 KC
3	Standard Test Loop*	1330 KC	1330 KC	Trimmer E Set Pointer to 1330 KC
4	Standard Test Loop*	570 KC	570 KC	Loop

REMARKS: *Hazeltine Test Loop #1150

Electrical Rating

Line Voltage . . . 110-120 Volts 50-60 cycle A.C.
Power Consumption . . . 32 watts

Tuning Frequency Range

550 to 1740 kc

Intermediate Frequency

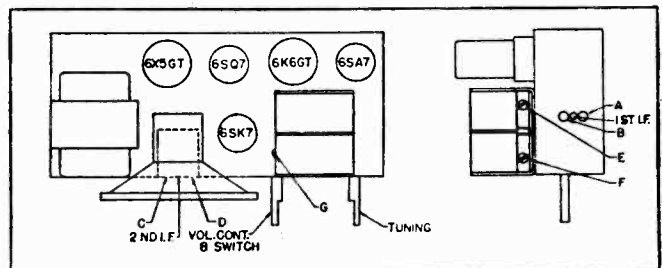
455 kc

Electrical Power Output

Maximum . . . 1.8 watts

Loudspeaker

Type . . . Permanent Magnet
Outside Cone Diameter . . . 4"
Voice Coil Impedance . . . 3.2 ohms at 400 cycles
Magnet Rating . . . 1.0 Oz. Alnico five



TRIMMER LOCATION

MODEL 5FP

PACKARD BELL CO.

SPECIAL SERVICE INFORMATION

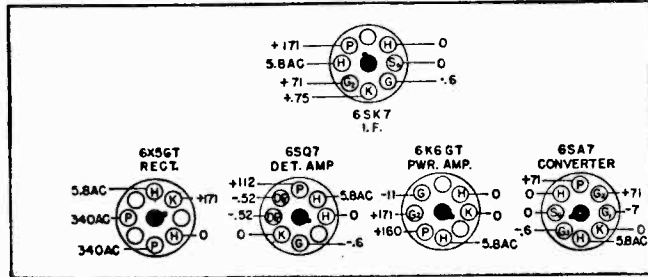
STAGE GAIN MEASUREMENTS

- Measurements taken with volume control fully advanced.
- Standard Output . . . 50 milliwatts Dummy Antenna . . . 220 mmf
- Converter gain . . . 80 X at 1000 KC
- Converter to 1st I. F. . . . 140 X at 455 KC
- 1st I. F. to 2nd Detector . . . 105 X at 455 KC
- Overall Audio Gain . . . 536 X at .5 watts at 400 cycles
- Oscillator Grid Voltage at 117 volts AC line voltage
- 1750 KC . . . 2.65 volts AC*
- 1330 KC . . . 2.1 volts AC*
- 750 KC . . . 1.84 volts AC*
- 550 KC . . . 1.72 volts AC*

*Measurements made with A.C. V.T.V.M.

Input loading above 10 megohms

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



SOCKET VOLTAGES

Tubes

Tube	Function
6X5-GT	Rectifier
6K6-GT	Power Amplifier
6SQ7	Detector Amplifier
6SK7	I. F. Amplifier
6SA7	Frequency Converter

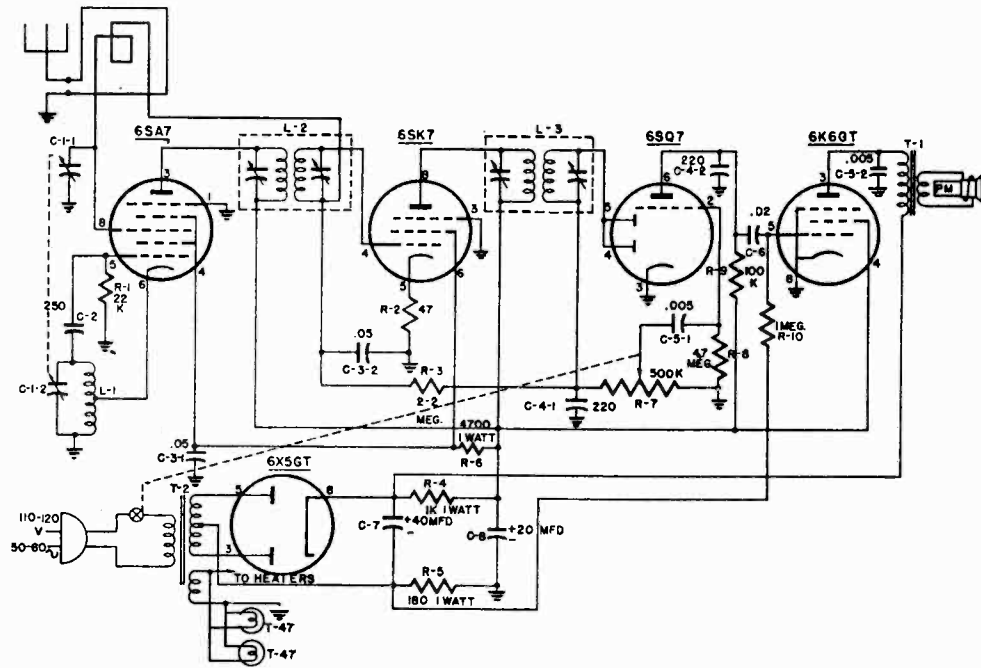
D.C. RESISTANCE MEASUREMENTS

- 1st I. F. Coil
 - primary . . . 17.5 ohms
 - secondary . . . 17.5 ohms
- 2nd I. F. Coil
 - primary . . . 13 ohms
 - secondary . . . 14 ohms
- Oscillator Coil
 - primary . . . 1.2 ohms
 - secondary . . . 4.5 ohms

TABLE OF REPLACEABLE PARTS

PART NO.	SYMBOL	DESCRIPTION	PART NO.	SYMBOL	DESCRIPTION
21004		Cabinet, Plastic	49001	R5 & S1	Control, volume: 500,000 ohms, with A.C. switch
23503	C1-1	Capacitor, Variable; 2 gang with pulley	55003		Crystal, dial
23228	C2-1	Capacitor, Mica: 220 mmf	52004		Knobs
	C2-2		29308		Loop, Assembly
23009	C3-1	Capacitor, Paper: .05 Mfd. 400 V	54001		Pilot Light, bayonet base: T44
	C3-2		67005	R1	Pointer, Plastic
23016	C4	Capacitor, Paper: .003 Mfd. 600 V	73041		Resistor, carbon: 22,000 ohms ± 10% ½ watt
24003	C5	Capacitor, Electrolytic: 20 Mfd. 350 WV	73055	R2	Resistor, carbon: 2.2 megohms ± 20% ½ watt
24005	C6	Capacitor, Electrolytic: 10 Mfd. 350 WV	73013	R3	Resistor, carbon: 100 ohms ± 10% ½ watt
23001	C7	Capacitor, Paper: .001 Mfd. 600 V	73073	R4	Resistor, carbon: 10,000 ohms ± 10% 1 watt
23006	C8	Capacitor, Paper: .01 Mfd. 600 V	73057	R6	Resistor, carbon: 4.7 megohms ± 20% ½ watt
23015	C9	Capacitor, Paper: .006 Mfd. 600 V	73122	R7-1	Resistor, carbon: 3000 ohms ± 10% 2 watt
29203	L1	Coil, oscillator	73047	R7-2	Resistor, carbon: 100,000 ohms ± 20% ½ watt
29002	L2	Coil, I.F.: 1st, 455 kc	73053	R9	Resistor, carbon: 1 megohm ± 20% ½ watt
29003	L3	Coil, I.F.: 2nd, 455 kc	73018	R10	Resistor, carbon: 270 ohms ± 10% ½ watt
			38003		Scale, dial
			79009		Socket, pilot light
			79002		Socket, tube: 8 prong octal, wafer type
			84002		Spring, dial
			83003		Speaker, PM-4"
			89002	T1	Transformer, power
			89402	T2	Transformer, output

PACKARD BELL CO.



ALIGNMENT PROCEDURE

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

Connect the test oscillator leads to the mixer grid and ground in series with a .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. The receiver loop must be shifted in order to reach trimmers A, B, C, and D (see Fig. 1). Return the loop to its original position before proceeding with the balance of the alignment.

Upon completion of the I.F. Alignment, the variable condenser should be "Rocked" to assure that the I.F.s have not been aligned to the image frequency.

The procedure outlined in steps 2 to 4 utilizes a standard test loop*. Connect the test oscillator leads across this loop and place it in a vertical position about two feet from the receiver loop.

*NOTE: Hazeltine Test Loop No. 1150.

Electrical Rating

Line Voltage . . . 110-120 volts, 50-60 cycle A.C.
Power Consumption . . . 33 watts

Tuning Frequency Range

540 to 1740 kc

Intermediate Frequency

455 kc

Electrical Power Output

Maximum . . . 2.8 watts

Loudspeaker

Type . . . Permanent Magnet
Outside Cone Diameter . . . 5"
Voice Coil Impedance . . . 3.2 ohms at 400 cycles
Magnet Rating . . . 1.0 oz. Alnico No. 5

Tubes

Function

- 6SA7 Frequency Converter
- 6SK7 I.F. Amplifier
- 6SQ7 Detector Amplifier
- 6K6-GT Power Amplifier
- 6X5-GT Rectifier

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mfd. Dummy Load	455 KC	550 KC	Trimmers A, B, C & D
2	Standard Test Loop*	1750 KC	1750 KC	Trimmer F to 1750 KC
3	Standard Test Loop*	1330 KC	1330 KC	Trimmer E
4	Standard Test Loop*	570 KC	570 KC	Loop

*REMARKS: Hazeltine Test Loop No. 1150.

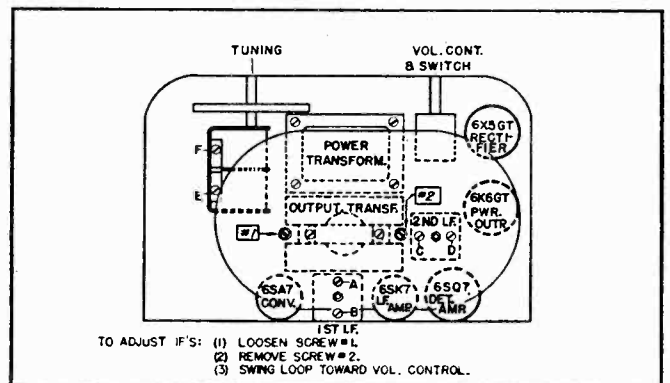


Fig. 1 — Trimmer Location

PACKARD BELL CO.

TABLE OF REPLACEABLE PARTS

PART NO.	SYMBOL	DESCRIPTION
A21001E		Cabinet, wood: walnut
B21001E		Cabinet, wood: bleach
C21001E		Cabinet, wood: fabricoid covered
A21002D		Cabinet, plastic: ivory
B21002D		Cabinet, plastic: walnut
24003	C8	Capacitor, electrolytic: 20 Mfd. 350 WV
24004B	C7	Capacitor, electrolytic: 40 Mfd. 350 WV
23206	C4-1	Capacitor, mica: 220 Mmf
	C4-2	
23016	C9	Capacitor, paper: .003 Mfd. 600 volt
23004	C5-1	Capacitor, paper: .005 Mfd. 600 volt
	C5-2	
23007	C6	Capacitor, paper: .02 Mfd. 600 volt
23009	C3-1	Capacitor, paper: .05 Mfd. 600 volt
	C3-2	
23502G	C1-1	Capacitor, variable: two gang
	C1-2	
29004A	L2	Coil, 1st I.F.: 455 KC
29001A	L3	Coil 2nd I.F.: 455 KC
29301D		Coil, loop antenna
29202	L1	Coil, oscillator
25003A	R7 & S1	Control, volume: 500,000 ohms, with A.C. switch
55001		Crystal, dial: for wood cabinet
55002		Crystal, dial: for plastic cabinet
38005		Dial, scale: for wood cabinet
39009		Dial, scale: for plastic cabinet
A47002C		Grille, plastic: walnut
B47002C		Grille, plastic: ivory
A49001E		Handle, plastic: walnut
B49001E		Handle, plastic: ivory
C52015C		Knob, walnut
A52015C		Knob, Ivory
54002		Lamp, bayonet base: T-44
67004		Pointer, slide
67006		Pointer, wire
73009	R2	Resistor, carbon: 47 ohm $\pm 10\%$, 1/2 watt
73077	R5	Resistor, carbon: 180 ohm $\pm 10\%$, 1 watt
73071	R4	Resistor, carbon: 1000 ohm $\pm 10\%$, 1 watt
73075	R6	Resistor, carbon: 4700 ohm $\pm 10\%$, 1 watt
73041	R1	Resistor, carbon: 22,000 ohm $\pm 10\%$, 1/2 watt
73047	R9	Resistor, carbon: 100,000 ohm $\pm 20\%$, 1/2 watt
73053	R10	Resistor, carbon: 1 megohm $\pm 20\%$, 1/2 watt
73055	R3	Resistor, carbon: 2.2 megohm $\pm 20\%$, 1/2 watt
73057	R8	Resistor, carbon: 4.7 megohm $\pm 20\%$, 1/2 watt
79009A		Socket, lamp
79002		Socket, tube
83203		Speaker, permanent magnet: 5"
89401B	T1	Transformer, output
89001A	T2	Transformer, power

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

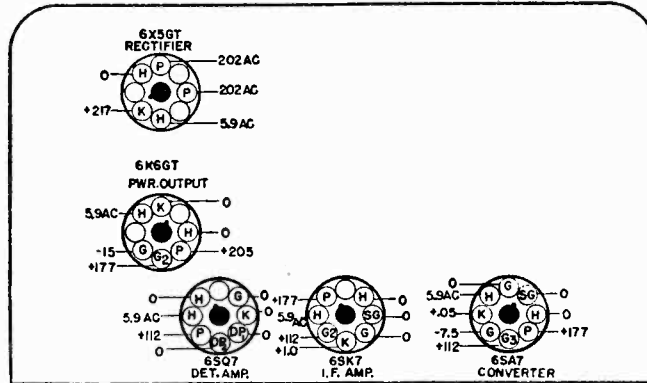


Fig. 2 — Socket Voltages

SPECIAL SERVICE INFORMATION

STAGE GAIN MEASUREMENTS

- Dummy Antenna . . . 200 mmf Standard Output . . . 50 mw
- Volume Control . . . Maximum
- Converter grid to 1st I.F. grid . . . 63 X at 1000 KC
- Converter grid to 1st I.F. grid . . . 72 X at 455 KC
- 1st I.F. grid to 2nd detector . . . 75 X at 455 KC
- Overall audio gain . . . 356 X at .5 watts 400 cycles

OSCILLATOR GRID VOLTAGES

At 117 volt A.C. line voltage.

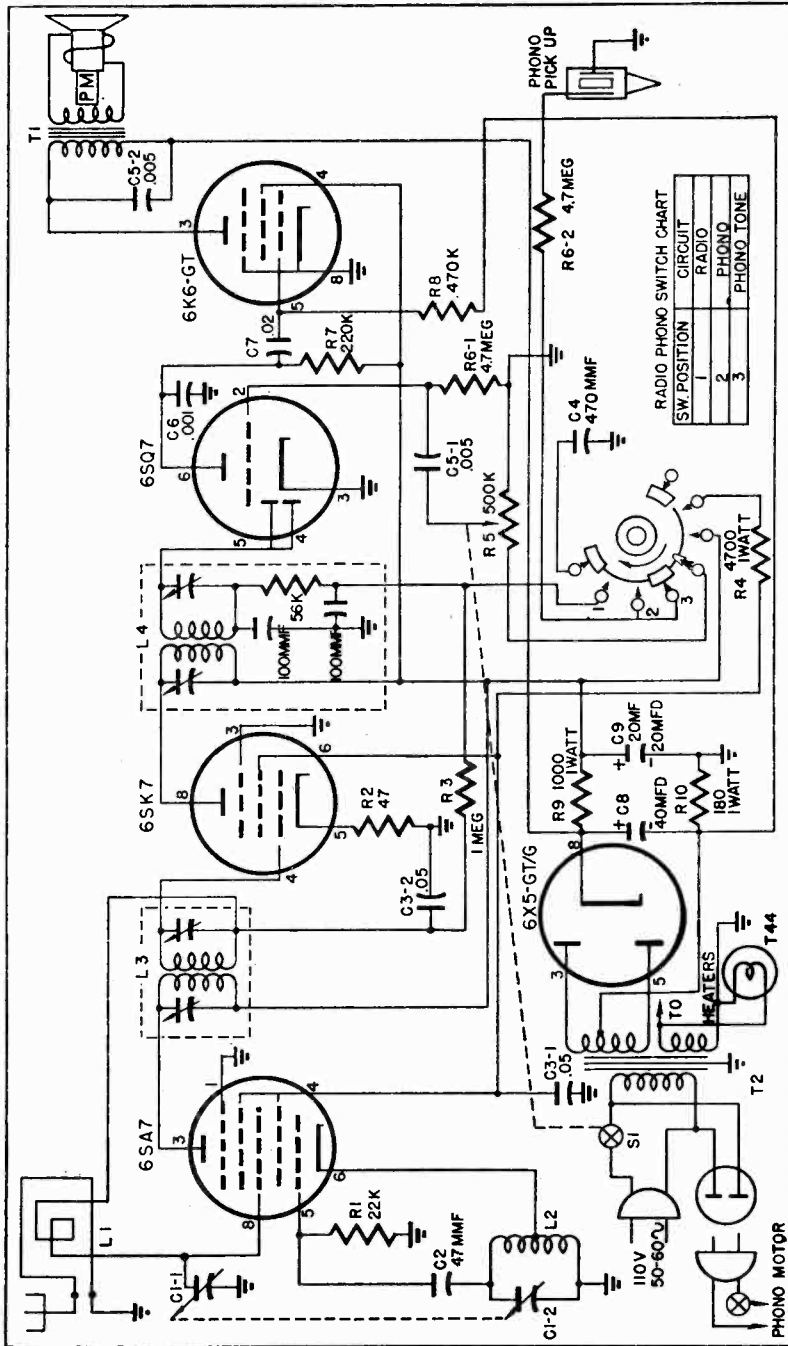
- 1750 KC . . . 20.0 volts A.C.*
- 1330 KC . . . 19.0 volts A.C.*
- 750 KC . . . 17.5 volts A.C.*
- 550 KC . . . 17.0 volts A.C.*

*Measurements made with A.C. — V.T.V.M., input loading above 10 megohms.

D.C. RESISTANCE MEASUREMENTS

1st I.F. Coil	2nd I.F. Coil	Oscillator Coil
primary . . . 14.5 ohms	primary . . . 14.5 ohms	start to finish . . . 8 ohms
secondary . . . 14.5 ohms	secondary . . . 14.5 ohms	start to tap . . . 7 ohms

PACKARD BELL CO.



GENERAL INFORMATION

Model 561 is a five tube superheterodyne receiver and phonograph combination. This model employs a permanent magnet speaker and a "Hi-Q" loop antenna. It is enclosed in a fabricoid covered carrying case. The schematic diagram shows a tweet filter network in the 2nd I.F. This network is comprised of two 100 Mmf capacitors and a 56,000 ohm resistor. Also shown is a .005 Mfd. capacitor parallel with the primary of the output transformer. In a few of the earlier models a 220 Mmf. AVC by-pass was used in place of the tweet filter, and the .005 Mfd. capacitor is connected to the plate of the 6K6-G1 and ground.

ALIGNMENT PROCEDURE

Alignment procedure consists of the four steps outlined in the Alignment Procedure Chart. For step No. 1, I.F. Alignment, connect the test oscillator leads to the mixer grid and ground in series with a .01 Mfd. capacitor (dummy load). Upon completion of this step, "Rock" the variable condenser to assure that the I.F.s have not been aligned to the image frequency. Steps 2 to 4 employ a standard test loop.* Connect the test oscillator leads across this loop and place it in a vertical position about two feet from the receiver loop.

*NOTE: Hazeltine Test Loop #1150.

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mfd. Dummy load	455 KC	540 KC	Trimmers # A, B, C & D
2	Standard* Test Loop	1750 KC	1750 KC	Trimmer #E to 1750 KC
3	Standard* Test Loop	1300 KC	1300 KC	Trimmer #F
4	Standard* Test Loop	570 KC	570 KC	Loop

*REMARKS: Hazeltine Test Loop #1150

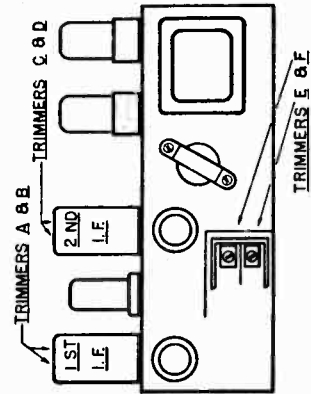


FIG. 2—TRIMMER LOCATION

MODEL 561

PACKARD BELL CO.

D.C. RESISTANCE MEASUREMENTS

1st I.F. Coil and 2nd I.F. Coil*	Oscillator Coil
Primary 14.5 ohms	Start to Finish 8 ohms
Secondary 14.5 ohms	Start to Tap 7 ohms

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

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

Switch in radio position

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

TABLE OF REPLACEABLE PARTS

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
23508B	C1-1 C1-2	Capacitor, variable: two gang with pulley	73075	R4	Resistor, carbon: 4700 ohms, 10%, 1 watt
23225	C2	Capacitor, mica: 47 Mmf.	25011	R5 & S1	Control, volume: 500K with AC switch
23009	C3-1 C3-2	Capacitor, paper: .05 Mfd. .600 volt	73057	R6-1 R6-2	Resistor, carbon: 4.7 megohm, 20%, 1/2 watt
23229	C4	Capacitor, mica: 470 Mmf.	73049	R7	Resistor, carbon: 220K, 20%, 1/2 watt
23004	C5-1 C5-2	Capacitor, paper: .005 Mfd. .600 volt	73051	R8	Resistor, carbon: 470K, 20%, 1/2 watt
23001	C6	Capacitor, paper: .001 Mfd. .600 volt	73071	R9	Resistor, carbon: 1000 ohms, 10%, 1 watt
23007	C7	Capacitor, paper: .01 Mfd. .600 volt	73077	R10	Resistor, carbon: 180 ohms, 10%, 1 watt
24011	C8	Capacitor, electrolytic: 40 Mfd. .350 WV	79002		Socket, tube: wafer type, octal
24012	C9	Capacitor, electrolytic: 20 Mfd. .350 WV	79005		Socket, phono pick-up
21014E		Cabinet, wood: fabricoid covered	79007		Socket, phono motor plug
29309A	L1	Loop, antenna	79010B		Socket, dial lamp: bayonet base
29202A	L2	Coil, oscillator	84001A		Spring, dial cord
29004D	L3	Coil, 1st I.F. .455 KC	86005B	S2	Switch, rotary: wafer type, phono-radio
29007	L4	Coil, 2nd I.F. .455 KC (2- 100 Mmf. mica capacitors & 56,000 ohm resistor are included in this assembly)	86701	S3	Switch, phono motor
32003B		Cord, AC	89401B	T1	Transformer, output
40002		Cord, dial drive	89001	T2	Transformer, power
38023A		Dial, scale	52014		Knob, plastic: round, for vol. control & dial tuning
54001		Lamp, dial: 250 MA, bayonet base	52001A		Knob, plastic: bar, for phono-radio switch
65007B		Plate, dial	53037		Insulator, motor switch
67004		Pointer, slide	49006		Handle, plastic
67007		Pointer, wire	83202		Speaker, permanent magnet: 5"
69003		Pulley, dial drive	59003		Needle, phono: permanent
77003		Shaft, dial	58012		Motor, phono: with 9" turntable
73041	R1	Resistor, carbon: 22K, 10%, 1/2 watt	58007		Motor, alternate for above
73009	R2	Resistor, carbon: 47 ohms, 10%, 1/2 watt	84024		Bushing, phono motor: for 50 cycle operation
73053	R3	Resistor, carbon: 1 megohm, 20%, 1/2 watt	63001		Phono pick-up
			63012		Crystal cartridge, Shure P-87
			66004		Plug, phono pick-up
			28006		Clamp, turntable holding

Electrical Rating

Line Voltage . . . 110-120 volt 50-60 cycle A.C.
Power Consumption . . . 48 watts

Tuning Frequency Range

540 to 1750 KC

Intermediate Frequency

455 KC

Electrical Power Output

Maximum . . . 2.3 watts

Loudspeaker

Type . . . Permanent Magnet
Outside Cone Diameter . . . 5"
Voice Coil Impedance . . . 3.2 ohms at 400 cycles
Magnet Rating . . . 2.5 oz. Alnico #5

Tubes

- 6SA7 Frequency Converter
- 6SK7 I.F. Amplifier
- 6SQ7 Detector Amplifier
- 6K6-GT . . . Power Amplifier
- 6X5-GT/G . . . Rectifier

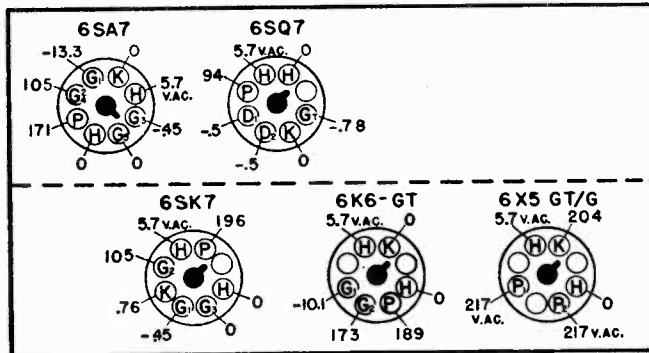


FIG. 1—SOCKET VOLTAGES

STAGE GAIN MEASUREMENTS

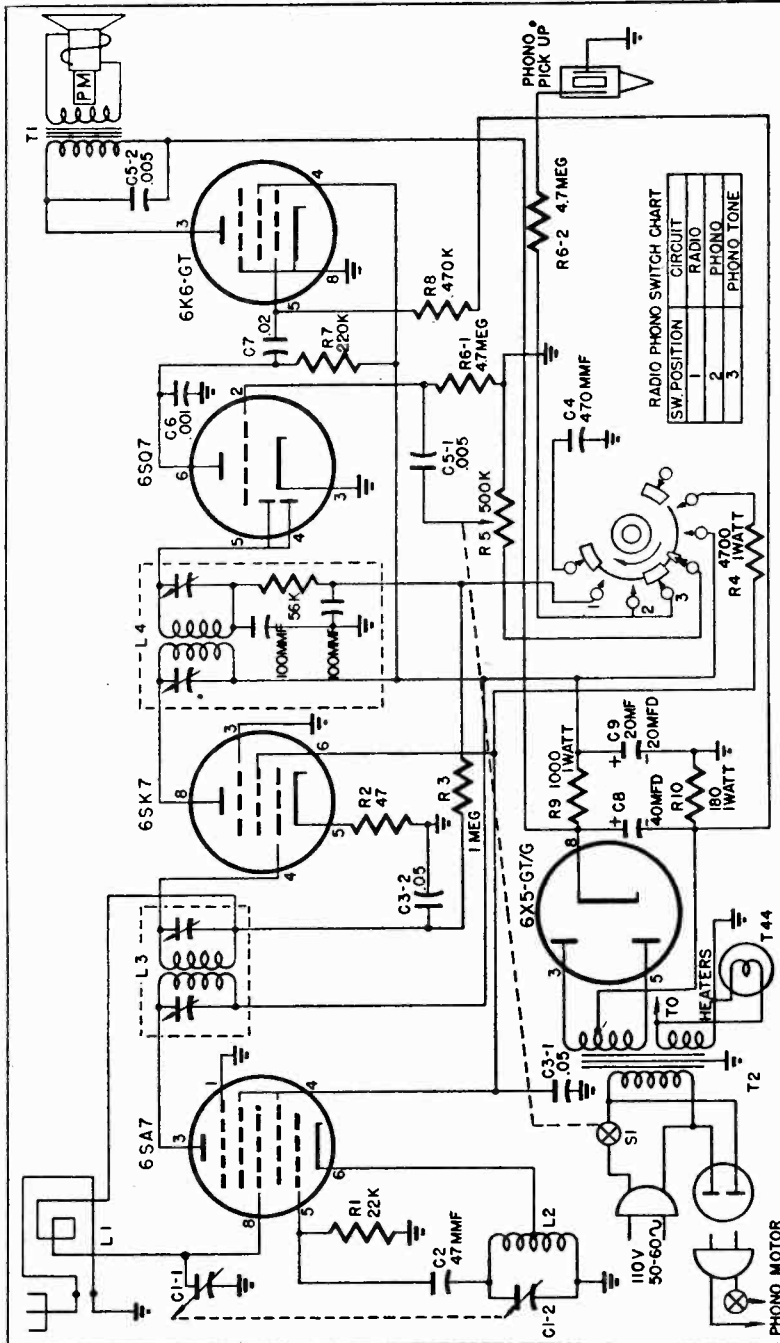
Measurements taken with volume control maximum, and switch in RADIO position. AVC shorted out.
Standard Output . . . 50 milliwatts
Dummy Antenna . . . 200 Mmf.
Antenna to Converter Grid . . . 4.65 X at 1000 KC
Converter Grid to 1st I.F. Grid . . . 79 X at 1000 KC
Converter Grid to 1st I.F. Grid . . . 95 X at 455 KC
1st I.F. Grid to 2nd Detector . . . 62.3 X at 455 KC
Overall Audio Gain . . . 700 X at 5 watts 400 cycles

OSCILLATOR GRID VOLTAGES

Measured at Oscillator grid to ground, no signal, with A.C. V.T.V.M. input loading above 10 megohms. 117 volts A.C. line voltage. Switch in RADIO position.

- 1750 KC . . . 19.8 volts AC
- 1300 KC . . . 19.8 volts AC
- 750 KC . . . 18.3 volts AC
- 570 KC . . . 17.2 volts AC

PACKARD BELL CO.



ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mfd. Dummy load	455 KC	540 KC	Trimmers # A, B, C & D
2	Standard* Test Loop	1750 KC	1750 KC	Trimmer #E to 1750 KC
3	Standard* Test Loop	1500 KC	1500 KC	Trimmer #F
4	Standard* Test Loop	600 KC	600 KC	Loop

GENERAL INFORMATION

Model 563 is a combination superheterodyne receiver and phono-graph. This model employs a permanent magnet speaker and a specially designed "Hi Q" loop antenna. The model is capable of playing ten or twelve-inch records and is enclosed in a fabricoid covered carrying case.

ALIGNMENT PROCEDURE

Alignment procedure consists of the four steps outlined in the Alignment Procedure Chart.
 For step No. 1, I.F. Alignment, connect the test oscillator leads to the mixer grid and ground in series with a .01 Mfd. capacitor (dummy load). Upon completion of this step, "Rock" the variable condenser to assure that the I.F.s have not been aligned to the image frequency.
 Steps 2 to 4 employ a standard test loop.* Connect the test oscillator leads across this loop and place it in a vertical position about two feet from the receiver loop.
 *NOTE: Hazeltine Test Loop # 1150.

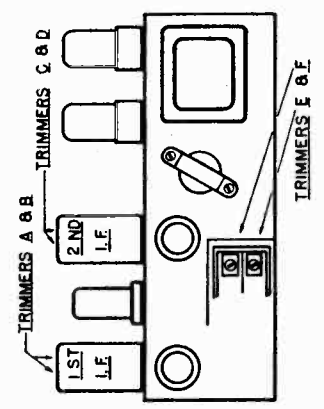


FIG. 2—TRIMMER LOCATION

*REMARKS: Hazeltine Test Loop # 1150

MODEL 563

PACKARD BELL CO.

D.C. RESISTANCE MEASUREMENTS

1st I.F. Coil and 2nd I.F. Coil*
 Primary . . . 14.5 ohms
 Secondary . . . 14.5 ohms

Oscillator Coil
 Start to Finish . . . 8 ohms
 Start to Tap . . . 7 ohms

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

TABLE OF REPLACEABLE PARTS

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
21035A		Cabinet, wood: fabricoid covered	73075	R4	Resistor, carbon: 4700 ohms, 10%, 1 watt
23508B	C1-1	Capacitor, variable: two gang with pulley	25011	R5 & S1	Control, volume: 500K with AC switch
	C1-2		73057	R6-1	Resistor, carbon: 4.7 megohm, 20%, 1/2 watt
23225	C2	Capacitor, mica: 47 Mmf.		R6-2	
23009	C3-1	Capacitor, paper: .05 Mfd. .600 volt	73049	R7	Resistor, carbon: 220K, 20%, 1/2 watt
	C3-2		73051	R8	Resistor, carbon: 470K, 20%, 1/2 watt
23229	C4	Capacitor, mica: 470 Mmf.	73071	R9	Resistor, carbon: 1000 ohms, 10%, 1 watt
23004	C5-1	Capacitor, paper: .005 Mfd. .600 volt	73077	R10	Resistor, carbon: 180 ohms, 10%, 1 watt
	C5-2		79002		Socket, tube: wafer type, octal
23001	C6	Capacitor, paper: 001 Mfd. .600 volt	79005		Socket, phono pick-up
23007	C7	Capacitor, paper: .01 Mfd. .600 volt	79007		Socket, phono motor plug
24011	C8	Capacitor, electrolytic: 40 Mfd. .350 WV	79010B		Socket, dial lamp: bayonet base
24012	C9	Capacitor, electrolytic: 20 Mfd. .350 WV	84001A		Spring, dial cord
29309A	L1	Loop, antenna	86005B	S2	Switch, rotary: wafer type, phono-radio
29202A	L2	Coil, oscillator	86701	S3	Switch, phono motor
29004D	L3	Coil, 1st I.F. .455 KC	89401B	T1	Transformer, output
29007	L4	Coil, 2nd I.F. .455 KC (2- 100 Mmf. mica capacitors & 56,000 ohm resistor are included in this assembly)	89001	T2	Transformer, power
32003B		Cord, AC	52014		Knob, plastic: round, for vol. control & dial tuning
40002		Cord, dial drive	52001A		Knob, plastic: bar, for phono-radio switch
38023A		Dial, scale	53037		Insulator, motor switch
54001		Lamp, dial: 250 MA, bayonet base	49006		Handle, plastic
65007B		Plate, dial	83202		Speaker, permanent magnet: 5"
67004		Pointer, slide	59003		Needle, phono: permanent
67007		Pointer, wire	58012		Motor, phono: with 9" turntable
69003		Pulley, dial drive	84024		Bushing, phono motor: for 50 cycle operation
77003		Shaft, dial	63001		Phono pick-up
73041	R1	Resistor, carbon: 22K, 10%, 1/2 watt	63012		Crystal cartridge, Shure P-93
73009	R2	Resistor, carbon: 47 ohms, 10%, 1/2 watt	66004		Plug, phono pick-up
73053	R3	Resistor, carbon: 1 megohm, 20%, 1/2 watt	28006		Clamp, turntable holding

STAGE GAIN MEASUREMENTS

Measurements taken with volume control maximum, and switch in RADIO position. AVC shorted out.
 Standard Output . . . 50 milliwatts
 Dummy Antenna . . . 200 Mmf.
 Antenna to Converter Grid . . . 4.65 X at 1000 KC
 Converter Grid to 1st I.F. Grid . . . 79 X at 1000 KC
 Converter Grid to 1st I.F. Grid . . . 95 X at 455 KC
 1st I.F. Grid to 2nd Detector . . . 62.3 X at 455 KC
 Overall Audio Gain . . . 700 X at .5 watts 400 cycles

OSCILLATOR GRID VOLTAGES

Measured at Oscillator grid to ground, no signal, with A.C. V.T.V.M. input loading above 10 megohms. 117 volts A.C. line voltage. Switch in RADIO position.

1750 KC . . . 19.8 volts AC
 1300 KC . . . 19.8 volts AC
 750 KC . . . 18.3 volts AC
 570 KC . . . 17.2 volts AC

Electrical Rating

Line Voltage . . . 110-120 volt 50-60 cycle A.C.
 Power Consumption . . . 48 watts

Tuning Frequency Range

540 to 1750 KC

Intermediate Frequency

455 KC

Electrical Power Output

Maximum . . . 2.3 watts

Loudspeaker

Type . . . Permanent Magnet
 Outside Cone Diameter . . . 5"
 Voice Coil Impedance . . . 3.2 ohms at 400 cycles
 Magnet Rating . . . 2.5 oz. Alnico #5

Tubes

6SA7 . . . Frequency Converter
 6SK7 . . . I.F. Amplifier
 6SQ7 . . . Detector Amplifier
 6K6-GT . . . Power Amplifier
 6X5-GT/G . . . Rectifier

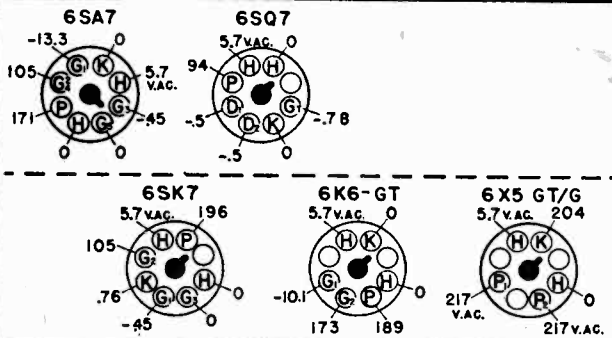


FIG. 1—SOCKET VOLTAGES

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 control . . . maximum — No signal

117 volts A.C. line voltage

Switch in radio position

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

PACKARD BELL CO.

1st I.F. Coil

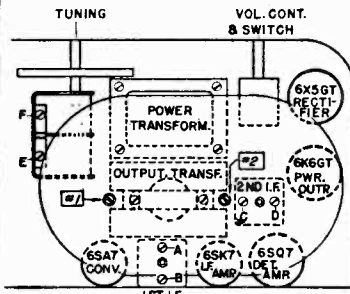
primary . . . 14.5 ohms
secondary . . . 14.5 ohms

2nd I.F. Coil

primary . . . 14.5 ohms
secondary . . . 14.5 ohms

Oscillator Coil

start to finish . . . 8 ohms
start to tap . . . 7 ohms



TO ADJUST IF'S: (1) LOOSEN SCREW #1.
(2) REMOVE SCREW #2.
(3) SWING LOOP TOWARD VOL. CONTROL.

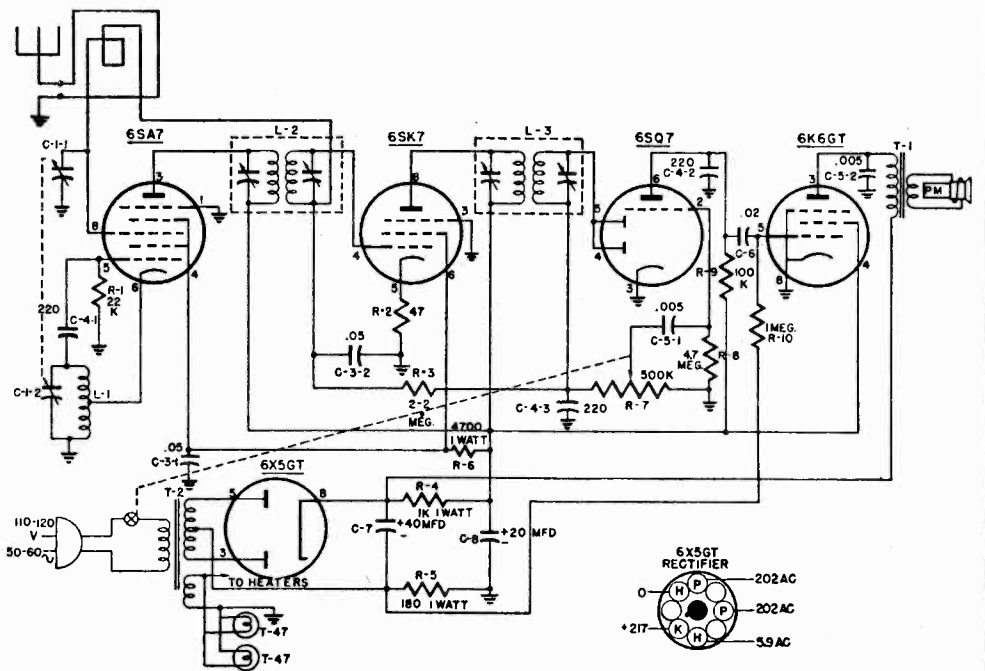


Fig. 1 — Trimmer Location

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

Connect the test oscillator leads to the mixer grid and ground in series with a .01 Mfd. capacitor (dummy load) for step No. 1, I.F. Alignment. The receiver loop must be shifted in order to reach trimmers A, B, C, and D (see Fig. 1). Return the loop to its original position before proceeding with the balance of the alignment.

Upon completion of the I.F. Alignment, the variable condenser should be "Rocked" to assure that the I.F.s have not been aligned to the image frequency.

The procedure outlined in steps 2 to 4 utilizes a standard test loop*. Connect the test oscillator leads across this loop and place it in a vertical position about two feet from the receiver loop.

*NOTE: Hazeltine Test Loop No. 1150.

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mfd. Dummy Load	455 KC	550 KC	Trimmers A, B, C & D
2	Standard Test Loop*	1740 KC	1740 KC	Trimmer F to 1750 KC
3	Standard Test Loop*	1500 KC	1500 KC	Trimmer E
4	Standard Test Loop*	600 KC	600 KC	Loop

*REMARKS: Hazeltine Test Loop No. 1150.

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

OSCILLATOR GRID VOLTAGES

At 117 volt A.C. line voltage.

- 1750 KC . . . 20.0 volts A.C.*
- 1330 KC . . . 19.0 volts A.C.*
- 750 KC . . . 17.5 volts A.C.*
- 550 KC . . . 17.0 volts A.C.*

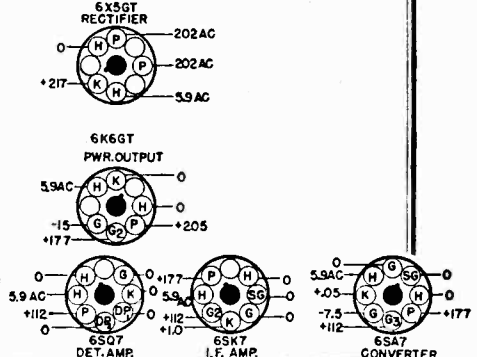


Fig. 2 — Socket Voltages

*Measurements made with A.C. — V.T.V.M., input loading above 10 megahms.

Electrical Rating

Line Voltage . . . 110-120 volts, 50-60 cycle A.C.
Power Consumption . . . 33 watts

Tuning Frequency Range

540 to 1740 kc

Intermediate Frequency

455 kc

Electrical Power Output

Maximum . . . 2.8 watts

Loudspeaker

Type . . . Permanent Magnet
Outside Cone Diameter . . . 5"
Voice Coil Impedence . . . 3.2 ohms at 400 cycles.
Magnet Rating . . . 1.0 oz. Alnico No. 5

STAGE GAIN MEASUREMENTS

Dummy Antenna . . . 200 mmf Standard Output . . . 50 mw
Volume Control . . . Maximum

Converter grid to 1st I.F. grid . . . 63 X at 1000 KC
Converter grid to 1st I.F. grid . . . 72 X at 455 KC
1st I.F. grid to 2nd detector . . . 75 X at 455 KC
Overall audio gain . . . 356 X at .5 watts 400 cycles

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MODEL 566
MODEL 661

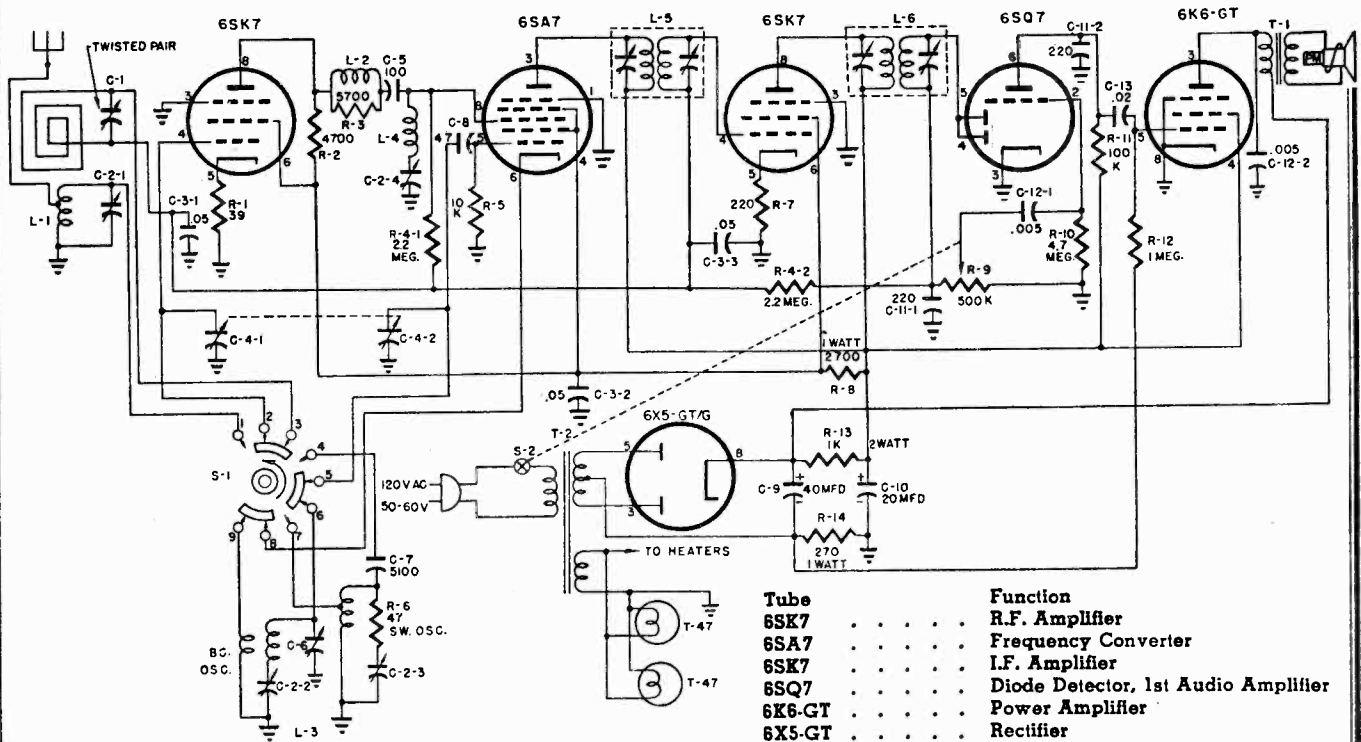
MODEL 661

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
19010		Bushing, drive shaft	73055	R1-1	Resistor, carbon: 2.2 megohms, 20%, 1/2 watt
21009F		Cabinet		R1-2	
23400A	C1-1	Capacitor, trimmer: 3-30 Mmf.	73008	R2-1	Resistor, carbon: 39 ohms, 10%, 1/2 watt
	C1-2			R2-2	
23406	C1-3	Capacitor, trimmer: 3-30 Mmf.	73041	R3	Resistor, carbon: 22,000 ohms, 10%, 1/2 watt
23500C	C2-A, B & C	Capacitor, variable: three gang		R4	Resistor, carbon: 390 ohms, 10%, 1/2 watt
23225	C3-1	Capacitor, mica: 47 Mmf.		R5	Resistor, carbon: 1 megohm, 20%, 1/2 watt
	C3-2			R6 & S1	Control volume: 500,000 ohms, with A.C. switch
23009	C4-1	Capacitor, paper: .05 Mfd. 400 volt	73020	R7	Resistor, carbon: 4.7 megohms, 20%, 1/2 watt
	C4-2			R8-1	Resistor, carbon: 220,000 ohms, 20%, 1/2 watt
	C4-3			R8-2	
23402	C5	Capacitor, padder: 300-800 Mmf.	73053	R9	Resistor, carbon: 470,000 ohms, 20%, 1/2 watt
23004	C6-1	Capacitor, paper: .005 Mfd. 600 volt		R10	Control, tone: 3 megohms
	C6-2		25003B	R11	Resistor, carbon: 470 ohms, 10%, 1/2 watt
23022	C7	Capacitor, paper: .01 Mfd. 400 volt	73057	R12	Resistor, carbon: 10,000 ohms, 10%, 2 watt
23007	C8	Capacitor, paper: .02 Mfd. 600 volt		R13	Resistor, carbon: 2,000 ohms, 10%, 1 watt
24001	C9	Capacitor, electrolytic: 20 Mfd. 450 volt	73049	R14	Resistor, carbon: 150 ohms, 10%, 1 watt
24003	C10	Capacitor, electrolytic: 20 Mfd. 350 volt		77002	Shaft, dial
23228	C11-1	Capacitor, mica: 220 Mmf.		79002	Socket, tube: 8 prong octal, wafer type
	C11-2		73051	79005	Socket, phono pick-up
	C11-3			79007	Socket, A.C. phono motor
	C11-4		25005A	79010B	Socket, dial lamp: bayonet base
	C12	Capacitor, mica: 470 Mmf.	73021	83303A	Speaker, permanent magnet: 6 1/2"
29305	L1	Coil, loop antenna		84001B	Spring, dial cord
29403	L2	Coil, antenna	73125	84002A	Spring, knob
29102A	L3	Coil, R.F.		86008	Switch, rotary: wafer type, Phono-Radio
29205	L4	Coil, oscillator	73214	89409C T1	Transformer, output
29004D	L5	Coil, 1st I.F.: 455 KC		89010A T2	Transformer, power
29001D	L6	Coil, 2nd I.F.: 455 KC			
32004A		Cord, A.C.: 6'	73081		
38024		Dial scale			
40002		Dial drive cord			
52025		Knob, plastic			
54001		Lamp, dial: bayonet base, T-44			
58008		Record changer			
59003		Needle, phono: permanent			
62020A		Panel, dial			
66004		Plug, phono pick-up			
66008		Plug, phono motor			
67002		Pointer, slide			
67009		Pointer, wire			
69003A		Dial drive pulley			

MODEL 566

PART NO.	SYMBOL	DESCRIPTION
A21003D		Cabinet, wood: walnut
B21003D		Cabinet, wood: bleach
A49404E		Handle, plastic: walnut
B49404E		Handle, plastic: ivory
C52008D		Knob, plastic: walnut
A52008D		Knob, plastic: ivory
A47001E		Grille, plastic: walnut
B47001E		Grille, plastic: ivory
A55004		Crystal, dial
29313		Coil, loop antenna
29309		(Alternate for above)
38037		Dial scale, stationized
54002		Lamp, bayonet base: T-44
67004		Pointer, slide
67006		Pointer, wire
79009A		Socket, lamp
79002		Socket, tube
83203		Speaker, permanent magnet: 5"
23502H	C1-1	Capacitor, variable: two gang
23009	C1-2	Capacitor, paper: .05 Mfd. 600 volt
23206	C3-1	Capacitor, mica: 220 Mmf
	C4-1	
	C4-2	
	C4-3	
	C5-1	Capacitor, paper: .005 Mfd. 600 volt
	C5-2	
	C6	Capacitor, paper: .02 Mfd. 600 volt
24004B	C7	Capacitor, electrolytic: 40 Mfd. 350 WV
24003	C8	Capacitor, electrolytic: 20 Mfd. 350 WV
23016	C9	Capacitor, paper: .003 Mfd. 600 volt
29202	L1	Coil, oscillator
29004A	L2	Coil, 1st I.F.: 455 KC
29001A	L3	Coil 2nd I.F.: 455 KC
73009	R1	Resistor, carbon: 22,000 ohm ±10%, 1/2 watt
73055	R2	Resistor, carbon: 47 ohm ±10%, 1/2 watt
73071	R3	Resistor, carbon: 2.2 megohm ±20%, 1/2 watt
73077	R4	Resistor, carbon: 1000 ohm ±10%, 1 watt
73075	R5	Resistor, carbon: 180 ohm ±10%, 1 watt
25003A	R6	Resistor, carbon: 4700 ohm ±10%, 1 watt
	R7 &	Control, volume: 500,000 ohms, with A.C. switch
	S1	
73057	R8	Resistor, carbon: 4.7 megohm ±20%, 1/2 watt
73047	R9	Resistor, carbon: 100,000 ohm ±20%, 1/2 watt
73053	R10	Resistor, carbon: 1 megohm ±20%, 1/2 watt
89401B	T1	Transformer, output
89001A	T2	Transformer, power

PACKARD BELL CO.



Tube	Function
6SK7	R.F. Amplifier
6SA7	Frequency Converter
6SK7	I.F. Amplifier
6SQ7	Diode Detector, 1st Audio Amplifier
6K6-GT	Power Amplifier
6X5-GT	Rectifier

***STAGE GAIN MEASUREMENTS**

Dummy Antenna . . . 200 mmf
 Standard Output . . . 50 mw
 Volume Control . . . maximum

Antenna to R.F. grid . . . 8X at 1000 KC
 R.F. grid to converter grid . . . 4X at 1000 KC
 Converter grid to 1st I.F. grid . . . 45X at 455 KC
 1st I.F. grid to 2nd detector . . . 70X at 455 KC
 Overall audio gain . . . 600X at .5 watts 400 cps

***NOTE:** Measurements made with A.C. V.T.V.M. AVC shorted out.

OSCILLATOR GRID VOLTAGES

117 AC line voltage
 1740 KC . . . 2.5 volts AC*
 1200 KC . . . 2.6 volts AC*
 750 KC . . . 2.8 volts AC*
 540 KC . . . 2.7 volts AC*

***NOTE:** Measurements made with A.C. V.T.V.M. Input loading above 10 megohms.

D.C. RESISTANCE MEASUREMENTS

1st I.F. Coil
 primary . . . 14.5 ohms
 secondary . . . 14.5 ohms

2nd I.F. Coil
 primary . . . 14.5 ohms
 secondary . . . 15 ohms

Oscillator Coil: (Short Wave and Standard Broadcast wound on same form.)

Short Wave:
 Start to finish . . . 2 ohms
 Start to tap . . . 1 ohm

Broadcast:
 Primary . . . 2 ohms
 Secondary . . . 9 ohms

ELECTRICAL RATING

Line Voltage . . . 110-120 volt 50-60 cycle AC
 Power Consumption . . . 30 watts

TUNING FREQUENCY RANGE

Standard Broadcast . . . 540 to 1740 KC
 Short Wave . . . 5.7 to 18.2 MC

INTERMEDIATE FREQUENCY

455 KC

ELECTRICAL POWER OUTPUT

Maximum . . . 2.5 watts

LOUDSPEAKER

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

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

Volume control maximum.

No signal.

117 volts A.C. line voltage.

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

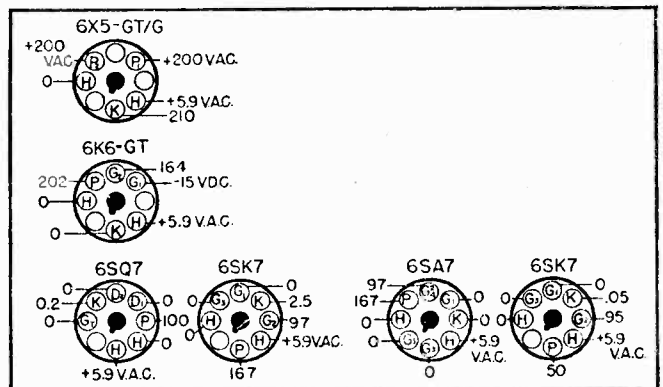
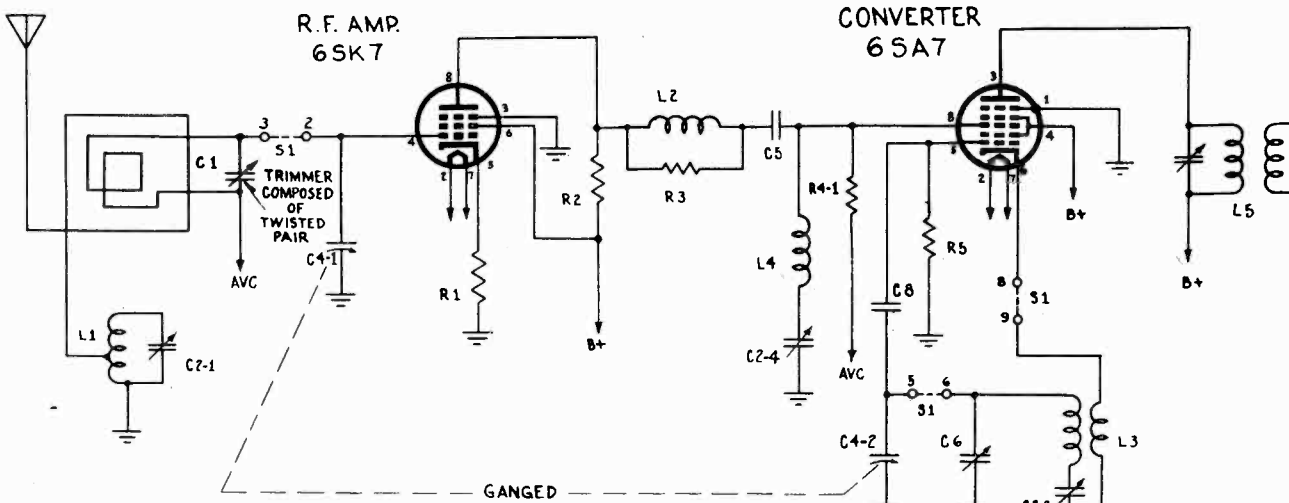
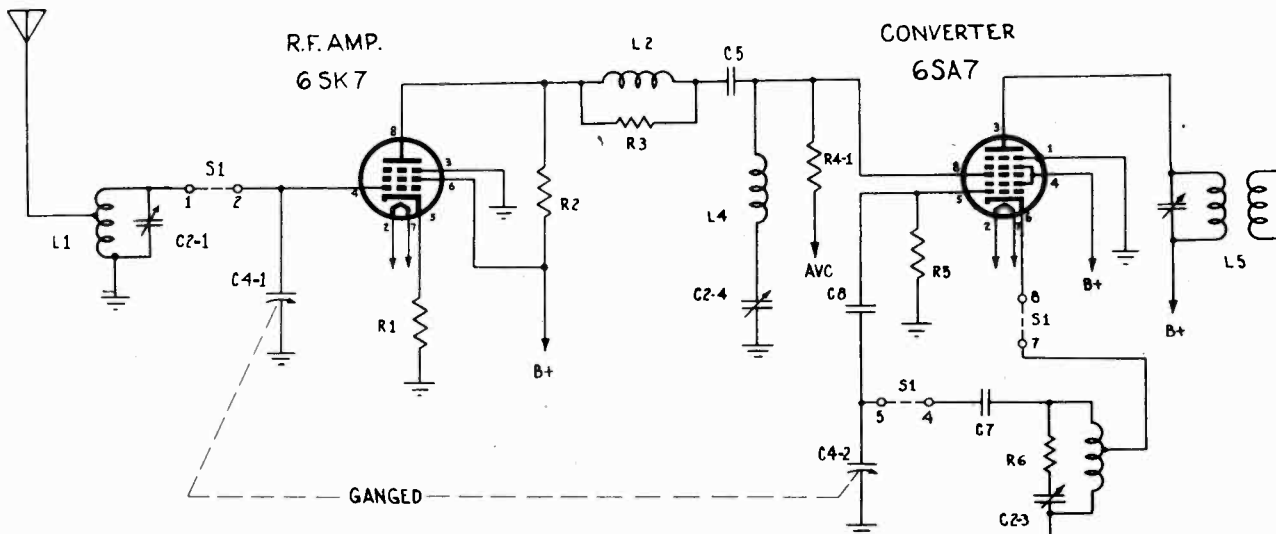


FIG. 2 — VOLTAGE CHART

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BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND 540 TO 1740KC



BAND-SWITCH SHOWN AT 2ND POSITION COUNTERCLOCKWISE SHORT WAVE BAND 5.7 TO 18.2 Mc.

PACKARD BELL CO.

ALIGNMENT PROCEDURE

The alignment procedure consists of the eight steps outlined in the alignment procedure chart.

Connect the test oscillator leads to the mixer grid and ground in series with a .01 mfd. capacitor (dummy load) for steps 1 and 2. I.F. alignment. The receiver loop must be shifted in order to reach trimmers A, B, C, and D (see Fig. No. 1). Return the loop to its original position before proceeding with the balance of the alignment.

Upon completion of the I.F. alignment, the variable condenser should be "Rocked" to assure that the I.F.s have not been aligned to the image frequency.

The procedure outlined in steps 3 to 5 utilizes a standard test loop.* Connect the test oscillator leads across this loop and place it about two feet from the receiver loop in a vertical position.

Steps 6 and 7 cover the short wave alignment. Connect the test oscillator leads to the short wave antenna and ground in series with a 400 ohm resistor.

ALIGNMENT CHART

STEP	CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUST FOR MAXIMUM OUTPUT
1	Mixer grid & Grd. .01 Mid. Dummy Load	455 KC	550 KC	Trimmers No. F, G, H & I
2	Mixer grid & Grd. .01 Mid. Dummy Load	455 KC	550 KC	Trimmer No. A Minimum Output
3	Standard Test Loop*	1750 KC	1750 KC	Trimmer No. C to 1750 KC
4	Standard Test Loop*	600 KC	600 KC	Trimmer No. D to 600 KC
5	Standard Test Loop*	Repeat Steps 3 and 4		
6	S.W. Antenna thru 400 ohms	18.2 MC	18.2 MC	Trimmer No. B to 18.2 MC
7	S.W. Antenna thru 400 ohms	15.0 MC	15.0 MC	Trimmer No. E

*REMARKS: Hazeltine Test Loop No. 1150.

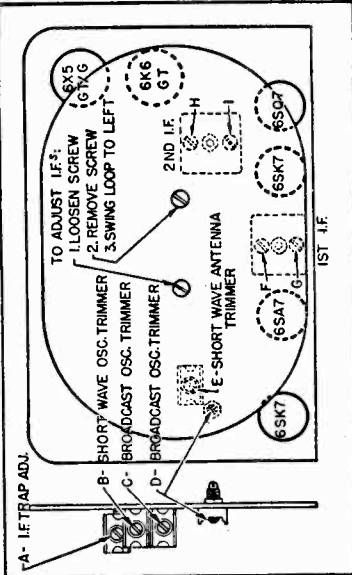


FIG. 1 — TRIMMER LOCATIONS

PART NO. SYMBOL	DESCRIPTION
73037	R5 Resistor, carbon: 10,000 ohms 10%, 1/2 watt
73009	R6 Resistor, carbon: 47 ohms 10%, 1/2 watt
73041	R7 Resistor, carbon: 22,000 ohms 10%, 1/2 watt
73079	R8 Resistor, carbon: 2700 ohms 10%, 1 watt
25003A	R9 & S2 Control, volume: 500K, with AC switch
73057	R10 Resistor, carbon: 4.7 megohm 20%, 1/2 watt
73047	R11 Resistor, carbon: 100,000 ohms 20%, 1/2 watt
73053	R12 Resistor, carbon: 1 megohm 20%, 1/2 watt
73128	R13 Resistor, carbon: 1000 ohms 10%, 2 watt
73074	R14 Resistor, carbon: 270 ohms 10%, 1 watt
86002C	S1 Switch, band, water type
89401B	T1 Transformer, output
89001A	T2 Transformer, power
11001A	Arm, switch extension: for short wave switch
11002	Arm, switch extension: for short wave switch
19001C	Bushing, short wave switch
A21003D	Cabinet, walnut wood
B21003D	Cabinet, bleached wood
32004A	Cord, AC
32013	Cord, AC (alternate for 32004A)
34002D	Cover, volume control
38026A	Dial scale, stationised
38007	Dial scale, export
40002	Dial cord
A47001E	Grille, plastic: walnut
B47001E	Grille, plastic: ivory
A49404E	Handle, plastic: walnut
B49404E	Handle, plastic: bleach
C52008D	Knob, plastic: walnut
A52008D	Knob, plastic: bleach
54002	Lamp, dial: bayonet base, 150 MA
29302C	Loop, antenna
A55004	Crystal, dial
67004	Slide, pointer
67008	Pointer, wire
69003A	Pulley, idler
78006	Shield, tube
79002	Socket, tube: water type, octal
79009B	Socket, lamp: bayonet base
83001	Speaker, permanent magnet, 5"
84001B	Spring, dial

PART NO. SYMBOL	DESCRIPTION
23403A	C2-1 Capacitor, trimmer: 3 to 50 Mmf.
C2-2	
C2-3	
C2-4	
23009	C3-1 Capacitor, paper: .05 Mid. 600 volt
C3-2	
C3-3	
23504D	C4-1 Capacitor, variable: two gang
C4-2	
23510	C4-1 Capacitor, variable: two gang (alternate for 23504D)
C4-2	
23227	C5 Capacitor, mica: 100 Mmf.
23230	C7 Capacitor, mica: 5100 Mmf.
23404A	C8 Capacitor, padder: 300 to 850 Mmf.
23225	C8 Capacitor, mica: 47 Mmf.
24004B	C9 Capacitor, electrolytic: 40 Mid. 350 WV
24003	C10 Capacitor, electrolytic: 20 Mid. 350 WV
23208	C11-1 Capacitor, mica: 220 Mmf.
C11-2	
23004	C12-1 Capacitor, paper: .005 Mid. 600 volt
C12-2	
23007	C13 Capacitor, paper: .02 Mid. 600 volt
29402	L1 Coil, antenna: short wave
29006	L2 & R3 Coil, peaking
29204A	L3 Coil, oscillator: BC & SW
29005	L4 Coil, I.F. trap
29004D	L5 Coil, 1st I.F.: 455 KC
29001D	L6 Coil, 2nd I.F.: 455 KC
73008	R1 Resistor, carbon: 39 ohms 10%, 1/2 watt
73033	R2 Resistor, carbon: 4700 ohms 10%, 1/2 watt
73055	R4-1 Resistor, carbon: 2.2 megohm 20%, 1/2 watt
R4-2	

MODEL 661

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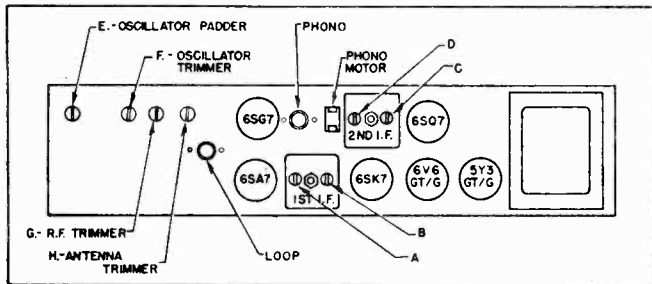
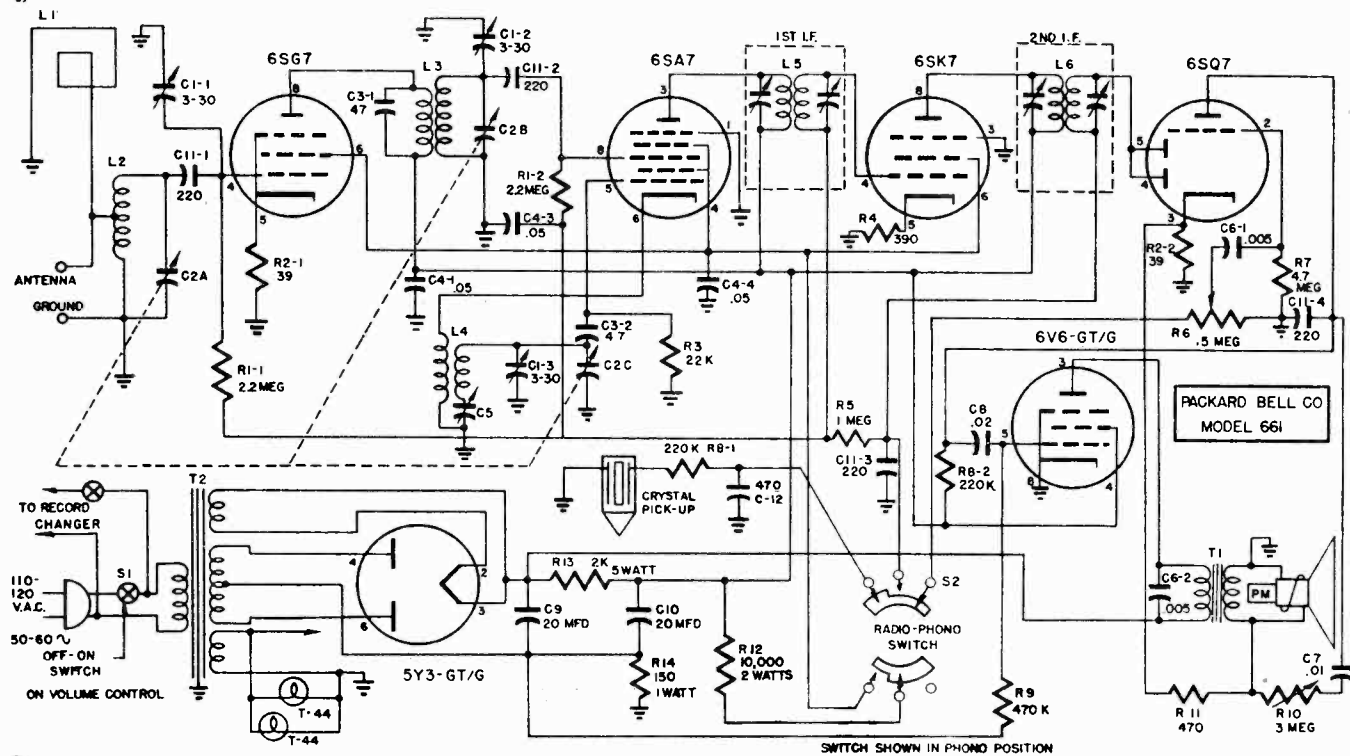


FIG. 2 TRIMMER LOCATION

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 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 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.

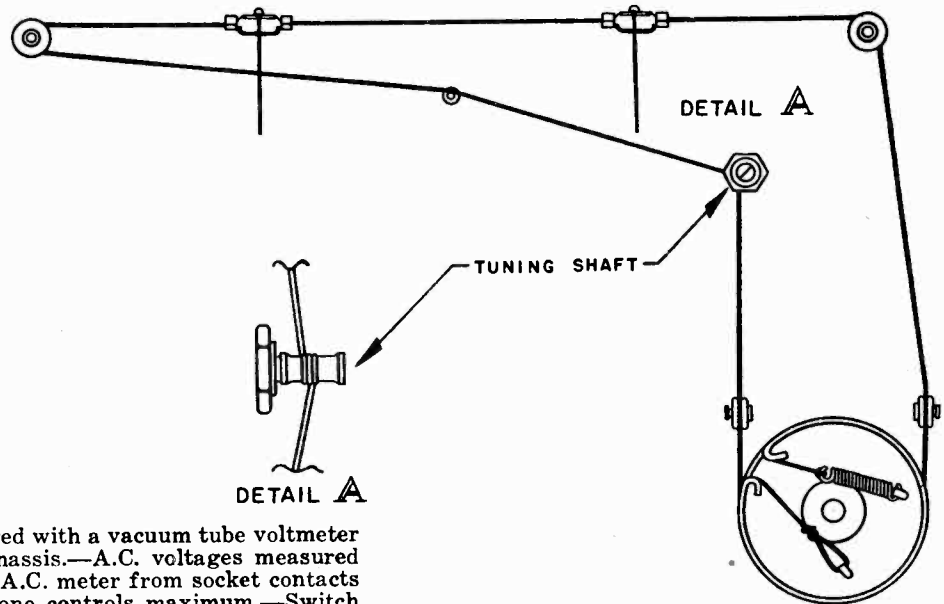
It will be noted that all alignment trimmers are accessible without removing the chassis from the cabinet. (See Fig. 2, Trimmer location.)

ALIGNMENT CHART

CONNECT TEST OSC. TO	TEST OSC. SETTING	POINTER SETTING	ADJUSTMENT FOR MAX. OUTPUT
1 Mixer Grid & Grd. .01 Mfd. Capacitor	455 KC	540 KC	Trimmers A, B, C & D
2 Standard* Test Loop	1740 KC	1740 KC	Trimmer F to 1740 KC
3 Standard* Test Loop	600 KC	600 KC	Trimmer E to 600 KC
4 Standard* Test Loop	1500 KC	1500 KC	Trimmers G & H
5 REPEAT	STEPS 2, 3 & 4		

*NOTE: Hazeltine Test Loop No. 1150

PACKARD BELL CO.



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 position.—No signal.—All voltages shown are positive D.C. unless otherwise noted.

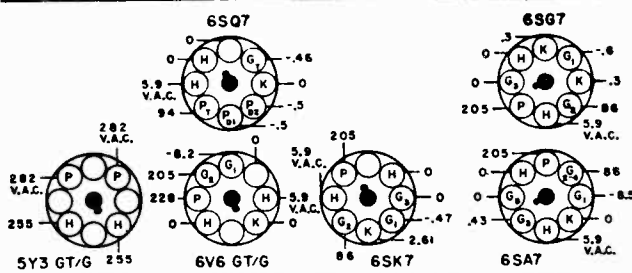


FIG. 1 SOCKET VOLTAGES

STAGE GAIN MEASUREMENTS:

Measurements taken with volume and tone controls maximum.

Switch in RADIO position.

AVC shorted out.

Standard Output . . . 50 milliwatts

Dummy Antenna . . . 200 Mmf.

Antenna to R.F. Grid . . . 4X at 1000 KC

R.F. Grid to Converter Grid . . . 21X at 1000 KC

Converter Grid to 1st I.F. Grid . . . 32X at 1000 KC

1st I.F. Grid to 2nd Detector . . . 48X at 455 KC

Overall Audio Gain . . . 253X at .5 watts 400 cycles

OSCILLATOR CATHODE VOLTAGES:

Measured at 120 volts AC line voltage with AC vacuum tube voltmeter input loading above 10 megohms.

1500 KC . . . 2.75 volts AC

1000 KC . . . 2.5 volts AC

800 KC . . . 2.62 volts AC

600 KC . . . 2.9 volts AC

D.C. RESISTANCE MEASUREMENTS:

1st & 2nd I.F. Coils

Primary . . . 14.5 ohms

Secondary . . . 14.5 ohms

Oscillator Coil

Primary . . . 1 ohm

Secondary . . . 6 ohms

Antenna Coil

Start to Tap . . . 1.5 ohms

Start to Finish . . . 2 ohms

R.F. Coil

Primary . . . 58 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.

The permanent magnet speaker contained in this model is equipped with the ADJUST-A-CONE feature. This feature provides the radio service technician with a quick and simple means of centering an "Off Center" or "Dragging" voice coil.

Centering the voice coil is accomplished by simply adjusting the two screws on the spider support until the voice coil moves freely in the air gap. This adjustment is very critical, consequently the use of an audio oscillator is recommended. Set the audio oscillator at cone resonance, which should be approximately 120 cycles, when making this adjustment.

In most cases, a very slight turn of either adjustment screw will correct an "Off Center" voice coil.

In the first run of sets a 39 ohm resistor was used in the cathode circuit of the 6SG7. This resistor has been replaced by a 220 ohm resistor. This change was made to stabilize the R.F., thereby eliminating critical dressing of leads surrounding the 6SG7.

Electrical Rating:

Line Voltage . . . 110-120 volts, 50-60 cycle A.C.

Power Consumption . . . 68 watts

Tuning Frequency Range:

540 to 1740 KC

Intermediate Frequency:

455 KC

Electrical Output:

Maximum . . . 4 watts

Loudspeaker:

Type . . . Permanent Magnet

Outside Cone Diameter . . . 6 1/2"

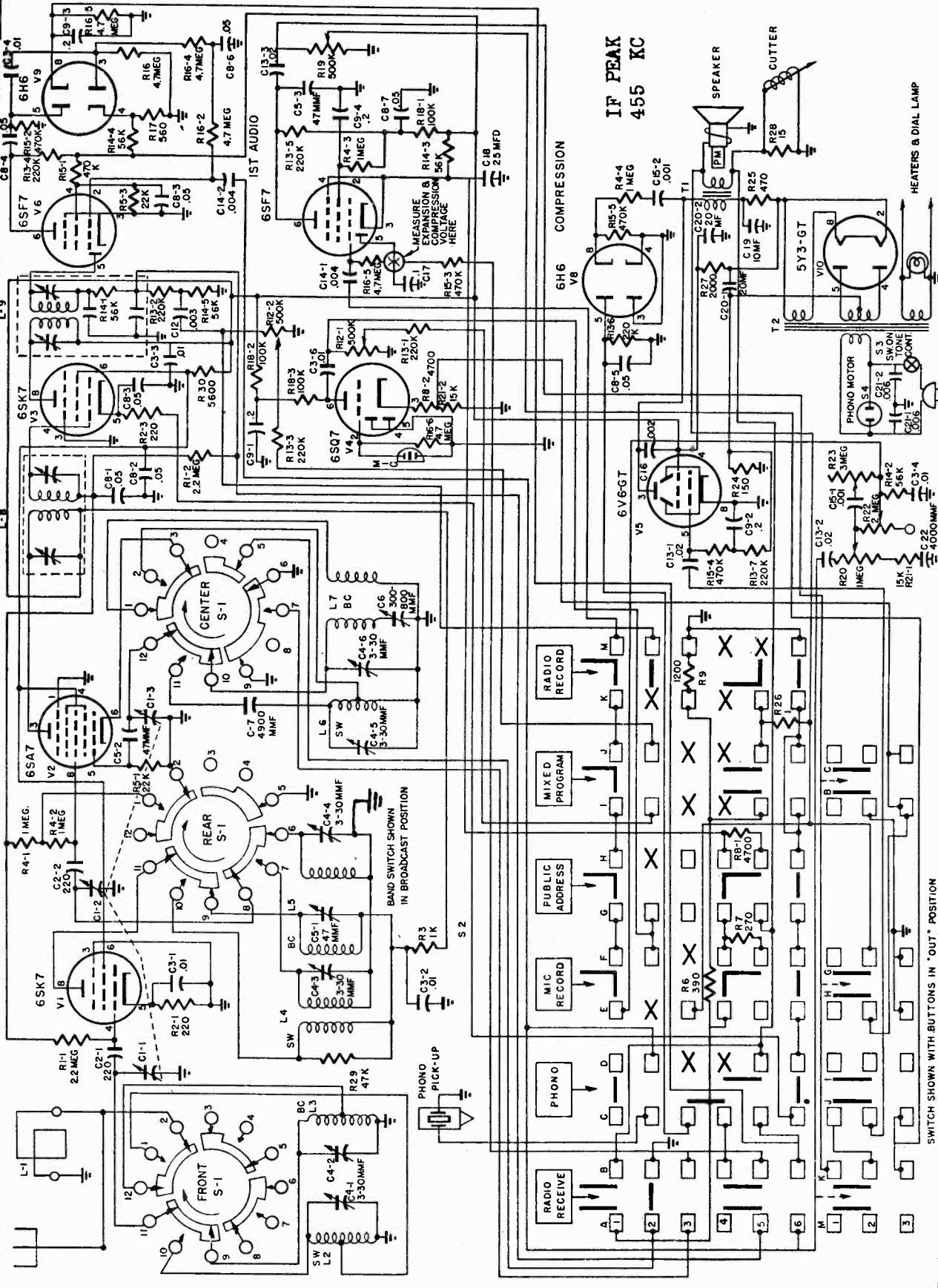
Voice Coil Impedance . . . 3.5 ohms at 400 cycles

Magnet Rating . . . 2.15 Oz. Alnico 5

Tubes:

Tube	Function
6SG7	R.F. Amplifier
6SA7	Frequency Converter
6SK7	I.F. Amplifier
6SQ7	Detector Amplifier
6V6-GT/G	Power Amplifier
5Y3-GT/G	Rectifier

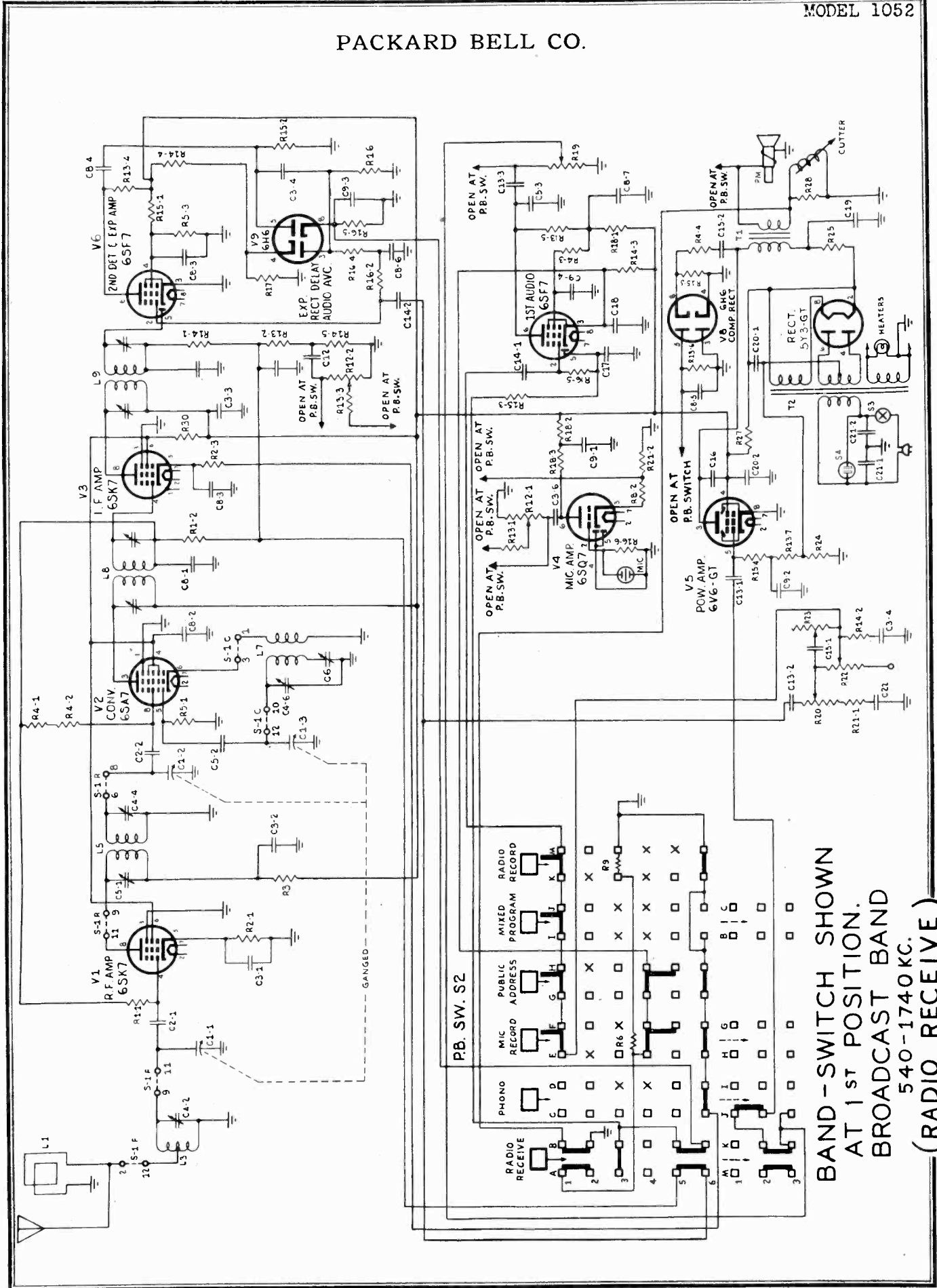
EXPANSION



SWITCH SHOWN WITH BUTTONS IN "OUT" POSITION

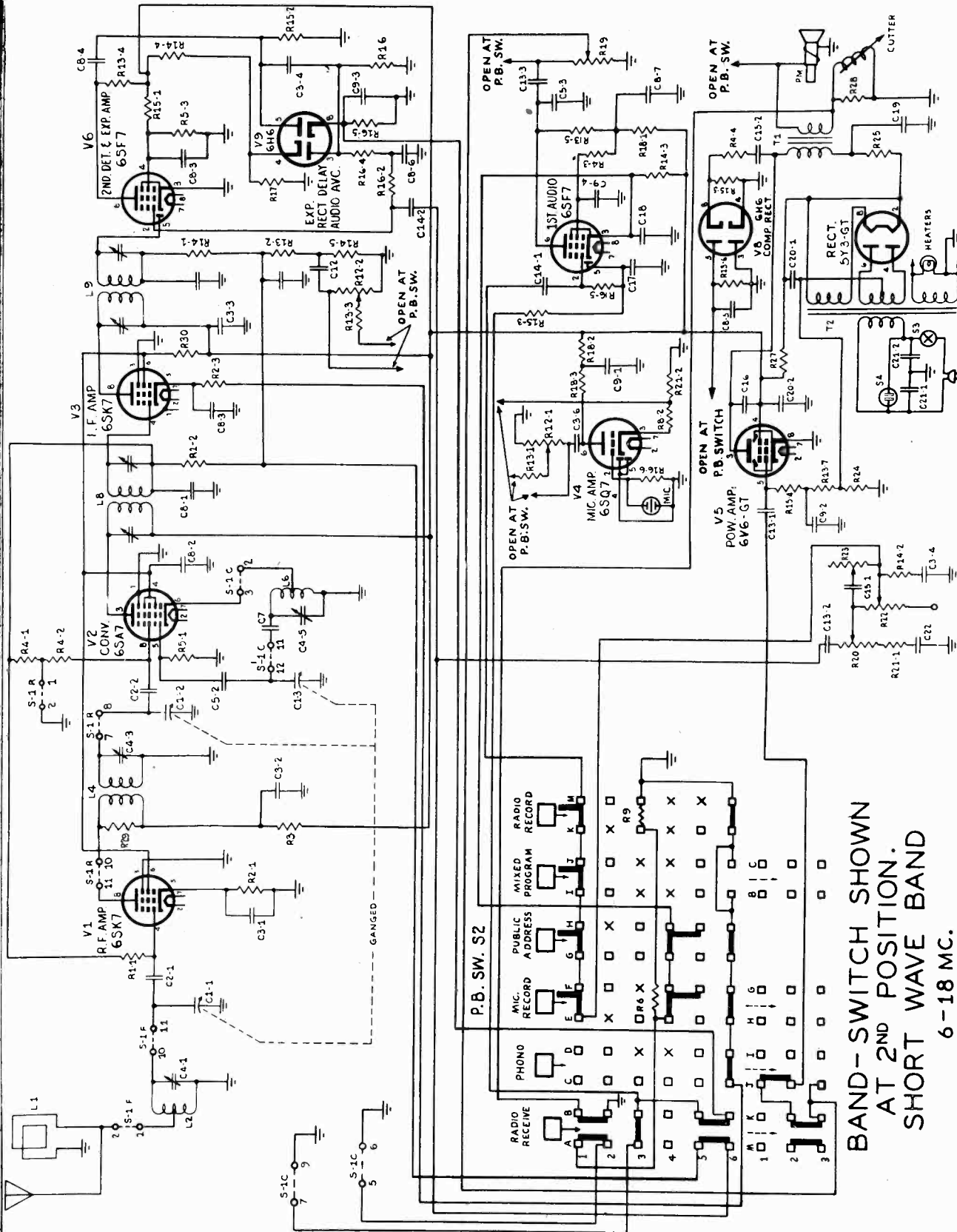
Resistors 16-6 (4.7 Meg.), R8-2 (#700), and R21-2 (15K), shown on this diagram, are used when the Shure microphone (Packard-Bell part No. 57001B) is in use. When the Shure microphone comes a 1 Meg., R8-2 becomes a 2700 ohm and American microphone (Packard-Bell part No. 57004) is used; R16-6 be- R21-2 becomes a 10,000 ohm

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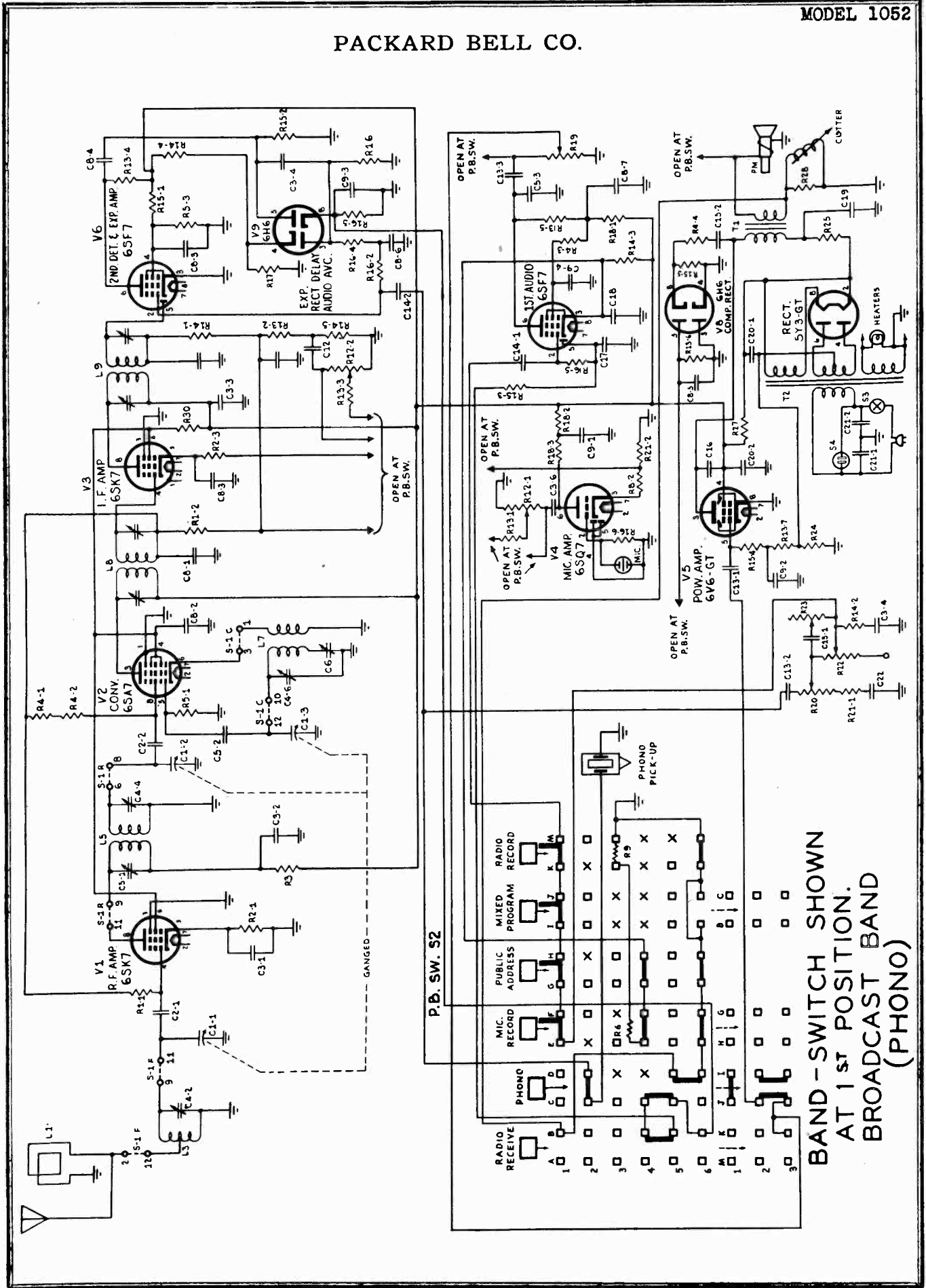
**BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540-1740 KC.
(RADIO RECEIVE)**

PACKARD BELL CO.



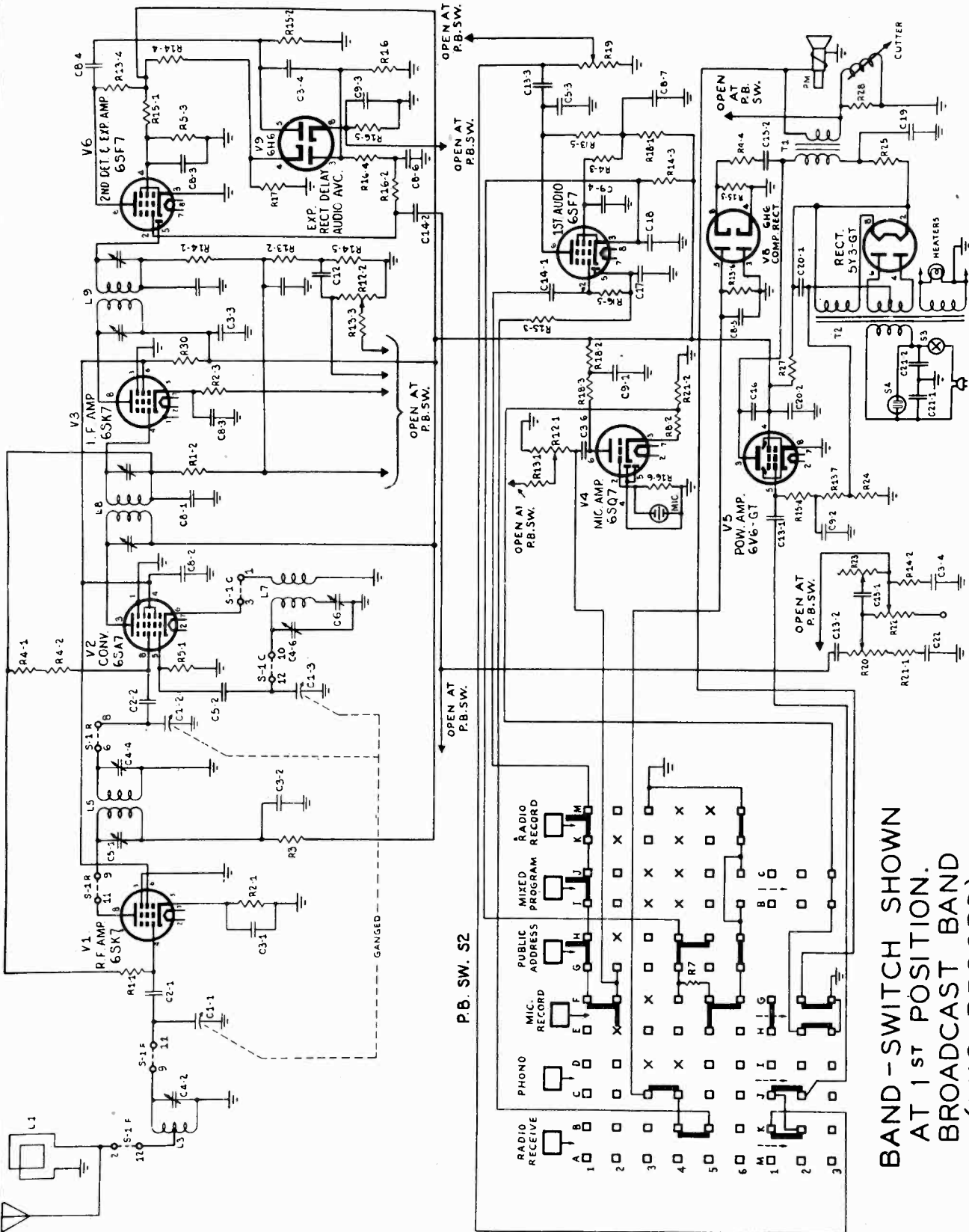
**BAND-SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE BAND
(RADIO RECEIVE)**
6-18 MC.

PACKARD BELL CO.



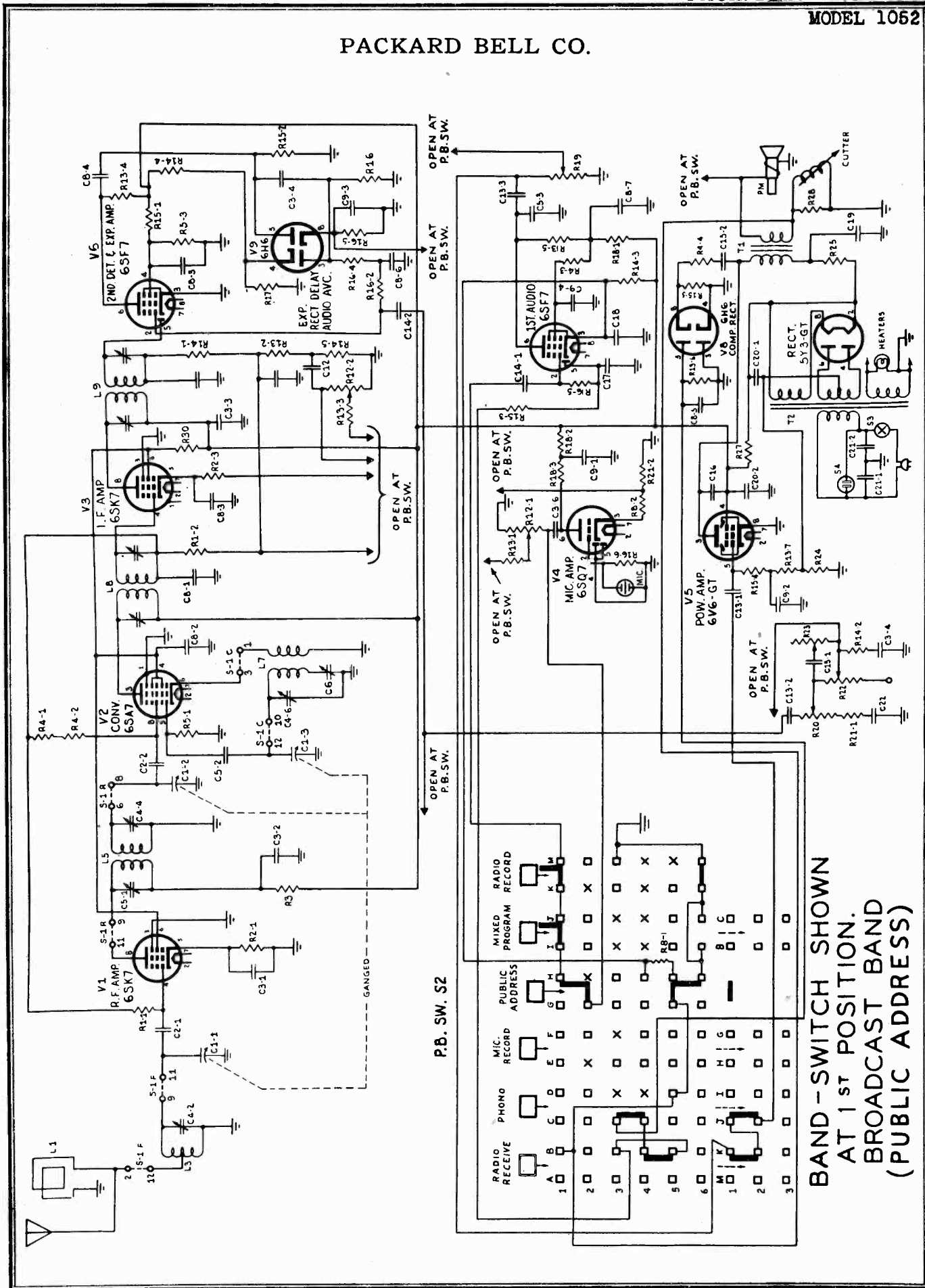
P.B. SW. S2

BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(PHONO)



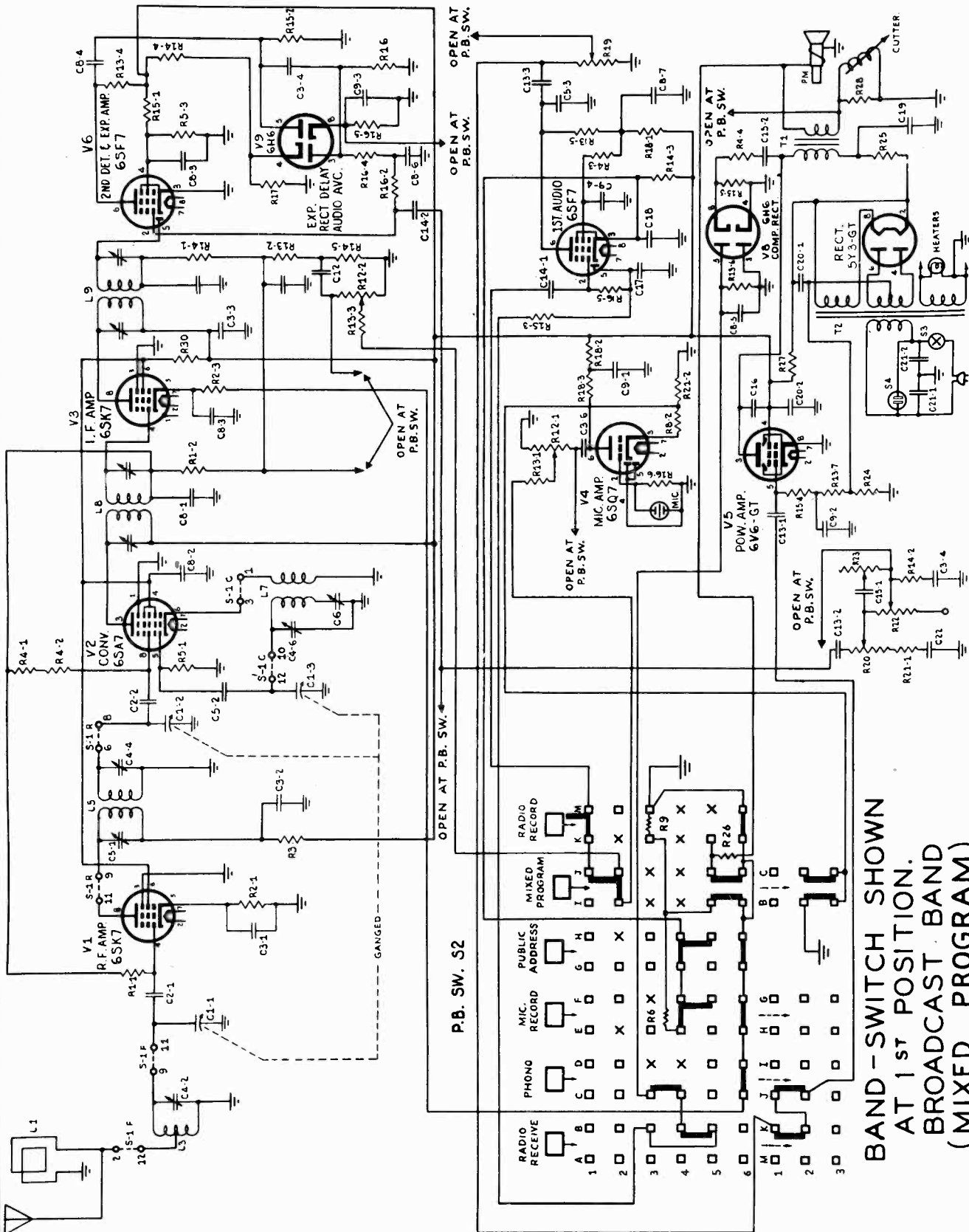
BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(MIC. RECORD)

PACKARD BELL CO.



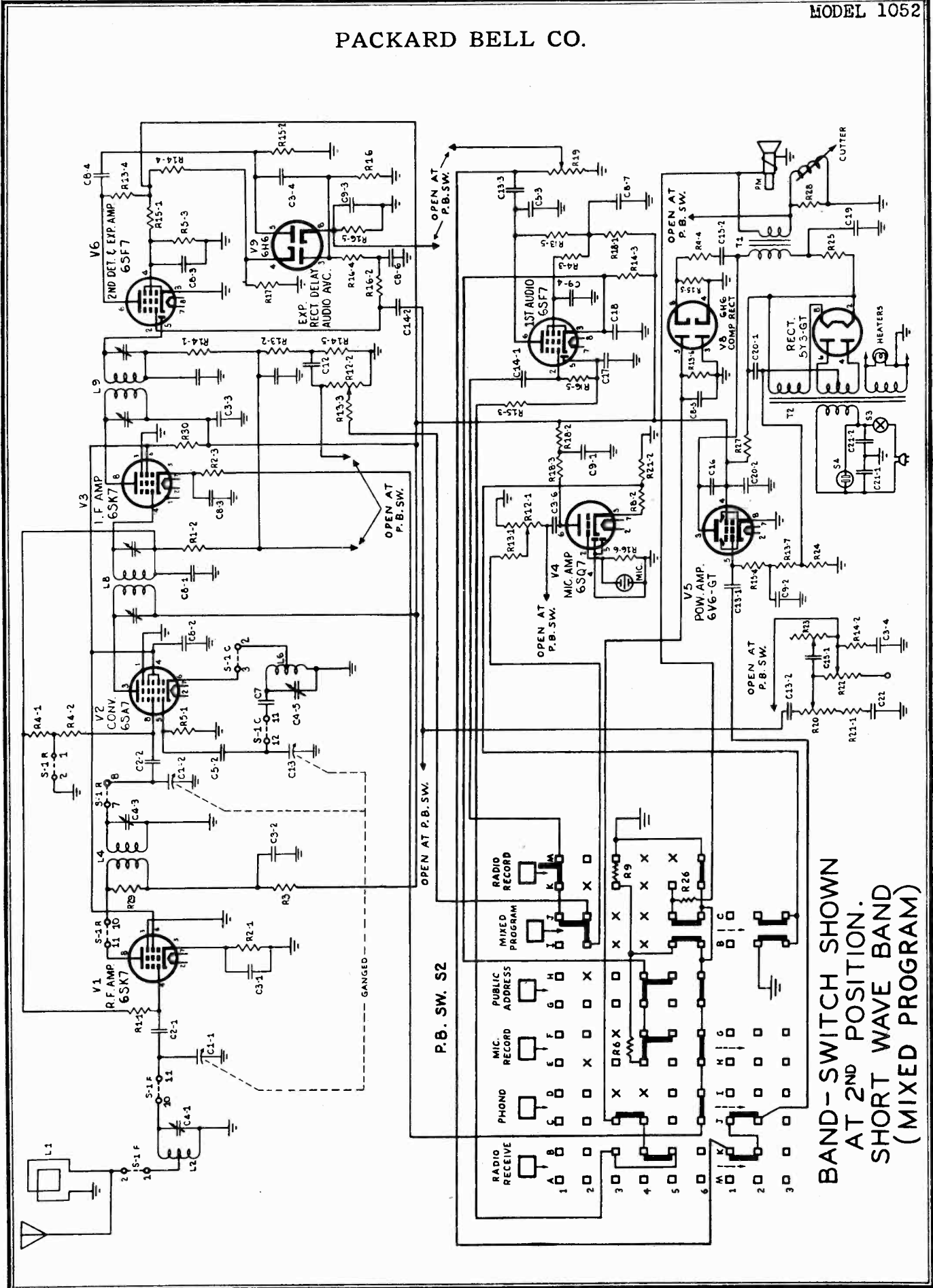
MODEL 1052

PACKARD BELL CO.



**BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(MIXED PROGRAM)**

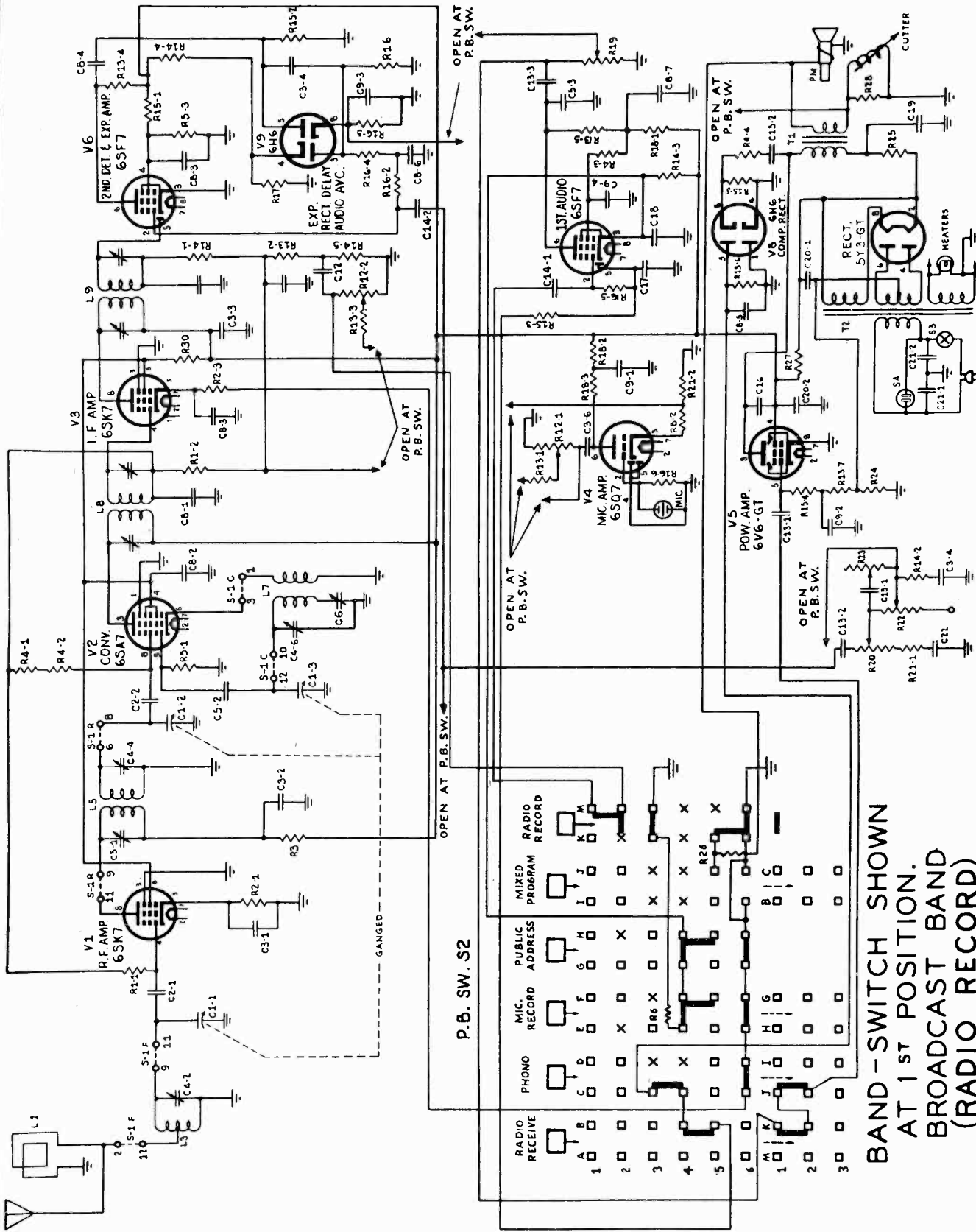
PACKARD BELL CO.



BAND - SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE BAND
(MIXED PROGRAM)

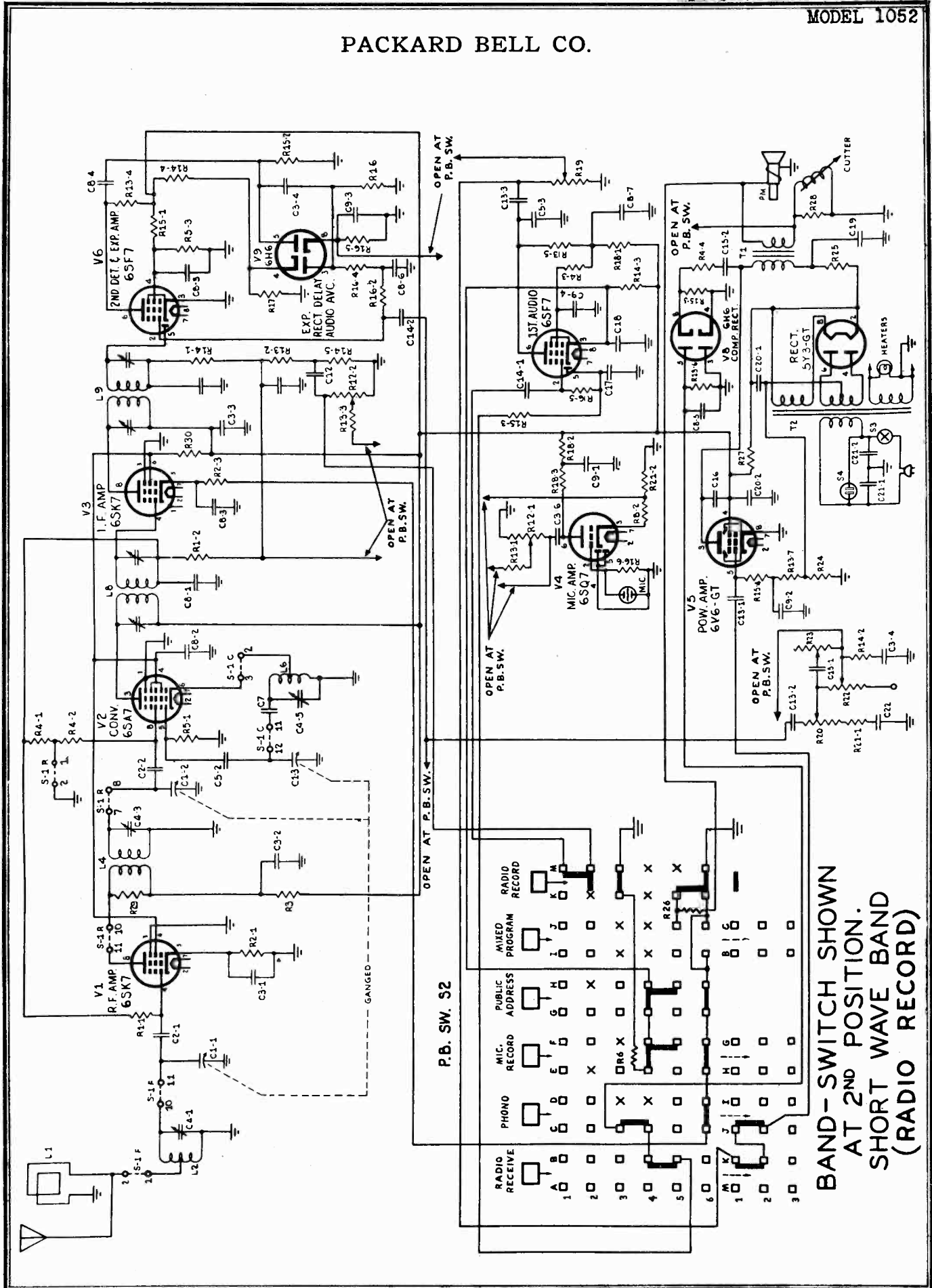
MODEL 1052

PACKARD BELL CO.



**BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(RADIO RECORD)**

PACKARD BELL CO.



BAND-SWITCH SHOWN AT 2ND POSITION. SHORT WAVE BAND (RADIO RECORD)

PACKARD BELL CO.

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.

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.

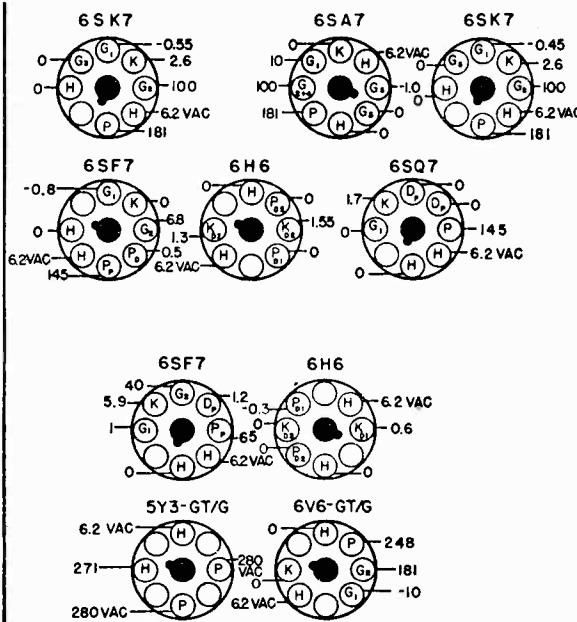


FIG. 2 VOLTAGE CHART

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.

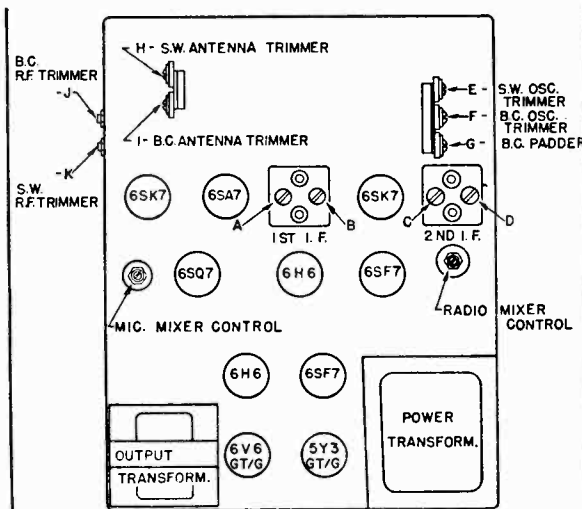


FIG. 1 TRIMMER LOCATION

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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%, 1/2 watt
	C3-5			R1-2	
	C3-6		73017	R2-1	Resistor, carbon: 220 ohms, 10%, 1/2 watt
23400A	C4-1	Capacitor, trimmer: dual 3-30 Mmf.		R2-2	
	C4-2		73025	R3	Resistor, carbon: 1000 ohms, 10%, 1/2 watt
	C4-3		73053	R4-1	Resistor, carbon: 1 megohm, 20%, 1/2 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%, 1/2 watt
23225	C5-1	Capacitor, mica: 47 Mmf., 20%		R5-2	
	C5-2		73020	R6	Resistor, carbon: 390 ohms, 10%, 1/2 watt
	C5-3		73018	R7	Resistor, carbon: 270 ohms, 10%, 1/2 watt
23402	C6	Capacitor, padder: 300 to 800 Mmf.	73033	R8-1	Resistor, carbon: 4700 ohms, 10%, 1/2 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%, 1/2 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%, 1/2 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%, 1/2 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%, 1/2 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%, 1/2 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 (enclosed in metal case)	73022	R17	Resistor, carbon: 560 ohms, 10%, 1/2 watt
23901	C21-2		73047	R18-1	Resistor, carbon: 100,000 ohms, 20%, 1/2 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%, 1/2 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	73903	R28	Resistor, wire wound: 15 ohms, 10%, 1 watt
41002		Escutcheon, motor switch	73045	R29	Resistor, carbon: 47,000 ohms, 10%, 1/2 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 1/8"
59003		Needle, permanent: phono (alternate for above)	84012		Spring, microphone holding
59001		Stylus (recording needle)	84013		Spring, recording head holding
59002		Panel, front	84001B		Spring, dial cord
62004D		Panel, motorboard	84003		Spring, round & bar knobs
62005D		Pick-up, phono: ass'y	84011		Spring, push button knobs
63002A		Cartridge, phono pick-up	86001A		Switch, rotary: wafer type, band switch
63003A		Plug, microphone	86301		Switch, push button section
66005		Plug, AC motor	86701A		Switch, slide: AC motor, SPST
66008		Pointer ass'y, dial scale	89400A	T1	Transformer, output
67001A		Decal, bandswitch	89003A	T2	Transformer, power
68038		Pulley, dial	63017		Phono pick-up rest
69001		Pulley, idler	10507		Automatic cutter arm lift, ass'y
69004		Pulley, drive			
69005					

MODEL 1052
MODEL 1054

PACKARD BELL CO.

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 1/2"
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	Primary . . . 17 ohms
Secondary . . . 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	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 Finish25 ohms
Start to Tap . . . 10.5 ohms	Start to Tap20 ohms

R.F. Coils

Broadcast	Short Wave
Primary . . . 75 ohms	Primary . . . 5.5 ohms
Secondary . . . 6.5 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	Primary . . . 17 ohms
Secondary . . . 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	Start to Finish . . . 4 ohms
Secondary . . . 6 ohms	Start to Tap2 ohms

ANTENNA COILS

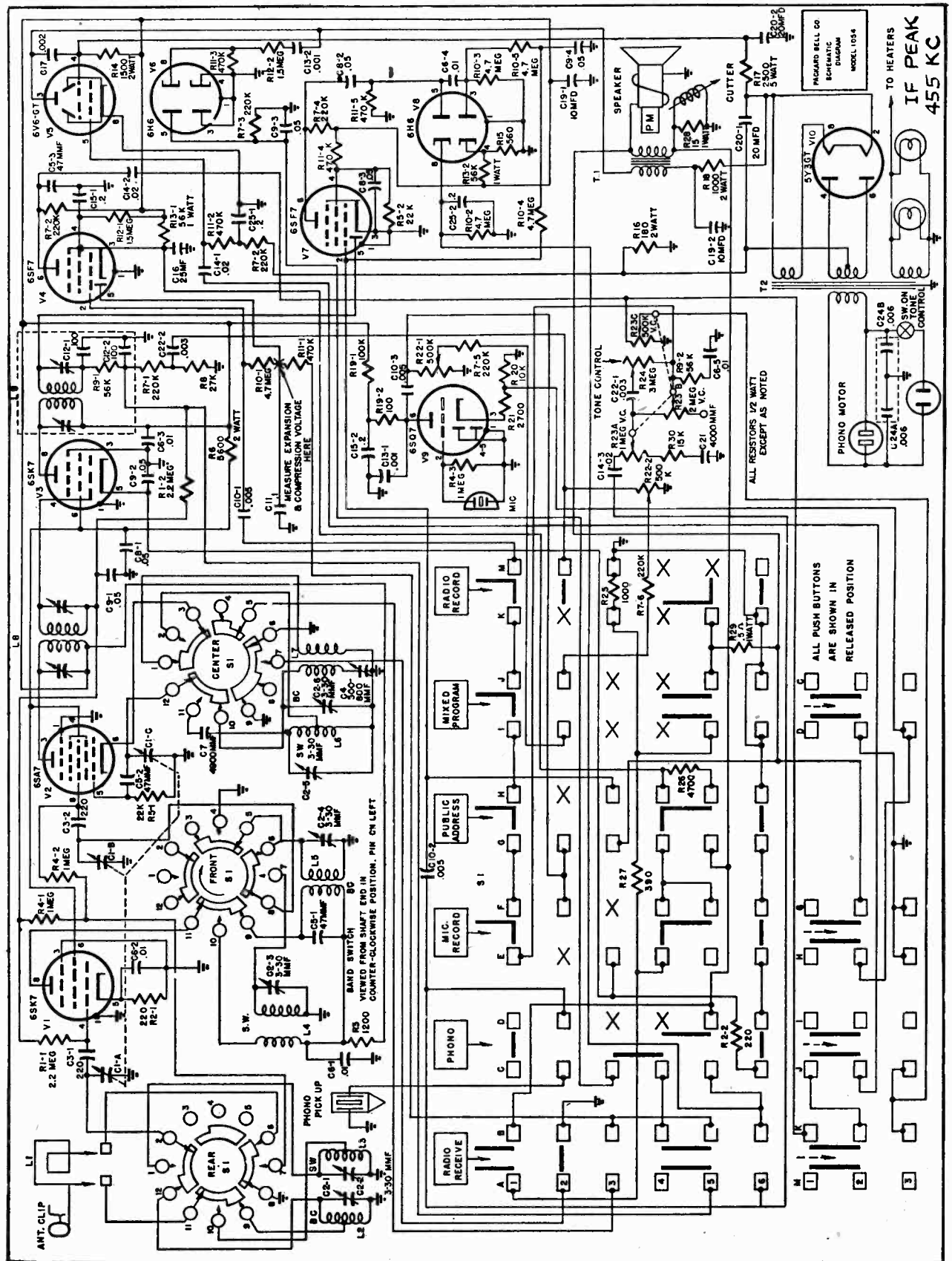
Broadcast	Short Wave
Start to Finish . . 12.2 ohms	Start to Finish . . .25 ohms
Start to Tap . . . 10.5 ohms	Start to Tap20 ohms

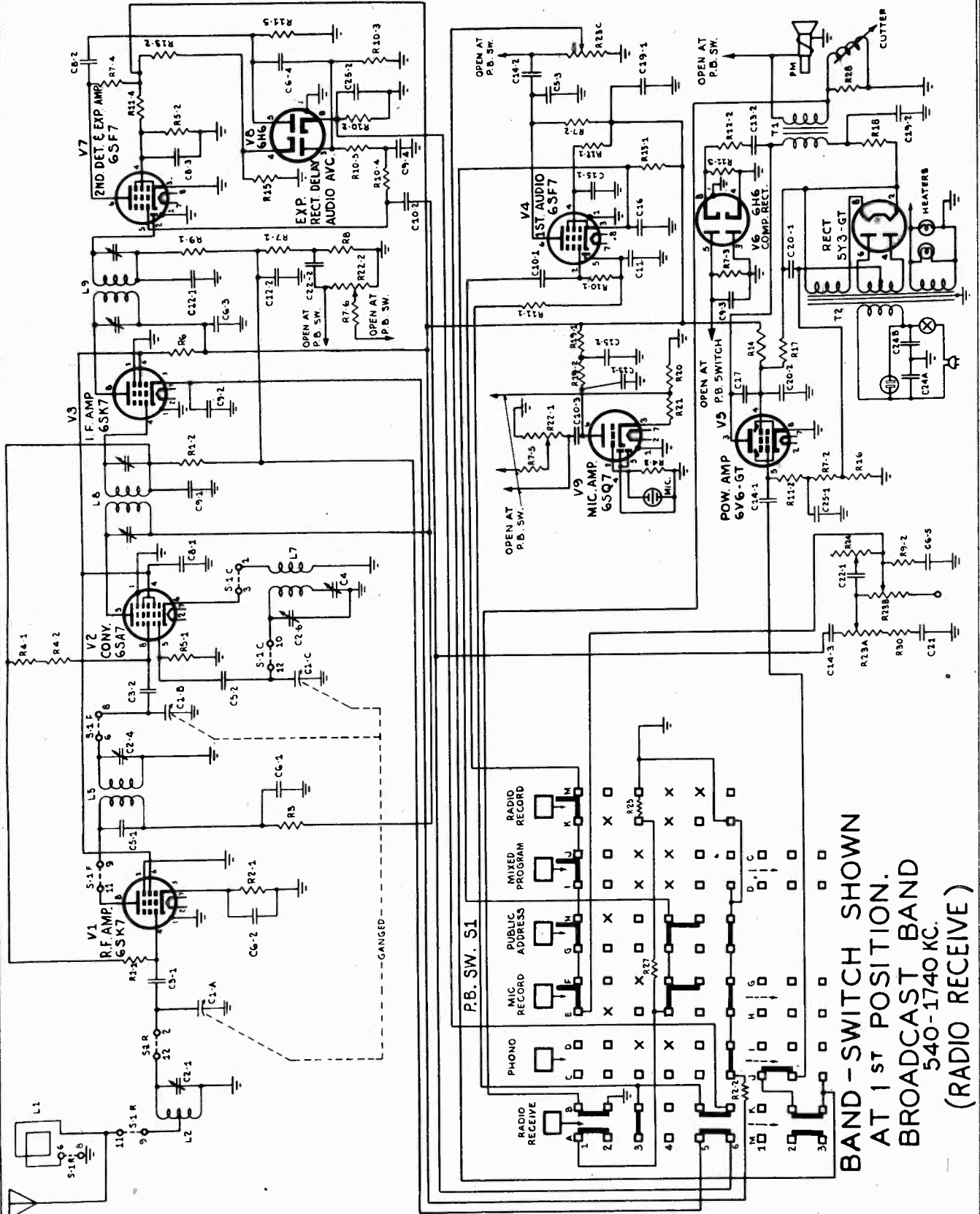
R.F. COILS

Broadcast	Short Wave
Primary75 ohms	Primary . . . 5.5 ohms
Secondary . . . 6.5 ohms	Secondary2 ohms

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

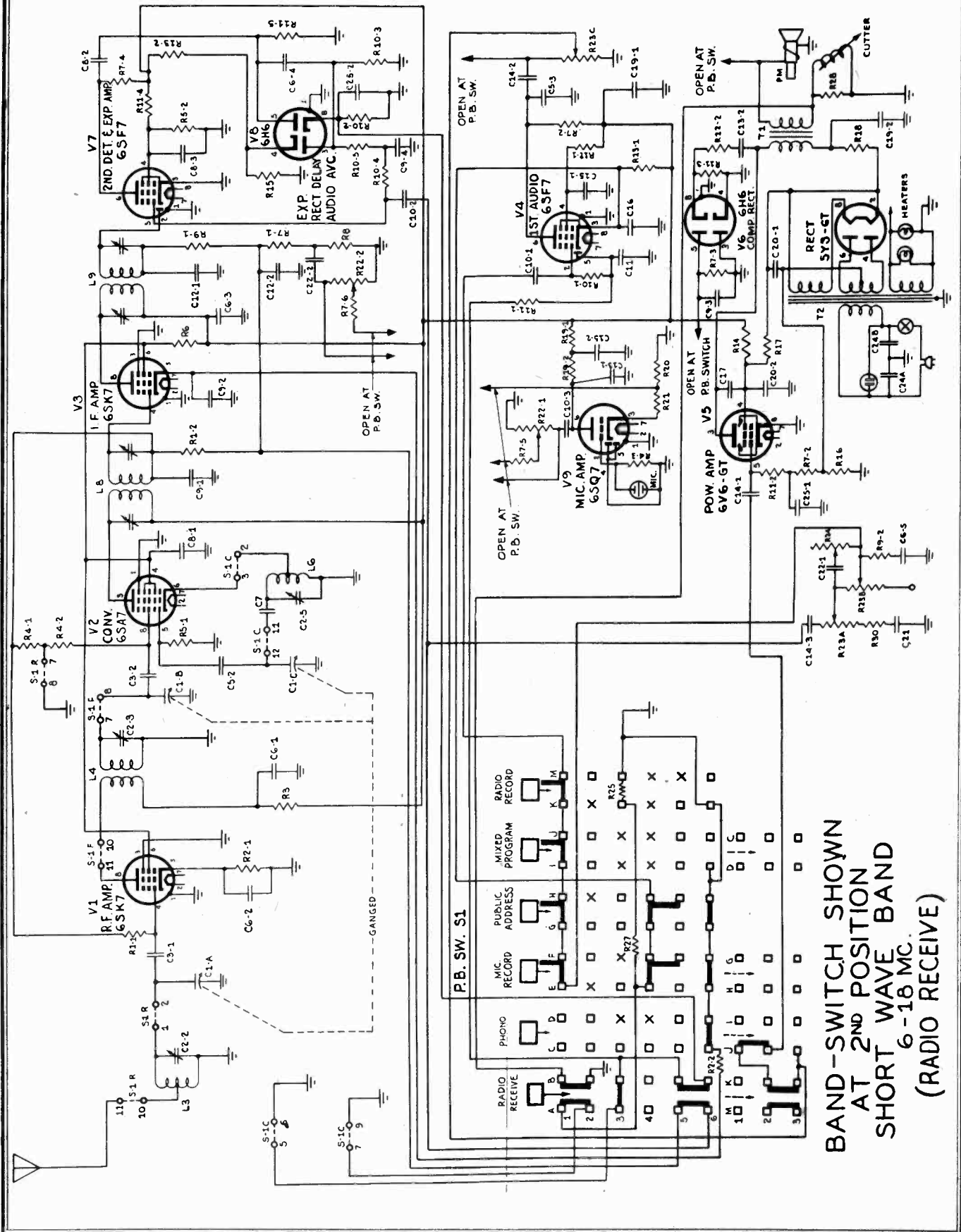
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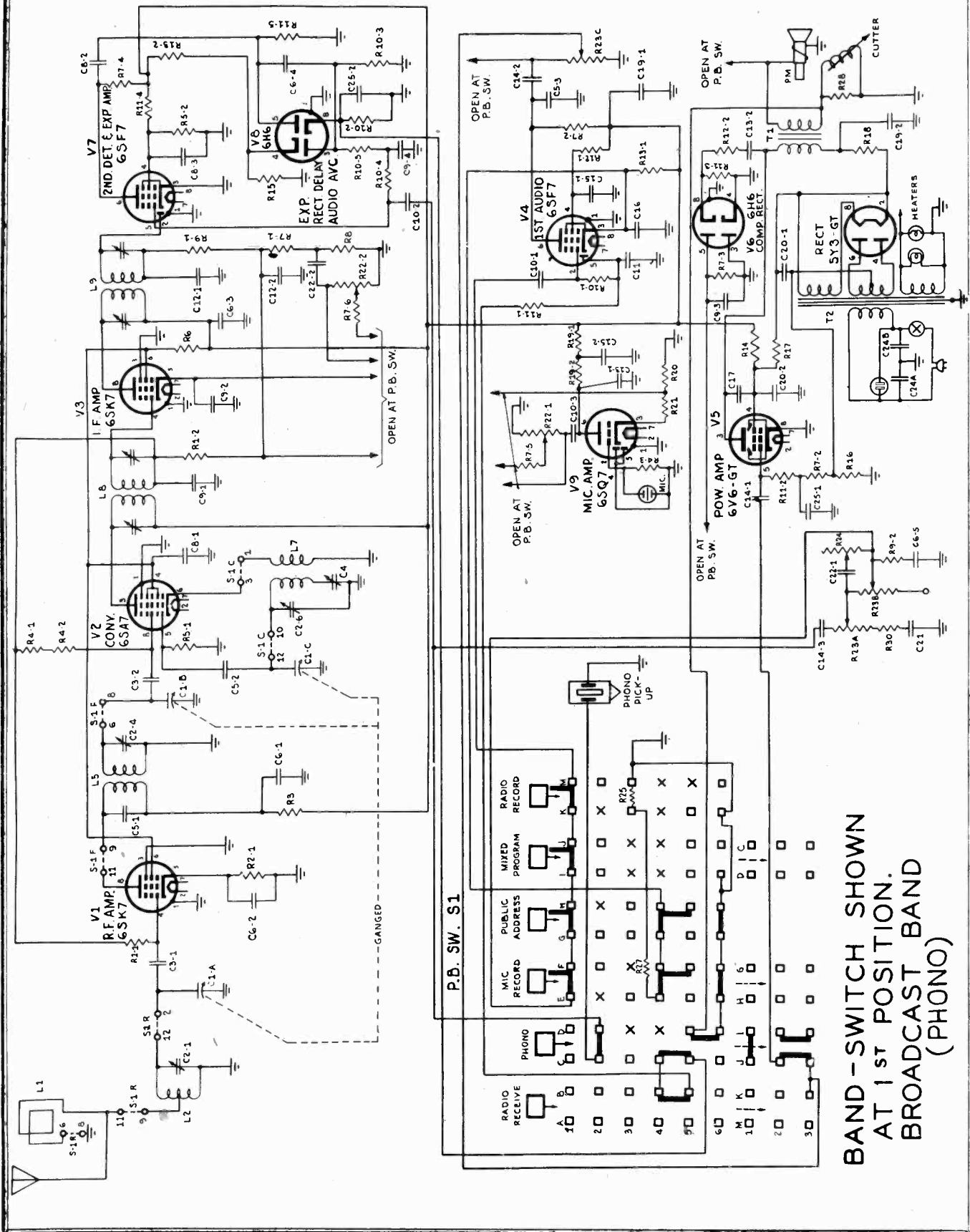


**BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540-1740 KC.
(RADIO RECEIVE)**

PACKARD BELL CO.

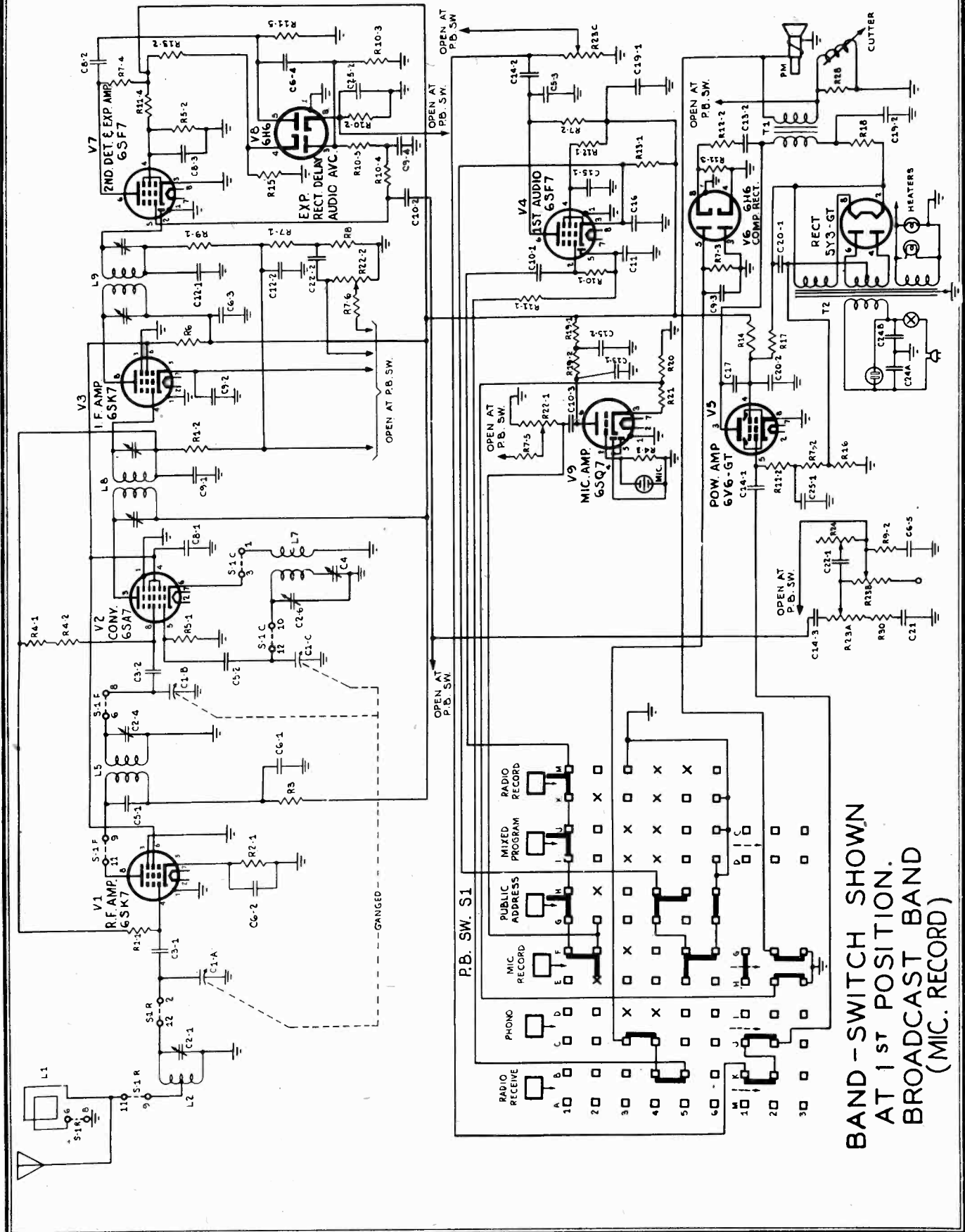


**BAND-SWITCH SHOWN
AT 2ND POSITION
SHORT WAVE BAND
6-18 MC.
(RADIO RECEIVE)**

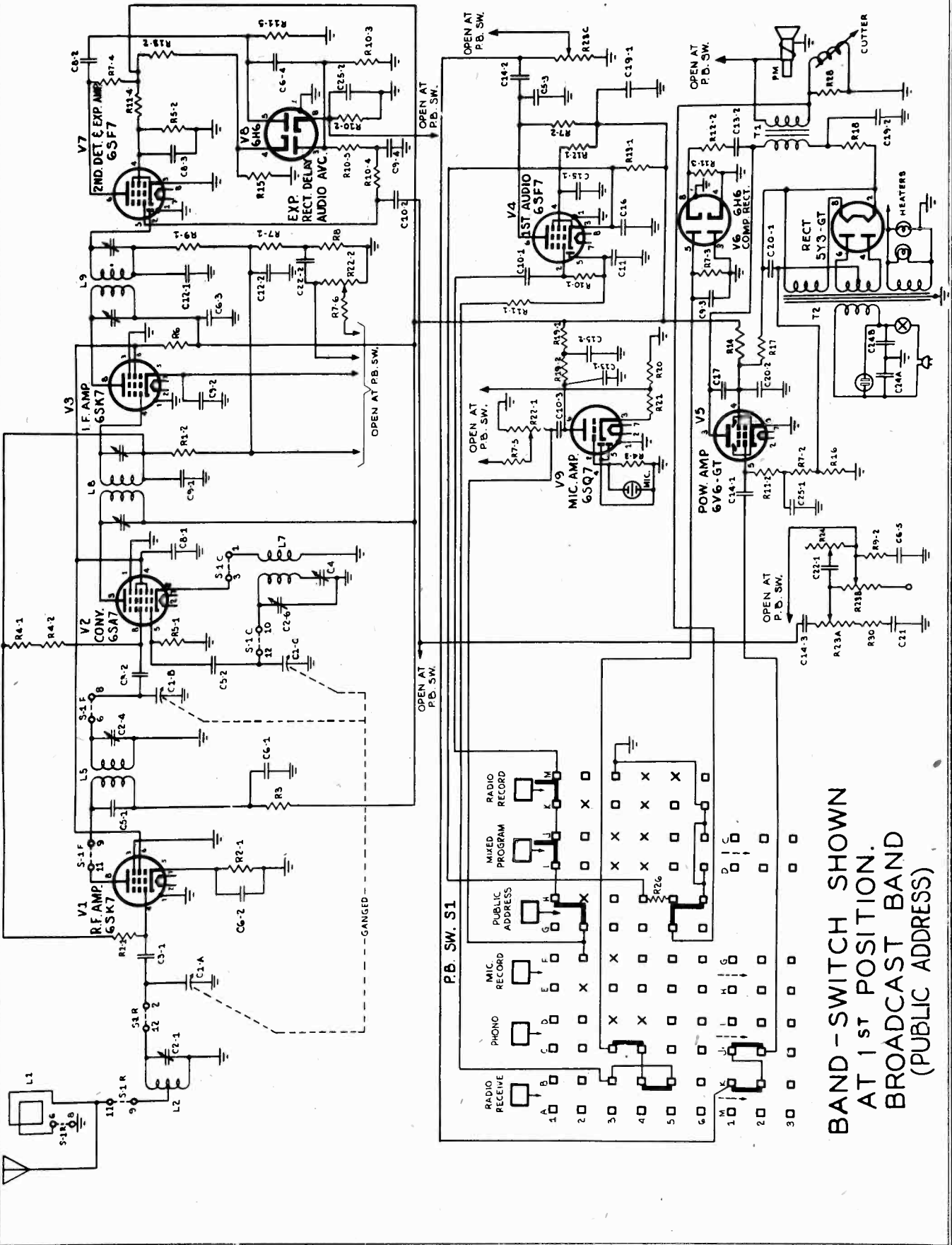


BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(PHONO)

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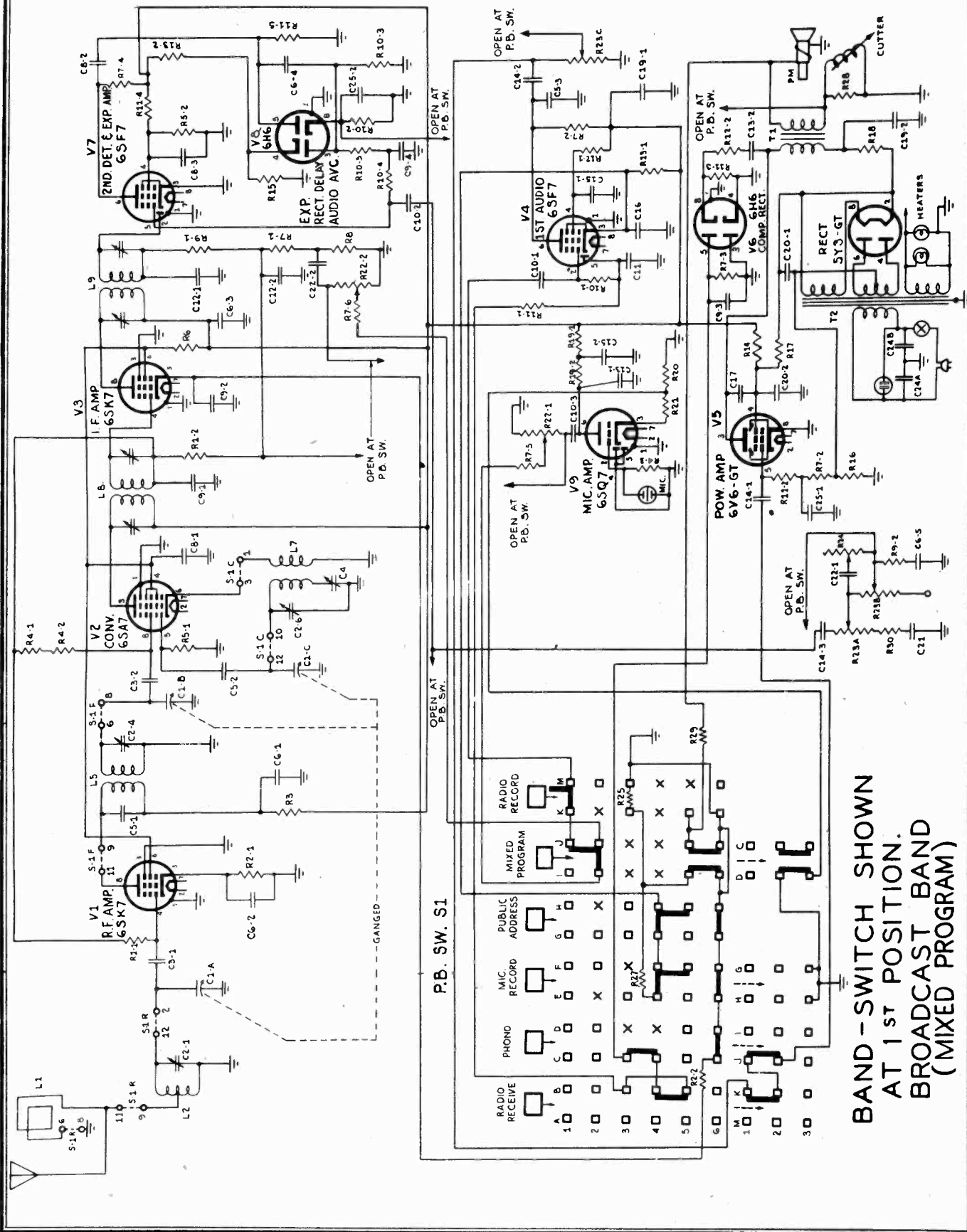


BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(MIC. RECORD)

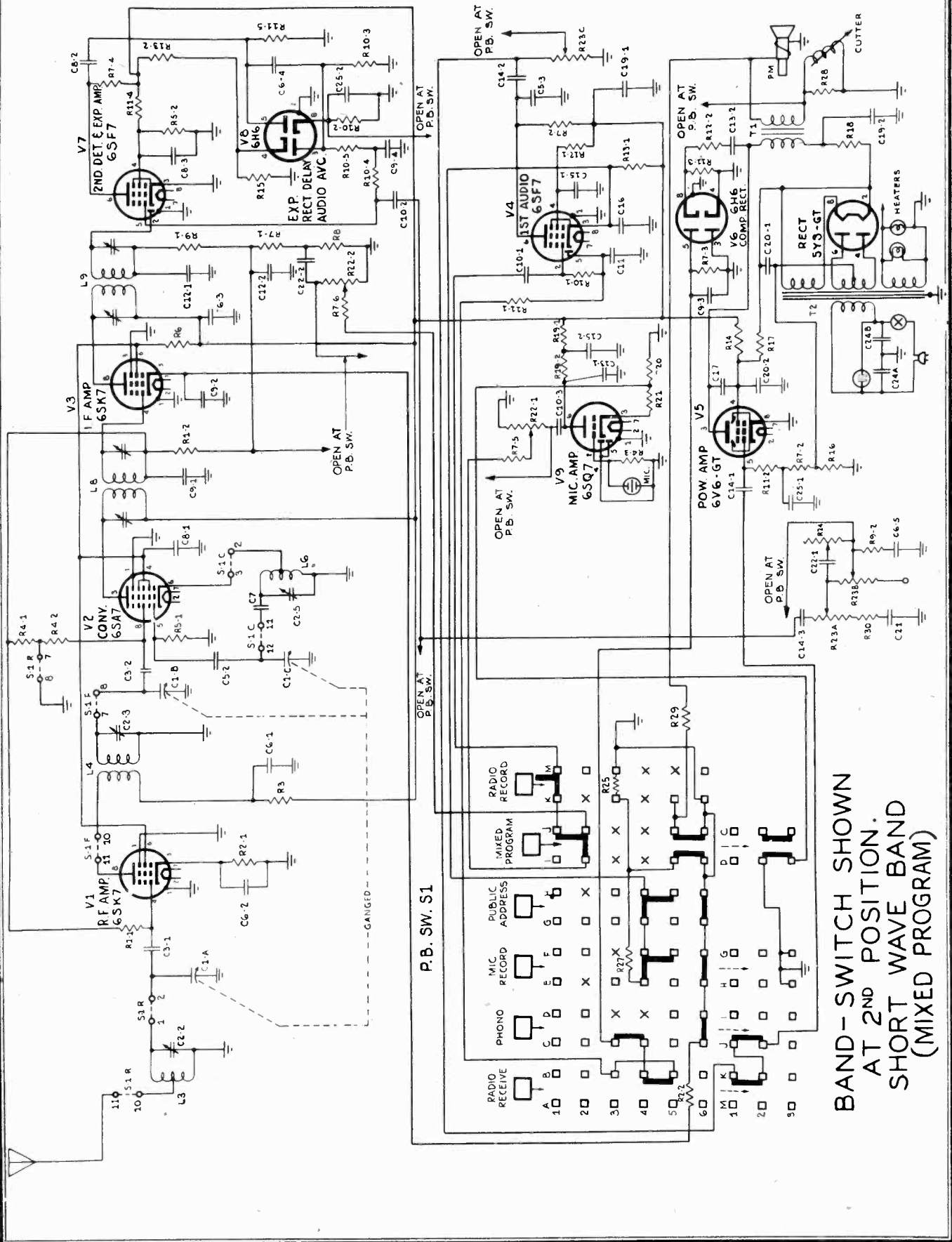


BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(PUBLIC ADDRESS)

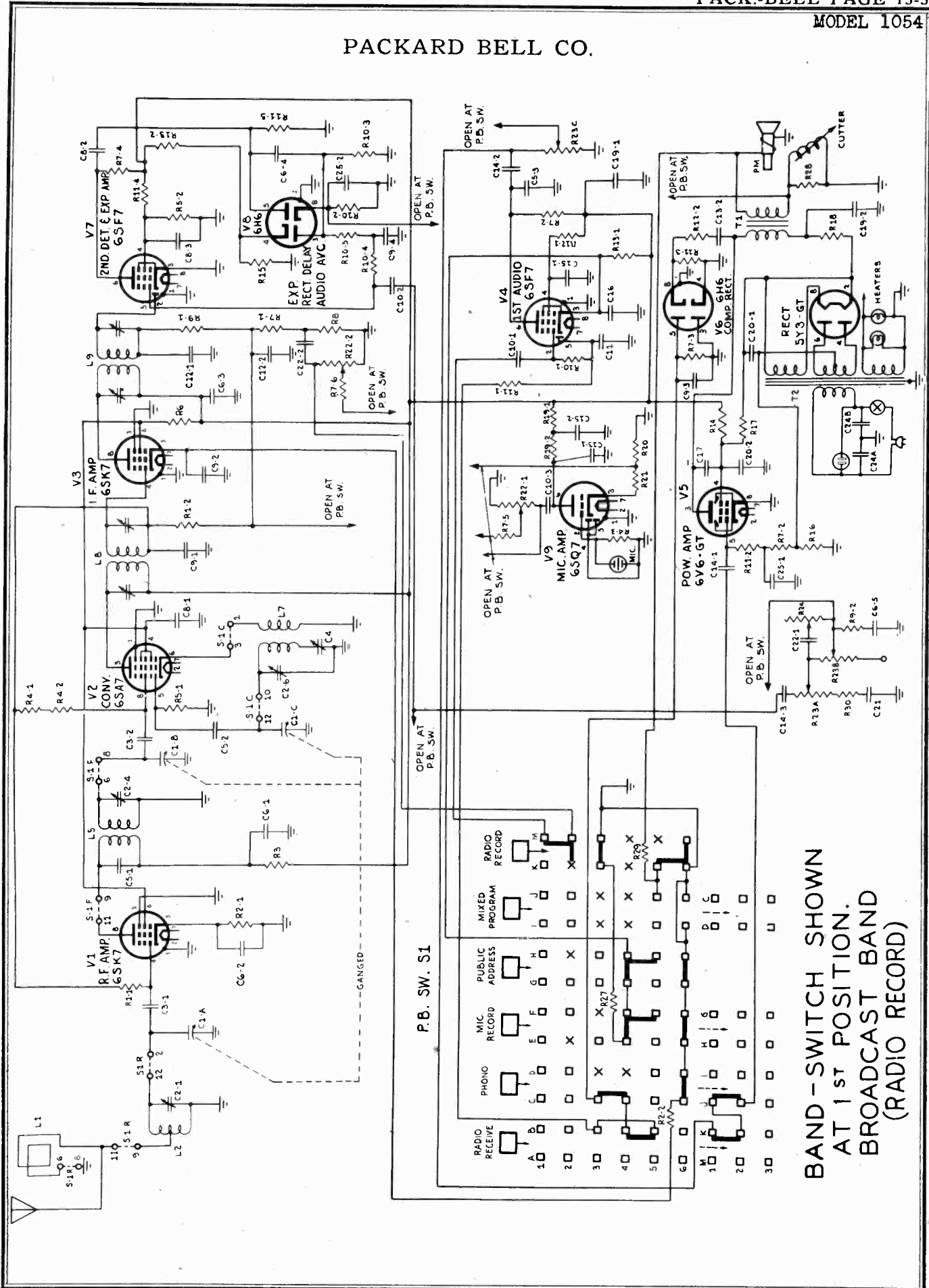
PACKARD BELL CO.



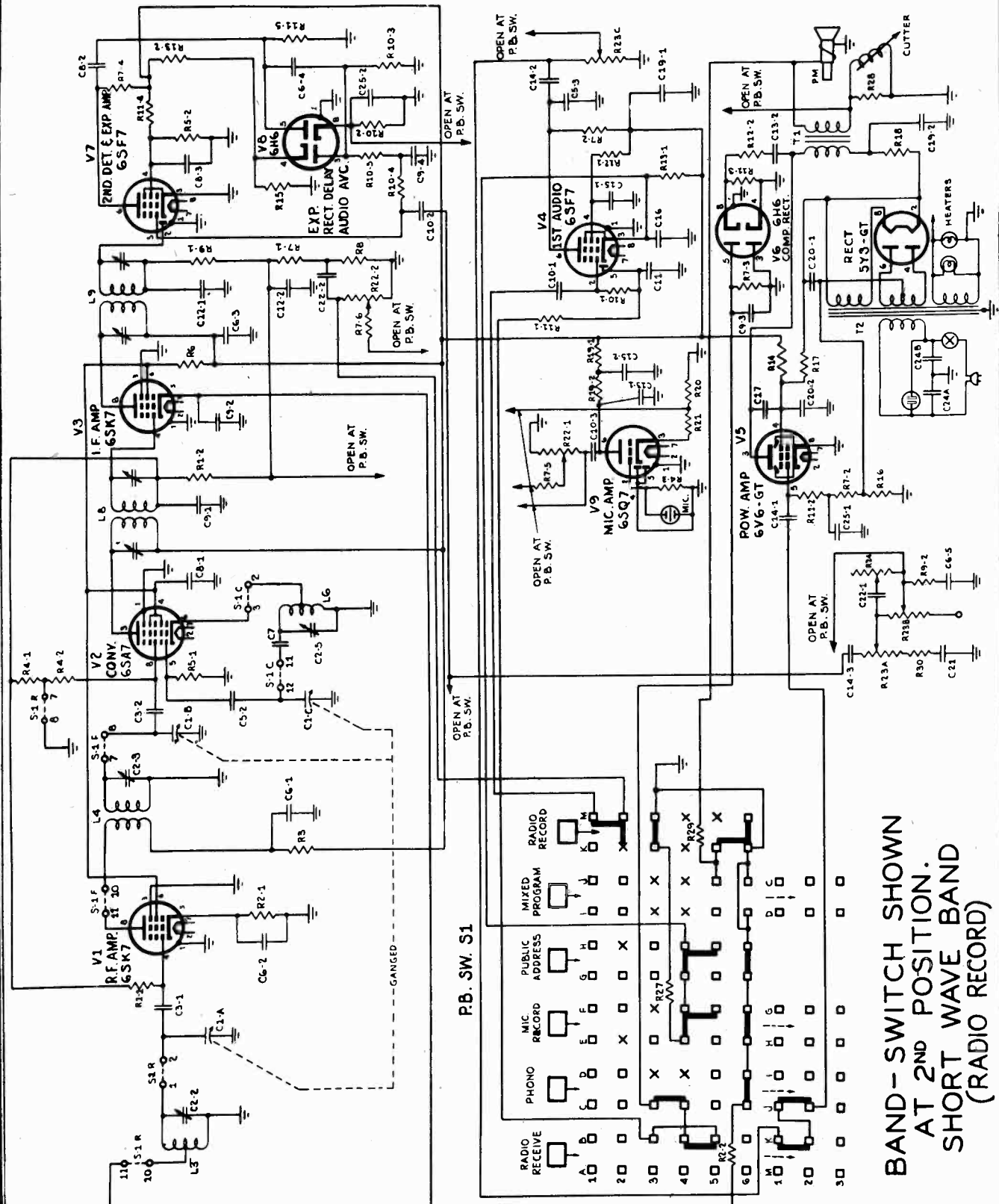
BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(MIXED PROGRAM)



PACKARD BELL CO.



BAND - SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
(RADIO RECORD)



P.B. SW. S1

BAND - SWITCH SHOWN
AT 2ND POSITION.
SHORT WAVE BAND
(RADIO RECORD)

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 5 columns: STEP, CONNECT TEST OSC. TO, TEST OSC. SETTING, POINTER SETTING, ADJUST FOR MAX. OUTPUT. Rows 1-7 detailing alignment steps.

*NOTE: Hazeltine Test Loop #1150.

BRIEF DESCRIPTION OF EXPANDER AND COMPRESSOR CIRCUITS

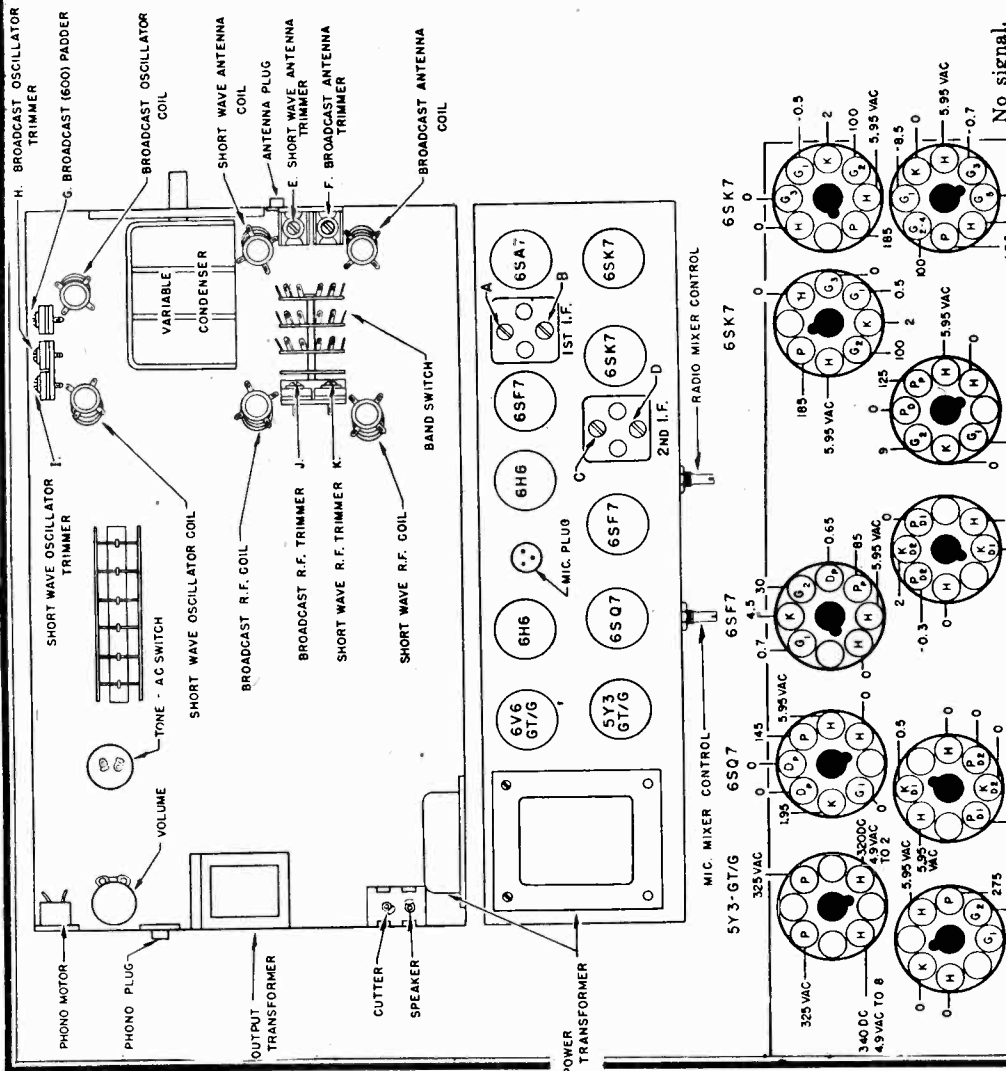
V7 6SF7 and V6 6H6 embrace the expansion circuit. Referring to Figure 3, Schematic Diagram, it will be noted that volume expansion is in the circuit at all times when the Phono or Radio receive buttons are depressed. V7 6SF7 serves as the 2nd detector and expansion amplifier. V6, 6H6 functions as the 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" button 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.

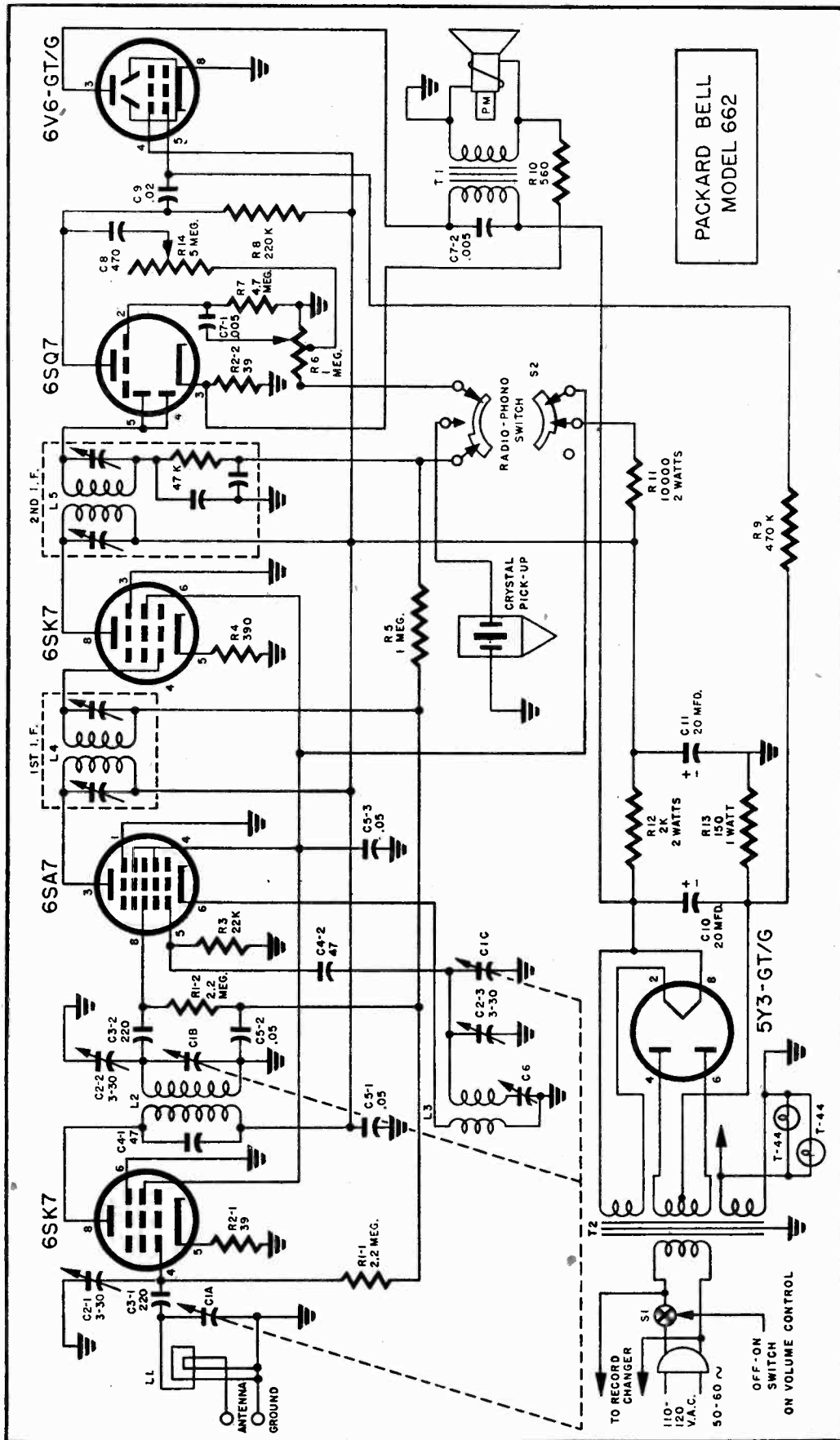
Volume and tone controls maximum. Band switch in standard broadcast position. Compression switched out of Radio Receive by breaking contact from B-4 to B-5. Compression switched out of Phonograph by breaking contact from C-3 to C-4. Compression is in circuit on ALL RECORD POSITIONS and PUBLIC ADDRESS.

MODEL 1054

PACKARD BELL CO.

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
10505		Assembly, switch arm	68048		Decal, band switch
10506		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
	C2-6				
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				
	C14-3		73022	R15	Resistor, carbon: 560 ohms, 10%, 1/2 watt
23020	C15-1	Capacitor, paper: .2 Mfd. 400 volt			
	C15-2		73077	R16	Resistor, carbon: 180 ohms, 10%, 2 watt
24006	C16	Capacitor, electrolytic: 25 Mfd. 25 WV			
23002	C17	Capacitor, paper: .002 Mfd. 600 volt	73907	R17	Resistor, wire wound: 2500 ohms, 10%, 5 watt
24002	C19-1	Capacitor, electrolytic: 10 Mfd. 450 WV			
	C19-2		73120	R18	Resistor, carbon: 1000 ohms, 10%, 2 watt
24001	C20-1	Capacitor, electrolytic: 20 Mfd. 450 WV			
	C20-2		73047	R19-1	Resistor, carbon: 100,000 ohms, 20%, 1/2 watt
23208	C21	Capacitor, mica: 4000 Mmf. 10%		R19-2	
23016	C22-1	Capacitor, paper: .003 Mfd. 600 volt	73037	R20	Resistor, carbon: 10,000 ohms, 10%, 1/2 watt
	C22-2				
23901	C24A & B	Capacitor, paper: 2 X .006 Mfd. 600 volt (metal case)	73030	R21	Resistor, carbon: 2700 ohms, 10%, 1/2 watt
23018	C25-1	Capacitor, paper: .2 Mfd. 200 volt	25800	R22-1	Control, mixer: 500,000 ohms
	C25-2		25500A	R23A, B & C	Control, volume: 3 section; section A 1 megohm, section B 2 megohms, section C 500,000 ohms
28005A		Clip, antenna	25002A	R24	Control, tone: 3 megohms, with AC switch
29306	L1	Loop, antenna	73025	R25	Resistor, carbon: 1000 ohms, 10%, 1/2 watt
29400A	L2	Coil, antenna: Std. broadcast	73033	R26	Resistor, carbon: 4700 ohms, 10%, 1/2 watt
29401A	L3	Coil, antenna: short wave	73020	R27	Resistor, carbon: 390 ohms, 10%, 1/2 watt
29101A	L4	Coil, R.F.: short wave			
29102A	L5	Coil, R.F.: Std. broadcast	73903	R28	Resistor, wire wound: 15 ohms, 10%, 1 watt
29201A	L6	Coil, oscillator: short wave			
29205A	L7	Coil, oscillator: Std. broadcast	73910	R29	Resistor, wire wound: .5 ohm, 10%, 1 watt
29004D	L8	Coil, 1st I.F.: 455 KC			
29007	L9	Coil, 2nd I.F.: 455 KC	73039	R30	Resistor, carbon: 15,000 ohms, 10%, 1/2 watt
32003C		Cord, AC: 8'	78008		Shield, microphone plug
32015		Cord, AC: 2 1/2'	79002		Socket, tube: 8 prong octal; wafer type
35002		Conductor, variable capacitor ground	79004		Socket, microphone
36020		Cutter cartridge	79005		Socket, antenna & phono
38021A		Dial scale	79007		Socket, phono motor
40101B		Drive, planetary	79009		Socket, dial lamp: bayonet base
40111B		Drive, band switch	79018		Socket, speaker & cutter
41005		Escutcheon, dial	79021		Socket, tube: 8 prong octal; black bakelite
50038		Insulator, antenna connector	83701		Speaker, permanent magnet: 10"
52019A		Knob, control: bleach (set screw)	84001B		Spring, dial
52020A		Knob, control: bleach (slip on)	84011		Spring, push button knob
52021A		Knob, control: walnut (set screw)	86001A	S1	Switch, rotary: 3 gang; wafer type; band switch
52022A		Knob, control: walnut (slip on)	86301	S2	Switch, push button
52023		Knob, push button: walnut	86802		Switch, micro: part of automatic cut- ter stop
52024A		Knob, push button: bleach	89409B	T1	Transformer, output
54001		Lamp, dial: T-44; bayonet base	89006C	T2	Transformer, power
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			

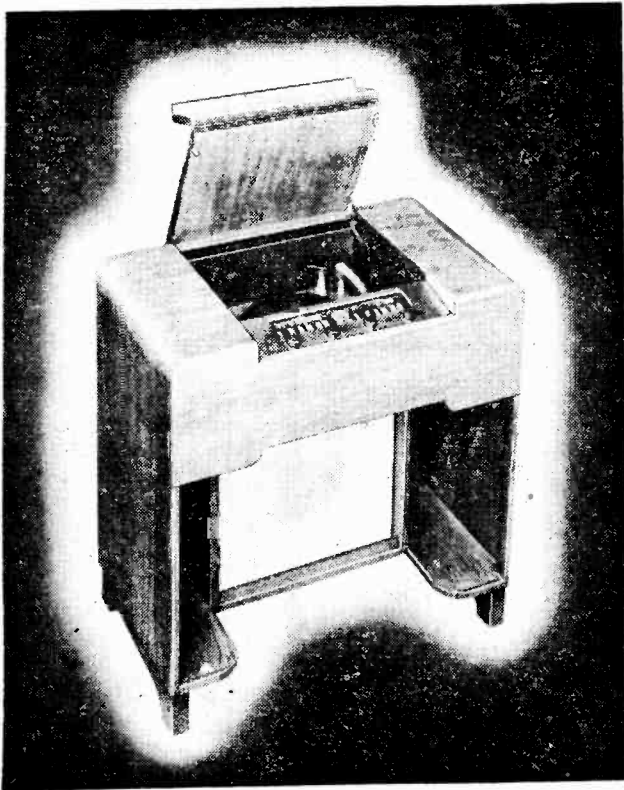
PACKARD BELL CO.



PACKARD BELL
MODEL 662

MODEL 662

PACKARD BELL CO.



SPECIFICATIONS

- Overall Dimensions:**
 Height 26 7/8" Depth 18 1/2"
 Width 29 3/4" Weight 70 Lbs.
- Electrical Rating:**
 Line Voltage . . . 110-120 volts, 50-60 cycle A.C.
 Power Consumption . . . 67 watts
- Tuning Frequency Range:**
 540 to 1740 KC
- Intermediate Frequency:**
 455 KC
- Electrical Output:**
 5 watts maximum
- Loudspeaker:**
 Type . . . Permanent Magnet
 Outside Cone Diameter . . . 10"
 Voice Coil Impedance . . . 3.5 ohms at 400 cycles
 Magnet Rating . . . 4.64 Oz. Alnico 5
- Tubes:**
- | | |
|----------|---------------------|
| Tube | Function |
| 6SK7 | R.F. Amplifier |
| 6SA7 | Frequency Converter |
| 6SK7 | I.F. Amplifier |
| 6SQ7 | Detector-Amplifier |
| 6V6-GT/G | Power Amplifier |
| 5Y3-GT/G | Rectifier |

GENERAL INFORMATION

Model 662 is a console, radio-phonograph combination with an automatic record changer. This model employs a specially designed high impedance loop antenna and a permanent magnet speaker. It is housed in a wood cabinet of bleach or walnut design.

For service information concerning the record changer, refer to the Model 550 Automatic Record Changer Manual. This record changer is also used on Packard-Bell Model 661.

Chassis mounting procedure will be found on the tube layout-license label.

To Service tubes, remove plate in record changer compartment.

Referring to Figure 4, Record Changer Motor Diagram, a 50 ohm, 10 watt resistor will be noted in series with the motor. This resistor was added after an early run to avoid motor heating on 50 cycle current. The resistor is enclosed in a small metal shield. The addition of this resistor does not, in any manner, detract from the efficiency of the motor on 50 or 60 cycle operation.

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 variable capacitor.

Use the Hazeltine Standard 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 is done with a minimum input signal.

ALIGNMENT CHART

STEP	CONNECT TEST OSC.	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*	1740 KC	1740 KC	Trimmer G to 1740 KC
3	Standard Test Loop*	600 KC	Rock Variable	Padder E
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)

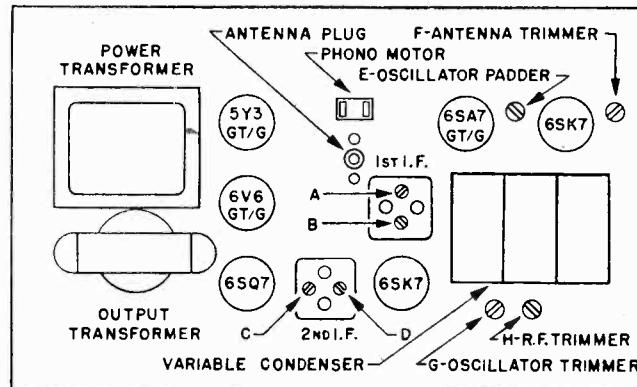


FIGURE 2 TRIMMER LOCATION

PACKARD BELL CO.

SPECIAL SERVICE INFORMATION

D.C. Resistance Measurements:

1st & 2nd I.F. Coils

Primary . . . 17 ohms

Secondary . . . 17 ohms

Oscillator Coil

Primary 1 ohm

Secondary 6 ohms

R.F. Coil

Primary 58 ohms

Secondary 4.2 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.

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

STAGE GAIN MEASUREMENTS:

Measurements taken with volume and tone controls maximum.

Switch in RADIO position.

AVC shorted out.

Standard Output . . . 50 milliwatts

Dummy Antenna . . . 200 Mmf.

Antenna to R.F. Grid . . . 6X at 1000 KC

R.F. Grid to Converter Grid . . . 7X at 1000 KC

Converter Grid to 1st I.F. Grid . . . 46X at 455 KC

1st I.F. Grid to 2nd Detector . . . 62X at 455 KC

Overall Audio Gain . . . 320X at .5 watts 400 cycles

OSCILLATOR CATHODE VOLTAGES:

Measured at 120 volts AC line voltage with AC vacuum tube voltmeter input loading above 10 megohms.

- 1500 KC . . . 2.25 volts AC
- 1000 KC . . . 2.15 volts AC
- 800 KC . . . 2.3 volts AC
- 600 KC . . . 2.5 volts AC

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 position. — No signal. — All voltages shown are positive D.C. unless otherwise noted.

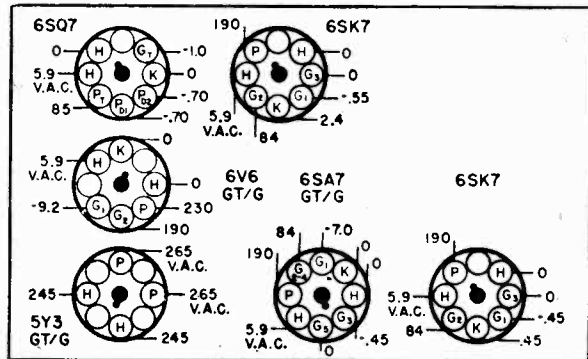


FIGURE 1 SOCKET VOLTAGES

TABLE OF REPLACEABLE PARTS

PART NO.	REF. SYMBOL	DESCRIPTION	PART NO.	REF. SYMBOL	DESCRIPTION
19010		Bushing, drive	73008	R2-1	Resistor, carbon: 39 ohms, 10%, 1/2 watt
21036G		Cabinet	73041	R2-2	Resistor, carbon: 22,000 ohms, 10%, 1/2 watt
23500C	C1A, B & C	Capacitor, variable: 3 gang	73020	R3	Resistor, carbon: 390 ohms, 10%, 1/2 watt
23401	C2-1	Capacitor, trimmer: 3-30 Mmf.	73053	R4	Resistor, carbon: 390 ohms, 10%, 1/2 watt
	C2-2		25010B	R5	Resistor, carbon: 1 megohm, 20%, 1/2 watt
23406	C2-3	Capacitor, trimmer: 3-30 Mmf.	73057	R6 & S1	Control, volume: 1 megohm, tapped at 200,000 ohms; with A.C. switch
23228	C3-1	Capacitor, mica: 220 Mmf. 20%	73057	R7	Resistor, carbon: 4.7 megohms, 20%, 1/2 watt
	C3-2		73049	R8	Resistor, carbon: 220,000 ohms, 20%, 1/2 watt
23225	C4-1	Capacitor, mica: 47 Mmf. 20%	73051	R9	Resistor, carbon: 470,000 ohms, 20%, 1/2 watt
	C4-2		73022	R10	Resistor, carbon: 560 ohms, 10%, 1/2 watt
23009	C5-1	Capacitor, paper: .05 Mfd. 400 volt	73125	R11	Resistor, carbon: 10,000 ohms, 10%, 2 watt
	C5-2		73214	R12	Resistor, carbon: 2000 ohms, 10%, 2 watt
	C5-3		73081	R13	Resistor, carbon: 150 ohms, 10%, 1 watt
23402	C6	Capacitor, padder: 300-800 Mmf.	25506B	R14	Control, tone: 5 megohms
23004	C7-1	Capacitor, paper: .005 Mfd. 600 volt	73911	R15	Resistor, wire wound: 50 ohms, 10 watt
	C7-2		77014E		Shaft, dial
23229	C8	Capacitor, mica: 470 Mmf. 20%	78028		Shield, light
23007	C9	Capacitor, paper: .02 Mfd. 600 volt	79002		Socket, tube: 8 prong octal, wafer type
24001-3	C10	Capacitor, electrolytic: 20 Mfd. 450 volt	79004		Socket, antenna
			79005		Socket, phono
24003	C11	Capacitor, electrolytic: 20 Mfd. 350 volt	79007		Socket, A.C.
29310A	L1	Loop antenna, high impedance	79010B		Socket, dial lamp: bayonet base
29102A	L2	Coil, R.F.	83703		Speaker, permanent magnet: 10"
29205A	L3	Coil, oscillator	84001B		Spring, dial cord
29004D	L4	Coil, 1st I.F.: 455 KC	84003A		Spring, knob
29007	L5	Coil, 2nd I.F.: 455 KC	84015		Spring, conical: changer mounting
32008C		Cord, A.C.: 8'	86008	S2	Switch, rotary: wafer type, single section, phono-radio
34002D		Cover, volume control	89409C	T1	Transformer, output
38034A		Dial scale	89010A	T2	Transformer, power
40002		Dial drive cord			
52001A		Knob, plastic			
54001		Dial lamp, bayonet base: 250 M A			
58008		Record changer			
59001		Needle, phono: permanent			
65032		Plate, front			
66004		Plug, speaker & phono			
66005		Plug, antenna			
66008		Plug, A.C.			
67004		Pointer slide			
67014		Pointer, wire			
73055	R1-1	Resistor, carbon: 2.2 megohms, 20%, 1/2 watt			
	R1-2				

MODEL 662

PACKARD BELL CO.

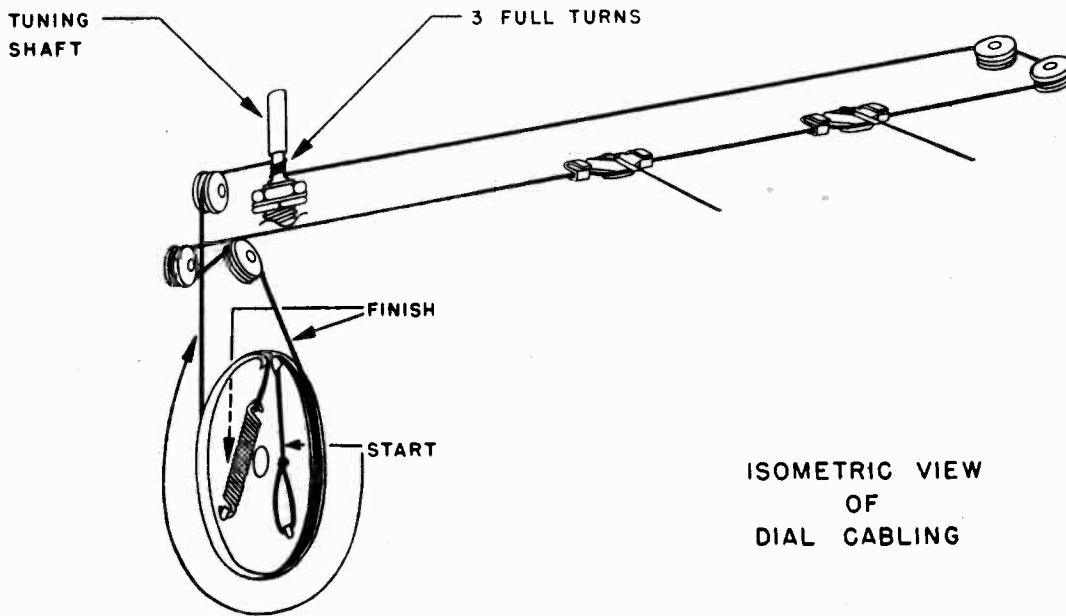


FIGURE 3
Dial Cord Diagram

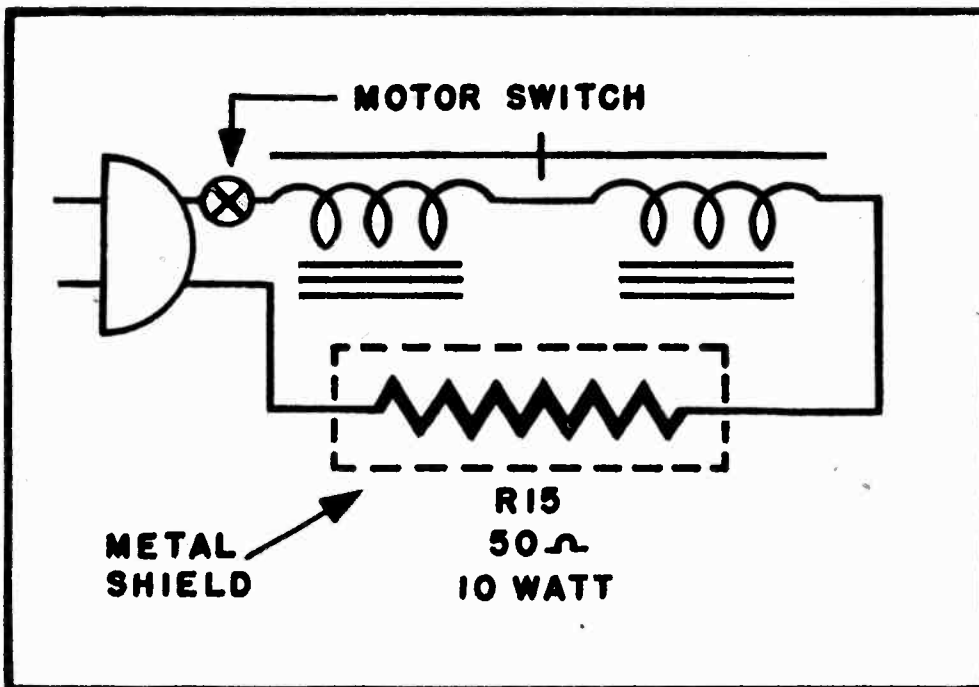
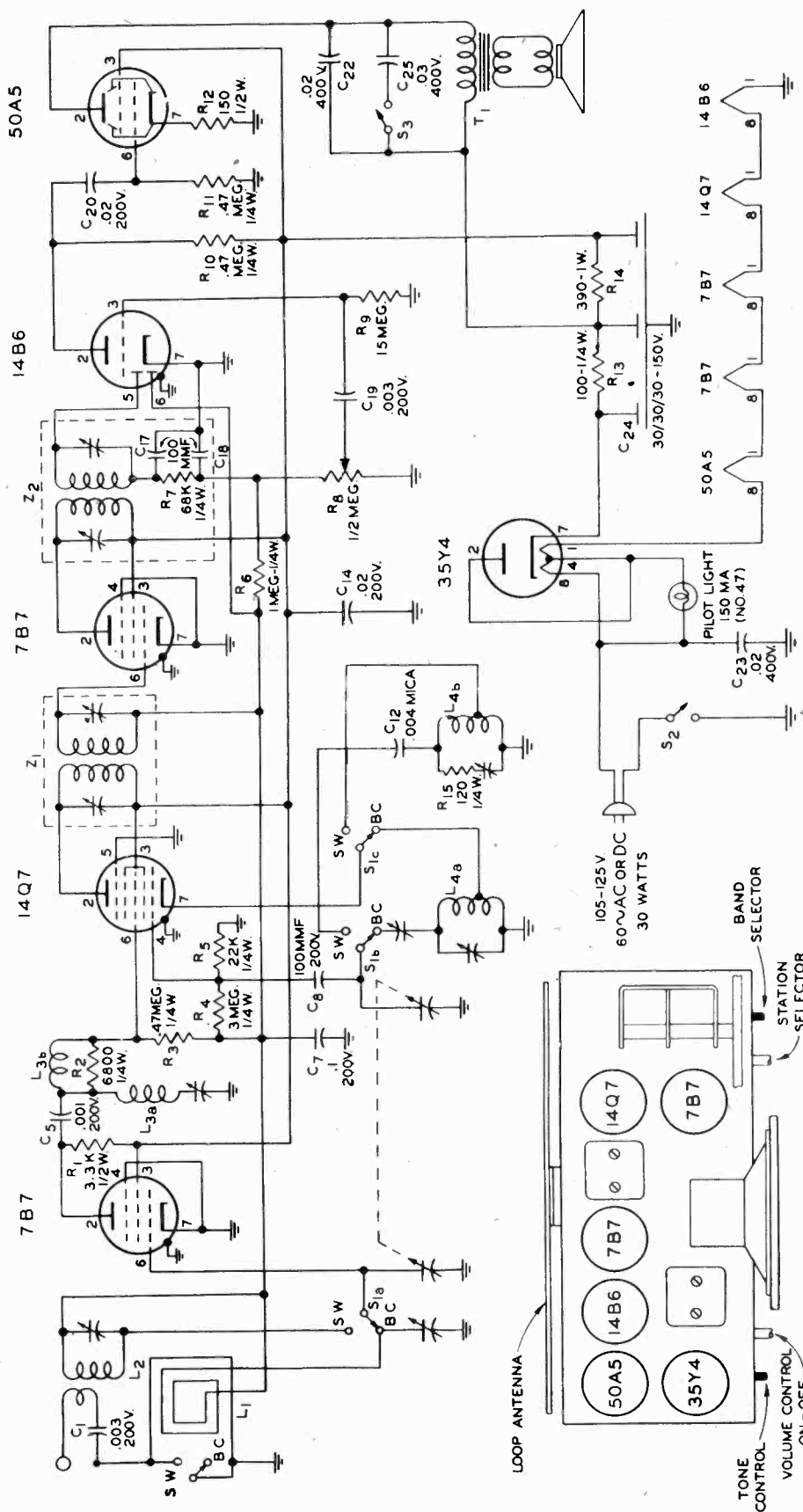


FIGURE 4
Record Changer Motor Diagram

PHILHARMONIC RADIO CORP.



MODEL NO RR-13L IF PEAK 456 KC

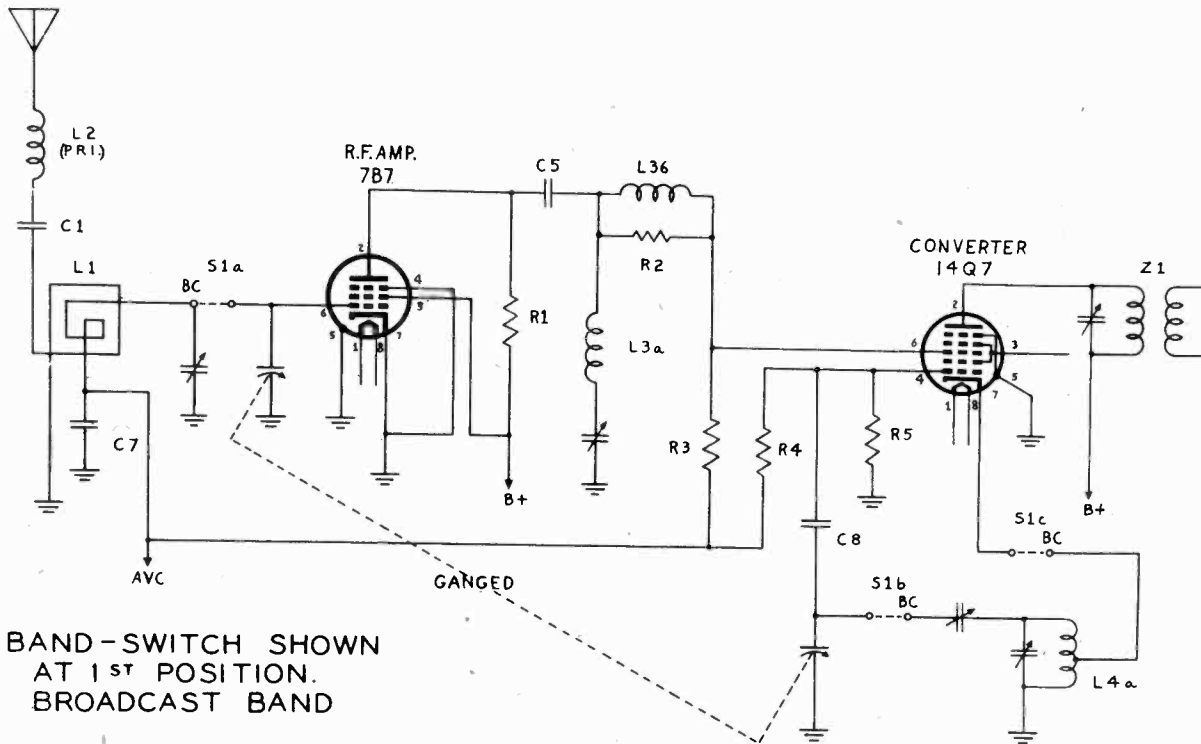
THIS APPARATUS IS LICENSED UNDER THE UNITED STATES PATENT RIGHTS OF HAZELTINE CORPORATION

THIS APPARATUS USES INVENTIONS OF UNITED STATES PATENTS LICENSED BY RADIO CORPORATION OF AMERICA PATENT NUMBERS SUPPLIED UPON REQUEST

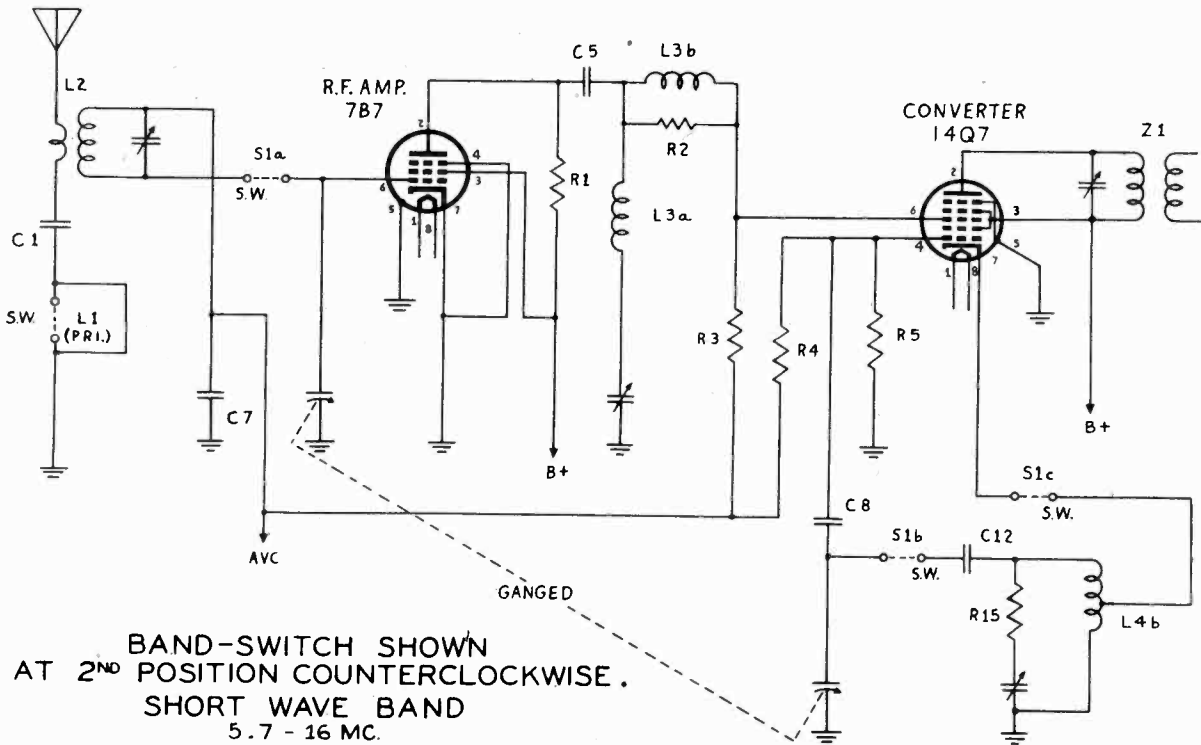
CAUTION: TO REPLACE TUBES, REMOVE SCREW & WASHER AT CENTER OF LOOP ANTENNA, AFTER FIRST REMOVING PLUG FROM CURRENT OUTLET

NOTICE: IF SET IS INOPERATIVE ON DC REVERSE LINE PLUG

PHILHARMONIC RADIO CORP.

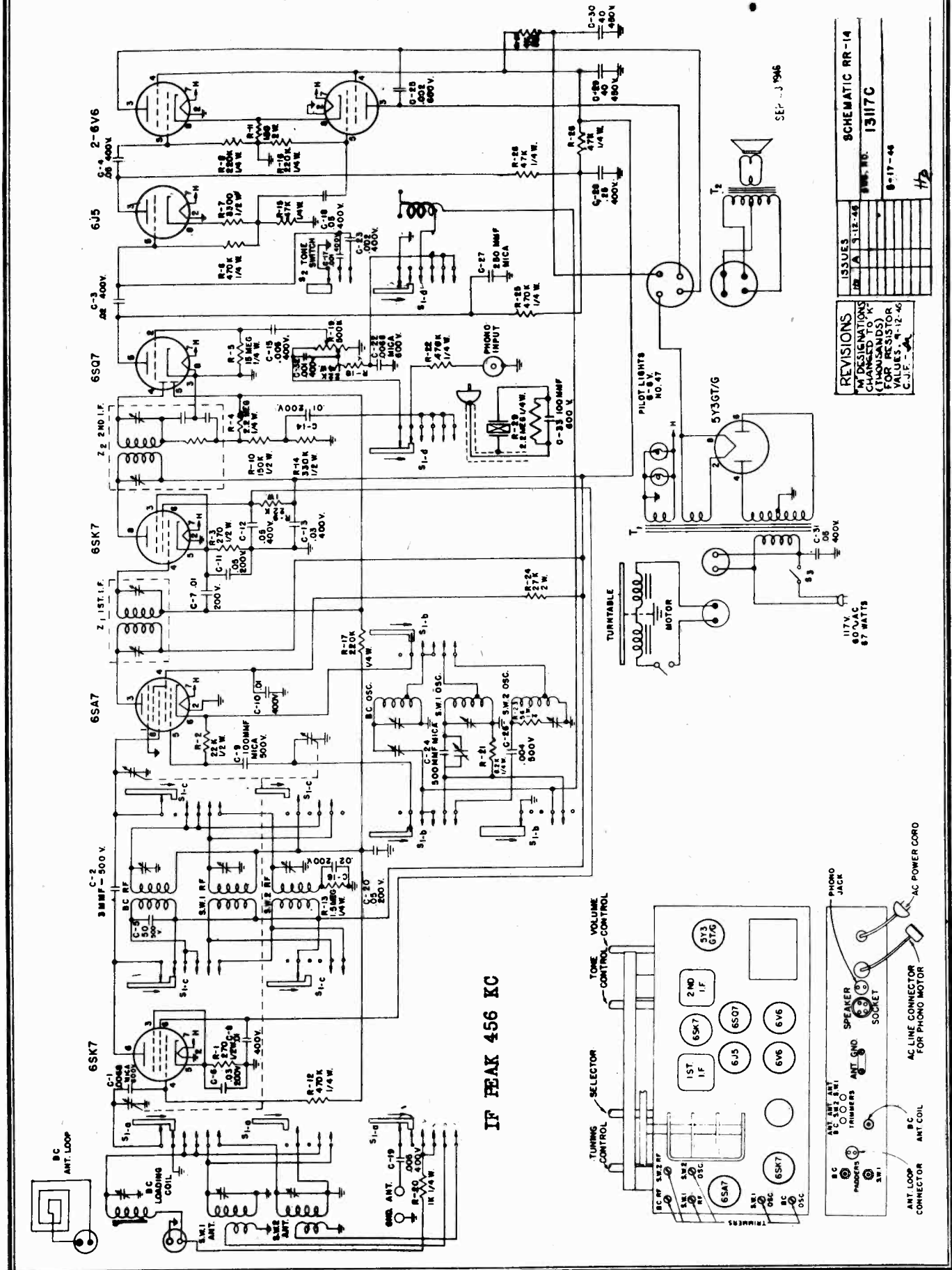


BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND



BAND-SWITCH SHOWN AT 2ND POSITION COUNTERCLOCKWISE. SHORT WAVE BAND 5.7 - 16 MC.

PHILHARMONIC RADIO CORP.



IF PEAK 456 KC

SEP. 1946

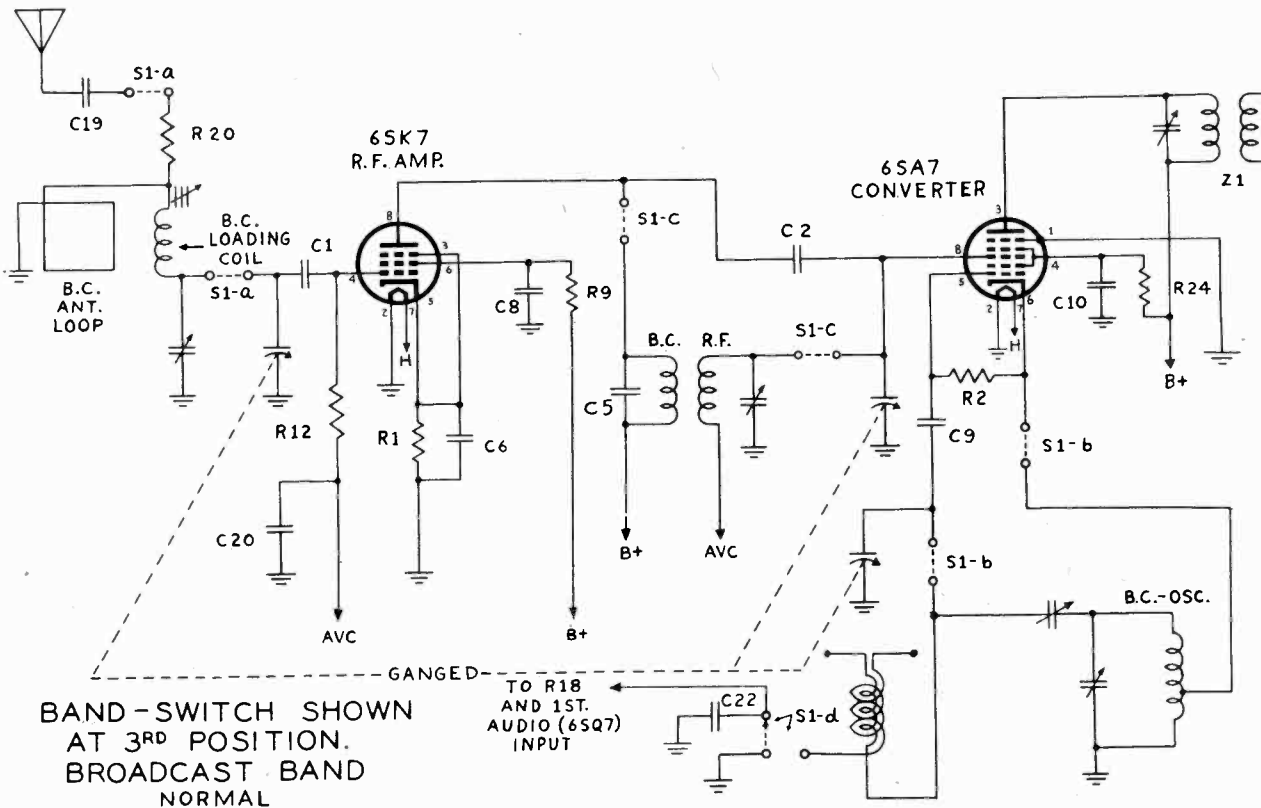
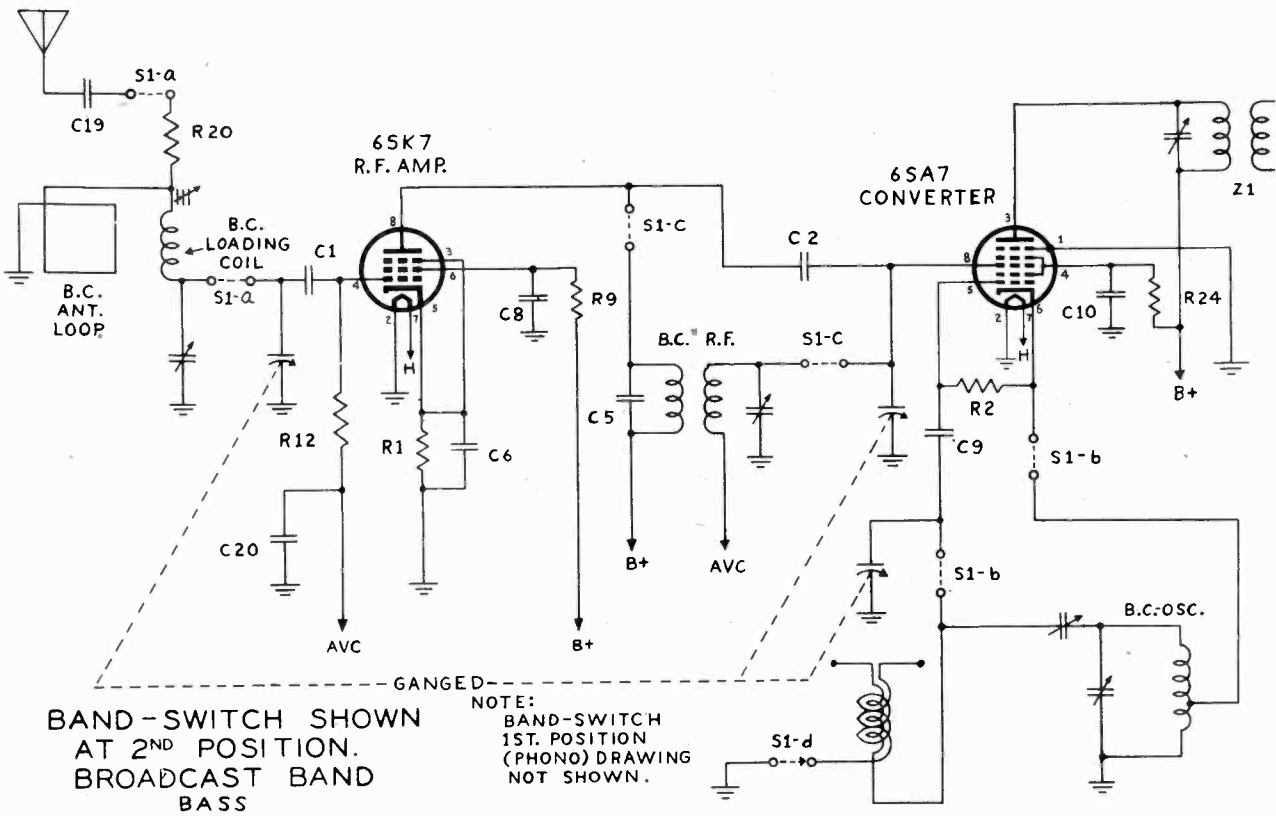
REVISIONS

ISSUES

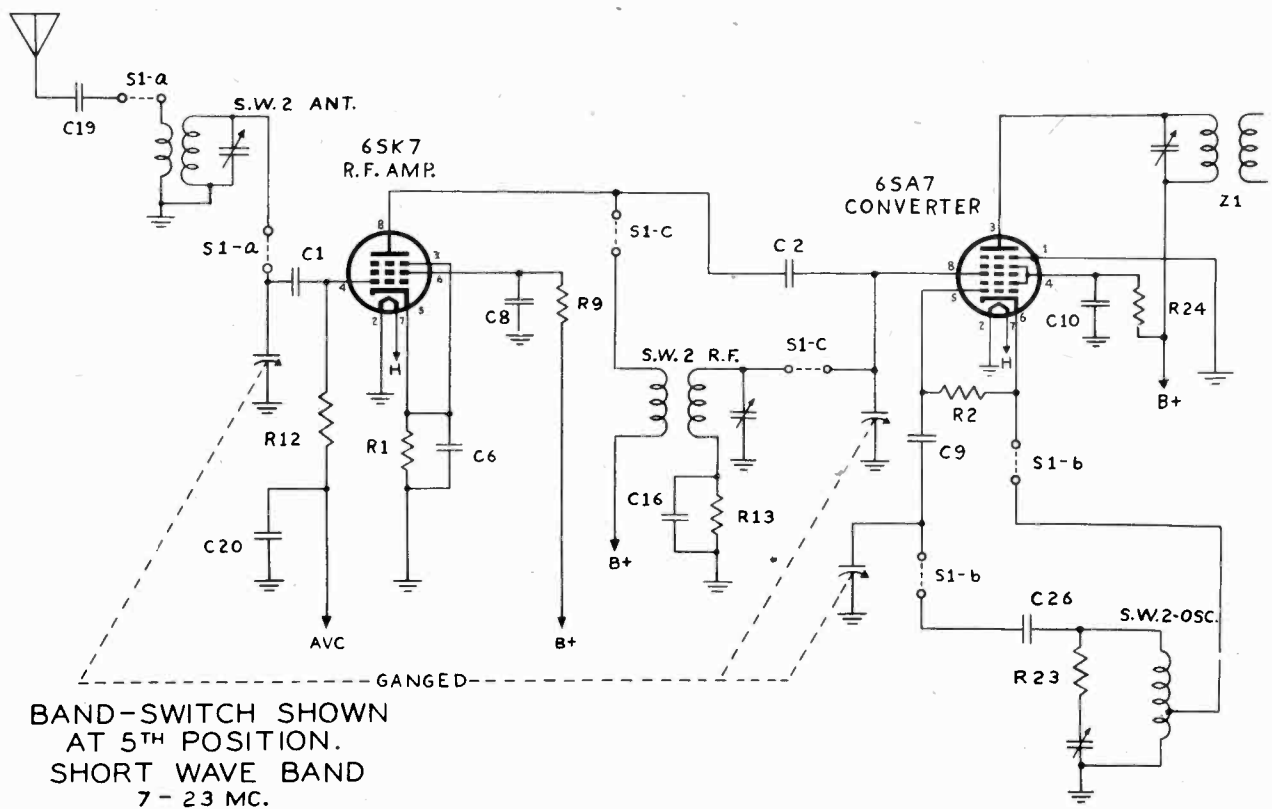
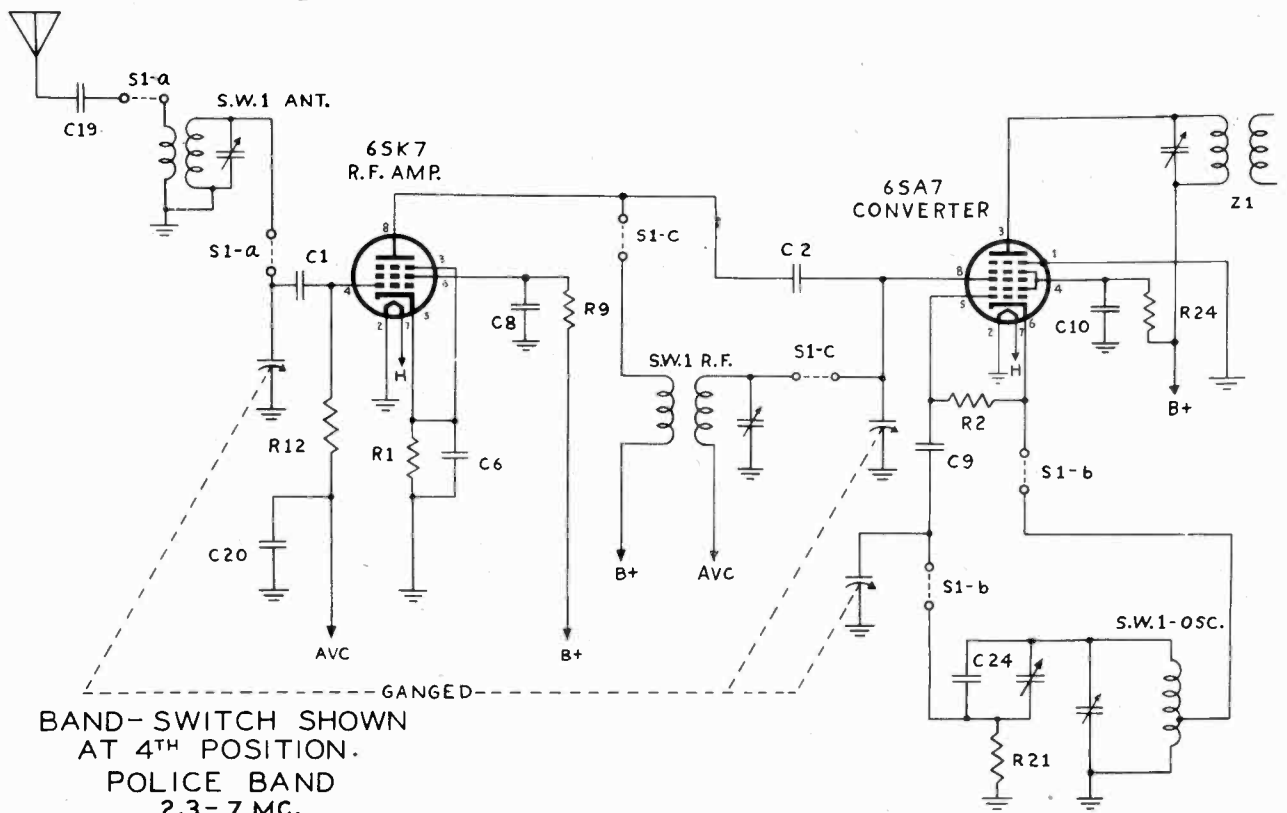
NO.	DATE	REVISIONS
1	9-12-45	CHANGED TO "K" (THOUSANDS) FOR RESISTOR VALUES 4-12-46 C.J.F.
2		
3		
4		
5		
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10		

SCHEMATIC RR-14
 PART NO. 13117C
 8-17-44
 H2

PHILHARMONIC RADIO CORP.

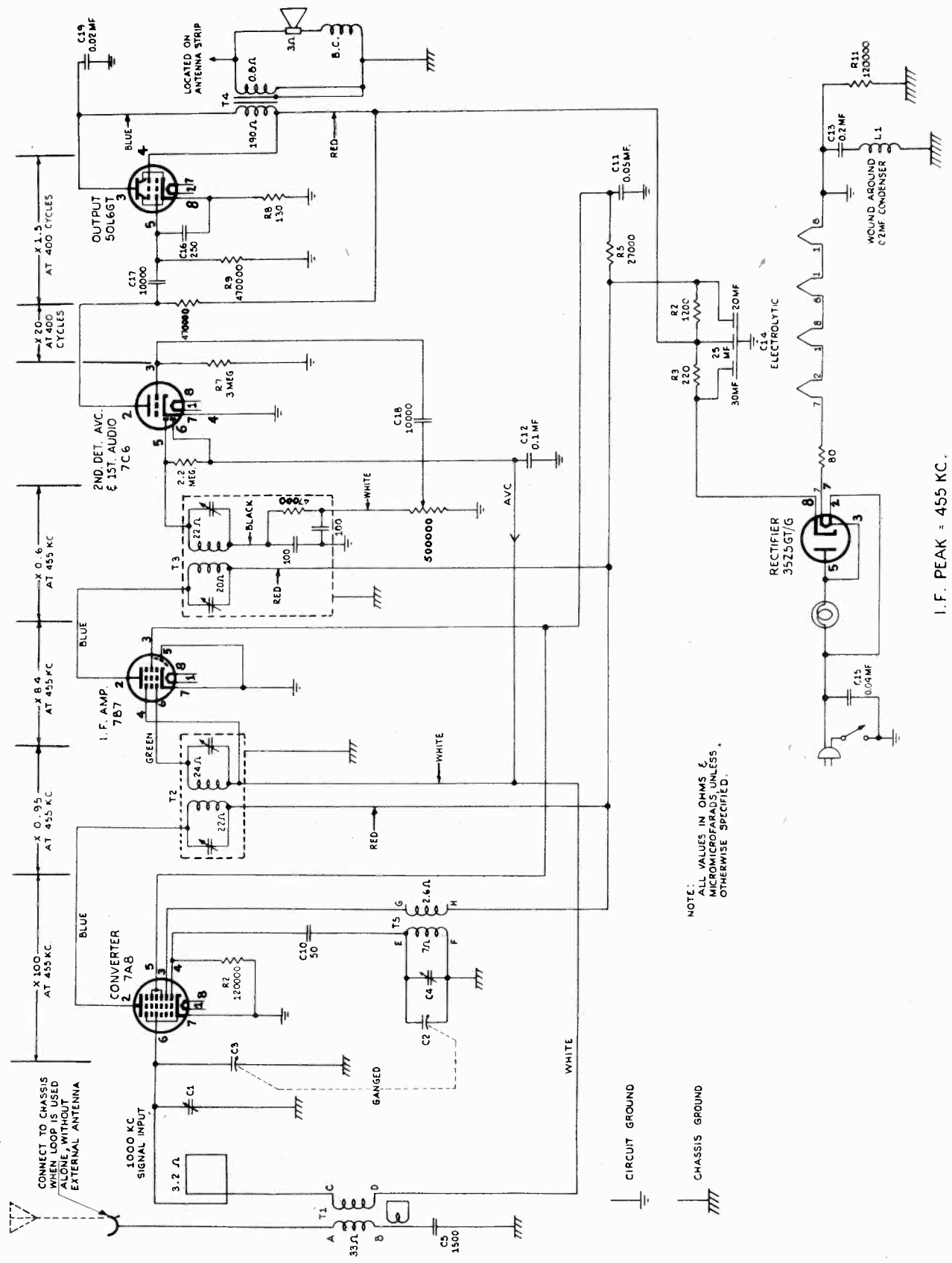


PHILHARMONIC RADIO CORP.



PHILCO RADIO & TELEV. CORP.

MODELS 46-250,
46-250-I, 46-251
Code 121

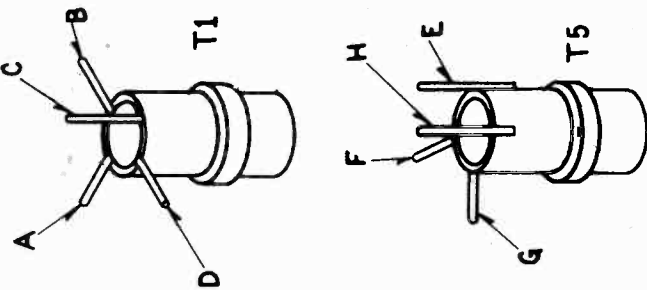


NOTE: ALL VALUES IN OHMS & MICROMICROFARADS, UNLESS OTHERWISE SPECIFIED.

I.F. PEAK = 455 KC.

MODELS 46-250,
46-250-I, 46-251
Code 121

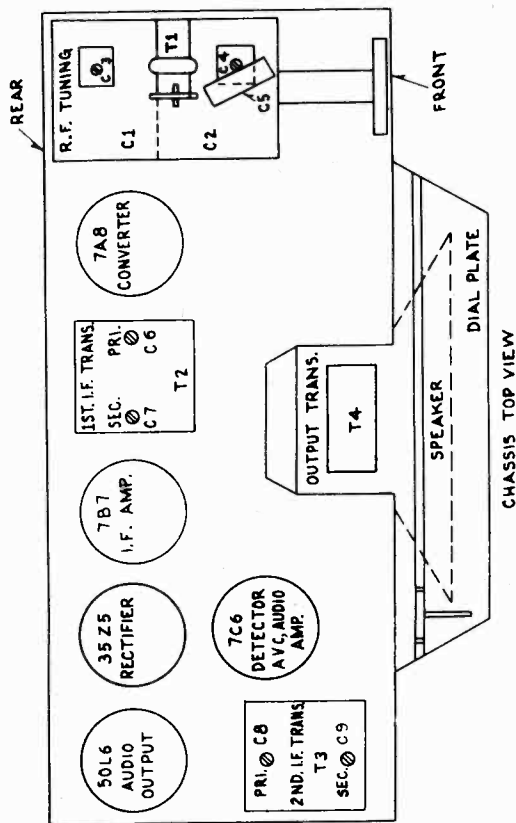
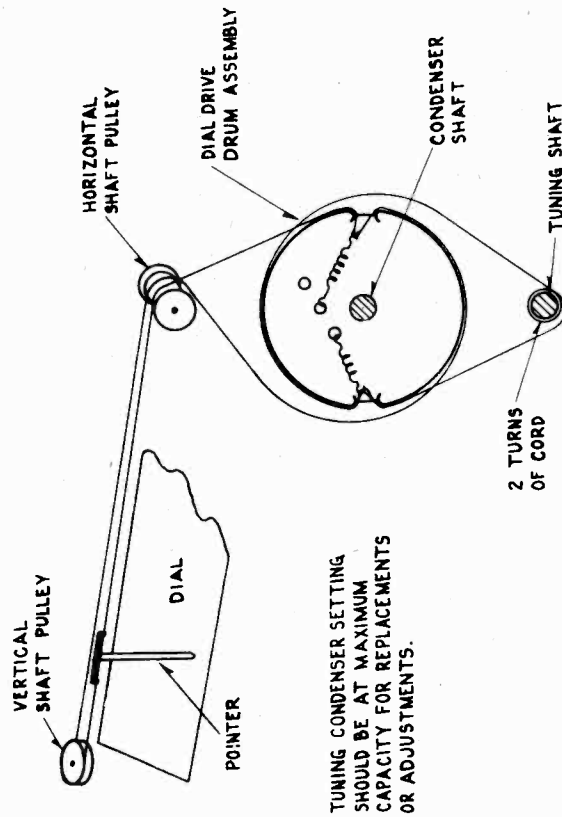
PHILCO RADIO & TELEV. CORP.



ALIGNMENT

PHILCO 46-250

Alignment may be accomplished with the chassis in the cabinet if a small alignment screwdriver is used. Connect the output meter between the left hand terminal (high) and center terminal (low) of the chassis antenna terminal strip. Connect the signal generator to the standard Hazeltine loop Model 1150 and couple it loosely to the receiver loop. The volume control should be set at maximum. The tuning condenser plates should be fully meshed when the dial pointer is at the index mark at the low frequency end of the dial. The generator output should always be just sufficient to obtain a minimum indication on the output meter. Set the signal generator in the following sequence: C9, C8, C7, C6. Set the generator and receiver to 1600 kc. and adjust the oscillator trimmer C4 for maximum output. Set the generator and receiver to 1500 kc. and adjust the r-f trimmer C1 for maximum output.



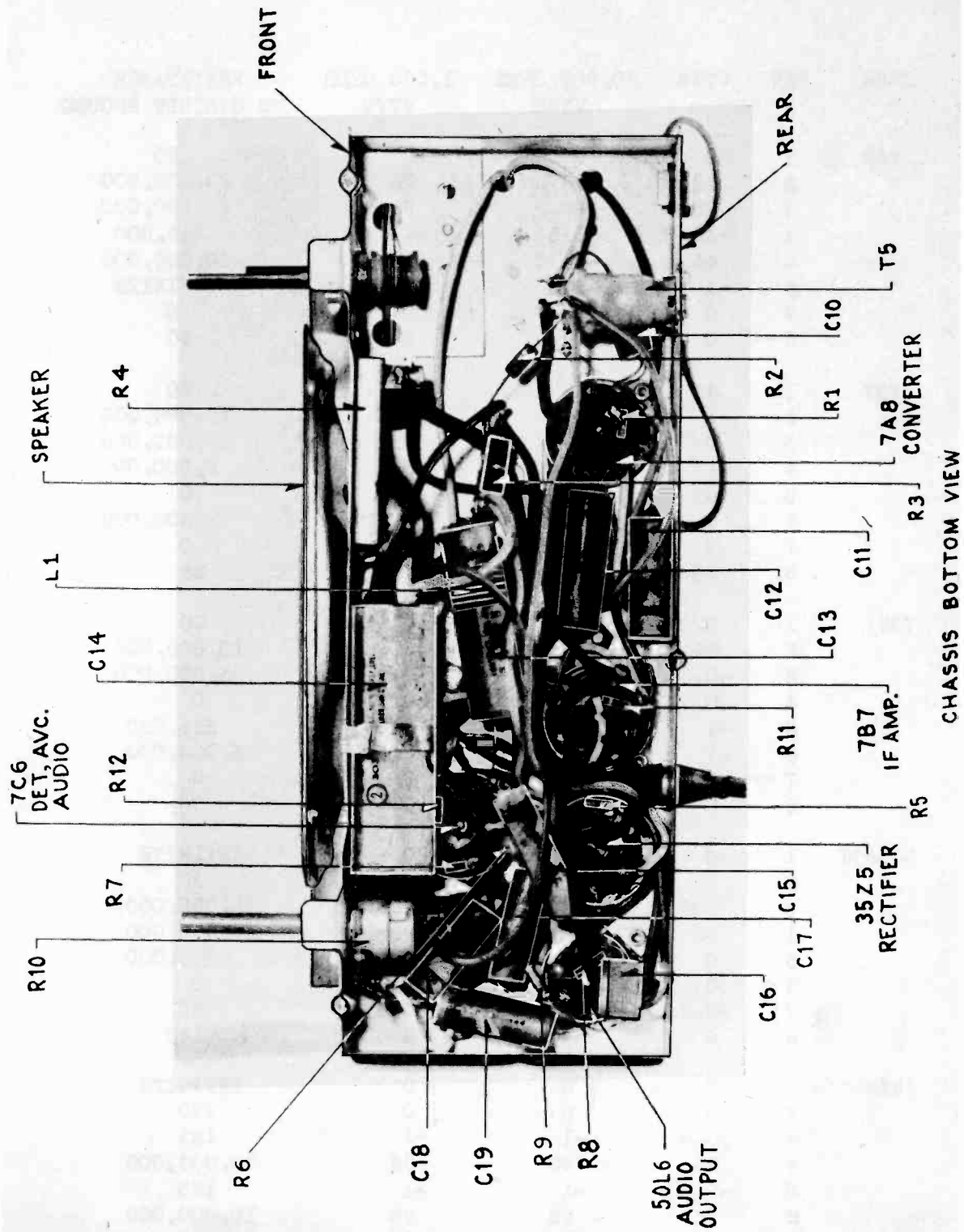
PHILCO RADIO & TELEV. CORP.

MODELS 46-250,
46-250-I, 46-251
Code 121

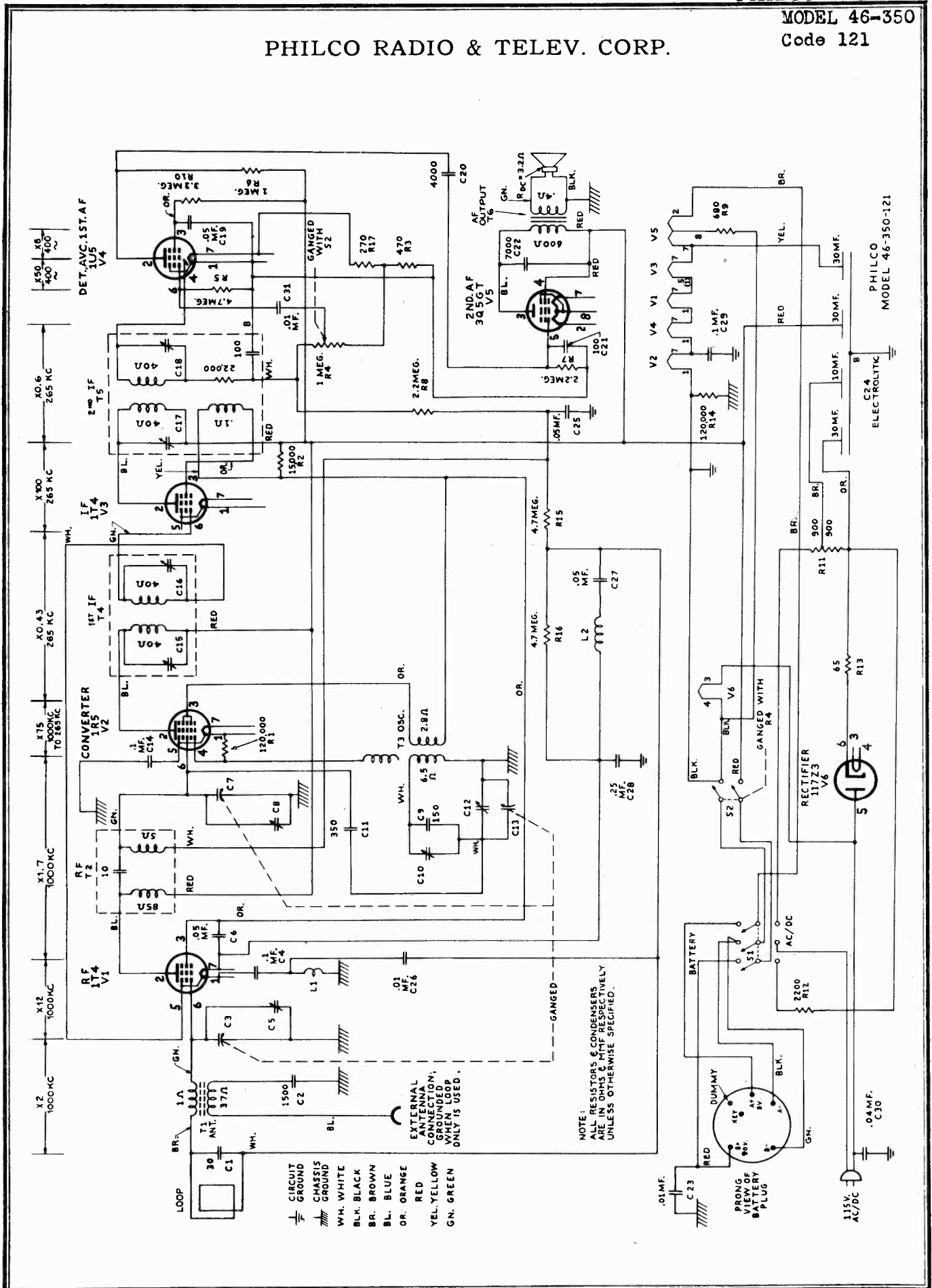
TUBE	PIN	VTVM	20,000 OHMS VTVM	1,000 OHMS VTVM	RESISTANCE TO CIRCUIT GROUND
7A8	1	0	0	0	20
	2	98	96	96	10,000,000
	3	98	96	96	10,000,000
	4	-10	-9.5	-4	115,000
	5	44	44	44	10,000,000
	6	-1	-0.5	-0.5	INFINITE
	7	0	0	0	0
	8	0	0	0	20
7B7	1	44	42	42	30
	2	-1	-0.5	-0.5	10,000,000
	3	0	0	0	10,000,000
	4	-1	-0.5	-0.5	2,800,000
	5	0	0	0	0
	6	0	0	0	2,800,000
	7	0	0	0	0
	8	96	96	96	26
7C6	1	0	0	0	20
	2	54	50	50	10,000,000
	3	-0.8	-0.4	-0.4	3,500,000
	4	0	0	0	0
	5	-1	-0.2	-0.2	525,000
	6	-1	-0.5	-0.4	3,000,000
	7	0	0	0	0
	8	0	0	0	0
50L6GT	1	0	0	0	INFINITE
	2	0	0	0	30
	3	100	96	96	10,000,000
	4	96	96	96	10,000,000
	5	0	0	0	500,000
	6	0	0	0	0
	7	-0.6	-0.6	-0.6	65
	8	6	6	6	130
35Z5GT/G	1	0	0	0	INFINITE
	2	0	0	0	170
	3	-0.5	-1	-1	168
	4	96	96	96	10,000,000
	5	-0.5	-1	-1	165
	6	96	96	96	10,000,000
	7	-0.5	-1	-1	140
	8	118	118	118	10,000,000

MODELS 46-250
46-250-I, 46-251
Code 121

PHILCO RADIO & TELEV. CORP.



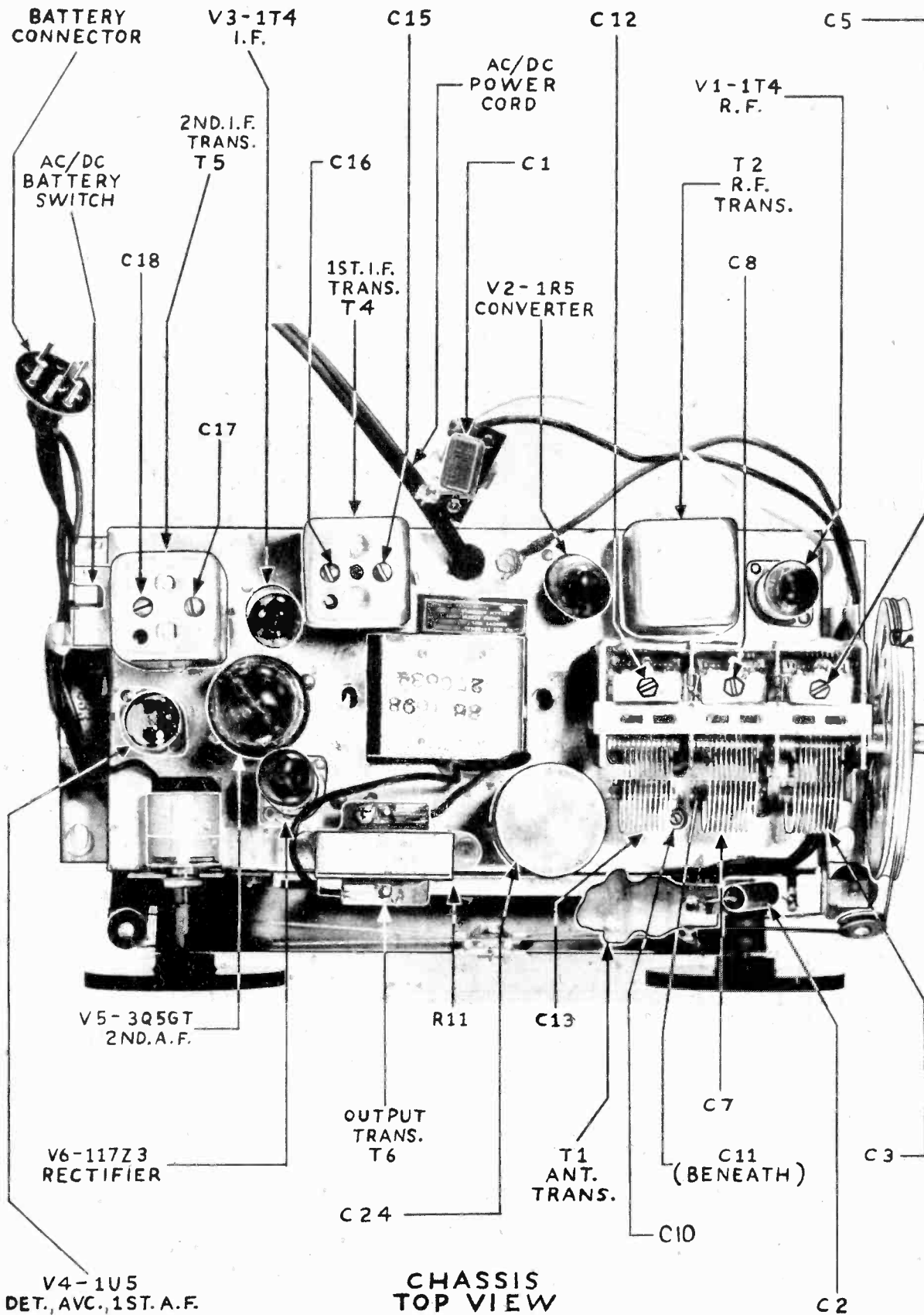
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MODEL 46-350

Code 121

PHILCO RADIO & TELEV. CORP.



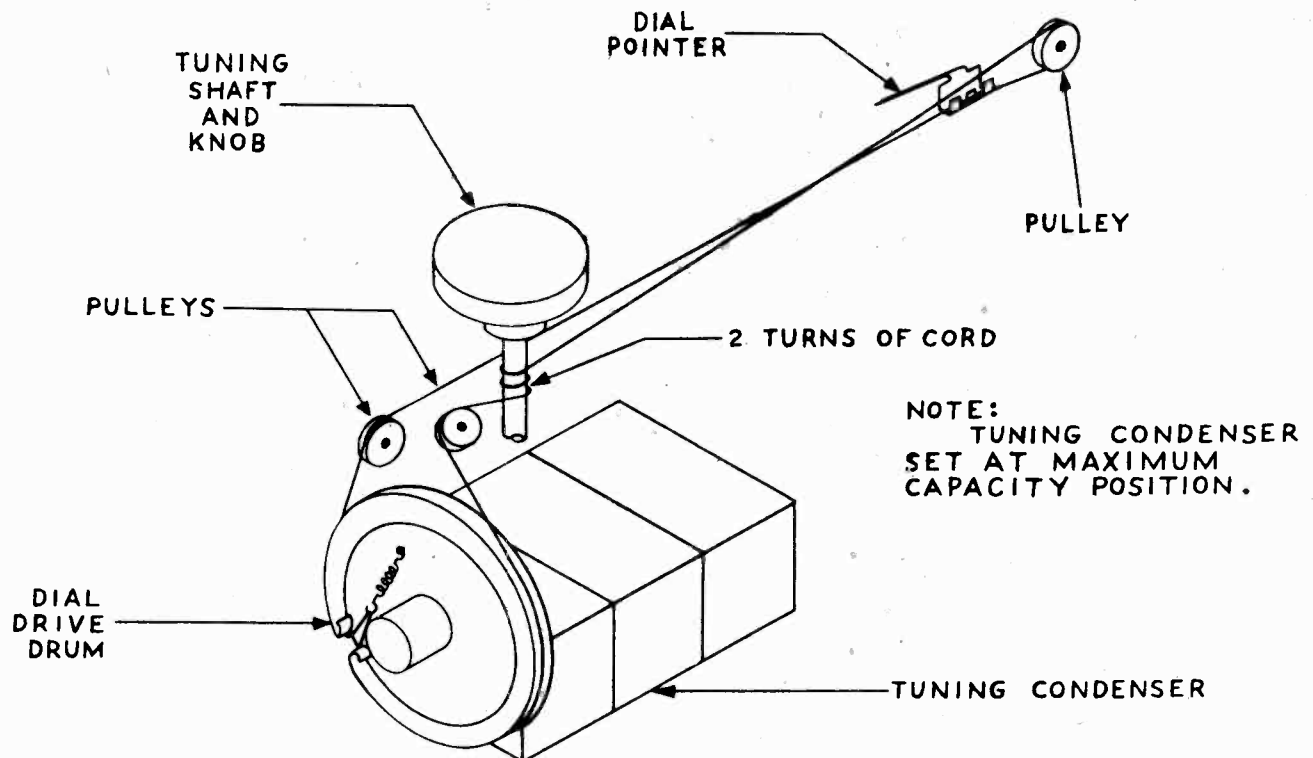
CHASSIS TOP VIEW

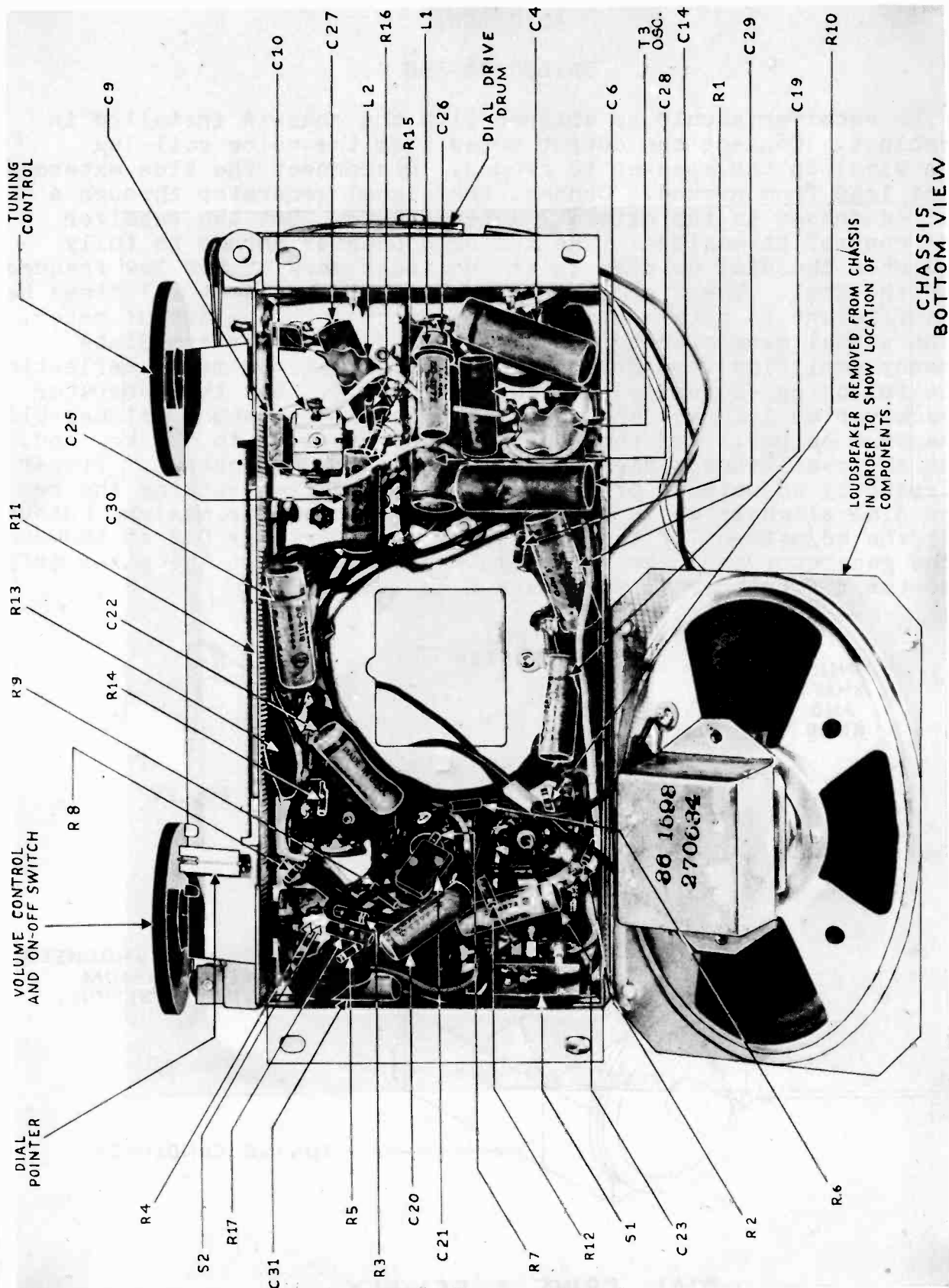
PHILCO RADIO & TELEV. CORP.

ALIGNMENT

PHILCO 46-350

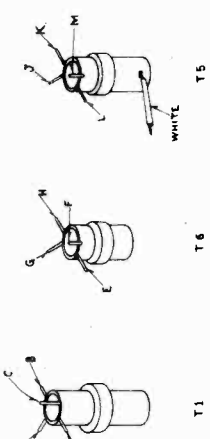
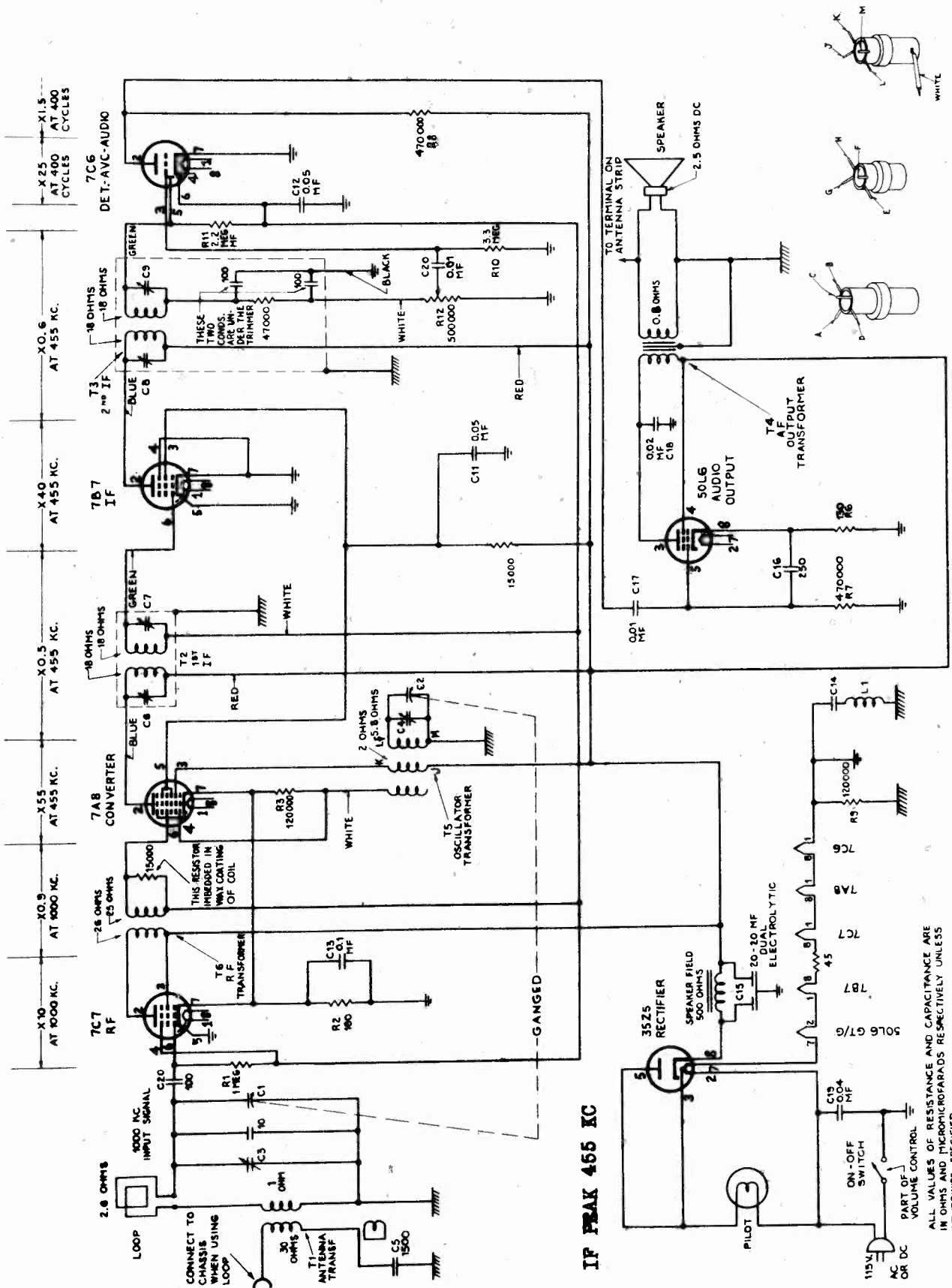
The receiver should be aligned with the chassis installed in the cabinet. Connect the output meter from the voice coil lug (green wire) on the speaker to ground. Disconnect the blue external antenna lead from ground. Connect the signal generator through a .01 mf condenser to the external antenna lead. Set the receiver volume control at maximum. The tuning condenser should be fully meshed when the dial pointer is at the index mark at the low frequency end of the dial. The signal generator output should at all times be just sufficient to obtain a minimum deflection on the output meter. Set the signal generator to 265 kc. and adjust the intermediate frequency amplifier transformer trimmers for maximum meter deflection in the following sequence: C18, C17, C16, C15. Set the generator and receiver to 1600 kc. and adjust the oscillator shunt trimmer C12 for maximum output. Set the generator and receiver to 580 kc. and adjust the oscillator series padder C10 for maximum output. Proper low frequency adjustment of the oscillator requires rocking the receiver dial slightly while adjusting this trimmer for maximum output. Repeat the adjustment of the oscillator shunt trimmer C12 at 1600 kc. Set the generator and receiver to 1500 kc. and adjust the mixer trimmer C8 and the r-f trimmer C5 for maximum output.

DIAL DRIVE ASSEMBLY
TOP VIEW



PHILCO RADIO & TELEV. CORP.

TUBE	PIN	VTVM	20,000 OHMS PER VOLT	1,000 OHMS PER VOLT	RESISTANCE
RF Amp.					
1T4	1	2.5	2.5	2.5	50
	2	80	80	80	4,000
	3	44	44	44	20,000
	4	0	0	0	INFINITE
	5	3	2.8	2.8	50
	6	2.5	0.1	0	2,750,000
	7	4.2	4	4.2	65
Conv.					
1R5	1	0	0	0	0
	2	80	80	80	4,000
	3	44	44	44	20,000
	4	-3.8	1.4	0	120,000
	5	0	0	0	0
	6	1	0.1	0	2,200,000
	7	1.2	1.2	1.2	30
IF Amp.					
1T4	1	4	4	4	65
	2	80	80	80	4,000
	3	44	44	44	20,000
	4	13	11	4	1,100,000
	5	4	4	4	65
	6	2.8	2.6	2.6	80
	7	5.4	5.4	5.4	80
Det. AVC					
Audio					
1U5	1	1.3	1.3	1.3	30
	2	13	12	4	1,100,000
	3	20	18	3.5	3,000,000
	4	1.4	0.4	0	850,000
	5	0	0	0	INFINITE
	6	1	0	0	5,000,000
	7	2.8	2.8	2.8	50
3Q5GT					
	1	1.4	1.4	1.4	30
	2	8	8	8	100
	3	78	78	78	4,600
	4	80	80	80	4,000
	5	1.3	0.2	0	2,200,000
	6	105	105	105	1,800
	7	5.4	5.4	5.4	80
	8	6.6	6.4	6.4	90
117Z3					
	1	0	0	0	500
	2	0	0	0	INFINITE
	3	0	0	0	500
	4	0	0	0	0
	5	0	0	0	500
	6	105	105	105	1,800
	7	0	0	0	INFINITE



IF PRAK 455 IC

ALL VALUES OF RESISTANCE AND CAPACITANCE ARE IN OHMS AND MICROFARADS RESPECTIVELY UNLESS OTHERWISE SPECIFIED.

PHILCO RADIO & TELEV. CORP.

MODELS 46-420,
46-420-I
Code 121

RESISTANCE VALUES									
MODEL	TERMINAL	VVM	20,000 ^a	PER VOLT	1,000 ^a	PER VOLT	RES. TO CIRCUIT GND.	TERMINAL	RES.
5525GT	1	88	88		80		3,500,000	1	150
	2	0	0		0		3,500,000	2	145
	3	0	0		0		3,500,000	3	145
	4	88	88		80		INFINITE	4	120
	5	-0.6	-1.0		-1.0		INFINITE	5	120
	6	0	0		-1.0		INFINITE	6	125
	7	-0.6	-1.0		110			7	
	8	115	110		0			8	
50L6	TERMINAL	VVM	20,000 ^a	PER VOLT	1,000 ^a	PER VOLT	RES. TO CIRCUIT GND.	TERMINAL	RES.
	1	0	0		0		INFINITE	1	75
	2	0	0		0		3,500,000	2	500,000
	3	78	78		76		0	3	120
	4	88	88		82		125	4	
	5	0	0		0			5	
	6	0	0		-1.0			6	
	7	-0.6	-1.0		5.6			7	
706	TERMINAL	VVM	20,000 ^a	PER VOLT	1,000 ^a	PER VOLT	RES. TO CIRCUIT GND.	TERMINAL	RES.
	1	0	0		0		0	1	0
	2	50	48		40		3,500,000	2	0
	3	-0.8	-0.3		-0.3		3,500,000	3	0
	4	0	0		0		0	4	0
	5	-0.8	-0.4		-0.3		525,000	5	0
	6	-1.0	-0.4		-0.3		2,600,000	6	0
	7	0	0		0		0	7	20
787	TERMINAL	VVM	20,000 ^a	PER VOLT	1,000 ^a	PER VOLT	RES. TO CIRCUIT GND.	TERMINAL	RES.
	1	0	0		0		0	1	75
	2	88	88		82		3,500,000	2	0
	3	50	50		50		3,500,000	3	0
	4	0	0		0		0	4	0
	5	0	0		0		0	5	0
	6	-1.0	-0.4		-0.3		0	6	0
	7	0	0		0		0	7	0
789	TERMINAL	VVM	20,000 ^a	PER VOLT	1,000 ^a	PER VOLT	RES. TO CIRCUIT GND.	TERMINAL	RES.
	1	0	0		0		0	1	20
	2	88	86		82		3,500,000	2	0
	3	88	88		86		3,500,000	3	0
	4	-1.2	-8		-2.6		120,000	4	0
	5	50	50		48		3,500,000	5	0
	6	-1.0	-0.4		-0.4		2,800,000	6	0
	7	1.2	1.2		1.2		0	7	180
707	TERMINAL	VVM	20,000 ^a	PER VOLT	1,000 ^a	PER VOLT	RES. TO CIRCUIT GND.	TERMINAL	RES.
	1	0	0		0		0	1	28
	2	36	92		84		3,500,000	2	0
	3	86	92		84		3,500,000	3	0
	4	-1.0	-0.4		-0.3		2,800,000	4	0
	5	0	0		0		0	5	0
	6	-1.0	-0.4		0		3,500,000	6	180
	7	1.2	1.2		1.2		0	7	30

PLATE AND SCREEN VOLTAGES TAKEN WITH 1000 OHMS PER VOLT METER WERE TAKEN WITH THE 1000-VOLT RANGE. ALL CATHODE VOLTAGES WERE READ USING THE 10-VOLT SCALE OF THE 1000 OHMS PER VOLT METER.

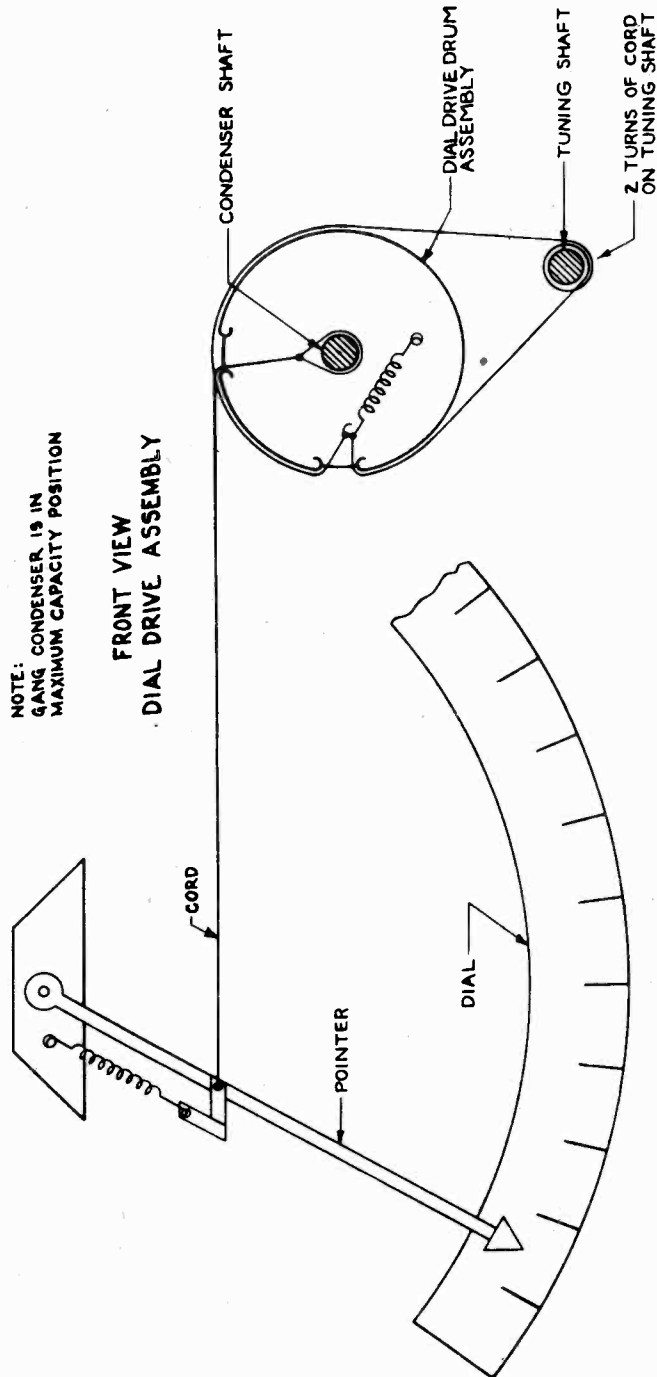
ALL VOLTAGE READINGS ARE POSITIVE EXCEPT THOSE MARKED NEGATIVE.

PHILCO RADIO & TELEV. CORP.

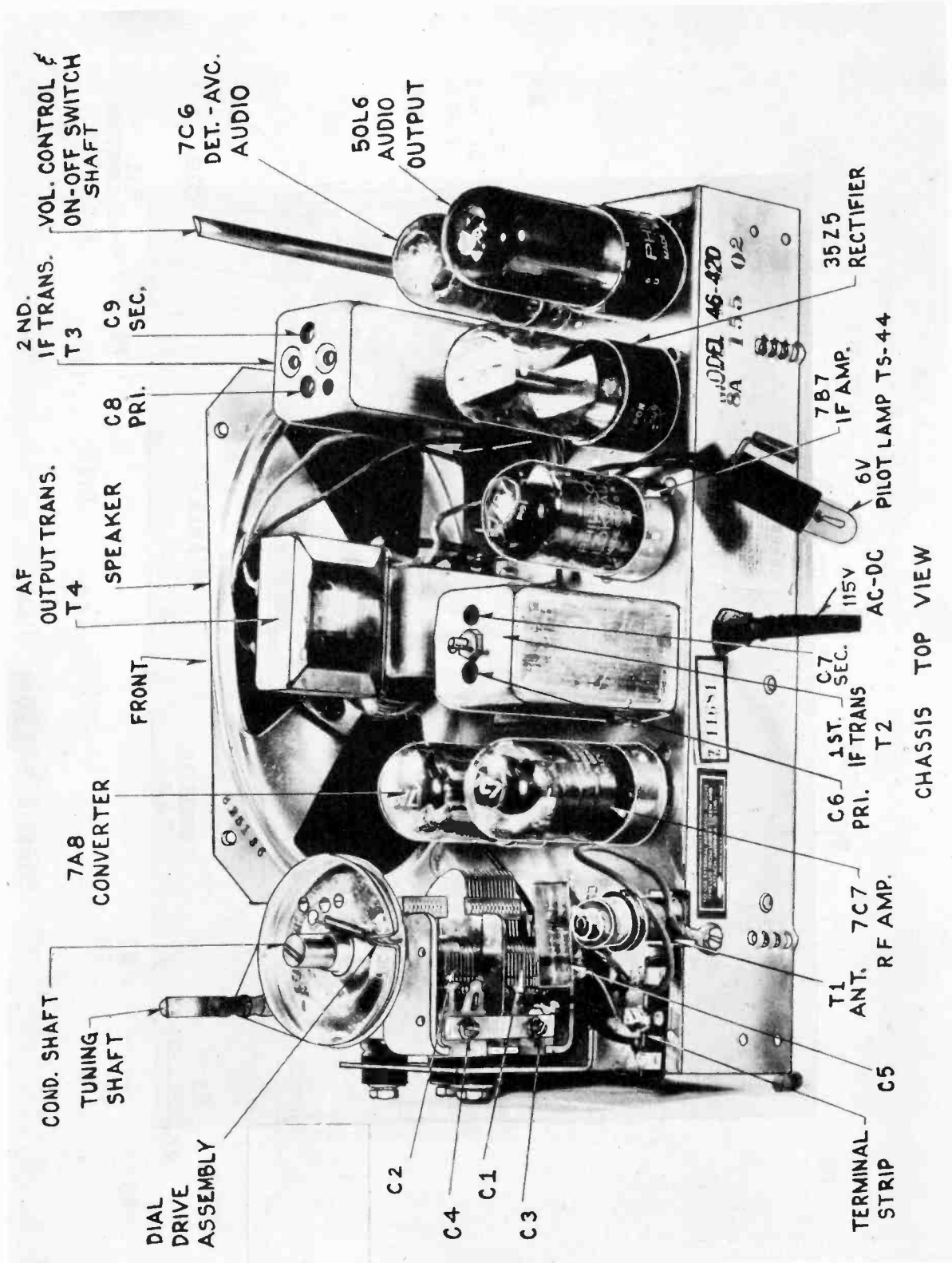
ALIGNMENT

PHILCO 46-420

Alignment may be accomplished with the chassis in the cabinet if a small alignment screwdriver is used. Connect the output meter between the left hand terminal (high) and center terminal (low) of the chassis antenna terminal strip. Connect the signal generator to the standard Hazeltine loop Model 1150 and couple it loosely to the receiver loop. The volume control should be set at maximum. The tuning condenser plates should be fully meshed when the dial pointer is at the index mark at the low frequency end of the dial. The generator output should always be just sufficient to obtain a minimum deflection on the output meter. Set the signal generator in the following sequence: C9, C8, C7, C6. Set the generator and receiver to 1600 kc. and adjust the oscillator trimmer C4 for maximum output. Set the generator and receiver to 1500 kc. and adjust the r-f trimmer C3 for maximum output.



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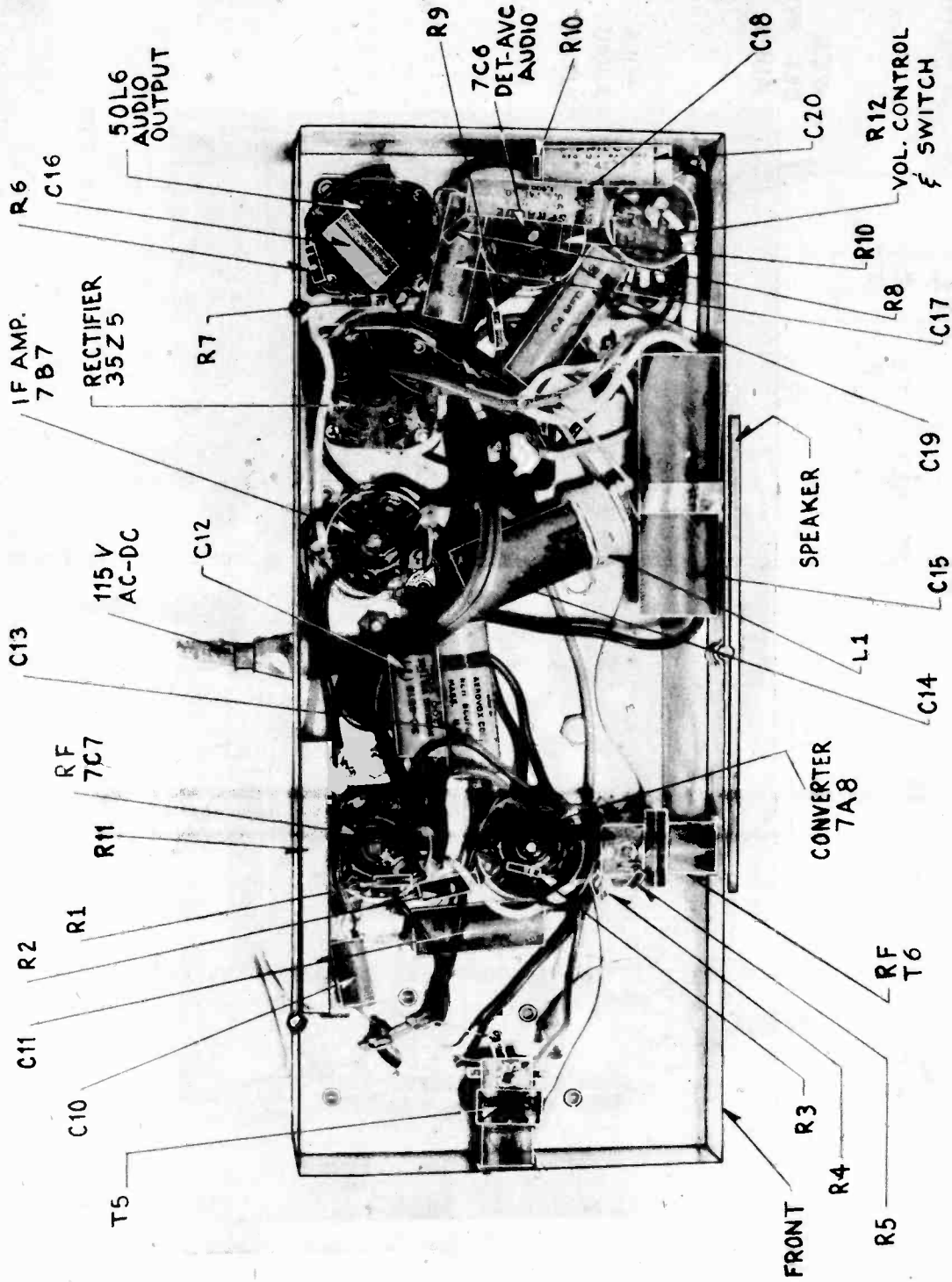
CHASSIS TOP VIEW

MODELS 46-420

46-420-I

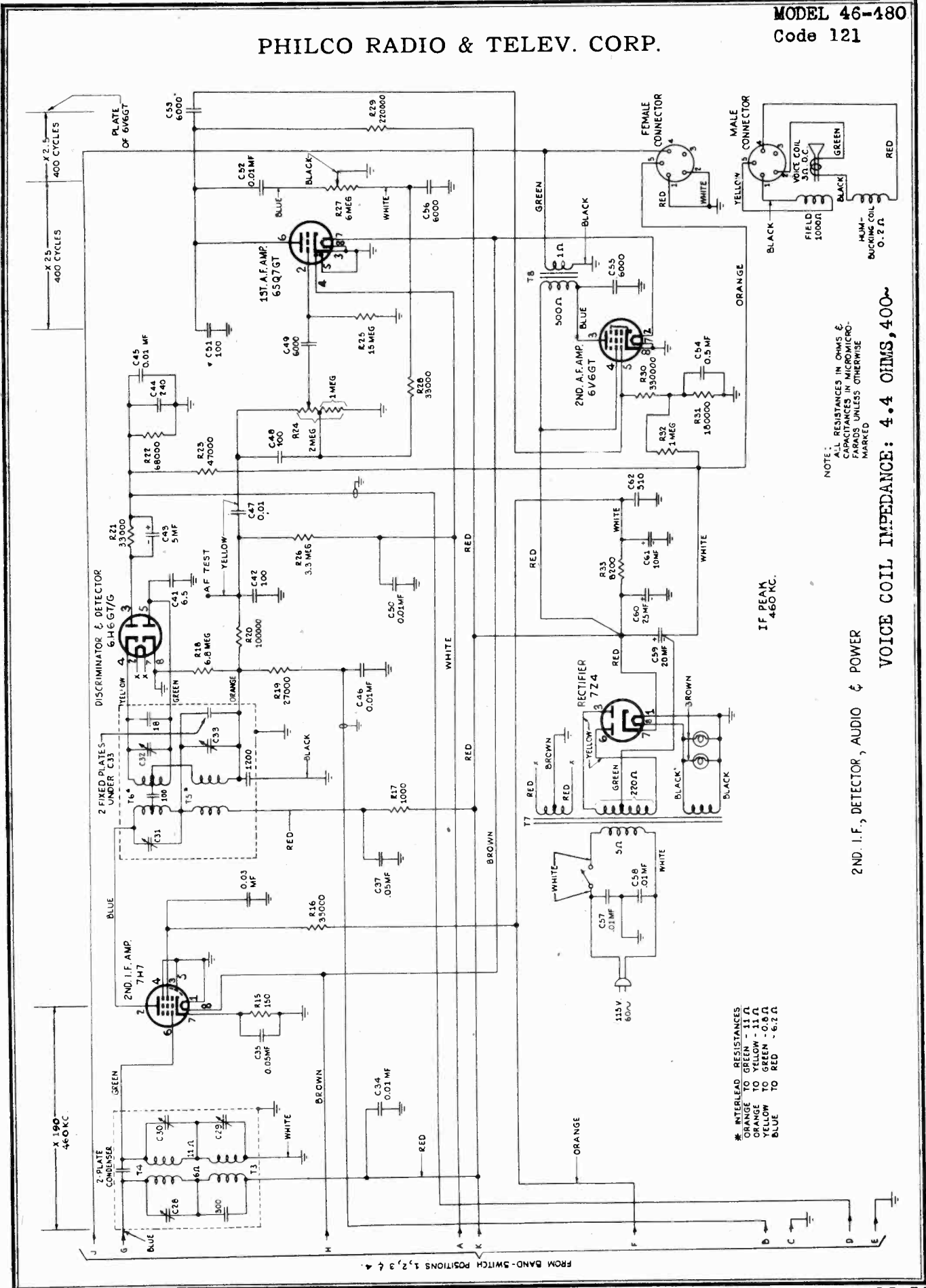
Code 121

PHILCO RADIO & TELEV. CORP.



CHASSIS BOTTOM VIEW

PHILCO RADIO & TELEV. CORP.

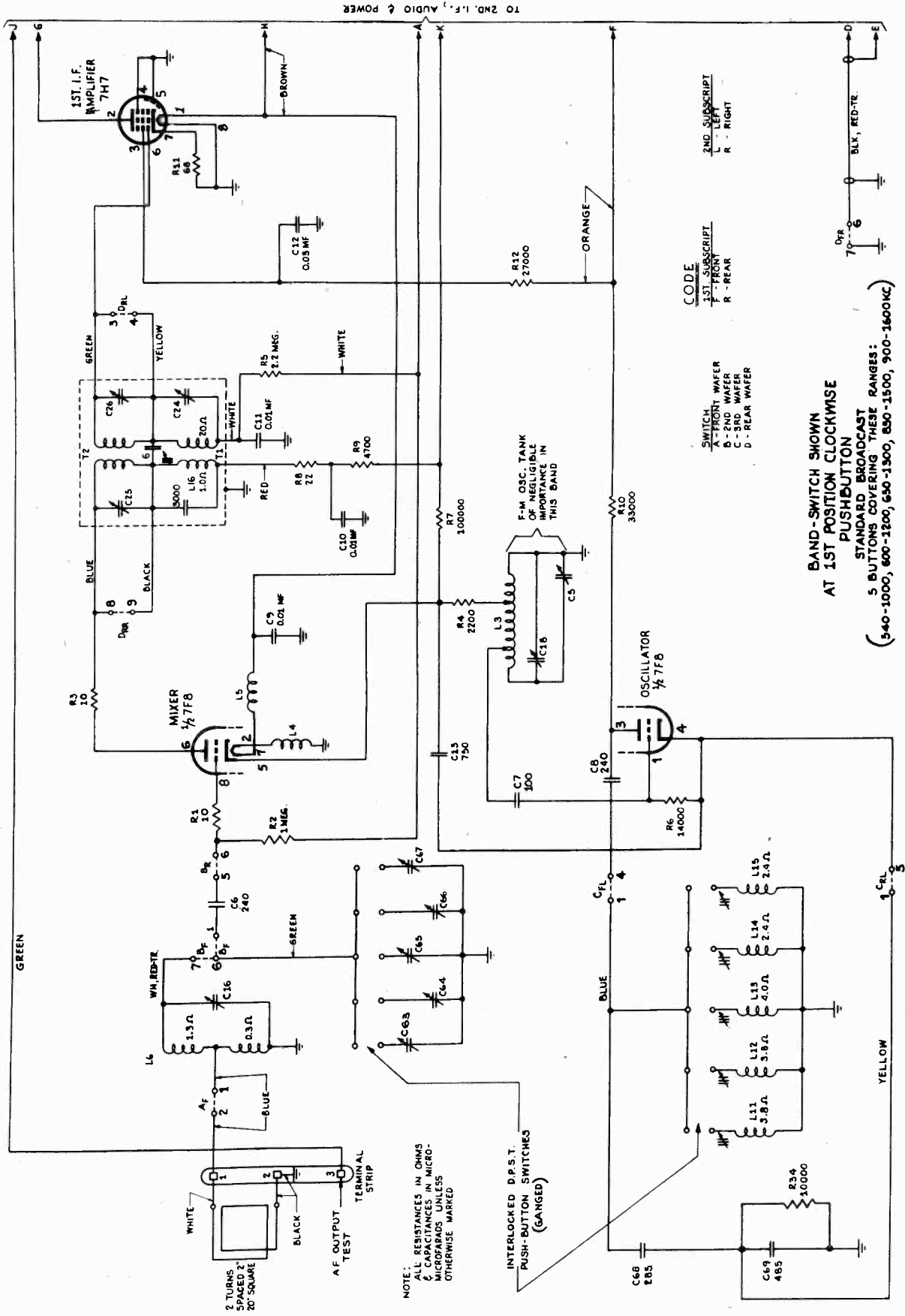


NOTE:
 ALL RESISTANCES IN OHMS &
 CAPACITANCES IN MICROMICRO-
 FARADS UNLESS OTHERWISE
 MARKED

IF PEAK
 460 KC.

2ND. I.F., DETECTOR, AUDIO & POWER
 VOICE COIL IMPEDANCE: 4.4 OHMS, 400~

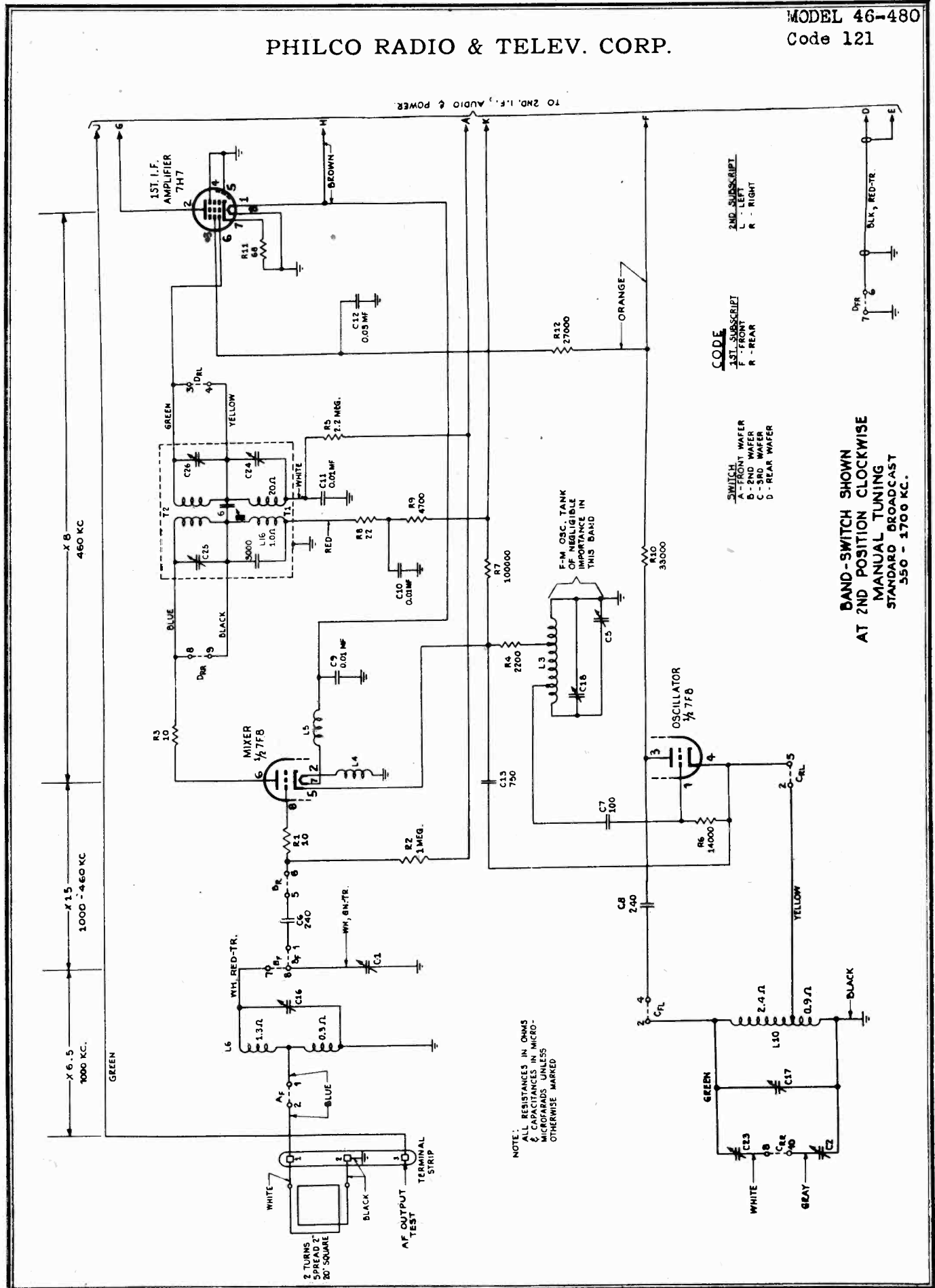
* INTERLEAD RESISTANCES
 ORANGE TO GREEN - 11 Ω
 ORANGE TO YELLOW - 11 Ω
 YELLOW TO GREEN - 0.8 Ω
 BLUE TO RED - 6.2 Ω



PHILCO RADIO & TELEV. CORP.

MODEL 46-480

Code 121



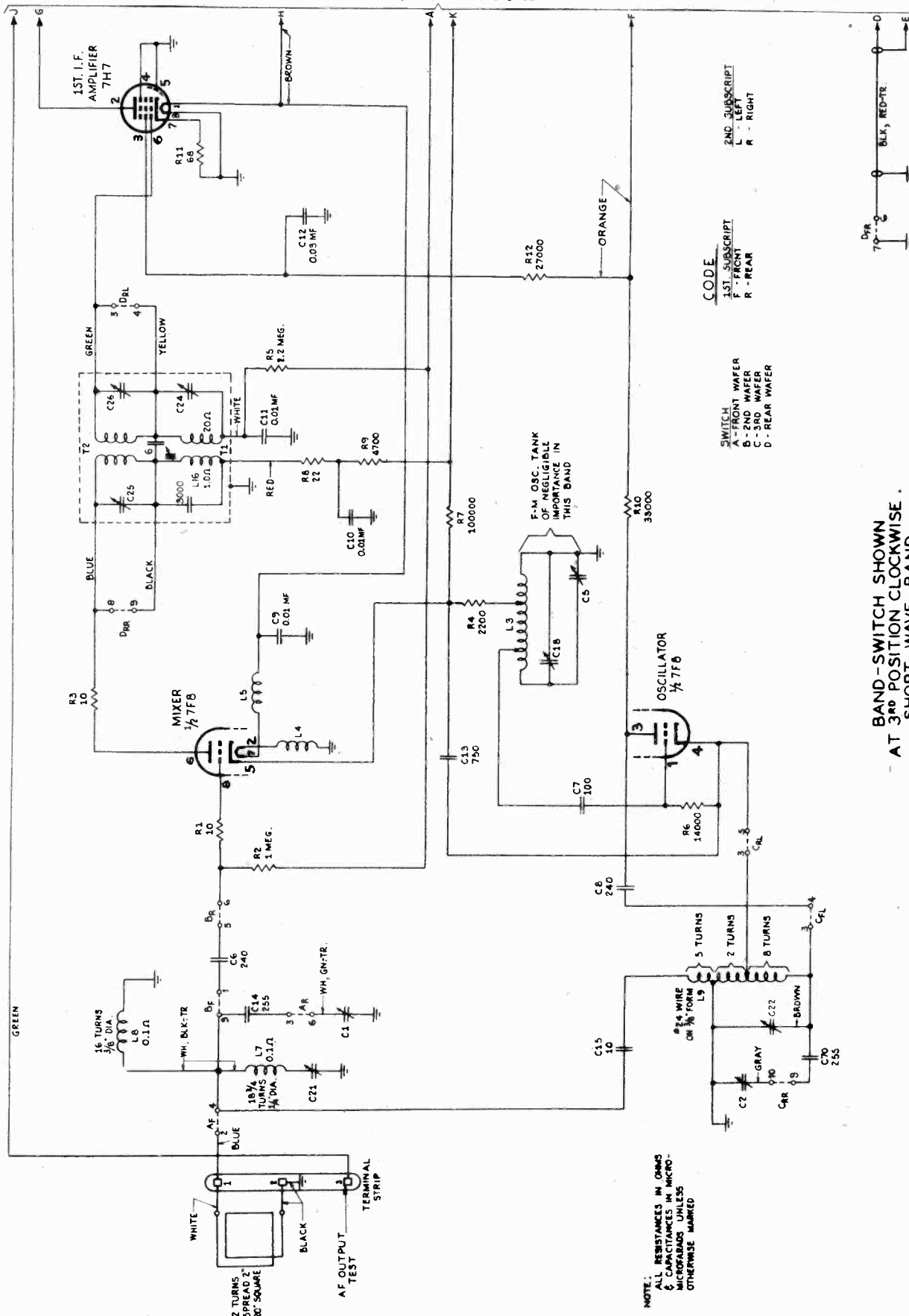
NOTE:
ALL RESISTANCES IN OHMS
& CAPACITANCES IN MICRO-
MICROFARADS UNLESS
OTHERWISE MARKED

CODE
1ST SUBSCRIPT
F - FRONT
R - REAR
2ND SUBSCRIPT
L - LEFT
R - RIGHT

SWITCH
A - FRONT WAFER
B - 2ND WAFER
C - 3RD WAFER
D - REAR WAFER

BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE
MANUAL TUNING
STANDARD BROADCAST
550 - 1700 KC.

TO 2ND. I.F., Audio & POWER



CODE
1ST. SUBSCRIPT
F - FRONT
R - REAR

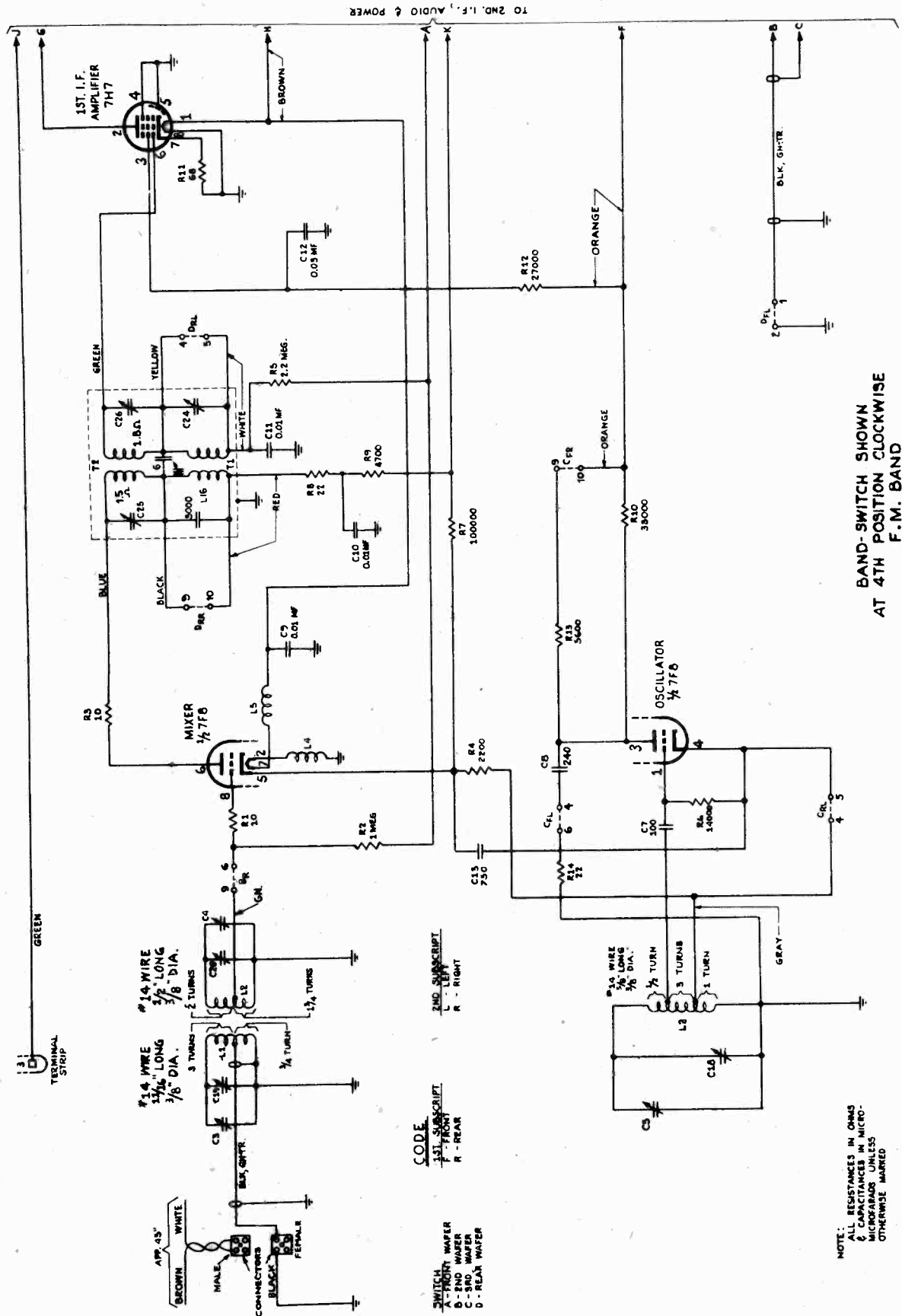
2ND. SUBSCRIPT
L - LEFT
R - RIGHT

SWITCH
FRONT WAFER
B - 2ND. WAFER
C - 3RD. WAFER
D - REAR WAFER

BAND-SWITCH SHOWN
AT 3rd POSITION CLOCKWISE.
SHORT WAVE BAND
9.3 - 15.5 MC.

NOTE:
ALL RESISTANCES IN OHMS
& CAPACITANCES IN MICRO-
MICROFARADS UNLESS
OTHERWISE MARKED

PHILCO RADIO & TELEV. CORP.



BAND-SWITCH SHOWN
AT 4TH POSITION CLOCKWISE
F.M. BAND
88 - 108 MC.

F-M Alignment

Connect a d-c vacuum tube voltmeter across the 5-mf condenser C43 in the ratio detector circuit. The alignment should be carried through without modulation of the generator output. The receiver band switch should be in the P-M position.

Signal Generator Connection	Signal Generator Frequency	Receiver Dial Position	Adjust as Noted
High side connected to projecting brass screw of L16 coil slug (first i-f transformer T1) through a .01 mf condenser.	9.1 mc.	Index mark (condenser plates fully meshed) Approximately 88 mc.	Fully tighten trimmer C32
Same	9.1 mc.	Index Mark	Adjust for maximum C31 C30 C28 C26 C25
Same	9.1 mc.	Index mark	Input should be adjusted for approximately 25 volts on dc meter. Loosen C32 slowly, recording the minimum and maximum readings. Set trimmer so that average of these voltage readings is obtained. Another method to obtain correct setting of C32 is to adjust this condenser so that the voltage across the L200 mmf condenser in the T5 can (obtainable between the R18-R19 junction and chassis) is one-half the voltage obtained across the 5-mf condenser C43.
Through a .01 mf condenser to the left rear terminal of the chassis P.M. female socket	105 mc.	105 mc.	Adjust for maximum C18 C20 C19

If a maximum voltage indication can not be obtained because either C18, C20, or C19 are completely screwed tight, it may be necessary to slightly compress manually the corresponding coils L3, L2, or L1. Similarly if maximum voltage indication is not obtained because C18, C20 or C19 are almost entirely screwed out, it will be necessary to slightly pull the turns apart of coils L3, L2 or L1. Then realign C18, C20 and C19 at 105 mc.

ALIGNMENT

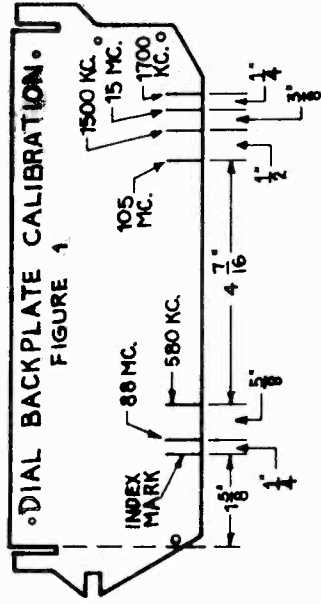
PHILCO 46-480

This chassis must be removed from the cabinet for aligning. Power should not be turned on in this receiver unless the speaker is connected. A-M alignment should be completed before F-M alignment. Alignment of the A-M circuits may not disturb the alignment of the F-M circuits. Calibrate the receiver dial backplate as shown in Figure 1. The receiver dial pointer should coincide with the index mark at the low frequency end of the dial when the gang condenser is fully in mesh.

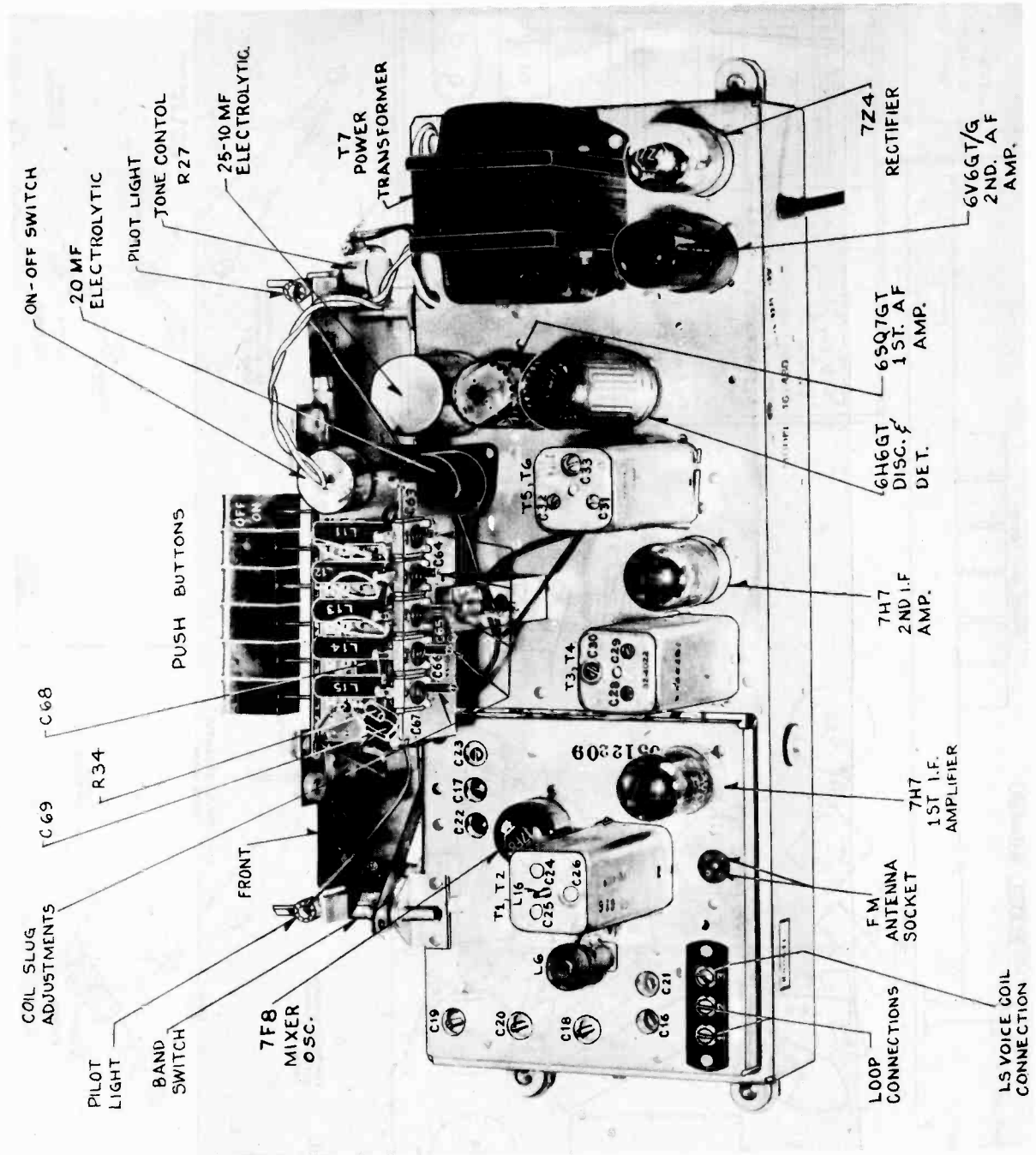
A-M ALIGNMENT

Connect the output meter between terminals 3 (high) and 2 (ground) of the antenna terminal strip. The receiver loop should be connected between terminals 1 (high) and 2 (ground) of the antenna terminal strip. The signal generator should be connected to the standard Hazeltine loop Model 1150 and should be loosely coupled to the receiver loop. The volume control should be set at maximum and the tone control at maximum high. The generator output should always be just sufficient to obtain a minimum deflection on the output meter.

Signal Generator Frequency	Receiver Band Switch Position	Receiver Dial Position	Adjust for Maximum
455 kc.	Broadcast	Index Mark (condenser plates fully meshed)	C33 C29 C24 L16 L15 C17 C16
1700 kc.	Broadcast	1700 kc.	Adjust C23 for peak while rocking tuning control.
1500 kc.	Broadcast	1500 kc.	Readjust C17
580 kc.	Broadcast	580 kc.	Starting with trimmer C22 screw loosened, slowly tighten for peak on first signal heard. Image should be obtained with receiver tuned to 15.9 mc.
1700 kc.	Broadcast	1700 kc.	
15 mc.	Short Wave	15 mc.	
15 mc.	Short Wave	15 mc.	



PHILCO RADIO & TELEV. CORP.



MODEL 46-480

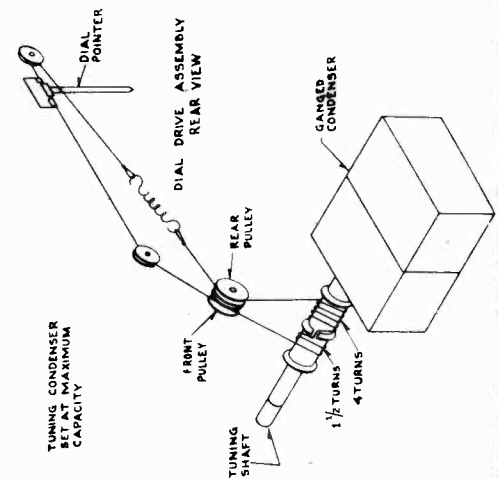
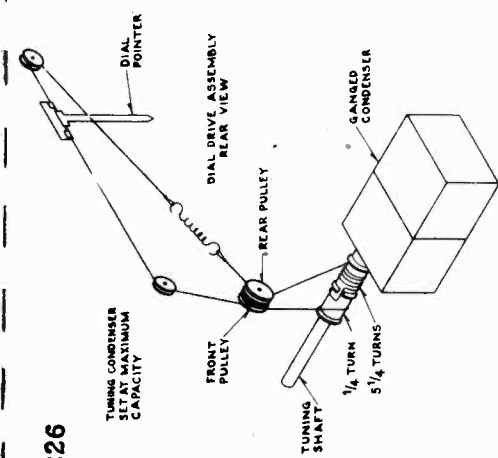
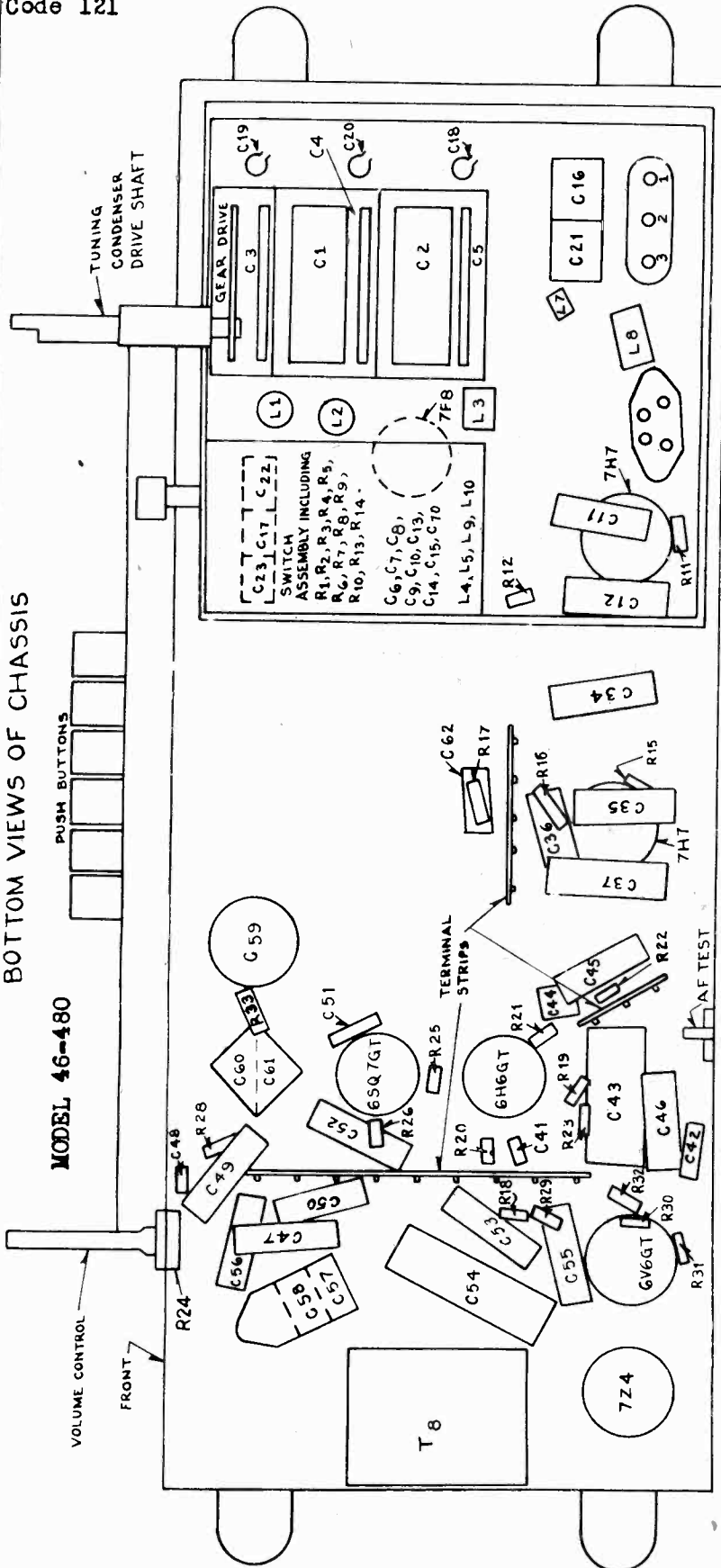
Code 121

MODEL 46-1226

Code 121

PHILCO RADIO & TELEV. CORP.

BOTTOM VIEWS OF CHASSIS



PHILCO RADIO & TELEV. CORP.

MODEL 46-480

Code 121

FUSE BUTTON		BROADCAST (MANUAL TUNING)		VOLTAGE		VOLTAGE		RESISTANCE		RESISTANCE	
1ST POSITION	2ND POSITION	20,000 OHMS	1000 OHMS	20,000 OHMS	1000 OHMS	20,000 OHMS	1000 OHMS	20,000 OHMS	1000 OHMS	20,000 OHMS	1000 OHMS
TUBE	TUBE	PER VOLT	PER VOLT	PER VOLT	PER VOLT	PER VOLT	PER VOLT	PER VOLT	PER VOLT	PER VOLT	PER VOLT
CLOCKWISE	CLOCKWISE										
7F8	7F8										
1	1	+28	+14	+25	+14	-4.2	-3.8	24,000	24,000	-4.2	-3.8
2	2	0	0	0	0	75	64	150,000	150,000	75	64
3	3	75	64	72	64	30	26	10,000	10,000	30	26
4	4	30	26	28	24	10	7.6	2,500	2,500	10	7.6
5	5	9	7.6	7.8	7.6	225	220	110,000	110,000	225	210
6	6	225	220	220	220	0	0	0	0	0	0
7	7	0	0	0	0	0	0	0	0	0	0
8	8	1	0	0.02	0	1	0	3.8 mΩ	3.8 mΩ	1	0
9	9	0	0	0	0	0	0	0	0	0	0
10	10	0	0	0	0	0	0	0	0	0	0
11	11	0	0	0	0	0	0	0	0	0	0
12	12	0	0	0	0	0	0	0	0	0	0
13	13	0	0	0	0	0	0	0	0	0	0
14	14	0	0	0	0	0	0	0	0	0	0
15	15	0	0	0	0	0	0	0	0	0	0
16	16	0	0	0	0	0	0	0	0	0	0
17	17	0	0	0	0	0	0	0	0	0	0
18	18	0	0	0	0	0	0	0	0	0	0
19	19	0	0	0	0	0	0	0	0	0	0
20	20	0	0	0	0	0	0	0	0	0	0
21	21	0	0	0	0	0	0	0	0	0	0
22	22	0	0	0	0	0	0	0	0	0	0
23	23	0	0	0	0	0	0	0	0	0	0
24	24	0	0	0	0	0	0	0	0	0	0
25	25	0	0	0	0	0	0	0	0	0	0
26	26	0	0	0	0	0	0	0	0	0	0
27	27	0	0	0	0	0	0	0	0	0	0
28	28	0	0	0	0	0	0	0	0	0	0
29	29	0	0	0	0	0	0	0	0	0	0
30	30	0	0	0	0	0	0	0	0	0	0
31	31	0	0	0	0	0	0	0	0	0	0
32	32	0	0	0	0	0	0	0	0	0	0
33	33	0	0	0	0	0	0	0	0	0	0
34	34	0	0	0	0	0	0	0	0	0	0
35	35	0	0	0	0	0	0	0	0	0	0
36	36	0	0	0	0	0	0	0	0	0	0
37	37	0	0	0	0	0	0	0	0	0	0
38	38	0	0	0	0	0	0	0	0	0	0
39	39	0	0	0	0	0	0	0	0	0	0
40	40	0	0	0	0	0	0	0	0	0	0
41	41	0	0	0	0	0	0	0	0	0	0
42	42	0	0	0	0	0	0	0	0	0	0
43	43	0	0	0	0	0	0	0	0	0	0
44	44	0	0	0	0	0	0	0	0	0	0
45	45	0	0	0	0	0	0	0	0	0	0
46	46	0	0	0	0	0	0	0	0	0	0
47	47	0	0	0	0	0	0	0	0	0	0
48	48	0	0	0	0	0	0	0	0	0	0
49	49	0	0	0	0	0	0	0	0	0	0
50	50	0	0	0	0	0	0	0	0	0	0
51	51	0	0	0	0	0	0	0	0	0	0
52	52	0	0	0	0	0	0	0	0	0	0
53	53	0	0	0	0	0	0	0	0	0	0
54	54	0	0	0	0	0	0	0	0	0	0
55	55	0	0	0	0	0	0	0	0	0	0
56	56	0	0	0	0	0	0	0	0	0	0
57	57	0	0	0	0	0	0	0	0	0	0
58	58	0	0	0	0	0	0	0	0	0	0
59	59	0	0	0	0	0	0	0	0	0	0
60	60	0	0	0	0	0	0	0	0	0	0
61	61	0	0	0	0	0	0	0	0	0	0
62	62	0	0	0	0	0	0	0	0	0	0
63	63	0	0	0	0	0	0	0	0	0	0
64	64	0	0	0	0	0	0	0	0	0	0
65	65	0	0	0	0	0	0	0	0	0	0
66	66	0	0	0	0	0	0	0	0	0	0
67	67	0	0	0	0	0	0	0	0	0	0
68	68	0	0	0	0	0	0	0	0	0	0
69	69	0	0	0	0	0	0	0	0	0	0
70	70	0	0	0	0	0	0	0	0	0	0
71	71	0	0	0	0	0	0	0	0	0	0
72	72	0	0	0	0	0	0	0	0	0	0
73	73	0	0	0	0	0	0	0	0	0	0
74	74	0	0	0	0	0	0	0	0	0	0
75	75	0	0	0	0	0	0	0	0	0	0
76	76	0	0	0	0	0	0	0	0	0	0
77	77	0	0	0	0	0	0	0	0	0	0
78	78	0	0	0	0	0	0	0	0	0	0
79	79	0	0	0	0	0	0	0	0	0	0
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93	93	0	0	0	0	0	0	0	0	0	0
94	94	0	0	0	0	0	0	0	0	0	0
95	95	0	0	0	0	0	0	0	0	0	0
96	96	0	0	0	0	0	0	0	0	0	0
97	97	0	0	0	0	0	0	0	0	0	0
98	98	0	0	0	0	0	0	0	0	0	0
99	99	0	0	0	0	0	0	0	0	0	0
100	100	0	0	0	0	0	0	0	0	0	0

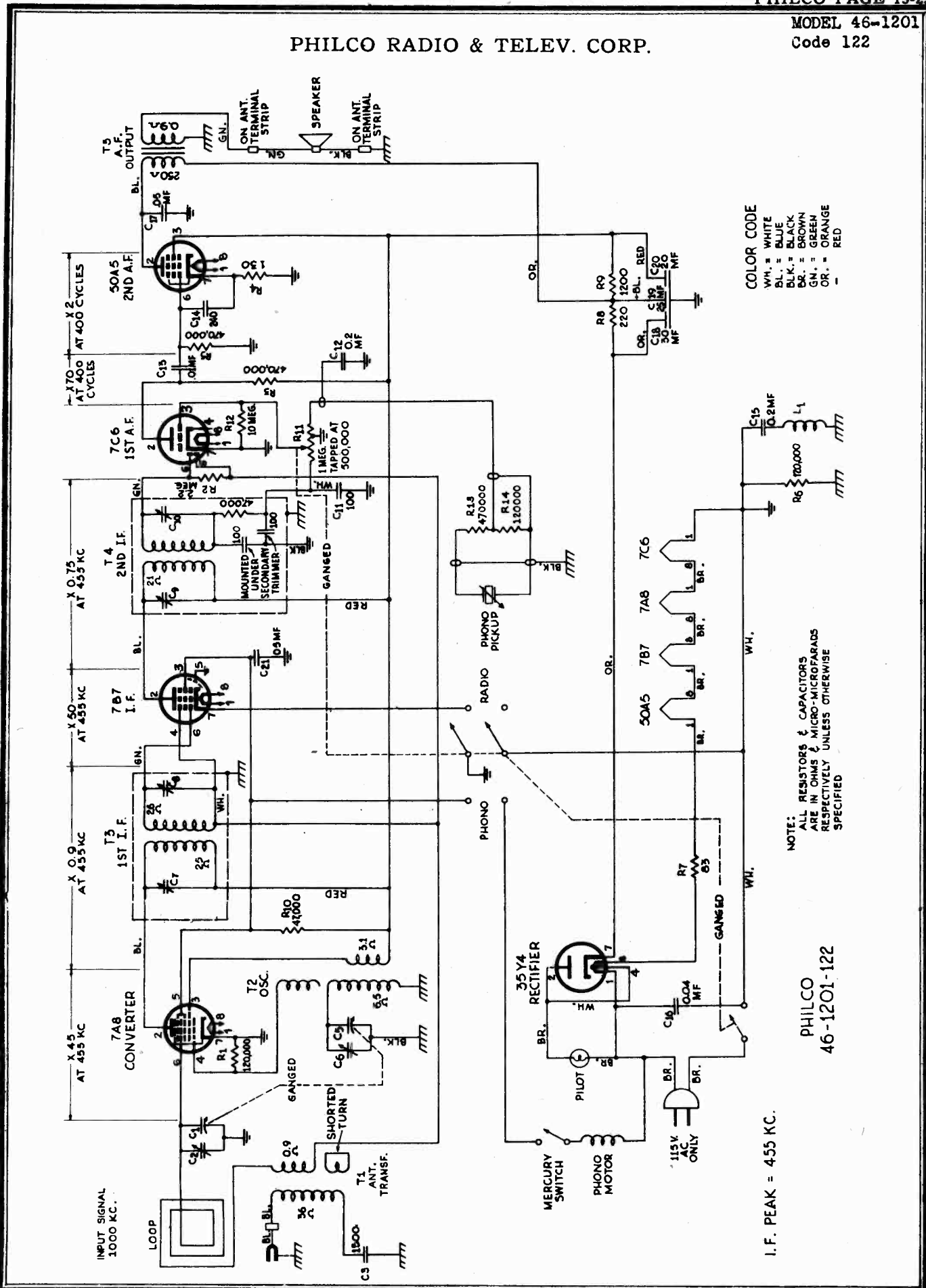
MODEL 46-280

Code 121

PHILCO RADIO & TELEV. CORP.

SHORTWAVE 3RD POSITION CLOCKWISE TUBE	PIN	V7VM	VOLTAGE		RESISTANCE	V7VM	VOLTAGE		RESISTANCE	4TH POSITION CLOCKWISE TUBE	PIN	V7VM	VOLTAGE		RESISTANCE
			20,000 OHMS PER VOLT	1000 OHMS PER VOLT			20,000 OHMS PER VOLT	1000 OHMS PER VOLT							
7F8	1	-1.6	-1.5	-1.4	14,000	-2.6	-0.3	0	14,000	7F8	1	-2.6	-0.3	0	14,000
	2	0	0	0	0	0	0	0	0		2	0	0	0	0
	3	75	58	53	150,000	125	110	92	120,000		3	125	110	92	120,000
	4	0	0	0	0	0	0	0	0		4	0	0	0	0
	5	8.5	8.4	7.9	2500	0	0	0	2500		5	0	0	0	2500
	6	225	220	220	110,000	225	220	220	110,000		6	225	220	220	110,000
	7	0	0	0	0	0	0	0	0		7	0	0	0	0
	8	1	0.02	0	3.8 meg	0	0	0	10		8	0	0	0	10
7H7 (1ST IF)	1	0	0	0	0.1	0	0	0	0.1	7H7 (1ST IF)	1	0	0	0	0.1
	2	235	225	225	110,000	235	225	225	110,000		2	235	225	225	110,000
	3	97	97	85	145,000	88	89	76	145,000		3	88	89	76	145,000
	4	0	0	0	0	0	0	0	0		4	0	0	0	0
	5	0	0	0	0	0	0	0	0		5	0	0	0	0
	6	-0.5	-0.02	0	5 meg	-0.5	-0.02	0	3 meg		6	-0.5	-0.02	0	3 meg
	7	0.7	0.7	0.65	60	0.6	0.6	0.6	60		7	0.6	0.6	0.6	60
	8	0	0	0	0	0	0	0	0		8	0	0	0	0
7H7 (2ND IF)	1	0	0	0	0	0	0	0	0	7H7 (2ND IF)	1	0	0	0	0
	2	230	220	220	110,000	230	220	220	110,000		2	230	220	220	110,000
	3	110	100	84	150,000	100	89	76	150,000		3	100	89	76	150,000
	4	0	0	0	0	0	0	0	0		4	0	0	0	0
	5	0	0	0	0	0	0	0	0		5	0	0	0	0
	6	0	0	0	0	0	0	0	0		6	0	0	0	0
	7	1.4	1.2	1.2	170	1.2	1.1	1.1	170		7	1.2	1.1	1.1	170
	8	0	0	0	0.1	0	0	0	0.1		8	0	0	0	0.1
6H6GT	1	0	0	0	0.6	0	0	0	0.6	6H6GT	1	0	0	0	0.6
	2	0	0	0	0	0	0	0	0		2	0	0	0	0
	3	-44	-41	-28	60,000	0	0	0	32,000		3	0	0	0	32,000
	4	-0.3	-0.2	-0.05	27,500	-0.2	-0.1	-0.04	2.5 meg		4	-0.2	-0.1	-0.04	2.5 meg
	5	-0.3	-0.2	-0.05	27,500	-0.2	-0.2	-0.04	2.5 meg		5	-0.2	-0.2	-0.04	2.5 meg
	6	-0.3	-0.04	0	125,000	-0.2	-0.03	0	2.6 meg		6	-0.2	-0.03	0	2.6 meg
	7	0	0	0	0.6	0	0	0	0.6		7	0	0	0	0.6
	8	0	0	0	0	0	0	0	0		8	0	0	0	0
6SQ7GT	1	0	0	0	0	0	0	0	0	6SQ7GT	1	0	0	0	0
	2	-0.8	-0.3	-0.06	17 meg	-0.3	-0.3	-0.06	17		2	-0.3	-0.3	-0.06	17
	3	0	0	0	0	0	0	0	0		3	0	0	0	0
	4	-0.5	-0.2	-0.02	3 meg	-0.5	-0.2	-0.02	900,000		4	-0.5	-0.2	-0.02	900,000
	5	0	0	0	0	0	0	0	0		5	0	0	0	0
	6	105	100	62	350,000	105	100	62	350,000		6	105	100	62	350,000
	7	0	0	0	0.1	0	0	0	0.1		7	0	0	0	0.1
	8	0	0	0	0	0	0	0	0		8	0	0	0	0
6V6GT	1	0	0	0	0	0	0	0	0	6V6GT	1	0	0	0	0
	2	0	0	0	0.1	0	0	0	0.1		2	0	0	0	0.1
	3	225	215	215-	110,000	225	215	215	110,000		3	225	215	215	110,000
	4	235	220	220	110,000	235	220	220	110,000		4	235	220	220	110,000
	5	-12	-4.3	0.3	470,000	-12	-4.3	0.3	470,000		5	-12	-4.3	0.3	470,000
	6	-12	-7.4	1.0	16,000	-12	-7.4	1.0	16,000		6	-12	-7.4	1.0	16,000
	7	0	0	0	0	0	0	0	0		7	0	0	0	0
	8	0	0	0	0	0	0	0	0		8	0	0	0	0
7Z4	1	0	0	0	0	0	0	0	0	7Z4	1	0	0	0	0
	2	0	0	0	0	0	0	0	0		2	0	0	0	0
	3	-77	-76	-75	INFINITE	-77	-76	-75	INFINITE		3	-77	-76	-75	INFINITE
	4	0	0	0	1100	0	0	0	1100		4	0	0	0	1100
	5	-0.5	0	0	INFINITE	-0.5	0	0	INFINITE		5	-0.5	0	0	INFINITE
	6	-76	-76	-76	1100	-76	-76	-76	1100		6	-76	-76	-76	1100
	7	235	230	230	110,000	235	230	230	110,000		7	235	230	230	110,000
	8	0	0	0	0.1	0	0	0	0.1		8	0	0	0	0.1

PHILCO RADIO & TELEV. CORP.



COLOR CODE
 WH. = WHITE
 BL. = BLUE
 BR. = BROWN
 GN. = GREEN
 OR. = ORANGE
 - = RED

NOTE:
 ALL RESISTORS & CAPACITORS
 ARE IN OHMS & MICRO-MICROFARADS
 RESPECTIVELY UNLESS OTHERWISE
 SPECIFIED

PHILCO
 46-1201-122

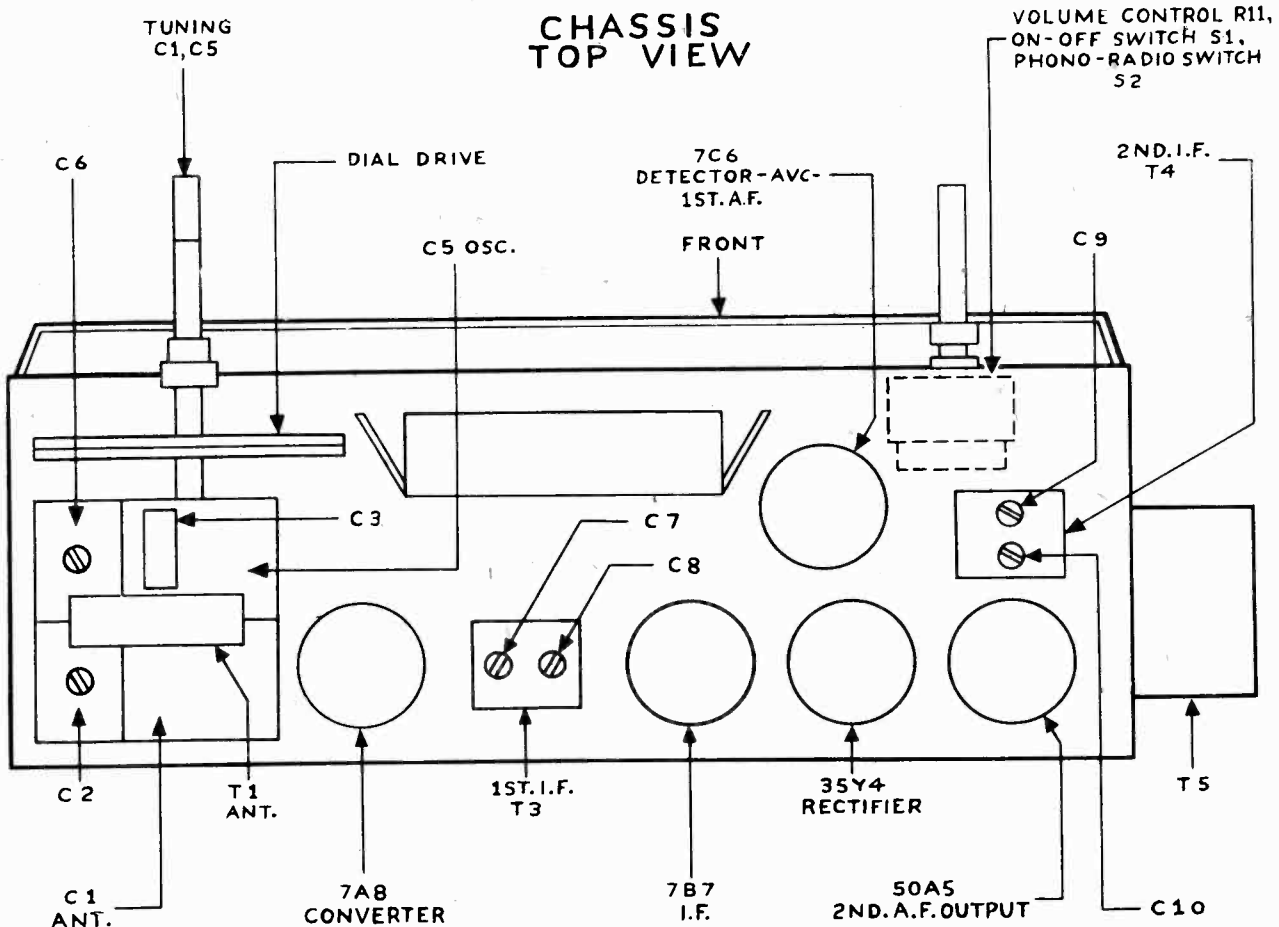
I.F. PEAK = 455 KC.

PHILCO RADIO & TELEV. CORP.

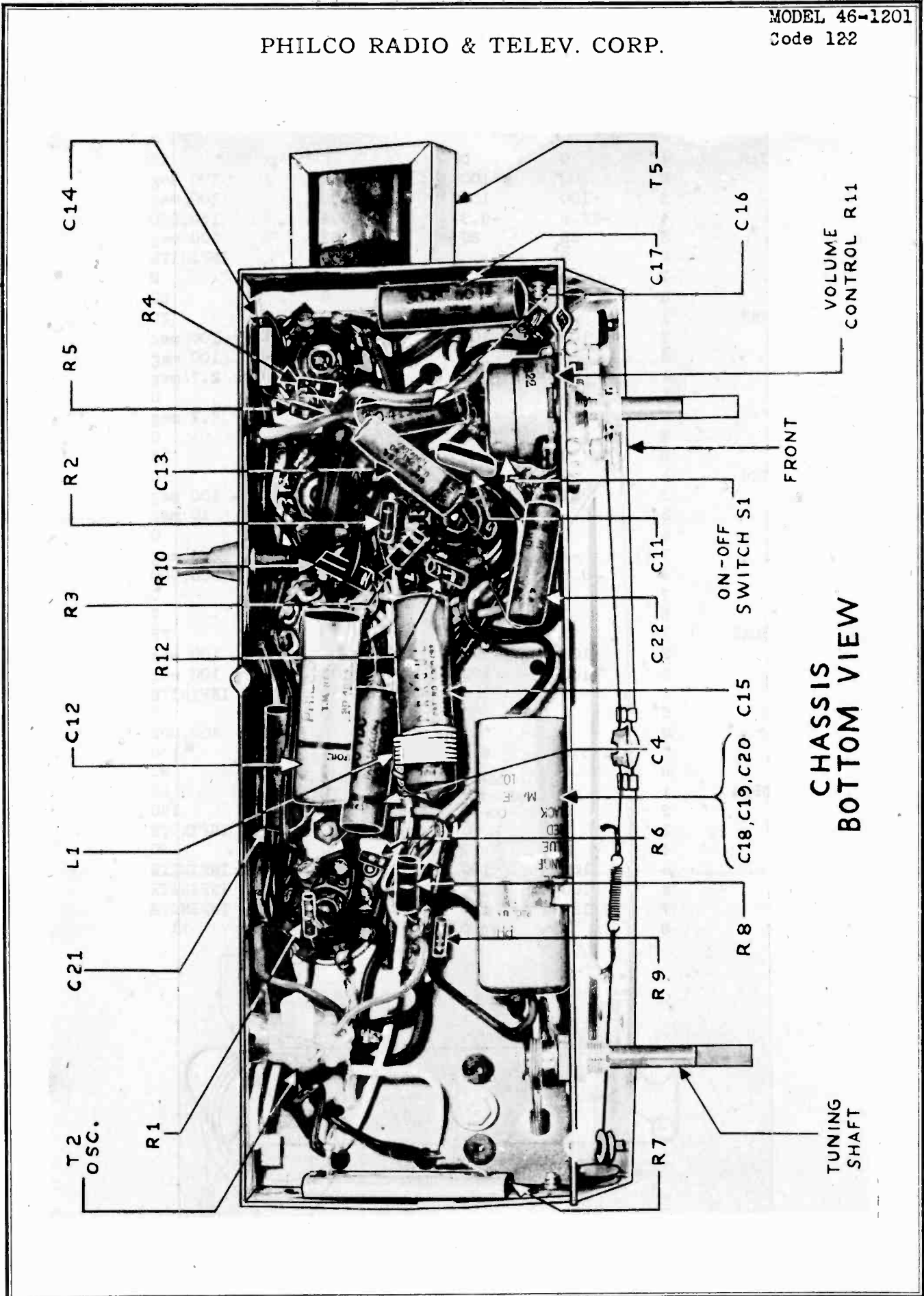
ALIGNMENT

PHILCO 46-1201

The receiver should be aligned with the chassis installed in the cabinet. Connect the output meter from the voice coil lug (green wire) on the speaker to ground. Disconnect the blue external antenna lead from ground. Connect the signal generator through a .01 mf condenser to the external antenna lead. Set the receiver volume control at maximum. The tuning condenser should be fully meshed when the dial pointer is at the index mark at the low frequency end of the dial. The signal generator output should at all times be just sufficient to obtain a minimum deflection on the output meter. Set the signal generator to 455 kc. and adjust the intermediate frequency amplifier transformer trimmers for maximum meter deflection in the following sequence: C10, C9, C8, C7. Set the generator and receiver to 1600 kc. and adjust the oscillator shunt trimmer C6 for maximum output. Set the generator and receiver to 1500 kc. and adjust the r-f trimmer C2 for maximum output.



PHILCO RADIO & TELEV. CORP.



CHASSIS
BOTTOM VIEW

MODEL 46-1201

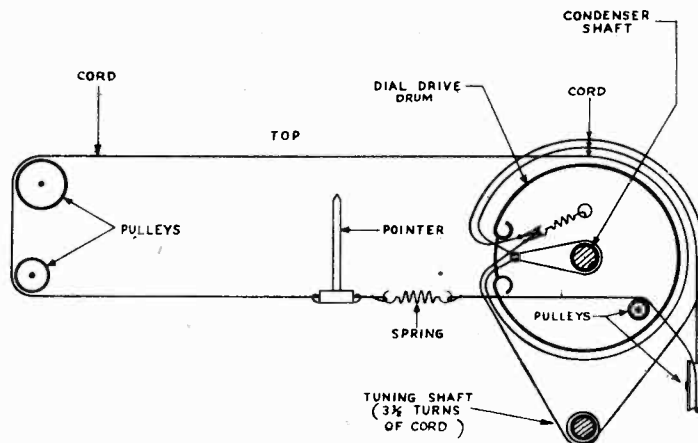
Code 122

PHILCO RADIO & TELEV. CORP.

SWITCH IN RADIO POSITION

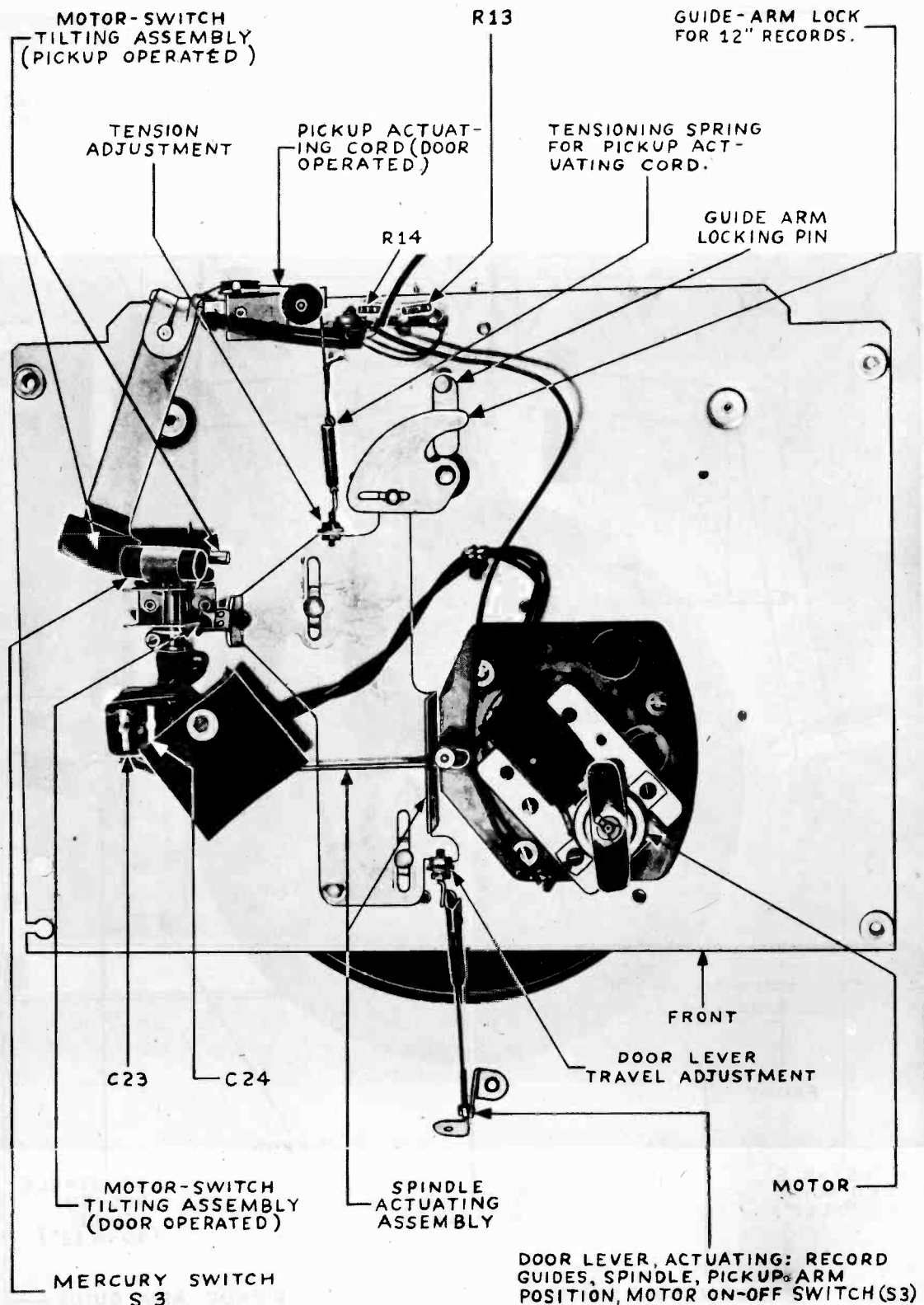
VOLUME CONTROL ON FULL

TUBE	PIN	VTVM	VOLTAGE		RESISTANCE TO CIRCUIT GROUND
			20,000 OHMS PER VOLT	1000 OHMS PER VOLT	
7A8	1	0	0	0	11
	2	100	100	100	100 meg
	3	100	100	100	100 meg
	4	-12.5	-6.6	-3.4	130,000
	5	38	36	32	100 meg
	6	0		0	INFINITE
	7	0		0	0
	8	0		0	20
7B7	1	0	0	0	20
	2	100	100	100	100 meg
	3	38	36	34	100 meg
	4	-1	-0.4	-0.3	2.7 meg
	5	0	0	0	0
	6	-1	-0.4	-0.3	2.7 meg
	7	0	0	0	0
	8	0	0	0	13
7C6	1	0	0	0	0
	2	62	56	50	100 meg
	3	-0.9	-0.36	-0.3	10 meg
	4	0	0	0	0
	5	-1	-0.6	-0.3	2.5 meg
	6	-0.6	-0.4	-0.2	500,000
	7	0	0	0	0
	8	0	0	0	7
50A5	1	0	0	0	75
	2	100	100	100	100 meg
	3	100	100	100	100 meg
	4	0	0	0	INFINITE
	5	0	0	0	0
	6	0	0	0	400,000
	7	5.6	5.2	5.4	130
	8	0	0	0	20
35Y4	1	0	0	0	185
	2	0	0	0	180
	3	0	0	0	INFINITE
	4	0	0	0	180
	5	100	100	100	INFINITE
	6	100	100	100	INFINITE
	7	120	120	120	INFINITE
	8	0	0	0	1



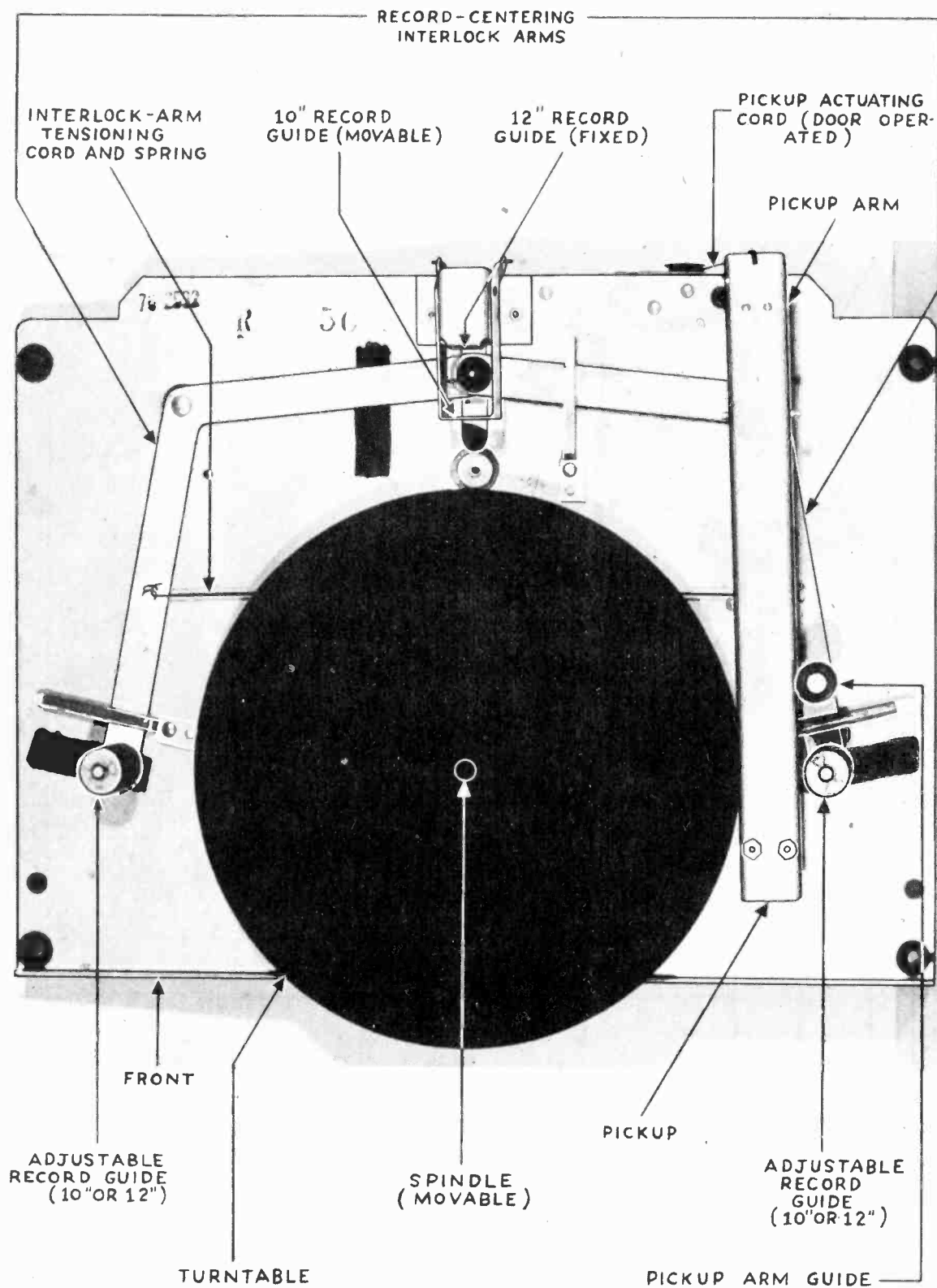
FRONT VIEW
DIAL DRIVE ASSEMBLY
(TUNING CONDENSER IN MAX. CAPACITY POSITION.)

PHILCO RADIO & TELEV. CORP.



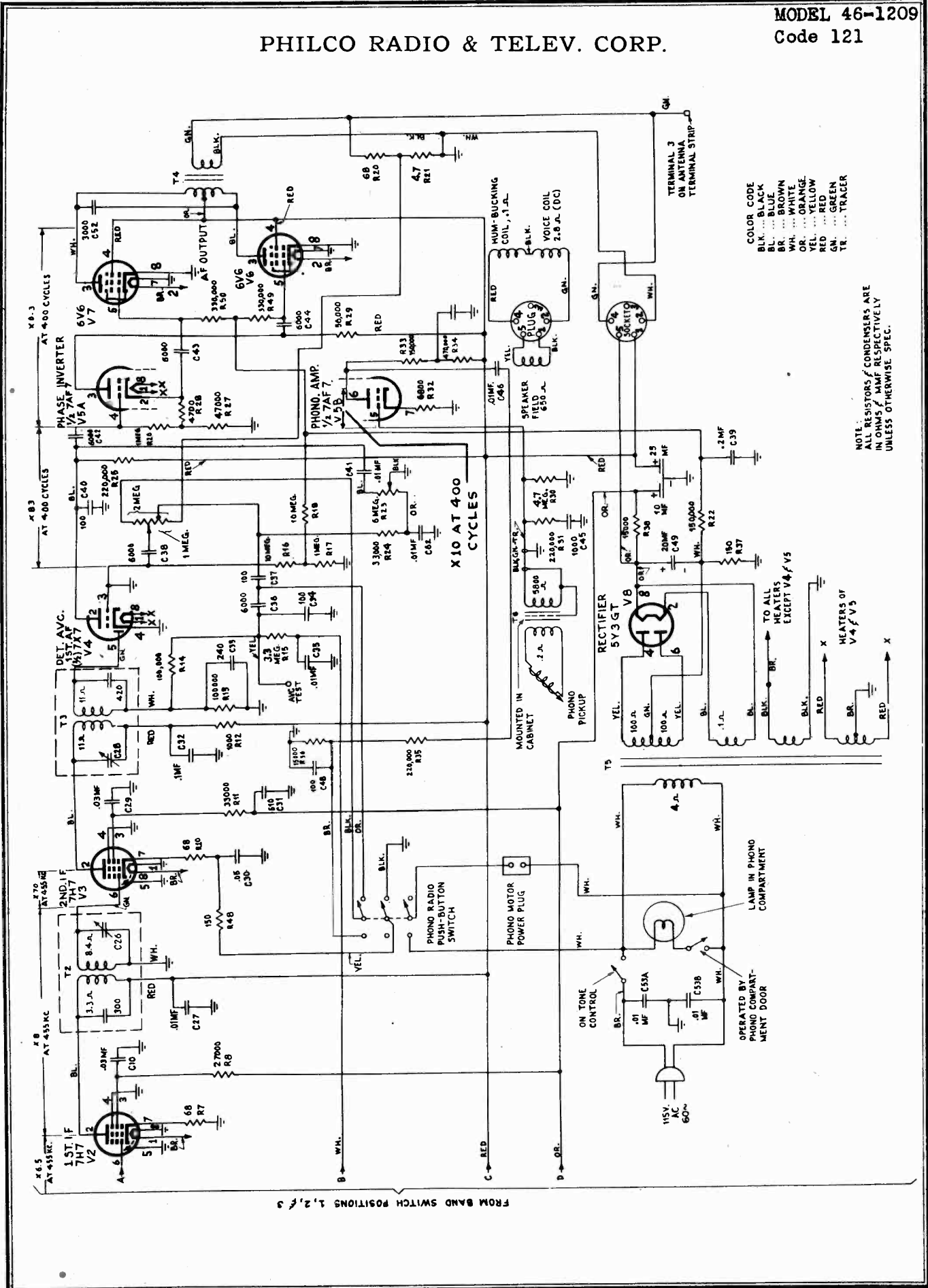
BOTTOM VIEW
RECORD PLAYER

PHILCO RADIO & TELEV. CORP.



TOP VIEW
RECORD PLAYER

PHILCO RADIO & TELEV. CORP.



COLOR CODE
 BLK... BLACK
 BL... BLUE
 BR... BROWN
 WH... WHITE
 OR... ORANGE
 YEL... YELLOW
 RED... RED
 GRN... GREEN
 TR... TRACER

NOTE: ALL RESISTORS / CONDENSERS ARE IN OHMS / MMF RESPECTIVELY UNLESS OTHERWISE SPEC.

MODEL 46-1209

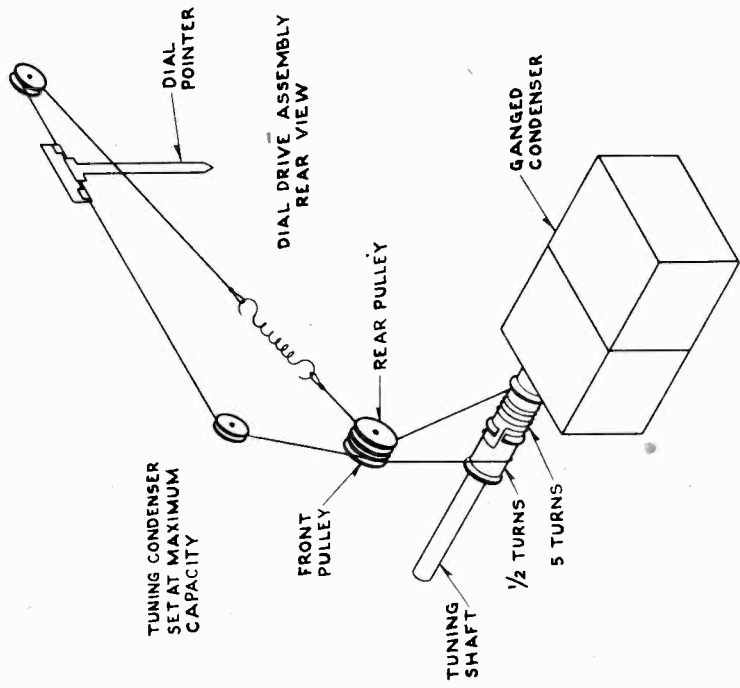
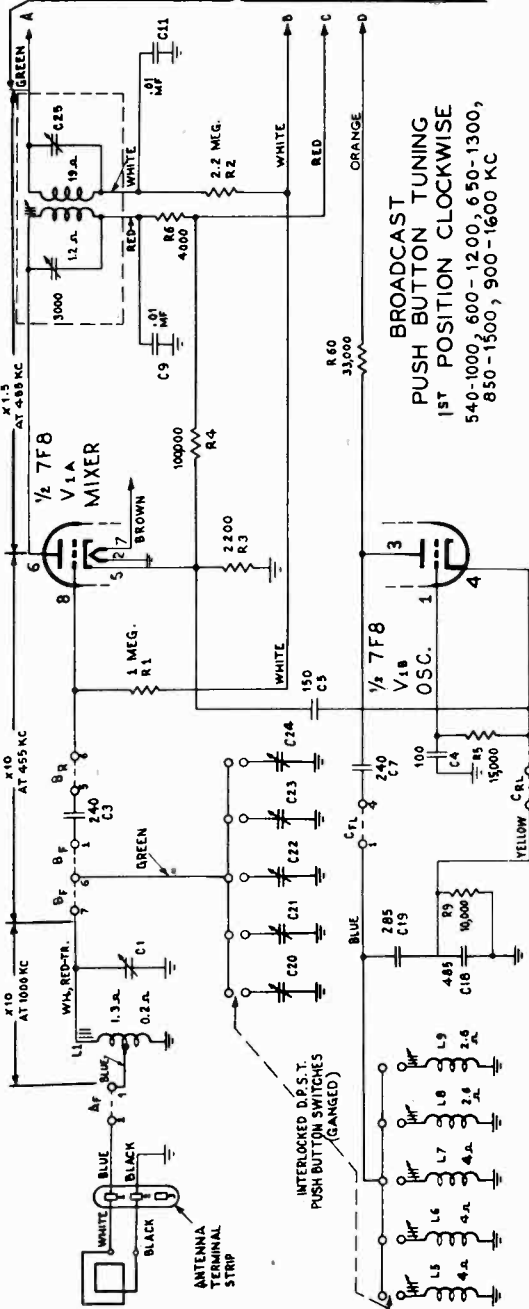
Code 121

PHILCO RADIO & TELEV. CORP.

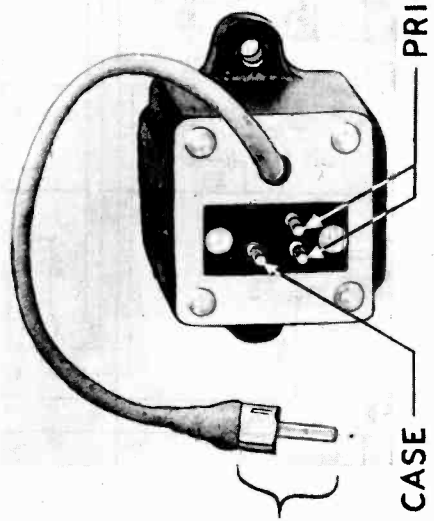
SWITCH CODE

- UPPER LETTER
- A ... FRONT WAFER
- B ... 2 ND. WAFER
- C ... 3 RD. WAFER
- D ... REAR WAFER
- 1 ST. SUBSCRIPT
- F ... FRONT
- R ... REAR
- 2 ND. SUBSCRIPT
- L ... LEFT VIEWED FROM TOP OF CHASSIS
- R ... RIGHT VIEWED FROM TOP OF CHASSIS

TERMINAL NUMBER
TERMINALS ARE NUMBERED
CLOCKWISE AS VIEWED FROM
FRONT #1 IS IMMEDIATELY TO
LEFT OF BOTTOM SWITCH BOLT;
VIEW FROM TOP OF CHASSIS.



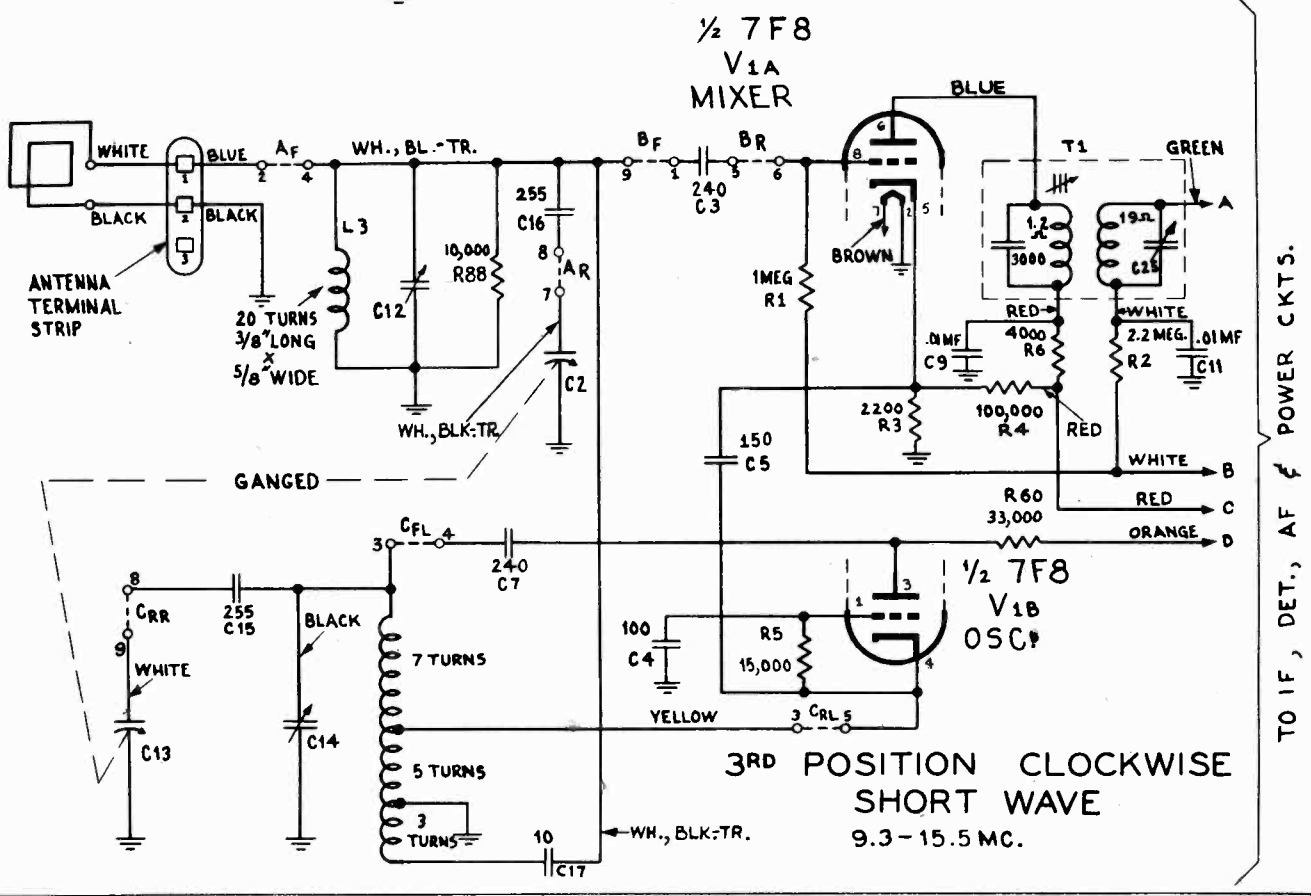
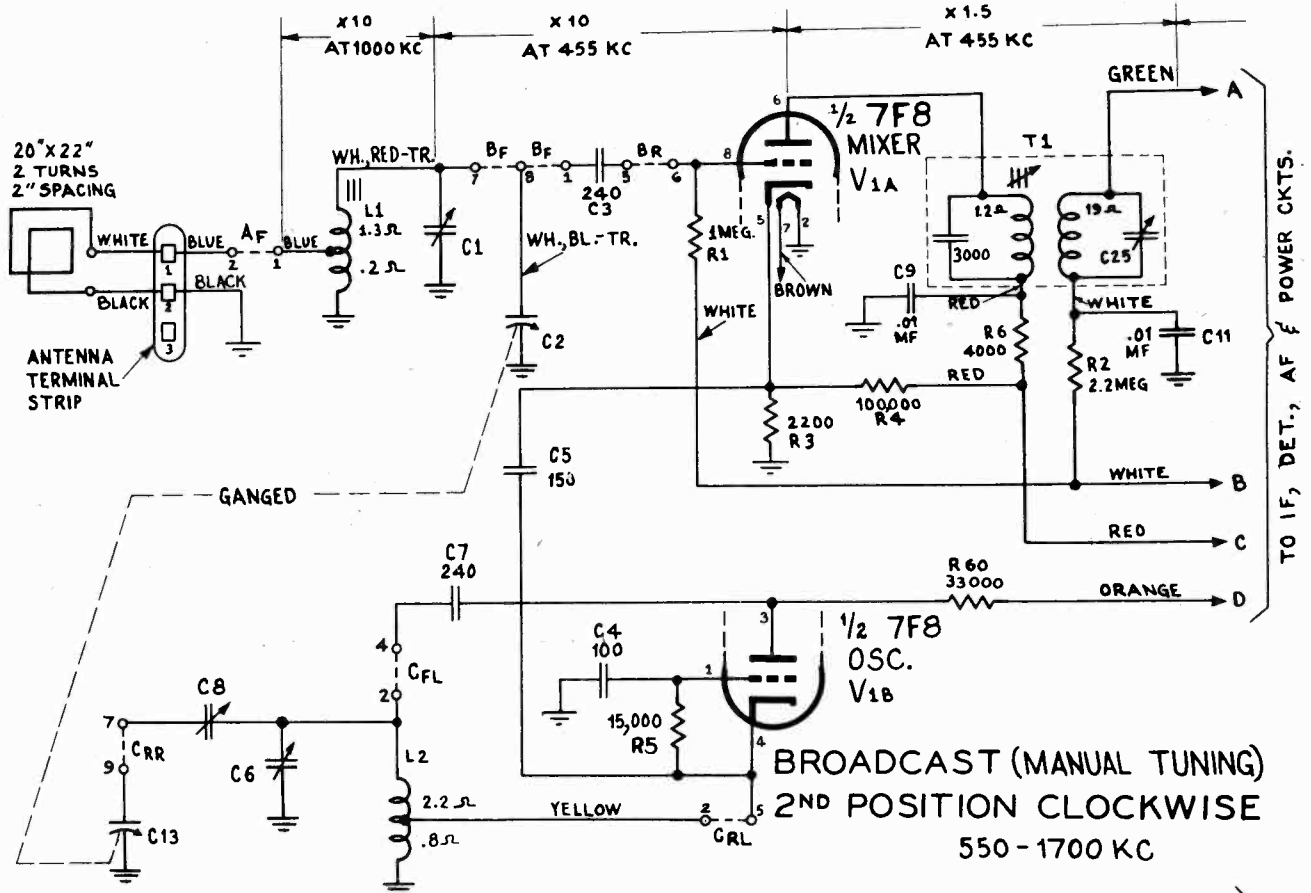
PHONO AUDIO TRANSFORMER



SECONDARY
CONNECTED TO CASE

PRIMARY

PHILCO RADIO & TELEV. CORP.



MODEL 46-480
MODEL 46-1209PHILCO RADIO & TELEV. CORP.
ALIGNMENT

PHILCO 46-1209

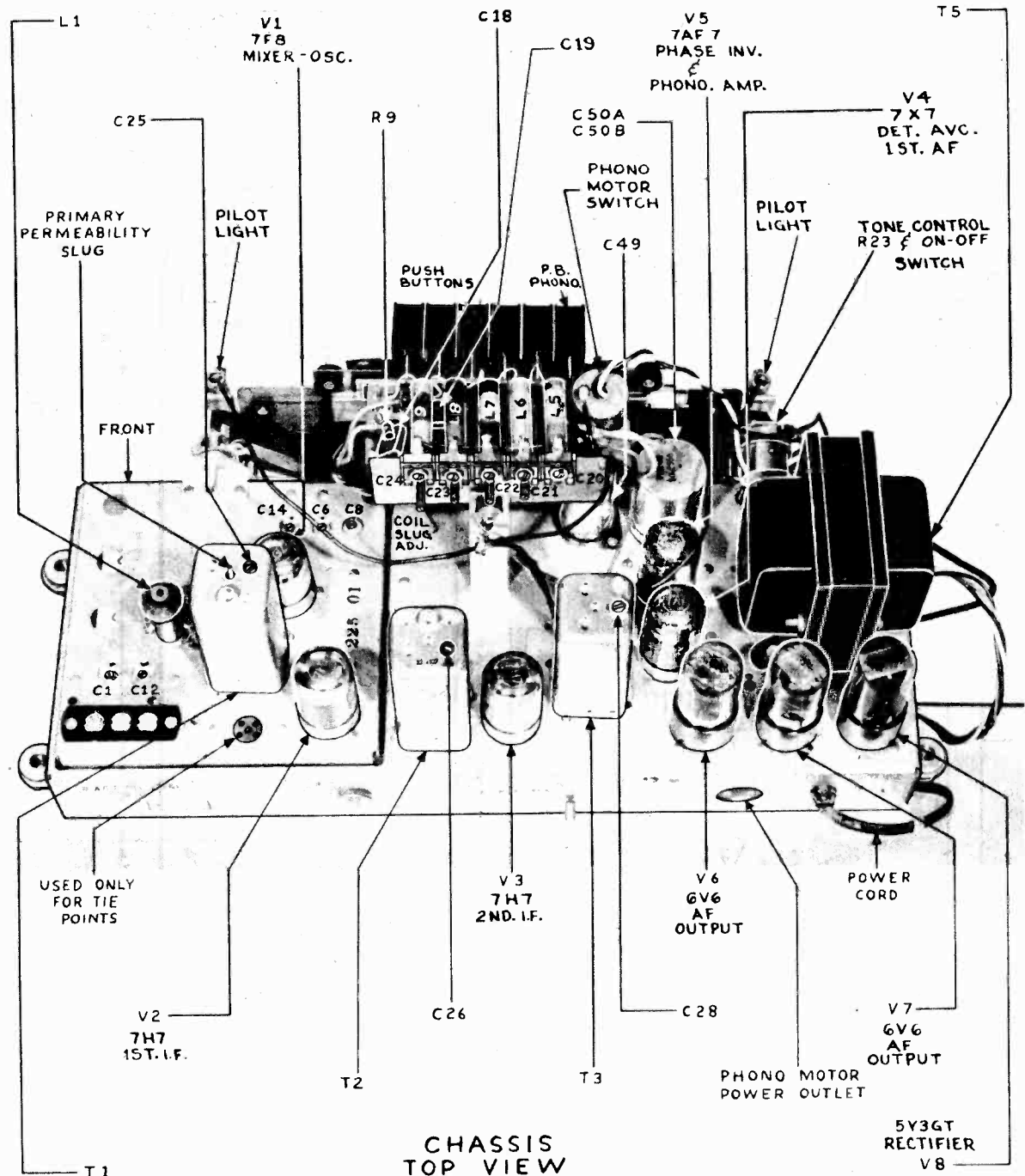
Power should not be turned on in this receiver unless the speaker is connected. The chassis must be removed from the cabinet for alignment. Calibrate the receiver dial backplate as shown in Fig. 1, Page 15-36. The receiver loop should be connected to terminals 1 (high) and 2 (low) of the antenna terminal strip. The output meter should be connected to terminals 3 (high) and 2 (low) of the antenna terminal strip.

Signal Generator Frequency	Receiver Band Switch Position	Receiver Dial Position	Adjust for Maximum
1. 455 kc.	Broadcast	Index mark (condenser plates fully meshed)	C28 C26 C25 Coil slug of T1
2. 1700 kc.	Broadcast	1700 kc.	C6
3. 1500 kc.	Broadcast	1500 kc.	C1
4. 580 kc.	Broadcast	580 kc.	Adjust C8 for peak while rocking tuning control.
5. 1700 kc.	Broadcast	1700 kc.	Readjust C6
6. 15 mc.	Short Wave	15 mc.	Starting with trimmer C14 screw loosened, slowly tighten for peak on first signal heard. Image should be obtained with receiver tuned to 15.9 mc.
7. 15 mc.	Short Wave	15 mc.	C12
46-480	PUSH BUTTON ADJUSTMENT		46-1209

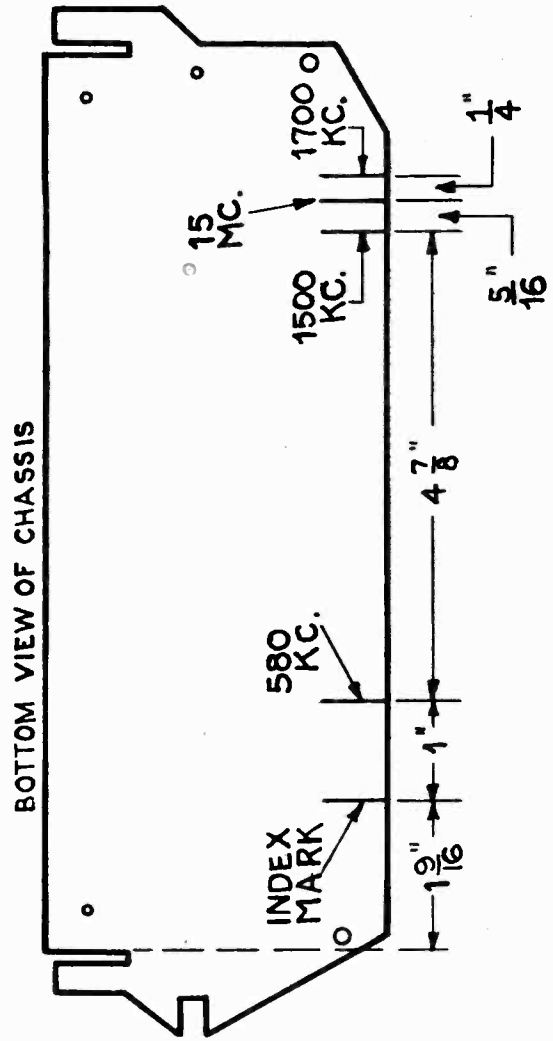
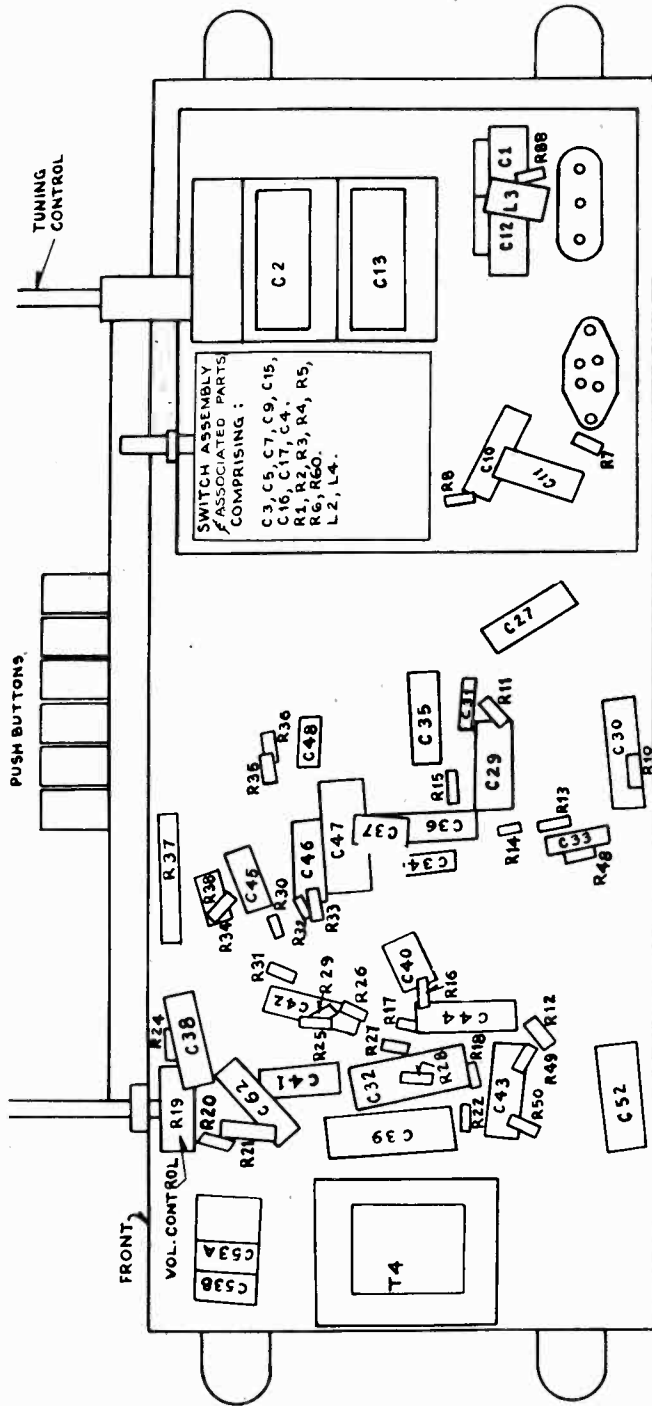
Note: Good reception of stations by use of push buttons depends on the accuracy of the manual tuning during the setting-up operation.

1. Allow the receiver to warm up for at least 20 minutes before setting up any stations.
2. The band switch must be in the push-button position.
3. Choose the most powerful local stations, those which are free from excess fading. Setting up weak or distant stations is not recommended.
4. List the desired stations, in order, from the low to the high frequencies. The station on your list that comes in nearest the left-hand end of the dial should be called station No. 1 and should be set up on button No. 1. Do not skip buttons but set up stations in numerical order.
5. Insert the proper station call tabs into the recesses of the respective buttons.
6. Manually tune in the desired station accurately.
7. Set the bandswitch to the push button position.
8. Push in the button to be set up to its depressed position.
9. Adjust its corresponding oscillator trimmer for the station signal which you tuned in manually above. Peak the adjustment for clearest reception.
10. Adjust its corresponding antenna trimmer for clearest reception.
11. Repeat the above procedure from step 6 to 10 for each button to be set up.

PHILCO RADIO & TELEV. CORP.

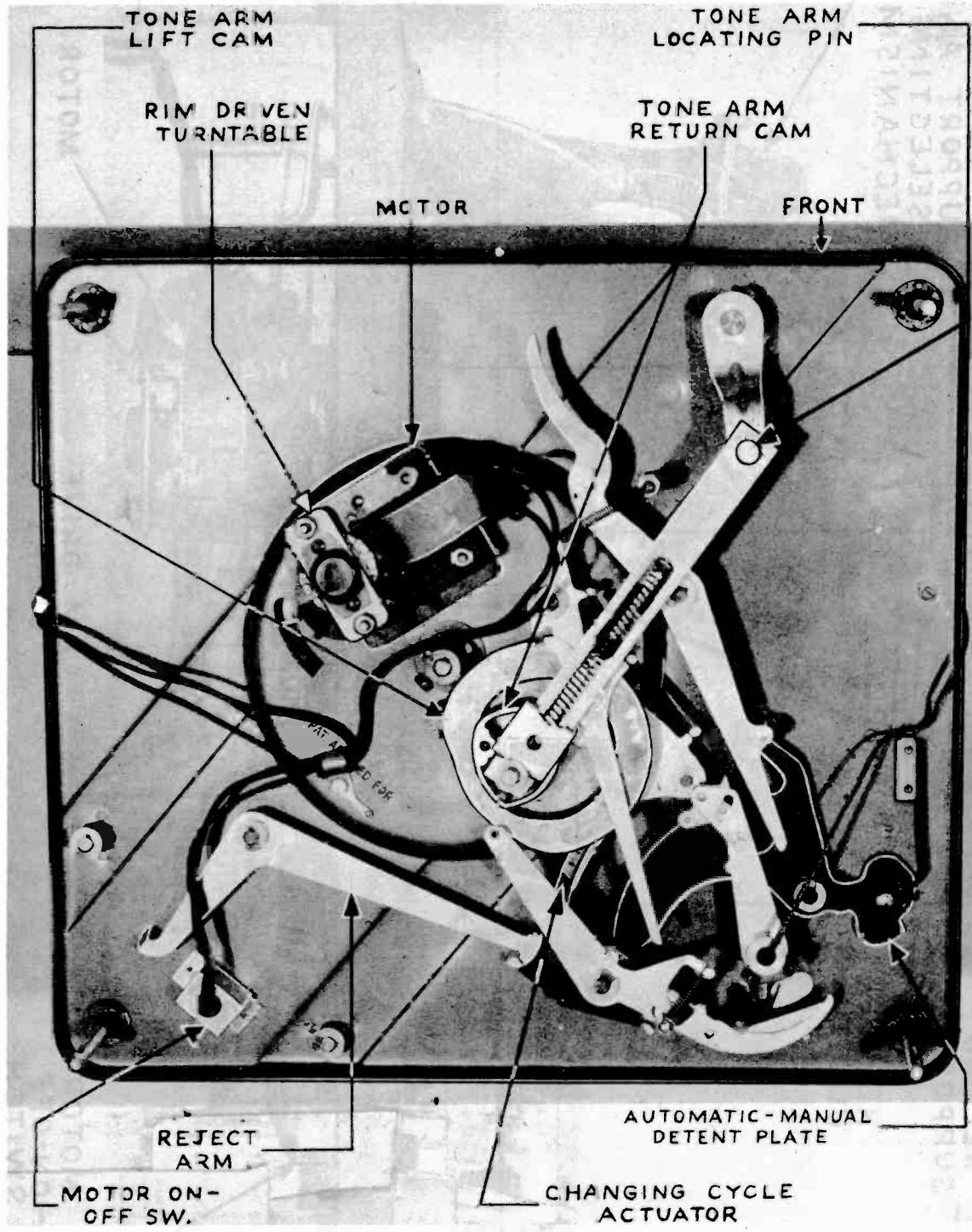


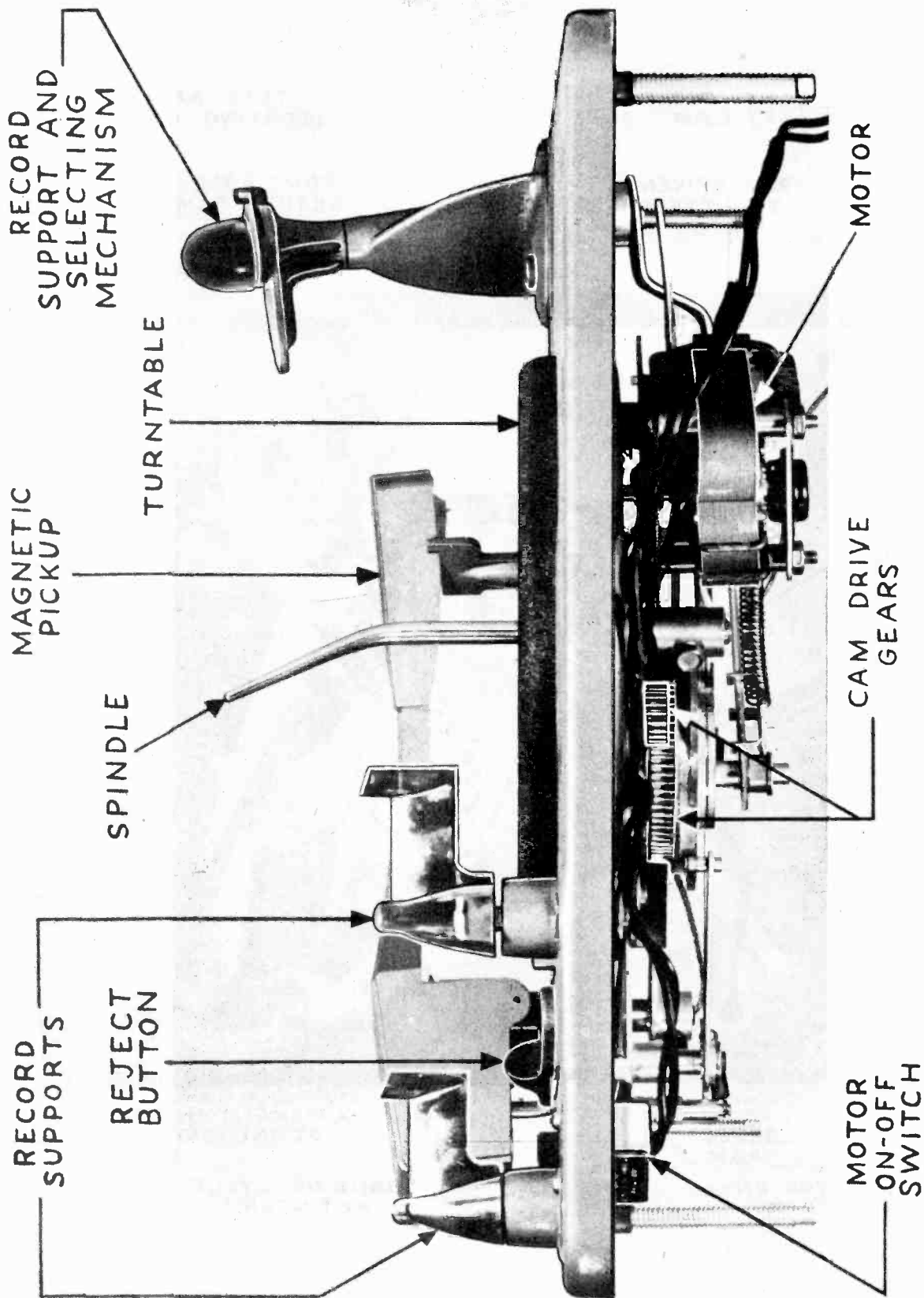
CHASSIS
TOP VIEW



DIAL BACKPLATE CALIBRATION
FIGURE 1

PHILCO RADIO & TELEV. CORP.





PHILCO RADIO & TELEV. CORP.

MODEL 46-1209

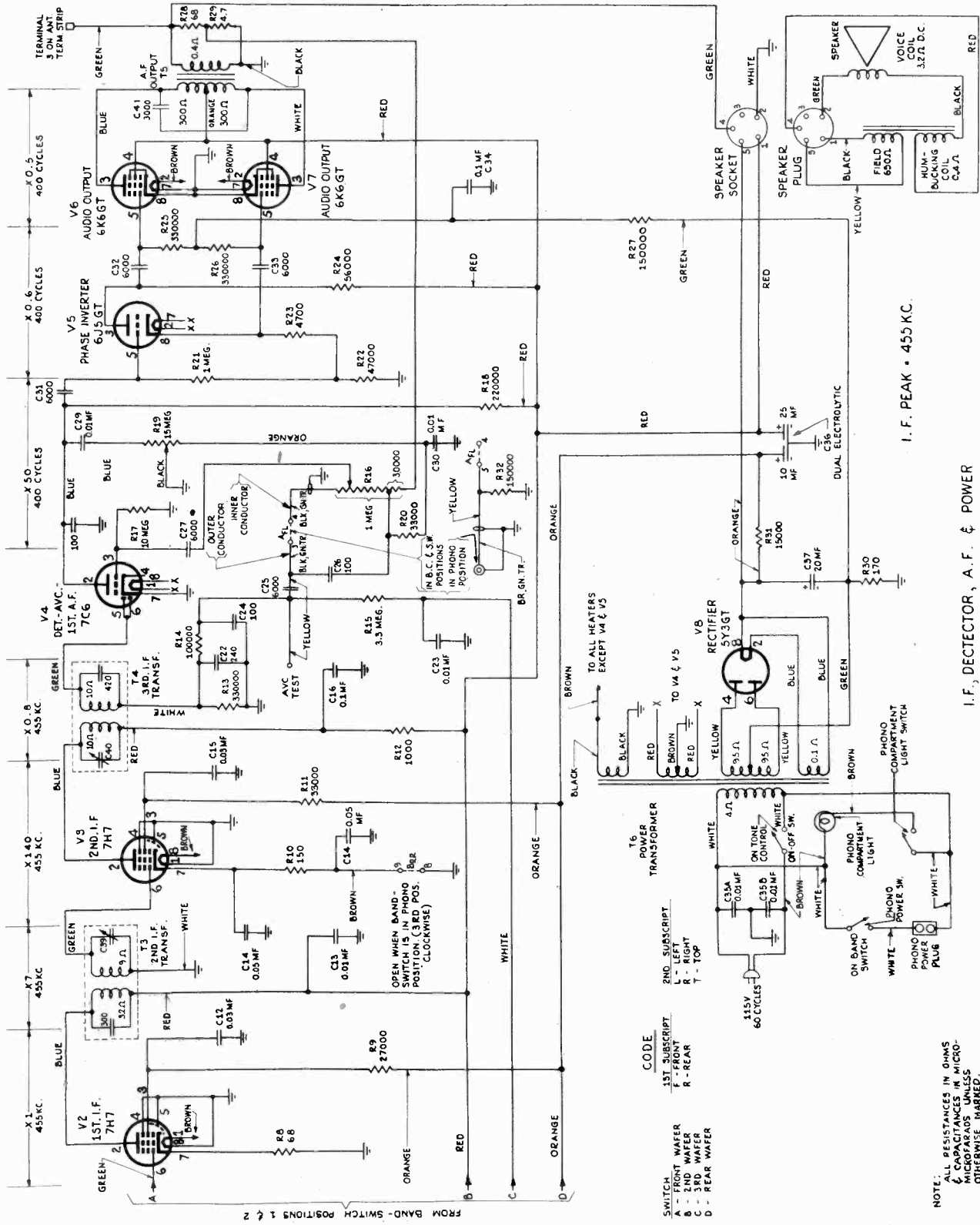
MODEL 46-1226

PHILCO MODEL 46-1209 Code 121

TUBE	PIN	VTVM	20,000 OHMS PER VOLT	1,000 OHMS PER VOLT	RESISTANCE
7F8	1	-4.7	-4.7	-4.2	16,500
	2	0	0	0	0
	3	110	100	100	150,000
	4	0	0	0	1
	5	8.6	8.6	8	21,000
	6	245	230	240	110,000
	7	0	0	0	0.2
	8	0	0	0	4,400,000
7H7 1st IF	1	0	0	0	0.2
	2	250	240	245	110,000
	3	105	100	105	150,000
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	5,400,000
	7	0.7	0.7	0.7	60
	8	0	0	0	0
7H7 2nd IF	1	0	0	0	0
	2	245	240	240	110,000
	3	125	120	120	150,000
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	8
	7	2.3	2.1	2.2	250
	8	0	0	0	0.2
7X7 Det AVC Audio	1	0	0	0	0.4
	2	145	140	130	350,000
	3	-1.0	-0.6	-0.3	10,000,000
	4	0	0	0	0
	5	-0.6	-0.6	-0.4	100,000
	6	0	0	0	INFINITE
	7	0	0	0	INFINITE
	8	0	0	0	0.4
7AF7	1	0	0	0	0.4
	2	68	66	68	53,000
	3	180	170	175	160,000
	4	48	18	0.2	1,000,000
	5	0	0	0	5,000,000
	6	36	32	18	700,000
	7	2.2	2	1.4	6,200
	8	0	0	0	0.4
6V6GT	1	0	0	0	INFINITE
	2	0	0	0	0.2
	3	240	230	240	110,000
	4	250	240	250	110,000
	5	-15	-12	-0.6	500,000
	6	240	230	240	110,000
	7	0	0	0	0
	8	0	0	0	0
6V6GT	1	0	0	0	INFINITE
	2	0	0	0	0.2
	3	240	230	240	110,000
	4	250	240	250	110,000
	5	-15	-12	-1.0	500,000
	6	0	0	0	INFINITE
	7	0	0	0	0
	8	0	0	0	0
5Y3GT	1	0	0	0	INFINITE
	2	320	310	320	110,000
	3	0	0	0	INFINITE
	4	0	0	0	230
	5	0	0	0	INFINITE
	6	0	0	0	240
	7	0	0	0	INFINITE
	8	320	310	320	110,000

PHILCO MODEL 46-1226 CODE 121

TUBE	PIN	VTVM	20,000 OHMS PER VOLT	1,000 OHMS PER VOLT	RESISTANCE
7F8 Conv.	1	-3.3	-3.3	-3.2	13,000
	2	0	0	0	0
	3	88	88	76	160,000
	4	0	0	0	0
	5	8.4	8.2	7.6	2,100
	6	230	230	230	110,000
	7	0	0	0	0
	8	0	0	0	0
7H7 1st IF Amp.	1	0	0	0	0
	2	230	230	230	110,000
	3	94	94	94	155,000
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	6,000,000
	7	0.7	0.7	0.7	62
	8	0	0	0	0
7H7 2nd IF Amp.	1	0	0	0	0
	2	230	230	230	110,000
	3	105	105	105	150,000
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	9
	7	1.5	1.5	1.5	1550
	8	0	0	0	0
7C6 Det.AVC 1st Audio	1	0	0	0	0
	2	130	130	130	325,000
	3	-0.7	-0.4	-0.2	9,000,000
	4	0	0	0	0
	5	0	0	0	350,000
	6	0	0	0	350,000
	7	0	0	0	0
	8	0	0	0	0
6J5 Phase Inv.	1	0	0	0	INFINITE
	2	0	0	0	0
	3	175	175	175	160,000
	4	0	0	0	INFINITE
	5	40	14	5	1,000,000
	6	0	0	0	1,100,000
	7	0	0	0	0
	8	58	56	50	53,000
6V6 Audio Output	1	0	0	0	INFINITE
	2	0	0	0	0
	3	230	230	230	105,000
	4	240	240	240	105,000
	5	-16	-6	-4	420,000
	6	0	0	0	INFINITE
	7	0	0	0	0
	8	0	0	0	0
6V6 Audio Output	1	0	0	0	INFINITE
	2	0	0	0	0
	3	230	230	230	105,000
	4	240	240	240	105,000
	5	-16	-6	-4	420,000
	6	0	0	0	INFINITE
	7	0	0	0	0
	8	0	0	0	0
5Y3GT Rect.	1	0	0	0	INFINITE
	2	300	300	300	105,000
	3	0	0	0	INFINITE
	4	-22	-22	-22	260
	5	0	0	0	0
	6	-22	-22	-22	260
	7	0	0	0	INFINITE
	8	300	300	300	105,000



CODE
 1ST - SUBSCRIPT
 F - FRONT
 R - REAR
 T - TOP

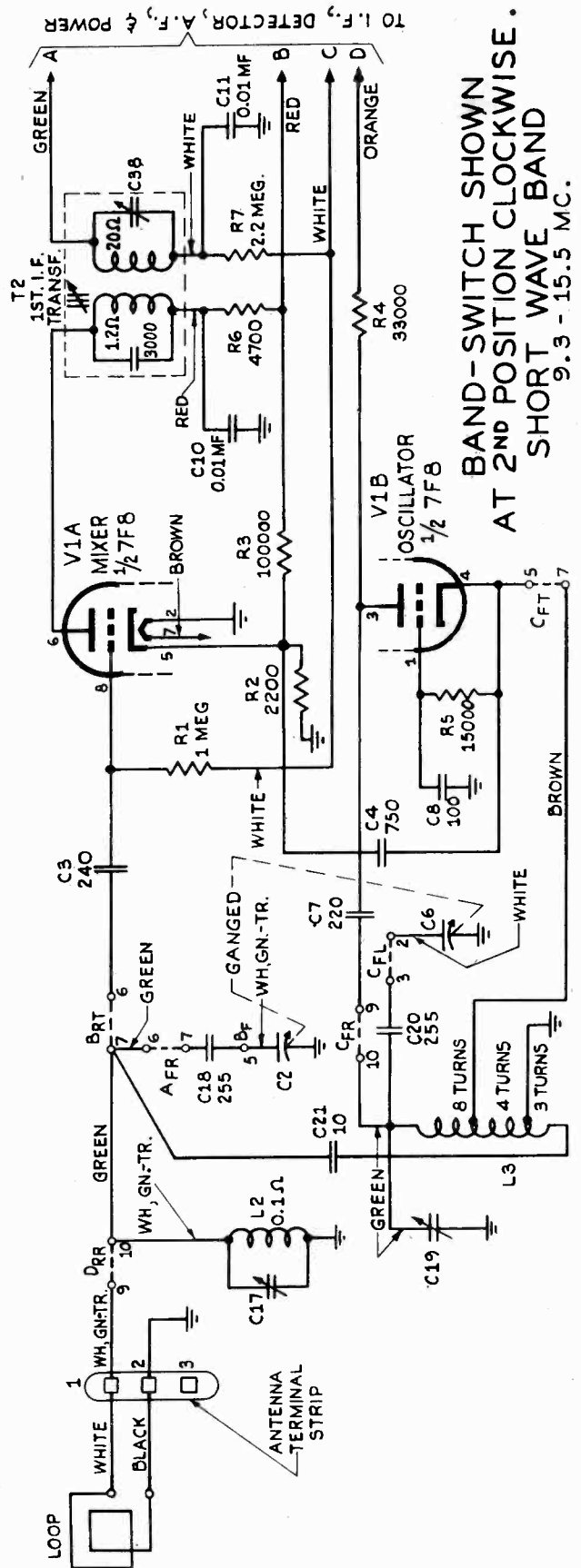
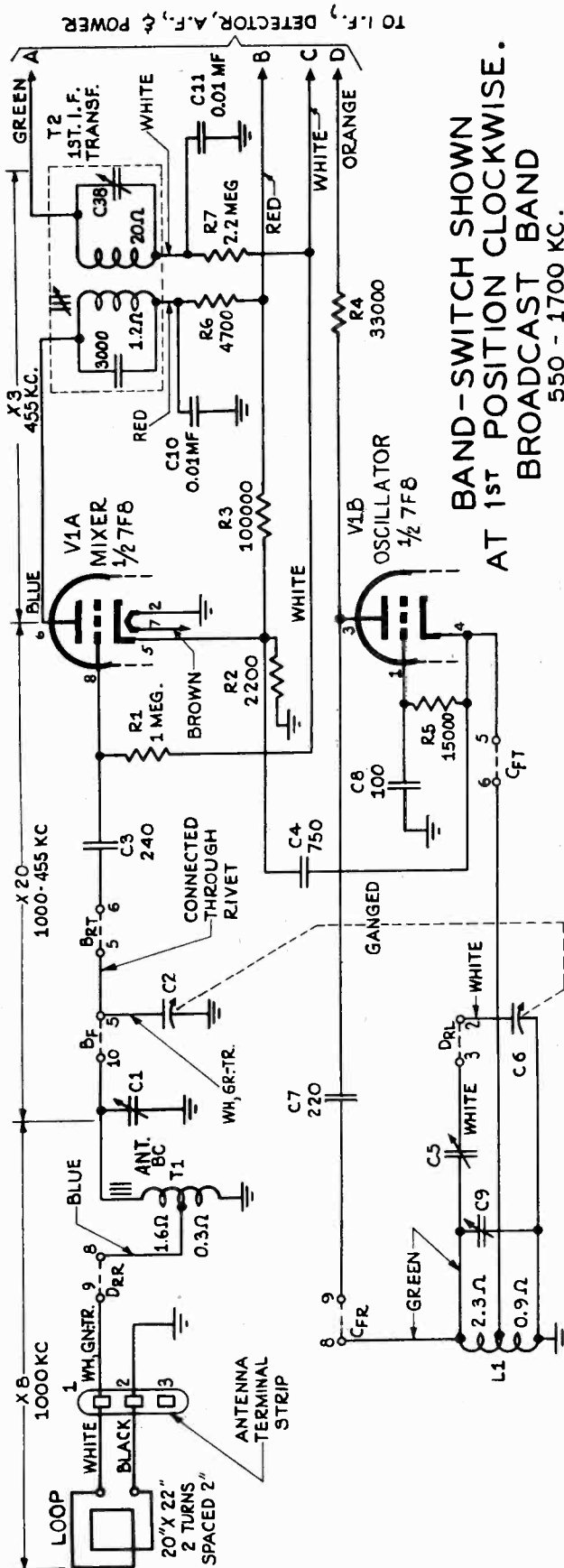
SWITCH
 1 - FRONT WAFER
 2 - 2ND WAFER
 3 - 3RD WAFER
 4 - REAR WAFER

NOTE:
 ALL RESISTANCES IN OHMS
 & CAPACITANCES IN MICRO-
 MICROFARADS UNLESS
 OTHERWISE MARKED.

I.F., DETECTOR, A.F. & POWER

I.F. PEAK = 455 KC.

PHILCO RADIO & TELEV. CORP.



MODEL 46-1226

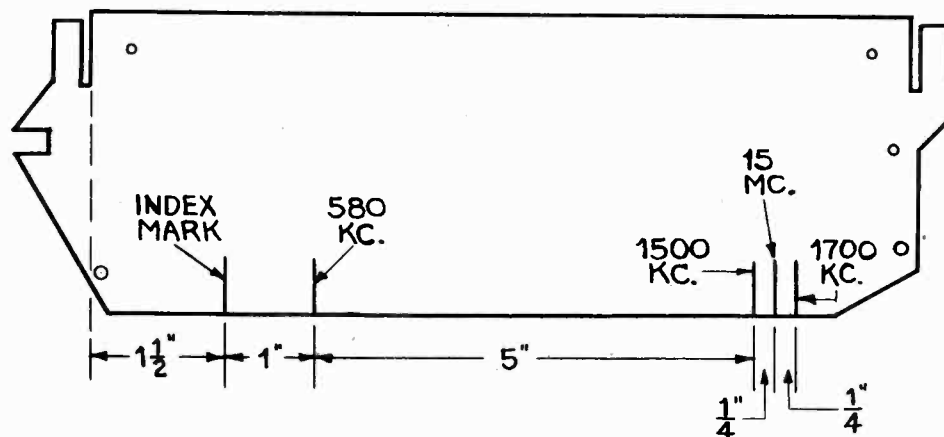
Code 121

ALIGNMENT

PHILCO 46-1226

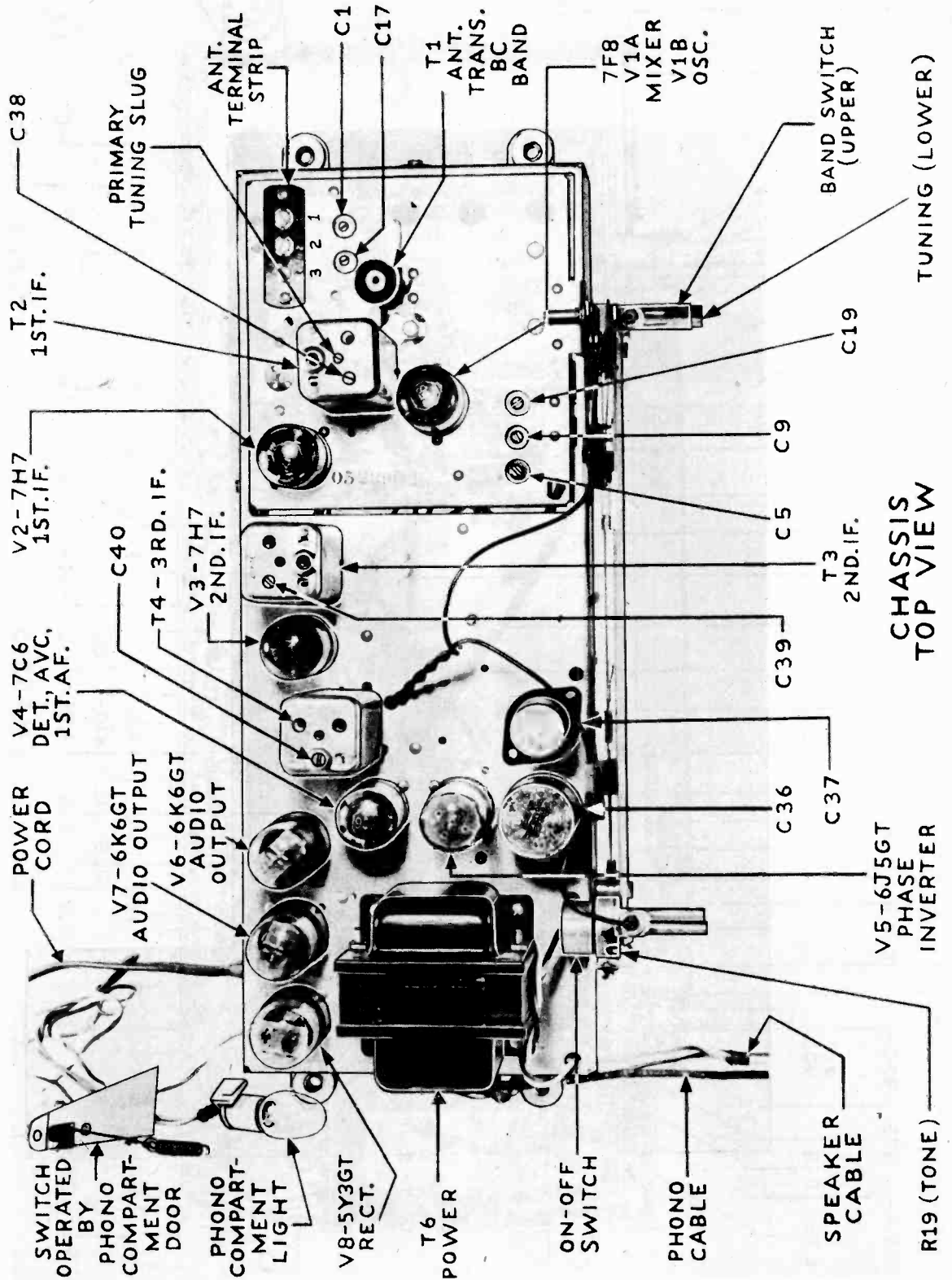
Power should not be turned on in this receiver unless the speaker is connected. The chassis should be removed from the cabinet and the dial backplate calibrated as shown in Figure 1. The receiver loop should be connected between terminals 1 (high) and 2 (low) of the antenna terminal strip. The signal generator is connected to the Hazeltine standard loop Model 1150 which is loosely coupled to the receiver loop. The output meter should be connected between terminal 1 (high) and 2 (low) of the antenna terminal strip. The tone control should be in the maximum high position. The volume control should be at maximum. The generator output should at all times be just sufficient to obtain a minimum deflection on the output meter.

Signal Generator Frequency	Receiver Band Switch Position	Receiver Dial Position	Adjust for Maximum
1. 455 kc.	Broadcast	Index Mark (condenser plates fully meshed)	C40 C39 C38 Primary tuning slug of T2.
2. 1700 kc.	Broadcast	1700 kc.	C9
3. 1500 kc.	Broadcast	1500 kc.	C1
4. 580 kc.	Broadcast	580 kc.	Adjust C5 for peak while rocking tuning control.
5. 1700 kc.	Broadcast	1700 kc.	Readjust C9
6. 15 mc.	Short Wave	15 mc.	Starting with trimmer C19 screw loosened, slowly tighten for peak on first signal heard. Image should be obtained with receiver tuned to 15.9 mc.
7. 15 mc.	Short Wave	15 mc.	C17



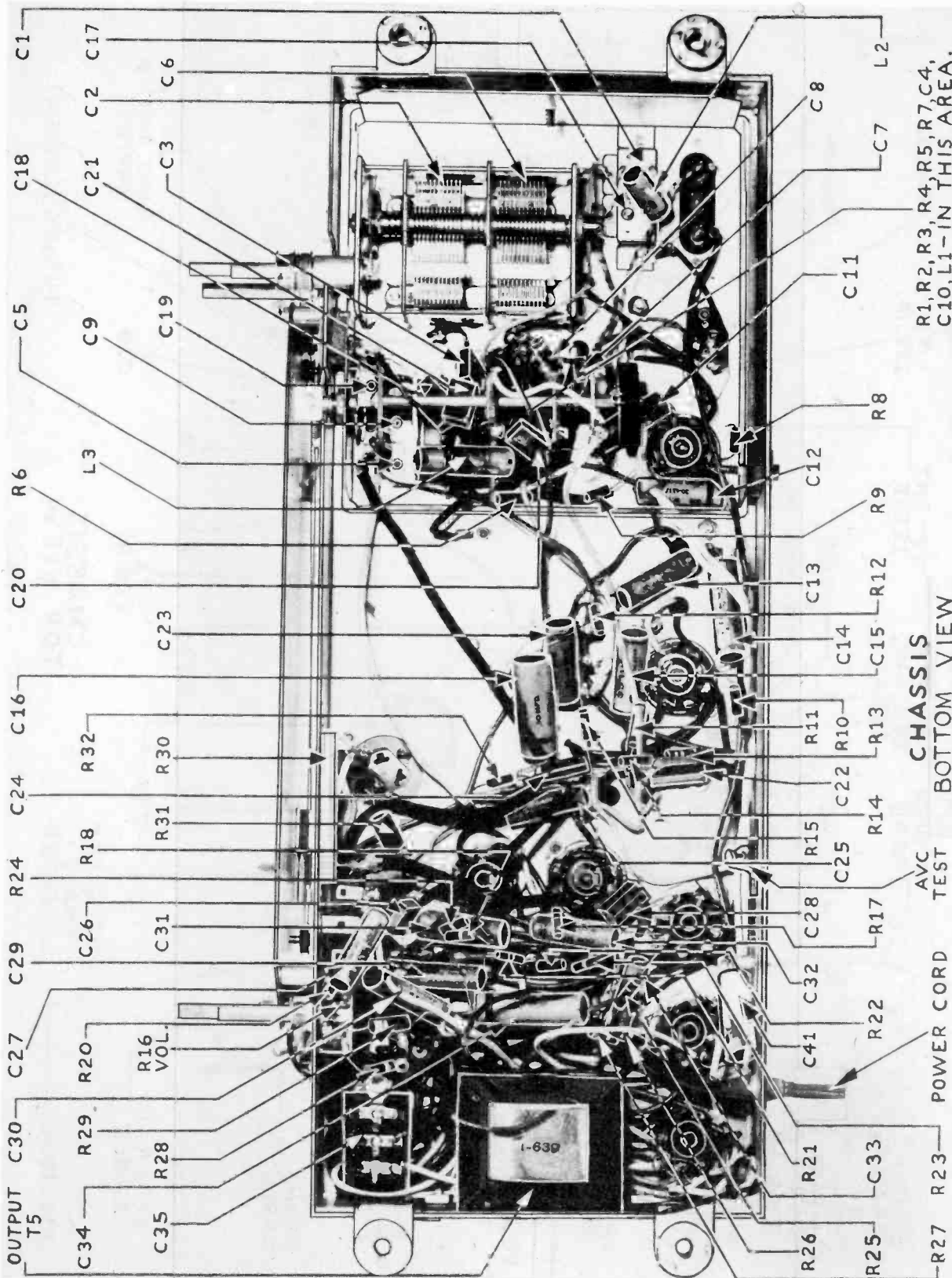
DIAL BACKPLATE CALIBRATION
FIGURE 1

PHILCO RADIO & TELEV. CORP.



CHASSIS TOP VIEW

PHILCO RADIO & TELEV. CORP.



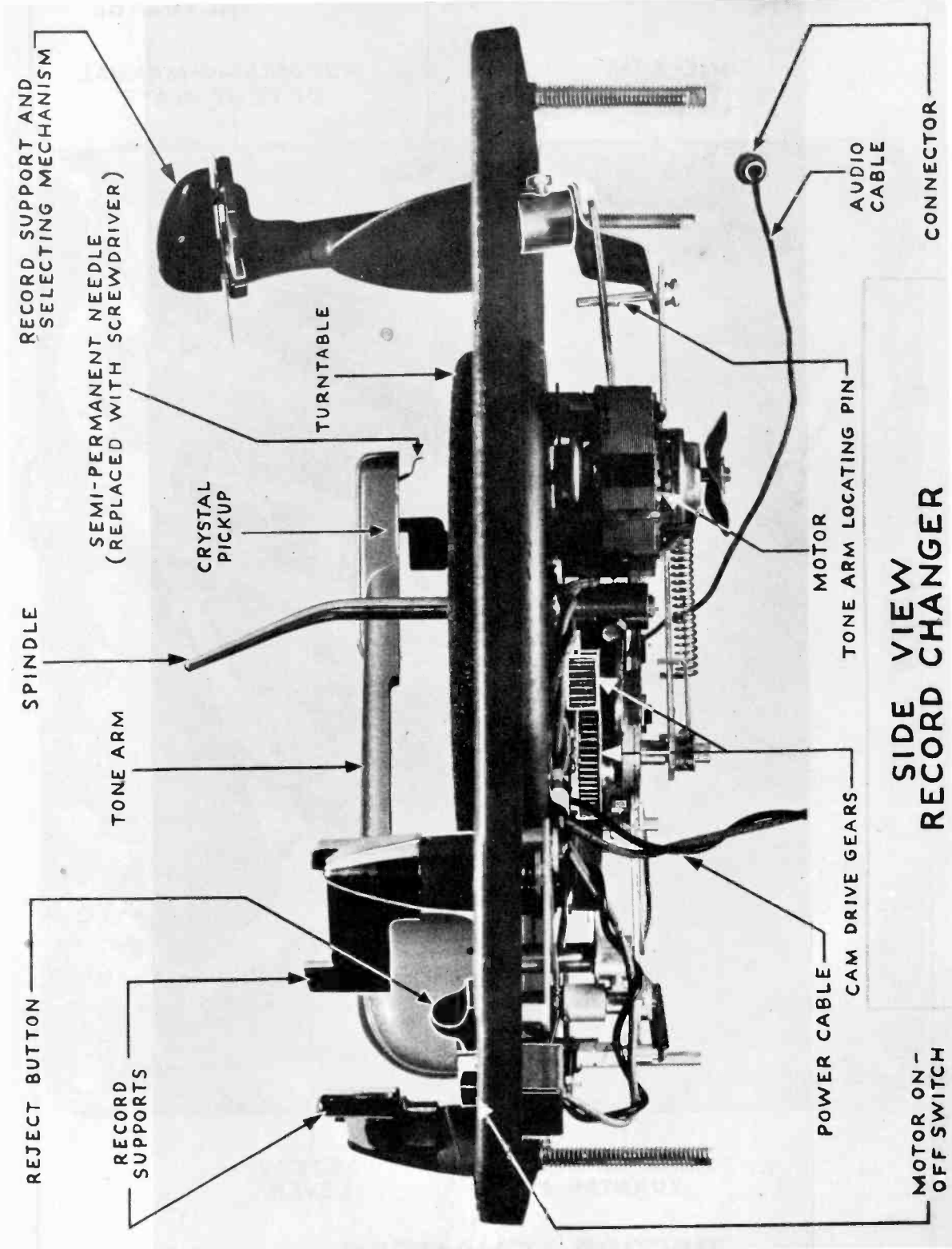
CHASSIS
BOTTOM VIEW

R1, R2, R3, R4, R5, R7, C4,
C10, L1 - IN THIS AREA.

AVC
TEST

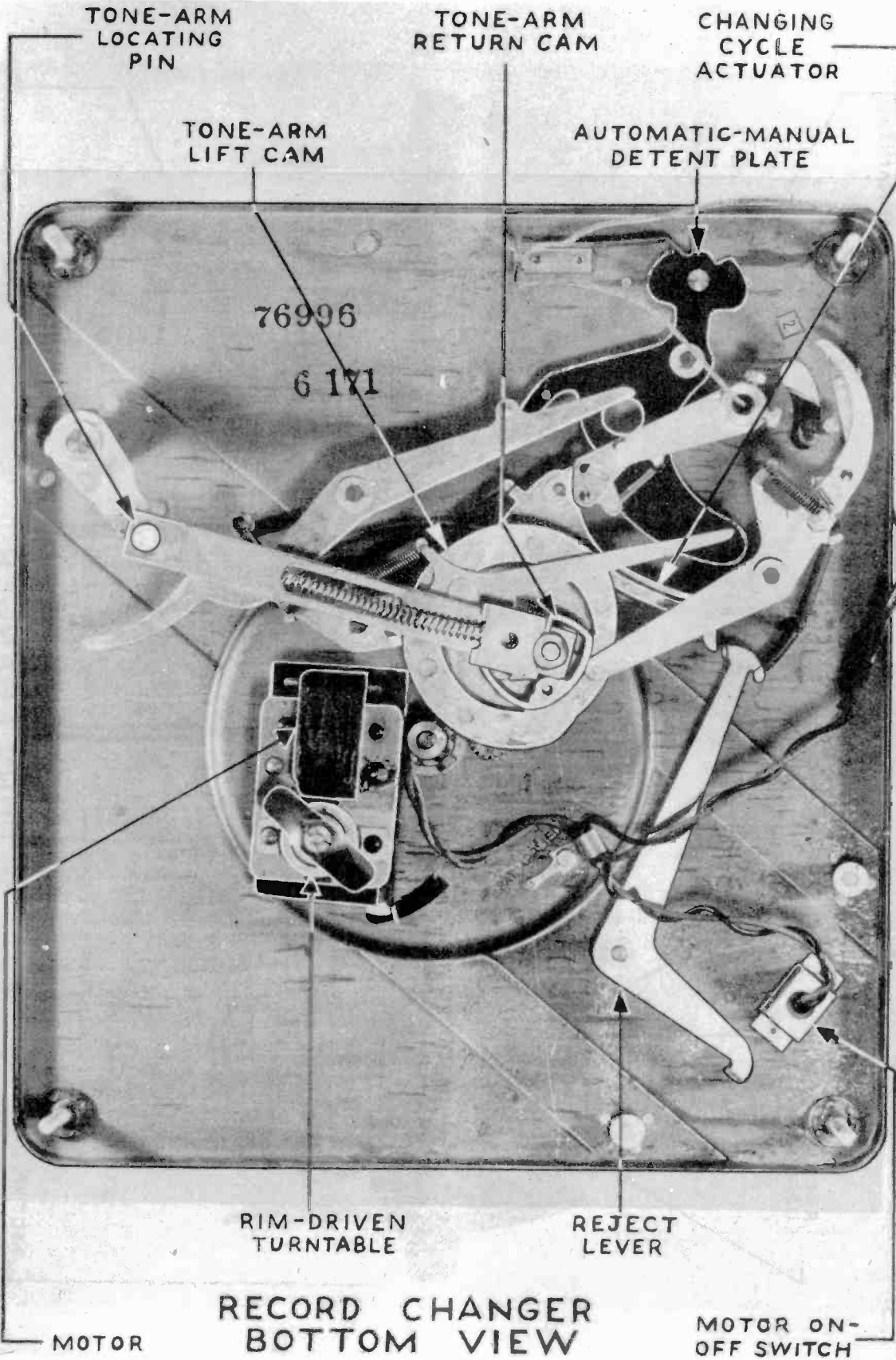
POWER CORD

PHILCO RADIO & TELEV. CORP.



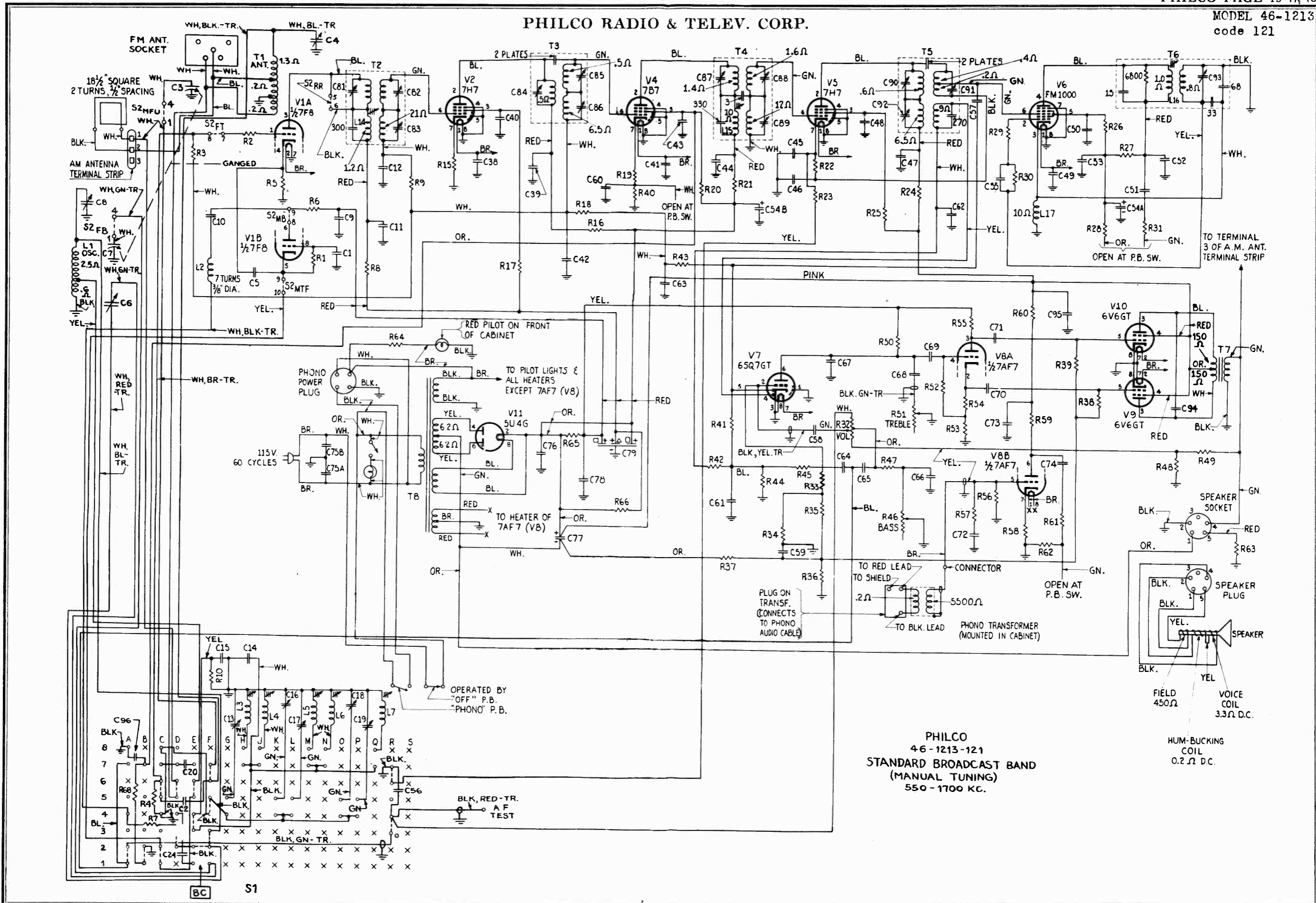
**SIDE VIEW
RECORD CHANGER**

PHILCO RADIO & TELEV. CORP.



PHILCO RADIO & TELEV. CORP.

MODEL 46-1213
code 121



PHILCO
46-1213-121
STANDARD BROADCAST BAND
(MANUAL TUNING)
550 - 1700 KC.

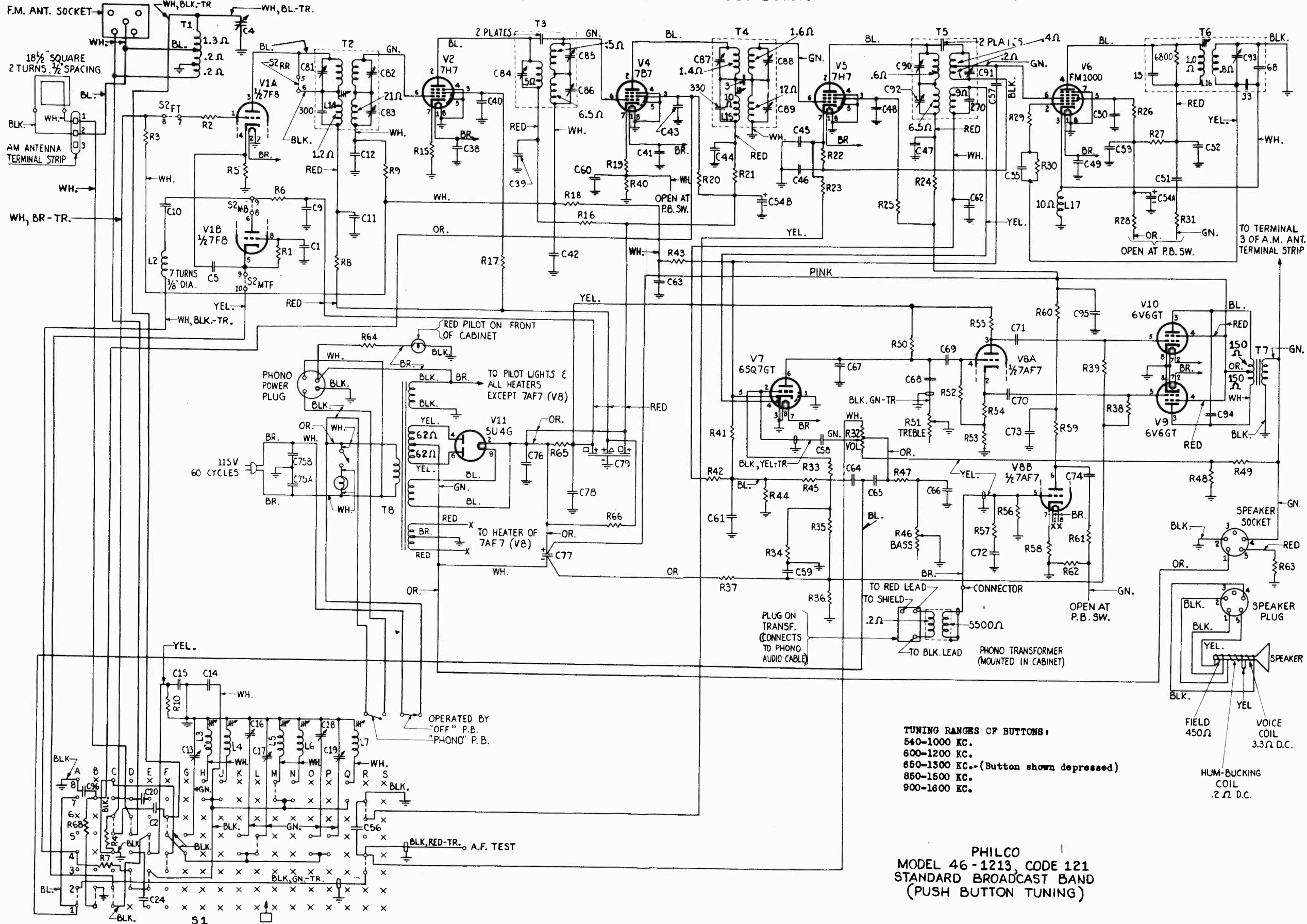
HUM-BUCKING
COIL
0.2 Ω D.C.

FIELD
450 Ω

VOICE
COIL
3.3 Ω D.C.

MODEL 46-1213
code 121

PHILCO RADIO & TELEVISION CORP.



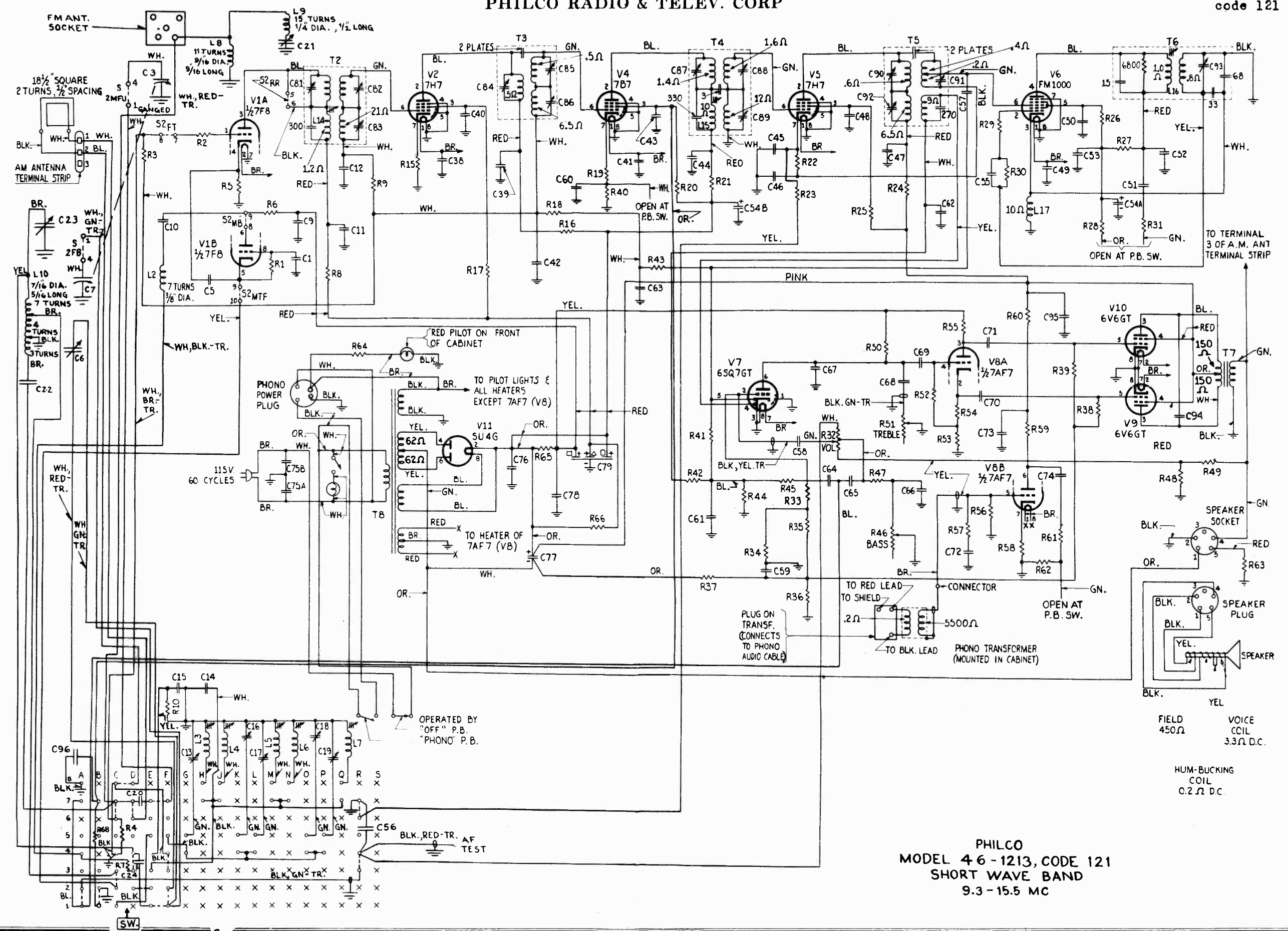
TUNING RANGES OF BUTTONS:
 540-1000 KC.
 600-1200 KC.
 650-1300 KC.-(Button shown depressed)
 850-1500 KC.
 900-1600 KC.

PHILCO
 MODEL 46-1213, CODE 121
 STANDARD BROADCAST BAND
 (PUSH BUTTON TUNING)

FIELD
 450Ω
 VOICE
 COIL
 3.3Ω D.C.
 HUM-BUCKING
 COIL
 .2Ω D.C.

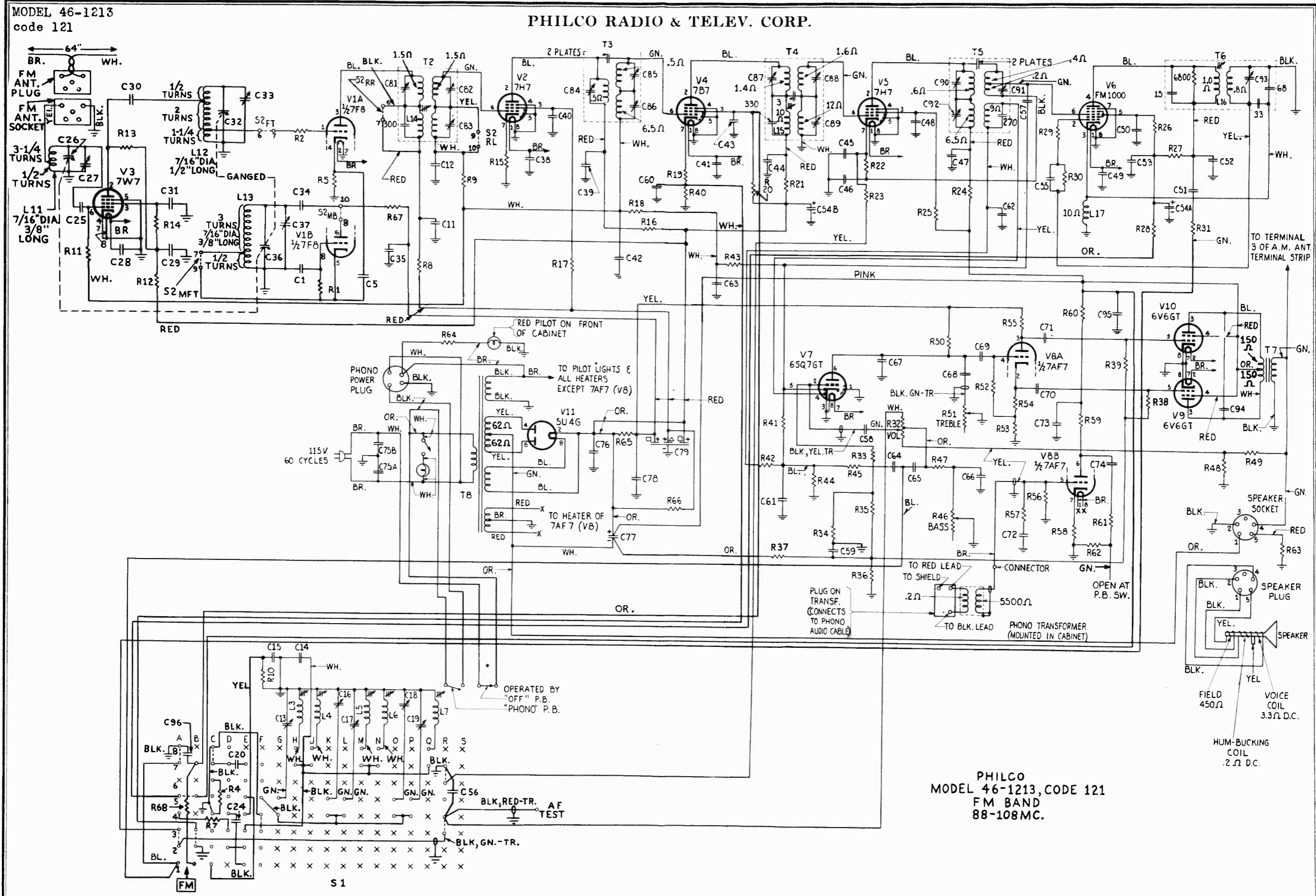
PHILCO RADIO & TELEV. CORP

MODEL 46-1213
code 121



PHILCO
 MODEL 46-1213, CODE 121
 SHORT WAVE BAND
 9.3-15.5 MC

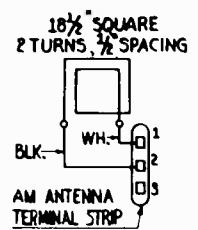
FIELD 450Ω
 VOICE COIL 3.3Ω D.C.
 HUM-BUCKING COIL 0.2Ω D.C.



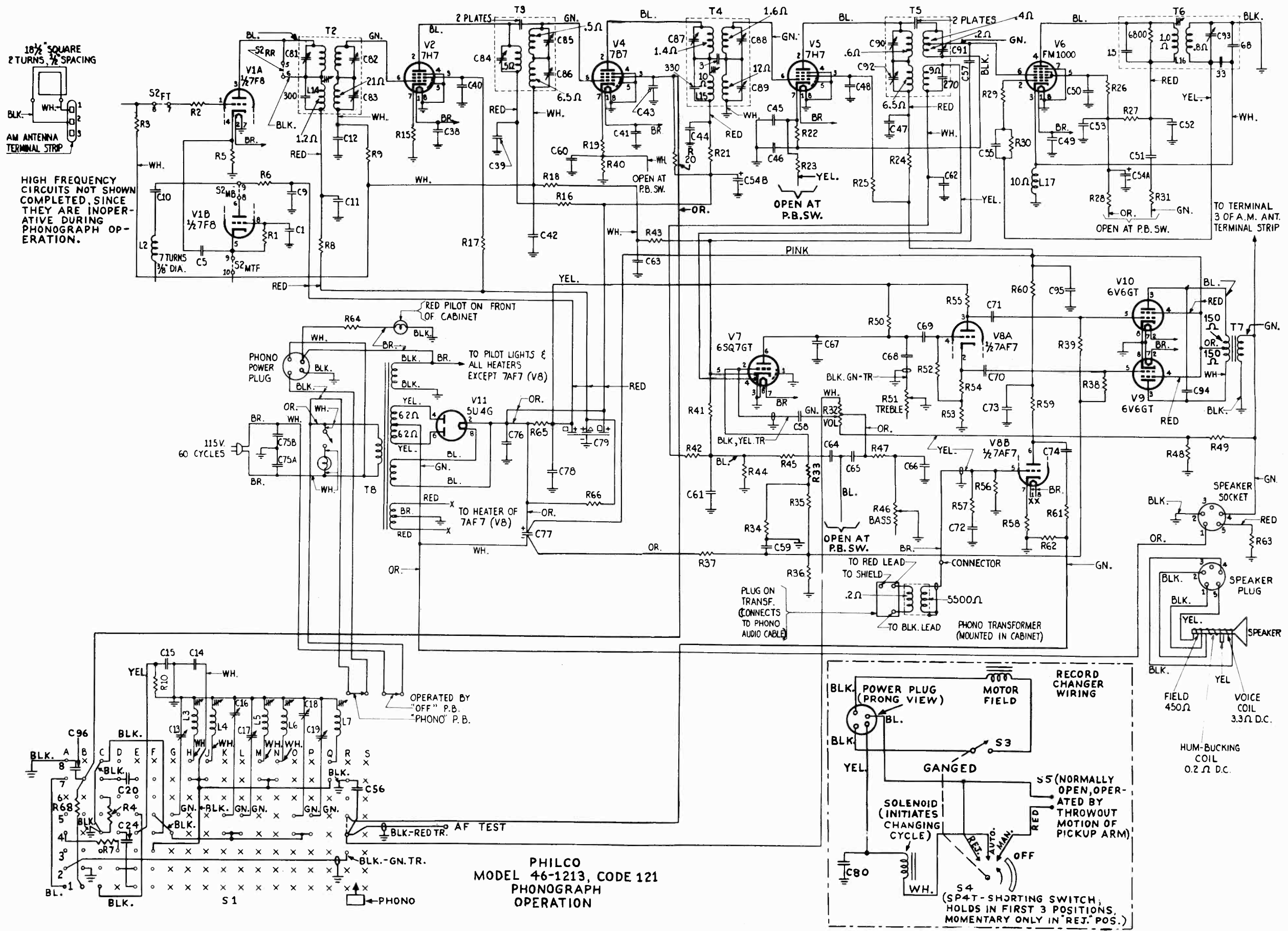
PHILCO
 MODEL 46-1213, CODE 121
 FM BAND
 88-108 MC.

PHILCO RADIO & TELEV. CORP.

MODEL 46-1213
code 121



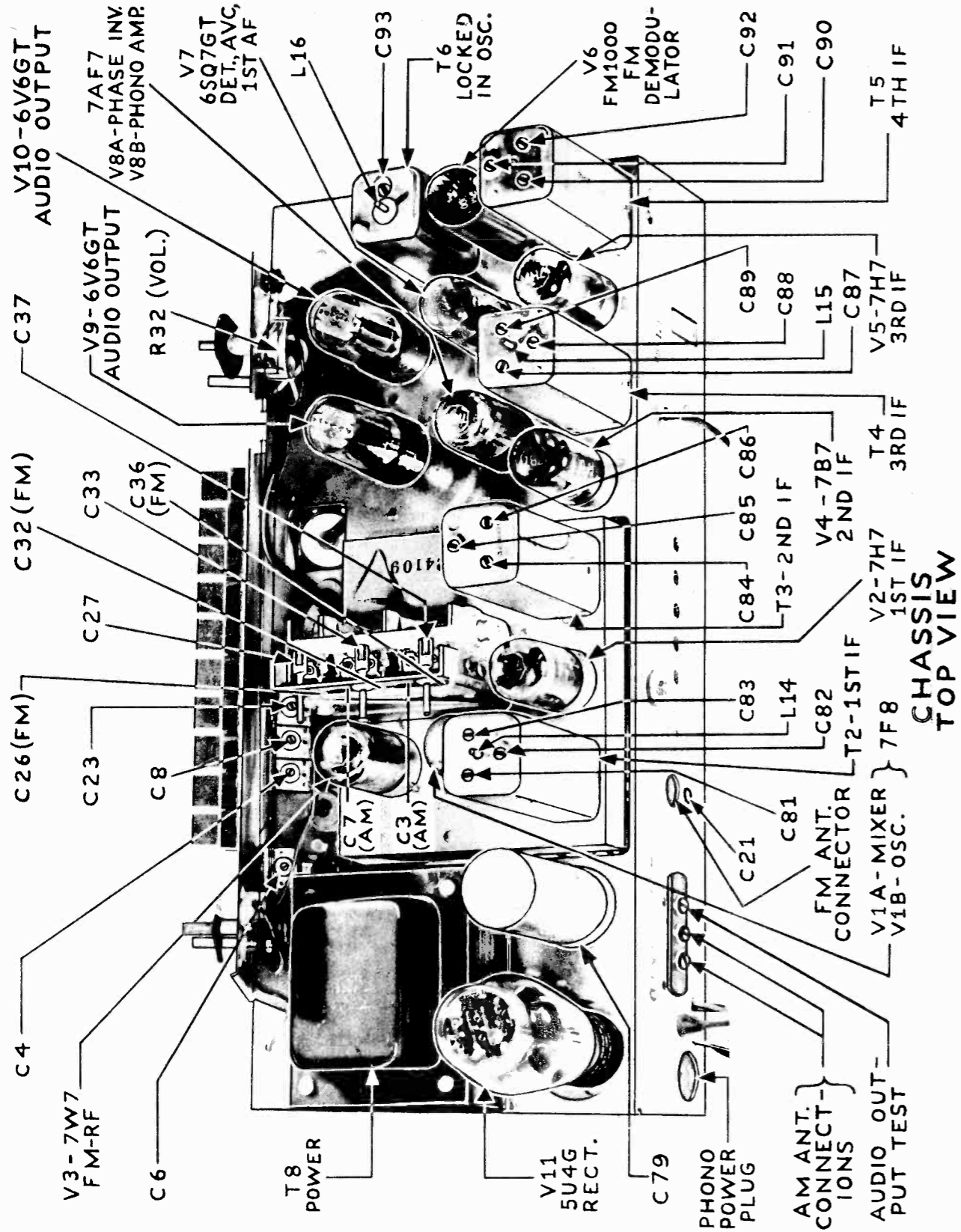
HIGH FREQUENCY
CIRCUITS NOT SHOWN
COMPLETED, SINCE
THEY ARE INOPER-
ATIVE DURING
PHONOGRAPH OP-
ERATION.



PHILCO
MODEL 46-1213, CODE 121
PHONOGRAPH
OPERATION

PHILCO RADIO & TELEVISION CORP.

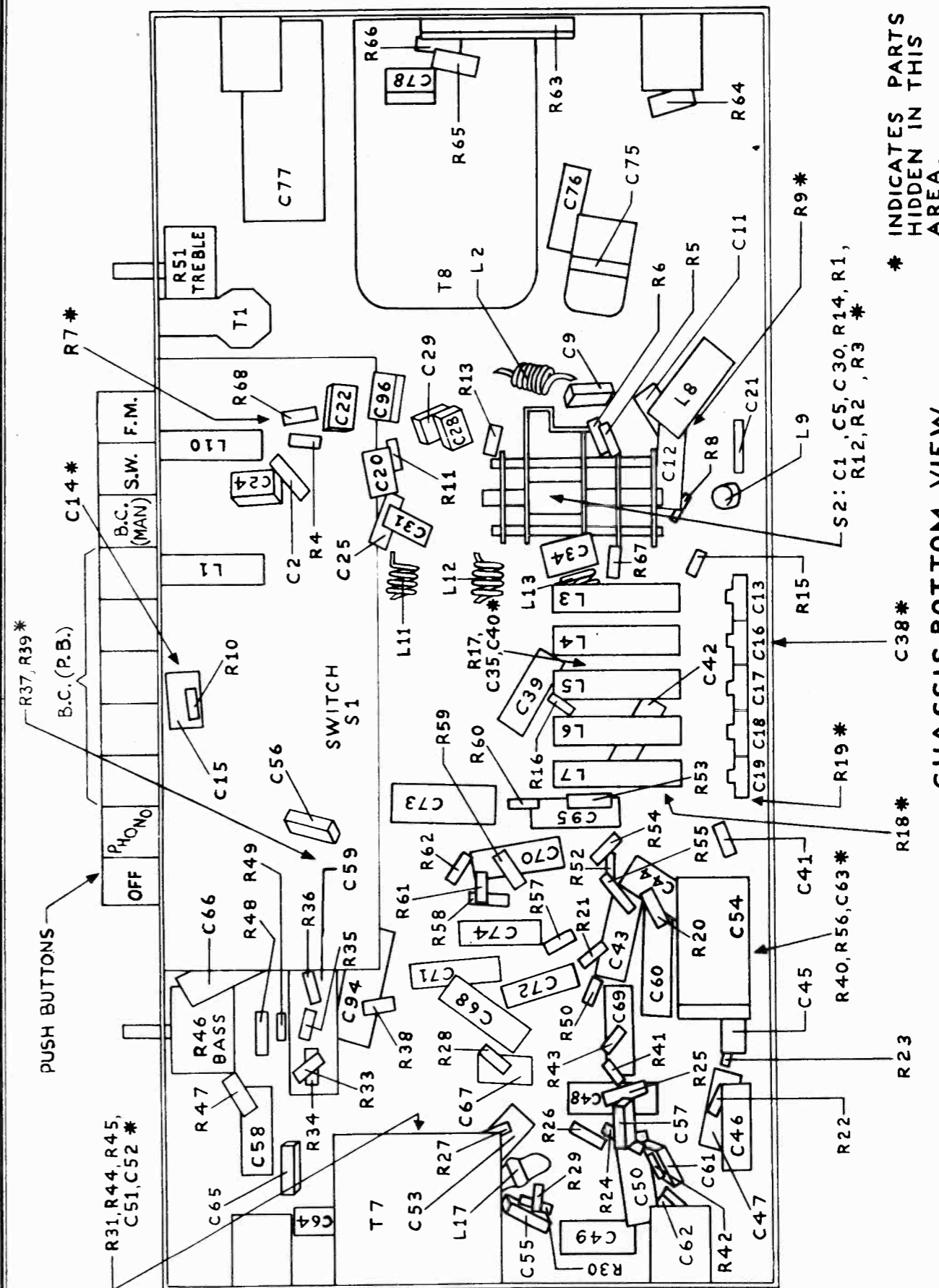
MODEL 46-1213
code 121



CHASSIS TOP VIEW

PHILCO RADIO & TELEV. CORP.

MODEL 46-1213
code 121



CHASSIS BOTTOM VIEW

PHILCO RADIO & TELEV. CORP.

MODEL 46-1213
code 121

ALIGNMENT

PHILCO 46-1213

This chassis must be removed from the cabinet for alignment. Power should not be turned on this receiver unless the speaker is connected. A-M alignment should be completed before F-M alignment. Alignment of the A-M circuits may not disturb the alignment of the F-M circuits. Calibrate the receiver dial backplate as shown in Figure 1. Indentations may be found at the bottom of the dial backplate which will facilitate calibration. The receiver dial pointer should coincide with the index mark at the low frequency end of the dial when the gang condenser plates are fully in mesh.

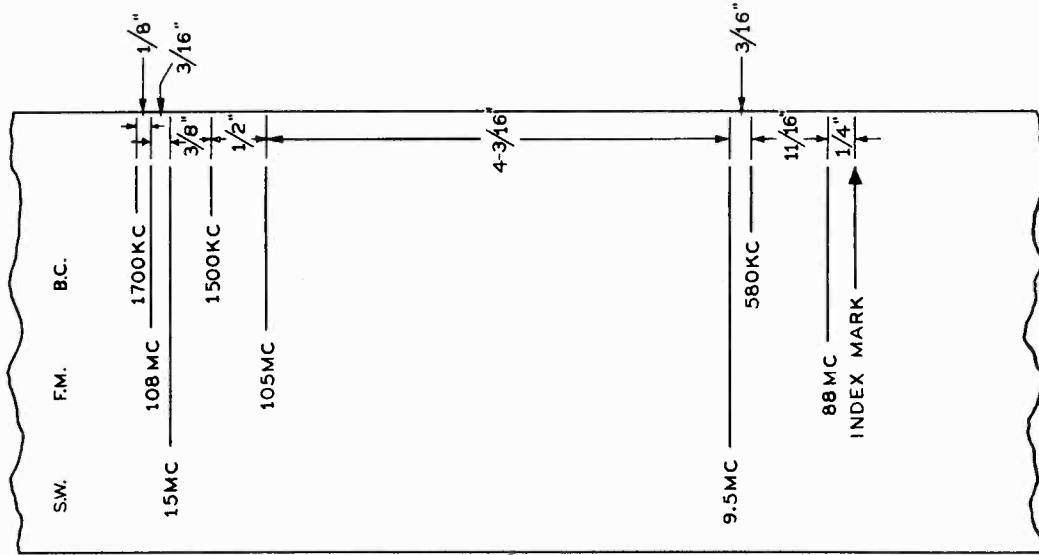
A-M ALIGNMENT

Connect the output meter between terminals 3 (high) and 2 (ground) of the antenna terminal strip. The receiver loop should be connected between terminals 1 (high) and 2 (ground) of the antenna terminal strip. Connect the signal generator to the standard Hazeltine loop Model 1150 and couple loosely to the receiver. The volume control should be set at maximum and the treble control set in the maximum high position. The generator output should always be just sufficient to obtain a minimum deflection on the output meter.

Signal Generator Frequency	Receiver Band Switch Position	Receiver Dial Position	Adjust for Maximum
1. 455 kc.	Broadcast	Index Mark (condenser plates fully meshed)	C92 C89 L15 C86 C83 L14
2. 1700 kc.	Broadcast	1700 kc.	C8
3. 1500 kc.	Broadcast	1500 kc.	C4
4. 580 kc.	Broadcast	580 kc.	Adjust C6 for peak while rocking tuning control.
5. 1700 kc.	Broadcast	1700 kc.	Readjust C8
6. 15 mc.	Short Wave	15 mc.	Starting with trimmer C23 screw loosened, slowly tighten for peak on first signal heard. Image should be obtained with receiver tuned to 15.9 mc.

MODEL 46-1213
code 121

PHILCO RADIO & TELEV. CORP.



FRONT VIEW
FIG. 1
DIAL BACKPLATE CALIBRATION

TOP

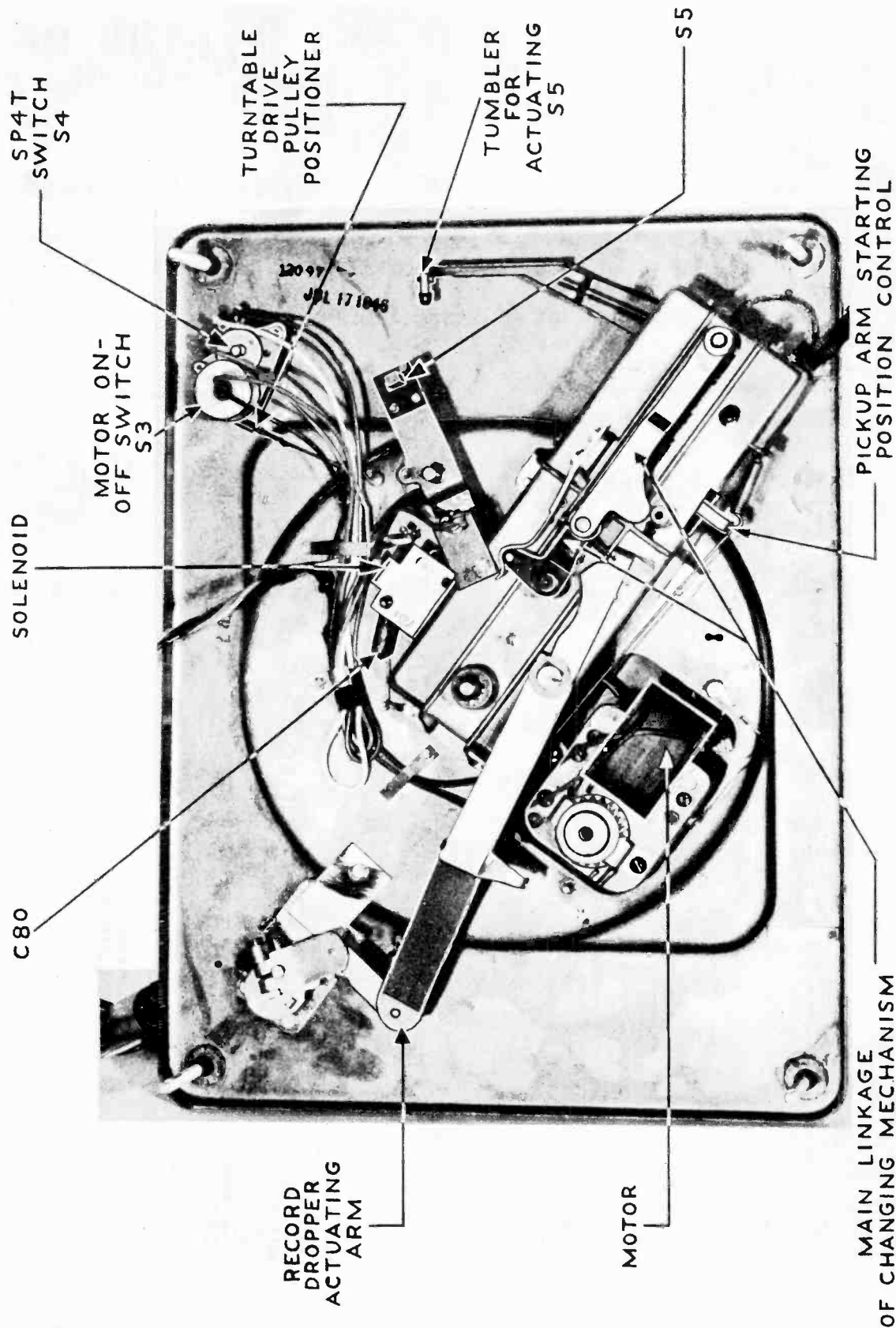
Philco 46-1213
F-M Alignment

The bandswitch is placed in the F-M position. The output meter is connected after the de-emphasis network (C51 and R31) in the audio output circuit of the demodulator (V6, FM-1000 tube). The high side of the meter may be connected to the lug on the terminal strip near R31 and the connection is thus between R31 and the green button switch S1. The low side of the meter connects to chassis. A d-c vacuum tube voltmeter is connected to the AVC line at the junction of C53, R43, and the white lead going to R18, with the positive lead going to the chassis. The signal generator is connected as shown in the table below with the generator negative lead connected to chassis at all times. A cathode ray oscilloscope may be connected across the output meter for use in checking bandpass distortion.

Signal Generator Connection	Signal Generator Frequency	Receiver Dial Position	Adjust as Noted
1. To pin 6 (signal grid) of 7H7 (V5) tube (V6)	9.1 Mc. No modulation	Quiet point on dial.	Adjust C93 (osc. section of V6) until approximately zero beat is obtained as heard in loudspeaker.
2. Same	9.1 Mc. Audio amplitude modulation (400 cycles)	Same	Adjust L16 (phasing network) very slowly for minimum signal between the two maximum signals (found close together) as indicated on output meter. If a large change is made from the original setting of L16 repeat step 1 above.
3. To pin 6 (signal grid) of 7H7 (V5)	9.1 Mc. No modulation	Same	Adjust C91 and then C90 (4th i-f trimmers) for maximum AVC response as indicated on VTVM
4. To pin 6 (signal grid) of 7H7 (V5)	Same	Same	Adjust C88 and then C87 (3rd i-f trimmers) for maximum AVC response.
5. To pin 6 (signal grid) of 7H7 (V2)	Same	Same	Adjust C85 and then C84 (2nd i-f trimmers) for maximum AVC response.
6. To pin 1 of 7P8 (V1)	Same	Same	Adjust C82 and then C81 (1st i-f trimmers) for maximum AVC response.
7. To right top terminal of F-M female socket	108 Mc. frequency modulated 400 cps at 75 kc. deviation	108 Mc. (approximately)	Adjust C37 for maximum AVC response with simultaneous undistorted sine wave on oscilloscope while rocking tuning condenser.
8. Same	105 Mc. frequency modulated 400 cps at 75 kc. deviation	105 Mc. (approximately)	Adjust C33 for maximum AVC response with simultaneous undistorted sine wave on oscilloscope while rocking tuning condenser.

PHILCO RADIO & TELEVISION CORP.

MODEL 46-1213
code 121



RECORD CHANGER
BOTTOM VIEW

MODEL 46-1213

code 121

PHILCO RADIO & TELEV. CORP.

MODEL 46-1213, CODE 121

SPECIFICATIONS

TUBE COMPLEMENT

- 7F8 (V1A) MIXER
- 7F8 (V1B) OSCILLATOR
- 7H7 (V2) 1ST IF
- 7B7 (V4) 2ND IF
- 7H7 (V5) 3RD IF
- FM 1000 (V6) FM DEMODULATOR
- 5SQ7GT (V7) DET. AVC. 1ST AF
- 7AF7 (V8A) PHASE INVERTER
- 7AF7 (V8B) PHONO AMPLIFIER
- 6V6GT (V9) AUDIO OUTPUT
- 5U6GT (V10) RECTIFIER
- 5U4G (V11) RECTIFIER
- 7W7 (V3) RF (RADIO FREQUENCY)

COLOR CODE

- BLK - BLACK
- BL - FLUE
- BR - BROWN
- GN - GREEN
- OR - ORANGE
- RED - RED
- YEL - YELLOW
- WH - WHITE
- TR - TRACER

PUSH BUTTON TUNING

TUNING RANGES OF BUTTONS

- 540 - 1000 KC.
- 600 - 1200 KC.
- 650 - 1300 KC. - (BUTTON SHOWN DEPRESS)
- 850 - 1500 KC.
- 900 - 1600 KC. (ON DRAWING)

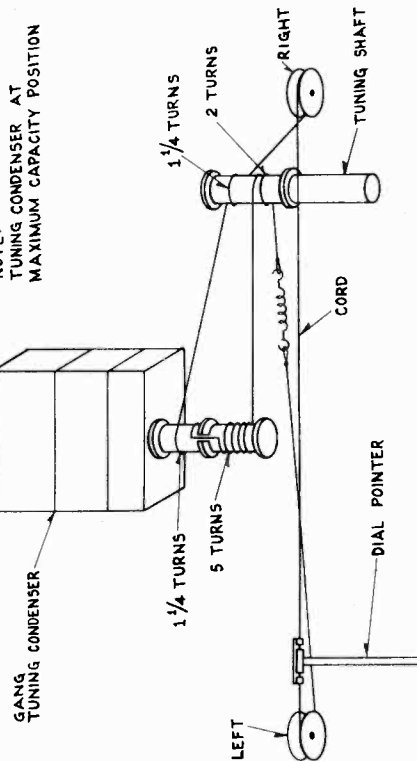
SWITCH S2 CODE

- 1ST LETTER 2ND & 3RD LETTERS
- F-FRONT OF WAFER
- M-MIDDLE WAFER
- R-REAR WAFER
- T-TOP OF WAFER
- R-RIGHT OF WAFER
- L-LEFT OF WAFER
- U-UNDERSIDE OF WAFER

SWITCH IS VIEWED FROM TOP FRONT OF CHASSIS; CONTACTS ARE NUMBERED CLOCKWISE FROM BOTTOM OF RIGHT SUPPORTING BOLT.

PARTS VALUES

CONDENSERS	VALUES
C1	100 MMF
C2	22 MMF
C3	220 MMF
C4	750 MMF
C5	.01 MF
C6	6000 MMF
C7	6000 MMF
C8	240 MMF
C9	.01 MF
C10	220 MMF
C11	510 MMF
C12	.01 MF
C13	.01 MF
C14	285 MMF
C15	485 MMF
C16	.01 MF
C17	.01 MF
C18	.03 MF
C19	300 MMF
C20	.01 MF
C21	10 MMF
C22	10 MMF
C23	255 MMF
C24	10 MMF
C25	22 MMF
C26	100 MMF
C27	.02 MF
C28	220 MMF
C29	510 MMF
C30	47 MMF
C31	510 MMF
C32	6000 MMF
C33	100 MMF
C34	240 MMF
C35	.01 MF
C36	.01 MF
C37	.01 MF
C38	.01 MF
C39	.01 MF
C40	.01 MF
C41	.01 MF
C42	.01 MF
C43	.01 MF
C44	.01 MF
C45	.01 MF
C46	.01 MF
C47	.01 MF
C48	.01 MF
C49	.01 MF
C50	.01 MF
C51	.03 MF
C52	1500 MMF
C53	.01 MF
C54	10 MF
C55	47 MMF
C56	22 MMF
C57	100 MMF
C58	.02 MF
C59	.5 MF
C60	.01 MF
C61	100 MMF
C62	240 MMF
C63	.05 MF
C64	6000 MMF
C65	100 MMF
C66	6000 MMF
C67	240 MMF
C68	.01 MF
C69	6000 MMF
C70	6000 MMF
C71	6000 MMF
C72	1000 MMF
C73	1 MF
C74	6000 MMF
C75A	.01 MF
C75B	.01 MF
C76	3000 MMF
C77	15 MF
C78	510 MMF
C79	15 MF
C80	30 MF
C81	.01 MF
C82	.01 MF
C83	10 MF
C84	10 MF
C85	47 MMF
C86	22 MMF
C87	100 MMF
C88	.02 MF
C89	.5 MF
C90	.01 MF
C91	100 MMF
C92	240 MMF
C93	.05 MF
C94	3000 MMF
C95	.01 MF
C96	240 MMF

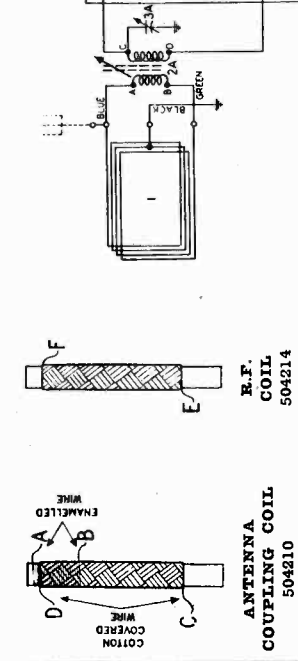
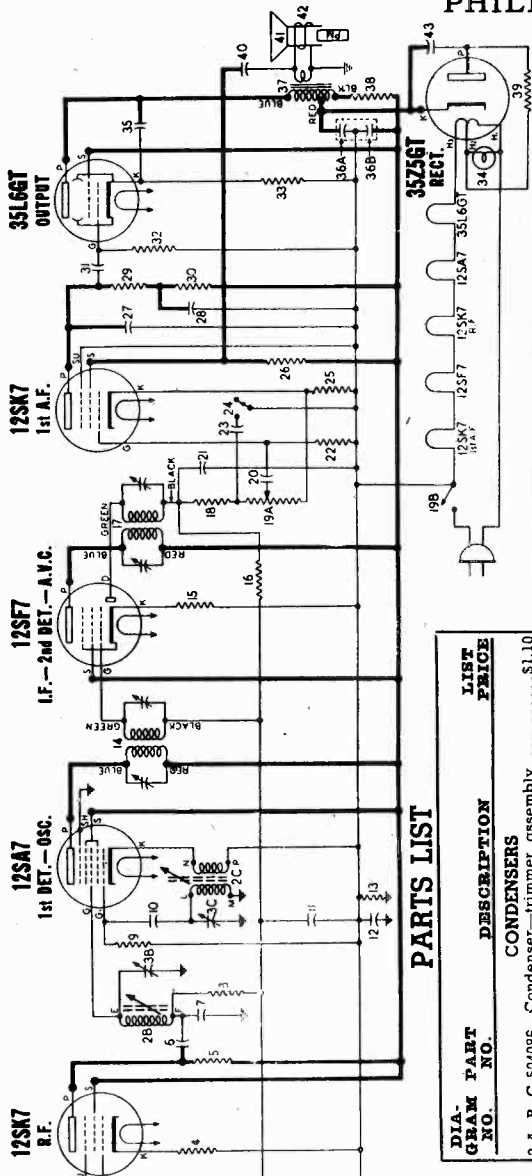


TOP VIEW DIAL DRIVE ASSEMBLY

TRANSFORMERS	VALUES
T1	ANTENNA
T2	1ST IF
T3	2ND IF
T4	3RD IF
T5	4TH IF
T6	LOCKED IN OSC.
T7	AUDIO OUTPUT
T8	POWER

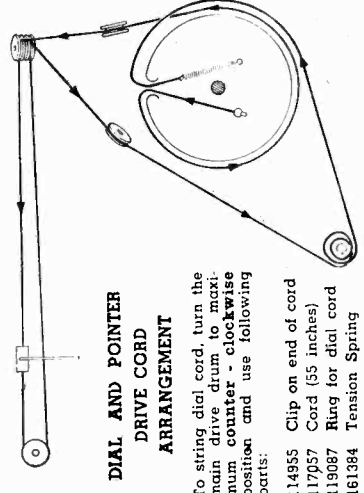
RESISTORS	VALUES
R1	22,000 OHMS
R2	10 OHMS
R3	4.7 MEGOHMS
R4	4.7 MEGOHMS
R5	2200 OHMS
R6	22,000 OHMS
R7	100 OHMS
R8	47,000 OHMS
R9	1 MEGOHMS
R10	10,000 OHMS
R11	1 MEGOHM
R12	3300 OHMS
R13	33,000 OHMS
R14	100,000 OHMS
R15	100 OHMS
R16	3300 OHMS
R17	100,000 OHMS
R18	1 MEGOHM
R19	180 OHMS
R20	100,000 OHMS
R21	3300 OHMS
R22	100 OHMS
R23	180 OHMS
R24	22,000 OHMS
R25	10 OHMS
R26	4.7 MEGOHMS
R27	4.7 MEGOHMS
R28	2200 OHMS
R29	22,000 OHMS
R30	100 OHMS
R31	47,000 OHMS
R32	1 MEGOHMS
R33	10,000 OHMS
R34	1 MEGOHM
R35	33,000 OHMS
R36	100,000 OHMS
R37	100 OHMS
R38	3300 OHMS
R39	100,000 OHMS
R40	1 MEGOHM
R41	180 OHMS
R42	100,000 OHMS
R43	3300 OHMS
R44	100 OHMS
R45	180 OHMS
R46	3300 OHMS
R47	100 OHMS
R48	4.7 OHMS
R49	68 OHMS
R50	220,000 OHMS
R51	400,000 OHMS
R52	1 MEGOHM
R53	47,000 OHMS
R54	47,000 OHMS
R55	36,000 OHMS
R56	4.7 MEGOHMS
R57	224,000 OHMS
R58	6800 OHMS
R59	150,000 OHMS
R60	470,000 OHMS
R61	220,000 OHMS
R62	470,000 OHMS
R63	180 OHMS
R64	10 OHMS
R65	15,000 OHMS
R66	18,000 OHMS
R67	22,000 OHMS
R68	100,000 OHMS

PHILLIPS PETROLEUM CO.



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:

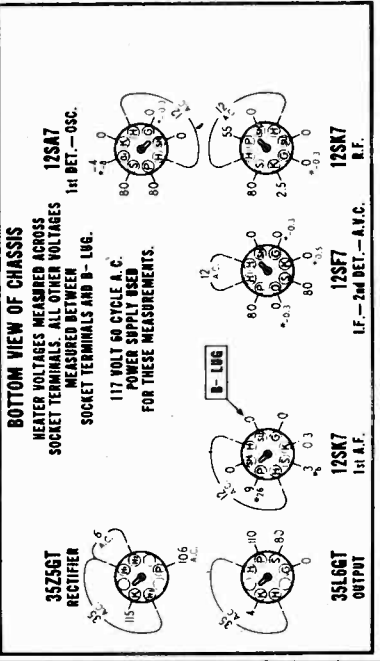
- 114955 Clip on end of cord
- 117957 Cord (55 inches)
- 119087 Ring for dial cord
- 161384 Tension Spring

OSCILLATOR COIL 504212
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.



*—Measured with vacuum tube voltmeter

PARTS LIST

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
3-A, B, C	504086	Condenser—trimmer assembly	\$1.10
		A—20 to 270 Mmfd.	
		B—40 to 370 Mmfd.	
		C—40 to 370 Mmfd.	
6	502271	Condenser—mica 250 Mmfd, 500 volt.	.30
7	502165	Condenser—mica 500 Mmfd, 500 volt.	.45
10	502159	Condenser—mica 50 Mmfd, 500 volt.	.24
11	502155	Condenser—1 Mfd, 200 volt.	.30
12	502158	Condenser—2 Mfd, 400 volt.	.36
20	502453	Condenser—.002 Mfd, 400 volt.	.20
21	502160	Condenser—mica 110 Mmfd, 500 volt.	.24
23	502470	Condenser—.008 Mfd, 400 volt.	.24
27	502160	Condenser—mica 110 Mmfd, 500 volt.	.24
28	502153	Condenser—.05 Mfd, 200 volt.	.24
31	502156	Condenser—.004 Mfd, 400 volt.	.20
35	502151	Condenser—.01 Mfd, 400 volt.	.20
36-A, B	500256	Condenser—electrolytic	1.50
		A—40 Mfd, 150 volt	
		B—20 Mfd, 150 volt	
40	502152	Condenser—.02 Mfd, 400 volt.	.24
43	502157	Condenser—.05 Mfd, 400 volt.	.24
RESISTORS			
4	502140	Resistor—carbon 390 ohms 1/4 watt.	.12
5	502291	Resistor—carbon 4700 ohms 1/4 watt.	.12
8	502134	Resistor—carbon 470,000 ohms 1/4 watt.	.12
9	502130	Resistor—carbon 22,000 ohms 1/4 watt.	.12
13	502133	Resistor—carbon 220,000 ohms 1/4 watt.	.12
15	502269	Resistor—carbon 47 ohms 1/4 watt.	.12
16	502269	Resistor—carbon 3.3 Meg. 1/4 watt.	.12
18	502131	Resistor—carbon 47,000 ohms 1/4 watt.	.12
19-A, B	502145	Volume control 500,000 ohms (with switch)	1.25
22	502136	Resistor—carbon 10 Meg. 1/4 watt.	.12
25	502128	Resistor—carbon 2200 ohms 1/4 watt.	.12
26	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	.12
29, 30	502133	Resistor—carbon 220,000 ohms 1/4 watt.	.12
32	502134	Resistor—carbon 470,000 ohms 1/4 watt.	.12
33	502138	Resistor—carbon 130 ohms 1/4 watt.	.12
38	502469	Resistor—carbon 1500 ohms 1/4 watt.	.16
39	502574	Resistor—carbon 33 ohms 1/2 watt.	.12
COILS & TRANSFORMERS			
1	502246	Loop antenna	2.90
2-A, B, C	504096	Tuning unit, complete assembly	10.80
2-A	504210	Coil—antenna (tess slug)	1.20
2-B	504214	Coil—R.F. (tess slug)	1.85
2-C	504212	Coil—oscillator (tess slug)	1.05
	504211	Slug core for Ant. coil (yellow end)	.45
	504213	Slug core for R.F. coil (purple end)	.45
	504215	Slug core for R.F. coil (white end)	.45
CONDENSERS			
14	502102	Transformer—1st I.F.	\$2.30
17	502103	Transformer—2nd I.F.	2.30
18	502213	Transformer—output (for R-502998 spkr.)	2.50
37	502904	Transformer—output (for A-502998 spkr.)	2.50
	504244	Transformer—output (for W-502998 spkr.)	2.50
OTHER ELECTRICAL PARTS			
24	500546	Switch—tone control	.84
34	502473	Lamp—dial (Mazda 47) 6-8V, 150 Ma.	.22
34	502214	Cone & voice coil for R-502998 spkr.	2.00
41	502903	Cone & voice coil for A-502998 spkr.	2.00
42	504245	Cone & voice coil for W-502998 spkr.	2.00
	502998	Speaker—P.M. dynamic (5 inch)	6.60
MISCELLANEOUS PARTS			
502502		Back for cabinet	.30
116467		Base for mtg. electrolytic condenser	.04
502476		Cabinet—ivory (Model 3-1A)	5.00
502477		Cabinet—mahogany (Model 3-2A)	4.60
502506		Clamp—dial scale mtg.	.04
500497		Clip—retainer for cabinet back	.02
114955		Clip—retainer on end of dial cord	.01
116563		Connector—for antenna leads	.05
117057		Cord—dial drive (55 in. required)	per ft.
500324		Cover—cardboard, for elect. cond.	1.40
504146		Dial scale—glass	1.40
501186		Grounding plate (under I.F. trans. cm)	.10
502564		Knob—ivory (Model 3-1A)	.08
502563		Knob—mahogany (Model 3-2A)	.08
502367		Pointer	.16
81145		Retaining ring for tuning shaft	.01
119087		Ring for dial cord	.01
85078		Rubber grommet; Ant. & R.F. coil mtg.	.03
504045		Rubber grommet; Osc. coil mtg.	.04
17063		Screw—No. 6 x 1/4 chassis mtg.	.01
114628		Shaft—tuning control	.15
502173		Socket—octal base	.12
116690		Socket—octal	.12
160392		Socket—octal (rectifier)	.16
500499		Socket—dial lamp (with leads)	.44
504012		Spring for tuning slug drive cord	.05
161384		Spring—dial cord tension	.06
111456		Washer—spring washer for tuning shaft	.005

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 3-1A, 3-2A

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.)

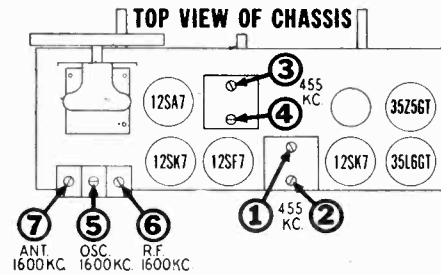
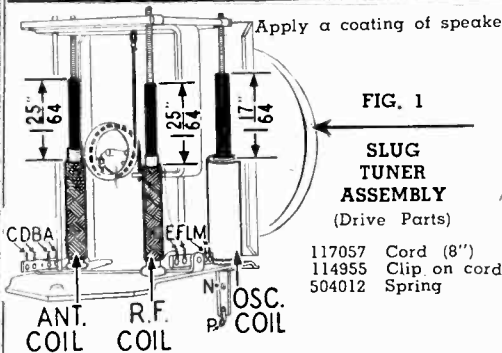
Turn the tuning control knob clockwise as far as it will go (tuner mechanism is now in maximum open position with tuning slugs almost completely withdrawn from coils). Dial pointer should then point to 1600 Kc mark on scale. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

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.



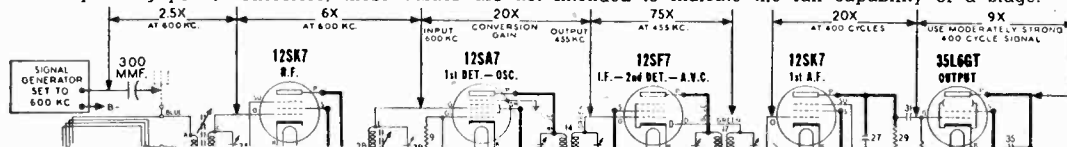
AUDIO OSCILLATION

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:

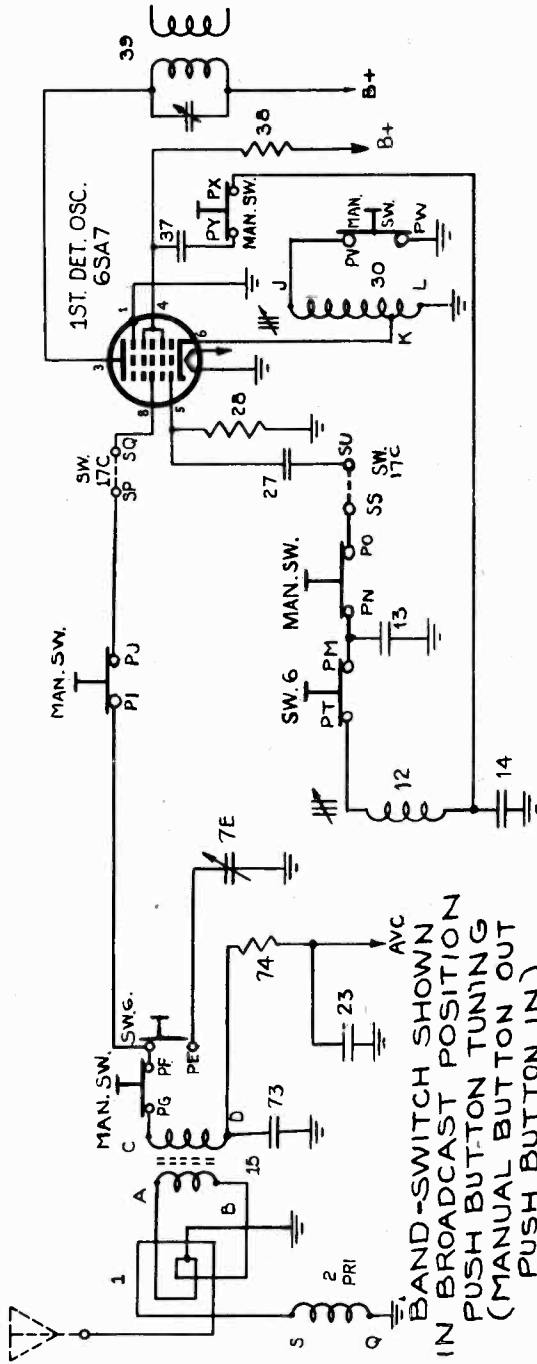
- For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
- For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1 1/2 volt cells in series) to A.V.C. lead and positive terminal 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.

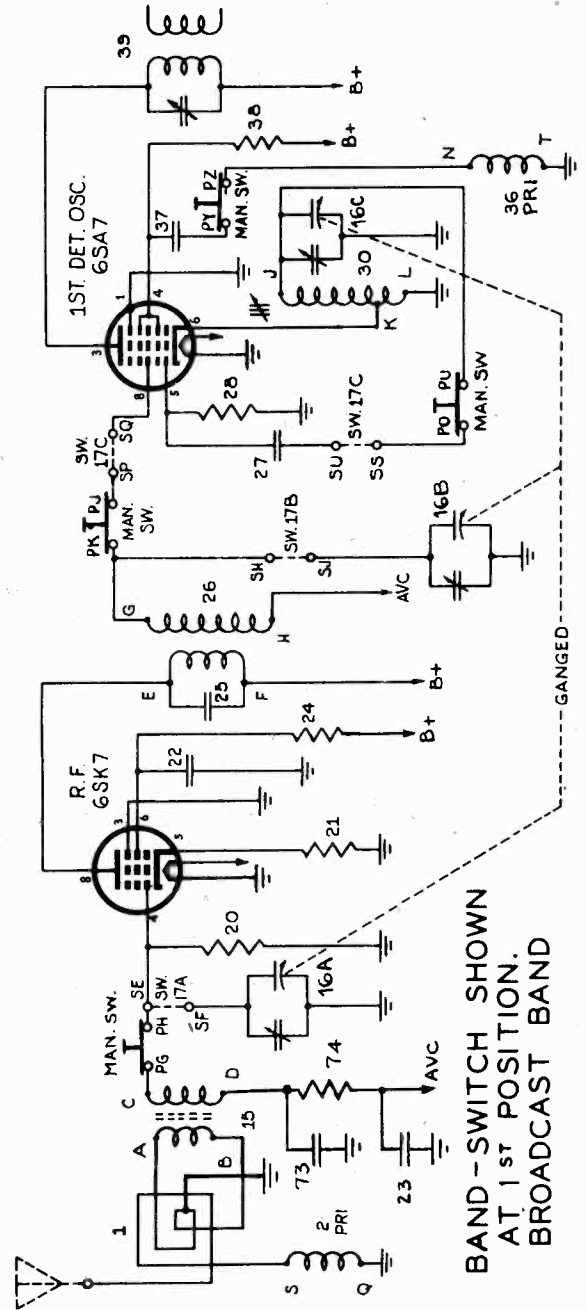


Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

PHILLIPS PETROLEUM CO.



BAND-SWITCH SHOWN IN BROADCAST POSITION
PUSH BUTTON TUNING
(MANUAL BUTTON OUT
PUSH BUTTON IN)



BAND-SWITCH SHOWN AT 1ST POSITION.
BROADCAST BAND

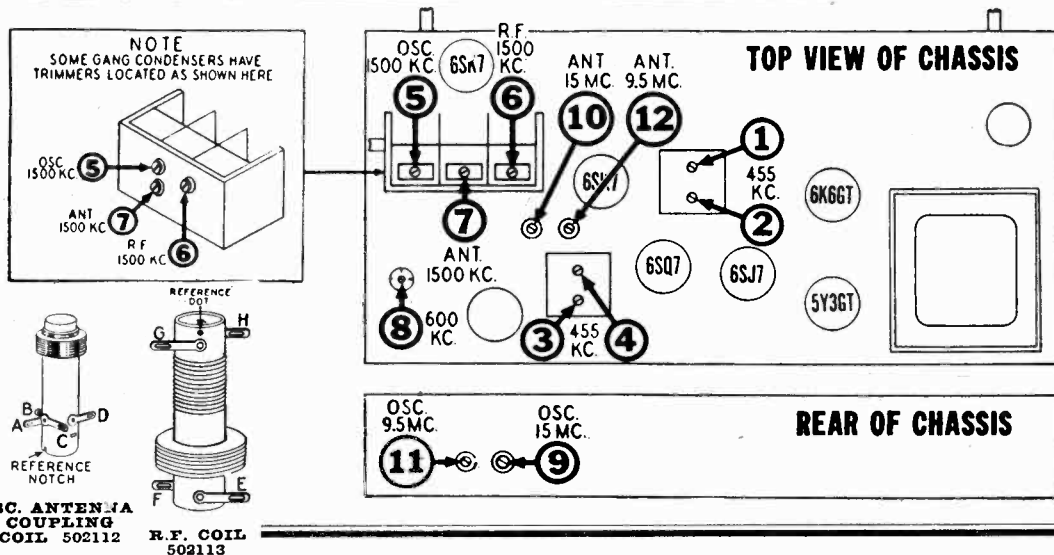
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ALIGNMENT PROCEDURE

1. The chassis and loop antenna should remain in their normal position in the cabinet throughout the following procedure.
2. Check arrangement of leads to push-button switch as shown in illustration on following page.
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
4. Connect output meter across speaker voice coil.
5. Connect the ground lead of the signal generator to the receiver chassis.
6. Set volume control at maximum volume position and use a weak signal from the signal generator.
7. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave bands.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT	
.1 MFD. Condenser	Trimmer on rear section of gang	455 KC	Broadcast (counter-clockwise)	Any point where it does not affect the signal.	1-2 3-4	2nd I.F. 1st I.F.	Adjust for maximum output. Then repeat adjustment.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	6	Broadcast R.F.	Adjust for maximum output.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	7	Broadcast Antenna	Adjust for maximum output.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	600 KC	Broadcast (counter-clockwise)	Tune to 600 KC Generator Signal	8	Adjustable core of Broadcast Oscillator Coil.	Adjust for maximum output. Try to increase output by rotating core in and out and retuning receiver dial until maximum output is obtained.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	Repeat adjustments of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.						
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	15 MC	Short wave	15 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 14.1 MC. If image does not appear, realign at 15 MC, with trimmer screw farther out. Recheck image.	
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	15 MC	Short wave	Tune to 15 MC Generator Signal	10	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.	
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.5 MC	31 M (Clockwise)	9.5 MC	11	31 M Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 8.6 MC. If image does not appear, realign at 9.5 MC, with trimmer screw farther out. Recheck image.	
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.5 MC	31 M (Clockwise)	Tune to 9.5 MC Generator Signal	12	31 M Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.	



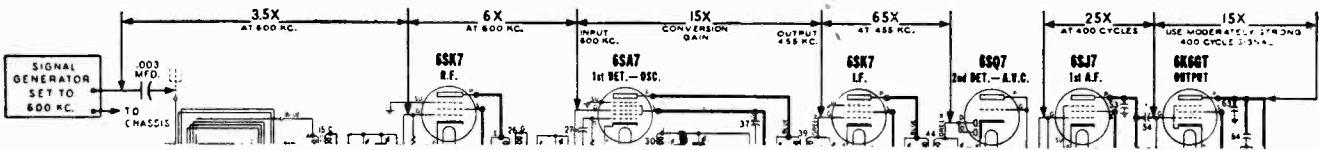
MODEL 3-3A

PHILLIPS PETROLEUM CO.
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 chassis. 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.

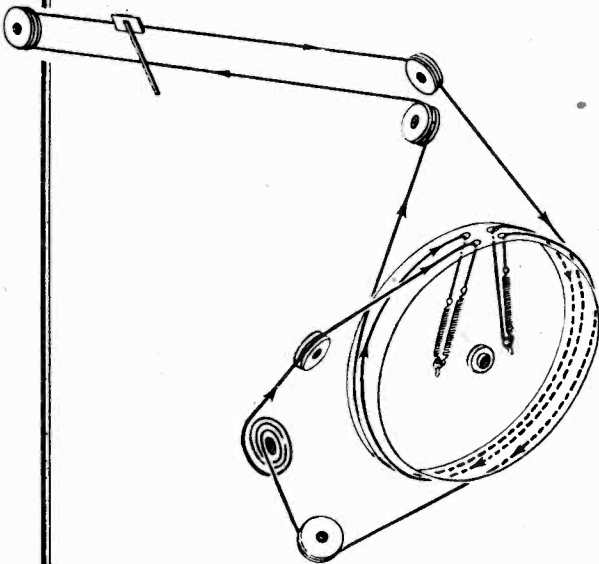


Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

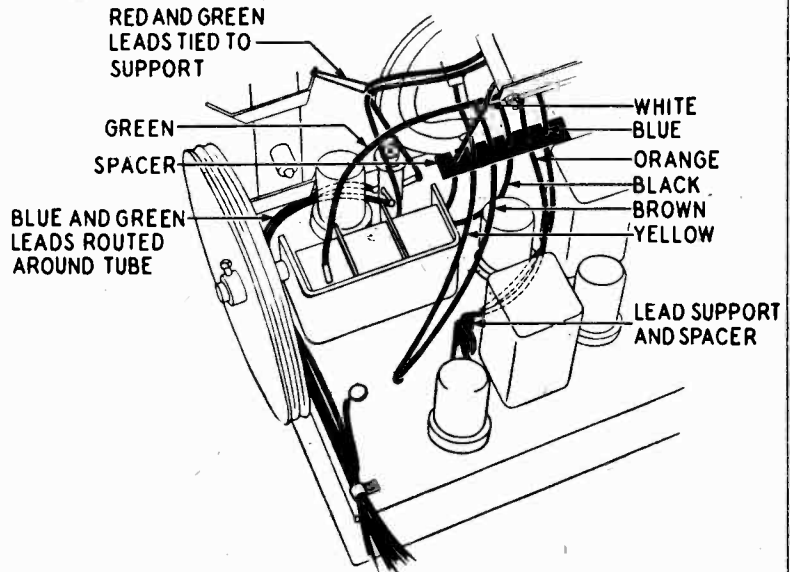
- 113177 Tension Spring
- 114955 Clip on end of cord
- 119087 Ring for dial cord
- 117057 Cord (102 inches)
Pointer drive 72 inches
Gang drive 30 inches



IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The wires shown in the above illustration are associated with tuned circuits which carry radio frequency currents. Therefore, care must be exercised to insure that they are properly routed and spaced. Anchoring and fixing spacing of wires minimizes freedom of movement and is utilized to maintain a stable arrangement.

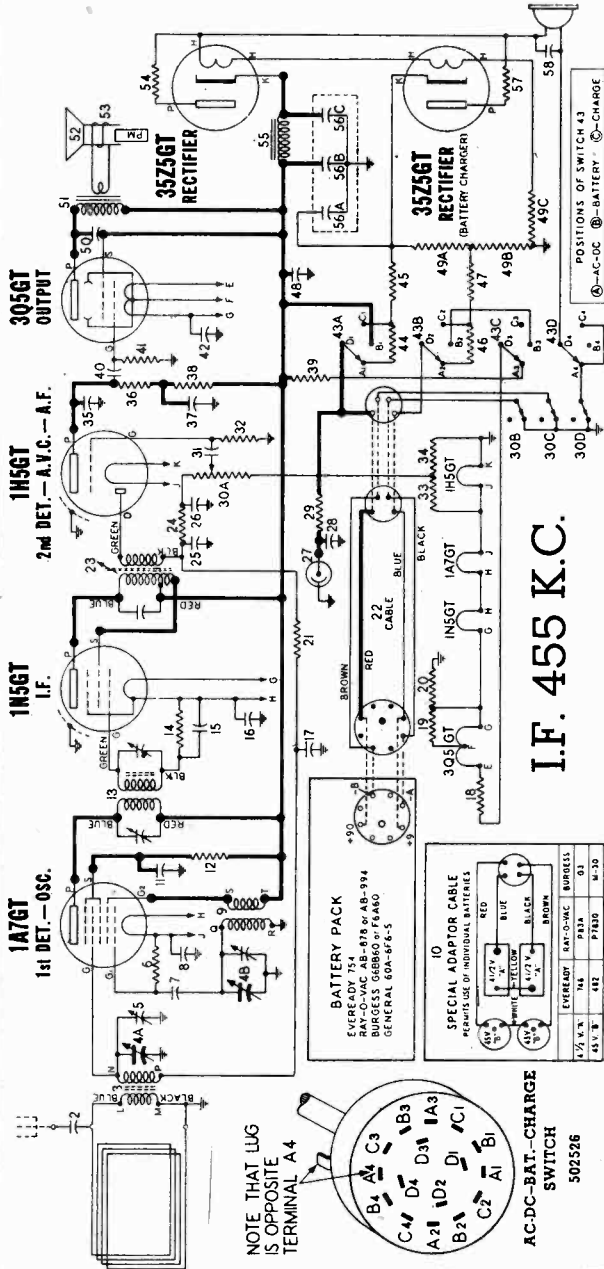
Since the relative positions of these wires may affect tuned circuits it is important to avoid any change in arrangement after the receiver has been aligned. If the position of the wires has been disturbed, it is advisable to re-check alignment.



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 feedback 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 primary of the output transformer.

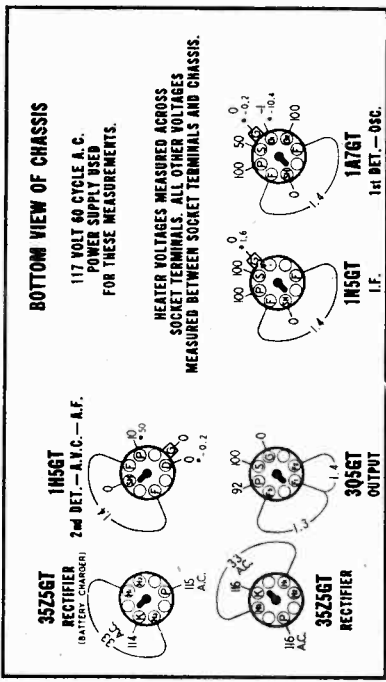
PHILLIPS PETROLEUM CO.



I.F. 455 K.C.

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.
 "AC-DC-BAT.-CHARGE" SWITCH IN "AC-DC" POSITION



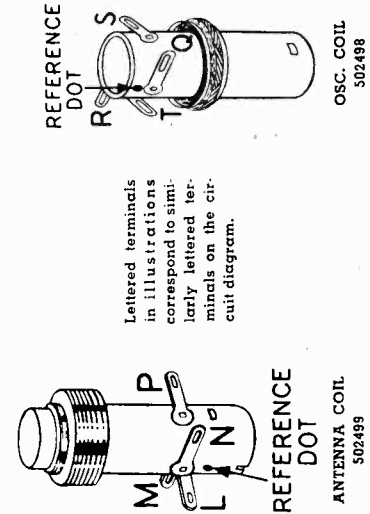
BOTTOM VIEW OF CHASSIS

117 40 CYCLE A.C. POWER SUPPLY USED FOR THESE MEASUREMENTS.

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS.

REAR OF CHASSIS

*—Measured with vacuum tube voltmeter.



PARTS LIST

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
2	502150	Condenser—.004 Mfd. 600 volt.	\$.20
4-A, B	502494	Condenser-variable gang	4.80
5	119132	Condenser-trimmer 2 to 15 Mmfd.	.26
7	502159	Condenser-mica 50 Mmfd. 500 volt.	.34
8	502153	Condenser—.05 Mfd. 200 volt.	.24
11	502547	Condenser-electrolytic 4 Mfd. 150 volt.	.75
13	502153	Condenser—.05 Mfd. 200 volt.	.24
16	502155	Condenser—.1 Mfd. 200 volt.	.30
18	502155	Condenser—.05 Mfd. 200 volt.	.24
21	502159	Condenser-mica 30 Mmfd. 500 volt.	.24
25	502136	Condenser—.004 Mfd. 200 volt.	.20
26	502136	Condenser—.004 Mfd. 400 volt.	.20
31	502160	Condenser—.1 Mfd. 200 volt.	.30
35	502155	Condenser—.05 Mfd. 200 volt.	.24
37	502155	Condenser—.1 Mfd. 200 volt.	.30
40	502151	Condenser—.01 Mfd. 400 volt.	.20
42	502527	Condenser-electrolytic 50 Mfd. 25 volt.	1.10
48	502155	Condenser—.1 Mfd. 200 volt.	.30
50	502453	Condenser—.002 Mfd. 400 volt.	.20
56-A, B, C	500714	Condenser-electrolytic A—20 Mfd. 150 volt B—20 Mfd. 200 volt C—20 Mfd. 200 volt.	1.70
58	502153	Condenser—.05 Mfd. 200 volt.	.24
6	502133	Resistor—carbon 220,000 ohms 1/4 watt.	.12
12	502131	Resistor—carbon 47,000 ohms 1/4 watt.	.12
14	502136	Resistor—carbon 10 Meg. 1/4 watt.	.12
18	502455	Resistor—carbon 27 ohms 1/4 watt.	.12
19	502457	Resistor—carbon 30 ohms 1/4 watt.	.12
20	502458	Resistor—carbon 430 ohms 1/4 watt.	.12
21	502269	Resistor—carbon 3.3 Meg. 1/4 watt.	.12
24	502132	Resistor—carbon 100,000 ohms 1/4 watt.	.12
25	502289	Resistor—carbon 3.3 Meg. 1/4 watt.	.12
30-A, B, C, D	502525	Volume control (with switch) 1 Meg.	1.25
32	502459	Resistor—carbon 33 Meg. 1/4 watt.	.12
33	502458	Resistor—carbon 220 ohms 1/4 watt.	.12
34	502458	Resistor—carbon 220 ohms 1/4 watt.	.12
38	502134	Resistor—carbon 470,000 ohms 1/4 watt.	.12
39	502134	Resistor—wire wound 1800 ohms 5 watt.	.55
41	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	.12
44	502266	Resistor—carbon 15,000 ohms 1/4 watt.	.12
45	502459	Resistor—carbon 6800 ohms 1/4 watt.	.12
46	502457	Resistor—carbon 30 ohms 1/4 watt.	.12
47	502455	Resistor—carbon 27 ohms 1/4 watt.	.12
49-A, B, C	500715	Resistor—wire wound A—1460 ohms 10 watt B—155 ohms 1 watt C—310 ohms 10 watt.	1.65
54	502454	Resistor—wire wound 47 ohms 1 watt.	.16
57	502454	Resistor—wire wound 47 ohms 1 watt.	.16

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
3	502469	Coil—antenna coupling	\$1.70
8	502468	Coil—oscillator	2.35
13	502485	Transformer—2nd I.F.	2.30
23	500749	Trans.—output for A-502491 speaker	2.50
51	502902	Trans.—output for R-502491 speaker	2.50
55	502492	Trans.—output for R-502491 speaker	2.50
	502528	Filter choke	2.35
10	500746	Cable—for use with individ. batteries.	1.60
22	502526	Cable—for use with battery pack	.75
27	500713	Switch—"AC-DC-BAT.-CHARGE"	1.50
43-A, B, C, D	502901	Cone & voice coil for A-502491 speaker	2.00
52	502493	Cone & voice coil for R-502491 speaker	2.00
53	502491	Speaker—P.M. dynamic (5 inch)	7.70
MISCELLANEOUS PARTS			
	160026	Base for mtg. electrolytic condenser	.04
	112745	Clip—coil mtg.	.01
	114955	Cable—retainer on end of dial cord	.05
	117057	Card—dial drive (28" required) per ft.	.10
	502549	Escutcheon plate	2.40
	502544	Knob—volume or tuning	.10
	502947	Plug for battery cable (fits chassis)	.12
	502537	Plug for battery cable (fits batt. pack)	.16
	502546	Painter	.16
	81145	Retaining ring for tuning shaft	.10
	119087	Ring for dial cord	.01
	79894	Screw—No. 8x5/8" for mtg. chassis	.01
	502524	Shield—tuning control	.10
	117716	Shield—tube	.07
	116690	Socket—octal base	.12
	500681	Socket—for battery cable	.10
	161384	Spring—dial cord tension	.06
	502533	Terminal strip for antenna	.20
	111436	Washer—spring washer for tuning shaft	.005
	502534	Washer—felt for knobs	.01

MODEL 3-4A

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Slide chassis partially out of cabinet by removing staples at each side of wood shelf and pulling entire shelf back about 2 inches. Do not disturb connections to loop antenna.

Connect an output meter across the voice coil of the speaker or between the plate of the 3Q5GT output tube and chassis, through a .1 mfd. condenser.

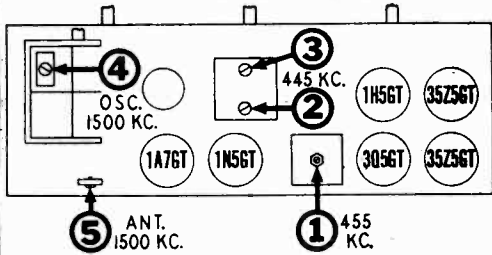
Connect the ground lead of the signal generator to chassis through a .25 mfd. condenser.

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

Set "AC-DC-BAT.-CHARGE" Switch in "AC-DC" position.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
300 MMFD. Condenser	Grid Cap of 1A7GT Tube	455 KC.	Any Point Where It Does Not Affect Signal	1	2nd I.F.	Loosen lock nut, Adjust screw for maximum output.
				2-3	1st I.F.	Adjust for maximum output. Re-check 1, 2 and 3 for maximum output and tighten lock nut on 1.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	1500 KC.	1500 KC. (Slide set into cabinet and replace pointer to set dial.)	4	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
300 MMFD. Condenser	Center Terminal on Antenna Terminal Strip at bottom of cabinet.	1500 KC.	Tune to 1500 KC. Generator Signal	5	Broadcast Antenna	Adjust for maximum output. Slide chassis all the way into cabinet when making this adjustment.

TOP VIEW OF CHASSIS



INDICATOR LAMP

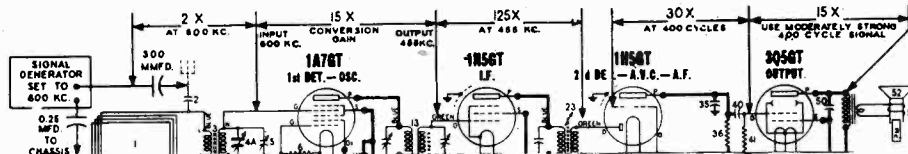
The flashing neon lamp on the dial face indicates condition of batteries. This lamp is included in an oscillating (R-C) circuit which is designed to oscillate at approximately 3 pulses per second when batteries are in a fully charged condition. As the battery voltage decreases with use, number of pulses per second decreases.

This lamp will only show the true condition of the batteries when the Selector Switch is in the "Battery" position. Lamp flashes more rapidly during charging or "AC-DC" operation.

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.

- 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 1½-volt battery to A.V.C. lead and positive terminal to chassis. This provides a definite operating point.
- 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.

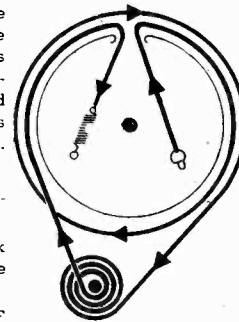
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 1½ volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



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.

When battery voltage is low (approximately 72 volts) the lamp flashes more slowly (about once per second). The set should not be operated from battery power after this point is reached and batteries should be recharged immediately. Charge for at least twice the time they were used and as soon as possible after they are run down. As batteries age it is necessary to charge for a longer period. For longest battery life, charge immediately after using.

- IMPORTANT:**
- Completely dead batteries cannot be recharged.
 - When set is connected to a DC line, check for correct polarity by operating it before attempting to charge the batteries.
 - Batteries will be discharged if ON-OFF switch is left ON when power cord is not connected to wall outlet.



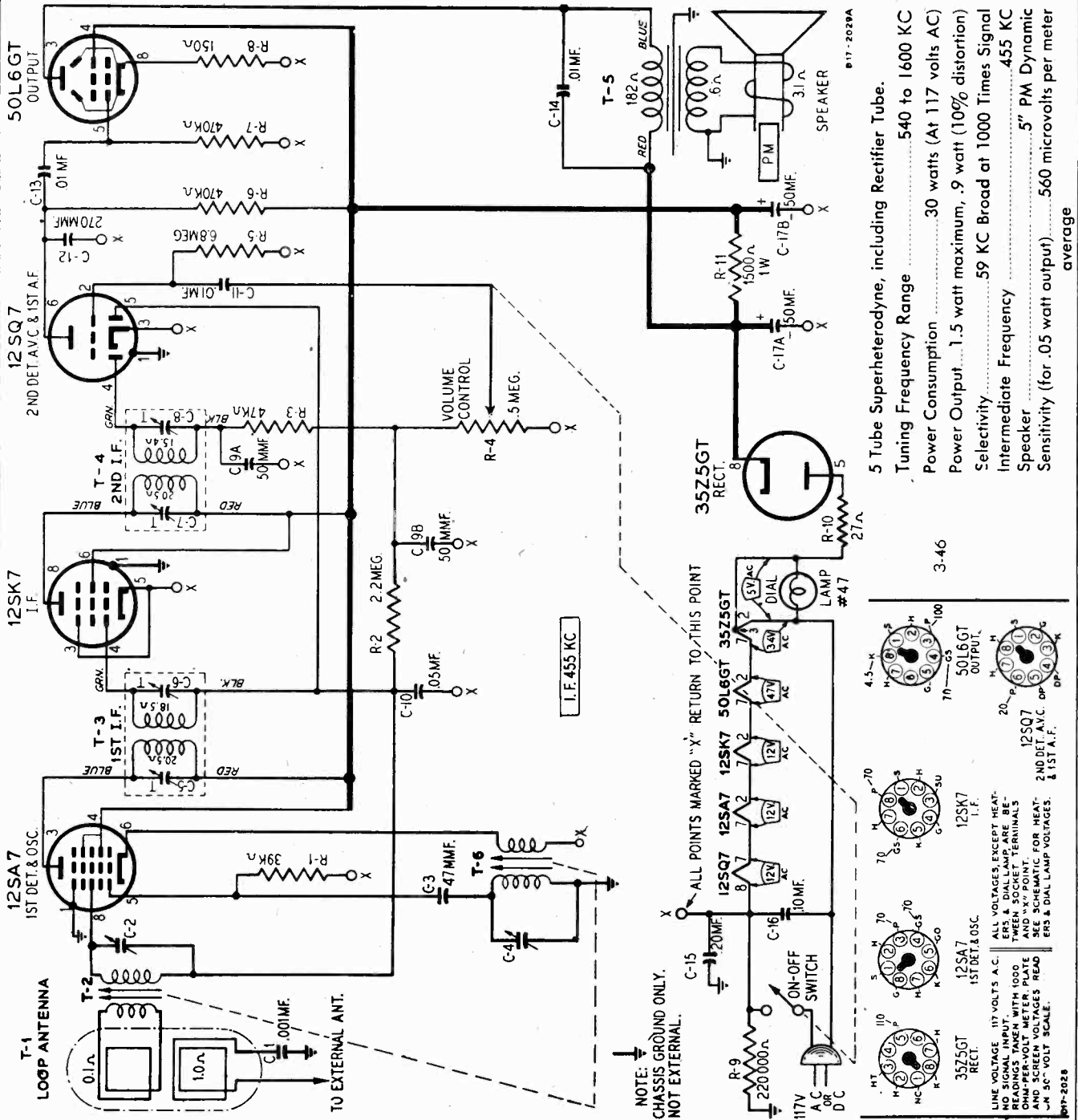
DIAL DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

- 114955 Clip on end of cord
- 117057 Cord (28 inches)
- 119387 Ring for dial cord
- 161384 Tension Spring

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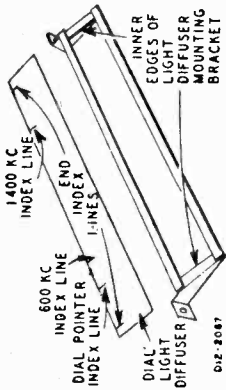
MODELS 3-9A, 3-10A,
Early



MODELS 3-9A, 3-10A,
Early
MODELS 3-9AX, 3-10AX

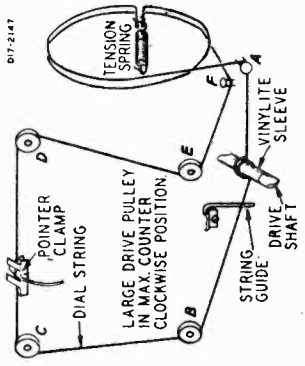
PHILLIPS PETROLEUM CO.

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 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 at one point to prevent movement of the diffuser strip. To position the dial pointer, turn the large drive pulley to the maximum clockwise position. The dial pointer should be directly over the dial pointer index line. (See illustration).

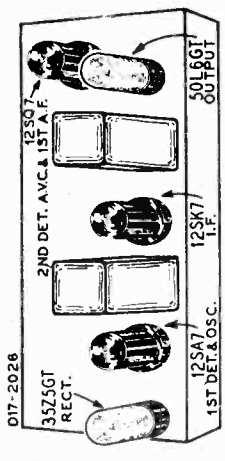
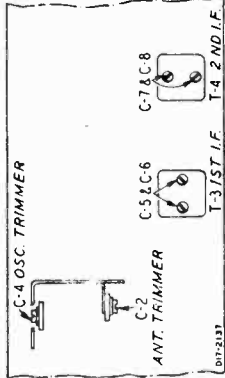


DRIVE CORD REPLACEMENT

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 two turns clockwise around the tuning shaft with the turns progressing away from the chassis. After string is installed, stretch the tension spring and tie free end of cord to spring. Cut off excess string.

ALIGNMENT PROCEDURE
Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter: Non-Metallic Screw-driver.
Dummy Antennas—1mf., 50 mmf.

FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	DUMMY ANTENNA CONNECTION	TUNER SETTING	ADJUST TRIMMERS TO MAXIMUM
455 KC	Control Grid 12SK7—1.F.	Point "X" 12SK7—1.F. Prong No. 3	Turn Drive Pulley to Counterclockwise Position	2nd I.F. (C7) & (C8)
455 KC	Control Grid 12SA7—1st Det.	Same As Above	Turn Drive Pulley to Counterclockwise Position	1st I.F. (C5) & (C6)
1610 KC	Control Grid 12SA7—1st Det.	Same As Above	Turn Drive Pulley to Maximum Counterclockwise Position	Oscillator (C4)
1610 KC	External Antenna Clip On Loop	Chassis	Turn Drive Pulley to Maximum Counterclockwise Position	Antenna (C-2)



TRANSFORMERS AND COILS

T 1	"B" range loop antenna (for walnut cabinet)
T 2	"B" range loop antenna (for ivory cabinet)
T 3	Part of Tuning Assembly
T 4	1st I.F. coil assembly
T 5	2nd I.F. coil assembly
T 6	Part of Tuning Assembly

CAPACITORS

C 1	.001 M.F. 400V Tubular
C 2	4.70 mfd. 50V Trimmer
C 3	47 mfd. 50V Moulded
C 4	40 370 mfd. 50V Trimmer
C 5, C 6	Part of T-3, 1st I.F. Transformer
C 7, C 8	Part of T-4, 2nd I.F. Transformer
C 9A, C 9B	50 mmf. Dual mica capacitor
C 10	.05 mf. 200 Tubular
C 11, C 13, C 14	.01 mf. 200 V Tubular
C 12	220 mmf. Moulded
C 15	20 mf. 200 V Tubular
C 16	.10 mf. 400 V Tubular
C 17A	50 mf. 150V Dry electrolytic capacitor
C 17B	50 mf. 150V Dry electrolytic capacitor

RESISTORS

R 1	35,000 ohms Carbo
R 2	2.2 meg. 0.5 watt Carbon
R 3	47,000 ohms 0.5 watt Carbon

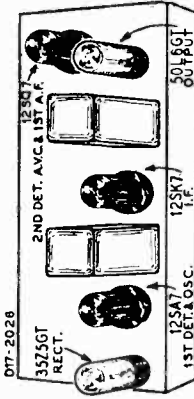
MISCELLANEOUS

12A432	5" P.M. speaker
3A303	Cone and voice coil assembly (Specify part number and letters stamped on speaker)
10A300	Tube socket octal (8 prong) moulded
10A297	Knob (ivory)
52A265	Cabinet (ivory)
52A266	Cabinet (walnut)
28X292	Snap button (mounting loop to chassis)
14X335	No. 6 x 1/4" slotted hex head P.K. Type "Z" screw (mounting loop to cabinet)
30X508	Grille metal
30X509	Grille, cloth No. 426 Egg Shell (for ivory cabinet)
30X510	Grille, cloth No. 418 Brown (for walnut cabinet)
13X328	Line cord and blue assembly

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.

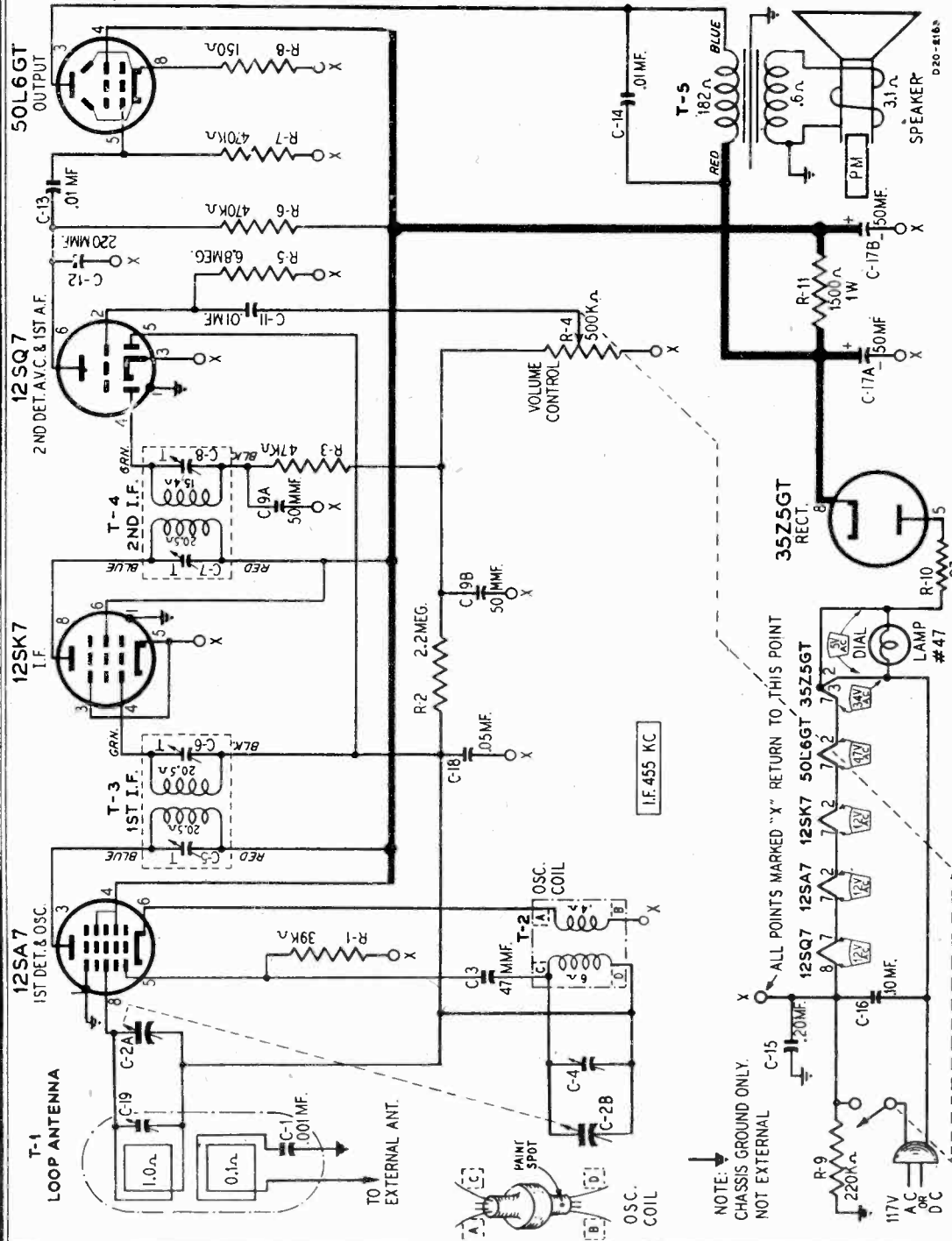
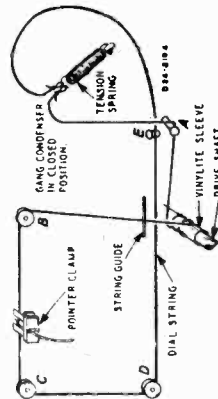
TUNING ASSEMBLY SERVICE
Exact requirements in the tuning assembly make it impractical to replace the drive cord, coils and components in this assembly other than the trimmer condensers. Should the drive cord break, or components other than the trimmer condensers require service, the entire assembly must be ordered and replaced as a unit.

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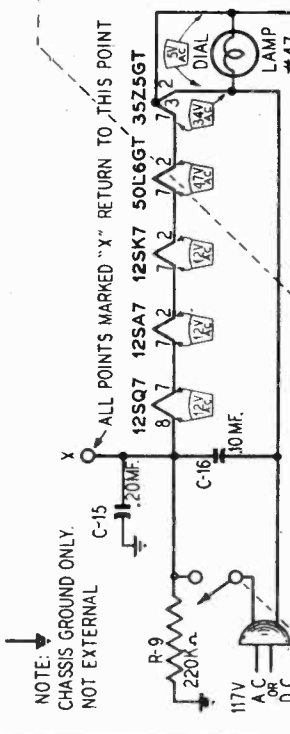
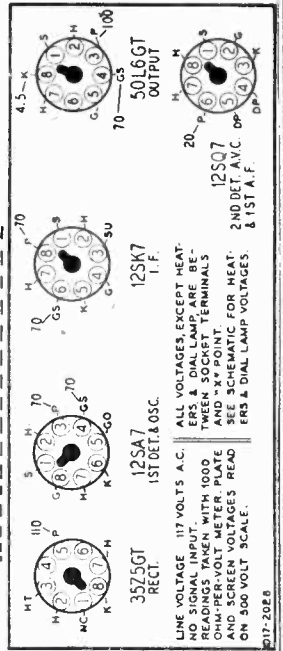


DRIVE CORD REPLACEMENT

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



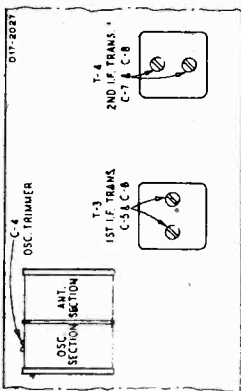
NOTE: CHASSIS GROUND ONLY. NOT EXTERNAL

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.

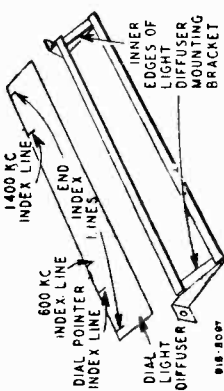
FREQUENCY SETTING	SIGNAL GENERATOR			DUMMY ANTENNA CONNECTION	CONDENSER SETTING	GANG ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
	ANTENNA CONNECTION	GROUND CONNECTION	ANTENNA			
435 KC	Control Grid Prong No. 4	Point "X" Prong No. 3	.1 mf.	Turn Rotor to full open	2nd I.F. (C7) & (C8)	
455 KC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

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).



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

MISCELLANEOUS

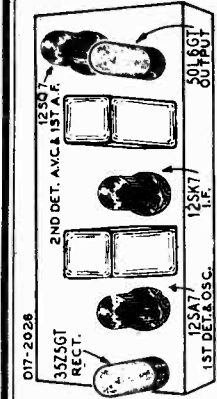
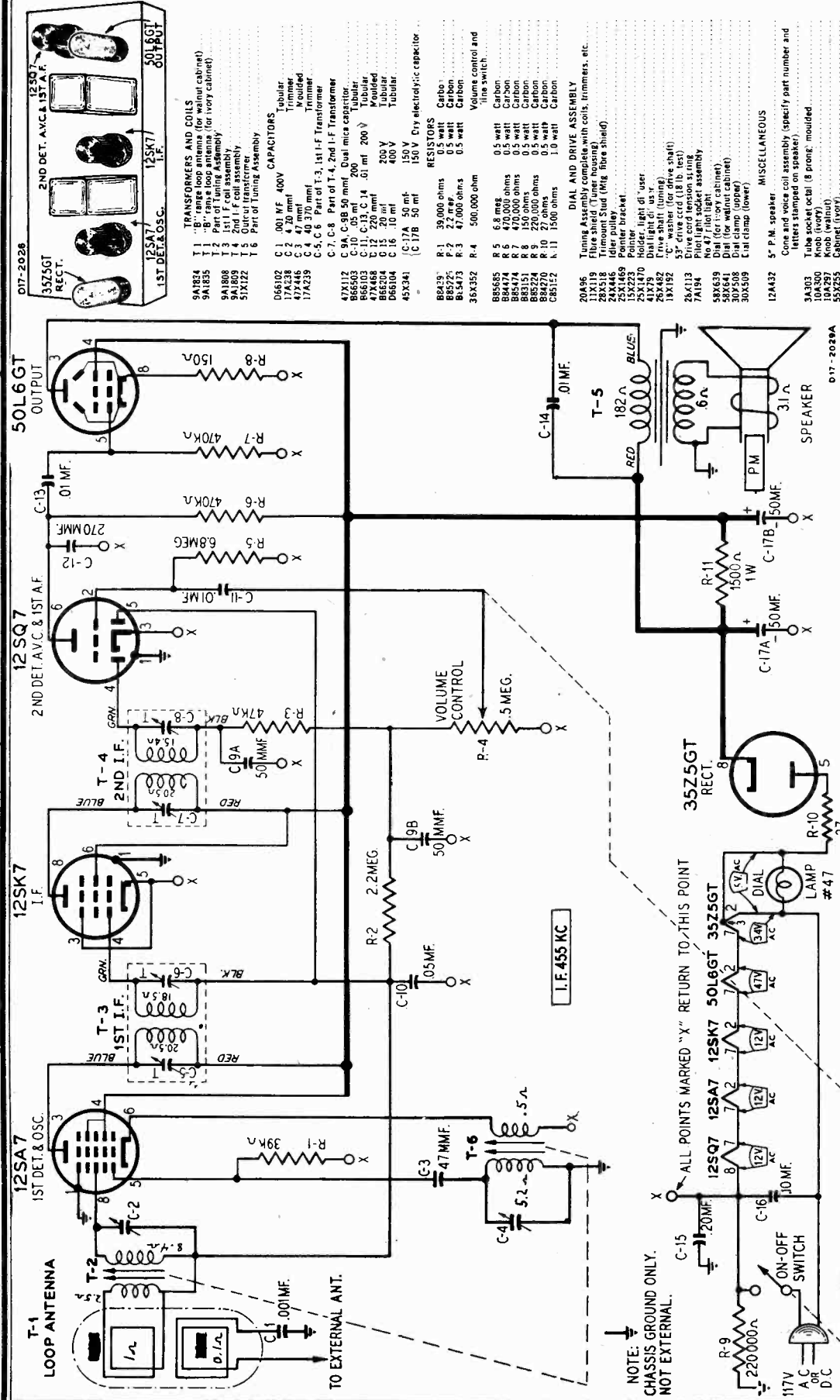
- 12A432 5" P.M. speaker
- 3A303 Cone and voice coil assembly (specify part number and letters stamped on speaker)
- 10A307 Tube socket octal (8 prong) moulded
- 10A309 Knob (ivory)
- 55X255 Cabinet (walnut)
- 55X267 Cabinet (walnut)
- 28X292 Snap button (mounting loop to chassis)
- 14X335 Grille metal No. 425 Egg Shell (for ivory cab) Grille cloth No. 418 Brown (for walnut cab)
- 13X328 Line cord and plug assembly
- 26A405 TRANSFORMERS AND COILS T-1 "B" Range Loop Antenna Assembly (for ivory cabinet)

NOTICE: This 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 (for ivory cabinet)
- 9A1805 Oscillator Coil Assembly
- 9A1808 1st I-F Coil Assembly
- 9A1809 T-4 2nd I-F Coil Assembly
- 51X123 T-5 Output Transformer
- D67102 C-1 .001 mf 400 V Capacitor Assembly
- 26A402 C-2A C-2B Gang Capacitor Assembly with Drive Pulley
- 47X446 C-3 47 mmf Moulded
- C-4 Part of C-2 (Gang Capacitor)
- C-5 Part of T-3 (1st I-F transformer)
- C-6 Part of T-3 (2nd I-F transformer)
- C-9A C-9B 50 mmf Dial micrometer
- 47X112 C-11 C-13 C-14 .01mf 200 V Tubular
- B66103 C-12 220 mmf Moulded
- 47X468 C-15 200 V Tubular
- B67204 C-16 .10 mf 400 V Tubular
- 45X341 C-17A .50 mf 150 V Dry Electrolytic
- B66303 C-17B .05 mf 150 V Tubular
- 17A123 C-19 1.0-12 mmf Trimmer
- B84393 R-1 39,000 ohms Carbon
- B85225 R-2 2.2 meg. Carbon
- B85473 R-3 47,000 ohms Carbon
- 36X352 R-4 500,000 ohms Volume control and line switch
- B85685 R-5 6.8 meg. Carbon
- B84474 R-6 470,000 ohms Carbon
- B85474 R-7 470,000 ohms Carbon
- B83151 R-8 150 ohms Carbon
- B85224 R-9 220,000 ohms Carbon
- B8470 R-10 25 ohms Carbon
- B85152 R-11 1500 ohms Carbon
- 26A401 DIAL AND DRIVE ASSEMBLY Pointer Bracket Assembly complete with light diffuser holder, string guide and lidler pulleys
- 41X24 Dial light diffuser
- 13X223 Pointer
- 20X329 Rubber Gummets
- 26X482 Drive shaft Mfg. gang capacitor
- 19X192 "C" Washer (for drive shaft)
- 28X95 Drive cord (18 lb. test)
- 7A194 Pilot light socket assembly No. 47 Pilot light
- 58X607 Dial clamp (upper)
- 30X308 Dial clamp (lower)

PHILLIPS PETROLEUM CO.



TRANSFORMERS AND COILS
 T-1 "B" sense loop antenna (for ivory cabinet)
 T-2 Part of Tuning Assembly
 T-3 1st I.F. coil assembly
 T-4 2nd I.F. coil assembly
 T-5 Output transformer
 T-6 Part of Tuning Assembly

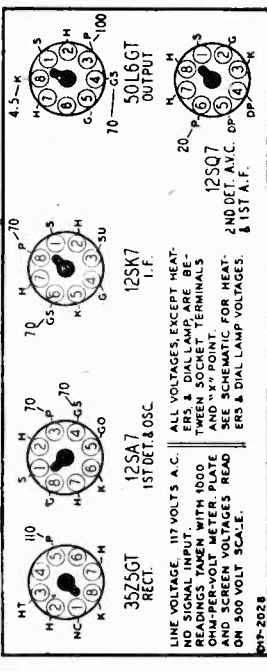
CAPACITORS
 C-1 .001 MF 400V Tubular
 C-2 .01 MF 400V Tubular
 C-3 .01 MF 400V Tubular
 C-4 40 370 mmf Trimmer
 C-5, C-6 Part of T-3, 1st I.F. Transformer
 C-7, C-8 Part of T-4, 2nd I.F. Transformer
 C-9A, C-9B 50 mmf, Dual mica capacitor
 C-10 .05 mf 200 Tubular
 C-11, C-12, C-14 .01 mf 200 V Tubular
 C-13 .01 MF 400V Tubular
 C-15 .20 mf 200V Tubular
 C-16 .10 mf 400V Tubular
 C-17A 50 mf 150V Dry electrolytic capacitor
 C-17B 50 mf 150V Dry electrolytic capacitor

RESISTORS
 R-1 39,000 ohms Carbon
 R-2 2.2 MEG. Carbon
 R-3 47K Carbon
 R-4 500,000 ohm Voice control and line switch
 R-5 6.8 meg Carbon
 R-6 470,000 ohms Carbon
 R-7 470,000 ohms Carbon
 R-8 150 ohms Carbon
 R-9 220 ohms Carbon
 R-10 27 ohms Carbon
 R-11 1500 ohms Carbon

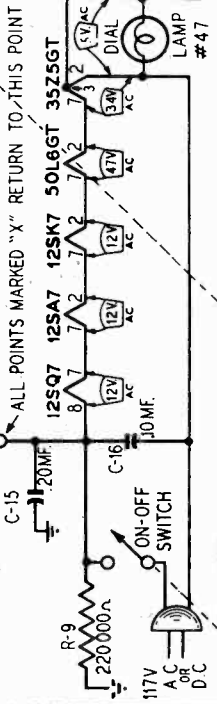
DIAL AND DRIVE ASSEMBLY
 20A96 Tuning Assembly complete with coils, trimmers, etc.
 11X119 Fibre shield (Tuner housing)
 28X518 Trimount Stud (Mfg. fibre shield)
 25X446 Idle pulley
 25X449 Pointer
 25X1470 Holder, light dt. user
 25X1729 Dial light dt. u.s.r.
 25X1730 "C" washer (for drive shaft)
 18X182 53" drive cord (18 lb. test)
 25X713 Drive cord tension spring
 7A194 No. 47 Pilot light
 58X639 Dial (for ivory cabinet)
 58X641 Dial (for walnut cabinet)
 30X509 Dial clamp (upper)
 30X508 Dial clamp (lower)

MISCELLANEOUS
 12A432 5" P.M. speaker
 3A4303 Complete coil assembly (specify part number and letters stamped on speaker)
 10A300 Tube socket (octal, 8 prong, moulded)
 18A297 Knob (ivory)
 18A298 Knob (walnut)
 55X235 Cabinet (ivory)
 55X236 Cabinet (walnut)
 28X292 Snap button (mounting loop to chassis)
 No. 5, 1/2" slotted hex head P.K. Type "Z" screw (mounting loop to cabinet)
 14X335 Grille metal
 14X336 Grille, cloth No. 425 Egg Shell (for ivory cabinet)
 14X337 Grille, cloth No. 425 Egg Shell (for walnut cabinet)
 13X328* Line cord and blue assembly

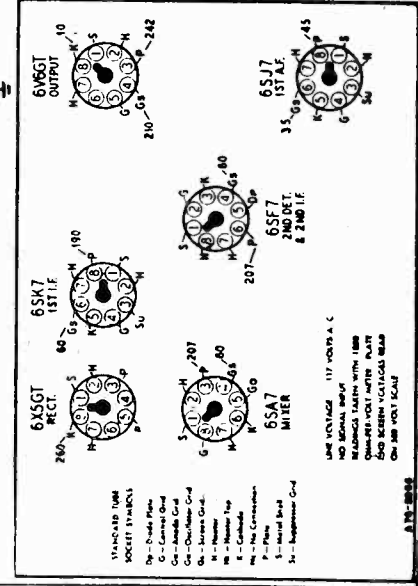
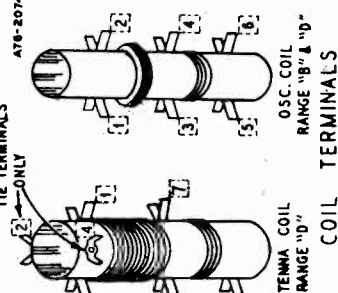
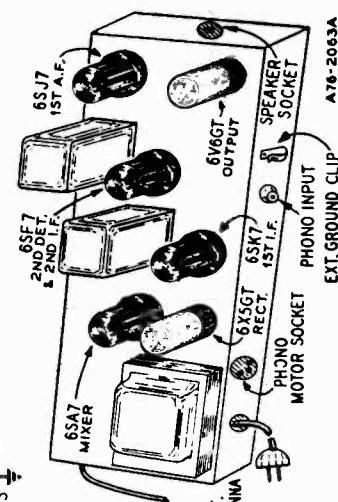
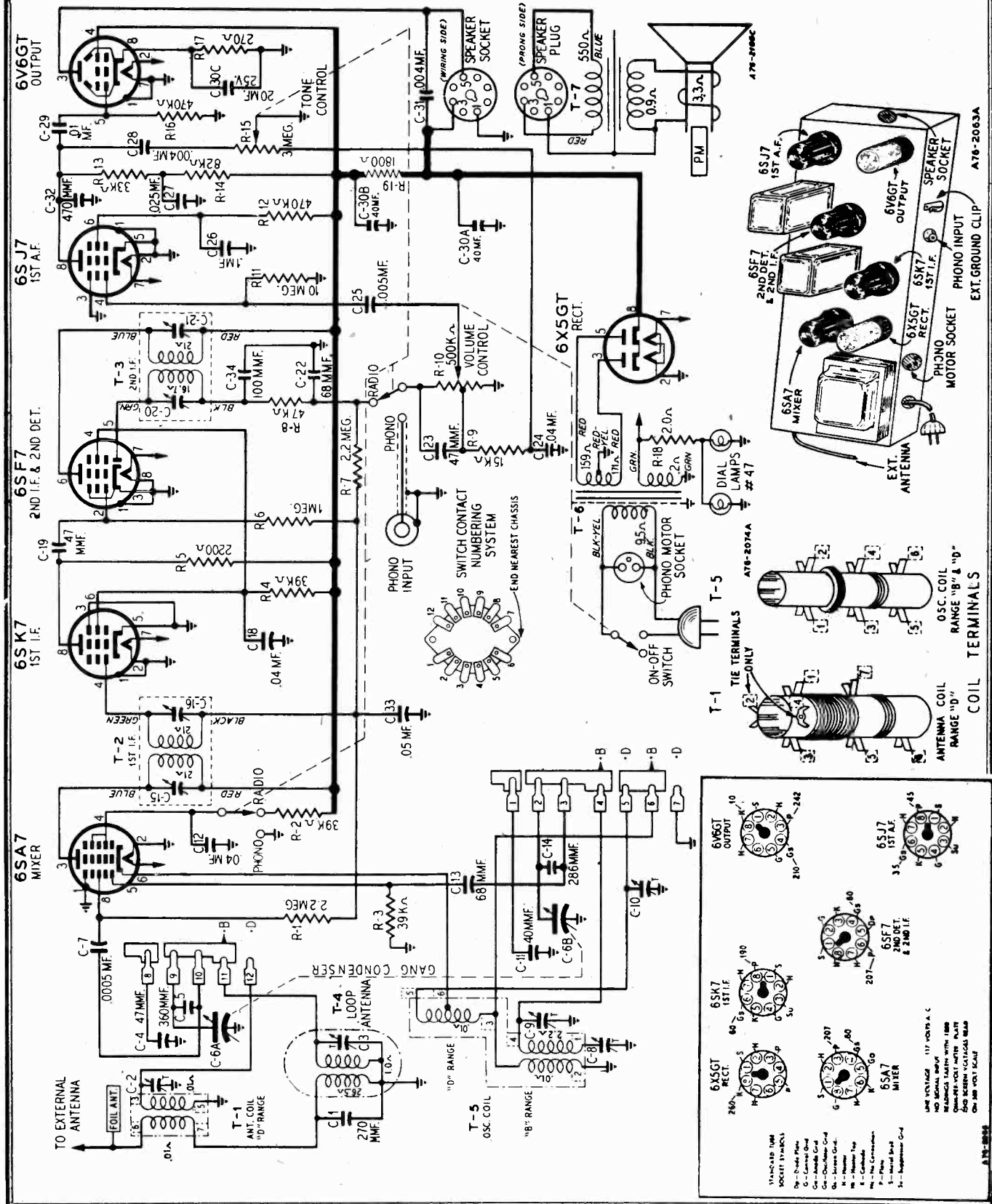
Tuning Frequency Range 540 to 1600 KC
 Power Consumption 30 watts (At 117 volts AC)
 Power Output 1.5 watt maximum, .9 watt (10% distortion)
 Selectivity 59 KC Broad at 1000 Times Signal
 Intermediate Frequency 455 KC
 Speaker 5" PM Dynamic
 Sensitivity (for .05 watt output) 560 microvolts per meter average



NOTE: CHASSIS GROUND ONLY. NOT EXTERNAL.



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.

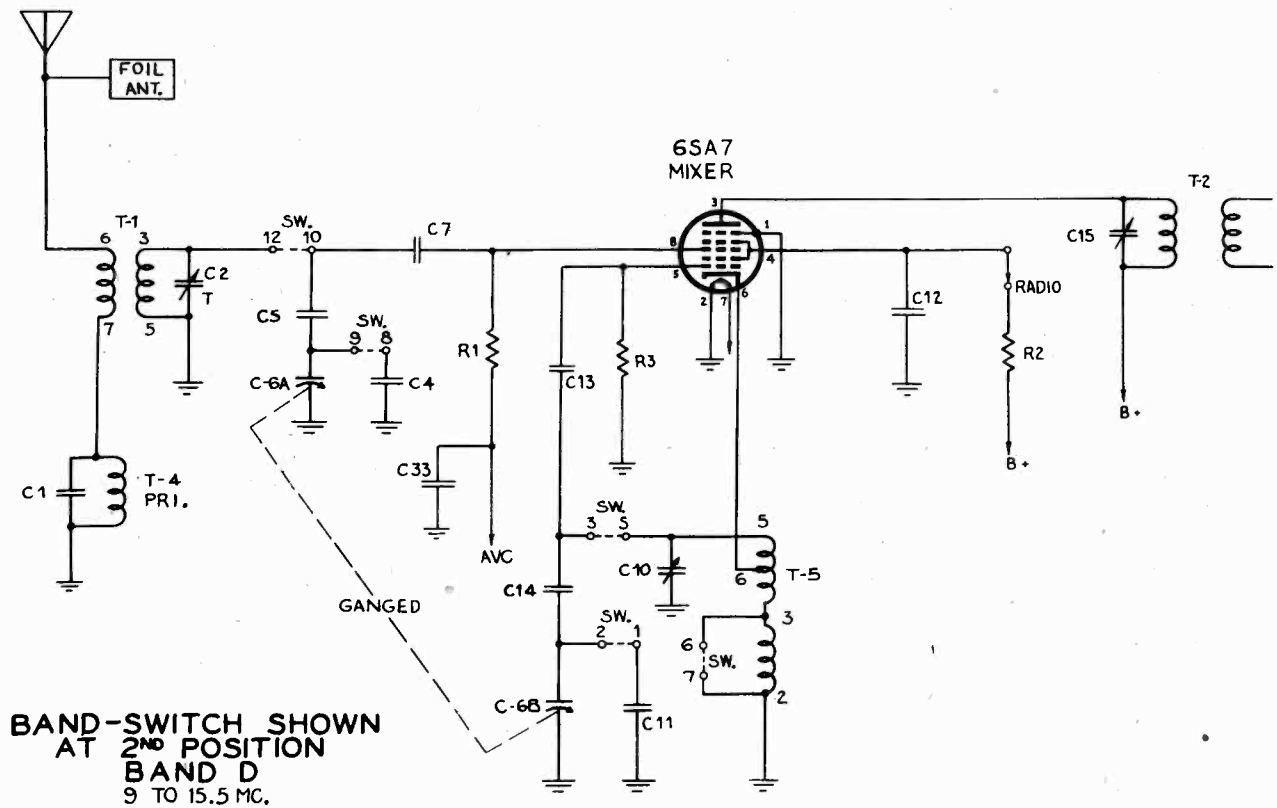
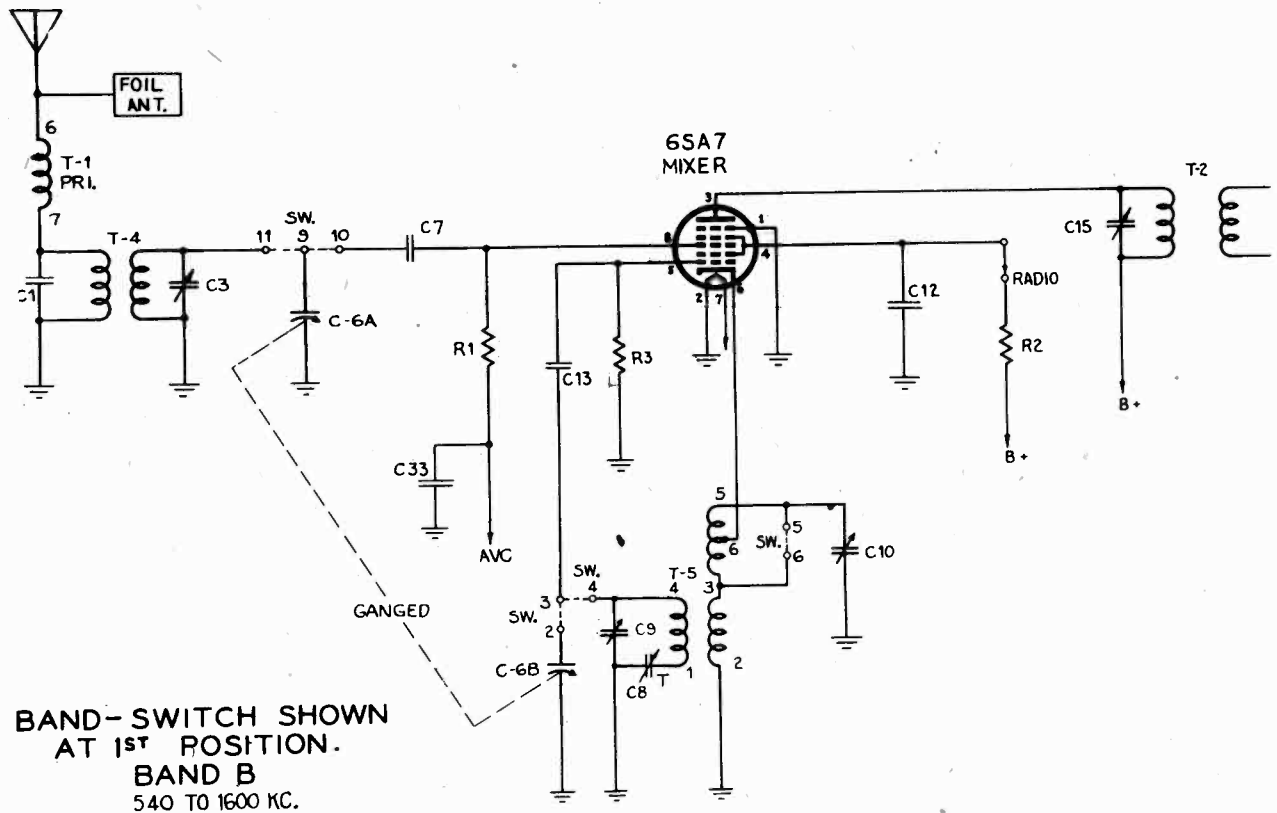


STANDARD 100A SOCKET SYMBOLS
 G - Grid Plate
 C - Control Grid
 G1 - Control Grid
 G2 - Screen Grid
 G3 - Suppressor Grid
 P - Plate
 S - Signal Input
 A - Antenna

LINE VOLTAGE 117 VOLTS A.C.
 NO SIGNAL INPUT
 TUNING INDICATED BY 100
 500 SCREEN VOLTAGE 500
 ON 100 VOLT SCALE

A76-2063A

PHILLIPS PETROLEUM CO.



MODEL 3-11A

PHILLIPS PETROLEUM CO.

47X163	C-10, C-21	C-23, 47 mmf	Moulded
	C-20	Part of T-3 (2nd I-F Coil Assembly)	
47X471	C-22	68 mmf	Moulded
D61403	C-24	.04 mf	400 V Tubular
D66502	C-25	.005 mf	400 V Tubular
D67104	C-26	.10 mf	400 V Tubular
D64253	C-27	.033 mf	400 V Tubular
D66103	C-28	.004 mf	400 V Tubular
D66103	C-29	.01 mf	400 V Tubular
45X346	C-30A	40 mf	450 V 1/3 Section
	C-30B	40 mf	450 V 1/3 Section
47X505	C-30C	40 mf	25 V Electrolytic
B64503	C-32	470 mf	Moulded
B64503	C-33	.05 mf	Moulded
47X176	C-34	100 mmf	Moulded

RESISTORS

B85225	R-1	R-7	2.2 meg.	0.5 Carbon
B84393	R-2	R-4	39 K	1.0 Carbon
B84393	R-3	R-3	33 K	0.5 Carbon
B85222	R-5	220Ω	1 meg.	0.5 Carbon
B85105	R-6	1 meg.	0.5 Carbon	
B84723	R-8	47 K	0.5 Carbon	
B84723	R-9	47 K	0.5 Carbon	
36X354	R-10	500 K	Volume Control and Line Switch	
B85106	R-11	10 meg.	0.5 Carbon	
B85474	R-12	R-16	.470 K	0.5 Carbon
B84333	R-13	33 K	0.5 Carbon	
B84623	R-14	82 K	0.5 Carbon	
40X275	R-15	3.0 meg	Telephone and Radio Phone Switch	
C84271	R-17	270	1.0 Carbon	
43X213	R-18	2.0	0.5 Wire Wound	
D84182	R-19	.000	2.0 Carbon	

DIAL AND DRIVE ASSEMBLY

26A411	Dial Bracket Assembly Complete with Dial, Background and Spacers
20X329	Rubber Grommet
19X192	Cond. Cushion Stud
15X230	Drive Shaft
58X280	Washer (For Drive Shaft)
28X113	58" Drive Cord (18 lb. test)
43X213	Drive Cord Tension Spring
7A205	Pilot Light Socket Assembly
	No. 47 Pilot Light

SUBSTITUTE REPLACEMENT PARTS

These are used on some receivers only. Check part number on part before ordering and order part originally used in receiver. *25X1539 Radio-Photo Switch Lever (when 40X280 is used) *2A161 D.P.D.T. Switch (when 40X280 is used) †12A459 6" P.M. Speaker Complete with Output Transformer (substitute for 12A442)

ALIGNMENT PROCEDURE

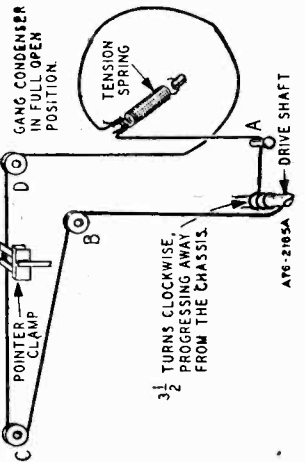
The following equipment is required for alignment:
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output indicating Meter—Non Metallic Screw-driver.
Dummy Antennas—.1 mf., 100 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY CONNECTION SETTING	DUMMY ANTENNA SETTING	CONDENSER SETTING	ADJUST. TRIMMERS TO MAXIMUM
I.F. RANGE B	Grid of 6SA7 Pin 8	B Range	2nd I-F. (C20) & (C21) I.F. (C18) & (C11)
15,600 KC	Antenna Lead	B Range	Turn Rotor to Full Open Oscillator Range B (C9)
14,000 KC	Antenna Lead	B Range	Turn Rotor to Max. Tune Output
1400 KC	Antenna Lead	B Range	Set Pointer to 1400 KC (See Note A)
600 KC	Antenna Lead	B Range	Tune Rotor to Max. Output
Repeat above steps at 1620 and 600 KC until readjusting the oscillator Range B Trimmer (C9) causes no further improvement of output.			
RANGE D	Antenna Lead	D Range	Turn Rotor to Full Open Oscillator Range D (C10)
14,000 KC	Antenna Lead	D Range	Tune Rotor to Max. Output
LOOP RANGE B	Reassemble chassis in cabinet.	B Range	Tune Rotor to Max. Output

NOTE A—Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord. NOTE B—Turn Rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

REPLACEMENT PARTS LIST

TRANSFORMERS AND COILS	CAPACITORS
9A1812 T-1 "D" Range Antenna Coil Assembly	47X445 C-1 270 mmf Moulded
9A1814 T-2 1st I-F Coil Assembly	17A164 C-2 5-50 mmf Trimmer
9A1815 T-3 2nd I-F Coil Assembly	17A123 C-3 1.0-12 mmf Trimmer
26A417 T-4 "B" Range Loop Antenna Assembly	47X473 C-4 47 mmf Silvered Mica
9A1813 T-5 "B" Range and "D" Range Oscillator Coil Assembly	47X474 C-5 360 mmf Silvered Mica
53X282 T-6 117 Volt 60 Cycle Standard Power Transformer	14A184 C-6A, C-6B Gang Capacitor with Drive
53X283 T-6 117 Volt 25 Cycle Standard Power Transformer	B65501 C-7 40005 mf 200 V Tubular
53X284 T-6 117-234 Volt 40-60 Cycle, Universal Power Transformer (See Miscellaneous)	17A155 C-8 350-430 mmf Trimmer
	17A109 C-9 C-10 2.5-35 mmf Dual Trimmer
	47X472 C-11 40 mmf Silvered Mica
	D66403 C-12 C-18 .04 mf 400 V Tubular
	47X466 C-13 68 mmf Moulded
	47X461 C-14 C-15 86 mmf Silvered Mica
	C-16 Part of T-2 (1st I-F Coil Assembly)

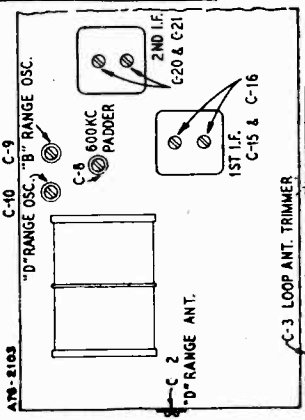


DRIVE CORD REPLACEMENT

The drive cord may be replaced as shown in the accompanying illustration. For this purpose use a 58" piece of cord. After installing the cord, stretch the tension spring before fastening the free end of the string.

SPECIFICATIONS

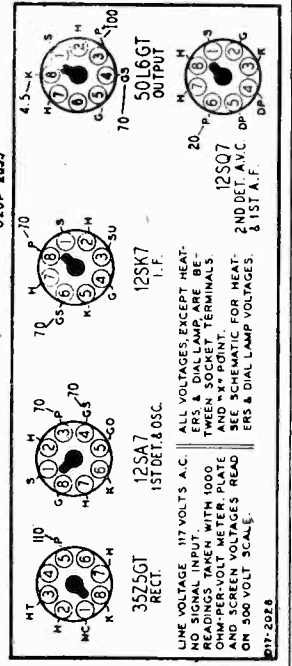
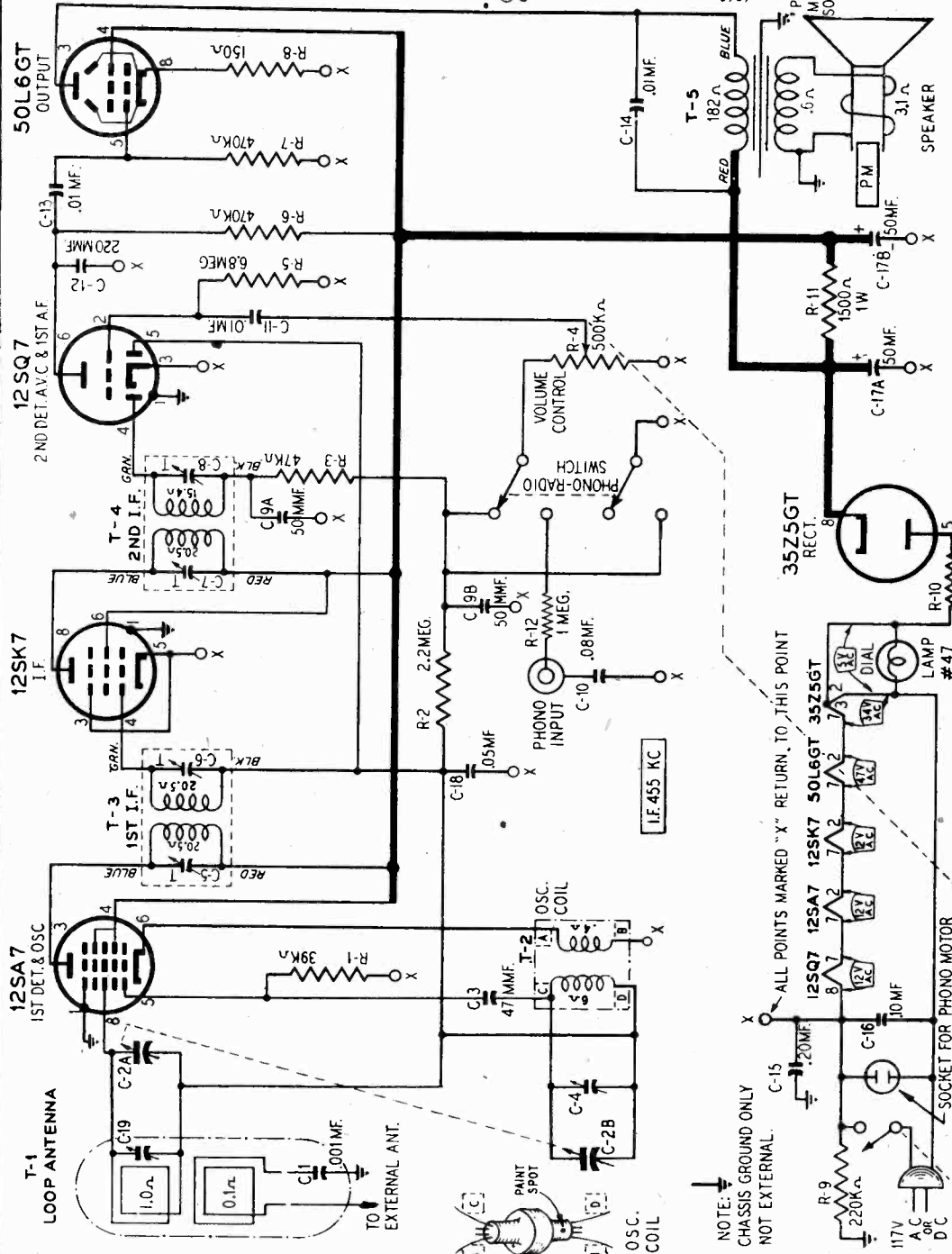
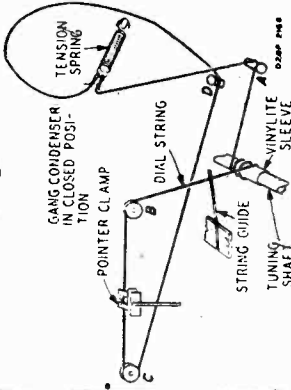
- Speaker.....6" PM Dynamic
- Intermediate Frequency.....455 KC
- Selectivity.....40 KC Broad at 1000 Times Signal
- Sensitivity (For 0.5 Watt Output, with External Antenna)
 - B Range.....9 Microvolts Av.
 - D Range.....20 Microvolts Av.
- Power Consumption (at 117 Volts AC).....40 Watts (normal)
- Power Output.....4 Watts Maximum
- Tuning Frequency Range.....2.3 Watts, 10% Harmonics
- B Range.....540-1600 Kilocycles
- D Range.....9-15.5 Megacycles



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DRIVE CORD REPLACEMENT

Turn the large drive pulley to the maximum counterclockwise position. Use a new 57 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 1/4 turns counterclockwise around the tuning shaft with the turns progressing away from the chassis. After string is installed, stretch the tension spring and tie free end of cord to spring. Cut off excess string.



LINE VOLTAGE 117 VOLTS A.C. ALL VOLTAGES EXCEPT HEATERS & DIAL LAMP ARE BE-
TWEEN SOCKET TERMINALS.
NO SIGNAL INPUT WITH 100Ω
GAIN MEASUREMENTS.
AND SCREEN VOLTAGES READ
ON 500 VOLT SCALE.
SEE SCHEMATIC FOR HEAT-
ERS & DIAL LAMP VOLTAGES.

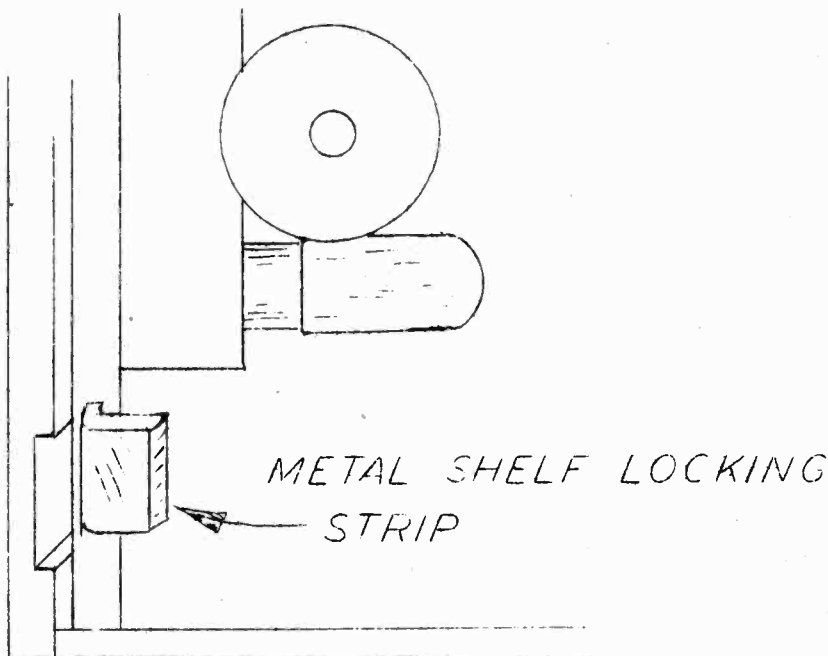
- Tuning Frequency Range.....540 to 1600 KC
- Power Consumption.....30 watts (At 117 volts AC)
-50 watts Phono Operating
- Power Output.....1.5 watt maximum, .9 watt (10% harmonics)
- Selectivity.....55 KC Broad at 1000 Times Signal
- Intermediate Frequency.....455 KC
- Speaker.....5" PM Dynamic
- Sensitivity (for .05 watt output).....25 microvolts average

MODEL 3-29A

PHILLIPS PETROLEUM CO.

REMOVAL OF RADIO CHASSIS

To remove the radio chassis for servicing, pull off the three control knobs, disconnect the cables and wires leading to the loud speaker, built-in antenna, etc., then withdraw the metal shelf locking strip from near the lower corner of the chassis. Swing the bottom of the chassis and the mounting shelf out from the cabinet until the top of the shelf is disengaged. The unit may then be withdrawn from the cabinet.



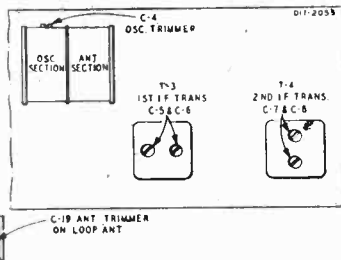
ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments. Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

Allow Chassis and Signal Generator to "Heat Up" for several Minutes. Output Indicating Meter: Non-Metallic Screw-driver.

The equipment in column at right is required for aligning: Dummy Antennas—.1 mf., 50 mmf.

FREQUENCY SETTING	SIGNAL GENERATOR ANTENNA CONNECTION	GRDUND CONNECTION	DUMMY ANTENNA	GANG CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
455 KC	Control Grid 12SK7—I.F.	Point "X" 12SK7—I.F. Prong No. 3	.1 mf.	Turn Rotor to Full Open	2nd I.F. (C7) & (C8)
455 KC	Control Grid 12SA7—1st Det.	Same As Above	.1 mf.	Turn Rotor to Full Open	1st I.F. (C5) & (C6)
1620 KC	Control Grid 12SA7—1st Det.	Same As Above	.1 mf.	Turn Rotor to Full Open	Oscillator (C-4)
1400 KC	External Antenna Clip on Loop	Chassis	50 mmf.	Turn Dial to 1400 KC	Antenna (C-19)



REPLACEMENT PARTS LIST

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.

MISCELLANEOUS

- 12A438 5" P.M. Speaker Cone and voice coil assembly (specify part number and letters stamped on speaker)
- 3A303 Tube socket octal (8 prong) moulded.
- 3A305 Phono socket
- 3A304 Phono motor socket
- 10A297 Knob (volume control, tuning)
- 10A584 Knob (Radio-Phono)
- 2A35R Radio-Phono switch
- 13X32R Line cord and plug assembly

TRANSFORMERS AND COILS

- 26A113 T-1 "B" Range Loop Antenna Assembly
- 9A1805 T-2 Oscillator Coil Assembly
- 9A1808 T-3 1st I-F Transformer and Can Assembly
- 9A1809 T-4 2nd I-F Transformer and Can Assembly
- 51X122 T-5 Output Transformer

CAPACITORS

- D66102 C-1 .001 mf 400 V Tubular
- 26A102 C-2A, C-2B Gang Capacitor assembly

- 47X415 C-3 47 mmf Moulded
- C-4 Part of C-2 (Gang Capacitor)
- C-5, C-6 Part of T-3 (1st I-F Transformer)
- C-7, C-8 Part of T-4 (2nd I-F Transformer)
- 47X112 C-9A, C-9B 50 mmf Dual Mica
- B66903 C-10 .08 mf 200 V Tubular
- B66103 C-11, C-13, C-14 .01 mf 200 V Tubular
- 47X468 C-12 220 mmf Moulded
- B67204 C-15 .20 mf 200 V Tubular
- D66104 C-16 .10 mf 400 V Tubular
- 45X341 C-17A 50 mf 150 V Dry Electrolytic
- B66503 C-17B 50 mf 150 V
- 17A123 C-18 .05 mf 200 V Tubular
- C-19 1.0-1.2 mmf Trimmer

RESISTORS

- B84393 R-1 39K 0.5 Carbon
- B85225 R-2 2.2 meg 0.5 Carbon
- B85473 R-3 47K 0.5 Carbon
- 36X352 R-4 500K Volume control and switch
- B85685 R-5 6.8 meg 0.5 Carbon
- B84474 R-6 470K 0.5 Carbon
- B85474 R-7 470K 0.5 Carbon
- B83151 R-8 150 0.5 Carbon
- B85224 R-9 220K 0.5 Carbon
- B84270 R-10 27 0.5 Carbon
- C85152 R-11 1500 1.0 Carbon

DIAL AND DRIVE ASSEMBLY

- 26A399 Dial Bracket Assembly Complete with Dial Background, Diffuser, Dial Clamps, Idler Pulleys and Spacers
- 5X21 Rubber Grommet
- 20X329 Cond. Cushion Stud capacitor

- 58X610 Dial
- 26X482 Drive Shaft
- 19X192 "C" Washer (For Drive Shaft)
- 19X62 Flat Washer (For Drive Shaft)
- 7A197 Pilot Light Socket Assembly No. 47 Pilot Light
- 15X150 57" Drive Cord (18 lb. test)
- 28X95 Pointer
- Drive Cord Tension spring

TYPE G-28A115 AUTOMATIC RECORD CHANGER PARTS

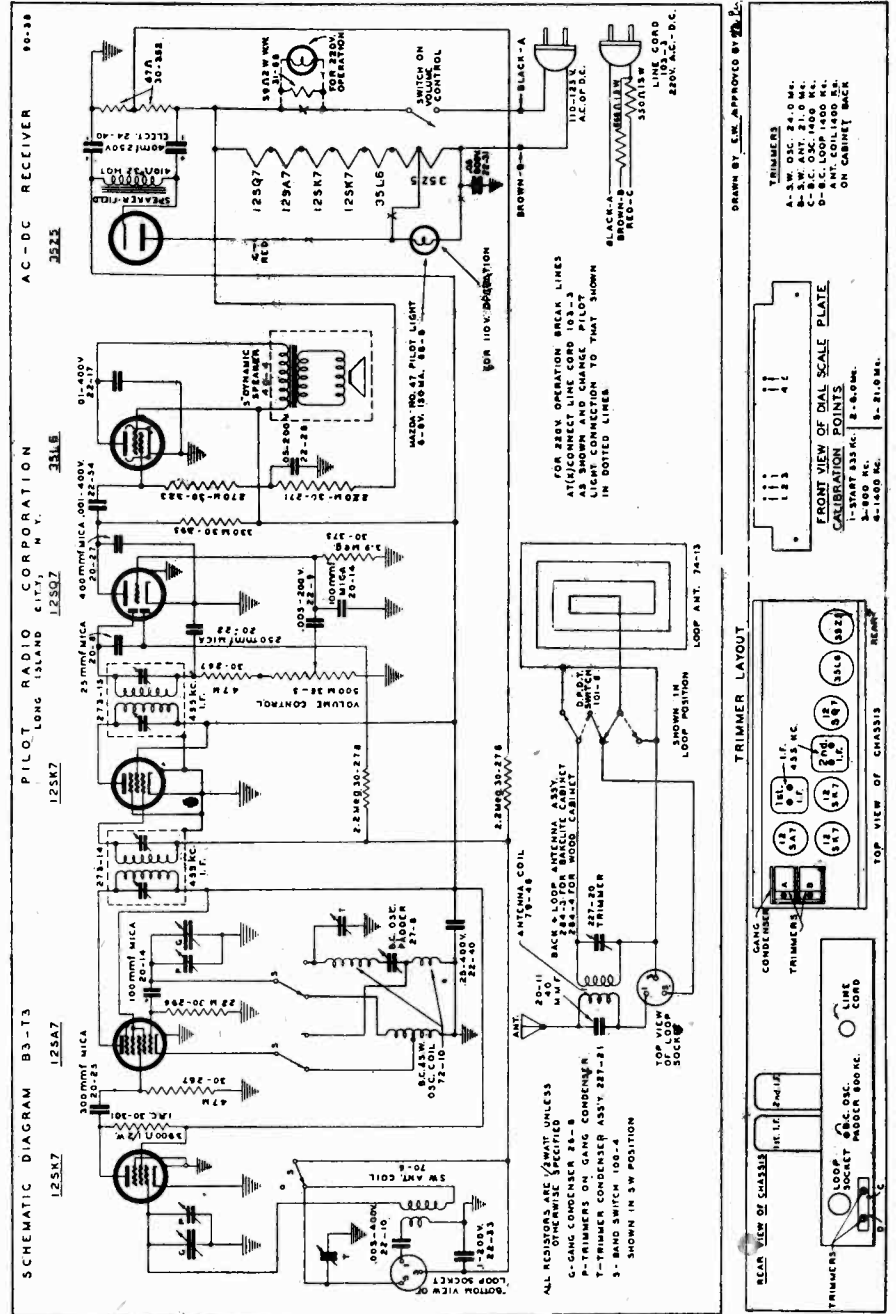
- G-30A71506 Bearing Assembly
- G-19A71535 Spindle Assembly
- G-58-71435 Single Button Control Switch
- G-26-70545 Drive Wheel
- G-33-A71196 Flexible Coupling Spring Assembly
- G-65-70566 Feed Cam Roller
- G-12-71406 Lift Pin
- G-33-71405 Counter Balance Spring
- G-33-71388 Finger Spring
- G-33-70582 Mounting Spring
- G-33-71316 Stop Lever Spring
- G-33-71173 Trip Lever Spring
- G-33-71205 Pul-in Spring
- G-33-71438 Trip Bar Spring
- G-33-71341 Record Feed Spring
- G-33-71342 Carrier Lever Spring
- G-59-71494 Index Spring
- G-66A71507 Turntable
- G-56-72092 Motor
- Pickup Arm Assembly (G.I. Model 205)
- Astatic L-75 Pickup Cartridge
- G-55-72021 Record Stabilizer Finger Needle, Permo No. 100

PILOT RADIO CORP.

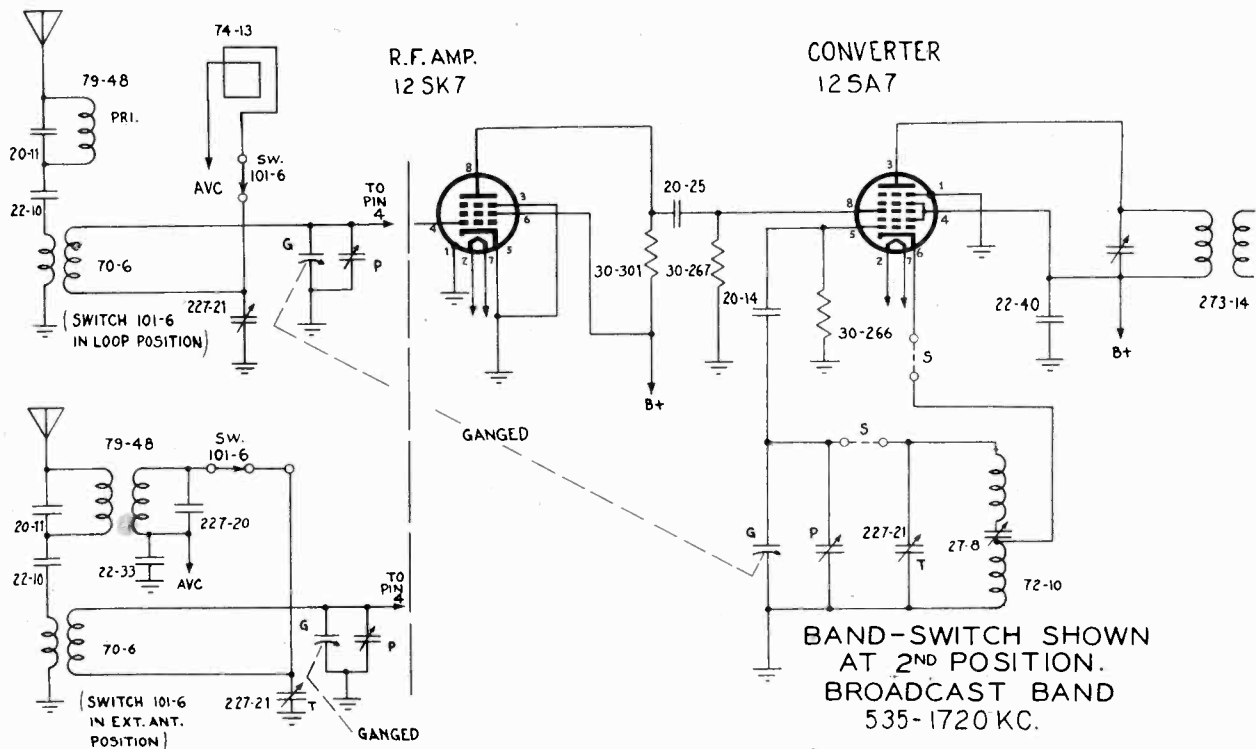
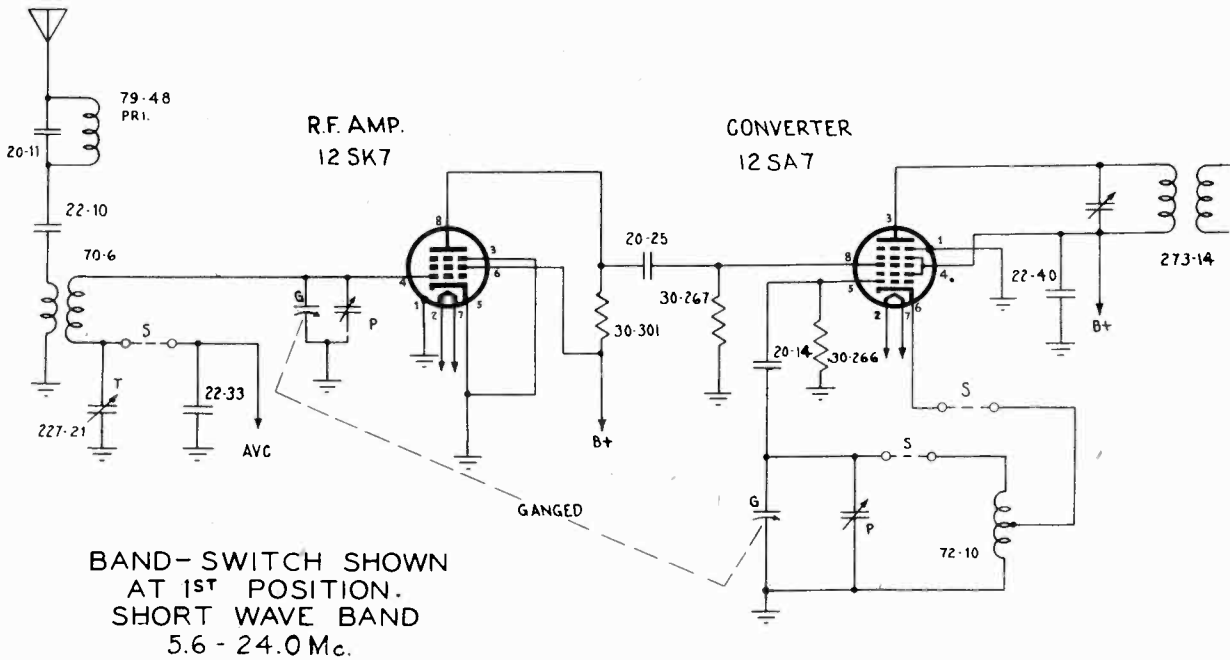
The screws for adjusting both the R.F. and I.F. amplifiers of this receiver, together with the frequencies at which they should be adjusted, are pictured in the diagram. Before aligning the I.F. amplifier, the generator must be connected to the grid of the 12SK7 R.F. tube through a .1 mfd. condenser. 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.

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.



PILOT RADIO CORP.



PILOT RADIO CORP.

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

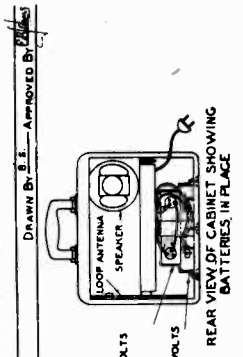
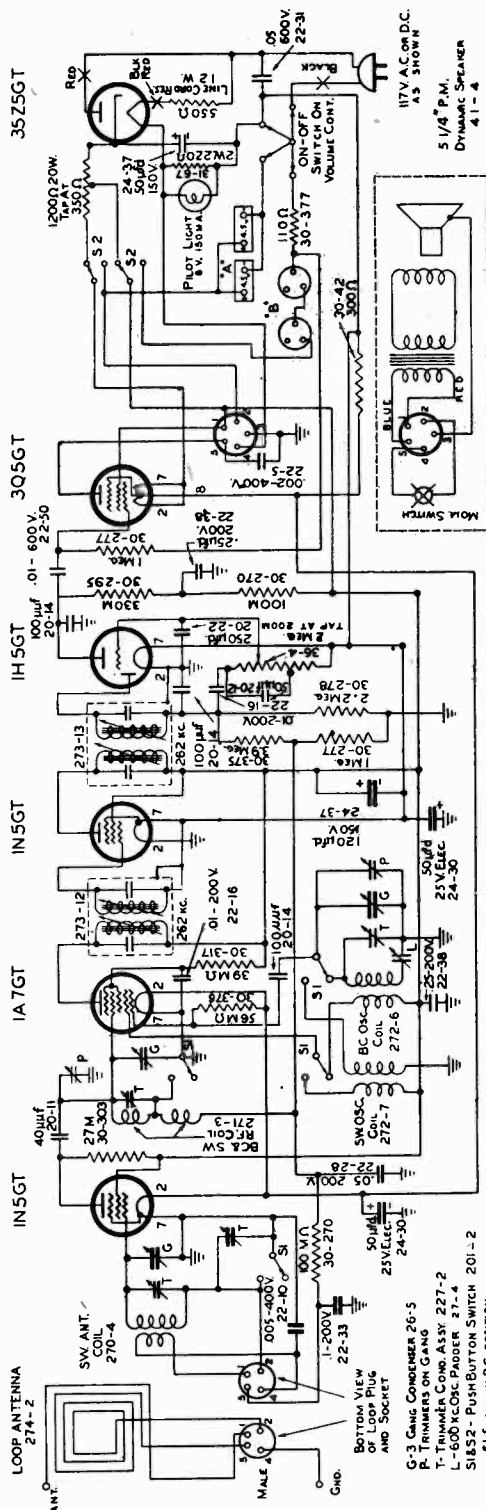
Remove the screws from the back and carefully lift off the back. When removing the batteries, first unscrew clamps, and then remove battery plugs. Be sure not to pull on the cables, but on the plugs themselves.

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

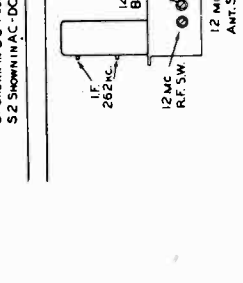
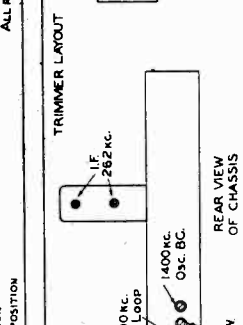
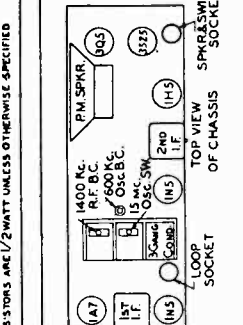
The blue and white cable, coming from the chassis, has two 2-prong plugs which are then plugged into the "A" batteries. The red and black cable has two 3-prong plugs, both of which are plugged into the "B" batteries.

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.

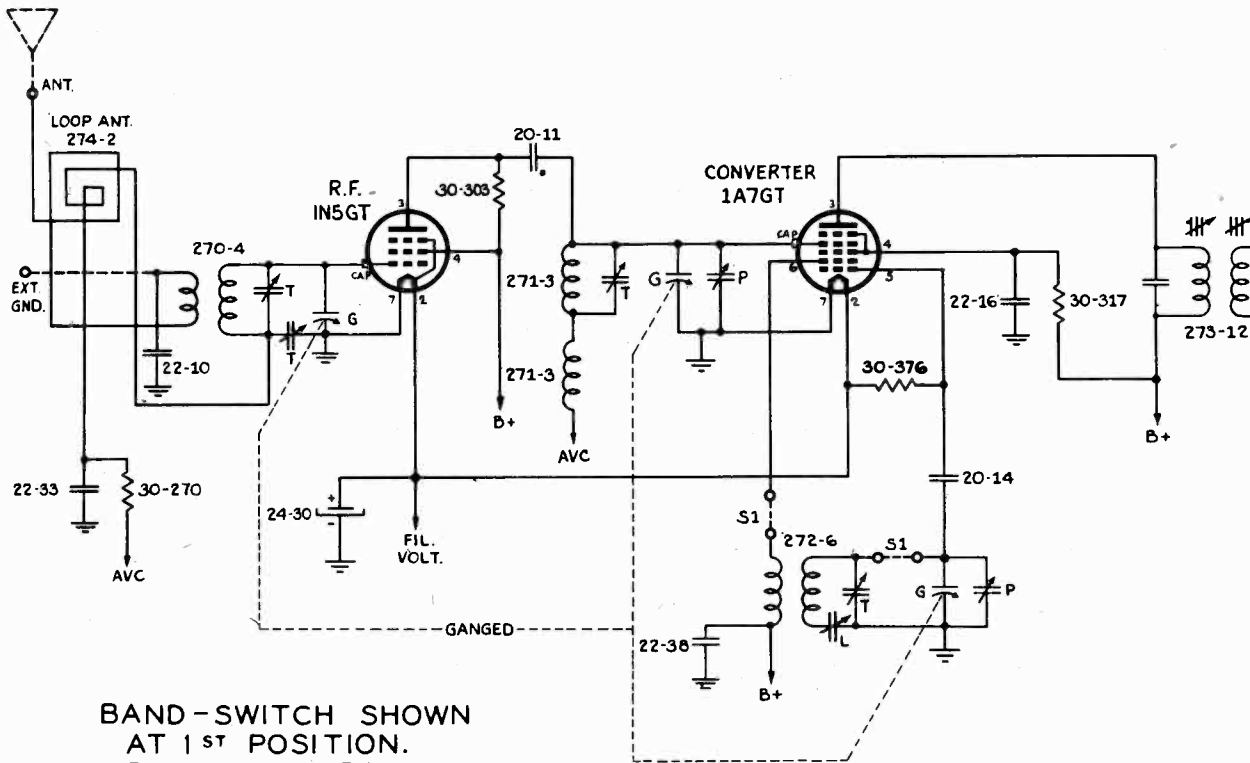


LINE	VALUE	RES.	W.	TYPE	CODE	RES.	W.	TYPE	CODE
1	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
2	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
3	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
4	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
5	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
6	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
7	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
8	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
9	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10
10	270	10	1/2	RES. <td>103-10</td> <td>100K</td> <td>1/2</td> <td>RES. <td>103-10</td> </td>	103-10	100K	1/2	RES. <td>103-10</td>	103-10

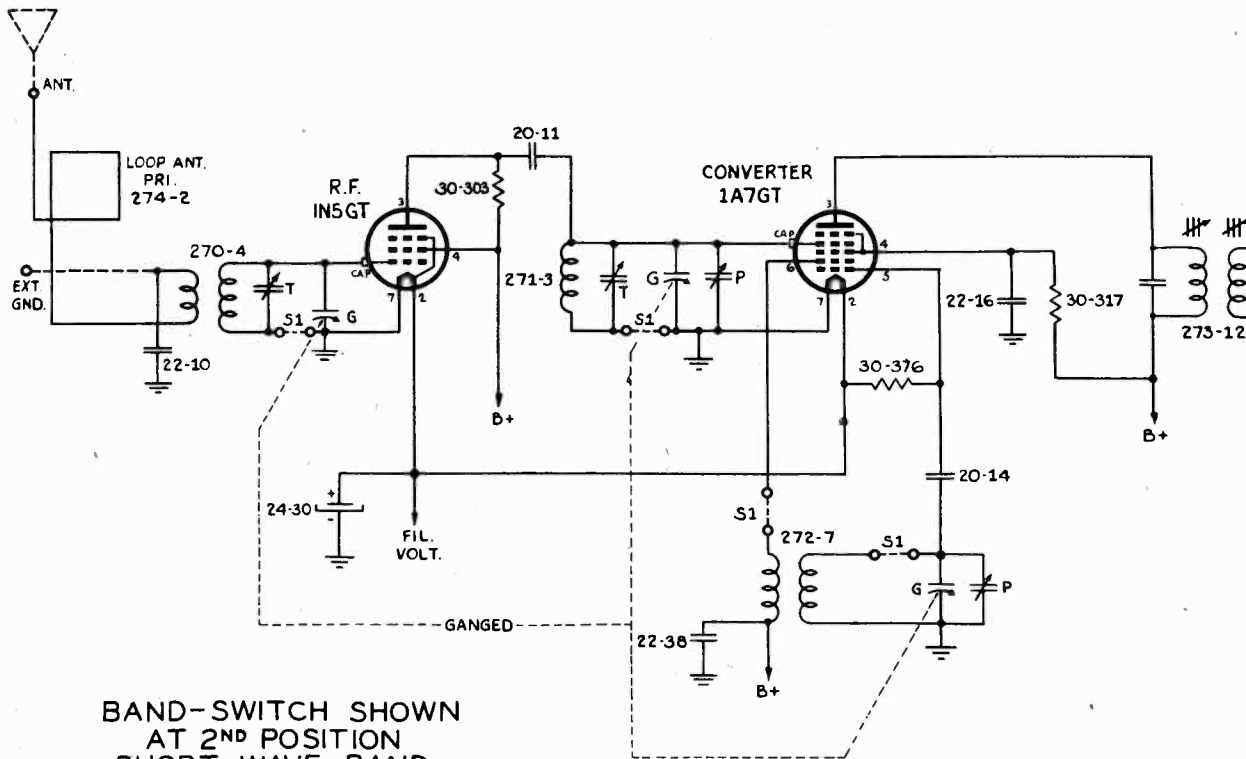


ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED

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BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND 535 - 1605 KC.



BAND-SWITCH SHOWN AT 2ND POSITION SHORT WAVE BAND 5.63 - 16.56 MC.

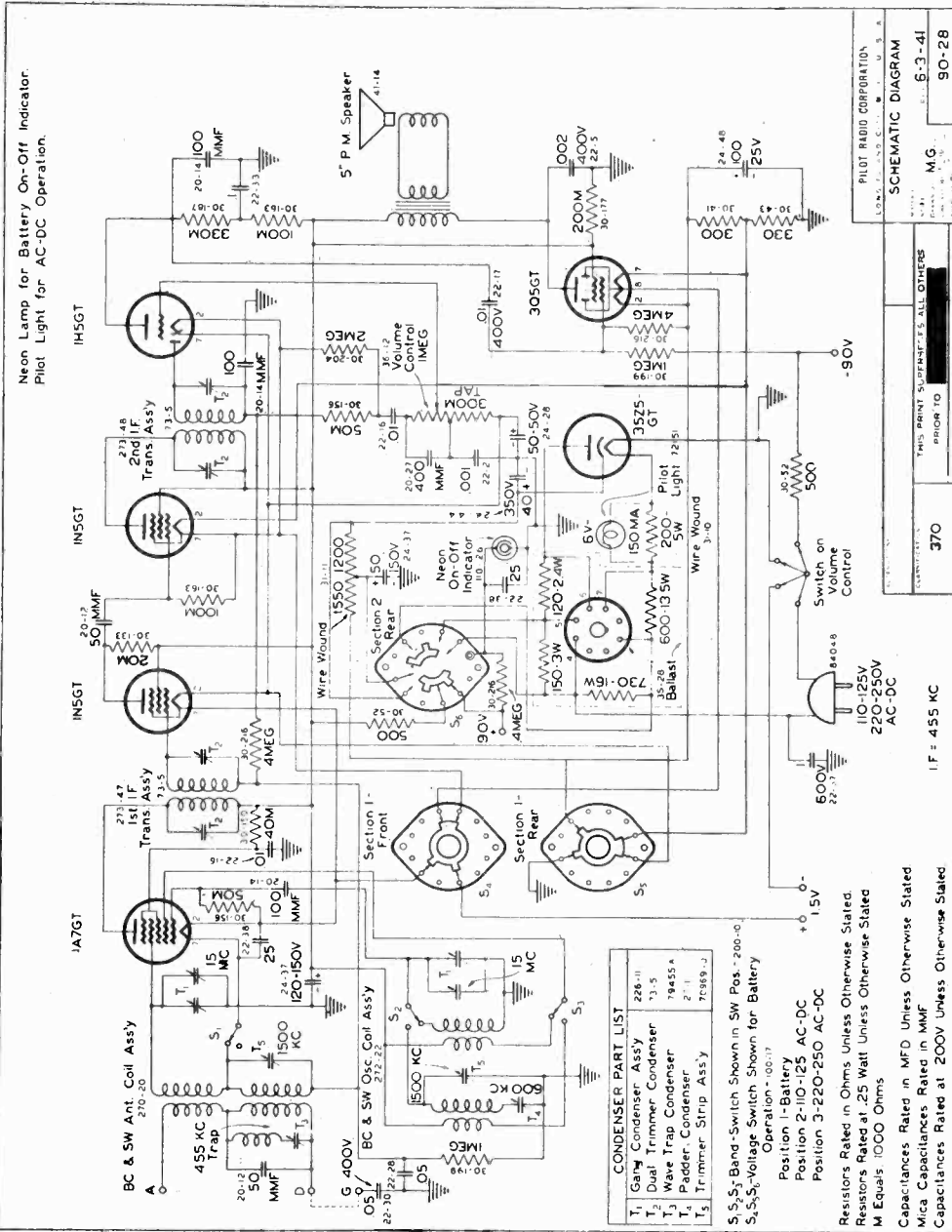
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In case battery packs, as listed below, are unavailable, separate batteries may be used by cutting off the plug and connecting the leads as follows:

- White 1.5 volts +
- Black 1.5 volts -
- Red 90 volts +
- Green 90 volts -

Battery packs that may be used:

- Eveready #748
- Ray-O-Vac #AB-82
- Burgess #17GD60
- Bond #0528



Broadcast Band 535 to 1720 Kc
Short Wave Band 5.7 to 18.7 Mc

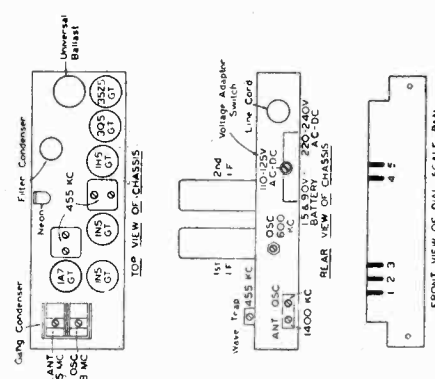
A battery beacon is provided to serve as a combination "ON" "OFF" and battery life indicator.

The battery beacon will flicker approximately once each second when the batteries are new. With the aging of the batteries, the rate of flickering and the brilliancy will be reduced.

End of useful battery life will occur when the battery beacon ceases to operate. Short period operation may be secured if the batteries are permitted long periods of rest after the end of the useful life occurs.

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 1A7GT tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the short wave band through a .400 ohm carbon resistor.



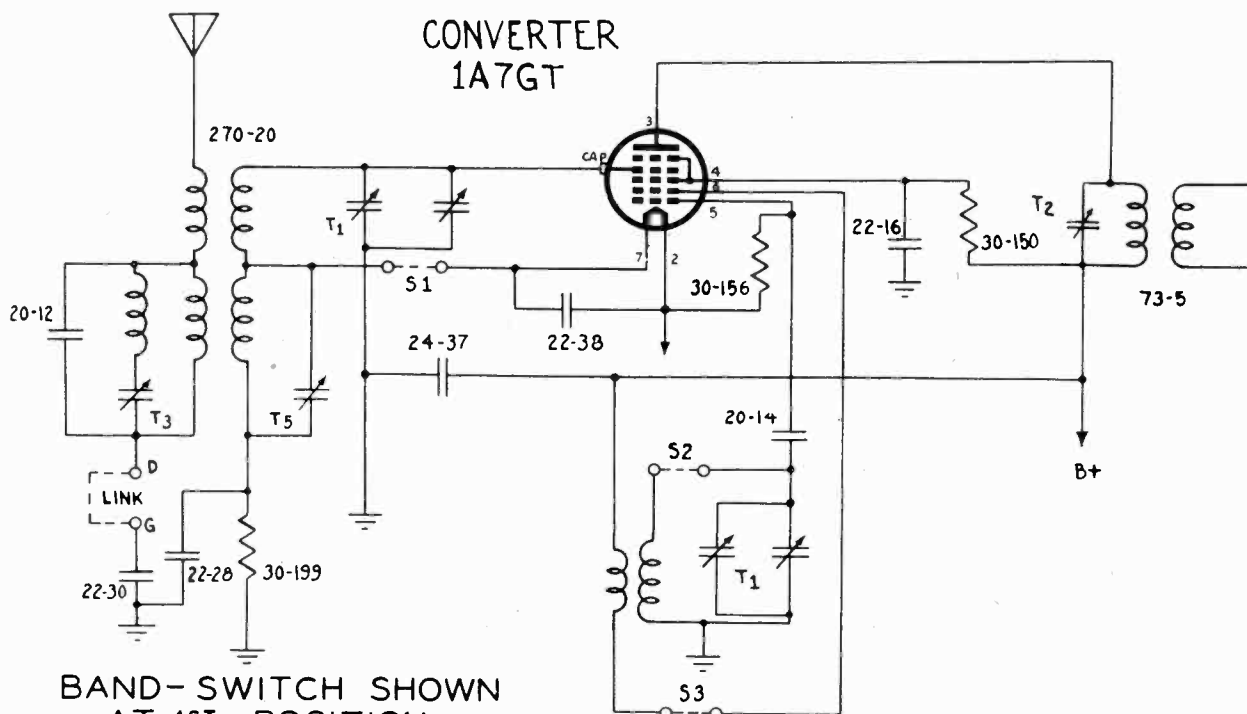
CONDENSER PART LIST

T ₁	Gain Condenser Assy	226-11
T ₂	Dual Trimmer Condenser	73-5
T ₃	Wave Trap Condenser	78455A
T ₄	Padder Condenser	2-11
T ₅	Trimmer Strip Assy	78389-J

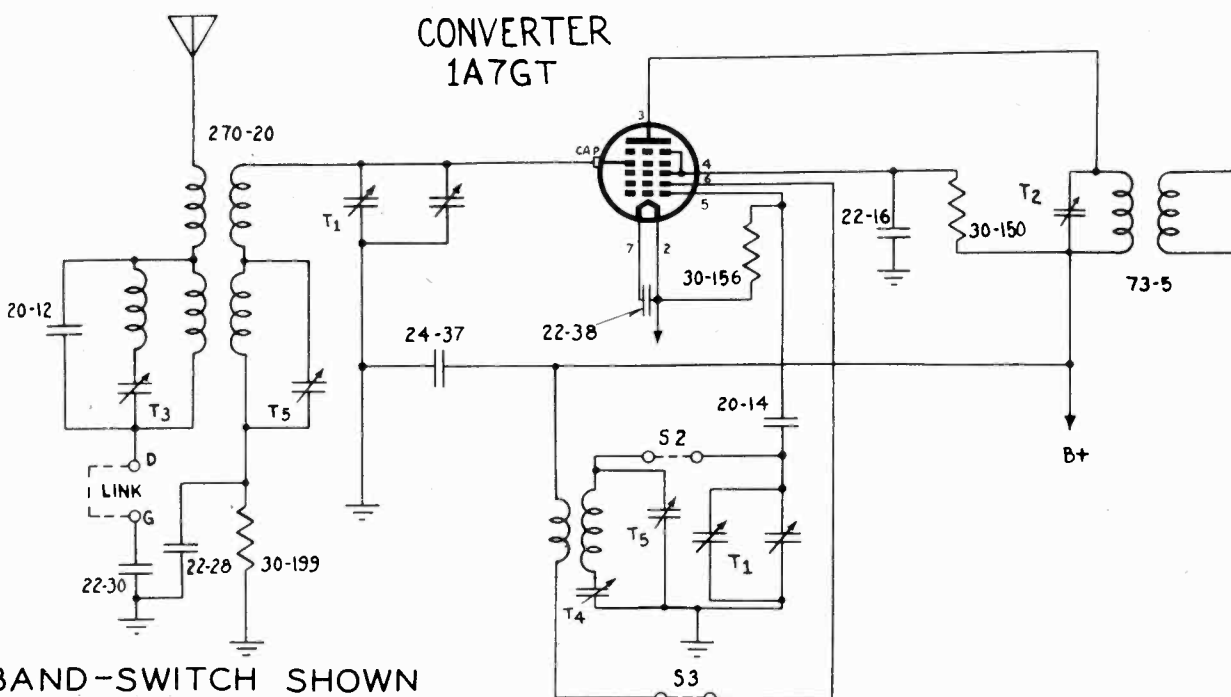
S₁S₂S₃ Band-Switch Shown in SW Pos. -200-0
S₁S₂S₃ Voltage-Switch Shown for Battery Operation -100-17
Position 1-110-125 AC-DC
Position 2-110-125 AC-DC
Position 3-220-250 AC-DC
Resistors Rated in Ohms Unless Otherwise Stated
Resistors Rated at .25 Watt Unless Otherwise Stated
M Equals 1000 Ohms
Capacitances Rated in MFD Unless Otherwise Stated
Capacitances Rated at 200V Unless Otherwise Stated

"clarified schematics"

PILOT RADIO CORP.



BAND-SWITCH SHOWN AT 1ST POSITION.
SHORT WAVE BAND
5.7 - 18.7 MC.

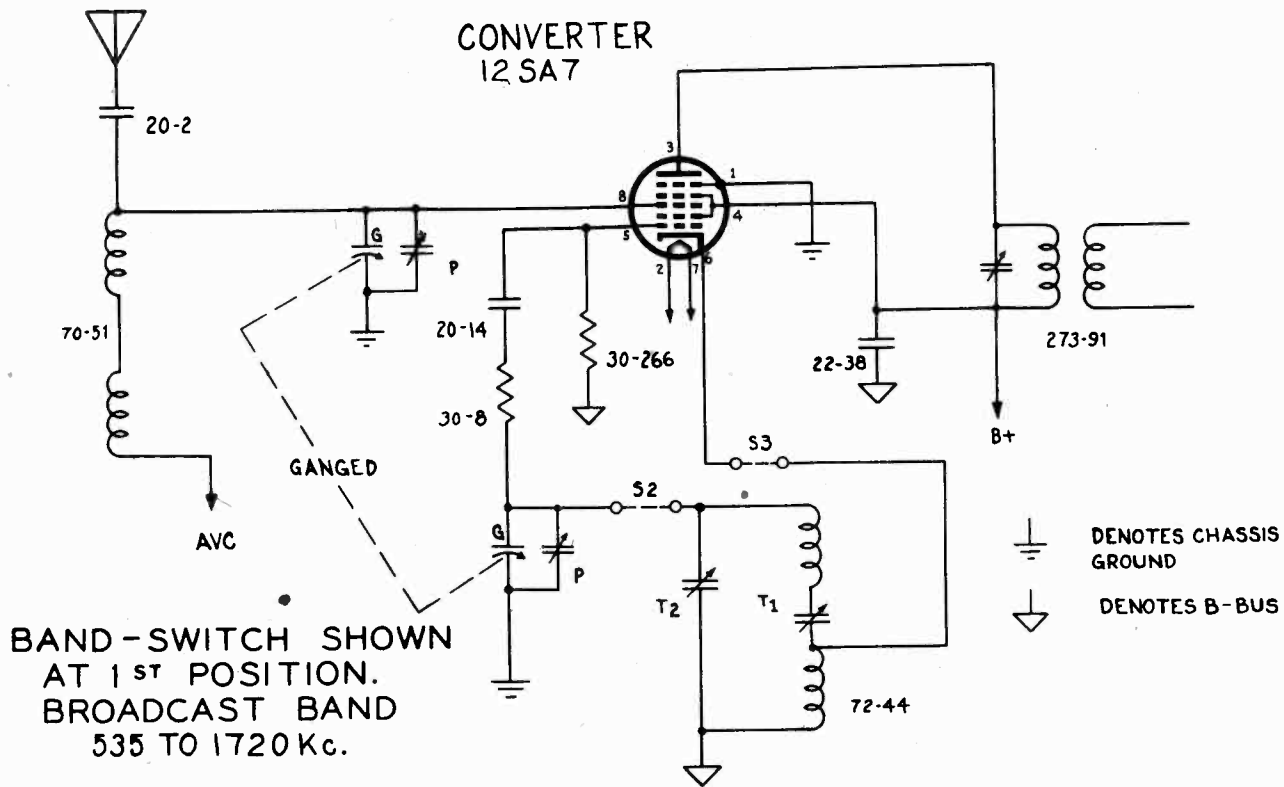


BAND-SWITCH SHOWN AT 2ND POSITION
BROADCAST BAND
535 - 1720 K.C.

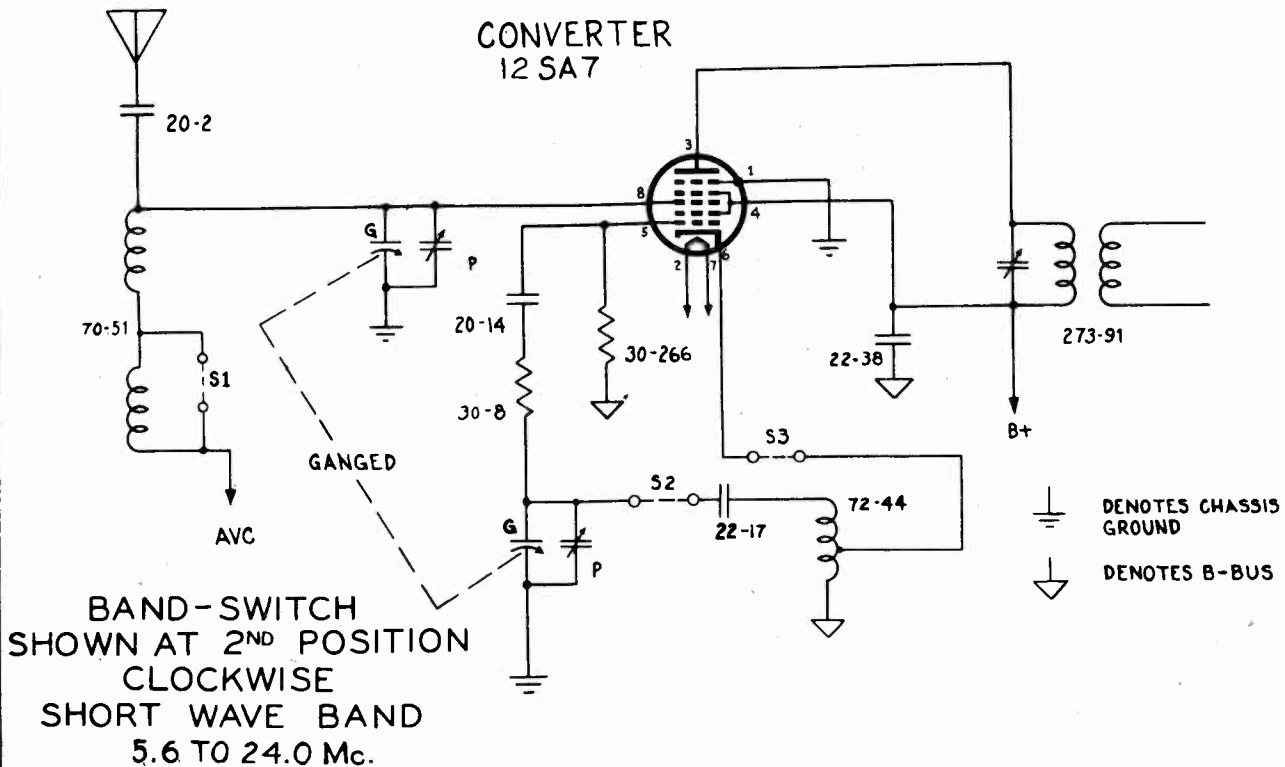
"clarified schematics"

PILOT RADIO CORP.

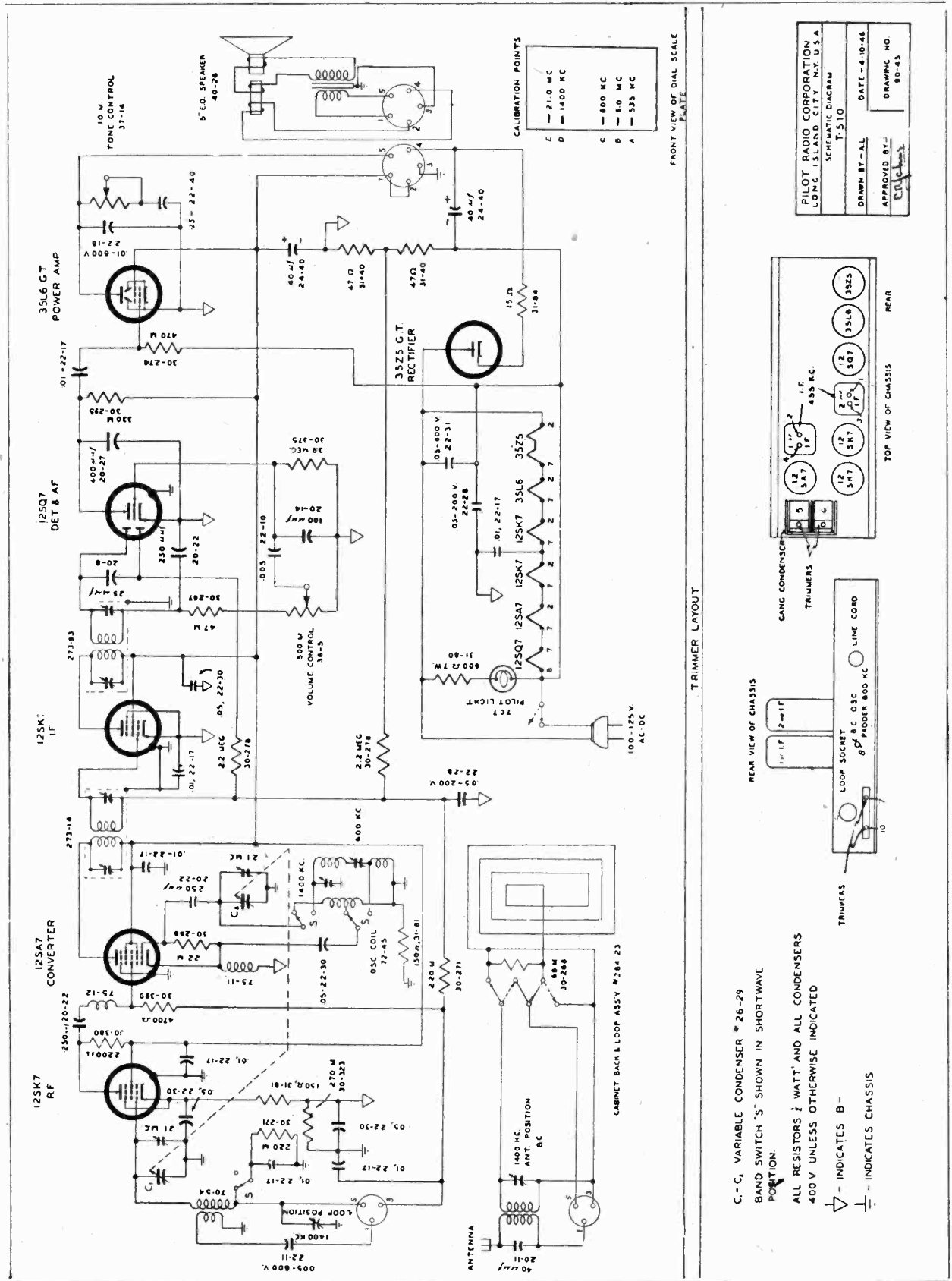
CONVERTER 12 SA7



CONVERTER 12 SA7

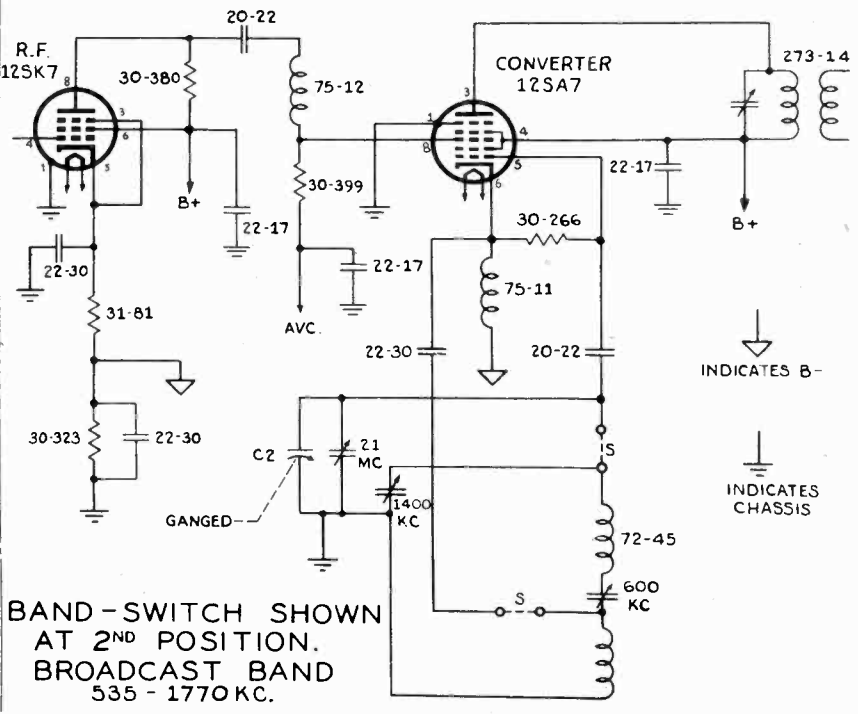
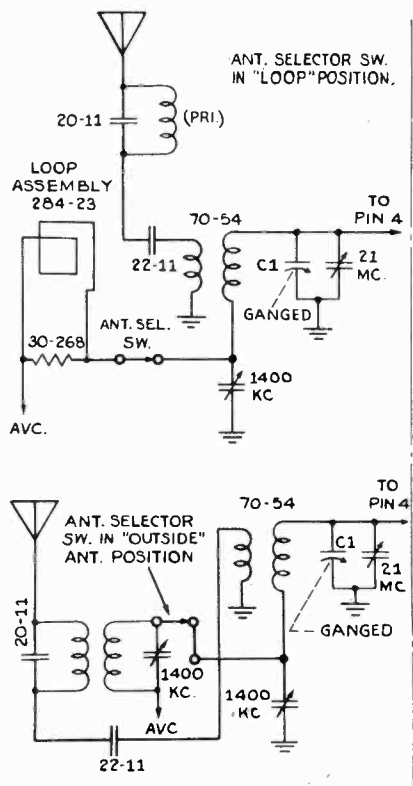
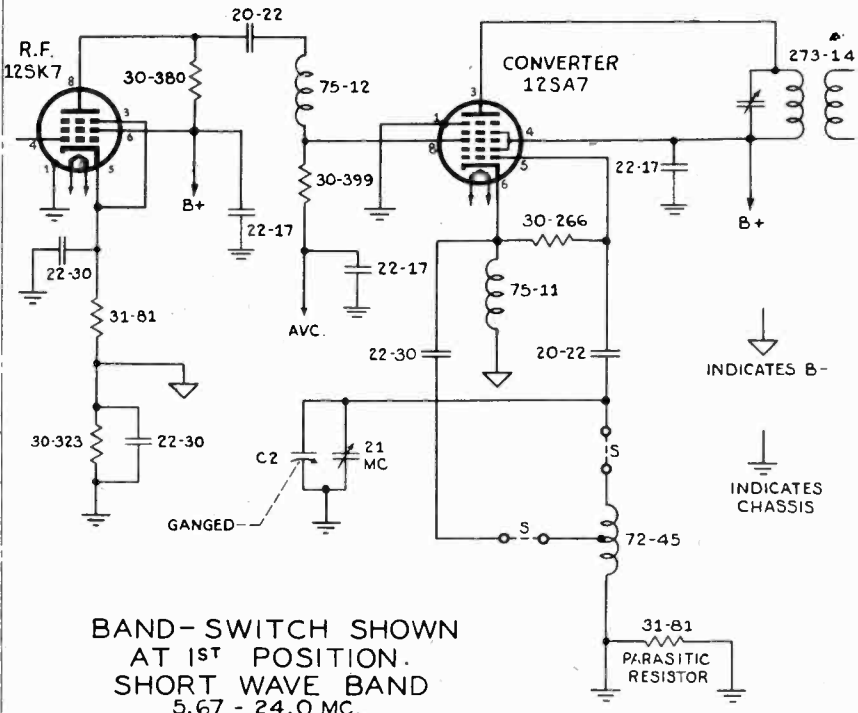
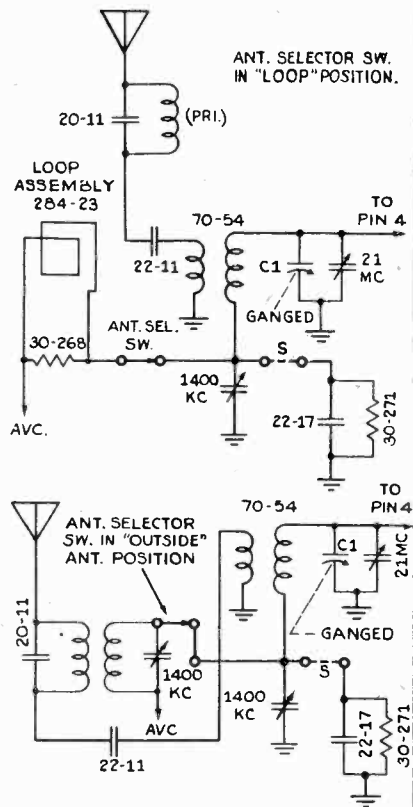


PILOT RADIO CORP.

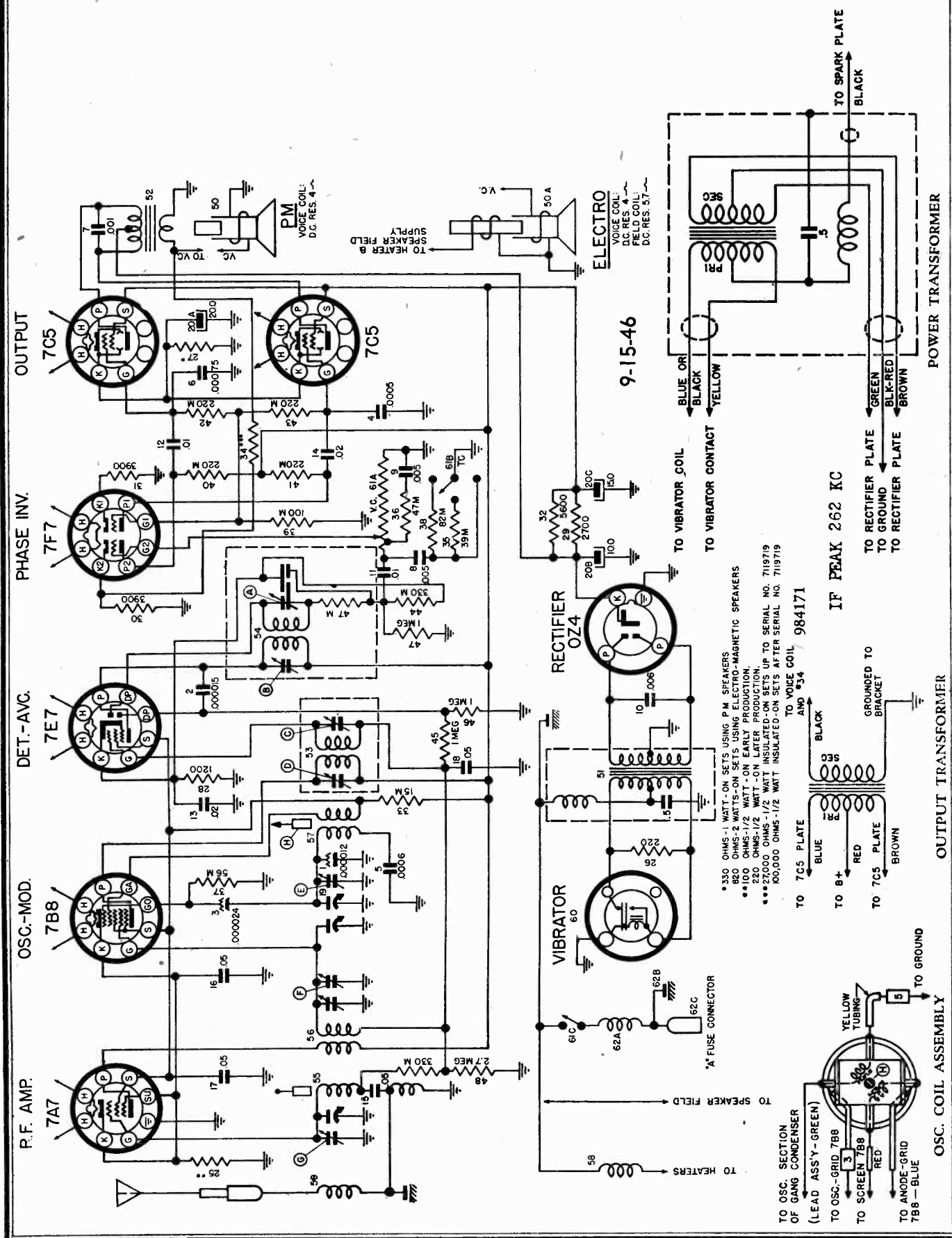


MODEL T-511

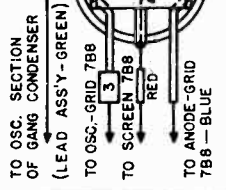
PILOT RADIO CORP.



PONTIAC DIV.-GENERAL MOTORS

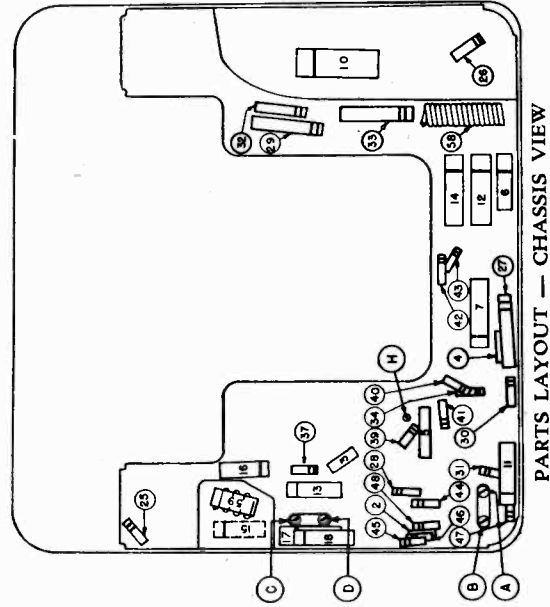
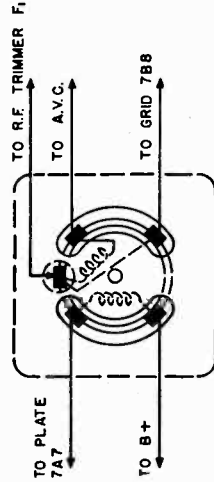
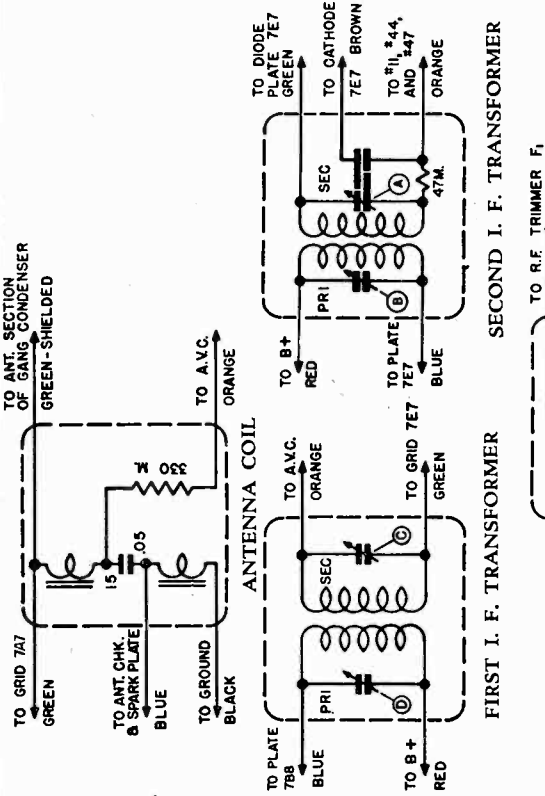


* 330 OHMS - 1 WATT - ON SETS USING P.M. SPEAKERS
 * 820 OHMS - 2 WATTS - ON SETS USING ELECTRO - MAGNETIC SPEAKERS
 * 100 OHMS - 1/2 WATT - ON EARLY PRODUCTION.
 * 220 OHMS - 1/2 WATT - ON LATER PRODUCTION.
 * 27000 OHMS - 1/2 WATT INSULATED - ON SETS UP TO SERIAL NO. 7119719
 * 60,000 OHMS - 1/2 WATT INSULATED - ON SETS AFTER SERIAL NO. 7119719



MODEL 984171

PONTIAC DIV.-GENERAL MOTORS



PARTS LAYOUT -- CHASSIS VIEW

ALIGNMENT PROCEDURE

Volume Control Maximum; Tone Control on Treble.

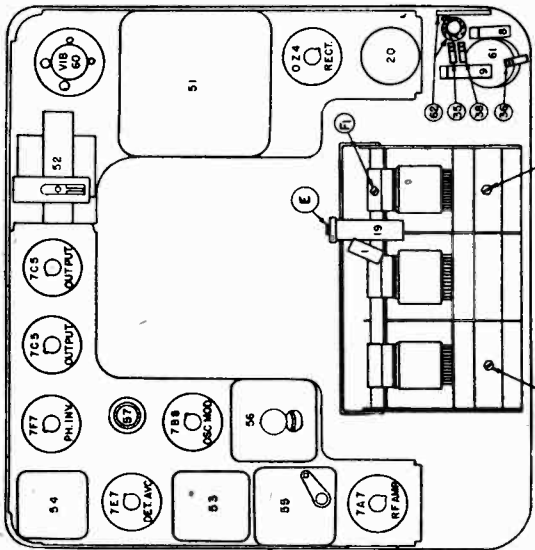
Signal generator output minimum for satisfactory output indication.

Series Condenser Or Dummy-Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 Mfd.	Grid Side of R. F. Trimmer F1	262 K. C.	A B C D
.000070 Mfd.	Antenna Connector	1615 K. C.	E
.000070 Mfd.	Antenna Connector	1430 K. C.	F G
.000070 Mfd.	Antenna Connector	600 K. C.	H
.000070 Mfd.	Antenna Connector	1615 K. C.	E
.000070 Mfd.	Antenna Connector	1430 K. C.	F G

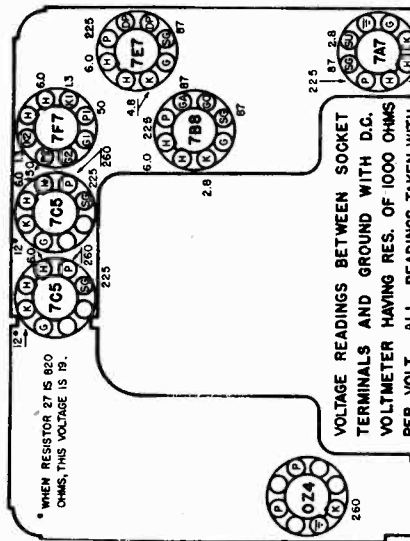
Adjust trimmer G to match car antenna (1430 K. C.) when radio is installed.

SPECIAL INSTRUCTIONS

Rock gang condenser back and forth through signal during 600 K. C. adjustment of screw H.



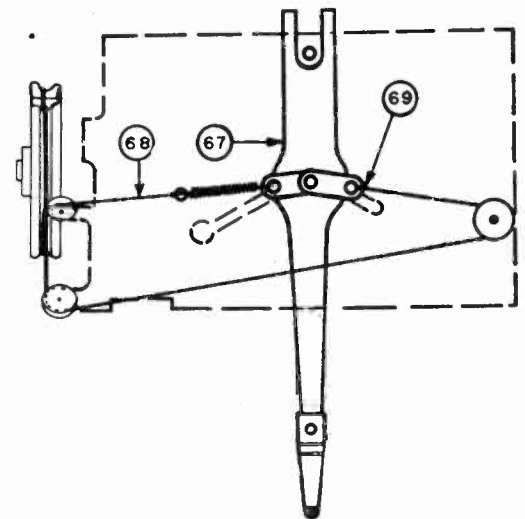
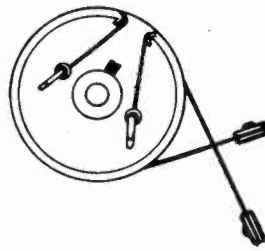
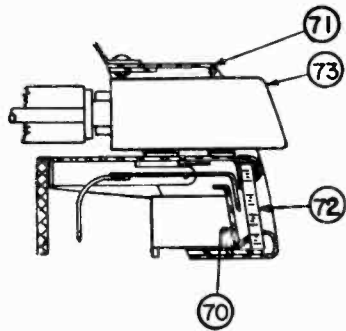
PARTS LAYOUT -- TUBE VIEW



VOLTAGE READINGS BETWEEN SOCKET TERMINALS AND GROUND WITH D.C. VOLTMETER HAVING RES. OF 1000 OHMS PER VOLT. ALL READINGS TAKEN WITH 6.0 VOLTS ACROSS HEATERS. CURRENT DRAIN WITH SPEAKER AND DIAL LIGHT 71 AMPERES. "B" SUPPLY DRAIN 55 M. A. TOLERANCE ON VOLTAGES ± 10%.

TUBE SOCKET VOLTAGE CHART

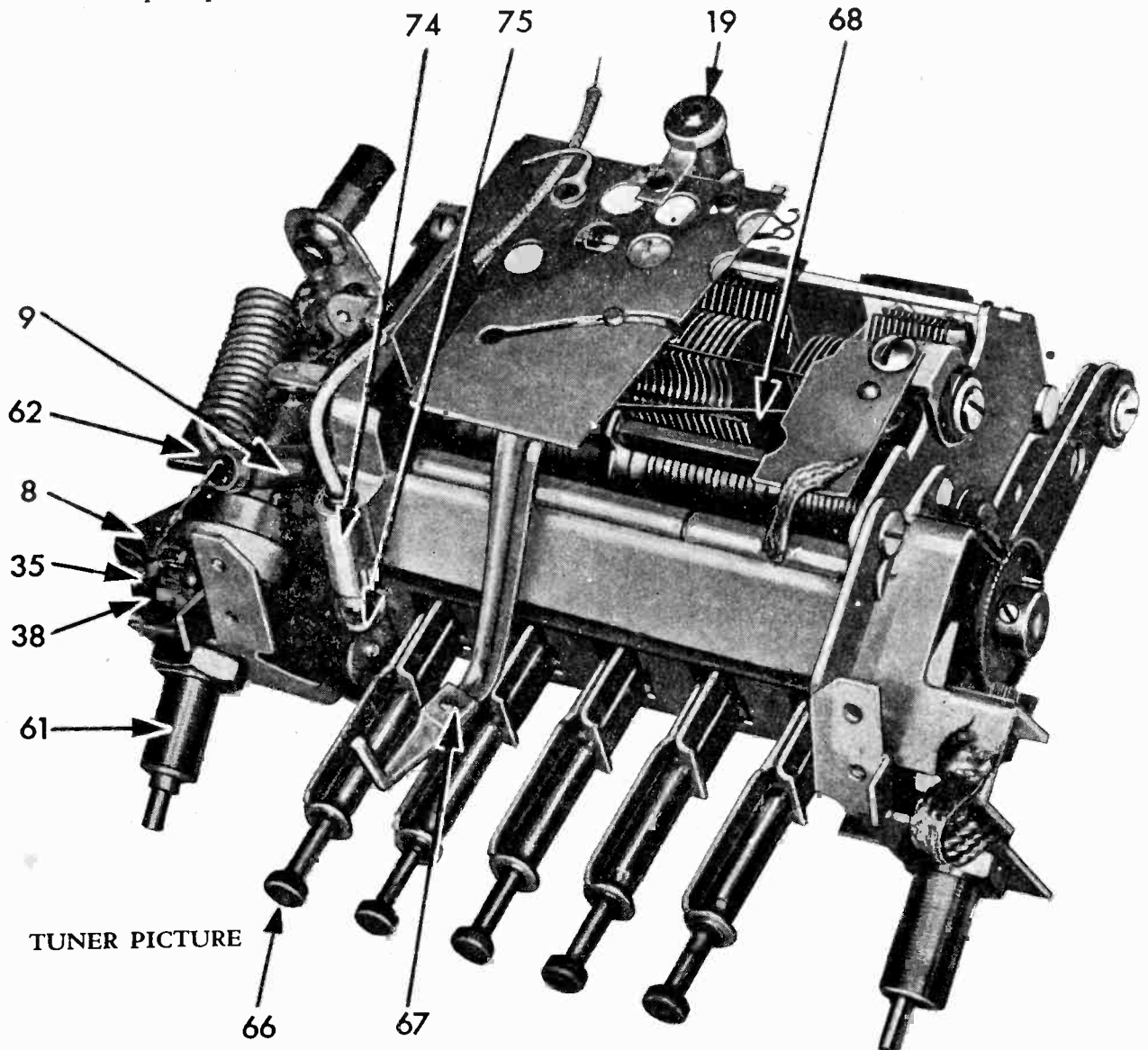
PONTIAC DIV.-GENERAL MOTORS



ESCUTCHEON CROSS SECTION
PUSH BUTTON SET-UP

Release holding spring in bottom of button, pull button off. Loosen reset screw, and tune in desired station while holding reset screw in tight. Release and tighten reset screw. Replace push button.

POINTER CORD ASSEMBLY



MODEL 984171

PONTIAC DIV.-GENERAL MOTORS

Illus. No.	Service Part No.	Description	Illus. No.	Service Part No.	Description
CONDENSERS					
1	7242450	.000012 Mfd.—Compensating (Included in Tuner Assy. Part #7253169)	50	7241120	8" PM Speaker
2	7238891	.000015 Mfd.—Molded	50A	7242532	8" Electro-Magnetic Speaker
3	7236178	.000024 Mfd.—Compensating (Included in Osc. Coil Assy. #7242527)	51	7255881	Power Transformer Assembly Complete
4	1207636	.0005 Mfd.—Molded	52	7240453	Output Transformer Assembly
5	7236156	.000600 Mfd.—Silver Mica (Included in Osc. Coil Assy. #7242527)	53	7242079	First I. F. Transformer Assembly Complete
6	7240738	.000750 Mfd.—400 V. Tubular	54	7242504	Second I. F. Transformer Assembly Complete
7	7240905	.001 Mfd. 1600 V. Tubular	55	7242503	Antenna Coil Assembly Complete (Includes Illus. #15)
8	7230912	.005 Mfd. 600 V. Tubular (Included in Tuner Assy. Part #7253169)	56	7242506	R. F. Coil Assembly Complete
9	7230912	.005 Mfd. 600 V. Tubular (Included in Tuner Assy. Part #7253169)	57	7242527	Oscillator Coil Assembly Complete (Includes Illus. #3 and 5)
10	7240906	.006 Mfd. 1600 V. Tubular	58	7241708	"A" Filter Choke
11	1208600	.01 Mfd. 600 V. Tubular	59	7255738	Antenna Series Choke Assembly
12	1208600	.01 Mfd. 600 V. Tubular	60	7242017	Vibrator—Non-Synchronous
13	1212099	.02 Mfd. 600 V. Tubular	61	86338	*Volume, Tone Control & Switch
14	1212099	.02 Mfd. 600 V. Tubular	62	7241779	*Spark Plate & "A" Connector Assembly
15	7236350	.05 Mfd. 200 V. Tubular (Included in Ant. Coil Assy. Part #7242504)		7239475	*Volume Control Cable
16	7230592	.05 Mfd. 600 V. Tubular		7241356	Antenna Connector Socket
17	7230592	.05 Mfd. 600 V. Tubular		7236279	Lokral Base Tube Socket
18	7230592	.05 Mfd. 600 V. Tubular		7236279	Octral Base Tube Socket
19	7242317	Oscillator Air Trimmer (Included in Tuner Assy. Part #7253169)		7233944	Vibrator Socket
20	7238830	Electrolytic—3 Section			
20A		20 Mfd. 25 V.			
20B		10 Mfd. 400 V.			
20C		15 Mfd. 400 V.			

Illus. No.	Service Part No.	Description	Illus. No.	Service Part No.	Description
RESISTORS					
25	1213217	100 Ohms 1/2 W. Insulated	66	7253169	Tuner & Dual Control Assembly Complete
25A	7237835	220 Ohms 1/2 W. Insulated	67	7240368	Reset Screw Assembly
26	7237994	220 Ohms 1 W. Insulated	68	7242090	Pointer, Tip & Guide Pin Assembly
27	7233773	330 Ohms 1 W. Insulated (Used on Later Sets)	69	7244082	Cord & Spring Assembly
27A	7254127	820 Ohms 2 W. Insulated (Utilized in Receivers Using PM Speakers)	70	7244083	Cord & Rivet Assembly
28	1213236	1,200 Ohms 1/2 W. Insulated	71	7253147	Backplate Assembly
29	7242844	2,700 Ohms 2 W. Insulated	72	7253151	Escutcheon Assembly Complete (Includes Dial Glass)
30	1214546	3,900 Ohms 1/2 W. Insulated		7253135	Calibrated Dial
31	1214546	3,900 Ohms 1/2 W. Insulated		7242136	Pushbutton with Spring
32	7240018	5,600 Ohms 1 W. Insulated	73	7241216	Dial Light Assembly (Includes Bulb)
33	7233653	15,000 Ohms 2 W. Insulated	74	115273	Dial Light Bulb
34	1214551	27,000 Ohms 1/2 W. Insulated (Used on Sets Up To Ser. #7119719)	75	115273	Volume, Tone Control & Switch
34A	1213270	100,000 Ohms 1/2 W. Insulated (Used on Sets After Ser. #7119719)	62	7240797	Spark Plate & "A" Connector
35	1213480	39,000 Ohms 1/2 W. Insulated (Included in Tuner Assy. Part #7253169)	38	1214554	Resistor 82,000 Ohms 1/2 W. Insulated
36	1214553	47,000 Ohms 1/2 W. Insulated (Included in Tuner Assy. Part #7253169)	36	1214553	Resistor 47,000 Ohms 1/2 W. Insulated
37	1213267	56,000 Ohms 1/2 W. Insulated	35	1213480	Resistor 39,000 Ohms 1/2 W. Insulated
38	1214554	82,000 Ohms 1/2 W. Insulated (Included in Tuner Assy. Part #7253169)	19	7242317	Oscillator Air Trimmer
39	1213270	100,000 Ohms 1/2 W. Insulated	9	7230912	Condenser .005 Mfd. 600 V. Tubular
40	1214555	220,000 Ohms 1/2 W. Insulated	8	7230912	Condenser .005 Mfd. 600 V. Tubular
41	1214555	220,000 Ohms 1/2 W. Insulated	1	7242450	Condenser .000012 Mfd. Compensating
42	1214555	220,000 Ohms 1/2 W. Insulated		7241179	Volume Control Cable
43	1214555	220,000 Ohms 1/2 W. Insulated			
44	1214557	330,000 Ohms 1/2 W. Insulated			
45	1213282	1 Megohm 1/2 W. Insulated			
46	1213282	1 Megohm 1/2 W. Insulated			
47	1213282	1 Megohm 1/2 W. Insulated			
48	7241614	2.7 Megohm 1/2 W. Insulated			

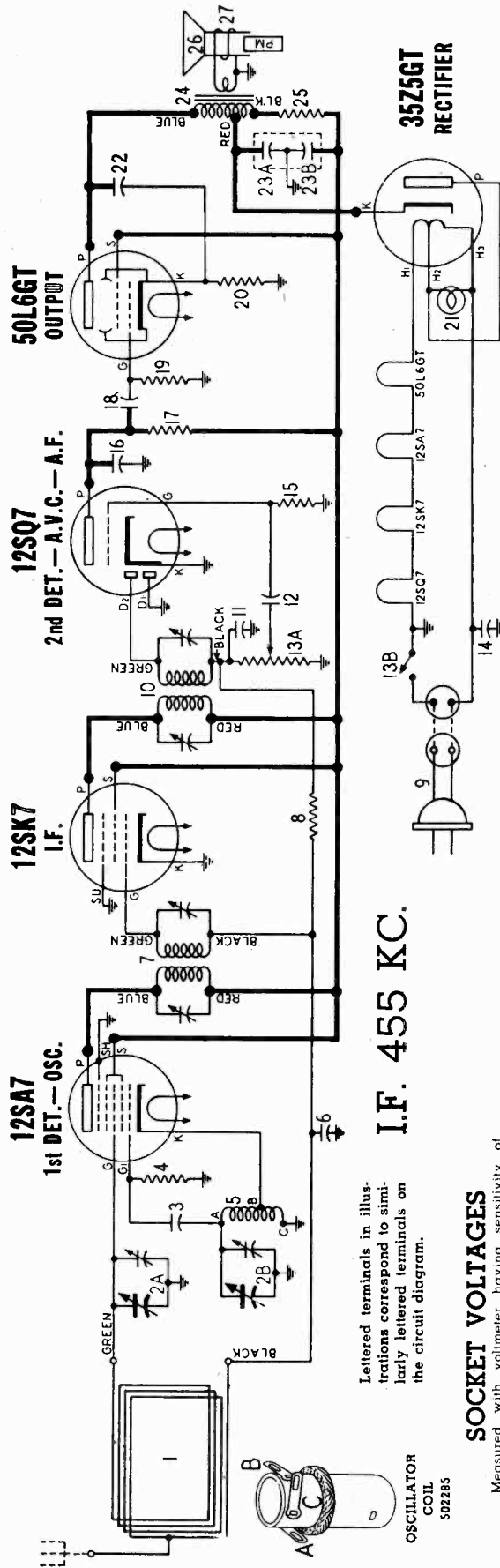
Illus. No.	Service Part No.	Description	Illus. No.	Service Part No.	Description
TUBE COMPLEMENT					
7A7	1213562	R. F. Amplifier			
7B8	1213567	Oscillator - Modulator			
7E7	1213802	Detector, A. V. C. and I. F. Amplifier			
7F7	1213979	Phase Inverter			
7C5	1213568	Push-Pull Output			
0Z4	1211924	Rectifier			

MOUNTING AND INSTALLATION PARTS	
1879777	Generator Condenser
1207821	Distributor Suppressor
1853686	Suppressor Adapter
147685	Fuse
1882758	Ammeter Condenser
5273906	"A" Lead Assembly
508583	Plate - Radio Control
507505	Knob - Tuning Control
507511	Knob - Tone Control
507510	Knob - Dummy

*Included in Tuner Part #7253169)

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MODELS PA-510, Ch. 9008-A,
PB-520, Ch. 9008-B



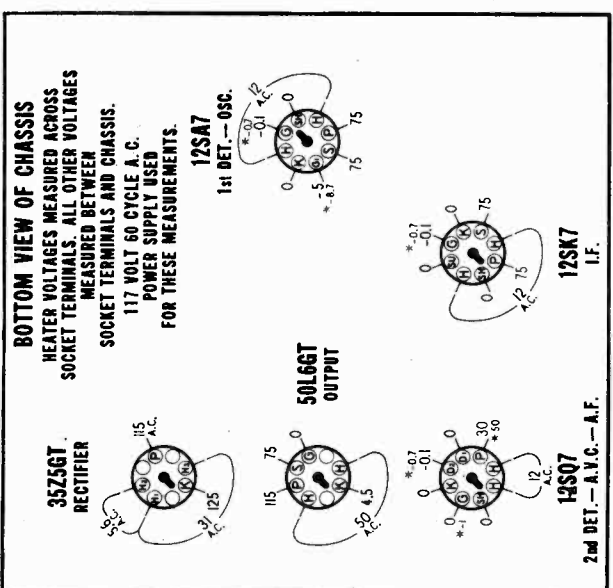
I.F. 455 KC.

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

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.

BOTTOM VIEW OF CHASSIS

HEATER VOLTAGES MEASURED ACROSS SOCKET TERMINALS. ALL OTHER VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS.

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

PARTS LIST

DIA. GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
2-A, B	500225	Condenser—variable gaging (with drum)...	\$
3	502159	Condenser—mica 50 Mmfd. 500 volt.	
6	502157	Condenser—.05 Mfd. 400 volt.	
11	502271	Condenser—.002 Mfd. 260 Mmfd. 500 volt.	
12	502260	Condenser—.002 Mfd. 600 volt.	
14	502157	Condenser—.05 Mfd. 400 volt.	
16	502271	Condenser—mica 260 Mmfd. 500 volt.	
18	502261	Condenser—.01 Mfd. 600 volt.	
22	502261	Condenser—electrolytic A—40 Mfd. 150 volt B—20 Mfd. 150 volt	
23-A, B	500256	Resistor—carbon 22,000 ohms 1/4 watt	
4	502130	Resistor—carbon 2.2 Meg. 1/4 watt	
8	502135	Volume control—with switch. 1 Meg.	
13-A, B	502223	Resistor—carbon 10 Meg. 1/4 watt	
15	502136	Resistor—carbon 220,000 ohms 1/4 watt	
17	502133	Resistor—carbon 470,000 ohms 1/4 watt	
19	502134	Resistor—wire wound 150 ohms 1 watt	
20	502270	Resistor—carbon 2,000 ohms 1 watt	
25	502265	Resistor—carbon 2,000 ohms 1 watt	
1	500288	Loop antenna	
5	502285	Coil—antenna	
7	502284	Transformer—1st I.F.	
10	502283	Transformer—2nd I.F.	
24	500360	Transformer—output for C-500257 speaker	
9	500298	Line cord with plugs.	
21	118921	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	
26	500361	Cone and voice coil for C-500257 speaker	
27	500257	Speaker—P.M. dynamic (4 inch)	
MISCELLANEOUS PARTS			
150026		Base for mtg. electrolytic condenser.	
502486		Cabinet—walnut (Model PB-520)	
502489		Cabinet—ivory (Model PA-510)	
112745		Clip—coil mtg.	
114955		Clip—retainer on end of dial cord.	
502480		Clip—for mtg. handle	
502481		Clip—for mtg. escutcheon	
117057		Cord—dial drive (25 in. required)	
500258		Dial scale	
502482		Escutcheon—ivory (Model PB-520)	
502484		Escutcheon—gold (Model PA-510)	
502483		Handle—ivory (Model PB-520)	
502485		Handle—gold (Model PA-510)	
500287		Knob—ivory (Model PB-520)	
500639		Knob—gold (Model PA-510)	
500287		Plug button for line cord receptacle	
500218		Pointer	
81145		Retaining ring for tuning shaft.	
113087		Ring for dial cord	
500216		Shaft—tuning control	
116690		Socket—social base	
500291		Socket—for line cord (with leads)	
500499		Socket—dial lamp (with leads)	
161384		Spring—dial cord tension	
111456		Washer—spring washer for tuning shaft	
500219		Window—dial	

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS PA-510, Ch. 9008-A,
PB-520, Ch. 9008-B

PORTO-SERVER INC.

Remove chassis and loop from cabinet. Reconnect both leads to loop and space it approximately same distance from chassis as when installed in cabinet.

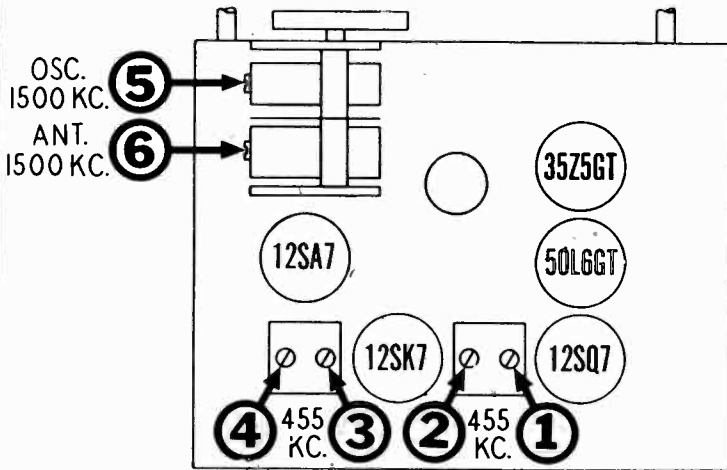
With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.

Connect an output meter across the speaker voice coil or from the plate of the 50L6GT tube to chassis through a .1 Mfd. condenser.

Connect the ground lead of the signal generator to the receiver chassis through a .25 Mfd. condenser.

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

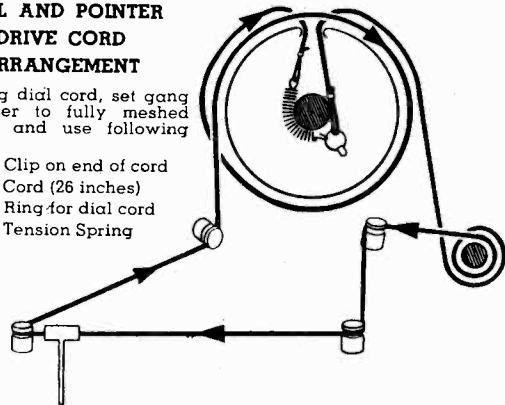
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Lug on trimmer No. 6 on rear section of gang (see figure below for location of trimmer.)	455 KC	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.	
200 MMFD. Mica Condenser	External antenna lead on loop.	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead on loop.	1500 KC	Tune to 1500 KC generator signal.	6	Broadcast Antenna	Adjust for maximum output.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

To string dial cord, set gang condenser to fully meshed position and use following parts:

- 114955 Clip on end of cord
- 117057 Cord (26 inches)
- 119087 Ring for dial cord
- 161284 Tension Spring

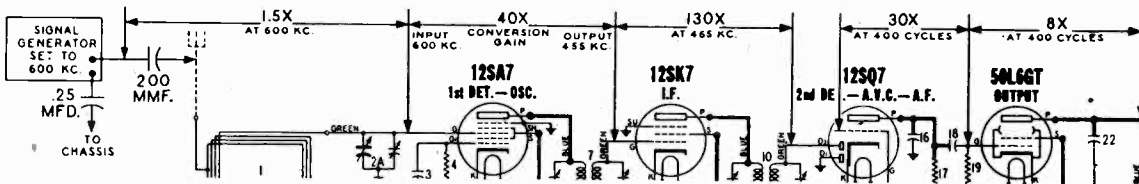


APPROXIMATE STAGE GAIN DATA

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 cycles 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 chassis. This provides a definite operating point.
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.

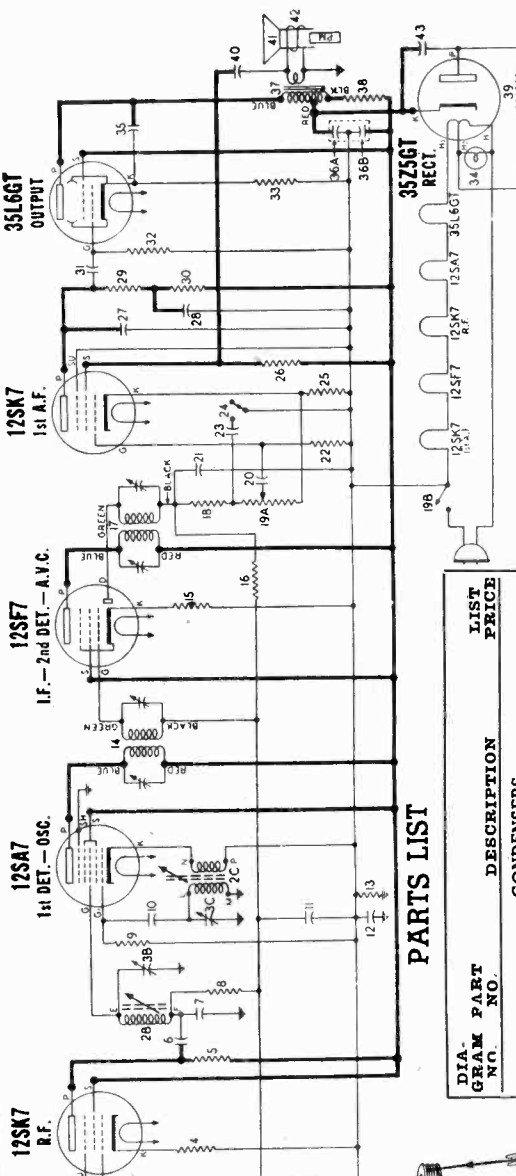
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



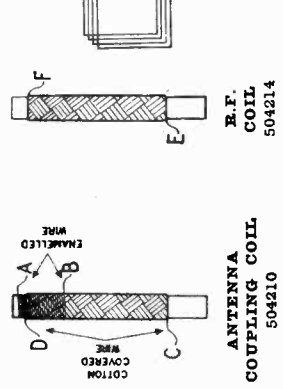
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

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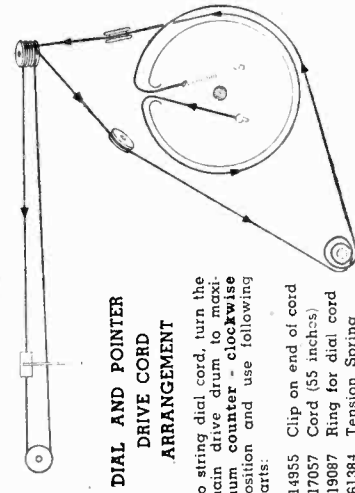
MODELS PE-610, Ch. 9022-E,
PF-611, Ch. 9022-F



I.F. 455 KC.



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



DIAL AND POINTER DRIVE CORD ARRANGEMENT

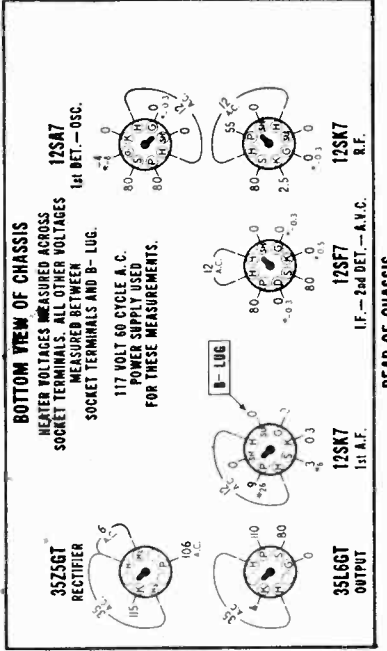
To string dial cord, turn the main drive drum to maximum counter - clockwise position and use following parts:

- 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.



Measured with vacuum tube voltmeter

PARTS LIST

DIA-GRAM NO.	DESCRIPTION	LIST PRICE
3-A, B, C 504086	Condenser-trimmer assembly	\$1.10
A	20 to 270 Mmfd.	
B	40 to 370 Mmfd.	
C	40 to 370 Mmfd.	
6	Condenser-mica 260 Mmfd. 500 volt	.30
7	Condenser-mica 1,000 Mmfd. 500 volt	.45
10	Condenser-mica 50 Mmfd. 500 volt	.24
11	Condenser-1 Mid. 200 volt	.30
12	Condenser-2 Mid. 400 volt	.36
20	Condenser-.002 Mid. 400 volt	.20
21	Condenser-mica 110 Mmfd. 500 volt	.24
23	Condenser-.0008 Mid. 400 volt	.20
27	Condenser-mica 110 Mmfd. 500 volt	.24
28	Condenser-.05 Mid. 200 volt	.24
31	Condenser-.004 Mid. 400 volt	.20
38	Condenser-.01 Mid. 400 volt	.20
35-A, B 500256	Condenser-electrolytic	1.50
A	40 Mid. 150 volt	
B	20 Mid. 150 volt	
40	Condenser-.02 Mid. 400 volt	.24
43	Condenser-.05 Mid. 400 volt	.24
4	Resistor-carbon 390 ohms 1/4 watt	.12
5	Resistor-carbon 4700 ohms 1/4 watt	.12
8	Resistor-carbon 470,000 ohms 1/4 watt	.12
9	Resistor-carbon 22,000 ohms 1/4 watt	.12
13	Resistor-carbon 220,000 ohms 1/4 watt	.12
15	Resistor-carbon 47 ohms 1/4 watt	.12
16	Resistor-carbon 3.3 Meg. 1/4 watt	.12
18	Resistor-carbon 47,000 ohms 1/4 watt	.12
19-A, B 502131	Volume control (500,000 ohms with switch)	1.25
22	Resistor-carbon 10 Meg. 1/4 watt	.12
25	Resistor-carbon 2200 ohms 1/4 watt	.12
26	Resistor-carbon 22 Meg. 1/4 watt	.12
29, 30	Resistor-carbon 220,000 ohms 1/4 watt	.12
32	Resistor-carbon 470,000 ohms 1/4 watt	.12
33	Resistor-carbon 130 ohms 1/4 watt	.12
38	Resistor-carbon 1500 ohms 1/2 watt	.16
39	Resistor-carbon 33 ohms 1/2 watt	.12
1	Loop antenna	2.90
2-A, B, C 504096	Tuning unit, complete assembly	10.80
2-A	Coil antenna (less slug)	1.20
2-B	Coil-R.F. (less slug)	.85
2-C	Coil-oscillator (less slug)	1.05
504212	Slug core for Ant. coil (yellow end)	.45
504213	Slug core for Osc. coil (white end)	.45
504215	Slug core for R.F. coil (purple end)	.45
502185	Back for cabinet	.30
116467	Base for mig. electrolytic condenser	.04
502232	Cabinet-ivory (Model PF-611)	5.00
502234	Cabinet-mahogany (Model PE-610)	4.63
500261	Clamp-dial scale mig.	.02
500497	Clip retainer for cabinet back	.02
114955	Clip retainer on end of dial cord	.01
116583	Connector for antenna leads	.01
117057	Cord-dial drive (55 in. required) per ft.	.05
500324	Cover-cardboard, for elect. cond.	.04
501143	Dial scale-glass	1.10
501186	Grounding plate (under I.F. trans. can)	.10
502553	Knob-ivory (Model PF-611)	1.00
502551	Knob-mahogany (Model PE-610)	1.00
39256	Painter's ring for tuning shaft	.01
119097	Ring for dial cord	.01
85078	Rubber grommet, Ant. & R.F. coil mtg.	.03
504045	Rubber No. 8 x 1/2 chassis mtg.	.04
117064	Screw-No. 8 x 7/32	.02
116680	Socket-antenna base	.15
160392	Socket-rectifier	.12
500499	Socket-dial lamp (with leads)	.44
504012	Spring for tuning slug drive cord	.05
161384	Spring-dial cord tension	.06
111456	Washer-spring washer for tuning shaft	.005

OTHER ELECTRICAL PARTS

- 500546 Switch (one control) 47 6.8V 150 Ma 84
- 502473 Lamp dial (Model 47) 6.8V 150 Ma 2.20
- 502244 Cone & voice coil for A-502998 spkr 2.50
- 502305 Cone & voice coil for W-502998 spkr 2.00
- 502998 Speaker P.M. dynamic (5 inch) 6.60

MISCELLANEOUS PARTS

- 502185 Back for cabinet .30
- 116467 Base for mig. electrolytic condenser .04
- 502232 Cabinet-ivory (Model PF-611) 5.00
- 502234 Cabinet-mahogany (Model PE-610) 4.63
- 500261 Clamp-dial scale mig. .02
- 500497 Clip retainer for cabinet back .02
- 114955 Clip retainer on end of dial cord .01
- 116583 Connector for antenna leads .01
- 117057 Cord-dial drive (55 in. required) per ft. .05
- 500324 Cover-cardboard, for elect. cond. .04
- 501143 Dial scale-glass 1.10
- 501186 Grounding plate (under I.F. trans. can) .10
- 502553 Knob-ivory (Model PF-611) 1.00
- 502551 Knob-mahogany (Model PE-610) 1.00
- 39256 Painter's ring for tuning shaft .01
- 119097 Ring for dial cord .01
- 85078 Rubber grommet, Ant. & R.F. coil mtg. .03
- 504045 Rubber No. 8 x 1/2 chassis mtg. .04
- 117064 Screw-No. 8 x 7/32 .02
- 116680 Socket-antenna base .15
- 160392 Socket-rectifier .12
- 500499 Socket-dial lamp (with leads) .44
- 504012 Spring for tuning slug drive cord .05
- 161384 Spring-dial cord tension .06
- 111456 Washer-spring washer for tuning shaft .005

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS PE-610, Ch. 9022-E,
PF-611, Ch. 9022-F

PORTO-SERVER INC.

ALIGNMENT PROCEDURE

1. 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.
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.

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
.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.

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.

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

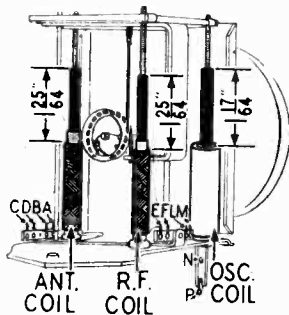


FIG. 1
SLUG TUNER ASSEMBLY (Drive Parts)
117057 Cord (8")
114955 Clip on cord
504012 Spring

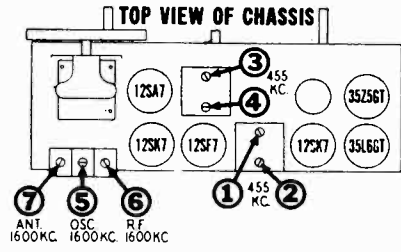


FIG. 2

AUDIO OSCILLATION

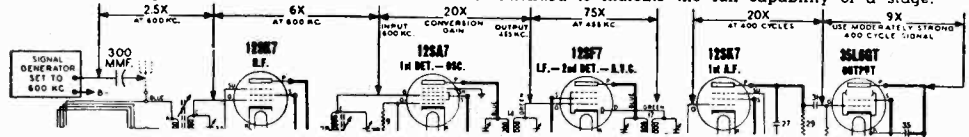
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer 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.

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:

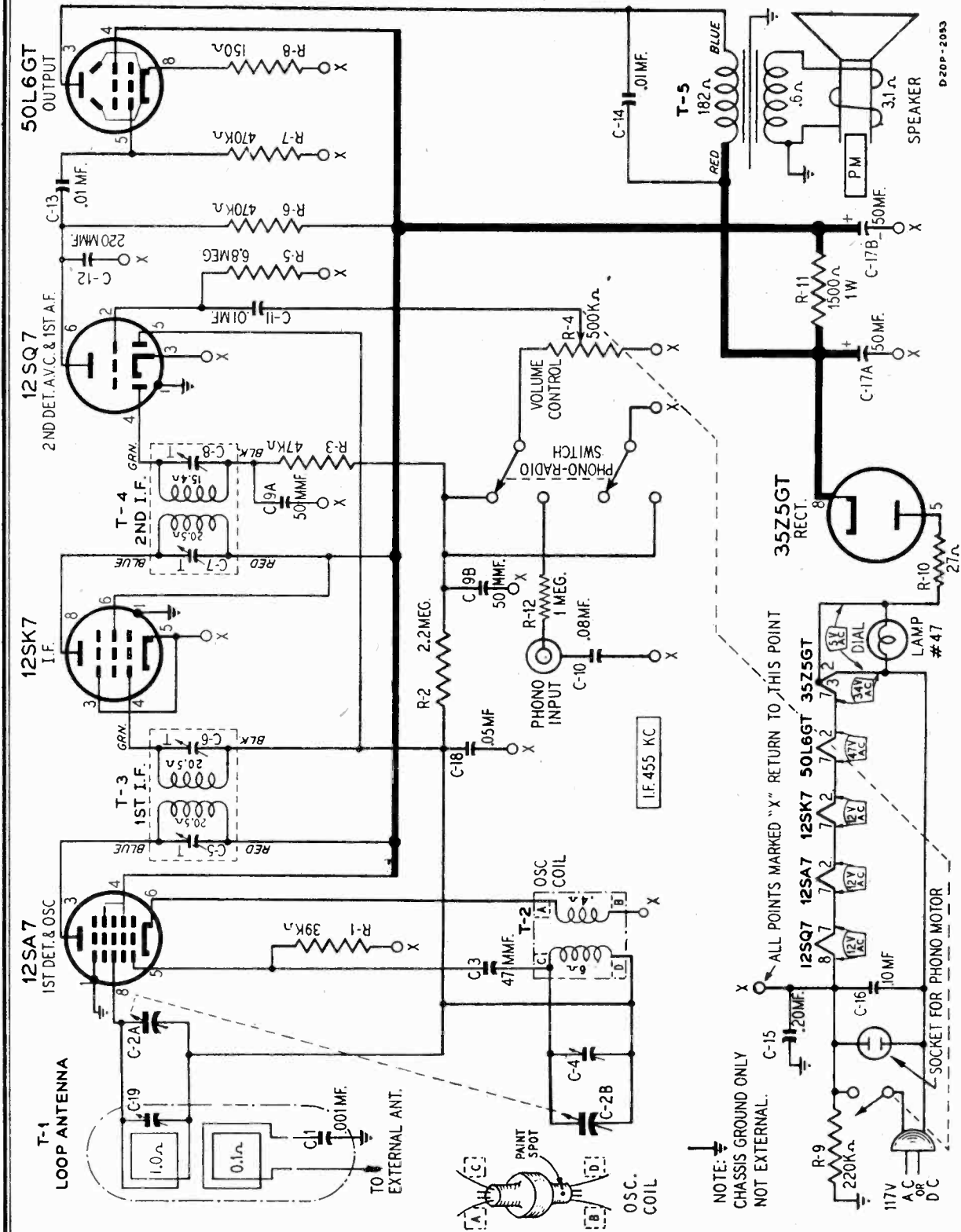
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1 1/2 volt cells in series) to A.V.C. lead and positive 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.

PURE OIL CORP.



D20P-2093

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

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

NOTE:
 CHASSIS GROUND ONLY
 NOT EXTERNAL.

ALL POINTS MARKED "X" RETURN TO THIS POINT

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

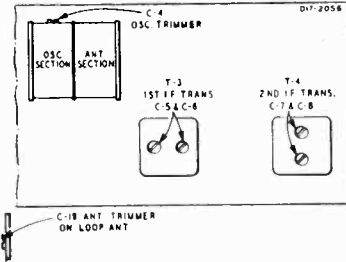
Allow Chassis and Signal Generator to "Heat Up" for several Minutes.

The equipment in column at right is required for aligning:

Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

Output Indicating Meter: Non-Metallic Screw-driver.

Dummy Antennas—.1 mf., 50 mmf.

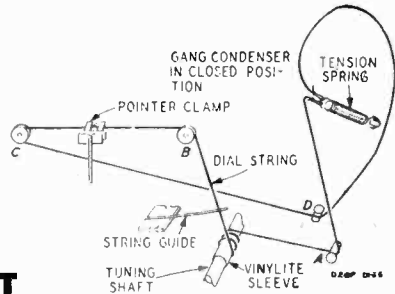


SIGNAL GENERATOR			GANG		ADJUST TRIMMERS
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	CONDENSER SETTING	TO MAXIMUM (See Trimmer Illustration)
455 KC	Control Grid 12SK7—I.F.	Point "X" 12SK7—I.F. Prong No. 3	.1 mf.	Turn Rotor to Full Open	2nd I.F. (C7) & (C8)
455 KC	Control Grid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

DRIVE CORD REPLACEMENT

Turn the large drive pulley to the maximum counterclockwise position. Use a new 57 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 free end of cord to spring. Cut off excess string.



REPLACEMENT PARTS LIST

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.

MISCELLANEOUS

- 12A438 5" P.M. Speaker
- Cone and voice coil assembly (specify part number and letters stamped on speaker)
- 3A303 Tube socket octal (8 prong) moulded.
- 3A305 Phono socket
- 3A304 Phono motor socket
- 10A257 Knob (volume control, tuning)
- 10A584 Knob. (Radio-Phono)
- 2A358 Radio-Phono switch
- 13X328 Line cord and plug assembly

TRANSFORMERS AND COILS

- 26A413 T-1 "B" Range Loop Antenna Assembly
- 9A1805 T-2 Oscillator Coil Assembly
- 9A1808 T-3 1st I-F Transformer and Can Assembly
- 9A1809 T-4 2nd I-F Transformer and Can 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 .47 mmf Moulded...
- C-4 Part of C-2 (Gang Capacitor)
- C-5, C-6 Part of T-3 (1st I-F Transformer)
- C-7, C-8 Part of T-4 (2nd I-F Transformer)
- 47X112 C-9A, C-9B 50 mmf Dual Mica...
- B66803 C-10 .08 mf 200 V Tubular...
- B66193 C-11, C-13, C-14 .01 mf 200 V Tubular...
- 47X488 C-12 220 mmf Moulded...
- B67204 C-15 .20 mf 400 V Tubular...
- D67104 C-16 .10 mf 400 V Tubular...
- 45X341 C-17A 50 mf 150 V Dry Electrolytic...
- C-17B 50 mf 150 V
- B66503 C-18 .05 mf 200 V Tubular...
- 17A123 C-19 1.0-12 mmf Trimmer...

RESISTORS

- B44393 R-1 39K 0.5 Carbon
- B85225 R-2 2.2 meg 0.5 Carbon
- B85473 R-3 37K 0.5 Carbon
- 36X352 R-4 500K Volume control and switch
- B85685 R-5 6.8 meg 0.5 Carbon
- B84474 R-6 470K 0.5 Carbon
- B85474 R-7 470K 0.5 Carbon
- B83151 R-8 150K 0.5 Carbon
- B85224 R-9 220K 0.5 Carbon
- B84270 R-10 27 0.5 Carbon
- C85152 R-11 1500 1.0 Carbon
- B5105 R-12 1 meg 0.5 Carbon

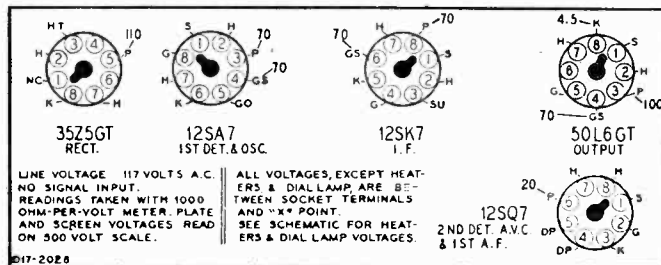
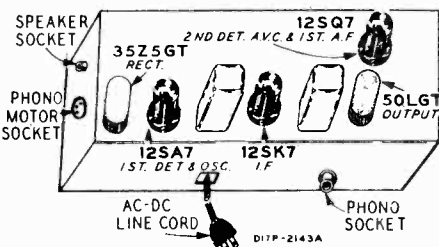
DIAL AND DRIVE ASSEMBLY

- 26A399 Dial Bracket Assembly Complete with Dial Background, Diffuser, Dial Clamps, Idler Pulleys and Spacers
- 6X21 Rubber Grommet Mounting gang
- 20X329 Cond. Cushion Stud / capacitor

- 58X609 Dial
- 26X482 Drive Shaft
- 19X192 "C" Washer (For Drive Shaft)
- 19X62 Flat Washer (For Drive Shaft)
- 7A197 Pilot Light Socket Assembly
- No. 47 Pilot Light
- 57" Drive Cord (18 lb. test)
- 15X150 Pointer
- 28X95 Drive Cord Tension spring

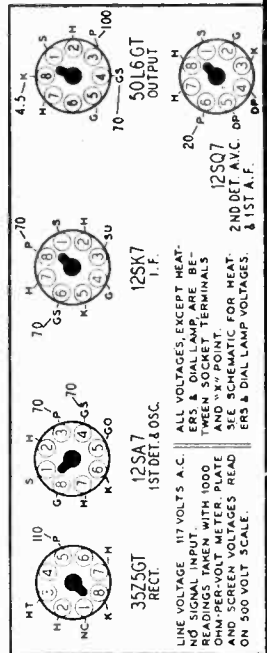
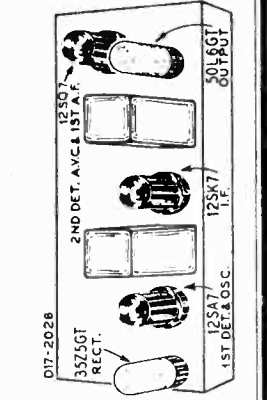
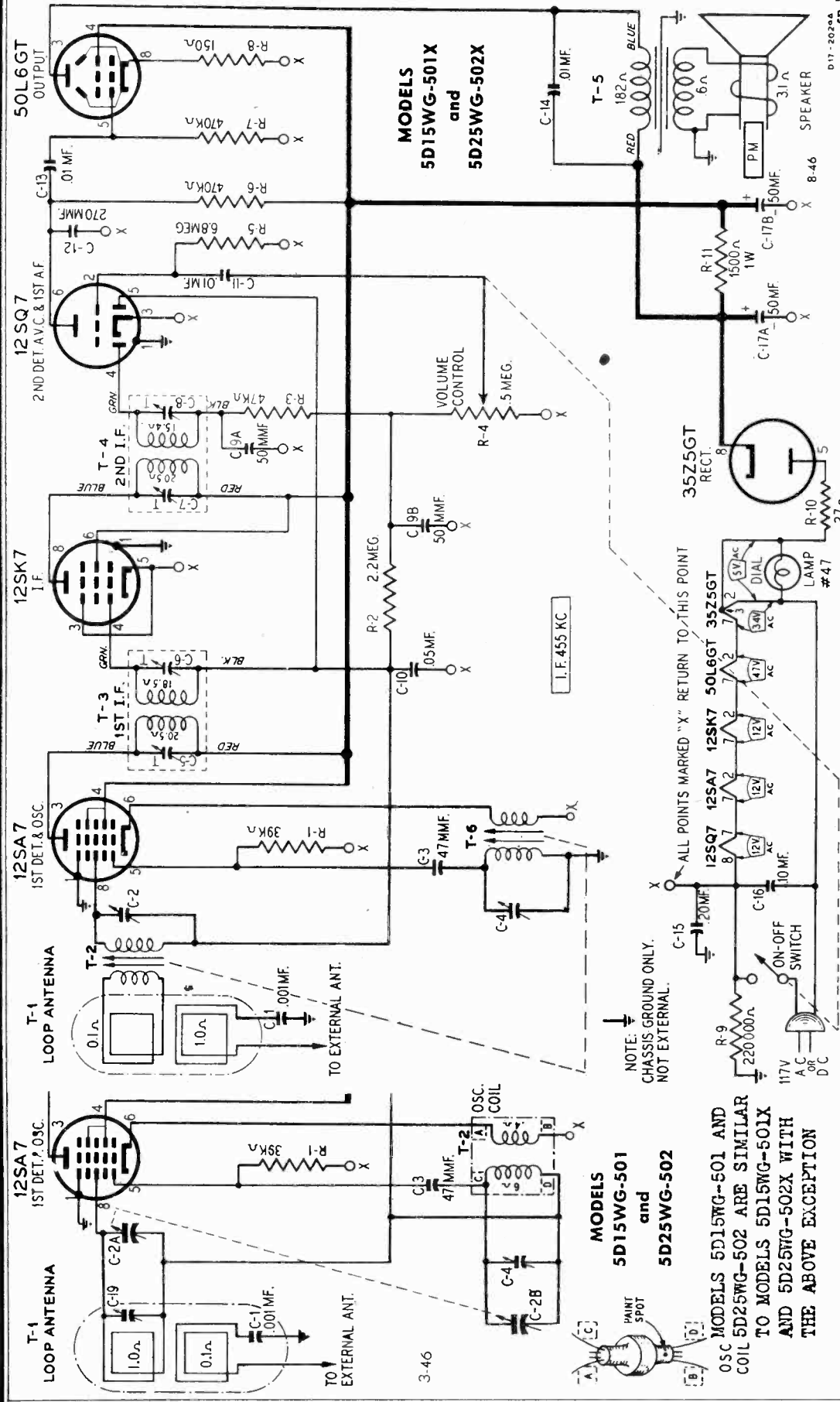
TYPE G-28A115 AUTOMATIC RECORD CHANGER PARTS

- G-30A71506 Bearing Assembly
- G-19A71535 Spindle Assembly
- G-58-71435 Single Button Control Switch
- G-26-70545 Drive Wheel
- G-33-A71196 Flexible Coupling Spring Assembly
- G-65-70566 Feed Cam Roller
- G-12-71406 Lift Pin
- G-33-71405 Counter Balance Spring
- G-33-71388 Finger Spring
- G-33-70582 Mounting Spring
- G-33-71316 Stop Lever Spring
- G-33-71173 Trip Lever Spring
- G-33-71205 Pull-in Spring
- G-33-71438 Trip Bar Spring
- G-33-71341 Record Feed Spring
- G-33-71342 Carrier Lever Spring
- G-59-71494 Index Spring
- G-66A71507 Turntable
- G-56-72092 Motor
- Astatic L-75 Pickup Cartridge
- G-55-72021 Record Stabilizer Finger Needle, Permo No. 100



PURE OIL CORP.

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



MODELS 5D15WG-501 and 5D25WG-502

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

PAINT SPOT

- 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	Onset to Antenna 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	47 mmf Moulded
	C-4	Part of C-2 (Gang Capacitor)
	C-5	C-6 Part of T-3 (1st I-F Transformer)
	C-7	C-8 Part of T-4 (2nd I-F Transformer)
47X112	C-9A	C-9B 50 mmf Mica
B66103	C-10	C-11, C-12, C-13, C-14 .01mf 200 V Tubular
47X468	C-15	.20 mf 200 V Tubular
B67204	C-16	.10 mf 200 V Tubular
D67104	C-17A	50 mf 150 V Dry Electrolytic
45X34	C-17B	50 mf 150 V Dry Electrolytic
B66503	C-18	.05 mf 200 V Trimmer
17A123	C-19	1.0-12 mmf 200 V Trimmer

RESISTORS		
B84393	R-1	39,000 ohms 0.5 watt Carbon
B85225	R-2	2.2 meg. 0.5 watt Carbon
B85473	R-3	47,000 ohms 0.5 watt Carbon
36X352	R-4	500,000 ohms Volume knob
B85685	R-5	6.8 meg. 0.5 watt Carbon
B84474	R-6	470,000 ohms 0.5 watt Carbon
B85474	R-7	470,000 ohms 0.5 watt Carbon
B83151	R-8	150 ohms 0.5 watt Carbon
B85224	R-9	220,000 ohms 0.5 watt Carbon
B84270	R-10	270 ohms 0.5 watt Carbon
C85152	R-11	1,900 ohms 1.0 watt Carbon

DIAL AND DRIVE ASSEMBLY		
26A401	Painter Bracket Assembly complete with light diffuser holder, string guide and idler	
41X74	Dial light diffuser	
15X223	Pointer	
9A21	Rubber Grommet	
20X329	Conc. Cushion Stud	
18X192	Drive Whisker (for drive shaft)	
28X95	Drive cord (18 lb test)	
7A194	53" Drive cord (18 lb test)	
58X596	Pilot light socket assembly	
30X508	No. 47 Pilot light	
30X598	Dial clamp (upper)	
	Dial clamp (lower)	

MISCELLANEOUS		
12A432	4" P. M. speaker	
	Complete speaker assembly (specify part number and letters as listed)	
3A303	Tube socket oval (8 prong) moulded	
10A300	Knob (ivory)	
95X255	Cabinet (walnut)	
95X257	Cabinet (walnut)	
20X292	1/2" screw (mounting loop to chassis)	
	1/2" 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	
TRANSFORMERS AND COILS		
26A403	T-1	"B" Range Loop Antenna Assembly (for ivory cabinet)

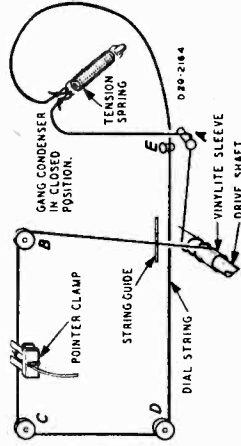
ALIGNMENT PROCEDURE

Check dial pointer position, see DIAL CALIBRATION paragraph.
 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:

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

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).

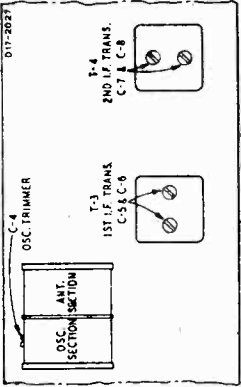
stalled, stretch the tension spring and tie free end of cord to spring. Cut off excess string.



NOTICE: This label specifies the 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.

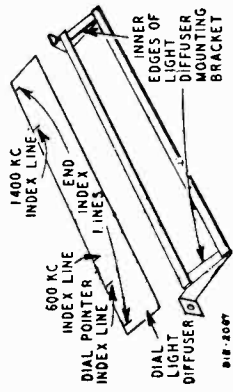
DRIVE CORD REPLACEMENT

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-



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

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

PURE OIL CORP.

PARTS LIST

9A1834	T-1	TRANSFORMERS AND COILS	Tabular
9A1835	T-1	"B" range loop antenna (for walnut cabinet)	Trimmer
9A1898	T-2	"B" range loop antenna (for ivory cabinet)	Folded
9A1899	T-3	Part of Tuning Assembly	Trimmer
9A1909	T-4	1st I.F. coil assembly	Trimmer
31X122	T-5	2nd I.F. coil assembly	Trimmer
	T-6	Output Transformer	Trimmer
	T-7	Part of Tuning Assembly	Trimmer
		CAPACITORS	
D56102	C-1	.001 MF 400V	Tabular
D56103	C-2	.01 MF 200V	Tabular
47X246	C-3	.01 MF 200V	Folded
17A239	C-4	.40 370 mfd	Trimmer
	C-5, C-6	Part of T-3, 1st I.F. Transformer	Trimmer
	C-7, C-8	Part of T-4, 2nd I.F. Transformer	Trimmer
47X112	C-9A, C-9B	50 mfd. Dual mica capacitor	Tabular
B6503	C-10	.05 mf. 200 V	Tabular
47X248	C-11	.01 mf. 200 V	Tabular
47X249	C-12	.01 mf. 200 V	Tabular
B65204	C-13	.01 mf. 200 V	Tabular
B65205	C-14	.01 mf. 200 V	Tabular
B65206	C-15	.01 mf. 200 V	Tabular
D66104	C-16	.10 mf. 400 V	Tabular
45X341	C-17A, 50 mf.	150 V	Tabular
	C-17B, 50 mf.	150 V Dry electrolytic capacitor	Tabular
		RESISTORS	
B8438	R-1	30,000 ohms	Carbon
B8439	R-2	2,700 ohms	Carbon
B8440	R-3	47,000 ohms	Carbon
		Volume control and line switch	
36X352	K-4	500,000 ohm	Carbon
B8585	R-5	6.8 meg	Carbon
B8586	R-6	70,000 ohms	Carbon
B8587	R-7	4,700 ohms	Carbon
B8588	R-8	150 ohms	Carbon
B8589	R-9	220,000 ohms	Carbon
B8590	R-10	27 ohms	Carbon
B8591	R-11	1500 ohms	Carbon
B8592	R-12	1500 ohms	Carbon
		DIAL AND DRIVE ASSEMBLY	
20A96		Tuning Assembly complete with coils, trimmers, etc.	
11X119		Flare shield (Tuner housing)	
24X146		Mounting Stud (Wig fibre shield)	
25X146		Pointer	
25X146		Pointer bracket	
15X223		Holder, light di. user	
25X1470		Dial light di. user	
41X79		Drive shaft (tuning)	
26X482		"C" washer (for drive shaft)	
19X192		55 drive cord (18 lb. test)	
28X113		Pin light socket assembly	
7A194		No.47 Pilot light	
58X638		Dial (for ivory cabinet)	
58X640		Dial (for walnut cabinet)	
30X508		Dial clamp (upper)	
30X509		Dial clamp (lower)	
		MISCELLANEOUS	
12A432		5" P.M. speaker	
		Cone and voice coil assembly (specify part number and letters stamped on speaker)	
3A303		Tube socket octal (8 prong) moulded	
10A300		Knob (walnut)	
10A297		Knob (ivory)	
55X255		Cabinet (ivory)	
55X257		Cabinet (walnut)	
28X292		Snap button (mounting loop to chassis)	
		No. 6 1/2" slotted hex head P.K. Type "Z" screw (mounting loop to cabinet)	
14X335		Grille metal	
		Grille, cloth No. 426 Egg Shell (for ivory cabinet)	
		Grille, cloth No. 418 Brown (for walnut cabinet)	
13X328		Line cord and blur assembly	

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.

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.

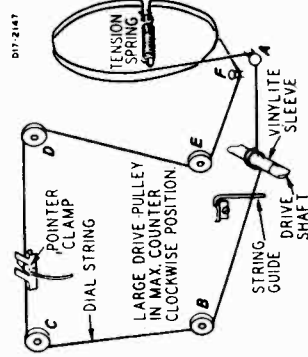
Volume Control—Maximum All Adjustments. Output Indicating Meter: Non-Metallic Screw-driver.

The equipment in column at right is required for aligning:

FREQUENCY SETTING	SIGNAL GENERATOR	DUMMY ANTENNA CONNECTION	TUNING	ADJUST TRIMMERS TO MAXIMUM
455 KC	Control Grid 12SK7—1.F. Prong No. 3	.1 mf.	Turn Drive Pulley to Counterclockwise Position	(See Trimmer Illustration)
455 KC	Control Grid 12SK7—1.F. Prong No. 3	.1 mf.	Turn Drive Pulley to Counterclockwise Position	2nd I.F. (C7) & (C8)
1610 KC	Control Grid 12SA7—1st Det.	Same As Above	Turn Drive Pulley to Maximum Counter-clockwise Position	1st I.F. (C5) & (C6)
1610 KC	External Antenna Clip On Loop	Same As Above	Turn Drive Pulley to Maximum Counter-clockwise Position	Oscillator (C4)
		50 mmf.	Turn Drive Pulley to Maximum Counter-clockwise Position	Antenna (C-2)

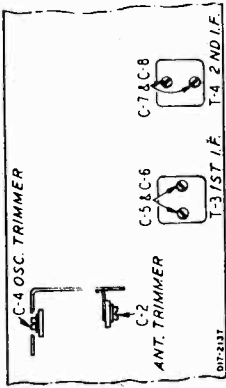
TUNING ASSEMBLY SERVICE

Exactng requirements in the tuning assembly make it impractical to replace the drive cord, coils and components in this assembly other than the trimmer condensers. Should the drive cord break, or components other than the trimmer condensers require service, the entire assembly must be ordered and replaced as a unit.

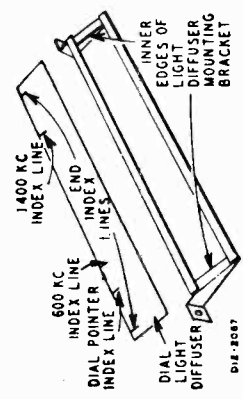


DRIVE CORD REPLACEMENT

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 two turns clockwise around the tuning shaft with the turns progressing away from the chassis. After string is installed, stretch the tension spring and tie free end of cord to spring. Cut off excess string.



DIAL CALIBRATION

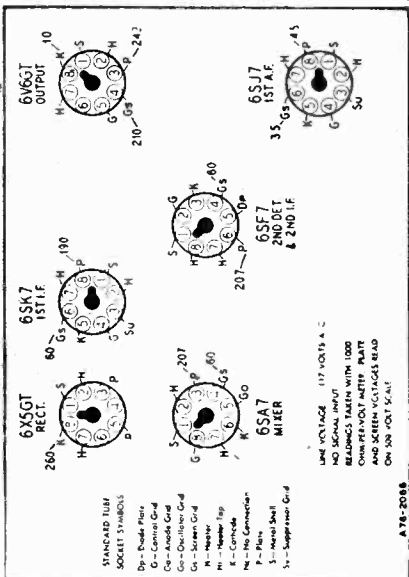
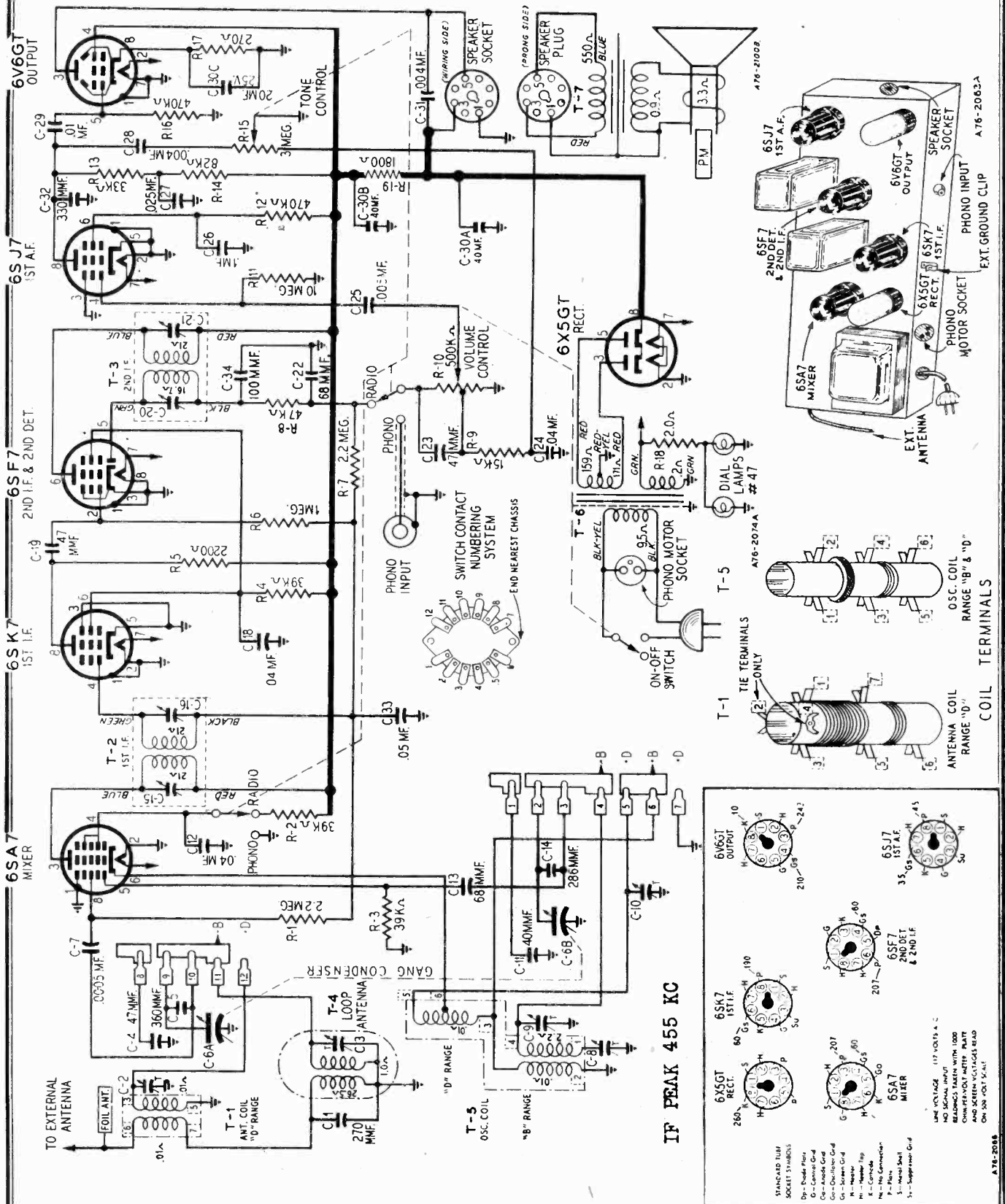


In order to align the receiver, the dial pointer must be positioned on the dial string correctly with reference to the dial. Index lines are provided on the dial light diffuser for this purpose.

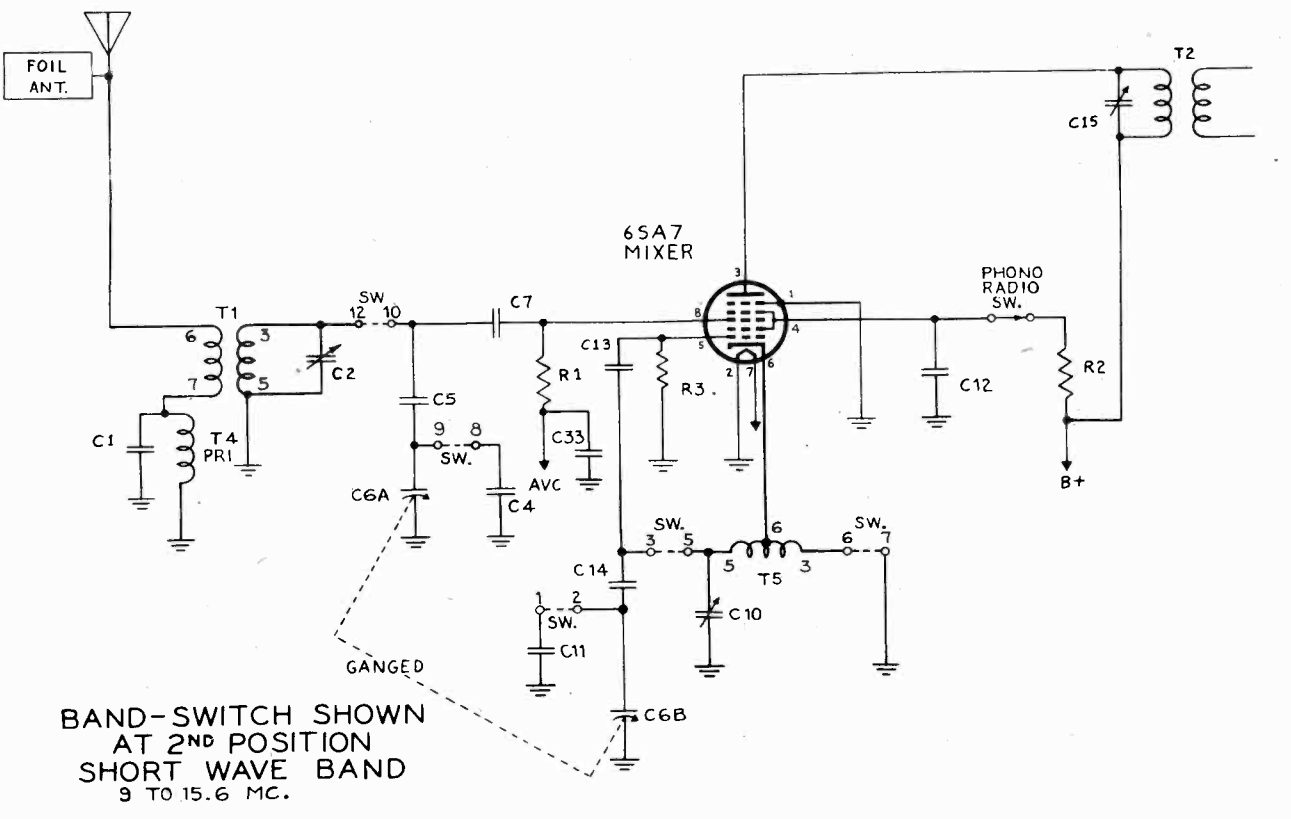
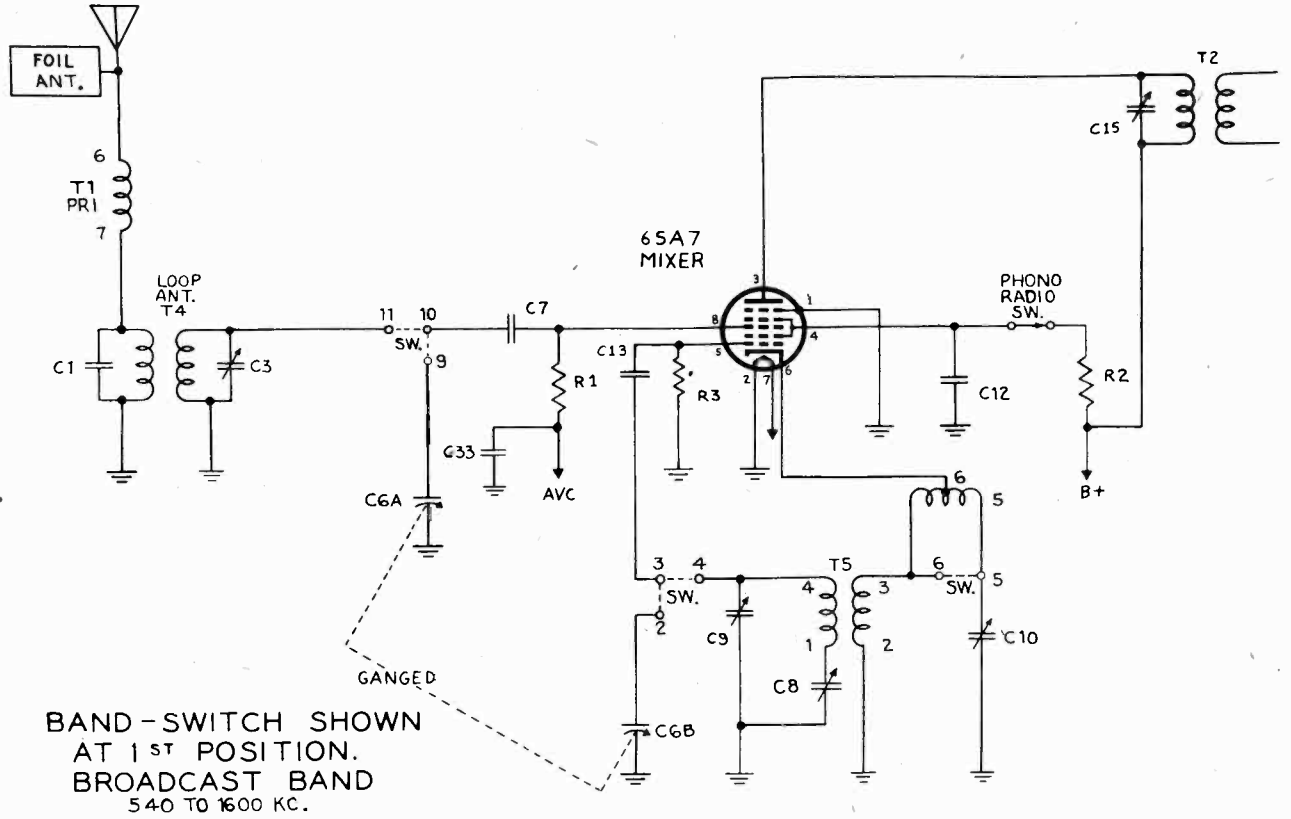
Before aligning the receiver (or when replacing the dial light diffuser) check the position of the diffuser strip, making certain that the two extreme index lines are aligned with the inner edges of the diffuser mounting bracket opening. The bracket should be crimped at one point to prevent movement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

- Selectivity..... 59 KC Broad at 1000 Times Signal
- Intermediate Frequency..... 455 KC
- Speaker..... 5" PM Dynamic
- Sensitivity (for .05 watt output)..... 560 microvolts per meter average

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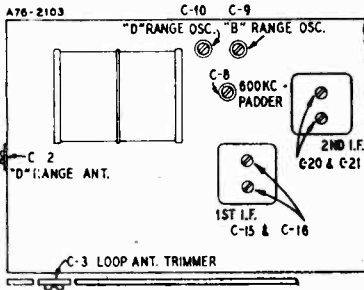


PURE OIL CORP.



SPECIFICATIONS

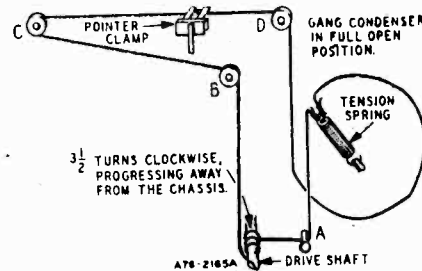
- Speaker.....6" PM Dynamic
- Intermediate Frequency.....455 KC
- Selectivity.....40 KC Broad at 1000 Times Signal
- Sensitivity (For 0.5 Watt Output, with External Antenna)
 - B Range.....9 Microvolts Av.
 - D Range.....20 Microvolts Av.
- Power Consumption (at 117 Volts AC).....40 Watts (normal)
- Power Output.....4 Watts Maximum
2.3 Watts, 10% Harmonics
- Tuning Frequency Range
 - B Range.....540-1600 Kilocycles
 - D Range.....9-15.5 Megacycles



DRIVE CORD REPLACEMENT

The drive cord may be replaced as shown in the accompanying illustration.

For this purpose use a 58" piece of cord. After installing the cord, stretch the tension spring before fastening the free end of the string.



REPLACEMENT PARTS LIST

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.

- 53X284 T-6 117-234 Volt, 40-60 Cycle, Universal Power Transformer
- T-7 Output Transformer (See Miscellaneous)

CAPACITORS

- 47X445 C-1 270 mmf Moulded
- 17A164 C-2 5-50 mmf Trimmer
- 17A123 C-3 1.0-12 mmf Trimmer
- 47X473 C-4 47 mmf Silvered Mica
- 47X474 C-5 360 mmf Silvered Mica
- 14A184 C-6A, C-6B Gang Capacitor with Drive Pulley
- B66501 C-7 .0005 mf 200 V Tubular
- 17A155 C-8 350-430 mmf Trimmer
- 17A109 C-9, C-10 2.5-35 mmf Dual Trimmer
- 47X472 C-11 40 mmf Silvered Mica
- D66403 C-12, C-18 .04 mf 400 V Tubular
- 47X486 C-13 68 mmf Moulded
- 47X481 C-14 286 mmf Silvered Mica
- C-15, C-16 Part of T-2 (1st I-F Coil Assembly)
- 47X463 C-19, C-23 47 mmf Moulded
- C-20, C-21 Part of T-3 (2nd I-F Coil Assembly)
- 47X471 C-22 68 mmf Moulded
- D64403 C-24 .04 mf 490 V Tubular
- D66502 C-25 .005 mf 400 V Tubular
- D66104 C-26 .10 mf 400 V Tubular
- D64253 C-27 .025 mf 400 V Tubular
- D66402 C-28, C-31 .004 mf 400 V Tubular
- D66103 C-29 .01 mf 490 V Tubular
- C-30A 40 mf 450 V
- C-30B 40 mf 450 V
- 47X470 C-32 300 mmf 25 V Electrolytic
- D66503 C-33 .05 mf Moulded
- 17X476 C-34 100 mmf 220 V Tubular Moulded

- C85105 R-6 1 meg. 0.5 Carbon
- B84573 R-8 47 K 0.5 Carbon
- B84153 R-9 15 K 0.5 Carbon
- 36X354 R-10 500 K Volume Control and line switch
- B05106 R-11 10 meg. 0.5 Carbon
- B9474 R-12, R-16 470 K 0.5 Carbon
- B81333 R-13 33 K 0.5 Carbon
- B64823 R-14 82 K 0.5 Carbon
- *40X275 R-15 3.0 meg. Tone control and Radio Phone Switch
- C84271 R-17 270 1.0 Carbon
- 43X213 R-18 2.0 0.5 Wire Wound
- D84182 R-19 1800 2.0 Carbon

DIAL AND DRIVE ASSEMBLY

- 26A410 Dial Bracket Assembly Complete with Dial, Background and Spacers
- 6X21 Rubber Grommet } Mtg. Gang Capacitor
- 20X329 Cond. Cushion Stud }
- 26X470 Drive Shaft
- 19X192 1/4" Washer (For Drive Shaft)
- 15X230 Printer
- 58" Drive Cord (18 lb. test)
- 28X113 Drive Cord Tension Spring
- 7A203 Pilot Light Socket Assembly
- No. 47 Pilot Light

SUBSTITUTE REPLACEMENT PARTS

These are used on some receivers only. Check part number on part before ordering.

- *40X280 Tone Control (substitute for 40X275)
- *25X1539 Radio-Phono Switch Lever (when 40X280 is used)
- *2A161 D.P.D.T. Switch (when 40X280 is used)
- 17A459 6" P.M. Speaker Complete with Output Transformer

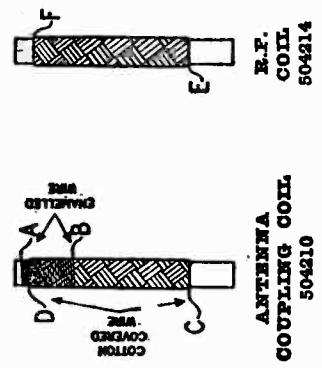
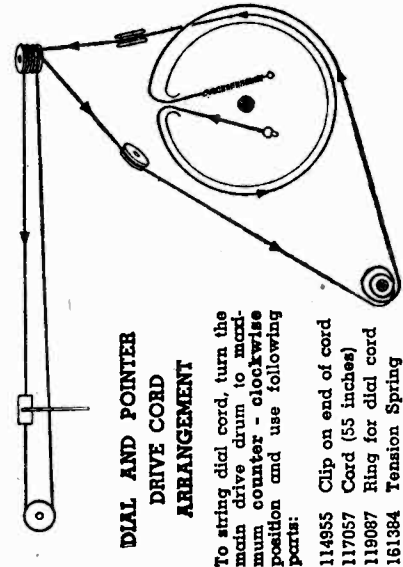
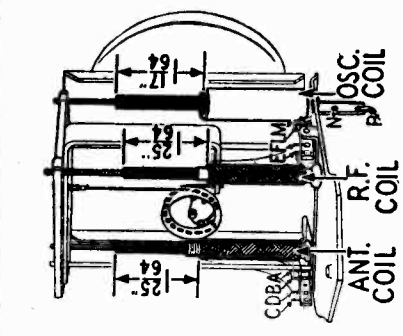
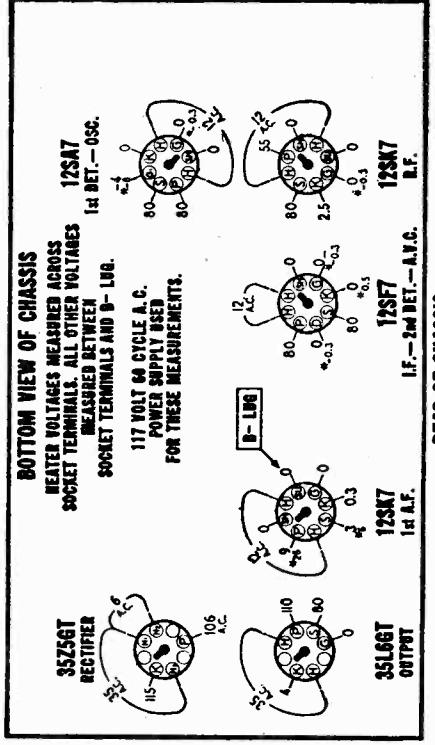
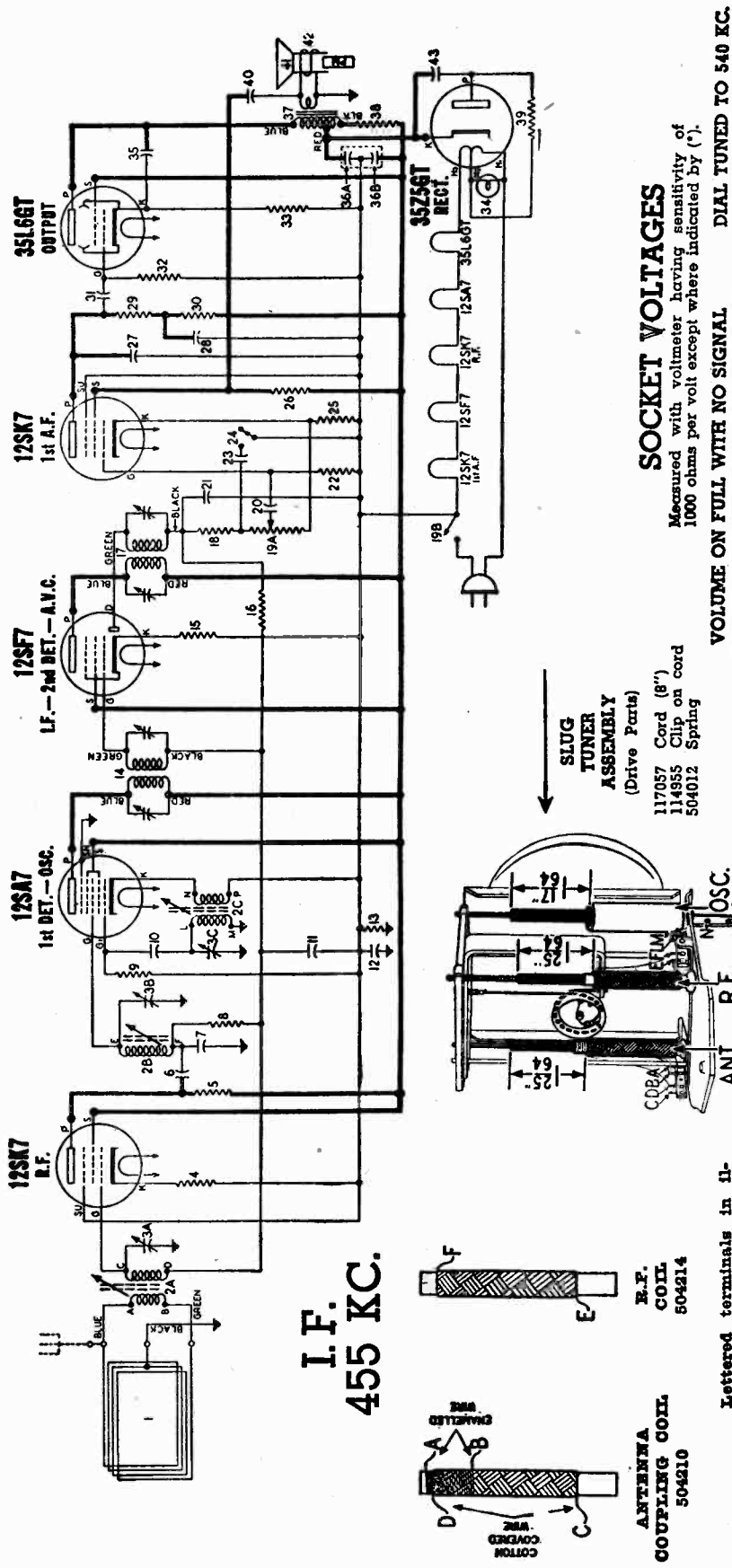
TRANSFORMERS AND COILS

- 9A1812 T-1 "D" Range Antenna Coil Assembly
- 9A1814 T-2 1st I-F Coil Assembly
- 9A1815 T-3 2nd I-F Coil Assembly
- 9A1821 T-4 "B" Range Loop Antenna
- 9A1813 T-5 "B" Range and "D" Range Oscilla-tor Coil Assembly
- 53X282 T-6 117 Volt, 60 Cycle, Standard Power Transformer
- 53X283 T-6 117 Volt, 25 Cycle, Standard Power Transformer

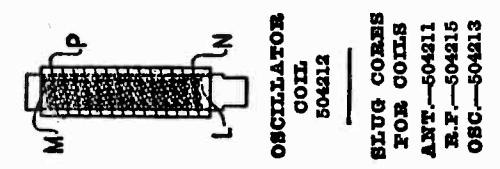
RESISTORS

- | | Ohms | Watts |
|--------|-------------------|------------|
| R85225 | R-1, R-7 2.2 meg. | 0.5 Carbon |
| C84393 | R-2, R-4 39 K | 1.0 Carbon |
| B84393 | R-3 29 K | 0.5 Carbon |
| B84222 | R-5 2200 | 0.5 Carbon |

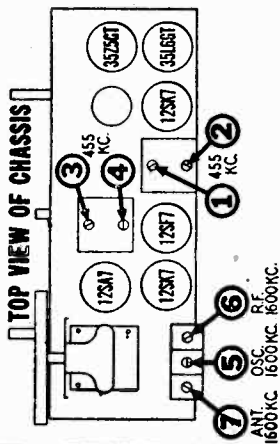
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Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



*-Measured with vacuum tube voltmeter



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.

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
.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	1600 KC	Tune to 1600 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1400 KC	Tune to 1400 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
300 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1600 KC	Tune to 1600 KC generator signal	Ant. coil tuning slug	Ant. coil tuning slug	Adjust position of slug for maximum output.
				R.F. coil tuning slug	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.

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PARTS LIST

DIA-GRAM PART NO.	NO.	DESCRIPTION	LIST PRICE
CONDENSERS			
3-A, B, C	504086	Condenser—trimmer assembly	\$1.10
		A—20 to 270 Mmfd.	
		B—40 to 370 Mmfd.	
		C—40 to 370 Mmfd.	
6	502271	Condenser—mica 260 Mmfd. 500 volt.	.30
7	502185	Condenser—mica 1,000 Mmfd. 500 volt.	.45
10	502159	Condenser—mica 50 Mmfd. 500 volt.	.24
11	502155	Condenser—.1 Mfd. 200 volt.	.30
12	502158	Condenser—.2 Mfd. 400 volt.	.36
20	502453	Condenser—.002 Mfd. 400 volt.	.20
21	502160	Condenser—mica 110 Mmfd. 500 volt.	.24
23	502470	Condenser—.0008 Mfd. 400 volt.	.20
27	502160	Condenser—mica 110 Mmfd. 500 volt.	.24
28	502153	Condenser—.05 Mfd. 200 volt.	.24
31	502156	Condenser—.004 Mfd. 400 volt.	.20
35	502151	Condenser—.01 Mfd. 400 volt.	.20
36-A, B	500256	Condenser—electrolytic	1.50
		A—40 Mfd. 150 volt	
		B—20 Mfd. 150 volt	
40	502152	Condenser—.02 Mfd. 400 volt.	.24
43	502157	Condenser—.05 Mfd. 400 volt.	.24
RESISTORS			
4	502140	Resistor—carbon 390 ohms 1/4 watt.	.12
5	502291	Resistor—carbon 4700 ohms 1/4 watt.	.12
8	502134	Resistor—carbon 470,000 ohms 1/4 watt.	.12
9	502130	Resistor—carbon 22,000 ohms 1/4 watt.	.12
13	502133	Resistor—carbon 220,000 ohms 1/4 watt.	.12
15	502264	Resistor—carbon 47 ohms 1/4 watt.	.12
16	502269	Resistor—carbon 3.3 Meg. 1/4 watt.	.12
18	502131	Resistor—carbon 47,000 ohms 1/4 watt.	.12
19-A, B	502145	Volume control 500,000 ohms (with switch)	1.25
22	502136	Resistor—carbon 10 Meg. 1/4 watt.	.12
25	502128	Resistor—carbon 2200 ohms 1/4 watt.	.12
26	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	.12
29, 30	502139	Resistor—carbon 220,000 ohms 1/4 watt.	.12
32	502134	Resistor—carbon 470,000 ohms 1/4 watt.	.12
33	502138	Resistor—carbon 130 ohms 1/4 watt.	.12
38	502489	Resistor—carbon 1500 ohms 1 watt.	.16
39	502574	Resistor—carbon 33 ohms 1/2 watt.	.12
COILS & TRANSFORMERS			
1	502246	Loop antenna	2.90
2-A, B, C	504096	Tuning unit; complete assembly	10.80
2-A	504210	Coil—antenna (less slug)	1.20
2-B	504214	Coil—R.F. (less slug)	.85
2-C	504212	Coil—oscillator (less slug)	1.05
	504211	Slug core for Ant. coil (yellow end)	.45
	504213	Slug core for Osc. coil (white end)	.45
	504215	Slug core for R.F. coil (purple end)	.45

DIA-GRAM PART NO.	NO.	DESCRIPTION	LIST PRICE
14	502102	Transformer—1st I.F.	\$2.30
17	502103	Transformer—2nd I.F.	2.30
37	502213	Transformer—output (for R-502998 spkr.)	2.50
	502904	Transformer—output (for A-502998 spkr.)	2.50
	504244	Transformer—output (for W-502998 spkr.)	2.50
OTHER ELECTRICAL PARTS			
24	500546	Switch—tone control	.84
34	502473	Lamp—dial (Mazda 47) 6.8V. 150 Ma.	.22
41	502214	Cone & voice coil for R-502998 spkr.	2.00
	502903	Cone & voice coil for A-502998 spkr.	2.00
42	504245	Cone & voice coil for W-502998 spkr.	2.00
	502998	Speaker—P.M. dynamic (5 inch)	6.60
MISCELLANEOUS PARTS			
	502502	Back for cabinet	.30
	116467	Base for mtg. electrolytic condenser	.04
	502476	Cabinet—ivory (Model 506)	5.00
	502477	Cabinet—mahogany (Model 507)	4.60
	502506	Clamp—dial scale mtg.	.04
	500497	Clip—retainer for cabinet back	.02
	114955	Clip—retainer on end of dial cord	.01
	118563	Connector—for antenna leads	.01
	117057	Cord—dial drive (55 in. required)	per ft.
	500324	Cover—cardboard, for elect. cond.	.04
	504147	Dial scale—glass	1.40
	501186	Grounding plate (under I.F. trans. can)	.10
	502564	Knob—ivory (Model 506)	.08
	502563	Knob—mahogany (Model 507)	.08
	502367	Pointer	.16
	81145	Retaining ring for tuning shaft	.01
	119067	Ring for dial cord	.01
	85078	Rubber grommet; Ant. & R.F. coil mtg.	.03
	504045	Rubber grommet; Osc. coil mtg.	.04
	17063	Screw—No. 6 x 1/4	.01
	114628	Screw—No. 8 x 1/2 chassis mtg.	.01
	502173	Shaft—tuning control	.15
	116890	Socket—octal base	.12
	160392	Socket—octal (rectifier)	.16
	500489	Socket—dial lamp (with leads)	.44
	504012	Spring for tuning slug drive cord	.05
	181384	Spring—dial cord tension	.06
	111456	Washer—spring washer for tuning shaft	.005

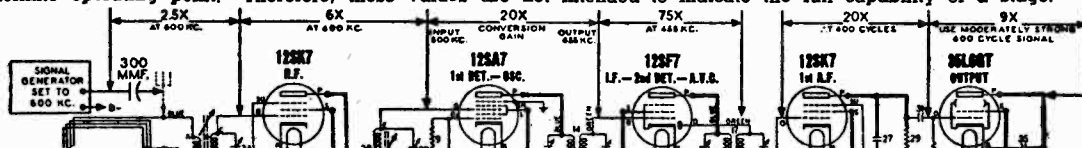
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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.

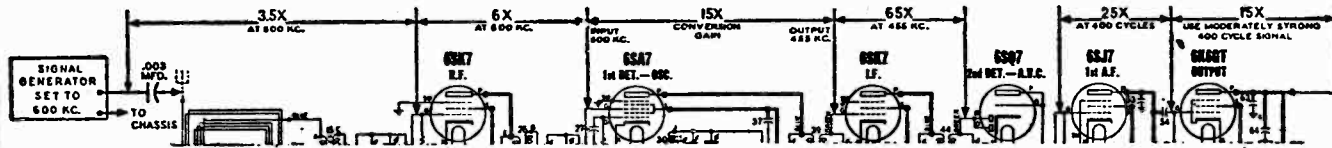
MODEL 508

PURE OIL CORP.

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 chassis. 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.



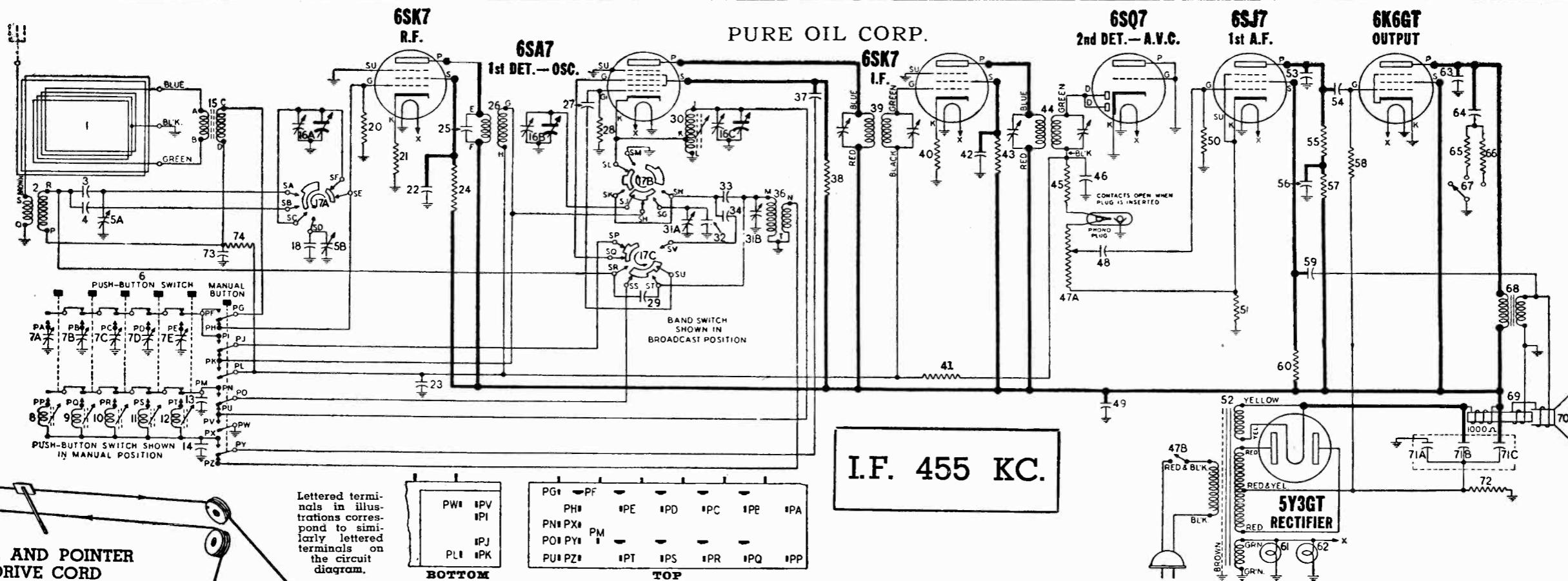
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

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 feedback 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 primary of the output transformer.

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE	DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
CONDENSERS							
3	502166	Condenser—ceramic 82 Mmfd. 500 volt.	\$0.30	40	502125	Resistor—carbon 220 Ohms 1/4 watt.	\$0.12
4	502164	Condenser—mica 670 Mmfd. 500 volt.	.70	41	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	.12
5A, B	502109	Condenser—trimmer assembly		43	502467	Resistor—carbon 68,000 Ohms 1/2 watt.	.12
		Section A 2 to 15 Mmfd.	.65	45	502131	Resistor—carbon 47,000 Ohms 1/4 watt.	.12
		Section B 10 to 40 Mmfd.		47A, B	502117	Volume control 500,000 ohms (with switch)	1.25
7A to E	502910	Condenser—trimmer assem. for P-B tuner	3.00	50	502468	Resistor—carbon 4.7 Meg. 1/4 watt.	.12
13	502161	Condenser—mica 270 Mmfd. 500 volt.	.45	51	502128	Resistor—carbon 2200 Ohms 1/4 watt.	.12
14	502165	Condenser—mica 1,000 Mmfd. 500 volt.	.45	55	502133	Resistor—carbon 220,000 Ohms 1/4 watt.	.12
16A, B, C	502122	Condenser—variable gang	6.60	57	502132	Resistor—carbon 100,000 Ohms 1/4 watt.	.12
18	502182	Condenser—ceramic 39 Mmfd. 500 volt.	.40	58	502134	Resistor—carbon 470,000 Ohms 1/4 watt.	.12
22	502157	Condenser—.05 Mfd. 400 volt.	.24	60	502135	Resistor—carbon 2.2 Meg. 1/4 watt.	.12
23	502155	Condenser—.1 Mfd. 400 volt.	.30	65	502291	Resistor—carbon 4700 Ohms 1/4 watt.	.12
25	502295	Condenser—ceramic 10 Mmfd. 500 volt.	.30	66	502127	Resistor—carbon 560 Ohms 1/4 watt.	.12
27	502159	Condenser—mica 50 Mmfd. 500 volt.	.24	72	502137	Resistor—wire wound 330 Ohms 2 watt.	.25
29	502411	Condenser—2 Mmfd. 500 volt.	.10	74	502134	Resistor—carbon 470,000 Ohms 1/4 watt.	.12
31A, B	502108	Condenser—trimmer assem.	.75	COILS & TRANSFORMERS			
		Section A 2 to 15 Mmfd.		1	502186	Loop antenna	3.15
		Section B 2 to 15 Mmfd.		2	502110	Coil—S.W. antenna	1.10
32	502182	Condenser—ceramic 39 Mmfd. 500 volt.	.40		502025	Complete coil—trimmer assem. for P-B tuner	8.80
33	502167	Condenser—ceramic 68 Mmfd. 500 volt.	.40	8	502907	Coil less slug (540-1000 Kc.)	1.50
34	502163	Condenser—mica 430 Mmfd. 500 volt.	.60	9, 10	502908	Coil less slug (650-1300 Kc.)	1.50
37	502151	Condenser—.01 Mfd. 400 volt.	.20	11, 12	502909	Coil less slug (975-1600 Kc.)	1.50
42	502157	Condenser—.05 Mfd. 400 volt.	.24		502911	Slug for coils 502907, 502908, 502909	.25
46	502271	Condenser—mica 260 Mmfd. 500 volt.	.30		501151	Clip—for mtg. push button coils	.08
48	502150	Condenser—.004 Mfd. 600 volt.	.20	15	502112	Coil—BC. antenna	1.70
49	502157	Condenser—.05 Mfd. 400 volt.	.24	26	502113	Coil—BC. R.F.	1.85
53	502160	Condenser—mica 110 Mmfd. 500 volt.	.24	30	502114	Coil—BC. oscillator	1.45
54	502152	Condenser—.02 Mfd. 400 volt.	.24	36	502111	Coil—S.W. oscillator	1.10
56	502410	Condenser—.1 Mfd. 400 volt.	.30	39	502102	Transformer—1st I.F.	2.30
59	502405	Condenser—.25 Mfd. 400 volt.	.36	44	502103	Transformer—2nd I.F.	2.30
63	502150	Condenser—.004 Mfd. 600 volt.	.20	52	502174	Transformer—power	7.50
64	502154	Condenser—.05 Mfd. 600 volt.	.24		504206	Transformer—output for M-504205 speaker	2.00
71A, B, C	502207	Condenser—Electrolytic		68	504208	Transformer—output for R-504205 speaker	2.00
		A—20 Mfd. 25 volt	2.20		504124	Transformer—output for D-504205 speaker	2.00
		B—20 Mfd. 400 volt		OTHER ELECTRICAL PARTS			
		C—10 Mfd. 400 volt		6	502120	Switch—push-button	4.00
73	502153	Condenser—.05 Mfd. 200 volt.	.24	17A, B, C	502119	Switch—band	2.80
RESISTORS							
20	502468	Resistor—carbon 4.7 Meg. 1/4 watt.	.12	61, 62	110629	Lamp—dial (Mazda 44) 6.3 V. 250 Ma.	.15
21	502127	Resistor—carbon 560 Ohms 1/4 watt.	.12	67	502118	Switch—tone control	.70
24	502132	Resistor—carbon 100,000 Ohms 1/4 watt.	.12	69	504205	Speaker—Electro-dynamic (6 inch)	9.00
28	502130	Resistor—carbon 22,000 Ohms 1/4 watt.	.12		504209	Cone & Voice coil for R-504205 speaker	3.00
38	502466	Resistor—carbon 33,000 Ohms 1 watt.	.16	70	504207	Cone & Voice coil for M-504205 speaker	3.00
					504125	Cone & Voice coil for D-504205 speaker	3.00
MISCELLANEOUS PARTS							
	502560	Background for dial	\$0.16		117057	Cord—dial drive (102 in. required), per ft.	.05
	116467	Base for mtg. electrolytic condenser	.04		502562	Dial scale—glass	3.85
	502046	Back for cabinet	.70		113402	Drum—for dial drive	.70
	117315	Call letter tabs for push-button	.55		502699	Escutcheon for push-buttons	1.70
	500420	Clamp—for dial glass	.15		501449	Knob—volume or tuning	.15
					501458	Knob—tone or band switch	.16

PURE OIL CORP.



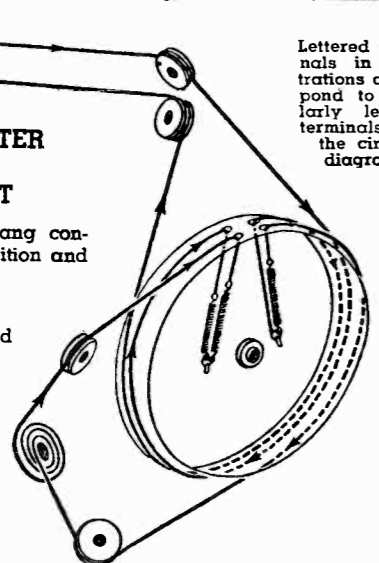
I.F. 455 KC.

DIAL AND POINTER DRIVE CORD ARRANGEMENT

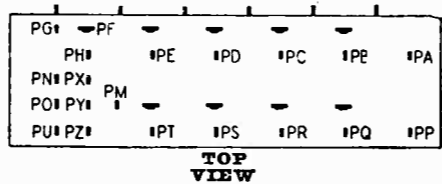
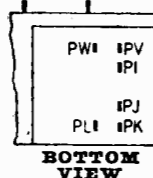
To string dial cord, set gang condenser to fully meshed position and use following parts:

- 113177 Tension Spring
- 114955 Clip on end of cord
- 119087 Ring for dial cord
- 117057 Cord (102 inches)

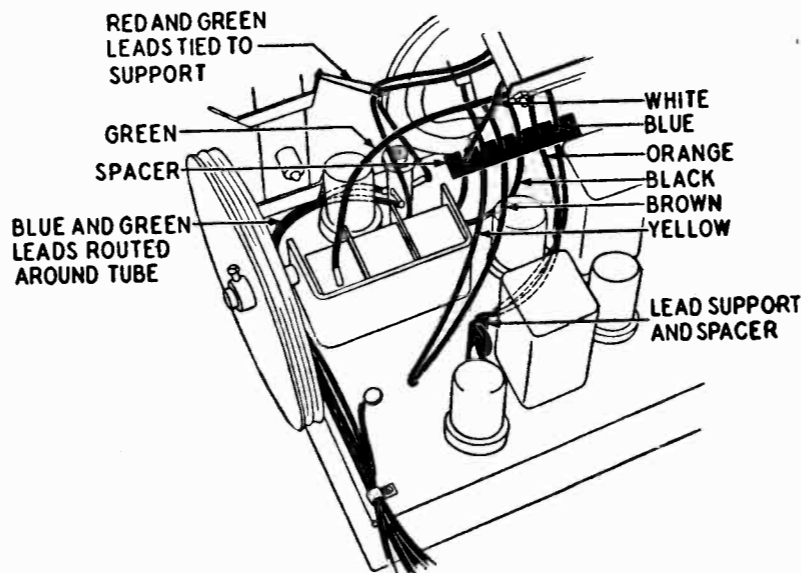
Pointer drive 72 inches
Gang drive 30 inches



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



PUSH-BUTTON SWITCH 502120



IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The wires shown in the above illustration are associated with tuned circuits which carry radio frequency currents. Therefore, care must be exercised to insure that they are properly routed and spaced. Anchoring and fixing spacing of wires minimizes freedom of movement and is utilized to maintain a stable arrangement.

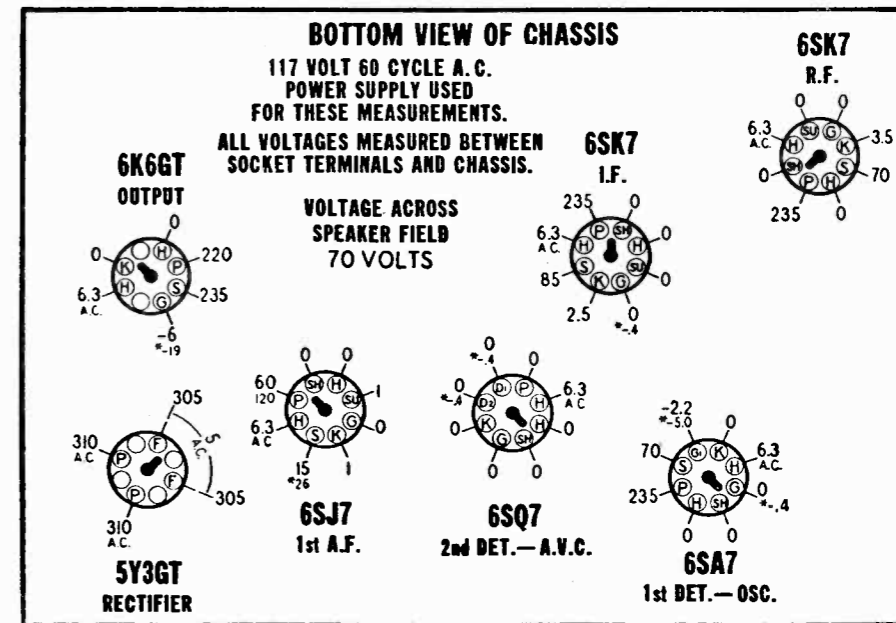
Since the relative positions of these wires may affect tuned circuits it is important to avoid any change in arrangement after the receiver has been aligned. If the position of the wires has been disturbed, it is advisable to re-check alignment (see previous page for alignment procedure).

SOCKET VOLTAGES

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

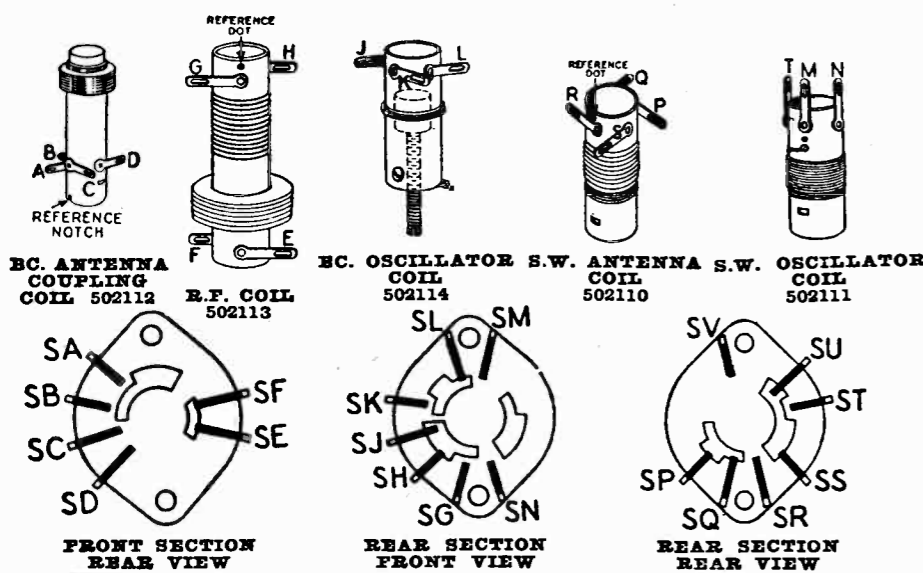
VOLUME ON FULL WITH NO SIGNAL
RANGE SWITCH IN BROADCAST POSITION

DIAL TUNED TO 540 KC.
MANUAL BUTTON PUSHED IN

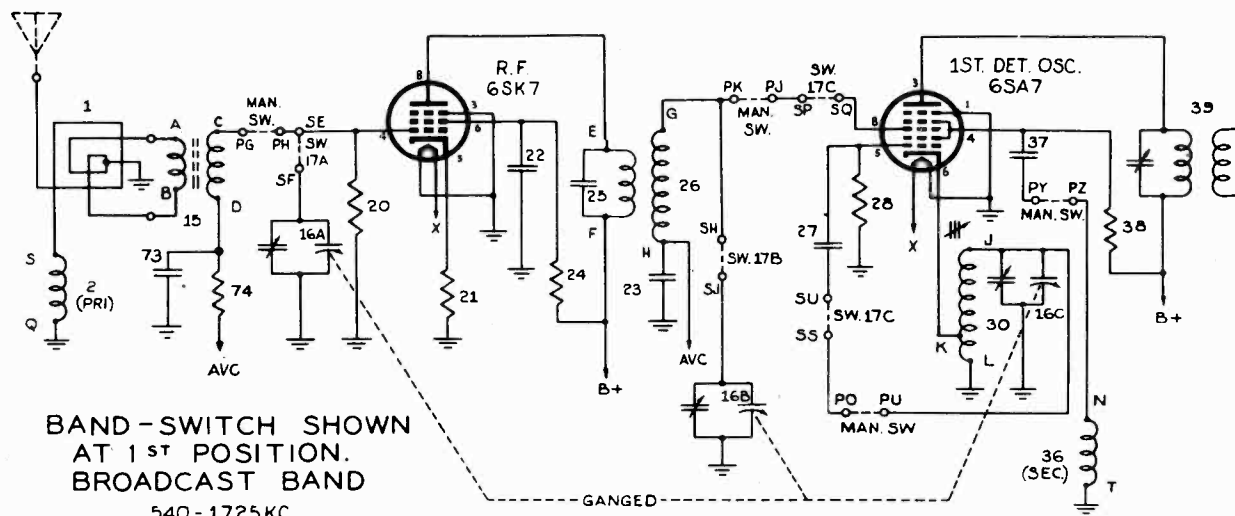


REAR OF CHASSIS

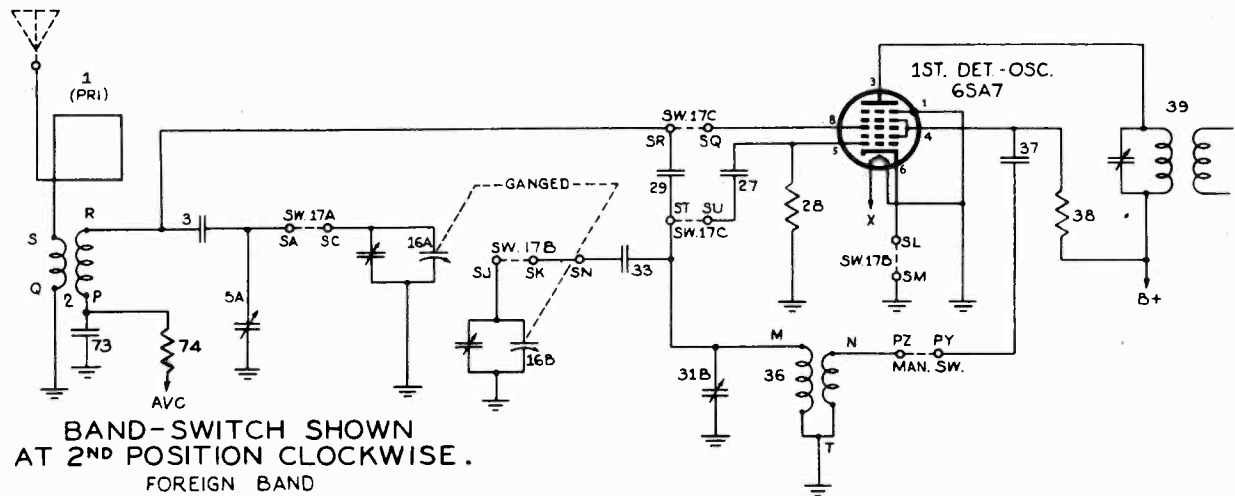
*—Measured with vacuum tube voltmeter.
NOTE:—The 6K6GT grid bias of —19 volts can be measured across resistor No. 72.



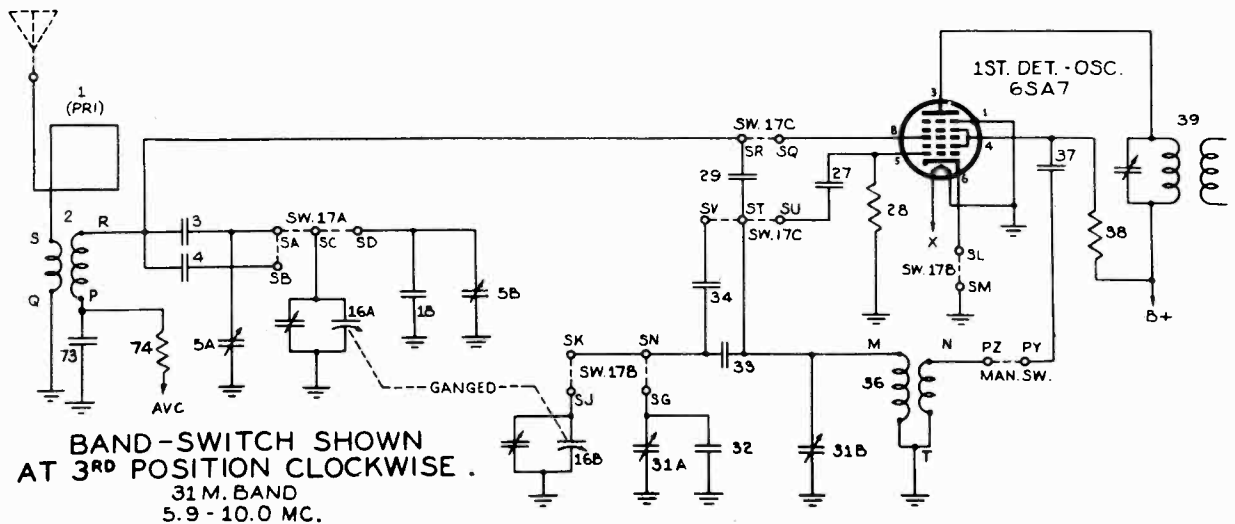
PURE OIL CORP.



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND 540-1725 KC.



BAND-SWITCH SHOWN AT 2ND POSITION CLOCKWISE. FOREIGN BAND 11.4-15.5 MC.



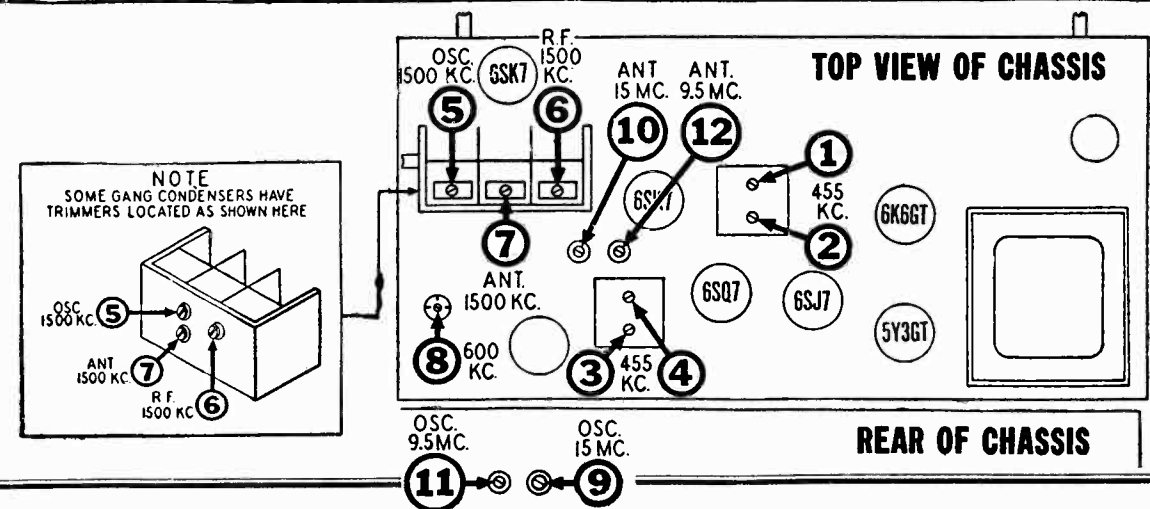
BAND-SWITCH SHOWN AT 3RD POSITION CLOCKWISE. 31 M. BAND 5.9-10.0 MC.

PURE OIL CORP.

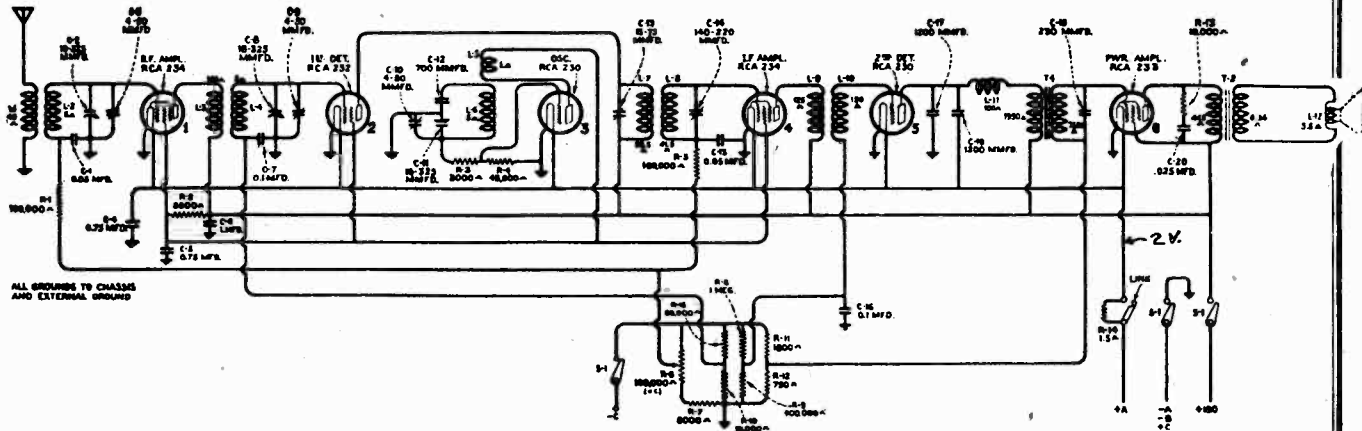
1. The chassis and loop antenna should remain in their normal position in the cabinet throughout the following procedure.
2. Check arrangement of leads to push-button switch as shown in illustration on following page.
3. With the gang condenser fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
4. Connect output meter across speaker voice coil.
5. Connect the ground lead of the signal generator to the receiver chassis.
6. Set volume control at maximum volume position and use a weak signal from the signal generator.
7. Push in the manual button and leave it in that position throughout the alignment procedure.

IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave bands.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on rear section of gang	455 KC	Broadcast (counter-clockwise)	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.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
					6	Broadcast R.F.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	7	Broadcast Antenna	Adjust for maximum output.
					8	Adjustable core of Broadcast Oscillator Coil.	
.003 MFD. Condenser	External Antenna Clip on Loop Frame	600 KC	Broadcast (counter-clockwise)	Tune to 600 KC Generator Signal	8	Adjustable core of Broadcast Oscillator Coil.	Adjust for maximum output. Try to increase output by rotating core in and out and retuning receiver dial until maximum output is obtained.
.003 MFD. Condenser	External Antenna Clip on Loop Frame	Repeat adjustments of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.					
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	15 MC	Short wave	15 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 14.1 MC. If image does not appear, realign at 15 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	15 MC	Short wave	Tune to 15 MC Generator Signal	10	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.5 MC	31 M (Clockwise)	9.5 MC	11	31 M Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 8.6 MC. If image does not appear, realign at 9.5 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	External Antenna Clip on Loop Frame	9.5 MC	31 M (Clockwise)	Tune to 9.5 MC Generator Signal	12	31 M Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.



RCA MFG. CO.



Electrical Specifications

Figure A—Schematic Circuit Diagram

- "A" Battery Current.....0.55 Ampere
- "B" Battery Current (Max. Volume Control)..0.032 Ampere
- Type and Number of Radiotrons.....2 RCA-234,
1 RCA-232, 2 RCA-230, 1 RCA-233—Total, 6.
- Undistorted Output.....0.4 Watt

Important—When using 3-volt "A" supply as shown in Figure 2 (b), be sure to open the link connecting terminals 1 and 2 on the rear of the chassis. For 2-volt "A" supply as in Figure 2 (a), the link should be closed. The proper link position is shown by the inset in each diagram.



REPLACEMENT PARTS

Stock No.	DESCRIPTION
RECEIVER ASSEMBLIES	
2012	Capacitor - 1,200 mmfd - (C-17)
2532	Capacitor - 230 mmfd - (C-19)
2747	Cap - Contact cap
2963	Resistor - 8,000 ohms - Carbon, 1 watt (R-2).
2994	Coil (L-11)
3076	Resistor - 1 megohm - Carbon - 1/2 watt (R-8)
3078	Resistor - 10,000 ohms - Carbon - 1/2 watt - (R-13, R-10)
3079	Resistor - 40,000 ohms - Carbon - 1/2 watt - (R-4)
3118	Resistor - 100,000 ohms - Carbon - 1/4 watt - (R-1)
3252	Resistor - 100,000 ohms - Carbon - 1/2 watt - (R-5)
3297	Resistor - 80,000 ohms - Carbon - 1/2 watt - (R-15)
3358	Resistor - 3,000 ohms - Carbon - 1/2 watt - (R-3)
3368	Socket - UX type Radiotron socket
3382	Resistor - 750 ohms - Carbon - 1/2 watt (R-12)
3456	Capacitor - 0.05 mfd (C-1, C-15)
3460	Capacitor - 1,200 mmfd - (C-17)
3471	Capacitor - 0.025 mfd - (C-20)
3509	Socket - Five contact Radiotron socket.
3510	Shaft - Tuning condenser drive shaft.
3511	Scale - Dial scale and drum
3512	Switch - Operating switch (S-1)
3513	Capacitor - 700 mmfd - (C-12)

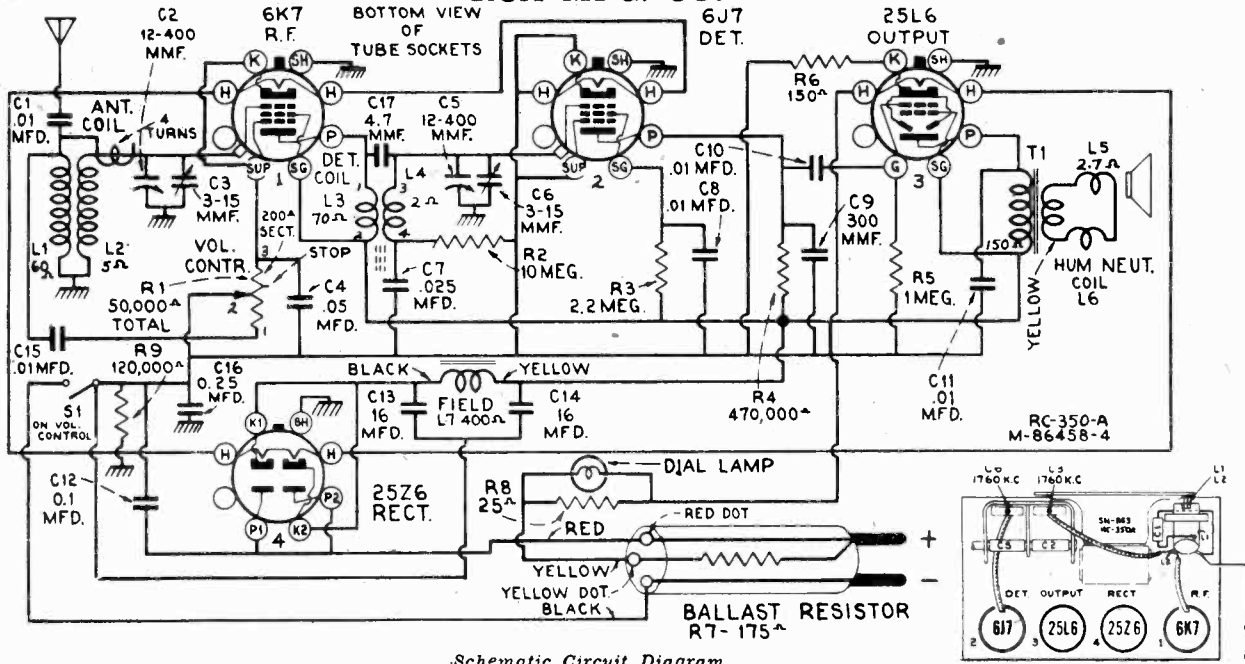
Stock No.	DESCRIPTION
RECEIVER ASSEMBLIES (Continued)	
3515	Resistor - 1,800 ohms - Carbon - 1/2 watt - (R-11)
6142	Resistor - 6,000 ohms - Carbon - 1/2 watt - (R-7)
6228	Resistor - 200,000 ohms - Carbon - 1/2 watt
6249	Resistor - 1.5 ohms - Flexible type (R-14).
6280	Resistor - 400,000 ohms - Carbon - 1/2 watt - (R-9)
6315	Resistor - 45,000 ohms - Carbon - 1/2 watt - (R-4)
6333	Cable - Battery cable
6414	Capacitor pack - Comprising one 1.0 mfd., two 0.75 mfd. and two 0.1 mfd. (C-5, C-6, C-7)
6415	Transformer assembly - Comprising interstage and output transformer (T-1, T-2)
6416	Transformer - First I-F transformer
6417	Transformer - Second I-F transformer.
6418	Coil - Detector oscillator coil
6419	Coil - R.F. coil
6463	Volume control, - 100,000 ohms (R-6)
7241	Condenser - 3 gang variable tuning.

LOUDSPEAKER ASSEMBLY

6166	Board - Terminal board, two terminals
8983	Magnet assembly - Comprising cone bracket core and magnet.
8984	Cone - Speaker paper cone

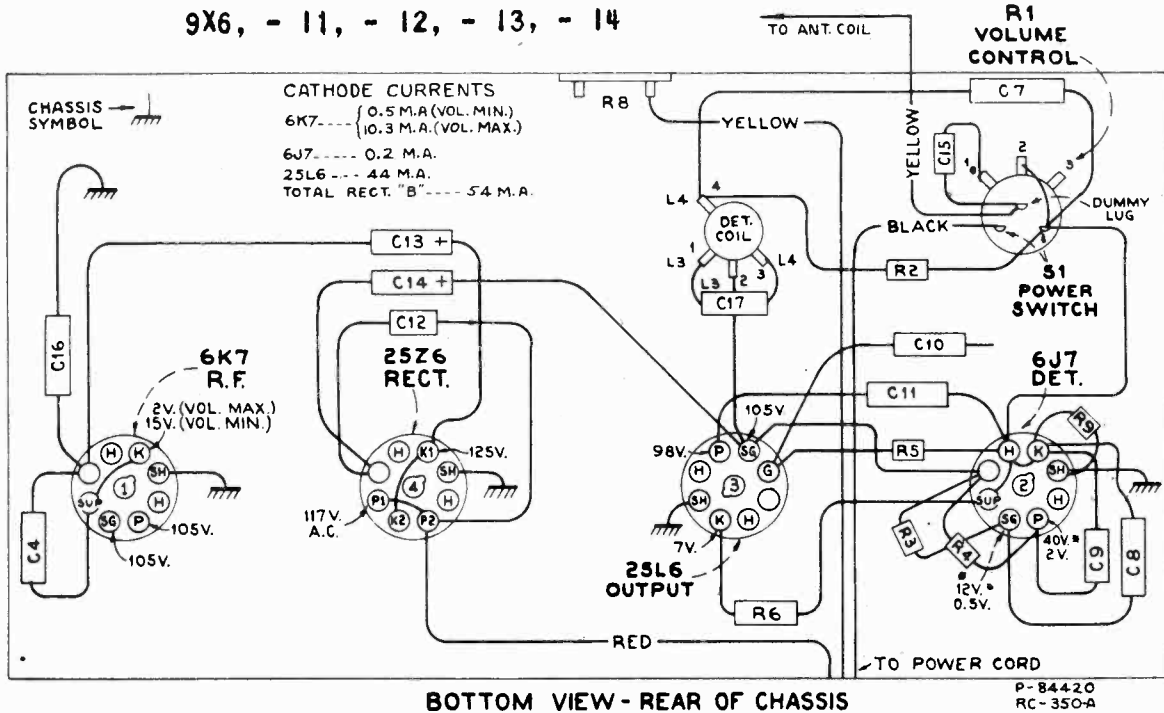
MODELS 9X6, 9X11, 9X12, 9X13, 9X14

RCA MFG. CO.



Schematic Circuit Diagram

9X6, - 11, - 12, - 13, - 14



R-F Wiring Diagram and Socket Voltages

* Note: Values with (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to common negative line, unless otherwise specified.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10,

Precautionary Lead Dress

1. Dress green lead from antenna coil to gang up from speaker chassis.
2. Green lead from gang to grid of 6J7 must be dressed down and away from top of bracket, and centered in gang section.
3. Green lead from detector coil to gang must be dressed under pilot lamp bracket; Any excess wire should be pulled through to under side of chassis.
4. Pilot lamp leads must be dressed clear of gang rotor.
5. Magnetite core in detector coil must not be in contact with base or mounting screw.

50, and 250 volts. (Use nearest range above the specified measure voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

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.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

RCA MFG. CO.

MODELS 9X6, 9X11, 9X12, 9X13, 9X14
MODEL X-55

MODELS 9X6, - 11, - 12, - 13, - 14
(RC-350A) Replacement Parts

Dial Lamp Mazda No. 40, 6.3 volts, .15 amps.

POWER SUPPLY RATINGS

A-C Rating 105-125 volts, 50-60 cycles, 50 watts
D-C Rating 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted 1.0 watt
Maximum 1.5 watts

LOUDSPEAKER

Type 3-inch Electrodynamic
Voice-Coil Impedance 3 ohms at 400 cycles

Alignment Procedure

Reel up the antenna wire, and keep it away from chassis during alignment. Connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Pre-setting Dial.—With gang condenser rotor plates turned full in for maximum capacity, loosen dial-drum set-screw, and turn drum so that the top edge of dial (low-frequency end) is approximately 1/16-in. below level of gang frame, and tighten set-screw.

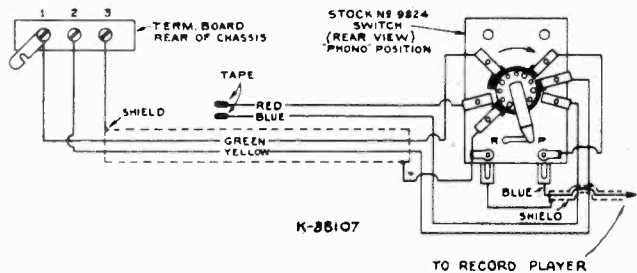
STOCK No.	DESCRIPTION
RECEIVER ASSEMBLIES	
14392	Capacitor—4.7 mmfd. (C17)
30883	Capacitor—300 mmfd. (C9)
14393	Capacitor—.01 mfd. (C15)
4870	Capacitor—.025 mfd. (C7)
30882	Capacitor—.05 mfd. (C4)
30899	Capacitor—.01 mfd. (C12)
12484	Capacitor—.025 mfd. (C16)
31323	Capacitor—16 mfd. (C13, C14)
30875	Coil—Antenna coil (L1, L2)
32027	Coil—R-f coil (L3, L4)
31321	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)
32030	Cord—Resistance power cord (R7)
31314	Dial—Station selector dial scale
31315	Drum—Station selector dial scale drum—less scale
4340	Lamp—Dial lamp
31193	Lead—Antenna lead—approximately 25 ft. long
32028	Resistor—25 ohms, 3 watts, wire wound (R8)
13428	Resistor—150 ohms, 1/2 watt (R6)
13734	Resistor—120,000 ohms, 1/2 watt (R9)
12285	Resistor—470,000 ohms, 1/2 watt (R4)
13730	Resistor—1 meg., 1/2 watt (R5)
12679	Resistor—2.2 meg., 1/2 watt (R3)
13601	Resistor—10 meg., 1/2 watt (R2)
4387	Screw—No. 6-32 headless set screw for drum, Stock No. 31315
31318	Socket—Dial lamp socket
31319	Socket—Tube socket
32029	Transformer—Output transformer (T1)
32026	Volume control and power switch (R1, S1)

SPEAKER ASSEMBLIES (86309-2)	
31325	Cone—Speaker cone and voice coil (L5)
32025	Speaker complete
MISCELLANEOUS ASSEMBLIES	
31326	Escutcheon—Station selector dial escutcheon—Model 9X6
31915	Escutcheon—Station selector dial escutcheon—Models 9X11, 9X12, 9X13 and 9X14 only
31914	Knob—Station selector or volume control knob—Models 9X12 and 9X13 only
31204	Knob—Station selector or volume control knob—Models 9X6, 9X11 and 9X14 only
30900	Spring—Retaining spring for knobs

Adjustments for Push-Button Tuning MODEL X-55

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.
2. Turn the accessory switch to "Radio" position and accurately tune in the station for which the first button is to be set.
3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than 1/4 turn after the rod begins to grip or damage to the mechanism may result.
4. Replace the push-button on its shaft.
5. Proceed in a similar manner for the remainder of the push-buttons.

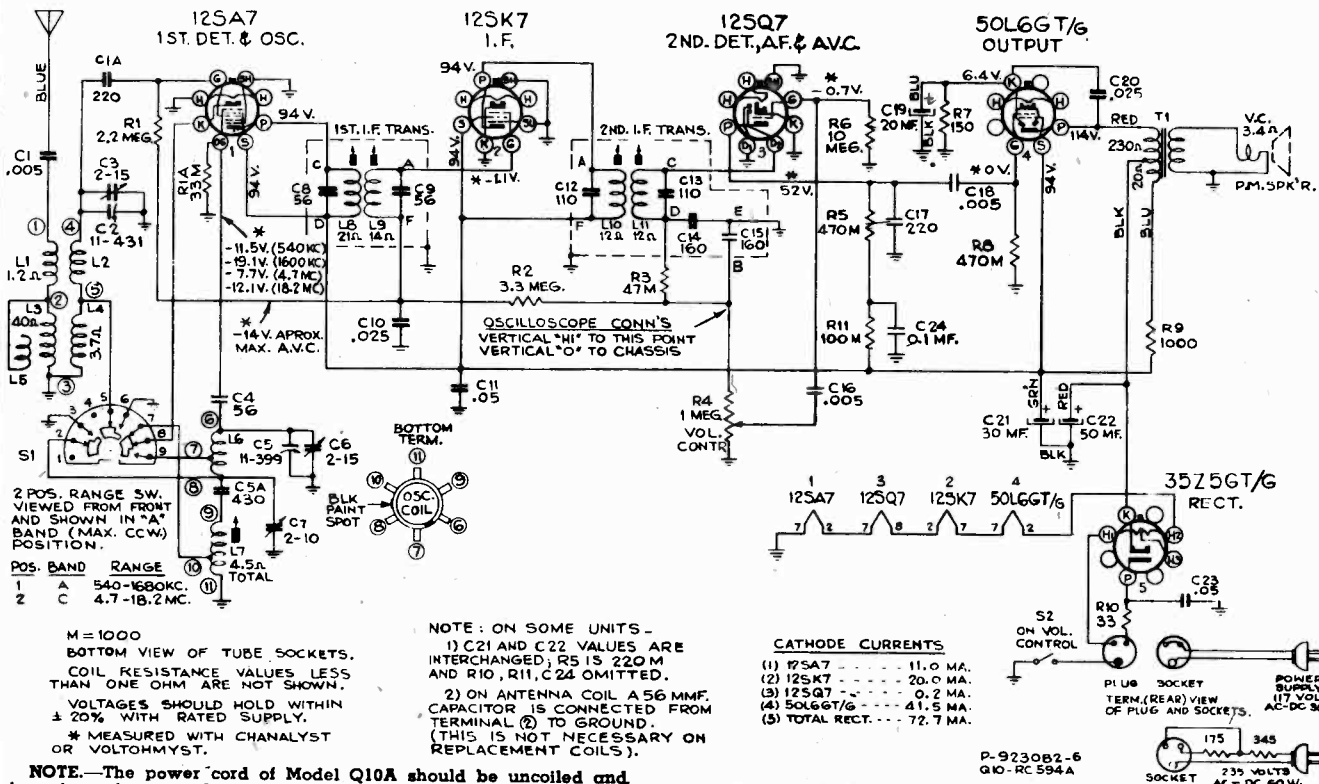


Record Player Connections, Using a No. 9824 Switch

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLY (RC-473A)			
33719	Belt—Push button arm adjustment belt and rivets	12285	Resistor—470,000 ohms, 1/2 W.
34024	Board—"Antenna-Ground" board	30271	Resistor—4.7 megohm, 1/2 W.
34025	Board—"Radio-Phono" board	13601	Resistor—10 megohm, 1/2 W.
33731	Button—Push button	33735	Screw—Push arm lock screw
12720	Capacitor—100 mmfd., moulded mica	33725	Shaft—Tuning condenser drive shaft and retainer
12725	Capacitor—150 mmfd., moulded mica	31365	Socket—Lamp socket
34213	Capacitor—430 mmfd., mica	31319	Socket—Tube socket
30433	Capacitor—470 mmfd., moulded mica	33720	Spring—Push button arm return spring
14393	Capacitor—.01 mfd., 300 volt	31418	Spring—Tuning condenser drive cord spring
11315	Capacitor—.015 mfd., 400 volt	33722	Transformer—1st i.f. transformer
32787	Capacitor—.05 mfd., 400 volt	34028	Transformer—2nd i.f. transformer
4839	Capacitor—.01 mfd., 400 volt	33728	Washer—"C" washer for drive shaft
34505	Capacitor—.02 mfd., 300 volt	SPEAKER ASSEMBLIES (RL 85-2)	
34212	Capacitor—Electrolytic comprising 2 sections of 50 mmfd. each, 150 volts	32907	Cap—Cone center dust cap
33724	Coil—Oscillator coil (L1)	34554	Cone—Speaker cone and voice coil
33728	Condenser—Tuning condenser and drum assembly	34802	Speaker—5-inch permanent magnet—less transformer
33631	Control—Volume control and power switch (S1)	34803	Transformer—Output transformer
32634	Cord—Tuning condenser drive cord	MISCELLANEOUS ASSEMBLIES	
33633	Indicator—Station selector pointer	31456	Cover—8 protective covers for push-button markers
11765	Lamp—Pilot lamp—Mazda No. 51	33729	Dial—Glass dial scale
33721	Loop—Antenna loop	33637	Escutcheon—Dial and button escutcheon
33727	Plate—Dial plate frame	30863	Knob—Tuning, volume control, or power switch knob
30880	Resistor—150 ohm, 1/2 W.	30900	Spring—Retaining spring for knob or button
30152	Resistor—1,000 ohms, 1 W.	33973	Marker—1 set push-button marker
12454	Resistor—33,000 ohms, 1/2 W.		
12412	Resistor—47,000 ohm, 1/2 W.		
12264	Resistor—220,000 ohms, 1/2 W.		

MODELS Q10, Q10A,
Ch. RC-594C, Early

RCA MFG. CO.



IF PEAK 455 KC

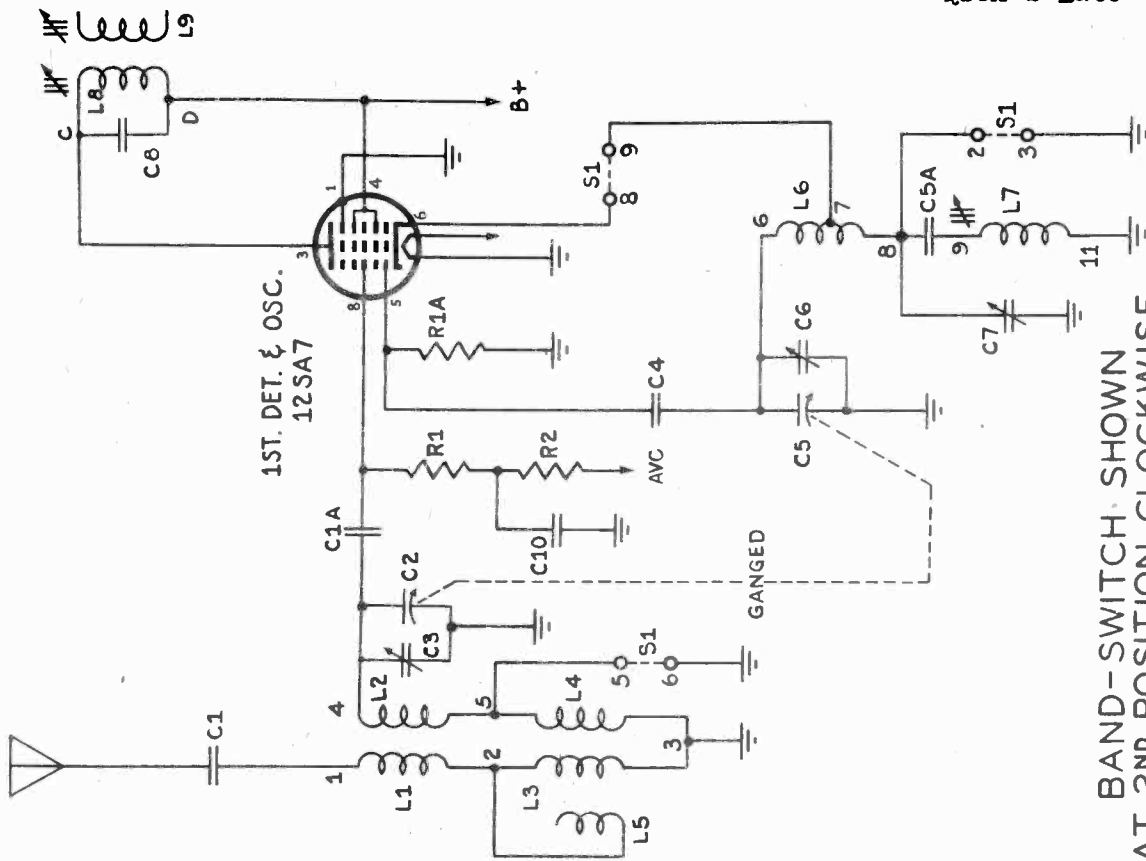
Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC-594C			
70367	Capacitor—Mica trimmer, 2-10 mmf. (C7)	70369	Shaft—Tuning knob shaft
39622	Capacitor—Mica, 56 mmf. (C4)	70363	Socket—3 pin socket for power cable located on rear apron
39636	Capacitor—Mica, 220 mmf. (C1A, C17)	37605	Socket—Tube socket, moulded
39643	Capacitor—Mica, 430 mmf. (C5A)	31418	Spring—Tension spring for drive cord
70627	Capacitor—Tubular, .005 mfd., 600 volts (C1, C16, C18)	70358	Switch—Range switch (S1)
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10, C20)	70361	Transformer—First I-F transformer (L8, L9, C8, C9)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C11, C23)	70362	Transformer—Second I-F transformer (L10, L11, C12, C13, C14, C15)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)	70370	Transformer—Output transformer (T1)
70371	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts; 1 section of 30 mfd., 150 volts; and 1 section of 20 mfd., 20 volts (C22, C21, C19)	33726	Washer—Retaining washer for tuning shaft
70380	Coil—Antenna coil (L1, L2, L3, L4, L5)	SPEAKER ASSEMBLY 92510-2	
70359	Coil—Oscillator coil (L6, L7)	70372	Speaker—5-inch PM speaker complete
70366	Condenser—Variable tuning condenser (C2, C3, C5, C6)	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.	
38406	Control—Volume control and power switch (R4, S2)	MISCELLANEOUS ASSEMBLIES	
32634	Cord—Drive cord (approx. 37 inches long)	37362	Clamp—Dial clamp (1 set)
70365	Core—Adjustable core and stud for oscillator coil	70374	Cord—Power cord for 110 v. operation
37068	Indicator—Station selector indicator	70375	Cord—Power cord (resistance) for 220 v. operation
70364	Nut—Speed nut to mount oscillator coil	70373	Cover—Back cover less power cord
70368	Plate—Dial back plate complete with pulleys less dial	71023	Decal—Trade mark decalcomania
36230	Pulley—Drive cord pulley	70376	Dial—Dial scale
71290	Resistor—33 ohms, 1 watt (R10)	37831	Fastener—Push fastener for back cover (1 set)
30880	Resistor—150 ohms, 1/2 watt (R7)	35121	Knob—Range switch knob
30152	Resistor—1000 ohms, 1 watt (R9)	36722	Knob—Volume control or tuning knob
30685	Resistor—33,000 ohms, 1/4 watt (R1A)	35126	Spring—Retaining spring for range switch knob
30787	Resistor—47,000 ohms, 1/4 watt (R3)	30900	Spring—Retaining spring for volume control or tuning knob
3252	Resistor—100,000 ohms, 1/4 watt (R11)		
30648	Resistor—470,000 ohms, 1/4 watt (R5, R8)		
30649	Resistor—2.2 megohms, 1/4 watt (R1)		
12928	Resistor—3.3 megohms, 1/4 watt (R2)		
30992	Resistor—10 megohms, 1/4 watt (R6)		

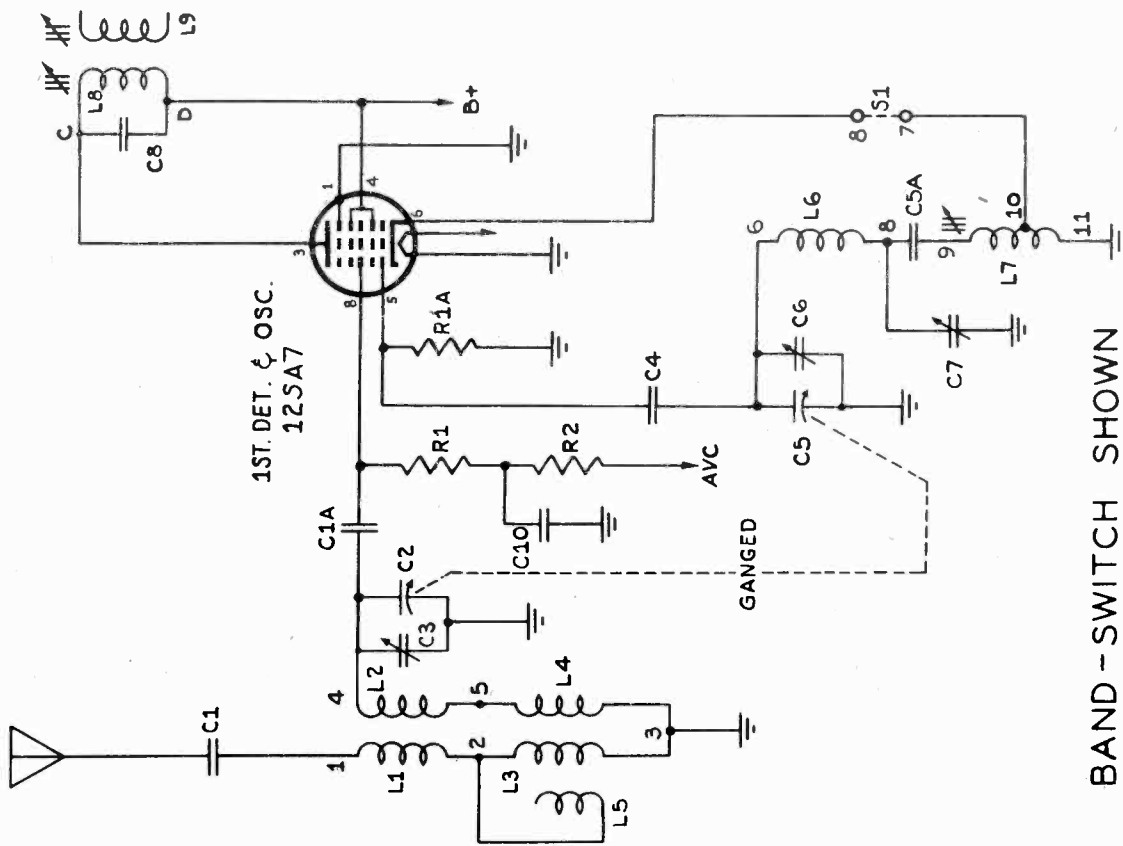
"clarified schematics"

RCA MFG. CO.

MODELS Q10, Q10A Early
 MODELS Q10, Q10-2,
 Q10A-2 Late



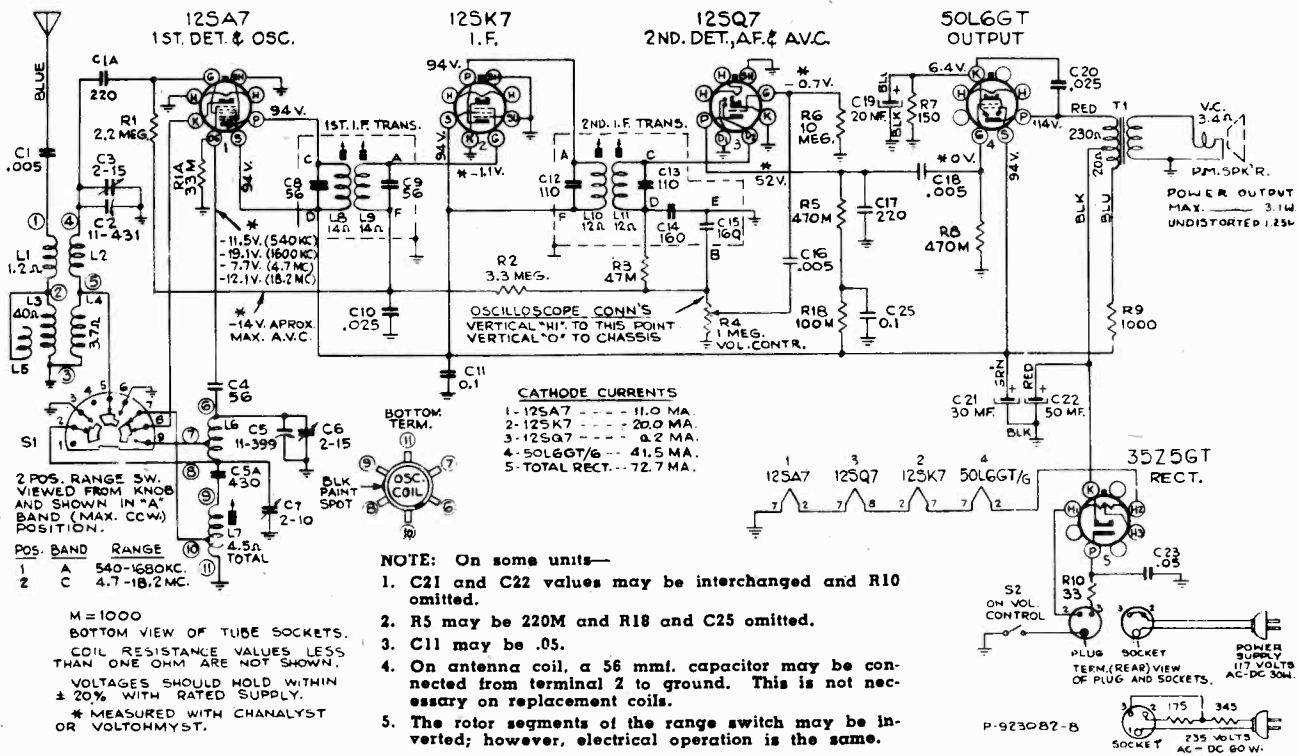
BAND-SWITCH SHOWN
 AT 2ND POSITION CLOCKWISE.
 SHORT WAVE BAND
 4.7-18.2 MC.



BAND-SWITCH SHOWN
 AT 1ST POSITION.
 BROADCAST BAND
 540-1680KC.

MODELS Q10, Q10A, Q10-2
Q10A-2, Ch. RC-594C Late

RCA MFG. CO.



Schematic Diagram

IF PEAK 455 KC

Replacement Parts

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC-594C			
70367	Capacitor—Mica trimmer, 2-10 mmf. (C7)	70369	Shaft—Tuning knob shaft
39622	Capacitor, 56 mmf. (C4)	70363	Socket—3 pin socket for power cable located on rear apron
39636	Capacitor—Mica, 220 mmf. (C1A, C17)	37605	Socket—Tube socket, moulded
39643	Capacitor—Mica, 430 mmf. (C5A)	31418	Spring—Tension spring for drive cord
70627	Capacitor—Tubular, .005 mfd., 600 volts (C1, C16, C18)	70358	Switch—Range switch (S1)
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10, C20)	70361	Transformer—First I-F transformer (L8, L9, C8, C9)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C23)	70362	Transformer—Second I-F transformer (L10, L11, C12, C13, C14, C15)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C11, C24)	70370	Transformer—Output transformer (T1)
70371	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts; 1 section of 30 mfd., 150 volts; and 1 section of 20 mfd., 20 volts (C22, C21, C19)	33726	Washer—Retaining washer for tuning shaft
70360	Coil—Antenna coil (L1, L2, L3, L4, L5)	SPEAKER ASSEMBLY	
70359	Coil—Oscillator coil (L6, L7)	92510-2	
70366	Condenser—Variable tuning condenser (C2, C3, C5, C6)	70372	Speaker—5-inch PM speaker complete
38406	Control—Volume control and power switch (R4, S2)	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. 37 inches long)	MISCELLANEOUS ASSEMBLIES	
70365	Core—Adjustable core and stud for oscillator coil	37362	Clamp—Dial clamp (1 set)
16058	Grommet—Rubber grommet for mounting speaker, 3 required (used only on some units)	70374	Cord—Power cord for 110 v. operation—Q10, Q10-2
37068	Indicator—Station selector indicator	70375	Cord—Power cord (resistance) for 220 v. operation—Q10A, Q10A-2
70364	Nut—Speed nut to mount oscillator coil	70373	Cover—Back cover less power cord
70368	Plate—Dial back plate complete with pulleys less dial	71023	Decal—Trade mark decalcomania
36230	Pulley—Drive cord pulley	70376	Dial—Dial scale
71290	Resistor—33 ohms, 1 watt (R10)	37831	Fastener—Push fastener for back cover (1 set)
30880	Resistor—150 ohms, 1/2 watt (R7)	35121	Knob—Range switch knob—Q10, Q10A
30152	Resistor—1000 ohms, 1 watt (R9)	35123	Knob—Range switch knob—Q10-2, Q10A-2
30685	Resistor—33,000 ohms, 1/4 watt (R1A)	36722	Knob—Volume control or tuning knob—Q10
30787	Resistor—47,000 ohms, 1/4 watt (R3)	70414	Knob—Volume control or tuning knob—Q10-2
3252	Resistor—100,000 ohms, 1/4 watt (R11)	35126	Spring—Retaining spring for range switch knob
30648	Resistor—470,000 ohms, 1/4 watt (R5, R8)	30900	Spring—Retaining spring for volume control or tuning knob
30649	Resistor—2.2 megohms, 1/4 watt (R1)		
12928	Resistor—3.3 megohms, 1/4 watt (R2)		
30992	Resistor—10 megohms, 1/4 watt (R6)		

MODELS Q10, Q10A, Ch. RC-594C Early
RCA MFG. CO. MODELS Q10, Q10A, Q10-2, Q10A-2,
Ch. RC-594C, Late

Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the schematic drawing.

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.

FOR EARLY MODELS

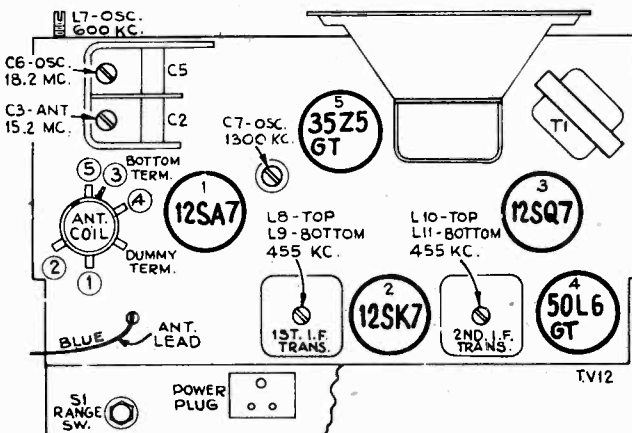
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator through a .01 mfd. capacitor to the receiver chassis, and keep the oscillator output low to avoid a-v-c action.

FOR LATE MODELS

Calibration Scale.—The glass tuning dial may be easily 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.



Tube and Trimmer Locations

Frequency Ranges

Standard Broadcast ("A" Band) 540-1,680 kc (555-178 m)
 Short Wave ("C" Band) 4.7-19.2 mc (63.8-16.5 m)

Intermediate Frequency 455 kc

RCA Tube Complement

- (1) RCA-12SA7 1st Detector-Oscillator
- (2) RCA-12SK7 I-F Amplifier
- (3) RCA-12SQ7 2nd Detector, A.V.C., and A-F Amplifier
- (4) RCA-50L6GT/G Power Output
- (5) RCA-35Z5GT/G Rectifier

Power Supply Ratings (D-C or 40 to 100 cycles A-C)

Q10 105-125 volts 30 watts
 Q10A 210-250 volts 60 watts
 Q10, Q10-2 105-125 volts 30 watts
 Q10A, Q10A-2 210-250 volts 60 watts

Power Output Rating

Undistorted 1.25 watts
 Maximum 3.1 watts

Loudspeaker (92510-2)

Type 5-inch Round Permanent-Magnet Dynamic
 Voice Coil Impedance 4 ohms at 400 cycles

Tuning Drive Ratio 18 to 1

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust following for max. output—
1	12SK7 I-F grid through 0.1 mfd. capacitor	455 kc	B. C.; 1800 kc quiet point	L11-L10 (2nd I-F Trans.)
2	Stator of gang cond. C2 through 0.1 mfd.			L9-L8* (1st I-F Trans.)
3	Antenna lead through 300 ohm resistor	18.2 mc	S. W.; gang condenser open	C6 (osc.)**
4		15.2 mc	S. W.; maximum signal rock gang	C3 (ant.)***
5	Antenna lead through 200 mmf. capacitor	600 kc	B. C.; 800 kc (2nd mark from left)	L7 (osc.)
6		1300 kc	B. C.; rock gang at 1300 kc†	C7 (osc.)
7		800 kc	B. C.; rock gang at 800 kc	L7 (osc.)
8	Repeat steps 6 and 7			

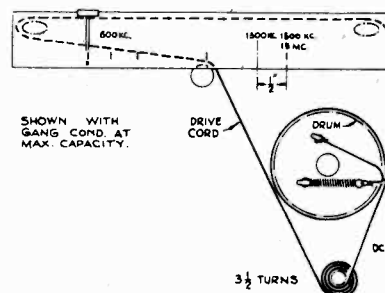
† 1300 kc corresponds to a point 1/2 inch to the left of the right hand mark on the dial backing plate.

* Do not readjust L10 or L11 when test oscillator is connected to C2.

** Use minimum capacity peak if two peaks can be obtained.

*** Image signal of lesser amplitude should occur at 14.3 mc.

NOTE.—Oscillator tracks above signals on both bands.



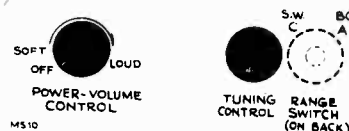
Dial Indicator and Drive Mechanism

PRECAUTIONARY LEAD DRESS

1. Dress output plate capacitor and output transformer leads down next to chassis.
2. Dress 12SQ7 grid resistor down next to chassis, and away from power ground wire to switch.
3. Dress lead from 2nd I-F transformer to volume control down to chassis and away from adjacent parts.
4. Keep grid end of R1 as short as possible.
5. Keep body of C1A slightly away from chassis.

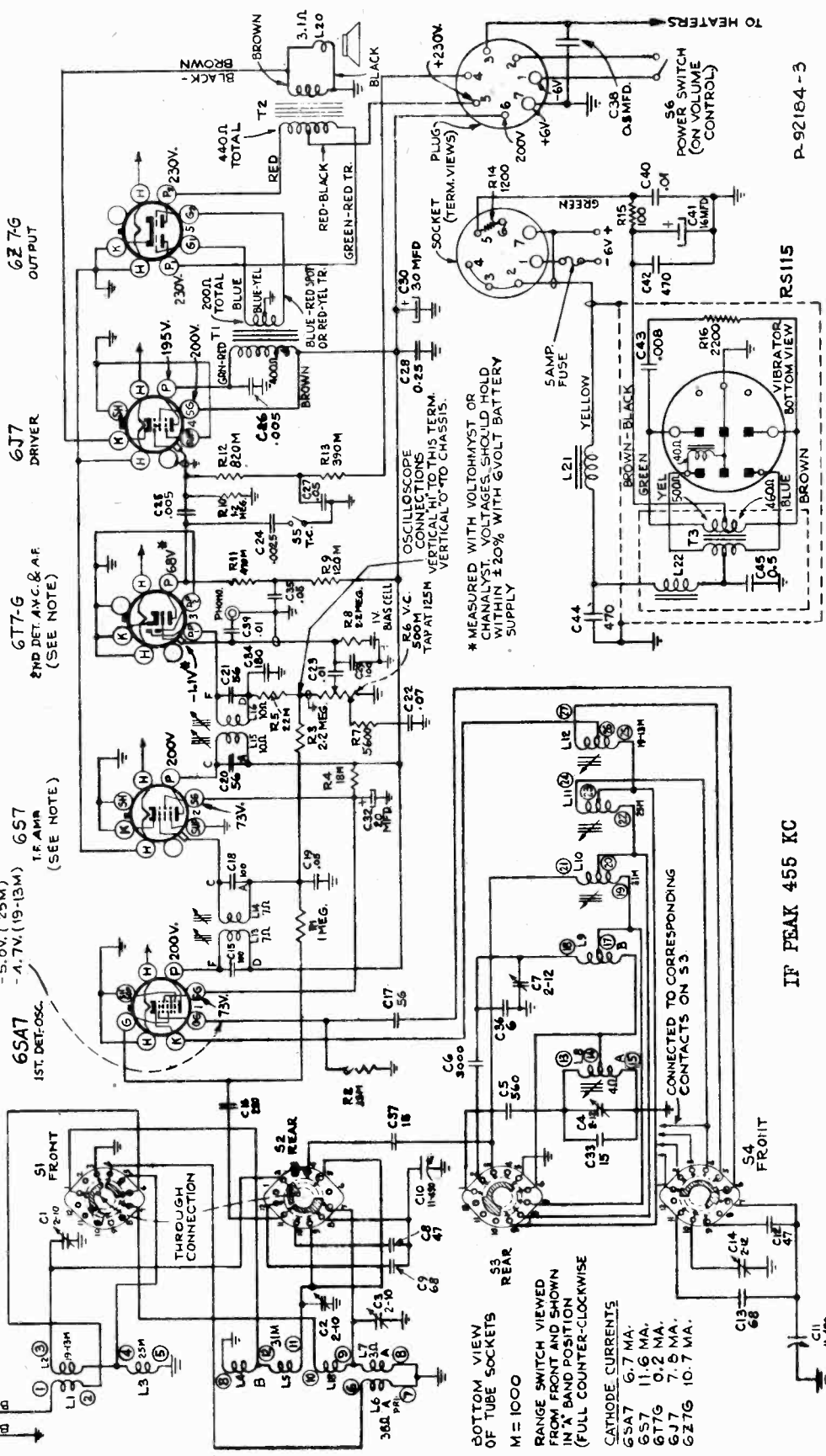
POWER SUPPLY POLARITY.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

CAUTION.—Repair of the power cord furnished with Model Q10A should not be attempted; apply to your RCA Distributor for a replacement.



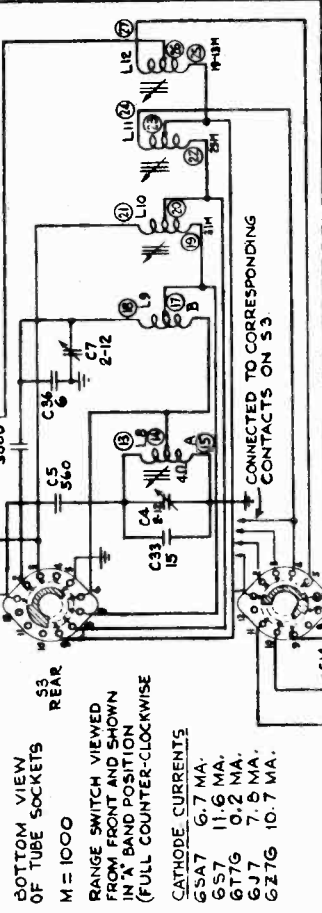
Location of Controls

NOTE
 In some units, a 6K7 may be substituted for the 6S7 and a 6Q7 in place of the 6T7G.



P-92184-3

* MEASURED WITH VOLTHYDRAST OR CHANALYST. VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 6VOLT BATTERY SUPPLY



IF PEAK 455 KC

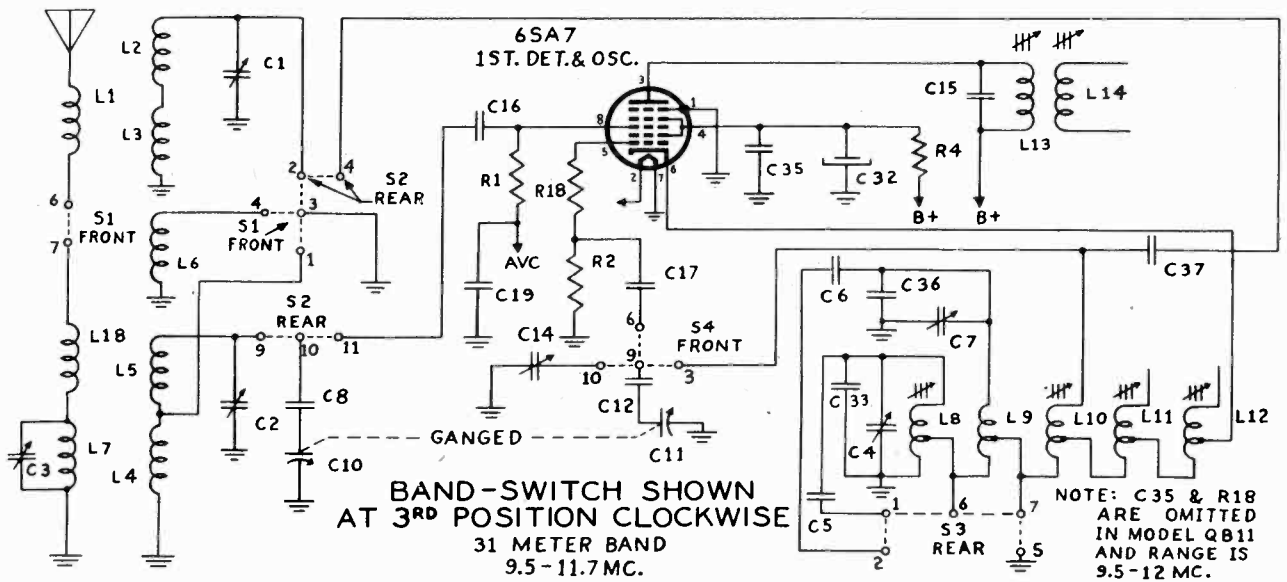
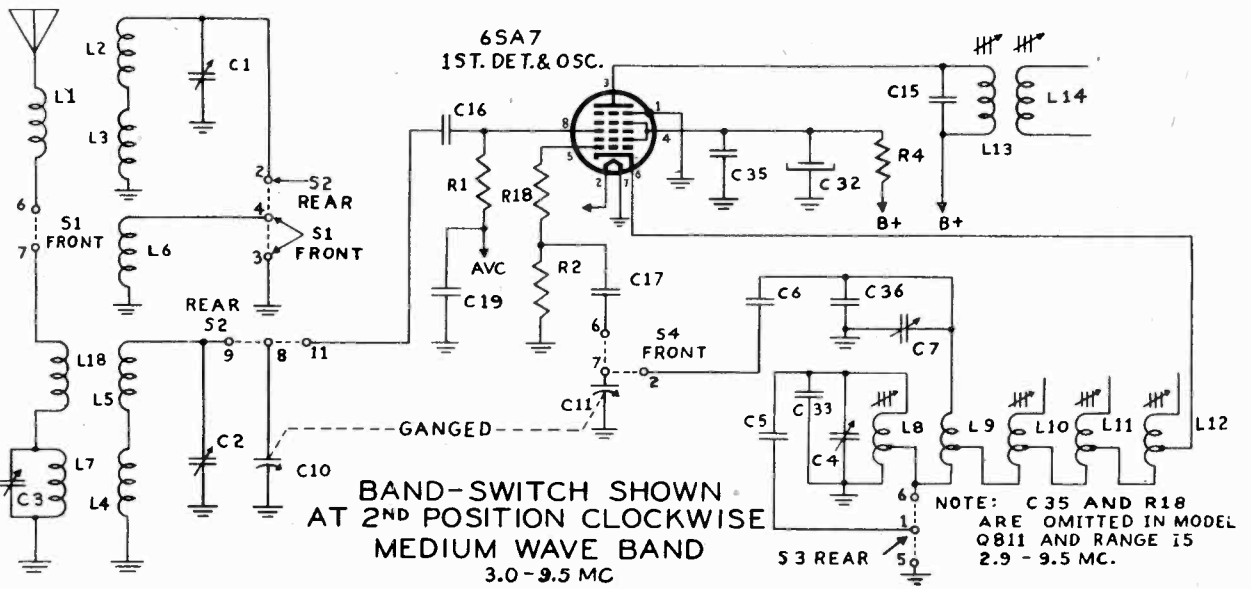
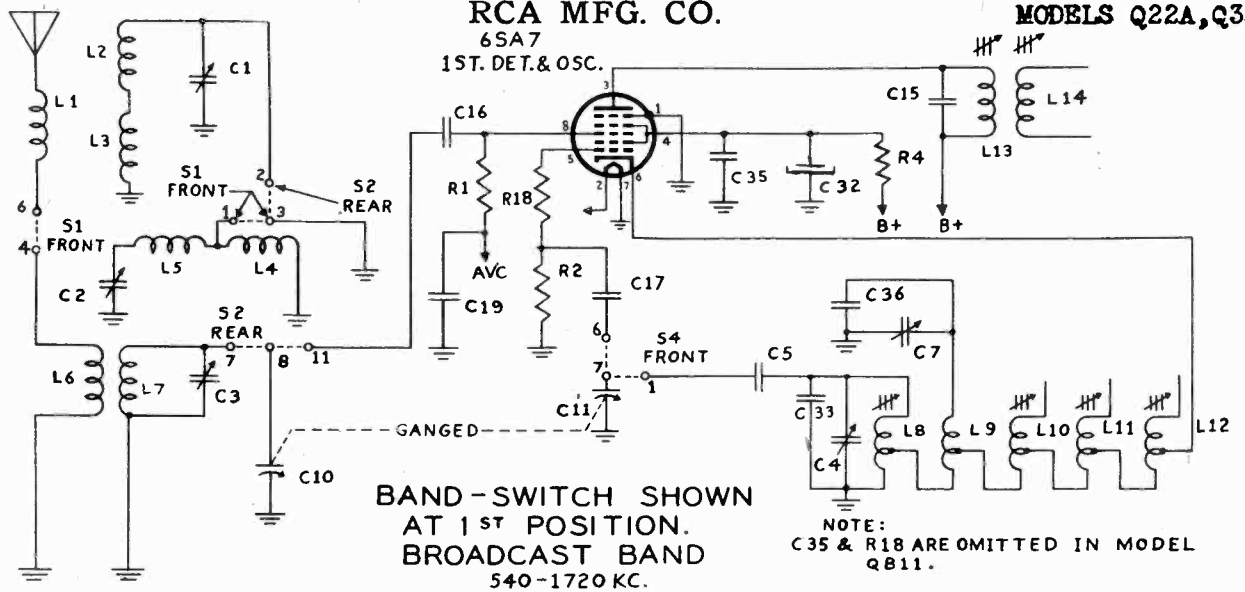
FREQUENCY RANGES	455 kc
Standard Broadcast ("A" Band)	540-1,720 kc (555-174 m)
Medium Wave ("B" Band)	2.9-9.5 mc (103-31.6 m)
"31" Meter Spread Band	9.5-12 mc (31.6-25 m)
"25" Meter Spread Band	11.7-15 mc (25.6-20 m)
"19-13" Meter Spread Band	15.1-22 mc (19.9-13.6 m)
INTERMEDIATE FREQUENCY	455 kc
POWER SUPPLY RATING	3.35 amperes
With vibrator power supply unit (RS-115):	6.3 volts, total current drain
LOUDSPEAKER (92519-1)	Type: 6 1/2 inch, permanent-magnet dynamic
	Voice-coil impedance at 400 cycles: 3.4 ohms
POWER OUTPUT	5 Amp
Undistorted	3.1 watts
Maximum	4.3 watts
FUSE	3AG
Victrola Attachment:	
A jack is provided on the rear of chassis for connecting a Victrola attachment to the audio amplifying circuit.	

MODEL QB11
MODELS Q22A, Q32

RCA MFG. CO.

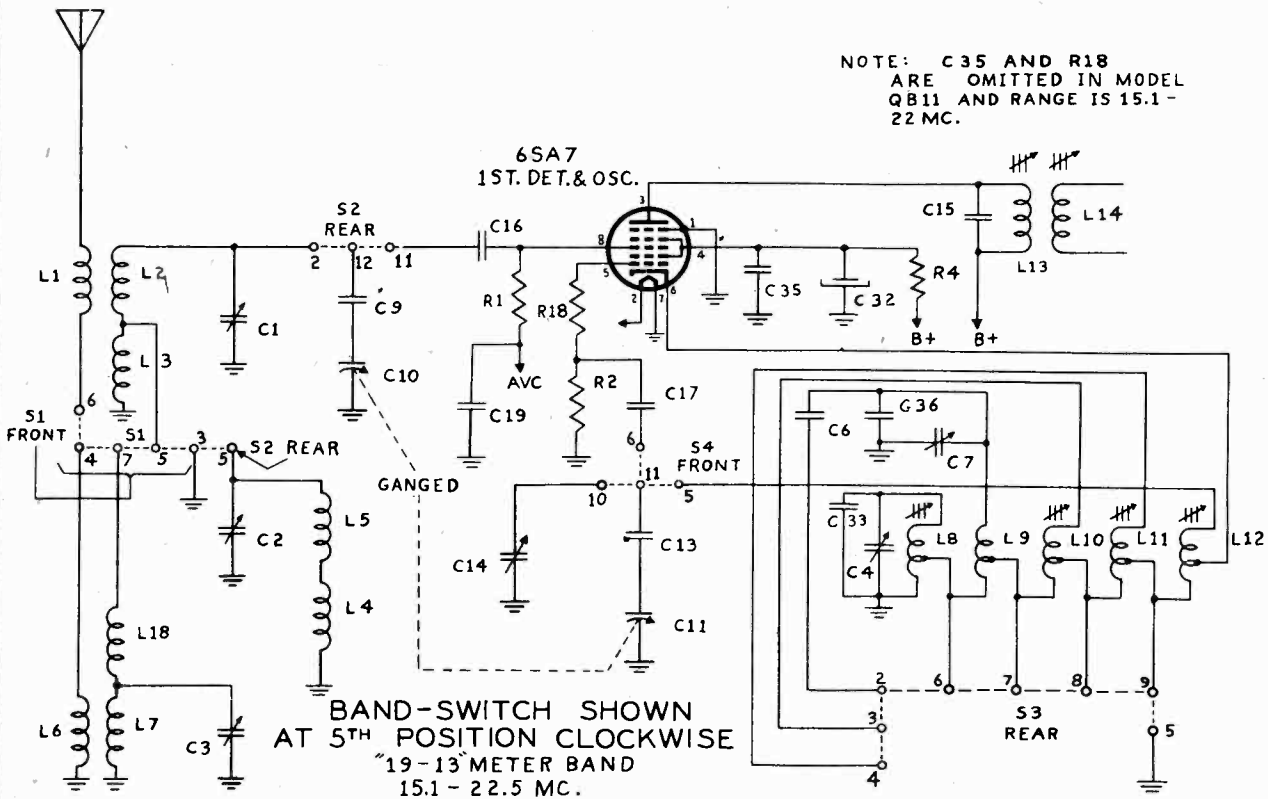
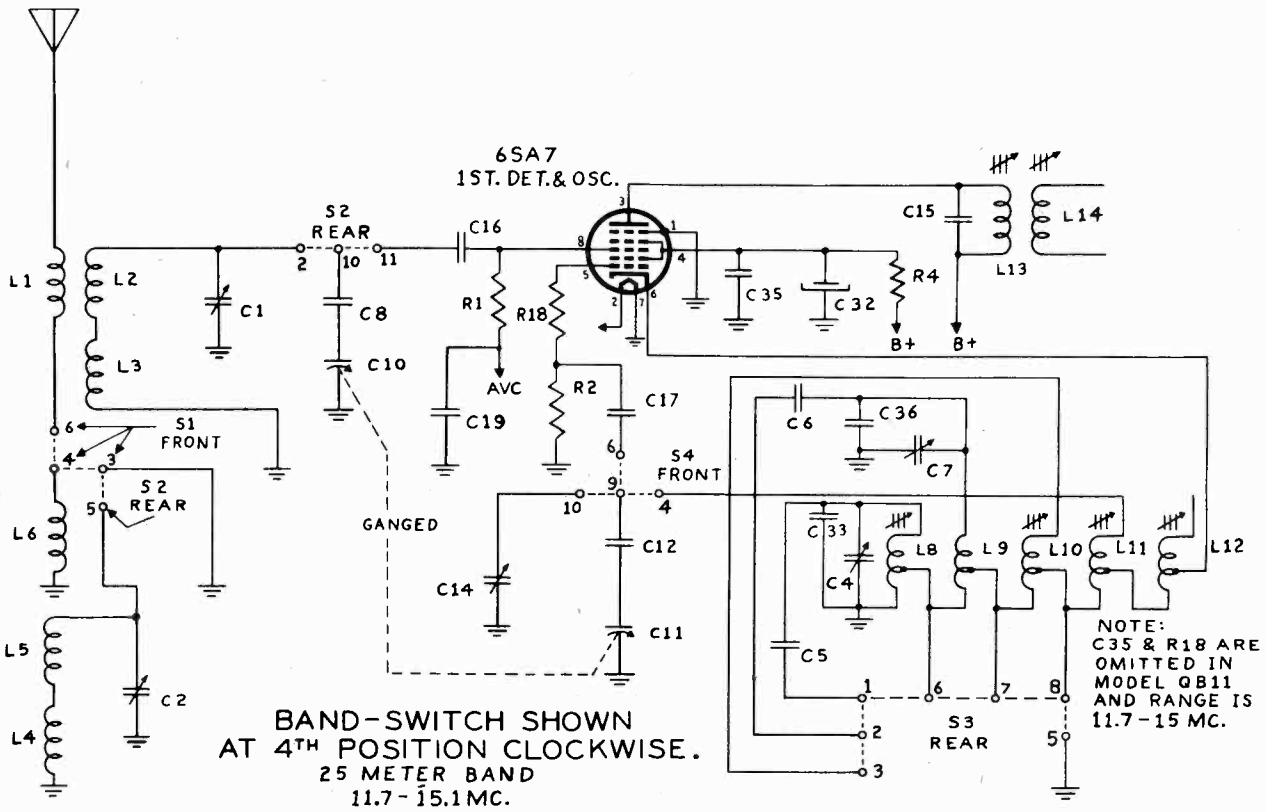
6SA7

1ST. DET. & OSC.



MODEL QB11
MODELS Q22A, Q32

RCA MFG. CO.



RCA MFG. CO.

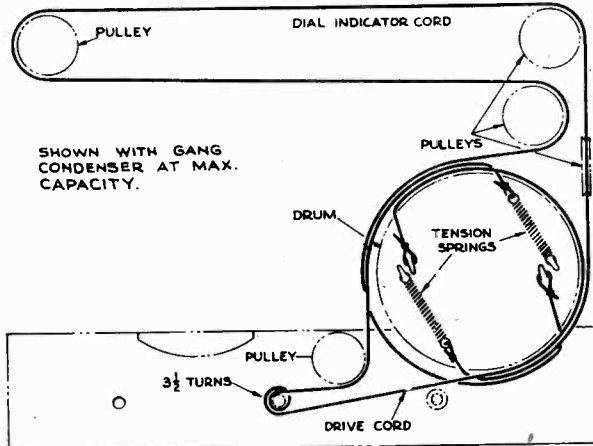
Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the diagram.

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 oscillator output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.



Victrola Attachment.

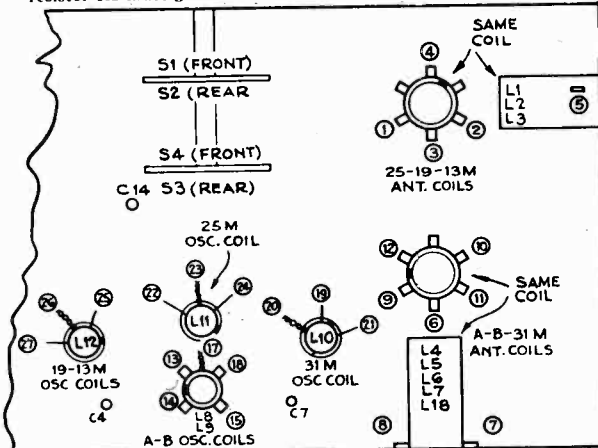
The cable from the Victrola attachment should be terminated with a Stock No. 31048 plug.

When Victrola attachment is in use, the volume control on the radio should be at minimum, and, if necessary, tune set off frequency from any very strong station.

When Victrola attachment is not in use its plug should be disconnected.

Precautionary Lead Dress.

1. Twist yellow lead from terminal 14 of L8 to terminal 6 of S3 with the lead from terminal 27 of L12 to terminal 5 of S4.
2. All other oscillator coil leads must be kept apart from each other as well as from other leads and parts. No two leads may be less than 1/4 inch apart.
3. The lead from the tap on 19-13 oscillator coil to pin number 6 of 6SA7 socket should be dressed up and away from all parts as far as possible.
4. Condensers C8, C9 and C16 must be as far away from all metal parts as possible.
5. All leads from the antenna coil to the range switch should be dressed together.
6. The green lead from pin 4 of 6SA7 socket to pin 4 of the 6S7 socket should be dressed down against the chassis and away from the I. F. terminals.
7. AVC by-pass condenser C19 and the lead from pin number 7 of the 6T7G socket must clear the tuning flywheel by at least 1/4 inch.
8. The leads to the power switch should be twisted and dressed up and away from the bias cell.
9. The bias cell must be installed in the correct polarity. The lead from resistor R8 must go to the bias cells metal container.



Coil and Band Switch Locations (Bottom Chassis View)

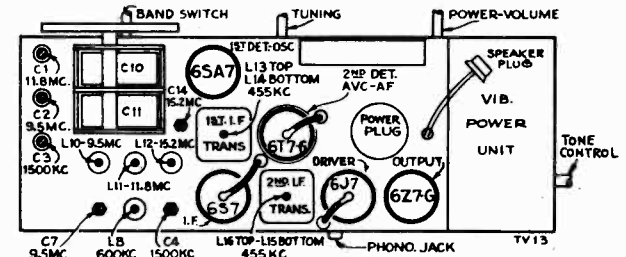
Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Range switch	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, cap. in series with .01 mfd.	455 kc	A	Quiet point near 180°	L16—L15 2nd I-F transformer
2	1st Det. grid, in series with .01 mfd.				L14—L13 1st I-F transformer
3	Ant. lead in series with 300 ohms	11.8 mc	25M	138.5°	L11 (osc.)* C1 (ant.)
4		15.2 mc		17°	C14 (osc.)***
5		Repeat steps 3 and 4.			
6	Ant. lead in series with 200 mmf.	15.2 mc	19-13M	156°	L12 (osc)*
7		9.5 mc	31M	156°	L10 (osc.)* C2 (ant.)
8		9.5 mc	B	11.5°	C7 (osc.)**
9	Ant. lead in series with 200 mmf.	1,500 kc	A	26°	C4 (osc.)** C3 (ant.)
10		600 kc		150°	L8 (osc.)* (Rock gang.)
11	Repeat steps 9 and 10.				

*If two peaks can be obtained, use the one obtained when the core screw is farthest out (counter-clockwise).

**Use minimum capacity peak if two can be obtained.

***Use minimum capacity peak if two can be obtained. Check image to determine that C14 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

NOTE: Oscillator tracks above signal on all bands.



Tube and Trimmer Locations (Top Chassis View)

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

Receiver Dial with Calibration Scale.—To determine the corresponding frequency for any setting of the calibration scales, refer to the dial with calibration scale drawing.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the oscillator coil magnetite-core for each band so that these stations come in at the correct points on the dial.

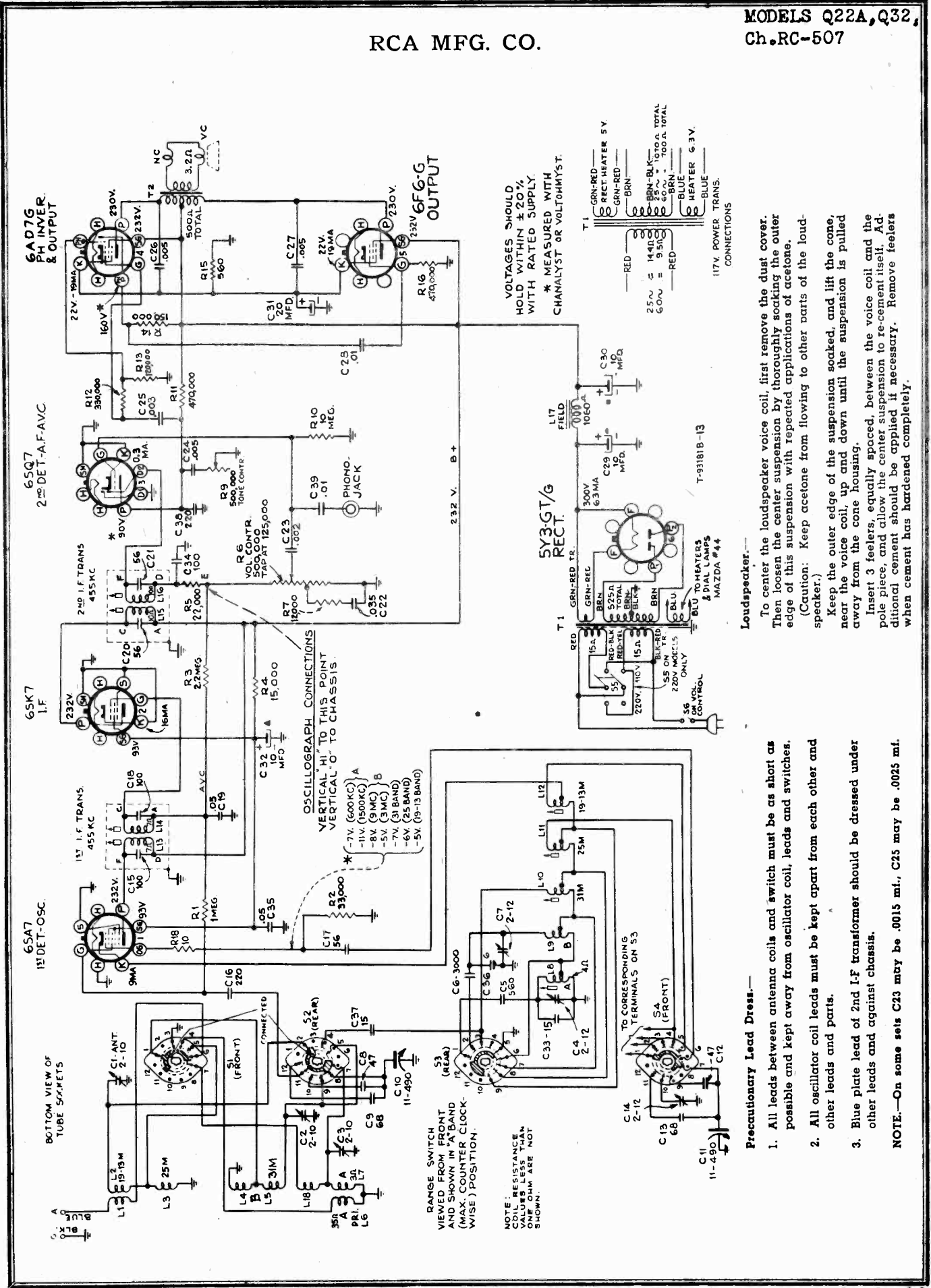
In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of the test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator, or by zero-beating against standard broadcast stations.

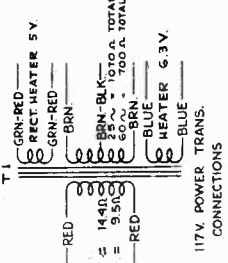
When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the oscillator coil magnetite-core for each band should be re-touched so that the stations come in at the correct points on the dial.

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 529A			
35640	Bracket—Support bracket complete with one (1) drive cord pulley	35633	*Shaft—Range indicator shaft
35639	Bracket—Support bracket complete with three (3) drive cord pulleys	35637	Shaft—Tuning knob shaft
35622	Bracket—Support bracket for tuning knob shaft	35787	Socket—Phono-input socket
37976	Bracket—Support bracket for tone control	31251	Socket—Tube socket
35642	Calibrator—Drive drum calibrator	31418	Spring—Indicator cord spring or drive cord spring
12714	Capacitor—Air trimmer, 2-12 mmf. (C-4, C-7, C-14)	12007	Spring—Retaining spring for I.F. transformers' core and stud assemblies
34654	Capacitor—Mica trimmer, triple, 2.5-10 mmf. (C-1, C-2, C-3)	31261	Spring—Retaining spring for oscillator coils core and stud assemblies
35646	Capacitor—Ceramic, 6 mmf. (C-36)	35621	Switch—Range switch (S-1, S-2, S-3, S-4)
36012	Capacitor—Ceramic, 15 mmf. (C-37)	33397	*Switch—Tone control switch (S-5)
45465	Capacitor—Ceramic, 15 mmf. (C-33)	37898	Transformer—Driver transformer (T-1)
70582	Capacitor—Ceramic, 47 mmf. (C-8)	35636	Transformer—First I.F. transformer (L-13, L-14, C-15, C-18)
35644	Capacitor—Ceramic, 47 mmf. (C-12)	35628	Transformer—Second I.F. transformer (L-15, L-16, C-20, C-21)
39622	Capacitor—Mica, 56 mmf. (C-17)	37924	Transformer—Output transformer (T-2)
39632	Capacitor—Mica, 56 mmf. (C-20, C-21)	33726	Washer—"C" washer for idler pulley
35645	Capacitor—Ceramic, 68 mmf. (C-13)	2917	Washer—"C" washer for tuning knob shaft
70586	Capacitor—Mica, 68 mmf. (C-9)		
39628	Capacitor—Mica, 100 mmf. (C-15, C-18, C-29)	VIBRATOR POWER SUPPLY	
39634	Capacitor—Mica, 180 mmf. (C-34)	4289	Body—Fuse connector body
39636	Capacitor—Mica, 220 mmf. (C-16)	4288	Cap—Fuse connector cap
70667	Capacitor—Mica, 560 mmf. (C-5)	39644	Capacitor—Mica, 470 mmf. (C-42, C-44)
70687	Capacitor—Mica, 3000 mmf. (C-6)	71008	Capacitor—Paper, .008 mfd., 1200 volts (C-43)
70644	Capacitor—Tubular, .0025 mfd., 1400 volts (C-24)	70652	Capacitor—Tubular, .01 mfd., 1000 volts (C-40)
70627	Capacitor—Tubular, .005 mfd., 500 volts (C-25, C-26)	37877	Capacitor—Electrolytic, 16 mfd., 350 volts (C-41)
70652	Capacitor—Tubular, .01 mfd., 1000 volts (C-23, C-39)	37834	Case—Power supply case less cover
70615	Capacitor—Tubular, .05 mfd., 400 volts (C-19, C-27, C-35)	14289	Clip—Battery clips (1 set)
71010	Capacitor—Tubular, .07 mfd., 400 volts (C-22)	37925	Coil—Choke coil (L-21)
70619	Capacitor—Tubular, 0.5 mfd., 150 volts (C-38)	37836	Cover—Power supply case cover
70618	Capacitor—Tubular, 0.25 mfd., 300 volts (C-28)	4286	Ferrule—Fuse connector ferrule and bushing
37250	Capacitor—Electrolytic, 20 mfd., 250 volts (C-32)	5140	Fuse—5 ampere
37867	Capacitor—Electrolytic, 30 mfd., 250 volts (C-30)	4290	Insulator—Fuse connector insulator
31581	Cell—Bias cell	14409	Plug—7 contact female plug for power supply cable
35632	Coil—Antenna coil, "A", "B" and 31 meter bands (L-4, L-5, L-6, L-7, L-18)	34765	Resistor—100 ohms, $\frac{1}{4}$ watt (R-15)
35631	Coil—Antenna coil, 25 meter and 19-13 meter bands (L-1, L-2, L-3)	6134	Resistor—1200 ohms, 1 watt (R-14)
35624	Coil—Oscillator coil, 19-13 meter band (L-12)	90382	Resistor—2200 ohms, 1 watt (R-16)
35625	Coil—Oscillator coil, 25 meter band (L-11)	12241	Socket—Vibrator socket
35626	Coil—Oscillator coil, 31 meter band (L-10)	4284	Spring—Fuse connector spring
35623	Coil—Oscillator coil, "A" and "B" bands (L-8, L-9)	35544	Transformer—Vibrator transformer (T-3, C-45, L-22)
35619	Condenser—Variable tuning condenser (C-10, C-11)	35543	Vibrator—Plug-in vibrator
37833	Control—Volume control and power switch (R-6, S-6)	4285	Washer—Fuse connector insulating washer
32634	Cord—Drive cord (approx. 28" overall length)		
34662	Cord—Indicator cord (approx. 53" overall length)	SPEAKER ASSEMBLIES 92519-1	
35788	Core—Adjustable core and stud for "A" and "B" band oscillator coil	70578	Cone—Cone and voice coil assembly
31259	Core—Adjustable core and stud for 19-13 meter, 25 meter and 31 meter bands oscillator coils	5118	Plug—3 prong male plug for speaker cable
12006	Core—Adjustable core and stud for I.F. transformers	70577	Speaker—6 $\frac{1}{2}$ " P.M. speaker complete with cone and voice coil less plug
35627	Drum—Drive drum less calibrator		
35638	Flywheel—Tuning knob shaft flywheel	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.	
31580	Holder—Bias cell holder	MISCELLANEOUS ASSEMBLIES	
5119	Plug—3 contact female plug for speaker cable	70579	Decal—Trademark decal
14404	Plug—7 prong plug for power input cable	35654	Dial—Glass dial scale
35641	Pulley—Drive cord pulley	36658	Extension—Tone control shaft extension
35630	Pulley—Idler pulley, located between tuning knob and range switch shafts	37838	Frame—Dial frame assembly less indicator and dial
30734	Resistor—5600 ohms, $\frac{1}{4}$ watt (R-7)	X1611	Grille—Cabinet grille cloth for Model QB11
30151	Resistor—18,000 ohms, 1 watt (R-4)	70580	Indicator—Station selector indicator
30492	Resistor—22,000 ohms, $\frac{1}{4}$ watt (R-5)	35652	Knob—Range indicator knob
30685	Resistor—33,000 ohms, $\frac{1}{4}$ watt (R-2)	35651	Knob—Range switch knob
30180	Resistor—120,000 ohms, $\frac{1}{4}$ watt (R-9)	35650	Knob—Tone control knob
11988	Resistor—390,000 ohms, $\frac{1}{4}$ watt (R-13)	34489	Knob—Tuning or volume control knob
30648	Resistor—470,000 ohms, $\frac{1}{4}$ watt (R-11)	4982	Spring—Retaining spring for range indicator knob
30161	Resistor—820,000 ohms, $\frac{1}{4}$ watt (R-12)	14270	Spring—Retaining spring for tone control knob, tuning or volume control knob, and for range switch knob
30652	Resistor—1 megohm, $\frac{1}{4}$ watt (R-1)		
30162	Resistor—1.2 megohm, $\frac{1}{4}$ watt (R-10)		
30649	Resistor—2.2 megohm, $\frac{1}{4}$ watt (R-3, R-8)		
14350	Screw—# 8-32 square head set screw for drive drum		

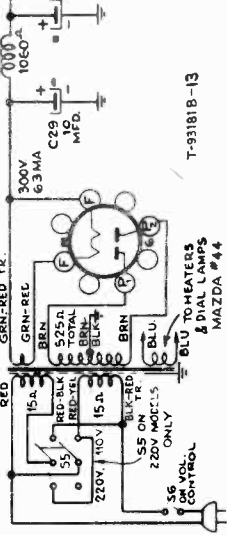
RCA MFG. CO.



VOLTAGES SHOULD
HOLD WITHIN ±20%
WITH RATED SUPPLY
* MEASURED WITH
CHARNALYST OR VOLTOHMYST.



5Y3GT/G
RECT.



Loudspeaker.—

To center the loudspeaker voice coil, first remove the dust cover. Then loosen the center suspension by thoroughly soaking the outer edge of this suspension with repeated applications of acetone. (Caution: Keep acetone from flowing to other parts of the loudspeaker.)
Keep the outer edge of the suspension soaked, and lift the cone, near the voice coil, up and down until the suspension is pulled away from the cone housing.
Insert 3 feelers, equally spaced, between the voice coil and the pole piece, and allow the center suspension to re-cement itself. Additional cement should be applied if necessary. Remove feelers when cement has hardened completely.

Precautionary Lead Dress.—

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
 2. All oscillator coil leads must be kept apart from each other and other leads and parts.
 3. Blue plate lead of 2nd I-F transformer should be dressed under other leads and against chassis.
- NOTE.—On some sets C23 may be .0015 ml., C25 may be .0025 ml.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the Schematic Circuit 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.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the calibration scale drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark (the first mark on "A" band to the left of "550"), and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each spread-band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal-controlled oscillator, or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be retouched so that the stations come in at the correct points on the dial.

Frequency Ranges

Standard Broadcast ("A" Band)	540-1,720 kc (556-174 m)
Medium Wave ("B" Band)	3.0-9.5 mc (100-31.6 m)
"31" Meter Spread Band	9.5-11.7 mc (31.6-25.6 m)
"25" Meter Spread Band	11.7-15.1 mc (25.6-19.9 m)
"19-13" Meter Spread Band	15.1-22.5 mc (19.9-13.3 m)

Intermediate Frequency 455 kc

Tuning Drive Ratio 25 to 1

Power Supply Ratings

Symbol	Voltages	Frequency (cycles)	Watts
Rating A	105-125	50-60	65
Rating B	105-125	25-60	65
Rating C	105-125, 200-250	50-60	65

(Shipped in 225-250 volt position)

Victrola Attachment.—A jack is provided on the rear of chassis for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug.

When Victrola is not in use its plug should be removed. When Victrola is in use the volume control on the radio should be at minimum and, if necessary, tune set off frequency from any very strong station.

Power Output Rating

Undistorted	3 watts
Maximum	3.5 watts

Loudspeaker

Model	92517-1
Type (Electrodynamic)	6½ inches
V.C Impedance at 400 c.p.s.	3.4 ohms

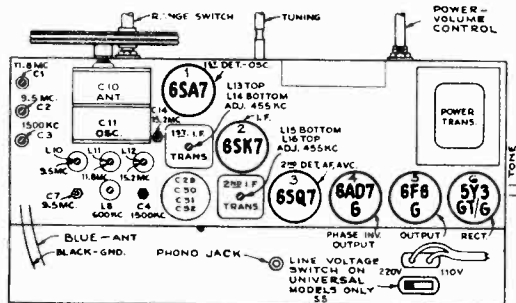
Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Range switch	Turn radio dial to—	Adjust the following for max. peak output	
1	6SK7 I-F grid in series with .01 mfd.				L15 and L16 2nd I-F Trans.	
2	6SA7 1st Det. grid in series with .01 mfd.	455 kc	A	Quiet Point near 180°	L13 and L14 1st I-F Trans.	
3	Ant. lead in series with 300 ohms	11.8 mc	25 M	138.5°	L11 (osc.)** C1 (ant.)	
4		15.2 mc		17°	C14 (osc.)*	
5		Repeat steps 3 and 4				
6		15.2 mc	19-13 M	156°	L12 (osc.)**	
7		9.5 mc	31 M	156°	L10 (osc.)** C2 (ant.)	
8		9.5 mc	B	11.5°	C7 (osc.)***	
9	Ant. lead in series with 200 mmf.	1,500 kc	A	26°	C4 (osc.) C3 (ant.)	
10		600 kc		150°	L8 (osc.) (Rock gang)	
11	Repeat steps 9 and 10					

* Use minimum capacity peak if two can be obtained. Check image to determine that C14 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

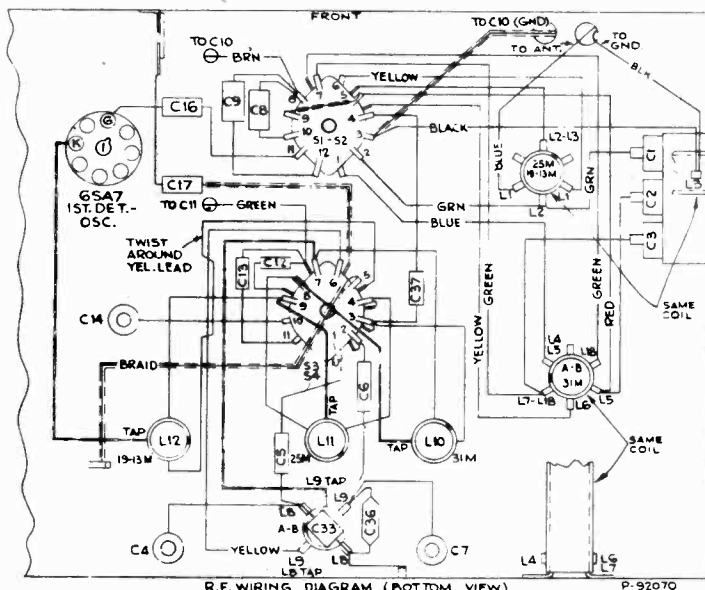
** If two peaks can be obtained use the one obtained when the core screw is farthest out (counter-clockwise).

*** Peak at minimum capacity if two peaks can be obtained.

NOTE: Oscillator tracks above signal on all bands.



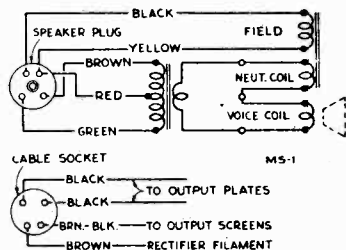
Tube and Trimmer Locations



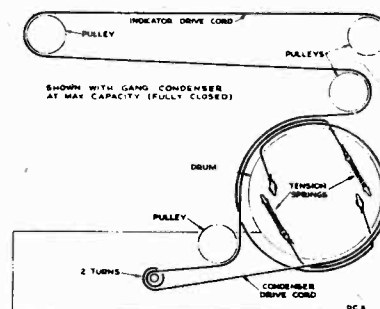
RCA MFG. CO.

Replacement Parts

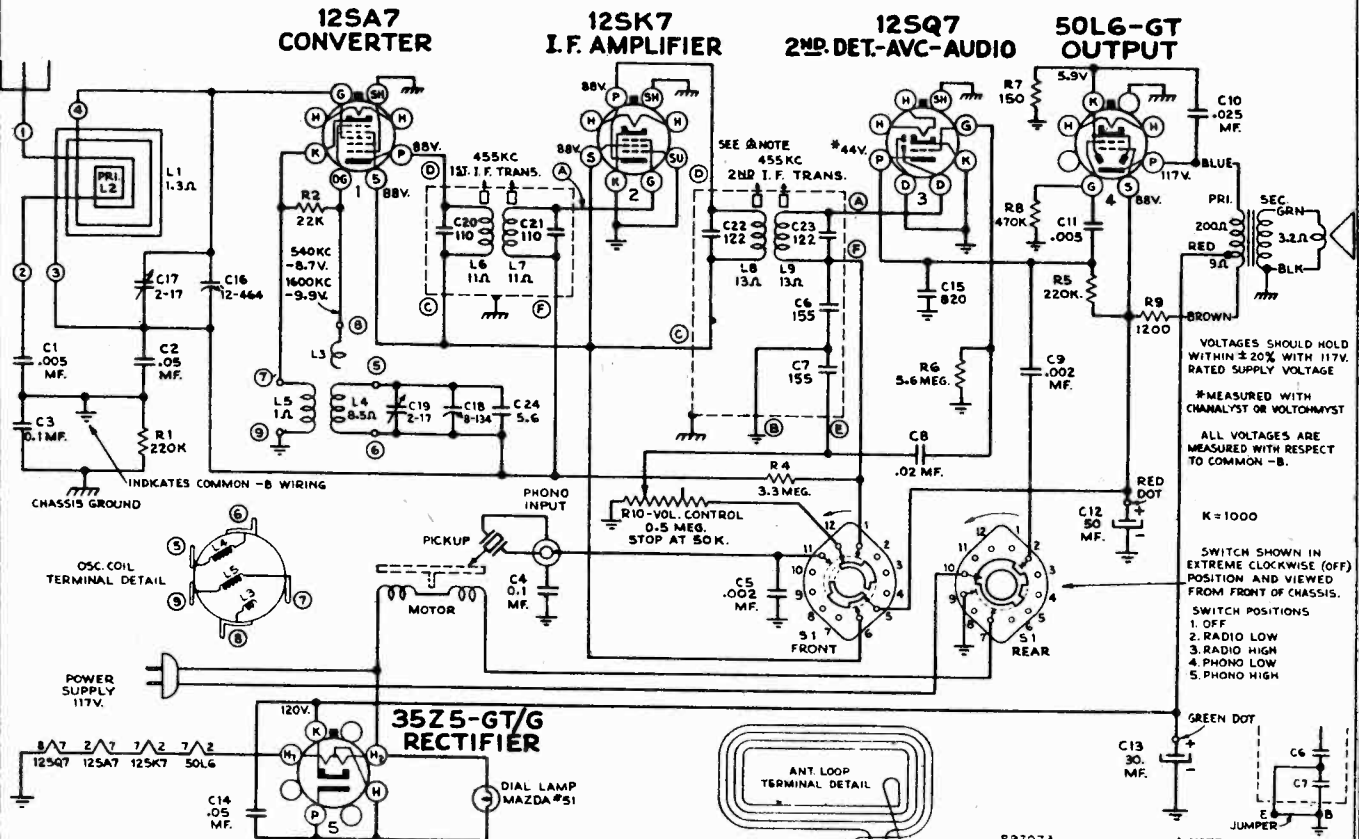
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES			
RC-507			
35640	Bracket—Drive cord pulley bracket complete with one (1) pulley	30436	Resistor—12,000 ohms, 1/4 watt (R7)
35639	Bracket—Drive cord pulley bracket complete with three (3) pulleys	35595	Resistor—15,000 ohms, 3 watt (R4)
35622	Bracket—Flywheel support bracket	30492	Resistor—22,000 ohms, 1/4 watt (R5)
37976	Bracket—Tone control support bracket	30685	Resistor—33,000 ohms, 1/4 watt (R2)
35642	Calibrator—Drive drum calibrator	30180	Resistor—120,000 ohms, 1/4 watt (R13)
12714	Capacitor—Air trimmer (2-12 mmf.) (C4, C7, C14)	30493	Resistor—150,000 ohms, 1/2 watt (R14)
33014	Capacitor—Electrolytic, consisting of three (3) sections of 10 mfd., 450 volts, and one (1) section of 20 mfd., 25 volts (C29, C30, C31, C32)	14983	Resistor—330,000 ohms, 1/4 watt (R12)
34654	Capacitor—Mica trimmer, triple, 2.5-10 mmf. (C1, C2, C3)	30648	Resistor—470,000 ohms, 1/2 watt (R11, R16)
35646	Capacitor—Ceramic, 6 mmf. (C36)	30652	Resistor—1 megohm, 1/4 watt (R1)
36012	Capacitor—Ceramic, 15 mmf. (C37)	30649	Resistor—2.2 megohms, 1/4 watt (R3)
45465	Capacitor—Ceramic, 15 mmf. (C33)	30992	Resistor—10 megohms, 1/4 watt (R10)
70582	Capacitor—Ceramic, 47 mmf. (C8)	14350	Screw—28-32 square head set screw for drive drum
35644	Capacitor—Ceramic, 47 mmf. (C12)	35633	Shaft—Range switch indicator knob shaft
39622	Capacitor—Mica, 56 mmf. (C17)	35637	Shaft—Tuning knob shaft
39632	Capacitor—Mica, 56 mmf. (C20, C21)	31364	Socket—Lamp socket
70586	Capacitor—Mica, 68 mmf. (C9)	14278	Socket—Phono input socket
35645	Capacitor—Ceramic, 68 mmf. (C13)	31251	Socket—Tube socket
39628	Capacitor—Mica, 100 mmf. (C15, C18, C34)	31418	Spring—Drive cord or indicator cord spring.
39636	Capacitor—Mica, 220 mmf. (C16, C38)	12007	Spring—Retaining spring for I-F transformers' core and stud assemblies
70667	Capacitor—Mica, 560 mmf. (C5)	31261	Spring—Retaining spring for oscillator coils' core and stud assemblies
70687	Capacitor—Mica, 3000 mmf. (C6)	35621	Switch—Range switch (S1, S2, S3, S4)
70601	Capacitor—Tubular, .002 mfd., 200 volts (C23)	32827	Switch—Voltage switch (S5)
70624	Capacitor—Tubular, .003 mfd., 600 volts (C25)	35636	Transformer—First I-F transformer (L13, L14, C15, C18)
70627	Capacitor—Tubular, .005 mfd., 600 volts (C24)	35628	Transformer—Second I-F transformer (L15, L16, C20, C21)
70648	Capacitor—Tubular, .005 mfd., 1000 volts (C26, C27)	32852	Transformer—Power transformer, 105-125 volts, 50/60 cycle or 105-125/200-250 volts, 50/60 cycle (T1)
70610	Capacitor—Tubular, .01 mfd., 200 volts (C39)	35588	Transformer—Power transformer, 105-125 volts, 25/60 cycle (T1)
70631	Capacitor—Tubular, .01 mfd., 600 volts (C28)	33726	Washer—"C" washer for idler pulley
70614	Capacitor—Tubular, .035 mfd., 200 volts (C22)	2917	Washer—"C" washer for tuning knob shaft
70615	Capacitor—Tubular, .05 mfd., 200 volts (C19)	SPEAKER ASSEMBLY	
70636	Capacitor—Tubular, .05 mfd., 600 volts (C35)	STAMPED 92517-1J	
35631	Coil—Antenna coil, 19-13 meter and 25 meter bands (L1, L2, L3)	70578	Cone—Cone and voice coil assembly
35632	Coil—Antenna coil, "A," "B" and 31 meter bands (L4, L5, L6, L7, L18)	5118	Plug—4-prong male plug for speaker
35623	Coil—Oscillator coil, "A" and "B" bands (L8, L9)	70583	Speaker—6 1/2-inch E.M. speaker complete with cone and voice coil less plug and output transformer
35624	Coil—Oscillator coil, 19-13 meter band (L12)	70584	Transformer—Output transformer (T2)
35625	Coil—Oscillator coil, 25 meter band (L11)	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.	
35626	Coil—Oscillator coil, 31 meter band (L10)	MISCELLANEOUS ASSEMBLIES	
35619	Condenser—Variable tuning condenser (C10, C11)	35649	Back—Cabinet back for Q22A
35629	Control—Tone control (R9)	71038	Back—Cabinet back for Q32
35620	Control—Volume control and power switch (R6, S6)	70579	Decal—Trade mark decal
32634	Cord—Drive cord (approx. 28 inches overall length)	35654	Dial—Glass dial scale
34662	Cord—Indicator cord (approx. 53 inches overall length)	36658	Extension—Tone control shaft extension for Q32
12006	Core—Adjustable core and stud assemblies for I-F transformers	35647	Frame—Dial frame complete less indicator
35788	Core—Adjustable core and stud for "A" and "B" band oscillator coil	70581	Grille—Grille cloth for Q22A
31259	Core—Adjustable core and stud for 19-13 meter, 25 meter and 31 meter oscillator coil	X1611	Grille—Grille cloth for Q32
35627	Drum—Drive drum less calibrator	70580	Indicator—Station selector indicator
35638	Flywheel—Tuning knob shaft flywheel	35652	Knob—Range indicator knob
5040	Plug—4 contact female plug for speaker cable	35651	Knob—Range switch knob
35641	Pulley—Drive cord pulley	35650	Knob—Tone control knob
35630	Pulley—Idler pulley located between the range switch and tuning knob shafts	34489	Knob—Tuning or volume control knob
34761	Resistor—10 ohms, 1/4 watt (R18)	11891	Lamp—Dial lamp (Mazda No. 44)
30735	Resistor—560 ohms, 1 watt (R15)	14270	Spring—Retaining spring for tone control, volume control, range switch and tuning knobs
		4982	Spring—Retaining spring for range indicator knob



Connections and Colors of Loudspeaker and Cable



Dial-Indicator and Drive Mechanism



VOLTAGES SHOULD HOLD WITHIN $\pm 20\%$ WITH 117V. RATED SUPPLY VOLTAGE
*MEASURED WITH CHANNELYST OR VOLTCOMYST
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.

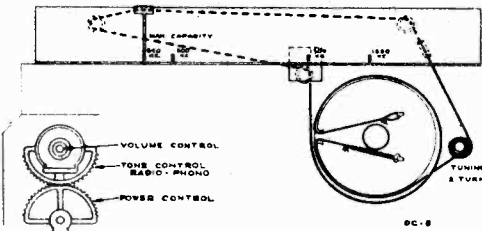
Take off both wooden strips on bottom of cabinet by removing wood screws before loosening chassis bolts.

CRITICAL LEAD DRESS.—

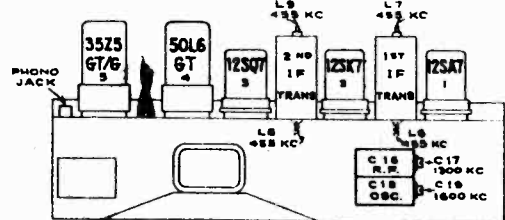
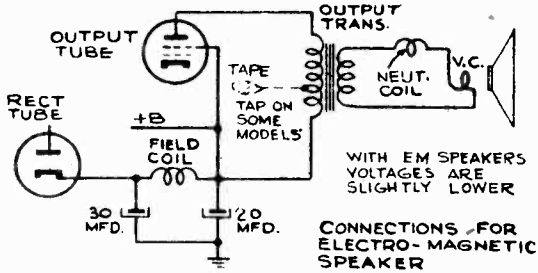
1. All filament wires should be dressed close to chassis.
2. Dress lead from switch to phono jack close to chassis and away from power cord.
3. Dress capacitor between 12SQ7 grid and terminal board away from chassis and away from other parts.
4. Dress all exposed leads away from each other and away from 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.

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.			

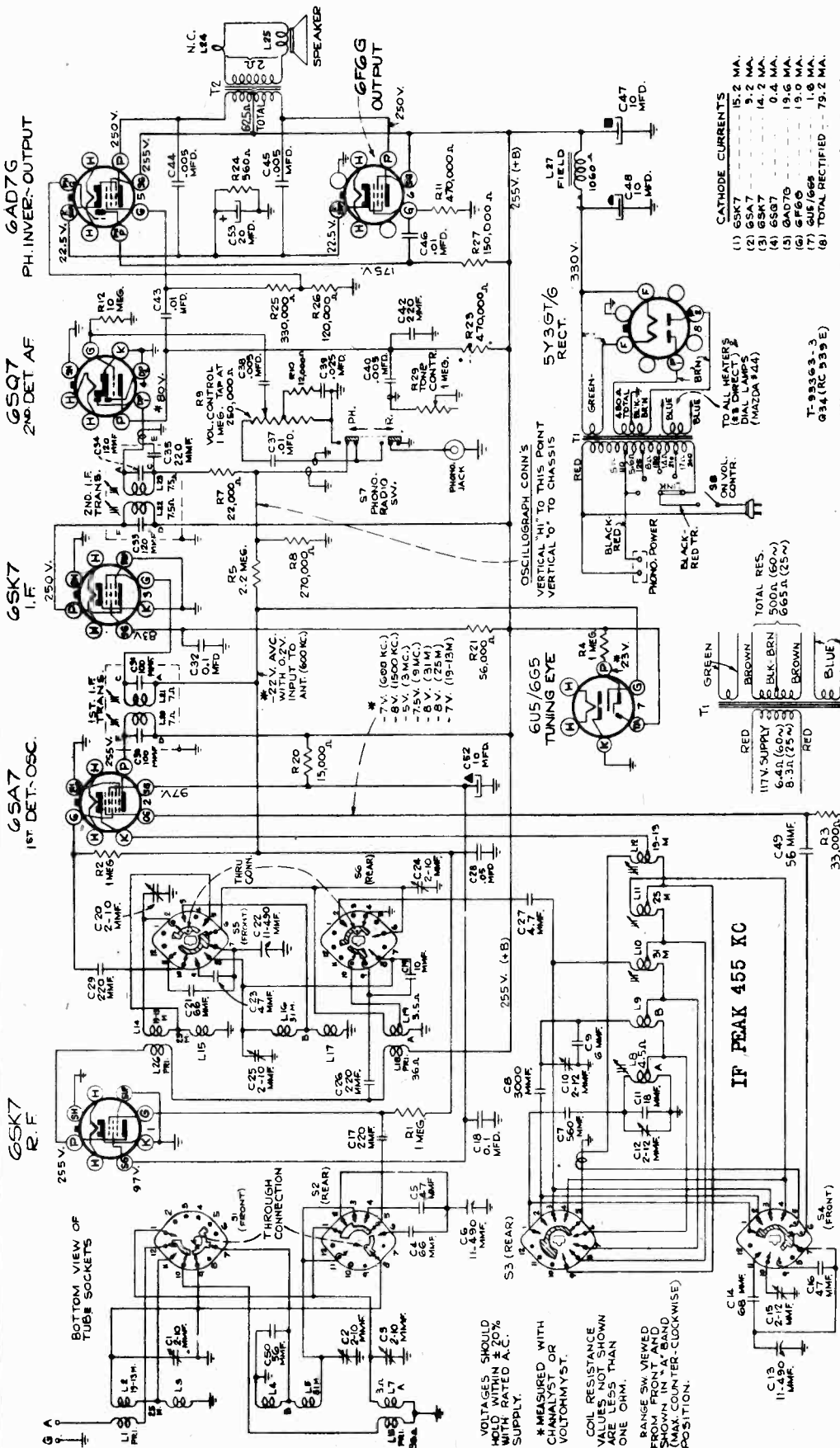


Dial Pointer Adjustment.—Rotate tuning condenser fully counter-clockwise plates (fully meshed). Adjust indicator pointer to left (max. cap.) mark on dial back plate.



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.

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VICTROLA ATTACHMENT—A jack is provided on the rear of chassis for connecting a Victrola Attachment to the audio amplifying circuit. The cable from the attachment should be terminated in a Stock No. 31048 plug. A 110-volt outlet for Victrola motor is available on back of the chassis.

For Radio reception, the Radio-Phono switch (S7) should be placed in the Radio position.

When Victrola is in use, the volume control on the radio should be at minimum, and, if necessary, tune set off frequency from any very strong station.

Power Supply Ratings

105-125 volts, 50-60 cycles	80 watts
105-125 volts, 25-60 cycles	80 watts
100-130, 140-160, 200-250 volts, 50-60 cycles	80 watts

(Shipped in 225-250 volt position)

1. Dress green leads from antenna and R.F. sections of the gang condenser away from all metal including chassis shield plates. The spigot-covered braid in the antenna section should be at least 1/4 inch away from the gang.
2. Black and brown twisted filament leads between 6SA7 (1st Det.-Osc.) and 6SK7 (R.F.) must run along front side of shield plate.
3. Dress mica capacitors and switch leads away from shield plates. Turn flat sides of capacitors away from shield plates.
4. Closely twist the leads from terminals F and A of the second I.F. transformer, and dress them close to the chassis.
5. Dress volume control-arm lead and capacitor (C38) close to front apron and away from output tube bypass capacitors (C44 and C45).
6. 6SQ7 10 megohm grid resistor (R12) should have minimum lead length on the grid side.
7. Dress the capacitor (C37) on the high side of the volume control as far as possible from a-c switch.
8. Leads to 6SA7 socket must not impede flexible mounting.
9. The 6SA7 control grid resistor (R2) must have its body as close as possible to the grid terminal as possible.
10. Dress 6SA7 control grid capacitor (C49) away from the coil form (L12), away from the oscillator grid capacitor (C29) and 1/4 inch away from any other part.
11. 6AD7G plate to cathode capacitor (C44) must be flat against chassis.
12. Dress all filament and B+ leads close to the chassis.

PRECAUTIONARY LEAD DRESS

VOLTAGES SHOULD BE MEASURED WITH RATED A.C. SUPPLY.

* MEASURED WITH CHANNELYST OR VOLTOHMAYR.

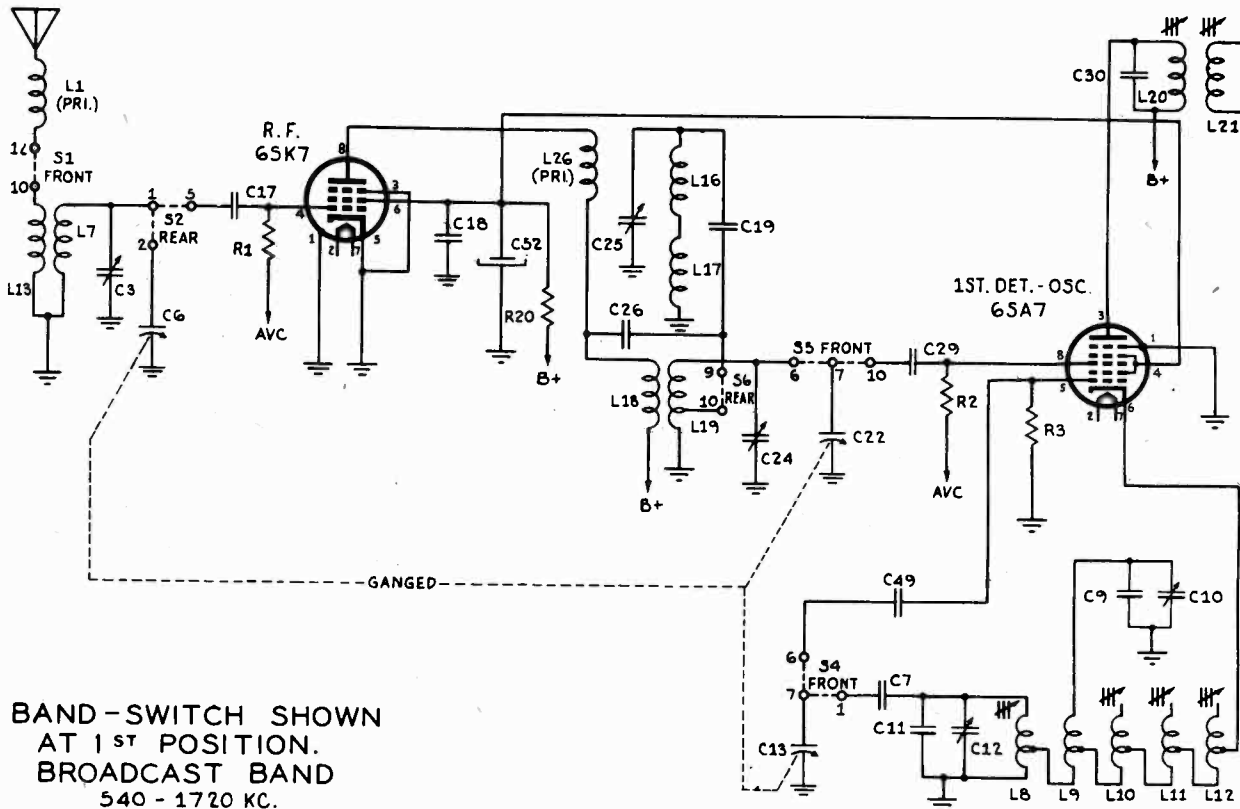
COIL RESISTANCE VALUES NOT SHOWN ARE ONE OHM.

RANGE SW VIEWED FROM FRONT AND (MAX. COUNTER-CLOCKWISE) POSITION.

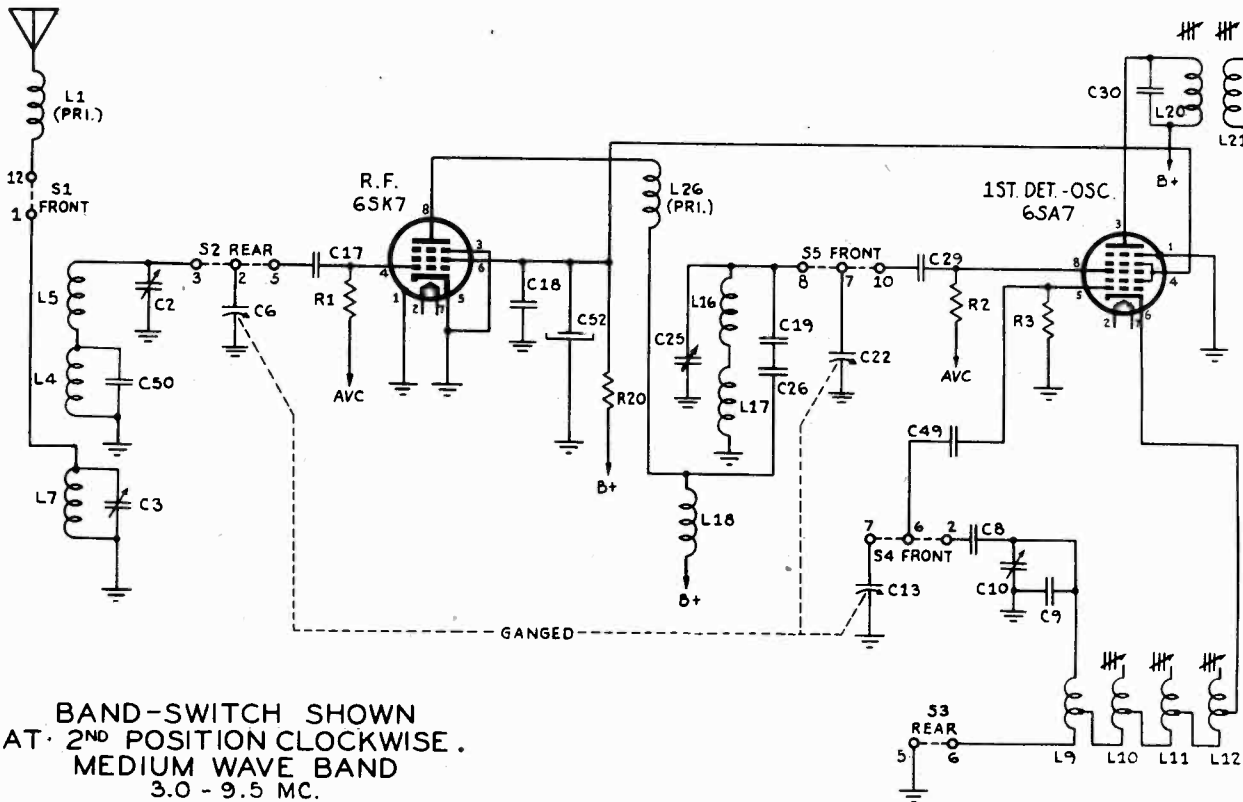
"clarified schematics"

MODEL Q34

RCA MFG. CO.

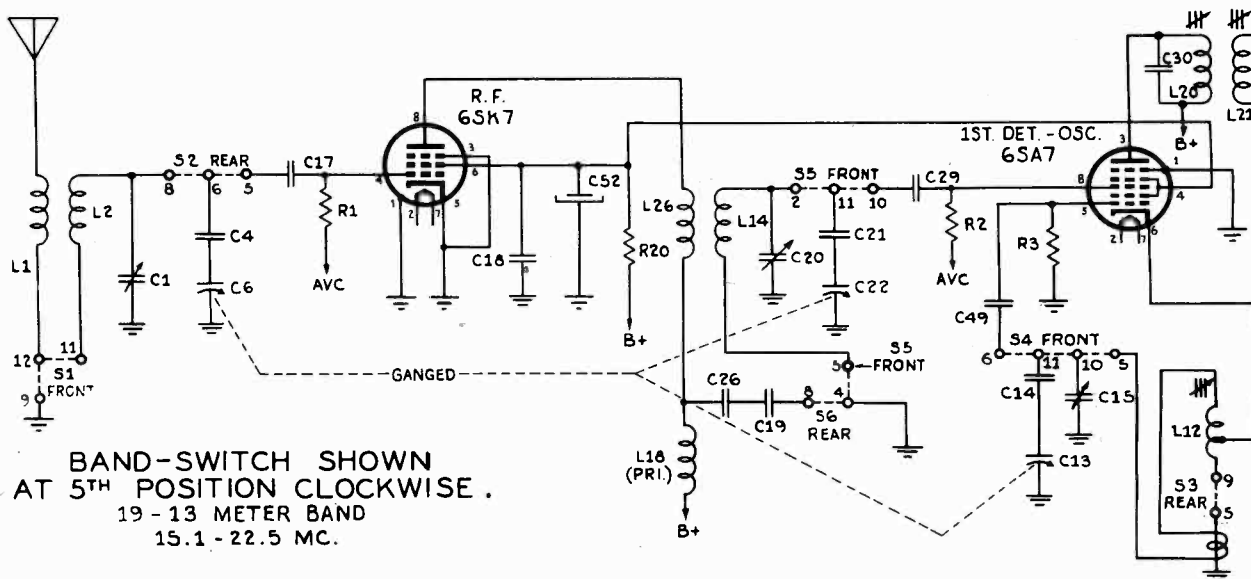
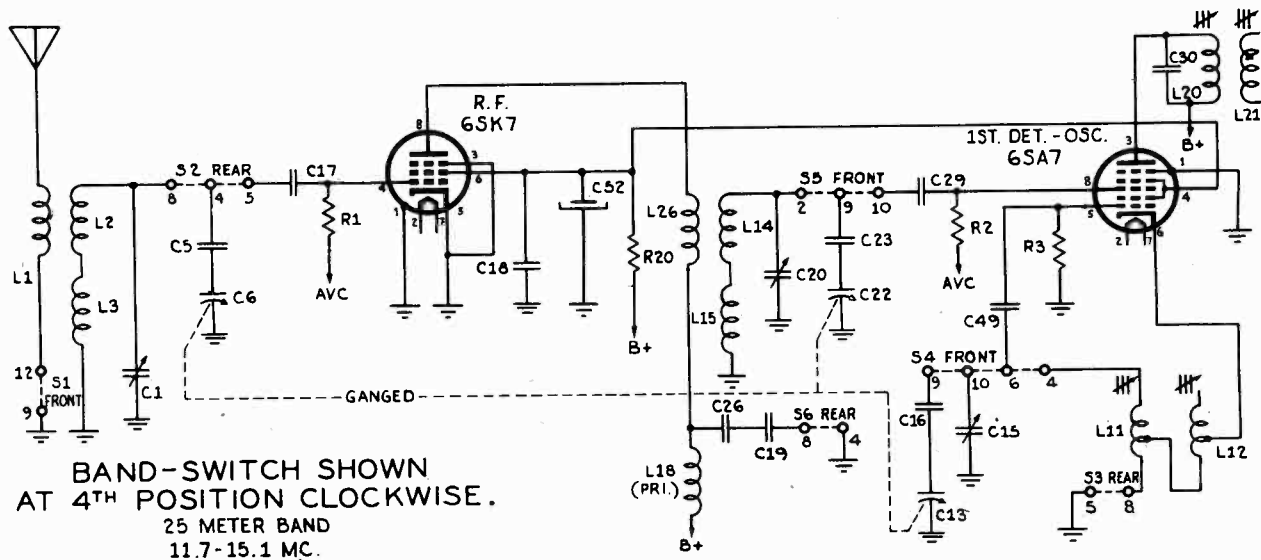
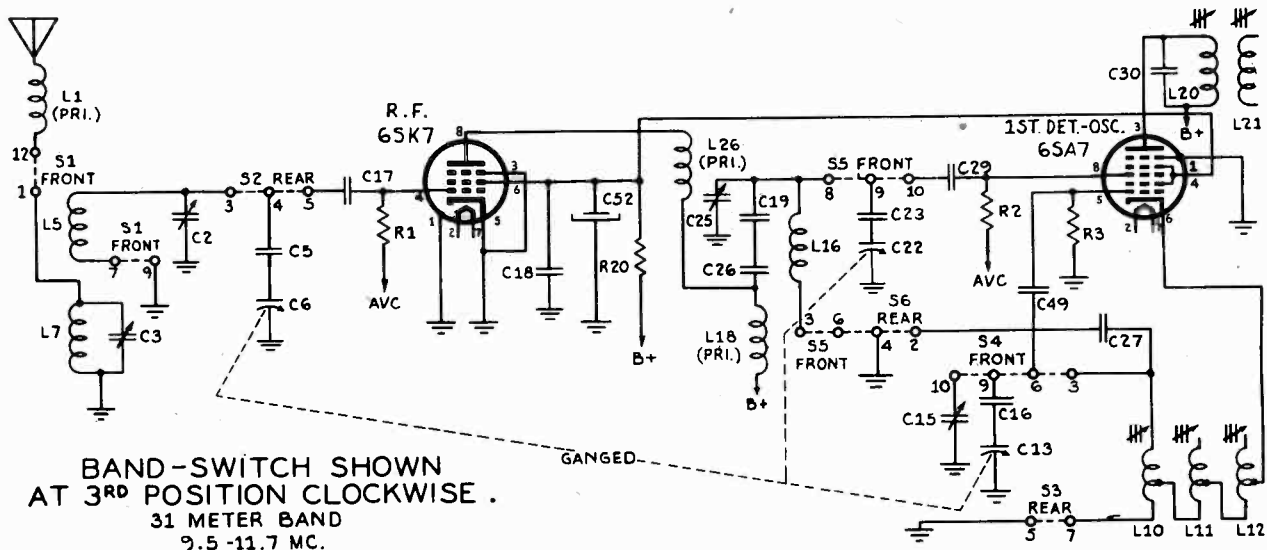


BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540 - 1720 KC.



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
MEDIUM WAVE BAND
3.0 - 9.5 MC.

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Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

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

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Range Switch	Turn Radio Dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" band	Quiet point 600 kc end of dial	L23-L22 2nd I-F transformer
2	6SA7 1st det. grid in series with .01 mfd.				L21-L20 1st I-F transformer
3	Antenna terminal in series with 300 ohms	11.8 mc	25 meter band	11.8 mc (41.5°)	L11 (osc.) C1 (ant.) C20 (det.)
4		15.2 mc		15.2 mc (161.7°)	C15 (osc.)† Rock in
5	Repeat steps 3 and 4 until aligned.				
6	Antenna terminal in series with 300 ohms	15.2 mc	19-13 meter band	15.2 mc (24°)	L12 (osc.)**
7		9.5 mc	31 meter band	9.5 mc (23.8°)	L10 (osc.)** C2 (ant.) C25 (det.)***
8		9.5 mc	"B" band	9.5 mc (168.5°)	C10 (osc.)*
9	Antenna terminal in series with 200 mmfd.	1,500 kc	"A" band	1,500 kc (153°)	C12 (osc.) C3 (ant.) C24 (det.)
10		600 kc		600 kc (30.5°)	L8 (osc.) Rock in
11	Repeat steps 9 and 10.				

* Use minimum capacity peak if two can be obtained.
 ** If two peaks can be obtained, use the one obtained when the core screw is farthest out (counter-clockwise).
 *** Use maximum capacity peak if two peaks can be obtained.
 † Check image to determine that C15 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc (147°) where a weaker signal should be received.

NOTE: Oscillator tracks above signals on all bands.

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 on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser.

As the first step in r-f alignment, check the position of the drum, it should correspond to that shown in the Dial Indicator and Drive Mechanism drawing when the gang condenser plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

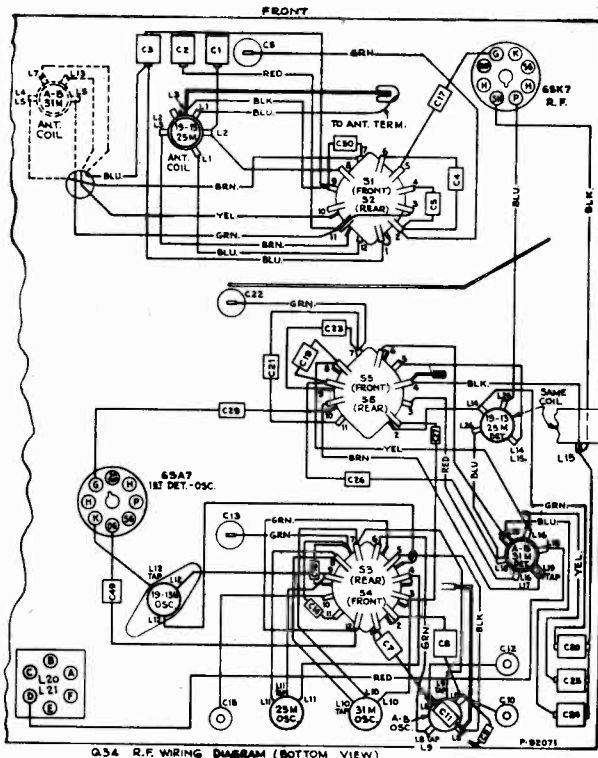
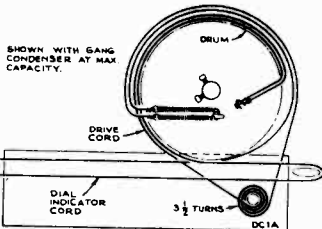
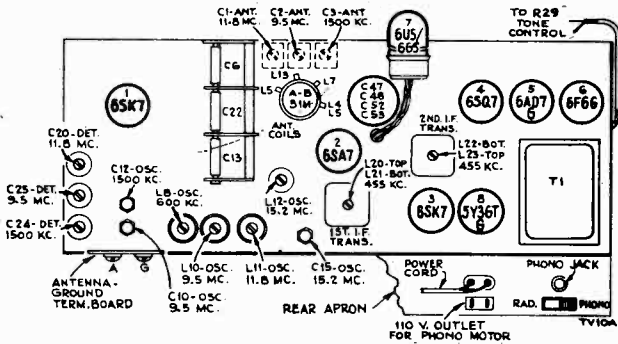
Receiver Dial with Calibration Scale.—To determine the corresponding frequency for any setting of the calibration scales, refer to the drawing.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is an actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

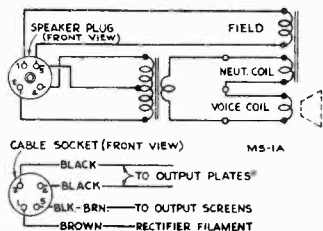
1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator, or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be retouched so that the stations come in at the correct points on the dial.



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STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES (RC 539E)			
34502	Arm—Range switch actuating arm	30651	Resistor—270,000 ohms, 1/4 watt (R8)
37053	Board—"Antenna-Ground" board	14983	Resistor—330,000 ohms, 1/4 watt (R25)
39857	Bracket—L.H. bracket complete with drive cord pulley	30648	Resistor—470,000 ohms, 1/2 watt (R11, R23)
39856	Bracket—R.H. bracket complete with drive cord pulley	30652	Resistor—1 megohm, 1/4 watt (R1, R2, R4)
37092	Calibrator—Drive drum calibrator	30649	Resistor—2.2 megohms, 1/4 watt (R5)
33014	Capacitor—Electrolytic, comprising three (3) sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts (C47, C48, C52, C53)	30992	Resistor—10 megohms, 1/4 watt (R12)
37059	Capacitor—Mica trimmer, triple 2.5-10 mmf. (C1, C2, C3, C20, C24, C25)	14350	Screw—#8-32 square head set screw for Arm #34502 and link #37094
33097	Capacitor—Ceramic, 4.7 mmf. (C27)	4669	Screw—#8-32 square head set screw for drive drum
12714	Capacitor—Air trimmer, 2-12 mmf. (C10, C12, C15)	37096	Shaft—Range indicator knob shaft
35846	Capacitor—Ceramic, 6 mmf. (C9)	37095	Shaft—Range switch actuating shaft
39604	Capacitor—Mica, 10 mmf. (C19)	37091	Shaft—Tuning knob shaft and flywheel
39041	Capacitor—Ceramic, 18 mmf. (C11)	31364	Socket—Dial lamp socket
35644	Capacitor—Ceramic, 47 mmf. (C16)	35787	Socket—Phono input socket
70582	Capacitor—Ceramic, 47 mmf. (C5, C23)	31251	Socket—Tube socket
39622	Capacitor—Mica, 56 mmf. (C49, C50)	34864	Socket—Tuning indicator tube socket
36072	Capacitor—Mica, 68 mmf. (C4, C21)	70576	Spring—Drive cord spring
35645	Capacitor—Ceramic, 68 mmf. (C14)	31418	Spring—Indicator cord spring
39628	Capacitor—Mica, 100 mmf. (C30, C31)	12007	Spring—Retaining spring for I-F transformers' core and stud assemblies
39630	Capacitor—Mica, 120 mmf. (C33, C34)	31261	Spring—Retaining spring for 19-13 meter band and oscillator coil core and stud assemblies
39636	Capacitor—Mica, 220 mmf. (C17, C26, C29, C35, C42)	33491	Switch—Radio-phonograph switch (S7)
39626	Capacitor—Mica, 560 mmf. (C7)	37050	Switch—Range switch (S1, S2, S3, S4, S5, S6)
70687	Capacitor—Mica, 3000 mmf. (C8)	35636	Transformer—First I-F transformer (L20, L21, C30, C31)
70648	Capacitor—Tubular, .005 mfd., 1000 volts (C44, C45)	36615	Transformer—Second I-F transformer (L22, L23, C33, C34, C35)
70606	Capacitor—Tubular, .005 mfd., 200 volts (C38)	31733	Transformer—Power transformer, 105-125 volts, 50/60 cycle (T)
70627	Capacitor—Tubular, .005 mfd., 600 volts (C40)	31734	Transformer—Power transformer, 105-125 volts, 25/60 cycle (T1)
70610	Capacitor—Tubular, .01 mfd., 200 volts (C37)	31735	Transformer—Power transformer, 105/130, 140/160, 200/250 volts, 50/60 cycle (T1)
70631	Capacitor—Tubular, .01 mfd., 600 volts (C43, C46)	34373	Washer—"C" washer for range switch actuating arm
70612	Capacitor—Tubular, .025 mfd., 200 volts (C39)	2917	Washer—"C" washer for tuning knob shaft
70615	Capacitor—Tubular, .05 mfd., 200 volts (C28)	SPEAKER ASSEMBLY Stamped 92562-1J	
70638	Capacitor—Tubular, .1 mfd., 600 volts (C18, C32)	70972	Cone—Cone and voice coil assembly
37055	Coil—Antenna coil, A, B and 31 meter band (L4, L5, L7, L13)	5039	Plug—4 prong male plug for speaker cable
37056	Coil—Antenna coil, 19-13 meter and 25 meter bands (L1, L2, L3)	70971	Speaker—7" x 9" EM speaker complete with cone and voice coil less output transformer and plug
37057	Coil—R-F coil, A, B and 31 meter bands (L16, L17, L18, L19)	70973	Transformer—Output transformer (T2)
37058	Coil—R-F coil, 19-13 meter and 25 meter bands (L14, L15, L26)	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.	
35624	Coil—Oscillator coil, 19-13 meter (L12)	MISCELLANEOUS ASSEMBLIES	
35625	Coil—Oscillator coil, 25 meter band (L11)	70589	Back—Cabinet back
35626	Coil—Oscillator coil, 31 meter band (L10)	70591	Board—Battle board and grille cloth
37093	Coil—Oscillator coil, A & B band (L8, L9)	70590	Bracket—Lamp bracket
37151	Condenser—Variable tuning condenser (C6, C13, C22)	30716	Clip—Tuning tube clip
36109	Control—Tone control (R29)	39967	Crystal—Protective crystal for tuning tube
37087	Control—Volume control and power switch (R9, S8)	70579	Decal—Trade mark decal
32634	Cord—Drive cord (approx. 41 inches overall length)	39916	Dial—Glass dial scale
32634	Cord—Indicator cord (approx. 42 inches overall length)	37922	Indicator—Station selector indicator
35788	Core—Adjustable core and stud for A & B band oscillator coil	35652	Knob—Range indicator knob
12006	Core—Adjustable core and stud for I-F transformers	35651	Knob—Range switch knob
31259	Core—Adjustable core and stud for 19-13 meter, 25 meter and 31 meter band oscillator coils	35650	Knob—Tone control knob
37090	Drum—Drive drum	34489	Knob—Volume control or tuning knob
37094	Link—Link, arm and bushing assembly	11891	Lamp—Dial lamp
5040	Plug—5 contact female plug for speaker cable	39859	Rail—Pointer rail
35641	Pulley—Drive cord pulley	36641	Retainer—Retainer for tuning tube crystal
36637	Receptacle—A-C power receptacle	33438	Screw—Thumb screw for tube clip
30735	Resistor—560 ohms, 1 watt (R24)	14270	Spring—Retaining spring for tone control knob, volume control or tuning knob and for range switch knob
30436	Resistor—12,000 ohms, 1/4 watt (R10)	4982	Spring—Retaining spring for range indicator knob
35595	Resistor—15,000 ohms, 3 watt (R20)		
30492	Resistor—22,000 ohms, 1/4 watt (R7)		
30685	Resistor—33,000 ohms, 1/4 watt (R3)		
30650	Resistor—56,000 ohms, 1/2 watt (R21)		
13734	Resistor—120,000 ohms, 1/4 watt (R26)		
30493	Resistor—150,000 ohms, 1/2 watt (R27)		



Loudspeaker Connections

Frequency Ranges	
Standard Broadcast ("A" Band)	540-1,720 kc (556-174 m)
Medium Wave ("B" Band)	3.0-9.5 mc (100-31.6 m)
31 Meter Spread Band	9.5-11.7 mc (31.6-25.6 m)
25 Meter Spread Band	11.7-15.1 mc (25.6-19.9 m)
19-13 Meter Spread Band	15.1-22.5 mc (19.9-13.3 m)

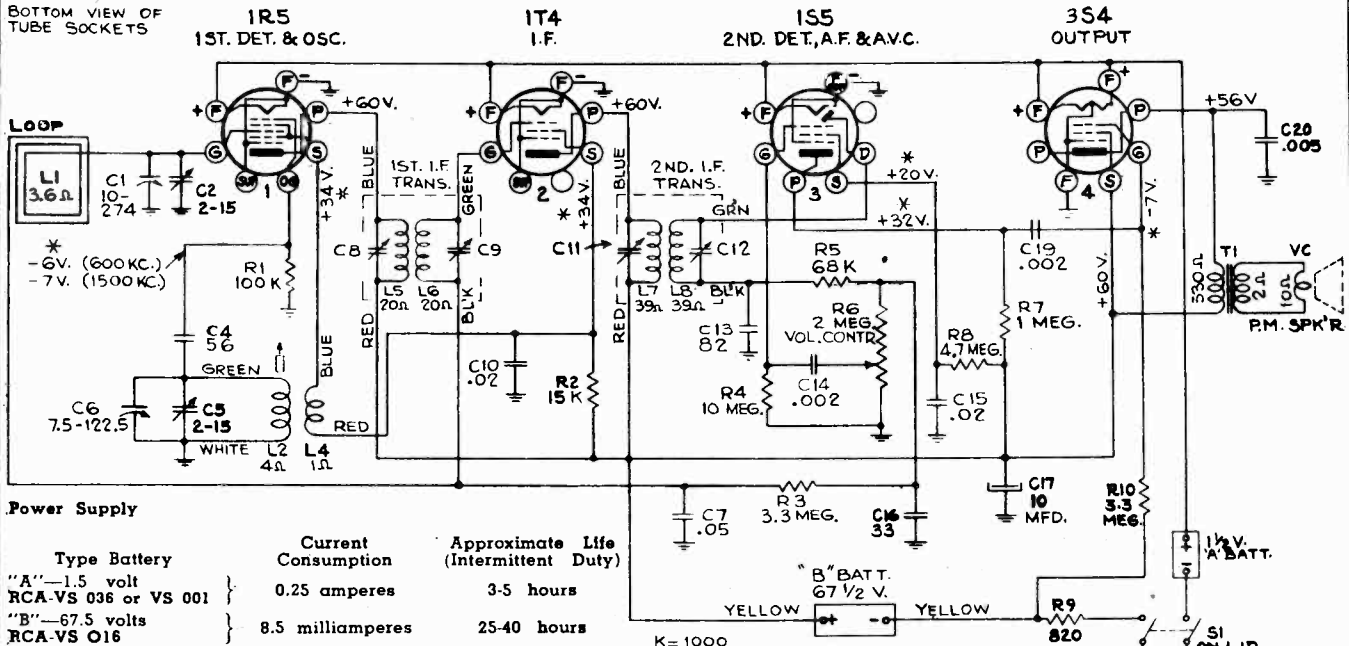
Intermediate Frequency	455 kc
Power Output	
Undistorted	3.25 watts
Maximum	4.5 watts

Loudspeaker	
Type	7" x 9" electrodynamic
V.C. Impedance	2.2 ohms at 400 cycles
Identification Number	92562-1J

MODELS 54B1, 54B1-N,
54B2, 54B3, Ch. RC-589

RCA MFG. CO.

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

K=1000
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH RATED BATTERY VOLTAGE.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
ALL VOLTAGES ARE MEASURED WITH RESPECT TO CHASSIS GROUND.

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 TBI (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. capacitor	455 kc	Quiet point near 1,600 kc	C11, C12 2nd I-F trans.
2		455 kc	Quiet point near 1,800 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.			

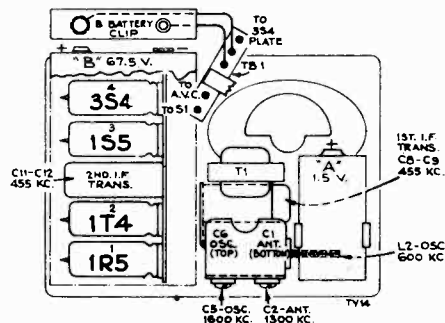
* Steps 3, 4 and 5 require a coupling loop from the signal generator to feed a signal into the receiver loop located in the lid. This loop should be approximately one turn of 6 x 3 1/2 inches coupled to the signal generator through a 200 mmf. capacitor, and loosely coupled to the receiver loop antenna 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 transformer 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.



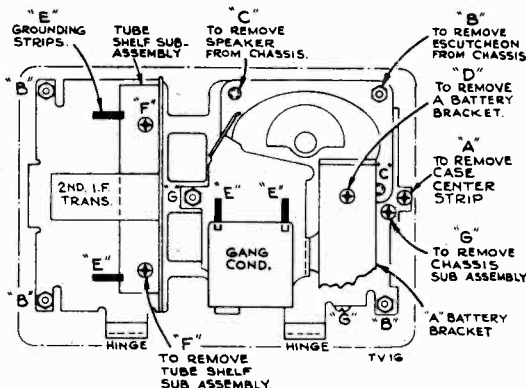
Note: DO NOT install "A" battery without cardboard cover. A rubber band should be placed around each tube for cushioning.

RCA MFG. CO.

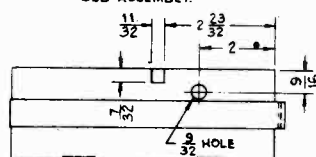
Replacement of Component Parts

- 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 shelf.
 - e. Slip 1st I-F transformer forward toward volume control and out.

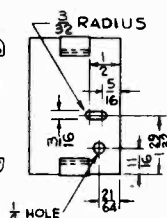
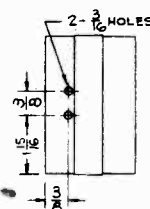
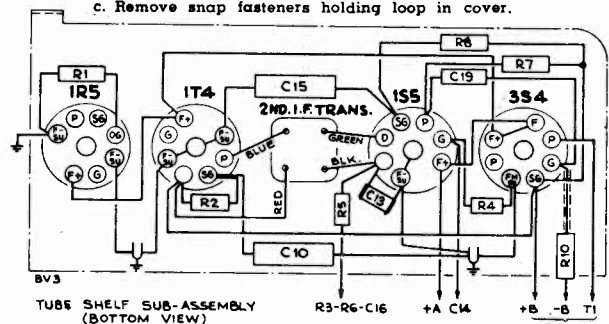
Note: It is possible to fold the 1st I-F transformer out the front of the chassis if the front plate is removed. This will eliminate the unsoldering of leads from the two lug terminal board.
- XI. To remove 2nd I-F transformer:
 - a. Carefully remove the two 0.02 uf C10, C15 capacitors.
 - b. Carefully 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.



DIMENSIONS IN INCHES.



ALIGNMENT SHIELD



MODELS 54B1, 54B1-N,
54B2, 54B3, Ch. RC-589
MODELS 55U, 55AU, Ch. RC-1017

RCA MFG. CO.

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—#6-32 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—#4-40 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	39545	Support—Lid support
30880	Resistor—150 ohms, 1/4 watt (R7)		
6134	Resistor—1200 ohms, 1 watt (R9)		
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)		
14074	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"

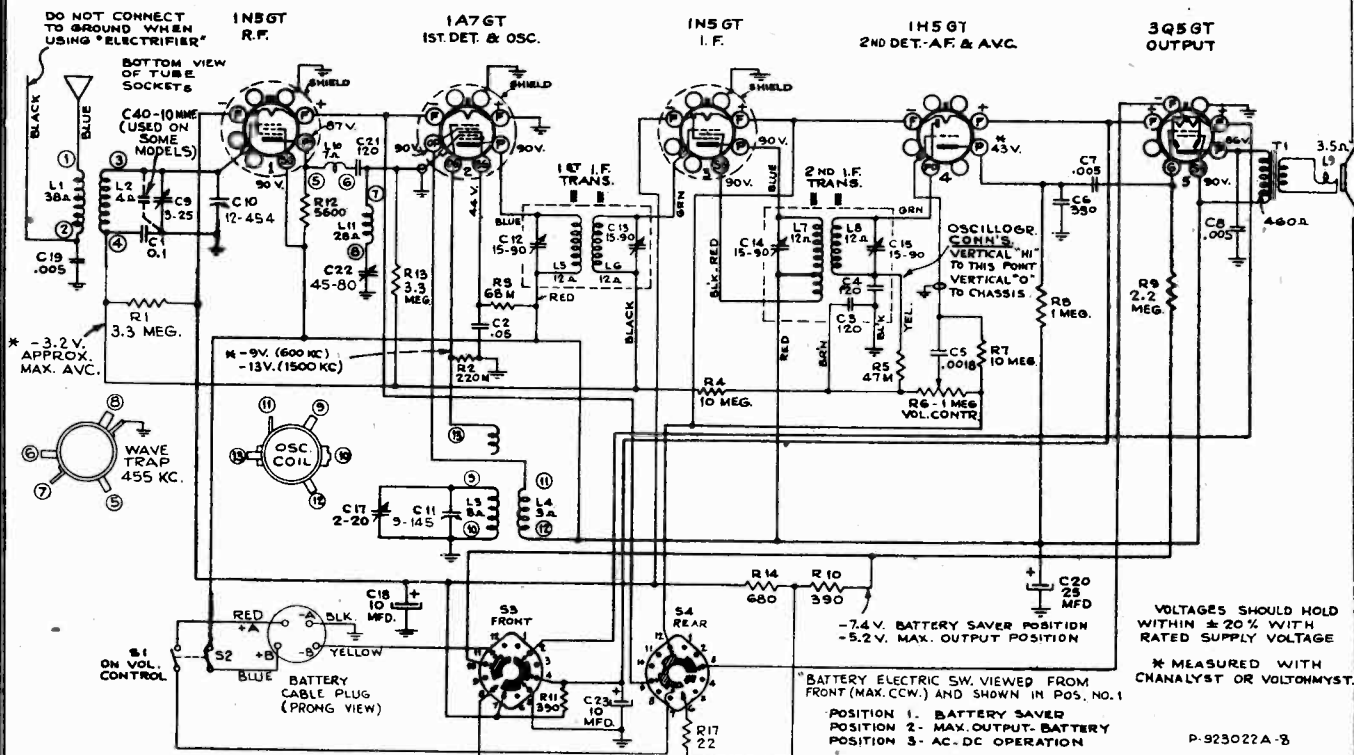
Size..... 4 x 6 inch elliptical
V.C. Impedance..... 3.4 ohms at 400 cycles
Some models may have..... 5 inch PM

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

RCA MFG. CO.

MODEL 55F, CV-42
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.

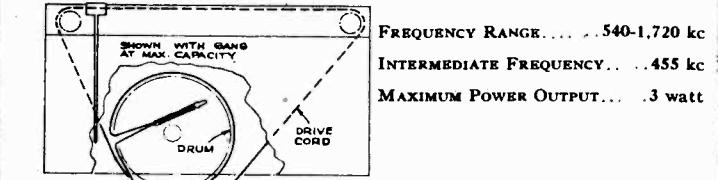
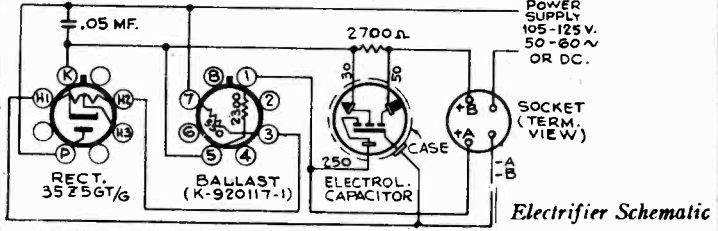
Cathode Ray Alignment is the preferable method. Connections for the oscillograph are shown in the diagram.

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	Antenna terminal in series with 200 mmfd.	1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4		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

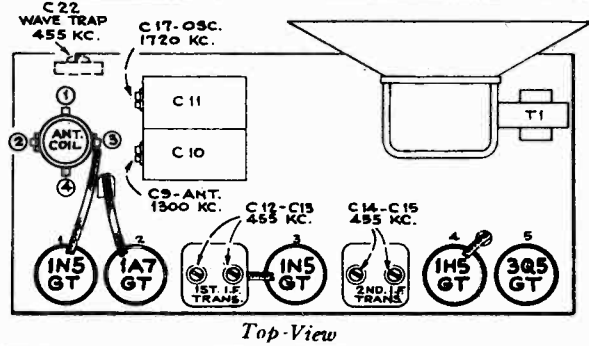


IMPORTANT

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 return. On an AC supply, reversal of the plug may reduce hum. CAUTION! Do not touch Radio Chassis unless power plug is removed from socket.



John F. Rider

Model 55F and CV-42 Electrifier		Model 55F and CV-42 Electrifier	
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)	70993	Transformer—Output transformer
36718	Capacitor—Electrolytic, 10 mfd., 10 volts (C18, C23)	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.	
38705	Capacitor—Electrolytic, 25 mfd., 90 volts (C20)	MISCELLANEOUS ASSEMBLIES	
38344	Coil—Antenna coil (L1, L2)	X1606	Board—Baffle board and grille cloth
38345	Coil—Oscillator coil (L3, L4)	36462	Clamp—Dial clamp
70378	Coil—Wave trap (L10, L11)	35915	Escutcheon—Dial escutcheon less dial
38599	Condenser—Variable tuning condenser (C9, C10, C11, C17)	36886	Knob—Power switch knob
36080	Control—Volume control and power switch (R6, S1, S2)	36722	Knob—Tuning knob
34662	Cord—Drive cord (approx. 59" overall length)	71281	Knob—Volume control knob
38821	Dial—Dial scale	30900	Spring—Retaining spring for knob
35069	Fastener—Push fastener for dial plate	38679	Window—Glass window for dial scale
36090	Indicator—Station selector indicator	CV-42 ELECTRIFIER	
38350	Lever—Indicator arm actuating lever	38702	Ballast—Plug-in ballast tube resistor
38673	Plate—Dial back plate complete with drive cord pulleys and indicator arm	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
30550	Plug—4 prong male plug for battery cable	30847	Capacitor—.05 mfd., 400 volts
32289	Pulley—Drive cord pulley	28431	Cover—Insulating cover for electrolytic capacitor
39930	Resistor—22 ohms, 1 watt (R17)	35069	Fastener—Push fastener for bottom cover
30498	Resistor—390 ohms, 1/2 watt (R10, R11)	28452	Plate—Bakelite mounting plate for electrolytic capacitor
12262	Resistor—680 ohms, 1/2 watt (R14)	38702	Resistor—Ballast tube resistor
30734	Resistor—5600 ohms, 1/2 watt (R12)	30730	Resistor—2,700 ohms, 1/2 watt
30787	Resistor—47,000 ohms, 1/2 watt (R5)	31027	Socket—Power output socket
14138	Resistor—68,000 ohms, 1/2 watt (R3)	31251	Socket—Tube or ballast resistor socket
14583	Resistor—220,000 ohms, 1/2 watt (R2)	38702	Tube—Ballast tube resistor
30652	Resistor—1 megohm, 1/2 watt (R8)		
30649	Resistor—2.2 megohm, 1/2 watt (R9)		
12928	Resistor—3.3 megohm, 1/2 watt (R1, R13)		
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 1/4

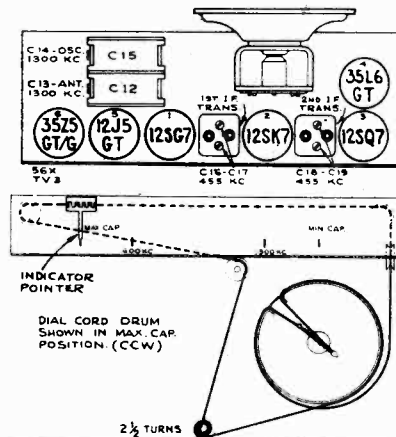
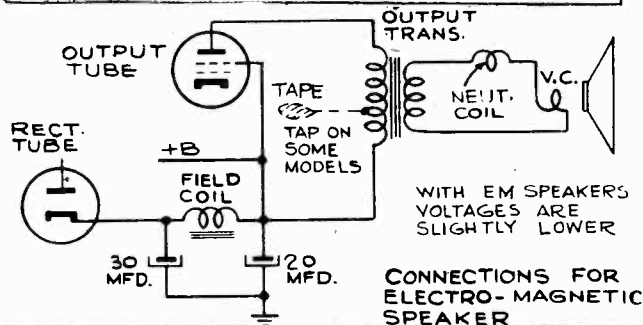
Models 56X, 56X2, 56X3

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.			

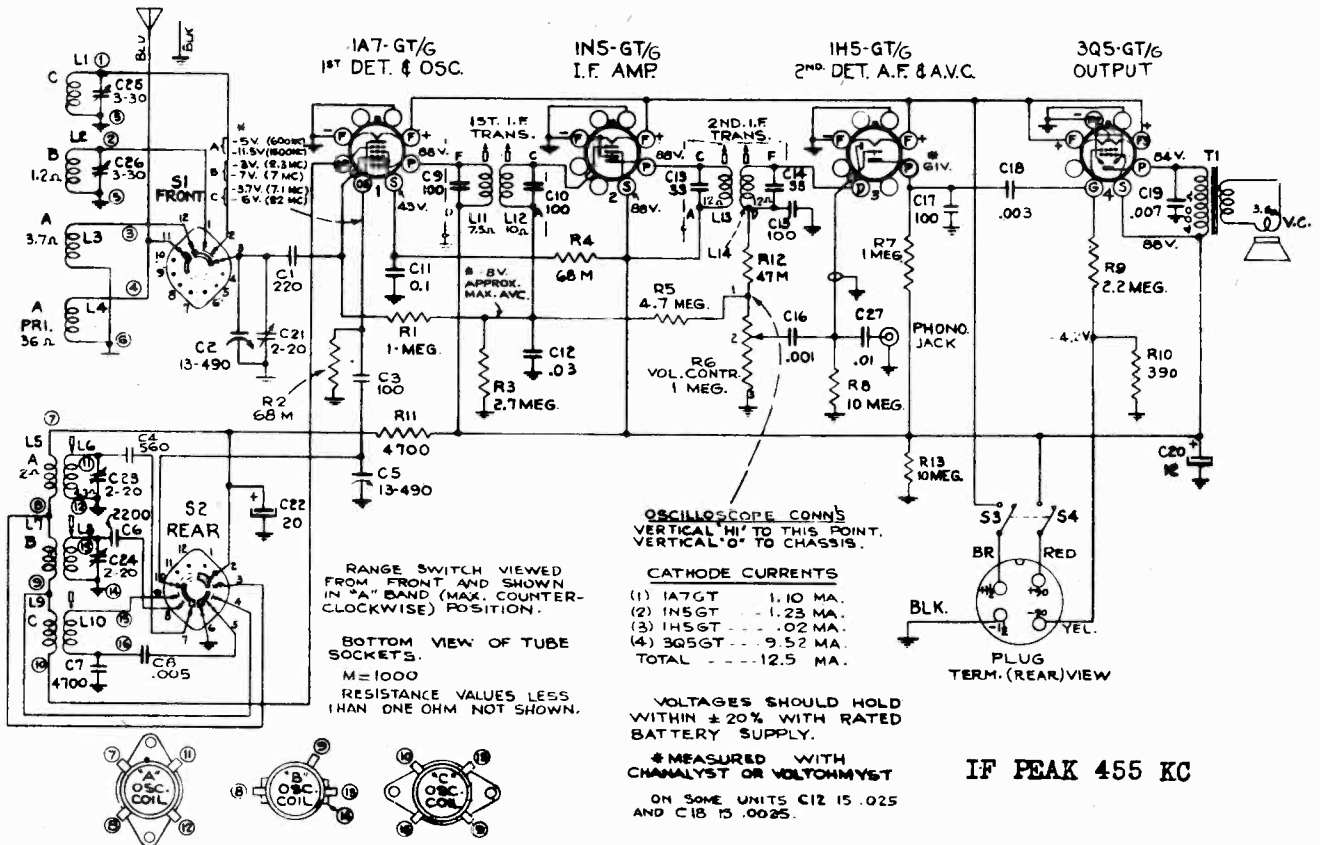
Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf capacitor to common "B." Keep the output signal as low as possible to avoid AVC action.

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.



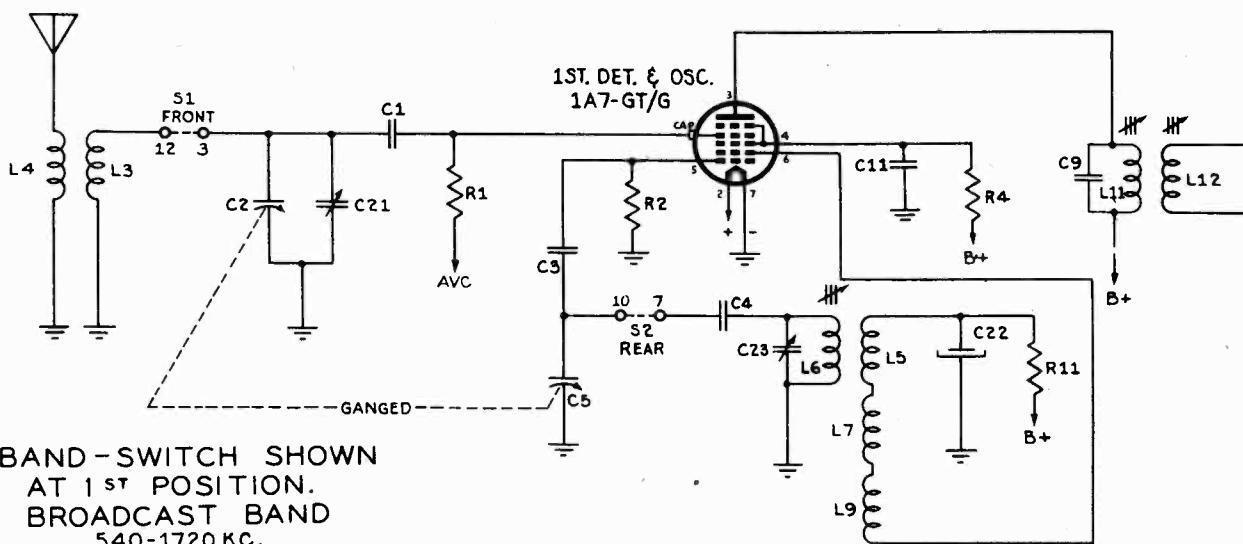
RCA MFG. CO.



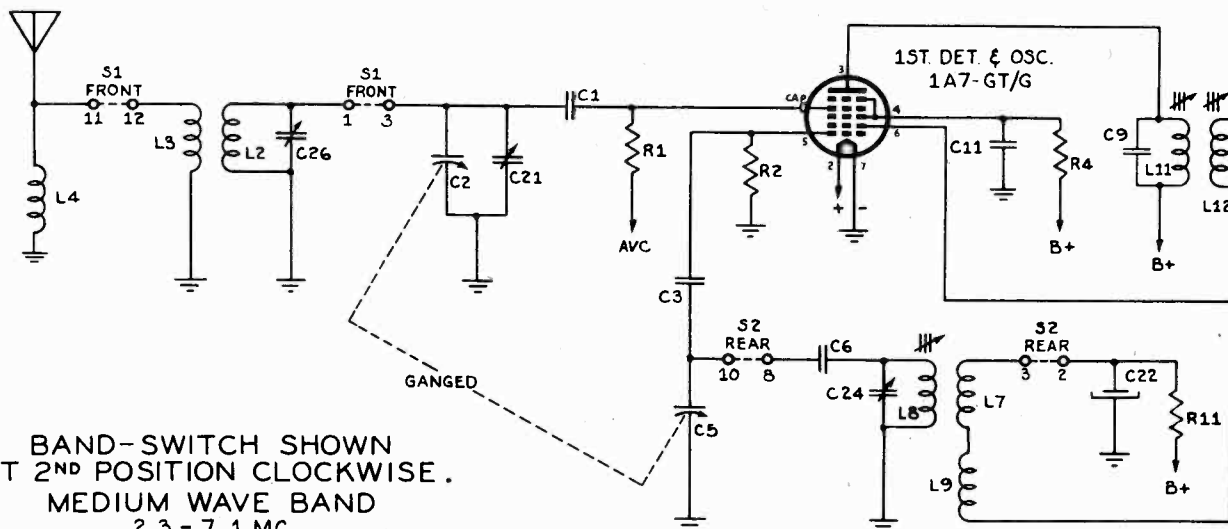
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES (RC-563A)			
32548	Capacitor—Electrolytic, comprising 1 section of 12 mfd., 150 volts, and 1 section of 20 mfd., 150 volts (C20, C22)	30649	Resistor—2.2 megohms, 1/4 watt (R9)
32830	Capacitor—Mica trimmer, dual, 2-20 mmf. (C25, C24)	30931	Resistor—4.7 megohms, 1/4 watt (R5)
31292	Capacitor—Mica trimmer, dual, 3-30 mmf. (C25, C26)	30992	Resistor—10 megohms, 1/4 watt (R8, R13)
39616	Capacitor—Mica, 33 mmf. (C13, C14)	30498	Resistor—390 ohms, 1/4 watt (R10)
39628	Capacitor—Mica, 100 mmf. (C3, C9, C10, C15, C17)	30494	Resistor—4700 ohms, 1/4 watt (R11)
39636	Capacitor—Mica, 220 mmf. (C1)	30787	Resistor—47,000 ohms, 1/4 watt (R12)
70667	Capacitor—Mica, 560 mmf. (C4)	14138	Resistor—68,000 ohms, 1/2 watt (R2, R4)
39660	Capacitor—Mica, 2200 mmf. (C6)	36897	Shaft—Tuning knob shaft
39668	Capacitor—Mica, 4700 mmf. (C7)	70377	Shield—Tube shield for 1N5GT tube
70600	Capacitor—Tubular, .001 mfd., 200 volts (C16)	33742	Socket—Phono input socket
70603	Capacitor—Tubular, .003 mfd., 200 volts (C18)	31319	Socket—Tube socket, moulded
70606	Capacitor—Tubular, .005 mfd., 200 volts (C8)	31251	Socket—Tube socket, water
70608	Capacitor—Tubular, .007 mfd., 400 volts (C19)	31418	Spring—Drive cord spring
70610	Capacitor—Tubular, .01 mfd., 200 volts (C27)	31261	Spring—Retaining spring for "A" and "C" band oscillator coil core and stud
70613	Capacitor—Tubular, .03 mfd., 200 volts (C12)	12007	Spring—Retaining spring for "B" band oscillator coil core and stud and retaining spring for I-F transformers' core and stud assemblies
70617	Capacitor—Tubular 0.1 mfd., 200 volts (C11)	38297	Switch—Range switch (S1, S2)
32821	Coil—Antenna coil, "A," "B" and "C" bands (L1, L2, L3, L4)	35636	Transformer—First I-F transformer (L11, L12, C9, C10)
32148	Coil—Oscillator coil, "A" band (L5, L6)	36122	Transformer—Second I-F transformer (L13, L14, C13, C14)
33784	Coil—Oscillator coil, "B" band (L7, L8)	38300	Transformer—Output transformer (T1)
38295	Coil—Oscillator coil, "C" band (L9, L10)	33726	Washer—"C" washer for tuning knob shaft
38287	Condenser—Variable tuning condenser (C2, C5, C21)	SPEAKER ASSEMBLIES (92510-1)	
36080	Control—Volume control and power switch (R6, S3, S4)	70413	Speaker—5-inch P.M. speaker complete
32634	Cord—Drive cord (approx. 48 inches 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.	
36093	Core—Adjustable core and stud for "A" band oscillator coil	MISCELLANEOUS ASSEMBLIES	
35788	Core—Adjustable core and stud for "B" band oscillator coil	36890	Clamp—Dial clamp, left hand
38296	Core—Adjustable core and stud for "C" band oscillator coil	36891	Clamp—Dial clamp, right hand
12006	Core—Adjustable core and stud for I-F transformers	35480	Decal—Range switch decal
36237	Drum—Drive drum	36103	Decal—Volume control and power switch decal
37068	Indicator—Station selector indicator	38328	Dial—Glass dial scale
38288	Plate—Dial back plate complete with drive cord pulleys	36886	Knob—Range switch or volume control knob
30588	Plug—4 prong male plug for battery cable	36722	Knob—Tuning knob
36230	Pulley—Drive cord pulley	30900	Spring—Retaining spring for control knob
30652	Resistor—1 megohm, 1/4 watt (R1, R7)		
14752	Resistor—2.7 megohms, 1/4 watt (R3)		

MODEL QB55,
Ch. RC-563A

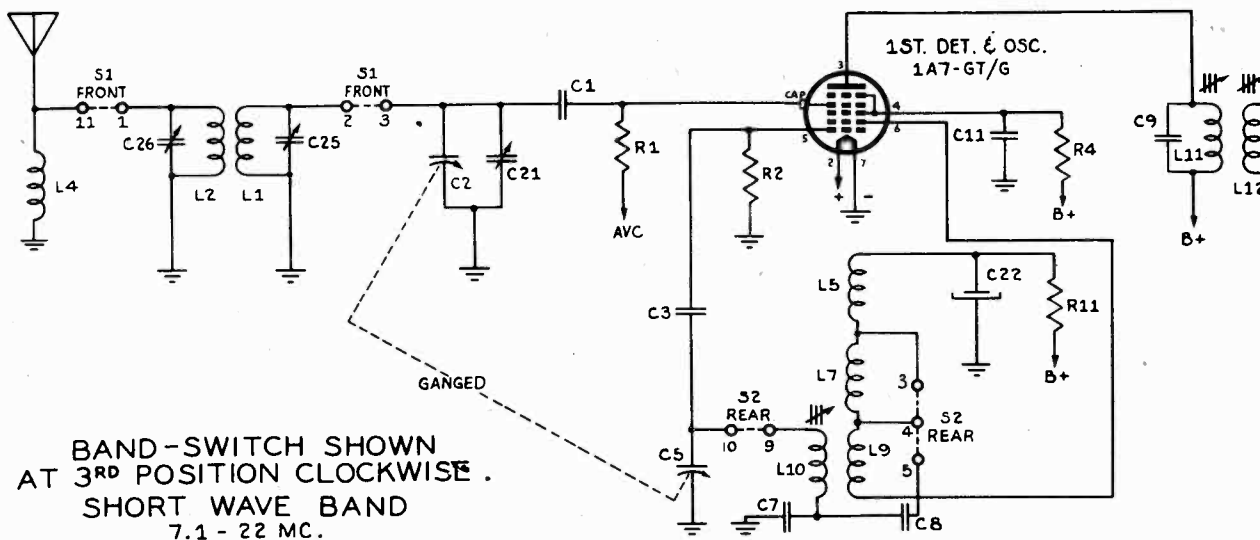
RCA MFG. CO.



BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540-1720 KC.



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
MEDIUM WAVE BAND
2.3 - 7.1 MC.



BAND-SWITCH SHOWN
AT 3RD POSITION CLOCKWISE.
SHORT WAVE BAND
7.1 - 22 MC.

RCA MFG. CO.

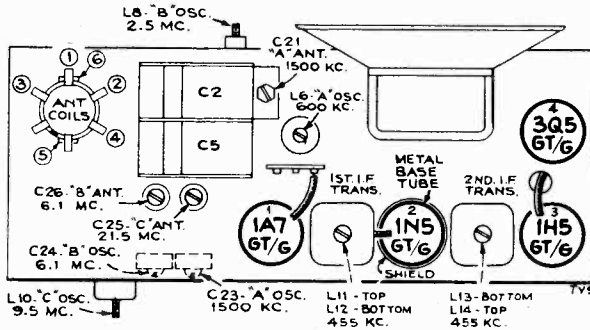
Cathode Ray Alignment is the preferable method. Connections for the oscilloscope are shown on the schematic diagram.

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.

Calibration Scale.—The dial backing plate has 6 marks which correspond to the frequencies indicated on the "Dial Indicator and Drive Mechanism" drawing. These marks are used during alignment.

Before alignment, set the dial pointer so that, with the tuning condenser gang in full mesh, the pointer is 1/16 inch to the left of the left hand mark on the dial backing plate.



PRECAUTIONARY LEAD DRESS

- The 220 mfd. condenser (C1) from the gang to the wiring panel on top of chassis to be dressed away from the chassis.
- All oscillator plate leads to coils and switch to be as short and direct as possible.
- The green lead from r-f section of the tuning condenser gang to terminal No. 3 on switch S1 to be dressed as near as possible to terminal No. 10 on switch S2 and to the green lead from oscillator section of the tuning condenser gang.
- The black lead from terminal No. 9 on switch S2 to L10 to be dressed below and touching the black lead from terminal No. 2 on switch S1 to the C-band antenna trimmer (C25).
- The red lead from the B-band oscillator trimmer (C24) to the B-band oscillator coil (L8); to be dressed above and touching the yellow lead from terminal No. 1 on switch S1 to the B-band antenna trimmer (C26).
- The 100 mfd. mica capacitor (C3) from oscillator section of the condenser gang to terminal 5 of 1A7GT/G socket dressed away from the chassis.

Frequency Ranges

Standard Broadcast ("A" Band) ...540-1,720 kc (555-174m)
 Medium Wave ("B" Band)2.3-7.1 mc (130-42.2 m)
 Short Wave ("C" Band)7.1-22 mc (42.2-13.6 m)

Intermediate Frequency455 kc

Batteries Required

1—RCA-VSO22 Battery Pack or equivalent
 Or: 1—1½ Volt "A" Battery and 2—45 Volt "B" Batteries

Battery Drain

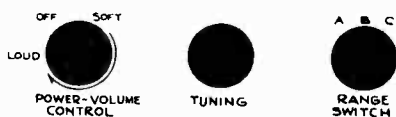
"A" 0.25 amp.
 "B" 12.5 ma.

Power Output

Undistorted 0.20 watt
 Maximum 0.26 watt

Loudspeaker (92510-1)

Type5-inch permanent-magnet dynamic
 Voice-coil impedance4 ohms at 400 cycles



Dial Controls

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust following for max. peak output—
1	1N5GT/G IF grid cap in series with .01 mfd.	455 kc	"A" Band Quiet Point at High Freq. End	L14 and L13 (2nd I-F Trans.)
2	1A7GT/G 1st det. grid cap in series with .01 mfd.			L12 and L11† (1st I-F Trans.)
3	Antenna Lead in series with 200 mfd.	1,500 kc	1,500 kc mark	Peak C23 (osc.) and C21 (ant.)
4		600 kc	800 kc mark	L6 (osc.)**
5	Repeat steps 3 and 4.			
6	Antenna Lead in series with 300 ohms	6.1 mc	6.1 mc mark	Peak C24 (osc.)* and C26 (ant.)
7		2.5 mc	2.5 mc mark	L8 (osc.)**
8	Repeat steps 6 and 7.			
9		9.5 mc	9.5 mc mark	L10 (osc.)**
10		21.5 mc	21.5 mc mark	C25 (ant.)**

* Use minimum capacity peak if two peaks can be obtained.

** Rock gang slightly for peak output.

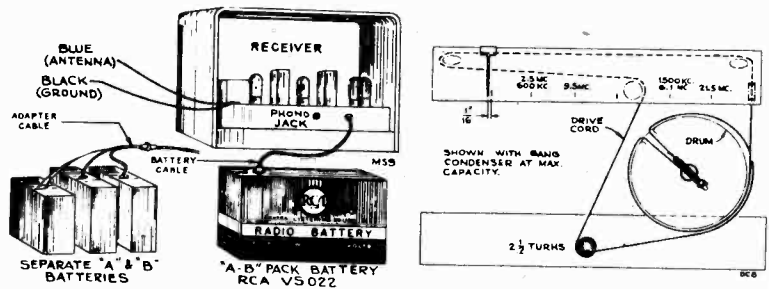
† Do not readjust L14 or L13 when test oscillator is applied to 1A7GT/G grid.

VICTROLA ATTACHMENT

A jack is provided on the rear of chassis for connecting a Victrola Attachment to the audio amplifying circuit. The cable from the attachment should be terminated in a Stock No. 31048 plug.

When Victrola is not in use its plug should be disconnected.

When Victrola is in use, the volume control on the radio should be at minimum, and, if necessary, tune set off frequency from any very strong station.



Power Connections

Dial Indicator and Drive Mechanism

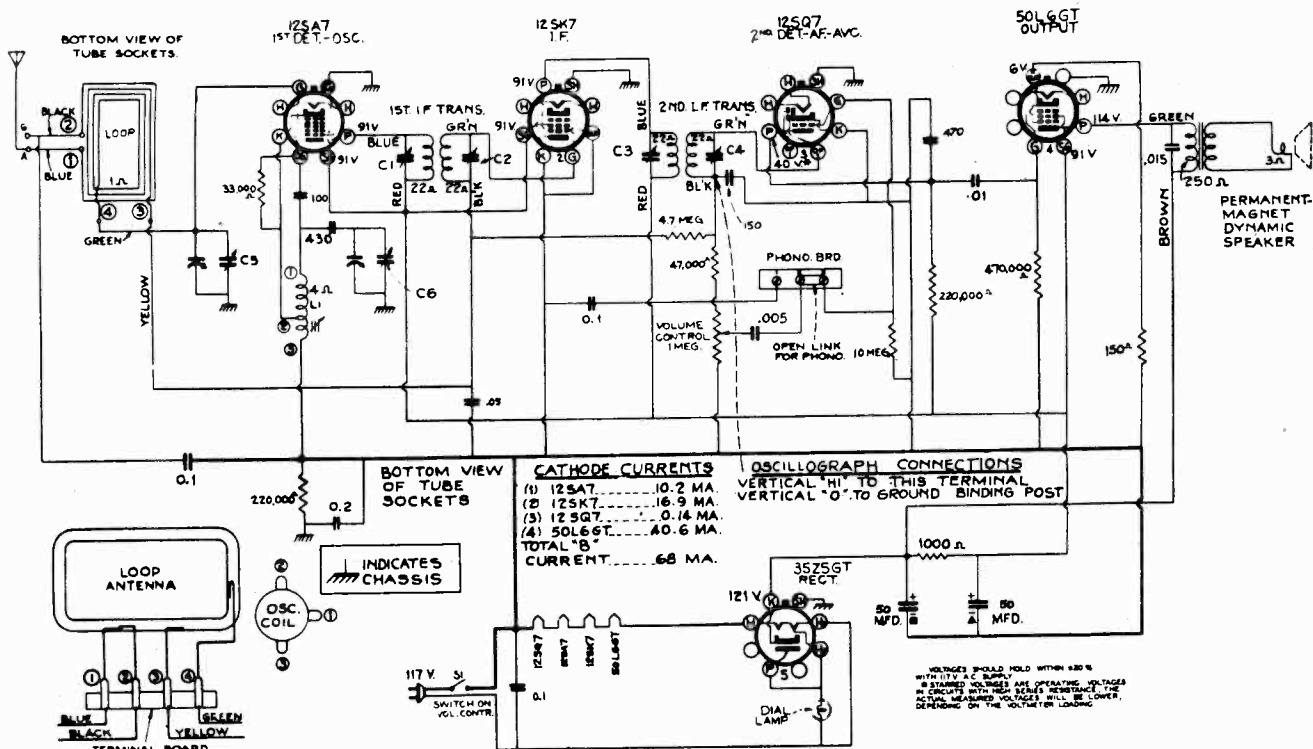
NOTES:

- A four wire cable with plug is provided for making connection to the RCA-VSO22 battery pack or equivalent.
- When separate batteries are used, an adapter extension cable is necessary.
- A good ground connection is essential for best results.

Cabinet Dimensions (inches)

Height 7 7/8 inches
 Width 12 1/8 inches
 Depth 6 3/4 inches

RCA MFG. CO.



Schematic Circuit Diagram

FREQUENCY RANGE 540-1,720 kc
 INTERMEDIATE FREQUENCY 455 kc
 Number of Push Buttons Six
 DIAL LAMP (1) Mazda No. 51, 7.5 volt, 0.2 amp.
 POWER OUTPUT (125 volts, 60 cycle supply)
 Undistorted 0.8 watts
 Maximum 1.4 watts

POWER SUPPLY RATINGS

A-C Rating 105-125 volts, 50-60 cycles, 35 watts
 D-C Rating 105-125 volts, direct current, 35 watts

LOUDSPEAKER (RL 85-2)

Type 5-inch permanent magnet dynamic
 Voice Coil Impedance 4.5 ohms at 400 cycles

Alignment Procedure

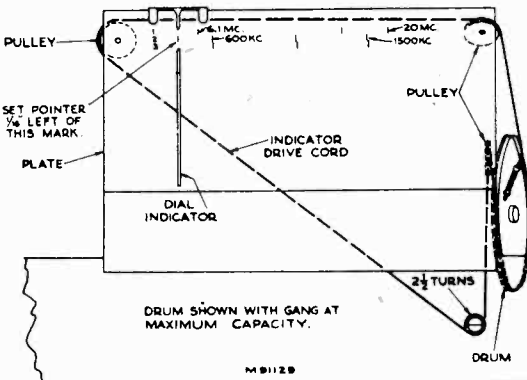
Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown on the schematic drawing.

Output Meter Alignment.—If this method is used, connect the output 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 ground binding post, and keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

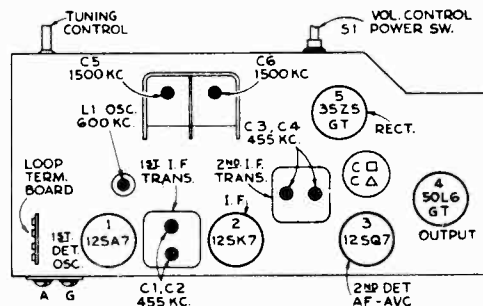
Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should be set to the extreme left (low frequency) mark on the dial scale.



Dial-Indicator and Drive Mechanism

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	Ant. terminal	455 kc	Quiet Point between 1,720-1,500 kc	C3 and C4 (2nd I-F trans.)
2	Ant. terminal			C1 and C2 (1st I-F trans.)
3	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc calibration mark	C6 (osc.) C5 (ant.)
4		800 kc	800 kc calibration mark	L1 (osc.) (Rock in)
5	Repeat step 3.			

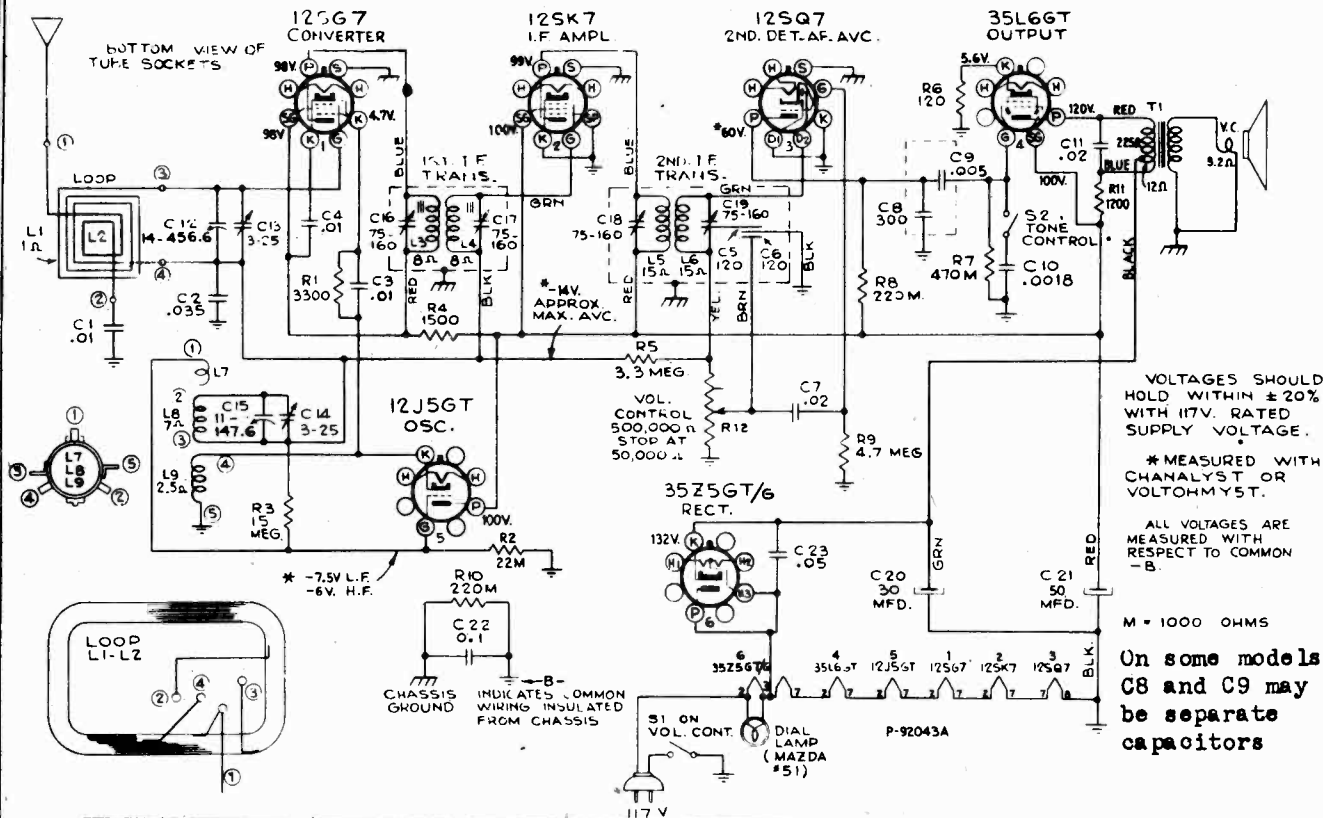
After mounting chassis in cabinet, check the dial calibration on stations of known frequency. If calibration is not correct, move pointer to agree with dial calibration. **Note.**—Oscillator tracks above signal.



Tube and Trimmer Locations

For other data, see P.15-3

RCA MFG. CO.

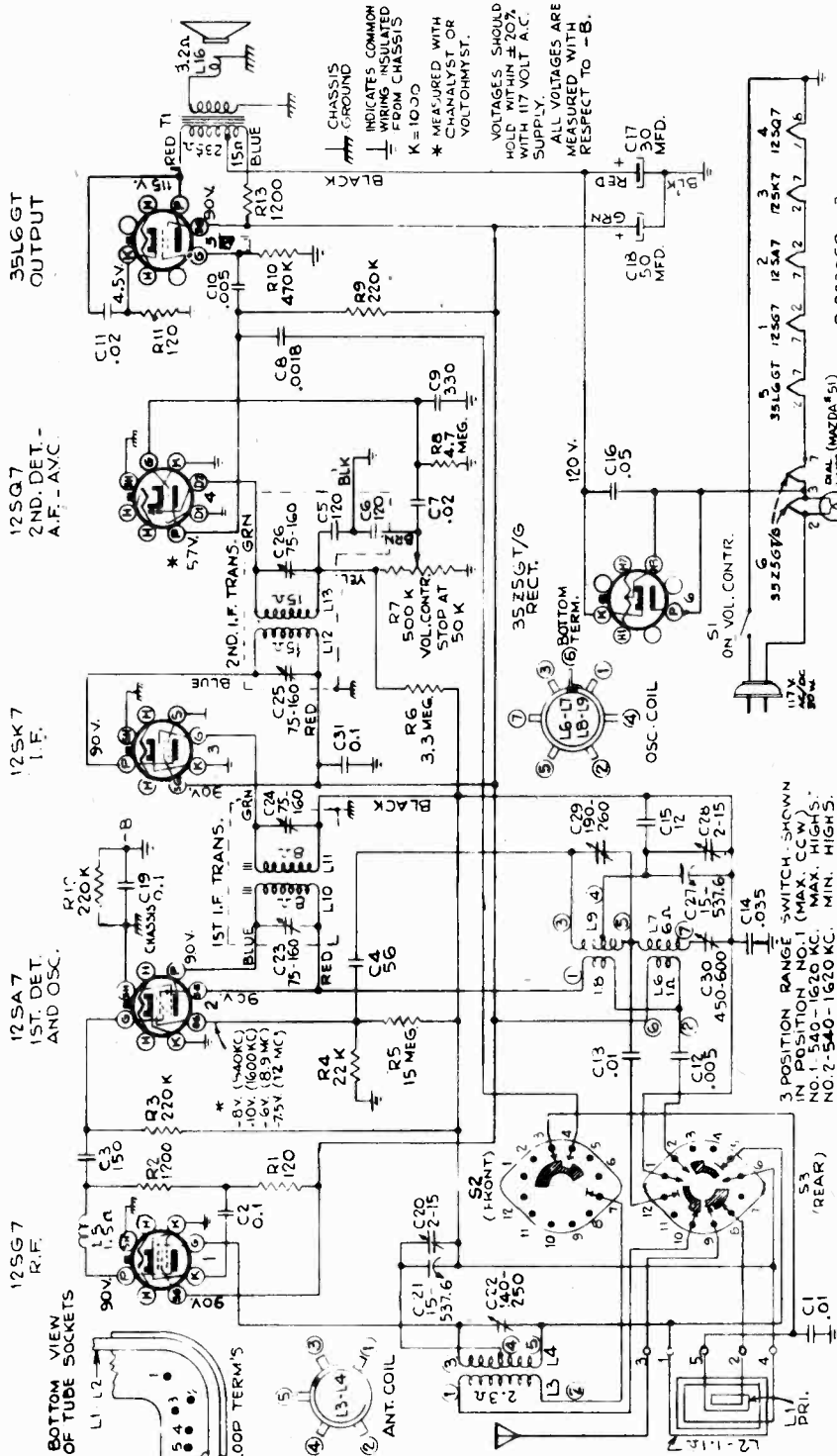


STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES			
RC 1011			
37359	Capacitor—Comprising 1 section of .0003 mfd. and 1 section of .005 mfd. (C-8, C-9)	34449	Socket—Lamp socket
70712	Capacitor—Paper .0018 mfd., 800 volts (C-10)	37805	Socket—Tube socket, moulded
70652	Capacitor—Paper .01 mfd., 800 volts (C-1, C-3, C-4)	31418	Spring—Drive cord tension spring
70711	Capacitor—Paper .02 mfd., 700 volts (C-7, C-11)	36228	Switch—Tone switch (S-2)
70635	Capacitor—Paper .035 mfd., 500 volts (C-2)	70411	Transformer—First I.F. transformer (L-3, L-4, C-16, C-17)
70615	Capacitor—Paper .05 mfd., 400 volts (C-23)	70412	Transformer—Second I.F. transformer (L-5, L-6, C-5, C-6, C-18, C-19)
70617	Capacitor—Paper 0.1 mfd., 400 volts (C-22)	36800	Transformer—Output transformer (T-1)
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C-20, C-21)	33726	Washer—"C" washer for tuning knob shaft
39824	Coil—Oscillator coil (L-7, L-8, L-9)	SPEAKER ASSEMBLY	
36228	Condenser—Variable tuning condenser (C-12, C-13, C-14, C-15)	92510-1	
36242	Control—Volume control and power switch (R-12, S-1)	70413	Speaker—5-inch PM speaker, complete
33634	Cord—Drive cord (approx. 49" long)	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.	
70592	Cord—Power cord	MISCELLANEOUS ASSEMBLIES	
36237	Drum—Drive drum	39953	Back—Cabinet back for 56X
36236	Indicator—Station selector indicator for 56X and 56X2	70409	Back—Cabinet back for 56X2
37068	Indicator—Station selector indicator for 56X3	70415	Back—Cabinet back for 56X3
39821	Loop—Antenna loop (L-1)	X1604	Board—Baffle board and grille cloth
11765	Lamp—Dial lamp	36890	Clamp—Dial clamp, left hand, for 56X and 56X2
36229	Plate—Dial back plate complete with pulleys less dial	36891	Clamp—Dial clamp, right hand, for 56X and 56X2
36230	Pulley—Drive cord pulley	39954	Dial—Glass dial scale for 56X and 56X2
30189	Resistor—120 ohms, 1/4 watt (R-6)	70410	Dial—Glass dial scale for 56X3
6134	Resistor—1200 ohms, 1 watt (R-11)	37831	Fastener—Push fastener (1 set) for cabinet backs on 56X and 56X2
30654	Resistor—1500 ohms, 1/4 watt (R-4)	33006	Feet—Rubber feet for cabinet (4 required)
30733	Resistor—3300 ohms, 1/4 watt (R-1)	70414	Knob—Control knob (ivory) for 56X2
30492	Resistor—22,000 ohms, 1/4 watt (R-2)	36722	Knob—Control knob (walnut) for 56X and 56X3
14583	Resistor—220,000 ohms, 1/4 watt (R-8, R-10)	30800	Spring—Retaining spring for knob
30648	Resistor—470,000 ohms, 1/4 watt (R-7)		
38785	Resistor—15 megohms, 1/4 watt (R-3)		
12828	Resistor—3.3 megohms, 1/4 watt (R-5)		
30831	Resistor—4.7 megohms, 1/4 watt (R-9)		
36897	Shaft—Tuning knob shaft		

Critical Lead Dress

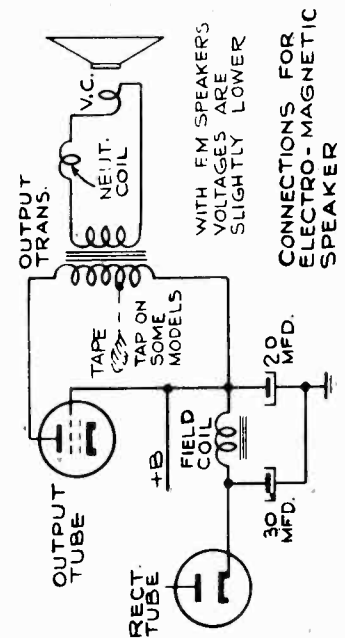
- Dress output plate bypass capacitor (C-11 .02 m) against chassis.
- Dress 35L6GT plate lead (red) against chassis and away from volume control, leads and terminals.
- Dress audio coupling capacitor (C-7 .02 m) away from 35L6GT heater leads.
- Dress tone control lead against front apron.
- Dress 2nd I-F yellow and brown leads away from output plate bypass capacitor (C-11 .02 m) and away from all heater leads.
- Dress lead to speaker voice coil away from tuning knob shaft "C" washer.
- Dress tone control capacitor (C-10 .0018 m) away from oscillator coil.
- Dress all uninsulated leads away from each other and away from chassis to prevent short circuits.
- Dress blue and green leads of both IF transformers back in shields leaving exposed lengths as short as possible.

Frequency Range	540-1600 kc
Intermediate Frequency	455 kc
Power Output	
Undistorted	1.0 watt
Maximum	1.5 watts
Power Supply Rating	
105-125 volts, AC, 50 or 60 cycles, or DC	30 watts
Pilot Lamp	Mazda No. 51, 6-8 volts, 0.2 amp.
Tuning Drive Ratio	20:1
Loudspeaker (92510-1)	
Type	5-inch PM
V. C. Impedance	3.4 ohms at 400 cycles



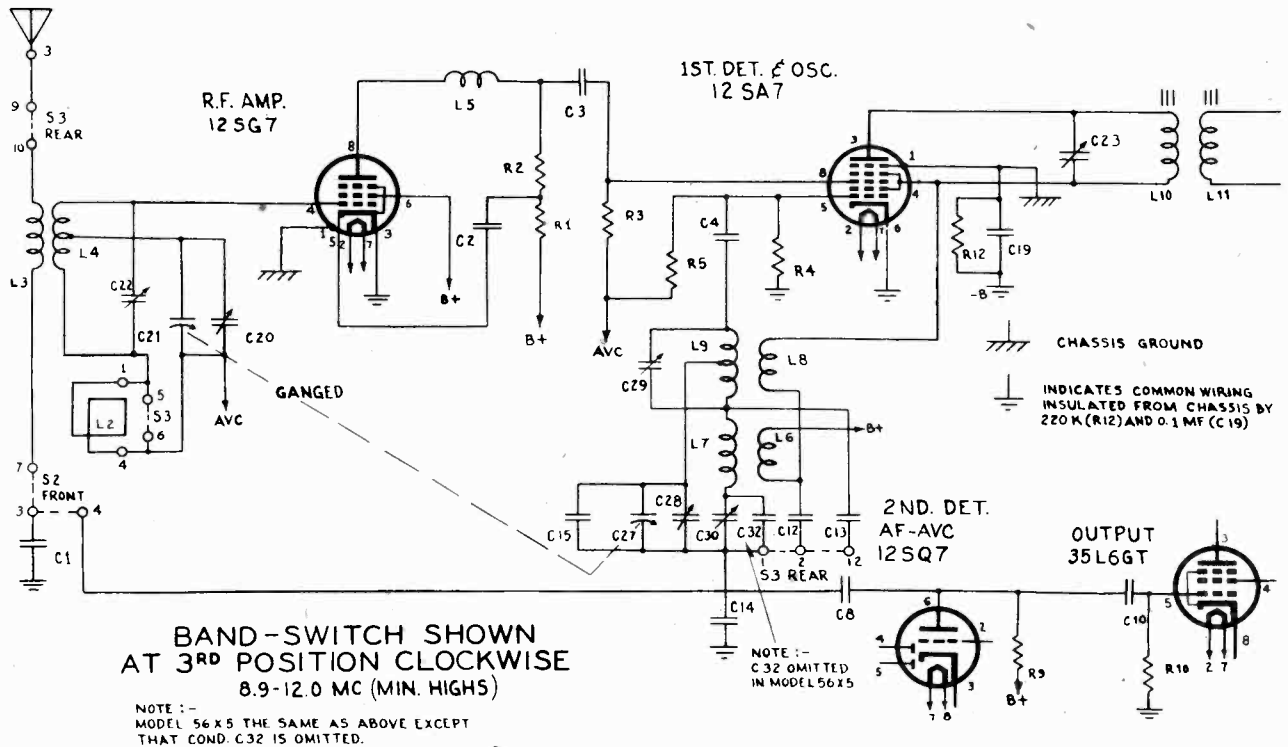
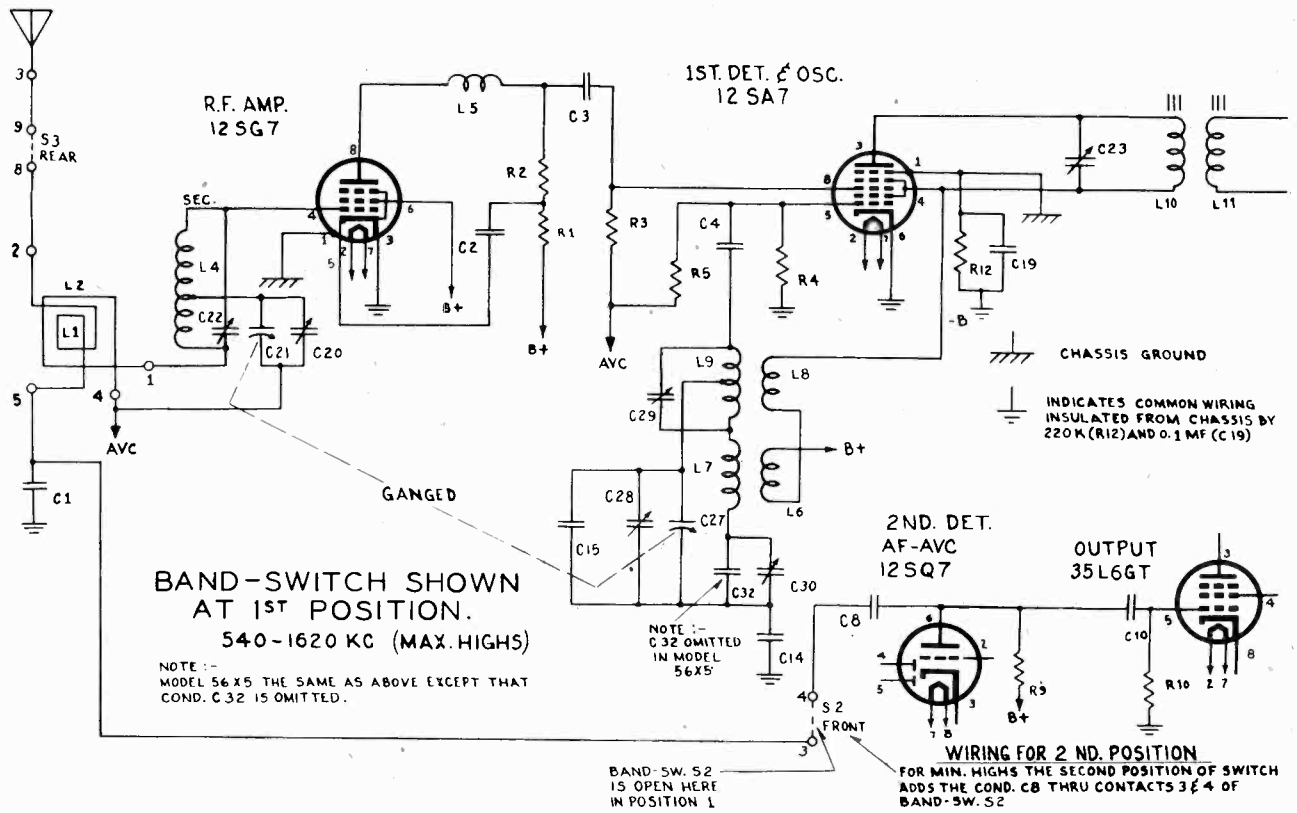
Frequency Range	540-1600 kc
Broadcast	8.9-12 mc
Short Wave	455 kc
Intermediate Frequency	
Tube Complement	
(1) RCA-12SG7	R-F Amplifier
(2) RCA-12SA7	1st Det.—Osc.
(3) RCA-12SK7	I-F Amplifier
(4) RCA-12SQ7	2nd Det., A.V.C., and A-F Amplifier
(5) RCA-35L6-GT	Power Output Rectifier
(6) RCA-35Z5-GT/G	
Pilot Lamp	Mazda No. 51, 6.8 volts, 0.2 amp.
Power Output	
Undistorted	1.0 watts
Maximum	1.5 watts
Loudspeaker (92510-1) "PM"	
Size	3.4 ohms at 400 cycles
V.C. Impedance	30 watts
Power Supply Rating	
105-125 volts, AC, 50 or 60 cycles, or DC	

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.



RCA MFG. CO.

MODEL 56X5
MODELS 61-5,61-10



MODEL 56X5, Ch. RC-1023

MODEL 56X10, Ch. RC-1023B

RCA MFG. CO.

Critical Lead Dress

Models 56X5 and 56X10

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.

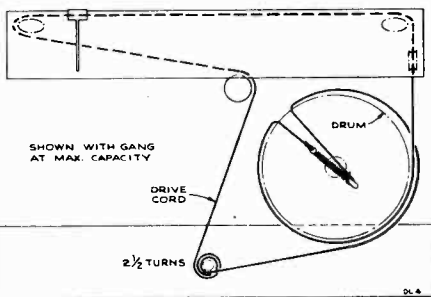
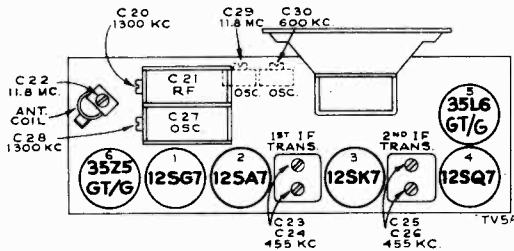
Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mf. capacitor to common "B." Keep the output signal as low as possible to avoid A.V.C. action.

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				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			

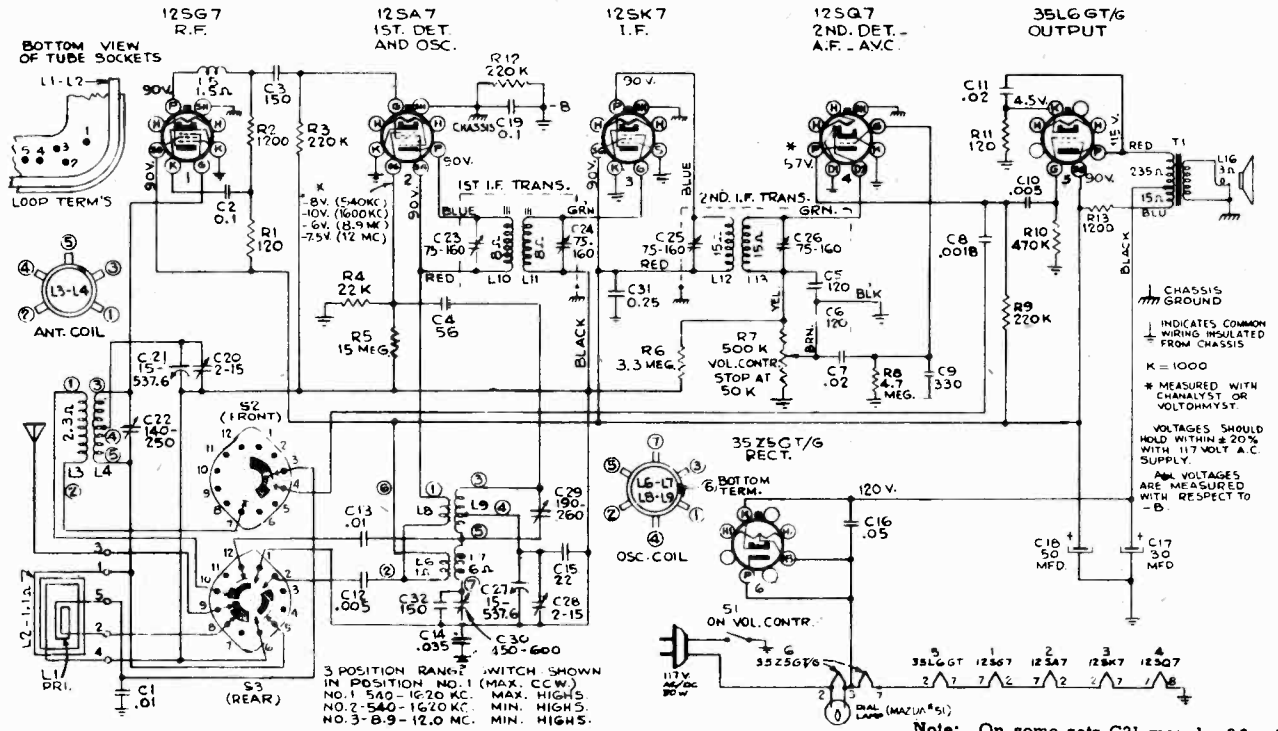
* Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver to approximately 10.9 mc where a weaker signal should be received.
 † Do not readjust C25 or C26

Model 56X5

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1023		14583	Resistor—220,000 ohms, 1/4 watt (R3, R9, R12)
39606	Capacitor—Mica, 12 mmf. (C15)	30648	Resistor—470,000 ohms, 1/4 watt (R10)
39622	Capacitor—Mica, 56 mmf. (C4)	12928	Resistor—3.3 megohms, 1/4 watt (R6)
39632	Capacitor—Mica, 150 mmf. (C3)	30931	Resistor—4.7 megohms, 1/4 watt (R8)
70417	Capacitor—Mica trimmer, 140-250 mmf., mounted on antenna coil (C22)	38785	Resistor—15 megohms, 1/4 watt (R5)
39839	Capacitor—Adjustable mica, comprising 1 section of 190-260 mmf. and 1 section of 450-600 mmf. (C29, C30)	36897	Shaft—Tuning knob shaft
39640	Capacitor—Mica, 330 mmf. (C9)	34449	Socket—Lamp socket
70627	Capacitor—Paper, .005 mfd. (C10, C12)	37605	Socket—Tube socket, moulded
70712	Capacitor—Paper, .0018 mfd. (C8)	31251	Socket—Tube socket, wafer
70652	Capacitor—Paper, .01 mfd. (C1, C13)	31418	Spring—Drive cord tension spring
70711	Capacitor—Paper, .02 mfd. (C7, C11)	39837	Switch—Range switch (S2, S3)
70635	Capacitor—Paper, .035 mfd. (C14)	36800	Transformer—Output transformer (T1)
70615	Capacitor—Paper, .05 mfd. (C16)	70411	Transformer—First I-F transformer (L10, L11, C23, C24)
70617	Capacitor—Paper, 0.1 mfd. (C2, C19, C31)	70412	Transformer—Second I-F transformer (L12, L13, C5, C6, C25, C26)
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C17, C18)	33726	Washer—"C" washer for tuning knob shaft
70416	Coil—Antenna coil (L3, L4, C22)	SPEAKER ASSEMBLY 92510-1	
39892	Coil—Oscillator coil (L6, L7, L8, L9)	70413	Speaker—5-inch P.M. speaker complete with cone and voice coil
70418	Coil—Peaking coil (L5)	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.	
39838	Condenser—Variable tuning condenser (C20, C21, C27, C28)		
36242	Control—Volume control and power switch (R7, S1)	MISCELLANEOUS ASSEMBLIES	
32634	Cord—Drive cord (approx. 49 inches overall length)	39777	Back—Cabinet back
70392	Cord—Power cord	70419	Dial—Glass dial scale
36237	Drum—Drive drum	33006	Feet—Rubber feet for cabinet (4 required)
37068	Indicator—Station selector indicator	X1337	Grille—Cabinet grille cloth
11765	Lamp—Dial lamp	36886	Knob—Range switch knob
70980	Lead—Antenna lead	36722	Knob—Volume control or tuning knob
39841	Loop—Antenna loop (L1, L2)	30900	Spring—Retaining spring for knob
36229	Plate—Dial back plate complete with drive cord pulleys less dial		
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)		

RCA MFG. CO.

MODEL 56X10
Ch.RC-1023B



STOCK No.	DESCRIPTION	IF PEAK 455 KC	DESCRIPTION
CHASSIS ASSEMBLIES			
RC 1023B			
39812	Capacitor—Mica, 22 mmf. (C15)	30492	Resistor—22,000 ohms, 1/4 watt (R4)
39822	Capacitor—Mica, 56 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)
39840	Capacitor—Mica, 330 mmf. (C9)	38785	Resistor—15 megohms, 1/4 watt (R5)
70712	Capacitor—Tubular, .0018 mid. 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 mid. 1000 volts (C1, C13)	37605	Socket—Tube socket, moulded
70711	Capacitor—Tubular, .02 mid. 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	
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

Loudspeaker (92510-1) "PM"
Size 5-inch
V.C. Impedance 3.4 ohms at 400 cycles

Power Output
Undistorted 1.0 watts
Maximum 1.5 watts

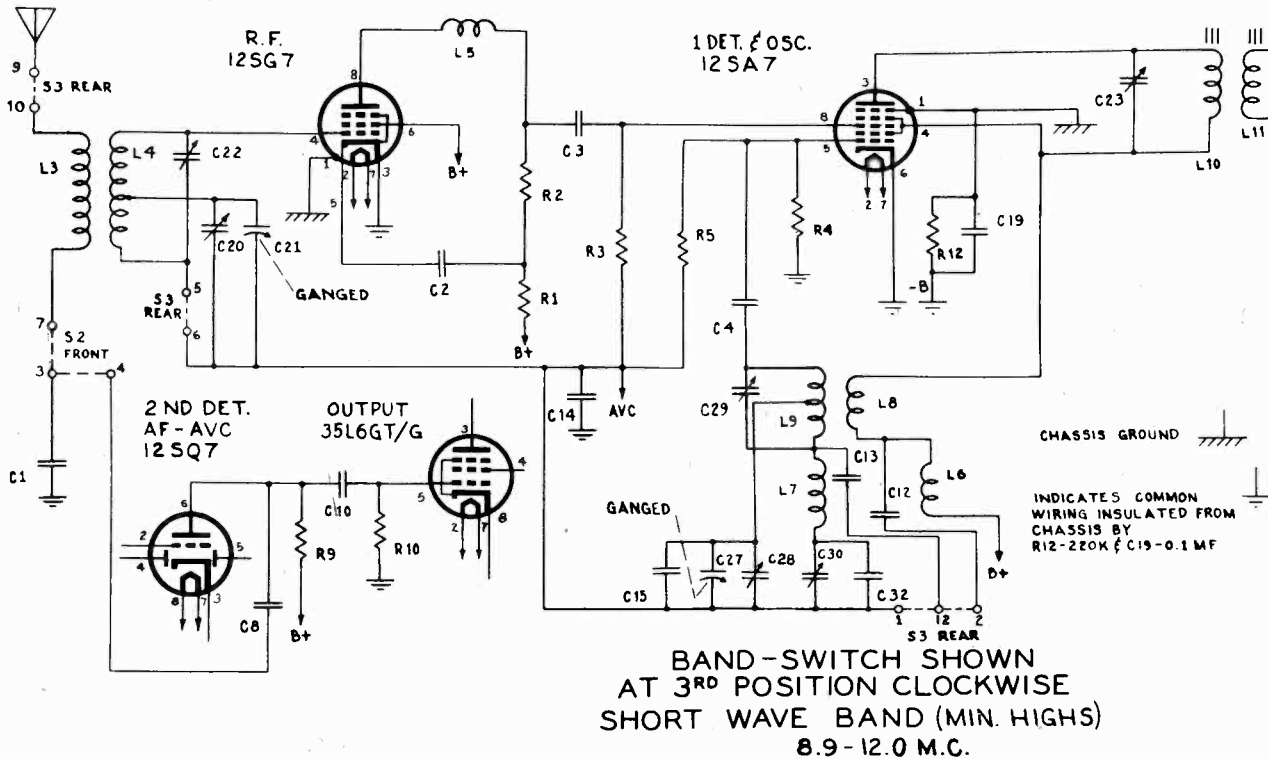
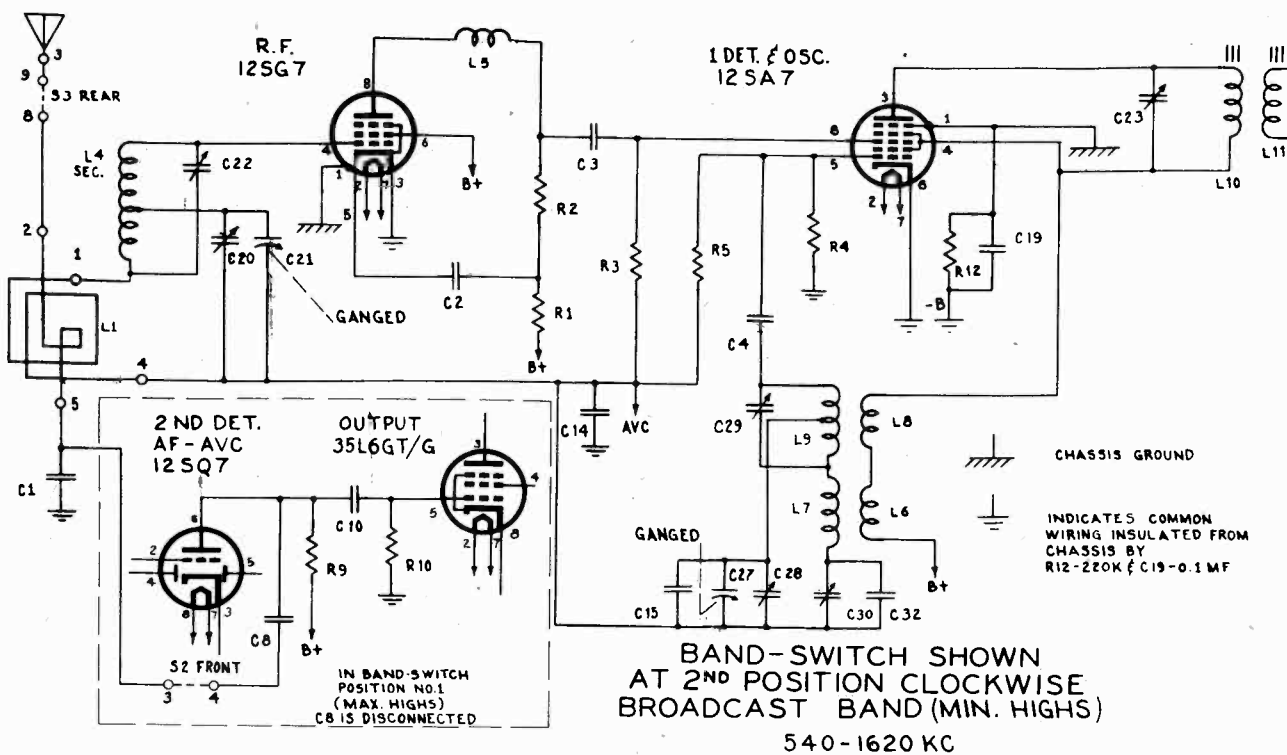
Power Supply Rating
105-125 volts, AC, 50 or 60 cycles, or DC 30 watts

"clarified schematics"

MODEL 56X10

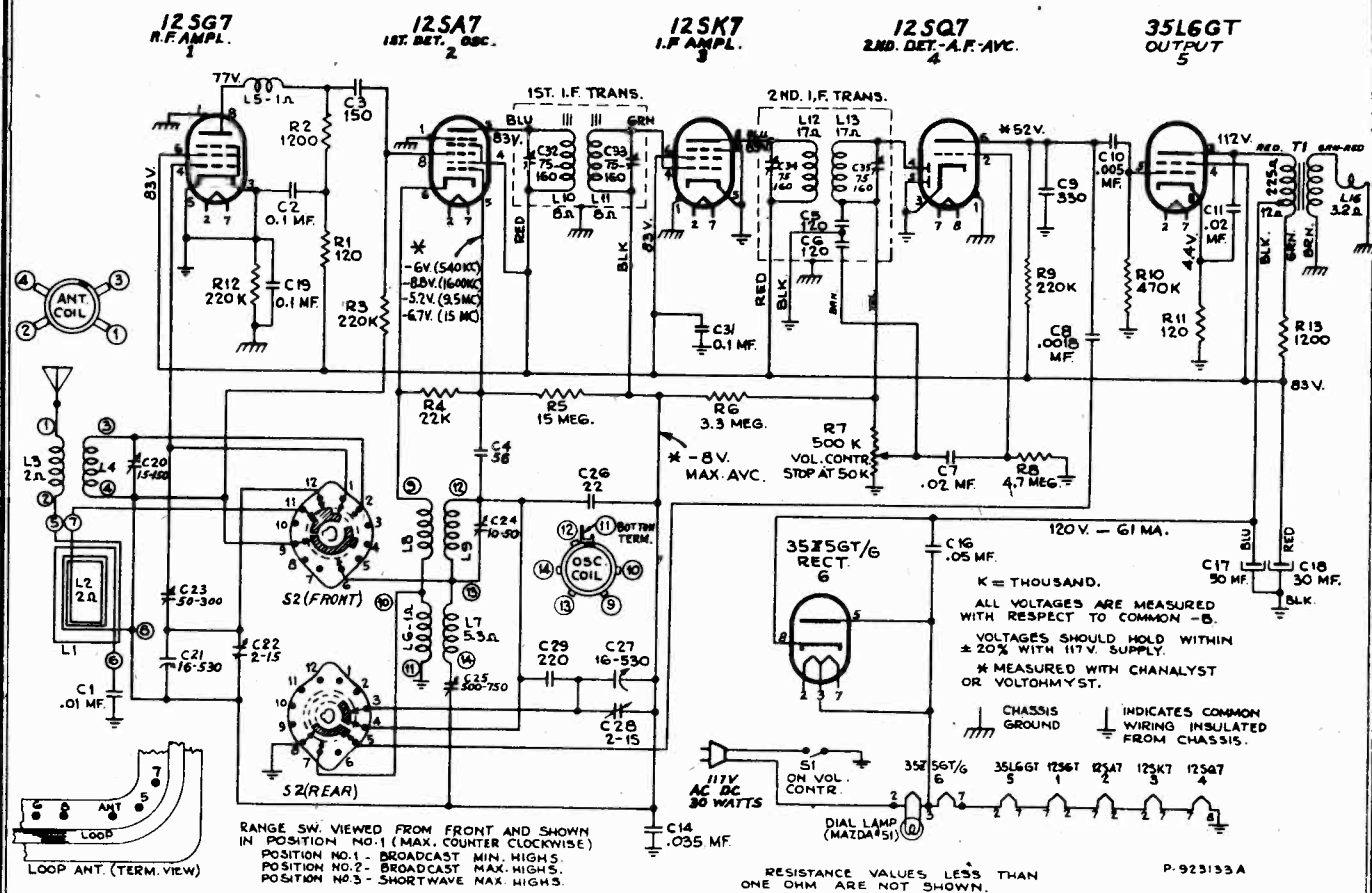
Ch. RC-1023B

RCA MFG. CO.

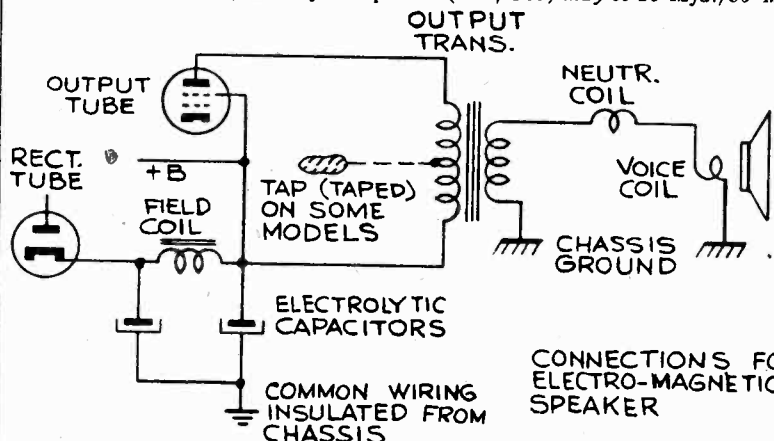


RCA MFG. CO.

MODEL 56X11
Ch. RC-1023A



Note: On some models, electrolytic capacitor (C17, C18) may be 20 Mfd./30 Mfd. The AVC bypass capacitor, (C14) may be .030 Mf.



FREQUENCY RANGE

Broadcast	540-1,600 kc
Short Wave	9.4-15.5 mc
Intermediate Frequency	455 kc

TUBE COMPLEMENT

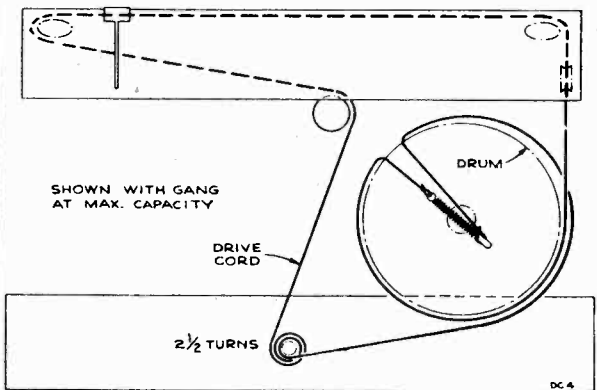
(1) RCA-12SG7	R-F Amplifier
(2) RCA-12SA7	1st Det.—Osc.
(3) RCA-12SK7	I-F Amplifier
(4) RCA-12SQ7	2nd Det., A.V.C., and A-F Amplifier
(5) RCA-35L6-GT	Power Output
(6) RCA-35Z5-GT	Rectifier

PILOT LAMP Mazda No. 51, 6-8 volts, 0.2 amp

POWER OUTPUT

Undistorted	1.0 watts
Maximum	1.5 watts

IF PEAK 455 KC



LOUDSPEAKER 92510-1

Size 5-inch PM
V.C. Impedance 3.4 ohms at 400 cycles

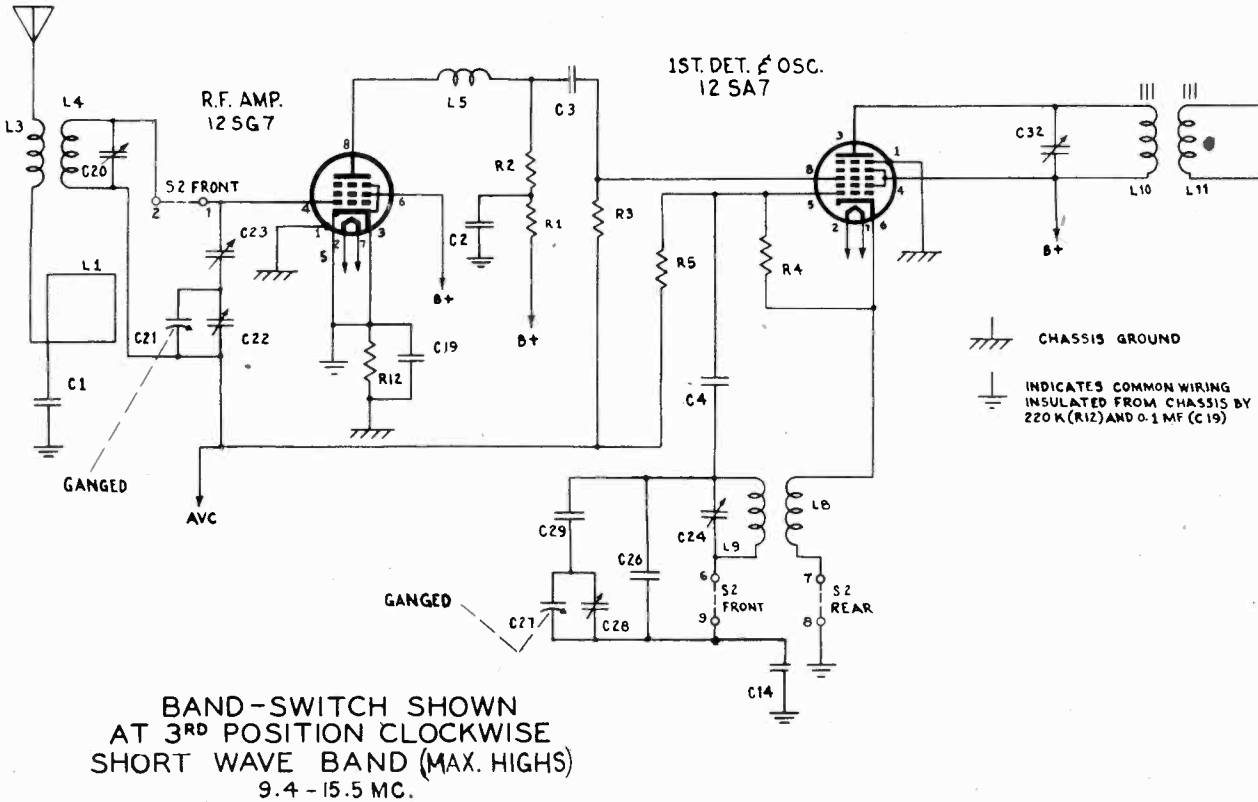
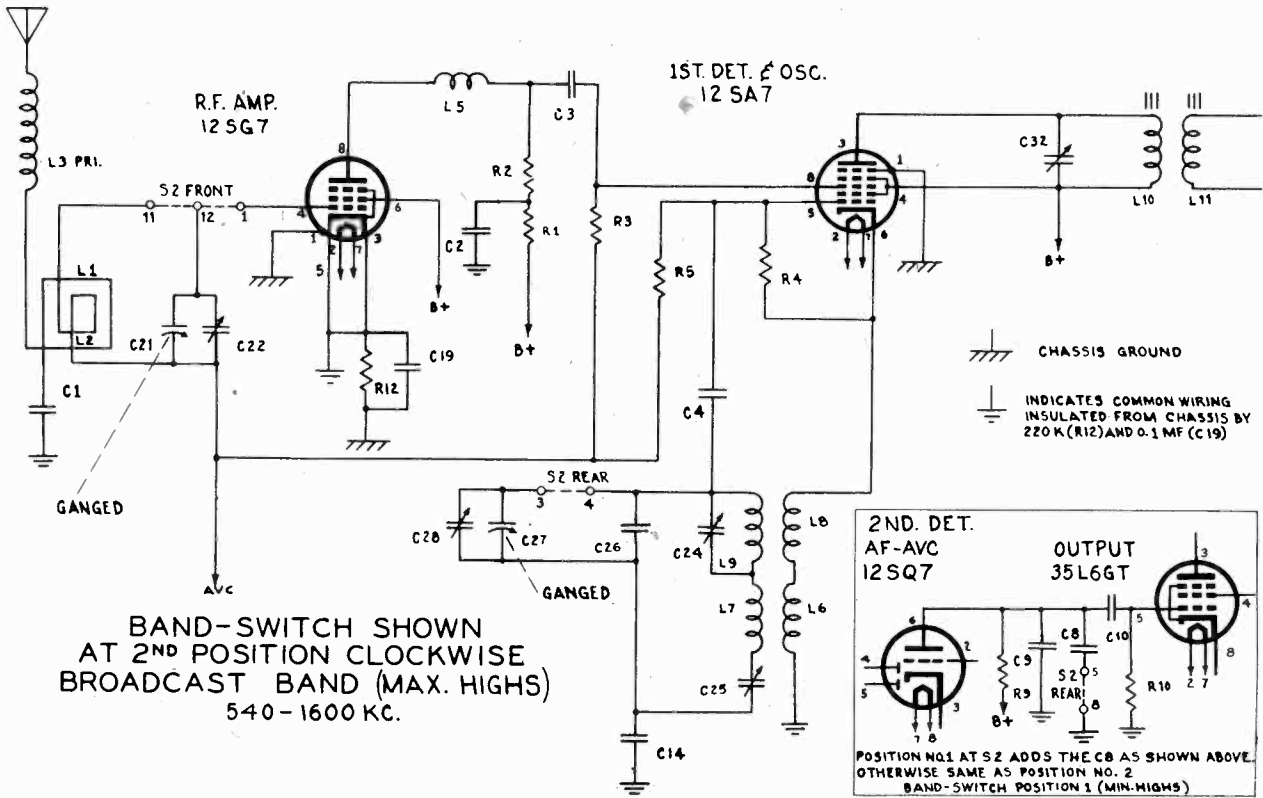
POWER SUPPLY RATING
105-125 volts, AC, 50 or 60 cycles, or DC 30 watts

CABINET DIMENSIONS
Width 12 1/4" Height 7 1/4" Depth 7 1/4"

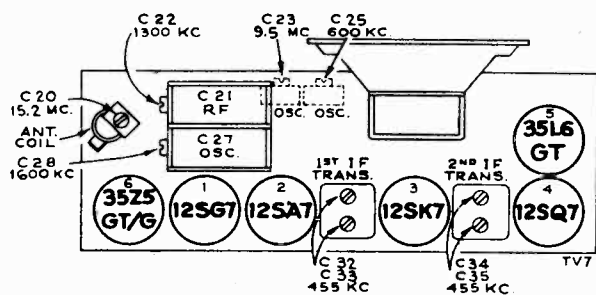
"clarified schematics"

MODEL 56X11
Ch. RC-1023A

RCA MFG. CO.



RCA MFG. CO.



Alignment Procedure

Test Oscillator.—For all alignment operations, keep the output as low as possible to avoid a.v.c. action.

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

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

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 down to chassis.
2. Dress excess leads from I.F. transformers back into cans, also blue and green leads should be dressed near to chassis.
3. Lead from band switch, terminal four, to C-24, should be dressed toward front apron and just clear of oscillator coil.
4. C-29, on band switch, connected from terminal three to terminal four, should be dressed toward rear of switch assembly.
5. Excess dial lamp leads should be dressed on top of chassis.
6. C-11, output tone control condenser, should be dressed close to chassis to clear when entering cabinet.
7. Power cord should be dressed free, and not under any other leads.
8. C-4 should be dressed clear of any other components or wiring and away from chassis.
9. Lead from tone control condenser, C-8, to band switch-terminal five, should be dressed over oscillator coil and oscillator padders C-24, C-25.
10. Lead from short-wave antenna coil to loop antenna should be to the right (outside) of 3525GT/G.
11. Leads to loop antenna should be dressed between I.F. transformer and 12SA7.
12. Yellow and brown leads from second I.F. transformer to volume control should be dressed up and away from chassis.

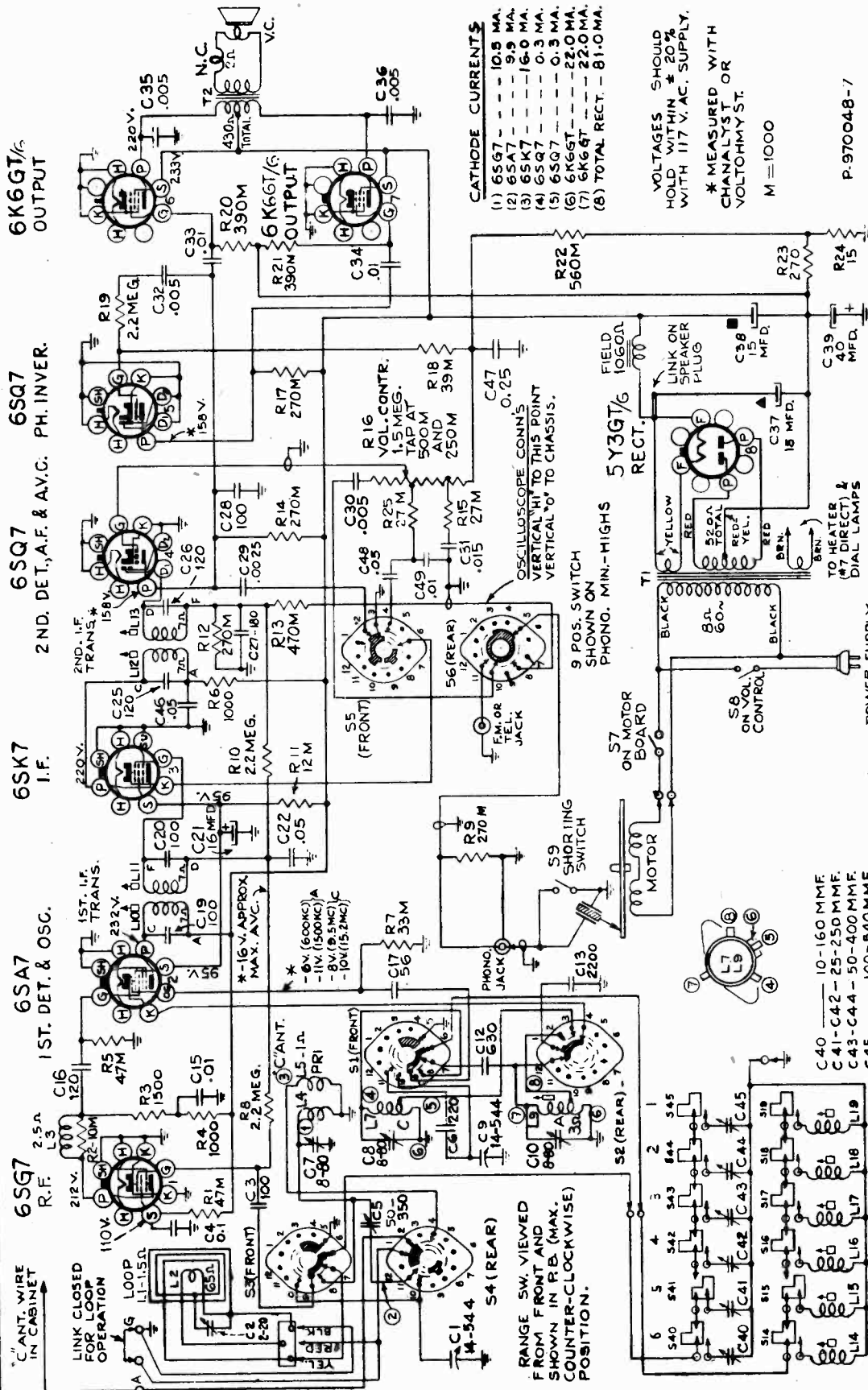
Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I.F. grid in series with .01 mfd.	455 kc	'A' Band Quiet point at 1600 kc end of dial	C34, C35 2nd I-F trans.
2	12SA7 grid in series with .01 mfd.			C32, C33 1st I-F trans.
3		600 kc	'A' Band rock gang near 600 kc	C25 (BC trimmer)
4	Antenna terminal on loop in series with 220 mmf.	1600 kc	1600 kc	C28 (Osc.)
5		600 kc	Rock gang near 600 kc	Recheck C25
6		1300 kc	1300 kc	C22 (r.f.)
7		15.2 mc.	'C' Band rock gang near 15.2 mc.	C20 (ant.) on top of S.W. ant. coil
8	Antenna terminal on loop in series with 22 mmf.	9.5 mc.	15.2 mc. center of "M"—"19M"	C24 (Osc.)*
9		9.5 mc.	9.5 mc.	C23 (r.f.)
10		15.2 mc.	15.2 mc.	Recheck C20

*Use minimum capacity peak, if two peaks can be obtained.
Note.—Oscillator tracks 455 kc above signal on both bands.

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1023A		
32979	Capacitor—Mica trimmer, 15-150 mmf. (C20)	30492	Resistor—22,000 ohms, 1/4 watt (R4)
37388	Capacitor—Mica trimmer, 50-300 mmf. (C23)	14583	Resistor—220,000 ohms, 1/4 watt (R3, R9)
70701	Capacitor—Mica trimmer, 1 section 500-750 mmf. and 1 section 10-50 mmf. (C24, C25)	30648	Resistor—470,000 ohms, 1/4 watt (R10)
39612	Capacitor—Mica, 22 mmf. (C26)	12928	Resistor—3.3 megohms, 1/4 watt (R6)
39622	Capacitor—Mica, 56 mmf. (C4)	30271	Resistor—4.7 megohms, 1/4 watt (R8)
39632	Capacitor—Mica, 150 mmf. (C3)	38785	Resistor—15 megohms, 1/4 watt (R5)
39640	Capacitor—Mica, 330 mmf. (C9)	36897	Shaft—Tuning knob shaft
71014	Capacitor—Silver mica, 220 mmf. (C29)	34449	Socket—Dial lamp socket
70712	Capacitor—Tubular, .0018 mfd., 800 volts (C8)	37605	Socket—Tube socket—moulded
70627	Capacitor—Tubular, .005 mfd., 600 volts (C10)	31418	Spring—Drive cord spring
70652	Capacitor—Tubular, .01 mfd., 800 volts (C1)	70696	Switch—Range switch (S2)
70711	Capacitor—Tubular, .02 mfd., 700 volts (C7, C11)	70697	Transformer—Audio transformer (T1)
70635	Capacitor—Tubular, .035 mfd., 500 volts (C14)	70698	Transformer—First I.F. transformer (L10, L11, C32, C33)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C16)	70699	Transformer—Second I.F. transformer (C34, C35, L12, L13)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C2, C19, C31)	33726	Washer—"C" washer for tuning knob shaft
36301	Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C17, C18)		SPEAKER ASSEMBLIES
70842	Coil—Antenna coil (L3, L4)	92510-1T	
70843	Coil—Oscillator coil (L6, L7, L8, L9)	92510-1L	
39804	Coil—Packing coil (L5)	92510-1P	
70700	Condenser—Variable tuning condenser (C21, C22, C27, C28)	92510-1M	
36242	Control—Volume control and power switch (R7, S1)		70413 Speaker—5" P.M. speaker complete with cone and voice coil
70392	Cord—Power cord		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. 49" overall length)		MISCELLANEOUS ASSEMBLIES
36237	Drum—Drive drum	39053	Back—Cabinet back
37068	Indicator—Station selector indicator	70702	Dial—Glass dial scale
11765	Lamp—Dial lamp	36890	Clamp—Dial clamp—left hand
31193	Lead—Antenna lead	36891	Clamp—Dial clamp—right hand
70841	Loop—Antenna loop (L1, L2)	37831	Fastener—Push fastener for cabinet back
36229	Plate—Dial back plate complete with pulleys	36722	Knob—Control knob
36230	Pulley—Drive cord pulley	30900	Spring—Retaining spring for knobs
30189	Resistor—120 ohms, 1/4 watt (R1, R11)		
12267	Resistor—1200 ohms, 1/4 watt (R2)		
6134	Resistor—1200 ohms, 1 watt (R13)		

MODELS 58V, 58AV
Ch. RC-604

RCA MFG. CO.



- CATHODE CURRENTS**
- (1) 6SG7 - - - - 10.5 MA.
 - (2) 6SA7 - - - - 9.9 MA.
 - (3) 6SK7 - - - - 16.0 MA.
 - (4) 6SQ7 - - - - 0.3 MA.
 - (5) 6SQ7 - - - - 0.3 MA.
 - (6) 6K6GT - - - - 22.0 MA.
 - (7) 6K6GT - - - - 22.0 MA.
 - (8) TOTAL RECT. - 81.0 MA.

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V.A.C. SUPPLY.
* MEASURED WITH CHANNELYST OR VOLTOMYST.
M = 1000

P-970048-7

POWER OUTPUT RATING

Undistorted 5 watts
Maximum 3.5 watts

PHONOGRAPH*

Type Automatic 960001-1
Record Capacity Fourteen 10-in. Twelve 12-in.
Turntable 78 r.p.m. C.T. type
Type Pickup C.T. type
Motor Power consumption 30 watts

* This mechanism can be converted to operate on 50 cycles.

- C40 - 10-160 MMF
- C41-C42 - 25-250 MMF
- C43-C44 - 50-400 MMF
- C45 - 100-540 MMF

FREQUENCY RANGES

Standard Broadcast "A" 540-1,600 kc
Short Wave "C" 9.4-15.4 mc

INTERMEDIATE FREQUENCY 455 kc

POWER SUPPLY RATING

105-125 volts, 60 cycles 115 watts
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PILOT LAMPS (2) Mazda No. 51, 6-8 volts, 0.2 amps

COMPARTMENT LAMP (1) Mazda No. 55, 6-8 volts, 0.4 amps.

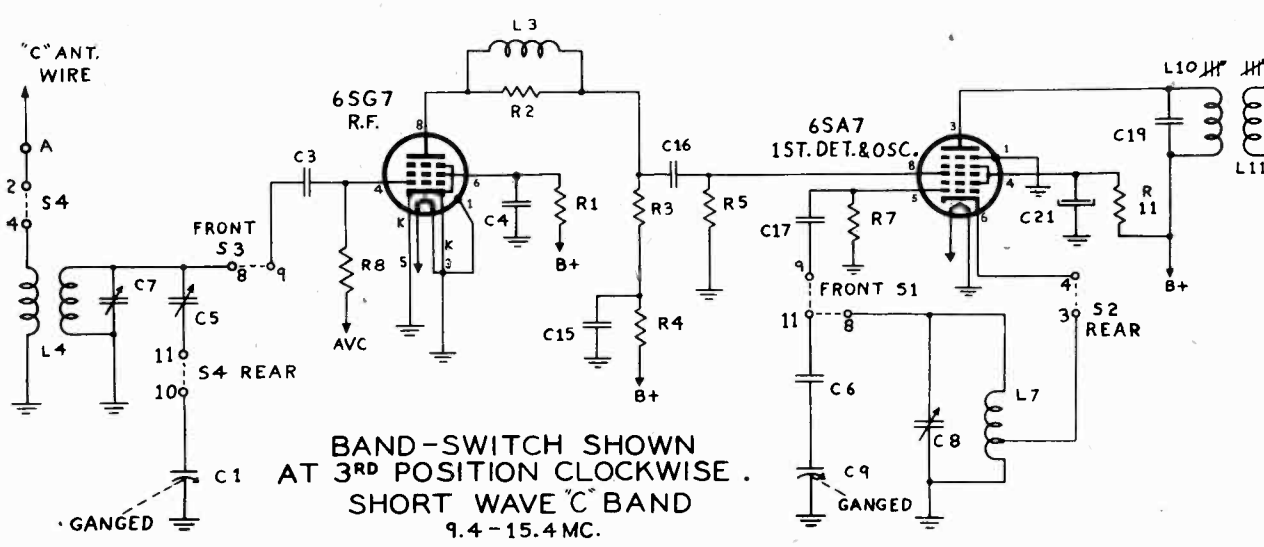
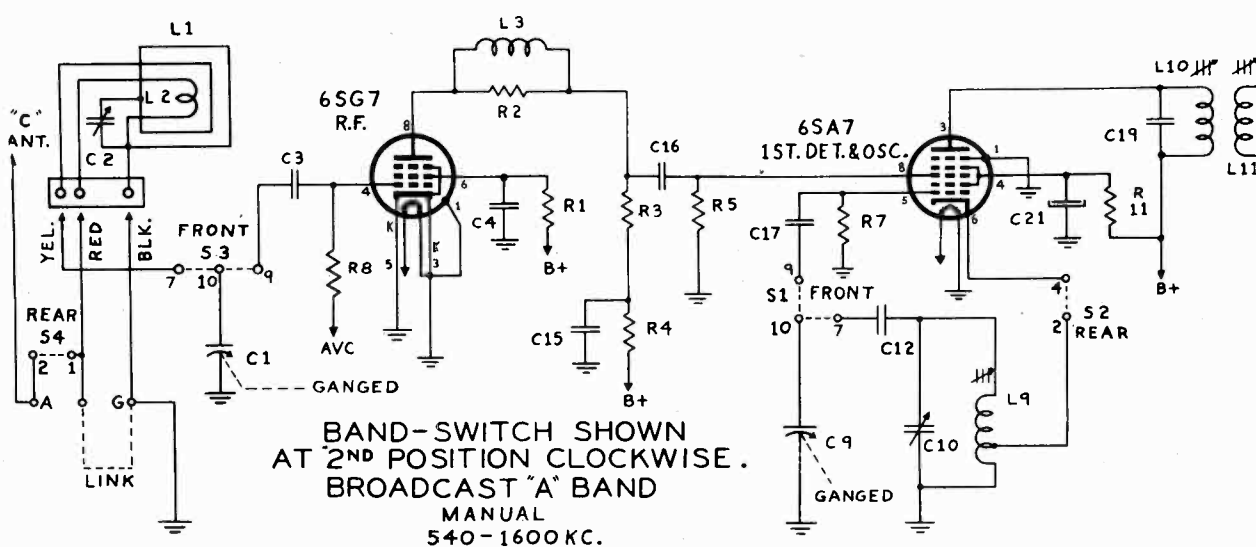
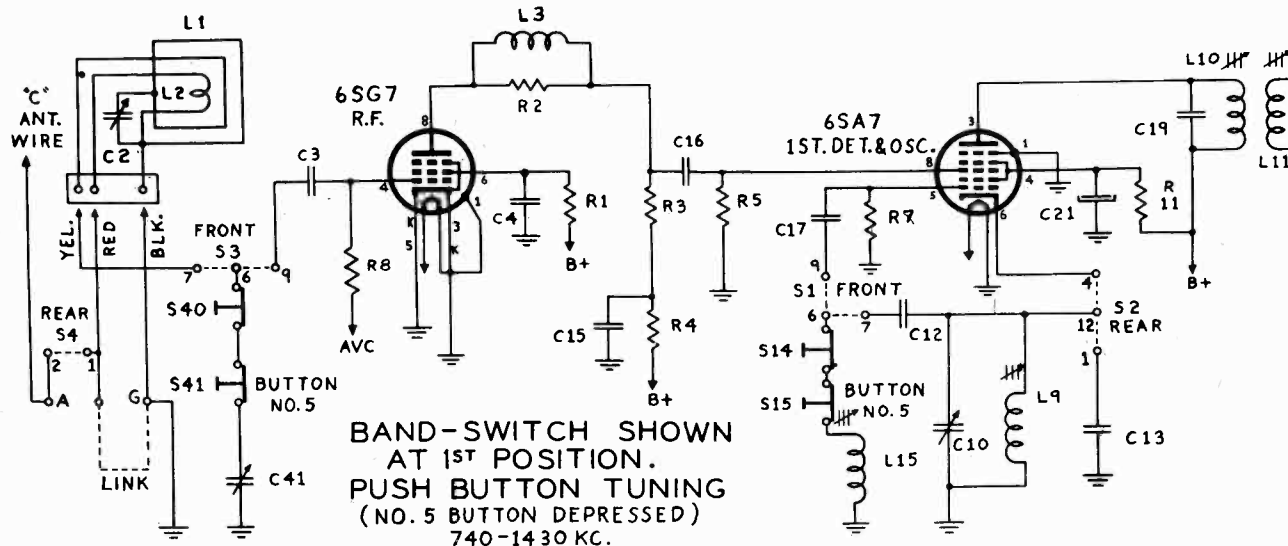
LOUDSPEAKER 92512-1

Electrodynamic 12-inch

Size 12-inch

V.C. impedance at 400 cycles 2.2 ohms

RCA MFG. CO.



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.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the full size scale printed in this service note can be used for reference.

Using Tuning Dial.—

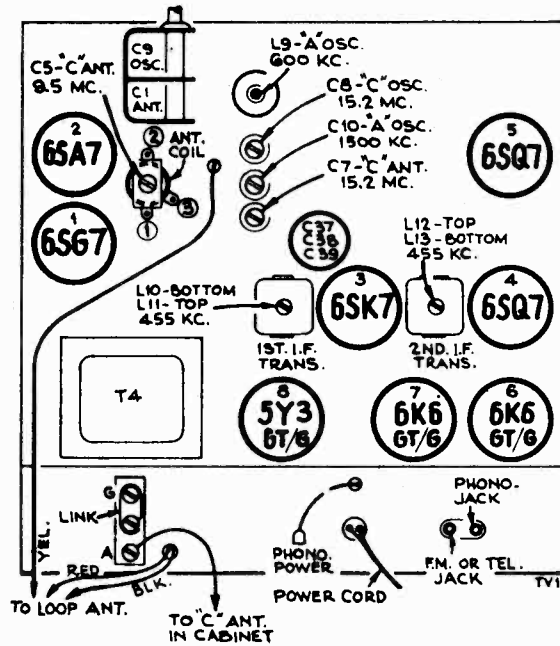
1. Remove glass dial from the cabinet.
2. With gang in full mesh, the dial pointer should be set to a point 1/4 inch to left of reference mark at left hand end of the dial backing plate.
3. Support the glass dial over the pointer with spacers so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the glass dial in place.

"C" Band Reception.—For best reception on "C" band with an outside antenna, adjust the trimmer screw of C5 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 (C5) for best reception on 31-meter band.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

Critical Lead Dress:

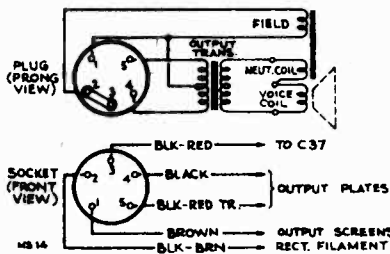
1. Bus from "C" oscillator coil to range switch must be held to length and dressed close to coil.
2. C30 (audio coupling capacitor to volume control) should be dressed close to front apron.
3. A.C. cord and motor leads must be dressed away from phono and F.M. jack.
4. Excess trans. leads to be dressed between trans. and rectifier socket.
5. Keep R5, C16 bus (in grid circuit of 6SA7 tube) as short as possible.
6. Dress C28 (in plate circuit of 1st A.F.) close to socket.
7. Keep R21 (grid resistor) and C34 (coupling capacitor of output tube) close to socket.
8. Keep R25, C48 (in tone compensating circuit) close to front apron.
9. Dress green lead from osc. coil to trimmer close to oscillator coil.
10. Dress red A.C. leads away from I.F. trans. and 6SQ7 socket.
11. RF choke in plate of 6SG7 must be dressed toward back apron.



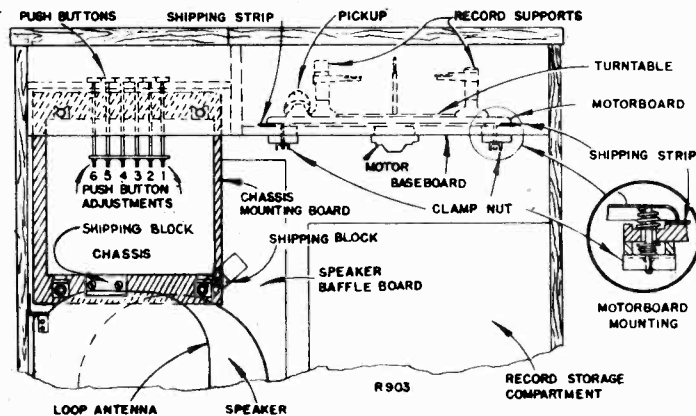
TUBE AND TRIMMER LOCATIONS

Steps	Connect test-osc. output 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	"A" band 540 kc	L13-L12 (2nd I-F trans.)
2	1st Det. grid in series with .01 mfd.			L11-L10 (1st I-F trans.)
3	A-Terminal in series with 47 mmfd. (link closed)	15.2 mc	"C" band 15.2 mc	C8 (osc.)* C7 (ant.)
4		9.5 mc	"C" band 9.5 mc	C5 (ant.) (Rock gang)
5		Repeat steps 3 and 4		
6	Yellow loop lead in series with 200 mmfd. (link closed)	1,500 kc	"A" band 1,500 kc	C10 (osc.)
7		600 kc	"A" band 600 kc	L9 (osc.)
8		Repeat steps 6 and 7		
9	Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc. and peak the "A" band trimmer C2 (on loop). Rock in L9 for peak output at 600 kc.			

*Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc. above signal on all bands.



SPEAKER CONNECTIONS



BACK VIEW

RCA MFG. CO.

PUSH BUTTON ADJUSTMENT.—

The push buttons connect to separate magnetite-core oscillator coils and separate ant. 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.

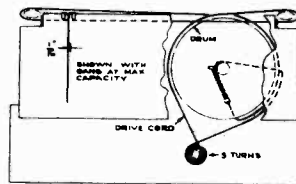
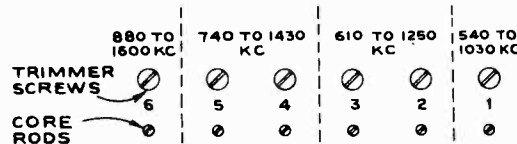
The procedure is as follows:

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 No. 1 oscillator core to receive the first station. To secure the best adjustment, rotate the antenna for least pickup, and adjust core for peak output.
5. Adjust No. 1 antenna trimmer capacitor for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.

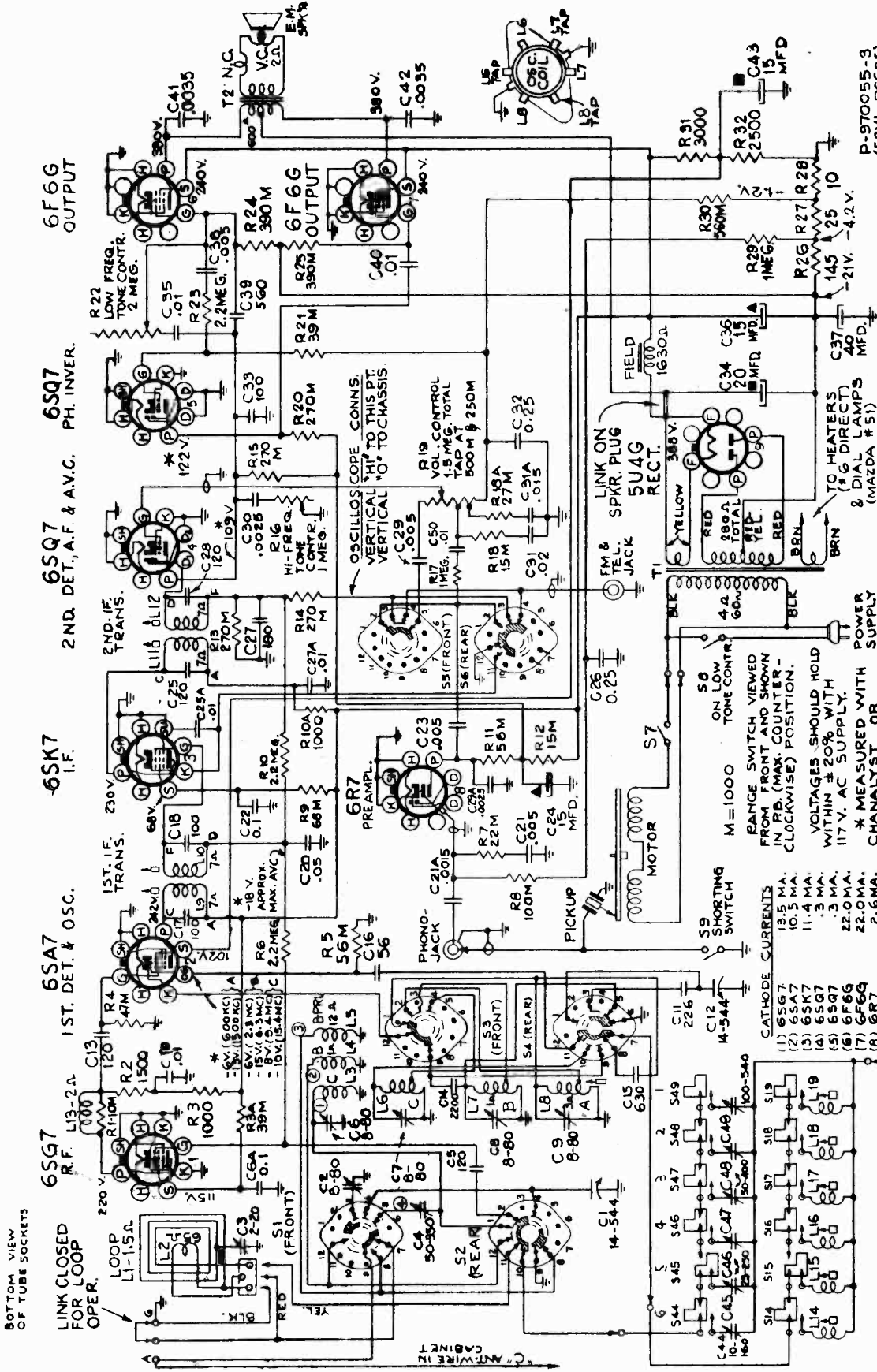
On the 880 to 1,600 kc push-button, the higher frequency stations may be received with osc. core either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

SERVICE HINT:—If unable to reach 550-540 KC on No. 1 push button —Connect a Stock No. 33111 Capacitor-Ceramic-33 mmf across L19 (between switch contact which connects to high side of L19, and switch frame).



STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC-604		
36342	Board—"Antenna-Ground" board	31380	Transformer—Power transformer—105-125 volts, 50/60 cycle (T1)
38368	Capacitor—Adjustable, 50-350 mmfd. (C5)	35636	Transformer—First I.F. transformer (L10, L11, C19, C20)
60954	Capacitor—Ceramic, 56 mmfd. (C17)	35790	Transformer—Second I.F. transformer (L12, L13, C25, C26)
38801	Capacitor—Mica trimmer, comprising 3 sections of 8-80 mmfd. (C7, C8, C10)	35969	Washer—"C" washer for tuning knob shaft
39628	Capacitor—Mica, 100 mmfd. (C3, C19, C20, C28)		SPEAKER ASSEMBLIES Stamped 92512-1K
39630	Capacitor—Mica, 120 mmfd. (C16, C25, C26)	70574	Cone—Cone and voice coil assembly
39634	Capacitor—Mica, 180 mmfd. (C27)	31539	Plug—5 prong male plug for speaker cable
38858	Capacitor—Silver mica, 220 mmfd. (C6)	70573	Speaker—12" E.M. speaker complete with cone and voice coil less plug and output transformer
38831	Capacitor—Silver mica, 630 mmfd. (C12)	37899	Transformer—Output transformer (T2)
39660	Capacitor—Mica, 2200 mmfd. (C13)		NOTE: If stamping on speaker in instruments 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.
70623	Capacitor—Tubular, .0025 mfd., 600 volts (C29)		MISCELLANEOUS ASSEMBLIES
70627	Capacitor—Tubular, .005 mfd., 600 volts (C30, C32)	36461	Button—Plug button
70648	Capacitor—Tubular, .005 mfd., 1000 volts (C35, C36)	38375	Button—Push button
70631	Capacitor—Tubular, .01 mfd., 600 volts (C15, C33, C34, C49)	38684	Capacitor—Trimmer, 2-20 mmfd. (C2)
70572	Capacitor—Tubular, .015 mfd., 400 volts (C31)	36424	Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. (C40, C41, C42, C43, C44, C45)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C22, C48)	36462	Clamp—Dial clamp
70636	Capacitor—Tubular, .05 mfd., 600 volts (C46)	X1609	Cloth—Grille cloth for Mahogany cabinet
70617	Capacitor—Tubular, 0.1 mfd., 200 volts (C47)	X1610	Cloth—Grille cloth for Walnut cabinet
70618	Capacitor—Tubular, 0.25 mfd., 200 volts (C47)	38579	Coil—Loop primary coil (L2)
37888	Capacitor—Electrolytic comprising 2 sections of 20 mfd., 450 volts and 1 section of 20 mfd., 25 volts replacement for (C37, C38, C39)	38315	Coil—P.B. oscillator coil—high frequency side (L14, L15, L16)
37877	Capacitor—Electrolytic, 16 mfd., 450 volts (C21)	37638	Coil—P.B. oscillator coil—low frequency side (L17, L18, L19)
38788	Coil—Antenna coil, "C" band (L4, L5)	35871	Core—Adjustable core and stud for P.B. oscillator coil
38787	Coil—Oscillator coil (L7, L9)	70547	Cover—Compartment lamp lead cover
38800	Condenser—Variable tuning condenser (C1, C9)	39013	Decal—Control panel decal
70342	Control—Volume control and power switch (R16, S8)	35392	Decal—Trade mark decal (RCA Victor)
32634	Cord—Drive cord (approx. 43" overall length)	70575	Decal—Trade mark decal (Dog)
12006	Core—Adjustable core and stud assembly for I.F. transformer	39011	Dial—Glass dial scale
35788	Core—Adjustable core and stud for oscillator coil	36327	Escutcheon—Dial escutcheon—less dial
38359	Cup—Oscillator coil mounting cup	38376	Escutcheon—Push button escutcheon—less buttons
38790	Drum—Drive drum	71003	Grille—Metal grille
35870	Indicator—Station selector pointer	39352	Hinge—Cabinet door hinge
28452	Plate—Bakelite mounting plate for electrolytic capacitor	30698	Hinge—Cabinet lid hinge
36333	Plate—Dial back plate complete with pulleys	13103	Jewel—Pilot lamp cap
38832	Plug—Pin plug for loop lead	71002	Knob—Cabinet door knob
30868	Plug—2 contact female plug for motor cable	35814	Knob—Tone control, range switch, volume control, or tuning knob
12493	Plug—5 contact female plug for speaker cable	5117	Lamp—Compartment lamp
32641	Plug—3 prong male plug for selector switch cable	11765	Lamp—Dial lamp
32289	Pulley—Drive cord pulley	70544	Loop—Antenna loop complete (L1, L2, C2)
11565	Resistor—15 ohms, 1/2 watt (R24)	34317	Marker—Station marker
70542	Resistor—270 ohms, 4 watt (R23)	70546	Mounting—One (1) set of hardware for mounting record changer consisting of four (4) upper and four (4) lower springs and four (4) clamp nuts
34766	Resistor—1000 ohms, 1/2 watt (R4, R6)	37800	Shade—Lamp shade
30654	Resistor—1500 ohms, 1/2 watt (R3)	36422	Socket—3 contact female for selector switch cable and loop leads
38829	Resistor—Resistor and coil assembly, 10,000 ohms (R2, L3)	30900	Spring—Retaining spring for control knobs
70541	Resistor—12,000 ohms, 4 watt (R11)	34053	Spring—Retaining spring for push button
30409	Resistor—27,000 ohms, 1/2 watt (R15, R25)	71001	Spring—Spring for L.H. cabinet lid support
30685	Resistor—33,000 ohms, 1/2 watt (R7)	70999	Spring—Spring for R.H. cabinet lid support
30147	Resistor—39,000 ohms, 1/2 watt (R18)	71000	Support—Cabinet lid support—L.H.
30787	Resistor—47,000 ohms, 1/2 watt (R1, R5)	70998	Support—Cabinet lid support—R.H.
30651	Resistor—270,000 ohms, 1/2 watt (R9, R12, R14, R17)	70545	Support—Loop support complete with mounting brackets and spring
11988	Resistor—390,000 ohms, 1/2 watt (R20, R21)		
30648	Resistor—470,000 ohms, 1/2 watt (R13)	38575	Switch—Selector switch (S14, S15, S16, S17, S18, S19, S40, S41, S42, S43, S44, S45)
30653	Resistor—560,000 ohms, 1/2 watt (R22)		
30649	Resistor—2.2 megohm, 1/2 watt (R8, R10, R19)		
38803	Shaft—Tuning knob shaft		
31364	Socket—Lamp socket		
33514	Socket—Phono input socket		
31251	Socket—Tube socket		
31418	Spring—Drive cord tension spring		
12007	Spring—Retaining spring for adjustable core and studs		
38802	Switch—Radio-phonograph and tone control switch (S5, S6)		
38805	Switch—Range switch (S1, S2, S3, S4)		



LOUSPEAKER
Type.....
Voice Coil Impedance.....
Identification Number.....

POWER SUPPLY RATING
105-125 volts, 50-60 cycles..... 145 watts

Pilot Lamps
Chassis Base Dimensions (inches)..... 3 11 1/4
Over-all Chassis Height (inches)..... 10 1/2
Tuning Drive Ratio..... 18-1

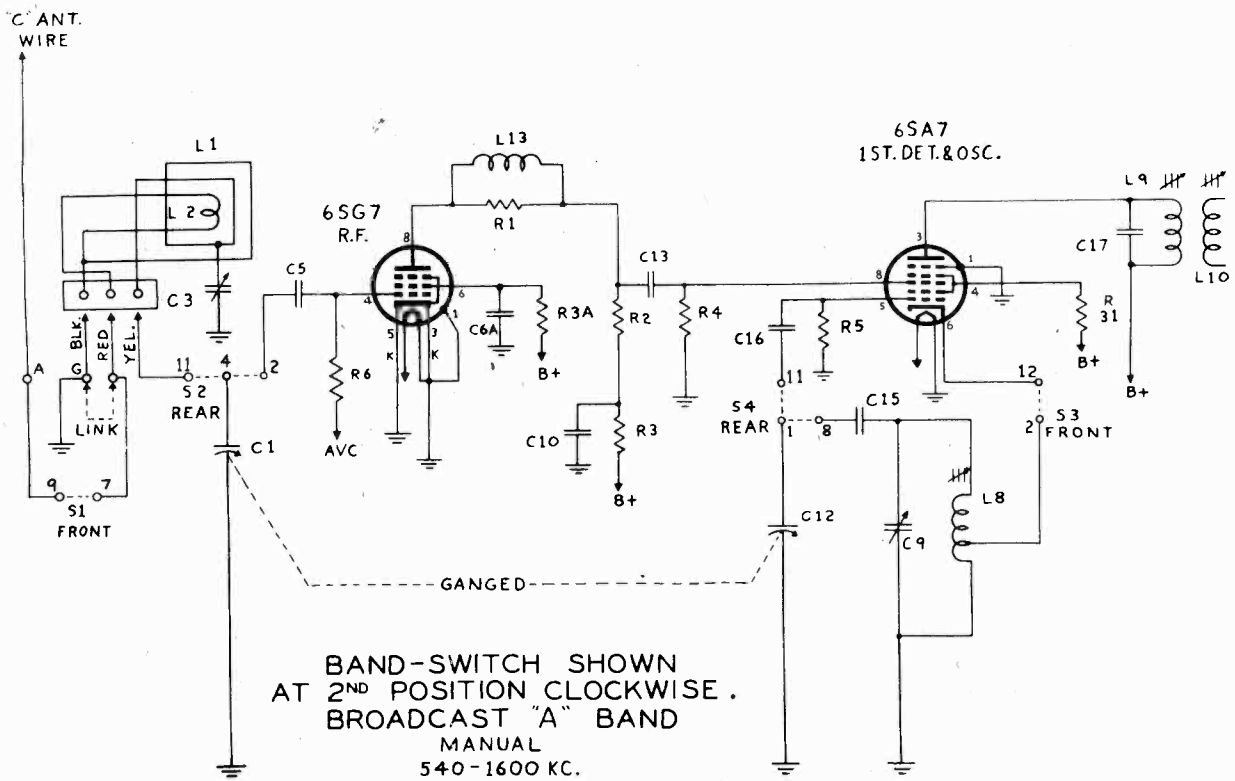
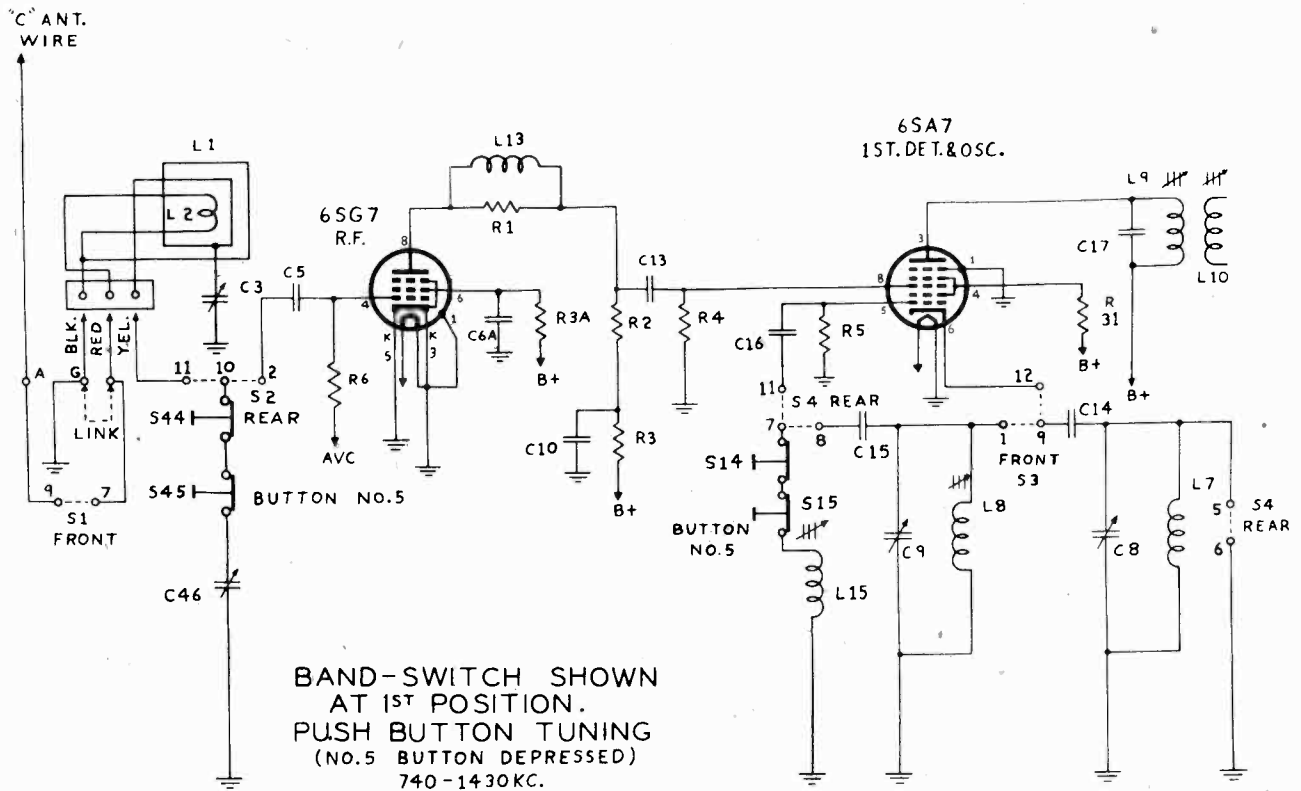
IF PEAK 455 KC
Frequency Ranges
Standard Broadcast (A)..... 540-1,600 kc
Medium Wave (B)..... 2,300-6,300 kc
Short Wave (C)..... 9,400-15,400 kc
Intermediate Frequency..... 455 kc

POWER OUTPUT RATING
Undistorted..... 10 watts
Maximum..... 12 watts

RECORD CHANGER*
Type Pickup..... Crystal
Record Capacity..... Fourteen 10-in., Twelve 12-in.
Power Consumption (125 v., 60 cycles)..... 30 watts

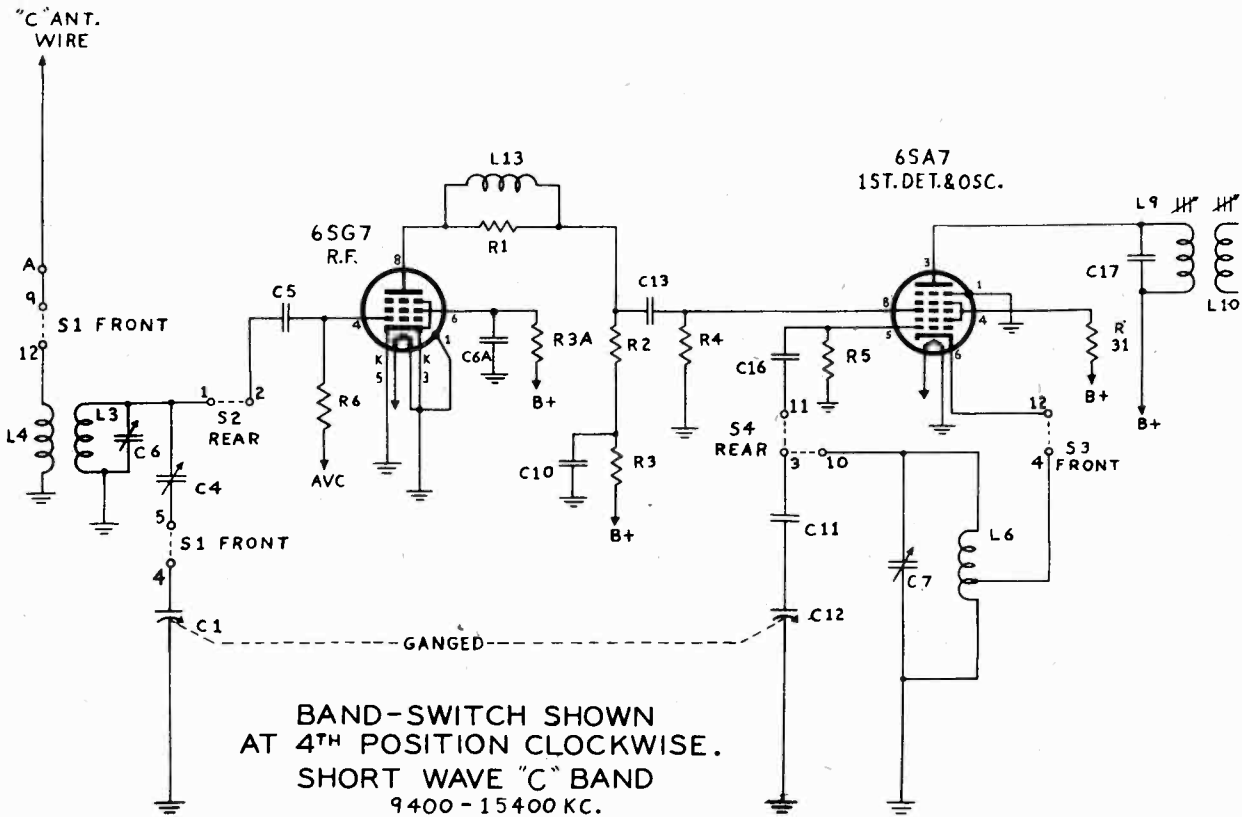
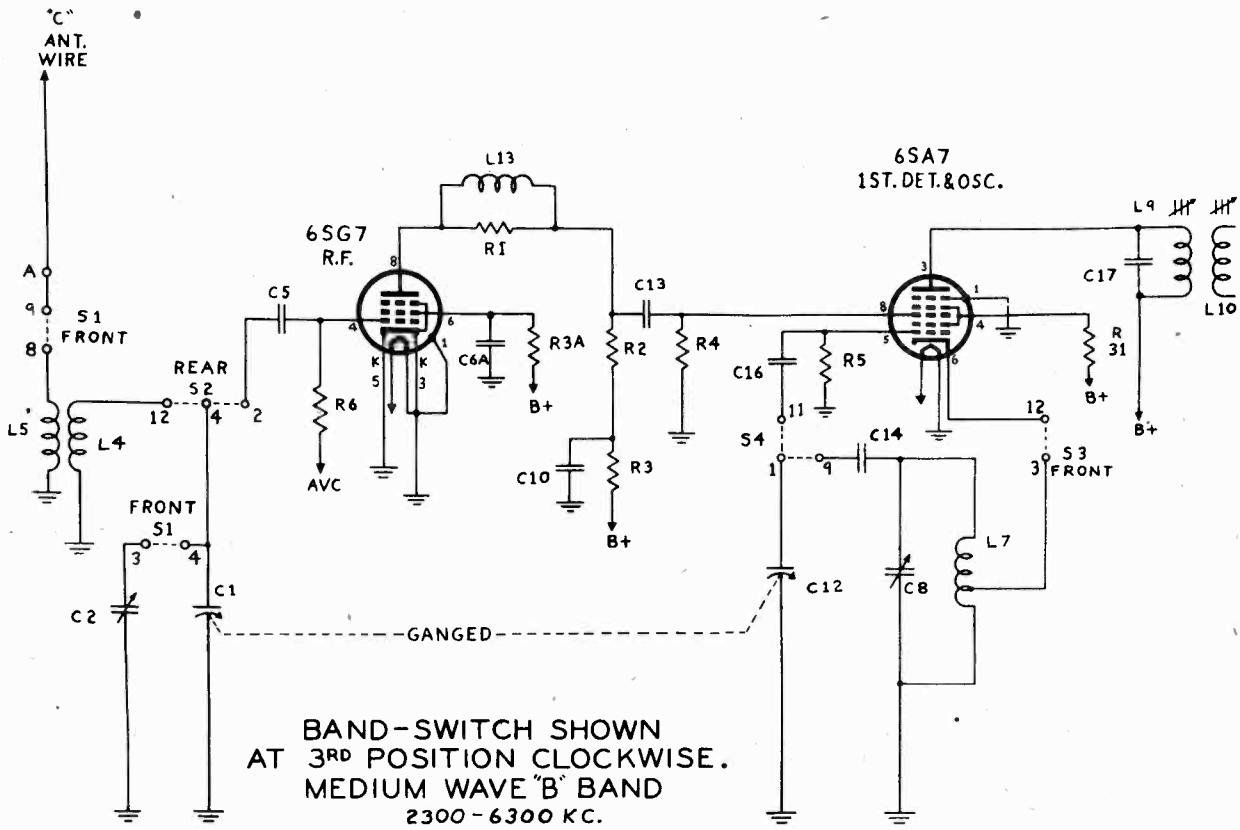
*This instrument can be converted to operate on 50 cycles.

RCA MFG. CO.



MODELS 59V1, 59AV1
Ch. RC-605

RCA MFG. CO.



RCA MFG. CO.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph 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.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the full size calibration scale printed in this service note can be used for reference.

Using Tuning Dial.—

1. Remove the dial glass from the cabinet.
2. With gang at full mesh the pointer should be set to a point (1/16) inch to the left of the reference mark at the left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in place.

Using Dial Scale Printed In This Service Note.—

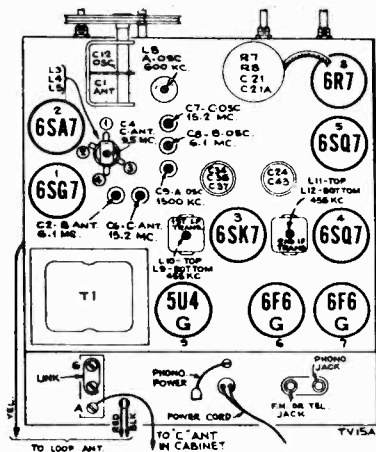
Follow the procedure above, substituting the dial scale printed in this service note for the glass dial in the cabinet.

"C" Band Reception.—For best reception on "C" band with an outside antenna, adjust the trimmer screw of C4 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 (C4) for best reception on 31-meter band.

For additional information, refer to booklet, "RCA Victor Receiver Alignment."

Steps	Connect high side of test osc. 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	"A" Band 540 kc	L12, L11 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			L10, L9 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf. (link closed)	1,500 kc	"A" Band 1,500 kc	C9 (osc.)
4		600 kc	"A" Band 600 kc	L8 (osc.)
5	Repeat steps 3 and 4			
6	Ant. terminal in series with 47 mmf. (link closed)	6.1 mc	"B" Band 6.1 mc	C8 (osc.)* C2 (ant.)
7		15.2 mc	"C" Band 15.2 mc	C7 (osc.)* C6 (ant.)
8		9.5 mc	"C" Band 9.5 mc	C4 (ant.)
9	Repeat steps 7 and 8			
10	Install and connect chassis in cabinet, with link closed. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band ant. trimmer C3 (on loop). Rock in L8 for peak output at 600 kc.			

*Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc above signal on all bands.

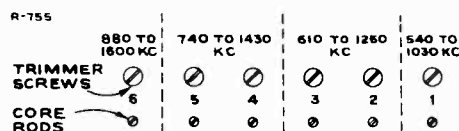


Top View Chassis

Critical Lead Dress

1. Push button, R.F. and oscillator leads should be separated as much as possible to reduce degeneration on push button reception.
2. R.F. choke in plate circuit of 6SG7 should be dressed towards the back apron.
3. Dress green push button lead under clamp and away from "C" band series capacitor.
4. Dress heater leads away from grids and diodes.
5. Dress phono. cables up and away from all wiring.
6. Dress all excess leads from transformer back towards transformer.
7. Keep output plate leads short and dressed close to chassis.
8. Dress green lead from 6SA7 screen to electrolytic down close to chassis.
9. Dress "C" band coil lead from oscillator coil to range switch down toward green lead.
10. Keep yellow loop lead clear of all wiring.
11. Dress ground bus of large electrolytic away from mounting lug.
12. Remove all excess slack from pilot light assembly and dress it close to chassis base away from volume control.
13. Dress oscillator grid capacitor (56 mmfd.) up and away from the screen and plate of 6SA7 socket.
14. A-C leads to "off-on" switch should be kept away from tone control cable to reduce hum.
15. Peaking coil should be dressed away from R-F grid resistor to reduce degeneration in R-F stage.
16. Dress oscillator push button lead in weld clamp on front apron away from 220 mmf. series condenser.
17. Keep all leads away from Phono.-FM jack to prevent audio oscillation and hum. Dress underneath the shield provided.

Push Button Adjustment



The push buttons connect to separate magnetite-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.

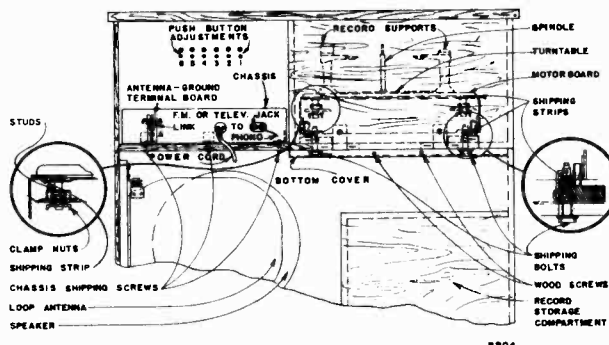
The procedure is as follows:

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.

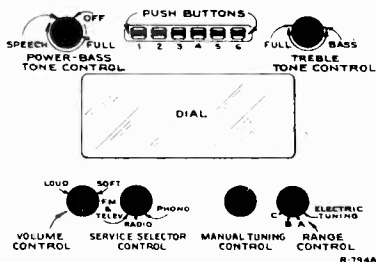
NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

SERVICE HINT:—If unable to reach 550-540 KC on No. 1 push button—Connect a Stock No. 33111 Capacitor-Ceramic-33 mmf across L19, and switch frame.

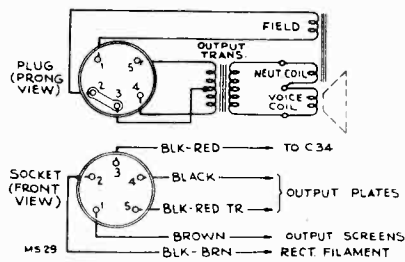


Back View

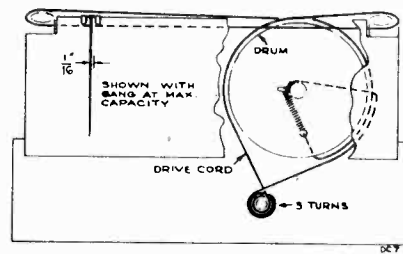
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 605			
36342	Board—"Antenna-Ground" board	35636	Transformer—First I.F. transformer (L9, L10, C17, C18)
60954	Capacitor—Ceramic, 56 mmf. (C16)	35790	Transformer—Second I.F. transformer (L11, L12, C25, C28)
38852	Capacitor—Mica trimmer comprising two (2) sections of 8-80 mmf. (C2, C6)	34539	Transformer—Power transformer 105-115 volts 50-60 cycles (T1)
38801	Capacitor—Mica trimmer comprising three (3) sections of 8-80 mmf. (C7, C8, C9)	33726	Washer—"C" washer for tuning knob shaft
39628	Capacitor—Mica, 100 mmf. (C17, C18, C33)	SPEAKER ASSEMBLIES 92513-1K	
39630	Capacitor—Mica, 120 mmf. (C5, C13, C25, C28)	70574	Cone—Cone and voice coil assembly
39634	Capacitor—Mica, 180 mmf. (C27)	31539	Plug—Five (5) prong male plug for speaker
38830	Capacitor—Silver mica, 226 mmf. (C11)	70548	Speaker—12" EM speaker complete with cone and voice coil less output transformer and plugs
38638	Capacitor—Mica trimmer, 50-350 mmf. (C4)	37899	Transformer—Output transformer (T2)
39646	Capacitor—Mica, 560 mmf. (C39)	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.	
38831	Capacitor—Mica, 630 mmf. (C15)	MISCELLANEOUS ASSEMBLIES	
39660	Capacitor—Mica, 2200 mmf. (C14)	36327	Bezel—Dial bezel less dial scale
71394	Capacitor—Paper, .0015 mfd., 600 volts (C21A)	38376	Bezel—P.B. bezel less push buttons
70623	Capacitor—Paper, .0025 mfd., 600 volts (C30, C29A)	36639	Bracket—Pilot lamp bracket
70646	Capacitor—Paper, .0035 mfd. (C41, C42)	38375	Button—Push button
70606	Capacitor—Paper, .005 mfd., 400 volts (C21, C38)	70556	Bumper—Rubber bumper for record changer tray (2 req'd)
70627	Capacitor—Paper, .005 mfd., 600 volts (C23, C29)	38684	Capacitor—Trimmer, 2-20 mmf. (C3)
70610	Capacitor—Paper, .01 mfd., 400 volts (C50)	36424	Capacitor—Mica trimmer, comprising one (1) section of 10-160 mmf.; two (2) sections of 25-250 mmf.; two (2) sections of 50-400 mmf.; and one (1) section of 100-540 mmf. (C44, C45, C46, C47, C48, C49)
70631	Capacitor—Paper, .01 mfd., 600 volts (C10, C35, C40, C25A, C27A)	36462	Clamp—Dial clamp
70611	Capacitor—Paper, .02 mfd., 400 volts (C31)	31382	Clip—Mounting clip for P.B. coils
70615	Capacitor—Paper, .05 mfd., 400 volts (C20)	38579	Coil—Loop primary coil (L2)
70617	Capacitor—Paper, 0.1 mfd., 400 volts (C22, C6A)	38315	Coil—P.B. oscillator coil—high frequency (L14, L15, L16)
70618	Capacitor—Paper, 0.25 mfd., 200 volts (C26, C32)	37638	Coil—P.B. oscillator coil—low frequency (L17, L18, L19)
34889	Capacitor—Electrolytic, comprising two (2) sections of 15 mfd., 450 volts (C24, C43)	38405	Control—H.F. tone control (R16)
34533	Capacitor—Electrolytic, comprising one (1) section of 20 mfd., 450 volts; one (1) section of 15 mfd., 350 volts; and one (1) section of 40 mfd., 25 volts (C34, C36, C37)	38402	Control—L.F. tone control and power switch (R22, S-8)
38367	Coil—Antenna coil, "B" and "C" band (L3, L4, L5)	35871	Core—Adjustable core and stud for P.B. oscillator coils
38358	Coil—Oscillator coil (L6, L7, L8)	70550	Cushion—Shock absorbing cushion
38800	Condenser—Variable tuning condenser (C1, C12)	39015	Decal—Control panel decal
36447	Control—Volume control (R19)	37147	Decal—H.F. tone control decal
32634	Cord—Drive cord	37148	Decal—L.F. tone control decal
12006	Core—Adjustable core and stud for first and second I.F. transformers	35392	Decal—Trade mark decal (RCA Victor)
35788	Core—Adjustable core and stud for oscillator coil	70575	Decal—Trade mark decal (Dog)
38359	Cup—Mounting cup for oscillator coil	39014	Dial—Glass dial scale
38790	Drum—Drive drum	X1607	Grille—Grille cloth for Mahogany cabinet
35870	Indicator—Station selector indicator	70996	Grille—Metal grille
28452	Plate—Bakelite mounting plate for capacitor #34533	X1608	Grille—Grille cloth for Walnut cabinet
36333	Plate—Dial back plate complete with pulleys less dial	39368	Guide—Carriage guide—L.H.
30868	Plug—Two (2) contact female plug for motor cable	39367	Guide—Carriage guide—R.H.
31572	Plug—Three (3) contact female plug for power cable	39352	Hinge—Cabinet door hinge
12493	Plug—Five (5) contact female plug speaker cable	13103	Jewel—Pilot lamp cap
38832	Plug—Pin plug for loop lead	70995	Knob—Record storage compartment door knob
32641	Plug—Three (3) prong male plug for selector cable	35814	Knob—Tone control, radio-phono switch, range switch, tuning knob, or volume control
39153	Plug—Four (4) prong male plug for tone control cable	11765	Lamp—Dial lamp
32289	Pulley—Drive cord pulley	70544	Loop—Antenna loop (L1, L2, C3)
34766	Resistor—1000 ohms, 1/2 watt (R3, R10A)	34317	Marker—Station marker
30654	Resistor—1500 ohms, 1/2 watt (R2)	70546	Mounting—One set of hardware to mount record changer consisting of four (4) upper and four (4) lower springs and four (4) clamp nuts
38808	Resistor—Voltage divider comprising one (1) section of 3000 ohms, 9 watt; one (1) section of 2500 ohms, 4.2 watt; one (1) section of 10 ohms, 0.2 watt; one (1) section of 25 ohms, 0.5 watt; and one (1) section of 145 ohms, 3 watt (R26, R27, R28, R31, R32)	30868	Plug—Two (2) contact female plug for motor cable extension
35876	Resistor—Resistor and coil assembly, 10,000 ohms (R1, L13)	30870	Plug—Two (2) prong male plug for motor cable extension
36714	Resistor—15,000 ohms, 1/2 watt (R12, R18)	36422	Plug—Three (3) contact female plug for selector cable and loop leads
30492	Resistor—22,000 ohms, 1/2 watt (R7)	31572	Plug—Three (3) contact female plug for power switch cable
30409	Resistor—27,000 ohms, 1/2 watt (R18A)	38853	Plug—Four (4) contact female plug for tone control cable
30147	Resistor—39,000 ohms, 1/2 watt (R21, R3A)	70994	Pull—Record changer compartment door pull
30787	Resistor—47,000 ohms, 1/2 watt (R4)	70551	Retainer—Tray roller retaining strip—L.H.
30650	Resistor—56,000 ohms, 1/2 watt (R5, R11)	70552	Retainer—Tray roller retaining strip—R.H.
14138	Resistor—68,000 ohms, 1/2 watt (R9)	70554	Roller—Record changer tray roller
3252	Resistor—100,000 ohms, 1/2 watt (R8)	30900	Spring—Retaining spring for control knob
30651	Resistor—270,000 ohms, 1/2 watt (R13, R14, R15, R20)	34053	Spring—Retaining spring for push button
11988	Resistor—390,000 ohms, 1/2 watt (R24, R25)	70549	Stop—Mechanism tray stop
30653	Resistor—560,000 ohms, 1/2 watt (R30)	38575	Switch—Selector switch (S14, S15, S16, S17, S18, S19, S44, S45, S46, S47, S48, S49)
30652	Resistor—1 megohm, 1/2 watt (R17, R29)	39360	Support—Door support for record changer compartment
30649	Resistor—2.2 megohm, 1/2 watt (R6, R10, R23)	70545	Support—Loop support complete with mounting brackets and spring
38803	Shaft—Tuning knob shaft	70555	Tire—Rubber tire for tray roller
31364	Socket—Lamp socket	70553	Tray—Record changer carrying tray less rollers
33514	Socket—Phoae input socket	2917	Washer—Spring washer to hold roller
31251	Socket—Tube socket		
31418	Spring—Drive cord tension spring		
12007	Spring—Retaining spring for first I.F. and second I.F. transformers' core and stud and for oscillator's core, coil, and stud		
38809	Switch—Radio-phono switch (S5, S6)		
38807	Switch—Range switch (S1, S2, S3, S4)		



Front Panel Controls

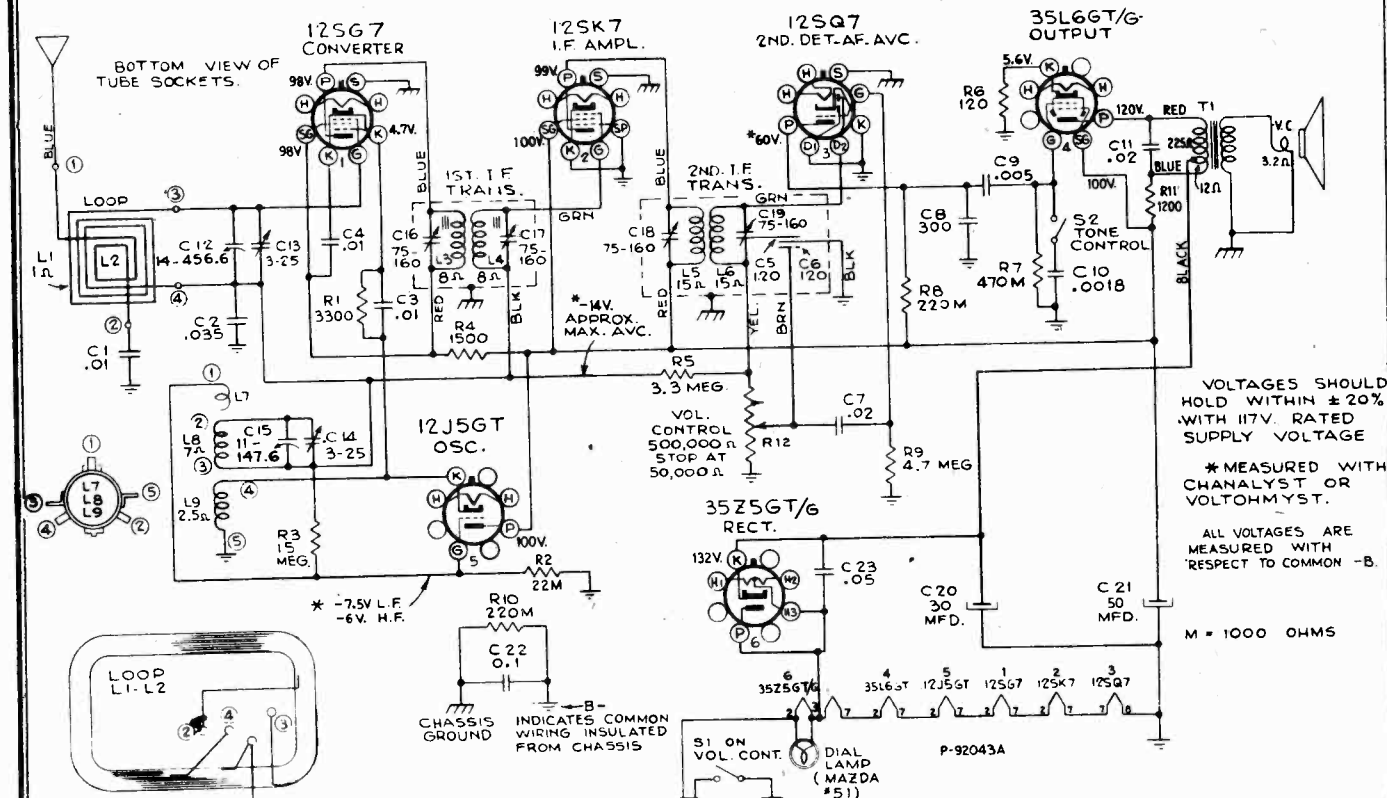


Speaker Connections



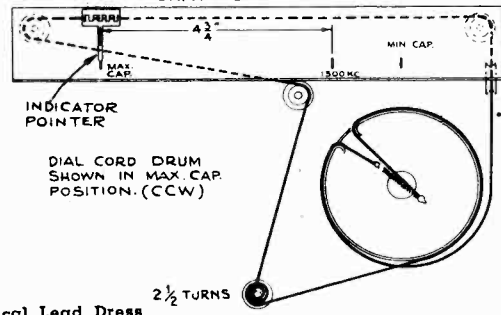
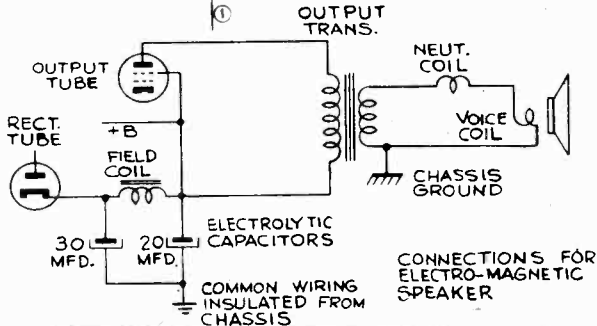
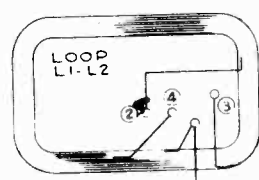
Dial Cord Drive

RCA MFG. CO.



VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117V. RATED SUPPLY VOLTAGE
* MEASURED WITH CHANALYST OR VOLTOHMYST.
ALL VOLTAGES ARE MEASURED WITH RESPECT TO COMMON -B.

M = 1000 OHMS



- Critical Lead Dress**
1. Dress output plate bypass capacitor (C-11 .02 mfd.) against chassis.
 2. Dress 35L6GT/G plate lead (red) against chassis and away from volume control, leads and terminals.
 3. Dress audio coupling capacitor (C-7 .02 mfd.) away from 35L6GT/G 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 mfd.) 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, .0018 mfd.) 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 IF transformers back in shields leaving exposed lengths as short as possible.

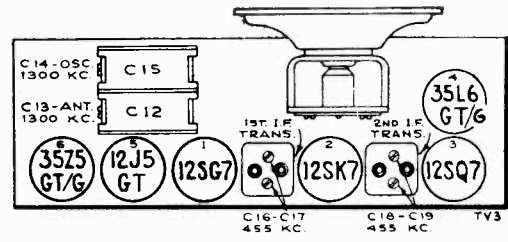
Test Oscillator.—Connect high side of test oscillator as shown in chart. Connect low side through a .01 mfd. capacitor to common "B." Keep the oscillator output signal as low as possible to avoid AVC action.

Output Meter.—Connect leads across speaker voice coil. 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 backing plate.

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 20J mmfd.	1,300 kc	1,300 kc	C14 (osc.) C13 (ant.)
4	Repeat step 3.			

* Do not readjust C18 or C19.



Frequency Range 540-1600 kc
Intermediate Frequency 455 kc
Power Output
Undistorted 1.0 watt
Maximum 1.5 watts

MODELS 61-1, 61-2, 61-3

MODEL QU61

RCA MFG. CO.

Models 61-1, 61-2, 61-3

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES			
RC 1011			
39640	Capacitor—Mica, 330 mmf. (C-8)	34449	Socket—Lamp socket
70712	Capacitor—Tubular, .0018 mfd., 800 volts (C-10)	37605	Socket—Tube socket, moulded
70627	Capacitor—Tubular, .005 mfd. (C-9)	31418	Spring—Drive cord tension spring
70652	Capacitor—Tubular, .01 mfd., 800 volts (C-1, C-3, C-4)	36228	Switch—Tone switch (S-2)
70711	Capacitor—Tubular, .02 mfd., 700 volts (C-7, C-11)	70411	Transformer—First I.F. transformer (L-3, L-4, C-16, C-17)
70635	Capacitor—Tubular, .035 mfd., 500 volts (C-2)	70412	Transformer—Second I.F. transformer (L-5, L-6, C-5, C-8, C-18, C-19)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C-23)	38800	Transformer—Output transformer (T-1)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C-22)	33726	Washer—"C" washer for tuning knob shaft
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C-20, C-21)	SPEAKER ASSEMBLY	
39824	Coil—Oscillator coil (L-7, L-8, L-9)	92510-1	
38226	Condenser—Variable tuning condenser (C-12, C-13, C-14, C-15)	70413	Speaker—5-inch PM speaker, complete
36242	Control—Volume control and power switch (R-12, S-1)	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. 49" long)	MISCELLANEOUS ASSEMBLIES	
70392	Cord—Power cord	39953	Back—Cabinet back for Radiola 61-1
36237	Drum—Drive drum	70409	Back—Cabinet back for Radiola 61-2
36236	Indicator—Station selector indicator for 61-1 and 61-2	70415	Back—Cabinet back for Radiola 61-3
37068	Indicator—Station selector indicator for 61-3	38890	Clamp—Dial clamp, left hand, for Radiola 61-1 and 61-2
11785	Lamp—Dial lamp	36891	Clamp—Dial clamp, right hand, for Radiola 61-1 and 61-2
39821	Loop—Antenna loop (L-1, L-2)	X1602	Cloth—Grille cloth for Radiola 61-3
38229	Plate—Dial back plate complete with pulleys less dial	71017	Decal—Control panel decal for Radiola 61-3
38230	Pulley—Drive cord pulley	70704	Dial—Glass dial scale for Radiola 61-1 and 61-2
30189	Resistor—120 ohms, 1/4 watt (R-8)	70705	Dial—Glass dial scale for Radiola 61-3
6134	Resistor—1200 ohms, 1 watt (R-11)	37831	Fastener—Push fastener (1 set) for cabinet backs on Radiola 61-1 and 61-2
30654	Resistor—1500 ohms, 1/4 watt (R-4)	33006	Feet—Rubber feet for cabinet (4 required)
36733	Resistor—3300 ohms, 1/4 watt (R-1)	71016	Knob—Control knob (walnut) for Radiola 61-1
30492	Resistor—22,000 ohms, 1/4 watt (R-2)	70414	Knob—Control knob (ivory) for Radiola 61-2
14583	Resistor—220,000 ohms, 1/4 watt (R-8, R-10)	36722	Knob—Control knob (walnut) for Radiola 61-3
30648	Resistor—470,000 ohms, 1/4 watt (R-7)	30900	Spring—Retaining spring for knob
12928	Resistor—3.3 megohms, 1/4 watt (R-5)		
30931	Resistor—4.7 megohms, 1/4 watt (R-9)		
38785	Resistor—15 megohms, 1/4 watt (R-3)		
36897	Shaft—Tuning knob shaft		

Power Supply Rating

105-125 volts, AC, 50 or 60 cycles, or DC 30 watts

Pilot Lamp Mazda No. 51, 6-8 volts, 0.2 amp.

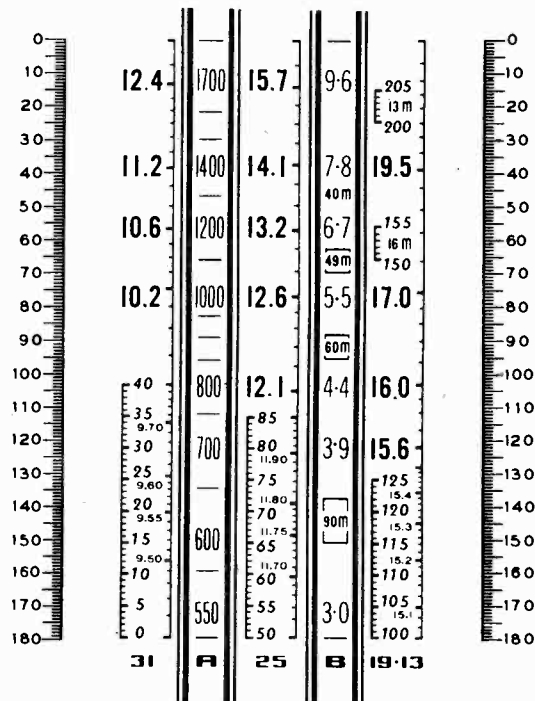
Tuning Drive Ratio 20:1

Loudspeaker (92510-1)

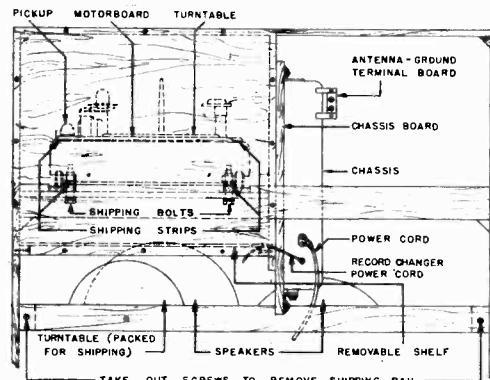
Type 5-inch PM

V. C. Impedance 3.4 ohms at 400 cycles

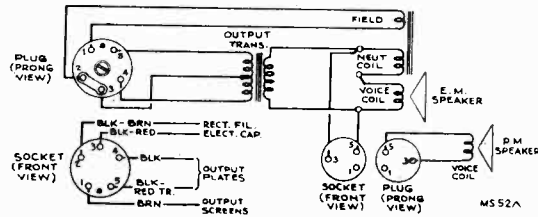
Model QU61



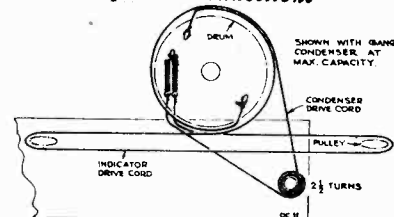
Receiver Dial with Calibration Scale



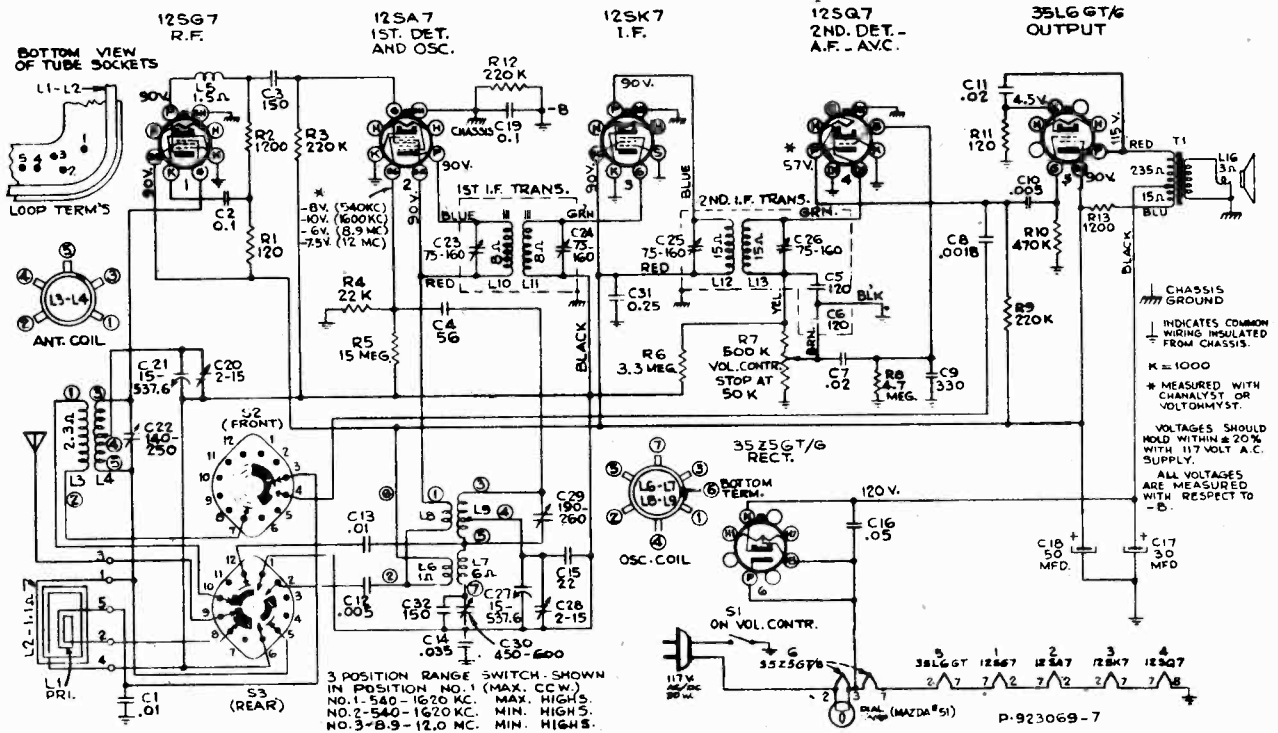
Cabinet Rear View



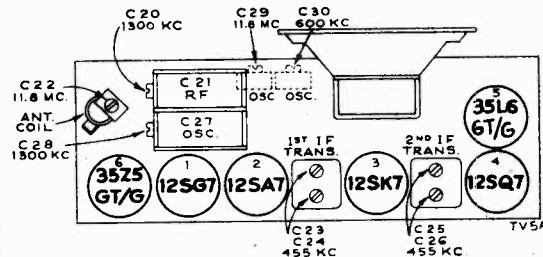
Loudspeaker Connections



RCA MFG. CO.

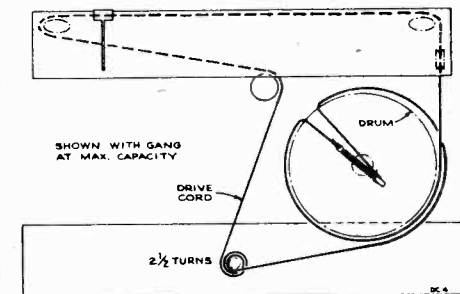


Note: On some sets C31 may be 0.1 mfd. or 0.2 mfd.



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 #8 of 12SA7 in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C25, C28 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

MODELS 61-5,61-10
MODELS 61-6,61-7

RCA MFG. CO.

MODELS 61-6,61-7

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC-594D			
71387	Capacitor—Adjustable, 1.6-18 mmf. (C37)	12928	Resistor—3.3 megohms, 1/4 watt (R2)
70367	Capacitor—Mica trimmer, 2-10 mmf. (C7)	30992	Resistor—10 megohms, 1/4 watt (R6)
39622	Capacitor—Mica, 56 mmf. (C4)	70369	Shaft—Tuning knob shaft
39636	Capacitor—Mica, 220 mmf. (C1A, C17)	37605	Socket—Tube socket, moulded
71392	Capacitor—Mica, 450 mmf. (C5B)	31418	Spring—Tension spring for drive cord
70627	Capacitor—Tubular, .005 mfd., 600 volts (C1, C16, C18)	71384	Switch—Range switch (S1)
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10, C20)	70361	Transformer—First I-F transformer (L8, L9, C8, C9)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C23)	70362	Transformer—Second I-F transformer (L10, L11, C12, C13, C14, C15)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C11)	71398	Transformer—Output transformer (T1)
39152	Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts and 1 section of 30 mfd., 150 volts (C30, C30A)	33726	Washer—Retaining washer for tuning shaft
71396	Coil—Antenna coil (L1, L2)	SPEAKER ASSEMBLY 92510-2	
37962	Coil—Antenna loop coupling coil (L3, L5, R20)	70372	Speaker—5-inch PM speaker complete
70359	Coil—Oscillator coil (L6, L7)	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.	
70366	Condenser—Variable tuning condenser (C2, C3, C5, C6)	MISCELLANEOUS ASSEMBLIES	
38406	Control—Volume control and power switch (R4, S2)	37362	Clamp—Dial clamp (1 set)
32634	Cord—Drive cord (approx. 37 inches long)	71324	Decal—Trade mark decalcomania
70392	Cord—Power cord	71389	Dial—Dial scale
70365	Core—Adjustable core and stud for oscillator coil	37831	Fastener—Push fastener for back cover (1 set)
16058	Grommet—Rubber grommet for mounting speaker—3 required	35121	Knob—Range switch knob for Radiola 61-6
37068	Indicator—Station selector indicator	35123	Knob—Range switch knob for Radiola 61-7
71397	Loop—Antenna loop (L4)	36722	Knob—Volume control or tuning knob for Radiola 61-6
70364	Nut—Speed nut to mount oscillator coil	70414	Knob—Tuning or volume control knob for Radiola 61-7
70368	Plate—Dial back plate complete with pulleys less dial	35126	Spring—Retaining spring for range switch knob
36230	Pulley—Drive cord pulley	30900	Spring—Retaining spring for volume control or tuning knob
30880	Resistor—150 ohms, 1/2 watt (R7)		
30152	Resistor—1000 ohms, 1 watt (R9)		
30685	Resistor—33,000 ohms, 1/4 watt (R1A)		
30787	Resistor—47,000 ohms, 1/4 watt (R3)		
14583	Resistor—220,000 ohms, 1/4 watt (R19)		
30648	Resistor—470,000 ohms, 1/4 watt (R8)		
30649	Resistor—2.2 megohms, 1/4 watt (R1)		

PRECAUTIONARY LEAD DRESS

1. Dress output plate capacitor and output transformer leads down next to chassis.
2. Dress 12SQ7 grid resistor down next to chassis, and away from power ground wire to switch.
3. Dress lead from 2nd I-F transformer to volume control down to chassis and away from adjacent parts.
4. Keep grid end of R1 as short as possible.
5. Keep body of C1A slightly away from chassis.

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.

Tuning Drive Ratio 18 to 1

Power Supply Rating

105-125 volts D.C. or 50-60 cycles A.C. 30 watts

Power Output Rating

Undistorted 1 watt
Maximum 1.5 watts

Loudspeaker (92510.2)

Type 5-inch Round Permanent-Magnet Dynamic
Voice Coil Impedance 4 ohms at 400 cycles

Frequency Ranges

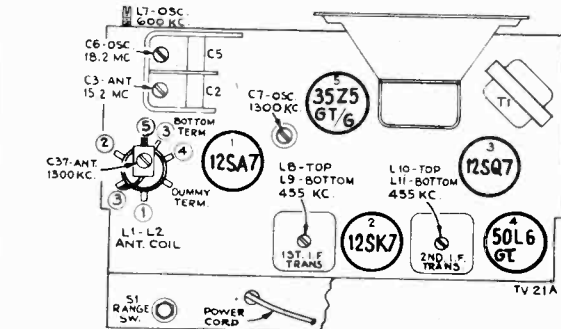
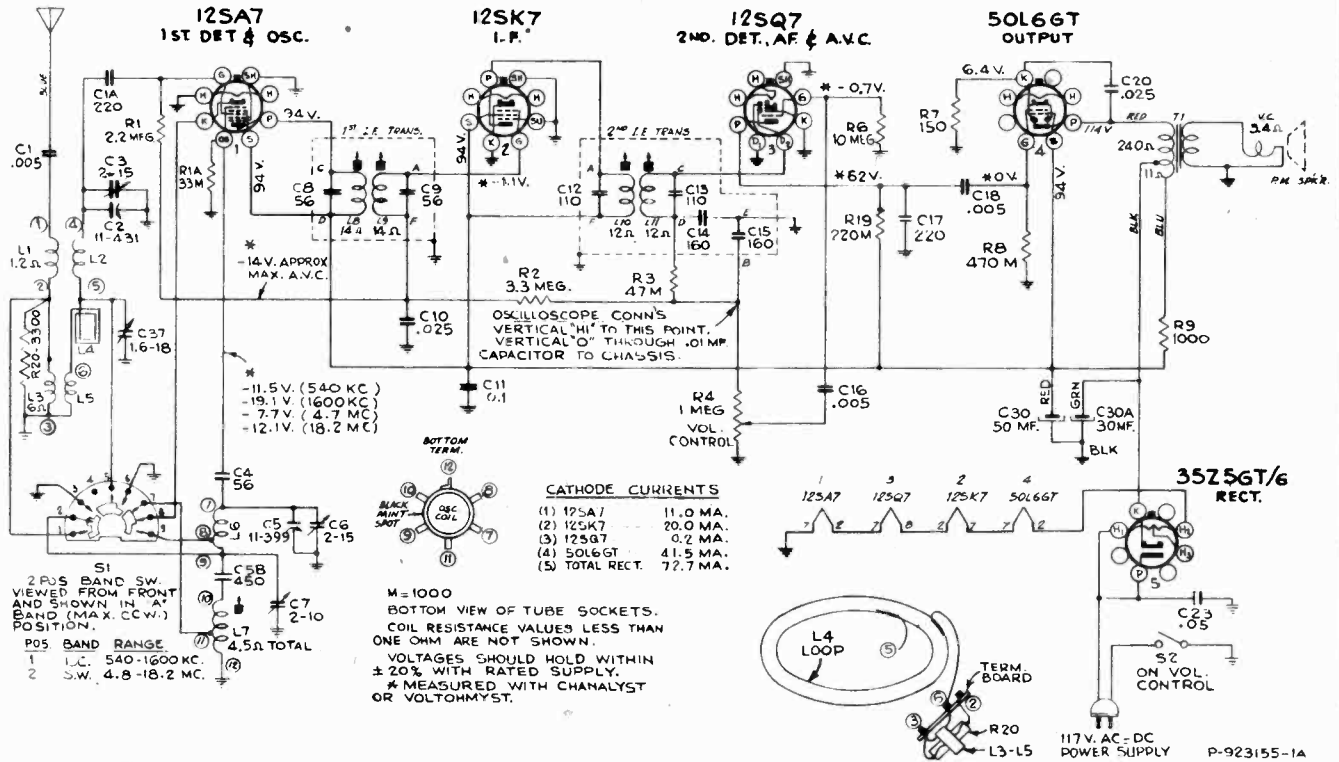
Standard Broadcast ("A" Band) 540-1,680 kc (555-178 m)
Short Wave ("C" Band) 4.7-18.2 mc (63.8-16.5 m)

Intermediate Frequency 455 kc

MODELS 61-5,61-10

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC-1023 and RC-1023B			
39612	Capacitor—Mica, 22 mmf. (C15)	12928	Resistor—3.3 megohms, 1/4 watt (R6)
39622	Capacitor—Mica, 56 mmf. (C4)	30931	Resistor—4.7 megohms, 1/4 watt (R8)
39632	Capacitor—Mica, 150 mmf. (C3, C32)	38785	Resistor—15 megohms, 1/4 watt (R5)
70417	Capacitor—Mica trimmer, 140-250 mmf., mounted on antenna coil (C2)	36897	Shaft—Tuning knob shaft
39839	Capacitor—Adjustable mica, comprising 1 section of 190-260 mmf. and 1 section of 450-600 mmf. (C29, C30)	34448	Socket—Lamp socket
39640	Capacitor—Mica, 330 mmf. (C9)	37605	Socket—Tube socket, moulded
70712	Capacitor—Tubular, .0018 mfd., 800 volts (C8)	31251	Socket—Tube socket, wafer
70627	Capacitor—Tubular, .005 mfd., 800 volts (C10, C12)	31418	Spring—Drive cord tension spring
70652	Capacitor—Tubular, .01 mfd., 1000 volts (C1, C13)	39837	Switch—Range switch (S2, S3)
70711	Capacitor—Tubular, .02 mfd., 700 volts (C7, C11)	36800	Transformer—Output transformer (T1)
70635	Capacitor—Tubular, .035 mfd., 800 volts (C14)	70411	Transformer—First I-F transformer (L10, L11, C23, C24)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C18)	70412	Transformer—Second I-F transformer (L12, L13, C5, C6, C25, C26)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C2, C19)	33726	Washer—"C" washer for tuning knob shaft
70618	Capacitor—Tubular, 0.25 mfd., 400 volts (C31)	SPEAKER ASSEMBLY 92510-1	
39152	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts (C17, C18)	70413	Speaker—5-inch P.M. speaker complete with cone and voice coil
70416	Coil—Antenna coil (L3, L4, C22)	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.	
38892	Coil—Oscillator coil (L6, L7, L8, L9)	MISCELLANEOUS ASSEMBLIES RC-1023 (61-5)	
70418	Coil—Peaking coil (L5)	39777	Back—Cabinet back
70700	Condenser—Variable tuning condenser (C20, C21, C27, C28)	X1603	Cloth—Grille cloth
36242	Control—Volume control and power switch (R7, S1)	70706	Dial—Glass dial scale
32634	Cord—Drive cord (approx. 49 inches overall length)	33008	Feet—Rubber feet for cabinet (4 required)
70392	Cord—Power cord	36886	Knob—Range switch knob
36237	Drum—Drive drum	38722	Knob—Tuning or volume control knob
37068	Indicator—Station selector indicator	30900	Spring—Retaining spring for knobs
11765	Lamp—Dial lamp (Mazda 51)	RC-1023B (61-10)	
70980	Lead—Antenna lead	39953	Back—Cabinet back
39841	Loop—Antenna loop (L1, L2)	36890	Clamp—Dial clamp—left hand
36229	Plate—Dial back plate complete with drive cord pulleys less dial	36891	Clamp—Dial clamp—right hand
36230	Pulley—Drive cord pulley	71324	Dial—Glass dial scale
30189	Resistor—120 ohms, 1/4 watt (R1, R11)	37831	Fastener—Push fastener (1 set) for cabinet back
30731	Resistor—1200 ohms, 1/4 watt (R2)	71016	Knob—Control knob
6134	Resistor—1200 ohms, 1 watt (R13)	30900	Spring—Retaining spring for knobs
30492	Resistor—22,000 ohms, 1/4 watt (R4)		
14583	Resistor—220,000 ohms, 1/4 watt (R3, R9, R12)		
30648	Resistor—470,000 ohms, 1/4 watt (R10)		

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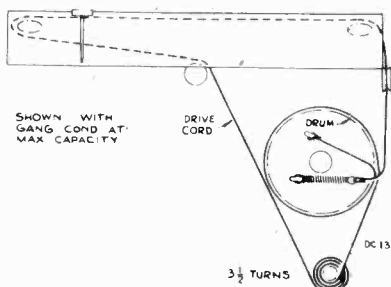


Cathode-Ray Alignment is the preferable method. Connections for the oscilloscope are shown in the schematic drawing.

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

Calibration Scale.—The glass tuning dial may be removed from the cabinet and mounted above the pointer for easy 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 Pointer.—With the gang condenser in full mesh the dial pointer should be set to the left hand mark of the Standard Broadcast scale.



Dial Indicator and Drive Mechanism

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust following for max. output—
1	12SK7 I-F grid through 0.1 mfd. capacitor			L11-L10 (2nd I-F Trans.)
2	Stator of gang cond. C2 (rear) through 0.1 mfd.	455 kc	B. C.; 1600 kc quiet point	L9-L8* (1st I-F Trans.)
3	Antenna lead through 300 ohm resistor	18.2 mc	S. W.; gang condenser open	C6 (osc.)**
4		15.2 mc	S. W.; maximum signal rock gang	C3 (ant.)***
5		600 kc	B. C.; 600 kc	L7 (osc.)
6	Antenna lead through 200 mmf. capacitor	1300 kc	B. C.; rock gang at 1300 kc	C37 (ant.) C7 (osc.)
7		600 kc	B. C.; rock gang at 600 kc	L7 (osc.)
8	Repeat steps 6 and 7			

* Do not readjust L10 or L11 when test oscillator is connected to C2.

** Use minimum capacity peak if two peaks can be obtained.

*** Image signal of lesser amplitude should occur at 14.3 mc.

NOTE.—Oscillator tracks above signals on both bands.

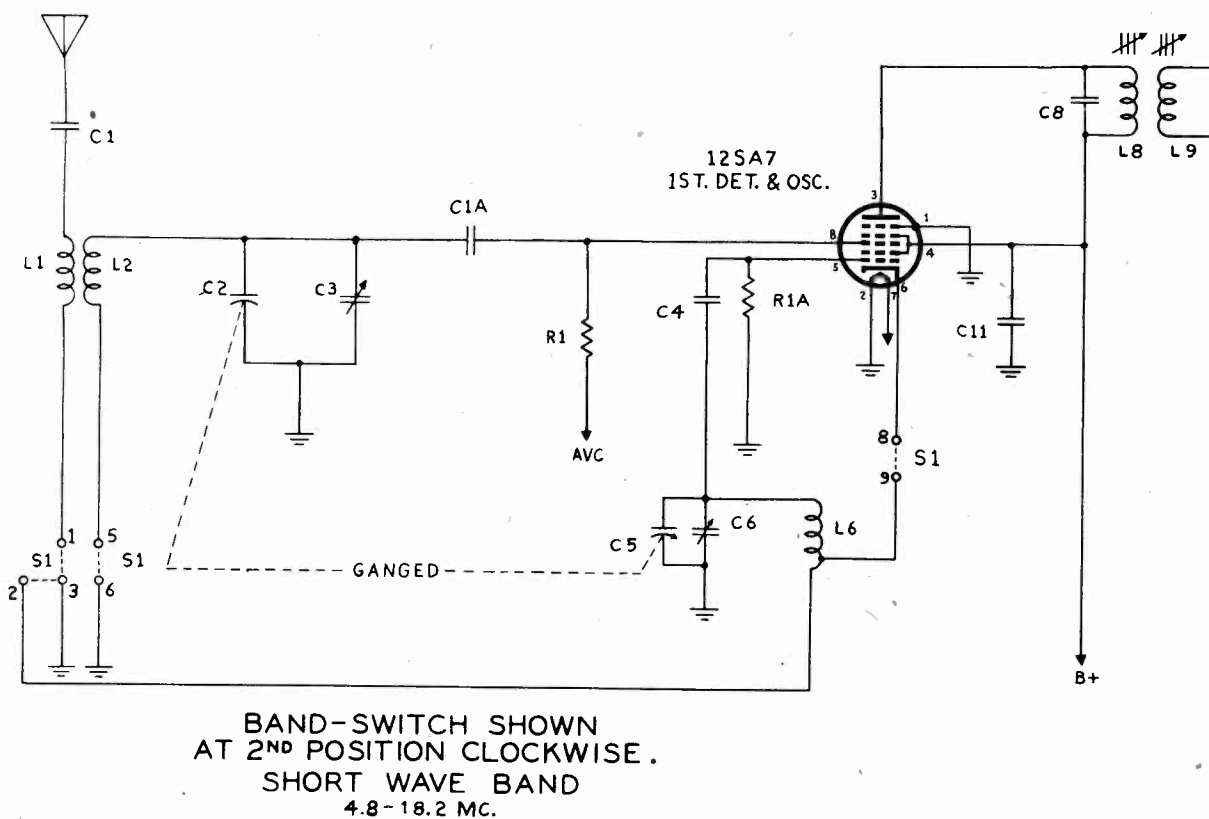
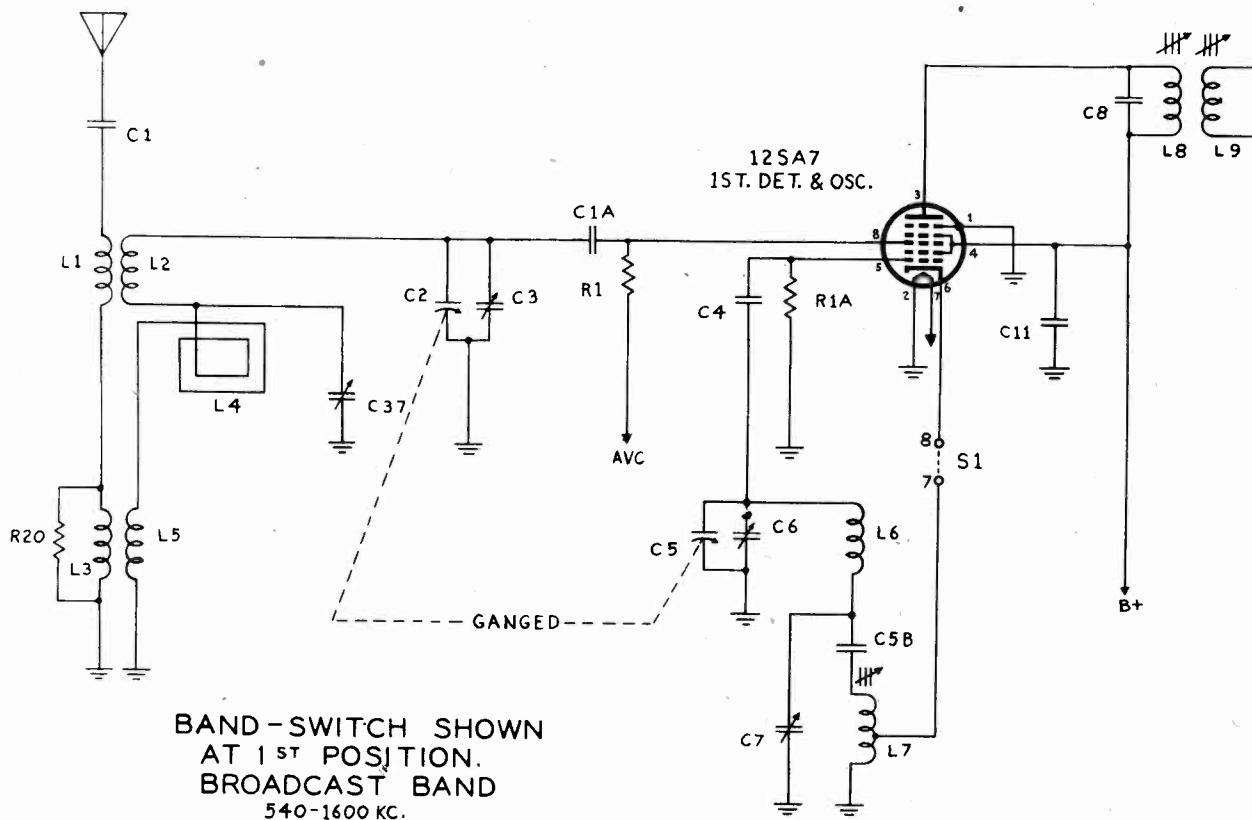
"clarified schematics"

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MODELS 61-6, 61-7

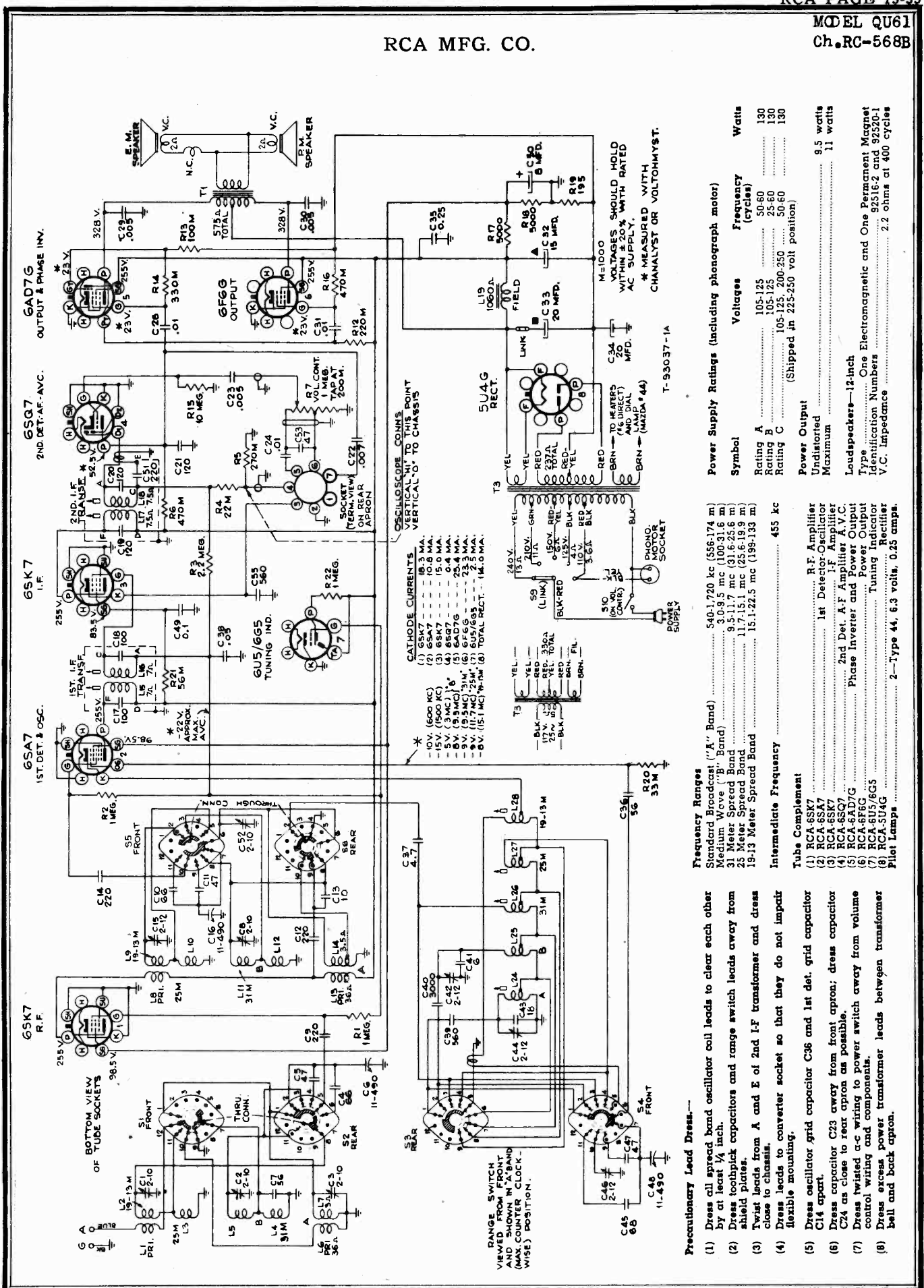
Ch. RC-594D

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MODEL QU61
Ch. RC-568B



CATHODE CURRENTS

(1) GSK7	10.3 MA.
(2) GSK7	15.3 MA.
(3) GSK7	15.3 MA.
(4) G5G7	0.4 MA.
(5) GAD7G	25.4 MA.
(6) G5G7	23.3 MA.
(7) G5G7	14.5 MA.
(8) TOTAL RECT.	14.5 MA.

Power Supply Ratings (including phonograph motor)

Symbol	Voltages	Frequency (cycles)	Watts
Rating A	105-125	50-60	130
Rating B	105-125	25-60	130
Rating C	105-125-200-250	50-60	130

(Shipped in 225-250 volt position)

Frequency Ranges

Standard Broadcast ("A" Band)	540-1,720 kc (556-174 m)
Medium Wave ("B" Band)	30-9.5 mc (100-31.6 m)
31 Meter Spread Band	9.5-11.7 mc (31.6-25.6 m)
25 Meter Spread Band	11.7-15.1 mc (25.6-19.9 m)
19-13 Meter Spread Band	15.1-22.5 mc (19.9-13.3 m)

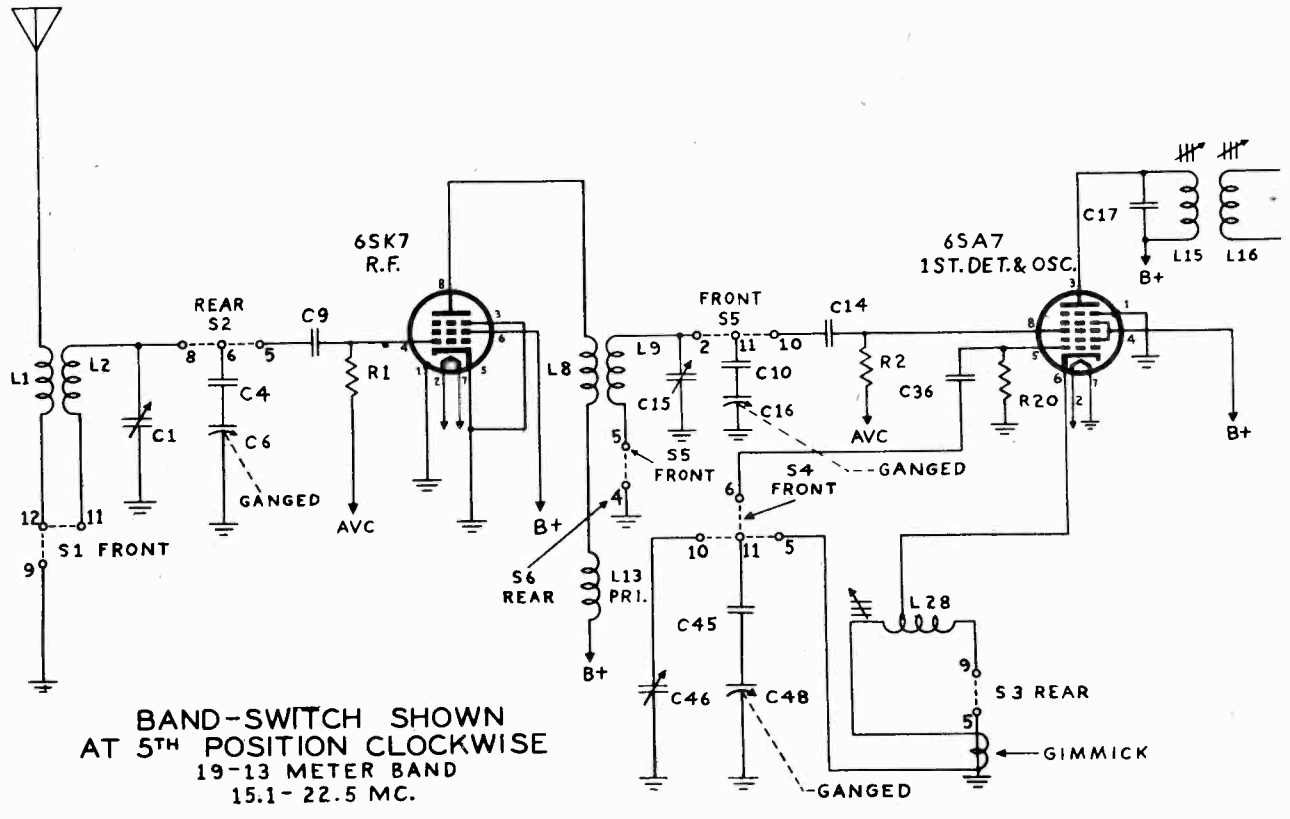
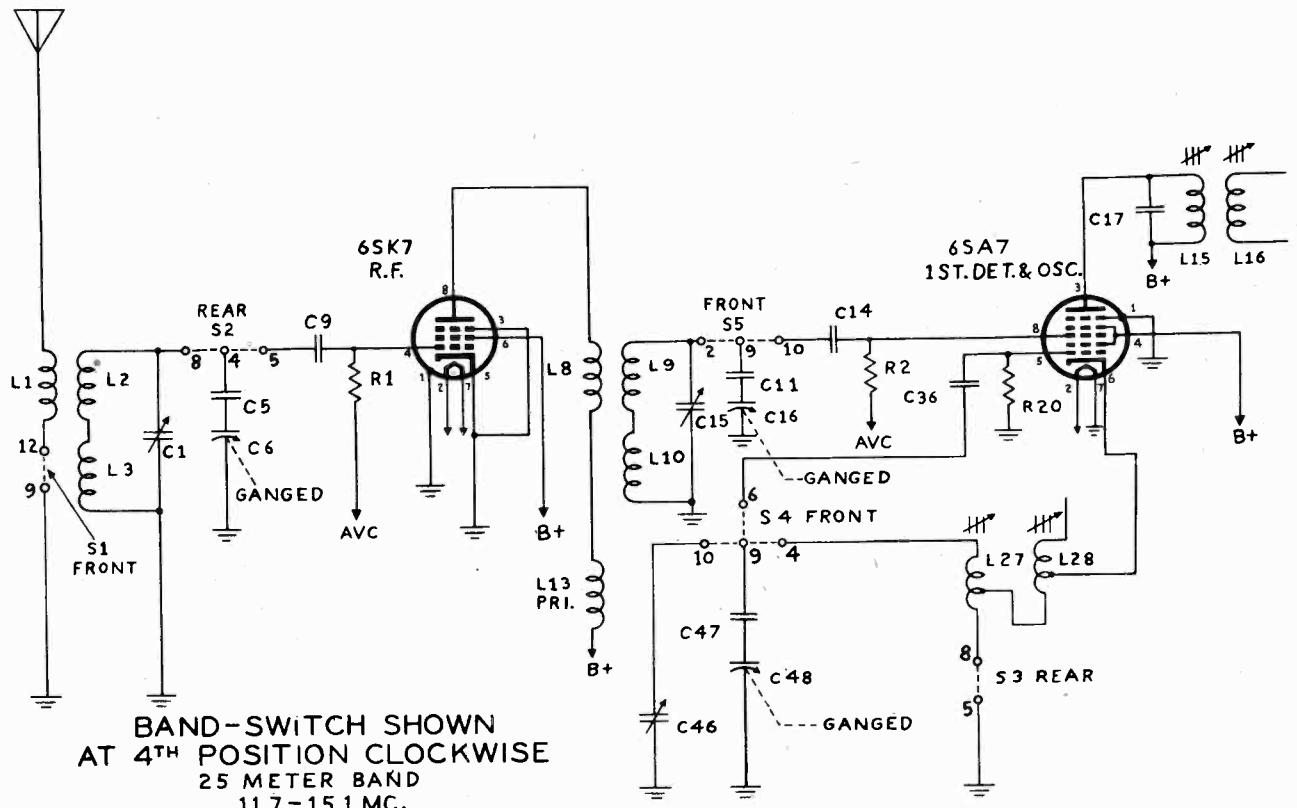
Intermediate Frequency 455 kc

Tube Complement

(1) RCA-6SA7	R.F. Amplifier
(2) RCA-6SA7	1st Detector-Oscillator
(3) RCA-6SK7	I.F. Amplifier
(4) RCA-6SK7	2nd Det. A.F. Amplifier A.V.C.
(5) RCA-6AD7G	Phase Inverter and Power Output
(6) RCA-6F6C	Tuning Indicator
(7) RCA-6U5/6G5	Rectifier
(8) RCA-5U4G	2-Type 44, 6.3 volts, 0.25 amps.

- Precautionary Lead Dress.--
- (1) Dress all spread band oscillator coil leads to clear each other by at least 1/4 inch.
 - (2) Dress bootstrap capacitors and range switch leads away from shield plates.
 - (3) Twist leads from A and E of 2nd I.F. transformer and dress close to chassis.
 - (4) Dress leads to converter socket so that they do not impair flexible mounting.
 - (5) Dress oscillator grid capacitor C38 and 1st det. grid capacitor C14 apart.
 - (6) Dress capacitor C23 away from front apron; dress capacitor C24 as close to rear apron as possible.
 - (7) Dress twisted a-c wiring to power switch away from volume control wiring and components.
 - (8) Dress excess power transformer leads between transformer bell and back apron.

RCA MFG. CO.



MODEL QU61
Ch. RC-568B

RCA MFG. CO.

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

Output Meter Alignment.—If this method is used, connect the meter across either 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 on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser.

As the first step in r-f alignment, check the position of the drum, it should correspond to that shown in the Dial Indicator and Drive Mechanism drawing when the gang condenser plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

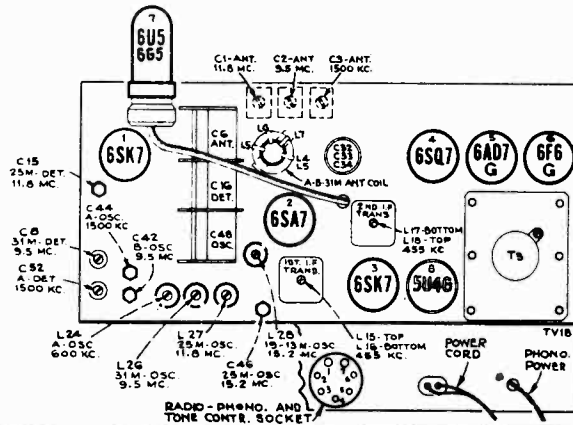
Receiver Dial with Calibration Scale.—To determine the corresponding frequency for any setting of the calibration scale, refer to the drawing.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by retouching the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings in this range by means of a crystal calibrator, or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be retouched so that the stations come in at the correct points on the dial.



Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Range Switch	Turn Radio Dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A" band	Quiet point 600 kc end of dial	L18-L17 2nd I-F transformer
2	6SA7 1st det. grid in series with .01 mfd.				L16-L15 1st I-F transformer
3	Antenna terminal in series with 300 ohms	11.8 mc	25 meter band	11.8 mc (138.5°)	L27 (osc.)** C1 (ant.) C15 (det.)***
4		15.2 mc			15.2 mc (18.5°)
5	Repeat steps 3 and 4 until aligned.				
6	Antenna terminal in series with 300 ohms	15.2 mc	19-13 meter band	15.2 mc (156°)	L28 (osc.)**
7		9.5 mc	31 meter band	9.5 mc (156°)	L26 (osc.)** C2 (ant.) C8 (det.)***
8		9.5 mc	"B" band	9.5 mc (11.5°)	C42 (osc.)*
9	Antenna terminal in series with 200 mmfd.	1,500 kc	"A" band	1,500 kc (27°)	C44 (osc.) C3 (ant.) C52 (det.)
10		600 kc			600 kc (149.5°)
11	Repeat steps 9 and 10.				

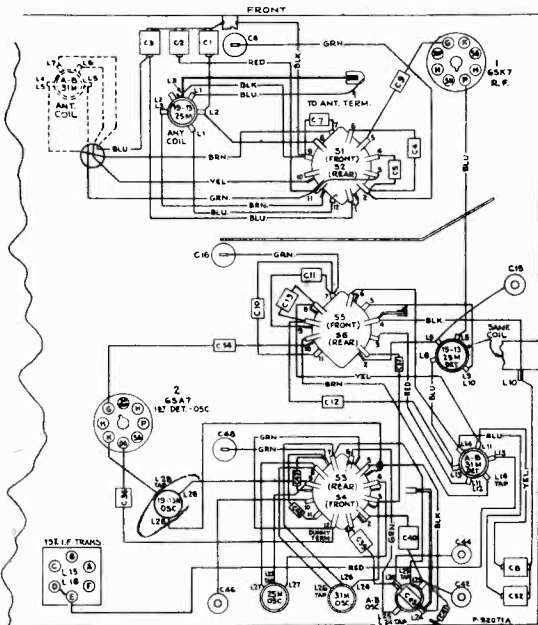
* Use minimum capacity peak if two can be obtained.

** If two peaks can be obtained, use the one obtained when the core screw is farthest out (counter-clockwise).

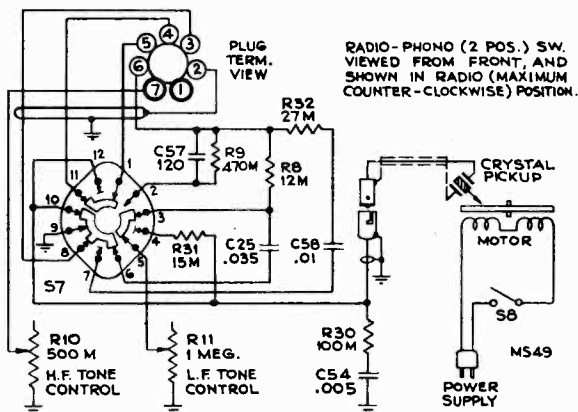
*** Use maximum capacity peak if two peaks can be obtained.

† Check image to determine that C46 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

NOTE: Oscillator tracks above signals on all bands.



R. F. Wiring Diagram (Bottom View)



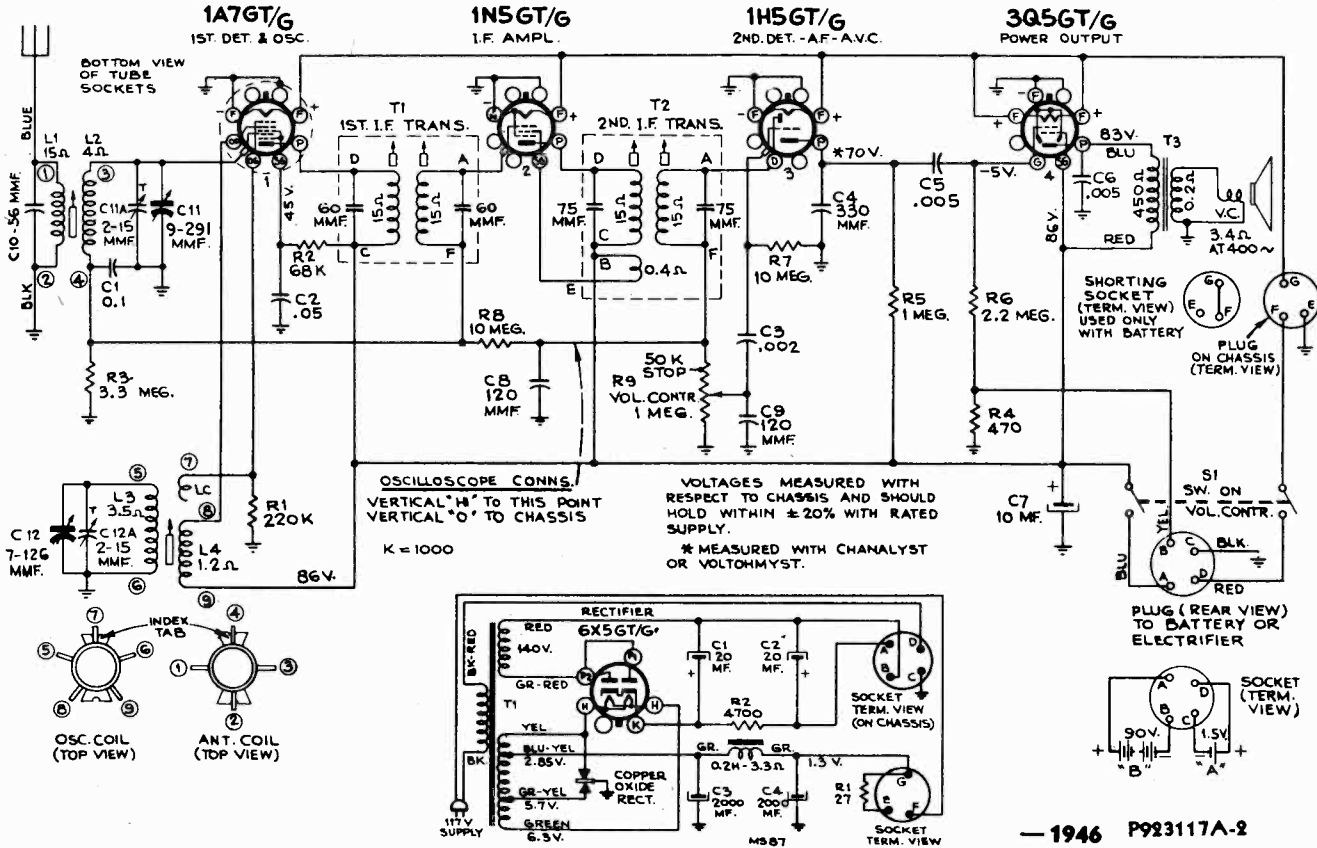
Radio-Phono Switch and Tone Control Strip

RCA MFG. CO.

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC-568B			
37053	Board—"Antenna-Ground" board	37993	Switch—Range switch (S1, S2, S3, S4, S5, S6)
37994	Bracket—Bracket (long) complete with drive cord pulley	35636	Transformer—First I-F transformer (L15, L16, C17, C18)
37995	Bracket—Bracket (short) complete with drive cord pulley	36615	Transformer—Second I-F transformer (L17, L18, C19, C20, C51)
35642	Calibrator—Drive drum calibrator	34183	Transformer—Power transformer, 110/125/150/210/240 volts, 50-60 cycle (T3) (For Specification Ratings A and C)
37996	Capacitor—Mica trimmer, dual, 2.5-10 mmf. (C8, C52)	39786	Transformer—Power transformer, 105/120 volts, 25-60 cycle (T3) (For Specification Rating B)
37059	Capacitor—Mica trimmer, triple, 2.5-10 mmf. (C1, C2, C3)	2917	Washer—"C" washer for tuning knob shaft
12714	Capacitor—Air trimmer, 2-12 mmf. (C15, C42, C44, C46)	SPEAKER ASSEMBLIES 92520-1K	
33097	Capacitor—Ceramic, 4.7 mmf. (C37)	70574	Cone—Cone and voice coil assembly
35646	Capacitor—Ceramic, 8 mmf. (C41)	5119	Plug—3 prong male plug for speaker
39604	Capacitor—Mica, 10 mmf. (C13)	70686	Speaker—12" PM speaker complete with cone and voice coil less plug
39041	Capacitor—Ceramic, 18 mmf. (C43)	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.	
70582	Capacitor—Ceramic, 47 mmf. (C5, C11)	SPEAKER ASSEMBLIES 92516-2K	
39620	Capacitor—Mica, 47 mmf. (C53)	70574	Cone—Cone and voice coil assembly
35644	Capacitor—Ceramic, 47 mmf. (C47)	5119	Plug—3 contact female plug for speaker
39622	Capacitor—Mica, 56 mmf. (C7, C36)	31539	Plug—5 prong male plug for speaker
71291	Capacitor—Mica, 66 mmf. (C4, C10)	70573	Speaker—12" E.M. speaker complete with cone and voice coil less output transformer and plugs
35645	Capacitor—Ceramic, 68 mmf. (C45)	70688	Transformer—Output transformer (T1)
39628	Capacitor—Mica, 100 mmf. (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.	
39630	Capacitor—Mica, 120 mmf. (C19, C20, C21)	MISCELLANEOUS ASSEMBLIES	
39636	Capacitor—Mica, 220 mmf. (C9, C12, C14, C51)	X1601	Baffle—Baffle board and grille cloth
70667	Capacitor—Mica, 560 mmf. (C39)	4287	Body—Phono-input cable connector body
39646	Capacitor—Mica, 560 mmf. (C55)	36639	Bracket—Lamp bracket
70687	Capacitor—Mica, 3,000 mmf. (C40)	70556	Bumper—Rubber bumper for tray
71007	Capacitor—Tubular, .005 mfd., 1,600 volts (C29, C30)	39630	Capacitor—Mica, 120 mmf. (C57)
70606	Capacitor—Tubular, .005 mfd., 200 volts (C23)	70606	Capacitor—Tubular, .005 mfd., 200 volts (C54)
70629	Capacitor—Tubular, .007 mfd., 600 volts (C22)	70610	Capacitor—Tubular, .01 mfd., 200 volts (C58)
70610	Capacitor—Tubular, .01 mfd., 200 volts (C24)	70614	Capacitor—Tubular, .035 mfd., 200 volts (C25)
70631	Capacitor—Tubular, .01 mfd., 600 volts (C28, C31)	30716	Clip—Tuning tube clip
70615	Capacitor—Tubular, .05 mfd., 200 volts (C38)	36109	Control—L.F. tone control (R11)
70638	Capacitor—Tubular, 0.1 mfd., 600 volts (C49)	35629	Control—H.F. tone control (R10)
70639	Capacitor—Tubular, 0.25 mfd., 600 volts (C35)	70694	Cushion—Rubber cushion
32187	Capacitor—Electrolytic, 8 mfd., 150 volts (C50)	36156	Decal—HF. tone control decal
37888	Capacitor—Electrolytic, comprising 1 section of 20 mfd., 450 volts; 1 section of 15 mfd., 450 volts; and 1 section of 20 mfd., 25 volts (C33, C32, C34) (See Note)	36155	Decal—L.F. tone control decal
37055	Coil—Antenna coil, "A", "B" and 31 meter bands (L4, L5, L6, L7)	36074	Decal—Radio-phonograph switch decal
37056	Coil—Antenna coil, 25 meter and 19-13 meter bands (L1, L2, L3)	37839	Decal—Range switch decal
37093	Coil—Oscillator coil, "A", "B" bands (L24, L25)	70669	Decal—Trade mark decal
35624	Coil—Oscillator coil, 19-13 meter band (L28)	35387	Decal—Volume control and power switch decal
35625	Coil—Oscillator coil, 25 meter band (L27)	39923	Dial—Glass dial scale
35626	Coil—Oscillator coil, 31 meter band (L26)	4286	Ferrule—Phono-input cable ferrule and bushing
37058	Coil—R-F coil, 25 meter and 19-13 meter bands (L8, L9, L10)	37998	Frame—Dial frame assembly less tube clip, indicator and dial
37057	Coil—R-F coil, "A", "B" and 31 meter bands (L11, L12, L13, L14)	70691	Guide—Guide rail—L.H.
37992	Control—Volume control and power switch (R7, S10)	70692	Guide—Guide rail—R.H.
37151	Condenser—Variable tuning condenser (C6, C16, C48)	70690	Hinge—L.H. cabinet door hinge
32634	Cord—Drive cord (approx. 24" overall length)	70693	Hinge—R.H. cabinet door hinge
12006	Core—Adjustable core and stud for I-F transformers	36593	Indicator—Station selector indicator
32634	Cord—Indicator cord (approx. 41" overall length)	13103	Jewel—Pilot lamp cap
31259	Core—Adjustable core and stud for 25 meter and 31 meter band oscillator coils and for 19-13 meter band osc. coil	36038	Knob—Radio-phonograph or range switch knob
35788	Core—Adjustable core and stud for ABC band oscillator coil	35814	Knob—Volume control, tone control or tuning knob
35768	Drum—Drive drum less calibrator	11891	Lamp—Dial lamp
28452	Plate—Bakelite mounting plate for capacitor #37888	70546	Mounting—One set of record changer mounting hardware consisting of four (4) upper and four (4) lower springs and four (4) clamp nuts.
30868	Plug—2 contact female plug for motor cable	30868	Plug—2 contact female plug for motor cable extension
12493	Plug—5 contact female plug for speaker cable	30870	Plug—2 prong male plug for motor cable extension
39858	Pulley—Drive cord pulley	36395	Plug—7 prong male plug for radio-phonograph cable
34189	Resistor—Voltage divider, consisting of 1 section of 5,000 ohms, 6 watt; 1 section of 5,000 ohms, 2.5 watt; and 1 section of 195 ohms, 3 watt (R17, R18, R19)	30436	Resistor—12,000 ohms, 1/4 watt (R8)
30492	Resistor—22,000 ohms, 1/4 watt (R4)	36714	Resistor—15,000 ohms, 1/4 watt (R31)
30685	Resistor—33,000 ohms, 1/4 watt (R20)	30409	Resistor—27,000 ohms, 1/4 watt (R32)
30650	Resistor—56,000 ohms, 1/2 watt (R21)	30648	Resistor—100,000 ohms, 1/4 watt (R30)
3252	Resistor—100,000 ohms, 1/4 watt (R13)	3252	Resistor—470,000 ohms, 1/4 watt (R9)
14583	Resistor—220,000 ohms, 1/2 watt (R12)	71151	Retainer—Tray roller retaining strip
30651	Resistor—270,000 ohms, 1/4 watt (R5)	71152	Retainer—Tray roller retaining strip
14983	Resistor—330,000 ohms, 1/4 watt (R14)	70554	Roller—Changer tray roller
30648	Resistor—470,000 ohms, 1/2 watt (R6, R16)	4284	Spring—Phono-input cable connector spring
30652	Resistor—1 megohm, 1/4 watt (R1, R2, R22)	30900	Spring—Retaining spring for knob
30649	Resistor—2.2 megohms, 1/4 watt (R3)	70689	Stop—Mechanism tray stop
30992	Resistor—10 megohms, 1/4 watt (R15)	39360	Support—Drop support for record changer compartment door
14350	Screw—#8-32 square head set screw for drive drum	39875	Switch—Radio-phonograph switch (S7)
38842	Shaft—Tuning knob shaft and flywheel	70555	Tire—Rubber tire for tray roller
36107	Socket—7 contact socket located on rear apron of chassis	70553	Tray—Record changer carrying tray less rollers
31364	Socket—Dial lamp socket	4285	Washer—Phono-input cable insulating washer
31251	Socket—Tube socket	2917	Washer—Retaining washer for tray roller
34864	Socket—Tuning tube socket	NOTE: #37888 rating is 20-20-20 mfd., 450-450-25 volts.	
31261	Spring—Retaining spring for 19-13 meter band oscillator coil core and stud and for oscillator coils' core and stud assemblies		
31418	Spring—Drive or indicator cord spring		
12007	Spring—Retaining spring for I-F transformers' core and stud assemblies		

MODELS 64F1, 64F2,
Ch. RC-1037; 64F3,
Ch. RC-1037A

RCA MFG. CO.



— 1946 P923117A-2

Frequency Range 540 KC.—1600 KC.
Intermediate Frequency 455 KC.

Tube Complement

- (1) RCA—1A7 GT/G 1st Det. Oscillator
- (2) RCA—1N5 GT/G IF Amplifier
- (3) RCA—1H5 GT/G 2nd Det., A-F, and A-V.C.
- (4) RCA—3Q5 GT/G Power Output

Power Output Rating

Undistorted 160 MW.
Maximum 270 MW.

Loudspeaker (922258-2)

Size 4 x 6 inch PM
V.C. impedance at 400 cycles 3.4 ohms

Power Supply Rating

- (1) RCA Farm Battery Pack—VS022 or equivalent.
"A" Battery 1½ volts, Drain—0.24 amperes, "B" Battery
90 volts, Drain—10.5 MA.
- (2) Electrifier—(CV-45)
105 to 125 volts AC, 50-60 cycles only.

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1037—64F1, 64F2 RC 1037A—64F3		SPEAKER ASSEMBLY 922258-2
71924	Capacitor—Ceramic, 56 mmf. (C10)	71058	Speaker—4" x 6" elliptical P.M. speaker complete with cone and voice coil
39640	Capacitor—Mica, 330 mmf. (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.
39630	Capacitor—Mica, 120 mmf. (C8, C9)		MISCELLANEOUS
70622	Capacitor—Tubular, .002 mfd., 600 volts (C3)	70471	Back—Cabinet back for 64F1
70606	Capacitor—Tubular, .005 mfd., 400 volts (C5, C6)	70472	Back—Cabinet back for 64F2
70611	Capacitor—Tubular, .05 mfd., 400 volts (C2)	70475	Clamp—Dial clamps (1 set) for 64F1 and 64F2
70617	Capacitor—Tubular, 0.1 mfd., 200 volts (C1)	70398	Clamp—Dial clamp for 64F3 (2 required)
38593	Capacitor—Electrolytic, 10 mfd., 90 volts (C7)	70476	Dial—Glass dial scale for 64F1 and 64F2
*71404	Coil—Antenna coil (L1, L2)	*71166	Dial—Glass dial scale for 64F3
*71401	Coil—Oscillator coil (L3, L4)	37831	Fastener—Push fastener for cabinet back (1 set)
*71160	Condenser—Variable tuning condenser (C11, C11a, C12, C12a)	70474	Knob—Tuning control knob—ivory—for 64F2
*71168	Control—Volume control and power switch (R9, S1)	70473	Knob—Tuning knob—mottled walnut—for 64F1 and 64F3
32634	Cord—Drive cord (approx. 41" long for 64F1 and 64F2 and approx. 43" long for 64F3) (R9, S1)	*71165	Knob—Volume control knob—ivory—for 64F2
70464	Drum—Drive drum	*71164	Knob—Volume control knob—mottled walnut—for 64F1 and 64F3
70469	Indicator—Station selector indicator	30900	Spring—Retaining spring for knobs
*71161	Plate—Dial back plate complete with four pulleys less dial—for 64F3		POWER SUPPLY RS 1001
70462	Plate—Dial back plate complete with four pulleys less dial—for 64F1 and 64F2	*71840	Capacitor—Electrolytic, 2000 mmf., 6 volts (C3, C4)
30550	Plug—4 prong male plug for battery cable	*71844	Capacitor—Electrolytic dual, 20 mfd., 150 volts (C1, C2)
*71162	Plug—Battery shorting plug—3 pronged male	35069	Fastener—Push fastener for bottom cover
36230	Pulley—Drive cord pulley	*71838	Reactor—Filter Reactor
14138	Resistor—470 ohms, ¼ watt (R4)	*71839	Rectifier—Rectifier complete with mounting bracket
14583	Resistor—68,000 ohms, ¼ watt (R2)	12453	Resistor—27 ohms, ¼ watt (R1)
30652	Resistor—220,000 ohms, ¼ watt (R1)	30788	Resistor—4700 ohms, 1 watt (R2)
30649	Resistor—1 megohm, ¼ watt (R5)	*71841	Socket—3 contact female socket
31417	Resistor—2.2 megohms, ¼ watt (R6)	31027	Socket—4 contact female socket for battery cable
30992	Resistor—3.3 megohms, ¼ watt (R3)	37635	Socket—Tube socket
70467	Resistor—10 megohms, ¼ watt (R7, R8)	*71837	Transformer—Power transformer, 117 volt, 60 cycle (T1)
70377	Shaft—Tuning knob shaft		
*71163	Shield—Shield for 1A7GT/G tube		
37605	Socket—Battery shorting socket—3 contact female		
70390	Socket—Tube socket		
*71403	Spring—Drive cord spring		
*71400	Transformer—First I.F. transformer (T1)		
*71159	Transformer—Second I.F. transformer (T2)		
33726	Transformer—Output transformer (T3)		
	Washer—"C" washer for tuning knob shaft		

*This is the first time this Stock No. has appeared in Service Data.

RCA MFG. CO.

MODELS 64F1, 64F2,
Ch. RC-1037; 64F3,
Ch. RC-1037A
MODELS 65X1, 65X2,
Ch. RC-1034

64F1, 64F2, 64F3

Alignment Procedure

Cathode Ray Alignment is the preferable method. Connections for the oscillograph are shown in the diagram.

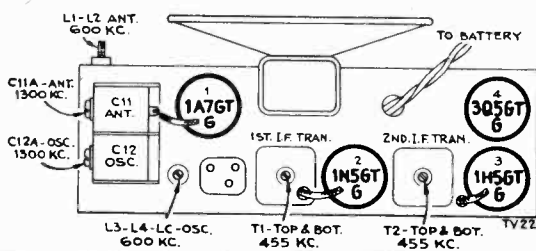
Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

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.

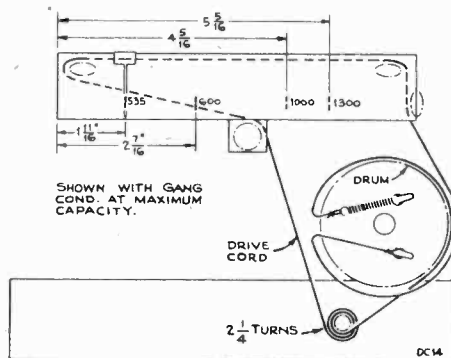
Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust following for maximum peak output
1	I.F. (IN5) grid in series with .1 mfd.	455 kc	Quiet point at the low freq. end of the dial	2nd I.F. trans.*
2	1A7 grid in series with .1 mfd.			1st I.F. trans.
3	Antenna lead (blue) in series with 200 mmf.	1300 kc	1300 kc	C12A (osc.) C11A (ant.)
4		600 kc	600 kc	(Osc.) and (ant.) slugs
5	Repeat steps 3 and 4 for exact alignment.			

*Do not repeat step 1.



Critical Lead Dress

1. Keep output plate capacitor dressed close to the chassis.
2. Keep lead from lug A of second IF transformer down and dressed close around the 1H5 tube socket.
3. Dress 1N5 plate lead close to chassis.
4. Dress C1 down and away from the antenna coil.
5. Dress C3 and C5 away from each other.
6. Dress the lead from 2nd IF transformer to the volume control in the open.



NOTE:—

When using the electrifier, remove the shorting plug on the chassis adjacent to the 1A7GT/G tube and replace it with a similar plug, attached to the electrifier. Also connect the remaining plug attached to the electrifier, in place of the normal battery plug. The receiver will operate in the normal manner, using the same control for turning the set on and off.

NOTE:—

Do not plug electrifier into a DC outlet.

65X1, 65X2

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.

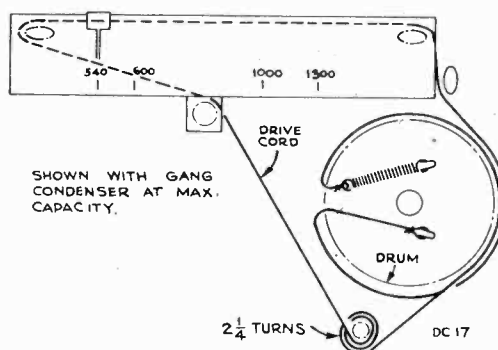
Dial Backing Plate.—In the event that only the chassis is returned for service, the marks on the dial backing plate may be used during alignment; refer to the Dial Indicator and Drive Mechanism drawing for corresponding frequencies.

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.

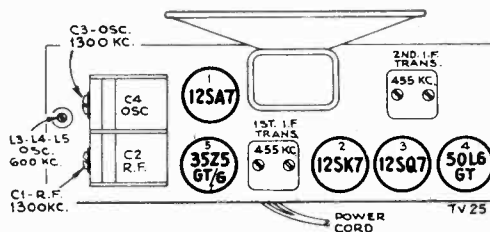
For additional information refer to booklet "RCA Victor Receiver Alignment."

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.



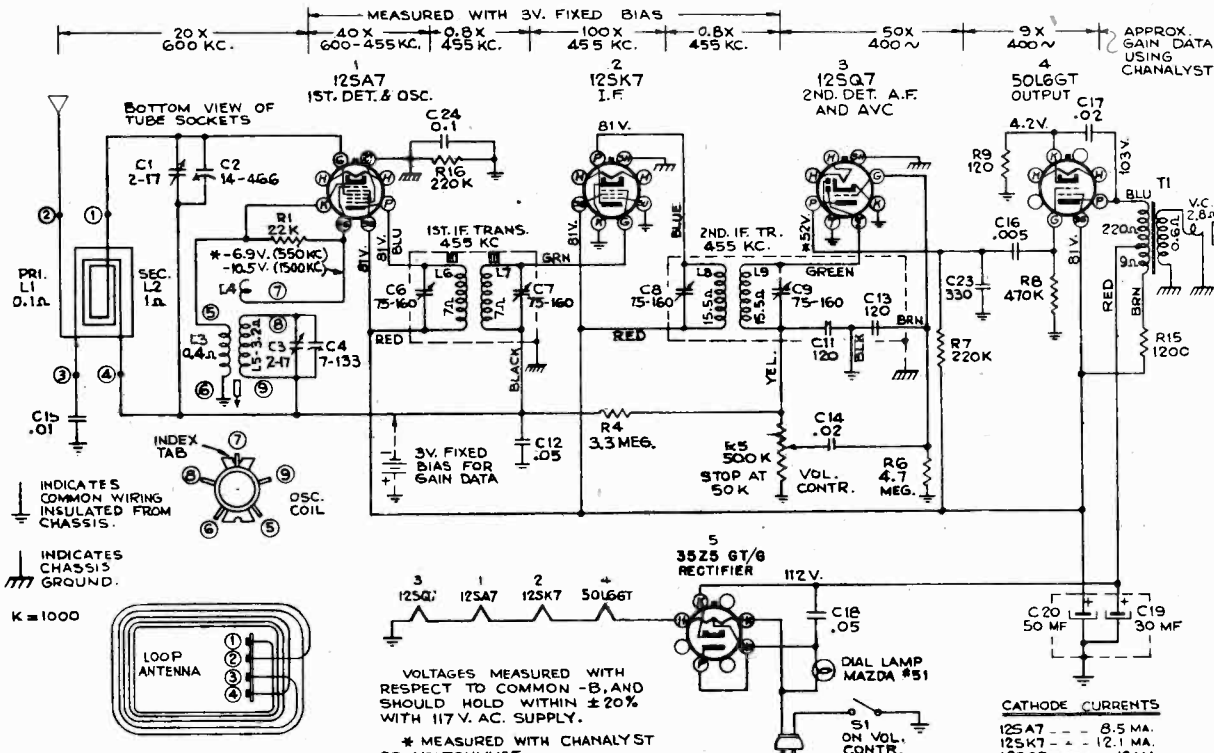
Dial-Indicator and Drive Mechanism



Tube and Trimmer Locations

MODELS 65X1, 65X2
Ch. RC-1034

RCA MFG. CO.



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.

P-923104-4

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

CATHODE CURRENTS

12SA7 - - -	8.5 MA.
12SK7 - - -	12.1 MA.
12SQ7 - - -	.12 MA.
50L6GT - -	33.0 MA.
35Z5G/8 -	54.1 MA.

STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1034	
70389	Bearing—Tuning knob shaft bearing
39640	Capacitor—Mica, 330 mmf. (C23)
70606	Capacitor—Tubular, .005 mfd., 400 volts (C16)
70610	Capacitor—Tubular, .01 mfd., 200 volts (C15)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C14, C17)
70615	Capacitor—Tubular, .05 mfd., 400 volts (C12, C18)
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C24)
70408	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts (C19, C20)
*70477	Coil—Oscillator coil (L3, L4, L5)
*70463	Condenser—Variable tuning condenser complete with drum (C1, C2, C3, C4)
70322	Control—Volume control and power switch (R5, S1)
32634	Cord—Drive cord (approximately 38")
*70464	Drum—Drive drum
*70469	Indicator—Station selector indicator
11765	Lamp—Dial lamp—Mazda 51
*70468	Loop—Antenna loop (L1, L2)
*70462	Plate—Dial back plate complete with drive cord pulleys less dial
36230	Pulley—Drive cord pulley
30189	Resistor—120 ohms, 1/4 watt (R9)
6134	Resistor—1200 ohms, 1 watt (R15)
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)

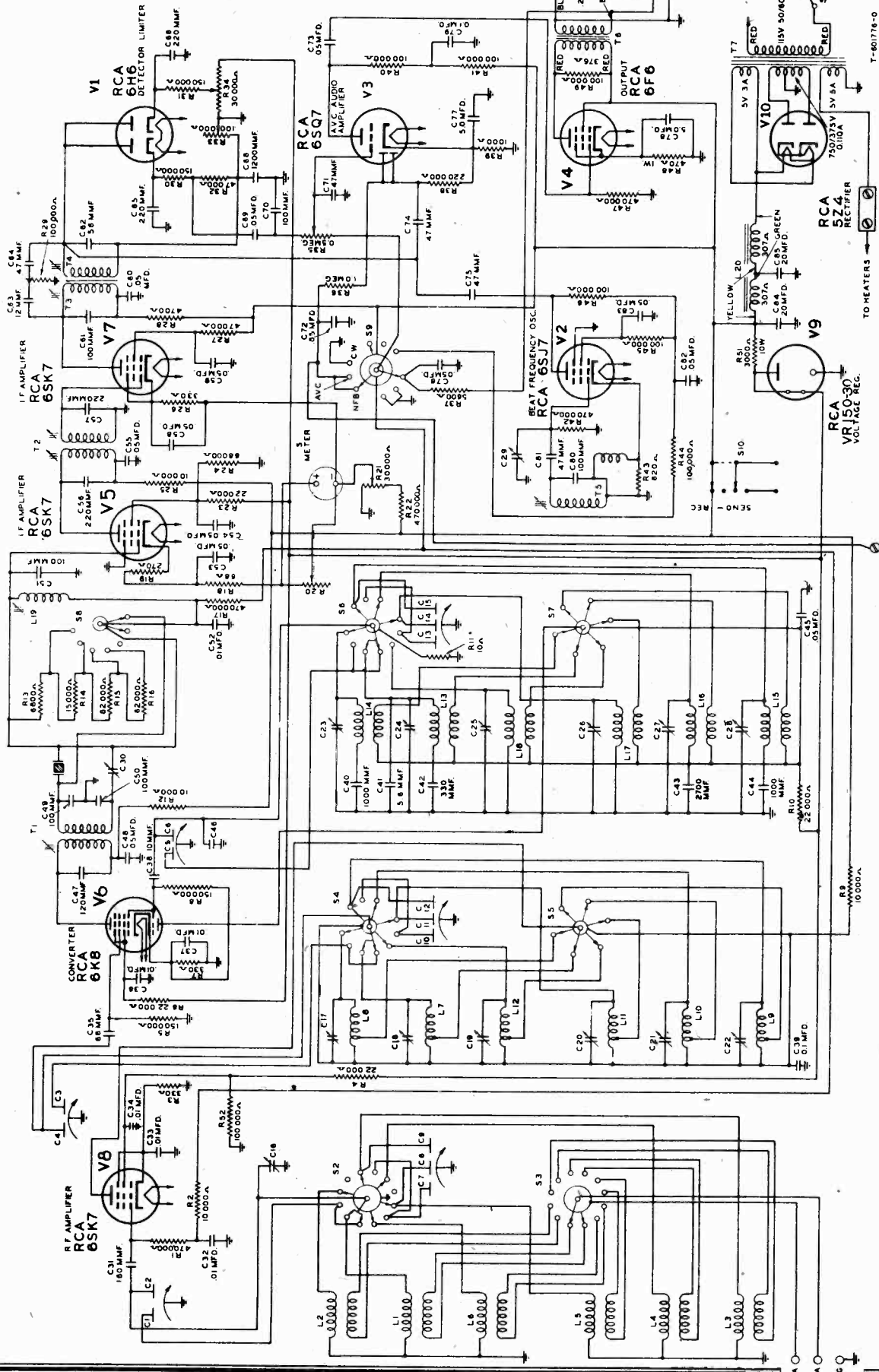
STOCK No.	DESCRIPTION
*70467	Shaft—Tuning knob shaft
34449	Socket—Lamp socket
37605	Socket—Tube socket—moulded
70390	Spring—Drive cord tension spring
*70465	Transformer—First I.F. transformer (L6, L7, C6, C7)
*70466	Transformer—Second I.F. transformer (L8, L9, C8, C9, C11, C13)
70385	Transformer—Output transformer (T1)
33726	Washer—"C" washer for tuning knob shaft
SPEAKER ASSEMBLY 922258-1	
*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 part required.	
MISCELLANEOUS ASSEMBLIES	
*70471	Back—Cabinet back for 65X1
*70472	Back—Cabinet back for 65X2
*70475	Clamp—Dial clamps (1 set)
*70476	Dial—Glass dial scale
37831	Fastener—Push fastener (1 set) for cabinet back
*70474	Knob—Control knob—ivory—for 65X2
*70473	Knob—Control knob—mottled walnut—for 65X1
*71821	Knob—Control knob—maroon—for 65X1
30900	Spring—Retaining spring for knob

1946

*THIS IS THE FIRST TIME THIS STOCK NUMBER HAS APPEARED IN PRINT.

RCA MFG. CO.

MODELS AR-77, AR-77E, Early

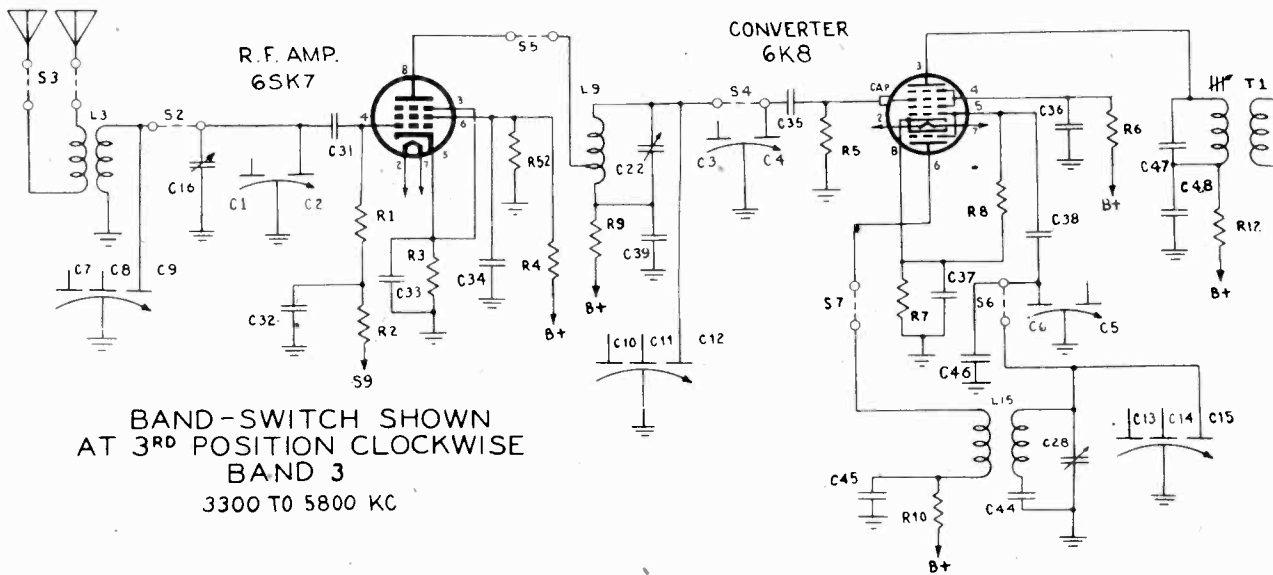
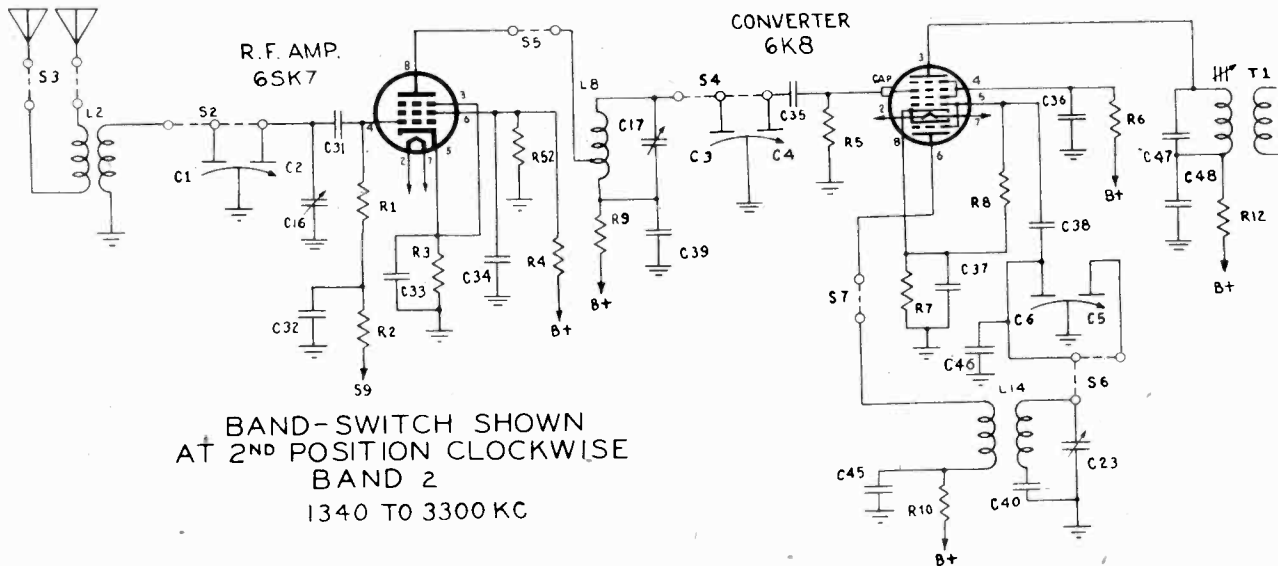
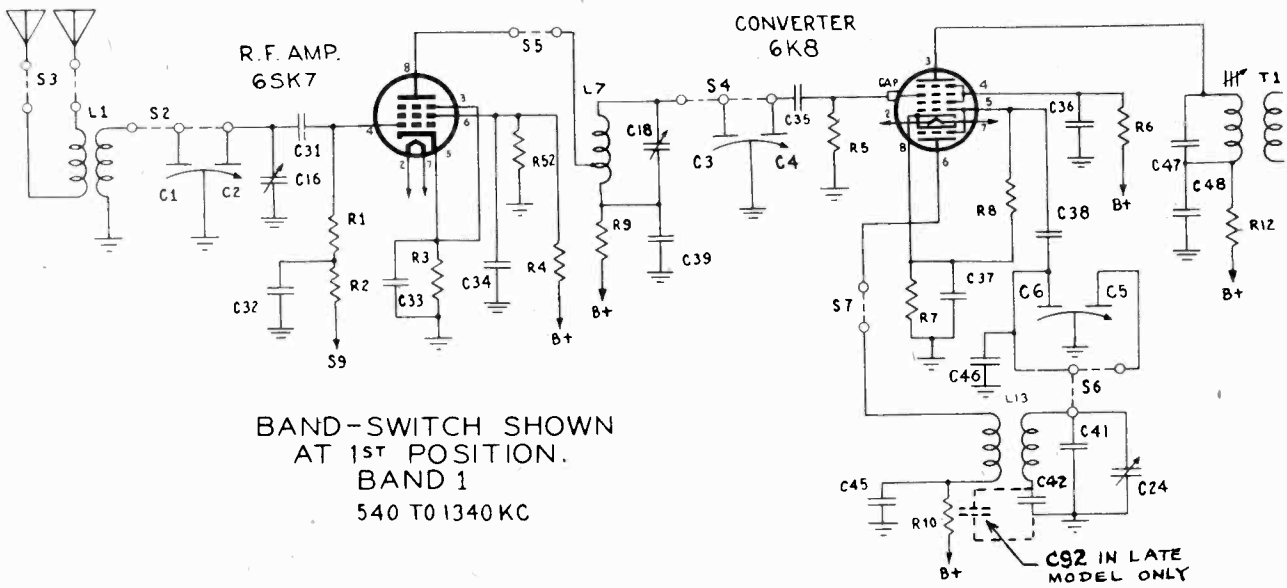


IF PEAK 455 KC

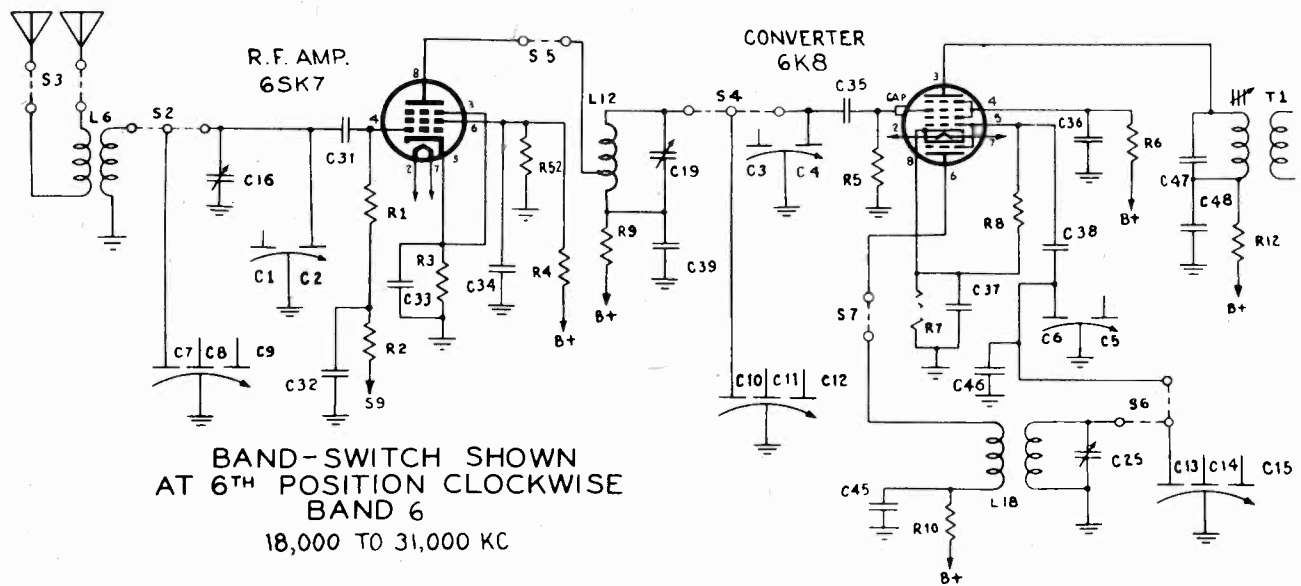
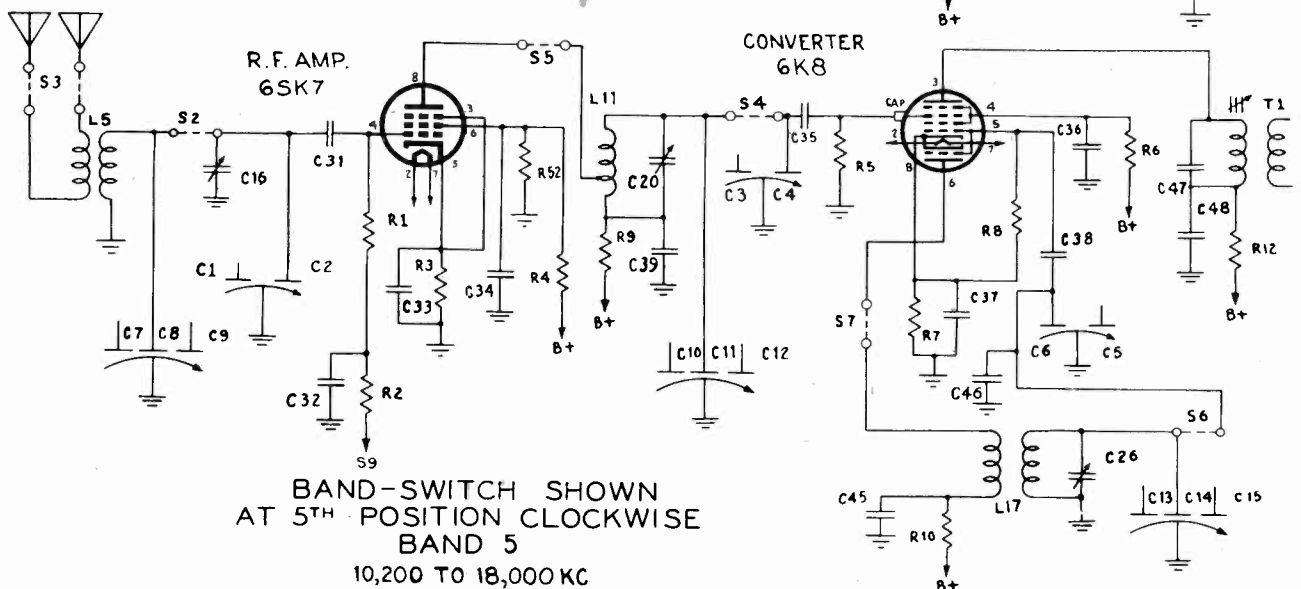
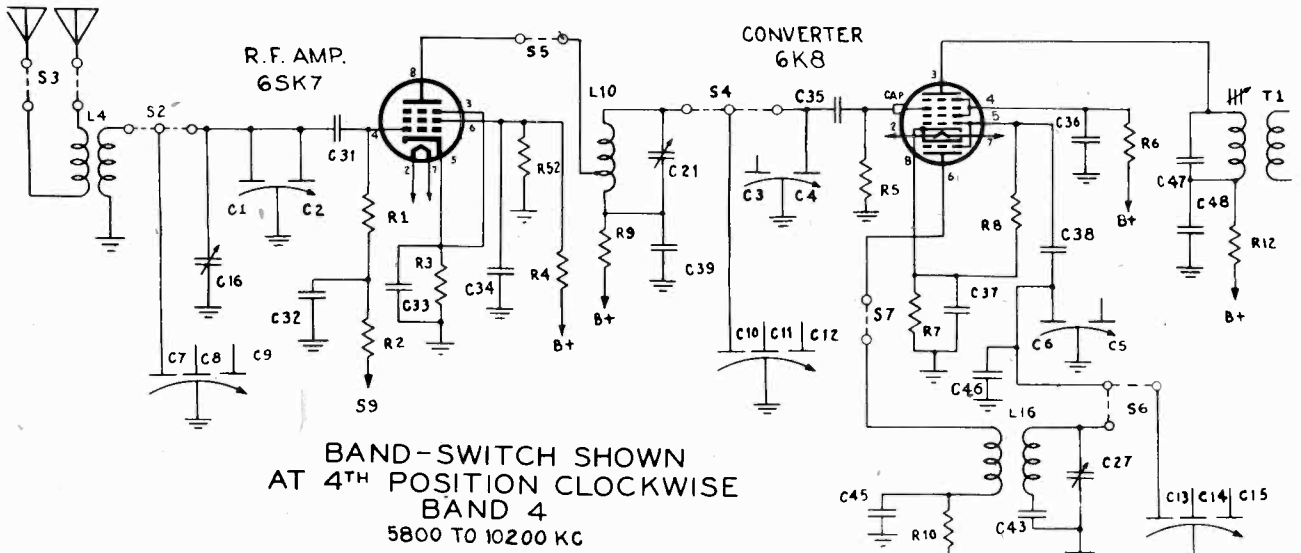
"clarified schematics"

MODELS AR-77, AR-77E,
Early, Late, Revised

RCA MFG. CO.

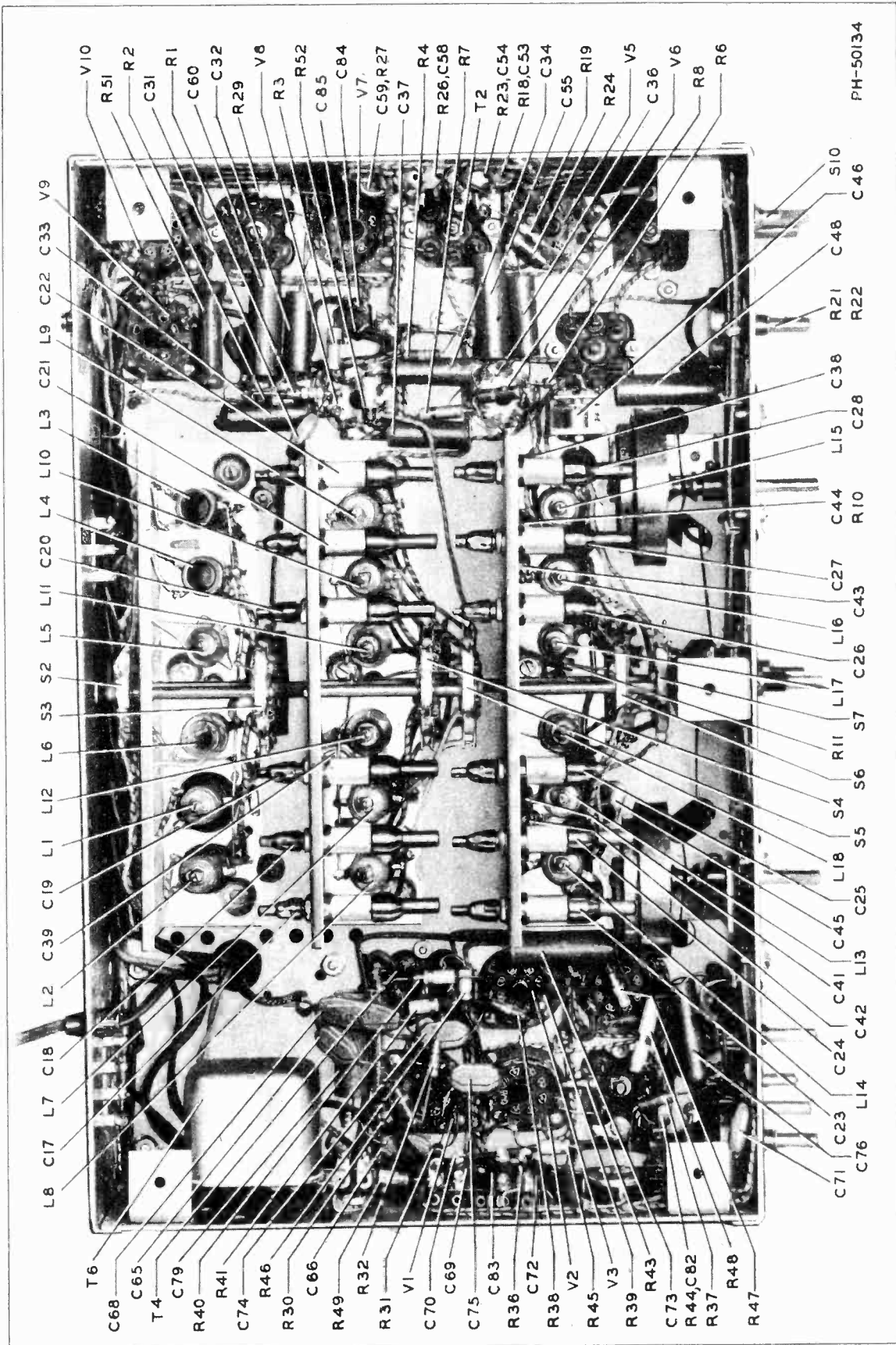


RCA MFG. CO.



MODELS AR-77, AR-77E,
Early

RCA MFG. CO.



RCA MFG. CO.

MODELS AR-77, AR-77E,
Early

TUBE SOCKET VOLTAGES

Tube	Cathode to Ground	Screen Grid to Ground	Plate to Ground	Suppressor Grid to Ground	Oscillator Plate to Ground	Heater (A.C.) Pin No. 2 to Pin No. 7
V8 RCA-6SK7 (R-F Amplifier)	3.0 (Pin No. 5)	90 (Pin No. 6)	180 (Pin No. 8)	3.0 (Pin No. 3)		6.1
V6 RCA-6K8 (Det. Osc.)	2.6 (Pin No. 8)	75 (Pin No. 4)	240 (Pin No. 3)		60 (Pin No. 6)	6.1
V5 RCA-6SK7 (1st I-F Amp.)	3.0 (Pin No. 5)	82 (Pin No. 6)	200 (Pin No. 8)	0 (Pin No. 3)		6.1
V7 RCA-6SK7 (2nd I-F Amp.)	4.5 (Pin No. 5)	115 (Pin No. 6)	220 (Pin No. 8)	4.5 (Pin No. 3)		6.1
V1 RCA-6M6 (2nd Det.)						6.1
V3 RCA-6SQ7 (A-F Amp. A.V.C.)	0.7 (Pin No. 3)		85 (Pin No. 6)			6.1 6.1 (Pin No. 7 to Pin No. 8)
V4 RCA-6F6 (Output)	16.0 (Pin No. 8)	260 (Pin No. 4)	250 (Pin No. 3)			6.1
V9 RCA-VR-150 (Voltage Regulator)			150 (Pin No. 5)			
V2 RCA-6SJ7	0 (Pin No. 5)	50 (Pin No. 6)	15 (Pin No. 8)			6.1
V10 RCA-5Z4	300.0 (Pin No. 8)		375 a.c. (Pin No. 4 & 6)			5.0 (CAUTION - 300 v d.c., voltage to ground)

EQUIPMENT

- Model AR-77: Domestic Model in Cabinet (see "Line Rating") MI-8302
- Model AR-77E: Export Model in Cabinet (see "Line Rating") MI-8302A
- Model AR-77E: Export Model on Rack Panel (105-125 V, 50/60 cycles) MI-8302B
- Model AR-77E: Export Model on Rack Panel (105-250 V, 50/60 cycles) MI-8302C

Optional Equipment:

- Loudspeaker in Cabinet MI-8303
- *Loudspeaker on Rack Panel MI-8303A
- Panel Kit for Rack Mounting of Model AR-77 MI-8304
- Panel Kit for Rack Mounting of Loudspeaker MI-8305
- Power Pack for Model AR-77E (117 volts d-c) MI-8307-2
- Power Pack for Model AR-77E (234 volts d-c) MI-8307-3
- Phone Plug MI-6216
- Headphones MI-5803
- A-F Coupling Transformer for 500-ohm line MI-4904

* Export sale only.

Signal-to-Noise and Image Ratios:

Band	Frequency KC	Microvolts Input for 2:1 Signal-to- Noise Ratio	Image Ratio
1	540	1.6	50,000
	1,340	2.8	3,900
2	1,340	2.0	5,000
	3,300	2.3	910
3	3,300	1.9	1,000
	5,800	1.7	320
4	5,800	2.0	550
	10,200	1.8	100
5	10,200	2.3	380
	18,000	2.5	88
6	18,000	2.2	60
	31,000	1.5	25

PARTS LIST (Continued)

Item	DESCRIPTION	Stock No.	Item	DESCRIPTION	Stock No.
R-43	Resistor—820 ohms, 1/2 watt	30158		Dial—Translucent band spread dial complete with hub and set screws	34900
R-44	Resistor—Same as R-29			Dial—Translucent main tuning dial complete with hub and set screws	34901
R-45	Resistor—Same as R-1	30681		Drum—Large dial drive drum complete	34908
R-46	Resistor—Same as R-29	34943	X-1	Crystal—455-kc crystal filter and case	MI-7953
R-47	Resistor—Same as R-19			Flywheel—Tuning flywheel with set screws	34902
R-48	Resistor—Same as R-29			Gear—Split main gear and bearing assembly	34882
R-49	Resistor—Same as R-29			Gear—Split main or band spread condenser drive gear	34881
R-50	Resistor—Same as R-29			Guide, Band indicator shutter	
R-51	Resistor—Same as R-29			Guide rods and strap assembly	34899
R-52	Resistor—Same as R-29			Lamp—6.3 volt dial lamp, Mazda No. 44	11891
S-1	Power Switch—Combined with R-35			Pulley—Band indicator idler pulley and bracket	34907
S-2	Switch—Range switch wafer section 6	34915		Pulley—Small dial drive pulley	31271
S-3	Switch—Range switch wafer section 6	34916		Seat—Hub with set screws	34905
S-4	Switch—Range switch wafer section 4, Same as S-2			Screw—No. 8-32 set screw for dial drive drum	4669
S-5	Switch—Range switch wafer section 1	34914		Shaft—Dial drive flywheel shaft	34904
S-6	Switch—Range switch wafer section 5, Same as S-2			Shaft—Range switch shaft—10 1/4 inches long	34935
S-7	Switch—Range switch wafer section 3, Same as S-5			Shutter—Finished band indicator shutter plate with indicating wire and pilot lamp bracket	34897
S-8	Switch—Crystal selectivity switch	34912		Socket—8-contact phenolic socket	18007
S-9	Switch—A. V. C. switch	34911		Socket—8-contact wafer socket	18467
S-10	Switch—Transmitter receive switch	34913		Spring—Band indicator shutter lift spring	34898
T-1	Transformer—First detector plate I-F transformer complete—includes C-47, R-12	34885		Spring—Dial drive cord tension spring	32481
T-2	Transformer—I-F transformer complete—includes C-57, R-25	34887		Spring—Triple loop spring used on rear end of band switch shaft	34944
T-3	Transformer—I-F link transformer complete—includes C-51, C-65, R-28	34884		Support—Vernier scale support and hub assembly	34906
T-4	Transformer—Diode I-F transformer complete—includes C-62, C-64	34888		Knob—Antenna adjuster control knob	34949
T-5	Transformer—CW oscillator transformer complete—includes C-80, C-81, R-42	34886		Knob—Bar type control knob	34950
T-6	Transformer—Output transformer	14355		Knob—Range control knob	34947
T-7	Transformer—105-130, 140-160, 200-250 volts, 50/60-cycle power transformer (for AR-77E only)	31735		Knob—Range control knob	34948
(Domestic)	Transformer—105-125 volts, 50/60-cycle power transformer (for AR-77 only)	9551		Mask—Metal window mask plate	34953
	MISCELLANEOUS			Meter—Carrier level meter complete	34946
	Bracket—Flywheel mounting	34903		Socket—Pilot lamp socket	34951
	Board—3-contact terminal board	12716	M-1	Socket—Pilot lamp socket and clip	34909
	Board—5-contact terminal board	34896		Window—Clear dial window sheet	34952
	Cord—Dial drive or range shutter control cord	32634			
	Coupling—Range switch coupling with set screws	34937			
	Detent—Range switch detent plate assembly	34936			

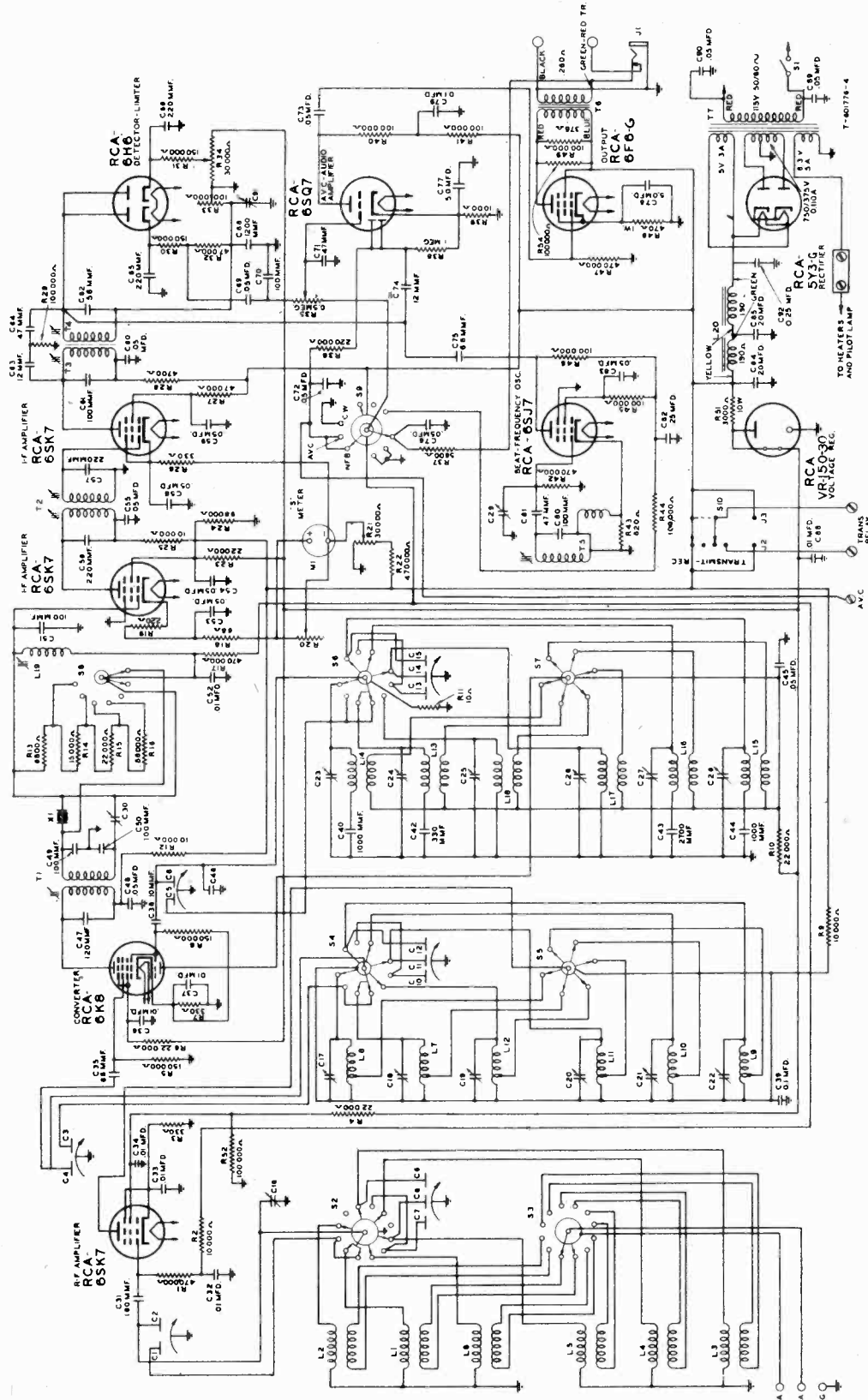
SPEAKER PARTS, MI-8303 and MI-8303-A (RL-73-1)

31310	Cone—Speaker cone and voice coil	5119
13059	Excutech—"RCA" excutech-con	9712
5118	Plug—3-contact male plug for speaker	

PARTS LIST, Type AR-77 Receiver MI-8302

Item	DESCRIPTION	Stock No.	Item	DESCRIPTION	Stock No.
C-1, C-2, C-3, C-4, C-5	Condenser—3-gang, 6-section main tuning—less split gear, brass pinion, gear, and bearing assembly	34879	C-84, C-85	Capacitor—20-20 mid., 450 volts	34889
C-7, C-8, C-9	Capacitor—spread, 9-section main tuning—less split gear, brass pinion, gear, and bearing assembly	34880	J-1	Jack—Headphones jack	7903
C-10, C-11, C-12, C-13, C-14, C-15	Condenser—3 to 35 mmfd., 10-plate antenna adjuster (medium)	12714	J-2	Jack—Phono jack for transformer connections	33891
C-17, C-18	Condenser—3 to 25 mmfd., 7-plate beat-frequency oscillator control	12807	L-1	Coil—Antenna 540-1340 kc	34929
C-19, C-20, C-21, C-22, C-23, C-24, C-25, C-26, C-27, C-28	Condenser—3 to 12 mmfd., 3-plate crystal phase adjusting condenser	34893	L-2	Coil—Antenna 540-1340 kc	34930
C-29	Capacitor—0.01 mfd., 400 volts	34894	L-3	Coil—Antenna 3.3-5.8 mc	34931
C-30	Capacitor—0.01 mfd., 400 volts	4858	L-4	Coil—Antenna 5.8-10.2 mc	34932
C-31	Capacitor—0.01 mfd., 400 volts	13003	L-5	Coil—Antenna 10.2-18.0 mc	34933
C-32, C-33, C-34	Capacitor—68 mmfd., 400 volts	13037	L-6	Coil—Detector 140-1340 kc	34923
C-35	Capacitor—Same as C-32	13200	L-7	Coil—Detector 3.3-5.8 mc	34924
C-36, C-37	Capacitor—10 mmfd., 400 volts	4839	L-8	Coil—Detector 5.8-10.2 mc	34925
C-38	Capacitor—10 mmfd., 400 volts	4839	L-9	Coil—Detector 18.0-31.0 mc	34926
C-39	Capacitor—1000 mmfd., 400 volts	12635	L-10	Coil—Oscillator 18.0-31.0 mc	34927
C-40	Capacitor—1000 mmfd., 400 volts	12635	L-11	Coil—Oscillator 540-1340 kc	34917
C-41	Capacitor—5.6 mmfd., 400 volts	12814	L-12	Coil—Oscillator 540-1340 kc	34917
C-42	Capacitor—330 mmfd., 400 volts	12952	L-13	Coil—Oscillator 3.3-5.8 mc	34919
C-43	Capacitor—2700 mmfd., 400 volts	30057	L-14	Coil—Oscillator 5.8-10.2 mc	34921
C-44	Capacitor—Same as C-40	4886	L-15	Coil—Oscillator 10.2-18.0 mc	34921
C-45	Capacitor—0.05 mfd., 400 volts	34895	L-16	Coil—Oscillator 18.0-31.0 mc	34921
C-46	Condenser—Stabilizing condenser	12724	L-17	Coil—Oscillator 18.0-31.0 mc	34922
C-47	Capacitor—120 mmfd., 400 volts	12724	L-18	Coil—Oscillator 18.0-31.0 mc	34922
C-48	Capacitor—Same as C-45	12724	L-19	Coil—Oscillator 18.0-31.0 mc	34922
C-49, C-50	Capacitor—100 mmfd., 400 volts	12720	L-20	Reactor—Filter reactor	34891
C-51	Capacitor—Same as C-45	12720	R-1	Resistor—470,000 ohms, 1/2 watt	33276
C-52, C-53, C-54, C-55	Capacitor—Same as C-45	12720	R-2	Resistor—10,000 ohms, 1/2 watt	3078
C-56, C-57	Capacitor—220 mmfd., 400 volts	12694	R-3	Resistor—22,000 ohms, 1/2 watt	8063
C-58, C-59, C-60	Capacitor—Same as C-45	12723	R-4	Resistor—150,000 ohms, 1/2 watt	30493
C-61	Capacitor—Same as C-49	13002	R-5	Resistor—Same as R-4	
C-62	Capacitor—12 mmfd., 400 volts	13141	R-6	Resistor—Same as R-3	
C-63	Capacitor—17 mmfd., 400 volts	13054	R-7	Resistor—Same as R-2	
C-64, C-65, C-66	Capacitor—Same as C-50	13054	R-8	Resistor—Same as R-2	
C-67	Capacitor—1200 mmfd., 400 volts	13054	R-9	Resistor—Same as R-2	
C-68	Capacitor—Same as C-45		R-10	Resistor—Same as R-2	
C-69	Capacitor—Same as C-45		R-11	Resistor—Same as R-2	
C-70	Capacitor—Same as C-49		R-12	Resistor—Same as R-2	
C-71, C-72, C-73	Capacitor—Same as C-45		R-13	Resistor—Same as R-2	
C-74, C-75	Capacitor—Same as C-45		R-14	Resistor—Same as R-2	
C-76, C-77, C-78	Capacitor—Same as C-45		R-15	Resistor—6800 ohms, 1/2 watt	32184
C-79	Capacitor—5-5.5 mid., 350 volts (tanned in T-5)		R-16	Resistor—15,000 ohms, 1/2 watt	14659
C-80	Capacitor—Same as C-49 (contained in T-5)		R-17	Resistor—2,000 ohms, 1/2 watt	17529
C-81	Capacitor—Same as C-64 (contained in T-5)		R-18	Resistor—68 ohms, 1/2 watt	8094
C-82, C-83	Capacitor—Same as C-45		R-19	Resistor—270 ohms, 1/2 watt	30929
			R-20	Control—80-ohm tuning meter zero adjustment	34910
			R-21	Control—30,000-ohm sensitivity control	34920
			R-22	Resistor—Same as R-1	
			R-23	Resistor—Same as R-4	
			R-24	Resistor—68,000 ohms, 1/2 watt	14138
			R-25	Resistor—Same as R-2	
			R-26	Resistor—Same as R-3	
			R-27	Resistor—47,000 ohms, 1/2 watt	30787
			R-28	Resistor—47,000 ohms, 1/2 watt	30494
			R-29	Resistor—10,000 ohms, 1/2 watt	3252
			R-30, R-31	Resistor—Same as R-27	
			R-32	Control—100,000-ohm noise balance adjustment	34941
			R-33	Control—30,000-ohm limiter control	34938
			R-34	Control—500,000-ohm volume control and power switch (S-1)	
			R-35	Resistor—1 megohm, 1/2 watt	34939
			R-36	Resistor—5600 ohms, 1/2 watt	30932
			R-37	Resistor—1600 ohms, 1/2 watt	14583
			R-38	Resistor—1600 ohms, 1/2 watt	4687
			R-39	Resistor—Same as R-29	
			R-40	Resistor—Same as R-29	
			R-41	Resistor—Same as R-1	
			R-42	Resistor—Same as R-1	

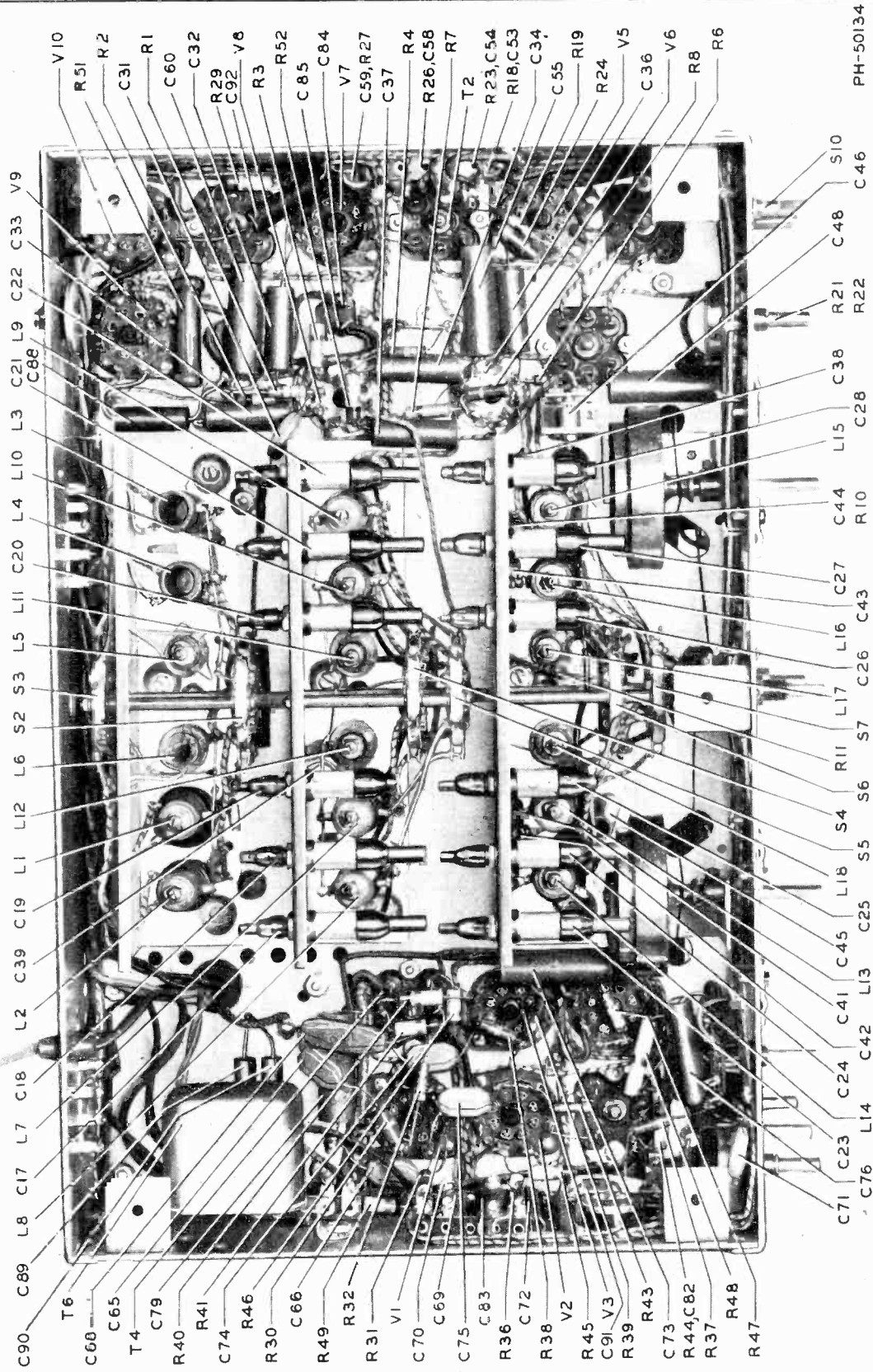
RCA MFG. CO.



IF PEAK 455 KC

MODELS AR-77, AR-77E,
Late

RCA MFG. CO.



PH-50134

RCA MFG. CO.

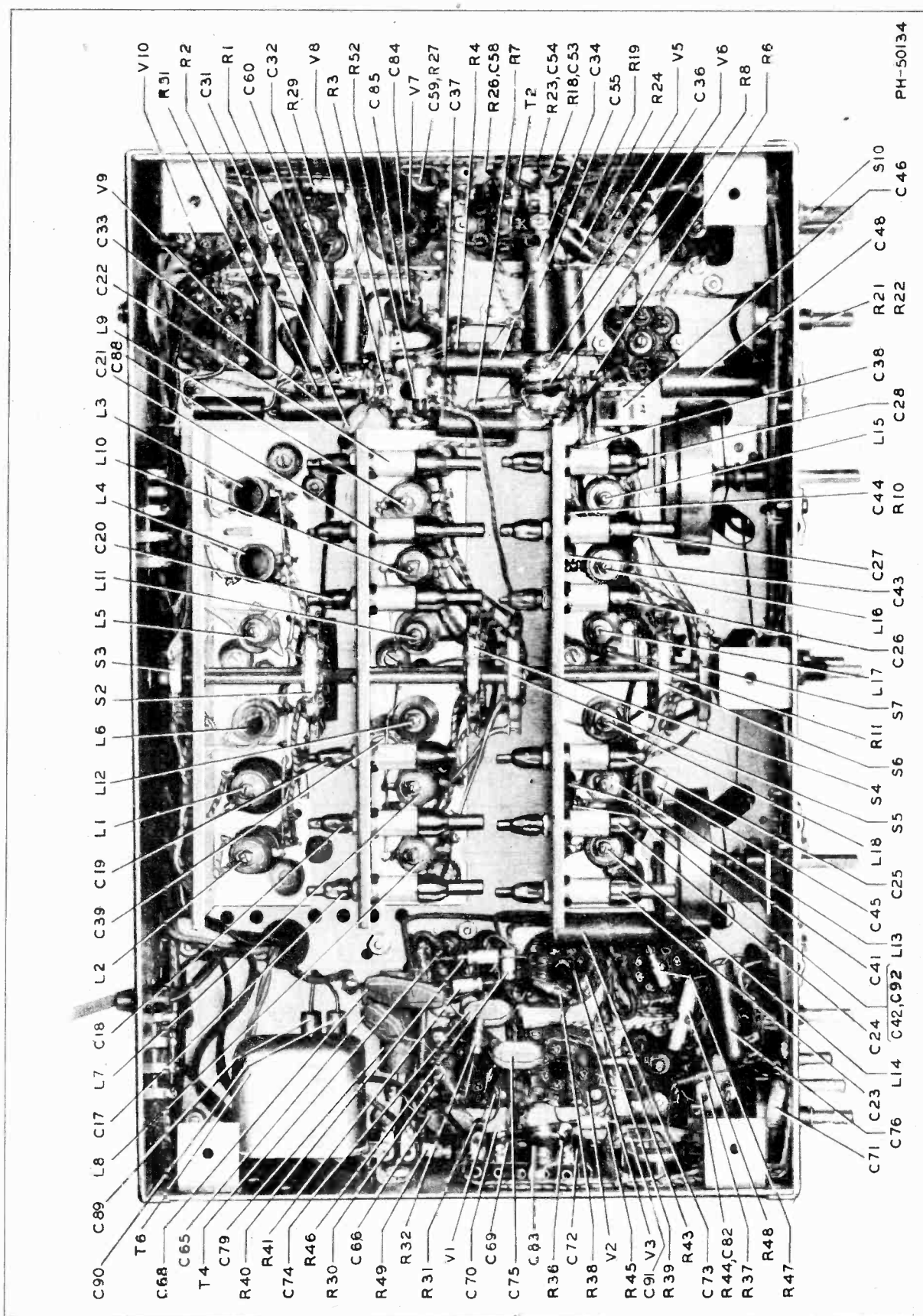


Figure 4—General Purpose Communication Receiver
(Chassis Bottom View)

RCA MFG. CO.

IF PEAK 455 KC

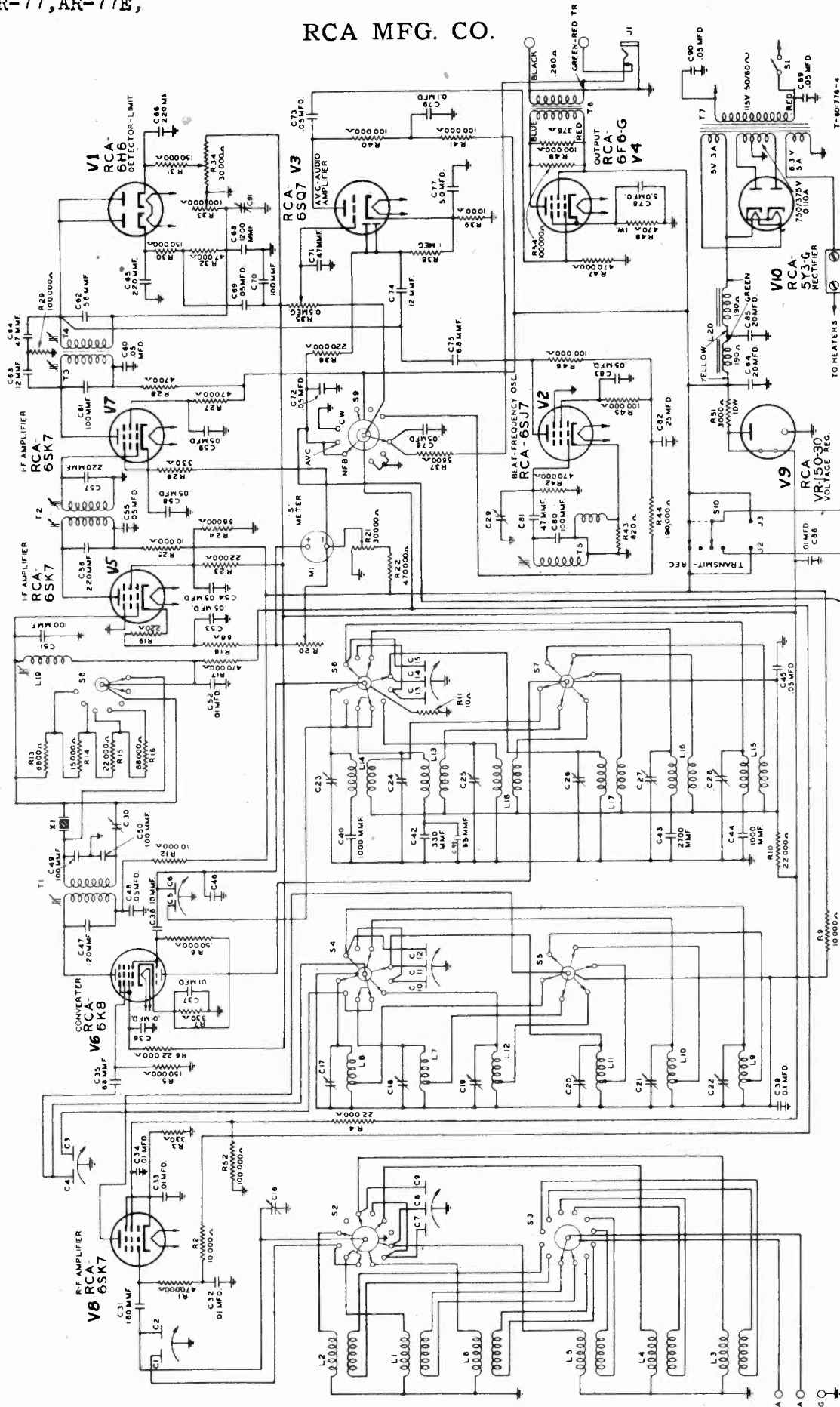
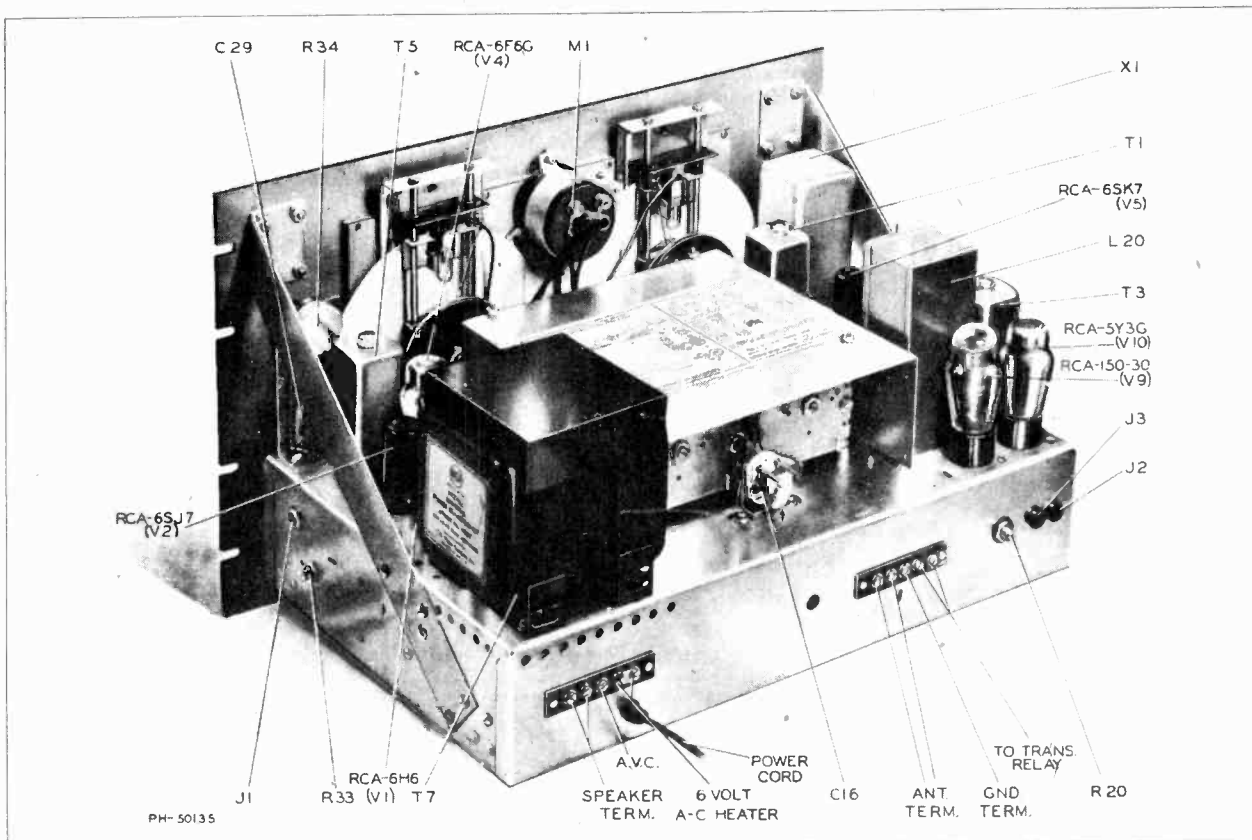


Figure 5—General Purpose Communication Receiver
(Schematic T-601776)

RCA MFG. CO.



A. Rack-Type Chassis

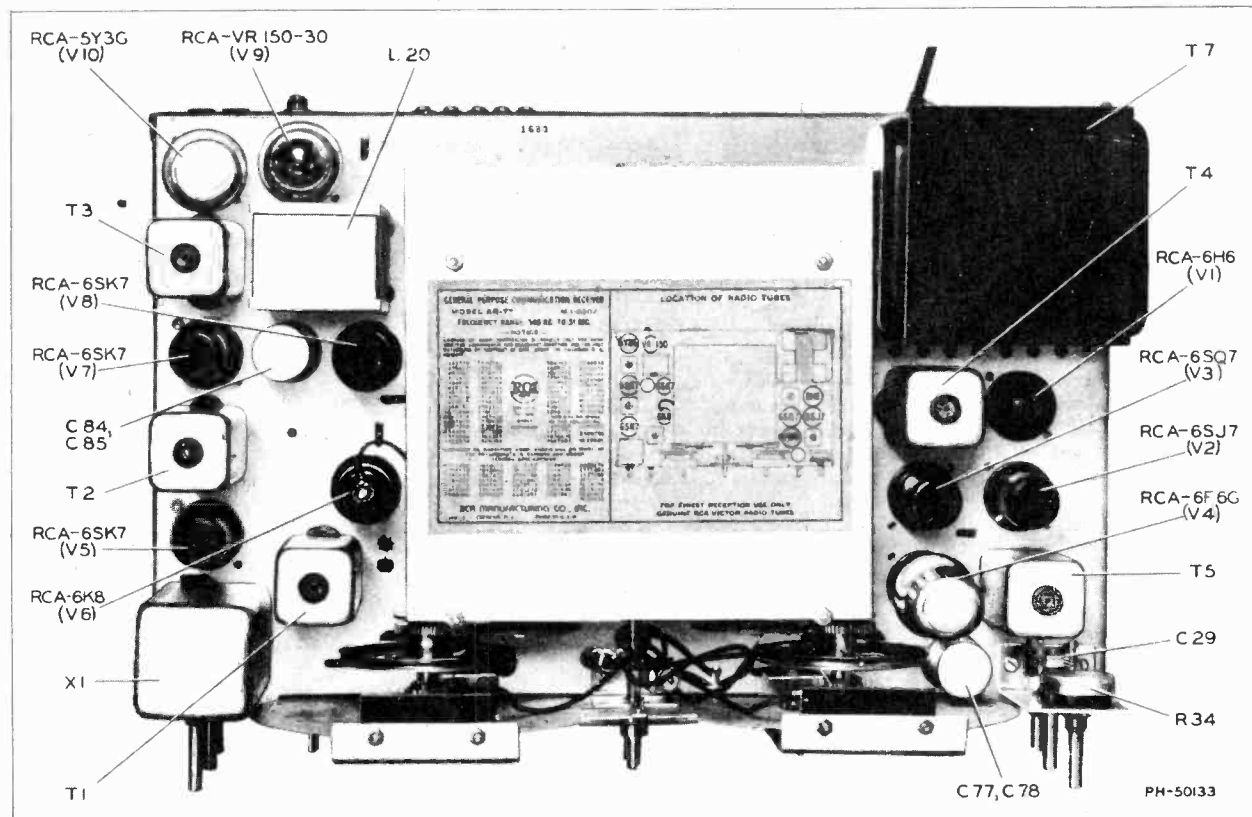


Figure 3—General Purpose Communication Receiver
(Chassis Top Views)

B. Cabinet-Type Chassis

MODELS AR-77, AR-77E,
Late, Revised

RCA MFG. CO.

TECHNICAL SUMMARY

All performance data were obtained on an average receiver. Slight variations above or below these values may be encountered due to practical manufacturing tolerances. A 300-ohm dummy antenna was used in series with the receiver input in making all measurements.

ELECTRICAL CHARACTERISTICS—

Frequency Range (total, 6 bands)	540 to 31,000 kc
Band 1	540 to 1,340 kc
Band 2	1,340 to 3,300 kc
Band 3	3,300 to 5,800 kc
Band 4	5,800 to 10,200 kc
Band 5	10,200 to 18,000 kc
Band 6	18,000 to 31,000 kc

Frequency Stability:

Warm-up Shift, 1 minute to 1 hour, 68° F. Ambient (Average Humidity Conditions)

Less than 3.5 kc at 30 mc

Shift with Line Voltage Variation, 105 to 125 volts

Less than 1,300 cycles at 29 mc

Shift is proportionally less at lower frequencies

Sensitivity: Input (30% mod.) required for 0.05 watt output

Less than 2 microvolts

Signal-to-Noise and Image Ratios:

Band	Frequency KC	Microvolts Input for 2:1 Signal-to- Noise Ratio	Image Ratio
1	540	0.9	50,000
	1,340	1.7	3,900
2	1,340	1.7	5,000
	3,300	1.9	910
3	3,300	1.4	1,000
	5,800	1.2	320
4	5,800	1.4	550
	10,200	1.2	100
5	10,200	1.8	380
	18,000	1.6	88
6	18,000	1.7	60
	31,000	1.0	25

Maximum Undistorted Output (approximate)

3 watts

Power Supply Requirements:

Line Rating—

Model AR-77

105-125 volts, 50/60 cycles

Model AR-77E*

105-130/140-160/195-250 volts, 50/60 cycles

* See "EQUIPMENT" list below for special rack models and optional power packs available.

Power Consumption

70 watts

MECHANICAL SPECIFICATIONS—

Dimensions

20¹/₈ inches (width) x 10¹/₂ inches (height) x 11⁵/₈ inches (depth).

Weight (net)

48¹/₂ pounds

EQUIPMENT

Model AR-77: Domestic Model in Cabinet (see "Line Rating")

MI-8302D

Model AR-77E: Export Model in Cabinet (see "Line Rating")

MI-8302E

Model AR-77: Domestic Model in Cabinet (105-125 v., 25 cycles)

MI-8302F

Model AR-77: Domestic Model on Standard 10-15/32-inch Panel (see "Line Rating")

MI-8302G

Model AR-77E: Export Model on Standard 10-15/32-inch Panel (see "Line Rating")

MI-8302H

Optional Equipment:

Loudspeaker in Styled Cabinet to match Receiver

MI-8303

Loudspeaker on Standard 10-15/32-inch Panel

MI-8303A

Extended Range Loudspeaker in Console Cabinet

MI-8314

Extended Range Loudspeaker in Wall Type Cabinet

MI-8314A

Panel Kit for Rack Mounting of Model AR-77 (12-7/32-inch Panel)

MI-8304

Panel Kit for Rack Mounting of Loudspeaker (10-15/32-inch Panel)

MI-8305

Power Pack for Model AR-77 or AR-77E (105-125 volts d-c)

MI-8307-2

Power Pack for Model AR-77 or AR-77E (210-250 volts d-c)

MI-8307-3

Power Pack for Model AR-77 or AR-77E (6-volt battery)

MI-8308

Phone Plug

MI-6216

Headphones

MI-5803

A-F Coupling Transformer for 500-ohm line

MI-4904

INSTALLATION

POWER SUPPLY—The power supply circuit is integral with the receiver in both the Model AR-77 and the Model AR-77E. At installation, the line voltage and frequency should be determined and checked for conformance to the nominal rating of the receiver. Reference should be made from the MI number on the instrument label on the top of the chassis to the corresponding rating shown in the "Equipment" list. Three power packs are available as accessory items to permit operation on special power supplies.

For connection of an external power pack, there are two terminals on the rear of the chassis connected by a link as shown in Figure 3A. This link should not be disturbed, except for the purpose intended. It is connected in the tube heater supply circuit.

In the Model AR-77E, MI-8302E and -8302H, the power transformer primary may be connected in any of three arrangements to accommodate a wide range of line voltages. Remove the small metal cap from the top of the power transformer and place the "U" shaped connector between the center terminal and that outside terminal marked with a value nearest to the actual line voltage. Thus, if the line voltage were 130 volts, the connector should be placed in the "125 V." position.

If the receiver is to be used for continuous service, especially when unattended, a 3-ampere fuse should be installed in series with the power source.

TUBES—Inspect the chassis before applying power to make certain that all tubes are firmly seated in their sockets and that the grid lead to the RCA-6K8 tube is in place.

ANTENNA—For general use it is recommended that an antenna of the doublet type, either single or double, be used. Connections to either type are shown in the accompanying diagram. Both types will give very good performance in any two amateur bands.

Any of the directive type antennas used for transmission may be satisfactorily employed for reception with this receiver. It will be found that very good results also may be obtained with a single wire antenna from 25 to 75 feet long.

In locations where the antenna transmission line is near power wiring or other sources of noise interference, it is recommended that a coupling transformer such as RCA Stock No. 9813 be connected between the receiver and the antenna transmission line. This transformer, however, is satisfactory only for the 160-, 40- and 20-meter bands. Transmission line such as RCA Stock No. 12430 or Stock No. 9882 is recommended for use with the doublet antennas, the latter being recommended for lengths in excess of 100 feet. The characteristics of these lines are:

Stock No. 12430 (90-foot length) or Stock No. 12429 (45-foot length)

Impedance 100 ohms

DB loss per 100 feet at 10 mc	2 db	dry
DB loss per 100 feet at 30 mc	5 db	dry
DB loss per 100 feet at 10 mc	4 db	90% humidity
DB loss per 100 feet at 30 mc	8 db	90% humidity

Stock No. 9882

Impedance 100 ohms

DB loss per 100 feet at 10 mc	1 db	dry
DB loss per 100 feet at 30 mc	2.5 db	dry
DB loss per 100 feet at 10 mc	1.5 db	90% humidity
DB loss per 100 feet at 30 mc	3.5 db	90% humidity

This transmission line, as well as other RCA antenna materials, may be purchased through RCA Paris Distributors.

The terminal board at the back of the chassis, near the center, contains the connecting terminals for the transmission line (or for the antenna lead-in) and ground. If an ordinary antenna is used, the adjacent transmission-line terminal should be connected to the ground terminal, and the antenna to the other transmission-line terminal.

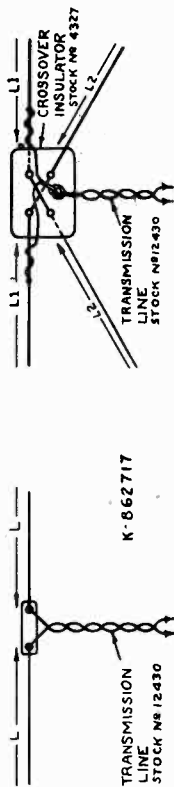
SPEAKER OR PHONES—This receiver is designed for use with a permanent-magnet dynamic type speaker, having a voice-coil impedance of from 2 to 3 ohms. The RCA Stock No. MI-8303 speaker (see Figure 2) is designed and recommended for the purpose. The terminals for connection to the speaker are shown in Figure 3A.

The RCA Manufacturing Company also produces two deluxe extended range speakers. One, MI-8314, is housed in a walnut cabinet; the other, MI-8314A, is contained in a walnut cabinet for wall mounting.

A jack is provided on the right-hand side of the cabinet, near the front, for plugging in a pair of 600-ohm headphones. The speaker is automatically disconnected when the phones are plugged in.

INSTALLING SHOCK MOUNTS—The following series of operations should be adhered to when installing shock mounts on Communication Receiver, Model AR-77:

- Remove all control knobs from the receiver panel.
- Remove the rear cover grille from the receiver panel.
- Take out the five screws and washers which are used to attach the receiver to the bottom of the case and withdraw the receiver from the case.
- Remove the four rubber feet from the bottom of the cabinet by taking out the nuts and screws with which they are attached, enlarge (drill out) the four holes with a 7/64 inch drill.
- Attach the shock mounts to the bottom of the receiver case using the four 1/2 inch screws with nuts and lock washers. These screws should be passed through the holes which were drilled out in the preceding operation. Four 1/32 inch spacers are provided, one of which should be placed on each mount.



SINGLE-DOUBLET ANTENNA

Stock No. 12430

Impedance 100 ohms

L = 130 feet for 160-Meter Band	(1,900 kc)	Band
L = 65 "	"	"
L = 33 "	"	"
L = 16 "	"	"
L = 8 "	"	"

DOUBLE-DOUBLET ANTENNA

Stock No. 4327

Impedance 100 ohms

L ₁ = 130 feet for 160-Meter Band	"	"
L ₁ = 65 "	"	"
L ₁ = 33 "	"	"
L ₁ = 16 "	"	"
L ₂ = 65 "	"	"
L ₂ = 33 "	"	"
L ₂ = 16 "	"	"
L ₂ = 8 "	"	"

Doublet Antenna Connections

ing screw between the bottom of the case and the channel brackets of the shock mounts.

NOTE—In order to facilitate the replacement of these shock mounts, should it become necessary to remove them for receiver servicing at some future date, it is suggested that the position of the mounts be marked on the bottom of the cabinet by drawing the point of a scriber or other pointed implement along the edge of the channel bracket.

f. Replace the receiver in the case and mount it therein, using the five (new) 7/16 inch screws provided for this purpose.

g. Replace the back cover (grille) and the receiver control knob.

RACK PANEL MOUNTING OF RECEIVER—If it is desired to mount the receiver on a rack panel, the necessary panel and supports (MI-8304) are available for this type of mounting. This set of parts includes everything necessary to mount the standard receiver chassis to the rack panel.

The receiver chassis is first removed from the cabinet. For this purpose first remove all knobs from the control shafts. Next remove the perforated metal screen on the back of the cabinet by taking out the five self-tapping screws. Remove the five 1/4 inch machine screws underneath the cabinet. Next disconnect the tuning meter on the front panel. The chassis is now ready to be removed from the cabinet. The chassis should be tipped up at the rear just before entering removing to prevent hitting the two front brackets against the upper angle at the rear of the cabinet.

With the chassis removed, the dial window mask and window should then be assembled to the rack

panel. The panel is fastened to the chassis by means of six machine screws. Spacers are placed between the panel and the chassis. The side brackets should then be attached.

One of the headphone jacks should be wired directly to the receiver output terminals. This jack will then allow the receiver output to be monitored in installations where the output of the receiver is connected to a line.

The other headphone jack should be connected exactly like the one on the side of the receiver chassis. This may be simplified in the following manner: It will be observed that the ground and output terminal connections are already connected to the first jack. Jumpers may then be placed between the two jacks for these connections. The remaining connection is to the output transformer primary. This lead should be removed from the jack on the side of the receiver and connected to the jack on the panel. The purpose of this second jack is to connect a pair of headphones and at the same time remove the receiver output from the line. Thus, in a diversity system, one receiver may be easily removed from the combined output and tuned or adjusted without disturbing the others.

A receiver, mounted on a 10 15/32 inch x 19 inch panel, ready to be installed on a rack, is also available. The Model AR-77, MI-8302G, is for use with a power supply of 105-125 volts, 50/60 cycles; and the Model AR-77E, MI-8302H, is for use with 105-130; 140-160; 195-250 volts, 50/60 cycles.

RACK PANEL MOUNTING OF LOUD-SPEAKER—The loudspeaker, Stock No. MI-8303, may be converted for rack mounting by purchasing the panel kit, MI-8305, available for this purpose.

MODELS AR-77, AR-77E,
Early, Late, Revised

RCA MFG. CO.

The A.V.C. is in operation on both the "NFB" and "AVC" positions of this switch.

The A.V.C. is "OFF" when the switch is in the "BFO" position. This position connects the beat frequency oscillator.

BFO FREQUENCY CONTROL—This control is provided to secure any desired audio beat frequency, for the reception of CW code signals. It should be set slightly off the central position, in normal use. The exact position may be found by experiment. With the crystal switch "OFF," the desired beat note may be obtained by tuning the receiver. However, in conditions of interference, when the crystal filter is used, the receiver must first be tuned to the desired signal, regardless of the beat frequency produced. If the beat note is not satisfactory, it may be changed with the BFO control. In other words, first tune for maximum signal strength, then adjust for the desired audio pitch.

When tuning in the same direction (that is, going from the high frequency to the low frequency end of the band, or vice versa), ALL signals will be changing in pitch in the same direction when resonance is reached. That is, the pitch will either be increasing or decreasing, depending on whether the BFO control is on one side or the other side of I-F resonance. It does not matter on which side the BFO control is placed, the CHANGE OF PITCH should be noted when tuning. If the change of pitch is opposite to that known to exist when passing through resonance, the signal is an audio image. Never try to receive an audio image. The signal can be made much stronger by tuning to the other side of zero beat.

NOISE LIMITER LEVEL CONTROL—When starting to tune the receiver, this control should be set in the "OUT" position, or advanced about one-quarter to three-quarters of the way in the counter-clockwise direction. Should external noise conditions interfere with reception, this control may be advanced as necessary, avoiding distortion of the signal. This control may be found especially helpful for reducing certain types of interference encountered on the 10-meter band. For CW reception with the noise limiter, the sensitivity control should be advanced, and the volume control reduced until limiting action occurs.

TRANSMIT-RECEIVE SWITCH—This switch opens the plate circuits of the receiver on the transmit position and shorts the two terminals on the antenna terminal strip (shown in photograph Figure 3A), which may be connected to a relay for operation of the transmitter.

In addition, terminals J₂ and J₃ are provided so that, if desired, the plate circuit of the receiver may be opened by a transmitter switch. Note that these terminals are at plate potential.

TUNING OR "S" METER ADJUSTMENT—The "S" meter should normally give a low scale reading when no signal is being received. To adjust this meter, tune the receiver to a point free of signals, turn the sensitivity control to maximum, switch in A.V.C.

OPERATION

over the bandwidth range. Crystal selectivity positions 1 and 2 should be used for phone or modulated signal reception and 3, 4 and 5 for CW telegraph reception.

It will be noticed that when tuning in a modulated signal with the crystal in, the speaker volume is greater on either side of the point which gives the maximum tuning meter indication. The reason for this is that the carrier voltage controls the gain of the receiver by means of the A.V.C. circuit, and if the carrier frequency is detuned slightly from resonance, the gain of the receiver increases so that part of the side band frequencies are amplified very much more than they are when the carrier is tuned to exact resonance. This is characteristic and normal for receivers with this degree of selectivity and provided with A.V.C. Care should be taken to tune the receiver for a maximum meter indication. Very much better results will be obtained. The background noise and adjacent channel interference will be materially reduced.

This receiver has been designed to have a selectivity characteristic which is slightly flat at resonance when the crystal is out, so that better fidelity of reception may be enjoyed when interference conditions permit. It is therefore likely that when the crystal is placed in the circuit, slight retuning may be necessary. This is due to the fact that exact tuning is much more necessary when using a sharp I-F circuit than when using a broad circuit.

CRYSTAL PHASING CONTROL—There is a normal or "neutral" position for this control, in which position it should be set for all normal reception. To locate this position, set the Crystal Selectivity Switch on position 3 or 4, and, using high gain with no incoming signal, adjust the phasing control for minimum noise. This control should be changed from this position only when a strong signal is producing a heterodyne action with the desired signal. In this case, the control should be adjusted for a minimum heterodyne effect.

VOLUME AND SENSITIVITY CONTROLS—For phone reception the sensitivity control should be set at maximum and the audio volume control used to obtain the desired volume. For CW telegraph reception the audio volume control should be set at three-fourths to maximum position and the desired volume obtained by adjustment of the sensitivity control.

NFB-AVC-BFO SWITCH—These letters stand for "NEGATIVE FEED-BACK," "AUTOMATIC VOLUME CONTROL," "BEAT FREQUENCY OSCILLATOR." The "NFB" position places the compensated negative feedback in the audio circuits, resulting in an increase in fidelity. This is useful for tests in voice transmissions and for entertainment use such as broadcast reception. When using this position the volume control must be advanced slightly. This position is not recommended for other forms of reception.

Before attempting to operate the receiver, this entire section should be carefully studied so that the operator may obtain a general understanding of the various controls and their uses and adjustment. The symbols on the panel used to designate the various controls should be learned with respect to function as shown on Figure 1.

TUNING—In tuning this receiver, the various controls should be approximately set for the class of signal it is desired to receive. Select the frequency band desired by rotating control knob "R," until the proper scale appears in the slot at the upper left of the panel. Before proceeding, adjust the antenna trimmer to maximum for this band (see next paragraph—"Antenna Trimmer"). The frequency calibrations on the main dial scales are correct for tuning, when the bandspread dial is turned to its maximum frequency position only.

The bandspread dial is calibrated for the amateur bands of 10, 20, 40 and 80 meters only. To use the bandspread on these bands, set the main tuning dial at the highest frequency on that band, then tune with the bandspread dial. On the 160-meter band, the calibrations on the main dial are spread sufficiently so that it is not necessary to use the bandspread tuning. For an extremely accurate calibration, set the bandspread dial for a signal of known frequency, and then adjust the main dial until the station is tuned in. When this position has been obtained, note the setting of the arbitrary scale with its vernier index, on the main dial.

For commercial operation, or bands other than Amateur, the arbitrary scales should be used on the main tuning and bandspread dial. If the bandspread is not used, it should be left at the high frequency end of its range and then the main dial calibration is correct.

Curves may be plotted, giving arbitrary scale readings versus frequencies, on any band, by observing the readings on the arbitrary scales for a number of stations of known frequency on the same band, and working them on a suitable graph or chart.

ANTENNA TRIMMER—Before tuning on any frequency range, the antenna trimmer should be adjusted for maximum performance on that band. This control may be adjusted by tuning for maximum background noise. Occasionally it is desired to test a signal that seems out of place, to see whether or not it is a fundamental signal or an "image."

When adjusting the antenna trimmer, if the maximum signal point coincides with the point of maximum background noise, the signal is a fundamental. If the control does not affect the signal strength, or if it is maximum at some other point, the signal heard is an "image."

CRYSTAL SELECTIVITY SWITCH—For general operation while tuning, it is recommended that the crystal switch be in the "OFF" position. After the main tuning dial has been set at the desired point, the crystal may be placed in the circuit while tuning

switch crystal "OUT," have antenna trimmer turned off resonance, and then adjust the potentiometer, R20 at the back of the receiver as shown in Figure 3A until the meter pointer just coincides with the mark at the low end of the scale. The meter will usually rise slightly when the antenna trimmer is tuned to resonance.

The calibration of this meter is arbitrary, since no standard has been set for conversion of the "S" units to microvolts. However, in this receiver, "S1" is equivalent to approximately 0.5 microvolt input to the receiver. Each unit above this is 6 db up to "S9". Thus, "S2" is equivalent to 1 microvolt, "S3" to 2 microvolts. Above "S9" the meter is calibrated to 40 db, which would be equivalent to 12,800 microvolts.

For CW telegraph reception, the "S" meter provides a visual indication of the position of the sensitivity control.

BREAK-IN OPERATION—Break-in operation may be obtained on CW telegraph operation by connecting a separate antenna to the receiver. A single wire antenna or a doublet tuned to a different band than that on which the transmitter is working is recommended. If a doublet antenna tuned to the transmitter frequency is used, sufficient voltage may be induced in the receiving antenna to damage the receiver.

DIVERSITY RECEPTION—Two or three of these receivers may be connected together for diversity reception of modulated signals, with no additional equipment necessary. Each receiver must be provided with a separate antenna in the usual manner. The A.V.C. terminal on the back of the receiver, shown in Figure 3, is connected inside the receiver to the A.V.C. circuits. This terminal must be connected to the corresponding terminals of the No. 2 and No. 3 receivers. The receiver outputs should all be connected in parallel. Note that one of the output terminals of this receiver is at ground potential.

FOR CONNECTION TO A TELEPHONE LINE—It is recommended that a transformer such as RCA type MI-4904 be used. The connections to the type MI-4904 transformer should be made as follows:

1. Connect the output terminals of one or more Model AR-77 receivers in parallel to terminals No. 4 and No. 41 of the transformer.
2. Connect the 500-ohm line to transformer terminals 1A and 3B.
3. Connect a jumper between transformer terminals 1A and 3B.
4. Connect a 500 to 600 ohm, 1/2 to 1-watt resistor across the 500-ohm line, or across terminals 1A and 3B.

Connecting a pair of headphones in the jack on each receiver will disconnect it from the combined output so that the tuning or other adjustments may be checked. Obviously, the audio volume control on each receiver should be set to approximately the same level. For CW telegraph diversity reception, it is recommended that a combining and tone-keyer unit be used.

RCA MFG. CO.

ALIGNMENT OF R-F AND OSCILLATOR CIRCUITS—Under usual conditions, the oscillator frequency will not shift far enough to throw the frequency calibration off, therefore, unless it is found that the frequency calibration is incorrect, the oscillator adjustments should not be changed. In any case, the oscillator circuit should not be changed unless a frequency calibrated test oscillator is available. The following procedure is for the r-f alignment of band No. 1 (540 to 1,300 kc). Tune in a signal near the high-frequency end of the band. (Do not use too strong a signal.) Reduce the sensitivity control until the output is approximately 1 volt. Referring to Figure 6, adjust C-18 and the antenna trimmer control on the front panel for maximum output. Next, tune in a signal near the low frequency end of the band. Adjust L-1 and L-7 for a maximum signal output. The same procedure may be followed for all bands. Make sure that the bandspread tuning is at the high-frequency end of the scale. The bottom cover should be held over the oscillator trimmer capacitors while adjusting the high frequency end of each band, so that when the cover is replaced, the frequency will not shift. The adjustments for each particular band are shown in the table herewith.

Band	R.F. Ind.	Det. Ind.	Osc. Cap.
540-1,340	L-1	L-7	C-24
1,340-3,300	L-2	L-8	C-23
3,300-5,800	L-3	L-9	C-28
5,800-10,200	L-4	L-10	C-21
10,200-18,000	L-5	L-11	C-20
18,000-31,000	L-6	L-12	C-19

DIAL SHUTTER ADJUSTMENT—If the dial shutters do not line up with the dial calibration, they may be adjusted by means of an idler pulley bracket which adjusts the tension of the cord. By loosening the two screws which clamp the idler pulley bracket to the chassis the bracket may be shifted until the shutter opening lines up with the dial scale.

Another adjustment may be made by loosening the two nuts on adjusting screw fastened to back of shutter. To raise or lower the shutter, adjust the nuts accordingly.

DIAL ADJUSTMENT—Should it become necessary to replace or to tighten the main dial, the reference line at the high-frequency end should be disregarded. The dial should be set so that a reading of 54 is obtained on the arbitrary scale. This should be read through the dial shutter opening, with the range switch on the highest frequency position and the tuning capacitor set at the low frequency end.

NOISE BALANCE ADJUSTMENT—This adjustment is the potentiometer mounted on the right flange of the chassis (R-33). The correct adjustment has been carefully made at the factory and should ordinarily require no further attention. However, in servicing the receiver, in the event that the adjustment is accidentally moved, it may be reset as follows: First tune in a strong modulated signal such as a broadcast station. Next turn the noise control on the front panel all the way clockwise. Now adjust the potentiometer for a minimum signal output. This point will be found to be very sharp. When properly

tivity of the receiver. If the receiver will operate on all bands, but with low sensitivity, the tubes should be removed and checked. The tube locations are shown on the label on the large metal shield on top of the chassis.

BAND CHANGE SWITCH—After a long period without being operated, the band change switch may become noisy or inoperative because of dust or oxide film on contacting surfaces. In some cases, normal operation may be restored by rotating the switch a number of times. If it is found impossible to clean the switch sufficiently by rotation, the defective switch section must be located and replaced. The receiver section should be removed from the cabinet and operated in a position such that the switch sections are accessible. With the switch in the defective position, a slight movement of each section with an insulated screwdriver will usually determine the defective section.

To remove a switch section it will first be necessary to remove the switch shaft. The antenna trimmer control shaft must also be removed in order to unsolder the leads on the tuning capacitor. After all leads are disconnected, the entire coil and switch assembly may be removed by taking out the three screws holding the assembly to the chassis.

TEST OF CIRCUIT ALIGNMENT—Under normal operating conditions the r-f amplifier and oscillator circuits should remain in line. If, however, it is found desirable to check the alignment of these circuits, the following test should first be made. Disconnect the antenna or transmission line and connect a 50- to 300-ohm carbon resistor across the two antenna terminal posts. Connect an output voltmeter to the output of the receiver and connect a 20-ohm resistor across the meter. Turn the sensitivity and volume controls to maximum. The A.V.C. switch should be on the A.V.C. position. The output noise voltage should be at least 0.1 volt, with the antenna trimmer tuned to resonance. The maximum noise voltage is a direct measurement of the sensitivity of the receiver. If the test shows that this voltage is less than 0.1 volt, the circuits should be realigned. First be sure that the decreased sensitivity is not caused by poor tubes. It probably will not be necessary to align all bands; however, the correct procedure for all bands is given below.

ALIGNMENT OF IF CIRCUITS—Remove the bottom cover plate of the receiver cabinet, tune in a steady outside signal on one of the lower frequency bands with the A.V.C. switch on the BFO position and the crystal filter switch in position 2 or 3. The signal should be tuned for a peak response at the crystal frequency. Do not use too strong a signal. The sensitivity control should be adjusted for approximately 1 volt output. Referring to Figure 5 adjust T-1, L-19, T-2, T-3 and T-4 for a maximum output voltage. The signal should now be detuned approximately 1,000 cycles and adjustments T-1, L-19 and T-2 returned for a maximum output.

The T-2 adjustment on top of the chassis is sealed with polystyrene cement. Applying a soldering iron to the adjusting screw for a few seconds will soften the cement. The intermediate frequency is 455 kc.

tions of selectivity. A crystal phasing control of the usual type is also provided on the front panel. The intermediate frequency is 455 kc.

BEAT-FREQUENCY OSCILLATOR—The BFO second heterodyne oscillator used for CW reception is a separate pentode. The coupling to the second detector is just sufficient to provide suitable heterodyne action. A panel control is provided for changing the frequency a small amount so that any desired audio beat-frequency may be obtained.

AUTOMATIC VOLUME CONTROL AND "S" METER—The A.V.C. circuit is a simple diode rectifier. Referring to the schematic diagram, Figure 5, the received signal carrier produces a voltage across R-38 which is filtered by R-36 and C-72 and applied to the control grids of the r-f and i-f amplifiers. The "S" meter is connected in the cathode circuit of the first i-f tube and thus records changes in plate current caused by changes of A.V.C. voltage applied to the grid. This type of "S" meter circuit provides the desired wide range and the greater portion of the scale is approximately linear with respect to db input.

NOISE LIMITER—A noise limiter is provided in the second detector circuit. The limiter is manually adjusted. This provides best limiter action since noise voltages cannot increase the limiter bias.

It has been found that noise such as that produced by the ignition systems of automobiles may have an effective value in excess of that of a weak signal. This is particularly true on the 10-meter band. In order to be effective, the limiter must have a bias or "gate opening" of not more than twice the signal carrier amplitude. If this "gate opening" is provided by the signal such as is done in present automatic noise circuits, the noise voltage, if it has a higher effective value than the signal, will open the "gate" to such a high value that the limiter circuit is ineffective. The action of the noise circuit in this receiver is such as to make signals readable which are below the effective noise voltage.

Referring to the schematic diagram, Figure 5, the signal and noise voltages appear across R-32 and the noise peaks alone appear across R-33, since the bias applied to R-31 by the potentiometer R-34 prevents this diode from operating with the signal voltage. The sum of these voltages (across R-32 and R-33) are applied to the audio amplifier. It is apparent that the noise peak voltage across R-32 is out of phase or opposed to that across R-33. The "balance" of this circuit is adjusted by potentiometer R-33. The potentiometer R-34 is the front panel bias control.

SERVICE—This receiver has been carefully adjusted and aligned by the manufacturer before shipment and should maintain its adjustments over a considerable period of time. It is recommended that any major adjustments or repairs be made by a competent service man.

TUBES—In a receiver which is used quite consistently, the first trouble which is likely to occur is that of deficient vacuum tubes. Usually the symptom of deficient tubes is a noticeable decrease in the sensi-

CIRCUIT DETAILS AND FEATURES—In reading the following discussion of the electrical circuit, reference should be made to the schematic diagram, Figure 5.

INPUT COUPLING—The antenna coupling system is designed to provide optimum coupling from transmission lines of 50 to 500 ohms, or from conventional antenna and ground systems. The coupling coils are balanced to ground and may be connected directly to a balanced transmission line. An antenna trimmer capacitor adjustment is provided on the front panel to insure first circuit resonance with any antenna system.

RADIO-FREQUENCY AMPLIFIER—The r-f amplifier is designed to provide as much selectivity as possible ahead of the first detector. The amplification is adjusted to provide optimum signal to noise ratio by making noise contributions of circuits following the first tube negligible in comparison with the noise contributed by the first r-f grid circuit. A uniform amplification is obtained over all frequency ranges. On the two highest frequency ranges the oscillator frequency is placed below the signal frequency. This gives better freedom from image signals in the higher frequency amateur bands.

BAND SPREAD—Band spreading is accomplished by means of a capacitor gang having sections of capacity suitable for each amateur band. The sections of this capacitor are connected by the band switch so that on each amateur band, proper size of capacitor is used to spread the band over the entire tuning dial. The dials are directly calibrated in frequency.

R-F HETERODYNE OSCILLATOR—The r-f oscillator circuit is of the tuned-grid type with plate circuit feedback. A voltage regulator is used to stabilize the plate voltage. Temperature changes are compensated for by a special capacitor. This capacitor is composed of a small bi-metal plate, which is adjusted to have a temperature coefficient which will compensate for all other circuit changes. This type of temperature compensation was found to be quite satisfactory since the circuit minimum and maximum capacitances are the same on the higher frequency ranges. That is, the temperature coefficient of this compensating capacitor is adjusted at the factory for best results on the high frequency end of the highest frequency range. The compensation is then near optimum on the high frequency end of each band. As the receiver is tuned from the high frequency end to the low frequency end of each band more tuning capacity is added and less compensation is needed. Since the capacity of the compensating capacitor is small compared to the tuning capacitor, less compensation results. Thus, a fairly uniform temperature characteristic is obtained over a very wide frequency range.

INTERMEDIATE-FREQUENCY AMPLIFIER—As may be seen from the schematic diagram, two stages of i-f amplification are used. A crystal filter is placed between the first detector and the first intermediate amplifier. This filter is adjustable by means of a control on the front panel and provides five posi-

PARTS LIST (Continued)

Item	DESCRIPTION	Stock No.	Item	DESCRIPTION	Stock No.
C-42	Capacitor—330 mmfd., 400 volts	39640	M-1	Meter—Carrier level meter	34946
C-43	Capacitor—2700 mmfd., 400 volts	30057	R-1	Resistor—10,000 ohms, 1/2 watt	34947
C-44	Capacitor—Same as C-40	37328	R-2	Resistor—10,000 ohms, 1/2 watt	37137
C-45	Capacitor—0.05 mfd., 400 volts	37328	R-3	Resistor—330 ohms, 1/2 watt	18039
C-46	Condenser—Stabilizing condenser	34895	R-4	Resistor—22,000 ohms, 1/2 watt	37136
C-47	Capacitor—120 mmfd., 400 volts	12724	R-5	Resistor—150,000 ohms, 1/2 watt	37271
C-48	Capacitor—Same as C-45		R-6	Resistor—Same as R-4	
C-49	Capacitor—100 mmfd., 400 volts	12720	R-7	Resistor—Same as R-3	
C-50	Capacitor—Same as C-32		R-8	Resistor—Same as R-2	
C-51	Capacitor—Same as C-45		R-9	Resistor—Same as R-4	
C-52	Capacitor—Same as C-45		R-10	Resistor—10 ohms, 1/2 watt	18471
C-53	Capacitor—220 mmfd., 400 volts	12694	R-11	Resistor—5,000 ohms, 1/2 watt	37273
C-54	Capacitor—Same as C-45		R-12	Resistor—Same as R-2	12759
C-55	Capacitor—Same as C-45		R-13	Resistor—Same as R-4	
C-56	Capacitor—220 mmfd., 400 volts		R-14	Resistor—Same as R-4	
C-57	Capacitor—Same as C-45		R-15	Resistor—Same as R-4	
C-58	Capacitor—Same as C-45		R-16	Resistor—68,000 ohms, 1/2 watt	37274
C-59	Capacitor—Same as C-49		R-17	Resistor—Same as R-1	
C-60	Capacitor—56 mmfd., 400 volts	12723	R-18	Resistor—68 ohms, 1/2 watt	37275
C-61	Capacitor—Same as C-49		R-19	Resistor—220 ohms, 1/2 watt	37276
C-62	Capacitor—12 mmfd., 400 volts	13002	R-20	Control—80-ohm tuning meter	
C-63	Capacitor—47 mmfd., 400 volts	13141	R-21	Control—30,000-ohm sensitivity control	34910
C-64	Capacitor—47 mmfd., 400 volts		R-22	Resistor—Same as R-1	34940
C-65	Capacitor—Same as C-56		R-23	Resistor—Same as R-4	
C-66	Capacitor—1200 mmfd., 400 volts	13054	R-24	Resistor—Same as R-16	
C-67	Capacitor—Same as C-45		R-25	Resistor—Same as R-2	
C-68	Capacitor—Same as C-45		R-26	Resistor—Same as R-3	
C-69	Capacitor—Same as C-45		R-27	Resistor—100 ohms, 1/2 watt	37139
C-70	Capacitor—Same as C-45		R-28	Resistor—100,000 ohms, 1/2 watt	30494
C-71	Capacitor—Same as C-45		R-29	Resistor—Same as R-29	19736
C-72	Capacitor—Same as C-45		R-30	Resistor—Same as R-27	
C-73	Capacitor—Same as C-45		R-31	Control—100,000-ohm noise balance adjustment	34941
C-74	Capacitor—Same as C-45		R-32	Control—30,000-ohm limiter control	34938
C-75	Capacitor—Same as C-45		R-33	Control—500,000-ohm volume control and power switch (S-1)	34939
C-76	Capacitor—Same as C-45		R-34	Resistor—220,000 ohms, 1/2 watt	35510
C-77	Capacitor—Same as C-45		R-35	Resistor—3600 ohms, 1/2 watt	37277
C-78	Capacitor—Same as C-45		R-36	Resistor—10,000 ohms, 1/2 watt	35521
C-79	Capacitor—Same as C-45		R-37	Resistor—10,000 ohms, 1/2 watt	19739
C-80	Capacitor—Same as C-45		R-38	Resistor—Same as R-29	
C-81	Capacitor—Same as C-45		R-39	Resistor—Same as R-1	
C-82	Capacitor—Same as C-45		R-40	Resistor—Same as R-29	
C-83	Capacitor—20-20 mfd., 450 volts	34889	R-41	Resistor—820 ohms, 1/2 watt	35513
C-84	Capacitor—Same as C-45		R-42	Resistor—Same as R-29	
C-85	Capacitor—Same as C-45		R-43	Resistor—Same as R-29	
C-86	Capacitor—Same as C-45		R-44	Resistor—Same as R-1	
C-87	Capacitor—Same as C-45		R-45	Resistor—470 ohms, 1 watt	37278
C-88	Capacitor—Same as C-45		R-46	Resistor—Same as R-29	
C-89	Capacitor—Same as C-45		R-47	Resistor—3000 ohms, 10 watts	34943
C-90	Capacitor—Same as C-45		R-48	Resistor—Same as R-29	
C-91	Capacitor—Same as C-45		R-49	Resistor—Same as R-29	
C-92	Capacitor—Same as C-45		R-50	Resistor—Same as R-29	
J-1	Jack—Headphone jack	37219	S-1	Switch—Range switch wafer	34915
J-2	Jack—Phone tip jack for transmitter relay connections	7903	S-2	Switch—Range switch wafer	34916
L-1	Coil—Antenna 540-1340 kc	33891	S-3	Switch—Range switch wafer	34914
L-2	Coil—Antenna 1340-3300 kc	37232	S-4	Switch—Range switch wafer	
L-3	Coil—Antenna 3.3-5.8 mc	37234	S-5	Switch—Range switch wafer	
L-4	Coil—Antenna 5.8-10.2 mc	37235	S-6	Switch—Range switch wafer	
L-5	Coil—Antenna 10.2-18.0 mc	37236	S-7	Switch—Range switch wafer	
L-6	Coil—Antenna 18.0-31.0 mc	37237	S-8	Switch—Range switch wafer	
L-7	Coil—Detector 3.3-5.5 mc	37238	S-9	Switch—A.V.C. switch	34912
L-8	Coil—Detector 5.8-10.2 mc	37239	S-10	Switch—Transmitter selective switch	34913
L-9	Coil—Detector 10.2-18.0 mc	37240			
L-10	Coil—Detector 18.0-31.0 mc	37241			
L-11	Coil—Oscillator 340-3300 kc	37242			
L-12	Coil—Oscillator 3.3-5.8 mc	37243			
L-13	Coil—Oscillator 5.8-10.2 mc	37244			
L-14	Coil—Oscillator 10.2-18.0 mc	37245			
L-15	Coil—Oscillator 18.0-31.0 mc	37246			
L-16	Coil—Oscillator 5.8-10.2 mc	37247			
L-17	Coil—Oscillator 10.2-18.0 mc	37248			
L-18	Coil—Oscillator 18.0-31.0 mc	37249			
L-19	Crystal Filter Assembly—Coil core, capacitor and formless shield caps—includes C-51	34891			
L-20	Resistor—Filter reactor	35527			

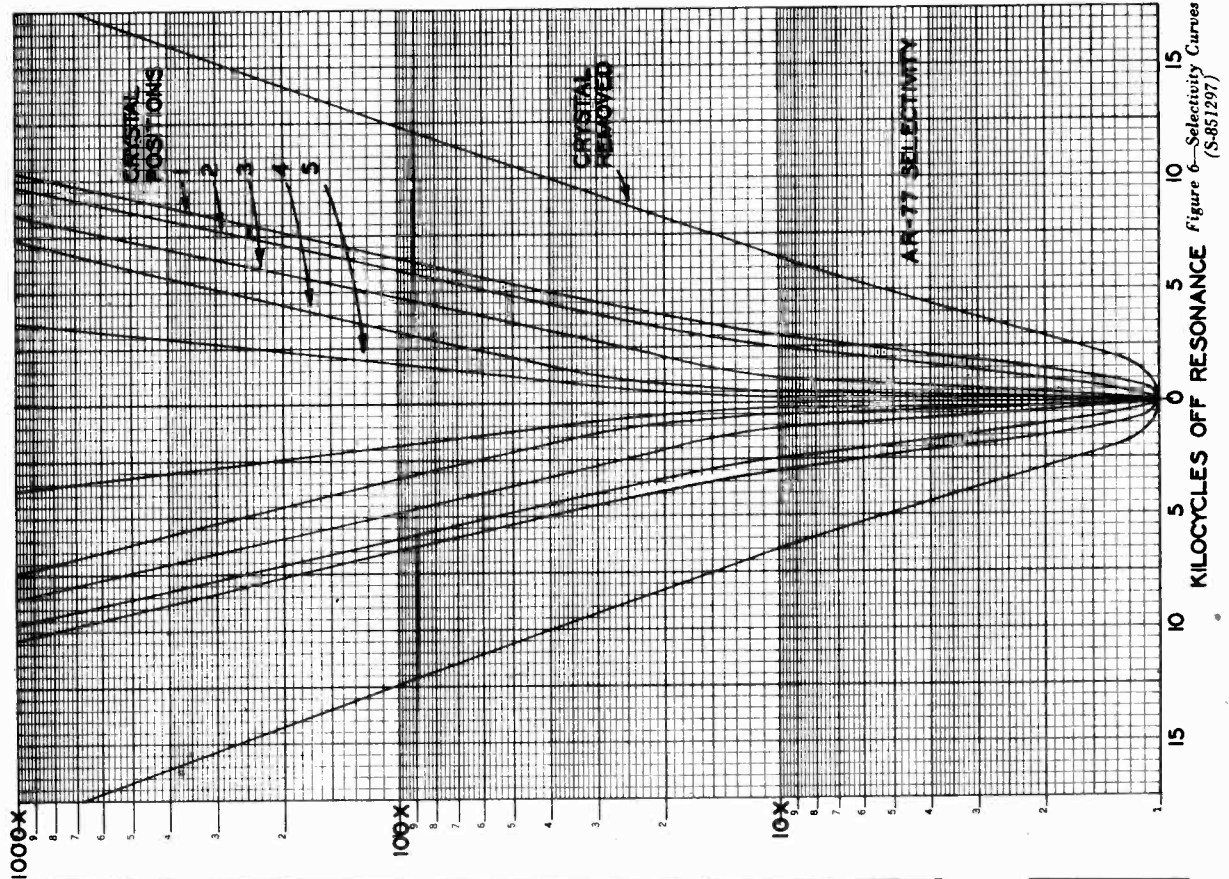
inlet should be removed. The tube socket terminal voltages should be measured and should be approximately the values given in the table below. The tubes should remain in the sockets for this test. A voltmeter having a resistance of at least 50,000 ohms should be used. Place switch on BFO and turn Sensitivity Control to maximum.

TUBE SOCKET VOLTAGES

Tube	Symbol	Cathode to Ground	Screen Grid to Ground	Plate to Ground	Suppressor Grid to Ground	Oscillator Plate to Ground	Heater (A-C) Pin No. 2 to Pin No. 7
RCA-6SK7 (R-F Amplifier)	V8	3.0 (Pin No. 5)	90 (Pin No. 6)	180 (Pin No. 8)	3.0 (Pin No. 3)	—	6.1
RCA-6KH8 (Det. Osc.)	V6	2.6 (Pin No. 8)	75 (Pin No. 4)	240 (Pin No. 3)	—	60 (Pin No. 6)	6.1
RCA-6K7 (1st I-F Amp.)	V5	3.0 (Pin No. 5)	82 (Pin No. 6)	200 (Pin No. 8)	0 (Pin No. 3)	—	6.1
RCA-6S17 (Beat Freq. Osc.)	V2	0 (Pin No. 5)	50 (Pin No. 6)	15 (Pin No. 8)	—	—	6.1
RCA-6SK7 (2nd I-F Amp.)	V7	4.5 (Pin No. 5)	115 (Pin No. 6)	220 (Pin No. 8)	4.5 (Pin No. 3)	—	6.1
RCA-6H6 (2nd Det.)	V1	— (Pin No. 3)	— (Pin No. 6)	— (Pin No. 8)	— (Pin No. 3)	—	6.1
RCA-6S07 (A-F Amp. A.V.C.)	V3	0.7 (Pin No. 3)	— (Pin No. 6)	85 (Pin No. 8)	— (Pin No. 3)	—	6.1 (Pin No. 7 to Pin No. 8)
RCA-6FG6 (Output)	V4	16 (Pin No. 8)	260 (Pin No. 4)	250 (Pin No. 3)	— (Pin No. 3)	—	6.1 (Pin No. 2 to Pin No. 8) (Caution—300 v. d.c., voltage to ground)
RCA-5Y3G (Rectifier)	V10	300.0 (Pin No. 8)	— (Pin No. 6)	375 a.c. (Pin Nos. 4 & 6)	— (Pin No. 3)	—	5.1 (Pin No. 2 to Pin No. 8) (Caution—300 v. d.c., voltage to ground)
RCA-VR-150 (Voltage Regulator)	V9	— (Pin No. 8)	— (Pin No. 6)	150 (Pin No. 5)	— (Pin No. 3)	—	—

PARTS LIST RECEIVER PARTS

Item	DESCRIPTION	Stock No.	Item	DESCRIPTION	Stock No.
C-1, C-2, C-3, C-4, C-5, C-6	Condenser—3-gang, 6-section main tuning—less split gear, brass pinion, gear, and bearing assembly	34879	C-29	Condenser—3 to 25 mmfd., 7-plate beat-frequency oscillator control	34893
C-7, C-8, C-9, C-10, C-11, C-12, C-13, C-14, C-15, C-16	Capacitor—3-gang, 9-section band-spread—less split gear, brass pinion gear, and bearing assembly to 35 mmfd., 10-plate antenna adjuster	34880	C-30	Condenser—2.5 to 17.9 mmfd., 5-plate crystal phase adjusting condenser	37238
C-17, C-18, C-19, C-20, C-21, C-22, C-23, C-24, C-25, C-26, C-27, C-28	Condenser—Air trimmer	34892	C-31	Capacitor—180 mmfd., 400 volts	13003
		12714	C-32, C-33, C-34	Capacitor—0.01 mfd., 1000 volts	43764
		12807	C-35	Capacitor—68 mmfd., 400 volts	13057
		12807	C-36, C-37	Capacitor—10 mmfd., 400 volts	13200
		12635	C-38	Capacitor—0.1 mfd., 400 volts	37327
		12814	C-39	Capacitor—1000 mmfd., 400 volts	12635
			C-40	Capacitor—5.6 mmfd., 400 volts	12814
			C-41	Capacitor—Same as C-21	



PARTS LIST (Continued)

Item	DESCRIPTION	Stock No.	Item	DESCRIPTION	Stock No.
T-1	Transformer—First detector plate I-F transformer complete—includes C-47, R-12	34885		Gear—Split main or band spread condenser drive gear	34881
T-2	Transformer—I-F transformer complete—includes C-56, C-57, R-25	34887		Guide, Band indicator shutter assembly	34899
T-3	Transformer—I-F link transformer complete—includes C-61, C-63, R-28	34884		Lamp—6.3 volt dial lamp, Mazda No. 44	11891
T-4	Transformer—Diode I-F transformer complete—includes C-62, C-64	34888		Pulley—Left-hand band indicator idler pulley and bracket	37241
T-5	Transformer—CW oscillator transformer—complete—includes C-80, C-81, R-42	34886		Pulley—Right-hand band indicator idler pulley and bracket	37242
T-6	Transformer—Output transformer	14355		Pulley—Small dial drive pulley	31271
T-7	Transformer—105-115 volts, 25-cycle power transformer (Used in MI-8302F only)	34693		Scale—Calibrated vernier scale—less support	34905
T-7	Transformer—110-125-150-210-240 volts, 50/60 cycle power transformer (Used in MI-8302E only)	37243		Screw—No. 8-32 set screw for dial drive drum	14350
T-7	Transformer—105-125 volts, 50/60 cycle power transformer (Used in MI-8302D and MI-8302G only)	9551		Shaft—Dial drive flywheel shaft—10 1/4 inches long	34904
X-1	Crystal—455 kc crystal filter and case	MI-7593		Shaft—Range switch shaft—10 1/4 inches long	34935
MISCELLANEOUS					
	Bracket—Flywheel mounting bracket	34903		Shutter—Left-hand band indicating shutter and pilot lamp bracket assembly	37239
	Board—3-contact terminal board	12716		Shutter—Right-hand band indicating shutter and pilot lamp bracket assembly	37240
	Board—5-contact terminal board	34896		Socket—8-contact phenolic socket	18007
	Cord—Dial drive or range shutter control cord	32634		Socket—8-contact water socket	33084
	Coupling—Range switch coupling with set screws	34937		Spring—Band indicator shutter lift spring	34898
	Detent—Range switch detent plate assembly	34936		Spring—Dial drive cord tension spring	32481
	Dial—Translucent band spread dial complete with hub and set screws	34900		Spring—Triple loop spring used on rear end of band switch shaft	34944
	Dial—Translucent main tuning dial complete with hub and set screws	34901		Support—Vernier scale support and hub assembly	34906
	Dial—Large dial drive drum complete	34908		Knob—Antenna adjuster control knob	34949
	Flywheel—Tuning flywheel with set screws	34902		Knob—Bar type control knob (8 used)	34950
	Gear—Brass pinion gear and bearing assembly	34882		Knob—Main tuning or band spread control knob	34947
				Knob—Range switch control knob	34948
				Mask—Metal window mask plate	34953
				Nut—Clamping nut for air trimmers	14028
				Socket—Pilot lamp socket	34951
				Socket—Pilot lamp socket and clip	34909
				Window—Clear dial window sheet	34952

SPEAKER PARTS

Item	DESCRIPTION	Stock No.	Item	DESCRIPTION	Stock No.
	Cone—Speaker cone and voice coil	31310		Socket—3-contact female socket for speaker cable	5119
	Escutcheon—"RCA" escutcheon	13059		Speaker—Speaker unit only less panel	9712
	Plug—3-contact male plug for speaker	5118			

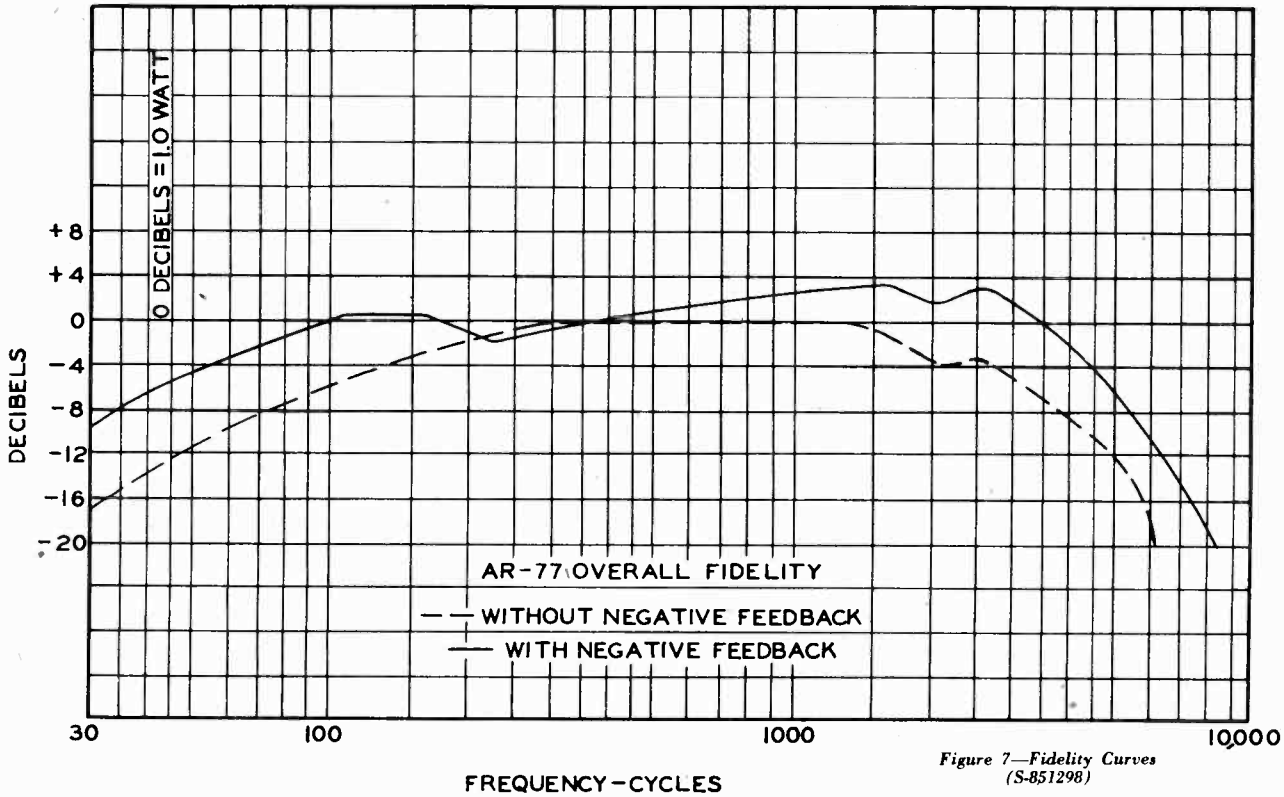
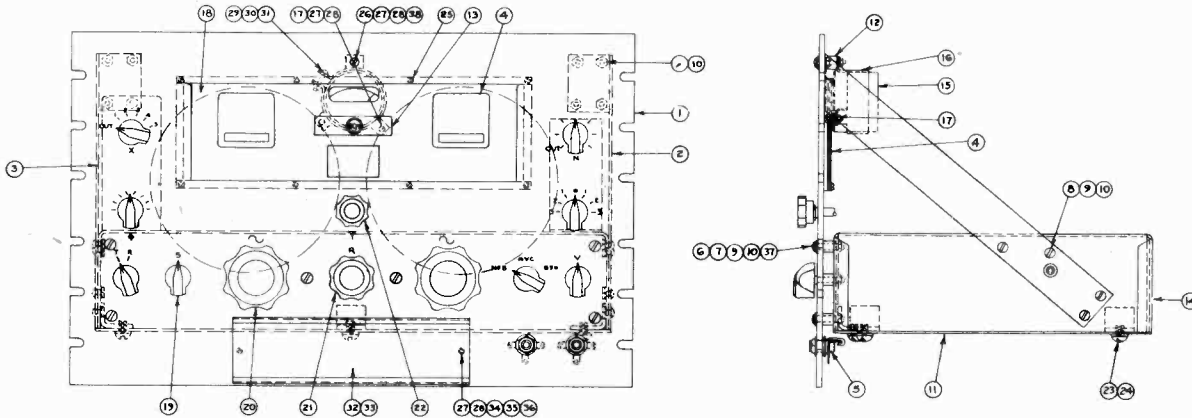


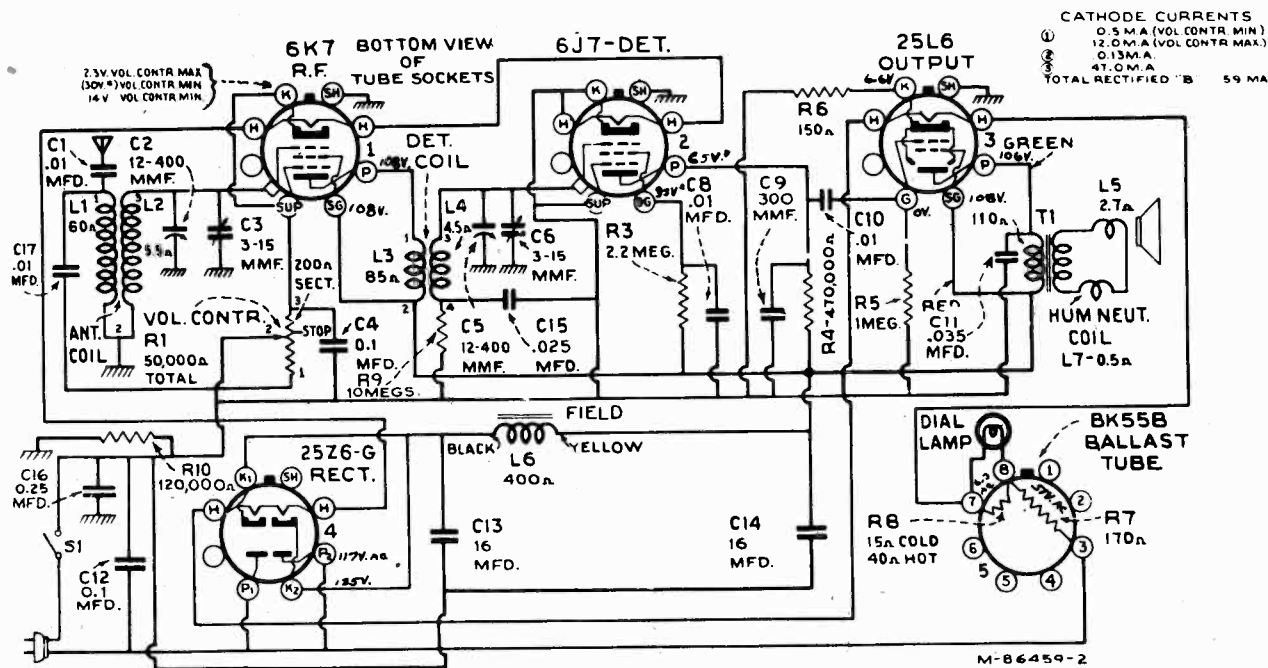
Figure 7—Fidelity Curves
(S-851298)



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	PANEL ASSEMBLY	20	KNOB
2	STRAP ASSEMBLY	21	KNOB
3	STRAP ASSEMBLY	22	KNOB
4	WINDOW MASK	23	MACH. SCR. R.H. $\frac{1}{4}$ -20 x $\frac{3}{16}$ LG.
5	JACK	24	LOCKWASHER $\frac{1}{2}$
6	SPACER	25	MACH. SCR. $\frac{1}{4}$ -40 x $\frac{1}{2}$ LG.
7	MACH. SCR. $\frac{1}{4}$ -32 x $\frac{1}{2}$ LG.	26	MACH. SCR. $\frac{1}{4}$ -40 x $\frac{3}{16}$ LG.
8	MACH. SCR. $\frac{1}{4}$ -32 x $\frac{3}{16}$ LG.	27	LOCKWASHER $\frac{1}{4}$
9	NUT HEX. #8-32	28	NUT HEX #4-40
10	LOCKWASHER #8	29	MACH. SCR. R.H. #6-32 x $\frac{3}{16}$ LG.
11	BOTTOM PLATE	30	LOCKWASHER #6
12	SPACER	31	NUT HEX. #6-32
13	MONOGRAM PLATE	32	CARD HOLDER
14	CHASSIS ASSEMBLY	33	WINDOW
15	METER	34	SCREW $\frac{1}{4}$ -40 x $\frac{3}{16}$ LG.
16	CLAMP	35	NUT HEX #4-40
17	SPACER	36	LOCKWASHER #4
18	WINDOW	37	WASHER
19	KNOB	38	WASHER

NOTE:— REMOVE ITEM 12 TO PANEL COMPRISING THE FOLLOWING:—
1 SPACER ITEM 12, 1 MONOGRAM PLATE ITEM 13, 1 CHASSIS ASSEMBLY ITEM 14,
1 METER ITEM 15, 1 CLAMP ITEM 16, 2 SPACERS ITEM 17, 1 WINDOW ITEM 18,
8 KNOBS ITEM 19, 2 KNOBS ITEM 20, 1 KNOB ITEM 21, 1 KNOB ITEM 22, 5 MACH.
SCREWS ITEM 23, 3 LOCKWASHERS ITEM 24, 8 MACH. SCREWS ITEM 25, 1 MACH.
SCREW ITEM 26, 3 LOCKWASHERS ITEM 27, 3 NUTS ITEM 28, 1 MACH. SCREW ITEM 29,
1 LOCKWASHER ITEM 30, 1 NUT ITEM 31, FROM CABINET & REPLACE ON PANEL AS
SHOWN. ITEMS 13, 14, 23, 30, 31 TO BE REMOVED AS A UNIT AND REPLACED ON
PANEL AS SHOWN.

RCA MFG. CO.



CATHODE CURRENTS
 ① 0.5 M.A. (VOL. CONTR. MIN.)
 ② 12.0 M.A. (VOL. CONTR. MAX.)
 ③ 0.13 M.A.
 ④ 47.0 M.A.
 TOTAL RECTIFIED "B" 59 MA

Frequency Range..... 540-1,760 kc
 Alignment Frequency..... 1,760 kc (ant., det.)

POWER SUPPLY RATINGS

A-C Rating..... 105-125 volts, 50-60 cycles, 50 watts
 D-C Rating..... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted..... 1.0 watt
 Maximum..... 1.5 watts

LOUDSPEAKER

Type..... 5-inch Electrodynamc
 Voice-Coil Impedance..... 3 ohms at 400 cycles

Alignment Procedure

Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during alignment.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

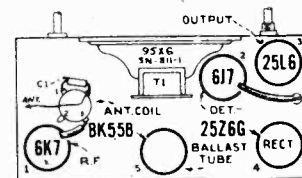
Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

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.



RECEIVER ASSEMBLIES

- 31198 Ballast—Ballast resistor tube type BK55B (R7, R8)
- 30883 Capacitor—300 mmfd. (C9)
- 14393 Capacitor—.01 mfd. (C1, C8, C10)
- 4858 Capacitor—.01 mfd. (C17)
- 30938 Capacitor—.025 mfd. (C15)
- 5196 Capacitor—.035 mfd. (C11)
- 30899 Capacitor—.01 mfd. (C4)
- 4839 Capacitor—.01 mfd. (C12)
- 12484 Capacitor—.025 mfd. (C16)
- 31323 Capacitor—16 mfd (C13, C14)
- 30875 Coil—Antenna coil (L1, L2)
- 30876 Coil—Det. coil (L3, L4)
- 31195 Condenser—2-gang variable tuning condenser—(C2, C3, C5, C6)
- 30877 Cord—Indicator drive cord
- 31200 Dial—Station selector dial scale and plate assembly
- 31198 Indicator—Station selector indicator pointer
- 4340 Lamp—Dial lamp
- 31193 Lead—Antenna lead—approximately 25 ft. long
- 31198 Resistor—Ballast resistor tube type BK55B (R7, R8)
- 30880 Resistor—150 ohms, 1/2 watt (R6)
- 13734 Resistor—120,000 ohms, 1/2 watt (R10)
- 12285 Resistor—470,000 ohms, 1/2 watt (R4)
- 13730 Resistor—1 meg., 1/2 watt (R5)
- 12679 Resistor—2.2 meg., 1/2 watt (R3)
- 13601 Resistor—10 meg., 1/2 watt (R9)
- 31197 Shaft—Indicator pointer shaft and pulley
- 31199 Shield—Dial lamp shield
- 14171 Socket—Dial lamp socket
- 31251 Socket—Tube and ballast resistor socket
- 30631 Spring—Indicator drive cord tension spring
- 31198 Tube—Ballast resistor tube type BK55B (R7, R8)
- 31966 Volume control and power switch (R1, S1)

SPEAKER ASSEMBLIES (84202-4)

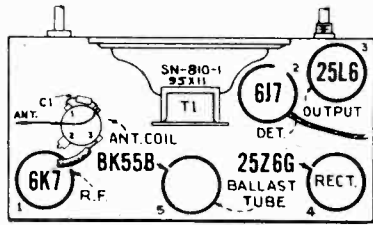
- 31202 Cone—Speake cone and voice coil (L5)
- 31201 Speaker—Complete
- 31203 Transformer—Output transformer (T1)

MISCELLANEOUS ASSEMBLIES*

- 31205 Crystal—Station selector dial crystal
- 30863 Knob—Tuning or volume control knob
- 31079 Screw—Chassis mounting screws and washers
- 30900 Spring—Retaining spring for knob

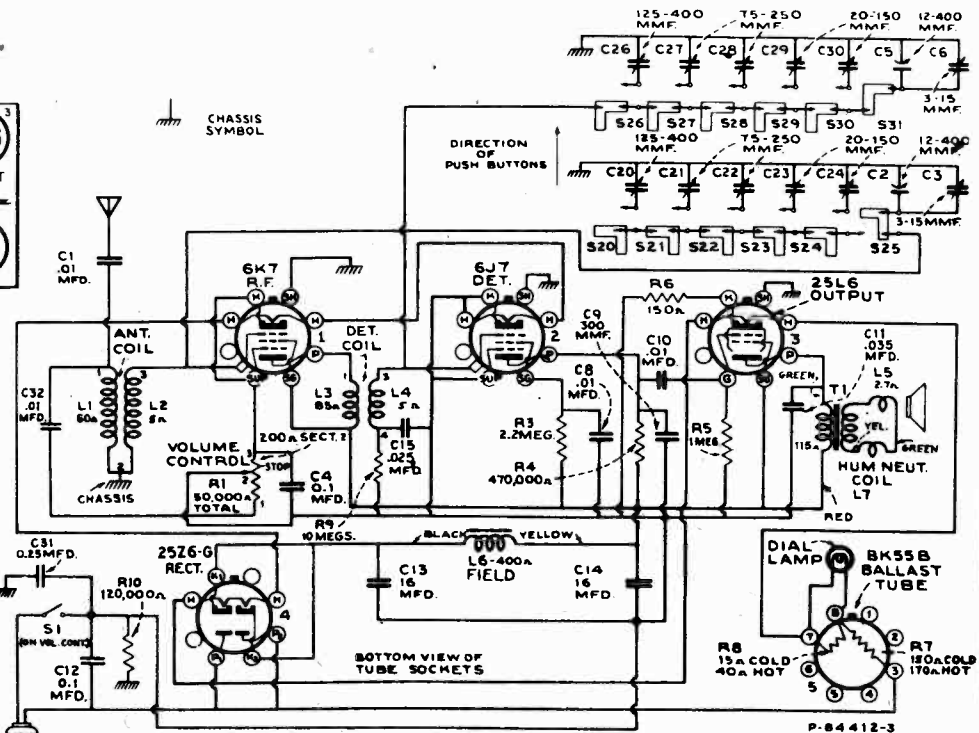
MODEL 95X11

RCA MFG. CO.



Alignment Procedure

Remove chassis from cabinet. Reel up the antenna wire, and connect the high side of test-oscillator through an 80-mmf. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through an .01-mfd. capacitor. Turn gang condenser to minimum (full out); push in the manual-tuning (right-hand) button, tune oscillator to 1,560 kc, connect an output meter across the voice coil, and turn volume control to maximum. Keep antenna roll and lead clear of chassis during all adjustments. Adjust the two trimmers (C8 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator. Turn pointer, so that it is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.



Adjustment of Tuning Capacitors

The preferable and quickest method of adjusting the tuning capacitors for five different stations, is to employ a test-oscillator, as described below:

1. Make a list of the desired five stations, arranged in order from low to high frequencies.
2. Determine the correct settings of the test-oscillator for these five frequencies. This is accomplished as follows: Tune in each of the five stations on any standard receiver; zero-beat the test-oscillator against each station, and note the exact setting of the oscillator in each case.
3. Reel up the antenna wire. Connect the high side of test-oscillator through an 80-mmf. fixed capacitor to the end of the antenna wire. Clip the low side of the oscillator through a 0.1-mfd. capacitor to one of the chassis-mounting screws on the bottom of the cabinet. Tune the oscillator to the previously-determined point for the lowest-frequency station, and adjust for a strong output.

4. Turn the volume control of the push-button receiver full clockwise, and push in the left-hand end button. Using an insulated screw-driver, peak capacitors C20 and C26, at the same time reducing the output of the oscillator in order to secure a sharp peak. (Clockwise adjustment of the capacitors tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies. The range of each trimmer is three full counter-clockwise turns from the tight position. Do not unscrew more than three turns.)
5. Push in the second button from left, and adjust C21 and C27 for peak output with the oscillator tuned to the frequency of the second station.
6. Proceed in this manner to adjust each pair of capacitors for the desired frequencies.
7. Final adjustment may be made in actual reception of the stations.

Precautionary Lead Dress

1. Dress Power cord away from detector coil, heater leads close to base, leads from electrolytic close to base and free of grid leads.
2. Dress blue lead from r-f plate to detector coil along front edge of push-button shaft holes. Dress all leads to prevent rubbing against push button shafts.

25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 81323) from the cathode of the rectifier tube to chassis. (Positive to contact K1 of 25Z6-G, and negative to shell contact of 6K7 r-f socket.)

STOCK No.	DESCRIPTION
RECEIVER ASSEMBLIES	
31198	Ballast—Ballast resistor-tube type BK55B (R7, R8)
31208	Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24)
31209	Capacitor—Detector tuning capacitor bank (C26, C27, C28, C29, C30)
30883	Capacitor—300 mmf. (C9)
14393	Capacitor—.01 mfd. (C1, C8, C10)
4858	Capacitor—.01 mfd. (C32)
30938	Capacitor—.025 mfd. (C15)
5196	Capacitor—.035 mfd. (C11)
30899	Capacitor—.1 mfd. (C4)
4839	Capacitor—.1 mfd. (C12)
12484	Capacitor—.25 mfd. (C31)
31323	Capacitor—16 mfd. (C13, C14)
30875	Coil—Antenna coil (L1, L2)
30878	Coil—Det. coil (L3, L4)
31195	Condenser—2-gang variable tuning condenser (C2, C3, C5, C6)
32634	Cord—Indicator drive cord
31206	Dial—Station selector dial and dial plate assembly
31196	Indicator—Station selector indicator pointer
4340	Lamp—Dial lamp
31193	Lead—Antenna lead—approximately 25 ft. long
31198	Resistor—Ballast resistor tube type BK55B (R7, R8)
30880	Resistor—150 ohms, 1/2 watt (R6)
13734	Resistor—120,000 ohms, 1/2 watt (R10)
12285	Resistor—470,000 ohms, 1/2 watt (R4)

STOCK No.	DESCRIPTION
13730	Resistor—1 meg., 1/2 watt (R5)
12679	Resistor—2.2 meg., 1/2 watt (R3)
13601	Resistor—10 meg., 1/2 watt (R9)
31197	Shaft—Indicator pointer shaft and pulley
31199	Shield—Dial lamp shield
14171	Socket—Dial lamp socket
31251	Socket—Tube and ballast resistor socket
30631	Spring—Indicator drive cord tension spring
31207	Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31)
31198	Tube—Ballast resistor tube type BK55B (R7, R8)
31966	Volume control and power switch (R1, S1)
SPEAKER ASSEMBLIES (Speaker 84202-4)	
31202	Cone—Speaker cone and voice coil (L5)
31201	Speaker—Complete
31203	Transformer—Output transformer (T1)
MISCELLANEOUS ASSEMBLIES	
31210	Button—Station selector push button
31205	Crystal—Station selector dial crystal
31095	Disc—10 celluloid protector discs for call letter markers
30863	Knob—Tuning or volume control knob
30991	Markers—Station selector button call letter markers
31079	Screw—Chassis mounting screws and washers
30900	Spring—Retaining spring for knob

RCA MFG. CO.

MODELS VA-22, VA-24
MODELS UY-122E,
UY-124

Specifications MODEL VA-22

Record Capacity Eight 10-inch or Seven 12-inch
MOTOR Constant-speed, self-starting
PICKUP Crystal
Pickup Impedance 0.1 meg., at 1,000 cycles
Average Output 1 1/2 volts across 0.5 meg.

POWER SUPPLY RATINGS

A6 105-125 volts, 60 cycles, 25 watts
A5 105-125 volts, 50 cycles, 25 watts
B2 105-125 volts, 25 cycles, 25 watts

Replacement Parts Model VA-22

STOCK No.	DESCRIPTION
	For Automatic Record Changer Parts, See Service Notes on RP 145*
	MISCELLANEOUS ASSEMBLIES
33595	Cable—Shielded output cable with male plug.
4870	Capacitor—.025 mfd. (C1)
30698	Hinge—Cabinet lid hinge.
31564	Holder—Needle card holder.
12673	Knob—Volume control knob.
14559	Resistor—10,000 ohms, 1/4 watt (R2).
12264	Resistor—220,000 ohms, 1/4 watt (R3).
4119	Screw—Headless set screw for knob, No. 12673.
31470	Springs—Motorboard mounting springs, screw, and washers (4 req'd).
33594	Support—Cabinet lid support.
31108	Volume control (R1)

2nd Production:

The 2nd production of Model VA-22 uses mechanism similar to RP-139A and RP-145.* For replacement parts, refer to the Service Data on RP-139A and RP-145 as specified below:

Stock No.

PICKUP AND ARM ASSEMBLIES

Same as RP-145, except add:
33905 Crystal—Pickup crystal cartridge and needle screw for 25-cycle only

OPERATING MECHANISM, MOTOR ASSEMBLIES, MOTORBOARD ASSEMBLIES

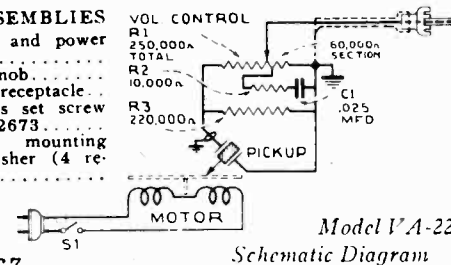
For 110-volt, 60-cycles, same as RP-145.
For 110-volt, 25-cycles, same as RP-139A.

MISCELLANEOUS ASSEMBLIES

- 31108 Control—Volume control and power switch
- 12673 Knob—Volume control knob
- 31564 Receptacle—Needle card receptacle
- 4119 Screw—No. 8-32 headless set screw for knob, Stock No. 12673
- 31470 Springs—Motorboard mounting springs, screw and washer (4 required)

*See Rider's "Automatic Record Changers" P.463

MODEL VA-24 IS A COMBINATION OF MODEL VA-22 AND OSC.22 WIRELESS OSCILLATOR, DATA FOR WHICH WILL BE FOUND ON RCA P.11-61 IN RIDER'S VOL.XI



General Description

The circuit of Models UY-122E and UY-124 is the same as Model 97Y, except for the phonograph circuit which is shown at right. For other circuit details, refer to Service Data for Model 97Y, RCA P.9-109, RIDER'S VOL. IX

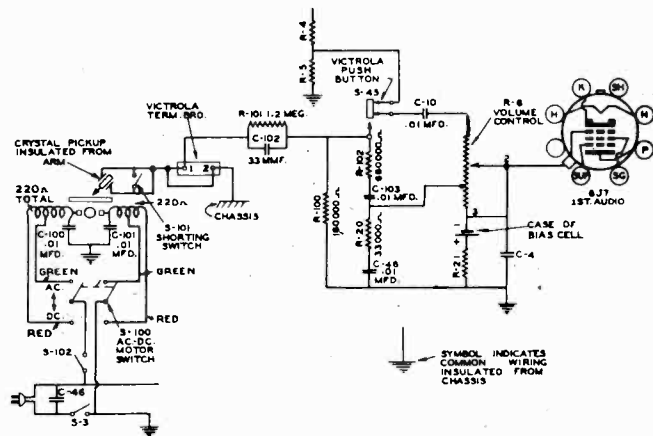
Alignment procedure, adjustments for electric tuning, voltages, and general service data, are the same as for Model 97Y.

Replacement parts for Models UY-122E and UY-124 are listed on the following page.

The phonograph motor has a switch to permit operation on 105-125 volts d.c., or 105-125 volts, 50-60 cycles a.c. The speed regulator screw should be adjusted for 78 r.p.m.

Lubrication should be maintained every six months, applying a few drops of light oil in each oil hole and at the spindle bearing.

The turntable switch should trip to the "off" position when the needle is 1 3/4 inches from the centerline of the turntable spindle.



Phonograph Circuit, Models UY-122E, UY-124

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	RECEIVER ASSEMBLIES		
30284	Ballast—Ballast resistor tube (R22, R23)	31381	Capacitor—620 mmfd. (C24)
31767	Board—Antenna-ground terminal board	31435	Capacitor—750 mmfd. (C26)
31579	Board—Phonograph terminal board	4881	Capacitor—3,300 mmfd. (C22)
14338	Bushing—Variable condenser mounting bushing and screws	12897	Capacitor—4,700 mmfd. (C47)
31400	Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25)	31405	Capacitor—6,000 mmfd. (C27)
14079	Capacitor—6.8 mmfd. (C1)	4838	Capacitor—.005 mfd. (C14, C43)
31387	Capacitor—Antenna coil trimmer capacitor bank—20-470 mmfd. (C31, C32, C33, C34, C35, C36)	14393	Capacitor—.01 mfd. (C10, C48, C103)
12948	Capacitor—33 mmfd. (C3, C102)	11315	Capacitor—.015 mfd. (C12, C17)
12725	Capacitor—150 mmfd. (C49)	4886	Capacitor—.05 mfd. (C13, C20, C44)
13003	Capacitor—180 mmfd. (C37)	4839	Capacitor—0.1 mfd. (C38, C46)
30433	Capacitor—470 mmfd. (C2)	12484	Capacitor—0.25 mfd. (C4, C45)
		31576	Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19)
		31584	Capacitor—40 mfd. (C18)
		30904	Capacitor—100 mfd. (C6, C8, C7, C8)
		31581	Cell—Bias cell
		31382	Clip—Mounting clip for coils and cores on oscillator bank
		31402	Coil—Antenna coil (L1, L2, L3)

Cont'd on next page

MODELS UY-122, UY-124

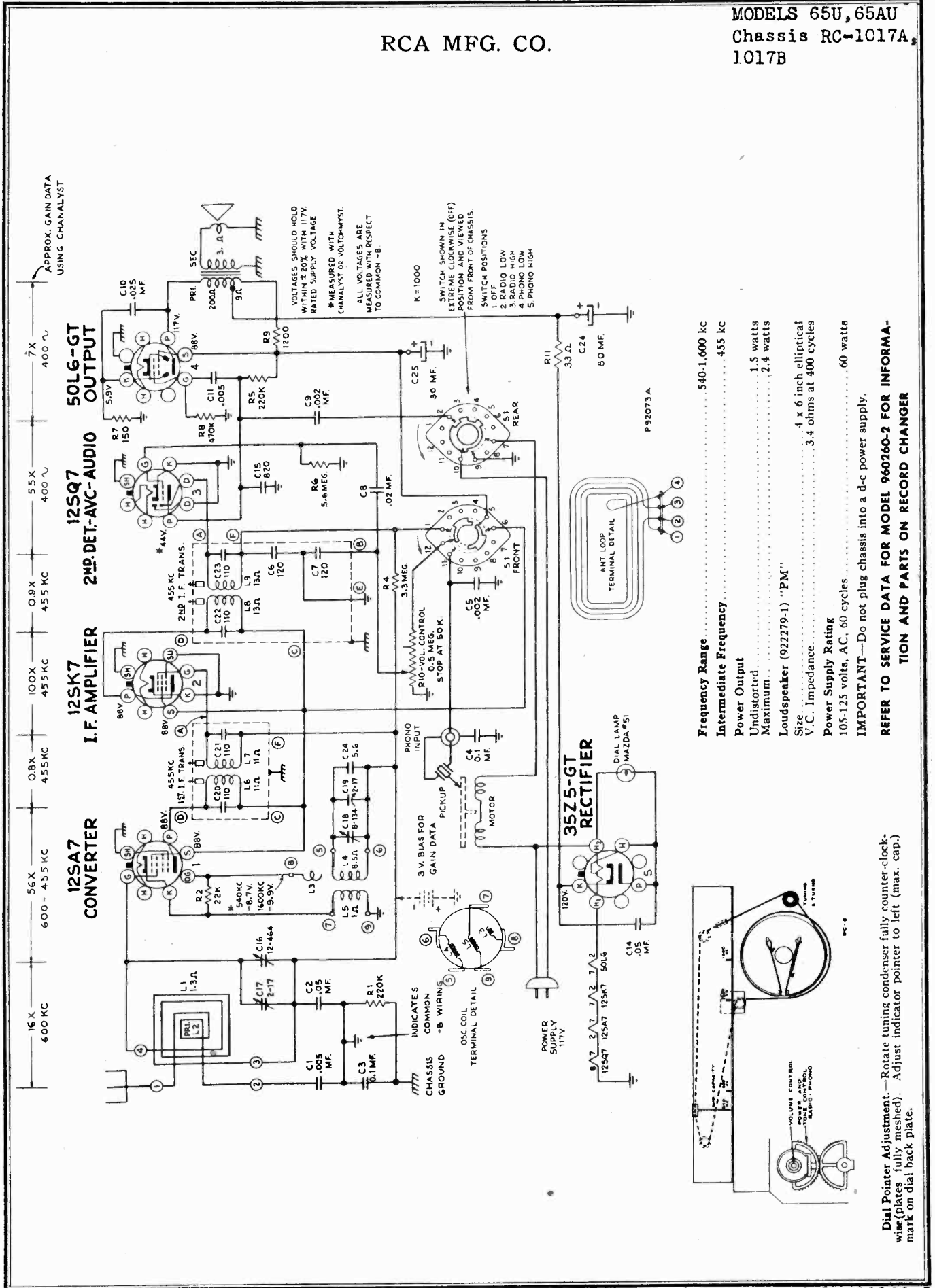
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UY-122E, UY-124 Replacement Parts (Continued)

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
31401	Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24)		
31385	Coil—Push button oscillator coil (L37, L38)		
31384	Coil—Push button oscillator coil (L39, L40)	32134	Bushing—Pickup needle insertion guide—mounts on top of crystal cartridge
31383	Coil—Push button oscillator coil (L41, L42)		
31369	Condenser—2-gang variable tuning condenser (C28, C29, C30)	31156	Crystal—Pickup crystal cartridge, needle screw and shorting switch, less bushing, Stock No. 32134 (S101)
5119	Connector—3-contact female connector plug for speaker cable		
31368	Control—Volume control, tone control, and on-off switch (R8, R13, S3)	32016	Pickup and arm complete
31374	Cord—Drum drive cord	31160	Screw—Needle screw
31375	Cord—Indicator pointer drive cord	31469	Shaft—Pickup pivot arm and shaft assembly complete with base
30905	Core—Adjustable core for I.F. transformer		
31386	Core—Adjustable core and stud assembly for oscillator bank		
31372	Drum—Variable condenser drive cord drum and calibrator		
31580	Holder—Bias cell holder	31275	Cone—Speaker cone and voice coil (L14)
31480	Lamp—Dial lamp	5118	Plug—3-contact male plug for speaker
30868	Plug—2-contact female for motor power cable	31798	Speaker—Less output transformer
31373	Pulley—Drive cord pulley	14628	Transformer—Output transformer (T1)
5066	Reactor—(L16)		
30284	Resistor—Ballast resistor (R22, R23)		
30880	Resistor—150 ohms, 1/2 watt (R12)		
30694	Resistor—3,900 ohms, 1/2 watt (R15)	31310	Cone—Speaker cone and voice coil (L14)
14284	Resistor—22,000 ohms, 1/10 watt (R4)	5118	Plug—3-contact male plug for speaker
12738	Resistor—27,000 ohms, 1/2 watt (R18)	31987	Speaker complete
12454	Resistor—33,000 ohms, 1/2 watt (R2, R20)	14628	Transformer—Output transformer (T1)
14560	Resistor—100,000 ohms, 1/2 watt (R9, R14)		
13698	Resistor—180,000 ohms, 1/2 watt (R100)		
12264	Resistor—220,000 ohms, 1/2 watt (R5)		
12199	Resistor—270,000 ohms, 1/2 watt (R19)		
14983	Resistor—330,000 ohms, 1/2 watt (R8)		
12285	Resistor—470,000 ohms, 1/2 watt (R1, R21)		
12413	Resistor—680,000 ohms, 1/2 watt (R102)		
30208	Resistor—1.2 meg., 1/2 watt (R101)		
12679	Resistor—2.2 meg., 1/2 watt (R3)		
14343	Retainer—Drive cord pulley retainer	30698	Hinge—Cabinet lid hinge—Model UY124
14887	Retainer—Retainer for drive cord pulley	31103	Hinge—Cabinet lid hinge—Model UY122E
4669	Screw—No. 8-32 square-head set screw for drum, Stock No. 31372	31392	Indicator—Indicator pointer, carriage, and clip
31368	Shaft—Station selector knob shaft and pulley	31355	Knob—Range switch knob
31199	Shield—Dial lamp shield	14359	Knob—Station selector knob
12110	Shield—Radiotron shield cap	31391	Knob—Tone control knob
31365	Socket—Dial lamp socket	30773	Knob—Volume control knob
31251	Socket—Tube socket	31458	Marker—"Dial Tuning" marker for push button—Model UY122E
31313	Spring—Tension spring for station selector push button switch latch bar	31460	Marker—"Dial Tuning" marker for push button—Model UY124
31418	Spring—Indicator or drum drive cord tension spring	31467	Marker—"Record Player" marker for push button—Model UY122E
31370	Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45)	31459	Marker—"Record Player" marker for push button—Model UY124
31398	Switch—Range switch (S1, S2)	31589	Marker—Station call letter markers—Model UY122E
30902	Transformer—First i-f transformer (L10, L11, C5, C6)	31590	Marker—Station call letter markers—Model UY124
37903	Transformer—Second i-f transformer (L12, L13, C7, C8)	31393	Screen—Dial color screen
30284	Tube—Ballast resistor tube (R22, R23)	11210	Screw—Chassis mounting screws, washers, and lockwashers—Model UY124
	MOTOR ASSEMBLIES	31471	Screw—Chassis mounting screws, washers, and lockwashers—Model UY122E
32007	Escutcheon—Motor changeover switch escutcheon	31470	Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 required)
32033	Field—Motor field coils and laminations	4982	Spring—Retaining spring for knob, Stock No. 14359
32034	Governor—Motor governor complete	14270	Spring—Retaining spring for knob, Stock Nos. 30773 and 31355
32006	Motor—105-125 volts, 60 cycles A.C. and 105-125 volts D.C., complete with switch (M1)	30330	Spring—Retaining spring for knob, Stock No. 31391
31616	Screw—Motor rotor bearing screw and nut	30946	Support—Cabinet lid support—Model UY122E
31620	Screw—Motor speed regulator screw and nut	11831	Support—Cabinet lid support—Model UY124
32035	Shaft—Motor turntable spindle shaft and gear		
31823	Switch—D.P.S.T. motor changeover switch (S100)		
31622	Washer—Motor spindle shaft thrust bearing washers (1 metal, 1 felt)		
	MOTOR BOARD ASSEMBLIES		
9848	Cup—Used needle cup and lid complete		
31464	Damper—One rubber spindle cap and one metal damper plate		
31465	Mounting—Pickup arm base mounting—one rubber washer, one lockwasher, one nut		
30870	Plug—2-contact male plug for motor and switch leads		
31158	Screw—Motor mounting screws, washers, and spacers (sufficient for one motor)		
31155	Spring—Used needle cup lid spring		
30100	Spring—Automatic switch springs—one long spring and one short spring		
31466	Switch—Automatic motor switch and switch lever		
31467	Switch—Switch only—for automatic switch (S102)		
31463	Turntable		

RCA MFG. CO.

MODELS 65U, 65AU
Chassis RC-1017A,
1017B



MODELS 65U, 65AU,
Chassis RC-1017A,
RC-1017B

RCA MFG. CO.

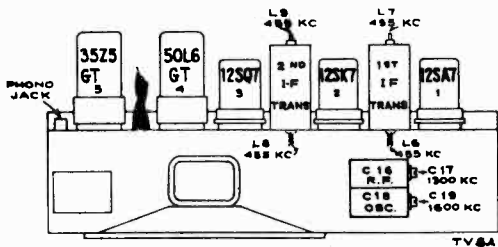
Alignment Procedure

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 1,630 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

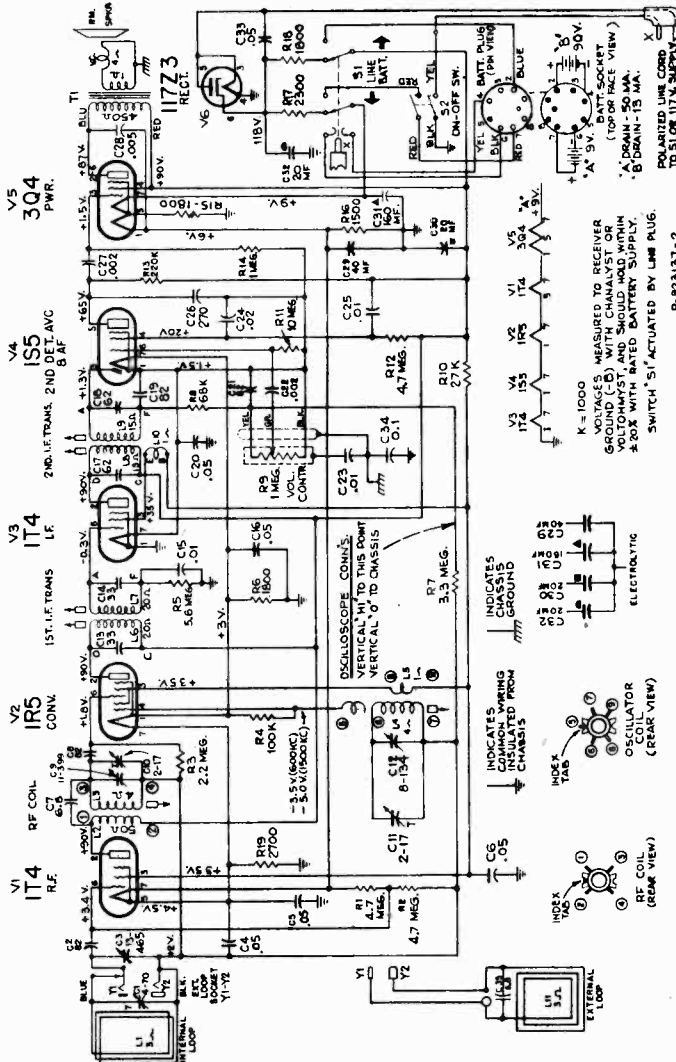
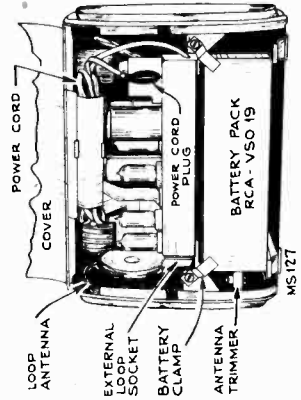
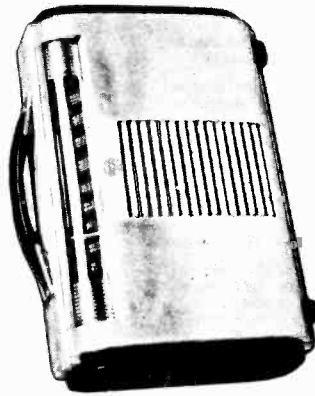
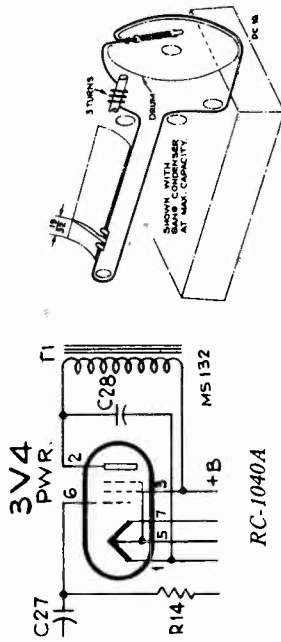
STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	CHASSIS ASSEMBLIES RC 1017A RC 1017B	70390	Spring—Drive cord tension spring
70389	Bearing—Tuning knob shaft bearing	70396	Spring—Volume control gear tension spring
70407	Button—Plug button (2 required)	70394	Switch—Power or radio phono switch
70997	Capacitor—Mica, 5.6 mmf. (C24)	70386	Transformer—First I.F. transformer
39650	Capacitor—Mica, 820 mmf. (C15)	70387	Transformer—Second I.F. transformer
70601	Capacitor—Tubular, .002 mfd., 400 volts (C5, C9)	70385	Transformer—Output transformer
70606	Capacitor—Tubular, .005 mfd., 400 volts (C1, C11)	33726	Washer—"C" washer for tuning knob shaft
70611	Capacitor—Tubular, .02 mfd., 400 volts (C8)	70406	Washer—Spring washer for volume control
70612	Capacitor—Tubular, .025 mfd., 400 volts (C10)		SPEAKER ASSEMBLY 922279-1
70615	Capacitor—Tubular, .05 mfd., 400 volts (C2, C14)	70405	Speaker—4" x 6" P.M. speaker complete
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C3, C4)		SPEAKER ASSEMBLY 922258-2
*72312	Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts and 1 section of 80 mfd., 150 volts (C25, C26)	71058	Speaker—4" x 6" P.M. speaker complete
70403	Coil—Oscillator coil		SPEAKER ASSEMBLY 922258-1
70383	Condenser—Variable tuning condenser complete with drum	70470	Speaker—4" x 6" P.M. elliptical speaker complete
70322	Control—Volume control		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
70392	Cord—Power cord	70398	Clamp—Dial clamps (1 set)
70384	Drum—Drive drum	71984	Decal—Trade mark decal (RCA Victor)
70397	Gear—Power or radio-phono switch gear	71966	Decal—Trade mark decal (Victrola)
70395	Gear—Volume control gear and spring assembly	70402	Dial—Glass dial
70404	Indicator—Station selector indicator	71595	Feet—Rubber feet (4 required)
70391	Insulator—Bakelite insulator for phono input socket	X1630	Grille—Baffle board and grille cloth
11765	Lamp—Dial lamp	70707	Hinge—Lid hinge (2 required)
*72311	Loop—Antenna loop	70401	Knob—Power switch and radio-phono switch knob
70382	Plate—Dial back plate complete with pulleys less dial	70400	Knob—Tuning knob
30868	Plug—2 contact female plug for "AC" cable	70399	Knob—Volume control knob
36230	Pulley—Drive cord pulley	71815	Mounting—One set of hardware consisting of four springs, two spring washers and two rubber washers to mount record changer.
*72313	Resistor—33 ohms, 1 watt (R11)	14270	Spring—Retaining spring for knobs
30880	Resistor—150 ohms, 1/4 watt (R7)	71824	Stud—Stud and screw to mount lid hinge (1 set)
6134	Resistor—1200 ohms, 1 watt (R9)	39545	Support—Lid support
30492	Resistor—22,000 ohms, 1/4 watt (R2)	X1386	Cabinet—Cabinet for Model 65U
14583	Resistor—220,000 ohms, 1/4 watt (R1, R5)		
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 1/4" 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

RCA MFG. CO.

MODEL 66BX
Chassis RC-1040,
RC-1040A

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
110 to 125 volts, AC 50 or 60 cycles, or DC	14 watts
Batteries required	One RCA Battery Pack VS019 or equivalent
Tube Complement	
(1) RCA-1T4	R.F. Converter
(2) RCA-1R5	I.F.-Amplifier
(3) RCA-1T4	2nd Det. AVC. & A.F.-Amplifier
(4) RCA-1S5	Power Output
(5) RCA-304-RC-1040	Power Output
(6) RCA-3V4-RC-1040A	Rectifier
(6) RCA-117Z3	Rectifier

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.

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.

Current Consumption	.33 watt
Battery Operation	"A" 50 milliamperes, "B" 13 milliamperes
Total Rect. Current (117 volt, 60 cycle)	61 mils.
Power Output	
Maximum	4 x 6 in. elliptical P.M. 3.4 ohms at 400 cycles

MODEL 66BX

Chassis RC-1040,
RC-1040A

RCA MFG. CO.

Alignment Procedure

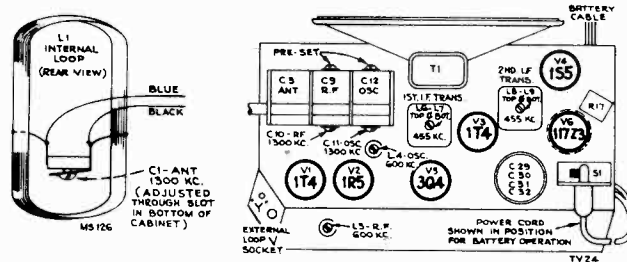
Cathode Ray Alignment is the preferable method. Connections for the oscilloscope are shown on the schematic diagram.

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.

Calibration Scale.—The calibrated dial scale is permanently connected to chassis. It can therefore be used directly as a reference for alignment.

With the gang at full mesh set the dial pointer so that the left hand edge of the pointer is $\frac{1}{4}$ inches to the right of the point indicated in the dial cord drawing.



*If two peaks are found with top slugs use the one with stud in the outer position.
**Adjust C-1 loop cap with back cover of case closed. Access to trimmer is made through small slot in case provided for cable of external loop.

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, slide the two plastic feet in the rear of the cabinet toward each other, 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.

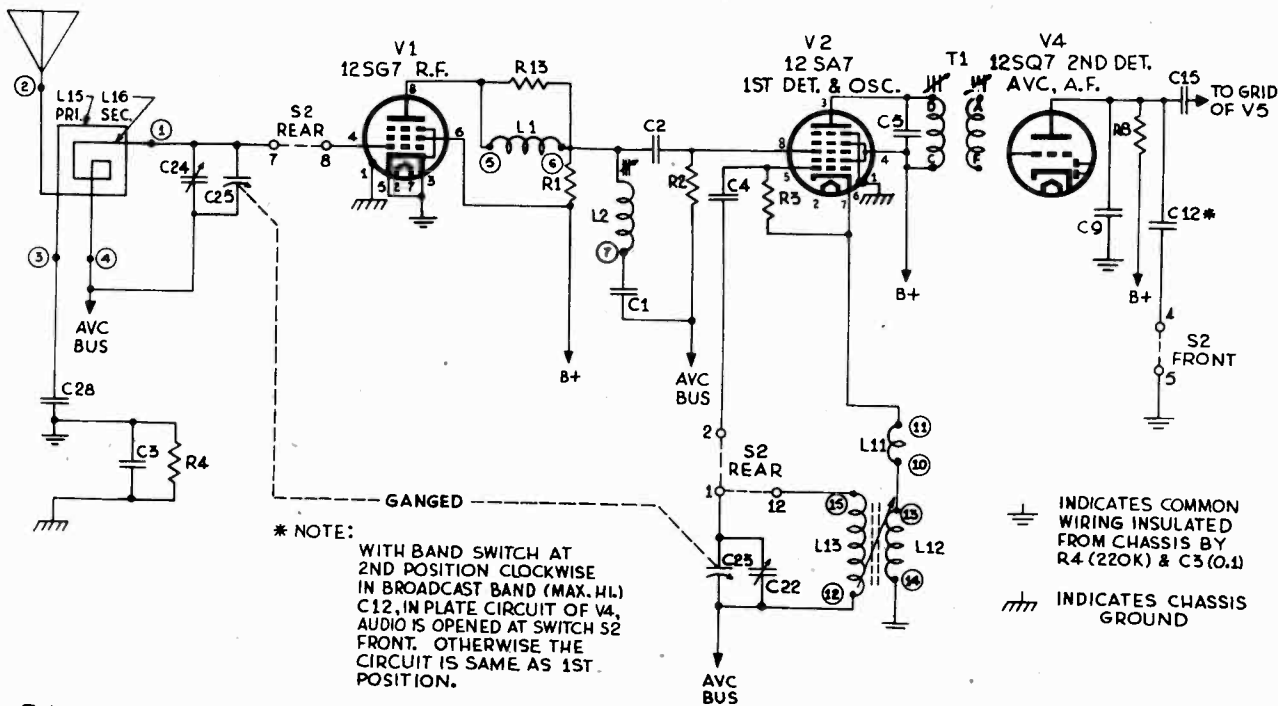
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	High side of loop (Blue lead) in series with 0.1 mfd.	455 kc	Gang at max. cap.	L8, L9 (2nd I.F. Trans.)* L6, L7 (1st I.F. Trans.)
2	High side of loop (Blue lead) in series with 0.1 mfd. (Bottom shield cover in place and chassis out of cabinet)	1300 kc	1300 kc	C11—(osc.) C10—(R.F.)
3		600 kc	600 kc	L4 (osc.) L3 (R.F.)
** 4	220 mmf. in series with a single turn loop 4x8 in., approx. 3 in. from receiver loop. (Chassis in cabinet C-1 connected and rear lid of cabinet closed)	1300 kc	1300 kc	C1 (loop)

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
CHASSIS ASSEMBLIES RC 1040			
*71056	Bracket—Drive cord pulley bracket complete with one (1) pulley	*71040	Socket—2 contact female socket for external loop
*71054	Bracket—Drive cord pulley bracket complete with two (2) pulleys	*71037	Socket—Tube socket—miniature—7 prong—floating
*71044	Bracket—Power switch bracket complete with actuating lever less power switch	*71827	Socket—Tube socket—miniature—7 prong—bottom mounted
*71042	Button—Plug button	70390	Spring—Drive cord spring
31709	Capacitor—Ceramic, 6.8 mmf. (C7)	*71053	Spring—Retaining spring for knob
*71514	Capacitor—Ceramic, 82 mmf. (C2, C8, C19, C21)	*71039	Switch—Line—battery change switch (S1)
*71540	Capacitor—Ceramic, 270 mmf. (C26)	*71045	Switch—Power switch (S2)
*71552	Capacitor—Tubular, .002 mfd., 400 volts (C22, C27)	*71290	Transformer—First I.F. transformer (L6, L7, C13, C14)
*71553	Capacitor—Tubular, .005 mfd., 400 volts (C28)	*71400	Transformer—Second I.F. transformer (L8, L9, L10, C17, C18)
70610	Capacitor—Tubular, .01 mfd., 400 volts (C15, C23, C25)	*71047	Transformer—Output transformer (T1)
70611	Capacitor—Tubular, .02 mfd., 400 volts (C24)	*71081	Washer—"C" washer for tuning knob shaft
70615	Capacitor—Tubular, .05 mfd., 400 volts (C4, C6, C33)	*71033	Washer—Insulating washer, extruded, for mounting dial support to chassis base (4 req'd.) and to mount base holder bracket
71551	Capacitor—Tubular, .05 mfd., 200 volts (C5, C16, C20)	*71034	Washer—Insulating washer—flat, to mount base holder bracket
70617	Capacitor—Tubular, 0.1 mfd., 400 volts (C34)	*71049	Window—Dial window
*71043	Capacitor—Electrolytic comprising 2 sections 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 922258-2	
*71053	Clip—Spring clip for knob	*71059	Gasket—Speaker gasket (black tubing)
*71401	Coil—Oscillator coil (L4, L5)	71058	Speaker—4" x 6" P.M. speaker complete with cone and voice coil
*71402	Coil—R.F. Coil (L2, L3)	<i>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.</i>	
*71035	Condenser—Variable tuning condenser (C3, C9, C10, C11, C12)	MISCELLANEOUS	
*71057	Control—Volume control (R9)	*71074	Arm—Shutter arm lever
32634	Cord—Drive cord (approx. 37" overall length)	*71617	Cable—Connecting cable for external loop
70392	Cord—Power cord	*71069	Capacitor—Adjustable trimmer, 3-35 mmf. (C1)
*71048	Dial—Dial scale and window assembly	*71080	Clip—Case side spring clip and screw (2 req'd.)
*71036	Drum—Drive drum	*71619	Cup—Suction cup for mounting external loop
*71031	Holder—Power cord holder	*71060	Back—Case back complete with center strip
*71030	Indicator—Station selector indicator	*71061	Foot—Case foot (moulded) (2 req'd.)
*71032	Insulator—Rectangular bakelite insulator—between chassis base and dial support bracket (2 required)	*71068	Foot—Case foot (wood) (2 req'd.)
*71052	Knob—Tuning knob and volume control knob	*71618	Gasket—Gasket front complete less shutter
18469	Plate—Electrolytic capacitor mounting plate	*71063	Gasket—Gasket seal to hold loop together
*71041	Plug—4 prong male plug for battery cable	*71062	Handle—Carrying handle
36230	Pulley—Drive cord pulley	*71065	Latch—Case latch (2 req'd.)
30654	Resistor—1500 ohms, 1/4 watt (R16)	*71066	Link—Carrying handle link (2 req'd.)
12194	Resistor—1800 ohms, 1/4 watt (R6, R15)	*71616	Loop—External antenna loop (L11, C35)
38875	Resistor—1800 ohms, 1 watt (R18)	*71079	Loop—Antenna loop—internal (L1)
*71038	Resistor—Ballast resistor, 2300 ohms, 6 watt (R17)	*71064	Retainer—Battery retainer spring bracket (2 required)
30730	Resistor—2700 ohms, 1/4 watt (R19)	*71066	Screw—#8-32 x 3/16" long screw to fasten case together (2 required) for battery holders (2 required)
30409	Resistor—27,000 ohms, 1/4 watt (R10)	*71077	Screw—Screw complete with washer and nut to secure one side to case front or case latch
14138	Resistor—68,000 ohms, 1/4 watt (R8)	*71071	Shutter—Case shutter
3252	Resistor—100,000 ohms, 1/4 watt (R4)	*71076	Side—Case side—L.H.
14583	Resistor—220,000 ohms, 1/4 watt (R13)	*71075	Side—Case side—R.H. (loop side)—less capacitor assembly
30652	Resistor—1 megohm, 1/4 watt (R14)	*71072	Spring—Case shutter compression spring
30649	Resistor—2.2 megohms, 1/4 watt (R3)	31608	Washer—"C" washer for case shutter's shafts
31417	Resistor—3.3 megohms, 1/4 watt (R7)	*71078	Washer—Dampening washer for shutter shafts
30931	Resistor—4.7 megohms, 1/4 watt (R1, R2, R12)		
31455	Resistor—5.6 megohms, 1/4 watt (R5)		
30992	Resistor—10 megohms, 1/4 watt (R11)		
*71055	Shaft—Tuning knob shaft		
*71050	Shield—L.H. end shield for dial		
*71051	Shield—R.H. end shield for dial		

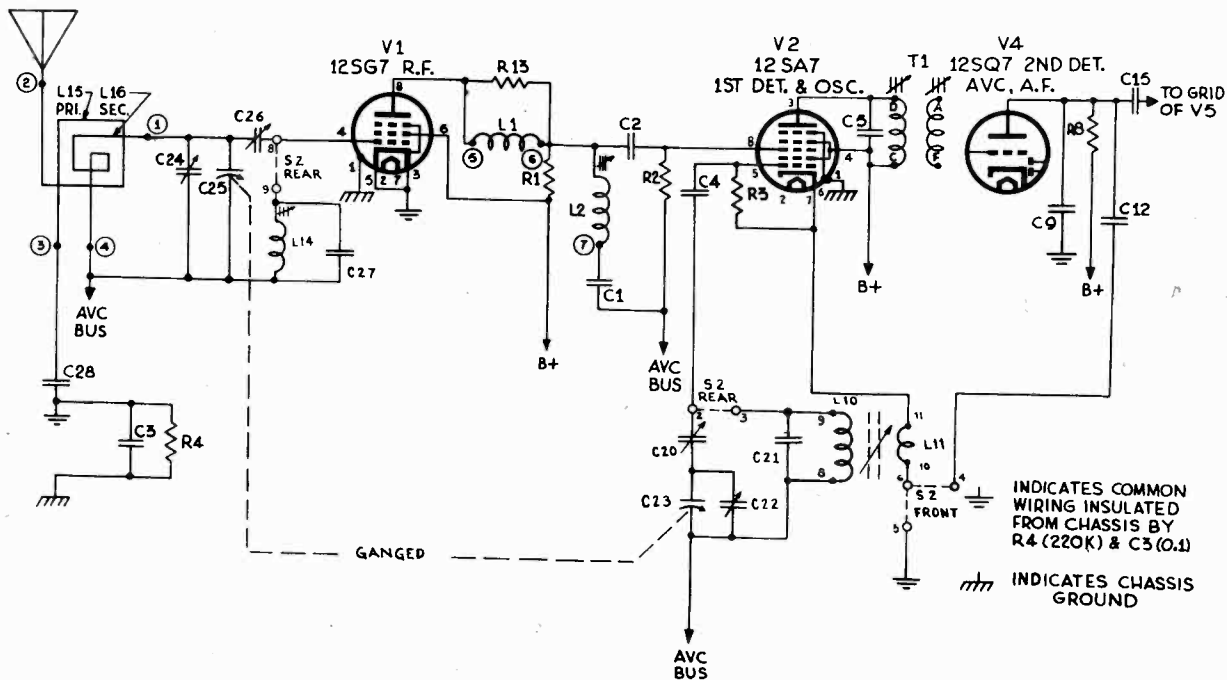
"clarified schematics"

MODELS 66X1, 66X2, 66X3, 66X4,
66X9, Chassis RC-1038

RCA MFG. CO.



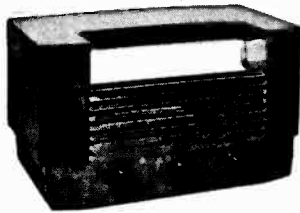
BAND-SWITCH SHOWN AT 1ST POSITION.
BROADCAST BAND (MIN. HI.)
540 - 1600 KC.



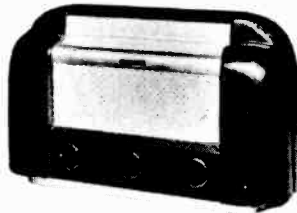
BAND-SWITCH SHOWN AT 3RD POSITION CLOCKWISE
SHORT WAVE BAND (MIN. HI.)
9-12 MC.

RCA MFG. CO.

MODELS 66X1, 66X2, 66X3, 66X4, 66X9, Chassis RC-1038

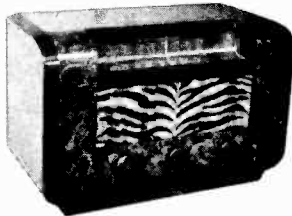


66X9—(Plastic)

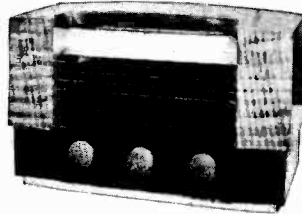


66X1—(Brown Plastic)

66X2—(Ivory Plastic)



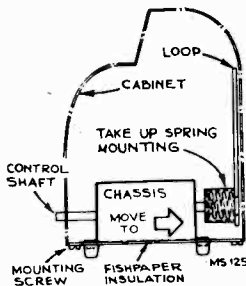
66X3—(Wood)



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 1-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 inductor) 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 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. 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.

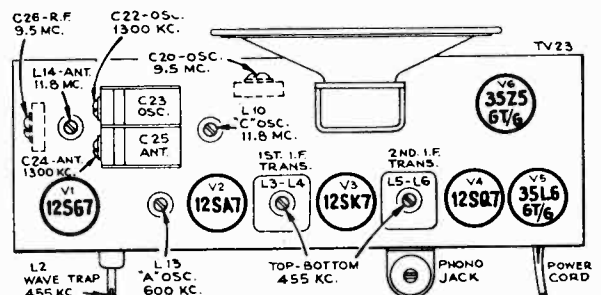
Power Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

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.

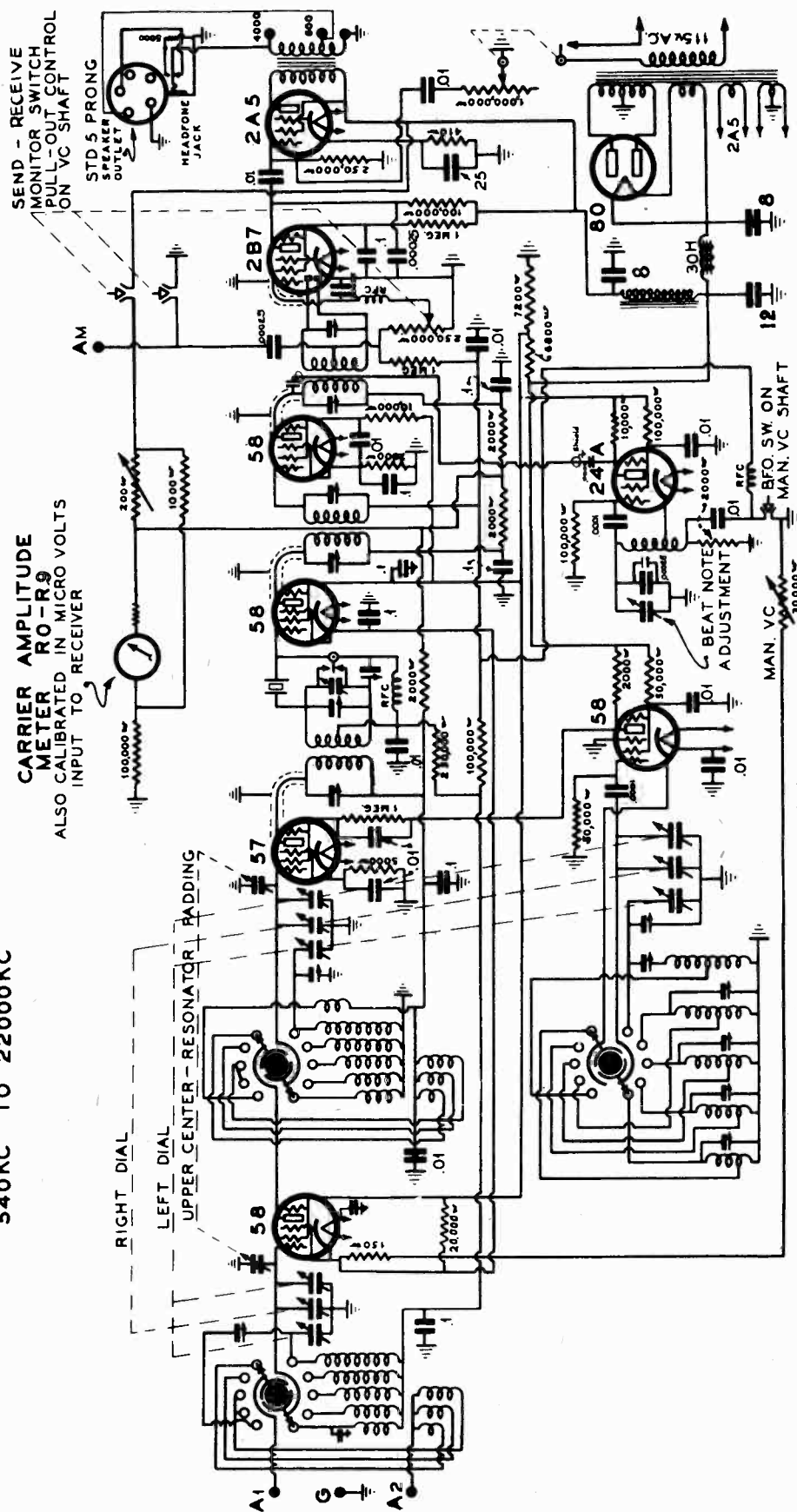
**If two peaks are obtained use minimum inductance peak.

†Do not repeat step No. 1.



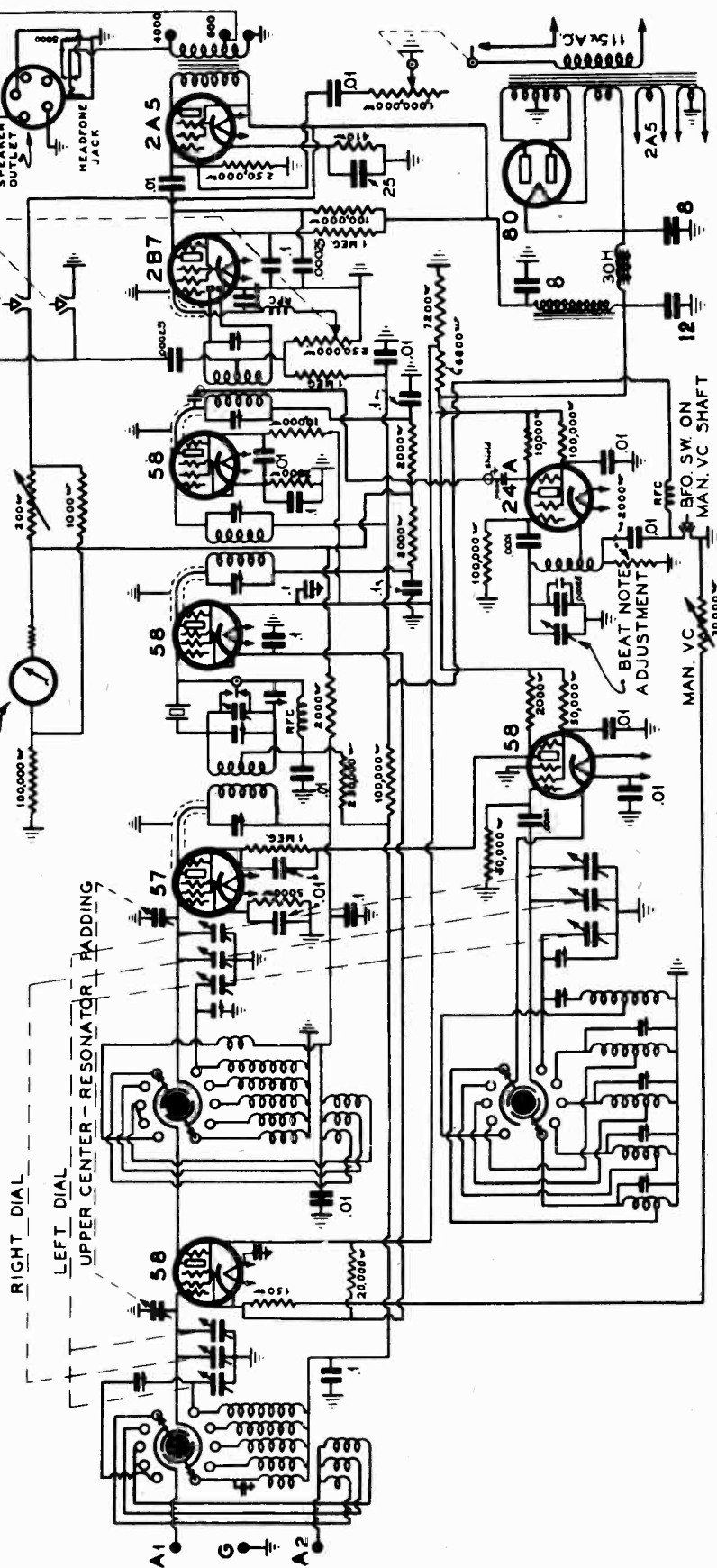
RADIO MFG. ENG. INC.

MODEL RME - 9D SINGLE SIGNAL
540KC TO 2200KC



SEND - RECEIVE
MONITOR SWITCH
PULL-OUT CONTROL
ON VC SHAFT

CARRIER AMPLITUDE
METER RO-R9
ALSO CALIBRATED IN MICRO VOLTS
INPUT TO RECEIVER



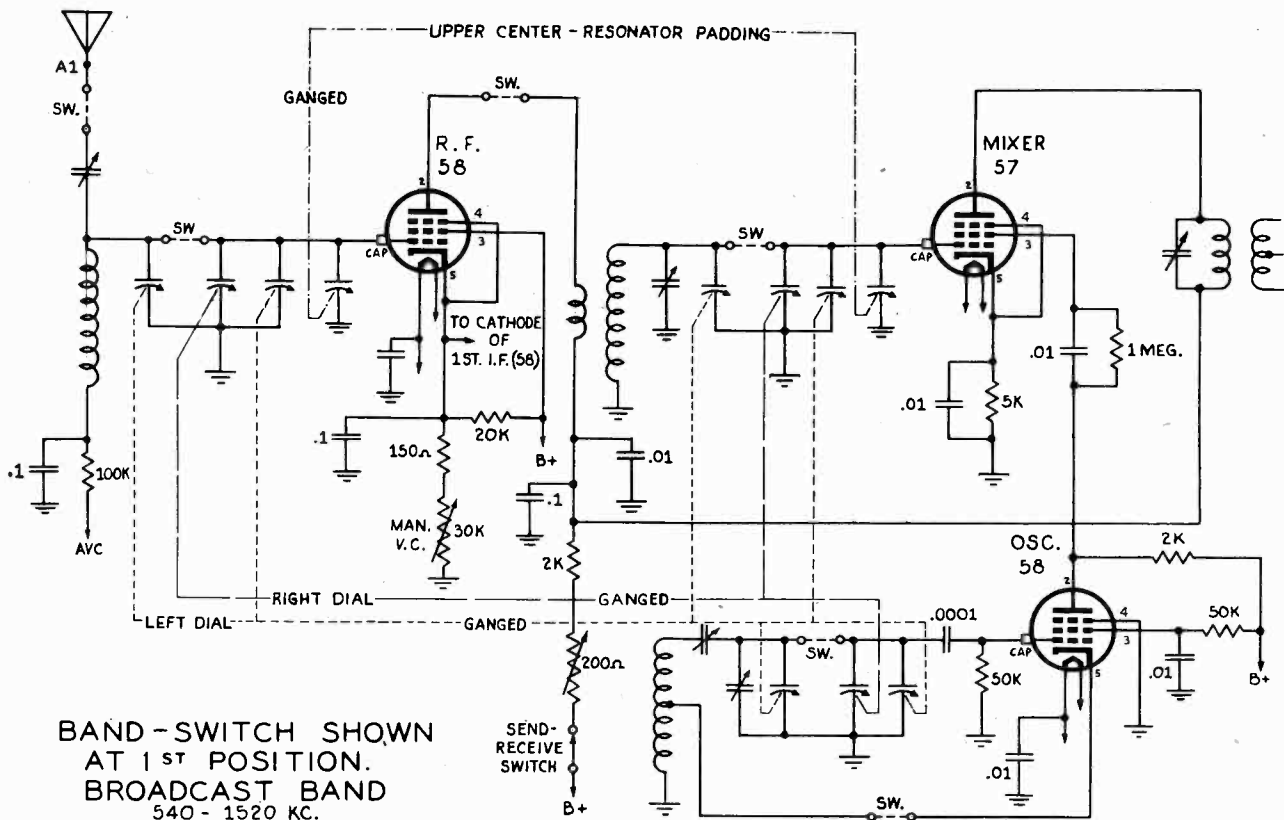
Range of Each Position of Band
Selector knob

Position	Range of Each Position of Band
1	540 KC to 1520 KC
2	1500 KC to 3200 KC
3	3100 KC to 6500 KC
4	6300 KC to 13000 KC
5	12000 KC to 22000 KC

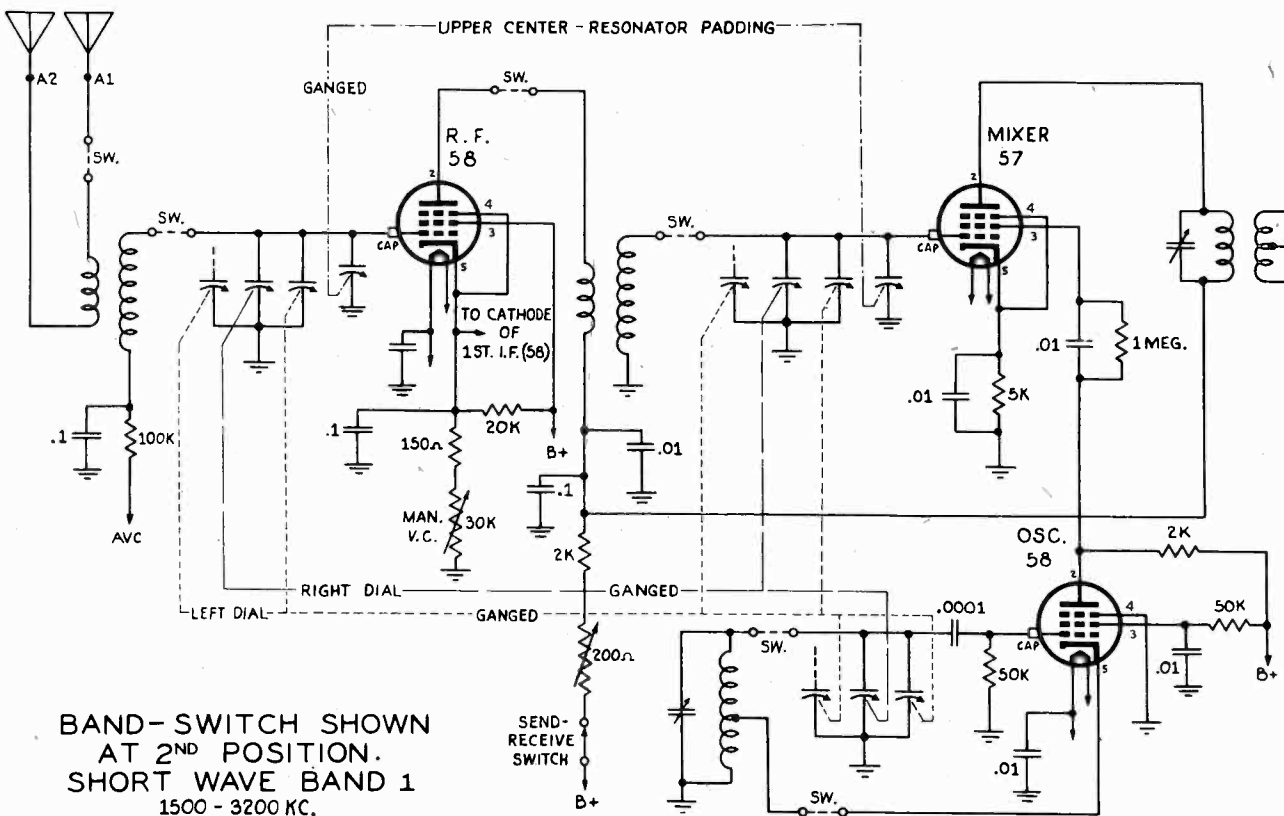
- Plus B tap on voltage divider to ground.....230-250
- Plates of 58s and 57 to ground.....210-25C
- Voltage divider tap to ground.....90-110
- Plate of 2A5 to ground.....220-250
- Cathode of 2A5 to ground.....17-19
- Cathode of RF and IF amplifiers to ground.....2.5-3
- Screens of RF and IF amplifiers to ground.....90-110
- Screens of 57 first detector to ground.....70-120
- Plate of 2A4 to ground.....230-250
- Plate of 2B7 to ground.....80-110
- Screen of 2B7 to ground.....15-30

MODEL 9D

RADIO MFG. ENG. INC.



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND 540 - 1520 KC.



BAND-SWITCH SHOWN AT 2ND POSITION. SHORT WAVE BAND 1 1500 - 3200 KC.

MODEL 9D

RADIO MFG. ENG. INC.

OPERATION OF THE CRYSTAL FILTER

To operate the crystal filter for single signal reception, the white dot on the knob "D" should be set to the position corresponding to "S" and the knob "C" adjusted slightly to a position where background response is a minimum. When tuning for CW signals using the crystal filter the tuning should be done with dial number 2, and rotation should be slow due to the sharp resonance characteristic of the filter. In case comparative elimination of noises does not occur when the selectivity control "C" is adjusted from side to side, it is possible that the balancing condenser has become misaligned. In order to adjust this alignment to the null point, use an insulated trimmer screw driver and adjust the pressure screw on the small mica trimmer condenser located just behind and below the crystal filter compartment. This is accessible by raising the receiver cabinet cover and removing the shield box cover of the crystal filter compartment. With the receiver merely on the air or turned to station reception, this balance can be made by slightly turning the screw either way until minimum receiver response is obtained.

When phone stations are to be received the carrier may be tuned in and the selectivity control "C" adjusted to broaden the crystal response. Although the result will be mostly a low frequency audio output, sufficient articulation frequencies are passed to make phone reception intelligible. Of course, when the crystal is used for phone reception the apparent strength of the speaker output is reduced due to the fact that the crystal has eliminated most of the side bands of the modulated carrier and since these eliminated higher side band frequencies contain some of the sound energy going to the speaker, the net effect is a reduction in sound output. However, with CW reception, when the carrier to be received, is exactly tuned there is no reduction in the signal beat when the crystal is being used.

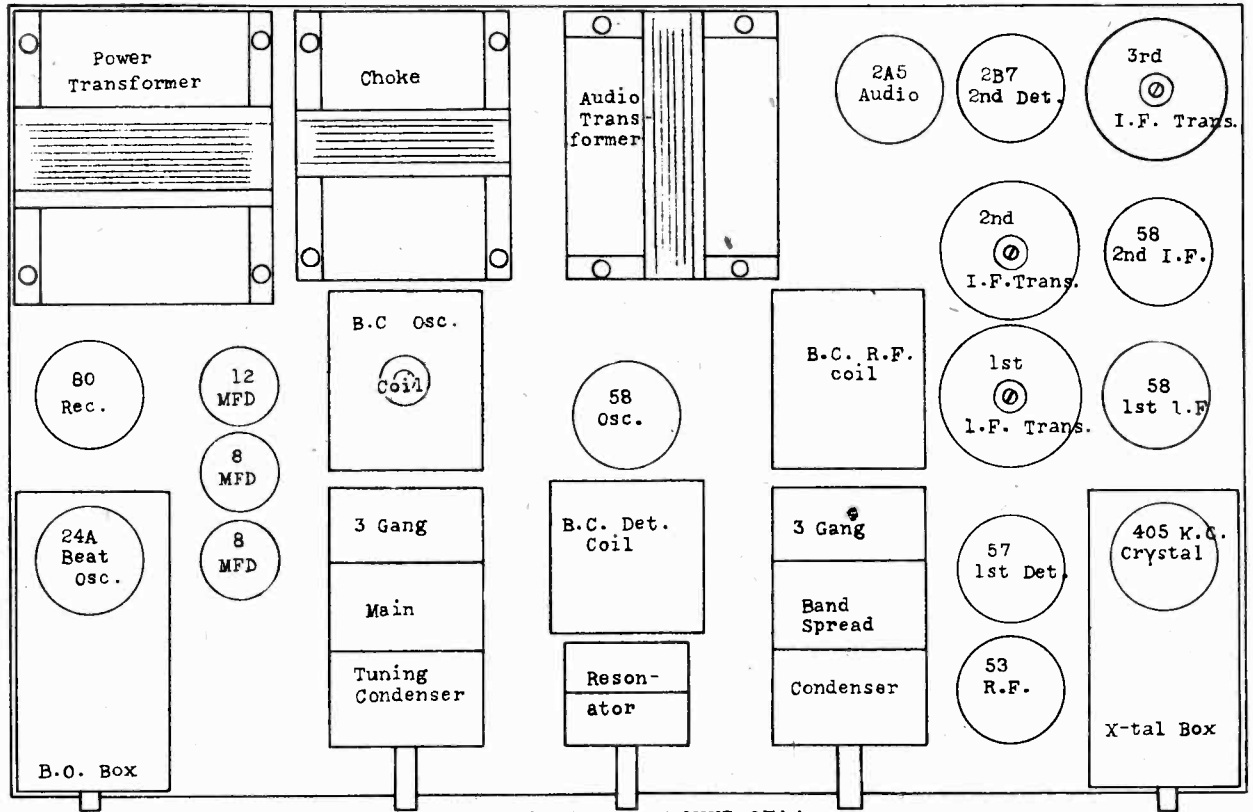
When the crystal is placed parallel in the filter circuit (knob "D" set to position B, diagram 40A) it tends to short circuit (series resonance) at its resonant frequency. This function is valuable for eliminating interfering heterodynes and its effect may be sharpened and broadened slightly in exactly the same way as the series operation of the filter. Its use in this manner is many times of invaluable service in connection with radio telephone reception.

THE MONITOR FOR MODULATION

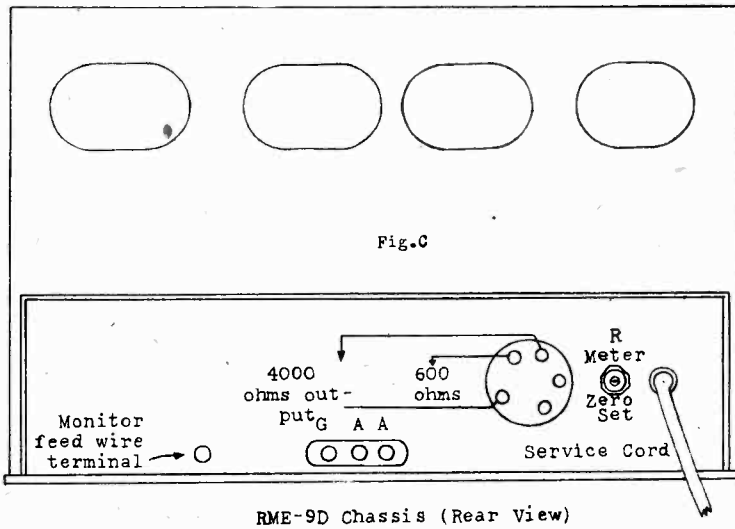
On the rear of the chassis (Figure C) is a terminal marked "monitor feed wire terminal", which is used to connect a pick-up wire to the monitor circuit. By pulling out the knob "B" the monitor circuit is connected and the radio amplifier circuits disconnected. The monitor is intended for the checking of modulation quality of a transmitter in the proximity of the receiver. For this purpose 10 feet or so, of wire lying on the floor, may be connected to the monitor terminal post. If more or less is needed that fact can be determined by noting the magnitude of the audio output. When using the monitor it is recommended that listening be done with headphones to prevent audio feed-back, especially when the transmitter modulation originates at a nearby microphone. If transcription equipment is used the receiver loud speaker may be used. Volume may be controlled by the rotation of knob "B" in the same manner as the radio volume of the receiver is controlled.

The monitor switch is operated by pulling on the knob "B" and thus also becomes the SEND-RECEIVE switch, since it opens the plate supply to the radio and IF amplifiers. The monitoring of CW signals can be accomplished by leaving the knob "B" pushed in toward the panel in the regular radio receiving position and the manual volume control and beat oscillator knob "F" turned considerably toward the maximum clockwise position. The frequency of the transmitter must then be tuned to by the regular tuning controls and the beat note will be heard in the same manner as that of any received signal. It may be necessary in this connection to remove the regular antenna and substitute a shorter length in case the received signal is too strong. However, the manual volume control knob "F", when in the maximum clockwise position, reduces the receiver's sensitivity to a point which will accommodate most amateur transmitters.

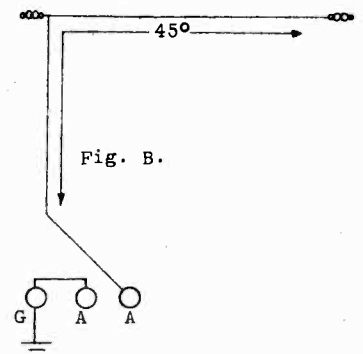
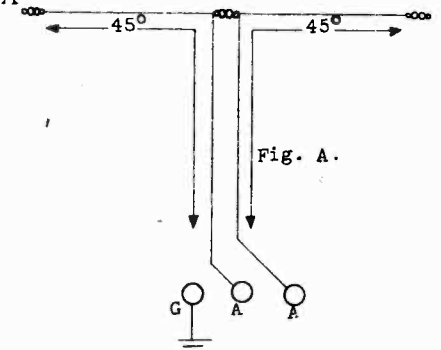
RADIO MFG. ENG. INC.



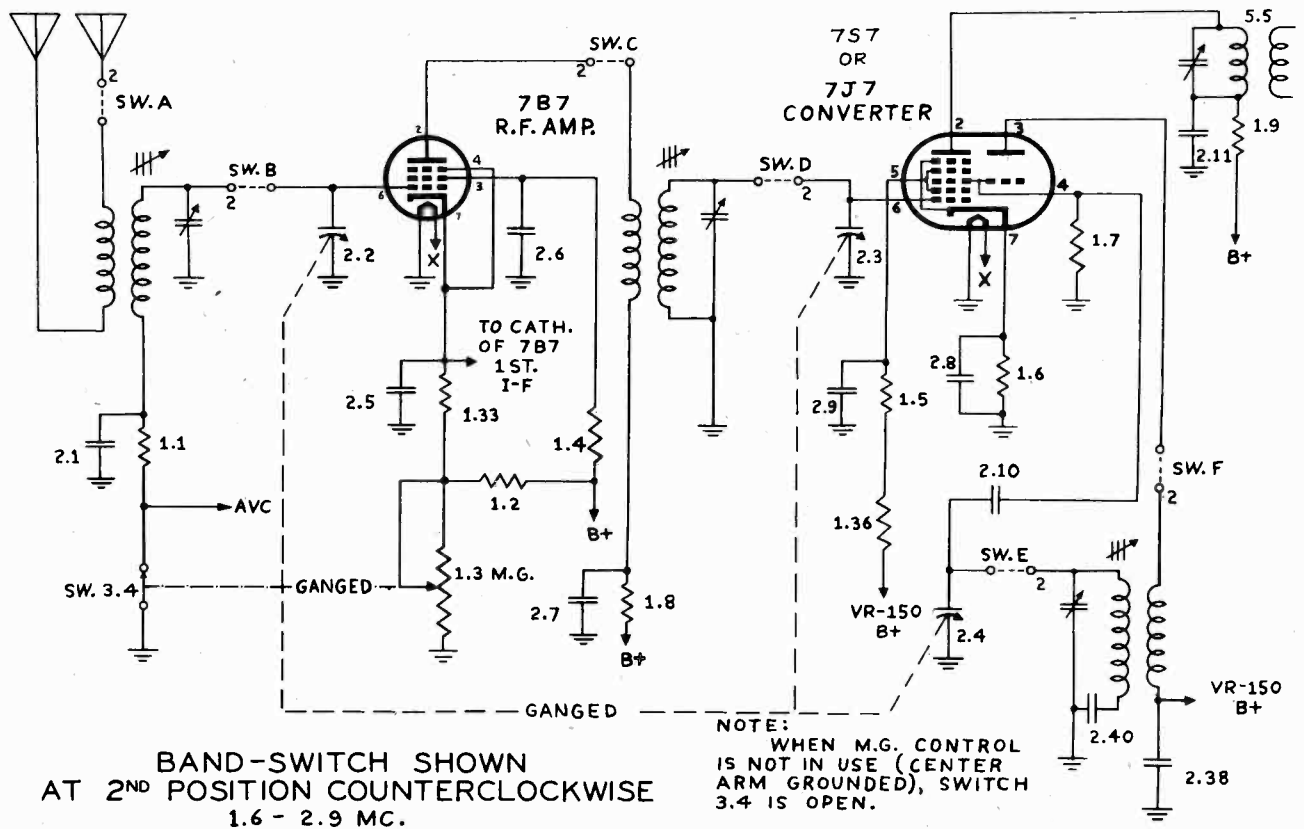
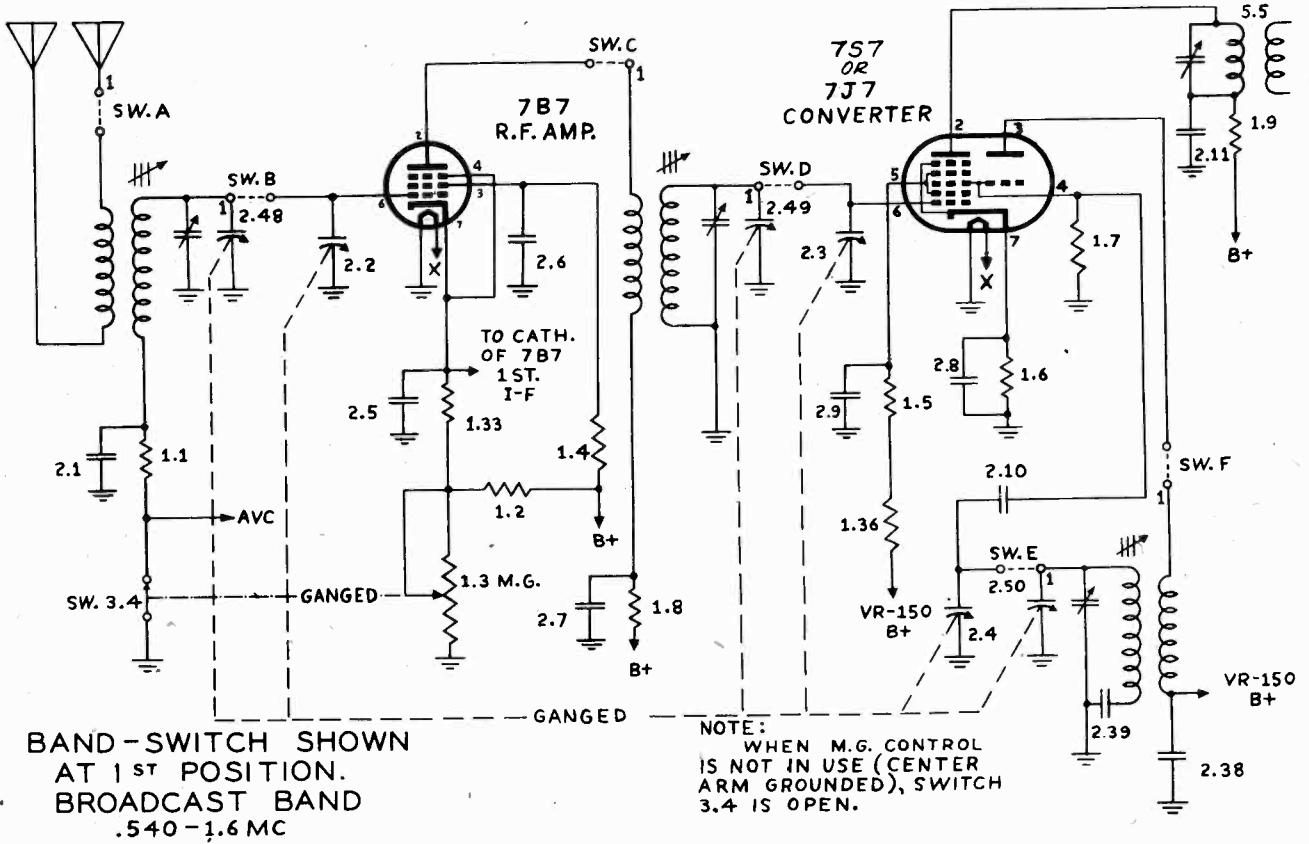
RME-9D CHASSIS LAYOUT-27AA



RME-9D Chassis (Rear View)

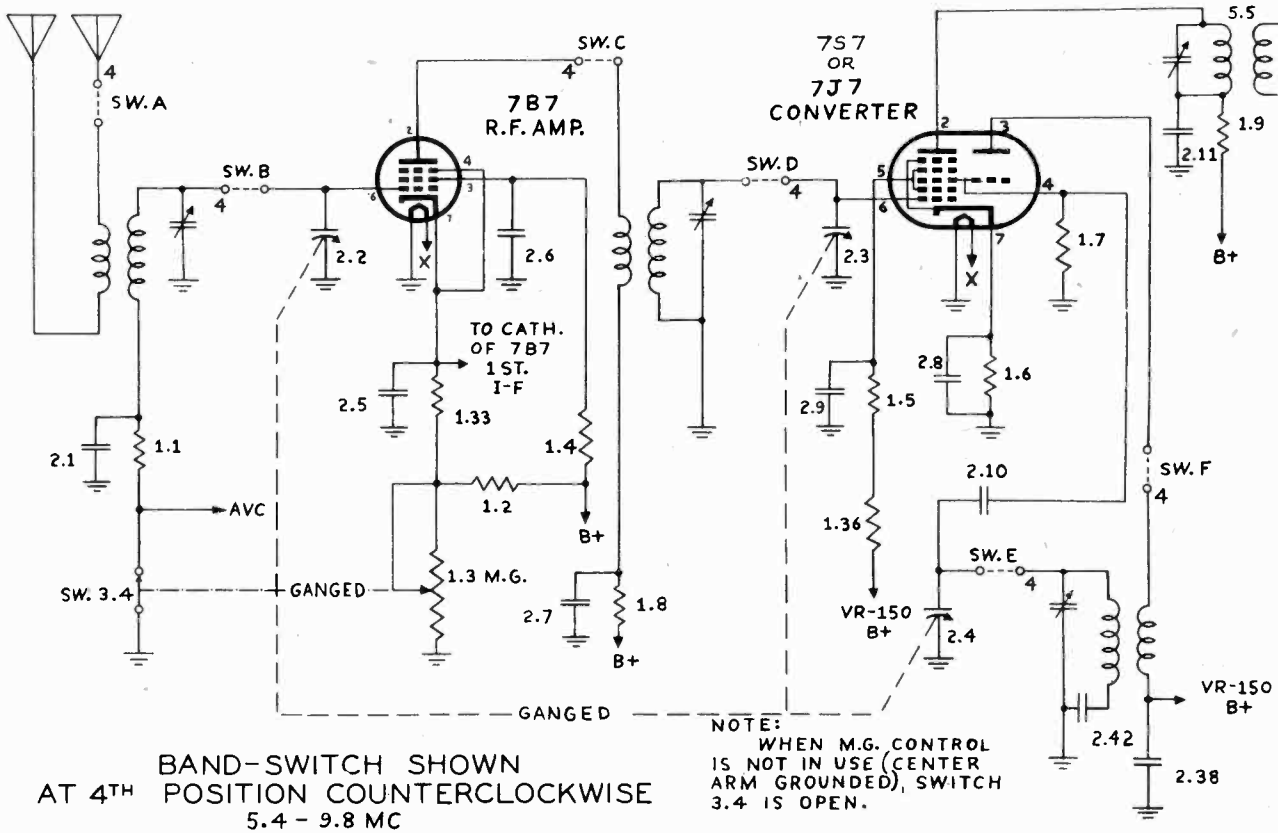
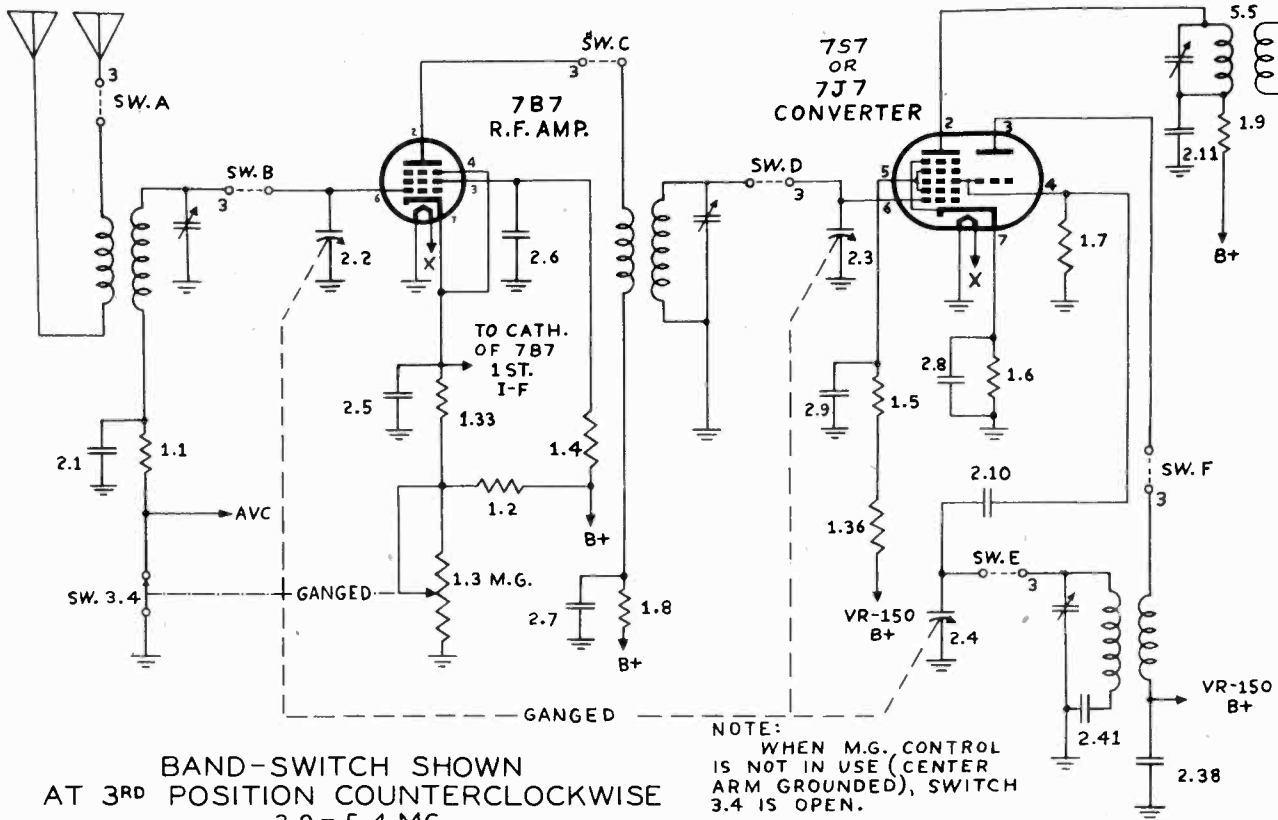


RADIO MFG. ENG. INC.



MODEL 45 Early,
Late, Revised, 45B

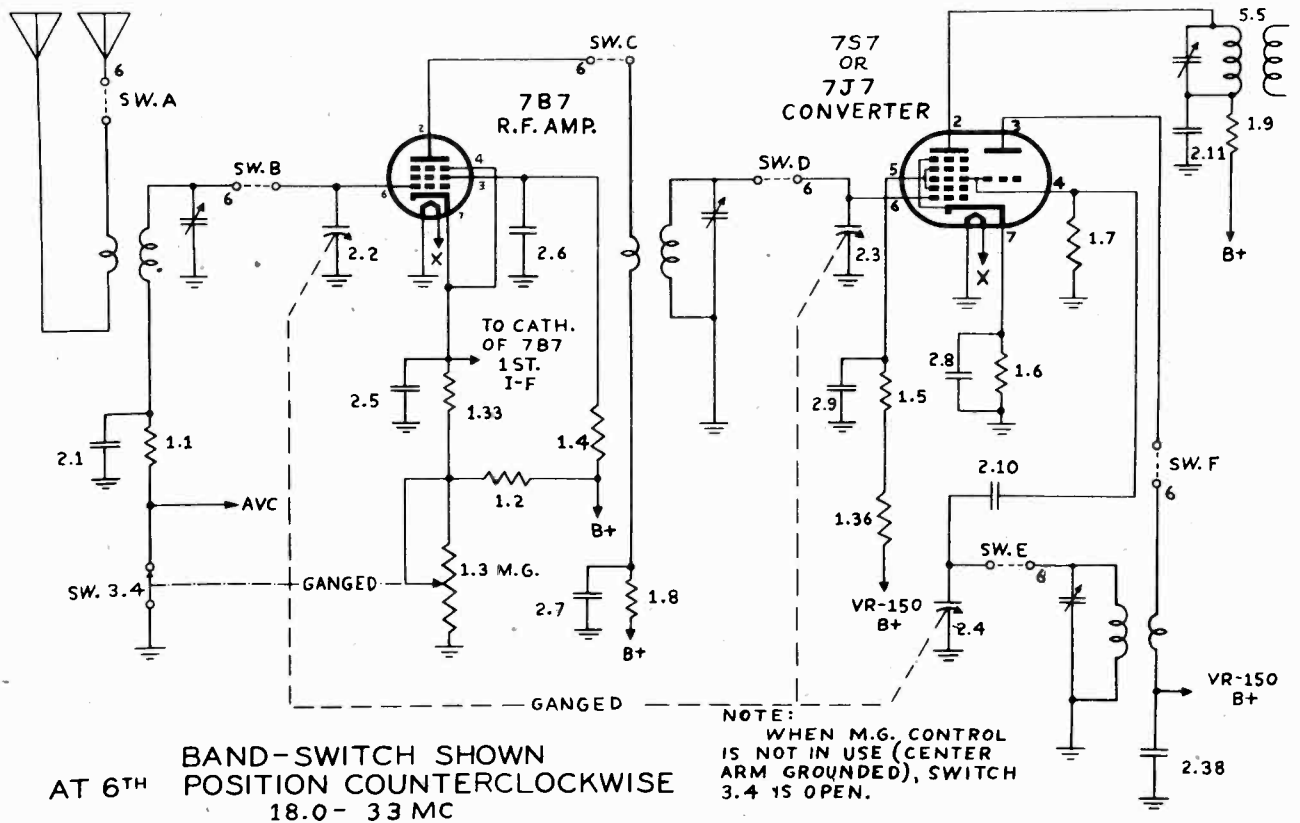
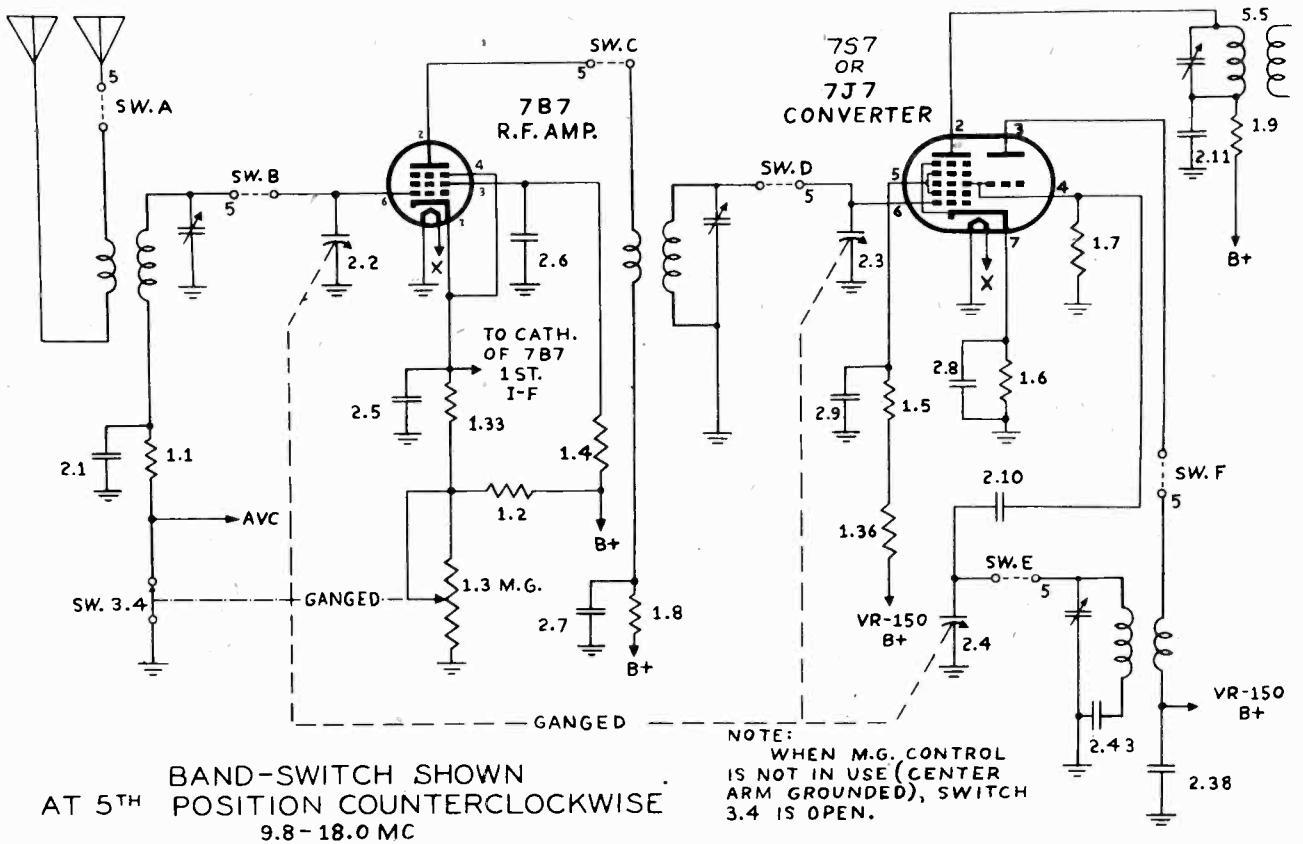
RADIO MFG. ENG. INC.



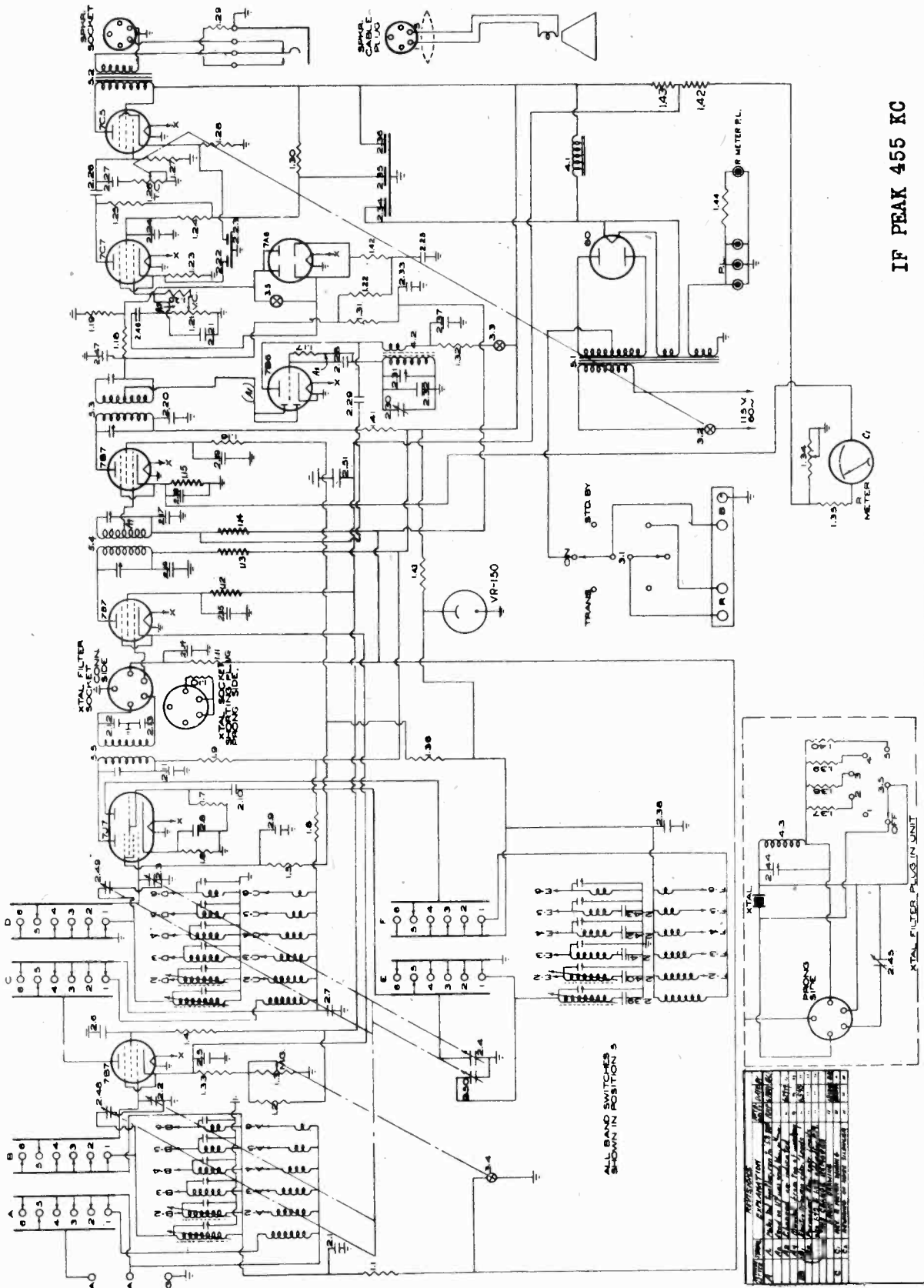
"clarified schematics"

MODEL 45 Early,
Late, Revised, 45B

RADIO MFG. ENG. INC.



RADIO MFG. ENG. INC.



IF PEAK 455 KC

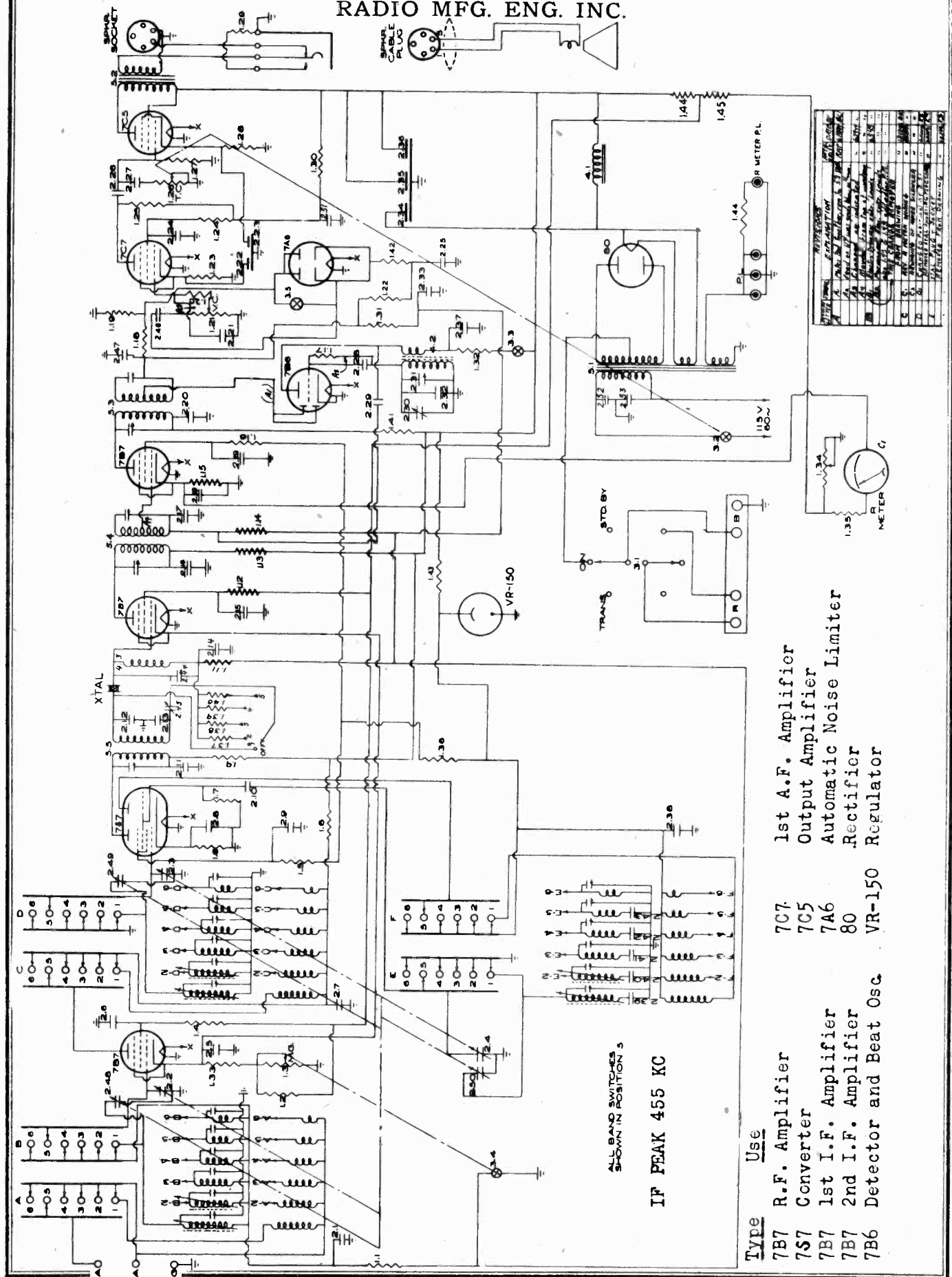
RADIO MFG. ENGINEERS, Inc.
314 FIRST AVENUE
PEORIA, ILL., U. S. A.

C - 96

SCHEMATIC
RME-45 RECEIVER
LATE

REV.	DATE	DESCRIPTION
1	10-15-36	ORIGINAL DESIGN
2	11-15-36	REVISION TO TUBE LIST
3	12-15-36	REVISION TO PARTS LIST
4	1-15-37	REVISION TO SCHEMATIC
5	2-15-37	REVISION TO PARTS LIST
6	3-15-37	REVISION TO SCHEMATIC
7	4-15-37	REVISION TO PARTS LIST
8	5-15-37	REVISION TO SCHEMATIC
9	6-15-37	REVISION TO PARTS LIST
10	7-15-37	REVISION TO SCHEMATIC
11	8-15-37	REVISION TO PARTS LIST
12	9-15-37	REVISION TO SCHEMATIC
13	10-15-37	REVISION TO PARTS LIST
14	11-15-37	REVISION TO SCHEMATIC
15	12-15-37	REVISION TO PARTS LIST
16	1-15-38	REVISION TO SCHEMATIC
17	2-15-38	REVISION TO PARTS LIST
18	3-15-38	REVISION TO SCHEMATIC
19	4-15-38	REVISION TO PARTS LIST
20	5-15-38	REVISION TO SCHEMATIC
21	6-15-38	REVISION TO PARTS LIST
22	7-15-38	REVISION TO SCHEMATIC
23	8-15-38	REVISION TO PARTS LIST
24	9-15-38	REVISION TO SCHEMATIC
25	10-15-38	REVISION TO PARTS LIST
26	11-15-38	REVISION TO SCHEMATIC
27	12-15-38	REVISION TO PARTS LIST
28	1-15-39	REVISION TO SCHEMATIC
29	2-15-39	REVISION TO PARTS LIST
30	3-15-39	REVISION TO SCHEMATIC
31	4-15-39	REVISION TO PARTS LIST
32	5-15-39	REVISION TO SCHEMATIC
33	6-15-39	REVISION TO PARTS LIST
34	7-15-39	REVISION TO SCHEMATIC
35	8-15-39	REVISION TO PARTS LIST
36	9-15-39	REVISION TO SCHEMATIC
37	10-15-39	REVISION TO PARTS LIST
38	11-15-39	REVISION TO SCHEMATIC
39	12-15-39	REVISION TO PARTS LIST
40	1-15-40	REVISION TO SCHEMATIC
41	2-15-40	REVISION TO PARTS LIST
42	3-15-40	REVISION TO SCHEMATIC
43	4-15-40	REVISION TO PARTS LIST
44	5-15-40	REVISION TO SCHEMATIC
45	6-15-40	REVISION TO PARTS LIST
46	7-15-40	REVISION TO SCHEMATIC
47	8-15-40	REVISION TO PARTS LIST
48	9-15-40	REVISION TO SCHEMATIC
49	10-15-40	REVISION TO PARTS LIST
50	11-15-40	REVISION TO SCHEMATIC
51	12-15-40	REVISION TO PARTS LIST
52	1-15-41	REVISION TO SCHEMATIC
53	2-15-41	REVISION TO PARTS LIST
54	3-15-41	REVISION TO SCHEMATIC
55	4-15-41	REVISION TO PARTS LIST
56	5-15-41	REVISION TO SCHEMATIC
57	6-15-41	REVISION TO PARTS LIST
58	7-15-41	REVISION TO SCHEMATIC
59	8-15-41	REVISION TO PARTS LIST
60	9-15-41	REVISION TO SCHEMATIC
61	10-15-41	REVISION TO PARTS LIST
62	11-15-41	REVISION TO SCHEMATIC
63	12-15-41	REVISION TO PARTS LIST
64	1-15-42	REVISION TO SCHEMATIC
65	2-15-42	REVISION TO PARTS LIST
66	3-15-42	REVISION TO SCHEMATIC
67	4-15-42	REVISION TO PARTS LIST
68	5-15-42	REVISION TO SCHEMATIC
69	6-15-42	REVISION TO PARTS LIST
70	7-15-42	REVISION TO SCHEMATIC
71	8-15-42	REVISION TO PARTS LIST
72	9-15-42	REVISION TO SCHEMATIC
73	10-15-42	REVISION TO PARTS LIST
74	11-15-42	REVISION TO SCHEMATIC
75	12-15-42	REVISION TO PARTS LIST
76	1-15-43	REVISION TO SCHEMATIC
77	2-15-43	REVISION TO PARTS LIST
78	3-15-43	REVISION TO SCHEMATIC
79	4-15-43	REVISION TO PARTS LIST
80	5-15-43	REVISION TO SCHEMATIC
81	6-15-43	REVISION TO PARTS LIST
82	7-15-43	REVISION TO SCHEMATIC
83	8-15-43	REVISION TO PARTS LIST
84	9-15-43	REVISION TO SCHEMATIC
85	10-15-43	REVISION TO PARTS LIST
86	11-15-43	REVISION TO SCHEMATIC
87	12-15-43	REVISION TO PARTS LIST
88	1-15-44	REVISION TO SCHEMATIC
89	2-15-44	REVISION TO PARTS LIST
90	3-15-44	REVISION TO SCHEMATIC
91	4-15-44	REVISION TO PARTS LIST
92	5-15-44	REVISION TO SCHEMATIC
93	6-15-44	REVISION TO PARTS LIST
94	7-15-44	REVISION TO SCHEMATIC
95	8-15-44	REVISION TO PARTS LIST
96	9-15-44	REVISION TO SCHEMATIC
97	10-15-44	REVISION TO PARTS LIST
98	11-15-44	REVISION TO SCHEMATIC
99	12-15-44	REVISION TO PARTS LIST
100	1-15-45	REVISION TO SCHEMATIC

RADIO MFG. ENG. INC.



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TYPE	DESCRIPTION	QTY	REMARKS
7B7	R.F. Amplifier	1	
7S7	R.F. Converter	1	
7B7	1st I.F. Amplifier	1	
7B7	2nd I.F. Amplifier	1	
7B6	Detector and Beat Osc.	1	
7A6	Automatic Noise Limiter	1	
7C7	1st A.F. Amplifier	1	
7C5	Output Amplifier	1	
80	Rectifier	1	
VR-150	Regulator	1	

IF PEAK 455 KC

ALL BAND SWITCHES SHOWN IN POSITION 5

- | | |
|-------------|-------------------------|
| TYPE | Use |
| 7B7 | R.F. Amplifier |
| 7S7 | Converter |
| 7B7 | 1st I.F. Amplifier |
| 7B7 | 2nd I.F. Amplifier |
| 7B6 | Detector and Beat Osc. |
| 7A6 | Automatic Noise Limiter |
| 7C7 | 1st A.F. Amplifier |
| 7C5 | Output Amplifier |
| 80 | Rectifier |
| VR-150 | Regulator |

MODEL 45 Early,
Late, Revised

RADIO MFG. ENG. INC.

the scale indicates its frequency it may be brought in by adjusting the oscillator coil core. This may be done with a small screw driver through the small hole marked "BAND I OSC" on Fig. 3. Another station or signal is now selected near the high frequency end of the range (for example 1400 KC). If this signal is not heard when the dial is accurately set to its frequency it may be brought in by adjusting the padder under the large hole marked "BAND I OSC" by means of an insulated trimmer tool. When this signal is accurately brought in as indicated by a maximum reading on the carrier meter one should go back to the low frequency test point and readjust it if it has changed. It may be necessary to go back and forth several times until both frequencies are accurately calibrated.

The procedure in calibrating and aligning Band II is the same for Band I. On this band two frequencies, such as 1800 and 2800 KC may be used.

The four high frequency bands are calibrated and aligned by removing the bottom plate from the receiver. The screws holding the four rubber feet and the four small screws between them are removed. This allows the bottom plate to be removed. It will be found that an aluminum plate covers the coils. This plate has holes over the 12 padders and all adjustments should be made with this plate in position.

Since the inductance of the coils are accurately adjusted and set at the factory it is necessary only to calibrate one frequency on each band. The same applies to the alignment of the RF and detector padders. Suggested calibration points for each band are as follows:

Band III	5 MC.
Band IV	9 MC.
Band V	16 MC.
Band VI	30 MC.

From the bottom sketch on Fig. 3 the location of each of the 3 padders for each band may be readily located. Note in particular the location of Band V and VI padders. Adjustments should be made with insulated screw driver type of trimmer tool.

High frequency beat is used on all bands. That is to say, that the oscillator is 455 KC higher in frequency than the signal received.

If sufficient input is used each signal can be received at two points, differing by 910 kilocycles. The other signal is the image or "low beat" signal. The higher frequency signal received, according to the receiver dial, is the proper one and the circuits should be aligned to it.

When using a signal generator or test oscillator to align the set a resistor of about 300 ohms should be inserted between the signal generator and the antenna connection. This will prevent misaligning of the RF stage caused by the connection of the low impedance of the signal generators output circuit across the receiver input.

In order that the full capabilities of the crystal filter in the Model 45 be realized the following procedure in tuning it is recommended:

On the top of the crystal filter box is a trimmer (Fig. 1). The easiest way to adjust this trimmer is to tune in a station in the broadcast band that is broadcasting music, preferably an orchestra. The XTAL SELECTIVITY switch should be turned to Position 5 and the signal tuned in accurately on the crystal. The XTAL PHASING control should be adjusted to give minimum background noise. The SELECTIVITY control is then turned to Position 1. The trimmer should then be carefully adjusted. As the trimmer is turned it will be found that the character of the music changes. The trimmer should be set to a point that sounds the most natural. If the adjustment is made carefully there will be a regular sharpening of the receiver as the SELECTIVITY switch is turned from "OFF" to Position 5.

SERVICE NOTES FOR THE RME-45 RECEIVER

If the owner has available an accurate signal generator he may, by following the steps outlined in succeeding paragraphs, realign and recalibrate the receiver. If a signal generator is not available he may take the receiver to a reputable service man to have the work done. In addition to the signal generator an insulated screw driver will be required.

NOTE: The "R" meter makes an excellent resonance indicating device. All adjustments are made with the AVC ON.

I. F. ALIGNMENT

The I.F. frequency of the RME-45 is 455 KC. The bandswitch should be turned to Band I. The tuning dial should be turned to the low frequency end (.55Mc). The hot lead from the signal generator is clipped to the lug on the detector section (middle) of the tuning condenser. With the signal generator set to 455 KC., each padder on the 1st, 2nd and 3rd I.F. transformers (see Fig. 1) are carefully adjusted for maximum response as indicated on the meter.

NOTE: The frequency of the signal generator must be set accurately to that of the crystal. This is done in the following manner:

Turn the crystal selectivity switch to Position 5. Carefully adjust the signal generator frequency until the carrier meter rises sharply. The signal generator is now accurately on the crystal frequency. The crystal selectivity switch is turned to "OFF" and the three I.F. transformers are aligned as before.

BEAT OSCILLATOR ADJUSTMENT

With the signal generator connected as for aligning I.F. circuits, turn "B.O. SWITCH" on and set "B.O. PITCH" control pointer vertical. With an insulated screw driver adjust B.O. padder (See Fig. 1) until zero beat is obtained.

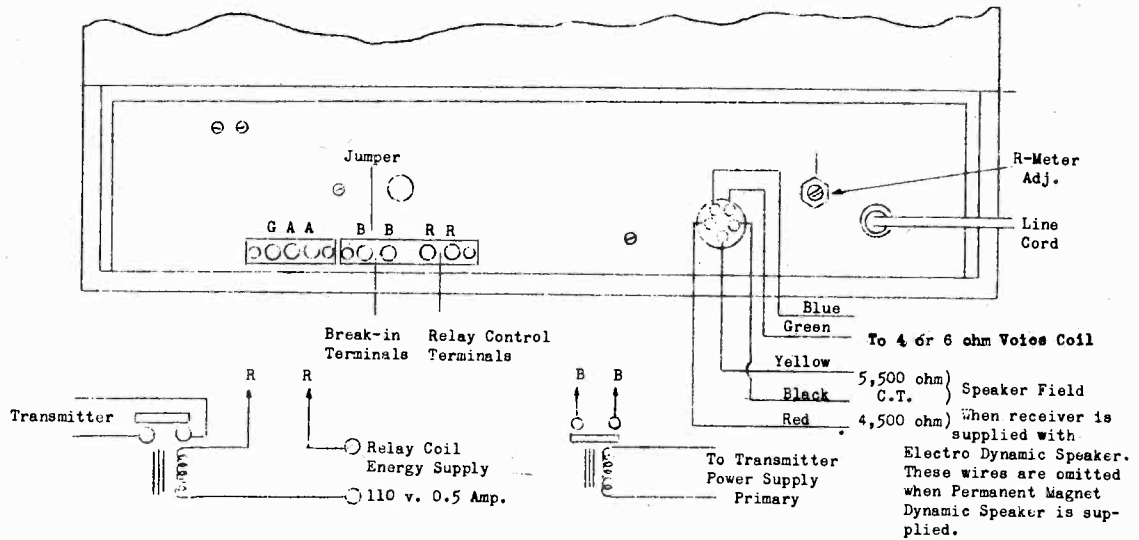
ALIGNMENT OF THE RADIO FREQUENCY SECTION

Alignment of the radio frequency section of the receiver will affect, principally, the calibration of the receiver. Within certain limits this, of course, will also affect the sensitivity. Small variations in frequency (up to 2%) will not materially reduce the sensitivity of the receiver, although they will, of course, show up as variations in the calibration as indicated by the setting of the MAIN TUNING DIAL. Correction of any variation of calibration can be made by following the suggestions outlined in the following paragraphs.

Band I includes frequencies between 540 and 1600 KC. For Band I there are two frequency adjustments for adjusting the dial to the proper calibration. The adjustments are made on the top of the chassis through the dust cover over the Band I and II coils. The proper holes for making the adjustments are indicated on the top sketch on Fig. 3. There are 6 sets of large and small holes each. The two sets toward the rear of the chassis are the oscillator adjustments. The set toward the front are the RF stage adjustments; and the center set are for the detector. Under the large hole is a padder for adjusting the high frequency coil and adjusts the low frequency end.

The next step is to choose a station or a signal of accurately known frequency on the low frequency end of the range (for example 600KC.) and set the main tuning scale to read this frequency. If the station is not tuned in which

RADIO MFG. ENG. INC.



Relay to Control transmitter typical circuit diagram for connecting of relay control. Connect to terminal pair marked "R" on receiver. Relay closes when Stand-by Switch is turned to "Trans".

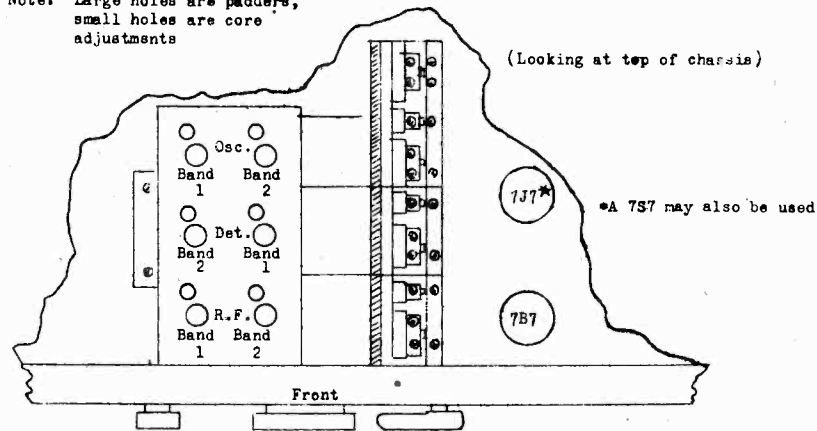
Typical circuit for remote break-in control of receiver. Terminal pair marked "B" on receiver connect to "B - B". Circuit between "B" pair is closed when relay or remote switch is closed during transmitter stand-by periods. Break-in terminals must be shorted if above circuit is not used.

FIGURE 2

ALIGNING ADJUSTMENTS

Low Frequency (Bands 1 & 2)

Notes: Large holes are padders, small holes are core adjustments



High Frequency (Bands 3, 4, 5 & 6)

(Looking at bottom of set with cabinet bottom removed)

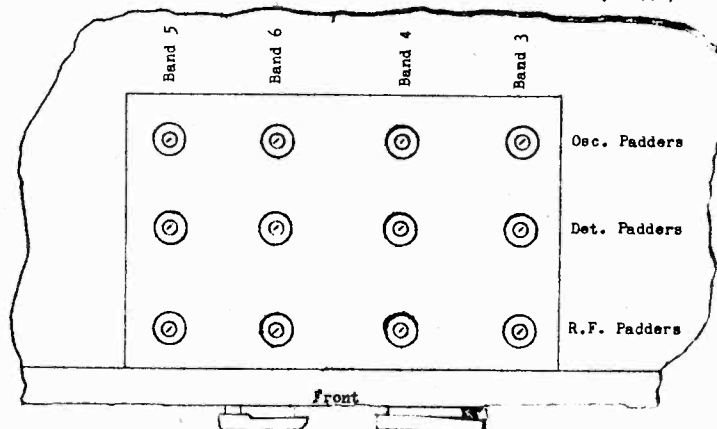


FIGURE 3

MODEL 45 Early,
Late, Revised

RADIO MFG. ENG. INC.

TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN RECEIVER CIRCUIT

Measurements made with a voltmeter having internal resistance of 1000 ohms per volt. Instruments with lower internal resistance may give entirely different readings.
NOTE: Line voltage should be 115 volts, Stand-by switch on.

PLACE TEST PRODS BETWEEN

CORRECT VOLTAGE

Radio frequency amplifier plate and ground	290 volts
Radio frequency amplifier screen and ground	107.5 volts
Radio frequency amplifier cathode and ground	3 volts
Converter plate (pentode section) and ground	310 volts
Converter screen (pentode section) and ground	107.5 volts
Oscillator supply and ground	150 volts *(168v.)
First I.F. amplifier plate and ground	290 volts
First I.F. amplifier screen and ground	107.5 volts
First I.F. amplifier cathode and ground	3 volts
(The same voltages apply to the 2nd I.F. stage)	
7C7 plate and ground	43 volts
7C7 screen and ground	112.5 volts
7C7 cathode and ground	3.1 volts
7C5 plate and ground	290 volts
7C5 screen and ground	305 volts
7C5 cathode and ground	13.5 volts
VR-150 plate to ground	150 volts
80 rectifier filament and ground	325 volts
B.O. plate supply and ground	125 volts
(B.O. turned on)	

These voltages are subject to a fluctuation of $\pm 15\%$ without indication of material difficulties.

CONTINUITY CHECKS

Receiver turned off. No jumper between "A" and "G" on antenna terminal strip.

PLACE TEST PRODS BETWEEN

RESISTANCE

A-1 and ground	Infinite
A-2 and ground	Infinite
"G" and ground	Short
RF amp. grid and ground	1.6 meg. $\pm 20\%$ *(1.1 meg)
Converter grid and ground	Band 1 3.5 ohms
	Band 2 1.5 ohms
	Band 3 .3 ohm
	Band 4 .2 ohm
	Band 5 .1 ohm
	Band 6 .1 ohm
First I.F. Grid and ground	1.6 meg. $\pm 20\%$ *(1.5 meg)
Second I.F. Grid and ground	1.6 meg. $\pm 20\%$ *(1.5 meg)
Oscillator grid and ground	50,000 ohms $\pm 20\%$
B.O. Grid and ground	100,000 ohms $\pm 20\%$
7C7 Grid and ground	250,000 ohms to 0 ohm as audio gain control is rotated.
7C5 Grid and ground	250,000 ohms $\pm 20\%$
Oscillator section of tuning condenser and ground	Bands 1,2,3,4,5 Infinite
	Band 6 .1 ohm

I.F. Frequency: 455 Kilocycles

Power Consumption at 115 volts, 90 watts

Audio Output: 3 watts

Audio Frequency Response: 100 to 5,000 cycles per second ± 2.5 db.

Voice Coil Impedance: 4 ohms. *(6 ohms)

When supplied with an Electro Dynamic Speaker Field Coil Resistance: 10,000 ohms
Tapped at: 4,500 ohms

*In Early model

RADIO MFG. ENG. INC.

RME-45 PARTS LISTRESISTORS

1.1	100,000 ohms, 1/2 watt
1.2	50,000 ohms, 1 watt
1.3	30,000 ohms, Variable
1.4	2,000 ohms, 1/2 watt
1.5	2,000 ohms, 1/2 watt
1.6	300 ohms, 1/2 watt
1.7	50,000 ohms, 1/2 watt
1.8	2,000 ohms, 1/2 watt
1.9	2,000 ohms, 1/2 watt
1.10	100,000 ohms, 1/2 watt
1.11	100,000 ohms, 1/2 watt
1.12	2,000 ohms, 1/2 watt
1.13	2,000 ohms, 1/2 watt
1.14	100,000 ohms, 1/2 watt
1.15	300 ohms, 1/2 watt
1.16	2,000 ohms, 1/2 watt
1.17	100,000 ohms, 1/2 watt
1.18	50,000 ohms, 1/2 watt
1.19	50,000 ohms, 1/2 watt
1.20	50,000 ohms, 1/2 watt
1.21	250,000 ohms, Variable
1.22	250,000 ohms, 1/2 watt
1.23	1,000 ohms, 1/2 watt
1.24	1 Megohm, 1/2 watt
1.25	100,000 ohms, 1/2 watt
1.26	1 Megohm, Variable
1.27	250,000 ohms, 1/2 watt
1.28	240 ohms, 1 watt
1.29	35 ohms, 1/2 watt
1.30	20,000 ohms, 1/2 watt
1.31	1 Megohm, 1/2 watt
1.32	250,000 ohms, 1/2 watt
1.33	150 ohms, 1/2 watt
1.34	200 ohms, Variable
1.35	1,500 ohms, 1/2 watt
1.36	10,000 ohms, 1 watt
1.37	250,000 ohms, 1/2 watt
1.38	100,000 ohms, 1/2 watt
1.39	50,000 ohms, 1/2 watt
1.40	5,000 ohms, 1/2 watt
1.41	2,000 ohms, 1/2 watt
1.42	680,000 ohms, 1/2 watt 20%
1.43	6,800 ohms, 2 watt 10%

INDUCTANCES

- 4.1 Filter Choke
4.2 B.O. Coil
4.3 Xtal Filter Coil

TRANSFORMERS

- 5.1 Power Trans.,
5.2 Output Trans.
5.3 #3 I.F. Trans.
5.4 #2 I.F. Trans.
5.5 #1 I.F. Trans.

NOTE: In Early models all resistors are 1/3 watt. Resistor 1.36 is 2000 ohms; condenser 2.25 is 1.0 μ fd. In Late and Revised models, resistor 1.44 is 5500 ohms, 10 watts

CONDENSERS

2.1	.1 μ fd. 400 volt paper
2.2	R.F. Section Tuning Condenser
2.3	Det. Section Tuning Condenser
2.4	Osc. Section Tuning Condenser
2.5	.01 μ fd. 400 volt paper
2.6	.01 μ fd. 400 volt paper
2.7	.01 μ fd. 400 volt paper
2.8	.01 μ fd. 400 volt paper
2.9	.01 μ fd. 400 volt paper
2.10	100 μ fd Mica
2.11	.01 μ fd. 400 volt paper
2.12	50 μ fd. Mica
2.13	50 μ fd. Mica
2.14	.01 μ fd. 400 volt paper
2.15	.01 μ fd. 400 volt paper
2.16	.01 μ fd. 400 volt paper
2.17	.01 μ fd. 400 volt paper
2.18	.01 μ fd. 400 volt paper
2.19	.01 μ fd. 400 volt paper
2.20	.01 μ fd. 400 volt paper
2.21	250 μ fd. Mica
2.22	20 μ fd. 25 v. electrolytic
2.23	20 μ fd. 25 v. electrolytic
2.24	.1 μ fd. 400 volt paper
2.25	.01 μ fd. 400 volt paper
2.26	.1 μ fd. 400 volt paper
2.27	.01 μ fd. 400 volt paper
2.28	100 μ fd. Mica
2.29	100 μ fd. Mica
2.30	50 μ fd. Variable
2.31	100 μ fd. Mica Padder
2.32	100 μ fd. Mica Padder
2.33	.01 μ fd. 400 volt Paper
2.34	10 μ fd.)
2.35	15 μ fd.) 3 Section Filter Condenser
2.36	15 μ fd.)
2.37	.01 μ fd. 400 volt Paper
2.38	.01 μ fd. 400 volt Paper
2.39	550 μ fd. Mica
2.40	600 μ fd. Mica
2.41	1300 μ fd. Mica
2.42	1700 μ fd. Mica
2.43	3900 μ fd. Mica
2.44	100 μ fd. Mica Padder
2.45	10 μ fd. Variable
2.46	.1 μ fd. 400 volt Paper
2.47	100 μ fd. Mica - 500 W.V.
2.48)	
2.49)	I.F. Sections of Tuning Condenser
2.50)	
2.51	1 μ fd. 400 volt Paper

SWITCHES

- 3.1 3 Position, 2 Pole, Stand-by Switch
3.2 S.P.S.T. Line Switch on Tone Control
3.3 S.P.S.T. Beat Oscillator Switch
3.4 S.P.S.T. AVC Switch on Manual Gain Control
3.5 5 Position, 1 Pole Xtal Switch

MODEL 45 Early,
Late, Revised, 45B

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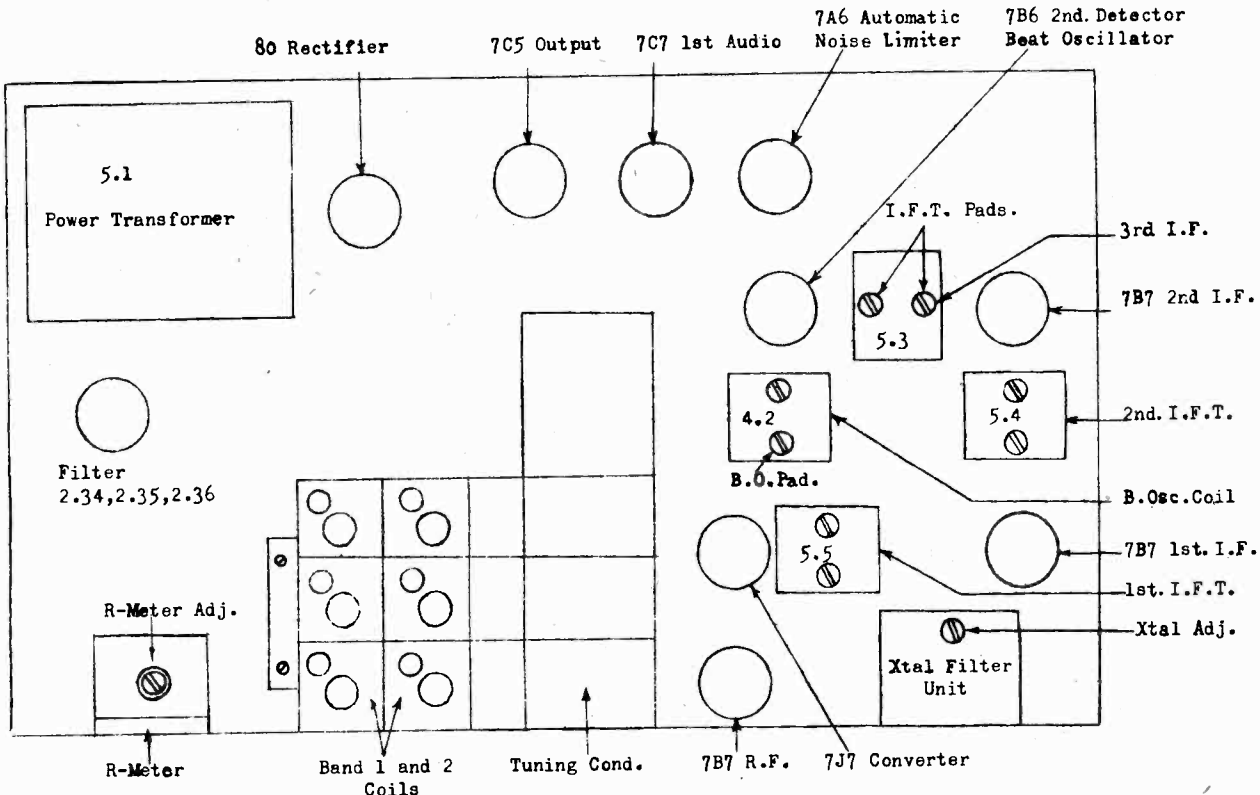
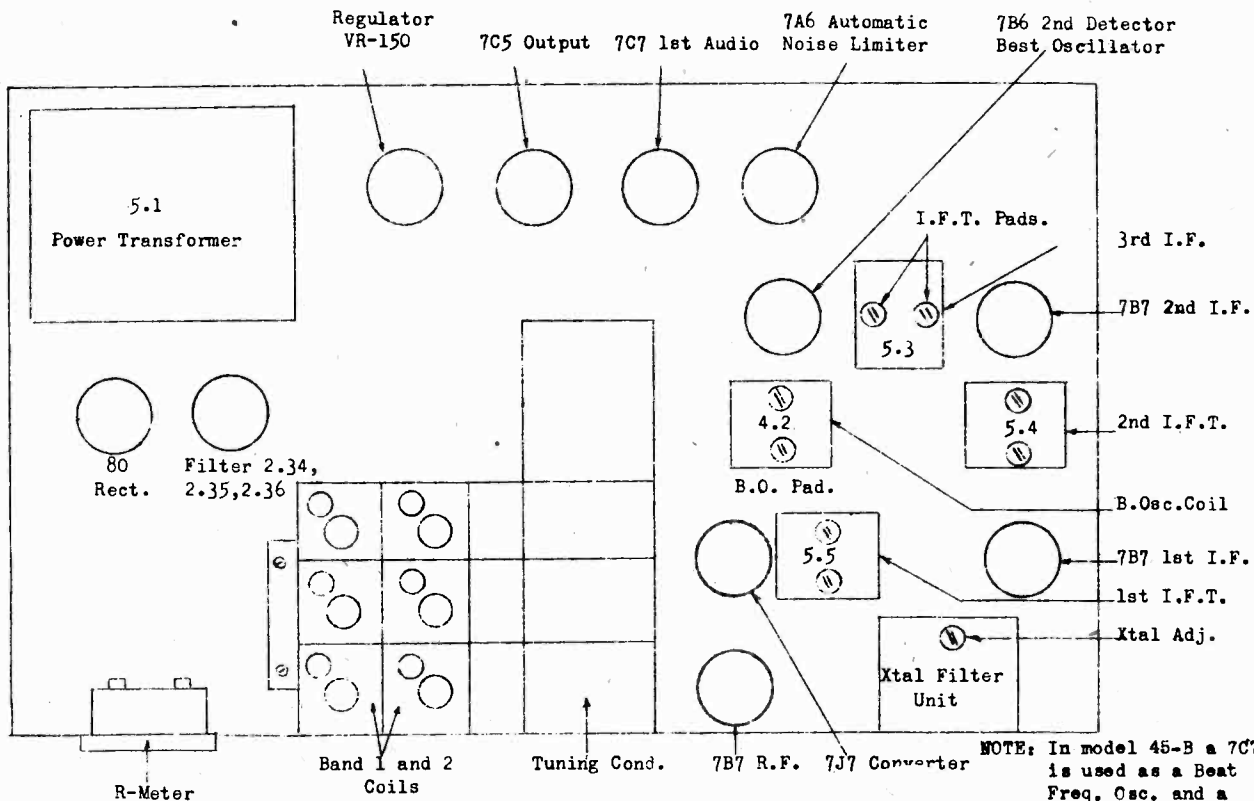


FIGURE I

RME-45 EARLY



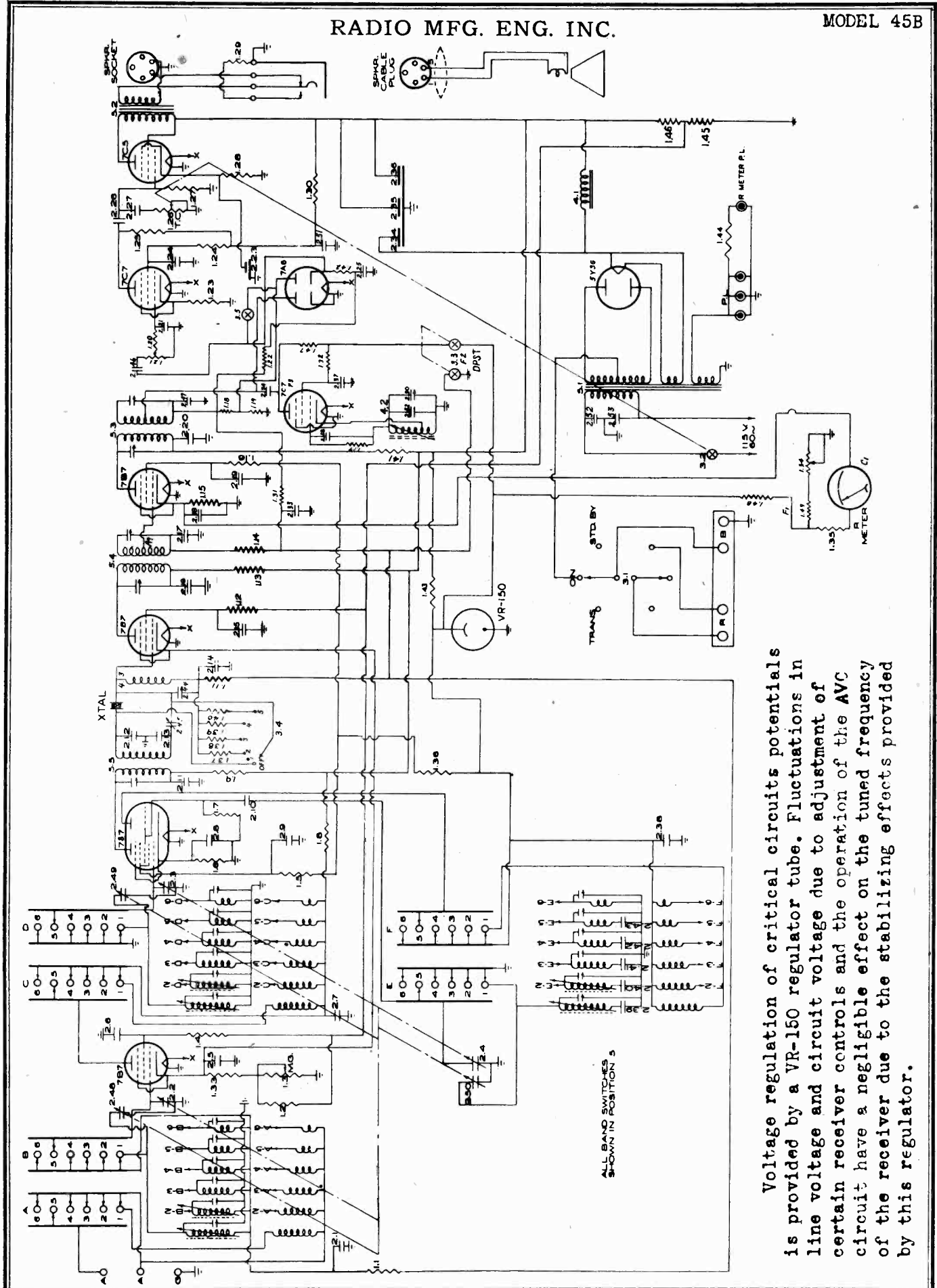
RME-45 LATE, REVISED, and 45-B

FIGURE I

NOTE: In model 45-B a 7C7 is used as a Beat Freq. Osc. and a 5Y3G is used as the rectifier tube.

RADIO MFG. ENG. INC.

MODEL 45B



Voltage regulation of critical circuits potentials is provided by a VR-150 regulator tube. Fluctuations in line voltage and circuit voltage due to adjustment of certain receiver controls and the operation of the AVC circuit have a negligible effect on the tuned frequency of the receiver due to the stabilizing effects provided by this regulator.

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For Clarified schematics, see Pp.15-7 to 15-9; for Alignment, see P.15-12; for Voltage and Parts list, see P.15-19

MODEL 45 Early,
Late, Revised. 45B

RADIO MFG. ENG. INC.

to the right to "Standby" it will be dead. The third position labeled "Trans" also makes the receiver inoperative and, in addition, closes the relay circuit as mentioned previously.

The AUDIO GAIN Control to the left of the stand-by switch is used to adjust the audio volume to the desired level.

Below the control panel is a toggle switch labeled B.O. SWITCH turning on the beat oscillator. The beat oscillator is indispensable in the reception of CW signals and is an aid in locating weak phone carriers.

The pitch of the beat frequency may be varied by means of the control labeled B.O. Pitch.

The beat oscillator may be used either with or without the automatic volume control (AVC). It is usually more satisfactory to receive CW signals with the AVC less effective. This may be accomplished by turning the control labeled R.F. GAIN slightly counter clockwise. Continued counter clockwise rotation of this control reduces the gain of the receiver manually. Automatic control of the receiver gain is fully effective only when the R.F. GAIN control knob is rotated to and set at its maximum clockwise position (position approximately marked AVC). The position of this control is also intimately related to the proper operation of the CARRIER LEVEL or "R" meter. (See paragraph on CARRIER LEVEL meter).

Below the control panel on the left is a jack marked "PHONES". Any pair of good headphones may be plugged into this jack for headphone reception. When the phones are plugged in the speaker is automatically cut out.

The CARRIER LEVEL meter is supplied with the Model 45. This meter indicates the average value of the carrier being received. The meter is calibrated in db as well as in conventional numbers. As in previous RME models a signal difference of 1-R is equivalent to 6 db, and R-9 is equivalent to 100 microvolts input to the receiver. A signal should always be tuned so as to give a maximum reading on the meter. The meter should be adjusted to zero with the antenna disconnected by means of the screw on the rear of the chassis (See Fig. 2). It should be noted here that the accurate functioning of the CARRIER LEVEL meter depends on the setting of the R.F. GAIN control. The R.F. GAIN control should always be rotated to the maximum clockwise position and left there when it is desired to use the CARRIER LEVEL meter (this position is marked approximately by the designation AVC).

The CRYSTAL FILTER has two controls. The top control marked "XTAL SELECTIVITY" makes it possible to select the desired amount of selectivity for best results. Turning the control to "Off" removes the crystal from the circuit. Rotating the control to the right changes the selectivity from a broad crystal characteristic at "1" suitable for phone reception to a razor-sharp characteristic at "5" for CW reception.

The CRYSTAL PHASING control should be adjusted to give minimum background noise. This setting will depend somewhat on particular conditions. This control may also be used to wipe out an interfering signal. Expert manipulation of the crystal filter usually comes only after a certain amount of practice.

An AUTOMATIC NOISE LIMITER is incorporated in the receiver circuit. No adjustment is required. The circuit is of a type that automatically adjusts itself to maximum effectiveness.

The action of the noise limiter is such that a slight amount of distortion is introduced on the signal. Therefore when it is desired to do so the noise limiter may be switched out of the circuit. This is accomplished by pulling "OUT" on the audio gain control. The shaft of this control floats and can be moved in and out with respect to the panel. When the knob is IN toward the panel the noise limiter is IN the circuit; when it is OUT from the panel the noise limiter is OUT of the circuit.

OPERATION

Each control on the RME-45 receiver has a definite function and the operator should familiarize himself with their purpose and operation in order to obtain the best results.

The Cal-O-Matic two speed tuning system is one of the important features of the RME-45.

The tuning mechanism uses a preloaded gear train which is entirely free from backlash. The smaller tuning knob rotates approximately five times while the larger one is turning once. This two speed tuning control enables the operator to cover a frequency band at the correct rate with the larger knob and to tune in a weak signal or one partially covered by other signals with the smaller one.

Elimination of the bandspread condenser lowers the losses in the RF circuit and therefore gives great gain and greater stability.

Five Amateur bands are directly calibrated on the bandspread dial, but the Cal-O-Matic tuning system also includes an easy and accurate method of logging any frequency between 550 kc and 33,000 kc.

The inner half circle on the megacycle scale is divided into five sections, 0 through 4, and the inner circumference of the bandspread dial is marked off in 100 equal divisions. While the red pointer is covering one of the megacycle scale sections the bandspread dial makes one complete revolution. After a station has been heard it can be logged accurately by using the two sets of figures.

For example, if a station is heard on band 5 with the pointer in section 3 of the megacycle scale and with the bandspread dial at 28, that station is definitely logged at 328 because it will always be found at 328 on band 5. Or, if a station is logged at 173 on band 3, it is always tuned in on band 3 by turning the knob until the red pointer is in section 1 of the megacycle scale and until 73 comes up on the bandspread dial.

This method of logging enables the operator to return to a station very quickly and since there is no other dial to pre-set the station is always found at the same place.

In order to receive a frequency in one of the Amateur bands it is necessary only to set the band-change switch on the proper band and to tune the receiver until the red pointer is opposite the approximate frequency on the megacycle scale. The Amateur frequency may then be read directly from the calibrated bandspread dial.

The BAND SELECTOR SWITCH selects the frequency range desired. The range of the receiver is divided into 6 bands. The range covered by each band is as follows:

Band I	.540	to	1.6 MC	American Broadcast
Band II	1.6	to	2.9 MC	
Band III	2.9	to	5.4 MC	
Band IV	5.4	to	9.8 MC	
Band V	9.8	to	18.0 MC	
Band VI	18.0	to	33.0 MC	

Actually these figures do not represent the full range of each band since there is considerable overlap between the end of one band and the start of the next.

The LINE TONE control turns the receiver on and off. As the control is turned clockwise the line switch will close. Continued turning of the knob controls the audio response.

The STAND-BY SWITCH on the extreme right end of the control panel is used to make the receiver inoperative without turning off the line switch. When the control is in the center at "on" the receiver will operate, when it is turned

RADIO MFG. ENG. INC.

MODEL 45B

Wg. C-196 Rev. 0906-6 - B

RESISTORS

RESISTORS CONTINUED

- 1.1 10,000 ohms, 1/2 watt
1.2 50,000 ohms, 1 watt
1.3 30,000 ohms, Variable
1.4 2,000 ohms, 1/2 watt
1.5 2,000 ohms, 1/2 watt
1.6 300 ohms, 1/2 watt
1.7 50,000 ohms, 1/2 watt
1.8 2,000 ohms, 1/2 watt
1.9 2,000 ohms, 1/2 watt
1.10 100,000 ohms, 1/2 watt
1.11 10,000 ohms, 1/2 watt
1.12 2,000 ohms, 1/2 watt
1.13 10,000 ohms, 1/2 watt
1.14 10,000 ohms, 1/2 watt
1.15 300 ohms, 1/2 watt
1.16 2,000 ohms, 1/2 watt
1.17 100,000 ohms, 1/2 watt
1.18 250,000 ohms, 1/2 watt
1.19 250,000 ohms, 1/2 watt
1.20 50,000 ohms, 1/2 watt
1.21 250,000 ohms, Variable
1.22 1 megohm, 1/2 watt
1.23 1,000 ohms, 1/2 watt
1.24 1 megohm, 1/2 watt

RESISTORS

- 1.25 100,000 ohms, 1/2 watt
1.26 1 megohm, Variable
1.27 250,000 ohms, 1/2 watt
1.28 240 ohms, 1 watt
1.29 35 ohms, 1/2 watt
1.30 20,000 ohms, 1/2 watt
1.31 1 megohm, 1/2 watt
1.32 100,000 ohms, 1/2 watt
1.33 150 ohms, 1/2 watt
1.34 200 ohms, Variable
1.35 1,500 ohms, 1/2 watt
1.36 10,000 ohms, 1 watt
1.37 250,000 ohms, 1/2 watt
1.38 100,000 ohms, 1/2 watt
1.39 50,000 ohms, 1/2 watt
1.40 5,000 ohms, 1/2 watt
1.41 2,000 ohms, 1/2 watt
1.42 680,000 ohms, 1/2 watt
1.43 5,000 ohms, 5 watt 10%
1.44 20 ohms, 1/2 watt
1.45 4,200 ohms, 10 watt Bleeder
1.46 5,500 ohms, 10 watt Bleeder
1.47 10,500 ohms, 1/2 watt
1.48 50,000 ohms, 1 watt
1.49 500 ohms, 1/2 watt

CONDENSERS

CONDENSERS CONTINUED

- 2.1 .1 mfd. 400 volt paper
2.2 R.F. Section Tuning Condenser
2.3 Oct. Section Tuning Condenser
2.4 Oct. Section Tuning Condenser
2.5 .01 mfd. 400 volt paper
2.6 .01 mfd. 400 volt paper
2.7 .01 mfd. 400 volt paper
2.8 .01 mfd. 400 volt paper
2.9 .01 mfd. 400 volt paper
2.10 100 mfd. Ceramic
2.11 .01 mfd. 400 volt paper
2.12 50 mfd. Mica
2.13 50 mfd. Mica
2.14 .01 mfd. 400 volt paper
2.15 .01 mfd. 400 volt paper
2.16 .01 mfd. 400 volt paper
2.17 .01 mfd. 400 volt paper
2.18 .01 mfd. 400 volt paper
2.19 .01 mfd. 400 volt paper
2.20 .01 mfd. 400 volt paper
2.21 250 mfd. Mica
2.23 20 mfd. 25 v. electrolytic
2.24 .1 mfd. 400 volt paper
2.25 .01 mfd. 200 volt paper
2.26 .1 mfd. 400 volt paper
2.27 .01 mfd. 400 volt paper
2.28 100 mfd. Mica

CONDENSERS

- 2.29 5 mfd. Mica
2.30 25 mfd. Variable
2.32 200 mfd. Mica Padder
2.33 .01 mfd. 400 volt Paper
2.34 10 mfd.
2.35 15 mfd.
2.36 15 mfd.
2.37 .01 mfd. 400 volt Paper
2.38 .01 mfd. 400 volt Paper
2.39 550 mfd. Mica
2.40 600 mfd. Mica
2.41 1300 mfd. Mica
2.42 1700 mfd. Mica
2.43 3900 mfd. Mica
2.44 100 mfd. Mica Padder
2.45 2-6 mfd. Variable
2.46 .1 mfd. 400 volt Paper
2.47 100 mfd. Mica - 500 v.v.
2.48) I.F. Sections of Tuning Condenser
2.49)
2.50)
2.51 1 mfd. 400 volt Paper
2.52 .002 mfd. Mica
2.53 .002 mfd. Mica

SWITCHES

- 3.1 3 Position, 2 Pole, Stand-by Switch
3.2 R.F.S.T. Line Switch on Tone Control
3.3 R.F.S.T. Beat Oscillator and AVC Shorting Switch
3.4 5 Position, 1 Pole Xtal Switch
3.5 R.F.S.T. Noise Limiter Switch on Volume Control Knob

INDUCTANCES

- 4.1 Filter Choc.
4.2 B.O. Coil
4.3 Xtal Filter Coil

TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN RECEIVER CIRCUIT

Measurements made with a voltmeter having internal resistance of 1000 ohms per volt. Instruments with lower internal resistance may give entirely different readings. NOTE: Line voltage should be 115 volts. Stand-by switch on.

COILS AND VOLTAGE

- Radio frequency amplifier screen and ground 290 volts
Radio frequency amplifier cathode and ground 107.5 volts
Radio frequency amplifier pentode and ground 3 volts
Converter plate (pentode section) and ground 310 volts
Converter screen (pentode section) and ground 107.5 volts
Oscillator supply and ground 150 volts
First I.F. amplifier plate and ground 290 volts
First I.F. amplifier screen and ground 107.5 volts
First I.F. amplifier cathode and ground 3 volts
(The same voltages apply to the 2nd I.F. stage)
7C7 plate and ground 43 volts
7C7 screen and ground 112.5 volts
7C7 cathode and ground 3-1 volts
7C7 screen and ground 290 volts
7C5 cathode and ground 305 volts
7C5 screen and ground 133.5 volts
VR-150 plate to filament and ground 150 volts
5Y3G rectifier filament and ground 125 volts
(3.0A turned On)
These voltages are subject to a fluctuation of +/- 1% without indication of material difficulties

CONTINUITY CHECKS

Receiver turned off. No jumper between "A" and "G" on antenna terminal strip.

PLACE TEST PRODS BETWEEN

- A-1 and ground Infinite
A-2 and ground Infinite
A-3 and ground Infinite
RF amp. grid and ground Short
Converter grid and ground 1 meg. +/- 20%
Band 1 3.5 ohms
Band 2 1.5 ohms
Band 3 +/- 3 ohms
Band 4 12 ohms
Band 5 1 ohm
Band 6 1 ohm
First I.F. Grid and ground 1 meg. +/- 20%
Second I.F. Grid and ground 1 meg. +/- 20%
Oscillator grid and ground 50,000 ohms +/- 20%
B.O. Grid and ground 100,000 ohms +/- 20%
7C7 Grid and ground 250,000 ohms to 0 ohm as audio gain control is rotated.
7C5 Grid and ground 250,000 ohms +/- 20%
Oscillator section of tuning condenser and ground Bands 1,2,3,4,5 Infinite
Band 6 1 ohm

TUBES:

- 1A I.F. Amplifier
1B Converter
1C 1st I.F. amplifier
1D 2nd I.F. amplifier
1E Beat Frequency Oscillator
1F 2nd Detector & Automatic Noise Limiter
1G 1st A.F. amplifier
1H Output amplifier
1I Rectifier
1J Regulator
VR-150

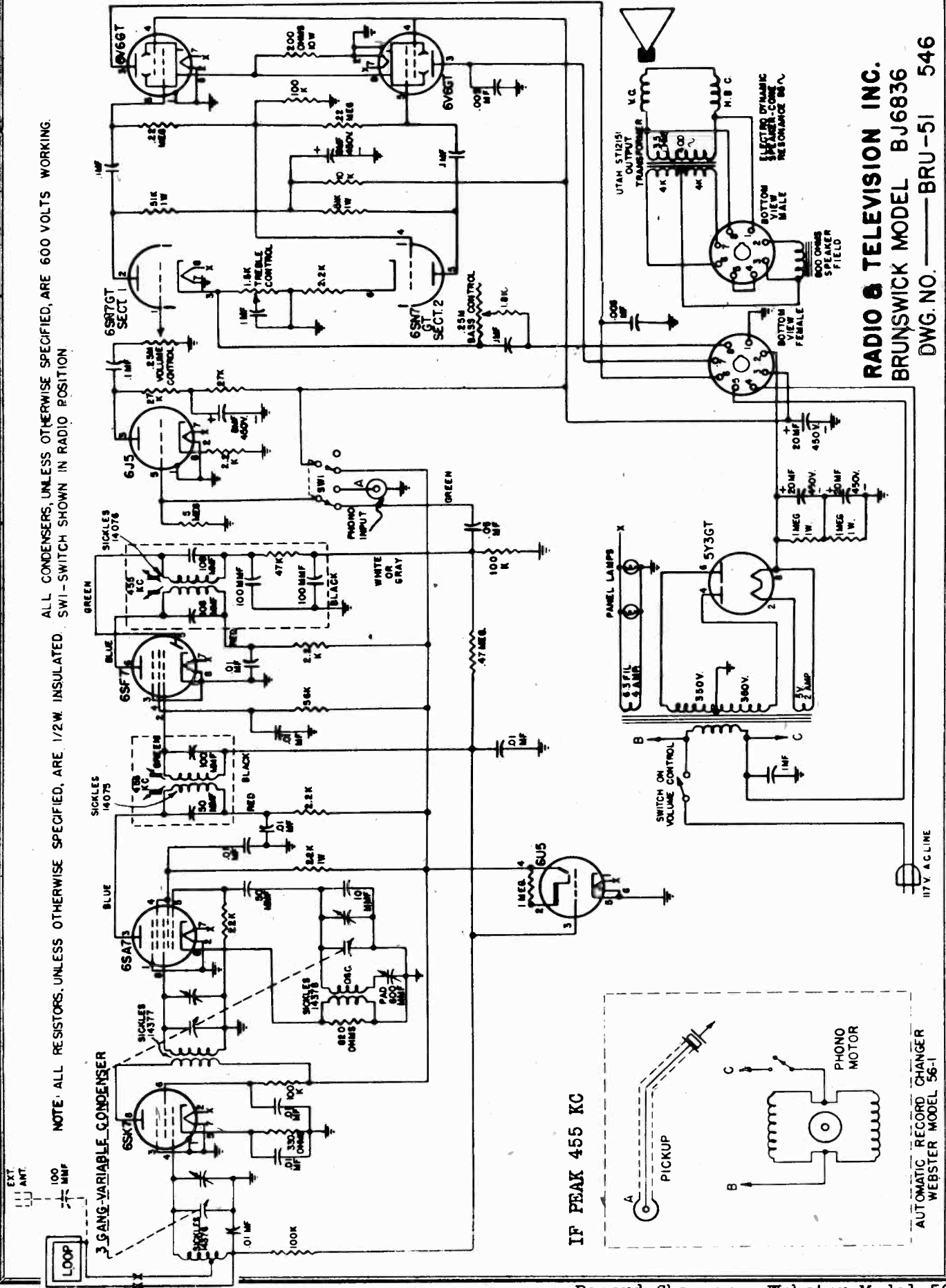
TRANSFORMERS

- 5.1 Power Transformer
5.2 Output Transformer
5.3 #3 I.F. Transformer
5.4 #2 I.F. Transformer
5.5 #1 I.F. Transformer

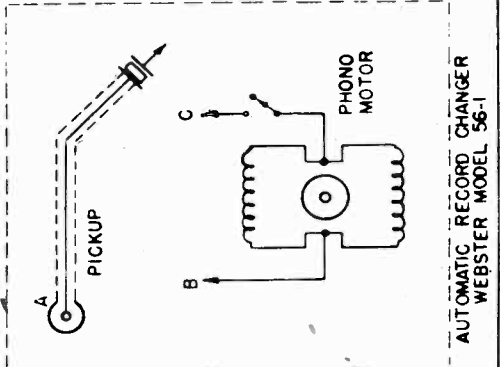
RADIO & TELEV. INC.

MODEL BJ-6836

NOTE: ALL RESISTORS, UNLESS OTHERWISE SPECIFIED, ARE 1/2W INSULATED. SWI - SWITCH SHOWN IN RADIO POSITION. ALL CONDENSERS, UNLESS OTHERWISE SPECIFIED, ARE 600 VOLTS WORKING.



RADIO & TELEVISION INC.
BRUNSWICK MODEL BJ6836
DWG. NO. — BRU-51 546



IF PEAK 455 KC

Record Changer: Webster Model 56

MODEL BJ-6836

RADIO & TELEVISION, INC.

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 mmf. 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
	4(S)	70	75
6SA7	3(P)	205	215
	4(S)	70	75
	6(P)	200	200
	3(P)	100	110
6SW7	8(K)	4.0	4.3
	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
	8(K)	14	14
6V6	4(S)	210	210
	3(P)	200	210
	8(K)	13.8	14.0
	2(F)	300	305
5Y3	8(F)	300	305
	4(P)	305 AC	305
	6(P)	305 AC	305
	4(Z)	200	205
6V5	3(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.

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 #3). 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 500mmf.

Set receiver dial and Signal Generator to 600 kilocycles. Adjust oscillator padder for maximum reading on the Vacuum Tube Voltmeter. The oscillator padder 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

To remove radio set from cabinet proceed as follows:

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.

MODELS JA1, JA2

RADIO WIRE TELEVISION

REPLACEMENT PARTS AND PRICE LIST

PART NO.	DESCRIPTION	LIST PRICE EACH
AK500	Speaker	\$2.50
AV501	Variable Condenser	1.30
AL502	Antenna Coil	.36
AL503	Composite I.F. and Osc Coil	.90
AL504	Output I.F.	.90
AV505	Vibrator Transformer	.85
AV506	Vibrator	2.50
AV507	Vibrator R.F. Choke	.15
AS508	Volume Control and Switch	.65
AL509	A Choke	.15
AL510	B Choke	.70
AC511	Electrolytic Condenser	1.45
AC512	Condenser .5 mfd. 200V	.20
AC513	" 1 " 200V	.12
AC514	" .05 " 200V	.12
AC515	" .02 " 200V	.12
AC516	" .005 600V	.15
AC517	" .02 " 1000V	.25
AO518	Condenser .0001 Mica	.10
AC519	" .0005 "	.12
AC520	" .002 "	.14
AR521	Resistors 1,000,000 $\frac{1}{2}$ watt	.07
AR522	" 500,000 " "	.07
AR523	" 250,000 " "	.07
AR524	" 100,000 " "	.07
AR525	" 50,000 " "	.07
AR526	" 30,000 " "	.07
AR527	" 600 " "	.07
AR528	" 400 " "	.07
AR529	" 150 " "	.07
AX530	Shielded Antenna Lead	.15
AX531	"A" Battery Shielded Lead	.15
AX532	Dial Assembly	1.35
AX533	Pilot Light	.12
AX534	Pilot Socket	.12

FOR MODEL JA-2 ONLY

6E5 Visual Tuning Indicator Tube 1.25
 " " " Assembly 1.25

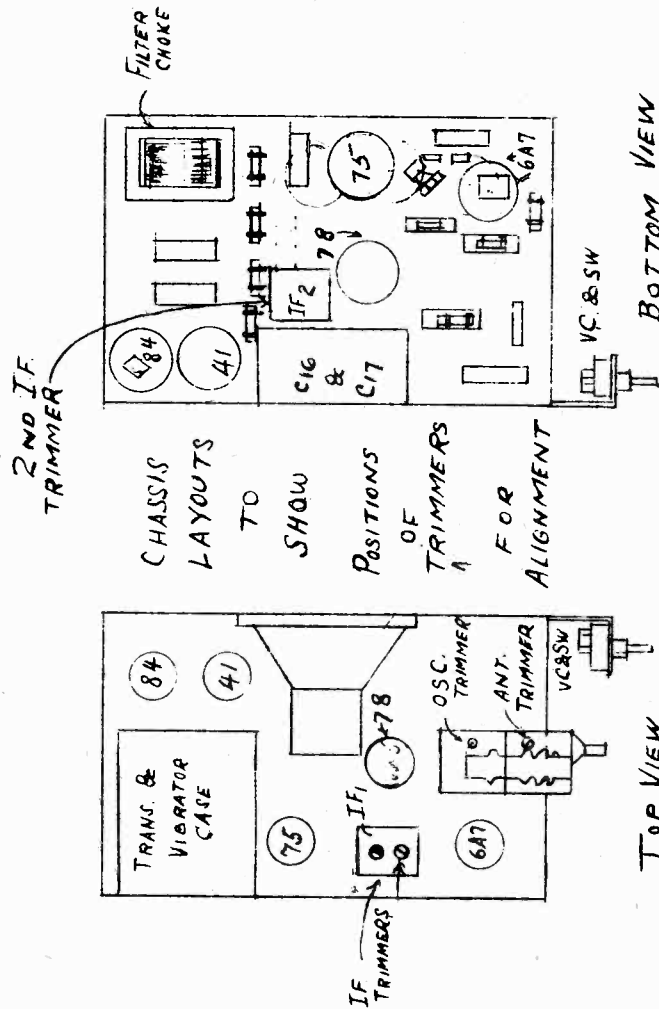
PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

ALIGNMENT PROCEDURE

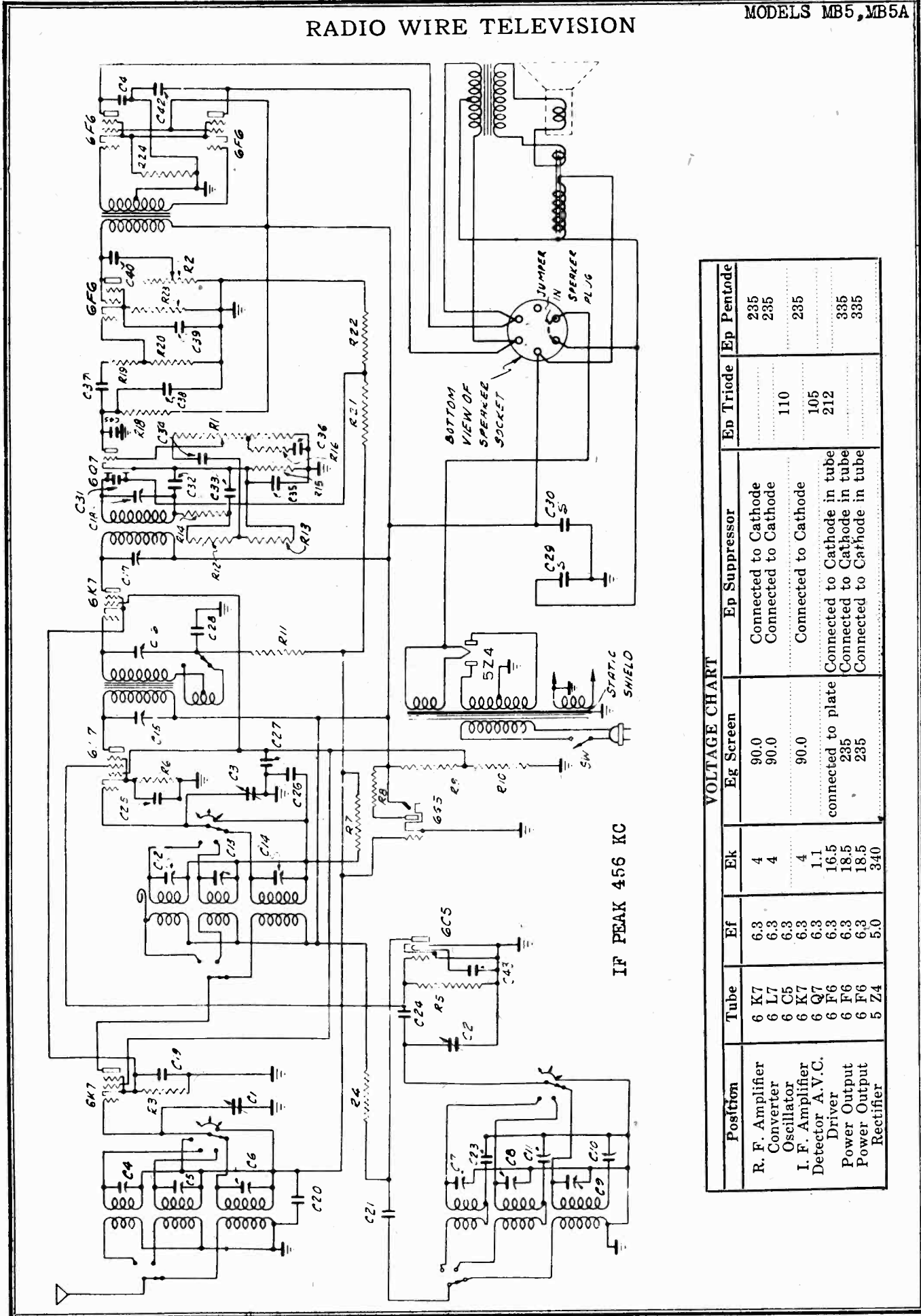
I.F. Alignment: Connect a signal generator to the 6A7 input, and connect an output meter to the speaker output. Using a weak 480 Kc. signal tune the two I.F. condensers on the composite coil and the single I.F. condenser on the output I.F. coil for maximum response.

Antenna and Oscillator Alignment: Connect the signal generator set at 1400 Kc. to the antenna lead using a dummy antenna of 150 mmfd. Tune the set by means of the dial to 1400 Kc. position. Adjust oscillator trimmer for this frequency. Then trim antenna stage for maximum response. Repeat the alignment to insure accuracy and increased sensitivity.

LOCATION OF TRIMMERS



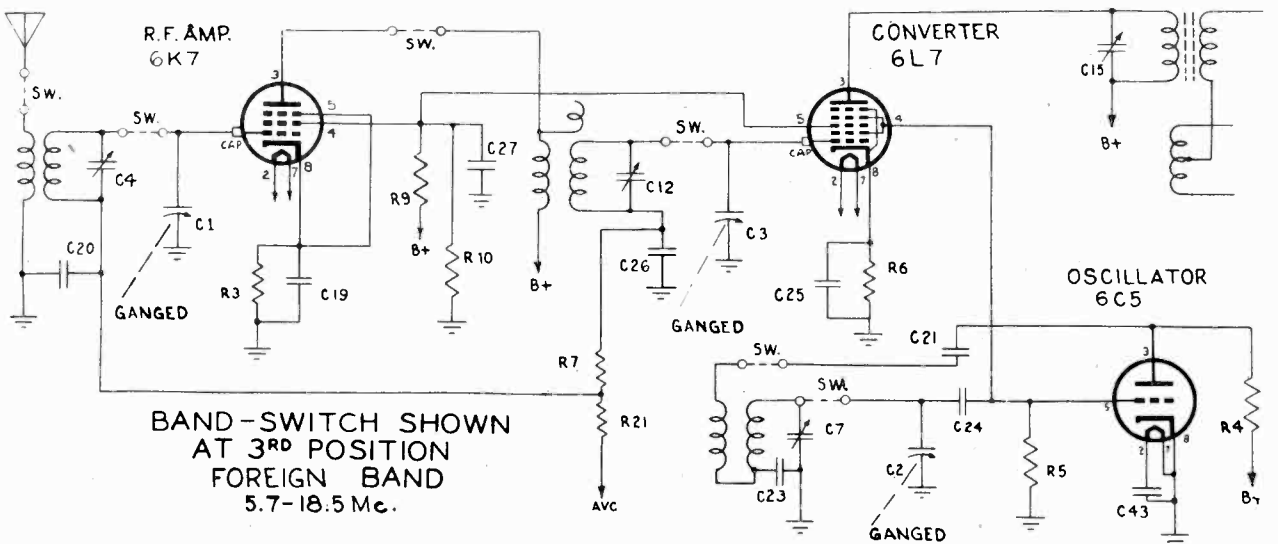
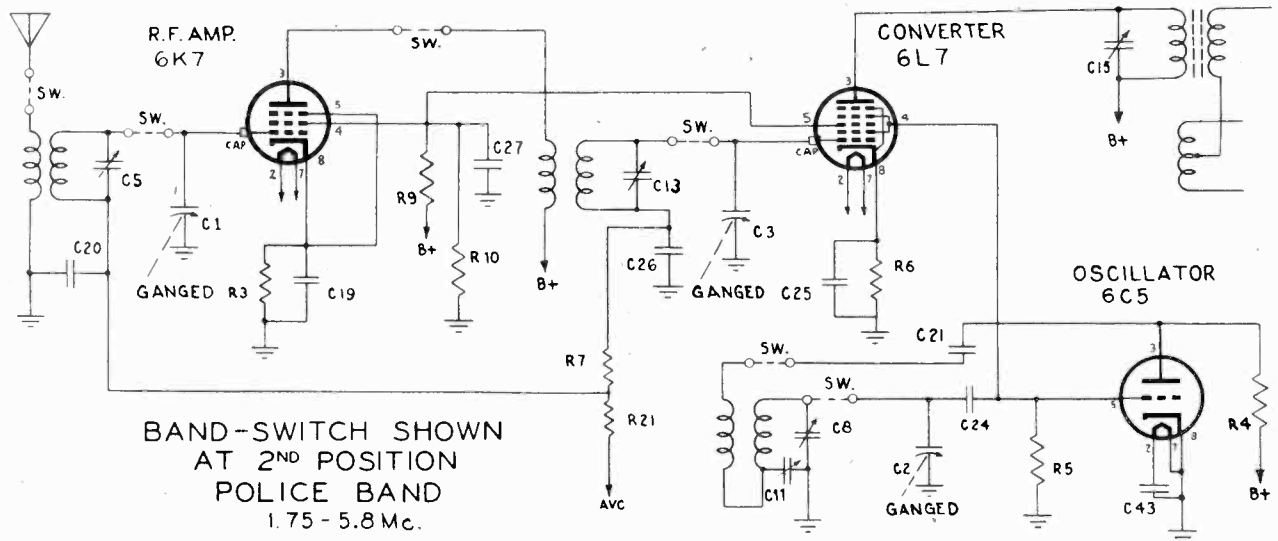
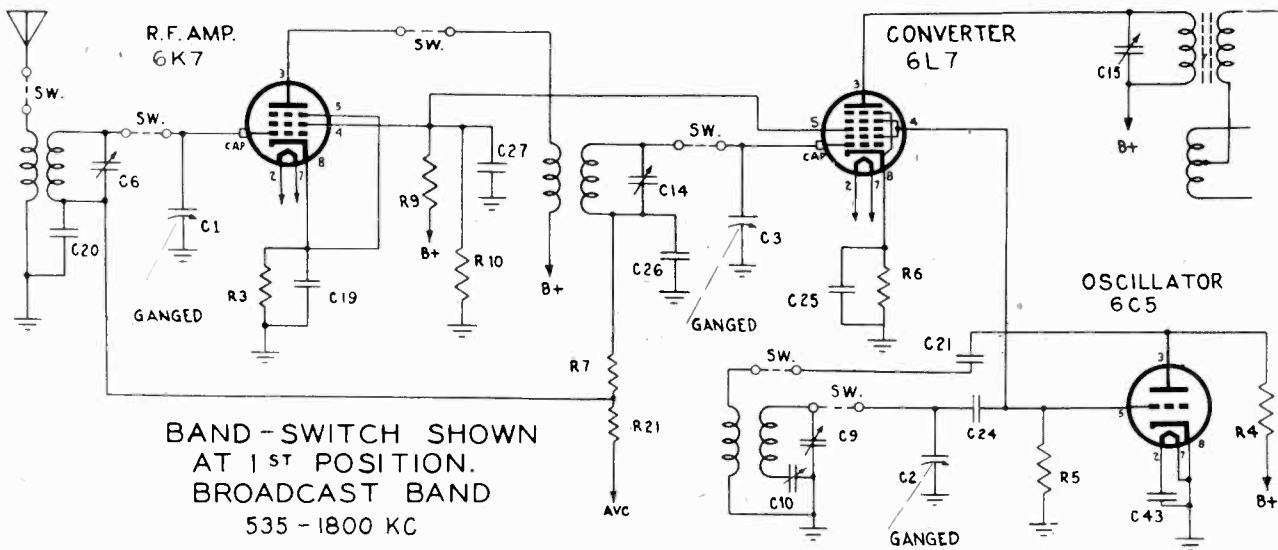
RADIO WIRE TELEVISION



VOLTAGE CHART

Position	Tube	Ef	Ek	Eg Screen	Ep Suppressor	Ep Triode	Ep Pentode
R. F. Amplifier	6 K7	6.3	4	90.0	Connected to Cathode		235
Converter	6 L7	6.3	4	90.0	Connected to Cathode		235
Oscillator	6 C5	6.3	4	90.0	Connected to Cathode	110	235
I. F. Amplifier	6 Q7	6.3	1.1		Connected to Cathode in tube	105	
Detector A.V.C. Driver	6 F6	6.3	16.5	connected to plate	Connected to Cathode in tube	212	
Power Output	6 F6	6.3	18.5	235	Connected to Cathode in tube		335
Power Output Rectifier	5 Z4	5.0	340	235			335

RADIO WIRE TELEVISION



RADIO WIRE TELEVISION

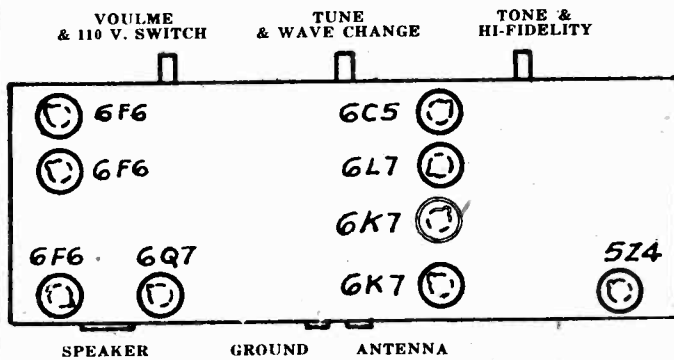


Fig. 1 Tuning Controls and Tube Position

ALIGNMENT PROCEDURE

Correct alignment is of extreme importance in all-wave receivers. The receivers are properly aligned at the factory with precision equipment and realignment should not be attempted by the service technician until all other causes of faulty operation are corrected.

In order to properly realign the receiver the following equipment is necessary:

1. A signal generator which will provide an accurately calibrated signal at any frequency from 456 kilocycles to 18 megacycles. The generator should have adjustable signal output.
2. An output audio voltmeter of the low voltage type to be connected across the moving coil of the speaker. This should be capable of providing a readable deflection for relatively low output levels to avoid the effects of overload.
3. An insulated or non-metallic screw driver for the adjustment of trimmers.

I F ALIGNMENT 456 KC

1. Connect the output meter (low scale) across the loud speaker voice coil. Turn the wave band switch to broadcast position. Turn the volume control to its maximum position.
2. Connect the test oscillator ground to chassis and the "hot" lead from the test oscillator to the grid of the 6L7 converter tube through a series .1 Mfd. condenser. Set test oscillator to 456 KC.
3. Turn selectivity control (second from the left) to its high selectivity position. This is the left hand or counter-clockwise position.
4. Adjust I. F. alignment screws C17 and C18 of the output transformer to maximum output reducing output of test oscillator to keep meter reading on scale as alignment proceeds.
5. Adjust alignment screws, C15 and C16, of input transformer to maximum output as described above.
6. Readjust all four alignment screws to insure accurate alignment. Always use the lowest possible output from the test oscillator to preclude the possibility of automatic volume control action confusing proper adjustment.

R. F. ALIGNMENT BROADCAST BAND

1. With test oscillator connected to the antenna post through .00025 Mfd., set signal generator to 1600 KC.

2. Set travelite indicator to end of scale (beyond 550 KC calibration) with gang condenser fully meshed at maximum capacitance.

3. Set dial to 1600 KC. Adjust broadcast oscillator trimming condenser, C9, for maximum output meter reading.

4. Adjust detector input trimmer, C14, to a maximum.

5. Adjust antenna stage trimmer, C6, to a maximum.

6. Set test oscillator to 600 KC and tune in the signal, then adjust broadcast oscillator padder, C10, for maximum output. Rock the main tuning adjustment back and forth a degree or two in order to obtain proper maximum.

7. Repeat adjustments described under 3, 4, and 5 for greater accuracy.

POLICE OR SECOND BAND

1. Turn the wave switch to second or police band. Leave oscillator connected as above but with the output set to 5000 KC and the .00025 Mfd. condenser replaced by a 400 ohm resistor. Set dial scale to 5 MC on the second band. Adjust oscillator trimming condenser C8 for maximum output, observing as before that the proper point occurs at the minimum or counter-clockwise position of the screw as two points are found.

2. Adjust detector input trimming condenser, C13, to maximum, while rocking the tuning condenser slightly for maximum response.

3. Adjust antenna stage trimmer, C5, for maximum output.

4. Set test oscillator to 2000 KC and tune in the signal. Adjust oscillator padding condenser, C11, for maximum output, while rocking the tuning condenser as described above.

5. Repeat operations 1, 2 and 3 to assure precise alignment.

FOREIGN OR THIRD BAND

1. With the test oscillator connected the same as above and set to 16000 KC (16MC) set the dial to 16MC on the third band.

2. Adjust oscillator trimming condenser, C7, for maximum response. Use lower capacity or counter-clockwise response point.

3. Adjust detector input trimmer, C12, to maximum, rocking tuning adjustment.

4. Adjust antenna trimmer, C4, for maximum response.

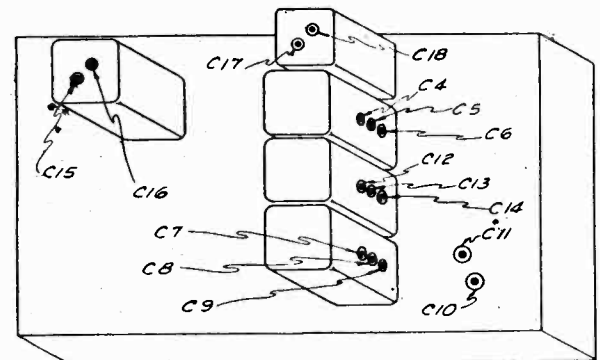


Fig. 2 Location of Trimmers

MODELS MB5, MB5A

RADIO WIRE TELEVISION

Model MB5 is designed to operate on 105 to 125 volts, 50-60 cycles a. c. supply only.

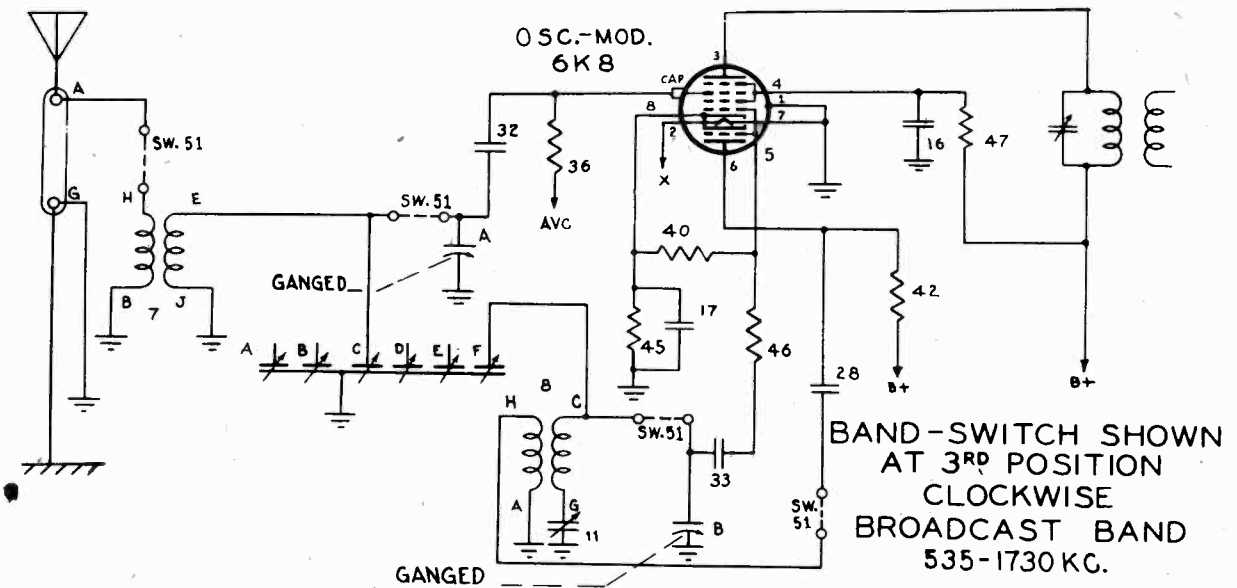
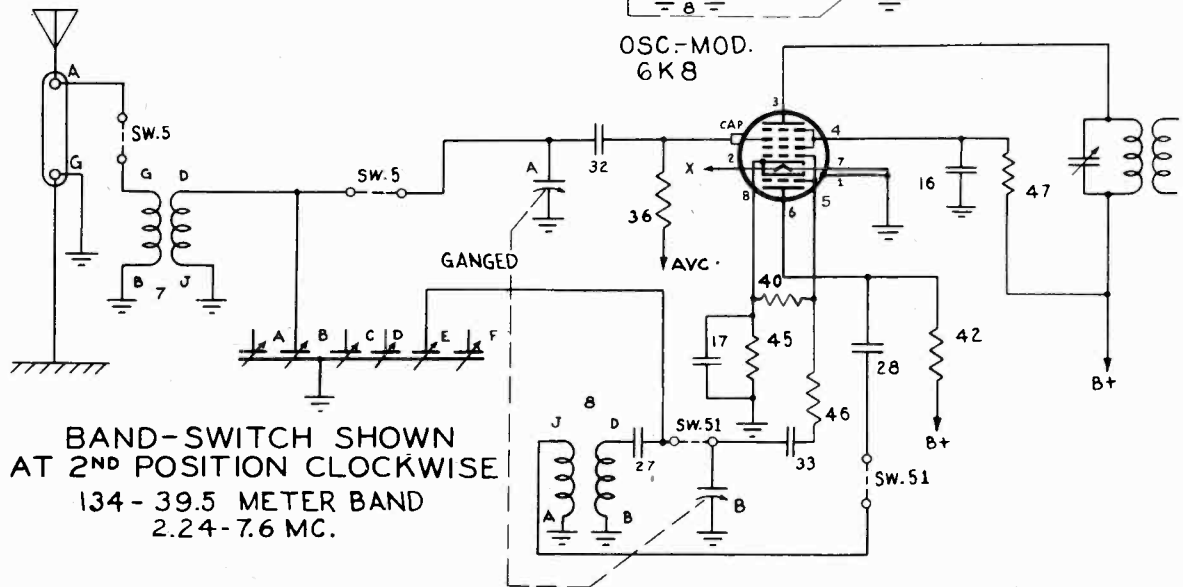
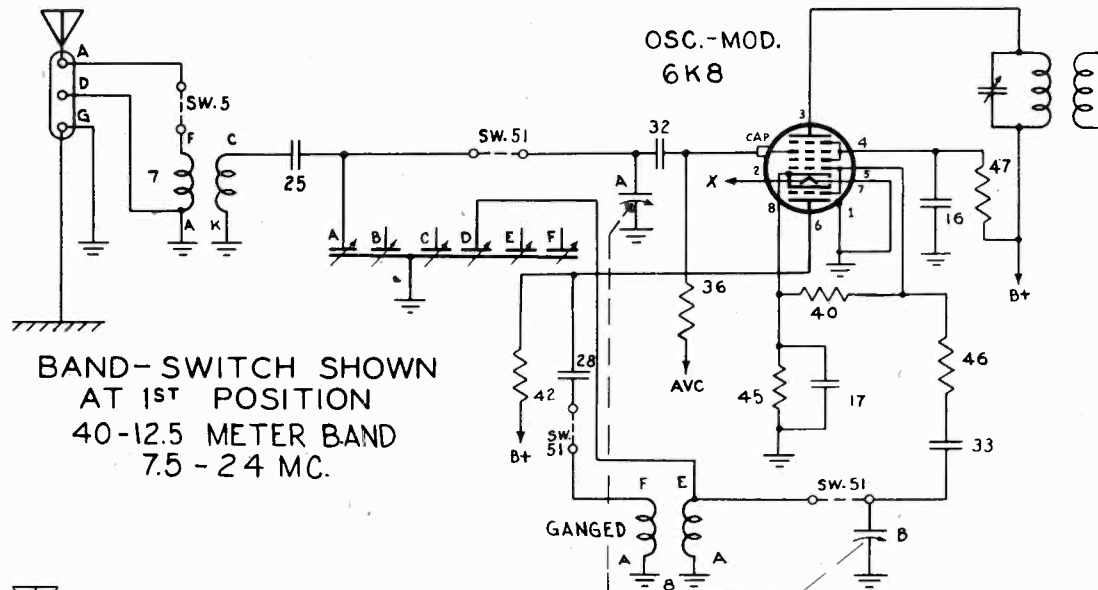
Model MB5-A is designed to operate on 115, 220 or 250 volts, 40-60 cycles a. c. supply.

Prices subject to change without notice.

REPLACEMENT PARTS MODELS MB5-MB5A

SCHEMATIC LOCATION	PART No.	DESCRIPTION	PRICE
	15089	Bulb Pilot Light (edgelight)	\$.13
	B-15045	Bezel	.94
C1 C2 C3	A-16718	Condenser Variable Gang	2.55
C4 C5 C6	A-16552	Condenser Trimmer 3-30 MMF. triple strip	.23
C7 C8 C9	A-16552	Condenser Trimmer 3-30 MMF. triple strip	.23
C12 C13 C14	A-16552	Condenser Trimmer 3-30 MMF. triple strip	.23
C15 C16	B-16559-4	Condenser Trimmer 1st I. F. (part of I. F. assembly)	
C17 C18	B-16560-4	Condenser Trimmer 2nd I. F. (part of I. F. assembly)	
C10 C11	B-16550	Condenser Dual Padding	.55
C29	B-16554-2	Condenser Wet Electrolytic 30 MFD. 450 volts	.97
C30	B-15427	Condenser Wet Electrolytic 16 MFD. 350 volts	.61
C35 C39	B-16551-3	Condenser Dry Electrolytic Dual 12-12 MFD. 18-25 volts	.65
C23	15936	Condenser Mica 3000 MMF. 5%	.20
C24 C31	15929	Condenser Mica 50 MMF. 20%	.09
C32 C33 C43 C45	15918	Condenser Mica 100 MMF. 20%	.07
C19	15770	Condenser Tubular .2 MFD. 200 volts	.11
C20	15761	Condenser Tubular .1 MFD. 200 volts	.10
C21 C41 C42	15753	Condenser Tubular .002 MFD. 600 volts	.08
C25 C26 C28	15752	Condenser Tubular .05 MFD. 200 volts	.09
C27	15757	Condenser Tubular .1 MFD. 400 volts	.11
C34	15763	Condenser Tubular .01 MFD. 200 volts	.07
C40	15756	Condenser Tubular .05 MFD. 400 volts	.09
R2	B-16539-2	Control Tone with High Fidelity Switch	.70
R1	B-16843	Control Volume with switch	.70
	16914	Coil Antenna and shield	2.25
	16915	Coil Detector and shield	2.25
	16916	Coil Oscillator and shield	2.00
	16919	Dial and Paper Strip	1.55
	B-15044	Glass Convex	.25
	A-15037	Knob (tune)	.14
	A-15039	Knob (volume and tone)	.15
	A-15098	Knob (band switch)	.13
	B-16813	Paper Dial Backing	.05
	A-15023	Pointer (minute)	.04
	A-15024	Pointer (tuning)	.04
R9 R10	A-16615	Resistor Candohm wire wound 6500 ohms and 5300 ohms	.47
R3	15609	Resistor Carbon 300 \pm 10% $\frac{1}{4}$ watt	.05
R4	15513	Resistor Carbon 20,000 \pm 20% $\frac{1}{2}$ watt	.05
R5	15552	Resistor Carbon 30,000 \pm 20% $\frac{1}{4}$ watt	.05
R6	15610	Resistor Carbon 900 \pm 10% $\frac{1}{4}$ watt	.05
R7 R11	15515	Resistor Carbon 100,000 \pm 20% $\frac{1}{4}$ watt	.05
R8 R21 R22	15517	Resistor Carbon 1 meg. \pm 20% $\frac{1}{4}$ watt	.05
R12 R13	15512	Resistor Carbon 250,000 \pm 20% $\frac{1}{4}$ watt	.05
R14	15510	Resistor Carbon 20,000 \pm 20% $\frac{1}{4}$ watt	.05
R15	15611	Resistor Carbon 3,000 \pm 10% $\frac{1}{4}$ watt	.05
R16	15511	Resistor Carbon 50,000 \pm 20% $\frac{1}{4}$ watt	.05
R18	15523	Resistor Carbon 200,000 \pm 20% $\frac{1}{4}$ watt	.05
R19	15549	Resistor Carbon 300,000 \pm 20% $\frac{1}{4}$ watt	.05
R20	15520	Resistor Carbon 500,000 \pm 20% $\frac{1}{4}$ watt	.05
R23	15563	Resistor Carbon 500 \pm 10% $\frac{1}{2}$ watt	.16
R24	15562	Resistor Carbon 325 \pm 10% 2 watt	.16
	B-15041	Retaining Spring for Bezel	.18
	B-15043	Retaining Ring for Glass	.16
	A-16828	Socket Speaker	.10
	15066	Socket 6 K7	.11
	15083	Socket 6 C5	.11
	16842	Socket 5 Z4	.07
	16469	Socket 6 Q7	.11
	15084	Socket 6 F6	.11
	15087	Socket 6 L7	.11
	B-16637	Socket 6 G5 with leads	.45
	A-15054	Socket Pilot light R. H.	.11
	A-15053	Socket Pilot light L. H.	.11
	C-16582	Speaker 12"	6.65
	A-16820	Transformer 1st I. F.	1.70
	A-16821	Transformer 2nd I. F.	1.55
	C-16573-5	Transformer Power	3.50
	C-16807	Transformer Universal Tap	6.60
	B-16555-2	Transformer Audio Driver	1.26
	A-1950	Washer Felt	.01

RADIO WIRE TELEVISION

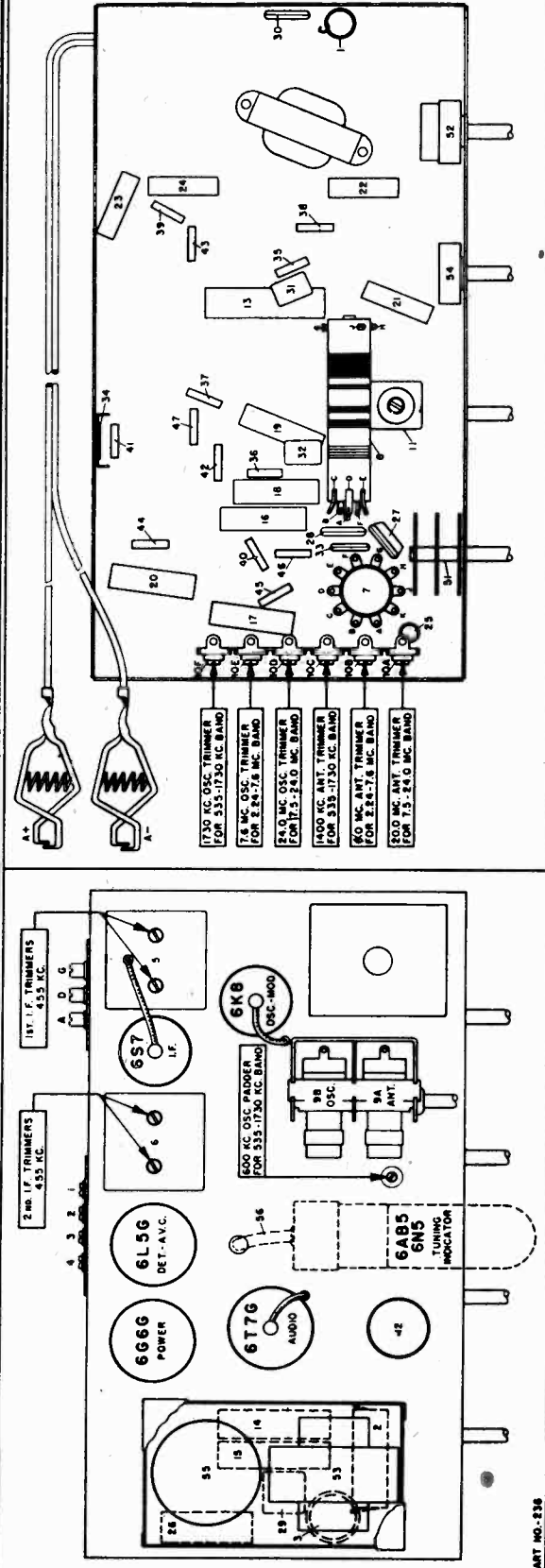


RADIO WIRE TELEVISION

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, (2) next, (3) third.
 Before starting alignment:
 (a) 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.
 (b) Use an accurately calibrated test oscillator with some type of output measuring device.
 (c) Have ground lead of test oscillator attached to chassis.

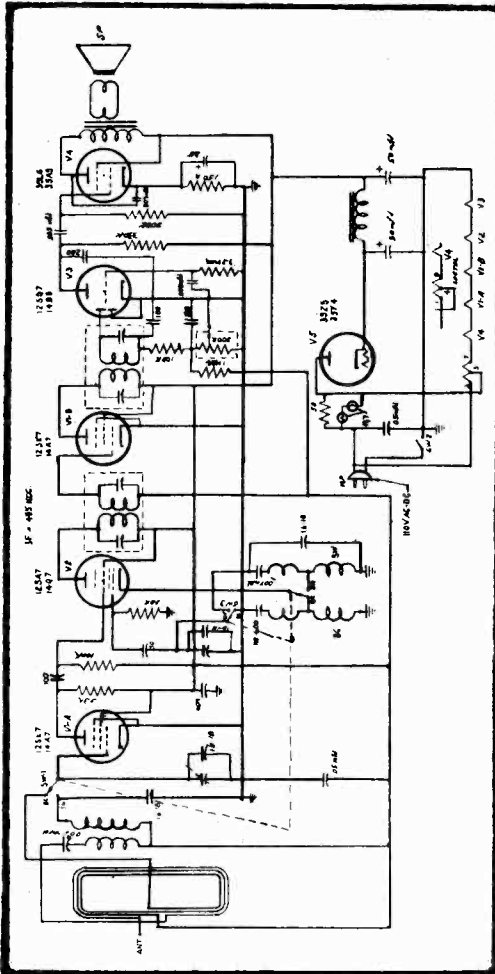
Place band switch for operation on:	Set receiver dial to:	Adjust test oscillator to frequency of:	Use dummy antenna in test oscillator, consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any 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. 3 Approx. 600 K.C.	Exactly 1730 K.C. Approx. 1400 K.C. Approx. 600 K.C.	.00025 Mfd. condenser .00025 Mfd. condenser .00025 Mfd. condenser	Receiver antenna "A," post Receiver antenna "A," post Receiver antenna "A," post	Adjust 1730 K.C. oscillator trimmer for maximum output. While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output. While rocking gang condenser adjust 600 K.C. oscillator paddler for maximum output.
2.24 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 400 Ohm carbon resistor	Receiver antenna "A," post Receiver antenna "A," post	Adjust 7.6 M.C. oscillator trimmer for maximum output. While rocking gang condenser adjust 6 M.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 400 Ohm carbon resistor	Receiver antenna "A," post Receiver antenna "A," post	Adjust 21 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to next peak, then screw down trimmer (add capacity) until the second peak—which is the proper one to use—is tuned in. While rocking gang condenser adjust 20 M.C. antenna trimmer for maximum output.



PART NO. 238

RADIO WIRE TELEVISION

MODEL U88
MODEL E190



This 6-tube superheterodyne is designed to operate on 115 volts, 40 to 60 cycles, alternating current (AC) or 115 volts direct current (DC).

The tuning ranges, 533 to 1660 kilocycles (KC) and 5.3 to 18.3 megacycles (MC), cover all major Domestic and Foreign Short Wave Broadcast, Police, Aircraft and Amateur Bands.

For portable use, or where it is desirable to move the receiver from place to place frequently, the Built-in Loop Antenna furnishes excellent noise-free reception. This applies to the Broadcast Band Only. Where a permanent installation is made and it is desired to take full advantage of the performance capabilities built into this receiver, with particular reference to Short Wave reception, the use of a separate, outside Antenna is recommended. An antenna connection for this purpose is at the rear of the receiver.

The two control knobs are: Left, Volume Control and ON-Off Switch—Right, Vernier Tuning for both bands. The short wave band switch is located on the back of the receiver.

DIRECTIONS: Turn the receiver on and wait for tubes to reach operating heat. Adjust wave-band switch at the rear of the receiver to desired band. The upper half of the dial scale covers the Broadcast-Band—the Short Wave Band is on the lower half. Turn the vernier tuning knob until the desired station (see dial pointer) is heard. Adjust volume to a satisfactory level, first making sure that the station is tuned in correctly. Tuning on the Short Wave is critical; use greater care or many worthwhile programs might be passed over unnoticed.

If the receiver fails to operate on DC current, reverse the power cord plug. On AC a hum may be heard in the background of the program. This may, in some cases, be eliminated or reduced by reversing the power cord plug.

One 6-8 volt 150 MA lamp is used to illuminate the dial. A similar lamp should be used for replacement or damage may result.

Illus. Part No.	Part Name	Description	List Price
1	4840	Choke	\$0.18
2	4840	Choke	.18
3	4199	Choke	.40
4	11007	Coil	.95
5	11008	Coil	1.25
6	12451	Coil	.80
7	12452	Coil	.70
8	12454	Condenser	
9	12454	Condenser	
10	12453	Condenser	1.75
11	3287	Condenser	.85
12	11150	Condenser	.45
13	1693	Condenser	1.00
14	10092	Condenser	.75
15	10072	Condenser	.25
16	10076	Condenser	.19
17	10076	Condenser	.19
18	10076	Condenser	.19
19	10076	Condenser	.19
20	10077	Condenser	.19
21	10084	Condenser	.17
22	10090	Condenser	.15
23	10080	Condenser	.17
24	10088	Condenser	.19
25	10078	Condenser	.19
26	10094	Condenser	.22
27	1529	Condenser	.21
28	1441	Condenser	.21
29	1441	Condenser	.21
30	1441	Condenser	.21
31	9458	Condenser	.21
32	7934	Condenser	.21
33	7934	Condenser	.21
34	10217	Condenser	.21
35	4804	Resistor	.21
36	2705	Resistor	.19
37	2705	Resistor	.19
38	8984	Resistor	.19
39	8984	Resistor	.19
40	6979	Resistor	.19
41	6979	Resistor	.19
42	6786	Resistor	.18
43	9089	Resistor	.19
44	1152	Resistor	.19
45	6975	Resistor	.19
46	2431	Resistor	.19
47	1176	Resistor	.19
48	12741	Speaker	5.00
49	12741	Speaker	5.00
50	12743	Speaker	7.00
51	12463	Switch	1.00
52	12463	Switch	1.00
53	1498	Tone Control	.85
54	12462	Volume Control	2.25
55	3698	Vibrator	3.60
56	12488	Socket Assem.	3.30

MISCELLANEOUS PARTS

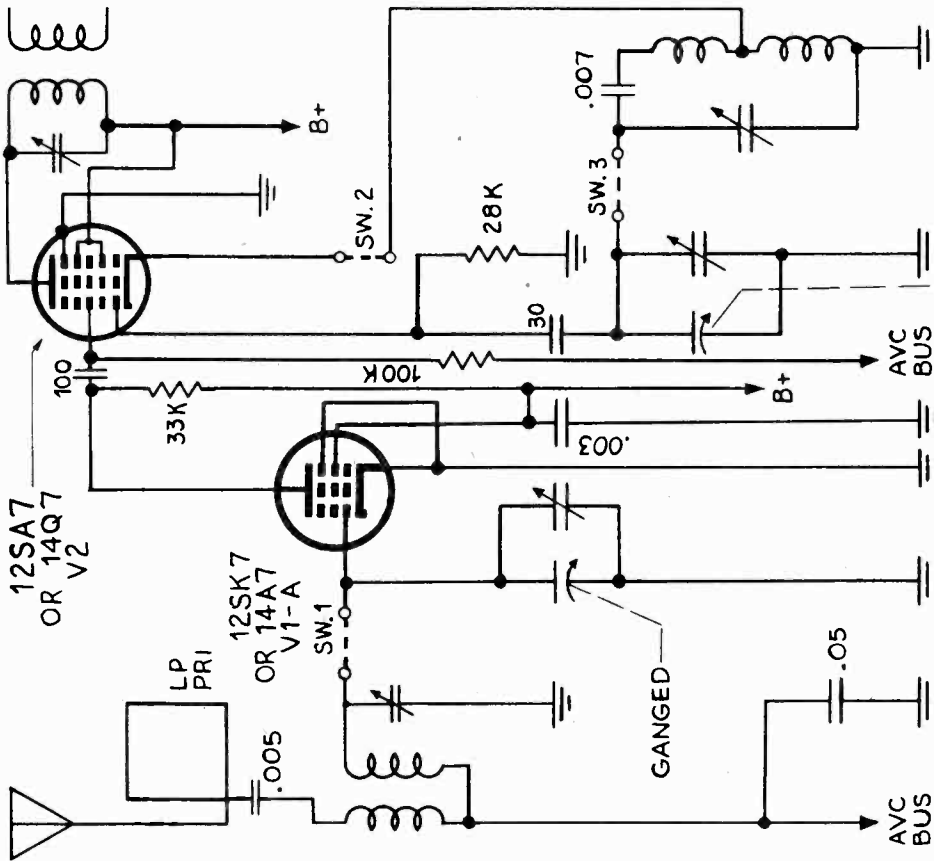
4167	Bulb	6-8 Volt 200 Amp. Dial Light Type	\$.10
12471	Back	Cabinet Back for Laydown Table	.40
12472	Back	Cabinet Back for Upright Cabinet	.40
12473	Back	Cabinet Back for Console Cabinet	.40
12455	Dial Shaft	37" of 18 Lb. Drive Cord	.20
1884	Dial Cord	Dial Cord Tension Spring	.04
1693	Dial Spring	Dial Indicator	.20
12489	Dial Pointer	Calibrated Glass Scale	.60
12492	Dial Scale	Key Dial "Tuning"	1.25
12154	Knob	Marked "Volume"	.15
12155	Knob	Marked "Off-On-Tone"	.15
12496	Knob	Marked 1, 2, 3	.15

When ordering parts be sure to mention part number. PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

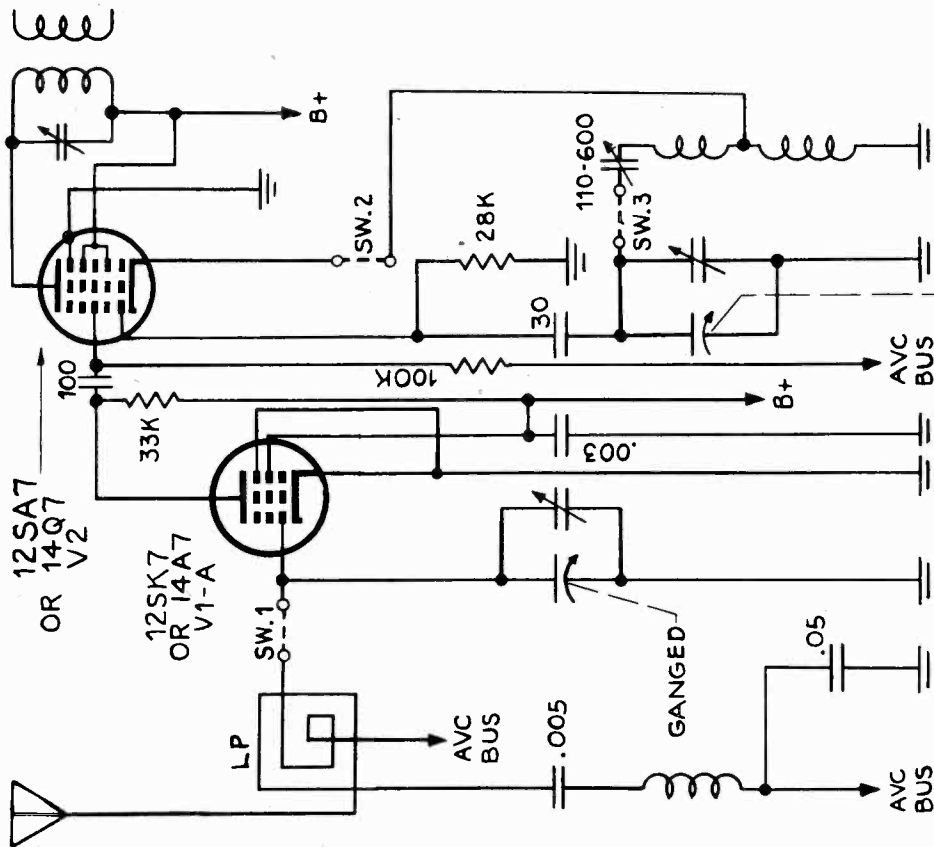
MODEL E190

MODEL U-88

RADIO WIRE TELEVISION



BAND-SWITCH SHOWN AT 2ND POSITION. SHORT WAVE BAND 5.3 - 18.3 MC.



BAND-SWITCH SHOWN AT 1ST POSITION. BROADCAST BAND 533 - 1660 KC.

MODEL 6W

RADIONIC EQUIPMENT CO.

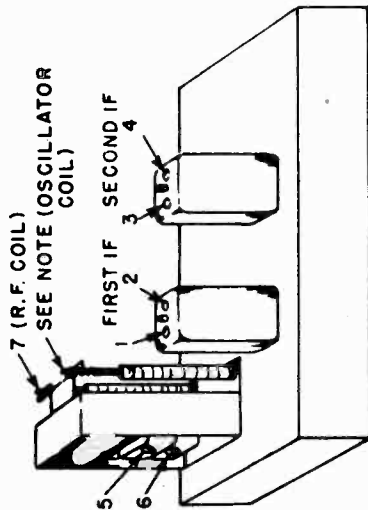
ALIGNMENT PROCEDURE

Volume Control-Maximum All Adjustments.
Signal Generator which will provide an accurately calibrated signal at test frequencies as listed.
Output Indicating Meter; Non-Metallic Screwdriver.
Dummy Antennas-.01 mf., and 400 ohms.
The equipment in column at right is required for Aligning:

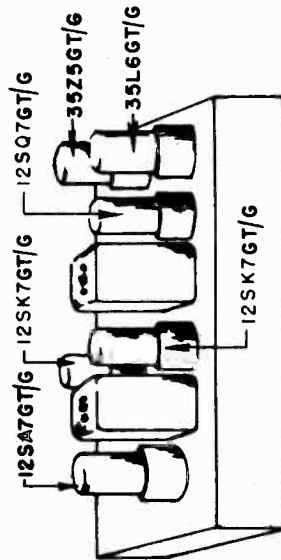
SIGNAL GENERATOR FREQUENCY ANTENNA SETTING		DUMMY ANTENNA	TUNER SETTING	TRIMMER ADJUSTMENT (SEE DIAGRAM)	NOTES
I.F. 455 KC	Grid of RF tube 12SK7	0.01 mfd	Out	Adjust for Max. 1, 2, 3 and 4	No signal will be heard unless trimmer condenser under chassis is unscrewed and reduced from original setting
I.F. 455 KC	Grid of RF tube 12SK7	0.01 mfd	Out	Trim condenser under chassis for Min. output.	If it is found that regeneration prevails when the loop antenna is put in its normal position close to the tubes, then the under chassis trimmer is incorrectly set, and should be adjusted to prevent the regenerative condition.
1620 KC	Inductive Coupling to Loop	400 ohms in series with Antenna & Gnd. leads	Out	Adjust Oso. #5 per Max. signal	
1400 KC	Inductive Coupling to Loop	400 ohms in series with Antenna & Gnd. leads	Dial set for 1400KC	Adjust RF trimmer #6 per Max. Signal.	
700 KC	Inductive Coupling to Loop	400 ohms in series with Antenna & Gnd. leads	Dial set for 700KC	Adjust RF tuning core #7 for Max. (care should be taken not to disturb carriage position of tuner)	If more than one turn is required, the trimming 1400 KC should be repeated and the 700 KC padding of the tuning core also repeated until correct alignment has been reached

SPECIFICATIONS

Power consumption..... 35 Watts
(At 117 volts AC Supply)
Power Output- 1.1 Watts 10% Distortion
Selectivity----49 KC Broad at 1000 times Signal
Intermediate Frequency..... 455 KC
Speaker..... 5" PM Dynamic
Tuning Frequency Range..540 to 1620 KC
Sensitivity (For .05 Watt output-external Antenna) 20 microvolts average



CAUTION - If a dial lamp burns out, it should be replaced at once.
Use ONLY a No. 47 dial lamp. Replace through bottom of cabinet.



RADIONIC EQUIPMENT CO.

ALIGNMENT NOTES

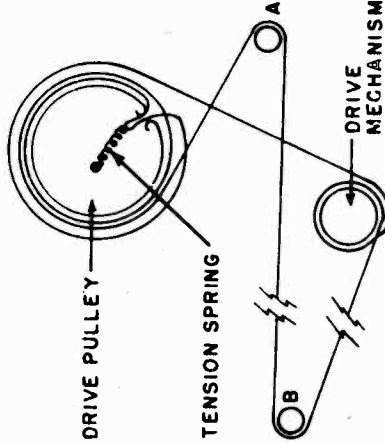
5. Tune I.F. trimmers for maximum signal, reducing I.F. signal input to coupling loop to keep output voltage less than 0.5 V.
 6. When maximum output has been secured, adjust trimmer condenser in the I.F. trap (under chassis) by turning clockwise to the minimum signal.

5. Tune I.F. trimmers for maximum signal, reducing I.F. signal input to coupling loop to keep output voltage less than 0.5 V.
 6. When maximum output has been secured, adjust trimmer condenser in the I.F. trap (under chassis) by turning clockwise to the minimum signal.

C. R.F. ALIGNMENT PROCEDURE

1. Volume control full on.
2. Adjust tuning unit to top stop position.
3. Feed 1620 kc signal into external loop. Hold audio output below 0.5 V. Adjust the oscillator trimmer condenser to maximum output.
4. Move slugs in by means of tuning dial so that pointer is approximately 1" from the stop end, and a signal received from the external loop on a frequency of 1400 kc. Adjust lower trimmer (R.F. trimmer) to maximum output. Reduce R.F. input to keep signal output voltage below 0.5 V.
5. Rotate tuning shaft until pointer is approximately 1" from the other end of the scale. Feed to the external loop a test signal at 700 kc. Adjust the R. F. coil slug by rotation to maximum output.

CAUTION: Extreme care should be taken in the 700 kc. position to make sure that the tuner carriage is not moved by the adjusting tools or hand pressure on the slug screw. Carriage should not be held against the frame, but should be allowed to assume its normal position when adjusting the R.F. coil slug.



DRIVE CORD REPLACEMENT

Turn the tuner to the fully open position. Use a new cord 50" long and tie one end to the tension spring. Fasten the other end of the tension spring to the drive pulley. Pass cord through slot in pulley ring; add spring tension and continue one and one-half turns counterclockwise over top of pulley. Then pass cord around idler pulley A, starting over top and going around clockwise. Pass cord over idler pulley B, starting over top and going around counter clockwise. Wind one full turn counterclockwise around drive mechanism. Then wind one full turn counterclockwise around drive pulley. Then pass cord through slot in pulley and tie string to tension spring. Cut off excess string. Attach dial pointer to cord.

A. MECHANICAL ALIGNMENT:— The following mechanical adjustments should be made before alignment:
 1. Rotate shaft of tuning unit until carriage is against top stop position.
 2. Space oscillator coil slug 1-5/32" out from top of oscillator coil form.
 3. Space R.F. coil slug 1-29/64" out from top end of R.F. coil winding. (Note:—The distance 1 and 2 should be measured from mounted end of the slug)
 4. Adjust screw on trimmer of wave trap towards open position so that condenser plates are open at least 1/32".

1. Rotate shaft of tuning unit until carriage is against top stop position.

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4. Adjust screw on trimmer of wave trap towards open position so that condenser plates are open at least 1/32".

B. I.F. ALIGNMENT PROCEDURE

1. Feed I.F. frequency from the signal generator through a 0.01 mfd condenser to the control grid of the R. F. tube.
2. No signal will be heard unless trimmer condenser under chassis is unscrewed and reduced from original setting.
3. Turn volume control full on.
4. Make preliminary I.F. adjustment with signal level approximately 50 Mv.

12SA7GT/G
1ST DET B OSCILLATOR

90 VDC

12SK7GT/G
I.F.

94 VDC

12SQ7GT/G
2ND DET AVC & AUDIO

60 VDC

35L6GT/G
OUTPUT

128 VDC

35Z5GT/G
RECT

102 VAC

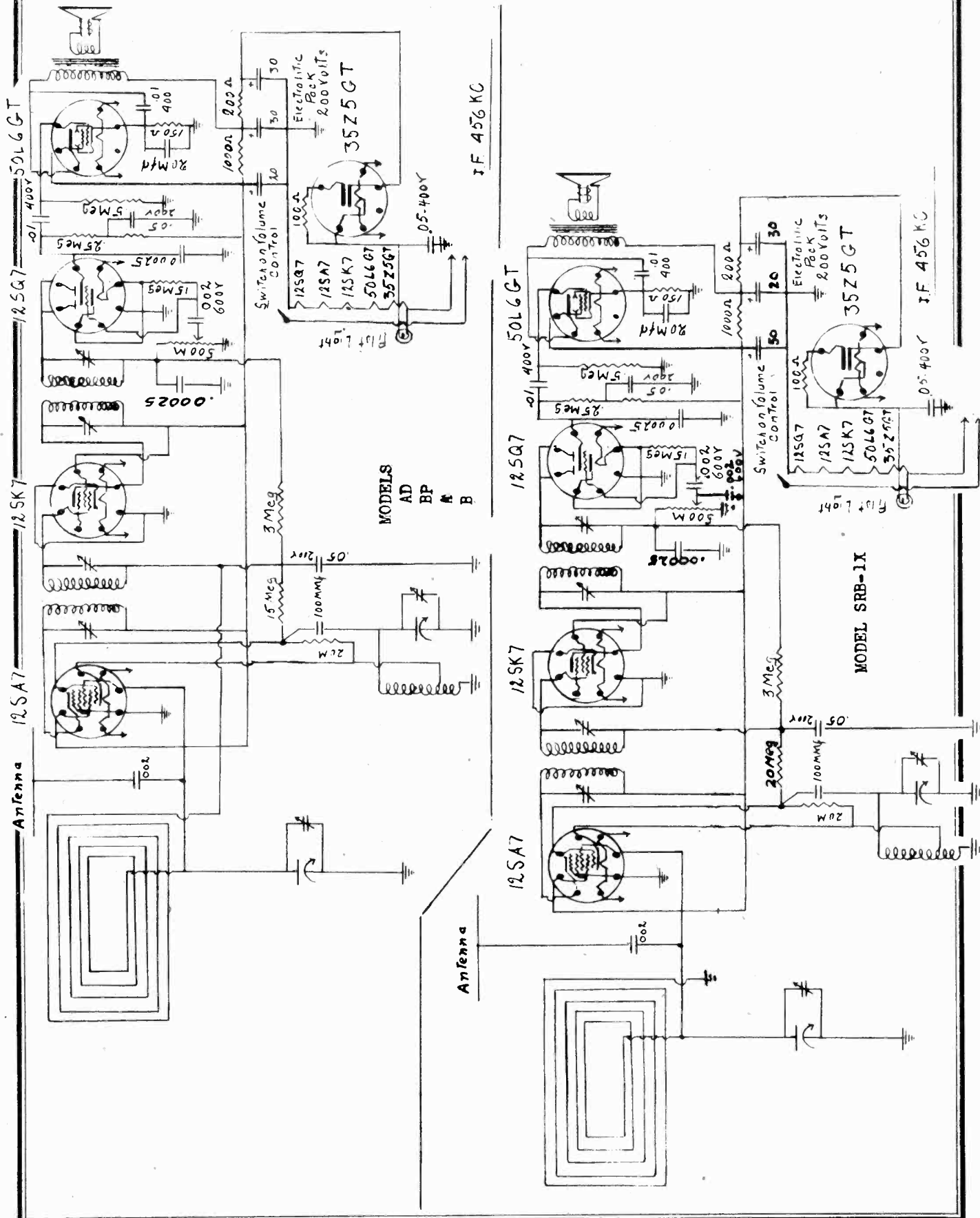
STANDARD TUBE SOCKET SYMBOLS

DEF DEFLECTOR PLATES	G ₁	GRID NO. 5
DIODE PLATE-LEFT	H ₁	HEATER TAP
DIODE PLATE-RIGHT	H ₂	CATHODE
GRID	K	NC NO CONNECTION
GRID NO. 1	G ₁	P PLATE
GRID NO. 2	G ₂	SH SHELL
GRID NO. 3	G ₃	
GRID NO. 4	G ₄	

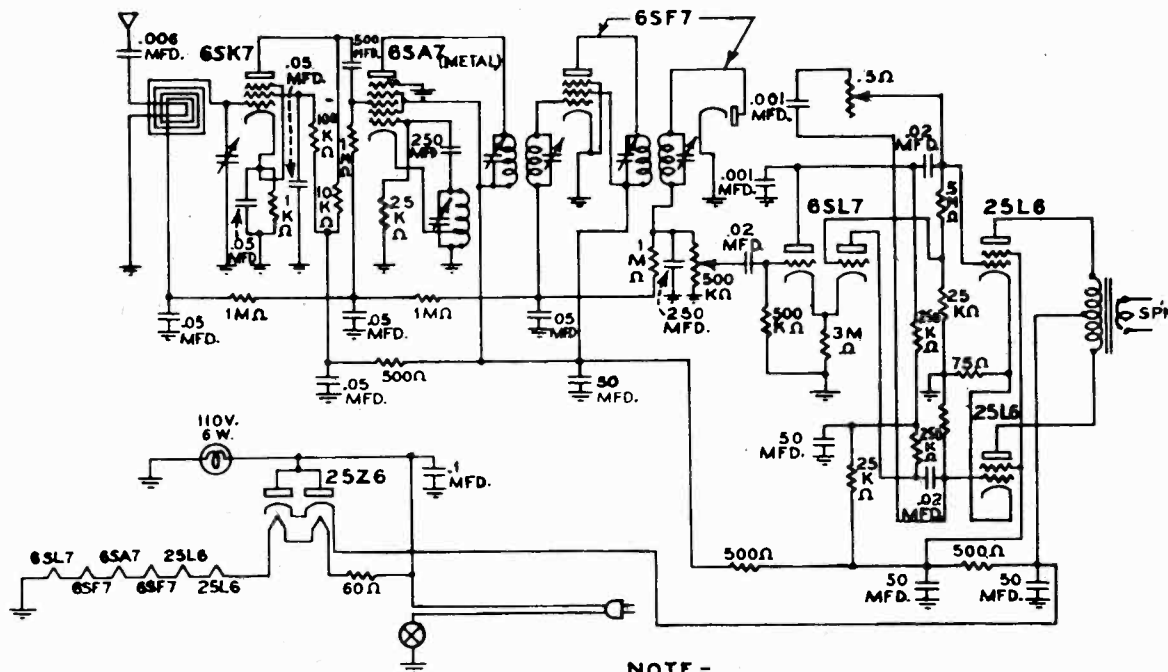
MEASUREMENTS TAKEN WITH AC LINE VOLTAGE OF 117 VOLTS. — READINGS TAKEN WITH NO SIGNAL INPUT. — USE 1000 Ω PER VOLT METER BETWEEN INDICATED POINTS & ELECTRICAL GND. INDICATED BY "X" ON SOCKET LAYOUT. NO MEASUREMENTS MADE TO CHASSIS GROUND.

RAY-ENERGY RADIO & TELEV
CORP. OF AMERICA

MODELS A, AD, B, BP
MODEL SRB-1X

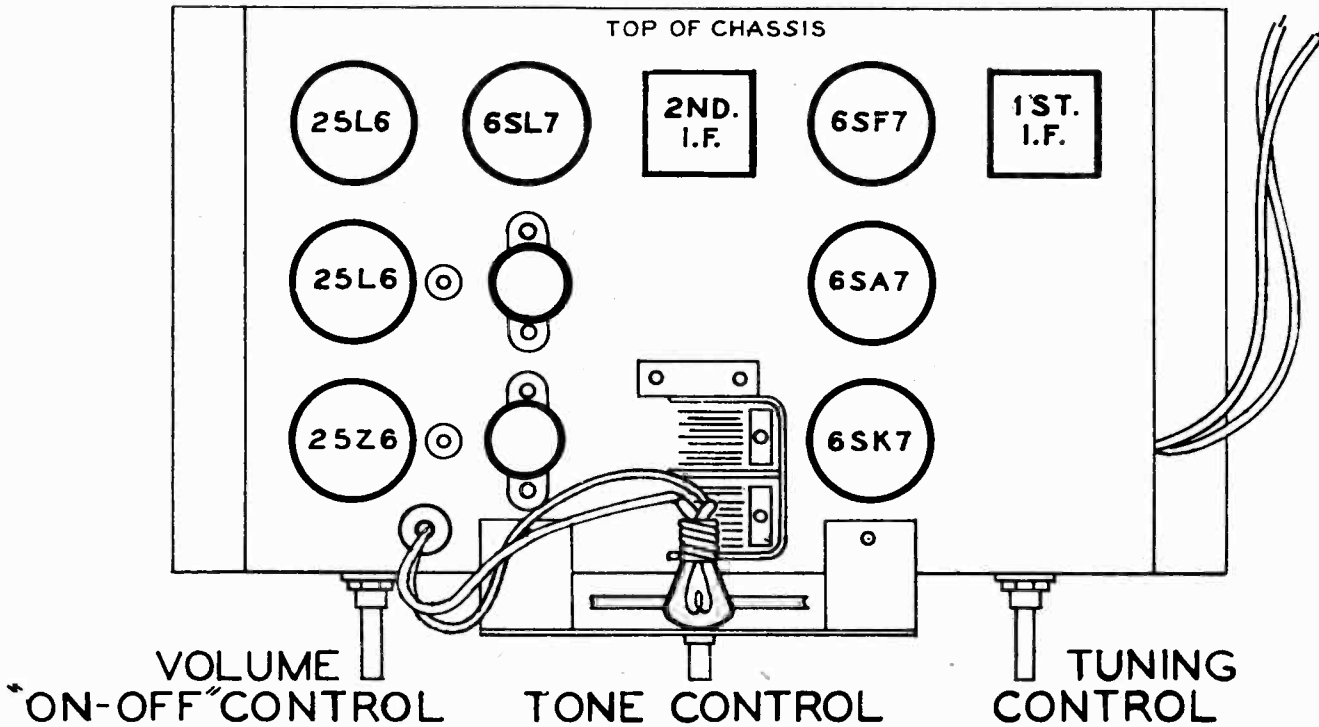


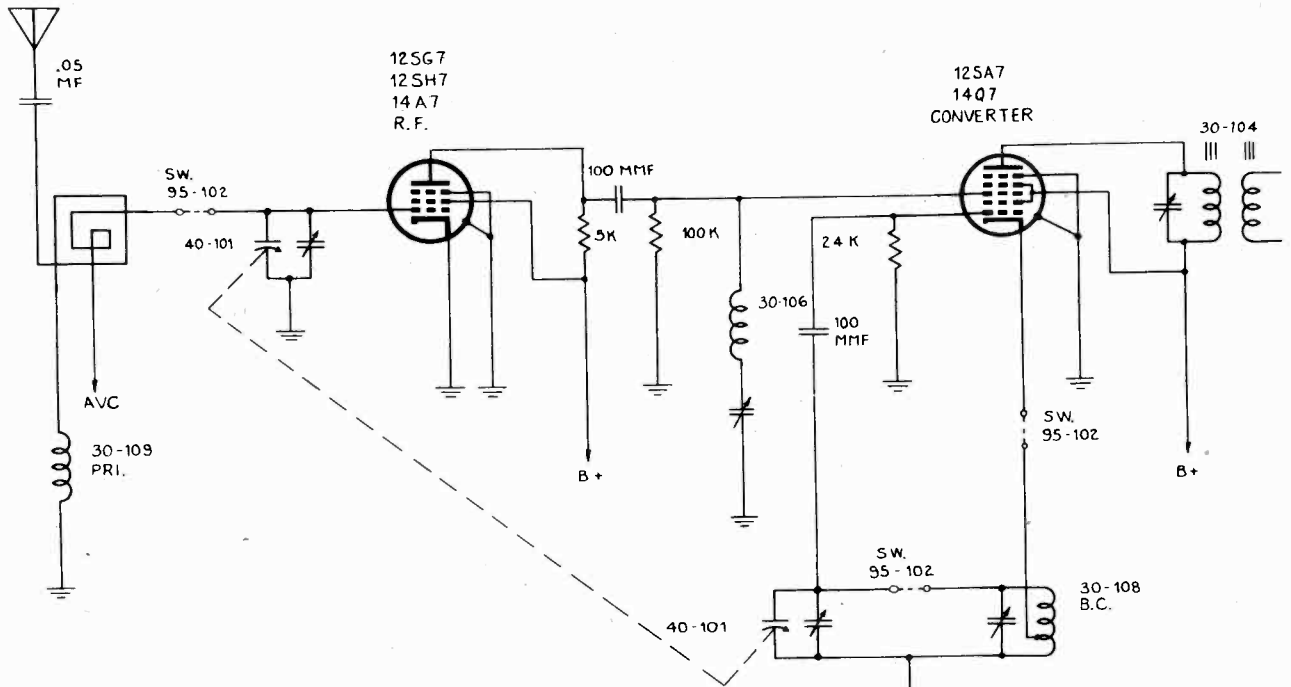
©John F. Rider



NOTE -
 1.- I.F. - 455 Kc.
 2.- OSC. SET 1650 Kc.
 3.- R.F.- ALIGN 1550 Kc.

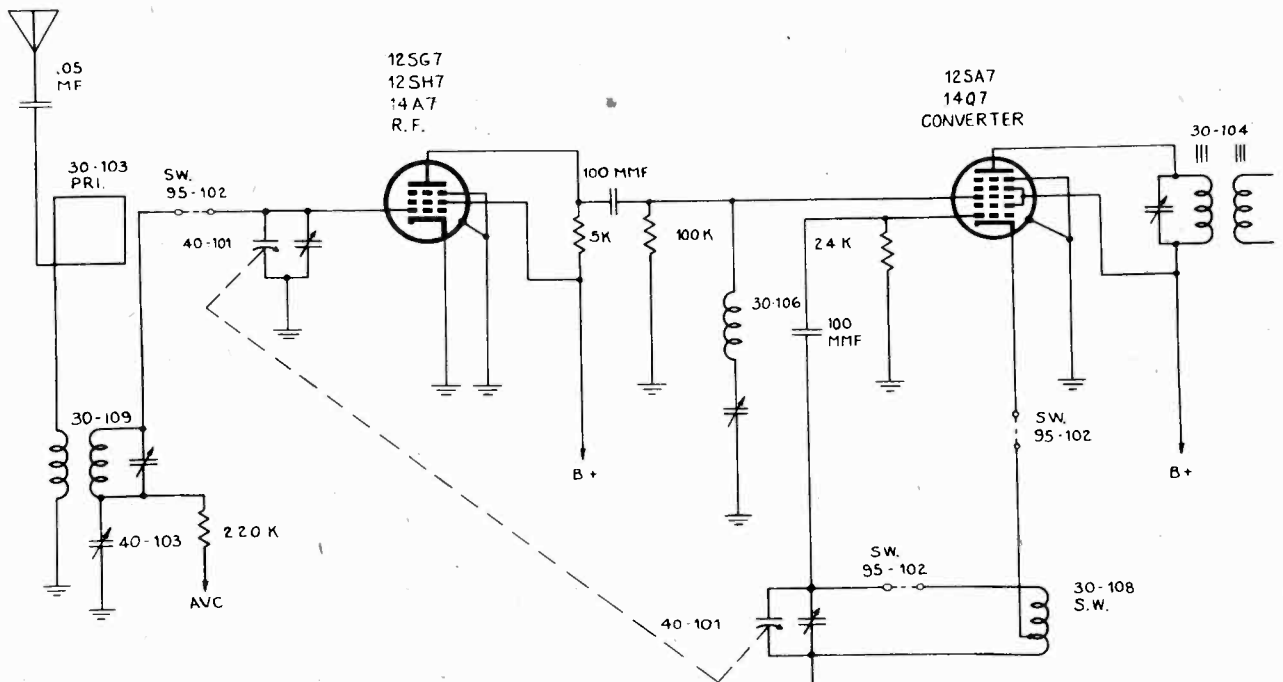
TOP OF CHASSIS





BAND-SWITCH SHOWN
AT 1ST POSITION.
BROADCAST BAND
540 TO 1650 KC.

NOTE:
PIN NUMBERS ARE NOT SHOWN
BECAUSE EITHER OCTAL OR
LOCTAL TUBES MIGHT BE USED.

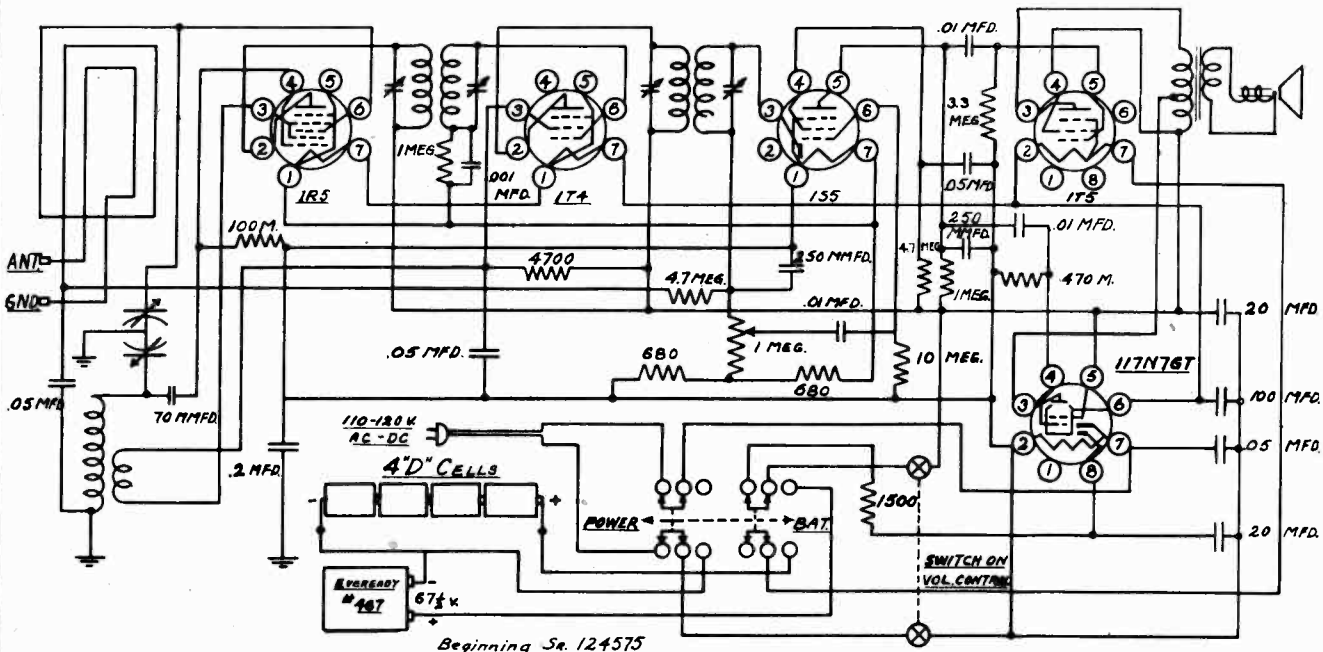


BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
SHORT WAVE BAND
7.5 TO 18.5 MC.

NOTE:
PIN NUMBERS ARE NOT SHOWN
BECAUSE EITHER OCTAL OR
LOCTAL TUBES MIGHT BE USED.

MODEL 440

REMLER CO. LTD.



The chassis may be removed from the cabinet by removing the knobs and taking out the three binding head screws in the bottom of the cabinet. The oscillator trimmer is located on the front section of the variable condenser, while the converter, or loop, trimmer is on the rear section. I. F. trimmers are accessible in the tops of the I. F. transformers. The I. F. frequency is 455 KC. Standard alignment procedure is applicable.

TUBES

A combination of battery-type and power tubes is used. The battery type output tube is not in use when the set is operated from a power source.

The receiver is equipped with:

1S5-diode detector and A. F. amplifier	1R5-converter
1T5GT-output tube for battery operation	1T4-I. F. amplifier
117N7GT-output and rectifier for power operation	

The following voltage readings are taken with a 1000 ohm per volt meter.

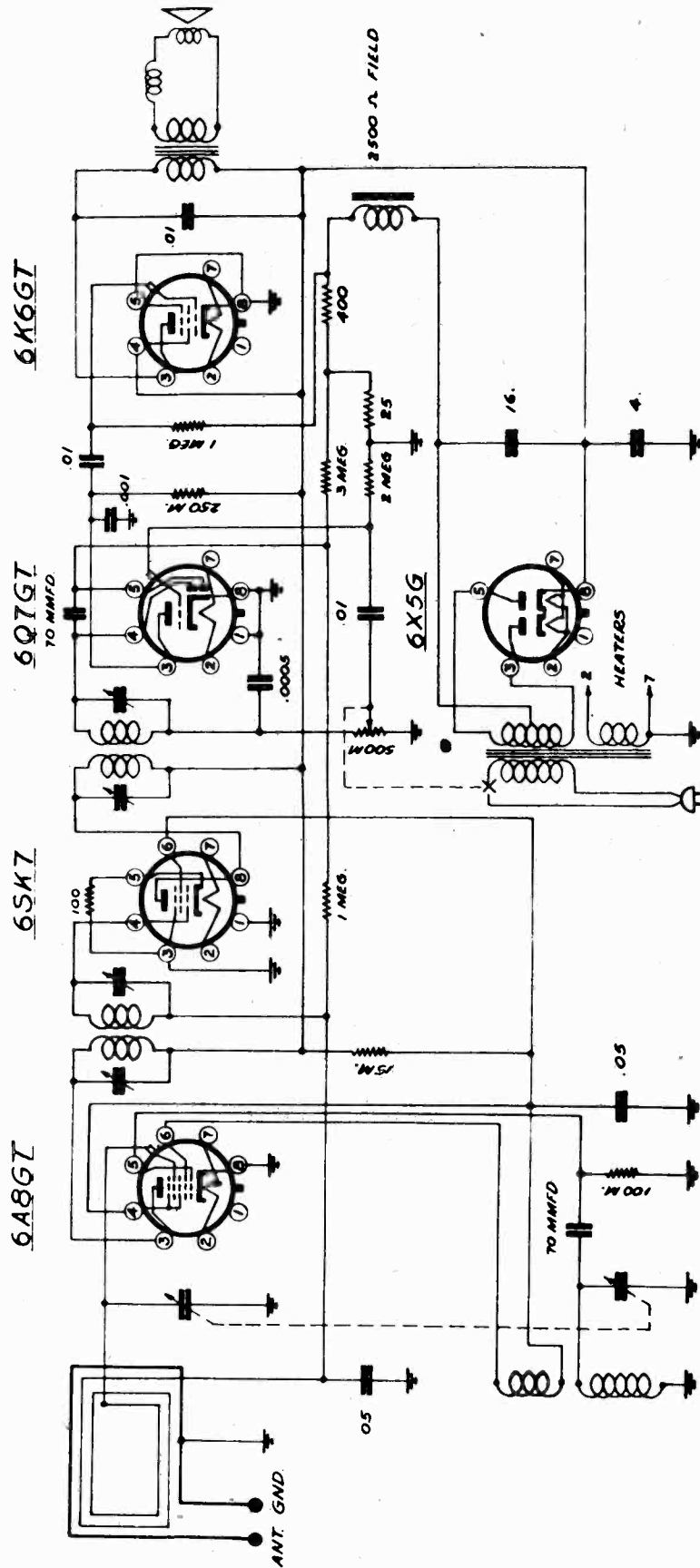
BATTERY OPERATION

Fresh batteries-no signal		
From negative bus to:		
1R5	Plate	67.5V
1R5	Screen	50
1T4	Plate	67.5
1T4	Screen	50
1S5	Plate	15
1S5	Screen	5
1T5GT	Plate	62
1T5GT	Screen	67.5

POWER OPERATION

115 volts AC. No signal		
From negative bus to:		
1R5	Plate	65
1R5	Screen	49
1T4	Plate	65
1T4	Screen	49
1S5	Plate	14
1S5	Screen	5
117N7GT	Power Amp.	
	screen	65
117N7GT	Power Amp.	
	cathode	3.5
117N7GT	Rectifier	
	cathode	125
117N7GT	Power Amp.	
	plate	55

REMLER CO. LTD.



REMLER CO. LTD.	
CIRCUIT DIAGRAM MODEL 462 RADIO	
DATE	7-23-33
DESIGNED BY	W. J. HANCOCK
CHECKED BY	W. J. HANCOCK
APPROVED BY	W. J. HANCOCK
DRW. NO.	462

Beginning Sr No 120272

IF PEAK 455 KC

