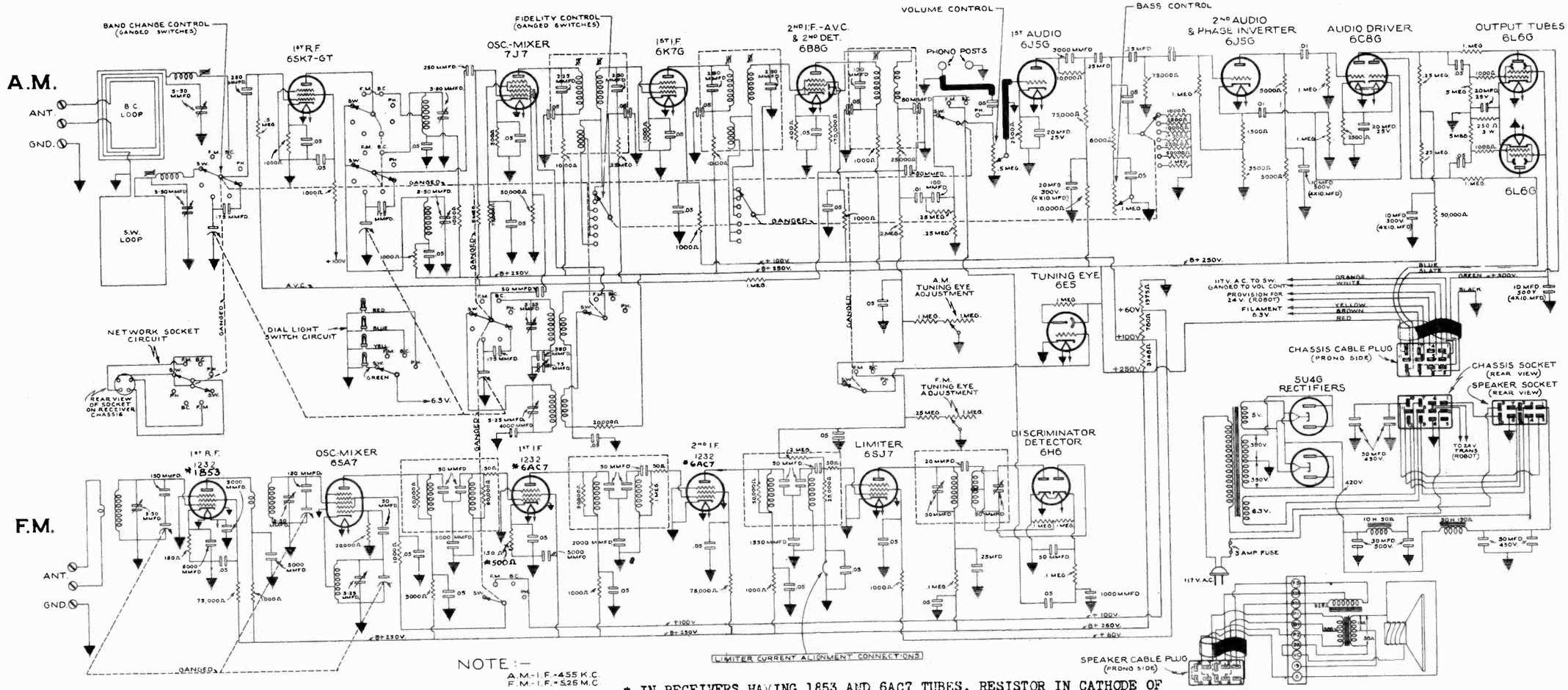
SCOTT RADIO LABS. INC.

MODEL Laureate
Revised

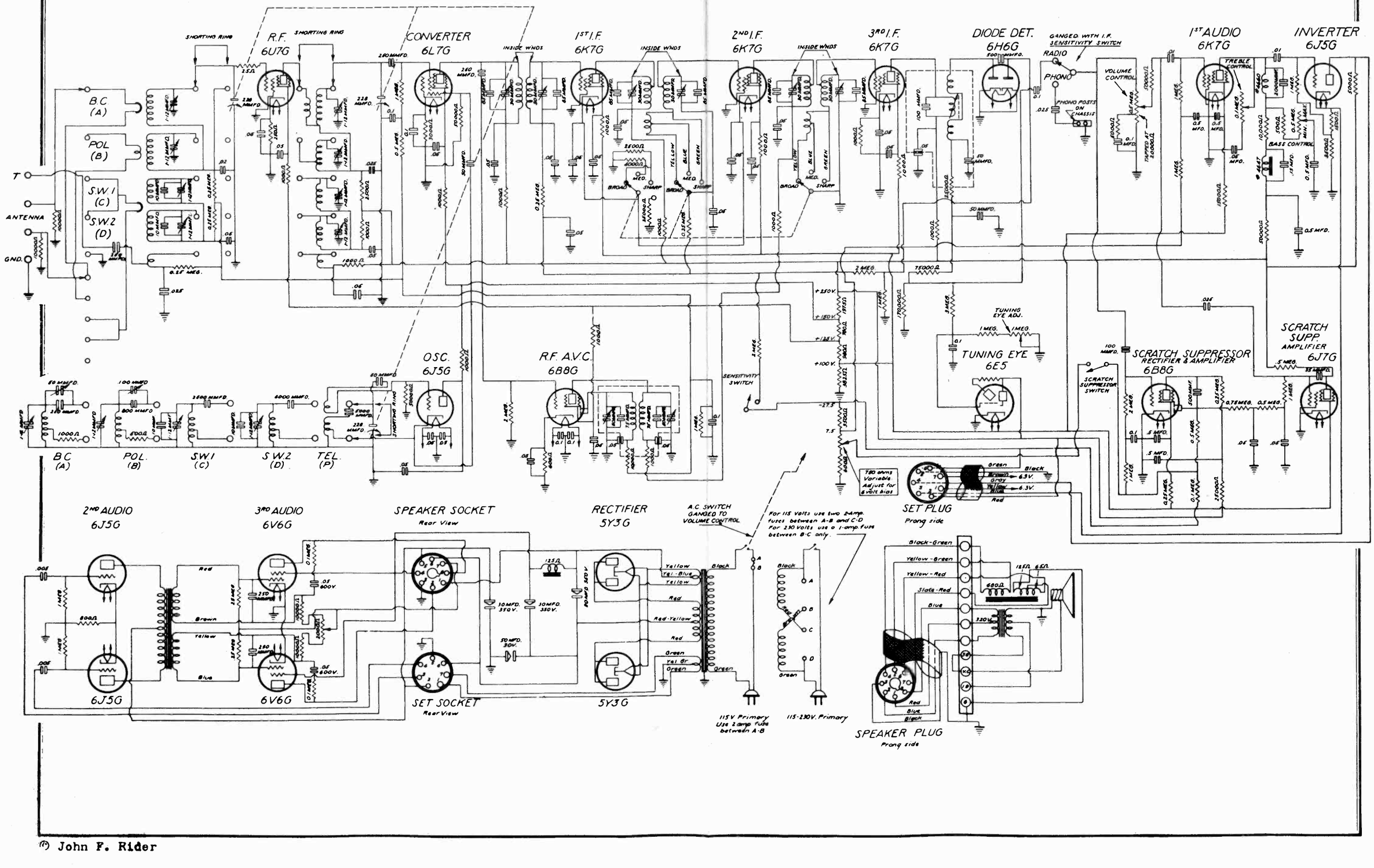


NOTE:—
A.M.-I.F.-455 K.C.
F.M.-I.F.-5.25 M.C.

* IN RECEIVERS HAVING 1853 AND 6AC7 TUBES, RESISTOR IN CATHODE OF FIRST I-F TUBE IS CHANGED FROM 150 TO 500 OHMS.

MODEL Phantom
Revised

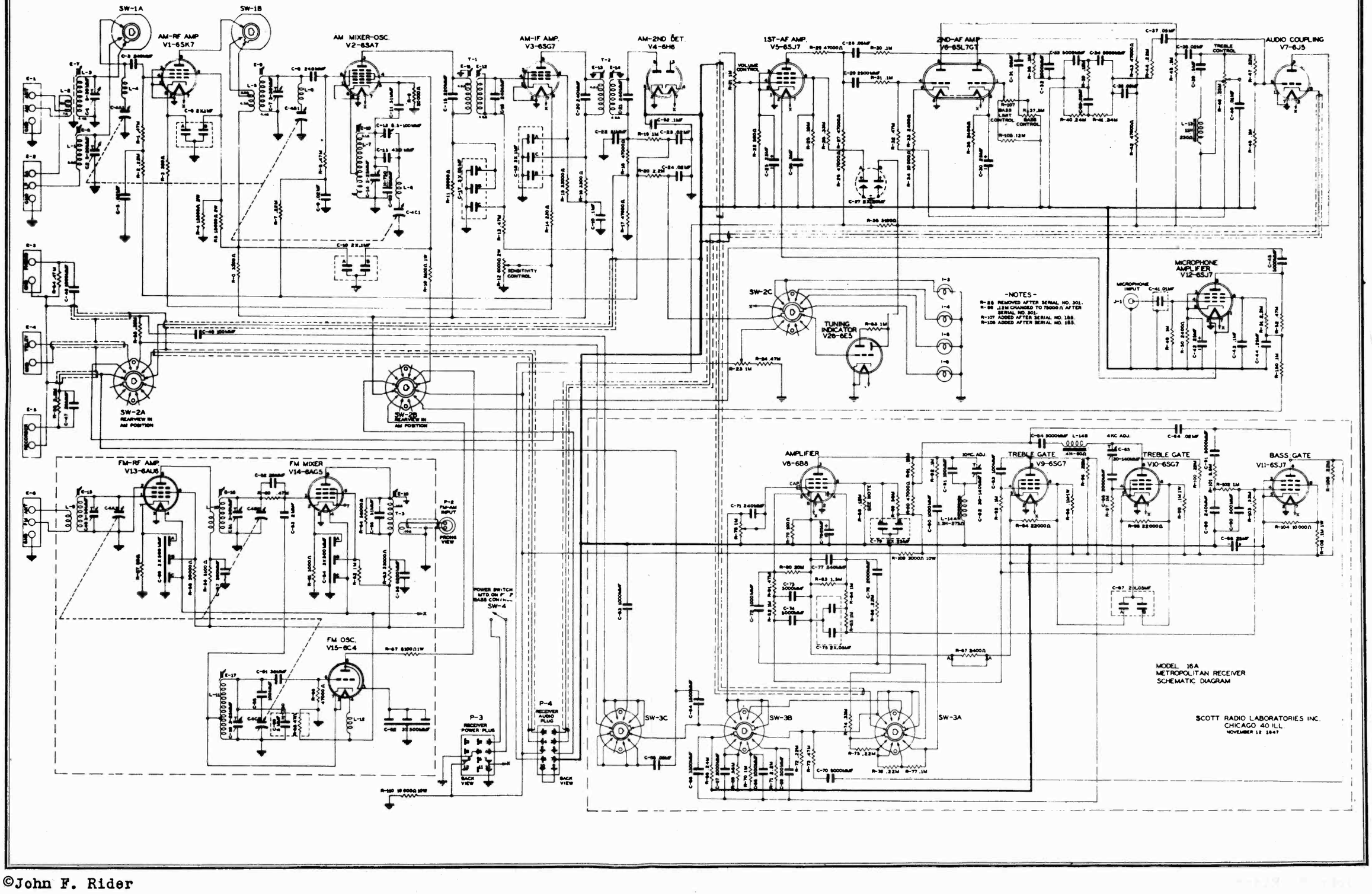
SCOTT RADIO LABS. INC.



(P) John F. Rider

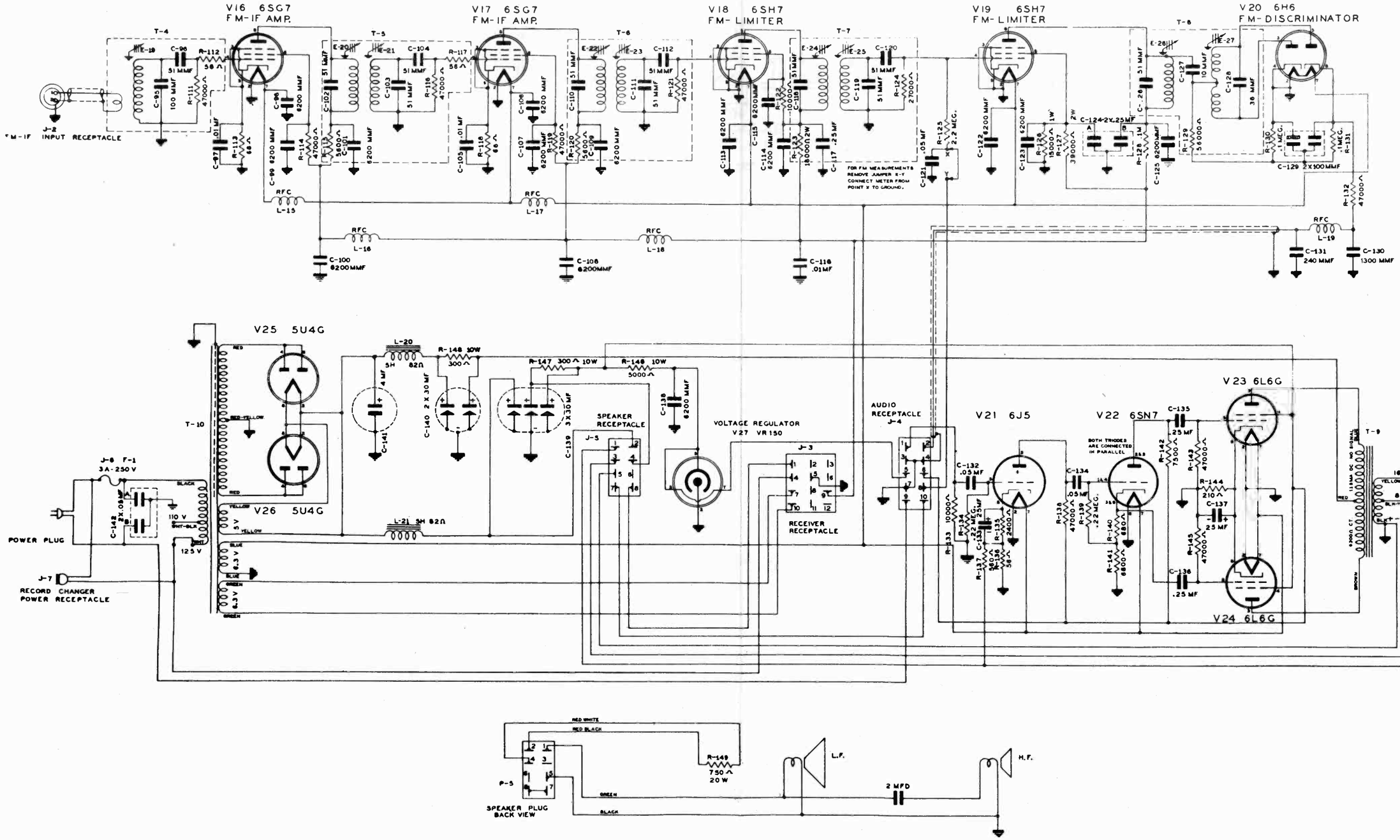
SCOTT RADIO LABS., INC.

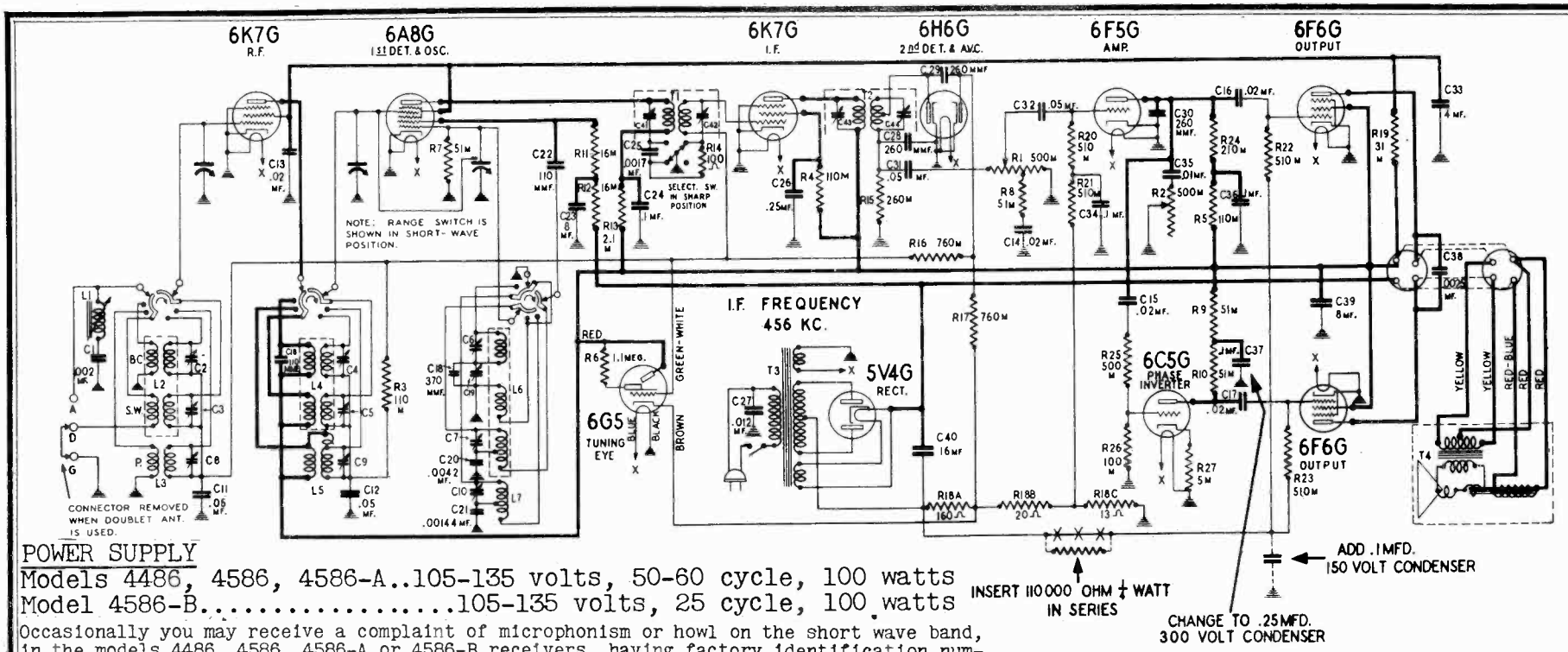
MODEL 16A
(Metropolitan)



MODEL 16A
(Metropolitan)

SCOTT RADIO LABS., INC.





POWER SUPPLY

Models 4486, 4586, 4586-A..105-135 volts, 50-60 cycle, 100 watts
Model 4586-B.....105-135 volts, 25 cycle, 100 watts

Occasionally you may receive a complaint of microphonism or howl on the short wave band, in the models 4486, 4586, 4586-A or 4586-B receivers, having factory identification number 100156. In such cases, first make a careful test of all tubes, eliminating those which are microphonic, and other parts which might cause howl if defective. A good ground must be used. It is also advisable to see that the control knobs are not jammed too tightly against the cabinet front. If microphonics or howl is not caused by defective parts or any of the above items, it can usually be eliminated or greatly reduced by making the following circuit changes:

1. Disconnect and remove the 110,000 ohm, 1/4 watt carbon resistor which is connected from the junction of the two 510,000 ohm grid resistors in the grid circuits of the output stage, to the center tap of the power transformer. This resistor will be found only in receivers carrying changes shown in supplement No. 1 of bulletin 57 RL 26. In receivers where this resistor is not present the lead between the junction of the two grid resistors and the center tap should be removed. The junction point referred to should then be connected to ground.

2. Short out the R-18A section of the candohm bias resistor strip.

3. (a) Open the cathode connections to ground on both of the 6F6 output tubes.

   (b) Connect the two cathode terminals, of the 6F6 output tubes, together.

   (c) From the cathode terminal, of either of the 6F6 output tubes, connect a 270 ohm 2 watt resistor to ground. The value given for this resistor is quite critical.

INTERMEDIATE FREQUENCY.....456 KC.

FREQUENCY RANGES	ALIGNMENT FREQUENCIES
Band A.....526 to 1750 KC.	1500 KC.; 600 KC.
Band P....1730 to 5600 KC.	5000 KC.
Band F..5500 to 18,000 KC.	16,000 KC.

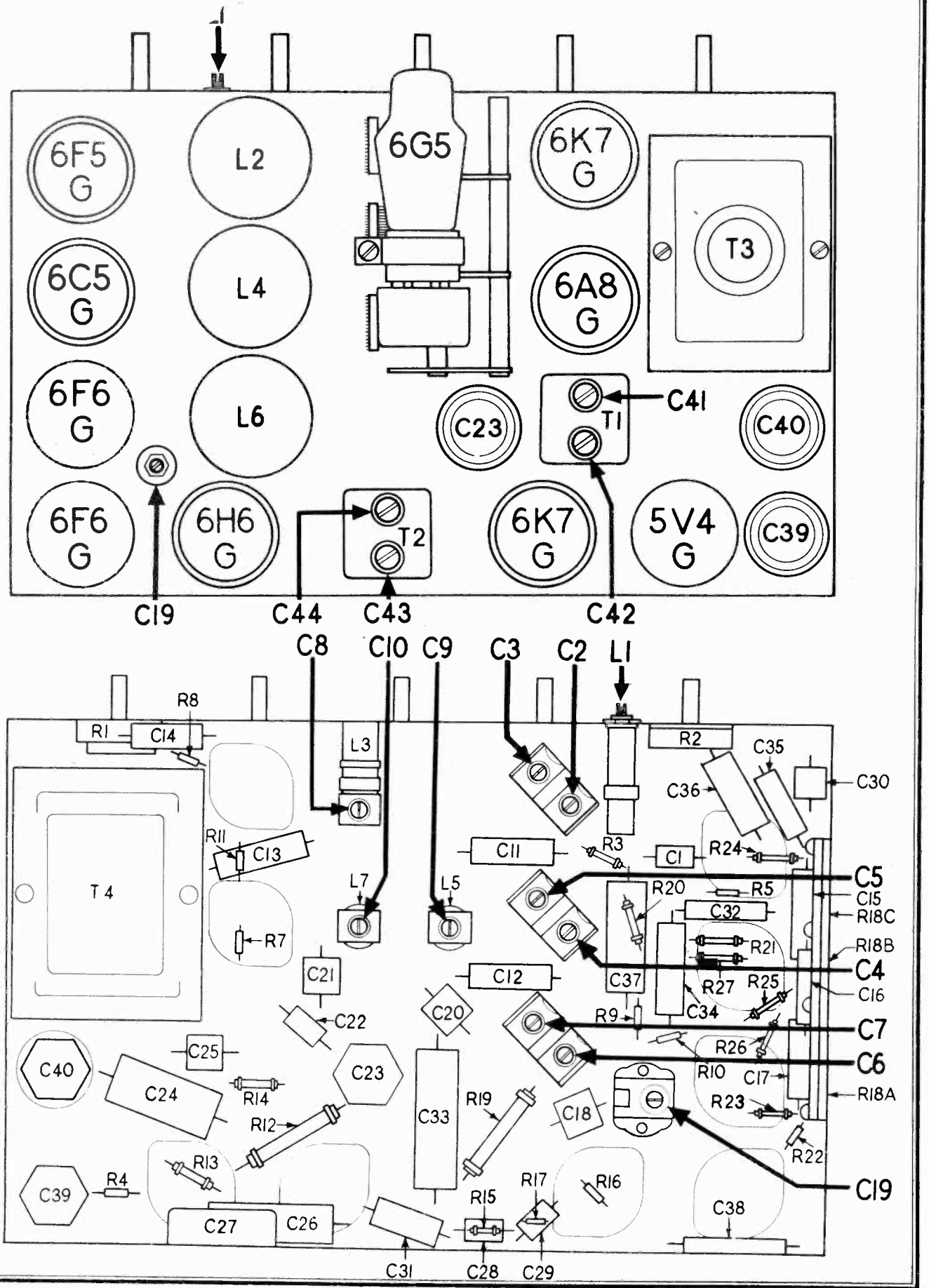
POWER OUTPUT

Type.....Class A
Undistorted.....3.0 Watts
Maximum.....3.5 Watts

CHASSIS FEATURES

Number of R.F. Stages.....One
Number of I.F. Stages.....One
Number of Cond. in Gang.....Three
Antenna....Conventional or Doublet
456 KC. Wave Trap

MODELS 4486,4586,4586-A, 4586-B CHASSIS 100,156 SEARS, ROEBUCK & CO.



SEARS, ROEBUCK & CO. MODELS 4486,4586,4586-A, 4586-B CHASSIS 100,156

ALIGNMENT PROCEDURE

PRELIMINARY

Output meter connections.....Across voice coil leads 10" spkr. 1.4 volts

Output meter reading to indicate 1 watt output..... 12" spkr. 2.0 volts

Average sensitivity in microvolts for 1 watt output.....See chart below

Generator ground connection.....Receiver Chassis
Dummy antenna to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator modulation.....30%, 400 cycles

Position of selectivity control.....Sharp position (clockwise)
Position of volume control.....Maximum clockwise
Position of tone control.....Maximum clockwise

BAND SWITCH	POSITION OF * DIAL POINTER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (In order shown)	MICRO-VOLTS (Sharp Pos.)
Band A I.F.	1000 KC.	456 KC.	.1 Mfd.	6A8-G Grid	C41, C42, C43, C44	150
I.F. Trap	600 KC.	456 KC.	.00025 Mfd.	Ant. Lead	L1 for Min.Output	
	1500 KC.	1500 KC.	.00025 Mfd.	Ant. Lead	C6,C4,C2	15
	600 KC. ** (Rock Dial)	600 KC.	.00025 Mfd.	Ant. Lead	C19	15
Band P	5000 KC.	5000 KC.	400 Ohm.	Ant. Lead	*** ** C10,C9,C8	30
Band F	16000 KC.	16000 KC.	400 Ohm.	Ant. Lead	*** ** C7,C5,C3	30

IMPORTANT ALIGNMENT NOTES

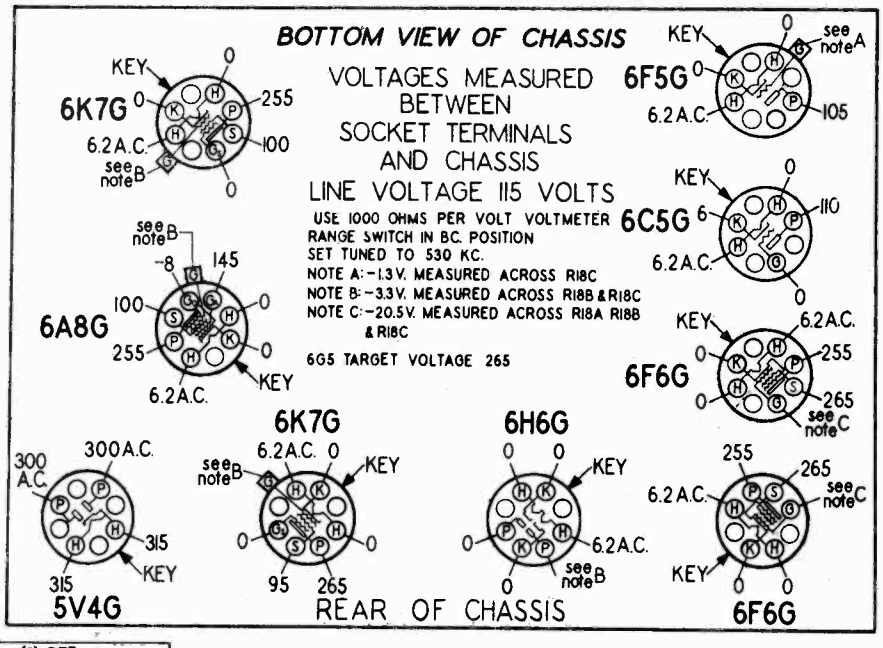
* Before attempting to align the receiver check to see that the dial pointer coincides with the last scale division at the low frequency end of the dial scale when the gang condenser is in full mesh.

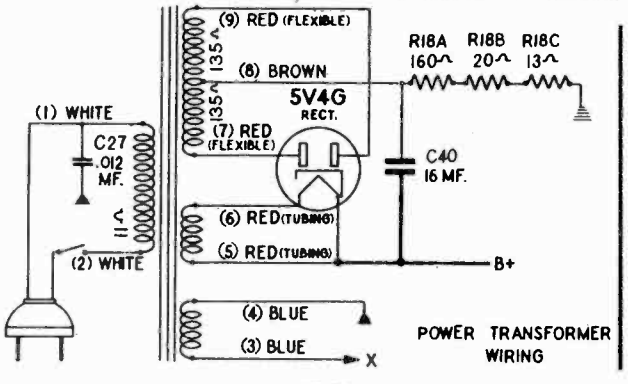
After adjusting the I.F. trimmers C41, C42, C43 and C44, go back and repeat the adjustment, since the setting of each trimmer will have some effect on others. When adjusting L1, antenna trap trimmer, increase generator output to obtain clearly defined trimmer setting for a minimum.

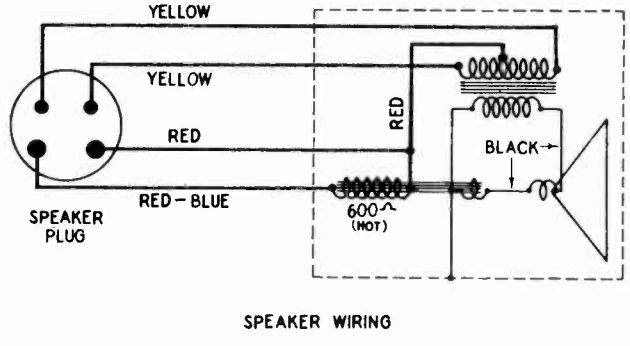
** When aligning the broadcast band padder C19 at 600 KC. and the short wave detector trimmers, it is necessary to adjust the trimmers while slowly rocking the gang condenser through a small distance. Rocking the gang is essential if maximum sensitivity is to be obtained.

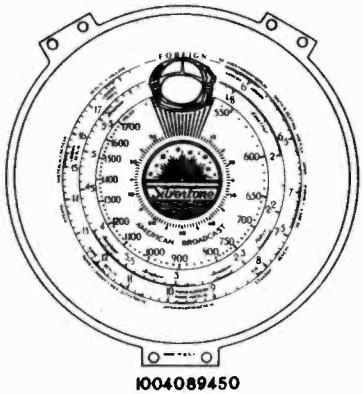
*** When aligning the short wave bands, care should be taken in adjusting trimmers C7 and C10, since two possible adjustments of these trimmers will result in signal peaks. The proper peak is that which occurs with the trimmer screw farthest out.

MODELS 4486,4586,4586-A, 4586-B CHASSIS 100,156 SEARS, ROEBUCK & CO.





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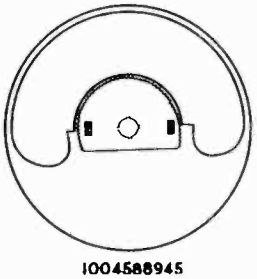
1004588942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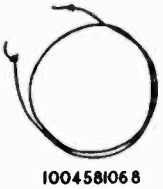
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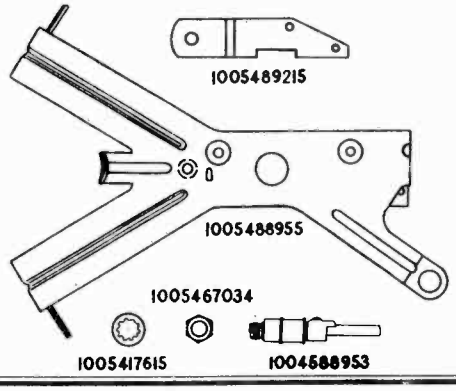


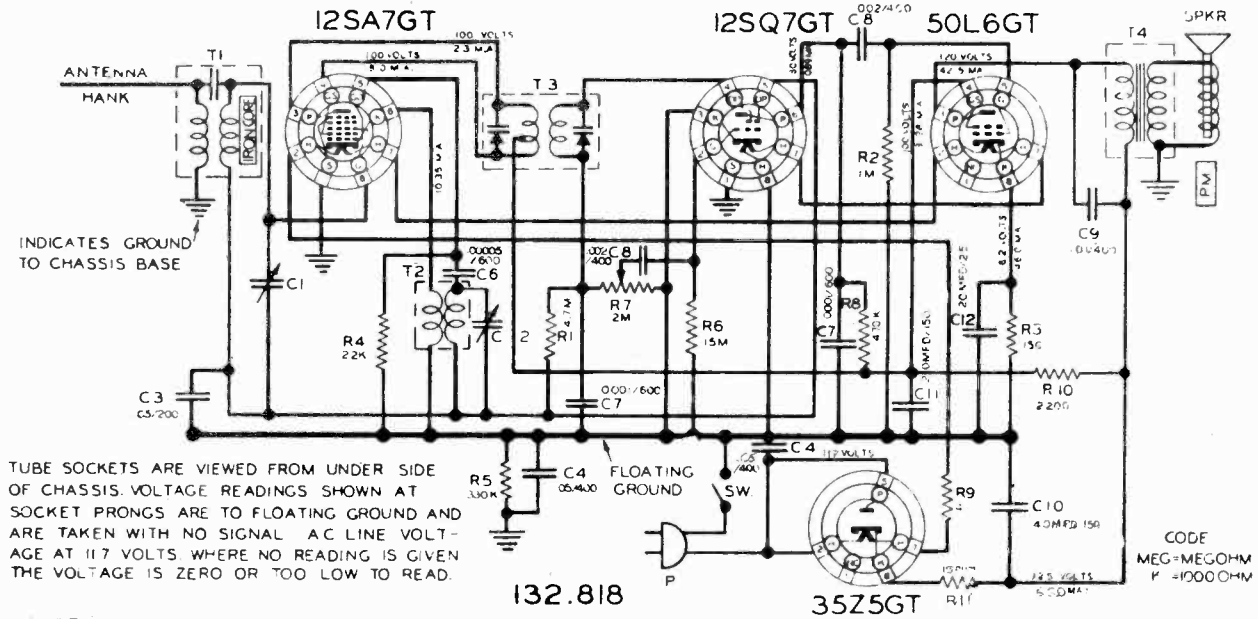
Part No.	Schematic Location	Description
1002089186	C33	Condenser - 4 mfd. 150 V. electrolytic
	C34	Condenser - .1 mfd. 150 V.
	C35	Condenser - .01 mfd. 400 V.
	C36 C37	Condenser - .1 mfd. 300 V.
1001989543	C38	Condenser - .0025 mfd. 750 V.
1002089542	C39	Condenser - 8 mfd. 400 V. electrolytic
1002088679	C40	Condenser - 16 mfd. 450 V. electrolytic
1001688850		Condenser - variable gang
1005585321		Connector - ground
1002489524	R1	Control - volume (250 M. with switch)
1002588677	R2	Control - tone (500 M.)
1004581068		Dial drive cord per ft.
1004089450		Dial scale
1004589509		Dial gear
1005789193		Diaphragm and voice coil assembly 10" sp.
1005789880		Diaphragm and voice coil assembly 12" sp.
1004589514		Drum and bushing assembly
1004488916		Escutcheon - dial
1004489819		Escutcheon - dial see note
1005789196		Gasket 3/16" for 10" speaker
1005467034		Hex. nut 3/8" - planetary
1003988804		Knob - range switch
1003988802		Knob - selectivity control } specify if knobs
1003988807		Knob - tone control } are lettered in gold
1003988801		Knob - tuning control }
1003988806		Knob - volume control }
1004983278		Lamp - pilot 6 volt
1005417615		Lockwasher - 3/8" planetary per 100
1005436437		Pin - escutcheon
1004588953		Planetary - dial drive
1001888631		Plug - speaker
1001888632		Plug Cap - speaker
1004189521		Pointer and stud assembly
1004189523		Pointer - band spread
	R3 R4 R5	Resistor - 110,000 ohm 1/4 watt
	R6	Resistor - 1.1 megohm 1/4 watt
	R7 R8 R9 R10	Resistor - 51,000 ohm 1/4 watt
	R11	Resistor - 16,000 ohm 1/2 watt
	R12	Resistor - 16,000 ohm 1 watt
	R13	Resistor - 2,100 ohm 1/4 watt
	R14	Resistor - 100 ohm 1/4 watt
	R15	Resistor - 260,000 ohm 1/4 watt
	R16 R17	Resistor - 760,000 ohm 1/4 watt
	R18A	Resistor - 160 ohm sect. 3 watt
2189603	R18B	Resistor - 20 ohm sect. 2 watt
	R18C	Resistor - 13 ohm sect. 2 watt
	R19	Resistor - 31,000 ohm 1 watt
	R20 R21 R22 R23	Resistor - 510,000 ohm 1/4 watt
	R24	Resistor - 210,000 ohm 1/4 watt
	R25	Resistor - 500,000 ohm 1/4 watt
	R26	Resistor - 100,000 ohm 1/4 watt
	R27	Resistor - 5,000 ohm 1/4 watt

Part No.	Schematic Location	Description
1004689511		Shaft and gear - pointer
1005384982		Shield - tube, section (slotted end)
1005384981		Shield - tube, section
1005388708		Shield - tube, section
1001884758		Socket - pilot light
1001888675		Socket - speaker
10058264		Speaker - 10"
10058268		Speaker - 12"
1005489837		Speed nut used on 1004489819 (each)
1005384983		Spring ring - tube shield
1004581069		Spring - dial cord
1004388918		Spring - dial glass retainer
1004388919		Spring - escutcheon mounting used on 1004488916
1003788877		Switch - range
1002688874		Switch - selectivity
1005585066		Terminal strip G.D.A.
1003388882	T1	Transformer - 1st I.F.
1003588885	T2	Transformer - 2nd I.F.
1001089582	T3	Transformer - Power, 115 V. 60 cycles
1001089822	T3	Transformer - Power, 115 V. 25 cycles
1001389508	T4	Transformer - Output 10" sp.
1001389881	T4	Transformer - Output 12" sp.
1005488955		Bracket - dial mounting
1005488875		Bracket - selectivity switch
1005489215		Bracket - planetary support
1005588969		Cable and Plug - tuning indicator
1005481145		Clip - pointer shaft retaining spring
1003189560	L1	Coil - antenna trap
1002888592	L2	Coil - antenna (B.C. & S.W. with shd. & trimmer)
1002888881	L3	Coil - antenna (Police)
1002888597	L4	Coil - R.F. (B.C. & S.W. with shd. & trimmer)
1002888604	L5	Coil - R.F. (Police)
1002888599	L6	Coil - osc. (B.C. & S.W. with shd. & trimmer)
1002888605	L7	Coil - osc. (Police)
1001988686	C1	Condenser - .002 mfd. (mica)
1001788596	C2 C3 C4 C5 C6 C7	Condenser - dual trimmer
1001788477	C8 C9 C10	Condenser - single trimmer
	C11 C12	Condenser - .05 mfd. 150 V.
	C13 C14 C15 C16 C17	Condenser - .02 mfd. 400 V.
1001989525	C18	Condenser - .00037 mfd. (mica)
1001785285	C19	Condenser - padding trimmer
1001988587	C20	Condenser - .0042 mfd. (mica)
1001985562	C21	Condenser - .00144 mfd. (mica)
	C22	Condenser - .00011 mfd. (mica)
1002089614	C23	Condenser - 8 mfd. 300 V. electrolytic
	C24	Condenser - .1 mfd. 400 V.
1001988887	C25	Condenser - .0017 mfd. (mica)
	C26	Condenser - .25 mfd. 200 V.
1001983976	C27	Condenser - .012 mfd. 1,000 V.
	C28 C29 C30	Condenser - .00026 mfd. (mica)
	C31 C32	Condenser - .05 mfd. 200 V.

Note: This escutcheon is mounted on cabinet with three escutcheon pins No. 1005436437 and three speed nuts No. 1005489837.

SEARS ROEBUCK & CO.

MODEL 6002
Ch.132.818



PRELIMINARY:

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 200 milliwatts	.8 volts
Connection of generator ground lead	Floating ground
Generator Modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Dial Pointer with Variable fully closed	54 on dial

POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (high)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION
Open	455 kc.	.05 mfd.	12SA7GT grid	Top of T3	IF
1400 kc.	1400 kc.	.00005 mfd.	**Ant.	*C2	Osc.
600 kc.	600 kc.	.00005 mfd.	**Ant.	Check point	----

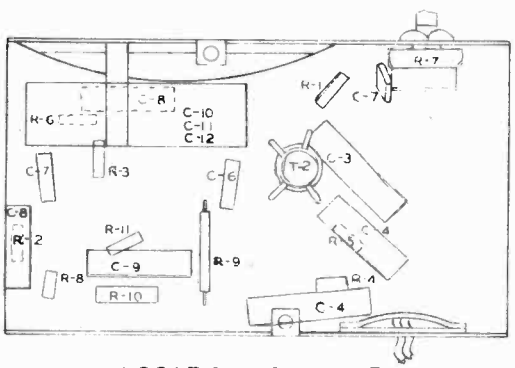
IMPORTANT ALIGNMENT NOTES

*Since the antenna stator section of the variable has no trimmer, the rotor is rocked back and forth while adjusting oscillator trimmer, to obtain maximum output.

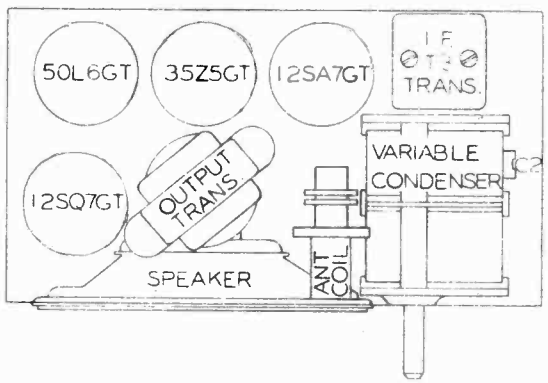
Check the sensitivity at 600 kc, if weak adjust antenna section plates for maximum output at 600 kc, tracking is accomplished by adjusting plates of rotor.

**Unsolder 20' antenna lead from lug on antenna coil, and connect signal generator lead to lug through .00005 uuf Dummy Antenna.

Approximate stage by stage sensitivities are: Mixer - 455 kc - 2600 uv; Mixer 1000 kc - 2600 uv; Antenna - 1000 kc - 180 uv.



LOCATION OF PARTS UNDER CHASSIS



MODEL 8003 CHASSIS 132.818-1

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection ..... Across speaker voice coil
Output meter reading to indicate 200 milliwatts ..... .8 volt
Connection of generator ground lead ..... Floating ground
Generator modulation ..... 30%, 400 cycles
Position of volume control ..... Fully clockwise
Position of dial pointer with variable fully closed ..... 54 on dial

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION (high)	TRIMMERS ADJUSTED (in order shown)	TRIMMER FUNCTION
Open	455 kc	.05 mfd.	12SA7GT grid	Top of T3	I. F.
1400 kc	1400 kc	.00005 mfd.	**Antenna	*C2	Oscillator
600 kc	600 kc	.00005 mfd.	**Antenna	Check point	- - - - -

IMPORTANT ALIGNMENT NOTES

*Since the antenna stator section of the variable has no trimmer, the rotor is rocked back and forth while adjusting oscillator trimmer, to obtain maximum output.

Check the sensitivity at 600 kc; if weak, adjust antenna section plates for maximum output at 600 kc; tracking is accomplished by adjusting plates of rotor.

**Unsolder 20' antenna lead from lug on antenna coil, and connect signal generator lead to lug through .00005 mfd. Dummy Antenna.

Approximate stage by stage sensitivities are: Mixer - 455 kc - 2600 uv; Mixer 1000 kc - 2600 uv; Antenna - 1000 kc - 180 uv.

MODEL 6002, Chassis 132.818

SCH. LOC.	PART NO.	DESCRIPTION
R1		Resistor, 4.7 Megohms, ½ watt
R2		Resistor, 1 Megohm, ½ watt
R3		Resistor, 150 ohms ½ watt
R4		Resistor, 22,000 ohms, ½ watt
R5		Resistor, 330,000 ohms, ½ watt
R6		Resistor, 15 Megohms, ½ watt
R7	N18587	Resistor, 2 Megohm Volume Control & Switch
R8		Resistor, 470,000 ohms, ½ watt
R9	N19177	Resistor, 47 ohms, 1 watt
R10		Resistor, 2,200 ohms, 1 watt
R11		Resistor, 15 ohms, ½ watt
C1,C2	N17115	Condenser, Variable 2-gang
C3		Condenser, .05 mfd., 200 volts
C4		Condenser, .05 mfd., 400 volts
C6		Condenser, .00005 mfd., 500 volts
C7		Condenser, .0001 mfd., 500 volts
C8		Condenser, .002 mfd., 500 volts
C9		Condenser, .01 mfd., 400 volts
C10		Condenser, 40 mfd., 150 volts
C11	N19176	Condenser, 20 mfd., 150 volts
C12		Condenser, 20 mfd., 25 volts
	N19212	Cabinet rear cover assembly
T1	N18255	Coil, antenna
T2	N18256	Coil, oscillator
T3	N19649	Transformer, I.F.
Spk.	N17209	Speaker less output transformer
T4	N18258	Transformer output
	N19937	Speaker & output transformer ass'y.
	N19122	Dial scale emblem
	N19936	Cabinet, ivory
	N19120	Knob, tuning, ivory
	N18673	Knob, volume, ivory
	N20064	Line Cord
	N20040	Washer - White Felt
	N18254	Socket - Tube
	N19292	Antenna Wire
	N19215	Instruction Sheet
	N19119	Wood Insulator, Rear Cover

Power Supply -- 105-125 Volts AC-DC, 35 Watts
Power Output
Undistorted .8 Watts, Maximum - 2.5 Watts

Tuning Range Broadcast Band 540-1600 Kc
Speaker
Voice Coil Impedance 3.2 Ohms

GENERAL INFORMATION & SERVICE HINTS

Due to a wide variation in characteristics of 12SA7 tubes the set may have a tendency to oscillate when tube replacements are made. A 1 megohm resistor placed across the I F coil from B- to plate will usually correct this condition. Some sets already have this resistor installed.

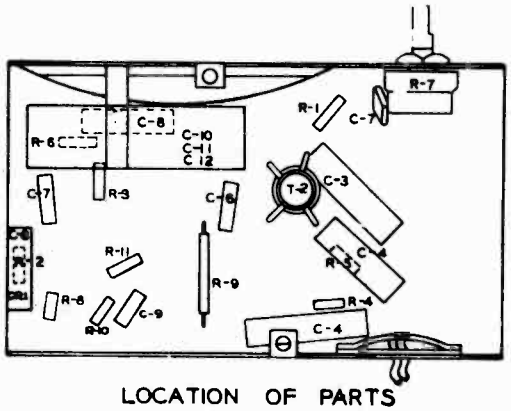
MODEL 8003
CHASSIS 132.818-1

SEARS, ROEBUCK & CO.

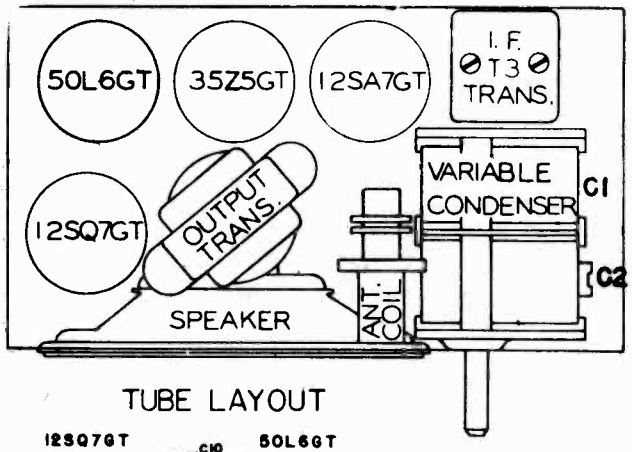
SPECIFICATIONS

Power Supply -- 105-125 Volts AC-DC, 30 Watts
Power Output
Undistorted .8 Watts, Maximum - 2.5 Watts

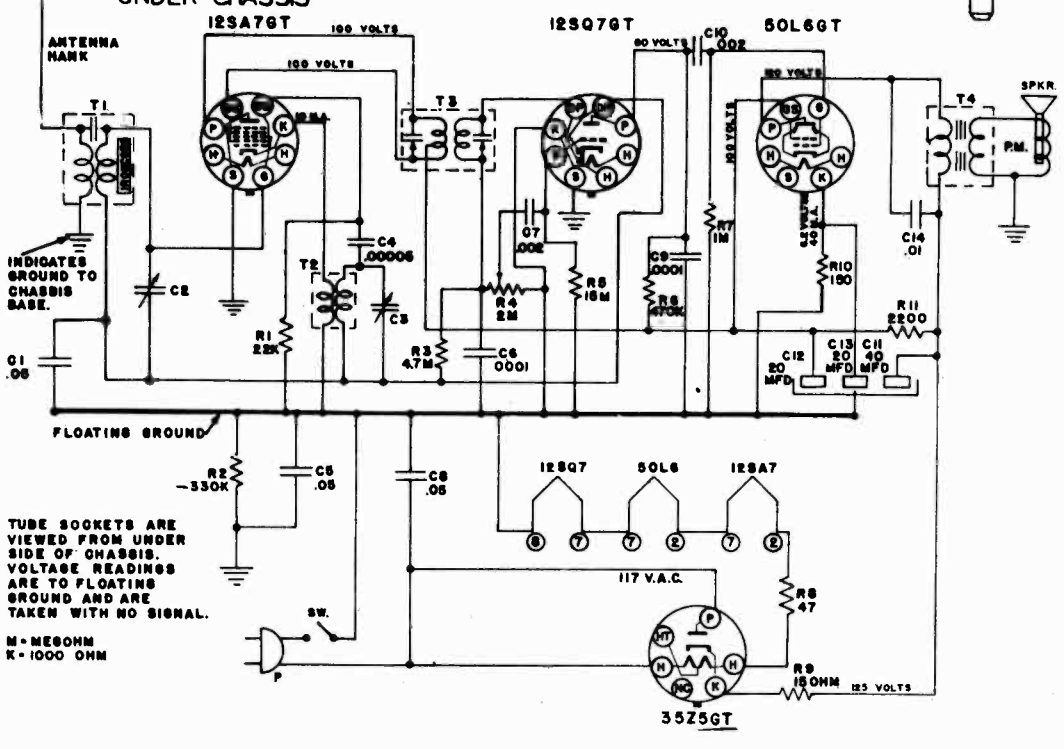
Tuning Range Broadcast Band 540-1600 Kc
Speaker
Voice Coil Impedance 3.2 Ohms



LOCATION OF PARTS UNDER CHASSIS



TUBE LAYOUT

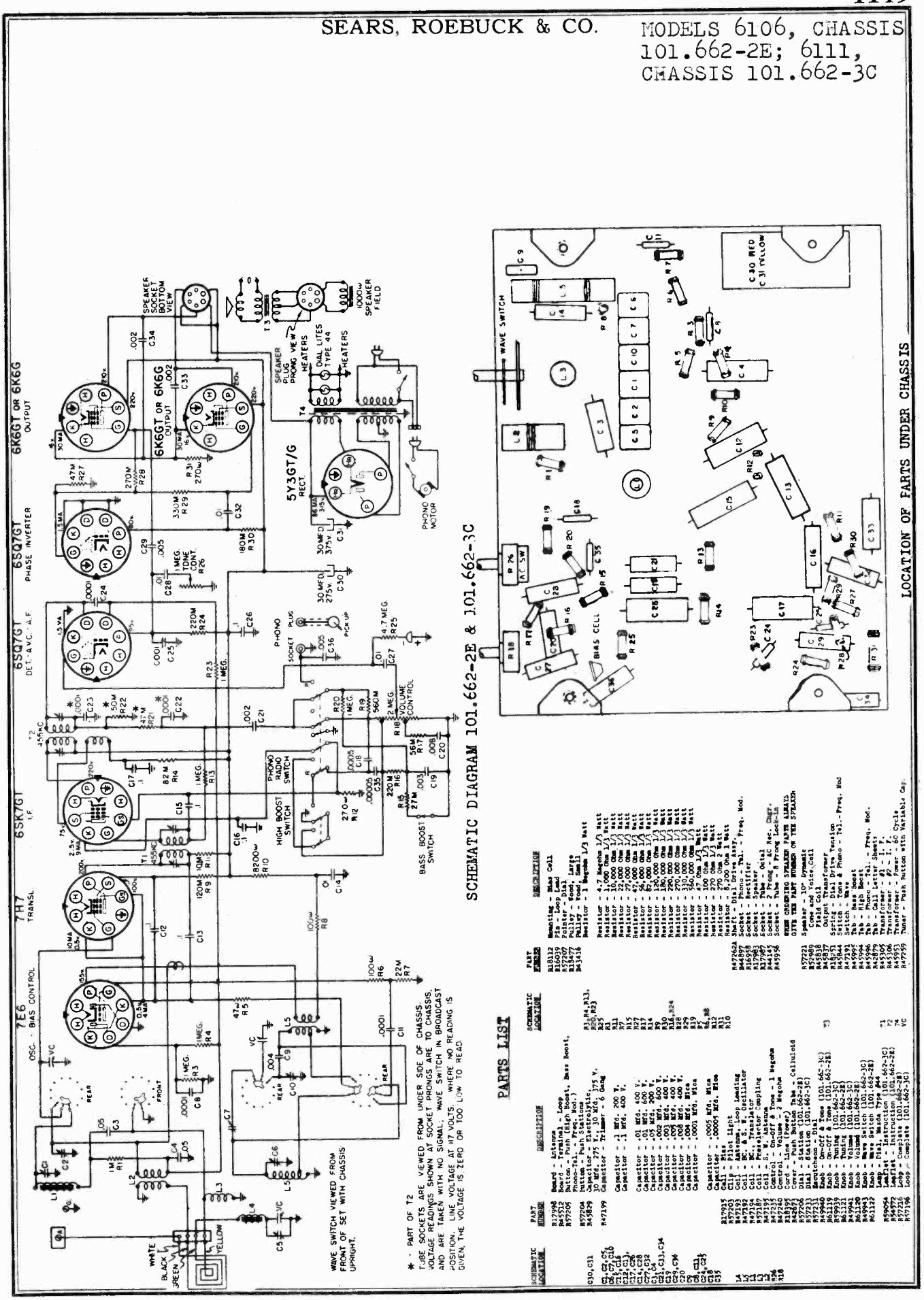


SCH. LOC.	PART NO.	DESCRIPTION	M.U. CODE
	N19936-2	Cabinet, gray-green	
T1	N18255	Coil, antenna	
T2	N18256	Coil, oscillator	
C1		Condenser, .05 mfd., 200 v	
C2,C3	N17115	Condenser, variable, 2-gang	AA0
C4		Condenser, .00005 mfd., 500 v, mica	
C5,C8		Condenser, .05 mfd., 400 v	
C6,C9		Condenser, .0001 mfd., 500 v	
C7,C10		Condenser, .002 mfd., 600 v	
C11)	N19176	Condenser, 40 mfd., 150 v	
C12)		Condenser, 20 mfd., 150 v	
C13)		Condenser, 20 mfd., 25 v	
C14		Condenser, .01 mfd., 400 v	
	N20237	Cord, Power	
	N21923	Emblem, Dial Scale	
	N19120-1	Knob, tuning	
	N18678	Knob, volume	
	N21925	Leaflet, instruction	

SCH. LOC.	PART NO.	DESCRIPTION
R1		Resistor, 22,000 Ohms, 1/4 w
R2		Resistor, 330,000 ohms, 1/4 w
R3		Resistor, 4.7 megohms, 1/4 w
R4	N18587	Resistor, 2 meg., vol control & sw
R5		Resistor, 1 meg., 1/4 w
R6		Resistor, 470,000 ohms, 1/4 w
R7		Resistor, 1 meg., 1/4 w
R8	N19177	Resistor, 470 ohms, 1 w
R9		Resistor, 15 ohms, 1/4 w
R10		Resistor, 150 ohms, 1/4 w
R11		Resistor, 2200 ohms, 1 watt
Spk.	N19937-1	Speaker & Output transformer assy.
	N21626-1	Speaker, 4" P. M.
T4	N18258	Transformer, output
T3	N19649	Transformer, I.F.
	N20040	Washer, white felt
	N18136	Wire, antenna

SEARS, ROEBUCK & CO.

MODELS 6106, CHASSIS 101.662-2E; 6111, CHASSIS 101.662-3C



SCHEMATIC DIAGRAM 101.662-2E & 101.662-3C

* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

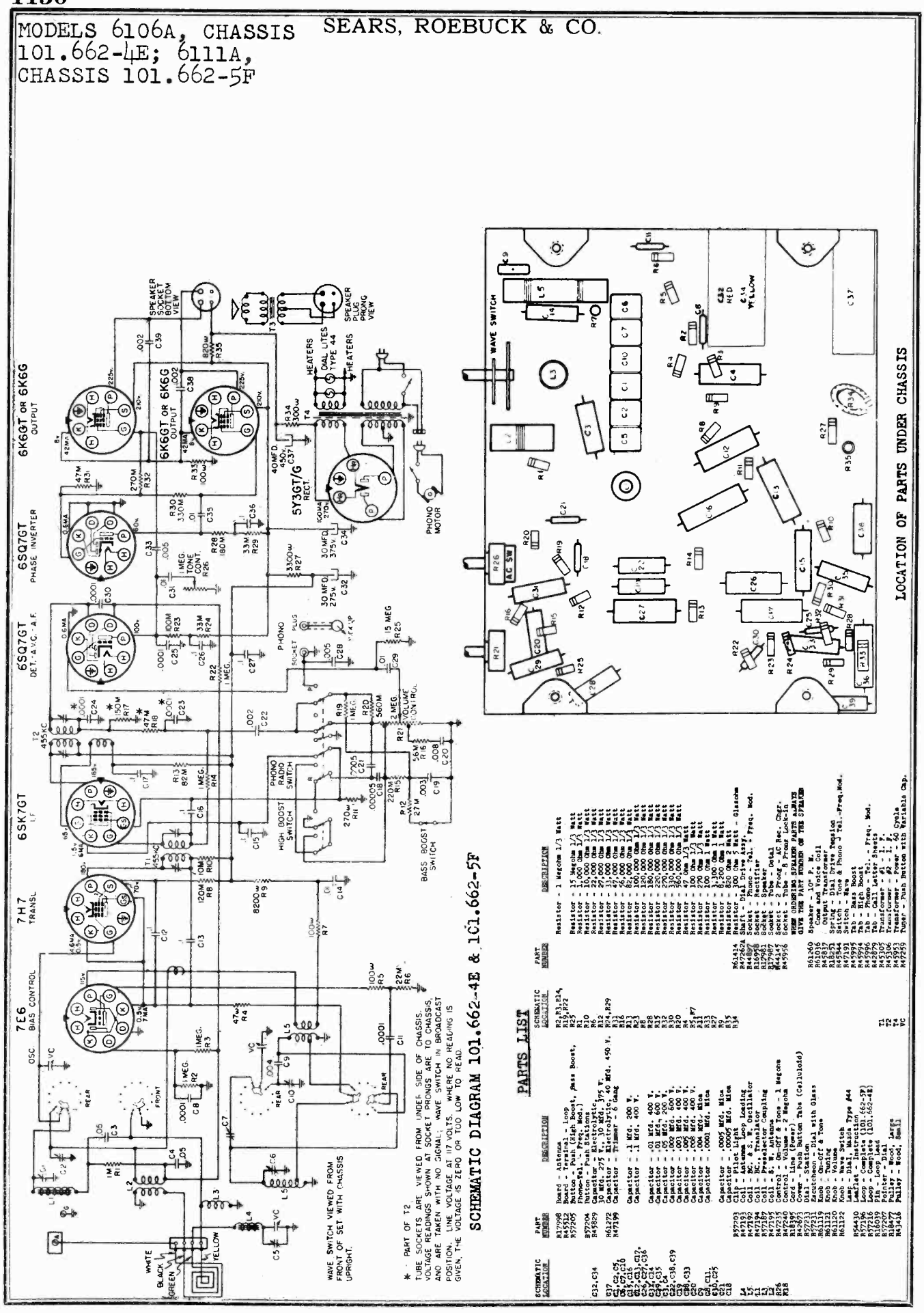
LOCATION OF PARTS UNDER CHASSIS

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R17098	Board - Antenna
	R45712	Board - Terminal - Loop
	R57205	Bracket - Dial (High Boost, Bass Boost, Phono-Tel. - Freq. Mod.)
	R57204	Button - Push Station
	R45829	Capacitor - Electrolytic, 25 Mfd. 375 V.
	R47199	Capacitor - Trimmer - 6 Gang
C30, C31		Capacitor - 1 Mfd. 200 V.
C1, C2, C7, C10		Capacitor - 1 Mfd. 400 V.
C15, C16, C17, C26		
C4, C28		Capacitor - .01 Mfd. 400 V.
C5, C32		Capacitor - .05 Mfd. 200 V.
C6, C31		Capacitor - .1 Mfd. 400 V.
C8, C33		Capacitor - .002 Mfd. 600 V.
C9, C34		Capacitor - .005 Mfd. 400 V.
C11, C13, C24		Capacitor - .01 Mfd. 400 V.
C12		Capacitor - .004 Mfd. Mica
C14, C25		Capacitor - .0001 Mfd. Mica
C18		
C19		Capacitor - .0005 Mfd. Mica
C20		Capacitor - .00005 Mfd. Mica
C35	R17935	Cell - Photo
	R17193	Cell - Light
	R17192	Coil - Antenna, Loop Loading
	R47194	Coil - BC. & S. W. Oscillator
	R47196	Coil - BC. Antenna
	R47195	Coil - S. W. Antenna
	R47235	Control - On-Off & Tone - 1 Megohm
	R47240	Control - Volume - 2 Megohm
	R42827	Cover - Push Button Tube - Celluloid
	R57206	Dial - Station (101.662-2E)
	R57211	Dial - Station (101.662-3C)
	R47197	Dial Mechanism
	R49940	Knob - On-Off & Tone (101.662-3C)
	R61119	Knob - On-Off & Tone (101.662-2E)
	R57239	Knob - Tuning (101.662-3C)
	R57233	Knob - Tuning (101.662-2E)
	R47235	Knob - Volume (101.662-3C)
	R61120	Knob - Volume (101.662-2E)
	R49941	Knob - Wave Switch (101.662-3C)
	R57243	Knob - Wave Switch (101.662-2E)
	R61121	Lamp - Dial, Mazda Type #44
	R59054	Leaflet - Instruction (101.662-3C)
	R59055	Leaflet - Instruction (101.662-2E)
	R57212	Loop - Complete (101.662-2E)
	R57196	Loop - Complete (101.662-3C)
	R18132	Mounting - Bias Cell
	R140491	Plug - Loop Lead
	R57207	Pointer - Dial
	R13477	Pulley - Wood, Large
	R43416	Pulley - Wood, Small
		Resistor - 1 Megohm 1/2 Watt
R25		Resistor - 4.7 Megohm 1/2 Watt
R11		Resistor - 1,000,000 Ohm 1/2 Watt
R7		Resistor - 10,000 Ohm 1/2 Watt
R15		Resistor - 22,000 Ohm 1/2 Watt
R17		Resistor - 27,000 Ohm 1/2 Watt
R14		Resistor - 47,000 Ohm 1/2 Watt
R9		Resistor - 82,000 Ohm 1/2 Watt
R10		Resistor - 120,000 Ohm 1/2 Watt
R23,R24		Resistor - 150,000 Ohm 1/2 Watt
R28		Resistor - 220,000 Ohm 1/2 Watt
R29		Resistor - 270,000 Ohm 1/2 Watt
R30		Resistor - 330,000 Ohm 1/2 Watt
R13		Resistor - 470,000 Ohm 1/2 Watt
R19		Resistor - 47 Ohm 1/2 Watt
R20		Resistor - 100 Ohm 1/2 Watt
R12		Resistor - 270 Ohm 1/2 Watt
R16		Resistor - 8,200 Ohm 1 Watt
R18		Resistor - 2 Megohm Volume Control
R27	R47242	Shaft - Dial Drive Assy.
	R45977	Socket - Phono
	R45978	Socket - Power Tel. - Freq. Mod.
	R17981	Socket - Rectifier
	R17983	Socket - Speaker
	R17987	Socket - Tube - Octal
	R45975	Socket - Tube - Rec. Chas.
	R45976	Socket - Tube - 8 Prong Lock-In
	R45958	WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER
	R57221	Speaker - 10" Dynamic
	R57989	Cone And Voice Coil
	R45838	Field Coil
	R45839	Output Transformer
	R18257	Spring - Dial Drive Tension
	R45844	Switch - Tone & Phono - Tel. - Freq. Mod
	R47191	Switch - Wave
	R45964	Tab - Bass Boost
	R45966	Tab - High Boost
	R45996	Tab - Phono - Tel. - Freq. Mod.
	R42879	Tab - Dial Cell Lever Sheet
	R45105	Transformer - #1 - I. F.
	R45106	Transformer - #2 - I. F.
	R45951	Transformer - Power - 60 Cycle
	R47199	Tuner - Push Button with Variable Cap.

MODELS 6106A, CHASSIS 101.662-4E; 6111A, CHASSIS 101.662-5F

SEARS, ROEBUCK & CO.



SCHEMATIC DIAGRAM 101.662-4E & 101.662-5F

* - PART OF T2.

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R17098	Board - Antenna
	R57212	Board - Terminal - Loop
	R57205	Button - Push (High Boost, Bass Boost, Phono-Tel., Freq. Mod.)
	R57204	Button - Push (Tone Control)
C32,C34	R45829	Capacitor - Electrolytic, 30 Mfd. 275 V., 30 Mfd. 375 V.
C37	R61272	Capacitor - Electrolytic, 40 Mfd. 450 V.
C1,C5,C26	R47199	Capacitor - Trimmer - 6 Gang
C2,C16		Capacitor - .1 Mfd. 200 V.
C3,C31,C12*		Capacitor - .1 Mfd. 400 V.
C4,C14,C36		Capacitor - .01 Mfd. 400 V.
C6,C15		Capacitor - .01 Mfd. 600 V.
C7,C34,C39		Capacitor - .05 Mfd. 200 V.
C8,C38,C39		Capacitor - .001 Mfd. 400 V.
C9,C33		Capacitor - .005 Mfd. 400 V.
C10		Capacitor - .008 Mfd. 400 V.
C11,C25		Capacitor - .0001 Mfd. Mica
C13		Capacitor - .0005 Mfd. Mica
C18	R57203	Clip - Pilot Light
L1	R47193	Coil - Antenna Loop Loading
L2	R47192	Coil - R.F. & Tuning Oscillator
L3	R57187	Coil - Preselector Coupling
L4	R47195	Coil - S. W. Antenna
L5	R47196	Coil - S. W. Oscillator & Trimmer - 1 Megohm
R26	R47240	Control - Volume & Tone
R26	R18395	Cord - Line (Power)
	R42873	Cover - Push Button Tabs (Celluloid)
	R57211	Escutcheon - Dial with Glass
	R57231	Escutcheon - Dial
	R61119	Knob - On-Off & Tone
	R61121	Knob - Tuning
	R61120	Knob - Volume
	R61122	Knob - Wave Switch
	R47197	Lamp - Dial, Mazda Type #44
	R54490	Leaflet - Instruction (662-5F)
	R57215	Loop - Complete (101.662-4E)
	R57216	Loop - Complete (101.662-4E)
	R18039	Pin - Loop Lead
	R57207	Pointer - Dial
	R18397	Pulley - Wood, Large
	R43416	Pulley - Wood, Small

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R2,R3,R24, R13,R22		Resistor - 1 Megohm 1/3 Watt
R25*		Resistor - 15 Megohm 1/3 Watt
R1		Resistor - 1,000 Ohm 1/3 Watt
R10		Resistor - 10,000 Ohm 1/3 Watt
R6		Resistor - 22,000 Ohm 1/3 Watt
R12		Resistor - 27,000 Ohm 1/3 Watt
R24,R29		Resistor - 33,000 Ohm 1/3 Watt
R16		Resistor - 56,000 Ohm 1/3 Watt
R23		Resistor - 82,000 Ohm 1/3 Watt
R28		Resistor - 100,000 Ohm 1/3 Watt
R15		Resistor - 150,000 Ohm 1/3 Watt
R32		Resistor - 180,000 Ohm 1/3 Watt
R30		Resistor - 220,000 Ohm 1/3 Watt
R20		Resistor - 270,000 Ohm 1/3 Watt
R4		Resistor - 560,000 Ohm 1/3 Watt
R17,R27		Resistor - 47 Ohm 1/3 Watt
R31		Resistor - 100 Ohm 1/3 Watt
R33		Resistor - 220 Ohm 1/3 Watt
R27		Resistor - 1,100 Ohm 1 Watt
R35		Resistor - 1,200 Ohm 2 Watt
R34		Resistor - 820 Ohm 2 Watt
R61414		Resistor - 300 Ohm 5 Watt - Glasohm
R47262A		Shaft - Dial Drive Assy.
R47263		Socket - Phono-Tel. - Freq. Mod.
R16958		Socket - Rectifier
R17981		Socket - Speaker
R17987		Socket - Tube - Octal
R47245		Socket - Tube - Pentode Rec. Chas.
R45956		Socket - Tube - 7 Prong Loctal
		WHEN ORDERING SPEAKER PARTS ADJUST GIVE THE PART NUMBER ON THE SPEAKER
R61260		Speaker - 10" P. M.
R61036		Cone and Voice Coil
R61038		Output Transformer
R18252		Spring - Dial Drive Tension
R45844		Switch - Tone & Phono - Tel.-Freq.Mod.
R47191		Switch - Wave
R47198		Tab - Bass Boost
R49994		Tab - High Boost
R45996		Tab - Phono - Tel. - Freq. Mod.
R45878		Tab - Call Letter Sheets
R45879		Transformer - Power
R45106		Transformer - #2 - I. F.
R45953		Transformer - Power - 60 Cycle
R47259		Tuner - Push Button with Variable Cap.

LOCATION OF PARTS UNDER CHASSIS

MODELS 6106, CHASSIS 101.662-2E; 6106A, CHASSIS 101.662-4E

SEARS, ROEBUCK & CO.

MODELS 6111, CHASSIS 101.662-3C; 6111A, CHASSIS 101.662-5F

ALIGNMENT PROCEDURE

Preliminary:

Output Meter Connection.....Across Loud Speaker Voice Coil
Output Meter Reading to Indicate 50 Milliwatts (Standard Output).....1.2 Volts
Generator Ground Lead Connection.....Receiver Chassis
Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
Connection of Generator Output Lead.....See Chart Below
Generator Modulation.....30%, 400 Cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of Pointer with Tuner Fully Closed.....Last Line Below 540 Calibration Mark

WAVE BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
BC	Closed	455 KC	.1 Mfd.	7H7 Transl. Grid	T2, T1	I. F.
BC	Open	1750 KC	.0002 Mfd.	Ant. Terminal	C6	Oscillator
BC	1410	1410 KC	.0002 Mfd.	Ant. Terminal	C5, C1	Ant., Transl.
BC	600 (rock)	600 KC	.0002 Mfd.	Ant. Terminal	C7	Padder
SW	Open	18.3 MC	400 Ohms	Ant. Terminal	C10	Oscillator
SW	15 (rock)	15 MC	400 Ohms	Ant. Terminal	C2	Transl.

IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.

The Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

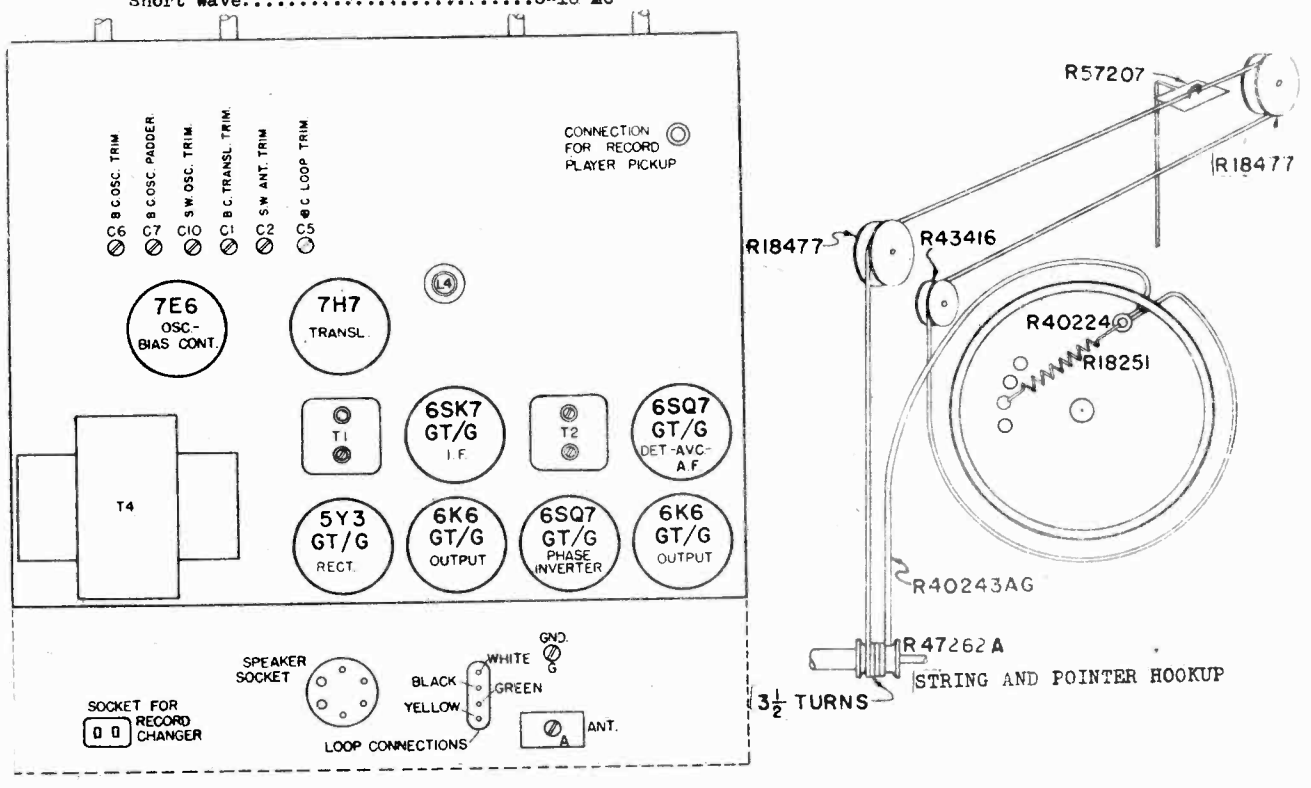
During alignment of the BC Band Padder and the SW Band Translator Trimmers, the Tuner should be rocked through resonance to assure alignment.

Power Output — Undistorted 3.6 Watts — Maximum 6.5 Watts

SPECIFICATIONS

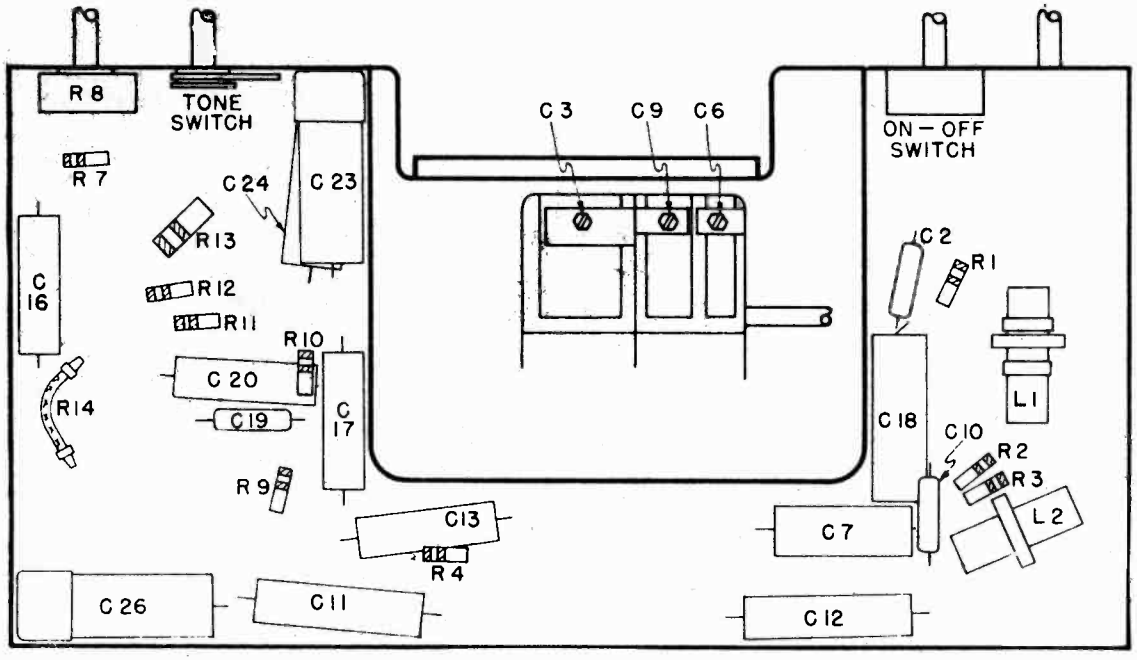
Power Supply:
All models available.....117 Volts 60 Cycles AC 100 Watts

Frequency Range:
Broadcast.....540-1700 KC
Short Wave.....6-18 MC

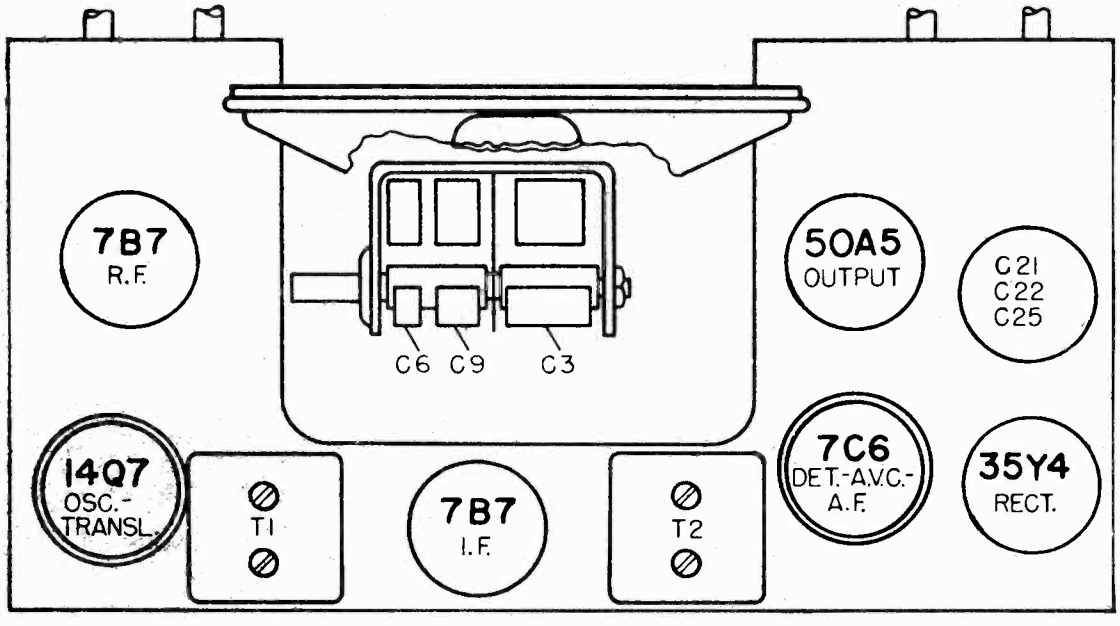


LOCATION OF PARTS ON TOP OF CHASSIS

MODELS 7020,7021,7054 SEARS ROEBUCK & CO.



LOCATION OF PARTS UNDER CHASSIS



LOCATION OF PARTS ON TOP OF CHASSIS

Power Supply:

All models available.....117 Volts DC 25-60 Cycles AC 30 Watts

Frequency Range:

Broadcast.....540-1600 KC

Difference between 101.807 and 101.807-A

101.807-A same as 101.807 except ivory cabinet instead of brown.

Recommended Antenna Equipment:

Catalog #6703 Conventional. Antenna
Catalog #6704 Noise Reducing Antenna
Catalog #6705 Greatest Reception and Noise Reduction Antenna

SEARS ROEBUCK & CO. MODELS 7020, 7021, 7054

MODEL 101.807, 101.807A

HOW TO ORDER PARTS

1. Use Correct Order Form.
2. On the Purchase Order always give the following information:
   (1) PART NUMBER (number printed on the part if different from that shown in this list) and DESCRIPTION for each part ordered. When no part number is assigned, order by description and rating. Also give PRICE of part (indicate if no selling).
   (2) THE CHASSIS NUMBER, which is 101.807 or 101.807-A. This number is found on a metal plate (pictured above) at the rear of the chassis.
3. ORDERING INSTRUCTIONS:
   Send Purchase Orders DIRECT to SOURCE No. 101. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for source name and address.
4. MARK-UP: Selling Prices in the following list produce a mark-up of AA5, unless otherwise noted in the M. U. Code Column. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for explanation of mark-up code.

REPAIR PARTS LIST

THE RETAIL SELLING PRICES SHOWN BELOW ARE VOID AFTER AUGUST 1, 1947. AFTER THIS DATE REFER TO DIV. 57 REPAIR PARTS STRAIGHT LIST. ALL PRICES PREPAID.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R60426	Button - Push, Brown (101.807)	
	R60486	Button - Push, Ivory (101.807-A)	
	R61846	Button - Snap	
	R60415	Cabinet - Brown (101.807)	A0
	R60950	Cabinet - Ivory (101.807-A)	A0
C4,C5,C8	R60413	Capacitor - Variable Tuning	
C1		Capacitor - .001 Mfd. 600 V.	
C7		Capacitor - .01 Mfd. 600 V.	
C11,C12		Capacitor - .05 Mfd. 200 V.	
C13,C17,C20		Capacitor - .005 Mfd. 600 V.	
C16		Capacitor - .01 Mfd. 400 V.	
C18		Capacitor - .1 Mfd. 200 V.	
C23,C26		Capacitor - .05 Mfd. 600 V.	
C24		Capacitor - .02 Mfd. 600 V.	
C2,C10,C19		Capacitor - .0001 Mfd. Mica	
C21,C22,C25	R60416	Capacitor - Electrolytic, 40 Mfd. 150 V. 40 Mfd. 150 V., 20 Mfd. 25 V.	
	R61836	Cloth - Grille, Gold (101.807)	
	R60952	Cloth - Grille, Tan (101.807-A)	
L1	R60465	Coil - R. F.	
L2	R60448	Coil - Oscillator	
	R60430	Control - Volume - 2 Megohm	
	R16706	Cord - Power	
	R60540	Covers - Tab	
	R60458	Covers - Dial	
	R60446	Dial	
	R60461	Drum and Pinion Assembly	
	R60459	Gear and Hub Assembly	
	R60444	Grille - Cabinet	
	R60455	Knob - Tone, Brown (101.807)	
	R60485	Knob - Tone, Ivory (101.807-A)	
	R60456	Knob - Tuning, Brown (101.807)	
	R60480	Knob - Tuning, Ivory (101.807-A)	
	R60457	Knob - Volume, Brown (101.807)	
	R60484	Knob - Volume, Ivory (101.807-A)	
	R60454	Knob - On-Off, Brown (101.807)	
	R60483	Knob - On-Off, Ivory (101.807-A)	
	R20963	Lamp - Dial #47	
	R54529	Leaflet - Instruction	
	R60541	Loop Assembly with Back Cover	A0
	R60464	Plunger and Yoke Assembly	
	R60946	Pointer - Dial	
	R43423	Pulley - Wood	
R14	R40232	Resistor - Glasohm, 25 Ohm, 1 Watt	
R1		Resistor - 1 Megohm, 1/3 Watt	
R2		Resistor - 22,000 Ohm, 1/3 Watt	
R3		Resistor - 470 Ohm, 1/3 Watt	
R4,R10		Resistor - 2.2 Megohm, 1/3 Watt	
R7		Resistor - 47,000 Ohm, 1/3 Watt	
R9		Resistor - 4.7 Megohm, 1/3 Watt	
R11		Resistor - 470,000 Ohm, 1/3 Watt	
R12		Resistor - 150 Ohm, 1/3 Watt	
R13		Resistor - 1200 Ohm, 1 Watt	
	R60462	Shaft - Tuning Assembly	
	R57049	Socket - Tube	
	R60401	Socket - Pilot Lamp	
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER	
	R60431	Speaker - P. M. 5"	A0
	R60674	Cone and Voice Coil	
	R60675	Output Transformer	
	R60427	Spring - Extension	
	R60437	Spring - Compression	
	R60499	String - Dial Drive Assembly	
	R60447	Switch - Tone	
	R60432	Switch - On-Off	
	R60474	Tabs - Station	
T1	R60417	Transformer - 1st I. F.	
T2	R60418	Transformer - 2nd I. F.	

MODEL 101.808

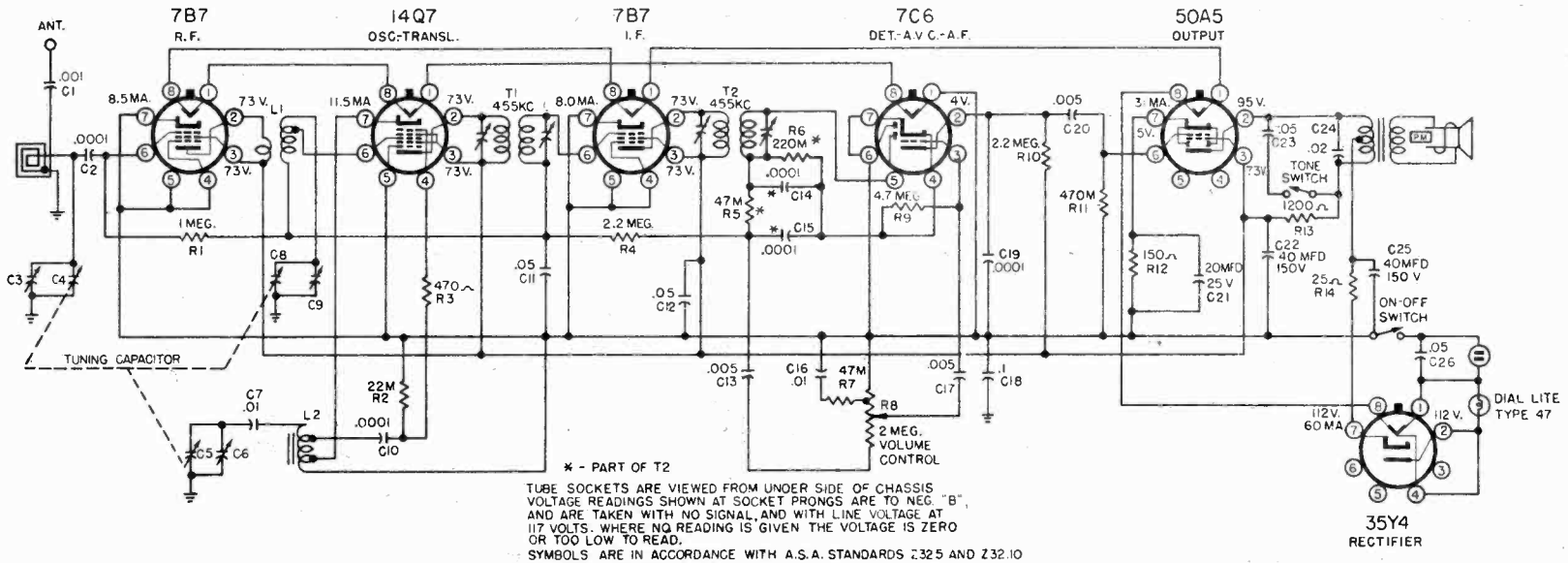
HOW TO ORDER PARTS

1. Use Correct Order Form.
2. On the Purchase Order always give the following information:
   (1) PART NUMBER (number printed on the part if different from that shown in this list) and DESCRIPTION for each part ordered. When no part number is assigned, order by description and rating. Also give PRICE of part (indicate if no selling).
   (2) THE CHASSIS NUMBER, which is 101.808. This number is found on a metal plate (pictured above) at the rear of the chassis.
3. ORDERING INSTRUCTIONS:
   Send Purchase Orders DIRECT to SOURCE No. 101. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for source name and address.
4. MARK-UP: Selling Prices in the following list produce a mark-up of AA5, unless otherwise noted in the M. U. Code Column. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for explanation of mark-up code.
5. In all correspondence relating to cabinets, always mention the source code letter stamped into the upper rear rail of consoles or the bottom of table models, and the CATALOG NUMBER shown on the sticker on the back, bottom or inside of cabinet.

REPAIR PARTS LIST

THE RETAIL SELLING PRICES SHOWN BELOW ARE VOID AFTER AUGUST 1, 1947. AFTER THIS DATE REFER TO DIV. 57 REPAIR PARTS STRAIGHT LIST. ALL PRICES PREPAID.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R60486	Button - Push	
	R61846	Button - Snap	
C4,C5,C8	R60413	Capacitor - Variable Tuning	
C1		Capacitor - .001 Mfd. 600 V.	
C7		Capacitor - .01 Mfd. 600 V.	
C11,C12		Capacitor - .05 Mfd. 200 V.	
C13,C17,C20		Capacitor - .005 Mfd. 600 V.	
C16		Capacitor - .01 Mfd. 400 V.	
C18		Capacitor - .1 Mfd. 200 V.	
C24		Capacitor - .02 Mfd. 600 V.	
C23,C26		Capacitor - .05 Mfd. 600 V.	
C2,C10,C25		Capacitor - .0001 Mfd. Mica	
C21,C22,C25	R60416	Capacitor - Electrolytic, 40 Mfd. 150 V. 40 Mfd. 150 V., 20 Mfd. 25 V.	
L1	R60465	Coil - R. F.	
L2	R60448	Coil - Oscillator	
	R60430	Control - Volume - 2 Megohm	
	R16706	Cord - Power	
	R60540	Covers - Tab	
	R60458	Covers - Dial	
	R60579	Dial	
	R60461	Drum and Pinion Assembly	
	R60487	Escutcheon	
	R60459	Gear and Hub Assembly	
	R60485	Knob - Tone	
	R60480	Knob - Tuning	
	R60484	Knob - Volume	
	R60483	Knob - On-Off	
		Lamp - Dial Mazda Type #47	
	R54534	Leaflet - Instruction	
	R60549	Loop Assembly with Back Cover	A0
	R60464	Plunger and Yoke Assembly	
	R60946	Pointer - Dial	
	R43423	Pulley - Wood	
R4	R40232	Resistor - Glasohm, 25 Ohm, 1 Watt	
R1		Resistor - 1 Megohm, 1/3 Watt	
R2		Resistor - 22,000 Ohm, 1/3 Watt	
R3		Resistor - 470 Ohm, 1/3 Watt	
R4,R10		Resistor - 2.2 Megohm, 1/3 Watt	
R7		Resistor - 47,000 Ohm, 1/3 Watt	
R9		Resistor - 4.7 Megohm, 1/3 Watt	
R11		Resistor - 470,000 Ohm, 1/3 Watt	
R12		Resistor - 150 Ohm, 1/3 Watt	
R13		Resistor - 1200 Ohm, 1 Watt	
	R60462	Shaft - Tuning Assembly	
	R57049	Socket - Tube	
	R60401	Socket - Pilot Lamp	
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER	
	R61627	Speaker - P. M. 5"	A0
	R61634	Cone and Voice Coil	
	R61635	Output Transformer	
	R60427	Spring - Extension	
	R60437	Spring - Compression	
	R60499	String - Dial Drive Assembly	
	R60447	Switch - Tone	
	R60432	Switch - On-Off	
	R60474	Tabs - Station	
T1	R60417	Transformer - 1st I. F.	
T2	R60418	Transformer - 2nd I. F.	



MODELS 7020,7021,7054; 7080,7100

ALIGNMENT PROCEDURE

Output Meter Connection.....Across Loud Speaker Voice Coil
Output Meter Reading to Indicate .05 Watts (Standard Output).....0.4 Volts
Generator Ground Lead Connection.....I. F. Alignment - Negative B Lead
Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
Connection of Generator Output Lead.....See Chart Below
Generator Modulation.....30%, 400 Cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of Pointer with Tuner Fully Closed.....Last Line Below 540 Calibration Mark

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS IN ORDER SHOWN	TRIMMER FUNCTION
Closed	455 KC	0.1 Mfd.	Translator Grid	T2-T1	I. F.
1500 KC	1500 KC	.0002 Mfd.	Antenna	C6	Oscillator
1500 KC	1500 KC	.0002 Mfd.	Antenna	C9	R. F.
1500 KC	1500 KC	.0002 Mfd.	Antenna	C3	Antenna

IMPORTANT ALIGNMENT NOTES

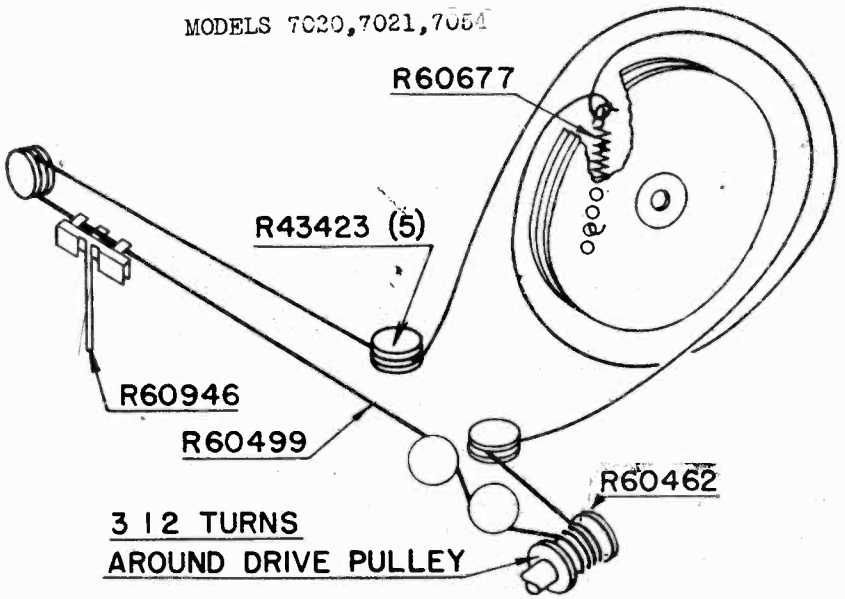
The alignment must be done in the order given.

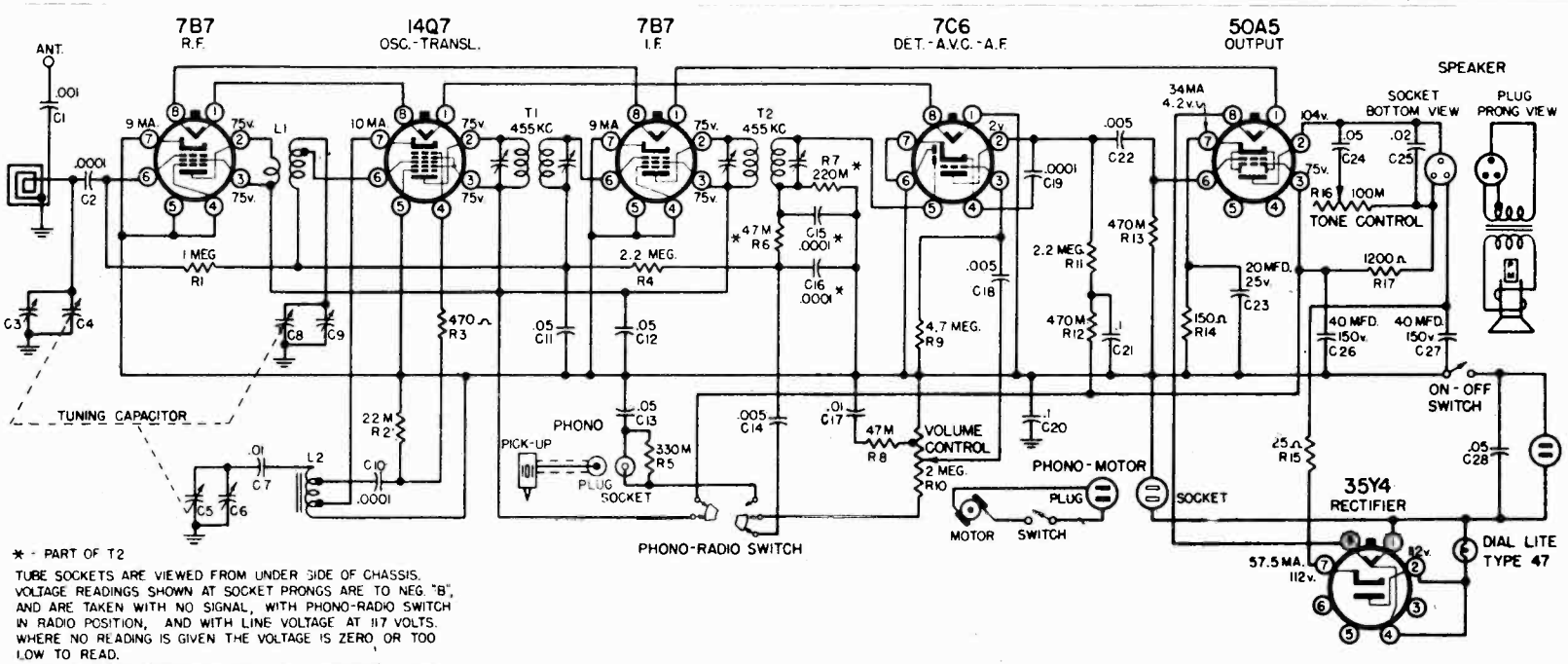
The Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

Power Output Undistorted 1.1 Watts Maximum 1.9 Watts

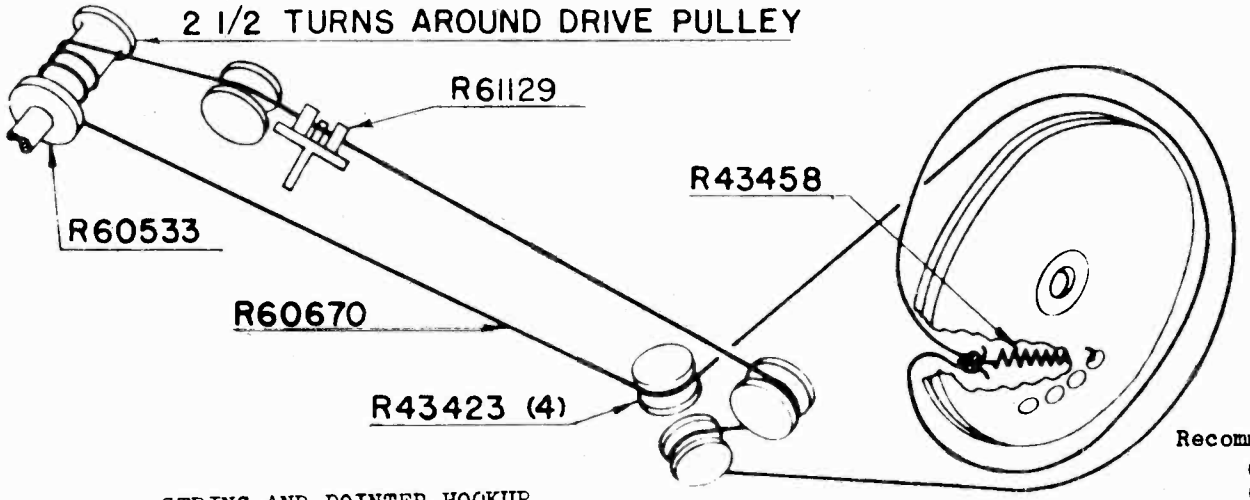
MODELS 7020,7021,7054





* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG. "B", AND ARE TAKEN WITH NO SIGNAL, WITH PHONO-RADIO SWITCH IN RADIO POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.
SYMBOLS ARE IN ACCORDANCE WITH A.S.A. STANDARDS Z32.5 AND Z32.10 UNLESS OTHERWISE STATED.



STRING AND POINTER HOOKUP

Uses Record Changer 101.203-1

SPECIFICATIONS

Power Supply:

All models available..

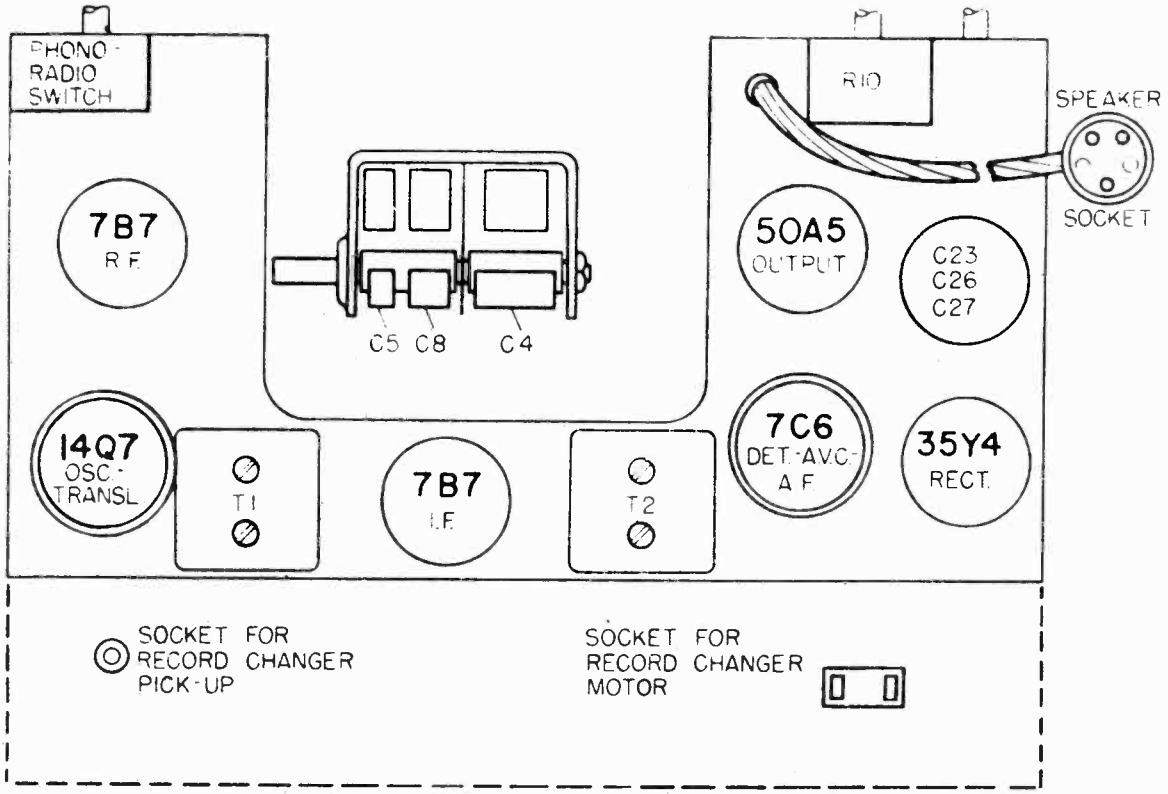
117 Volts 60 Cycles AC 60 Watts

Frequency Range:

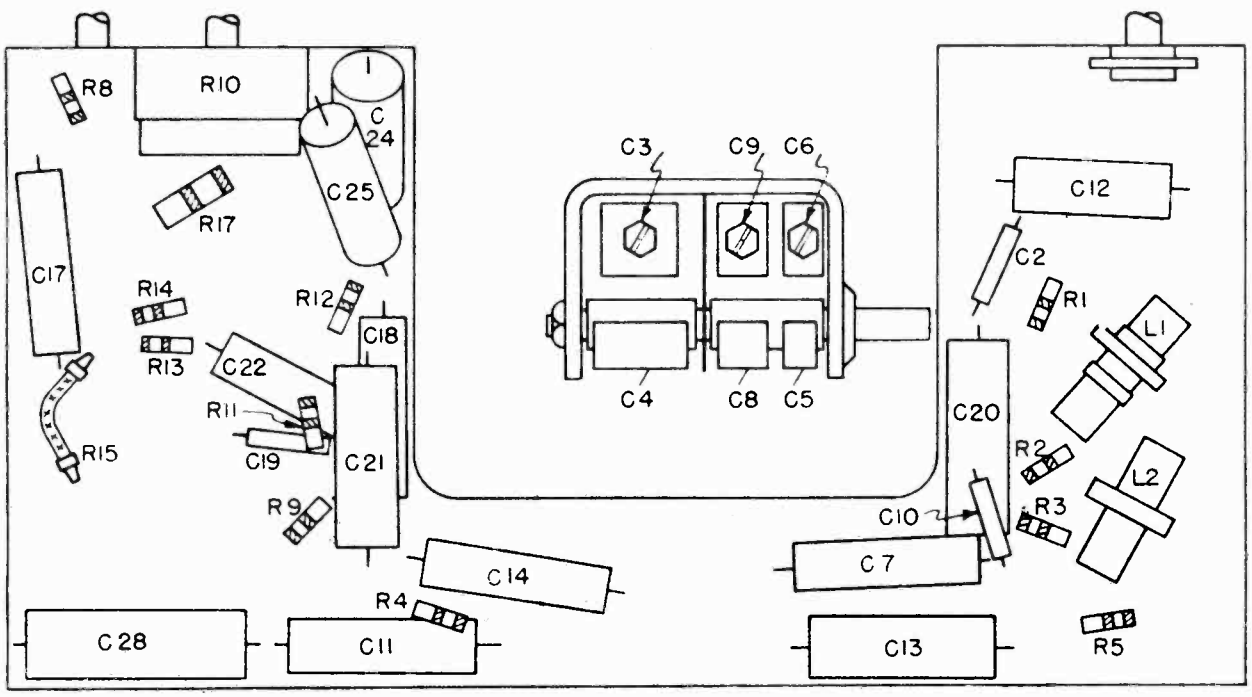
Broadcast.. .540-1600 KC

Recommended Antenna Equipment:

Catalog #6703 A Conventional Antenna
Catalog #6704 Noise Reducing Antenna
Catalog #6705 Greatest Reception and Noise Reduction Antenna



LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS

101.823,101.823-1 IMPORTANT ALIGNMENT NOTES 101.823A,101.823-1A

An isolation transformer between the power source and the receiver is recommended during any service or alignment operation which requires that service equipment be connected to the receiver. Failure to observe this precaution might damage service equipment.

*The variable should be rocked back and forth a degree or two while making the 600 KC adjustment.

The Alignment Procedure should be repeated in the original order, step by step, to insure greater accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

ALIGNMENT PROCEDURE

Output Meter Connection.....Across Speaker Voice Coil
Output Meter Reading to Indicate 40 Milliwatts.....0.4 Volts
Generator Ground Lead Connection.....To B- through .1 Mfd. Capacitor
Connection of Generator Output Lead.....See Chart Below
Position of Volume Control.....Fully On (Clockwise)
Position of Pointer with Variable Fully Closed....To right of 540 KC Calibration Mark

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS IN ORDER SHOWN	TRIMMER FUNCTION
Closed	455	0.05 Mfd.	1R5 Translator Grid	T2-T1	I. F.
Open	1610	0.05 Mfd.	Hazeltine Loop	C4	Oscillator
1400	1400	0.05 Mfd.	Hazeltine Loop	C1	Antenna
*600	600	0.05 Mfd.	Hazeltine Loop	L1	Padder

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	
	R13961	Button - Snap	
C4,C5,C6	R60413	Capacitor - Variable Tuning	
C1		Capacitor - .001 Mfd. 600 V.	
C7		Capacitor - .01 Mfd. 600 V.	
C11,C12,C13		Capacitor - .05 Mfd. 200 V.	
C14,C18,C22		Capacitor - .005 Mfd. 600 V.	
C17		Capacitor - .01 Mfd. 400 V.	
C20		Capacitor - .1 Mfd. 200 V.	
C21		Capacitor - .1 Mfd. 200 V. H. T.	
C24,C28		Capacitor - .05 Mfd. 600 V.	
C25		Capacitor - .02 Mfd. 600 V.	
C2,C10,C19		Capacitor - .0001 Mfd. Mica	
C23,C26,C27	R60416	Capacitor - Electrolytic, 20 Mfd. 25 V 40 Mfd. 150 V., 40 Mfd. 150 V.	
L1	R60465	Coil - R. F.	
L2	R60448	Coil - Oscillator	
R16	R60516	Control - Tone and On-Off	
R10	R60505	Control - Volume - 2 Megohm	
	R16706	Cord - Power	
	R60506	Dial	
	R60523	Drum - Drum & Bushing Assembly	
	R60520	Escutcheon - Plastic	
	R60482	Knob - Phono-Radio	
	R60522	Knob - Tone - On-Off	
	R60480	Knob - Tuning	
	R60484	Knob - Volume	
		Lamp Dial Mazda Type #47	
	R54551	Leaflet - Instruction	
	R60985	Loop - Assembly with Board	A0.
	R61129	Pointer - Dial	
	R44145	Plug - Female	
	R43423	Pulley - Wood	
R1		Resistor - 1 Megohm 1/3 Watt	
R2		Resistor - 22,000 Ohm 1/3 Watt	
R3		Resistor - 470 Ohm 1/3 Watt	
R4,R11		Resistor - 2.2 Megohm 1/3 Watt	
R5		Resistor - 330,000 Ohm 1/3 Watt	
R8		Resistor - 47,000 Ohm 1/3 Watt	
R9		Resistor - 4.7 Megohm 1/3 Watt	
R12,R13		Resistor - 470,000 Ohm 1/3 Watt	
R14		Resistor - 150 Ohm 1/3 Watt	
R17		Resistor - 1200 Ohm 1 Watt	
R15	R40232	Resistor - Glaschm 1 Watt 25 Ohm	
	R60533	Shaft - Tuning Assembly	
	R44897	Socket - Phono - 1 Prong	
	R60515	Socket - Pilot Lamp	
	R57049	Socket - 8 Prong - Lock-in	
	R61032	Speaker - P. M. 8"	A0
	R61037	Cone and Voice Coil	A5
	R61038	Output Transformer	A5
	R60670	String Assembly	
	R60517	Switch - Phono - Radio	
T1	R60417	Transformer - 1st I. F.	
T2	R60418	Transformer - 2nd I. F.	

MODEL 101.809, 101.811

SPECIFICATIONS

Power Supply:
4 Large Flashlight "A" Batteries
1 #4480 - 67.5 Volt "B" Battery
105-125 Volts AC or DC
Frequency Range

"A" Drain . . . . . 0.050 Amperes
"B" Drain . . . . . 0.010 Amperes
Power Consumption 10 Watts
540 to 1610 KC

CHASSIS DIFFERENCES: Chassis 101.823 and 101.823A are mounted by two machine screws through the chassis. (See Page 2 "Parts Layout Back" for location of mounting screws.) Chassis 101.823-1 and 101.823-1A are mounted by one machine screw through the outside bottom of the case into the chassis. Both types of chasses are held at the top by machine screws through the carrying handle escutcheons

HOW TO ORDER PARTS

1. Use Correct Order Form.
2. On the Purchase Order always give the following information:
   (1) PART NUMBER (number printed on the part if different from that shown in this list) and DESCRIPTION for each part ordered. When no part number is assigned, order by description and rating. Also give PRICE of part (indicate if no selling).
   (2) The CHASSIS NUMBER, which is 101.823 or 101.823-A. This number is found on a metal plate (pictured above) at the rear of the chassis.
3. ORDERING INSTRUCTIONS:
   Send Purchase Orders DIRECT to SOURCE No. 101. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for source name and address.
4. MARK-UP: Selling Prices in the following list produce a mark-up of AA5, unless otherwise noted in the M. U. Code Column. Refer to "DIV. 57 STANDARD NOMENCLATURE INDEX" for explanation of Mark-up Code.

REMOVING CHASSIS FROM CASE:

1. Open front cover, turn tuning knob to low frequency stop (54 on dial).
2. Remove volume and tuning knobs and dial pointer.
3. Close front cover.
4. Remove two screws holding carrying handle clips.
5. Open back cover.
6. Remove batteries.
7. Unsolder loop lead from variable capacitor and pull this lead out of the vinylite protective tubing.
8. Unsolder second loop lead at ground lug.
9. Remove two chassis mounting screws (See Tube and Battery Layout Illustration).
10. Pull chassis carefully from the case as far as it will go keeping the chassis square with the case.
11. Insert a screw driver or similar tool between chassis and case at the hinges and carefully bend the case to allow carrying strap screw anchors (riveted to the chassis) to clear hinges (See Parts Layout Front Illustration).
12. Pull chassis again squarely until speaker housing holds at the hinge side of the case.
13. Insert the screw driver between chassis and case at or near the speaker housing and gently pry the case to allow speaker to clear. The chassis can then be lifted clear of the case.

REPLACING CHASSIS INTO CASE:

To replace the chassis into the case the above procedure should be reversed and the following precautions taken:

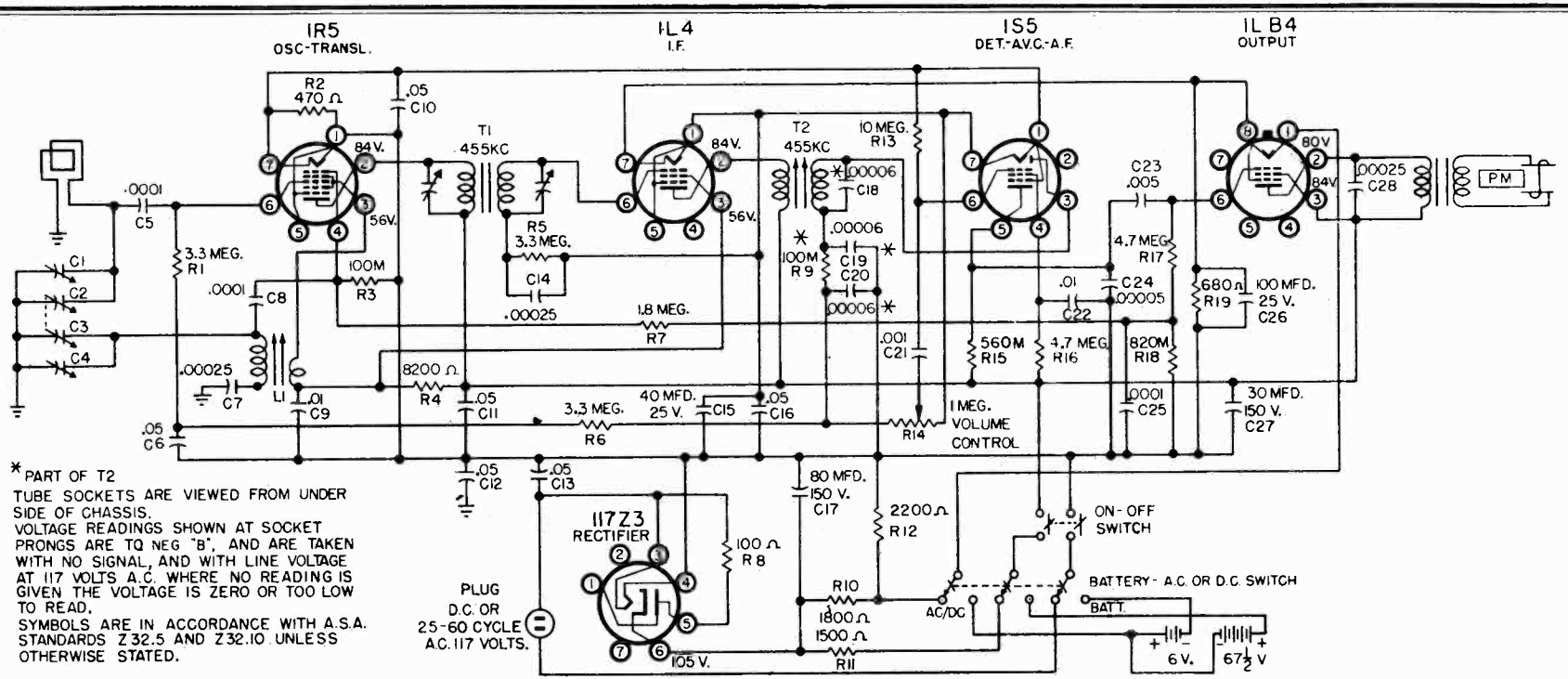
1. Dress the loop leads in such manner as not to cut insulation against the edge of the chassis or case.
2. Guide the "on off" switch button through the hole in the front panel.

HOW TO ORDER PARTS

1. Use Correct Order Form.
2. On the Purchase Order always give the following information:
   (1) PART NUMBER (number printed on the part if different from that shown in this list) and DESCRIPTION for each part ordered. When no part number is assigned, order by description and rating. Also give PRICE of part (indicate if no selling).
   (2) THE CHASSIS NUMBER, which is 101.811. This number is found on a metal plate (pictured above) at the rear of the chassis.
3. ORDERING INSTHUCTIONS:
   Send Purchase Orders DIRECT to SOURCE No. 101. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for source name and address.
4. MARK-UP: Selling Prices in the following list produce a mark-up of AA5, unless otherwise noted in the M. U. Code Column. See "DIV. 57 STANDARD NOMENCLATURE INDEX" for explanation of mark-up code.
5. In all corresponderce relating to cabinets, always mention the source code letter stamped into the upper rear rail of consoles or the bottom of table models, and the CATALOG NUMBER shown on the sticker on the back, bottom or inside of cabinet.

REPAIR PARTS LIST

THE RETAIL SELLING PRICES SHOWN BELOW ARE VOID AFTER AUGUST 1, 1947. AFTER THIS DATE REFER TO DIV. 57 REPAIR PARTS STRAIGHT LIST. ALL PRICES PREPAID.



*PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.

VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG "B", AND ARE TAKEN WITH NO SIGNAL, AND WITH LINE VOLTAGE AT 117 VOLTS A.C. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

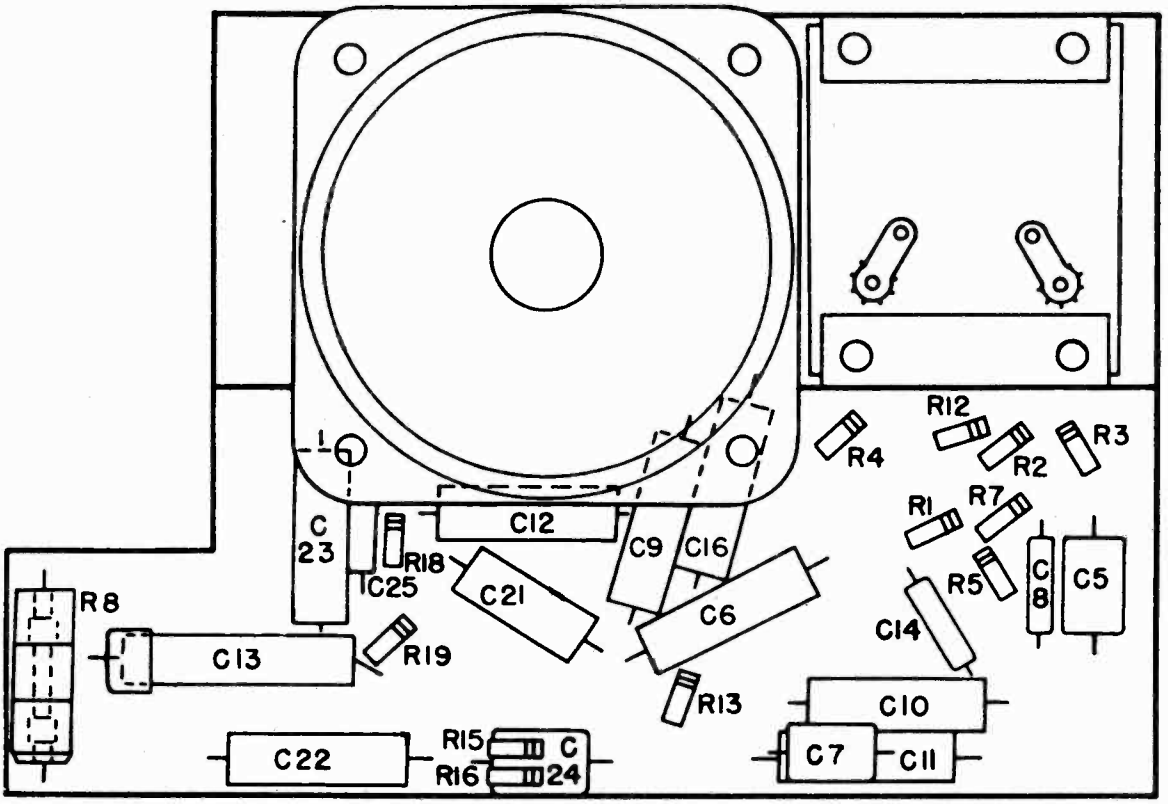
SYMBOLS ARE IN ACCORDANCE WITH A.S.A. STANDARDS Z32.5 AND Z32.10 UNLESS OTHERWISE STATED.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R60859	"A" Battery Board Assembly (Fixed)	
	R60860	"A" Battery Board Assembly (Removable)	
	R60965	Button - On-Off Switch (101.823)	
	R60904	Button - On-Off Switch (101.823-A)	
	R60803	Capacitor - Electrolytic	
C15		40 Mfd. 25 Volts	
C26		100 Mfd. 25 Volts	
C27		30 Mfd. 150 Volts	
C17		80 Mfd. 150 Volts	
C1,C2,C3,C4	R60804	Capacitor - Variable	A0
C9	R42877	Capacitor - .01 Mfd. - 400 V. H.T.	
C22		Capacitor - .01 Mfd. - 400 V.	
C10,C11,C12		Capacitor - .05 Mfd. - 200 V.	
C6,C16	R43661	Capacitor - .05 Mfd. - 200 V. H.T.	
C13		Capacitor - .05 Mfd. - 400 V.	
C21	R52846	Capacitor - .001 Mfd. - 600 V. H.T.	
C23		Capacitor - .005 Mfd. - 400 V.	
C24		Capacitor - 50 Mmfd. - Mica	
C5,C8,C25		Capacitor - 100 Mmfd. - Mica	
C14,C28	R20548	Capacitor - 250 Mmfd. - Mica ±20%	
C7	R44835	Capacitor - 250 Mmfd. - Mica ±3%	
	R60872	Case Assy.-Loop & Covers(Ivory 101.823)	B0
	R60916	Case Assy.-Loop & Covers(Black 101.823-A)	B0
	R60867	Clip - Carrying Handle	
L1	R60805	Coil - Oscillator	
	R44583	Connector - "B" Battery - Female	
	R44584	Connector - "B" Battery - Male	
R14	R60807	Control - Volume	
	R60826	Cord - Line (Brown 101.823)	
	R60920	Cord - Line (Black 101.823-A)	
	R60893	Cover Assembly - Switch	
	R60869	Grille Cloth Assy.-Speaker (101.823)	
	R60918	Grille Cloth Assy.-Speaker (101.823-A)	
	R60971	Insulator - "B" Battery	
	R60851	Insulator - Chassis Bottom	
	R49557	Kit-Front Cover with Rivets(Ivory 101.823)	A5
	R49562	Kit-Front Cover with Rivets(Black 101.823-A)	A5
	R49569	Kit-Back Cover with Rivets (Ivory 101.823)	
	R49574	Kit-Back Cover with Rivets (Black 101.823-A)	
	R49576	Kit-Hinge Back with Rivets (101.823 & 823-A)	
	R49583	Kit-Hinge Front with Rivets(Ivory 101.823)	
	R49595	Kit-Hinge Front with Rivets(Black 101.823-A)	
	R49596	Kit-Latch with Rivets (Ivory 101.823)	
	R49597	Kit-Latch with Rivets (Black 101.823-A)	

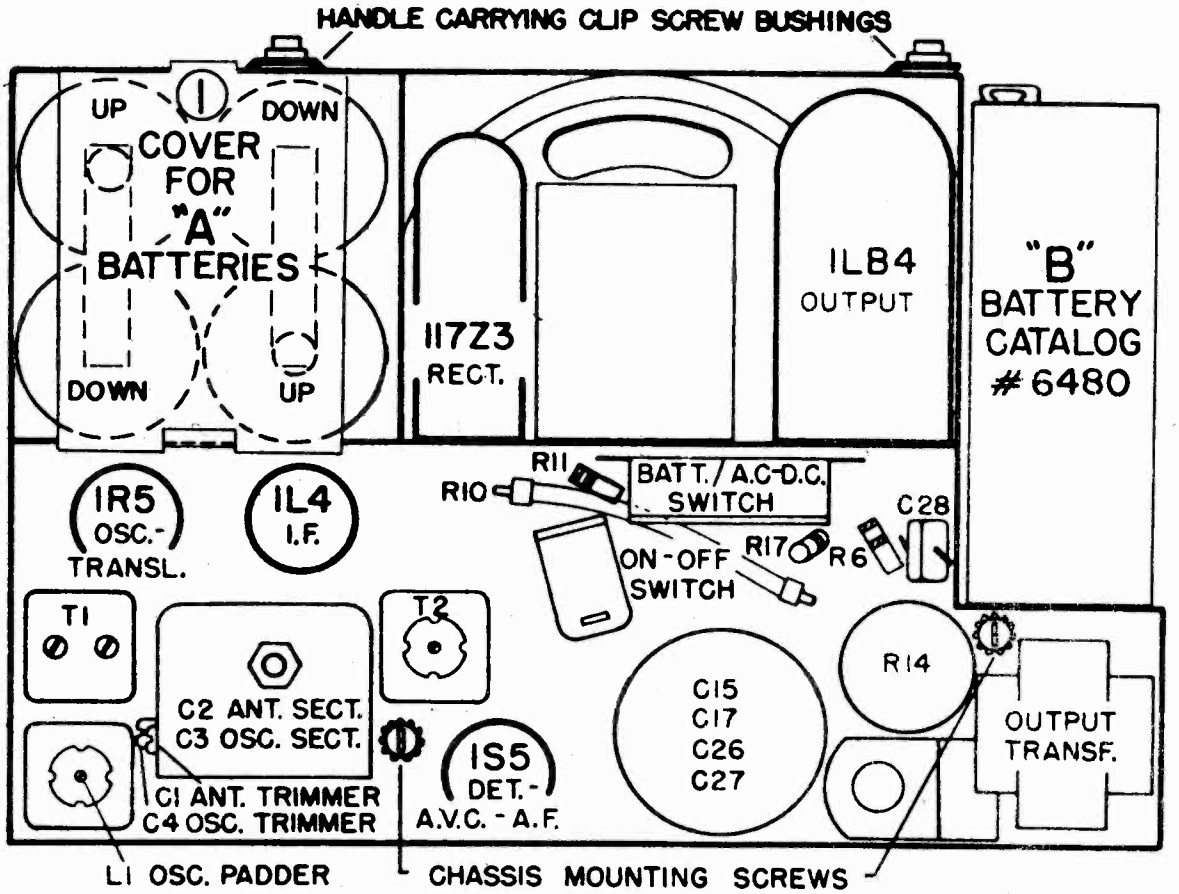
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R60808	Knob - Tuning (Ivory 101.823)
	R60905	Knob - Tuning (Black 101.823-A)
	R60889	Knob - Volume (Ivory 101.823)
	R60906	Knob - Volume (Black 101.823-A)
	R54540	Leaflet - Instruction
	R60878	Pin - Drive for On-Off Button
	R60849	Pointer - Dial Assy. (Green 101.823
	R60902	Pointer - Dial Assy. (Gold 101.823-
R2		Resistor - 470 Ohm - 1/3 W.
R19		Resistor - 680 Ohm - 1/3 W.
R12		Resistor - 2200 Ohm - 1/3 W.
R4		Resistor - 8200 Ohm - 1/3 W.
R3		Resistor - 100,000 Ohm - 1/3 W.
R18		Resistor - 820,000 Ohm - 1/3 W.
R15		Resistor - 560,000 Ohm - 1/3 W.
R7		Resistor - 1.8 Megohm - 1/3 W.
R1,R5,R6		Resistor - 3.3 Megohm - 1/3 W.
R16,R17		Resistor - 4.7 Megohm - 1/3 W.
R13		Resistor - 10 Megohm - 1/3 W.
R11		Resistor - 1500 Ohm - 1 W.
R8	R61219	Resistor - Glasohm - 100 Ohm 2 W.
R10	R60810	Resistor - Glasohm - 1800 Ohm 5 W.
	R57049	Socket - Tube - 8 Prong Lock-in
	R60055	Socket - Tube - Miniature
	R60811	Socket - Tube - Miniature (1L4)
		WHEN ORDERING SPEAKER PARTS, ALWAYS GIVE THE PART NUMBER APPEARING ON THE SPEAKER
	R60812	Speaker - 3-1/2" P. M.
	R60890	Cone and Voice Coil
	R60842	Spring - "A" Battery Retaining
	R60897	Spring - Compression On-Off Switch
	R60870	Spring - Loop Lead Tension
	R60821	Strap - Carrying (Tan 101.823)
	R60914	Strap - Carrying (Black 101.823-A)
	R60873	Strap - Shoulder (Tan 101.823)
	R60913	Strap - Shoulder (Black 101.823-A)
	R60813	Switch - AC - Battery - T.P.D.T.
	R60814	Switch - On-Off
	R60817	Transformer - Output
T1	R60815	Transformer - I. F. #1
T2,R9,C18 C19,C20	R60816	Transformer - I. F. #2

REPAIR PARTS LIST

THE RETAIL SELLING PRICES SHOWN BELOW ARE VOID AFTER MARCH 1 1947. AFTER THIS DATE REFER TO "DIV. 57 REPAIR PARTS STRAIGHT LIST" - ALL PRICES PREPAID.

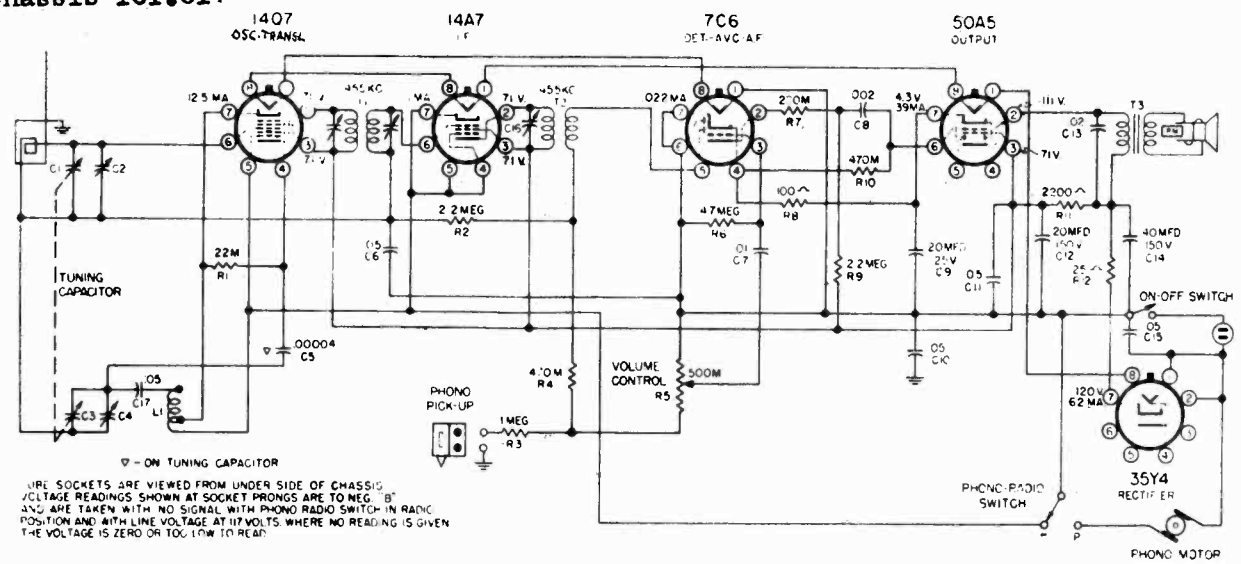


PARTS LAYOUT - FRONT

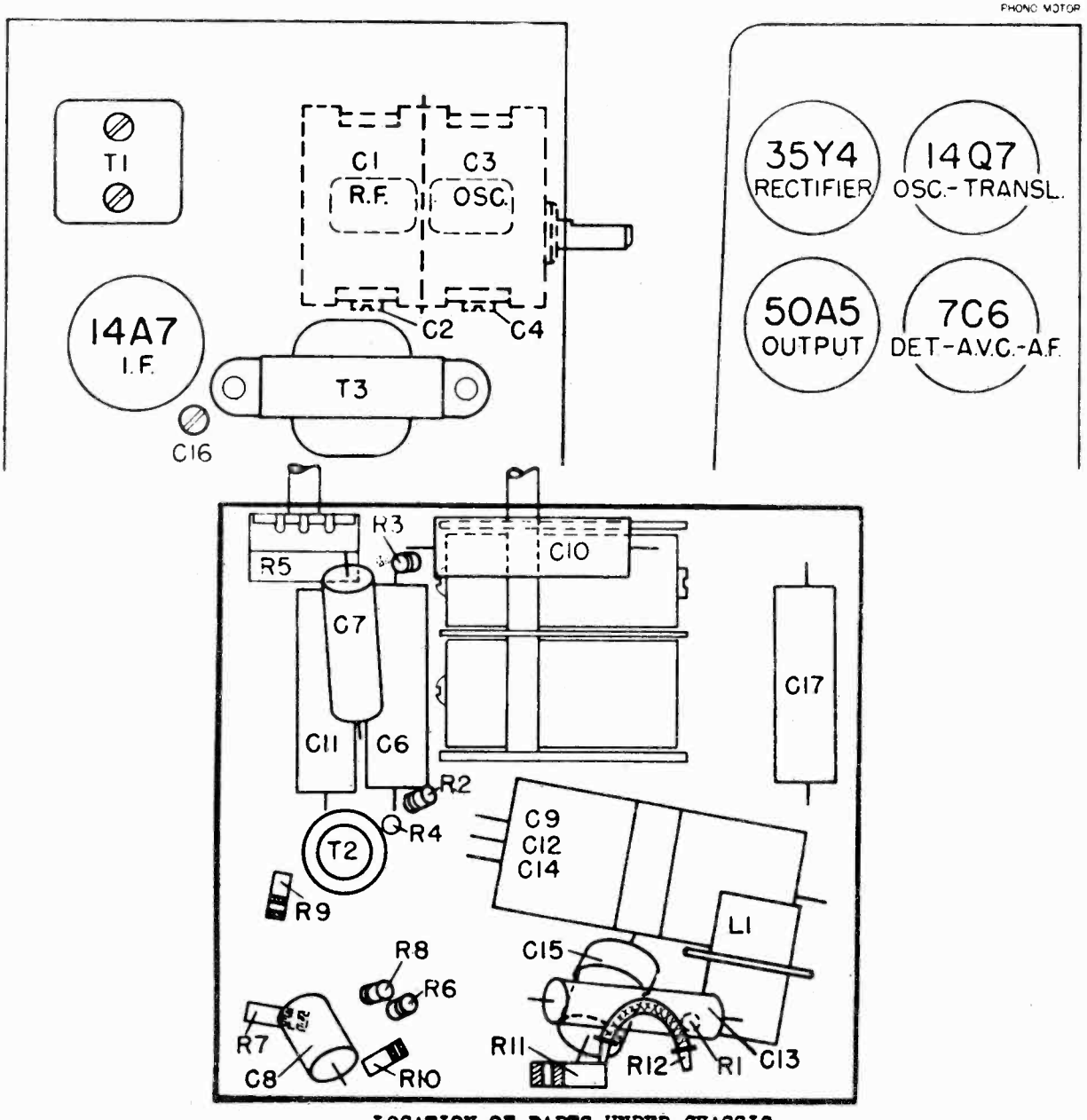


PARTS LAYOUT - BACK

MODEL 7070 SEARS, ROEBUCK AND CO.
Chassis 101.817



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG. "B" AND ARE TAKEN WITH NO SIGNAL WITH PHONO RADIO SWITCH IN RADIO POSITION AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.



LOCATION OF PARTS UNDER CHASSIS.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output Meter Connection.....Across loud speaker voice coil
Generator ground lead connection.....Receiver chassis
Dummy Antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator Modulation.....30%, 400 cycles
Position of Volume Control.....Fully on

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER) SHOWN	TRIMMER FUNCTION
Closed	455 KC	.1 mfd.	14Q7 Transl. grid	C16, T1	IF
1410 KC	1410 KC	.0002 mfd.	Loop	C4	Oscillator
1410 KC	1410 KC	.0002 mfd.	Loop	C2	Transl.

IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.

The entire Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

MODEL 7070

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R62212	Arm - Pickup (Less Crystal)
	R52826	Cartridge - Crystal - Astatic L70
	R61642	Button - Phono - Radio Switch
	R61639	Cabinet - Radio - Molded
C6,C10,C11, C17		Capacitor - .05 Mfd. 200 V.
C15		Capacitor - .05 Mfd. 600 V.
C7		Capacitor - .01 Mfd. 400 V.
C13		Capacitor - .02 Mfd. 200 V.
C6		Capacitor - .002 Mfd. 600 V.
C1,C3,C5	R61682	Capacitor - Variable Assembly
C9,C12,C14	R61683	Capacitor - Elect. 20 Mfd. 150 V., 40 Mfd. 150 V., 20 Mfd. 25 V.
C16	R62282	Capacitor - Trimmer - Single
	R61647	Clip - Spring - Speaker Retaining
L1	R61697	Coil - Oscillator
R5	R61684	Control - On-Off & Volume
	R63143	Cord - Line
	R62228	Cover - Bottom
	R61690	Knob - On-Off & Volume
	R61691	Knob - Station Selector
	R64178	Leaflet - Instruction
	R61415	Loop - Antenna

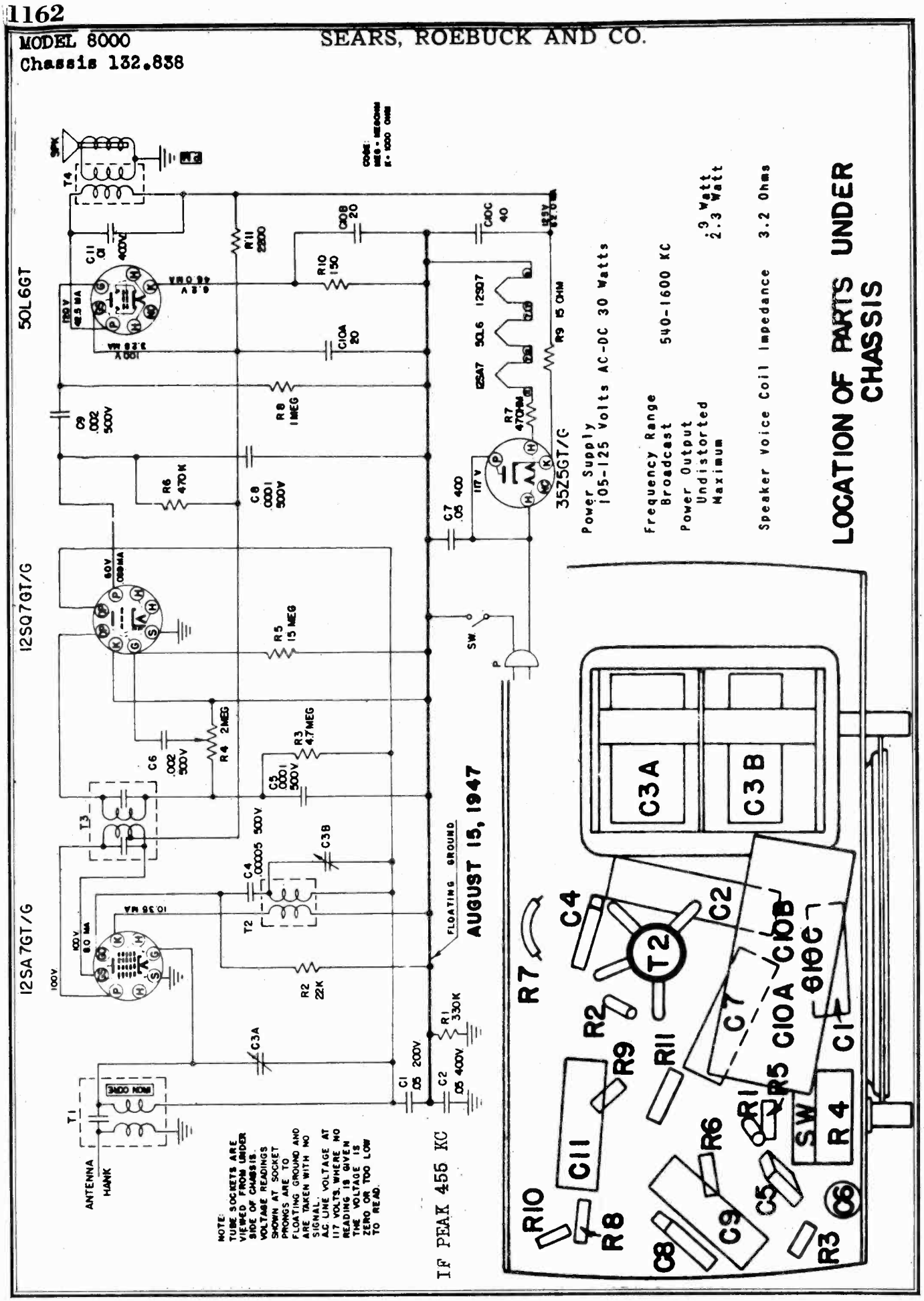
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R49547	Motor - Phono - 60 Cycle (Less Turntable)
	R49749	Idler Wheel
	R49548	Turntable - 8"
	R61645	Plate - Chassis Bottom
	R61694	Plate - Chassis Hold Down
R8		Resistor - 100 Ohm - 1/3 Watt
R1		Resistor - 22,000 Ohm - 1/3 Watt
R7		Resistor - 220,000 Ohm - 1/3 Watt
R4,R10		Resistor - 470,000 Ohm - 1/3 Watt
R3		Resistor - 1 Megohm - 1/3 Watt
R2,R9		Resistor - 2.2 Megohm - 1/3 Watt
R6		Resistor - 4.7 Megohm - 1/3 Watt
R11		Resistor - 2200 Ohm - 1 Watt
R12	R40232	Resistor - Glasohm - 25 Ohm - 1 Watt
	R57193	Shield - Tube
	R62230	Shield - I.F. Transformer
	R57049	Socket - Tube - 8 Prong Lock-in
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER
	R61693	Speaker - 4" P.M.
	R61687	Switch - Phono - Radio - S.P.D.T.
T1	R61688	Transformer - I.F. #1
T2	R61689	Transformer - I.F. #2
T3	R61699	Transformer - Output

MODEL 8000

SCHEMATIC LOCATION	PART NO.	DESCRIPTION
R1		Resistor, 220,000 Ohms, 1/4 Watt
R2		Resistor, 22,000 Ohms, 1/4 Watt
R3		Resistor, 4.7 Megohm, 1/4 Watt
R4	#21335	Control - Vol and switch, 2 meg.
R5		Resistor, 15 Megohm, 1/2 Watt
R6		Resistor, 470,000 Ohms, 1/4 Watt
R7	#18177	Resistor, 47 Ohms, 1 Watt
R8		Resistor, 1 Megohm, 1/4 Watt
R9		Resistor, 15 Ohms, 1/4 Watt
R10		Resistor, 150 Ohms, 1/4 Watt
R11		Resistor, 2200 Ohms, 1 Watt
C1		Condenser, .05 Mfd., 200 V
C2, C7		Condenser, .05 Mfd., 400 V
C3A, C3B	#21336	Condenser, Variable, 2 Gang
C4		Condenser, .00005 Mfd., 500 V., Mica
C5, C8		Condenser, .0001 Mfd., 500 V., Mica
C6, C9		Condenser, .002 Mfd., 400 V
C10A, C10B, & C10C	#21456	Condenser, Electrolytic, 40-20 Mfd., 150 Volt, 20 Mfd., 25 Volt
C11		Condenser, .01 Mfd, 400 V
T1	#21320	Coil, Antenna
T2	#21328	Coil, Oscillator
T3	#21329	Transformer, I. F.
Spk	#21670	Speaker, 4" P.M. with Output Transformer
	#21334	Speaker, 4" P.M.
	#21333	Transformer, Output
	#20138	Line Cord with Plug
	#21126	Cabinet, Ivory
	#19828	Grille, Metal Cabinet Front
	#21175	Sticker, Dial Scale
	#21306	Grille Cloth, Rear Cabinet
	#21314	Felt Feet
	#21101	Knob, Tuning, Ivory
	#21176	Pointer, Dial
	#21177	Knob, Volume, Ivory
	#18136	Wire, Antenna Mast

MODEL 8000
Chassis 132.838

SEARS, ROEBUCK AND CO.



ALIGNMENT PROCEDURE

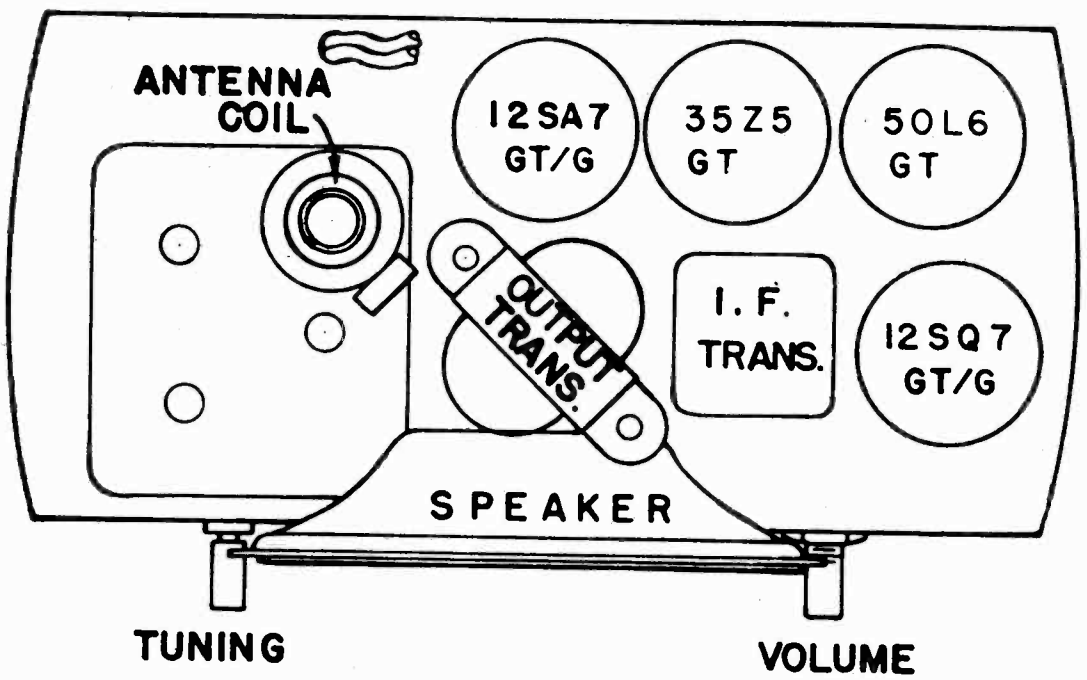
PRELIMINARY:

Output meter connection ..... Across Speaker Voice Coil
Output meter reading to indicate 200 MW (Standard Output) ..... .8 Volt
Generator modulation ..... 30% 400 Cycles
Position of volume control ..... Fully Clockwise
Position of dial pointer with variable condenser fully closed ..... Down

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION HIGH SIDE	GENERATOR CONNECTION GRD. LEAD	ADJUST TRIMMERS IN ORDER SHOWN	TRIMMER FUNCTION
Open	455 KC	.05 Mfd.	Mixer Grid	Floating Gnd	T3	IF
Open	1620 KC	50 Mmf.	*Ant. Lug	Float. Gnd.	C3B	Oscillator
1400 KC	1400 KC	50 Mmf.	*Ant. Lug	Float. Gnd.	C3A	Antenna
600 KC	600 KC	50 Mmf.	*Ant. Lug	Float. Gnd.	**Check Point	Antenna

IMPORTANT ALIGNMENT NOTES

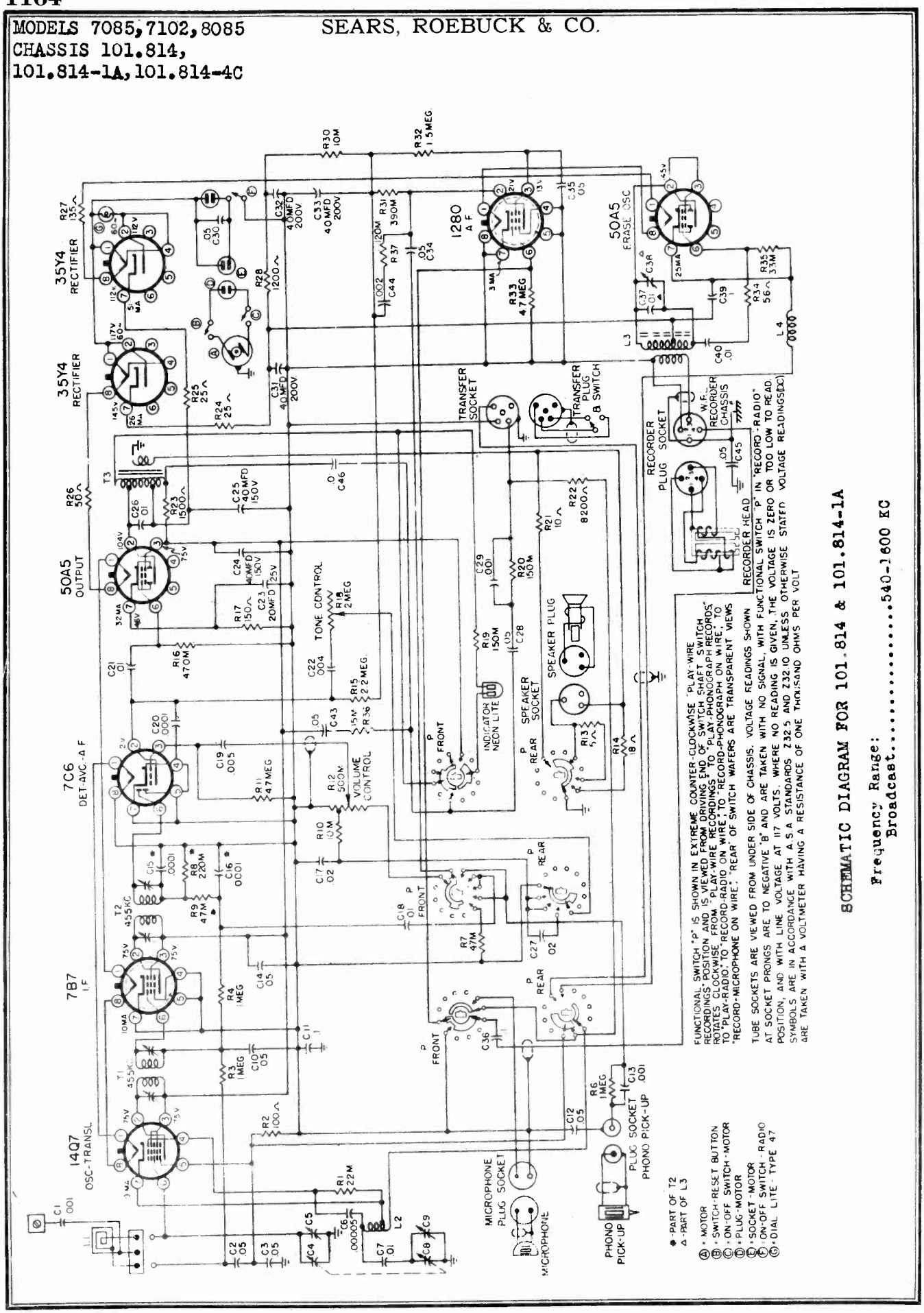
* Antenna hank lug on antenna coil with hank removed.
** Check sensitivity at 600 KC. If low, adjust antenna section plates of variable for maximum output at 600 KC.
The alignment procedure should be repeated in the original order for greatest accuracy. Always keep the output from the signal generator at its lowest possible value to make the A. V. C. action of the receiver ineffective



TUBE LAYOUT

MODELS 7085,7102,8085
CHASSIS 101.814,
101.814-1A,101.814-4C

SEARS, ROEBUCK & CO.



FUNCTIONAL SWITCH "P" IS SHOWN IN EXTREME COUNTER-CLOCKWISE "PLAY-WIRE RECORDINGS" POSITION AND IS VIEWED FROM DRIVING END OF SWITCH SHAFT. SWITCH ROTATES CLOCKWISE FROM "PLAY-WIRE RECORDINGS" TO "PLAY-PHONOGRAPH RECORDS" TO "PLAY-RADIO," TO "RECORD-PHONOGRAPH ON WIRE," TO "RECORD-RADIO ON WIRE," TO "RECORD-MICROPHONE ON WIRE." REAR OF SWITCH WAFERS ARE TRANSPARENT VIEWS

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH NO SIGNAL, WITH FUNCTIONAL SWITCH "P" IN "RECORD-RADIO" POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. SYMBOLS ARE IN ACCORDANCE WITH A.S.A. STANDARDS Z32.5 AND Z32.10 UNLESS OTHERWISE STATED. VOLTAGE READINGS(DC) ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT

* - PART OF T2
Δ - PART OF L3

Ⓐ - MOTOR
Ⓑ - SWITCH-RESET BUTTON
Ⓒ - ON-OFF SWITCH-MOTOR
Ⓓ - PLUG-MOTOR
Ⓔ - SOCKET-MOTOR
Ⓕ - ON-OFF SWITCH-RADIO
Ⓒ - DIAL LITE-TYPE 47

SCHEMATIC DIAGRAM FOR 101.814 & 101.814-1A

Frequency Range:
Broadcast.....540-1600 KC

CHASSIS 101.814-4C

is Similar to chassis 101.814 except 14A7 I. F. Tube is used in place of 7B7. Elliptical Speaker is used in place or 5 1/4" Speaker. The styling of this model with respect to Escutcheon, Knobs, Dial Background and Pointer are similar to the 101.814-2B.

SPECIFICATIONS

CHASSIS 101.814 AND 101.814-1A

Model Differences:
Both models are similar, however, 101.814-1A is a console with a larger speaker. The 101.814 is a table model.

Power Supply:
All models available.....117 Volts AC 60 Cycles 90 Watts

ALIGNMENT PROCEDURE

PRELIMINARY:

Output Meter Connection.....Across loud speaker voice coil
Output Meter Reading to Indicate 50 Milliwatts (Standard Output)..... 0.4 Volt
Generator Ground Lead Connection.....Receiver chassis
Dummy Antenna Value to be in Series with Generator Output.....See chart below
Connection of Generator Output Lead.....See chart below
Generator Modulation.....30%, 400 cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble (clockwise)
Position of Pointer with Tuner Fully Closed.....Last line below 540 calibration mark

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER) SHOWN	TRIMMER FUNCTION
Closed	455 KC	.1 mfd.	Trans. Grid	T2,T1	IF
1500 KC	1500 KC	.0002 mfd.	Antenna	C9	Oscillator
1500 KC	1500 KC	.0002 mfd.	Antenna	C5	Transl.

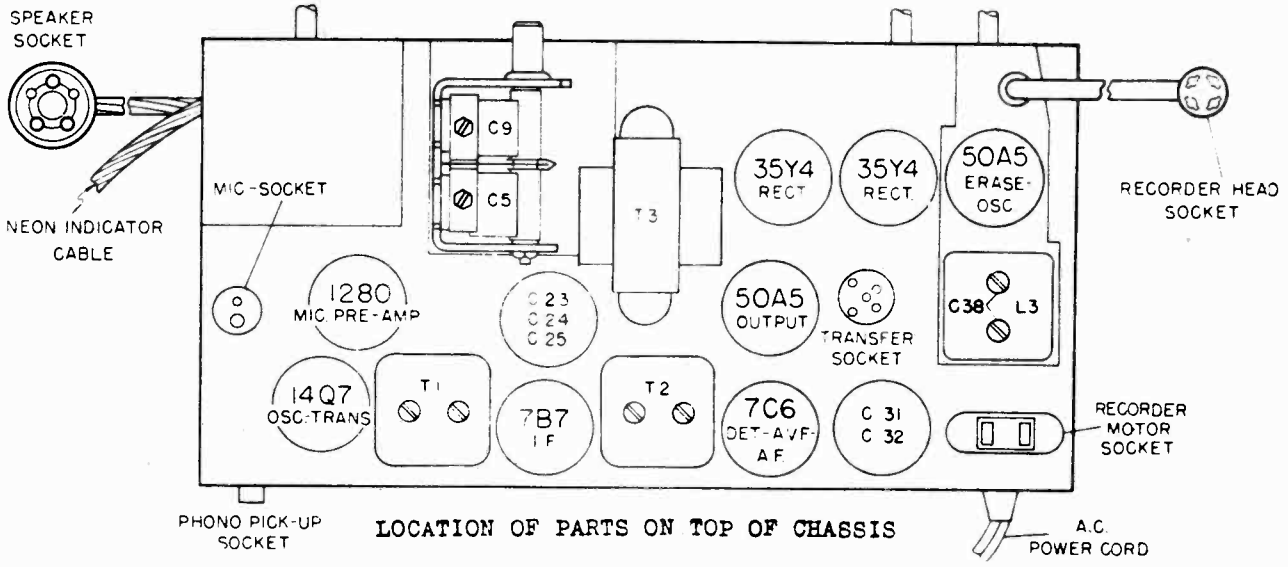
IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.
The entire Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

The Erase Oscillator Coil has been set at 39.5 Kc. at the factory. If necessary, it can be adjusted with the use of a Beat Frequency Oscillator.

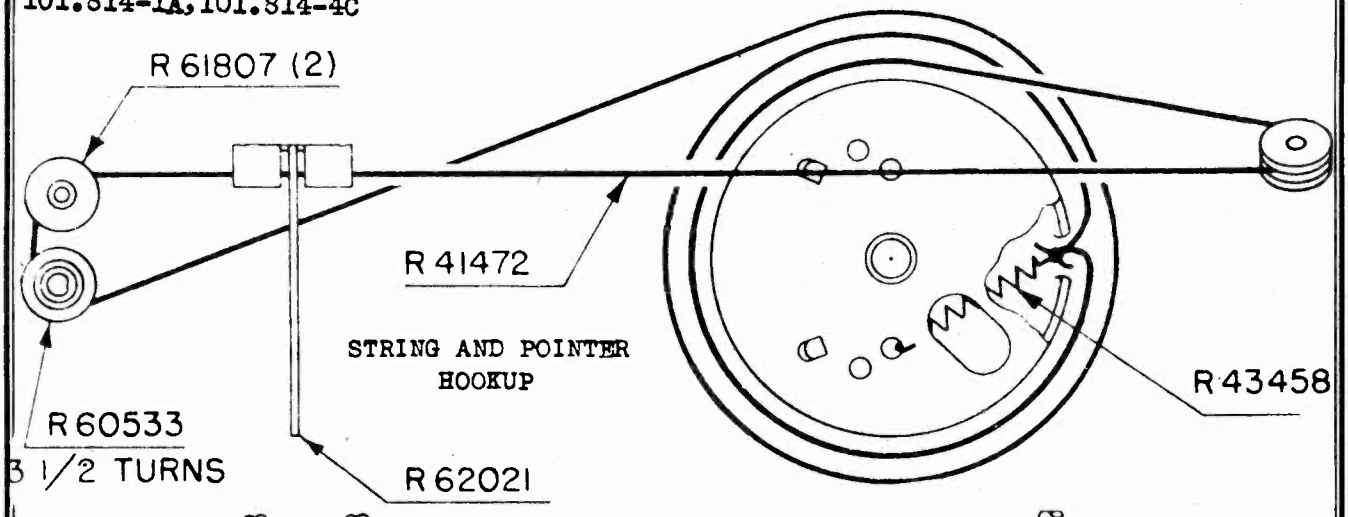
The Erase voltage on the Recording Head should be approximately 3.3 volts as measured with a Vacuum Tube Voltmeter.

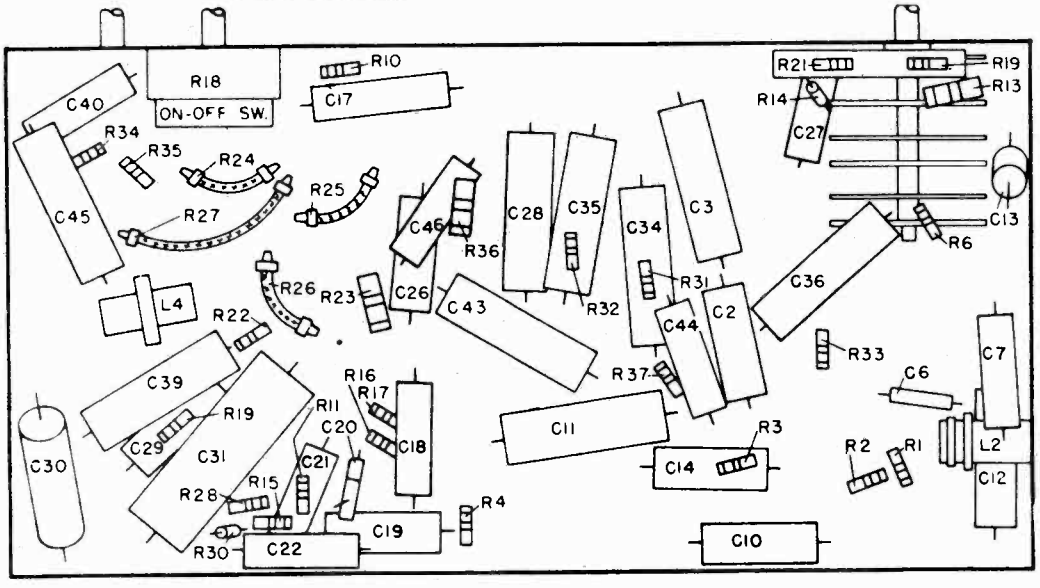


LOCATION OF PARTS ON TOP OF CHASSIS

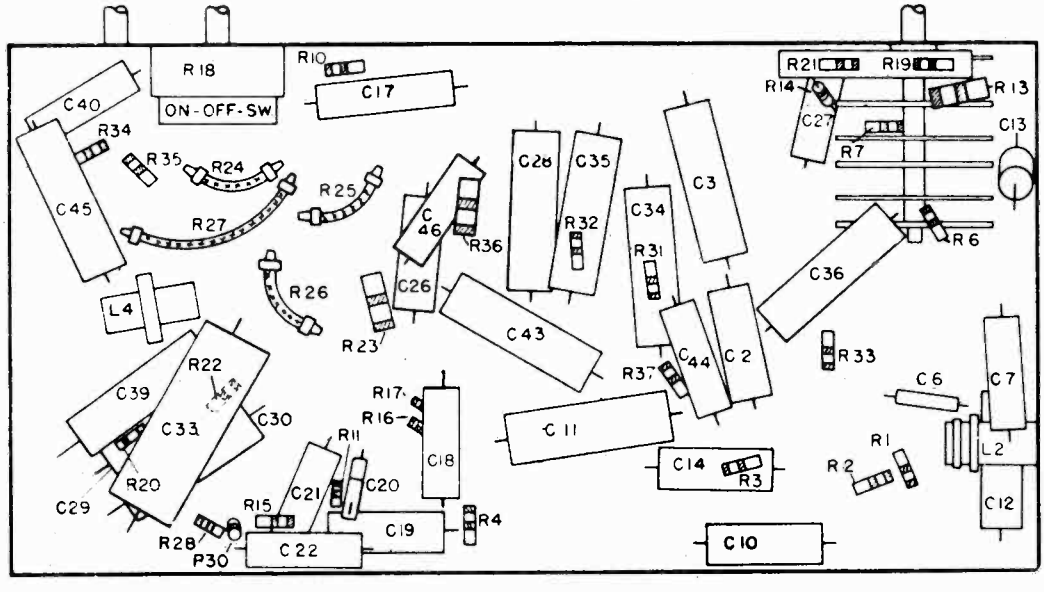
MODELS 7085,7102,8085
CHASSIS 101.814,
101.814-1A,101.814-4C

SEARS, ROEBUCK & CO.





LOCATION OF PARTS UNDER CHASSIS - 101.814



LOCATION OF PARTS UNDER CHASSIS - 101.814-1A

PARTS LIST

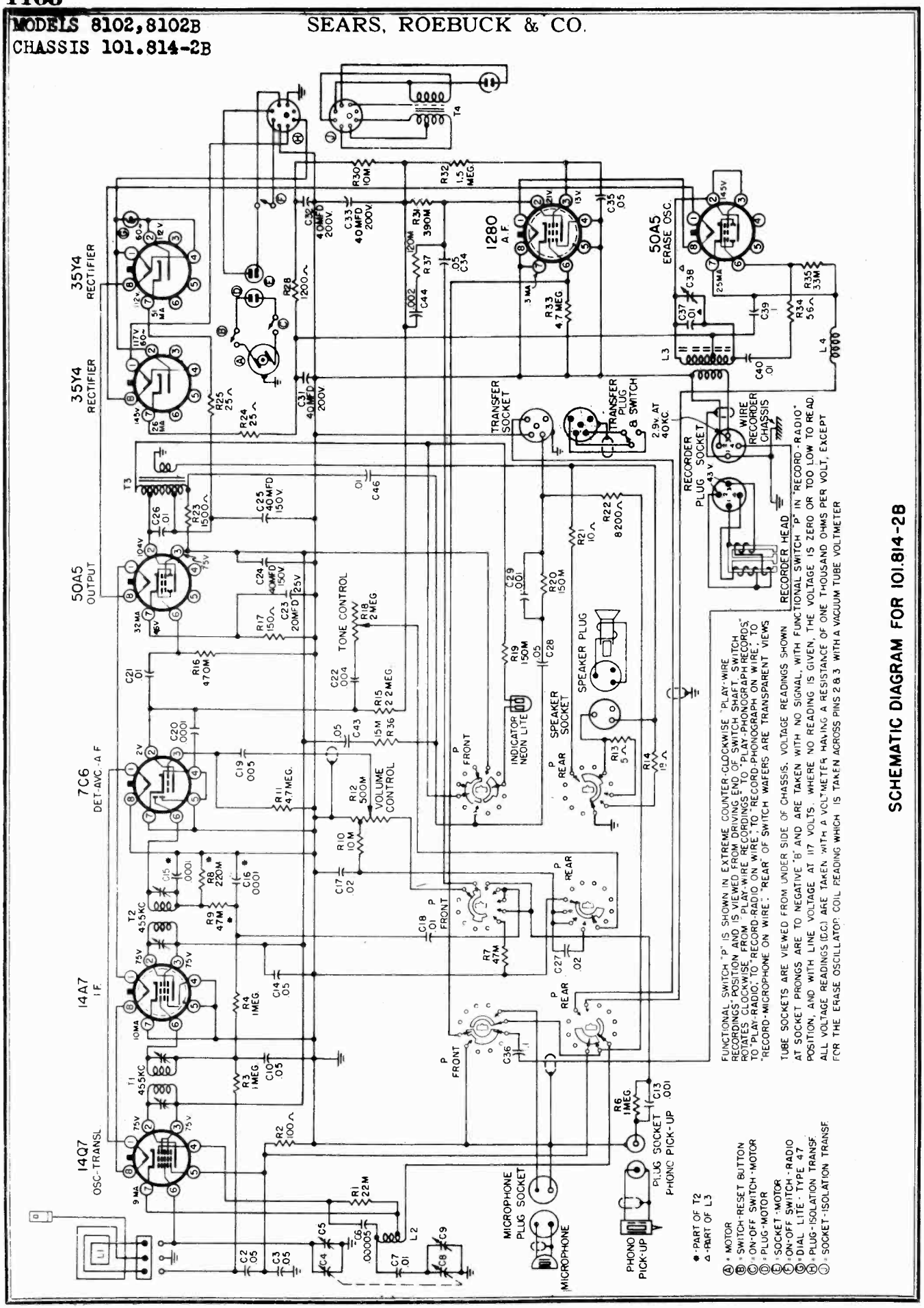
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R62075	Background - Dial
	R61846	Button - Snap - Dial Background Mounting
	R63220	Cable & Socket Assembly (101.814,-1A,-2B)
	R64699	Cable & Socket Assembly (101.814-3B,-5C,-6C)
C11,C36,C39		Capacitor - .1 Mfd. 600 Volt (101.814,-1A)
C36,C39		Capacitor - .1 Mfd. 600 Volt (101.814-2B)
C11,C34		Capacitor - .1 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C7,C18,C21, C26,C40,C46		Capacitor - .01 Mfd. 600 Volt (101.814,-1A,-2B)
C6,C14,C21, C27,C29,C32		Capacitor - .01 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C17,C27		Capacitor - .02 Mfd. 600 Volt (101.814,-1A,-2B)
C13,C17		Capacitor - .02 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C2,C3,C10,C12, C14,C28,C30,C34, C35,C43,C45		Capacitor - .05 Mfd. 600 Volt (101.814,-1A)
C2,C3,C10, C14,C28,C34 C35,C43		Capacitor - .05 Mfd. 600 Volt (101.814-2B)
C1,C2,C10,C12, C20,C23,C36, C40		Capacitor - .05 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C9		Capacitor - .001 Mfd. 600 Volt (101.814-6C)
C1,C13,C29		Capacitor - .001 Mfd. 600 Volt (101.814,-1A)
C13,C29		Capacitor - .001 Mfd. 600 Volt (101.814-2B)
C26		Capacitor - .001 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C44		Capacitor - .002 Mfd. 600 Volt (101.814,-1A,-2B)
C35		Capacitor - .002 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C42		Capacitor - .003 Mfd. 600 Volt
C22		Capacitor - .004 Mfd. 600 Volt (101.814,-1A,-2B)
C22,C31		Capacitor - .004 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C19		Capacitor - .005 Mfd. 600 Volt (101.814,-1A,-2B)
C18		Capacitor - .005 Mfd. 600 Volt (101.814-3B,-5C,-6C)
C6		Capacitor - Mica - 50 Mmfd. (101.814,-1A,-2B)
C5		Capacitor - Mica - 50 Mmfd. (101.814-3B,-5C,-6C)
C20		Capacitor - Mica - 100 Mmfd. (101.814,-1A,-2B)
C19		Capacitor - Mica - 100 Mmfd. (101.814-3B,-5C,-6C)
C4,C8	R61100	Capacitor - Variable Tuning (101.814,-1A,-2B)
C3,C7	R61100	Capacitor - Variable Tuning (101.814-3B,-5C,-6C)
C33	R61517	Capacitor - 40 Mfd. 200 Volt (101.814,-1A,-2B)
C40	R61517	Capacitor - 40 Mfd. 200 Volt (101.814-3B,-5C,-6C)
C31,C32	R61507	Capacitor - 40 Mfd. 200 Volt, 40 Mfd. 200 Volt (101.814,-1A,-2B)
C30,C39	R61507	Capacitor - 40 Mfd. 200 Volt, 40 Mfd. 200 Volt (101.814-3B,-5C,-6C)
C23,C24,C25	R60416	Capacitor - Electrolytic - 40 Mfd. 150 Volt, 40 Mfd. 150 Volt, 20 Mfd. 25 Volt (101.814,-1A,-2B)
C24,C25,C28	R60416	Capacitor - Electrolytic - 40 Mfd. 150 Volt, 40 Mfd. 150 Volt, 20 Mfd. 25 Volt (101.814-3B,-5C,-6C)
L3	R64696	Coil - Erase Oscillator (101.814-3B,-5C,-6C)
L4	R43050	Coil - Choke
L5	R61519	Coil - Erase Oscillator (101.814,-1A,-2B)
L2	R61107	Coil - Oscillator - B.C.
	R62045	Clip - Lens Retaining
	R61191	Clip - Neon Lamp Retaining
	R60639	Connector - Loop Terminal
R12	R61128	Control - Volume (101.814,-1A,-2B)
R18	R61864	Control - On-Off & Tone
R11	R61128	Control - Volume (101.814-3B,-5C,-6C)
	R41748	Cord - Line
	R41472	Cord - Dial Drive (44")
	R60506	Dial - Station (101.814,-1A)
	R60520	Escutcheon - Dial (101.814,-1A)
	R62080	Escutcheon & Dial Assembly (101.814-2B,-3B,-5C,-6C)
	R62531	Knob - Volume (101.814-2B,-3B,-5C,-6C)
	R60484	Knob - Volume (101.814,-1A)
	R61408	Knob - On-Off & Tone (101.814,-1A)
	R62538	Knob - Master Control (101.814-2B,-3B,-5C,-6C)
	R61566	Knob - Master Control (101.814,-1A)
	R60480	Knob - Tuning (101.814,-1A)
	R62712	Knob - Tuning (101.814-2B,-3B,-5C,-6C)
		Lamp - Mazda Type #47
	R45981	Lamp - Neon
	R54425	Leaflet - Instruction (101.814)
	R54451	Leaflet - Instruction (101.814-1A)
	R64075	Leaflet - Instruction (101.814-2B)
	R64295	Leaflet - Instruction (101.814-3B)
	R64473	Leaflet - Instruction (101.814-5C)
	R66520	Leaflet - Instruction (101.814-6C)
	R61137	Lens - Recorder Indicating Lamp
	R61196	Loop & Board Assembly (101.814)
	R61557	Loop & Board Assembly (101.814-1A)
	R64589	Loop & Board Assembly (101.814-2B,-3B)
	R65216	Loop & Board Assembly (101.814-5C,-6C)
	R61168	Microphone (101.814,-1A)
	R49264	Cartridge - Crystal Microphone
	R56115	Ring - Mounting
	R56449	Cover Assembly - Terminal Shield
	R64674	Microphone (101.814-2B,-3B,-5C,-6C)
	R56076	Cartridge - Crystal Microphone
	R56115	Ring - Mounting
	R56449	Cover Assembly - Terminal Shield
	R61527	Plate - Instruction (101.814)
	R61594	Plate - Instruction (101.814-1A)
	R64567	Plug - 9 Prong
	R62077	Pointer Assembly (101.814-2B,-3B,-5C,-6C)
	R62021	Pointer - Dial (101.814,-1A)
	R62013	Pointer - Plastic - Master Control Knob (101.814,-1A)
	R61807	Pulley - Metal
R21		Resistor - 10 Ohm - 1/2 Watt
R14		Resistor - 18 Ohm - 1/2 Watt
R34		Resistor - 56 Ohm - 1/2 Watt (101.814,-1A,-2B)
R29		Resistor - 56 Ohm - 1/2 Watt (101.814-3B,-5C,-6C)
R2		Resistor - 100 Ohm - 1/2 Watt
R17		Resistor - 150 Ohm - 1/2 Watt
R28		Resistor - 1200 Ohm - 1/2 Watt (101.814,-1A,-2B)
R26		Resistor - 1200 Ohm - 1/2 Watt (101.814-3B,-5C,-6C)
R22		Resistor - 8200 Ohm - 1/2 Watt
R10,R30		Resistor - 10,000 Ohm - 1/2 Watt (101.814,-1A,-2B)
R9,R33		Resistor - 10,000 Ohm - 1/2 Watt (101.814-3B,-5C,-6C)
R1		Resistor - 22,000 Ohm - 1/2 Watt
R35		Resistor - 33,000 Ohm - 1/2 Watt (101.814,-1A,-2B)
R30		Resistor - 33,000 Ohm - 1/2 Watt (101.814-3B,-5C,-6C)
R7		Resistor - 47,000 Ohm - 1/2 Watt (101.814,-1A,-2B)
R6		Resistor - 47,000 Ohm - 1/2 Watt (101.814-3B,-5C,-6C)
R37		Resistor - 120,000 Ohm - 1/2 Watt (101.814,-1A,-2B)
R27		Resistor - 120,000 Ohm - 1/2 Watt (101.814-3B,-5C,-6C)
R19,R20		Resistor - 150,000 Ohm - 1/2 Watt
R31		Resistor - 390,000 Ohm - 1/2 Watt
R16		Resistor - 470,000 Ohm - 1/2 Watt
R4		Resistor - 1 Megohm - 1/2 Watt (101.814-6C)
R3,R4,R5,		Resistor - 1 Megohm - 1/2 Watt (101.814,-1A,-2B)
R3,R5		Resistor - 1 Megohm - 1/2 Watt (101.814-3B,-5C,-6C)
R32		Resistor - 1.5 Megohm - 1/2 Watt
R15		Resistor - 2.2 Megohm - 1/2 Watt
R11,R33		Resistor - 4.7 Megohm - 1/2 Watt (101.814,-1A,-2B)
R10,R28		Resistor - 4.7 Megohm - 1/2 Watt (101.814-3B,-5C,-6C)
R23		Resistor - 1500 Ohm - 1 Watt
R36		Resistor - 15,000 Ohm - 1 Watt (101.814,-1A,-2B)
R12		Resistor - 15,000 Ohm - 1 Watt (101.814-3B,-5C,-6C)
R24,R25	R40232	Resistor - Glasohm - 25 Ohm - 1 Watt
R26	R62030	Resistor - Glasohm - 50 Ohm - 3 Watts (101.814,-1A)
R27	R61605	Resistor - Glasohm - 136 Ohm - 5 Watts (101.814,-1A)
R13		Resistor - 5 Ohm - 1 Watt
	R60533	Shaft Assembly - Tuning
	R62641	Screw - Escutcheon & Dial Mounting
	R63141	Screw - Wire Recorder Mounting
	R64566	Shell - (for R64567 Plug)
	R62014	Shield - Switch
	R44145	Socket - 2 Prong - AC to Wire Recorder
	R62049	Socket Assembly - 1280 Tube only
	R44897	Socket - 1 Prong - Phono Connector
	R57049	Socket - Tube - 8 Prong Lock-In
	R60515	Socket - Pilot Lamp
	R60597	Socket - 5 Prong - Transfer Cable
	R60693	Socket - Speaker Cable
	R61291	Socket - 2 Prong - Microphone Connector
	R64569	Socket - 9 Contact (101.814-2B,-3B)
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER
	R61117	Speaker - 5 1/4" P.M. (101.814)
	R60780	Cone & Voice Coil
	R49743	Plug
	R64668	Speaker - 6" x 9" P.M. (101.814-5C,-6C)
	R62659	Cone & Voice Coil
	R49743	Plug
	R61558	Speaker - 8" P.M. (101.814-1A)
	R59799	Cone & Voice Coil
	R49743	Plug
	R63021	Speaker - 10" P.M. (101.814-2B,-3B)
	R63056	Cone & Voice Coil
	R49743	Plug
	R43458	Spring - Tension - Dial Drive
	R67035	Switch - Master Control (101.814,-1A)
	R62695	Switch - Master Control (101.814-2B,-3B,-5C,-6C)
T1	R61111	Transformer - I. F. #1
T2	R61142	Transformer - I. F. #2
T3	R61506	Transformer - Output
T4	R64563	Transformer - Isolation - 60 Cycle (101.814-2B,-3B,-5C,-6C)
	R61570	Tray - Spool Storage (101.814-1A,-2B,-3B)
	R61523	Tray - Spool Storage (101.814,-5C,-6C)
	R60450	Wafer - Electrolytic Capacitor Mounting
	R18897	Washer - Flat - Dial Plate Mounting
	R46042	Washer - Phono Socket Insulating
	R61815	Washer - Metal Pulley Retaining

For CHASSIS 101.814-4C

PART NUMBER	DESCRIPTION
R64931	Loop & Board Assembly
R64310	Leaflet - Instruction
R64668	Speaker - 6" x 9" P. M.
R62659	Cone & Voice Coil
R49743	Plug

MODELS 8102,8102B
CHASSIS 101.814-2B

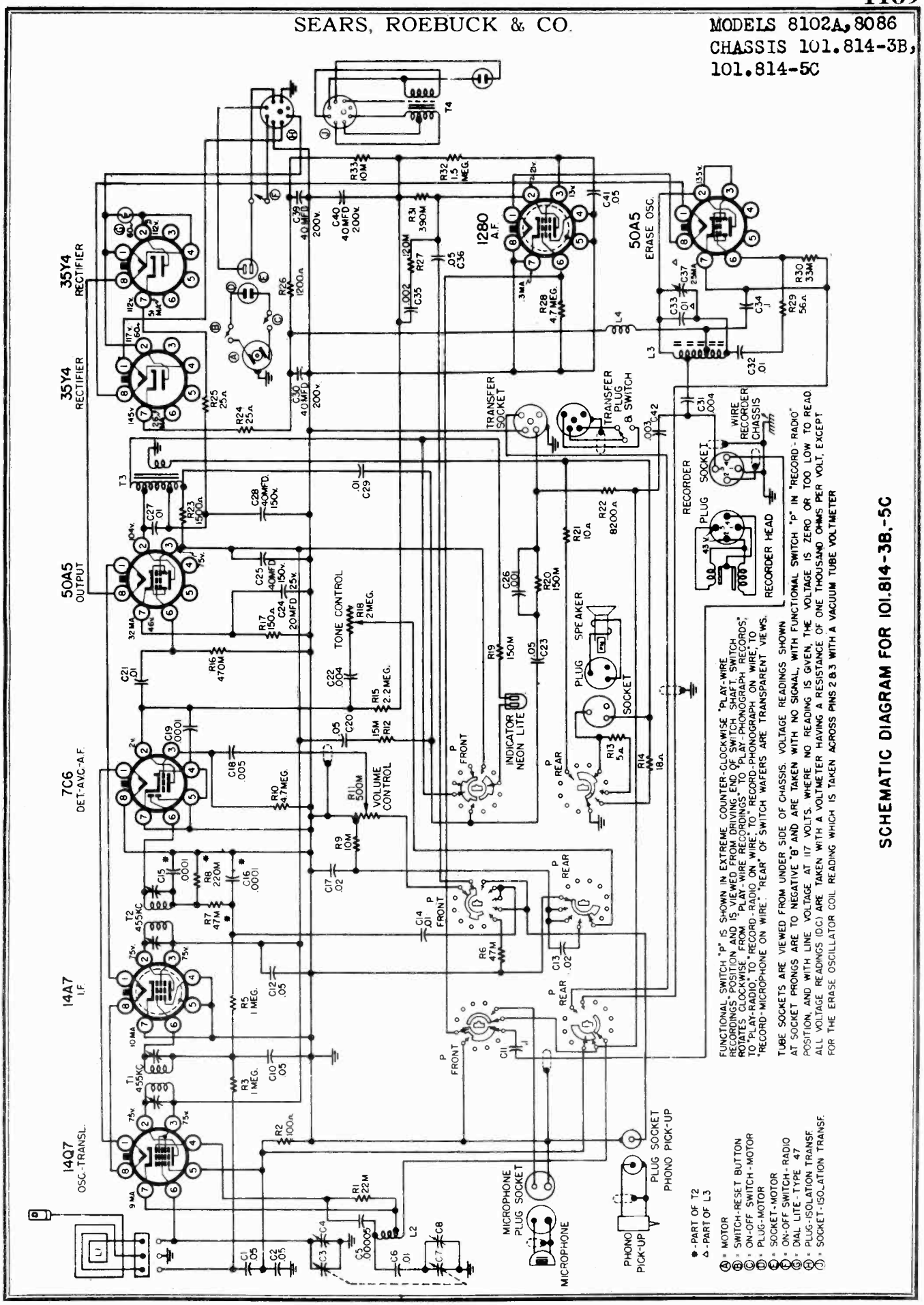
SEARS, ROEBUCK & CO.



SCHEMATIC DIAGRAM FOR 101.814-2B

SEARS, ROEBUCK & CO.

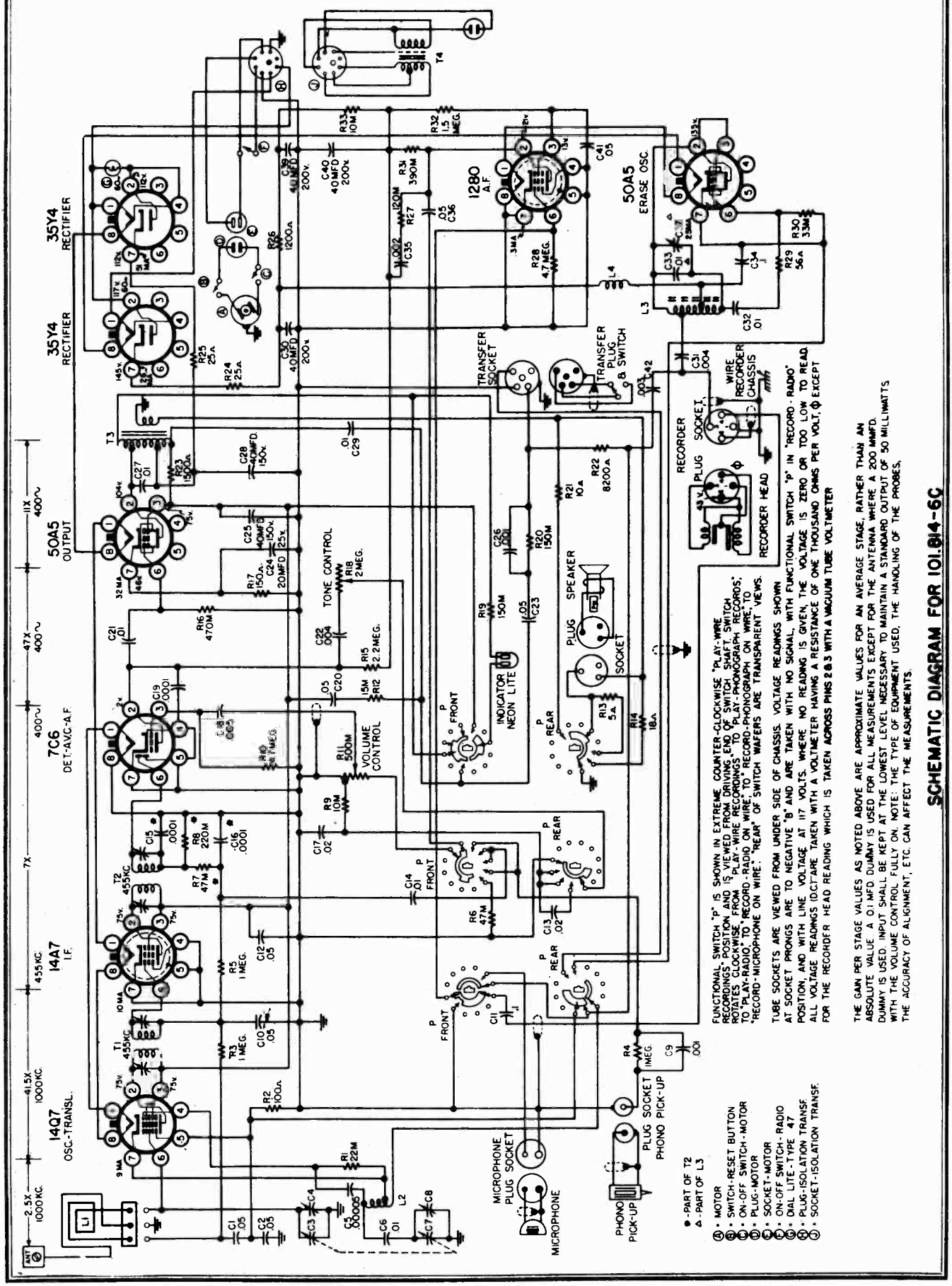
MODELS 8102A, 8086
CHASSIS 101.814-3B,
101.814-5C



SCHEMATIC DIAGRAM FOR 101.814-3B,-5C

MODELS 8086A, 8086B
CHASSIS 101.814-6C

SEARS, ROEBUCK & CO.



FUNCTIONAL SWITCH "P" IS SHOWN IN EXTREME COUNTER-CLOCKWISE "PLAY-WIRE RECORDINGS" POSITION AND IS VIEWED FROM DRIVING END OF SWITCH SHAFT. SWITCH ROTATES CLOCKWISE FROM "PLAY-WIRE RECORDINGS" TO "PLAY-PHONOGRAPH RECORDS;" TO "PLAY-RADIO," TO "RECORD-RADIO ON WIRE," TO "RECORD-PHONOGRAPH ON WIRE," TO "RECORD-MICROPHONE ON WIRE." "REAR" OF SWITCH WAFERS ARE TRANSPARENT VIEWS.

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH NO SIGNAL, WITH FUNCTIONAL SWITCH "P" IN "RECORD-RADIO" POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. ALL VOLTAGE READINGS (D.C.) ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT, ϕ EXCEPT FOR THE RECORDER HEAD READING WHICH IS TAKEN ACROSS PINS 2 & 3 WITH A VACUUM TUBE VOLTMETER.

THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE STAGE, RATHER THAN AN ABSOLUTE VALUE. A 0.1 MFD DUMMY IS USED FOR ALL MEASUREMENTS EXCEPT FOR THE ANTENNA WHERE A 200 MMFD. DUMMY IS USED. INPUT SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC. CAN AFFECT THE MEASUREMENTS.

SCHEMATIC DIAGRAM FOR 101.814-6C

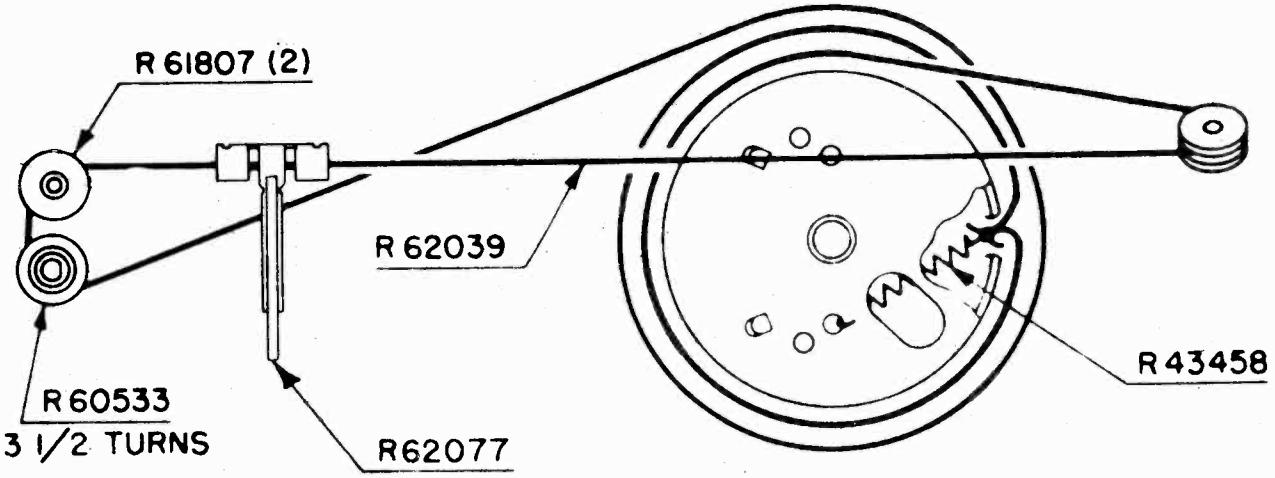
● - PART OF T2
Δ - PART OF L3

① • MOTOR
② • SWITCH-RESET BUTTON
③ • ON-OFF SWITCH-MOTOR
④ • PLUG-MOTOR
⑤ • SOCKET-MOTOR
⑥ • ON-OFF SWITCH-RADIO
⑦ • DIAL LITE-TYPE 47
⑧ • PLUG-ISOLATION TRANSF.
⑨ • SOCKET-ISOLATION TRANSF.

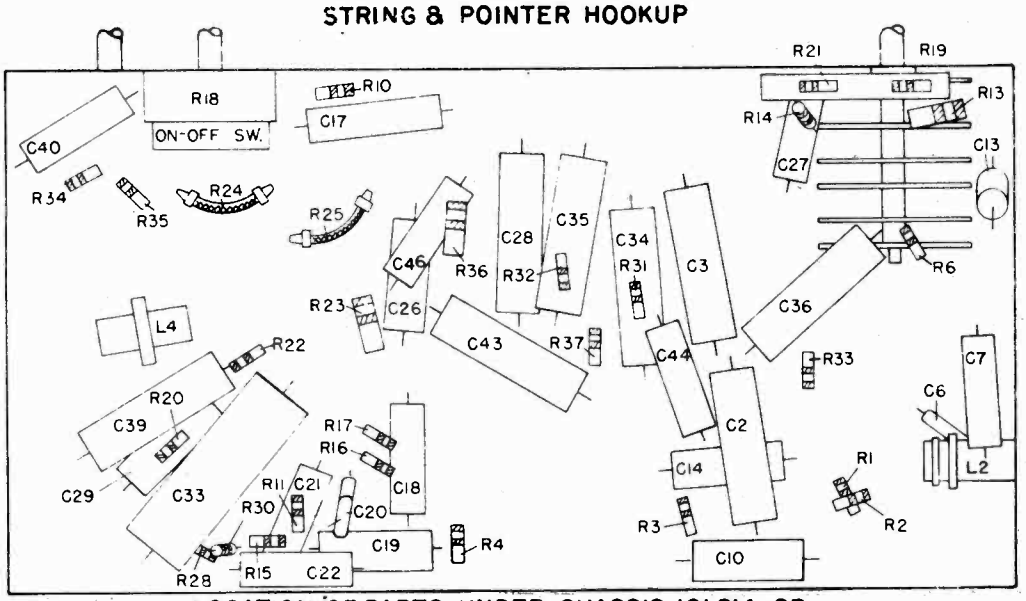
CHASSIS 101.814-2B
CHASSIS 101.814-3B
CHASSIS 101.814-5C
CHASSIS 101.814-6C

SEARS, ROEBUCK & CO.

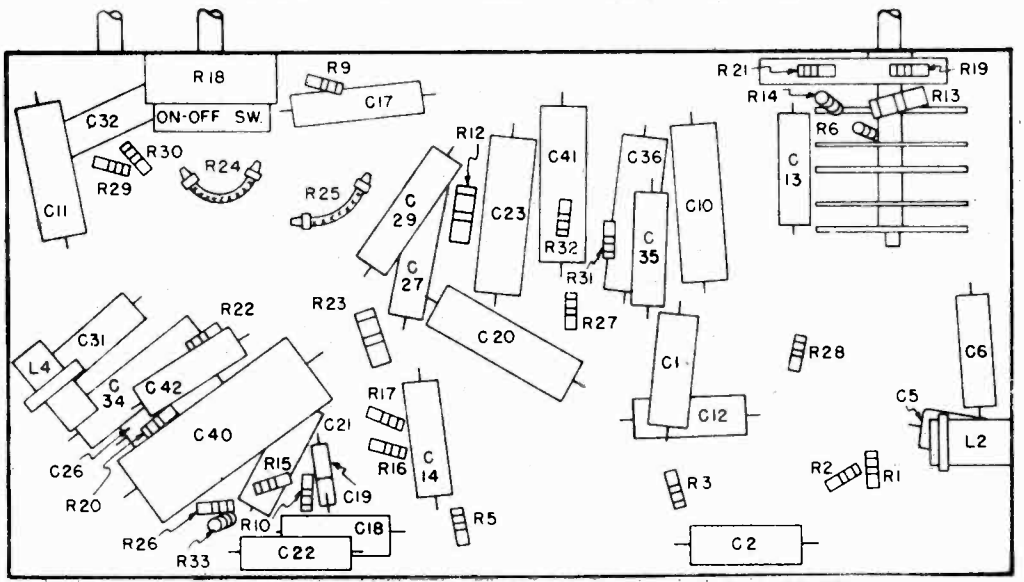
MODELS 8102, 8102B
MODEL 8102A
MODEL 8086
MODELS 8086A, 8086B



STRING & POINTER HOOKUP



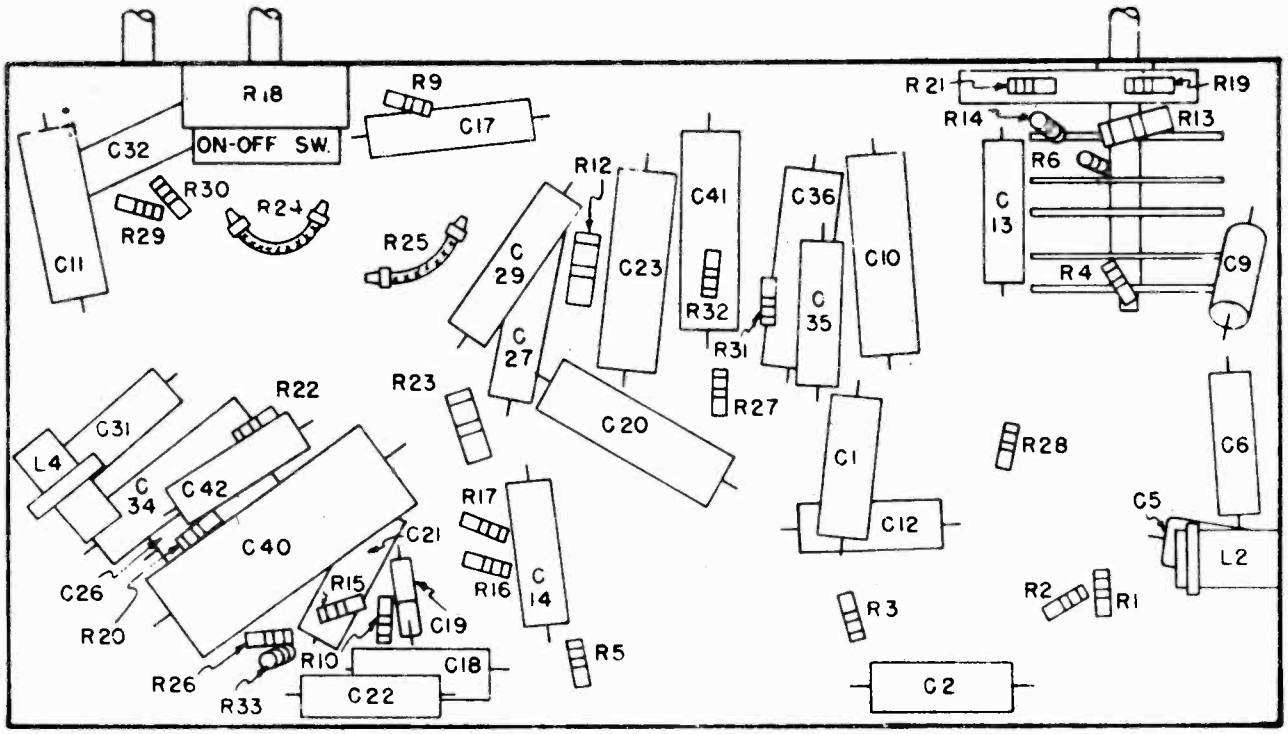
LOCATION OF PARTS UNDER CHASSIS 101.814-2B



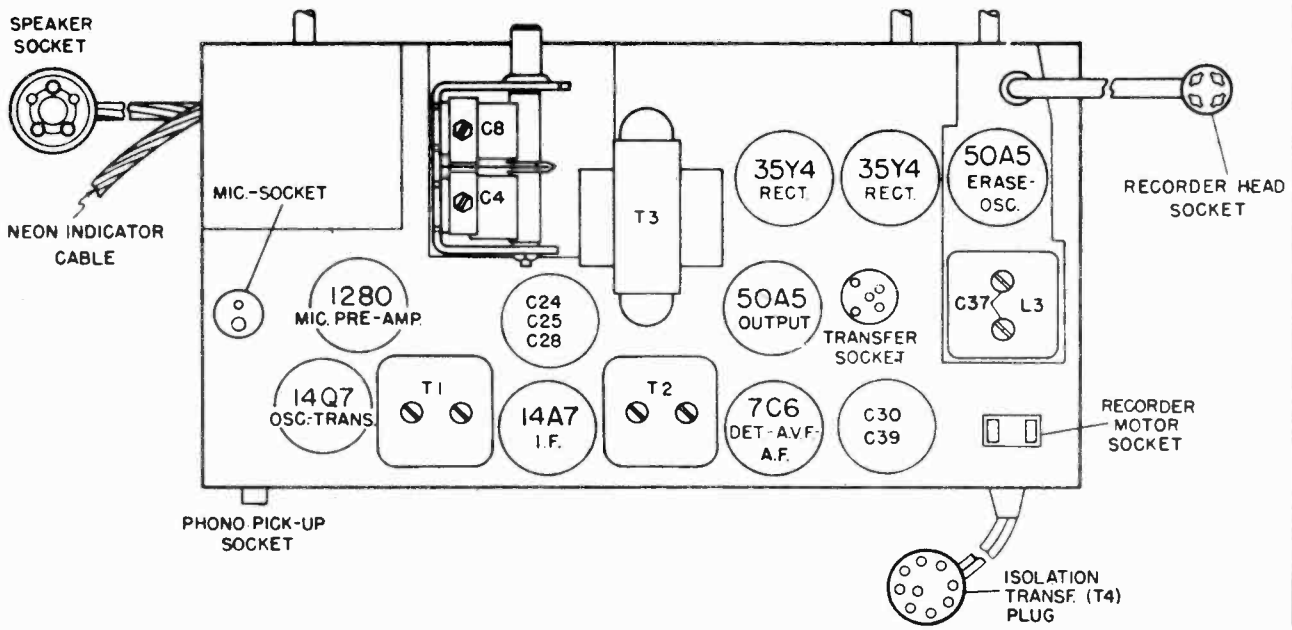
LOCATION OF PARTS UNDER CHASSIS 101.814-3B,5C

MODELS 8102, 8102B
CHASSIS 101.814-2B
MODELS 8086A, 8086B
CHASSIS 101.814-6C

SEARS, ROEBUCK & CO.



LOCATION OF PARTS UNDER CHASSIS 101.814-6C



LOCATION OF PARTS ON TOP OF CHASSIS 101.814-2B

SEARS, ROEBUCK & CO. MODEL 8102A CHASSIS 101.814-3B
MODEL 8086 CHASSIS 101.814-5C
MODELS 8086A, 8086B
CHASSIS 101.814-6C

ALIGNMENT PROCEDURE FOR 101.814-3B,5C,6C ONLY

PRELIMINARY:

Output meter reading to indicate 0.05 watt across voice coil.....0.4 volt
Generator ground lead connection.....Receiver chassis
Generator modulation.....30%, 400 cycles
Position of volume control.....Fully on
Position of tone control.....HI
Position of pointer with tuner fully closed.....Last line below 540 Kc. calibration mark on the Dial or at the "Start" of calibration point on the dial background plate.

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
See note below	1400 Kc.	200 mmfd.	Ant.	C8	Osc.
See note below	1400 Kc.	200 mmfd.	Ant.	C4	Transl.

IMPORTANT ALIGNMENT NOTES:

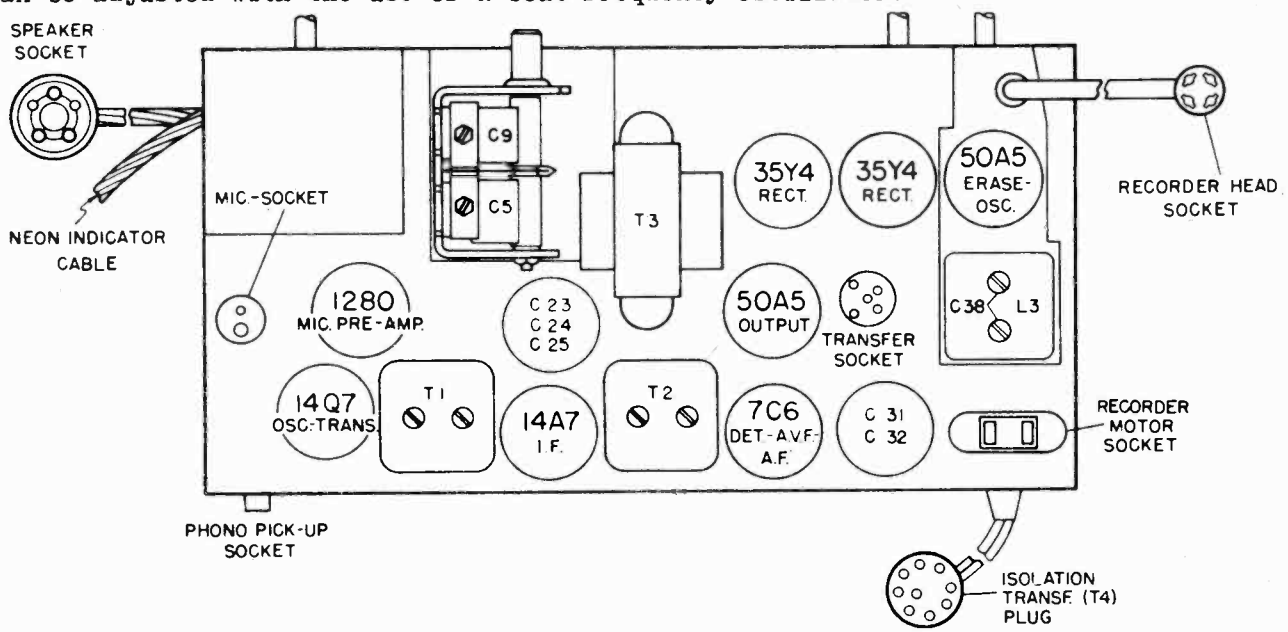
NOTE: With the dial background removed, the tuner should be positioned at the 1400 Kc. mark on the dial background plate.

The alignment must be done in the order given.

The alignment procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output voltage from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurage alignment.

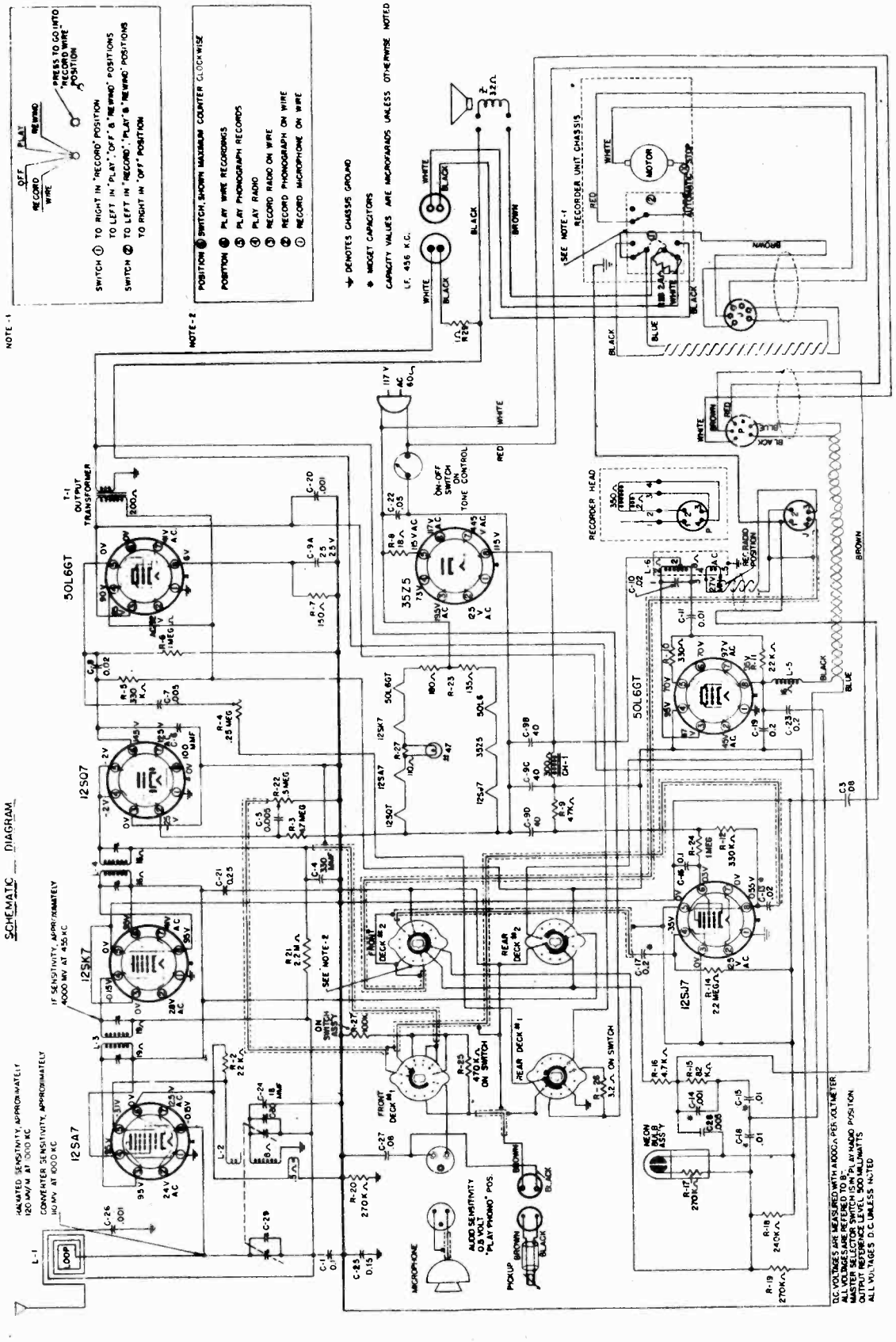
The erase oscillator coil has been set at 33.7 Kc. at the factory. If necessary it can be adjusted with the use of a beat frequency oscillator.



LOCATION OF PARTS ON TOP OF CHASSIS 101.814-3B,-5C,-6C

MODELS 7086,7103
CHASSIS 110.466,
110.466-1

SEARS, ROEBUCK & CO.



SCHEMATIC DIAGRAM 110.466 and 110.466-1

SEARS, ROEBUCK & CO.

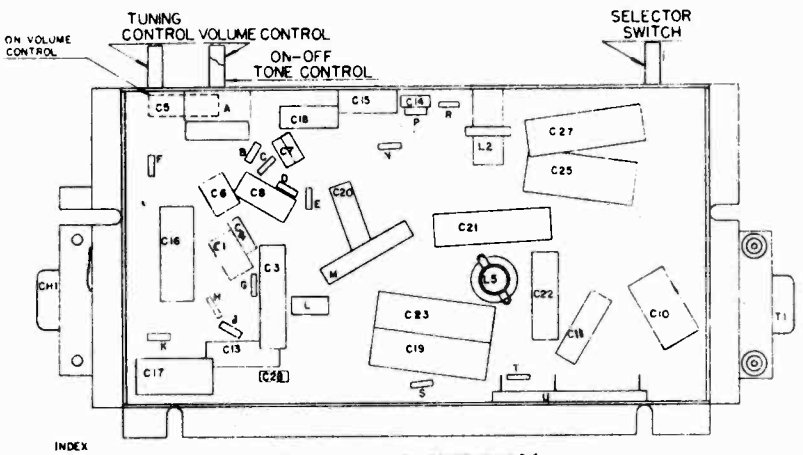
MODELS 7086, 7103
CHASSIS 110.466,
110.466-1

SPECIFICATIONS

Power Supply:

All models available. . . . . .117V 60 cycle AC 90 watts

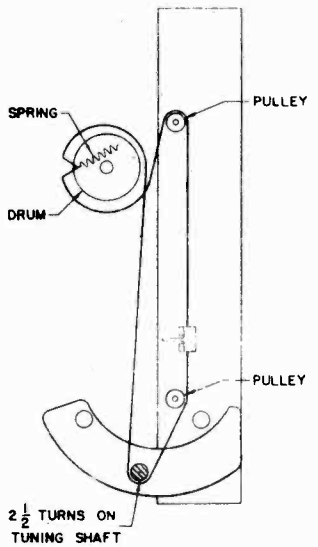
Frequency Ranges:. 540-1580KC



INDEX

A	R4	K	R13
B	R18	L	R6
C	R5	M	R27
D	R7	N	R2
E	R6	P	R15
F	R3	R	R16
G	R21	S	R9
H	R24	T	R10
J	R12	U	R23

LOCATIONS OF PARTS UNDER CHASSIS



DIAL STRINGING DIAGRAM

ALIGNMENT PROCEDURE

PRELIMINARY:

OUTPUT METER CONNECTION.	ACROSS LOUD SPEAKER VOICE COIL
OUTPUT METER READING TO INDICATE 500 MILLIWATTS.	1.25 VOLTS
DUMMY ANTENNA VALUE TO BE IN SERIES WITH GENERATOR OUTPUT	SEE CHART BELOW
CONNECTION OF GENERATOR OUTPUT LEAD.	SEE CHART BELOW
CONNECTION OF GENERATOR GROUND LEAD.	B— BUS
GENERATOR MODULATION.	30% AT 400 CYCLES
POSITION OF VOLUME CONTROL.	FULLY CLOCKWISE
POSITION OF TONE CONTROL	COUNTER CLOCKWISE (HI)
POSITION OF DIAL POINTER WITH VARIABLE FULLY CLOSED	ON MARK BELOW 540 KC. CALIBRATION MARK
POSITION OF MASTER CONTROL SWITCH	"PLAY RADIO"

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (In order shown)	FUNCTION
Any	455	.2 mfd.	Grid. 12SA7GT	L3, L4	I.F.
1500 Kc	1500 Kc	***	*** See Below	C30, C29	Osc. R. F.
600 Kc	600 Kc	***	*** See Note Below	(Check-Point)	(Check Point)

***Run a wire from the output terminal of generator near the receiver. No connection is made between the signal generator and the receiver.

IMPORTANT ALIGNMENT NOTES

The alignment procedure should be repeated stage by stage, in the original order for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the Receiver ineffective.

POWER OUTPUT UNDISTORTED. . . . .95 WATTS MAXIMUM. . . . . 2.0 WATTS

SPECIAL SERVICE NOTES

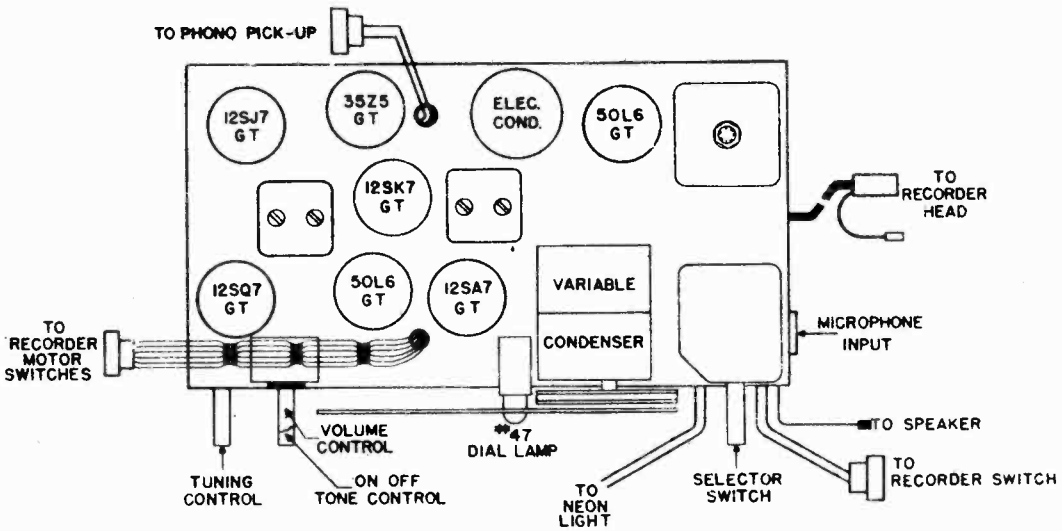
To check the erasing voltage of the Recorder Head, turn set on. Set Master Selector Switch to Position #3 *(Record Radio)*. Set the Recorder Control Lever to "Record Wire" and measure the voltage between Pin #2 and 3 of the Recorder Head. This should be done with Recorder Head attached to the plug of the Recorder Cable. The voltage at this point should be 2.7 Volts, minimum, as measured with the Vacuum Tube Voltmeter.

The erasing voltage may also be checked using a #57 Pilot Light. This is done by setting the Master Selector Switch to Position #3 *(Record Radio)* and the Recorder Control Lever to "Record Wire". The voltage appearing across Pin #2 and 3 of the "J" Connector *(see schematic)* will light the lamp to a pale orange color which outlines the filament. *(without recorder head attached).*

MODELS 7086,7103
CHASSIS 110.466,
110.466-1

SEARS, ROEBUCK & CO.

TUBE LOCATION

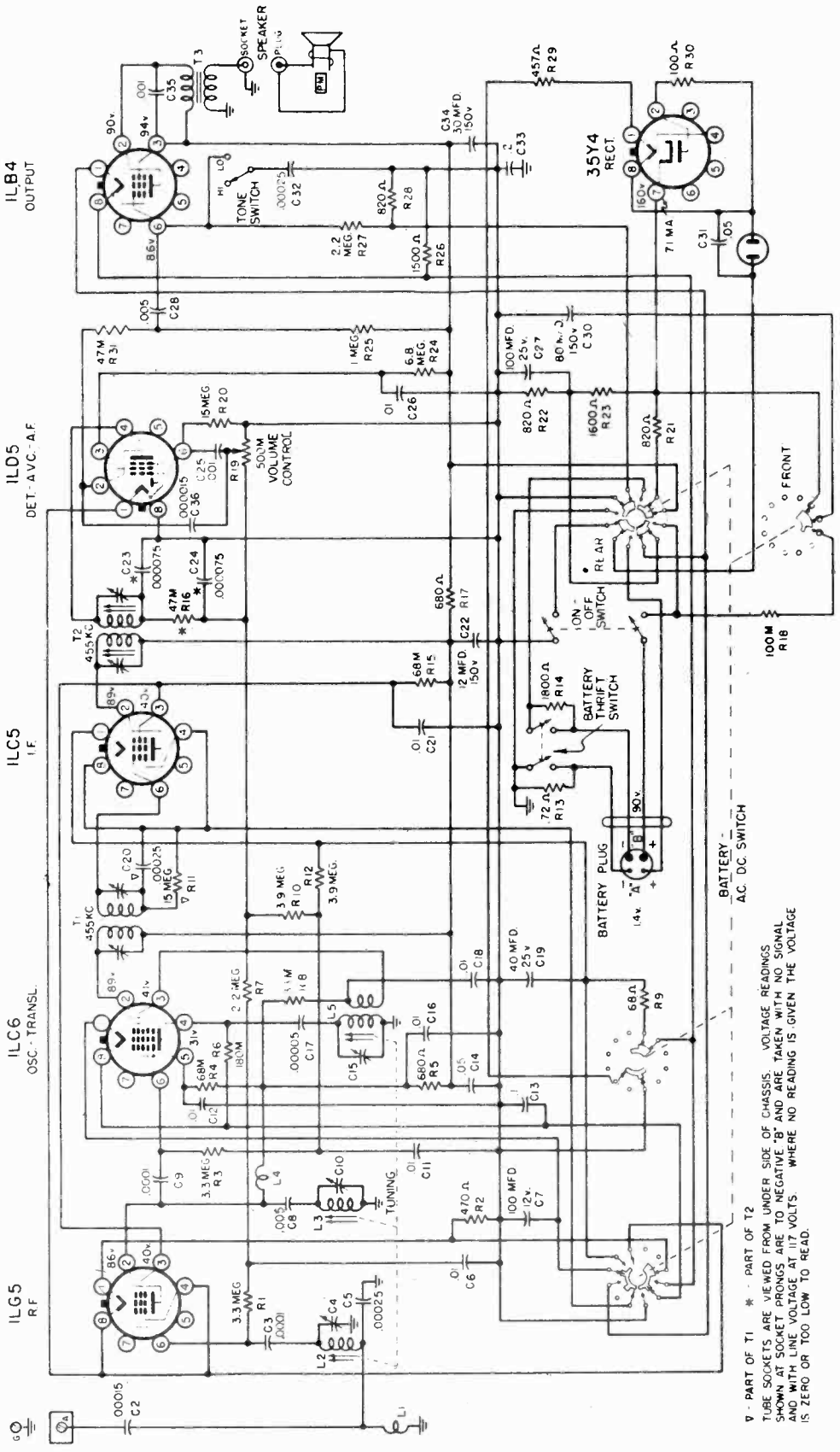


PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
C21		Condenser- .25 mfd. paper, 400 volts
C22		Condenser- .05 mfd. paper, 400 volts
C24		Condenser- 18 mmfd. mica or ceramic
C25		Condenser- .5 mfd. paper, 400 volts
C26		Condenser- .001 mfd. paper, 200 volts
C28		Condenser- .002 mfd. paper, 150 volts
	A-1691	Condenser- variable
R4	A-2474	Control, Tone, with Switch
R22	A-2475	Control, Volume
	A-54367	Cord, Dial Drive (Per Yard)
	A-5589	Cord, Line 8 ft.
	A-4447	Escutcheon (Dial Crystal)
	A-4445	Escutcheon (Meter Control)
	A-39166	Knob Selector
	A-39167	Knob-Tone Control, On - Off
	A-39165	Knob-Tuning
	A-39168	Knob-Volume Control
		Lamp, Pilot Light No.47
	A-59309	Leaflet - Instruction
	A-28174	Loop Antenna Ass'y.
	A-18127	Plug Phono - 2 Wire
L5	A-3010	Choke 1 mh R.F. 15 ohms
CH1	A-1400	Choke Filter
L2	A-28173	Coil-Oscillator B. C.
C1	A-1979	Condenser- .1 mfd. paper, 150 volts
C3,C27		Condenser- .08 mfd. paper, 400 volts
C4		Condenser- 330mmfd mica
C5		Condenser- .005 mfd. paper
C6		Condenser- 470 mmfd mica, 400 volts
C7	A-1978	Condenser- .005 mfd. paper, 150 volts
C8		Condenser- .02 mfd. paper, 400 volts
C9	A-2074	Condenser- Electrolytic 40-40-40 x 150 volts - 25 x 25 volts
C10		Condenser- .02 mfd. oil, 600 volts
C11		Condenser- .01 mfd. 400 volts
C12	A-2077	Condenser- Electrolytic 25 mfd. 10 volts
C13	A-1982	Condenser- .02 mfd. 400 volts
C14	A-1980	Condenser- .001 mfd. 150 volts
C15,C18	A-1981	Condenser- .01 mfd. 400 volts
C16		Condenser- .1 mfd. paper, 400 volts
C17	A-1983	Condenser- .2 mfd. paper, 200 volts
C19,C23		Condenser- .2 mfd. paper, 400 volts
C20		Condenser- .001 mfd. paper, 400 volts
	A-5586	Plug (Recorder Motor AC)
	A-4142	Pointer-Dial
R2		Resistor- 22,000 ohms, 1/4 watt
R3		Resistor- 4.7 meg ohms, 1/4 watt
R5		Resistor- 330,000 ohms, 1/4 watt
R6,R14,R25		Resistor- 470,000 ohms, 1/4 watt
R7		Resistor- 150 ohms, 1/4 watt
R8		Resistor- 18 ohms, 2 watt
R9		Resistor- 47,000 ohms, 1/4 watt
R10		Resistor- 330 ohms, 1/4 watt
R11		Resistor- 22,000 ohms, 1/4 watt
R12		Resistor- 240,000 ohms, 1/4 watt
R13		Resistor- 2200 ohms, 1/4 watt
R15		Resistor- 62,000 ohms, 1/4 watt
R16		Resistor- 4700 ohms, 1/4 watt
R18		Resistor- 220,000 ohms, 1/4 watt
R19,R20		Resistor- 270,000 ohms, 1/4 watt
R21		Resistor- 2.2 meg ohms, 1/4 watt
R23	A-2176	Resistor- Fil. Dropping 135-180 ohms
R24		Resistor- 1 meg ohms, 1/4 watt
R26		Resistor- 3.2 ohms, 1/2 watt
R27		Resistor- 110 ohms, 2 watt
	A-40116	Scale Dial
	A-4677	Shaft, Dial Drive
	A-18133	Socket Ass'y. Neon Bulb
	A-18123	Socket, Dial Light
	A-18134	Socket, Female for Recorder Head
	A-18101	Socket, Microphone
	A-18126	Socket, Phono
	A-5586	Socket, Recorder Motor AC
	A-5874	Speaker - 6" (PM) used on 466 only
	A-5075	Speaker - 8" (PM) used on 466-1 only
	A-53335	Spring Dial Cord
	A-3786	Switch, wafer 6 position
	A-3360	Transformer - 1st I.F.
	A-3530	Transformer - 2nd I.F.
	A-28178	Transformer - Bias Oscillator
	A-1336	Transformer - Output
	A-6610	Microphone

SEARS, ROEBUCK & CO.

MODEL 7226
CHASSIS 101.819A



SCHEMATIC DIAGRAM FOR 101.819A

MODEL 7226
CHASSIS 101.819A

SEARS, ROEBUCK & CO.

PRELIMINARY:

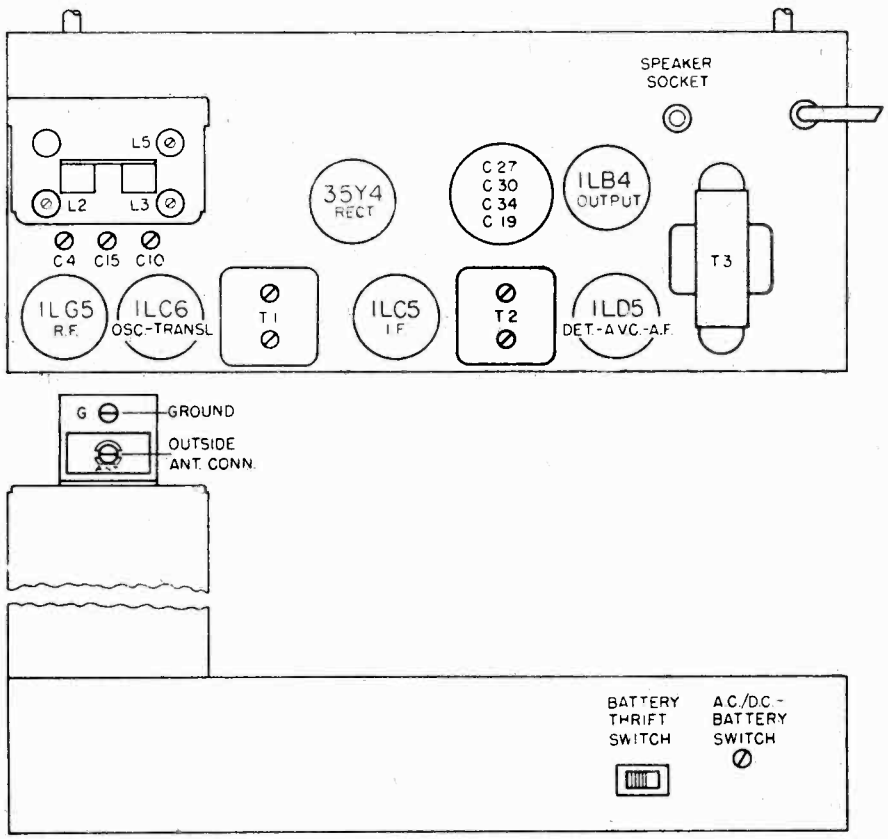
Output meter connections.....Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts (Standard output).....0.4 Volt
Generator ground lead connection.....Receiver chassis
Dummy antenna value to be in series with generator output.....See chart below
Connection of generator output lead.....See chart below
Generator modulation.....30%, 400 cycles
Position of Volume Control.....Fully on
Position of Tone Control..... HI
Position of pointer with tuner fully closed....To the left of 540 Kc calibration mark

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	.1 mfd.	1LC6 Transl. Grid	T2,T1	I.F.
1725	1725 Kc.	.000075 mfd.	Ant. Terminal	C15	Oscillator
1725	1725 Kc	.000075 mfd.	Ant. Terminal	C4,C10	Ant., Transl.
1500	1500 Kc	.000075 mfd.	Ant. Terminal	L5	Oscillator Core
1500	1500 Kc	.000075 mfd.	Ant. Terminal	L2,L3	Ant., Transl. Cores
1725	1725 Kc	.000075 mfd.	Ant. Terminal	C4,C10,C15	Oscillator, Ant., & Transl. Recheck

The alignment must be done in the order given.

The Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

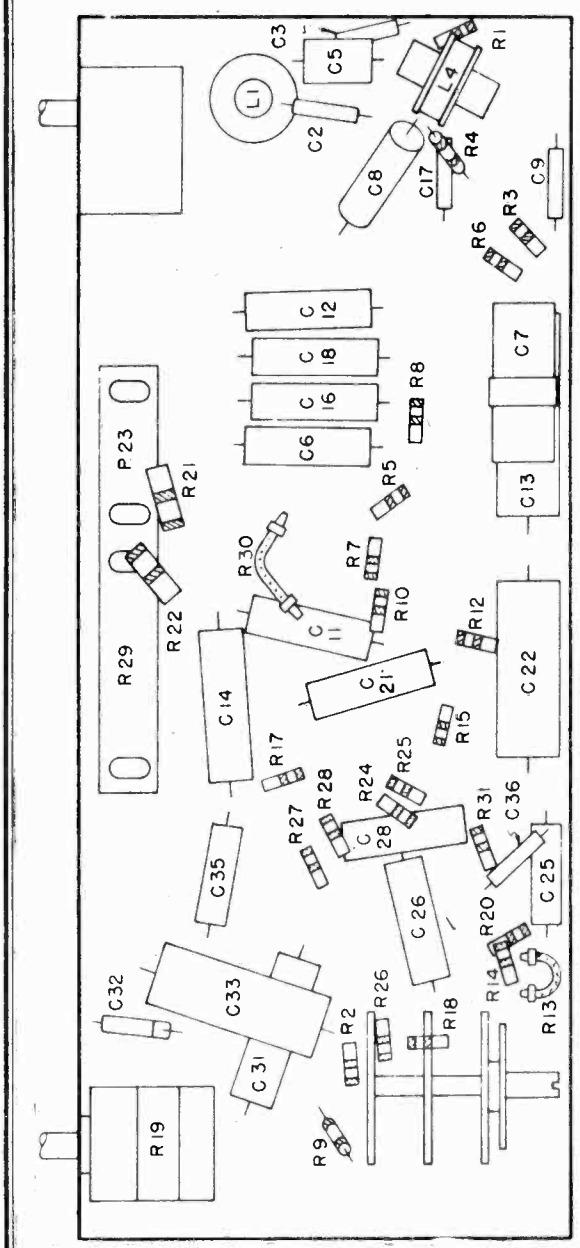
Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.



LOCATION OF PARTS ON TOP AND BACK OF CHASSIS

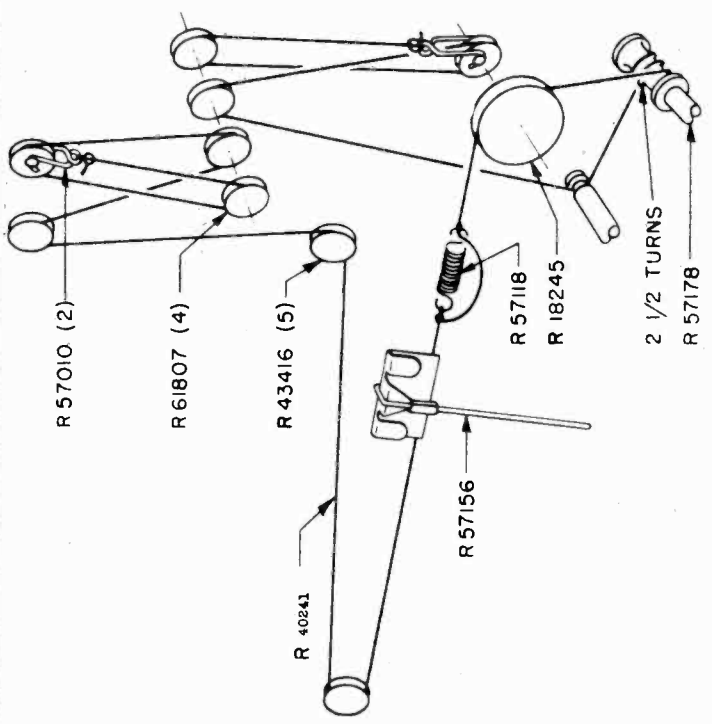
SEARS, ROEBUCK & CO.

MODEL 7226
CHASSIS 101.819A



SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R57145	Antenna Package
	R57174	Bushing - Drive Shaft
	R13961	Button Snap - Dial Lite
C13		Capacitor - .1 Mfd. 200 V.
C33		Capacitor - .22 Mfd. 200 V.
C10,C11,C12, C16,C18,C21, C29		Capacitor - .01 Mfd. 200 V.
C4		Capacitor - .03 Mfd. 600 V.
C31		Capacitor - .05 Mfd. 400 V.
C23,C35		Capacitor - .001 Mfd. 600 V.
C8,C28		Capacitor - .006 Mfd. 400 V.
C36		Capacitor - Mica - 15 Mmfd.
C17		Capacitor - Mica - 80 Mmfd.
C3,C9		Capacitor - Mica - 100 Mmfd.
C2		Capacitor - Mica - 150 Mmfd.
C12		Capacitor - Mica - 250 Mmfd.
C19,C27,C30	R46798	Capacitor - Electr. - 20-200-200 Mfd. 300 V.
	R80803	Capacitor - Electr. - 30 Mfd. 150 V., 40 Mfd. 28 V., 100 Mfd. 25 V., 80 Mfd. 150 V.
C22	R61840	Capacitor - Dry Electr. - 12 Mfd. 150 V.
C7	R62274	Capacitor - Dry Electr. - 100 Mfd. 12 V.
C4,C10,C15	R45235	Coil - Choke - Antenna
L1,L4	R57011	Control On-Off - Volume & Tone
R19	R40241	Control Tuning Drive
	R17166	Cord - Line
	R61816	Cover - Dial
	R45067	Cover - Perm. Coil Unit
	R61801	Dial - Station
	R57150	Knob - On-Off & Volume
	R57151	Knob - Tuning
	R57153	Knob - Tone Control
	R61866	Leaflet - Instruction
	R40417	Plug - Battery - 4 Prong
	R61818	Pointer - Dial
	R18243	Pulley - Tuning
	R43418	Pulley - Band
	R57017	Pulley - Drive Shaft
	R61807	Pulley - Metal

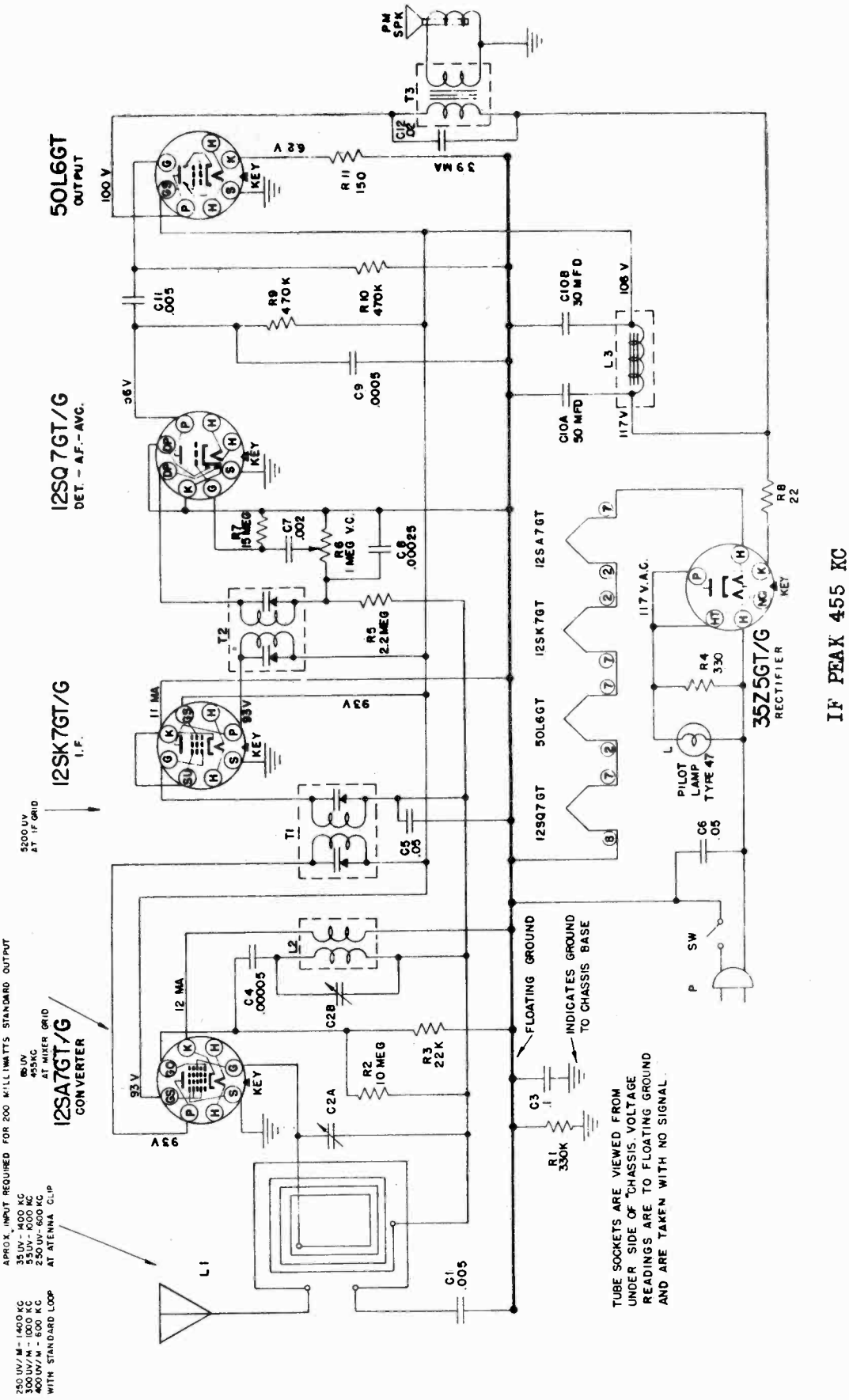
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R2		Resistor - 68 Ohm - 1/3 Watt
R3		Resistor - 470 Ohm - 1/3 Watt
R9,R17		Resistor - 680 Ohm - 1/3 Watt
R28		Resistor - 820 Ohm - 1/3 Watt
R16		Resistor - 1500 Ohm - 1/3 Watt
R14		Resistor - 10,000 Ohm - 1/3 Watt
R26		Resistor - 33,000 Ohm - 1/3 Watt
R31		Resistor - 47,000 Ohm - 1/3 Watt
R4,R15		Resistor - 68,000 Ohm - 1/3 Watt
R18		Resistor - 100,000 Ohm - 1/3 Watt
R6		Resistor - 180,000 Ohm - 1/3 Watt
R25		Resistor - 1 Megohm - 1/3 Watt
P7,R27		Resistor - 2.2 Megohm - 1/3 Watt
R5,R5		Resistor - 3.3 Megohm - 1/3 Watt
R10,R12		Resistor - 3.9 Megohm - 1/3 Watt
R24		Resistor - 6.8 Megohm - 1/3 Watt
R20		Resistor - 15 Megohm - 1/3 watt
R21,R22		Resistor - Wire Wound - 1 Watt
R13	R43234	Resistor - Fixed - 72 Ohm - 1/2 Watt
R30	R81219	Resistor - Wire Wound 2 Section Candohm 100 Ohm - 2 Watt
R3,R29	R61838	Resistor - Wire Wound 2 Section Candohm 473 Ohm - 1000 Ohm
	R57178	Shaft - Drive Assembly - Dial
	R44887	Socket - 1 Prong - Speaker Connector
	R57049	Socket - Tube - 8 Prong Lock-In SEE UNDER RADIO SPEAKER PARTS ALSAYS GIVE THE NUMBER OF THE SPEAKER
	R57041	Speaker - 3½" P.M.
	R57118	Spring - Retension - Dial
	R57038	Switch - Thrift
	R61828	Switch - A.C. - Battery Changeover
	R57120	Transformer - I. F. #1
	R62813	Transformer - I. F. #2
	R61814	Tuner Permeability Unit
	R61824	Coil - Antenna
	R61826	Coil - Oscillator
	R61819	Coil - R.F.
	R61830	Core Slug Bracket Assembly
	R45140	Washer - "C"



STRING AND POINTER HOOKUP

MODEL 8005
Chassis 132.839

SEARS, ROEBUCK AND CO.



ALIGNMENT PROCEDURE

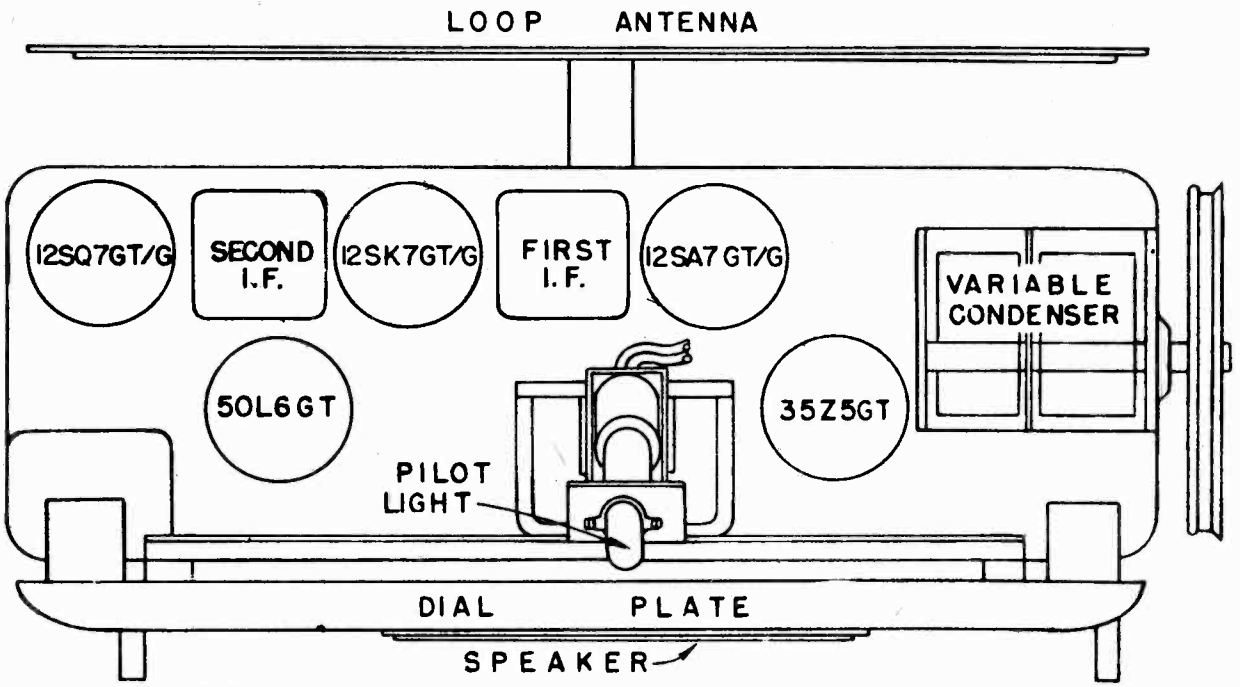
PRELIMINARY:

Output meter connection ..... Across Speaker Voice Coil
Output meter reading to indicate 200 MW (Standard output) ..... .8 Volt
Generator modulation ..... 30% 400 Cycles
Position of volume control ..... Fully clockwise
Dial pointer position with variable condenser closed..... Last mark on dial

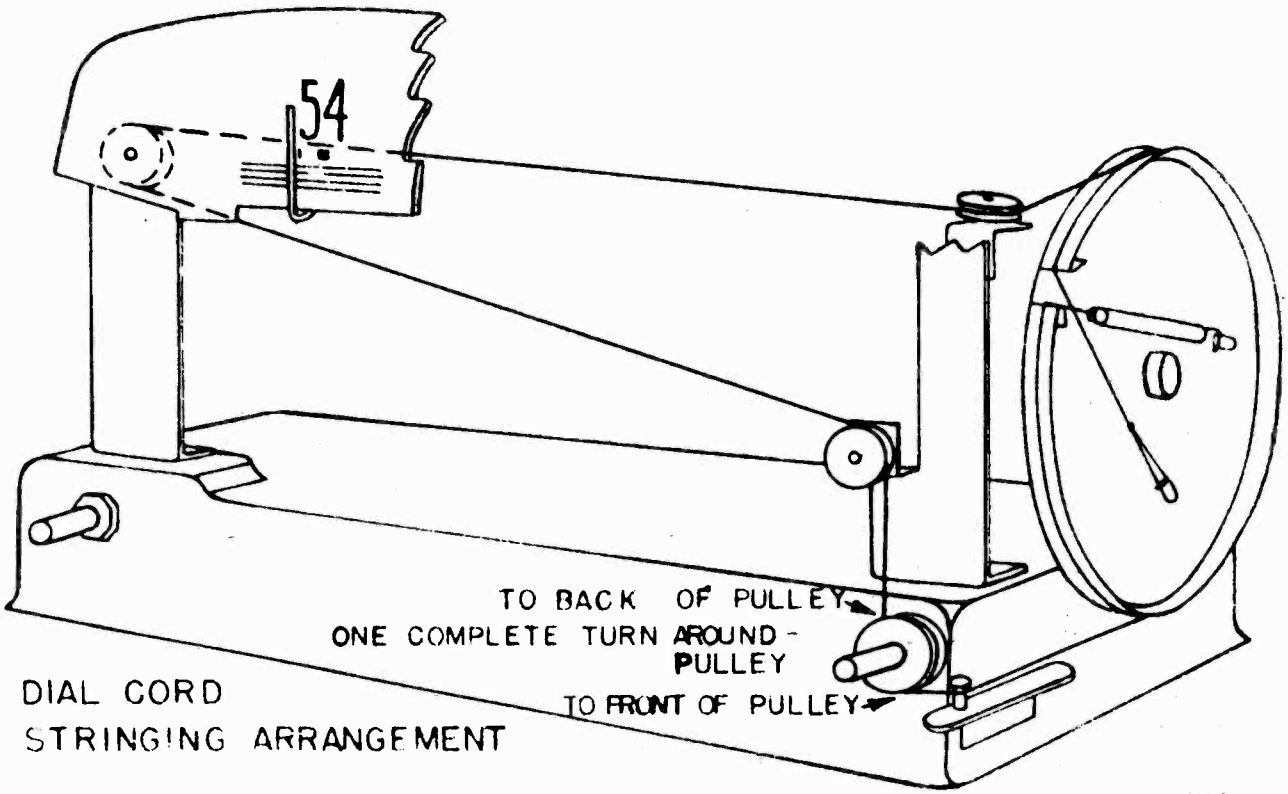
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION HIGH SIDE	GENERATOR CONNECTION GND. LEAD	ADJUST TRIMMERS ORDER SHOWN	TRIMMER FUNCTION
Open	455 KC	.05 Mfd.	Mixer Grid	Fltg. Gnd.	T2-T1	IF
1400 KC	1400 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	C2B	Oscillator
1400 KC	1400 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	C2A	Antenna
600 KC	600 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	**Check Point	Antenna

IMPORTANT ALIGNMENT NOTES

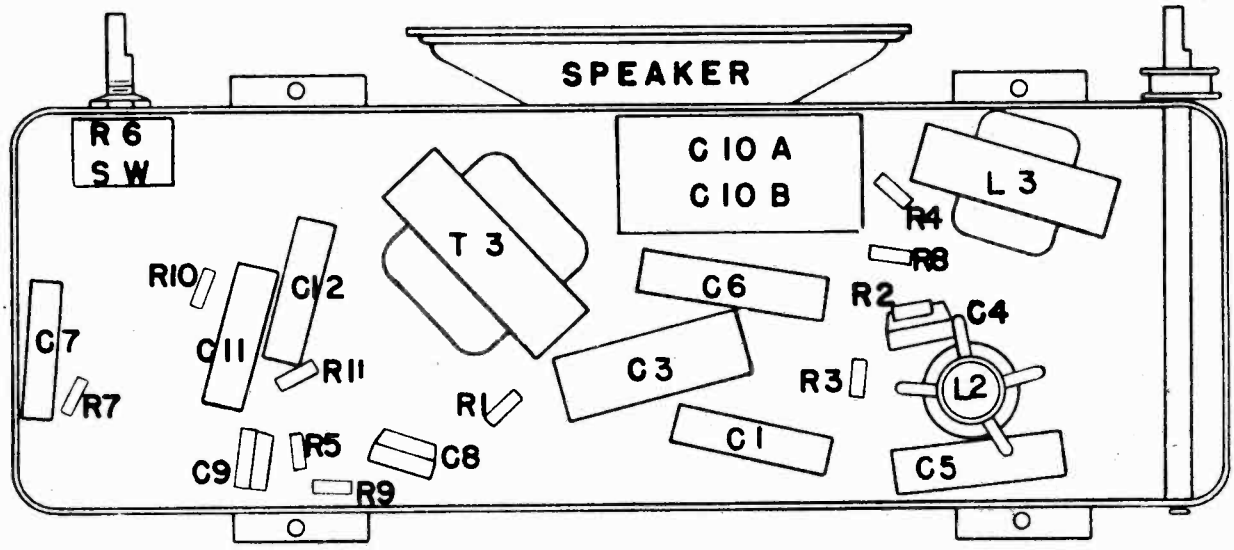
* Connect generator lead to green wire on loop antenna or a test loop may be used on the generator placed a short distance from the set loop.
**Check sensitivity at 600 KC. If low, adjust antenna section plates of variable for maximum output at 600 KC.
The alignment procedure should be repeated in the original order for greatest accuracy Always keep the output from the signal generator at its lowest possible value to make the A. V. C. action of the receiver ineffective.



TUBE LAYOUT OUTLINE



DIAL CORD
STRINGING ARRANGEMENT

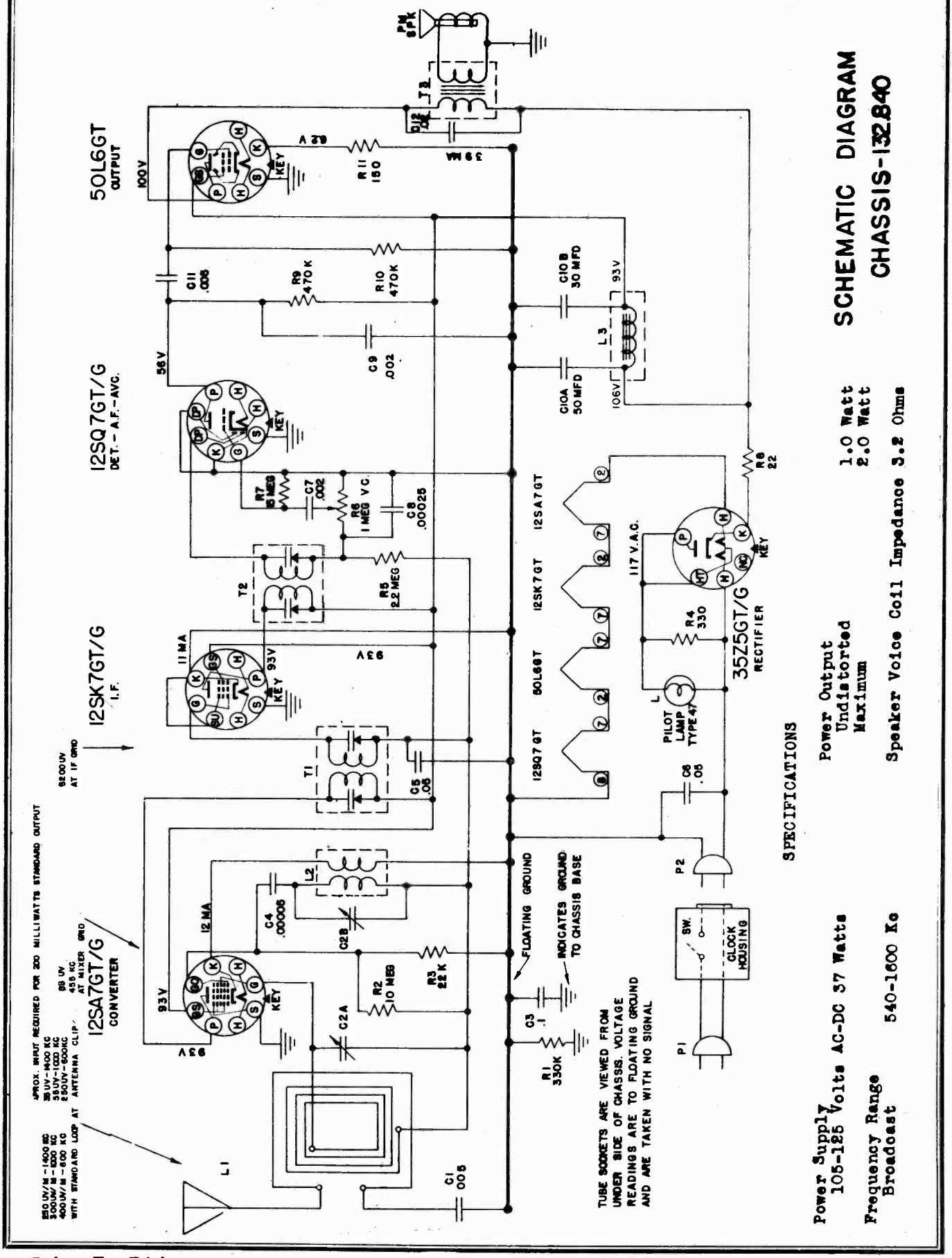


LOCATION OF PARTS UNDER CHASSIS

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
R1		Resistor, 330,000 Ohms, 1/4 W	
R2		Resistor, 10 Meg., 1/4 W	
R3		Resistor, 22,000 Ohm, 1/4 W	
R4		Resistor, 330 Ohm, 1/4 W	
R5		Resistor, 2.2 Megohm, 1/4 W	
R6	N21251	Control, On-Off Sw & Volume, 1 Megohm	
R7		Resistor, 15 Megohm, 1/4 W	
R8		Resistor, 22 Ohm, 1/4 W	
R9, R10		Resistor, 470,000 Ohm, 1/4 W	
R11		Resistor, 150 Ohm, 1/4 W	
C1, C11		Condenser, .005 Mfd., 400 V	
C2A, C2B		Condenser, Variable	AA0
C3		Condenser, .1 Mfd., 400 V	
C4		Condenser, .00005 Mfd., 500V Mica	
C5		Condenser, .05 Mfd., 400 V	
C6		Condenser, .05 Mfd., 200 V	
C7		Condenser, .002 Mfd., 400 V	
C8		Condenser, .00025 Mfd., 500 V Mica	
C9		Condenser, .0005 Mfd., 500 V Mica	
C10A,10B		Electrolytic, 50-30 Mfd., 150 V	
C12		Condenser, .02 Mfd., 400V	
L1	N21245	Antenna Loop Assembly	
L2	N19354	Coil, Oscillator	
L3	N21246	Choke, Filter	
Spk	N21248	Speaker, 4" P. M.	A5
T1	N21424	Transformer, 1st I. F.	
T2	N21425	Transformer, 2nd I. F.	
T3	N21247	Transformer, Output	
	N21227	Cabinet, Less Metal Grille & Dial Cover	A5
	N19794	Cover, Dial, Clear Plastic	
	N19793	Grille, Metal Cabinet Front	
	N19132	Cord, Dial Drive	
	N21204	Knob, On-Off, Volume or Tuning	
	N21231	Leaflet, Instruction	
	N20138	Line Cord with Plug	
	N21145	Dial Pointer	
	N21200	Scale, Dial with Pointer Rail	
	N21243	Shaft, Tuning	
	N21226	Socket, Dial Light with Leads	
		Lamp, Dial, Mazda No. 47	

MODEL 8010,
CHASSIS 132.840

SEARS, ROEBUCK & CO.



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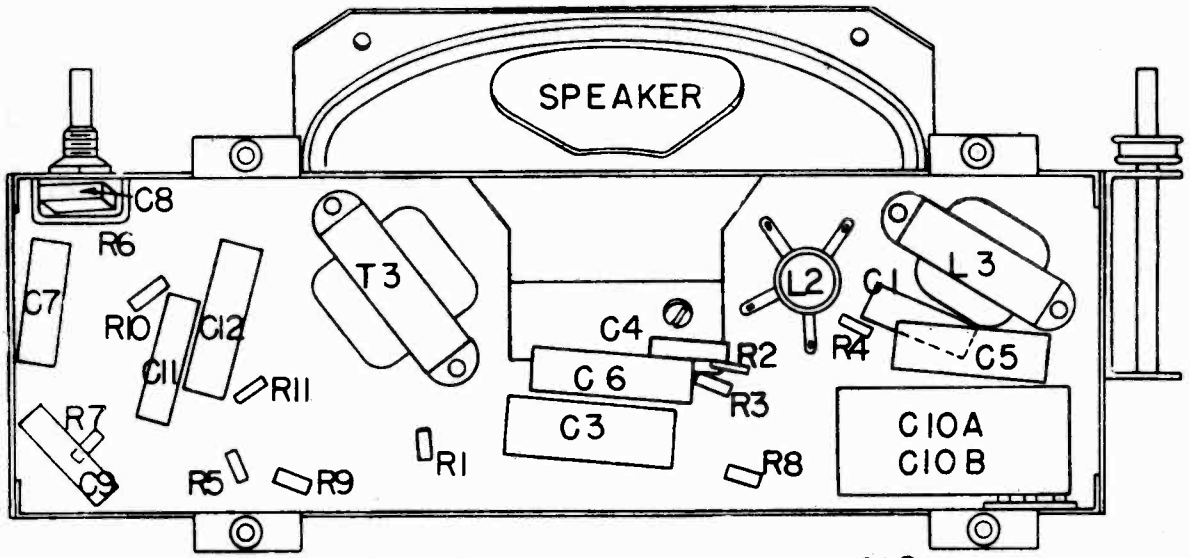
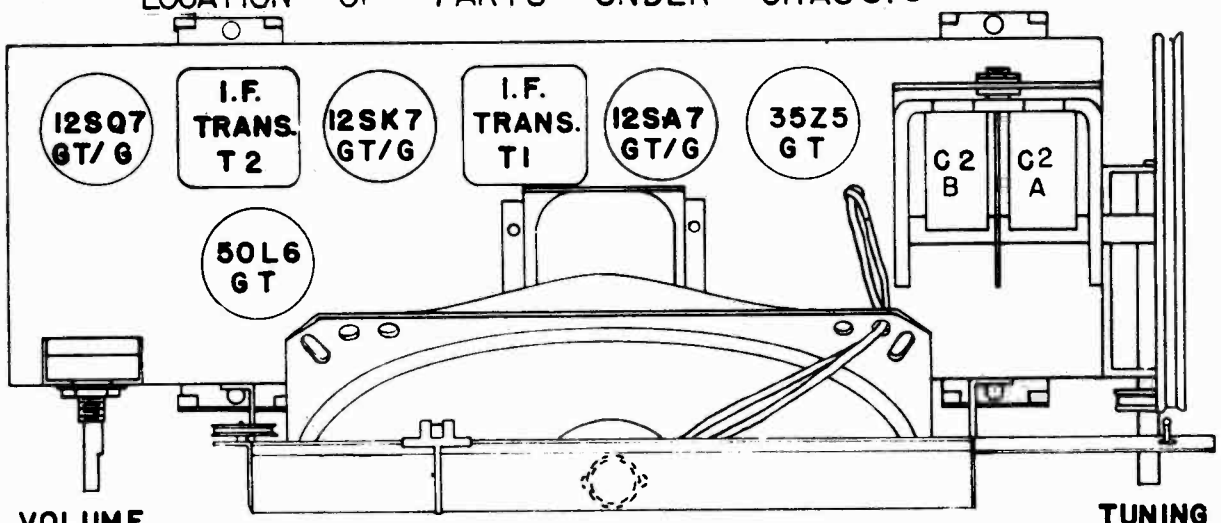
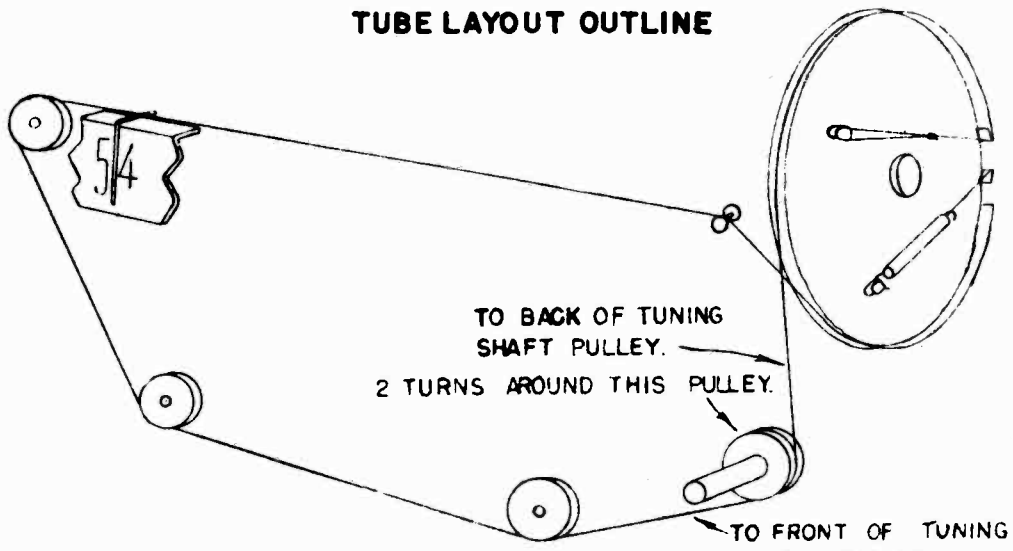
MODEL 8010,
CHASSIS 132.840



LOCATION OF PARTS UNDER CHASSIS



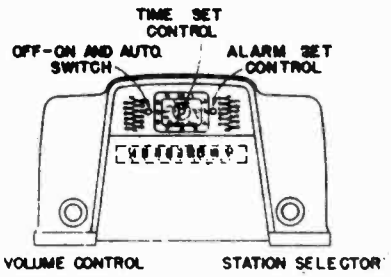
TUBE LAYOUT OUTLINE



DIAL STRINGING ARRANGMENT

MODEL 8010,
CHASSIS 132.840

SEARS, ROEBUCK & CO.



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection ..... Across Speaker Voice Coil
Output meter reading to indicate 200 MW (Standard output) ..... .8 Volt
Generator modulation ..... 30 % 400 Cycles
Position of volume control ..... Fully Clockwise
Dial pointer position with variable condenser closed ..... Last Mark on Dial

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION (HIGH SIDE)	GENERATOR CONNECTION GND. LEAD	ADJUST TRIMMERS ORDER SHOWN	TRIMMER FUNCTION
Open	455 KC	.05 Mfd.	Mixer Grid	Fltg. Gnd.	T2-T1	IF
1400 KC	1400 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	C2B	Oscillator
1400 KC	1400 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	C2A	Antenna
600 KC	600 KC	50 Mmf.	*Ant. Lead	Fltg. Gnd.	**Check Point	Antenna

IMPORTANT ALIGNMENT NOTES

* Connect generator lead to green wire on loop antenna or a test loop may be used on the generator placed a short distance from the set loop.
**Check sensitivity at 600 KC. If low, adjust antenna section plates of variable for maximum output at 600 KC.
The alignment procedure should be repeated in the original order for greatest accuracy. Always keep the output from the signal generator at its lowest possible value to make the A. V. C. action of the receiver ineffective.

PARTS LIST

Schematic Location	Part No.	Description	M.U. Code	Schematic Location	Part No.	Description
L1	M21297	Antenna Loop Assembly			M19132	Cord, Dial Drive
	M21092	Cabinet, Less Front Trim Assy.	AO		M21274	Insulator, Chassis
	M21262	Trim Assembly, Cabinet Front	AO		M21204-2	Knob, Control, Volume or Tuning
	M21246	Choke Filter.				Lamp, Dial, Mazda No. 47
*See note below	M21265	Clock, less knobs, cord & metal harg.	B5		M21276	Leaflet, Instruction
	M21693	Knob, Clock, Off-On-Auto			M21295	Pointer, Dial
	M21694	Knob, Clock, Alarm Set		R1		Resistor, 330,000 ohms, 1/4 W
	M21695	Knob, Clock Time Set		R2		Resistor, 10 megohms, 1/4 W
L2	M19354	Coil, Oscillator		R3		Resistor, 22,000 ohms, 1/4 W
C1, 11		Condenser, .005 mfd, 400V		R4		Resistor, 330 ohms, 1/4 W
C2A, 2B	M21305	Condenser, Variable	AAO	R5		Resistor, 2.2 megohm, 1/ W
C3		Condenser, .1 mfd, 400V		R7		Resistor, 15 megohm, 1/4 W
C4		Condenser, .00005 mfd, 500V, Mica		R8		Resistor, 22 ohms, 1/4 W
C5		Condenser, .05 mfd, 200V		R9, R10		Resistor, 470,000 ohms, 1/4 W
C6		Condenser, .05 mfd, 400V		R11		Resistor, 150 ohms, 1/4 W
C7		Condenser, .002 mfd, 400V			M21290	Scale, Dial
C8		Condenser, .00025 mfd, 500V, Mica			M21291	Shaft, Tuning with Pulley
C9		Condenser, .0005 mfd, 500V, Mica			M19234	Socket, Antenna Loop
C10A, 10B	M21253	Condenser, Electrolytic, 50-30 mfd, 150V			M21296	Socket, Dial Light, with Leads
					M21302	Speaker, 4" x 6" P. M.
C12		Condenser, .02 mfd, 400V			M20149	Spring, Dial Cord
R6	M21304	Control, Volume, 1 megohm			M21424	Transformer, 1st I. F.
	M21303	Cord, Power, Chassis to Clock (11")			M21425	Transformer, 2nd I. F.
	M20138-11	Cord, Power, Clock (6')			M21247	Transformer, Output

* Repair parts for this clock are not available.

MODEL 8020
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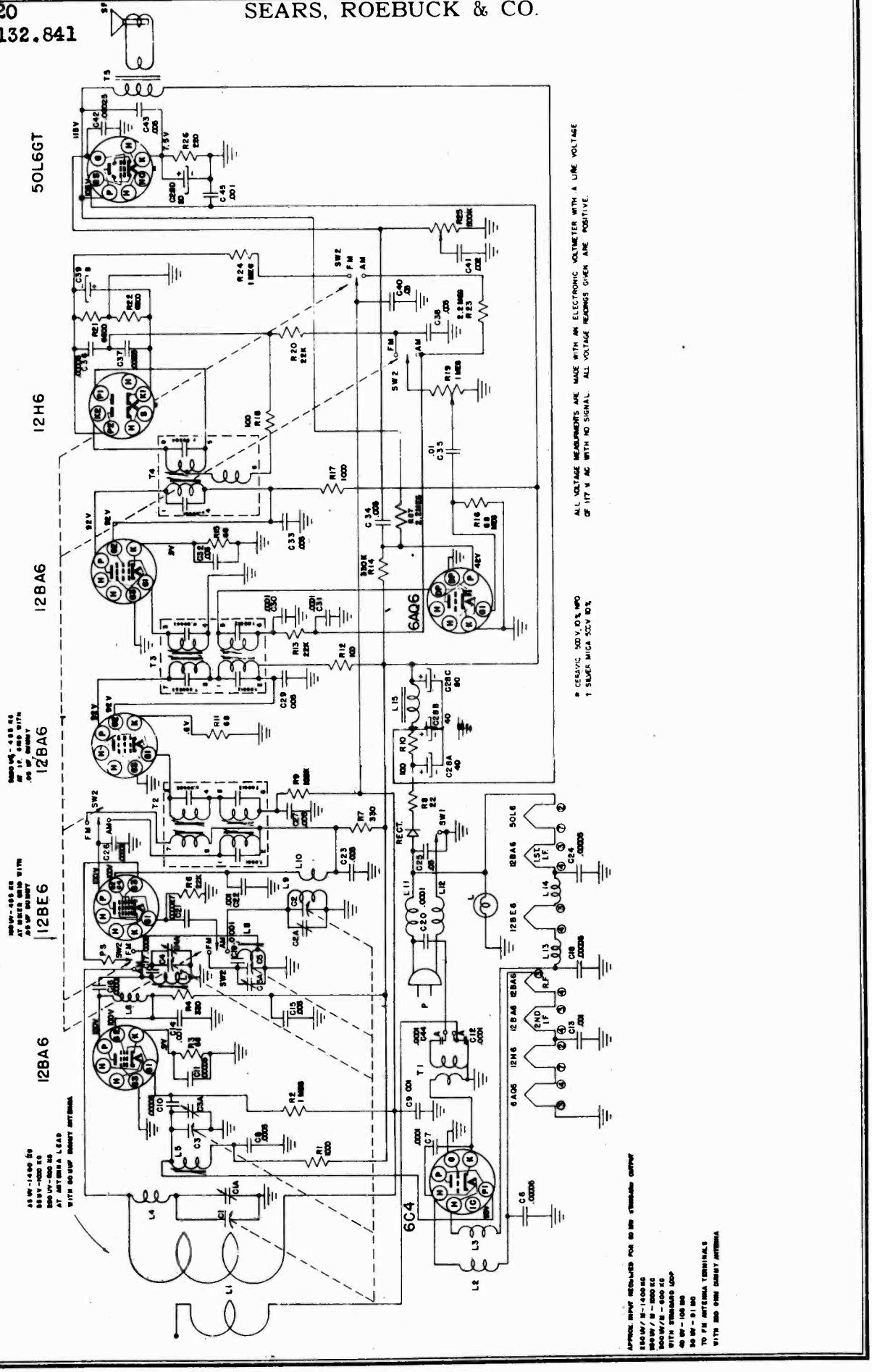
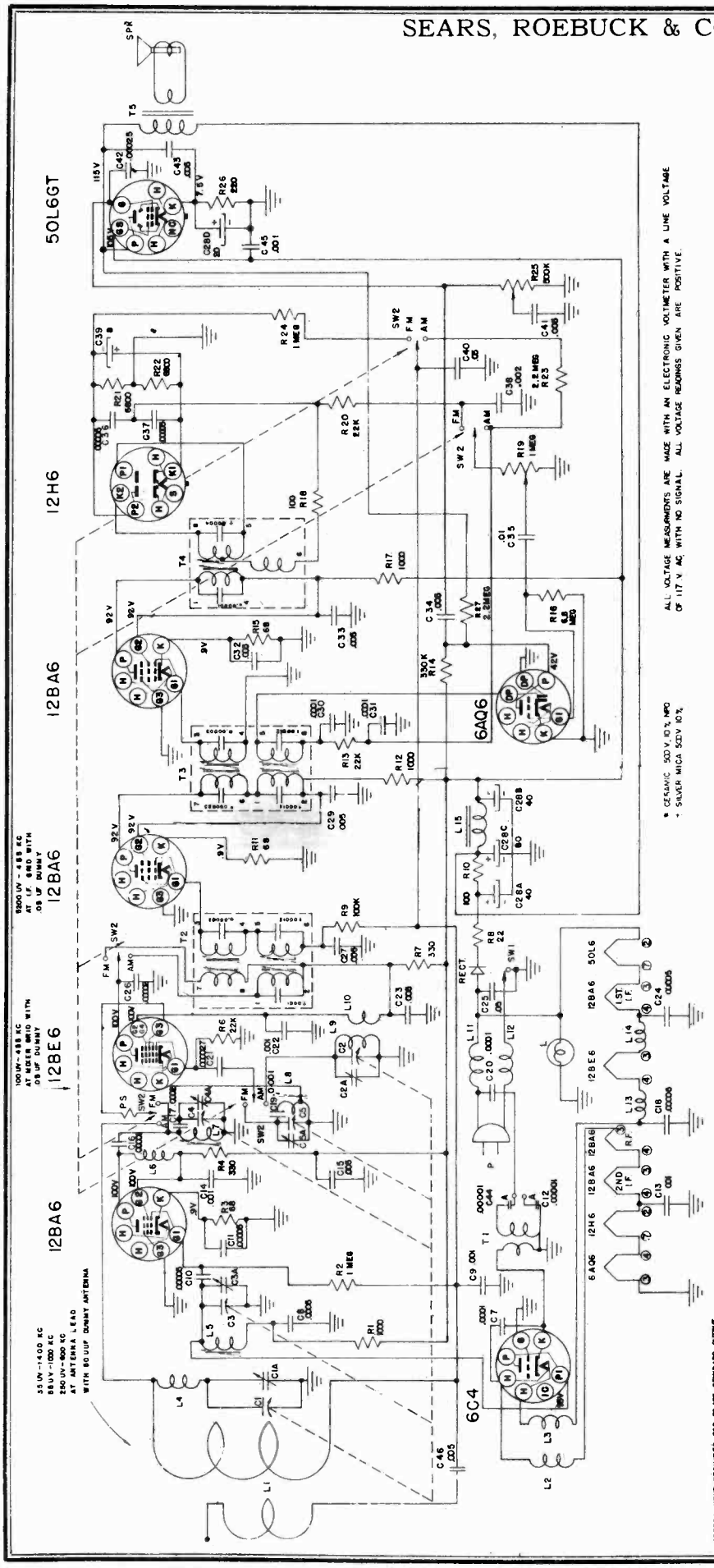
SEARS, ROEBUCK & CO.



SEARS, ROEBUCK & CO.

MODEL 8020 REVISED
CHASSIS 132.841



SPECIFICATIONS

Power Supply
105-125 Volts AC-DC 45 Watts

Frequency Range
Broadcast ..... 540-1600 Kc
FM ..... 88- 108 Mc

Power Output
Undistorted ..... 1.0 Watt
Maximum ..... 2.0 Watt

Speaker Voice Coil Impedance ... 3.2 Ohms

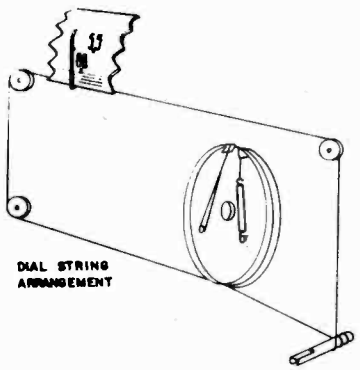
MODEL 8020 SEARS, ROEBUCK & CO.

CHASSIS 132.841

CIRCUIT CHANGES

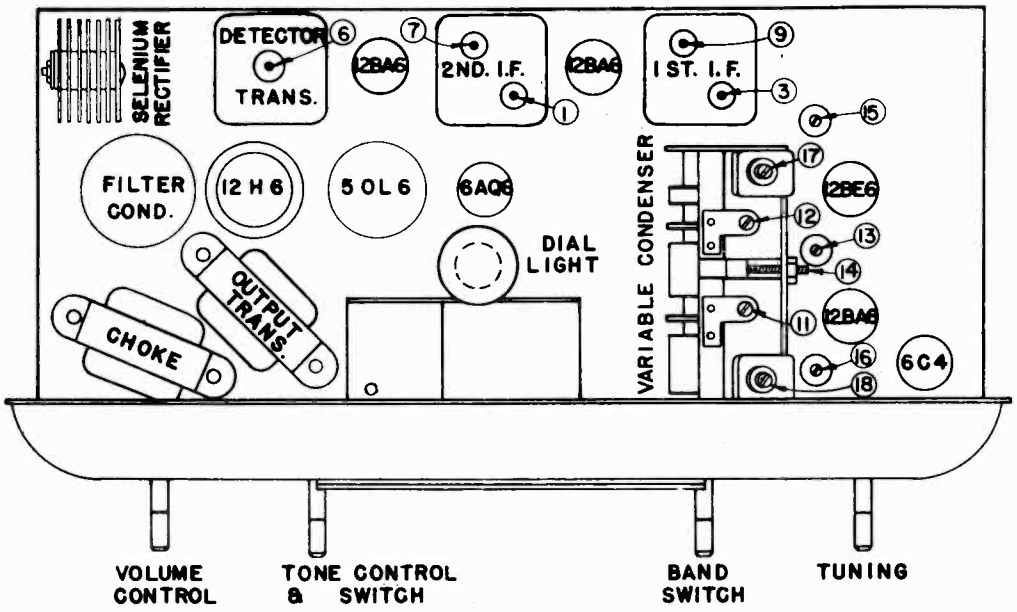
Before start of Production on this model, certain circuit improvements were made, which do not appear on the printed stickers and instruction sheets which accompany each receiver. These differences are as follows:

1. A pickup coil was added to the AM loop antenna.
2. C44 added to FM antenna circuit and C12 relocated in FM antenna circuit.
3. R27 added from plate of 50L6 to plate of 6AQ6.
4. C34 -- .005 Mfd. was .05 Mfd.
5. C38 -- .005 Mfd. was .002 Mfd.
6. C47 -- .002 Mfd. was .005 Mfd.
7. L4 -- is relocated on the Schematic Diagram.
8. R5 -- deleted from FM antenna circuit.

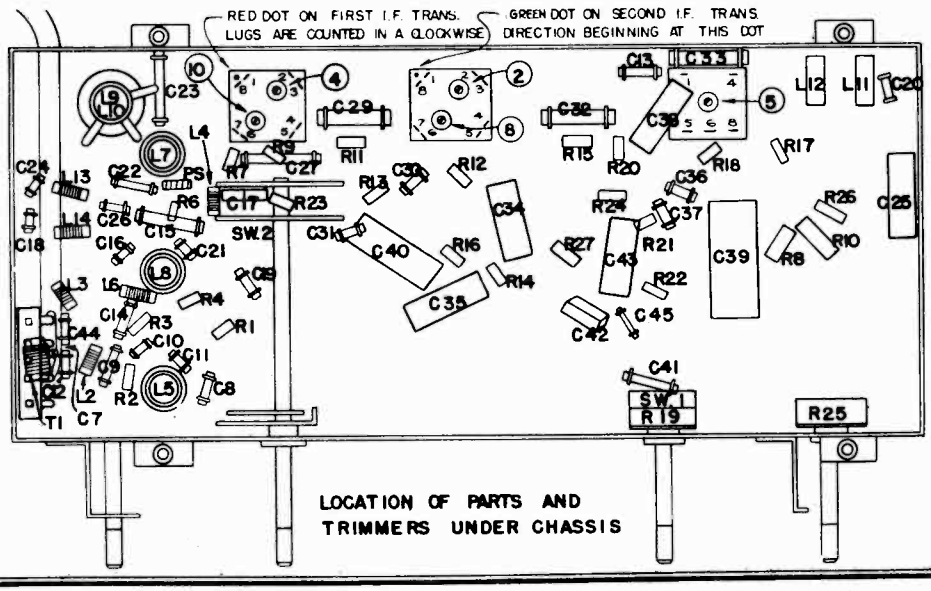


The following changes were made after some sets had been produced, to improve the sensitivity and tone.

1. C45 Condenser added from 50L6 screen grid to chassis .001 uf.
2. C12 Condenser changed from .001 uf. to .00001 uf.
3. C44 Condenser changed from .001 uf. to .00001 uf.
4. C34 Condenser changed from 400 Volt to 600 Volt.



LOCATION OF TUBES AND TRIMMERS ON TOP OF CHASSIS



LOCATION OF PARTS AND TRIMMERS UNDER CHASSIS

SEARS, ROEBUCK & CO. MODEL 8020
CHASSIS 132.841

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection ..... Across speaker voice coil
Output meter reading to indicate 50 MW (Standard Output) ..... .4 volt
Generator modulation ..... 30 % 400 cycles
Position of volume control ..... Fully clockwise
Set dial pointer ..... To last mark on left end of dial with variable condenser closed
Set band switch ..... To left for AM alignment and to right for FM alignment

AM ALIGNMENT

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION HIGH SIDE	GENERATOR CONNECTION GROUND LEAD	ADJUST TRIMMERS IN ORDER SHOWN FOR MAX. OUTPUT	TRIMMER FUNCTION
Open	455 Kc	.05 Mfd.	Mixer grid	Chassis	1-2-3-4	IF
1400 Kc	1400 Kc		*Test loop	Test loop	11	Oscillator
1400 Kc	1400 Kc		*Test loop	Test loop	12	Antenna
**600 Kc	600 Kc		*Test loop	Test loop	Check point	Antenna

*Connect generator lead to a Standard Hazeltine Test Loop, Model 1150, placed two feet from the set loop, or three turns of wire about six inches in diameter, placed about one foot from the set loop. Or the generator can be connected with the high side lead to the green lead on the set loop and the ground lead to the chassis.

**With a generator signal of 600 Kc, tune the set to the point where maximum output is obtained, which should be approximately 600 Kc on the dial. Adjust antenna section plates of variable for maximum output.

The alignment procedure should be repeated in the original order for greatest accuracy.

Always keep the output from the signal generator at its lowest possible value to make the A.V.C. action of the receiver ineffective.

FM ALIGNMENT

Discriminator

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION HIGH SIDE	GENERATOR CONNECTION GROUND LEAD	ADJUST TRIMMERS IN ORDER SHOWN	TRIMMER FUNCTION
Open	10.7 Mc	.05 Mfd.	2d IF grid	Chassis	*5, 6	Discriminator

*5 is adjusted for maximum A.V.C. voltage.
*6 is adjusted for zero reading of a vacuum tube voltmeter connected across the volume control. Rock tnis adjustment through the zero point to see that the voltage is positive on one side of the zero point and negative on the other.

IF

Open	10.7 Mc	.05 Mfd.	Mixer grid	Chassis	7, 8, 9, 10	IF

Adjust trimmers for maximum A. V. C. voltage.

Repeat "Discriminator" and "IF Alignment" with generator connected to mixer grid, being careful not to shift the generator frequency during this operation.

NOTE: If a 10.7 Mc FM generator is not available for alignment of discriminator and IF, an unmodulated signal of 10.7 Mc from an accurately calibrated conventional AM type generator can be used.

RF

108 Mc	108 Mc	200 Ohm Resistor	Ant. Terminal on Rear Cover	Ant. Terminal on Rear Cover	14	Oscillator
88 Mc	88 Mc	200 Ohm Resistor	Ant, Terminal on Rear Cover	Ant. Terminal on Rear Cover	13	Oscillator

Repeat the above oscillator adjustments until proper coverage is obtained.

105 Mc	105 Mc	200 Ohm Resistor	Ant. Terminal on Rear Cover	Ant. Terminal on Rear Cover	17, 18	Mixer & Antenna
91 Mc	91 Mc	200 Ohm Resistor	Ant. Terminal on Rear Cover	Ant. Terminal on Rear Cover	15, 16	Mixer & Antenna

All RF trimmers are adjusted for maximum output.

Repeat "Mixer & Antenna" adjustments until proper tracking is obtained.

MODEL 8020
CHASSIS 132.841

SEARS, ROEBUCK & CO.

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MFR. CODE
	#21525	Cabinet (Less metal grille & dial cover)	85
L18	#21394-2	Choke, B+ Filter	
L2,L3,L4	#21465-1	Choke, R. F.	
L6,L13,L14			
L11, L12	#21466-1	Choke, R. F.	
L5	#21390-1	Coil, F. M., First R. F.	
L7	#21400-1	Coil, F. M., Second R. F.	
L9,L10	#21396-1	Coil, A. M. Oscillator	
L8	#21397-1	Coil, F. M. Oscillator	
C1,C2,C3	#21401-2	Condenser, Variable	85
C4,C5			
C6		Condenser, .00005 Mfd., 500 Volts	
C7		Condenser, .0001 Mfd., 500 Volts	
C8		Condenser, .0005 Mfd., 350 Volts	
C9		Condenser, .01 Mfd., 350 Volts	
C10		Condenser, .00005 Mfd., 350 Volts	
C11		Condenser, .00005 Mfd., 500 Volts	
C12, C44		Condenser, .00001 Mfd., 350 Volts	
C13		Condenser, .001 Mfd., 350 Volts	
C14		Condenser, .001 Mfd., 350 Volts	
C15		Condenser, .005 Mfd., 350 Volts	
C16		Condenser, .00001 Mfd., 500 Volts	
C17		Condenser, .0002 Mfd., 500 Volts	
C18		Condenser, .00005 Mfd., 500 Volts	
C19		Condenser, .0001 Mfd., 500 Volts	
C20		Condenser, .001 Mfd., 500 Volts	
C21		Condenser, .000027 Mfd., 500 Volts	
C22		Condenser, .001 Mfd., 350 Volts	
C23		Condenser, .005 Mfd., 350 Volts	
C24		Condenser, .00005 Mfd., 500 Volts	
C25		Condenser, .05 Mfd., 400 Volts	
C26		Condenser, .00002 Mfd., 500 Volts	
C27		Condenser, .005 Mfd., 350 Volts	
C28A,C28B, C28C, C28D	#21402	Condenser, Electrolytic 40-40-80 Mfd., 150 Volt, 20 Mfd., 25 Volts	
C29		Condenser, .005 Mfd., 350 Volts	
C30		Condenser, .0001 Mfd., 500 Volts	
C31		Condenser, .0001 Mfd., 500 Volts	
C32		Condenser, .005 Mfd., 350 Volts	
C33		Condenser, .005 Mfd., 350 Volts	
C34		Condenser, .005 Mfd., 600 Volts	
C35		Condenser, .01 Mfd., 400 Volts	
C36		Condenser, .00005 Mfd., 500 Volts	
C37		Condenser, .00005 Mfd., 500 Volts	
C38		Condenser, .005 Mfd., 350 Volts	
C39	#21403	Condenser, Electrolytic, 8 Mfd., 50 Volts	
C40		Condenser, .05 Mfd., 200 Volts	
C41		Condenser, .002 Mfd., 200 Volts	
C42		Condenser, .00025 Mfd., 500 Volts	
C43		Condenser, .005 Mfd., 600 Volts	
C45		Condenser, .001 Mfd., 350 Volts	
R19	#21661	Control, Volume, 1 Megohm	

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
S1-1, R25	#21663	Control, AC Switch & Tone, ½ Megohm
	#19132	Cord, Dial Drive
	#21505	Cover, Dial
	#21504	Grille, Metal
		Lamp, Dial, Mazda, No. C7
M	#21592	Leaflet, Instruction
L1	#21605-1	Loop Antenna Assembly, A. M.
	#20064-6	Power Cord and Plug
	#21604	Pointer, Dial
R1		Resistor, 1000 Ohms, 1/4 Watt
R2		Resistor, 1 Megohm, 1/4 Watt
R3		Resistor, 68 Ohms, 1/4 Watt
R4		Resistor, 330 Ohm, 1/4 Watt
R5		Resistor, 220 Ohm, 1/4 Watt
R6		Resistor, 22,000 Ohm, 1/4 Watt
R7		Resistor, 330 Ohm, 1/4 Watt
R8		Resistor, 22 Ohm, 1/4 Watt
R9		Resistor, 100,000 Ohm, 1/4 Watt
R10		Resistor, 100 Ohm, 1/4 Watt
R11		Resistor, 68 Ohms, 1/4 Watt
R12		Resistor, 1000 Ohm, 1/4 Watt
R13		Resistor, 22,000 Ohm, 1/4 Watt
R14		Resistor, 330,000 Ohm, 1/4 Watt
R15		Resistor, 68 Ohm, 1/4 Watt
R16		Resistor, 6.8 Megohm, 1/4 Watt
R17		Resistor, 1,000 Ohm, 1/4 Watt
R18		Resistor, 100 Ohm, 1/4 Watt
R20		Resistor, 22,000 Ohm, 1/4 Watt
R21		Resistor, 6800 Ohms, 1/4 Watt
R22		Resistor, 6800 Ohms, 1/4 Watt
R23		Resistor, 2.2 Megohm, 1/4 Watt
R24		Resistor, 1 Megohm, 1/4 Watt
R26		Resistor, 220 Ohm, 1/4 Watt
R27		Resistor, 2.2 Megohm, 1/4 Watt
#21601		Scale, Dial
#21603		Shaft, Tuning
#19134-4		Socket,Dial Light with Leads
#21709-1		Suppressor, Parasitic
S1-2	#21652	Switch, Wave
	#21658	Speaker, 5-1/4" P.M.
	#19295	Spring, Dial Cord
T2	#21390-2	Transformer, First I. F.
T3	#21391-2	Transformer, Second I. F.
T1	#21388-1	Transformer, Antenna Coupling
T4	#21392-2	Transformer, F. M. Detector
T5	#21393-2	Transformer, Output
	#20207-3	Rectifier, Selenium
	#21587	Knob, Tuning
	#21588	Knob, Volume
	#21589	Knob, Tone (Off-On)
	#21590	Knob, AM-FM

Subject: General Service Suggestions and Circuit Changes.

This supplement is issued for the purpose of distributing information which should be helpful in servicing this radio. The following points are covered.

1. REDUCTION OF HUM LEVEL:

On some earlier production sets, excessive hum may be reduced to an acceptable level by reversing the intermediate and output sections of the electrolytic condenser, part no. N21402. The intermediate section, indicated as C28C on the Schematic Diagram printed herewith, should be 80 Mfd., and the output section 40 Mfd. Should these be connected oppositely, reversing them as indicated in the diagram below, will result in a lower hum level.

2. MICROPHONISM:

Examination of the metal chassis will disclose that the R. F. unit (variable condenser, three miniature tubes and related parts underneath) is rubber mounted on a separate panel. Any direct contact between this panel and the main chassis base may result in a tendency toward microphonics, particularly at high volume level. Slightly loosening the three mounting screws which protrude through the rubber grommets, so as to free the "floating" action of the panel, will, in some cases, eliminate the microphonic tendency. It may be necessary also to pry up the front edge of the panel in order to clear contact with the head of the rivet in the front of the panel. On later production sets, the location of this rivet was changed, so as to avoid any contact with the main chassis base.

3. DISTORTION AT LOW VOLUME LEVEL:

A complaint of low volume distortion or "hum modulation" may be satisfied by the addition of a .001 mfd. condenser from the 50L6GT screen grid to chassis ground. This addition was incorporated in early production; however, some sets were shipped without it.

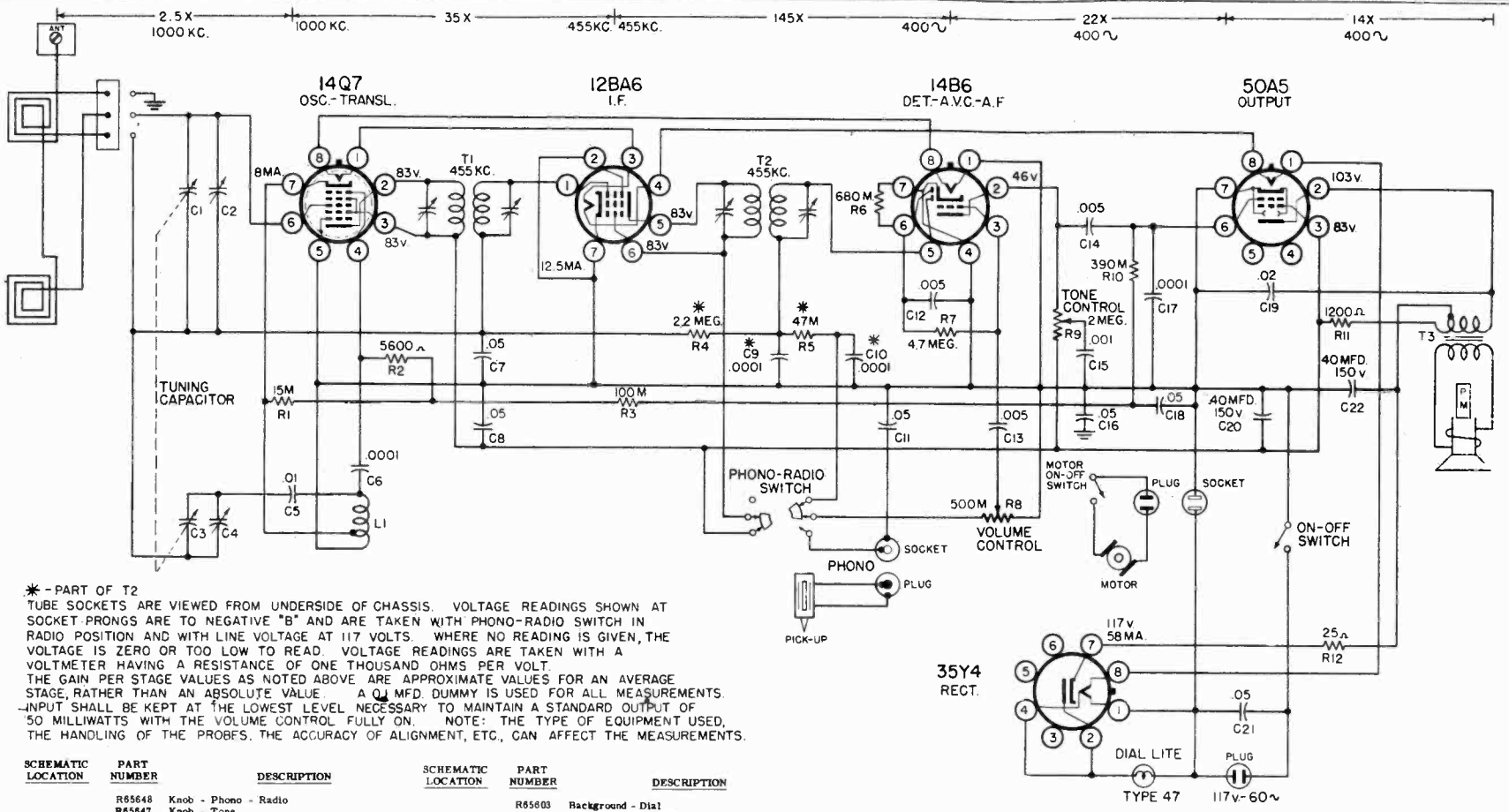
4. NEW CIRCUITS:

(4) additional circuit changes have been made in current production. These are indicated on the revised schematic diagram printed here, and are as follows:

1. Condenser C6 - .00005 mfd., deleted.
2. Condenser C46 - .005 mfd., added across antenna loop sections and connection to antenna screw terminals removed.
3. Condenser C41 - changed from .002 mfd. to .005 mfd.
4. Condenser C38 - changed from .005 mfd. to .002 mfd.

Any set not wired in accordance with the above #2 change should be changed over, only if it is to be used in conjunction with an external antenna. Otherwise, these changes are not necessary.

Changes #3 and #4 make the tone control more effective.



✱-PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH PHONO-RADIO SWITCH IN RADIO POSITION AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE STAGE, RATHER THAN AN ABSOLUTE VALUE. A 0.1 MFD. DUMMY IS USED FOR ALL MEASUREMENTS. INPUT SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC., CAN AFFECT THE MEASUREMENTS.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R65648	Knob - Phono - Radio
	R65647	Knob - Tone
	R65646	Knob - Tuning
		Lamp - Mazda - #47
	R65644	Loop & Board Assy.
	R65602	Pointer - Dial
R2	XY35621	Resistor - 5,600 ohm - 1/2 W.
R1	XY31531	Resistor - 15,000 ohm - 1/2 W.
R3	XY31041	Resistor - 100,000 ohm - 1/2 W.
R10	XY33941	Resistor - 390,000 ohm - 1/2 W.
R6	XY36842	Resistor - 680,000 ohm - 1/2 W.
R7	XY34752	Resistor - 4.7 megohm - 1/2 W.
R11	XY31221	Resistor - 1,200 ohm - 1 W.
R12	R40232	Resistor - 25 ohm - 1 W. - Glasohm
	R65611	Shaft - Tuning
	R44897	Socket - Phono Input
	R65626	Socket - Pilot Lamp
	R44145	Socket - AC to Changer
	R57049	Socket - Tube - 8 Prong - Lock-in
	R66237	Socket - Tube - Miniature
	R65634	Speaker - 5" x 7" P.M.
	R66443	Cone & Voice Coil
T3	R66444	Output Transformer
	R43458	Spring - Tension - Drive String Assy.
	R65623	Switch - Phono - Radio
T1	R65606	Transformer - #1 I.F.
T2	R65607	Transformer - #2 I.F.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R65603	Background - Dial
	R65618	Baffle - Grille Assy.
	R65538	Button - Snap
	R65637	Cabinet - Bottom Section
	R65638	Cover
	R66440	Bumper - Lid
	R65639	Hinge
	R65640	Support - Cover
C12,C13,C14		Capacitor - .005 Mfd. - 600 V.
C15		Capacitor - .001 Mfd. - 600 V.
C7,C8,C11, C16,C18,C21		Capacitor - .05 Mfd. - 600 V.
C19		Capacitor - .02 Mfd. - 600 V.
C5		Capacitor - .01 Mfd. - 600 V.
C6,C17		Capacitor - Ceramic - 100 Mmfd.
	R65609	Capacitor - Electrolytic 60 Mfd. - 150 V. 60 Mfd. - 150 V.
C20, C22	R66430	Capacitor - Variable - 2 Gang
C1,C3	R61629	Capacitor - Trimmer - Single
C2	R65608	Coil - Oscillator
L1	R65622	Control - On-Off & Volume
R8	R65621	Control - Tone
	R41472	Cord - Dial Drive - 47"
	R65624	Cord - Line
	R65604	Dial - Station - Lucite
	R65615	Drum & Bushing Assy.
	R65643	Foot - Mounting - Rubber
	R65820	Grille - Metal
	R65649	Knob - On-Off & Volume

Frequency Range

Broadcast . . . . . 540-1600 Kc.

Power Output

Undistorted . . . . . 1.5 Watts

Maximum . . . . . 2.5 Watts

MODEL 8080,
CHASSIS 101.852

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter reading to indicate 0.05 Watt across voice coil . . . . . 0.4 Volt
Generator ground lead connection . . . . . I.F. alignment - negative "B" lead
. . . . . R.F. alignment - receiver chassis
Generator modulation . . . . . 30%, 400 cycles
Position of volume control . . . . . Fully on
Position of tone control . . . . . Treble
Position of pointer with tuner fully closed . . . . . Last line to the left of 540 kc. calibration mark

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
1600 Kc.	1600 Kc.	50 mmfd.	Hazeltine Loop	C4	Osc.
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	C2	Ant.

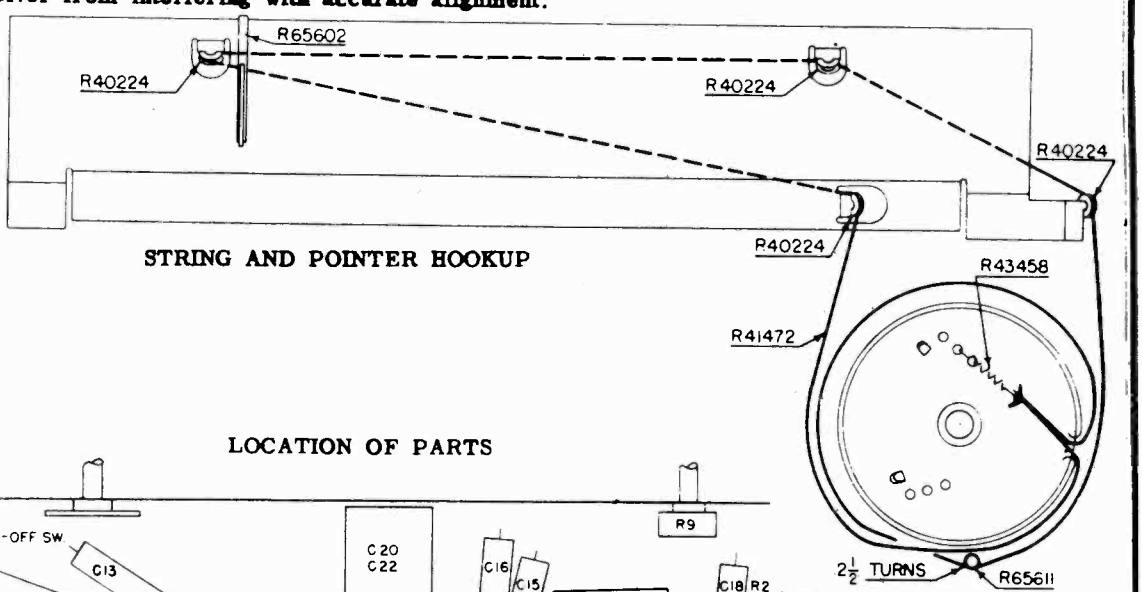
IMPORTANT ALIGNMENT NOTES:

NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning receiver on A.C.

The alignment must be done in the order given.

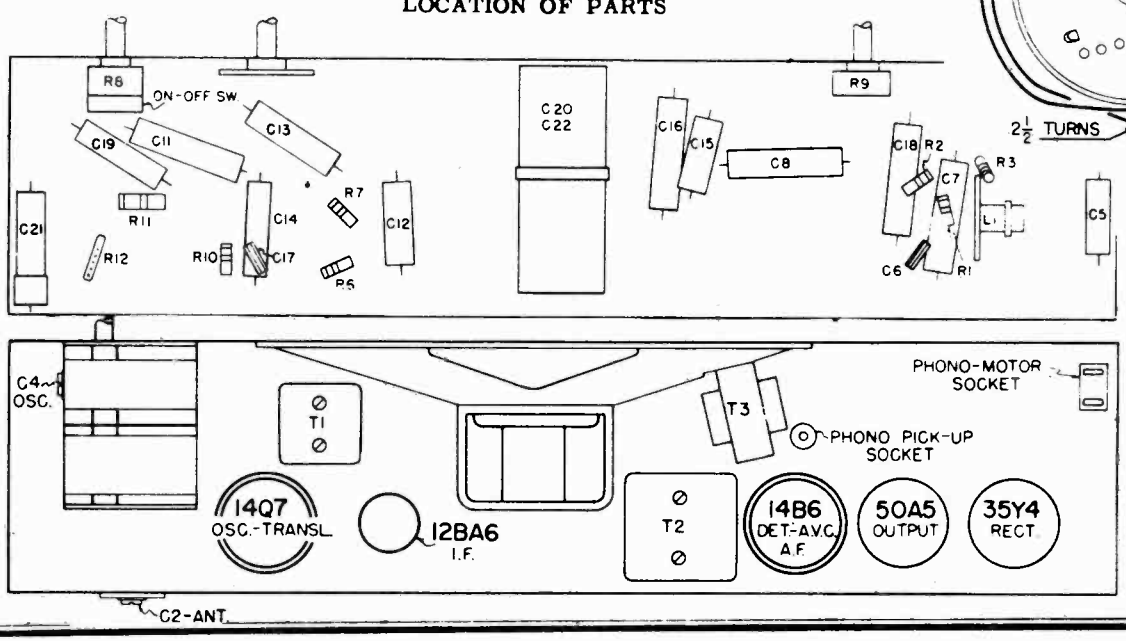
The entire alignment procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.



STRING AND POINTER HOOKUP

LOCATION OF PARTS



Preliminary:

ALIGNMENT PROCEDURE

Output Meter Connection.....Across Loud Speaker Voice Coil
Generator Ground Lead Connection.....Receiver Chassis
Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
Connection of Generator Output Lead.....See Chart Below
Generator Modulation.....30%, 400 Cycles
Position of Volume Control.....Fully on
Position of Tone Control.....Treble
Position of Pointer with Tuner Fully Closed.....Last Line Below 540 Calibration Mark

BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS	TRIMMER FUNCTION
BC	Closed	455 KC	0.1	Trans. Grid	T2-T1	I. F.
BC	1500 KC	1500 KC	200 Mmfd.	Ant.	C9	Oscillator
BC	1500 KC	1500 KC	200 Mmfd.	Ant.	C6	Translator
BC	1500 KC	1500 KC	200 Mmfd.	Ant.	C4	Antenna
BC	600 KC (Rock)	600 KC	200 Mmfd.	Ant.	C15	Padder
SW	Open	16.5 MC	400 Ohms	Ant.	C14	Oscillator
SW	15 MC (Rock)	15 MC	400 Ohms	Ant.	C8	Translator
SW	15 MC (Rock)	15 MC	400 Ohms	Ant.	C2	Antenna

IMPORTANT ALIGNMENT NOTES

The Alignment must be done in the order given.
The Alignment Procedure should be repeated step by step in the original order for greatest accuracy.
Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.
During alignment of the BC Band Padder and the SW Band Translator and Antenna Trimmers, the Tuner should be rocked through resonance to assure alignment.

Power Output — Undistorted 1.1 Watts — Maximum 2 Watts

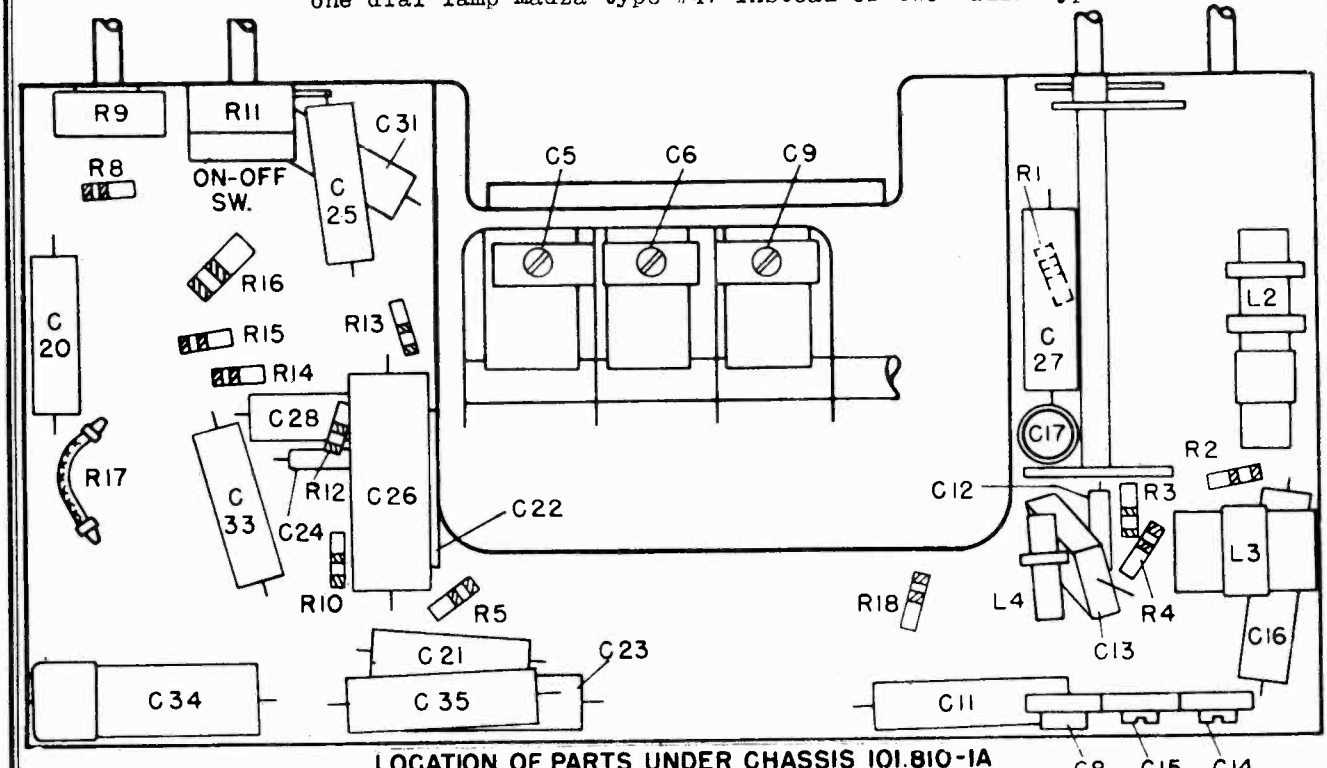
THE FOLLOWING PARTS LIST COVERS CHASSIS 101.810, 101.810-1A, 101.810-3 AND 101.810-2

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R62842	Antenna Assembly - S. W. (101.810-1A)
	R61412	Antenna Assembly - S. W. (101.810,-3)
	R62643	Background - Dial (101.810-1A,-2)
	R62652	Button - Push (101.810-1A)
	R60486	Button - Push (101.810,-3)
	R13961	Button - Snap
C4,C7,C10	R61200	Capacitor - Variable
C24,C26		Capacitor - .1 Mfd. 600 Volt
C31,C21		Capacitor - .02 Mfd. 600 Volt
C12,C17,C30,C32		Capacitor - .05 Mfd. 600 Volt
C16		Capacitor - .01 Mfd. 600 Volt
C1,C25		Capacitor - .001 Mfd. 600 Volt (101.810,-1A,-3)
C1,C25,C30		Capacitor - .001 Mfd. 600 Volt (101.810-2)
C18,C22,C27		Capacitor - .005 Mfd. 600 Volt
C3,C11,C23		Capacitor - .0001 Mfd. Mica
C13		Capacitor - .004 Mfd. Mica
C8,C14,C15	R61231	Capacitor - Trimmer Assembly
C28,C29,C33	R60416	Capacitor - Electrolytic - 40x40 Mfd. 150 Volt 20 Mfd. 25 Volt
	R63166	Coil - Oscillator - SW (101.810-1A,-2)
	R61236	Coil - BC & SW R. F.
	R61237	Coil - BC Oscillator
	R61238	Coil - SW Antenna
	R61239	Coil - SW Oscillator (101.810,-3)
	R60430	Control - Volume (101.810,-3)
	R61232	Control - On-Off & Tone (101.810,-3)
	R62052	Control - Volume (101.810-1A)
	R62529	Control - On-Off & Tone (101.810-1A)
	R62340	Control - On-Off & Tone (101.810-2)
	R41472	Cord - Dial Drive (42")
	R16706	Cord - Line
	R60540	Cover - Tab (101.810,-2,-3)
	R62653	Cover - Tab (101.810-1A)
	R61215	Dial - Station (101.810,-2,-3)
	R60461	Drum & Pinion Assembly (Used on R61200)
	R62373	Escutcheon & Dial Assembly (101.810-1A)
	R61214	Escutcheon - Dial (101.810,-2,-3)
	R61218	Escutcheon - Push Button
	R60724	Gear & Hub Assembly (Tuner Assembly) (101.810-1A,-2)
	R60459	Gear & Hub Assembly (Tuner Assembly) (101.810,-3)
	R62315	Key - Plunger - Tuner Assembly (101.810-1A,-2)
	R62531	Knob - Volume (101.810-1A)
	R62534	Knob - On-Off & Tone (101.810-1A)
	R62537	Knob - BC, SW & Phono (101.810-1A)
	R62712	Knob - Tuning (101.810-1A)
	R61221	Knob - Tuning (101.810,-2,-3)
	R61222	Knob - Volume (101.810,-2,-3)
	R61223	Knob - Tone & On-Off (101.810,-2,-3)
	R61224	Knob - Wave Switch (101.810,-2,-3)
		Lamp - Mazda Type #291 (101.810)
		Lamp - Mazda Type #47 (101.810-1A,-2,-3)
	R64064	Leaflet - Instruction (101.810-2)
	R64060	Leaflet - Instruction (101.810-1A)
	R54657	Leaflet - Instruction (101.810)
	R64125	Leaflet - Instruction (101.810-3)
	R64080	Log - Station
	R61235	Loop and Board Assembly
	R62307	Plunger & Yoke Assembly (101.810-1A)
	R60464	Plunger & Yoke Assembly (101.810-2)
	R62549	Pointer Assembly (101.810-1A)
	R61220	Pointer - Dial (101.810,-2,-3)
	R61216	Pointer Drive Drum Assembly
	R61807	Pulley - Metal (101.810-1A)
	R43423	Pulley - Wood (101.810,-2,-3)
R12		Resistor - 150 Ohm - 1/2 Watt
R2		Resistor - 22,000 Ohm - 1/2 Watt
R10,R11		Resistor - 470,000 Ohm - 1/2 Watt
R1		Resistor - 1 Megohm - 1/2 Watt
R3,R9		Resistor - 2.2 Megohm - 1/2 Watt
R8		Resistor - 4.7 Megohm - 1/2 Watt
R14		Resistor - 1200 Ohm - 1 Watt
R6		Resistor - 68,000 Ohm - 1/2 Watt
R14		Resistor - 560 Ohm - 1/2 Watt
R15	R40232	Resistor - Glasohm - 25 Ohm - 1 Watt
	R62640	Screw - Escutcheon Mounting (101.810-2)
	R62641	Screw - Escutcheon & Dial Mounting (101.810-1A
	R44897	Socket - 1 Prong - Phono Connector (101.810-1A
	R60515	Socket - Pilot Lamp (101.810-1A)
	R60693	Socket - Speaker Cable
	R62173	Socket - Pilot Lamp (101.810-2,-3)
	R57049	Socket - 8 Prong - Lock-In
	R61234	Socket - Dial Lamp (101.810)
	R57193	Shield - Tube
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER
	R61032	Speaker - 8" P. M.
	R61037	Cone & Voice Coil
	R61038	Transformer - Output
	R43458	Spring - Tension - Dial Drive (101.810,-2,-3)
	R60677	Spring - Tension - Dial Drive (101.810-1A)
	R60427	Spring - Extension (Tuner Assembly)
	R60437	Spring - Compression (Tuner Assembly)
	R62050	Switch - Wave (101.810-1A)
	R61228	Switch - Wave (101.810,-2,-3)
	R62838	Tabs - Station (101.810-1A)
	R60474	Tabs - Station (101.810,-2,-3)
	R62527	Tuning Shaft Assembly (101.810-1A)
T1	R60417	Transformer - 1st I. F.
T2	R60418	Transformer - 2nd I. F.
	R60462	Tuning Shaft Assembly (101.810,-2,-3)
	R60450	Wafer - Electrolytic Capacitor Mtg.
	R60472	Washer - Felt
	R46042	Washer - Phono Socket Insulating (101.810-1A)
	R60439	Washer - Spring - Tuner Assembly
	R61815	Washer - Metal Pulley Retaining (101.810-1A)

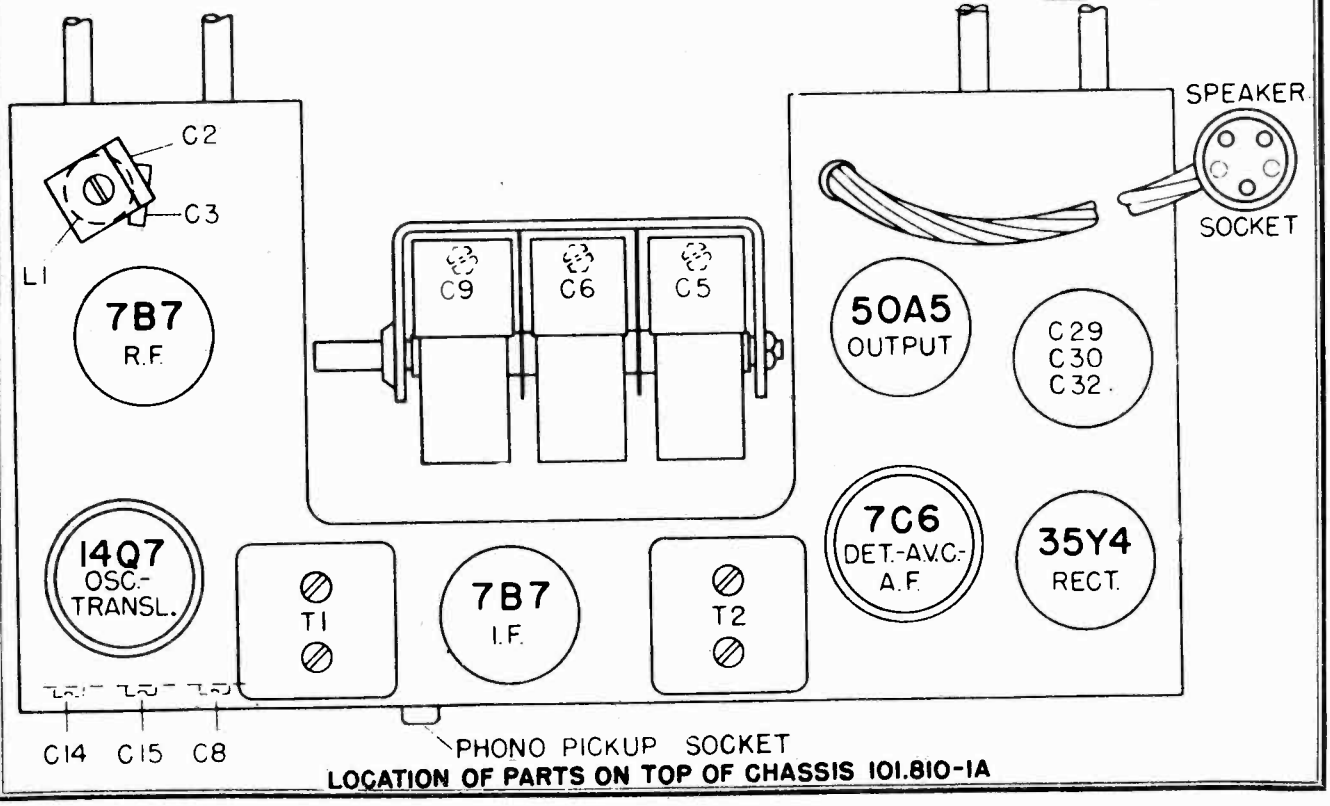
Chassis Differences:

101.810-1A - Chassis similar to 101.810-3 except linear dial.

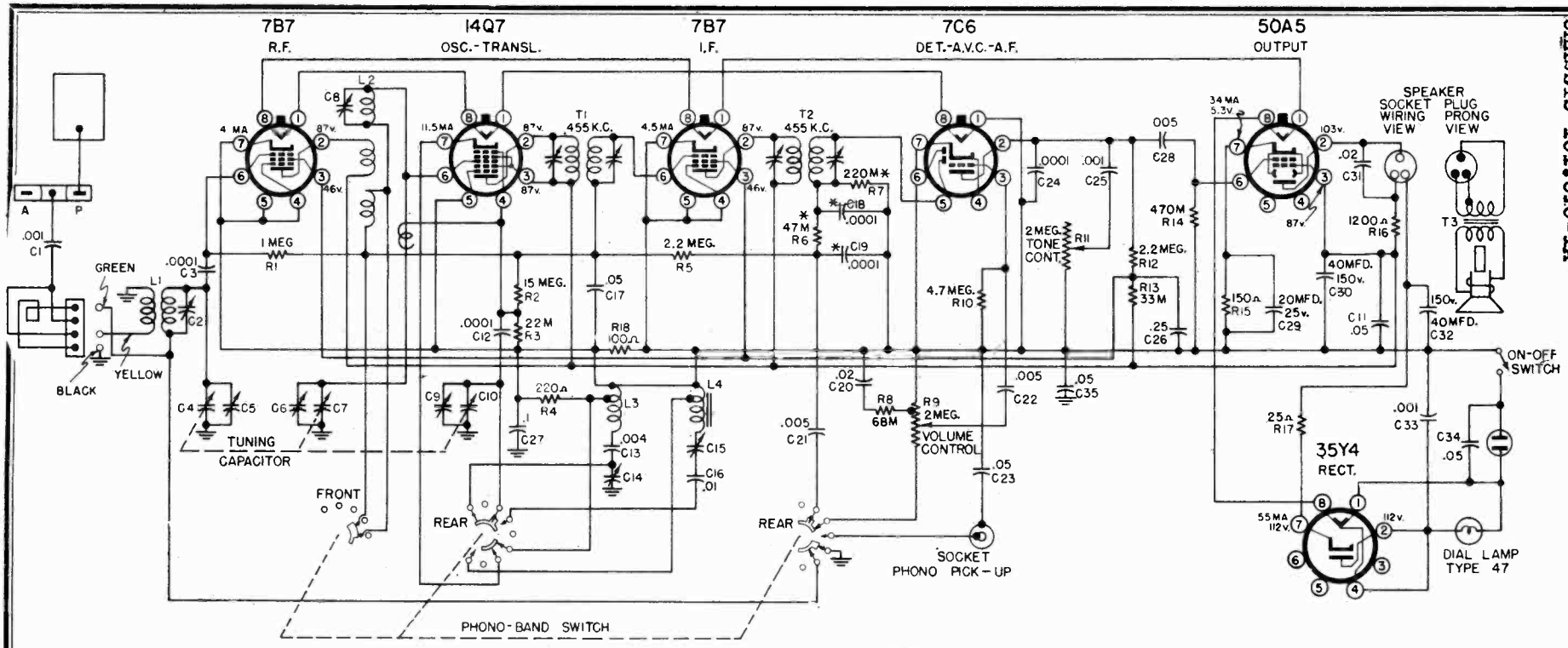
101.810-2 - Chassis same as 101.810 except new type tone control and uses one dial lamp Madza type #47 instead of two Madza type #291.



LOCATION OF PARTS UNDER CHASSIS 101.810-1A

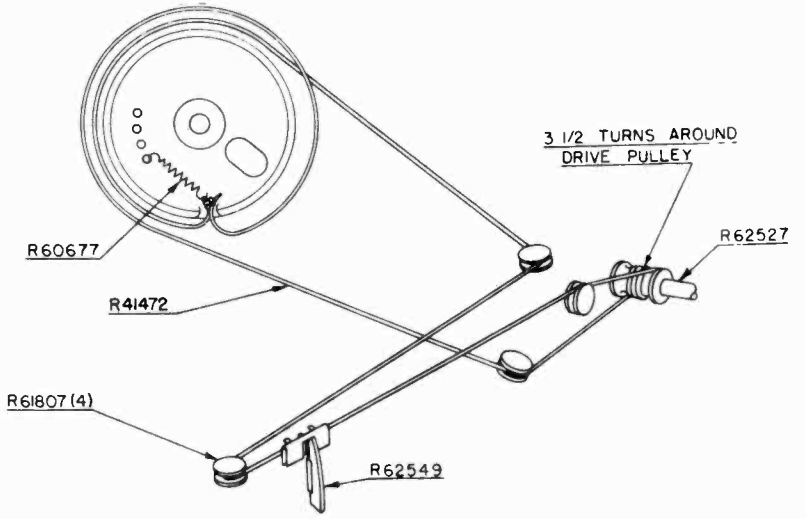


LOCATION OF PARTS ON TOP OF CHASSIS 101.810-1A



*-PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH NO SIGNAL, WITH PHONO-BAND SWITCH IN BC. POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. VOLTAGES SHOWN ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.
PHONO-BAND SWITCH IS SHOWN IN EXTREME COUNTER-CLOCKWISE (S.W.) POSITION (VIEWED FROM SHAFT END) AND ROTATES CLOCKWISE FROM S.W. TO BC. TO PHONO. SECTIONS MARKED "REAR" ARE TRANSPARENT VIEWS.

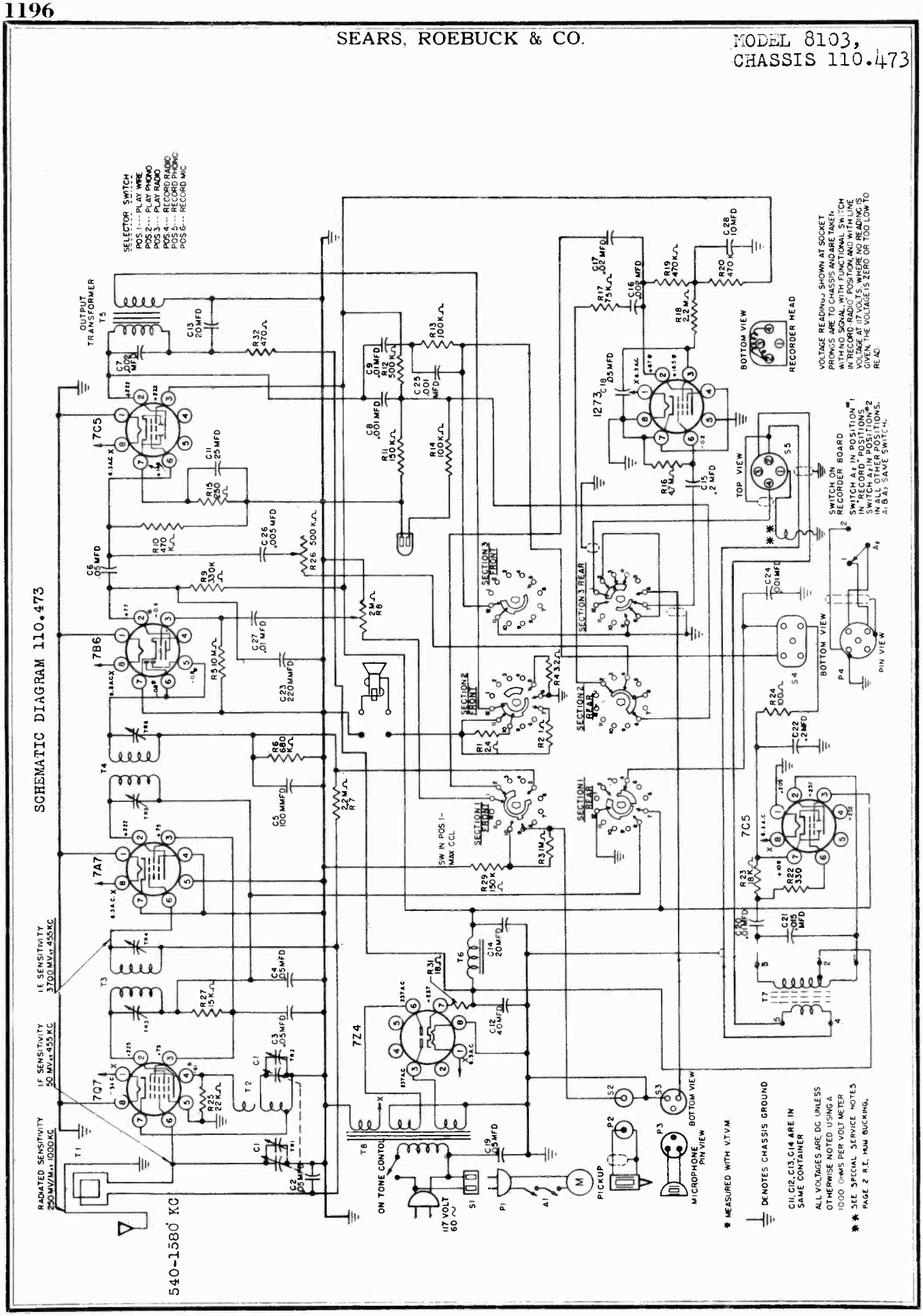
SCHEMATIC DIAGRAM FOR 101.810-1A



STRING & POINTER HOOKUP FOR 101.810-1A

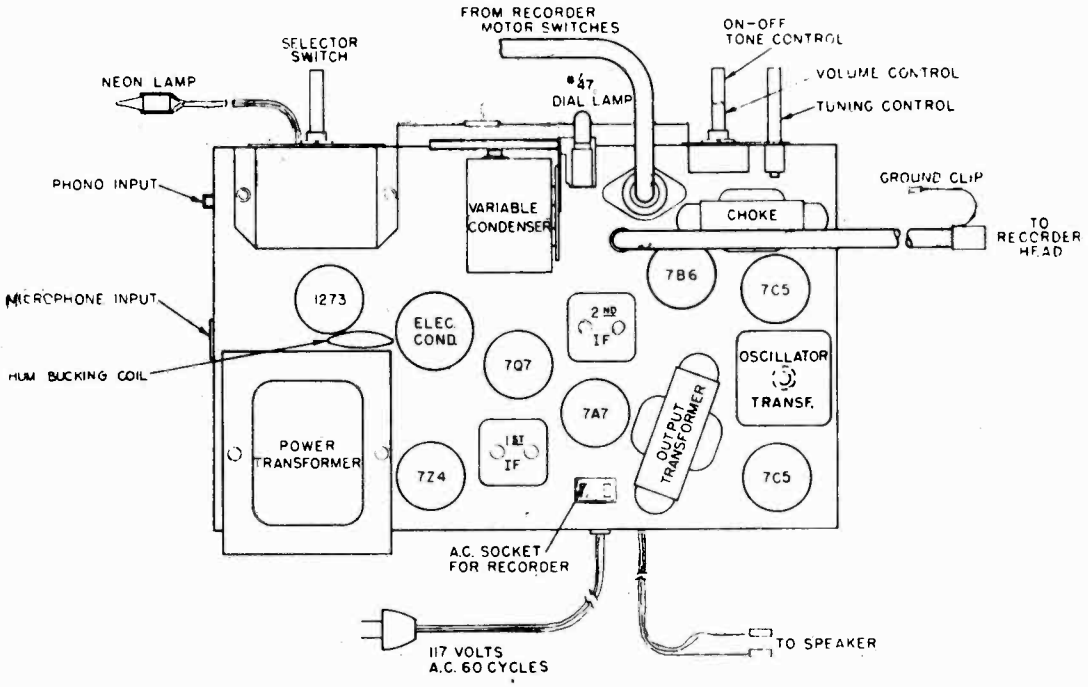
SEARS, ROEBUCK & CO.

MODEL 8103,
CHASSIS 110.473

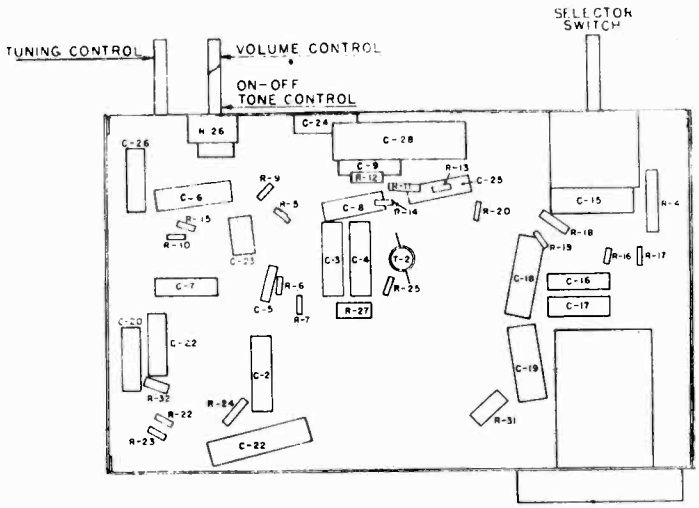


MODEL 8103,
CHASSIS 110.473

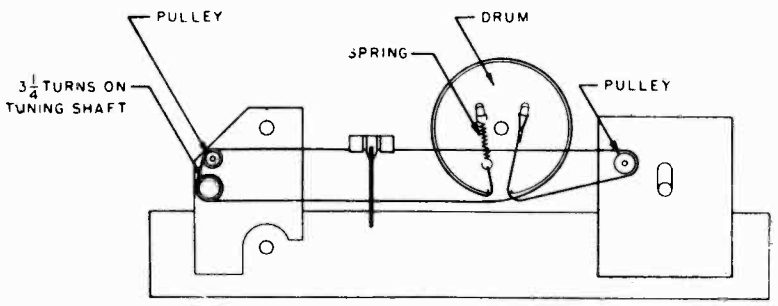
SEARS, ROEBUCK & CO.



TUBE LOCATION



LOCATIONS OF PARTS UNDER CHASSIS



DIAL STRINGING DIAGRAM

SEARS, ROEBUCK & CO. MODEL 8103, CHASSIS 110.473

ALIGNMENT PROCEDURE

Output Meter Connection.....Across Loud Speaker Voice Coil
Output Meter Reading to Indicate 500 Milliwatts.....1.25 Volts
Dummy Antenna Value to be in Series with Generator Output.....See Chart Below
Connection of Generator Output Lead.....See Chart Below
Connection of Generator Ground Lead.....I. F. Alignment B - Bus
Generator Modulation.....30% at 400 cycles
Position of Volume Control.....Fully Clockwise
Position of Tone Control.....Counter Clockwise (HI)
Position of Dial Pointer with Variable Fully Closed.On Mark Below 540 KC Calibration
Position of Master Control Switch....."Play Radio"

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455	0.1 Mfd.	Grid 7Q7	TR3 TR4 TR5 TR6	I.F.
1500 KC	1500 KC	***	***See Below	TR2	Osc.
1500 KC	1500 KC	***	***See Below	TR1	Trans.
600 KC	600 KC	***	***See Below	(Check-Point)	Check Point

*** Run a wire from the output terminal of generator near the receiver. No connection is made between the signal generator and the receiver.

IMPORTANT ALIGNMENT NOTES

The alignment procedure should be repeated stage by stage, in the original order for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the Receiver ineffective.

Power Output Undistorted....2.25 Watts Maximum....6 Watts

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R3		Resistor - 1 meg ohm 1/4 Watt
R4		Resistor - 3.2 ohm 1 Watt Wirewound
R5		Resistor - 10 meg ohms 1/4 Watt
R6		Resistor - 680,000 ohms 1/4 Watt
R7		Resistor - 2.2 meg ohms 1/4 Watt
R9		Resistor - 330,000 ohms 1/4 Watt
R10		Resistor - 470,000 ohms 1/4 Watt
R11		Resistor - 150,000 ohms 1/4 Watt
R12		Resistor - 500,000 ohms 1/4 Watt
R13		Resistor - 100,000 ohms 1/4 Watt
R14		Resistor - 100,000 ohms 1/4 Watt
R15		Resistor - 250,000 ohms 1/2 Watt
R16		Resistor - 4.7 meg ohms 1/4 Watt
R17		Resistor - 75,000 ohms 1/4 Watt
R18		Resistor - 2.2 meg ohms 1/4 Watt
R19		Resistor - 470,000 ohms 1/4 Watt
R20		Resistor - 470,000 ohms 1/4 Watt
R22		Resistor - 330,000 ohms 1/4 Watt
R23		Resistor - 18,000 ohms 1/4 Watt
R24		Resistor - 100 ohms 1/4 Watt
R25		Resistor - 22,000 ohms 1/4 Watt

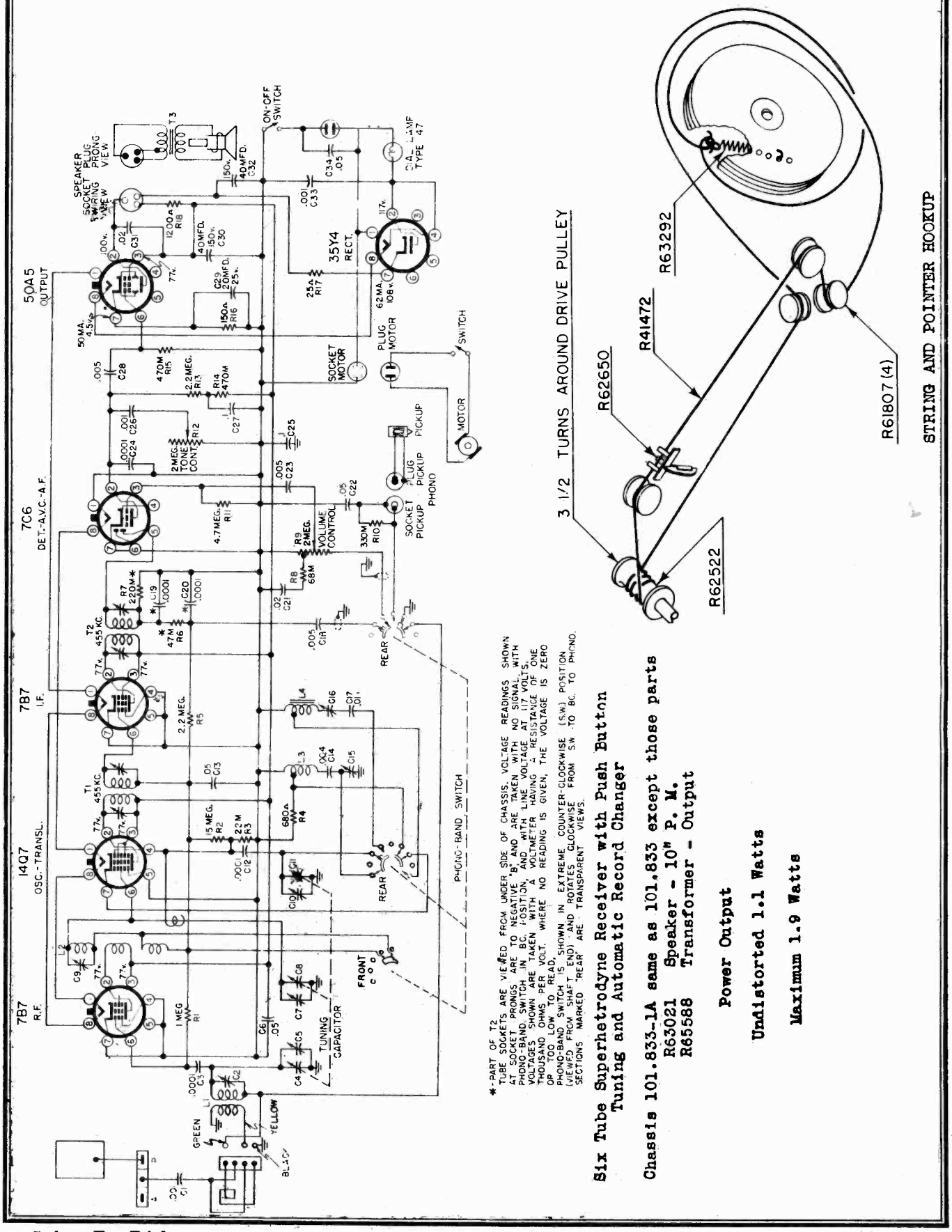
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R27		Resistor - 15,000 ohms 2 Watt
R29		Resistor - 150,000 ohms 1/4 Watt
R31		Resistor - 18 ohms, 2 Watt
R32		Resistor - 150,000 ohms 1/4 Watt
	A18146	Socket, AC
	A18144	Socket, Dial Light
	A54374	Socket, (for cable from recorder switch)
	A18101	Socket, Microphone
	A18104	Socket, Phono
	A58102	Speaker - 10" (P.M.)
	A54335	Spring - Dial Cord
	A3791	Switch - Wafer - 6 Position
T3	A3371	Transformer - 1st I.F.
T4	A3535	Transformer - 2nd I.F.
T5	A1339	Transformer - Output
T6	A28176	Transformer - Bias Oscillator
T8	A1091	Transformer - Power

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R26	A2486	Control - tone, with switch
R8	A2485	Control - Volume
	A54373	Cord - Dial Drive (per yard)
	A5592	Cord - Line 8 feet long
	A40131	Dial
	A4448	Escutcheon (Dial Crystal)
	A31972	Knob - Master Selector Switch
	A39171	Knob - Tone, Off-On
	A39169	Knob - Tuning
	A39170	Knob - Volume-Control
	A4926	Lamp - Neon Light Ass'y
		Lamp - Pilot Light #47
	A59398	Leaflet - Instruction
	A54372	Lens - Neon Light
T1	A28205	Loop Antenna Ass'y
	A6610	Microphone - Cord, Plug & Stand
	A4146	Pointer - Dial
R1		Resistor - 2.4 ohms 1/2 Watt
R2		Resistor - 1.0 ohms 1/2 Watt

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	A5594	Cable - Recorder Head
C1	A1695	Capacitor - Variable
C2		Capacitor - .05 mfd 200 V
C3 C4 C16 C18		Capacitor - .05 mfd 400 V
C5		Capacitor - 100 mmfd Mica or Ceramic
C7 C15		Capacitor - .002 mfd 400 V
C8 C24 C25		Capacitor - .001 mfd 400 V
C9 C20 C27		Capacitor - .01 mfd 400 V
C11 C12 C13 C14	A20114	Capacitor - Electrolytic 25 mfd 20 V 40 mfd 300 V 20 mfd 300 V
C15		Capacitor - .2 mfd 200 V
C17		Capacitor - .02 mfd 400 V
C19		Capacitor - .05 mfd Oil (metal case) 400 V
C21		Capacitor - .015 mfd 600 V
C22		Capacitor - .2 mfd 400 V
C23		Capacitor - 220 mmfd Mica or Ceramic
C26		Capacitor - .005 mfd 400 V
C28	A20117	Capacitor - Electrolytic 10 mfd 400 V
T7	A3368	Choke - Filter
T2	A28184	Coil - Oscillator B.C.

MODELS 8105, 8105A, 8106, 8106A, CHASSIS 101.833, 101.833-1A

SEARS, ROEBUCK & CO.



*-PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE 'B' AND ARE TAKEN WITH NO SIGNAL. WITH PHONO-BAND SWITCH IN BC. POSITION, AND WITH LINE VOLTAGE AT 117 VOLTS. VOLTAGES SHOWN ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. SHOWN IN EXTREME COUNTER-CLOCKWISE (S.W.) POSITION (VIEWED FROM SHAFT END) AND ROTATES CLOCKWISE FROM SW. TO BC. TO PHONO. SECTIONS MARKED 'REAR' ARE TRANSPARENT VIEWS.

Six Tube Superhetrodyne Receiver with Push Button Tuning and Automatic Record Changer

Chassis 101.833-1A same as 101.833 except those parts

R63021 Speaker - 10" P. M.
R65588 Transformer - Output

Power Output

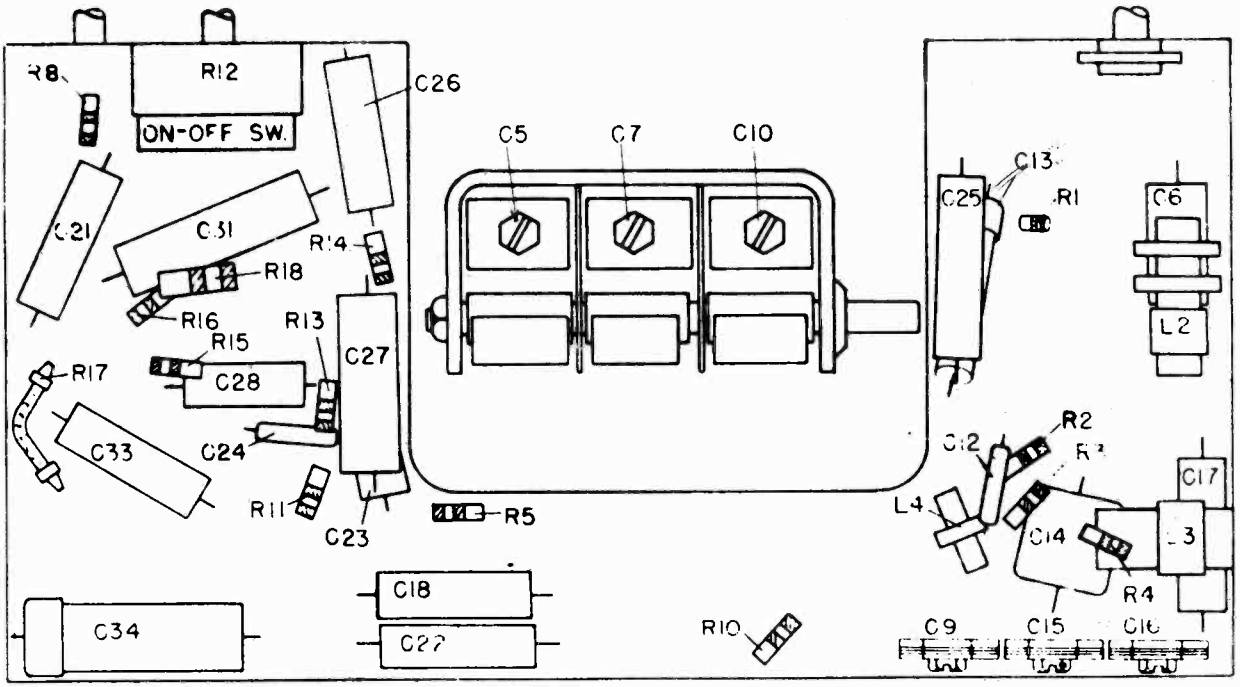
Undistorted 1.1 Watts

Maximum 1.9 Watts

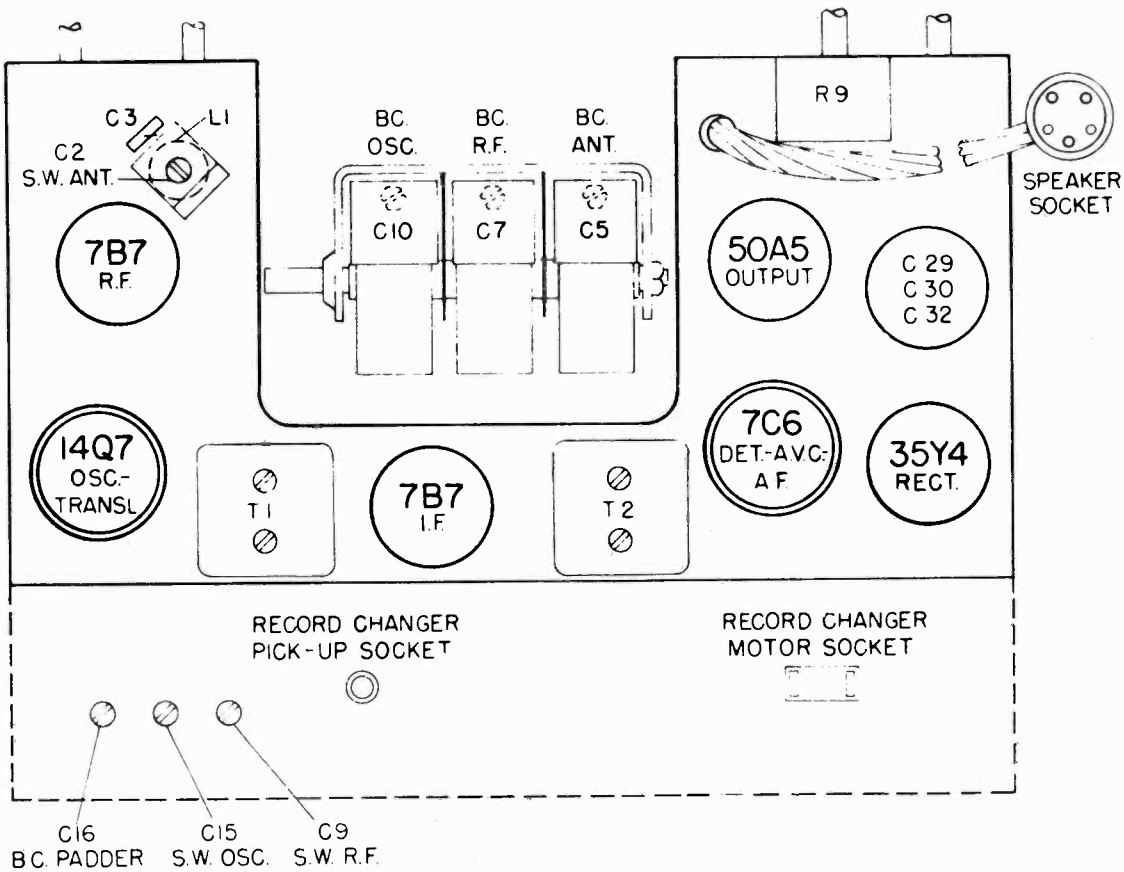
STRING AND POINTER HOOKUP

MODELS 8105, 8105A, 8106, 8106A, CHASSIS 101.833, 101.833-1A

SEARS, ROEBUCK & CO.



LOCATION OF PARTS UNDER CHASSIS



LOCATION OF PARTS ON TOP AND BACK OF CHASSIS

SEARS, ROEBUCK & CO. MODELS 8105, 8105A, 8106, 8106A, CHASSIS 101.833, 101.833-1A

REPAIR PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R62379	Background - Dial	
	R62652	Button - Push	
	R13961	Button - Snap	
C25,C27		Capacitor - .1 Mfd. 200 Volt	
C17		Capacitor - .01 Mfd. 600 Volt	
C21,C31		Capacitor - .02 Mfd. 600 Volt	
C6,C13,C22,C34		Capacitor - .05 Mfd. 600 Volt	
C1,C23,C24		Capacitor - .001 Mfd. 600 Volt	
C18,C25,C28		Capacitor - .005 Mfd. 600 Volt	
C14		Capacitor - Mica - .004 Mfd.	
C3,C12,C24		Capacitor - Mica - 100 Mmfd.	
C29,C30,C32	R60416	Capacitor - Electrolytic - 40 Mfd. 150 Volt, 20 Mfd. 25 Volt, 40 Mfd. 150 V.	
C9,C15,C16	R62651	Capacitor - Trimmer - 3 Gang	
C4,C8,C11	R61200	Capacitor - Variable - 3 Gang	A0
L2	R61236	Coil - R. F. - BC & SW	
L4	R61237	Coil - Oscillator - BC	
L1	R61238	Coil - Antenna - SW	
L3	R62512	Coil - Oscillator - SW	
	R60639	Connector - Loop Terminal	
R9	R62528	Control - Volume	
R12	R62529	Control - On-Off & Tone	
	R16706	Cord - Line	
	R41472	Cord - Dial Drive	
	R62653	Covers - Tab	
	R60461	Drum & Pinion Assembly	
	R62389	Escutcheon & Dial Assembly	A5
	R62387	Dial - Station - Lucite	*
	R62388	Escutcheon (Without Dial)	
	R60459	Gear & Hub Assembly	
	R62315	Key - Plunger	
	R62531	Knob - Volume	
	R62534	Knob - On-Off & Tone	
	R62537	Knob - BC, SW & Phono	
	R62712	Knob - Tuning	
		Lamp - Mazda Type #47	
	R64022	Leaflet - Instruction	
	R62385	Lever, Arm & Link Assembly	
	R61235	Loop & Board Assembly	

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R62307	Plunger & Yoke Assembly	
	R62650	Pointer & Slide Assembly	
	R61807	Pulley - Metal	
R16		Resistor - 150 Ohm - 1/3 Watt	
R4		Resistor - 680 Ohm - 1/3 Watt	
R3		Resistor - 22,000 Ohm - 1/3 Watt	
R8		Resistor - 68,000 Ohm - 1/3 Watt	
R10		Resistor - 330,000 Ohm - 1/3 Watt	
R14,R15		Resistor - 470,000 Ohm - 1/3 Watt	
R1		Resistor - 1 Megohm - 1/3 Watt	
R5,R13		Resistor - 2.2 Megohm - 1/3 Watt	
R11		Resistor - 4.7 Megohm - 1/3 Watt	
R2		Resistor - 15 Megohm - 1/3 Watt	
R18		Resistor - 1200 Ohm - 1 Watt	
R17	R40232	Resistor - Glasohm - 25 Ohm - 1 Watt	
	R62303	Rocker - Bar & Plate Assembly	
	R57193	Shield - Tube	
	R44145	Socket - 2 Prong - Female A.C.	
	R44897	Socket - 1 Prong - Phono	
	R57049	Socket - Tube 8 Prong Lock-In	
	R60515	Socket - Pilot Lamp	
	R60639	Socket - Speaker Cable	
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER	
	R61032	Speaker - 8" P. M.	B5
	R61037	Cone & Voice Coil	
T3	R61038	Output Transformer	
	R60427	Spring - Extension - Tuner Assembly	
	R60437	Spring - Compression - Tuner Assembly	
	R60677	Spring - Dial Drive	
	R62382	Switch - Wave	
	R62882	Tuning Shaft Assembly	
T1	R60417	Transformer - I. F. #1	
T2	R60418	Transformer - I. F. #2	
	R60460	Wafer - Electrolytic Capacitor Mounting	
	R62384	Wafer - Rear - Wave Switch	
	R45823	Washer - Spring - Lever, Arm & Link Assy.	
	R46042	Washer - Insulating - Phono Socket	

SPECIFICATIONS

Power Supply:
All models available.....117 Volts 60 Cycles AC 60 Watts

Frequency Range:
Broadcast.....540-1600 KC
Short Wave.....6-18 MC

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter reading to indicate 0.05 Watt across voice coil.....0.4 Volt
Generator ground lead connection.....I.F. alignment-negative "B" lead
.....R.F. alignment-Receiver chassis
Generator Modulation.....30%, 400 cycles
Position of volume control.....Fully on
Position of tone control.....Treble
Position of pointer with tuner fully closed.....Last line to left of 540 calibration mark on the dial scale or first light brown mark from the left-hand end on the upper edge of the dial background.

WAVE SWITCH POSITION	POSITION OF TUNER	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS (ADJ. IN ORDER SHOWN)	TRIMMER FUNCTION
BC	Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
BC	Fully open	1650 Kc.	200 mmfd.	Antenna	C10	Osc.
BC	See Note 1	1400 Kc.	200 mmfd.	Antenna	C7	Transl.
BC	See Note 1	1400 Kc.	200 mmfd.	Antenna	C5	Ant.
BC	See Note 2	600 Kc. (Rock)	200 mmfd.	Antenna	C16	Padder
SW	16.5 Mc.	16.5 Mc.	400 ohms	Antenna	C15	Osc.
SW	See Note 1	14 Mc. (Rock)	400 ohms	Antenna	C9	Transl.
SW	See Note 1	14 Mc. (Rock)	400 ohms	Antenna	C2	Ant.

IMPORTANT ALIGNMENT NOTES:

NOTE 1: The 1400 Kc. & 14 Mc. calibration point is the second light brown mark from the right-hand end on the upper edge of the dial background.

NOTE 2: The 600 Kc. calibration point is the third light brown mark from the left-hand edge of the dial background.

The Alignment must be done in the order given.

The entire Alignment Procedure should be repeated step by step in the original order for greatest accuracy.

Always keep the output from the generator at its lowest possible value to prevent the AVC receiver from interfering with accurate alignment.

During alignment of the "BC" Band Padder and the "SW" Band R.F. and Antenna Trimmers, the tuner should be rocked through resonance to assure alignment.

MODELS 8270, 8270A,
CHASSIS 101.822,
101.822A

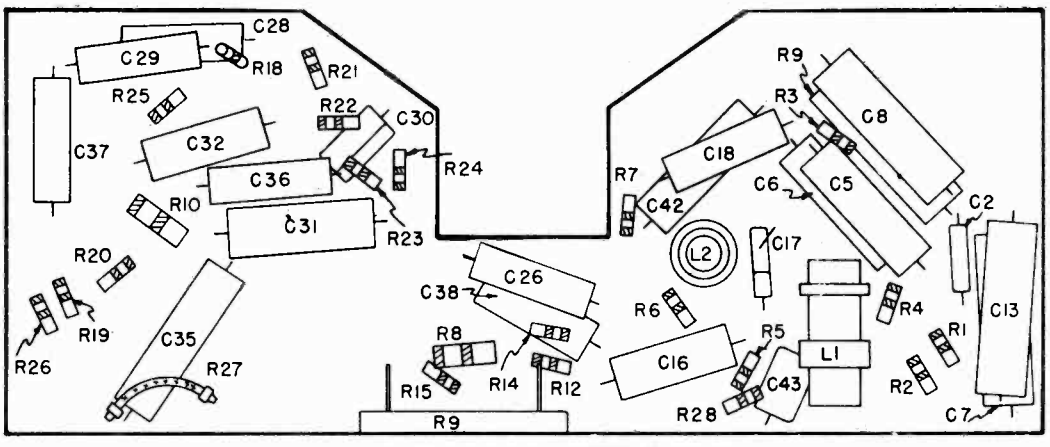
SEARS, ROEBUCK & CO.

SPECIFICATIONS

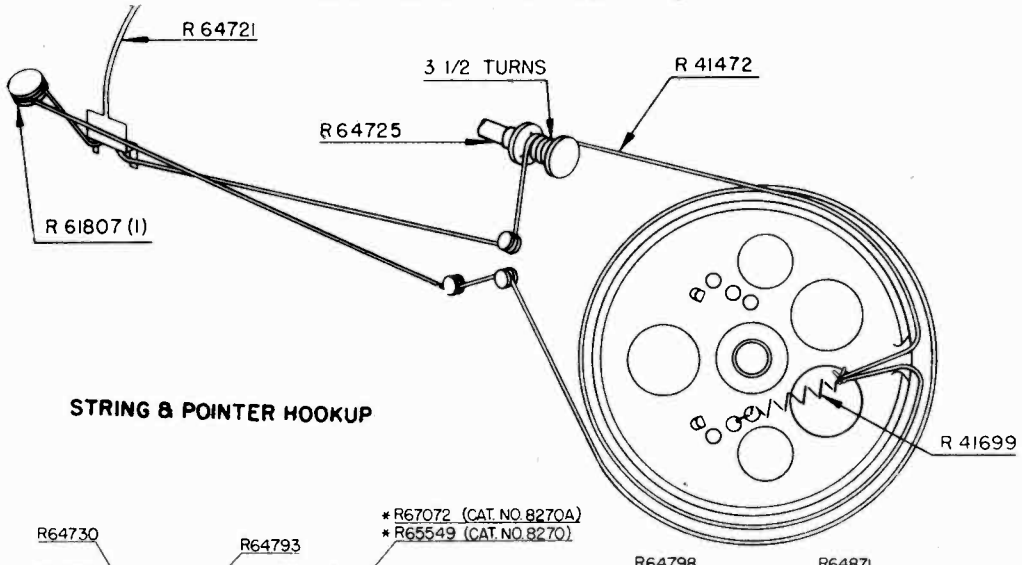
Power Supply:
All Models available..... 117 Volts DC, 25-60 Cycle AC, 20 Watts or Catalog No. 6404 Battery Pack

Power Output:
Undistorted..... .25 Watts
Maximum..... .45 Watts

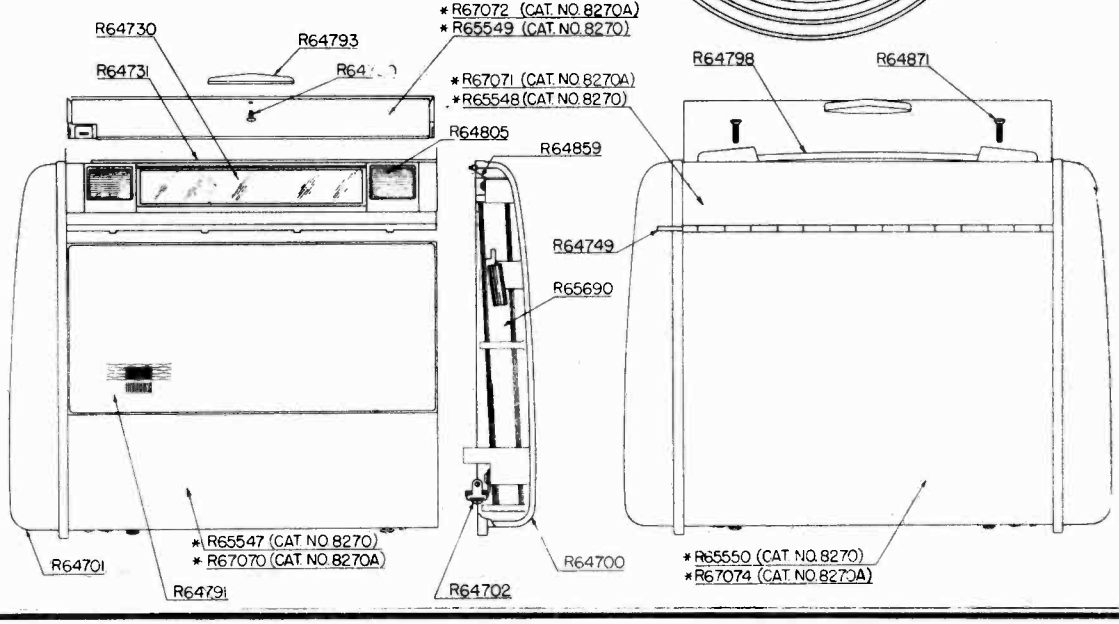
Frequency Range:
Broadcast..... 540-1600 KC



LOCATION OF PARTS UNDER CHASSIS

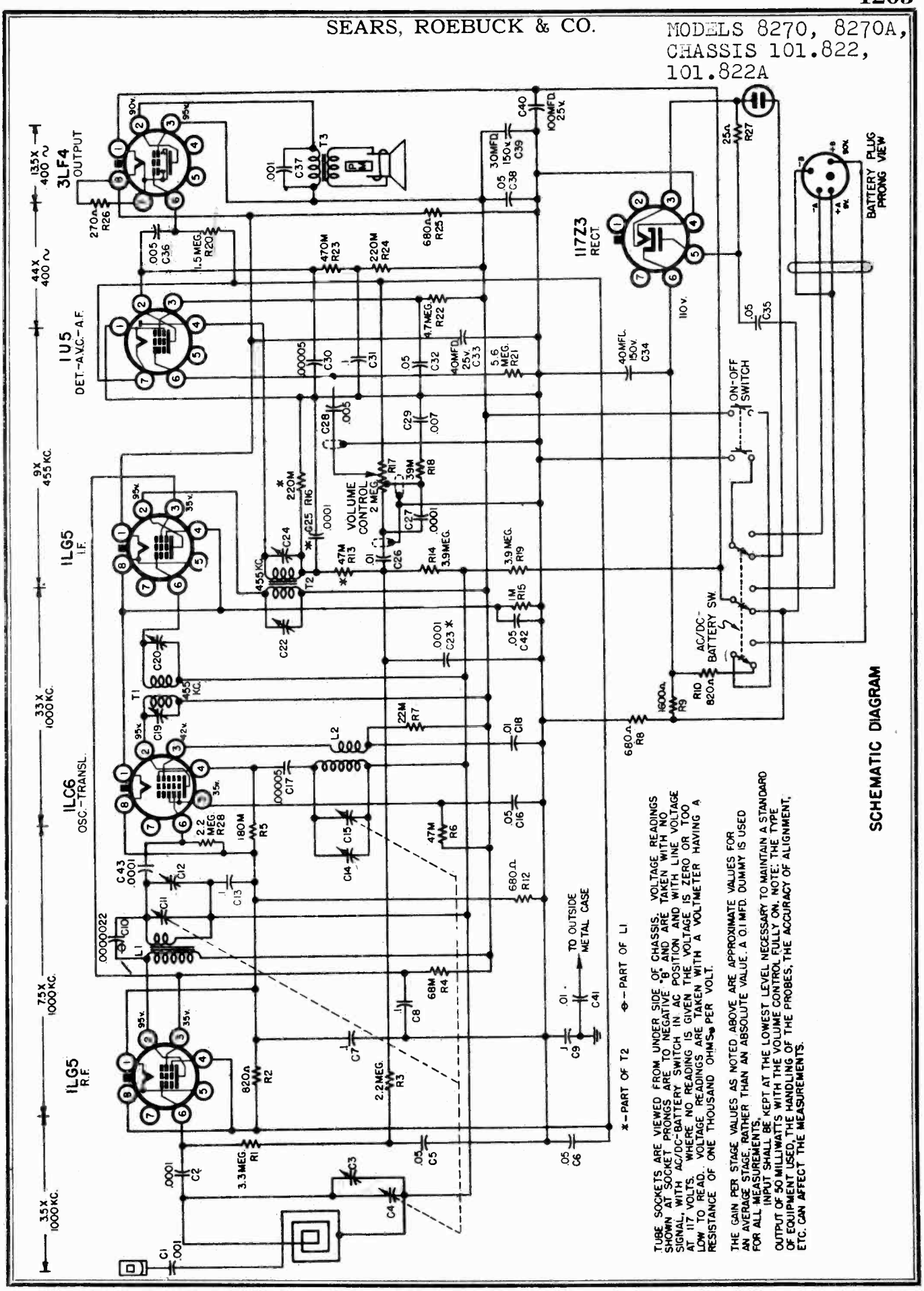


STRING & POINTER HOOKUP



SEARS, ROEBUCK & CO.

MODELS 8270, 8270A,
CHASSIS 101.822,
101.822A



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEGATIVE "B" AND ARE TAKEN WITH NO SIGNAL, WITH AC/DC-BATTERY SWITCH IN AC POSITION AND WITH LINE VOLTAGE AT 117 VOLTS. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ. VOLTAGE READINGS ARE TAKEN WITH A VOLTMETER HAVING A RESISTANCE OF ONE THOUSAND OHMS PER VOLT.

THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE STAGE, RATHER THAN AN ABSOLUTE VALUE. A 0.1 MFD. DUMMY IS USED FOR ALL MEASUREMENTS.
INPUT SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC. CAN AFFECT THE MEASUREMENTS.

*-PART OF T2 ⊖-PART OF L1

SCHEMATIC DIAGRAM

SEARS, ROEBUCK & CO.

MODELS 8270, 8270A,
CHASSIS 101.822,
101.822A

PRELIMINARY: ALIGNMENT PROCEDURE

Output meter reading to indicate 0.05 Watt across voice coil ..... 0.4 Volt
Generator ground lead connection ..... To B- through 0.1 mfd. capacitor
Generator modulation ..... 30%, 400 cycles
Position of volume control ..... Fully on
Position of pointer with tuner fully closed ..... The second line to the left of the 540 Kc. calibration mark.

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	0.1 mfd.	Trans-Grid	T2 & T1	I.F.
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	C14	Oscillator
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	C12	R.F.
1400 Kc.	1400 Kc.	50 mmfd.	Hazeltine Loop	* C3	Antenna

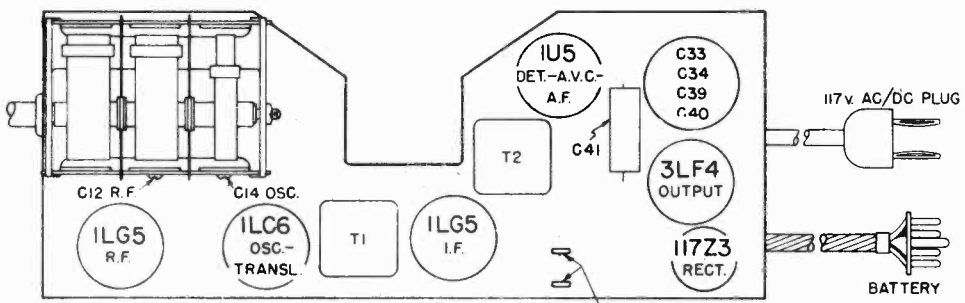
IMPORTANT ALIGNMENT NOTES:

NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning the receiver on AC.

The alignment must be done in the order given.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

*Located on Loop and Case End Assembly



LOCATION OF PARTS ON TOP OF CHASSIS

PARTS LIST

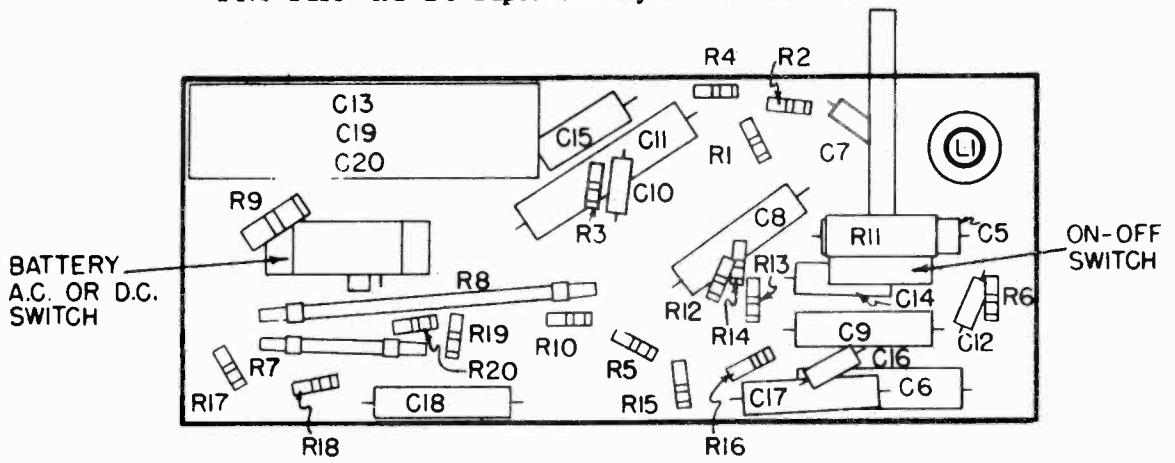
SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
	R84703	Capacitor - Trimmer - Loop & End Case Assy.	
C7,C9,C8, C13,C31		Capacitor - .1 mfd. 600 Volt	
C18,C38,C41		Capacitor - .01 mfd. 600 Volt	
C5,C6,C16,C35, C28,C33,C43		Capacitor - .05 mfd. 600 Volt	
C2,C37,C42		Capacitor - Mica - 100 mmfd	
C17,C30		Capacitor - Mica - 50 mmfd.	
C1,C37		Capacitor - .001 mfd. 600 Volt	
C36,C36		Capacitor - .006 mfd. 600 Volt	
C29		Capacitor - .007 mfd. 600 Volt	
C34,C39,C40, C33	R84703	Capacitor - Electrolytic - 40 mfd. 25 Volt, 100 mfd. 25 Volt, 50 mfd. 150 Volt, 40 mfd. 150 Volt	
C4,C11,C15	R84716	Capacitor - 3 Gang Variable	A5
	* R85550	Case Assembly - Rear Cat. #8270-Leatherette	AAO
	* R87074	Case Assembly - Rear Cat. #8270A-Painted	
	* R87070	Case Assembly - Front Cat. #8270A-Painted	
	* R85547	Case Assembly - Front Cat. #8270-Leatherette	AAO
	* R85548	Case Assembly - Top Cat. #8270-Leatherette	
	* R87071	Case Assembly - Top Cat. #8270A-Painted	
	R84700	Case - End - R.H.	
	R84701	Case - End - L.H.	
	R84730	Cover - Dial Celluloid	
	* R85549	Cover Assembly-Escutcheon Cat. #8270-Leatherette	
	* R87072	Cover Assembly-Escutcheon Cat. #8270A-Painted	
	R84738	Clip - Coil Mounting	
L1	R84705	Coil - R.F.	
L2	R84706	Coil - Oscillator	
R17	R84704	Control - On-Off & Volume	
	R84711	Cord - Line	
	R41473	Cord - Dial Drive (54")	
	R84923	Dial - Station	
	R84731	Escutcheon	
	R84781	Grille	A5
	R84793	Handle - Escutcheon Cover	
	R84387	Leaflet - Instruction	
	R85690	Loop - Antenna	
	R84805	Knob - On-Off or Tuning	
	R84749	Pin - Hinge	
	R84567	Plug - Battery Cable	
	R84731	Pointer - Dial	
	R61807	Pulley - Metal	

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	MU CODE
R36		Resistor - 270 ohm 1/2 Watt	
R13,R8,R25		Resistor - 680 ohm 1/2 Watt	
R10		Resistor - 820 ohm 1/2 Watt	
R15		Resistor - 1000 ohm 1/2 Watt	
		Resistor - 22,000 ohm 1/2 Watt	
R16		Resistor - 39,000 ohm 1/2 Watt	
R6		Resistor - 47,000 ohm 1/2 Watt	
R4		Resistor - 68,000 ohm 1/2 Watt	
R5		Resistor - 180,000 ohm 1/2 Watt	
R7,R24		Resistor - 220,000 Ohm 1/2 Watt	
R23		Resistor - 470,000 ohm 1/2 Watt	
R30		Resistor - 1.5 megohm 1/2 Watt	
R3,R28		Resistor - 2.2 megohm 1/2 Watt	
R1		Resistor - 3.3 megohm 1/2 Watt	
R18,R14		Resistor - 3.9 megohm 1/2 Watt	
R22		Resistor - 4.7 megohm 1/2 Watt	
R21		Resistor - 5.6 megohm 1/2 Watt	
R2		Resistor - 820 Ohm 1 Watt	
R27	R40232	Resistor - Glazohm - 25 ohm 1 Watt	
R9	R84715	Resistor - 1600 ohm - 6 Watt	
	R87049	Socket - Tube - 6 Prong Lock-in	
	R65153	Socket - Tube - Miniature	
	R65545	Socket - Miniature Tube (117Z3 Tube)	
		WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER	
	R65157	Speaker - 5 1/4" P.M.	
	R82919	Cone & Voice Coil	
T3	R84784	Transformer - Output	
	R41699	Spring - Dial Drive	
	R80613	Switch - A.C. - Battery	AO
	R84725	Shaft Assembly - Tuning	
	R84780	Screw - Escutcheon - Cover Assembly	
	R84871	Screw - Carrying Strap Mounting	
	R84859	Spring Assembly - Loop & Case End Assembly	
	R84798	Strap - Carrying	
T1	R84707	Transformer - I.F. #1	
T2	R84708	Transformer - I.F. #2	
	R81830	Wafer - Electrolytic Capacitor Mounting	
	R15495	Washer - Flat - Chassis Assembly Mounting	
	R61815	Washer - Metal Pulley Retaining	
	R84744	Washer - Insulating - Pointer Drive Assembly Mtg.	

SEARS, ROEBUCK & CO.

MODEL 9260,
CHASSIS 101.850

Five Tube AC-DC Superheterodyne Portable Receiver



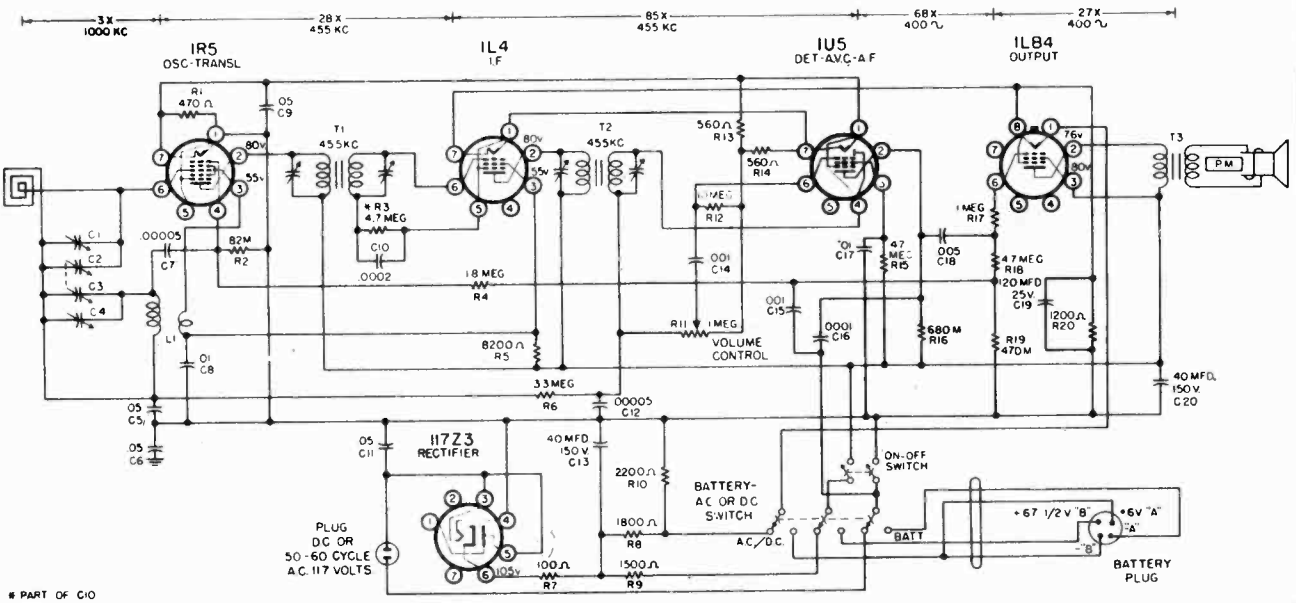
LOCATION OF PARTS UNDER CHASSIS

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	R66303	Cover - Cabinet
	R66316	Clip - Tubular
	R65201	Cabinet (Body)
	R65810	Clip (Cover Retaining)
	R65318	Clip (Handle)
	R65308	Grille (Front)
	R65317	Handle (Carrying)
	R65319	Loop (Antenna)
	R65327	Cable - Battery (With Plug)
	R67010	Plug - Battery
C18		Capacitor - .006 mfd. - 600 Volt
C14,C15		Capacitor - .001 mfd. - 600 Volt
C11		Capacitor - .05 mfd. - 600 Volt
C9	R30730	Capacitor - .05 mfd. - 200 Volt
C8,C6	R44627	Capacitor - .05 mfd. - 100 Volt
C5,C17		Capacitor - .01 mfd. - 600 Volt
C7,C16	R65333	Capacitor - Ceramic - 50 mmfd.
C18	R65323	Capacitor - Ceramic - 100 mmfd.
C2,C3	R65307	Capacitor - Variable - 2 Gang
C13,C19,C20	R65308	Capacitor - Electrolytic 40 mfd. - 150 Volt 40 mfd. - 150 Volt 170 mfd. - 350 Volt
	R65315	Clip - Chassis Mounting
L1	R65332	Coil - Oscillator
R11	R65309	Control - On-Off & Volume
	R65310	Cord - Line
	R65304	Cover - Bottom of Chassis
	R64767	Insulator - Line Cord Mounting
	R65349	Knob - On-Off & Volume
	R65348	Knob - Tuning
	R65395	Pointer - Dial Assy.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
R1		Resistor - 470 ohm - 1/2 Watt
R13,R14		Resistor - 560 ohm - 1/2 Watt
R30		Resistor - 1,200 ohm - 1/2 Watt
R6		Resistor - 8,200 ohm - 1/2 Watt
R3		Resistor - 82,000 ohm - 1/2 Watt
R19		Resistor - 470,000 ohm - 1/2 Watt
R16		Resistor - 680,000 ohm - 1/2 Watt
R17		Resistor - 1 megohm - 1/2 Watt
R4		Resistor - 1.8 megohm - 1/2 Watt
R8		Resistor - 3.3 megohm - 1/2 Watt
R15,R18		Resistor - 4.7 megohm - 1/2 Watt
R13		Resistor - 10 megohm - 1/2 Watt
R9		Resistor - 1,500 ohm - 1 Watt
R10		Resistor - 2,200 ohm - 1 Watt
R7	R61219	Resistor - Glasohm - 100 ohm - 2 Watt
R8	R60810	Resistor - Glasohm - 1,800 ohm - 5 Watt
R5, C10	R65326	Resistor-Capacitor Combination - 4.7 megohm - 200 mmfd.
	R57049	Socket - Tube - 8 Prong Lock-in
	R65153	Socket - Tube - Miniature
	R65323	Socket - Tube - Miniature (with Ground Term.)
		WHEN ORDERING SPEAKER PARTS, ALWAYS GIVE THE PART NUMBER APPEARING ON THE SPEAKER
	R65311	Speaker - 3 1/2" P.M.
	R60880	Cone & Voice Coil
	R65313	Switch - T.P.D.T. - AC-DC & Battery
T1	R65320	Transformer - I.F. #1
T2	R65321	Transformer - I.F. #2
T3	R65312	Transformer - Output

SCHEMATIC DIAGRAM FOR YOUR RADIO



* PART OF C10

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO NEG "B", AND ARE TAKEN WITH NO SIGNAL, AND WITH LINE VOLTAGE AT 117 VOLTS A.C. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ. THE GAIN PER STAGE VALUES AS NOTED ABOVE ARE APPROXIMATE VALUES FOR AN AVERAGE STAGE, RATHER THAN AN ABSOLUTE VALUE. A .01 MFD. DUMMY IS USED FOR ALL MEASUREMENTS EXCEPT THE 1000KC WHERE A STANDARD RADIATING LOOP IS USED. INPUT SHALL BE KEPT AT THE LOWEST LEVEL NECESSARY TO MAINTAIN A STANDARD OUTPUT OF 50 MILLIWATTS WITH THE VOLUME CONTROL FULLY ON. NOTE: THE TYPE OF EQUIPMENT USED, THE HANDLING OF THE PROBES, THE ACCURACY OF ALIGNMENT, ETC., CAN AFFECT THE MEASUREMENTS.

MODEL 9260,
CHASSIS 101.850

SEARS, ROEBUCK & CO.

SPECIFICATIONS

Power Supply
All models available . . . . . 117 Volt, 50-60 Cycles AC or DC, 15 Watts

Frequency Range
Broadcast . . . . . 540-1600 KC

Power Output
Undistorted . . . . . .05 Watt
Maximum . . . . . 0.1 Watt

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter reading to indicate 0.05 Watt across voice coil. . . . . 0.4 Volts
Generator ground lead connection . . . . . .To B—through 0.1 mfd. capacitor (I.F. Alignment)
Generator modulation . . . . . 30%, 400 cycles
Position of volume control . . . . . Fully on
Position of pointer with tuner fully closed . . . . . Below the 540 kc. calibration mark

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	ADJUSTMENTS (IN ORDER SHOWN)	FUNCTION
Closed	455 Kc.	0.1 mfd.	Transl.-Grid	T2 & T1	I.F.
*1400 Kc.	1400 Kc.	200 mmfd.	Hazeltine Loop	C4	Oscillator
*1400 Kc.	1400 Kc.	200 mmfd.	Hazeltine Loop	C1	Antenna

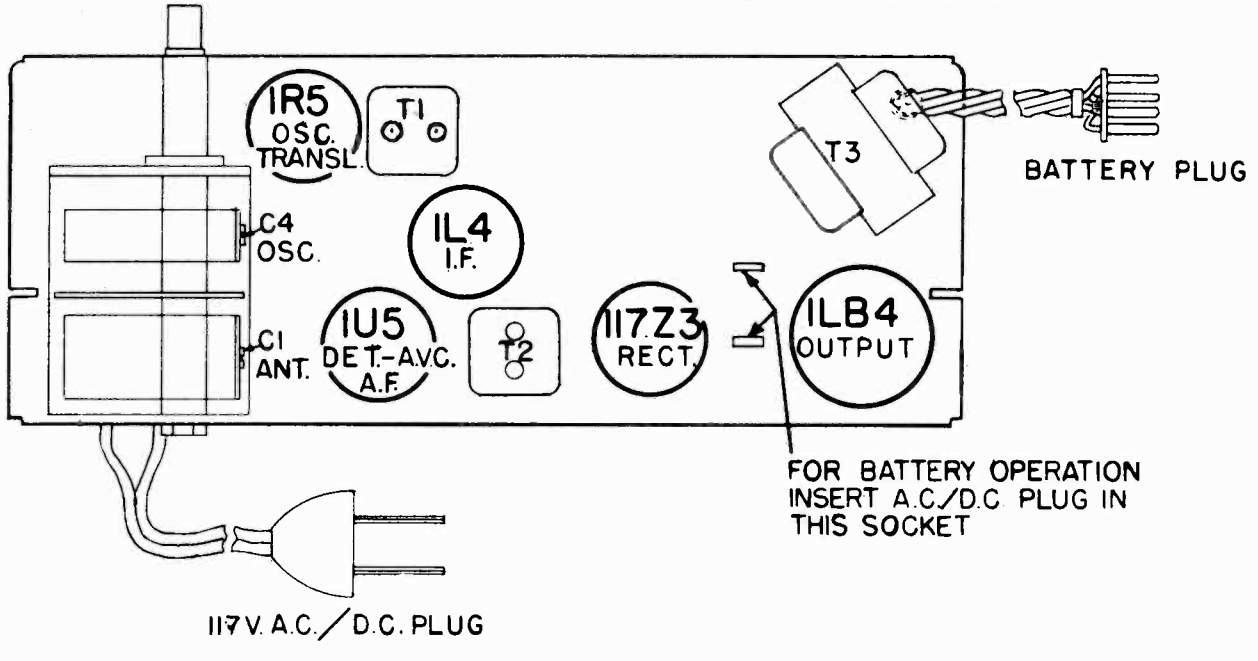
IMPORTANT ALIGNMENT NOTES:

NOTE: It is recommended that an isolation transformer be connected between the radio chassis and the line before aligning the receiver on A.C.

The alignment must be done in the order given.

Always keep the output power from the generator at its lowest possible value to prevent the AVC of the receiver from interfering with accurate alignment.

*Always make these trimmer adjustments with the loop in approximately the same position, with respect to the chassis, as it is when the chassis and loop are mounted in the case.



LOCATION OF PARTS ON TOP OF CHASSIS

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.

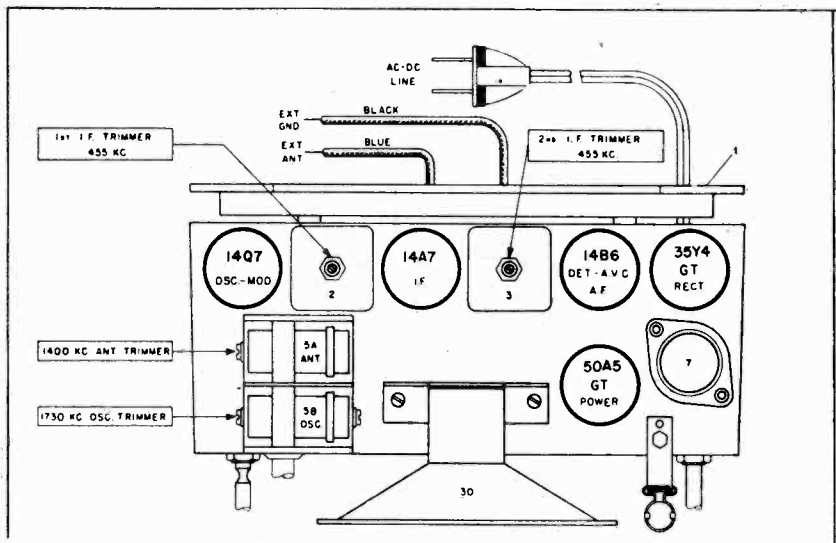
Before starting alignment:

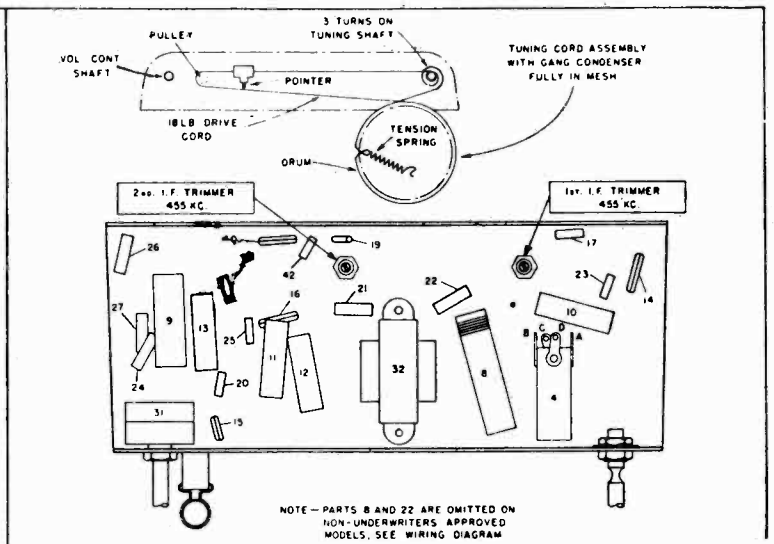
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

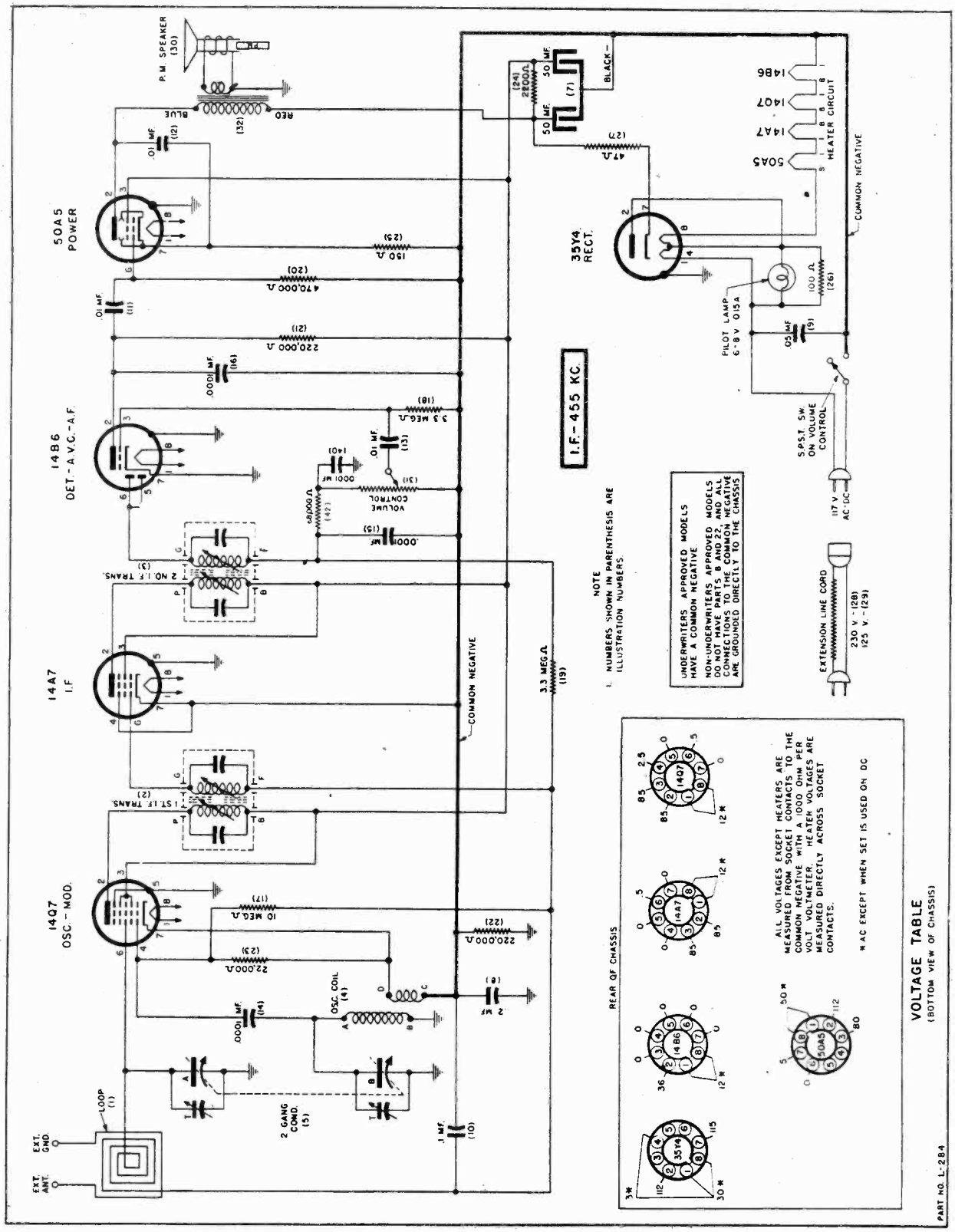
Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Exactly 1400 B. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.





MODELS L-284I, L-284NA, L-284NI, L-284NR, L-284W

SENTINEL RADIO CORP.



MODEL L-284W, L-284I, L-284NI, L-284NA, L-284NR

PARTS LIST

Ill. No.	Part No.	Part Name	Description
1	20E24	Antenna	Loop
2	20E21 or 20E261	Coil	1st I.F. Transformer
3	20E22 or 20E261-2	Coil	2nd I.F. Transformer
4	20E162	Coil	Oscillator
5	24E2 or 24E18	Condenser	Tuning, 2 Gang (3 Hole Mtg.) or Tuning, 2 Gang (2 Hole Mtg.)
7	25E1	Condenser	Dry Electrolytic, 50-50 Mfd. 150 V.
8	23E421	Condenser	Tubular, .2 Mfd. 400 Volts
9	23E416	Condenser	Tubular, .05 Mfd. 400 Volts
10	23E418	Condenser	Tubular, .1 Mfd. 400 Volts
11	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
12	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
13	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
14	23E39	Condenser	Mica, .0001 Mfd.
15	23E39	Condenser	Mica, .0001 Mfd.
16	23E39	Condenser	Mica, .0001 Mfd.
17	27E106	Resistor	Carbon, 10 Megohm 1/3 Watt
18	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
19	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
20	27E474	Resistor	Carbon, 470,000 Ohm 1/3 Watt
21	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt
22	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt (Und. Appd. Only)
23	27E223	Resistor	Carbon, 22,000 Ohm 1/3 Watt
24	27E222-3	Resistor	Carbon, 2,200 Ohm 1 Watt
25	27E151	Resistor	Carbon, 150 Ohm 1/3 Watt
26	27E101	Resistor	Carbon, 100 Ohm 1/3 Watt
27	27E470-2	Resistor	Carbon, 47 Ohm 1/2 Watt
28		Resistor	230 Volt Extension Line Cord Used in models not Underwriters Apprd.
29		Resistor	125 Volt Extension Line Cord Used in models not Underwriters Apprd.
30	1E9	Speaker	5" PM
31	28E1	Volume Control	With S.P.S.T. Switch
32	22E2	Transformer	Output for Speaker
40	23E39	Condenser	Mica, .0001 Mfd.
42	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 Watt

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E31-1	Cabinet	Walnut Plastic
7E31-2	Cabinet	Ivory Plastic
7E1-1	Cabinet	Amber Catalin
7E1-5	Cabinet	Ivory Catalin
7E1-6	Cabinet	Red Catalin
7E70	Cabinet Back	For Catalin Cabinet
7E32	Cabinet Back	For Walnut & Ivory Plastic Cabinets
41E1	Cord	6 Ft. Rubber Line Cord
20E12	Dial Plate Assem.	Dial Back Plate Assem. Less Scale
4E1	Dial Cord	30" of 18 Lb. Dial Drive Cord
9E2	Dial Crystal	Acetate Dial Crystal
36E10	Dial Scale	Calibrated Scale
20E225-3	Dial Shaft Assembly	Dial Drive Shaft with "C" Washer, Bearing & Lock Nut
35E8	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring For Drive Cord, net
37E17-1	Knob	For Walnut Cabinet
37E17-3	Knob	For Ivory Cabinet
37E29-4	Knob	For Catalin Cabinet
20E43	Pilot Lamp Socket	Pilot Lamp Socket Assembly
40E1	Pilot Lamp	6-8 Volt .150 Amp. Type 47 Lamp

VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON EITHER: 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC) OR 110-120 VOLTS DIRECT CURRENT (DC). IF THE RADIO DOES NOT OPERATE AFTER APPROXIMATELY ONE MINUTE, REMOVE THE PLUG ON THE END OF THE RADIO LINE CORD FROM THE POWER RECEPTACLE, TURN IT HALF WAY AROUND AND RE-INSERT IT INTO THE RECEPTACLE.

DIAL LIGHT

IT IS NORMAL FOR THE DIAL LIGHT TO BE DIM FOR APPROXIMATELY 60 SECONDS AFTER SET IS TURNED "ON" AND THEN ATTAIN NORMAL BRILLIANCE —ALSO, ON VERY LOUD SIGNALS THE LIGHT MAY FLUCTUATE.

ALWAYS USE A 6.3 VOLT .150 AMPERE DIAL LIGHT

MODEL 247

PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	13275	Antenna	Loop Assembly Mounted in Lid Cover.. Mention Color of Cabinet.
2	13262	Coil	First I.F. Transformer
3	13262	Coil	Second I.F. Transformer
4	†13281	Coil	Oscillator
5	13143	Condenser	Tuning (2 Gang)
6	12935	Condenser	Tubular Dry Elec. 40-40 Mfd. 150 V.
7	13148	Condenser	Tubular Dry Elec. 90 Mfd. 10 Volt.
8	12630	Condenser	Tubular .1 Mfd. 120 Volt
9	12630	Condenser	Tubular .1 Mfd. 120 Volt
10	12630	Condenser	Tubular .1 Mfd. 120 Volt
11	12630	Condenser	Tubular .1 Mfd. 120 Volt
12	12631	Condenser	Tubular .01 Mfd. 120 Volt
13	12631	Condenser	Tubular .01 Mfd. 120 Volt
14	6591	Condenser	Tubular .001 Mfd. 120 Volt
15	1147	Condenser	Tubular .05 Mfd. 200 Volt
16	12631	Condenser	Tubular .01 Mfd. 200 Volt
17	12630	Condenser	Tubular .1 Mfd. 120 Volt
18	1275	Condenser	Tubular .005 Mfd. 400 Volt
19	9457	Condenser	Tubular .05 Mfd. 400 Volt
20	9458	Condenser	Mica .00025 Mfd. + or — 20%
21	9458	Condenser	Mica .00025 Mfd. + or — 20%
22	7934	Condenser	Mica .0001 Mfd. + or — 20%
23	†13302	Condenser	Mica .000275 Mfd. + or — 1%
24	12632	Resistor	Carbon 10 Meg Ohm 1/3 Watt
25	12841	Resistor	Carbon 4 Meg Ohm 1/3 Watt
26	12841	Resistor	Carbon 4 Meg Ohm 1/3 Watt
27	12841	Resistor	Carbon 4 Meg Ohm 1/3 Watt
28	12224	Resistor	Carbon 3 Meg Ohm 1/3 Watt
29	12060	Resistor	Carbon 1 Meg Ohm 1/3 Watt
30	12840	Resistor	Carbon 75,000 Ohm 1/3 Watt
31	12840	Resistor	Carbon 75,000 Ohm 1/3 Watt
32	12699	Resistor	Carbon 25,000 Ohm 1/3 Watt
33	12834	Resistor	Carbon 10,000 Ohm 1/3 Watt
34	13168	Resistor	Carbon 800 Ohm 1/3 Watt
35	12898	Resistor	Carbon 600 Ohm 1/3 Watt
36	13193	Resistor	Carbon 1,000 Ohm 1/3 Watt
37	*13149	Resistor	Wire Wound 800 Ohms
37	‡13364	Resistor	Wire Wound 1220 & 1400 Ohm
38	*13266	Resistor	Carbon 420 Ohm ½ Watt
39	13150	Resistor	Wire Wound 1,400 Ohm
40	13247	Resistor	Line Cord Assembly (825 Ohm)
41	12605A	Speaker	P. M. (3½")
42	13145	Switch	Changeover
43	12608	Switch	Snap
44	13141	Transformer	Output
45	13144	Volume Control	

MISCELLANEOUS PARTS

Part No.	Part Name	Description
13146	Arm	For Voltage Selector Switch
12956	Bat. Connectors	B— & B+ Dot Snapper "B" Connectors (Set of Two)
13152	Battery Spring	"A" Battery Contacts
13162	Button Plug	Metal Plug for Cabinet Back
	Cabinet	Complete Cabinet Less Lid Assembly
	Cabinet Top	Top Section of Cabinet Only
	Cabinet Bottom	Bottom Section of Cabinet Only
12735	Chassis Plate	Metal Bottom Plate
10335	Chassis Fastener	Trimount Studs for Metal Bottom Plate (Pkg. of 12)
	Handle	For Cabinet
12741	Handle Ring	For Attaching Handle to Cabinet (Pkg. of 2)
12795	Knob Pointer	Dial Indicator
12798	Knob	For Tuning
12851	Knob	For Volume
12609	Latch Lift	Latch Lift Plate
12610	Latch Bar	Latch Lift Bar
12738	Lock Assembly	Lock Used to Hold Two Halves of Cabinet Together
13064	Loop Jack	External Loop Jack
13147	Plug	Three Prong
13164	Socket	Female Receptacle Used on Resistor Line Cord

*NOTE: These resistors were used in first production only, they were replaced with 1 No. 13245a 950 Ohm Wire Wound and 1 No. 13267a 270 Ohm 1 Watt Resistor.

‡Part No. 13364 Wire Wound Resistor having 1220 and 1400 Ohm sections replaced No. 13149, 13266 and 13150 Resistors in latest production.

†NOTE—Replaces part No. 13142 Oscillator Coil and 13179 Mica .00024 Mfd. Padder Condenser which were used in first production. It is important to remember that the 13142 and 13281 Oscillator Coils and 13179 .00024 Mfd. and 13302 .000275 Mfd. Condenser cannot be interchanged. When 13281 Coil is used the .000275 Mfd. Padder Condenser 13302 must be used. With 13142 Oscillator Coil the .00024 Mfd. Condenser 13179 must be used.

Sets having part No. 13281 Oscillator Coil and 13302 Mica .000275 Condenser can be identified by the letter "A" which will be found stamped on the back of the chassis.

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right. If more than one adjustment is required, make the adjustment marked (1) first, (2) next. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA AND BATTERIES IN THE SAME POSITION THEY WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1550 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator. (b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to lug on stator of gang condenser to which loop lead is connected.	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.
1 Exactly 1550 K.C.	Exactly 1550 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1550 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.

BATTERY INSTALLATION

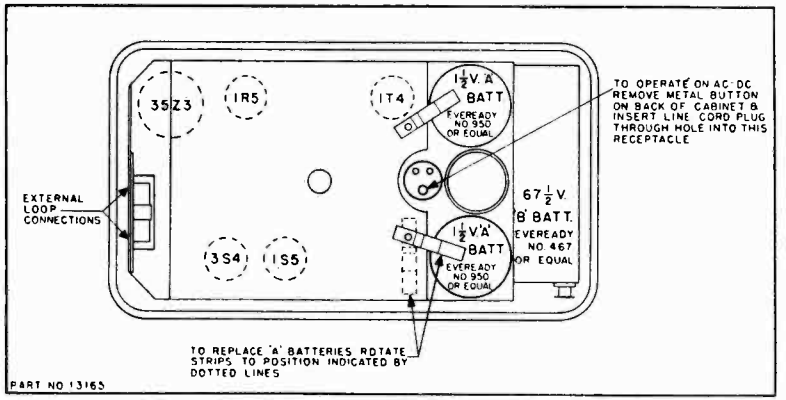
The plastic case is made in two sections. To install batteries in receiver, push the slide lock button underneath the carrying handle and gently separate the case.

Place the batteries in the exact position shown on the diagram.

Press the snap buttons on the end of the short flexible wire leads into the terminals on top of "B" battery.

After batteries have been installed, gently press the two sections of the case together and lock in place with slide button underneath case handle.

WHEN INSTALLING BATTERIES BE CAREFUL NOT TO INJURE ANY OF THE EXPOSED RADIO PARTS.



BATTERY LIFE

The life of the batteries depends on the number of hours the set is operated.

Based on average usage, the flashlight "A" batteries will supply approximately ten hours' service—the "B" battery approximately forty hours' service.

Because the "A" batteries become exhausted much faster than the "B" battery, six to eight "A" batteries may be used during the life of a single "B" battery.

Be sure to try new "A" batteries before replacing the "B" battery.

115 VOLT D.C. OR 115 VOLT 50-60 CYCLE ELECTRIC INSTALLATION AND OPERATION

To operate the receiver on 110-120 volt direct current or 50-60 cycle alternating current, just:

(a) Remove metal button on back of cabinet and insert plug on end of AC-DC line cord into receptacle in back of the small hole that will be exposed when metal button is removed.

(b) Place battery or AC-DC selector knob in AC/DC position.

If the radio does not operate on "DC" current after approximately one minute, remove the plug on the end of radio set power cord from the house current receptacle, turn it half way around (180°) and reinsert it into the power receptacle.

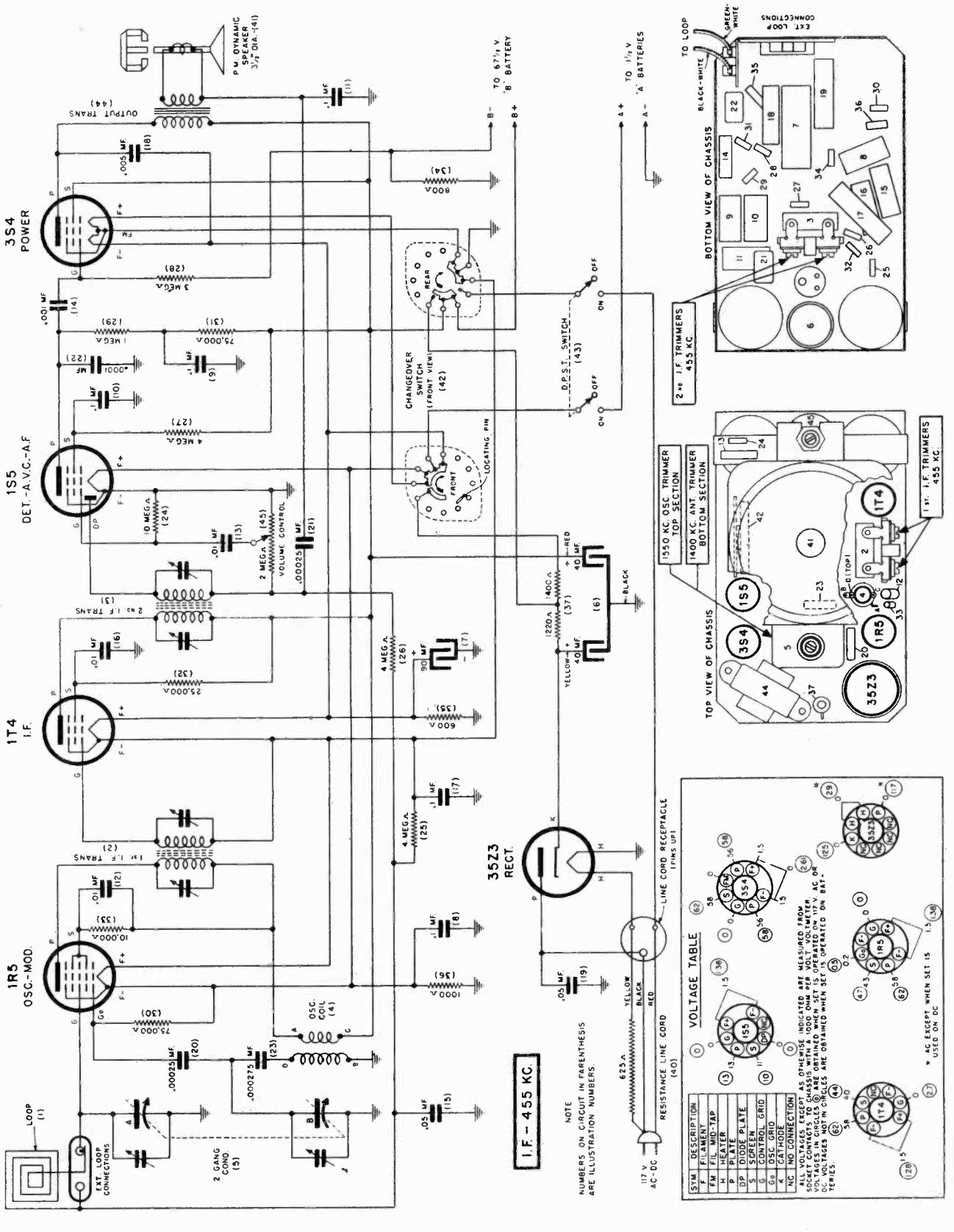
THIS RECEIVER CAN BE OPERATED EITHER WITH DRY BATTERIES OR FROM 110-120 VOLT DIRECT CURRENT OR 50-60 CYCLE ALTERNATING CURRENT.

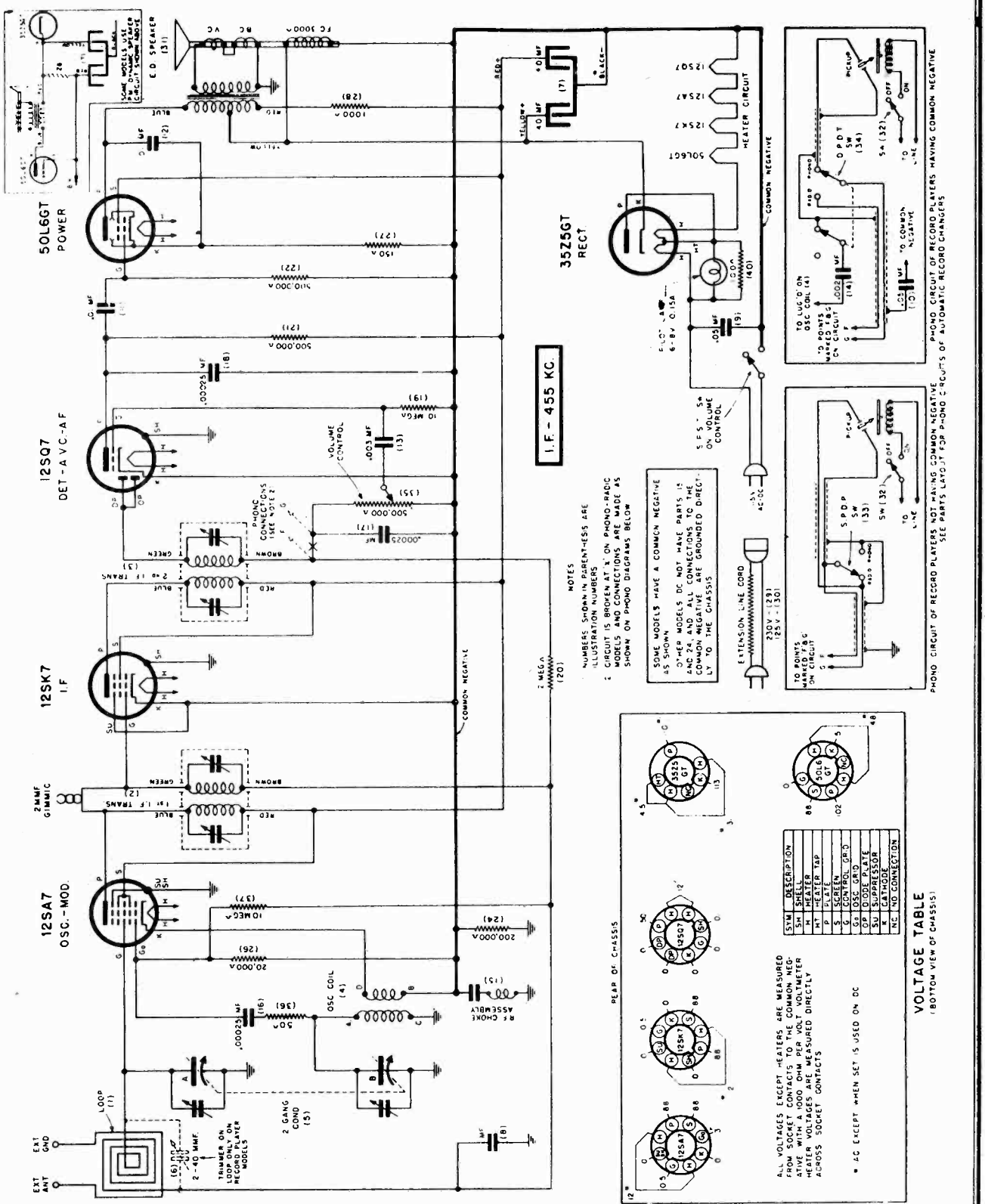
THUS THE SET MAY BE OPERATED ON FARMS, IN SUMMER CAMPS, HUNTING LODGES, BOATS, OR IN ANY ISOLATED DISTRICTS WHERE ELECTRIC SERVICE IS NOT AVAILABLE BY USING BATTERIES. WHERE 110-120 VOLT DIRECT CURRENT OR 50-60 CYCLE ALTERNATING CURRENT IS AVAILABLE, THE RADIO MAY BE OPERATED DIRECT FROM THE ELECTRIC LINES WITHOUT USING THE BATTERIES OR MAKING ANY CHANGE IN THE RECEIVER.

WHEN THE "BATTERY OR AC-DC" SWITCH KNOB IS IN THE AC-DC POSITION THE BATTERIES ARE ENTIRELY DISCONNECTED AND THE SET RECEIVES ALL ITS POWER FROM THE AC OR DC ELECTRIC LINE.

MODEL 247

SENTINEL RADIO CORP.



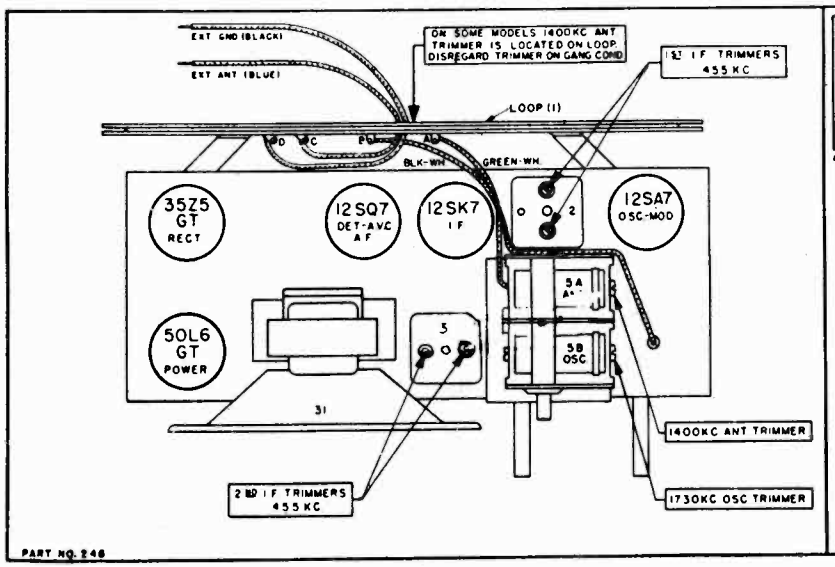

50L6GT POWER
12SQ7 DET-AVC-AF
12SK7 I.F.
12SA7 OSC.-MOD.
35Z5GT RECT.
I.F. - 455 KC.
VOLUME CONTROL
PHONO CONNECTIONS (SEE NOTE 2)
2 GANG COND. (5)
OSC COIL (4)
R.F. CHOKE ASSEMBLY
LOOP (1)
TRIMMER ON LOOP ONLY ON RECORD CHANGER MODELS
EXT. GND.
EXT. ANT.
2MMF GIMMIC
2 MEGA (20)
COMMON NEGATIVE
HEATER CIRCUIT
50L6GT
12SK7
12SA7
12SQ7
EXTENSION LINE CORD
230V - (29)
125V - (30)
S.P.S.T. S.W. ON VOLUME CONTROL
SPDP SW (33)
DPDT SW (34)
TO LUG ON OSC COIL (4)
TO POINTS MARKED F & G ON CIRCUIT
TO COMMON NEGATIVE
PHONO CIRCUIT OF RECORD PLAYERS HAVING COMMON NEGATIVE
SEE PARTS LAYOUT FOR PHONO CIRCUITS OF AUTOMATIC RECORD CHANGERS
PHONO CIRCUIT OF RECORD PLAYERS NOT HAVING COMMON NEGATIVE
NOTES
NUMBERS SHOWN IN PARENTHESES ARE ILLUSTRATION NUMBERS
CIRCUIT IS BROKEN AT 'X' ON PHONO-RADIO MODELS AND CONNECTIONS ARE MADE AS SHOWN ON PHONO DIAGRAMS BELOW
SOME MODELS HAVE A COMMON NEGATIVE AS SHOWN
OTHER MODELS DO NOT HAVE PARTS 15 AND 24, AND ALL CONNECTIONS TO THE COMMON NEGATIVE ARE GROUNDED DIRECTLY TO THE CHASSIS
SOME MODELS USE A DIFFERENT CIRCUIT FROM THIS
E.D. SPEAKER (31)
VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)
REAR OF CHASSIS
ALL VOLTAGES EXCEPT HEATERS ARE MEASURED FROM SOCKET CONTACTS TO THE COMMON NEGATIVE WITH A 1000 OHM PER VOLT VOLTMETER
HEATER VOLTAGES ARE MEASURED DIRECTLY ACROSS SOCKET CONTACTS
* AC EXCEPT WHEN SET IS USED ON DC
SYM DESCRIPTION
SH SHIELD
HT HEATER
HT HEATER TAP
P PLATE
S SCREEN
G CONTROL GRID
Gs OSC. GRID
DP DIODE PLATE
SU SUPPRESSOR
K CATHODE
NC NO CONNECTION

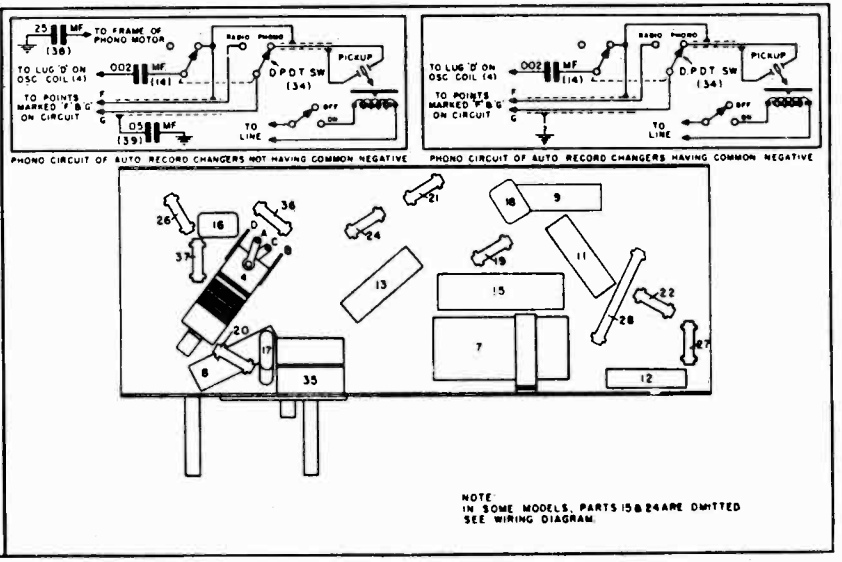
ALIGNMENT PROCEDURE

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. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1730 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator. (b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Set receiver dial to:		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
Any point where no interfering signal is received		Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid of 12SA7 tube. Low side to frame of gang condenser through .01 Mfd. condenser.	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.
1	Exactly 1730 K.C.	Exactly 1730 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of gang condenser through .01 Mfd. condenser.	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of gang condenser through .01 Mfd. condenser.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.





VOLTAGE RATING

BE SURE THAT THE VOLTAGE RATING MARKED ON THE WHITE PAPER LICENSE NOTICE ATTACHED EITHER TO THE BOTTOM OR THE INSIDE OF THE CABINET IS EXACTLY THE SAME AS YOUR HOUSE LIGHT CURRENT SUPPLY—IF IN DOUBT CONSULT YOUR LOCAL ELECTRIC LIGHT COMPANY OR RADIO DEALER.

VOLTAGE RATING OF ALL MODELS NOT EQUIPPED WITH PHONO PLAYER OR AUTOMATIC RECORD-CHANGER

IF THE RECEIVER IS NOT EQUIPPED WITH PHONO PLAYER OR AUTOMATIC RECORD-CHANGER it may be used on either 110-120 volt 50/60 cycle alternating current (AC) or 110-120 volt direct current (DC).

If the radio does not operate on DC current after approximately one minute remove the plug on the end of radio line cord from the house current receptacle turn it half way around (180°) and re-insert it into power receptacle.

VOLTAGE RATING OF PHONO PLAYER AND AUTOMATIC RECORD-CHANGER MODELS

MODELS EQUIPPED WITH PHONO PLAYER OR AN AUTOMATIC RECORD-CHANGER ARE DESIGNED FOR USE ON ALTERNATING CURRENT ONLY. While the radio may be operated on either 50 or 60 cycle 110-120 volt alternating current (AC) the phonograph motor must only be used on the correct frequency.

If license notice is marked 115 volt 60 cycle the phonograph motor is designed for operation on 110-120 volt 60 cycle current only.

If license notice is marked 115 volt 50 cycle the phonograph motor is designed for operation on 110-120 volt 50 cycle current only.

DO NOT ATTEMPT TO OPERATE PHONO PLAYER OR RECORD CHANGER MODELS ON DIRECT CURRENT. TO DO SO WILL DAMAGE THE MOTOR.

THE LOOP AERIAL SUPPLIED with the radio should provide ample reception in average locations.

Loop aerials are directional — for maximum volume and range when using the loop carefully tune in the desired station, next lift the complete radio and slowly turn it until the station is heard with greatest volume, then set the radio down in this position.

OUTSIDE AERIAL

When the radio is used in shielded areas or when located a great distance from broadcast stations, the volume of some or all stations may not be ample in which case it would be necessary to ATTACH A 25-50 ft. OUTDOOR AERIAL TO THE BLUE LEAD COMING OUT THE REAR OF THIS CHASSIS to obtain satisfactory results.

GROUND

When a regular aerial is used, best result will be obtained with a ground attached to the black lead.

WARNING—Do not attach a ground direct to the radio chassis—ANY EXTERNAL GROUND CONNECTION TO ANY METAL PART OF THE CHASSIS WILL CAUSE A SHORT AND POSSIBLE DAMAGE.

PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	13222	Coil	Loop Antenna (A & B)
1	13239	Coil	Loop Antenna (C & D)
1	13254	Coil	Loop Antenna (E & F)
2	13213	Coil	First I.F. Transformer
3	11988	Coil	Second I.F. Transformer
4	13221	Coil	Oscillator
5	13215	Condenser	Tuning (2 Gang) with Pulley
6	1597	Condenser	Trimmer 3-35 Mmf (A & C)
7	13701	Condenser	Tubular Dry Elec. 40-40 Mfd 150 V (B, D & F)
7	13545	Condenser	Tubular Dry Elec. 40-40 Mfd 150V (A, C, & E)
8	1151	Condenser	Tubular .1 Mfd. 200 Volt
9	9457	Condenser	Tubular .05 Mfd. 400 Volt
10	9457	Condenser	Tubular .05 Mfd. 400 Volt (C)
11	9468	Condenser	Tubular .01 Mfd. 400 Volt
12	9468	Condenser	Tubular .01 Mfd. 400 Volt
13	1368	Condenser	Tubular .003 Mfd. 400 Volt
14	10762	Condenser	Tubular .002 Mfd. 400 Volt (C, E & F)
15	13474	Condenser	R.F. Choke Wound on a Tubular .2 Mfd. 400 Volt (A, C & E)
16	9458	Condenser	Mica .00025 Mfd. + or — 20%
17	9458	Condenser	Mica .00025 Mfd. + or — 20%
18	9458	Condenser	Mica .00025 Mfd. + or — 20%
19	4804	Resistor	Carbon 10 Meg Ohm 1/3 Watt
20	2705	Resistor	Carbon 2 Meg Ohm 1/3 Watt
21	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt
22	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt
24	2155	Resistor	Carbon 200,000 Ohm 1/3 Watt (A, C, & E)
26	1784	Resistor	Carbon 20,000 Ohm 1/3 Watt
27	9018	Resistor	Carbon 150 Ohm 1/3 Watt
28	4998	Resistor	Carbon 1,000 Ohm 1 Watt
29	11860	Resistor	230 Volt Line Cord (B)
30	11861	Resistor	125 Volt Line Cord (B)
31	13288	Speaker	Permanic 5" (B & D)
	11364	Speaker	P.M. 5" (A & C)
	13250	Speaker	P.M. 5" (F)
	13255	Speaker	P.M. 5" (E)
	13565	Speaker	E.D. 5" (B & D)
	13566	Speaker	E.D. 5" (A & E)
	13567	Speaker	E.D. 5" (F)
	13568	Speaker	E.D. 5" (E)
32	12281	Switch	S.P.D.T. Meter On-Off Switch (C & D)
33	12281	Switch	S.P.D.T. Radio-Phone Switch (D)
34	12909	Switch	D.P.D.T. Radio-Phone Switch (C, E & F)
35	11358	Vol. Control	With S.P.S.T. Switch
36	3706	Resistor	Carbon 50 Ohm 1/3 Watt
37	4804	Resistor	Carbon 10 Meg Ohm 1/3 Watt
38	9032	Condenser	Tubular .25 Mfd. 200 Volt (F)
39	1147	Condenser	Tubular .05 Mfd. 200 Volt (F)
40	10540	Resistor	Carbon 100 Ohm ½ Watt

(A)—Used only in models having common ground and not equipped with phono player or automatic record changer.

(B)—Used only in models not having common ground and not equipped with phono player or automatic record-changer.

(C)—Used only in phono player model and having common ground.

(D)—Used only in phono player model not having common ground.

(E)—Used only in models having record-changer and having common ground.

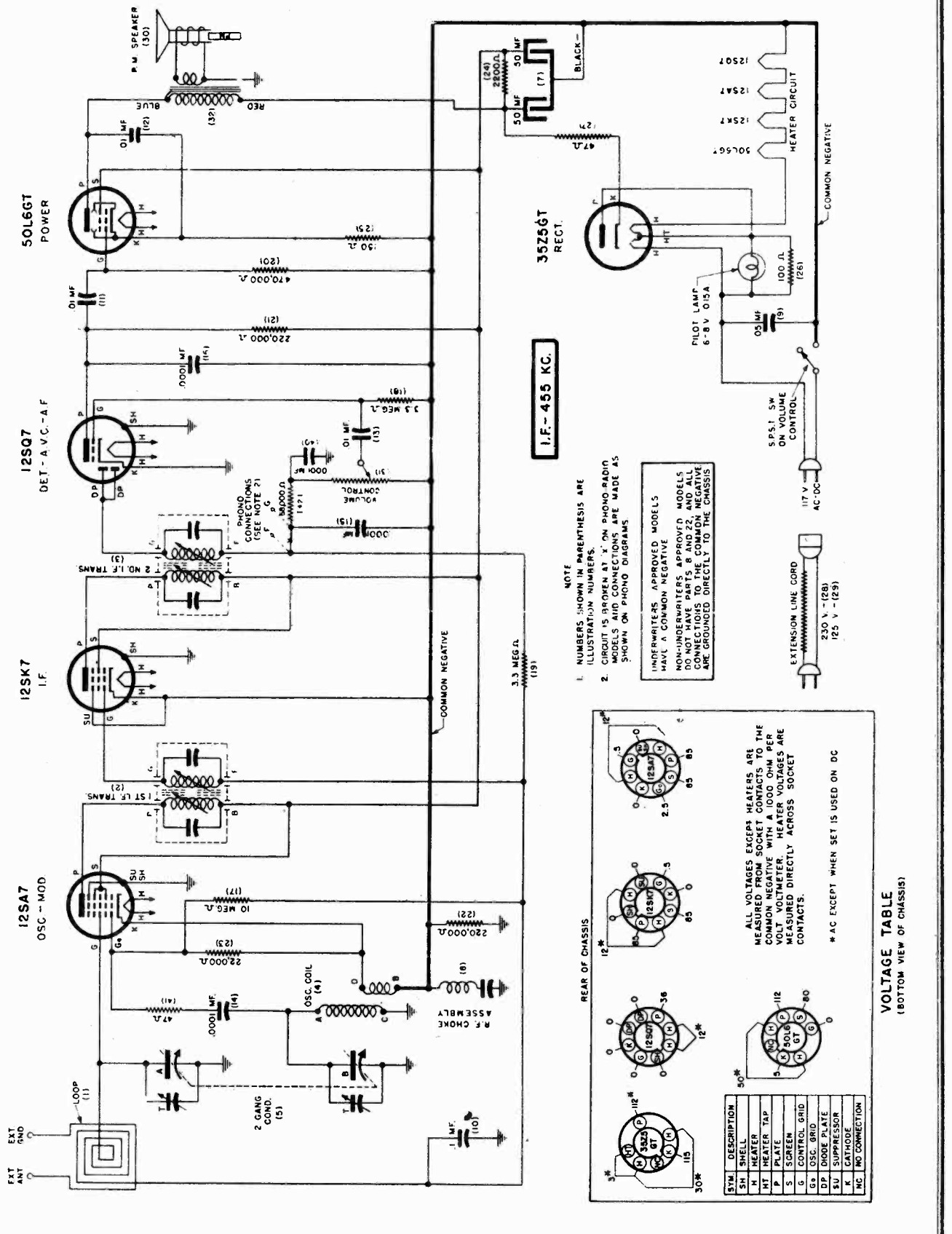
(F)—Used only in models having record-changer and not having common ground.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
12022	Back	For Plastic Cabinets
12280	Back	For Phono Player Cabinet
11304	Bulb	6-8 Volt .150 Amp. No. 47 Bayonet Base Dial Light
276	Cabinet	Ivory Plastic
278	Cabinet	Walnut Plastic
13217	Dial Scale	Calibrated Scale
11992	Dial Shaft	Drive Shaft
8184	Dial Cord	17" of 18 Lb. Drive Cord
11357	Dial Crystal	Acetate Crystal for Dial
13248	Dial Pointer	Dial Indicator
12105	Knob	Used with Walnut Plastic Cabinet
12106	Knob	Used with Ivory Plastic Cabinet
12096	Knob	Used with Phono Player and Automatic Record-Changer Model only
12916	Pickup	Crystal Pickup and Arm Used Only with Phono-Player

SENTINEL RADIO CORP.

MODELS 284W, 284I, 284NI, 284NA, 1U-284W, 1U-284I, 1U-284NI, 1U-284NA



For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.

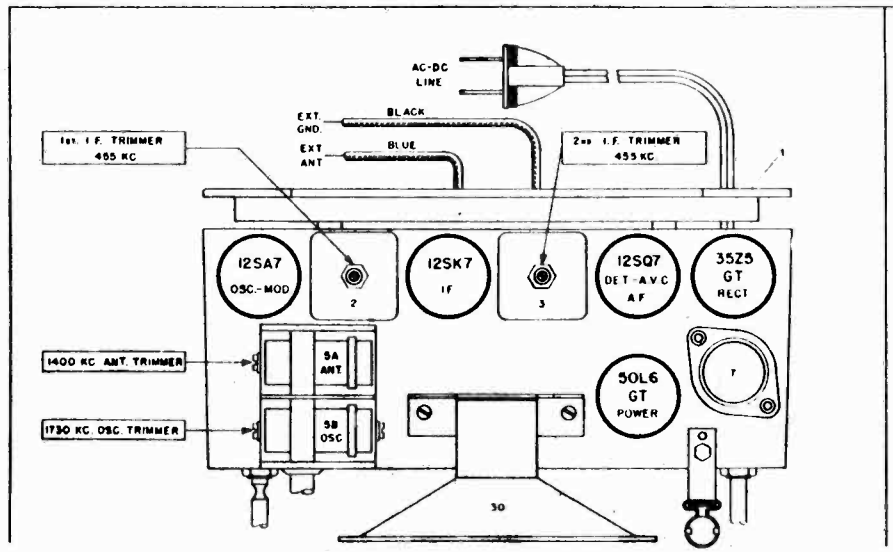
Before starting alignment:

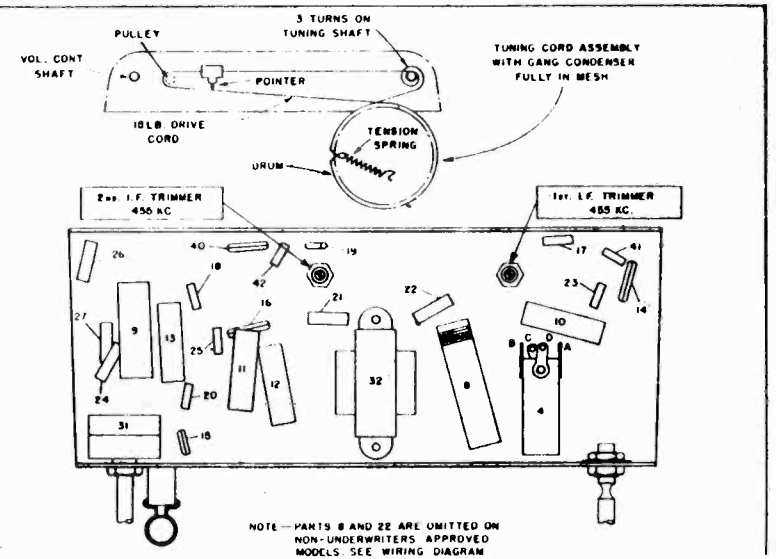
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
2	Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.





SENTINEL RADIO CORP. MODELS 284W,284I,284NI, 284NA,1U-284W,1U-284I, 1U-284NI,1U-284NA

MODELS 284W, 284I, 284NI, 284NA, 1U-284W, 1U-284I, 1U-284NI, 1U-284NA,

PARTS LIST

Ill. No.	Part No.	Part Name	Description
1	20E24	Antenna	Loop
2	20E21	Coil	1st I.F. Transformer
3	20E22	Coil	2nd I.F. Transformer
*4	20E13 or	Coil	Oscillator See *Note
*4	20E162	Coil	Oscillator See *Note
5	24E2	Condenser	Tuning, 2 Gang (3 Hole Mtg.)
5	24E18	Condenser	Tuning, 2 Gang (2 Hole Mtg.)
7	25E1	Condenser	Dry Electrolytic, 50-50 Mfd. 150 V.
8	20E75	Choke	R.F. Choke Assembly (Und. Appd. Only)
9	23E416	Condenser	Tubular, .05 Mfd. 400 Volts
10	23E218	Condenser	Tubular, .1 Mfd. 200 Volts
11	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
12	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
13	23E211	Condenser	Tubular, .01 Mfd. 200 Volts
14	23E39	Condenser	Mica, .0001 Mfd.
15	23E39	Condenser	Mica, .0001 Mfd.
16	23E39	Condenser	Mica, .0001 Mfd.
17	27E106	Resistor	Carbon, 10 Megohm 1/3 Watt
18	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
19	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
20	27E474	Resistor	Carbon, 470,000 Ohm 1/3 Watt
21	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt
22	29E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt (Und. Appd. Only)
*23	27E223 or	Resistor	Carbon, 22,000 Ohm 1/3 Watt See *Note
*23	27E473	Resistor	Carbon, 47,000 Ohm See *Note
24	27E222-2	Resistor	Carbon, 2,200 Ohm 1 Watt
25	27E151	Resistor	Carbon, 150 Ohm 1/3 Watt
26	27E101	Resistor	Carbon, 100 Ohm 1/3 Watt
27	27E470-2	Resistor	Carbon, 47 Ohm 1/2 Watt
28		Resistor	230 Volt Extension Line Cord Used in models not Underwriters Apprd.
29		Resistor	125 Volt Extension Line Cord Used in models not Underwriters Apprd.
30	1E9	Speaker	5" PM
31	28E1	Volume Control	With S.P.S.T. Switch
32	22E2	Transformer	Output for Speaker
40	23E39	Condenser	Mica, .001 Mfd.
*41	27E470	Resistor	Carbon, 47 Ohm 1/3 W. See *Note
42	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 W.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E31-1	Cabinet	Walnut Plastic
7E31-2	Cabinet	Ivory Plastic
7E1-1	Cabinet	Catalin Plastic
7E70	Cabinet Back	For Catalin Cabinet
7E32	Cabinet Back	For Walnut & Ivory Plastic Cabinets
41E1	Cord	6 Ft. Rubber Line Cord
20E12	Dial Plate Assem.	Dial Back Plate Assem. Less Scale
4E1	Dial Cord	30" of 18 Lb. Dial Drive Cord
9E2	Dial Crystal	Acetate Dial Crystal
36E10	Dial Scale	Calibrated Scale
68E1	Dial Shaft	Drive Shaft
19E3	Dial Shaft Bearing	Bearing For Drive Shaft
35E8	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring For Drive Cord
37E17-1	Knob	For Walnut Cabinet
37E17-3	Knob	For Ivory Cabinet
37E29-1	Knob	For Catalin Cabinet
20E43	Pilot Lamp Socket	Pilot Lamp Socket Assembly
40E1	Pilot Lamp	6-8 Volt .150 Amp. Type 47 Lamp

*NOTE: First production run of this model used Oscillator Coil Part Number 20E13, Illus. No. 4, with the 47 Ohm Resistor, Illus. No. 41, and the value of the 12SA7 grid leak Resistor, Illus. No. 23, was 47,000 Ohms.
In later production, Part Number 20E13, Oscillator Coil, was replaced with Part Number 20E162; also the 47 Ohm Resistor, Illus. No. 41, was eliminated and the value of Resistor, Illus. No. 23, was changed to 22,000 Ohms.
BECAUSE PERFORMANCE OF THE SET WILL BE SOMEWHAT IMPROVED BY USING OSCILLATOR COIL Part Number 20E162, WE RECOMMEND THAT WHENEVER IT IS NECESSARY TO REPLACE THE OSCILLATOR COIL, THAT ONLY Part Number 20E162 BE USED FOR THIS PURPOSE.

MODEL 284GA, 1U284GA

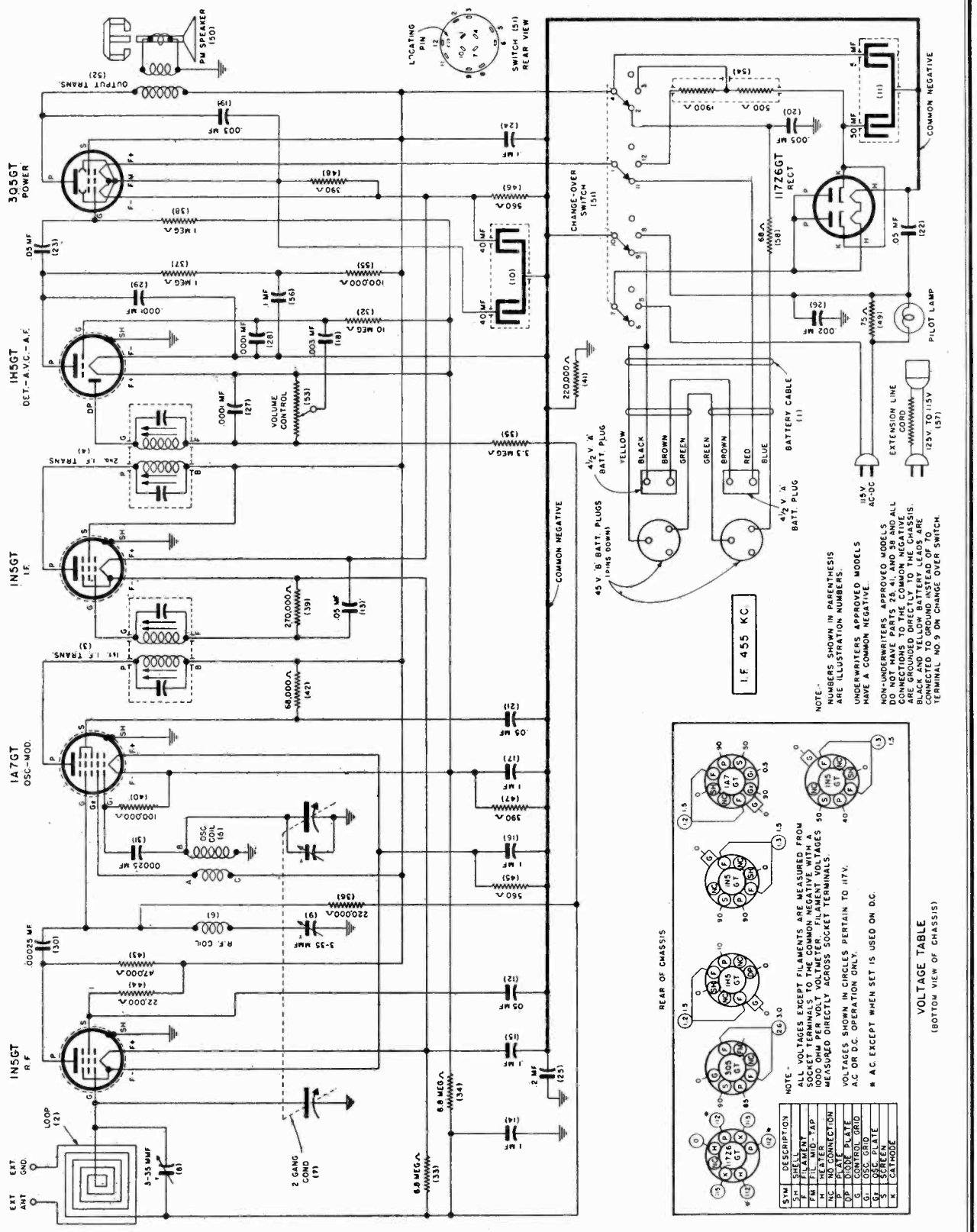
PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	20E24	Antenna	Loop
2	20E21 OR	Coil	1st I.F. Trans.
2	20E261	Coil	1st. I.F. Trans.
3	20E22 OR	Coil	2nd I.F. Trans.
3	20E261-2	Coil	2nd I.F. Trans.
4	20E162	Coil	Oscillator
5	24E2 OR	Condenser	Tuning, 2 Gang (3 Hole Mtg.)
5	24E18	Condenser	Tuning, 2 Gang (2 Hole Mtg.)
7	25E1 OR	Condenser	Dry Elect. (50-50 Mfd.) 150 V.
7	25E18	Condenser	Dry Elect. (50-50 Mfd.) 150 V. Und. App'd only
8	23E421	Condenser	Tubular, .2 Mfd. 400 V.
9	23E416	Condenser	Tubular, .05 Mfd. 400 V.
10	23E418	Condenser	Tubular, .1 Mfd. 400 V. (Und. App'd only)
11	23E211	Condenser	Tubular, .01 Mfd. 200 V.
12	23E414	Condenser	Tubular, .03 Mfd. 400 V.
13	23E211	Condenser	Tubular, .01 Mfd. 200 V.
14	23E39	Condenser	Mica, .0001 Mfd.
15	23E39	Condenser	Mica, .0001 Mfd.
16	23E39	Condenser	Mica, .0001 Mfd.
17	23E106	Resistor	Carbon, 10 Megohm 1/3 Watt
18	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
19	27E335	Resistor	Carbon, 3.3 Megohm 1/3 Watt
20	27E474	Resistor	Carbon, 470,000 Ohm 1/3 Watt
21	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt
22	27E224	Resistor	Carbon, 220,000 Ohm 1/3 Watt Und. App'd only
23	27E223	Resistor	Carbon, 22,000 Ohm 1/3 Watt
24	27E222-3	Resistor	Carbon, 2,200 Ohm 1 Watt
25	27E151	Resistor	Carbon, 150 Ohm 1/3 Watt
26	27E101	Resistor	Carbon, 100 Ohm 1/3 Watt
27	27E470-2	Resistor	Carbon, 47 Ohm 1/2 Watt
28	23E39	Condenser	Mica, .0001 Mfd.
29	27E683	Resistor	Carbon, 68,000 Ohm 1/3 Watt
30	1E9	Speaker	5" P. M.
31	28E1	Vol. Control	With S.P.S.T. Switch
32	22E2	Transformer	Output for Speaker
33	23E416	Condenser	Tubular, .05 Mfd. 400 V.
34	23E418	Condenser	Tubular, .1 Mfd. 400 V.
35	20E203-2 OR	Switch	Radio Phono D.P.D.T.
35	20E203-4	Switch	Radio Phono D.P.D.T. Und. App'd only

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E106	Cabinet	Complete Cabinet
7E59	Cabinet Back	
41E1	Line Cord	6 Ft. Rubber Line Cord
5E14-1	Dial Plate Assembly	Dial Back Plate Assembly Less Dial Scale and Drive Shaft
4E1	Dial Cord	30" of 18 Lb. Dial Drive Cord
36E10-2	Dial Scale	Calibrated Scale
20E225-3	Dial Shaft Assembly	Drive Shaft with "C" Washer & Locknut
35E8	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring for Drive Cord
37E27-1	Knob	
20E43	Pilot Lamp Socket	Pilot Lamp Socket Assembly
40E1	Pilot Lamp	6-8 Volt .150 Amp. Type 47 Lamp

SENTINEL RADIO CORP. MODELS 285P, 1U285P



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. Make the adjustment marked (1) first, (2) next, (3) third, etc.

Before starting alignment:

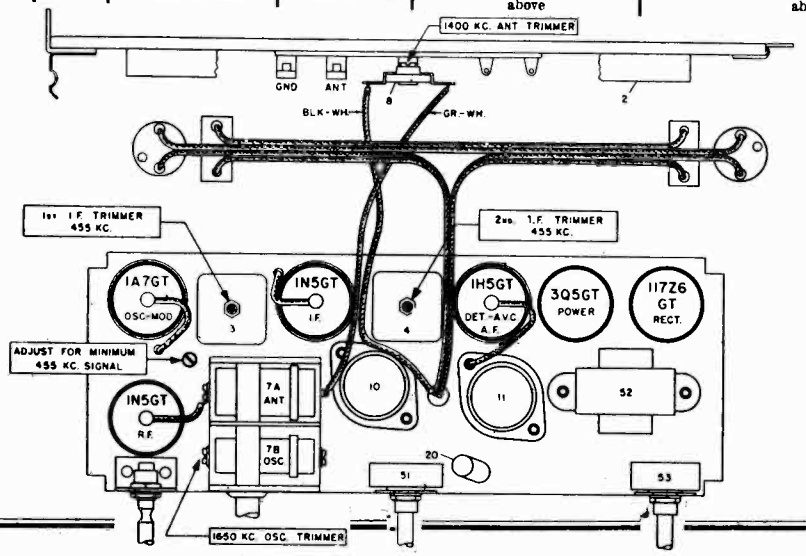
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

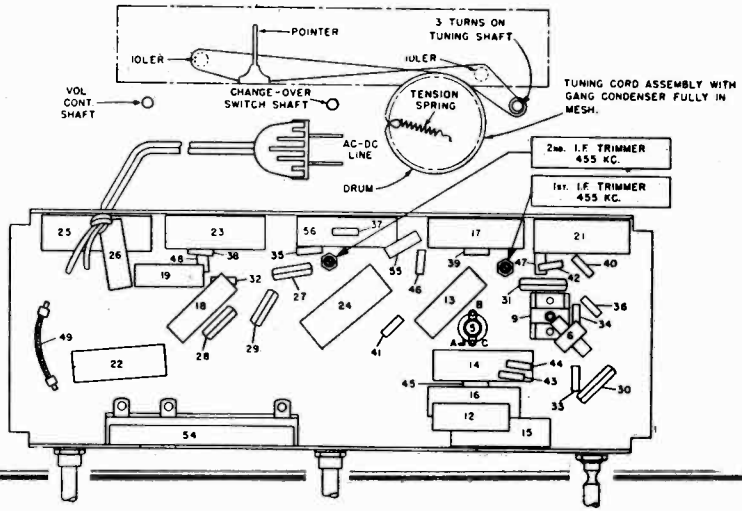
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) WHEN ADJUSTING 1650 KC OSCILLATOR TRIMMER AND 455 KC TRIMMER remove chassis from cabinet and disconnect the white-green and white-black loop connection wires from the 1400 KC loop antenna trimmer. Attach a 1 megohm resistor across these wires and feed output of test oscillator across the 1 megohm resistor.

(d) THE 1400 KC LOOP ANTENNA TRIMMER is accessible through hole in cabinet back. It should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet and the back IN CLOSED position. When aligning the 1400 KC trimmer connect test oscillator output to the "ANT" and "GND" clips that are attached to the inside of the cabinet back.

Steps	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to	Refer to parts layout diagram for location of trimmers mentioned below:
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 1A7GT tube, Low side to chassis (if non-Underwriter Approved) or Common Negative (if Underwriter Approved).	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
2	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	See paragraph (C) above	See paragraph (C) above	Adjust R. F. coil trimmer for minimum 455 K. C. signal.
3	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.			Adjust 1650 K. C. oscillator trimmer for maximum output.
4	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	See paragraph (D) above	Adjust 1400 K. C. antenna trimmer for maximum output.





MODELS 285P, 1U285P

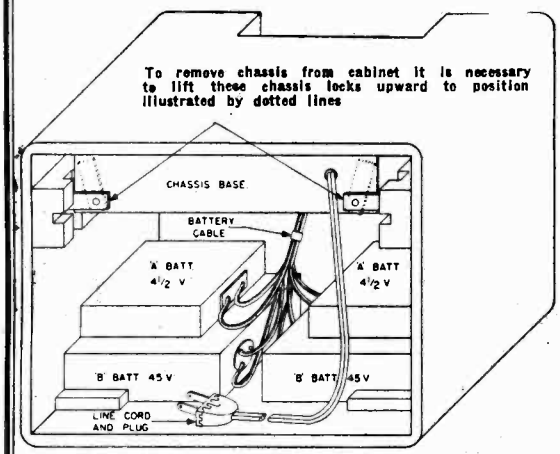
SENTINEL RADIO CORP.

PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	20E79	Cable	Battery with 2 "B" and 2 "A" Plugs
2	20E82	Coil	Honey Comb Type Loop with Back
		or	
2	20E160-1	Coil	Flat Type Loop with Back
3	20E53	Coil	1st I.F. Transformer
4	20E54	Coil	2nd I.F. Transformer
5	20E52	Coil	Oscillator
6	2E19	Coil	R. F.
7	24E2	Condenser	Tuning, 2 Gang, 2 Hole Mtg—with Pulley
		or	
7	24E18	Condenser	Tuning, 2 Gang, 3 Hole Mtg—with Pulley
8	24E3	Condenser	Trimmer, 3-35 MMF
9	24E3	Condenser	Trimmer, 3-35 MMF
10	25E4	Condenser	Dry Elec. 40-40 Mfd. 25 Volt
		or	
10	25E18	Condenser	Dry Elec. 50-50 Mfd. 150 Volt, Und. Approved Models only
11	25E1	Condenser	Dry Elec. 50-50 Mfd. 150 Volt
		or	
11	25E17	Condenser	Dry Elec. 40-40 Mfd. 25 Volt, Und. Approved Models only
12	23E216	Condenser	Tubular, .05 Mfd. 200 Volt
13	23E216	Condenser	Tubular, .05 Mfd. 200 Volt
14	23E218	Condenser	Tubular, .1 Mfd. 200 Volt
15	23E218	Condenser	Tubular, .1 Mfd. 200 Volt
16	23E218	Condenser	Tubular, .1 Mfd. 200 Volt
17	23E218	Condenser	Tubular, .1 Mfd. 200 Volt
18	23E406	Condenser	Tubular, .003 Mfd. 400 Volt
19	23E406	Condenser	Tubular, .003 Mfd. 400 Volt
20	23E408	Condenser	Tubular, .005 Mfd. 400 Volt
21	23E416	Condenser	Tubular, .05 Mfd. 400 Volt
22	23E416	Condenser	Tubular, .05 Mfd. 400 Volt
23	23E416	Condenser	Tubular, .05 Mfd. 400 Volt
24	23E418	Condenser	Tubular, .1 Mfd. 400 Volt
25	23E421	Condenser	Tubular, .2 Mfd. 400 Volt Und. App'd Only
26	23E405	Condenser	Tubular, .002 Mfd. 400 Volt
27	23E39	Condenser	Mica, .0001 Mfd.
28	23E39	Condenser	Mica, .0001 Mfd.
29	23E39	Condenser	Mica, .0001 Mfd.
30	23E42	Condenser	Mica, .00025 Mfd.
31	23E42	Condenser	Mica, .00025 Mfd.
32	27E106	Resistor	Carbon, 10 Megohm, 1/3 W.
33	27E685	Resistor	Carbon, 6.8 Megohm, 1/3 W.
34	27E685	Resistor	Carbon, 6.8 Megohm, 1/3 W.
35	27E335	Resistor	Carbon 3.3 Megohm, 1/3 W.
36	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 W.
37	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
38	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
39	27E1002	Resistor	Carbon, 270,000 Ohm, 1/3 W.
40	27E104	Resistor	Carbon, 100,000 Ohm, 1/3 W.
41	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 W. Und. App'd Only
42	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 W.
43	27E473	Resistor	Carbon, 47,000 Ohm, 1/3 W.
44	27E223	Resistor	Carbon, 22,000 Ohm, 1/3 W.
45	27E561	Resistor	Carbon, 560 Ohm, 1/3 W.
46	27E561	Resistor	Carbon, 560 Ohm, 1/3 W.
47	27E391	Resistor	Carbon, 390 Ohm, 1/3 W.
48	27E391	Resistor	Carbon, 390 Ohm, 1/3 W.
49	27E1001	Resistor	Flexible Wire Wound 75 Ohm, 2 W.
50	1E12	Speaker	5" PM
51	29E5	Switch	Changeover
52	22E9	Transformer	Output
		or	
52	22E7	Transformer	Output—Und. Approved Models only
53	28E6	Volume Control	1 Megohm
		or	
53	28E12	Volume Control	1 Megohm—Und. Approved only
54	27E1000	Resistor	Fixed Wire Wound 2 Sect. Candohm
55	27E104	Resistor	Carbon, 100,000 Ohm, 1/3 W.
56	23E218	Condenser	Tubular, .1 Mfd. 200 Volt
58	27E680	Resistor	Carbon 68 Ohm 1/3 W.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
20E79	Battery Cable	Complete with "A" & "B" Batt. Plugs
17E3-2	"A" Battery Plug	2 Prong "A" Battery Plug
17E3-5	"B" Battery Plug	3 Prong "B" Battery Plug
7E43-1	Cabinet	Complete Cabinet, less Back
7E44-1	Cabinet Back	Back only, for Honey-Comb Type Loop
7E87-1	Cabinet Back	Back only, for Flat Type Loop
20E78	Dial Plate Assem.	Dial Back Plate
9E4	Dial Crystal	Acetate Crystal
4E1	Dial Cord	18 lb. Dial Drive Cord
48E1	Dial Escutcheon	Plastic Escutcheon
36E15	Dial Scale	Calibrated Dial Scale
65E2	Dial Spring	Tension Spring for Drive Cord
68E5	Dial Shaft	Dial Drive Shaft
35E10	Dial Pointer	For Dial
37E21-1	Knob	
37E21-3	Knob	Marked "AC-DC-OFF-BATT"
20E25	Pilot Lamp Socket	Pilot Lamp Socket Assembly
40E2	Pilot Lamp	6-8 Volt .250 Amp. Type No. 44 Lamp



TO INSTALL BATTERIES, OPEN CABINET BACK AND PLACE BATTERIES AS SHOWN.

FOR AC/DC OPERATION, BRING LINE CORD THROUGH OPENING IN RIGHT SIDE OF CABINET BACK.

ALWAYS KEEP BACK CLOSED.

ELECTRIC OPERATION

To operate the receiver on 110 to 120 Volt direct current or 110 to 120 Volt, 50 to 60 Cycle, alternating current:

(A) Open hinged cabinet back outward by pulling on the tab attached to the right side of the back, then take out the power line cord, and reclose back.

(B) Insert line cord plug into 110 to 120 Volt AC or DC electric power outlet.

(C) Turn voltage selector knob to center "AC-DC" position.

If the current supply is DIRECT CURRENT and the radio does not play after it has been turned on for approximately one minute, reverse radio plug connection at electric power receptacle.

INSTALLATION OF REQUIRED BATTERIES

Diagram shows proper location and connections of the following required types of batteries.

2 Sentinel number 38A 4½ Volt "A" Batteries or equivalent such as Ray-O-Vac type 83A, etc.

2 Sentinel number 3870 45 Volt "B" Batteries or equivalent such as Ray-O-Vac type 7830.

POWER SUPPLY

THIS RADIO CAN BE OPERATED ON EITHER:

110 TO 120 VOLTS DIRECT CURRENT

OR

110 TO 120 VOLT, 50 TO 60 CYCLE ALTERNATING CURRENT

OR

BATTERIES—2 - 4½ VOLT "A" AND 2 - 45 VOLT "B"

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. Make the adjustment marked (1) first, (2) next, (3) third.

ALWAYS HAVE METAL BOTTOM PLATE MOUNTED ON CHASSIS WHEN ALIGNING SET.

Before starting alignment:

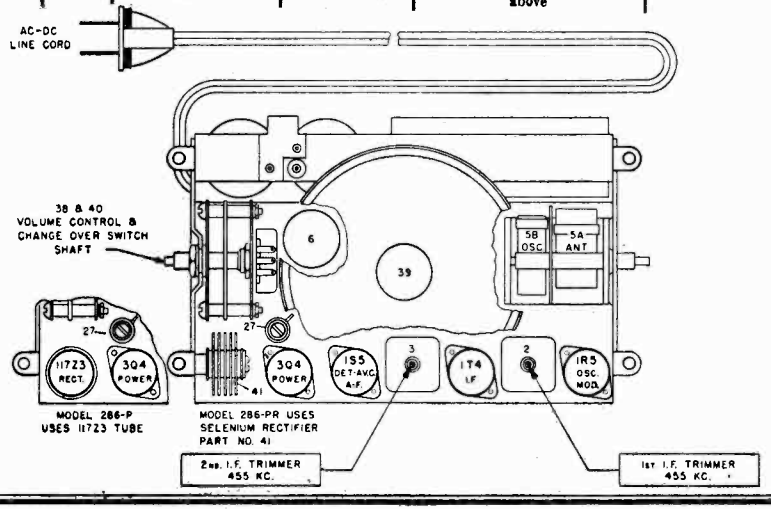
(A) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the bottom edge of the large 5 in the 55 calibration number at the low frequency end of the dial scale. If dial indicator does not point exactly to the bottom edge of the large 5, move knob to correct position.

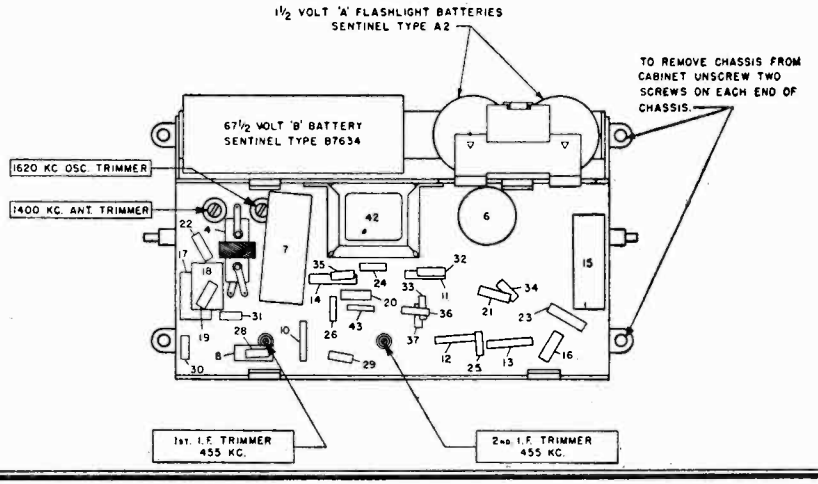
(B) Use an accurately calibrated test oscillator with some type of output measuring device.

(C) WHEN ADJUSTING THE 1620 KC OSCILLATOR TRIMMER, remove chassis from cabinet and disconnect the loop connection wires from the loop. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.

(D) THE 1400 KC LOOP ANTENNA TRIMMER should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet, and the loop in an upright position. When aligning the 1400 KC Antenna Trimmer, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2" or 3" form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

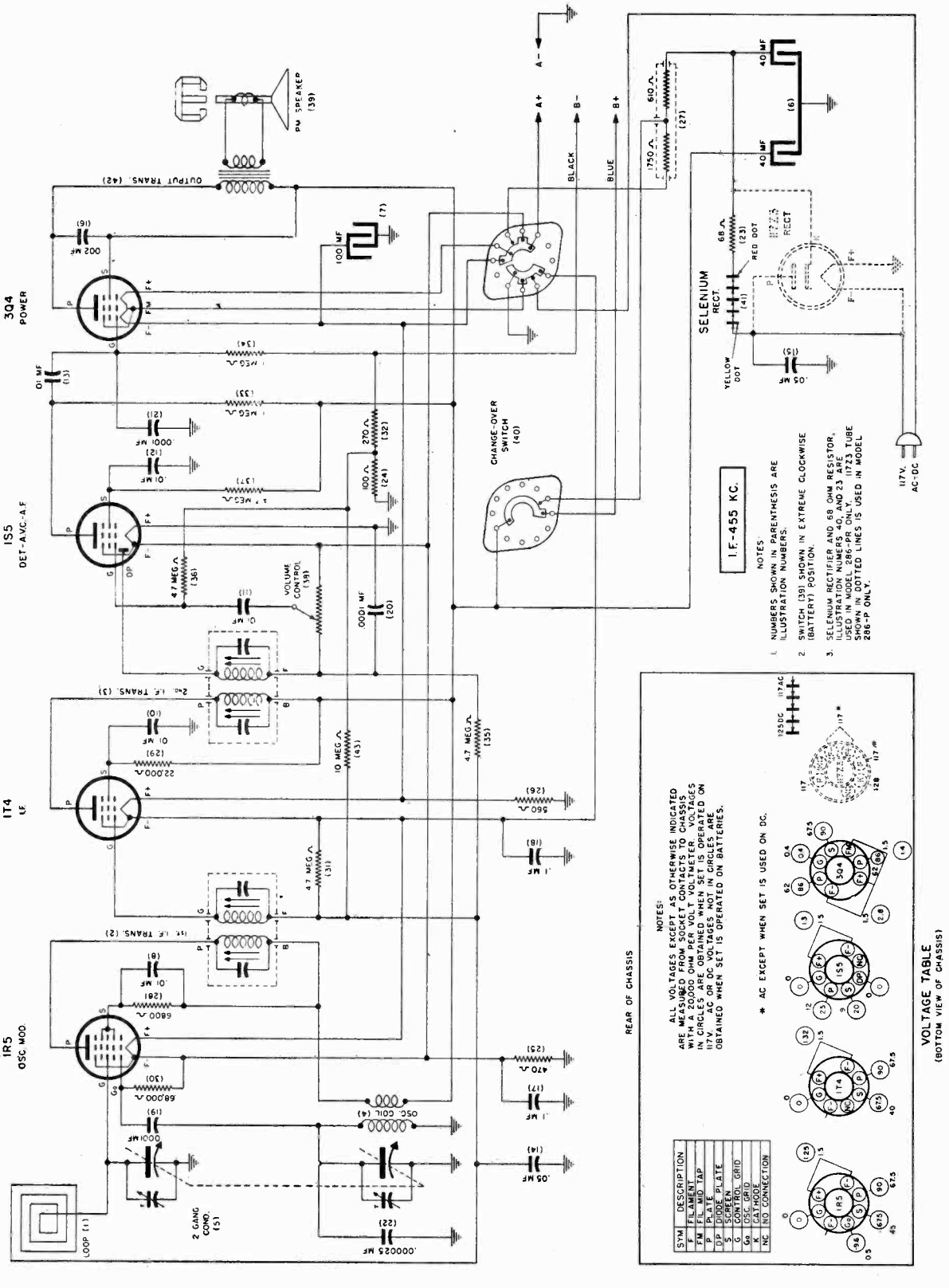
Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to	
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 1R5 tube. Low side to chassis.	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
2	Rotate gang condenser to minimum capacity	Exactly 1620 K. C.	See paragraph (C) above	See paragraph (C) above	Adjust 1620 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	See paragraph (D) above	Adjust 1400 K. C. antenna trimmer for maximum output.





MODELS 286P,286PR

SENTINEL RADIO CORP.



PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	20E134	Antenna	Loop with Cabinet Lid Assem.
2	20E125	Coil	1st I.F. Transformer
3	20E125	Coil	2nd I.F. Transformer
4	20E127	Coil	Oscillator
5	24E20	Condenser	Tuning, 2 Gang
6	25E13	Condenser	Tubular, Dry Elect. 40-40 Mfd. 150 Volt
7	25E12	Condenser	Tubular, Dry Elect. 100 Mfd. 10 Volt
8	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.
10	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.
11	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.
12	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.
13	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.
14	23E2004-7	Condenser	Tubular, .05 Mfd. 150 V.
15	23E416	Condenser	Tubular, .05 Mfd. 400 V.
16	23E2004-2	Condenser	Tubular, .002 Mfd. 150 V.
17	23E2004-8	Condenser	Tubular, .1 Mfd. 150 V.
18	23E2004-8	Condenser	Tubular, .1 Mfd. 150 V.
19	23E9	Condenser	Mica, .0001 Mfd.
20	23E9	Condenser	Mica, .0001 Mfd.
21	23E9	Condenser	Mica, .0001 Mfd.
22	23E8	Condenser	Mica, .000025 Mfd.
23	27E680-2	Resistor	Carbon, 68 Ohm 1/2 W. (used in Model 286PR only)
24	27E101-7	Resistor	Carbon, 100 Ohm, 1/4 W.
25	27E471-7	Resistor	Carbon, 470 Ohm, 1/4 W.
26	27E561-7	Resistor	Carbon, 560 Ohm, 1/4 W.
27	27E1003	Resistor	Wire Wound 1750 and 610 Ohms, 7 W.
28	27E682-7	Resistor	Carbon, 6,800 Ohm, 1/4 W.
29	27E223-7	Resistor	Carbon, 22,000 Ohm, 1/4 W.
30	27E683-7	Resistor	Carbon, 68,000 Ohm, 1/4 W.
31	27E475-7	Resistor	Carbon, 4.7 Megohm, 1/4 W.
32	27E271-7	Resistor	Carbon, 270 Ohm, 1/4 W.
33	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.
34	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.
35	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.
36	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.
37	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.
38	28E14	Vol. Control	2 Megohm
39	1E19	Speaker	4 Inch P.M.
40	29E11	Switch	Power Selector
41	57E1	Rectifier	Selenium (Used in Model 286PR only)
	OR		
41	57E1-4	Rectifier	Selenium (Round Type) used in Model 286PR only
42	22E16	Transformer	Output
.0743	27E106-7	Resistor	Carbon, 10 Megohm, 1/4 W.

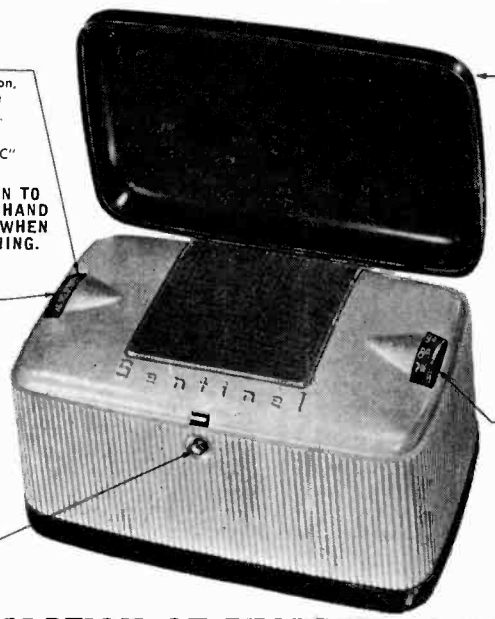
MISCELLANEOUS PARTS

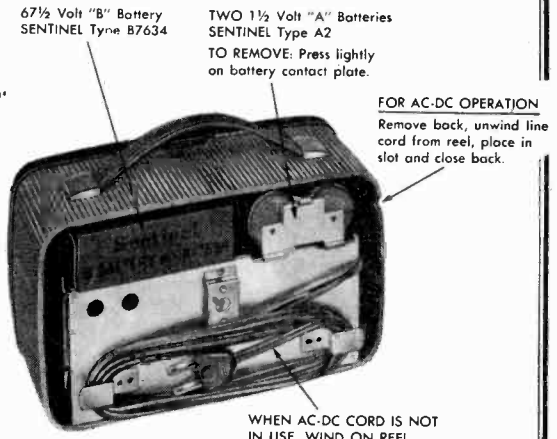
Part No.	Part Name	Description
20E128	"A" Batt. Con. Bracket Assembly	With 4 No. 10E43 Trimount Studs
20E130-1	Cab. Assembly	Complete Cabinet Assembly with Lid & Loop, Handle, Lid Catch & Push Button Assembly & Bottom Assembly
20E134	Cab. Lid. Assembly	Lid Assembly with Loop and Hinges
20E135-1	Cab. Bottom	Bottom Assem. with Locking Slotted Head Stud
30E25-1	Cab. Center Section	Less Lid and Bottom Assemblies, with Handle, Spkr. Screen, Lid Catch & Push Button
20E131	Chassis Plate	Bottom Shield Plate for Chassis
20E136-1	Hinge	Hinge & Spring Assembly with 2 No. 82E36-F10 No. 4 24x1/4 Mtg. Screws
37E44-1	Knob	Calibrated Dial Knob
37E34-1	Knob	"Off-AC-DC-Batt."
37E32-1	Knob	Tuning and Volume Knobs
20E129	"B" Batt. Connector	B— and B+ Batt. Connector Assembly

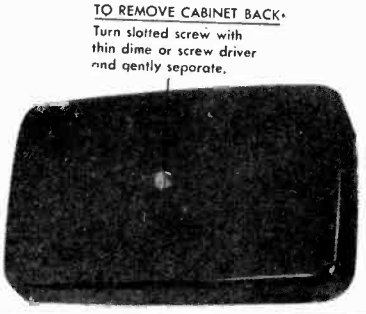
HARDWARE

15E41	Lid Catch Bracket	Bracket for Mounting Lid Catch, With 2 No. 82E3-F10 Screws
20E138	Lid Catch	Lid Catch with Screw
37E35-1	Lid Catch Button	Button for Lid Catch with No. 13E3-F10 No. 4 40x1/4 Hex Screw and No. 11E3-F10 Lockwasher
55E22-1	Handle	Leather
55E21-1	Handle Bracket	Bracket for Mounting Handle
71E42-F10	Screw	No. 4 40x3/16 Slot B.H.I.M.
78E142-F50	Screw	No. 2 56x3/16 Rec. Oval Hd. B.M.
82E3-F10	Screw	No. 4 24x1/4 Rec. Hd. Type 25
82E36-F10	Screw	No. 6 20x5/16 Rec. Hd. Type 25
10E41	Stud	Trimount for Mounting Chassis Bottom Shield
10E43	Stud	Trimount for Mounting "A" Batt. Contact Brkt. Assem.
65E8	Spring	Lid Index Spring
66E12-1	Screen	Speaker Screen Grille

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.







INSTALLATION OF REQUIRED BATTERIES

Diagram shows proper location and connections of the following required types of batteries:

Two SENTINEL, Type A2, 1½ Volt "A" batteries, or equivalent, such as Ray-O-Vac Type No. 2, Eveready 750, etc.

One SENTINEL Type B7634, 67½ Volt "B" battery, or equivalent, such as Ray-O-Vac Type 4367, Eveready 467, etc.

RADIO PARTS LIST MODEL 293-CT, 1U-293-CT

Illus. No.	Part No.	Part Name	Description
1	20E67	Antenna	Antenna Loop & Mounting Assembly
2	20E21	Coil	1st I. F. Transformer
	or		
2	20E261	Coil	1st I. F. Transformer
3	20E22	Coil	2nd I. F. Transformer
	or		
3	20E261-2	Coil	2nd I. F. Transformer
4	20E64	Coil	Oscillator
5	2E19	Coil	R. F. Choke
6	24E8	Condenser	Tuning, 2 Gang
	or		
6	24E6	Condenser	Tuning, 2 Gang
7	24E3	Condenser	Trimmer, (3-35 MMF Working)
8	25E6	Condenser	Tubular, Dry Elect. 50-50 Mfd. 150 V.
9	23E216	Condenser	Tubular, .05 Mfd. 200 V.
10	23E211	Condenser	Tubular, .01 Mfd. 200 V.
11	23E416	Condenser	Tubular, .05 Mfd. 400 V.
12	23E411	Condenser	Tubular, .01 Mfd. 400 V.
13	23E408	Condenser	Tubular, .005 Mfd. 400 V.
14	23E408	Condenser	Tubular, .005 Mfd. 400 V.
15	23E421	Condenser	Tubular, .2 Mfd. 400 V. (1U293CT Only)
16	23E405	Condenser	Tubular, .002 Mfd. 400 V.
17	23E37	Condenser	Mica, .00005 Mfd.
18	23E39	Condenser	Mica, .0001 Mfd.
19	23E39	Condenser	Mica, .0001 Mfd.
20	23E42	Condenser	Mica, .00025 Mfd.
21	23E42	Condenser	Mica, .00025 Mfd.
22	27E101-2	Resistor	Carbon, 100 Ohm 1/2 W.
23	27E335	Resistor	Carbon, 3.3 Megohm 1/3 W.
24	27E335	Resistor	Carbon, 3.3 Megohm 1/3 W.
25	23E474	Resistor	Carbon, 470,000 Ohm 1/3 W.
26	27E474	Resistor	Carbon, 470,000 Ohm 1/3 W.
27	27E224	Resistor	Carbon, 220,000 Ohm 1/3 W.
28	27E224	Resistor	Carbon, 220,000 Ohm 1/3 W. (1U-293CT Only)
29	27E473	Resistor	Carbon, 47,000 Ohm 1/3 W.
30	27E223	Resistor	Carbon, 22,000 Ohm 1/3 W.
31	27E822	Resistor	Carbon, 8,200 Ohm 1/3 W.
32	27E151	Resistor	Carbon, 150 Ohm 1/3 W.
33	27E102-3	Resistor	Carbon, 1,000 Ohm 1 W.
36	1E1	Speaker	4" x 6" Elliptical P. M. (less Transformer
37	22E8	Transformer	Output for Speaker
38	28E8	Tone Control	
39	28E7	Volume Control	500,000 Ohm, with S.P.S.T. Switch
40	27E470-2	Resistor	Carbon, 47 Ohm 1/2 W.
41	23E416	Condenser	Tubular, .05 Mfd. 400 V.
42	20E203	Switch	Radio Phono, D.P.D.T.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
40E1	Bulb	6-8 Volt, .150 Amp. Dial Light, #47.
65E2	Dial Cord Spring	Tension Spring
4E1	Dial Cord	30" of 18 lb. Drive Cord
20E225-7	Dial Shaft Assem.	Dial Drive Shaft, with "C" Washer, Bearing & Lock Nut
20E65	Dial Back Plate	Backplate Assembly less Calibrated Scale
36E16	Dial Scale	Calibrated Glass Scale
35E13	Dial Pointer	Dial Indicator
37E21-17	Knob	
20E184-1	Socket Assem.	2-Contact, for Phono Motor
20E185-1	Socket Assem.	4-Contact, for Phono-Pick Up

Sentinel 1U286

This model is the same as Model 286PR, except for the following changes.

A 0.1-μf capacitor (46) has been placed between pin number 6 of the 1R5 oscillator-modulator tube and the top side of the ganged tuning capacitor. A 470,000-ohm resistor (48) has been connected in the ave line between the top of the 0.05-μf capacitor (14) and the 4,700,000-ohm resistor (35). A 0.05-μf capacitor (47) has been connected from the junction of resistors 48 and 35 and ground. Two interlock plugs have been added in the power line. The i-f transformers (2 and 3) may either be the transformers listed in the parts list on page 16-16, or they may be part number 20E299.

The following parts should be deleted from the parts list shown on page 16-16.

Illus. No.	Part No.	Description
8	23E2014-6	Capacitor, tubular, 0.01 μf, 150 V.
10	23E2014-6	Capacitor, tubular, 0.01 μf, 150 V.
11	23E2014-6	Capacitor, tubular, 0.01 μf, 150 V.
12	23E2014-6	Capacitor, tubular, 0.01 μf, 150 V.
13	23E2014-6	Capacitor, tubular, 0.01 μf, 150 V.
14	23E2014-8	Capacitor, tubular, 0.05 μf, 150 V.
16	23E2014-12	Capacitor, tubular, 0.002 μf, 150 V.
17	23E2014-9	Capacitor, tubular, 0.01 μf, 150 V.
46	23E2014-9	Capacitor, tubular, 0.1 μf, 150 V.
23	23E680-3	Resistor, carbon, 68 ohm, ½ W.
	20E128	"A" battery con. bracket assembly, with 4 No. 10E43 trimount studs
	20E130-1	Complete cabinet assembly, with lid and loop, handle, lid catch and pushbutton assembly and bottom assembly
	20E134	Top lid assembly with loop and hinges.
	20E135-1	Bottom assembly with locking slotted head stud
	30E25-1	Cabinet center section, less lid and bottom assemblies, with handle, speaker screen, lid catch and pushbutton
	20E136-1	Hinge and spring assembly with two No. 82E36-F10 No. 4-24 x ¼ mounting screws
	55E22-1	Handle, leather
	71E42-F10	Screw, No. 4-40 x 3/16 slot R.H.I.M.

The following parts should be added to the parts list.

Illus. No.	Part No.	Description
8	23E2004-5	Capacitor, tubular, 0.01 μf, 200 V.
10	23E2004-5	Capacitor, tubular, 0.01 μf, 200 V.
11	23E2004-5	Capacitor, tubular, 0.01 μf, 200 V.
12	23E2004-5	Capacitor, tubular, 0.01 μf 200 V.
13	23E2004-5	Capacitor, tubular, 0.01 μf, 200 V.
14	23E2004-7	Capacitor, tubular, 0.05 μf 200 V.
16	23E2004-2	Capacitor, tubular, 0.002 μf, 400 V.
17	23E2004-8	Capacitor, tubular, 0.01 μf, 200 V.
23	27E680-3	Resistor, carbon, 68 ohm, 1 W.
44	20E280-2	Switch, lid operated, mounted on "A" battery bracket assembly
45	20E284	Interlock, socket assembly
46	23E2014-9	Capacitor, tubular, 0.1 uf, 200 V.
47	23E2014-8	Capacitor, tubular, 0.05 μf, 200 V.
48	27E47-7	Resistor, carbon, 470,000 ohm, ¼ W.
48	20E284	Interlock, socket assembly
	20E130-3	Complete cabinet assembly with lid and loop, handle, lid catch and pushbutton assembly and bottom assembly
	20E134-3	Top lid assembly with loop and hinges
	30E25-3	Cabinet center section, less lid and bottom assemblies, but with handle, speaker screen, lid catch and pushbutton assembly.
	20E136-2	Hinge, right hinge and spring assembly with two No. 82E36-F10 No. 4-24 x ¼ mounting screws
	20E136-3	Left hinge and spring assembly with two No. 82E36-F10 No. 4-24 x ¼ mounting screws
	20E280-2	Complete "A" battery bracket assembly with lid operated switch assembly
	20E283	"A" battery contact plate assembly
	52E23	Plastic covered handle
	55E39	Handle strap, clock spring steel
	85E4-21	Screw, No. 4-40 x 3/16 Slot headless cup point for control knobs
	82E2004	Screw, for adjusting lid switch shaft

GROUND

When a regular aerial is used, best results will be obtained with a ground attached to the black lead coming out of the rear of the chassis.

WARNING—DO NOT ATTACH A GROUND DIRECT TO THE RADIO CHASSIS OR RECORD CHANGER. Any external ground connection to any metal part of the chassis or record changer may cause a short and possible damage.

FUNCTION OF CONTROLS

THE LEFT HAND KNOB controls the volume control and off-and-on switch.

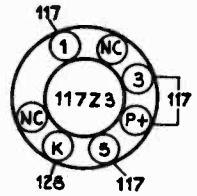
THE RIGHT HAND KNOB is the station selector.

THE CENTER KNOB is the tone control.

THE "PHONO-RADIO" SWITCH is located in the lower left hand corner of the record-changer compartment.

Sentinel Model 286P

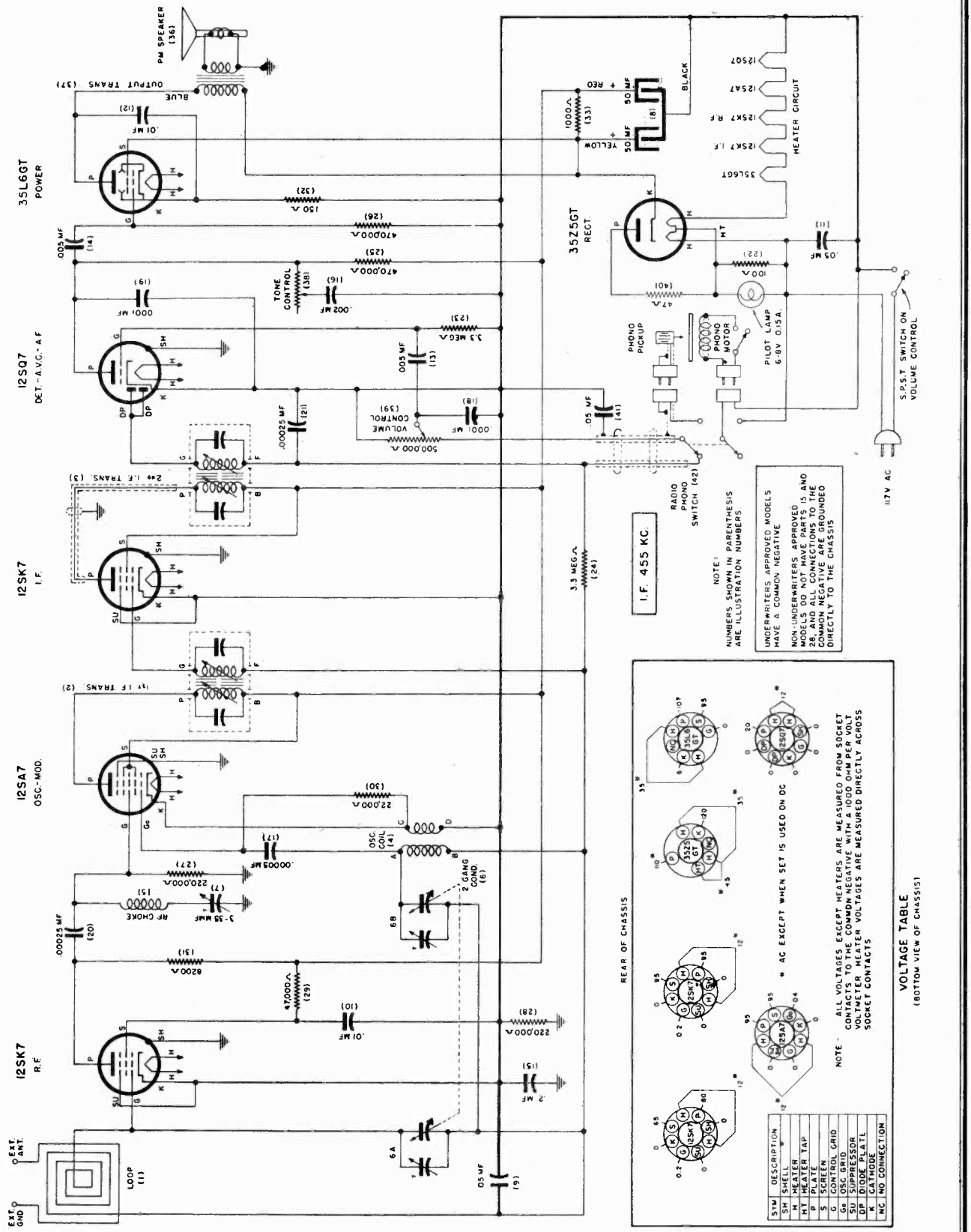
In this model all factory wiring connections were made to the 117Z3 tube socket at pin number 1. The 117Z3 tube, as originally produced, had an internal connection to pins 1, 3, and 5. Therefore, the foregoing connection was satisfactory, and no jumper was provided.



When a new type 117Z3 is used in the Sentinel model 286P, pins 1, 3, and 5 must be externally connected. Voltages are here shown.

The new production of 117Z3 tubes provides no internal connection between the number 1 pin and the number 3 and 5 pins. Therefore, it is necessary to wire the 1, 3, and 5 socket connections together, so that this receiver will operate when the original 117Z23 tube is replaced with a recent production tube.

SENTINEL RADIO CORP. MODELS 293CT, 1U293CT

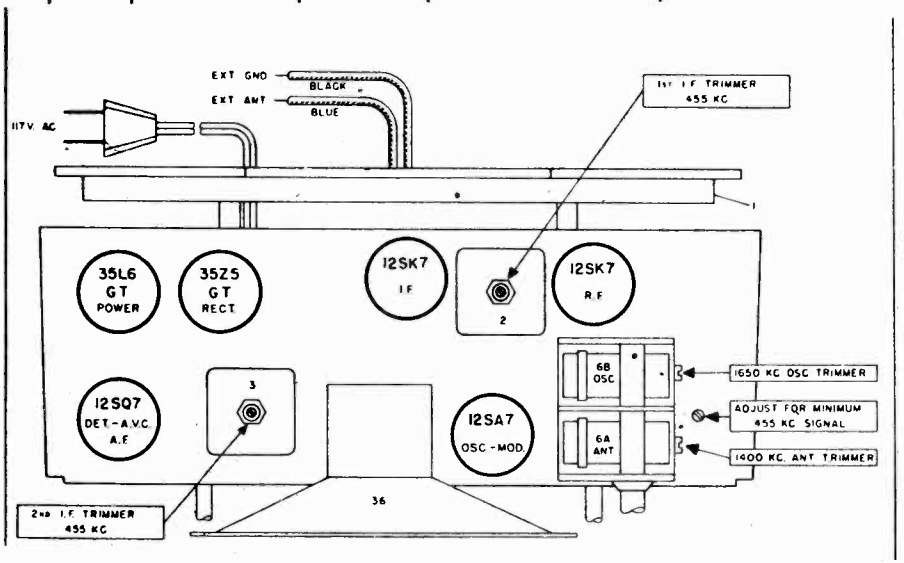


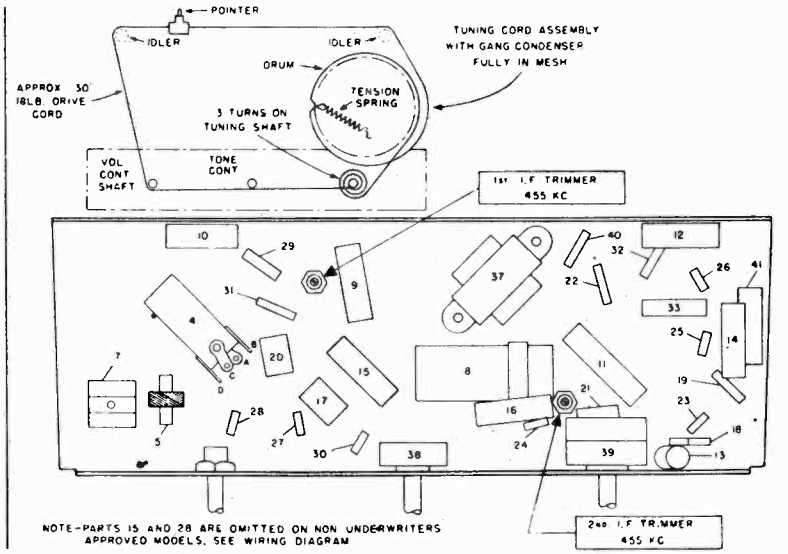
ALIGNMENT PROCEDURE

For Alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.
IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET. BE SURE THAT IT DOES NOT MOVE WHILE ALIGNING.

When adjusting 1650 kilocycle oscillator trimmer, 455 K.C. R.F. trimmer and 1400 kilocycle antenna trimmer, connect test oscillator to loop external antenna and ground connections with a .0002 Mfd. condenser in series with antenna lead.

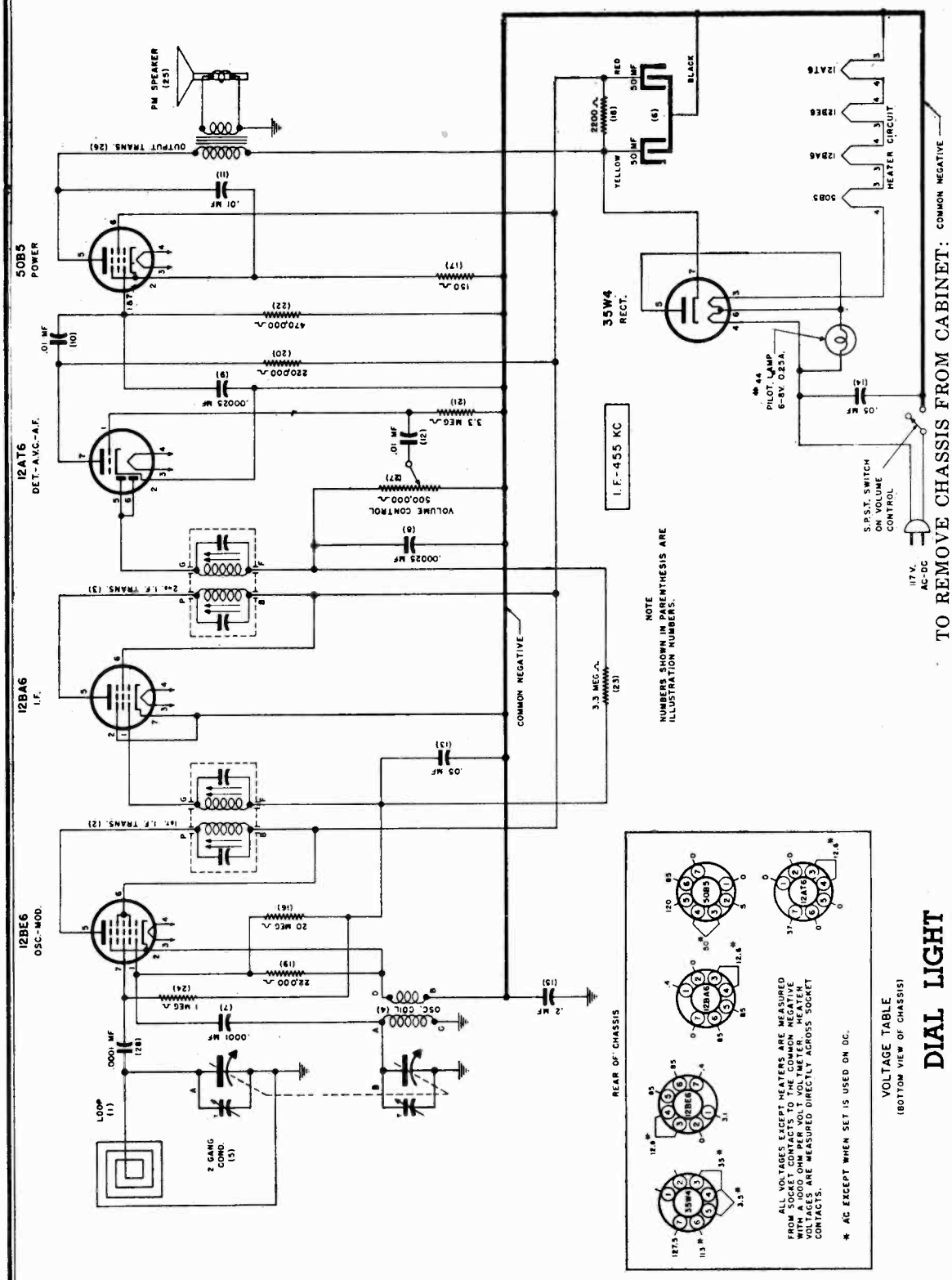
Steps	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to	Refer to parts layout diagram for location of trimmers mentioned below:
	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 12SA7 tube. Low side to chassis (if Model 293CT) or Common Negative (if Model 1U-293CT).	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
1	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust R. F. coil trimmer for minimum 455 K. C. signal.
2	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust 1650 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections	Adjust 1400 K. C. antenna trimmer for maximum output.





SENTINEL RADIO CORP.

MODELS 1U-309-W, 1U-309-I, 1U-309-R



TO REMOVE CHASSIS FROM CABINET: COMMON NEGATIVE

(A) Remove cabinet back.
(B) Pull knobs off of control shafts.
(C) Unscrew and remove nut and fibre washer on volume control shaft—accessible when knob is removed.
(D) Slide chassis out of cabinet.

TO REINSTALL, reverse the above procedure. Be sure to place fibre washer on volume control shaft before attaching nut. DO NOT tighten nut too much—otherwise, cabinet may crack.

DIAL LIGHT

It is normal for the dial light to be dim for approximately 60 seconds after set is turned "on" and then attain normal brilliance—also, on very loud signals the light may fluctuate.

Always use a 6.3 volt .250 ampere dial light, No. 44 Mazda.

ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

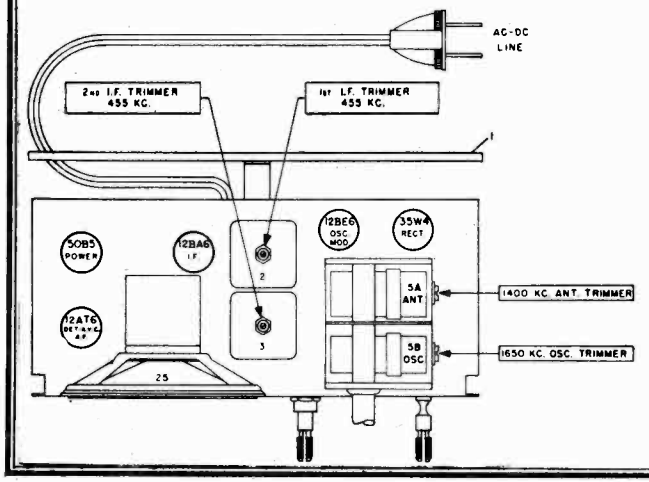
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct position.

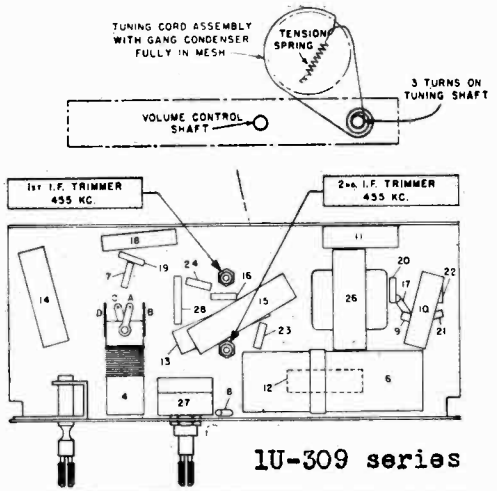
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET — APPROXIMATELY ⅝" SPACE BETWEEN LOOP AND CHASSIS.

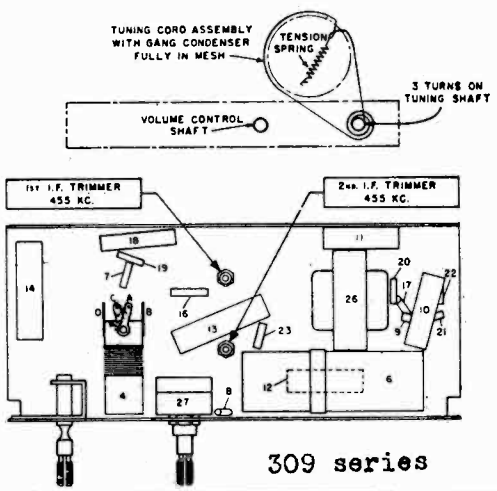
Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. trimmers for maximum output.
2	Exactly 1650 K. C.	Exactly 1650 K. C.	.00025 MFD. condenser	High side to green & white antenna lead. Low side to chassis through .02 Mfd. blocking condenser.	Adjust 1650 K. C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD. condenser	High side to green & white antenna lead. Low side to chassis through .02 Mfd. blocking condenser.	Adjust 1400 K. C. antenna trimmer for maximum output.

1U-309 series, 309 series





1U-309 series



309 series

MODELS 1U-309 series

PARTS LIST

Ill. No.	Part No.	Part Name	Description
1	64E12	Antenna	Loop & Back
2	20E271	Coil	1st I.F. Transformer
	or		
2	20E301	Coil	1st I.F. Transformer
3	20E271	Coil	2nd I.F. Transformer
	or		
3	20E301	Coil	2nd I.F. Transformer
4	20E306	Coil	Oscillator
5	20E273	Condenser	Tuning, 2 Gang
6	25E24	Condenser	Tubular, Dry Elec. 50-50 Mfd. 150 V
7	23E11	Condenser	Fixed Ceramic, .0001 Mfd.
8	23E42	Condenser	Fixed Ceramic, .00025 Mfd.
9	23E42	Condenser	Fixed Ceramic, .00025 Mfd.
10	23E411	Condenser	Fixed Paper, .01 Mfd. 400 Volts
11	23E411	Condenser	Fixed Paper, .01 Mfd. 400 Volts
12	23E411	Condenser	Fixed Paper, .01 Mfd. 400 Volts
13	23E416	Condenser	Fixed Paper, .05 Mfd. 400 Volts
14	23E416	Condenser	Fixed Paper, .05 Mfd. 400 Volts
16	27E206	Resistor	Carbon, Insulated, 20 Megohm 1/3 W.
17	27E151	Resistor	Carbon, Insulated, 150 Ohm 1/3 W.
18	27E222-3	Resistor	Carbon, Insulated, 2,200 Ohm 1 W.
19	27E223	Resistor	Carbon, Insulated, 22,000 Ohm 1/3 W.
20	27E224	Resistor	Carbon, Insulated, 220,000 Ohm 1/3 W.
21	27E335	Resistor	Carbon, Insulated, 3.3 Megohm 1/3 W.
22	27E474	Resistor	Carbon, Insulated, 470,000 Ohm 1/3 W.
23	27E335	Resistor	Carbon, Insulated, 3.3 Megohm 1/3 W.
25	1E27	Speaker	P.M. 3"
26	22E23	Transformer	Output
27	28E27	Vol. Control	500,000 Ohm

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E129-2	Cabinet	Walnut Plastic
7E129-3	Cabinet	Ivory Plastic
7E129-4	Cabinet	Red Plastic
41E1	Cord	6 ft. Rubber Line Cord
20E274	Dial Cord	Dial Drive Cord
9E9	Dial Crystal	Acetate Dial Crystal
36E32	Dial Scale	Calibrated Scale
20E270	Dial Shaft Assembly	Dial Drive Shaft with bracket
35E21	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring for Dial Cord
37E47	Knob	For Walnut Cabinet
37E47-2	Knob	For Ivory and Red Cabinet
17E22	Pilot Lamp Socket	Pilot Lamp Socket with leads
40E2	Pilot Lamp	6.8 Volt .250 Amp. Type #44 Lamp
10E42	Stud	Trimount Stud for Loop & Back
13E105	Nut	Used to hold chassis in Cabinet
12E123	Washer	Fibre Cushion, Used with 13E105 Nut

MODELS 309 series

PARTS LIST

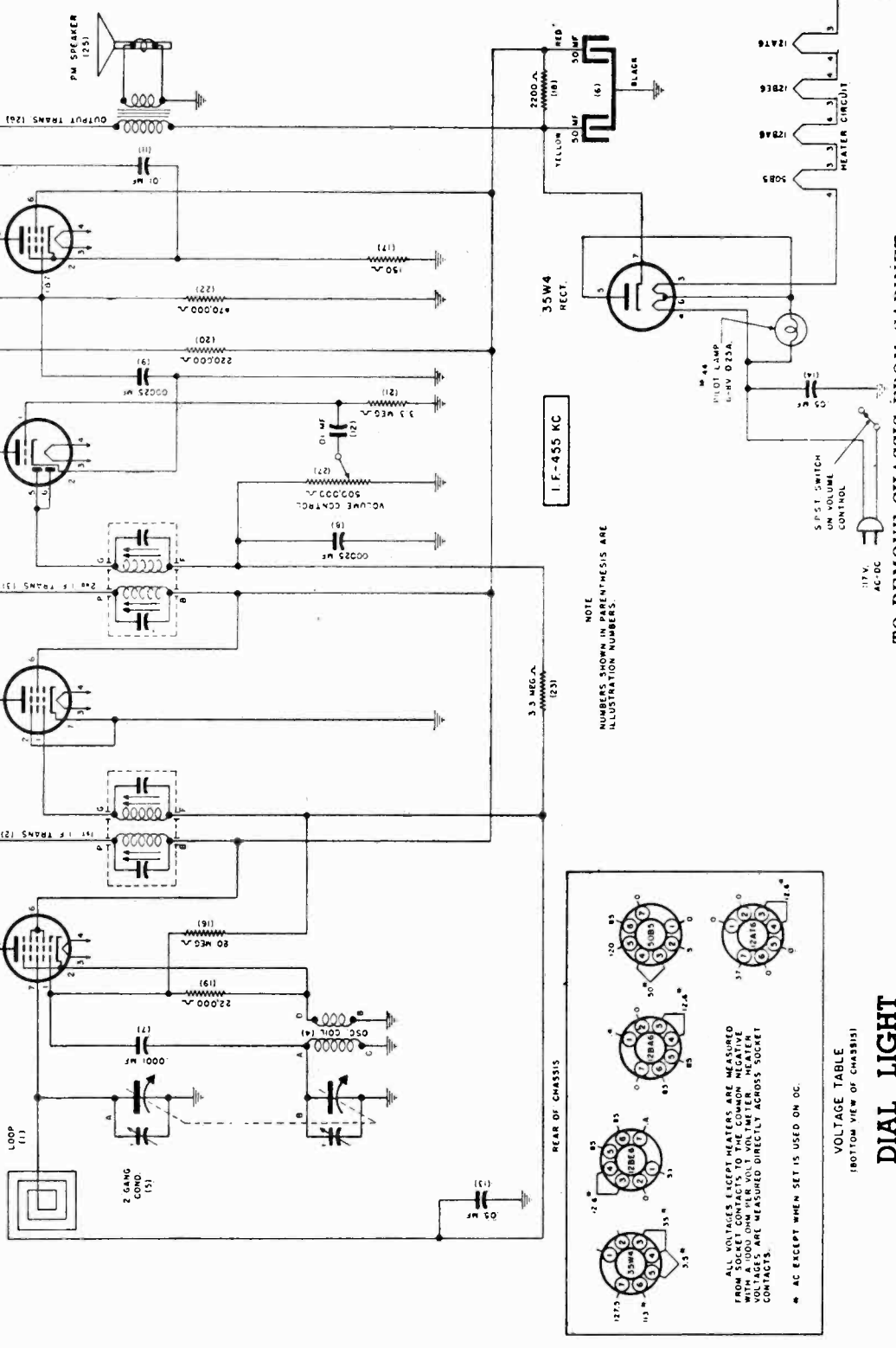
Ill. No.	Part No.	Part Name	Description
1	64E12	Antenna	Loop & Back
2	20E271	Coil	1st I.F. Transformer
	OR		
2	20E301	Coil	1st I.F. Transformer
3	20E271	Coil	2nd I.F. Transformer
	OR		
3	20E301	Coil	2nd I.F. Transformer
4	20E272	Coil	Oscillator
5	20E273	Condenser	Tuning, 2 Gang
6	25E24	Condenser	Dry Electrolytic, 50-50 Mfd. 150 V.
7	23E11	Condenser	Fixed Ceramic, .0001 Mfd.
8	23E42	Condenser	Fixed Mica, .00025 Mfd.
9	23E42	Condenser	Fixed Mica, .00025 Mfd.
10	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.
11	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.
12	23E411	Condenser	Fixed Paper, .01 Mfd. 400 V.
13	23E416	Condenser	Fixed Paper, .05 Mfd. 400 V.
14	23E416	Condenser	Fixed Paper, .05 Mfd. 400 V.
15	23E2021	Condenser	Fixed Paper, .2 Mfd. 400 V.
16	27E206	Resistor	Carbon, 20 Megohm, 1/3 W.
17	27E151	Resistor	Carbon, 150 Ohm, 1/3 W.
18	27E222-3	Resistor	Carbon, 2,200 Ohm, 1 W.
19	27E223	Resistor	Carbon, 22,000 Ohm, 1/3 W.
20	27E224	Resistor	Carbon, 220,000 Ohm, 1/3 W.
21	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
22	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 W.
23	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
24	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
25	1E27	Speaker	3" P.M.
26	22E23	Transformer	Output for speaker
27	28E27	Volume Control	500,000 Ohm, with switch
28	23E11	Condenser	Fixed Ceramic, .0001 Mfd.

MISCELLANEOUS PARTS

Part No.	Part Name	Description
7E129-2	Cabinet	Walnut Plastic
7E129-3	Cabinet	Ivory Plastic
7E129-4	Cabinet	Red Plastic
41E8	Cord	6 ft. Rubber Line Cord
20E274	Dial Cord	Dial Drive Cord
9E9	Dial Crystal	Acetate Dial Crystal
36E32	Dial Scale	Calibrated Scale
20E270	Dial Shaft Assembly	Dial Drive Shaft with bracket
35E21	Dial Pointer	Dial Indicator
65E2	Dial Spring	Tension Spring for Dial Cord
37E47	Knob	For Walnut Cabinet
37E47-2	Knob	For Ivory and Red Cabinet
17E29	Pilot Lamp Socket	Pilot Lamp Socket with leads
40E2	Pilot Lamp	6.8 Volt .250 Amp. Type #44 Lamp
10E42	Stud	Trimount Stud for Loop & Back
13E105	Nut	Used to hold chassis in Cabinet
12E123	Washer	Fibre Cushion, Used with 13E105 Nut

MODELS 309-I, 309-N, 309-R, 309-W

SENTINEL RADIO CORP.



DIAL LIGHT

It is normal for the dial light to be dim for approximately 60 seconds after set is turned "on" and then attain normal brilliance—also, on very loud signals the light may fluctuate.

Always use a 6.3 volt .250 ampere dial light, No. 44 Mazda.

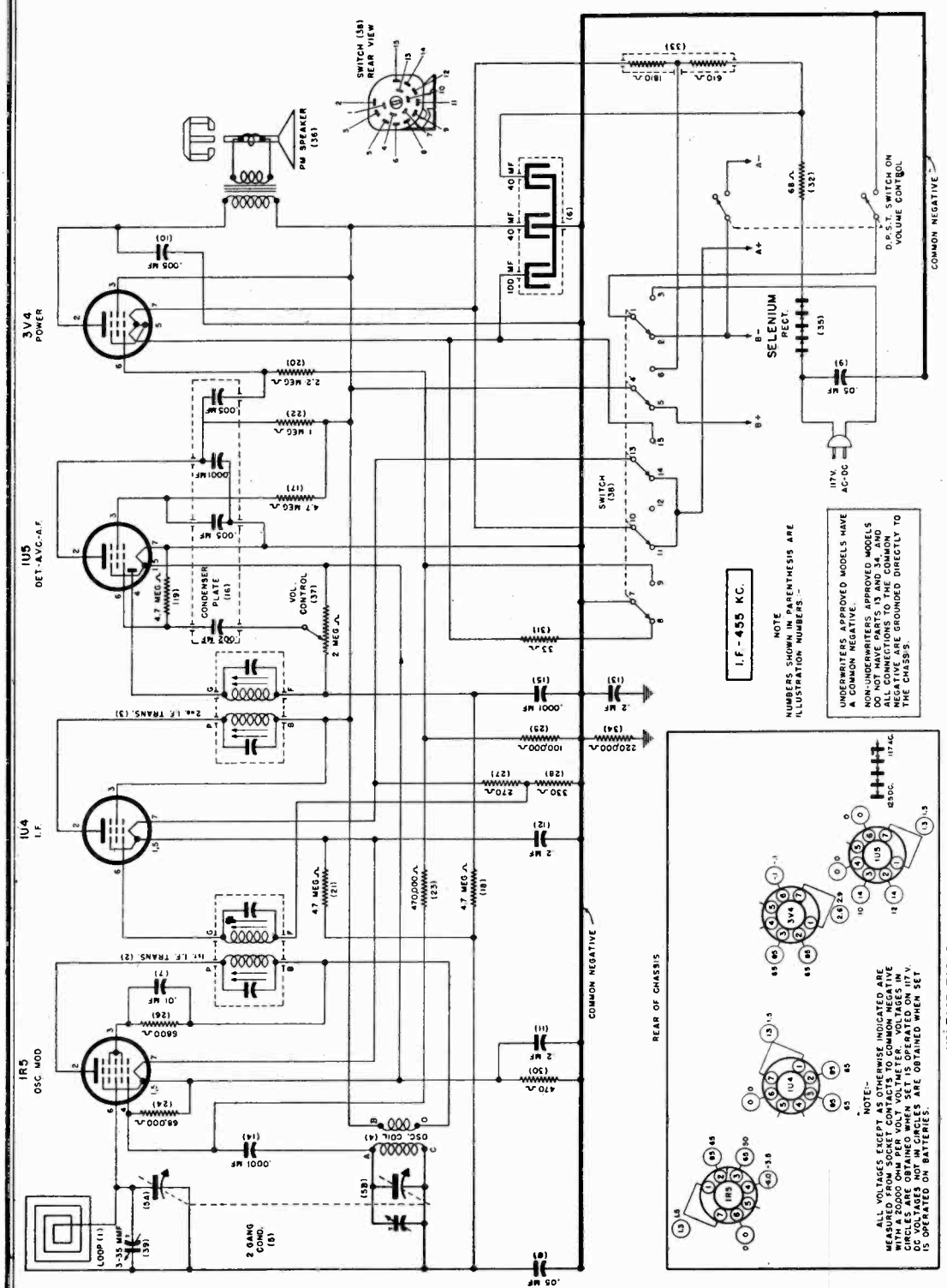
TO REMOVE CHASSIS FROM CABINET:

(A) Remove cabinet back.
(B) Pull knobs off of control shafts.
(C) Unscrew and remove nut and fibre washer on volume control shaft—accessible when knob is removed.
(D) Slide chassis out of cabinet.

TO REINSTALL, reverse the above procedure. Be sure to place fibre washer on volume control shaft before attaching nut. DO NOT tighten nut too much—otherwise, cabinet may crack.

SENTINEL RADIO CORP.

MODELS 316PM, 316PT,
1U-316PM, 1U-316PT



INSTALLATION OF REQUIRED BATTERIES

Diagram shows proper location and connections of the following required types of batteries:

One 4½ Volt "A" Battery, such as SENTINEL Type A38, or Ray-O-Vac P83A or Eveready No. 736A, etc.

One 67½ Volt "B" Battery, such as SENTINEL Type B7634, or Ray-O-Vac 4367 or Eveready No. 467, etc.

NOTE: A 90 Volt "B" Battery, such as Eveready Type No. 490B, may be used in place of the 67½ Volt "B" Battery. The use of a 90 Volt "B" Battery will provide somewhat increased sensitivity and more power output, but this battery will not last quite as long as the 67½ Volt "B" Battery.

POWER SUPPLY

THIS RADIO CAN BE OPERATED ON EITHER:

110 to 120 VOLTS DIRECT CURRENT
OR
110 to 120 VOLTS, 50 to 60 CYCLE, ALTERNATING CURRENT
OR
BATTERIES—WITH ONE 4½ VOLT "A" and ONE 67½ VOLT "B" Battery.

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. Make the adjustment marked (1) first, (2) next, (3) third.
IF RADIO HAS METAL PLATE ON BOTTOM OF CHASSIS BE SURE TO HAVE PLATE MOUNTED ON CHASSIS WHEN ALIGNING SET.

Before starting alignment:

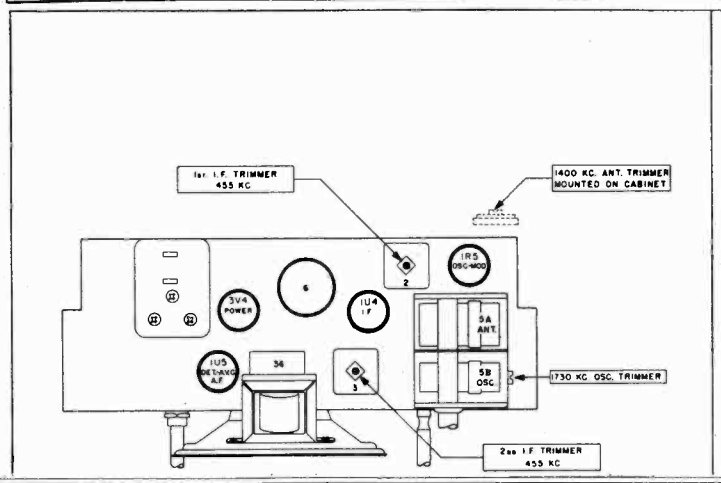
(A) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the outside edge of the first 5 in the 55 calibration number at the low frequency end of the dial scale. If dial indicator does not point exactly to the outside edge, move pointer to correct position.

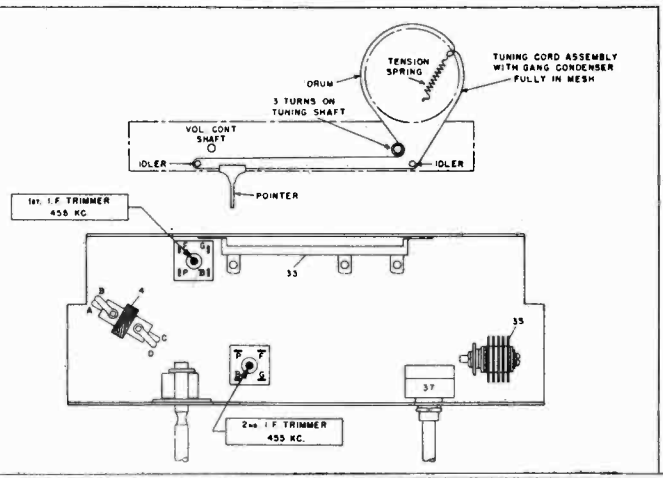
(B) Use an accurately calibrated test oscillator with some type of output measuring device.

(C) WHEN ADJUSTING THE 1730 KC OSCILLATOR TRIMMER, remove chassis from cabinet and disconnect the loop connection wires from the loop terminal strip. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.

(D) THE 1400 KC LOOP ANTENNA TRIMMER should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet. When aligning the 1400 KC Antenna Trimmer, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2″ or 3″ form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

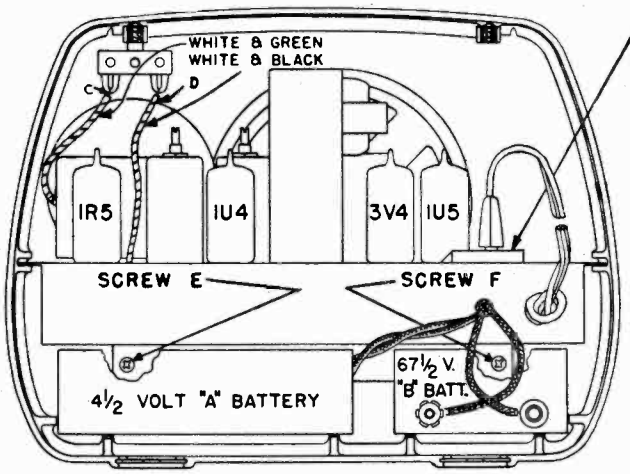
Steps	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to	Refer to parts layout diagram for location of trimmers mentioned below:
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 1R5 tube. Low side to chassis.	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
2	Rotate gang condenser to minimum capacity	Exactly 1730 K. C.	See paragraph (C) above	See paragraph (C) above	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	See paragraph (D) above	Adjust 1400 K. C. antenna trimmer for maximum output.





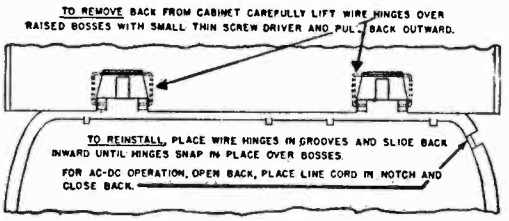
SENTINEL RADIO CORP.

MODELS 316PM, 316PT, 1U-316PM, 1U-316PT



FOR BATTERY OPERATION THE AC LINE CORD PLUG MUST BE FIRMLY INSERTED INTO THIS RECEPTACLE.

TO REMOVE CHASSIS FROM CABINET:
1. REMOVE BATTERIES.
2. UNSOLDER ANTENNA WIRES C & D.
3. REMOVE SCREWS E & F.



PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	64E18	Antenna	Loop
2	20E337	Coil	1st I.F. Transformer
3	20E337	Coil	2nd I.F. Transformer
4	20E338	Coil	Oscillator
5	20E339	Condenser	Tuning, Two Gang
6	25E28	Condenser	Dry Electrolytic, 40-40 Mfd. 150 V. & 100 Mfd. 10 V.
OR			
6	25E29	Condenser	Dry Electrolytic, 40-40 Mfd. 150 V. & 100 Mfd. 10 V. (Used in 1U-316P Only)
7	23E211	Condenser	Tubular, .01 Mfd. 200 V.
8	23E216	Condenser	Tubular, .05 Mfd. 200 V.
9	23E416	Condenser	Tubular, .05 Mfd. 400 V.
10	23E408	Condenser	Tubular, .005 Mfd. 400 V.
11	23E220	Condenser	Tubular, .2 Mfd. 200 V.
12	23E220	Condenser	Tubular, .2 Mfd. 200 V.
13	20E407	Choke	R. F. (Used in 1U-316P Only)
14	23E24	Condenser	Ceramic, .0001 Mfd.
15	23E24	Condenser	Ceramic, .0001 Mfd.
16	23E2024	Condenser	Ceramic Condenser Plate
17	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
18	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
19	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
20	27E225	Resistor	Carbon, 2.2 Megohm, 1/3 W.
21	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
22	27E105	Resistor	Carbon, 1 Megohm, 1/3 W.
23	27E474	Resistor	Carbon, 470,000 Ohm, 1/3 W.
24	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 W.
25	27E104	Resistor	Carbon, 100,000 Ohm, 1/3 W.
26	27E682	Resistor	Carbon, 6,800 Ohm, 1/3 W.
27	27E271	Resistor	Carbon, 270 Ohm, 1/3 W.
28	27E331	Resistor	Carbon, 330 Ohm, 1/3 W.
30	27E471	Resistor	Carbon, 470 Ohm, 1/3 W.
31	27E330-2	Resistor	Carbon, 33 Ohm, 1/2 W.
32	27E680-3	Resistor	Carbon, 68 Ohm, 1 W.
33	27E1005	Resistor	Wire Wound, 1810 and 610 Ohms, 8 W.
35	57E1-4	Rectifier	Selenium
36	1E29	Speaker	4" P.M.
37	28E30	Volume Control	With D.P.S.T. Switch, 2 Megohm
38	29E20	Switch	Spring Return Type
39	24E33	Condenser	Trimmer 3-35 MMF. Working Range

HARDWARE

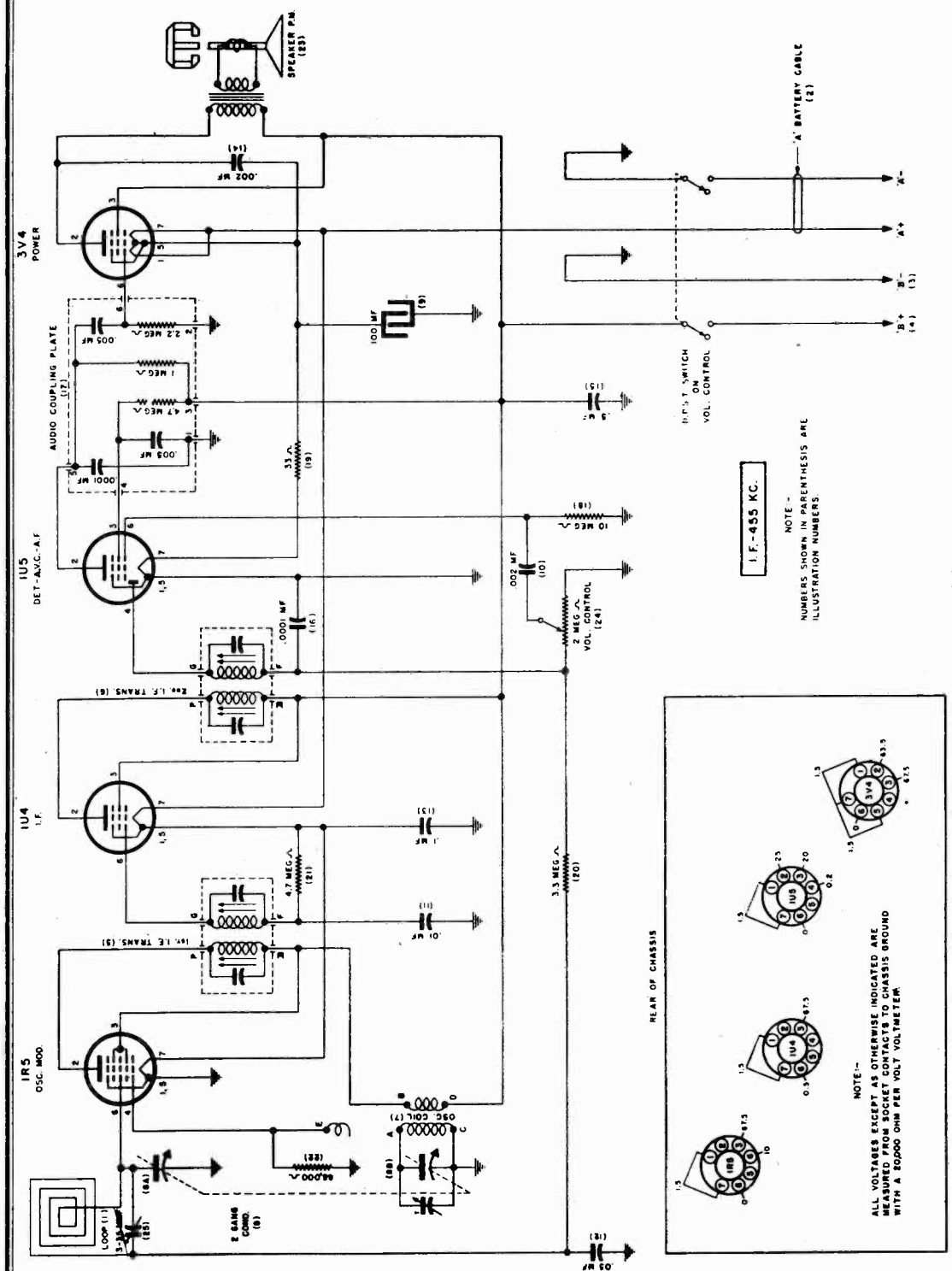
Part No.	Part Name	Description
13E103-9	Clip	Holds Back to Cabinet
82E35-F10	Screw	6-20x1/4—Holds 13E103-9 Clip to Cabt.
82E37-F10	Screw	6-20x3/8—For Mounting Chassis
10E43	Stud	Trimount, for Mounting Speaker Baffle to Cabinet
35E8-8	Dial Pointer	Dial Indicator
20E249	Batt. Connector	B— Battery Connector Assembly
20E249-2	Batt. Connector	B+ Battery Connector Assembly
20E340	"A" Batt. Cable	"A" Battery Cable with Plug
55E21-1	Handle Bracket	Bracket for Mounting Handle
52E31	Handle Cover	Plastic Cover
55E39	Handle Strap	Clock Spring Steel
65E27	Hinge	Spring Hinge for Cabinet Back
37E17-5	Knob	Maroon
37E17-6	Knob	Tan
41E12	Line Cord	Line Cord and Plug

MISCELLANEOUS PARTS

Part No.	Part Name	Description
20E343	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Maroon
20E343-2	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Tan
20E344	Cabinet, less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Maroon
20E344-2	Cabinet, less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Tan
7E165-4	Cabinet Back	Back for Cabinet with 65E27 Spring Hinge Maroon
17E3-2	Plug	"A" Battery Plug
20E345	Speaker Baffle	Baffle Assembly with Grille Cloth, Tan
20E345-2	Speaker Baffle	Baffle Assembly with Grille Cloth, Maroon
7E165-8	Cabinet Back	Back for Cabinet with 65E27 Spring Tan
20E253-19	Dial Cord	Dial Drive Cord
65E2	Dial Spring	Dial Cord Tension Spring
20E348	Dial Shaft	Drive Shaft Assembly

MODELS 319PM, 319PT

SENTINEL RADIO CORP.



INSTALLATION OF REQUIRED BATTERIES

Diagram shows proper location and connections of the following required types of batteries:

One 4½ Volt "A" Battery, such as SENTINEL Type A38, or Ray-O-Vac P83A or Eveready No. 746, etc.

One 67½ Volt "B" Battery, such as SENTINEL Type B7634, or Ray-O-Vac 4367 or Eveready No. 467, etc.

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. Make the adjustment marked (1) first, (2) next, (3) third.

Before starting alignment:

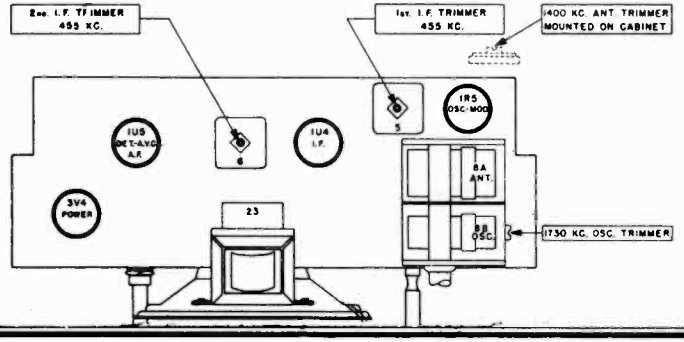
(A) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial indicator must be exactly even with the outside edge of the first 5 in the 55 calibration number at the low frequency end of the dial scale. If dial indicator does not point exactly to the outside edge, move pointer to correct position.

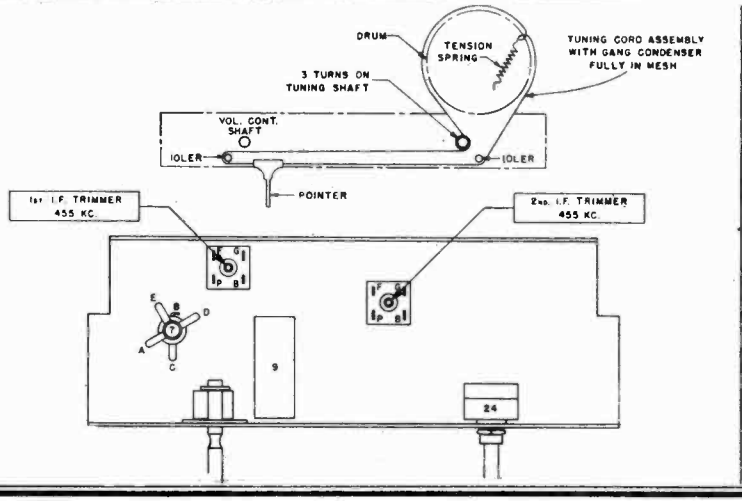
(B) Use an accurately calibrated test oscillator with some type of output measuring device.

(C) WHEN ADJUSTING THE 1730 KC OSCILLATOR TRIMMER, remove chassis from cabinet and disconnect the loop connection wires from the loop. Attach a 1 megohm resistor across these connections and feed output of test oscillator across the 1 megohm resistor.

(D) THE 1400 KC LOOP ANTENNA TRIMMER should be adjusted only after all other adjustments have been made and with the set mounted in the cabinet. When aligning the 1400 KC Antenna Trimmer, couple test oscillator to receiver loop by: (1) make loop consisting of five to ten turns of No. 20 to No. 30 size wire, wound on a 2″ or 3″ form; (2) connect this loop across output of test oscillator; (3) place test oscillator loop near radio loop. BE SURE THAT NEITHER LOOP MOVES WHILE ALIGNING.

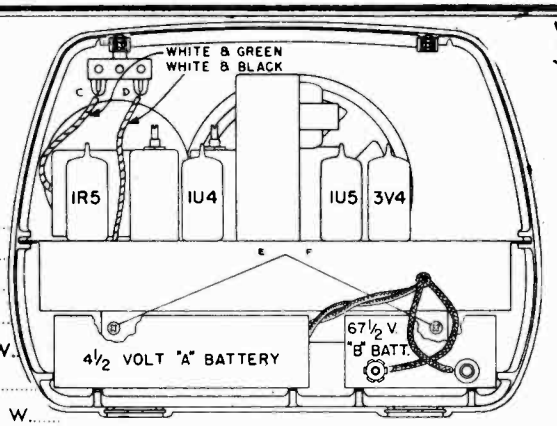
Steps	Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to	
1	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side to grid of 1R5 tube. Low side to chassis.	Adjust each of the 2nd I.F. transformer trimmer adjustment screws for maximum output, then adjust each of the 1st I.F. transformer trimmer adjustment screws for maximum output.
2	Rotate gang condenser to minimum capacity	Exactly 1730 K. C.	See paragraph (C) above	See paragraph (C) above	Adjust 1730 K. C. oscillator trimmer for maximum output.
3	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	See paragraph (D) above	Adjust 1400 K. C. antenna trimmer for maximum output.





PARTS LIST

Illus. No.	Part No.	Part Name	Description
1	64E19	Antenna	Loop
2	20E340	Cable	"A" Battery
3	20E249	Cable	"B"— Battery
4	20E249-2	Cable	"B"+ Battery
5	20E337	Coil	1st I. F. Transformer
6	20E337	Coil	2nd I. F. Transformer
7	20E356	Coil	Oscillator
8	24E44	Condenser	Tuning, Two Gang
9	25E12	Condenser	Dry Electrolytic, 100 Mfd. 25 V.
10	23E205	Condenser	Tubular, .002 Mfd. 200 V.
11	23E211	Condenser	Tubular, .01 Mfd. 200 V.
12	23E216	Condenser	Tubular, .05 Mfd. 200 V.
13	23E218	Condenser	Tubular, .1 Mfd. 200 V.
14	23E405	Condenser	Tubular, .002 Mfd. 400 V.
15	23E224	Condenser	Tubular, .5 Mfd. 200 V.
16	23E24	Condenser	Fixed Ceramic, .0001 Mfd.
17	23E2023-2	Condenser	Ceramic Coupling Plate
18	27E106	Resistor	Carbon, 10 Megohm, 1/3 W.
19	27E330-2	Resistor	Carbon, 33 Ohm, 1/2 W.
20	27E335	Resistor	Carbon, 3.3 Megohm, 1/3 W.
21	27E475	Resistor	Carbon, 4.7 Megohm, 1/3 W.
22	27E683	Resistor	Carbon, 68,000 Ohm, 1/3 W.
23	1E29	Speaker	4" P.M.
24	28E30	Volume Control	2 Megohm, with D.P.S.T. Switch
25	24E33	Condenser	Trimmer, 3-35 MMF.



IMPORTANT: When ordering complete cabinet, cabinet less back, handle, cabinet back, or knobs, be sure to mention required color in addition to proper part number.

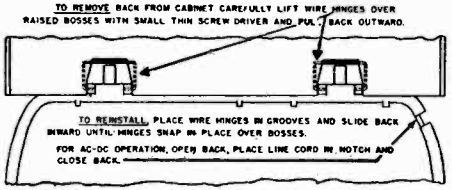
MISCELLANEOUS PARTS

Part No.	Part Name	Description
20E384	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Maroon
20E384-2	Cabinet	Complete Cabt. Assembly with Handle, Baffle, Loop and Cabt. Back, Tan
20E385	Cabinet, less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Maroon
20E385-2	Cabinet, less Back	Cabinet Assembly, less Back, but with Handle, Baffle and Loop, Tan
7E165-4	Cabinet Back	Back for Cabinet with 65E27 Spring Hinge, Maroon
7E165-8	Cabinet Back	Back for Cabinet with 65E27 Spring Hinge, Tan
20E253-19	Dial Cord	Dial Drive Cord
65E2	Dial Spring	Dial Cord Tension Spring
20E348	Dial Shaft	Drive Shaft Assembly
35E8-8	Dial Pointer	Dial Indicator
20E249	Batt. Connector	B— Battery Connector Assembly
20E249-2	Batt. Connector	B+ Battery Connector Assembly
20E340	"A" Batt. Cable	"A" Battery Cable with Plug
55E21-1	Handle Bracket	Bracket for Mounting Handle
52E31	Handle Cover	Plastic Cover
55E39	Handle Strap	Clock Spring Steel
65E27	Hinge	Spring Hinge for Cabinet Back
37E17-5	Knob	Maroon
37E17-6	Knob	Tan
17E3-2	Plug	"A" Battery Plug
20E345	Speaker Baffle	Baffle Assembly with Grille Cloth

TO REMOVE CHASSIS FROM CABINET:
1. REMOVE BATTERIES
2. UNSOLDER ANTENNA WIRES C & D.
3. REMOVE SCREWS E & F.

HARDWARE

Part No.	Part Name	Description
13E103-9	Clip	Holds Back to Cabinet
82E35-F10	Screw	6-20x1/4—Holds 13E103-9 Clip to Cabt
82E37-F10	Screw	6-20x3/8—For Mounting Chassis
10E43	Stud	Trimount, for Mounting Speaker Baffle to Cabinet



AUTOMATIC TUNING

ADJUSTMENT. All adjustments are simply made from the top of the cabinet using an ordinary screw driver.

To make adjustments remove all six buttons, which pull off readily. The center buttons should be removed first, since by depressing the adjacent buttons with thumb and finger a firm grip may be secured on either center button. The side buttons can then be easily removed.

Loosen the screw of the desired button and with the manual tuning knob tune to any desired station. Hold the manual tuning knob in position and depress the button shaft as far as possible. With the button fully depressed, tighten the screw firmly.

Be sure the push button knob is held down in position while being tightened.

After the stations are adjusted, it is advisable to check each button to assure sufficient tightening.

To assure accurate adjustment, the volume control should be set at a moderate level and the station tuned in slowly to a point of maximum volume and clarity.

It is not necessary to follow any particular sequence of stations since each button is adjustable to any station.

With each button definitely set and securely tightened to the selected station, the tuner is ready for operation.

OPERATION. With the set turned on to a moderate level of volume, the automatic tuner is operated by merely pressing a button set to the desired station.

Station selection may be made automatically or manually at will, since the manual tuning control functions integrally with the automatic unit.

The station call letter tabs enclosed in the Operating Instruction Sheet envelope should be inserted into the slot of the push-buttons, using designations corresponding to the station selected for each button. After inserting call letter tabs, the buttons may be replaced.

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400, 1620, 6000, 15000, and 18300 KC, and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

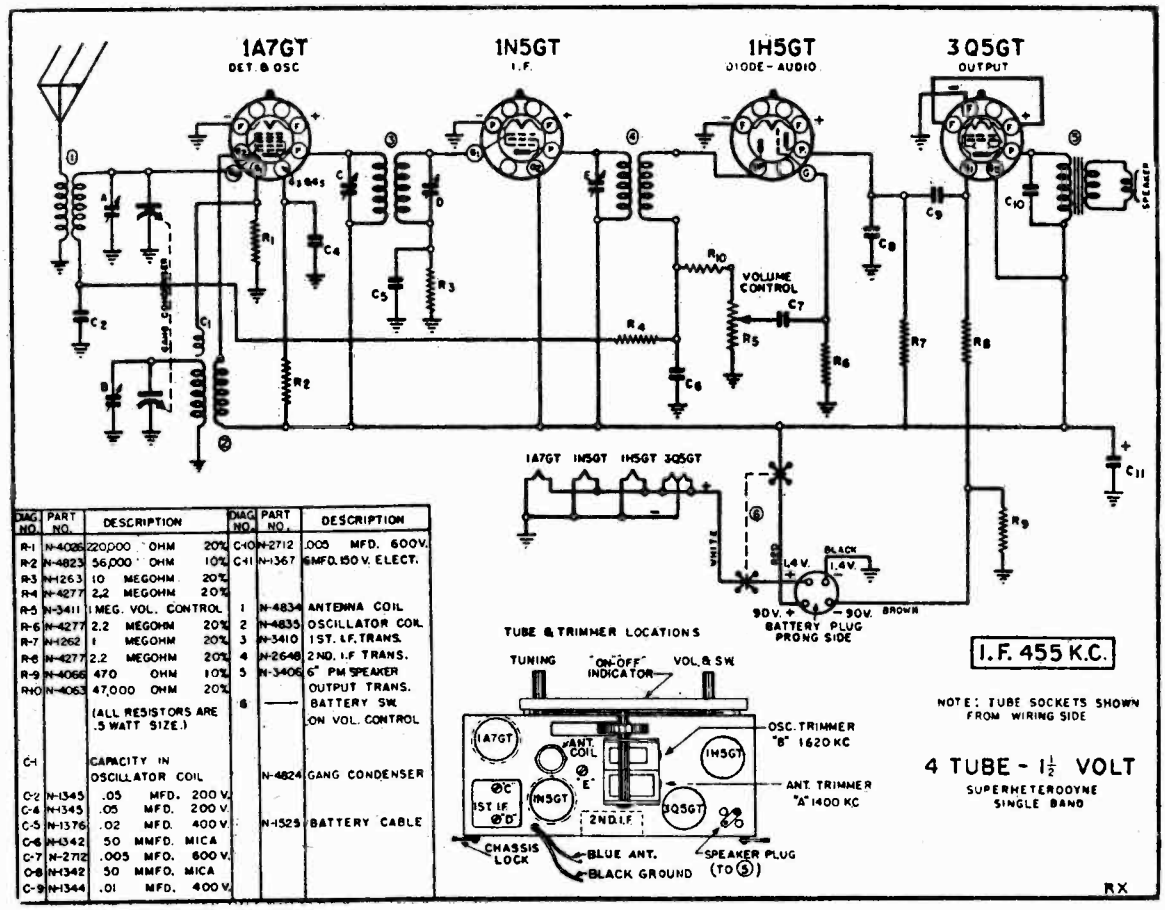
CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the Broadcast and Short Wave bands should be adjusted.

I. F. ALIGNMENT. Remove the chassis from the cabinet. With the Band Switch set to the Broadcast Band and with the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube 6SG7 through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. With the Band Switch turned to the Broadcast Position, connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser, and the ground on the test oscillator should be connected to the buss, indicated on the circuit diagram. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer). For the antenna adjustment, it is necessary to connect the loop on the cabinet to the chassis or use an equivalent dummy. An equivalent dummy can be constructed by winding two turns of hookup wire on a piece of carton material to form a loop 22x35 inches. Set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on the condenser. Adjust 600 KC pad while rocking the gang to obtain maximum output.

SHORT WAVE BAND ALIGNMENT. With the band switch turned to the S.W. position, connect the test oscillator to the antenna with a 400 ohm dummy and the ground on the test oscillator to the buss, indicated on the circuit diagram. Adjust the S.W. oscillator to give a maximum output with the dial at 18300 KC (extreme end). Set the test oscillator at 15000 KC and tune in the signal with the dial. Adjust the antenna trimmer for maximum output. With a strong signal input turn the dial to approximately 1 M.C. lower in frequency and pick up the image frequency. If the image is not received, it will be necessary to return the dial to 183000 KC to reduce the capacity in the oscillator trimmer until a second signal is received. Proceed as before with the alignment of the antenna and recheck for image frequency. Check the sensitivity at 6000 KC to determine if the coils and mica pad are not defective.

SONORA RADIO & TELEV. CORP.



DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R-1	N-4025	220,000 OHM 20%	C-10	N-2712	.005 MFD. 600V.
R-2	N-4823	56,000 OHM 10%	C-11	N-1367	8MFD. 150 V. ELECT.
R-3	N-1263	10 MEGOHM 20%			
R-4	N-4277	2.2 MEGOHM 20%			
R-5	N-3411	1 MEG. VOL. CONTROL	1	N-4834	ANTENNA COIL
R-6	N-4277	2.2 MEGOHM 20%	2	N-4835	OSCILLATOR COIL
R-7	N-1262	1 MEGOHM 20%	3	N-3410	1ST. I.F. TRANS.
R-8	N-4277	2.2 MEGOHM 20%	4	N-2648	2ND. I.F. TRANS.
R-9	N-4066	470 OHM 10%	5	N-3406	6" PM SPEAKER
R-10	N-4063	47,000 OHM 20%			OUTPUT TRANS.
		(ALL RESISTORS ARE .5 WATT SIZE.)	6	——	BATTERY SW. ON VOL. CONTROL
C-1		CAPACITY IN OSCILLATOR COIL		N-4824	GANG CONDENSER
C-2	N-1345	.05 MFD. 200 V.			
C-4	N-1345	.05 MFD. 200 V.			
C-5	N-1376	.02 MFD. 400 V.		N-1529	BATTERY CABLE
C-6	N-1342	50 MMFD. MICA			
C-7	N-2712	.005 MFD. 600 V.			
C-8	N-1342	50 MMFD. MICA			
C-9	N-1344	.01 MFD. 400 V.			

ALIGNMENT PROCEDURE

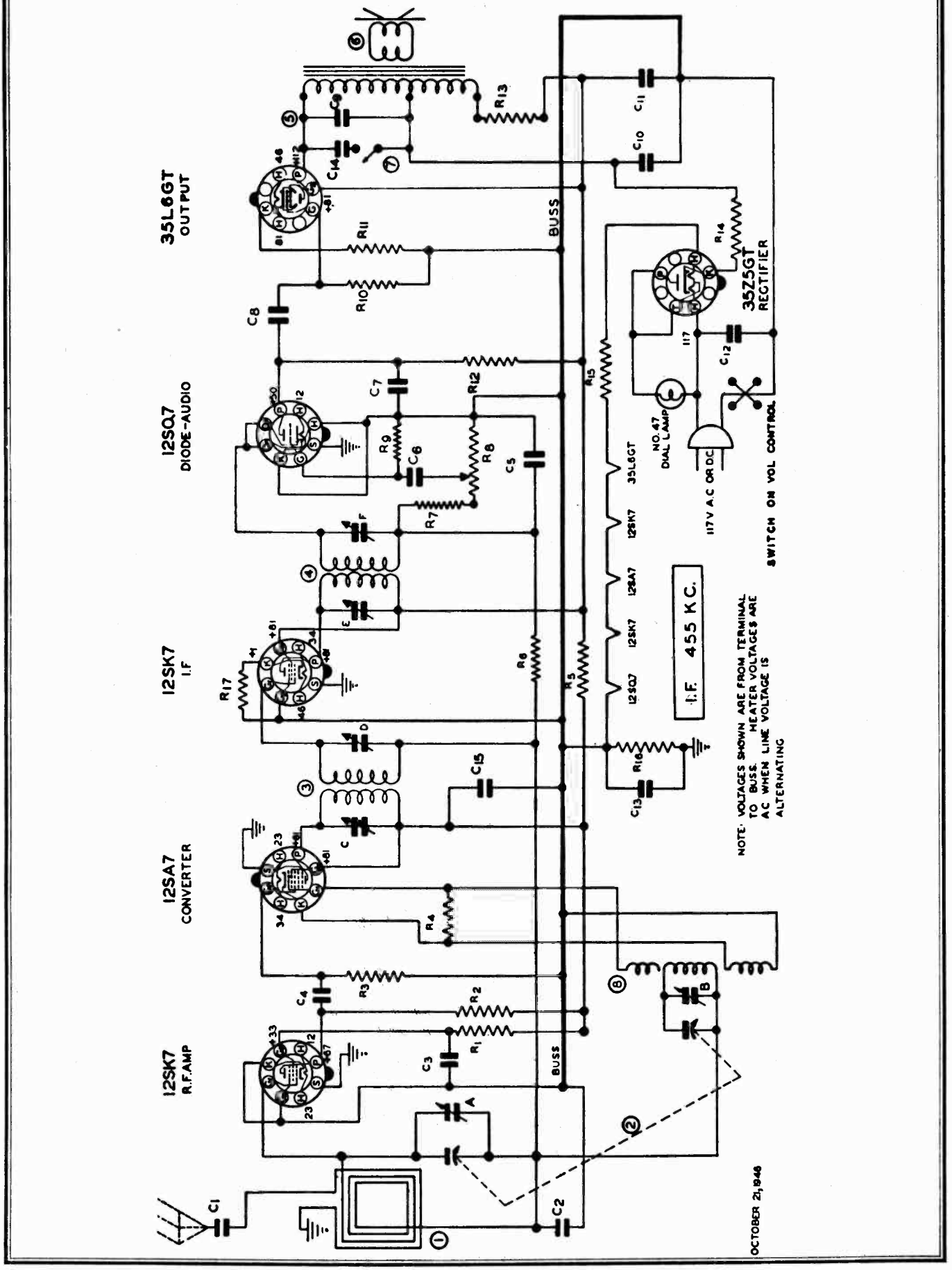
GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I. F. ALIGNMENT. Remove the chassis and speaker from the cabinet and connect output meter across primary or secondary of output transformer. With the gang condenser set at minimum, adjust the test oscillator to 455 KC, connect its output to the grid of the first detector tube (1A7GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna lead through a 200 mmfd. (.0002) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

SONORA RADIO & TELEV. CORP. MODEL RZU-222



MODEL RZU-222 SONORA RADIO & TELEV. CORP.

SERVICE DATA

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I.F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condsenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

TUNING RANGE

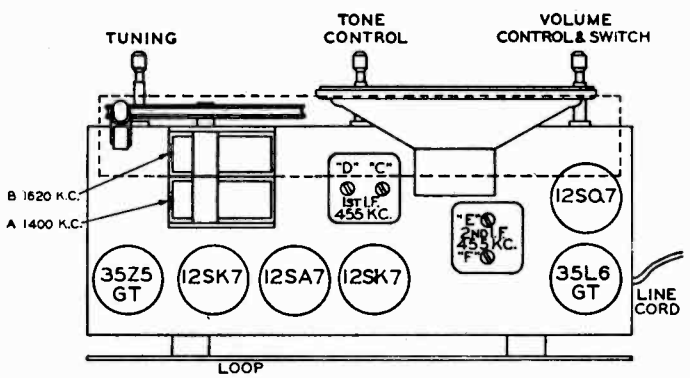
This receiver is designed to operate over the standard broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters).

DIAL CALIBRATION. The scale is calibrated from 55 to 160 (Standard Broadcast). This band covers all Standard Broadcast frequencies of the United States, Canada, Mexico, Cuba and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

GROUND. No ground connection should be used when operaitng this receiver. The receiver gets its ground connection through the power line and any external connection to the chassis may cause a short circuit and consequent damage.

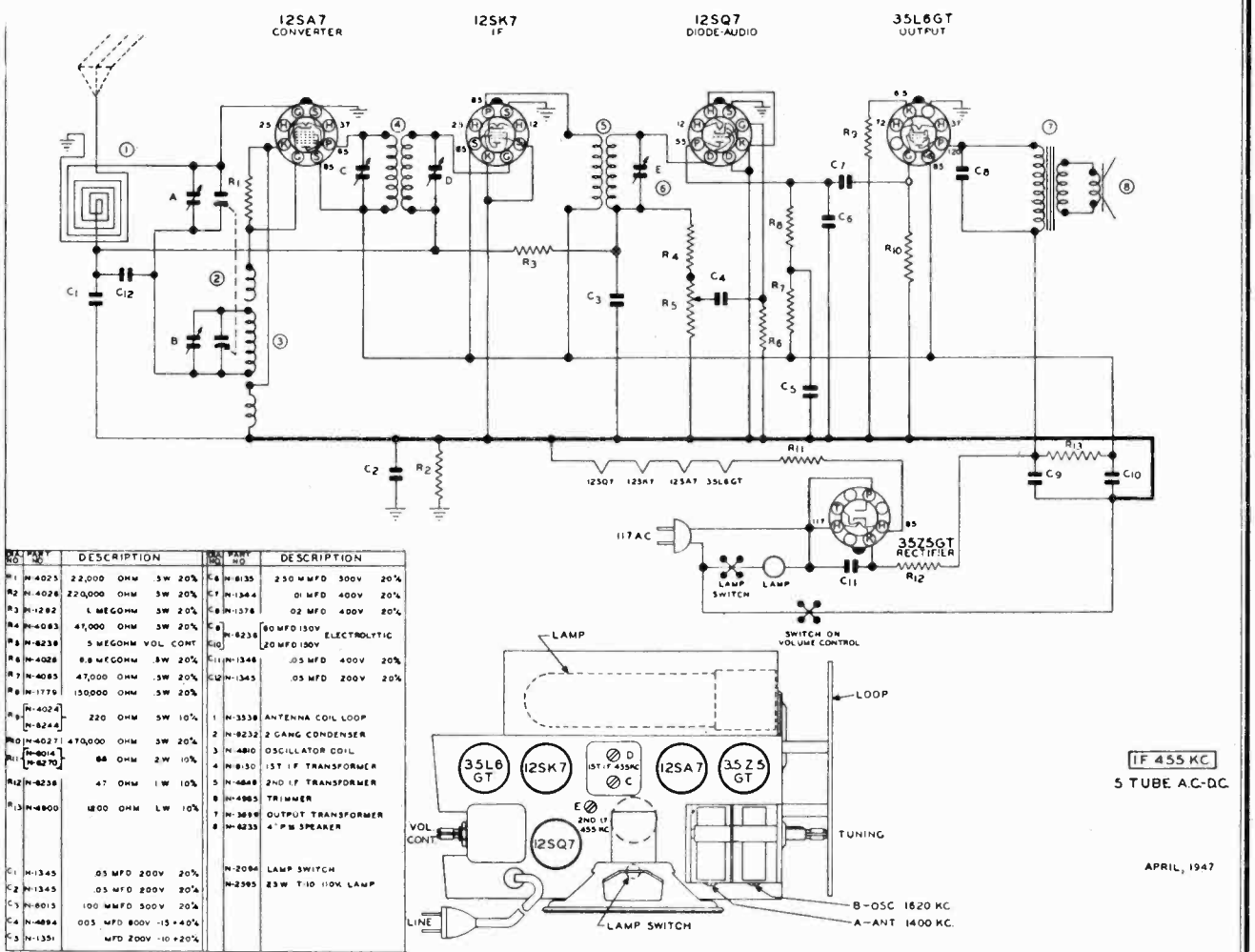
POWER SUPPLY. This receiver is designed to operate on any alternating current supply (AC) ranging from 110 to 120 volts, 50 to 60 cycles; or on any direct current supply (DC) ranging from 110 to 120 volts.

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO	DESCRIPTION
C1	N-1344	.01 MFD 400 V. 20%	R6	N-1262	1 MEGOHM .5W 20%
C2	N-1345	.05 MFD 200 V. 20%	R7	N-4063	47,000 OHM .5W 20%
C3	N-1345	.05 MFD 200 V. 20%	R8	N-5026	0.5 MEGOHM VOL CONT.
C4	N-2383	150 MMFD MICA 20%	R9	N-4081	4.7 MEGOHM .5W 20%
C5	N-1374	100 MMFD MICA 20%	R10	N-4027	470,000 OHM .5W 20%
C6	N-4894	.005 MFD 600V -15+40%	R11	N-4087	180 OHM .5W 10%
C7	N-4890	.0005 MFD 600V -25+60%	R12	N-4988	220,000 OHM .5W INS. 20%
C8	N-1344	.01 MFD 400V. 20%	R13	N-4900	1200 OHM 1W 10%
C9	N-1344	.01 MFD 400V. 20%	R14	N-4022	33 OHM .5W 20%
C10	N-3658	40 MFD 150 W.V. ELECTRO	R15	N-4628	33 OHM 1W 10%
C11		40 MFD 150 W.V. LYTIC	R16	N-4026	220,000 OHM .5W 20%
C12	N-1346	.05 MFD 400 V. 20%	R17	N-5857	82 OHM .5W 10%
C13	N-5160	.2 MFD 200V. -10+10%	1	N-5937	LOOP COIL
C14	N-1346	.05 MFD 400V. 20%	2	N-5286 OR	2 GANG CONDENSER
C15	N-1351	.1 MFD 200V. -10+20%	1	N-5785	LOOP COIL
			2	N-5936	2 GANG CONDENSER
			3	N-4872	IST I.F. TRANSFORMER
			4	N-5571	2ND I.F. TRANSFORMER
R1	N-4063	47,000 OHM .5W 20%	5	N-4875	OUTPUT TRANSFORMER
R2	N-4896	2200 OHM .5W 10%	6	N-4868	5" SPEAKER
R3	N-4087	47,000 OHM .5W INS. 20%	7	N-4942	TONE SWITCH
R4	N-5351	22,000 OHM .5W INS. 20%	8	N-4810	OSCILLATOR COIL
R5	N-4086	470 OHM .5W 10%			



TUBE & TRIMMER LOCATIONS

SONORA RADIO & TELEV. CORP. MODELS WCU-246, WCU-247



DIAG NO	PART NO	DESCRIPTION
R1	N-4025	22,000 OHM 5W 20%
R2	N-4026	220,000 OHM 5W 20%
R3	N-1282	1 MEGOHM 5W 20%
R4	N-4083	47,000 OHM 5W 20%
R5	N-8238	5 MEGOHM VOL CONT
R6	N-4028	0.8 MEGOHM .5W 20%
R7	N-4085	47,000 OHM .5W 20%
R8	N-1779	130,000 OHM .5W 20%
R9	N-4024 / N-8244	220 OHM 5W 10%
R10	N-4027	470,000 OHM 5W 20%
R11	N-8014 / N-8270	68 OHM 2W 10%
R12	N-8236	47 OHM 1W 10%
R13	N-4900	1200 OHM 1W 10%
C1	N-1345	.05 MFD 200V 20%
C2	N-1345	.05 MFD 200V 20%
C3	N-8015	100 MMFD 500V 20%
C4	N-4894	.005 MFD 600V -15 +40%
C5	N-1351	.1 MFD 200V -10 +20%

DIAG NO	PART NO	DESCRIPTION
C6	N-8135	250 MMFD 300V 20%
C7	N-1344	.01 MFD 400V 20%
C8	N-1378	.02 MFD 400V 20%
C9	N-8236	60 MFD 130V ELECTROLYTIC
C10		20 MFD 150V
C11	N-1348	.05 MFD 400V 20%
C12	N-1345	.05 MFD 200V 20%
1	N-3538	ANTENNA COIL LOOP
2	N-8232	2 GANG CONDENSER
3	N-4810	OSCILLATOR COIL
4	N-8130	1ST I.F. TRANSFORMER
5	N-4848	2ND I.F. TRANSFORMER
6	N-4985	TRIMMER
7	N-3698	OUTPUT TRANSFORMER
8	N-8235	4" P.M. SPEAKER
	N-2084	LAMP SWITCH
	N-2595	23 W T-10 110V. LAMP

SERVICE DATA

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED. OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

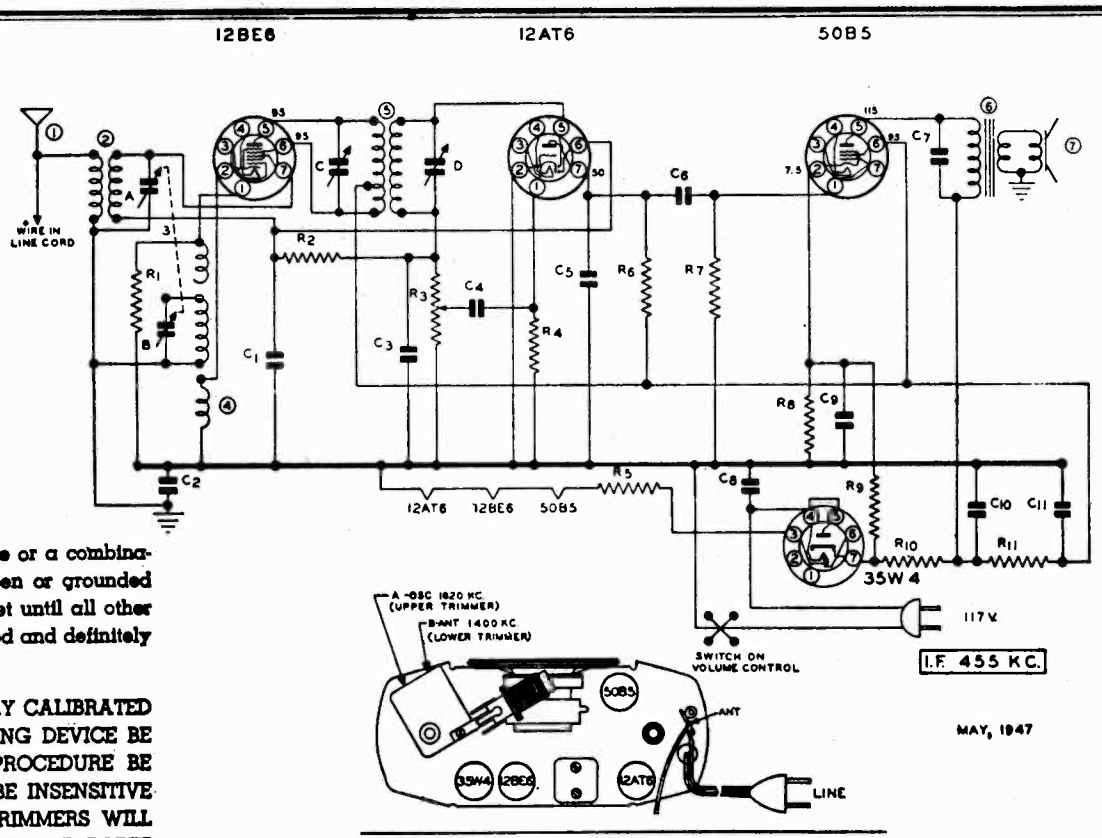
GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I.F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cobinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the converter tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next — set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

DIA. NO.	PART NO.	DESCRIPTION
R1	N-6012	22,000 OHM .5W 10%
R2	N-4081	4.7 MEGOHM .5W 20%
R3	N-6273	2.0 MEGOHM VOL. CONT.
R4	N-4028	6.8 MEGOHM .5W 20%
R5	N-6256	47 OHM 1.W 10% INSUL.
	N-6259	47 OHM 1W 10% WIREW'D
R6	N-4423	330,000 OHM .5W 20%
R7	N-4027	470,000 OHM .5W 20%
R8	N-4067	180 OHM .5W 10%
	N-6297	180 OHM .5W 10% WIREW'D
R9	N-4064	33,000 OHM .5W 20%
R10	N-4022	33 OHM .5W 20%
R11	N-5052	2200 OHM .5W 20%
C1	N-1345	.05 MFD 200V 20%
C2	N-1345	.05 MFD 200V 20%
C3	N-6015	100 MMFD 500V
C4	N-2063	.003 MFD 600V -15+40%
C5	N-6015	100 MMFD 500V
C6	N-1344	.01 MFD 400V 20%
C7	N-1344	.01 MFD 400V 20%
C8	N-1346	.05 MFD 400V 20%
C9		20 MFD 25V ELECTRO-LYTIC
C10	N-6281	40 MFD 150V
C11		20 MFD 150V
1	N-3744	ANTENNA HANK
2	N-6292	ANTENNA COIL
3	N-6276	2 GANG CAPACITOR
4	N-6412	OSCILLATOR COIL
5	N-6295	I.F. TRANSFORMER
6	N-3899	OUTPUT TRANSFORMER
8	N-6414	OUTPUT TRANSFORMER
7	N-6279	3½" P.M. SPEAKER



Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED, OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

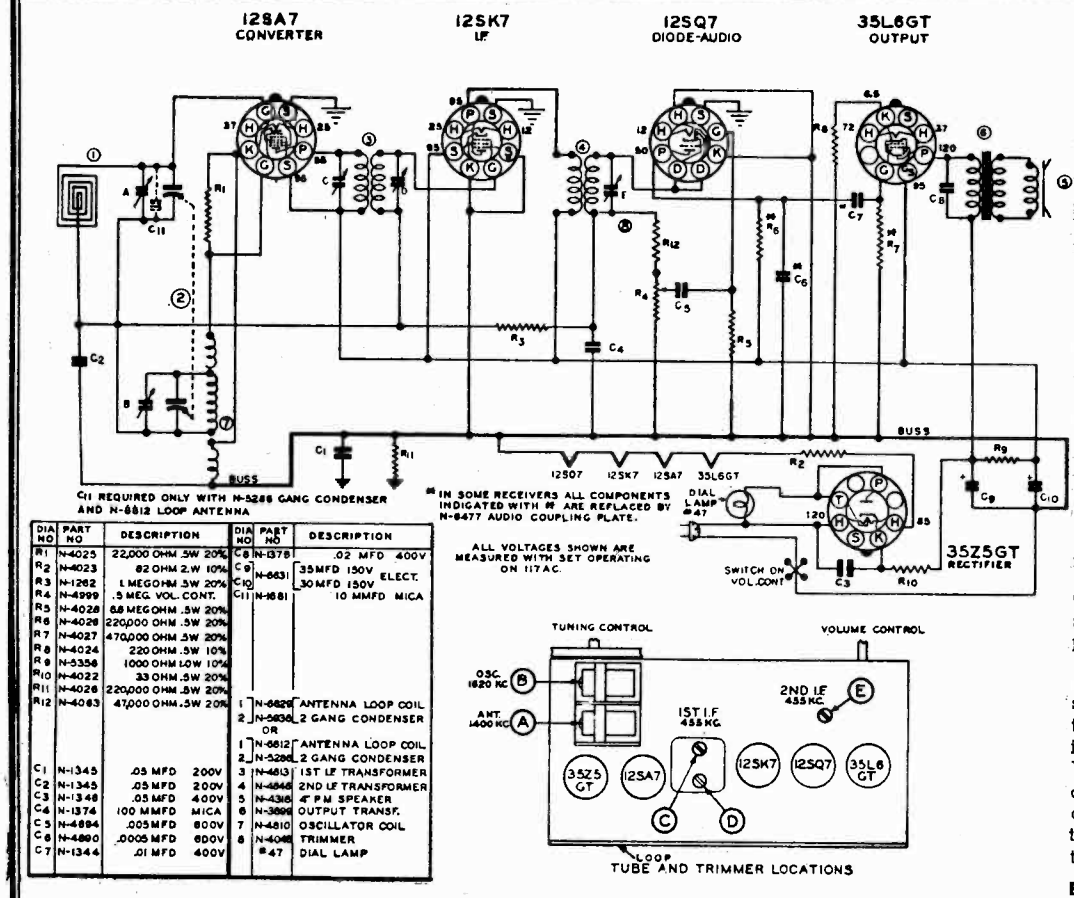
CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stage should be aligned properly as the first step. After the I.F. transformer has been properly adjusted and peaked, the broadcast band should be adjusted.

I.F. ALIGNMENT. Remove the Chassis from the cabinet. With the Knob Indicator set at 1620 KC, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12BE6) through an .05 or .1 MFD condenser. The ground on the test oscillator should be connected to the ground buss indicated on the circuit diagram. Adjust both I.F. trimmers to peak or maximum reading on the output meter.

TUNING RANGE

This receiver is designed to operate over the standard broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters).

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna lead through a 50 mmfd. (.00005) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on gang condenser. Next set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.



DIA NO	PART NO	DESCRIPTION
R1	N-4025	22,000 OHM .5W 20%
R2	N-4023	82 OHM 2W 10%
R3	N-1262	1 MEGOHM .5W 20%
R4	N-4999	.5 MEG. VOL. CONT.
R5	N-4028	68 MEGOHM .5W 20%
R6	N-4026	220,000 OHM .5W 20%
R7	N-4027	470,000 OHM .5W 20%
R8	N-4024	220 OHM .5W 10%
R9	N-5358	1000 OHM LOW 10%
R10	N-4022	33 OHM .5W 20%
R11	N-4026	220,000 OHM .5W 20%
R12	N-4063	47,000 OHM .5W 20%
C1	N-1345	.05 MFD 200V
C2	N-1345	.05 MFD 200V
C3	N-1348	.05 MFD 400V
C4	N-1374	100 MMFD MICA
C5	N-4884	.005 MFD 600V
C6	N-4890	.0005 MFD 600V
C7	N-1344	.01 MFD 400V

DIA NO	PART NO	DESCRIPTION
C8	N-1378	.02 MFD 400V
C9	N-6631	35 MFD 150V ELECT.
C10		30 MFD 150V
C11	N-1681	10 MMFD MICA
1	N-6826	ANTENNA LOOP COIL
2	N-5636	2 GANG CONDENSER OR
1	N-6812	ANTENNA LOOP COIL
2	N-5286	2 GANG CONDENSER
3	N-4813	1ST I.F. TRANSFORMER
4	N-4846	2ND I.F. TRANSFORMER
5	N-4316	4" P.M. SPEAKER
6	N-3896	OUTPUT TRANSF.
7	N-4810	OSCILLATOR COIL
8	N-4048	TRIMMER
	#47	DIAL LAMP

TUBE AND TRIMMER LOCATIONS

TUNING RANGE

This receiver is designed to operate over the standard broadcast band which extends from 535 to 1620 Kilocycles (KC) (185 to 560 Meters).

DIAL CALIBRATION. The scale is calibrated from 55 to 160 (Standard Broadcast). This band covers all Standard Broadcast frequencies of the United States, Canada, Mexico, Cuba and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

POWER SUPPLY. This receiver is designed to operate on any alternating current supply (AC) ranging from 110 to 120 volts, 50 to 60 cycles; or on any direct current supply (DC) ranging from 110 to 120 volts.

5 TUBE AC-DC

SUPERHETERODYNE
SINGLE BAND

DRAWN [illegible] APPROVED [illegible]

NOVEMBER, 1947

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED, OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1620 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stage should be aligned properly as the first step. After the I.F. transformer has been properly adjusted and peaked, the broadcast band should be adjusted.

I.F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective position on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to a dummy loop which can be made by coiling 2 turns of hookup wire about 6" in diameter. Place this dummy loop about a foot from the loop on the receiver and in the same plane as the receiver loop. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on the gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

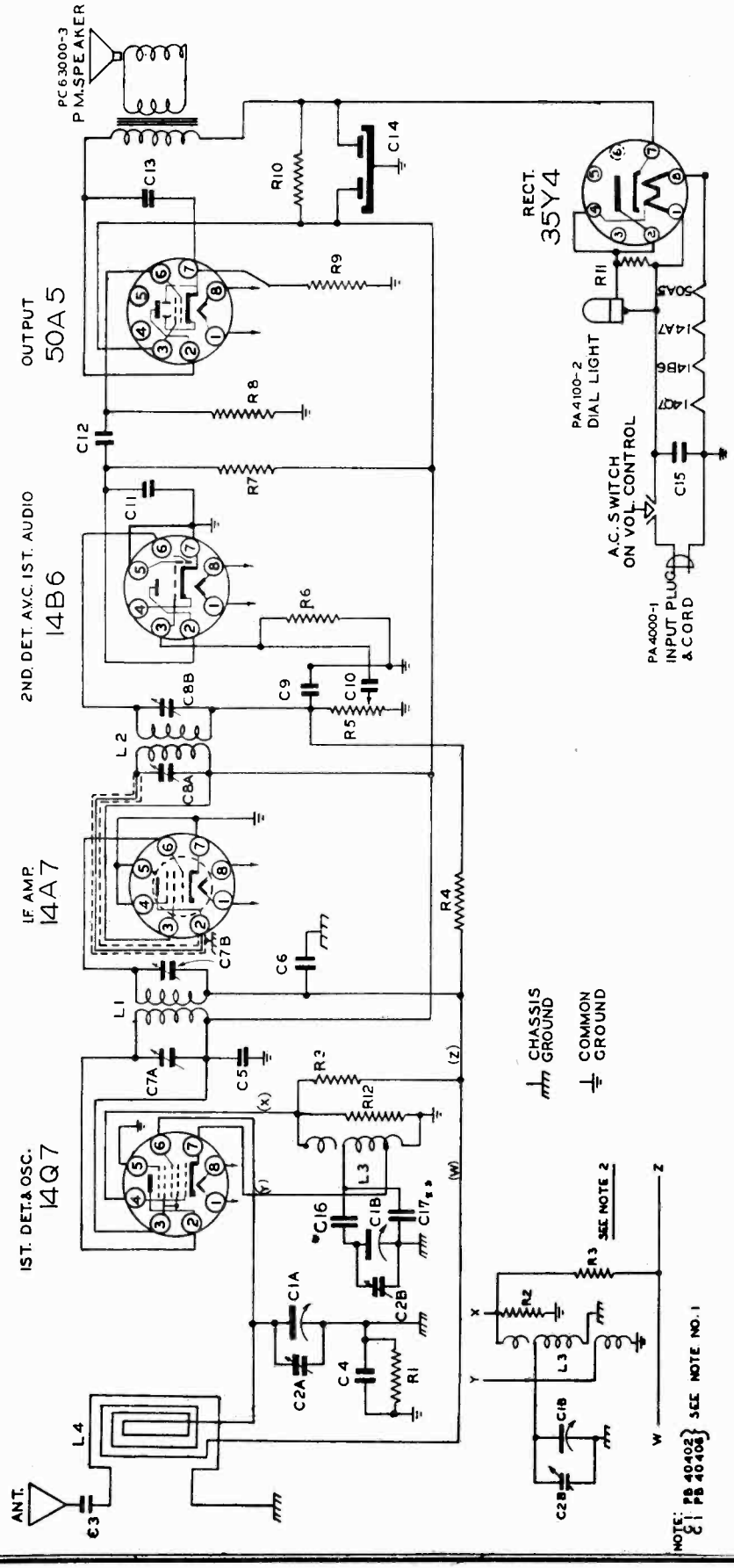
I.F. 455 KC.

MODEL 5-06

THE SPARKS WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODEL 5-06
INTERMEDIATE FREQUENCY 456K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1A&B VARIABLE CONDENSER (SEE NOTE)
C2A&B TRIMMERS ON VARIABLE
C3 .001 MFD. 400 V. PC 40GL-102
C4 .15 MFD. 400 V. PC 40GL-154
C5 .05 MFD. 200 V. PC 40GK-503
C6 .05 MFD. 200 V. PC 40GK-503
C7A&B NO. 1 I.F. TRIMMERS AB 43500-1
C8A&B NO. 2 I.F. TRIMMERS AB 43500-2

C9 270 MMF. MICA MC60G-271
C10 .01 MFD. 400 V. PC40GL-103
C11 510 MMF. MICA MC60G-511
C12 .002 MFD. 400 V. PC 40GL-202
C13 .01 MFD. 400 V. PC 40GL-103
C14 ELECT. CONDENSER PA 4301 RED 30 MFD. YELLOW 40 MFD.
C15 .05 MFD. 400 V. PC 40GL-503
C16 .05 MFD. 200 V. PC 40FK-503
C17 15 MMF. PA 4328-1
* SEE NOTE NO. 2
** SEE NOTE NO. 1

R1 150,000 Ω .5W. BR12N-154
R2 22,000 Ω .5W. BR12S-223
R3 15 MEGOHM .5W BR12S-156
R4 2.2 MEGOHM .5W BR12N-225
R5 .5 MEG. VOL. CONT. & SW. PA 4400-2
R6 5.6 MEGOHM .5W. BR12S-565
R7 220,000 Ω .5W BR12N-224
R8 470,000 Ω .5W BR12N-474
R9 150 Ω .5W BR12S-151
R10 1200 Ω 1W. CR12S-122
R11 82 Ω .5W. BR12S-820
R12 47,000Ω .5W. BR12S-473

L1 NO. 1 I.F. COIL ASSEMBLY AA6800-1
L2 NO. 2 I.F. COIL ASSEMBLY AA6800-2
L3 B.C. OSCILLATOR COIL ASSEMBLY AB 42200-1 (SEE NOTE NO. 2)
L4 LOOP ASSEMBLY AB43015-1 } SEE NOTE NO. 1
L4 LOOP ASSEMBLY AB 43024-1 }

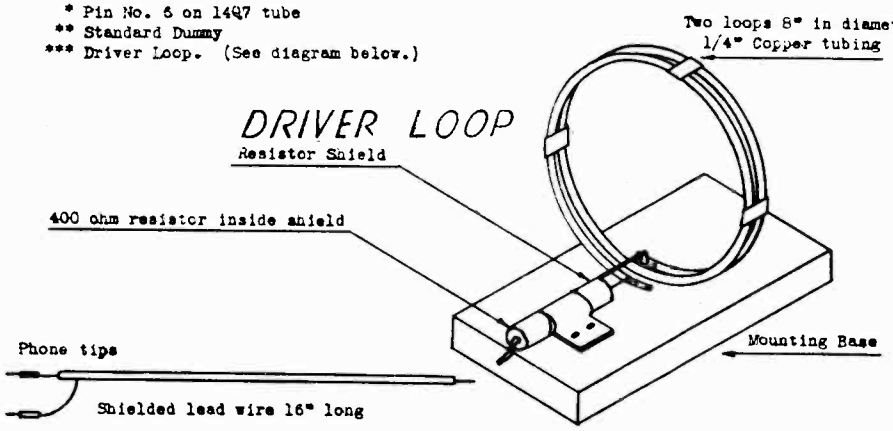
NOTE NO. 1. THE FIRST 4,000 UNITS WILL BE ASSEMBLED USING C1 AS PB 40402 AND L4 AS AB 43015-1. AFTER FIRST 4000, C1 WILL BE PB 40406 MOUNTED ON SPECIAL BRACKET PB 41913 AND USING L4 AS AB 43024-1 ELIMINATING USE OF C17 (15 MMF. CONDENSER.)

NOTE NO. 2 AFTER 15,000 UNITS USE L3 AS AA 8752-3 AND HOOK UP AS SHOWN IN SECTIONAL DRAWING ELIMINATING C16 CONDENSER.

ALIGNMENT DATA

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer with left hand stop line and with condenser closed.						
2	I.F.	*	* *	456 KC	Open	C8A&B	Peak accurately
						C7A&B	Peak accurately
3	B.C.	* * *	Dummy Loop	1500 KC	1500 KC	C2B Osc Trim	Peak accurately
						C2A RF Trim	Peak accurately
4	(Repeat operation 2 and 3)						
5	(Check calibration at 600 KC, 1000 KC and 1500 KC)						
6	(Check operations 1 to 5 inclusive.)						

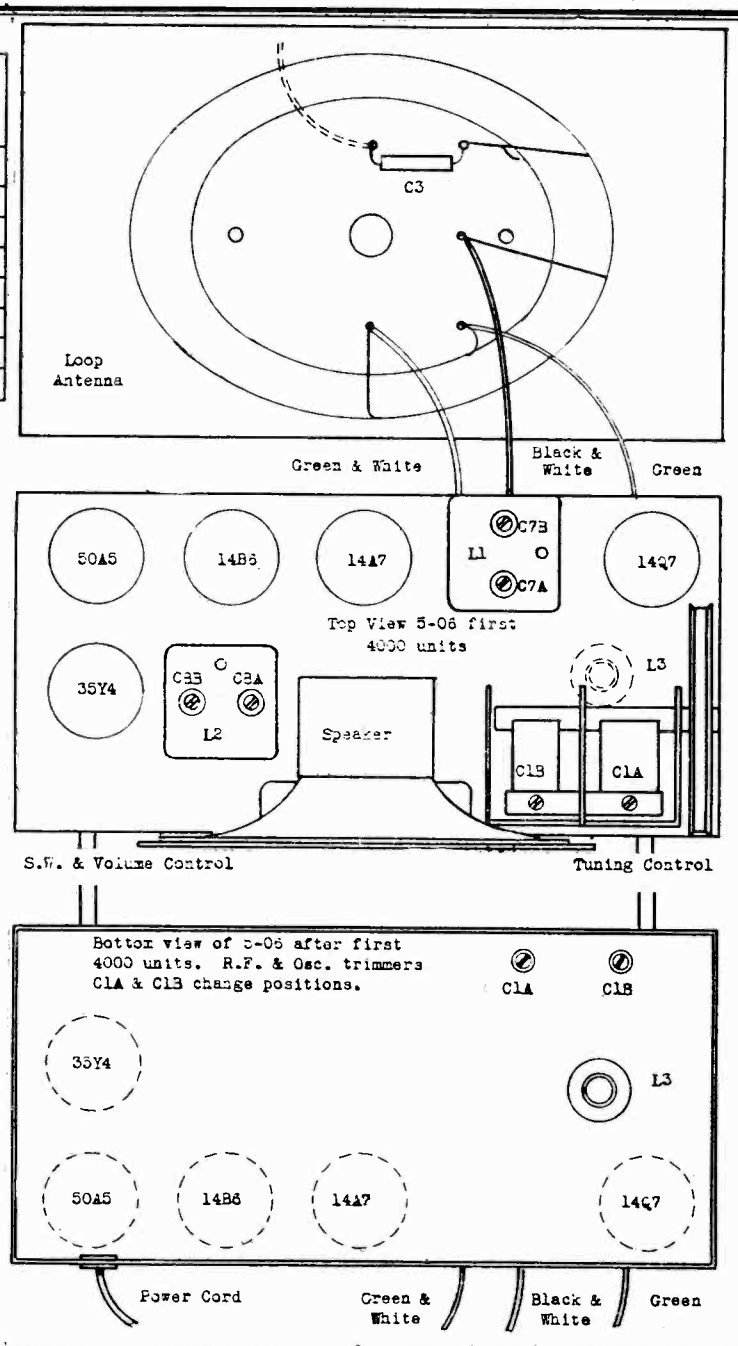
* Pin No. 6 on 14Q7 tube
** Standard Dummy
*** Driver Loop. (See diagram below.)



SPECIFICATIONS

Two loops of 1/4" copper tubing 8" in diameter spaced 1/4" apart with 400 ohms resistor in series. Connecting cable and resistor must be shielded.
The loop should be spaced twice the diameter of the loop from the receiver being aligned to prevent an over modulated signal and poor alignment of the receiver.

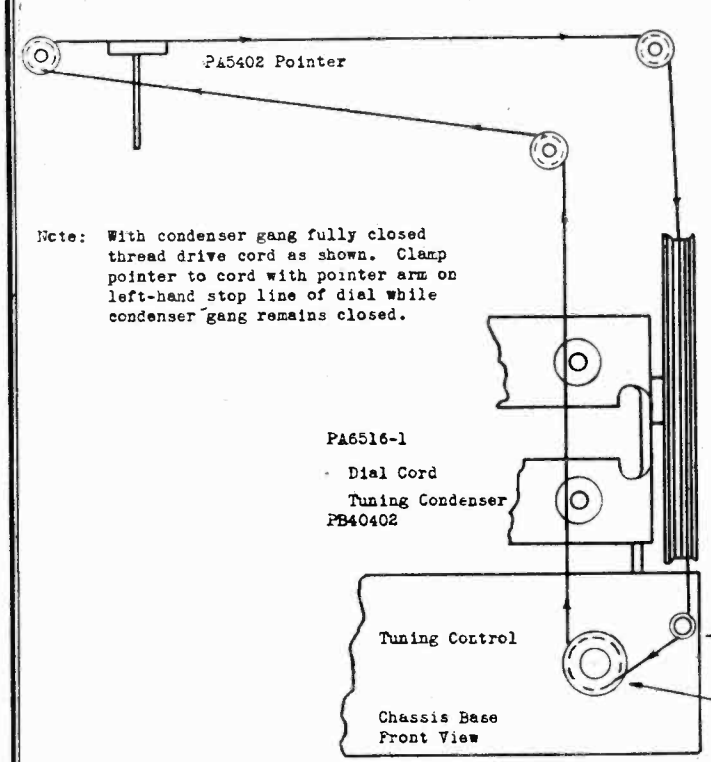
Special Note: The first 4,000 units will be assembled using C1 as PB40402 and L4 as AB43015-1. After first 4,000 units C1 will be PB40406 mounted on a special bracket PB41913 and using L4 as AB43024-1. On part No. PB40402 trimmers C1A and C1B are located on top of the tuning condenser, while on PB40406 condenser C1A and C1B are on the bottom of the condenser and must be adjusted from chassis bottom side.

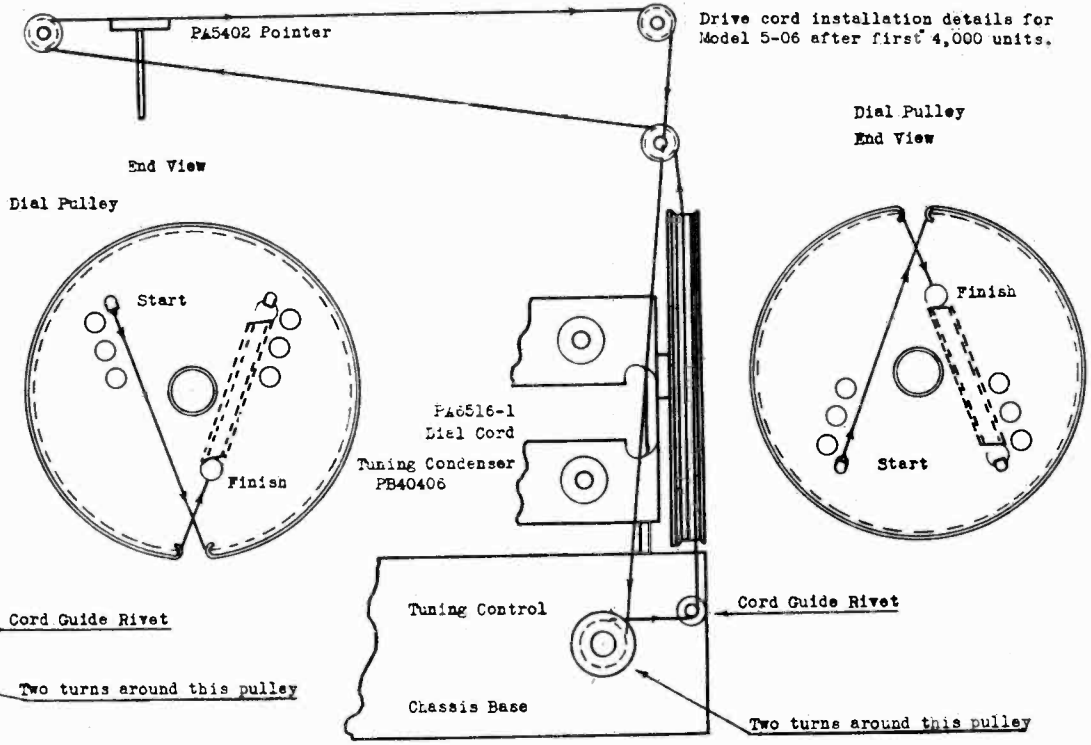


THE SPARKS WITHINGTON CO.

MODEL 5-06

DRIVE CORD INSTALLATION DETAILS FOR MODEL 5-06
FIRST 4,000 UNITS





VOLTAGE CHART

Line Voltage: 117 Volts A.C. Position of Volume Control: Full with set tunned to quiet channel.

TUBE	FUNCTION	Voltage of Socket Prong to Gnd.(See Prong Nos. on Schematic Dia.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
14Q7	1st Det. & Osc.	12*	80	80	* *	0	* *	* *	0
14A7	I.F. Amp.	24*	80	80	0	0	* *	0	36*
14B6	2nd. Det. A.V.C. & 1st audio	24*	55	-.35	0	0	-.55	0	12*
50A5	Power Output	85*	110	85	0	0	* *	5.4	36*
35Y4	Rectifier	117*	110*	0	110*	0	0	115	85*

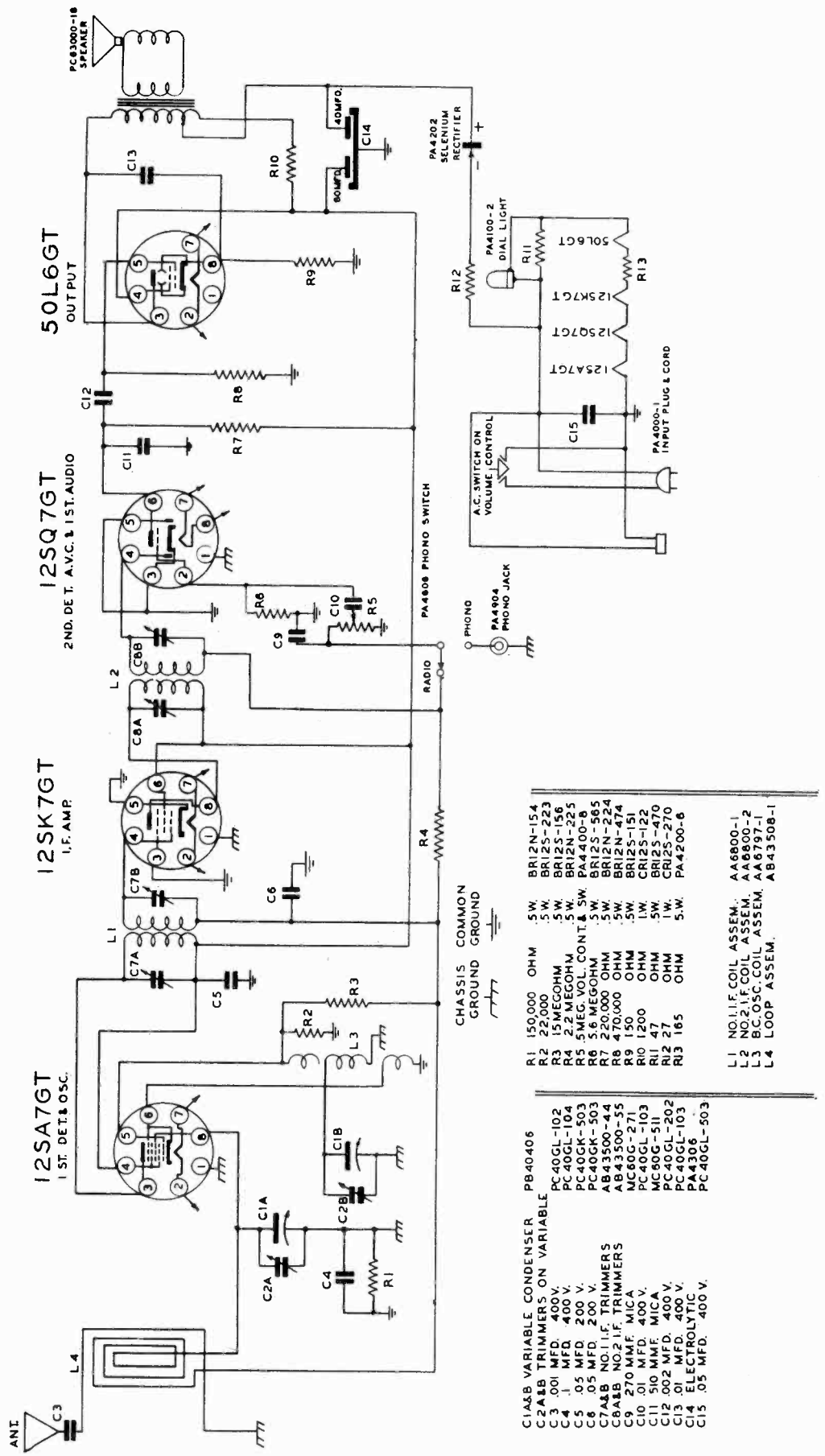
Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.
**Cannot be measured with 20,000 ohms per volt voltmeter.

THE SPARKS-WITHINGTON CO. MODEL 5-07-PA

INTERMEDIATE FREQUENCY 456 KC.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

(Original) June 24, 1947



C1A&B VARIABLE CONDENSER	PB40406
C2A&B TRIMMERS ON VARIABLE	
C3 .001 MFD. 400V.	PC40GL-102
C4 .1 MFD. 400 V.	PC40GL-104
C5 .05 MFD. 200 V.	PC40GK-503
C6 .05 MFD. 200 V.	PC40GK-503
C7A&B NO.1 I.F. TRIMMERS	AB43500-44
C8A&B NO.2 I.F. TRIMMERS	AB43500-55
C9 270 MMF. MICA	MC60G-271
C10 .01 MFD. 400 V.	PC40GL-103
C11 510 MMF. MICA	MC60G-511
C12 .002 MFD. 400 V.	PC40GL-202
C13 .01 MFD. 400 V.	PC40GL-103
C14 ELECTROLYTIC	PA4306
C15 .05 MFD. 400 V.	PC40GL-503

R1	150,000 OHM	.5W.	BR12N-154
R2	22,000	.5W.	BR12S-223
R3	1.5 MEGOHM	.5W.	BR12S-156
R4	2.2 MEGOHM	.5W.	BR12N-225
R5	.5 MEG. VOL. CONT.	& SW.	PA4400-6
R6	5.6 MEGOHM	.5W.	BR12S-565
R7	220,000 OHM	.5W.	BR12N-224
R8	470,000 OHM	.5W.	BR12N-474
R9	150 OHM	.5W.	BR12S-151
R10	1200 OHM	1W.	CR12S-122
R11	47 OHM	.5W.	BR12S-470
R12	27 OHM	1W.	CR12S-270
R13	165 OHM	5.W.	PA4200-6

L1 NO.1 I.F. COIL ASSEM.	AA6800-1
L2 NO.2 I.F. COIL ASSEM.	AA6800-2
L3 B.C. OSC. COIL ASSEM.	AA6797-1
L4 LOOP ASSEM.	AB43508-1

ALIGNMENT CHART

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with last calibration with cond. gang fully closed.						
2	I.F.	*	.02 MFD. Cond.	456 KC.	Open	C8 A & B	Peak Accurately
						C7 A & B	" "
3	Special Note: Before realigning the R.F. stages of this receiver please observe the special note at the bottom of this page.						
4	Broad-cast	**	Driver Loop	1500 KC.	1500 KC.	C2B Osc. Trim.	Peak Accurately
						C2A Ant. Trim.	***
5	Repeat operations (2 and 4).						
6	Check calibration at 600 KC., 1000 KC., and 1500 KC.						

* Pin No. 8 on 12SA7GT Tube.
** Use driver loop as shown
*** Rock dial while adjusting for maximum output.
SPECIAL NOTE: In view of the fact that the metal speaker grill will affect the R. F. alignment on this set, please observe the following instructions when alignment is necessary. After the receiver has been removed from cabinet, turn the chassis in such manner that the speaker faces the metal cabinet grill. Slide chassis up against cabinet so that the metal grill and the loop antenna will be in the same relative position as when the chassis is properly mounted in the cabinet. By using the procedure as outlined in this bulletin the receiver will remain properly aligned when placed back into cabinet.

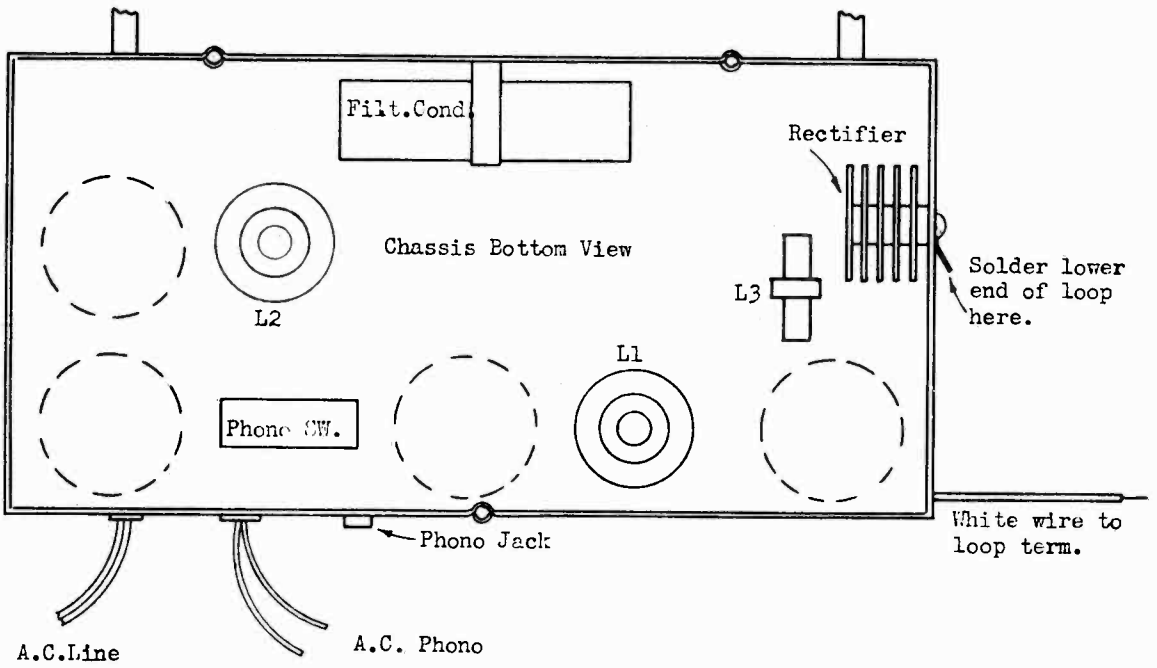
VOLTAGE CHART

RECEIVER OPERATED ON: A.C.
Line Voltage: 117 Volts

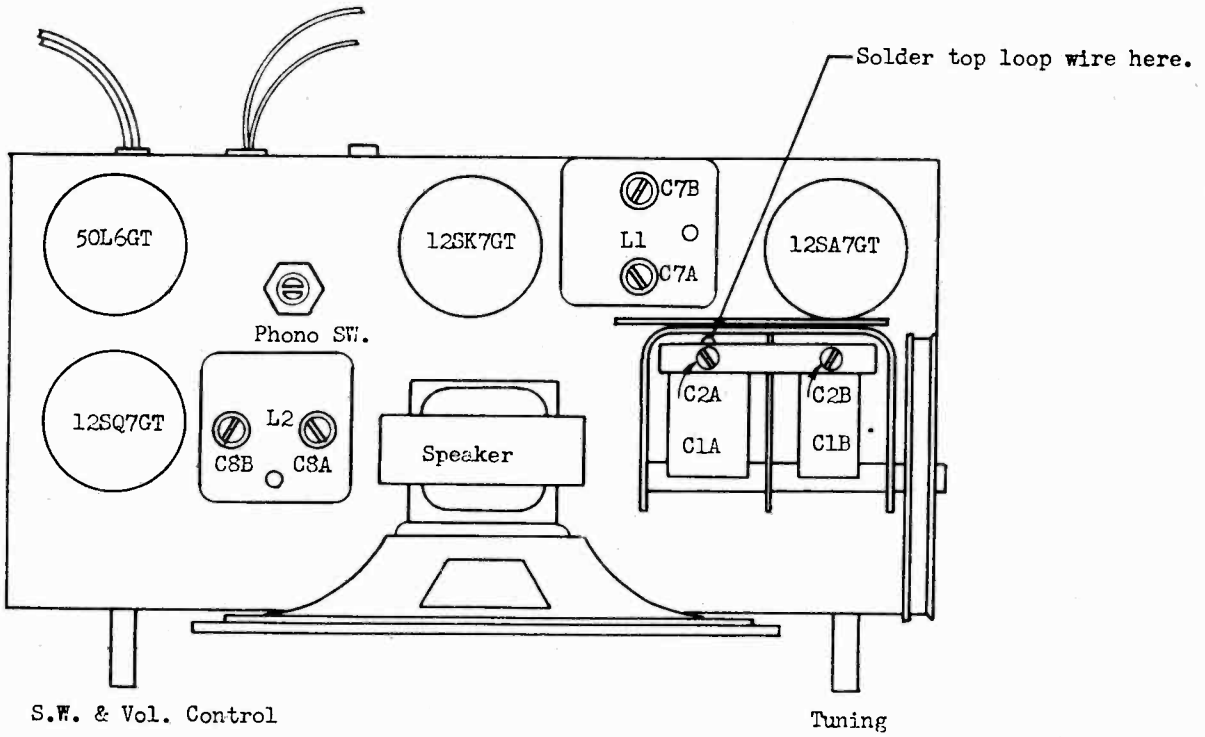
Position of Volume Control:Full with set tunned to quiet channel.

TUBE	FUNCTION	Voltage of socket prongs to B-. See prong Nos. on schematic.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
12SA7GT	Osc. & Det.	0	0	97.0	97.5	**	0	12.4*	0
12SK7GT	I. F. Amp.	0	24.6*	0	-.5	0	97.5	37.2*	97.0
12SQ7GT	2nd Det. A.V.C., 1st Audio	0	0.5	0	**	0	5.5	24.6*	12.4*
50L6GT	Output	0	112*	131	97	0	117*	66.0*	6.2

NOTE: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
* Designates A.C. Volts
** Cannot be measured with 20,000 ohms per volt voltmeter.



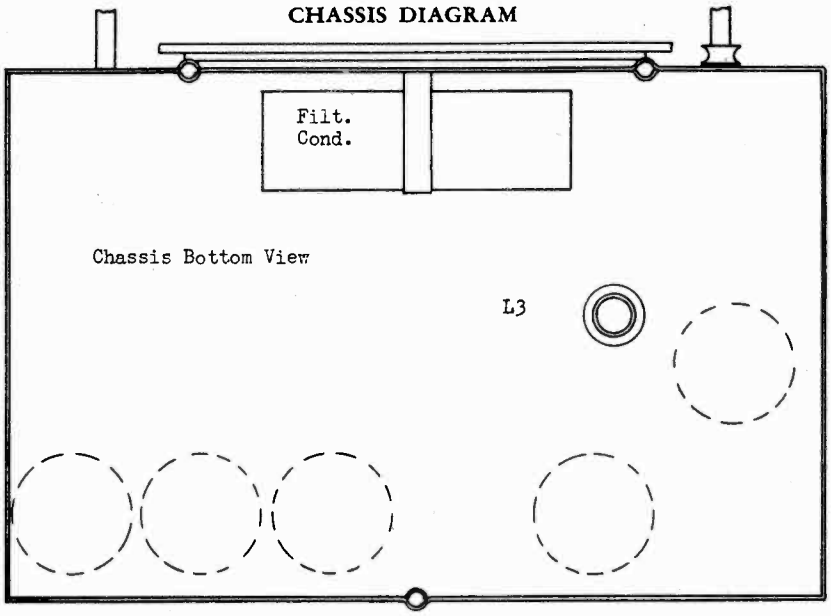
CHASSIS DIAGRAM



MODELS 5-16, 5-AW16

THE SPARKS-WITHINGTON CO.

CHASSIS DIAGRAM



ALIGNMENT DATA

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer with left hand stop line and with condenser closed.						
2	I.F.	*	* *	456 KC	Open	C8A & B	Peak accurately
						C7A & B	Peak accurately
3	R.C.	* * *	Dummy Loop	1500 KC	1500 KC	C2B Osc.Trim.	Peak accurately
						C2A R.F.Trim.	Peak accurately
4	(Repeat operation 2 and 3).						
5	(Check calibration at 600 KC, 1000 KC, and 1500 KC).						
6	(Check operations 1 to 5 inclusive).						

* Pin No. 6 on 12SA7GT
** Standard Dummy

VOLTAGE CHART

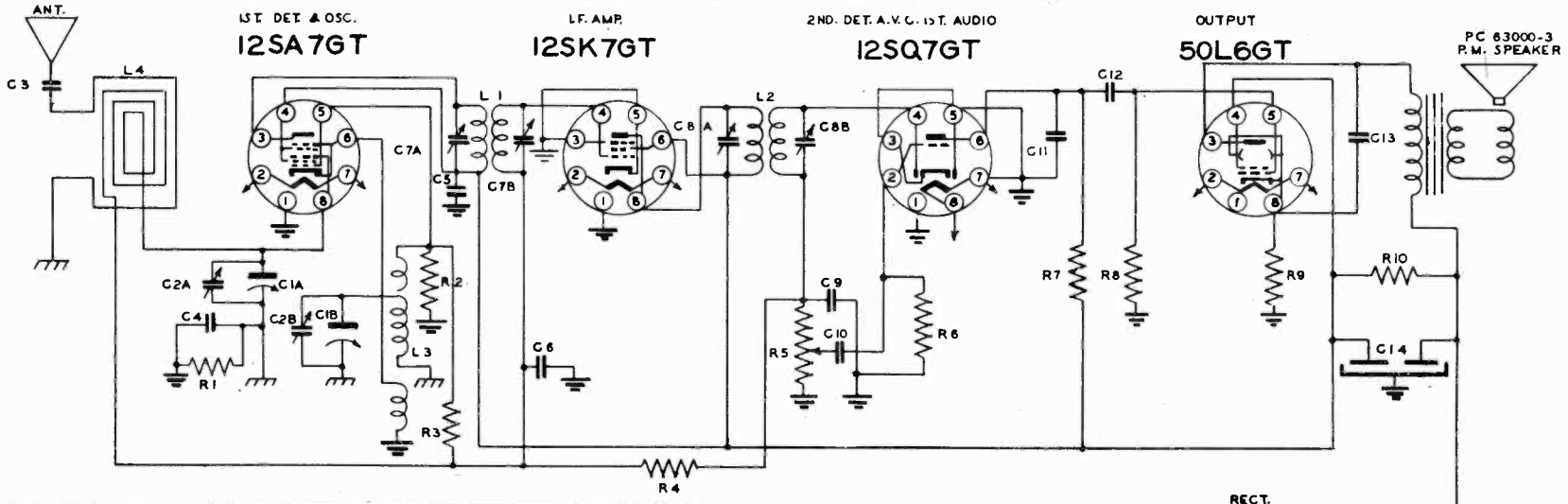
Line Voltage: 117 Volts A.C. Position of Volume Control: Full with set tunned to quiet channel.

TUBE	FUNCTION	Voltage of Socket Prong to Gnd.(See Prong Nos. on Schematic							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
12SA7GT	1st Det. & Osc.	12*	80	80	* *	0	* *	* *	0
12SK7GT	I.F. Amp.	24*	80	80	0	0	* *	0	36*
12SQ7GT	2nd. Det. A.V.C. & 1st Audio	24*	55	-.25	0	0	-.55	0	12*
50L6GT	Power Output	85*	110	85	0	0	* *	5.4	36*
35Z5GT	Rectifier	117*	110*	0	110*	0	0	115	85*

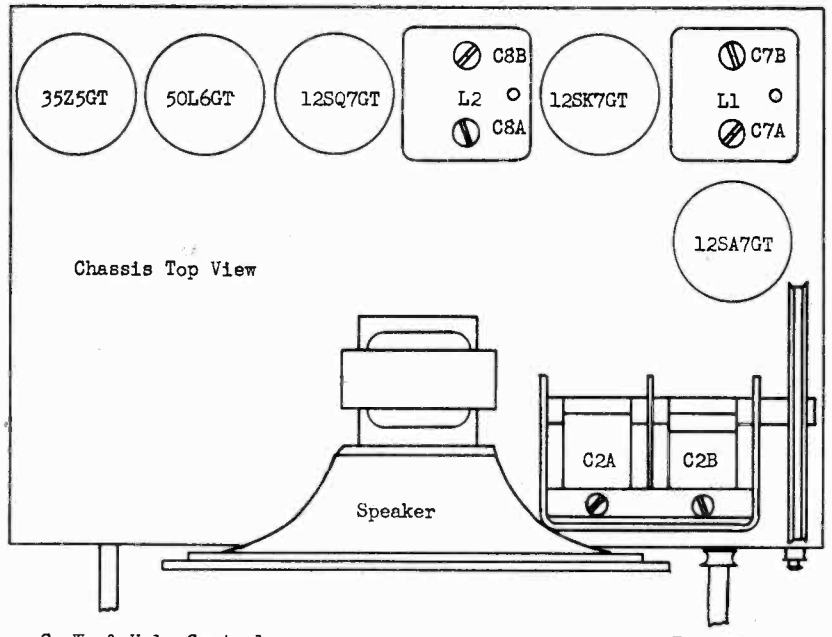
NOTES: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
* AC volts.
** Cannot be measured with 20,000 ohms per volt voltmeter.

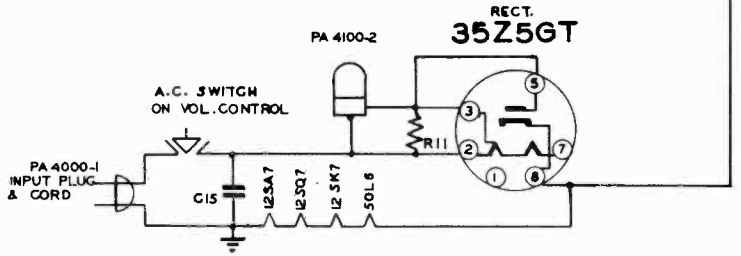
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



Loop Antenna





C1A & B	VARIABLE CONDENSER		PB 40406
C2A & B	TRIMMERS ON VARIABLE		
C3	.001 MFD.	400 V.	PC 40GL-102
C4	.15 MFD.	400 V.	PC 40GL-154
C5	.05 MFD.	200 V.	PC 40GK-503
C6	.05 MFD.	200 V.	PC 40GK-503
C7A & B	NO. 1 I.F. TRIMMERS		AB 43500-44
C8A & B	NO. 2 I.F. TRIMMERS		AB 43500-55
C9	270 MMF.	MICA	MC 60G-271
C10	.01 MFD.	400 V.	PC 40GL-103
C11	510 MMF.	MICA	MC 60G-511
C12	.002 MFD.	400 V.	PC 40GL-202
C13	.01 MFD.	400 V.	PC 40GL-103
C14	ELECT. CONDENSER		PA 4301-1
	RED 30 MFD.	YELLOW	40 MFD.
C15	.05 MFD.	400 V.	PC 40GL-503

R1	150,000 Ω	.5W	BR12N-154
R2	22,000 Ω	.5W	BR12S-223
R3	15 MEGOHM	.5W	BR12S-156
R4	2.2 "	.5W.	BR12N-225
R5	.5 MEG. VOL. CONT. & SW.		PA4400-3
R6	5.6 MEGOHM	.5W	BR12S-565
R7	220,000 Ω	.5W	BR12N-224
R8	470,000 Ω	.5W	BR12N-474
R9	150 Ω	.5W	BR12S-151
R10	1200 Ω	1W.	CR12S-122
R11	82 Ω	.5W	BR12S-820

L1	NO. 1 I.F. COIL ASSEMBLY	AA 6800-12
L2	NO. 2 I.F. COIL "	AA 6800-2
L3	B.C. OSCILLATOR COIL ASSEMBLY	AA 6797-1
L4	LOOP ASSEMBLY	AB 43025-1

CHASSIS GROUND

COMMON GROUND

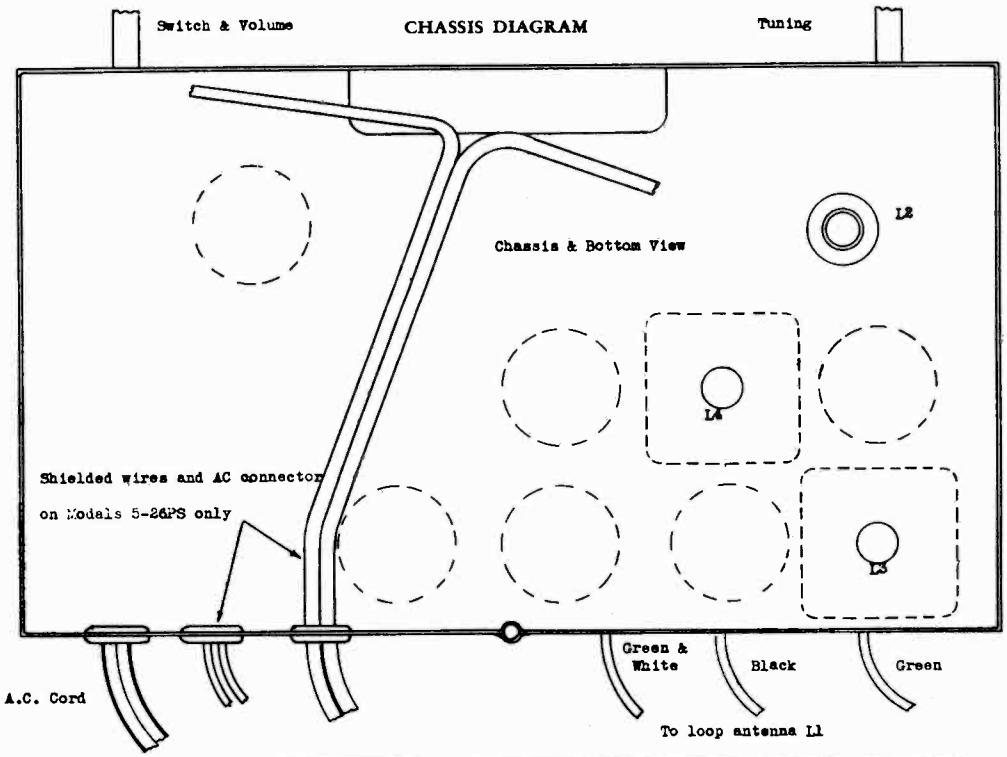
MODELS 5-26, 5-26X, 5-26PS

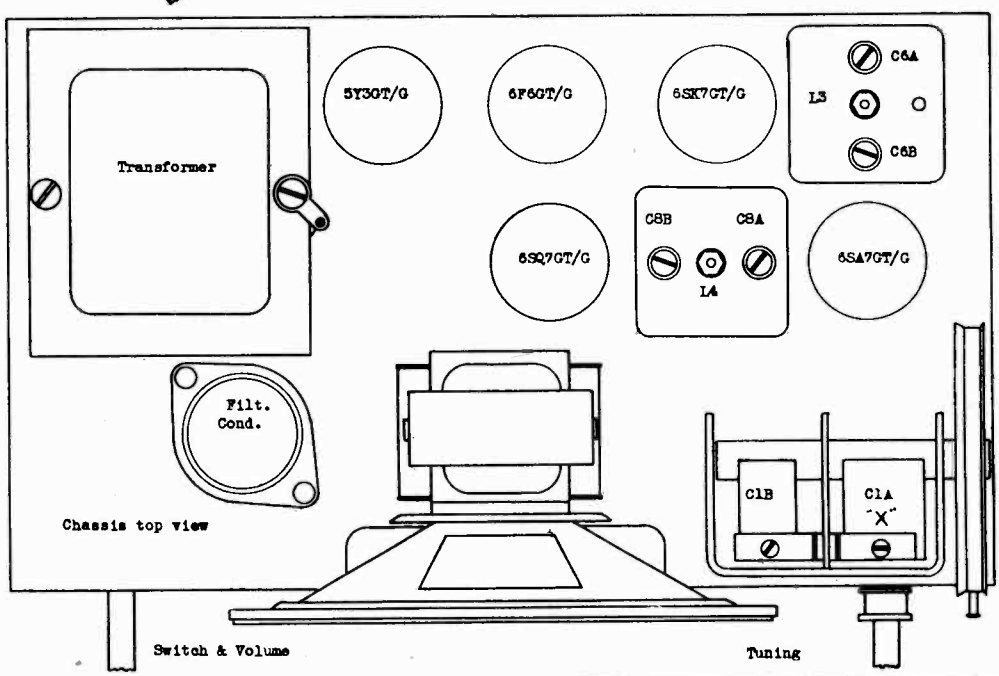
THE SPARKS WITHINGTON CO.

ALIGNMENT DATA

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING CONDENSER SETTING	TRIMMER	REMARKS
1	Set pointer to last calibration mark at low end of dial with condenser gang fully closed.						
2	I.F.	*	.02MFD	456 KC	Open	C8A&B	Peak accurately
						C6A&B	Peak accurately
3	Broadcast	**	Driver Loop	1500 KC	1500 KC	C2B Osc.	Peak accurately
						C2A Ant.	Peak accurately
4	(Repeat operation No. 3)						
5	(Check calibration at 600 KC, 900 KC and 1500 KC)						
6	(Check operations 1 to 5 inclusive)						

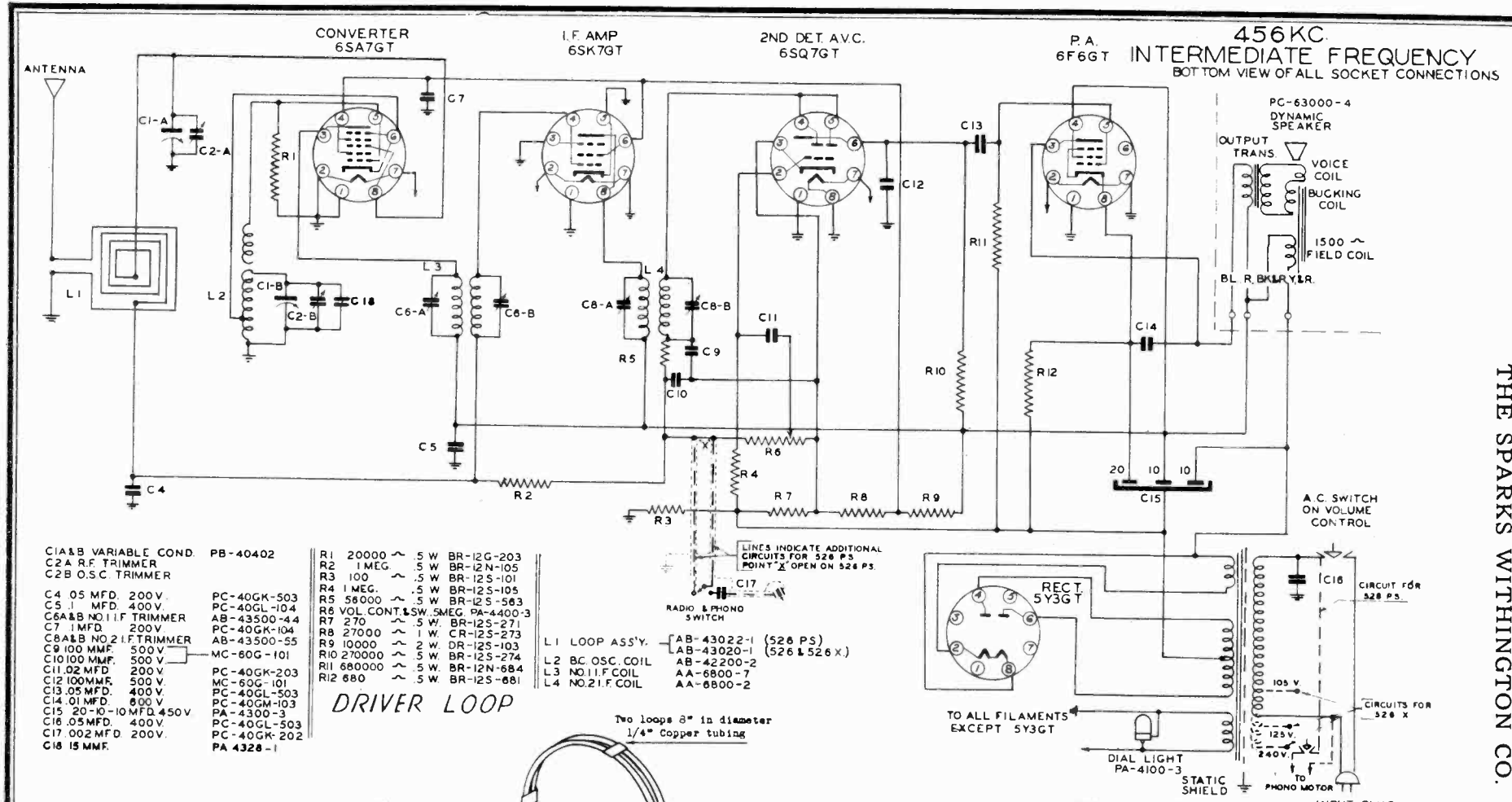
Notes: * X on chassis diagram.
** Driver loop see diagram below.





456KC. INTERMEDIATE FREQUENCY

BOTTOM VIEW OF ALL SOCKET CONNECTIONS

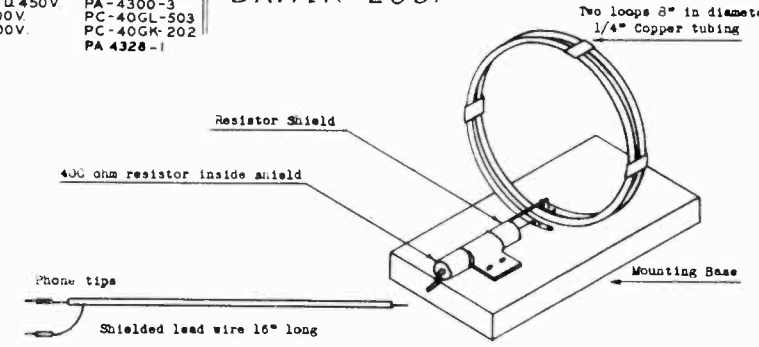


C1A&B VARIABLE COND.	PB-40402
C2A R.F. TRIMMER	
C2B O.S.C. TRIMMER	
C4 .05 MFD. 200V.	PC-40GK-503
C5 .1 MFD. 400V.	PC-40GL-104
C6A&B NO.1 I.F. TRIMMER	AB-43500-44
C7 .1 MFD. 200V.	PC-40GK-104
C8A&B NO.2 I.F. TRIMMER	AB-43500-55
C9 100 MMF. 500V.	MC-60G-101
C10 100 MMF. 500V.	
C11 .02 MFD. 200V.	PC-40GK-203
C12 100 MMF. 500V.	MC-60G-101
C13 .05 MFD. 400V.	PC-40GL-503
C14 .01 MFD. 600V.	PC-40GM-103
C15 20-10-10 MFD. 450V.	PA-4300-3
C16 .05 MFD. 400V.	PC-40GL-503
C17 .002 MFD. 200V.	PC-40GK-202
C18 15 MMF.	PA-4328-1

R1 20000 ~ .5 W	BR-12G-203
R2 1 MEG. .5 W	BR-12N-105
R3 100 ~ .5 W	BR-12S-101
R4 1 MEG. .5 W	BR-12S-105
R5 56000 ~ .5 W	BR-12S-563
R6 VOL. CONT. & SW. .5 MEG.	PA-4400-3
R7 270 ~ .5 W.	BR-12S-271
R8 27000 ~ 1 W.	CR-12S-273
R9 10000 ~ 2 W	DR-12S-103
R10 270000 ~ .5 W.	BR-12S-274
R11 680000 ~ .5 W.	BR-12N-684
R12 680 ~ .5 W.	BR-12S-681

L1 LOOP ASS'Y.	AB-43022-1	(526 PS)
	AB-43020-1	(526 & 526 X)
L2 BC. OSC. COIL	AB-42200-2	
L3 NO.1 I.F. COIL	AA-6800-7	
L4 NO.2 I.F. COIL	AA-6800-2	

DRIVER LOOP



SPECIFICATIONS

Two loops of 1/4" copper tubing 8" in diameter spaced 1/4" apart with 400 ohms resistor in series. Connecting cable and resistor must be shielded.
The loop should be spaced twice the diameter of the loop from the receiver being aligned to prevent an over modulated signal and poor alignment of the receiver.

VOLTAGE CHART

Line Voltage: 117 Volts AC

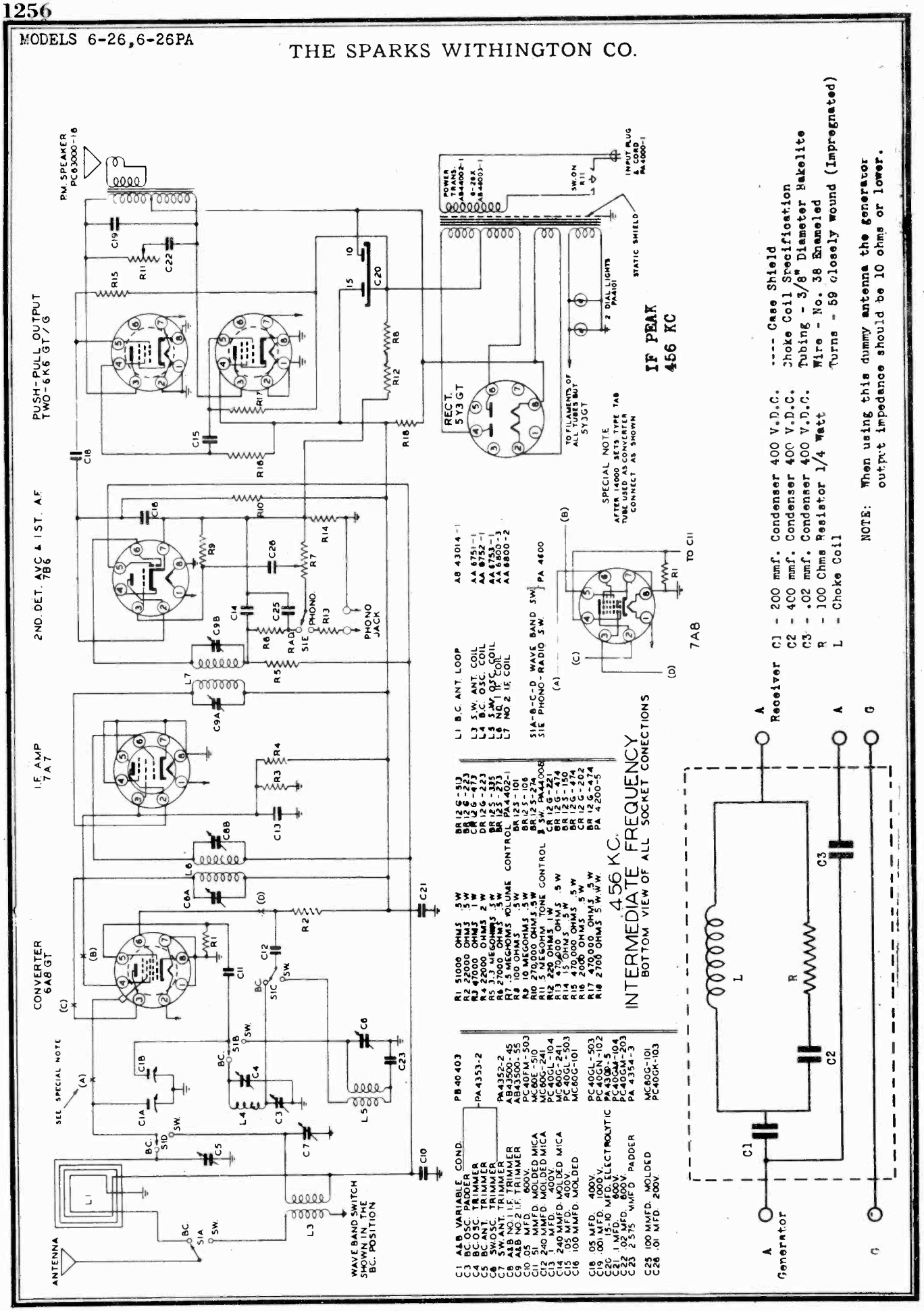
Position of volume control: Full with set tunned to quiet channel
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of Socket Prongs to Ground see prong nos. on schematic							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6SA7GT	Converter	0	0	230	85	**	**	6.2*	-.45
6SK7GT	I.F. Amp.	0	6.2*	0	-.45	0	85	0	230
6SQ7GT	2nd. Det. A.V.C.	0	-.95	-.9	-1.2	-1.2	125	6.2*	0
6F6GT	P.A.	0	6.2*	215	230	**	125	-1.9	15
5Y3GT	Rect.	0	290	0	280	0	280	0	290

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.
**Cannot be measured with 20,000 Ohms per volt voltmeter.

MODELS 6-26,6-26PA

THE SPARKS WITHINGTON CO.



C3,C4,C5,C6, REFER TO TRIMMERS ON THE RIGHT SIDE OF CHASSIS IN THE BOTTOM VIEW

C3 ⊖
C4 ⊖
C5 ⊖
C6 ⊖

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING CONDENSER SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with L.H. stop line with condenser gang fully closed.							
2	I.F.	G.C. 6A8GT	.02 MFD.	456 KC.	BC	OPEN	C9 A & B	Peak Accurately
							C8 A & B	Peak Accurately
3	BC	Driver Loop	•	1500 KC.	BC	1500 KC.	C4 Osc.Trim.	Peak Accurately
							C5 Ant.Trim.	Peak Accurately
				600 KC.	BC	600 KC.	C3 Osc.Pad.	Peak Accurately
4	(Repeat Operation #3)							
5	Check Calibration at 600 KC., 1000 KC., and 1500 KC.							
6	S.W.	"A" on Antenna Strip	• •	18 MC.	S.W.	18 MC.	C6 Osc.Trim.	Peak Accurately
							C7 Ant.Trim.	• • •
							C23 Osc.Pad.	See Operation #7
7	Osc. padder C23 is percision set at the factory and should not be readjusted in the field.							
8	(Repeat Operation #6)							
9	Check calibration at 6 MC., 11 MC., and 18 MC.							
10	Check Operations 1 to 6 inclusive.							

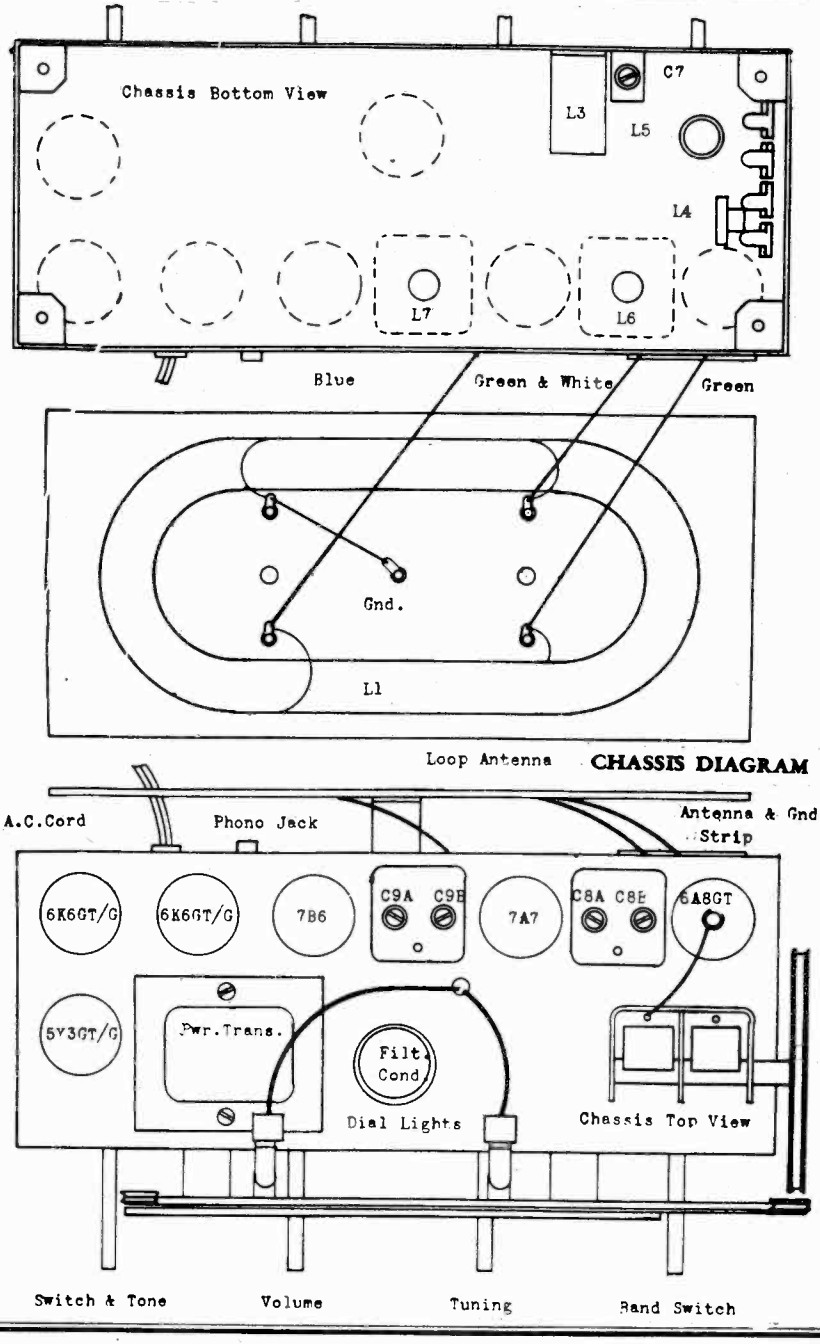
NOTES: • Driver Loop. See manual 5, Bulletin 1-1 for diagram.
•• Standard Dummy. See diagram below.
••• Rock dial while making this adjustment.

VOLTAGE CHART

Line Voltage: 117 Volts AC Position of Volume Control: Full with set tunned to quiet channel.
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of Socket Prongs to Ground See Prong Nos.on Schematic.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	G.Cap.
6A8GT/G	Converter	0	6.4•	233	87.5	6.6	150	C	0	-.98
7A7	I.F. Amplifier	6.4•	230	85	0	0	-1.03	C	0	-
7B6	2nd. Det. AVC. 1st A.F.	6.4•	97.5	-1.15	-1.0	-1.15	-1.23	-1.0	C	-
6K6GT/G	Phase Invt. output	0	0	217.5	217.5	••	0	6.4•	13.5	-
6K6GT/G	Push-Pull Output	0	0	217.5	230	••	0	6.4•	13.5	-
5Y3GT/G	Rectifier	0	237.5	C	320	0	320	0	237.5	-

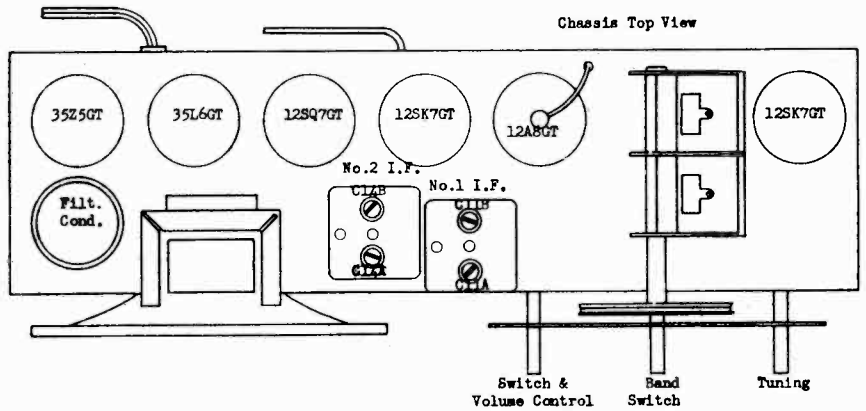
NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
• AC volts.
•• Cannot be measured with 20,000 ohms/volt voltmeter.



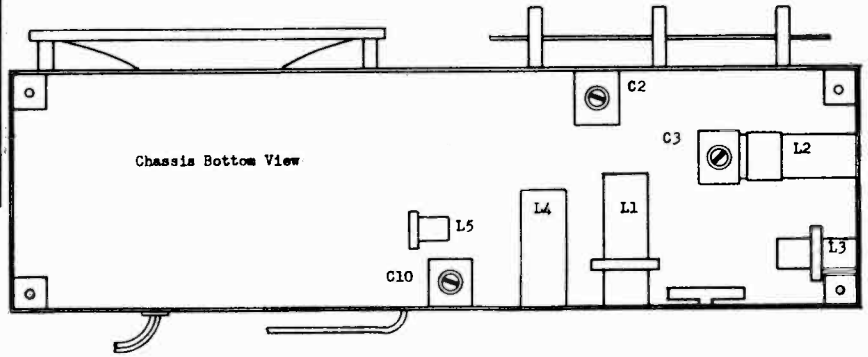
ALIGNMENT DATA

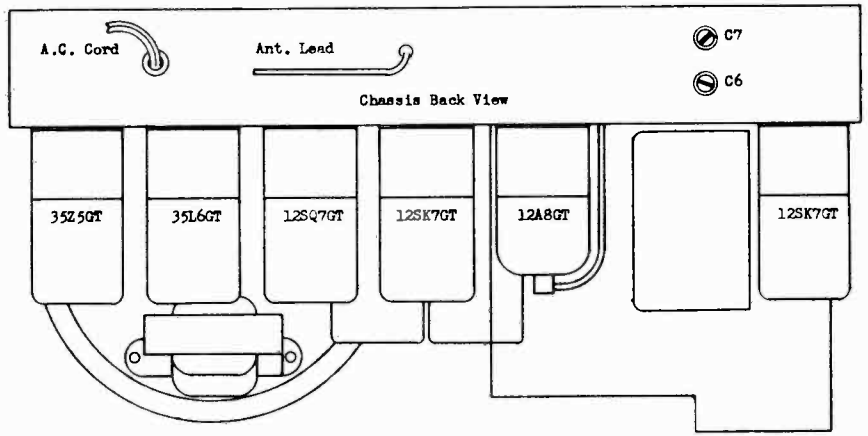
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	BAND SWITCH SETTING	GENERATOR FREQUENCY	TUNING CONDENSER SETTING	TRIMMER	REMARKS
1	Set Dial Pointer to end of scale with condenser gang closed							
2	I.F.	*	.02 MFD. Cond.	BC.	456Kc.	OPEN	C14A & C14B	Peak Accurately
3							C11A & C11B	" "
4	Rejector	Ant.	* *	BC.	456Kc.	CLOSED	C10 Trim.	Adjust to Minimum
5	Broadcast Band	Ant.	* *	BC.	1500Kc	1500Kc.	C6 Osc.Trim.	Peak Accurately
							C2 Ant.Trim.	" "
6					600Kc.	600Kc.	C7 Osc.Pad.	***
7	Repeat operations 5 & 6							
8	Check calibration at 600Kc., 1000Kc. and 1500Kc.							
9	S.W.Band	Ant.	* *	S.W.Band	18.Mc.	18.Mc.	C3 Ant.Trim.	***
10	Check calibration at 18.Mc., 9.Mc. and 6.Mc.							
11	Check operations 1 to 8 inclusive.							

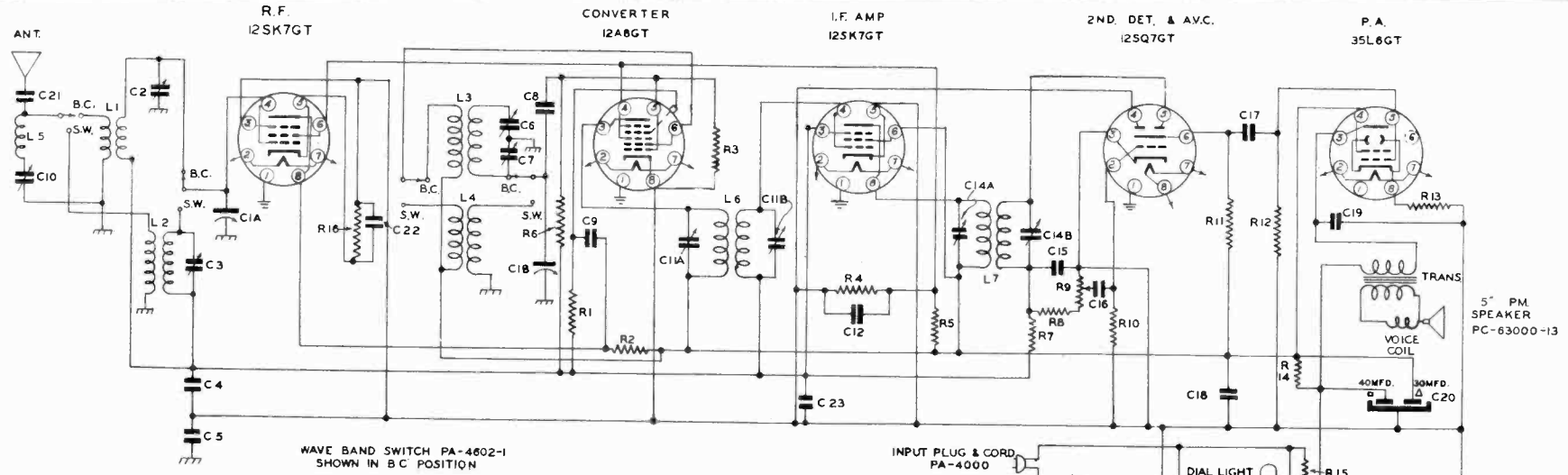
Notes: * Connect Generator to grid cap on 12A8GT Tube.
** Use dummy antenna as shown below.
*** Rock dial while adjusting for maximum output.



CHASSIS DIAGRAM







CHASSIS GND.

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

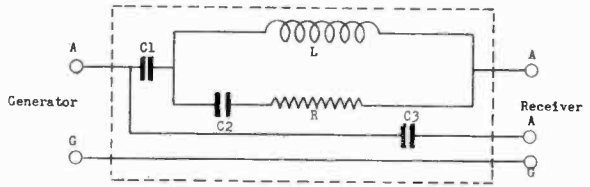
C1A&B	VARIABLE CONDENSER	PB-40410
C2	B.C. ANT. TRIMMER	PA-4352-2
C3	S.W. ANT. TRIMMER	PA-4352-3
C4	.05 MFD. 200V	PC-40GK-503
C5	.15 MFD. 400V.	PC-40GL-154
C6	B.C. OSC. TRIMMER	PA-4359
C7	B.C. OSC. PADDER	
C8	51 MMF. MICA	MC-60F-510
C9	100 MMF. MICA	MC-60F-101
C10	I.F. REJECT TRIMMER	PA-4352-4

C11A&B	NO.1 I.F. TRIMMER	AB-43500-44
C12	.05 MFD. 200 V.	PC-40HK503
C13	.05 MFD. 400V.	PC-40HL-503
C14A&B	NO. 2 I.F. TRIMMER	AB-43500-45
C15	510 MMF MICA	MC-60G-511
C16	.01 MFD 200V	PC-40HK-103
C17	.01 MFD. 200V	PC-40HK-103
C18	.05 MFD. 200V	PC-40HK-503
C19	.03 MFD. 400V	PC-40GL-303
C20	40-30 MFD ELECT.	PA-4304-1
C21	.001 MFD. 400V	PC-40GL-102
C22	.01 MFD 200V	PC-40HK-103
C23	.05 MFD 200V.	PC-40HK-503

R1	5100 ~	.5W	BR-12G-512
R2	10 000 ~	.5W	BR-12S-103
R3	56 000 ~	.5W	BR-12G-563
R4	22 000 ~	.5W	BR-12S-223
R5	5600 ~	.5W	BR-12G-562
R6	10 MEGOHM	.5W	BR-12S-106
R7	1 MEGOHM	.5W	BR-12S-105
R8	56 000 ~	.5W	BR-12G-563
R9	VOL. CONT. & SW.	.5MEG.	PA-4400-4
R10	10 MEGOHM	.5W	BR-12S-106
R11	270 000 ~	.5W	BR-12S-274
R12	680 000 ~	.5W	BR-12S-684
R13	180 ~	.5W	BR-12S-181
R14	1200 ~	.1W	CR-12S-122
R15	82 ~	.5W	BR-12S-820
R16	470 ~	.5W	BR-12G-471

L1	ANTENNA COIL	AA-6784-1
L2	S.W. ANT. COIL	AA-6725-1
L3	B.C. OSC. COIL	AA-6786-1
L4	S.W. OSC. COIL	AA-6753-3
L5	I.F. REJECT COIL	AA-6765-1
L6	NO. 1 I.F. COIL	AA-6800-1
L7	NO. 2 I.F. COIL	AA-6800-4

DUMMY ANTENNA



Note: When using this dummy antenna the generator output impedance should be 10 Ohms or lower.

C1 - 200 mmf. Condenser 400 V.D.C.
C2 - 400 mmf. Condenser 400 V.D.C.
C3 - .02 mmf. Condenser 400 V.D.C.
R - 100 Ohms Resistor 1/4 Watt
L - 20 Microhenryies Choke

----Case Shield

Choke Coil Specifications
Tubing-3/8" Diameter bakelite
Wire-No. 38 Enameled
Turns-59 closely wound(Impregnated)

VOLTAGE CHART

Line Voltage: 117 Volts AC

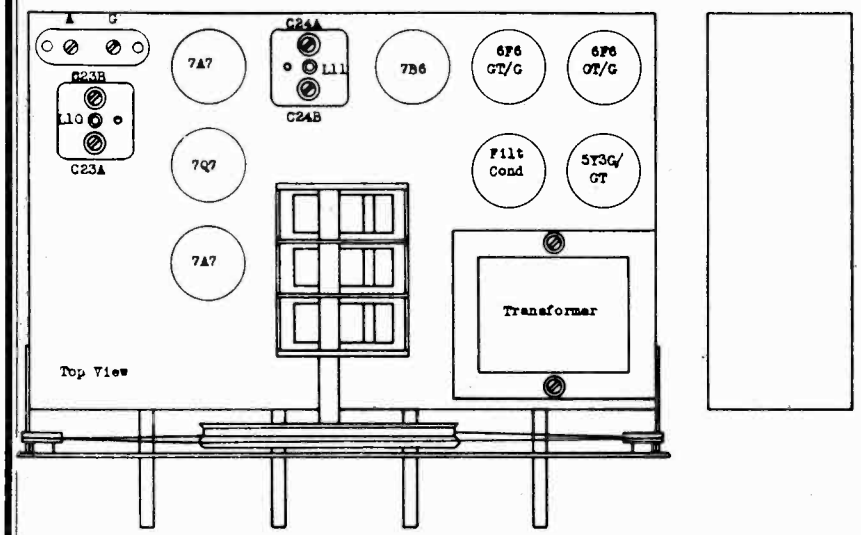
Position of volume control: Full with set tunned to quiet channel
Position of Band Switch: Broadcast

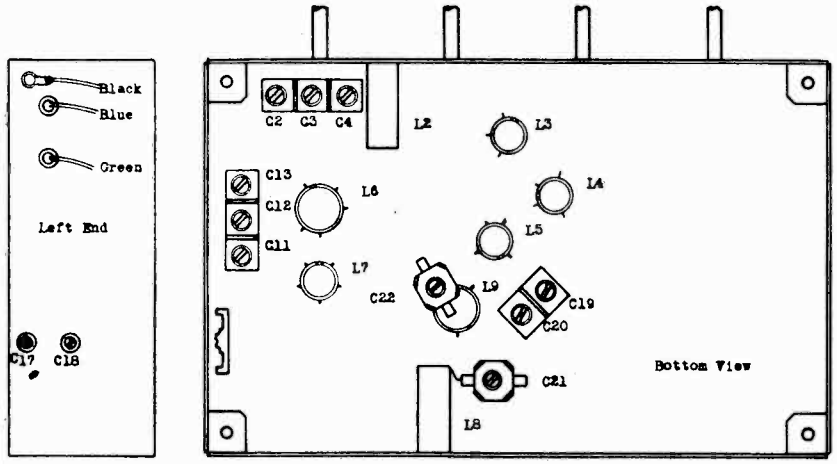
TUBE	FUNCTION	Voltage of Socket Prongs to Ground See Prong Nos. on schematic								
		No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	Grid Cap
12SK7GT	R. F. Amp.	0	38 *	0	-.3	.35	50.3	23. *	58.	---
12A8GT	Converter	0	12 *	82.	52	-.24	81	0	0	-.26
12SK7GT	I. F. Amp.	0	23.3*	0	-.28	0	82	12 *	82	---
12SQ7GT	2nd. Det., AVC, 1st. AF	0	-.6	0	**	-.42	54	39 *	48.5*	---
35L6GT	Power Amp.	0	85. *	112	82	0	0	48 *	5.3	---
35Z5GT	Rectifier	0	117 *	112 *	0	112	0	87 *	117	---

Notes: All voltages are measured between tube pins and B- on Filter Condenser. (Chassis Base not ground pontential). Voltage readings are for Schematic Diagram in this bulletin. Allow 15% ≠ or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All D.C. measurements made with 20,000 ohms per volt voltmeter. All D.C. voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are ≠ D.C. voltages.

* A.C. Volts
** Cannot be measured with 20,000 ohms per volt voltmeter.

CHASSIS DIAGRAM

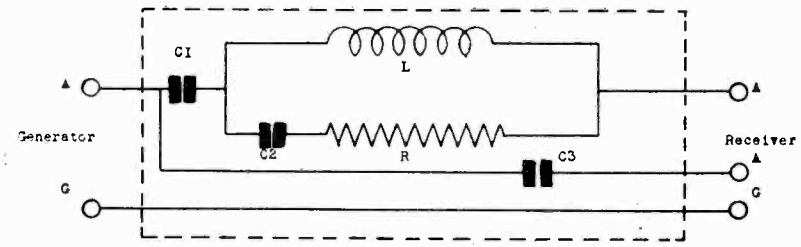




OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING CONDENSER SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with stop line when condenser gang is fully meshed.							
2	I.F.	*	1.mf cond.	456KC	BC	Open	C24 A&B	Peak Accurately
							C23 A&B	" "
3	Broadcast Band	Ant.	See note	1500KC	BC	1500KC	C17 Osc.Trim	" "
							C11 Det.Trim	" "
							C2 Ant.Trim	" "
4				600KC	BC	600KC	C18 Osc. Pad.	Rock **
5	(Repeat operation 3).							
6	Check Calibration at 600 KC, 1000 KC and 1500 KC.							
7	Police Band	Ant.	See note	5 MC	Police Band	5 MC	C19 Osc.Trim	Peak Accurately
							C12 Det.Trim	Rock **
							C3 Ant.Trim	Rock **
							C21 Osc.Pad	See operation #8
8	Oscillator Padder C21 is precision set at the factory and should not be readjusted in the field.							
9	(Repeat operation 7).							
10	Check Calibration at 1.8 MC and 5 MC.							
11	SW Band	Ant.	See note	18 MC	SW Band	18 MC	C20 Osc.Trim	Peak Accurately
							C13 Det.Trim	Rock **
							C4 Ant.Trim	Rock **
							C22 Osc.Pad	See operation #12
12	Oscillator Padder C22 is precision set at the factory and should not be readjusted in the field.							
13	(Repeat operation 11).							
14	Check Calibration and at 6 MC and 18 MC.							
15	Check operations 1 to 11 Inclusive.							

NOTES: Use Dummy Antenna as described on page No. 1 of this bulletin.
* Connect generator to pin #6 on 7Q7 Osc-conv. tube.
** Rock dial while adjusting for maximum output.

DUMMY ANTENNA



Note: When using this dummy antenna the generator output impedance should be 10 Ohms or lower.

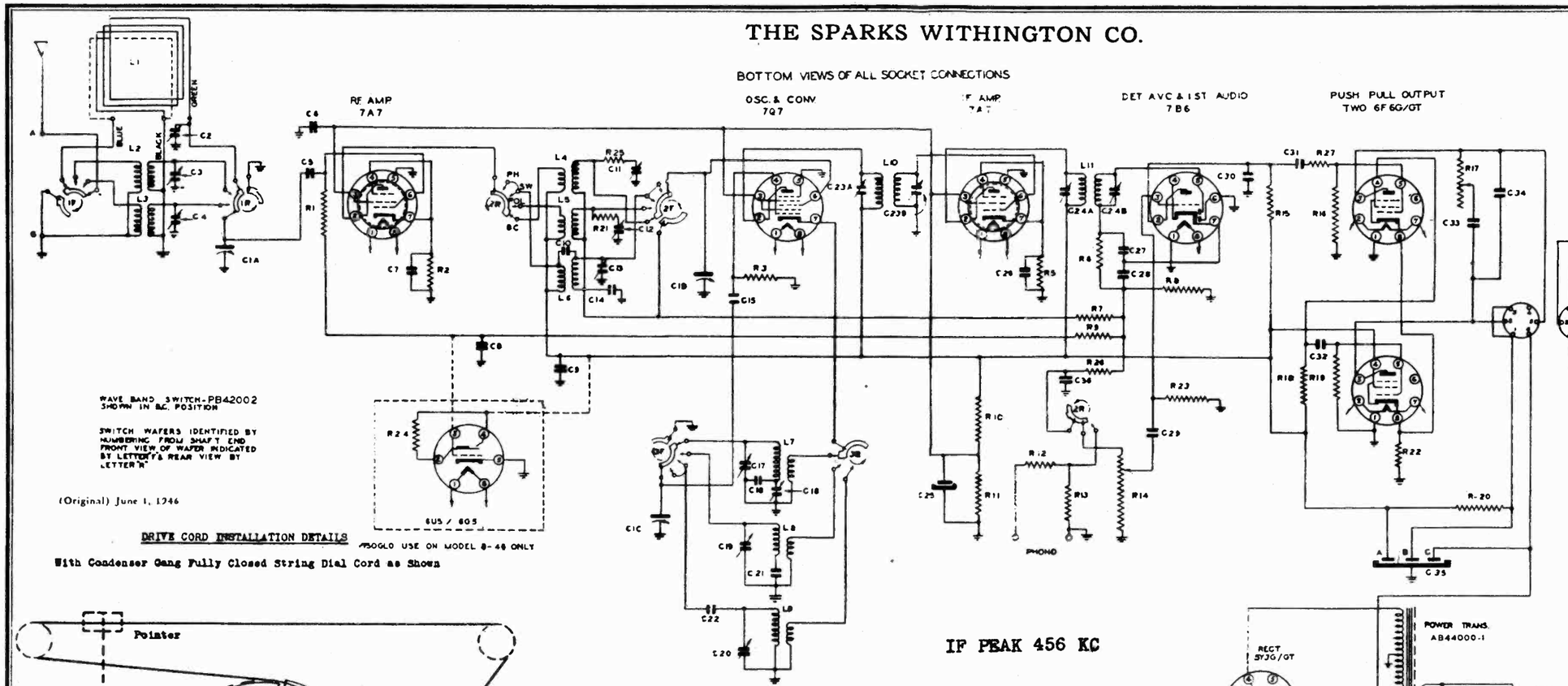
CI - 200 mmf. Condenser 400 V.D.C.
C2 - 400 mmf. Condenser 400 V.D.C.
C3 - .02 mmf. Condenser 400 V.D.C.
R - 100 Ohms Resistor 1/4 Watt
L - 20 Microhenryies Choke

---- Case Shield
Choke Coil Specifications
Tubing - 3/8" diameter bakelite
Wire - No. 38 Enameled
Turns - 59 closely wound (Impregnated)

MODELS 7-46, 7-46-PA, 846, 846-PA

THE SPARKS WITHINGTON CO.

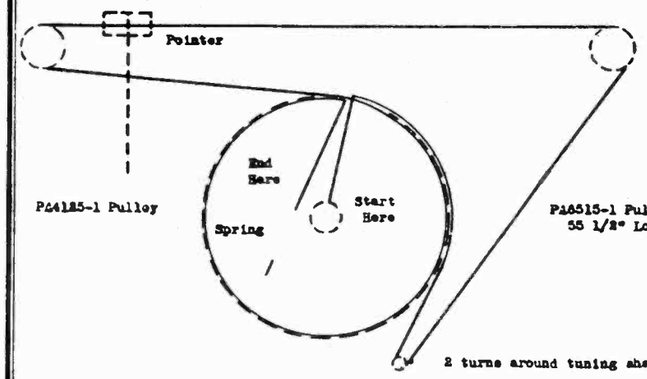
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



DRIVE CORD INSTALLATION DETAILS

*605GLO USE ON MODEL 8-46 ONLY

With Condenser Gang Fully Closed String Dial Cord as Shown



VOLTAGE CHART

Line Voltage: 117 Volts A.C. — Position of Volume Control: Full with dial tuned to Quiet Channel — Position of Band Switch: Broadcast

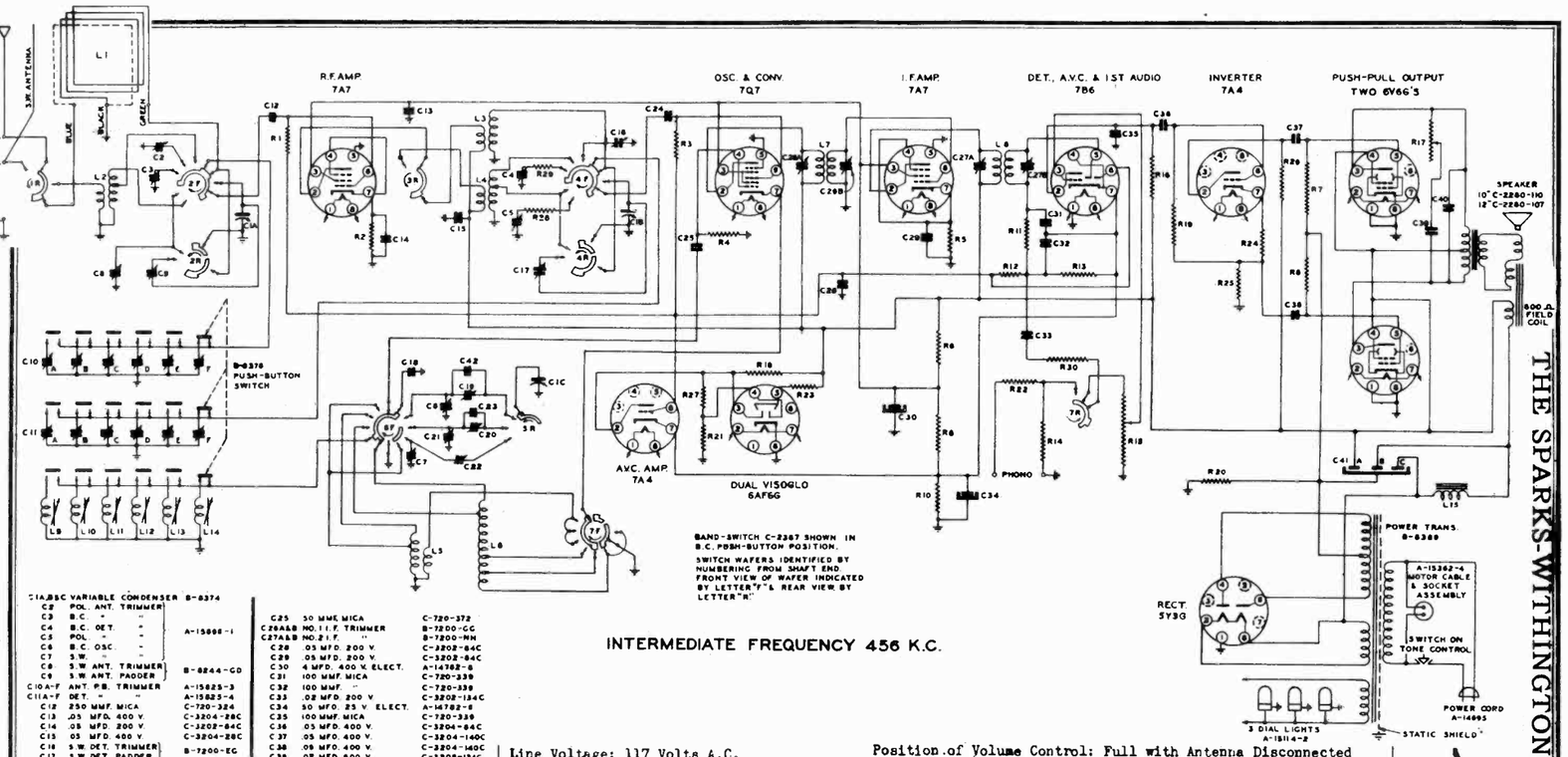
TUBE	FUNCTION	Voltage of socket prongs to Gnd, See prong on schematic dia.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A7	R. F. Amp.	0	230	63	2.8	0	**	2.8	6*
7Q7	Osc-Conv.	0	230	63	-6	0	-.6	*	6*
7A7	I. F. Amp.	0	230	63	2.3	0	**	2.3	6*
7B6	Det-AVC-1st Audio	0	100	**	0	**	0	0	6*
6F6	Push Pull Output	0	0	247	220	**	**	6*	14
6F6	Push Pull Output	0	0	247	227	**	0	6*	14
5Y3	Rectifier	0	325	0	330*	0	320*	0	325

NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
* AC Volts.
** Cannot be measured with 20,000 Ohms per volt voltmeter.

Description	
Coil - Ant. (Pol.)	AA6754-1
Coil - Ant. (S.W.)	AA6758-1
Coil - Det. (B.C.)	AA6756-1
Coil - Det. (Pol.)	AA6757-1
Coil - Det. (S.W.)	AA6760-1
Coil - Osc. (B.C.)	AA6759-1
Coil - Osc. (Pol.)	AA6755-1
Coil - Osc. (S.W.)	AA6753-2
Coil - No. 1 I.F. (with trimmer, less shield)	AB43501-5
Coil - No. 2 I.F. (with trimmer, less shield)	AB43501-6
Condenser - Electrolytic	PA4300-1
Condenser - Padder 3330 MMF	PA4354-1
Condenser - Padder 1660 MMF	PA4354-2
Condenser - Trimmer Padder (Osc. - B.C.)	AB43503-36
Condenser - Variable	PB40400-1
Control - Tone & A.C. Sw.	PA4404-1
Control - Volume	PA4401-2
Dial Chart - Horizontal Reading	PC60001
Dial Chart - Vertical Reading	PC60006

Description	Part Number
Model "K" Automatic Record Changer	PD93100
Dial Glass - Cabinet	PB41909
Fly Wheel & Shaft Assy. Tuning	AA6735-1
Knob - Control (3) Walnut	PA5602-1
Knob - Control (3) Mahog.	PA5602-2
Knob - Wave Band Sw. (1) Walnut	PA5603-1
Knob - Wave Band Sw. (1) Mahogany	PA5603-2
Loop - Ant.	AB43011-1
Pointer & Slide Assy.	AA6700-1
Speaker - Complete (10")	PC63000-1
Switch - Wave Band	PB42002
Transformer - Power (60 cy.)	AB44000-1
Transformer - Speaker	PC63000-1-3

* Complete speakers may be returned to factory Service Dept for repair or replacement.



C1A,B,C VARIABLE CONDENSER B-8374
C2 POL. ANT. TRIMMER
C3 B.C. " "
C4 B.C. DET. " " A-15688-1
C5 POL. " "
C6 B.C. OSC. " "
C7 S.W. " "
C8 S.W. ANT. TRIMMER
C9 S.W. ANT. PADDER B-8244-GD
C10 A-F ANT. P.B. TRIMMER A-15625-3
C11A-F DET. " " A-15625-4
C12 250 MMF. MICA C-720-324
C13 .05 MFD. 400 V. C-3204-28C
C14 .05 MFD. 200 V C-3202-84C
C15 .05 MFD. 400 V C-3204-28C
C16 S.W. DET. TRIMMER B-7200-EG
C17 S.W. DET. PADDER
C18 350 MMF. MICA B-8283-4
C19 B.C. OSC. PADDER B-7200-YY
C20 POL. OSC. PADDER
C21 " " TRIMMER B-7200-DG
C22 S.W. OSC. PADDER
C23 2300 MMF. MICA C-720-332
C24 250 MMF. MICA C-720-324

C25 .50 MMF. MICA C-720-372
C26A&B NO. 1 I.F. TRIMMER B-7200-CC
C27A&B NO. 2 I.F. " B-7200-MN
C28 .05 MFD. 200 V. C-3202-84C
C29 .05 MFD. 200 V. C-3202-84C
C30 4 MFD. 400 V. ELECT. A-14702-6
C31 100 MMF. MICA C-720-339
C32 100 MMF. " C-720-339
C33 .02 MFD. 200 V C-3202-134C
C34 50 MFD. 25 V. ELECT. A-14782-6
C35 100 MMF. MICA C-720-338
C36 .05 MFD. 400 V. C-3204-84C
C37 .05 MFD. 400 V. C-3204-140C
C38 .05 MFD. 400 V. C-3204-140C
C39 .02 MFD. 600 V. C-3208-134C
C40 .002 MFD. 600 V. C-3208-118C
C41 A 15 MFD. 450 V. ELECT. A-14884-7
C41 B 10 MFD. 450 V. ELECT. A-14884-7
C41 C 15 MFD. 450 V. ELECT. A-14884-7
C42 .250 MMF. MICA C-720-324

R1 1 MEGOHM .25 W. C-2793-96B
R2 1000 Ω. .25 W. C-2793-82B
R3 1 MEGOHM .25 W. C-2793-96B
R4 20,000 Ω. .25 W. C-2793-190B
R5 820 Ω. .25 W. C-2793-154B
R6 18,000 Ω. 3 W. C-2768-77A
R7 47,000 Ω. .25 W. C-2793-98B
R8 47,000 Ω. .25 W. C-2793-98B
R9 22,000 Ω. 1 W. C-2767-191B
R10 220 Ω. .25 W. C-2793-143B
R11 18,000 Ω. .25 W. C-2793-77B
R12 3.3 MEGOHMS .25 W. C-2793-104B
R13 180,000 Ω. .25 W. C-2793-99B
R14 270,000 Ω. .25 W. C-2793-91B
R15 2 MEG. VOL CONT. A-15140-2

R16 270,000 Ω. .25 W. C-2793-91B
R17 .25 MEG. TONE CONT. & SW. A-15129-12
R18 180,000 Ω. .25 W. C-2793-99B
R19 470,000 Ω. .25 W. C-2793-94B
R20 180 Ω. 3 W. C-2793-141A
R21 1 MEGOHM .25 W. C-2793-96B
R22 270,000 Ω. .25 W. C-2793-91B
R23 56,000 Ω. .25 W. C-2793-83B
R24 2700 Ω. .25 W. C-2793-169B
R25 22,000 Ω. .25 W. C-2793-191B
R26 22,000 Ω. .25 W. C-2793-191B
R27 1 MEGOHM .25 W. C-2793-96B
R28 30 Ω. .25 W. C-2793-1288
R29 150 Ω. .25 W. C-2793-125B
R30 330,000 Ω. .25 W. C-2793-92B

L1 LOOP ANTENNA D-1586-B
L2 POL. & S.W. ANT. COIL A-20281
L3 B.C. DET. COIL A-20283
L4 POL. & S.W. DET. COIL A-20302
L5 POL. & S.W. OSC. COIL A-20300
L6 B.C. OSC. COIL A-20352
L7 NO. 1 I.F. COIL A-12084-48
L8 NO. 2 I.F. COIL A-12084-46
L9-L14 P.B. B.C. OSC. COIL B-8387
L15 FILTER CHOKE A-15386

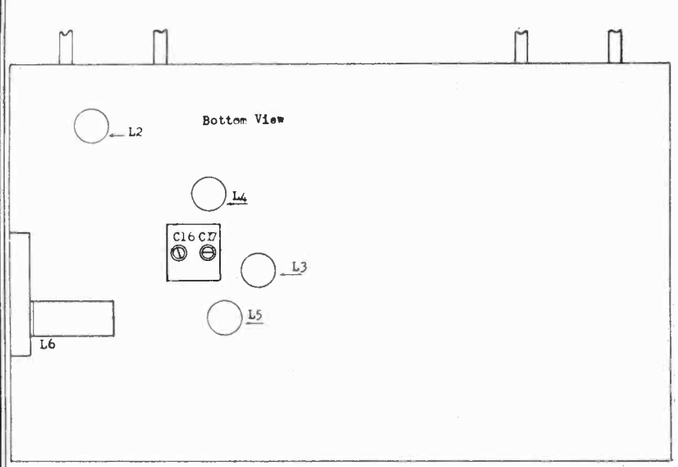
INTERMEDIATE FREQUENCY 456 K.C.

Line Voltage: 117 Volts A.C.

Position of Volume Control: Full with Antenna Disconnected
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. See Prong Nos. on Schematic Dia.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
7A7	R-F Amplifier	0	260	75	3.8	0	0	3.8	6.2*	-
7A7	Osc - Converter	0	260	75	-2.3	0	0	0	6.2*	-
7A7	I.F. Amplifier	0	260	75	3	0	0	3	6.2*	-
7B6	2nd Det - AVC - 1st Audio	0	140	0	1.1	0	.5	.6	6.2*	-
7A4	Inverter	0	223	50	0	0	17	60	6.2*	-
7A4	Viso-Glo Amplifier	0	40	160	0	275	0	1.2	6.2*	-
6V6G	Power Amplifier	0	2	260	265	-17	-17.5	6.3*	0	-
6V6G	Power Amplifier	0	0	260	265	-17	265	6.3*	0	-
5Y3G	Rectifier	0	390	0	355*	0	355*	0	390	-
6AF6G	Viso-Glo	0	0	40	17	260	0	6.2*	0	-

Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.

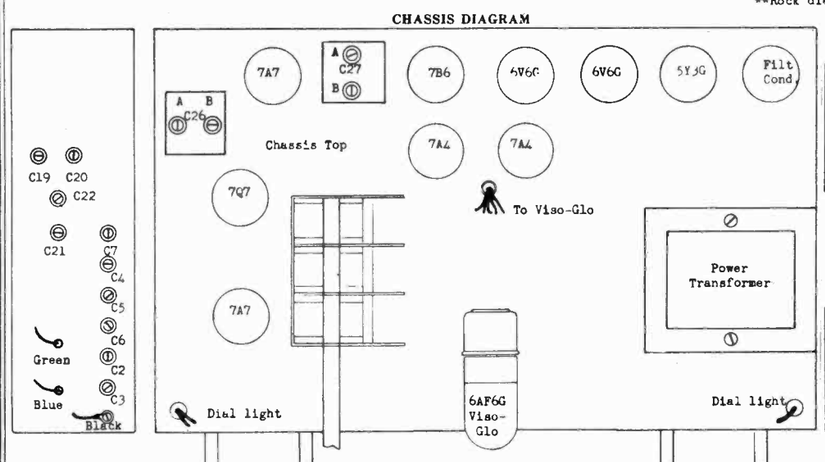


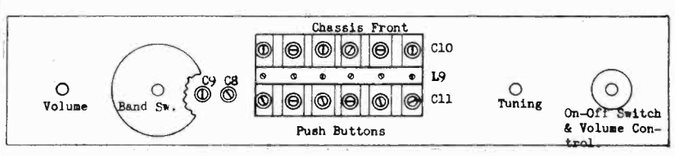
ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with left hand stop line with condenser gang fully meshed.							
2	I.F.	*	.1 MFD	456 KC	BC	Open	C27 A&B	Peak accurately
3							C26 A&B	Peak accurately
4	Broadcast Band	ANT	See Note	1500 KC	BC	1500 KC	C6 Osc.	Peak accurately
							C4 R.F.	Peak accurately
							C3 Ant.	Peak accurately
5				600 KC	BC	600 KC	C19 Pad.	Rock **
6	Repeat operation 4.							
7	Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC.							
8	Police Band	ANT	See Note	7 MC	Police	7 MC	C21 Osc.	Peak accurately
							C5 R.F.	Peak accurately
							C2 Ant.	Peak accurately
9				2.5 MC	Police	2.5 MC	C20 Pad.	Rock **
10	Check calibration and sensitivity at 7 MC, 4 MC and 2.5 MC.							
11	Short Wave Band	ANT	See Note	11.7	SW	11.7	C7 Osc. Tr.	Peak accurately
							C16 RF Tr.	Rock **
							C8 Ant. Tr.	Rock **
12				9.3	SW	9.3	C22 Osc. "	Peak accurately
							C17 RF Pad	Rock **
							C9 Ant. "	Rock **
13	Repeat operation 12 as many times as necessary until additional gain cannot be obtained.							
14	Check calibration and sensitivity at 11.7 and 9.3.							
15	Check operations 1 to 14.							

NOTES: Use dummy antenna as described on page 1.
*Connect generator to pin #6 on 7Q7 Oscillator Converter Tube.
**Rock dial while adjusting for maximum output.

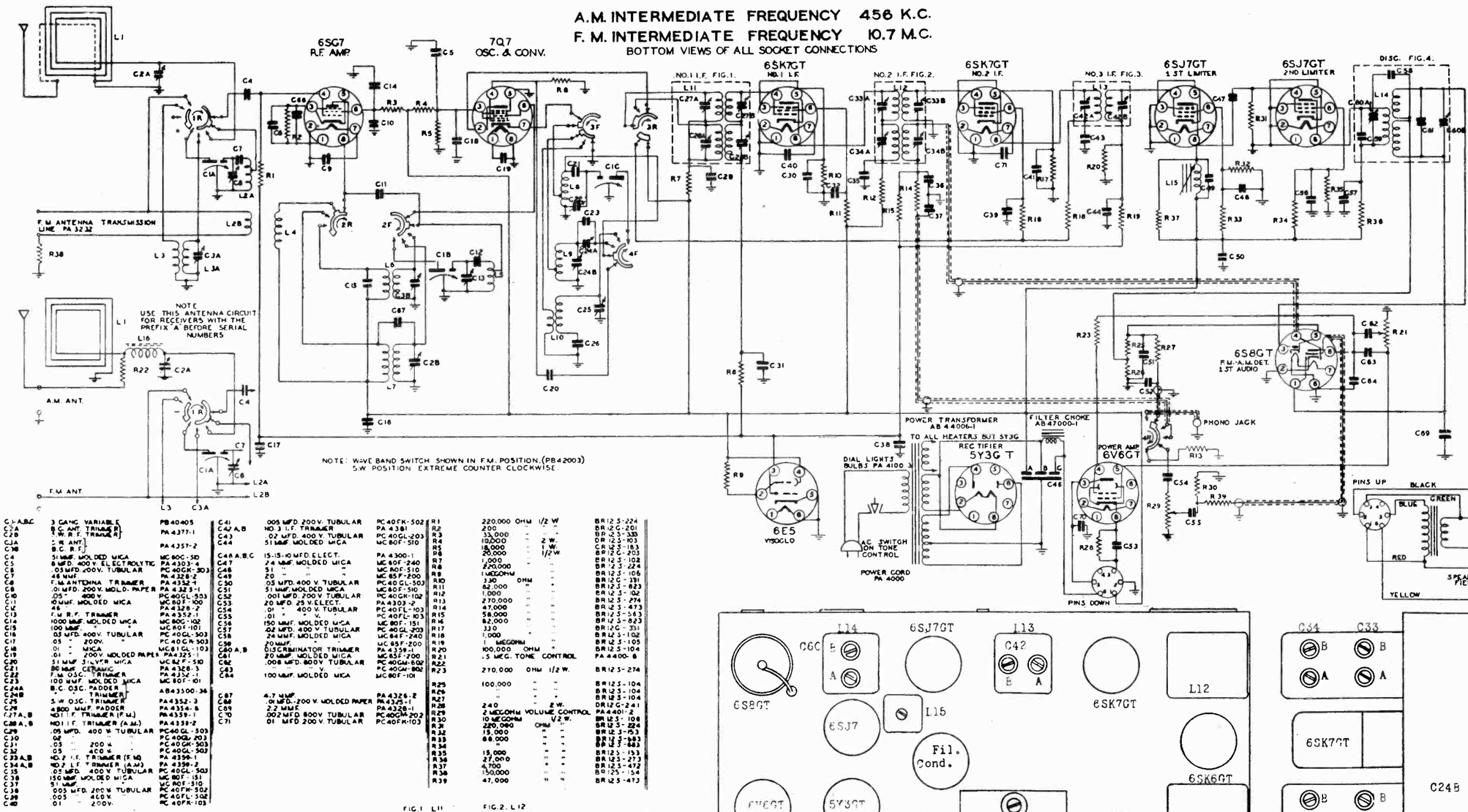
CHASSIS DIAGRAM





THE SPARKS-WITHINGTON CO.

A.M. INTERMEDIATE FREQUENCY 456 K.C.
F. M. INTERMEDIATE FREQUENCY 10.7 M.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1,A,B,C	3 GANG VARIABLE	PB 40405	C41	.005 MFD. 200 V. TUBULAR	PC 40FK-502	R1	220,000 OHM	1/2 W	BR 125-224
C2A	B.C. ANT. TRIMMER	PA 4377-1	C42 A,B	NO.3 I.F. TRIMMER	PA 4381	R2	200 "	"	BR 12G-201
C2B	S.W. R.F. TRIMMER		C43	.02 MFD. 400 V. TUBULAR	PC 40GL-203	R3	33,000 "	"	BR 125-333
C3A	S.W. ANT.	PA 4357-2	C44	51 MMF. MOLDED MICA	MC 80F-510	R4	10,000 "	2 W.	DR 125-103
C3B	B.C. R.F.					R5	18,000 "	1 W.	GR 125-183
C4	51 MMF. MOLDED MICA	MC 80C-510	C44 A,B,C	15-15-10 MFD. ELECT.	PA 4300-1	R6	20,000 "	1/2 W.	BR 12G-203
C5	8 MFD. 400 V. ELECTROLYTIC	PA 4303-4	C47	24 MMF. MOLDED MICA	MC 80F-240	R7	1,000 "	"	BR 125-102
C6	.03 MFD. 200 V. TUBULAR	PC 40GK-303	C48	51 " " "	MC 80F-510	R8	220,000 "	"	BR 123-224
C7	46 MMF.	PA 4328-2	C49	20 " " "	MC 85F-200	R9	1 MEGOHM	"	BR 125-105
C8	F.M. ANTENNA TRIMMER	PA 4332-1	C50	.05 MFD. 400 V. TUBULAR	PC 40GL-503	R10	330 OHM	"	BR 12G-331
C9	.01 MFD. 200 V. MOLD. PAPER	PA 4323-1	C51	51 MMF. MOLDED MICA	MC 80F-510	R11	82,000 "	"	BR 123-823
C10	.05 " 400 V.	PC 40GL-503	C52	.001 MFD. 200 V. TUBULAR	PC 40GK-102	R12	1,000 "	"	BR 125-102
C11	10 MMF. MOLDED MICA	MC 80F-100	C53	20 MFD. 25 V. ELECT.	PA 4303-2	R13	270,000 "	"	BR 125-274
C12	46 "	PA 4328-2	C54	.01 " 400 V. TUBULAR	PC 40FL-103	R14	47,000 "	"	BR 125-473
C13	F.M. R.F. TRIMMER	PA 4352-1	C55	.01 " "	PC 40FL-103	R15	58,000 "	"	BR 125-583
C14	1000 MMF. MOLDED MICA	MC 80C-102	C56	150 MMF. MOLDED MICA	MC 80F-151	R16	82,000 "	"	BR 123-823
C15	100 MMF. " "	MC 80F-101	C57	.02 MFD. 400 V. TUBULAR	PC 40GL-203	R17	330 "	"	BR 12G-331
C16	.05 MFD. 400 V. TUBULAR	PC 40GL-503	C58	24 MMF. MOLDED MICA	MC 64F-240	R18	1,000 "	"	BR 123-102
C17	.05 " 200 V.	PC 40GK-503	C59	20 MMF. " "	MC 85F-200	R19	1 MEGOHM	"	BR 125-105
C18	.01 " MICA	MC 81GL-103	C60 A,B	DISCRIMINATOR TRIMMER	PA 4358-1	R20	100,000 OHM	"	BR 125-104
C19	.01 " 200 V. MOLDED PAPER	PA 4325-1	C61	20 MMF. MOLDED MICA	MC 85F-200	R21	.5 MEG. TONE CONTROL		PA 4400-8
C20	51 MMF SILVER MICA	MC 82F-510	C62	.008 MFD. 600 V. TUBULAR	PC 40GM-802	R22			
C21	80 MMF. CERAMIC	PA 4326-3	C63	" " " V.	PC 40GM-802	R23	270,000 OHM	1/2 W.	BR 125-274
C22	F.M. OSC. TRIMMER	PA 4352-1	C64	100 MMF. MOLDED MICA	MC 80F-101				
C23	100 MMF. MOLDED MICA	MC 80F-101				R25	100,000 "	"	BR 125-104
C24A	B.C. OSC. PADDER	AB 43300-36				R26	" "	"	BR 125-104
C24B	" " TRIMMER		C67	4.7 MMF.	PA 4326-2	R27	" "	"	BR 125-104
C25	S.W. OSC. TRIMMER	PA 4352-3	C68	.01 MFD. 200 V. MOLDED PAPER	PA 4325-1	R28	240 "	2 W.	DR 12G-241
C26	4,800 MMF. PADDER	PA 4354-8	C69	2.2 MMF.	PA 4326-1	R29	2 MEGOHM	VOLUME CONTROL	PA 4401-2
C27A,B	NO.1 I.F. TRIMMER (F.M.)	PA 4359-1	C70	.002 MFD. 800 V. TUBULAR	PC 40GM-202	R30	10 MEGOHM	1/2 W.	BR 1.5-108
C28 A,B	NO.1 I.F. TRIMMER (A.M.)	PA 4338-2	C71	.01 MFD. 200 V. TUBULAR	PC 40FK-103	R31	220,000 OHM	"	BR 125-224
C29	.05 MFD. 400 V. TUBULAR	PC 40GL-503				R32	15,000 "	"	BR 125-153
C30	.05 " " "	PC 40GL-503				R33	68,000 "	"	BR 125-683
C31	.05 " 200 V.	PC 40GK-503				R34	" "	"	BR 125-683
C32	.05 " 400 V.	PC 40GL-503				R35	15,000 "	"	BR 125-153
C33 A,B	NO.2 I.F. TRIMMER (F.M.)	PA 4359-1				R36	27,000 "	"	BR 125-273
C34 A,B	NO.2 I.F. TRIMMER (A.M.)	PA 4350-2				R37	4,700 "	"	BR 125-472
C35	.05 MFD. 400 V. TUBULAR	PC 40GL-503				R38	150,000 "	"	BR 125-154
C36	150 MMF. MOLDED MICA	MC 80F-151				R39	47,000 "	"	BR 125-473
C37	51 MMF. " "	MC 80F-510							
C38	.005 MFD. 200 V. TUBULAR	PC 40FK-502							
C39	.005 " 400 V.	PC 40FL-502							
C40	.01 " 200 V.	PC 40FK-103							

FIG.1 L11 — FIG.2. L12 — FIG.3. L13 — FIG.4. L14

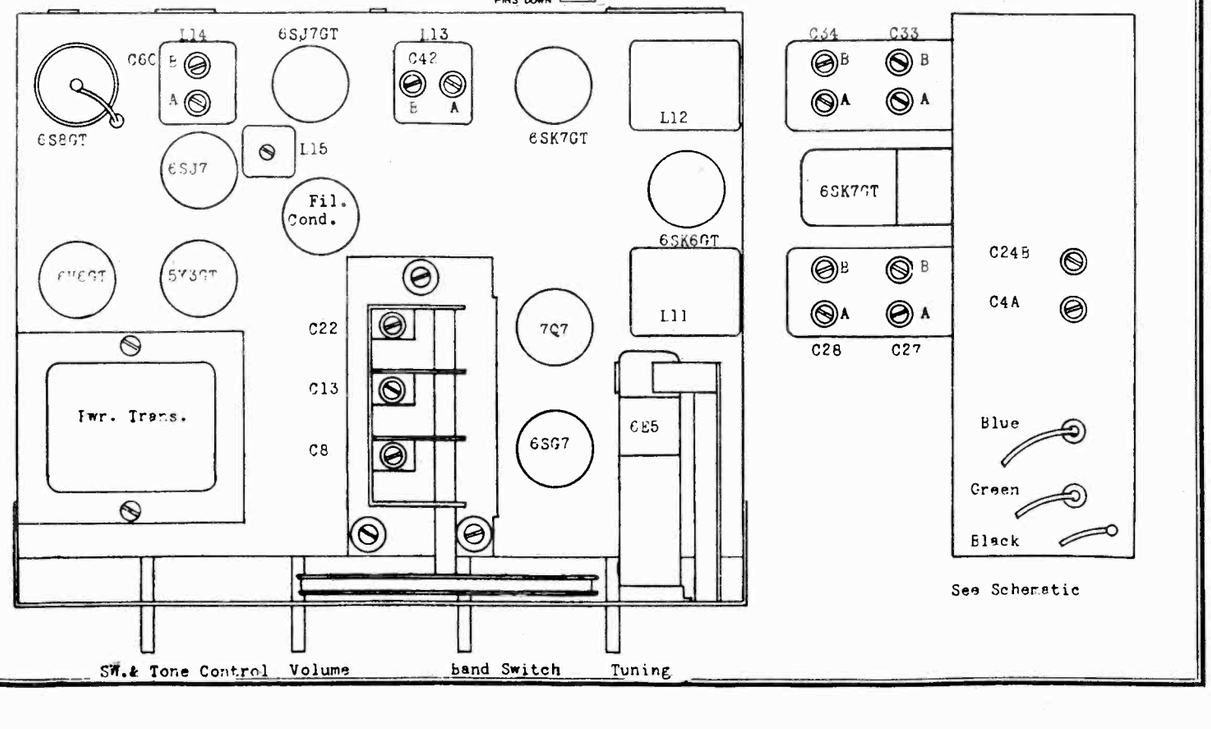
TERMINAL HOOKUP FOR L11, L12, L13 & L14. (BOTTOM VIEW)

FOR RECEIVERS WITHOUT PREFIX 'A' BEFORE SERIAL NUMBERS

L1	LOOP ANTENNA ASSEMBLY	AB 43011-3
L2A	F.M. ANTENNA COIL (SECONDARY)	AA 6747-3
L2B	F.M. " " PRIMARY	AA 6748-1
L3	S.W. ANTENNA "	AA 6758-5
L4	HIGH FREQUENCY CHOKE COIL	AA 6769-1
L5	F.M. DET. COIL	AA 6767-2
L6	B.C. " "	AA 6758-2
L7	S.W. " "	AA 6760-4
L8	F.M. OSC. COIL	AA 6767-1
L9	B.C. "	AA 6752-2
L10	S.W. " "	AA 6770-1
L11	NO.1 I.F. COIL	AA 6801-1
L12	NO.2 I.F. "	AA 6803-1
L13	NO.3 I.F. "	AA 6804-1
L14	DISCRIMINATOR COIL	AA 6805-1
L15	LIMITER PLATE REACTOR COIL	AA 6785-1

FOR RECEIVERS WITH THE PREFIX 'A' BEFORE SERIAL NUMBERS

L1	LOOP ANTENNA ASSEM.	AB 43011-6 / AB 43011-7
L3	S.W. ANT. COIL ASSEM.	AA 6758-8
L6	B.C. DET. COIL ASSEM.	AA 6758-3
L7	S.W. DET. COIL ASSEM.	AA 6760-5
L9	B.C. OSC. COIL ASSEM.	AA 6752-5
L10	S.W. OSC. COIL ASSEM.	AA 6770-2
L16	ANT. LOADING COIL ASSEM.	AA 6780-1
C26	4.8 MMF. CONDENSER	PA 4354-8
R22	2500 OHMS 1/4 W.	BR 125-222



ALIGNMENT CHART

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left-hand stop line with condenser closed.							
2	A.M.-I.F.	Pin #6 of 7Q7 Convt. Tube	.02 MFD Cond.	456 KC.	BC.	Open	C34A & B C28A & B	Peak Accurately " "
3	BC. R.F.	BC. ANT.	*	1600 KC.	BC.	1600 KC.	C24B Osc.T.	" "
4				1500 KC.		1500 KC.	C3B R.F.TR. C2A Ant.TR.	" " " "
5				600 KC.		600 KC.	C24A Osc. P.	**
6	Repeat operations 3, 4, & 5.							
7	Check calibrations at 600 KC., 1000 KC., and 1500 KC.							
8	S.W. BAND	F.M. ANT. to GND.	*	18 MC.	S.W. BAND	18 MC.	C25 Osc.Tr. C2B R.F.Tr. C3A Ant.Tr. C26 Osc. P.	Peak Accurately ** ** See Oper. #9
9	C26 Osc. Padder is precision set at the factory and should not be moved.							
10	Repeat operation #8.							
11	Check calibration at 6 MC. and 18 MC.							
12	SPECIAL NOTE: For complete F.M.-I.F. visual alignment instructions see pages 17-12, 17-13, and 17-14 An alternate F.M.-I.F. alignment using a V.T.V.M. is shown in operations 13, 14, 15, 16, 17, and 18 below.							
13	LIMITER	Pin No. 4 on 1st Lim. Tube.	.02 MFD. Cond.	10.7 MC. Unmod.	F.M.	Optional	L15 Slug	***
14	Disc. Stage Pri.	Pin #4 on 1st limiter to Gnd.	.02 MFD. Cond.	10.7 MC. Unmod.	F.M.	Optional	C60A Disc. Prim.	***
15	Disc. Stage Sec.	Pin #4 on 1st Limiter to Gnd.					C60B Disc. Sec.	See Note 1.
16	F.M.-I.F.	Note "A"	.02 MFD. Cond.	10.7 MC. Unmod.	F.M.	10.7 MC.	C42A & B No. 3. I.F.	See Note 2.
17		Note "B"					C33A & B No. 2 I.F.	" " "
18		Note "C"					C27A & B No. 1 I.F.	" " "
19	F.M.-R.F.	F.M. Ant.	270 OHMS	108 MC. Unmod.	F.M.	108 MC. 300 Channel	C22 Osc.Tr. C13 R.F.TR. C8 Ant.Tr.	" " " " " " " " "
20	Repeat operation 19.							
21	Check calibration at 200, 250, and 300 channels.							

NOTE: The F.M.-I.F. alignment proceedure shown above is made with a measurements vacuum tube voltmeter.
* Use dummy antenna
** Rock dial while adjusting for maximum output.
*** Connect V.T.V.M. from C.T. of discriminator coil to chassis gnd. using lowest scale on D.C. range. Adjust for maximum reading.
NOTE 1: Connect V.T.V.M. from pin #5 of 6S8CT tube to gnd. adjust for zero reading on V.T.V.M.
NOTE 2: Connect V.T.V.M. between A.V.C. terminal on #3 I.F. Trans. to gnd. Tune for maximum response on lowest scale D.C. range.
"A" Connect signal generator between pin #4 on No. 2 I.F. tube and gnd.
"B" Connect signal generator between pin #4 on No. 1 I.F. tube and Gnd.
"C" Connect signal generator between pin #6 on 7Q7 converter tube and gnd.

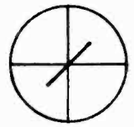
F.M. I.F. ALIGNMENT

In that the alignment of the I.F. stages of an F.M. receiver is inherently far more critical than is the case in the conventional A.M. receiver the visual method using an oscilloscope and frequency modulated signal generator should be used where such equipment is available. In case this equipment is not available any good signal generator providing a stable signal at 10.7 Mc. may be used providing a vacuum tube voltmeter and zero center voltmeter are used in place of the output meter. Both methods are outlined below.

Visual Alignment of F.M.-I.F. Transformers and Discriminators.

1. Equipment required.
   (a) Cathode ray oscilloscope with both vertical and horizontal amplifiers and preferably with calibrated screen.
   (b) Frequency modulated signal generator providing sweep width up to approximately 400 Kc., preferably variable. The modulation voltage should be available at terminals to syncronize the oscilloscope sweep.
   (c) Insulated alignment tools and shielded leads for the scope and signal generator.
2. Preliminary adjustments.
   (a) Set the signal generator for a center frequency of 10.7 Mc. and allow sufficient warm up time for the generator to stabilize. It is very important that the frequency remain at exactly 10.7 Mc. throughout the entire alignment procedure. A shift in frequency during alignment might result in stagger tuning with consequent impairments of receiver performance.
   (b) Turn the oscilloscope on and after focusing the beam for the smallest spot of desired brilliance, center the spot exactly.
   (c) Connect syncronize or sweep terminals of signal generator to the horizontal input post on the oscilloscope.
3. Alignment of plate reactor and discriminator.
   (a) Connect output from signal generator to pin #4 of 1st limiter tube (6SJ7GT).
   (b) Connect output cable from pin #5 of 6S8GT tube to the vertical input terminals on the scope.
   (c) With the sweep or modulation control off advance the R.F. control on the signal generator to give a trace approximating Fig. 1.

   (d) If the sweep control is now advanced the trace will tilt like Fig. 2.

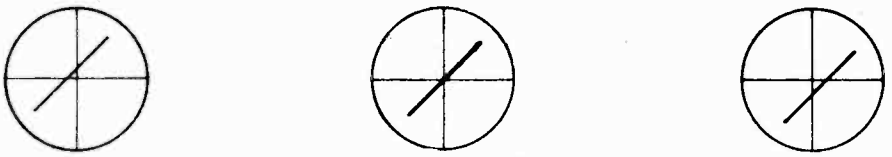


   (e) Adjust core in L15 plate reactor for maximum vertical deflection. Note that the length of trace increases as Fig. 3.

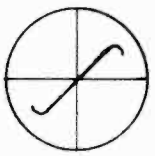
ALIGNMENT DATA

(f) Align discriminator transformer by adjusting primary C60A for maximum vertical deflection, meanwhile keeping the trace in the exact center of the screen by adjusting secondary C60B. See Fig. 4.

Fig. 4



When the discriminator has been properly aligned and the generator sweep increased to about 400 Kc. the conventional shaped discriminator curve will be presented on the screen. See Fig. 5.



This presentation will be helpful for final alignment and balance of the discriminator transformer. Make sure that the straight center position crosses the exact center of the screen and that the distance from the vertical center line to each peak is approximately equal.

4. Alignment of #3 I.F. Transformer

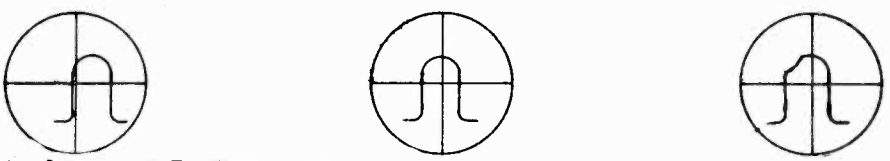
(a) Connect input from signal generator to pin #4 on No. 2 I.F. amplifier tube (6SK7GT).

(b) Connect output cable from AVC terminal on #3 I.F. transformer to the vertical terminals on the scope using a 50 K ohm isolating resistor at the set end of the cable.

(c) With generator sweep width set for approximately 400 Kc. increase R.F. output until a convenient pattern is presented on the screen.

(d) Adjust C42A and C42B for maximum vertical deflection with a symmetrical curve. See Fig. 6.

Fig. 6



5. Alignment of No. 2 I.F. Transformer

(a) Connect input from signal generator to pin #4 of No. 1 I.F. tube (6SK7GT). The output connection remains at the AVC terminal of the 3rd I.F. transformer.

(b) Align C33A and C33B per instructions and diagram in (c) and (d) above.

6. Alignment of No. 1 I.F. Transformer

(a) Connect input from signal generator to Pin #6 on the converter tube (7Q7). (Note: There will be an apparent reduction in gain here due to the short circuiting effect of the F.M. detector coil but this may be compensated for by increasing the generator output. If the generator output is still too low the lead from 7Q7 pin #6 to the wave band switch may be unsoldered thus removing the short circuit).

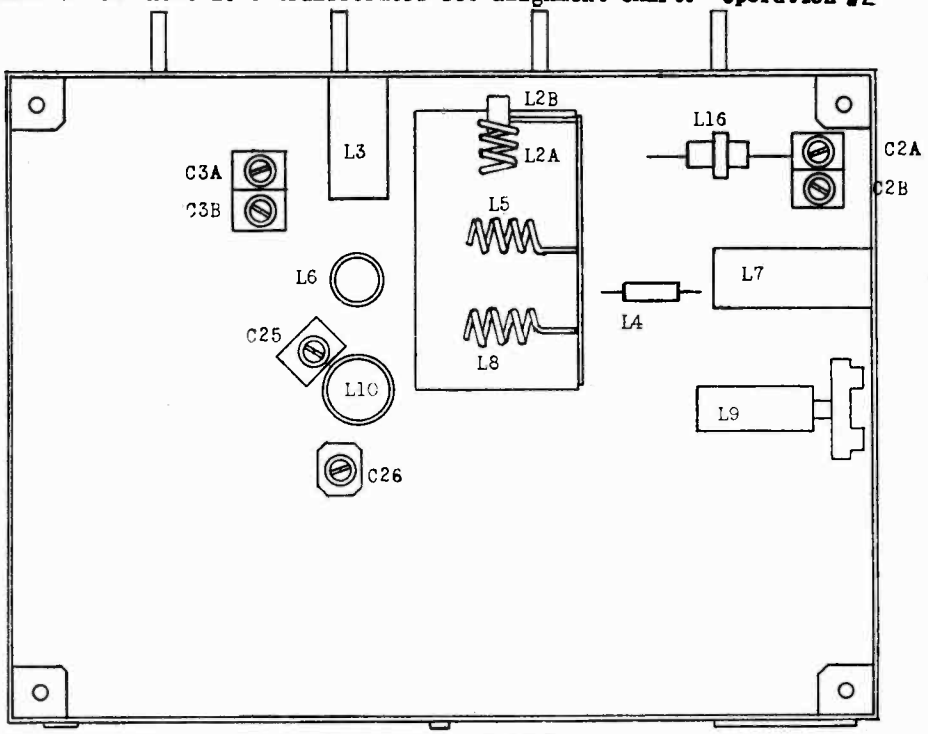
MODEL 10-76-PA THE SPARKS-WITHINGTON CO.

ALIGNMENT DATA

(b) Align C27A and C27B per instructions in (c) and (d) Par. 4. See Fig. 6.

7. Caution: Do not try to "touch up" or worse yet completly align the I.F. channel by applying the signal to the converter grid. To do so will almost certainly result in misalignment of one stage to compensate for the poor alignment of another.

8. For alignment of the A.M.-I.F. transformers see alignment chart. Operation #2



VOLTAGE CHART

Line Voltage: 117 Volts AC

Position of volume control: Full with set tunned to quiet channel.

Position of Band Switch: Broadcast with the exception ***.

TUBE	FUNCTION	Voltage of Socket Prongs to Ground See Prong Nos. on schematic.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6SG7	R. F. Amplifier	0	0	2.20	.10	2.20	155	6.0*	270	
7Q7	Osc. & Convt.	6.05*	270	110	-9.8	0	**	0	0	
6SK7GT	No. 1 I. F. Amp.	0	0	3.0	**	3.0	95	6.05*	270	
6SK7GT	No. 2 I. F. Amp. ***	0	0	3.0	**	3.0	***	6.05*	270	
6SJ7GT	1st Limiter	0	0	0	-.3	0	46	6.05*	270	
6SJ7GT	2nd Limiter	0	0	0	-.42	0	47	6.05*	207	
6S8GT	F.M.-A.M.Det. 1st Audio	-.20	0	-.20	-.30	**	95	6.05	0	-.27
6V6G	Power Amp.	0	0	260	270	**	****	6.05*	12.5	
5Y3GT	Rectifier	0	375	0	360*	0	360*	360	375	
6E5	Viso-Glo	5.95*	23	-4.4	270					

NOTES: Voltage readings are for schematic diagram. Allow 15% ± or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are ± DC voltages.

* AC volts.

** Cannot be measured with 20,000 ohms per volt voltmeter.

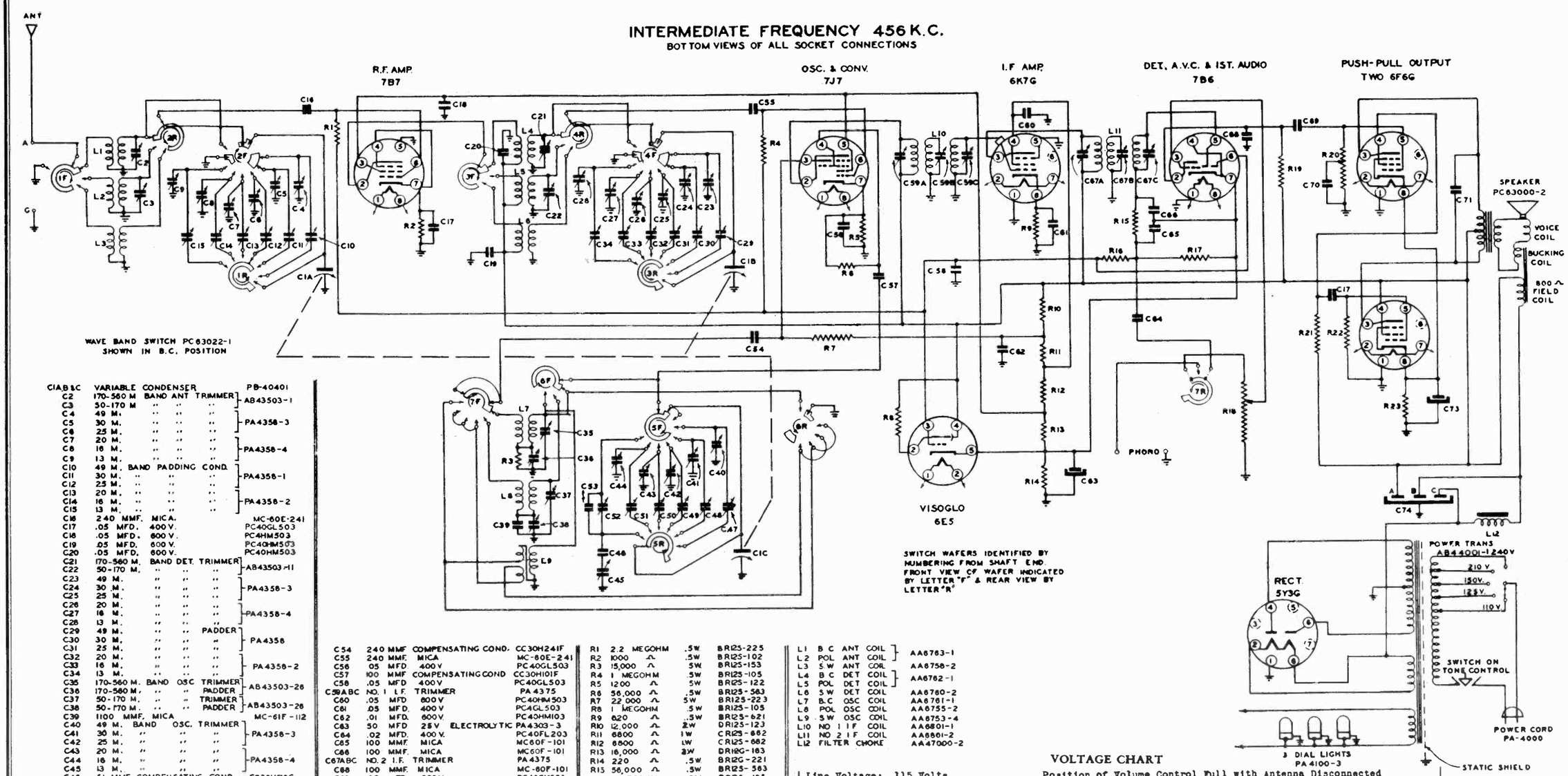
*** Band switch in F.M. position.

**** Zero volts or 237 volts. (Tie point only on some receivers).

THE SPARKS-WITHINGTON CO.

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1A,B,C	VARIABLE CONDENSER		PB-40401
C2	170-560 M	BAND ANT TRIMMER	AB43503-1
C3	50-170 M	" " "	
C4	49 M.	" " "	PA4358-3
C5	30 M.	" " "	
C6	25 M.	" " "	
C7	20 M.	" " "	PA4358-4
C8	16 M.	" " "	
C9	13 M.	" " "	
C10	49 M.	BAND PADDING COND.	PA4358-1
C11	30 M.	" " "	
C12	25 M.	" " "	
C13	20 M.	" " "	PA4358-2
C14	16 M.	" " "	
C15	13 M.	" " "	
C16	240 MMF.	MICA.	MC-60E-241
C17	.05 MFD.	400 V.	PC40GL503
C18	.05 MFD.	600 V.	PC4HM503
C19	.05 MFD.	600 V.	PC40HM503
C20	.05 MFD.	600 V.	PC40HM503
C21	170-560 M.	BAND DET. TRIMMER	AB43503-11
C22	50-170 M.	" " "	
C23	49 M.	" " "	PA4358-3
C24	30 M.	" " "	
C25	25 M.	" " "	
C26	20 M.	" " "	PA4358-4
C27	16 M.	" " "	
C28	13 M.	" " "	
C29	49 M.	" " PADDER	PA4358
C30	30 M.	" " "	
C31	25 M.	" " "	
C32	20 M.	" " "	PA4358-2
C33	16 M.	" " "	
C34	13 M.	" " "	
C35	170-560 M.	BAND OSC TRIMMER	AB43503-26
C36	170-560 M.	" " PADDER	
C37	50-170 M.	" " TRIMMER	AB43503-28
C38	50-170 M.	" " PADDER	
C39	1100 MMF.	MICA	MC-61F-112
C40	49 M.	BAND OSC. TRIMMER	PA4358-3
C41	30 M.	" " "	
C42	25 M.	" " "	
C43	20 M.	" " "	PA4358-4
C44	16 M.	" " "	
C45	13 M.	" " "	
C46	51 MMF.	COMPENSATING COND.	CC30H510C
C47	49 M.	BAND OSC PADDER	
C48	30 M.	" " "	PA4358-1
C49	25 M.	" " "	
C50	20 M.	" " "	
C51	16 M.	" " "	PA4358-2
C52	13 M.	" " "	
C53	20 MMF.	COMPENSATING COND.	CC30H200F

C54	240 MMF.	COMPENSATING COND.	CC30H241F
C55	240 MMF.	MICA	MC-60E-241
C56	.05 MFD.	400 V	PC40GL503
C57	100 MMF	COMPENSATING COND	CC30H101F
C58	.05 MFD	400 V	PC40GL503
C59A,B,C	NO. 1 I.F.	TRIMMER	PA4375
C60	.05 MFD	600 V	PC40HM503
C61	.05 MFD.	400 V	PC4GL503
C62	.01 MFD.	600 V.	PC40HM103
C63	50 MFD	25 V ELECTROLYTIC	PA4303-3
C64	.02 MFD.	400 V.	PC40FL203
C65	100 MMF.	MICA	MC60F-101
C66	100 MMF.	MICA	MC60F-101
C67A,B,C	NO. 2 I.F.	TRIMMER	PA4375
C68	100 MMF.	MICA	MC-60F-101
C69	.05 MFD.	600 V	PC40GM503
C70	.003 MFD.	600V.	PC40GM302
C71	.003 MFD	600V.	PC40GM302
C72	.05 MFD.	600V	PC40GM503
C73	20 MFD.	25V ELECTROLYTIC	PA4303-2
C74 A	15 MFD.	450 V.	PA4300-1
C74 B	10 MFD	450 V.	
C74 C	15 MFD.	450 V.	ELECTROLYTIC

R1	2.2 MEGOHM	.5W	BR1S-225
R2	1000 Ω	.5W	BR1S-102
R3	15,000 Ω	.5W	BR1S-153
R4	1 MEGOHM	.5W	BR1S-105
R5	1200 Ω	.5W	BR1S-122
R6	56,000 Ω	.5W	BR1S-563
R7	22,000 Ω	.5W	BR1S-223
R8	1 MEGOHM	.5W	BR1S-105
R9	620 Ω	.5W	BR1S-621
R10	12,000 Ω	2W	DR1S-123
R11	6800 Ω	1W	CR1S-682
R12	6800 Ω	1W	CR1S-682
R13	16,000 Ω	2W	DR1RG-163
R14	220 Ω	.5W	BR1RG-221
R15	56,000 Ω	.5W	BR1S-563
R16	1 MEGOHM	.5W.	BR1S-105
R17	560,000 Ω	.5W.	BR1S-564
R18	2 MEGOHM VOL CONT		PA4401-1
R19	270,000 Ω	.5W.	BR1S-274
R20	.5 MEG TONE CONT & S.W.		PA4400-1
R21	2000 Ω	.5W.	BR1RG-202
R22	470,000 Ω	.5W.	BR1S-474
R23	240 Ω	2W	BR1RG-241

L1	B C ANT COIL		AA6763-1
L2	POL ANT COIL		
L3	S W ANT COIL		AA6758-2
L4	B C DET COIL		AA6762-1
L5	POL DET COIL		
L6	S W DET COIL		AA6760-2
L7	B.C OSC COIL		AA6761-1
L8	POL OSC COIL		AA6755-2
L9	S W OSC COIL		AA6753-4
L10	NO 1 I F COIL		AA6801-1
L11	NO 2 I F COIL		AA6801-2
L12	FILTER CHOKE		AA47000-2

VOLTAGE CHART

Line Voltage: 115 Volts
Position of Band Switch Broadcast
Position of Volume Control Full with Antenna Disconnected
Position of Tap Plug - 110 Volts

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic Dia.)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap.
7B7	R.F. Amplifier	0	290	75	4.2	0	0	4.2	6.1*	-
7J7	Osc - Converter	0	290	100	-1	75	4.1	4.5	6.1*	-
6K7G	I-F Amplifier	0	0	290	120	0	-	6.1*	9	0
7B6	2nd Det - AVC - 1st Audio	0	150	0	1.2	.5	0	1.2	6.1*	-
6F6G	Push-Pull Power Output	0	0	290	285	0	295	6.1*	20	-
6F6G	Push-Pull Power Output	0	0	290	285	0	295	6.1*	20	-
5Y3G	Rectifier	0	375*	0	350*	0	375*	0	350*	-
6E5	Viso-Glo	0	250	0	295	0	6.1*	-	-	-

Notes: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter.
*AC volts.

THE SPARKS-WITHINGTON CO.

MODEL 843SX

ALIGNMENT DATA

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	BAND SWITCH SETTING	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set drive wheel so that pointer is at end of calibration scales with condenser gang fully meshed)							
2	I.F.	Connect to Stator of Detector Section of CI (See Chassis Diagram)	.1 mf.	170-560 Meters	(456 KC)	Open	C67B*	**
3							C67A C67C	Peak accurately
4							C67B*	Peak accurately
5							C59B*	**
6							C59A C59C	Peak accurately
7							C59B*	Peak accurately
8	CAUTION: Do not readjust trimmers C67A & C and C59A & C after red spot trimmers C67B & C59B have been peaked)							
9	170-560 Meter Band	ANT	See Note	170-560 Meters	200 M	200 M	C35 Osc.	Trim.
							C21 Det.	Trim.
							C2 ANT.	Trim.
10					500 M	500 M	C36 Osc.	Pad.
11	(Repeat operation 9)							
12	(Check calibration and sensitivity at 200 M, 300 M and 500 M)							
13	50-170 Meter Band	ANT	See Note	50-170 Meters	55 M	55 M	C37 Osc.	Trim.
							C22 Det.	Trim.
							C3 ANT.	Trim.
14					150 M	150 M	C38 Osc.	Pad.
15	(Repeat operation 13)							
16	(Check calibration and sensitivity at 55M, 95M and 150M)							
17	49 Meter Band	ANT	See Note	49 Meters	35 M	35 M	C40 Osc.	Trim.
18					48 M	48 M	C47 Osc.	Pad.
19					35 M	35 M	C23 Det.	Trim.
							C4 ANT.	Trim.
20					48 M	48 M	C29 Det.	Pad.
							C10 ANT.	Pad.
21	(Check carefully all adjustments for 49 meter band. Be sure band limits are covered)							
22	30 Meter Band	ANT	See Note	30 Meters	27 M	27 M	C41 Osc.	Trim.
23					34.5 M	34.5 M	C48 Osc.	Pad.
24					27 M	27 M	C24 Det.	Trim.
							C5 ANT.	Trim.
25					34.5 M	34.5 M	C30 Det.	Pad.
							C11 ANT.	Pad.
26	(Check carefully all adjustments for 30 meter band. Be sure band limits are covered.							
27	25 Meter Band	ANT	See Note	25 Meters	22 M	22 M	C42 Osc.	Trim.
28					26 M	26 M	C49 Osc.	Pad.
29					22 M	22 M	C25 Det.	Trim.
							C6 ANT.	Trim.
30					26 M	26 M	C31 Det.	Pad.
							C12 ANT.	Pad.
31	(Check carefully all adjustments for 25 meter band. Be sure band limits are covered.)							
32	20 Meter Band	ANT	See Note	20 Meters	18.5 M	18.5 M	C43 Osc.	Trim.
33					21.1 M	21.1 M	C50 Osc.	Pad.
34					18.5 M	18.5 M	C26 Det.	Trim.
							C7 Ant.	Trim.
35					21.1 M	21.1 M	C32 Det.	Pad.
							C13 Ant.	Pad.
36	(Check carefully all adjustments for 20 meter band. Be sure band limits are covered.)							
37	16 Meter Band	ANT	See Note	16 Meters	15.7 M	15.7 M	C44 Osc.	Trim.
38					17.7 M	17.7 M	C51 Osc.	Pad.
39					15.7 M	15.7 M	C27 Det.	Trim.
							C8 Ant.	Trim.
					17.7 M	17.7 M	C33 Det.	Pad.
							C16 Ant.	Pad.

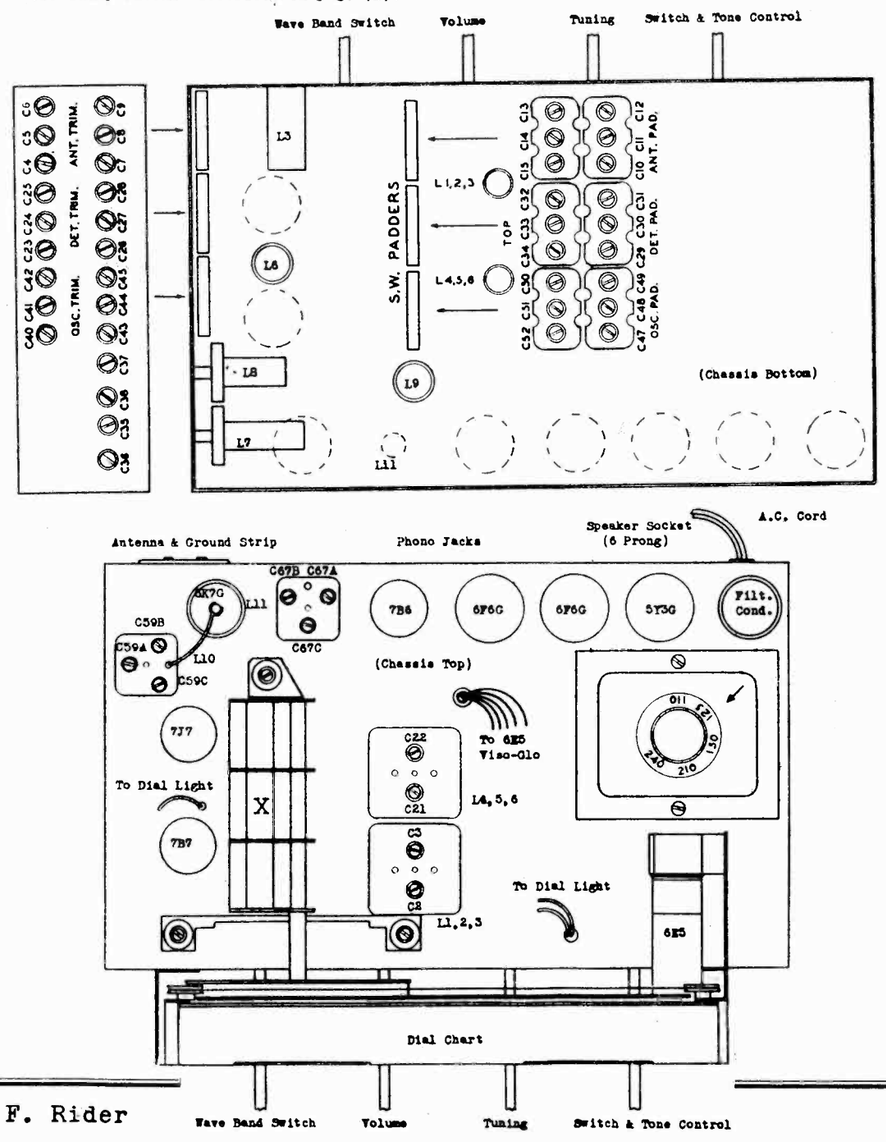
MODEL 843SX THE SPARKS-WITHINGTON CO.

ALIGNMENT DATA

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	BAND SWITCH SETTING	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
41	(Check carefully all adjustments for 16 meter band. Be sure band limits are covered.)							
42	13 Meter Band	ANT	See Note	13 Meters	13.8 M	13.8 M	C45 Osc.	Trim.
43					15.2 M	15.2 M	C52 Osc.	Pad.
44					13.8 M	13.8 M	C28 Det.	Trim.
							C9 Ant.	Trim.
45					15.2 M	15.2 M	C34 Det.	Pad.
							C15 Ant.	Pad.
46	(Check carefully all adjustments for 13 meter band. Be sure band limits are covered.)							

*Bronze color trimmer screw.
**Turn trimmer screw all the way down.
Note - Use dummy antenna described on page (1).

SPECIAL NOTE: All band trimmers should be adjusted to the fundamental of the test signal and not to the image.



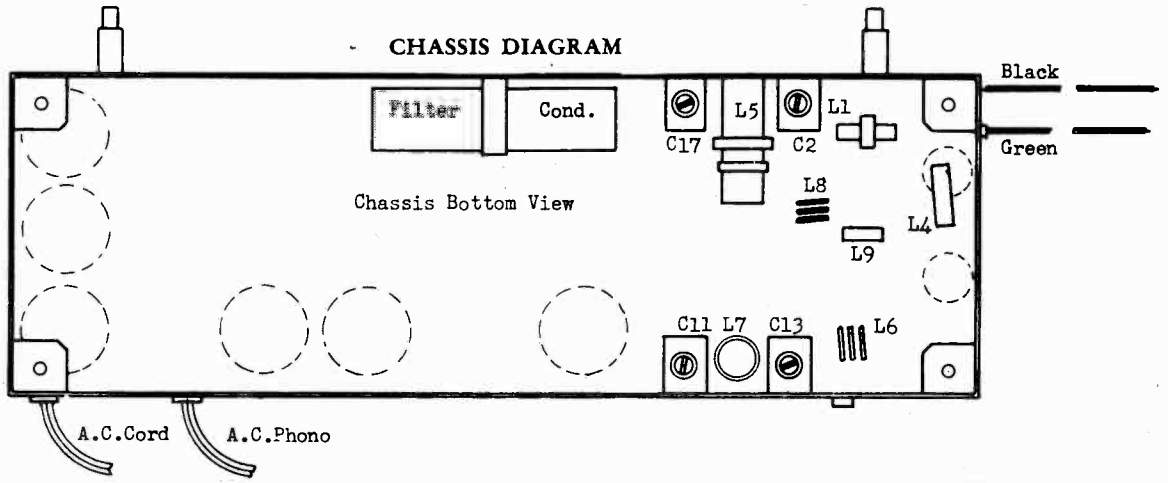
ALIGNMENT CHART

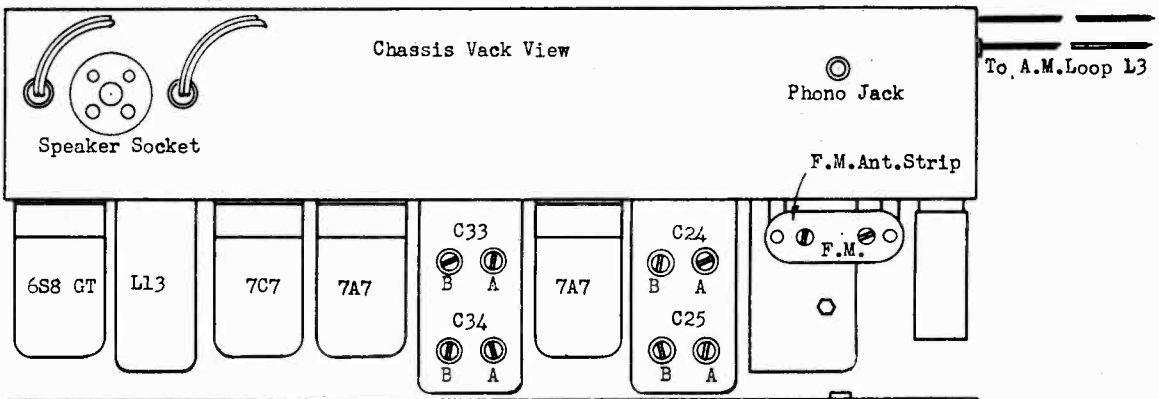
OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left-hand stop line with condenser gang closed.							
2	A.M.-I.F.	Pin #7 of 6BE6 Convt. Tube	.02 MFD. Cond.	456 KC.	BC.	Open	C34A & B	Peak Accurately
							C25A & B	" "
3	A.M.-R.F.	BC. Ant.	*	1500 KC.	BC.	1500 KC.	C11 Osc. Tr.	" "
							C17 R.F. Tr.	" "
							C2 Ant. Tr.	" "
4				600 KC.		600 KC.	C13 Osc. Pad.	**
5	Repeat operations 2, 3, and 4.							
6	Check calibrations at 600, 1000, and 1500 KC.							
7	SPECIAL NOTE: For complete F.M.-I.F. visual alignment instructions please refer to pages 5, 6, 7, 8, 9, and 10 of this bulletin.							
8	F.M.-I.F. alignment using A.M. generator and output meter.							
9	T3 F.M. Ratio Det.	Pin #6 on 2nd 7A7 I.F. Amp.	.05 MFD. Cond.	10.8 MC.	F.M.	Open 108 MC.	C46B Sec.	Peak Accurately
							L12 Slug	Max. Reading
							C46A Pri.	Peak Accurately
10	NOTE: Operation #9 must be made with generator output as low as possible with maximum reading on output meter.							
11	Connect a 15,000 ohm resistor (to prevent overcoupling) between pin #6 (grid) on 2nd 7A7 tube to ground. After operation #12 is completed leave resistor connected for operations to follow.							
12	T2 F.M.-I.F.	Pin #6 on 1st 7A7 I.F. Amp.	.05 MFD. Cond.	10.7 MC.	F.M.	Open 108 MC.	C33B Sec.	Peak Accurately
							C33A Pri.	" "
13	NOTE: Operation #12 must be made with generator output as low as possible with maximum reading on output meter.							
14	Connect another 15,000 ohm resistor between pin #6 (grid) on 1st 7A7 tube to ground.							
15	T1 F.M.-I.F.	Pin #7 on 6BE6 Tube or C.T. on L6 Coil	.05 MFD Cond.	10.7 MC.	F.M.	Open 108 MC.	C24B Sec.	Peak Accurately
							C24A Pri.	" "
16	NOTE: Operation #15 must be made with generator output as low as possible with maximum reading on output meter.							
17	Repeat operations 9, 12, and 15.							
18	Remove the two 15,000 ohm resistor dummies from pin #6 on the 7A7 tubes but leave generator coupled through .05 MFD. Cond. to pin #7 on 6BE6 tube (C.T. on L6 coil).							
19	Adjust C46B secondary trimmer on T3 ratio detector transformer to minimum deflection or dip on output meter. Under certain conditions it is possible to adjust C46B secondary trimmer to minimum noise with the receiver tuned to a weak station. This operation is very sharp and the receiver must be tuned to the center response only.							
20	Repeat operation #19.							
21	F.M.-R.F. alignment using an A.M. generator with frequency of 88 to 108 MC. and vacuum tube voltmeter, or D.C. voltmeter (20,000 ohms per volt).							
OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
22	Place meter across C51 Elect. Condenser. (Meter reading approx. 1 volt).							
23	F.M.-R.F.	F.M. Ant.	Match to 300 Ohms	108 MC.	F.M.	108 MC.	C14 Osc. Tr.	Max. A.V.C. V.
							C18 R.F. Tr.	Peak Accurately
							C3 Ant. Tr.	" "
24	Repeat operation #23.							
25	Check calibration at 88 MC.							

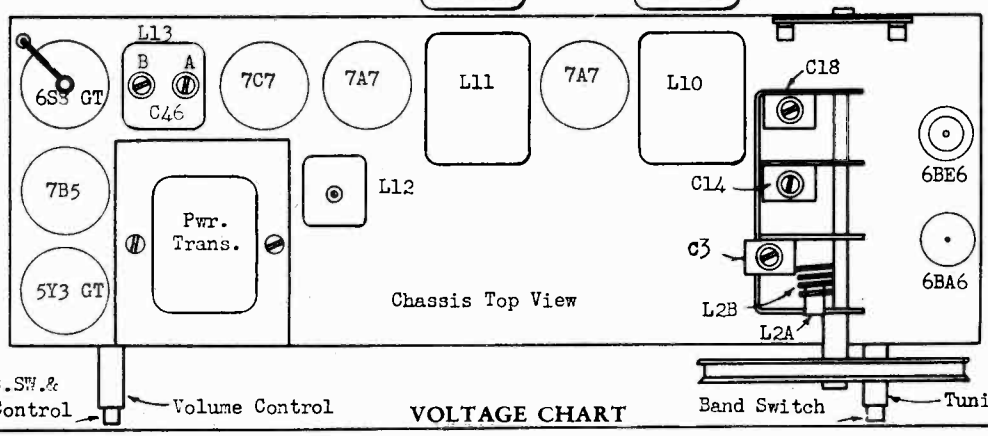
* Use dummy antenna

** Rock dial while adjusting for maximum output.

CHASSIS DIAGRAM







VOLTAGE CHART

Line Voltage: 117 Volts AC

Position of volume control: Full with set tunned to quiet channel.
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of Socket Prongs to Ground. See Prong Nos. on schematic.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6BA6	R. F. Amp.	* *	6	6.2*	0	238	115	.9		
6BE6	Convt.	.-15	0	6.2*	0	236	90	0		
7A7	1st I. F. Amp.	6.2*	230	87	2.38	0	* *	2.38	0	
7A7	2nd I. F. Amp.	6.2*	168	93	2.30	0	* *	2.30	0	
7C7	3rd I. F. Amp.	6.2*	235	110	2.45	0	* *	2.50	0	
6S8GT	2nd Det. 1st Audio	* *	0	0	0	.-15	111	6.2*	0	-.25
7B5	P.A.	0	260	237	0	0	* *	15	6.2*	
5&3GT	Rect.	0	260	0	245*	0	245*	0	260	

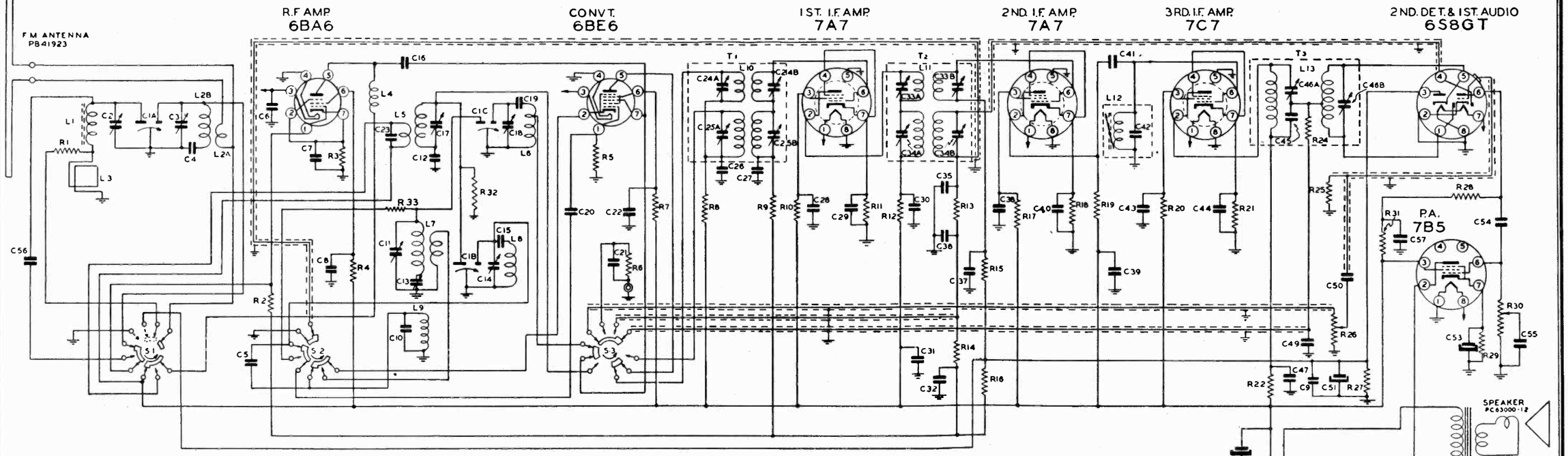
NOTES: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
* AC volts. ** Cannot be measured with 20,000 ohms per volt voltmeter.

THE SPARKS-WITHINGTON CO.

MODELS 1005, 6, 7, 8,
CHASSIS 8-57

A.M. INTERMEDIATE FREQUENCY 456 KC.
F.M. INTERMEDIATE FREQUENCY 10.7 MC.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

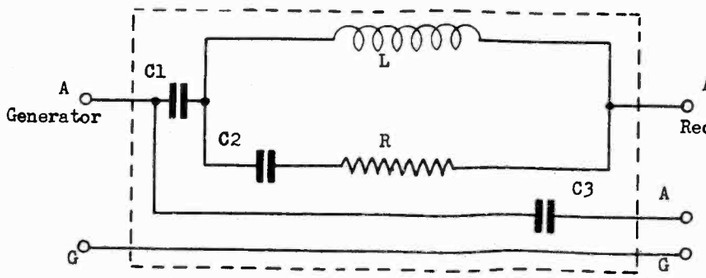


TERMINAL HOOKUP FOR L10, L11 AND L13
BOTTOM VIEW

* SPECIAL SERVICE NOTE: THESE TRANSFORMERS SUPPLIED AS ASSEMBLIES COMPLETE ONLY.

C1 A,B,C, 3 GANG CONDENSER		PB40405
C2 AM ANT TRIMMER		PA4352-1
C3 F.M. ANT TRIMMER		PA4352-1
C4 F.M. ANT. PADDER .46MMF.		PA4328-2
C5 10MMF. CERAMIC		CC31H100K
C6 1000 MMF MOLDED PAPER		PA4325-2
C7 10000 MMF. MOLDED PAPER		PA4325-1
C8 1000 MMF. MOLDED 200 V		PA4325-2
C9 1000 MMF MOLDED 400 V.		PA4325-3
C10 15 MMF. CERAMIC		CC31H150K
C11 A.M. OSC TRIMMER		PA4352-3
C12 .05 MFD 200 V TUBULAR		PC40GK 503
C13 B.C. OSC. PADDER		PA4352-8
C14 F.M. OSC. TRIMMER		PA4379-1
C15 F.M. OSC PADDER 85 MMF.		PA4328-6
C16 5 MMF. CERAMIC		PA4328-5
C17 B.C. R.F. TRIMMER		PA4352-1
C18 F.M. R.F. TRIMMER		PA4352-1
C19 F.M. R.F. PADDER .46MMF		PA4328-2
C20 51 MMF. MOLDED MICA		MC80G-510
C21 100 MMF. " "		MC60G-101
C22 1000 MMF. " PAPER		PA4325-2
C23 51 MMF. CERAMIC		CC31H510K
C24 A,B NO.1 I.F. TRIMMER F.M. *		PA4359-1
C25 A,B NO.1 I.F. " A.M. *		PA4359-3
C26 .01 MFD. 400V. TUBULAR		PC40GL-103
C27 .01 MFD 200V. "		PC40GK-103
C28 1000 MMF. MOLDED PAPER		PA4325-2
C29 .05 MFD. 200 V.		PC40GK-503
C30 .01 MFD. 400 V.		PC40GL-103
C31 .05 MFD. 400 V.		PC40GL-503
C32 .02 MFD. 200 V.		PC40GK-203
C33 NO.2 I.F. TRIMMER F.M. *		PA4359-1
C34 NO.2 I.F. TRIMMER A.M. *		PA4359-3
C35 100 MMF. MOLDED MICA		MC60G-101
C36 100 MMF. " "		MC60G-101
C37 001 MFD. 200V. MOLDED PAPER		PA4325-2
C38 1000 MMF. MOLDED PAPER		PA4325-2
C39 .01 MFD. 400V. TUBULAR		PC40GL-103
C40 .05 MFD. 200V. "		PC40GK-503
C41 100 MMF. MICA MOLDED		MC60G-101
C42 20 MMF. MICA MOLDED		MC65F-200
C43 .05 MFD. 400 V. PAPER		PC40GL-503
C44 .01 " 200 V.		PC40GK-103
C45 51 MMF. MOLDED MICA		MC60F-510
C46 A,B RATIO DET. TRIMMER *		PA4359-1
C47 .05 MFD. 400V. TUBULAR		PC40GL-503
C48 A,B 40-40 MFD. ELECT.		PA4302
C49 100 MMF. MOLDED MICA		MC60G-101
C50 .02 MFD. 200V. TUBULAR		PC40GK-203
C51 8 MFD. 150 V. ELECT.		PA4303-8
C52 .006 MFD. 1000V. TUBULAR		PC40GN-602
C53 20 " 25V. ELECT.		PA4303-2
C54 .02 " 400 V. TUBULAR		PC40GL-203
C55 .004 " 200 V.		PC40GK-402
C56 51 MMF. MICA		MC60G-510
C57 .05 400 V. "		PC40GL-503
L1 A.M. ANT. LOADING COIL		AA6780-2
L2A F.M. ANT. COIL PRI.		AA6786-1
L2B F.M. ANT. COIL SEC.		AA6767-6
L3 A.M. ANT. LOOP		AA67708-1
L4 F.M. R.F. CHOKE		AA6769-2
L5 B.C. R.F. COIL		AA6756-4
L6 F.M. R.F. COIL		AA6767-5
L7 B.C. OSC. COIL		AA6759-2
L8 F.M. OSC. COIL		AA6767-4
L9 F.M. CATHODE CHOKE		AA6798-1
L10 NO.1 I.F. COIL *		AA6803-2
L11 NO.2 I.F. COIL *		AA6803-2
L12 F.M. CHOKE		AA6785-2
L13 RATIO DETECTOR *		AA6805-2
R1 2200 OHMS	½	WATT BR12S-222
R2 1 MEG. "	"	" BR12S-105
R3 68 "	"	" BR12S-680
R4 33000 "	"	" BR12S-333
R5 22000 "	"	" BR12S-223
R6 1 MEG. "	"	" BR12S-105
R7 22000 "	2	" DR12S-223
R8 1000 "	½	" BR12S-102
R9 100,000 "	"	" BR12S-104
R10 82,000 "	"	" BR12S-823
R11 270 "	"	" BR12S-271
R12 1000 "	"	" BR12S-102
R13 56,000 "	"	" BR12S-563
R14 100,000 "	"	" BR12S-104
R15 1 MEG. "	"	" BR12S-105
R16 330,000 "	"	" BR12S-334
R17 82,000 "	"	" BR12S-823
R18 270 "	"	" BR12S-271
R19 10,000 "	1	" CR12S-103
R20 220,000 "	½	" BR12S-224
R21 820 "	"	" BR12S-821
R22 1000 "	"	" BR12S-102
R23 850 "	10	" PA4200-4
R24 10,000 "	½	" BR12S-103
R25 10,MEG. "	"	" BR12S-106
R26 ½ MEG. VOLUME CONTROL		PA4407-1
R27 51,000 "	½	BR12S-513
R28 220,000 "	"	BR12S-224
R29 470 "	2	DR12S-471
R30 ½ MEG. TONE CONTROL & SWITCH		PA4400-7
R31 56,000 OHMS	½	WATT BR12S-563
R32 1 MEGOHM	½	WATT BR12S-105
R33 47 OHM	1	WATT CR12S-470
T1 NO.1 I.F. TRANS. ASSEM. *		AA6768-3
T2 NO.2 I.F. TRANS. ASSEM. *		AA6768-4
T3 RATIO DET. TRANS. ASSEM. *		AA6734-3

DUMMY ANTENNA



C1-200 mmf. Condenser 400 V.D.C.
C2-400 mmf. Condenser 400 V.D.C.
C3-.02 mmf. Condenser 400 V.D.C.
R-100 ohms Resistor 1/4 Watt
L-Choke Coil

----Case Shield
Choke Coil Specification
Tubing - 3/8" Diameter Bakelite
Wire - No. 38 Enameled
Turns - 59 closely wound (Impregnated)

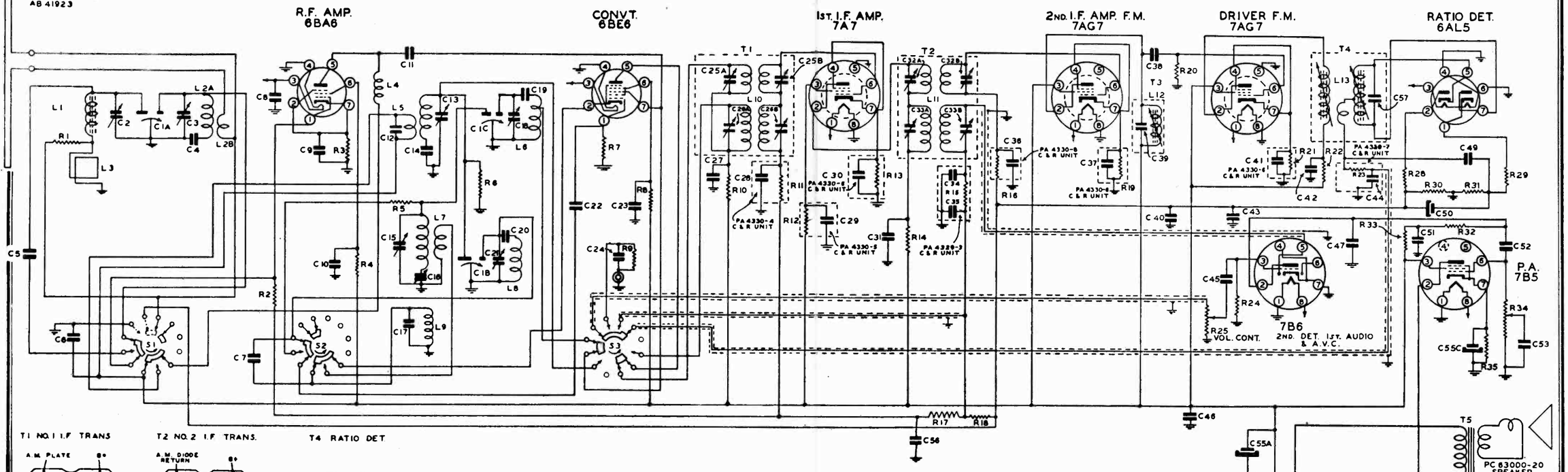
NOTE: When using this dummy antenna the generator output impedance should be 10 ohms or lower.

THE SPARKS-WITHINGTON CO.

MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8

INTERMEDIATE FREQUENCY A.M. 456 Kc. F.M. 10.7 Mc.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



* SPECIAL SERVICE NOTE: THESE TRANSFORMERS SUPPLIED AS ASSEMBLIES COMPLETE ONLY.

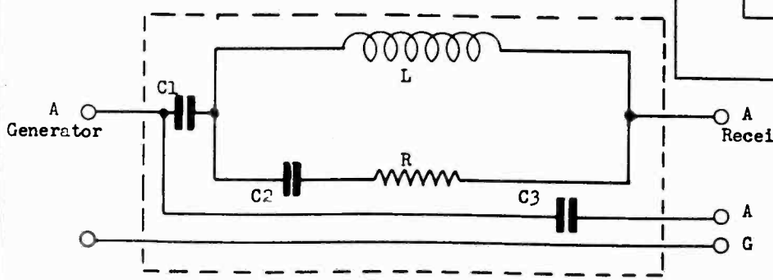
TERMINAL MOOKUP FOR BOTTOM VIEW T1, T2 & T4

	DESCRIPTION	PART NO.	LOCATION
C1A,B,C	3 GANG CONDENSER	PC 65001	P-4, N-11, P-11
C2	AM ANT TRIMMER	PA 4352-1	P-4
C3	FM ANT TRIMMER	PA 4368	P-5
C4	FM ANT PADDER 51 MMF	PA 4328-9	P-5
C5	51 MMF MICA	MC 60G-510	N-2
C6	.02 MFD. CERAMIC	HK 35G-203	L-3
C7	10 MMF CERAMIC	CC 31H-100K	L-7
C8	1000 MMF MOLDED PAPER	PA 4325-2	Q-7
C9	10,000 MMF MOLDED PAPER	PA 4325-1	P-8
C10	1000 MMF MOLDED PAPER	PA 4325-2	M-8
C11	5 MMF CERAMIC	PA 4328-5	R-10
C12	51 MMF CERAMIC	CC 31H-510K	P-9
C13	B.C. R.F. TRIMMER	PA 4352-1	P-10
C14	.05 MFD. 200 V. TUBULAR	PC 40GK-503	P-10
C15	A.M. OSC. TRIMMER	PA 4352-3	N-10
C16	B.C. OSC. PADDER	PA 4352-8	M-10
C17	15 MMF CERAMIC	CC 31H-150K	L-10
C18	FM R.F. TRIMMER	PA 4368	P-12
C19	FM R.F. PADDER (46 MMF)	PA 4328-2	Q-12
C20	FM. OSC. PADDER (85 MMF)	PA 4328-8	N-12
C21	FM OSC. TRIMMER	PA 4368	N-12
C22	51 MMF MICA	MC 60G-510	O-13
C23	1000 MMF MOLDED PAPER	PA 4325-2	O-14
C24	.002 MFD. CERAMIC	HK 35G-202	N-14
C25A&B	NO. 1 I.F. TRIMMER FM	PA 4359-1	O-16, Q-17
C26A&B	NO. 1 I.F. TRIMMER AM	PA 4359-3	O-16, P-17
C27	.02 MFD CERAMIC	HK 35G-203	O-18
C28	.02 MFD (C&R UNIT)	PA 4330-4	O-17
C29	.02 MFD (C&R UNIT)	PA 4330-5	N-18
C30	.02 MFD (C&R UNIT)	PA 4330-6	O-19
C31	.02 MFD. CERAMIC	HK 35G-203	N-20
C32A&B	NO 2 I.F. TRIMMER FM	PA 4359-1	Q-20, Q-21
C33A&B	NO 2 I.F. TRIMMER AM	PA 4359-3	P-20, P-21
C34	100 MMF (C&R UNIT)	PA 4329-3	O-21, O-21
C35	100 MMF		
C36	.001 MFD (C&R UNIT)	PA 4330-8	P-22
C37	.02 MFD (C&R UNIT)	PA 4330-6	P-24
C38	100 MMF MICA	MC 60G-101	R-23
C39	20 MMF MICA	MC 15F-200	P-25
C40	.02 MFD CERAMIC	HK 35G-203	N-25
C41	.02 MFD (C&R UNIT)	PA 4330-6	P-28
C42	.02 MFD CERAMIC	HK 35G-203	O-28
C43	.01 MFD 200 V. TUBULAR	PC 40GK-103	O-27
C44	.002 MFD (C&R UNIT)	PA 4330-7	O-30
C45	.02 MFD CERAMIC	HK 35G-203	M-27
C46	.02 MFD CERAMIC	HK 35G-203	J-28
C47	150 MMF MICA	MC 60F-151	N-29

	DESCRIPTION	PART NO.	LOCATION
C49	330 MMF CERAMIC	HK 35 F-331	P-32
C50	3 MFD 50 V ELECT.	PA 4306-1	O-31
C51	.05 MFD. 400 V.	PC 40GL-503	N-30
C52	.02 MFD. 400 V.	PC 40GL-203	N-32
C53	.01 MFD. 200 V. TUBULAR	PC 40GK-103	L-33
C54	.006 MFD. 1000 V.	PC 40GN-602	I-30
C55A,B,C	40-40-20 MFD ELECT.	PA 4307-3	J-27, C-27, L-32
C56	.01 MFD. 400 V.	PC 40FL-103	K-21
C57	33 MMF. MICA	MC 6SE-330	Q-30
L1	AM ANT LOADING COIL	AA 6686-2	P-3
L2A	FM ANT COIL (PRI.)	AA 6786-1	P-6
L2B	FM ANT COIL (SEC.)	AA 6787-10	P-6
L3	AM ANT LOOP	AC 67008-4	O-3
L4	FM R.F. CHOKE	AA 6769-2	O-9
L5	BC R.F. COIL	AA 6756-7	P-10
L6	FM R.F. COIL	AA 6787-5	P-12
L7	BC OSC. COIL	AA 6759-4	N-10
L8	FM OSC. COIL	AA 6787-4	N-12
L9	FM CATHODE CHOKE	AA 6798-1	L-10
L10	NO 1 I.F. COIL*	AA 6803-2	Q-17
L11	NO 2 I.F. COIL*	AA 6803-3	Q-21
L12	TUNED CHOKE ASSEM.*	AA 6785-3	Q-25
L13	RATIO DET. COIL*	AA 6805-3	Q-29

	DESCRIPTION			PART NO.	LOCATION
R1	2200	OHMS	.5 W	BR 125-222	P-3
R2	1 MEG	"	.5 W	BR 125-105	M-7
R3	68	"	.5 W	BR 125-680	P-8
R4	33,000	"	.5 W	BR 125-333	N-9
R5	47	"	.5 W	BR 125-470	O-10
R6	1 MEG	"	.5 W	BR 125-105	O-11
R7	22,000	"	.5 W	BR 125-223	P-14
R8	22,000	"	2 W	DR 125-223	O-15
R9	1 MEG	"	.5 W	BR 125-105	N-14
R10	1000	"	.5 W	BR 125-102	O-16
R11	100,000	"	(C&R UNIT)	PA 4330-4	O-17
R12	82,000	"	(C&R UNIT)	PA 4330-5	N-18
R13	270	"	(C&R UNIT)	PA 4330-6	O-19
R14	1000	OHMS	.5 W	BR 125-102	N-20
R15	56,000	"	(C&R UNIT)	PA 4329-3	O-21
R16	1 MEG	"	(C&R UNIT)	PA 4330-8	P-22
R17	100,000	"	.5 W	BR 125-104	K-21
R18	330,000	"	.5 W	BR 125-334	J-21
R19	270	"	(C&R UNIT)	PA 4330-6	P-24
R20	15,000	"	.5 W	BR 125-153	R-25
R21	270	"	(C&R UNIT)	PA 4330-8	P-28
R22	1000	"	.5 W	BR 125-102	O-28
R23	39,000	"	(C&R UNIT)	PA 4330-7	O-29
R24	10 MEG	"	.5 W	BR 125-106	M-27
R25	VOLUME CONTROL			PA 4407-2	L-26
R27	650	OHMS	10 W	PA 4200-4	I-28
R28	200	"	.5 W	BR 125-201	O-29
R29	470	"	.5 W	BR 125-471	O-32
R30	15,000	"	.5 W	BR 125-153	O-31
R31	15,000	"	.5 W	BR 125-153	O-32
R32	220,000	"	.5 W	BR 125-224	N-31
R33	56,000	"	.5 W	BR 125-563	N-30
R34	TONE CONTROL & SWITCH			PA 4400-7	M-32
R35	470	OHMS	2 W	OR 125-471	L-32
T1	NO 1 I.F. TRANS ASSEM			AA 6768-3	Q-17
T2	NO 2 I.F. TRANS ASSEM			AA 6768-4	Q-20
T3	FM PLATE CHOKE			AA 6720-5	Q-25
T4	RATIO DETECTOR ASSEM			AA 6684-1	Q-29
T5	OUTPUT TRANS			AB 44058-2	J-32
T6	POWER TRANS			AB 44010-2	

DUMMY ANTENNA



C1 - 200 mmf. Condenser 400 V.D.C.
C2 - 400 mmf. Condenser 400 V.D.C.
C3 - .02 mmf. Condenser 400 V.D.C.
R - 100 Ohms Resistor 1/4 Watt
L - Choke Coil

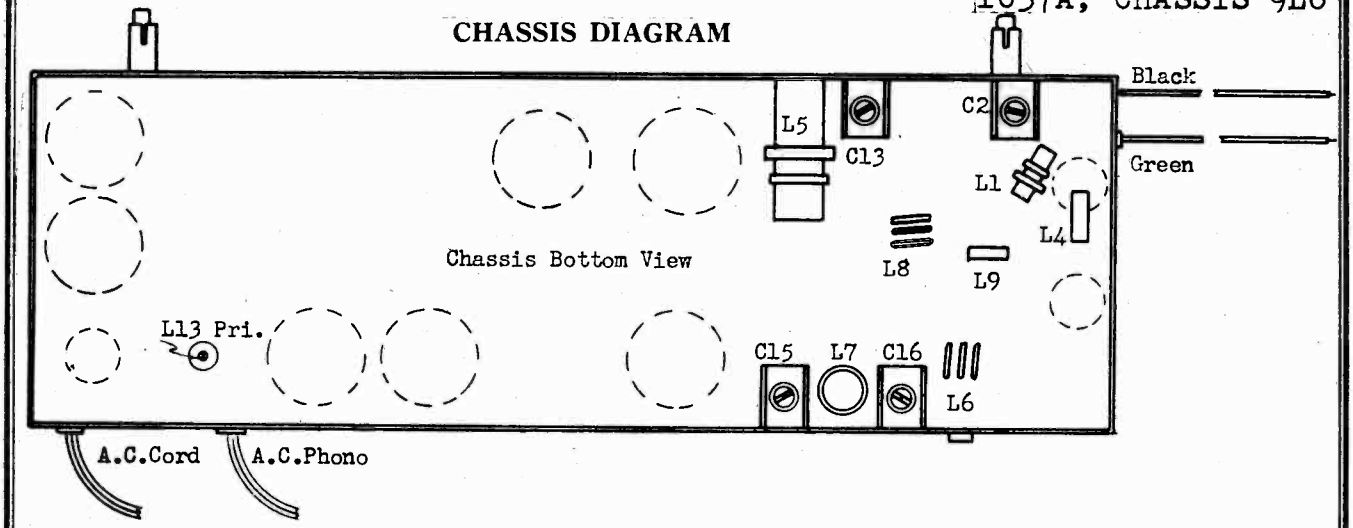
----Case Shield
Choke Coil Specification
Tubing - 3/8" Diameter Bakelite
Wire - No. 38 Enameled
Turns - 59 closely wound (Impregnated)

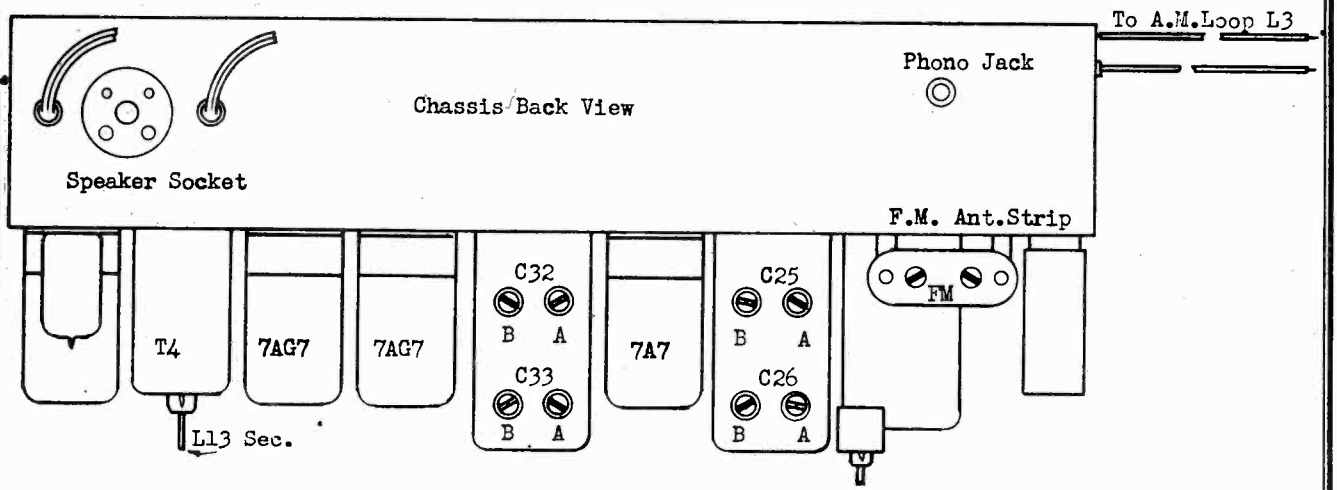
NOTE: When using this dummy antenna the generator output impedance should be 10 ohms or lower.

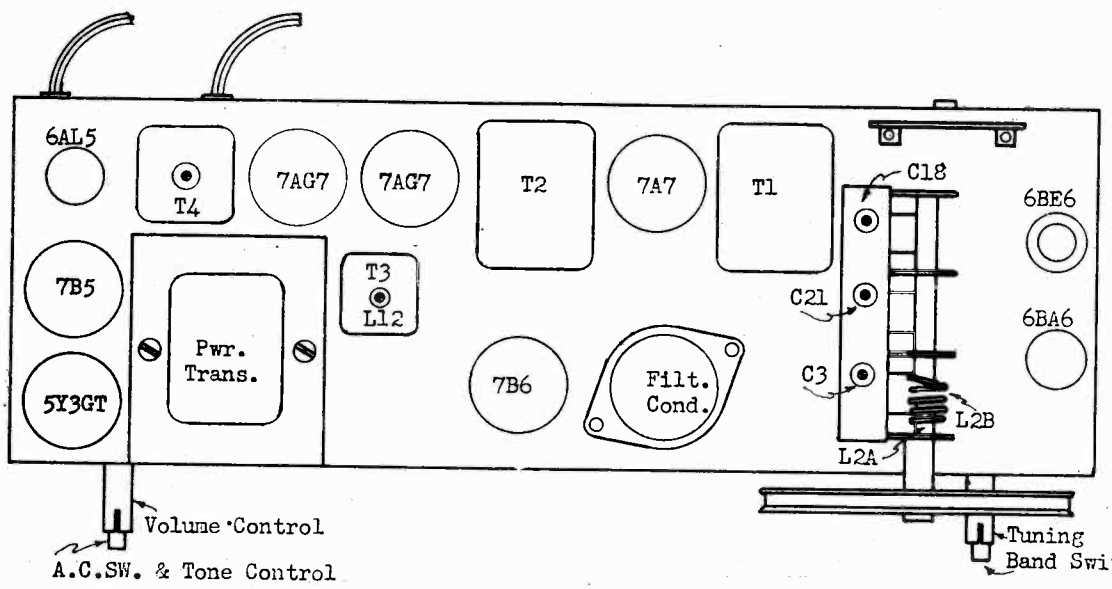
THE SPARKS-WITHINGTON CO.

MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8

CHASSIS DIAGRAM







MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8 — THE SPARKS-WITHINGTON CO.

STEP BY STEP ALIGNMENT PROCEDURE

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left-hand stop line with condenser gang closed.							
2	A.M.-I.F.	Pin #7 of 6BE6 Convt. Tube	.02 MFD. Cond.	456 KC.	BC.	Open	C33 A & B	Peak Accurately
							C26 A & B	" "
3	A.M.-R.F.	BC. Ant.	*	1500 KC.	BC.	1500 KC.	C15 Osc. Tr.	" "
							C13 R.F. Tr.	" "
							C2 Ant. Tr.	" "
4				600 KC.		600 KC.	C16 Osc. Pad.	**
5	Repeat operations 3 and 4.							
6	Check calibrations at 600, 1000 and 1500 Kc.							
7	SPECIAL NOTE: For complete F.M.-I.F. Visual alignment instructions please refer to pages 6, 7, 8, 9, 10, and 11.							
8	F.M.-I.F. Alignment using an A.M. Generator and Output Meter.							
9	T4 F. M. Ratio Det.	Pin #6 on 7AG7 Driver Tube	.05 MFD. Cond.	10.7 MC.	F.M.	Open 108 MC.	L13 Sec.	Max. Reading
							L13 Pri.	" "
10	NOTE: Operation #9 must be made with generator output as low as possible with maximum reading on output meter.							
11	T3 Plate Choke	Pin #6 on 7AG7 #2 I.F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	L12 Slug	Max. Reading
12	T2 F.M.-I.F.	Pin #6 on 7A7 I.F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C32 B	Peak Accurately
							C32 A	" "
13	NOTE: Operation #11 & 12 must be made with generator output as low as possible with maximum reading on output meter.							
14	Connect a 15,000 ohm resistor between pin #6 (Grid) on 7A7 tube to ground.							
15	T1 F.M.-I.F.	Pin #7 on 6BE6 Tube or C.T. on L6 coil	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C25 B	Peak Accurately
							C25 A	" "
16	NOTE: Operation #15 must be made with generator output as low as possible with maximum reading on output meter.							
17	Remove the 15,000 ohm resistor dummy from pin #6 on 7A7 tube, but leave generator coupled through .05 Mfd. condenser to pin #7 on 6BE6 tube or C.T. on L6 coil.							
18	Adjust L13 secondary slug on T4 ratio detector transformer to minimum deflection or dip on output meter. Under certain conditions it is possible to adjust L13 secondary slug to minimum noise with the receiver tuned to a weak station. This operation is very sharp and the receiver must be tuned to the center response only.							
19	F. M. - R. F. alignment using an A. M. Generator with frequencies of 88 to 108 Mc. and vacuum tube voltmeter, or D.C. Voltmeter. (20,000 ohms per volt).							
20	Place meter across C50 elect. condenser. (Meter reading approx. 1 volt.)							
21	F.M.-R.F.	F.M. Ant.	Match to 300 Ohms.	108 MC.	F. M.	108 MC.	C21 Osc. Tr.	Max. A.V.C. V.
							C18 R.F. Tr.	Peak Accurately
							C3 Ant. Tr.	" "
22	Check calibration at 88 Mc.							

NOTE:
* Use dummy antenna as described
** Rock dial while adjusting for maximum output.

MODELS 1035, 1035A, 1036, 1036A, 1037, 1037A, CHASSIS 9L8

THE SPARKS-WITHINGTON CO.

VOLTAGE CHART

Line Voltage: 117 Volts AC		Position of volume control: Full with set tuned to quiet channel. Position of Band Switch: Broadcast.							
TUBE	FUNCTION	Voltage of Sockets Prongs to Ground. See Prong Nos. on schematic.							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6BA6	R. F. Amplifier	**	.8	6.3*	0	230	98	.8	-
6BE6	Converter	-1	0	6.3*	0	225	83	0	-
7A7	1st I. F. Amplifier	6.3*	225	75	2.2	0	**	2.2	0
7AG7	2nd I. F. Amplifier (F.M.)	6.3*	220	220	1.8	0	**	1.8	0
7AG7	Driver (F.M.)	6.3*	210	220	1.5	0	**	1.8	0
7B6	2nd Det., A.V.C., & 1st Audio	6.3*	95	**	0	0	.5	0	0
6AL5	Ratio Det.	.25	0	0	6.3*	0	0	0	-
7B5	Power Amp.	0	250	230	0	0	**	14	6.3
5Y3GT	Rectifier	0	270	0	250*	0	250*	0	304

NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.

* AC Volts.

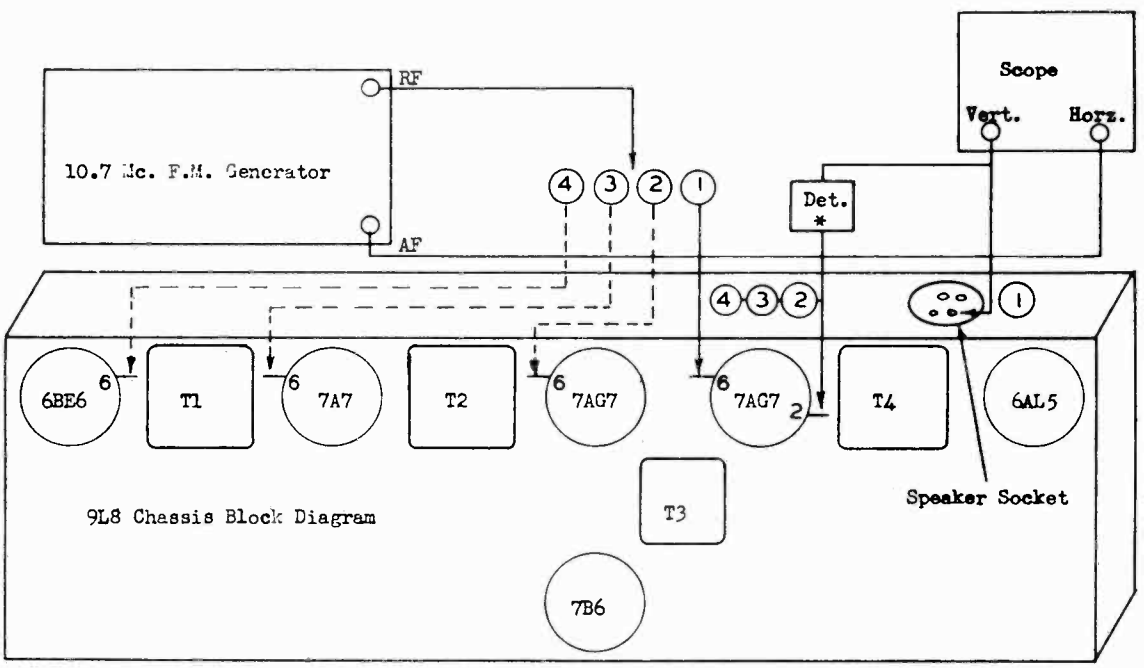
** Cannot be measured with 20,000 ohms per volt voltmeter.

VISUAL I. F.-F. M. ALIGNMENT DATA

1. DESCRIPTION OF CIRCUIT USED:

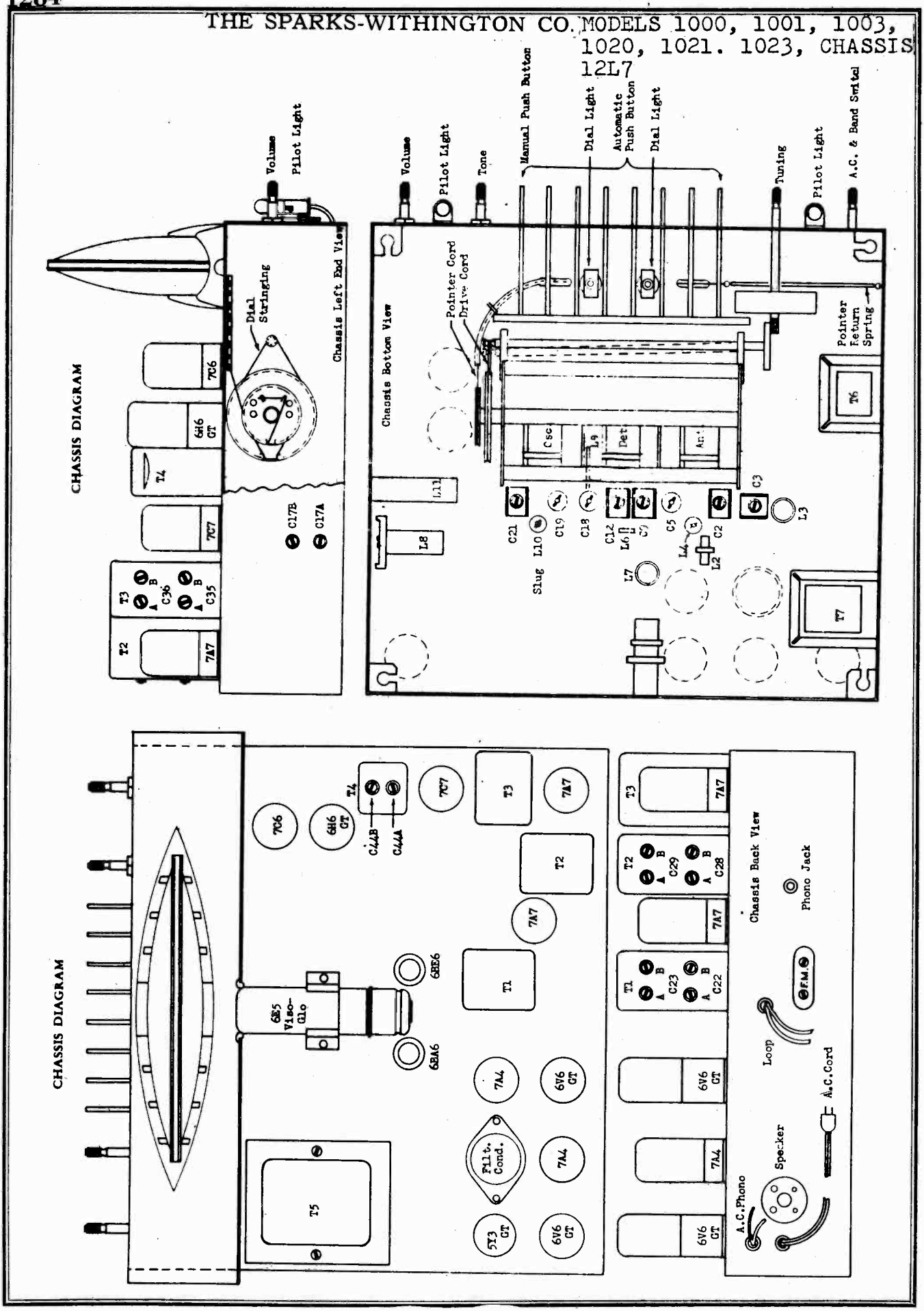
This circuit consists of a 6BE6 Converter, 7A7 1st I.F. (A.M. & F.M.), two 7AG7 2nd F.M.-I.F. Amplifier and Ratio Detector Driver, a 6AL5 Ratio Detector for F.M. The A.M.-I.F. frequency is 456 Kc. and the F.M. frequency is 10.7 Mc.

The diagram below shows the correct hook-up for generator and scope to the receiver circuit.



Gen. & Scope Position	Use
1	Align Ratio Det. - Adjust T4
2	Align Plate Choke - Adjust T3
3	Align I.F. - Adjust T2
4	Align I.F. - Adjust T1
*	See paragraph 3 (e) under equipment required.

THE SPARKS-WITHINGTON CO. MODELS 1000, 1001, 1003, 1020, 1021. 1023, CHASSIS 12L7

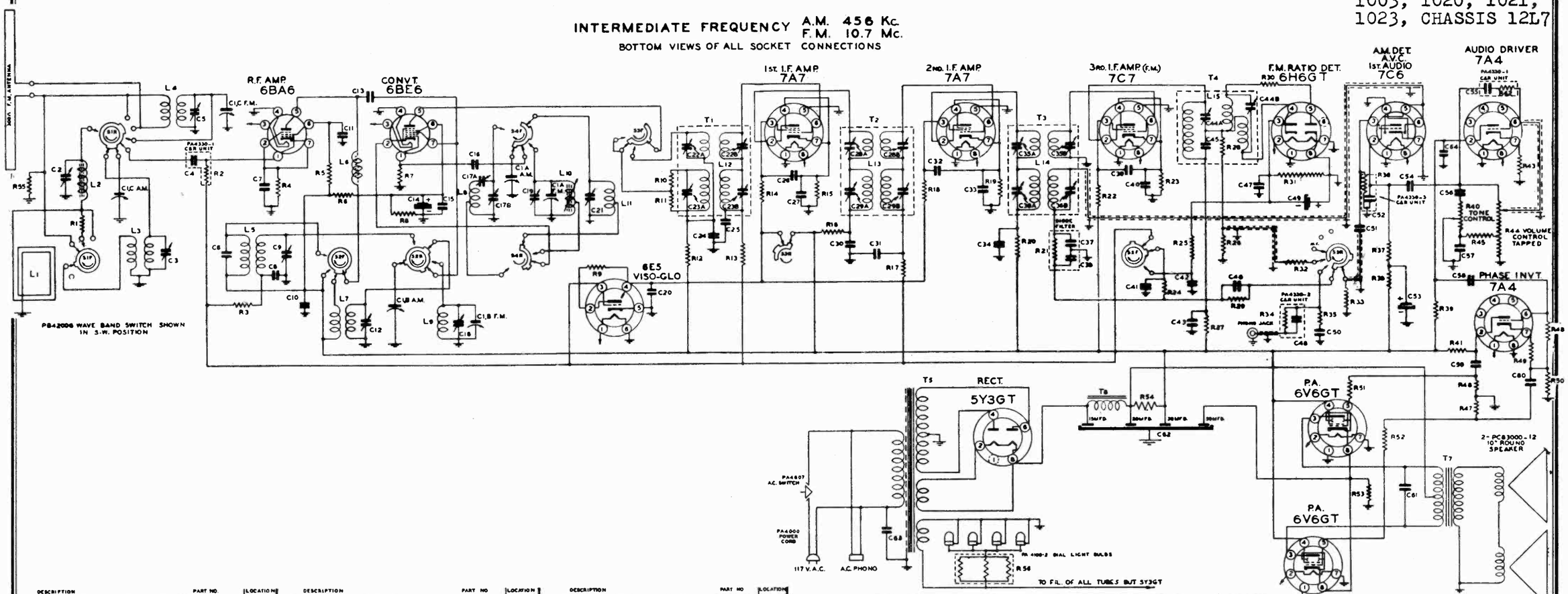


THE SPARKS-WITHINGTON CO.

MODELS 1000, 1001, 1003, 1020, 1021, 1023, CHASSIS 12L7

INTERMEDIATE FREQUENCY A.M. 456 Kc. F.M. 10.7 Mc.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



DESCRIPTION	PART NO.	LOCATION
C1A A.M. B.A.M. C.A.M. 3 GANG CONDENSER	PC65000	OM, M11, P4
C1A F.M. B.F.M. C.F.M. " " "		PM, M10, R7
C2 B.C. ANT. TRIMMER	PA4378-2	O-2
C3 S.W. ANT. TRIMMER	PA4352-2	O-5
C4 100 MMF. COND. (C&R UNIT)	PA4330-1	O-5
C5 T.M. ANT. TRIMMER	PA4365-1	R-6
C6 51 MMF. CERAMIC	CC30H-510K	O-6
C7 .01 MFD. 100 V. MOLDED PAPER	PA4325-1	P-8
C8 .01 MFD. 100 V. " "	PA4325-1	N-8
C9 B.C. R.F. TRIMMER	PA4378-2	O-8
C10 1000 MMF. CERAMIC	PA4328-8	M-9
C11 1000 MMF. "	PA4328-8	R-10
C12 S.W. R.F. TRIMMER	PA4378-2	M-10
C13 5 MMF. CERAMIC	PA4328-7	S-10
C14 4 MFD. 250 V. ELECTRO. COND.	PA4303-8	P-12
C15 1000 MMF. CERAMIC	PA4328-8	P-12
C16 51 MMF. "	CC30H-510K	O-13
C17A B.C. OSC. PAD. C17B B.C. OSC. TRIM.	AB43500-38	O-13
C18 F.M. R.F. TRIMMER	PA4365-1	M-13
C19 F.M. OSC. "	PA4365-1	P-15
C20 .05 MFD. 400 V. TUBULAR	PC40HL-503	M-18
C21 S.W. OSC. TRIMMER	PA4378-2	P-16
C22 A&B NO. 1 I.F. TRIMMER F.M. *	PA4359-3	Q19-20
C23 A&B NO. 2 I.F. " A.M. *	PA4359-1	P19-20
C24 .01 MFD. 400 V. PAPER MOLDED	PC45GL-103	O-19
C25 .01 MFD. 200 V. " "	PC45GK-103	O-19
C26 .01 MFD. 200 V. " "	PA4325-4	N-21
C27 .01 MFD. 200 V. " "	PC45GK-103	P-21
C28 A&B NO. 2 I.F. TRIMMER F.M. *	PA4359-1	Q23-24
C29 A&B NO. 2 I.F. " A.M. *	PA4359-1	P23-24
C30 .05 MFD. 400 V. TUBULAR	PC40HL-503	P-23
C31 .01 MFD. 600 V. PAPER MOLDED	PC4GK-103	P-23
C32 .01 MFD. 300 V. " "	PA4325-4	O-25
C33 .01 MFD. 200 V. " "	PC45GK-103	P-25
C34 .05 MFD. 400 V. TUBULAR	PC40HL-503	P-25
C35 A&B NO. 3 I.F. TRIMMER F.M. *	PA4359-1	Q27-28
C36 A&B NO. 3 I.F. " A.M. *	PA4359-3	P27-28
C37 100 MMF. — DIODE FILTER UNIT	PA4329-1	O-28
C38 100 MMF. —		P-28
C39 .01 MFD. 300 V. PAPER MOLDED	PA4325-4	Q-30
C40 .01 MFD. 200 V. " "	PC45GK-103	P-30
C41 .1 MFD. 200 V. TUBULAR	PC40HK-104	N-30
C42 .001 MFD. 200 V. PAPER MOLDED	PA4325-2	N-31
C43 .05 MFD. 400 V. TUBULAR	PC40HL-503	N-31
C44 A&B RATIO DET. TRIMMER *	PA4359-1	R32-33
C45 51 MMF. MICA	MC60F-510	O-32
C46 220 MMF. "	MC60G-331	N-33
C47 1000 " CERAMIC	PA4328-8	P-33
C48 220 " (C&R UNIT)	PA4330-2	M-34
C49 3 MFD. 50 V. ELECTRO. COND.	PA4308-1	P-34
C50 .01 MFD. 200 V. TUBULAR	PC40HK-103	L-35
C51 .01 " 100 V. PAPER MOLDED	PA4325-1	O-36
C52 100 MMF. (C&R UNIT)	PA4330-3	P-36
C53 4 MFD. 400 V. ELECTRO. COND.	PA4303-1	M-37

DESCRIPTION	PART NO.	LOCATION
C54 .05 MFD. 400 V. TUBULAR	PC40HL-503	P-37
C55 100 MMF. (C&R UNIT)	PA4330-1	S-40
C56 .005 MFD. 200 V. TUBULAR	PC40HK-502	P-39
C57 .01 MFD. 200 V. " "	PC40HK-103	P-39
C58 .05 MFD. 400 V. " "	PC40HL-503	N-38
C59 .05 MFD. 400 V. " "	PC40HL-503	K-39
C60 .05 MFD. 400 V. " "	PC40HL-503	K-40
C61 .1 MFD. 1000 V. " "	PC40HK-602	M-37
C62 ELECTRO. COND. 30, 20, 15 MFD. 450 V. 50 MFD. 25 V.	PA 4307-1	J-28, 30, 32
C63 .05 MFD. 600 V. PAPER MOLDED	PC45GM-503	H-24
C64 150 MMF. MICA	MC60F-151	Q-38

	DESCRIPTION				PART NO.	LOCATION
R1	2200	OHMS	½	W.	BR125-222	P-2
R2	100,000	"	"	(C&R UNIT)	PA4330-1	P-8
R3	100,000	"	"	W.	BR125-104	M-7
R4	68	"	"	"	BR125-680	P-8
R5	47,000	"	1	W.	CR125-473	Q-9
R6	15,000	"	2	"	BR125-153	P-10
R7	22,000	"	½	"	BR125-223	Q-11
R8	22,000	"	1	"	CR125-223	P-11
R9	1 MEGOHM	"	½	"	BR125-105	O-18
R10	220,000	OHMS	"	"	BR125-224	P-18
R11	10,000	"	"	"	BR125-103	P-18
R12	10,000	"	"	"	BR125-103	O-18
R13	100,000	"	"	"	BR125-104	O-20
R14	68,000	"	"	"	BR125-683	P-20
R15	330	"	"	"	BR125-331	P-22
R16	4700	"	"	"	BR125-472	O-22
R17	100,000	"	"	"	BR125-104	O-24
R18	68,000	"	"	"	BR125-683	P-25
R19	330	"	"	"	BR125-331	P-27
R20	4700	"	"	"	BR125-472	P-27
R21	47,000	"	"	(DIODE FILTER)	PA4329-1	O-28
R22	220,000	"	½	W.	BR125-224	P-31
R23	1000	"	"	"	BR125-102	P-31
R24	2.2 MEGOHM	"	"	"	BR125-225	N-31
R25	1	"	"	"	BR125-105	O-31
R26	470,000	OHMS	"	"	BR125-474	O-33
R27	4700	"	"	"	BR125-472	M-32
R28	10,000	"	"	"	BR125-103	Q-32
R29	470,000	"	"	"	BR125-474	M-33
R30	47	"	"	"	BR125-470	O-33
R31	15,000	"	"	"	BR125-153	O-34
R32	150,000	"	"	"	BR125-154	M-34
R33	22,000	"	"	"	BR125-223	M-34
R34	2.2 MEGOHM	"	"	(C&R UNIT)	PA4330-2	M-34
R35	10,000	OHMS	"	W.	BR125-103	M-35
R36	15 MEGOHM	"	"	(C&R UNIT)	PA4330-3	O-37
R37	220,000	OHMS	"	W.	BR125-224	O-37
R38	33,000	"	"	"	BR125-333	N-37

	DESCRIPTION				PART NO.	LOCATION
R39	100,000	OHMS	½	W.	BR125-104	M-38
R40	TONE CONTROL				PA4409-1	P-39
R41	47,000	OHMS	½	W.	BR125-473	L-39
R42	100,000	"	"	(C&R UNIT)	PA4330-1	S-40
R43	2700	"	½	W.	BR125-272	P-40
R44	VOLUME CONTROL				PA4408-1	O-40
R45	22,000	OHMS	½	W.	BR125-223	O-38
R46	470,000	"	"	"	BR125-474	K-39
R47	470,000	"	"	"	BR125-474	K-39
R48	470,000	"	"	"	BR125-474	M-41
R49	2700	"	"	"	BR125-272	L-40
R50	47,000	"	"	"	BR125-473	K-41
R51	1500	"	2	"	BR125-152	K-36
R52	1500	"	2	"	BR125-152	J-36
R53	220	"	2	"	BR125-221	H-36
R54	470	"	2	"	BR125-471	K-31
R55	100,000	"	½	"	BR125-104	O-1
R56	3.3	"	½	"	AA6887-1	O-26

	DESCRIPTION	PART NO.	LOCATION
L1	B.C. LOOP ASSEMBLY	AC67006-2	N-1
L2	B.C. ANT. LOADING COIL ASSEM.	AA6780-3	O-3
L3	S.W. ANT. COIL	AA8758-7	O-4
L4	F.M. " "	AA8767-8	R-5
L5	B.C. R.F. "	AA8758-5	N-7
L6	S.W. R.F. "	AA8758-3	O-10
L7	R.F. CHOKE COIL	AA8780-8	P-10
L8	S.W. R.F. "	AA8780-6	P-13
L9	B.C. OSC. "	AA8752-8	P-13
L10	F.M. R.F. "	PA32234	M-13
L11	F.M. OSC. " ASSEM.	AA8767-7	P-15
L11	S.W. OSC. "	AA6770-3	P-17
L12	NO. 1 I.F. COIL ASSEMBLY *	AA8803-2	O-19
L13	NO. 2 I.F. " *	AA8803-3	O-25
L14	NO. 3 I.F. " *	AA8803-2	O-26
L15	RATIO DETECTOR COIL ASSEM. *	AA8805-2	O-32

	DESCRIPTION	PART NO.	LOCATION
T1	NO. 1 I.F. TRANS ASSEM. *	AA6788-5	O-19
T2	NO. 2 I.F. " " *	AA6788-6	O-23
T3	NO. 3 I.F. " " *	AA6788-7	O-28
T4	RATIO DET. TRANS.	AA8805-2	O-32
T5	POWER TRANS	AA6788-4	M-35
T6	FILTER CHOKE	AA6788-3	K-37
T7	OUTPUT TRANS.	AA6788-1	I-38

T1 NO. 1 I.F. TRANS. — AA6788-5*

T2 NO. 2 I.F. TRANS. — AA6788-6*

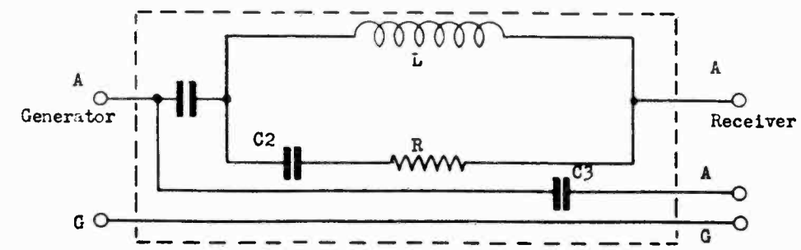
T3 NO. 3 I.F. TRANS. — AA6788-7*

T4 RATIO DET. TRANS. — AA8805-2*

TERMINAL HOOKUP FOR L12, L13, L14 & L15.

*SPECIAL SERVICE NOTE: THESE TRANSFORMERS SUPPLIED AS COMPLETE ASSEMBLIES ONLY.

DUMMY ANTENNA



C1-200 mmf. Condenser 400 V.D.C.
C2-400 mmf. Condenser 400 V.D.C.
C3-.02 mmf. Condenser 400 V.D.C.
R-100 ohms Resistor 1/4 Watt
L-Choke Coil

----Case Shield
Choke Coil Specification
Tubing - 3/8" Diameter Bakelite
Wire - No. 38 Enameled
Turns - 59 closely wound (Impregnated)

NOTE: When using this dummy antenna the generator output impedence should be 10 ohms or lower.

MODELS 1000, 1001, 1003, 1020, 1021, 1023, CHASSIS 12L7 — THE SPARKS-WITHINGTON CO.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer to 88 Mc. with gang condenser closed.							
2	A. M. I. F.	Center A. M. Section of Gang Condenser	*	456 KC.	BC.	Open	C36 A & B T3	Peak Accurately
							C29 A & B T2	" "
							C23 A & B T1	" "
3	BC. R.F.	Ant.	*	1600 KC.	BC.	1600 KC.	C17B Osc. Tr.	" "
4				1400 KC.		1400 KC.	C9 R.F. Tr.	**
							C2 Ant. Tr.	Peak Accurately
5				600 KC.		600 KC.	C17A Osc. Pad.	**
6	Repeat operations 2, 3, and 4.							
7	Check calibrations at 600 Kc., 1000 Kc., and 1400 Kc.							
8	S. W. R. F.	Ant.	*	16 MC.	S. W.	16 MC.	C21 Osc. Tr.	Max. A. V. C.
							C12 R.F. Tr.	Peak Accurately
							C3 Ant. Tr.	" "
9	Repeat operation #8.							
10	Check calibrations at 6 Mc., 10 Mc., and 16 Mc.							
11	SPECIAL NOTE: For complete F.M.-I.F. visual alignment instructions please refer to pages 7, 8, 9, 10, 11, and 12, of this bulletin.							
12	F.M.-I.F. alignment using A.M. Generator and Output Meter.							
13	T4 F. M. Ratio Det.	Pin #6 on 7C7 3rd I. F. Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C44A	Peak Accurately
							C44B	" "
14	NOTE: Operation #13 must be made with generator output as low as possible, consistent with usable output meter reading.							
15	Connect a 15,000 ohm resistor (to prevent overcoupling) between pin #6 (grid) on 7C7 3rd I. F. Amp. tube to gnd. After operation #16 is completed leave resistor connected for operations to follow.							
16	T3 F.M.-I.F.	Pin #6 of 2nd 7A7 Tube	.05 MFD. Cond.	10.7 MC.	F. M.	108 MC.	C35B	Peak Accurately
							C35A	" "
17	Connect a 15,000 ohm resistor between Pin #6 on 2nd 7A7 I. F. Amp. and Gnd. After operation #18 is completed leave resistor connected for operations to follow.							
18	T2 F.M.-I.F.	Pin #6 of 2nd 7A7 I.F.Amp.	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C28B Sec.	Peak Accurately
							C28A Pri.	" "
19	NOTE: Operation #18 must be made with generator output as low as possible, consistent with usable output meter reading.							
20	Connect another 15,000 ohm resistor between Pin #6 (Grid) on 1st 7A7 tube to Gnd. After operation #21 is completed leave resistor connected for operations to follow.							
21	T1 F.M.-I.F.	Center Sec. of Gang Condenser	.05 MFD. Cond.	10.7 MC.	F. M.	Open 108 MC.	C22B Sec.	Peak Accurately
							C22A Pri.	" "
22	NOTE: Operation #21 must be made with generator output as low as possible, consistent with usable output meter reading.							
23	Repeat operations 13, 16, 18, and 21.							
24	Remove the three 15,000 ohm resistor dummies from Pin #6 on the two 7A7 and the 7C6 tubes but leave generator coupled through the .05 MFD. Cond. to the center F.M. Section of Gang Condenser.							
25	Adjust C44B secondary trimmer on T4 ratio detector transformer to minimum deflection or dip on output meter. Under certain conditions it is possible to adjust C44B secondary trimmer to minimum noise with the receiver tuned to a weak station. This operation is very sharp and the receiver must be tuned to the center response only.							
26	Repeat operation #25.							
27	F.M.-R.F. alignment using an A.M. generator with frequency of 88 to 108 Mc. and vacuum tube voltmeter, D.C. Voltmeter (20,000 ohms per volt).							
28	Place meter across C49 Elect. Cond. Meter reading approx. 1 Volt.							

NOTE: * Use dummy antenna
** Rock dial while adjusting for maximum output.

THE SPARKS-WITHINGTON CO. — MODELS 1000, 1001, 1003, 1020, 1021, 1023, CHASSIS 12L7

ALIGNMENT CHART

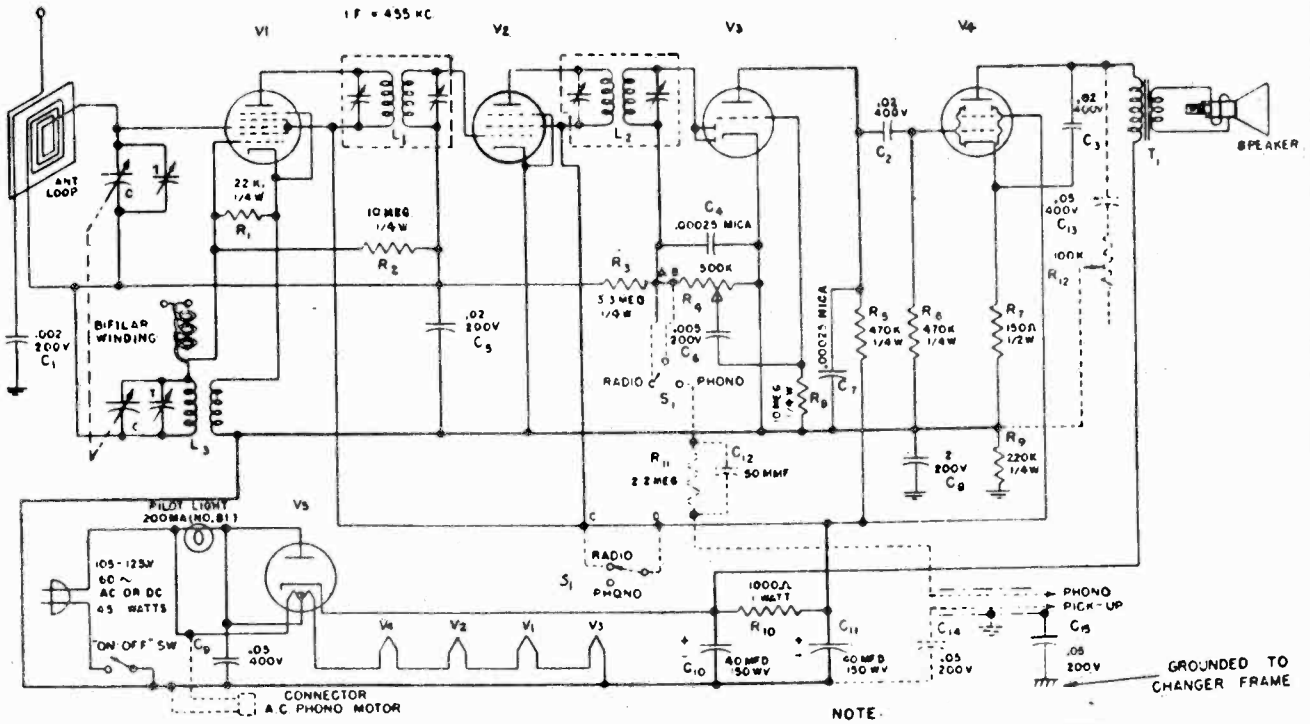
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANT.	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
29	F. M. R. F.	Ant.	Match to 300 Ohms	108 MC.	F. M.	108 MC.	C19 F.M.Osc.	Max. A. V. C. V.
							C18 F.M.-R.F.	Peak Accurately
							C5 F.M. Ant.	"
30	Repeat operation #29.							
31	Check calibration at 88 and 100 Mc.							

VOLTAGE CHART

Line Voltage: 117 Volts AC — Position of volume control: Full with set tuned to quiet channel. Position of Band Switch: Broadcast. — Voltage of Sockets Prongs to Ground See Prong Nos. on schematic.

TUBE	FUNCTION	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6BA6	R. F. Amp.	-.15	.65	6.2*	0	235	80	.55	-
6BE6	Converter	-9.0	0	6.2*	0	205	75	-.40	-
7A7	No. 1 I.F. Amp.	0	205	95	2.7	0	-.20	2.7	6.2*
7A7	No. 2 I.F. Amp.	0	205	95	2.7	0	-.20	2.7	6.2*
7C7	No. 3 I.F. Amp. (F.M.)	0	225	100	3.2	0	0	3.2	6.2*
6H6GT	Ratio Det. (F.M.)	0	0	-.15	**	**	-	6.2*	.15
7C6	Det., A.V.C., & 1st A.F.(A.M.)	0	120	-.20	0	-.35	-.35	0	6.2*
7A4	No. 2 A.F. Amp.	0	85	235	75	80	0	0	6.2*
7A4	Phase Inverter	6.2*	160	-	-	70	13	75	0
6V6GT	Power Amp. (2)	0	6.2*	250	235	0	0	0	13
5Y3GT	Rectifier	-	260	-	260*	-	260*	-	260
6E5	Tuning Eye (Viso-Glo)	6.2*	**	-.40	235	0	-	-	-

NOTES: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.
* AC Volts.
** Cannot be measured with 20,000 Ohms per volt voltmeter.



NOTICE: ON SETS HAVING THREE (3) CONTROLS, R12 & C13 ARE OMITTED.

NOTE:

(1) POINTS A-B, C-D JUMPED IN RADIO MODELS. SWITCH S_1 USED IN RADIO-PHONO COMBINATION

(2) DOTTED LINES IN CIRCUIT USED IN PHONO-COMBINATION ONLY

(3) RADIO POWER INPUT IS 30 WATTS, WITH PHONO 45 WATTS.

(4) C_{15} USED ON MODEL 6547 ONLY.

(5) WARNING! — DO NOT USE PHONO ON D.C.

TUBE COMPLEMENT

TUBE	LOCTAL	OCTAL	MINIATURE
V_1	14Q7		12BE6
V_2	14A7		12BA6
V_3	14B6		12AT6
V_4	50A5	50L6	50B5
V_5	35Y4		35W4

Figure 4. Schematic Diagram

PARTS LIST:

C 1—.002 Mfd., 200V paper
C 2—.02 Mfd., 400V paper
C 3—.02 Mfd., 400V paper
C 4—.00025 Mfd., mica
C 5—.02 Mfd., 200V paper
C 6—.005 Mfd., 200V paper
C 7—.00025 Mfd., mica
C 8—.25 Mfd. (or .20 Mfd.), 200V paper
C 9—.05 Mfd., 400V, molded bakelite
C10, 11—Dual 40 Mfd., 150V (*A-25.019)
C12—50 Mmfd., mica
C13—.05 Mfd., 400V
C14—.05 Mfd., 200V
C15—.05 Mfd., 200V
R 1—22K, ¼W, 20%
R 2—10 meg., ¼W, 20%
R 3—3.3 meg., ¼W, 20%
R 4—500K variable, audio taper, with SPST (*A-9.066)
R 5—470K, ¼W, 20%
R 6—470K, ¼W, 20%
R 7—150 ohms, ½W, 10%
R 8—10 meg., ¼W, 20%
R 9—220K, ¼W, 20%
R10—1000 ohms, 2W (or 1W), 20%
R11—2.2 meg., ¼W, 20%
L 1—Transformer, IF input, 455KC (*C-2.191-1)
L 2—Transformer, IF output, 455KC (*C-2.191-2)
L 3—Coil, oscillator (*B-2.192)
Antenna, loop (*B-5.006)
Loudspeaker, PM, 5" Trans. to match 50A5 (*B-11.037)
Pilot light, Mazda No. 51, 200 Ma.

* Mfg. Part No.

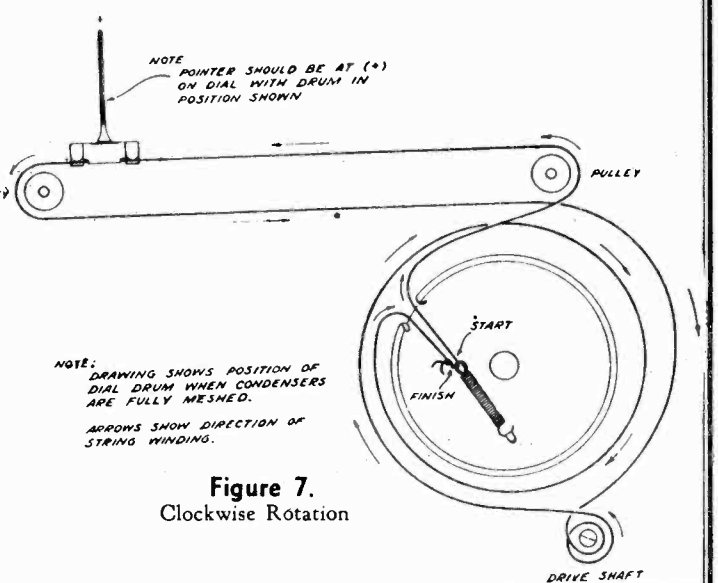


Figure 7.
Clockwise Rotation

Tube Complement:

loctal	*octal*	*miniature*	*function*
V_1—14Q7		12BE6	Osc., Conv.
V_2—14A7		12BA6	I.F. Amp.
V_3—14B6		12AT6	Det., A.V.C., Amp.
V_4—50A5	50L6	50B5	Power Amp.
V_5—35Y4		35W4	Rectifier

Loctal base tubes have a special locking arrangement which holds the tubes securely in the sockets. To remove a tube, use slightly off-side pressure towards socket rivet, thus releasing the socket lock.

This is a 5-tube Superheterodyne radio receiver designed to operate on:

1. 105-125 volts A.C. 60 cycles.
2. *105-125 volts D.C.

This receiver operates on the standard broadcast band, 540-1700 KC.

* Operate phonograph on A.C. only.

ALIGNMENT PROCEDURE.

Steps	*Connect output of oscillator to*	*Tune osc. to*	*Tune radio dial to*	*Adjust the following for max. peak output*
1	Tuning condenser stator (ant.) in series with .01 mfd.	455	Quiet point at high frequency end of dial.	1st and 2nd I.F. Transformers
2	Antenna term. of Ant. loop in series with 100 mmf.	1720	Full clockwise (out of mesh)	Osc. trimmer
3	Antenna term. of Ant. loop in series with 100 mmf.	1500	1500	Ant. trimmer

Output meter is connected across voice coil.

Receiver volume is turned to maximum

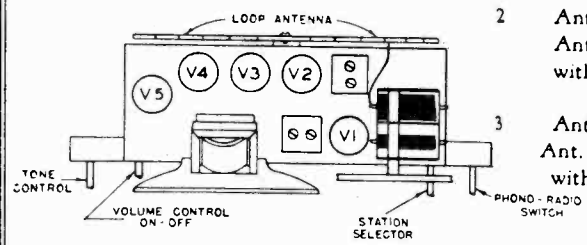


Fig. 3. Tube and Trimmer Locations—4-Control

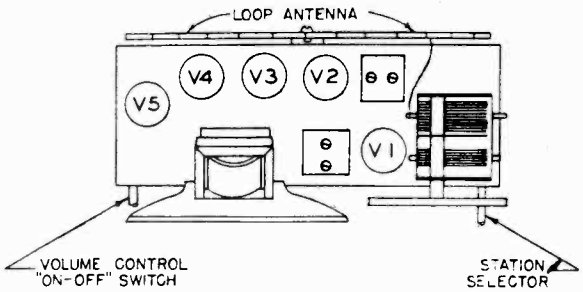


Fig. 1. Tube and Trimmer Locations—2-Control

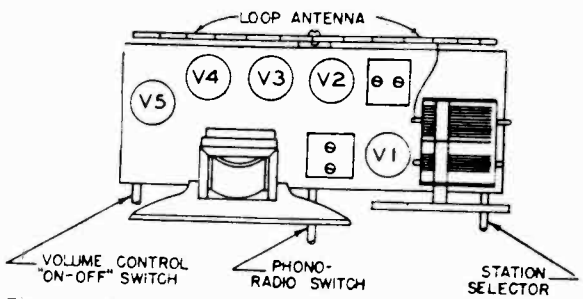
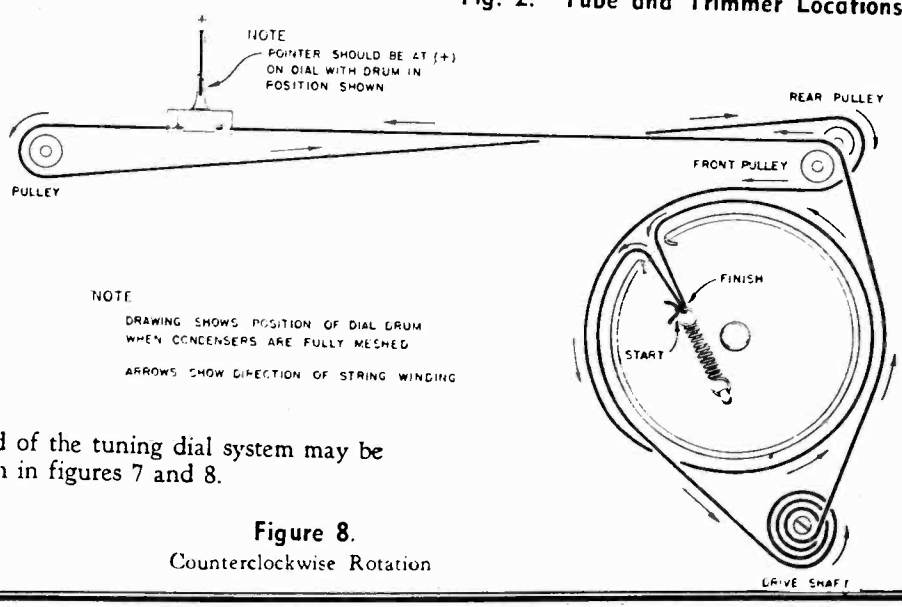
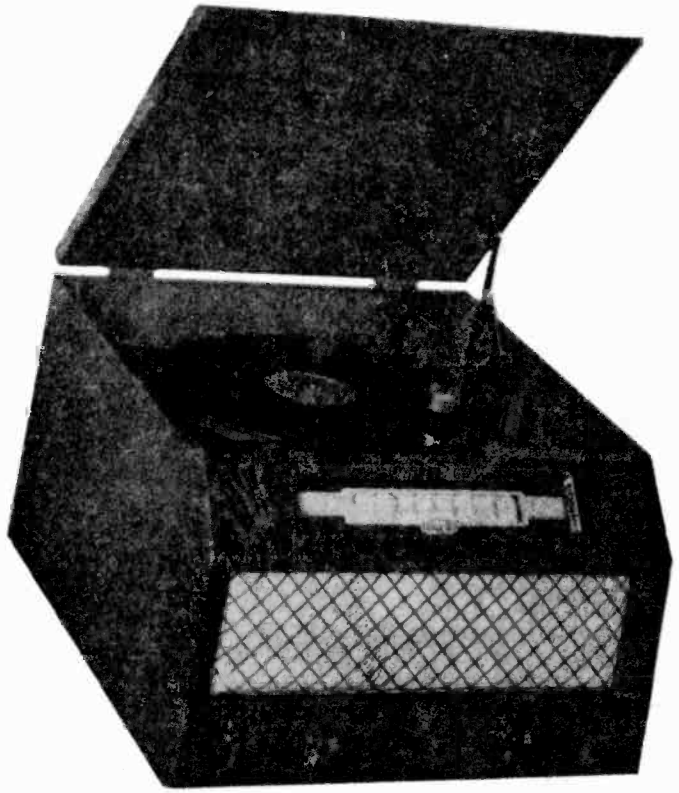


Fig. 2. Tube and Trimmer Locations—3-Control



Nylon cord of the tuning dial system may be replaced as shown in figures 7 and 8.

Figure 8.
Counterclockwise Rotation



Operation: The set operates on 110 to 120 volts, 60 cycles A.C. only. Power drain is approximately 25 watts for radio and about 10 watts additional for the motor.

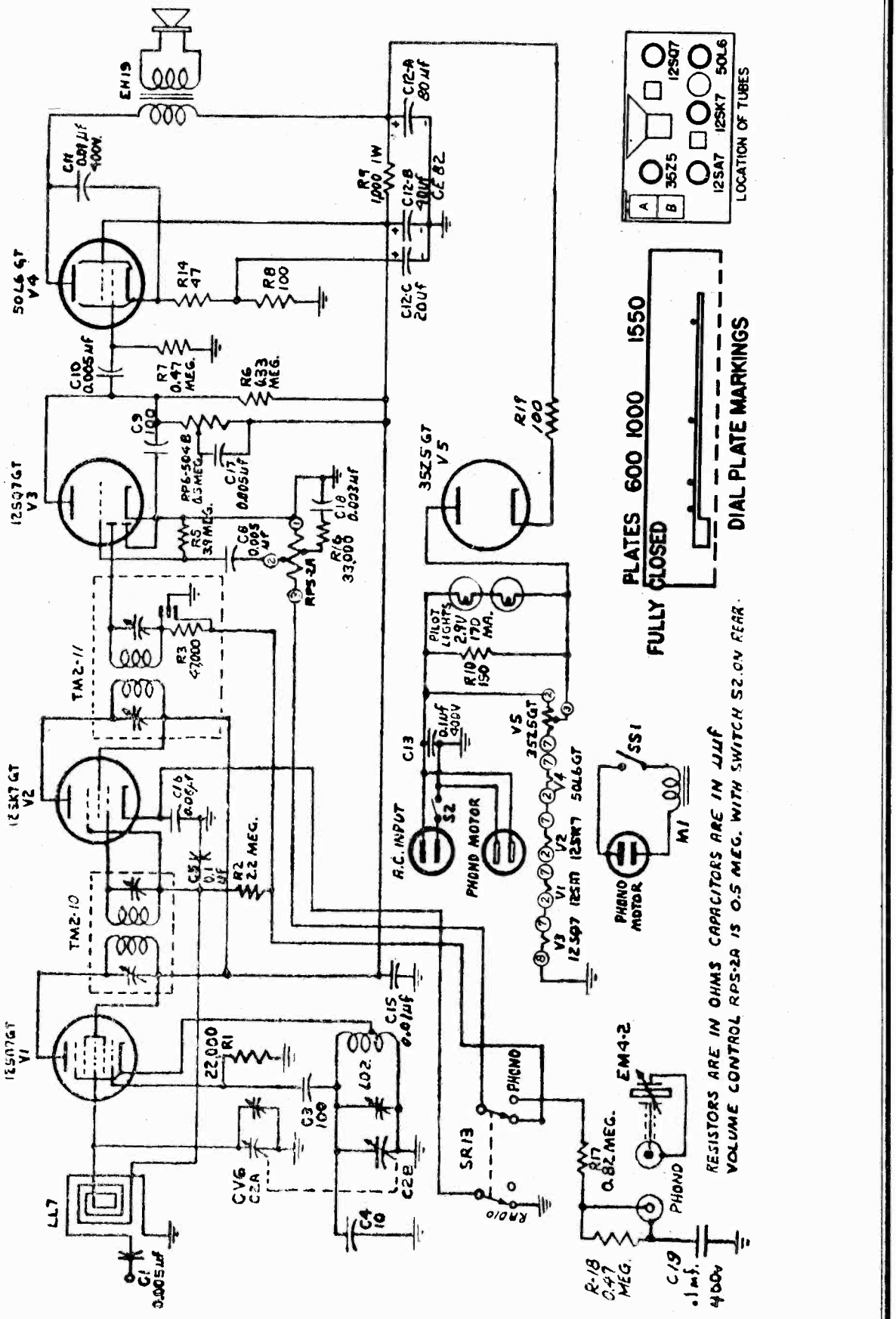
Range: Model G-516 covers the broadcast band from 540 to 1620 kilcycles. Since the scale is calibrated 54 to 160, the actual frequency of the station received is obtained by adding a zero to the dial calibration.

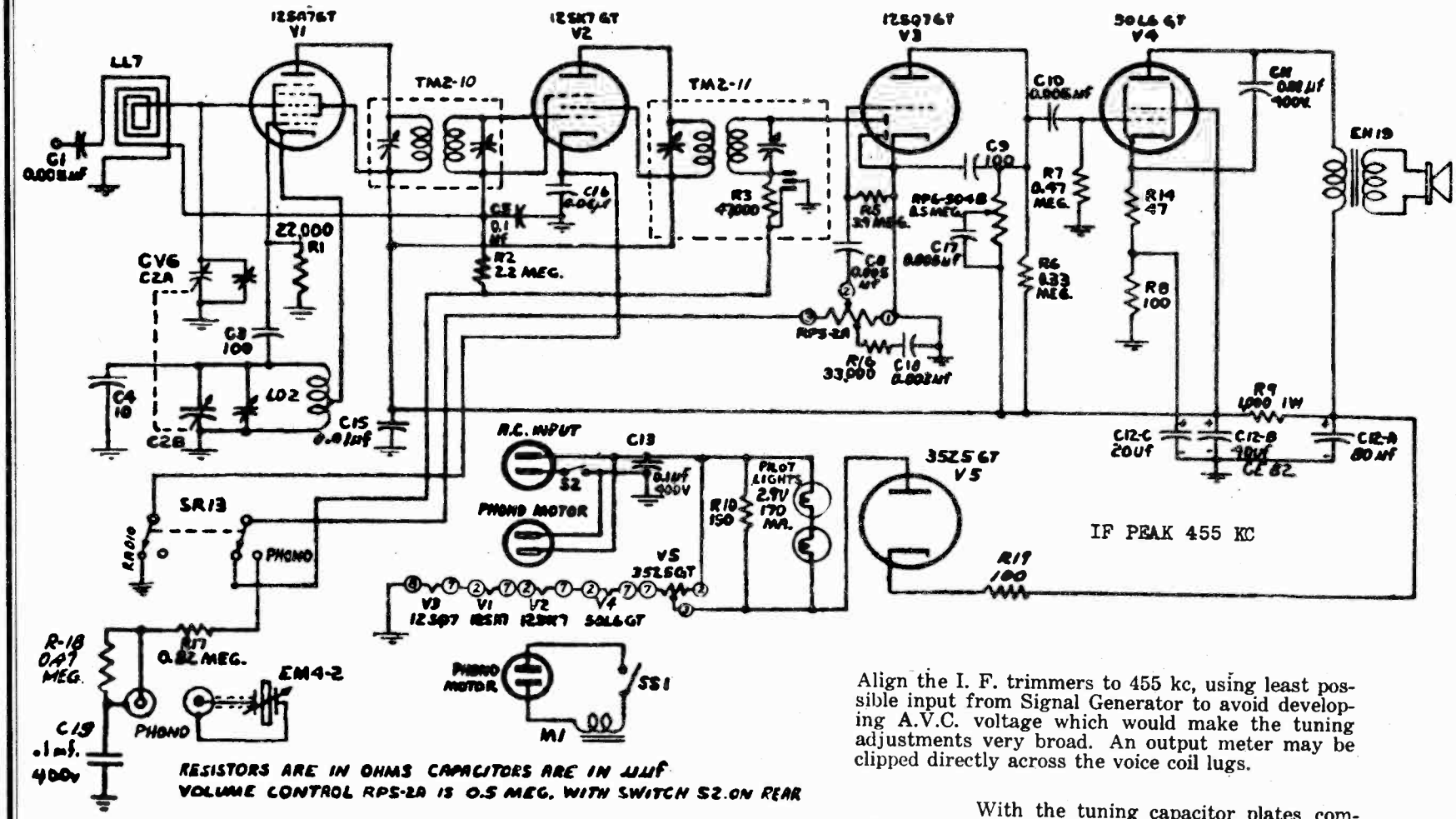
Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for the faulty reception.

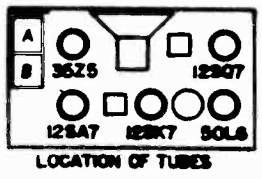
The Signal Generator may be connected through a 0.01 mf capacitor (used as dummy antenna) to the lug on RF section (B) of tuning capacitor. Connect ground clip of generator directly to chassis. Align the I. F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C.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

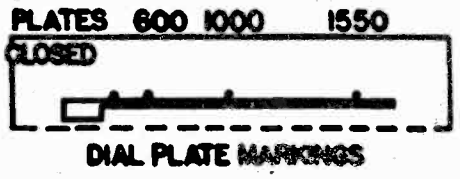
To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal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

MODEL G-516 SPIEGEL









Align the I. F. trimmers to 455 kc, using least possible input from Signal Generator to avoid developing A.V.C. voltage which would make the tuning adjustments very broad. An output meter may be clipped directly across the voice coil lugs.

With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (A) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (B) (on rear section) for maximum response. With tuning capacitor plates fully meshed, the receiver should tune to 532 kc; however, no adjustment is required at this point. For checking purposes, four fine marks are engraved on the dial plate. These represent, in order, the pointer position with capacitor plates fully meshed, and the pointer setting for 600, 1000 and 1550 kc.

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

1—AM signal generator covering 455 KC, 600 KC, 1550 KC and 10.7 MC

2—FM signal generator covering 10.7 MC, 92 MC and 106 MC

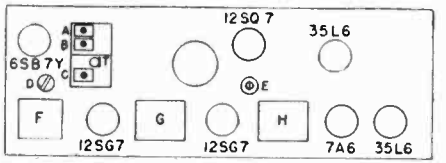
3—Output meter, rectifier type, approximately 0 to 2 volts RMS

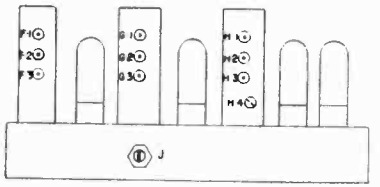
4—Dummy antennas

0.01 MFD Capacitor

300 Ohm Resistor

100MMFD Mica Capacitor



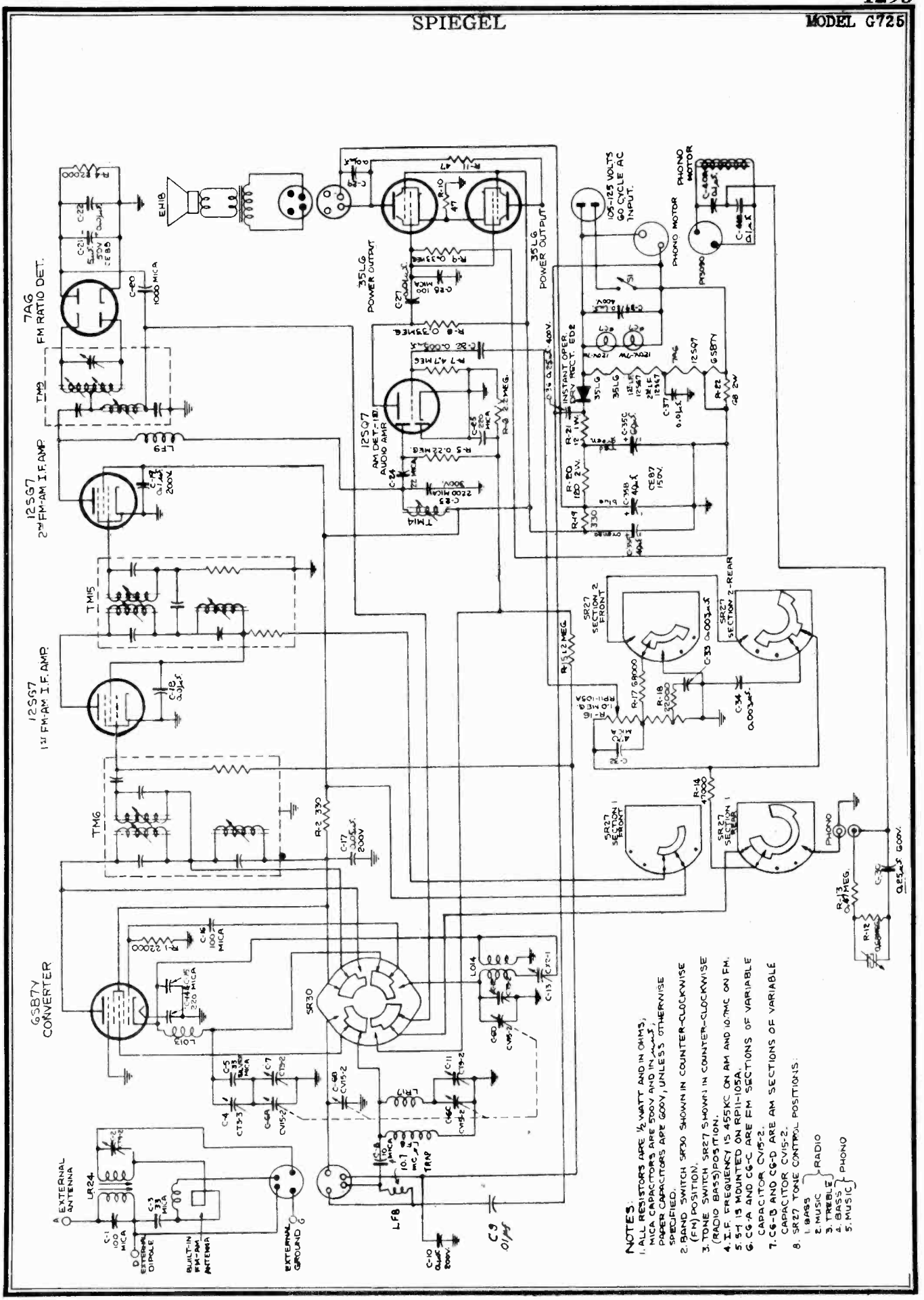


In the following alignment procedure the high side of the signal generator is connected to the terminal indicated in the "Signal Generator Coupling" column below. The ground side of the signal generator is connected directly to the chassis. The output meter should be connected across the voice coil of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

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

Dummy Antenna	Signal Generator Connection	Signal Generator Frequency	Band Switch Position	Radio Dial Setting	Adjust	Remarks
0.01 MFD	Terminal T	455 KC AM	Broadcast	1625 KC	E G-1 F-1	Adjust for maximum output Repeat for fine adjustment
0.01 MFD	Pin 4 of 12SG7 2nd FM-AM IF with FM Signal Gen.	10.7 MC FM	FM	108 MC	H-2	Adjust for maximum output (Broad adjustment)
0.01 MFD	"	10.7 MC FM	FM	108 MC	H-4	Adjust for maximum output
0.01 MFD	"	10.7 MC AM	FM	108 MC	H-1 or H-3	Adjust whichever is required for minimum output
						Repeat last two steps for fine adjustment until settings for maximum FM output coincide with settings for minimum AM output.
0.01 MFD	Pin 8 of 6SB7Y Converter	10.7 MC FM	FM	108 MC	G-3 — G-2	Adjust for maximum output
0.01 MFD		"	FM	108 MC	F-3 — F-2	Adjust for maximum output
						Repeat last two steps for fine adjustment
			Broadcast	535 KC	Pointer	Adjust pointer to reference mark
100 MMFD	"A" Post on Cabinet	600 KC AM	"	600 KC	J and Core on Ant. Coil in Cab.	Adjust for maximum output
"	"	1550 KC AM	"	1550 KC	B and trimmer on Ant. Coil	Adjust for maximum output
300 OHM Resistor	"	92 MC FM	FM	92 MC	D	Adjust for maximum output
"	"	106 MC FM	FM	106 MC	A and C	Adjust for maximum output

SPIEGEL MODEL G725



SERVICE DATA

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as weak or defective tubes or speaker, open or grounded bias resistor, bypass condenser, etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proved not to be the cause.

NOTE: IT IS ABSOLUTELY NECESSARY THAT AN ACCURATELY CALIBRATED TEST OSCILLATOR WITH SOME TYPE OF OUTPUT MEASURING DEVICE BE USED WHEN ALIGNING THE RECEIVER AND THAT THE PROCEDURE BE CAREFULLY FOLLOWED, OTHERWISE THE RECEIVER WILL BE INSENSITIVE AND THE DIAL CALIBRATION WILL BE INCORRECT. THE TRIMMERS WILL BE REFERRED TO BY THEIR FUNCTION AS INDICATED ON THE PARTS DIAGRAM.

TUNING RANGE

This receiver is designed to operate over the standard broadcast band which extends from 535 to 1720 Kilocycles (KC) (174 to 560 Meters).

DIAL CALIBRATION. The scale is calibrated from 55 to 170 (Standard Broadcast). This band covers all Standard Broadcasts frequencies of the United States, Canada, Mexico, Cuba and many Central and South American Countries. Add a zero to figures on the scale to obtain kilocycles.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 455, 600, 1400 and 1720 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stages should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the broadcast band should be adjusted.

I.F. ALIGNMENT. Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective positions on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench. With the gang condenser set at minimum, adjust the test oscillator to 455 KC and connect the output to the grid of the first detector tube (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the ground buss, indicated on the circuit diagram. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1720 KC, and adjust the oscillator (or 1720 KC trimmer) on gang condenser. Next—set the test oscillator at 1400 KC, and tune in the signal on the gang condenser. Adjust the antenna trimmer (or 1400 KC trimmer) for maximum signal. Next set the test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.

AERIAL SYSTEM

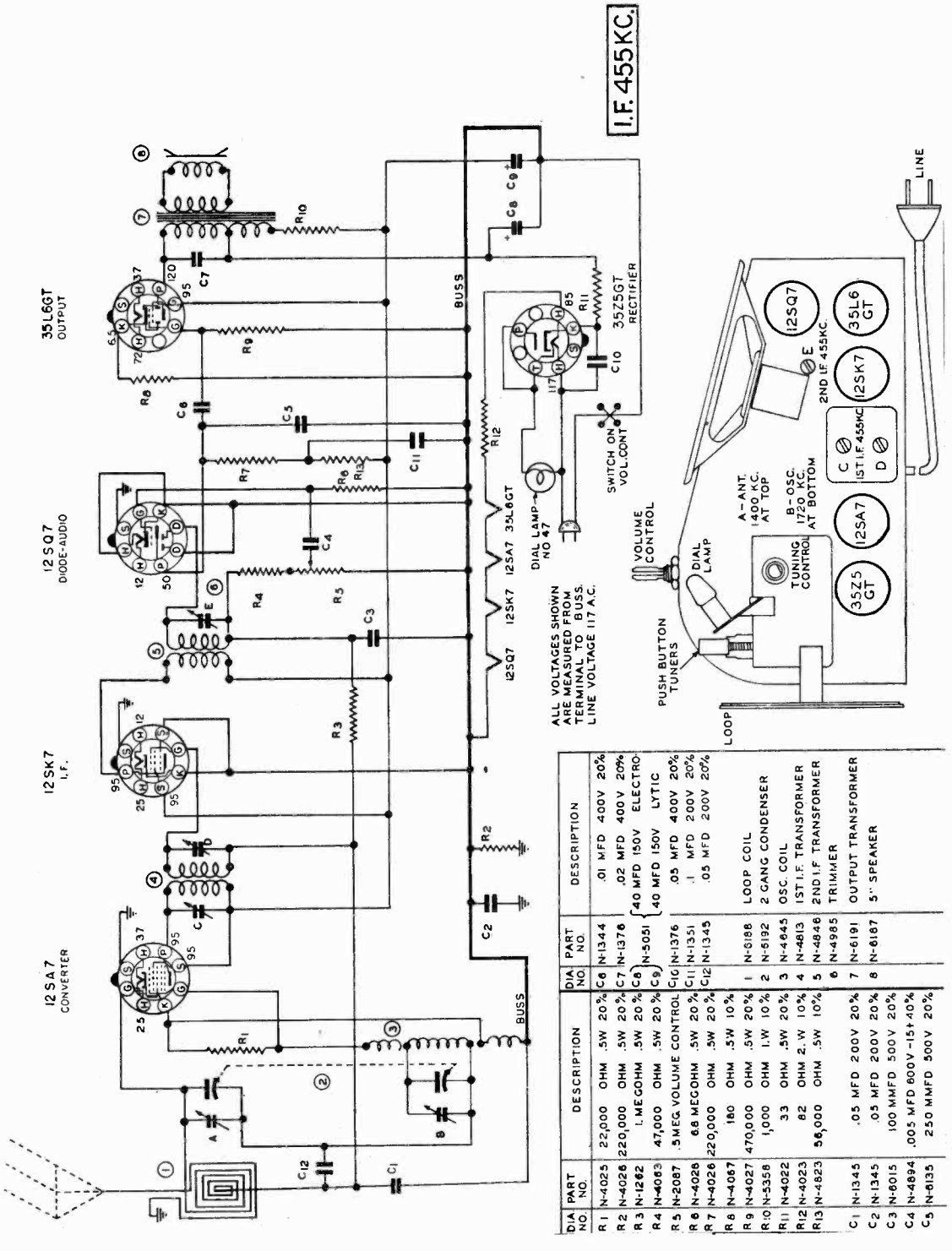
This receiver has a built-in "loop" aerial. Its excellent design is such as to increase pick-up from stations having wide variations in signal strength. The efficiency and selectivity of the loop provide outstanding reception without the use of an external aerial. The "loop" aerial used on this receiver is somewhat directional so reception from weak stations can be improved by turning the set in the proper direction. In or near metal buildings, iron ore deposits or steel structures or in localities remote from broadcasting stations, reception can be improved by using an outside aerial 50 feet to 100 feet in length including lead-in. Connect the outside aerial to the aerial lead. When using the outside aerial with AC power supply it may be necessary to reverse the power cord plug in wall socket to eliminate hum or distortion.

TUBES USED

Five tubes are used. (One tube is a rectifier.) Type numbers and locations are shown in the tube location diagram on the cabinet. If tubes are removed from their sockets for test or replacement purposes, make certain that each tube is placed in its proper socket when replacing the tubes in the set. Failure to replace the tubes in their proper sockets may result in damage to the tube, or to the receiver, or both.

SPIEGEL

MODEL WAU-243



DIA NO.	PART NO.	DESCRIPTION
R 1	N-4025	22,000 OHM .5W 20%
R 2	N-4026	220,000 OHM .5W 20%
R 3	N-1262	1. MEGOHM .5W 20%
R 4	N-4063	47,000 OHM .5W 20%
R 5	N-2087	.5 MEG VOLUME CONTROL
R 6	N-4028	6.8 MEGOHM .5W 20%
R 7	N-4026	220,000 OHM .5W 20%
R 8	N-4067	180 OHM .5W 10%
R 9	N-4027	470,000 OHM .5W 20%
R 10	N-5358	1,000 OHM 1.W 10%
R 11	N-4022	33 OHM .5W 20%
R 12	N-4023	82 OHM 2. W 10%
R 13	N-4823	56,000 OHM .5W 10%
C 1	N-1345	.05 MFD 200V 20%
C 2	N-1345	.05 MFD 200V 20%
C 3	N-6015	100 MMFD 500V 20%
C 4	N-4894	.005 MFD 600V -15+40%
C 5	N-6135	250 MMFD 500V 20%

DIA NO.	PART NO.	DESCRIPTION
C 6	N-1344	.01 MFD 400V 20%
C 7	N-1376	.02 MFD 400 V 20%
C 8	N-5051	40 MFD 150V ELECTRO
C 9		40 MFD 150V LYTIC
C 10	N-1376	.05 MFD 400V 20%
C 11	N-1351	.1 MFD 200V 20%
C 12	N-1345	.05 MFD 200V 20%
1	N-6188	LOOP COIL
2	N-6192	2 GANG CONDENSER
3	N-4045	OSC. COIL
4	N-4813	1ST I.F. TRANSFORMER
5	N-4846	2ND I.F. TRANSFORMER
6	N-4985	TRIMMER
7	N-6191	OUTPUT TRANSFORMER
8	N-6187	5" SPEAKER

2. Ground.

This set has been designed to operate without an external ground, and the use of any ground connection is not recommended.

3. Power Connection.

After making certain that the power circuit is rated between 105 and 125 volts extend the line cord to its full length and insert the plug into the nearest convenient outlet. If the supply is DC, and the set fails to operate, it may be necessary to reverse the plug connection to secure operation of the set.

OPERATION:

The left hand knob controls the ON-OFF power switch and volume level. To turn receiver on, rotate this knob in a clockwise direction. Within a few degrees of rotation an audible click will be heard, and the dial will become luminous. After a half minute of warm up the receiver will be in an operating condition. Further advance of this control in a clockwise direction will provide an increase in volume level.

The center knob controls the selection of AM or FM stations. When rotated to the counterclockwise position, operation in the AM (standard broadcast) band is provided. When this control is rotated to the clockwise position, FM stations may be tuned in.

The right hand or tuning knob enables the selection of any desired station as indicated on the calibrated dial. The upper row of numbers is calibrated directly in megacycles and covers the FM band. The lower scale is used to tune in stations in the standard broadcast band. Add one zero to the numbers on this scale to obtain the station frequency in kilocycles.

SERVICE ADJUSTMENTS:

Alignment or adjustment of the various circuits of this receiver can only be made by a skilled radio technician with the proper equipment.

NOTE: Points A, B, C, D, E, and F are noted on the circuit diagram.

AM Equipment:

Equipment Required:

a) Broadcast Band Signal Generator.
b) Output Meter.

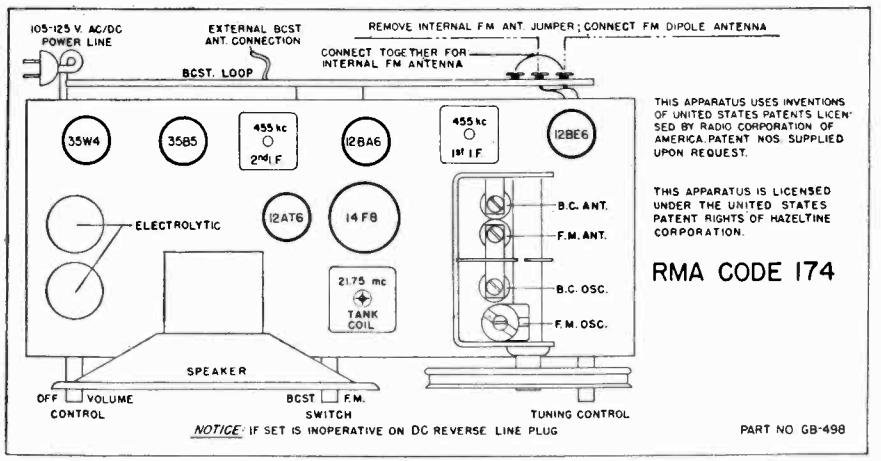
1. Set band switch at AM. Advance volume control to full volume setting.
2. Connect output meter across voice control at points "E" and "F".
3. Connect the "high" side of the Signal Generator to point "A" through a .01 mfd condenser. Connect the "ground" side to point "B". Adjust the Signal Generator to 455 kc and with the receiver switched on, adjust the first and second I.F. transformers for peak output as shown on the output meter. The signal injected into the receiver should be as small in magnitude as possible, consistent with a useful deflection on the output meter.
4. Connect the "high" side of the Generator to the antenna terminal with a 200 mmf condenser inserted in series. Connect the "ground" side of the Generator to point "B".
5. Tune receiver to 150 on the dial. Adjust Signal Generator to 1500 kc. Adjust BC oscillator and BC antenna trimmers for maximum output. Use a weak signal for final adjustment.

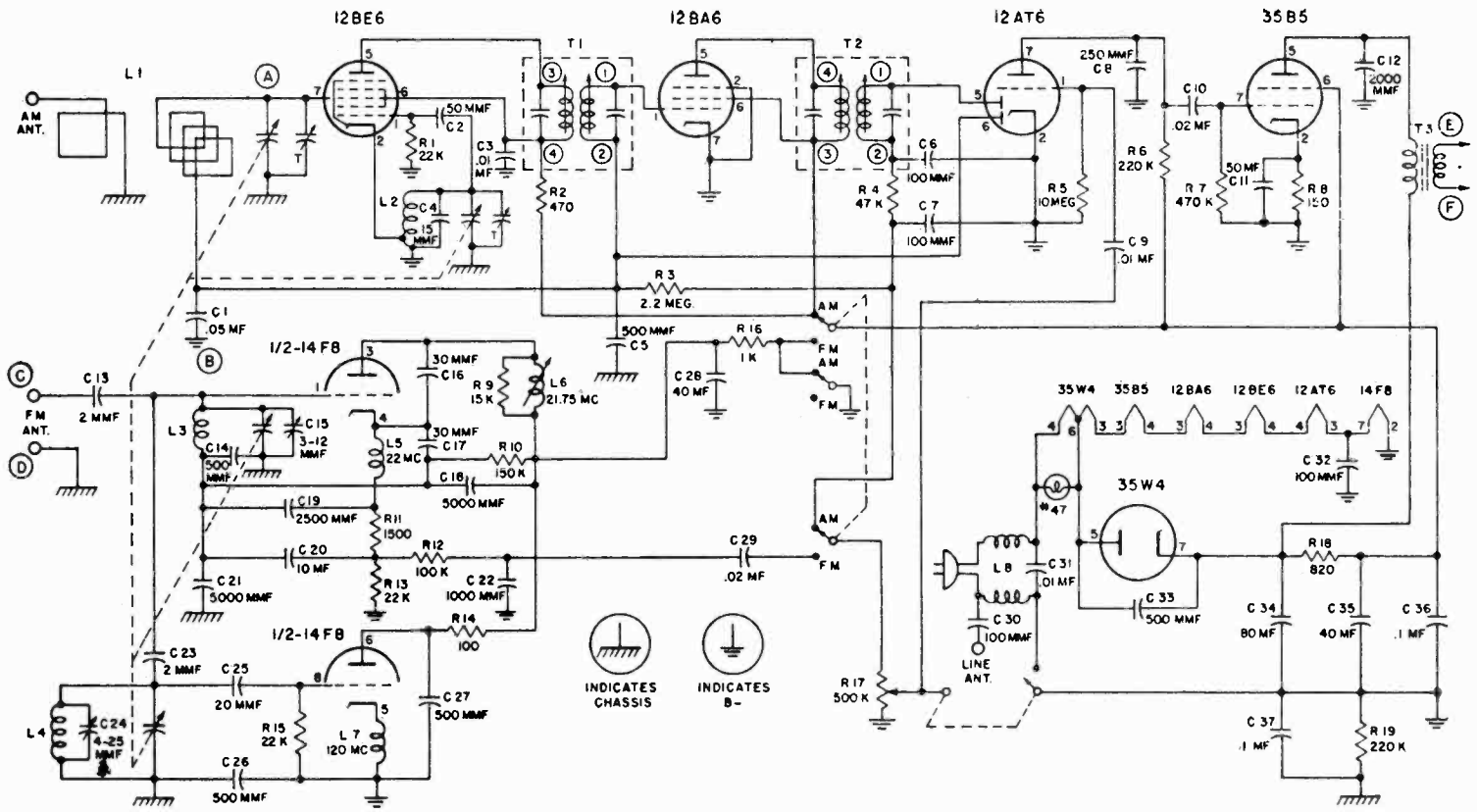
FM Equipment:

Equipment Required:

a) 21.75 kc oscillator.
b) FM Signal Generator for 88 to 108 megacycle range.
c) Output meter.

1. Connect output meter across points "E" and "F".
2. With set switched on and volume control at maximum, feed modulated 21.75 mc signal into terminals "C" and "D".
3. Adjust tank coil for maximum response on output meter.
4. Disconnect 21.75 kc oscillator and connect FM signal generator to points "C" and "D".
5. Set receiver dial to 88 megacycles and adjust Signal Generator for same frequency. Adjust spacing of FM oscillator coil for maximum signal response.
6. Tune receiver to 108 megacycles and adjust Signal Generator to same frequency. Adjust FM oscillator trimmer for maximum signal response.
7. Repeat operation 5 and 6.
8. Tune receiver to 90 megacycles and adjust Signal Generator for same frequency. Adjust spacing of the FM antenna coil for maximum signal response with minimum background noise. Slowly rock tuning control while performing this adjustment.
10. Repeat operations 8 and 9.





POWER SOURCE:

This receiver may be operated from either an AC or DC line, between 105 and 125 volts. On AC lines the frequency must be 50 to 60 cycles.

TUBE COMPLEMENT:

1 12BE6 — AM converter.
1 12BA6 — AM intermediate frequency amplifier.
1 12AT6 — AM demodulator and AVC; AM-FM 1st audio amplifier.
1 14F8 — FM oscillator-mixer-Super Regenerative I.F. amp.
1 35B5 — Audio output amplifier.
1 35W4 — Power rectifier.

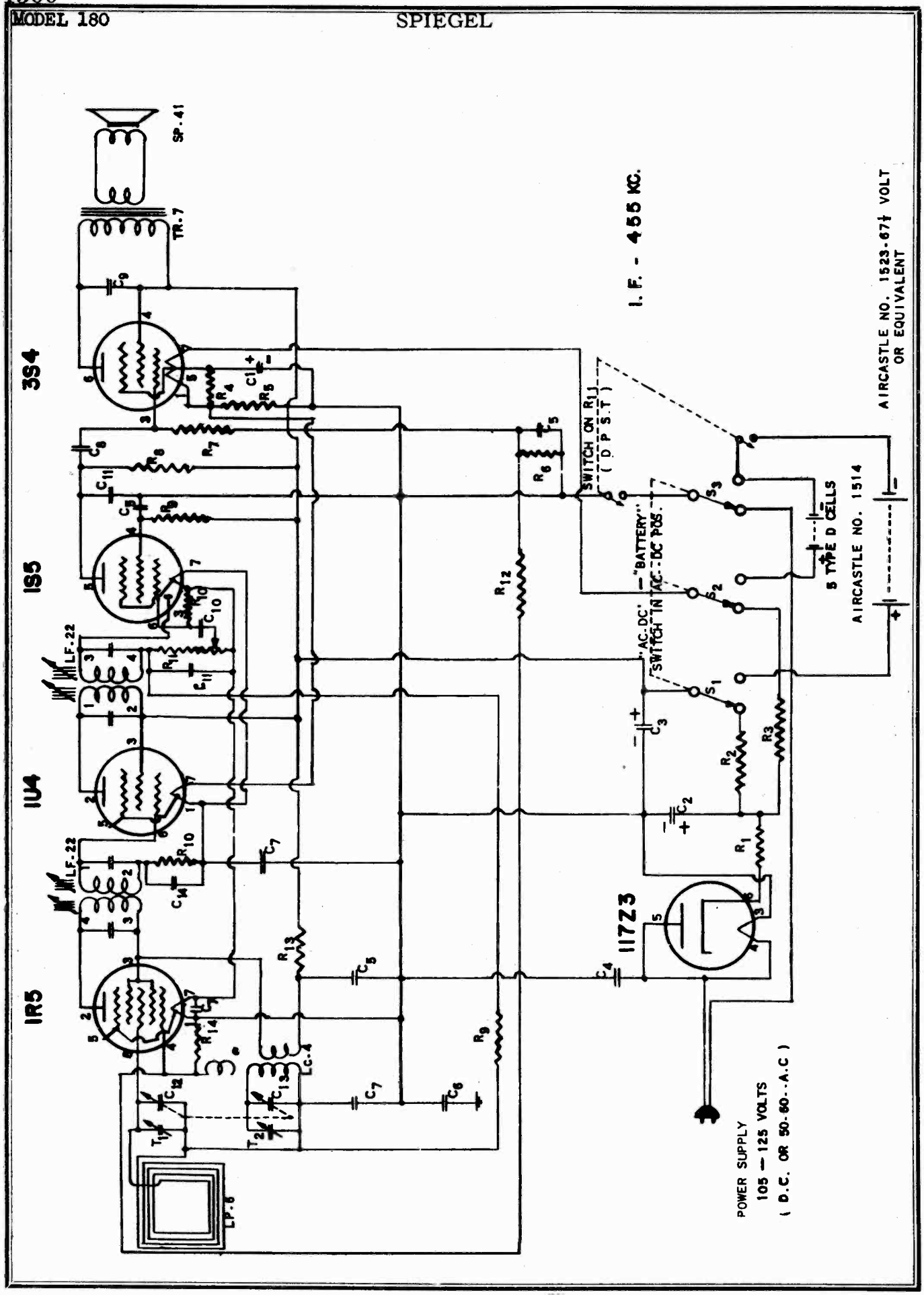
INSTALLATION:

1. Antenna Connection.

AM A self contained loop antenna is provided, which will give satisfactory reception on the standard broadcast band without requiring any additional external antenna. However, if stronger signals are desired from weak or distant stations an external antenna may be connected to the wire extending from the loop.

FM A self contained line antenna system is provided for reception of stations appearing in the FM band. To use this line antenna a short wire jumper should be connected between the two outside screw terminals of the FM antenna panel, which is mounted on the broadcast loop antenna form. Should poor reception conditions make it necessary, an FM dipole antenna may be connected to the left hand and center screw terminals of the FM antenna panel. In such a case, the line antenna link should be disconnected.

MODEL 180 SPIEGEL



ALIGNMENT PROCEDURE

- Output meter ac oss 3 5 ohm output load
- Volume control at maximum for all adjustments.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.

SIGNAL GENERATOR				SETTING TUNER	ADJUST TRIMMERS TO MAXIMUM OUTPUT (in order shown)
Frequency	Coupling Factor	Connection to Receiver	Ground Connection		
455 kc	.1 mfd	1R5 Grid	B—	Rotor full open (Plates out of mesh)	Input and output trimmers on IF cans
1700 kc	.1 mfd	1R5 Grid	B—	Rotor full open (Plates out of mesh)	Oscillator trimmer T2
1500 kc		Radiating Loop		1500 kc*	Antenna trimmer T1

* Five markings on the dial bracket represent respectively 530 kc., 600 kc., 1000 kc., 1500 kc., and 1700 kc., reading from left to right. These points are to be used for the alignment of the receiver.

REPLACEMENT PARTS LIST

When ordering parts, specify part number, model number and series.

CAPACITORS

Ref. No.	Part No.	Description
C1, C2, C3,	CE-12	{125 mfd, 10 volt} Electrolytic {25 mfd, 150 volt} condenser
C4	CP-503-5	.05 mfd, 400 volt, paper
C5	CP-103-2	.01 mfd, 150 volt, paper
C6	CP-104-2	.1 mfd, 200 volt, paper
C7	CP-503-2	.05 mfd, 150 volt, paper
C8	CP-202-3	.002 mfd, 200 volt, paper
C9	CP-502-2	.005 mfd, 400 volt, paper
C10	CP-102-3	.001 mfd, 200 volt, paper
C11	CM-101-1	.0001 mfd, 300 volt, mica
C12, C13	CV-10	Variable condenser, 2 gang
C14	CP-103-4	.01 mfd, 100 volt, paper

RESISTORS

R1	RC-180-1	18 ohms,	½ watt 20%
R2	RC-682-5	6800 ohms,	1 watt 10%
R3	RP-3	2650 ohms,	10 watt 5%
R4	RC-471-1	470 ohms,	½ watt 20%
R5	RC-821-2	820 ohms,	½ watt 10%
R6	RC-274-2	270,000 ohms,	½ watt 10%
R7	RC-225-1	2.2 megohms,	½ watt 20%
R8	RC-105-1	1 megohm,	½ watt 20%
R9	RC-335-1	3.3 megohms,	½ watt 20%
R10	RC-106-1	10 megohms,	½ watt 20%
R11	VC-6	1 meg. vol. control with switch	
R12	RC-105-2	1 megohm,	½ watt 10%
R13	RC-153-1	15,000 ohms,	½ watt 20%
R14	RC-104-2	100,000 ohms,	½ watt 10%

POWER SUPPLY

This receiver is designed to operate on either an A.C. or D.C power supply. The following operation ratings should be observed:

Voltages ..... 105 - 125 Volts, A.C. or D.C.

COILS AND TRANSFORMERS

Ref. No.	Part No.	Description
	LC-4	Oscillator coil
	LF-22	IF transformer
	LP- 6	Loop antenna
	TR- 7	Output transformer

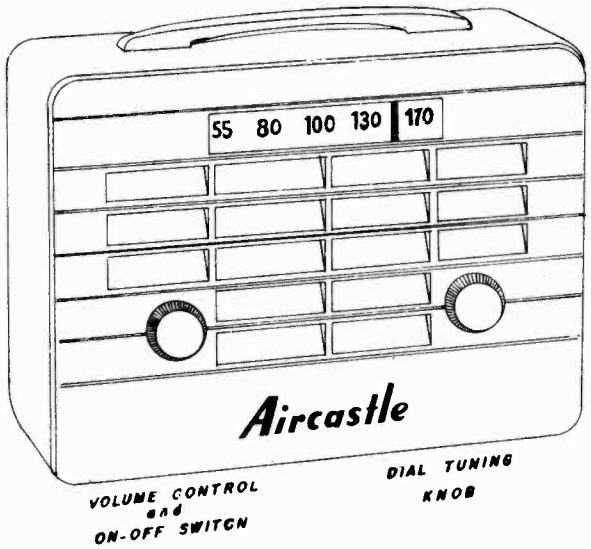
MISCELLANEOUS

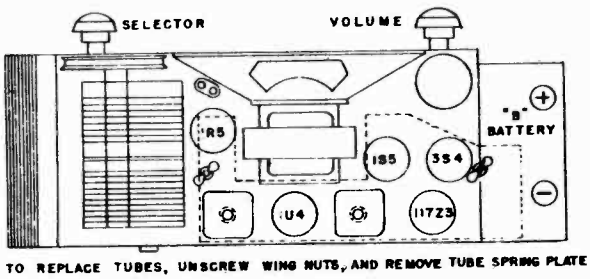
S1, S2, S3	SW-10	Three Pole Single Throw Switch
	SP-41	4 inch P.M. speaker
	PN-6	Pointer
	CR-2	Drive cord
	SG-1	Spring for drive cord
	KN-20-4	Knob
	BK- 20	Cabinet back (with hardware)
	CB-104A	Assembled cabinet (without back and handle)
	HA-2	Handle for cabinet (with springs and pins)
	AS-1	Assembled battery box

The battery supply to be used with this receiver is as follows:

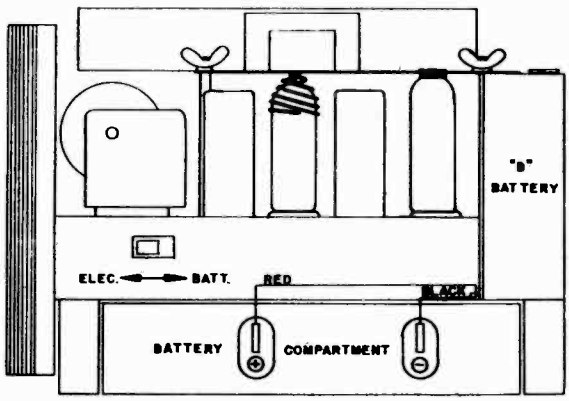
"A" supply ..... 7½ volts
Use five type "D" flashlight cells; Aircastle No. 1514, or RCA-VS-001, or Burgess No. 2 or Eveready No. 950 or equivalent.

"B" supply ..... 67½ volts.
Use Aircastle No. 1523 or Burgess No. XX45 or Eveready No. 467 or RCA-VS-016 or equivalent.



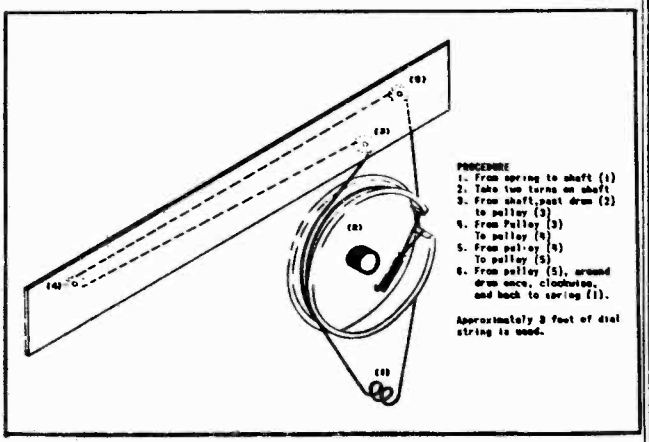


TO REPLACE TUBES, UNSCREW WING NUTS, AND REMOVE TUBE SPRING PLATE

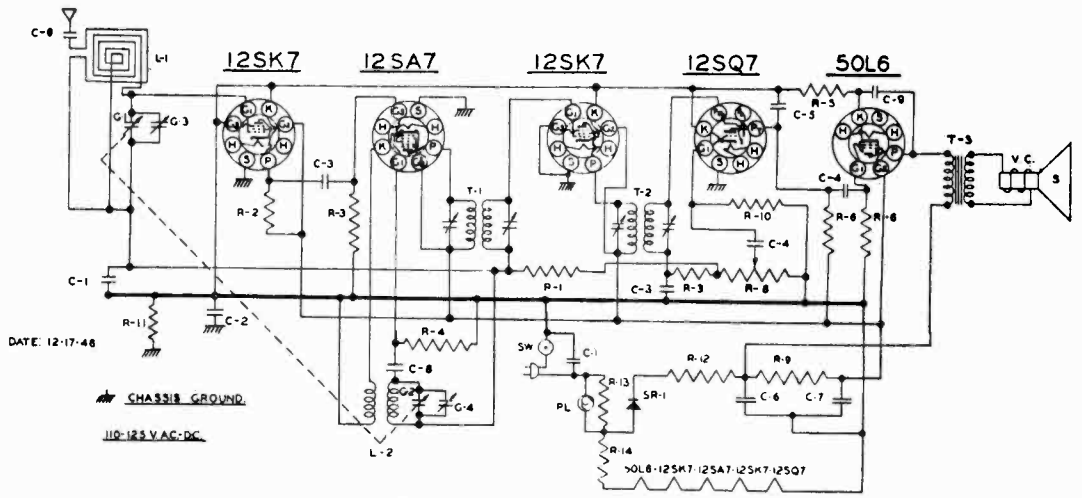


ELECTRICAL SPECIFICATIONS

Power Supply	105-125 volts DC or 50-60 cycles AC 15 watts
Batteries	A—7½ volts. 50 ma. B—67½ volts. 8 ma. average.
Frequency Range	530 to 1700 kc.
Intermediate Freq.	455 kc.
Tuning	Two-gang capacitor
Antenna	Built-in loop
Speaker	4 inch PM; voice coil Impedance 3.5 ohms.
Power Output	80 milliwatts undistorted 140 milliwatts maximum
Sensitivity	500 microvolts per meter for 50 milliwatt output
Selectivity	55 kc broad at 1000 times signal at 1000 kc.



Replacement of Drive Cord



Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

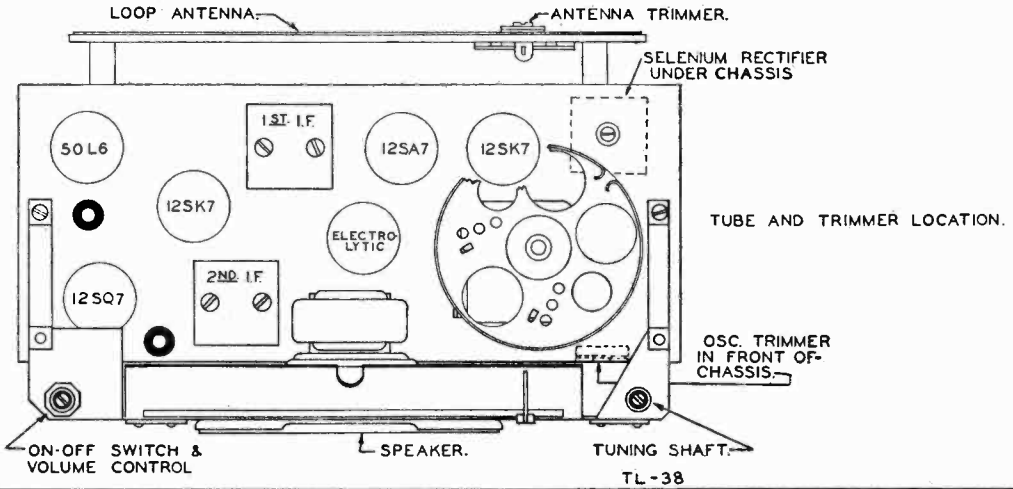
PART NO.		DESCRIPTION.
1R-23	R-1	3.9 MEG RESISTOR 1/2W 20
1R-22	R-2	3900Ω RESISTOR 1/2W 10
1R-10	R-3	47M Ω RESISTOR 1/2W 20
1R-9	R-4	22M Ω RESISTOR 1/2W 20
1R-14	R-5	150 Ω RESISTOR 1/2 W 20
1R-11	R-6	470M Ω RESISTOR 1/2 W 20
VC-4	R-8	1MEG VOLUME CONTROL
1R-25	R-9	2000 Ω RESISTOR 1 W 10
1R-13	R-10	2 MEGΩ RESISTOR 1/2 W 20
1R-20	R-11	220MΩ RESISTOR 1/2 W 20
1R-33	R-12	75 Ω RESISTOR 2 W 10
PC-5	C-1	.05 MFD CONDENSER 400 V
PC-8	C-2	1 MFD CONDENSER 400 V
MC-2	C-3	.0001 MFD MICA CONDENSER
PC-10	C-4	.005 MFD CONDENSER 400 V
MC-5	C-5	.0005 MFD MICA CONDENSER
EC-10	C-6	40 MFD 150 V ELECTROLYTIC
	C-7	40 MFD
MC-4	C-8	.00005 MFD MICA CONDENSER
PC-7	C-9	.01 MFD CONDENSER 400V
LO-9	L-2	OSC COIL
CO-1	P	LINE CORD
PB-1	PL	PILOT LITE #47
LI-1	T1	INPUT I.F. TRANSFORMER
LI-2	T2	OUTPUT I.F. TRANSFORMER
LL-1	LI	LOOP ANTENNA
SPK-5	T3	SPK. TRANSFORMER
	VC	VOICE COIL
	S	P.M. SPEAKER
GC-2	C-1	GANG CONDENSER
	C-2	
TC-7	C-3	ANT. TRIMMER CONDENSER
TC-6	C-4	OSC. TRIMMER CONDENSER
	SW.	SWITCH ON VOLUME CONTROL
TU-25		2/12SK7-12SA7-12SQ7 50L6
WR-4	R-13	30Ω 3W 5%
	R-14	90Ω
SR-1	SR-1	SELENIUM RECTIFIER

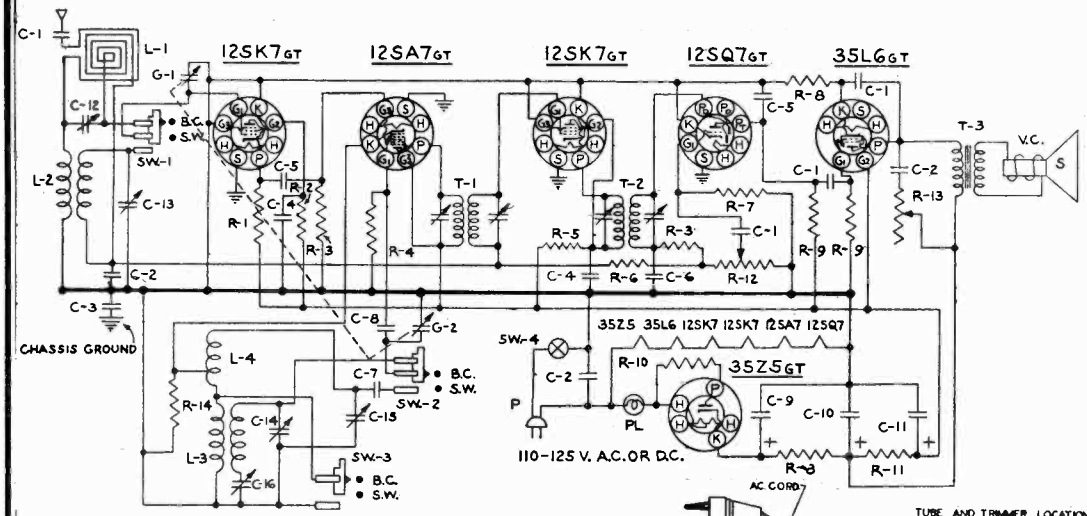
The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

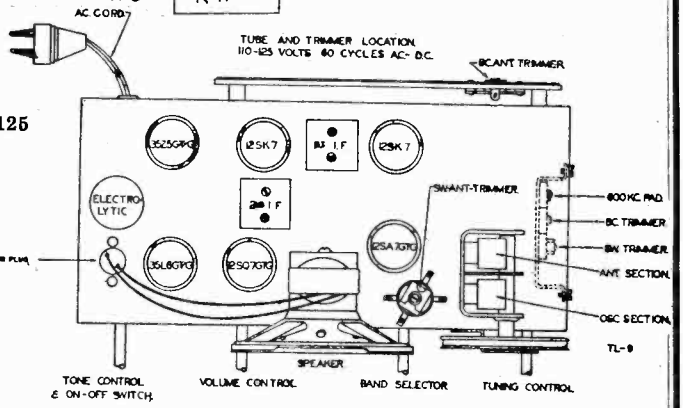
FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the floating ground buss under the chassis. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP. Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the primary of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.







CAUTION

POWER SOURCES: — This receiver will operate either on 110-125 volt A.C., 50-60 cycle current or 110-125 volt D. C. current.

Never plug this receiver into a 220 volt line.

The components in this receiver are designed for 110-125 volt operation only. Any attempt to operate this receiver at a higher than prescribed voltage will cause serious damage.

ALIGNMENT AND SERVICE DATA

Remove the chassis from the cabinet for alignment.

A signal generator is required, having the following frequencies: 455 KC, 1400 KC, 1730 KC. 6 MC, 16 MC, and 18.3 MC. An output meter should be connected across the speaker.

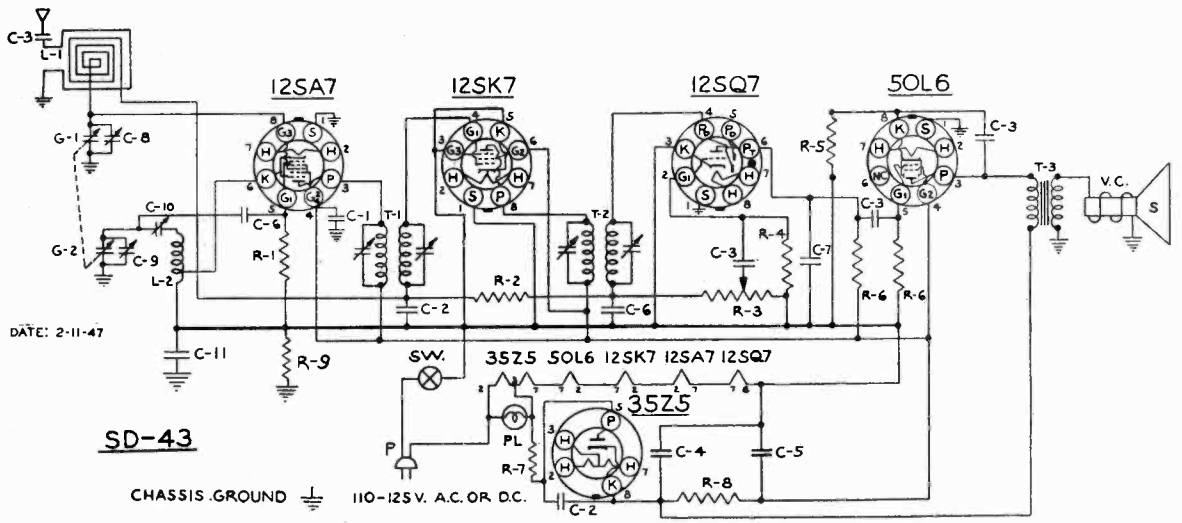
I. F. ALIGNMENT: — Connect the generator lead through a .1 MFD Condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the gang frame. Set the generator at 455 KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (See Fig. 1) until a maximum reading is noted on the output meter.

The receiver volume control should be turned to maximum during the I. F. and all subsequent alignments, to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

BC. OR BROADCAST ALIGNMENT: — With the generator leads still connected as in I. F. Alignment, rotate the tuning condenser to complete minimum capacity. Set the generator to 1730 KC. Adjust the BC. oscillator trimmer until the signal is tuned in. Next remove the hot lead of the generator from the "Ant" section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Set the generator to 1400 KC and rotate the tuning condenser until the signal is tuned in. Adjust the BC. antenna trimmer until a maximum reading is noted on the output meter. Set the generator to 600 KC and turn the tuning control until the signal is tuned in. Rock the tuning control back and forth slowly and at the same time adjust the 600 KC pad, slowly to the right or left until a maximum reading is noted on the output meter. It is advisable to return to the 1730 KC adjustment and re-check that setting to make sure it has not changed while padding at 600 KC.

S. W. OR SHORT WAVE ALIGNMENT: — Set the generator at 18.3 MC. Turn the receiver band switch to short band position. Turn the tuning condenser to complete minimum capacity. The generator leads should be connected to the antenna lead wire that projects from the back of the loop antenna through a 400 Ohm resistor. Adjust the S. W. oscillator trimmer slowly until the 18.3 MC signal is tuned in. At this point, it will be well to make sure that the fundamental signal is turned in. Turn up the generator output and tune the receiver to approximately 17.3 MC. At this point the 18.3 MC signal will be heard again but much weaker. This is the image frequency. If the image is not heard, then turn the tuning condenser back to complete minimum and readjust the S. W. oscillator trimmer. Remember, the image must always be heard (at 2 times the I. F. frequency in KC) lower the frequency than the fundamental signal. After the oscillator has been properly set, tune the signal generator to 16 MC and rotate the tuning control until the signal is tuned in. Adjust the S.W. antenna trimmer until a maximum reading is noted on the output meter. It is advisable to rock the gang slowly while adjusting the antenna trimmer. Set the generator to 6 MC and tune the signal in on the receiver. Check the alignment at this frequency. No adjustment should be necessary as the coils have been carefully checked before leaving the factory. A fixed oscillator padding condenser is used at 6 MC.

PART NO.		DESCRIPTION
IR-22	R-1	3900Ω RESISTOR 1/2 W. 10%
IR-8	R-2	22,000Ω RESISTOR 1/2 W. 10%
IR-10	R-3	47000Ω RESISTOR 1/2 W. 20%
IR-9	R-4	22000Ω RESISTOR 1/2 W. 20%
IR-24	R-5	1000Ω RESISTOR 1/2 W. 20%
IR-23	R-6	3.9 MEG. RESISTOR 1/2 W. 20%
IR-13	R-7	2 MEG. RESISTOR 1/2 W. 20%
IR-5	R-8	220Ω RESISTOR 1/2 W. 10%
IR-11	R-9	470000Ω RESISTOR 1/2 W 20%
IR-17	R-10	39Ω RESISTOR 1/2 W. 20%
IR-21	R-11	330Ω RESISTOR 1/2 W. 10%
VC-3	R-12	1 MEG. VOLUME CONTROL
VC-1	R-13	25 MΩ TONE CONTROL & SW.
IR-6	R-14	470Ω RESISTOR 1/2 W. 10%
PC-7	C-1	.01 MFD. CONDENSER 400 V.
PC-5	C-2	.05 MFD. CONDENSER 400 V.
PC-9	C-3	.25 MFD. CONDENSER 400 V.
BC-8	C-4	.1 MFD. CONDENSER 400 V.
MC-3	C-5	.00022 MFD. MICA COND. 500 V.
MC-2	C-6	.0001 MFD. MICA COND. 500 V.
MC-1	C-7	.00475 MFD. MICA COND. 3%
MC-4	C-8	.00005 MFD. MICA COND. 500 V.
EC-4	C-9	40 MFD. (150 V. ELECTROLYTIC)
	C-10	40 MFD.
	C-11	40 MFD.
TC-7	C-12	LOOP ANTENNA TRIMMER
TC-8	C-13	S.W. ANTENNA TRIMMER
TC-1	C-14	B.C. OSC. TRIMMER
	C-15	S.W. OSC. TRIMMER
	C-16	B.C. OSC. PADDING COND.
GC-1	G-1	GANG CONDENSER
	G-2	
SW-1	SW-1	BAND SWITCH
	SW-2	
	SW-3	
	SW-4	A.C. SW. ON TONE CONTROL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
SPK-4	T-3	OUTPUT SPK. TRANSFORMER
	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	PILOT BULB #47
CO-1	P	LINE CORD
LL-2	L-1	LOOP ANTENNA
LA-2	L-2	S.W. ANTENNA COIL
LO-3	L-3	B.C. OSC. COIL
LO-4	L-4	S.W. OSC. COIL
TU-4		12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT



Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the floating ground buss under the chassis. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the primary of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the top of the ANT. section of the gang condenser. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

PART NO.		DESCRIPTION
1R-9	R-1	22,000 Ω RESISTOR ½W 20%
1R-23	R-2	3.9 MEG. RESISTOR ½W 20%
VC-4	R-3	1 MEG. VOL. CONTROL & SW.
1R-13	R-4	2 MEG. RESISTOR ½W 20%
1R-14	R-5	150 Ω RESISTOR ½W 20%
1R-11	R-6	470M Ω RESISTOR ½W 20%
1R-17	R-7	39 Ω RESISTOR ½W 20%
1R-25	R-8	2000 Ω RESISTOR 1W 10%
PC-8	C-1	.1 MFD. COND.-400V.
PC-5	C-2	.05 MFD. COND.-400V.
PC-7	C-3	.01 MFD. COND.-400V.
EC-8	C-4	40 MFD. 150 V. ELECTROLYTIC
	C-5	20 MFD.
MC-2	C-6	100 MMFD. MICA COND.
MC-5	C-7	500 MMFD. MICA COND.
PC-9	C-11	.25 MFD. COND.-400V.
TC-7	C-8	ANTENNA TRIMMER COND.
TC-6	C-9	OSC. TRIMMER COND.
TC-9	C-10	OSC. PADDING COND.
1R-20	R-9	220M Ω RESISTOR ½W 20%
GC-1	G-1, G-2	GANG CONDENSER
LL-4	L-1	LOOP ANTENNA
LO-7	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
	T-3	OUTPUT SPKR. TRANSFORMER
SPK-6	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	No. 47 PILOT BULB
	SW.	A.C. SW. ON VOL. CONTROL
CO-1	P	LINE CORD
TU-3	——	12SA7 GT 12SK7 GT 12SQ7 GT 50L6GT 35Z5GT

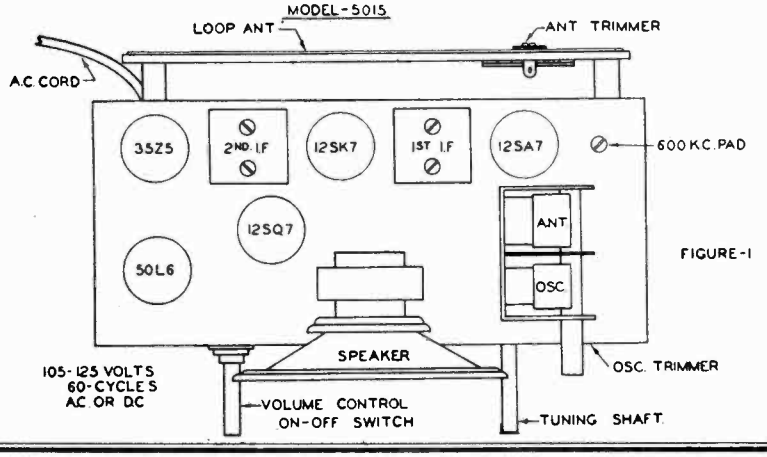
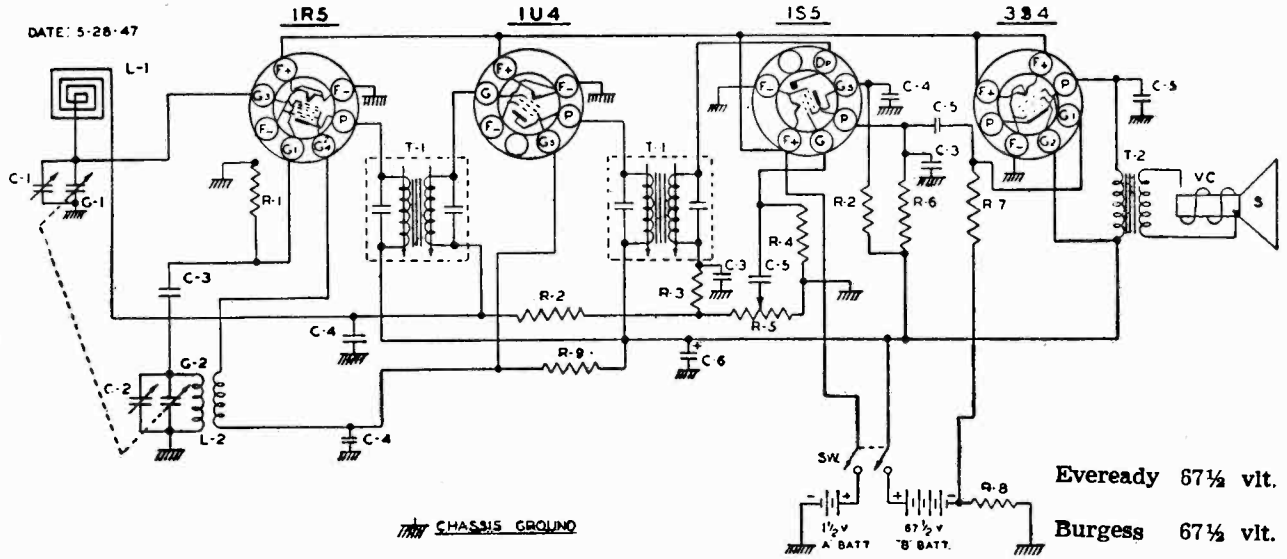
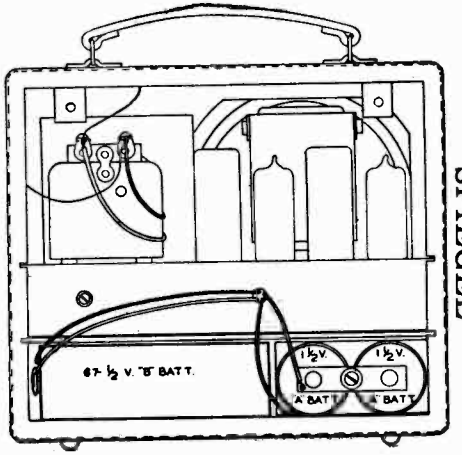


FIGURE-1



PART NO		DESCRIPTION
1R-20	R-1	220M Ω RESISTOR 1/2W 20 %
1R-23	R-2	3.3MEG RESISTOR 1/2W 20 %
1R-31	R-3	82M Ω RESISTOR 1/2W 10 %
1R-3	R-4	10MEG RESISTOR 1/2W 20 %
VC-8	R-5	1MEG VOLUME CONTROL
1R-12	R-6	1MEG RESISTOR 1/2W 20 %
1R-13	R-7	2.2MEG RESISTOR 1/2W 20 %
1R-5	R-8	220 Ω RESISTOR 1/2W 10 %
1R-37	R-9	10M Ω RESISTOR 1/2W 20 %
TC-7	C-1	ANT. TRIMMER
	C-2	OSC TRIMMER ON GANG
MC-2	C-3	100MMFD MICA CONDENSER
PC-7	C-4	.01 MFD 400 V.
PC-6	C-5	.008 MFD 600 V.
EC-7	C-6	20MFD 80WV.
GC-4	G-1, G-2	GANG CONDENSER
LL-8	L-1	LOOP ANTENNA
LO-12	L-2	OSC. COIL
LI-5	T-1	I.F. TRANSFORMER
	SW	DPST. SWITCH ON VOLUME CONTROL
SPK-8	T-2	SPEAKER TRANSFORMER
	VC	VOICE COIL
	S	PM SPEAKER
TU-29		1R5-1U4-1S5-3S4

Eveready	67½ vlt.	#467
Burgess	67½ vlt.	#XX45
General	67½ vlt.	#W45A
Ray-O-Vac	67½ vlt.	#4367



Remove chassis from cabinet for alignment. A signal generator is required having the following frequencies: 455 KC and 1400 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD. condenser. The ground lead from the generator may be connected to any spot on the metal chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the movable iron cores in the IF cans. These IF adjustments are made in the top and in the bottom of the can under the chassis. Adjust the cores until a maximum reading is noted on the output meter.

The volume control of the receiver should be turned to maximum during the IF and all subsequent alignment and the generator output as low as possible to prevent the AVC from working and giving false readings.

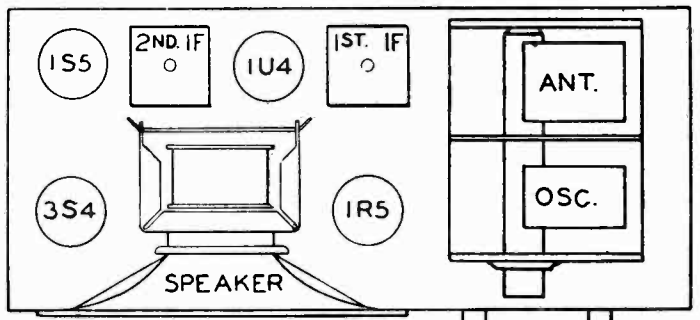
SECOND STEP: With the leads from the generator still connected as in IF alignment, adjust the generator to 1400 KC. Set the dial pointer to 1400 KC on the dial scale. Adjust the oscillator trimmer until the signal is tuned in.

THIRD STEP: Remove the generator leads from the gang condenser.

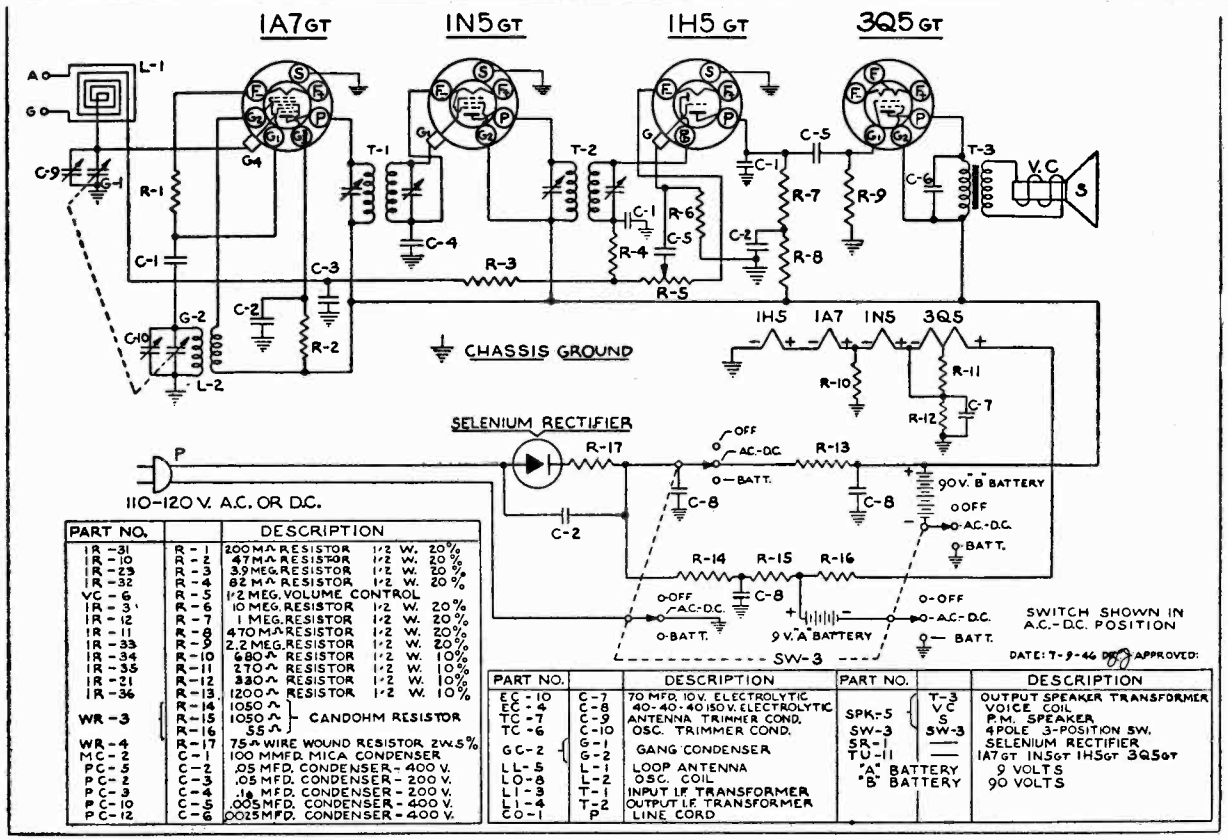
Replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn over the outside of the cabinet. With the receiver and the generator still set at 1400 KC increase the generator output. Adjust the Antenna trimmer through the back of the chassis until a maximum signal is noted on the output meter.

No further adjustment should be necessary as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

NOTE: When the antenna trimmer is adjusted at 1400 KC., the chassis as well as the "A" and "B" batteries must be in normal position in the cabinet to reflect the proper loop impedance.



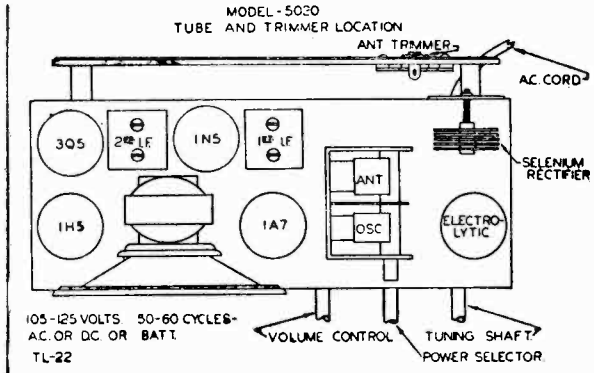
TUBE AND TRIMMER LOCATION.



PART NO.		DESCRIPTION
1R-31	R-1	200 MΩ RESISTOR 1/2 W. 20%
1R-10	R-2	47 MΩ RESISTOR 1/2 W. 20%
1R-23	R-3	3.9 MEG. RESISTOR 1/2 W. 20%
1R-32	R-4	82 MΩ RESISTOR 1/2 W. 20%
VC-6	R-5	1/2 MEG. VOLUME CONTROL
1R-3	R-6	10 MEG. RESISTOR 1/2 W. 20%
1R-12	R-7	1 MEG. RESISTOR 1/2 W. 20%
1R-11	R-8	470 MΩ RESISTOR 1/2 W. 20%
1R-33	R-9	2.2 MEG. RESISTOR 1/2 W. 20%
1R-34	R-10	680 Ω RESISTOR 1/2 W. 10%
1R-35	R-11	270 Ω RESISTOR 1/2 W. 10%
1R-21	R-12	330 Ω RESISTOR 1/2 W. 10%
1R-36	R-13	1200 Ω RESISTOR 1/2 W. 10%
	R-14	1050 Ω
WR-3	R-15	1050 Ω CANDOHM RESISTOR
	R-16	55 Ω
WR-4	R-17	75 Ω WIRE WOUND RESISTOR 2W. 5%
MC-2	C-1	100 MMFD. MICA CONDENSER
PC-5	C-2	.05 MFD. CONDENSER - 400 V.
PC-2	C-3	.05 MFD. CONDENSER - 200 V.
PC-3	C-4	.1 MFD. CONDENSER - 200 V.
PC-10	C-5	.005 MFD. CONDENSER - 400 V.
PC-12	C-6	.0025 MFD. CONDENSER - 400 V.

PART NO.		DESCRIPTION
EC-10	C-7	70 MFD. 10 V. ELECTROLYTIC
EC-4	C-8	40-40-40 150 V. ELECTROLYTIC
TC-7	C-9	ANTENNA TRIMMER COND.
TC-6	C-10	OSC. TRIMMER COND.
GC-2	G-1	GANG CONDENSER
	G-2	
LL-5	L-1	LOOP ANTENNA
LO-8	L-2	OSC. COIL
LI-3	T-1	INPUT I.F. TRANSFORMER
LI-4	T-2	OUTPUT I.F. TRANSFORMER
CO-1	P	LINE CORD

PART NO.		DESCRIPTION
SPK-5	T-3	OUTPUT SPEAKER TRANSFORMER
	VC	VOICE COIL
	S	P.M. SPEAKER
SW-3	SW-3	4 POLE 3-POSITION SW.
SR-1	—	SELENIUM RECTIFIER
TU-11	—	1A7GT 1N5GT 1H5GT 3Q5GT
"A" BATTERY		9 VOLTS
"B" BATTERY		90 VOLTS



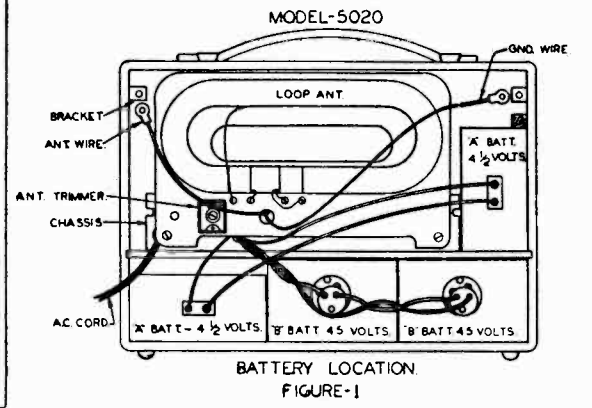


FIGURE-1

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

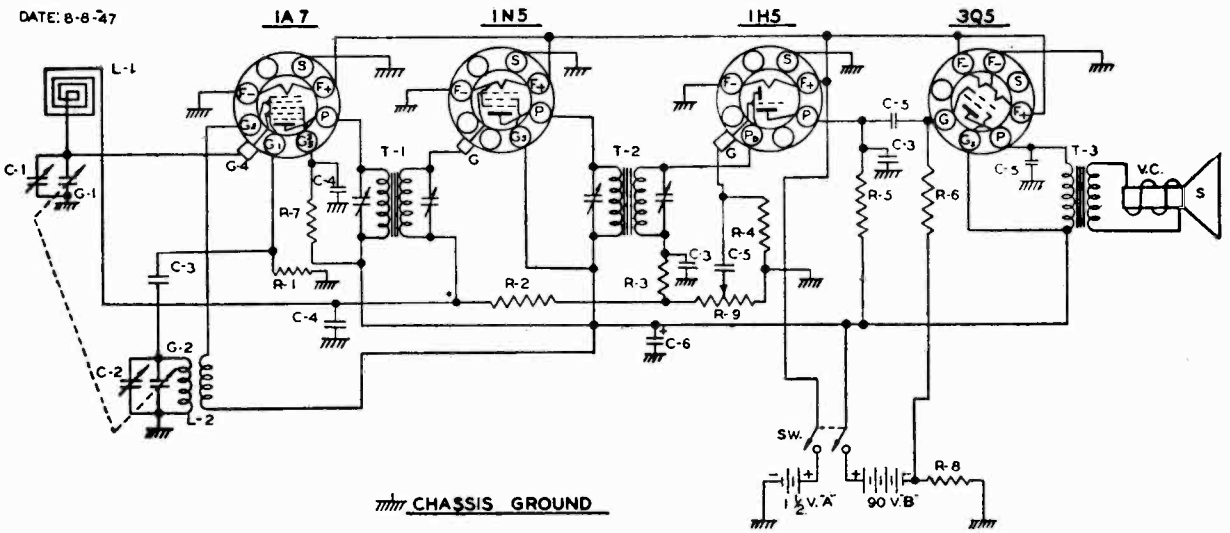
A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the top of the oscillator section of the gang condenser. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

CAUTION: When the receiver is not in use, the power selector knob must be turned to "OFF." If the knob is allowed to remain in "BATT" position, the batteries will be in use constantly. The volume control does not control the batteries and they are still in operation even though the volume control is turned all the way off.



Remove chassis from cabinet for alignment. A signal generator is required having the following frequencies: 455 KC and 1400 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD. condenser. The ground lead from the generator may be connected to any spot on the metal chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the movable trimmers in the IF cans, until a maximum reading is noted on the output meter.

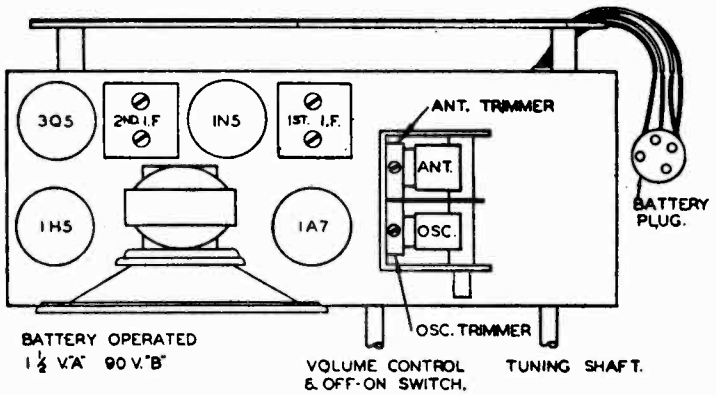
The volume control of the receiver should be turned to maximum during the IF and all subsequent alignment and the generator output as low as possible to prevent the AVC from working and giving false readings.

SECOND STEP: With the leads from the generator still connected as in IF alignment, adjust the generator to 400 KC. Set the dial pointer to 1400 KC on the dial scale. Adjust the oscillator trimmer until the signal is tuned in.

THIRD STEP: Remove the generator leads from the condenser. Connect the hot lead from the generator through a 200 MMFD. condenser to one of the leads which project from the back of the loop antenna. Connect the ground lead of the generator to the remaining lead. With the generator and the receiver still tuned to 1400 KC, adjust the antenna trimmer until a maximum reading is noted on the output meter.

PART NO.		DESCRIPTION.	PART NO.		DESCRIPTION.
1R-20	R-1	220M ^ RESISTOR 1/2 W 20	GC-5	G-1	GANG CONDENSER.
1R-23	R-2	33MEG ^ RESISTOR 1/2 W 20		G-2	
1R-31	R-3	82M ^ RESISTOR 1/2 W 10	LL-5	L-1	LOOP ANTENNA
1R-3	R-4	10MEG ^ RESISTOR 1/2 W 20	LO-12	L-2	OSC. COIL
1R-12	R-5	1MEG ^ RESISTOR 1/2 W 20	LI-3	T-1	INPUT I.F. TRANSFORMER
1R-13	R-6	2.2MEG ^ RESISTOR 1/2 W 20	LI-4	T-2	OUTPUT I.F. TRANSFORMER
1R-16	R-7	33M ^ RESISTOR 1/2 W 20		T-3	SPEAKER TRANSFORMER
1R-5	R-8	220 ^ RESISTOR 1/2 W 10	SPK-	VC.	VOICE COIL
VC-10	R-9	1MEG VOLUME CONTROL.		S	PM. SPEAKER
	C-1	ANT. TRIMMER		SW	D.P.S.T. SWITCH ON VOLUME CONTROL
MC-2	C-2	OSC. TRIMMER			
PC-5	C-3	100 MMFD. MICA CONDENSER.			
PC-6	C-4	.05 CONDENSER 400 V.			
EC-13	C-5	.005 CONDENSER 600 V.			
	C-6	8 MFD-150 V. ELECTROLYTIC CONDENSER			

TUBE AND TRIMMER LOCATION.



BATTERY OPERATION: The power cord is not used for battery operation and may be hanked and put back in the cabinet. Set the power control knob to "BATT" and the receiver is ready for operation on the enclosed batteries.

CAUTION: When the receiver is not in use, the power selector knob must be turned to "OFF." If the knob is allowed to remain in "BATT" position, the batteries will be in use constantly. The volume control does not control the batteries and they are still in operation even though the volume control is turned all the way off.

VOLUME CONTROL: The left hand knob is the volume control. After the power selector knob has been properly set and the receiver is in operation, rotate the volume control knob to the right to increase volume or to the left to decrease volume.

BATTERY SUPPLIERS

The batteries for this receiver may be purchased from any reliable radio dealer.

For proper operation of this receiver, you must use, two (2) 4½ Volt "A" batteries, and two (2) 45 Volt "B" batteries.

The following is a table of manufacturers and their battery type number.

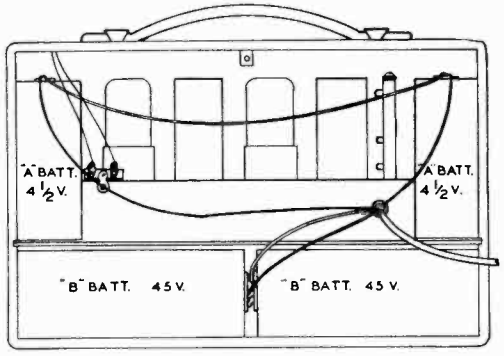
"B" BATTERIES (2 Required)

Mfgr.	Volts	Type No.
Burgess	45 "B"	M30
General	45 "B"	W30B
Bright Star	45 "B"	3033
Usalite	45 "B"	640
Rayovac	45 "B"	P7830
Eveready	45 "B"	482

"A" BATTERIES (2 Required)

Burgess	4½ "A"	G3
General	4½ "A"	3H3
Bright Star	4½ "A"	361
Usalite	4½ "A"	683
Rayovac	4½ "A"	P83A
Eveready	4½ "A"	746

MODEL - 5027



BATTERY LOCATION

BATTERY SERVICING

(See Figure No. 1)

To replace batteries, loosen and remove the two screws at the left and right hand corners of the cabinet back. Remove the back and pull out the plug from each battery. Never pull on the wires connected to the plugs as they may break. Always grasp the plug form between the fingers, or use a flat blade to pry out the plug. Observe with care the position of the batteries and plugs when replacing. Be sure that batteries and plugs are replaced as shown in the "Battery Location" diagram. (Figure No. 1)

After the batteries have been installed, replace the back. Make sure that the two wires from the loop antenna are held in place between the brackets of the cabinet and the back by the two fastening screws.

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

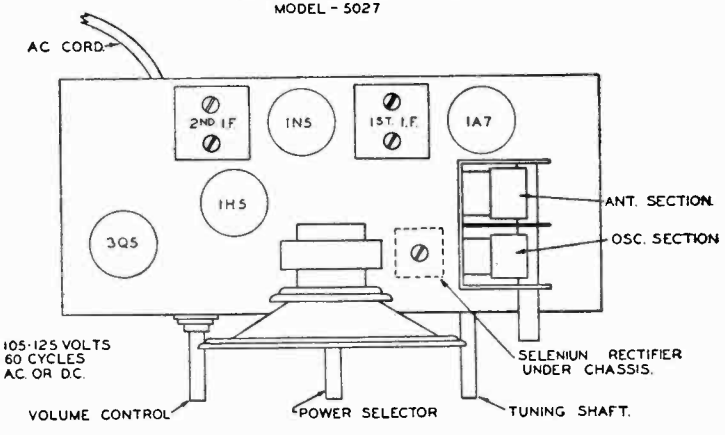
The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the first and second I. F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

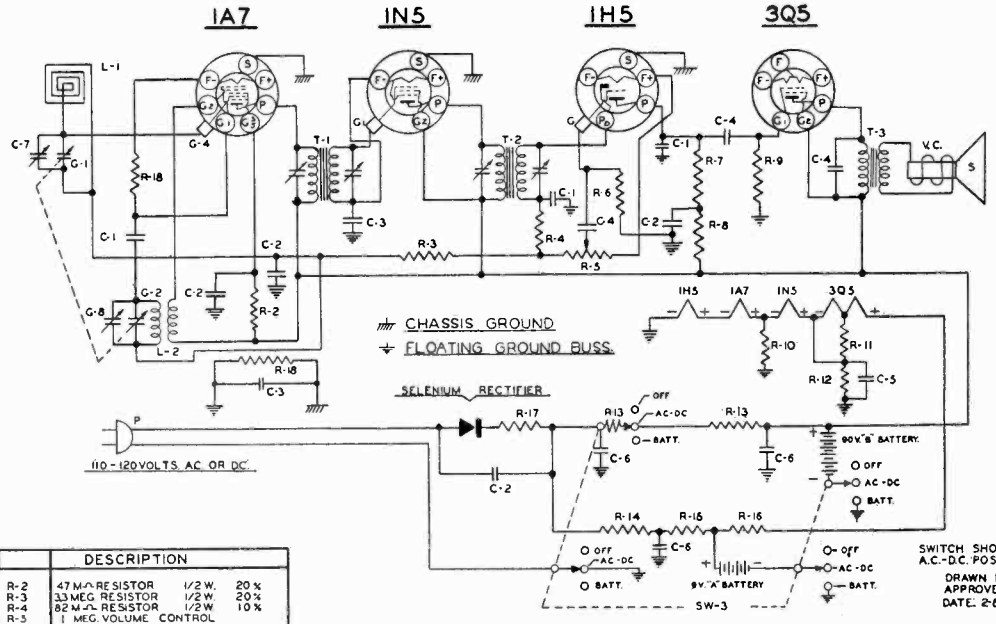
THIRD STEP: Remove the generator leads from the gang condenser and replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn of wire over the outside of the cabinet. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer through the hole which is provided in the top of the cabinet until a maximum signal is noted on the output meter. The ANT. trimmer hole in the top of the cabinet is covered by a small plug button. Replace this button after adjustment has been made. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

TUBE AND TRIMMER LOCATION
MODEL - 5027



TL-50

FIGURE-1



PART NO.		DESCRIPTION
IR-10	R-2	47 MΩ RESISTOR 1/2 W. 20%
IR-23	R-3	33 MEG. RESISTOR 1/2 W. 20%
IR-31	R-4	82 MΩ RESISTOR 1/2 W. 10%
VC-2	R-5	1 MEG. VOLUME CONTROL
IR-3	R-6	10 MEG. RESISTOR 1/2 W. 20%
IR-12	R-7	1 MEG. RESISTOR 1/2 W. 20%
IR-11	R-8	470 MΩ RESISTOR 1/2 W. 20%
IR-13	R-9	2.2 MEG. RESISTOR 1/2 W. 20%
IR-32	R-10	680 Ω RESISTOR 1/2 W. 10%
IR-33	R-11	270 Ω RESISTOR 1/2 W. 10%
IR-21	R-12	330 Ω RESISTOR 1/2 W. 10%
IR-39	R-13	6.20 Ω RESISTOR 1/2 W. 5%
WR-3A	R-14	1050 Ω } CANDOHM RESISTOR
	R-15	1050 Ω }
	R-16	40 Ω }
IR-35	R-17	82 Ω WIREWOUND RESISTOR 2W 10%
IR-20	R-18	220 MΩ RESISTOR 1/2 W. 20%
MC-2	C-1	100 MMFD. CONDENSER. [MICA]
PC-5	C-2	.05 MFD. CONDENSER 400 V.
PC-8	C-3	.1 MFD. CONDENSER 400 V.
PC-6	C-4	.005 MFD. CONDENSER 600 V.

PART NO.		DESCRIPTION	PART NO		DESCRIPTION
EC-6	C-5	70 MFD. 10 V. ELECTROLYTIC		T-3	OUTPUT SPEAKER TRANSFORMER
EC-4	C-6	40-40-40-150 V ELECTROLYTIC	SPK-3	VC	VOICE COIL
TC-7	C-7	ANTENNA TRIMMER		S	P.M. SPEAKER
	G-8	OSC. TRIMMER.	SW-5	SW-3	4 POLE 3 POSITION
	G-1	GANG CONDENSER	SR-1	—	SELENIUM RECTIFIER
GC-4	G-2		TU-11	—	1A7-1N5-1H5-3Q5
LL-10	L-1	LOOP ANNTENNA	"A" BATTERY		9 VOLTS
LO-8	L-2	OSC. COIL	"B" BATTERY		90 VOLTS.
LI-3	T-1	INPUT I.F. TRANSFORMER			
LI-4	T-2	OUTPUT I.F. TRANSFORMER			
CO-1	P	LINE CORD			

POWER SOURCES: This receiver is designed for operation on either an external power source or on the enclosed batteries.

AC OR DC OPERATION: This receiver may be operated on 50 to 60 cycle, 110 to 125 volt AC current or 110 to 125 DC current.

CAUTION: Never plug this receiver into a 220 volt line as this will seriously damage the component parts which have been designed for 110 to 125 volt operation only.

To operate on AC or DC open the small door at the lower right hand corner in the back of the cabinet. Pull out the power cord and plug into a convenient outlet of the proper voltage and current. Follow instructions under "Controls."

To operate on the enclosed batteries, follow instructions under "Control."

CONTROLS: This receiver has three control knobs which are located on the front panel of the cabinet.

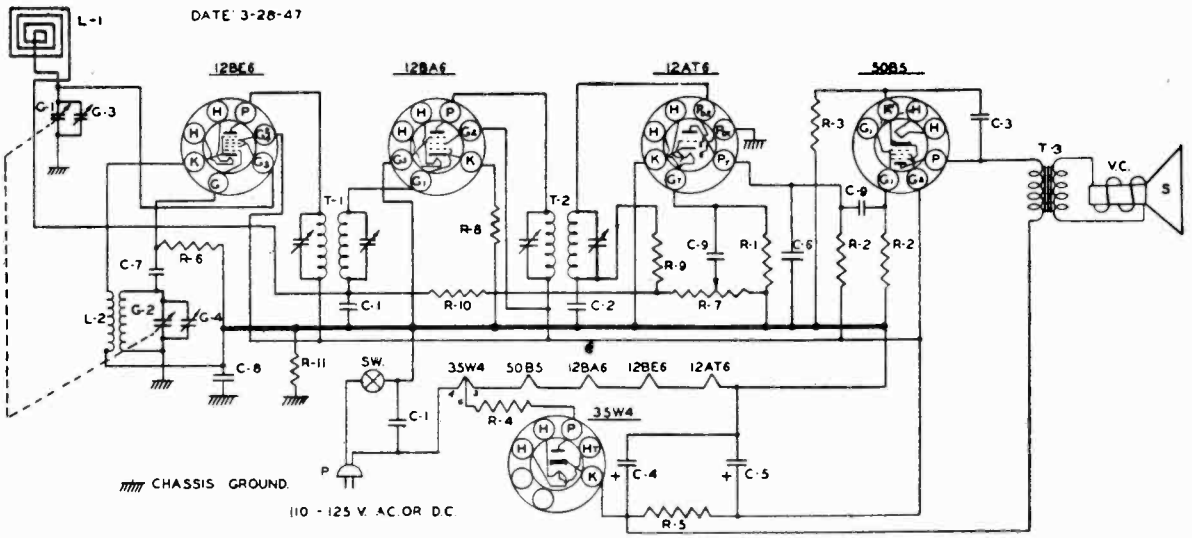
STATION SELECTOR KNOB: The right hand knob is the station selector. Rotate this knob to the right or left to select your desired station. The dial scale is calibrated in kilocycles. By mentally adding a zero to the numbers on the scale, the result will be read directly in (KC) kilocycles. (i.e., 60 plus 0 equals 600 KC or 140 plus 0 equals 1400 KC).

POWER SELECTOR SWITCH: The center knob is the power selector. It has three positions which are indicated on the front panel. The extreme left hand position is the "OFF" position. The small dot on this knob must point to "OFF" when the receiver is not in use. The center position is "AC-DC" and is used when it is desired to operate the receiver from a power line source. The extreme right hand position is "BATT" and is used when it is desired to operate on the enclosed batteries.

AC OPERATION: When an AC power source is used, set the power selector knob to "AC-DC" after the power cord has been plugged into a convenient outlet. The receiver is now ready for operation.

DC OPERATION: If the receiver does not operate after a few seconds, reverse the power cord plug in the outlet and it will operate properly.

MODEL 5050 SPIEGEL



Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

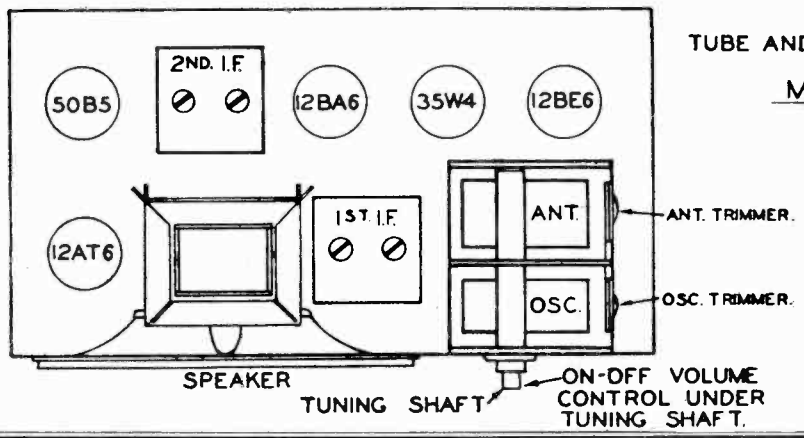
The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the first and second I. F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

THIRD STEP: Remove the generator leads from the gang condenser and replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn of wire over the outside of the cabinet. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer through the hole which is provided in the end of the cabinet until a maximum signal is noted on the output meter. The ANT. trimmer hole in the side of the cabinet is covered by a small plug button. Replace this button after adjustment has been made. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

PART NO.		DESCRIPTION
IR-13	R-1	2.2 MEG. RESISTOR 1/2 W. 20%
IR-11	R-2	470M RESISTOR 1/2 W. 20%
IR-14	R-3	150 RESISTOR 1/2 W. 20%
IR-17	R-4	33 RESISTOR 1/2 W. 20%
IR-25	R-5	2200 RESISTOR 1 W. 10%
IR-16	R-6	33 M RESISTOR 1/2 W. 20%
VC-9	R-7	1 MEG. VOLUME CONTROL
GC-7	G-1, G-2	GANG CONDENSER
	G-3	ANT. TRIMMER COND.
IR-36	R-8	100 RESISTOR 1/2 W. 20%
IR-10	R-9	47 M RESISTOR 1/2 W. 20%
	G-4	OSC. TRIMMER COND.
PC-5	C-1	.05 MFD. CONDENSER 400 V.
MC-2	C-2	.0001 MFD. MICA CONDENSER 20%
PC-7	C-3	.01 MFD. CONDENSER 400 V.
EC-12	C-4, C-5	40 MFD. / 20 MFD. 150 V. ELECTROLYTIC CONDENSER
MC-5	C-6	.0005 MFD. CONDENSER 20%
MC-4	C-7	.000056 MFD. MICA 20%
PC-8	C-8	.1 MFD. CONDENSER 400 V.
LL-9	L-1	LOOP ANTENNA
IR-23	R-10	3.3 MEG. RESISTOR 1/2 W. 20%
PC-6	C-9	.005 MFD. CONDENSER 600 V.
LO-13	L-2	OSC. COIL
LI-6	T-1	INPUT TRANSFORMER
LI-7	T-2	OUTPUT TRANSFORMER
	T-3	OUTPUT SPK. TRANFORMER.
SPK-10	V.C.	VOICE COIL
	S	PM. SPEAKER
IR-20	R-11	220M RESISTOR 1/2 W. 20%
	SW	AC. SW. ON VOLUME CONTROL
CO-1	P	LINE CORD
TU-18	—	12BE6 - 12BA6 - 12AT6 - 50B5 - 35W4



TUBE AND TRIMMER LOCATION

MODEL-5050

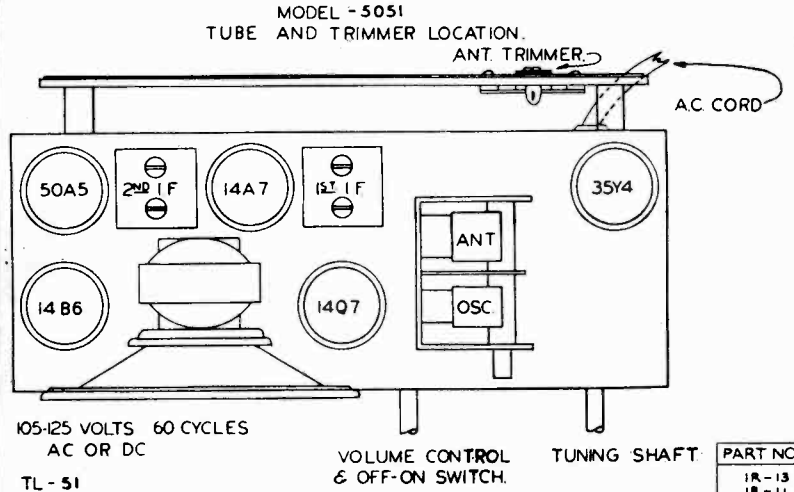
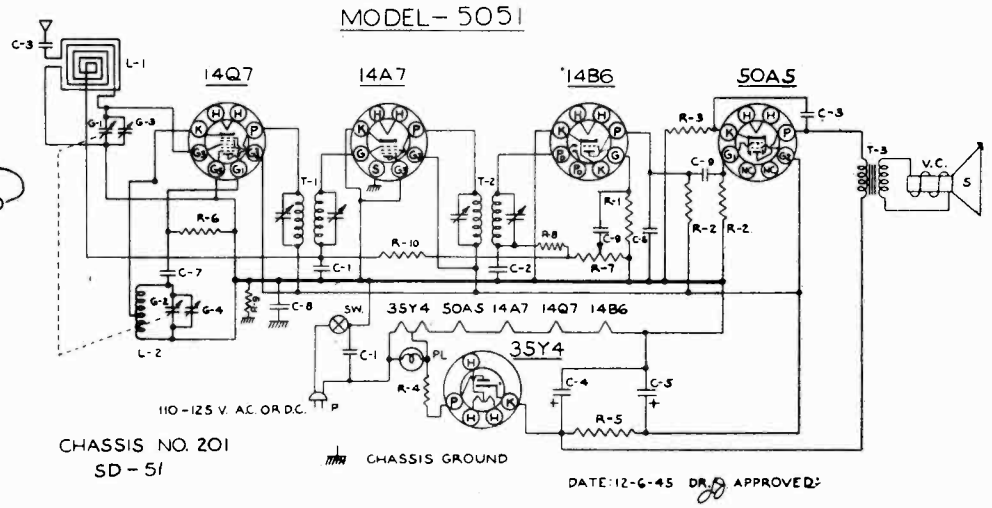


FIGURE - 1.



PART NO.		DESCRIPTION	PART NO.		DESCRIPTION	PART NO.		DESCRIPTION
1R-13	R-1	2.2 MEG RESISTOR 1-2 W 20%		G-4	OSC. TRIMMER COND.	LO-11	L-2	OSC. COIL
1R-11	R-2	470M RESISTOR 1-2 W 20%	PC-5	C-1	.05 MFD. COND. 400 V.	L1-1	T-1	INPUT I.F. TRANSFORMER
1R-14	R-3	150 RESISTOR 1-2 W 20%	MC-2	C-2	.0001 MFD MICA COND. 20%	L1-2	T-2	OUTPUT I.F. TRANSFORMER
1R-4	R-4	47 RESISTOR 1-2 W 20%	PC-7	C-3	.01 MFD. COND. 400 V.		T-3	OUTPUT SPK. TRANSFORMER
1R-15	R-5	2200 RESISTOR 1-2 W 20%	EC-12	C-4	40 MFD. 150 V. ELECTROLYTIC CONDENSER	SPK.-4	V.C.	VOICE COIL
1R-16	R-6	33 M RESISTOR 1-2 W 20%		C-5	20 MFD.		S	RM. SPEAKER
VC-3	R-7	1 MEG. VOLUME CONTROL	MC-5	C-6	.0005 MFD. COND. 20%	PB-1	PL	#47 PILOT BULB
GC-4	G-1	GANG CONDENSER	MC-4	C-7	.000056 MFD. MICA 20%		SW.	A.C. SW. ON VOL. CONTROL
	G-2		PC-9	C-8	.1 MFD. COND. 400 V.	CO-1	P	LINE CORD
TC-7	G-3	ANT. TRIMMER COND.	LL-6	L-1	LOOP ANTENNA	TU-6	——	14Q7 14A7 14B6 50A5 35Y4
1R-10	R-8	47M 1/2W 20%	1R-20	R-9	220M 1/2W 20%	1R-23	R-10	3.3MEG 1/2W 20%
						PC-6	C-9	.005MFD 600 V

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis between the volume and tuning controls. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

ALIGNMENT DATA

Remove the chassis from the cabinet. A Signal Generator with the following frequencies is required: 455 KC, 1400 KC and 1720 KC.

The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the A.V.C. from working and giving false readings. Turn the tone control to complete left hand position. Keep the generator output as low as possible to prevent overloading.

Connect an output meter across the voice coil of the speaker.

Connect a 20,000 ohm resistor across the loop connector terminals to reflect the proper loop impedance.

FIRST STEP: Connect the hot lead from the generator to the "ANT." section of the gang condensor through a .1 MFD. condensor. The ground lead must be connected to the floating ground buss under the chassis. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455 KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator connected in the same manner as in I.F. alignment, adjust the signal generator to 1720 KC. The "OSC." trimmer is located on the front section of the gang condenser. Adjust this trimmer until the signal is tuned in. The gang condenser should be at complete minimum capacity for this setting.

THIRD STEP: Remove the generator leads from the chassis. Remove the 20,000 ohm resistor from the loop connector terminals. Reinstall the chassis in the cabinet, connect the loop leads, motor plug and phono pickup leads.

Connect the generator leads to a transmitting loop, made of a few turns of wire, and loosely couple to the receiver loop antenna which is located on the back end of the cabinet. Adjust the generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The "ANT." trimmer is located on the rear section of the gang condenser. Adjust this trimmer until a maximum signal is noted on the output meter.

No further adjustment should be necessary, unless the receiver has been damaged, as the coils and tuning condenser have been specially handled at the factory to insure proper alignment at the lower frequencies.

TUBE AND TRIMMER LOCATION

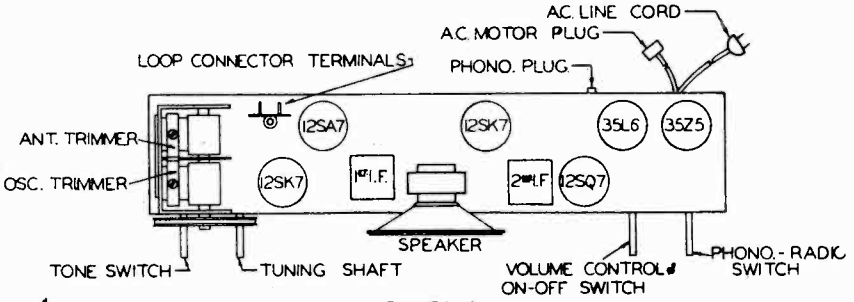
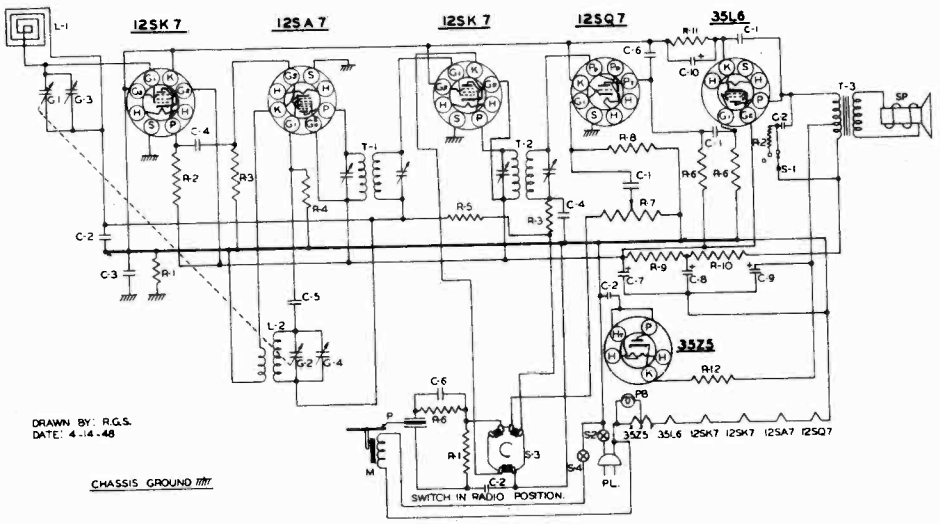


FIGURE-1

MODEL- 6041

SD-69-U

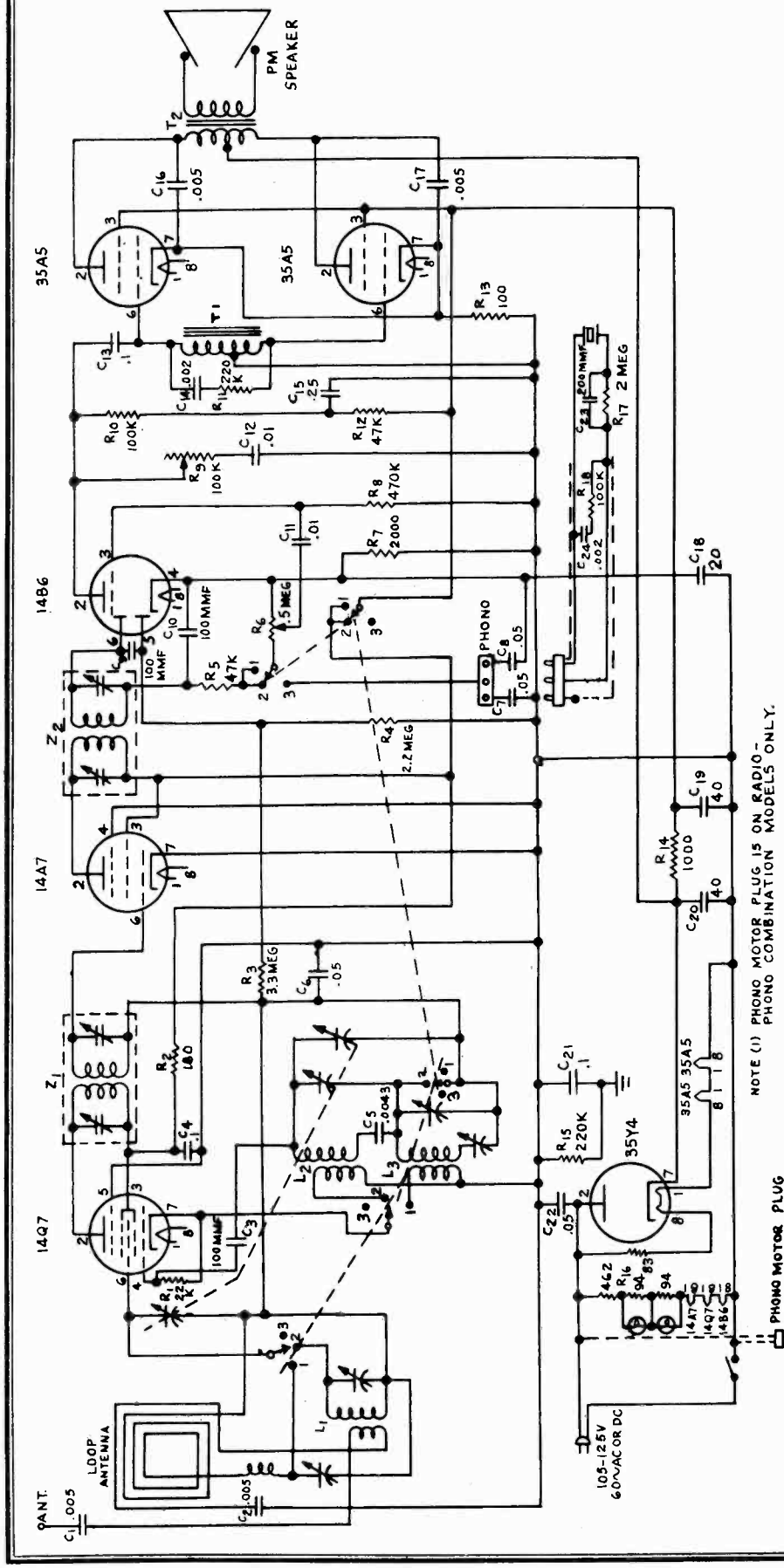


PART NO.		DESCRIPTION	PART NO.		DESCRIPTION
PC-7	C-1	.01 MFD. CONDENSER 400 V.	IR-13	R-8	2.2 MEG. RESISTOR 1/2W. 20%
PC-5	C-2	.05 MFD. CONDENSER 400 V.	IR-1	R-9	470 Ω RESISTOR 1/2W 20%
PC-8	C-3	.1 MFD. CONDENSER 400 V.	IR-42	R-10	1000 Ω RESISTOR 1 W 10%
MC-2	C-4	100 MMFD. MICA CONDENSER	IR-14	R-11	150 Ω RESISTOR 1/2W 20%
MC-4	C-5	50 MMFD. MICA CONDENSER	IR-17	R-12	33 Ω RESISTOR 1 W 20%
MC-5	C-6	500 MMFD. MICA CONDENSER	GC-5	G-1	GANG CONDENSER
EC-14	C-7	20 MFD.		G-2	
	C-8	40 MFD. 150 WV ELECTROLYTIC		G-3	ANT. TRIMMER
	C-9	40 MFD.		G-4	OSC. TRIMMER
EC-2	C-10	10 MFD. 25 WV. ELECTROLYTIC	L1-6	T-1	INPUT I.F. TRANSFORMER
IR-20	R-1	220M Ω RESISTOR 1/2W 20%	L1-7	T-2	OUTPUT I.F. TRANSFORMER
IR-15	R-2	2200 Ω RESISTOR 1/2W 20%		T-3	OUTPUT TRANSFORMER
IR-10	R-3	47M Ω RESISTOR 1/2W 20%			
IR-9	R-4	22M Ω RESISTOR 1/2W 20%	LL-17	L-1	LOOP ANT.
IR-23	R-5	.33 MEG. RESISTOR 1/2W. 20%	LO-15	L-2	OSC. COIL
IR-11	R-6	470M Ω RESISTOR 1/2W 20%			
VC-4	R-7	1 MEG. VOLUME CONTROL	SPK-12	SP	5" P.M. SPEAKER

PART NO.		DESCRIPTION
SW-2	S-1	TONE SWITCH
	S-2	SWITCH ON VOLUME CONTROL
SW-1	S-3	PHONO - RADIO SWITCH
	S-4	SWITCH ON RECORD CHANGER
AC-M-7	M	RECORD CHANGER MOTOR
AC-PU-7	P	CRYSTAL PICKUP ARM. CARTRIDGE SH
	PB	#47 PILOT BULB
CO-2	PL	LINE CORD

MODELS 7541, 7547,
8714, 8715, 8718

SPIEGEL



Short Wave Reception:

With a good antenna connected to it this receiver is able to pick up foreign and domestic short wave programs. International broadcasts may be heard in the following bands.

49 meter	6.0 — 6.2 Mc
31 meter	9.5 — 9.7 Mc
25 meter	11.7 — 11.9 Mc
19 meter	15.1 — 15.35 Mc
16 meter	17.75 — 17.85 Mc

Amateur radio stations may be heard on the 20 meter band from 14.0 to 14.4 Mc.

Tube Complement:

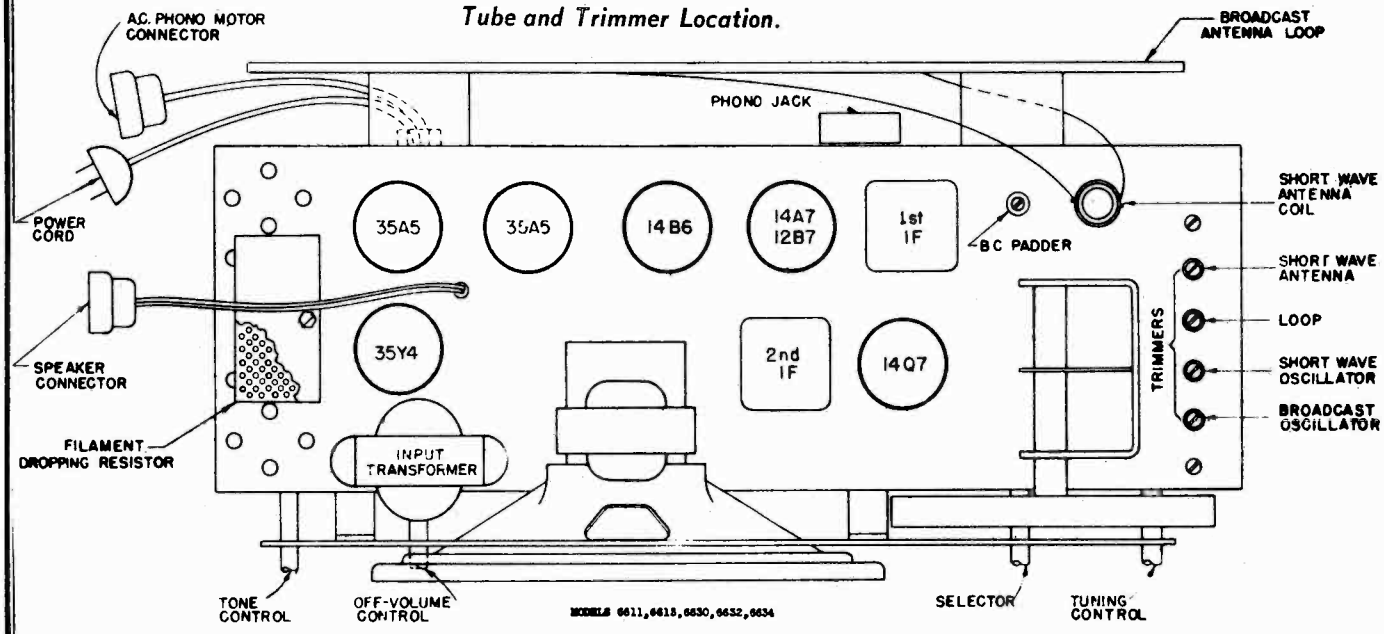
1 type 14Q7 Oscillator-Converter
1 type 14A7 I.F. Amplifier
1 type 14B6 Det. A.V.C. and Amplifier
2 type 35A5 Power Amp.
1 type 35Y4 Rectifier

radio receiver designed to operate on:

1. 105-125 volts A.C. 60 cycles.
2. 105-125 volts D.C.*

Power drawn is 50 watts.

Tube and Trimmer Location.



NOTE: FOR PHONO COMBINATION MODELS, SPEAKER IS REMOVED FROM CHASSIS & FILAMENT DROPPING RESISTOR IS LOCATED IN AREA WHERE SPEAKER IS SHOWN. SPEAKER CONNECTOR IS USED ON PHONO COMBINATION MODELS ONLY.

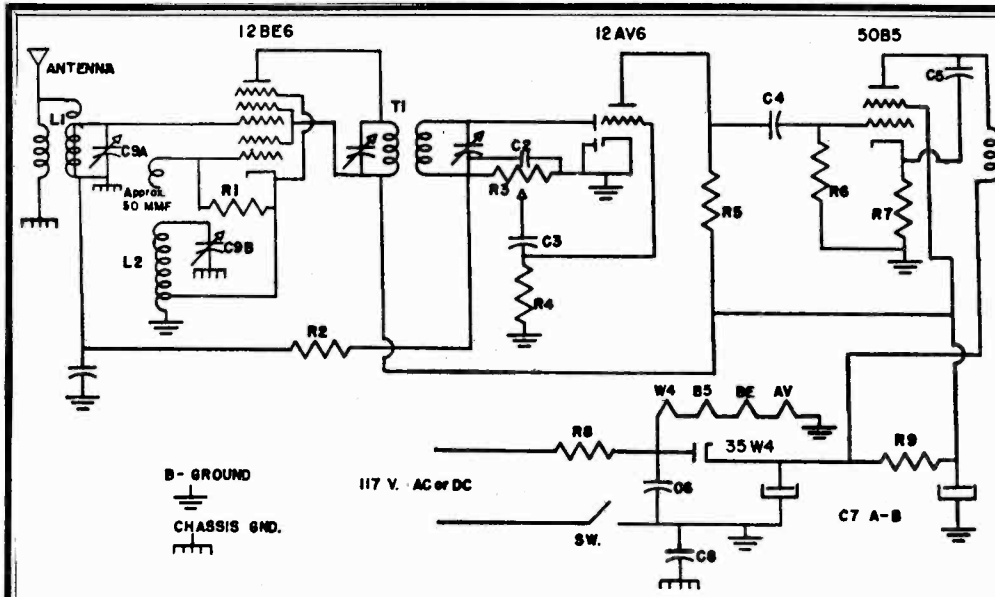
VI. ALIGNMENT PROCEDURE:

Steps	*Connect output of Generator to*	*Tune Osc. to*	*Band Switch on*	*Tune Radio Dial to*	*Adjust the following for Max. Peak Output*
1	Tuning condenser stator (ant.) in series with .01 mfd	455 Kc	Best	Quiet point on high frequency end of dial	1st and 2nd IF transformers
2	Antenna term. of Ant. loop in series with 100 mmf.	1660 Kc	Best	Full clockwise (out of mesh)	B.C. Osc. Trimmer
3	Same	1500 Kc	Best	Signal (1500 Kc)	B.C. loop trimmer
4	Same	600 Kc	Best	600 Kc	Osc. padder (rock in)
5	Same	1660 Kc	Best	Full clockwise (out of mesh)	B.C. Osc. Trimmer
6	Ant. term. in series with 100 mmf and 400 ohm resistor	18.6 Mc	S.W.	Full clockwise (out of mesh)	S.W. Osc. Trimmer
7	Same	18.0 Mc	S.W.	Signal (18.0 Mc)	S.W. Ant. Trimmer (rock in)

Output meter is connected across voice coil. Receiver volume is turned to maximum.

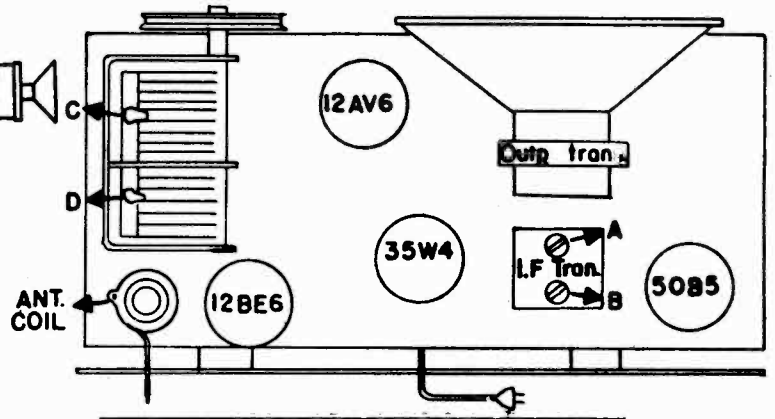
Parts List:

C 1—.005 Mfd. 400V
C 2—.005 Mfd. 400V
C 3—100 Mmf. 20%
C 4—.1 Mfd. 200V
C 5—.0043 Mfd. 5%
C 6—.05 Mfd. 200V
C 7—.05 Mfd. 200V
C 8—.05 Mfd. 200V
C 9—100 Mmf. 20%
C10—100 Mmf. 20%
C11—.01 Mfd. 400V
C12—.01 Mfd. 400V
C13—.1 Mfd. 200V
C14—.002 Mfd. 200V
C15—.25 Mfd. 200V
C16—.005 Mfd. 400V
C17—.005 Mfd. 400V
C18—20 Mfd. Electrolytic (*CA25.020)
C19—40 Mfd. Electrolytic (*CA25.020)
C20—40 Mfd. Electrolytic (*CA25.020)
C21—.1Mfd. 200V
C22—.05 Mfd. 400V
C23—200 Mmf. 20%
C24—.002 Mfd. 200V paper
Z 1—1st I.F. Transformer (*ZC2.191-1)
Z 2—2nd I.F. Transformer (*ZC2.191-2)
T 1—Audio Choke (*TA15.018)
R 1—22K ¼W
R 2—180 ohms ¼W
R 3—3.3 Meg ¼W
R 4—2.2 Meg ¼W
R 5—47K ¼W
R 6—.5 Meg Variable (*RA9.066)
R 7—2000 ohms ¼W
R 8—470K ¼W
R 9—100K Variable (*RA9.068)
R10—100K ¼W
R11—220K ¼W
R12—47K ¼W
R13—100 ohms 1W
R14—1000 ohms 1W
R15—220K ¼W
R16—Wire Wound (*RA14.026)
R17—2 Meg ¼W
R18—100K ¼W
Pilot Light, Mazda No. 47, 150 Ma.
*Mfr. Part No.



CHASSIS MODEL 10001

TUBE LOCATION CHART



CIR. SYM.	PART NO.	DESCRIPTION
R1	RC-21002	RESISTOR CARBON 10,000 Ohm 1/3 W
R2	RC-22204	" " 2.2 MEG Ohm 1/3W
R3	VC-12108-C	VOLUME CONTROL 1 MEG WITH SWITCH
R4	RC-21005	RESISTOR CARBON 10 MEG Ohm 1/3 W
R5,6	RC-24703	" " 470,000 Ohm 1/3 W
R7	RC-21500	" " 150 Ohm 1/3 W
R8	RC-40220	" " 22 Ohm 1 W
R9	RC-21001	" " 1000 Ohm 1/3 W
T1	TS-10017A	TRANSFORMER I.F.
T2	TO-10000	TRANSFORMER OUTPUT.
C1	CP-12203	CONDENSER PAPER .02 MFD 200 V.
C2	CM-25251	" MICA 250 MMF
C3,4	CP-12502	" PAPER .005 MFD 200 V.
C5	CP-14103	" PAPER .01 MFD 400 V.
C6,8	CP-12503	" PAPER .05 MFD 200 V.
C7	CL-10017	" ELECT. 30/20 MFD 150 V.
C9A-B	CV-10010	" VARIABLE
L1	TRF-10012	ANTENNA COIL
L2	TRC-10011-A	OSCILLATOR COIL

OPERATION

Insert the power cord plug into the power receptacle. To turn the receiver on, turn the lower knob to the right until a click is heard. In about 30 seconds the set will be in operating condition.

The tuning range of this receiver is 540 to 1600 kilocycles, the standard broadcast band. The dial has the last 0 omitted so that 54 is 540 Kc. and 160 is 1600 Kc.

Rotate the tuning knob (upper knob) until the desired station has the deepest tone, and the background noise is at a minimum. Adjust the volume control (lower knob) for the desired volume. Do not reduce the volume by tuning the receiver off the station.

To turn the receiver off, turn the lower knob to the left until a click is heard and the receiver is switched off.

ANTENNA

A 20 foot antenna hank is attached to the receiver. In metropolitan areas it may be necessary to uncoil only a portion of the antenna to obtain satisfactory reception. For maximum pickup uncoil the antenna hank the full length. Do not attach it to a water pipe, radiator, or other grounded object. If you are located some distance from a broadcasting station, or if local noise from electrical equipment is high, reception will be greatly improved by the addition of an outside antenna which may be connected to the end of the hank.

This receiver is designed to operate without a ground connection and no attempt should be made to use one.

ALIGNMENT PROCEDURE

I. F. Alignment

1. Set variable condenser to high frequency end of dial.
2. Connect suitable output meter to voice coil of speaker.
3. Connect signal generator to grid of BE6 through .05 condenser. Connect ground side of generator to B-.
4. Adjust trimmers A and B for maximum output at 455 Kc.
5. Repeat trimmer adjustment for peak sensitivity.

R. F. Alignment

1. Set variable condenser to extreme high frequency end of dial.
2. Connect signal generator to antenna input terminal on antenna coil through 50 mmf. condenser.
3. Set generator to 1720 Kc.
4. Set trimmer C to 1720 Kc.
5. Set generator to 1400 Kc. and tune receiver dial to maximum response.
6. Adjust trimmer D for maximum output at 1400 Kc.
7. Check tracking and make necessary compensations.

SPIEGEL MODEL 131504

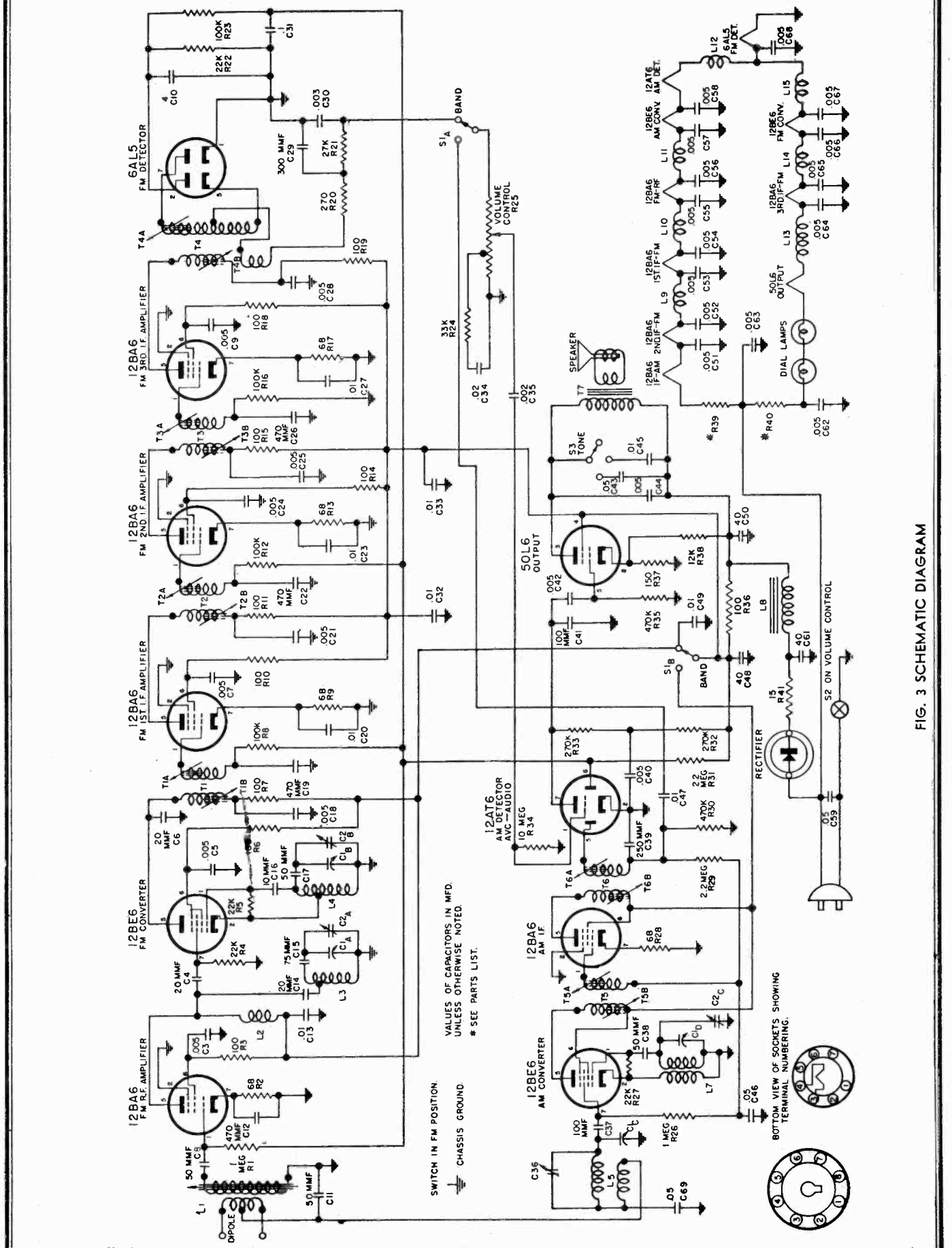


FIG. 3 SCHEMATIC DIAGRAM

ALIGNMENT PROCEDURE

STEPS	RECEIVER DIAL SETTING	BAND SWITCH POSITION	SIGNAL GENERATOR FREQUENCY	DUMMY ANTENNA	SIGNAL GENERATOR CONNECTIONS	OUTPUT INDICATOR	TRIMMER ADJUSTMENT	TRIMMER FUNCTION	REMARKS
1	Minimum capacity	AM	455 KC 400 cycle AM	.1 MFD	High side—Grid of AM converter tube (12BE6) Low side—Chassis	Output Meter across voice coil	T5A, T5B T6A, T6B	AM I.F.	Adjust for maximum output
2	"	"	1600 KC 400 cycle AM	.00025 MFD	"	"	C2C	AM Oscillator	Adjust for maximum output
3	1400 KC	"	1400 KC 400 cycle AM	"	High side—One ant. terminal Low side—Other ant. terminal	"	C36 (on back)	AM Antenna	Adjust for maximum output
4	Any position where there is no station interference.	FM	10.7 MC unmodulated .1 volt output.	.1 MFD	High side—Grid of 3rd I.F. amplifier tube (12BA6) Low side—Chassis	Connect V.T.V.M. to plate of Ratio detector tube, pin 2 (6AL5)	T4B	Ratio detector primary	Adjust for maximum negative voltage, about —5 volts
5	"	"	10.7 MC 400 cycle 30% Modulation. (See note A)	"	"	Connect scope to audio take off point (across C30)	T4A	Ratio detector secondary	Adjust for a balanced pattern on scope. See Fig. 4.
6	"	"	"	"	High side—Grid of 2nd I.F. amplifier tube (12BA6) Low side—Chassis	Connect scope across 100K ohm grid return resistor of 3rd I.F. (R16)	T3A, T3B	FM 3rd I.F.	Adjust for maximum gain and best pattern on scope. See Fig. 5 (See note "B" below)
7	"	"	"	"	High side—Grid of 1st I.F. amplifier tube (12BA6) Low side—Chassis	"	T2A, T2B	FM 2nd I.F.	Adjust for maximum gain and best pattern on scope. See Fig. 6.
8	"	"	"	"	High side—Plate of FM R.F. tube, pin 5 (12BA6) Low side—Chassis	"	T1A, T2B	FM 1st I.F.	Adjust for maximum gain and best pattern on scope. See Fig. 7.
9	109 MC	"	109 MC 400 cycle 30% modulation. (22.5 KC Deviation)	150 ohms in each lead.	High side—One ant. terminal Low side—Other ant. terminal	Connect output meter across voice coil	C2B	FM Oscillator	Adjust for maximum output (remove AVC ground)
10	103 MC	"	103 MC 400 cycle 30% modulation. (22.5 KC Deviation)	"	"	"	C2A	FM R.F.	Adjust for maximum output
11	100 MC	"	100 MC 400 cycle 30% modulation. (22.5 KC Deviation)	"	"	"	L1	FM Antenna	Adjust for maximum output

NOTE A: When aligning the FM I.F. circuits, keep the out put from the signal generator as low as possible.

NOTE B: The AVC circuit must be grounded to the chassis when aligning the FM I.F. circuits.

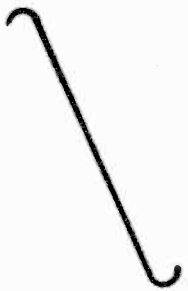


FIGURE 4

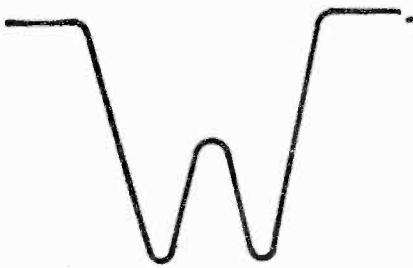


FIGURE 5

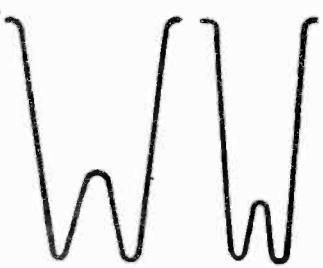


FIGURE 6

FIGURE 7

EQUIPMENT USED FOR ALIGNMENT

Vacuum tube voltmeter.
AM Signal generator
FM Sweep generator.
Oscilloscope.
Insulated screw driver.
Dummy antenna:
.1 MFD condenser
.00025 MFD mica condenser
150 ohm resistor (2)
Output meter.

SPIEGEL MODEL 131504

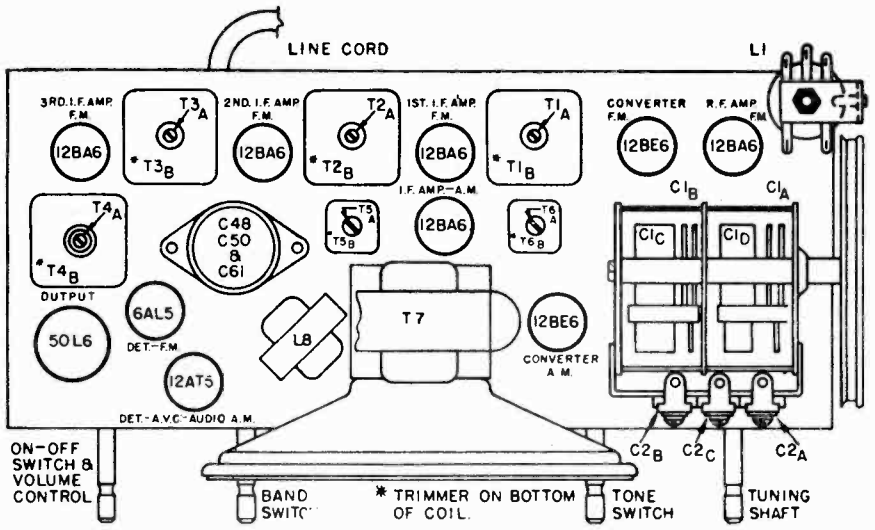


FIG. 1 TUBE AND TRIMMER LOCATIONS

VOLTAGE CHART

TUBE No.	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
12BE6 AM—Converter	—6	0	29ac	17ac	100	100	0	
12BA6 AM—I.F. Amp.	0	0	75ac	63ac	100	100	1	
12AT6 AM—Det.-AVC-Audio	0	0	17ac	6ac	0	0	30	
12BA6 FM—R.F. Amp.	0	0	29ac	39ac	100	95	1	
12BE6 FM—Converter	0	0	6ac	18ac	95	95	0	
12BA6 FM—1st I.F. Amp.	0	0	39ac	50ac	95	95	1	
12BA6 FM—2nd I.F. Amp.	0	0	50ac	63ac	95	95	1	
12BA6 FM—3rd I.F. Amp.	0	0	18ac	31ac	95	95	1	
6AL5 FM—Ratio detector	0	—3	0	6ac	—4	0	0	
50L6GT Power output	0	31ac	85	95	0	30	80ac	6.5

RESISTANCE CHART

TUBE No.	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
12BE6 AM—Converter	20K	1	27	18	25K	25K	3 meg.	
12BA6 AM—I. F. Amp.	2 meg.	0	70	62	25K	25K	70	
12AT6 AM—Det.-AVC-Audio	10 meg.	0	18	5	470K	120K	540K	
12BA6 FM—R.F. Amp.	1 meg.	0	27	40	25K	25K	70	
12BE6 FM—Converter	20K	0	5	18	25K	25K	22K	
12BA6 FM—1st I.F. Amp.	220K	0	40	50	25K	25K	70	
12BA6 FM—2nd I.F. Amp.	220K	0	50	62	25K	25K	70	
12BA6 FM—3rd I.F. Amp.	100K	0	18	28	25K	25K	70	
6AL5 FM—Ratio Detector	0	25K	0	5	750K	0	750K	
50L6GT Power output	0	28	25K	25K	450K	250K	70	150

All voltage readings are taken from tube pin to chassis.

All measurements are made with no signal, using a 20,000 ohm per volt meter.

AC input voltage must be maintained at 117 volts for accurate readings.

AC voltages shown are at 1000 ohms per volt.

All voltages shown are approximate.

All resistance readings are taken from tube pin to chassis.

Due to manufacturing tolerance on component parts, resistance readings may vary as much as 20%.

All readings are shown in ohms unless otherwise noted.

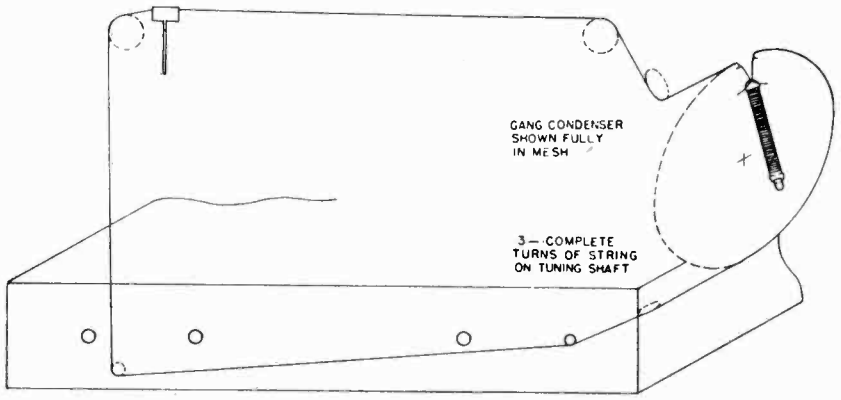


FIG. 2 DIAL CORD STRINGING

MODEL 131504 SPIEGEL

FM-AM radio receiver designed for use on 117 volts 60 cycles AC or DC current.

It covers the standard AM broadcast frequency range, 540-1600 kilocycles (KC) and the FM frequency range from 88 to 108 megacycles (MC).

SPECIFICATIONS

Power Supply	117 volts AC DC
Power Consumption	55 Watts
Frequency Range FM	88 to 108 MC.
Frequency Range AM	540 to 1600 KC.
I.F. frequency FM	10.7 MC.
I.F. frequency AM	455 KC.
Band width, FM, Ratio detector	360 KC.
Band width, FM, 2nd I.F.	280 KC.
Band width, FM, 1st I.F.	240 KC.
Band width, FM, Converter	180 KC.
Tubes	10
Rectifier	Selenium, 150 ma.
Speaker	6" P.M.

The tubes used are as follows:

12BA6	FM, R.F. Amplifier
12BE6	FM, Converter
12BA6	FM, 1st I.F. Amplifier
12BA6	FM, 2nd I.F. Amplifier
12BA6	FM, 3rd I.F. Amplifier
6AL5	FM, Ratio detector
12BE6	AM, Converter
12BA6	AM, I.F. Amplifier
12AT6	AM, Detector-AVC-1st audio
50L6GT	Power output
A83-463	Selenium rectifier
No. 47	Pilot lights (2)

PARTS LIST

Schematic Diagram Reference	Part No.	Description
R8, R12, R16, R23	A60-727	100 K Ohm 20% 1/2 Watt
R20	A60-723	270 Ohm 20% 1/2 Watt Resistor
R21	A60-745	27 K Ohm 10% 1/2 Watt Resistor
R24	A60-748	33 K Ohm 10% 1/2 Watt Resistor
R25	B24-173	Volume Control with Switch
R29, R31	A60-726	2.2 Megohm 20% 1/2 Watt
R30, R35	A60-731	470K Ohm 1/2 Watt Resistor 20%
R32, R33	A60-747	270K Ohm 20% 1/2 Watt
R34	A60-728	10 Megohm 20% 1/2 Watt
R36	A60-755	100 Ohm 1 Watt 10% Resistor
R37	A60-741	150 Ohm 10% 1 Watt Resistor
R38	A60-751	12K Ohm 10% 1 Watt Resistor
R39	A60-734	Special Compensating Resistor (Order from Spiegel)
R40	A60-735	Special Compensating Resistor (Order from Spiegel)
R41	A60-738	15 Ohm — Glassohm 10% 3 Watt Resistor
L1	SB10-488	Antenna Coil, FM
L3	B10-489	R. F. Coil, F.M.
L4	B10-490	Oscillator Coil, F. M.
L5	A10-507	Antenna Coil, A. M.
L7	B10-491	Oscillator Coil, A. M.
L8	A33-225	Filter Choke
L2, L9, L10, L11, L12, L14, L15	A33-226	Filament Choke, 11 mh.
L13	A33-227	Filament Choke
S1A, S1B	A69-181	Switch, F.M.—A.M.
S2		Switch, ON-OFF, (on volume control)
S3	A26-125	Tone Control
T1	SA10-493	1st I. F. Transformer, F. M.
T2, T3	SC10-494	2nd & 3rd I. F. Transformer, F.M.
T4	SC10-492	Ratio detector transformer, F.M.
T5	A10-499	1st I. F. transformer, A. M.
T6	A10-500	2nd I. F. transformer, A. M.
T7	A80-234	Output transformer
	B39-285	Drum, for variable condenser
	A23-151	Line cord
	A83-463	Selenium rectifier, 150 ma.
	A75-63	Tuning shaft
	B79-354	Speaker, 6 1/4" P. M.
	A21-111	Cover, for compensating resistors
	SB82-49	F. M. antenna assembly, Dipole
	B83-325	Speaker baffle
	D42-379	Cabinet, Walnut
	C67-534	Dial Scale
	A98-4	Grille Cloth
	A52-279	Knob, Walnut
	A83-292	Retainer, dial scale, right
	A83-293	Retainer, dial scale, left
	C83-580	Cabinet back
	B83-503	Dial diffusing plate
	A58-65	Dial pointer

Schematic Diagram Reference	Part No.	Description
C1A, C1B, C1C, C1D	C19-191	Variable Condenser
C2A, C2B, C2C	A20-144	FM—R.F. Trimmer; FM—Oscillator Trimmer; AM—Oscillator Trimmer
C3, C5, C7, C9, C18, C21, C23, C24, C25, C28, C40, C51, C52, C53, C54, C55, C56, C57, C58, C62, C64, C65, C66, C67	A16-177	005 MFD Ceramic Condenser (Centralab No. DA048 or Equiv.)
C68	A15-198	20 MMF 20% Ceramic Condenser (Erie Style "A" or Equiv.)
C4, C14	A15-193	20 MMF 20% Ceramic Condenser (Erie Style K or Equiv.)
C6	A15-194	50 MMF 10% Ceramic Condenser (Erie Style K or Equiv.)
C8, C17	A18-273	4 MFD 150 Volt Elec. Condenser
C10, C34,	A16-150	.02 MFD 400 Volt Tubular Condenser
C12, C19, C22, C26	A15-200	470 MMF 20% Mica Condenser
C13, C32, C33, C47 C49	A16-165	.01 MFD 200 V Tubular Condenser
C15	A15-195	75 MMF 10% Ceramic Condenser (Erie Style K or Equiv.)
C16	A15-197	10 MMF 10% Ceramic Condenser (Erie Style A or Equiv.)
C20, C23, C27, C42, C44	A16-163	.01 MFD 120 V Molded Paper Condenser
C29	A16-153	.005 MFD 600 Volt Tubular Condenser
C30	A15-199	300 MMF 20% Mica Condenser
C31	A16-180	.003 MFD 200 V Molded Paper Condenser
C35	A16-157	.1 MFD 200 V Tubular Condenser
C36	A16-178	.002 MFD 200 V Molded Paper Condenser
C37	A20-139	AM Antenna Trimmer
C11 C38	A15-190	100 MMF 20% Mica Condenser
C39	A15-191	50 MMF 20% Mica Condenser
C41	A15-176	250 MMF 20% Mica Condenser
C46, C69 C43, C59	A15-196	100 MMF 20% Ceramic Condenser (Erie Style K or Equiv.)
C45	A16-158	.05 MFD 400 V Tubular Condenser
C48, C50, C61	A16-156	.01 MFD 400 V Tubular Condenser
R1, R26	A18-284	40 MFD 150 Volt Electrolytic Condenser; 40 MFD 300 Volt Electrolytic Condenser; 40 MFD 300 Volt Electrolytic Condenser
R2, R13, R17, R28, R9	A60-688	1 Megohm Resistor 20% 1/2 Watt
R3, R6, R7, R10, R19, R11, R14, R15, R18	A60-742	68 Ohm Resistor 10% 1/2 Watt
R4, R5, R22, R27	A60-743	100 Ohm Resistor 20% 1/2 Watt
	A60-744	22 K Ohm Resistor 10% 1/2 Watt

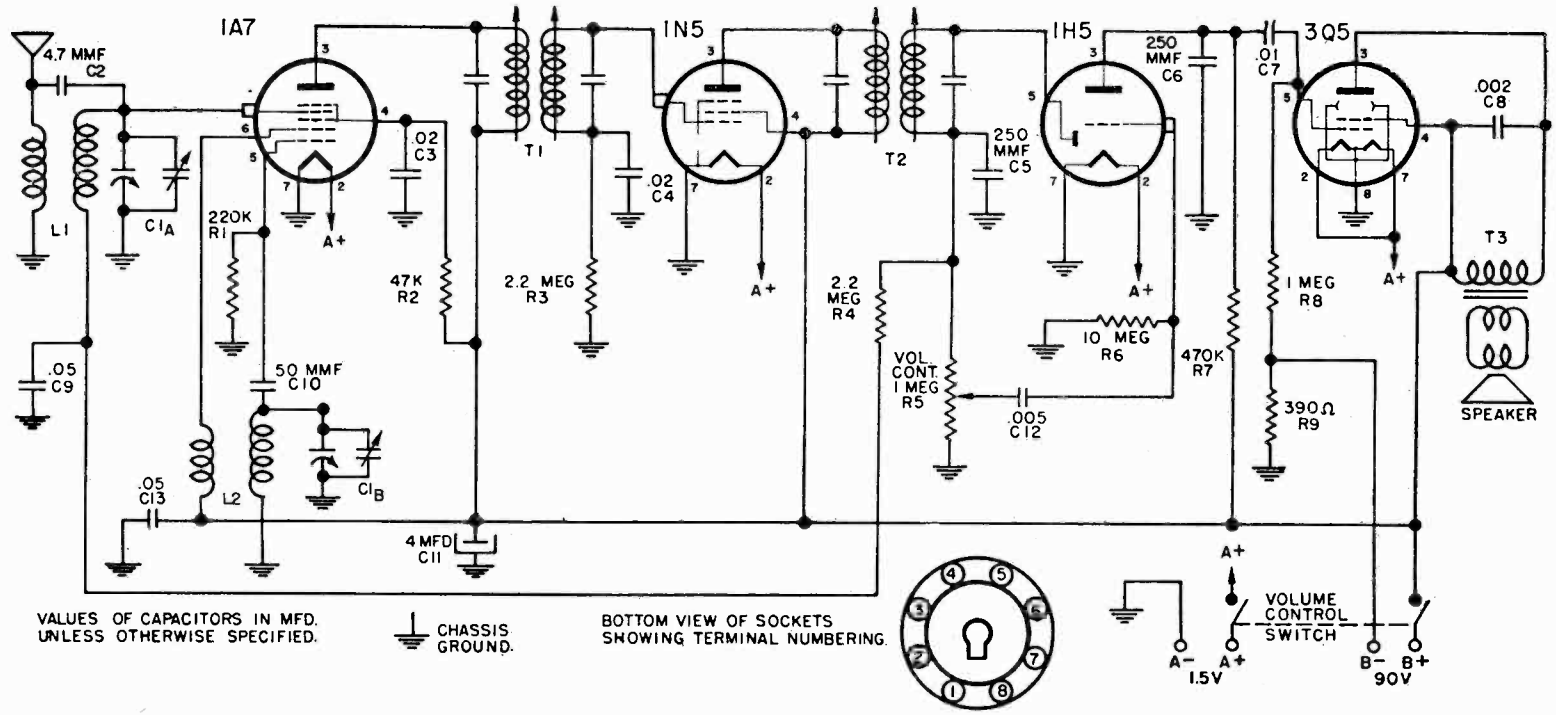


FIG. 1 SCHEMATIC DIAGRAM

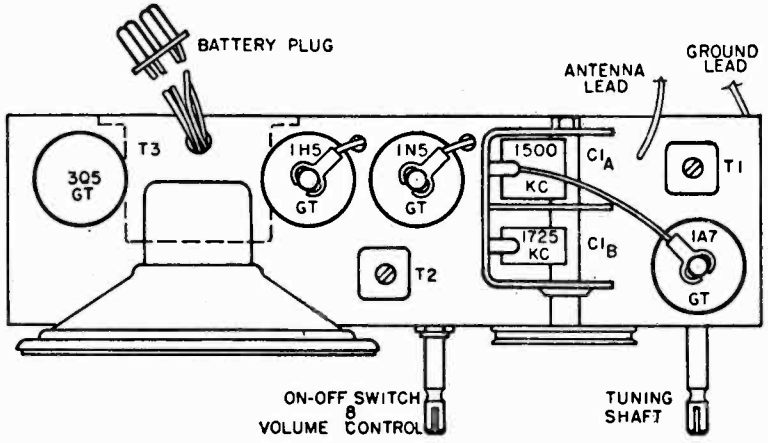


FIG. 2 TUBE AND TRIMMER LOCATIONS

VOLTAGE CHART

All voltages measured with a 1000 ohm per volt meter on the 150 volt scale. For the following voltages the "B" battery section of the power pack should read 90 volts under load, the "A" section 1½ volts.

TUBE	PIN NUMBERS							
	1	2	3	4	5	6	7	8
1A7	0	1.5	85	37	0	85	0	0
1N5	0	1.5	85	85	0	0	0	0
1H5	0	1.5	17	0	0	0	0	0
3Q5	0	1.5	83	85	0	5	1.5	

DESCRIPTION

Your New Aircastle Radio is a 4-Tube Superhetrodyne receiver designed to cover a frequency range of from 540 kilocycles to 1725 kilocycles (K.C.). The tubes used are—

1A7 GT—Osc. Converter
1N5 GT—I. F. Amplifier
1H5 GT—AVC Det. Audio Amplifier
3Q5 GT—Power Output

ALIGNMENT PROCEDURE

Volume control—Maximum: all adjustments.

Connect ground lead of signal generator to chassis.

Connect dummy antenna in series with output lead of signal generator.

Connect output meter across voice coil of speaker.

The following equipment is necessary for proper alignment:
Signal generator that will provide the test frequencies as listed, 30% modulated, 400 c.p.s.
Output meter.
Non-metallic screwdriver.
Dummy antennas— .1 mfd., .00025 mfd.

Position of Variable	Generator Frequency	Dummy Ant. Mfd.	Generator Connections	Trimmer Adjustment	Trimmer Function
Fully open	455 KC	.1	1A7 Grid (Stator of C1A)	T2	Output I.F.
Fully open	455 KC	.1	1A7 Grid (Stator of C1A)	T1	Input I.F.
Fully open	1725 KC	.00025	Antenna Lead	C1B	Oscillator
Tune in signal from generator	1400 KC	.00025	Antenna Lead	C1A	Antenna

INSTALLATION

This receiver has been designed to operate on a self-contained battery containing both the "B" battery (90 Volts) and the "A" battery (1½ Volts) Aircastle No. 1491.

After inserting the battery plug of the receiver into the socket on the battery, the battery may be placed inside the cabinet in the space provided.

Anyone of the following batteries may also be used with this receiver: Eveready No. 748, General No. 60DL-11 L, Burgess No. 17G-D60, Ray-O-Vac No. AB 82.

For best results an outside antenna about 75-100 feet long, including the lead-in, should be used. It should be erected as high as possible and as far away from surrounding objects as practical. When the receiver is used close to powerful broadcasting stations it may be desirable to use a shorter antenna. (For most ordinary instalations use Aircastle House Mast Arial No. 1396.)

To obtain the best possible performance a good ground should be used. This can be a water pipe, or a galvanized pipe driven into the ground. It should be connected to the ground lead (black) of the receiver. Connect the antenna wire to the other lead coming from the receiver.

PARTS LIST

Circuit Diagram Reference	Part No.	Description
C1A,C1B	B19-188	Variable Condenser
C2	A83-355	4.7 MMFD Condenser
C3,C4	A16-150	.02 MFD 400 volt condenser
C5,C6	A15-176	250 MMFD mica condenser
C7	A16-156	.01 MFD 400 volt condenser
C8	A16-155	.002 MFD 600 volt condenser
C9,C13	A16-152	.05 MFD mica condenser
C10	A15-175	50 MMFD mica condenser
C11	A18-273	4 MFD 150 volt electrolytic condenser
C12	A16-153	.005 MFD 600 volt condenser
R1	A60-667	220K ohm ½ watt resistor
R2	A60-685	47K ohm ½ watt resistor
R3,R4	A60-684	2.2 megohm ½ watt resistor
R5	A24-170	Volume control, 1 megohm
R6	A60-663	10 megohn, ½ watt resistor
R7	A60-662	470K ohm ½ watt resistor
R8	A60-668	1 megohm ½ watt resistor
R9	A60-665	390 ohm ½ watt resistor
L1	A10-485	Antenna coil
L2	A10-505	Oscillator coil
T1,T2	A10-506	1st and 2nd I.F. transformer
T3	B80-232	Output transformer
	B79-352	Speaker, 5" P.M.
	A75-60	Tuning Shaft
	A45-118	Battery plug
	B67-515	Dial scale
	58-31	Dial pointer
	48-21	Dial crystal
	D42-437	Cabinet, walnut, wood
	A52-245	Knob, walnut

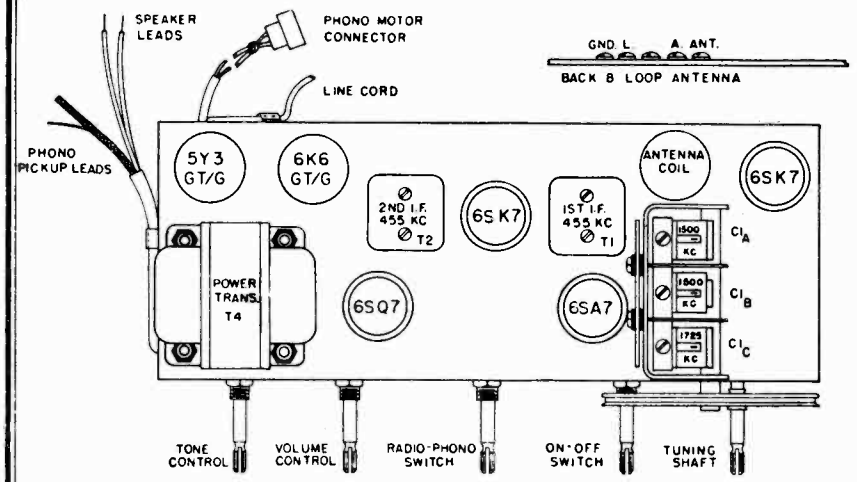


Fig. 1 Chassis, Top View

TUBE COMPLEMENT

The tube complement of this receiver consists of the following:

1—6SK7—R.F. Amplifier
1—6SA7—Mixer—OSC.
1—6SK7—I.F. Amplifier
1—6SQ7—Det. AVC—Audio
1—6K6—Power Output
1—5Y3—Rectifier

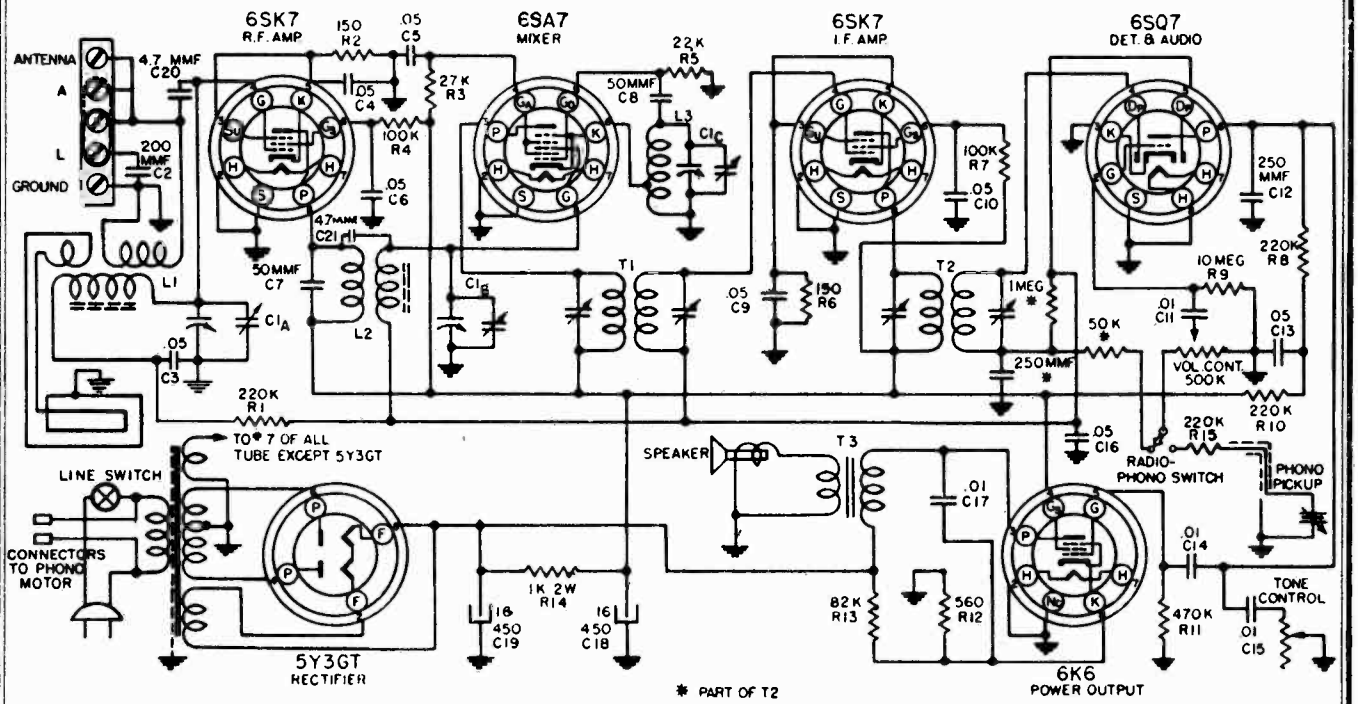


Fig. 2 Schematic Diagram

ALIGNMENT PROCEDURE

Volume control—Maximum: all adjustments.
Tone Control—Treble: Full Clockwise Rotation.
Connect ground lead of signal generator to radio chassis.
Connect dummy antenna in series with output lead of signal generator.
Connect output meter across voice coil of speaker.

The following equipment is necessary for proper alignment:
Signal generator that will provide the test frequencies as listed.
Output meter.
Non-metallic screwdriver.
Dummy antennas—.1 mfd., .00025 mfd.

Position of Variab'e	Generator Frequency	Dummy Ant. mfd.	Generator Connections	Trimmer Adiustment	Trimmer Function
Minimum Capacity (Fully Opened)	455 K.C.	.1	6SA7 Grid (Stator of C1B)	T1 T2	I. F.
Minimum Capacity (Fully Opened)	1725 K.C.	.00025	*Ant. Terminal on Loop	C1C	Osc.
Tune in signal From Generator	1500 K.C.	.00025	*Ant. Terminal on Loop	C1B	R. F.
Tune in signal From Generator	1500 K.C.	.00025	*Ant. Terminal on Loop	C1A	Ant.

*Be sure coupling link is in correct position for external antenna operation. See Fig 3.

Repeat the above alignment procedure as a final check.

With an output meter connected across the voice coil of the speaker, the output meter reading for ½ watt is 1.25 volts using a signal which is modulated 400 c.p.s.

POWER SUPPLY

This receiver is designed to operate from a power source of 117 volts A.C. 60 cycle current. If in doubt about the power rating in your location consult your local power company for this information. Never attempt to operate this radio on any current other than that specified.

ANTENNA and GROUND CONNECTIONS

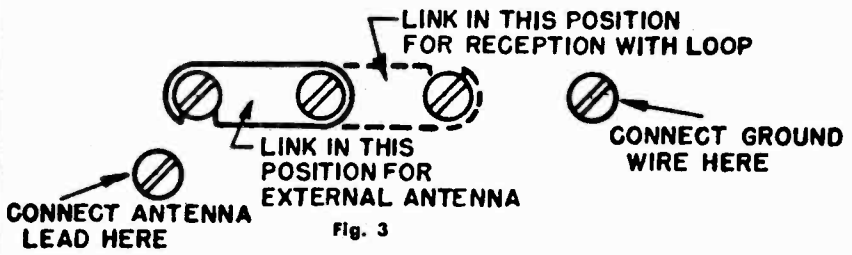
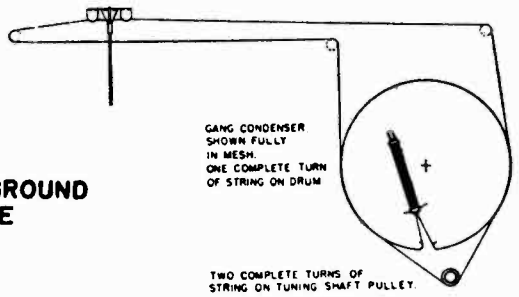


Fig. 3



PARTS LIST

Circuit Reference	Part No.	Description
		CONDENSERS
C1A, C1B, C1C	B19-186	Variable condenser
C2	B15-189	200 MMF Mica condenser (on loop)
C3, C4, C9, C16	A16-152	.05 MFD 200 volt condenser
C5, C6, C10, C13	A16-158	.05 MFD 400 volt condenser
C7, C8	A15-175	50 MMF mica condenser
C11, C14, C15	A16-156	.01 MFD 400 volt condenser
C12	A15-176	250 MMF mica condenser
C17	A16-168	.01 MFD 1000 volt condenser
C18	A18-279	16 MFD 450 volt electrolytic condenser
C19	A18-274	16 MFD 450 volt electrolytic condenser
C20, C21	A83-355	4.7 MMF condenser
		RESISTORS
R1, R8, R10, R15	A60-667	220K ohm ½ watt resistor
R2, R6	A60-686	150 ohm ½ watt resistor
R3	A60-692	27K ohm 1 watt resistor
R4, R7	A60-671	100K ohm ½ watt resistor
R5	A60-659	22K ohm ½ watt resistor
R9	A60-663	10 megohm ½ watt resistor
R11	A60-662	470K ohm ½ watt resistor
R12	A60-701	560 ohm 1 watt resistor
R13	A60-700	82K ohm 1 watt resistor
R14	A60-699	1000 ohm 2 watt resistor
		COILS
L1	C10-459	Antenna coil
L2	B10-452	R. F. Coil
L3	B10-446	Oscillator coil
T1	B10-412	1st I.F. transformer
T2	B10-444	2nd I. F. transformer
		MISCELLANEOUS
T3	A80-222	Output transformer
T4	C80-223	Power transformer
	A69-169	Switch, on-off
	A26-123	Tone control
	A24-169	Volume control
	A84-41	Dial drive shaft and pulley assembly
	B79-359	Speaker, 10" P. M.
	S84-234	Loop antenna and Back assembly
	C67-529	Dial scale
	A52-263	Knob, (tuning)
	A52-264	Knob, (tone)
	A52-265	Knob, (volume)
	A52-266	Knob, (on-off)
	A52-267	Knob, (radio-phono)
	B58-67	Dial pointer
	A83-537	Retainer, dial scale
	A69-180	Switch, radio-phono
	11200	Milwaukee Automatic Record Changer

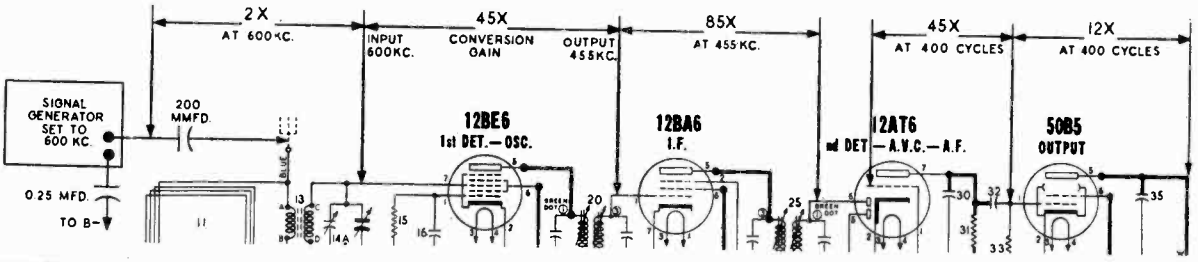
STEWART-WARNER CORP. MODELS A51T1, A51T2, A51T3, A51T4

STAGE GAIN MEASUREMENT PROCEDURE

REQUIRED INSTRUMENTS: The amount of amplification or "gain" of each of the stages of this receiver may be measured with an A.C. Vacuum Tube Voltmeter or a "channel" type instrument containing a tuned and calibrated amplifier.

PROCEDURE: It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F. and I.F. stages are carefully and accurately aligned by utilizing the alignment procedure given above.
2. Connect Signal Generator as shown below.
3. The values of stage gain which are given here were measured with a fixed bias of 3 volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 3 volt battery to A.V.C. at terminal "D" of antenna coupling coil and connect the positive battery lead to B— in receiver chassis.
4. Set Signal Generator for operation at 600 Kc with 400 cycle modulation and carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.
6. When using a "channel" type instrument, carefully tune it for maximum output at desired frequency before making measurements.

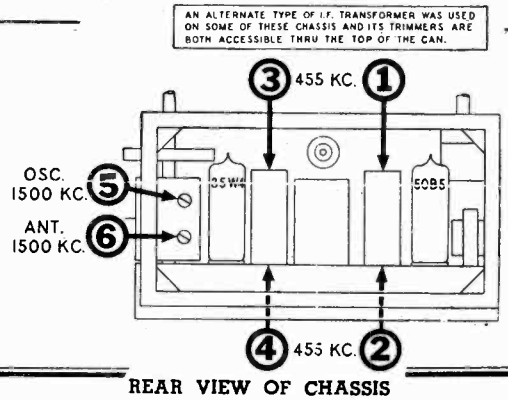


DIFFERENCES in tube characteristics, tolerance of parts, adjustment of tuned circuits and variations in line voltage will influence stage gain. These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.

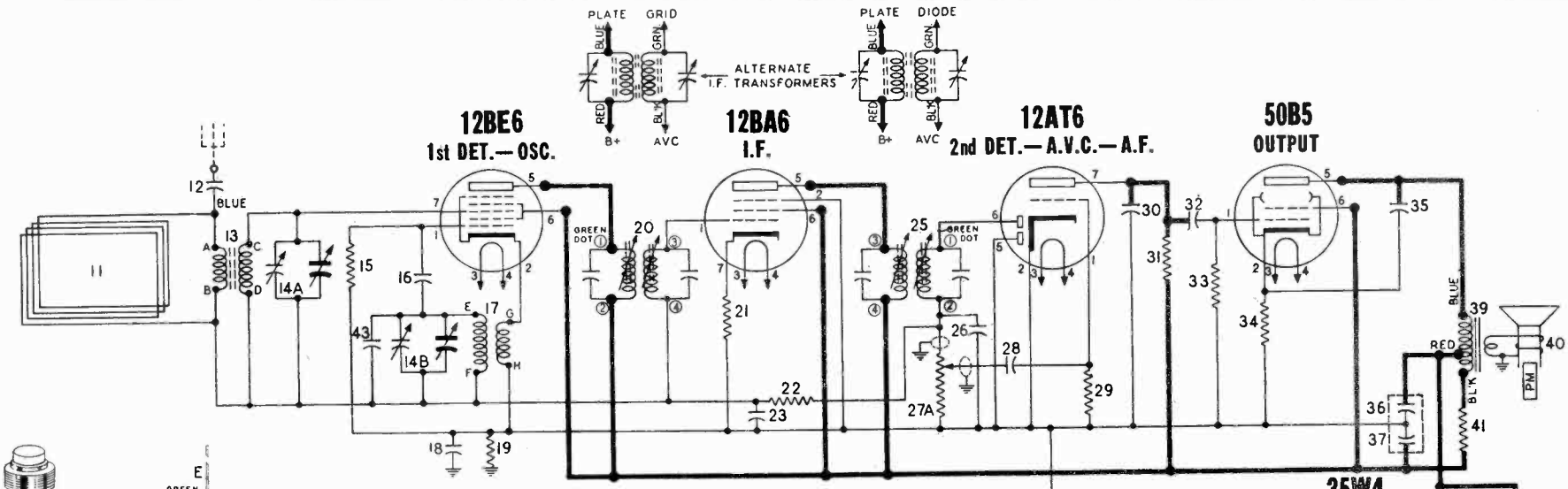
ALIGNMENT PROCEDURE

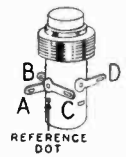
1. With the gang condenser fully meshed, the dial pointer should be 1/8" to the left of the 55 mark on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.
2. To remove chassis from cabinet lift edge of insulating sheet at bottom of cabinet and take out mounting screws at each corner. Then remove bottom plate by taking out screws at each end holding it to chassis. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposite side for convenient B— location).
3. Connect ground lead of signal generator to B— through a 0.25 Mfd. condenser.
4. Connect output meter across speaker voice coil (terminals at back of speaker) or from plate of 50B5 tube to B— through a 0.1 Mfd condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	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 bottom 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	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead	1500 KC	Tune to 1500 KC generator signal.	6	Broadcast Antenna	Adjust for maximum output.

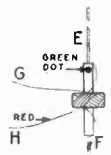


REAR VIEW OF CHASSIS





ANTENNA COUPLING COIL 504451



OSCILLATOR COIL 504458

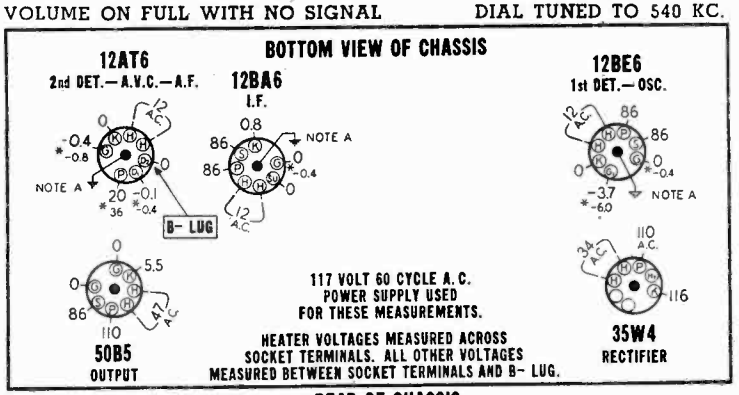
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

I.F. 455 KC.

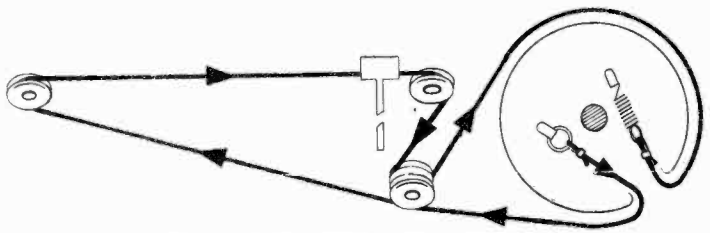
SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

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



NOTE A: Grounding of center stud on tube socket is necessary to reduce capacity coupling between other pins. Oscillation may result if this ground is omitted.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

114955	Clip on end of cord	119087	Ring for dial cord
117057	Cord (2 feet required)	505161	Tension Spring

PARTS LIST — MODEL A61P1

ORDER PARTS FROM YOUR
STEWART-WARNER DISTRIBUTOR ONLY

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
1	502160	Condenser—110 Mmfd. 500 volt
4-A, B	502494	Condenser—variable gang (with drum)
5	119132	Condenser—trimmer 2 to 15 Mmfd.
7	502159	Condenser—mica 50 Mmfd. 500 volt
8	502153	Condenser—.05 Mfd. 200 volt
11	502547	Condenser—electrolytic 4 Mfd. 150 volt
15	502153	Condenser—.05 Mfd. 200 volt
16	502155	Condenser— .1 Mfd. 200 volt
17	502153	Condenser—.05 Mfd. 200 volt
25, 26	502159	Condenser—mica 50 Mmfd. 500 volt
28	502155	Condenser— .1 Mfd. 200 volt
31	502156	Condenser—.004 Mfd. 400 volt
35	502160	Condenser—mica 110 Mmfd. 500 volt
37	502155	Condenser— .1 Mfd. 200 volt
40	502151	Condenser—.01 Mfd. 400 volt
42	502527	Condenser—electrolytic 50 Mfd. 25 volt
48	502155	Condenser— .1 Mfd. 200 volt
50	502453	Condenser—.002 Mfd. 400 volt
56-A, B, C	500714	Condenser—electrolytic A—20 Mfd. 150 volt B—20 Mfd. 200 volt C—20 Mfd. 200 volt
58	502153	Condenser—.05 Mfd. 200 volt
59	502411	Condenser—2 Mmfd. 500 volt
		RESISTORS
6	502133	Resistor—carbon 220,000 ohms 1/4 watt
12	504710	Resistor—carbon 33,000 ohms 1/4 watt
14	502136	Resistor—carbon 10 Meg. 1/4 watt
18	502455	Resistor—carbon 27 ohms 1/4 watt
19	502457	Resistor—carbon 330 ohms 1/4 watt
20	502458	Resistor—carbon 430 ohms 1/4 watt
21	502269	Resistor—carbon 3.3 Meg. 1/4 watt
24	502132	Resistor—carbon 100,000 ohms 1/4 watt
29	502269	Resistor—carbon 3.3 Meg. 1/4 watt
30-A,B,C,D	502525	Volume control 1 Meg. (with switch)
32	502269	Resistor—carbon 3.3 Meg. 1/4 watt
33, 34	502456	Resistor—carbon 220 ohms 1/4 watt
36	502268	Resistor—carbon 1 Meg. 1/4 watt
38	502134	Resistor—carbon 470,000 ohms 1/4 watt
39	500712	Resistor—wire wound 1830 ohms 5 watt
41	502135	Resistor—carbon 2.2 Meg. 1/4 watt
44	502266	Resistor—carbon 15,000 ohms 1/4 watt
45	502459	Resistor—carbon 6800 ohms 1/4 watt
46	502457	Resistor—carbon 330 ohms 1/4 watt
47	502455	Resistor—carbon 27 ohms 1/4 watt
49-A, B, C	500715	Resistor—wire wound A—1460 ohms 10 watt B— 155 ohms 1 watt C— 310 ohms 10 watt
54	502454	Resistor—wire wound 47 ohms 1 watt
57	502454	Resistor—wire wound 47 ohms 1 watt
		COILS AND TRANSFORMERS
2	505781	Coil—antenna (series)
3	505440	Loop antenna
9	502498	Coil—oscillator
13	502495	Transformer—1st I.F.
23	500749	Transformer—2nd I.F.
51	502902	Trans.—output for A-502491 speaker
	502492	Trans.—output for R-502491 speaker
55	502528	Filter choke
		OTHER ELECTRICAL PARTS
22	502536	Cable—battery pack
27	500713	Neon indicator lamp
43-A,B,C,D	502526	Switch—"CHARGE—BATT.—AC-DC"
53	502491	Speaker—P. M. dynamic (5 inch) includes output transformer
		MISCELLANEOUS PARTS
	160026	Base for mtg. electrolytic condenser
	505444	Cabinet—black
	505451	Catch and latch for rear door
	112745	Clip—coil mtg.
	114955	Clip—retainer on end of dial cord
	117057	Cord—dial drive (3 feet required) per ft.
	505400	Door-front for Model A61P1
	505441	Door-rear for Model A61P1
	505712	Door-front for Model A61P2
	505713	Door-rear for Model A61P2
	505720	Door-front for Model A61P3
	505721	Door-rear for Model A61P3
	505687	Escutcheon plate for Model A61P1
	505692	Escutcheon plate for Models A61P2 & A61P3
	505453	Handle & mtg. clips for Model A61P1
	505714	Handle & mtg. clips for Models A61P2 & A61P3
	505452	Hinge (pair) for rear door
	505711	Hinge for front door
	505682	Knob "OFF-VOLUME" (black)
	505683	Knob—"CHARGE—AC-DC" (black)
	505684	Knob—"TUNE" (black)
	505688	Knob—"OFF-VOLUME" (brown)
	505689	Knob—"CHARGE—AC-DC" (brown)
	505690	Knob—"TUNE" (brown)
	500747	Plug for battery cable (fits chassis)
	502537	Plug for battery cable (fits batt. pack)
	131575	Plug button
	505685	Pointer (black)
	505691	Pointer (brown)
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	79894	Screw—No. 8 X 5/8"; for mtg. chassis
	502524	Shaft—tuning control
	117716	Shield—tube
	116690	Socket—octal base
	500681	Socket—battery cable
	161384	Spring—dial cord tension
	111456	Washer—spring washer for tuning shaft

PARTS LIST — MODEL A51T1

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
12	502156	Condenser—.004 Mfd. 400 volt
14	504390	Condenser—variable gang (with drum)
16	504434	Condenser—ceramic 50 Mmfd. 500 volt
18	504446	Condenser—.1 Mfd. 400 volt
23	504444	Condenser—.05 Mfd. 400 volt
26	502271	Condenser—mica 260 Mmfd. 500 volt
28	504445	Condenser—.004 Mfd. 150 volt
30	502271	Condenser—mica 260 Mmfd. 500 volt
32	504450	Condenser—.01 Mfd. 150 volt
35	504449	Condenser—.01 Mfd. 400 volt
36	504431	Condenser—electrolytic 20 Mfd. 150 volt
37	504431	Condenser—electrolytic 20 Mfd. 150 volt
42	504444	Condenser—.05 Mfd. 400 volt
43	502295	Condenser—10 Mmfd. 500 volt
		RESISTORS
15	504440	Resistor—carbon 22,000 ohms 1/3 watt
19	504435	Resistor—carbon 220,000 ohms 1/3 watt
21	504436	Resistor—carbon 82 ohms 1/2 watt
22	504441	Resistor—carbon 2.2 Meg. 1/3 watt
27A, B	504391	Volume control—with switch; 1 Meg.
29	504439	Resistor—carbon 3.3 Meg. 1/3 watt
31	504438	Resistor—carbon 470,000 ohms 1/3 watt
33	504438	Resistor—carbon 470,000 ohms 1/3 watt
34	504437	Resistor—carbon 150 ohms 1/2 watt
38	502574	Resistor—carbon 33 ohms 1/2 watt
41	504442	Resistor—carbon 1500 ohms 1 watt
		OTHER ELECTRICAL PARTS
11	504453	Loop antenna
13	504451	Coil—antenna coupling
17	504458	Coil—oscillator
20	504392	Transformer—1st I.F.
25	504392	Transformer—2nd I.F.
39	504454	Transformer—output
40	504455	Speaker—P.M. dynamic (3-1/2 inch)
		MISCELLANEOUS PARTS
	504389	Bottom plate
	504537	Cabinet—ivory (Model A51T3)
	504538	Cabinet—black (Model A51T4)
	504539	Cabinet—mahogany (Model A51T2)
	112745	Clip—coil mtg.
	114955	Clip—retainer on end of dial cord
	505101	Clip—for mtg. slug tuned I.F. transformers
	117057	Cord—dial drive (2 ft. required) per ft.
	504545	Dial scale (Models A51T2 & A51T3)
	505099	Dial Scale (Model A51T4)
	504452	Insulator for volume control terminals
	505103	Insulating sheet on bottom of cabinet
	504470	Knob—black (Model A51T4)
	504474	Knob—ivory (Model A51T3)
	504541	Knob—mahogany (Model A51T2)
	504544	Pointer
	119087	Ring for dial cord
	116584	Rubber feet
	12531	Screw—No. 8-32 x 3/8; retains bottom plate to cabinet
	17861	Screw—Set, No. 4-40; shaft extension
	83624	Screw—No. 8 x 1/4; retains chassis to bottom plate
	504721	Shaft extension for tuning gang
	504397	Socket—miniature
	505161	Spring—dial cord tension
	504472	Window for dial

MODELS A61P1, A61P2, A61P3

STEWART-WARNER CORP.

STAGE GAIN MEASUREMENT PROCEDURE

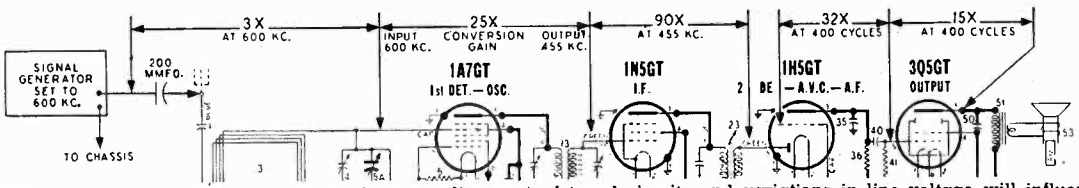
REQUIRED INSTRUMENTS: The amount of amplification or "gain" of each of the stages of this receiver may be measured with an A.C. Vacuum Tube Voltmeter or a "channel" type instrument containing a tuned and calibrated amplifier.

PROCEDURE: It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F. and I.F. stages are carefully and accurately aligned by utilizing the alignment procedure given above.
2. Connect Signal Generator as shown below.
3. The values of stage gain which are given here were measured with a fixed bias of 1½ volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 1½ volt battery to A.V.C. at terminal "M" of Antenna Coil and connect the positive battery lead to receiver chassis.

IMPORTANT: Disconnect battery when measuring audio stage gain.

4. Set Signal Generator for operation at 600 Kc with 400 cycle modulation and carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.
6. When using a "channel" type instrument, carefully tune it for maximum output at desired frequency before making measurements.



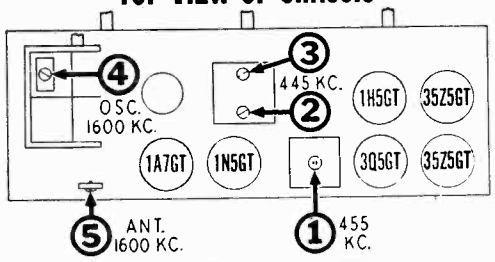
DIFFERENCES in tube characteristics, tolerance of parts, adjustment of tuned circuits and variations in line voltage will influence stage gain These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.

ALIGNMENT PROCEDURE

1. Disconnect and remove battery from cabinet. Then remove the two plug buttons which are located at bottom of cabinet so that a long blade screwdriver may be inserted to remove chassis holddown screws. After removing these screws be sure to replace and reconnect the battery as battery position affects alignment of loop antenna circuit.
2. Partially withdraw the chassis from cabinet so as to obtain access to trimmer adjustments—**do not completely remove the chassis from the cabinet** as position of chassis relative to loop antenna is important.
3. In order to provide a means of coupling the signal generator to the antenna, wind approximately two turns of insulated wire around outside of cabinet so that its position corresponds to that of the built-in loop. Then connect both leads of this coupling to signal generator.
4. Connect an output meter across voice coil of speaker or between plate of 3Q5GT output tube and chassis through a 0.1 mfd. condenser.
5. Set the volume control at maximum volume position and use a weak signal from the signal generator.
6. Set "CHARGE—BATT.—AC-DC" Switch in "AC-DC" position.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
None	Connect directly to coupling turn around cabinet.	455 KC	Any point where it does not affect the signal.	1	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				2—3	1st I.F.	
None	Connect directly to coupling turn around cabinet.	1600 KC	1600 KC	4	Broadcast Oscillator	Adjust for maximum output.
None	Connect directly to coupling turn around cabinet.	1600 KC	Tune to 1600 KC generator signal	5	Broadcast Antenna	Adjust for maximum output. Slide chassis all the way into cabinet when making this adjustment.

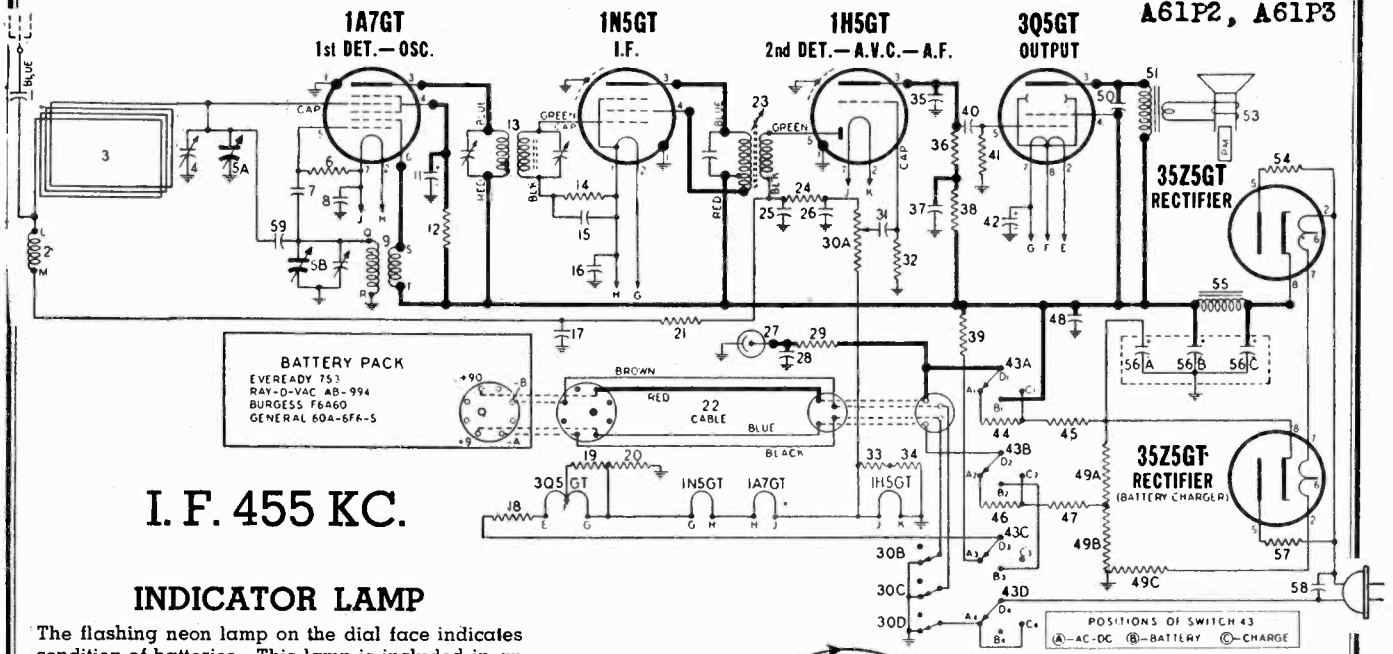
TOP VIEW OF CHASSIS



TRIMMER LOCATIONS

STEWART-WARNER CORP.

MODELS A61P1, A61P2, A61P3



I. F. 455 KC.

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.

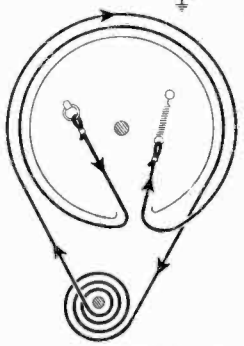
When battery voltage is low (approximately 72 volts) the lamp flashes more slowly (about once per second). The set should not be operated from battery power after this point is reached and batteries should be recharged immediately. Charge for at least twice the time they were used and as soon as possible 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:

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

CHARGING CIRCUIT

The battery charging circuit consists of a 35Z5GT rectifier and a suitable resistor voltage dividing network. This circuit provides a very low charging current when the receiver is operated on AC-DC and is just enough to maintain the batteries but will not charge them. A separate charging position is provided for the regular charging operation. A charging rate of approximately 1/3 the discharge rate is used to give best results.



DIAL DRIVE CORD ARRANGEMENT

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

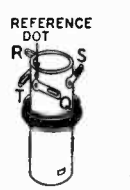
114955 Clip on end of cord
117057 Cord (3 feet)
119087 Ring for dial cord
161384 Tension Spring

SOCKET VOLTAGES

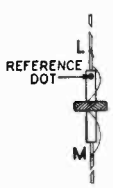
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

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

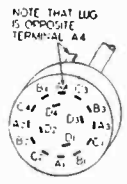
"CHARGE—BATT.—AC-DC" SWITCH IN "AC-DC" POSITION



ANTENNA COIL 505781

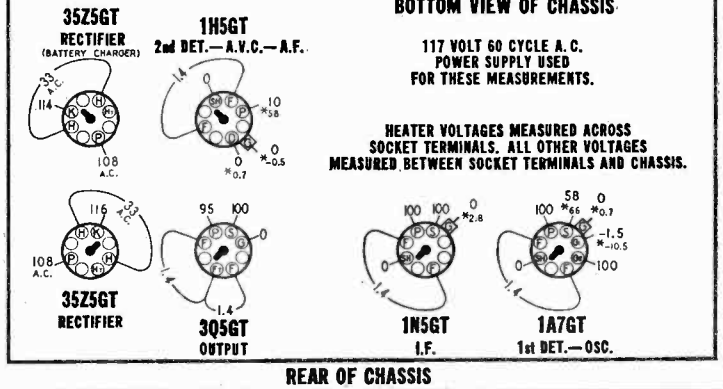


OSCILLATOR COIL 502498



CHARGE—BATT.—AC-DC SWITCH 502526

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



ALIGNMENT PROCEDURE

1. With the gang condenser fully meshed, the dial pointer should be in a horizontal position at low end of dial, parallel to the bottom edge of dial scale. If it is set incorrectly, merely hold tuning control shaft steady and turn pointer to correct position.
2. Connect an output meter across the speaker voice coil or from the plate of the 6V6GT tube to chassis through a .1 Mfd. condenser.
3. Connect the ground lead of signal generator to the receiver chassis.
4. 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 SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Lug on trimmer No. 6 on antenna 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 Clip	1400 KC	1400 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip	1400 KC	Tune to 1400 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

STAGE GAIN MEASUREMENT PROCEDURE

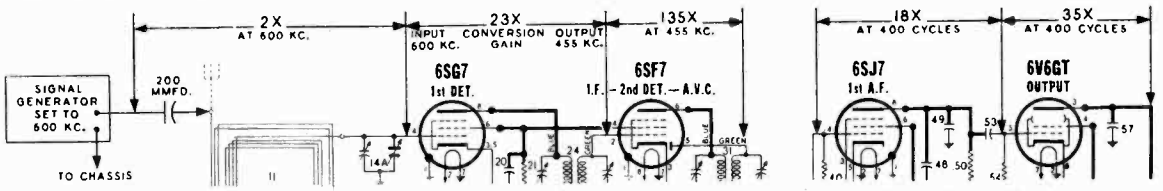
REQUIRED INSTRUMENTS: The amount of amplification or "gain" of each of the stages of this receiver may be measured with an A.C. Vacuum Tube Voltmeter or a "channel" type instrument containing a tuned and calibrated amplifier.

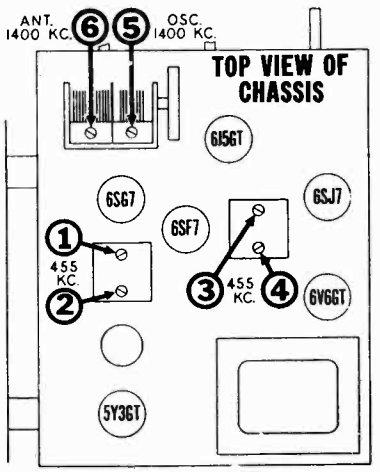
PROCEDURE: It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F. and I.F. stages are carefully and accurately aligned by utilizing the alignment procedure given above.
2. Connect Signal Generator as shown below.
3. The values of stage gain which are given here were measured with a fixed bias of 3 volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 3 volt battery to A.V.C. at black lead of 1st I.F. and connect the positive battery lead to receiver chassis.

IMPORTANT: Disconnect battery when measuring audio stage gain.

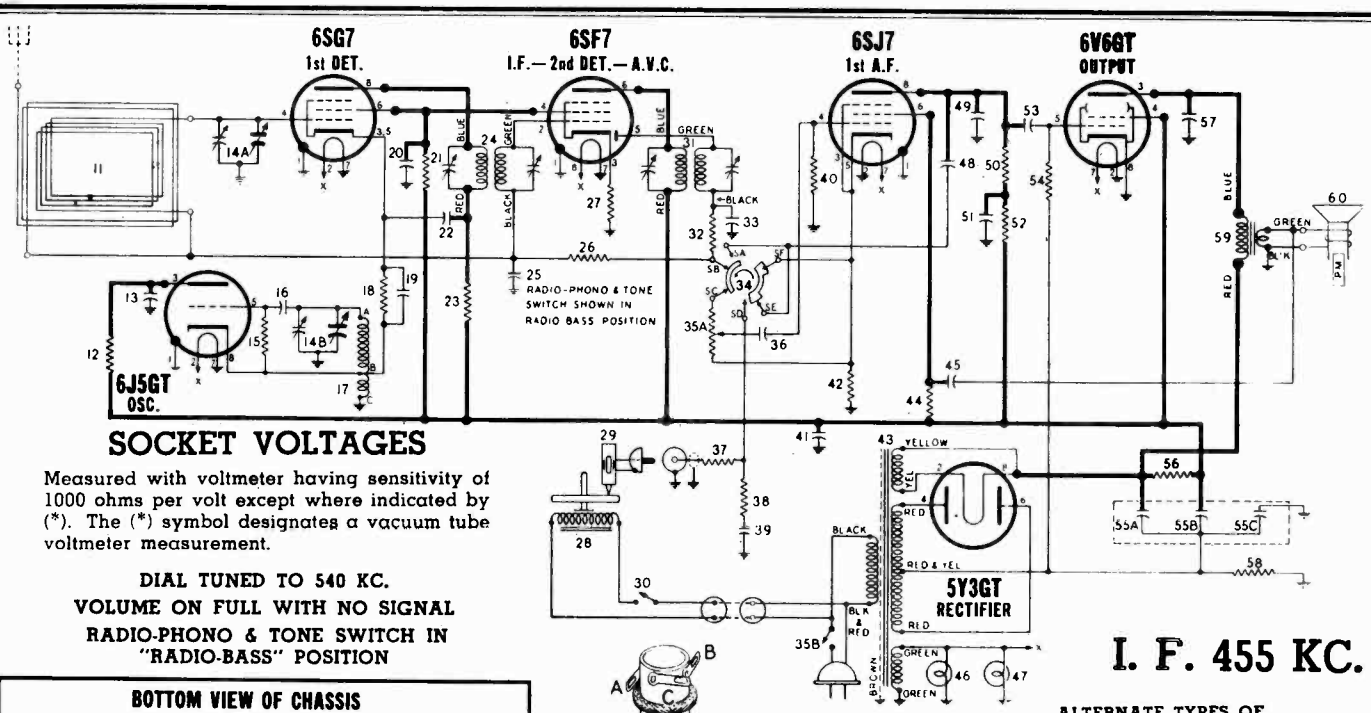
4. Set Signal Generator for operation at 600 Kc with 400 cycle modulation and carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.
6. When using a "channel" type instrument, carefully tune it for maximum output at desired frequency before making measurements.





TRIMMER LOCATIONS

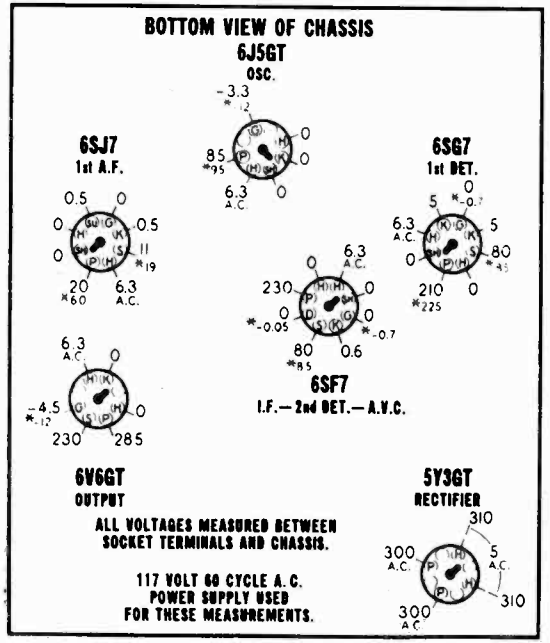
DIFFERENCES in tube characteristics, tolerance of parts, adjustment of tuned circuits and variations in line voltage will influence stage gain. These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.



SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

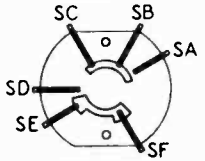
DIAL TUNED TO 540 KC.
VOLUME ON FULL WITH NO SIGNAL
RADIO-PHONO & TONE SWITCH IN "RADIO-BASS" POSITION



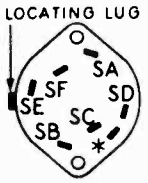
OSCILLATOR COIL 505326

I. F. 455 KC.

ALTERNATE TYPES OF RADIO-PHONO & TONE SWITCH 505317



REAR VIEW



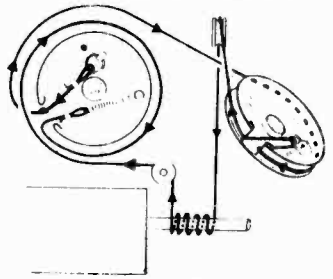
REAR VIEW

*Not used; may serve as wiring junction point.

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

DIAL AND POINTER DRIVE CORD ARRANGEMENT

SIDE VIEW
(With dial plate removed)



To string dial cord first slip pointer off its shaft. Then remove dial scale by taking out the six clips around its edges. Dial plate may now be taken off by removing the two screws which are visible and accessible at front of chassis. Now set gang condenser to fully open position and use the following parts:

114955 Clip on end of cord
117057 Cord (3 feet)
119087 Ring for dial cord
505161 Tension spring

To replace and properly position pointer see step 1 in "Alignment Procedure"

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 remove or 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 speaker voice coil.

STEWART-WARNER CORP. MODELS B72CR1, 9038B

FREQUENCY RANGES
- **Broadcast** ..... 540-1600 KC
- **FM** ..... 88-108 MC

POWER OUTPUT
- **Undistorted** ..... 1 watt
- **Maximum** ..... 2.5 watts

SPEAKER ..... 8" PM Dynamic

INTERMEDIATE FREQUENCY ..... FM—10.7 MC; AM—455 KC

CIRCUIT DESCRIPTION

This receiver operates on 60 cycle Alternating Current (A.C.) at 105 to 125 volts. Rectified B+ voltage is obtained by using a miniature selenium type rectifier which is noted for reliability and long life.

The built-in antenna used for AM reception is a high impedance loop that is mounted at the rear of the chassis. Two 18" lengths of wire, arranged to form a dipole, serve as the built-in FM antenna.

Tuning of the radio frequency circuits of the receiver is accomplished by a 5 section gang condenser. Two sections are used to tune the AM antenna and oscillator circuits, and three sections are used to tune the FM antenna, R.F., and oscillator circuits.

An R.F. amplifier stage is utilized to give maximum sensitivity and selectivity as well as high image rejection on FM reception. Although this stage is switched out of the circuit on AM reception, overall receiver sensitivity is adequate for highly satisfactory reception where station signals are of moderate strength.

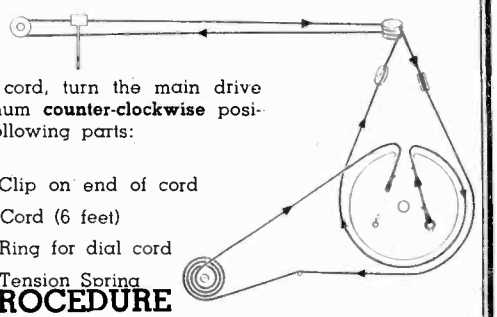
Both transformer coupled I.F. stages are used for FM and one stage is used for AM. The first and second I.F. transformers have two sets of windings; one set is tuned to 455 KC for AM operation and the other is tuned to 10.7 MC for FM operation. Switching of the windings, to alleviate undesired beat frequencies, is necessary only in the first I.F. transformer.

Detection of amplitude modulated 455 KC signals is accomplished by the 12AV6 diode rectification circuit.

Frequency modulation detection is accomplished by an entirely new circuit that is known as the "RATIO DISCRIMINATOR." This FM detector circuit has the unusual ability to reject noise or other brief variations in amplitude of the signal. The relative insensitivity of the Ratio Discriminator to signal amplitude variation makes it possible to eliminate the use of a "limiter" stage that usually precedes the discriminator in other types of FM detector systems. It will therefore be noted that this receiver utilizes a normal I.F. amplifier stage instead of a low gain limiter stage preceding the FM discriminator.

Audio frequency output from both AM and FM detectors is amplified through the triode section of the 12AV6. The audio power amplifier stage incorporates a 50B5 tube which is coupled to a permanent magnet dynamic speaker. A special inverse feedback arrangement is used which reduces distortion and contributes to exceptionally good tone quality.

DIAL AND POINTER DRIVE CORD ARRANGEMENT



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

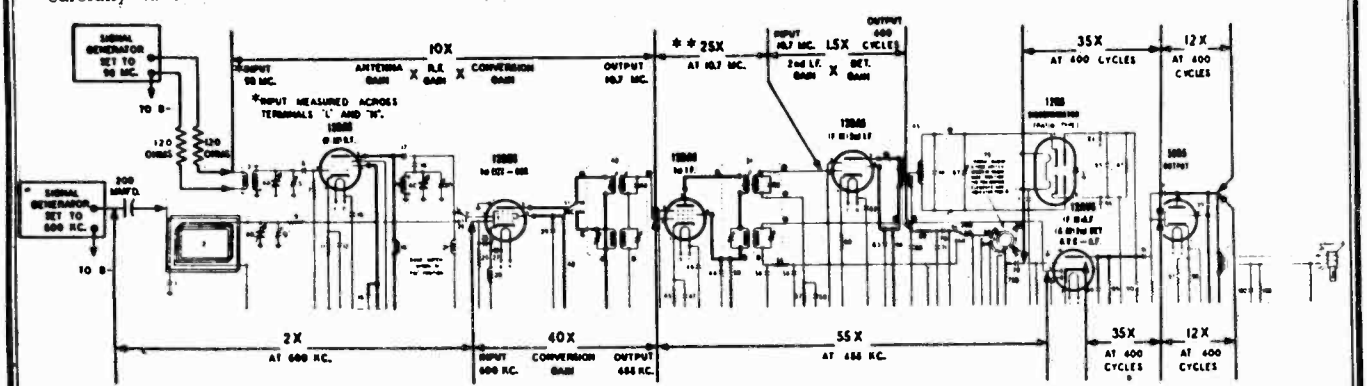
114955—Clip on end of cord
117057—Cord (6 feet)
119087—Ring for dial cord
161384—Tension Spring

STAGE GAIN MEASUREMENT PROCEDURE

REQUIRED INSTRUMENTS: The amount of amplification or "gain" of each of the stages of this receiver should be measured with an A. C. Vacuum Tube Voltmeter of the high frequency type (uniform response up to 100 MC). A conventional "AM" type signal generator may be used but it must be capable of producing **fundamental** frequencies of 600 KC. and 98 MC—**avoid using a generator that produces the 98 MC. signal by means of harmonics.**

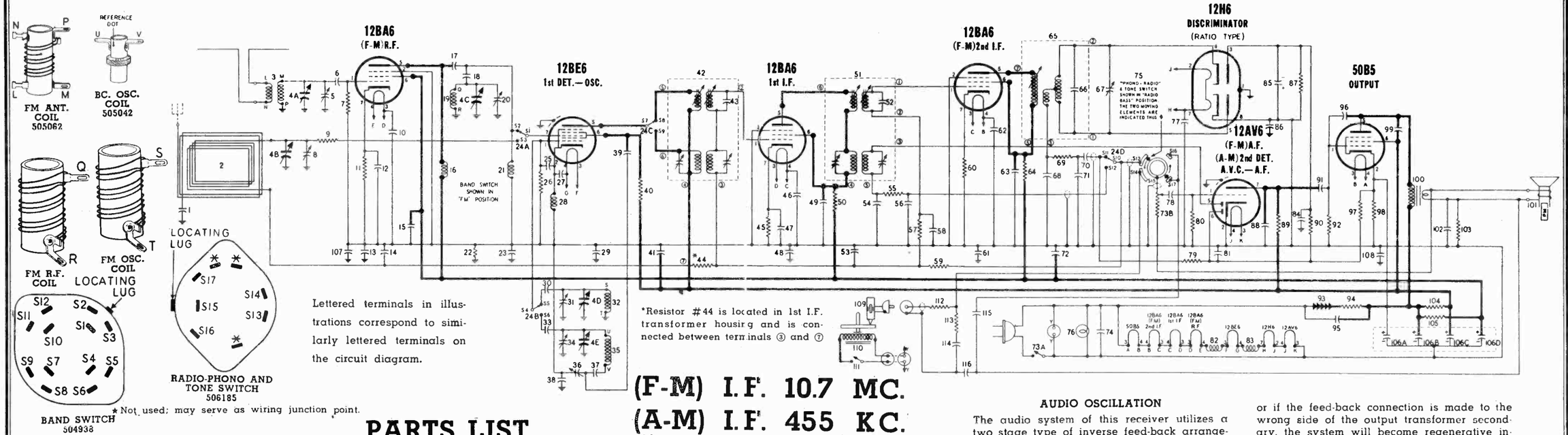
PROCEDURE: It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F., I.F. and Discriminator stages are carefully and accurately aligned by utilizing the alignment procedure given in this manual.
2. Connect Signal Generator as shown below. Note that generator connections differ for "AM" and "FM" measurements.
3. For "AM" measurements, set signal generator to 600 KC. and then carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
4. For "FM" measurements, set signal generator to 98 MC. and then carefully tune radio receiver to this signal by using a D. C. Vacuum Tube Voltmeter as an output indicator—meter must be connected between pin #3 of 12H6 tube and B—. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. The values of stage gain which are given here were measured with a fixed bias of 1.5 volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 1.5 volt battery to A.V.C. at terminal 7 of the 1st I.F. transformer and connect the positive battery lead to B—.
6. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that the signal voltage at the specified point has not changed as a result of circuit de-tuning.



** When measuring the gain of this stage with a vacuum tube voltmeter the input signal level for minimum meter indication may cause overloading. Under those conditions the measured gain will be found to be approximately 14X.

DIFFERENCES in tube characteristics, tolerance of parts, adjustment of tuned circuits and variations in line voltage will influence stage gain. These factors should be given due attention in event the gain of a stage varies extensively from the values shown above.



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

*Resistor #44 is located in 1st I.F. transformer housing and is connected between terminals ③ and ⑦

* Not used; may serve as wiring junction point.

(F-M) I.F. 10.7 MC.
(A-M) I.F. 455 KC.

PARTS LIST

WARNING: Some parts listed below have special characteristics. Do not use substitutes for replacement purposes.

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
1	504725	Condenser—.02 Mfd. 200 volt
4-A to E	504955	Condenser—variable gang and drum
5	504954	Condenser—trimmer; 3 to 12 Mmfd.
6	504974	Condenser—ceramic 47 Mmfd. 500 volt
8	504069	Condenser—trimmer; 3 to 35 Mmfd.
10	504976	Condenser—ceramic 1500 Mmfd. 150 volt
12	505025	Condenser—ceramic 100 Mmfd. 350 volt
13	505052	Condenser—.002 Mfd. 400 volt
14	505073	Condenser—.05 Mfd. 400 volt
15	504975	Condenser—ceramic 470 Mmfd. 350 volt
17	502295	Condenser—ceramic 10 Mmfd. 500 volt
18	505053	Condenser—ceramic 15 Mmfd. 500 volt
20	504954	Condenser—trimmer; 3 to 12 Mmfd.
23	505073	Condenser—.05 Mfd. 400 volt
25	504730	Condenser—ceramic 3 Mmfd. 500 volt
27	504973	Condenser—ceramic 22 Mmfd. 500 volt
29	505454	Condenser—.05 Mfd. 400 volt (low impedance at 455 Kc.—do not substitute ordinary capacitor)
30	505072	Condenser—ceramic 33 Mmfd. 350 volt
31	504954	Condenser—trimmer; 3 to 12 Mmfd.
33	504974	Condenser—ceramic 47 Mmfd. 500 volt
34	119491	Condenser—trimmer; 10 to 90 Mmfd.
36	505051	Condenser—trimmer; 440 to 660 Mmfd.
37	504979	Condenser—ceramic .01 Mfd. 150 volt
38	504975	Condenser—ceramic 470 Mmfd. 350 volt
39	504979	Condenser—ceramic .01 Mfd. 150 volt
41	504979	Condenser—ceramic .01 Mfd. 150 volt
43	505068	Condenser—ceramic 91 Mmfd. 350 volt ± 5%
46	504976	Condenser—ceramic 1500 Mmfd. 150 volt
47	505028	Condenser—.05 Mfd. 150 volt
48	504979	Condenser—ceramic .01 Mfd. 150 volt
49	505211	Condenser—.08 Mfd. 400 volt
52	505068	Condenser—ceramic 91 Mmfd. 350 volt ± 5%
53	505028	Condenser—.05 Mfd. 150 volt
54	505026	Condenser—ceramic 150 Mmfd. 350 volt
56	505026	Condenser—ceramic 150 Mmfd. 350 volt
58	504978	Condenser—ceramic .005 Mfd. 150 volt
61	504979	Condenser—ceramic .01 Mfd. 150 volt
62	504976	Condenser—ceramic 1500 Mmfd. 150 volt
63	504978	Condenser—ceramic .005 Mfd. 150 volt
66	505074	Condenser—ceramic 43 Mmfd. 350 volt ± 5%
67	504954	Condenser—trimmer; 3 to 12 Mmfd.
68	505025	Condenser—ceramic 100 Mmfd. 350 volt
70	505028	Condenser—.05 Mfd. 150 volt
71	504976	Condenser—ceramic 1500 Mmfd. 150 volt
72	504979	Condenser—ceramic .01 Mfd. 150 volt
74	505083	Condenser—.02 Mfd. 400 volt
77	504976	Condenser—ceramic 1500 Mmfd. 150 volt
78	504977	Condenser—ceramic .002 Mfd. 150 volt
81	505082	Condenser—.02 Mfd. 150 volt
84	505027	Condenser—.01 Mfd. 400 volt
85	504937	Condenser—electrolytic 5 Mfd. 50 volt
86	504979	Condenser—ceramic .01 Mfd. 150 volt
88	505025	Condenser—ceramic 100 Mmfd. 350 volt
91	505028	Condenser—.05 Mfd. 150 volt
95	505073	Condenser—.05 Mfd. 400 volt
96	504973	Condenser—ceramic 22 Mmfd. 500 volt
99	505027	Condenser—.01 Mfd. 400 volt
102	505071	Condenser—.2 Mfd. 400 volt
106-A, B, C, D	504980	Condenser—electrolytic A—20 Mfd. 25 volt; B—60 Mfd. 150 volt; C—40 Mfd. 150 volt; D—40 Mfd. 150 volt
107	504975	Condenser—ceramic 470 Mmfd. 350 volt
108	504979	Condenser—ceramic .01 Mfd. 150 volt
114	504450	Condenser—.01 Mfd. 150 volt
115	504978	Condenser—ceramic .005 Mfd. 150 volt
116	505071	Condenser—.2 Mfd. 400 volt
		RESISTORS
7	502134	Resistor—carbon 470,000 Ohms ¼ watt
9	504969	Resistor—carbon 33 Ohms ¼ watt
11	502794	Resistor—carbon 68 Ohms ¼ watt
22	502133	Resistor—carbon 220,000 Ohms ¼ watt
26	502130	Resistor—carbon 22,000 Ohms ¼ watt
40	502406	Resistor—carbon 1,500 Ohms ¼ watt
44	502134	Resistor—carbon 470,000 Ohms ¼ watt
45	502794	Resistor—carbon 68 Ohms ¼ watt
50	502287	Resistor—carbon 680 Ohms ¼ watt
55	504710	Resistor—carbon 33,000 Ohms ¼ watt
57	502134	Resistor—carbon 470,000 Ohms ¼ watt
59	502268	Resistor—carbon 1 Meg. ¼ watt
60	504968	Resistor—carbon 10 Ohms ¼ watt
64	502287	Resistor—carbon 680 Ohms ¼ watt
69	504710	Resistor—carbon 33,000 Ohms ¼ watt
73-A, B	504967	Resistor—Volume control 1 Meg (with Switch)
79	502134	Resistor—carbon 470,000 Ohms ¼ watt
80	502136	Resistor—carbon 10 Meg. ¼ watt
87	502408	Resistor—carbon 68,000 Ohms ¼ watt
89, 90	502134	Resistor—carbon 470,000 Ohms ¼ watt
92	502134	Resistor—carbon 470,000 Ohms ¼ watt
94	505023	Resistor—carbon 33 Ohms 1 watt
97	502135	Resistor—carbon 2.2 Meg. ¼ watt
98	504437	Resistor—carbon 150 Ohms ½ watt ± 10%
103	502132	Resistor—carbon 100,000 Ohms ¼ watt
104	504971	Resistor—carbon 2,200 Ohms ½ watt
105	504970	Resistor—carbon 470 Ohms, 2 watt
112	510073	Resistor—carbon 100,000 Ohms ¼ watt
113	502408	Resistor—carbon 68,000 Ohms ¼ watt
		COILS AND TRANSFORMERS
2	505054	Loop Antenna
3	505062	Coil—F.M. antenna
16	505075	Coil—R.F. choke (FM)
19	505060	Coil—FM R.F.
21	505076	Coil—R.F. choke (FM)
28	505076	Coil—R.F. choke (FM)
32	505060	Coil—FM oscillator
35	505042	Coil—BC oscillator
42	505066	Transformer—1st I.F.
51	505067	Transformer—2nd I.F.
65	505391	Transformer—discriminator
82, 83	505392	Coil—R.F. choke (FM)
100	506184	Transformer—output
		OTHER ELECTRICAL PARTS
24-A, B, C, D	504938	Switch—band
75	506185	Switch—radio, phono and tone
76	506183	Lamp—dial, 115 volt 10 watt
93	504972	Rectifier—selenium
101	505342	Speaker—P.M. dynamic (8 inch)
109	505100	Crystal cartridge
110	505750	Motor—phono; 115 volt 50 cycle
	505758	Motor—phono; 115 volt 60 cycle
111	505759	Switch—phono; "On-Off"
		MISCELLANEOUS
	506240	Back for cabinet
	504598	Base for tube shield with internal spring
	504981	Base for mounting electrolytic condenser
	505368	Base for tube shield without internal spring
	114955	Clip—retainer on end of dial cord
	112764	Clip—retains light shield
	117057	Cord—dial drive (6 ft. required) per ft.
	506191	Dial scale
	506235	Drawer—record changer compartment (less hardware)
	506233	Handle for drawer
	505344	Knob—tuning
	505345	Knob—"VOLUME"
	505346	Knob—"RADIO-PHONO"
	506192	Knob—"FM-AM"
	506278	Light diffusing strip
	502690	Pointer
	506234	Rail for drawer (supplied in sets)
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	113463	Rubber stop for drawer
	114914	Screw—No. 2 x 3/8"; for mtg. dial scale
	83047	Screw—No. 3 x 7/8"; chassis mtg.
	501777	Screw—No. 4 x 1/2"; for mtg. back
	505045	Shaft—tuning
	504599	Shield—tube; has internal spring
	505367	Shield—tube; has no internal spring
	506181	Shield—light
	116690	Socket—octal base
	501182	Socket—phono motor cable
	504597	Socket—miniature
	505654	Socket—phono pickup cable
	506182	Socket—dial light
	161384	Spring—dial cord tension
	506277	Trim strip for dial

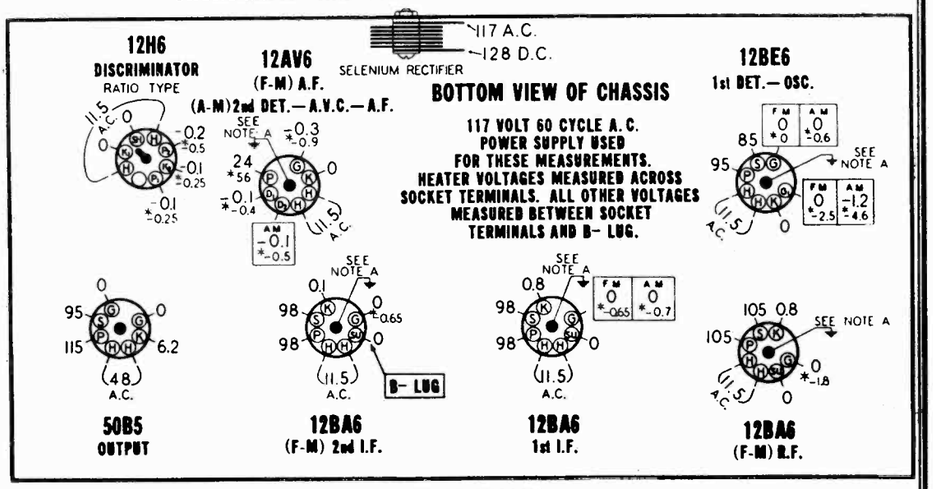
AUDIO OSCILLATION

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.

SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

ALL MEASUREMENTS MADE WITH BAND SWITCH IN "FM" POSITION UNLESS OTHERWISE INDICATED
DIAL TUNED TO 108MC. FOR "FM" MEASUREMENTS
DIAL TUNED TO 540KC. FOR "AM" MEASUREMENTS
VOLUME CONTROL SET TO MINIMUM WITH NO SIGNAL
"PHONO-RADIO" AND TONE SWITCH SET "RADIO-BASS" POSITION



NOTE A: Grounding of center stud on tube socket is necessary to reduce capacity coupling between other pins. Oscillation may result if this ground is omitted.

STEWART-WARNER CORP.

FREQUENCY MODULATION — "FM" — ALIGNMENT PROCEDURE

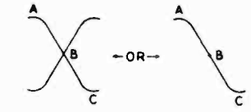
INSTRUMENTS: Alignment of the FM circuits in this receiver may be accomplished with either a conventional AM type signal generator or an FM signal generator. The output indicator should be an oscilloscope or a vacuum tube voltmeter.

Although it is preferable to use an FM generator and an oscilloscope, reasonably accurate alignment is obtainable when using a conventional AM generator and a vacuum tube voltmeter providing proper care is exercised in adjusting the discriminator circuit trimmer condenser.

IMPORTANT: If an AM signal generator is used, it should be capable of producing fundamental frequencies of 10.7 and 88 to 108 MC. Avoid using an AM generator which produces signals in the 88 to 108 MC range by using harmonics higher than the second. Generators which are dependent upon third, fourth or fifth harmonics for frequencies of 88 to 108 MC will generally produce undesireable spurious beat signals with the local oscillator in the receiver and alignment will be exceedingly difficult.

The following procedure is adaptable for use with either an AM or FM generator and oscilloscope or vacuum tube voltmeter merely follow the instructions that are applicable to the instruments that are used.

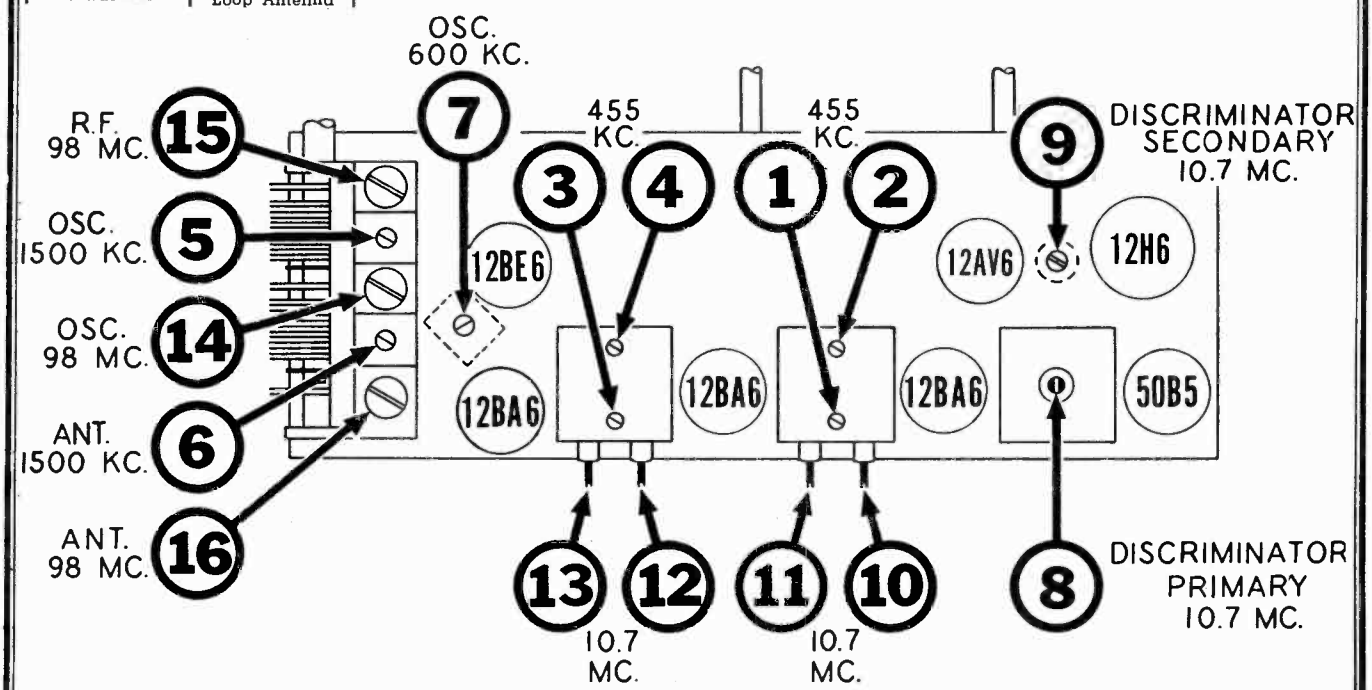
1. If alignment of both AM and FM channels is required it is necessary to align the AM channel first, then align the FM channel as instructed in the following chart (AM alignment procedure is given on page 7).
2. During alignment of this receiver, it will be necessary to set the dial pointer to 98 MC. In order to avoid replacing the chassis in the cabinet, it will be found convenient to mark this frequency point on the dial background before starting the alignment.
3. Do not attempt to reposition pointer by releasing it from clip on dial cord as this is done only during AM alignment.
4. Disconnect leads from built-in FM antenna (do not disturb connections to built-in AM loop antenna); also disconnect phono-plugs and speaker.
5. Remove chassis and AM loop antenna from cabinet. Reconnect speaker.
6. Set "PHONO-RADIO" and Tone switch to "Radio-Bass" position (extreme counter-clockwise).
7. Set the receiver volume control to the maximum volume position.
8. Dress FM circuit leads as short and straight as possible, particularly those in the oscillator circuit. I.F. plate and grid leads should also be kept short and straight.
9. Alignment of receiver circuits may now be accomplished by using the procedure in the chart below.

SIGNAL GENERATOR CONNECTIONS			V-T VOLTMETER OR OSCILLOSCOPE CONNECTIONS		RECEIVER				TYPE OF ADJUSTMENT AND OUTPUT INDICATION	
CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	CONNECT GROUND LEAD OF SIGNAL GENERATOR TO	FREQUENCY & TYPE OF MODULATION	IF A V-T VOLTMETER IS USED, CONNECT IT AS FOLLOWS:	IF AN OSCILLOSCOPE IS USED, CONNECT IT AS FOLLOWS:	BAND SWITCH POSITION	DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	ADJUSTMENT AND OUTPUT INDICATION WHEN USING A V-T VOLTMETER	ADJUSTMENT AND OUTPUT INDICATION WHEN USING AN OSCILLOSCOPE
Pin ⌶7 of 12BE6 tube: use a .01 MFD. condenser in series with generator lead.	B in vicinity of 12BE6 tube. **CAUTION:** If your signal generator is designed with an AC-DC type power supply, connect ground lead of signal generator to B lug through a .25 Mfd. condenser.	**10.7 MC** AM signal must be 400 cycle modulated or FM signal should preferably be modulated ±300 KC.	Connect common (or ground) terminal of meter to B —. D.C. probe lead of meter is then connected to pin ⌶3 of the 12H6 tube.	Connect vertical amplifier "high" lead in series with an 0.1 MFD. condenser to junction of resistor ⌶69 (33,000 ohms) and condenser ⌶70 (.05 MFD.) which are in the discriminator output circuit. Connect scope ground lead to B —.	**FM** Maximum clockwise position	Any position where it does not affect the signal.	8	Discriminator Primary	Set meter to a low D.C. voltage range and adjust trimmer ⌶8 for maximum meter reading. (This voltage will be negative.)	Set vertical amplifier of scope for maximum amplification. Where FM signal generator provides an output voltage for synchronization, connect this voltage to "sync" terminals of the scope. Then adjust setting of trimmer ⌶9, before attempting to adjust trimmer ⌶8, until a pattern similar to the following appears on the screen. Should the pattern fail to appear on screen or be of insufficient amplitude, adjust trimmers ⌶10, 11, 12 and 13 for maximum sound output from speaker. Then readjust trimmer ⌶9 for approximately correct pattern and trimmer ⌶8 for maximum amplitude and steepness of that portion of the curve between "A" and "C". If pattern does not remain stationary operate sweep frequency control on scope and also "sync" control until desired result is obtained.  This double "S" curve pattern results when 'scope uses properly phased "Sawtooth" horizontal deflection voltage whose frequency is twice the modulation frequency of signal generator. This single "S" curve pattern results when 'scope uses properly phased "sine wave" horizontal deflection voltage.
Same as above	Same as above	Same as above	Before connecting V-T voltmeter, it is necessary to connect two 68,000 ohm resistors (resistance of both units must compare within 1%) in series from pin ⌶3 of the 12H6 tube to B—. Then connect common (or ground) terminal of V-T voltmeter to the junction of these two resistors. D.C. probe lead of meter is now connected to junction of resistor ⌶69 (33,000 ohms) and condenser ⌶70 (.05 MFD.) which are in the discriminator output circuit.	Same as above	Same as above	Same as above	9	Discriminator Secondary **Use an insulated phasing tool to adjust this trimmer.**	Set meter for operation on its lowest D.C. voltage range. Note that as trimmer ⌶9 is rotated a point will be found where voltmeter will swing rather sharply from a positive to a negative reading or vice versa. Correct setting of trimmer ⌶9 is obtained when meter reads zero as trimmer is moved through this point. The adjustment is somewhat critical and considerable care must be exercised to set the trimmer for a zero meter indication.	With the 'scope set up as described above, adjust trimmer ⌶9 until the cross-over point "B" is centrally located in both the horizontal and vertical directions; in addition, the portion of the curve between "A" and "C" should be as linear (straight) as possible.
Recheck the two preceding adjustments to be sure that both trimmers are set as accurately as possible to obain the specified output indication on vacuum tube voltmeter or oscilloscope. Then disconnect and remove the two 68,000 ohm resistors that were used for the vacuum tube voltmeter connection in the 2nd step.										
Same as above	Same as above	Same as above	Connect common (or ground) terminal of meter to B—. D.C. probe lead of meter is then connected to Pin ⌶3 of the 12H6 tube.	Same as above	Same as above	Same as above	**10 and 11**	2nd I.F.	Adjust trimmers ⌶10 and ⌶11 for maximum meter reading.	With 'scope set up as described above, adjust trimmers ⌶10 and ⌶11 for maximum amplitude and steepness of that portion of the pattern between "A" and "C".
Same as above	Same as above	Same as above	Same as above	Same as above	Same as above	Same as above	**12 and 13**	1st I.F.	Adjust trimmers ⌶12 and ⌶13 for maximum meter reading.	Adjust trimmers ⌶12 and ⌶13 for maximum amplitude and steepness of pattern as described above. If the enlarged pattern now indicates a lack of symmetry, readjust trimmer ⌶9 for correct cross-over point.
Generator output leads must be connected to the two "External FM Antenna" terminals at back of loop antenna frame. Insert a 120 Ohm resistor in series with each of the generator leads before connecting to receiver antenna terminals.		**98 MC** AM signal may be 400 cycle modulated or FM signal should preferably be modulated ±300 KC.	Same as above	Same as above	Same as above	**98 MC**	**14**	Oscillator Trimmer	Set trimmer ⌶14 to receive 98 MC. signal as indicated by maximum meter reading.	Adjust trimmer ⌶14 to obtain the symmetrical pattern shown above. Correct setting of trimmer ⌶14 is obtained when cross-over point in pattern is centrally located.
Same as above		Same as above	Same as above	Same as above	Same as above	**98 MC**	**15**	R.F. Trimmer	Adjust trimmer ⌶15 for maximum meter reading.	Adjust trimmer ⌶15 for maximum amplitude of pattern.
							12 and 13	1st I.F.	Recheck adjustment of these trimmers for maximum meter reading.	Recheck adjustment of these trimmers for maximum amplitude and symmetry of pattern.
Same as above		Same as above	Same as above	Same as above	Same as above	**98 MC**	**16**	Antenna Trimmer	Adjust trimmer ⌶16 for maximum meter reading.	Adjust trimmer ⌶16 for maximum amplitude of pattern.
Check calibration and tracking of receiver with input signals of 88 and 108 MC. If necessary, adjust spacing of gang condenser plates.										

BROADCAST BAND — "AM" — ALIGNMENT PROCEDURE

1. With the gang fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial card and reposition pointer.
2. During the alignment of this receiver, it will be necessary to set the dial pointer to the following frequencies: 1500 Kc., and 600 Kc. In order to avoid replacing the chassis in the cabinet each time a dial setting is required, it will be found more convenient to mark the required frequency points on the dial background before starting the alignment.
3. Disconnect leads from built-in FM antenna (do not disturb connections to built-in AM loop antenna); also disconnect phono plugs and speaker.
4. Remove chassis and AM loop antenna from cabinet. Place loop antenna in same position with respect to the chassis as is maintained when both units are mounted in the cabinet. Reconnect speaker.
5. Connect an output meter across speaker voice coil or from plate of the 50B5 tube to B— through a 0.1 Mfd. condenser (see voltage chart for convenient B— connection).
6. Connect ground lead of signal generator to B— lug.
   CAUTION: If your signal generator is designed with an AC-DC type power supply, connect ground lead of signal generator to B— lug through a .25 Mfd. condenser.
7. Set "PHONO-RADIO" and Tone switch to "Radio-Bass" position (extreme counter-clockwise).
8. Set volume control to the maximum volume position and use a weak signal from the signal generator.
9. If alignment of both AM and FM channels is required, it is necessary to align the AM channel first; then align the FM channel as instructed in the preceding section.

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
200 MMFD. Mica Condenser	Pin #7 of 12BE6 tube.	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.	
200 MMFD. Mica Condenser	External Antenna Terminal (AM) on Loop Antenna	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Terminal (AM) on Loop Antenna	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Terminal (AM) on Loop Antenna	600 KC	Broadcast (counter-clockwise)	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series Pad)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
200 MMFD. Mica Condenser	External Antenna Terminal (AM) on Loop Antenna	Repeat adjustment of trimmers 5 and 6 at 1500 Kc. Then re-check adjustment of trimmer 7 at 600 Kc.					



TRIMMER LOCATION CHART

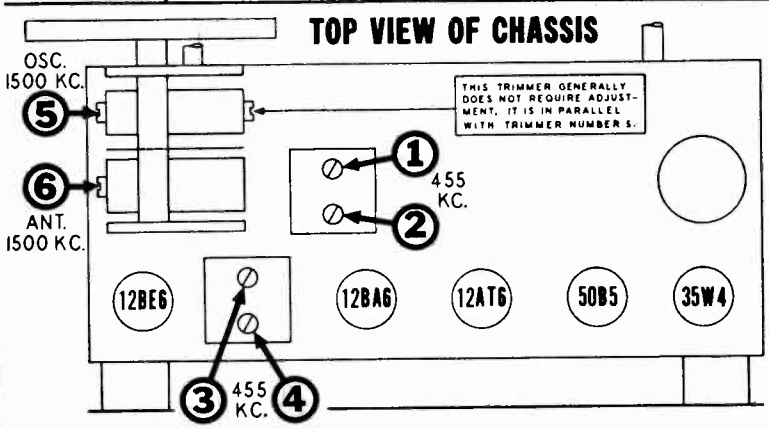
MODELS 51T126, 51T136, 51T146, 51T176, 9018-B, 9018-C, 9018-F, 9018-H

STEWART-WARNER CORP.

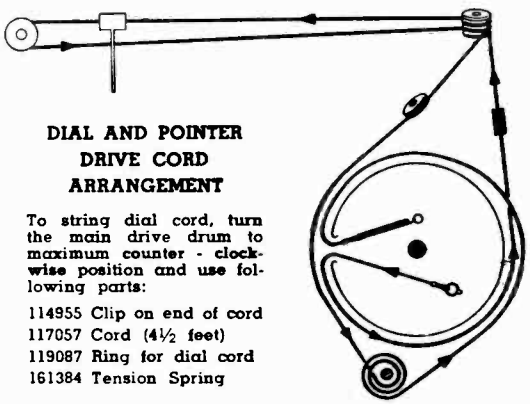
ALIGNMENT PROCEDURE

1. With the gang condenser fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.
2. Remove chassis from cabinet by taking out two screws which hold chassis to bottom of cabinet. Solder approximately 8" of insulated wire to any B— connection (see voltage chart on opposits side for convenient B— location).
3. Connect ground lead to signal generator to B— through a 0.25 Mfd. condenser.
4. Connect output meter across speaker voice coil (terminals at back of speaker) or from plate of 50B5 tube to B— through a 0.1 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Trimmer on rear section of gang.	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.



TRIMMER LOCATIONS



DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

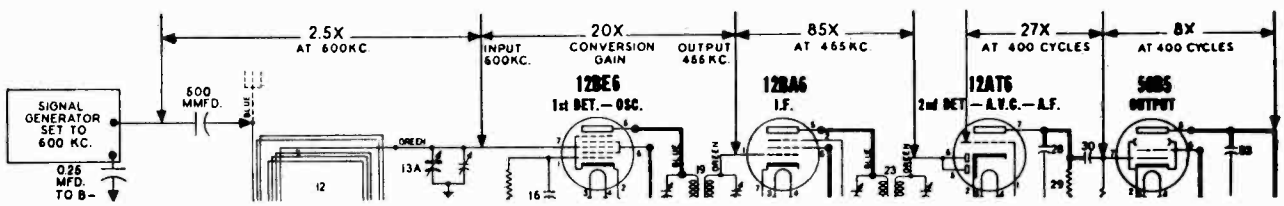
114955 Clip on end of cord
117057 Cord (4½ feet)
119087 Ring for dial cord
161384 Tension Spring

APPROXIMATE STAGE GAIN DATA

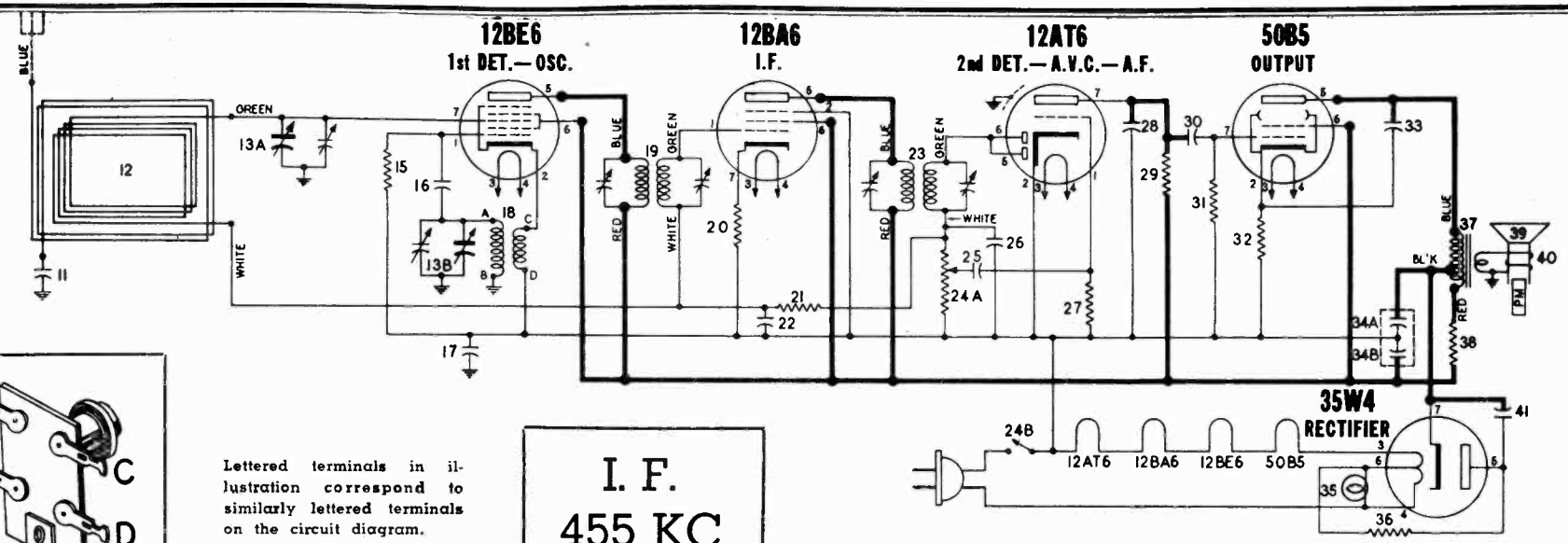
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

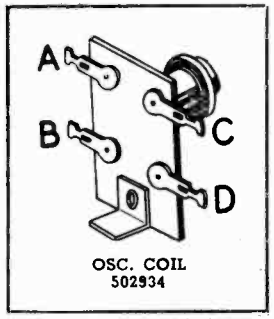
1. For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1½ volt cells in series) to A.V.C. connection at loop antenna (white wire) and connect positive battery terminal to B—. 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.





OSC. COIL
502934

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

I. F. 455 KC.

SOCKET VOLTAGES

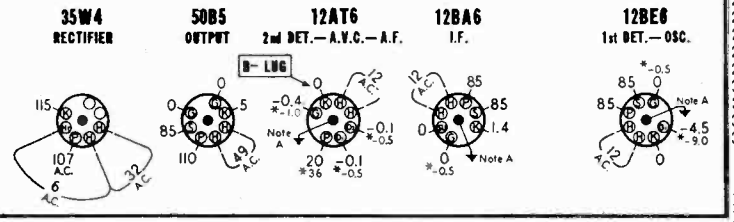
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*). The (*) symbol designates a vacuum tube voltmeter measurement.

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

BOTTOM VIEW OF CHASSIS

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

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



REAR OF CHASSIS

NOTE A: Grounding of center stud on tube socket is necessary to reduce capacity coupling between other pins. Oscillation may result if this ground is omitted.

PARTS LIST

CONDENSERS

11	502151	Condenser—.01 Mfd., 400 volt
13-A, B	502925	Condenser—variable gang (with drum)
16	502929	Condenser—mica 47 Mmfd. 500 volt
17	502158	Condenser—.2 Mfd. 400 volt
22	502153	Condenser—.05 Mfd. 200 volt
25	502156	Condenser—.004 Mfd. 400 volt
26	502882	Condenser—220 Mmfd. 500 volt
28	502470	Condenser—.0008 Mfd. 400 volt
30	502156	Condenser—.004 Mfd. 400 volt
33	502152	Condenser—.02 Mfd. 400 volt
34-A, B	500256	Condenser—electrolytic A-40 Mfd. 150 volt, B-20 Mfd. 150 volt
41	502157	Condenser—.05 Mfd. 400 volt

RESISTORS

15	502130	Resistor—carbon 22,000 ohms ¼ watt
20	502456	Resistor—carbon 220 ohms ¼ watt
21	502135	Resistor—carbon 2.2 Meg. ¼ watt
24-A, B	502928	Volume control—with switch; 1 Meg.
27	502136	Resistor—carbon 10 Meg. ¼ watt
29	502134	Resistor—carbon 470,000 ohms ¼ watt
31	502134	Resistor—carbon 470,000 ohms ¼ watt
32	502932	Resistor—carbon 150 ohms 1 watt
36	502574	Resistor—carbon 33 ohms ½ watt
38	502933	Resistor—carbon 1500 ohms 1 watt

COILS AND TRANSFORMERS

12	502937	Loop antenna
18	502934	Coil—oscillator
19	502926	Transformer—1st I.F.
23	502927	Transformer—2nd I.F.
37	502817	Transformer—output for C-502816 spkr.
	504583	Transformer—output for W-502816 spkr

OTHER ELECTRICAL PARTS

35	118921	Lamp—dial (Mazda 47) 6-8V. 150 Ma.
39	504584	Cone & voice coil for W-502816 speaker
	502818	Cone & voice coil for C-502816 speaker
40	502816	Speaker—P.M. dynamic (4 inch)

MISCELLANEOUS PARTS

504556	Back for cabinet—(Models 51T126, 51T136, 51T146)
502940	Back for cabinet (Model 51T176)
116467	Base for mtg. electrolytic condenser
504598	Base—tube shield
500383	Cabinet—ivory (Model 51T176)
500261	Clamp—dial scale m't'g. (Model 51T176)
114955	Clip—retainer on end of dial cord
500497	Clip—retainer for cabinet back
117057	Cord—dial drive (4½ ft. required) per ft.
500324	Cover—cardboard for elect. condenser
504774	Dial scale—glass (Models 51T126, 51T136, 51T146)
504912	Dial scale—glass (Model 51T176)
502564	Knob—ivory (Models 51T126, 51T146, 51T176)
502563	Knob—mahogany (Model 51T136)
502367	Pointer
81145	Retaining ring for tuning shaft
119087	Ring for dial cord
17064	Screw No. 4 x ⅜; for mtg. dial scale
83047	Screw No. 8 x ⅞; chassis mtg.
114628	Screw No. 8 x ½; chassis mtg.
501777	Screw No. 4 x ½; for mtg. back
502173	Shaft—tuning control
504599	Shield—tube
500499	Socket—dial lamp (with leads)
504397	Socket—miniature (black bakelite)
504597	Socket—miniature (wafer type)
161384	Spring—dial cord tension

MODELS 61T16, 61T26

STEWART WARNER CORP.

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

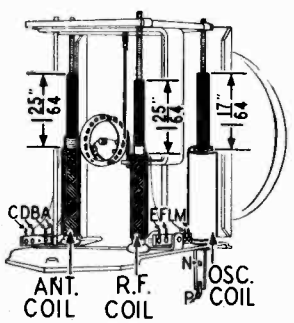


FIG. 1

SLUG TUNER ASSEMBLY
(Drive Parts)

117057 Cord (8")
114955 Clip on cord
504012 Spring

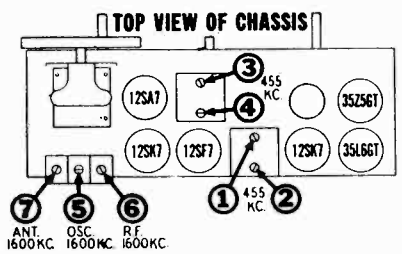


FIG. 2

AUDIO OSCILLATION

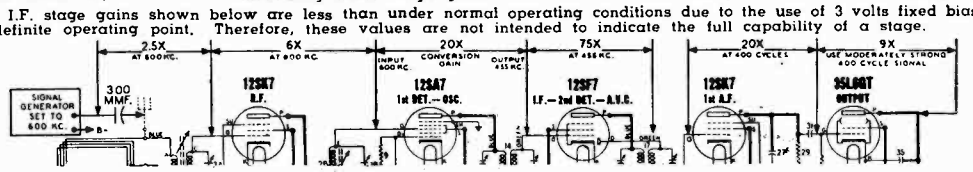
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and, should it ever be necessary to replace the speaker or output transformer, it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer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

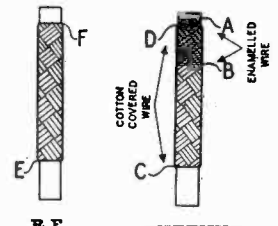
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

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 1½ volt cells in series) to A.V.C. lead and positive terminal to B—. This provides a definite operating point. IMPORTANT: Disconnect battery when measuring audio stage gains.
3. Be sure radio is carefully tuned to generator signal (use weak signal for sharp tuning.)
4. When using a "channel" type instrument carefully tune it for maximum output at desired frequency before making measurements.

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



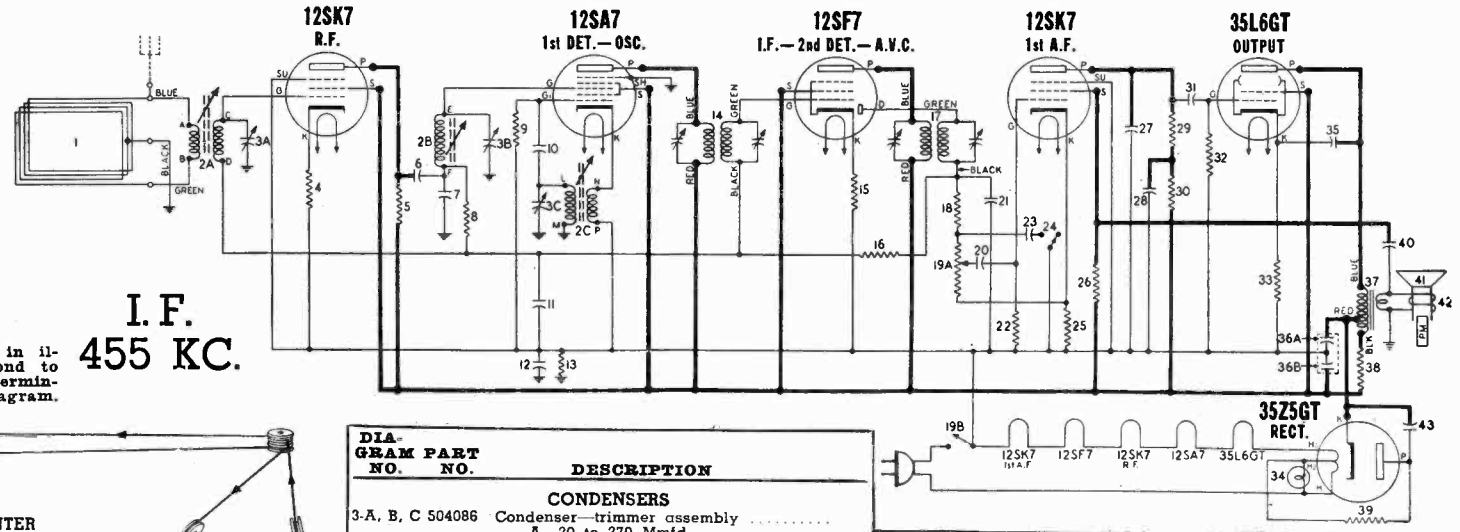
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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



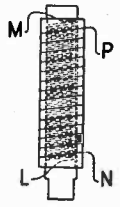
R.F. COIL 504214

ANTENNA COUPLING COIL 504210

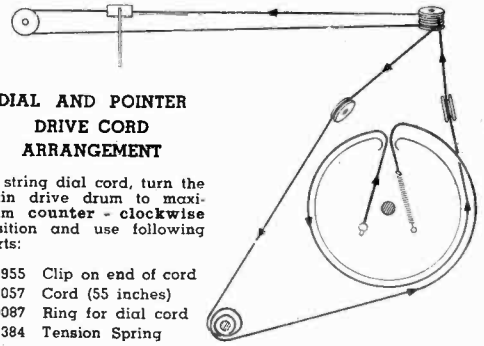
I.F. 455 KC.



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



OSCILLATOR COIL 504212



DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

SLUG CORES FOR COILS

	114955	Clip on end of cord
ANT.—504211	117057	Cord (55 inches)
R.F.—504215	119087	Ring for dial cord
OSC.—504213	161384	Tension Spring

SOCKET VOLTAGES

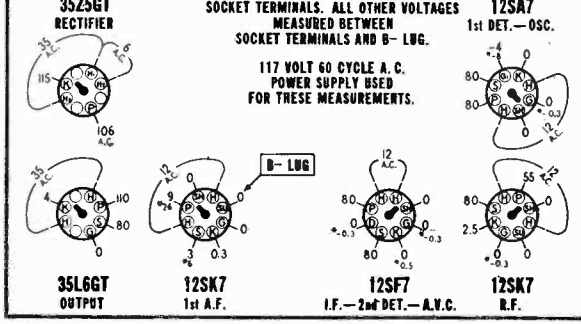
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

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

BOTTOM VIEW OF CHASSIS

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

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

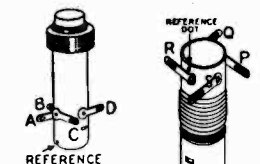


REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3-A, B, C	504086	Condenser—trimmer assembly A—20 to 270 Mmfd. B—40 to 370 Mmfd. C—40 to 370 Mmfd.
6	502271	Condenser—mica 260 Mmfd. 500 volt
7	502165	Condenser—mica 1,000 Mmfd. 500 volt
10	502159	Condenser—mica 50 Mmfd. 500 volt
11	502155	Condenser—.1 Mfd. 200 volt
12	502158	Condenser—.2 Mfd. 400 volt
20	502453	Condenser—.002 Mfd. 400 volt
21	502160	Condenser—mica 110 Mmfd. 500 volt
23	502470	Condenser—.0008 Mfd. 400 volt
27	502160	Condenser—mica 110 Mmfd. 500 volt
28	502153	Condenser—.05 Mfd. 200 volt
31	502156	Condenser—.004 Mfd. 400 volt
35	502151	Condenser—.01 Mfd. 400 volt
36-A, B	500256	Condenser—electrolytic A—40 Mfd. 150 volt B—20 Mfd. 150 volt
40	502152	Condenser—.02 Mfd. 400 volt
43	502157	Condenser—.05 Mfd. 400 volt
		RESISTORS
4	502140	Resistor—carbon 390 ohms ¼ watt
5	502291	Resistor—carbon 4700 ohms ¼ watt
8	502134	Resistor—carbon 470,000 ohms ¼ watt
9	502130	Resistor—carbon 22,000 ohms ¼ watt
13	502133	Resistor—carbon 220,000 ohms ¼ watt
15	502264	Resistor—carbon 47 ohms ¼ watt
16	502269	Resistor—carbon 3.3 Meg. ¼ watt
18	502131	Resistor—carbon 47,000 ohms ¼ watt
19-A, B	502145	Volume control 500,000 ohms (with switch)
22	502136	Resistor—carbon 10 Meg. ¼ watt
25	502128	Resistor—carbon 2200 ohms ¼ watt
26	502135	Resistor—carbon 2.2 Meg. ¼ watt
29, 30	502133	Resistor—carbon 220,000 ohms ¼ watt
32	502134	Resistor—carbon 470,000 ohms ¼ watt
33	502138	Resistor—carbon 130 ohms ¼ watt
38	502469	Resistor—carbon 1500 ohms 1 watt
39	502574	Resistor—carbon 33 ohms ½ watt
		COILS & TRANSFORMERS
1	502246	Loop antenna
2-A, B, C	504096	Tuning unit; complete assembly
2-A	504210	Coil—antenna (less slug)
2-B	504214	Coil—R.F. (less slug)
2-C	504212	Coil—oscillator (less slug)
	504211	Slug core for Ant. coil (yellow end)
	504213	Slug core for Osc. coil (white end)
	504215	Slug core for R.F. coil (purple end)

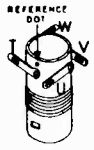
DIAGRAM NO.	PART NO.	DESCRIPTION
14	502102	Transformer—1st I.F.
17	502103	Transformer—2nd I.F.
37	502213	Transformer—output (for R-502998 spkr.)
	502904	Transformer—output (for A-502998 spkr.)
	504244	Transformer—output (for W-502998 spkr.)
		OTHER ELECTRICAL PARTS
24	500546	Switch—tone control
34	502473	Lamp—dial (Mazda 47) 6-8V. 150 Ma.
41	502214	Cone & voice coil for R-502998 spkr.
	502903	Cone & voice coil for A-502998 spkr.
	504245	Cone & voice coil for W-502998 spkr.
42	502998	Speaker—P.M. dynamic (5 inch)
		MISCELLANEOUS PARTS
	502185	Back for Cabinet
	116467	Base for mtg. electrolytic condenser
	500384	Cabinet—ivory (Model 61T26)
	502244	Cabinet—mahogany (Model 61T16)
	500261	Clamp—dial scale mtg.
	504084	Clip—holds tuning slugs to frame
	500497	Clip—retainer for cabinet back
	114955	Clip—retainer on end of dial cord
	116563	Connector—for antenna leads
	117057	Cord—dial drive (55 in. required) per ft.
	500324	Cover—cardboard, for elect. cond.
	504142	Dial scale—glass
	501186	Grounding plate (under I.F. trans. can)
	502552	Knob—maroon (Model 61T26)
	502551	Knob—mahogany (Model 61T16)
	502367	Pointer
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	85078	Rubber grommet; Ant. & R.F. coil mtg.
	504045	Rubber grommet; Osc. coil mtg.
	17063	Screw—No. 6 x ¼
	17064	Screw—No. 4 x 7/32
	114628	Screw—No. 8 x ½ chassis mtg.
	502173	Shaft—tuning control
	116690	Socket—octal base
	160392	Socket—octal (rectifier)
	500499	Socket—dial lamp (with leads)
	504012	Spring for tuning slug drive cord
	161384	Spring—dial cord tension
	111456	Washer—spring washer for tuning shaft



BC. ANTENNA COUPLING COIL 502121

S.W. ANTENNA COIL 502740

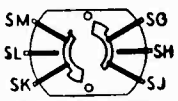
R.F. COIL 502142



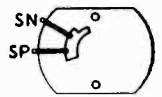
S.W. OSC. COIL 502197

BC. OSC. COIL 502198

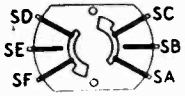
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



FRONT DECK FRONT VIEW

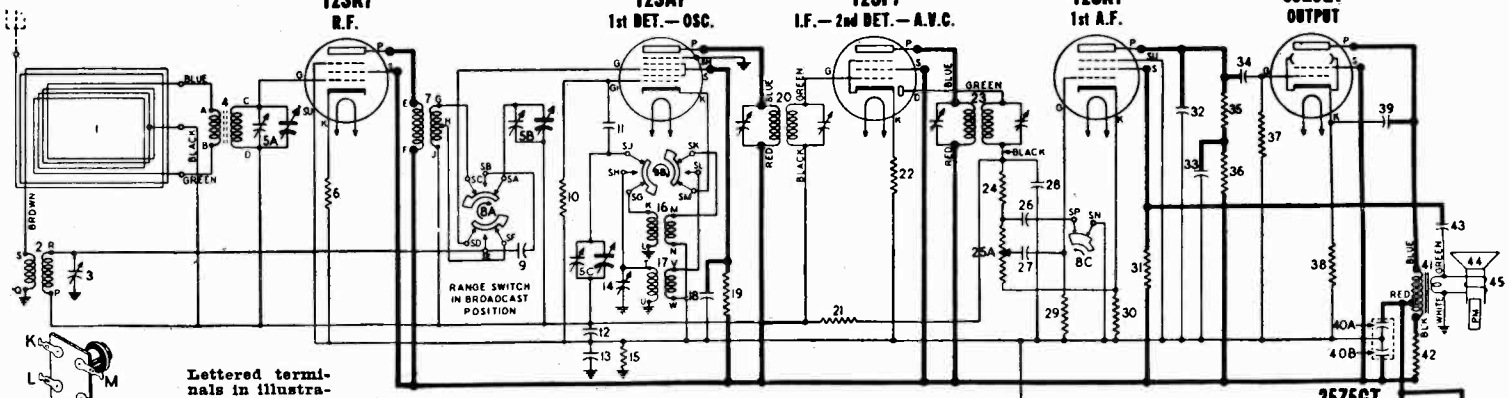


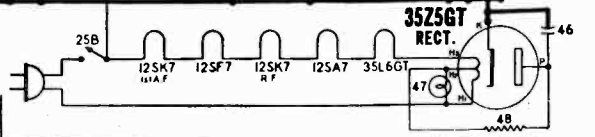
FRONT DECK REAR VIEW



REAR DECK FRONT VIEW

BAND AND TONE SWITCH 502199





SOCKET VOLTAGES

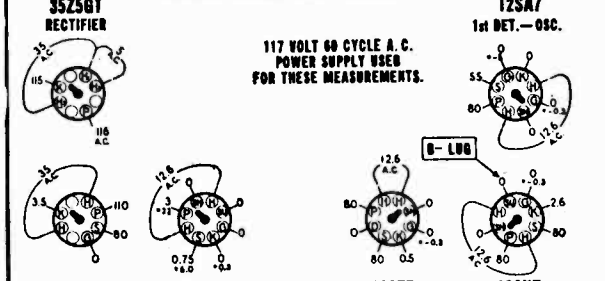
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

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

BOTTOM VIEW OF CHASSIS

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

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



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3	502172	Condenser—trimmer; 25 to 100 Mmfd.
5A-5B-5C	502123	Condenser—variable gang (with drum)
9	502162	Condenser —315 Mmfd. 500 volt
11	502159	Condenser—mica 50 Mmfd. 500 volt
12	502155	Condenser—.1 Mfd. 200 volt
13	502158	Condenser—.2 Mfd. 400 volt
14	502172	Condenser—trimmer; 25 to 100 Mmfd.
18	502262	Condenser—.25 Mfd. 200 volt
26	502470	Condenser—.0008 Mfd. 400 volt
27	502453	Condenser—.002 Mfd. 400 volt
28	502160	Condenser—mica 110 Mmfd. 500 volt
32	502160	Condenser mica 110 Mmfd. 500 volt
33	502153	Condenser .05 Mfd. 200 volt
34	502156	Condenser .004 Mfd. 400 volt
39	502151	Condenser .01 Mfd. 400 volt
40A-40B	500256	Condenser electrolytic { A-40 Mfd. 150 v. / B-20 Mfd. 150 v. }
43	502152	Condenser—.02 Mfd. 400 volt
46	502157	Condenser—.05 Mfd. 400 volt
		RESISTORS
6	502140	Resistor carbon 390 ohms ¼ watt
10	502130	Resistor carbon 22,000 ohms ¼ watt
15	502133	Resistor carbon 220,000 ohms ¼ watt
19	502291	Resistor carbon 4700 ohms ¼ watt
21	502269	Resistor carbon 3.3 Meg. ¼ watt
22	502264	Resistor carbon 47 ohms ¼ watt
24	502131	Resistor carbon 47,000 ohms ¼ watt
25A-25B	502145	Volume control 500,000 ohms (with switch)
29	502136	Resistor carbon 10 Meg. ¼ watt
30	502128	Resistor carbon 2200 ohms ¼ watt
31	502135	Resistor carbon 2.2 Meg. ¼ watt
35-36	502133	Resistor carbon 220,000 ohms ¼ watt
37	502134	Resistor carbon 470,000 ohms ¼ watt
38	502138	Resistor carbon 130 ohms ¼ watt
42	502469	Resistor carbon 1500 ohms 1 watt
48	502574	Resistor carbon 33 ohms ½ watt
		COILS & TRANSFORMERS
1	502503	Loop antenna
2	502740	Coil S. W. antenna
4	502121	Coil antenna coupling
7	502142	Coil BC. R.F.
16	502198	Coil—BC. oscillator
17	502197	Coil S.W. oscillator
20	502102	Transformer 1st I.F.
23	502103	Transformer—2nd I.F.

DIAGRAM NO.	PART NO.	DESCRIPTION
	502213	Trans. output, speaker with prefix "R"
	502904	Trans. output, speaker with prefix "A"
41	504244	Trans. output, speaker with prefix "W"
	504756	Trans. output, speaker with prefix "Y"
	504758	Trans. output, speaker with prefix "Z"
	504781	Trans. output, speaker with prefix "C"
		OTHER ELECTRICAL PARTS
8A-8B-8C	502199	Switch—tone & band
	502214	Cone & voice coil, spkr. with prefix "R"
	502903	Cone & voice coil, spkr. with prefix "A"
44	504245	Cone & voice coil, spkr. with prefix "W"
	504757	Cone & voice coil, spkr. with prefix "Y"
	504759	Cone & voice coil, spkr. with prefix "Z"
	504782	Cone & voice coil, spkr. with prefix "C"
45	502208	Speaker P.M. dynamic (5 inch)
	502998	Speaker P.M. dynamic (5 inch)
47	502473	Lamp dial (Mazda 47) 6-8V. 150 Ma.
		MISCELLANEOUS PARTS
	502501	Back for cabinet
	116467	Base for mtg. electrolytic condenser
	502500	Cabinet
	502506	Clamp—dial scale mtg.
	112745	Clip—coil mtg.
	114955	Clip—retainer on end of dial cord
	500497	Clip—retainer for cabinet back
	116563	Connector—for antenna leads
	117057	Cord—dial drive (55 in. required), per ft.
	500324	Cover—cardboard, for elect. cond.
	502505	Dial scale glass
	501186	Grounding plate (under I.F. trans. can.)
	502531	Knob—volume or tuning
	502532	Knob tone & range switch
	502367	Pointer
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	17063	Screw No. 6x¼; holds clamps to cab.
	114628	Screw—No. 8x½; chassis mtg.
	502173	Shaft—tuning control
	116690	Socket—octal base
	160392	Socket—octal (rectifier)
	500499	Socket—dial lamp (with leads)
	161384	Spring—dial cord tension
	111456	Washer spring washer for tuning shaft

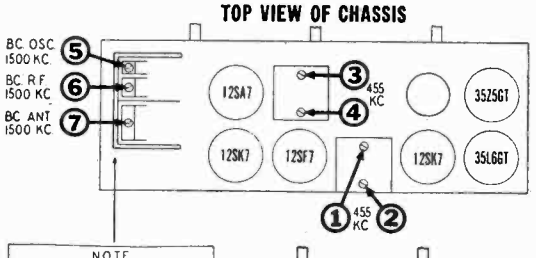
ALIGNMENT PROCEDURE

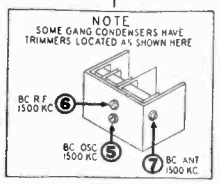
1. **Remove chassis and loop antenna from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.**
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should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

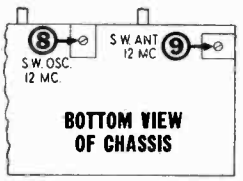
IMPORTANT:—Align this receiver in exactly the order shown below. Broadcast band must be aligned before short wave band.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

TOP VIEW OF CHASSIS



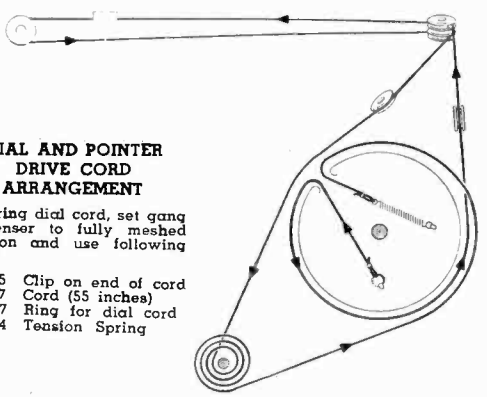




DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

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

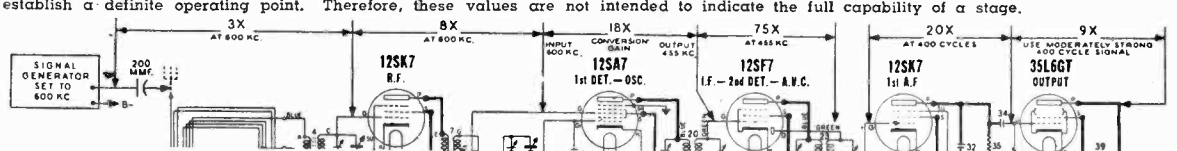


APPROXIMATE STAGE GAIN DATA

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

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



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

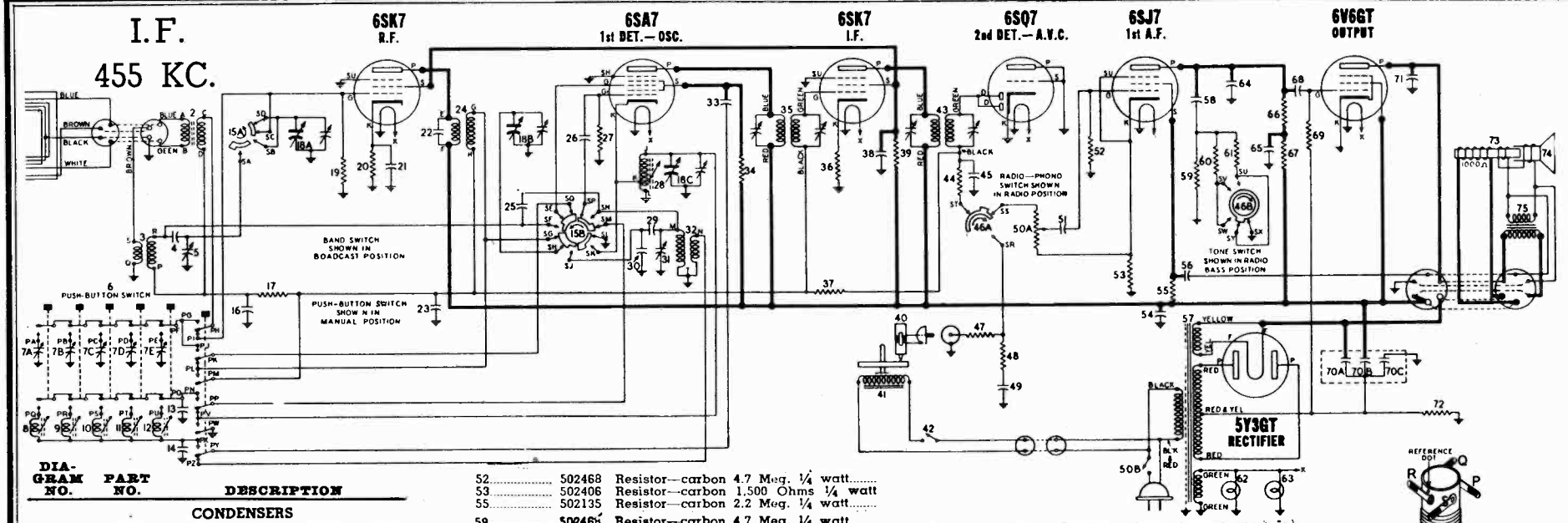
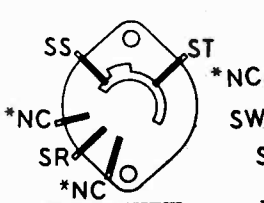
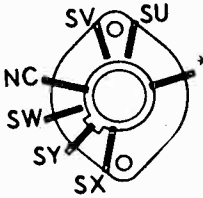


DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
4	502202	Condenser—ceramic 150 Mmfd. 500 volt
5	502172	Condenser—trimmer 25 to 100 Mmfd.
7-A to E	502910	Condenser—trimmer assembly for P-B tuner
13	502161	Condenser—mica 270 Mmfd. 500 volt
14	502165	Condenser—mica 1,000 Mmfd. 500 volt
16	502153	Condenser—.05 Mfd. 200 volt
18-A, B, C	502122	Condenser—variable gang
21	502155	Condenser—.1 Mfd. 200 volt
22	502295	Condenser—ceramic 10 Mmfd. 500 volt
23	502153	Condenser—.05 Mfd. 200 volt
25	502411	Condenser—2 Mmfd. 500 volt
26	502159	Condenser—mica 50 Mmfd. 500 volt
29	502201	Condenser—ceramic 130 Mmfd. 500 volt
30	502182	Condenser—ceramic 39 Mmfd. 500 volt
31	502171	Condenser—trimmer 5 to 35 Mmfd.
33	502152	Condenser—.02 Mfd. 400 volt
38	502154	Condenser—.05 Mfd. 600 volt
45	502160	Condenser—mica 110 Mmfd. 500 volt
49	502151	Condenser—.01 Mfd. 400 volt
51	502150	Condenser—.004 Mfd. 600 volt
54	502154	Condenser—.05 Mfd. 600 volt
56	502405	Condenser—.25 Mfd. 400 volt
58	502151	Condenser—.01 Mfd. 400 volt
64	502271	Condenser—mica 260 Mmfd. 500 volt
65	502157	Condenser—.05 Mfd. 400 volt
68	502152	Condenser—.02 Mfd. 400 volt
70-A, B, C	502207	Condenser—electrolytic A—20 Mfd. 400 volt; B—10 Mfd. 400 volt; C—20 Mfd. 25 volt
71	502479	Condenser—.006 Mfd. 600 volt
		RESISTORS
17	502134	Resistor—carbon 470,000 Ohms ¼ watt
19	502468	Resistor—carbon 4.7 Meg. ¼ watt
20	502478	Resistor—carbon 1,000 Ohms ½ watt
27	502130	Resistor—carbon 22,000 Ohms ¼ watt
34	502466	Resistor—carbon 33,000 Ohms 1 watt
36	502457	Resistor—carbon 330 Ohms ½ watt
37	502135	Resistor—carbon 2.2 Meg. ¼ watt
39	502292	Resistor—carbon 68,000 Ohms 1 watt
44	502131	Resistor—carbon 47,000 Ohms ¼ watt
47	502132	Resistor—carbon 100,000 Ohms ¼ watt
48	502131	Resistor—carbon 47,000 Ohms ¼ watt
50-A, B	502148	Volume control—with switch; 500,000 Ohms
52	502468	Resistor—carbon 4.7 Meg. ¼ watt
53	502406	Resistor—carbon 1,500 Ohms ½ watt
55	502135	Resistor—carbon 2.2 Meg. ¼ watt
59	502465	Resistor—carbon 4.7 Meg. ¼ watt
60	502408	Resistor—carbon 68,000 Ohms ¼ watt
61	502291	Resistor—carbon 4,700 Ohms ¼ watt
66, 67	502133	Resistor—carbon 220,000 Ohms ¼ watt
69	502134	Resistor—carbon 470,000 Ohms ¼ watt
72	502293	Resistor—wire wound 200 Ohms 2 watt
		COILS AND TRANSFORMERS
1	502282	Loop antenna
2	502112	Coil—BC. antenna
3	502110	Coil—S.W. antenna
	502025	Complete coil—trimmer assembly for P-B tuner
8	502907	Coil less slug (540-1000 Kc.)
9, 10	502908	Coil less slug (650-1300 Kc.)
11, 12	502909	Coil less slug (975-1600 Kc.)
	502911	Slug for coils 502907, 502908, 502909
	501151	Clip—for mtg. push button coils
24	502113	Coil—BC. R.F.
28	502114	Coil—BC. oscillator
32	502111	Coil—S.W. oscillator
35	502102	Transformer—1st I.F.
43	502103	Transformer—2nd I.F.
57	502174	Transformer—power
75	502303	Transformer—output for R-502302 speaker
	502994	Transformer—output for M-502302 speaker
		OTHER ELECTRICAL PARTS
6	502369	Switch—push-button
15-A, B	502368	Switch—band
40	502461	Crystal cartridge (Astatic L-71)
41	502846	Motor—for type GI-502444 record changer; 115 volt 50 cycle
	502847	Motor—for type GI-502444 record changer; 115 volt 60 cycle
	504201	Motor—for type W-504138 record changer; 115 volt 60 cycle
42	504883	Switch—on-off; for type GI-502444 record changer
	504203	Switch—on-off; for type W-504138 record changer
46-A, B	502370	Switch—tone and radio-phono
62, 63	110629	Lamp—dial (Mazda No. 44) 6.3 V. 0.25 Amps.
73	502302	Speaker—electro-dynamic (10 inch)
74	502304	Cone and voice coil for R-502302 speaker
	502995	Cone and voice coil for M-502302 speaker

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



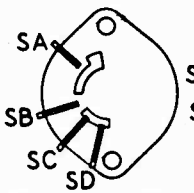
FRONT VIEW



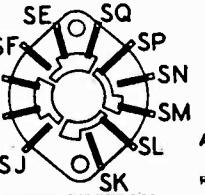
REAR VIEW

RADIO-PHONO AND TONE SWITCH 502370

*NC—NO CONNECTION

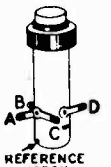


FRONT SECTION REAR VIEW



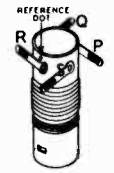
REAR SECTION REAR VIEW

BAND SWITCH 502368



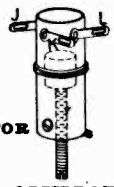
REFERENCE NOTCH

BC. ANTENNA COUPLING COIL 502112

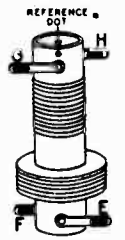


S.W. ANTENNA COIL 502110

S.W. OSCILLATOR COIL 502111



BC. OSCILLATOR COIL 502114



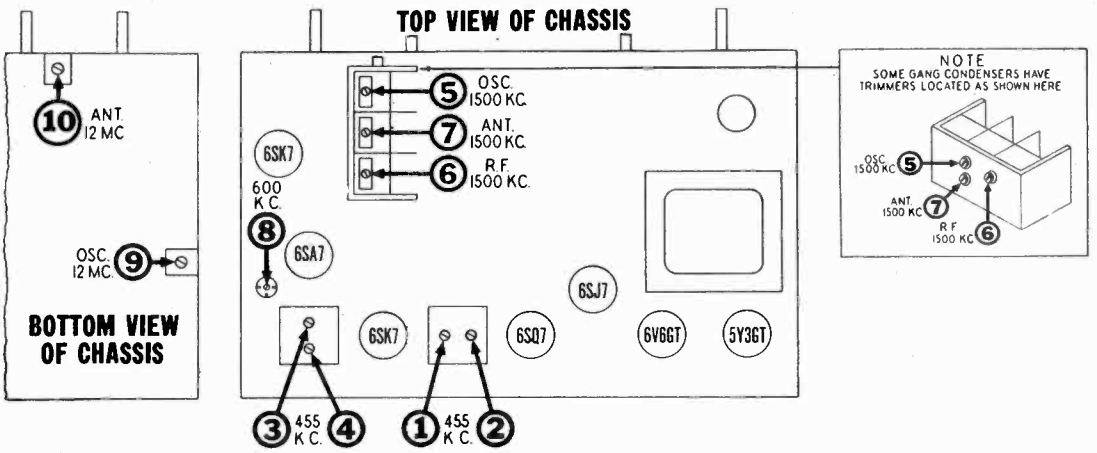
R.F. COIL 502113

ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). Wind one turn of insulated wire around frame of antenna so as to provide a means of coupling it to the signal generator. Stand chassis on one end and space it approximately same distance from loop as when installed in cabinet. Connect plug on loop antenna cable to socket at rear of chassis. Brown lead in antenna cable (which was connected to loop of wire stapled to cabinet) should now be connected to one end of new coupling turn on frame of loop.
2. Connect the ground lead of the signal generator to the receiver chassis.
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 or from plate of 6V6GT to chassis through a .1 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.
6. 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 band.

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.	
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	6	Broadcast R.F.	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn on Loop Frame	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	7	Broadcast Antenna	Adjust for maximum output.
500 MMFD. Mica Condenser	Coupling turn 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.
500 MFD. Mica Condenser	Coupling turn on Loop Frame	Repeat adjustment of trimmers 5, 6 and 7 at 1500 Kc. Then re-check adjustment of trimmer 8 at 600 Kc.					
400 OHM Carbon Resistor	Coupling turn on Loop Frame	12 MC	Short wave (Clockwise)	12 MC	9	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Coupling turn on Loop Frame	12 MC	Short wave (Clockwise)	Tune to 12 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.



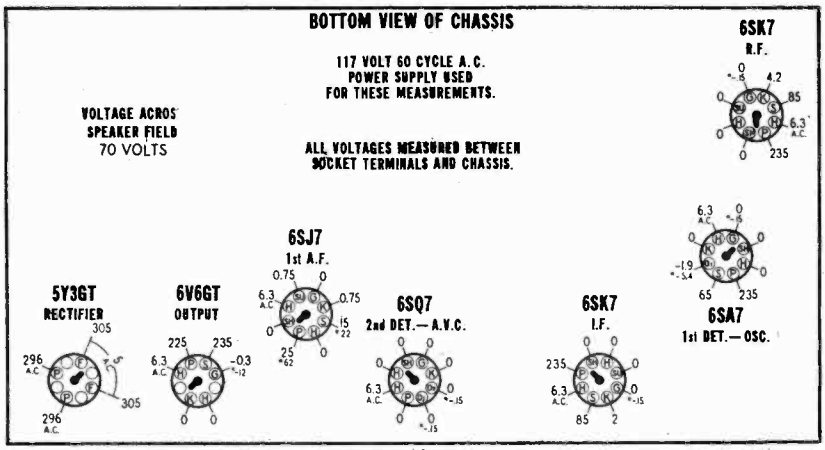
AUDIO OSCILLATION

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 primary of the output transformer.

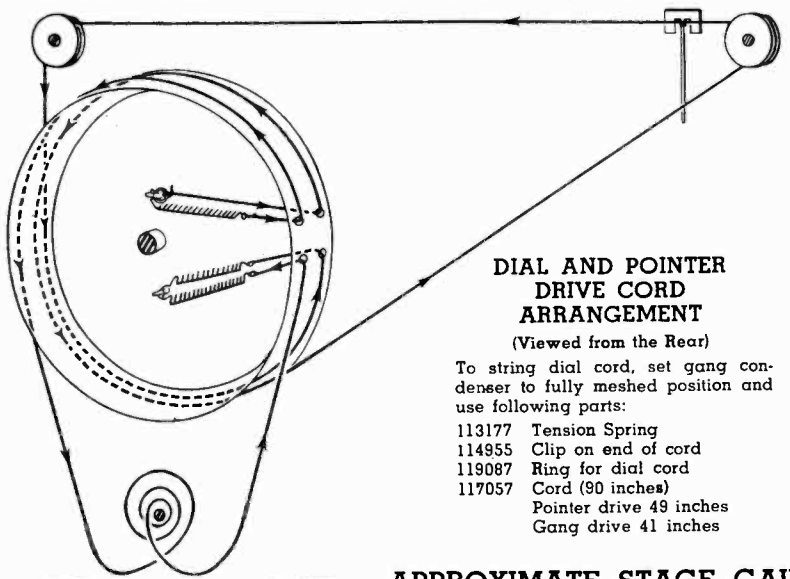
MODELS 72CR16, 72CR26 STEWART WARNER CORP.

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

RANGE SWITCH IN BROADCAST POSITION
VOLUME ON FULL WITH NO SIGNAL
RADIO-PHONO-TONE SWITCH IN "RADIO-SPEECH" POSITION
DIAL TUNED TO 540 KC.
MANUAL BUTTON PUSHED IN



*—Measured with vacuum tube voltmeter.
NOTE:—The 6V6GT grid bias of —12 volts can be measured across resistor No. 72.

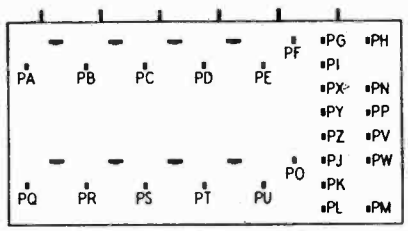


DIAL AND POINTER DRIVE CORD ARRANGEMENT

(Viewed from the Rear)

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 (90 inches)
Pointer drive 49 inches
Gang drive 41 inches



PUSH-BUTTON SWITCH
502369

MISCELLANEOUS PARTS

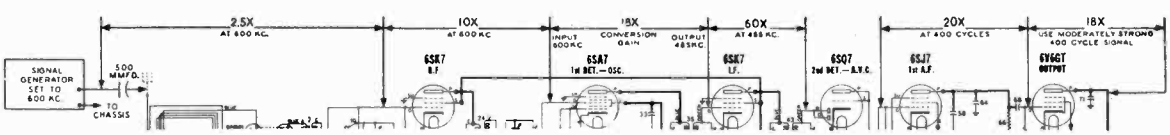
119993	Background for dial
116467	Base for mtg. electrolytic condenser
117315	Call letter tabs for push-button
119989	Clamp for dial glass
112745	Clip—coil mtg.
114955	Clip—retainer on end of dial cord
501151	Clip—for mtg. push button coils
117057	Cord—dial drive (90" required) per ft.
502227	Dial scale—glass
113402	Drum—for dial drive
502428	Escutcheon for push-button (Model 72CR16)
502429	Escutcheon for push-button (Model 72CR26)
501449	Knob—volume or tuning (Model 72CR16)
501458	Knob—tone or band switch (Model 72CR16)
501498	Knob—volume or tuning (Model 72CR26)
501499	Knob—tone or band switch (Model 72CR26)
502460	Needle—phonograph
500966	Plug—phonograph pick-up cable
501031	Plug—phonograph motor cable
502281	Plug—loop antenna cable
504097	Plug—speaker
502496	Pointer
501495	Push-Button (Model 72CR16)
502452	Push-Button (Model 72CR26)
81145	Retaining ring for tuning shaft
119087	Ring for dial cord
113463	Rubber pad—chassis mtg.
116584	Rubber spacer for mtg. dial scale
112874	Screw—No. 10 x 1⅛"; for mtg. chassis
114914	Screw—No. 2 x ⅜". for mtg. escutcheon
502399	Shaft—tuning control
114876	Socket—octal base (rectifier)
119791	Socket—octal base
118617	Socket—dial lamp
160039	Socket—phonograph plug
500051	Socket—loop antenna plug
501182	Socket—phonograph motor cable
502210	Socket—speaker
113177	Spring—dial cord tension
111456	Washer—spring washer for tuning shaft
500487	Washer—felt for knobs

APPROXIMATE STAGE GAIN DATA

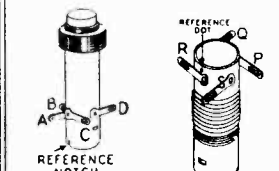
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

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 at terminal "D" of antenna coil; then connect positive battery lead 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.

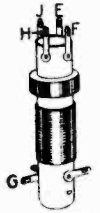


Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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



BC. ANTENNA COUPLING COIL 502121

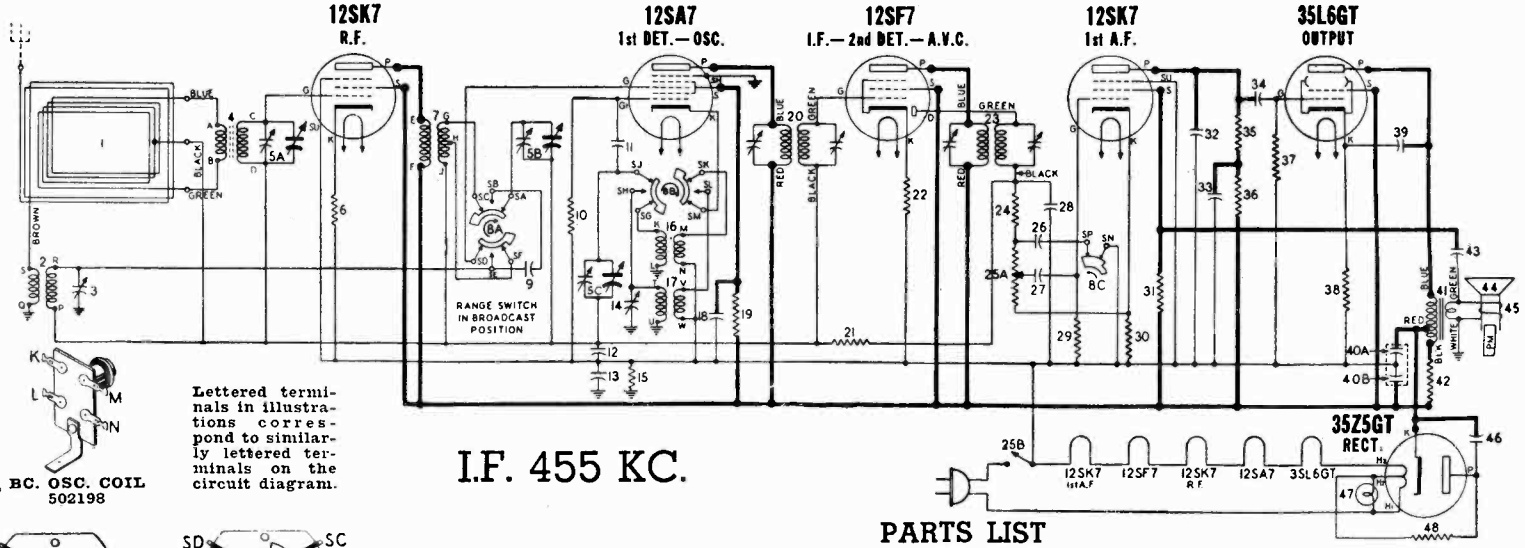
S.W. ANTENNA COIL 502740



R.F. COIL 502142

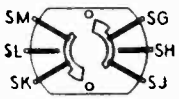
S.W. OSC. COIL 502197

BC. OSC. COIL 502198

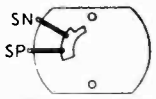


Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

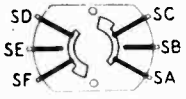
I.F. 455 KC.



FRONT DECK FRONT VIEW



FRONT DECK REAR VIEW



REAR DECK FRONT VIEW

RANGE AND TONE SWITCH 502199

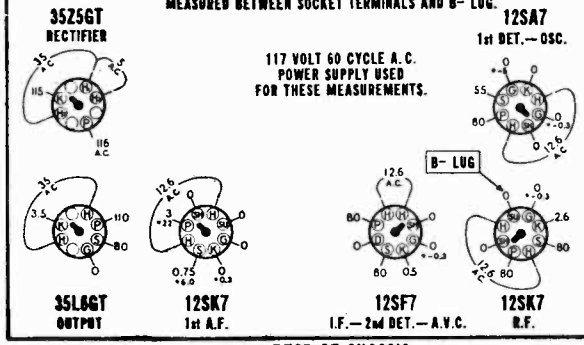
SOCKET VOLTAGES

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

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

BOTTOM VIEW OF CHASSIS

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



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3	502172	Condenser—trimmer; 25 to 100 Mmfd.
5A-5B-5C	502123	Condenser—variable gang (with drum)
9	502162	Condenser—315 Mmfd. 500 volt
11	502159	Condenser—mica—50 Mmfd. 500 volt
12	502155	Condenser—.1 Mfd. 200 volt
13	502158	Condenser—.2 Mfd. 400 volt
14	502172	Condenser—trimmer; 25 to 100 Mmfd.
18	502262	Condenser—.25 Mfd. 200 volt
26	502470	Condenser—.0008 Mfd. 400 volt
27	502453	Condenser—.002 Mfd. 400 volt
28	502160	Condenser—mica—110 Mmfd. 500 volt
32	502160	Condenser—mica—110 Mmfd. 500 volt
33	502153	Condenser—.05 Mfd. 200 volt
34	502156	Condenser—.004 Mfd. 400 volt
39	502151	Condenser—.01 Mfd. 400 volt
40A-40B	500256	Condenser—electrolytic A-40 Mfd. 150 volt / B-20 Mfd. 150 volt
43	502152	Condenser—.02 Mfd. 400 volt
46	502157	Condenser—.05 Mfd. 400 volt
		RESISTORS
6	502140	Resistor—carbon 390 ohms ¼ watt
10	502130	Resistor—carbon 22,000 ohms ¼ watt
15	502133	Resistor—carbon 220,000 ohms ¼ watt
19	502291	Resistor—carbon 4700 ohms ¼ watt
21	502269	Resistor—carbon 3.3 Meg. ¼ watt
22	502264	Resistor—carbon 47 ohms ¼ watt
24	502131	Resistor—carbon 47,000 ohms ¼ watt
25A-25B	502145	Volume control 500,000 ohms (with switch)
29	502136	Resistor—carbon 10 Meg. ¼ watt
30	502128	Resistor—carbon 2200 ohms ¼ watt
31	502135	Resistor—carbon 2.2 Meg. ¼ watt
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt
37	502134	Resistor—carbon 470,000 ohms ¼ watt
38	502138	Resistor—carbon 130 ohms ¼ watt
42	502469	Resistor—carbon 1500 ohms 1 watt
48	502574	Resistor—carbon 33 ohms ½ watt
		COILS & TRANSFORMERS
1	502196	Loop antenna
2	502740	Coil—S. W. antenna

DIAGRAM NO.	PART NO.	DESCRIPTION
4	502121	Coil—antenna coupling
7	502142	Coil—BC. R.F.
16	502198	Coil—BC. oscillator
17	502197	Coil—S.W. oscillator
20	502102	Transformer—1st I.F.
23	502103	Transformer—2nd I.F.
41	500617 / 502906	Transformer—output for R-500616 spkr. / Transformer—output for A-500616 spkr.
		OTHER ELECTRICAL PARTS
8A-8B-8C	502199	Switch-tone & range
44	500587 / 502905	Cone and voice coil for R-500616 spkr. / Cone and voice coil for A-500616 spkr.
45	500616	Speaker—P.M. dynamic (5 inch)
47	502473	Lamp-dial (Mazda 47) 6-8V. 150 Ma.
		MISCELLANEOUS PARTS
	116467	Base for mtg. electrolytic condenser
	502431	Back for cabinet
	501732	Clamp—dial scale mtg.
	112745	Clip—coil mtg.
	114955	Clip -retainer on end of dial cord
	116563	Connector—for antenna leads
	117057	Cord—dial drive (57 in. required) per ft.
	500324	Cover—cardboard. for elect. cond.
	502221	Dial scale—glass
	502700	Grille metal; for cabinet
	501186	Grounding plate (under I.F. trans. can)
	501778	Knob—volume or tuning
	501779	Knob—tone & band switch
	502367	Pointer
	81145	Retaining ring for tuning shaft
	14771	Screw—No. 6x3/8; holds frame to cab
	83047	Screw—No. 8x7/8; chassis mtg.
	500734	Screw—No. 4x5/16; holds clamps to cab.
	501777	Screw—No. 4x1/2; for mtg. loop & back
	502173	Shaft—tuning control
	116690	Socket—octal base
	160392	Socket—octal (rectifier)
	500499	Socket—dial lamp (with leads)
	161384	Spring—dial cord tension
	111456	Washer—spring washer for tuning shaft
	500487	Washer—felt; for knobs

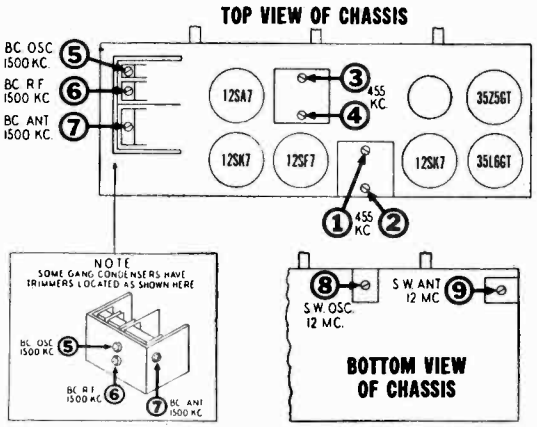
STEWART WARNER CORP.

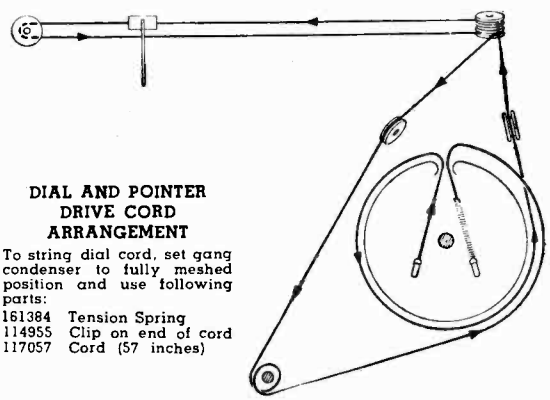
ALIGNMENT PROCEDURE

1. Remove chassis and loop antenna from cabinet (do not remove loop of wire stapled to cabinet). After chassis has been removed, replace loop antenna in cabinet. Stand the chassis on one end and space it approximately same distance from loop as when installed in cabinet. Then reconnect all leads to loop antenna and to loop of wire stapled on cabinet.
2. Note that there are four calibrating lines stamped into the metal dial frame. When gang condenser is fully meshed, dial pointer should be in the position indicated by first line at the left. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
3. Connect an output meter across the speaker voice coil or from plate of 35L6GT tube to B— through a .1 Mfd. condenser (see voltage chart for convenient B— connection).
4. Connect ground lead from signal generator to B— through a .25 Mfd. condenser.
5. Set volume control at maximum volume position and use a weak signal from the signal generator.

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

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

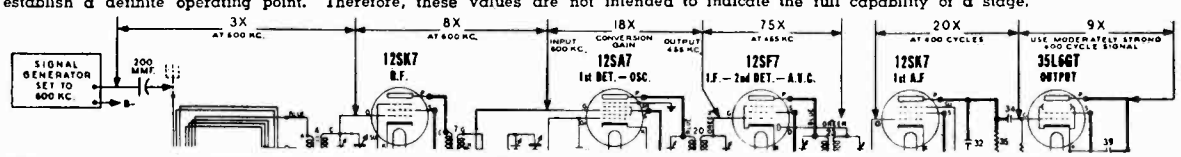
161384 Tension Spring
114955 Clip on end of cord
117057 Cord (57 inches)

APPROXIMATE STAGE GAIN DATA

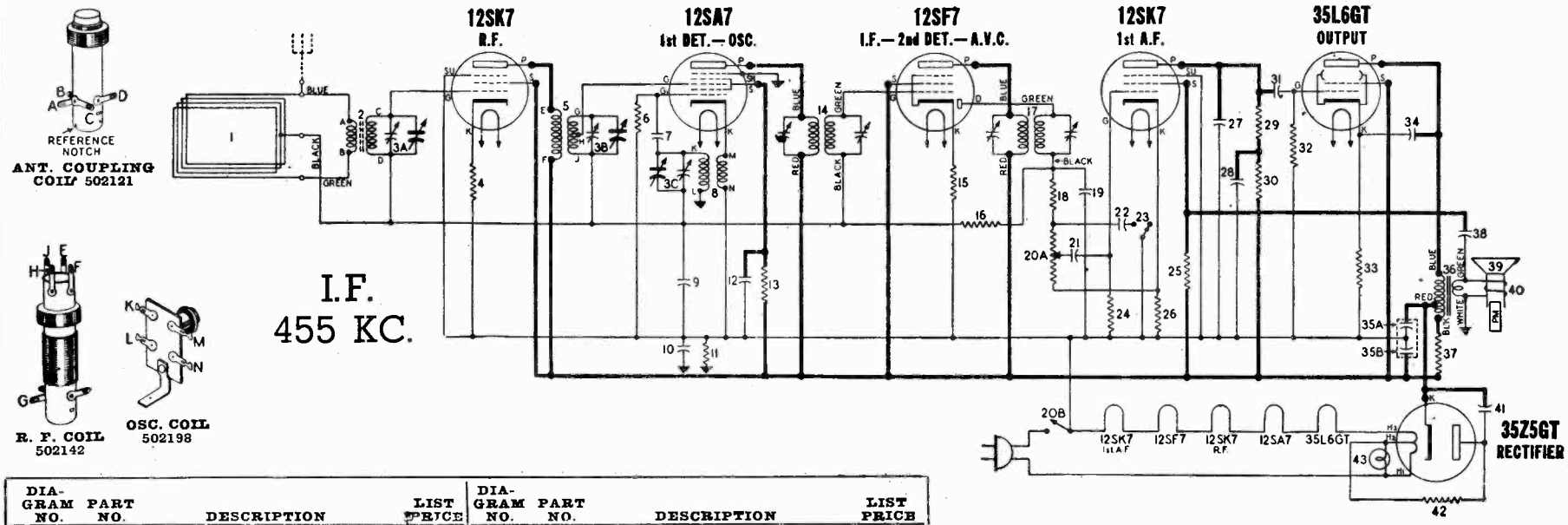
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

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

The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in oraer 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.



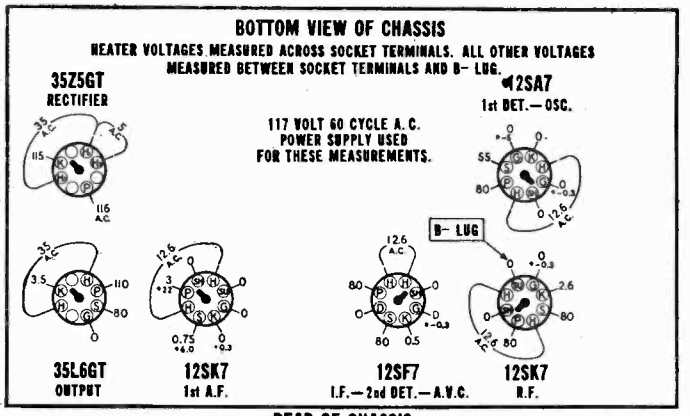
DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		CONDENSERS	
3A-3B-3C	502123	Condenser—variable gang (with drum)	$
7	502159	Condenser—mica—50 Mmfd. 500 Volt	
9	502155	Condenser—.1 Mfd. 200 Volt	
10	502158	Condenser—.2 Mfd. 200 Volt	
12	502262	Condenser—.25 Mfd. 200 Volt	
19	502160	Condenser—mica—110 Mmfd. 500 Volt	
21	502453	Condenser—.002 Mfd. 400 Volt	
22	502470	Condenser—.0008 Mfd. 400 Volt	
27	502160	Condenser—Mica—110 Mmfd. 500 Volt	
28	502153	Condenser—.05 Mfd. 200 Volt	
31	502156	Condenser—.004 Mfd. 400 Volt	
34	502151	Condenser—.01 Mfd. 400 Volt	
35A-35B	500256	Condenser—electrolytic A-40 Mfd. 150 Volt / B-20 Mfd. 150 Volt	
38	502152	Condenser—.02 Mfd. 400 Volt	
41	502157	Condenser—.05 Mfd. 400 Volt	
		RESISTORS	
4	502140	Resistor—carbon 390 Ohms ¼ Watt	
6	502130	Resistor—carbon 22,000 Ohms ¼ Watt	
11	502133	Resistor—carbon 220,000 Ohms ¼ Watt	
13	502291	Resistor—carbon 4700 Ohms, ¼ Watt	
15	502264	Resistor—carbon 47 Ohms ¼ Watt	
16	502269	Resistor—carbon 3.3 Meg. ¼ Watt	
18	502131	Resistor—carbon 47,000 Ohms ¼ Watt	
20A-20B	502145	Volume control 500,000 Ohms (with switch)	
24	502136	Resistor—carbon 10 Meg. ¼ Watt	
25	502135	Resistor—carbon 2.2 Meg. ¼ Watt	
26	502128	Resistor—carbon 2200 Ohms ¼ Watt	
29-30	502133	Resistor—carbon 220,000 Ohms ¼ Watt	
32	502134	Resistor—carbon 470,000 Ohms ¼ Watt	
33	502138	Resistor—carbon 130 Ohms ¼ Watt	
37	502469	Resistor—carbon 1500 Ohms 1 Watt	
42	502574	Resistor—carbon 33 Ohms ½ Watt	
		COILS & TRANSFORMERS	
1	502246	Loop Antenna	
2	502121	Coil—antenna coupling	
5	502142	Coil—R.F.	
8	502198	Coil—oscillator	
14	502102	Transformer 1st I.F.	
17	502103	Transformer 2nd I.F.	
36	502213 / 502904	Transformer—Output for R-502208 spkr. / Transformer—Output for A-502208 spkr.	

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
		OTHER ELECTRICAL PARTS	
23	500546	Switch-tone control	
39	502214 / 502903	Cone & voice coil for R-502208 spkr. / Cone & voice coil for A-502208 spkr.	
40	R-502208	Speaker—P.M. dynamic (5 inch)	
43	118921	Lamp—dial (Mazda 47) 6-8V. 150 Ma.	
		MISCELLANEOUS PARTS	
	17063	Screw—No. 6 x ¼	
	17064	Screw—No. 4 x 7/32	
	114628	Screw—No. 8 x ½ chassis mtg.	
	81145	Retaining ring for tuning shaft	
	111456	Washer—spring washer for tuning shaft	
	112745	Clip—coil mtg.	
	114955	Clip—retainer on end of dial cord	
	500497	Clip—retainer for cabinet back	
	116467	Base for mtg. electrolytic condenser	
	116563	Connector—for antenna leads	
	116690	Socket—octal base	
	160392	Socket—octal (rectifier)	
	500499	Socket—dial lamp (with leads)	
	117057	Cord—dial drive (55" required)	
	161384	Spring—dial cord tension	
	500261	Clamp—dial scale mtg. (Models 9002-A, B)	
	502506	Clamp—dial scale mtg. (Models 9002-P, R)	
	500324	Cover—cardboard, for elect. cond.	
	501186	Grounding plate (under I.F. transformer)	
	502173	Shaft—tuning control	
	502185	Back for cabinet (Models 9002-A, B)	
	502668	Back for cabinet (Models 9002-P, R)	
	502223	Dial scale—glass (Model 9002-A)	
	502224	Dial scale—glass (Model 9002-B)	
	502691	Dial scale—glass (Models 9002-P, R)	
	500384	Cabinet—ivory (Model 9002-B)	
	502244	Cabinet—mahogany (Model 9002-A)	
	502665	Cabinet—ivory (Model 9002-R)	
	502666	Cabinet—mahogany (Model 9002-P)	
	502367	Pointer (Models 9002-A, B)	
	502690	Pointer (Models 9002-P, R)	
	502551	Knob—mahogany (Model 9002-A)	
	502552	Knob—maroon (Model 9002-B)	
	502563	Knob—mahogany (Model 9002-P)	
	502564	Knob—ivory (Model 9002-R)	

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

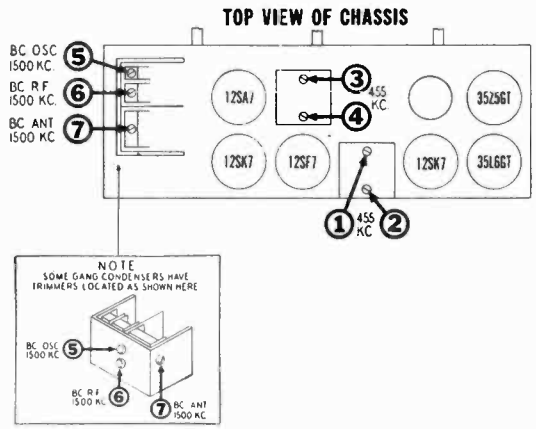
MODELS 9002-A, 9002-B, 9002-P, 9002-R

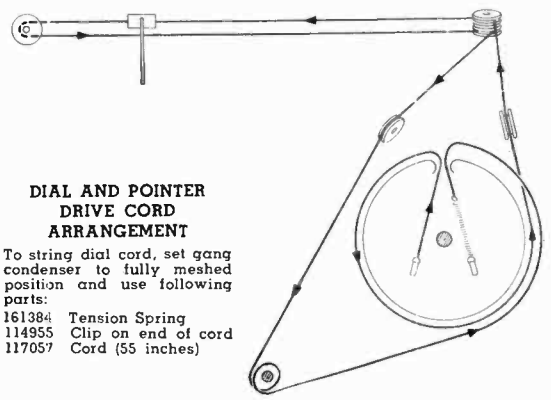
STEWART WARNER CORP.

ALIGNMENT PROCEDURE

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

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





DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

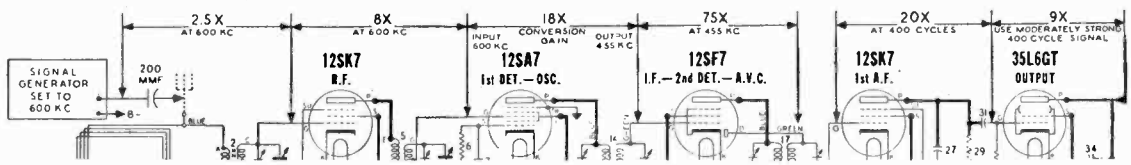
161384 Tension Spring
114955 Clip on end of cord
117057 Cord (55 inches)

APPROXIMATE STAGE GAIN DATA

A vacuum tube voltmeter may be used for audio gain measurements. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. Observe following precautions:

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

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



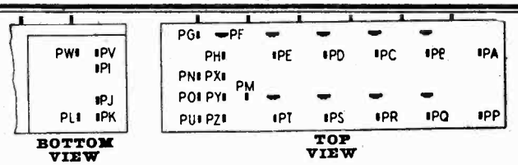
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

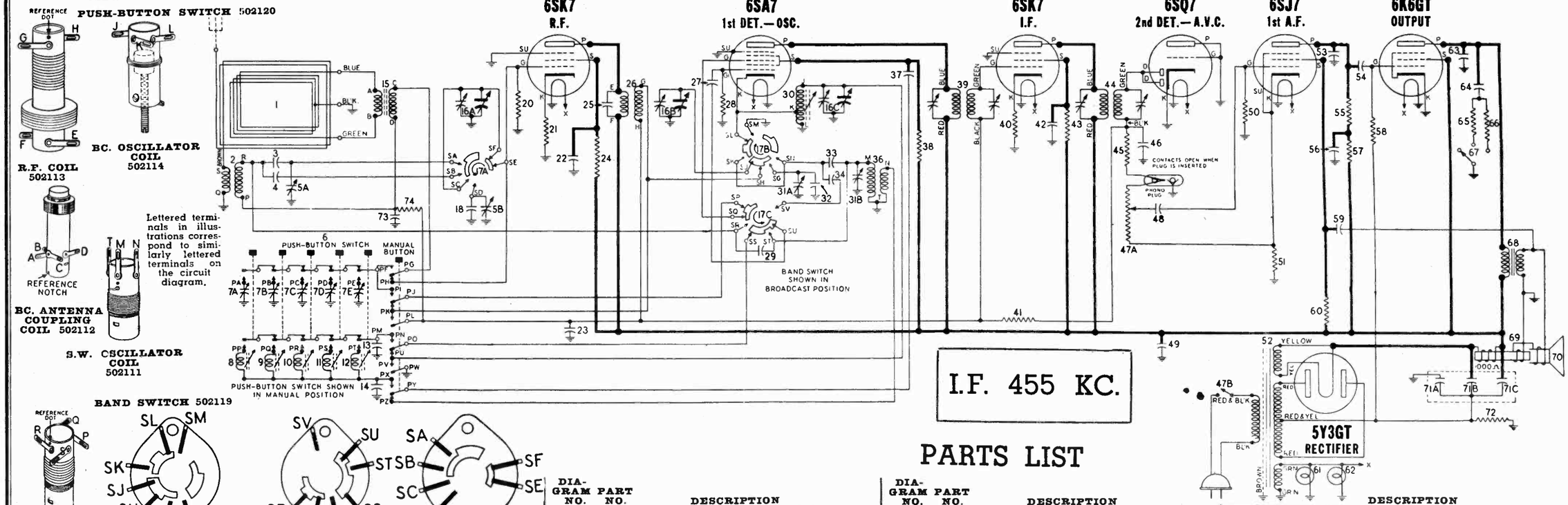
MODEL 9003-B, Early and First Revision

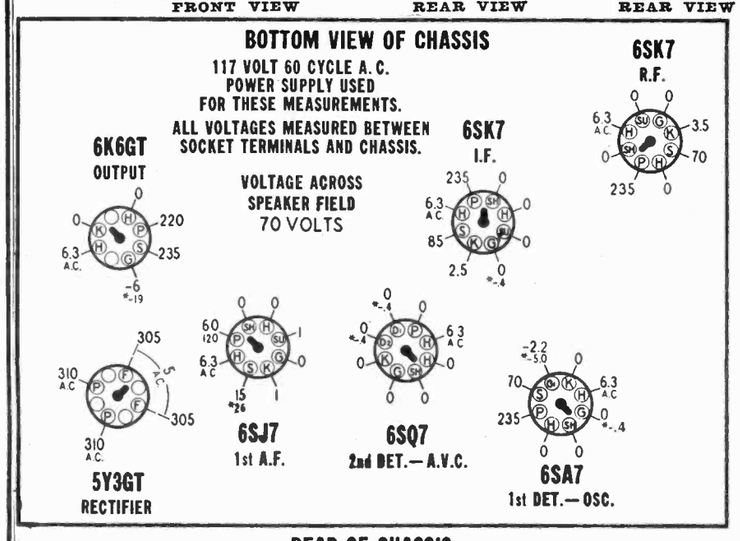
STEWART WARNER CORP.

NOTE:—The circuit shown below applies to chassis which have a letter "S" stamped on rear surface adjacent to model number. Early production chassis which do not contain the "S" designation will have the following circuit differences.
1. Terminal "D" of BC. Antenna Coil No. 15 and terminal "P" of S.W. Antenna Coil No. 2 are connected to ground and not to A.V.C. as shown below.
2. Condenser No. 73 and resistor No. 74 are omitted.

Improved sensitivity on Push Button tuning and short wave operation may be obtained for chassis that do not contain the "S" designation by connecting coils No. 2 and No. 15 as shown in the circuit on this page and adding parts No. 73 and No. 74.







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

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3	502166	Condenser—ceramic 82 Mmfd. 500 volt
4	502164	Condenser—mica 670 Mmfd. 500 volt
5A, B	502109	Condenser—trimmer assembly { Section A 2 to 15 Mmfd. / Section B 10 to 40 Mmfd. }
7A to E	502910	Condenser—trimmer assem. for P-B tuner
13	502161	Condenser—mica 270 Mmfd. 500 volt
14	502165	Condenser—mica 1,000 Mmfd. 500 volt
16A, B, C	502122	Condenser—variable gang
18	502182	Condenser—ceramic 39 Mmfd. 500 volt
22	502157	Condenser—.05 Mfd. 400 volt
23	502155	Condenser—.1 Mfd. 200 volt
25	502295	Condenser—ceramic 10 Mmfd. 500 volt
27	502159	Condenser—mica 50 Mmfd. 500 volt
29	502411	Condenser—2 Mmfd. 500 volt
31A, B	502108	Condenser—trimmer assem. Section A 2 to 15 Mmfd. Section B 2 to 15 Mmfd.
32	502182	Condenser—ceramic 39 Mmfd. 500 volt
33	502167	Condenser—ceramic 68 Mmfd. 500 volt
34	502163	Condenser—mica 430 Mmfd. 500 volt
37	502151	Condenser—.01 Mfd. 400 volt
42	502157	Condenser—.05 Mfd. 400 volt
46	502271	Condenser—mica 260 Mmfd. 500 volt
48	502150	Condenser—.004 Mfd. 600 volt
49	502157	Condenser—.05 Mfd. 400 volt
53	502160	Condenser—mica 110 Mmfd. 500 volt
54	502152	Condenser—.02 Mfd. 400 volt
56	502410	Condenser—.1 Mfd. 400 volt
59	502405	Condenser—.25 Mfd. 400 volt
63	502150	Condenser—.004 Mfd. 600 volt
64	502154	Condenser—.05 Mfd. 600 volt
71A, B, C	502207	Condenser—Electrolytic { A—20 Mfd. 25 volt / B—20 Mfd. 400 volt / C—10 Mfd. 400 volt }
73	502153	Condenser—.05 Mfd. 200 volt
		RESISTORS
20	502468	Resistor—carbon 4.7 Meg. 1/4 watt
21	502127	Resistor—carbon 560 Ohms 1/4 watt
24	502132	Resistor—carbon 100,000 Ohms 1/4 watt
28	502130	Resistor—carbon 22,000 Ohms 1/4 watt
38	502466	Resistor—carbon 33,000 Ohms 1 watt

DIAGRAM NO.	PART NO.	DESCRIPTION
40	502125	Resistor—carbon 220 Ohms 1/4 watt
41	502135	Resistor—carbon 2.2 Meg. 1/4 watt
43	502467	Resistor—carbon 68,000 Ohms 1/2 watt
45	502131	Resistor—carbon 47,000 Ohms 1/4 watt
47A, B	502117	Volume control 500,000 ohms (with switch
50	502468	Resistor—carbon 4.7 Meg. 1/4 watt
51	502128	Resistor—carbon 2200 Ohms 1/4 watt
55	502133	Resistor—carbon 220,000 Ohms 1/4 watt
57	502132	Resistor—carbon 100,000 Ohms 1/4 watt
58	502134	Resistor—carbon 470,000 Ohms 1/4 watt
60	502135	Resistor—carbon 2.2 Meg. 1/4 watt
65	502291	Resistor—carbon 4700 Ohms 1/4 watt
66	502127	Resistor—carbon 560 Ohms 1/4 watt
72	502137	Resistor—wire wound 330 Ohms 2 watt
74	502134	Resistor—carbon 470,000 Ohms 1 4 watt
		COILS & TRANSFORMERS
1	502186	Loop antenna
2	502110	Coil—S.W. antenna
	502025	Complete coil—trimmer assem. for P-B tuner
8	502907	Coil less slug (540-1000 Kc.)
9, 10	502908	Coil less slug (650-1300 Kc.)
11, 12	502909	Coil less slug (975-1600 Kc.)
	502911	Slug for coils 502907, 502908, 502909
	501151	Clip—for mtg. push button coils
15	502112	Coil—BC. antenna
26	502113	Coil—BC. R.F.
30	502114	Coil—BC. oscillator
36	502111	Coil—S.W. oscillator
39	502102	Transformer—1st I.F.
44	502103	Transformer—2nd I.F.
52	502174	Transformer—power
68	504206	Transformer—output for M-504205 speaker
	504208	Transformer—output for R-504205 speaker
	504124	Transformer—output for D-504205 speaker
		OTHER ELECTRICAL PARTS
6	502120	Switch—push-button
17A, B, C	502119	Switch—band
61, 62	110629	Lamp—dial (Mazda 44) 6.3 V. 250 Ma.
67	502118	Switch—tone control
69	504205	Speaker Electro-dynamic (6 inch)
70	504209	Cone & Voice coil for R-504205 speaker
	504907	Cone & Voice coil for M-504205 speaker
	504125	Cone & Voice coil for D-504205 speaker

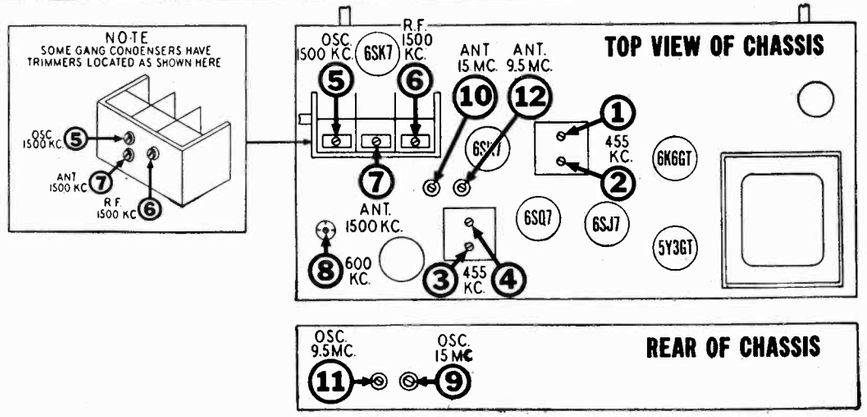
	DESCRIPTION
	MISCELLANEOUS PARTS
502041	Background for dial
116467	Base for mtg. electrolytic condenser
502046	Cabinet back
117315	Call letter tabs for push-button
500420	Clamp for dial glass
112745	Clip coil mtg.
114955	Clip retainer on end of dial cord
501151	Clip for mtg. push button coils
116563	Connector for antenna leads
117057	Cord dial drive (102 in. required), per ft.
502216	Dial scale glass
113402	Drum for dial drive
502699	Escutcheon for push-buttons
501449	Knob volume or tuning
501458	Knob tone or band switch
160620	Pointer
501495	Push-button
81145	Retaining ring for tuning shaft
119087	Ring for dial cord
116584	Rubber spacer for mtg. dial scale
502702	Rubber spacer on frame behind escutcheon
83552	Screw No. 10x7 8"; for mtg. chassis
85827	Screw No. 8-32 for dial drum
501777	Screw No. 4x1 2; for mtg. loop & back
502116	Shaft tuning control
114876	Socket octal base (rectifier)
119791	Socket octal base
500459	Socket dial lamp (with mtg. bracket)
502980	Spacer for leads to push button switch
113177	Spring dial cord tension
119911	Terminal strip phono
111456	Washer spring washer for tuning shaft
500487	Washer felt; for knobs

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	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.
.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.

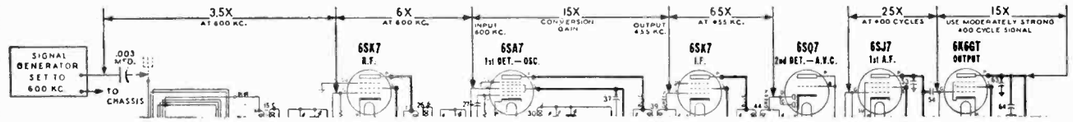


APPROXIMATE STAGE GAIN DATA

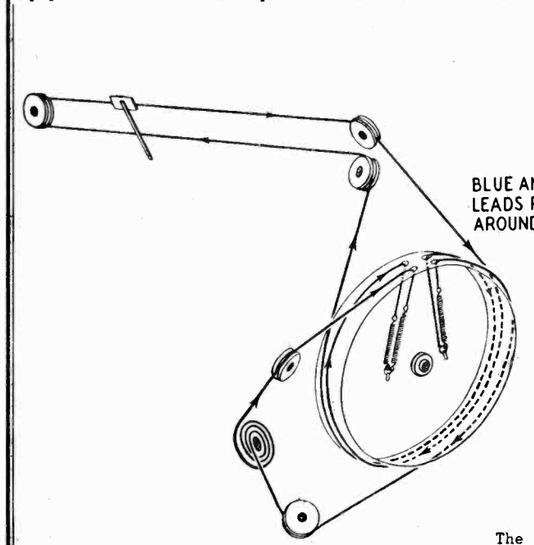
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

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.



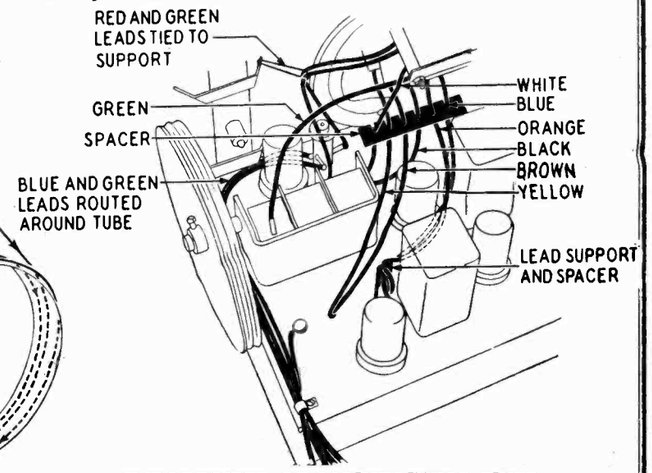
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

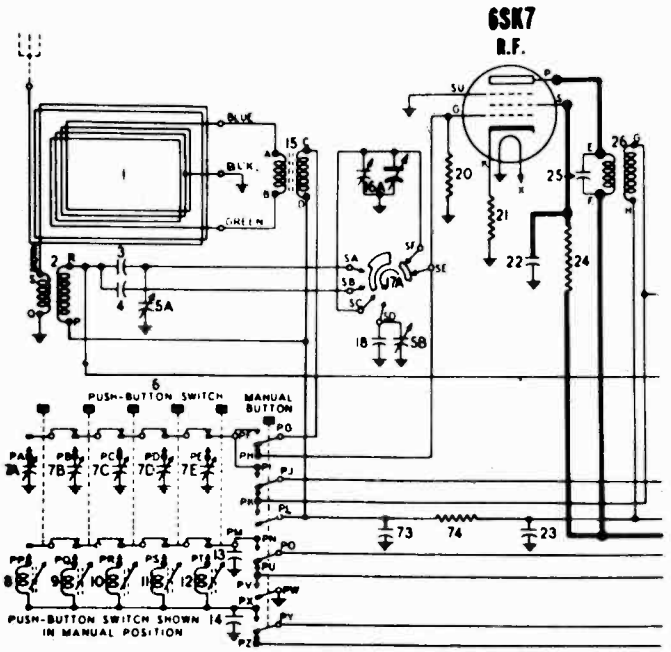
Since the relative positions of these wires may affect tuned circuits it is important to avoid any change in arrangement after the receiver has been aligned. If the position of the wires has been disturbed, it is advisable to re-check alignment (see previous page for alignment procedure).

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.

STEWART WARNER CORP.

MODEL 9003-B
2nd Revision



When the model 9003-B is operated on push-button tuning it is possible for a "wide tolerance" 6SA7 tube to cause considerable reduction in sensitivity which may be particularly noticeable when comparison is made to the sensitivity obtained for "manual" tuning. This loss of sensitivity has been traced to a wide variation in one of the characteristics of the 6SA7 tube which permits the flow of a larger than normal grid current. Loss of sensitivity results from the loading effect of grid current flowing through the associated tuned circuit.

Correction of this condition may be accomplished by utilizing one or both of the following remedies.

REMEDY #1: Try replacing the 6SA7 tube; use several different tubes, preferably of different brands, and check the performance of the set with each tube. In event a replacement tube is not available or if changing the tube does not make any improvement, apply remedy #2.

REMEDY #2: The application of this remedy requires that the chassis be removed from the cabinet. After this has been done, you can then make the following changes. These changes make it possible to use the same 6SA7 tube that was supplied with the set and still obtain a considerable improvement in sensitivity when using push-button tuning.

CIRCUIT CHANGES

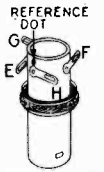
1. Remove ground connection at terminal "D" of Broadcast Antenna Coil and terminal "P" of Short Wave Antenna Coil and reconnect both coil terminals to the A.V.C. system as indicated in the diagram on next page.

2. Add resistor #74 (470,000 ohms 1/2 watt) and condenser #73 (.05 mfd. 200 volt) by connecting them into the circuit as shown.

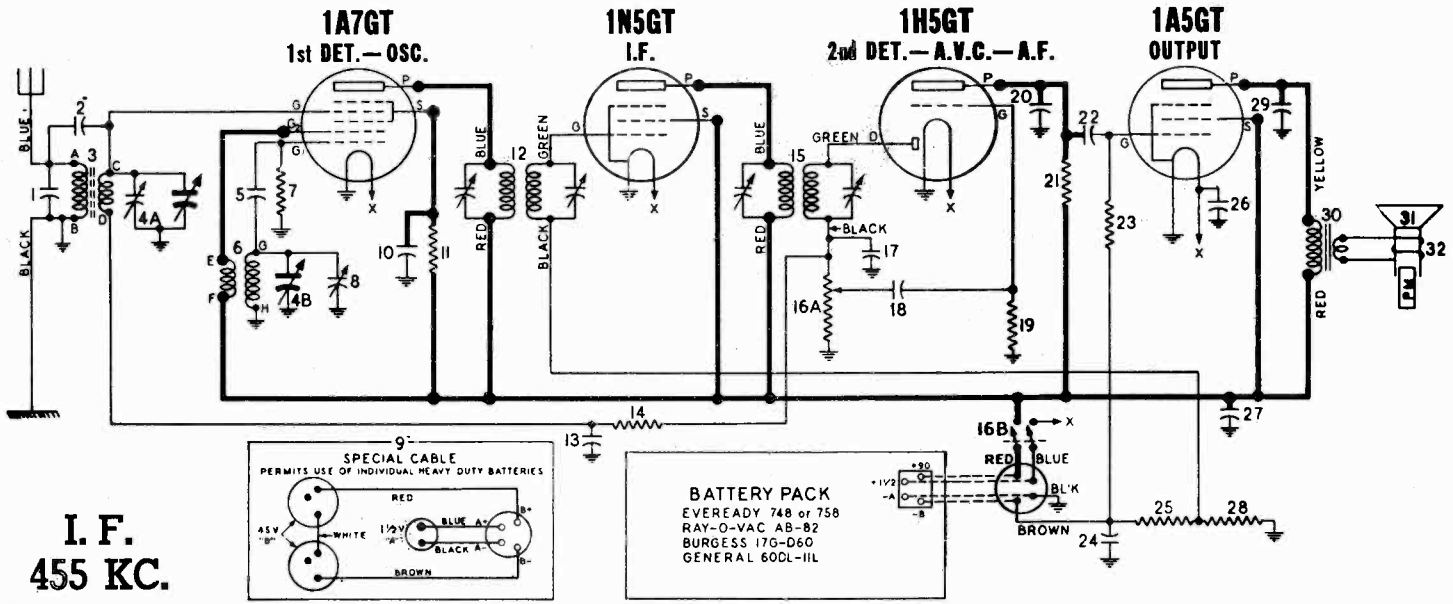
3. Check alignment of receiver by adjusting antenna circuit trimmers for maximum output. Broadcast band trimmer (16A) must be adjusted before attempting to peak Short Wave band trimmer (5A).

SERVICE DATA FOR STEWART-WARNER MODELS 9005-A, B.

ANTENNA COIL
502277



OSCILLATOR COIL
502278



I. F. 455 KC.

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

SOCKET VOLTAGES

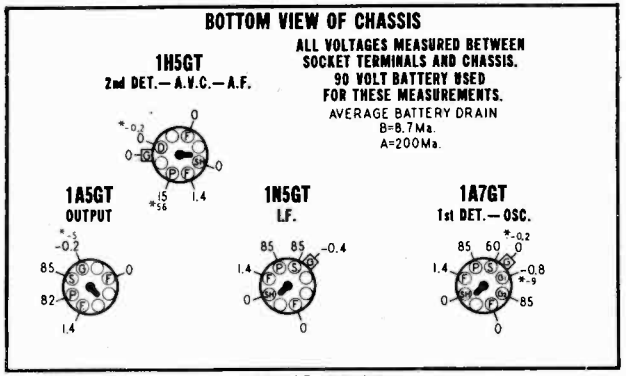
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

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

BOTTOM VIEW OF CHASSIS

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS. 90 VOLT BATTERY USED FOR THESE MEASUREMENTS.

AVERAGE BATTERY DRAIN
B=8.7Ma.
A=200Ma.



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
1	502159	Condenser—mica—50 Mmfd. 500 volt
2	502411	Condenser—2 Mmfd. 500 volt
4A, B	T19528	Condenser—variable gang
5	502159	Condenser—mica—50 Mmfd. 500 volt
8	119719	Condenser—trimmer 5 to 50 Mmfd.
10	502157	Condenser—.05 Mfd. 400 volt
13	502157	Condenser—.05 Mfd. 400 volt
17	502160	Condenser—mica—110 Mmfd. 500 volt
18	502151	Condenser—.01 Mfd. 400 volt
20	502271	Condenser—mica—260 Mmfd. 500 volt
22	502151	Condenser—.01 Mfd. 400 volt
24	502286	Condenser—electrolytic 10 Mfd. 25 volt
26	502263	Condenser—.5 Mfd. 150 volt
27	502262	Condenser—.25 Mfd. 200 volt
29	502260	Condenser—.002 Mfd. 600 volt
		RESISTORS
7	502133	Resistor—carbon—220,000 ohms ¼ watt
11	502266	Resistor—carbon—15,000 ohms ¼ watt
14	502269	Resistor—carbon—3.3 Meg. ¼ watt
16A, B	161325	Volume control (with switch) 500,000 ohms
19	502269	Resistor—carbon—3.3 Meg. ¼ watt
21	502267	Resistor—carbon—680,000 ohms ¼ watt
23	502268	Resistor—carbon—1 Meg. ¼ watt
25	502127	Resistor—carbon—560 ohms ¼ watt
28	502264	Resistor—carbon—47 ohms ¼ watt
		COILS & TRANSFORMERS
3	502277	Coil—antenna coupling
6	502278	Coil—oscillator
12	502279	Transformer—1st I.F.
15	502280	Transformer—2nd I.F.
30	119749	Transformer—output for M-115095 Spkr.
		OTHER ELECTRICAL PARTS
9	116566	Battery cable for use with indiv. batt.
31	119748	Cone & voice coil for M-115095 spkr.
32	115095	Speaker—P.M. dynamic (6 inch)
		MISCELLANEOUS PARTS
	502575	Background (foil) around indicator hole
	112745	Clip—coil mtg.
	114955	Clip—retainer on end of dial cord
	117057	Cord—dial drive (36 in. required), per ft.
	502226	Dial scale
	501449	Knob
	111372	Lever for OFF-ON indicator
	119518	OFF-ON indicator plate (less foil tab)
	502576	OFF-ON indicator tab (with red dot)
	502281	Plug for battery cable
	502602	Pointer
	81145	Retaining ring for tuning shaft
	119087	Ring—dial cord
	83047	Screw—No. 8 x 7/8; chassis mtg.
	85827	Screw—No. 8-32 for indicator lever
	161327	Shaft—tuning control
	113169	Spring—OFF-ON indicator
	114968	Spring—dial cord tension
	116690	Socket—octal base
	111456	Washer—spring washer for tuning shaft
	500487	Washer—felt: for knobs
	502397	Window—dial, celluloid
	502398	Window—OFF-ON indicator, celluloid

STEWART WARNER CORP. MODELS 9005-A, 9005-B

ALIGNMENT PROCEDURE

1. When gang condenser is fully meshed, dial pointer should be in the position indicated by the 54 mark on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.

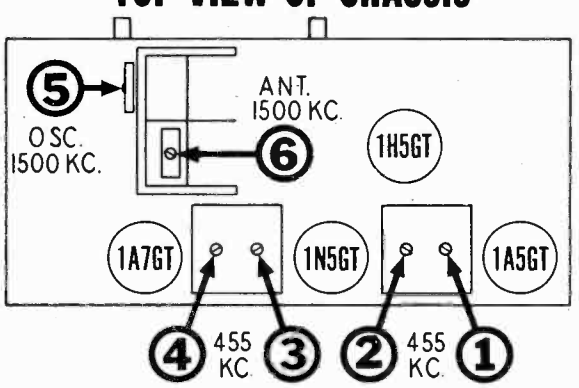
2. Connect an output meter across speaker voice coil or from the plate of the 1A5GT tube to chassis through a 0.1 Mfd. condenser.

3. Connect the ground lead of the signal generator to the receiver ground lead (black) or to the chassis.

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

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
.1 MFD. Condenser	Grid cap on 1A7GT tube	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 (blue)	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External antenna lead (blue)	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.

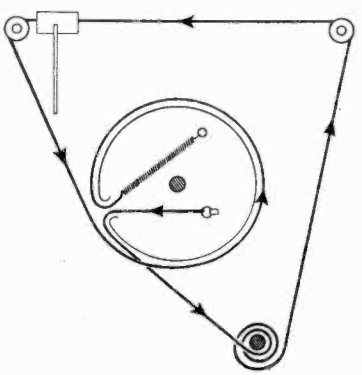
TOP VIEW OF CHASSIS



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 (36 inches)
119087 Ring for dial cord
114968 Tension Spring



POWER LINE OPERATION

The following power pack may be used to operate this set on 110 volt 50-60 cycle A.C. power lines.

Porta-Power Model "H"

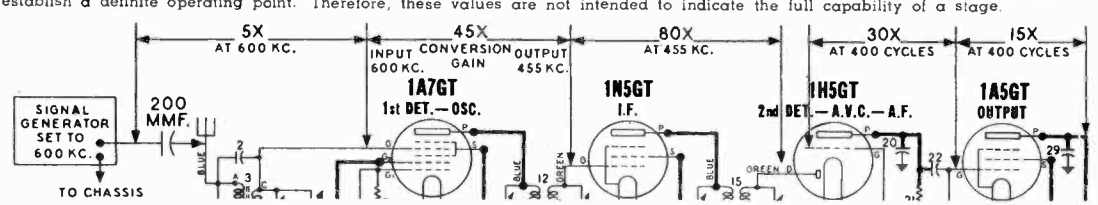
This unit is manufactured by the General Transformer Corp., 1250 W. Van Buren St., Chicago, Ill.

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.

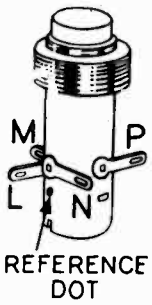
1. For all gain measurements connect signal generator as shown. Use 600 KC signal with 400 cycles modulation (use nearby frequency if local station interferes.)
2. For R.F. and I.F. measurements connect negative terminal of a 1½-volt battery to A.V.C. lead and positive terminal to chassis. This provides 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 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.

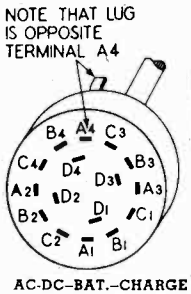


Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

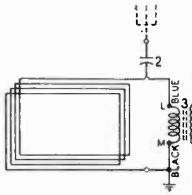
OSC. COIL
502498



ANTENNA COIL
502499



AC-DC-BAT.-CHARGE SWITCH
502526



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

I.F. 455 K.C.

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
2	502150	Condenser—.004 Mfd. 600 volt
4-A, B	502494	Condenser—variable gang
5	119132	Condenser—trimmer 2 to 15 Mmfd.
7	502159	Condenser—mica 50 Mmfd. 500 volt
8	502153	Condenser—.05 Mfd. 200 volt
11	502547	Condenser—electrolytic 4 Mfd. 150 volt
15	502153	Condenser—.05 Mfd. 200 volt
16	502155	Condenser—.1 Mfd. 200 volt
17	502153	Condenser—.05 Mfd. 200 volt
25, 26	502159	Condenser—mica 50 Mmfd. 500 volt
28	502155	Condenser—.1 Mfd. 200 volt
31	502156	Condenser—.004 Mfd. 400 volt
35	502160	Condenser—mica 110 Mmfd. 500 volt
37	502155	Condenser—.1 Mfd. 200 volt
40	502151	Condenser—.01 Mfd. 400 volt
42	502527	Condenser—electrolytic 50 Mfd. 25 volt
48	502155	Condenser—.1 Mfd. 200 volt
50	502453	Condenser—.002 Mfd. 400 volt
56-A,B,C	500714	Condenser—electrolytic A—20 Mfd. 150 volt B—20 Mfd. 200 volt C—20 Mfd. 200 volt
58	502153	Condenser—.05 Mfd. 200 volt
		RESISTORS
6	502133	Resistor—carbon 220,000 ohms ¼ watt
12	502131	Resistor—carbon 47,000 ohms ¼ watt
14	502136	Resistor—carbon 10 Meg. ¼ watt
18	502455	Resistor—carbon 27 ohms ¼ watt
19	502457	Resistor—carbon 330 ohms ¼ watt
20	502458	Resistor—carbon 430 ohms ¼ watt
21	502269	Resistor—carbon 3.3 Meg. ¼ watt
24	502132	Resistor—carbon 100,000 ohms ¼ watt
29	502269	Resistor—carbon 3.3 Meg. ¼ watt
30-A,B,C,D	502525	Volume control (with switch) 1 Meg.
32	502269	Resistor—carbon 3.3 Meg. ¼ watt
33, 34	502456	Resistor—carbon 220 ohms ¼ watt
36	502268	Resistor—carbon 1 Meg. ¼ watt
38	502134	Resistor—carbon 470,000 ohms ¼ watt
39	500712	Resistor—wire wound 1830 ohms 5 watt
41	502135	Resistor—carbon 2.2 Meg. ¼ watt
44	502266	Resistor—carbon 15,000 ohms ¼ watt
45	502459	Resistor—carbon 6800 ohms ¼ watt
46	502457	Resistor—carbon 330 ohms ¼ watt
47	502455	Resistor—carbon 27 ohms ¼ watt
49-A,B,C	500715	Resistor—wire wound A—1460 ohms 10 watt B— 155 ohms 1 watt C— 310 ohms 10 watt
54	502454	Resistor—wire wound 47 ohms 1 watt
57	502454	Resistor—wire wound 47 ohms 1 watt

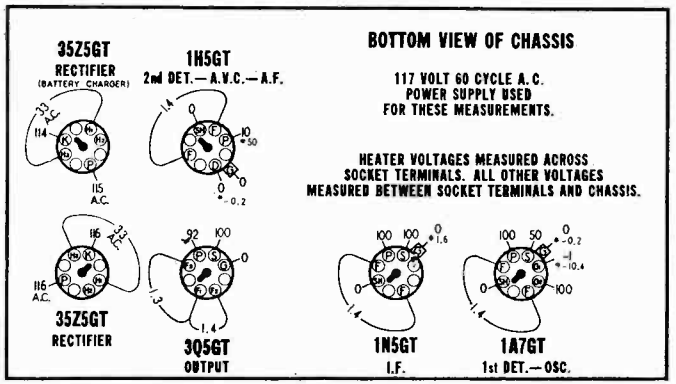
DIAGRAM NO.	PART NO.	DESCRIPTION
		COILS AND TRANSFORMERS
3	502499	Coil—antenna coupling
9	502498	Coil—oscillator
13	502495	Transformer—1st I.F.
23	500749	Transformer—2nd I.F.
51	502902	Trans.—output for A-502491 speaker
	502492	Trans.—output for R-502491 speaker
55	502528	Filter choke
		OTHER ELECTRICAL PARTS
10	500746	Cable—for use with individ. batteries
22	502536	Cable—for use with battery pack
27	500713	Neon indicator lamp
43-A,B,C,D	502526	Switch—"AC-DC—BAT.—CHARGE"
52	502901	Cone & voice coil for A-502491 speaker
	502493	Cone & voice coil for R-502491 speaker
53	502491	Speaker—P.M. dynamic (5 inch)
		MISCELLANEOUS PARTS
	160026	Base for mtg. electrolytic condenser
	112745	Clip—coil mtg.
	114955	Clip—retainer on end of dial cord
	117057	Cord—dial drive (28" required) per ft.
	502535	Escutcheon plate
	502544	Knob—volume or tuning
	502545	Knob—"AC-DC—BAT.—CHARGE"
	500747	Plug for battery cable (fits chassis)
	502537	Plug for battery cable (fits batt. pack)
	502546	Pointer
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	79894	Screw—No. 8x5/8"; for mtg. chassis
	502524	Shaft—tuning control
	117716	Shield—tube
	116690	Socket—octal base
	500681	Socket—for battery cable
	161384	Spring—dial cord tension
	502533	Terminal strip for antenna
	111456	Washer—spring washer for tuning shaft
	502534	Washer—felt; for knobs

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



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter.

STEWART WARNER CORP.

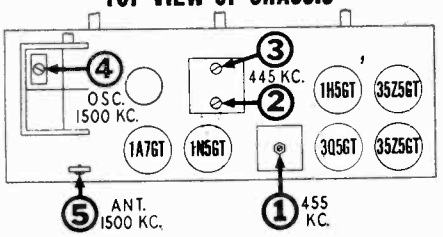
MODELS 9007-A, 9007-F, 9007-G

ALIGNMENT PROCEDURE

1. 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.
2. 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.
3. Connect the ground lead of the signal generator to chassis through a .25 mfd. condenser.
4. Set the volume control in the maximum position and use a weak signal from the generator.
5. 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. Recheck 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.

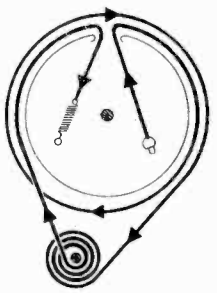
This lamp will only show the true condition of the batteries when the Selector Switch is in the "Battery" position. Lamp flashes more rapidly during charging or "AC-DC" operation.

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

CHARGING CIRCUIT

The battery charging circuit consists of a 35Z5GT rectifier and a suitable resistor voltage dividing network. This circuit provides a very low charging current when the receiver is operated on AC-DC and is just enough to maintain the batteries but will not charge them. A separate charging position is provided for the regular charging operation. A charging rate of approximately ⅓ the discharge rate is used to give best results.



DIAL DRIVE CORD ARRANGEMENT

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

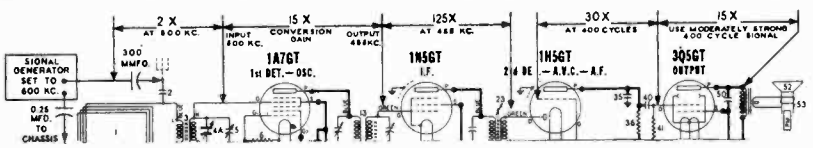
114955	Clip on end of cord
117057	Cord (28 inches)
119087	Ring for dial cord
161384	Tension Spring

APPROXIMATE STAGE GAIN DATA

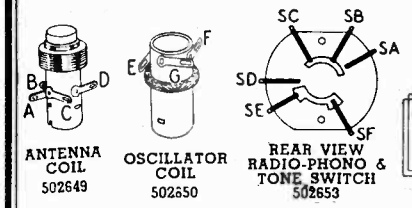
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements.

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 1½-volt battery 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.

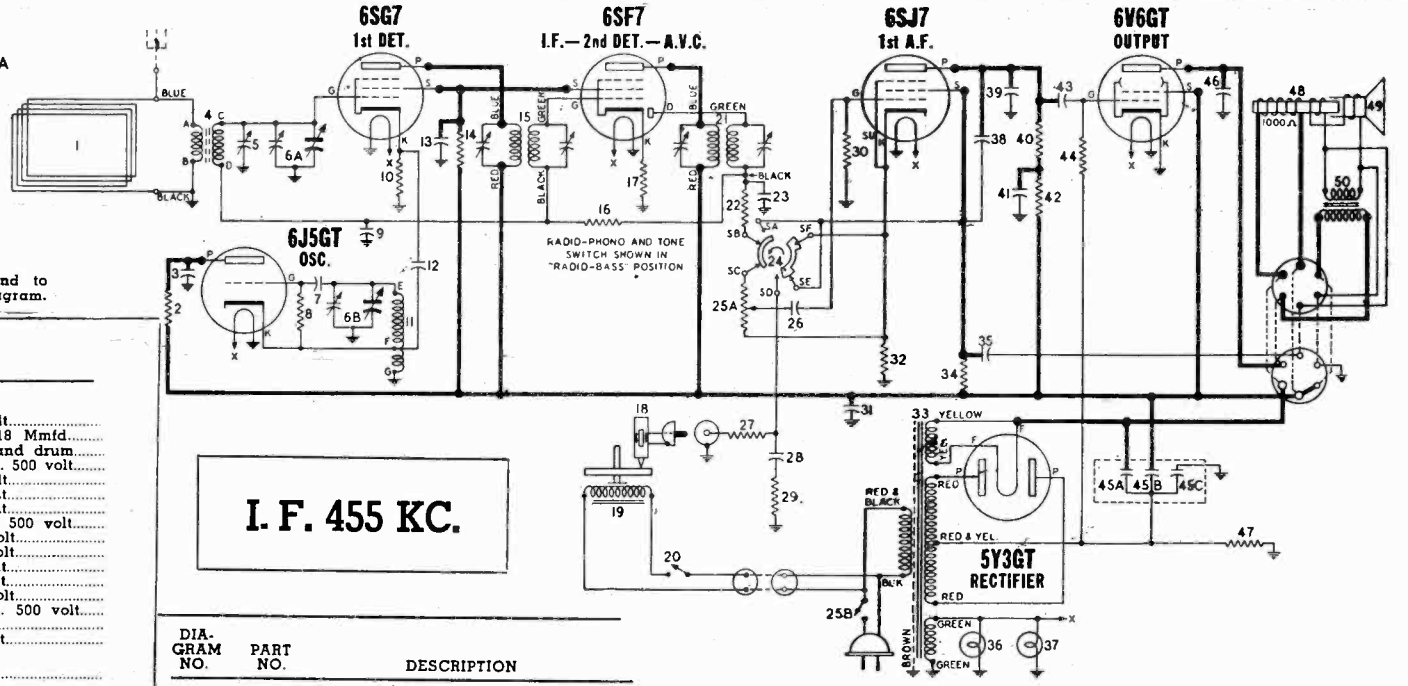
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 1½ volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



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.



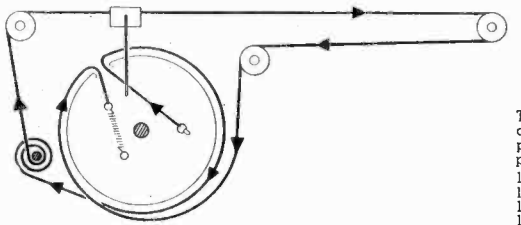
Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.



I. F. 455 KC.

DIA-GRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3	502151	Condenser—.01 Mfd. 400 volt
5	502651	Condenser—trimmer 12 to 18 Mmfd.
6A, B	502652	Condenser—variable gang and drum
7	502160	Condenser—mica—110 Mmfd. 500 volt
9	502153	Condenser—.05 Mfd. 200 volt
12	502151	Condenser—.01 Mfd. 400 volt
13	502157	Condenser—.05 Mfd. 400 volt
23	502160	Condenser—mica 110 Mmfd. 500 volt
26	502156	Condenser—.004 Mfd. 400 volt
28	502479	Condenser—.006 Mfd. 600 volt
31	502157	Condenser—.05 Mfd. 400 volt
35	502405	Condenser—.25 Mfd. 400 volt
38	502150	Condenser—.004 Mfd. 600 volt
39	502271	Condenser—mica—260 Mmfd. 500 volt
41	502410	Condenser—.1 Mfd. 400 volt
43	502152	Condenser—.02 Mfd. 400 volt
45A, B, C	502207	Condenser—electrolytic A — 20 Mfd. 400 volt B — 10 Mfd. 400 volt C — 20 Mfd. 25 volt
46	502156	Condenser—.004 Mfd. 400 volt
		RESISTORS
2	502466	Resistor—carbon—33,000 ohms 1 watt
8	502131	Resistor—carbon—47,000 ohms ¼ watt
10	502514	Resistor—carbon—3,300 ohms ¼ watt
14	502288	Resistor—carbon—47,000 ohms 1 watt
16	502269	Resistor—carbon—3.3 Meg. ¼ watt
17	502264	Resistor—carbon—47 ohms ¼ watt
22	502131	Resistor—carbon—47,000 ohms ¼ watt
25A, B	502654	Volume control—with switch; 1 Meg.
27	502133	Resistor—carbon—220,000 ohms ¼ watt
29	502408	Resistor—carbon—68,000 ohms ¼ watt
30	502468	Resistor—carbon—4.7 Meg. ¼ watt
32	502406	Resistor—carbon—1,500 ohms ¼ watt
34	502135	Resistor—carbon—2.2 Meg. ¼ watt
40	502133	Resistor—carbon—220,000 ohms ¼ watt
42	502133	Resistor—carbon—220,000 ohms ¼ watt
44	502134	Resistor—carbon—470,000 ohms ¼ watt
47	502293	Resistor—wire wound—200 ohms 2 watt
		COILS & TRANSFORMERS
1	502697	Loop antenna and cabinet back
4	502649	Coil—antenna
11	502650	Coil—oscillator
15	502657	Transformer—1st I.F.
21	502658	Transformer—2nd I.F.
33	502174	Transformer—power
50	502170	Transformer—output for R-502168 spkr.
	504061	Transformer—output for M-502168 spkr.
	504122	Transformer—output for D-502168 spkr.
		OTHER ELECTRICAL PARTS
18	502461	Crystal cartridge (Astatic L-71)
19	502846	Motor—type "GI"-502584 record changer 115 volt 50 cycle
	502847	Motor—type "GI-502584 record changer 115 volt 60 cycle
20	502979	Switch-on-off; type "GI"-502584 record changer

DIA-GRAM NO.	PART NO.	DESCRIPTION
24	502653	Switch—Radio-Phono and Tone
36, 37	110629	Lamp—dial (Mazda No. 44) 6.3 V. 0.25 Amps.
48	502168	Speaker—electro-dynamic (6 inch)
49	502169	Cone & Voice coil for R-502168 spkr.
	504062	Cone & Voice coil for M-502168 spkr.
	504123	Cone & Voice coil for D-502168 spkr.
		MISCELLANEOUS PARTS
	116467	Base for mtg. electrolytic condenser
	119559	Clamp—dial glass
	112745	Clip—coil mounting
	114955	Clip—retainer on end of dial cord
	117057	Cord—dial drive (40 in. required) per ft.
	502672	Dial scale—glass
	502564	Knob—volume cr tuning (Model 9009-H)
	502698	Knob—volume or tuning (Model 9009-B)
	502701	Knob—"Phono-Radio" (Model 9009-B)
	504698	Knob—"Phono-Radio" (Model 9009-H)
	502460	Needle—phonograph
	500966	Plug—phono. pick-up cable
	501031	Plug—phono. motor cable
	504097	Plug—speaker
	502664	Pointer
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	113463	Rubber pad—chassis mtg.
	116584	Rubber spacer for mtg. dial scale
	112874	Screw—No. 10 x 1⅛; chassis mtg.
	501777	Screw—No. 4 x ½; for mtg. loop & back
	502173	Shaft—tuning control
	116690	Socket—octal base
	160039	Socket—phono. pick-up plug
	160392	Socket—octal (rectifier)
	501182	Socket—phono. motor cable
	502210	Socket—speaker
	502662	Socket—dial lamp
	161384	Spring—dial cord tension
	111456	Washer—spring washer for tuning shaft
	500487	Washer—felt; for knobs
	119885	Washer—felt for phono. mtg.



DIAL AND POINTER DRIVE CORD ARRANGEMENT

Top view
Dial plate removed

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

114955 Clip on end of cord
117057 Cord (40 inches)
119087 Ring for dial cord
161384 Tension Spring

IMPORTANCE OF MAINTAINING FIXED POSITIONS FOR LEADS AT TOP OF CHASSIS

The shielded leads which are routed to the "Radio-Phono" switch and volume control should be tied to the upright bracket which supports the dial assembly. Grounded shields on these leads must not be allowed to contact electrolytic condenser case. If case of condenser is grounded it will short out bias voltage for 6V6GT tube.

AUDIO OSCILLATION

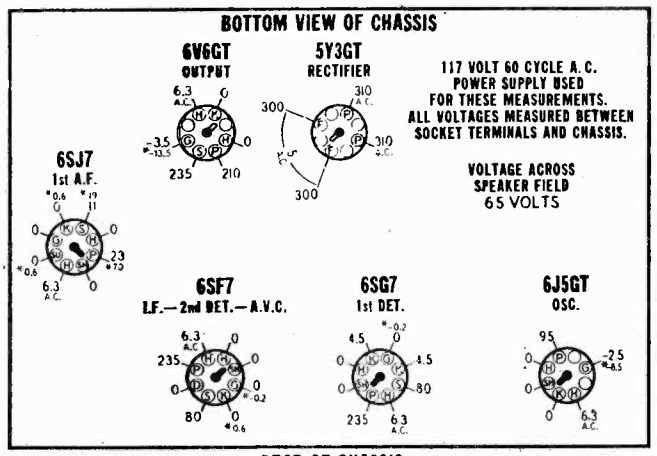
The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the speaker or output transformer it is important to maintain a definite phase relationship in the feed-back circuit. If the connections to the output transformer are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

STEWART WARNER CORP.

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

RADIO-PHONO-TONE SWITCH IN "RADIO-BASS" POSITION
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.

BOTTOM VIEW OF CHASSIS

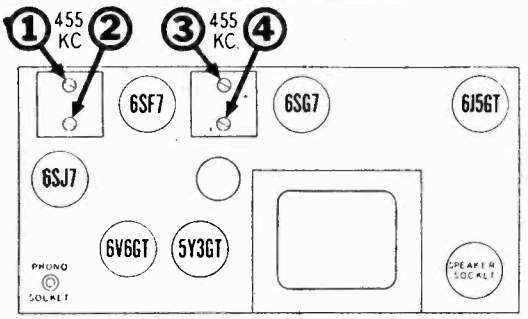


REAR OF CHASSIS

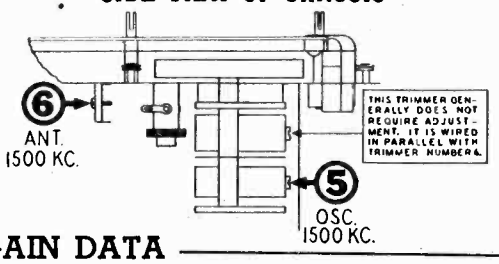
*—Measured with vacuum tube voltmeter.

NOTE:—The 6V6GT grid bias of —13½ volts can be measured across resistor No. 47.

TOP VIEW OF CHASSIS



SIDE VIEW OF CHASSIS

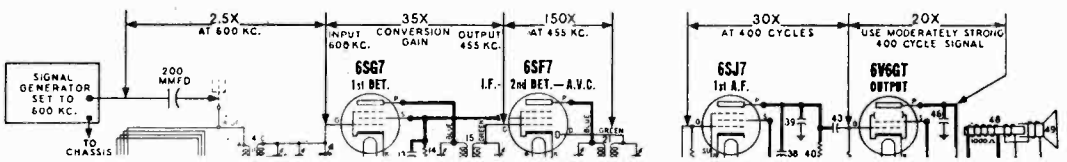


APPROXIMATE STAGE GAIN DATA

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 K.C. 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 at terminal "D" of antenna coil; then connect positive battery lead 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.

Remove chassis and loop antenna (cabinet back) from cabinet. Reconnect loop to chassis and space it approximately same distance from chassis as when installed in cabinet.

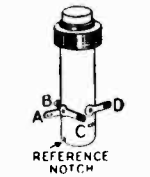
With the gang condenser fully meshed, the dial pointer should be in the position indicated by the last mark below 55 on the dial. If it is set incorrectly, release the pointer clip on the dial cord and reposition pointer.

Connect an output meter across the speaker voice coil or from the plate of the 6V6GT tube to chassis through a .1 Mfd. condenser.

Connect the ground lead of signal generator to the receiver chassis.

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 SIG. GENERATOR TO	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. Condenser	Trimmer on top section of gang.	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	1500 KC	5	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Antenna	1500 KC	Tune to 1500 KC generator signal	6	Broadcast Antenna	Adjust for maximum output.



BC. ANTENNA COUPLING COIL 502121

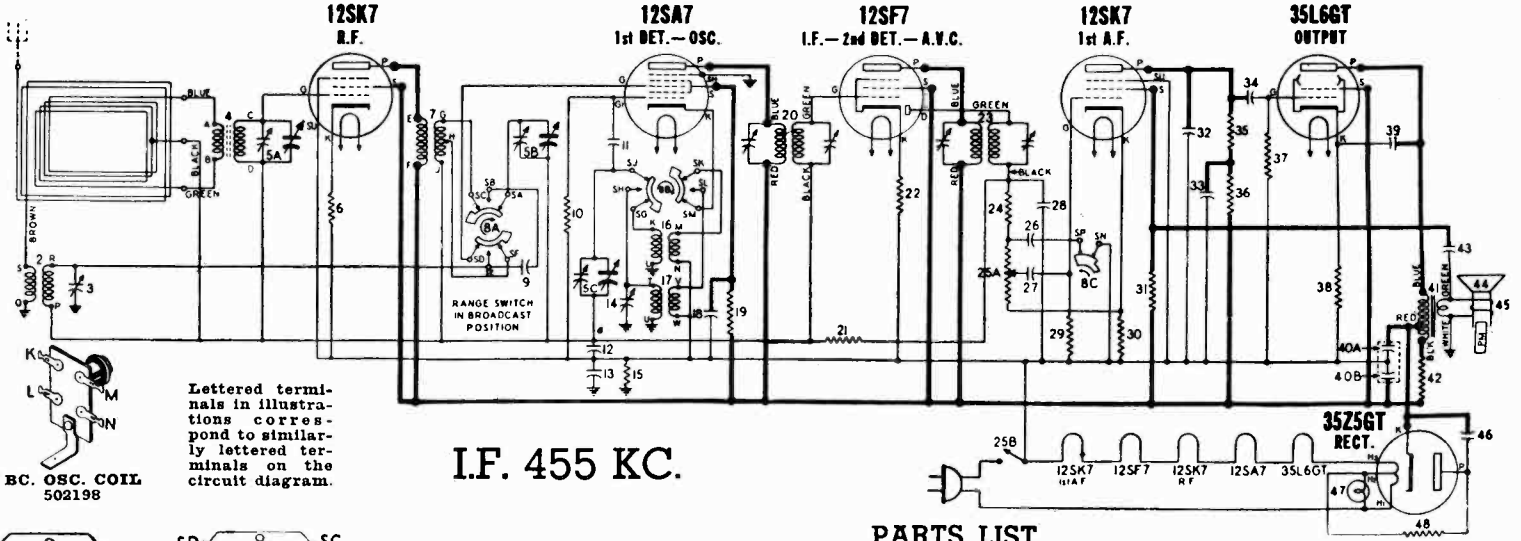
S.W. ANTENNA COIL 502740

R.F. COIL 502142

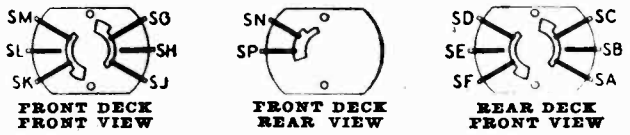
S.W. OSC. COIL 502197

BC. OSC. COIL 502198

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



I.F. 455 KC.



FRONT DECK FRONT VIEW — FRONT DECK REAR VIEW — REAR DECK FRONT VIEW

BAND AND TONE SWITCH 502199

SOCKET VOLTAGES

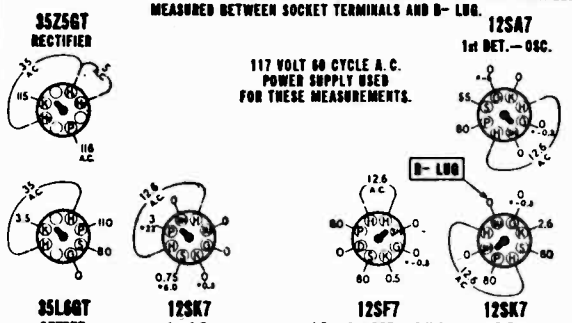
Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (*).

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

BOTTOM VIEW OF CHASSIS

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

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



REAR OF CHASSIS

*—Measured with vacuum tube voltmeter

PARTS LIST

DIAGRAM NO.	PART NO.	DESCRIPTION
		CONDENSERS
3	502172	Condenser—trimmer; 25 to 100 Mmfd.
5A-5B-5C	502123	Condenser—variable gang (with drum)
9	502162	Condenser—315 Mmfd. 500 volt
11	502159	Condenser—mica 50 Mmfd. 500 volt
12	502155	Condenser—.1 Mfd. 200 volt
13	502158	Condenser—.2 Mfd. 400 volt*
14	502172	Condenser—trimmer; 25 to 100 Mmfd.
18	502262	Condenser—.25 Mfd. 200 volt
26	502470	Condenser—.0008 Mfd. 400 volt
27	502453	Condenser—.002 Mfd. 400 volt
28	502160	Condenser—mica 110 Mmfd. 500 volt
32	502160	Condenser mica 110 Mmfd. 500 volt
33	502153	Condenser .05 Mfd. 200 volt
34	502156	Condenser .004 Mfd. 400 volt
39	502151	Condenser .01 Mfd. 400 volt
40A-40B	500256	Condenser—electrolytic A-40 Mfd. 150 volt; B-20 Mfd. 150 volt
43	502152	Condenser—.02 Mfd. 400 volt
46	502157	Condenser—.05 Mfd. 400 volt
		RESISTORS
6	502140	Resistor—carbon 390 ohms ¼ watt
10	502130	Resistor—carbon 22,000 ohms ¼ watt
15	502133	Resistor—carbon 220,000 ohms ¼ watt
19	502291	Resistor—carbon 4700 ohms ¼ watt
21	502269	Resistor—carbon 3.3 Meg. ¼ watt
22	502264	Resistor—carbon 47 ohms ¼ watt
24	502131	Resistor—carbon 47,000 ohms ¼ watt
25A-25B	502145	Volume control 500,000 ohms (with switch)
29	502136	Resistor—carbon 10 Meg. ¼ watt
30	502128	Resistor—carbon 2200 ohms ¼ watt
31	502135	Resistor—carbon 2.2 Meg. ¼ watt
35-36	502133	Resistor—carbon 220,000 ohms ¼ watt
37	502134	Resistor—carbon 470,000 ohms ¼ watt
38	502138	Resistor—carbon 130 ohms ¼ watt
42	502469	Resistor—carbon 1500 ohms 1 watt
48	502574	Resistor carbon 33 ohms ½ watt
		COILS & TRANSFORMERS
1	502503	Loop antenna
2	502740	Coil S. W. antenna
4	502121	Coil antenna coupling
7	502142	Coil BC. R.F.
16	502198	Coil—BC. oscillator
17	502197	Coil S.W. oscillator
20	502102	Transformer 1st I.F.
23	502103	Transformer—2nd I.F.
41	502213	Transformer—output for R-502998 spkr.
	502904	Transformer—output for A-502998 spkr.
	504244	Transformer—output for W-502998 spkr.
		OTHER ELECTRICAL PARTS
8A-8B-8C	502199	Switch—tone & band
44	502214	Cone and voice coil for R-502998 spkr.
	502903	Cone and voice coil for A-502998 spkr.
	504245	Cone & voice coil for W-502998 spkr.
45	502998	Speaker P.M. dynamic (5 inch)
47	502473	Lamp dial (Mazda 47) 6-8V. 150 Ma.
		MISCELLANEOUS PARTS
	502501	Back for cabinet
	116467	Base for mtg. electrolytic condenser
	502500	Cabinet
	502506	Clamp—dial scale mtg.
	112745	Clip coil mtg.
	114955	Clip—retainer on end of dial cord
	500497	Clip—retainer for cabinet back
	116563	Connector for antenna leads
	117057	Cord dial drive (55 in. required), per ft.
	500324	Cover cardboard, for elect. cond.
	502505	Dial scale—glass
	501186	Grounding plate (under I.F. trans. can.)
	502531	Knob—volume or tuning
	502532	Knob—tone & range sw.
	502367	Pointer
	81145	Retaining ring for tuning shaft
	119087	Ring for dial cord
	17063	Screw No. 6x¼; holds clamps to cab.
	114628	Screw No. 8x½; chassis mtg.
	502173	Shaft tuning control
	116690	Socket octal base
	160392	Socket octal (rectifier)
	500499	Socket dial lamp (with leads)
	161384	Spring dial cord tension
	111456	Washer spring washer for tuning shaft

MODEL 9014-E

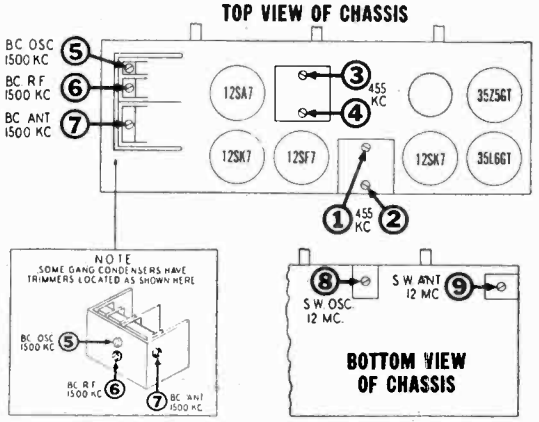
STEWART-WARNER CORP.

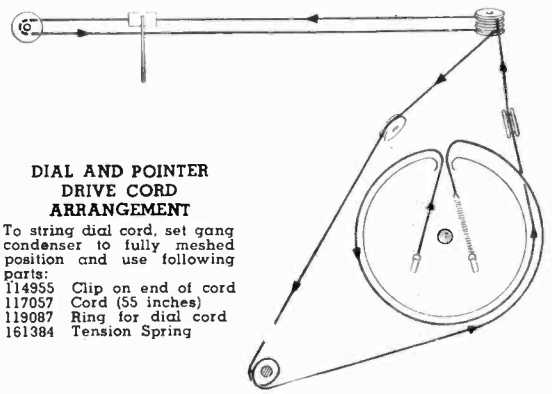
ALIGNMENT PROCEDURE

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

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

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECT HIGH SIDE OF GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
200 MMFD. Mica Condenser	Control Grid of 12SA7	455 KC	Broadcast	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Set pointer to 1500 KC reference line stamped into metal dial plate (first line at the right)	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	6	Broadcast R.F.	Adjust for maximum output.
200 MMFD. Mica Condenser	External Antenna Clip on Loop Frame	1500 KC	Broadcast	Tune to 1500 KC generator signal	7	Broadcast Antenna	Adjust for maximum output.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Set pointer to 12 MC. Reference line stamped into metal dial plate (second line from the right)	8	Short Wave Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 11.1 MC. If image does not appear, realign at 12 MC. with trimmer screw farther out. Recheck image.
400 OHM Resistor	External Antenna Clip on Loop Frame	12 MC	Short Wave	Tune to 12 MC generator signal	9	Short Wave Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.





DIAL AND POINTER DRIVE CORD ARRANGEMENT

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

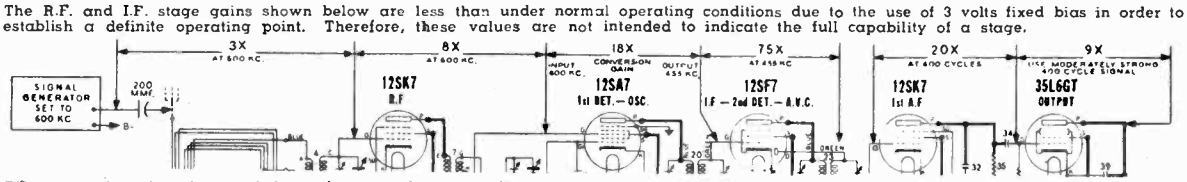
114955 Clip on end of cord
117057 Cord (55 inches)
119087 Ring for dial cord
161384 Tension Spring

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

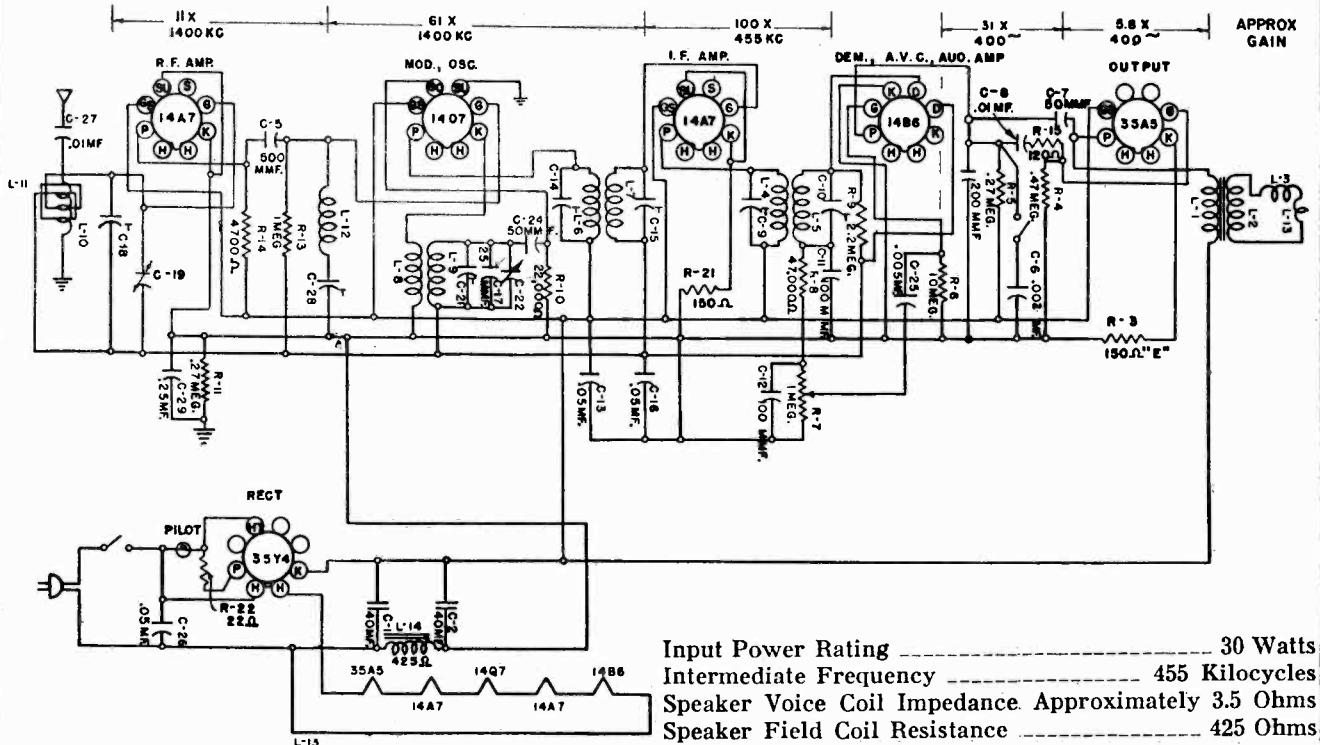
The R.F. and I.F. stage gains shown below are less than under normal operating conditions due to the use of 3 volts fixed bias in order to establish a definite operating point. Therefore, these values are not intended to indicate the full capability of a stage.



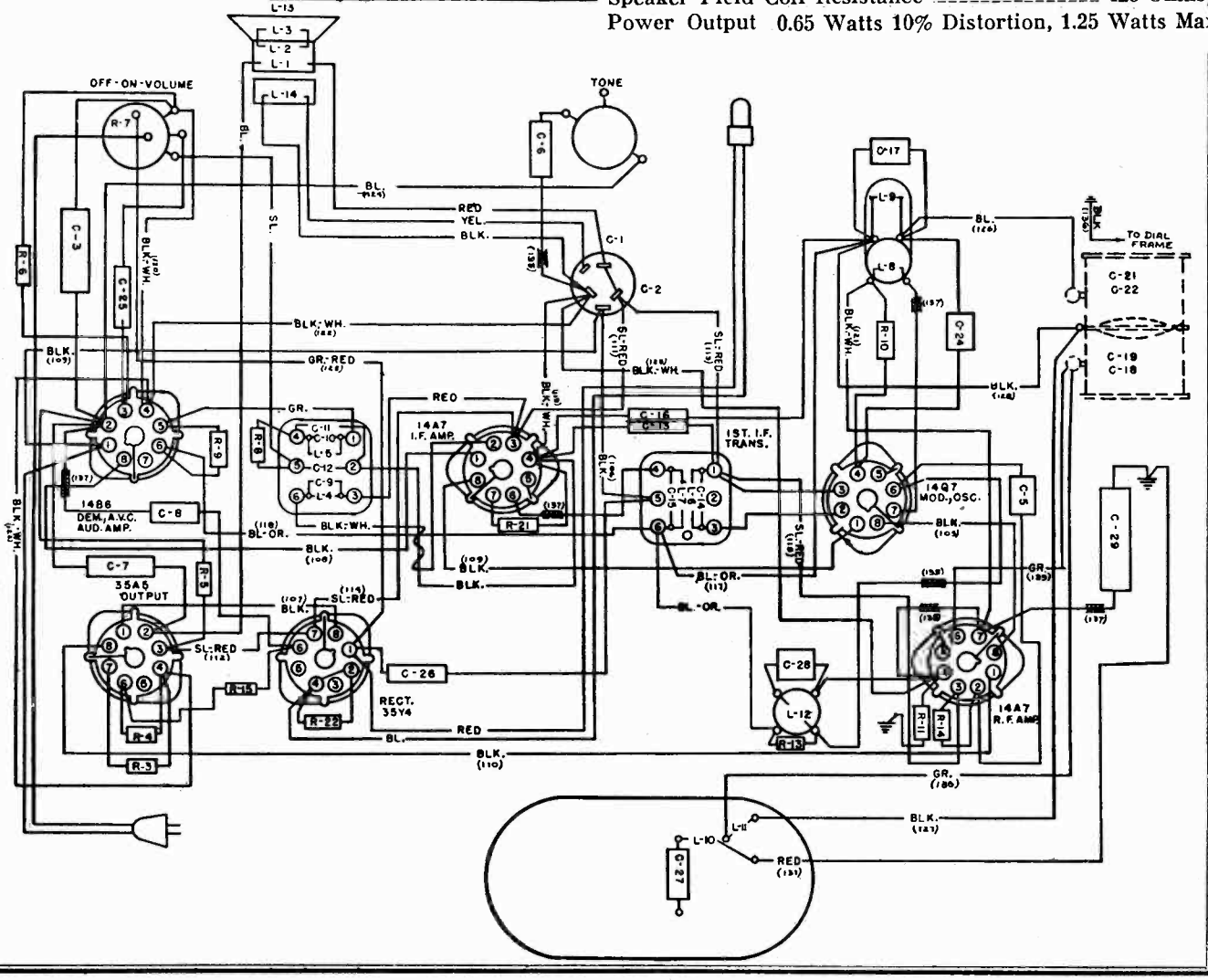
Differences in tube characteristics, tolerance of parts, adjustment of tuned circuits, and variations of line voltage will influence stage gain. Accuracy of measurements is dependent upon careful tuning of receiver to generator signal and experience in using your test equipment. These factors may create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

MODELS 1100H, 1100HI

STROMBERG CARLSON CO.



Input Power Rating	30 Watts
Intermediate Frequency	455 Kilocycles
Speaker Voice Coil Impedance	Approximately 3.5 Ohms
Speaker Field Coil Resistance	425 Ohms
Power Output	0.65 Watts 10% Distortion, 1.25 Watts Max



VOLTAGE CHART FOR ELECTRONIC VOLTMETER

Tube	Circuit	1	2	3	4	5	6	7	8
14B6	Dem. A.V.C. Audio Amp.	—B	81	14	26.5	23.5	18	27	12AC
14A7	I. F. Amp.	11.5AC	105	105	36.5	26	18.4	27.6	24AC
14A7	R. F. Amp.	47AC	69	105	26.7	26	18.4	26.7	35AC
35A5	Output	82.5AC	100	105	26.5	0	25	32	49AC
14Q7	Mod. Osc.	27.5AC	105	105	18	26	17.2	26.5	36AC
35Y4	Rect.	105AC	117AC	0	117AC	0	25.8	105	85AC

NORMAL VOLTAGE READINGS

Use a good voltmeter having a resistance of at least 1000 ohms per volt. See chart below if electronic voltmeter is used.

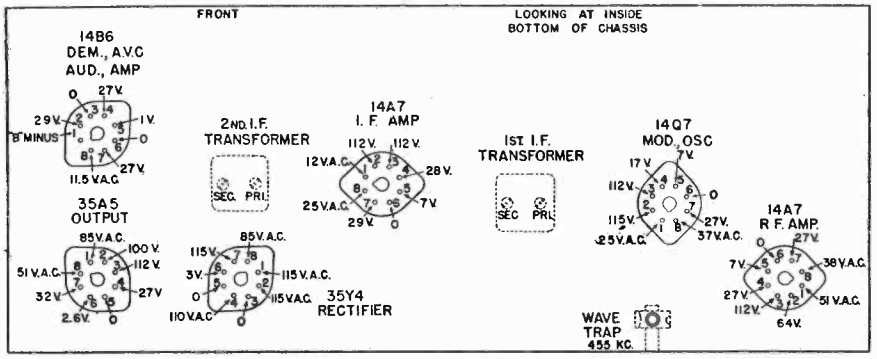
Take all readings with chassis operating and tuned to approximately 1000 Kc.—no input signal.

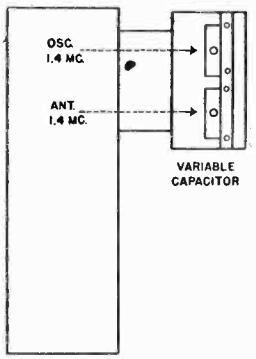
Use a line voltage of 117 volts or make allowance for the variation.

Read from indicated socket terminals to B minus. A convenient point is terminal No. 1 of the 14B6 Dem. A.V.C. Socket.

See Location Chart for position of terminals.

A. C. Voltages are indicated as A. C.; when the receiver is operated from a D. C. power supply, D. C. voltages will be obtained in place of A. C. voltages shown.





ALIGNING INFORMATION

Never realign unless absolutely necessary.

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator. A strong signal makes adjustments inaccurate.

Always have the volume control "full on".

Important: Be sure the metal plate is fastened in place on the bottom of the chassis before alignment is attempted.

ALIGNING PROCEDURE (follow this order exactly).

I. **Intermediate Frequency Adjustments.**

1. Turn the tuning control to the extreme low frequency position. (Variable capacitor plates all the way in.)
2. Connect the ground terminal of the signal generator to the chassis base.
3. Introduce a modulated signal of 455 kilocycles using a .01 mfd. capacitor in series with the lead from the signal generator to the antenna connection located at rear of the pickup loop.
4. Adjust the I. F. aligners for maximum output in the following order:
   - A. Secondary of second I. F. Transformer.
   - B. Primary of second I. F. Transformer.
   - C. Secondary of first I. F. Transformer.
   - D. Primary of first I. F. Transformer.

II. **Dial Pointer Adjustment.**

With the plates of the gang tuning capacitor fully engaged set the dial pointer in a horizontal position directly on the upper edge of the calibration mark located at 550 Kc. on the dial scale.

III. **Radio Frequency Adjustments.**

1. Replace the .01 mfd. capacitor in series with the output lead of the signal generator with a 200 mmf. capacitor and connect to the antenna terminal located on the back of the loop assembly.
2. Set the signal generator's frequency and the receiver's tuning dial to 1.4 megacycles.
3. Adjust the oscillator and antenna aligning capacitors for maximum signal.
4. Set both the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles and check calibration.
   NOTE: If the calibration is too far off at 0.6 megacycles, operations 2 and 3 may be repeated until the best results are obtained.

Wave Trap Adjustment.

(Leave the receiver connected in the same manner as when making the Radio Frequency Adjustments.)

1. Tune set to 1000 K. C.
2. Set the signal generator frequency to 455 K. C. and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

MODELS 1100H, 1100HI

STROMBERG CARLSON CO.

Model	Input Power Frequency	Chassis	Cabinet	Speaker
1100-H	25-60 Cycles AC (or DC)	35982	33528	34505
1100-HI	25-60 Cycles AC (or DC)	35982	37269	34505

Capacitors

Part No.		
34506	C-1, C-2 . .	Electrolytic Capacitor, 2—40 mfd.
27921	C-28 . . .	Aligning Capacitor
24166	C-17 . . .	25 mmf.
27101	C-3	200 mmf.
29371	C-5	500 mmf. Capacitor
24560	C-7, C-24 . .	50 mmf. Capacitor
27760	C-25 . . .	.005 mfd. Capacitor
27646	C-6	.002 mfd. Capacitor
25485	C-27, C-8 . .	.01 mfd. Capacitor
29891	C-13, C-26 .	.05 mfd. Capacitor
40632	C-16 . . .	.05 mfd. Capacitor
28002	C-29 . . .	.25 mfd. Capacitor
31698	C-19, C-22 .	Variable Capacitor and Pulley

Resistors

Part No.		
26322	R-15 . . .	120 Ohm Resistor
26323	R-21, R-3 . .	150 Ohm Resistor
26341	R-14 . . .	4700 Ohm Resistor
26349	R-10 . . .	22,000 Ohm Resistor
26353	R-8	47,000 Ohm Resistor
26362	R-11, R-5 . .	270,000 Ohm Resistor
26365	R-4	470,000 Ohm Resistor
26369	R-13, R-7 . .	1 Megohm Resistor
26373	R-9	2.2 Megohm Resistor
26381	R-6	10 Megohm Resistor
41580	R-22 . . .	22 Ohm Resistor

Coils, Transformers and Speakers

Part No.		
33205	L-10, 11 . .	Loop
33206	L-8, 9 . . .	Oscillator Coil
33249	L-12 . . .	Wave Trap
31686	L-6, 7; C-14, 15	1st I. F. Transformer
33208	L-4, 5; C-9, 10, 11, 12 . .	2nd I. F. Transformer
34505	. . . . .	Speaker Assembly

Controls and Knobs

Part No.		
31694	R-7	Off-On Switch and Volume Control
42495	. . . . .	Switch
31260	. . . . .	Knob (3)

Miscellaneous Parts

Part No.		
33599	. . . . .	Back Panel
34590	. . . . .	Tube Socket
37125	. . . . .	Dial
33531	. . . . .	Dial Glass
33533	. . . . .	Grill Cloth
31693	. . . . .	Bottom Cover
33211	. . . . .	Pointer
31824	. . . . .	Dial Cord Assembly
30947	. . . . .	Socket (Pilot Lamp)
30933	. . . . .	Pilot Light
33018	. . . . .	Power Supply Cord

Stromberg-Carlson 1204

This 1949 model is similar to the previously manufactured Model 1204.

The following changes provide complete servicing information:

Remove C-4 and R-5 and ground the cathode of the r-f amplifier (Pin 7).

Remove C-29 and R-20 and ground the cathode of the 1st i-f amplifier (Pin 7).

Remove C-37 and R-22 and ground the cathode of the 2nd i-f amplifier (Pin 7).

Short out L-18 and R-7 in the screen of the r-f amplifier (Pin 6).

Change R-9 from 680 ohms to 2200 ohms with an r-f choke wound on the resistor and connected in parallel with it.

Remove C-30 and short out R-34 in the screen of the 1st i-f amplifier (Pin 6).

Remove C-38 and short out R-24 in the screen of the 2nd i-f amplifier (Pin 6).

Add a 0.1-μf capacitor from Pin 8 to ground and from pin 3 to ground on the 12H6 f-m detector.

Add a 10-megohm, ½-watt resistor from the grid (Pin 7) of the converter to the avc string.

Add a 220,000-ohm, ½-watt resistor from terminal 5 to terminal 7 of 1st i-f transformer.

Disconnect Pin 5 of 2nd i-f transformer from ground and insert a 0.01-μf capacitor from Pin 5 to ground. Connect Pin 5 to the avc string through a 100,000-ohm, ½-watt resistor.

Change the converter, 1st i-f amplifier, and 2nd i-f amplifier B-plus line to feed from the low side of the filter choke.

Stromberg-Carlson 1210, 1408

The information for Model 1210 and The 1408 is the same except that it is being manufactured in two cabinet styles, the blonde 1408 M6A (108119) and the mahogany 1408 PLM (10811), both equipped with the VM-800 record changer and the 1210 radio chassis.

Now that the low-frequency f-m band is practically non-existent, these two models can be modified to give greater sensitivity on the high-frequency f-m band at the sacrifice of the low-frequency f-m sensitivity. This is done by changing the built-in f-m dipole on the back of the cabinet. Use the following procedure:

Remove the original dipole attached to the rear of the cabinet.

Cut a piece of 300-ohm transmission line to 57 inches in length. This will be the new dipole.

Short the two parallel leads together at each lend of this transmission line and solder.

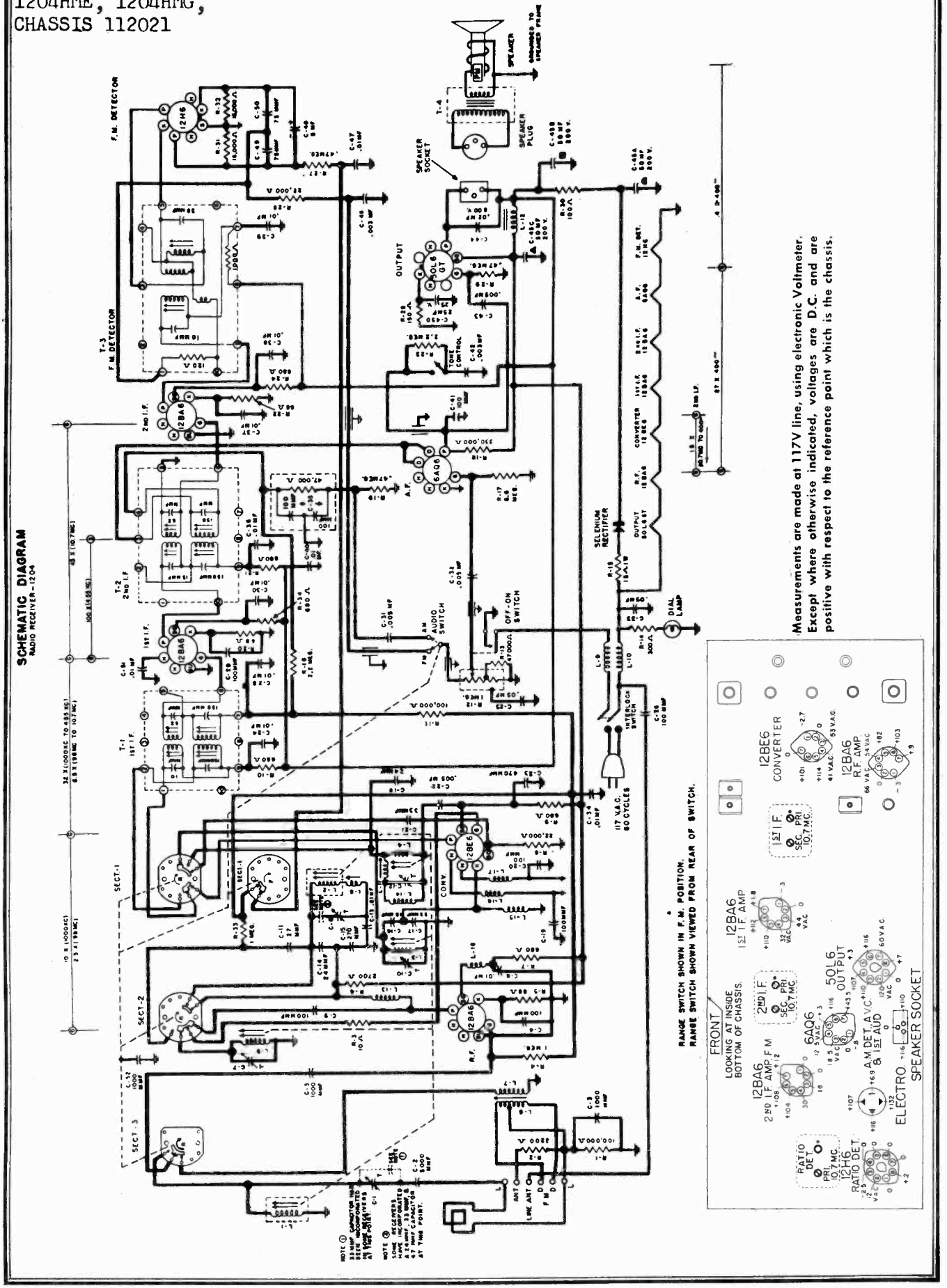
At the center of *one* of the wires in the 300-ohm line, break the lead and connect another piece of 300-ohm line long enough to reach from the top of the cabinet to the dipole antenna terminals on the 1210 chassis. Solder the connection.

Attach the 57-inch length of line to the cabinet, dressing it so that it is kept away from the a-m loop and so that the center of the dipole is at the center of the cabinet at the top.

Connect the other end of the lead-in to the f-m antenna terminals of the 1210 chassis.

MODELS 1204HB, 1204HI,
1204HME, 1204HMG,
CHASSIS 112021

STROMBERG-CARLSON CO.



STROMBERG-CARLSON CO.

ALIGNMENT PROCEDURE 1204

MODELS 1204HB, 1204HI, 1204HME, 1204HMG, CHASSIS 112021

Band and Pointer Setting	Generator Setting	Input and Dummy	VTVM Connection and Scale	Trimmer Adj. and Notes
A.M. I.F. ALIGNMENT				
(1) AM-Pointer near middle of dial	455 kc. 400 cy. mod.	Junction C-13, 6 and L-8 200 mmf. dummy	Junction C-31, 35 3VDC scale	Adj. Pri. and Sec. cores two AM IF transformers top of chassis. Highest voltage
F.M. I.F. ALIGNMENT				
(1) FM-Pointer near middle of dial	10.7 mc 400 cy mod.	Junction C-10, 16 and L-3	AVC buss (Green and White Wire) —3VDC scale	Detune Sec. Ratio Det. Transformer adjust four FM IF cores, bottom of chassis, in following order counting from band switch—One, Four, Two Three for highest voltage. DO NOT REPEAT
(2)	"	"	"	Adjust Pri. Ratio Det. Transformer for highest voltage.
(3)	"	"	Center terminal audio switch —3 VDC scale	Adjust Sec. Ratio Det. Transformer for ZERO voltage.
(4) Repeat (2) and (3)				
A.M. R.F. ALIGNMENT				
(1) AM-600 kc	600 kc 400 cy. mod.	Loop and link connected 200 mmf dummy to Ant. terminal	Junction C-31, 35 —3 VDC scale	Adjust C-12, 6 and 1 for highest voltage.
(2) AM-1600 kc Repeat (1) and (2)	1600 kc	"	"	Align L-8, 11 for highest voltage.
F.M. R.F. ALIGNMENT				
FM Pointer at 98 to 100 mc.	98 to 100 mc. 400 cy mod.	"	AVC buss (Green and White Wire) —3 VDC scale	Adjust C-7, 10 and core L-6 and 7 for highest voltage.

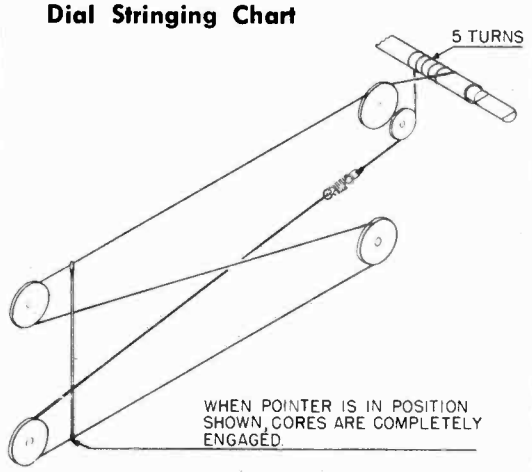
SPECIFICATIONS

Voltage Rating.....105-125 Volts AC-DC
Type of Circuit.....Superheterodyne
Tuning Range.....A.M.—540 KC.—1600 KC.
F.M.—88 MC.—108 MC.
Number & Type of Tubes—7
3—12BA6..... R.F. Amp. and two I.F. Amp.
1—12BE6.....Convertor
1—6AQ6.....1st Audio Amp.—A.M. Det. & AVC
1—12H6..... F.M. Det.
1—50L6GT.....Power Output
Input Power Rating..... 40 Watts
Intermediate Frequency.....A.M. 455 KC. F.M. 10.7 MC.
Speaker Voice Coil Impedance (PM).....3 Ohms
Power Output.....1.25 Watts at less than 10% distortion

Cabinet Parts

	HB	HI	HME	HMG	
108044	X				Cabinet
108056		X			Cabinet
108062				X	Cabinet
108063			X		Cabinet
122015	X	X			Dial
122021			X	X	Dial
125019			X	X	Escutcheon
130029	X				Grille Cloth Assem.
130037		X			Grille Metal
138014	X	X			Lens
138015			X	X	Lens
139013	X	X			Loop and Back Assem.
139019	X	X	X	X	Loop and Back Assem.
154030	X	X	X	X	Fibre Knob Spacer
508051	X	X	X	X	Screw, Chassis to cabinet

Dial Stringing Chart



IDENTIFICATION TABLE

MODEL	CHASSIS	CABINET	SPEAKER
HI	112021	108056	155030
HB	112021	108044	155030
HME	112021	108063	155030
HMG	112021	108062	155030

MODELS 1204HB, 1204HI, 1204HME, 1204HMG, CHASSIS 112021

STROMBERG-CARLSON CO.

REPLACEMENT PARTS

Resistors

28144	R-5, 20, 22	68 Ohms
28156	R-7, 9, 10, 21, 24, 34	680 Ohms
28162	R-2	2200 Ohms
28163	R-6	2700 Ohms
149089	R-3	10 Ohms
149109	R-8, 26	22000 Ohms
149111	R-13	47000 Ohms
149113	R-1, 11	0.1 Meg.
149116	R-18	0.33 Meg.
149117	R-19, 27, 29	0.47 Meg.
149119	R-4, 33	1.0 Meg.
149121	R-16, 23	2.2 Meg.
149124	R-17	6.8 Meg.
149167	R-30	100 Ohms 1W
149168	R-28	150 Ohms 1W
149219	R-15	15 Ohms 1W (Glusohm)
149229	R-14	300 Ohms 1W
149250	R-31,32	15000 Ohms 5%

NOTE—When ordering replacement parts always specify series number as well as model and part number. Series number is stamped on back of chassis.

Capacitors

25484	C-44	.02-600V
29891	C-25,33	.05-600V
110017	C-6, 12	Trimmer
110024	C-1	Trimmer
110025	C-7, 10	Trimmer
110208	C-15	270 mmf
110403	C-14, 18	24 mmf
110407	C-17	33 mmf
110419	C-22, 31, 32, 43	.005-500V
110420	C-8, 13, 24, 28, 30, 34, 36, 37, 38, 39, 40, 47, 51	.01-500V
110425	C-3, 5, 52	1000 mmf
110451	C-4, 9, 19, 20, 26, 29, 41	100 mmf
110455	C-23	470 mmf
110468	C-16	15 mmf
110478	C-35	Diade filter, Includes 47000 Ohms resistar
110483	C-49, 50	75 mmf.
110485	C-11	27 mmf.
110486	C-21	33 mmf.
110488	C-42, 46	.003-500V
110491	C-2	5000 mmf.
111027	C-45a, b, c, d	3-50 MF 200V, 1-25 MF 25V
111030	C-48	5 MF

Transformers—Coils

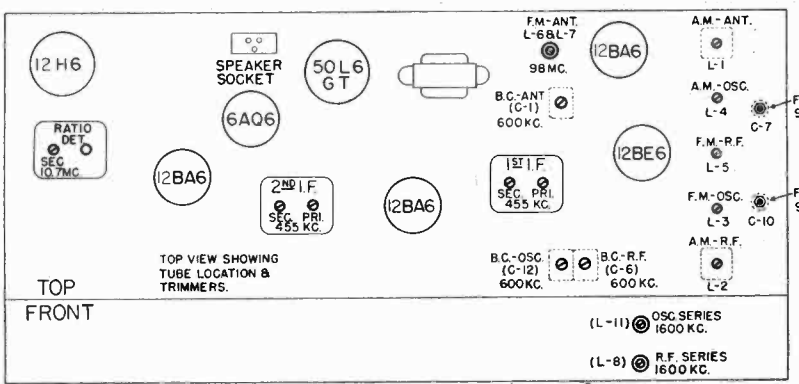
114029	L-5	RF Tuning Coil F.M.
114036	L-6 and 7	Ant. Coil F.M.
114041	L-1, 2, 4	Ant., RF, Osc Tuning Coils A.M.
114042	L-3	Osc. Tuning Coil F.M.
114043	L-11	Osc. Coil, A.M. Aligning
114044	L-8	RF Coil, A.M. Aligning
114045	L-14	Osc. Coil, A.M. Shunt
114311	T-1	1st I.F. transformer
114323	T-2	2nd I.F. transformer
114616	L-9 and 10	Ant. choke coil
114620	L-13, 15	R.F. choke
114621	L-16, 17	Heater choke
114622	L-18	R.F. choke
161004	L-12	Filter choke
161228	T-3	Ratio Detector Transformer
161410	T-4	Output Transformer

Controls—Switches—Knobs

134031	Knob Assem. (dot)	HB
134032	Knob Assem (no dot)	HB
134046	Knob Assem. (dot)	HI
134047	Knob Assem. (no dot)	HI
134050	Knob Assem.	HMG
134051	Knob Assem.	HME
145031	R-12	1 Meg. Volume Contral and Switch
158016		Range Switch
158017		Tone Contral Switch
158018		Interlack Smitch
158028		Audio Switch (A.M.-F.M.)

Miscellaneous

31969	Dial Pointer
32046	Speaker Socket
32164	Speaker Plug
33218	A.C. Cord
124012	Dial Drive Cord Assem.
142026	Dial Plate Assem.
147016	Range Switch Hub
151021	Miniature Sacket
151036	Converter Tube Shield
152014	Octal Socket
152037	Miniature Socket, Converter Tube
155006	Speaker Cane .
155029	Speaker—Less Transformer
155030	Speaker, Complete
156032	Tube Hold-dawn Spring
162058	Selenium Rectifier
164004	Tuning Unit (Mechanical Assem.)
165007	Connector, Range Switch to Audia Switch



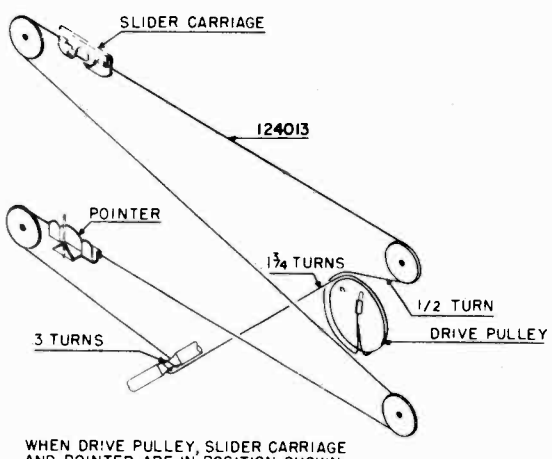
MODELS 1210 series STROMBERG-CARLSON CO.

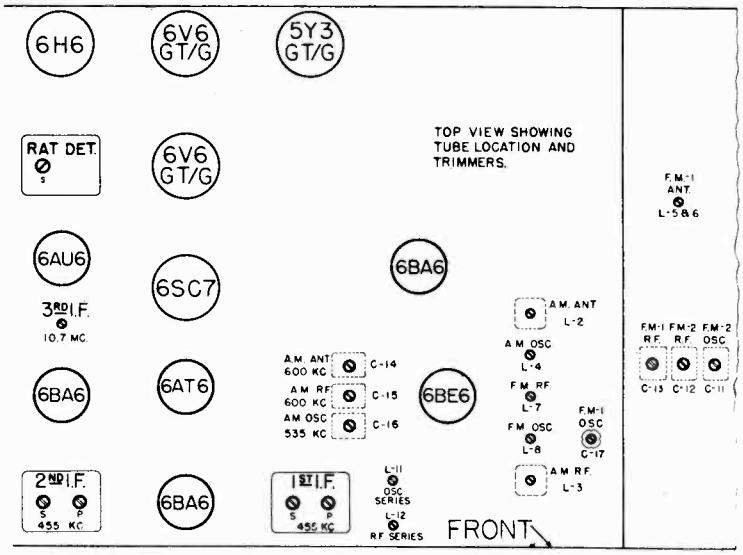
ALIGNMENT PROCEDURE

	Band and Pointer Setting	Input Generator Setting	Input and Dummy	VTM and Scope Input	Trimmer Adj. and Notes
			A.M. I.F. ALIGNMENT		
1	AM Low end of dial	455 kc. 400 cy. mod.	Junction C-17 and L-8. See location chart. 100 mmf. dummy	Junction R-12 and C-60 (See location chart)	Adj. Pri. and Sec. 1st and 2nd I.F. (Top of Chassis) for highest voltage on -3V DC Scale
2	"	455 kc. swept 15 kc.	"	"	Adj. same cores as above for best over-lapping curve on scope.
			F.M. I.F. ALIGNMENT		
FM 1	(1) Low end of dial	10.7 mc. 400 cyc. mod.	Junction C-17 and L-8. See location chart. 100 mmf. dummy	AVC buss (Green and White Wire)	Detune Sec. Ratio Det. (Top of Chassis). Adj. Pri. and Sec. 1st and 2nd I.F. Pri. Ratio Det. (Bottom of Chassis) and 3rd I.F. (L-9 Top of Chassis) on -3 VDC Scale for max. AVC voltage.
2*	"	10.7 mc. swept 150 kc.	"	Pin No. 6 Driver tube (screen) thru .01 capac.	Adj. same cores (as in step 1) for bes. overlapping curve on scope.
3*	"	"	"	Junction R-12 and C-60	Adj. Sec. of Ratio Det. for zero voltage. (Top of Chassis).
	*Repeat 2 and 3 if necessary				
			A.M. R.F. ALIGNMENT		
	Broadcast Extreme	535 Kc.	Ant. term.	AVC Buss	Adj. C-16 for max. AVC voltage
1	Low Freq.	400 cyc. mod.	200 mmf. dummy	Green and White Wire	
2	Extreme Hi Freq.	1700 Kc. 400 cyc. mod.	"	"	Adj. L-11 for max. AVC voltage
3	Repeat 1 and 2				
4	600 Kc	600 Kc. 400 cyc. mod.	"	"	Adj. C-15 for max. AVC voltage
5	1500 Kc	1500 Kc. 400 cyc. mod.	"	"	Adj. L-12 for max. AVC voltage
6	Repeat 4 and 5				
7	600 Kc	600 Kc. 400 cyc. mod.	"	"	Adj. C-14 for max. AVC voltage
			F.M. R.F. ALIGNMENT		
1	FM 1 Channel 260	100 Mc	Ant. term. (DD) 150 ohm series with each side of Gen.	AVC Buss Green and White Wire	CAUTION: Align FM-1 1st. 1. C-17 2. C-13 3. L-5 and 6 } Adjust for max. AVC Voltage. (All Trimmers)
2	FM 2 Channel 60	46 Mc.	"	"	1. C-11 2. C-12 3. C-18 } Adjust for max. AVC Voltage (All Trimmers)

CAUTION: Use low signal input especially for steps 2 and 3 of F.M. I.F. Alignment to avoid overloading.
Use dummy loop No. 114048 for A.M. R.F. Alignment
Use insulated aligning tool No. 80777 to prevent damage to iron cores.
Refer to Number 4, Vol. 1 Current Flash for suggested instrument use.
R.F. alignment procedure of iron core tuners is different from condenser tuners in that trimmers are adjusted at low frequency end and coils are adjusted at high frequency end of dial.
Recommended procedure is to align both I.F. channels if either channel requires it.

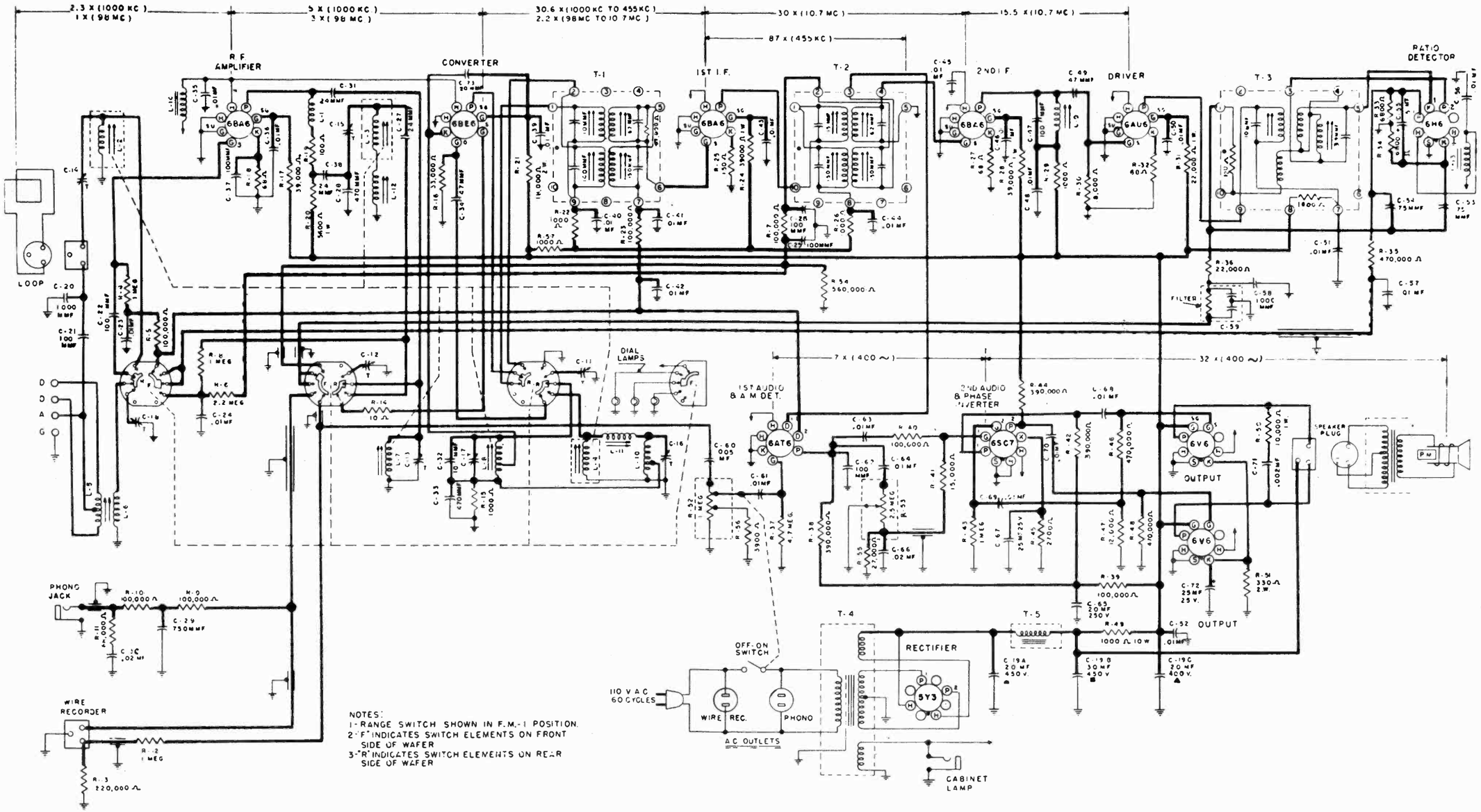
Dial Stringing Chart





STROMBERG-CARLSON CO.

MODELS 120M2-Y, 1210M2-M, 1210M2-W,
1210PG-M, 1210PG-W, 1210PL-M, series 10-11



NOTES:
1-RANGE SWITCH SHOWN IN F.M.-1 POSITION.
2-'F' INDICATES SWITCH ELEMENTS ON FRONT SIDE OF WAFER
3-'R' INDICATES SWITCH ELEMENTS ON REAR SIDE OF WAFER

SPECIFICATIONS

Voltage Rating.....50-60 Cy. 105-125 V.
Type of Circuit.....Superheterodyne
Tuning Range.....Broadcast—540 KC.-1700 KC.
FM. 1-88 MC.-108 MC. FM. 2-42 MC.-50 MC.
Input Power Rating.....Radio 86 Watts, Phono 30 Watts
Intermediate Frequency..... A.M. 455 KC, F.M. 10.7 MC.
Speaker Voice Coil Impedance at 400 Cycles.....6-8 Ohms
Power Output.....10 Watts

Resistors

Part No.	
28163	R-45
28165	R-56
28171	R-47
28173	R-30
28174	R-55
28186	R-38-42-44
28187	R-46
28188	R-54
149020	R-51
149057	R-21

Description	Part No.	
2,700 Ohm, ½ W	149089	R-14
3,900 Ohm, ½ W	149094	R-18-27-32
12,000 Ohm, ½ W	149095	R-19
18,000 Ohm, ½ W	149096	R-25
27,000 Ohm, ½ W	149101	R-15-22-26-29-57
390,000 Ohm, ½ W	149108	R-41
470,000 Ohm, ½ W	149109	R-36
560,000 Ohm, ½ W	149110	R-16
330 Ohm, 2 W	149112	R-68
18,000 Ohm, 2 W	149113	R-5-7-9-10-23-39
	149115	R-13
	149117	R-35-48
	149119	R-4-8-12-43

10 Ohm, ½ W	149121	R-6
68 Ohm, ½ W	149123	R-37
100 Ohm, ½ W	149126	R-49
150 Ohm, ½ W	149144	R-50
1,000 Ohm, ½ W	149146	R-31
15,000 Ohm, ½ W	149184	R-20
22,000 Ohm, ½ W	149189	R-17-24-28
33,000 Ohm, ½ W	149216	
68,000 Ohm, ½ W	149239	R-33-34
100,000 Ohm, ½ W		
220,000 Ohm, ½ W		
470,000 Ohm, ½ W		
1.0 Meg. ½ W		

2.2 Meg. ½ W
4.7 Meg. ½ W
10,000 Ohm, 10 W B Stick
10,000 Ohm, 1 W
22,000 Ohm, 1 W
5,600 Ohm, 1 W
39,000 Ohm, 1 W
Voltage Divider
6,800 Ohm, ½ W ±5%

Capacitors

25484	C-30-66	.02 mf. 600 V.
27646	C-71	.002 mf. 600 V.
110019	C-14-15-16	Aligning
110020	C-11-12-13	Aligning
110022	C-18	Aligning
110023	C-17	Trimmer
110401	C-21-22-25-26-37-62	100 mmf.
110402	C-34-49	47 mmf.
110403	C-27-31-38	24 mmf.
110419	C-60	.005 500 V.
110420	C-23-24-35-36-39-40-41-42-43-44-45-46-48-50-51-52-56-57-61-63-64-68-69-70	.01 mf. 500 V.
110425	C-20-58	1,000 mmf.
110455	C-28-33	470 mmf.
110456	C-29	750 mmf.
110476	C-47	100 mmf.
110478	C-59	Diode Filter
110483	C-53-54	75 mmf.
110495	C-32	10 mmf.
110496	C-73	20 mmf.
111025	C-19	Electrolytic
111026	C-67-72	Electrolytic
111030	C-55	5 mfd.
111031	C-65	20 mf. 250 V.

NOTE: Series 11 incorporates changes listed

	Part No.
Remove—R55—27,000 ohms	Not Replaced
Change—R-14 10 ohms—To 100,000 ohms	149113
Add—C74—100 mmf. across R-14	110401
Change—C 31 24 mmf.—To 100 mmf.	110401
Change—C 38 24 mmf.—To 47 mmf.	110402

NOTE—When ordering replacement parts always specify series number as well as model and part number. Series number is stamped on back of chassis.

Transformers—Coils

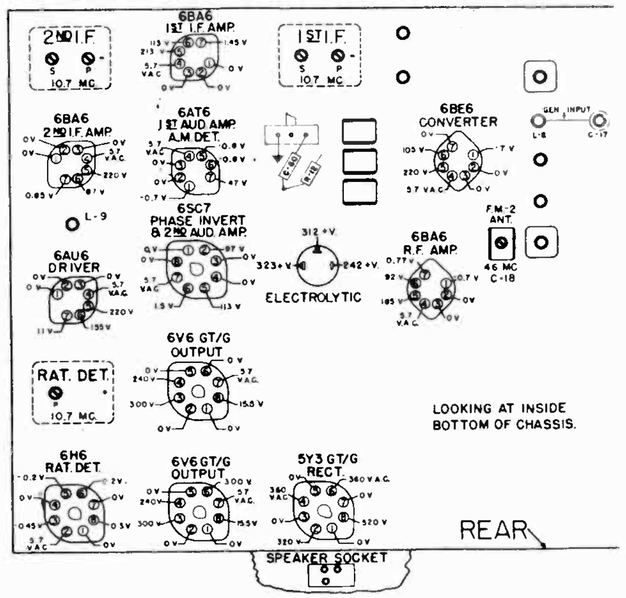
Part No.		Description
114029	L-7	R.F., Coil, F.M.
114035	L-5-6	Ant., Coil, F.M.
114037	L-8	Osc. Coil, F.M.
114038	L-10	Osc. Coil, A.M.
114039	L-11	Osc. Trim. Coil, A.M.
114040	L-12	R.F. Trim. Coil, A.M.
114041	L-2-3-4	Ant., R.F., & Osc. Coils, A.M.
114328	T-2	I.F. 2nd
114329	L-9	I.F. 3rd
114332	T-1	I.F. 1st
114614	L-1	R.F. Choke
114618	L-13-14	R.F. Filament Choke
161006	T-5	Filter Choke
161226		Output Trans.
161228	T-3	Ratio Det. Trans.
161411	T-4	Power Trans.

Miscellaneous

29956	Pilot Lamp
32046	Socket, Loop-Wire Rc.
32076	Pulley, Dial Cord
32164	Plug, Ant. Loop
33218	A.C. Cord
34421	Socket, Phono., Cab. Lamp
40546	Clip, Pulley
48997	Speaker
48984	Speaker Cone
81054	Speaker Plug.
105112	Chassis Mtg. Bracket
118001	Iron Core (I.F.)
122016	Dial Scale, F.M. 1
122017	Dial Scale, F.M. 2
122018	Dial Scale, A.M.
124013	Drive Cord Assem.
127012	Dial Frame Assem.
131004	Grommet, A.C. Cord
142029	Dial Plate Assem.
144011	Pointer, Broadcast
144012	Pointer, F.M.
150031	Shaft, Vol. Control
150032	Shaft, Tuning
151028	Tube Shield, Base (Min.)
151036	Tube Shield, (Min.)
152026	Socket, A.C. (2)
152031	Pilot Socket, F.M. 1
152032	Pilot Socket, A.M. 2
152033	Socket, Speaker
152036	Pilot Socket
156033	Coupling Spring, Vol.
159023	Ant. Binding Post
164005	Tuning Unit (Mechanical Assem.)
167011	Shield Assem.

Cabinet Parts

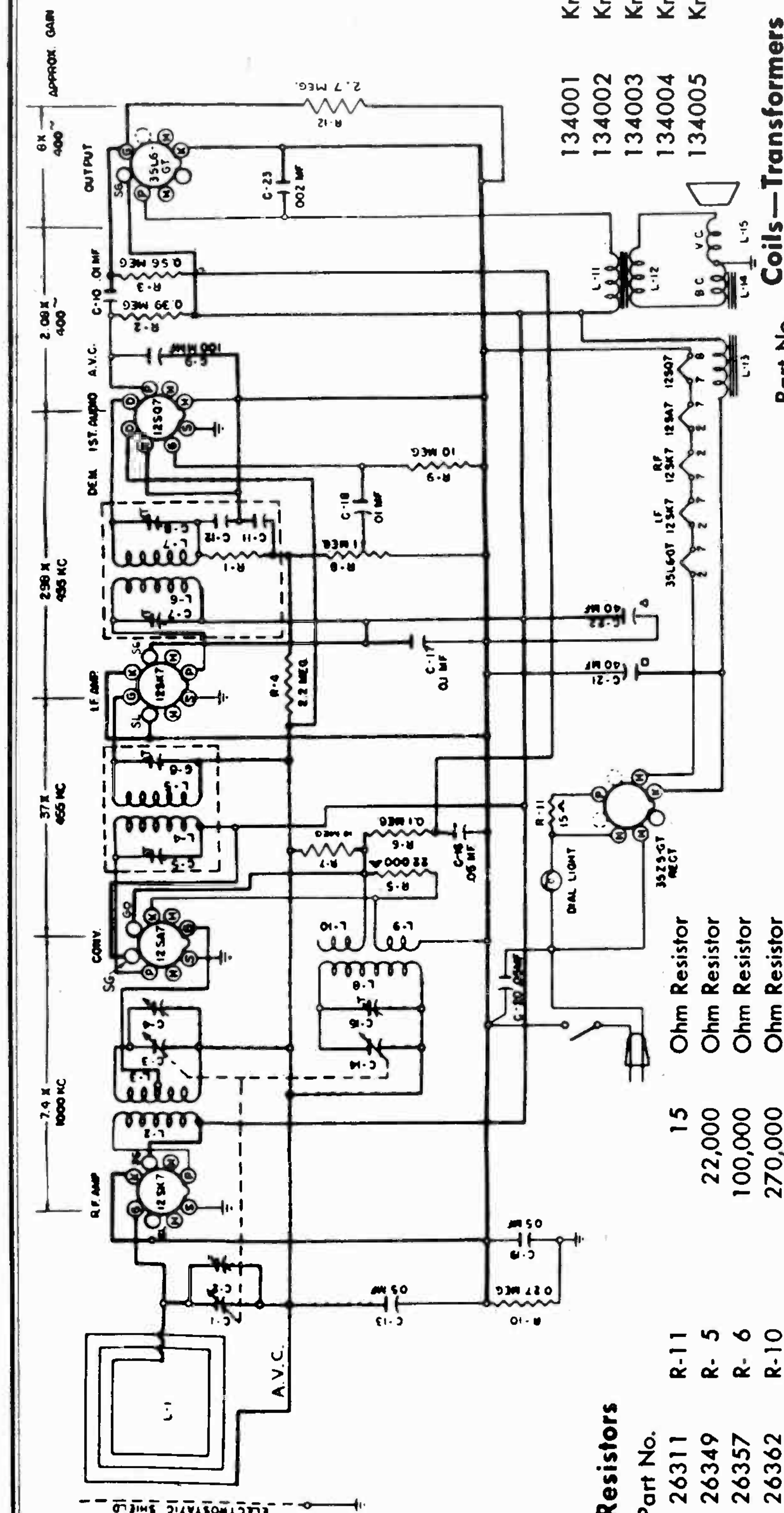
	PGM-W	PLM	M-2-Y,M-W	Description
37148	X			Door Pull
38442	X	X		Bullet Catch
39350	X			Grille Cloth
80681	X	X		Stophinge Assembly
108016			X	Phono Drawer and Track
108052	X			Phono Drawer and Track
108054		X		Phono Drawer and Track
125015			X	Dial Escutcheon
125016	X	X		Dial Escutcheon
125018			X	Escutcheon Speaker
130030		X		Grille Cloth
130031		X		Metal Grille
132009			X	Door Pull, concealed
132013			X	Bottom Hinge
132016			X	Bullet Catch
132021	X		X	Phono Track, left
132022	X		X	Phono Track, right
132053			X	Rt. Upper Hinge, Semi-concealed
132054			X	Lt. Lower Hinge, Semi-concealed
132059		X		Phono Track, Right
132060		X		Phono Track, Left
132061		X		Door Pull
132062		X		Rosette
132063		X		Stophinge, upper
132064		X		Stophinge, lower
132065			X	Door Pull (4)
132071		X		Door Knob
152009		X	X	Socket and Plug
801401	X	X	X	Lamp Cap



Measurements are made at 117V line, using electronic Voltmeter. Except where otherwise indicated, voltages are D.C. and are positive with respect to the reference point which is the chassis.

Controls—Switches—Knobs

134038		Knobs
145028	R-52	Tone Control
145029	R-53	Volume Control and Switch
158020		Range Switch



134001	Knob (1101-HW) (2)
134002	Knob (1101-HY) (2)
134003	Knob (1101-HM) (2)
134004	Knob (1101-HB) (2)
134005	Knob (1101-HI) (2)

Coils—Transformers

Part No.		
114001	L- 2, 3	RF Coil Assembly
114002	L- 4, 5	Osc. Coil Assembly
114301	L- 8, 9, 10, C-14, 15	1st I.F. Transformer
114302	L- 6, 7, C-7, 8, 11, 12, R-1	2nd I.F. Transformer
139005	L- 1	Loop Assembly
151013	Electro Static Shield and Back	HB-HI
151014	Electro Static Shield & Back	HM, HW, HY
155001	L-11, 12, 13, 14, 15	Speaker Assembly

Voltage Rating..........105-125 Volts
Type of Circuit..........Superheterodyne
Tuning Range..........540 Kc. to 1600 Kc.
Input Power Rating..........50 Watts
Input Power Frequency..........25-60 Cycles AC-DC
Intermediate Frequency..........455 Kc.
Speaker Voice Coil Impedance..........at 400 Cycles 3.5 Ohms
Speaker Field Coil Resistance..........425 Ohms
Power Output..........0.65 Watts

Miscellaneous

Part No.	
30151	Socket—8 Pt.
152001	Socket, Pilot Light
138008	Dial Lens HB-HI
105048	Bracket, Right Dial
105049	Bracket, Left Dial
122011	Dial HW, HB, HI, HY
122003	Dial—HM
144001	Pointer—1101-HB, HI, HW, HY
144002	Pointer—1101-HM
124001	Drive Cord Assembly
32075	Pulley
40546	Clip
30933	Pilot Light
33218	Power Supply Cord

Resistors

Part No.		
26311	R-11	15 Ohm Resistor
26349	R- 5	22,000 Ohm Resistor
26357	R- 6	100,000 Ohm Resistor
26362	R-10	270,000 Ohm Resistor
26364	R- 2	390,000 Ohm Resistor
26366	R- 3	560,000 Ohm Resistor
26373	R- 4	2.2 Meg. Resistor
26381	R- 7, 9	10 Meg. Resistor
28196	R-12	2.7 Meg. Resistor
145001	R- 8	Volume Control-off-on-switch

Capacitors

Part No.		
24559	C- 9	100 mmf. Capacitor
25485	C-10, 18	.01 mfd. Capacitor
40632	C-13, 19, 20-16	.05 mfd. Capacitor
111001	C-21, 22	Electrolytic Capacitor 2-40 mfd.
23483	C-17	0.1 mfd. Capacitor
27646	C-23	.002 mf. Capacitor
110001	C- 1, 2, 3, 4, 14, 15	Variable Capacitor

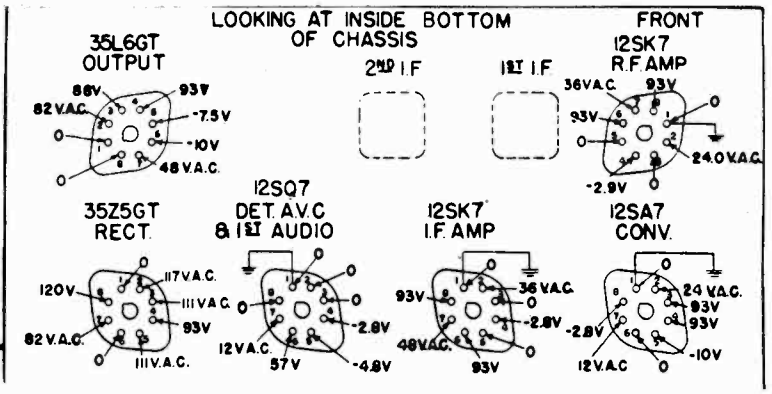
STROMBERG CARLSON CO.

MODELS 1101-HB,-HI, -HM,-HW,-HY

Voltage Chart

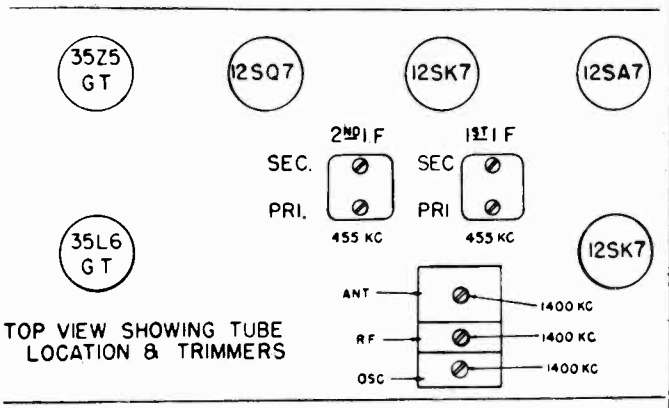
Measurements are made at 117 volt line, using electronic voltmeter.

Except where otherwise indicated, voltages are D.C. and are positive with respect to the reference point which is the minus B or neutral buss, black and white wire.



IDENTIFICATION TABLE

MODEL	CHASSIS	CABINET	SPEAKER	
			SERIES 10	SERIES 11
1101—HB Br. Bakelite	112002	108031	155001	155013
1101—HI Iv. Bakelite	112002	108032	155001	155013
1101—HM Mahogany	112003	108011	155001	155013
1101—HW Walnut	112001	108001	155001	155013
1101—HY Bleached	112001	108002	155001	155013



TOP VIEW SHOWING TUBE LOCATION & TRIMMERS

ALIGNING

Never realign unless absolutely necessary

Use a good signal generator modulated at 400 or 1000 cycles with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator. *A strong signal makes adjustments approximate.*

Always have the volume control "full on."

Aligning Procedure *(follow this order exactly)*

Intermediate Frequency Adjustments

1. Turn the tuning control to the extreme low frequency position. (Variable capacitor plates all the way in).
2. Connect the ground terminal of the signal generator to the common buss. (Black and White wire).
3. Introduce a modulated signal of 455 kilocycles using a .01 mfd. capacitor in series with the lead from the signal generator to the modulator grid, terminal No. 8, of the 12SA7 tube.
4. Adjust the I.F. Aligners for maximum output in the following order:
   A. Secondary of second I.F. Transformer.
   B. Primary of second I.F. Transformer.
   C. Secondary of first I.F. Transformer.
   D. Primary of first I.F. Transformer.

Dial Pointer Adjustments

1. Disconnect the .01 mfd. capacitor in series with the signal generator, disconnect signal generator ground from black and white buss. Connect both signal generator lead and ground lead to an 8 inch radiating loop. *(1 turn).* Place the radiating loop close to the antenna of the receiver.
2. Turn the plates of the gang tuning capacitor full out *(complete clockwise rotation).*
3. Set signal generator to 1580 kilocycles and adjust oscillator trimmer for maximum output. Now set signal generator to 1400 kilocycles and tune set to receive 1400 kilocycle signal. Adjust pointer to center of 1400 kilocycles calibration on dial.

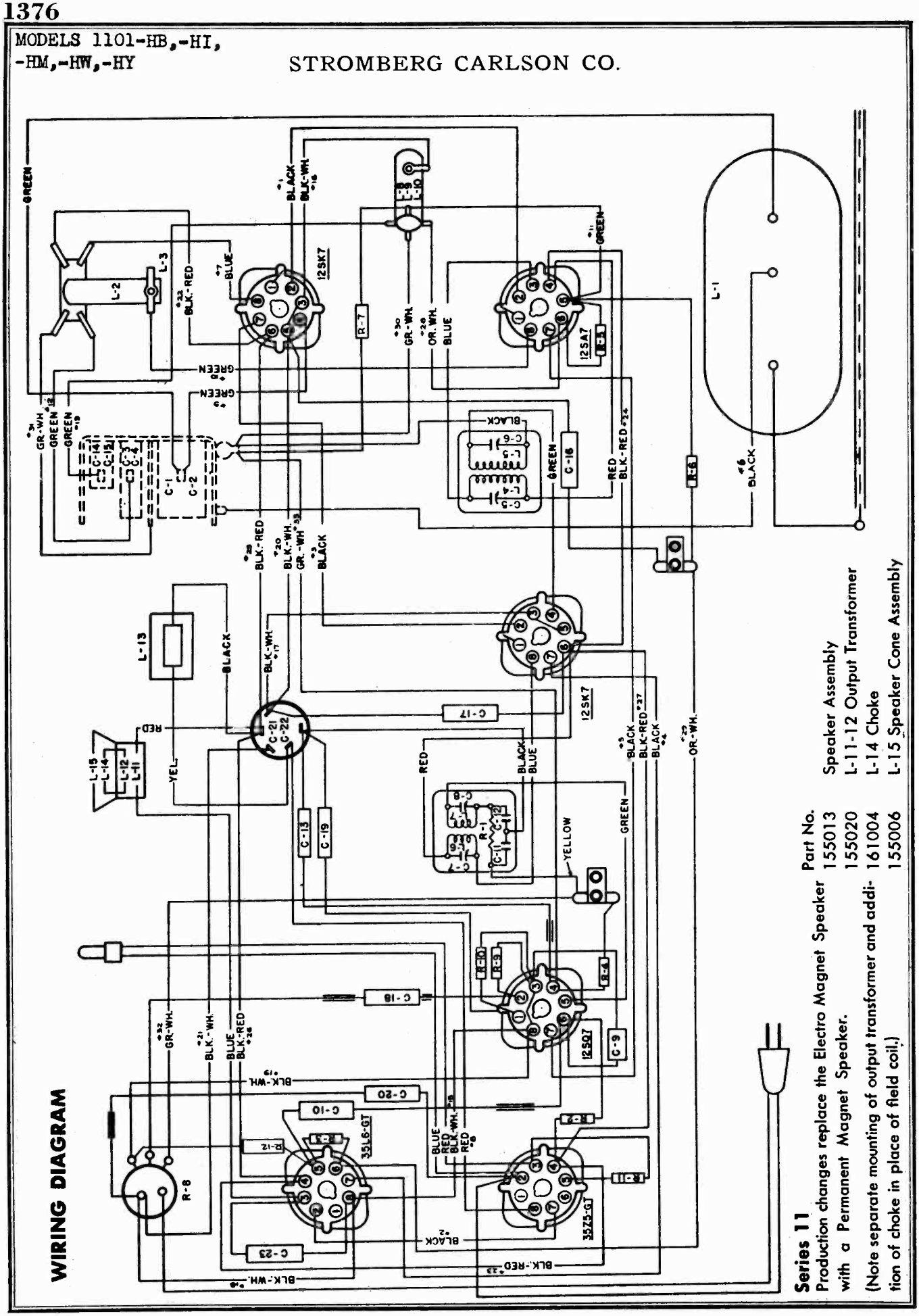
Radio Frequency Adjustments

1. Leave signal generator loop connected in same position as for dial pointer adjustment.
2. Set signal generator and receiver tuning dial to 1400 kilocycles.
3. Adjust the oscillator, radio frequency and antenna trimmers for maximum output.
4. Set both the signal generator's frequency and the receiver's tuning dial to a 600 kilocycles and check calibration.

Note: If the calibration is too far off at 600 kilocycles, operations 2 and 3 may be repeated until the best results are obtained.

MODELS 1101-HB,-HI,
-HM,-HW,-HY

STROMBERG CARLSON CO.



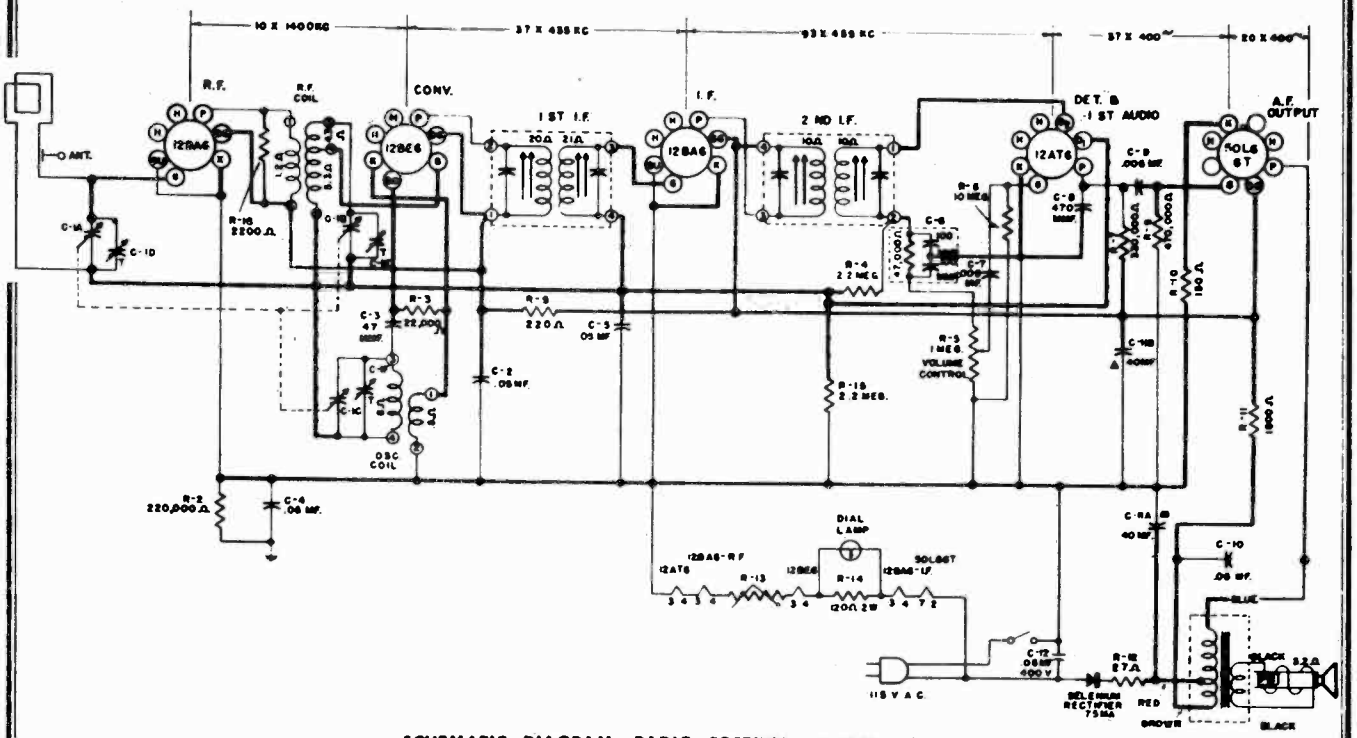
Series 11
Production changes replace the Electro Magnet Speaker with a Permanent Magnet Speaker.
(Note separate mounting of output transformer and addition of choke in place of field coil.)

	Part No.
Speaker Assembly	155013
L-11-12 Output Transformer	155020
L-14 Choke	161004
L-15 Speaker Cone Assembly	155006

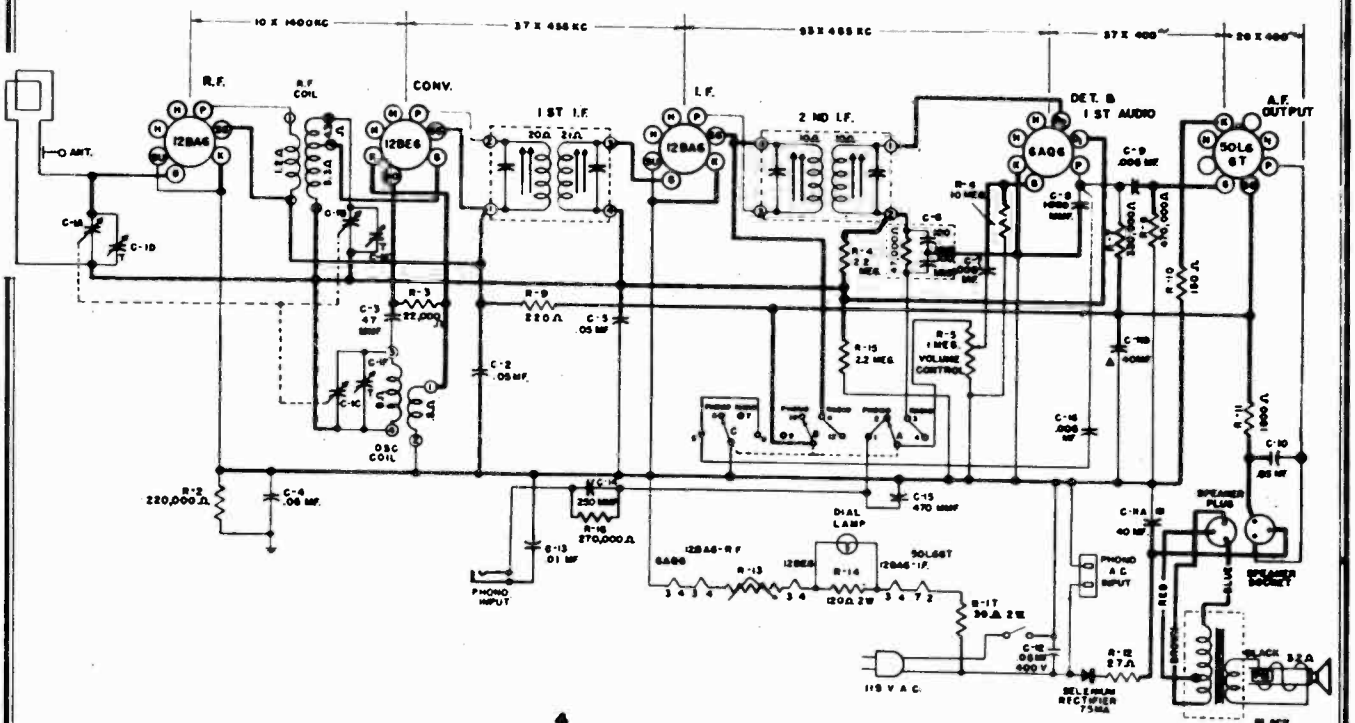
STROMBERG-CARLSON CO.

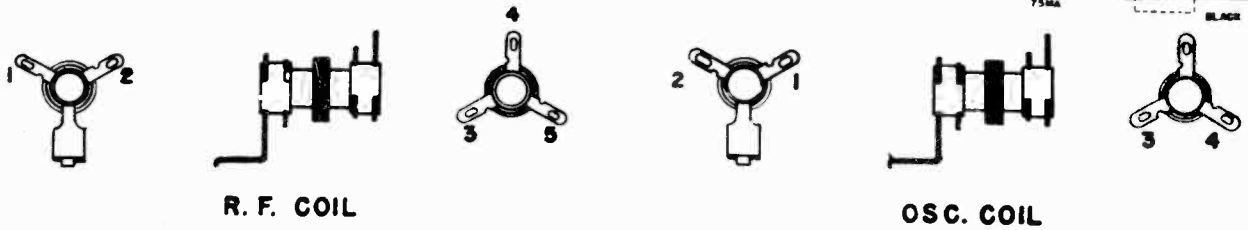
MODEL 1200
MODEL 1202

SCHEMATIC DIAGRAM, RADIO RECEIVER, MODEL 1200



SCHEMATIC DIAGRAM, RADIO RECEIVER, MODEL 1202





R. F. COIL

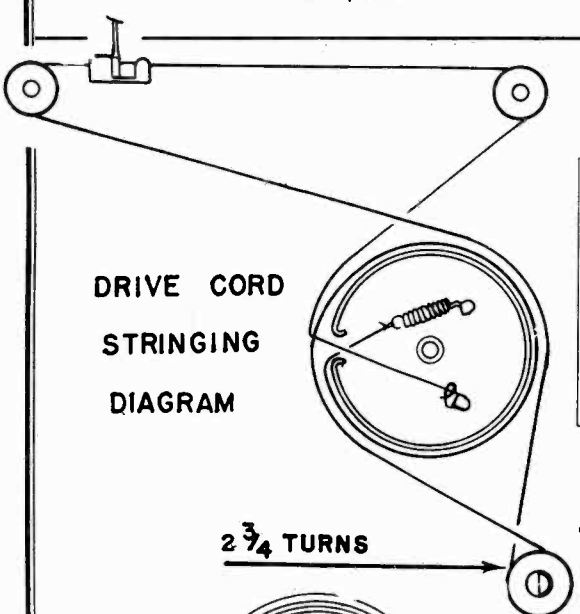
OSC. COIL

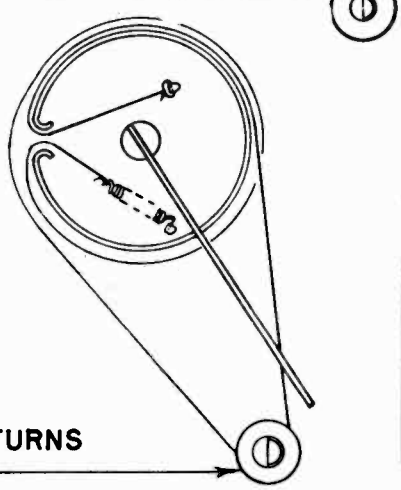
MODELS 1200, 1202 STROMBERG-CARLSON CO.

ALIGNMENT PROCEDURE

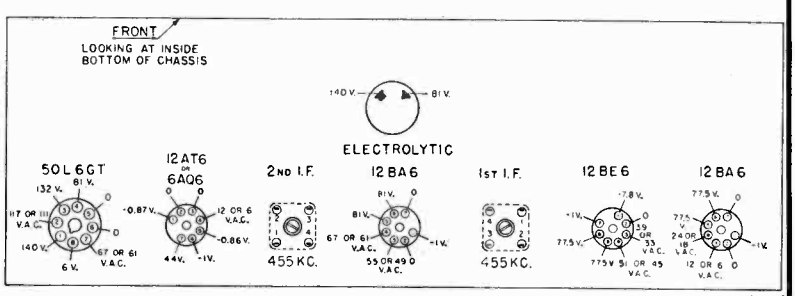
CAUTION: As this is a transformless Receiver, observe all usual precautions. The Black-White (B-) lead is common to one side of the 117 Volt Power Line Cord.

Pointer Setting	Generator Setting	Input and Dummy	VTVM and Scope Connection and Scale	Adj. and Notes
		I. F. ADJUSTMENT		
(1) Low frequency end of dial	455 kc. 400 cy. mod.	Pin #7, 12BE6 tube 0.01 mfd. dummy	-3V DC Scale Green-White (AVC) lead and Black-White (B-) lead.	Adj. top and bottom cores of each I. F. transformer with non-metallic screwdriver for maximum voltage.
(2) "	455 kc. Swept 15 kc.	"	Scope to Junction C-6 and Volume Control	Adj. same cores as above for best over-lapping curve on scope.
		R. F. ADJUSTMENT		
(1) 1650 kc. Condenser plates all way out	1650 kc. 400 cy. mod.	Ant. terminal 0.01 mfd dummy	"	Adj. Osc. (front) trimmer on variable condenser for maximum voltage.
(2) 1400 kc.	1400 kc. 400 cy. mod.	"	"	Adj. R. F. and Loop trimmers on variable condenser for maximum voltage.



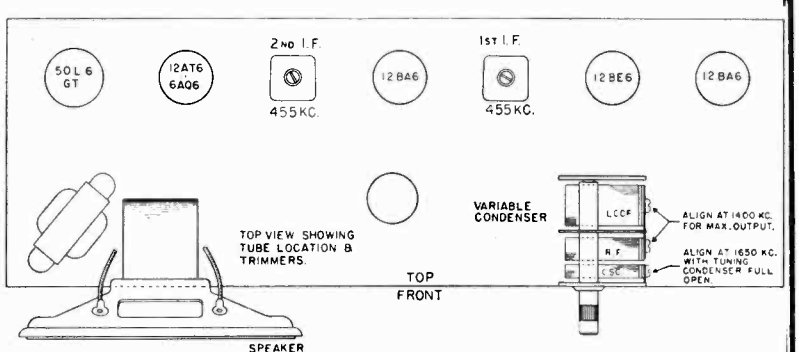


Voltage and Tube Location Chart



*Where two tube types or voltage values are shown, the first is for the 1200 chassis, the second is for the 1202 chassis.

Measurements are made at 117V line, using electronic Voltmeter. Except where otherwise indicated, voltages are D.C. and are positive with respect to the reference point which is the common Black-White lead.



SPECIFICATIONS

Voltage Rating — Radio	117 Volts AC-DC
Voltage Rating — Phono Motor	117 Volts AC Only
Type of Circuit	Superheterodyne
Tuning Range	540-1640 Kc
Input Power Rating	30 Watts
Intermediate Frequency	455 Kc
Speaker Voice Coil Impedence	3 Ohm
Power Output	1.5 Watts at 10% Distortion

Stromberg-Carlson 1400, 1400 Special

These models are the same as Model 1200, except for the following changes. Omit R-9 (220 ohms) and connect the screen grid of the converter (12BA6, Pin 6) to the screen grid i-f amplifier (12BE6, Pin 6).

Omit C-2 (.05 μf). Omit the dial lamp. Omit R-14 (120 ohms 2 watt) and jumper the former terminals of the resistor to make the heater string continuous.

The difference between these models is that Model 1400 has a dial with the numbers on the curved lens while Model 1400 Special has a dial with numbers on the flat glass plate behind the curved lens.

REPLACEMENT PARTS

Resistors

	1200 Model	1202	
28162	R-16		2200 Ohm
28184		R-16	0.27 Meg.
145032	R-5	R-5	Volume Cont. 1.0 Meg.
149030		R-17	39 Ohm 2 W
149035	R-14	R-14	120 Ohm 2 W
149047	R-11	R-11	1800 Ohm 2 W
149097	R-9	R-9	220 Ohm
149109	R-3	R-3	22000 Ohm
149115	R-2	R-2	0.22 Meg.
149116	R-7	R-7	0.33 Meg.
149117	R-8	R-8	0.47 Meg.
149121	R-4, 15	R-4, 15	2.2 Meg.
149125	R-6	R-6	10.0 Meg.
149168	R-10	R-10	150 Ohm
149243	R-13	R-13	Special N-T-C
149244	R-12	R-12	27 Ohm 2 W

Capacitors

	1200 Model	1202	
25376		C-14	250 mmf. mica
27760	C-9	C-9	.005 mf. 600 V
40632	C-2, 4, 5, 10, 12	C-2,4,5,10,12	.05 mf. 400 V
110026	C-1	C-1	Variable
110209		C-15	470 mmf. mica
110419	C-7	C-7,16	.005 mf. 500 V
110420		C-13	.01 mf. 500 V
110425		C-8	.001 mf. Ceramic
110458	C-3	C-3	47 mmf. Ceramic
110464	C-8		470 mmf. Ceramic
110478	C-6	C-6	Diode Filter
111032	C-11 A, B	C-11 A, B	2, 40 mf. 200 V Electrolytic

Coils—Transformers—Speakers

	1200 Model	1202	
114046	X	X	RF Coil Assem.
114047	X	X	Osc. Coil Assem.
114336	X	X	1st. I. F. Transf.
114337	X	X	2nd. I. F. Transf.
139020	X		Loop Assembly
139022		X	Loop Assembly
155013	X		Speaker Assem.
155029		X	Speaker Only
155052		X	Speaker Assem.
161413	X	X	Output Transformer

Miscellaneous

	1200 Model	1202	
33218	X	X	Power Cord
34421		X	Phono Socket
122022	X		Dial
122025		X	Dial
124014	X		Dial Drive Cord
124016		X	Dial Drive Cord
143012		X	Speaker Plug
144013	X		Pointer
144015		X	Pointer
150034	X	X	Tuning Shaft Assembly
152001	X		Pilot Socket
152038		X	Phono Motor Power Socket*
152040	X	X	Miniature Socket
152041	X	X	Octal Socket
152044		X	Speaker Socket Assem.
152045		X	Pilot Socket
156032	X	X	Tube Hold Down Spring
158015		X	Radio-Phono Switch
162034	X	X	Rectifier

*The Phono Motor is for use on AC only.

Cabinets and Parts

	1200 Model	1202	
108065	X		Brown Cabinet
108066	X		Ivory Cabinet
108078		X	Cabinet
125013		X	Escutcheon and Grille
134004	X		Brown Knob
134005	X		Ivory Knob
134029		X	Volume and Station Knob
134056		X	Radio-Phono Knob
138008	X		Dial Lens
163062	X		Chassis hold down screw
200624		X	Chassis hold down screw

NOTE—When ordering replacement parts always specify series number as well as model and part number. Series number is stamped on back of chassis.

STROMBERG-CARLSON CO. MODELS 1407PFM, 1407PLM, 1409 M-2W, M2-M, M2-Y, M3A, M3M, PGM, PGW

SPECIFICATIONS

	1407	1409
Voltage Rating	50-60 Cycle 117V	50-60 Cycle 117V
Type Of Circuit	Superheterodyne	Superheterodyne
Tuning Range AM	535 to 1630 Kc.	535 to 1630 Kc.
Tuning Range FM	87 to 109 Mc.	87 to 109 Mc.
Input Power Rating Radio	70 Watts	100 Watts
Input Power Rating Phono	25 Watts	25 Watts
Intermediate Frequency AM	455 Kc.	455 Kc.
Intermediate Frequency FM	10.7 Mc.	10.7 Mc.
Speaker Voice Coil Impedance at 400 Cycles	6 Ohms	6 Ohms
Power Output	3 Watts	11 Watts

TUBE COMPLEMENT

		1407	1409
6BA6	IF & RF Amplifiers	4	5
12AT7	FM Converter	1	1
6BE6	AM Converter	1	1
6AL5	Ratio Detector	1	1
6AV6	AM Detector & Audio Amplifier	1	1
12AU7	Audio Phase Inverter		1
6V6GT	Power Output	1	2
5Y3GT	Rectifier	1	1
6E5	Tuning Eye		1
		10	14

IDENTIFICATION TABLES

Model	Cabinet
1409 M3A	108112
1409 M3M	108098
1409 M-2W	108093
1409 M2-Y	108091
1409 M2-M	108092
1409 PGM	108095
1409 PGW	108096
1407 PLM	108090
1407 PFM	108099

Description	Part No.
1409 Chassis	112036
1407 Chassis	112037
1409 & 1407 Speaker	155065
1409 Phonograph	148022 (Seeburg SQ-2)
	148018 (Seeburg S)
	148026 (VM-402 Duo)
	148031 (VM-402)
1407-PL Phonograph	148021 (Seeburg SQ-1)
	148024 (VM-400)
1407-PF Phonograph	148026 (VM-402 Duo)
	148030 (VM-402)
	148021 (Seeburg SQ-1)

REPLACEMENT PARTS

Resistors

Part No.	1409 R-No.	1407 R-No.	Description
27640	34,35		150,000 Ohms ½ W
28144	17,21,26, 29,53	17,26,29,53	68 Ohms ½ W
28162	4	4	2200 Ohms ½ W
28169	40		8200 Ohms ½ W
28170	20		10,000 Ohms ½ W
28176	28	28	39,000 Ohms ½ W
28177	6	6	47,000 Ohms ½ W
28178	43	34	56,000 Ohms ½ W
28184	41	20,21,25	270,000 Ohms ½ W
28186	33		390,000 Ohms ½ W
28187	42,44,55		470,000 Ohms ½ W
28195	12	12	2.2 Meg. ½ W
149020	45		330 Ohms 2 W
149036		30	150 Ohms 2 W
149055	8	8	12,000 Ohms 2 W
149101	3,5,15,19, 23,31	3,5,15,19,37	1000 Ohms ½ W
149103	50,51		2200 Ohms ½ W
149107	9,52	9,38,52	10,000 Ohms ½ W
149109	10	10	22,000 Ohms ½ W
149111	7	7	47,000 Ohms ½ W
149112	47		68,000 Ohms ½ W
149113	32	24	100,000 Ohms ½ W
149115	38,39		220,000 Ohms ½ W
149117		22,27	470,000 Ohms ½ W
149119	1,13	1,13	1 Meg. ½ W
149121	16,24	16	2.2 Meg. ½ W
149123	27,46		4.7 Meg. ½ W
149125		23	10 Meg. ½ W
149170		36	270 Ohms 1 W
149184	11	11	5600 Ohms 1 W
149188	2	2,14,18	22,000 Ohms 1 W
149189	14,18,22		39,000 Ohms 1 W
149247	30		1,000 Ohms 10 W
149282	54	41	4.7 Ohms 1 W
149286		31,32	2700 Ohms 2 W

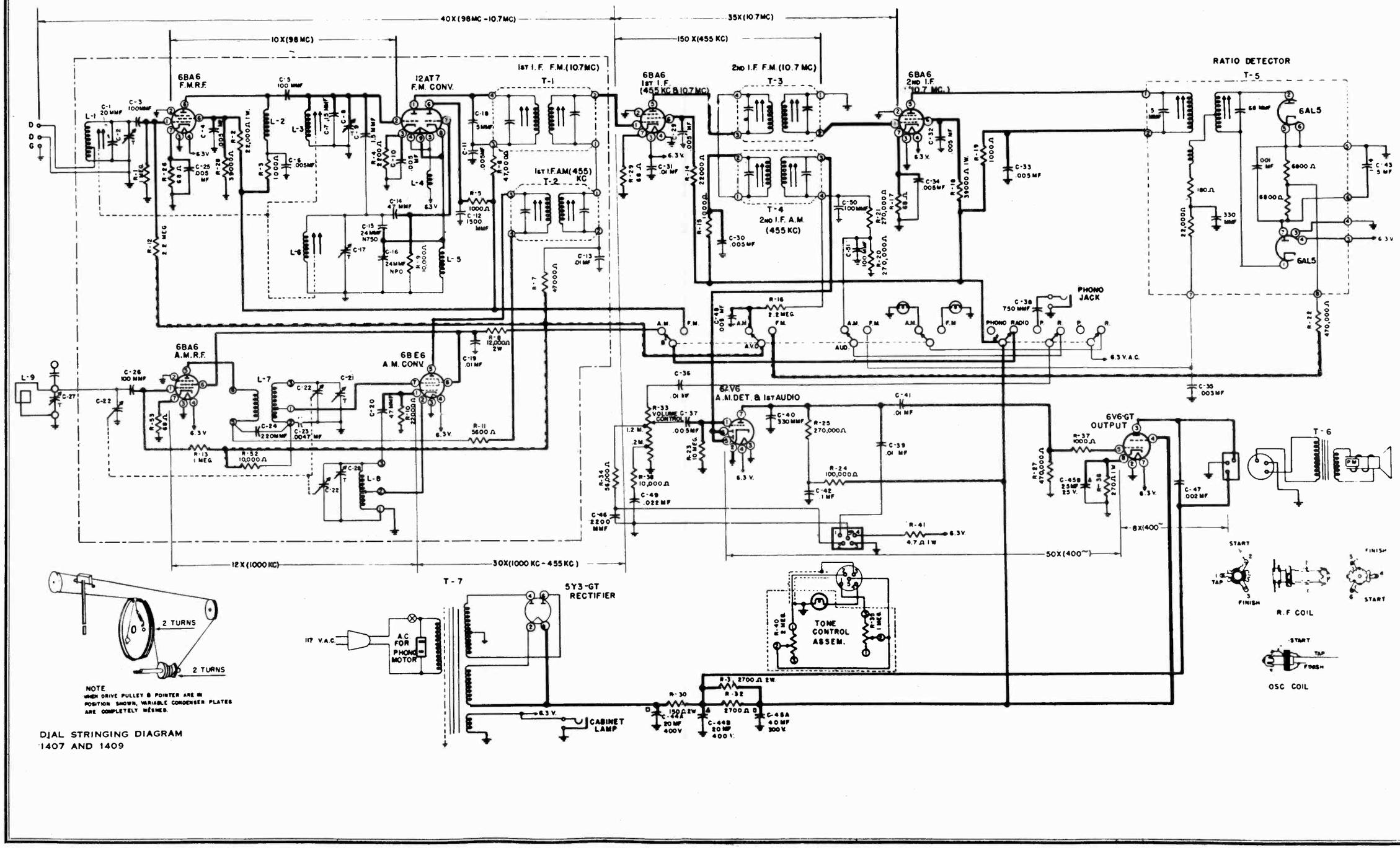
Capacitors

	C-No.	C-No.	
25483		42	.1 MF 400 V Tubular
27646	50		.002 MF 600 V Tubular
27760		30,37,48	.005 MF 600 V Tubular
46315		35	.003 MF 400 V Tubular
110025	2,8,17	2,8,17	Trimmer
110029	22	22	Variable Condenser
110031	27	27	Trimmer 1.5-15 MMF
110402	14,20	14,20	47 MMF Ceramic
110403	16	16	24 MMF Ceramic
110404	1	1	20 MMF Ceramic
110405	7	7	15 MMF Ceramic
110419	45		.005 MF 500 V Tubular
110438	9	9	1.5 MMF Ceramic
110451	3,5,26,34,40	3,5,26,50,51	100 MMF Ceramic
110453	24	24	220 MMF Ceramic
110454		40	330 MMF Ceramic
110455	39,43		470 MMF Ceramic
110456	44	38	750 MMF Ceramic
110457	12	12	1500 MMF Ceramic
110476	56		100 MMF Ceramic NPO
110478	31		Diode Filter
110488	37		.003 MF 500 V Tubular
110536		46	2200 MMF Moulded
110540	13,19,29,30, 32,33,35, 36,38,41, 47,53,54, 59,60	13,19,31,36	.01 MF 400 V Moulded

STROMBERG-CARLSON CO.

MODELS 1407PFM, 1407PLM

RADIO RECEIVER 1407

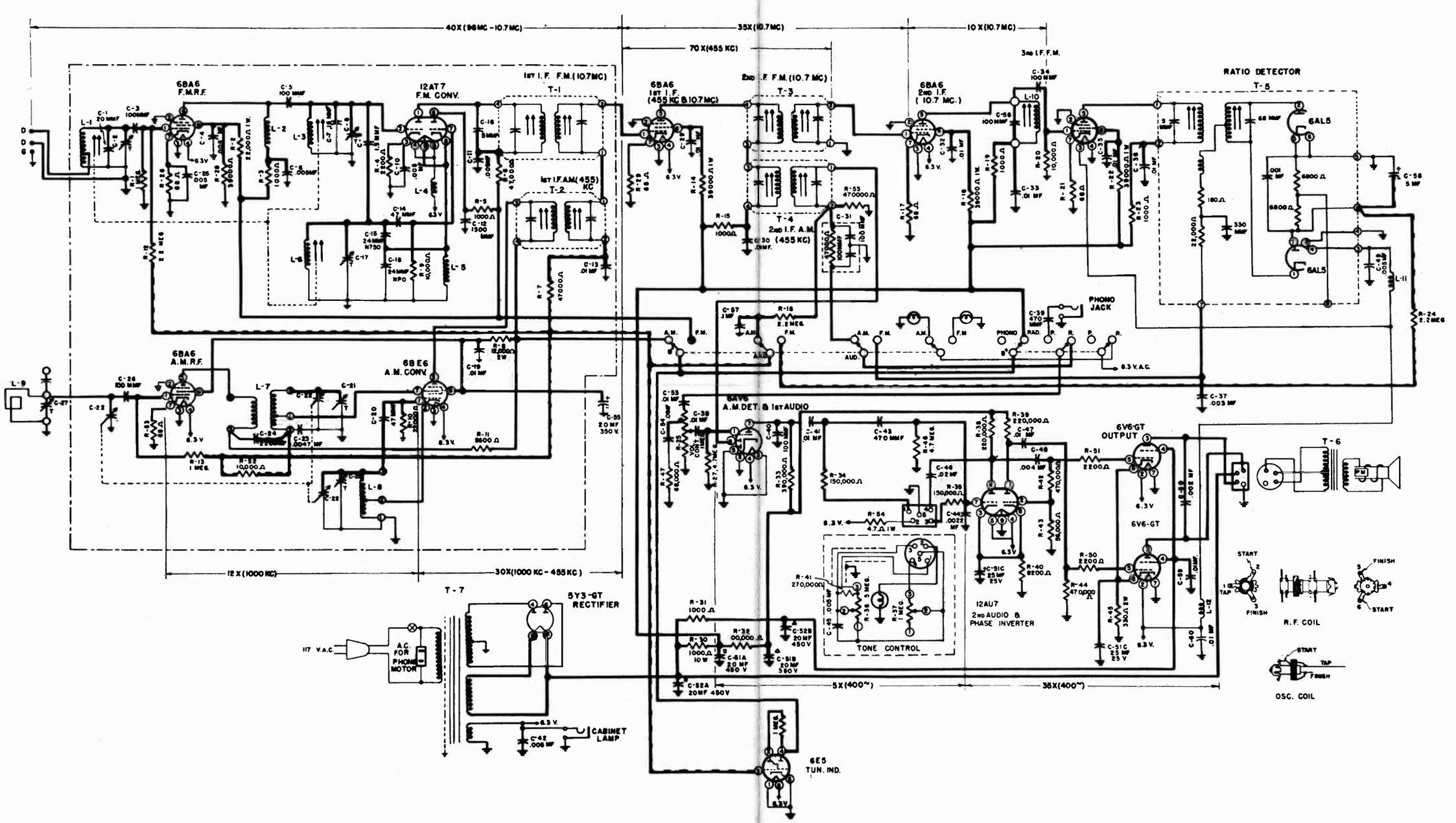


DIAL STRINGING DIAGRAM
1407 AND 1409

MODELS 1409 M-2W, M2-M,
M2-Y, M3A, M3M, PGM, PGW

STROMBERG-CARLSON CO.

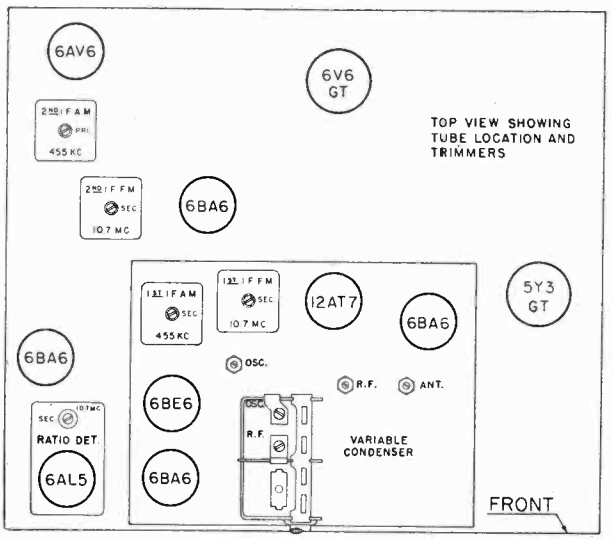
RADIO RECEIVER 1409

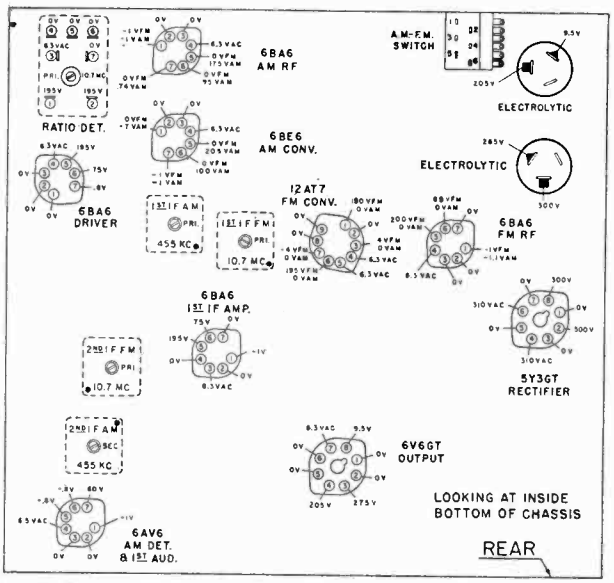


STROMBERG-CARLSON CO.

MODELS 1407PFM, PLM

1407 TUBE LOCATION AND VOLTAGE CHARTS





NOTE: Dots on IF trans. indicate the position of the color coded terminals.

ALIGNMENT PROCEDURE 1407

On IF and Radio Detector transformers, primary slugs are under chassis and secondary slugs above chassis.
Adjust AM loop trimmer after chassis is in cabinet for best reception at 1500 Kc.
Adjust dial pointer to marker at top left of dial with condenser plates fully meshed.

A.M. - I.F.

	Band & Pointer	Signal Generator	VTVM or Scope Connection	Adjustment and Notes
1.	AM low end of dial.	455 Kc. 400 cy. mod. to Pin 7 (Grid) of 6BE6 tube through .01 cap.	Term. 2 of AM-FM sw and ground.	Adj. two AM-IF trans., using —3V DC Scale.
2.	"	455 Kc swept 15 Kc.	"	Adjust same for best double-trace curve on scope.

F.M. - I.F.

1.	FM low end of dial.	10.7 Mc. 400 cy. mod. to Pin 2 (Grid) of 12AT7 tube at RF Coil thru .01 capacitor.	"	Detune secondary of ratio det. Adj. two FM-IF trans. and pri. ratio det. trans., using —3 VDC scale.
2.	"	10.7 Mc. swept 150 Kc.	"	Disconnect ground end of C-43 (5 mfd. electrolytic under ratio detector can). Adj. as step 1 for best double-trace curve on scope.
3.	"	"	Terms. 2 & 5 of AM-FM sw.	Be sure VTVM is not grounded. Connect C-43, Adj. sec. ratio det. for 0 voltage.

A.M. - R.F.

1.	AM 1500 Kc.	1500 Kc. 400 cy mod. coupled loosely to loop leads.	Term. 2 of Am-FM sw & ground.	Adj. two trimmers on tuning cond., using low —DC scale.

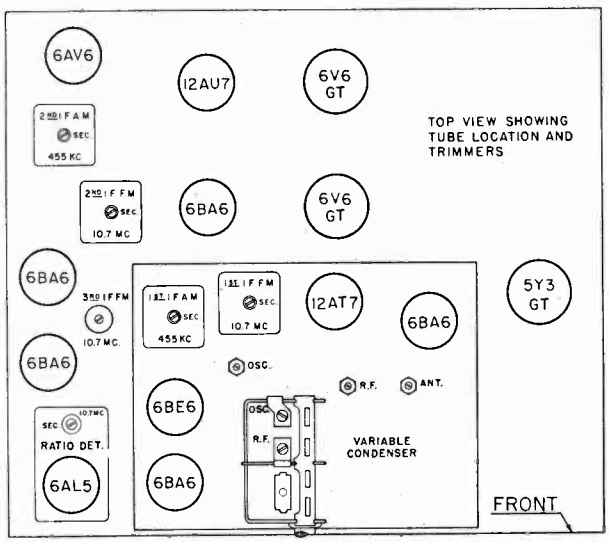
F.M. - R.F.

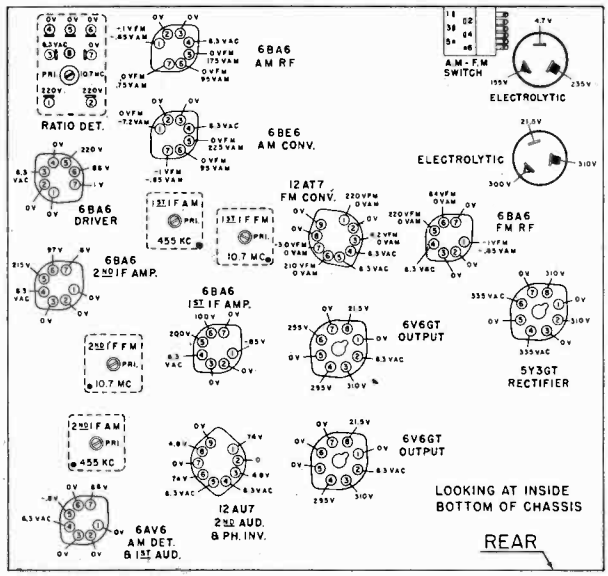
1.	FM 100 mc.	100 Mc. 400 cy. mod. to FM Ant. Terms., thru 270 ohm resistor.	"	Adj. C-17 (Osc.) C-8 (RF) and C-2 (Ant.) on low —DC scale.

Align both IF channels if either is out of adjustment.
Use a non-metallic screwdriver and light pressure for slug adjustment.
2nd AM-IF trans. will be damaged if chassis is placed on left side.
If FM osc. coil is replaced, adjust placement of its ground lead for tracking at 88 mc.

MODEL 1409 Series STROMBERG-CARLSON CO.

1409 TUBE LOCATION AND VOLTAGE CHARTS





NOTE: Dots on IF trans. indicate the position of the color coded terminals.

ALIGNMENT PROCEDURE 1409

On IF and Ratio Detector transformers, primary slugs are under chassis and secondary slugs above chassis.
Adjust AM loop trimmer after chassis is in cabinet for best reception at 1500 Kc.
Adjust dial pointer to marker at top left of dial with condenser plates fully meshed.

A.M. - I.F.

	Band & Pointer	Signal Generator	VTVM or Scope Connection	Adjustment and Notes
1.	AM low end of dial.	455 Kc. 400 cy. mod. to Pin 7 (Grid) of 6BE6 tube through .01 cap.	Term. 2 of AM-FM sw and ground.	Adj. two AM-IF trans., using —3V DC Scale.
2.	"	455 Kc swept 15 Kc.	"	Adjust same for best double-trace curve on scope.

F.M. - I.F.

1.	FM low end of dial.	10.7 Mc. 400 cy. mod. to Pin 2 (Grid) of 12AT7 tube at RF Coil thru .01 capacitor.	"	Detune secondary of ratio det. Adj. three FM-IF trans & ratio det. primary using —3V DC scale
2.	"	10.7 Mc swept 150 Kc.	Pin 6 (screen) of third IF tube thru .01 capacitor.	Adj. as above for best double-trace curve on scope.
3.	"	"	Term. 2 of AM-FM switch & Term 8 of ratio det. trans.	Be sure VTVM is not grounded. Adj. sec. of ratio det. for 0 voltage.

A.M. - R.F.

1.	AM 1500 Kc.	1500 Kc. 400 cy mod. coupled loosely to loop leads.	Term. 2 of AM-FM sw & ground.	Adj. two trimmers on tuning cond., using low —DC scale.

F.M. - R.F.

1.	FM 100 mc.	100 Mc. 400 cy. mod. to FM Ant. Terms., thru 270 ohm resistor.	"	Adj. C-17 (Osc.) C-8 (RF) and C-2 (Ant.) on low —DC scale.

Align both IF channels if either is out of adjustment.
Use a non-metallic screwdriver and light pressure for slug adjustment.
2nd AM-IF trans. will be damaged if chassis is placed on left side.
If FM osc. coil is replaced, adjust placement of its ground lead for tracking at 88 mc.

MODELS 1407PFM, 1407PLM, Series 1409

STROMBERG-CARLSON CO.

REPLACEMENT PARTS—Continued

Part No.	1409 C-No.	1407 C-No.	Description
110542	46	49	.022 MF 400 V Moulded
110546	57		.1 MF 400 V Moulded
110551		47	.0022 MF 600 V Moulded
110555		39,41	.01 MF 600 V Moulded
110538	23	23	.0047 MF 400 V Moulded
110586	4,6,10,11, 25,42,49	4,6,10,11, 25,29,32, 33,34	.005 MF Disc Ceramic
110587	48		.004 MF 500 V Tubular
110592	15	15	24 MMF Ceramic N 750
110593	18	18	5 MMF Ceramic
111043	51		Electrolytic
111044	52		Electrolytic
111045		45	Electrolytic
111046		44	Electrolytic
111047	58	43	Electrolytic
111048	55		Electrolytic

Potentiometers

145056	R-25		Volume On-Off, 1 Meg.
145057	R-37	R-35	Treble, 1 Meg.
145058	R-36		Bass, 5 Meg.
145059		R-33	Volume On-Off, 2 Meg.
145060		R-40	Bass, 2 Meg.

Coils—Transformers

114051	L-8	L-8	A.M. Osc. Coil
114052	L-7	L-7	A.M. RF Coil
114053	L-1	L-1	FM Ant. Coil
114054	L-3,6	L-3,6	FM RF and Osc. Coil
114329	L-10		3rd. IF FM Coil
114337	T-4		2nd IF AM
114363	T-1,3	T-1,3	IF FM
114364	T-2	T-2,4	IF AM
114365	T-5	T-5	Ratio Detector
114618	L-11,12		Heater Choke Coil
114620	L-5	L-5	R.F. Cathode Choke
114621	L-4	L-4	R.F. Heater Choke Coil
114633	L-2	L-2	R.F. Plate Choke Coil
161239		T-6	Output Transformer
161240	T-6		Output Transformer
161415		T-7	Power Transformer
161416	T-7		Power Transformer

Tone Dial Assembly

18630	x	x	Tone Dial Lamp
119015	x	x	Tone Dial Plug Shell
134061	x	x	Tone Wheel
138017	x	x	Red Lens
138018	x	x	Blue Lens
138019	x	x	Inside Lens Holder
138020	x	x	Outside Lens Holder
143014	x	x	Tone Dial Plug (5 point)
152058	x	x	Tone Dial Lamp Socket

Miscellaneous

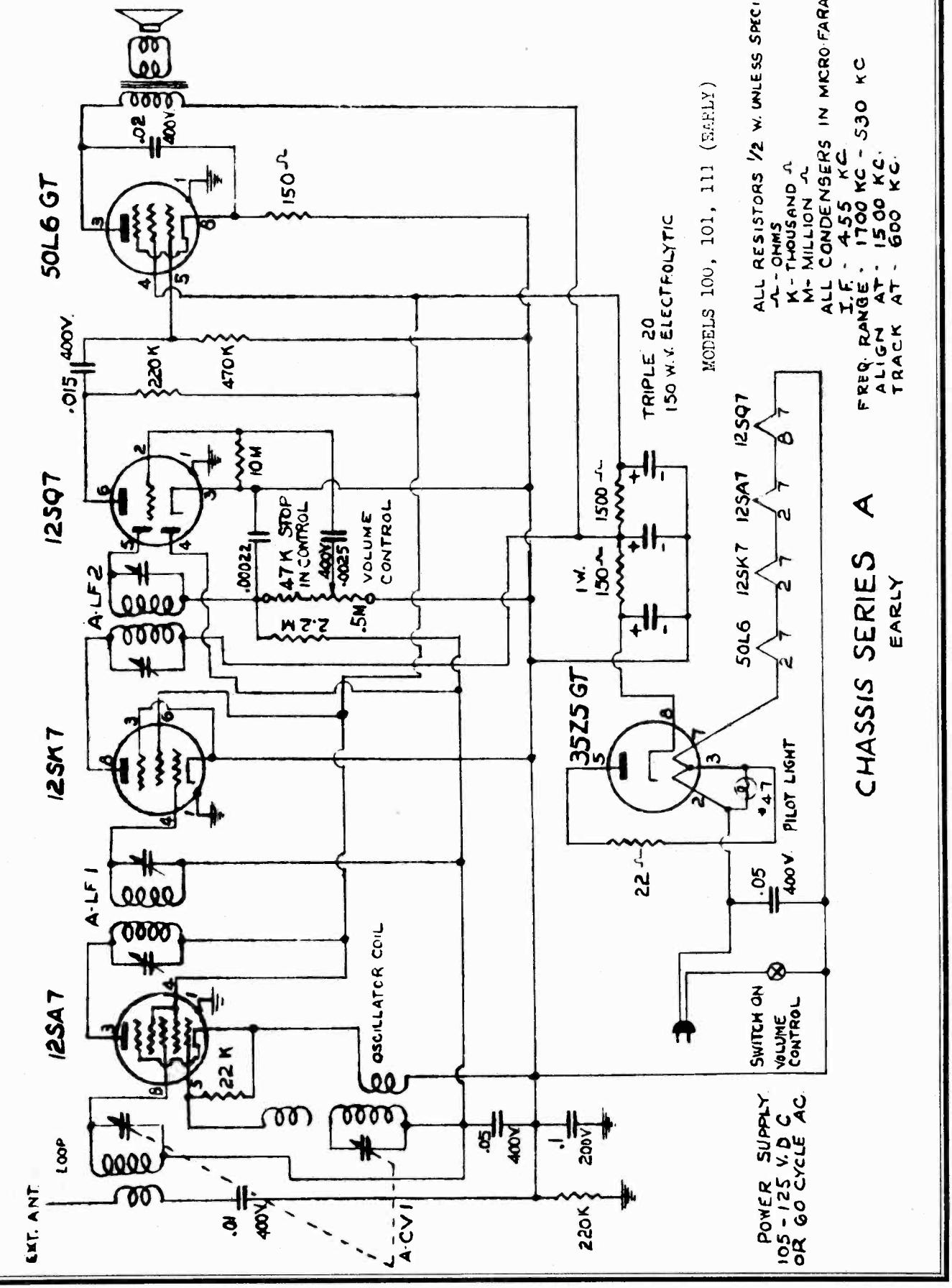
29956	x	x	Pilot Lamp
32041	x		Speaker Socket
107010	x	x	Push Button
109031	x	x	Eye Cable Assembly
113030	x	x	I.F. Trans. Mtg. Clip
118028	x	x	F.M. R.F. Core
122031	x	x	Dial Glass
124018	x	x	Drive Cord Assembly
129019	x	x	Pinion Gear
129022	x	x	Core Carriage Gear Assembly
131004	x	x	A-C Cord Grommet
131015	x	x	Dial Glass Grommet
134059	x	x	Knob
139028	x	x	A.M. Loop Assembly
142048	x	x	Dial Plate
144017	x	x	Pointer
146192	x	x	Call Letters
147022	x	x	¾" Pulley
147023	x	x	Pulley Assembly
147026	x	x	Balance Wheel
147027	x	x	Dial Drive Pulley
150037	x	x	Dial Drive Shaft
151028	x	x	Tube Shield Base
151036	x	x	Tube Shield
151060	x	x	R.F. Shield
151063	x		I.F. Shield
152009	x	x	Pilot Light Socket & Plug Assembly
152014	x	x	Octal Socket
152021	x	x	7 Pin Miniature Socket
152033		x	Speaker Socket
152038	x	x	A-C Socket
152055	x	x	Pilot Lamp Socket
152056	x	x	9 Pin Miniature Socket
152057	x	x	5 Pt. Socket
154042	x	x	Rubber Coil Spacer
155066	x	x	Speaker Cone
158031	x	x	A.M.-F.M. Switch
158032	x	x	Radio-Phono Switch
159027	x	x	Antenna Binding Post

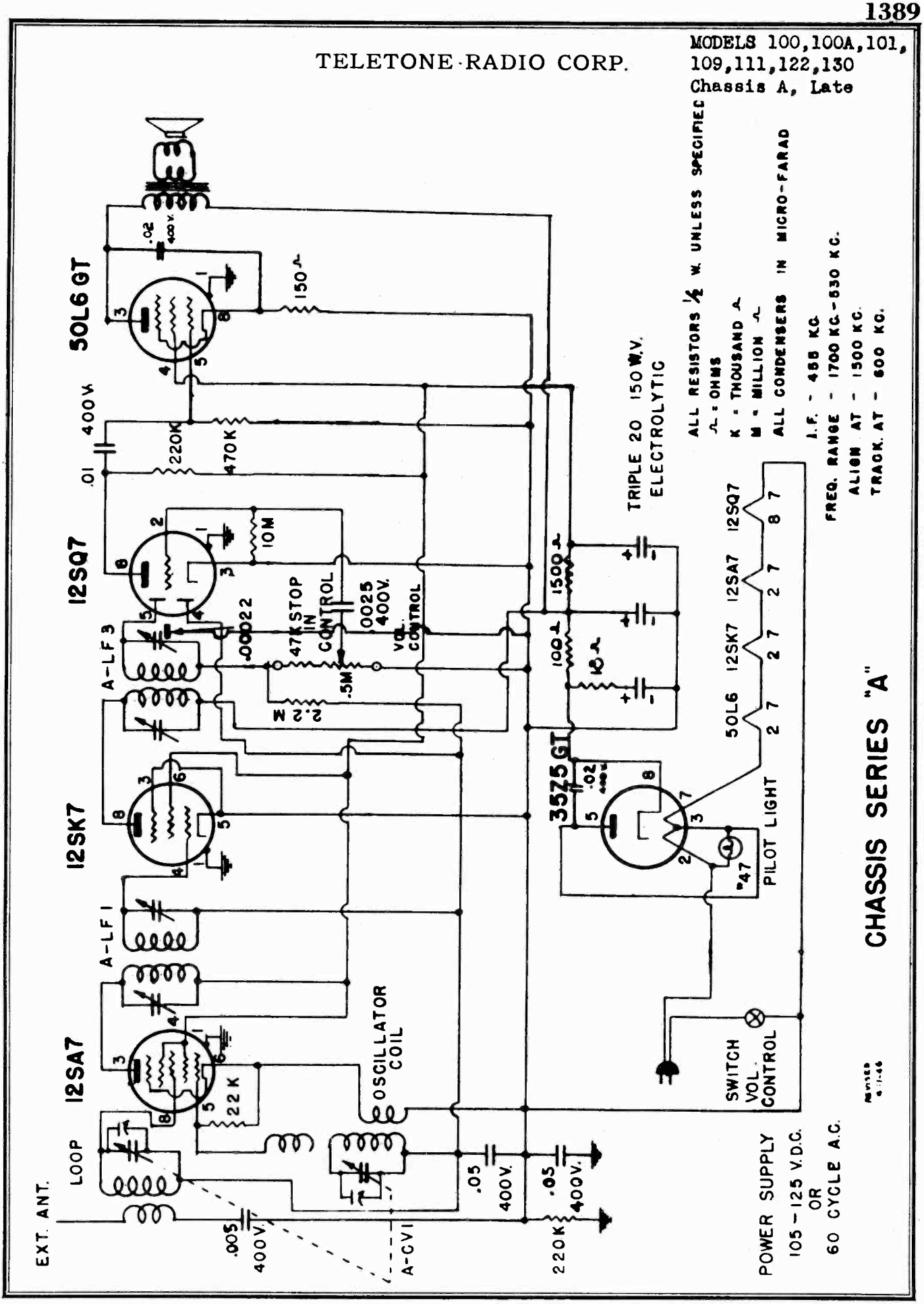
Cabinet Parts

Part No.	1409—M3M, M3A	1409 M2W, M2Y, M2M	1409—PGM, PGW	1407—PLM	1407—PF	Description
37148			x			Door Pull
38442			x			Bullet Catch
41102			x	x		Stop Hinge R.H.
41103			x	x		Stop Hinge L.H.
108087	x			x	x	Phono Drawer and Track
125018		x				Speaker Escutcheon
125025	x	x	x	x	x	Plastic Escutcheon
125026	x	x	x			Metal Escutcheon
125028				x	x	Metal Escutcheon
130003		x				Grille Cloth
130030				x		Grille Cloth
130031				x		Metal Grille
130062	x					Grille Cloth
130064			x			Grille Cloth
130070					x	Grille Cloth
132009		x				Concealed Door Pull
132013		x				Butt Hinge
132016	x	x		x	x	Bullet Catch
132021		x	x			Right Phono Track
132022		x	x			Left Phono Track
132053		x				Upper Hinge, Semi-Concealed
132059	x			x	x	Right Phono Track
132060	x			x	x	Left Phono Track
132061				x		Door Pull
132062				x		Rosette
132063				x	x	Hinge, R. H.
132064				x	x	Hinge, L. H.
132065		x				Door Pull
132071				x		Album Door Pull
132084		x				Lower Hinge, Semi-Concealed
132089	x					Hinge
132090	x					Door Pull
132103					x	Door Pull
148019		x	x			Phono Drawer and Track
152009		x	x	x	x	Socket and Plug Assembly
201848					x	Door Pull Screw
201849				x		Album Door Pull Screw
801401			x	x	x	Lamp Cap
801403		x				Lamp Cap

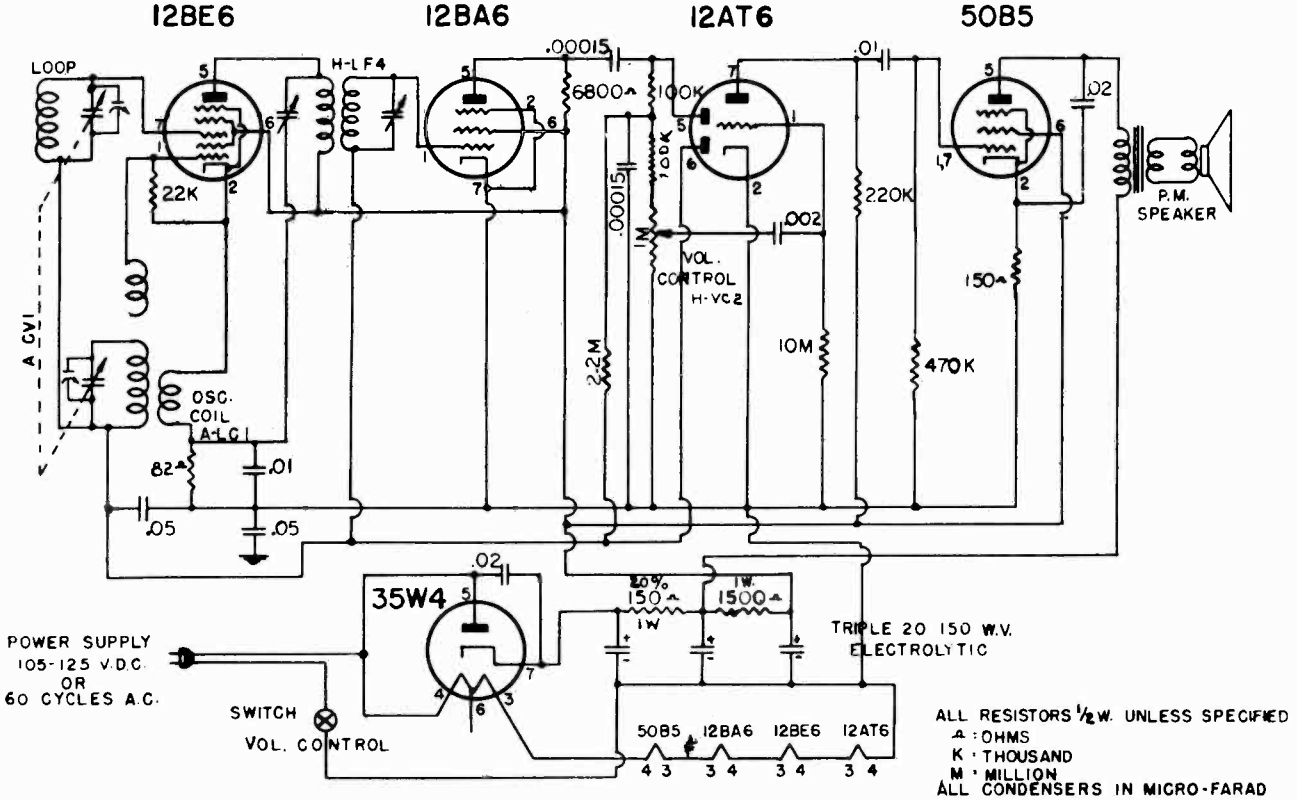
MODELS 100,101,111,
113,Chassis A,Early

TELETONE RADIO CORP.




TELETONE RADIO CORP.
MODELS 100,100A,101, 109,111,122,130
Chassis A, Late
ALL RESISTORS ½ W. UNLESS SPECIFIED
Ω = OHMS
K = THOUSAND Ω
M = MILLION Ω
ALL CONDENSERS IN MICRO-FARAD
I.F. - 455 KC
FREQ. RANGE - 1700 KC-530 KC.
ALIGN AT - 1500 KC.
TRACK AT - 600 KC.
CHASSIS SERIES "A"
50L6 GT
12SQ7
12SK7
12SA7
35Z5 GT
12SQ7
12SA7
12SK7
50L6
A-LF3
A-LF1
A-CV1
LOOP
EXT. ANT.
OSCILLATOR COIL
TRIPLE 20 150 W.V. ELECTROLYTIC
PILOT LIGHT
#47
SWITCH VOL. CONTROL
POWER SUPPLY
105 - 125 V.D.C. OR 60 CYCLE A.C.
150Ω
220K
470K
10M
1500Ω
100Ω
1K
22K
47K STOP IN CONTROL
.5M
VOL. CONTROL
.0025 400V.
.0022
.01 400V.
.02 400V.
.05 400V.
.005 400V.
220K

MODELS 135,139,140,141, TELETONE RADIO CORP. MODELS 145, 152, chassis R 149,157,163,164, Ch.H

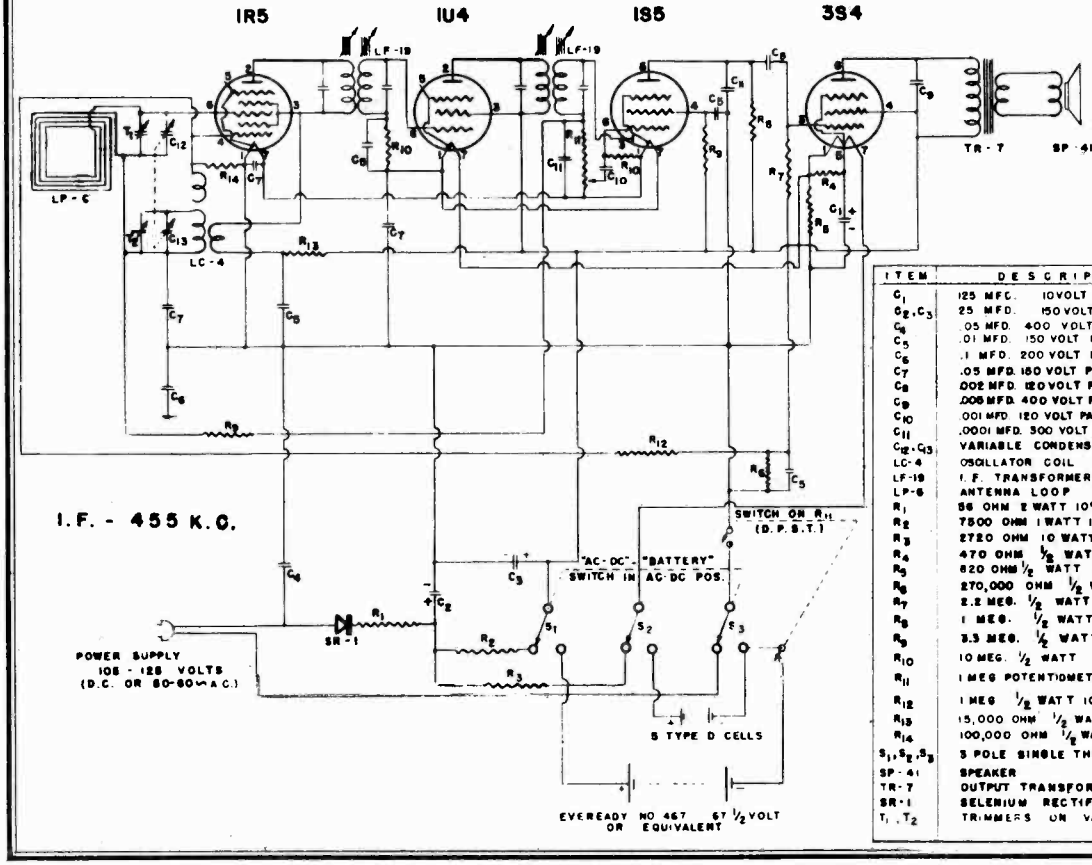


ALL RESISTORS ½ W. UNLESS SPECIFIED
Ω : OHMS
K : THOUSAND
M : MILLION
ALL CONDENSERS IN MICRO-FARAD

MODEL 135 "DYNAMITE" CHASSIS SERIES "H"

I.F. - 455 K.C.
FREQ. RANGE - 530-1700 K.C.
ALIGN AT - 1500 K.C.
TRACK AT - 600 K.C.

MODELS 145, 152 CHASSIS SERIES 'R'

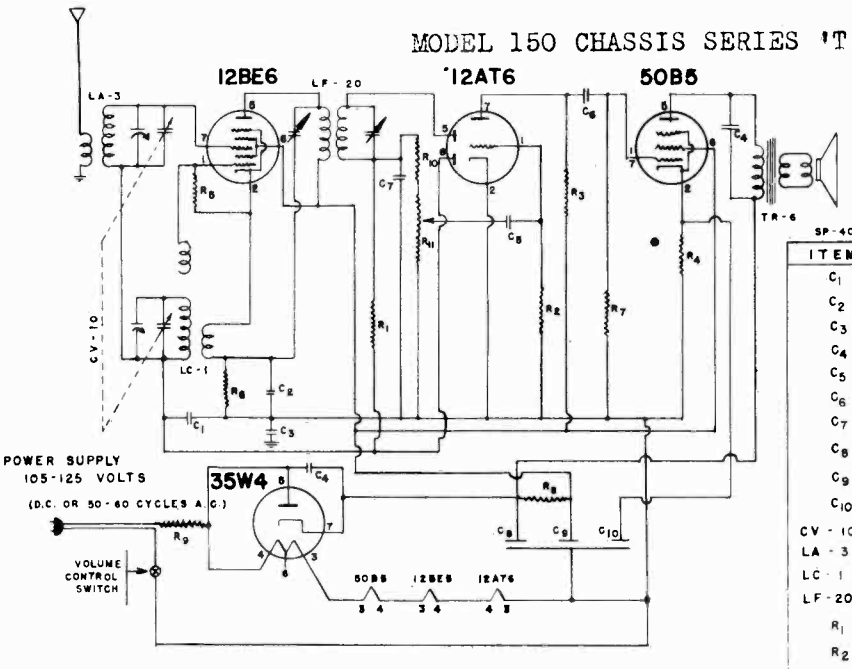


ITEM	DESCRIPTION	PART NUMBER
C_1	125 MFD. 10VOLT } ELECTROLYTIC	CE-12
C_2, C_3	25 MFD. 150 VOLT } CONDENSER	
C_4	.05 MFD. 400 VOLT PAPER CONDENSER	CP 503-1
C_5	.01 MFD. 150 VOLT PAPER CONDENSER	CP 103-2
C_6	.1 MFD. 200 VOLT PAPER CONDENSER	CP 104-2
C_7	.05 MFD. 180 VOLT PAPER CONDENSER	CP 503-2
C_8	.002 MFD. 120 VOLT PAPER CONDENSER	CP 202-1
C_9	.006 MFD. 400 VOLT PAPER CONDENSER	CP 502-2
C_{10}	.001 MFD. 120 VOLT PAPER CONDENSER	CP 102-1
C_{11}	.0001 MFD. 500 VOLT MICA CONDENSER	CM 101-1
C_{12}, C_{13}	VARIABLE CONDENSER	CV 10
LC-4	OSCILLATOR COIL	LC-4
LF-19	I.F. TRANSFORMER	LF-19
LP-6	ANTENNA LOOP	LP-6
R_1	56 OHM 2 WATT 10% W.W. RESISTOR	RW 560-8
R_2	7500 OHM 1 WATT 10% RESISTOR	RC 752-8
R_3	2720 OHM 10 WATT 5% RESISTOR	RP-1
R_4	470 OHM ½ WATT RESISTOR	RC 471-1
R_5	820 OHM ½ WATT 10% RESISTOR	RC 821-2
R_6	270,000 OHM ½ WATT 10% RESISTOR	RC 274-2
R_7	2.2 MEG. ½ WATT RESISTOR	RC 226-1
R_8	1 MEG. ½ WATT RESISTOR	RC 105-1
R_9	3.3 MEG. ½ WATT RESISTOR	RC 335-1
R_{10}	10 MEG. ½ WATT RESISTOR	RC 106-1
R_{11}	1 MEG POTENTIOMETER WITH SWITCH	VC-6
R_{12}	1 MEG ½ WATT 10% RESISTOR	RC 105-2
R_{13}	15,000 OHM ½ WATT RESISTOR	RC 153-1
R_{14}	100,000 OHM ½ WATT 10% RESISTOR	RC 104-2
S_1, S_2, S_3	3 POLE SINGLE THROW SWITCH	SW-3
SP-41	SPEAKER	SP-41
TR-7	OUTPUT TRANSFORMER	TR-7
SR-1	SELENIUM RECTIFIER	SR-1
T_1, T_2	TRIMMERS ON VARIABLE	

TELE-TONE RADIO CORP.

MODEL 150, chassis T
MODEL 152, chassis W

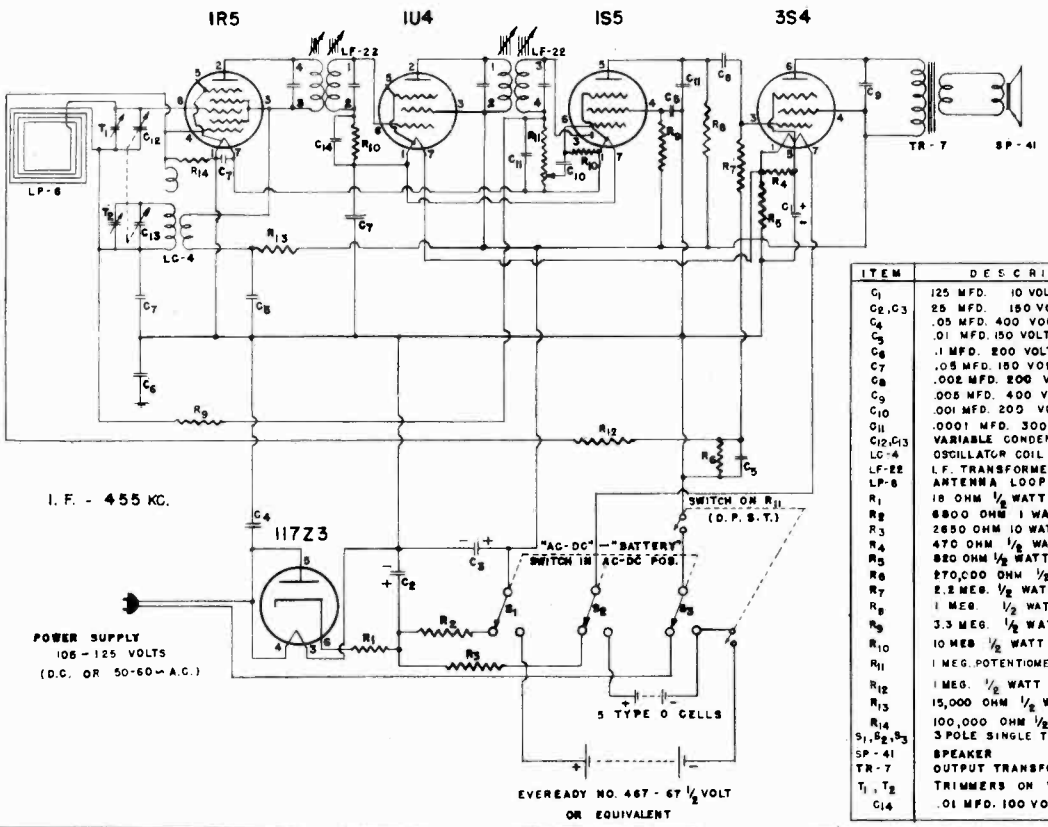
MODEL 150 CHASSIS SERIES 'T'



ITEM	DESCRIPTION	PART NO.
C_1	.05 MFD - 200 VOLT PAPER CONDENSER	CP 503-3
C_2	.01 MFD - 150 VOLT PAPER CONDENSER	CP 103-2
C_3	.05 MFD - 400 VOLT PAPER CONDENSER	CP 503-3
C_4	.02 MFD - 400 VOLT PAPER CONDENSER	CP 203-1
C_5	.002 MFD - 400 VOLT PAPER CONDENSER	CP 202-2
C_6	.005 MFD - 200 VOLT PAPER CONDENSER	CP 502-3
C_7	150 MMF - 500 VOLT MICA CONDENSER	CM 151-1
C_8	40 MFD - 150 VOLT	CE-13
C_9	20 MFD - 150 VOLT (ELECTROLYTIC CONDENSER)	
C_{10}	20 MFD - 15 VOLT	
CV - 10	VARIABLE CONDENSER	CV-10
LA - 3	ANTENNA COIL	LA-3
LC - 1	OSCILLATOR COIL	LC-1
LF - 20	I.F. TRANSFORMER	LF-20
R_1	2.2 MEG. 1/2 WATT RESISTOR	RC 225-1
R_2	10 MEG. 1/2 WATT RESISTOR	RC 106-1
R_3	330,000 OHMS 1/2 WATT RESISTOR	RC 334-1
R_4	150 OHMS 1/2 WATT RESISTOR	RC 151-1
R_5	22,000 OHMS 1/2 WATT RESISTOR	RC 223-1
R_6	82 OHMS 1/2 WATT RESISTOR 10%	RC 820-2
R_7	470,000 OHMS 1/2 WATT RESISTOR	RC 474-1
R_8	2200 OHMS 1 WATT RESISTOR	RC 222-4
R_9	33 OHMS 2 WATT WIRE RESISTOR 10%	RW 330-8
R_{10}	100,000 OHMS 1/2 WATT RESISTOR	RC 104-1
R_{11}	1 MEG. VOLUME CONTROL & S.P.S.T. SW.	VC-6
SP - 40	SPEAKER	SP-40
TR - 6	OUTPUT TRANSFORMER	TR-6

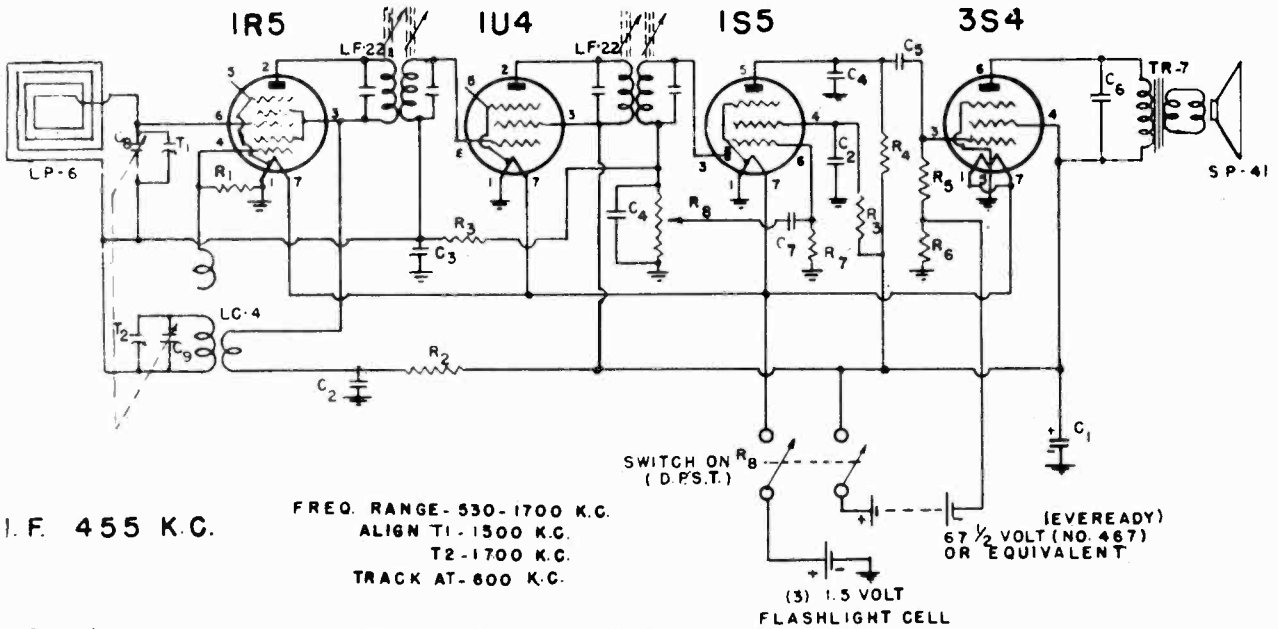
I.F. - 455 K.C.
FREQ. RANGE 530-1700 K.C.
ALIGN AT 1500 K.C.
TRACK AT 600 K.C.

MODEL 152 CHASSIS SERIES 'W'



ITEM	DESCRIPTION	PART NUMBER
C_1	125 MFD. 10 VOLT (ELECTROLYTIC	CE-12
C_2, C_3	25 MFD. 150 VOLT) CONDENSER	
C_4	.05 MFD. 400 VOLT PAPER COND.	CP 503-5
C_5	.01 MFD. 150 VOLT PAPER COND.	CP 103-2
C_6	.1 MFD. 200 VOLT PAPER COND.	CP 104-2
C_7	.05 MFD. 150 VOLT PAPER COND.	CP 503-2
C_8	.002 MFD. 200 VOLT PAPER COND.	CP 202-3
C_9	.005 MFD. 400 VOLT PAPER COND.	CP 502-2
C_{10}	.001 MFD. 200 VOLT PAPER COND.	CP 102-3
C_{11}	.0001 MFD. 300 VOLT MICA COND.	CM 101-1
C_{12}, C_{13}	VARIABLE CONDENSER	CV 10
LC-4	OSCILLATOR COIL	LC-4
LF-22	I.F. TRANSFORMER	LF-22
LP-6	ANTENNA LOOP	LP-6
R_1	18 OHM 1/2 WATT RESISTOR	RC 180-1
R_2	6800 OHM 1 WATT 10% RESISTOR	RC 682-6
R_3	2650 OHM 10 WATT 5% RESISTOR	RP-3
R_4	470 OHM 1/2 WATT RESISTOR	RC 471-1
R_5	820 OHM 1/2 WATT 10% RESISTOR	RC 821-2
R_6	270,000 OHM 1/2 WATT 10% RESISTOR	RC 274-2
R_7	2.2 MEG. 1/2 WATT RESISTOR	RC 225-1
R_8	1 MEG. 1/2 WATT RESISTOR	RC 106-1
R_9	3.3 MEG. 1/2 WATT RESISTOR	RC 335-1
R_{10}	10 MEG 1/2 WATT RESISTOR	RC 106-1
R_{11}	1 MEG. POTENTIOMETER WITH SWITCH	VC-6
R_{12}	1 MEG. 1/2 WATT 10% RESISTOR	RC 105-2
R_{13}	15,000 OHM 1/2 WATT RESISTOR	RC 153-1
R_{14}	100,000 OHM 1/2 WATT RESISTOR 10%	RC 104-2
S_1, S_2, S_3	3 POLE SINGLE THROW SWITCH	3W-10
SP-41	SPEAKER	SP-41
TR-7	OUTPUT TRANSFORMER	TR-7
T_1, T_2	TRIMMERS ON VARIABLE	
C_{14}	.01 MFD. 100 VOLT PAPER COND.	CP 103-4

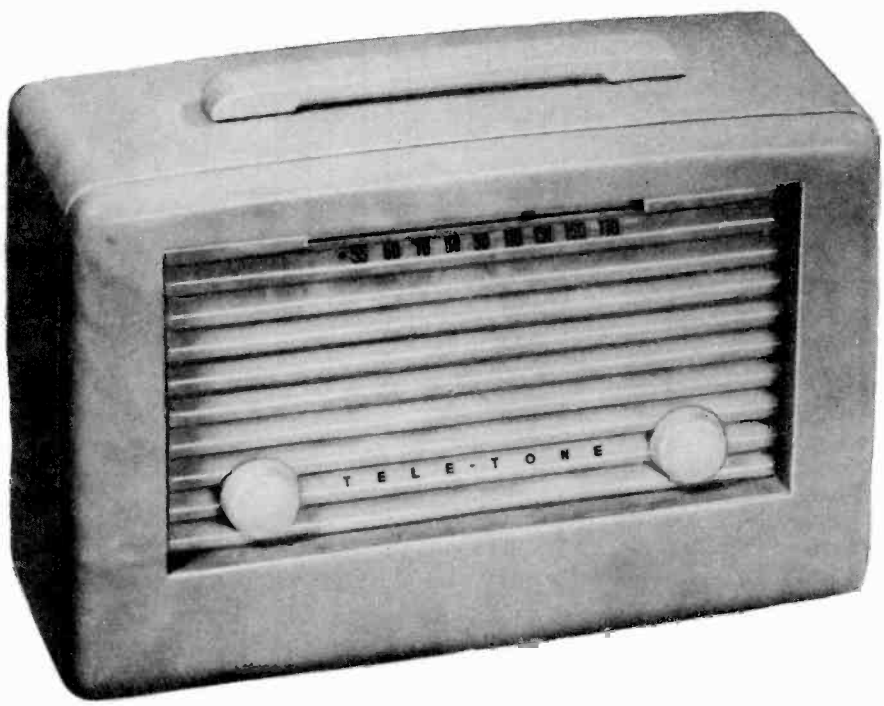
MODEL 156, chassis U TELE-TONE RADIO CORP.



I.F. 455 K.C.

FREQ. RANGE - 530 - 1700 K.C.
ALIGN T1 - 1500 K.C.
T2 - 1700 K.C.
TRACK AT - 600 K.C.

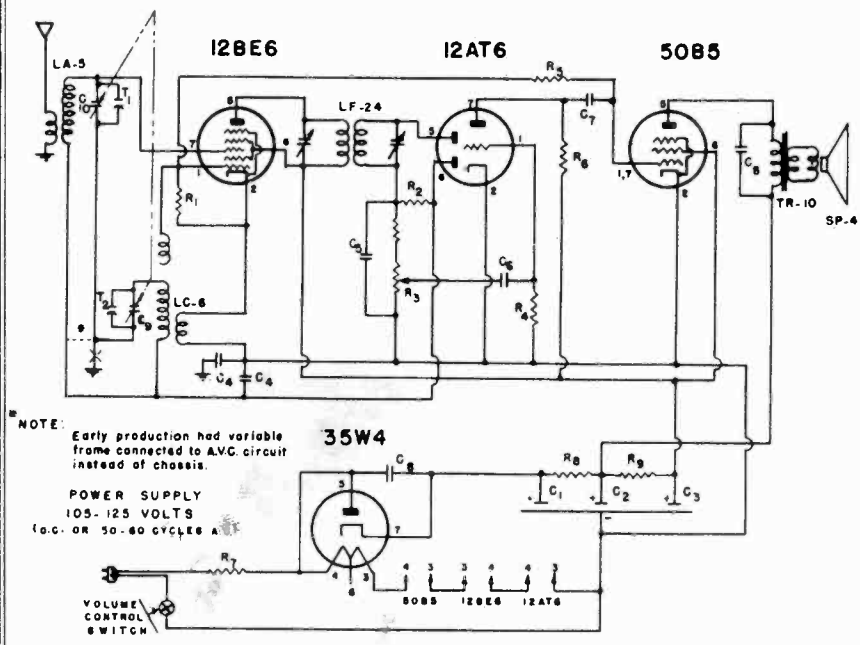
C_1	16 MFD. 100 VOLT ELECTROLYTIC	CE-14	R_2	15,000 OHM ½ WATT RESISTOR	RC-153-1
C_2	.01 MFD. 200 VOLT PAPER COND.	CP-103-3	R_3	3.3 MEG. ½ WATT RESISTOR	RC-335-1
C_3	.05 MFD. 200 VOLT PAPER COND.	CP-503-4	R_4	1 MEG. ½ WATT RESISTOR	RC-105-1
C_4	.0001 MFD. 500 VOLT MICA COND.	CM-101-2	R_5	2.2 MEG. ½ WATT RESISTOR	RC-225-1
C_5	.002 MFD. 200 VOLT PAPER COND.	CP-202-2	R_6	820 OHM ½ WATT RESISTOR 10%	RC-821-2
C_6	.005 MFD. 400 VOLT PAPER COND.	CP-502-1	R_7	10 MEG. ½ WATT RESISTOR	RC-106-1
C_7	.001 MFD. 200 VOLT PAPER COND.	CP-102-3	SP-41	SPEAKER	SP-41
LC-4	OSCILLATOR COIL	LC-4	R_8	1 MEG. POTENTIOMETER WITH SWITCH	VC-8
LF-22	I.F. TRANSFORMER	LF-22	TR-7	OUTPUT TRANSFORMER	TR-7
LP-6	ANTENNA LOOP	LP-6	C8, C9	VARIABLE CONDENSER	CV-10
R_1	100,000 OHM ½ WATT RESISTOR	RC-104-1	T1, T2	TRIMMERS ON VARIABLE	



TELE-TONE RADIO CORP.

MODEL 165 Early,
CHASSIS AD
MODELS 165Late,175,
Chassis AG

MODEL 165 Early



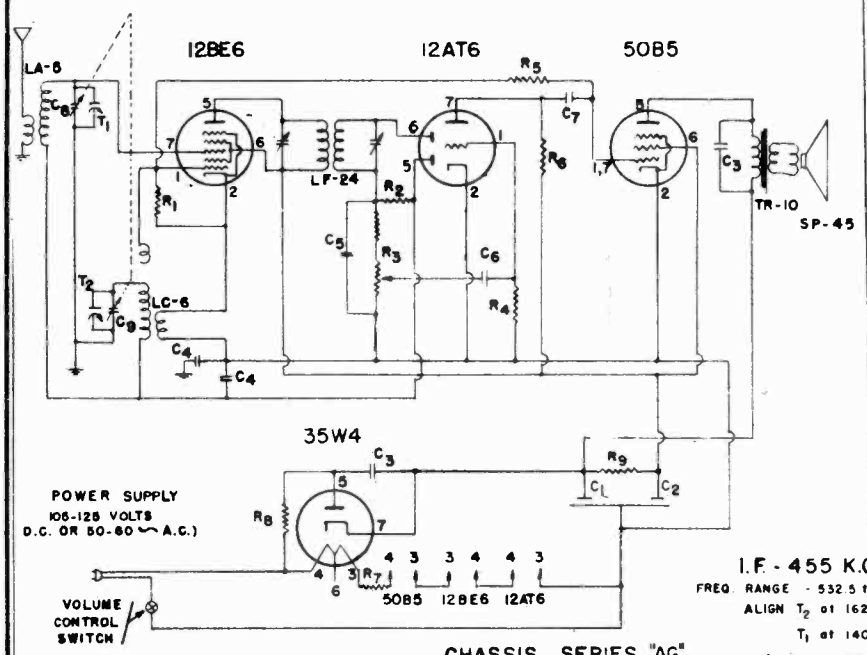
*NOTE: Early production had variable frame connected to A.V.C. circuit instead of chassis.

I.F 455 K.C.
FREQ RANGE - 1620 KC.-532.5 KC.
ALIGN T_2 - 1620 KC.
T_1 - 1400 KC.
TRACK - 600 KC.

ITEM	DESCRIPTION	PT. NO.
C_1 C_2 C_3	3X20 MFD 150 VOLT ELECTROLYTIC	CE-11
C_4	.05 MFD. 200 VOLT PAPER COND.	CP-503-4
C_5	.00015 MFD. 500 VOLT MICA COND.	CM-151-1
C_6	.002 MFD. 400 VOLT PAPER COND.	CP-202-2
C_7	.005 MFD. 200 VOLT PAPER COND.	CP-502-3
C_8	.02 MFD. 400 VOLT PAPER COND.	CP-203-1
LA-5	ANTENNA COIL	LA-5
LC-6	OSCILLATOR COIL	LC-6
LF-24	I.F. TRANSFORMER	LF-24
R_1	22,000 OHMS 1/2 W. RESISTOR	RC-223-2
R_2	4.7 MEG OHMS 1/2 W. RESISTOR	RC-475-1
R_3	2 MEG. VOL. CONTROL-100K STOP	VC-11
R_4	10 MEG. OHMS 1/2 W. RESISTOR	RC-106-1
R_5	330,000 OHMS 1/2 W. RESISTOR	RC-334-1
R_6	220,000 OHMS 1/2 W. RESISTOR	RC-224-1
R_7	33 OHMS 2 W. wire wound RES.	RW-330-8
R_8	120 OHMS 1/2 W RESISTOR	RC-121-2
R_9	1500 OHMS 1/2 W. RESISTOR	RC-152-1
SP-45	SPEAKER	SP-45
TR-10	OUTPUT TRANSFORMER	TR-10
C_9 C_{10}	VARIABLE CONDENSER	CV-14
T_1 T_2	TRIMMERS	

CHASSIS SERIES "AD"

MODELS 165 Late,175



ITEM	DESCRIPTION	PART NO.
C_1,C_2	2 X 40 MFD. 150 VOLT ELECT.	CE-15
C_3	.02 MFD. 400 V. PAPER COND.	CP-203-1
C_4	.05 MFD. 200 V. PAPER COND.	CP-503-4
C_5	.00015 MFD. 500 V. MICA COND.	CM-151-1
C_6	.002 MFD. 400 V. PAPER COND.	CP-202-2
C_7	.005 MFD. 200 V. PAPER COND.	CP-502-3
C_8,C_9	VARIABLE CONDENSER	CV-14
LC-6	OSCILLATOR COIL	LC-6
LA-5	ANTENNA COIL	LA-5
LF-24	I. F. TRANSFORMER	LF-24
R_1	18,000 OHMS 1/2 W. 10%	RC-183-2
R_2	4.7 MEGOHMS 1/2 W. RESISTOR	RC-475-1
R_3	2 MEG. VOL. CONTROL, 100K STOP	VC-11
R_4	10 MEGOHMS 1/2 W. RESISTOR	RC-106-1
R_5	330,000 OHMS 1/2 WATT	RC-334-1
R_6	220,000 OHMS 1/2 WATT	RC-224-1
R_7	39 OHMS 1 WATT RESISTOR	RC-390-4
R_8	18 OHMS 1/2 W. RESISTOR	RC-180-1
R_9	2200 OHMS 1 W. RESISTOR	RC-222-4
T_1 ,T_2	TRIMMERS	
SP-45	SPEAKER	SP-45
TR-10	OUTPUT TRANSFORMER	TR-10

I.F. - 455 K.C.
FREQ. RANGE - 532.5 to 1620 K.C.
ALIGN T_2 at 1620 K.C.
T_1 at 1400 K.C.
TRACK at 600 K.C.

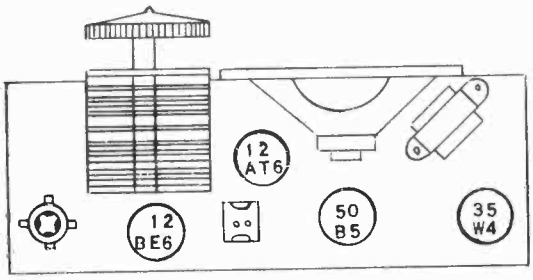
CHASSIS SERIES "AG"

MODEL 165 Early
CHASSIS AD

TELE-TONE RADIO CORP.

ELECTRICAL SPECIFICATIONS

Power Supply	105-125 Volts D.C. or 50-60 Cycles A.C. 30 Watts
Frequency Range	532.5 to 1620 kc.
Intermediate Freq.	455 kc.
Tuning	Two gang capacitor
Speaker	4 inch PM 3.5 ohm voice coil impedance
Power Output	1 watt undistorted 1.5 watt maximum
Sensitivity	800 Microvolts at 50 milliwatts Output
Selectivity	120 kc broad at 1000 times signal at 1000 kc.



Remove back to replace tubes

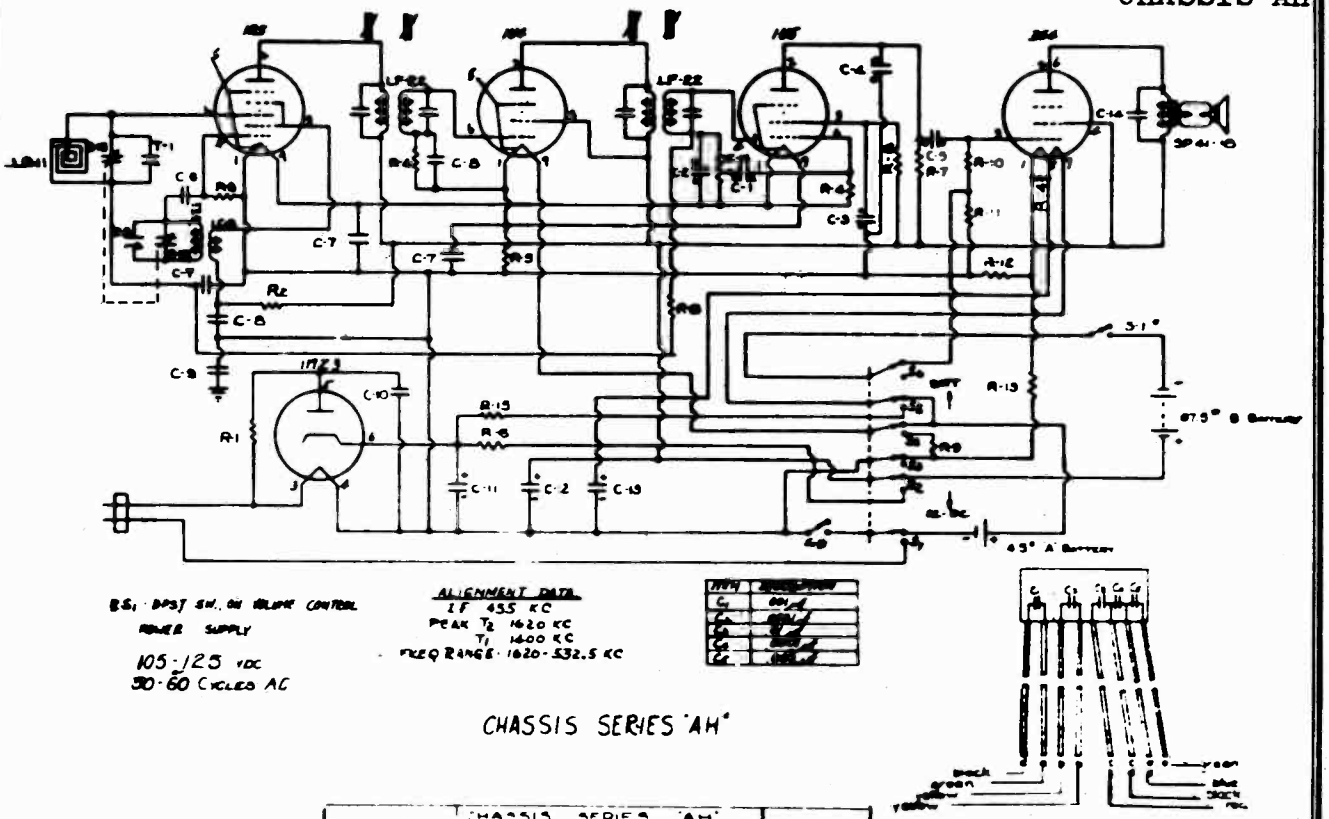
ALIGNMENT PROCEDURE

- Output meter across 3.5 ohm output load.
- Volume control at maximum for all adjustments.
- Align for maximum output. Reduce input as needed to keep output near 0.4 volts.

SIGNAL GENERATOR				*SETTING TUNER*	*ADJUST TRIMMERS TO MAXIMUM OUTPUT (in order shown)*
Frequency	*Coupling Factor*	*Connection to Receiver*	*Ground Connection*		
455 kc	.1 mfd	12BE6 Grid	B—	Rotor full open (Plates out of mesh)	Input and output trimmers on IF cans
1620 kc	.1 mfd	12BE6 Grid	B—	Rotor full open (Plates out of mesh)	Oscillator trimmer T2
1400 kc	75 mmf	Hank	B—	1400 kc	Antenna trimmer T1

TELE-TONE RADIO CORP.

MODEL 185, CHASSIS AH



B.S. - DPST SW. ON VOLUME CONTROL

POWER SUPPLY

105-125 VDC
50-60 CYCLES AC

ALIGNMENT DATA
I.F. 455 KC
PEAK T_2 1620 KC
T_1 1400 KC
FREQ RANGE - 1620 - 532.5 KC

CHASSIS SERIES "AH"

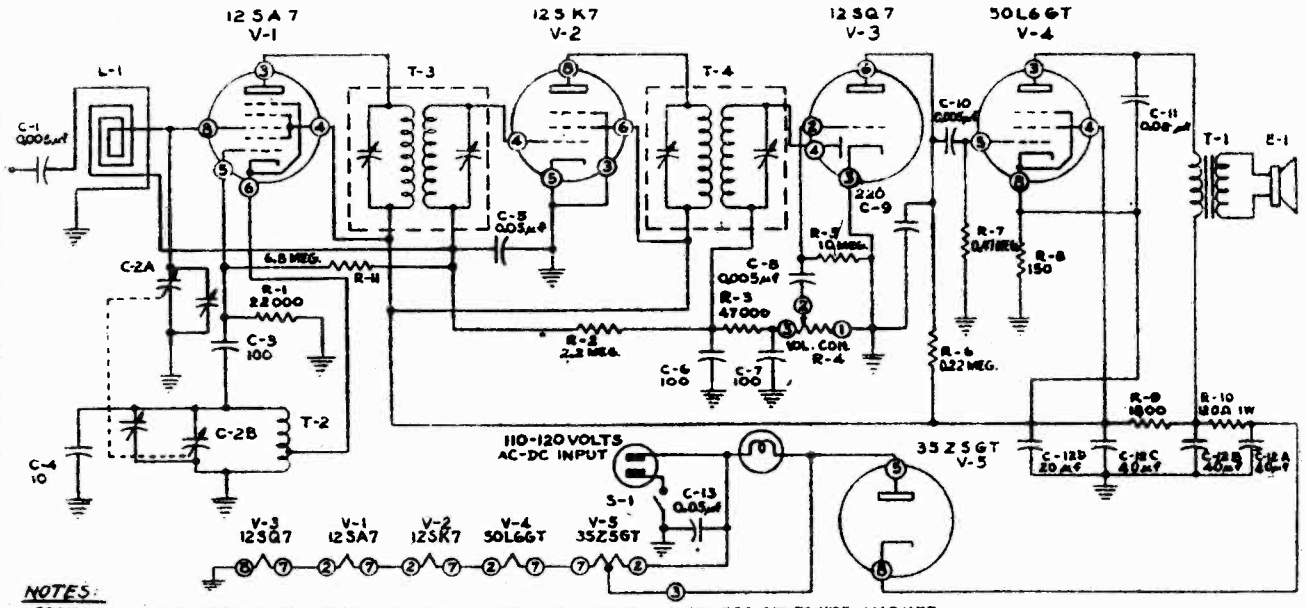
CHASSIS SERIES "AH"

ITEM	DESCRIPTION	PART NO.
C1,C2,C3,C4,C5	Ceramic Condenser Block	CC-5-1
C-6	.000047 MF Mica Condenser	CM-470-1
C-7	.05 MF 50V Paper	CP-503-2
C-8	.01 MF 150V Paper	CP-103-2
C-9	.1 MF 200V Paper	CP-104-1
C-10	.05 MF 400V Paper	CP-503-1
C-11	Elect Cond 40 MF 150V	CE-17V
C-12	40 MF 150V	
C-13	200 MF 10V	
C-14	.005 MF 400V Paper	CP-502-2
C15,C16	Variable Condenser	CV-15
T1,T2	Trimmers On Variable	
R-1	18Ω ½W ±20% Carbon Res	RC-180-1
R-2	15,000Ω ½W ±20% "	RC-153-1
R-3	100,000Ω ½W ±20% "	RC-104-1
R-4	10 Meg ½W ±20% "	RC-106-1
R-5	2200Ω ½W ±10% "	RC-222-2
R-6	6800Ω 1W ±10% "	RC-682-5
R-7	1 Meg ½W ±20% "	RC-105-1
R-8	33 Meg ½W ±20% "	RC-336-1
R-9	39Ω ½W ±10% "	RC-390-2
R-10	2.2 Meg ½W ±20% "	RC-225-1
R-11	680Ω ½W ±10% "	RC-681-2
R-12	1500Ω ½W ±10% "	RC-152-2
R-13	27Ω ½W ±5% "	RC-270-5
R-14	390Ω ½W ±10% "	RC-391-2
R-15	Candohm Res 2350Ω ±5%	RP-5
VC-16	Vol Control 1 Meg with DPST Switch	VC-16
SP-41-18	4" Spkr for Midget with OT	SP-41-18
LF-22	I.F. Transformer	LF-22
LP-11	Antenna Loop	LP-11
LC-8	Osc. Coil	LC-8
S2,3,4,5,6,7	Battery Switch 6 Pole DT	SW-H

Late series have C removed from ceramic condenser block, paper condenser of same paper value used.

MODELS E-510 to
E-519 Inclusive

TEMPLETONE RADIO MFG. CORP.



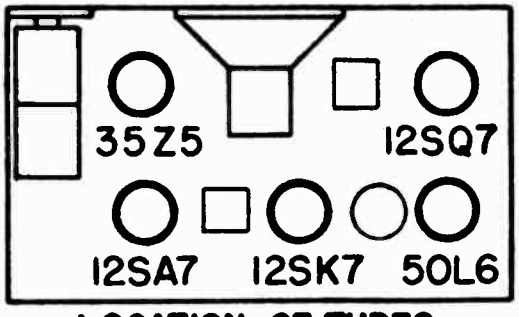
NOTES:
1. RESISTORS ARE IN OHMS, CAPACITORS ARE IN μμf, INDUCTORS ARE IN μH UNLESS OTHERWISE MARKED.
2. VOLUME CONTROL R-4 IS 0.5 MEGOHMS, WITH SWITCH S-1 MOUNTED ON REAR.
3. IN A FEW EARLY MODELS C-12D WAS A SEPARATE 25μf CAPACITOR, C-12A WAS 80μf, C-12C WAS 20μf AND R-11 WAS NOT USED.

IF PEAK 455 KC

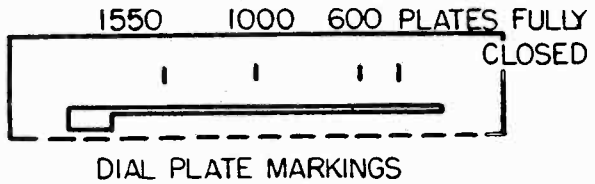
Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception. An output meter may be clipped directly across the voice coil lugs.

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

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads or two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme left end of travel, adjust the oscillator trimmer (A) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (B) (on rear section) for maximum response. With tuning capacitor plates fully meshed, the receiver should tune to 535 kc; however, no adjustment is required at this point. For checking purposes, four fine marks are engraved on the dial plate. These represent, in order, the pointer settings for 1550, 1000, 600 kc, and the pointer position with capacitor plates fully meshed.

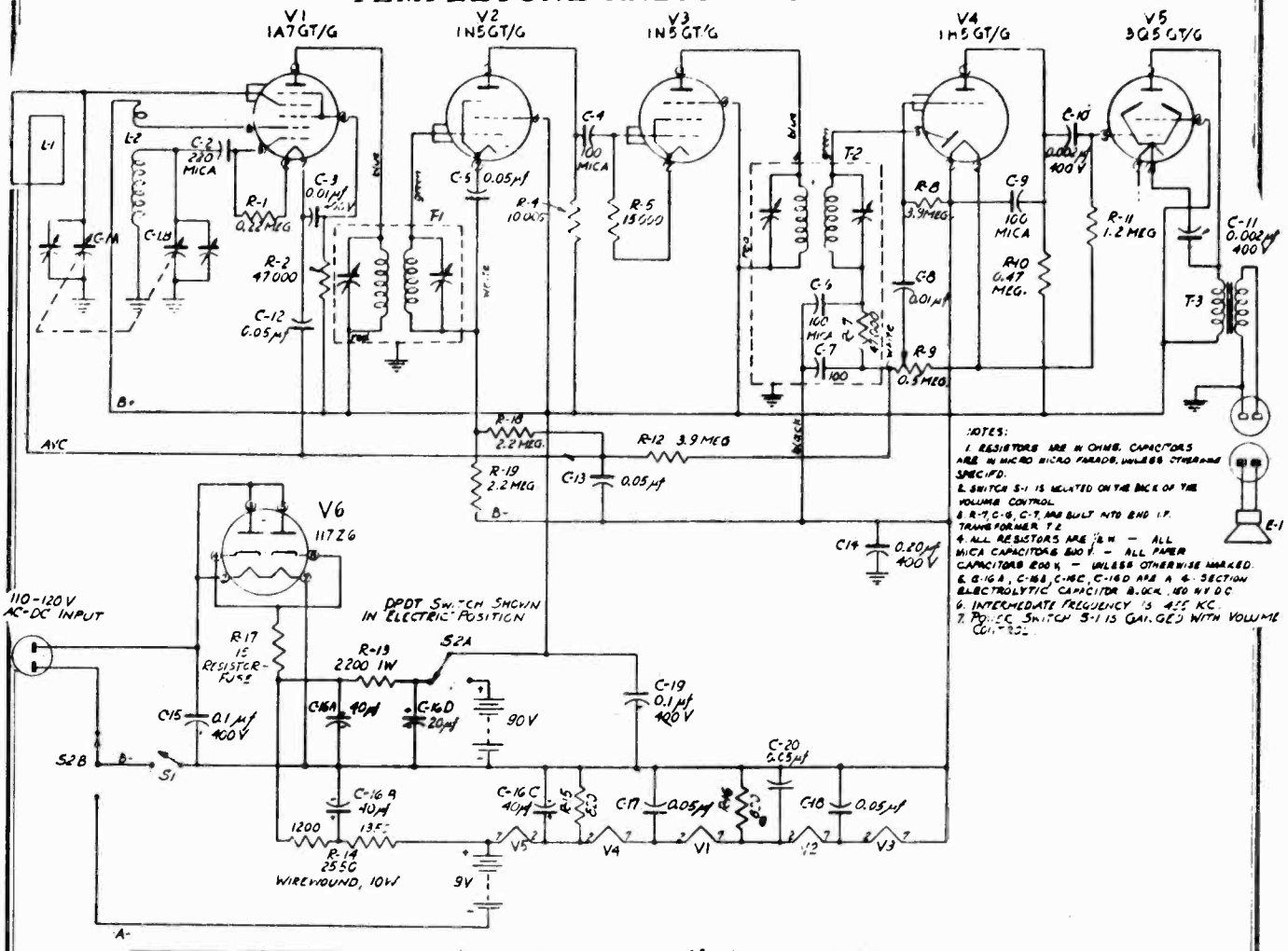


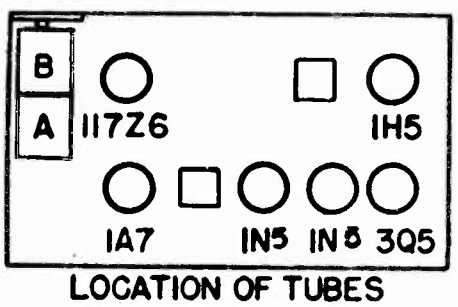
LOCATION OF TUBES



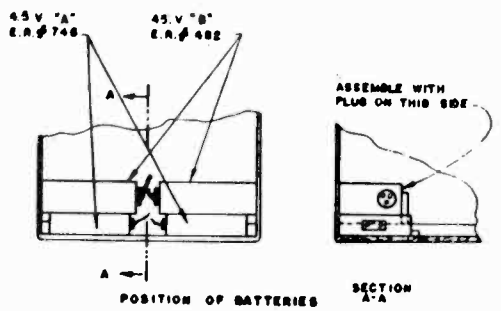
DIAL PLATE MARKINGS

TEMPLETONE RADIO MFG. CORP. MODEL F-611





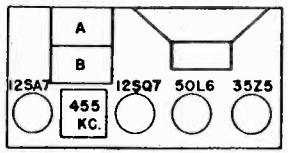
LOCATION OF TUBES



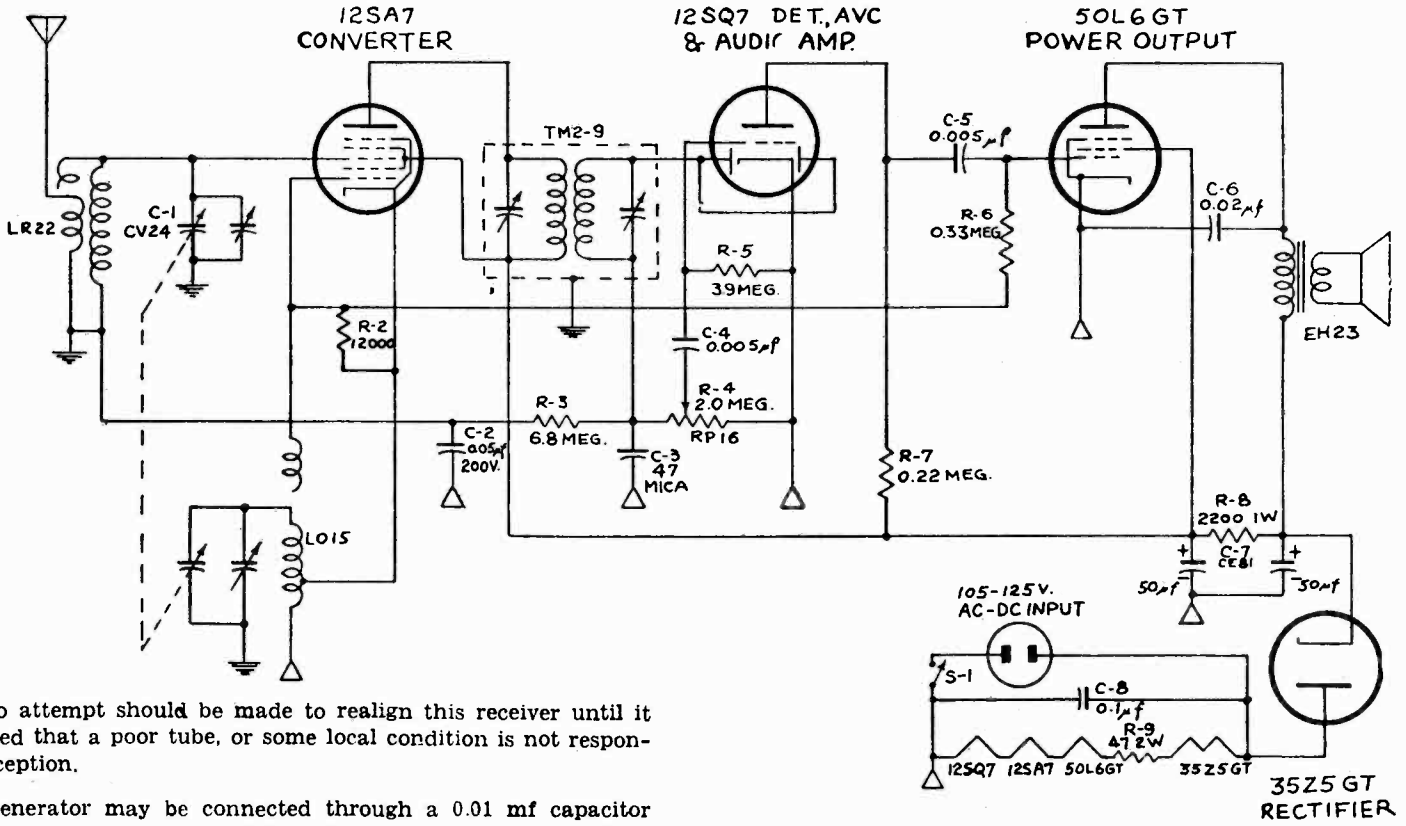
Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception.

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

To align RF trimmers, remove the 0.01 mf capacitor and connect the Signal Generator leads to two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal Generator. With the tuning capacitor plates completely out of mesh, and pointer at extreme right end of travel, adjust the oscillator trimmer (B) (on front section of tuning capacitor) to 1700 kc. Readjust both Signal Generator and tuning capacitor to 1550 kc and adjust the RF trimmer (A) (on rear section) for maximum response.



LOCATION OF TUBES



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

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

To align RF trimmer, remove the 0.01 mf capacitor and connect the signal generator hot lead to a 68 mmf mica condenser. Connect the dummy antenna thus formed to the antenna lug on the antenna coil (lug to which the antenna hank is soldered). Again, use the least possible input from the signal generator. With the tuning capacitor plates completely out of mesh, and pointed at extreme clockwise position, adjust the oscilator trimmer on front section of tuning capacitor to 1700 kc. Readjust both signal generator and tuning capacitor to 1550 kc and adjust the RF trimmer on rear section for maximum response.

NOTES:

1. RESISTORS ARE IN OHMS AND ARE ½ WATT; CAPACITORS ARE 400V AND IN μμf UNLESS OTHERWISE SPECIFIED.
2. SWITCH S-1 IS MOUNTED ON REAR OF VOLUME CONTROL.
3. SYMBOL Δ DENOTES B- AND SYMBOL ⏚ DENOTES CHASSIS.
4. I.F. FREQUENCY IS 455Kc.
5. TUNING RANGE IS 532Kc. TO 1700Kc.

This radio is a 5-tube super-heterodyne receiver using the latest type of low-drain electronic tubes.

Operation: The set operates on 110 to 120 volts, 50 or 60 cycles A. C. and 110 to 120 volts D. C. Power drain is approximately 25 watts.

When operated on direct current (D.C.), if no reception is obtained after approximately one minute of warm-up time, reverse the line plug in the power outlet.

Range: covers the broadcast band from 540 to 1620 kilocycles. Since the scale is calibrated 54 to 160, the actual frequency of the station received is obtained by adding a zero to the dial calibration.

Controls: Only two controls are required for operation. The left-hand control puts set into operation, increases the volume with clockwise rotation, and includes the power switch. The right-hand control tunes the dial to the desired station.

Antenna: For normal reception, no outside aerial is required, as more than adequate pickup is obtained by the self-contained loop antenna.

At installations remote from the stations desired to be heard, improved results may be obtained by rotating the receiver for maximum response, as the loop antenna has a marked directional effect on weak signals. Reception can also be improved, and the directional effect reduced, by attaching a length of insulated wire approximately 15 to 25 feet long, to the antenna connection provided at the back of the cabinet. This wire may be laid on the floor along one side of the room, or concealed under the rug. **Under no circumstances** should a ground be attached to the chassis—such ground is automatically provided through the power lines.

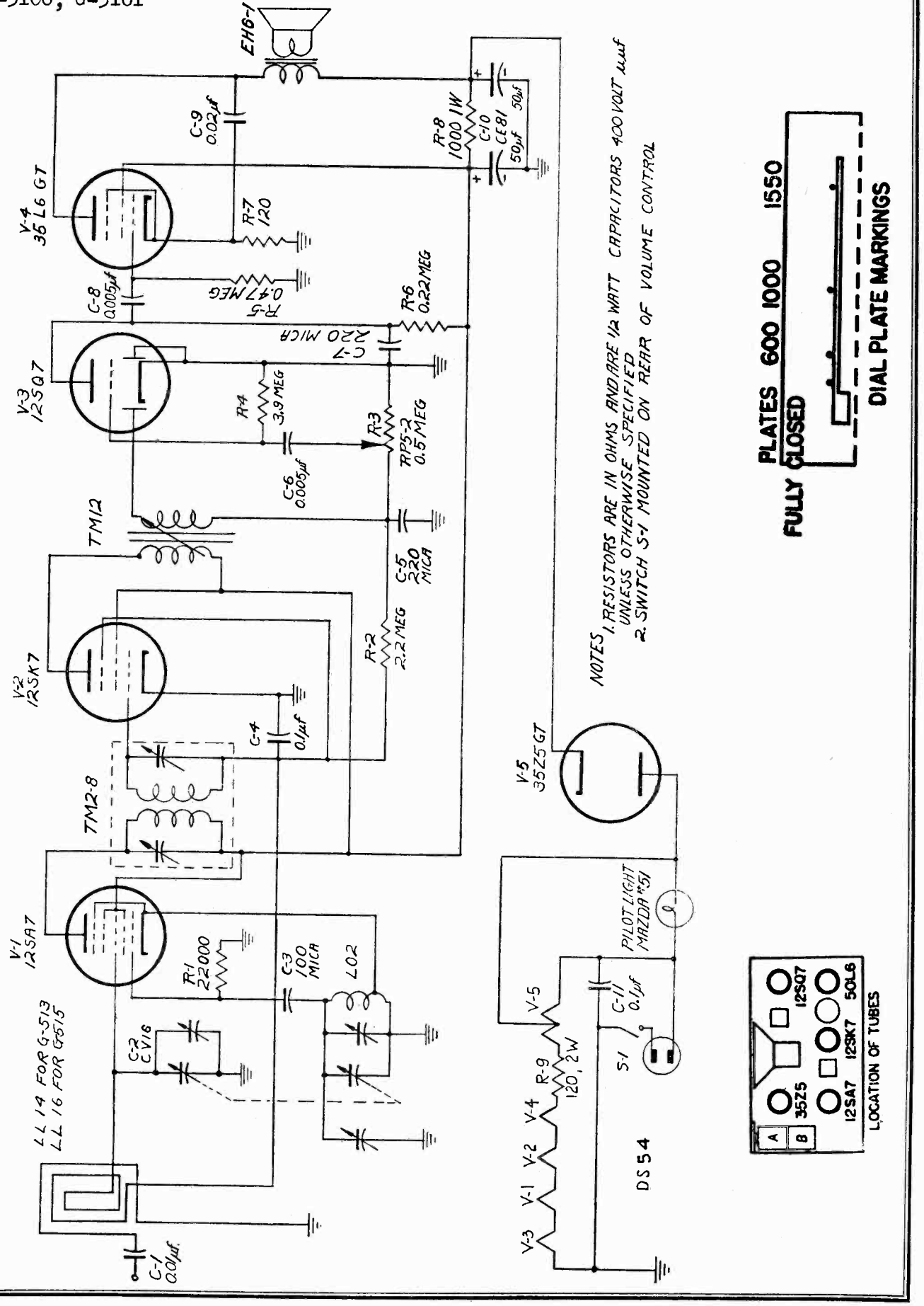
Alignment: No attempt should be made to realign this receiver until it has been determined that a poor tube, or some local condition is not responsible for faulty reception. An output meter may be clipped directly across the voice coil lugs.

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

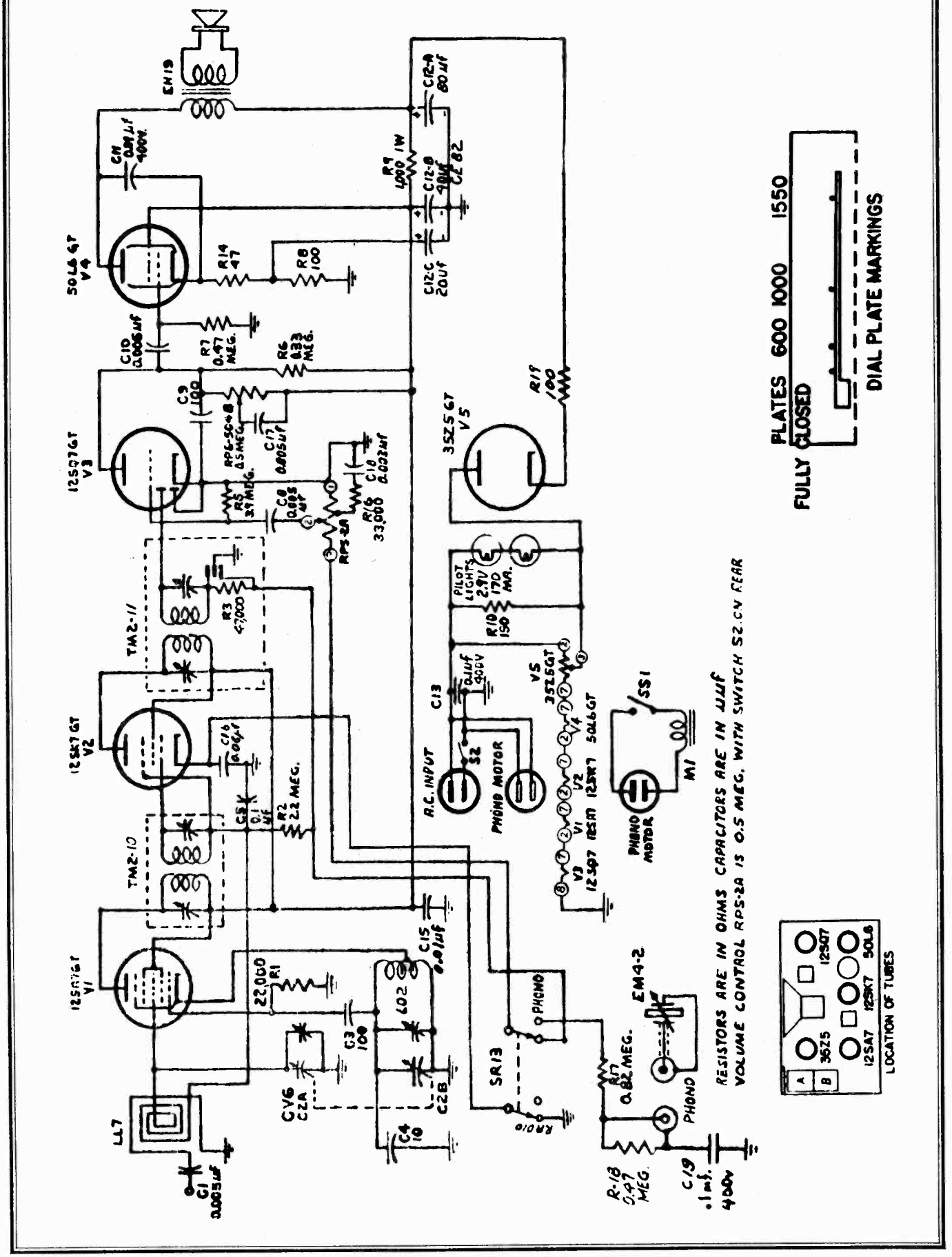
To align RF trimmers remove the 0.01 mf capacitor and connect the Signal Generator leads or two or three turns of heavy wire, forming a self-supporting loop of about 7 or 8 inches diameter, placed about a foot away from the receiver's loop antenna. Again, use the least possible input from the Signal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

MODELS G-513, G-515, G-5100, G-5101

TEMPLETONE RADIO MFG. CORP.



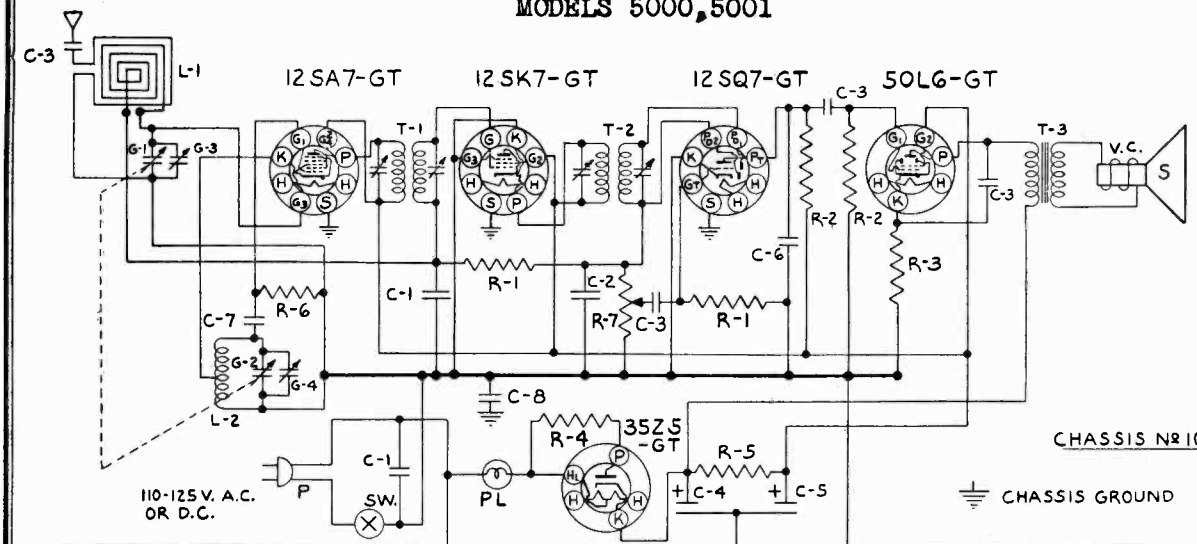
TEMPLETONE RADIO MFG. CORP. MODEL G-516



MODELS 5000,5001
Chassis 100
MODEL 5002,Ch.102

TRAVLER RADIO CORP.

MODELS 5000,5001

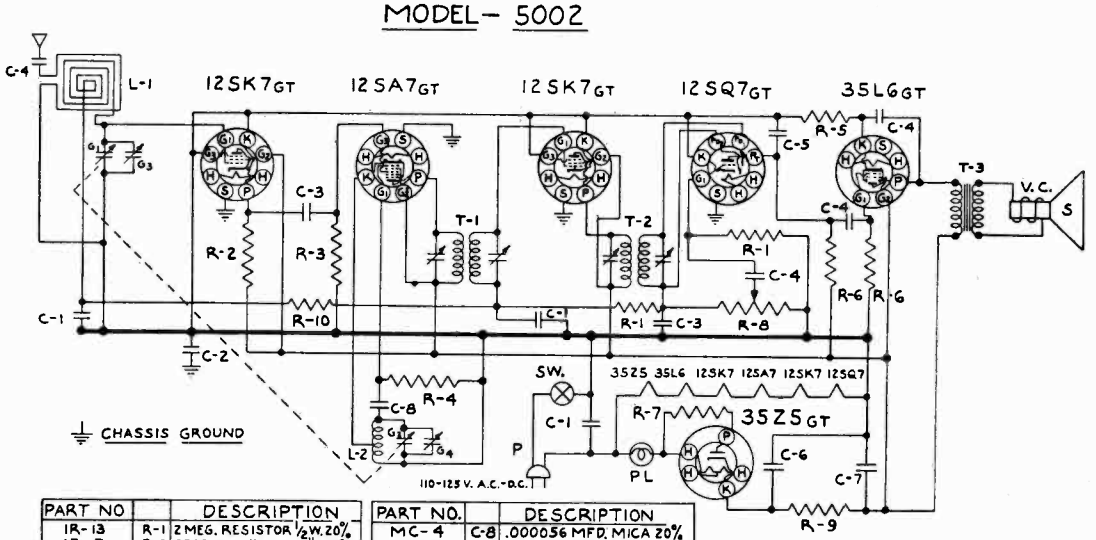


PART NO.		DESCRIPTION
IR-13	R-1	2 MEG. RESISTOR ½W 20%
IR-11	R-2	470M ~ " " "
IR-14	R-3	150 ~ " " "
IR-4	R-4	47 ~ " " "
IR-15	R-5	2200 ~ " " "
IR-16	R-6	33,000 ~ " " "
V.C.-3	R-7	1 MEG. VOLUME CONTROL
GC-2	G-1, G-2	GANG COND.
TC-7	G-3	ANT. TRIMMER COND.
TC-6	G-4	OSC. TRIMMER COND.
PC-5	C-1	.05 MFD. COND. 400 V.
MC-2	C-2	.0001 MFD. MICA 20%
PC-7	C-3	.01 MFD. COND. 400 V.
EC-3	C-4, C-5	40 MFD., 150 V. / 20 MFD. ELECTROLYTIC

SD-1

PART NO		DESCRIPTION
MC-5	C-6	.0005 MFD. COND. 20%
MC-4	C-7	.000056 MFD. MICA 20%
PC-9	C-8	.1 MFD COND. 400 V.
LL-1	L-1	LOOP ANTENNA
LO-2	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. TRANSFORMER
SPK-4	T-3	OUTPUT SPK. TRANSFORMER
	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	#47 PILOT BULB
	SW	A.C. SWITCH ON VOL. CONTROL
CO-1	P	LINE CORD
TU-3		12SA7 GT 12SK7 GT 12SQ7 GT 50L6 GT 35Z5 GT

MODEL- 5002



PART NO		DESCRIPTION
IR-13	R-1	2 MEG. RESISTOR ½W 20%
IR-7	R-2	2200 ~ " 5%
IR-10	R-3	47,000 ~ " 20%
IR-16	R-4	33,000 ~ " "
IR-5	R-5	220 ~ " "
IR-11	R-6	470M ~ " "
IR-4	R-7	47 ~ " "
VC-3	R-8	1 MEG VOLUME CONTROL
IR-15	R-9	2200 ~ RESISTOR ½W 20%
IR-12	R-10	1 MEG. " "
PC-5	C-1	.05 MFD. COND. 400 V.
PC-8	C-2	.1 MFD. COND. 400 V.
MC-2	C-3	.0001 MFD. MICA 20%
PC-7	C-4	.01 MFD. COND. 400 V.
MC-5	C-5	.0005 MFD. MICA 20%
EC-3	C-6, C-7	40 MFD., 20 MFD. 150 V. ELECTROLYTIC

PART NO.		DESCRIPTION
MC-4	C-8	.000056 MFD. MICA 20%
LL-1	L-1	LOOP ANTENNA
LO-2	L-2	OSC. COIL
LI-1	T-1	INPUT I.F. TRANSFORMER
LI-2	T-2	OUTPUT I.F. "
SPK-4	T-3	OUTPUT SPK. "
	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	#47 PILOT BULB
GC-2	G-1, G-2	GANG COND.
TC-7	G-3	ANT. TRIMMER COND.
TC-6	G-4	OSC. TRIMMER COND.
CO-1	P	LINE CORD
TU-4	—	12SK7GT 12SA7GT 12SK7GT 12SQ7GT 35L6GT 35Z5GT

CHASSIS Nº 102

SD-5

ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

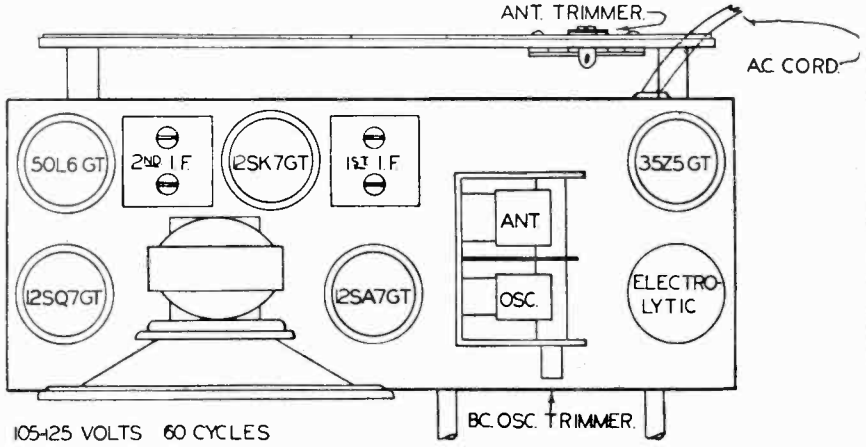
A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis between the volume and tuning controls. Adjust this trimmer until the 1720 KC signal is tuned in.

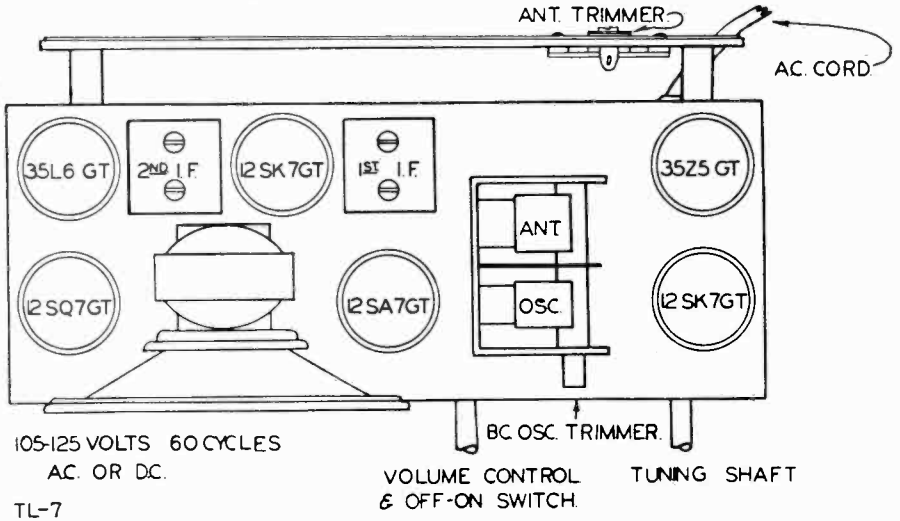
THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

MODEL 5000, 5001
TUBE AND TRIMMER LOCATION.



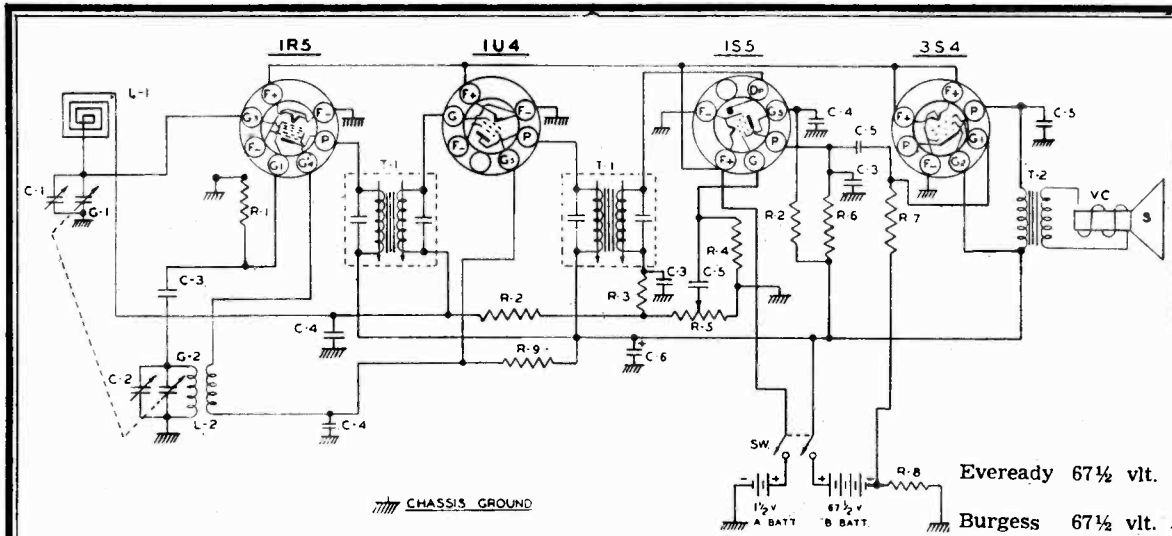
TL-3.

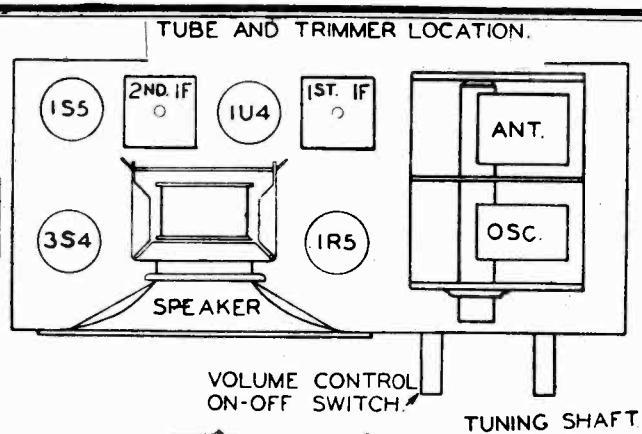
MODEL 5002
TUBE AND TRIMMER LOCATION.



TL-7

TRAVLER RADIO CORP.
MODELS 5000,5001
MODEL 5002





PART NO		DESCRIPTION	PART NO		DESCRIPTION
1R-20	R-1	220M Ω RESISTOR 1/2W 20 %	GC-4	G-1	GANG CONDENSER
1R-23	R-2	1.3MEG. RESISTOR 1/2W 20 %		G-2	
1R-31	R-3	82M Ω RESISTOR 1/2W 10 %	LL-8	L-1	LOOP ANTENNA
1R-3	R-4	10MEG RESISTOR 1/2W 20 %	LO-12	L-2	OSC. COIL
VC-8	R-5	1MEG VOLUME CONTROL	LI-5	T-1	I.F. TRANSFORMER
1R-12	R-6	1MEG. RESISTOR 1/2W 20 %		SW	DPST. SWITCH ON VOLUME CONTROL
1R-13	R-7	2.2MEG. RESISTOR 1/2W. 20 %		T-2	SPEAKER TRANSFORMER
1R-5	R-8	220 Ω RESISTOR 1/2W. 10 %	SPK-8	VC	VOICE COIL
1R-37	R-9	10M Ω RESISTOR 1/2W 20 %		S	PM SPEAKER
TC-7	C-1	ANT. TRIMMER	TU-29		1R5-1U4-1S5-3S4
	C-2	OSC. TRIMMER ON GANG			
MC-2	C-3	100MMFD MICA CONDENSER			
PC-7	C-4	.01 MFD 400 V.			
PC-6	C-5	.005 MFD 600 V.			
EC-7	C-6	20MFD 80WV.			

BATTERY SERVICING

To replace the batteries in this receiver loosen and remove the screw in the back of the cabinet. Remove the back.

To the right looking at the rear of the cabinet is the "A" or flashlight battery assembly. Remove the battery assembly from the cabinet. Loosen the screw in the cross arm assembly until the batteries may be removed. Replace with fresh batteries and retighten the screw making sure that the battery center caps fit into the small recesses in the ends of the cross arm.

To replace the "B" battery, remove it from the cabinet. Disconnect the fasteners from the battery. Replace with a fresh battery and reconnect the fasteners. When replacing the "B" battery in the cabinet, make sure that the terminal end of the battery faces the end of the cabinet.

After the batteries have been installed, replace the back, making sure that the two washers in the bottom of the back fit into the slot near the bottom edge of the cabinet. Replace and tighten the screw.

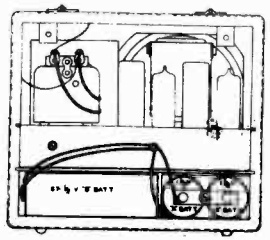
CAUTION: If the batteries in the receiver wear out from use and the receiver refuses to operate make sure that the volume control is turned all the way to the left in "OFF" position, until the batteries can be replaced. If the switch is left in the "ON" position this will cause the battery cells to burst and they will leak into the receiver which may ruin the component parts.

Eveready 67½ vlt. #467

Burgess 67½ vlt. #XX45

General 67½ vlt. #W45A

Ray-O-Vac 67½ vlt. #4367



ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment. A signal generator is required having the following frequencies: 455 KC and 1400 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD. condenser. The ground lead from the generator may be connected to any spot on the metal chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the movable iron cores in the IF cans. These IF adjustments are made in the top and in the bottom of the can under the chassis. Adjust the cores until a maximum reading is noted on the output meter.

The volume control of the receiver should be turned to maximum during the IF and all subsequent alignment and the generator output as low as possible to prevent the AVC from working and giving false readings.

SECOND STEP: With the leads from the generator still connected as in IF alignment, adjust the generator to 1400 KC. Set the dial pointer to 1400 KC on the dial scale. Adjust the oscillator trimmer until the signal is tuned in.

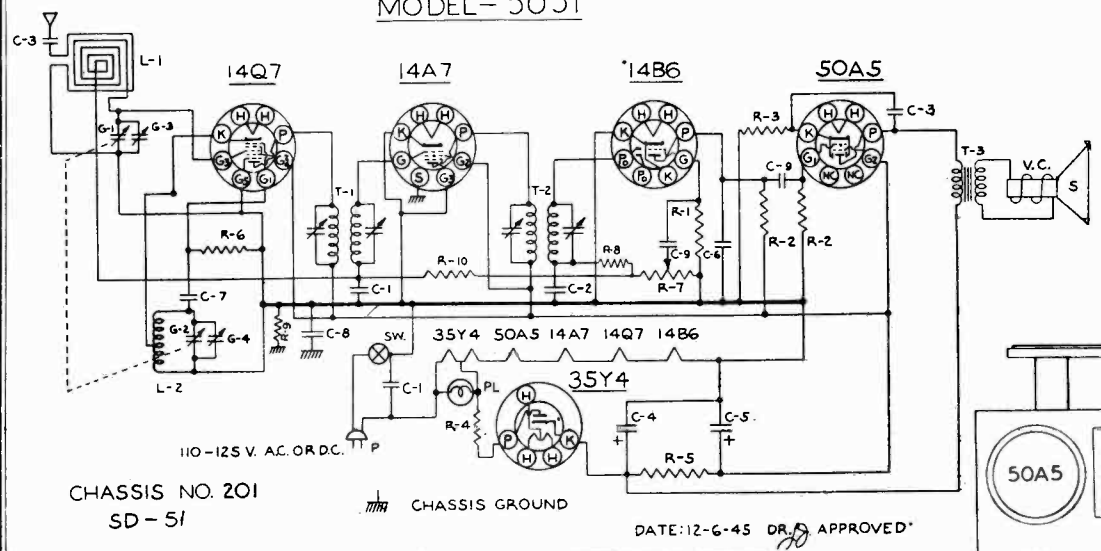
THIRD STEP: Remove the generator leads from the gang condenser.

Replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn over the outside of the cabinet. With the receiver and the generator still set at 1400 KC increase the generator output. Adjust the Antenna trimmer through the back of the chassis until a maximum signal is noted on the output meter.

No further adjustment should be necessary as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

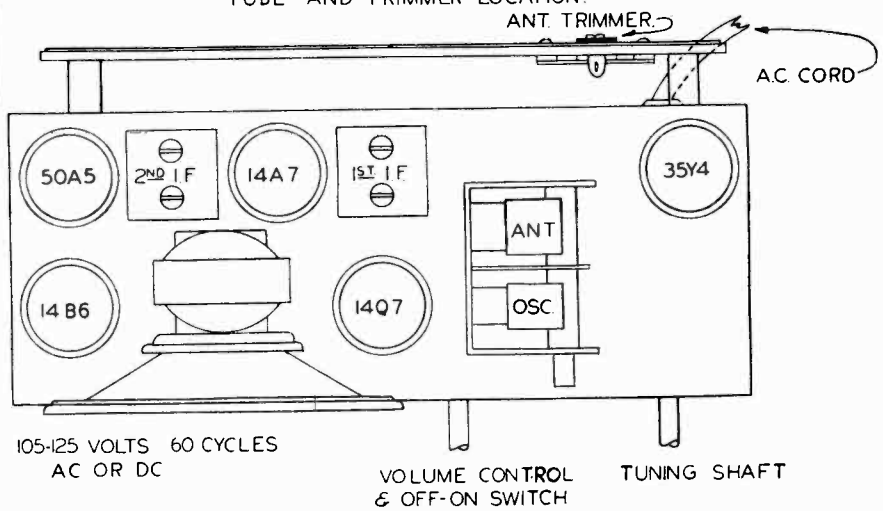
NOTE: When the antenna trimmer is adjusted at 1400 KC., the chassis as well as the "A" and "B" batteries must be in normal position in the cabinet to reflect the proper loop impedance.

MODEL-5051



PART NO.		DESCRIPTION
LO-11	L-2	OSC. COIL
L1-1	T-1	INPUT I.F. TRANSFORMER
L1-2	T-2	OUTPUT I.F. TRANSFORMER
	T-3	OUTPUT SPK. TRANSFORMER
SPK.-4	V.C.	VOICE COIL
	S	P.M. SPEAKER
PB-1	PL	#47 PILOT BULB
	SW.	A.C. SW. ON VOL. CONTROL
CO-1	P	LINE CORD
TU-6		14Q7 14A7 14B6 50A5 35Y4
IR-23	R-10	3.3 MEG. 1/2 W. 20%
PC-6	C-9	.005 MFD. 600 V

TUBE AND TRIMMER LOCATION.



PART NO.		DESCRIPTION	PART NO.		DESCRIPTION
IR-13	R-1	2.2 MEG RESISTOR 1-2 W 20%		G-4	OSC. TRIMMER COND.
IR-11	R-2	470 Ω RESISTOR 1-2 W 20%	PC-5	C-1	.05 MFD. COND. 400 V.
IR-14	R-3	150 Ω RESISTOR 1-2 W 20%	MC-2	C-2	.0001 MFD. MICA COND. 20%
IR-4	R-4	47 Ω RESISTOR 1-2 W 20%	PC-7	C-3	.01 MFD. COND. 400 V.
IR-15	R-5	2200 Ω RESISTOR 1-2 W 20%	EC-12	C-4	40 MFD. 150 V. ELECTROLYTIC CONDENSER
IR-16	R-6	33 MΩ RESISTOR 1-2 W 20%		C-5	20 MFD.
V.C.-3	R-7	1 MEG. VOLUME CONTROL	MC-5	C-6	.0005 MFD. COND. 20%
	G-1		MC-4	C-7	.000056 MFD. MICA 20%
GC-4	G-2	GANG CONDENSER	PC-9	C-8	.1 MFD. COND. 400 V.
	G-3		LL-6	L-1	LOOP ANTENNA
TC-7 IR-10	R-8	ANT. TRIMMER COND. 47M Ω 1/2W 20%	IR-20	R-9	220M Ω 1/2W 20%

ALIGNMENT

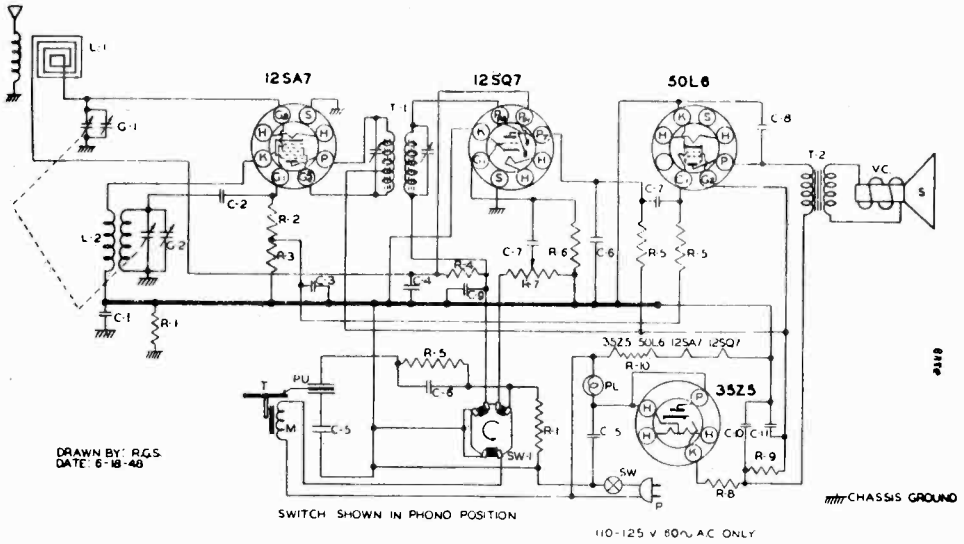
Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the metal frame of the gang condenser. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis between the volume and tuning controls. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the antenna lead wire that projects from the back of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the back of the loop antenna. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.



ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1720 KC. An output meter should be connected across the speaker.

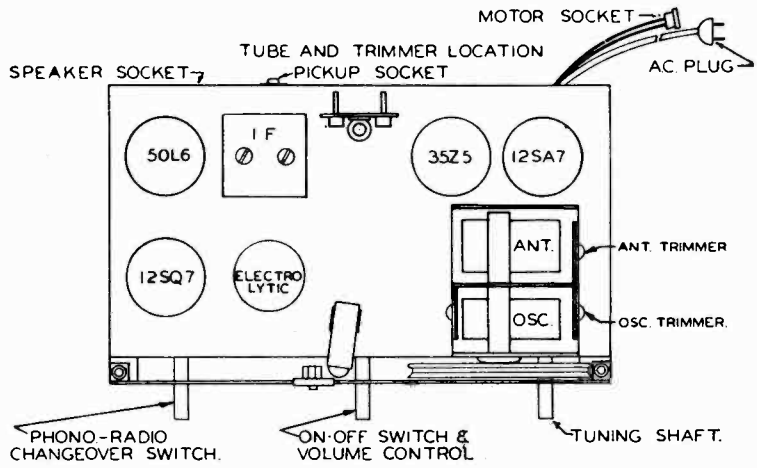
The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD condenser. The ground lead from the generator must be connected to the floating ground buss under the chassis. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

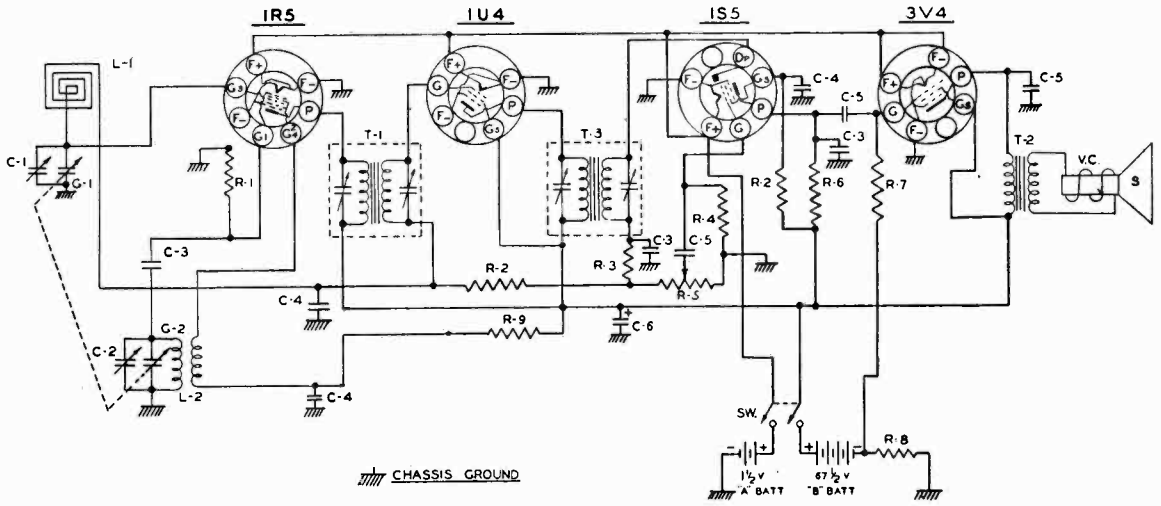
SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis. Adjust this trimmer until the 1720 KC signal is tuned in.

THIRD STEP: Remove the hot lead of the generator from the ANT section of the gang condenser. Connect this lead to the primary of the loop antenna through a 200 MMFD condenser. Adjust the Signal Generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The ANT trimmer is located on the top of the ANT. section of the gang condenser. Adjust this trimmer until a maximum reading is noted on the output meter. No further adjustment should be necessary, unless the set has been damaged, as the coils and condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

PART NO.		DESCRIPTION
IR-20	R-1	220M RESISTOR 1/2W 20%
IR-9	R-2	22M RESISTOR 1/2 W 20%
IR-10	R-3	47M RESISTOR 1/2 W 20%
IR-23	R-4	3.3MEG RESISTOR 1/2 W 20%
IR-11	R-5	470M RESISTOR 1/2 W 20%
IR-3	R-6	10MEG RESISTOR 1/2 W 20%
VC-4	R-7	1 MEG. VOLUME CONTROL
IR-17	R-8	33 RESISTOR 1/2 W 20%
IR-25	R-9	2200 RESISTOR 1 W 10%
IR-41	R-10	47 RESISTOR 1 W 10%
PC-8	C-1	.1 MFD. CONDENSER 400 V.
MC-4	C-2	50MMFD. MICA
PC-4	C-3	.25MFD. CONDENSER 200 V.
PC-2	C-4	.05MFD CONDENSER 200 V.
PC-5	C-5	.05MFD. CONDENSER 400 V
MC-5	C-6	500MMFD. MICA
PC-10	C-7	.005 MFD CONDENSER 400 V.
PC-7	C-8	.01MFD. CONDENSER 400 V.
MC-2	C-9	100MMFD. MICA
EC-42	C-10	40MFD.
	C-11	20MFD. ELECTROLYTIC
	SW	SWITCH ON VOLUME CONTROL
SW-1	SW-1	RADIO-PHONO SWITCH
LI-8	T-1	I.F. TRANSFORMER
	T-2	OUTPUT TRANSFORMER
SPK-10	VC	VOICE COIL
	S	4" PM SPEAKER
LL-10	L-1	LOOP ANT
LO-14	L-2	OSC COIL
M-2	M-2	110 V. 60 CYCLES MOTOR
PU-5	PU	TONE ARM WITH L-75 CARTRIDGE
PB-1	PL	#47 PILOT BULB
CO-1A	P	LINE CORD
TT-2	T	8" TURNTABLE
GC-6	G-1	GANG CONDENSER
	G-2	



MODEL 5049 TRAV-LER RADIO CORP.



ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment. A signal generator is required having the following frequencies: 455 KC and 1400 KC. An output meter should be connected across the speaker.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser, through a .1 MFD. condenser. The ground lead from the generator may be connected to any spot on the metal chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the movable iron cores in the IF cans. These IF adjustments are made in the top and in the bottom of the can under the chassis. Adjust the cores until a maximum reading is noted on the output meter.

The volume control of the receiver should be turned to maximum during the IF and all subsequent alignment and the generator output as low as possible to prevent the AVC from working and giving false readings.

SECOND STEP: With the leads from the generator still connected as in IF alignment, adjust the generator to 1400 KC. Set the dial pointer to 1400 KC on the dial scale. Adjust the oscillator trimmer until the signal is tuned in.

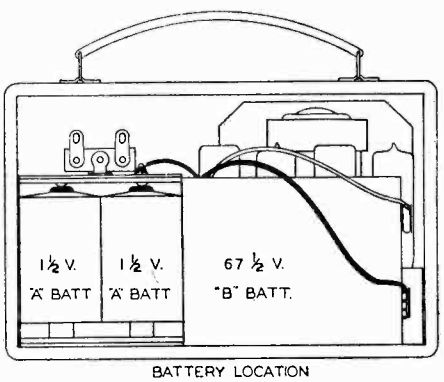
THIRD STEP: Remove the generator leads from the gang condenser.

Replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn over the outside of the cabinet. With the receiver and the generator still set at 1400 KC increase the generator output. Adjust the Antenna trimmer through the back of the chassis until a maximum signal is noted on the output meter.

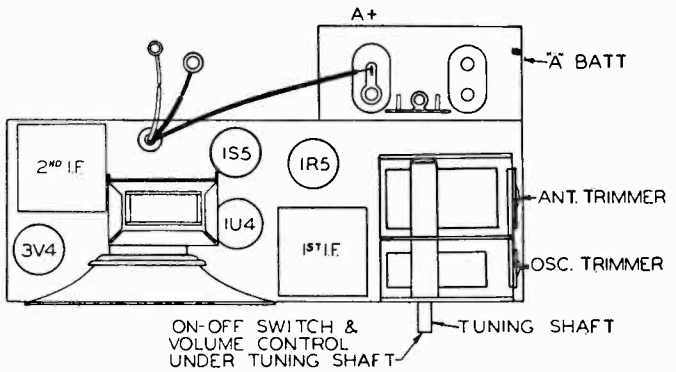
No further adjustment should be necessary as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

NOTE: When the antenna trimmer is adjusted at 1400 KC., the chassis as well as the "A" and "B" batteries must be in normal position in the cabinet to reflect the proper loop impedance.

PART NO.		DESCRIPTION
1R-20	R-1	220M Ω RESISTOR 1/2W 20 %
1R-23	R-2	3.3MEG. RESISTOR 1/2W. 20 %
1R-31	R-3	82M Ω RESISTOR 1/2 W. 10 %
1R-3	R-4	10MEG. RESISTOR 1/2 W 20 %
VC-8	R-5	1MEG. VOLUME CONTROL
1R-12	R-6	1MEG. RESISTOR 1/2W 20 %
1R-13	R-7	2.2MEG. RESISTOR 1/2W. 20 %
1R-39	R-8	620 Ω RESISTOR 1/2W 5 %
1R-37	R-9	10M Ω RESISTOR 1/2W 20 %
TC-7	C-1	ANT. TRIMMER
	C-2	OSC. TRIMMER ON GANG
MC-2	C-3	100 MMFD. MICA CONDENSER
PC-7	C-4	.01 MFD. 400 V. CONDENSER
PC-6	C-5	.005 MFD. 600 V. CONDENSER
EC-7	C-6	20 MFD. 80 WV ELECTROLYTIC
GC-4	G-1, G-2	GANG CONDENSER
LL-18	L-1	LOOP ANTENNA
LO-16	L-2	OSC. COIL
LI-3	T-1	I.F. TRANSFORMER INPUT
	SW	D.P.S.T. SWITCH ON VOLUME CONTROL
SPK-8	T-2	SPEAKER TRANSFORMER
	VC	VOICE COIL
	S	P.M. SPEAKER
LI-4	T-3	I.F. TRANSFORMER OUTPUT
TU-30		1R5 - 1U4 - 1S5 - 3V4

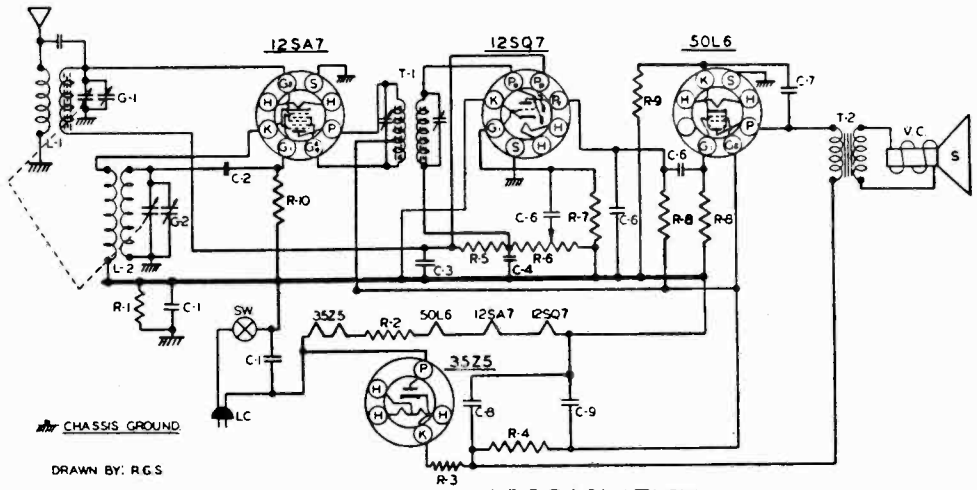


BATTERY LOCATION



TUBE AND TRIMMER LOCATION.

TRAV-LER RADIO CORP. MODEL 5054



ALIGNMENT AND SERVICE DATA

Remove chassis from cabinet for alignment.

A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

PART NO.		DESCRIPTION
1R-20	R-1	220M Ω RESISTOR 1/2W. 20
1R-41	R-2	47 Ω RESISTOR 1 W. 10
1R-17	R-3	33 Ω RESISTOR 1/2W 20
1R-25	R-4	2200 Ω RESISTOR 1 W 10
1R-23	R-5	3.3MEG.RESISTOR 1/2W. 20
VC-9	R-6	1MEG. VOLUME CONTROL
1R-3	R-7	10 MEG. RESISTOR 1/2W. 20
1R-11	R-8	470M Ω RESISTOR 1/2W. 20
1R-14	R-9	150 Ω RESISTOR 1/2W. 20
1R-9	R-10	22M Ω RESISTOR 1/2W. 20
PC-5	C-1	.05 MFD. CONDENSER 400 V.
MC-4	C-2	50MMFD. MICA.
PC-2	C-3	.05 MFD. CONDENSER 200V
MC-2	C-4	100MMFD. MICA.
MC-5	C-5	500 MMFD. MICA.
PC-6	C-6	.005 MFD. CONDENSER 600 V
PC-7	C-7	.01 MFD. CONDENSER 400 V.
EC-15	C-8	30MFD. ELECTROLYTIC COND.
	C-9	20MFD.
LA-3	L-1	ANT. COIL
LO-14	L-2	OSC. COIL
LI-8	T-1	I.F. TRANSFORMER
	T-2	OUTPUT TRANSFORMER
SPK-10	S	4" P.M. SPEAKER.
	VC.	VOICE COIL
GC-7X	G-1 G-2	TUNING CONDENSER
CO-1	LC	LINE CORD
TU-32		35Z5-50L6-12SA7-12SQ7

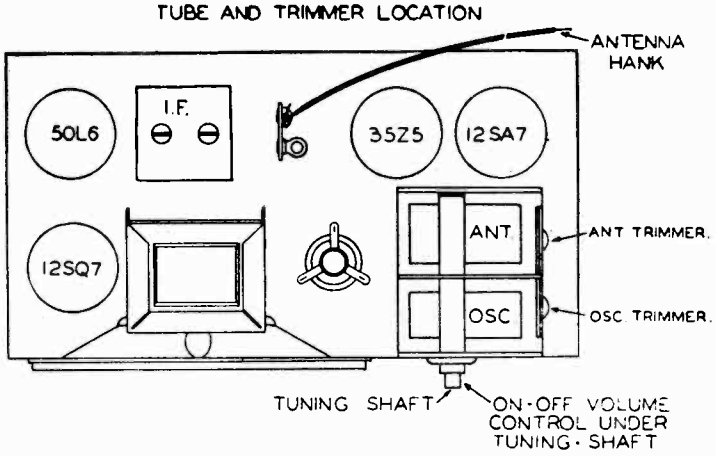
The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the trimmers of the I. F. transformer until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

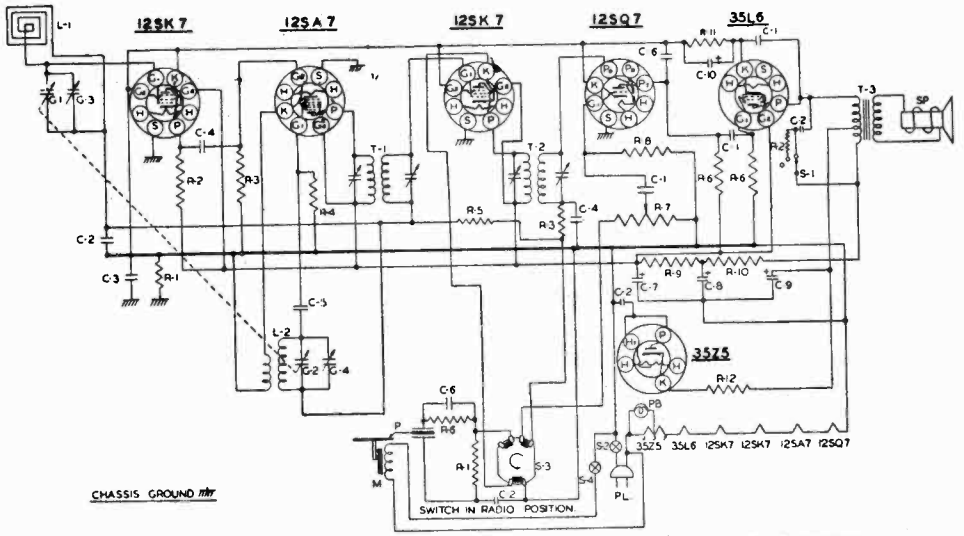
THIRD STEP: Remove the generator hot lead and connect it to the antenna bank terminal strip through a 200 MMFD. condenser. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer until a maximum signal is noted on the output meter. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.

TUBE AND TRIMMER LOCATION



MODEL 6040

TRAV-LER RADIO CORP.



PART NO.		DESCRIPTION
PC-7	C-1	.01 MFD. CONDENSER 400 V.
PC-5	C-2	.05 MFD. CONDENSER 400 V.
PC-8	C-3	.1 MFD. CONDENSER 400 V.
MC-2	C-4	100 MMFD. MICA CONDENSER.
MC-4	C-5	50 MMFD. MICA CONDENSER
MC-5	C-6	500 MMFD. MICA CONDENSER
EC-14	C-7	20 MFD.
	C-8	40 MFD. 150 WV. ELECTROLYTIC
	C-9	40 MFD.
EC-2	C-10	10 MFD. 25 WV. ELECTROLYTIC
IR-20	R-1	220M ~ RESISTOR 1/2W. 20%
IR-15	R-2	2200 ~ RESISTOR 1/2W 20%
IR-10	R-3	47M ~ RESISTOR 1/2 W. 20 %
IR-9	R-4	22M ~ RESISTOR 1/2W 20 %
IR-23	R-5	3.3 MEG. RESISTOR 1/2W 20 %
IR-11	R-6	470M ~ RESISTOR 1/2W. 20 %
VC-4	R-7	1 MEG VOLUME CONTROL
IR-13	R-8	2.2 MEG. RESISTOR 1/2W 20%
IR-1	R-9	470 ~ RESISTOR 1/2W 20 %
IR-42	R-10	1000 ~ RESISTOR 1 W 10 %
IR-14	R-11	150 ~ RESISTOR 1/2 W 20 %
IR-17	R-12	33 ~ RESISTOR 1/2 W 20 %
GC-5	G-1	GANG CONDENSER
	G-2	
	G-3	ANT. TRIMMER
	G-4	OSC. TRIMMER
LI-6	T-1	INPUT I.F. TRANSFORMER
LI-7	T-2	OUTPUT I.F. TRANSFORMER
	T-3	OUTPUT TRANSFORMER
LL-17	L-1	LOOP ANT.
LO-15	L-2	OSC. COIL
SPK-12	SP	5" P.M. SPEAKER
SW-2	S-1	TONE SWITCH
	S-2	SWITCH ON VOLUME CONTROL
SW-1	S-3	PHONO. - RADIO SWITCH
	S-4	SWITCH ON RECORD CHANGER
AC-M-7	M	RECORD CHANGER MOTOR
AC-PU-7	P	CRYSTAL PICKUP ARM, CARTRIDGE &
	PB	#47 PILOT BULB
CO-2	PL	LINE CORD

ALIGNMENT DATA

Remove the chassis from the cabinet. A Signal Generator with the following frequencies is required: 455 KC, 1400 KC and 1720 KC.

The receiver volume control should be turned to maximum during the I.F. and all subsequent alignments to keep the A.V.C. from working and giving false readings. Turn the tone control to complete left hand position. Keep the generator output as low as possible to prevent overloading.

Connect an output meter across the voice coil of the speaker.
Connect a 20,000 ohm resistor across the loop connector terminals to reflect proper loop impedance.

FIRST STEP: Connect the hot lead from the generator to the "ANT." section of the gang condenser through a .1 MFD. condenser. The ground lead must be connected to the floating ground buss under the chassis. Turn the gang condenser to complete minimum capacity. Adjust the generator to 455 KC and adjust the trimmers of the 1st and 2nd I.F. transformers until a maximum reading is noted on the output meter.

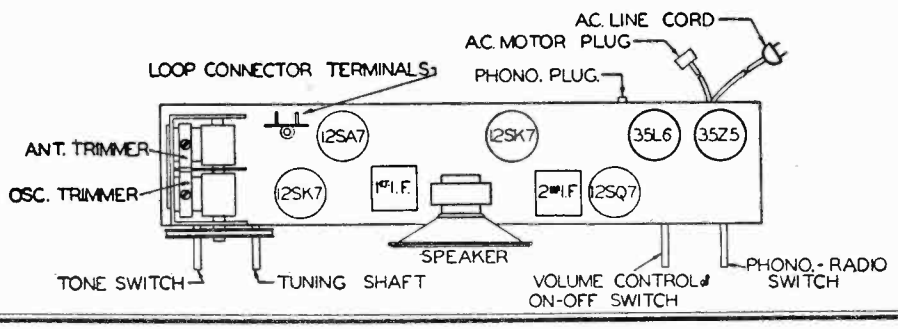
SECOND STEP: With the leads from the generator connected in the same manner as in I.F. alignment, adjust the signal generator to 1720 KC. The "O.S.C." trimmer is located on the front section of the gang condenser. Adjust this trimmer until the signal is tuned in. The gang condenser should be at complete minimum capacity for this setting.

THIRD STEP: Remove the generator leads from the chassis. Remove the 20,000 ohm resistor from the loop connector terminals. Reinstall the chassis in the cabinet, connect the loop leads, motor plug and phono pickup leads.

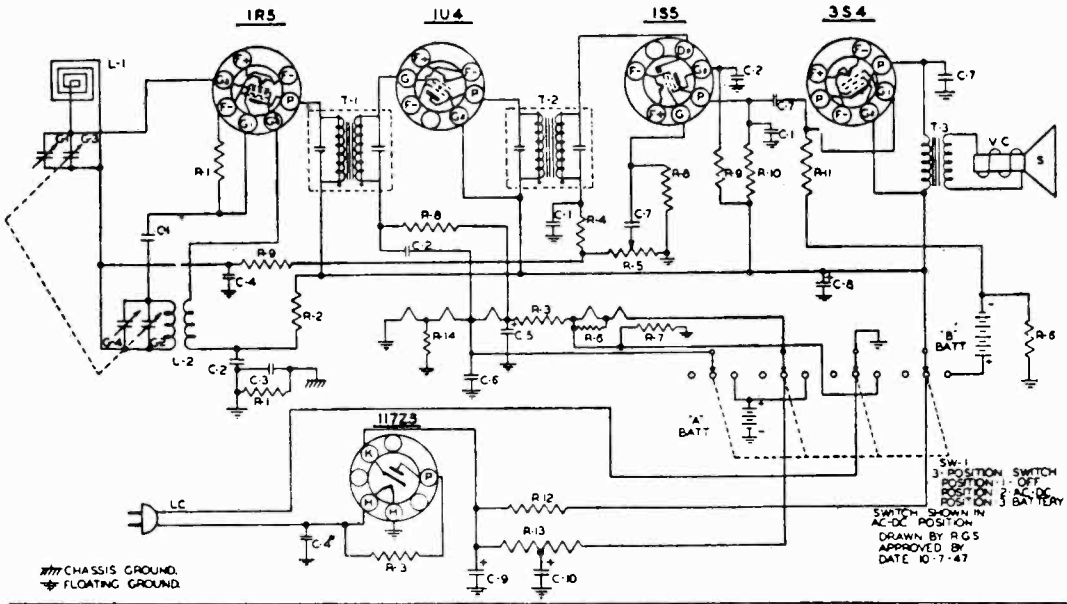
Connect the generator leads to a transmitting loop, made of a few turns of wire, and loosely couple to the receiver loop antenna which is located on the back end of the cabinet. Adjust the generator to 1400 KC. Rotate the tuning control until this signal is tuned in. The "ANT." trimmer is located on the rear section of the gang condenser. Adjust this trimmer until a maximum signal is noted on the output meter.

No further adjustment should be necessary, unless the receiver has been damaged, as the coils and tuning condenser have been specially handled at the factory to insure proper alignment at the lower frequencies.

TUBE AND TRIMMER LOCATION



MODEL 5028 TRAV-LER RADIO CORP.



PART NO		DESCRIPTION	PART NO		DESCRIPTION	PART NO		DESCRIPTION
R-20	R-1	220M RESISTOR 1/2W 20 %	PC-3	C-6	1 MFD CONDENSER 200 W V	L1-5	T-1	INPUT I.F. TRANSFORMER
R-17	R-2	10M RESISTOR 1/2W 20 %	PC-6	C-7	.005 MFD CONDENSER 600 W V	L1-5	T-2	OUTPUT I.F. TRANSFORMER
R-31	R-3	33M RESISTOR 1/2W 10 %	EC-14	C-8	40 MFD		T-3	SPEAKER OUTPUT TRANSFORMER
VC-11	R-4	82M RESISTOR 1/2W 10 %		C-9	40 MFD 150 W V ELECTROLYTIC	SPK-6	VC	VOICE COIL
R-33	R-5	1 MEG. VOLUME CONTROL		C-10	20 MFD		S	3 & P.M. SPEAKER
R-39	R-6	270M RESISTOR 1/2W 10 %				TU-31	—	11Z3-1R5-1U4-1S5-3S4
R-3	R-7	620M RESISTOR 1/2W 5 %		C-1	ANT TRIMMER			
R-4	R-8	10 MEG RESISTOR 1/2W 20 %	GC-6	C-2	GANG CONDENSER		'A' BATT	2"D" SIZE 1½ VOLT FLASHLITE CELLS
R-23	R-9	3.3 MEG RESISTOR 1/2W 20 %		C-3			'B' BATT	1-67½ VOLT BATTERY
R-12	R-10	1 MEG RESISTOR 1/2W 20 %		C-4	OSC TRIMMER			
R-11	R-11	2.2 MEG RESISTOR 1/2W 20 %						
R-40	R-12	3600M RESISTOR 1W 10 %						
R-7	R-13	1050-1050 CANDOHM RESISTOR 5W 5%						
R-1	R-14	470M RESISTOR 1/2 20 %	LL-14	L-1	LOOP ANTENNA			
			LO-8	L-2	OSC COIL			
	C-1	400 MMFD MICA CONDENSER						
	C-2	.05 MFD CONDENSER 400 W V	CO-1	LC	LINE CORD			
	C-3	1 MFD CONDENSER 400 W V						
	C-4	.05 MFD CONDENSER 400 W V	SW-8	SW-1	4 POLE-3 POSITION SWITCH			
	C-5	20 MFD 10 W V ELECTROLYTIC						

Remove chassis from cabinet for alignment.

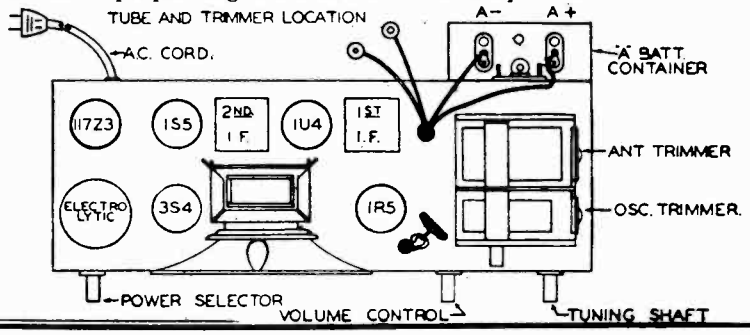
A Signal Generator is required having the following frequencies: 455 KC, 1400 KC, 1650 KC. An output meter should be connected across the speaker.

The volume control of the receiver should be turned to maximum during the I. F. and all subsequent alignment and the generator output as low as possible to prevent the A. V. C. from working and giving false readings.

FIRST STEP: Connect the hot lead from the generator to the ANT. section of the gang condenser through a .1 MFD. condenser. The ground lead from the generator must be connected to "B" minus under the chassis. Turn the gang condenser to complete minimum capacity. Set the generator to 455 KC. Adjust the movable iron cores in the IF cans. These IF adjustments are made in the top and in the bottom of the can under the chassis. Adjust the cores until a maximum reading is noted on the output meter.

SECOND STEP: With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1650 KC. Adjust the OSC. trimmer until the 1650 KC signal is tuned in. The gang condenser must be at complete minimum capacity for this adjustment.

THIRD STEP: Remove the generator leads from the gang condenser and replace the chassis in the cabinet. Loosely couple the generator to the receiver loop by making a complete turn of wire over the outside of the cabinet. With the receiver and generator set at 1400 KC, increase the generator output. Adjust the ANT. trimmer through the hole which is provided in the end of the cabinet until a maximum signal is noted on the output meter. The ANT. trimmer hole in the side of the cabinet is covered by a small plug button. Replace this button after adjustment has been made. No further adjustment should be made as the coils and gang condenser in this receiver have been specially handled at the factory to insure proper alignment at the lower frequencies.



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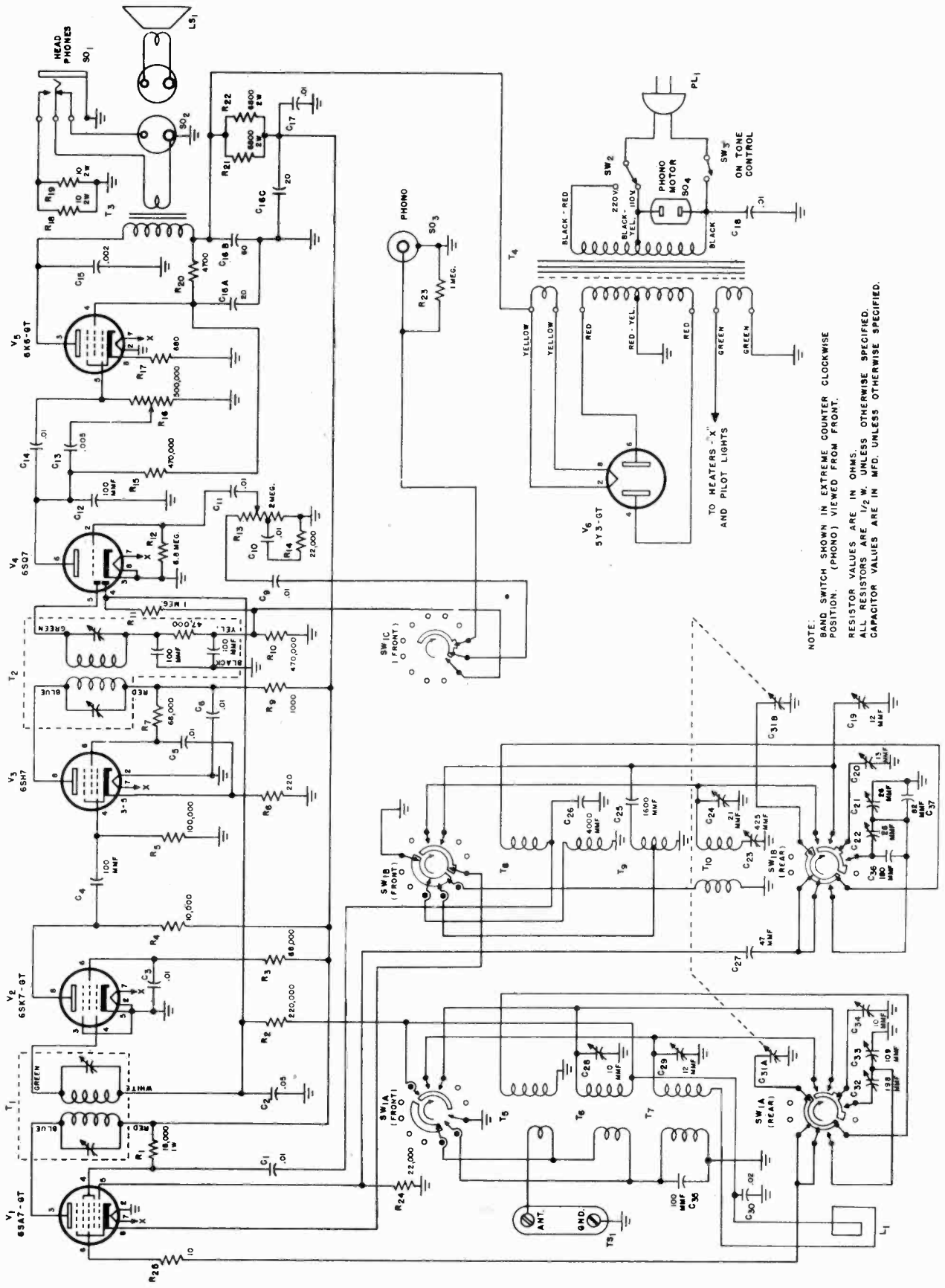
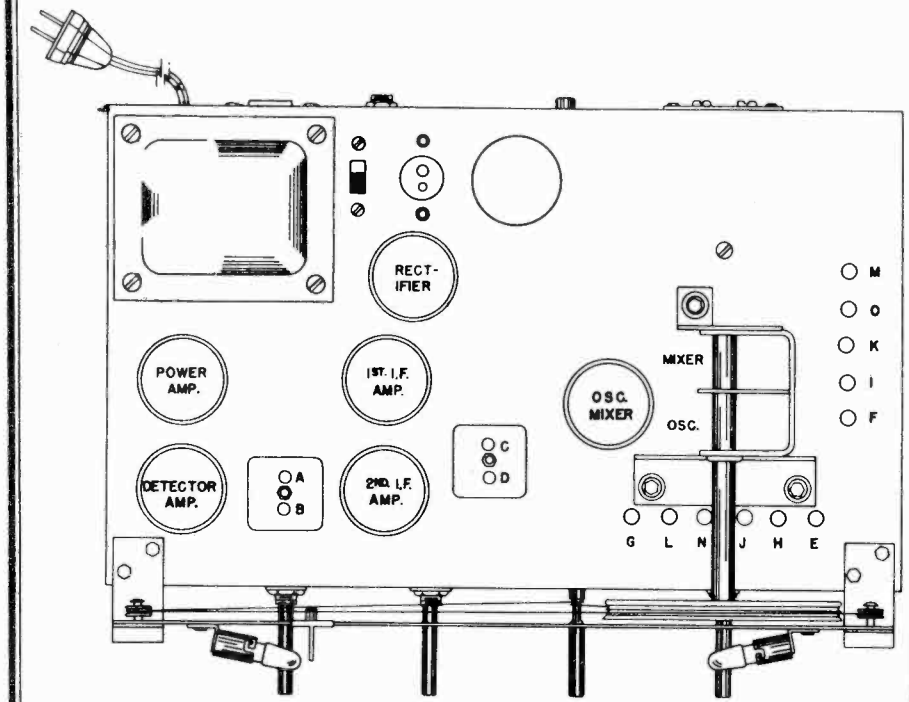
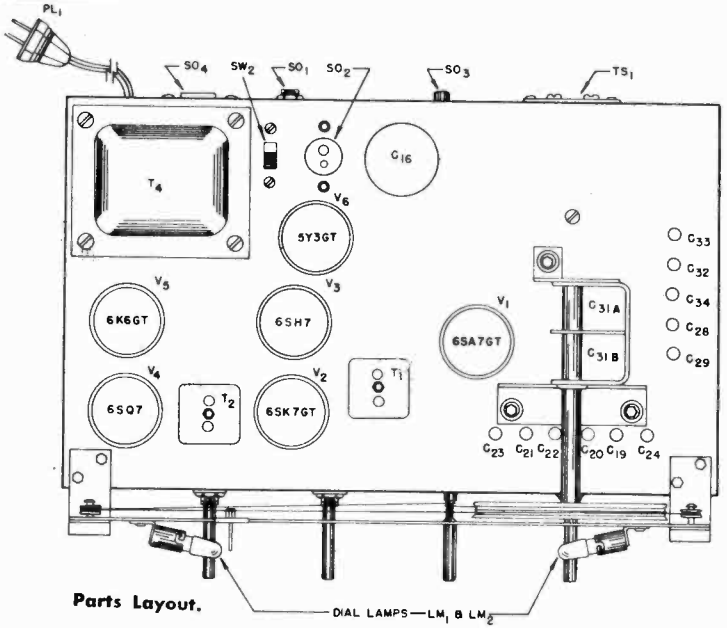
DIV. OF GENERAL MOTORS CORP.

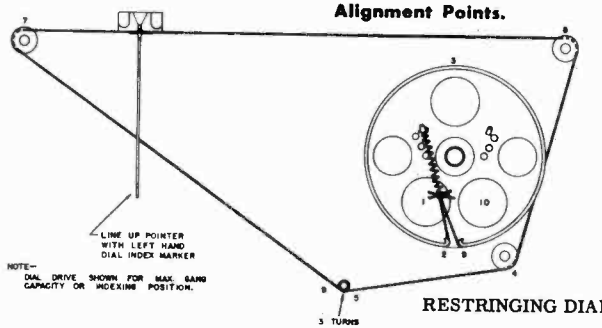




Alignment Points.

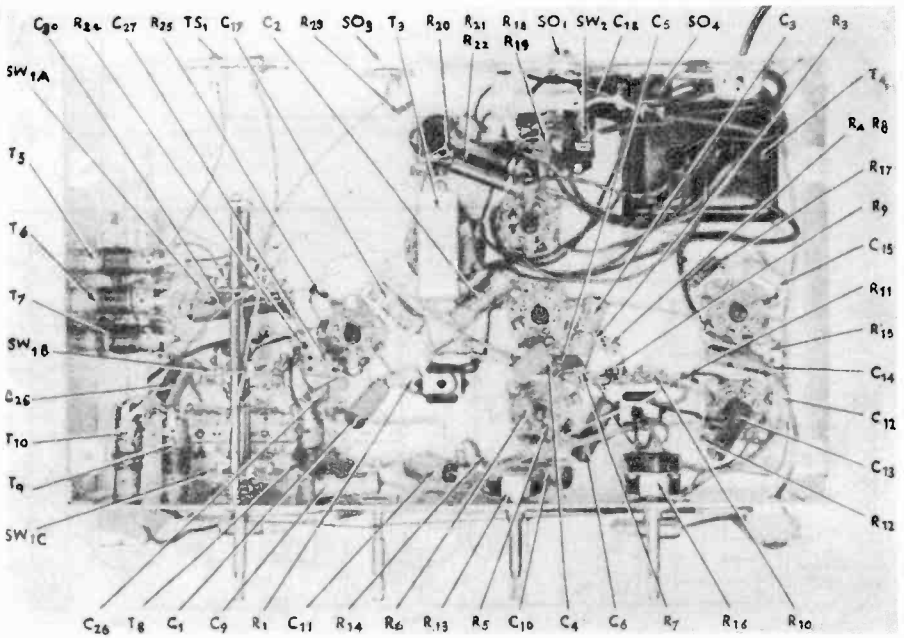


Parts Layout.



RESTRINGING DIAL CORD:

Restring the dial drive with 30 lb. test dial cord. Tie one end to the tension spring and follow the sequence outlined in Fig. 4. Stretch the tension spring and tie the end of the cord securely to the spring as shown. Set the tuning condenser at maximum capacity (closed), attach the pointer to the string and line it up with the left hand index mark on the dial scale.



Parts Layout.

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TUBES AND DIAL LAMP REPLACEMENT:

The types of tubes required and their relative position in the receiver are shown in Fig. 5. When installing a replacement tube, insert the center guide pin into the center hole of the tube socket. Rotate the tube until the key on the guide pin drops into the notch in the socket hole. Push down until the base of the tube rests firmly on the socket. To replace dial lamps it will be necessary to remove the chassis from the cabinet. Replace lamps with 6-8 V. Mazda #44 (Blue bead) or equivalent.

SOCKET VOLTAGES:

The voltages shown in the voltage chart were obtained with a 20,000 ohm per volt meter when operating the receiver from a 117-volt a-c source. All voltages are to be measured between the tube pin and chassis. Blanks are provided for your meter readings to establish an average set of readings for this receiver as measured with your test equipment. The normal power consumption for the receiver is 55 watts.

ALIGNMENT:

All connections and adjustments necessary for alignment are accessible from the top of the chassis. The output transformer is located on the under side of the chassis, hence, the output meter connection should be made at the speaker socket. Output voice coil impedance is 3 ohms.

Make all alignment adjustments at maximum volume and refer to the alignment chart for the dial and band switch settings.

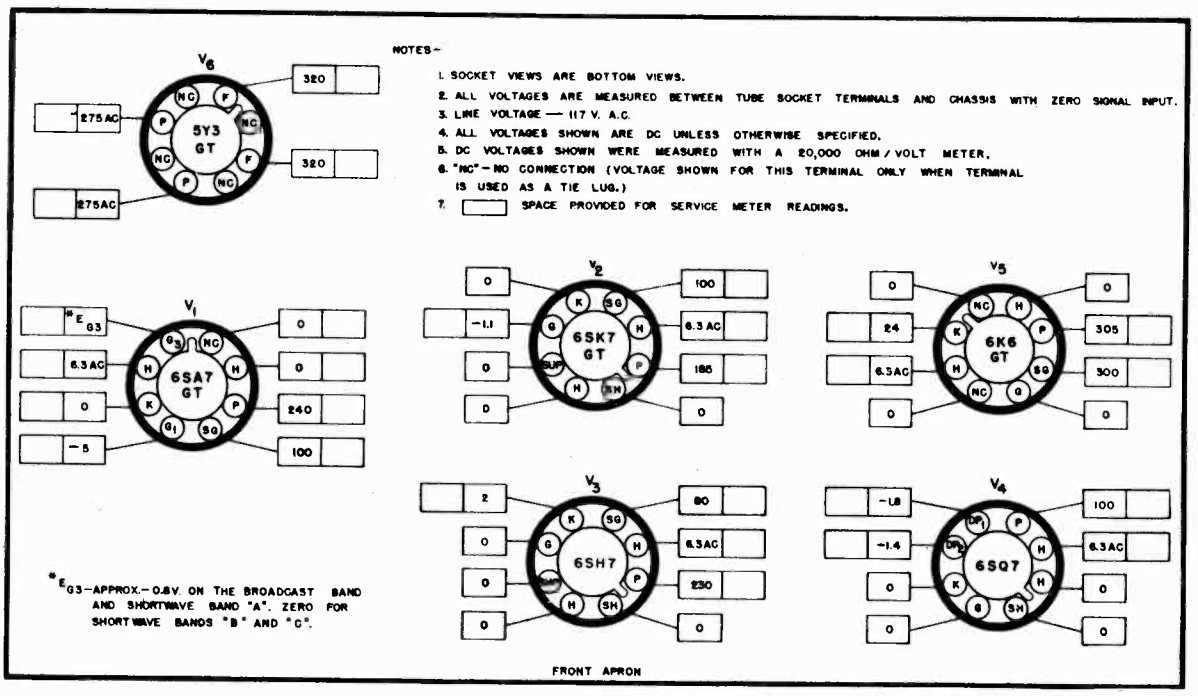
The standard RMA dummy antenna specified in the alignment chart consists of a 200 mmf condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400-ohm carbon resistor.

CAUTION - The loop antenna must be connected during alignment.

ALIGNMENT CHART:

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Setting	Receiver Dial Setting	Adjust
1	.01 mfd capacitor	Connect to rear section stator of tuning cap.	455 kc	BC	1000 kc	ABCD
2	Std RMA dummy	Connect to terminals "A" and "G" of antenna terminal strip TS_1.	1500 kc	BC	1500 kc	E*F
			600 kc		600 kc	G*
3	Std RMA dummy	See step 2.	6 mc	SW(A)	6 mc	H*I
4	Std RMA dummy	See step 2.	20 mc	SW(B)	20 mc	J*K
5	Std RMA dummy	See step 2.	11.5 mc	SW(C)	11.5 mc	L*M
			9.2 mc		9.2 mc	N*O

* Note - Calibration adjustment.



Voltage Chart.

UNITED MOTORS SERVICE
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ELECTRICAL PARTS

TRANSFORMERS AND COILS

Illustration No.	Production Part No.	Service Part No.	Description
T-1	50C365		Transformer, 1st I.F.
T-2	50C364		Transformer, Detector Stage
T-3	55B104-1		Transformer, Audio Output
T-4	52C149		Transformer, Power
T-5	51B1018		Transformer, Antenna Stage, SW (B) (C)
T-6	51B960		Transformer, Antenna Stage, SW (A)
T-7	51B1060		Transformer, Antenna Stage, BC
T-8	51B964		Transformer, Oscillator Stage, SW (B) (C)
T-9	51B963		Transformer, Oscillator Stage, SW (A)
T-10	51B962		Transformer, Oscillator Stage, BC

CONDENSERS

C-1,3,5,6,9, 10,11,14,17	46AZ103F	E103	.01 mfd. 600 V., tubular
C-2	46AY503F	E503	.05 mfd. 600 V., tubular
C-4,12,35	CM20A101M	G101	100 mmf. 500 V., mica
C-13	46AZ502J	E502	.005 mfd. 600 V., tubular
C-15	46AZ202J	E202	.002 mfd. 600 V., tubular
C-16	45B113		60-20-20 mfd. 450 V., electrolytic
C-18	46AG103J		.01 mfd. 600 V., molded
C-19,20,21, 22,23,24	44B217		Trimmer assembly, 6 section, oscillator stage
C-25	CM30C162G		1600 mmf. 2% 500 V., mica
C-26	CM35A402J		4000 mmf. 5% 500 V., mica
C-27	CM20A470M	G470	47 mmf. 500 V., mica
C-28,29,32. 33,34	44B216		Trimmer assembly, 5 section, antenna stage
C-30	46AY203F		.02 mfd. 150 V., tubular
C-31	48B184		Tuning condenser, 2 section
C-36	CM20A820J		82 mmf. 5% 500 V., mica
C-37	CM20A181J		180 mmf. 5% 500 V., mica

RESISTORS

R-1	RC30AE183M	B183	18,000 ohms 1 watt, insulated
R-2	RC20AE224M	A224	220,000 ohms ½ watt, insulated
R-3,7	RC20AE683M	A683	68,000 ohms ½ watt, insulated
R-4	RC30AE103M	B103	10,000 ohms 1 watt, insulated
R-5	RC20AE104M	A104	100,000 ohms ½ watt, insulated
R-6	RC20AE221M	A221	220 ohms ½ watt, insulated
R-9	RC20AE102M	A102	1000 ohms ½ watt, insulated
R-10,15	RC20AE474M	A474	470,000 ohms ½ watt, insulated
R-11,23	RC20AE105M	A105	1 megohm ½ watt, insulated
R-12	RC20AE685M	A685	6.8 megohm ½ watt, insulated
R-14,24	RC20AE223M	A223	22,000 ohms ½ watt, insulated
R-17	RC30AE681M	B681	680 ohms 1 watt, insulated
R-18,19	RC40AE100M	C100	10 ohms 2 watt, insulated
R-20	RC20AE472M	A472	4700 ohms ½ watt, insulated
R-21,22	RC40AE682M	C682	6800 ohms 2 watt, insulated
R-25	RC20AE151K	A100	10 ohms ½ watt, insulated

TUBES AND RECTIFIER COMPLEMENT

V-1	90X6SA7GT	5223	6SA7GT, mixer
V-2	90X6SK7GT	5230	6SK7GT, 1st I.F.
V-3	90X6SH7	5255	6SH7, 2nd I.F.
V-4	90X6SQ7	5231	6SQ7, Detector and 1st Audio
V-5	90X6K6GT	5196	6K6GT, audio power amp.
V-6	90X5Y3GT	5123	5Y3GT, rectifier

MISCELLANEOUS ELECTRICAL PARTS

R-13	25B621		Control, volume
R-16	25B640		Control, tone, includes power switch SW-3
LM-1,2	39A003	44	Lamp 6-8V., 250 Ma Mazda #44
PL-1	87A078		Line cord and plug
LS-1	85C063		Speaker, P.M.
SW-1	60B290		Band switch assembly
SW-2	60A228		Line voltage switch, S.P.D.T
TS-1	88A327		Terminal strip, antenna

MECHANICAL PARTS

CHASSIS PARTS

	76A299	1217671	Lock, line cord
	38A001		Cord, dial drive (54")
	75A006	1217624	Spring, dial drive
	67B727		Rail, pointer
	83C322		Dial scale
	82A135		Dial pointer
	22B189		Dial glass
SO-1	36A036-1		Receptacle, headphone jack
SO-2	88A072		Receptacle, speaker
SO-3	36A029		Receptacle, phono
SO-4	10A015	1217633	Receptacle, phono motor
	6A190	1217684	Socket, octal (tube)
	86A054		Socket, dial light

CABINET PARTS

66F542		Cabinet, wood
32C440		Cover, back
7C061		Escutcheon
15B068-3		Knob, volume, tone and tuning
15B137		Knob, band switch
57C120		Loop antenna

GENERAL

Tubes ..... Five
Speaker ..... 5-inch Electrodynamic
Antenna ..... Built-in Loop or External
Tuning ..... Manual
Tuning Range ..... 540-1,720 kc, 9-12 mc
Power Supply. 105-125 AC, 50/60 cycles or DC—30 watts

ALIGNMENT PROCEDURE

Volume Control maximum, Signal Generator output minimum for satisfactory output indication.

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.

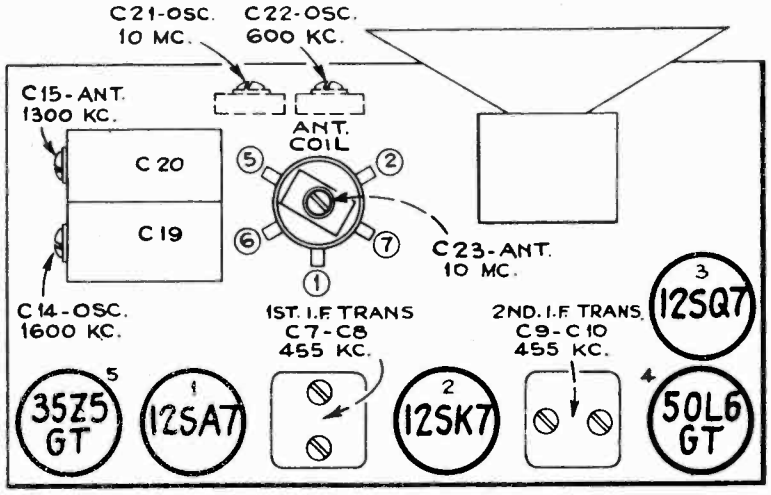
CALIBRATION SCALE

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

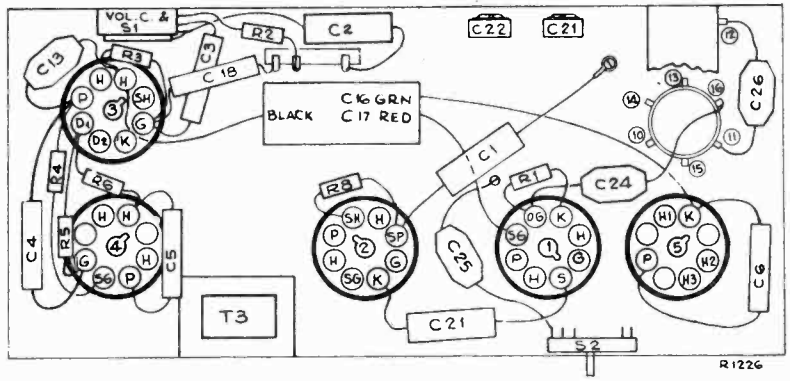
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with 0.1 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	12SA7 grid in series with 0.1 mfd.			C8, C7 1st I-F Transformer
3	Antenna term. in series with 47 mmf.	10 mc*	10 mc	C21 (osc.)** C23 (ant.)
4	Antenna term. in series with 200 mmfd.	1,600 kc	1,600 kc	C14 (osc.)
5	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,300 kc	Resonance on signal	C15 (ant.)
6		600 kc	600 kc	C22 (osc.) Rock in

* It is recommended that this step be repeated using a received station of known frequency.

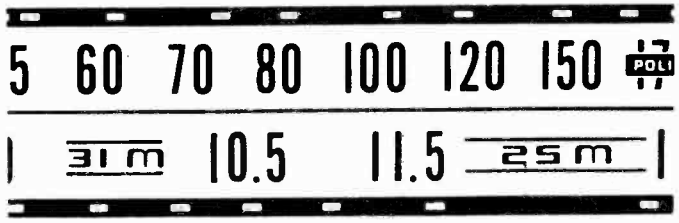
** Use minimum capacity if two peaks can be obtained.



Parts Layout—Top View



Parts Layout—Bottom View



The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.

MODEL R-1226

UNITED MOTORS SERVICE
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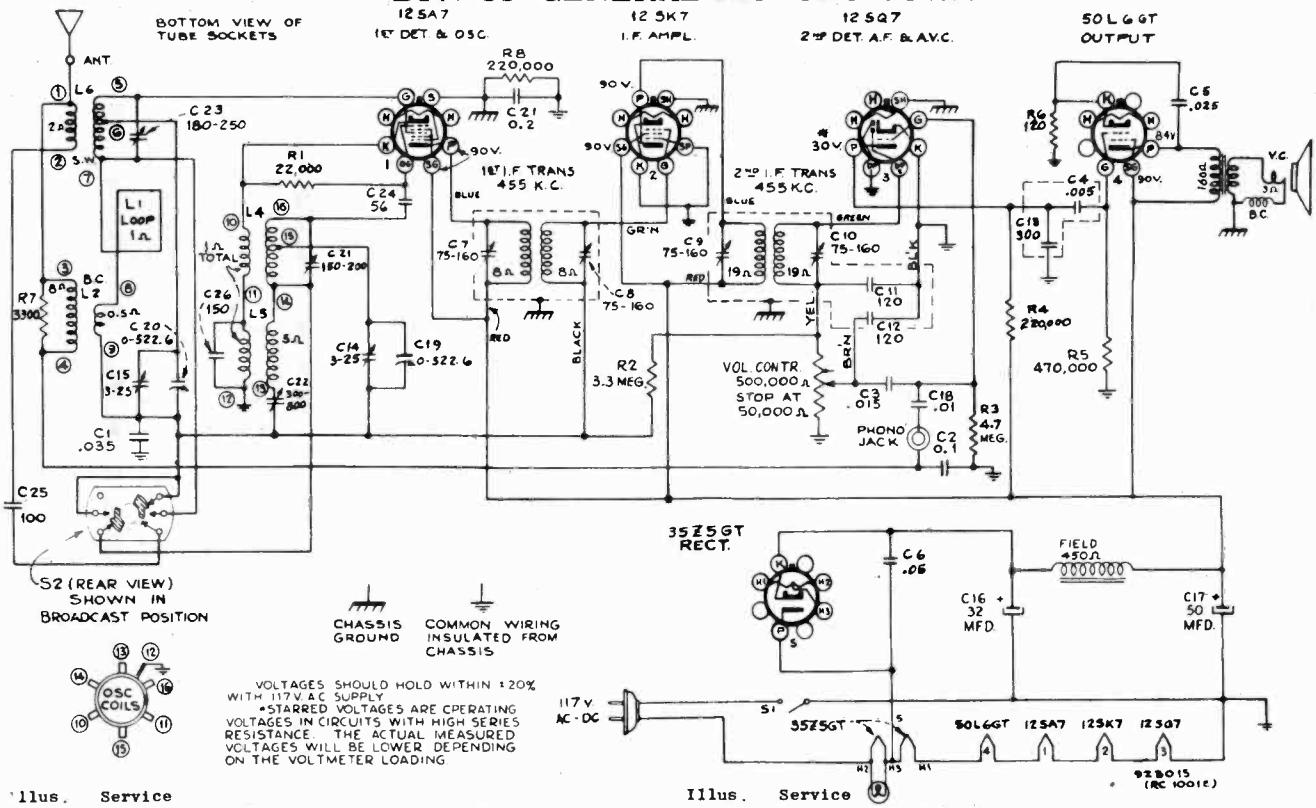


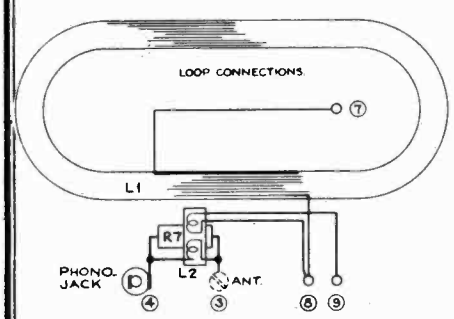
Illus. No.	Service Part No.	Part Name	Description
C1	E403	Condenser	.035 mfd., 400 V., tubular
C3	E203	Condenser	.02 mfd., 600 V., tubular
C4		Condenser	.005 mfd., 300 mmfd., dual
C13		Condenser	.0003 mfd., 300 mmfd., dual
C5	E203	Condenser	.02 mfd., 600 V., tubular
C6	E503	Condenser	.05 mfd., 600 V., tubular
C14		Condenser	Trimmer
C15		Condenser	Trimmer
C19		Condenser	Tuning
C20		Condenser	Tuning
C16		Condenser	Electrolytic, 30 mfd., 150 V.
C17		Condenser	Electrolytic, 20 mfd., 150 V.
C18	E103	Condenser	.01 mfd., 600 V., tubular
C21	E104	Condenser	0.1 mfd., 400 V., tubular
C21A		Condenser	Trimmer
C22		Condenser	Trimmer
C23		Condenser	Trimmer
C24	G470	Condenser	.00005 mfd., moulded
C25	G101	Condenser	.0001 mfd., 600 V., moulded
L1		Loop	Antenna loop
L2-R7		Coil	Loop coupling
L4	1216399	Coil	Oscillator coil
L5		Coil	Oscillator coil
L6		Coil	Antenna coil
R1	A183	Resistor	20,000 ohms, ½ watt
R2	A275	Resistor	3 megohm, ½ watt
R3	A475	Resistor	4.7 megohm, ½ watt
R4	A184	Resistor	200,000 ohms, ½ watt
R5	A474	Resistor	500,000 ohms, ½ watt
R6	A101	Resistor	100 ohms, ½ watt
R8	A184	Resistor	200,000 ohms, ½ watt
S2		Switch	Range switch
T1		Transformer	First I.F. transformer
T2		Transformer	Second I.F. transformer
T3		Transformer	Output transformer
V1	8070	Control	Volume control
	8200	Switch	Power switch on vol. control
	1216366	Speaker	5 inch E. M. (stamped RL86-B1 or RL86-B4)

Tubes

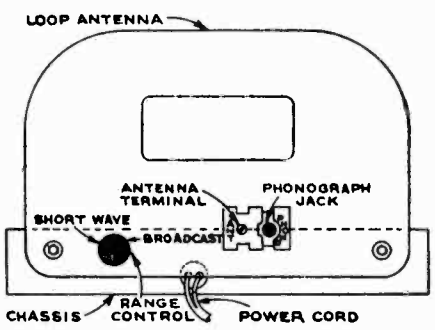
5341	12SA7	First Detector--Oscillator
5348	12SK7	I.F.
5350	12SQ7	Second Detector--A.E.&A.V.C.
5451	50L6GT	Output
5408	35Z5GT	Rectifier

Chassis Miscellaneous Parts

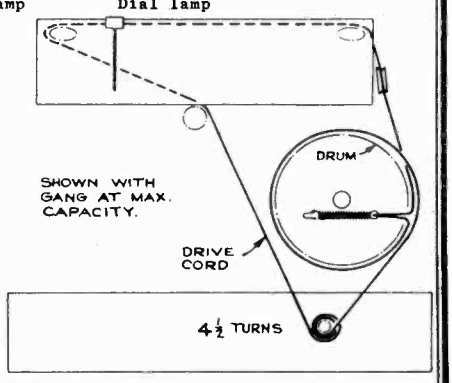
1212233	Cord	Drive cord (approx. 33 inch. overall lgth.)
1216403	Dial	Glass dial scale
1215740	Knob	Volume control or tuning
51.....	Lamp	Dial lamp



Loop Antenna Connections

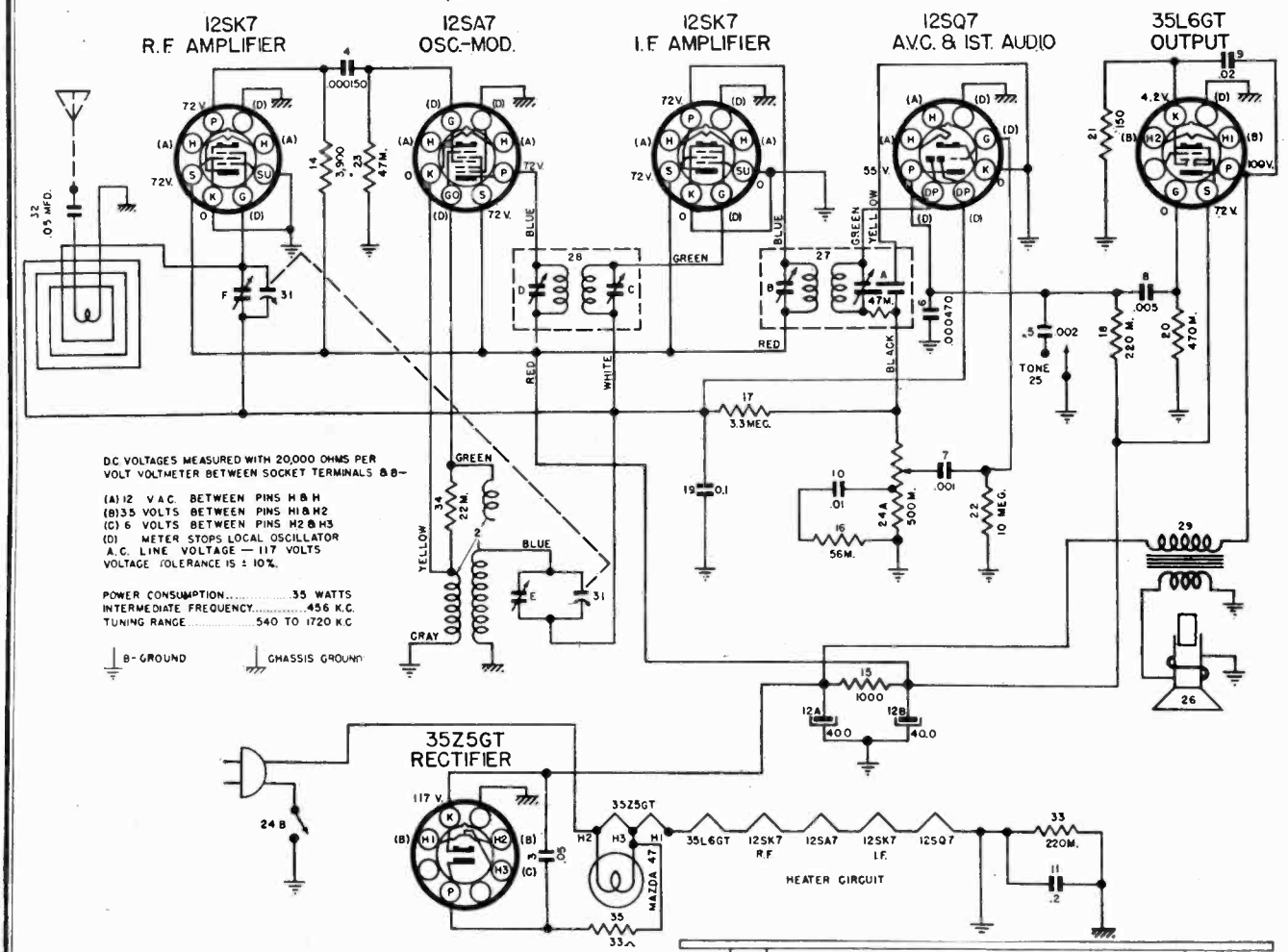


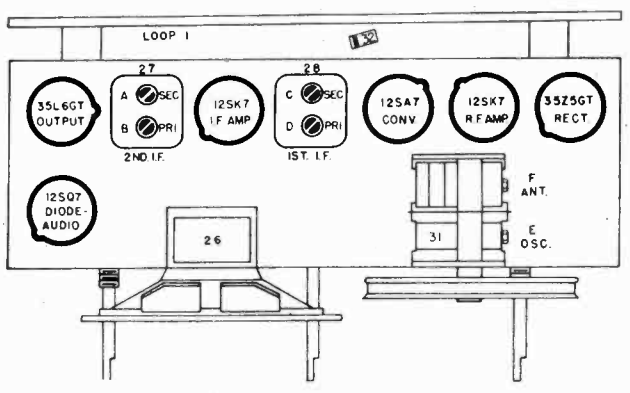
Rear View



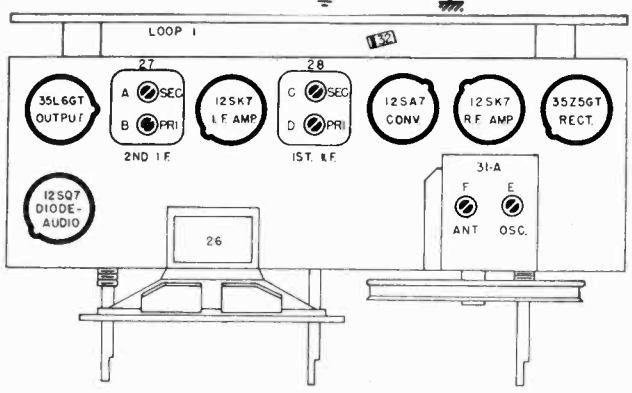
Dial Cord Layout

UNITED MOTORS SERVICE CORP. (DIV. OF GEN. MOTORS) MODELS R-1227, R-1228, R-1229

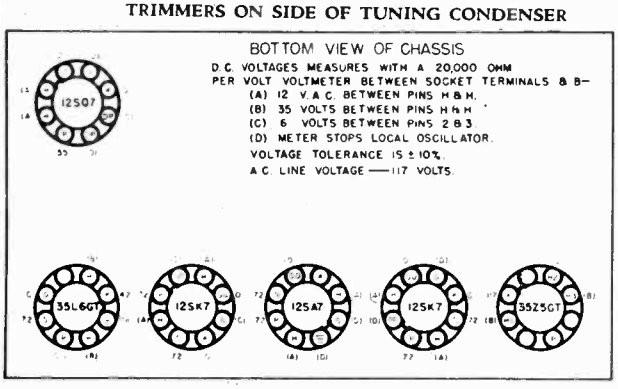




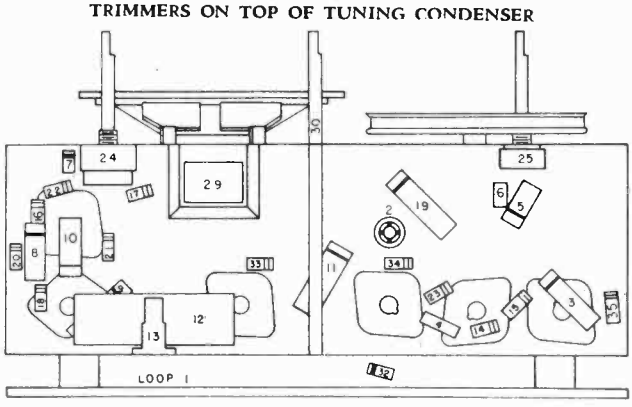
PARTS LAYOUT — TUBE VIEW
TRIMMERS ON SIDE OF TUNING CONDENSER



PARTS LAYOUT — TUBE VIEW
TRIMMERS ON TOP OF TUNING CONDENSER



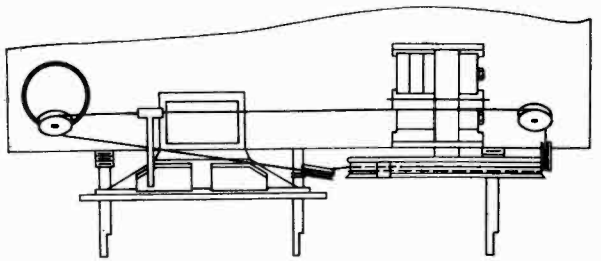
TUBE SOCKET VOLTAGE CHART

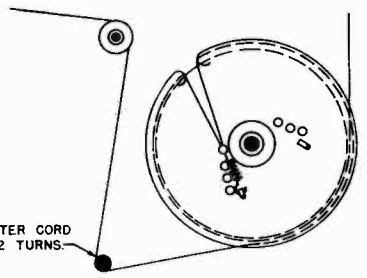


PARTS LAYOUT — CHASSIS VIEW

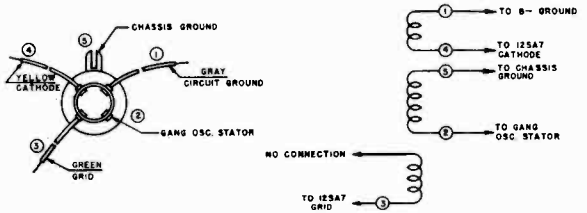
Illus. No.	Service Part No.	Description
		ELECTRICAL PARTS
		COILS
1	1217138	Antenna Assy. — Loop and Back Cover — Model R-1227 and R-1228 (Includes Condenser #32)
1A	1216937	Antenna Assy. — Loop and Back Cover — Model R-1229 (Includes Condenser #32)
2	1216915	Oscillator Coil Complete
27	1216570	2nd I. F. Assy.
28	1216605	1st I. F. Assy.
		CONDENSERS
3	E503	.05 Mfd. 600 V. Tubular
4	G151	.000150 Mfd. Molded
5	E202	.002 Mfd. 600 V. Tubular
6	G471	.000470 Mfd. Molded
7	E102	.001 Mfd. 600 V. Tubular
8	E502	.005 Mfd. 600 V. Tubular
9	E203	.02 Mfd. 600 V. Tubular
10	E103	.01 Mfd. 600 V. Tubular
11	E204	.20 Mfd. 400 V. Tubular
12	J908	2 Section Electrolytic
12A		40 Mfd. 150 V.
12B		40 Mfd. 150 V.
19	E104	.10 Mfd. 600 V. Tubular
31	1217414	Condenser and Pulley Parts Pkg. Variable Condenser and Pulley Assy. Grommet (3) Lockwasher (2) Spacer Sleeve (3) Solder Lug Screw (3)
31A	1217415	Condenser and Pulley Parts Pkg. (Alternate for 1217414)
32	E503	.05 Mfd. 600 V. Tubular
		RESISTORS
14	A392	3,900 Ohms ½ W. Insulated
15	B102	1,000 Ohms 1 W. Insulated
16	A563	56,000 Ohms ½ W. Insulated
17	A335	3.3 Megohm ½ W. Insulated
18	A224	220,000 Ohms ½ W. Insulated
20	A474	470,000 Ohms ½ W. Insulated
21	A151	150 Ohms ½ W. Insulated
22	A106	10 Megohm ½ W. Insulated
23	A473	47,000 Ohms ½ W. Insulated
33	A224	220,000 Ohms ½ W. Insulated
34	A223	22,000 Ohms ½ W. Insulated
35	A330	33 Ohms ½ W. Insulated
		TUBE COMPLEMENT
	1213813	12SQ7
	1213809	12SA7
	1213812	12SK7
	1213818	35L6GT
	1213848	35Z5GT — Rectifier
		MISCELLANEOUS ELECTRICAL PARTS
13	1216559	Clip — Condenser
24	1216505	Control — Volume Control and Switch
24A		Volume Control
24B		Switch
25	1216544	Control — Tone
47		Lamp — Dial Light (Mazda #47)
26	1216563	Speaker — 5" PM
29	1216557	Transformer — Output
		MISCELLANEOUS CHASSIS PARTS
	7241702	Cord — Dial Drive (72" Length)
	1216512	Cord — Power
	1216562	Pointer — Dial
	1216650	Shaft — Drive
	1217323	Spring — Cord Tension
	1217819	Socket — Dial Light Assy. (Less Lamp)
	7236279	Socket — Octal Base Tube
	7245333	Washer — "C" (Use With Drive Shaft)
		CABINET PARTS
	1217724	Cabinet Assy. — Model R-1227 — Brown Plastic (Complete With Dial Glass, Clamps and Screws)
	1217725	Cabinet Assy. — Model R-1228 — White Plastic (Complete With Dial Glass, Clamps and Screws)
	1217723	Cabinet Assy. — Model R-1229 — Wood (Complete With Dial Glass, Clamps and Screws)
	1217191	Clamp — Dial Glass — Model R-1229
	1216583	Clamp — R. H. — Dial Glass — Models R-1227 and R-1228
	1216582	Clamp — L. H. — Dial Glass — Models R-1227 and R-1228
	1217156	Dial Glass — Models R-1227, R-1228 and R-1229
	1217573	Knob — Brown — Control — Model R-1227
	1217571	Knob — Ivory — Control — Model R-1228
	1216878	Knob — Ivory — Control — Model R-1229
	1217192	Rubber Band — Model R-1229
	1217169	Screw — Self Tapping — Models R-1227 and R-1228

Power Supply	105/125 volts AC-DC
Power Consumption	35 Watts
Model R-1227	Brown Plastic Cabinet
Model R-1228	White Plastic Cabinet
Model R-1229	Wood Cabinet





DIAL STRING DRAWING



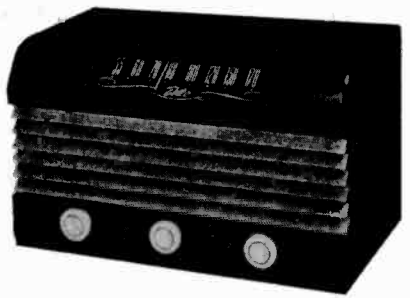
OSCILLATOR COIL

Some receivers are made using a gang condenser having the trimmers on the side of the condenser and some with the trimmers on the top of the condenser. Two Parts Layout drawings are used to illustrate this difference.

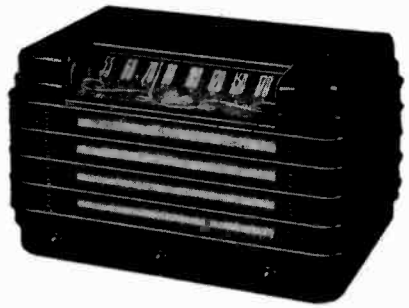
ALIGNMENT PROCEDURE

Output Meter Connections	Across Voice Coil Winding
Generator Ground	To Chassis through .01 MFD
Dummy Antenna	In Series with generator
Volume Control Position	Fully on

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator To	Adjust Signal Generator To	Turn Radio Dial To	Adjust Trimmers
1	.02 Mfd.	12SA7 Grid (Pin #8)	456 KC	Quiet Point near H. F. end	A-B (2nd IF Trans) C-D (1st IF Trans)
2	.000200 Mfd.	Ant. lead	1720 KC	1720 KC	E (Osc.)
3	.000200 Mfd.	Ant. lead	1400 KC	1400 KC	F (Ant.)



Model R-1229



Models R-1227 and R-1228

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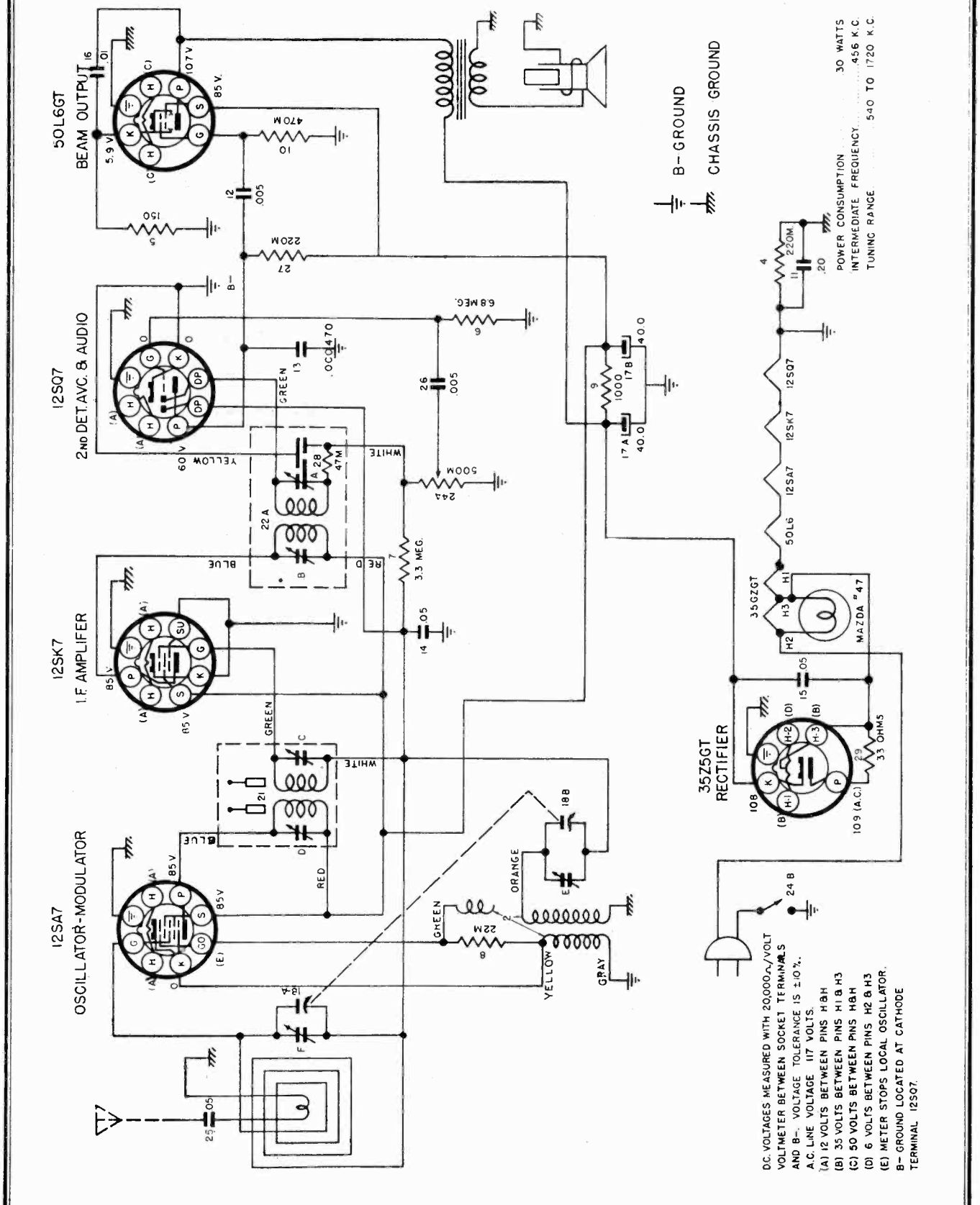
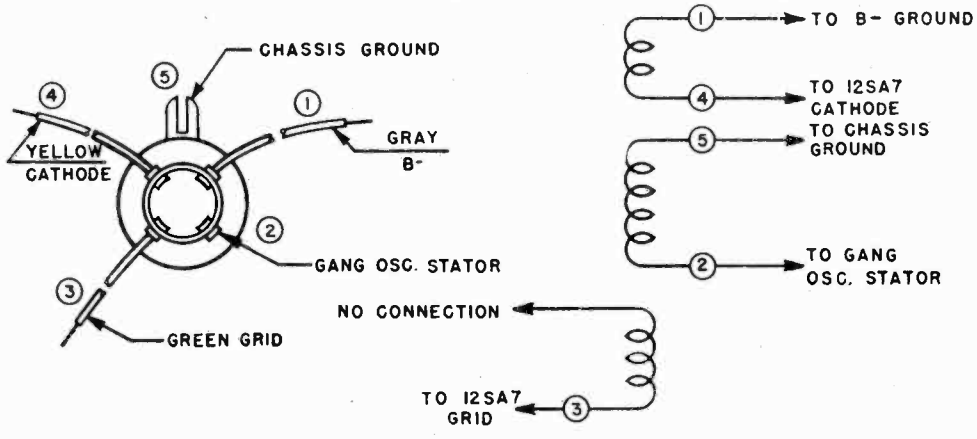
DIV. OF GENERAL MOTORS CORP.

MODELS R1230, R1230A, R1231, R1231A, R1232

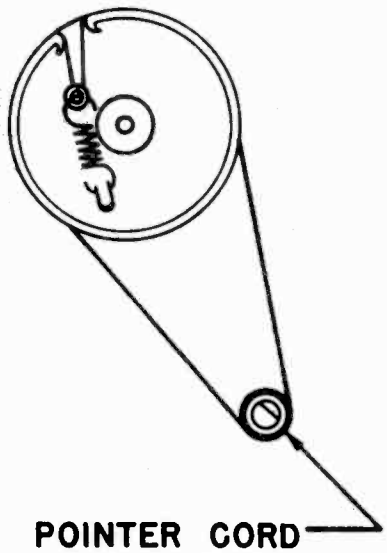


MODELS R1230, R1230A, R1231, R1231A, R1232

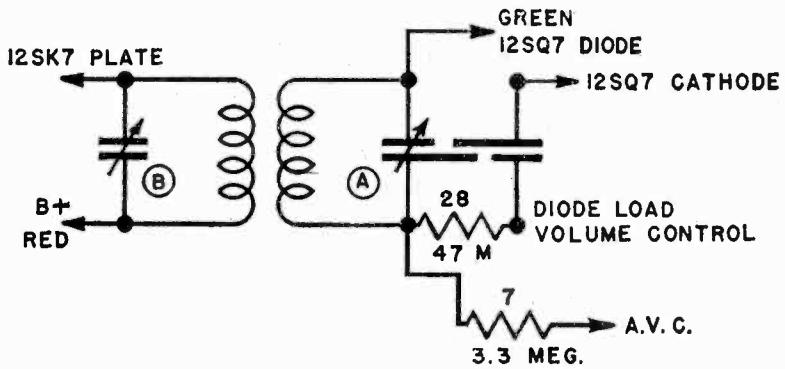
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



OSCILLATOR COIL



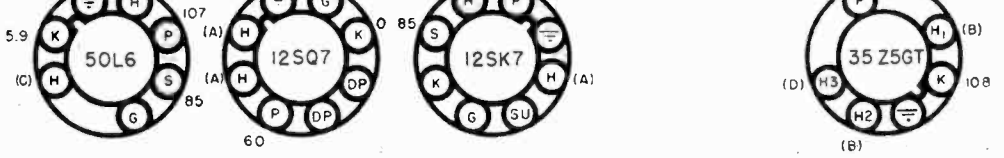
DIAL STRING DRAWING



SECOND I. F. TRANSFORMER
PART #22 UNSHIELDED
MODELS R-1230, R-1231 and R-1232

BOTTOM VIEW OF CHASSIS

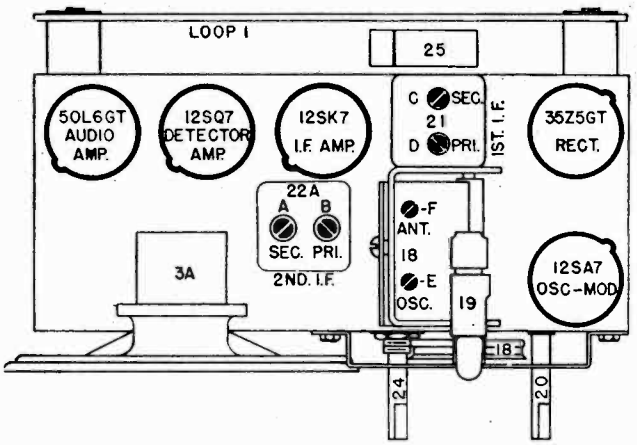
D.C. VOLTAGES MEASURED WITH 20,000Ω/VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND B—
A.C. LINE VOLTAGE 117 VOLTS
(A) 12 VOLTS BETWEEN PINS H&H
(B) 35 VOLTS BETWEEN PINS H1&H3
(C) 50 VOLTS BETWEEN PINS H&H
(D) 6 VOLTS BETWEEN PINS H2&H3
(E) METER STOPS LOCAL OSCILLATOR.
VOLTAGE TOLERANCE IS ±10%.



TUBE SOCKET VOLTAGE CHART

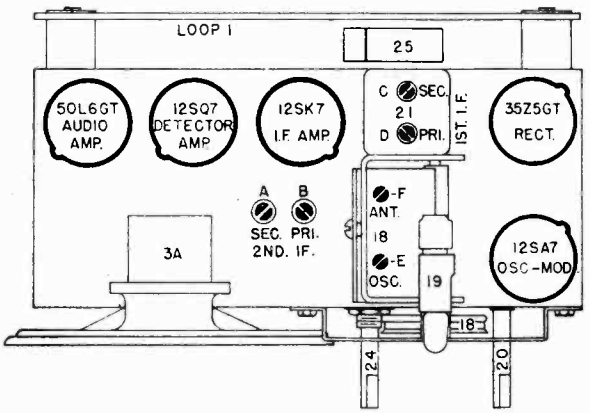
UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODELS R1230, R1230A, R1231, R1231A, R1232



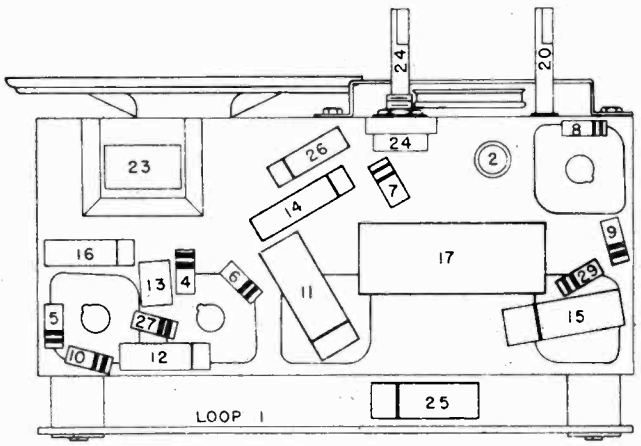
PARTS LAYOUT - TUBE VIEW

MODELS R-1230A, R-1231A AND R-1232A



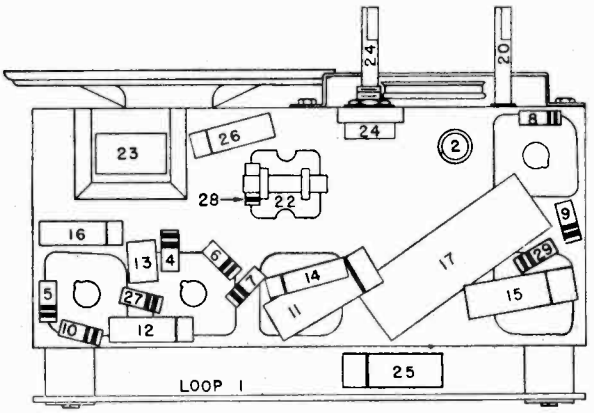
PARTS LAYOUT - TUBE VIEW

MODELS R-1230, R-1231 AND R-1232



PARTS LAYOUT - CHASSIS VIEW

MODELS R-1230A, R-1231A AND R-1232A



PARTS LAYOUT - CHASSIS VIEW

MODELS R-1230, R-1231 AND R-1232

ALIGNMENT PROCEDURE

Output Meter Connections ..... Across Voice Coil Winding
Generator Ground ..... To Chassis through .01 MFD
Dummy Antenna ..... In Series with generator
Volume Control Position ..... Fully on

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator To	Adjust Signal Generator To	Turn Radio Dial To	Adjust Trimmers
1	0.1 Mfd.	12SA7 Grid (Pin #8) Ground Generator to B– (not chassis)	456 KC	Quiet Point near H. F. end	A-B (2nd IF Trans) C-D (1st IF Trans)
2	.000200 Mfd.	Ant. lead	1720 KC	1720 KC	E (Osc.)
3	.000200 Mfd.	Ant. lead	1400 KC	1400 KC	F (Ant.)

MODELS R1230, R1230A, R1231, R1231A, R1232

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

SERVICE PARTS LIST

Illus. No.	Service Part No.	Description
		ELECTRICAL PARTS
		COILS
1	1217593	Antenna Assembly - Loop and Back Cover
2	1216518	Oscillator
21	1216504	1st I. F.
22	1216980	2nd I. F. (Includes Illus. No. 7 and 28) Unshielded - Mounted on under side of chassis
22A	1217594	2nd I. F. (Includes Illus. No. 28) Shielded - Mounted on top of chassis
		CONDENSERS
11	E204	.20 Mfd. 400V Tubular
12	E502	.005 Mfd. 600V Tubular
13	G471	.000470 Mfd. Molded
14	E503	.05 Mfd. 600V Tubular
15	E503	.05 Mfd. 600V Tubular
16	E103	.01 Mfd. 600V Tubular
17	J908	2 Section Electrolytic
17A		40 Mfd. 150V
17B		40 Mfd. 150V
18	1217391	Condenser and Pulley Parts Package Condenser and Pulley Grommet (3) Spacer Sleeve (3) Screw (3)
25	E503	.05 Mfd. 600V Tubular
26	E502	.005 Mfd. 600V Tubular
		RESISTORS
4	A224	220,000 Ohms ½ W Insulated
5	A151	150 Ohms ½ W Insulated
6	A685	6.8 Megohms ½ W Insulated
7	A335	3.3 Megohms ½ W Insulated
8	A223	22,000 Ohms ½ W Insulated
9	B102	1,000 Ohms 1 W Insulated
10	A474	470,000 Ohms ½ W Insulated
27	A224	220,000 Ohms ½ W Insulated
28	A473	47,000 Ohms ½ W Insulated (Used only on sets utilizing volume controls without a stop.)
29	A330	33 Ohms ½ W Insulated
		TUBE COMPLEMENT
	1213809	12SA7
	1213812	12SK7
	1213813	12SQ7
	1214366	50L6GT
	1213848	35Z5GT - Rectifier
		MISCELLANEOUS ELECTRICAL PARTS
24	1216477	Control - Volume and Switch
24A		Volume Control
24B		Switch
	1216512	Cord - Universal Power
	435433	Lamp - Dial Light (Mazda #47)
3	1216563	Speaker - 5" P. M. (Bracket #1217406 is necessary when replacing original 4" speakers)
23	1216571	Transformer - Output

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODELS R1230, R1230A, R1231, R1231A, R1232

SERVICE PARTS LIST (Cont.)

Illus. No.	Service Part No.	Description
		MECHANICAL PARTS
		MISCELLANEOUS CHASSIS PARTS
	1217406	Bracket - Speaker Mounting (For 5" Speakers)
	1216559	Clip - Condenser
	1212233	Cord - Universal Dial Drive
	1217210	Dial and Dial Plate - Dial, Dial Plate and Bracket Assy. (Model R-1232)
	1217213	Dial and Dial Plate - Dial, Dial Plate and Bracket Assy. (Models R-1230, R-1230A)
	1217421	Dial and Dial Plate - Dial, Dial Plate and Bracket Assy. (Models R-1231, R-1231A)
	1216831	Pointer - Dial
20	1216479	Shaft - Tuning
	1217366	Spacer (Use with Tuning Shaft)
	1217323	Spring - Drive Cord Tension
19	1217819	Socket - Dial Light, Less Lamp
	7236279	Socket - Octal Tube
	1216508	Washer - "C" (Use with Tuning Shaft)
		MISCELLANEOUS CABINET PARTS
	1216715	Cabinet - Ivory - Models R-1230, R-1230A (Includes Crystal)
	1216827	Cabinet - Walnut - Model R-1232 (Includes Crystal)
	1216714	Cabinet - Brown - Models R-1231, R-1231A (Includes Crystal)
	1216660	Crystal - Dial (Models R-1230, R-1230A, R-1231, R-1231A)
	1216811	Crystal - Dial (Model R-1232)
	1216825	Knob - Ivory - Volume and Tuning (Models R-1230, R-1230A)
	1216826	Knob - Brown - Volume and Tuning (Models R-1231, R-1231A, R-1232)

GENERAL:

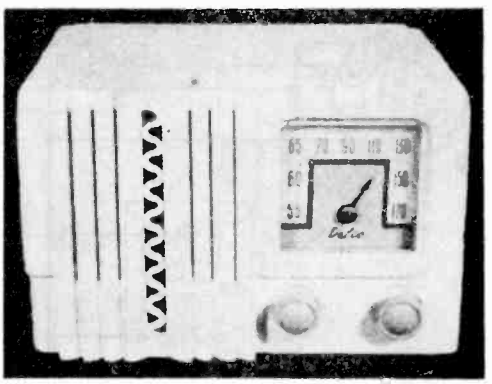
Tubes	5
Speaker	5" PM
Tuning	Manual
Tuning Range	540 to 1720 KC
Intermediate Frequency	456 KC
Power Supply	105/125 volts AC-DC
Power Consumption	30 Watts

Model R-1232—Walnut Wood Cabinet

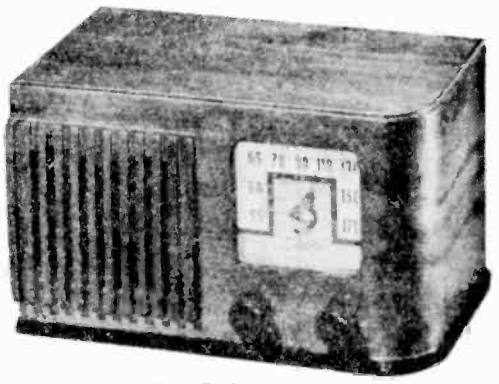
Models R-1231 and R-1231A—Brown Plastic Cabinet

Models R-1230 and R-1230A—White or Ivory Plastic Cabinet

The same chassis is used in all of the five different models listed in this bulletin. Models R-1230A and R-1231A are equipped with a shielded Second I. F. Transformer which is mounted on the upper side of the chassis whereas Models R-1230, R-1231 and R-1232 are equipped with an unshielded Second I. F. which is mounted on the under side of the chassis.



MODELS R-1230, R-1231, R-1230A and R-1231A



MODEL R-1232

MODEL R-1233

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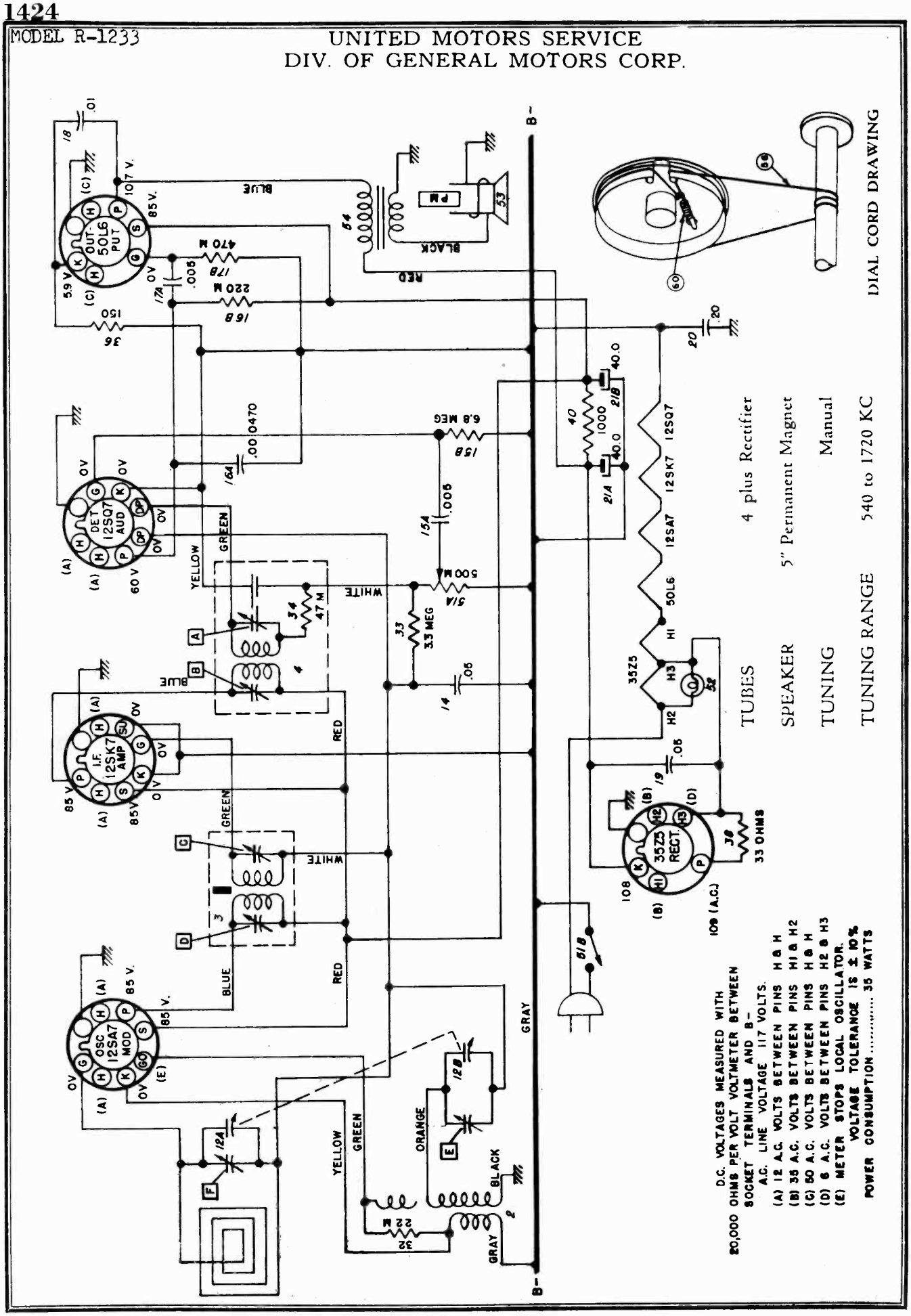


UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL R-1233

ALIGNMENT PROCEDURE:

Output Meter Connections ..... Across Voice Coil

Generator Return ..... To Chassis Through 0.1 Mfd.

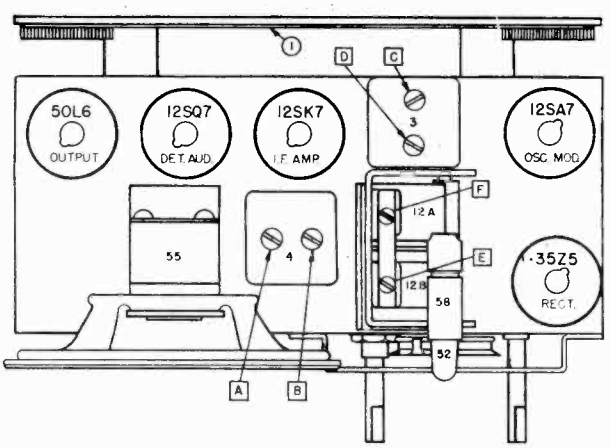
Dummy Antenna ..... In Series With Generator

Volume Control Position ..... Maximum Volume

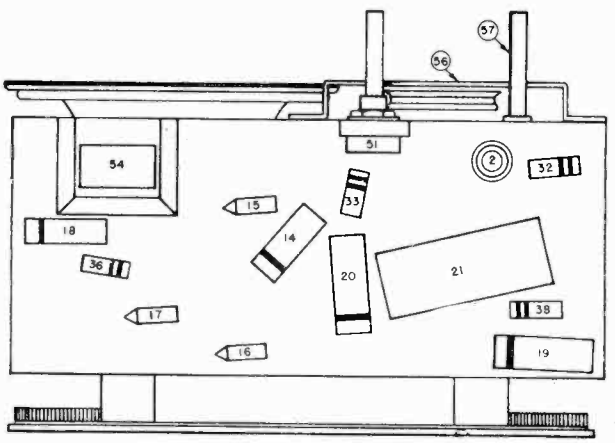
Generator Output ..... Minimum for Readable Indication

Steps	Series Condenser or Dummy Antenna	Connect Signal Generator To	Signal Generator Frequency	Tune Receiver To	Adjust In Sequence For Max. Output
1	0.000220 Mfd.	12SA7 Grid (Pin #8)	456 KC	High Frequency Stop	A, B, C, D
2	0.000220 Mfd.	*12SA7 Grid (Pin #8)	1720 KC	Signal Generator Signal	E
3	0.000220 Mfd.	*Clip to Loop Mtg Board	1400 KC	Signal Generator Signal	F

*The signal generator may be coupled to the receiver by placing a loop electrically across the output of the signal generator and physically near the receiver loop. This loop may be a loop from another radio, a home made loop of 10 or 15 turns, etc.

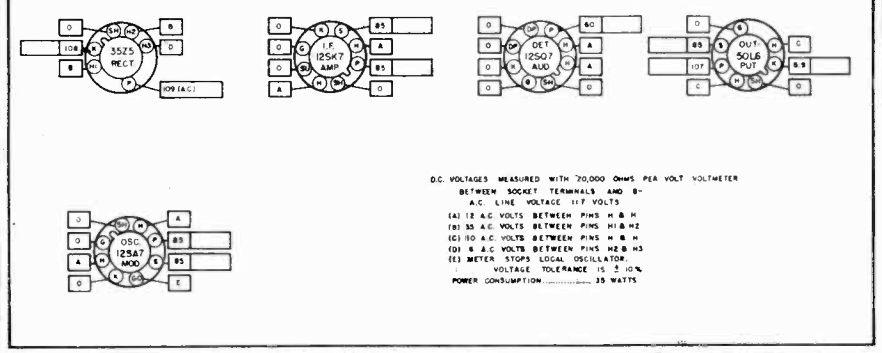


PARTS LAYOUT - TUBE VIEW



PARTS LAYOUT - CHASSIS VIEW

TUBE SOCKET VOLTAGE CHART



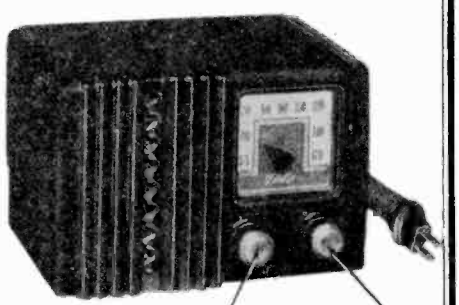
The tube socket voltages as measured at the factory are shown above. The blank spaces are provided so the service man may fill in actual readings as taken with his own equiqment. A normal operating radio should be used for these measurements.

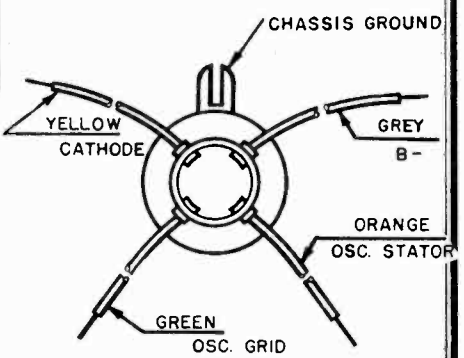
Voltmeter Resistance is ..... Ohms Per Volt

Reading Taken with ..... AC Volts Line Voltage

Tolerance on Readings is ± 10%

Tubes are viewed from the Terminal Side of the Socket





OSCILLATOR COIL CONNECTIONS

MODEL R-1233

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

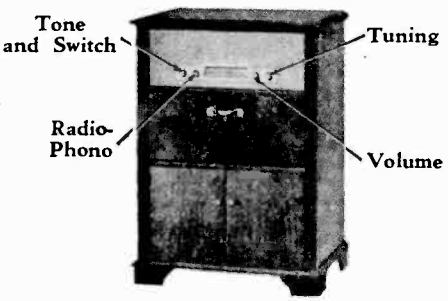
SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description
			ELECTRICAL PARTS
			COILS
1	1218286	1218286	Loop and Rear Cover Assy.
2	1216518	1216518	Oscillator
3	1218248	1217972	1st I. F. Assy.
4	1218250	1217973	2nd I. F. Assy.
			CONDENSERS
12	1217391	1217391	Variable Condenser Package
			Variable Condenser
12A			R. F. Section
12B			Osc. Section
	1218252	1218252	Pulley
			Grommet -3 Spacer Sleeve -3 Screw -3
14	7236842	E 503	0.05 Mfd. 200V Tubular
15	1218258		Capristor — 0.005 Mfd; 6.8 Megohms
15A		E 502	0.005 Mfd. 600V Tubular
15B		A 685	6.8 Megohms ½W Insulated
16	1218260		Capristor — 0.000470 Mfd; 220,000 Ohms
16A		G 471	0.000470 Mfd. Molded
16B		A 224	220,000 Ohms ½W Insulated
17	1218259		Capristor — 0.0005 Mfd; 470,000 Ohms
17A		E 502	0.005 Mfd. 600V Tubular
17B		A 474	470,000 Ohms ½W Insulated
18	1216513	E 103	0.01 Mfd. 600V Tubular
19	7230592	E 503	0.05 Mfd. 600V Tubular
20	7238787	E 204	0.2 Mfd. 400V Tubular
21	1217027	J 908	Electrolytic
21A			40 Mfd. 150V
21B			40 Mfd. 150V
			RESISTORS
15	1218258		Capristor — 0.005 Mfd. 6.8 Megohm
15A		E 502	0.005 Mfd. 600V Tubular
15B		A 685	6.8 Megohms ½W Insulated
16	1218260		Capristor — 0.000470 Mfd. 220,000 Ohms
16A		G 471	0.000470 Mfd. Molded
16B		A 224	220,000 Ohms ½W Insulated
17	1218259		Capristor — 0.005 Mfd. 470,000 Ohms
17A		E 502	0.005 Mfd. 600V Tubular
17B		A 474	470,000 Ohms ½W Insulated
32	1214550	A 223	22,000 Ohms ½W Insulated
33	1214564	A 335	3.3 Megohm ½W Insulated
34	1214553	A 473	47,000 Ohms ½W Insulated
			(In 2nd I. F. Coil Assy.)
36	1213220	A 151	150 Ohms ½W Insulated
38	1214538	A 330	33 Ohms ½W Insulated
40	1211037	B 102	1000 Ohms 1W Insulated
			MISCELLANEOUS ELECTRICAL PARTS
51	1216477		Control — Volume and Switch
51A		8071	Volume Control
51B		8201	Switch
52	435433	47	Lamp, Dial Light
53	1217405	1216563	Speaker — 5" Permanent Magnet
54	1216571	1216571	Transformer — Output
			TUBES
	1214889	5342	12SA7GT
	1214890	5349	12SK7GT
	1214891	5351	12SQ7GT
	1214366	5451	50L6GT
	1213848	5408	35L5GT — Rectifier
			MECHANICAL PARTS
			CHASSIS
	1216512	1216512	Cord — Power
55		6040	Cord — Pointer Drive (120 Ft. Spool)
56	1217421	1217421	Dial and Plate Assy.
	1218253	1218253	Pointer
57	1216479	1216479	Shaft — Tuning
58	1217839	1217839	Socket — Dial Light
	7236279	7236279	Socket — Octal Tube
59	1217323	1217323	Spring — Cord Tension

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODELS R-1244, R-1245, R-1246

MODEL R-1244



MODELS R-1245 and R-1246

GENERAL:

TUBES—Five, Plus Rectifier.

SPEAKER—5" x 7" Elliptical Permanent Magnet.

TUNING—Manual.

TUNING RANGE—550-1600 KC.

POWER SUPPLY—105/125 Volts, 60 Cycle A. C.

CABINETS:

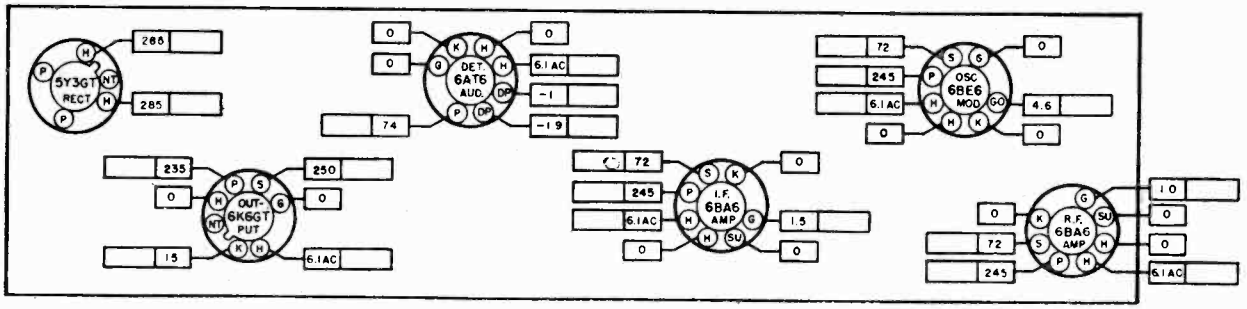
R-1244—Walnut

R-1245—Walnut

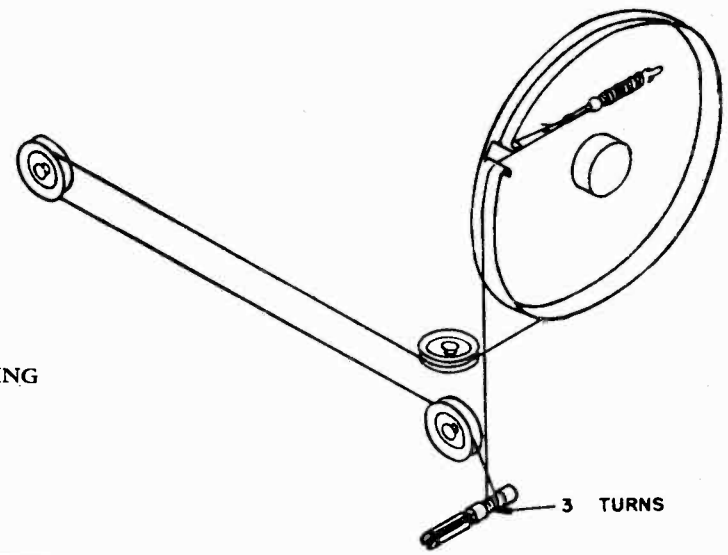
R-1246—Mahogany

TUBE SOCKET VOLTAGE CHART

The tube socket voltages, as measured at the factory and under the conditions shown on the schematic diagram, are shown below. The blank spaces are provided so the service man may fill in actual voltage readings as measured with his own equipment. A normal operating radio should be used for these measurements.

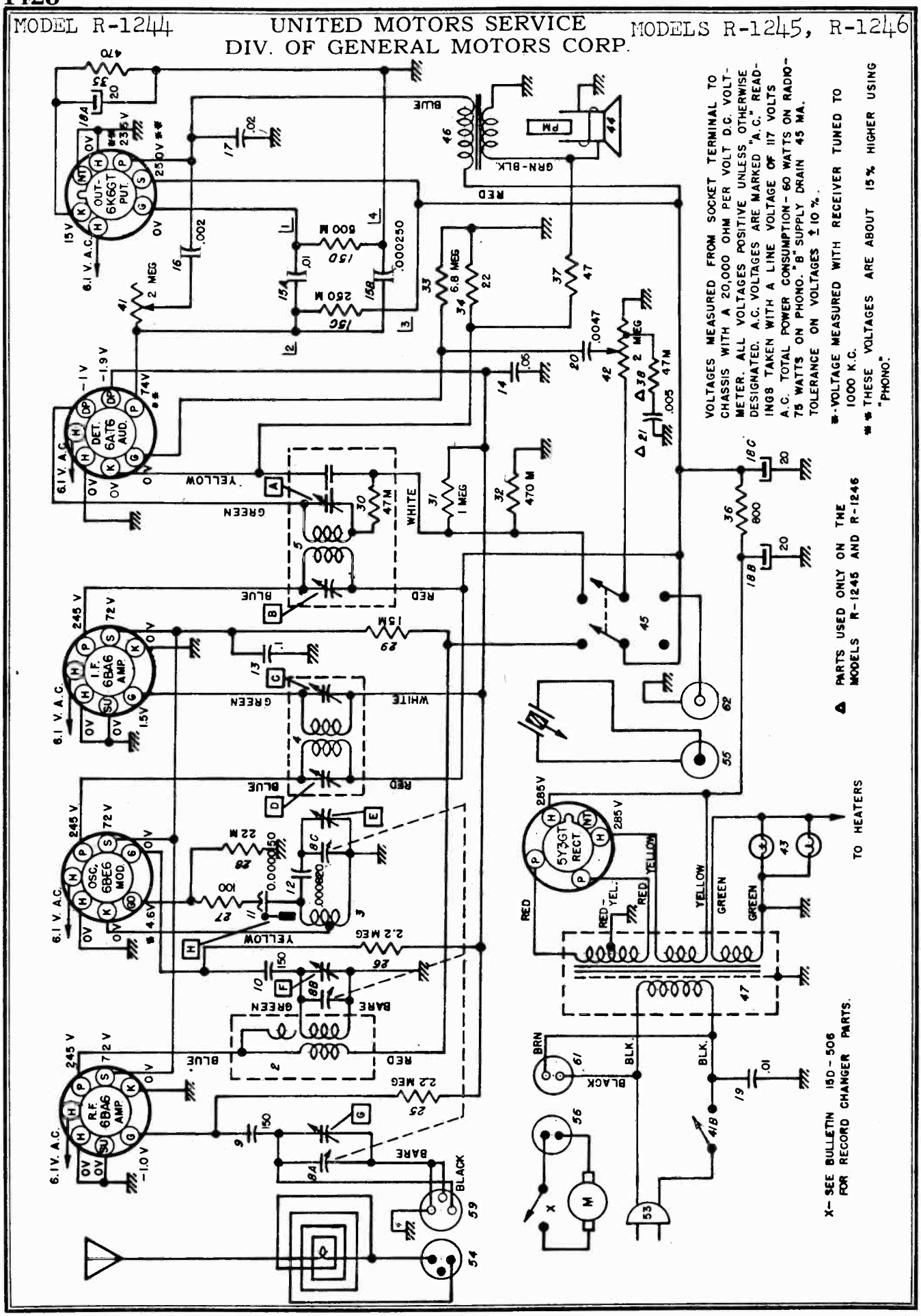


Volt Meter Resistance	Ohms Per Volt
Line Voltage	Volts
Voltage Tolerance	±10%



DIAL CORD DRAWING

MODEL R-1244 UNITED MOTORS SERVICE MODELS R-1245, R-1246
DIV. OF GENERAL MOTORS CORP.

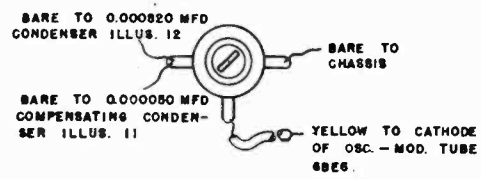


ALIGNMENT PROCEDURE:

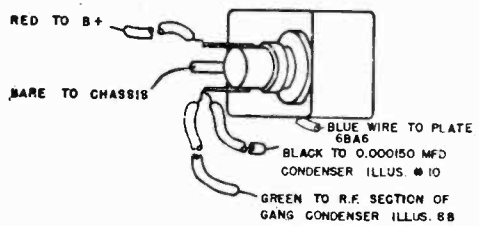
Output Meter Connections ..... Across Voice Coil
Generator Return ..... To Receiver Chassis
Dummy Antenna ..... In Series With Generator
Volume Control Position ..... Maximum Volume
Tone Control Position ..... Treble
Generator Output ..... Minimum For Readable Indication

Steps	Series Condenser or Dummy Antenna	Connect Generator To	Signal Generator Frequency	Tune Receiver To	Adjust in Sequence for Max. Output
1	0.1 Mfd.	Stator Lug RF Section of Gang	262 KC	High Frequency Stop	A, B, C, D
2	0.000220 Mfd.	Stator Lug RF Section of Gang	1615 KC	High Frequency Stop	E
3	0.000220 Mfd.	External Antenna Connection	1400 KC	Signal Generator Signal	F, G
4	0.000220 Mfd.	External Antenna Connection	600 KC	Signal Generator Signal	*H
5	0.000220 Mfd.	External Antenna Connection	1615 KC	High Frequency Stop	E
6	0.000220 Mfd.	External Antenna Connection	1400 KC	Signal Generator Signal	F, G

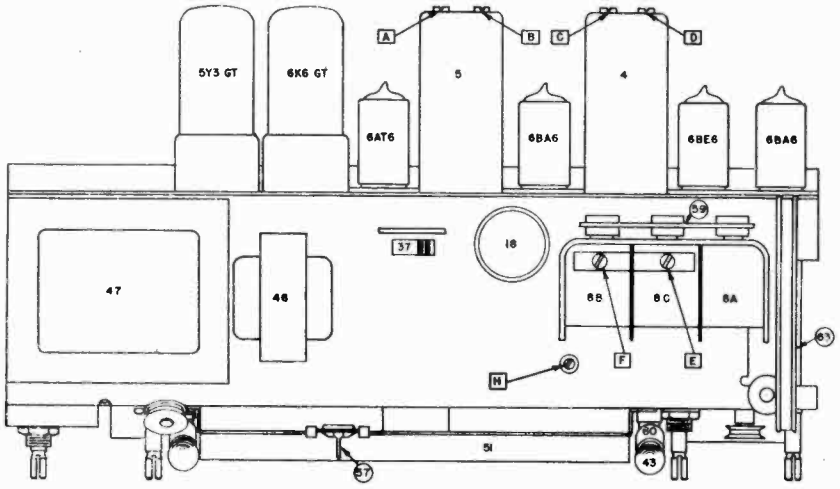
*During this Adjustment rock-in the gang condenser



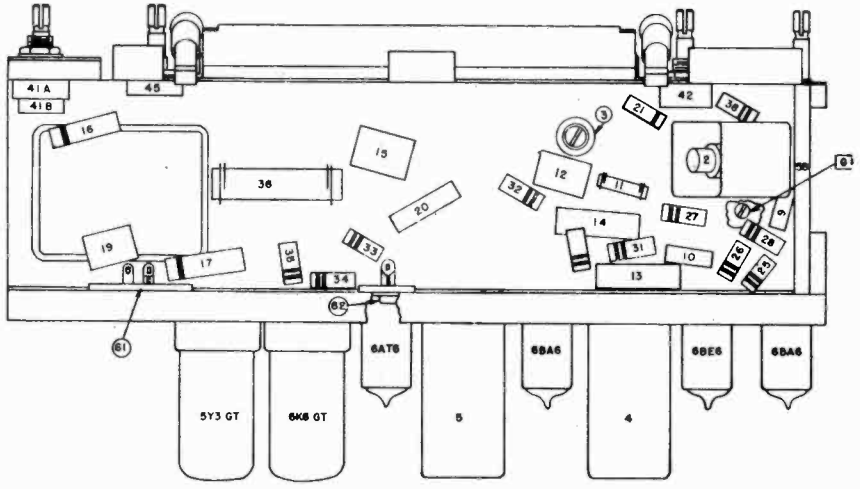
OSCILLATOR
COIL CONNECTIONS



R. F. COIL CONNECTIONS



PARTS LAYOUT — TUBE VIEW



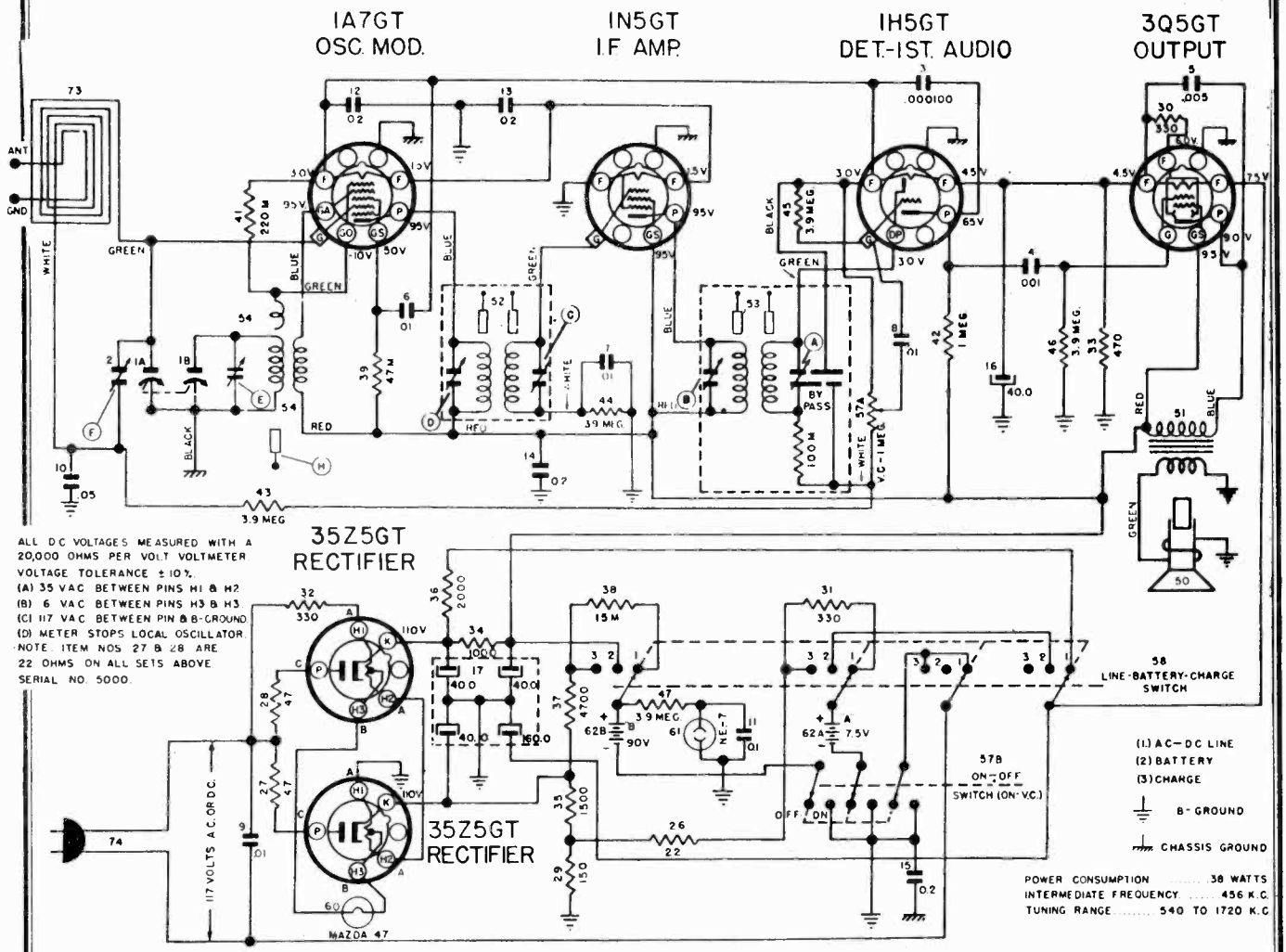
PARTS LAYOUT — CHASSIS VIEW

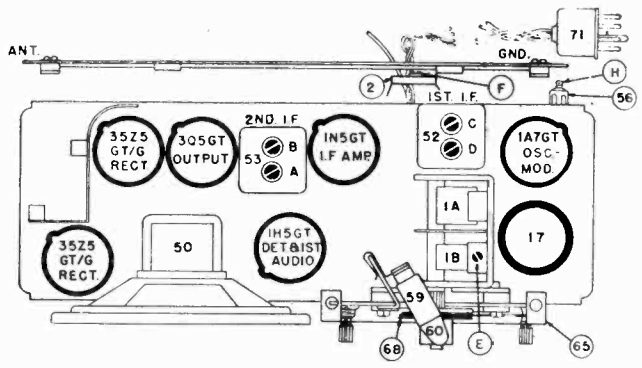
Illus. No.	Prod. Part No.	Service Part No.	Part Description
			ELECTRICAL PARTS
			Coils
1	1218390	1218390	Loop Assy. - Antenna
2	1218677	1218677	R.F.
3	1218679	1218679	Oscillator
4	1218086	1218676	1st I.F. Assy.
5	1218088	1218088	2nd I.F. Assy.
			CONDENSERS
8	1218095	1218678	Variable Condenser and Pulley
8A			Antenna Section
8B			R.F. Section
8C			Oscillator Section
9	1218121	G151	0.000150 Mfd. Ceramic
10	1218121	G151	0.000150 Mfd. Ceramic
11	7238511	7238511	0.000051 Mfd. Compensating
12	1217742	G821	0.000821 Mfd. Molded
13	7238788	E104	0.1 Mfd. 400 V. Tubular
14	7236842	E503	0.05 Mfd. 200 V. Tubular
15	1218204		Couplate
15A		E103	0.01 Mfd. 450 V.
15B		G271	0.000250 Mfd. 450 V.
15C		A274	250,000 Ohms 1/5 W.
15D		A474	500,000 Ohms 1/5 W.
16	7237836	E202	0.002 Mfd. 600 V. Tubular
17	1209307	H203	0.02 Mfd. 1000 V. Tubular
18	7240724	M908	Electrolytic
18A			20 Mfd. 25 V.
18B			20 Mfd. 400 V.
18C			20 Mfd. 400 V.
19	1217227	E103	0.01 Mfd. 600 V. Tubular
20	1217748	G472	0.004700 Mfd. Molded
21	1216558	E502	0.005 Mfd. (used only on R-1245 and R-1246)
			RESISTORS
15	1218204		Couplate
15A		E103	0.01 Mfd. 450 V.
15B		G271	0.000250 Mfd. 450 V.
15C		A274	250,000 Ohms 1/5 W.
15D		A474	500,000 Ohms 1/5 W.
25	1214563	A225	2.2 Megohms ½ W. Insulated
26	1214563	A225	2.2 Megohms ½ W. Insulated
27	1213217	A101	100 Ohms ½ W. Insulated
28	1214550	A223	22,000 Ohms ½ W. Insulated
29	7233653	C153	15,000 Ohms 2 W. Insulated
30	1214553	A473	47,000 Ohms ½ W. Insulated (Included in 2nd I.F. Assy.)
31	1213282	A105	1 Megohm ½ W. Insulated
32	1214559	A474	470,000 Ohms ½ W. Insulated
33	1215563	A685	6.8 Megohms ½ W. Insulated
34	1214537	A220	22 Ohms ½ W. Insulated
35	1216150	B471	470 Ohms 1 W. Insulated
36	1218241	1218241	800 Ohms 10 W. Insulated
37	1213489	A470	47 Ohms ½ W. Insulated
38	7240731	A473	47,000 Ohms ½ W. Insulated (used only on R-1245 and R-1246)

Illus. No.	Prod. Part No.	Service Part No.	Part Description
			MISCELLANEOUS ELECTRICAL
41	1218078	1218078	Control-Tone and Switch
41A			Tone Control
41B			Switch
42	1218536	1218536	Control-Volume
43	115273	51	Lamp-Dial
44	1218090	1218090	Speaker—5 x 7 Elliptical PM
45	1218062	1218062	Switch DPDT "Radio-Phono"
46	1218118	1218118	Transformer-Output
47	1217165	1217165	Transformer-Power
			MECHANICAL PARTS
51	1218076	1218076	Backplate-Pointer
52		6040	Cord—Pointer Drive
53	1216512	1216512	Cord—Power
54	1215418	1215418	Plug—Antenna Loop
55	1851850	1851850	Plug—Pick Up Arm
56	1217515	1217515	Plug—Phono Motor
57	1218065	1218065	Pointer
58	1218073	1218073	Shaft—Manual Tuning
59	1216962	1216962	Socket—Antenna Loop
60	1217839	1217839	Socket—Dial Light
	7236279	7236279	Socket—Octal Tube
61	1216925	1216925	Socket—Phono Motor
62	1216747	1216747	Socket—Phono Pick Up Arm
	1218071	1218071	Socket—Seven Pin Miniature Tube
63	7242189	7242189	Spring—Pointer Cord Tension
			CABINET PARTS
	1218675	1218675	Cabinet Assy. (R-1244)
	1218865	1218865	Cabinet Assy. (R-1245)
	1218871	1218871	Cabinet Assy. (R-1246)
	1218131	1218131	Dial
	1218085	1218085	Knob—Volume or Tuning
	1218084	1218084	Knob—"Radio-Phono" or Tone
	1218873	1218873	Handle—Record Player Drawer (R-1245 & R-1246)
	1218874	1218874	Knob—Cabinet Door (R-1245 & R-1246)
	1218875	1218875	Track—Record Player Drawer (R-1245 & R-1246)
	1218876	1218876	Tee Nut (R-1245 & R-1246)
	1218877	1218877	Tee Bolt (R-1245 & R-1246)

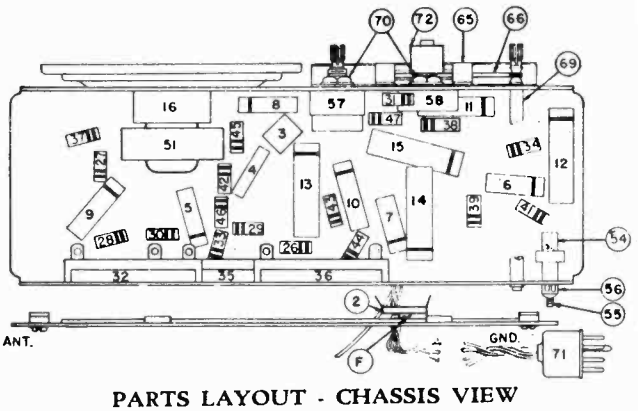
TUBES		
1217690	5252	6BA6
1217691	5253	6BE6
1218105	5251	6AT6
1213847	5196	6K6GT
1216134	5123	5Y3GT

UNITED MOTORS SERVICE CORP. MODELS R-1408, R-1409
(DIV. OF GEN. MOTORS)

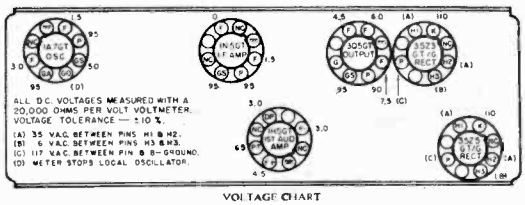




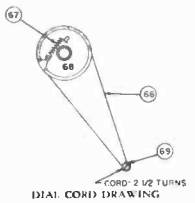
PARTS LAYOUT - TUBE VIEW



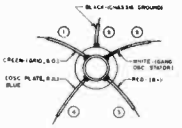
PARTS LAYOUT - CHASSIS VIEW



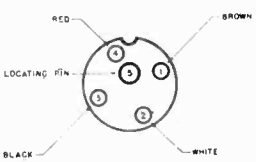
VOLTAGE CHART



DIAL CORD DRAWING



OSCILLATOR COIL



BATTERY PLUG CONNECTIONS (SHELL SIDE)

MODELS R-1408, R-1409 UNITED MOTORS SERVICE CORP. (DIV. OF GEN. MOTORS)

ALIGNMENT PROCEDURE

Output Meter Connections ..... Across Voice Coil Winding
Generator Ground ..... To Ground Terminal
Dummy Antenna ..... In Series with generator
Volume Control Position ..... Fully on

Adjust Signal Generator Output to a Minimum for Satisfactory Output Indication.

Steps	Series Condenser Or Dummy Antenna	Connect Signal Generator To	Adjust Signal Generator To	Turn Radio Dial To	Adjust Trimmers
1	0.1 Mfd.	1A7 Grid Cap.***	456 KC	Quiet Point near H. F. end	A-B (2nd IF Trans) C-D (1st IF Trans)
2	.000200 Mfd.	Ant. Terminal	1720 KC	1720 KC	E (Osc.)
3	.000200 Mfd.	Ant. Terminal	1400 KC	1400 KC	F (Ant.)
4*	.000200 Mfd.	Ant. Terminal	600 KC	600 KC	H

*Rock in Oscillator Core "H" with Signal Generator until maximum output is secured.

Repeat steps 2, 3 and 4 for most accurate alignment.

NOTE: If hum is encountered in output when an AC operated signal generator is used for Step 1, short out the 0.2 mfd condenser (#15) which is connected between B– and the chassis until work is completed. Shorting wire must be removed for normal operation in order to reduce shock hazard.

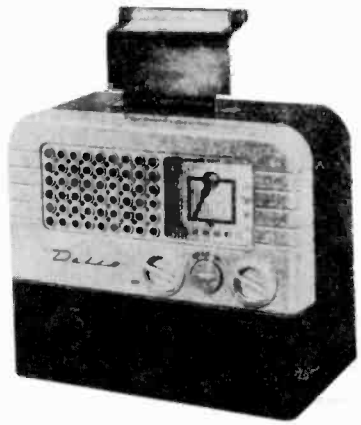
***Connect generator ground to chassis ground.

NOTE: On all sets above Serial No. 5000 the 47 ohm resistors, Illustration No. 27 and 28, have been replaced by 22 ohm resistors to prevent possible overheating if the line voltage is above 120 volts. If replacement becomes necessary, install either a 22 ohm resistor or two 47 ohm resistors in parallel in both locations (Illus. No. 27 and 28).

Illus. No.	Service Part No.	Description
		ELECTRICAL PARTS
		COILS
73	1217535	Antenna Assy. — Loop and Back Cover — Model R-1409 (Includes Condenser #2)
73	1217569	Antenna Assy. — Loop and Back Cover — Model R-1408 (Includes Condenser #2)
54	1217019	Oscillator
52	1216952	1st I. F.
53	1216953	2nd I. F.
		CONDENSERS
1	1216904	2 Gang Variable
1A		Antenna Section
1B		Oscillator Section
2	1217250	Antenna Trimmer (Included in #1217535 and 1217569)
3	G101	.000100 Mfd. Molded
4	E102	.001 Mfd. 600 V. Tubular
5	E502	.005 Mfd. 600 V. Tubular
6	E103	.01 Mfd. 600 V. Tubular
7	E103	.01 Mfd. 600 V. Tubular
8	E103	.01 Mfd. 600 V. Tubular
9	E103	.01 Mfd. 600 V. Tubular
10	E503	.05 Mfd. 600 V. Tubular
11	E104	0.1 Mfd. 600 V. Tubular
12	E204	0.2 Mfd. 400 V. Tubular
13	E204	0.2 Mfd. 400 V. Tubular
14	E204	0.2 Mfd. 400 V. Tubular
15	E204	0.2 Mfd. 400 V. Tubular
16	J300	40 Mfd. 25 V. Electrolytic
17	1217139	4 Section Electrolytic
17A		40 Mfd. 150 V.
17B		40 Mfd. 150 V.
17C		40 Mfd. 150 V.
17D		160 Mfd. 25 V.
		RESISTORS
26	A220	22 Ohms ½ W. Insulated
27	B470	47 Ohms 1 W. Insulated — Illus. Nos. 27 and 28 are B220
28	B470	47 Ohms 1 W. Insulated — 22 Ohm 1 W. on Sets above Serial #5000
29	B151	150 Ohms 1 W. Insulated
30	A331	330 Ohms ½ W. Insulated
31	A331	330 Ohms ½ W. Insulated
32	1216958	330 Ohms 10 W. Candohm
33	A471	470 Ohms ½ W. Insulated
34	B102	1,000 Ohms 1 W. Insulated
35	1216959	1,500 Ohms 10 W. Candohm
36	1216960	2,000 Ohms 10 W. Candohm
37	B472	4,700 Ohms 1 W. Insulated
38	A153	15,000 Ohms ½ W. Insulated
39	A473	47,000 Ohms ½ W. Insulated
41	A224	220,000 Ohms ½ W. Insulated
42	A105	1 Megohm ½ W. Insulated
43	A395	3.9 Megohm ½ W. Insulated
44	A395	3.9 Megohm ½ W. Insulated
45	A395	3.9 Megohm ½ W. Insulated
46	A395	3.9 Megohm ½ W. Insulated
47	A395	3.9 Megohm ½ W. Insulated
		MECHANICAL PARTS
		CHASSIS PARTS
72	1836870	Bushing — Selector Switch
	1217103	Cable Assy. — Battery
66	1212233	Cord — Universal Dial Drive — 48" Length
65	1217301	Dial and Dial Plate Assy.
	7237173	Grommet — Neon Lamp Mtg.
70	7231480	Nut — Hex
	1217533	Plug — Male Chassis
	1217255	Pointer — Dial
74	1217538	Power Cord and Socket
68	1217238	Pulley Assy.
69	1216951	Shaft — Manual Drive
59	1217839	Socket — Dial Light Assy., Less Lamp
	7236279	Socket — Octal Base Tube
67	1217323	Spring — Cord Tension
	7245353	Washer — "C" (Use With #1216951)
62	8760	Battery — "A" 7.4 V, "B" 90 V
56	1217105	Fastener — Coil Form
55	1217124	Iron Core Assembly
60	47	Lamp — Dial
61	1217239	Lamp — Neon Glow
50	1216563	Speaker — 5" PM
58	1216956	Transfer Switch
51	1217582	Transformer Output
57	1216945	Volume Control and Switch
		CABINET PARTS
	1217586	Cabinet — Model R-1409 — Brown Leather
	1217587	Cabinet — Model R-1408 — Cream Leather
	1217583	Front Cover Assy. — Complete — Model R-1409
	1217584	Front Cover Assy. — Complete — Model R-1408
		Front Cover
		Grille and Baffle Cloth — Included in Both
		Mounting Brackets and Screws — Front Cover Assys.
		Dial Crystal
	1217585	Handle Assy. Complete
	1217043	Knob — Power Volume and Tuning Control — Model R-1409
	1217557	Knob — Power Volume and Tuning Control — Model R-1408
	1217068	Knob and Spring — Transfer Switch — Model R-1409
	1217558	Knob and Spring — Transfer Switch — Model R-1408

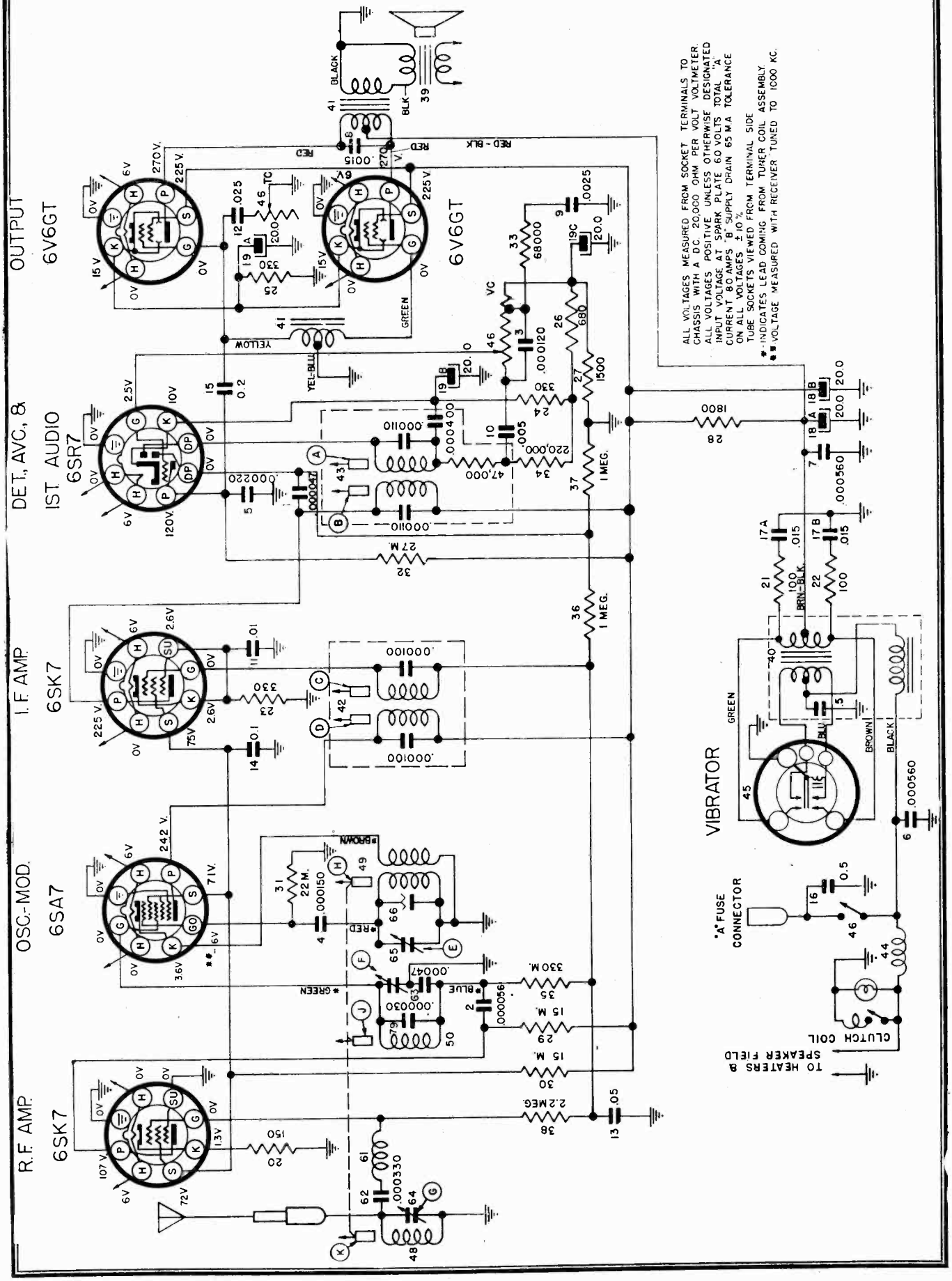
Charging Rate (Battery Charging) "A"	15 Mils.
Charging Rate (Battery Charging) "B"	4 Mils.
Battery Supply, "A"	7.5 Volts
Battery Supply, "B"	90 Volts
Power Supply	105/125 volts AC-DC
Power Consumption	38 Watts

The only difference between the R-1408 and R-1409 is in cabinet colors. The R-1408 is cream leather and the R-1409 is brown leather.



MODELS 980797, 980798, BUICK

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.



UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODELS 980797, 980798, BUICK

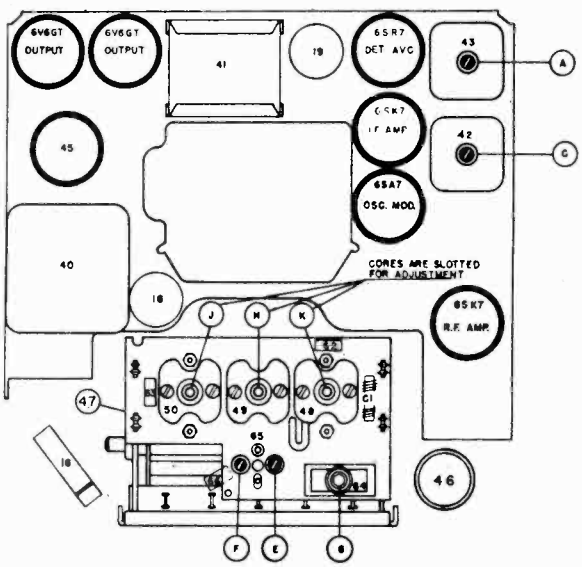
GENERAL:

Mounting—Model 980797 on all 1948 series 40-60-90 Buick cars.
Model 980798 on all 1948 series 50-70

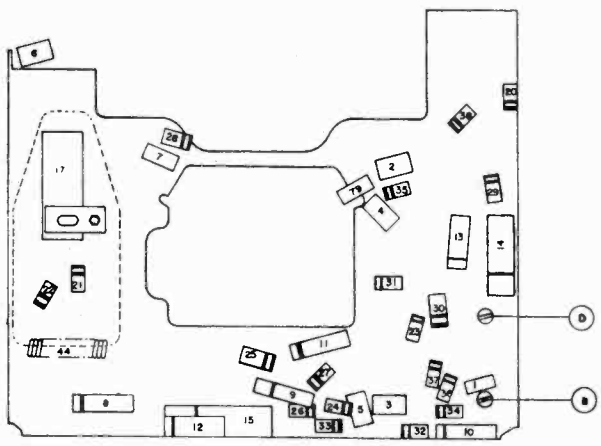
The model 980797 is similar to model 980744 and model 980798 is similar to model 980745. With the exception of parts and illustrations shown in this bulletin, all other information in Bulletin 6D-923 is applicable to models 980797 and 980798.

SERVICE PARTS LIST

Illus. No.	Production Part No.	Service Part No.	Description	
20	1213220	A151	150 Ohms ½ W. Insulated Resistor	
39	7255895	7255895	Speaker—8" Permanent Magnet	
40	7256939	7256939	Power Transformer	
	1217841	1217841	Dial Light Socket (Less Lamp)	
47	7257817	7257817	Tuner Assembly Complete—980797	
47A	7257797	7257797	Tuner Assembly Complete—980798	
		6040	Pointer Cord Pkg. (100' length)	
	7238860	7238860	Spring-Pointer Cord Tension	
69	7257811	7257811	Escutcheon	Parts included in Tuner Assy. 7257817
70	7257765	7257765	Dial	
71	7257766	7257766	Dial Shield	
72	7257803	7257803	Backplate Assembly	
74	7257779	7257779	"B" Pushbutton	
75	7257780	7257780	"U" Pushbutton	
76	7257781	7257781	"I" Pushbutton	
77	7257782	7257782	"C" Pushbutton	
78	7257783	7257783	"K" Pushbutton	
69A	7257818	7257818	Escutcheon	Parts included in Tuner Assy. 7257797
70A	7257755	7257755	Dial	
71A	7257756	7257756	Dial Shield	
72A	7257796	7257796	Backplate Assembly	
74A	7257786	7257786	"B" Pushbutton	
75A	7257787	7257787	"U" Pushbutton	
76A	7257788	7257788	"I" Pushbutton	
77A	7257789	7257789	"C" Pushbutton	
78A	7257790	7257790	"K" Pushbutton	
	1334393	1334393	Tuning Knob	
	1320577	1320577	Dummy Knob	
	1320576	1320576	Tone Control Knob	
	1336763	6015	Generator Condenser	
	120375	120375	Hex Nut	
79	1217735	G330	0.000033 Mfd. Molded Condenser	



PARTS LAYOUT — CHASSIS VIEW



PARTS LAYOUT — TUBE VIEW

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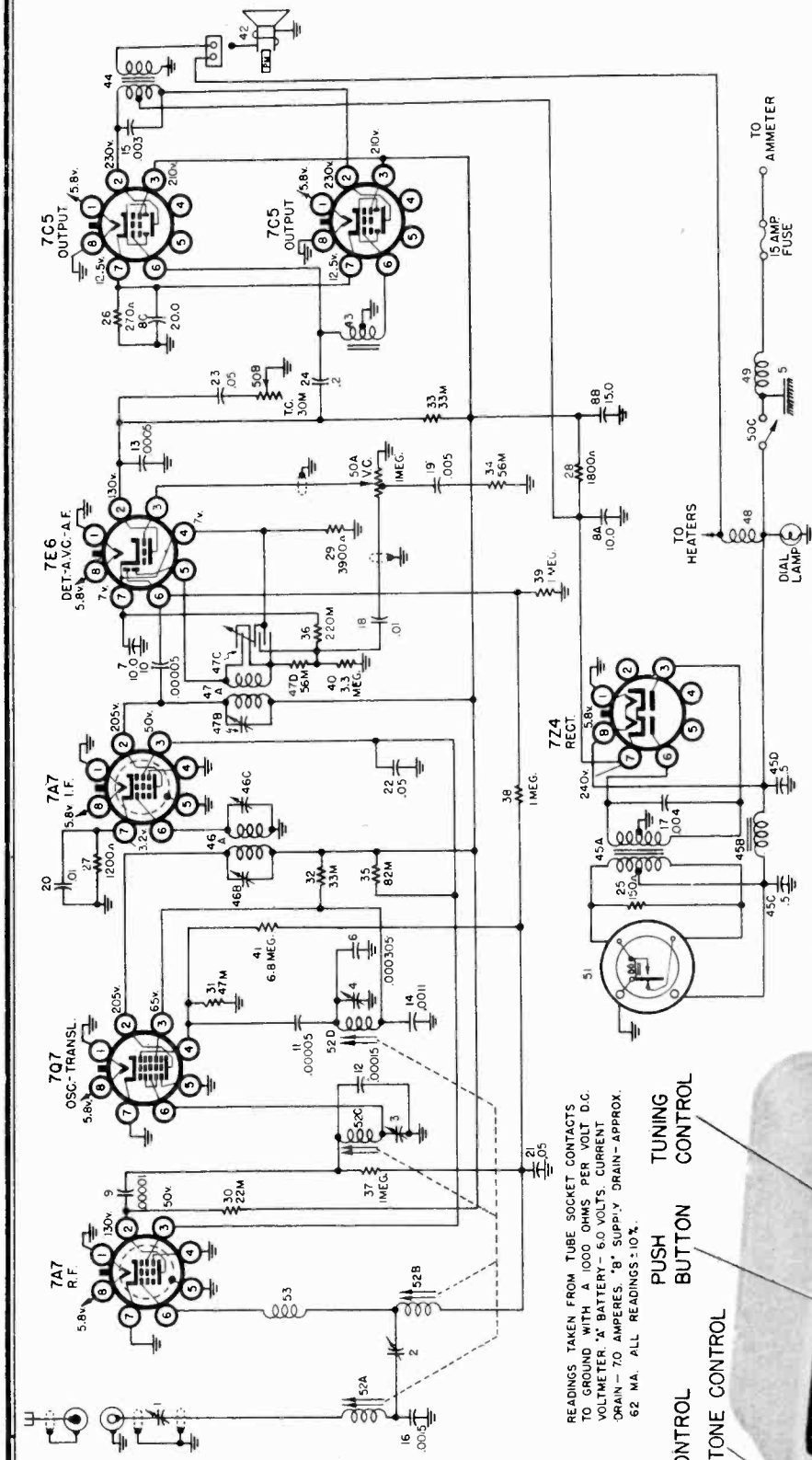
DIV. OF GENERAL MOTORS CORP.

MODEL 982420,
Early; Oldsmobile



TUBES — 7A7, 7Q7, 7A7, 7E6, 7C5, 7C5, 7Z4

SPEAKER — 6" x 9" Elliptical Permanent-Dynamic

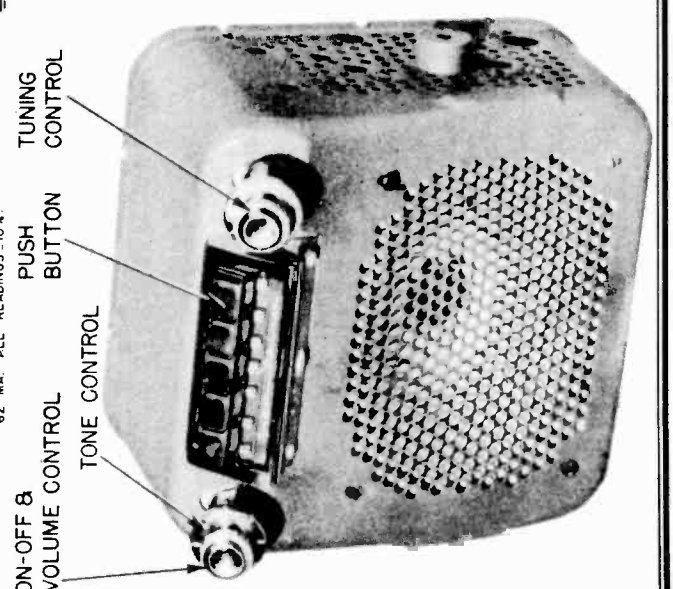
TUNING — Manual and 5 P. B.

TUNING RANGE — 535 KC 1610 KC

CAR ANTENNA CAPACITY — 70 mmfd.

PUSH BUTTON SET-UP

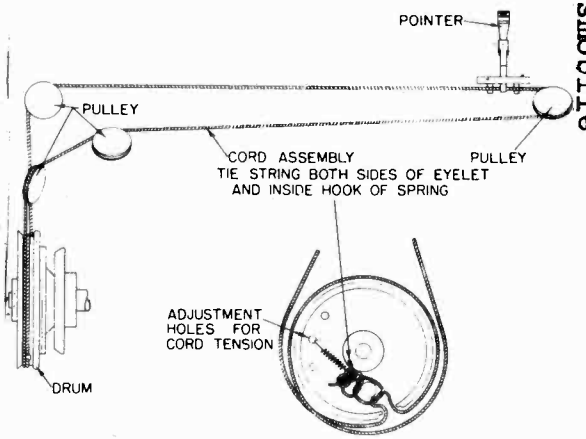
Pull button slightly to the left and then out - tune in manually - depress selected button to set.



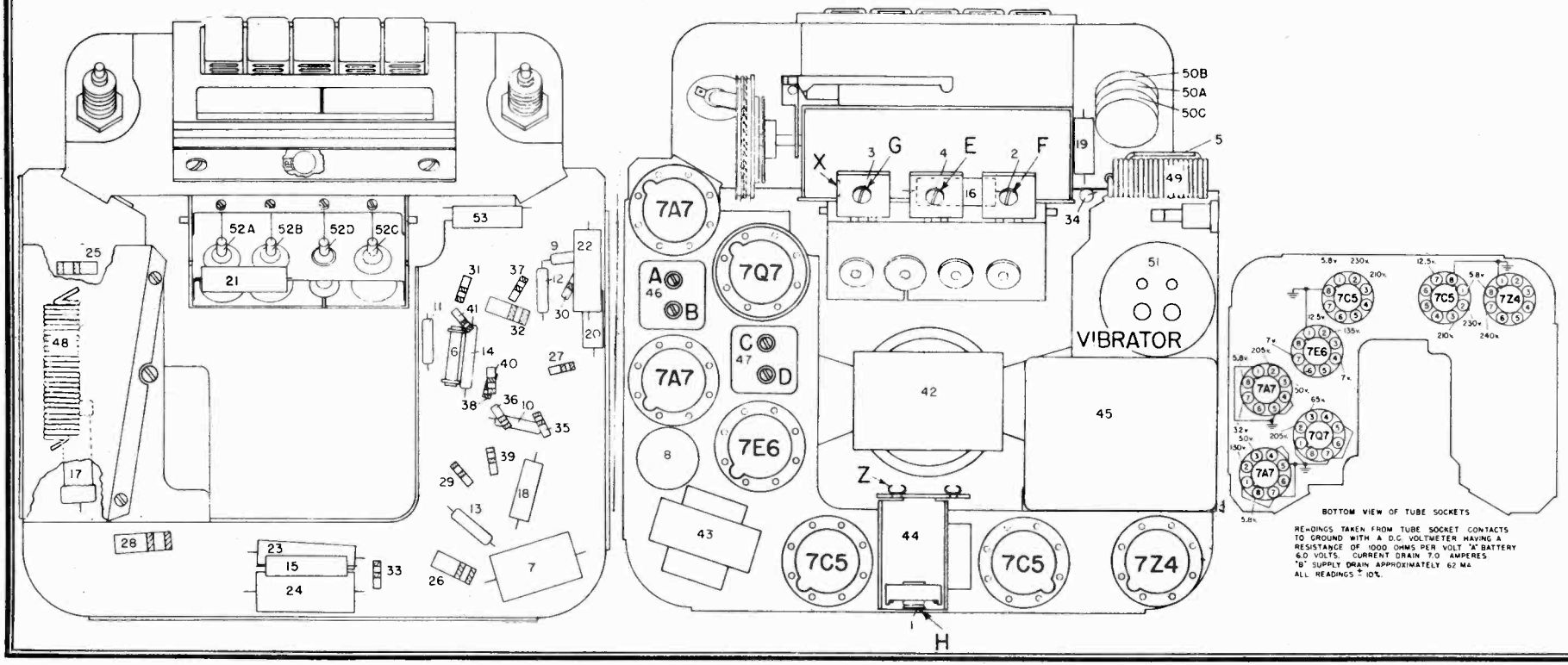
ALIGNMENT PROCEDURE

Volume Control maximum.
Tone Control on high position.
Signal Generator Output minimum for satisfactory output indication.

Series Capacitor Or Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 mfd.	Terminal X (See Parts Layout)	257.5 KC	A, B, C, D
.000070 mfd.	Antenna Terminal	1610 KC	E, H, F, G



Low frequency alignment not required.
Adjust Trimmer "H" to match car antenna (1400 KC) when radio is installed.



UNITED MOTORS SERVICE
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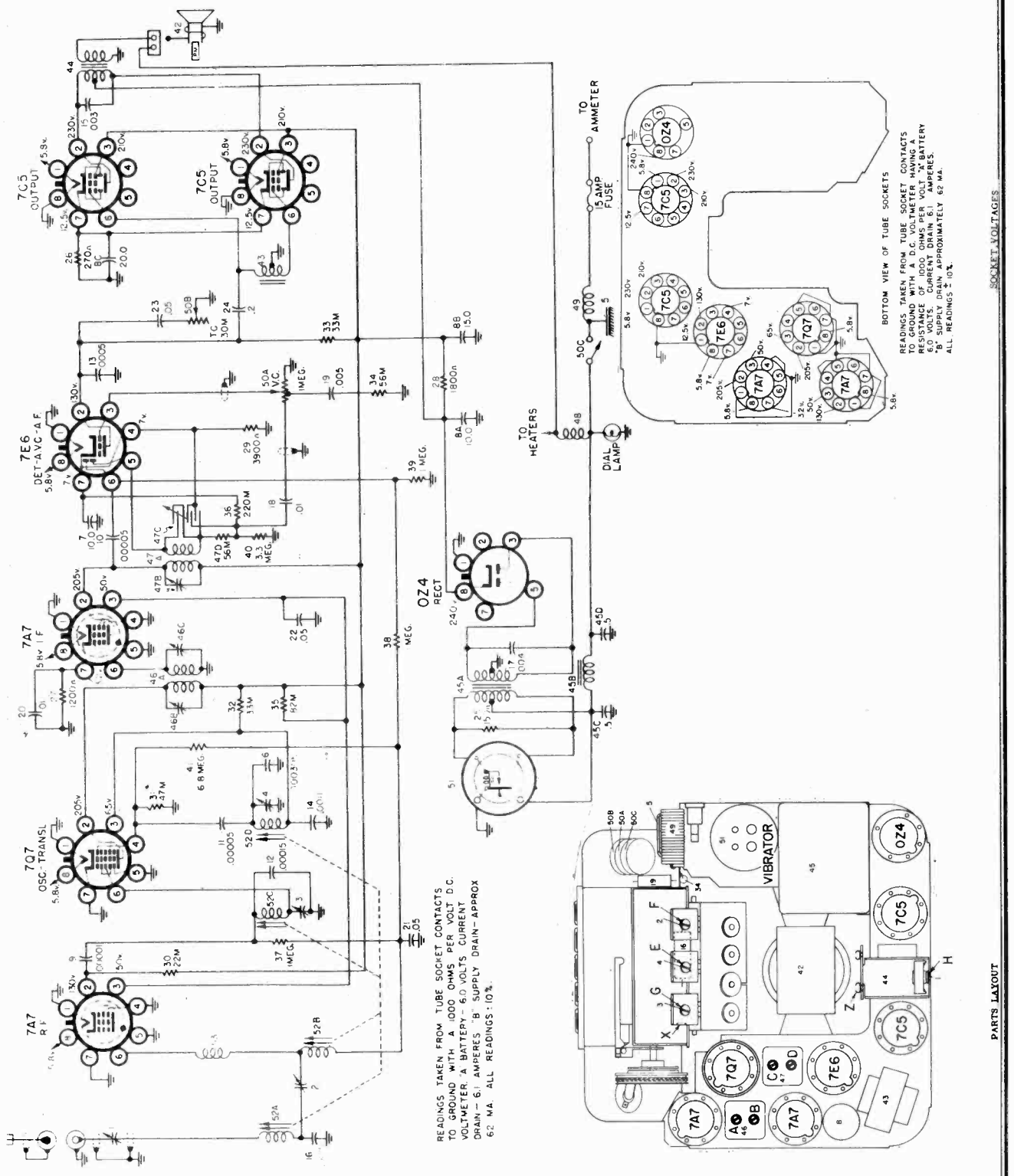
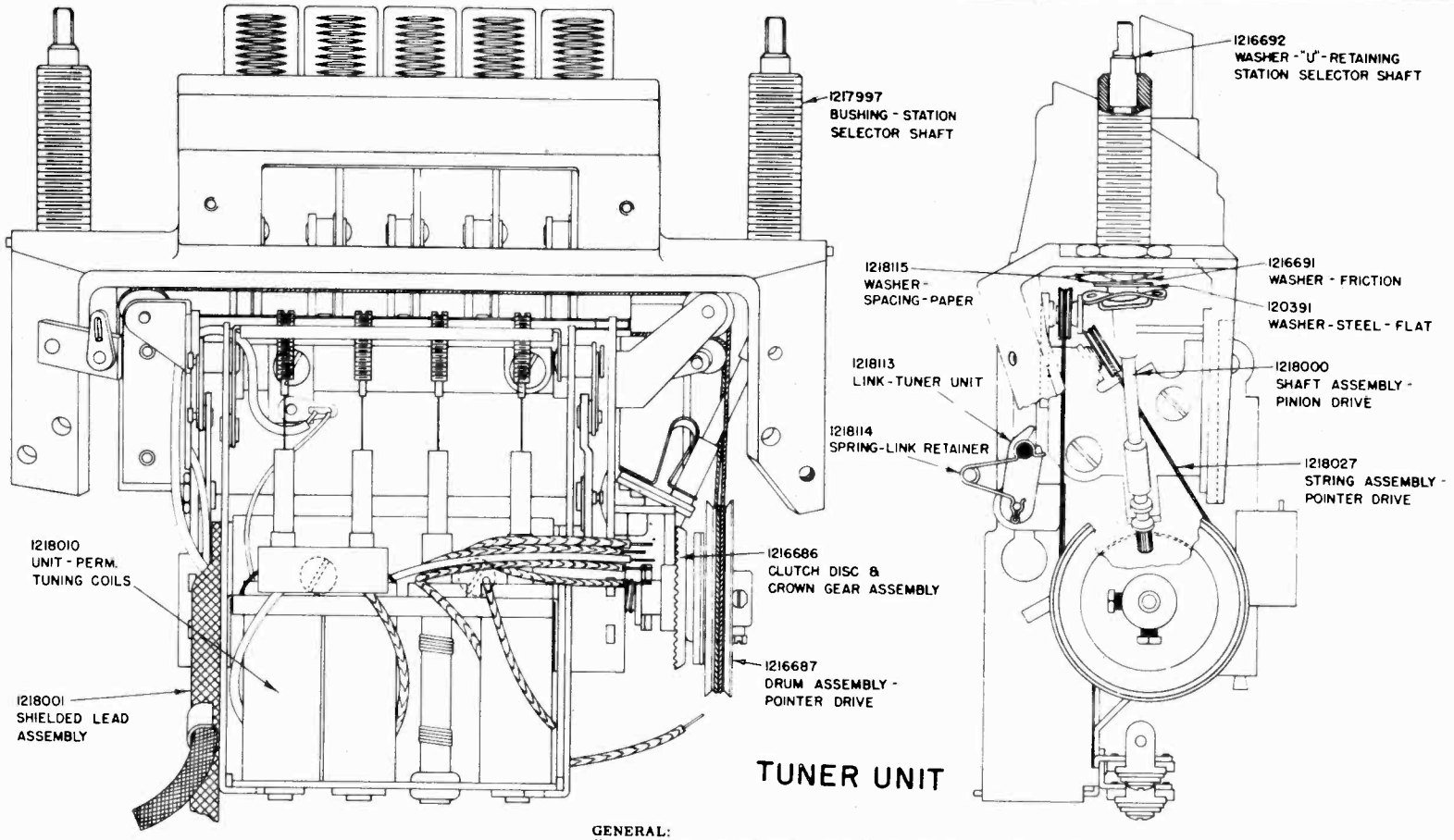
MODEL 982420,
Late; Oldsmobile





GENERAL:
"The 1949 version of Model 982420 (identified by serial number prefix 'B-59') is identically the same as the 1948 version of Model 982420 (identified by serial number prefix 'B-58') except for the following TUBE, MOUNTING & INSTALLATION PARTS and MISCELLANEOUS CHASSIS PARTS changes:"

SERVICE PARTS LIST

PRODUCTION PART NUMBER	SERVICE PART NUMBER	DESCRIPTION
DELETIONS		
554516		Nut - 1/2-28 Hex.
419511		Washer - Felt - 9/32 I.D. (Anti-Rattle) Tone Control
1562090		Washer - Felt - 3/16 I.D. (Anti-Rattle) Tuning & Volume Control
554518		Bracket - Receiver Mounting
554520		Gasket - Speaker Baffle
1910147		Condenser - Ignition Coil
122159		Screw - #8-32 x 1/4 - Rd. Head
121841		Washer - Lock - #8 (Split)
1218424		Tube - 7Z4 Rectifier
ADDITIONS		
7255287		Nut - 1/2-28 Hex.
7257400		Washer - Wave - 3/16 I.D. (Anti-Rattle) Tuning & Volume Control
7256654		Bracket - Receiver Mounting
555437 or 1912757		Condenser - Ignition Coil
7256684		Condenser - Ignition Coil
164349		Gasket - Speaker Baffle
1912900		Screw - #8-32 x 1/4 - Phillips Hd. - Self Tapping
1211924	5003	Condenser - Voltage Regulator
1219086		Tube - OZ4 Rectifier
		Socket - 8 Prong Octal (Rectifier)

UNITED MOTORS SERVICE
DIV. OF GENERAL MOTORS CORP.

MODEL 982420, Early, Late; Oldsmobile

Illus. No.	Service * Part No.	Production Part No.	Description
			CAPACITORS
1		1218002	Antenna - Trimmer - Capacitor
2		1218047	Grid Trimmer - Capacitor
3		1218046	R. F. Trimmer - Capacitor
4		1218043	Oscillator - Trimmer - Capacitor
5		1212278	Spark - Capacitor
6		1217993	305 Mmfd. Compensating Capacitor
7	J100	1217998	Electrolytic - 10 Mfd. 25 Volt
8		1218009	Electrolytic
8A			10 Mfd. 350 Volt
8B			15 Mfd. 350 Volt
8C			20 Mfd. 25 Volt
9	G100	7234242	.00001 Mfd. Mica
10	G470	1207625	.00005 Mfd. Mica
11	G470	1207625	.00005 Mfd. Mica
12	G151	7230893	.00015 Mfd. Mica
13	G471	7238879	.0005 Mfd. Mica
14		1218015	.0011 Mfd. Mica - Silver
15	E302	7234126	.003 Mfd. 800 Volt
16	E102	7236134	.0015 Mfd. 800 Volt
17	H402	1217875	.004 Mfd. 1500 Volt
18	E103	1208600	.01 Mfd. 600 Volt
19	E502	7230912	.005 Mfd. 600 Volt
20	E103	1208600	.01 Mfd. 600 Volt
21	E503	7230592	.05 Mfd. 600 Volt
22	E503	7230592	.05 Mfd. 600 Volt
23	E503	7230592	.05 Mfd. 600 Volt
24		7234127	.2 Mfd. 200 Volt
			RESISTORS
25	B151	1211005	150 Ohm - 1 Watt
26	B271	1213846	270 Ohm - 1 Watt
27	A122	1213236	1200 Ohm - 1/2 Watt
28	C182	1214573	1800 Ohm - 2 Watt
29	A392	1214546	3900 Ohm - 1/2 Watt
30	A223	1214550	22,000 Ohm - 1/2 Watt
31	A473	1214553	47,000 Ohm - 1/2 Watt
32	A333	1213845	33,000 Ohm - 1/2 Watt
33	A333	1213845	33,000 Ohm - 1/2 Watt
34	A563	1213267	56,000 Ohm - 1/2 Watt
35	A823	1214554	82,000 Ohm - 1/2 Watt
36	A224	1214555	220,000 Ohm - 1/2 Watt
37	A105	1213282	1 Megohm - 1/2 Watt
38	A105	1213282	1 Megohm - 1/2 Watt
39	A105	1213282	1 Megohm - 1/2 Watt
40	A335	1214564	3.3 Megohm - 1/2 Watt
41	A685	1215563	6.8 Megohm - 1/2 Watt
			MISCELLANEOUS ELECTRICAL PARTS
42		1218060	Speaker - 6" x 9" Elliptical Permanent-Dynamic
43		1218029	Transformer - Audio Input
44		1218059	Transformer - Audio Output
45		1218008	Transformer & Filter Assembly
45A			Transformer - Power
45B			Hash - Choke
45C			.5 Mfd. 100 Volt
45D			.5 Mfd. 100 Volt
46		1218033	1st I. F. Transformer Assembly
46A			I. F. Coil Assembly
46B			Primary Trimmer
46C			Secondary Trimmer
47		1218035	2nd I. F. Transformer Assembly
47A			I. F. Coil Assembly
47B			Primary Trimmer
47C			Secondary Trimmer
47D			56,000 Ohm - 1/2 Watt
48		1217996	Filament Choke
49		1217995	Spark Choke
50		1218005	Control - Volume - Tone On-Off Switch
50A			Volume Control - 1 Megohm
50B			Tone Control - 30,000 Ohm
50C			On-Off Switch
51	8542	1218006	Vibrator

Illus. No.	Service * Part No.	Production Part No.	Description
			TUNER UNIT & PARTS
52		1218010	Unit - Perm. Tuning Coil
52A			Antenna Coil
52B			Preselector Coil
52C			R. F. Coil
52D			Oscillator Coil
		1217997	Bushing - Station Selector Shaft
		1218044	Tuner Unit Assembly - Mechanical Portion only - Includes Push Buttons, Clutch Disc, Crown Gear and Drum Assembly
		1216686	Clutch Disc & Crown Gear Assy.
		1208004	Dial Glass - Calibrated
		1218042	Escutcheon Assy. & Light Shields Without Dial (for service only)
		1216687	Drum Assembly - Pointer Drive
		1218001	Lead Assembly - Shielded
		1218000	Shaft Assembly - Drive Pinion
		1218030	Pointer & Slide Assembly
		1216692	Washer - "U" Retaining - Station Selector Shaft
		1216691	Washer - Friction - Station Selector Shaft
		1217999	Actuator Plate Assembly
		1217994	Lever Assembly
		1217992	Screw - #10-32 Special
		1218027	String Assembly - Pointer Drive
		1218041	Connector Assembly - Antenna
		121391	Washer - Steel - Flat
		1218115	Washer - Spacing - Paper
		1218113	Link - Tuner Unit
		1218114	Spring - Link Retaining
53		1214382	Antenna Choke
			TUBES
5290		1213583	7A7 - R. F. Amplifier
5301		1213853	7Q7 - Oscillator-Translator
5290		1213583	7A7 - I. F. Amplifier
5298		1213852	7B6 - Detector AVC - 1st Audio
5295		1213586	7C5 - Audio Output
5295		1213586	7C5 - Audio Output
5308		1218424	7Z4 - Rectifier
			MOUNTING & INSTALLATION PARTS
		414997	Washer - Flat 33/64 I. D.
		554516	Nut - 1/2-28 Hex
		419512	Washer - Rubber - 9/32 I. D. (Anti-Rattle) Dummy Control
		419511	Washer - Felt - 9/32 I. D. (Anti-Rattle) Tone Control
		554515	Knob - Tone & Dummy
		1562090	Washer - Felt - 3/16 I.D. (Anti-Rattle) Tuning & Volume Control
		7256702	Knob (Tuning & Volume Control) Included Set Screw
		554518	Bracket - Receiver Mounting
		554519	Bracket - Side Mounting
		554690	Bolt - 1/4-20 x 3/8 long Truss Head
		120706	Bolt - 1/4-20 x 1/2 long - Hex Hd.
		121797	Bolt - 1/4-20 x 3/8 long - Hex Hd.
		120392	Washer - Flat - 17/64 I.D. 5/8 O.D.
		120423	Washer - Lock - 1/4 (Internal Tooth Type "B")
		103319	Washer - Lock - 1/4 (Split)
		554691	"A" Lead Connector & Filter Condenser Assembly
		120151	Fuse - "A" Lead 15 Amp. 25 Volt
		1910147	Condenser - Ignition Coil
		1911095	Condenser - Generator - .5 Mfd.
		7257239	Distributor Suppressor - 15,000 Ohm
		414237	Grommet - Distributor Suppressor
		415823	Static Collector (Front Wheel)
		122159	Screw - #8-32 x 1/4 - Rd. Hd.
		121841	Washer - Lock - #8 (Split)
		554339	Panel - Radio Control
		554520	Gasket - Speaker Baffle
		7256717	Spacer - Instrument Panel to Gasket
		555348	Hood Grounding Clip
			MISCELLANEOUS CHASSIS PARTS
		1216041	Socket - Vibrator
		7238455	Socket - Tube - 8 Prong Lock-In
		1217991	Shield - Tube
		1218007	Cover Assembly - Case Back

MODEL 984172, Pontiac

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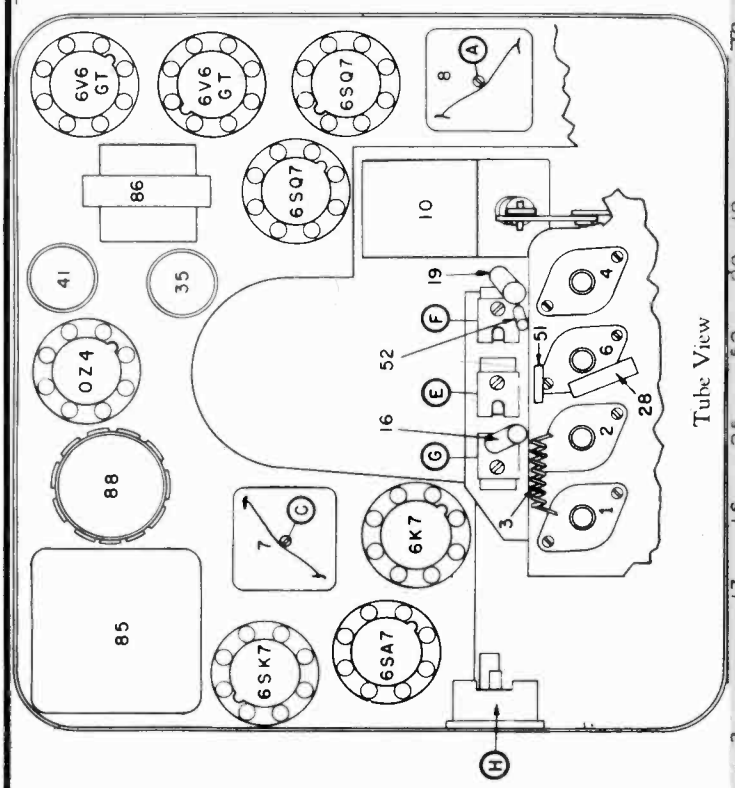
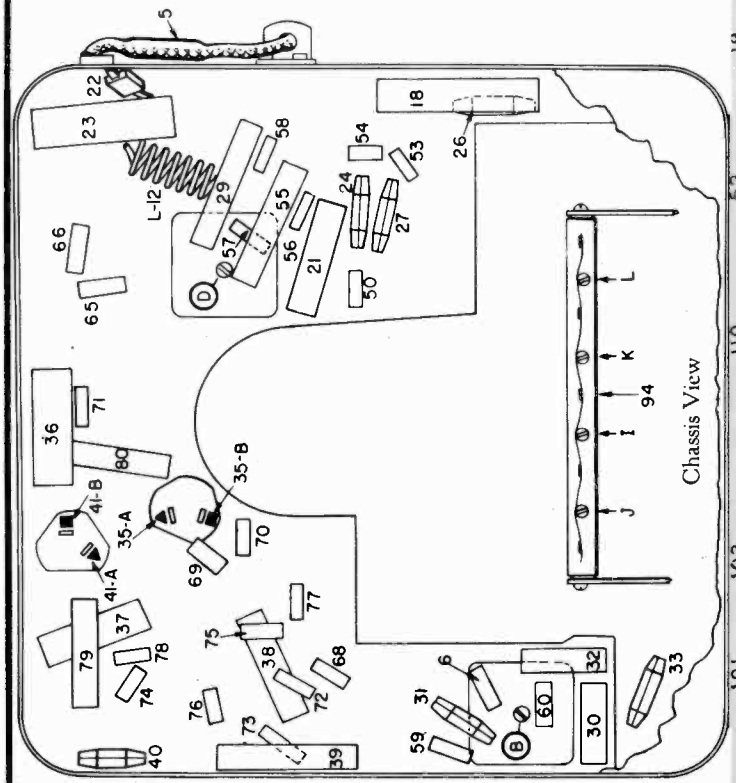
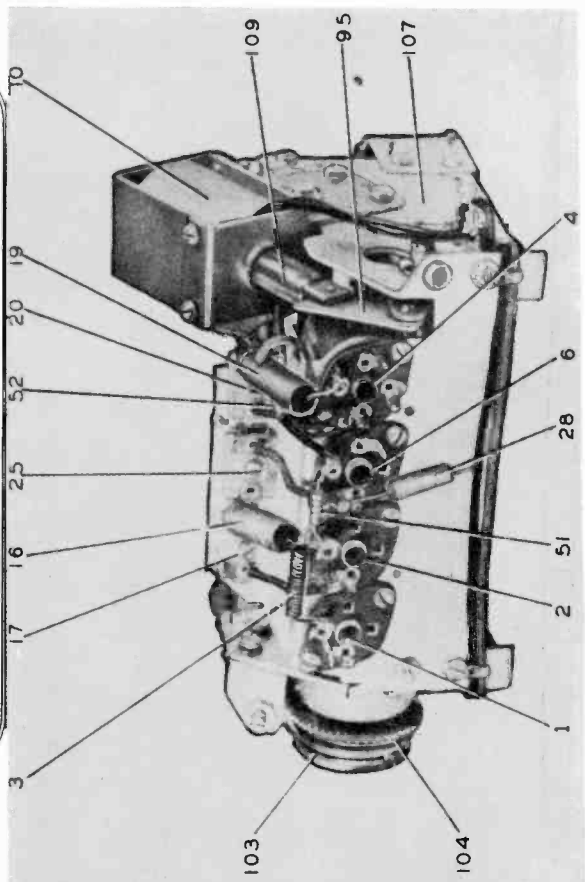


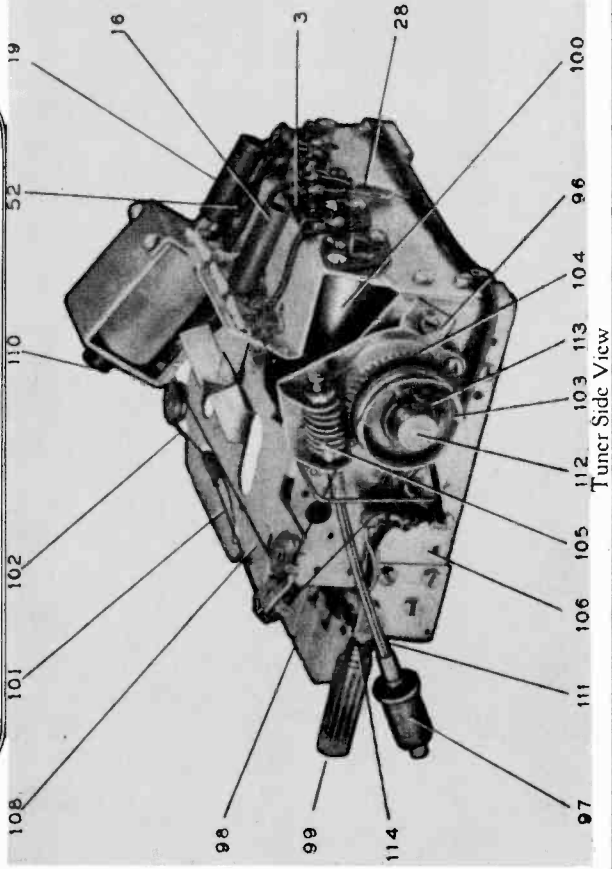
Tube View



Chassis View



Tuner Coil View



Tuner Side View

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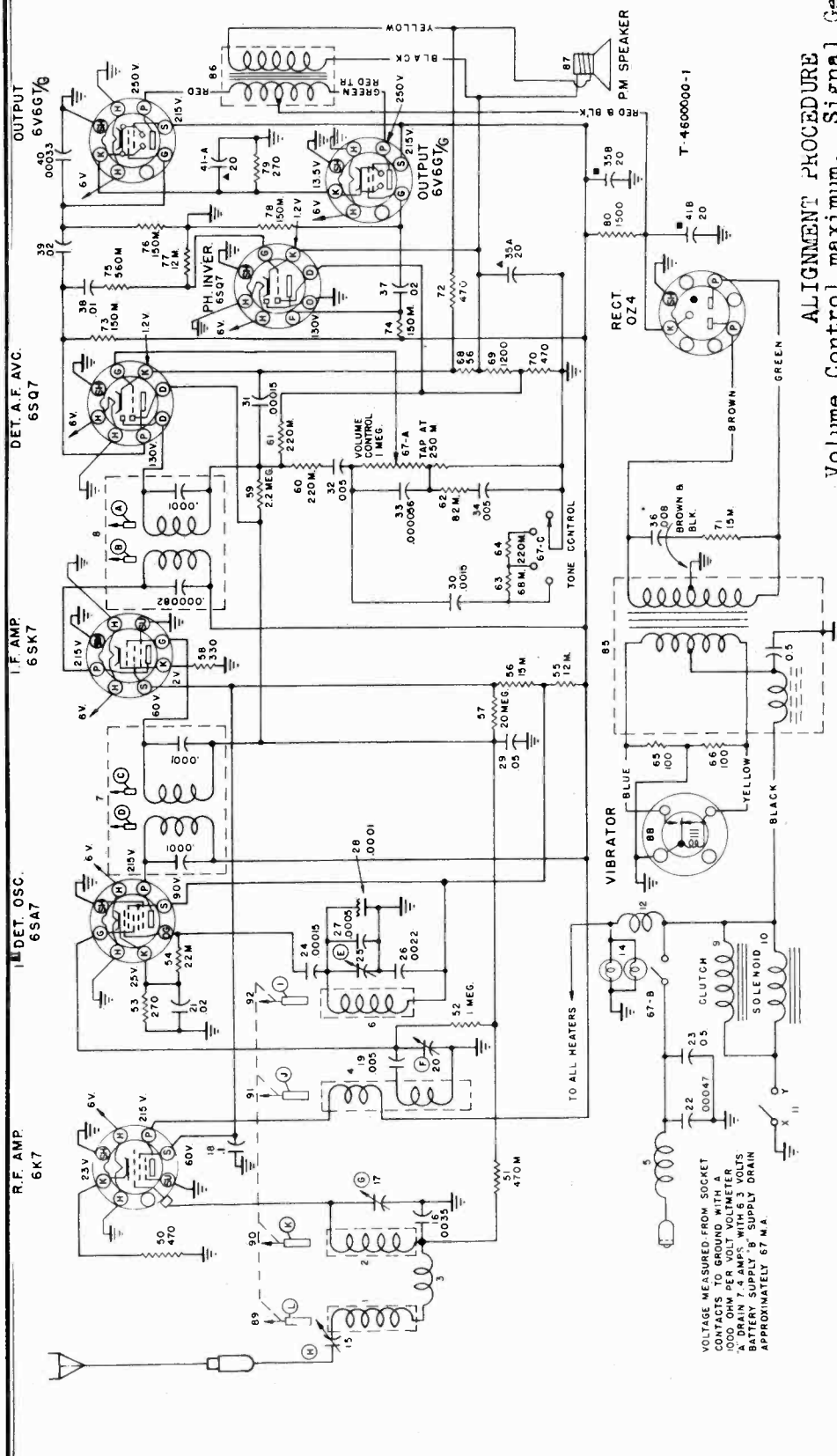
MODEL 984172, Pontiac



ALIGNMENT PROCEDURE

Volume Control maximum. Signal Generator output minimum for satisfactory output indication.

*Before making this adjustment, turn core screws, I, J, K, L several turns in a counter clockwise direction until the threaded stud extends 5/8" through the core bar (Illus.94). The purpose of this adjustment is to completely remove the tuning cores from the coils for the initial trimmer adjustments.

Series Condenser Dummy Antenna	Connect to	Signal Generator Frequency	Tune Receiver To	Adjust Screws in Order
.1 Mfd.	6SK7 Grid	260 K.C.	No Broadcast Signal	A, B
.1 Mfd.	6SA7 Grid	260 K.C.	No Broadcast Signal	C, D
*.000072	Antenna	1,645 K.C.	Extreme High Freq. End	E, F, G, H
.000072	Antenna	1,620 K.C.	Extreme High Freq. End	I, J, K, L
.000072	Antenna	1,200 K.C.	Signal Generator	J, K, L
.000072	Antenna	600 K.C.	Signal Generator	F, G, H
.000072	Antenna	1,200 K.C.	Signal Generator	J, K, L

UNITED MOTORS SERVICE
DIV. OF GEN. MOTORS CORP.

MODEL 984172, Pontiac

SERVICE PARTS LIST

Coils

Ill. No.		Service Part No.	Description
1		1215800	Antenna (less shield can)
2		1215800	Antenna (less shield can)
3		1215801	Antenna choke
4		1215802	R.F. (less shield can)
5		1215803	"A" lead and choke assembly
6		1215804	Oscillator (less shield can)
7		1214491	First I.F. transformer
	7A		I.F. coil assemblies
	7B		.0001 mfd. mica
8		1214492	Second I.F. transformer
	8A		I.F. coil assemblies
	8B		.000082 mfd., mica
	8C		.0001 mfd., mica
9		1214463	Clutch
10		1216431	Solenoid

Condensers

15		1214494	Antenna trimmer and bracket
16		7232954	.0035 mfd., 700 volts, tubular
17		1214456	8-80 mmfd.—trimmer
18		1207908	0.1 mfd., 400 volts—tubular
19		7230912	.005 mfd., 800 volts—tubular
20		1214456	8-80 mmfd.—trimmer
21		1212099	.02 mfd., 600 volts—tubular
22		1214168	.00047 mfd.—mica
23		7232403	0.5 mfd., 150 volts—tubular
24		7230893	.00015 mfd.—moulded mica
25		1214456	8-80 mmfd.—trimmer
26		7236159	.0022 mfd.—silvered mica, moulded
27		7236160	.00051 mfd.—silvered mica, moulded
28		1216120	.0001 mfd.—ceramic
29		7230592	.05 mfd., 600 volts—tubular
30		1214167	.0015 mfd., 1,500 volts—tubular
31		7230893	.00015 mfd.—moulded mica
32		7230912	.005 mfd., 800 volts—tubular
33		1215077	.000056 mfd.—moulded mica
34		7230912	.005 mfd., 800 volts—tubular
35		1216122	Electrolytic
	35A		20 mfd., 25 volts
	35B		20 mfd., 350 volts
36		1215191	.008 mfd., 1,500 volts—tubular
37		1212099	.02 mfd., 600 volts—tubular
38		1208600	.01 mfd., 600 volts—tubular
39		1212099	.02 mfd., 600 volts—tubular
40		7232957	.00033 mfd.—moulded mica
41		1216122	Electrolytic
	41A		20 mfd., 25 volts
	41B		20 mfd., 350 volts

Resistors

50		1213486	470 ohms, ½ watt
51		1210470	500,000 ohms, ½ watt
52		1209885	1 meg., ½ watt
53		1211188	270 ohms, ½ watt
54		1210882	20,000 ohms, ½ watt
55		1212491	12,000 ohms, 2 watt
56		1211089	15,000 ohms, ½ watt
57		7242581	20 meg., ½ watt
58		1211220	300 ohms, ½ watt
59		1211164	2 meg., ½ watt
60		1210119	200,000 ohms, ½ watt
61		1210119	200,000 ohms, ½ watt
62		1210832	75,000 ohms, ½ watt
63		1210832	75,000 ohms, ½ watt
64		1210119	200,000 ohms, ½ watt
65		1211002	100 ohms, 1 watt
66		1211002	100 ohms, 1 watt
67		1215806	Volume control, tone control, and power switch
	67A		Volume control
	67B		Power switch
	67C		Tone control
68		1212288	50 ohms, ½ watt
69		1211038	1,200 ohms, ½ watt
70		1213486	470 ohms, ½ watt
71		1211091	15,000 ohms, 1 watt
72		1213486	470 ohms, ½ watt
73		1211163	150,000 ohms, ½ watt
74		1211163	150,000 ohms, ½ watt
75		7232592	600,000 ohms, ½ watt
76		1211163	150,000 ohms, ½ watt
77		7231810	12,000 ohms, ½ watt
78		1211163	150,000 ohms, ½ watt
79		1216117	270 ohms, 2 watt
80		1216125	1,500 ohms, 2 watt

Miscellaneous Electrical Parts

85		1215807	Vibrator transformer
	85A		Transformer coil and core
	85B		0.5 mfd., 100 volts—tubular
	85C		Reactor
86		1214488	Output transformer
87		1216432	Dynamic speaker, 6⅜ in. x 9¼ in. Elliptical
	87A	1215838	Cone and voice coil
	87B	1215839	Dust cap
88		8542	Vibrator
89 90 91		1215809	Tuning core—Color code YELLOW
92 89 90 91		1215810	Tuning core—Color code GREEN
92 89 90 91		1215811	Tuning core—Color code RED
92			

Tuner Mechanical Parts

		145635	Ball—For worm gear
94		1214461	Bar—Coil core draw
		1214484	Bar—Contact latch
		1214458	Bar—Rocker and gear
95		1216434	Bar—Solenoid draw and link
96		1215812	Bracket—Clutch and bearing assembly
		1214481	Bracket—Push button guide
97		1214478	Bushing—Tuning shaft
98		1215813	Button—Push
99		1215814	Button—Set-up
100		1215815	Can—Coil shield
101		1215816	Cord—Pointer cord and long link
102		1214508	Cord—Pointer cord and short link
		1216435	Dial—Tuning
		7235945	Disc—Rubber disc for clutch
103		1214468	Drum—Drive drum and clutch disc (rubber)
		1215818	Escutcheon—Dial
104		1216092	Gear—Drive gear and clutch friction disc assembly
105		1214842	Gear—Worm gear—less set screw
		1215819	Grommet—Rubber grommet for antenna or R.F. coils
		1215820	Grommet—Rubber grommet for oscillator coil
		1214462	Link—Coil draw bar
		1216436	Nut—Locknut for solenoid pole piece
		1214821	Nut—Locknut for worm gear bearing screw
		1309864	Nut—Mounting nut for tuning shaft bushing
		1215821	Pawl—Switch finger
106		1215822	Plate—L.H. end
107		1215823	Plate—R.H. end
108		1215824	Plate—Bottom plate with pulleys
		1216437	Plate—Dial back
		1216438	Plate—Front bearing
		1214444	Plate—Rear bearing
		1214460	Plate—Set-up button stop plate and switch rear contact
109		1216439	Plunger—Solenoid plunger and stud
		1215826	Pointer—Dial pointer and holder
110		1216440	Pole Piece—Solenoid
		1214822	Retainer—Solenoid draw bar retaining clip
		1214503	Retainer—Tuning dial
		1215827	Rod—Push rod and cam assembly
		132688	Screw—Dial back plate mounting
		1214845	Screw—Dial escutcheon
		1215121	Screw—Set screw for drive drum
		127555	Screw—Set screw for worm gear
		7240316	Screw—Set screw for worm gear bearing
		1214483	Shaft—Contact latch bar, and switch finger pawl shaft
111		1214477	Shaft—Flexible tuning shaft—less bushing
		1214469	Shaft—Solenoid draw bar
		1214464	Shell—Clutch coil cover
		1214486	Shield—Light shield
112		1215828	Spindle—Clutch spindle and gear assembly
		1214466	Spring—Clutch
		1214843	Spring—Coil draw bar link
		1214831	Spring—Coil draw bar
		1214825	Spring—Contact latch bar
113		1216208	Spring—Pointer cord
		1214482	Spring—Push button retaining spring strip
		1216441	Spring—Push rod return
		1215235	Spring—Rocker bar gear
114		1216118	Spring—Set-up button
		1216442	Spring—Solenoid draw bar
		1214824	Spring—Switch finger pawl
		7236121	Spring—Tension spring for drive gear
		1216209	Spring—Tension spring for rocker bar
		7236001	Washer—"C" washer for flexible shaft
		1214835	Washer—Felt washer for push rods
		7235892	Washer—Fibre washer for worm gear thrust
		1214837	Washer—Flat washer for solenoid draw bar
		1214823	Washer—Spring washer for worm gear thrust

Tubes

7232770	6K7—R.F.
7237886	6SA7—First Detector—Oscillator
7237887	6SK7—I.F.
7237888	6SQ7—Second Detector—A.F.—A.V.C.
7237888	6SQ7—Phase Inverter
1213637	6V6GT—Output
1213637	6V6GT—Output
7237180	0Z4—Rectifier

Miscellaneous Mechanical Parts

1860926	Bushing—Bushing and ferrule for "A" lead connector
1215829	Case—Complete receiver case
1214495	Connector—"A" lead connector and bracket
1215830	Cover—Vibrator "hash" cover
1215831	Gasket—Sponge rubber gasket for speaker cover
115273	Lamp—Dial lamp—Mazda No. 51
1309864	Nut—⅜ in. x 28 in. nut for volume control bushing
1213439	Socket—Tube
1215196	Socket—Vibrator
1214497	Spacer—Spacing collar for volume control shaft

Installation Parts

1215832	Package No. 1—Instrument Panel Hardware
505629	Bolt—¼ in. x 20 x ⅝ in. hex head (1)
7235968	Nut—¼ in. x 28 in. x ⅛ in. hex (2)
1299232	Washer—¼-in. (plain) (1)
121753	Washer—Shakeproof (1)
1216443	Package No. 2—Panel Parts
508921	Card—Owner's instruction and warranty card (1)
508865	Marker—Station call letter markers (1)
508583	Plate—Control finish plate (1)
1215834	Package No. 3—Knob Kit
507510	Knob—Dummy (1)
507511	Knob—Tone control (1)
507505	Knob—Tuning and volume control (2)
505630	Washer—Felt washer (1)
7238755	Washer—Spring washer (1)
1215835	Package No. 4—"A" Lead and Fuse
106653	Fuse—20 ampere (1)
504842	Lead—"A" lead assembly (1)
1845913	Tube—Fuse insulating (1)
1215836	Package No. 5—Suppressor and Condenser Kit
1853686	Adapter—Suppressor (1)
1882758	Condenser—Ammeter (1)
1879777	Condenser—Generator (1)
509129	Insulator—Distributor Suppressor (1)
144722	Screw—No. 7 x ⅜ S.T. hex head (1)
1207821	Suppressor—Distributor (1)

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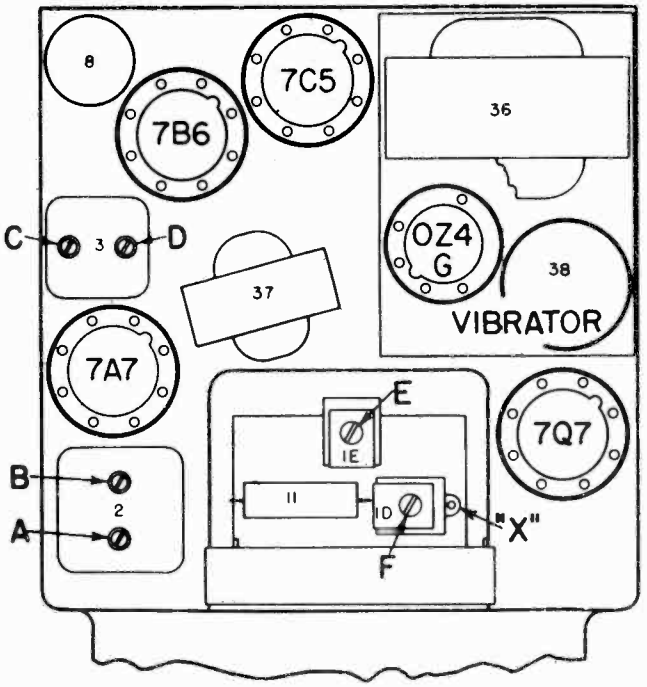
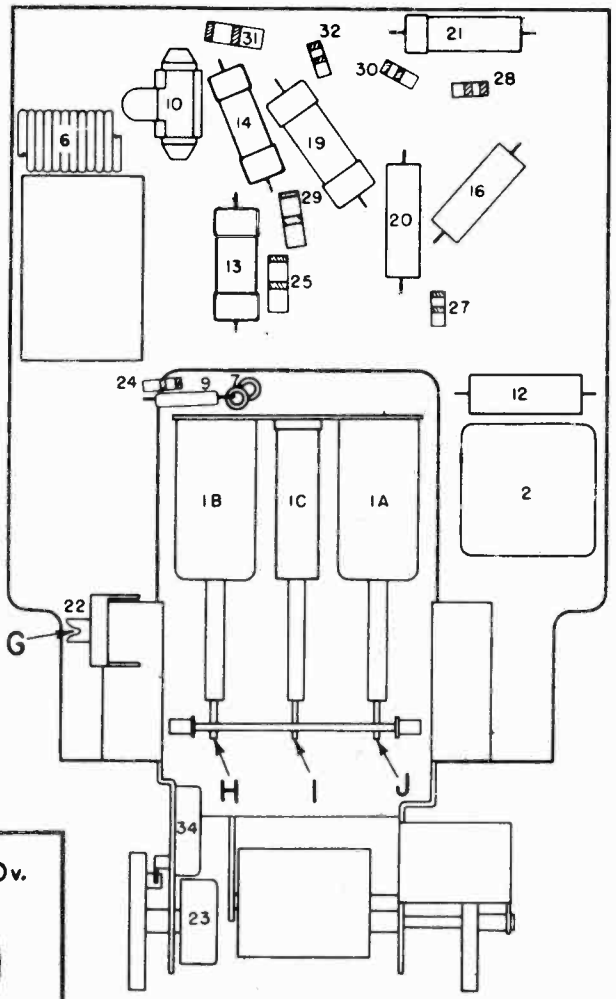
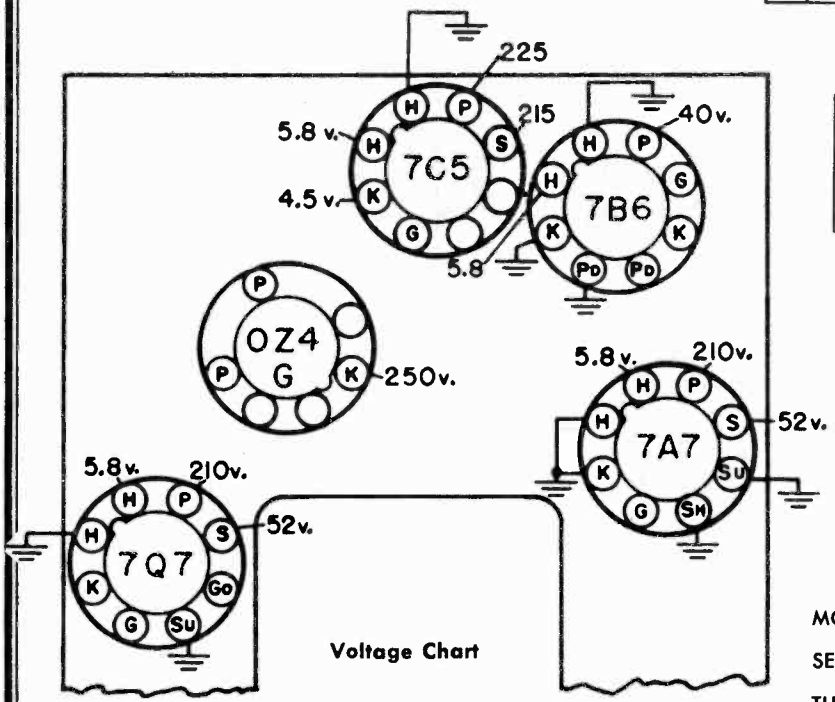
MODEL 986146, Serial B47-1001 and up; Chevrolet





Parts Layout



Voltage Chart

BOTTOM VIEW OF TUBE SOCKETS

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT. ALL VOLTAGES EXCEPT THE HEATER VOLTAGES MEASURED ON THE 0-250 VOLT SCALE.
"A" BATTERY 6.0 VOLTS. CURRENT DRAIN 6.2 AMPERES.
"B" SUPPLY DRAIN APPROXIMATELY 45 MA.

RADIO DATA

MODEL NUMBER—986146

SERIAL NUMBER—

TUBE COMPLEMENT—7Q7, 7A7, 0Z4G, 7B6, 7C5

BATTERY CURRENT—6.2 AMPERES

B+ VOLTS—250 VOLTS

I.F. KC—260

R.F. KC—1610-540

VIBRATOR TYPE—NON SYNCHRONOUS

YEAR—1947 AND 1948

MODEL 986146, Serial B47-1001 and up; Chevrolet

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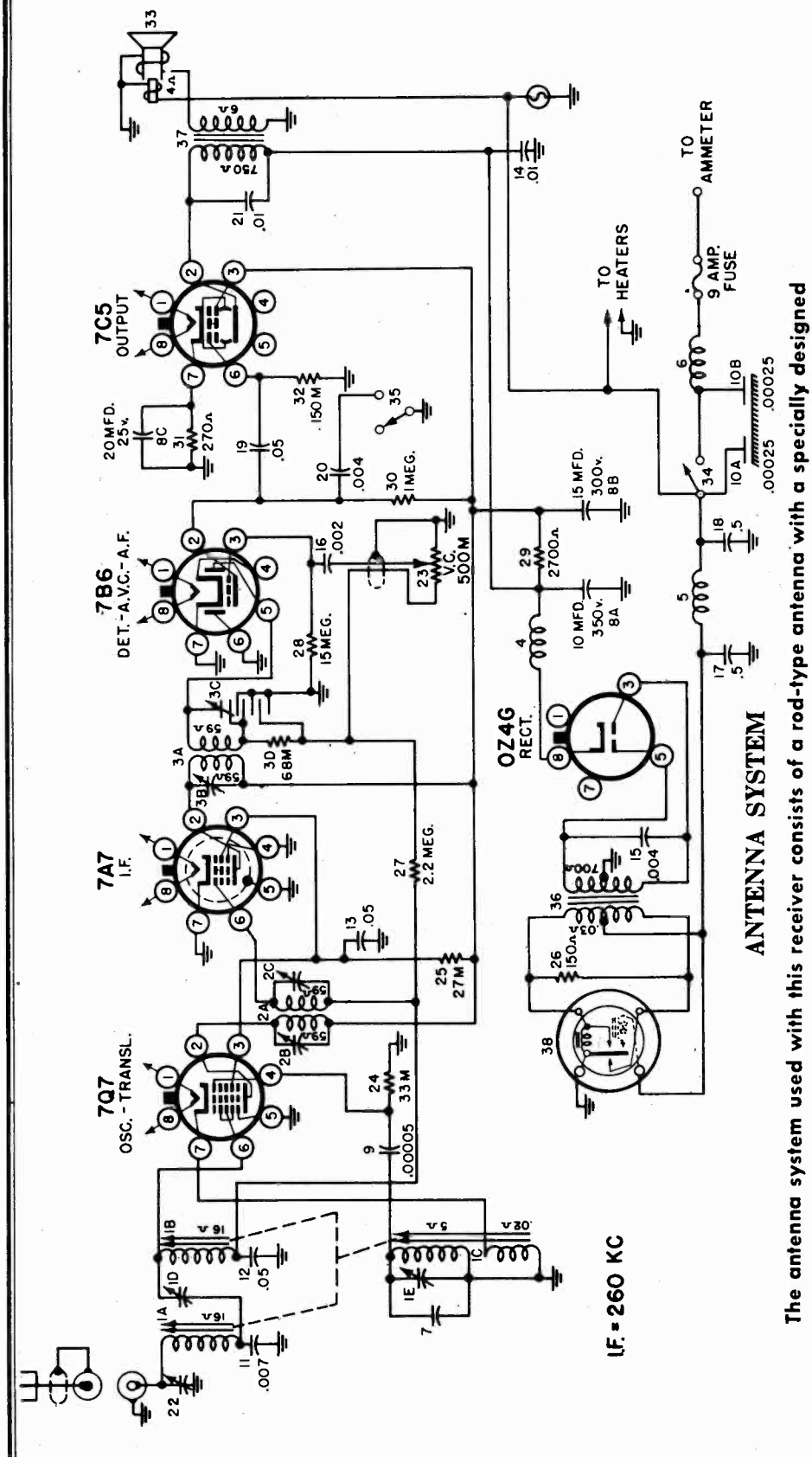

The antenna system used with this receiver consists of a rod-type antenna with a specially designed low capacity lead-in.

ANTENNA SYSTEM

TUBE COMPLEMENT

Type	Function	Type	Function
7Q7	Oscillator-Modulator	7C5	Audio Output
7A7	I.F. Amplifier	0Z4G	Rectifier
7B6	Detector A.V.C.-1st Audio		

CIRCUIT DESCRIPTION

The circuit used in this receiver is the superheterodyne type, employing the permeability method of tuning. An adjustable condenser is provided for matching the antenna circuit to the antenna. This adjustment is made near the high frequency end of the band (1400 kilocycles).