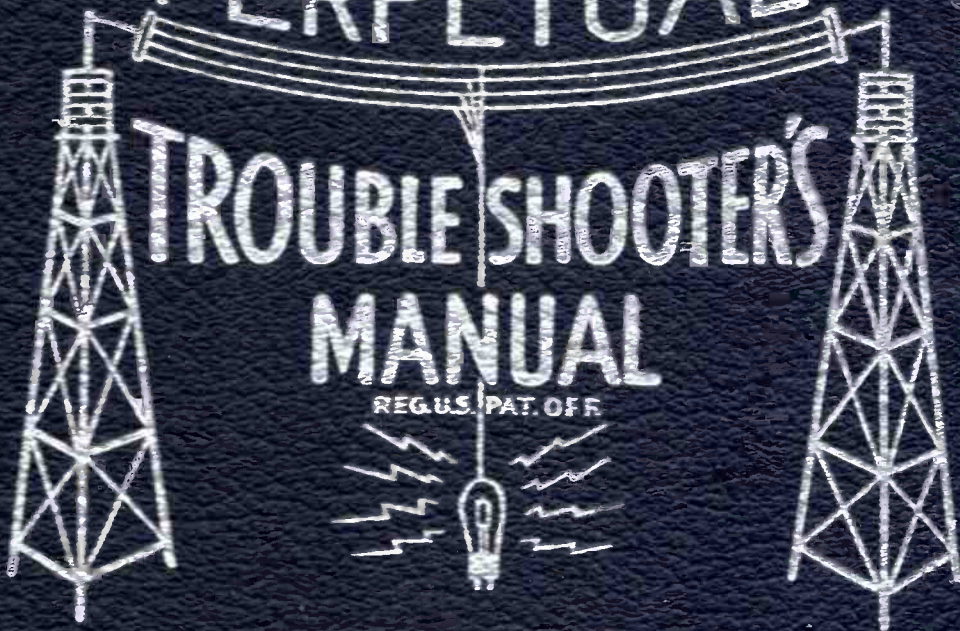


VOLUME XVI

PERPETUAL



JOHN F. RIDER

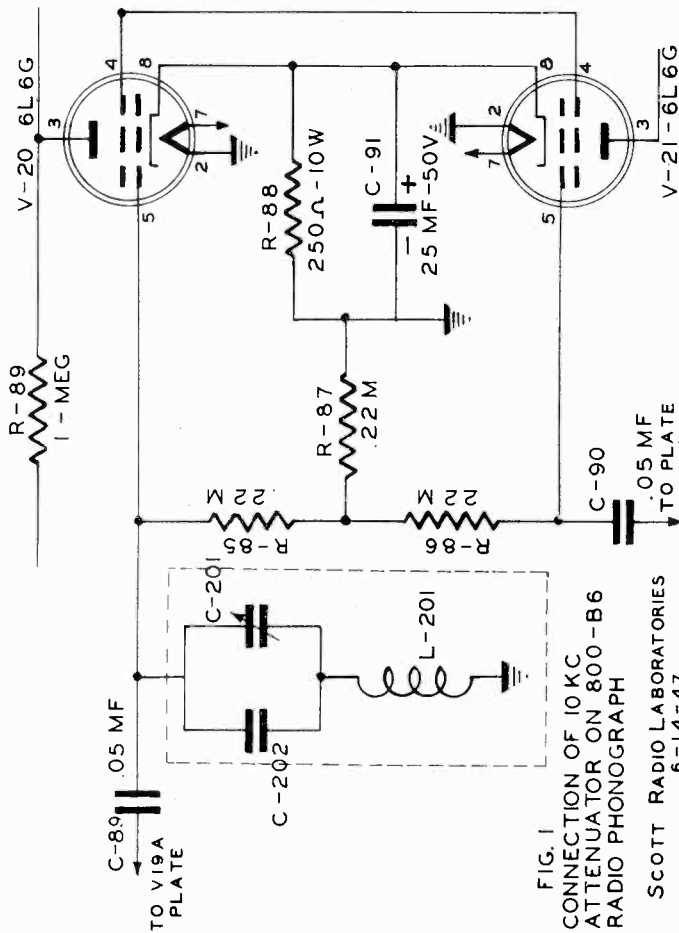


FIG. 1  
CONNECTION OF 10 KC  
ATTENUATOR ON 800-B6  
RADIO PHONOGRAPH  
SCOTT RADIO LABORATORIES  
6-14-47

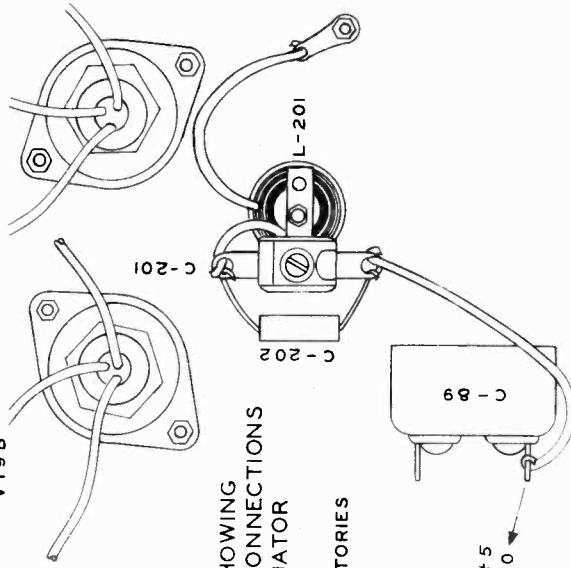


FIG. 2  
CUTAWAY VIEW SHOWING  
LOCATION AND CONNECTIONS  
OF 10 KC ATTENUATOR  
SCOTT RADIO LABORATORIES  
6-12-47

10 KC Attenuator for  
Model 800-B6 Radio-Phonograph

For use in locations where trouble is encountered from a 10 KC whistle caused by two adjacent channel stations, an attenuator unit is provided which is easily installed and wired into the grid circuit of the 6L6G tube V-20 in the power supply unit of the Model 800-B6 Radio-Phonograph.

The attenuator unit is installed in the power supply unit adjacent to the terminal strip which holds the compensation network resistors and capacitors for the input grid of the 6SL7GT tube V-19A. The choke is fastened to the base using the screw, nut and washers furnished as shown in Figure 2. It is necessary to adjust the trimmer capacitor C-201 to the center of the tuning knob being the center mounting hole of the output transformer which is not used for mounting the transformer. The trimmer capacitor C-101 is mounted on the top of the choke with this same screw and nut. Capacitor C-202 is connected directly across the trimmer capacitor C-201. One lead of choke L-201 is then connected to one side of trimmer capacitor C-201, the other side of C-201 is connected to contact No. 5 of 6L6G tube socket V-20 with a short length of wire, the other lead of choke L-201 is then grounded preferably to a lug fastened under one of the output transformer mounting nuts.

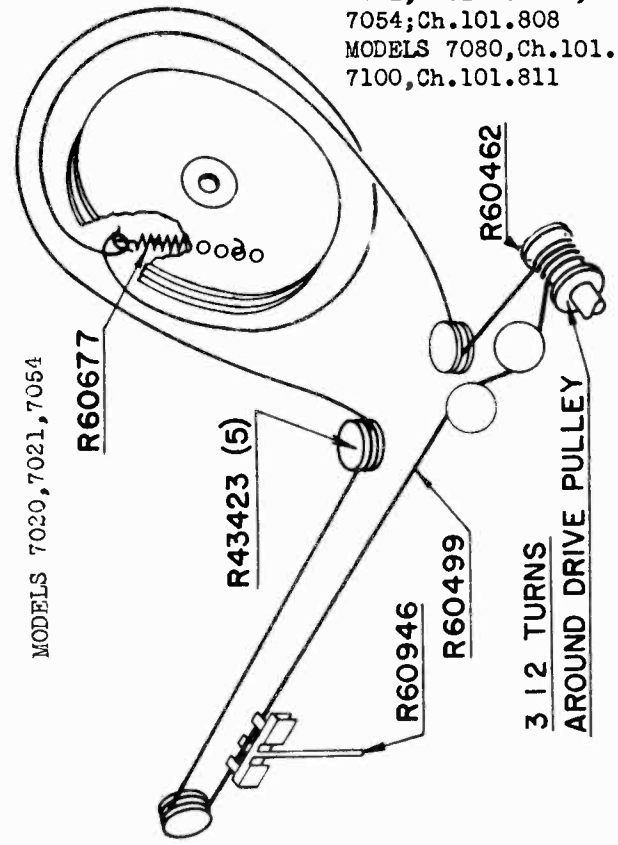
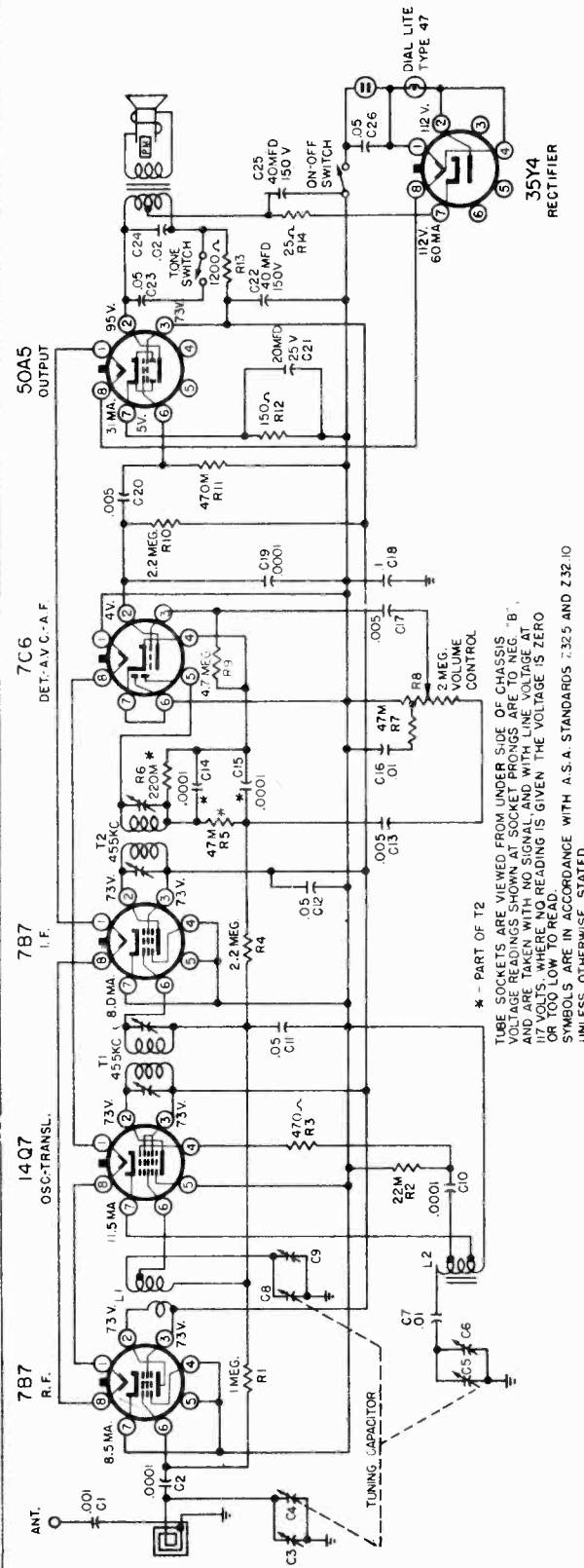
The filter is tuned to resonance either by operating the receiver and adjusting the trimmer capacitor C-201 until the 10 KC whistle disappears, or is at minimum level, or by using an audio generator connected to the PHONO-GND terminal strip, adjusting the receiver as for record changer operation, then by use of a meter connected across the secondary of the output transformer and with the audio generator adjusted to provide a 10,000 cycle signal. The filter is adjusted for minimum reading on the meter.

Although the adjustment of trimmer capacitor C-201 is not extremely critical, caution must be taken to the audio generator to exact 10,000 cycles per second. The maximum attenuation at 10 KC can be obtained only if the audio generator is adjusted to this frequency.

Symbol	Description	Part No.
C-201	Capacitor, mica compression trimmer 30-200 MHF	15E2675
C-202	Capacitor, silver mica, 1000 MHF plus or minus 10% 500 V DC wkgl. bakelite case	15A36
L-201	Inductor, 200 MH ± 1000 CPS, DC resist. 525 ohms, air core, mounted on wood dowel	17E2676
Quan.	Hardware	Part No.
1	Screw - 6-32 x 2" RHMPB	77E2177
1	Nut - 6-32 x 1/4" hex	59A177
1	Washer - #6 external tooth lock	95A255

SEARS ROEBUCK & CO.

MODELS 7020, Ch.101.807;  
7021, Ch.101.807A;  
7054; Ch.101.808  
MODELS 7080, Ch.101.809;  
7100, Ch.101.811



MODELS 7020,7021,7054

3 1/2 TURNS  
AROUND DRIVE PULLEY

**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.....30M, 400 Cycles  
Generator Modulation.....Fully on  
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.	Transistor Grid Antenna	T2, T1	I. F. Oscillator
1500 KC	1500 KC	.0002 Mfd.	Antenna	C6	R. F. Antenna
1500 KC	1500 KC	.0002 Mfd.	Antenna	C9	R. F. Antenna
1500 KC	1500 KC	.0002 Mfd.	Antenna	C3	R. F. 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.

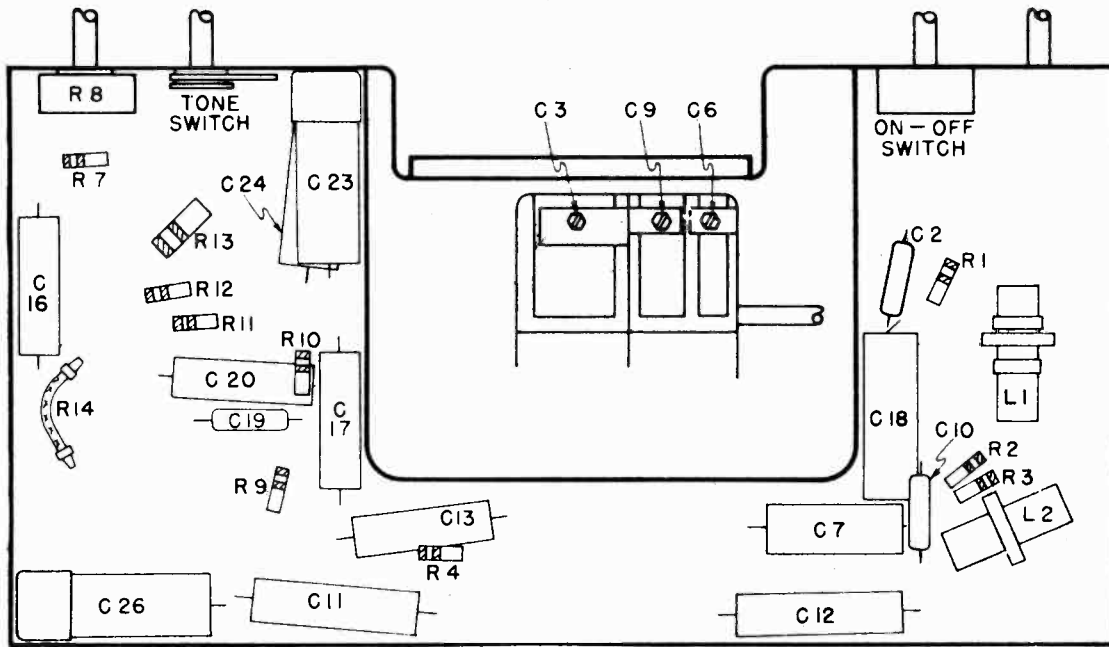
Power Output

Undistorted 1.1 Watts

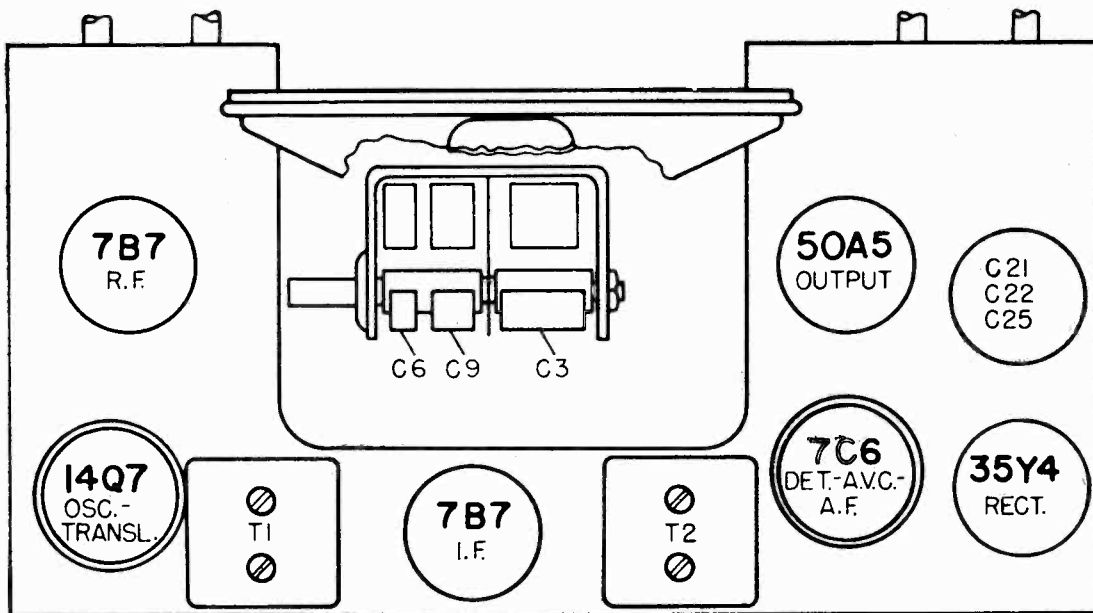
Maximum 1.9 Watts

MODELS 7020, 7021, 7054

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 &amp; CO.

## 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	SEARS LIST PRICE EACH	MU CODE	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SEARS LIST PRICE EACH	MU CODE
	R60426	Button - Push, Brown (101.807)	.11			R60484	Knob - Volume, Ivory (101.807-A)	.14	
	R60486	Button - Push, Ivory (101.807-A)	.14			R60484	Knob - On-Off, Brown (101.807)	.14	
	R61846	Button - Snap	5.40	AO		R60483	Knob - On-Off, Ivory (101.807-A)	.14	
	R60415	Cabinet - Brown (101.807)	4.17			R20963	Lamp - Dial #47	.18	
	R60950	Cabinet - Ivory (101.807-A)	5.40			R54529	Leaflet - Instruction	.20	
C4, C5, C8	R60413	Capacitor - Variable Tuning	5.35			R60541	Loop Assembly with Back Cover	2.08	AO
C1		Capacitor - .001 Mfd. 600 V.	.15			R60464	Plunger and Yoke Assembly	.43	
C7		Capacitor - .01 Mfd. 600 V.	.18			R60946	Pointer - Dial	.09	
C11, C12		Capacitor - .05 Mfd. 200 V.	.21		R14	R43423	Pulley - Wood	.01	
C13, C17, C20		Capacitor - .005 Mfd. 600 V.	.17		R1	R40232	Resistor - Glasohm, 25 Ohm, 1 Watt	.14	
C16		Capacitor - .01 Mfd. 400 V.	.18		R2		Resistor - 1 Megohm, 1/3 Watt	.15	
C18		Capacitor - .1 Mfd. 200 V.	.27		R2		Resistor - 22,000 Ohm, 1/3 Watt	.15	
C23, C26		Capacitor - .05 Mfd. 600 V.	.26		R3		Resistor - 470 Ohm, 1/3 Watt	.15	
C24		Capacitor - .02 Mfd. 600 V.	.27		R4, R10		Resistor - 2.2 Megohm, 1/3 Watt	.15	
C2, C10, C19		Capacitor - .0001 Mfd. Mica	.20		R7		Resistor - 47,000 Ohm, 1/3 Watt	.15	
C21, C22, C25	R60416	Capacitor - Electrolytic, 40 Mfd. 150 V. 40 Mfd. 150 V., 20 Mfd. 25 V.	1.91		R9		Resistor - 4.7 Megohm, 1/3 Watt	.15	
					R11		Resistor - 470,000 Ohm, 1/3 Watt	.15	
					R12		Resistor - 150 Ohm, 1/3 Watt	.15	
L1	R61836	Cloth - Grills, Gold (101.807)	.34		R13		Resistor - 1200 Ohm, 1 Watt	.21	
	R60952	Cloth - Grills, Tan (101.807-A)	.43			R60462	Shaft - Tuning Assembly	.17	
	R60465	Coil - R. F.	1.25			R57049	Socket - Tube	.13	
L2	R60448	Coil - Oscillator	.80			R60401	Socket - Pilot Lamp	.29	
	R60430	Control - Volume - 2 Megohm	.77			WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER			
	R16706	Cord - Power	.77			R60431	Speaker - P. M. 5"	6.76	AO
	R60540	Covers - Tab	.01			R60674	Cone and Voice Coil	2.51	
	R60458	Covers - Dial	.68			R60475	Output Transformer	2.74	
	R60446	Dial	.23			R60427	Spring - Extension	.06	
	R60461	Drum and Pinion Assembly	.68			R60437	Spring - Compression	.01	
	R60459	Gear and Hub Assembly	.46			R60499	String - Dial Drive Assembly	.68	
	R60444	Grille - Cabinet	.83			R60447	Switch - Tone	.63	
	R60455	Knob - Tone, Brown (101.807)	.14			R60432	Switch - On-Off	.63	
	R60487	Knob - Tone, Ivory (101.807-A)	.14			R60474	Tab - Station	.26	
	R60496	Knob - Tuning, Brown (101.807)	.14			R60417	Transformer - 1st I. F.	2.24	
	R60480	Knob - Tuning, Ivory (101.807-A)	.14			R60418	Transformer - 2nd I. F.	2.71	
	R60457	Knob - Volume, Brown (101.807)	.14		T1				
					T2				

## 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.

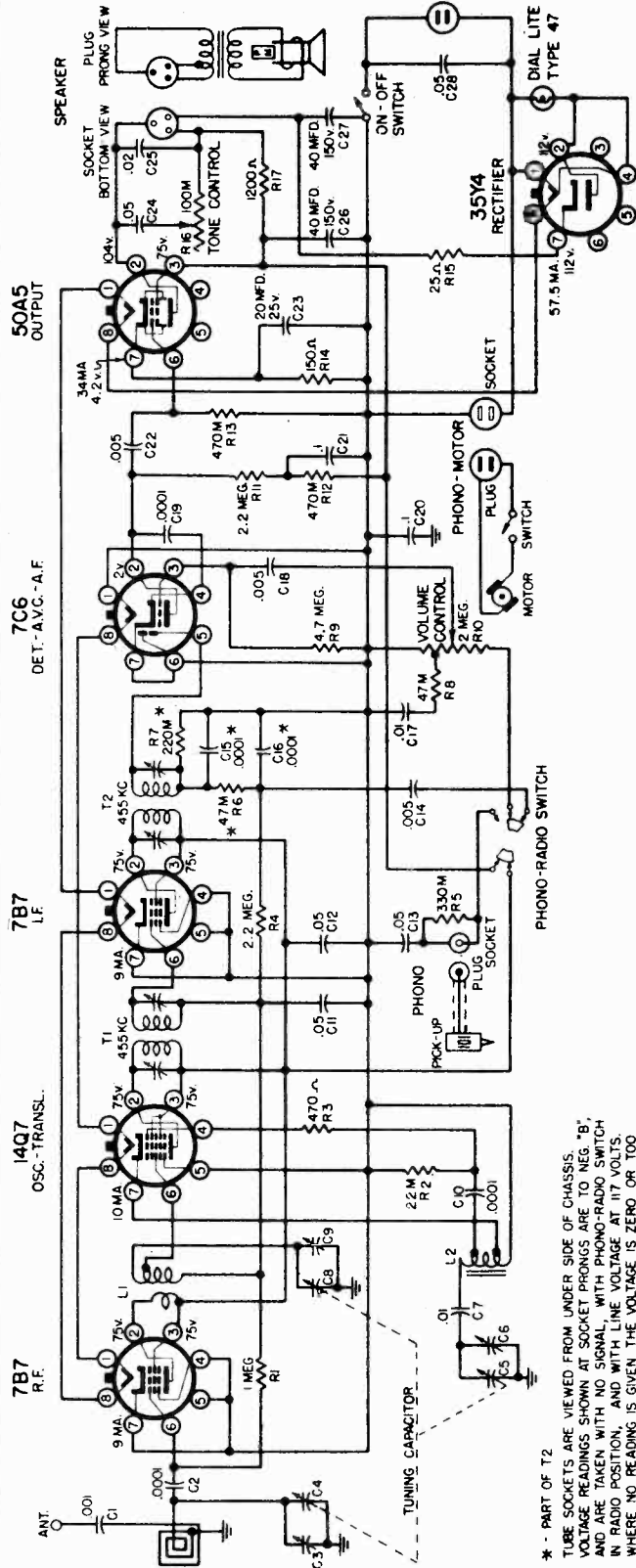
## REPAIR PARTS LIST

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	SEARS LIST PRICE EACH	MU CODE	SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SEARS LIST PRICE EACH	MU CODE
	R61486	Button - Push	.14			R60549	Loop Assembly with Back Cover	2.10	AO
	R61846	Button - Snap	.01			R60946	Pointer - Dial	.09	
C4, C5, C7	R60413	Capacitor - Variable Tuning	5.35			R43423	Pulley - Wood	.01	
C1		Capacitor - .001 Mfd. 600 V.	.15		R4	R40232	Resistor - Glasohm, 25 Ohm, 1 Watt	.14	
C7		Capacitor - .01 Mfd. 600 V.	.18		R1		Resistor - 1 Megohm, 1/3 Watt	.15	
C11, C10		Capacitor - .05 Mfd. 200 V.	.21		R2		Resistor - 22,000 Ohm, 1/3 Watt	.15	
C13, C17, C20		Capacitor - .005 Mfd. 600 V.	.17		R3		Resistor - 470 Ohm, 1/3 Watt	.15	
C16		Capacitor - .01 Mfd. 400 V.	.18		R4, R10		Resistor - 2.2 Megohm, 1/3 Watt	.15	
C18		Capacitor - .1 Mfd. 200 V.	.27		R9		Resistor - 47,000 Ohm, 1/3 Watt	.15	
C24		Capacitor - .02 Mfd. 600 V.	.27		R11		Resistor - 4.7 Megohm, 1/3 Watt	.15	
C23, C26		Capacitor - .05 Mfd. 600 V.	.26		R12		Resistor - 150 Ohm, 1/3 Watt	.15	
C2, C10, C19		Capacitor - .0001 Mfd. Mica	.20		R13		Resistor - 1200 Ohm, 1 Watt	.21	
C21, C22, C25	R60416	Capacitor - Electrolytic, 40 Mfd. 150 V. 40 Mfd. 150 V., 20 Mfd. 25 V.	1.91			R60462	Shaft - Tuning Assembly	.17	
						R57049	Socket - Tube	.13	
L1	R60465	Coil - R. F.	1.25			R60401	Socket - Pilot Lamp	.29	
L2	R60448	Coil - Oscillator	.80			WHEN ORDERING SPEAKER PARTS ALWAYS GIVE THE PART NUMBER ON THE SPEAKER			
	R60430	Control - Volume - 2 Megohm	.77			R61627	Speaker - P. M. 5"	6.76	AO
	R16706	Cord - Power	.77			R61634	Cone and Voice Coil	2.51	
	R60540	Covers - Tab	.01			R61635	Output Transformer	2.74	
	R60458	Covers - Dial	.68			R60427	Spring - Extension	.06	
	R60446	Dial	.23			R60437	Spring - Compression	.01	
	R60461	Drum and Pinion Assembly	.68			R60499	String - Dial Drive Assembly	.68	
	R61487	Gear and Hub Assembly	.46			R60447	Switch - Tone	.63	
	R60444	Grille - Cabinet	.83			R60432	Switch - On-Off	.63	
	R60455	Knob - Tone, Brown (101.807)	.14			R60474	Tab - Station	.26	
	R60487	Knob - Tone, Ivory (101.807-A)	.14			R60417	Transformer - 1st I. F.	2.24	
	R60496	Knob - Tuning, Brown (101.807)	.14			R60418	Transformer - 2nd I. F.	2.71	
	R60480	Knob - Tuning, Ivory (101.807-A)	.14						
	R60457	Knob - Volume, Brown (101.807)	.14						
		Lamp - Dial Mazda Type #47	.18		T1				
		Leaflet - Instruction	.20		T2				

MODELS 7080, Ch. 101.809;  
7100, Ch. 101.811

SEARS ROEBUCK & CO.



\* - 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.

**SPECIFICATIONS**

Power Supply:  
All models available..

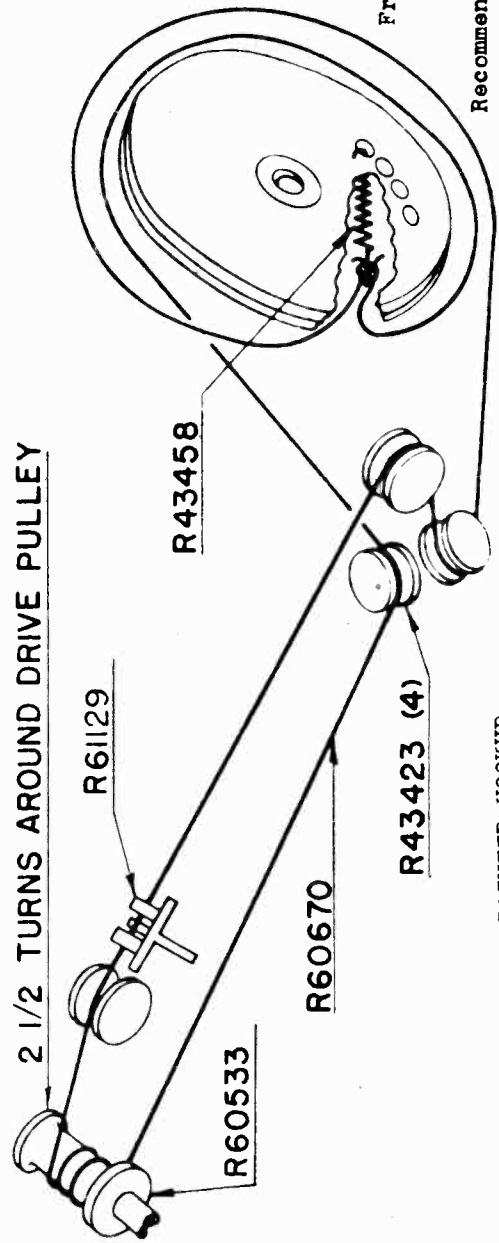
117 Volts 60 Cycles AC 60 Watts

Frequency Range:

Broadcast...540-1600 KC

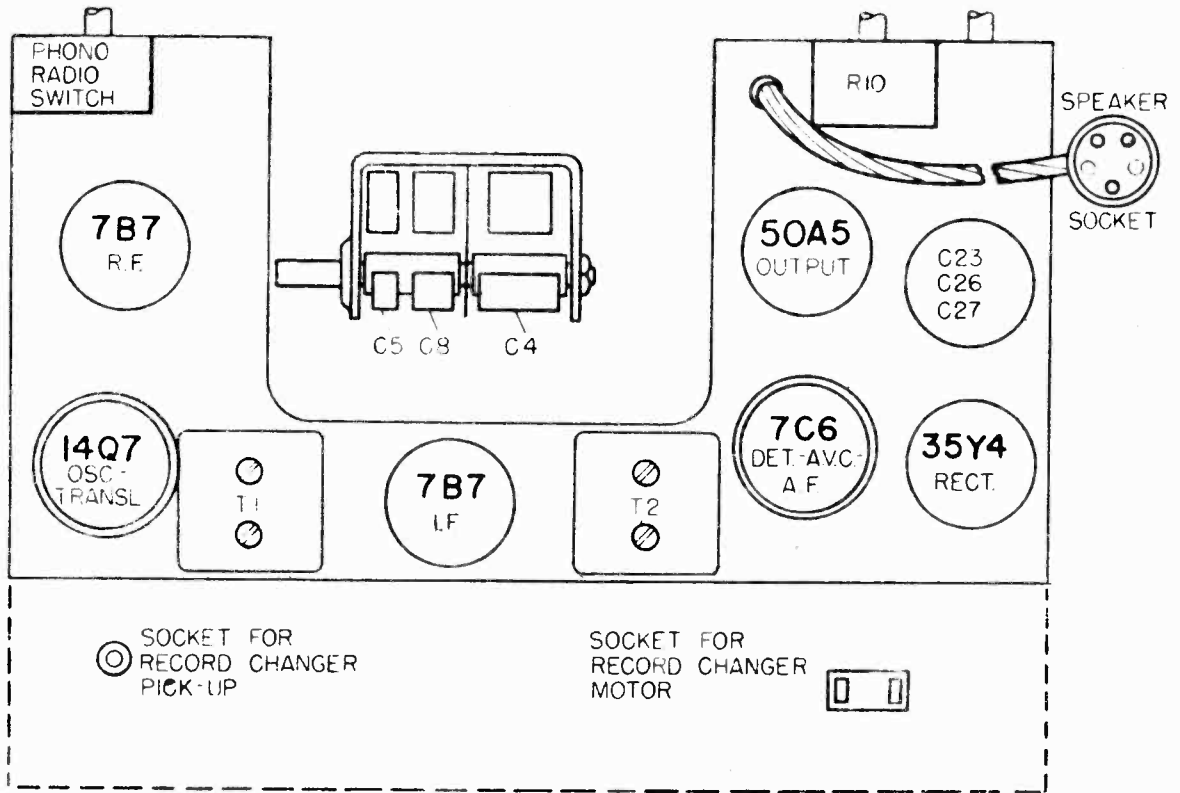
Recommended Antenna Equipment:

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

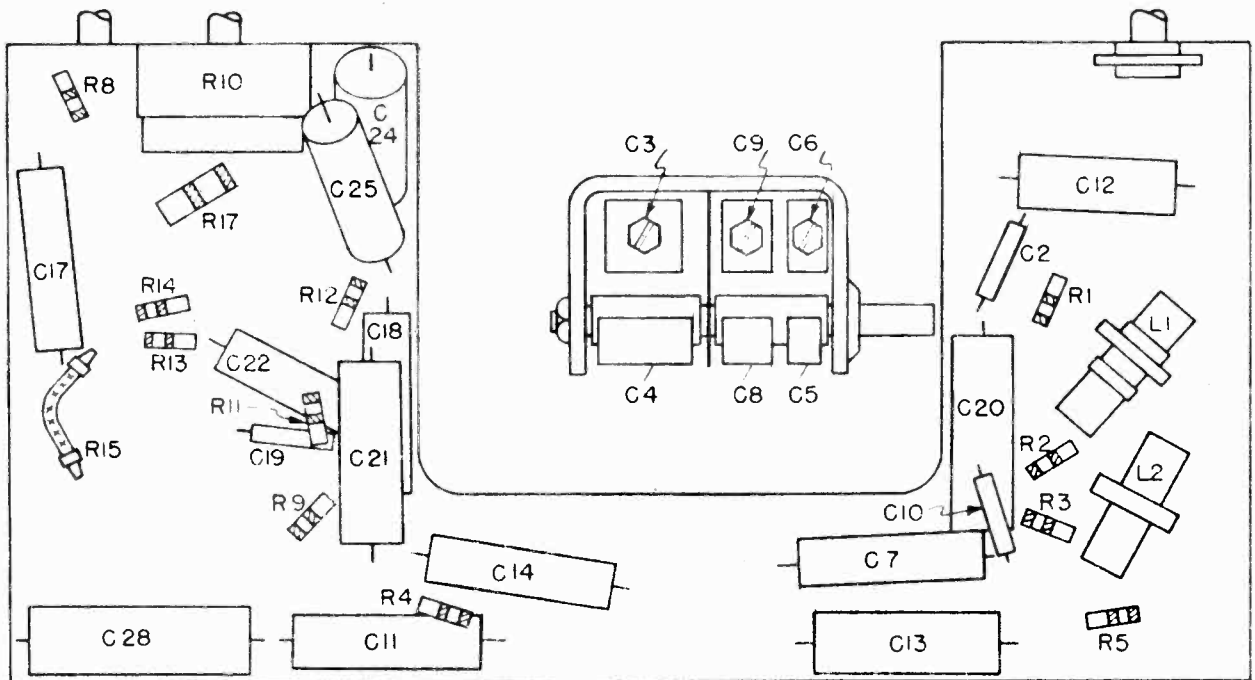


Uses Record Changer 101.203-1

STRING AND POINTER HOOKUP

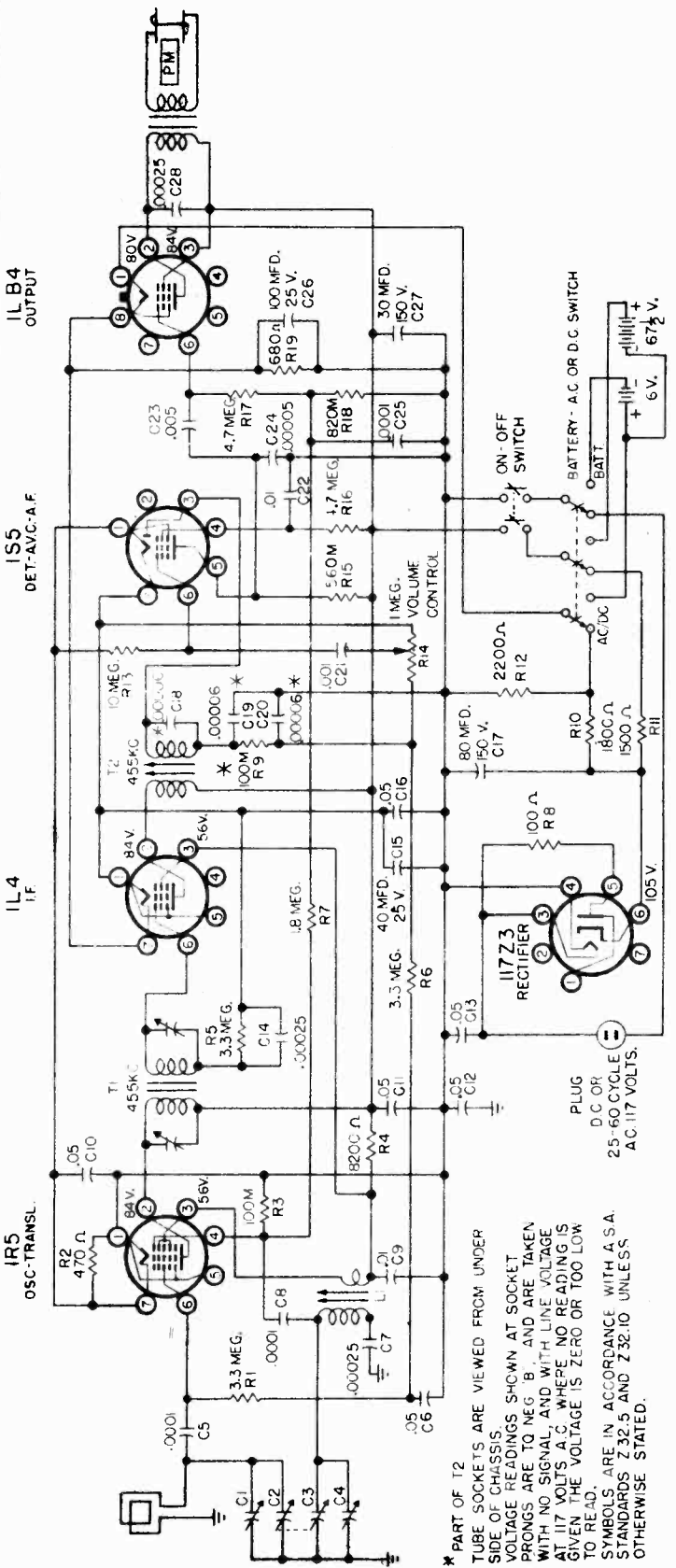


LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS

MODELS 7165, Ch. 101.823, SEARS ROEBUCK & CO.  
 101.823-1; 7166, Ch. 101.823A,  
 101.823-1A

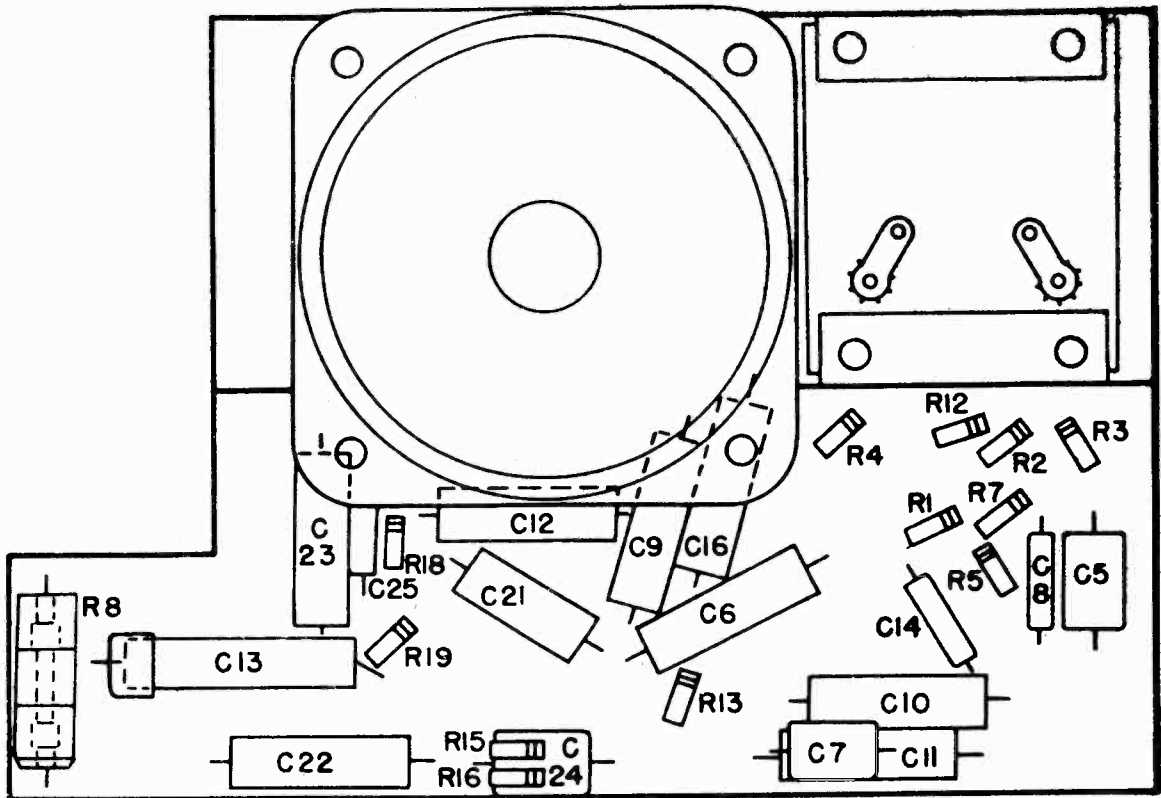


\* PART OF T2  
 TUBE SOCKETS ARE VIEWED FROM UNDER  
 SIDE OF CHASSIS.  
 VOLTAGE READINGS SHOWN AT SOCKET  
 PRONGS ARE TO NEG. B. AND ARE TAKEN  
 WITH NO SIGNAL AND WITH LINE VOLTAGE  
 AT 117 VOLTS A.C. WHERE NO READING IS  
 GIVEN THE VOLTAGE IS ZERO OR TOO LOW  
 TO READ.  
 SYMBOLS ARE IN ACCORDANCE WITH A.S.A.  
 STANDARDS Z32.5 AND Z32.10 UNLESS  
 OTHERWISE STATED.

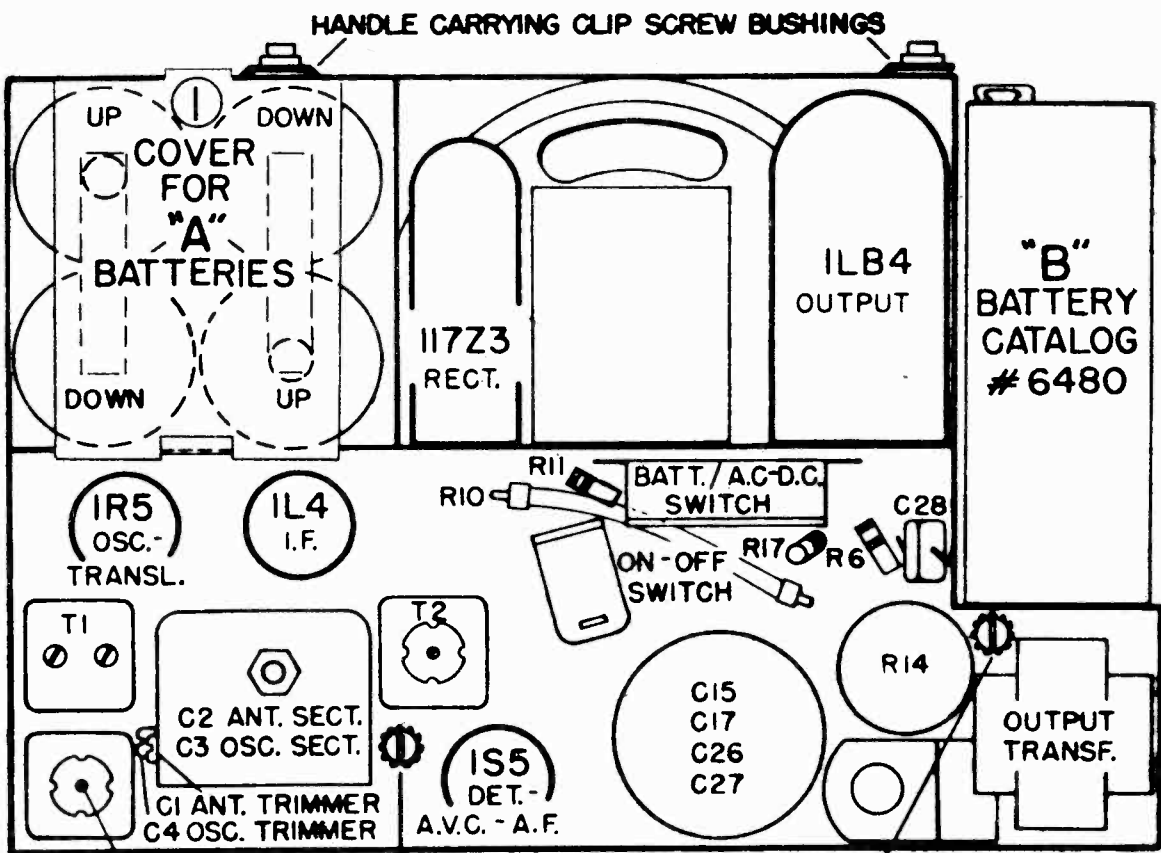
REPAIR PARTS LIST  
 THE RETAIL SELLING PRICES SHOWN BELOW ARE  
 VOID AFTER MARCH 1 1947. AFTER THIS DATE  
 REFER TO "DIV. 57 REPAIR PARTS STRAIGHT  
 LIST" - ALL PRICES PREPAID.

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SEARS LIST PRICE	REPAIR PRICE	MU CODE	SCHAEMATIC LOCATION	SEARS LIST PRICE	
							REPAIR PRICE	MU CODE
C15	R60859	"A" Battery Board Assembly (Standard)	.11	.11	A0	R5	4.19	4.28
C16	R60860	"B" Battery Board Assembly (Removable)	.11	.11	A0	R6	.18	.05
C17	R60905	Knob - Volume (Black 101.823-A)	.15	.15	A0	R7	.41	.05
C18	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R8	.41	.05
C19	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R9	.41	.05
C20	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R10	.41	.05
C21	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R11	.41	.05
C22	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R12	.41	.05
C23	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R13	.41	.05
C24	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R14	.41	.05
C25	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R15	.41	.05
C26	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R16	.41	.05
C27	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R17	.41	.05
C28	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R18	.41	.05
C29	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R19	.41	.05
C30	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R20	.41	.05
C31	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R21	.41	.05
C32	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R22	.41	.05
C33	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R23	.41	.05
C34	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R24	.41	.05
C35	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R25	.41	.05
C36	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R26	.41	.05
C37	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R27	.41	.05
C38	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R28	.41	.05
C39	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R29	.41	.05
C40	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R30	.41	.05
C41	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R31	.41	.05
C42	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R32	.41	.05
C43	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R33	.41	.05
C44	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R34	.41	.05
C45	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R35	.41	.05
C46	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R36	.41	.05
C47	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R37	.41	.05
C48	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R38	.41	.05
C49	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R39	.41	.05
C50	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R40	.41	.05
C51	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R41	.41	.05
C52	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R42	.41	.05
C53	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R43	.41	.05
C54	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R44	.41	.05
C55	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R45	.41	.05
C56	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R46	.41	.05
C57	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R47	.41	.05
C58	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R48	.41	.05
C59	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R49	.41	.05
C60	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R50	.41	.05
C61	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R51	.41	.05
C62	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R52	.41	.05
C63	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R53	.41	.05
C64	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R54	.41	.05
C65	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R55	.41	.05
C66	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R56	.41	.05
C67	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R57	.41	.05
C68	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R58	.41	.05
C69	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R59	.41	.05
C70	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R60	.41	.05
C71	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R61	.41	.05
C72	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R62	.41	.05
C73	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R63	.41	.05
C74	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R64	.41	.05
C75	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R65	.41	.05
C76	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R66	.41	.05
C77	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R67	.41	.05
C78	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R68	.41	.05
C79	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R69	.41	.05
C80	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R70	.41	.05
C81	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R71	.41	.05
C82	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R72	.41	.05
C83	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R73	.41	.05
C84	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R74	.41	.05
C85	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R75	.41	.05
C86	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R76	.41	.05
C87	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R77	.41	.05
C88	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R78	.41	.05
C89	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R79	.41	.05
C90	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R80	.41	.05
C91	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R81	.41	.05
C92	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R82	.41	.05
C93	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R83	.41	.05
C94	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R84	.41	.05
C95	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R85	.41	.05
C96	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R86	.41	.05
C97	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R87	.41	.05
C98	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R88	.41	.05
C99	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R89	.41	.05
C100	R60906	Knob - Volume (Black 101.823-A)	.15	.15	A0	R90	.41	.05





PARTS LAYOUT - FRONT



L1 OSC. PADDER

CHASSIS MOUNTING SCREWS

PARTS LAYOUT - BACK

MODELS 7165, 7166  
MODELS 7080, 7100

SPECIFICATIONS

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

Power Supply:  
4 Large Flashlight "A" Batteries  
1 #450 - 67.5 Volt "B" Battery  
105-125 Volts AC or DC  
Frequency Range  
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 chassis 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 101.823-1. 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 NOMECLATURE INDEX" for source name and address.  
4. MARK-UP: Selling Prices in the following list produce a mark-up of 445, unless otherwise noted in the "M. U. Code" Column. Refer to "DIV. 57 STANDARD NOMECLATURE 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 INSTRUCTIONS:  
Send Purchase Orders DIRECT to SOURCE No. 101. See "DIV. 57 STANDARD NOMECLATURE INDEX" for source name and address.  
4. MARK-UP: Selling Prices in the following list produce a mark-up of 445, unless otherwise noted in the "M. U. Code" Column. See "DIV. 57 STANDARD NOMECLATURE 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.

101.823, 101.825-1. 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

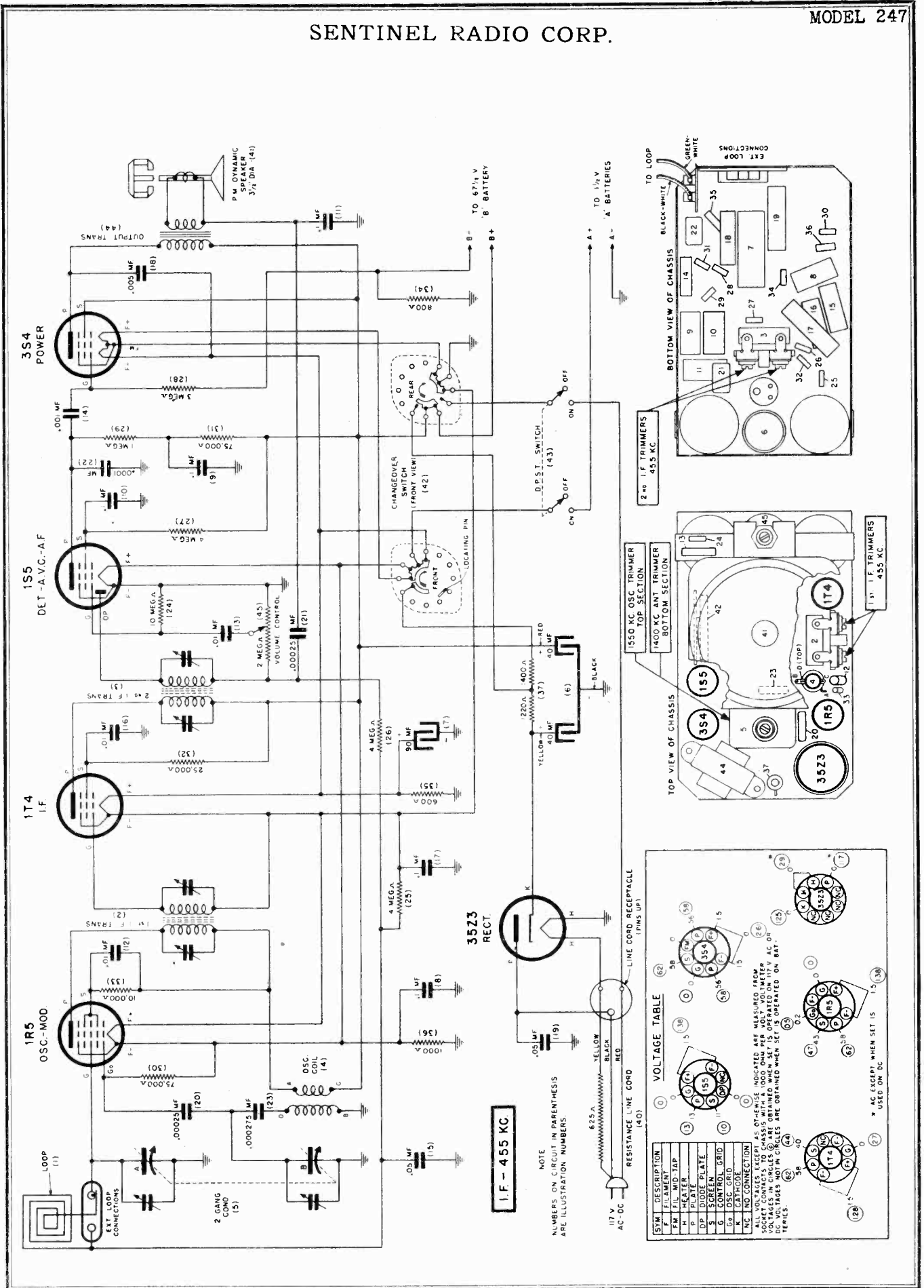
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA CONNECTION	TRIMMER ADJUSTMENTS IN ORDER SHOWN	TRIMMER FUNCTION
Closed	455	IR5 Translater Grid	T2-T1	I. F.
Open	1610	Hazeltine Loop	C4	Oscillator
1400	1400	Hazeltine Loop	C1	Antenna
*600	600	Hazeltine Loop	L1	Padding

**MODEL 101.809, 101.811**

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	RETAIL PRICE	QUANTITY
CA1, CB, C5	R1391	Button - Snap	\$ .01	1
C7	R6043	Capacitor - Variable Tuning, .001 Mfd., 600 V.	5.35	1
C11, C18, C23	R1676	Capacitor - .01 Mfd., 600 V.	.18	1
C20	R6042	Capacitor - .05 Mfd., 200 V.	.21	1
C21	R6043	Capacitor - .005 Mfd., 600 V.	.17	1
C22	R6043	Capacitor - .001 Mfd., 200 V.	.12	1
C23, C28	R6043	Capacitor - 1 Mfd., 200 V., H. T.	.22	1
C24, C28	R6043	Capacitor - .05 Mfd., 600 V.	.26	1
C29	R6043	Capacitor - .001 Mfd., 200 V.	.12	1
C30, C10, C19	R6043	Capacitor - .0008 Mfd., 600 V.	.27	1
C31, C28, C27	R60416	Capacitor - Electrolytic, 20 Mfd., 25 V. 40 Mfd., 150 V., 40 Mfd., 150 V., 40 Mfd., 150 V.	1.91	1
L1	R6044	Coil - R. F. Inductor	1.25	1
L16	R60576	Control - On-Tone and On-Off	1.08	1
R10	R60576	Control - Volume - 2 Megohm	.89	1
R1	R18708	Cord - Power	.77	1
R2	R60520	Drum - Drum & Pushing Assembly	.45	1
R3	R60482	Knob - Phone-Radio	1.19	1
R4	R60482	Knob - Volume	.14	1
R5	R60482	Knob - Tuning On-Off	.14	1
R6	R60484	Knob - Volume	.14	1
R7	R60484	Knob - Volume	.14	1
R8	R60484	Knob - Volume	.14	1
R9	R60484	Knob - Volume	.14	1
R10	R60484	Knob - Volume	.14	1
R11	R60484	Knob - Volume	.14	1
R12	R60484	Knob - Volume	.14	1
R13	R60484	Knob - Volume	.14	1
R14	R60484	Knob - Volume	.14	1
R15	R60484	Knob - Volume	.14	1
R16	R60484	Knob - Volume	.14	1
R17	R60484	Knob - Volume	.14	1
R18	R60484	Knob - Volume	.14	1
R19	R60484	Knob - Volume	.14	1
R20	R60484	Knob - Volume	.14	1
R21	R60484	Knob - Volume	.14	1
R22	R60484	Knob - Volume	.14	1
R23	R60484	Knob - Volume	.14	1
R24	R60484	Knob - Volume	.14	1
R25	R60484	Knob - Volume	.14	1
R26	R60484	Knob - Volume	.14	1
R27	R60484	Knob - Volume	.14	1
R28	R60484	Knob - Volume	.14	1
R29	R60484	Knob - Volume	.14	1
R30	R60484	Knob - Volume	.14	1
R31	R60484	Knob - Volume	.14	1
R32	R60484	Knob - Volume	.14	1
R33	R60484	Knob - Volume	.14	1
R34	R60484	Knob - Volume	.14	1
R35	R60484	Knob - Volume	.14	1
R36	R60484	Knob - Volume	.14	1
R37	R60484	Knob - Volume	.14	1
R38	R60484	Knob - Volume	.14	1
R39	R60484	Knob - Volume	.14	1
R40	R60484	Knob - Volume	.14	1
R41	R60484	Knob - Volume	.14	1
R42	R60484	Knob - Volume	.14	1
R43	R60484	Knob - Volume	.14	1
R44	R60484	Knob - Volume	.14	1
R45	R60484	Knob - Volume	.14	1
R46	R60484	Knob - Volume	.14	1
R47	R60484	Knob - Volume	.14	1
R48	R60484	Knob - Volume	.14	1
R49	R60484	Knob - Volume	.14	1
R50	R60484	Knob - Volume	.14	1
R51	R60484	Knob - Volume	.14	1
R52	R60484	Knob - Volume	.14	1
R53	R60484	Knob - Volume	.14	1
R54	R60484	Knob - Volume	.14	1
R55	R60484	Knob - Volume	.14	1
R56	R60484	Knob - Volume	.14	1
R57	R60484	Knob - Volume	.14	1
R58	R60484	Knob - Volume	.14	1
R59	R60484	Knob - Volume	.14	1
R60	R60484	Knob - Volume	.14	1
R61	R60484	Knob - Volume	.14	1
R62	R60484	Knob - Volume	.14	1
R63	R60484	Knob - Volume	.14	1
R64	R60484	Knob - Volume	.14	1
R65	R60484	Knob - Volume	.14	1
R66	R60484	Knob - Volume	.14	1
R67	R60484	Knob - Volume	.14	1
R68	R60484	Knob - Volume	.14	1
R69	R60484	Knob - Volume	.14	1
R70	R60484	Knob - Volume	.14	1
R71	R60484	Knob - Volume	.14	1
R72	R60484	Knob - Volume	.14	1
R73	R60484	Knob - Volume	.14	1
R74	R60484	Knob - Volume	.14	1
R75	R60484	Knob - Volume	.14	1
R76	R60484	Knob - Volume	.14	1
R77	R60484	Knob - Volume	.14	1
R78	R60484	Knob - Volume	.14	1
R79	R60484	Knob - Volume	.14	1
R80	R60484	Knob - Volume	.14	1
R81	R60484	Knob - Volume	.14	1
R82	R60484	Knob - Volume	.14	1
R83	R60484	Knob - Volume	.14	1
R84	R60484	Knob - Volume	.14	1
R85	R60484	Knob - Volume	.14	1
R86	R60484	Knob - Volume	.14	1
R87	R60484	Knob - Volume	.14	1
R88	R60484	Knob - Volume	.14	1
R89	R60484	Knob - Volume	.14	1
R90	R60484	Knob - Volume	.14	1
R91	R60484	Knob - Volume	.14	1
R92	R60484	Knob - Volume	.14	1
R93	R60484	Knob - Volume	.14	1
R94	R60484	Knob - Volume	.14	1
R95	R60484	Knob - Volume	.14	1
R96	R60484	Knob - Volume	.14	1
R97	R60484	Knob - Volume	.14	1
R98	R60484	Knob - Volume	.14	1
R99	R60484	Knob - Volume	.14	1
R100	R60484	Knob - Volume	.14	1

R1	R61129	Pointer - Dial	\$ .11	1
R2	R64145	Plug - Female	.30	1
R3	R61423	Push-button - Foot	.01	1
R4	R61423	Resistor - 22,000 Ohm 1/2 Watt	.13	1
R5	R61423	Resistor - 470 Ohm 1/2 Watt	.15	1
R6	R61423	Resistor - 510 Ohm 1/2 Watt	.15	1
R7	R61423	Resistor - 510 Ohm 1/2 Watt	.15	1
R8	R61423	Resistor - 47,000 Ohm 1/2 Watt	.15	1
R9	R61423	Resistor - 4.7 Megohm 1/2 Watt	.15	1
R10	R61423	Resistor - 470,000 Ohm 1/2 Watt	.15	1
R11	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R12	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R13	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R14	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R15	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R16	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R17	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R18	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R19	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R20	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R21	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R22	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R23	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R24	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R25	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R26	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R27	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R28	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R29	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R30	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R31	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R32	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R33	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R34	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R35	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R36	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R37	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R38	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R39	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R40	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R41	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R42	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R43	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R44	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R45	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R46	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R47	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R48	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R49	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R50	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R51	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R52	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R53	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R54	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R55	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R56	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R57	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R58	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R59	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R60	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R61	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R62	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R63	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R64	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R65	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R66	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R67	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R68	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R69	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R70	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R71	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R72	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R73	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R74	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R75	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R76	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R77	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R78	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R79	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R80	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R81	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R82	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	1
R83	R61423	Resistor - 1200 Ohm 1/2 Watt	.21	

SENTINEL RADIO CORP.



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For parts list, see P.16-10

**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:	
Any point where no interfering signal is received	Exactly 450 K.C.	0.3 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 1550 K.C.	Exactly 1650 K.C.	None	Adjust 1650 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K.C.	Approx. 1400 K.C.	None	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.

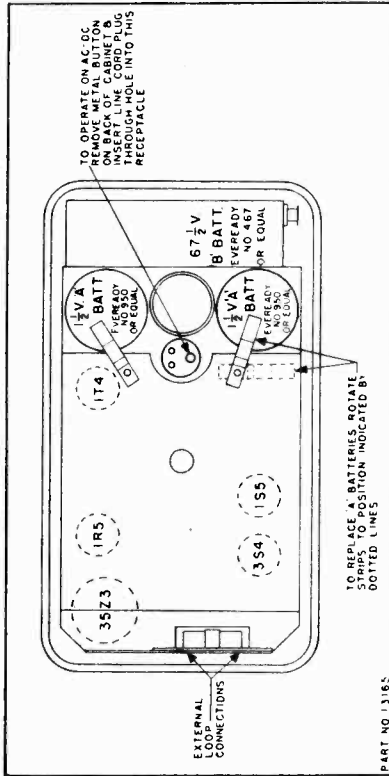
Because the "A" batteries become exhausted much faster than the "B" battery, six to eight "A" batteries may be used during the life of a single "B" battery. Be sure to try new "A" batteries before replacing the "B" battery.

**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.

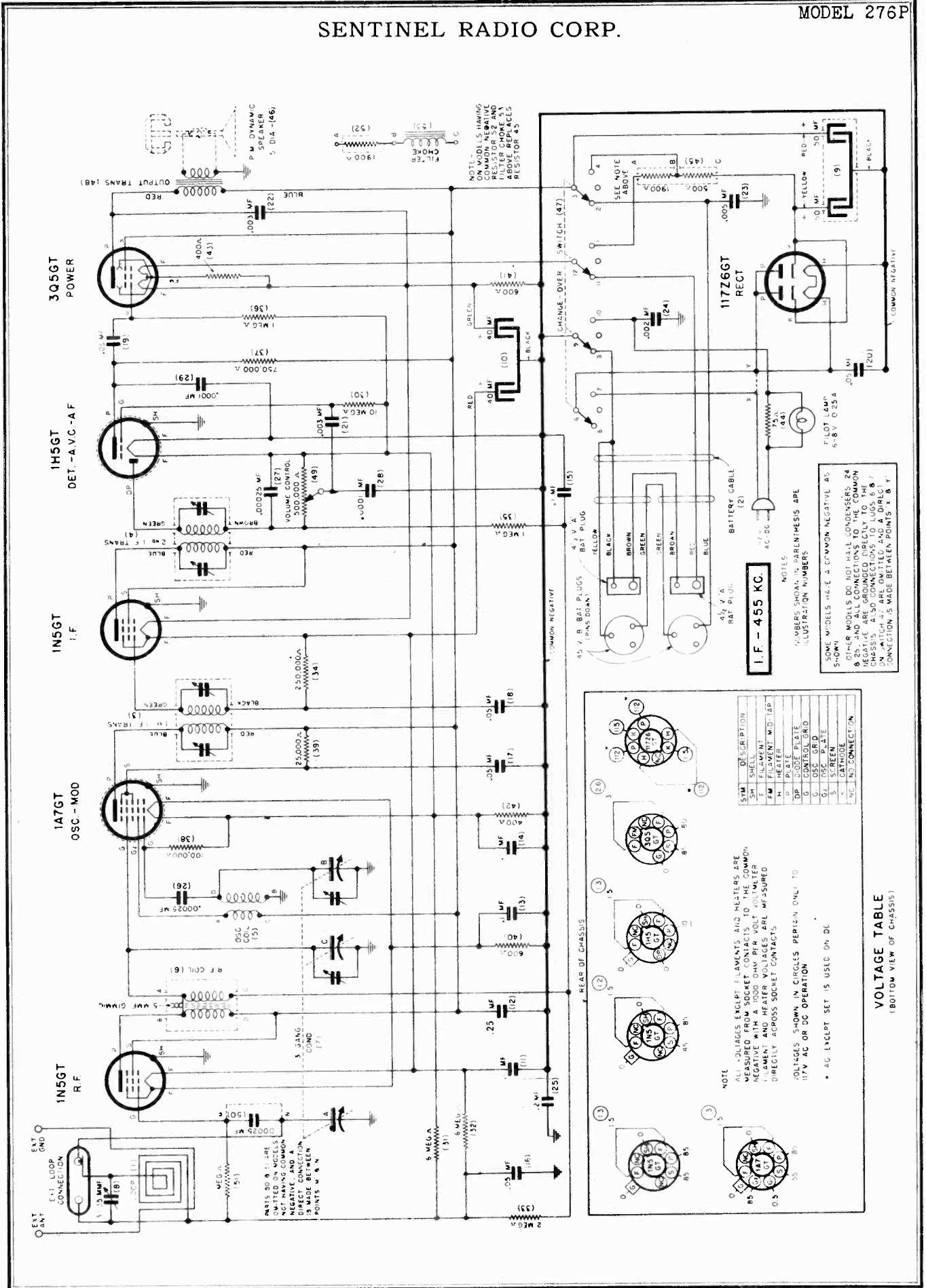


**THIS RECEIVER CAN BE OPERATED EITHER WITH DRY BATTERIES OR FROM 110-120 VOLT DIRECT CURRENT OR 50-60 CYCLE ALTERNATING CURRENT.**

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.

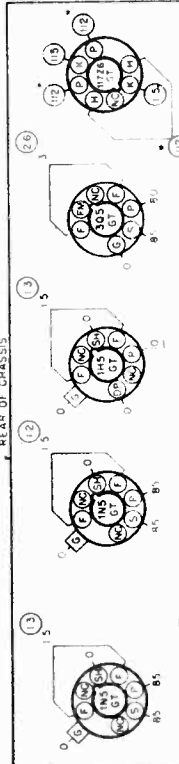
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NOTE: ON MODELS HAVING COMMON NEGATIVE RESISTOR 32 AND ABOVE REPLACES RESISTOR 45

I.F. - 455 KC.

NOTES:  
 NUMBERS SHOWN IN PARENTHESES ARE ILLUSTRATION NUMBERS  
 SOME MODELS HAVE A COMMON NEGATIVE AS SHOWN  
 OTHER MODELS DO NOT HAVE CONDENSERS 24 & 25  
 NEGATIVE ARE GROUNDED DIRECTLY TO THE CHASSIS. ALSO CONNECTIONS TO LUGS 6 & 8 ON SWITCH 47 ARE OMITTED AND A DIRECT CONNECTION IS MADE BETWEEN POINTS 2 & 8.



SYM	DESCRIPTION
SH	SHELL
F	FILAMENT
H	HEATER
DP	DIP
G	GRID
C	CATHODE
N	NO CONNECTION

NOTE: ALL VOLTAGES EXCEPT FILAMENT AND HEATERS ARE MEASURED FROM SOCKET CONTACTS TO THE COMMON NEGATIVE WITH A 1000 OHM PER VOLT VOLTMETER. FILAMENT AND HEATER VOLTAGES ARE MEASURED DIRECTLY ACROSS SOCKET CONTACTS.

VOLTAGES SHOWN IN CIRCLES PERTAIN ONLY TO 117V AC OR DC OPERATION.

\* AC EXCEPT SET IS USED ON DC.

VOLTAGE TABLE (BOTTOM VIEW OF CHASSIS)

**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 and R.F. trimmers, 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 near set loop—**BE SURE THAT NEITHER MOVES WHILE ALIGNING.**

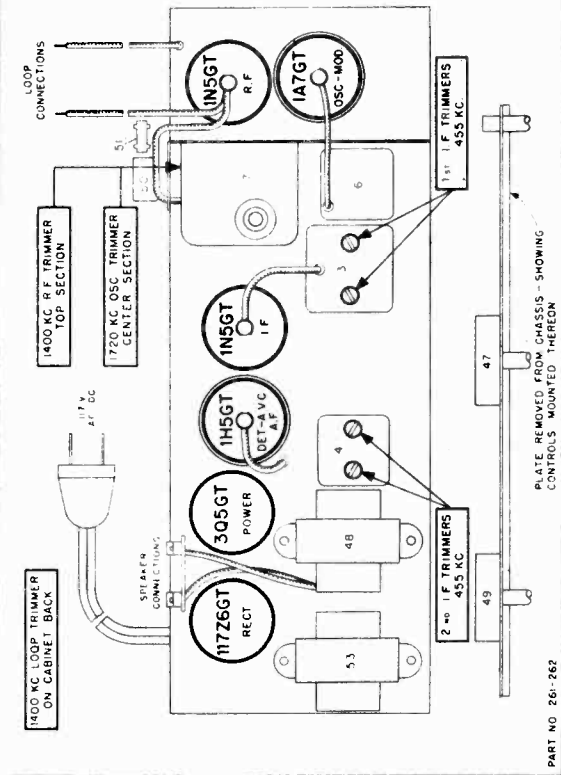
Set receiver dial to:	TEST OSCILLATOR	
	Adjust test oscillator frequency to:	Attach output of test oscillator to:
Any point where no interfering signal is received	Exactly 455 K.C.	High side to grid cap of 1A7GT tube. Do not remove cap.
<b>1</b> Exactly 1730 K.C.	Exactly 1730 K.C.	Use Small Loop to couple test oscillator to receiver loop.
Approx. 1400 K.C.	Approx. 1400 K.C.	Use Small Loop to couple test oscillator to receiver loop.

Refer to parts layout diagram for location of trimmers mentioned below:

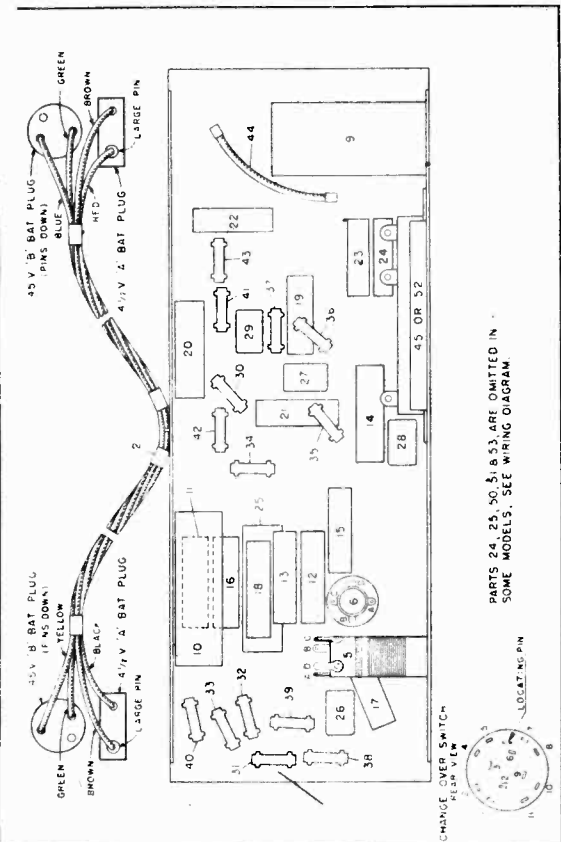
Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.

Adjust 1730 K. C. oscillator trimmer for maximum output.

Adjust 1400 K.C. loop and R.F. trimmers for maximum output



PART NO. 261-262



PARTS 24, 25, 50, 51, 8, 53, ARE OMITTED IN SOME MODELS. SEE WIRING DIAGRAM.

**VOLTAGE RATING**

THIS RADIO IS DESIGNED FOR USE WITH BATTERIES OR ON EITHER 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC) OR 110-120 VOLTS DIRECT CURRENT (DC). **IMPORTANT**—If hum is high when set is operated on A.C. current, reverse position of set power cord plug in house current socket.

**GROUND**

WHEN AN EXTERNAL AERIAL IS ATTACHED TO THE RADIO A GOOD GROUND MUST BE USED. A wire placed underneath the lower left hand screw on back of cabinet and firmly attached to a metal stake driven two to four feet in moist ground, or attached to a cold water pipe will provide a suitable ground.

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**CONTROLS**

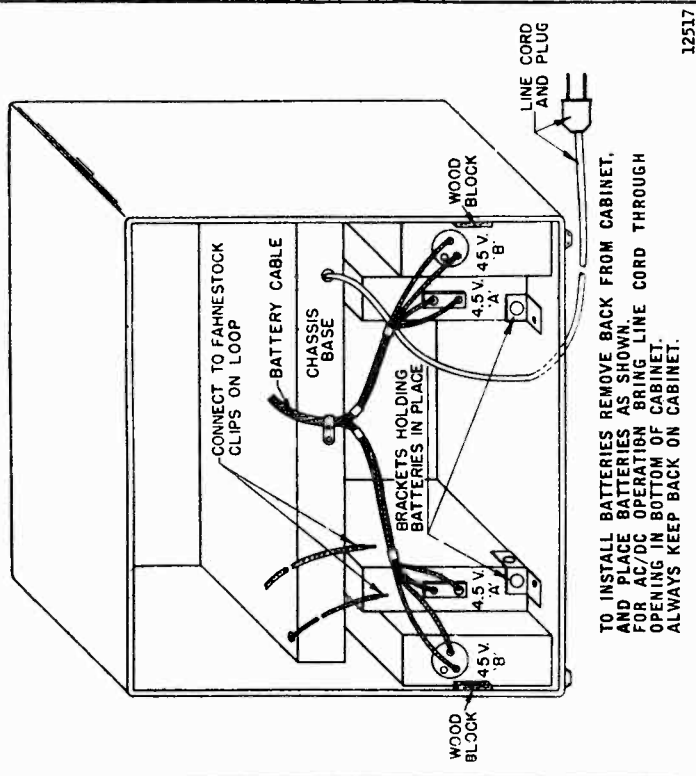
THE LEFT HAND KNOB controls the volume control.  
 THE CENTER KNOB is the voltage selector and on-off switch.  
 THE RIGHT HAND KNOB is the station selector.

**BATTERY INSTALLATION AND OPERATION**  
 BATTERY EQUIPMENT:

Diagram shows proper location and connections of the following and similar types of batteries:  
 2—4½ VOLT "A" BATTERIES such as Eveready type 746.  
 2—45 VOLT "B" BATTERIES such as Eveready type 482.

**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) Bring line cord through opening in bottom of cabinet.  
 (b) Insert line cord plug into 110-115 volt AC or DC electric power socket.  
 (c) Rotate voltage selector knob to left hand AC/DC position.  
 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 reinsert it into the power receptacle.

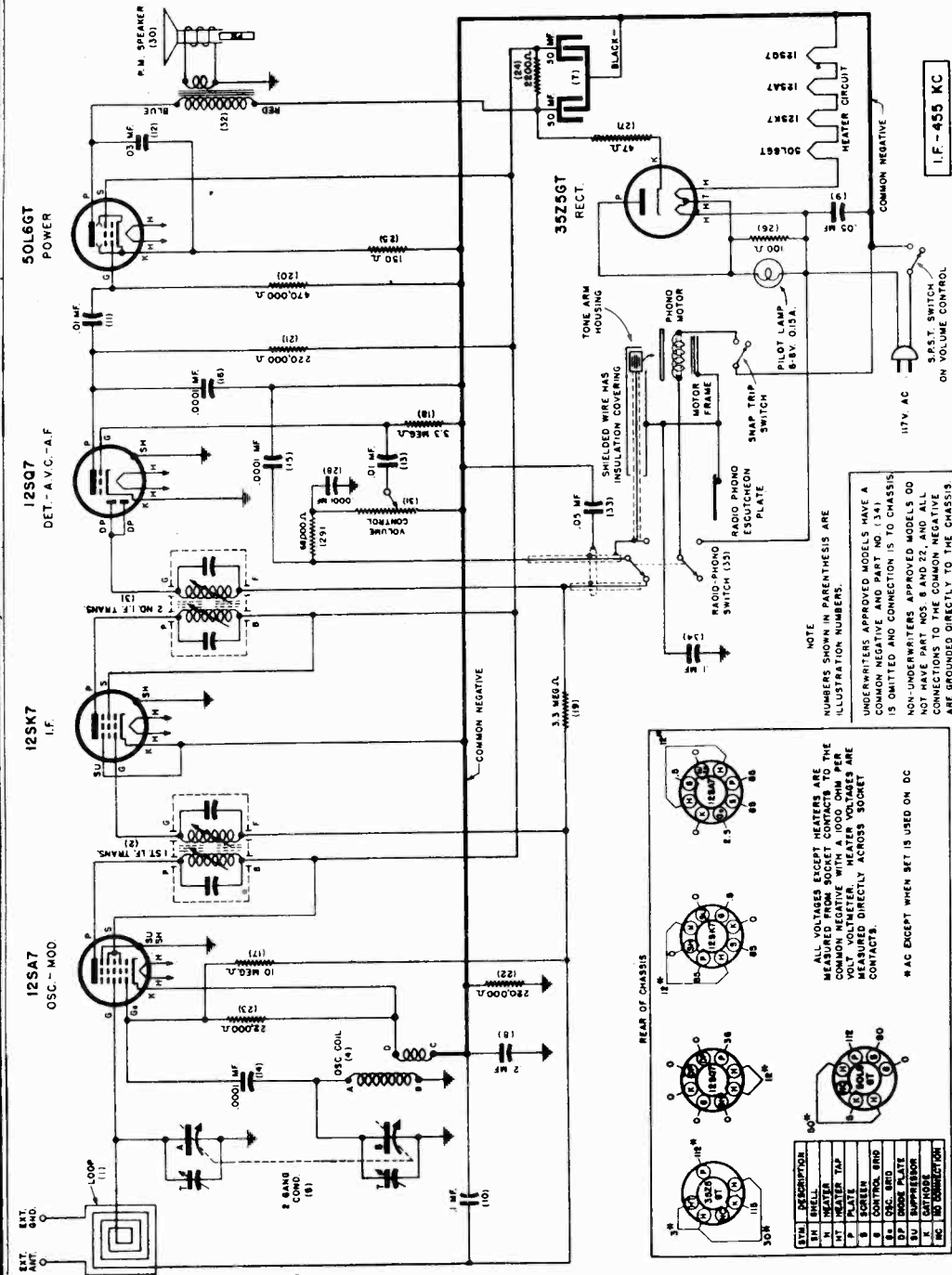


**PARTS LIST**

Illus. Part No.	Part Name	Description	List Price
1	13331 Antenna	Loop Assembly	\$1.50
2	12204 Cable	Battery with 2 Three Prong "B" and 2 Two Prong "A" Plugs	.85
3	12182 Coil	First I.F. Transformer	1.05
4	11988 Coil	Oscillator	.60
5	12184 Coil	Oscillator—used in Models not having common ground	.60
6	13566 Coil	R.F. Coil	.50
7	12188 Condenser	Tuning (Three Gang)	2.50
8	11638 Condenser	Trimmer (2-40 MMF.)	.20
9	13326 Condenser	Tubular Dry Elec. (50-50 Mfd. 150 Volt)	.75
10	13242 Condenser	Tubular Dry Elec. (40-40 Mfd. 25 Volt)	.50
11	11511 Condenser	Tubular .1 Mfd. 200 Volt	.23
12	9032 Condenser	Tubular .25 Mfd. 200 Volt	.23
13	11511 Condenser	Tubular .1 Mfd. 200 Volt	.20
14	11511 Condenser	Tubular .1 Mfd. 200 Volt	.20
15	11511 Condenser	Tubular .1 Mfd. 200 Volt	.20
16	1147 Condenser	Tubular .05 Mfd. 200 Volt	.19
17	1147 Condenser	Tubular .05 Mfd. 200 Volt	.19
18	1147 Condenser	Tubular .05 Mfd. 200 Volt	.19
19	1147 Condenser	Tubular .05 Mfd. 200 Volt	.19
20	9457 Condenser	Tubular .03 Mfd. 400 Volt	.18
21	1366 Condenser	Tubular .003 Mfd. 400 Volt	.20
22	1366 Condenser	Tubular .003 Mfd. 400 Volt	.17
23	1275 Condenser	Condenser	.18
24	10762 Condenser	Condenser	.19
25	12089 Condenser	Condenser	.26
26	9458 Condenser	Condenser	.21
27	9458 Condenser	Condenser	.21
28	7934 Condenser	Condenser	.19
29	7934 Condenser	Condenser	.18
30	4804 Resistor	Carbon 10 Megohm 1/3 Watt	.18
31	2333 Resistor	Carbon 6 Megohm 1/3 Watt	.18
32	2333 Resistor	Carbon 2 Megohm 1/3 Watt	.18
33	2005 Resistor	Carbon 250,000 Ohm 1/3 Watt	.19
34	7998 Resistor	Carbon 1 Megohm 1/3 Watt	.19
35	7998 Resistor	Carbon 1 Megohm 1/3 Watt	.19
36	7998 Resistor	Carbon 750,000 Ohm 1/3 Watt	.19
37	2673 Resistor	Carbon 100,000 Ohm 1/3 Watt	.19
38	8000 Resistor	Carbon 600 Ohm 1/3 Watt	.19
39	8507 Resistor	Carbon 600 Ohm 1/3 Watt	.19
40	40	Carbon 400 Ohm 1/3 Watt	.19
41	1562 Resistor	Carbon 400 Ohm 1/3 Watt	.19
42	1152 Resistor	Carbon 200 Ohm 1/3 Watt	.19
43	1152 Resistor	Carbon 200 Ohm 1/3 Watt	.20
44	12327 Resistor	Wound 500 Ohm 3 Watt and 1900 Ohm 6 Watt	.30
45	13327 Resistor	P. M. Dynamite (8")	3.25
46	12211 Speaker	Speaker	
47	12193 Switch	Voltage Selector Switch	1.00
48	13095 Transformer	Transformer common ground in Models having common ground	1.00
49	12183 Transformer	Transformer common ground in Models not having common ground	1.10
49	13324 Volume-Control	Volume-Control used in Models not having common ground	.60
49	13397 Volume Control	Volume Control used in Models having common ground	.70
50	9458 Condenser	Mica .00025 Mfd.	.21
51	7998 Resistor	Carbon megohm 1/3 Watt	.19
52	10831 Resistor	Carbon 100,000 Ohm 1/3 Watt used in Model having common ground	.55
53	12069 Filler Choke	Used in Model having common ground	1.00

**MISCELLANEOUS PARTS**

Illus. Part No.	Part Name	Description	List Price
10292	Bulb	6.3 Volt .250 Amp. Dial Light No. 44 Bayonet Base	\$0.10
8184	Dial Cord	24" of No. 18 Lb. Drive Cord	.15
12191	Dial Shaft	Drive Shaft	.20
12221	Dial Pointer	For Dial	.10
12222	Dial Pointer	AC-DC Battery Indicator	.35
12253	Dial Scale	Calibrated Scale	.10
12086	Knob	Crystal For Dial	.10
11642	Plug	Three Prong "B"	.10
12205	Plug	Two Prong "A"	.08
13330	Plate	Metal Control Face Plate for Cabinet	1.00

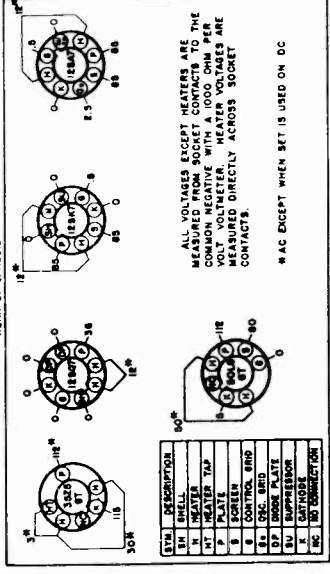


**GROUND**

When a regular aerial is used, best result 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 - ANY EXTERNAL GROUND CONNECTION TO ANY METAL PART OF THE CHASSIS WILL CAUSE A SHORT AND POSSIBLE DAMAGE.**

**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. When replacing light, always use a 6.3 volt .150 ampere dial light.



VOLTAGE TABLE (BOXTOP VIEW OF CHASSIS)

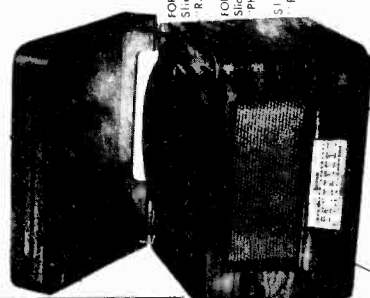
**LOOP AERIAL**

THE LOOP AERIAL SUPPLIED with the radio should provide ample reception in average locations. Loop aerials are directional—the volume of a weak station may be improved, or undesired electrical noise may be reduced, by lifting and turning the radio to a different position. A trial will reveal position of best reception with least interference.

**OUTSIDE AERIAL**

If the radio is used in shielded areas or 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 OF THE REAR OF THE CHASSIS.

- INSTRUCTIONS FOR PLAYING A 7", 10" OR 12" RECORD:**
- LIFT CABINET LID AND PLACE RECORD ON TURNTABLE.
  - SLIDE RECORD SIZE SELECTOR BUTTON TO PROPER POSITION, AND TO 12" POSITION. SLIDE BUTTON FOR 10" RECORD. SLIDE BUTTON TO POSITION MARKED 10 FOR 7" RECORD. DEPRESS BUTTON AND SLIDE TO 7 POSITION.
  - PLACE "RADIO-PHONO" SWITCH IN PHONO POSITION.
  - CLOSE LID—THIS WILL AUTOMATICALLY START RECORD PLAYING. WHEN RECORD HAS BEEN COMPLETELY PLAYED, TURNABLE WILL AUTOMATICALLY TURN OFF TO PLAY SAME RECORD AGAIN. JUST LIFT LID ALL THE WAY UP AND RE-CLOSE.
  - TO PLAY ANOTHER RECORD, REPLACE RECORD ON TURNTABLE AND PROCEED AS ABOVE.
  - DO NOT HAVE MORE THAN ONE RECORD ON TURNTABLE.





### ALIGNMENT PROCEDURE

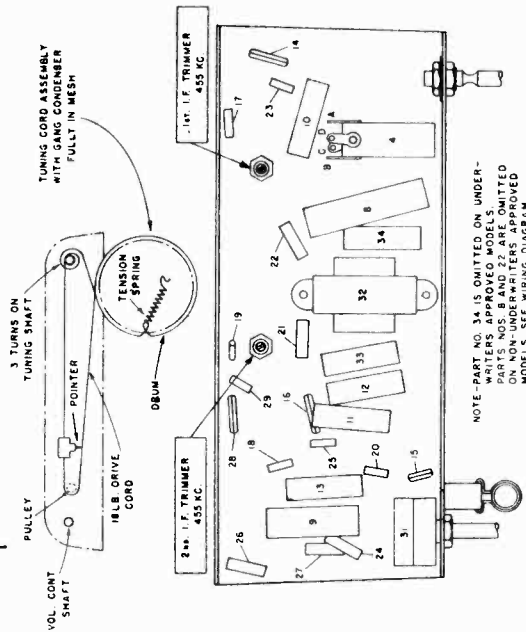
For alignment procedure read tabulations from left to right, and make the adjustment marked (1) first, (2) next, (3) third.  
 Before starting alignment:

- (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.

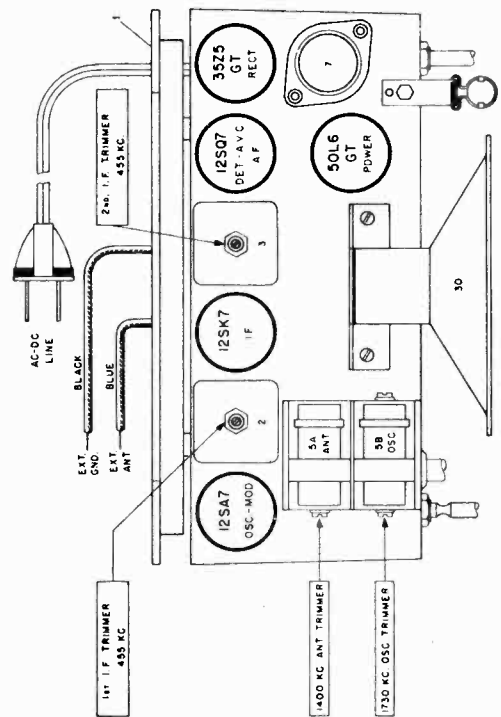
Steps	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	
1	Any point where no interfering signal is received.	455 K. C.	.02 MFD.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

Adjust 1730 K. C. oscillator trimmer for maximum output.

Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.

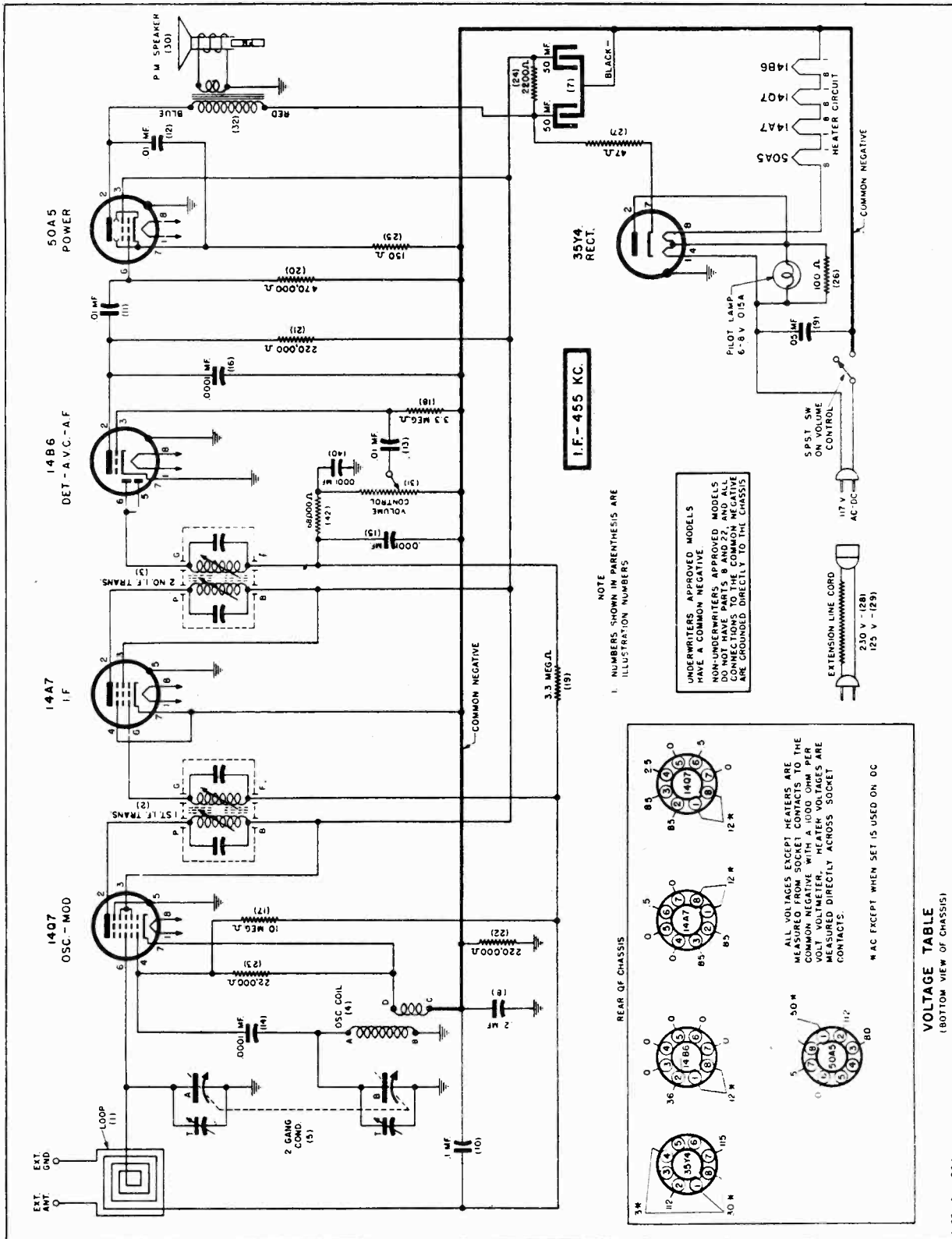


NOTE—PART NO. 34 IS OMITTED ON UNDERWRITERS APPROVED MODELS. PART NO. 34 IS OMITTED ON NON-UNDERWRITERS APPROVED MODELS. SEE WIRING DIAGRAM.



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

SENTINEL RADIO CORP.



PART NO L-284

### 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.

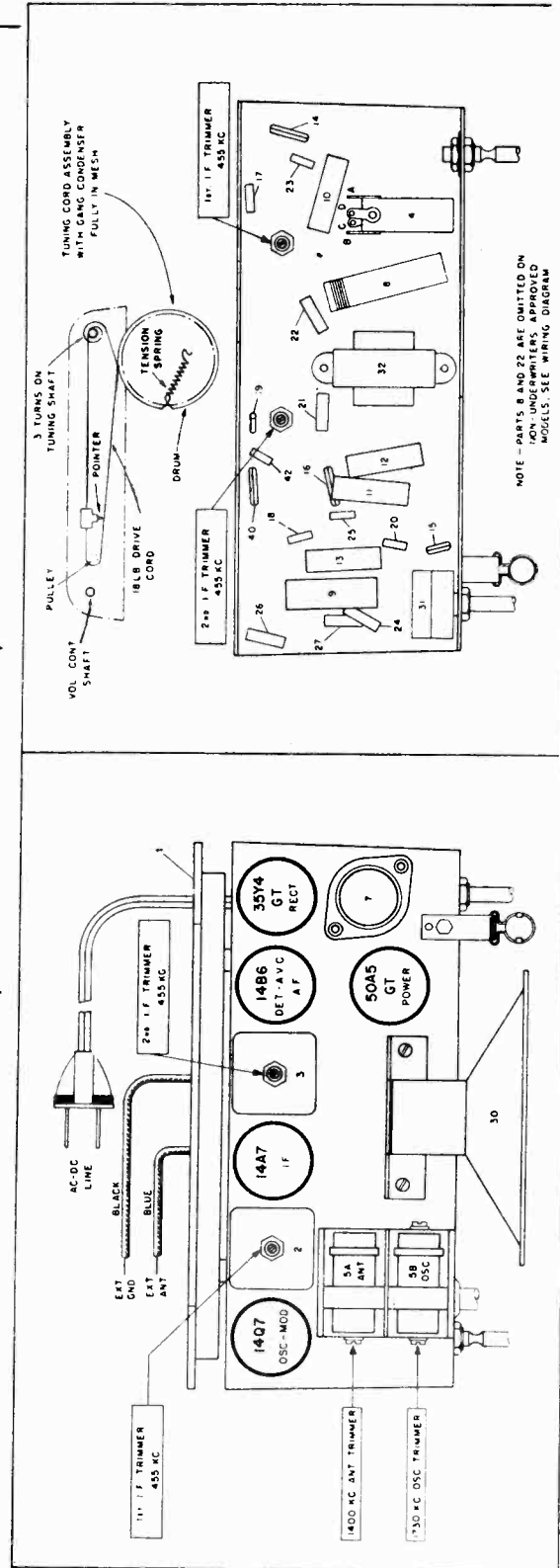
TEST OSCILLATOR			
Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:
1 Any point where no interfering signal is received.	455 K. C.	.02 MFD. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through a .02 Mfd. blocking condenser.
2 Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead
3 Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead Receiver black ground lead

Refer to parts layout diagram for location of trimmers mentioned below:

Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.

Adjust 1730 K. C. oscillator trimmer for maximum output.

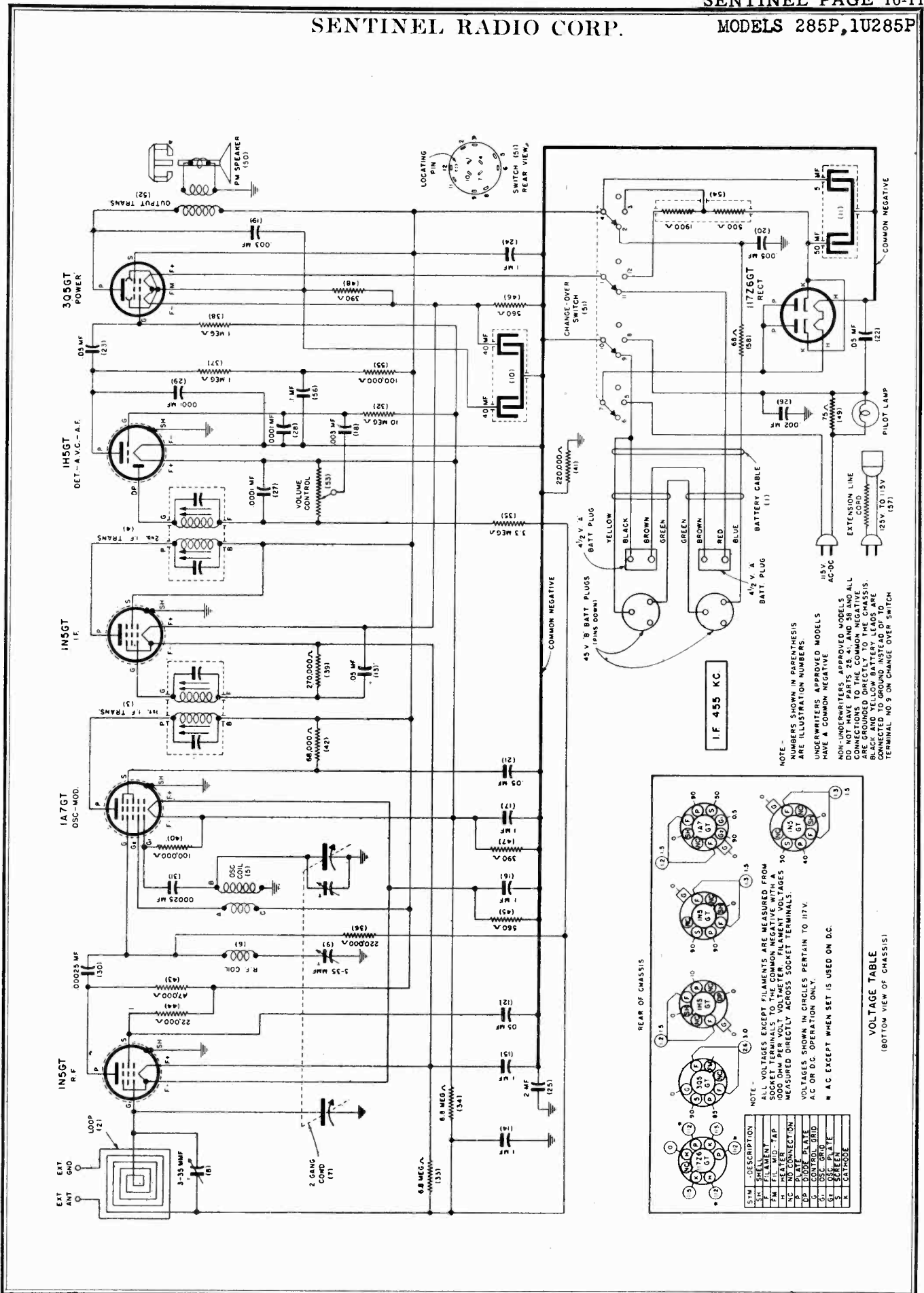
While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.





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MODELS 285P, 1U285P



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**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:

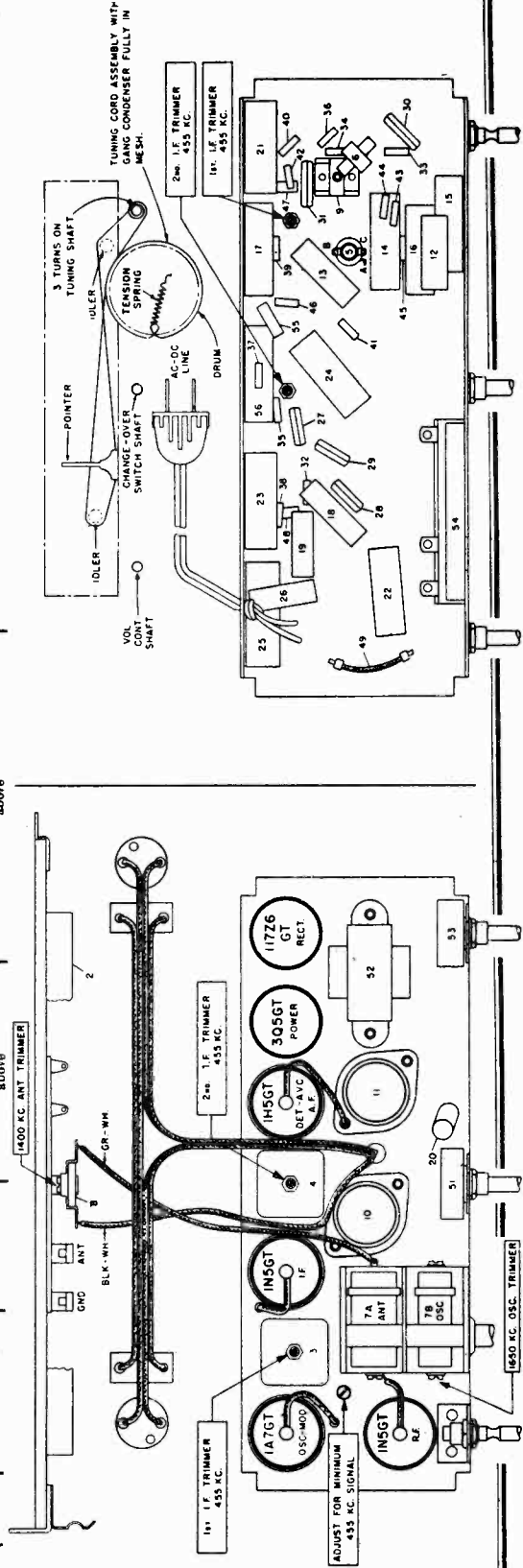
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct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

TEST OSCILLATOR				Refer to parts layout diagram for location of trimmers mentioned below:
Steps	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	
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).
2	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	See paragraph (D) above	See paragraph (C) above
	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.		
4	Approximately 1400 K. C.	Approx. 1400 K. C.	See paragraph (D) above	Adjust R. F. coil trimmer for <u>minimum</u> 455 K. C. signal.  Adjust 1650 K. C. oscillator trimmer for maximum output.  Adjust 1400 K. C. antenna trimmer for maximum output.



SENTINEL RADIO CORP.

MODELS 285P, 1U285P

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	23E414	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.

Illus. No.	Part No.	Part Name	Description
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. 5" PM
50	1E12	Speaker	Changeover
51	29E5	Switch	Output
52	22E9	Transformer	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

Part No.	Part Name	Description
48E1	Dial Escutcheon	Plastic Escutcheon
36E15	Dial Scale	Calibrated Dial Scale
6E2	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

ELECTRIC OPERATION

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

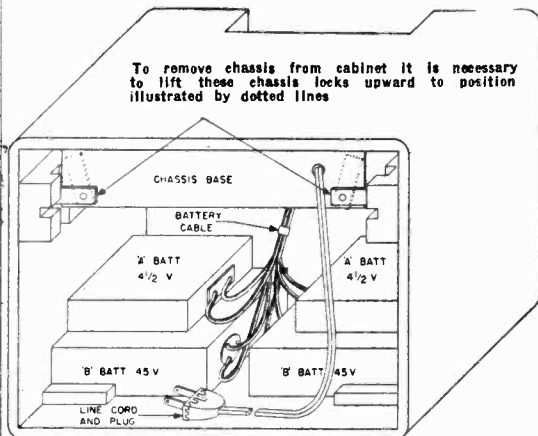
- (A) Open hinged cabinet back outward by pulling on the tab attached to the right side of the back, then take out the power line cord, and reclose back.
- (B) Insert line cord plug into 110 to 120 Volt AC or DC electric power outlet.
- (C) Turn voltage selector knob to center "AC-DC" position.

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 4 1/2 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.



To remove chassis from cabinet it is necessary to lift these chassis locks upward to position illustrated by dotted lines

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.

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 - 4 1/2 VOLT "A" AND 2 - 45 VOLT "B"





**ALIGNMENT PROCEDURE**

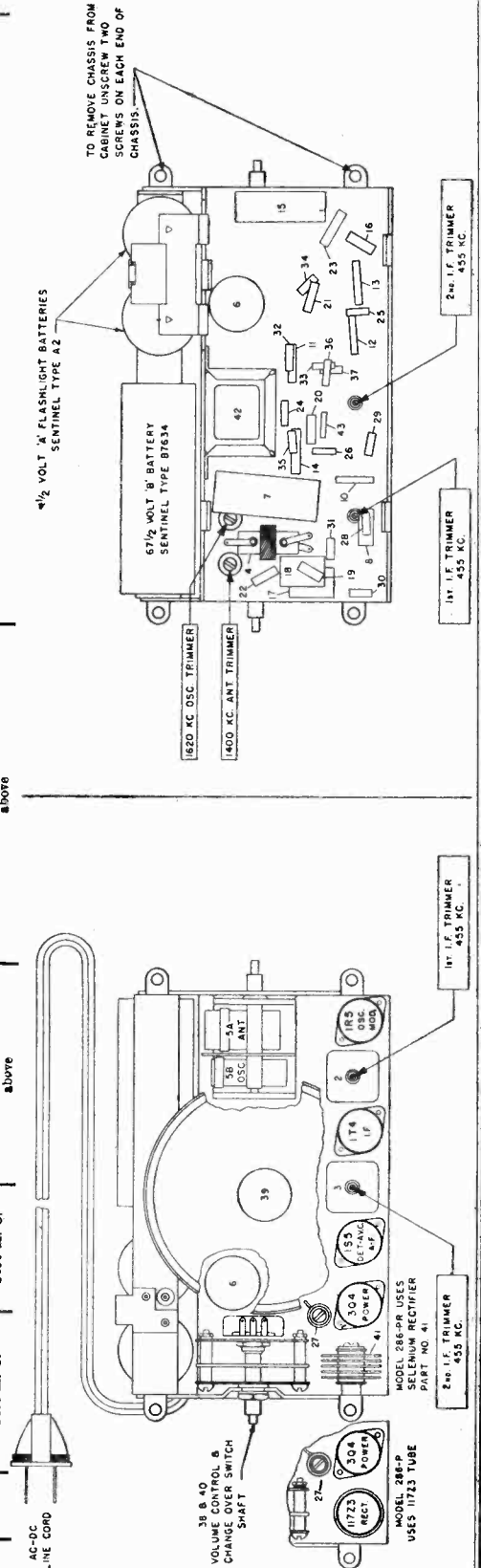
Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure, read tabulations from left to right. Make the adjustment marked (1) first, (2) next, (3) third. **ALWAYS HAVE METAL BOTTOM PLATE MOUNTED 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.**

**TEST OSCILLATOR**

Steps	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:
<b>1</b>	Any point where no interfering signal is received	Exactly 455 K. C.	0.2 Mfd. Condenser	High side $\uparrow$ 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.
<b>2</b>	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.
<b>3</b>	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	List Price	Illus. No.	Part No.	Part Name	Description	List Price
1	20E134	Antenna	Loop with Cabinet Lid Assem.	\$3.55	24	27E101-7	Resistor	Carbon, 100 Ohm, 1/4 W.	.07
2	20E125	Coil	1st I.F. Transformer	3.00	25	27E471-7	Resistor	Carbon, 470 Ohm, 1/4 W.	.06
3	20E125	Coil	2nd I.F. Transformer	3.00	26	27E561-7	Resistor	Carbon, 560 Ohm, 1/4 W.	.06
4	20E127	Coil	Oscillator	1.00	27	27E1003	Resistor	Wire Wound 1750 and 610 Ohms, 7 W.	.85
5	24E20	Condenser	Tuning, 2 Gang	3.40	28	27E682-7	Resistor	Carbon, 6,800 Ohm, 1/4 W.	.06
6	25E13	Condenser	Tubular, Dry Elect. 40-40 Mfd. 150 Volt	1.15	29	27E223-7	Resistor	Carbon, 22,000 Ohm, 1/4 W.	.06
7	25E12	Condenser	Tubular, Dry Elect. 100 Mfd. 10 Volt	.80	30	27E683-7	Resistor	Carbon, 68,000 Ohm, 1/4 W.	.06
8	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.	.40	31	27E475-7	Resistor	Carbon, 4.7 Megohm, 1/4 W.	.06
10	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.	.40	32	27E271-7	Resistor	Carbon, 270 Ohm, 1/4 W.	.08
11	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.	.40	33	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.	.06
12	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.	.40	34	27E105-7	Resistor	Carbon, 1 Meg Ohm, 1/4 W.	.06
13	23E2004-5	Condenser	Tubular, .01 Mfd. 150 V.	.40	35	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
14	23E2004-7	Condenser	Tubular, .05 Mfd. 150 V.	.40	36	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
15	23E416	Condenser	Tubular, .05 Mfd. 400 V.	.25	37	27E475-7	Resistor	Carbon, 4.7 Meg Ohm, 1/4 W.	.06
16	23E2004-2	Condenser	Tubular, .002 Mfd. 150 V.	.40	38	28E14	Vol. Control	2 Megohm	.80
17	23E2004-8	Condenser	Tubular, .1 Mfd. 150 V.	.45	39	1E19	Speaker	4 Inch P.M.	4.00
18	23E2004-8	Condenser	Tubular, .1 Mfd. 150 V.	.45	40	29E11	Switch	Power Selector	2.25
19	23E9	Condenser	Mica, .0001 Mfd.	.20	41	57E1	Rectifier	Selenium (Used in Model 286PR only)	2.00
20	23E9	Condenser	Mica, .0001 Mfd.	.20		OR	Selenium (Round Type) used in Model 286PR only	2.00	
21	23E9	Condenser	Mica, .0001 Mfd.	.20	41	57E1-4	Rectifier	Output	2.25
22	23E8	Condenser	Mica, .000025 Mfd.	.23	42	22E16	Transformer	Carbon, 10 Megohm, 1/4 W.	.06
23	27E680-2	Resistor	Carbon, 68 Ohm 1/2 W. (used in Model 286PR only)	.0743	27E106-7	Resistor			

**MISCELLANEOUS PARTS**

Part No.	Part Name	Description	List Price	Part No.	Part Name	Description	List Price
20E128	"A" Batt. Con. Bracket Assembly	With 4 No. 10E43 Trimount Studs	.60	30E25-1	Cab. Center Section	Less Lid and Bottom Assemblies, with Handle, Spkr. Screen, Lid Catch & Push Button	4.30
20E130-1	Cab. Assembly	Complete Cabinet Assembly with Lid & Loop, Handle, Lid Catch & Push Button Assembly & Bottom Assembly	9.00	20E131	Chassis Plate	Bottom Shield Plate for Chassis	.85
20E134	Cab. Lid, Assembly	Lid Assembly with Loop and Hinges	3.55	20E136-1	Hinge	Hinge & Spring Assembly with 2 No. 82E36-F10 No. 4 24x1/4 Mtg. Screws	.40
20E135-1	Cab. Bottom	Bottom Assem. with Locking Slotted Head Stud	2.10	37E44-1	Knob	Calibrated Dial Knob	.88
				37E34-1	Knob	"OFF-AC-DC" Batt.	.85
				37E32-1	Knob	Tuning and Volume Knobs	.53
				20E129	"B" Batt. Connector	B- and B+ Batt. Connector Assembly	.50

**HARDWARE**

Part No.	Part Name	Description	List Price	Part No.	Part Name	Description	List Price
15E41	Lid Catch Bracket	Bracket for Mounting Lid Catch, With 2 No. 82E3-F10 Screws	.12	78E142-F50	Screw	No. 2 56x3/16 Rec. Oval Hd. B.M.	1.25/C
20E138	Lid Catch	Lid Catch with Screw	.25	82E3-F10	Screw	No. 4 24x1/4 Rec. Hd. Type 25	.93/C
37E35-1	Lid Catch Button	Button for Lid Catch with No. 13E3-F10 No. 4 40x1/4 Hex Screw and No. 11E3-F10 Lockwasher	.14	82E36-F10	Screw	No. 6 20x5/16 Rec. Hd. Type 25	2.25/C
55E22-1	Handle	Leather	.50	10E41	Stud	Trimount for Mounting Chassis Bottom Shield	1.15/C
55E21-1	Handle Bracket	Bracket for Mounting Handle	.25	10E43	Stud	Trimount for Mounting "A" Batt. Contact Brkt. Assem.	1.15/C
71E42-F10	Screw	No. 4 40x3/16 Slot B.H.I.M.	.30/C	65E8	Spring	Lid Index Spring	.09
				66E12-1	Screen	Speaker Screen Grille	.60

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

**VOLTAGE SELECTOR**

For BATTERY operation, turn to maximum right hand "BATT" position.  
For AC-DC operation, turn to middle "AC-DC" position.

**BE SURE TO TURN TO MAXIMUM LEFT HAND "OFF" POSITION WHEN THROUGH LISTENING.**

**VOLUME CONTROL**

Turn clockwise to increase volume.

**TO OPEN LID**

Depress this button.

**LOOP AERIAL**

Always have loop in upright position when operating set.

**TUNING CONTROL**

Use this control to tune receiver to desired station.

67 1/2 Volt "B" Battery SENTINEL Type B7634

TWO 1 1/2 Volt "A" Batteries SENTINEL Type A2

TO REMOVE: Press lightly on battery contact plate.

**FOR AC-DC OPERATION**

Remove back, unwind line cord from reel, place in slot and close back.

WHEN AC-DC CORD IS NOT IN USE, WIND ON REEL.

**TO REMOVE CABINET BACK**

Turn slotted screw with thin dime or screw driver and gently separate.

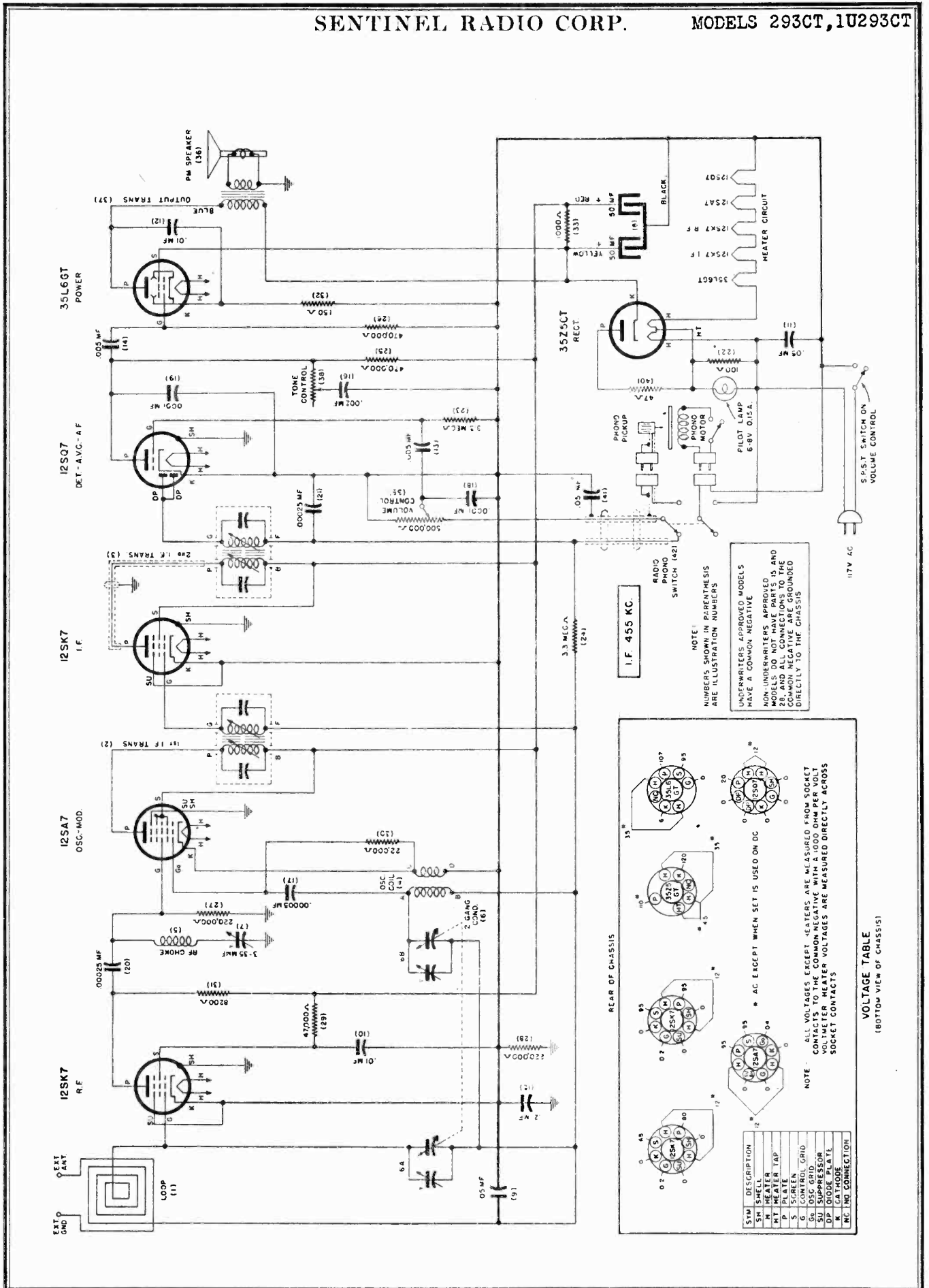
**INSTALLATION OF REQUIRED BATTERIES**

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

- Two SENTINEL, Type A2, 1 1/2 Volt "A" batteries, or equivalent, such as Ray-O-Vac Type No. 2, Eveready 750, etc.
- One SENTINEL Type B7634, 67 1/2 Volt "B" battery, or equivalent, such as Ray-O-Vac Type 4367, Eveready 467, etc.

SENTINEL RADIO CORP.

MODELS 293CT, 1U293CT

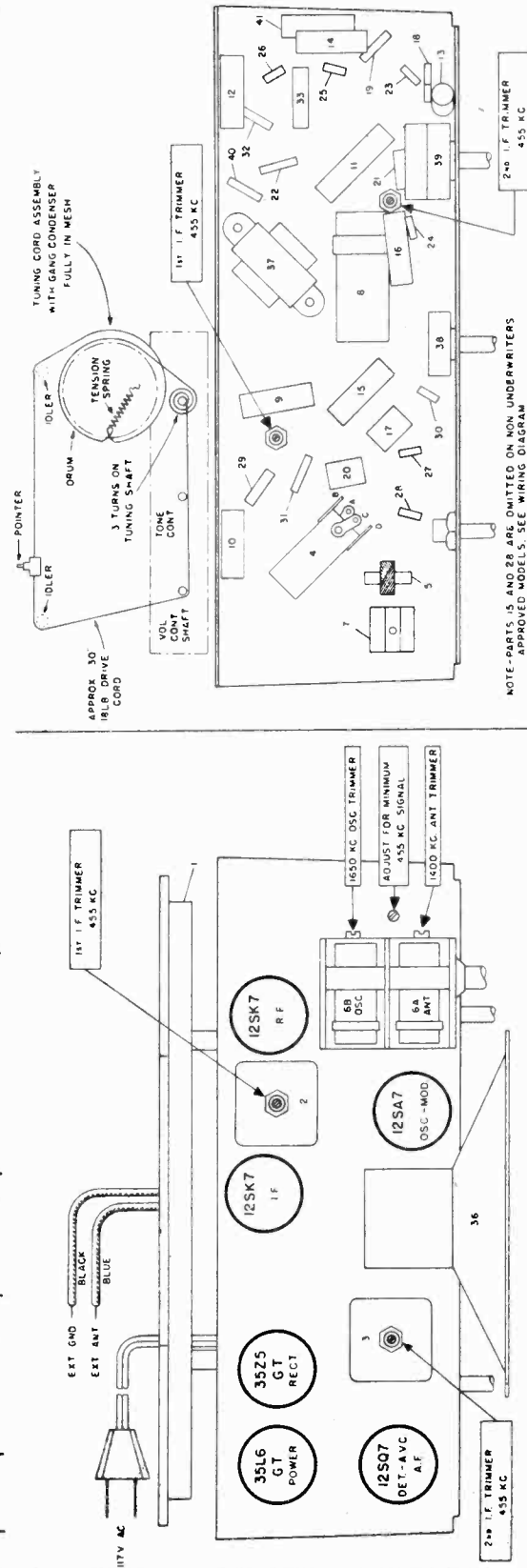


**ALIGNMENT PROCEDURE**

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	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	
	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).
<b>1</b>	Rotate gang condenser to maximum capacity	Exactly 455 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections
<b>2</b>	Rotate gang condenser to minimum capacity	Exactly 1650 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections
<b>3</b>	Approximately 1400 K. C.	Approx. 1400 K. C.	.0002 Mfd. Condenser	To loop external antenna and ground connections



SENTINEL RADIO CORP.

MODELS 293CT, 1U293CT  
MODELS 284GA, 1U284GA

**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.

**MODEL 293-CT, 1U-293-CT**

Illustration No.	Part Name	Description	List Price
1	20E67 Antenna	Antenna Loop & Mounting Assembly	\$1.70
2	20E21 Coil	1st I. F. Transformer	2.75
3	20E22 Coil	1st I. F. Transformer	2.75
4	20E64 Coil	2nd I. F. Transformer	2.75
5	2E19 Coil	Oscillator	1.10
6	24E8 Condenser	R. F. Choke	.65
7	24E5 Condenser	Tuning, 2 Gang	3.50
8	24E3 Condenser	Tuning, 2 Gang	3.50
9	23E216 Condenser	Trimmer, (3-35 MMF Working)	.32
10	23E211 Condenser	Tubular, Dry Elect. 50-50 Mfd. 150 V.	1.15
11	23E416 Condenser	Tubular, .05 Mfd. 200 V.	.18
12	23E411 Condenser	Tubular, .01 Mfd. 200 V.	.18
13	23E408 Condenser	Tubular, .05 Mfd. 400 V.	.20
14	23E408 Condenser	Tubular, .01 Mfd. 400 V.	.18
15	23E421 Condenser	Tubular, .005 Mfd. 400 V.	.18
16	23E405 Condenser	Tubular, .005 Mfd. 400 V.	.18
17	23E37 Condenser	Tubular, .002 Mfd. 400 V.	.18
18	23E39 Condenser	Mica, .00005 Mfd.	.22
19	23E39 Condenser	Mica, .0001 Mfd.	.25
20	23E42 Condenser	Mica, .00025 Mfd.	.25
21	23E42 Condenser	Mica, .00025 Mfd.	.25
22	27E101-2 Resistor	Carbon, 100 Ohm 1/2 W.	.08
23	27E335 Resistor	Carbon, 3.3 Megohm 1/3 W.	.07
24	27E335 Resistor	Carbon, 3.3 Megohm 1/3 W.	.07
25	23E474 Resistor	Carbon, 470,000 Ohm 1/3 W.	.07
26	27E474 Resistor	Carbon, 470,000 Ohm 1/3 W.	.07
27	27E224 Resistor	Carbon, 220,000 Ohm 1/3 W.	.08
28	27E224 Resistor	Carbon, 220,000 Ohm 1/3 W.	.08
29	27E473 Resistor	Carbon, 470,000 Ohm 1/3 W.	.07
30	27E223 Resistor	Carbon, 22,000 Ohm 1/3 W.	.08
31	27E822 Resistor	Carbon, 8,200 Ohm 1/3 W.	.07
32	27E151 Resistor	Carbon, 150 Ohm 1/3 W.	.08
33	27E102-3 Resistor	Carbon, 1,000 Ohm 1 W.	.11
34	1E1 Speaker	4" x 6" Elliptical P. M. (less Transformer)	4.00
35	22E8 Transformer	Output for Speaker	1.70
36	28E8 Tone Control	500,000 Ohm, with S.P.S.T. Switch	.60
37	28E7 Volume Control	Carbon, 47 Ohm 1/2 W.	.80
38	27E470-2 Resistor	Tubular, .05 Mfd. 400 V.	.20
39	23E416 Condenser	Radio Phono, D.P.D.T.	.70
40	20E203 Switch		

**RADIO PARTS LIST**

Illustration No.	Part Name	Description	List Price
1	20E67 Antenna	Antenna Loop & Mounting Assembly	\$1.70
2	20E21 Coil	1st I. F. Transformer	2.75
3	20E22 Coil	1st I. F. Transformer	2.75
4	20E64 Coil	2nd I. F. Transformer	2.75
5	2E19 Coil	Oscillator	1.10
6	24E8 Condenser	R. F. Choke	.65
7	24E5 Condenser	Tuning, 2 Gang	3.50
8	24E3 Condenser	Tuning, 2 Gang	3.50
9	23E216 Condenser	Trimmer, (3-35 MMF Working)	.32
10	23E211 Condenser	Tubular, Dry Elect. 50-50 Mfd. 150 V.	1.15
11	23E416 Condenser	Tubular, .05 Mfd. 200 V.	.18
12	23E411 Condenser	Tubular, .01 Mfd. 200 V.	.18
13	23E408 Condenser	Tubular, .05 Mfd. 400 V.	.20
14	23E408 Condenser	Tubular, .01 Mfd. 400 V.	.18
15	23E421 Condenser	Tubular, .005 Mfd. 400 V.	.18
16	23E405 Condenser	Tubular, .005 Mfd. 400 V.	.18
17	23E37 Condenser	Tubular, .002 Mfd. 400 V.	.18
18	23E39 Condenser	Mica, .00005 Mfd.	.22
19	23E39 Condenser	Mica, .0001 Mfd.	.25
20	23E42 Condenser	Mica, .00025 Mfd.	.25
21	23E42 Condenser	Mica, .00025 Mfd.	.25
22	27E101-2 Resistor	Carbon, 100 Ohm 1/2 W.	.08
23	27E335 Resistor	Carbon, 3.3 Megohm 1/3 W.	.07
24	27E335 Resistor	Carbon, 3.3 Megohm 1/3 W.	.07
25	23E474 Resistor	Carbon, 470,000 Ohm 1/3 W.	.07
26	27E474 Resistor	Carbon, 470,000 Ohm 1/3 W.	.07
27	27E224 Resistor	Carbon, 220,000 Ohm 1/3 W.	.08
28	27E224 Resistor	Carbon, 220,000 Ohm 1/3 W.	.08
29	27E473 Resistor	Carbon, 470,000 Ohm 1/3 W.	.07
30	27E223 Resistor	Carbon, 22,000 Ohm 1/3 W.	.08
31	27E822 Resistor	Carbon, 8,200 Ohm 1/3 W.	.07
32	27E151 Resistor	Carbon, 150 Ohm 1/3 W.	.08
33	27E102-3 Resistor	Carbon, 1,000 Ohm 1 W.	.11
34	1E1 Speaker	4" x 6" Elliptical P. M. (less Transformer)	4.00
35	22E8 Transformer	Output for Speaker	1.70
36	28E8 Tone Control	500,000 Ohm, with S.P.S.T. Switch	.60
37	28E7 Volume Control	Carbon, 47 Ohm 1/2 W.	.80
38	27E470-2 Resistor	Tubular, .05 Mfd. 400 V.	.20
39	23E416 Condenser	Radio Phono, D.P.D.T.	.70
40	20E203 Switch		

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**MODEL 284GA, 1U284GA**

**PARTS LIST**

Illustration No.	Part Name	Description	List Price
1	20E24 Antenna	Loop	
2	20E21 Coil	1st I. F. Trans.	
3	20E261 Coil	1st I. F. Trans.	
4	20E22 Coil	2nd I. F. Trans.	
5	20E261-2 Coil	2nd I. F. Trans.	
6	24E2 Condenser	Oscillator	
7	24E18 Condenser	Tuning, 2 Gang (3 Hole Mtg.)	
8	24E18 Condenser	Tuning, 2 Gang (2 Hole Mtg.)	
9	25E1 Condenser	Dry Elect. 150-50 Mfd. 150 V.	
10	25E18 Condenser	Dry Elect. 150-50 Mfd. 150 V.	
11	23E421 Condenser	Tubular, .2 Mfd. 400 V.	
12	23E416 Condenser	Tubular, .05 Mfd. 400 V.	
13	23E411 Condenser	Tubular, .01 Mfd. 400 V.	
14	23E414 Condenser	Tubular, .03 Mfd. 200 V.	
15	23E39 Condenser	Tubular, .01 Mfd. 200 V.	
16	23E39 Condenser	Mica, .0001 Mfd.	
17	23E39 Condenser	Mica, .0001 Mfd.	
18	23E35 Resistor	Carbon, 10 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	
23	27E223 Resistor	Carbon, 22,000 Ohm 1/3 Watt	

Illustration No.	Part Name	Description	List Price
24	27E223-3 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	2E2 Transformer	Output for Speaker	
33	23E416 Condenser	Tubular, .05 Mfd. 400 V.	
34	23E418 Condenser	Tubular, .1 Mfd. 400 V.	
35	20E203-2 Switch	Radio Phono D.P.D.T.	
36	OR		
37	20E203-4 Switch	Radio Phono D.P.D.T. Und. App'd only	

**MISCELLANEOUS PARTS**

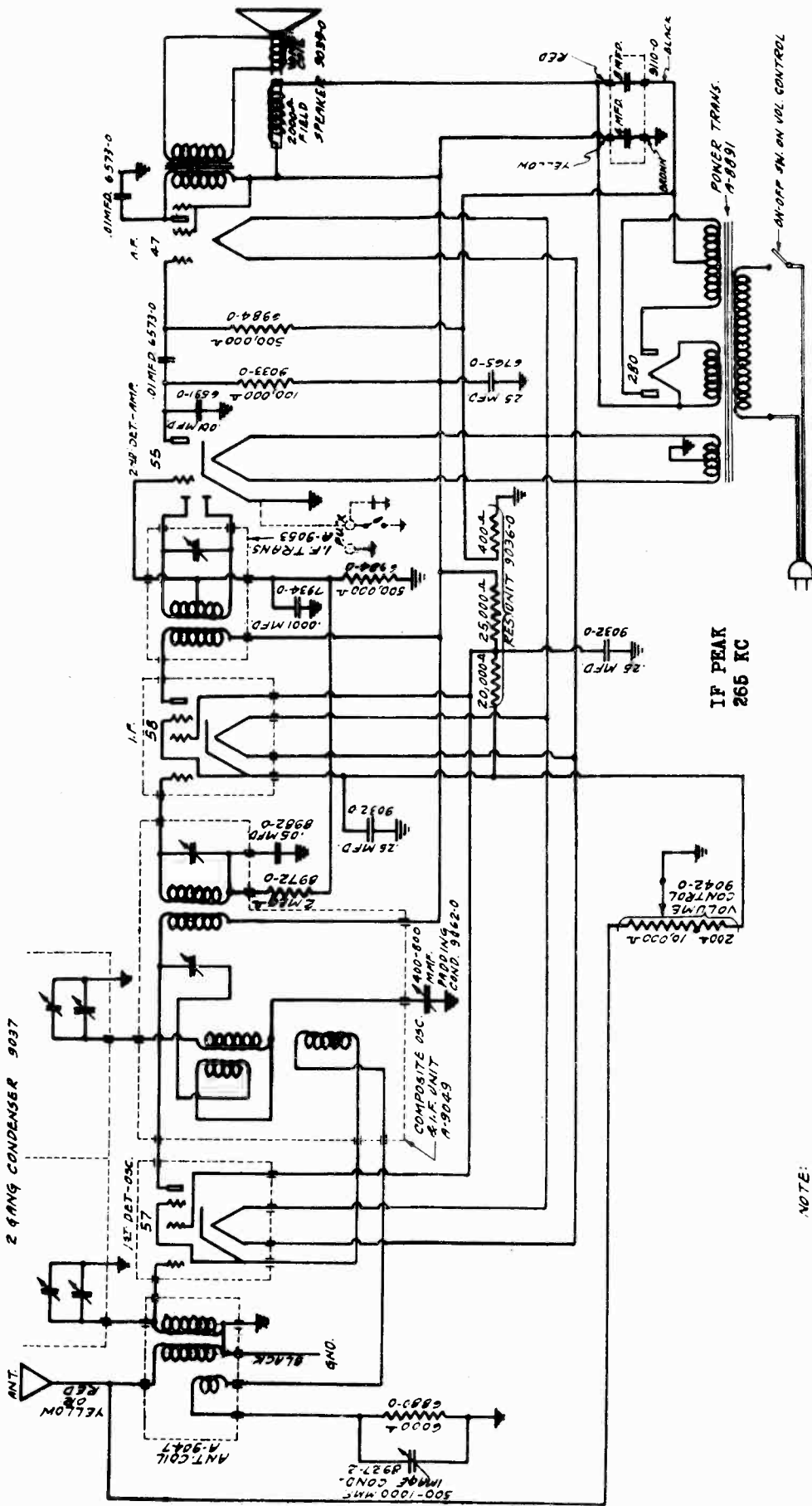
Part No.	Part Name	Description	List Price
7E106	Cabinet	Complete Cabinet	
7E59	Cabinet Back		
41E1	Line Cord	6 Ft. Rubber Line Cord	
5E14-1	Dial Plate Assembly	Dial Back Plate Assembly Less Dial Scale and Drive Shaft	
4E1	Dial Cord	30" of 18 Lb. Dial Drive Cord	
38E10-2	Dial Scale	Calibrated Scale	
20E225-7	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	Pilot Lamp Socket Assembly	
20E43	Pilot Lamp Socket		
40E1	Pilot Lamp	6-8 Volt .150 Amp. Type 47 Lamp	

**MISCELLANEOUS PARTS**

Part No.	Part Name	Description	List Price
40E1	Bulb	6-8 Volt, .150 Amp. Dial Light, #47	\$ .10
65E2	Dial Cord Spring	Tension Spring	Net .02
4E1	Dial Cord	30" of 18 lb. Drive Cord	
20E225-7	Dial Shaft Assembly	Dial Drive Shaft, with "C" Washer, Bearing & Lock Nut	.40
20E45	Dial Back Plate	Backplate Assembly less Calibrated Scale	.90
36E16	Dial Scale	Calibrated Glass Scale	\$.60
35E13	Dial Pointer	Dial Indicator	.15
37E21-17	Knob		.10
20E184-1	Socket Assem.	2-Contact, for Phono Motor	.55
20E185-1	Socket Assem.	4-Contact, for Phono-Pick Up	.64

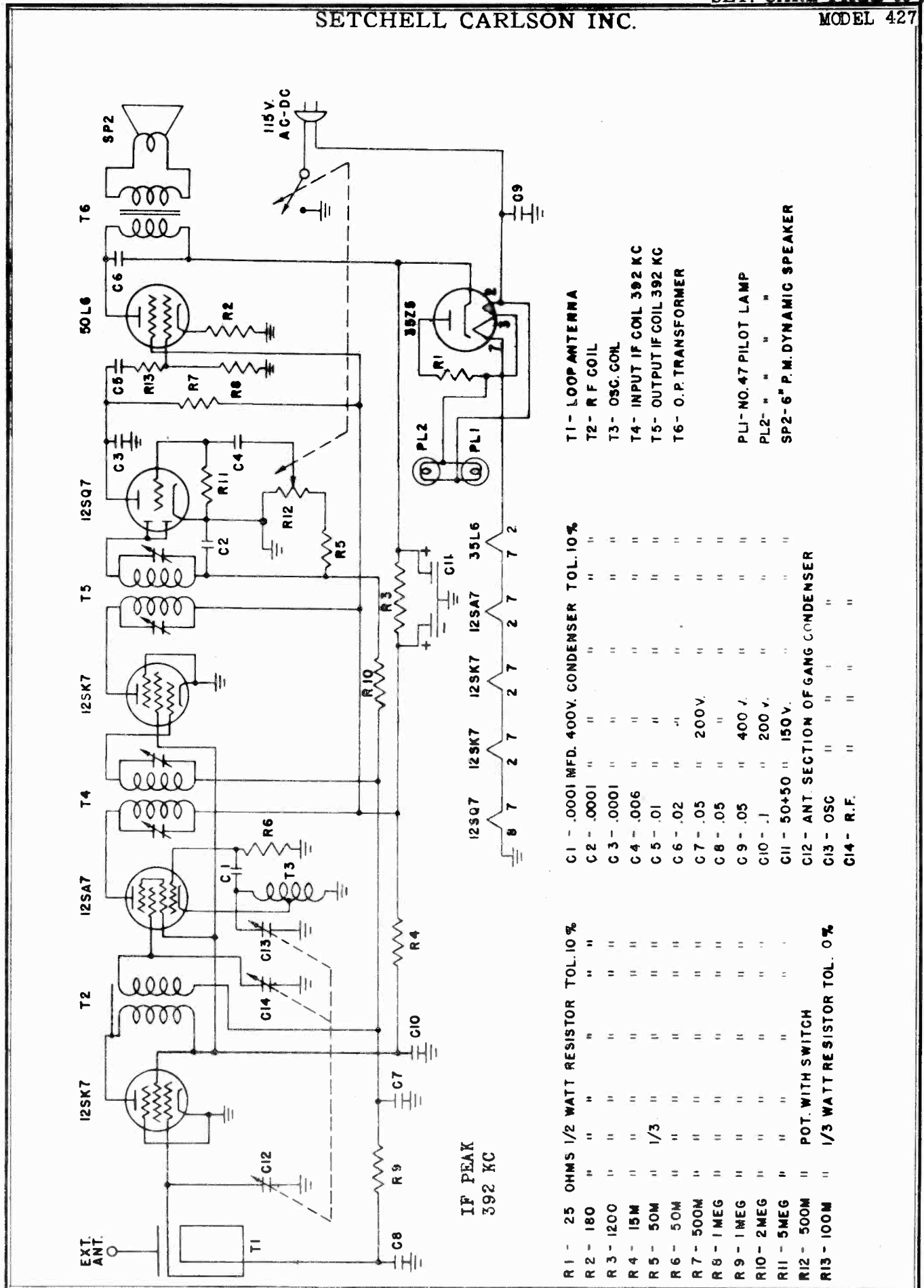
MODEL 510

SENTINEL RADIO CORP.



NOTE:  
 1. DOTTED LINES DENOTE SHIELDING  
 2. ALL NUMBERS SHOWN RELATIVE TO PARTS ARE OUR PART NOS.  
 3. NUMBERS SHOWN WITH PREFIX "A" ARE COMPLETE ASSEMBLIES.  
 4. WHEN PHONO-JKS. ARE USED CATHODE OF 55 TUBE IS CONNECTED TO POINT MARKED "X"  
 5. I.F. = 265

SETCHELL CARLSON INC.



R1 - 25 OHMS	1/2 WATT RESISTOR	TOL. 10 %
R2 - 180 "	"	"
R3 - 1200 "	"	"
R4 - 15M "	"	"
R5 - 50M "	1/3	"
R6 - 50M "	"	"
R7 - 500M "	"	"
R8 - 1MEG "	"	"
R9 - 1MEG "	"	"
R10 - 2MEG "	"	"
R11 - 5MEG "	"	"
R12 - 500M "	POT. WITH SWITCH	"
R13 - 100M "	1/3 WATT RESISTOR	TOL. 0 %

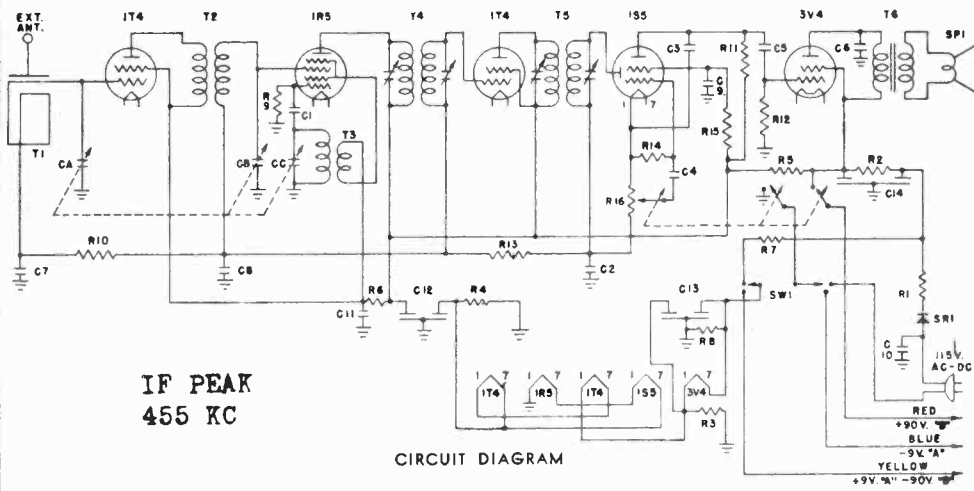
C1 - .0001 MFD.	400V. CONDENSER	TOL. 10 %
C2 - .0001 "	"	"
C3 - .0001 "	"	"
C4 - .006 "	"	"
C5 - .01 "	"	"
C6 - .02 "	"	"
C7 - .05 "	200V.	"
C8 - .05 "	"	"
C9 - .05 "	400 V.	"
C10 - .1 "	200 V.	"
C11 - 50+50 "	150V.	"
C12 - ANT. SECTION OF GANG	CONDENSER	"
C13 - OSC "	"	"
C14 - R.F. "	"	"

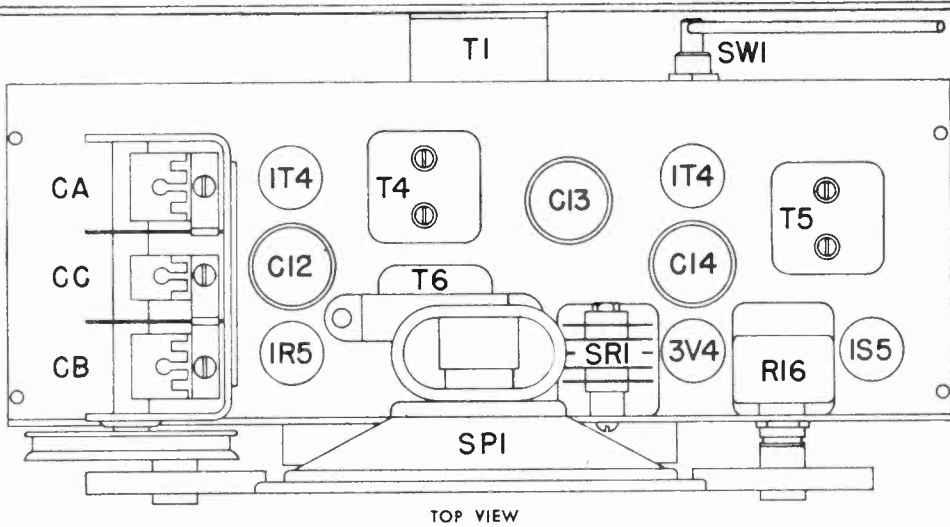
T1 - LOOP ANTENNA
T2 - R F COIL
T3 - OSC. COIL
T4 - INPUT IF COIL 392 KC
T5 - OUTPUT IF COIL 392 KC
T6 - O.P. TRANSFORMER

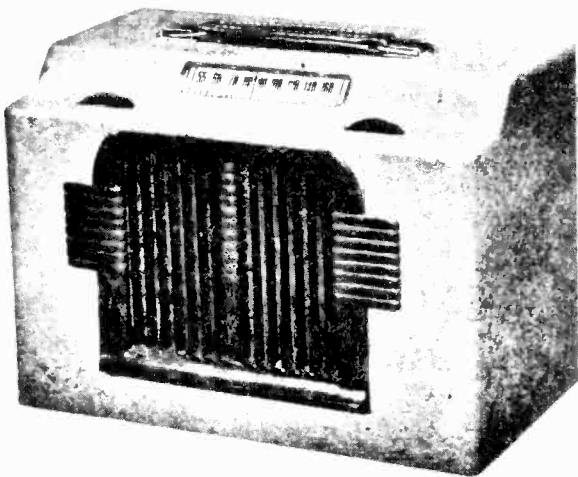
PL1 - NO. 47 PILOT LAMP
PL2 - " " "
SP2 - 6" P.M. DYNAMIC SPEAKER



- R1 —100 OHM — 5 W. RESISTOR
- R2 —150 OHM — 1 W. RESISTOR
- R3 —700 OHM — 1 W. RESISTOR
- R4 —1200 OHM — 1/2 W. RESISTOR
- R5 —3000 OHM — 1/2 W. RESISTOR
- R6 —5000 OHM — 1/3 W. RESISTOR
- R7 —2000 OHM — 0 W. RESISTOR
- R8 —25 M OHM — 1/3 W. RESISTOR
- R9 —100M OHM — 1/3 W. RESISTOR
- R10 —1Meg. OHM — 1/3 W. RESISTOR
- R11 —1Meg. OHM — 1/3 W. RESISTOR
- R12 —1Meg. OHM — 1/3 W. RESISTOR
- R13 —2Meg. OHM — 1/3 W. RESISTOR
- R14 —5Meg. OHM — 1/3 W. RESISTOR
- R15 —5Meg. OHM — 1/3 W. RESISTOR
- R16 —500M OHM — POT. & 2 P SW.
- C1 —.0001 MFD. 400 V. CONDENSER
- C2 —.0001 MFD. 400 V. CONDENSER
- C3 —.0001 MFD. 400 V. CONDENSER
- C4 —.004 MFD. 400 V. CONDENSER
- C5 —.004 MFD. 400 V. CONDENSER
- C6 —.004 MFD. 400 V. CONDENSER
- C7 —.05 MFD. 200 V. CONDENSER
- C8 —.05 MFD. 200 V. CONDENSER
- C9 —.05 MFD. 200 V. CONDENSER
- C10 —.05 MFD. 400 V. CONDENSER
- C11 —.1 MFD. 200 V. CONDENSER
- C12 —50 ± 50 MFD. 150 V. CONDENSER
- C13 —50 ± 50 MFD. 150 V. CONDENSER
- C14 —50 ± 50 MFD. 150 V. CONDENSER
- C A-B-C —3 GANG. CONDENSER
- T1 —LOOP ANTENNA
- T2 —R. F. COIL
- T3 —OSC. COIL
- T4 —455 KC. IF. COIL
- T5 —455 KC. IF. COIL
- T6 —OUTPUT TRANSFORMER
- SPI —5" PM SPEAKER
- SW1 —2 POLE 2 POS. SWITCH
- SRI —SELENIUM RECTIFIER

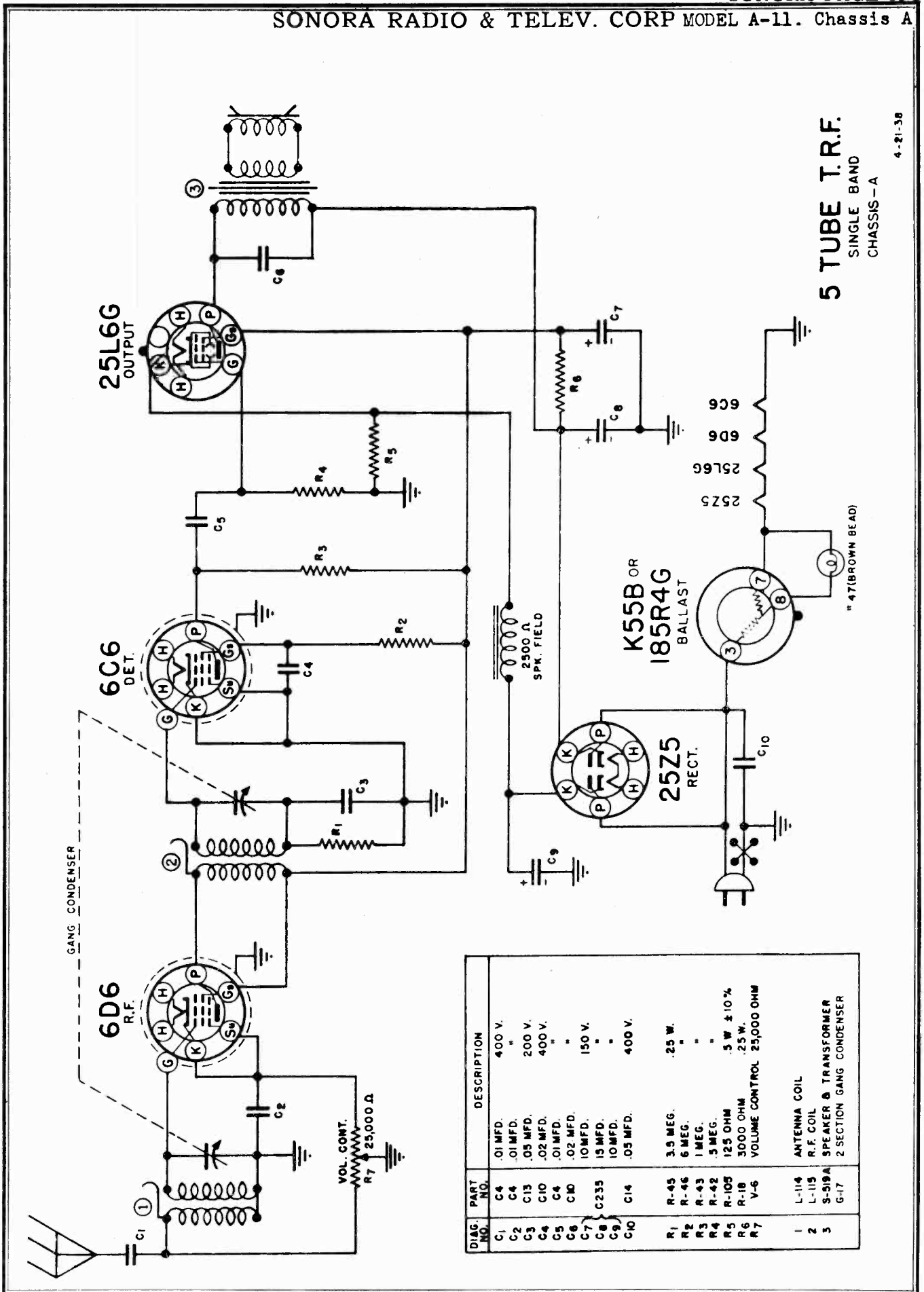


**ALIGNMENT PROCEDURE**  
 I. F. Alignment 455 KC (Connect to 1R5 Grid) Loop and R. F. Alignment—1400, 1000 and 600 KC. Dial Pointer Setting—535 KC with fully closed condenser.



- Three-gang tuning condenser (selectivity).
- Tuned R. F. stage (sensitivity).
- Super-het circuit.
- Band coverage—540 KC to 1650 KC.
- Five miniature tubes—  
 1—IT4-RF, 1—IR5-Mixer, 1—IT4-IF, 1—IS5-Det. and 1st Audio, 1—3V4-Pr. output. Plus selenium rectifier (6-tube performance).
- Instant heating—no waiting for tube warm-up.
- Battery life—approximately 170 hours.  
 Burgess No. F6A60, Eveready No. 753, Ray-O-Vac No. AB994.
- Trigger switch automatically prevents battery drain when operating on A.C. or D.C.
- Five-inch P. M. dynamic speaker—1.47 oz. Alnico 5.
- Sealed filter for long-life hum-free operation.
- Finger-tip controls.
- Inverted aluminum chassis.
- Heavy leather snap-down handle.
- Weight with batteries 12½ lbs.
- Size: 11¾" wide, 6¾" deep, 8¼" high.
- Color optional: Brown with walnut grille or maroon with ivory grille.



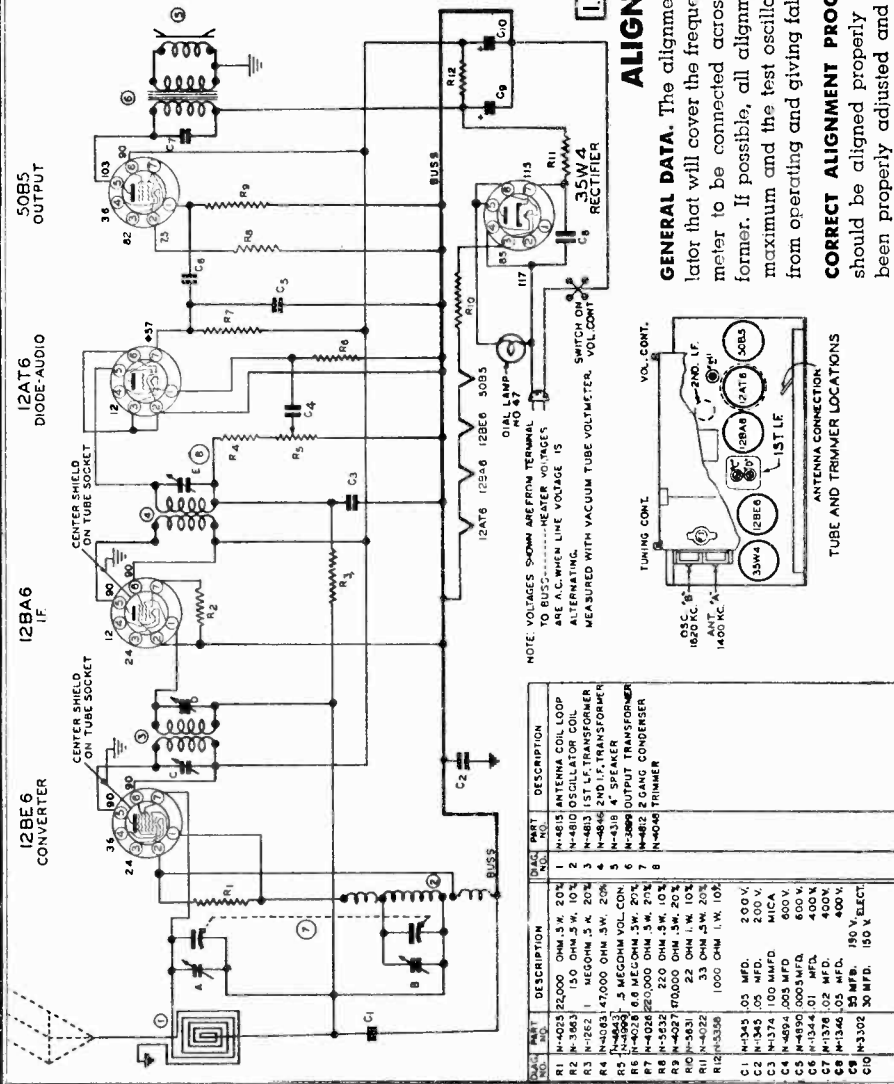


5 TUBE T.R.F.  
SINGLE BAND  
CHASSIS - A

4-21-36

DIAG. NO.	PART NO.	DESCRIPTION
C1	.01 MFD.	400 V.
C2	.01 MFD.	"
C3	.05 MFD.	200 V.
C4	.02 MFD.	400 V.
C5	.01 MFD.	"
C6	.02 MFD.	150 V.
C7	10 MFD.	"
C8	15 MFD.	"
C9	10 MFD.	"
C10	.05 MFD.	400 V.
R1	R-45	3.5 MEG.
R2	R-46	6 MEG.
R3	R-43	1 MEG.
R4	R-42	.5 MEG.
R5	R-105	125 OHM
R6	R-18	3000 OHM
R7	V-5	VOLUME CONTROL 25,000 OHM
1	L-114	ANTENNA COIL
2	L-115	R.F. COIL
3	S-519A	SPEAKER & TRANSFORMER
	G-17	2 SECTION GANG CONDENSER

ALIGNMENT PROCEDURE FOR  
MODEL RBMU-176, RK/RKRU-215  
SCHEMATIC FOR MODEL RBMU-176



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.

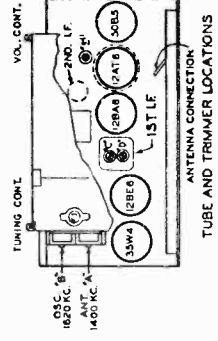
**I.F. ALIGNMENT.** Remove the chassis and loop antenna from the cabinet and set them up on the bench so that they occupy exactly the same respective position on the bench as they did in the cabinet. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal 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 (12BE6) 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.

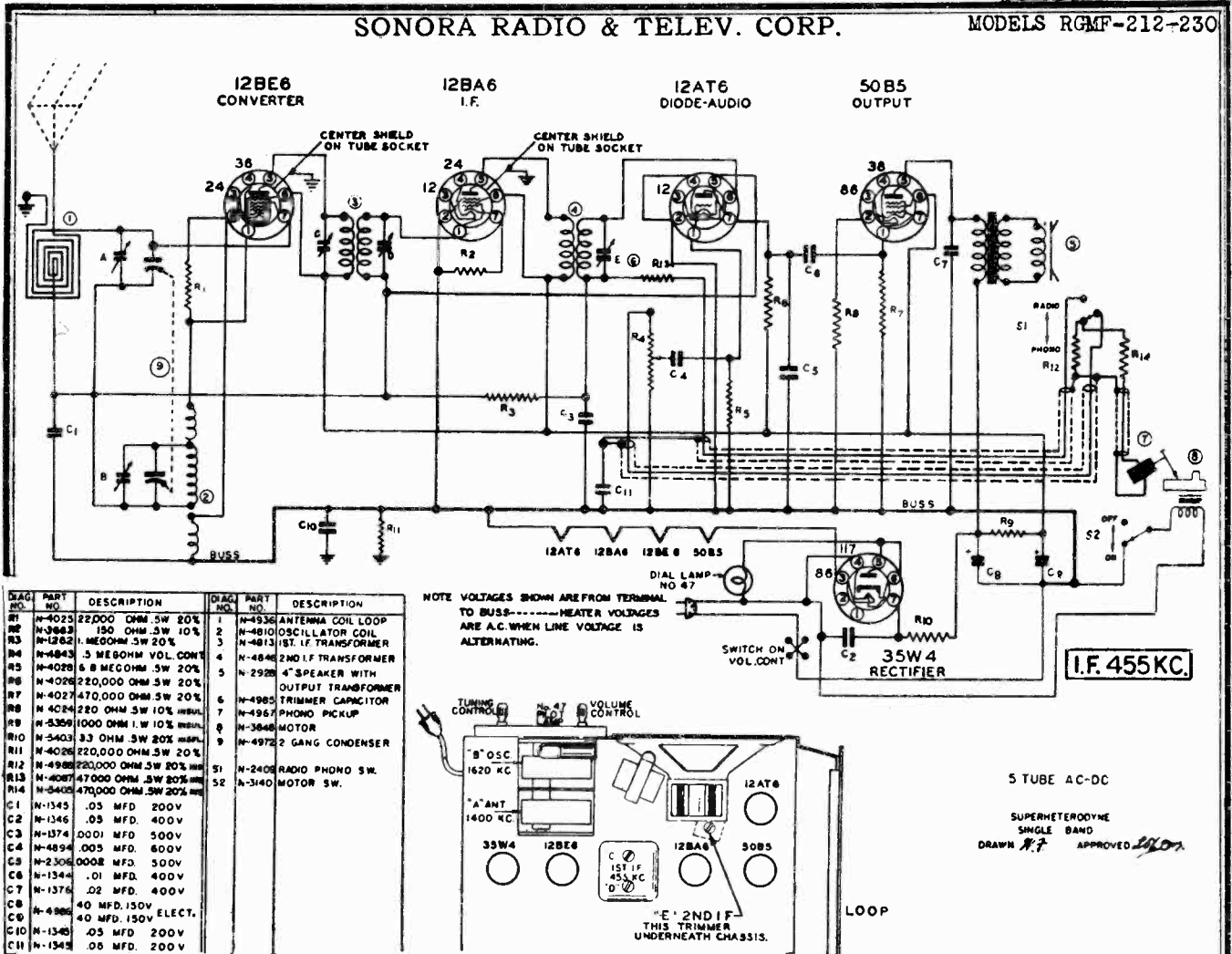
**BROADCAST BAND ALIGNMENT.** Connect the test oscillator to the antenna of the set through a 100 mmfd. (.0001) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1620 KC, and adjust the oscillator (or 1620 KC trimmer) on the gang condenser. Next—set the test oscillator 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.

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.**

I.F. 455 KC





**CONNECTING THE UNIT**

Before connecting the unit, be sure that your house is wired for the voltage and current for which the set is designed. In doubt, call your local power company for the necessary information. Connecting the set to a supply outlet furnishing the wrong type of current will result in improper operation or damage.

**POWER SUPPLY.** This Radio-Phonograph is designed to operate on an alternating current supply (AC) ranging from 110 to 120 volts.

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 current must be 60 cycles. Never plug into a D.C. outlet.

**GROUND.** No ground connection should be used when operating 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.

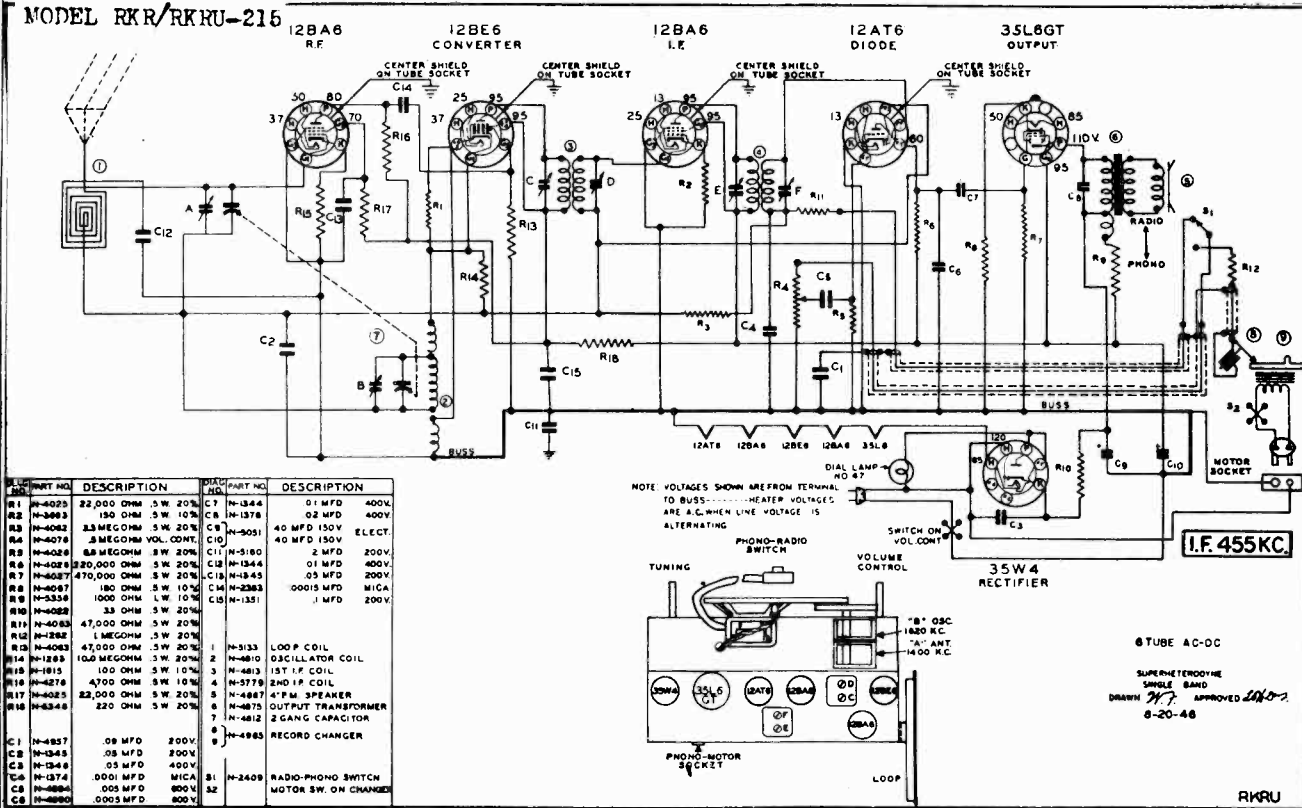
**CAUTION.** Do not place receiver on hot objects such as stoves, radiators, etc. Heat will damage the internal components of the unit.

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 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 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.

MODELS RK-215, RKRU-215  
MODELS WA, WAU

SONORA RADIO & TELEV. CORP.



QTY	PART NO.	DESCRIPTION	QTY	PART NO.	DESCRIPTION
R1	N-4023	22,000 OHM 5W 20%	C1	N-1344	.01 MFD 400V
R2	N-3063	150 OHM 5W 10%	C2	N-1378	.02 MFD 400V
R3	N-4062	2.5 MEG OHM 5W 20%	C3	N-1378	.02 MFD 400V
R4	N-4076	.5 MEG OHM VOL. CONT.	C4	N-5051	40 MFD 150V ELECT.
R5	N-4026	.88 MEG OHM 5W 20%	C5	N-5190	.2 MFD 200V
R6	N-4029	200,000 OHM 5W 20%	C6	N-1344	.01 MFD 400V
R7	N-4027	470,000 OHM 5W 20%	C7	N-1845	.05 MFD 200V
R8	N-4087	180 OHM 5W 10%	C8	N-2363	.00015 MFD MICA
R9	N-5358	1000 OHM LW 10%	C9	N-1351	.1 MFD 200V
R10	N-4028	33 OHM 5W 20%			
R11	N-4063	47,000 OHM 5W 20%			
R12	N-2862	1 MEG OHM 5W 20%			
R13	N-4063	47,000 OHM 5W 20%	1	N-3133	LOOP COIL
R14	N-1285	100 OHM 5W 20%	2	N-4810	OSCILLATOR COIL
R15	N-1815	100 OHM 5W 10%	3	N-4813	1ST I.F. COIL
R16	N-4278	4700 OHM 5W 10%	4	N-5778	2ND I.F. COIL
R17	N-4025	22,000 OHM 5W 20%	5	N-4887	4" P.M. SPEAKER
R18	N-4348	220 OHM 5W 20%	6	N-4875	OUTPUT TRANSFORMER
			7	N-4812	2 GANG CAPACITOR
			8	N-4983	RECORD CHANGER
C1	N-4837	.05 MFD 200V			
C2	N-4345	.05 MFD 200V			
C3	N-1348	.05 MFD 400V			
C4	N-1374	.0001 MFD	81	N-2409	RADIO-PHONO SWITCH
C5	N-4886	.005 MFD 800V	82	N-2409	MOTOR SW. ON CHANGED
C6	N-4880	.0005 MFD 800V			

### CONNECTING THE UNIT

Before connecting the unit, be sure that your house is wired for the voltage and current for which the set is designed. If in doubt, call your local power company for the necessary information. Connecting the set to a supply outlet furnishing the wrong type of current will result in improper operation or damage.

**POWER SUPPLY.** This Radio-Phonograph is designed to operate on an alternating current supply (AC) ranging from 110 to 120 volts.

#### MODEL WA/WAU

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 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

The current must be 60 cycles. Never plug into a D.C. outlet.

**GROUND.** No ground connection should be used when operating 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.

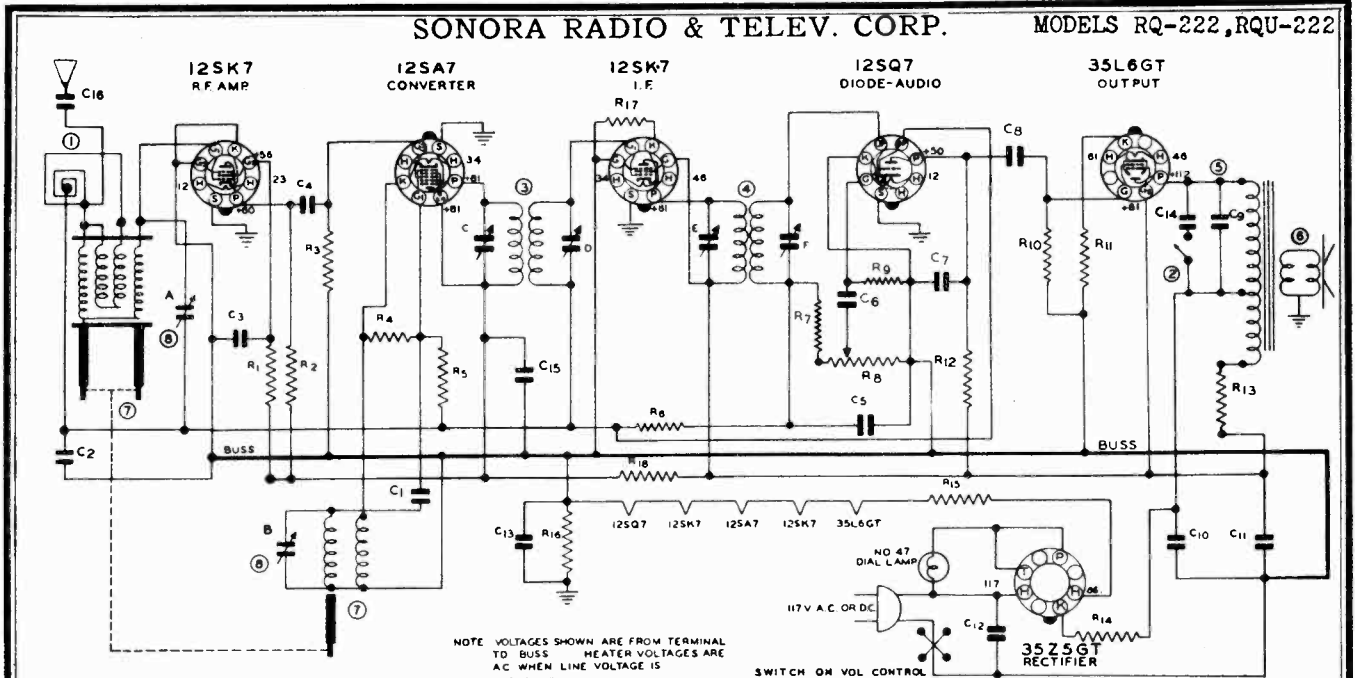
**CAUTION.** Do not place receiver on hot objects such as stoves, radiators, etc. Heat will damage the internal components of the unit.

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.

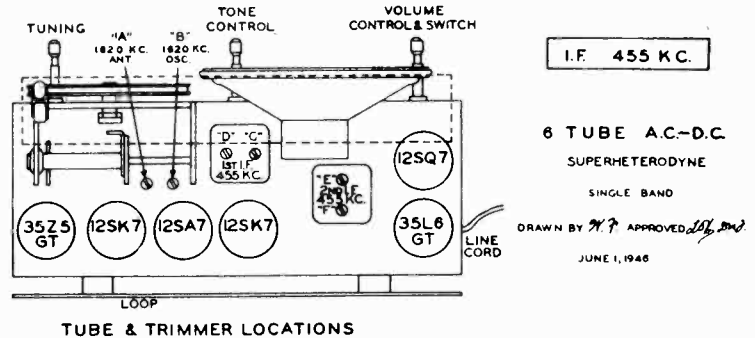
SONORA RADIO & TELEV. CORP.

MODELS RQ-222, RQU-222



QTY	PART NO.	DESCRIPTION	QTY	PART NO.	DESCRIPTION
C1	N-1342	50 MMFD MICA	20%	R6	N-4082 33 MEGOHM 5W 20%
C2	N-1345	.05 MFD 200V	20%	R7	N-4083 47,000 OHM 5W 20%
C3	N-1345	.05 MFD 200V	20%	R8	N-5026 .05 MEGOHM VOL CONT
C4	N-2363	150 MMFD MICA	20%	R9	N-4081 47 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-4067 180 OHM 5W 10%
C7	N-4890	0.005 MFD 600V	-25+60%	R12	N-4988 220,000 OHM 5W 10%
C8	N-1344	.01 MFD 400V	20%	R13	N-5623 1500 OHM 1W 10%
C9	N-1344	.01 MFD 400V	20%	R14	N-4022 33 OHM 5W 20%
C10	N-3066	40 MFD 150 W.V. ELECTRO		R15	N-4828 33 OHM 1W 10%
C11	N-5160	40 MFD 150 W.V. LYTC		R16	N-4026 22,000 OHM 5W 20%
C12	N-1346	.05 MFD 400V	20%	R17	N-4022 33 OHM 5W 20%
C13	N-5160	.2 MFD 200V -10+10%		R18	N-4068 470 OHM 5W 10%
C14	N-1346	.05 MFD 400V	20%		
C15	N-1351	.1 MFD 200V -10+20%		1	N-5374 LOOP COIL
C16	N-1342	50 MMFD MICA	20%	2	N-4942 TONE SWITCH
				3	N-4872 1ST I.F. TRANSFORMER
				4	N-5571 2ND I.F. TRANSFORMER
R1	N-5351	22,000 OHM 5W 10%		5	N-4875 OUTPUT TRANSFORMER
R2	N-4278	4700 OHM 5W 10%		6	N-4868 15 SPEAKER
R3	N-4087	47,000 OHM 5W 10%		7	N-5640 PERMEABILITY TUNER
R4	N-5351	22,000 OHM 5W 10%		8	N-5552 2 SECTION TRIMMER
R5	N-5624	15 MEGOHM 5W 10%			

NOTE: VOLTAGES SHOWN ARE FROM TERMINAL TO BUSS. HEATER VOLTAGES ARE A.C. WHEN LINE VOLTAGE IS ALTERNATING.



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, 1000 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 pointer at right end of dial 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.

**PERMEABILITY TUNER ALIGNMENT.** To align the tuner requires four separate steps which must be followed in the order given.

1. **Marking Test Points on Dial Plate.** Use an accurate scale or ruler.

Make a pencil mark at 1-13/16 inches and another at 4-3/16 inches from the right hand edge of the dial plate.

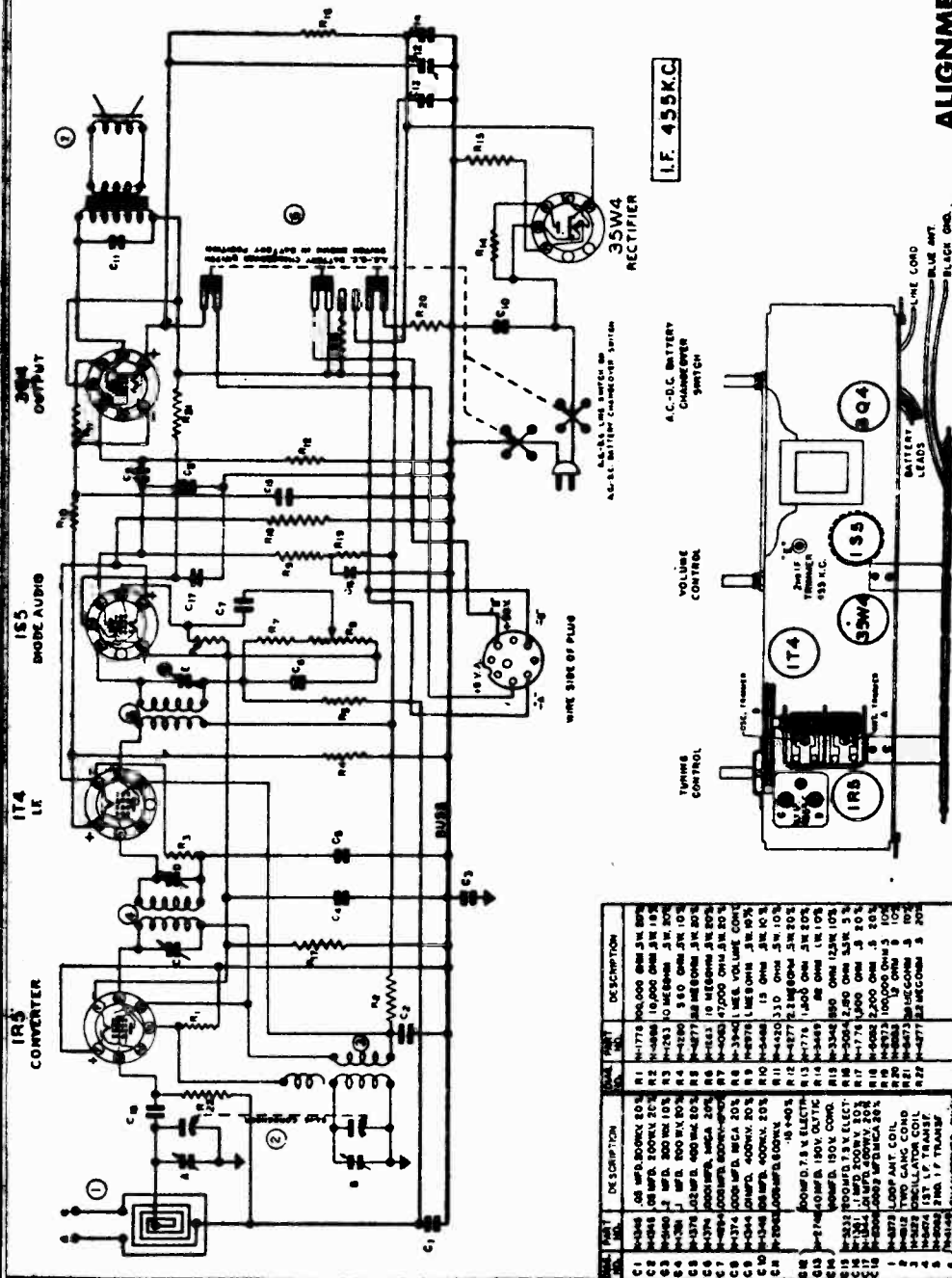
2. **Location of Pointer.** Turn right hand knob all the way to the right. This moves the slugs to the left out of the coils. The pointer should be at the 1-13/16 inch mark. If the pointer is not in this position, slide pointer on string and crimp in place.

3. **Oscillator Alignment.** Connect the test oscillator to the grid of the 12SA7 tube through a .05 or .1 mfd. condenser. Set test oscillator at 1620 KC, turn right hand knob all the way to the right and adjust oscillator trimmer "B" for maximum signal.

Set test oscillator at 1000 KC, tune in signal using right hand knob. Pointer should now be at the 4-3/16 inch mark in dial plate. If not, adjust oscillator tuning slug (located beneath chassis) so that 1000 KC comes in at this mark.

4. **Antenna Alignment.** Connect the test oscillator to the antenna lead through a 100 mfd (.0001) condenser. Set the test oscillator at 1620 KC, turn right hand knob all the way to the right and adjust antenna trimmer "A" for maximum signal.

Set test oscillator at 1000 KC. Tune in signal using right hand knob. Adjust antenna tuning slugs (located above chassis) for maximum signal. In adjusting these slugs, it is best to turn one core about a half turn, then remove the hand or tool and tune in the signal. Repeat this until the adjustment for maximum signal is reached. Keep the two antenna slugs as even as possible.



I.F. 455KC

ALIGNMENT

Operation	Connect Oscillator To:	Dummy Ant.	Set Osc. To:	Set Dial To:	A Adjust Trimmers	Purpose
1	Converter Grid	.05 MFD.	455 KC	Min. Cap.	C, D, E	Align IF
2	Antenna	100 MMF.	1620 KC	Min. Cap.	B	Set Oscillator
3	Antenna	100 MMF.	1400 KC	1400 KC	A	Adjust Ant.
4	Antenna	100 MMF.	600 KC	600 KC	....	Check Calibration

QTY.	DESCRIPTION	QTY.	DESCRIPTION
1	174 LE	1	174 CONVERTER
1	174 CONVERTER	1	174 LE
1	35W4 RECTIFIER	1	35W4 RECTIFIER
1	A.C.-D.C. BATTERY CHANGEOVER SWITCH	1	A.C.-D.C. BATTERY CHANGEOVER SWITCH
1	174 LE	1	174 CONVERTER
1	174 CONVERTER	1	174 LE
1	35W4 RECTIFIER	1	35W4 RECTIFIER
1	A.C.-D.C. BATTERY CHANGEOVER SWITCH	1	A.C.-D.C. BATTERY CHANGEOVER SWITCH

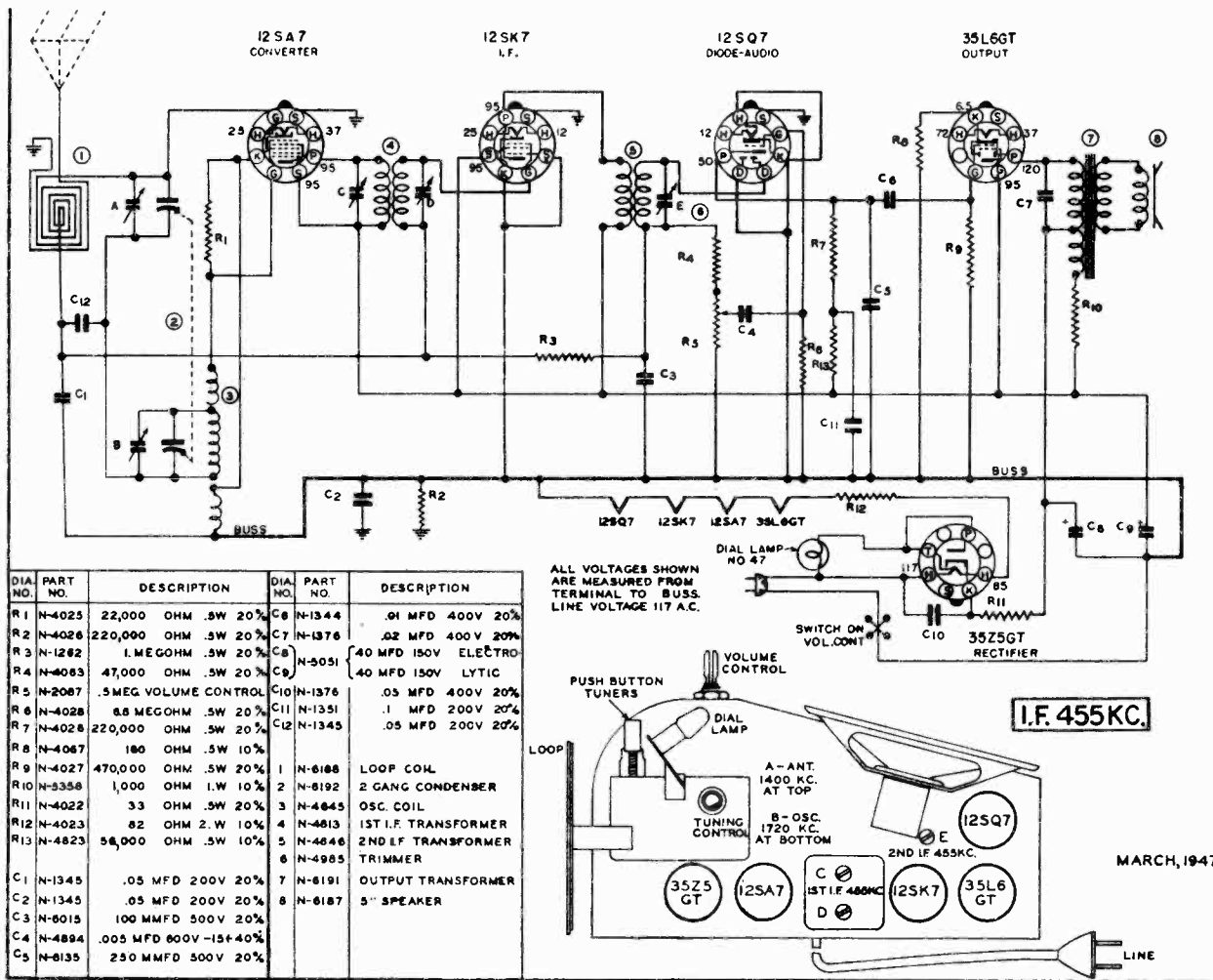
**BATTERY.** To install a new battery or replace an old one, remove the screws holding the back in place and lift off the back. Remove the battery and pull out the plug. Insert plug in new battery and place battery in bottom of cabinet. Replace back.

The batteries listed below are satisfactory for service in your receiver. They are combination "A" and "B" packs having 90 volts "B" and 9 and 7½ volts "A".

- Manufacturer
- Type Number
- F6A60
- G6M60
- 754
- 60B6F6-5
- AB878
- AB994

SONORA RADIO & TELEV. CORP.

MODELS WA, WAU



**AUTOMATIC TUNING**

Automatic tuning is a standard feature on this Model. It provides instantaneous selection of any four favorite stations by simply depressing a button. The automatic unit is wholly mechanical in operation and of rugged construction to assure greater accuracy over a longer period of time.

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

To make adjustments remove all four 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 top and bottom 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.

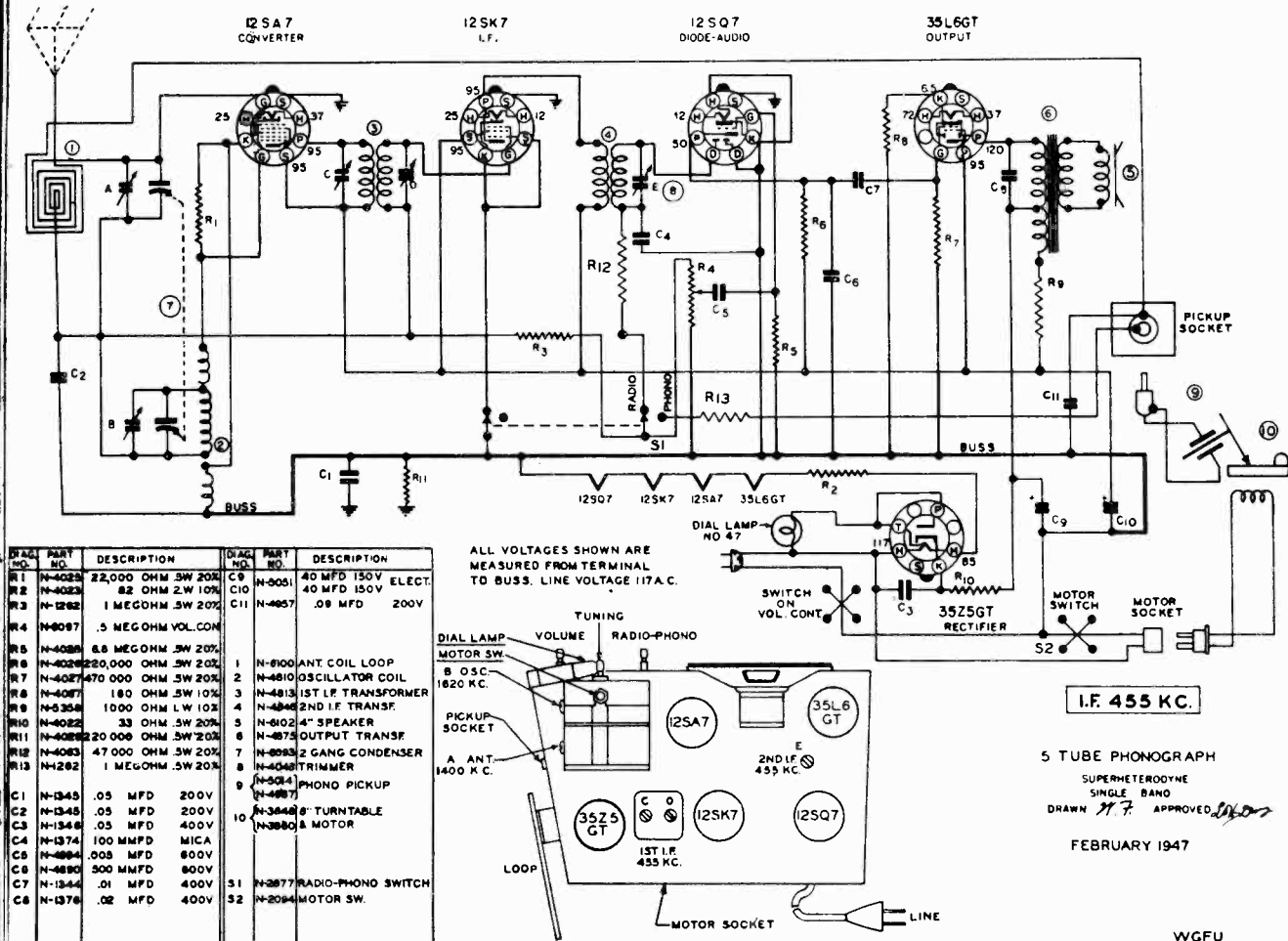
It is not necessary to follow any particular sequence of stations since each button is adjustable to any station.

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.



**AERIAL SYSTEM**

The 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 it may be necessary to reverse the power cord plug in wall socket to eliminate hum or distortion.

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 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 test oscillator at 600 KC, and tune in signal on condenser to check alignment of coils.



THE SPARKS WITHINGTON CO.

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

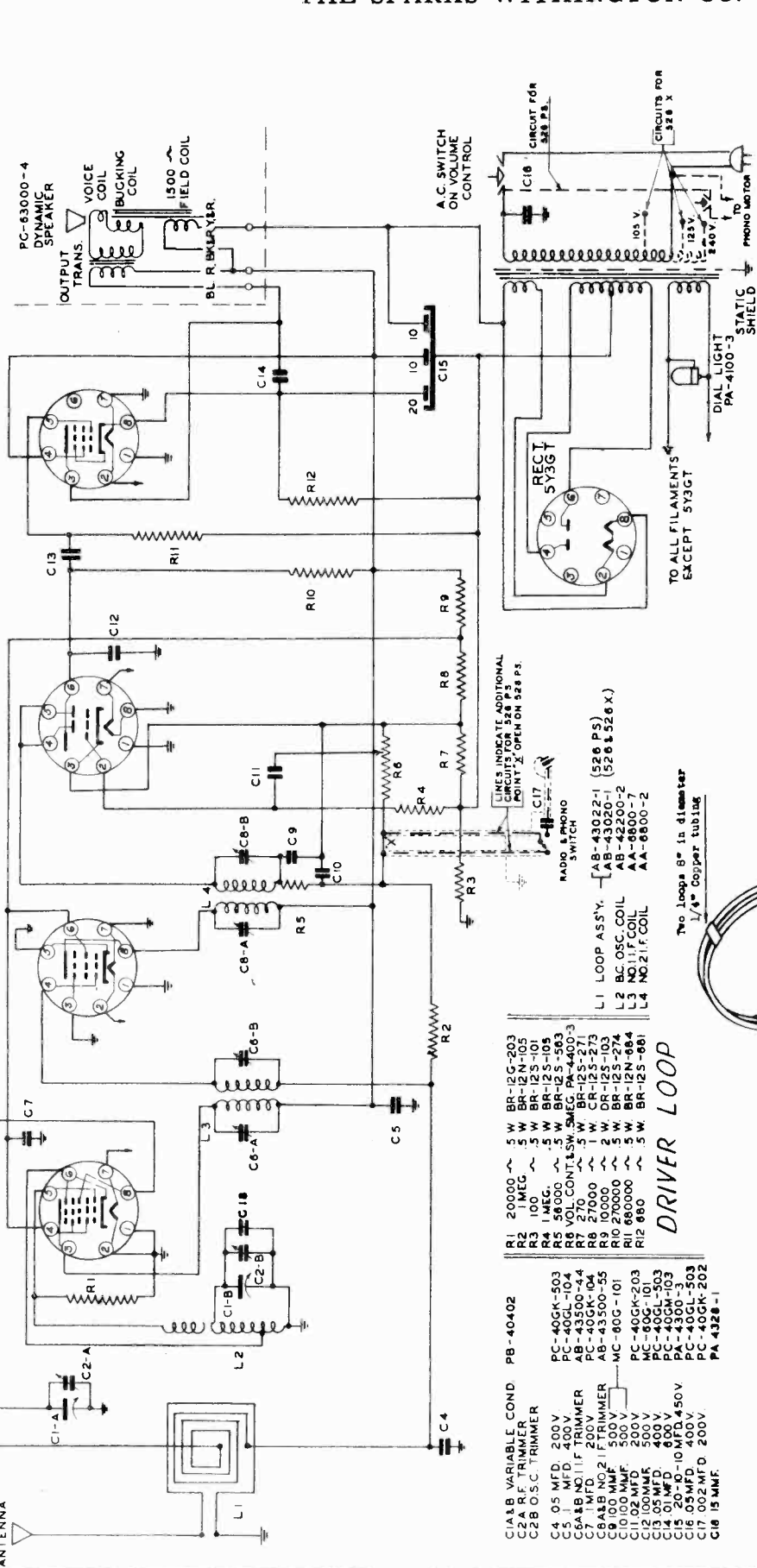
456 KC.  
P.A. 6F6GT INTERMEDIATE FREQUENCY  
BOTTOM VIEW OF ALL SOCKET CONNECTIONS

2ND DET. AVC. 6SQ7GT

I.F. AMP. 6SK7GT

CONVERTER 6SA7GT

ANTENNA



OUTPUT TRANS. PC-63000-4  
DYNAMIC SPEAKER  
VOICE COIL  
BUCKING COIL  
1500 FIELD COIL  
BL R. BLYNER.

A.C. SWITCH ON VOLUME CONTROL

RECT. SY3GT  
TO ALL FILAMENTS EXCEPT SY3GT

DIAL LIGHT PA-4100-3  
STATIC SHIELD PA-4100-3  
PHONO MOTOR

DOMESTIC TRANS. AB44007-1  
EXPORT TRANS. AB44008-1  
AND. COND. PA-4003-1  
Position of volume control: Full with set tuned to quiet channel.  
Position of Band Switch: Broadcast

VOLTAGE CHART  
Line Voltage: 117 Volts AC

TUBE	FUNCTION	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6SA7GT	Converter	0	0	250	85	**	**	0.8*	-0.45
6SK7GT	I.F. Amp.	0	0	0	-0.45	0	85	0	230
6F6GT	2nd. Det., A.V.C.	0	-0.95	-0.9	-1.2	-1.2	185	0.8*	0
6SQ7GT	P.A.	0	6.2*	215	230	**	-1.9	0	15
5Y3GT	Rect.	0	290	0	280	0	280	0	290

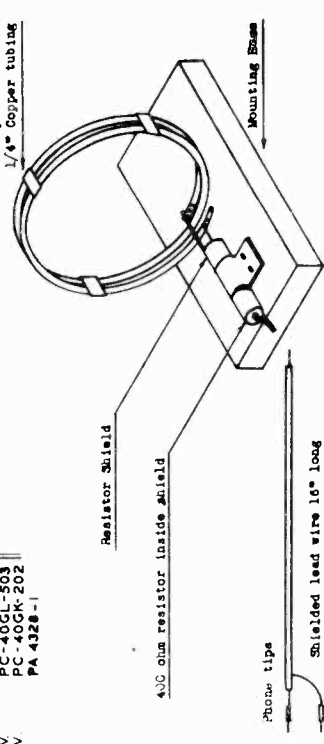
Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% for - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohm per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are  $\frac{1}{2}$  AC voltages.  
\*AC volt.  
\*\*Cannot be measured with 20,000 Ohms per volt voltmeter.

Lines indicate additional circuits for 328 PS. POINT X OPEN ON 328 PS.

RADIO & PHONO SWITCH  
L1 LOOP ASSY. AB-43022-1 (528 PS)  
L2 BC OSC. COIL AB-43020-1 (528 & 528 ex)  
L3 NO. 11 F. COIL AA-6800-7  
L4 NO. 21 F. COIL AA-6800-2

- COMPONENTS LIST:
- C1A B VARIABLE COND PB-40402
  - C2 A R.F. TRIMMER
  - C2 B S.C. TRIMMER
  - C4 0.5 MFD 200V
  - C5 1 MFD 400V
  - C6 A B NO. 11 F. TRIMMER
  - C7 1 MFD 200V
  - C8 A B NO. 21 F. TRIMMER
  - C9 0.5 MFD 500V
  - C10 0.001 MFD 200V
  - C11 0.02 MFD 200V
  - C12 0.001 MFD 500V
  - C13 0.5 MFD 400V
  - C14 0.001 MFD 200V
  - C15 20-0-10 MFD 450V
  - C16 0.05 MFD 400V
  - C17 0.02 MFD 200V
  - C18 15 MFD

DRIVER LOOP



SPECIFICATIONS

Two loops of 1/4" copper tubing 8" in diameter spaced 1/4" apart with 400 ohm 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.

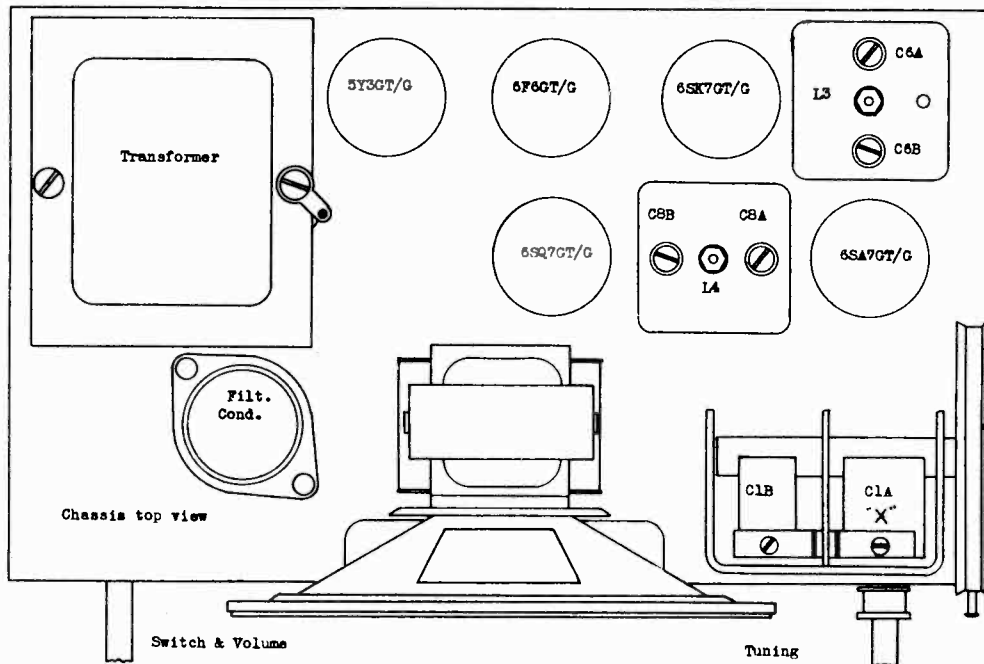
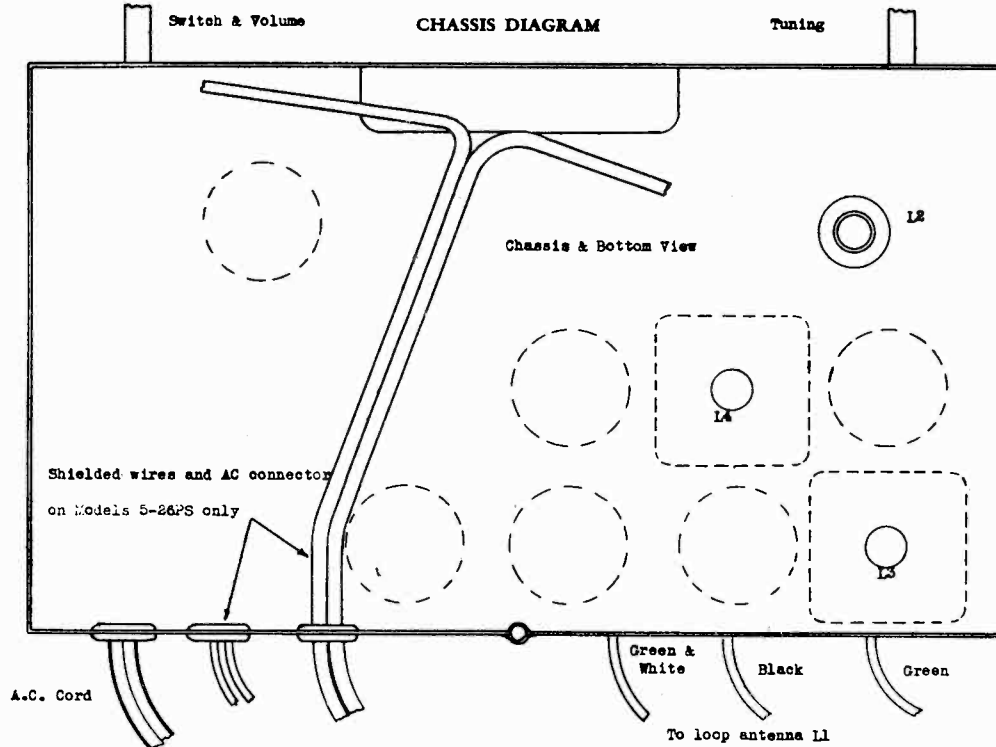
MODELS 5-26,  
5-26X, 5-26PS

THE SPARKS WITHINGTON CO.

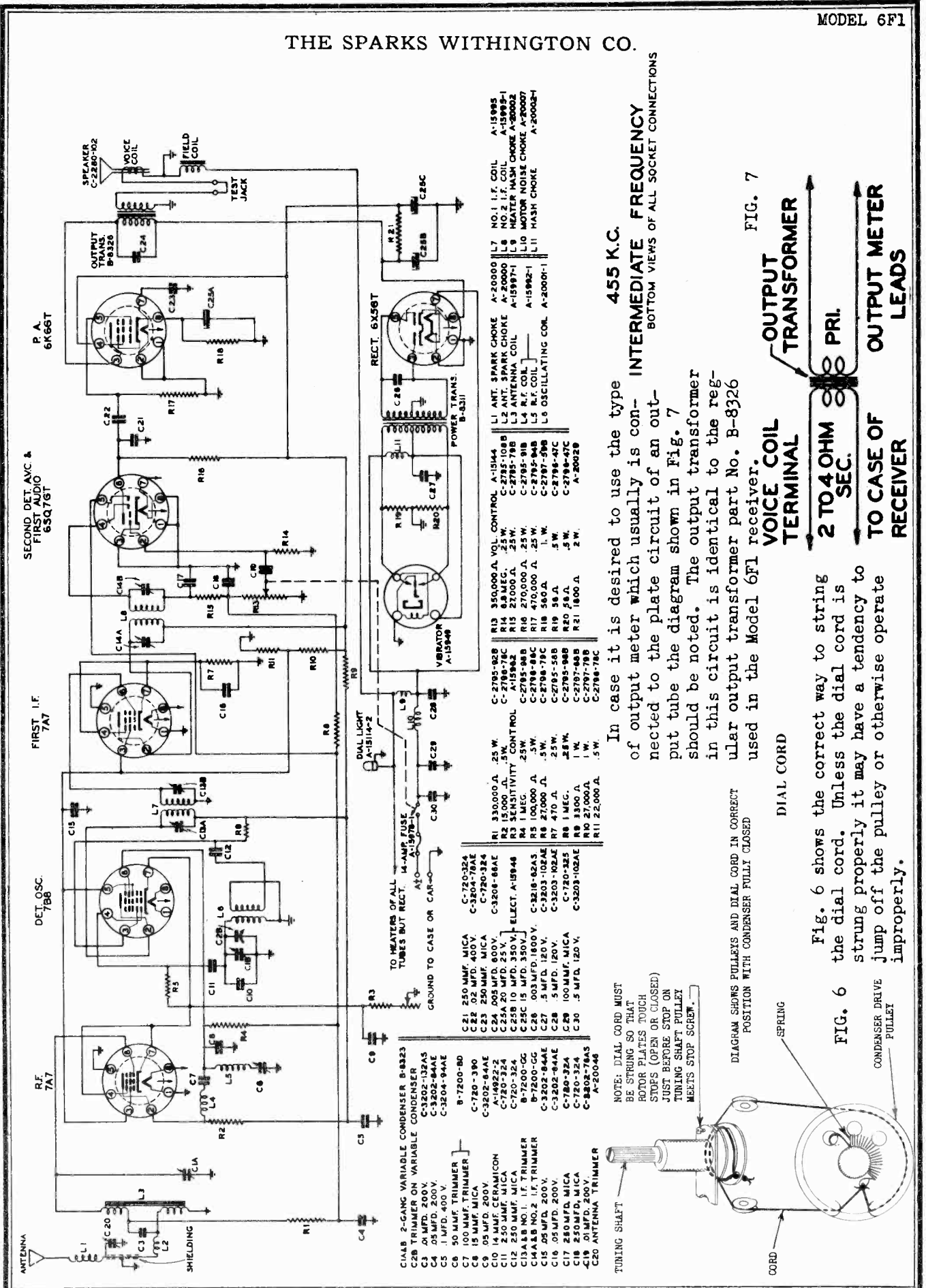
ALIGNMENT DATA

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	C6A&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.



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NOTE: DIAL CORD MUST BE STRUNG SO THAT ROTOR PLATES TOUCH STOPS (OPEN OR CLOSED) JUST BEFORE STOP ON TUBING SHAFT PULLEY MEETS STOP SCREEN.

DIAGRAM SHOWS PULLEYS AND DIAL CORD IN CORRECT POSITION WITH CONDENSER FULLY CLOSED

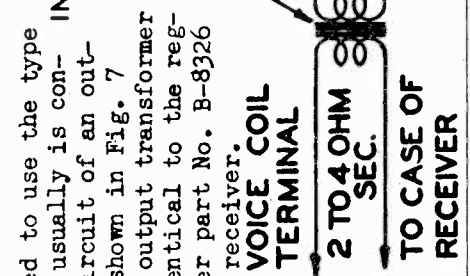
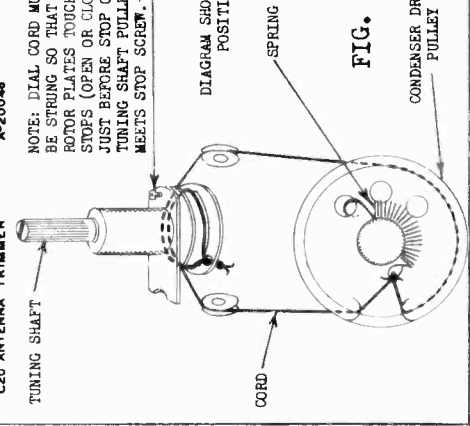


FIG. 6 shows the correct way to string the dial cord. Unless the dial cord is strung properly it may have a tendency to jump off the pulley or otherwise operate improperly.

In case it is desired to use the type of output meter which usually is connected to the plate circuit of an output tube the diagram shown in Fig. 7 should be noted. The output transformer in this circuit is identical to the regular output transformer part No. B-8326 used in the Model 6F1 receiver.



MODEL 6F1

THE SPARKS WITHINGTON CO.

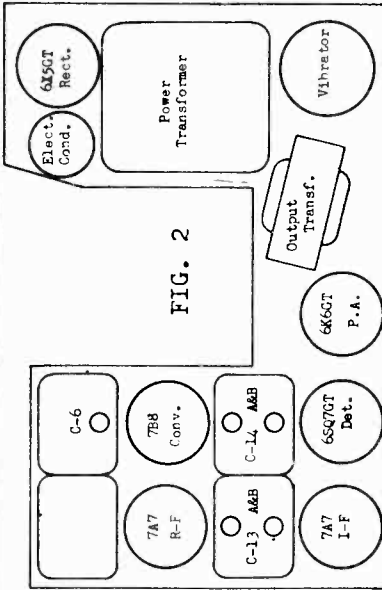


FIG. 2

2. Adjust trimmers C-14 A&B and C-13 A&B to maximum response. (See Fig. 2)
  3. Adjust code rejector trimmer C-6 for minimum response. (See Fig. 2).
- R-F ALIGNMENT
1. Turn the manual tuning knob until the variable condenser plates are completely out of mesh (1600 KC).
  2. Set signal generator 1600 KC.
  3. Adjust oscillator trimmers C-2B for maximum response. (See Fig. 4).

4. Set signal generator to 1400 KC and rotate the manual tuning control until a signal is heard.
5. Adjust the antenna trimmer C-20 (See Fig. 5) for maximum response.

6. After receiver has been installed in car the antenna trimmer (C-20) must be adjusted for maximum response on a weak station at or near 1400 KC.

MISCELLANEOUS DATA

TEST JACK

It will be noted that a test jack is provided in the output circuit. The jumper must be connected to the jack in order to have the loud speaker operate properly. This jumper may be conveniently removed to permit the connection of an output meter to the voice coil side of the output transformer.

Sensitivity: 7 microvolts at 1 watt output.

Tuning Range: 540 to 1600 KC.

Current Consumption: 8.5 amps.

ALIGNMENT INSTRUCTIONS

Note: The alignment of a radio receiver is one of the most important functions that a service man performs. The following instructions must be followed carefully and in detail.

CAUTION

When making any adjustment on the receiver, be sure to have the volume control turned full on. If it is necessary to reduce the intensity of the test signal, reduce the volume at the signal generator.

Dummy antenna should be used throughout the entire alignment procedure. The correct dummy antenna is composed of two 20 mmf. condensers (SPARTON Part C-720-389). The condenser should be connected in the line between the test oscillator or signal generator and the receiver as shown in Fig. 3. These capacities are identical with the actual capacities provided by the Ford antenna.

Note: The Model 6F1 is equipped with an adjustable sensitivity control located in the position indicated in Fig. 4. This control is properly adjusted at the factory to provide a sensitivity of 7 microvolts at one watt output. The factory adjustment of this control provides as high a sensitivity level as possible without introducing excessive background noise. No attempt should be made to change the setting of the control unless laboratory equipment is available for measuring sensitivity.

I-F ALIGNMENT

1. Set signal generator at 455 KC and connect through the dummy antenna to the receiver.

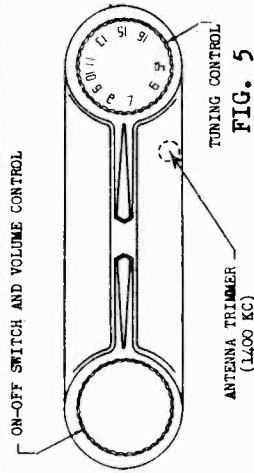


FIG. 5

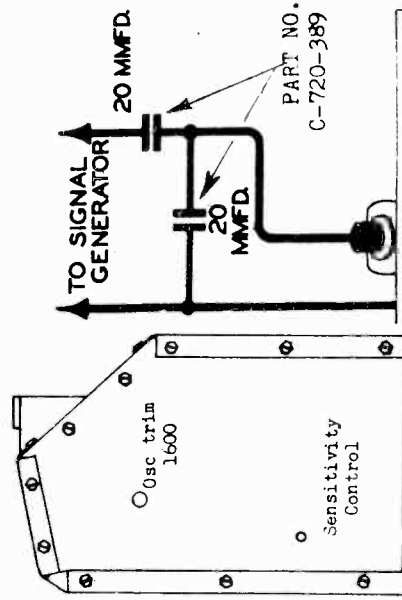


FIG. 3

FIG. 4

Power Output: 3.5 watts measured at voice coil.

Speaker: Full electro dynamic (5 inch.)

THE SPARKS WITHINGTON CO.

MODEL 6F1  
MODEL 6F1D

MODEL 6F1 VOLTAGE CHART

Input Voltage: 6.6 volts at panel. Volume Control Full On with Antenna Disconnected

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Schematic Diagram)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A7	R-F Amplifier	H 0	P 187	Gs 68	Gsu 3.8	S 0	G 0	K 3.8	H 6.4
7B8	Osc - Converter	H 0	P 225	Ga 137	Go -10	Gs 68	G 0	K 3.8	H 6.4
7A7	I-F Amplifier	H 0	P 244	Gs 68	Gsu 2.6	S 0	G 0	K 2.6	H 6.4
6SQ7 GT	Det - AVC - 1st A-F	S 0	G 0	K 0	Dp 0	Dp 0	P 98	H 6.4	H 0
6K6G T	Power Amplifier	S 0	H 0	P 255	Gs 242	G 0	-	H 6.4	K 18.
6X5G T	Rectifier	S 0	H 0	P 320*	-	P 320*	-	H 6.5	K 275

Notes: Voltage readings are for schematic diagram on page 3. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All D-c measurements made with 20000 ohms per volt voltmeter. All A-c voltages measured with rectifier type meter. Unless otherwise designated, voltages in table are - D-c volts. \*Indicates AC volts.  
Explanation of Symbols: H - Heater, P - Plate, Ga - Oscillator Anode, Go - Oscillator Grid, Gs - Screen Grid, Gsu - Suppressor Grid, S - Shield, Dp - Diode Plate, K - Cathode.

MODEL 6F1D VOLTAGE CHART

Input Voltage: 6.6 volts at panel. Volume Control Full On with Antenna Disconnected

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Schematic Diagram)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A7	R-F Amplifier	H 0	P 153	Gs 72	Gsu 3.5	S 0	G -.1	K 3.5	H 6.3*
7B8	Osc - Converter	H 0	P 205	Ga 130	Go -7	Gs 72	G -.1	K 3.5	H 6.3*
7A7	I-F Amplifier	H 0	P 227	Gs 72	Gsu 2.6	S 0	G 0	K 2.6	H 6.3*
7B6	Det-AVC-1st A-F	H 0	P 94	G -.5	K 0	Dp 0	Dp -.1	K 0	H 6.3*
7C5	Power Amplifier	H 0	P 250	Gs 230	-	-	G 0	K 12	H 6.3*
7Y4	Rectifier	H 0	-	P 275*	-	-	P 275*	K 255*	H 6.4*

Notes: Voltage readings are for schematic diagram on page . Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All D-c measurements made with 20000 ohms per volt voltmeter. All A-c voltages measured with rectifier type meter. Unless otherwise designated, voltages in table are + D-c volts. \*Indicates AC volts.  
Explanation of Symbols: H - Heater, P - Plate, Ga - Oscillator Anode, Go - Oscillator Grid, Gs - Screen Grid, Gsu - Suppressor Grid, S - Shield, Dp - Diode Plate, K - Cathode.

MODEL 6F1D

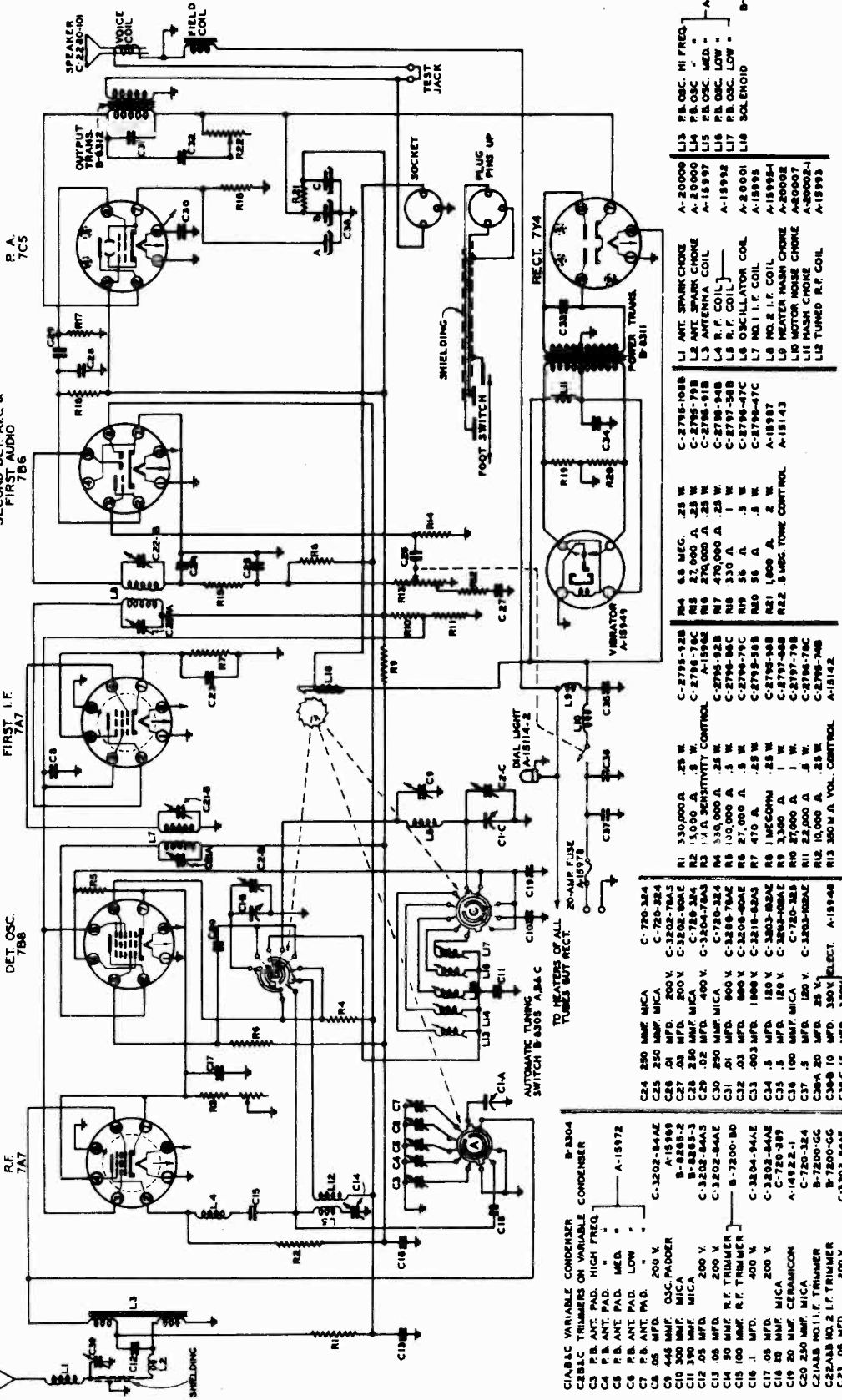
THE SPARKS WITHINGTON CO.

INTERMEDIATE FREQUENCY 455 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

DET. OSC. 7A7  
FIRST I.F. 7A7  
SECOND DET. AVC. & FIRST AUDIO 7B6  
P.A. 7C5

ANTENNA



- C18 50 MFD. MICA
- C19 100 MFD. MICA
- C20 50 MFD. MICA
- C21 50 MFD. MICA
- C22 50 MFD. MICA
- C23 50 MFD. MICA
- C24 250 MFD. MICA
- C25 250 MFD. MICA
- C26 250 MFD. MICA
- C27 250 MFD. MICA
- C28 250 MFD. MICA
- C29 250 MFD. MICA
- C30 250 MFD. MICA
- C31 250 MFD. MICA
- C32 250 MFD. MICA
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- C34 250 MFD. MICA
- C35 250 MFD. MICA
- C36 250 MFD. MICA
- C37 250 MFD. MICA
- C38 250 MFD. MICA
- C39 250 MFD. MICA
- C40 250 MFD. MICA
- C41 250 MFD. MICA
- C42 250 MFD. MICA
- C43 250 MFD. MICA
- C44 250 MFD. MICA
- C45 250 MFD. MICA
- C46 250 MFD. MICA
- C47 250 MFD. MICA
- C48 250 MFD. MICA
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- C50 250 MFD. MICA
- C51 250 MFD. MICA
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- C57 250 MFD. MICA
- C58 250 MFD. MICA
- C59 250 MFD. MICA
- C60 250 MFD. MICA
- C61 250 MFD. MICA
- C62 250 MFD. MICA
- C63 250 MFD. MICA
- C64 250 MFD. MICA
- C65 250 MFD. MICA
- C66 250 MFD. MICA
- C67 250 MFD. MICA
- C68 250 MFD. MICA
- C69 250 MFD. MICA
- C70 250 MFD. MICA
- C71 250 MFD. MICA
- C72 250 MFD. MICA
- C73 250 MFD. MICA
- C74 250 MFD. MICA
- C75 250 MFD. MICA
- C76 250 MFD. MICA
- C77 250 MFD. MICA
- C78 250 MFD. MICA
- C79 250 MFD. MICA
- C80 250 MFD. MICA
- C81 250 MFD. MICA
- C82 250 MFD. MICA
- C83 250 MFD. MICA
- C84 250 MFD. MICA
- C85 250 MFD. MICA
- C86 250 MFD. MICA
- C87 250 MFD. MICA
- C88 250 MFD. MICA
- C89 250 MFD. MICA
- C90 250 MFD. MICA
- C91 250 MFD. MICA
- C92 250 MFD. MICA
- C93 250 MFD. MICA
- C94 250 MFD. MICA
- C95 250 MFD. MICA
- C96 250 MFD. MICA
- C97 250 MFD. MICA
- C98 250 MFD. MICA
- C99 250 MFD. MICA
- C100 250 MFD. MICA

- L1 330,000 A .25 W.
- L2 150,000 A .25 W.
- L3 330,000 A .25 W.
- L4 100,000 A .25 W.
- L5 330 A .5 W.
- L6 470 A .25 W.
- L7 150,000 A .25 W.
- L8 150,000 A .25 W.
- L9 150,000 A .25 W.
- L10 27,000 A .25 W.
- L11 10,000 A .25 W.
- L12 300 W/A VOL. CONTROL
- L13 330,000 A .25 W.
- L14 150,000 A .25 W.
- L15 330,000 A .25 W.
- L16 100,000 A .25 W.
- L17 330 A .5 W.
- L18 470 A .25 W.
- L19 150,000 A .25 W.
- L20 150,000 A .25 W.
- L21 150,000 A .25 W.
- L22 27,000 A .25 W.
- L23 10,000 A .25 W.
- L24 300 W/A VOL. CONTROL

- R1 330,000 A .25 W.
- R2 150,000 A .25 W.
- R3 330,000 A .25 W.
- R4 100,000 A .25 W.
- R5 330 A .5 W.
- R6 470 A .25 W.
- R7 150,000 A .25 W.
- R8 150,000 A .25 W.
- R9 150,000 A .25 W.
- R10 27,000 A .25 W.
- R11 10,000 A .25 W.
- R12 300 W/A VOL. CONTROL
- R13 330,000 A .25 W.
- R14 150,000 A .25 W.
- R15 330,000 A .25 W.
- R16 100,000 A .25 W.
- R17 330 A .5 W.
- R18 470 A .25 W.
- R19 150,000 A .25 W.
- R20 150,000 A .25 W.
- R21 150,000 A .25 W.
- R22 27,000 A .25 W.
- R23 10,000 A .25 W.
- R24 300 W/A VOL. CONTROL

- R25 330,000 A .25 W.
- R26 150,000 A .25 W.
- R27 330,000 A .25 W.
- R28 100,000 A .25 W.
- R29 330 A .5 W.
- R30 470 A .25 W.
- R31 150,000 A .25 W.
- R32 150,000 A .25 W.
- R33 150,000 A .25 W.
- R34 27,000 A .25 W.
- R35 10,000 A .25 W.
- R36 300 W/A VOL. CONTROL
- R37 330,000 A .25 W.
- R38 150,000 A .25 W.
- R39 330,000 A .25 W.
- R40 100,000 A .25 W.
- R41 330 A .5 W.
- R42 470 A .25 W.
- R43 150,000 A .25 W.
- R44 150,000 A .25 W.
- R45 150,000 A .25 W.
- R46 27,000 A .25 W.
- R47 10,000 A .25 W.
- R48 300 W/A VOL. CONTROL

VOICE COIL TERMINAL  
 2 TO 4 OHM SEC.  
 OUTPUT TRANSFORMER  
 TO CASE OF RECEIVER

OUTPUT METER  
 IN case it is desired to use the type of output meter which usually is connected to the plate circuit of an output tube the diagram shown in Fig. 7 should be noted. The output transformer in this circuit is identical to the regular output transformer part No. B-8312 used in the Model 6F1D receiver.

It will be noted that a test jack is provided in the output circuit. The jumper must be connected to the jack in order to have the loud speaker operate properly. This jumper may be conveniently removed to permit the connection of an output meter to the voice coil side of the output transformer.

FIG. 7

THE SPARKS WITHINGTON CO.

MODEL 6FLD

## ALIGNMENT INSTRUCTIONS

Note: The alignment of a radio receiver is one of the most important functions that a service man performs. The following instructions must be followed carefully and in detail.

## CAUTION

When making any adjustment on the receiver, be sure to have the volume control turned full on. If it is necessary to reduce the intensity of the test signal, reduce the volume at the signal generator.

Dummy antenna should be used through out the entire alignment procedure. The correct dummy antenna is composed of two 20 mmf. condensers (SPARTON Part C-720-389). The condenser should be connected in the line between the test oscillator or signal generator and the receiver as shown in Fig. 3. These capacities are identical with the actual capacities provided by the Ford antenna.

Note: The Model 6FLD is equipped with an adjustable sensitivity control located in the position indicated in Fig. 4. This control is properly adjusted at the factory to provide a sensitivity of 7 microvolts at one watt output. The factory adjustment of this control provides as high a sensitivity level as possible without introducing excessive background noise. No attempt should be made to change the setting of the control unless laboratory equipment is available for measuring sensitivity.

## I-F ALIGNMENT

1. Turn selector switch to the No. 1 (Automatic) position (580 KC).
2. Set signal generator at 455 KC and connect through the dummy antenna to the receiver.

3. Adjust trimmers C-22 A&B and C-21 A&B to maximum response. (See Fig. 2).
4. Adjust code rejector trimmer C-14 for minimum response. (See Fig. 2).

## R-F ALIGNMENT

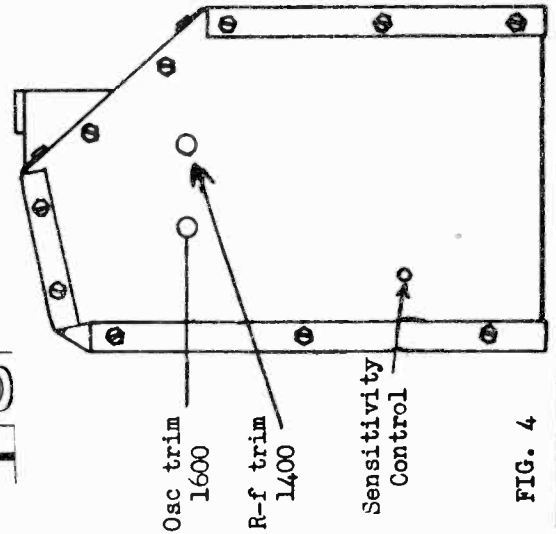
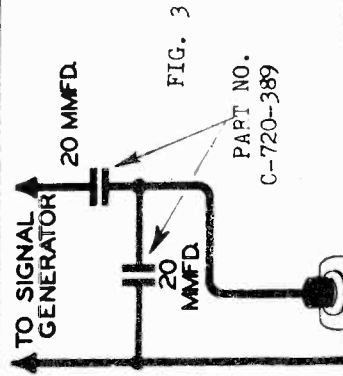
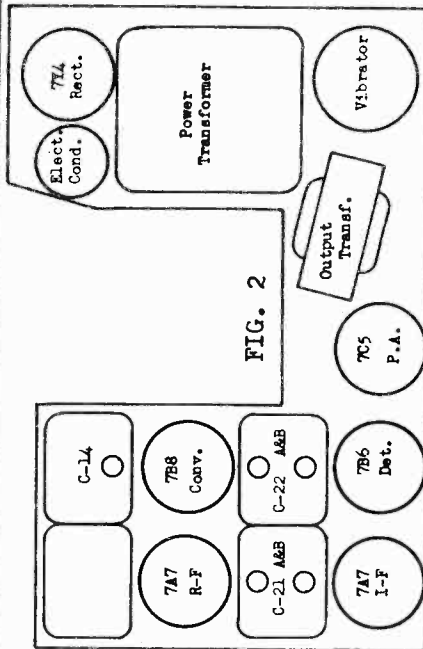
1. Turn selector switch to "Manual Tuning" (D).
2. Turn the manual tuning knob until the variable condenser plates are completely cut of mesh (1600 KC).
3. Set signal generator 1600 KC.
4. Adjust oscillator trimmer C-2C for maximum response. (See Fig. 4).
5. Set signal generator to 1400 KC and rotate the manual tuning control until a signal is heard.
6. Adjust R-F trimmer C-2B (See Fig. 4) and the antenna trimmer C-39 (See Fig. 4) or maximum response.

7. Set the signal generator to 600 KC and rotate the manual tuning control until a signal is heard.

8. The variable condenser should then be rocked slightly while adjusting the oscillator padder condenser C-9. (See Fig. 5).

9. Repeat adjustments described in step 6 to make sure that condensers C-2B and C-39 are peaked for maximum response.

10. After receiver has been installed in car the antenna trimmer (C-39) must be adjusted for maximum response on a weak station at or near 1400 KC.



MODEL 6FLD

THE SPARKS WITHINGTON CO.

**SETTING THE ROTO-SELECTOR**

1. Turn receiver on and allow it to operate for approximately  $\frac{1}{2}$  hour. (This is necessary in order that the operating temperature may reach normal and to be assured of accurate adjustment).
2. Remove the plastic escutcheon over the tuning control by first pulling off the three (3) knobs and removing the lock nuts on the tuning and volume control shafts. With the escutcheon removed, the automatic adjusting screws become accessible as shown in Fig. 5. The adjustments are easily made by means of a small screw driver.
3. Select five stations within the frequency range shown under each set of adjustment screws in Fig. 5.
4. With the selector switch in the "D" position, tune in manually the broadcast station to be set up on position No. 1 and identify the program. Note: Due to the net-work programs broadcast by many stations, it is advisable to wait until the station announces its call letters before completing the adjustments.
5. With the desired station accurately tuned in turn selector switch to the No. 1 position. Now using the screw driver turn the top screw at position No. 1 until the station selected is brought in with the loudest volume, then adjust the larger screw at the bottom until maximum volume is obtained. Note: Stations of the higher frequencies are tuned in by turning the screws to the left (counter-clockwise). Lower frequency stations are tuned by turning the screws to the right (clockwise).

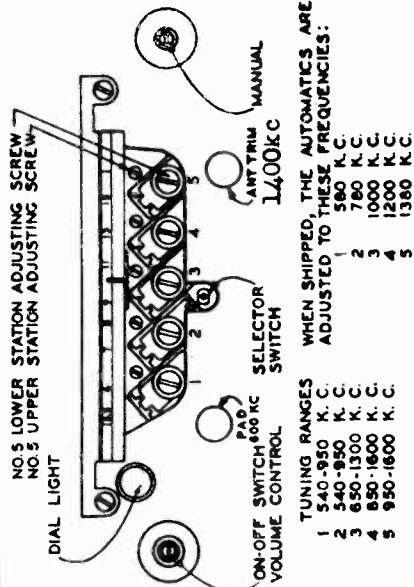


FIG. 5

6. Proceed with setting up the remaining four stations in the same manner as described under paragraphs 4 and 5.

7. Recheck the screws for each station to make sure that each one of the selected stations is tuned in as accurately as possible. It is advisable for the final rechecking of adjustments to be made in an area of low signal strength or in some known "dead spot", where radio signals are difficult to receive.

**SOLENOID PLUNGER**

The solenoid plunger is fully lubricated at the factory and normally no special lubrication service will be required. However, it is good practice to place one or two drops of lubricant on the plunger at such times as the receiver may be in the service shop. Use only Super Pyroil "B" as a plunger lubricant. It is readily obtainable from any auto supply house or from the factory.

**DIAL CORD**

Fig. 6 shows the correct way to string the dial cord. Unless the dial cord is strung properly it may have a tendency to jump off the pulley or otherwise operate improperly.

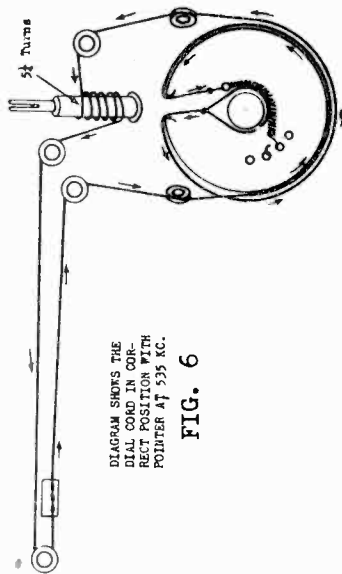


FIG. 6

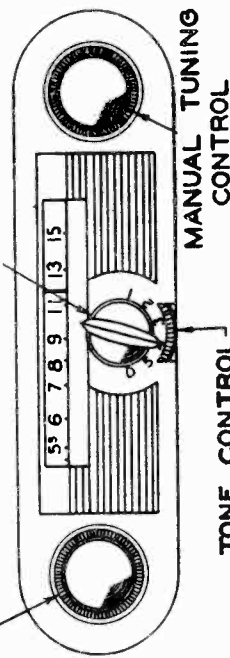
**ELECTRICAL SPECIFICATIONS**

**Sensitivity:** 7 microvolts at 1 watt output.  
**Power Output:** 4.5 watts measured at voice coil. Full electro dynamic (7 inch diameter).  
**Roto-Selector Tuning:** Automatic tuning for five stations.  
**Current Consumption:** 8.5 amps.

**Foot Control Switch (Optional):** Automatic tuning for five stations and automatic reduction of volume by floor-mounting foot control switch.

**VOLUME CONTROL AND OFF ON SWITCH**

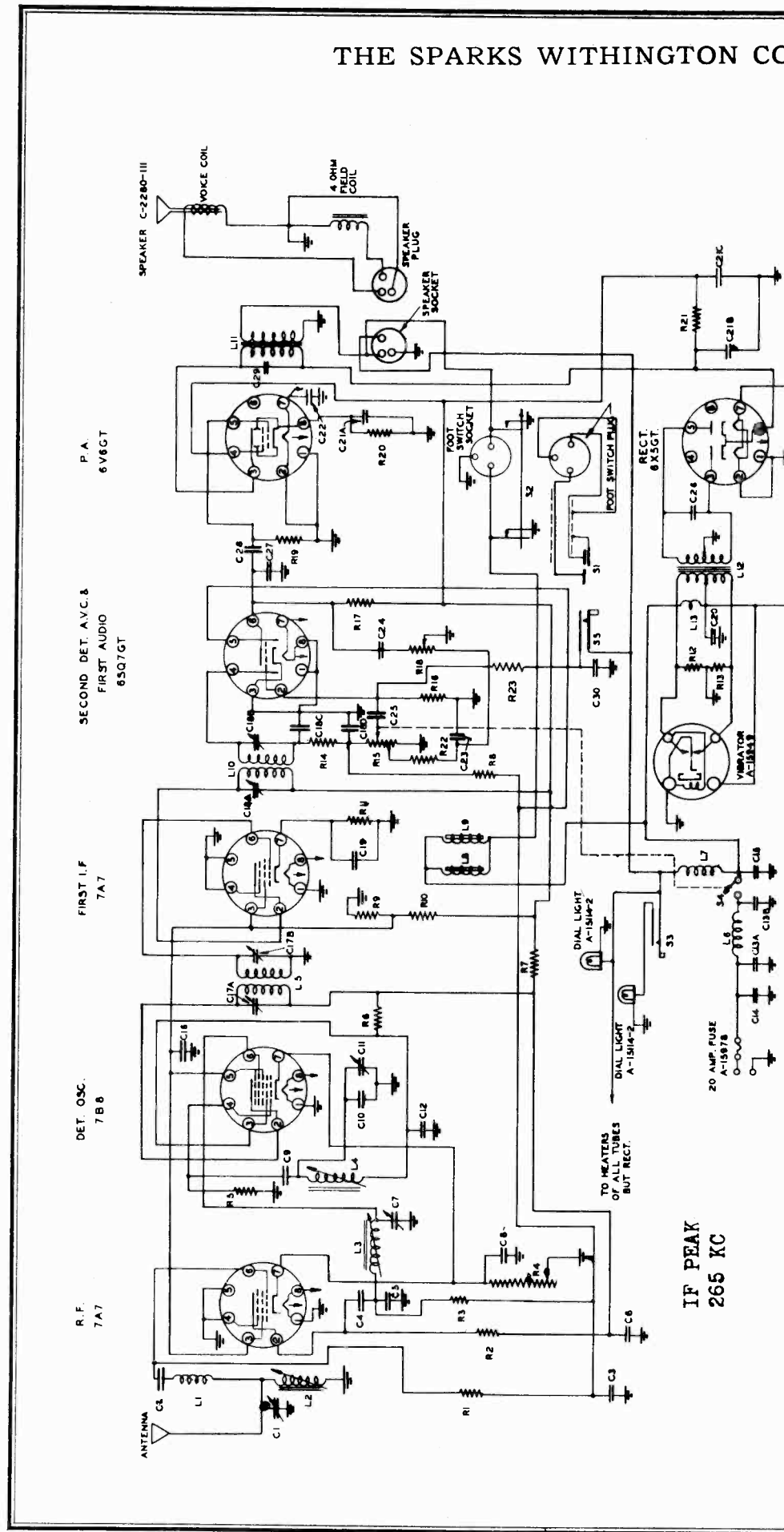
**SELECTOR KNOB**





THE SPARKS WITHINGTON CO.

MODEL 6F2D



51	FOOT SWITCH	A-20386	L1	ANTENNA SPARK CHOK	A-20488	C1	ANTENNA TRIMMER	A-20465	L17A	I.F. TRIMMER ASSEMBLY	A-20023-2	C13	0.2 200 V.	C-3202-88AE	R7	3300 Ω	C-2797-84C
52	ACTUATOR & MUTING SWITCH	A-20485	L2	ANTENNA COIL	B-8480	C13A	300 MMFD. SILVER MICA	B-8265-2	C12	DUAL 200 MMFD MICA	A-20458	C24	0.05 600V	C-3202-88AE	R8	1,000,000 Ω 1/2 W.	C-2795-84C
53	DIAL LIGHT SWITCH	A-20338	L3	OSCILLATOR COIL	A-20002-1	C13B	TRANSFORMER HASH CHOK	A-20096	C14	5 100 V.	C-3201-102AE	C26	0.01 200 V.	C-3202-78AE	R9	22,000 Ω 1/2 W.	C-2796-78C
54	OFF-ON SWITCH	A-20338	L4	NO. 1 I.F. COIL ASSEMBLY	A-20002-1	C15	5 100 V.	C-3201-102AE	C15	5 100 V.	C-3201-102AE	C27	250 MMFD. MICA	C-3218-84AS	R10	27,000 Ω	C-2797-79C
55	DELAY MUTING SWITCH	A-20338	L5	LEAD SPARK CHOK	A-20002-1	C16	0.5 200 V.	C-3202-84AE	C16	0.5 200 V.	C-3204-78AE	C28	0.02 400 V.	C-720-324	R11	470 Ω	C-2798-59C
L1	ANTENNA SPARK CHOK	A-20488	C1	ANTENNA TRIMMER	A-20465	C17A	I.F. TRIMMER ASSEMBLY	A-20023-2	C17A	I.F. TRIMMER ASSEMBLY	A-20023-2	C29	0.02 400 V.	C-3204-78AE	R12	58 Ω	C-2798-47C
L2	ANTENNA COIL	A-20485	C2	0.1 200 V.	B-8480	C18	0.5 200 V.	A-20023-2	C18	0.5 200 V.	A-20023-2	C30	0.02 400 V.	C-3204-78AE	R13	27,000 Ω 1/2 W.	C-2798-47C
L3	R.F. COIL	A-20327-1	C3	0.5 200 V.	A-20002-1	C19	0.05 200 V.	A-20096	C19	0.05 200 V.	A-20096	C31	0.02 400 V.	C-3204-78AE	R14	330,000 Ω 1/2 W.	A-15148
L4	OSCILLATOR COIL	A-20326	C4	25 MMFD. MICA	C-3202-84AE	C20	0.5 100 V.	C-3202-84AE	C20	0.5 100 V.	C-3202-84AE	C32	0.02 400 V.	C-3204-78AE	R15	10,000,000 Ω 1/2 W.	C-2798-10C
L5	NO. 1 I.F. COIL ASSEMBLY	A-15995-2	C5	850 MMFD	C-720-389	C21	20 MFD. 25 V.	C-3202-84AE	C21	20 MFD. 25 V.	C-3202-84AE	C33	0.02 400 V.	C-3204-78AE	R16	270,000 Ω 1/2 W.	C-2798-10C
L6	A LEAD SPARK CHOK	A-20481	C6	1.4 00 V.	C-720-395	C22	10 MFD. 350 V.	C-3201-102AE	C22	10 MFD. 350 V.	C-3201-102AE	C34	0.02 400 V.	C-3204-78AE	R17	470,000 Ω 1/2 W.	C-2798-10C
L7	HEATER HASH CHOK	B-8456	C7	R.F. TRIMMER	A-7352-1	C23	15 MFD. 300 V.	C-3201-102AE	C23	15 MFD. 300 V.	C-3201-102AE	C35	0.02 400 V.	C-3204-78AE	R18	1 MEG. TONE CONTROL	A-15148
L8	TUNER SOLENOID ASSEMBLY	B-8456	C8	1.2 00 V.	C-3202-84AE	C24	20 MFD. 25 V.	C-3201-102AE	C24	20 MFD. 25 V.	C-3201-102AE	C36	0.02 400 V.	C-3204-78AE	R19	470,000 Ω 1/2 W.	C-2798-84C
L9	INDEXING SOLENOID ASSEMBLY	B-8457	C9	350 MMFD COMPENSATOR	A-20463-1	C25	10 MFD. 300 V.	ELECTROLYTIC	C25	10 MFD. 300 V.	ELECTROLYTIC	C37	0.02 400 V.	C-3204-78AE	R20	330 Ω	C-2798-84C
L10	NO. 2 I.F. COIL ASSEMBLY	A-15995-3	C10	OSCILLATOR TRIMMER	A-20422	C26	2.50 MMFD. MICA	C-3201-102AE	C26	2.50 MMFD. MICA	C-3201-102AE	C38	0.02 400 V.	C-3204-78AE	R21	180 Ω	A-20023-2

MODEL 6F2D

THE SPARKS WITHINGTON CO.

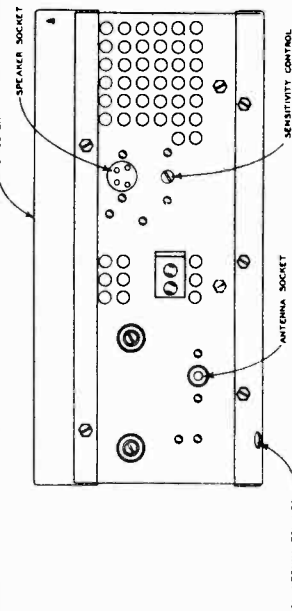


FIG. 4 BACK VIEW OF SET

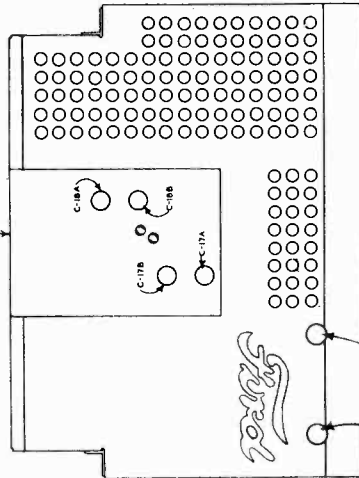


FIG. 5

TO SIGNAL GENERATOR

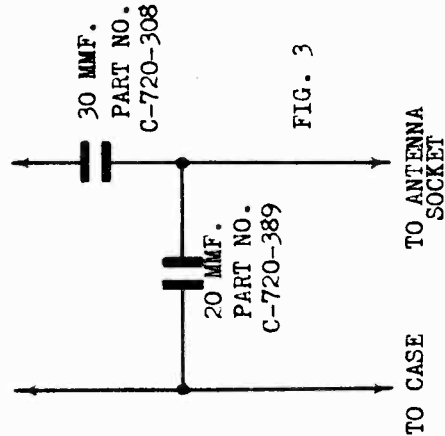


FIG. 3

2. Set the signal generator at 265 KC and connect through the dummy antenna to the receiver.

3. Adjust trimmers C-18 A&B and C-17 A&B for maximum response. (See Fig. 5.)

R-F ALIGNMENT

1. Tune the set to 1610 KC by rotating the tuning knob as far as it will go clockwise.

2. Set the signal generator to 1610 KC.

3. Adjust the oscillator trimmer C-11, the RF trimmer C-7 and the antenna trimmer C-1 for maximum response, in the sequence given. (See Fig. 4 & 5 for trimmer locations.)

4. After the receiver has been installed in the car the antenna trimmer C-1 must be adjusted for maximum response with the set tuned to a weak station near 1600 KC.

SOLENOID PLUNGER

The solenoid plunger is fully lubricated at the factory and normally no special lubrication service will be required. However, it is good practice to place one or two drops of lubricant on the plunger at such times as the receiver may be in the service shop. Use only Super Pyroil "B" as a plunger lubricant. It is readily obtainable from any auto supply house or from the factory.

DIAL CORD

The dial pointer should be so adjusted that when the iron slugs are in the maximum out position with respect to the coils the dial pointer should be the pointer width to the right hand side of 1600 KC on the dial scale.

ALIGNMENT INSTRUCTIONS

Note: The alignment of a radio receiver is one of the most important functions that a service man performs. The following instructions must be followed carefully and in detail.

CAUTION

When making any adjustment on the receiver, be sure to have the volume control turned full on. If it is necessary to reduce the intensity of the test signal, reduce the volume at the signal generator.

A dummy antenna should be used through out the entire alignment procedure. The correct dummy antenna is composed of one 20 mmf. condenser (SPARTON Part C-720-389) and one 30 mmf. condenser (SPARTON Part C-720-308). The condenser should be connected in the line between the test oscillator or signal generator and the receiver as shown in Fig. 3. These capacities are identical with the actual capacities provided by the Ford antenna.

Note: The Model 6F2D is equipped with an adjustable sensitivity control located in the position indicated in Fig. 4. This control is properly adjusted at the factory to provide a sensitivity of 6 microvolts at one watt output. The factory adjustment of this control provides as high a sensitivity level as possible without introducing excessive background noise. No attempt should be made to change the setting of the control unless laboratory equipment is available for measuring sensitivity.

I-F ALIGNMENT

1. Index the tuner to dial position and tune the set to 550 KC.

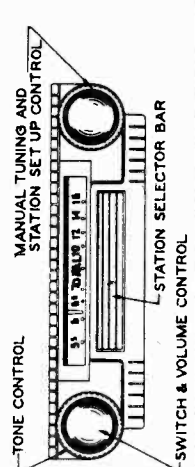
THE SPARKS WITHINGTON CO.

MODEL 6F2D

SETTING THE ADJUST-O-MATIC TUNER

1. Turn receiver on and allow it to operate for approximately 1/2 hour. (This is necessary in order that the operating temperature may reach normal and to be assured of accurate adjustment).
2. With the tuning knob in its normal position and the tuner indexed so that the word DIAL in the pointer background is illuminated, the set is ready for manual operation.
3. By indexing the tuner with the push bar the first automatic position is ready for setting up. The station is tuned in by retracting the manual knob and tuning to the desired station as indicated by the dial pointer.
4. The manual knob should then be pushed back to its normal position.
5. The next automatic position may then be indexed and the desired station set up in the same manner as mentioned in paragraph 3 and 4.
6. After all five automatic positions are set up the manual knob should be returned to its normal position. If desired, the manual position may also be set up and used as an automatic position. Any station may be set up in any desired automatic position.

Note: Due to the net-work programs broadcast by many stations, it is rather difficult to determine the station until the station call letters have been announced.



Input Voltage: 6.6 Volts. Volume Control Full on with Antenna Disconnected

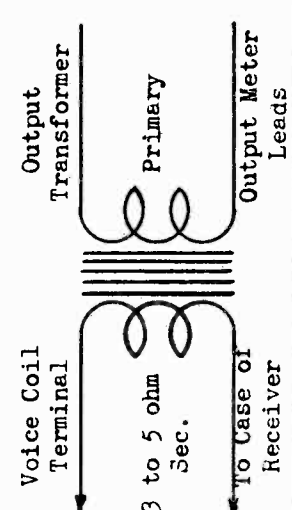
TUBE	FUNCTION	Voltage of socket prongs to gnd. (See schematic dia.)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A7	R-F Amplifier	H	P	Gs	Gau	S	G	K	H
		0	132	112	0	0	-.03	2.9	6.25
7B8	Osc-Converter	H	P	Ga	Go	Gs	G	K	H
		0	208	142	-.75	60	-.03	2.9	6.25
7A7	I-F Amplifier	H	P	Gs	Gsu	S	G	K	H
		0	223	62	0	0	0	2.1	6.25
6SQ7GT	Det-AVC-1st AF	S	G	K	Dp	Dp	P	H	H
		0	-.22	0	-.3	-.3	95	6.25	0
6V6GT	Power Amplifier	-	H	P	Gs	G	-	H	K
			0	235	225	0	-	6.25	12
6X5GT	Rectifier	-	H	P	-	P	-	H	K
			0	230*	-	230*	-	6.2	250

Notes: Voltage readings are for schematic diagram on page 3. 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 measured with rectifier type meter. Unless otherwise designated, voltages in table are + DC volts. \*Indicates AC volts. Explanation of Symbols: H-Heater, P-Plate, Gs-Oscillator Anode, Go-Oscillator Grid, Gs-Screen Grid, Gsu-Suppressor Grid, S-Shield, Dp-Diode Plate, K-Cathode.

OUTPUT METER

In case it is desired to use the type of output meter which usually is connected to the plate circuit of an output tube the diagram shown in Fig. 6 should be noted.

The output transformer in this circuit is identical to the regular output transformer part No. B-8312-1 used in the Model 6F2D receiver.

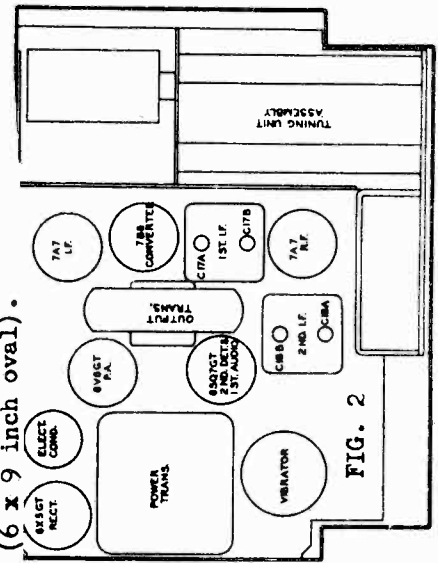


Sensitivity: 6 microvolts at 1 watt output.

Power Output: 4.5 watts measured at voice coil.

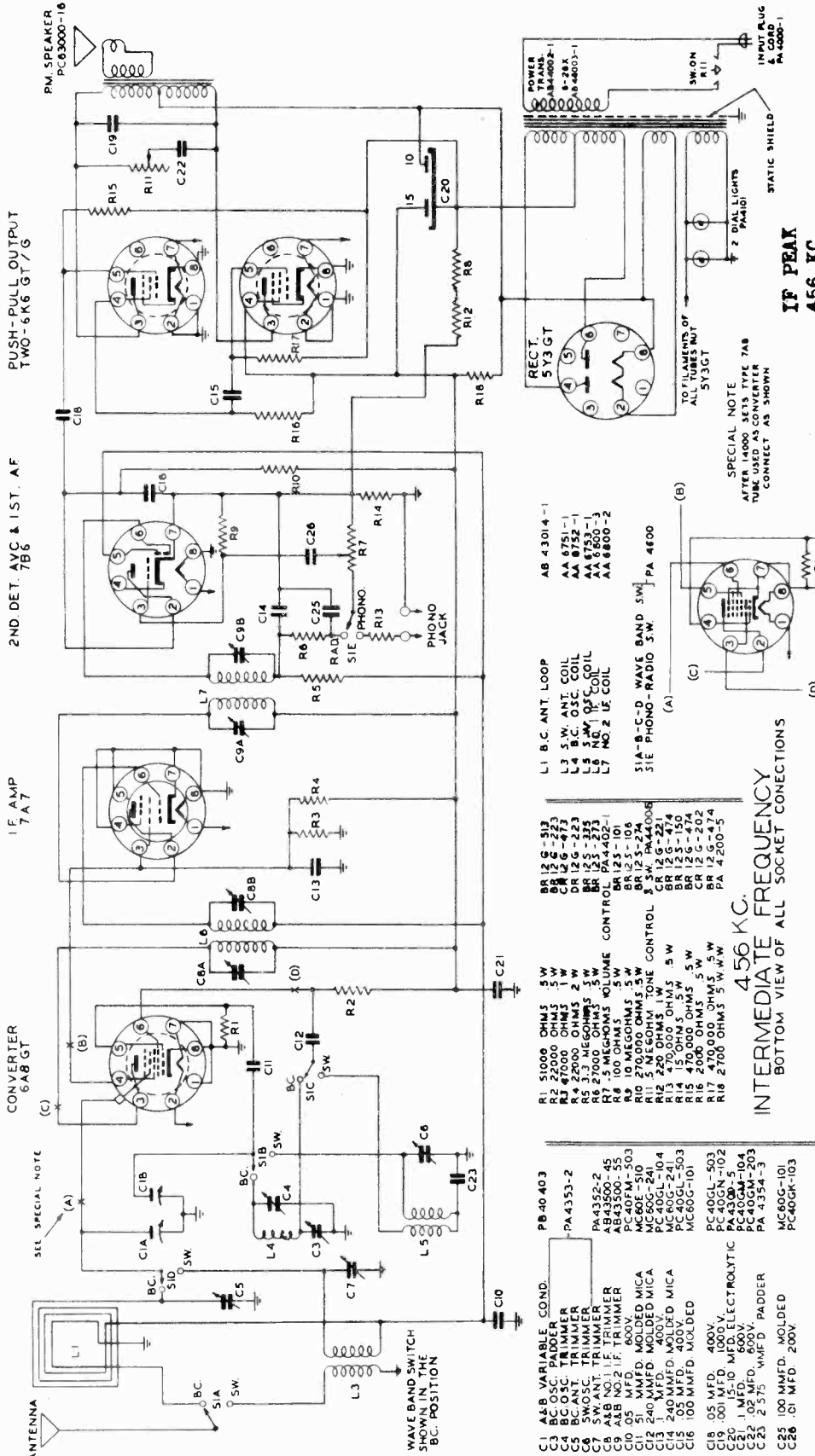
Current Consumption: 8.5 Amps.

Speaker: Full electro dynamic (6 x 9 inch oval).

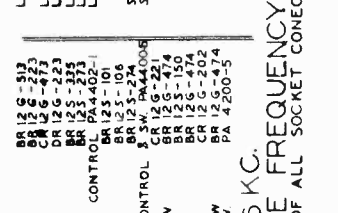
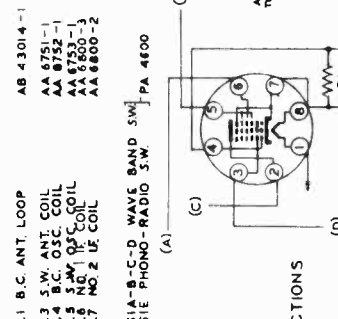


MODELS 6-26, 6-26PA

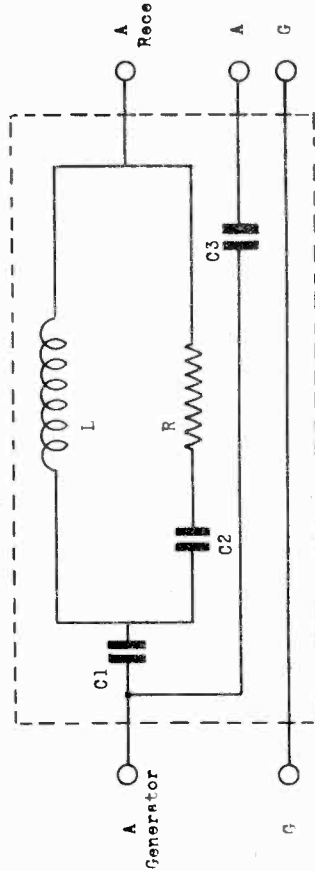
THE SPARKS WITHINGTON CO.



IF PEAK  
456 KC



- COMPONENT LIST:**
- C1 A2B VARIABLE COND. PB40403
  - C2 BC OSC. PADDER PA4353-2
  - C3 BC ANT. TRIMMER PA4353-2
  - C4 SW OSC. TRIMMER PA4353-2
  - C5 SW OSC. TRIMMER PA4353-2
  - C6 SW OSC. TRIMMER PA4353-2
  - C7 100 MFD. 400V. MICA
  - C8 100 MFD. 400V. MICA
  - C9 A4B NO.1 IF. TRIMMER PA4353-2
  - C10 05 MFD. 600V. MICA
  - C11 500 MFD. MOLDED MICA
  - C12 1.40 MFD. 400V. MICA
  - C13 240 MMFD. MOLDED MICA
  - C14 100 MFD. 400V. MICA
  - C15 100 MFD. 400V. MICA
  - C16 100 MFD. 400V. MICA
  - C17 100 MFD. 400V. MICA
  - C18 05 MFD. 600V. MICA
  - C19 100 MFD. 400V. MICA
  - C20 1 MFD. 600V. ELECTROLYTIC
  - C21 1 MFD. 600V. ELECTROLYTIC
  - C22 .02 MFD. 600V. PADDER PA 4354-3
  - C23 2.575 MMFD. PADDER PA 4354-3
  - C24 100 MMFD. MOLDED MC60G-103
  - C25 100 MMFD. MOLDED MC60G-103
  - C26 .01 MFD. 200V. MC60GK-103
  - R1 51000 OHMS 5W
  - R2 47000 OHMS 1W
  - R3 47000 OHMS 2W
  - R4 22000 OHMS 2W
  - R5 3.3 MEGOHMS 5W
  - R6 100 OHMS 5W
  - R7 5 MEGOHMS VOLUME CONTROL PA4402-1
  - R8 100 OHMS 5W
  - R9 10 MEGOHMS 5W
  - R10 2700 OHMS 5W
  - R11 2700 OHMS 5W
  - R12 220 OHMS 1W
  - R13 470,000 OHMS 5W
  - R14 470,000 OHMS 5W
  - R15 470,000 OHMS 5W
  - R16 2000 OHMS 5W
  - R17 470,000 OHMS 5W
  - R18 2700 OHMS 5W
  - L1 B-C ANT. LOOP
  - L2 5W. ANT. COIL AB 43014-1
  - L3 B-C. OSC. COIL AA 8751-1
  - L4 B-C. OSC. COIL AA 8752-1
  - L5 1.5M. IF. COIL AA 8753-1
  - L6 1.5M. IF. COIL AA 8753-1
  - L7 NO.2 IF. COIL AA 8800-2
  - 51A-B-E-D WAVE BAND SW. PA 4600
  - 51E PHONO-RADIO SW.

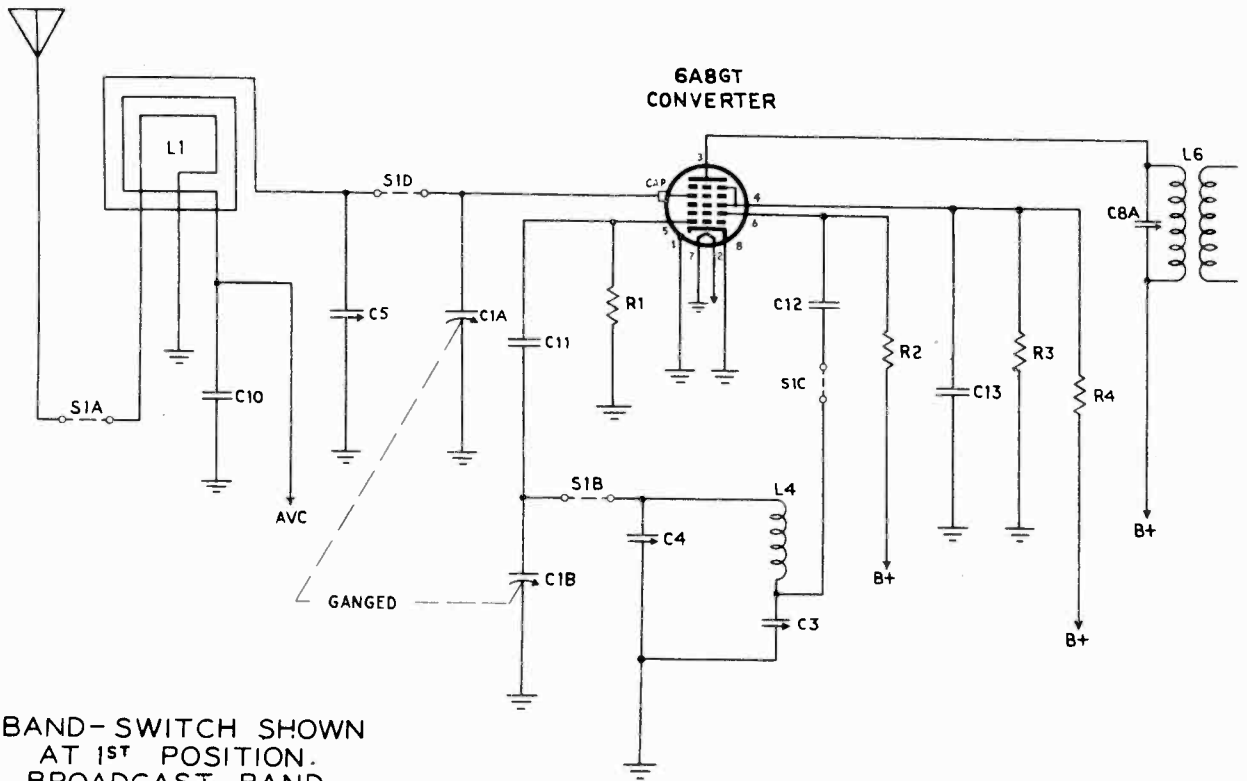


--- Case Shield  
Choke Coil Specification  
Tubing - 3/8" Diameter Bakelite  
Wire - No. 38 Enameled  
Turns - 59 closely wound (Impregnated)

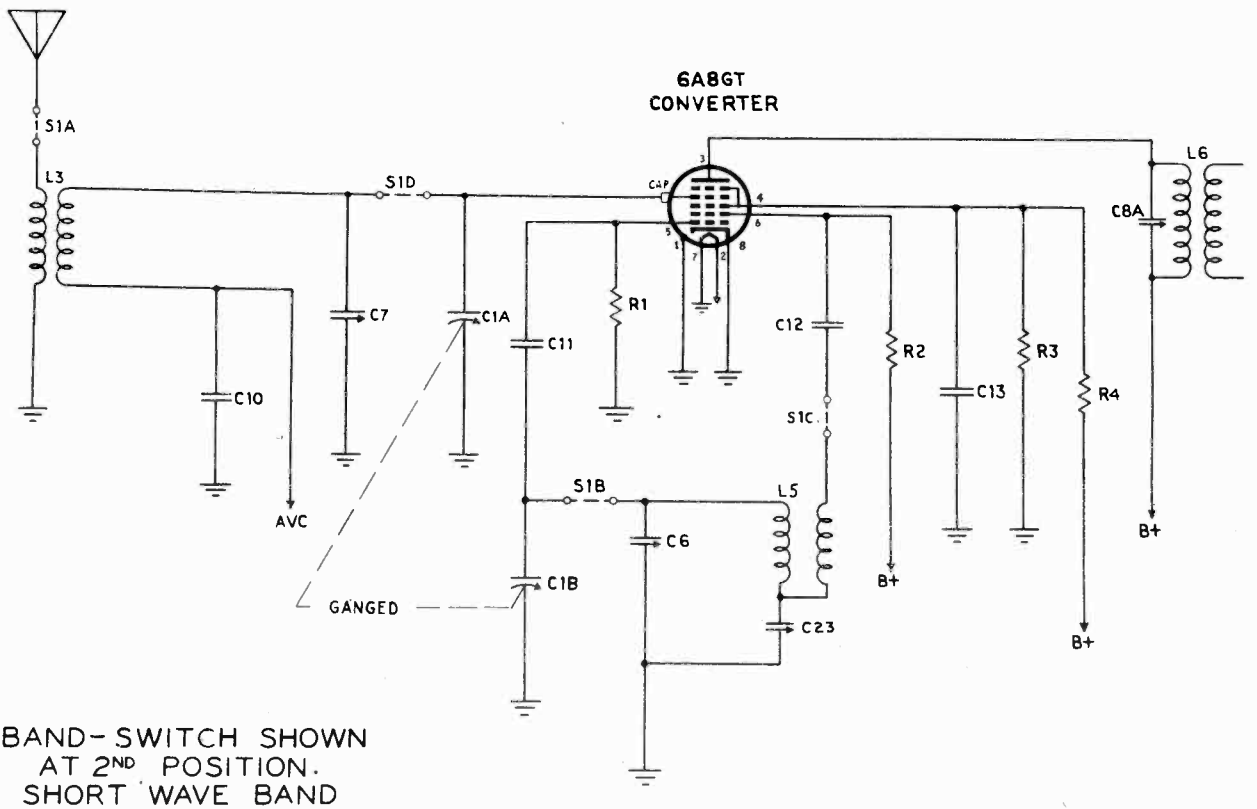
NOTE: When using this dummy antenna the generator output impedance should be 10 ohms or lower.

THE SPARKS WITHINGTON CO.

MODELS 6-26, 6-26PA



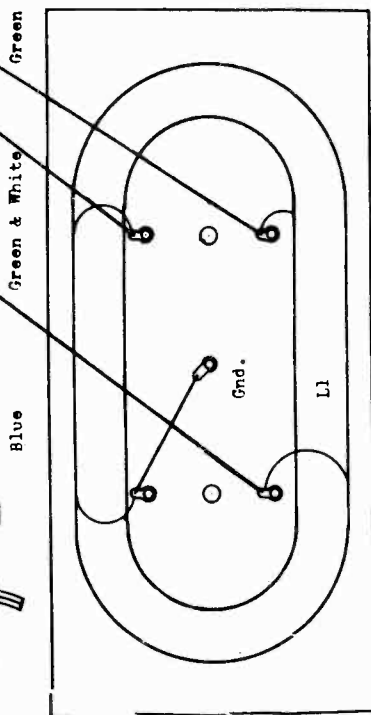
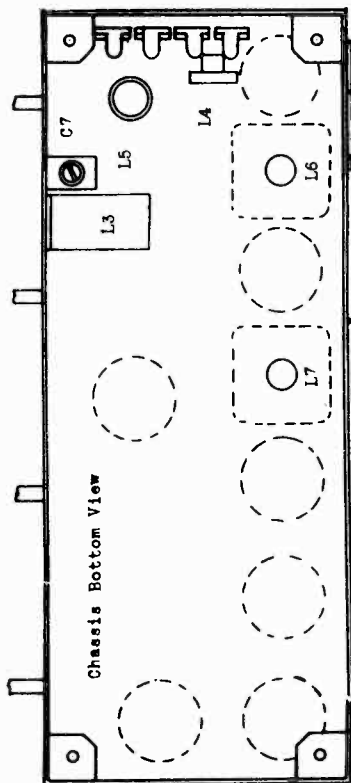
BAND-SWITCH SHOWN AT 1<sup>ST</sup> POSITION. BROADCAST BAND



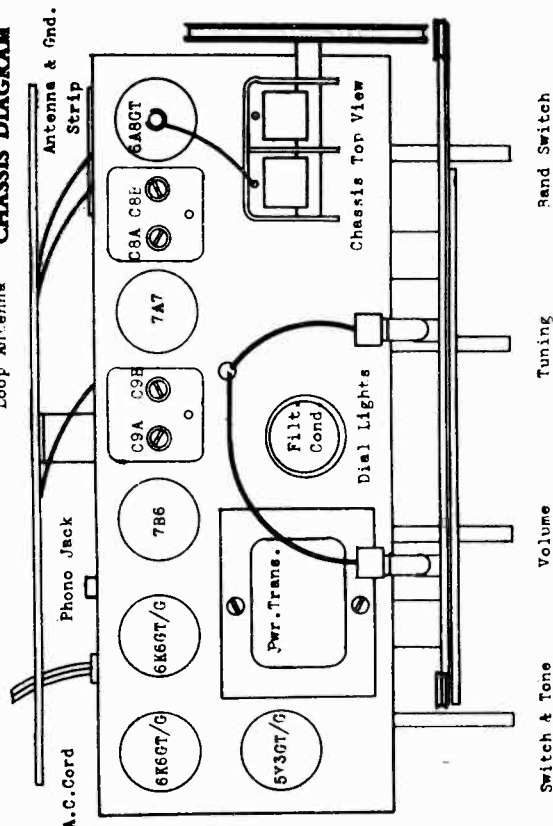
BAND-SWITCH SHOWN AT 2<sup>ND</sup> POSITION. SHORT WAVE BAND

MODELS 6-26,6-26PA

THE SPARKS WITHINGTON CO.



Loop Antenna CHASSIS DIAGRAM



- C3
- C4
- C5
- C6

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

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA FREQUENCY	GENERATOR 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 C8 A & B	Peak Accurately Peak Accurately
3	BC	Driver Loop	1500 KC.	BC	1500 KC.	C4 Osc.Trim. C5 Ant.Trim.	Peak Accurately Peak Accurately
4			600 KC.	BC	600 KC.	C3 Osc.Pad.	Peak Accurately
<b>(Repeat Operation #3)</b>							
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. C7 Ant.Trim. C23 Osc.Pad.	Peak Accurately * * * See Operation #7
7			Osc. padder C23 is precision set at the factory and should not be readjusted in the field.				
8			<b>(Repeat Operation #6)</b>				
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.  
 \*\*\* Peak dial while making this adjustment.

VOLTAGE CHART

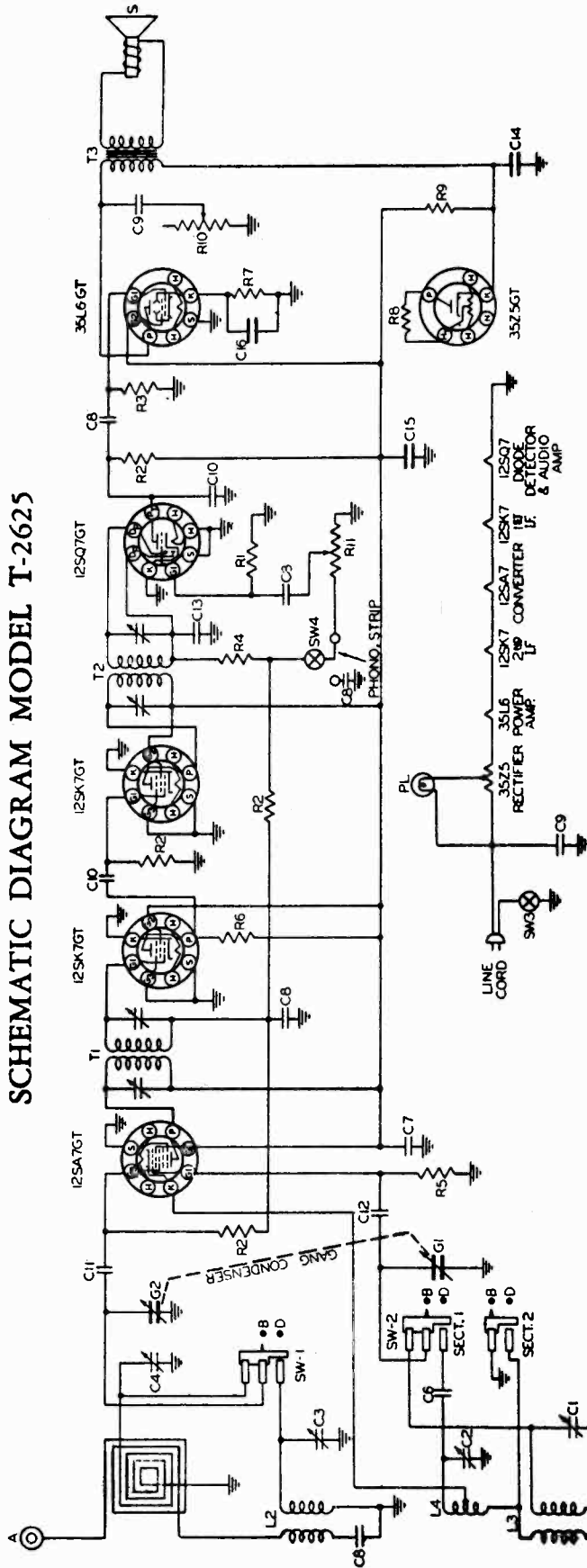
TUBE	FUNCTION	Position of Volume Control: Full with set tuned to quiet channel. Position of Band Switch: Broadcast								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	
6A8GT/G	Converter	0	6.4*	233	87.5	6.6	150	C	0	- .98
7A7	I.F. Amplifier	6.4*	23C	85	0	0	-1.03	C	0	-
7B6	2nd. Det. AVC. 1st A.F.	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	-
5Y3GT/G	Push-Pull Output	0	0	217.5	23C	**	0	6.4*	13.5	-
5Y3GT/G	Rectifier	0	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.

SPIEGEL

MODEL T-2625

SCHEMATIC DIAGRAM MODEL T-2625



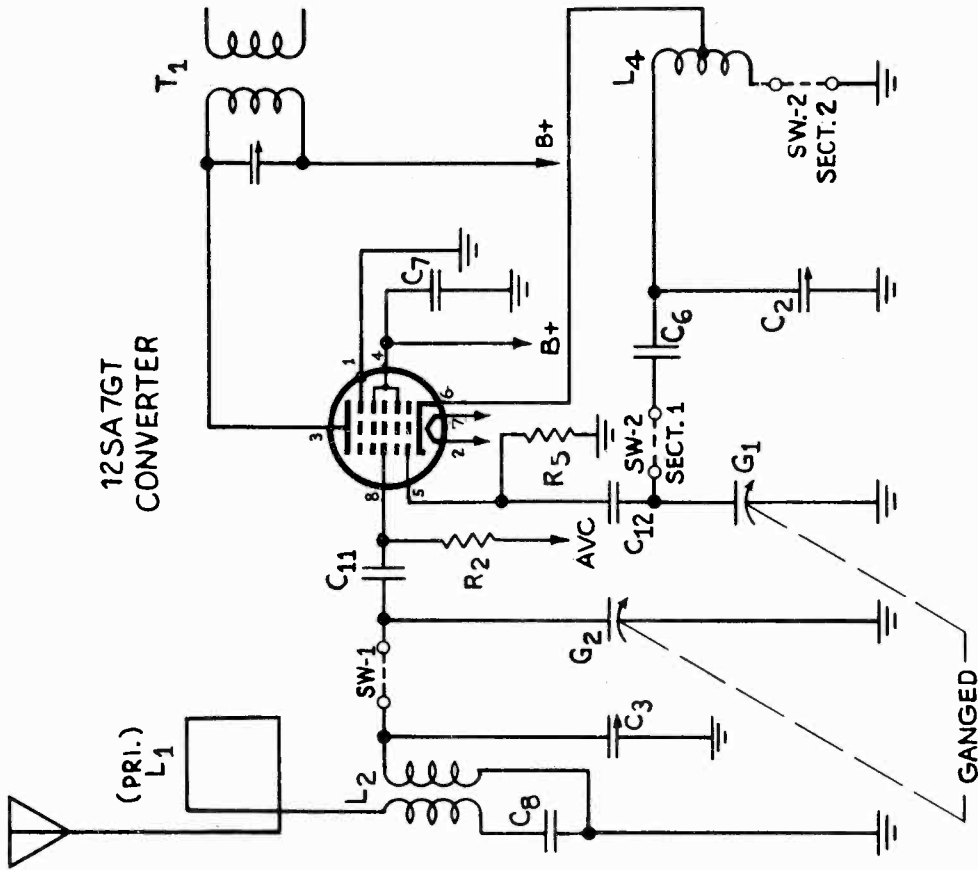
PART NO	SCHEMATIC LOCATION	DESCRIPTION
2-165	R1	2 MEG. 1/2 W 20% RESISTOR
3-2	R2	1 MEG. "
3-6	R3	500K "
3-1	R4	50M "
3-16	R5	30M "
3-32	R6	1700 "
3-34	R7	100 "
3-174	R8	50 "
3-37	R9	25M TONE CONTROL
5-31	R10	1 MEG. VOLUME CONTROL
5-30	R11	BC OSC. TRIMMER COND.
9-305	C1	SW OSC. TRIMMER COND.
9-47	C2	BC ANT. TRIMMER COND.
9-27	C3	BC OSC. PADDER COND.
6-26	C6	SW OSC. PADDER COND. 250WV (ON COIL)
6-3	C7	0.1 MFD. 400 VDC PAPER COND.
6-14	C8	.01 MFD.
8-10	C9	.05 MFD.
8-43	C10	.00025 MFD. 20% MICA COND.
8-13	C11	.0005 MFD.
8-8	C12	.0005 MFD.
8-8	C13	.0001 MFD.
47-302	C14	80 MFD. 150WV ELECTROLYTIC COND.
15-315	C15	10 MFD. 25WV
15-316	L1	BC LOOP
15-317	L2	SW ANTENNA COIL
15-317	L3	BC ANT. TRIMMER COND.
43-301	L4	SW OSC. PADDER COND.
16-39	T1	INPUT IF TRANSFORMER
16-40	T2	OUTPUT IF TRANSFORMER (ON SPKR)
14-307	SW1	BAND SWITCH
28-303	SW2	ON-OFF SWITCH ON VOL. CONTROL
47	SW3	PHONO JACK & SWITCH
40-306	SW4	CONVERTER
10-304	G1	PILOT LIGHT
	G2	187 A. 200 IF
		DIODE DETECTOR & AUDIO AMP.
		POWER AMPLIFIER
		RECTIFIER
		OSCILLATOR TUNING COND.
		ANTENNA TUNING COND.

DESIGNED BY R.F. RIDER, AMERICAN ELECTRIC COMPANY

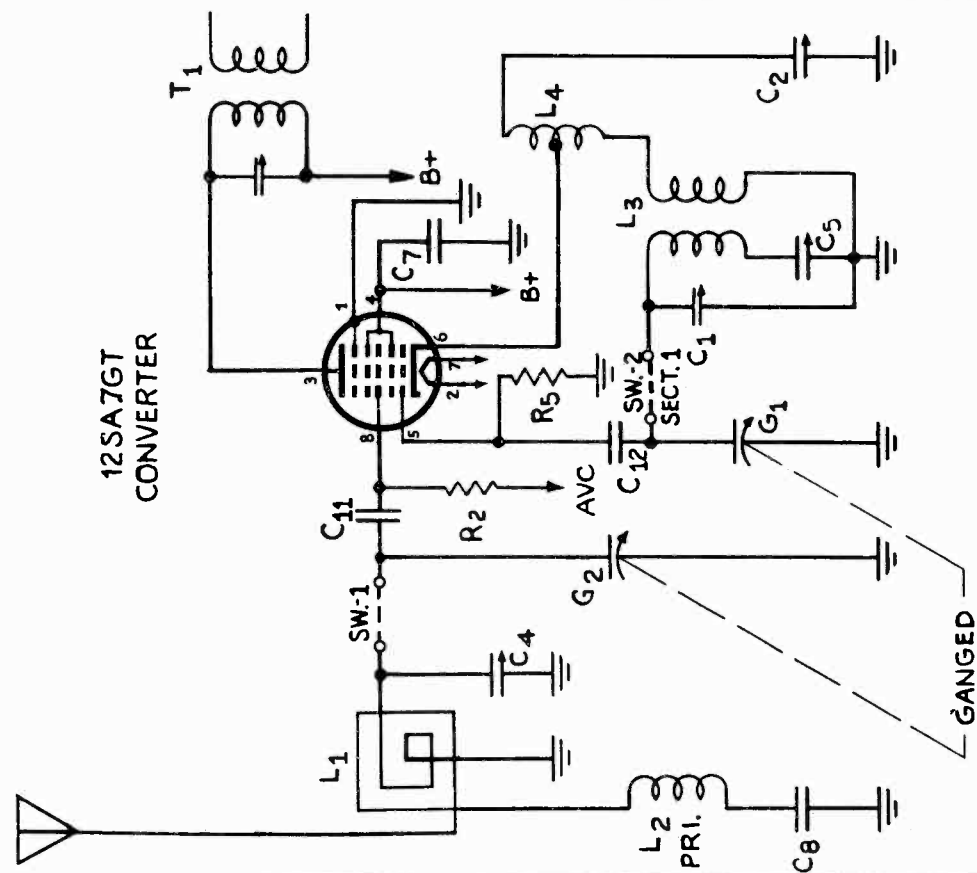
*"clarified schematics"*

MODEL T-2625

SPIEGEL



BAND-SWITCH SHOWN AT 2<sup>ND</sup> POSITION. SHORT WAVE BAND



BAND-SWITCH SHOWN AT 1<sup>ST</sup> POSITION. BROADCAST BAND



**INSTRUCTIONS FOR CONNECTING  
F.M., TELEVISION OR PHONOGRAPH CONVERTOR**

A shielded lead wire is usually provided with the aforementioned instruments. To connect them to this receiver, plug the insulated wire into the hole on the connector strip which is marked with red paint. The shield or bare wire is plugged into the unmarked hole. When the wires are plugged in, the radio portion of the receiver is automatically cut off. It is only necessary to turn the volume control to increase or decrease volume.

When you desire to use the receiver for radio reception, it is necessary to pull out the external plugs.

**MODEL 5020 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**

Mfr.	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**

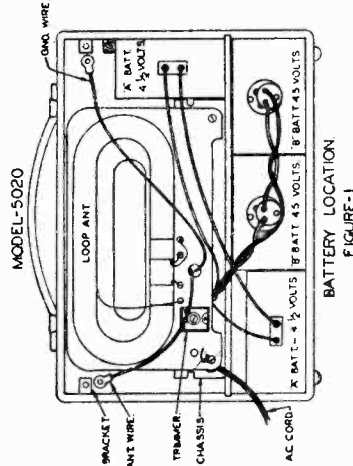
Mfr.	Volts	Type No.
Burgess	4½ "A"	G3
General	4½ "A"	3H3
Bright Star	4½ "A"	361
Usalite	4½ "A"	683
Rayovac	4½ "A"	P83A
Eveready	4½ "A"	746

**BATTERY SERVICING**

(See Figure No. 1)

To replace batteries, loosen and remove the two screws at the upper 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, making sure that the two washers riveted to the bottom of the back, fit into the slots near the bottom edge of the cabinet. Also make sure that the two wires from the loop antenna are held in place between the top brackets of the cabinet and the back by the two fastening screws.



**ALIGNMENT AND SERVICE DATA**

**MODEL T-2625**

Remove the chassis from the cabinet for alignment.

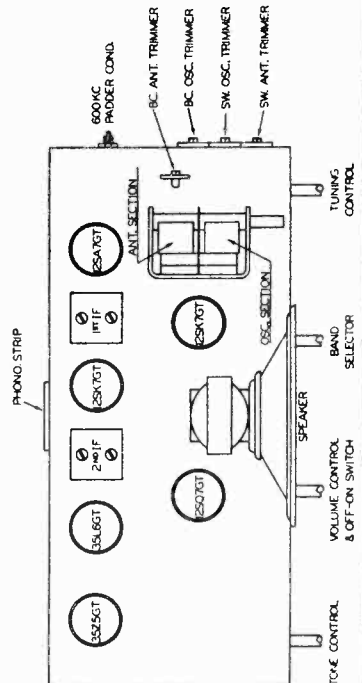
A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC, 6MC, 16MC, 18.3MC. An output meter should be connected across the speaker.

**I. F. Alignment:** Connect the generator lead through a 1MFD condenser to the terminal lug on the "Antenna" section of the gang condenser. The ground lead from the generator should be connected to the chassis base. Set the generator at 456KC. Adjust the trimmer screws in the 1st and 2nd I. F. cans (see Fig. No. 1) until a maximum reading is noted on the output meter.

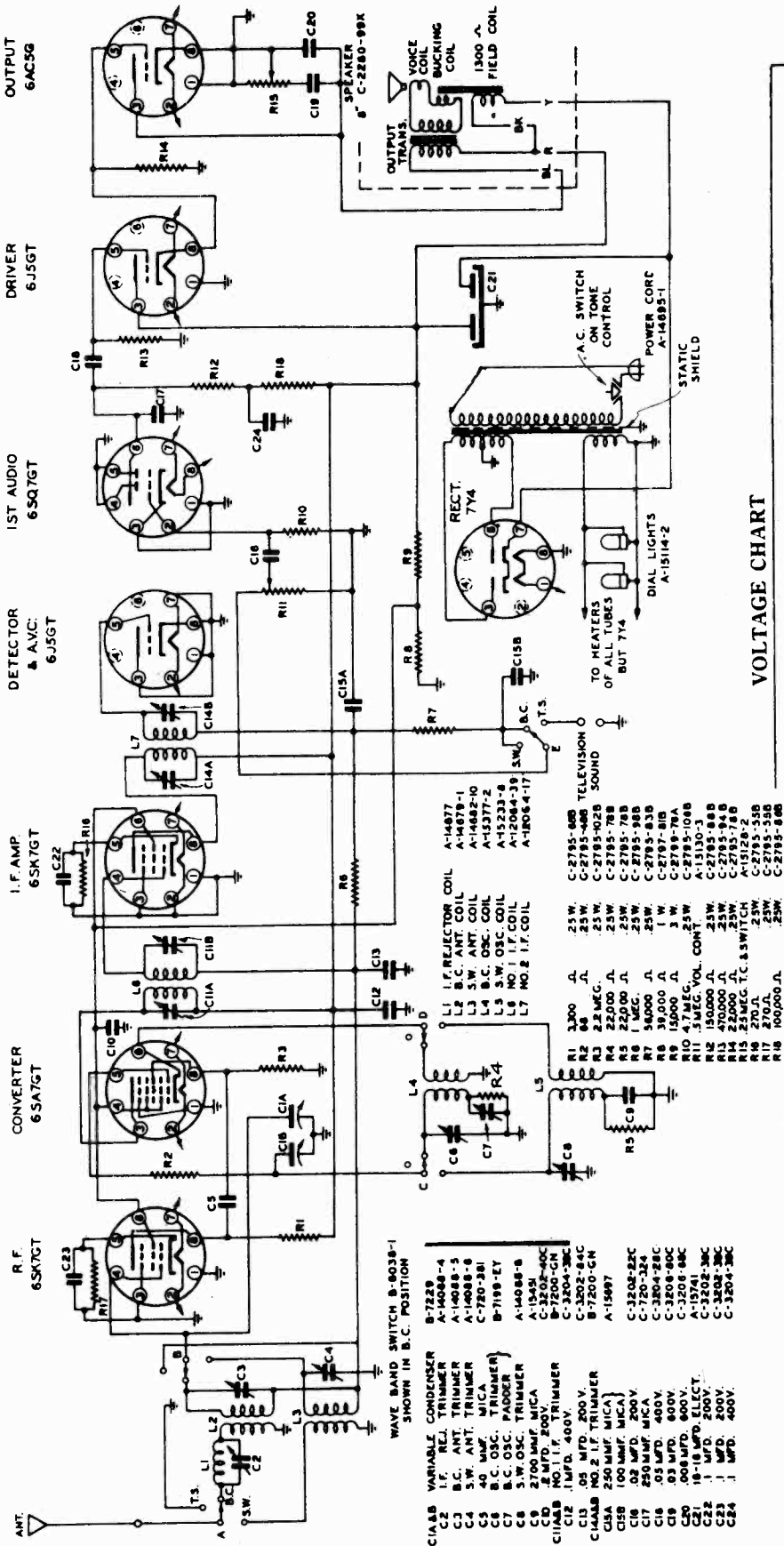
The receiver volume control should be turned to maximum during the I F and all subsequent alignments, to keep the AVC from working and giving false readings. Keep the generator output as low as possible to prevent overloading.

**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 1720KC. Adjust the BC oscillator trimmer until the signal is tuned in. Next, remove the generator leads and connect them to the antenna lead of the loop antenna, through a 100 MMFD condenser. Set the generator to 1400KC 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 600KC and turn the tuning condenser until the signal is tuned in. Rock the tuning control back and forth slowly until a maximum reading is noted on the output meter. It is advisable to return to the 1700KC adjustment and recheck that setting to make sure it has not changed while padding at 600KC.

**SW or Short Wave Alignment:** Set the generator at 18.3MC. Turn the receiver band switch to short wave position. Turn the tuning condenser to complete minimum capacity. The generator leads should be connected to the antenna lead of the loop through a 400 Ohm resistor. Adjust the S. W. oscillator trimmer slowly until the 18.3MC signal is tuned in. At this point, it will be well to make sure that the fundamental signal is tuned in. Turn up the generator output and tune the receiver to approximately 17.3MC. At this point, the 18.3MC 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 SW oscillator trimmer. Remember the image must always be heard (at 2 times the IF frequency in KC) lower in frequency than the fundamental signal. After the oscillator has been properly set, tune the signal generator to 16MC and rotate the tuning control until the signal is tuned in. Adjust the SW 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 6MC 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 6MC.



SPIEGEL



VOLTAGE CHART

Position of Volume control: Full with Antenna disconnected  
Position of Band Switch: Broadcast

Voltage of socket prongs to Gnd. (Prong no's. on Schematic)		No 1	No 2	No 3	No 4	No 5	No 6	No 7	No 8
6SK7GT	R-f Amplifier	0	0	0	**	1.6	76	6.2*	237
6SA7GT	Oscillator-Converter	0	0	245	76	0	**	6.2*	0
6SK7GT	I-f Amplifier	0	0	0	**	1.6	76	6.2*	245
6J5GT	Detector-AVC	0	0	0	0	**	155	6.2*	0
6SQ7GT	1st Audio Amplifier	0	**	0	0	0	60	6.2*	0
6J5GT	Audio Driver	0	0	255	77	0	0	6.2*	11
6AC5G	Power Amplifier	0	0	240	0	11	0	6.2*	0
7Y4	Rectifier ***	0	0	300*	0	0	300*	0	0

August 1, 1940

MODEL 831

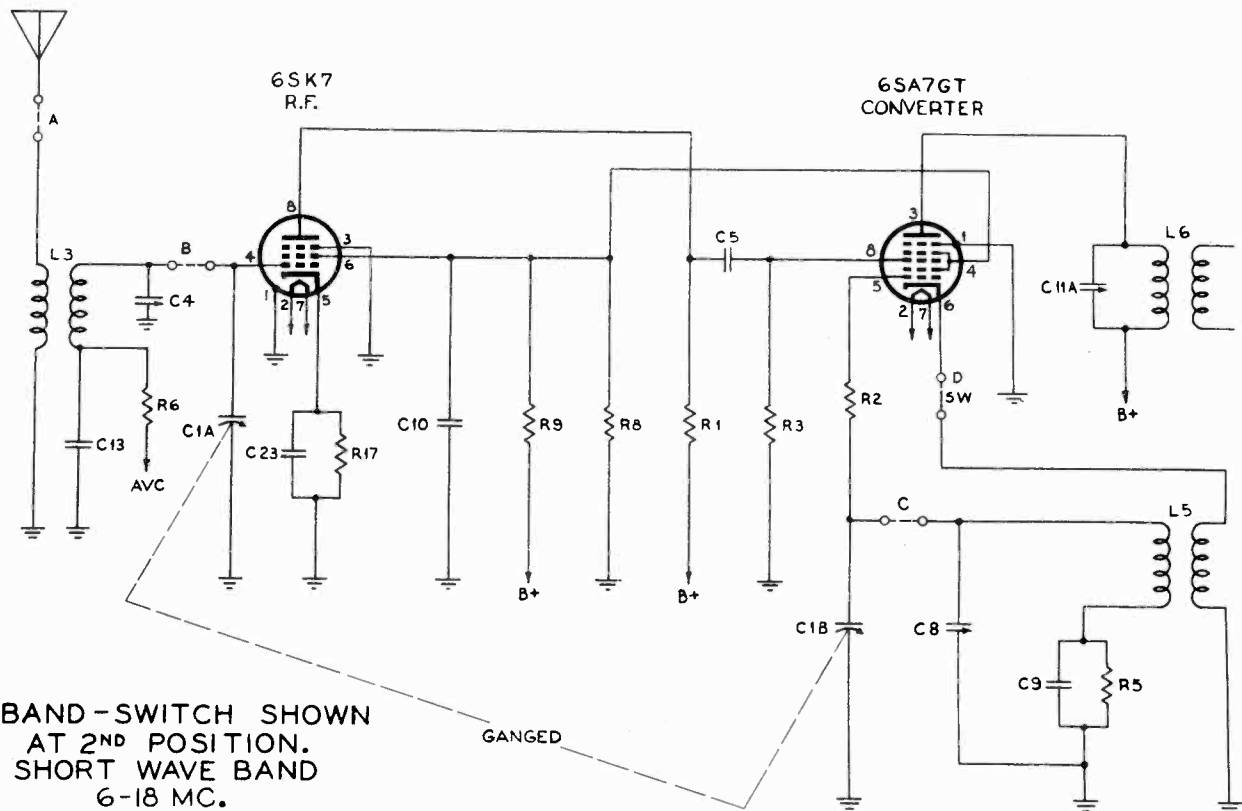
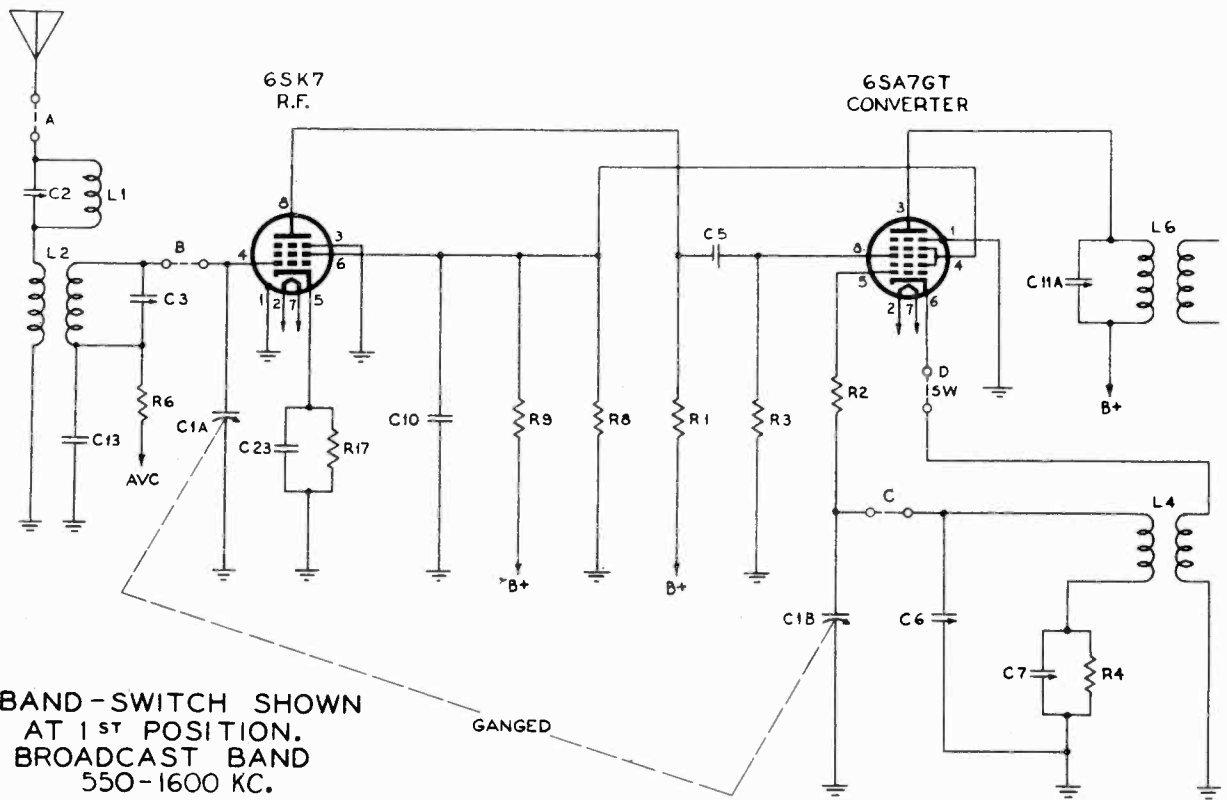
INTERMEDIATE FREQUENCY 456 K.C. Tube

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

Line voltage: 117 volts

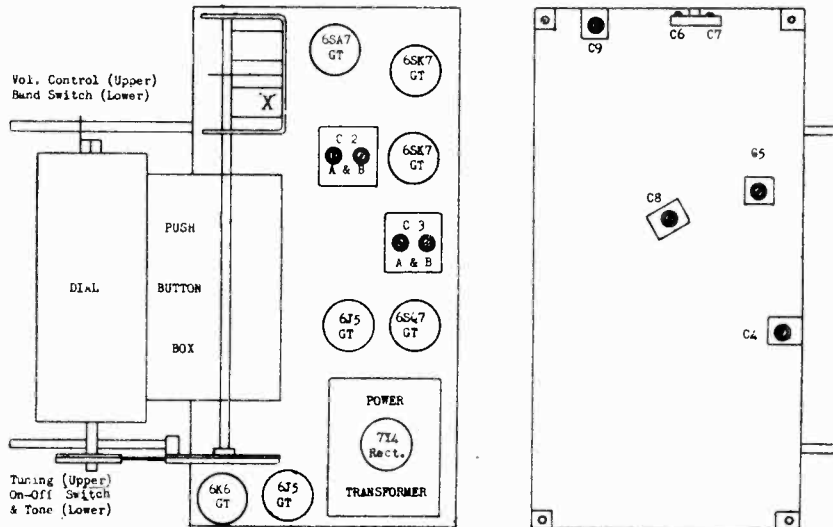
Tube	Function
6SK7GT	R-f Amplifier
6SA7GT	Oscillator-Converter
6SK7GT	I-f Amplifier
6J5GT	Detector-AVC
6SQ7GT	1st Audio Amplifier
6J5GT	Audio Driver
6AC5G	Power Amplifier
7Y4	Rectifier ***

\* AC volts  
\*\* Cannot be measured with 1000 ohms/volt voltmeter.  
\*\*\* Tube removed from socket to enable test prods to reach socket prongs.



MODEL 831

SPIEGEL



TOP VIEW OF CHASSIS

BOTTOM VIEW OF CHASSIS

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial drum so that last mark on BC scale is directly toward front of set when condenser plates are fully meshed.)							
2	I.F.	*	.1 mf.	456 KC	BC	Open	C3 A&B	2nd I-F
3	Rejector	Ant.	200 mf.	456 KC	BC	Closed	C2 A&B	1st I-F
4	Broad-cast Band	Ant.	200 mf.	1500 KC	BC	1500 KC	C4	Adjust to minimum
5				600 KC	BC	600 KC	C6 Osc. C5 Ant. C7 Pad.	
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
8	Shortwave Band	Ant.	*	18 MC	SW	18 MC	C9 Osc. C8 Ant.	Rock dial while adjusting for maximum output
9	(Check calibration and sensitivity at 6 MC and 18 MC)							
10	(Check operations 1 to 9 inclusive)							

Notes: \*Connect to point "X" on Variable Condenser. See drawing below.  
 \*\*100 ohm and 200 mf. in series

ADJUSTING THE PUSH-BUTTON TUNER

1. Select six favorite nearby broadcast stations and detach the corresponding call letter tabs from the station call letter tab sheets.
2. Any tab may be used for any button, but it is usually more convenient for the operator if the tabs are arranged in sequence so that the tab for the lowest frequency station (station having lowest number of kilocycles [K. C.]) will be at the low frequency end of the dial.
3. Using a small screwdriver or other tool that will fit the screw in the end of the button, push the button in as far as it will go and turn to the right or left until the dial pointer has moved to the desired station frequency. Be sure the button is pushed all the way in and the station is tuned in accurately.
4. Repeat the procedure in Paragraph 3 for each of the remaining five buttons.
5. Check all buttons by pushing them in, one at a time, to determine whether desired stations are tuned properly.
6. Insert the proper tab in each button by pressing it in position.
7. Any of the six stations to which the push-button tuner has been adjusted may now be received simply by pushing the button for the desired station.

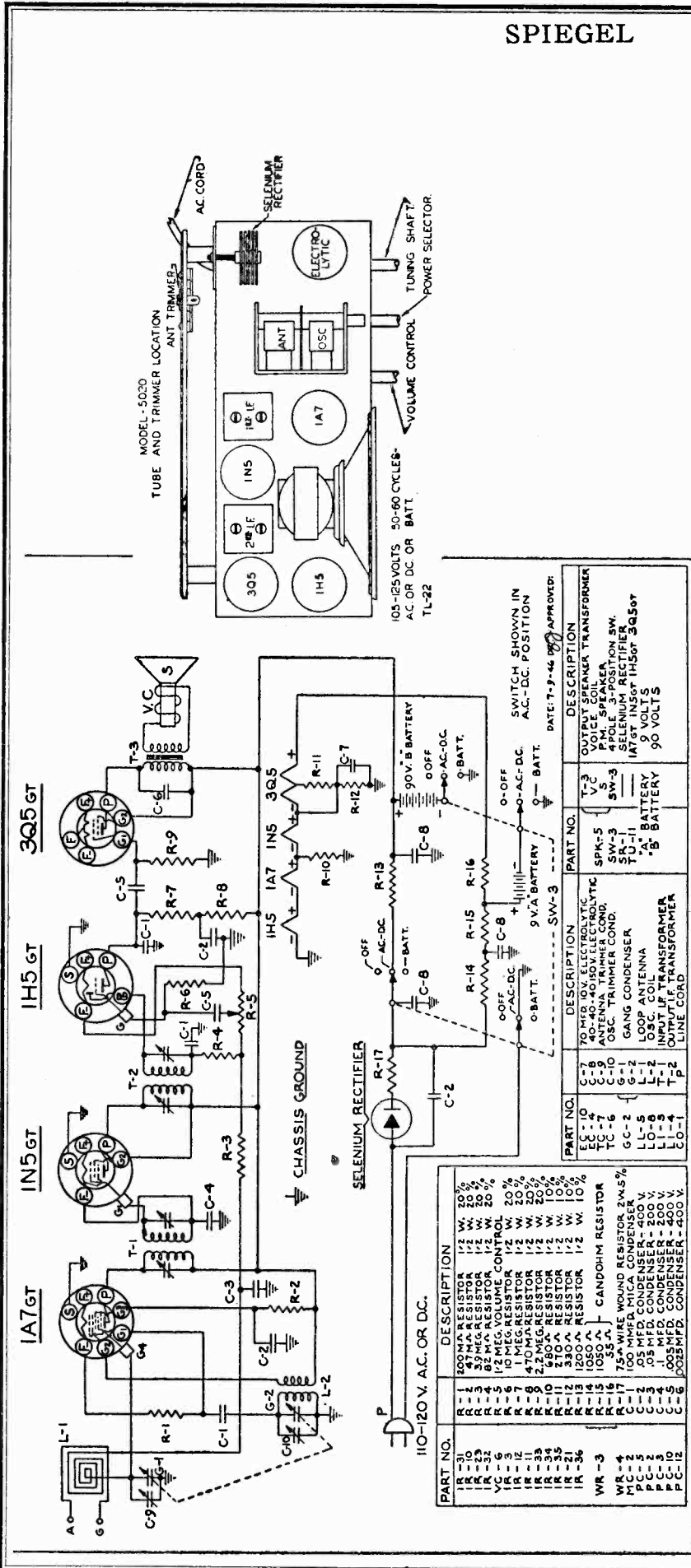
The tuning range of each band is as follows.

Position of Band Selector Switch	Dial Scale	Meters	or	Kilocycles	or	Megacycles
"B" Broadcast	Right hand .....	545 to 187		550 to 1600		.55 to 1.6
"S" Short-Wave	Left hand.....	50 to 16.6		6000 to 18000		6. to 18

"T" (Use pin jacks at back of chassis for phono or television sound.)

SPIEGEL

MODEL 5020



**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.

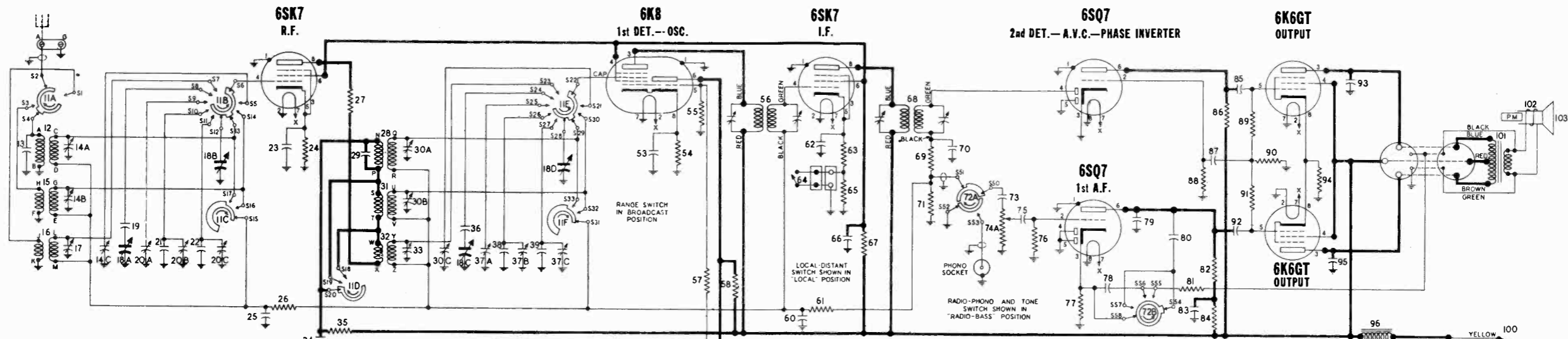
**ALIGNMENT AND SERVICE DATA**

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.

3

3

3

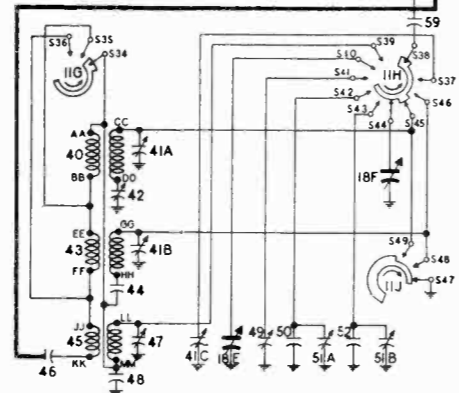


SOCKET VOLTAGES

Measured with voltmeter having sensitivity of 1000 ohms per volt except where indicated by (\*). The (\*) symbol designates a vacuum tube voltmeter measurement.

BE SURE THAT SWITCH ON POWER TRANSFORMER IS SET TO POSITION WHICH MOST NEARLY MATCHES LINE VOLTAGE

RADIO-PHONO AND TONE SWITCH IN "RADIO-BASS" POSITION  
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC  
BAND SWITCH IN BROADCAST POSITION



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.

I. F. 455 KC.

STAGE GAIN MEASUREMENT PROCEDURE

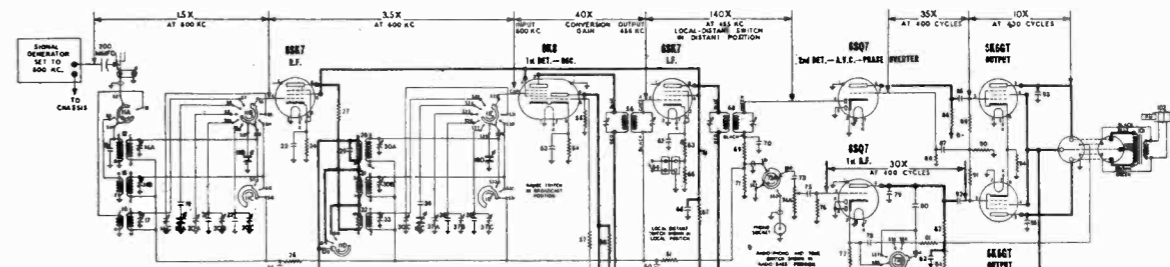
REQUIRED INSTRUMENTS: The amount of amplification or "gain" of each of the stages of this receiver may be measured with an A.C. Vacuum Tube Voltmeter or a "channel" type instrument containing a tuned and calibrated amplifier.

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 the

black lead of the 1st I.F. transformer and connect the positive battery lead to the receiver chassis.

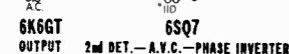
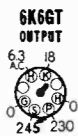
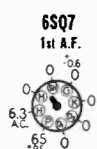
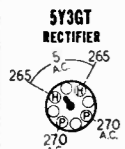
4. Set Signal Generator for operation at 600 Kc with 400 cycle modulation and carefully tune radio receiver to this signal by using an output meter to indicate peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. R.F. and I.F. circuits are slightly 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.

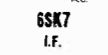
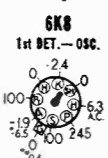
BOTTOM VIEW OF CHASSIS

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS. VOLTAGE OF POWER SUPPLY USED FOR THESE MEASUREMENTS MUST MATCH VOLTAGE SETTING ON SELECTOR SWITCH OF POWER TRANSFORMER IN THE RECEIVER



REAR OF CHASSIS

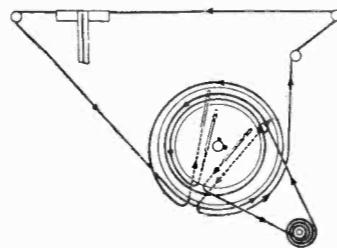
NOTE A: The voltage at the cathode or suppressor terminals of this tube is 13 volts when Local-Distant switch is in "Local" position and 2.4 volts when switch is set to "Distant" position.

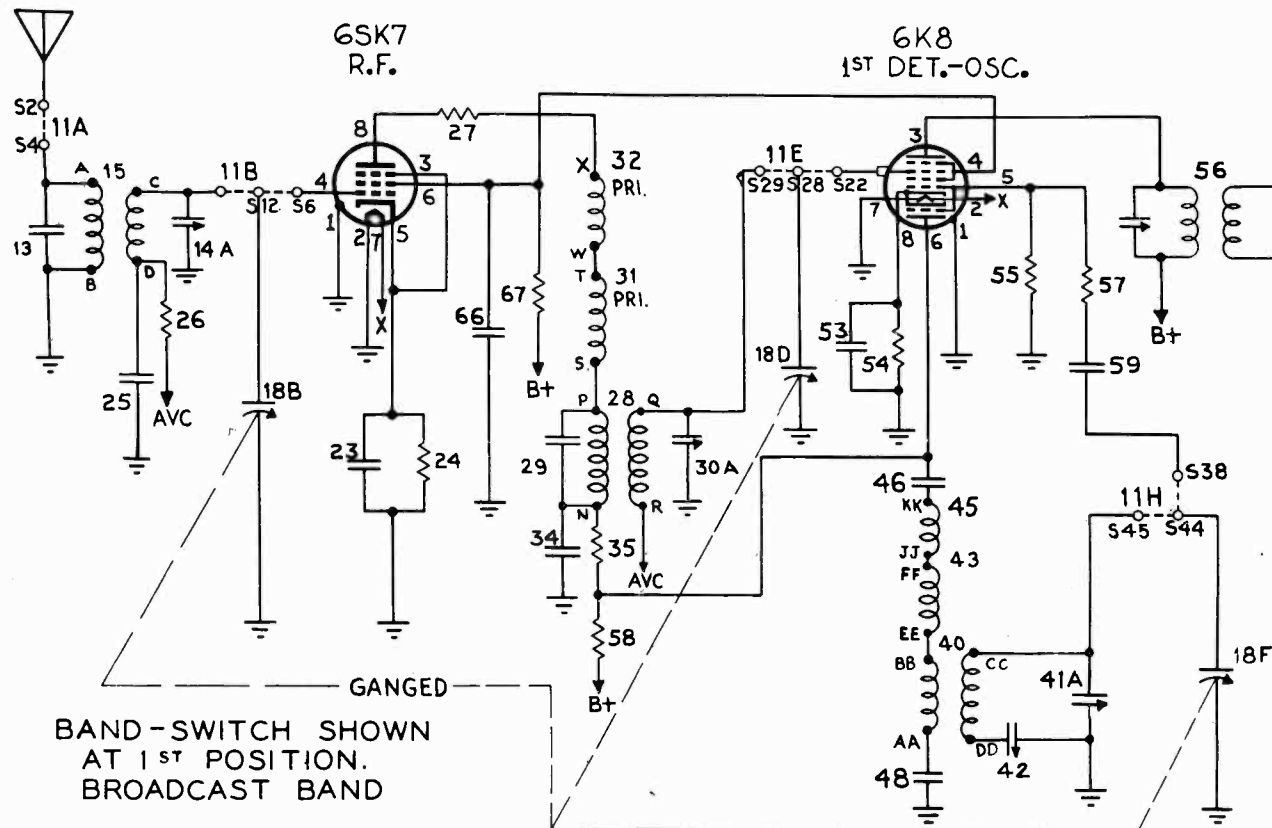


DIAL AND POINTER DRIVE CORD ARRANGEMENT

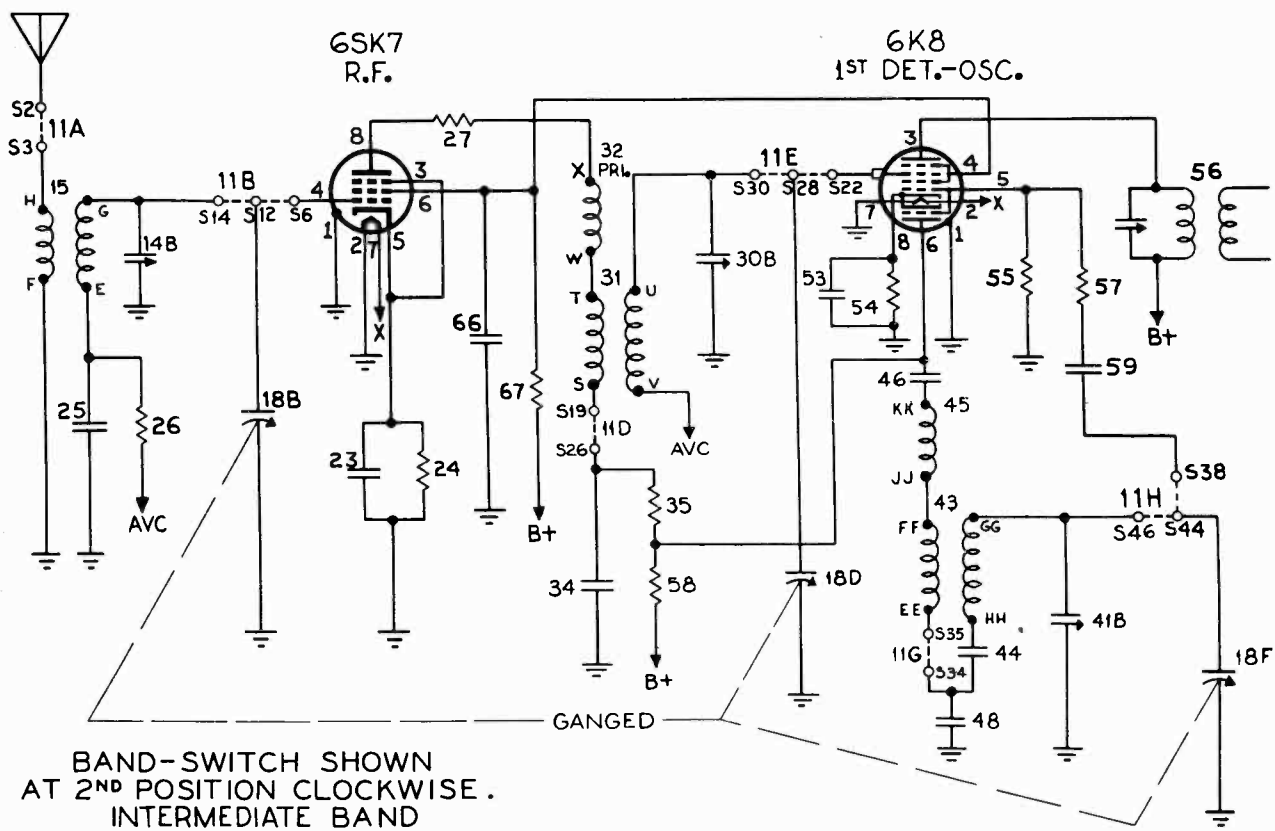
To string dial cord, set gang condenser to fully meshed position and use following parts:

- 113177 Tension Spring
- 114955 Clip on end of cord
- 119087 Ring
- 502773 Cord (8 feet)
- 4 1/2 ft. for pointer drive
- 3 1/2 ft. for tuning drive

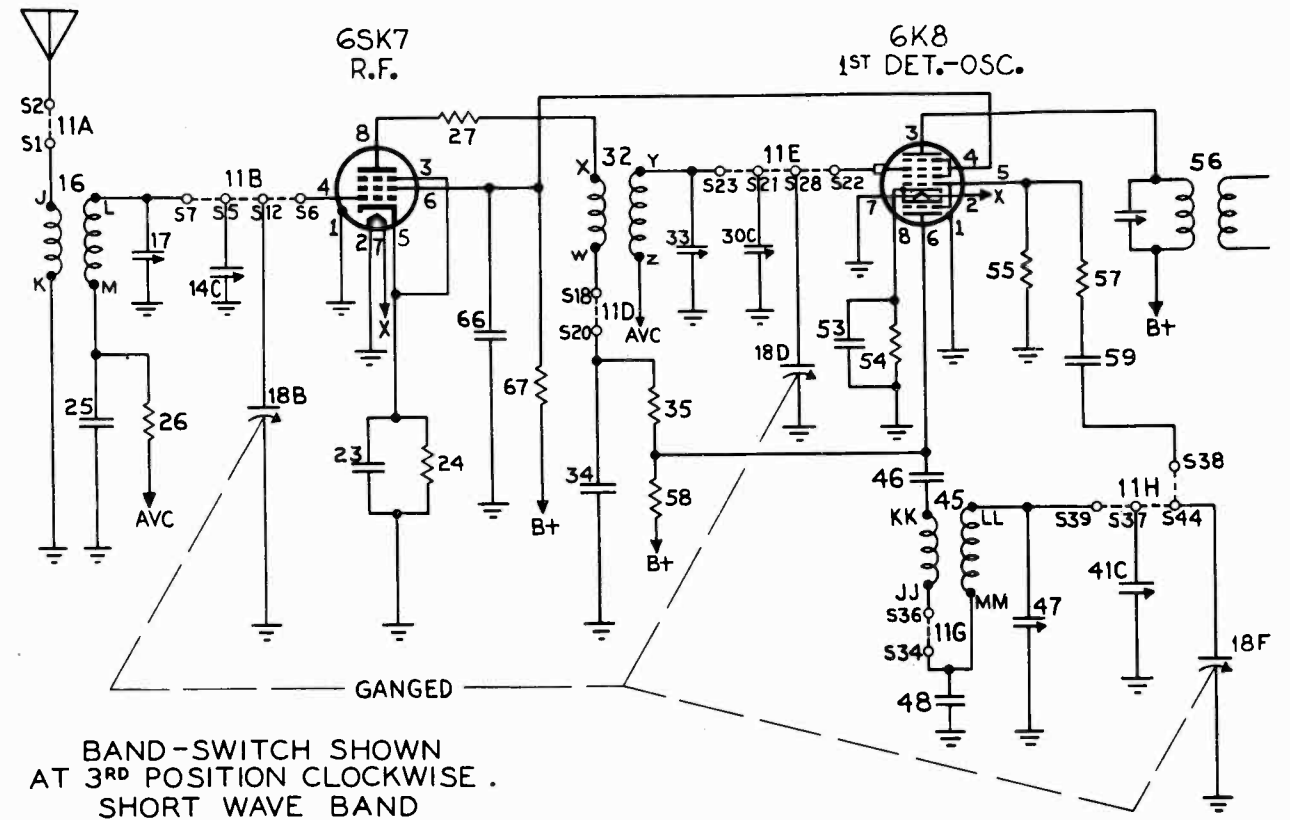




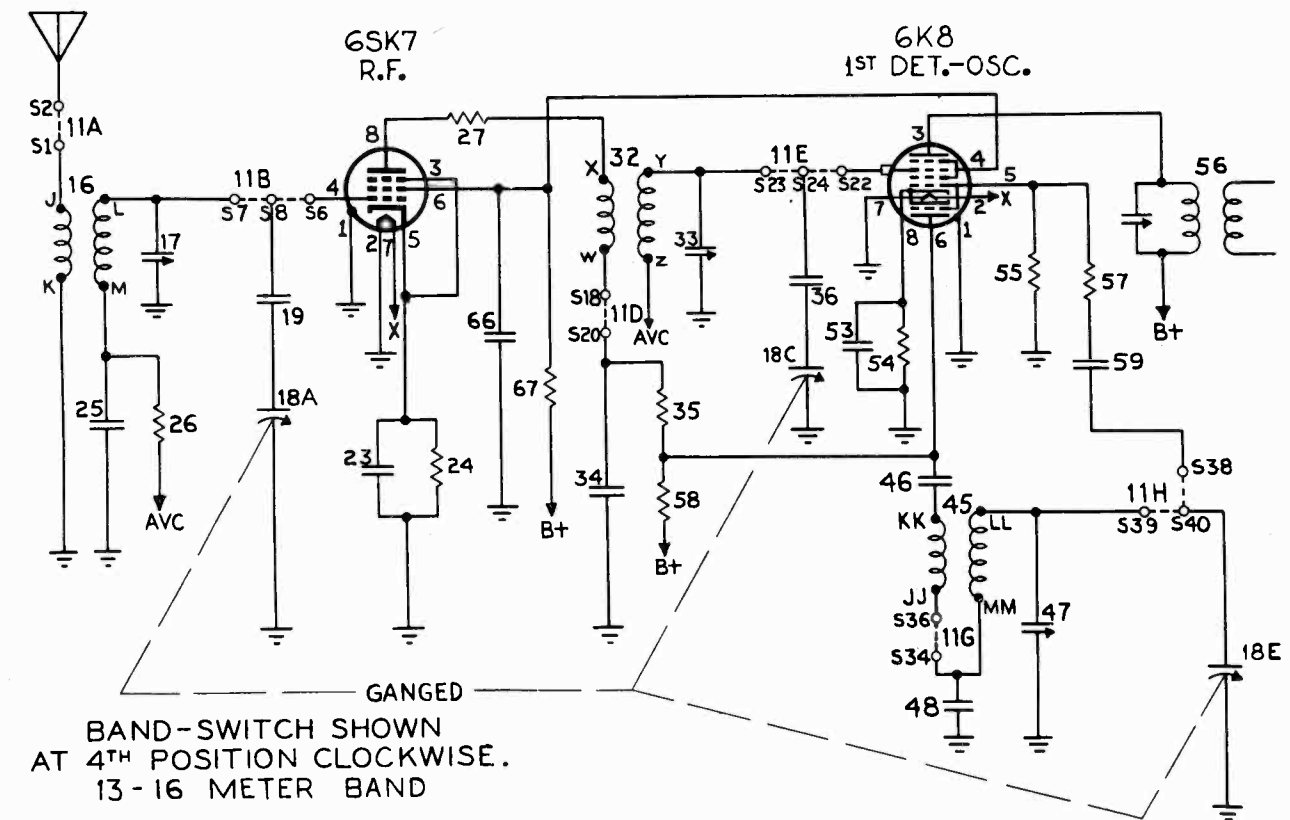
BAND-SWITCH SHOWN AT 1<sup>ST</sup> POSITION. BROADCAST BAND



BAND-SWITCH SHOWN AT 2<sup>ND</sup> POSITION CLOCKWISE. INTERMEDIATE BAND

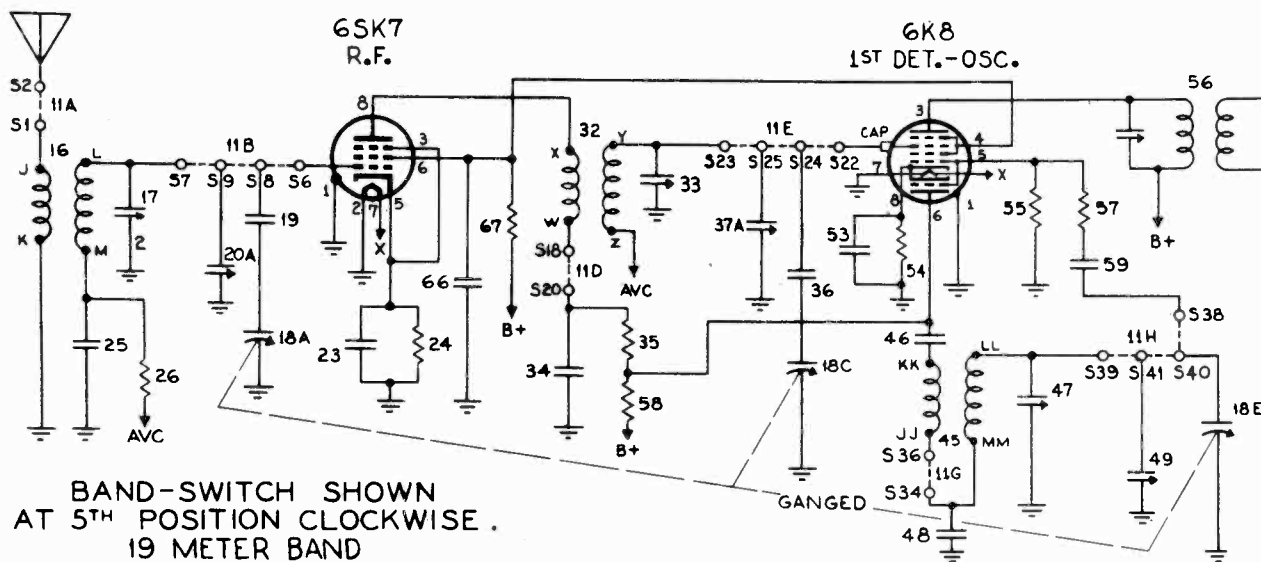


BAND-SWITCH SHOWN AT 3<sup>RD</sup> POSITION CLOCKWISE. SHORT WAVE BAND

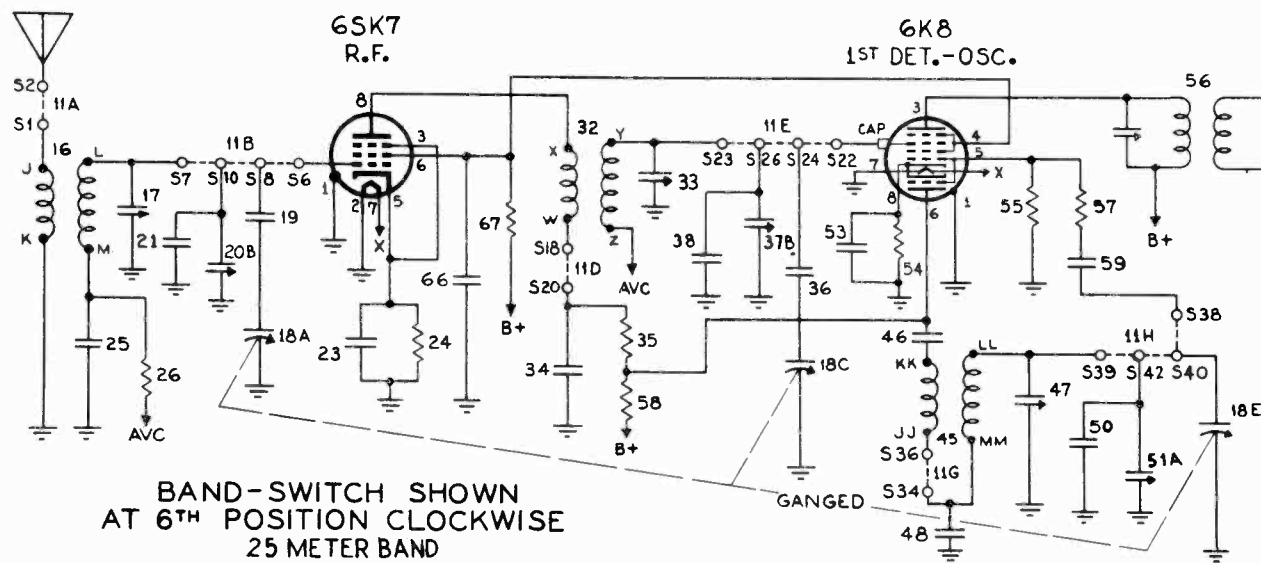


BAND-SWITCH SHOWN AT 4<sup>TH</sup> POSITION CLOCKWISE. 13-16 METER BAND

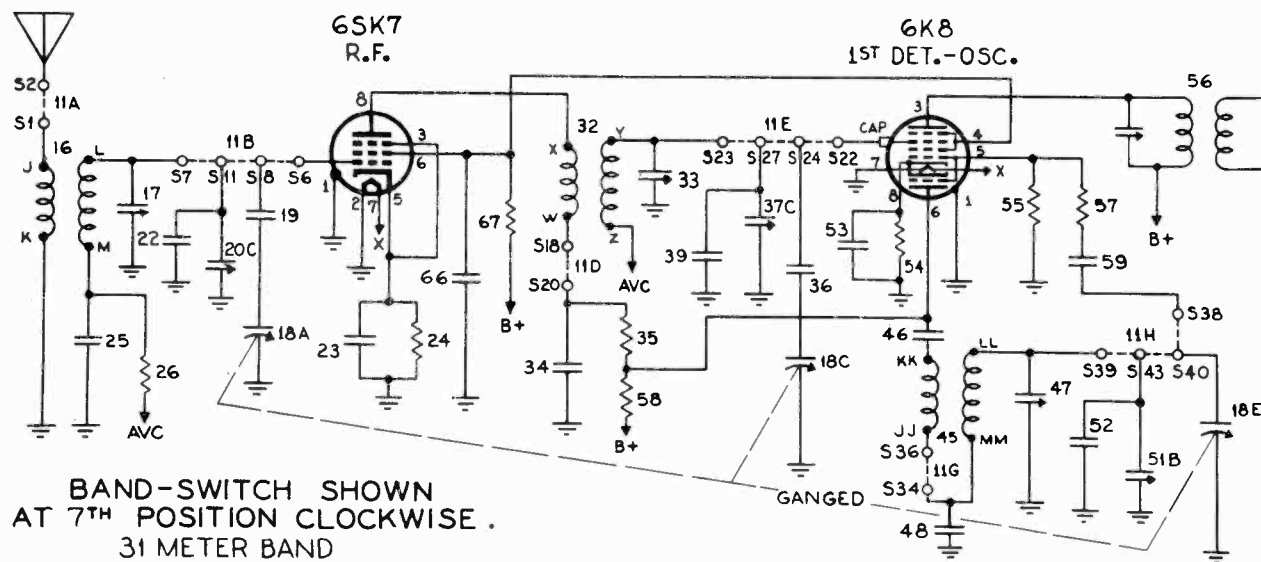




BAND-SWITCH SHOWN AT 5<sup>TH</sup> POSITION CLOCKWISE. 19 METER BAND



BAND-SWITCH SHOWN AT 6<sup>TH</sup> POSITION CLOCKWISE 25 METER BAND



BAND-SWITCH SHOWN AT 7<sup>TH</sup> POSITION CLOCKWISE. 31 METER BAND

**ALIGNMENT PROCEDURE**

1. When gang condenser is fully meshed, dial pointer should be in the position indicated by the last division below 550 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
2. Connect on output meter across the speaker voice coil or from the plate of the 6K6GT tube to chassis through a 0.1 Mfd. condenser.
3. Connect the ground lead of the signal generator to the receiver chassis.
4. Set volume control to maximum volume position and use a weak signal from the signal generator.
5. Set Radio-Phono and Tone switch to "Radio-Bass" position.
6. Set Local-Distant switch to "Distant" position.

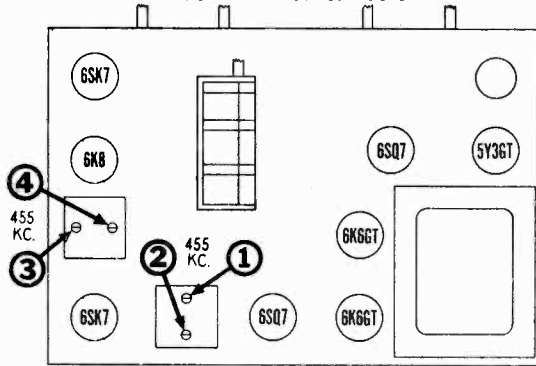
**IMPORTANT:** Align this receiver in exactly the order shown below. The 13-16 Meter band must be aligned before any of the other short wave bands.

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
200 MMFD. Mica Condenser	Cap of 8K8	455 KC	Broadcast (*Position 1)	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	"A" terminal at rear of chassis.	1500 KC	Broadcast (*Position 1)	1500 Kc.	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	"A" terminal at rear of chassis.	1500 KC	Broadcast (*Position 1)	Tune to 1500 Kc. generator signal.	6	Broadcast Antenna	Adjust for maximum output.
					7	Broadcast R.F.	
200 MMFD. Mica Condenser	"A" terminal at rear of chassis.	600 KC	Broadcast (*Position 1)	Tune to 600 Kc. generator signal.	8	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	"A" terminal at rear of chassis.	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	"A" terminal at rear of chassis.	5.5 MC	Intermediate (*Position 2)	5.5 Mc.	9	Intermediate Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 4.6 MC. If image does not appear, realign at 5.5 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	5.5 MC	Intermediate (*Position 2)	Tune to 5.5 Mc. generator signal.	10	Intermediate Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
					11	Intermediate R.F.	
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	20 MC	13-16 Meter (*Position 4)	20 Mc.	12	13-16 Meter Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 19.1 MC. If image does not appear, realign at 20 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	20 MC	13-16 Meter (*Position 4)	Tune to 20 Mc. generator signal.	13	13-16 Meter Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
					14	13-16 Meter R.F.	
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	16 MC	19 Meter (*Position 5)	16 Mc.	15	19 Meter Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 15.1 MC. If image does not appear, realign at 16 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	16 MC	19 Meter (*Position 5)	Tune to 16 Mc. generator signal.	16	19 Meter Antenna	Adjust for maximum output.
					17	19 Meter R.F.	
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	12 MC	25 Meter (*Position 6)	12 Mc.	18	25 Meter 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.

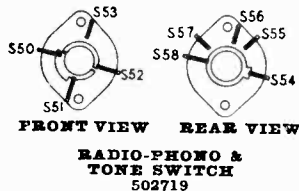
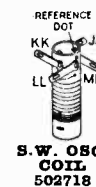
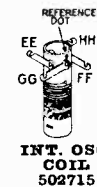
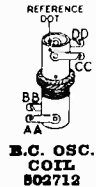
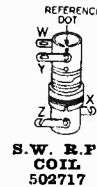
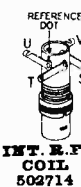
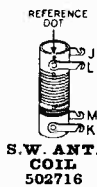
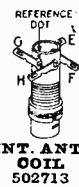
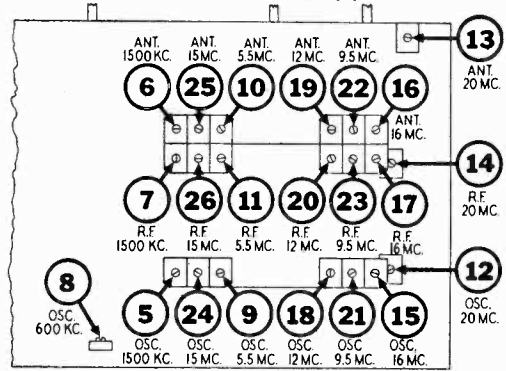
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	12 MC	25 Meter (*Position 6)	Tune to 12 Mc. generator signal.	19	25 Meter Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
					20	25 Meter R.F.	
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	9.5 MC	31 Meter (*Position 7)	9.5 Mc.	21	31 Meter 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.
					22	31 Meter Antenna	
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	9.5 MC	31 Meter (*Position 7)	Tune to 9.5 Mc. generator signal.	23	31 Meter R.F.	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
					24	S.W. Oscillator	
400 OHM Carbon Resistor	"A" terminal at rear of chassis.	15 MC	S.W. (*Position 3)	15 Mc.	25	S.W. Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
					26	S.W. R.F.	

\* Position 1 corresponds to extreme counter-clockwise setting of band switch. Succeeding positions are numbered in ascending order as switch is rotated clockwise.

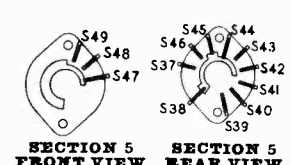
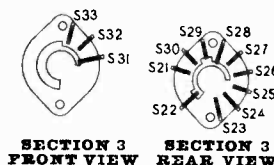
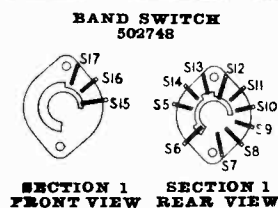
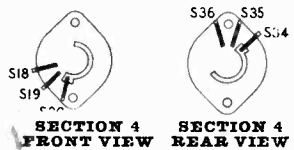
TOP VIEW OF CHASSIS



BOTTOM VIEW OF CHASSIS



\*No connection



MODEL 9010-A  
MODEL 9013-A

# PARTS LIST

ORDER PARTS FROM YOUR STEWART-WARNER DISTRIBUTOR ONLY

DIA-GRAM NO.	PART NO.	MODEL 9010-A DESCRIPTION	LIST PRICE
<b>CONDENSERS</b>			
13	502787	Condenser—mica 100 Mmfd. 500 volt	\$0.24
14A, B, C	502753	Condenser—trimmer assembly A—1.6 to 18 Mmfd. B—1.6 to 18 Mmfd. C—3 to 35 Mmfd.	1.25
17	502758	Condenser—trimmer; 1.6 to 18 Mmfd.	.35
18A to E	502748	Condenser—variable gang	9.00
19	502778	Condenser—ceramic 200 Mmfd. 500 volt	.40
20A, B, C	502754	Condenser—trimmer assembly A—3 to 35 Mmfd. B—3 to 35 Mmfd. C—1.6 to 18 Mmfd.	1.25
21	502779	Condenser—ceramic 56 Mmfd. 500 volt	.45
22	502788	Condenser—mica 130 Mmfd. 500 Volt	.45
23	502806	Condenser—.05 Mfd. 200 volt	.36
25	502806	Condenser—.05 Mfd. 200 volt	.36
29	502787	Condenser—mica 100 Mmfd. 500 volt	.24
30A, B, C	502753	Condenser—trimmer assembly A—1.6 to 18 Mmfd. B—1.6 to 18 Mmfd. C—3 to 35 Mmfd.	1.25
33	502758	Condenser—trimmer; 1.6 to 18 Mmfd.	.35
34	502807	Condenser—.05 Mfd. 400 volt	.37
36	502778	Condenser—ceramic 200 Mmfd. 500 volt	.40
37A, B, C	502754	Condenser—trimmer assembly A—3 to 35 Mmfd. B—3 to 35 Mmfd. C—1.6 to 18 Mmfd.	1.25
38	502779	Condenser—ceramic 56 Mmfd. 500 volt	.45
39	502788	Condenser—mica 130 Mmfd. 500 volt	.45
41A, B, C	502753	Condenser—trimmer assembly A—1.6 to 18 Mmfd. B—1.6 to 18 Mmfd. C—3 to 35 Mmfd.	1.25
42	502922	Condenser—trimmer; 300 to 600 Mmfd.	.85
44	502791	Condenser—mica 1600 Mmfd. 500 volt	.80
46	502792	Condenser—mica 4000 Mmfd. 500 volt	.80
47	502756	Condenser—trimmer; 2 to 6 Mmfd.	.60
48	502793	Condenser—mica 5600 Mmfd. 500 volt	1.15
49	502757	Condenser—trimmer; 6.5 to 35 Mmfd.	.60
50	502167	Condenser—ceramic 68 Mmfd. 500 volt	.40
51A, B	502755	Condenser—trimmer assembly A—3 to 35 Mmfd. B—1.6 to 18 Mmfd.	.90
52	502789	Condenser—mica 160 Mmfd. 500 volt	.45
53	502806	Condenser—.05 Mfd. 200 volt	.36
59	502790	Condenser—mica 200 Mmfd. 500 volt	.24
60	502806	Condenser—.05 Mfd. 200 volt	.36
62	502806	Condenser—.05 Mfd. 200 volt	.36
66	502807	Condenser—.05 Mfd. 400 volt	.37
70	502787	Condenser—mica 100 Mmfd. 500 volt	.24
73	502802	Condenser—.004 Mfd. 600 volt	.30
77	502808	Condenser—.004 Mfd. 600 volt	.30
78	502808	Condenser—.004 Mfd. 600 volt	.30
79	502787	Condenser—mica 100 Mmfd. 500 volt	.24
80	502803	Condenser—.006 Mfd. 600 volt	.30
83	502809	Condenser—.25 Mfd. 400 volt	.36
85	502805	Condenser—.02 Mfd. 400 volt	.36
87	502804	Condenser—.01 Mfd. 400 volt	.36
92	502805	Condenser—.02 Mfd. 400 volt	.36
93	502802	Condenser—.004 Mfd. 600 volt	.30
95	502802	Condenser—.004 Mfd. 600 volt	.30
97A, B	502720	Condenser—electrolytic A—15 Mfd. 400 volt B—20 Mfd. 400 volt	2.10
<b>RESISTORS</b>			
24	502125	Resistor—carbon 220 ohms 1/4 watt	.12
26	502134	Resistor—carbon 470,000 ohms 1/4 watt	.12
27	502478	Resistor—carbon 1000 ohms 1/4 watt	.12
35	502795	Resistor—carbon 4700 ohms 1/2 watt	.12
54	502125	Resistor—carbon 220 ohms 1/4 watt	.12
55	502131	Resistor—carbon 47,000 ohms 1/4 watt	.12
57	502794	Resistor—carbon 68 ohms 1/4 watt	.12
58	502801	Resistor—carbon 39,000 ohms 1/2 watt	.12
61	502135	Resistor—carbon 2.2 Meg. 1/4 watt	.12
62	502125	Resistor—carbon 220 ohms 1/4 watt	.12
65	502796	Resistor—carbon 8200 ohms 1/4 watt	.12
67	502981	Resistor—carbon 15,000 ohms 2 watt	.25
69	502131	Resistor—carbon 47,000 ohms 1/4 watt	.12
71	502134	Resistor—carbon 470,000 ohms 1/4 watt	.12
74A, B	502750	Volume control—with switch; 2 meg.	1.50
76	502136	Resistor—carbon 10 meg. 1/4 watt	.12
77	502794	Resistor—carbon 68 ohms 1/4 watt	.12
81	502126	Resistor—carbon 470 ohms 1/4 watt	.12
82	502133	Resistor—carbon 220,000 ohms 1/4 watt	.12
84	502132	Resistor—carbon 100,000 ohms 1/4 watt	.12
86	502133	Resistor—carbon 220,000 ohms 1/4 watt	.12
88	502136	Resistor—carbon 10 meg. 1/4 watt	.12
89	502133	Resistor—carbon 220,000 ohms 1/4 watt	.12
90, 91	502133	Resistor—carbon 220,000 ohms 1/4 watt	.12
94	502813	Resistor—wire wound 300 ohms 2 watt	.25
<b>COILS AND TRANSFORMERS</b>			
12	502710	Coil—BC antenna	2.10
15	502713	Coil—Int. antenna	1.40
16	502716	Coil—S.W. antenna	1.40

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

DIA-GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
28	502711	Coil—BC. R.F.	2.30
31	502714	Coil—Int. R.F.	1.50
32	502717	Coil—S.W. R.F.	1.40
40	502712	Coil—BC oscillator	1.80
43	502715	Coil—Int. oscillator	1.80
45	502718	Coil—S.W. oscillator	1.70
56	502725	Transformer—1st I.F.	2.15
68	502726	Transformer—2nd I.F.	2.15
96	502751	Coil—filter choke	4.60
100	502774	Transformer—power	12.50
101	502776	Transformer—output for M-502775 spkr.	2.75
<b>OTHER ELECTRICAL PARTS</b>			
11A to J	502748	Switch—band	7.00
64	502916	Switch—local-disjant	.80
72A, B	502719	Switch—tone control	1.40
98, 99	110629	Lamp—dial (Mazda No. 44) 6.3V 0.25 Amps	.15
102	502775	Speaker—P.M. dynamic (8 inch)	12.50
103	502777	Cone & voice coil for M-502775 speaker	3.00
<b>MISCELLANEOUS</b>			
502724		Background for dial	.35
160026		Base for mtg. electrolytic condenser	.04
500420		Clamp for dial glass	.15
112745		Clip—coil mtg.	.01
114955		Clip—retainer on end of dial cord	.01
502773		Cord—dial drive (8 ft. required) Per ft.	.05
502921		Dial scale—glass	2.25
117029		Drum—for dial drive	.70
501458		Knob—tone or band switch	.16
501449		Knob—volume or tuning	.15
502762		Plug—for Local-Distant switch	.15
502772		Pointer	.50
81145		Retaining ring for tuning shaft	.01
119087		Ring for dial cord	.01
113463		Rubber pad for mtd. chassis	.03
116584		Rubber spacer for mtg. dial scale	.02
85827		Screw—No. 8-32 for dial drum	.02
112874		Screw—No. 10 x 1/8 for mtg. chassis	.03
504990		Shaft—tuning control	.12
502770		Socket—for dial lamp	.18
502761		Socket—for Local-Distant switch	.20
502769		Socket—for speaker	.30
114876		Socket—octal base	.15
160039		Socket—phono. plug	.08
113177		Spring—dial cord tension	.09
502767		Terminal strip—"A G"	.18
500487		Washer—felt for knobs	.01
111456		Washer—spring washer for tuning shaft	.005

## SOCKET VOLTAGES

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

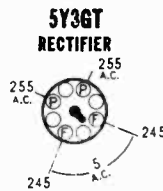
BE SURE THAT SWITCH ON POWER TRANSFORMER IS SET TO POSITION WHICH MOST NEARLY MATCHES LINE VOLTAGE  
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC.  
BAND SWITCH IN BROADCAST POSITION

MODEL 9013-A

BOTTOM VIEW OF CHASSIS

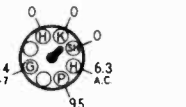
6SA7

1st DET.

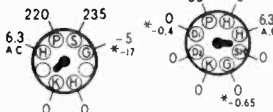


ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS.

6J5GT OSC.



6K6GT OUTPUT



6SQ7

2nd DET.—A.V.C.—A.F.

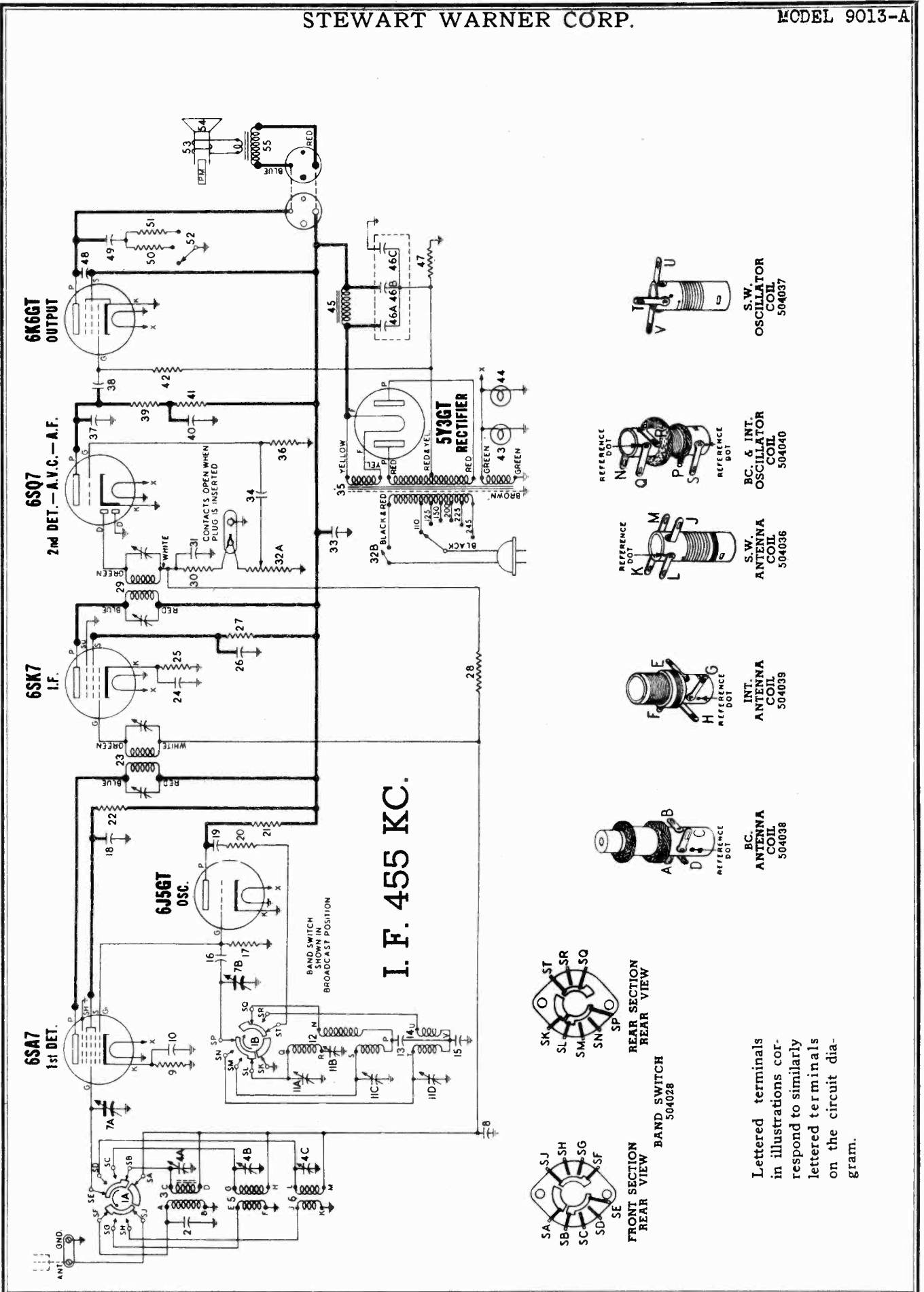
6SK7

H.F.

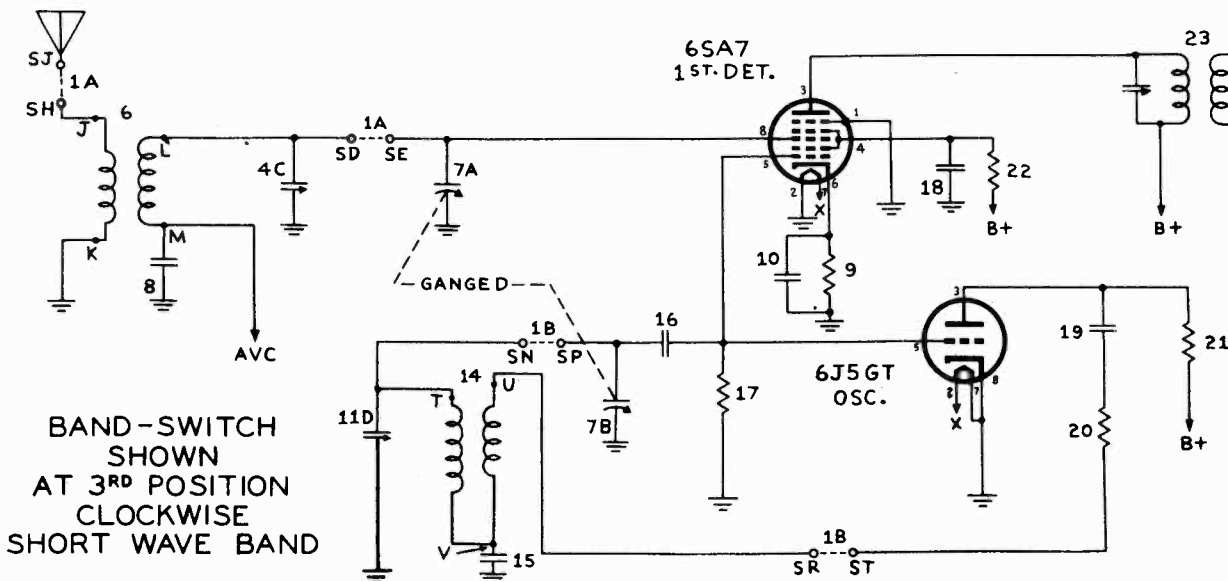
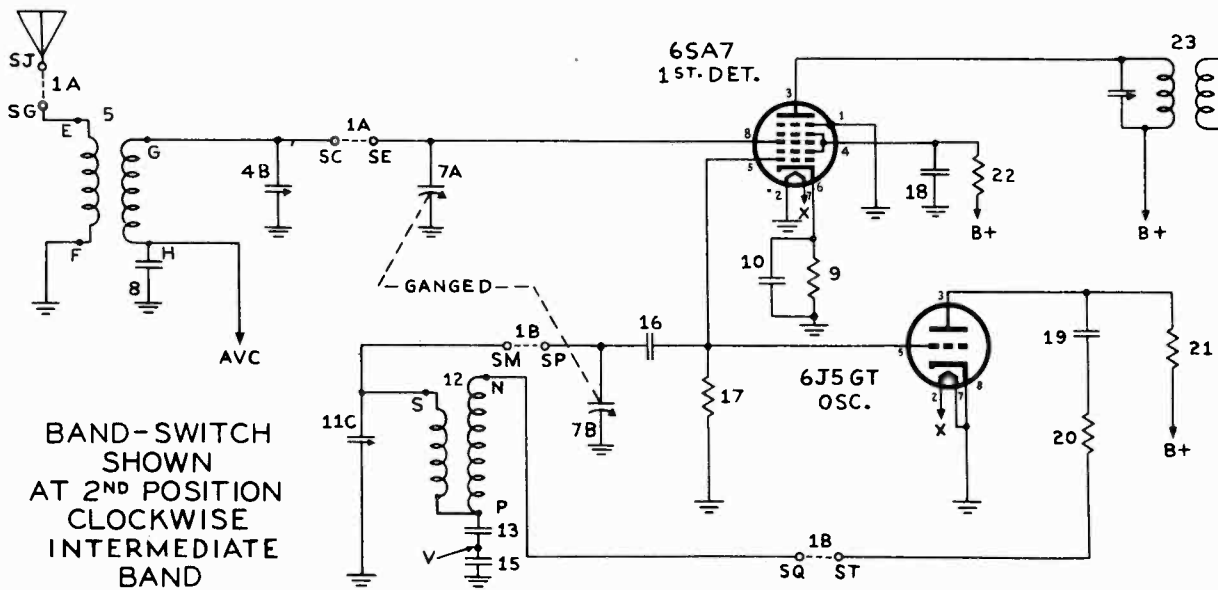
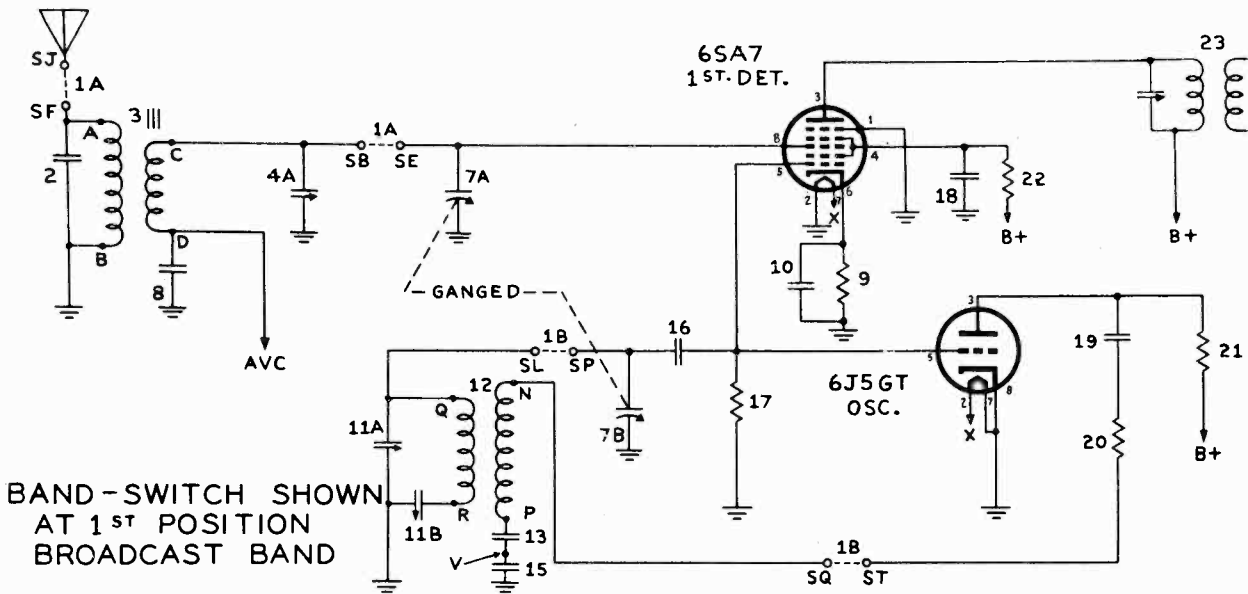
REAR OF CHASSIS

\*—Measured with vacuum tube voltmeter.

NOTE:—The 6K6GT grid bias of —17 volts can be measured across resistor No. 47



"clarified schematics"



**PARTS LIST** ORDER PARTS FROM YOUR STEWART-WARNER DISTRIBUTOR ONLY

DIA. GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE	DIA. GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
2	502931	Condenser-mica 100 Mmfd. 500 volt.	\$0.24	9	502125	Resistor-carbon 220 Ohms 1/4 watt	\$0.12
4A, B, C	504030	Condenser-trimmer assembly		17	502130	Resistor-carbon 22,000 Ohms 1/4 watt	.12
		A-1.6 to 18 Mmfd.		20	502794	Resistor-carbon 68 Ohms 1/4 watt	.12
		B-1.6 to 18 Mmfd.	.90	21	504047	Resistor-carbon 22,000 Ohms 1/2 watt	.12
		C-3 to 35 Mmfd.		22	502466	Resistor-carbon 33,000 Ohms 1 watt	.16
7A, B	504026	Condenser-variable gang	4.60	25	502125	Resistor-carbon 220 Ohms 1/4 watt	.12
8	502806	Condenser-.05 Mfd. 200 volt	.36	27	504048	Resistor-carbon 220 Ohms 1/4 watt	.12
10	502806	Condenser-.05 Mfd. 200 volt	.36	28	502135	Resistor-carbon 2.2 Meg. 1/4 watt	.12
11 {A,B}	504031	Condenser-trimmer assembly		30	502131	Resistor-carbon 47,000 Ohms 1/4 watt	.12
{C,D}		A-3 to 35 Mmfd.	1.40	32A	504029	Volume control 1 Meg. (with switch)	1.35
		B-300 to 600 Mmfd.		36	502136	Resistor-carbon 10 Meg. 1/4 watt	.12
		D-1.6 to 18 Mmfd.		39	502132	Resistor-carbon 220,000 Ohms 1/4 watt	.12
13	504049	Condenser-mica 4,300 Mmfd. 500 volt	1.30	41	502132	Resistor-carbon 100,000 Ohms 1/4 watt	.12
15	502929	Condenser-mica 4,300 Mmfd. 500 volt	1.30	42	502134	Resistor-carbon 470,000 Ohms 1/4 watt	.12
16	502807	Condenser-.05 Mfd. 400 volt	.36	47	502137	Resistor-wire wound 330 Ohms 2 watt	.25
18	502804	Condenser-.05 Mfd. 400 volt	.36	50	502291	Resistor-carbon 4,700 Ohms 1/4 watt	.12
19	502806	Condenser-.05 Mfd. 400 volt	.36	51	502141	Resistor-carbon 560 Ohms 1/4 watt	.12
24	502807	Condenser-.05 Mfd. 400 volt	.36				
26	502931	Condenser-mica 100 Mmfd. 500 volt	.24				
31	504220	Condenser-.004 Mfd. 400 volt	.24				
33	504051	Condenser-mica 200 Mmfd. 500 volt	1.50				
34	502790	Condenser-.02 Mfd. 400 volt	.36				
37	502805	Condenser-.02 Mfd. 400 volt	.36				
38	502807	Condenser-.05 Mfd. 400 volt	.36				
40	502807	Condenser-electrolytic					
46A, B, C	504033	Condenser A-20 Mfd. 400 volt	2.20				
		B-10 Mfd. 400 volt					
		C-20 Mfd. .25 volt					
48	504051	Condenser-.004 Mfd. 400 volt	.24				
49	504050	Condenser-.05 Mfd. 600 volt	.36				

DIA. GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
1A, B	504028	Switch-band	\$2.40
43, 44	110629	Label-4 (Maraca No. 44) 6.3V 0.25Amps.	.15
52	504027	Switch-tone	.85
53	504056	Speaker-P.M. dynamic (6 inch)	8.90
54	504764	Cone & voice coil for W-504056 spkr.	2.50

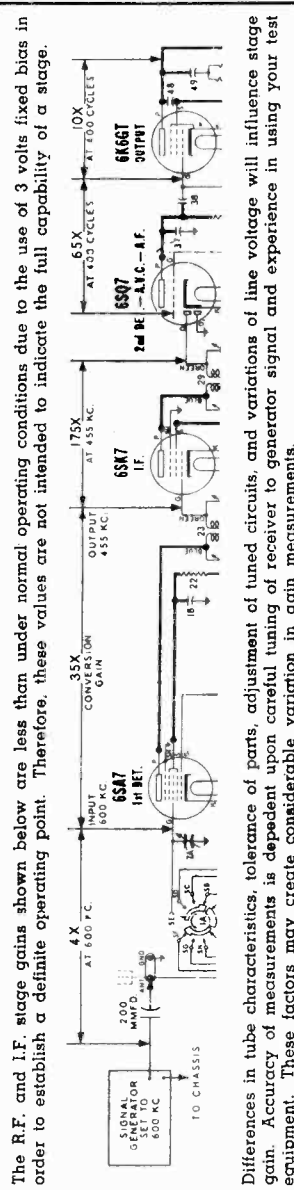
DIA. GRAM NO.	PART NO.	DESCRIPTION	LIST PRICE
504054		<b>OTHER ELECTRICAL PARTS</b>	
504034		Background for dial	\$0.10
112745		Base for mtg. electrolytic condenser	.08
502975		Clamp-dial glass	.01
504055		Clip-retainer on end of dial cord	.01
117029		Coil-dial drive (66 in. required) per ft.	.70
504108		Drum for dial drive	.25
501449		Plug-speaker	.15
501458		Knob-volume or tuning	.16
502601		Knob-tone or band switch	.18
81145		Retaining ring for tuning shaft	.01
119087		Ring for dial cord	.03
113463		Rubber pad-chassis mtg.	.02
16584		Rubber spacer for mtg. dial scale	.02
95827		Screw-.832 for dial drum	.02
112874		Screw-No. 10 x 1 1/2; chassis mtg.	.02
112818		Socket-tuning control	.18
160392		Socket-dial lamp with lead	.12
504035		Socket-speaker	.18
113177		Spring-dial cord tension	.09
502767		Terminal strip-"GND.ANT."	.18
504044		Terminal strip-Phone	.22
111456		Washer-spring washer for tuning shaft.	.01
500487		Washer-felt; for knobs.	.05

**APPROXIMATE STAGE GAIN DATA**

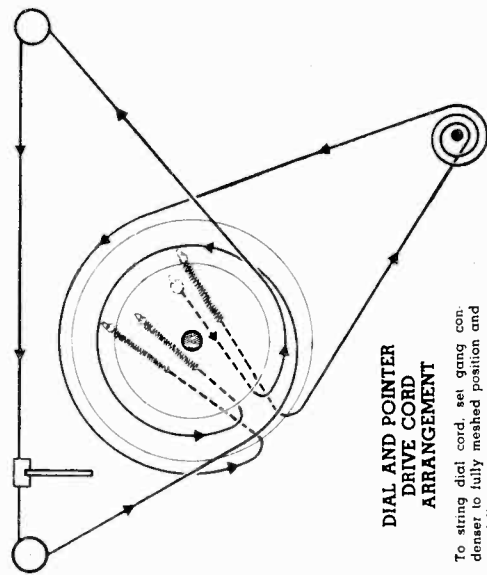
Be sure R.F. and I.F. stages are accurately aligned before measuring gain. R.F. gains can be measured with a "channel" type instrument containing a tuned and calibrated R.F. amplifier. A vacuum tube voltmeter may be used for audio gain measurements. Observe following precautions:

- For all gain measurements connect signal generator as shown. Use 600 KC. signal with 400 cycle modulation (use nearby frequency if local station interferes).
- For R.F. and I.F. measurements connect negative terminal of a 3 volt battery (two 1 1/2 volt cells in series) to A.V.C. lead at terminal D of BC. antenna coil (#3). Then connect positive battery terminal to chassis. This provides a definite operating point.
- Be sure radio is carefully tuned to generator signal (use weak frequency before making measurements).
- 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:

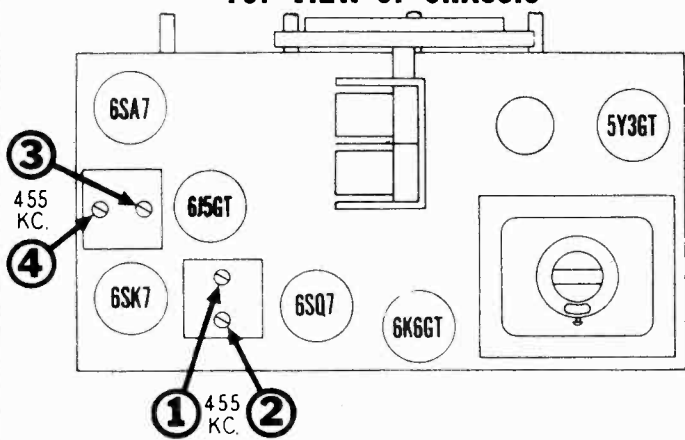
- 119177 Tension Spring
- 111455 Clip on end of cord
- 111807 Bush (66 inches)
- 502773 Cord (66 inches)
- 36 inches for pointer drive
- 30 inches for tuning drive

**ALIGNMENT PROCEDURE**

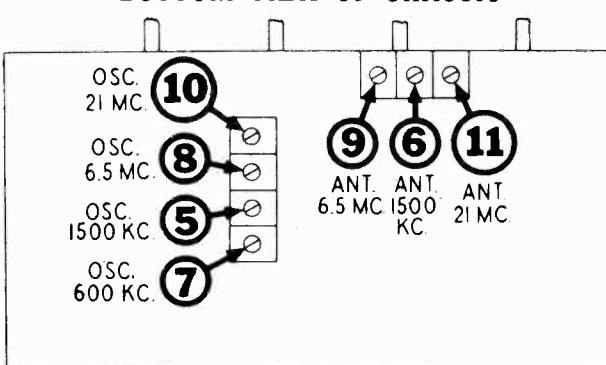
1. When gang condenser is fully meshed, dial pointer should be in the position indicated by the last division below 55 on the dial. If it is set incorrectly, release pointer clip on dial cord and reposition pointer.
2. Connect on output meter across the speaker voice coil or from the plate of the 6K6GT tube to chassis through a 0.1 Mfd. condenser.
3. Connect the ground lead of the signal generator to the receiver 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 SIGNAL GENERATOR TO	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
1 MFD. Condenser	Lug on front 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.	
200 MMFD. Mica Condenser	"ANT" terminal at rear of chassis.	1500 KC	Broadcast (counter-clockwise)	1500 Kc.	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	"ANT" terminal at rear of chassis.	1500 KC	Broadcast (counter-clockwise)	Tune to 1500 Kc. generator signal.	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	"ANT" terminal at rear of chassis.	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.
400 OHM Carbon Resistor	"ANT" terminal at rear of chassis.	6.5 MC	Intermediate (middle)	6.5 Mc.	8	Intermediate Oscillator	Adjust to bring in signal. Check to see if proper peak was obtained by tuning in image at approx. 5.6 Mc. If image does not appear, realign at 6.5 Mc. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"ANT" terminal at rear of chassis.	6.5 MC	Intermediate (middle)	Tune to 6.5 Mc. generator signal.	9	Intermediate 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	"ANT" terminal at rear of chassis.	21 MC	Short wave (clockwise)	21 Mc.	10	S.W. Oscillator	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 20.1 Mc. If image does not appear, realign at 21 Mc. with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	"ANT" terminal at rear of chassis.	21 MC	Short wave (clockwise)	Tune to 21 Mc. generator signal.	11	S.W. 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**

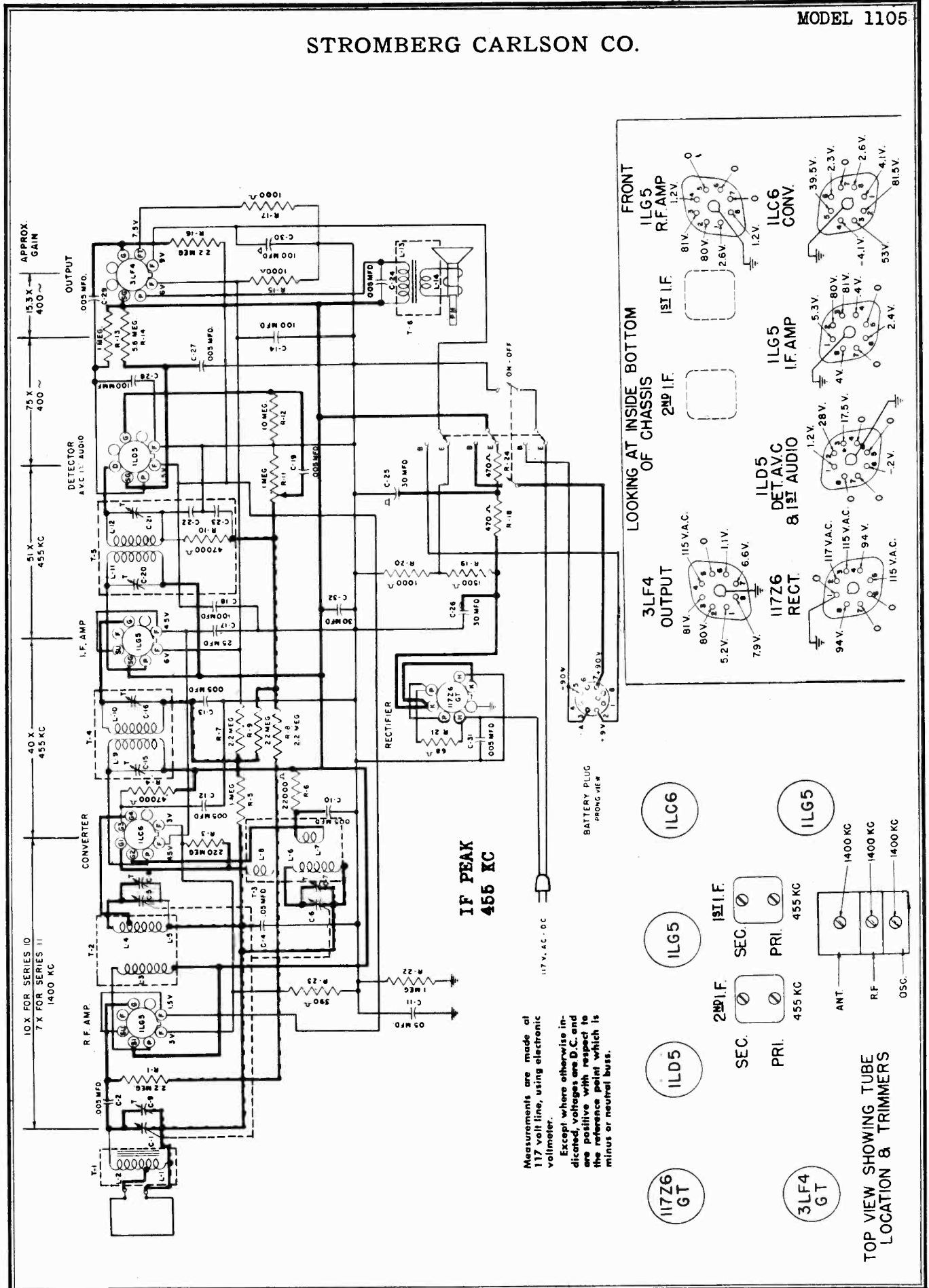


**BOTTOM VIEW OF CHASSIS**



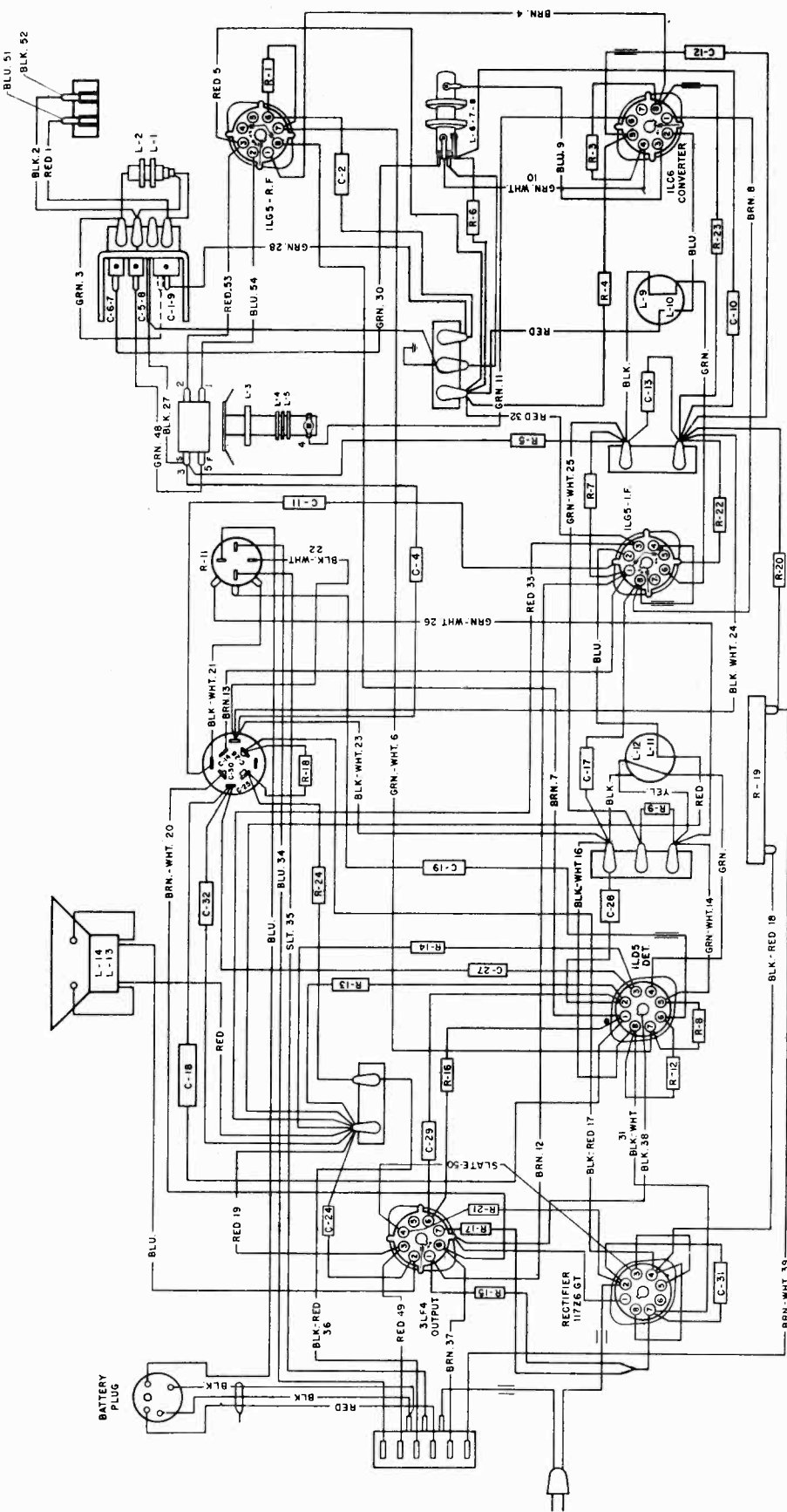


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MODEL 1105



WIRING DIAGRAM

LLH4 designation above it. On future production the screen dropping resistor and bypass capacitor R-14-(5.6 Meg.) and C-27 (.005 Mfd.) will be omitted from the chassis. These part numbers are 28200 and 2776Q.

In cases where microphonism is due to the 1LD5 tube, a 1LH4 should be employed. This change requires no rewiring or removal of chassis from cabinet. This is a direct substitute.

When this tube is replaced, the tube label on the back of the chassis should be changed by crossing out the 1LD5 which is indicated on the label and marking in the

Note on all 1105 Receivers:  
In some cases oscillation will be present over a major portion of the band. To cure this reverse antenna loop leads. The pin terminals have been coded red and black. Disregard coding.

This change replaces the pentode audio section of the 1LD5 with a triode audio section of the 1LH4. On all receivers bearing series

LLH4 designation above it. On future production the screen dropping resistor and bypass capacitor R-14-(5.6 Meg.) and C-27 (.005 Mfd.) will be omitted from the chassis. These part numbers are 28200 and 2776Q.

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**ALIGNING**

*Never realign unless absolutely necessary.*

Use a good signal generator modulated at 400 or 1000 cycles with variable output voltage. Use 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 volume control "full on".

Refer to Location Chart on page two for trimmer locations.

**Aligning Procedure** (follow this order exactly)

**Intermediate Frequency Adjustments**

The built-in loop should remain connected to the antenna and ground terminals. (or use a dummy loop).

1. Turn the tuning control to the extreme low frequency position (Variable capacitor plates all the way in).
2. Connect both signal generator leads to an 8 inch radiating loop (1 turn).

Place the radiating loop close to the antenna of the receiver. The antenna in the 1105 is built around the carrying case.

3. Introduce a modulated signal of 455 KC to the radiating 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

**Dial Pointer Adjustment**

Align the two arrow pointers, located at the extreme ends of the dial, horizontal with respect to the chassis base.

**Radio Frequency Adjustments**

The built-in antenna should remain connected to the antenna and ground terminals of the receiver.

1. Leave signal generator and radiating loop connected in same position as for I.F. Transformer.
2. Set signal generator and receiver tuning dial to 1400 kilocycles. Arrow on dial scale indicates 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 600 kilocycles and check calibration.

Note: If the calibration is off at 600 kilocycles, operations 2 and 3 may be repeated until the best results are obtained.

**IDENTIFICATION TABLE**

Model	Chassis	Cabinet	Speaker
1105	112009	108025	155013

**SPECIFICATIONS**

Voltage Rating ..... 105-125 Volts  
 Type of Circuit ..... Superheterodyne  
 Tuning Range ..... 540 Kc. to 1600 Kc.  
 Number and type of Tubes—6  
 1—1LG5 ..... R.F. Amplifier  
 1—11C6 ..... Converter  
 1—1LG5 ..... I.F. Amplifier  
 1—11D5 ..... Demodulator, A.V.C., 1st Audio  
 1—3LF4 ..... Power Output  
 1—11Z6GT ..... Rectifier  
 Input Power Rating ..... 25 Watts  
 Input Power Frequency ..... 25-60 Cycles AC-DC  
 Intermediate Frequency ..... 455 Kc.  
 Speaker Voice Coil Impedance at 400 Cycles 3.5 Ohms  
 Speaker ..... PM  
 Power Output ... 170 Milliwatts AC; 180 Milliwatts Batt.

**Resistors**

27407 R-6  
 28153 R-23  
 28154 R-18-24  
 28158 R-15-17  
 28177 R-4  
 28183 R-3  
 28191 R-5-13-22  
 28195 R-1-7-8-9-16  
 28200 R-14  
 28203 R-12  
 45529 R-20  
 114310 R-10  
 145007 R-11  
 149015 R-19  
 149206 R-21

**Capacitors**

27760 C-2-10-12-13-19-24-27-29-31  
 34800 C-28  
 40632 C-4-11  
 110001 C-1-9-5-8-6-7  
 110010 C-18  
 111008 C-14-25-26-30  
 100 mfd., 30 mfd., 30 mfd., 100 mfd. Electrolytic  
 111013 C-32  
 110421 C-17  
 .005 mf.  
 100 mfd.  
 .05 mf.  
 Variable Capacitor  
 100 mfd. Electrolytic

**Transformers, and Coils**

114001 T-2 (L-3-4-5) RF Coil  
 114023 T-1 (L-1-2) Antenna Coil  
 114024 T-3 (L-6-7-8) Oscillator Coil  
 114025 R.F. Coil used on Series 10  
 See Note Page 4  
 114309 T-4 (L-9-10-C-15-16) 1st I.F. Transformer  
 114310 T-5 (L-11-12-C-20-21-22-23-R-10) 2nd I.F. Transformer  
 155006 Speaker Cone Assembly  
 155011 Output Transformer  
 155013 T-6 (L-13-14) Speaker Assembly

**Miscellaneous**

30151 Socket, Tube 11Z6  
 33218 Cord, AC  
 34590 Socket, Tube (4)  
 109008 Cable Plug Assembly, Battery  
 116001 Contact Strip, Antenna  
 122010 Dial Scale  
 124002 Cord, Dial Drive  
 131001 Grommet, Variable Mounting  
 131003 Grommet, Tube Socket 11D5  
 144005 Indicator, Off-On  
 150011 Shaft, Dial Drive  
 151015 Shield, Tube  
 152008 Socket, Tube 11D5  
 156009 Spring, Indicator  
 158008 Switch, AC-Batt.  
 159011 Cord Tip, Antenna Red  
 159012 Cord Tip, Antenna Black  
 168004 Battery Pack

**Knobs and Cabinet Parts**

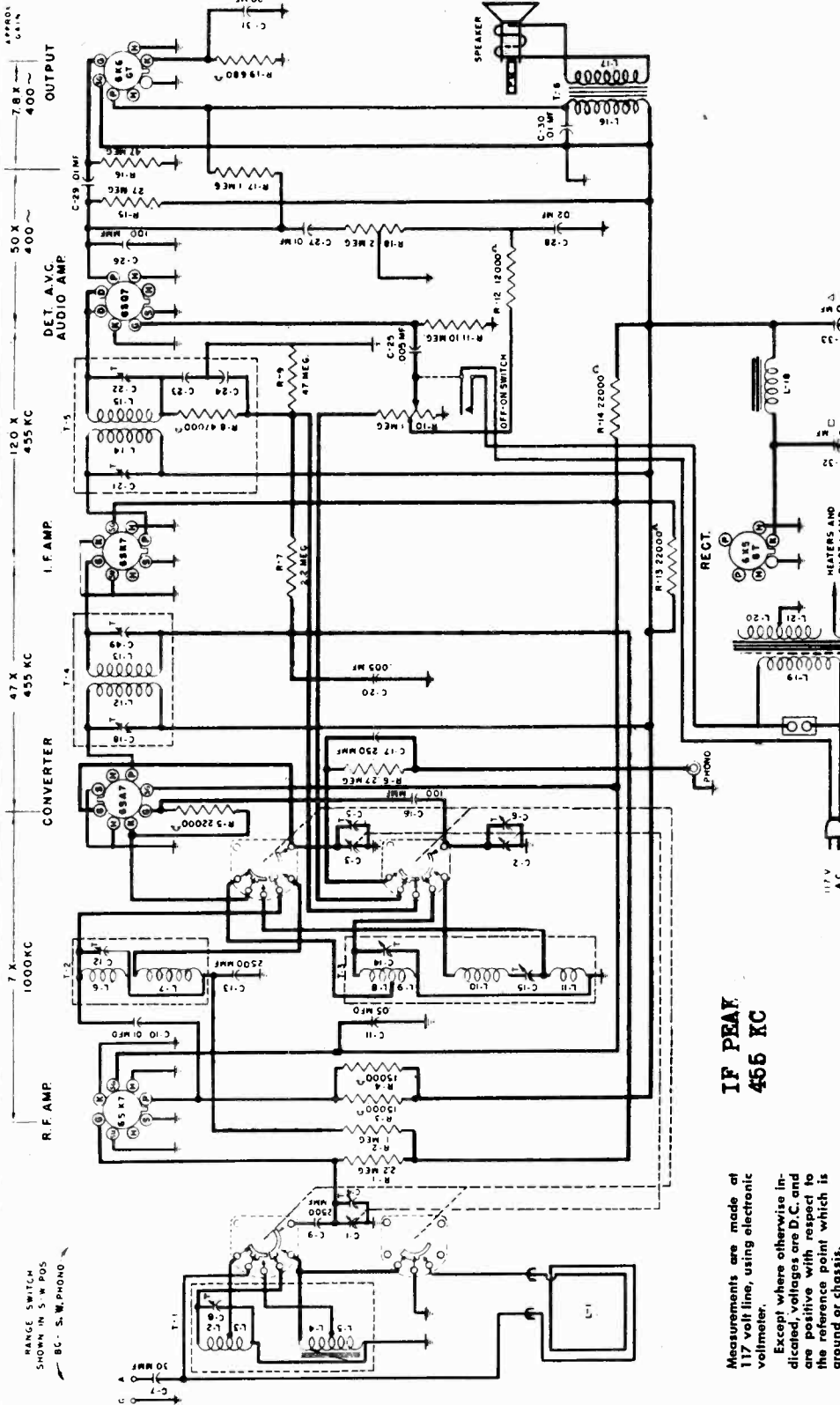
24135 Tips, Felt  
 130013 Grille  
 132041 Handle, Carrying  
 132042 Handle, Panel  
 134015 Knob (2)  
 138007 Lens, Dial

Series 10 employed R.F. Coil 114025. This has been superseded by coil No. 114001. Rewire to use 114001 as shown on Schematic and Wiring Diagram.

**NOTE—When ordering replacement parts always specify series number as well as model and part number. Series number is stamped on back of chassis.**

MODEL 1110

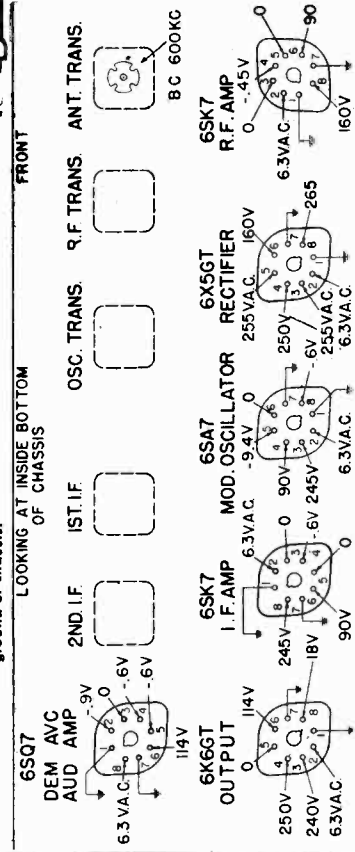
# STROMBERG CARLSON CO.



**IF PEAK  
455 KC**

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 ground or chassis.

LOOKING AT INSIDE BOTTOM OF CHASSIS



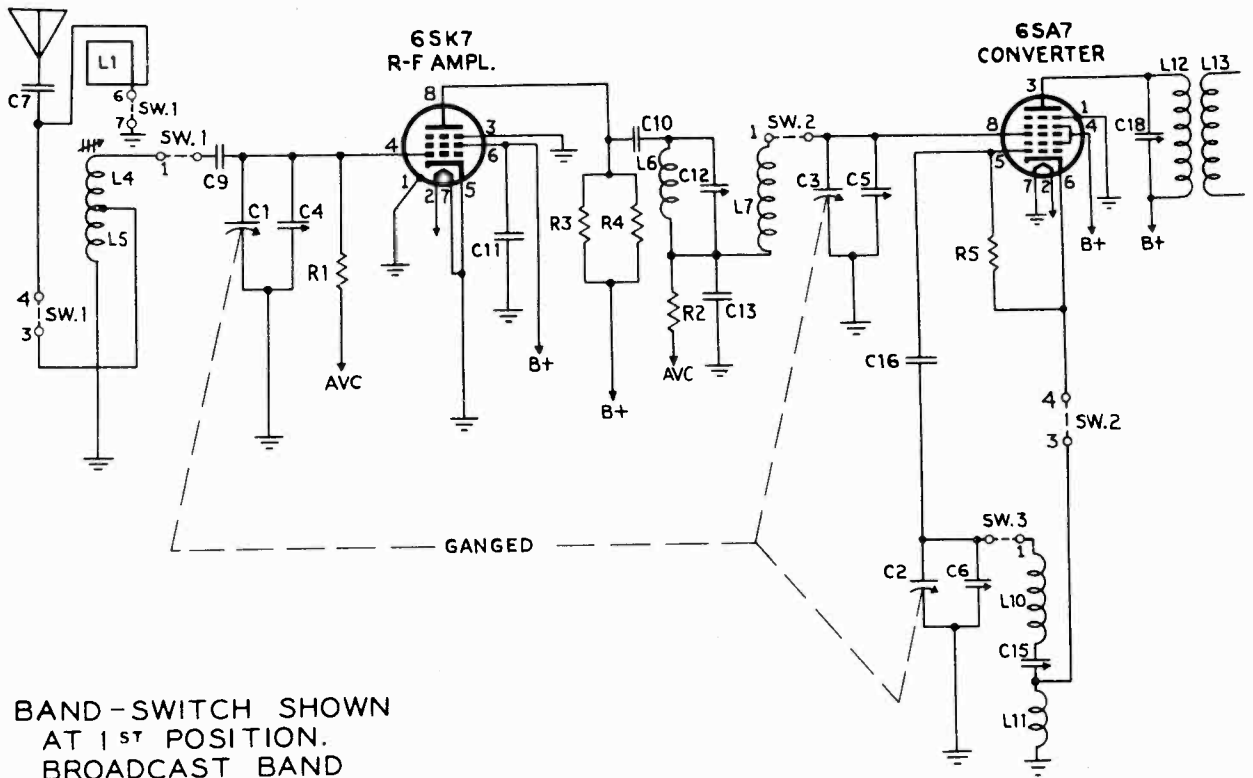
**Capacitors**

C-17	25376	22,000 Ohm
C-28	25484	12,000 Ohm
C-10-27-29-30	25485	.27 Meg.
C-20-C-25	27760	.47 Meg.
C-9-13	29559	1 Meg.
C-16-26	34800	2.2 Meg.
C-7	34889	10 Meg.
C-11	40632	Tone Control
C-1-2-3-4-5-6	110010	Volume Control, Off-On
C-31-32-33	111004	22,000 Ohm
		680 Ohm
		15,000 Ohm
		Variable Capacitor
		20-10-30 mfd. Electrolytic

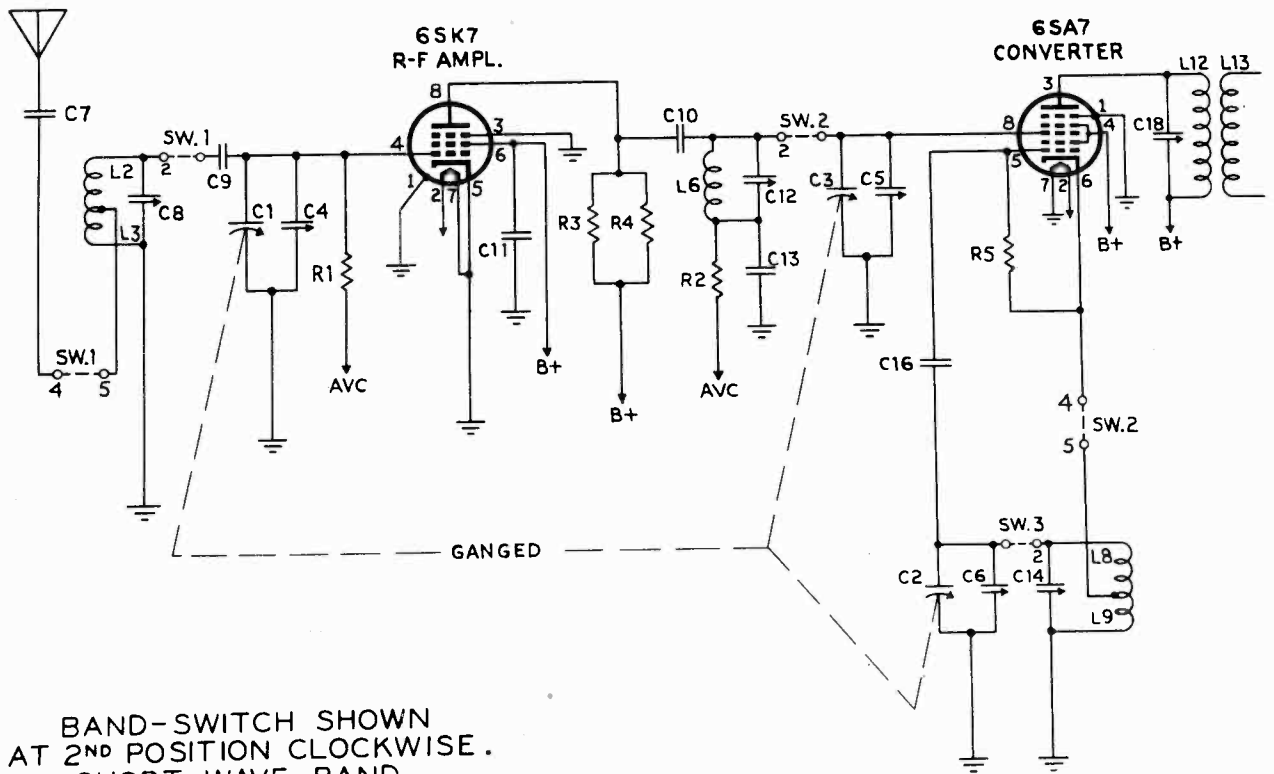
**Resistors**

R-5	27407
R-12	28171
R-6-15	28184
R-8-9-16	28187
R-2-17	28191
R-1-7	28195
R-11	28203
R-18	145004
R-10	145005
R-13-14	149011
R-19	149174
R-3-4	149186

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BAND-SWITCH SHOWN AT 1<sup>ST</sup> POSITION. BROADCAST BAND 540 - 1600 KC.

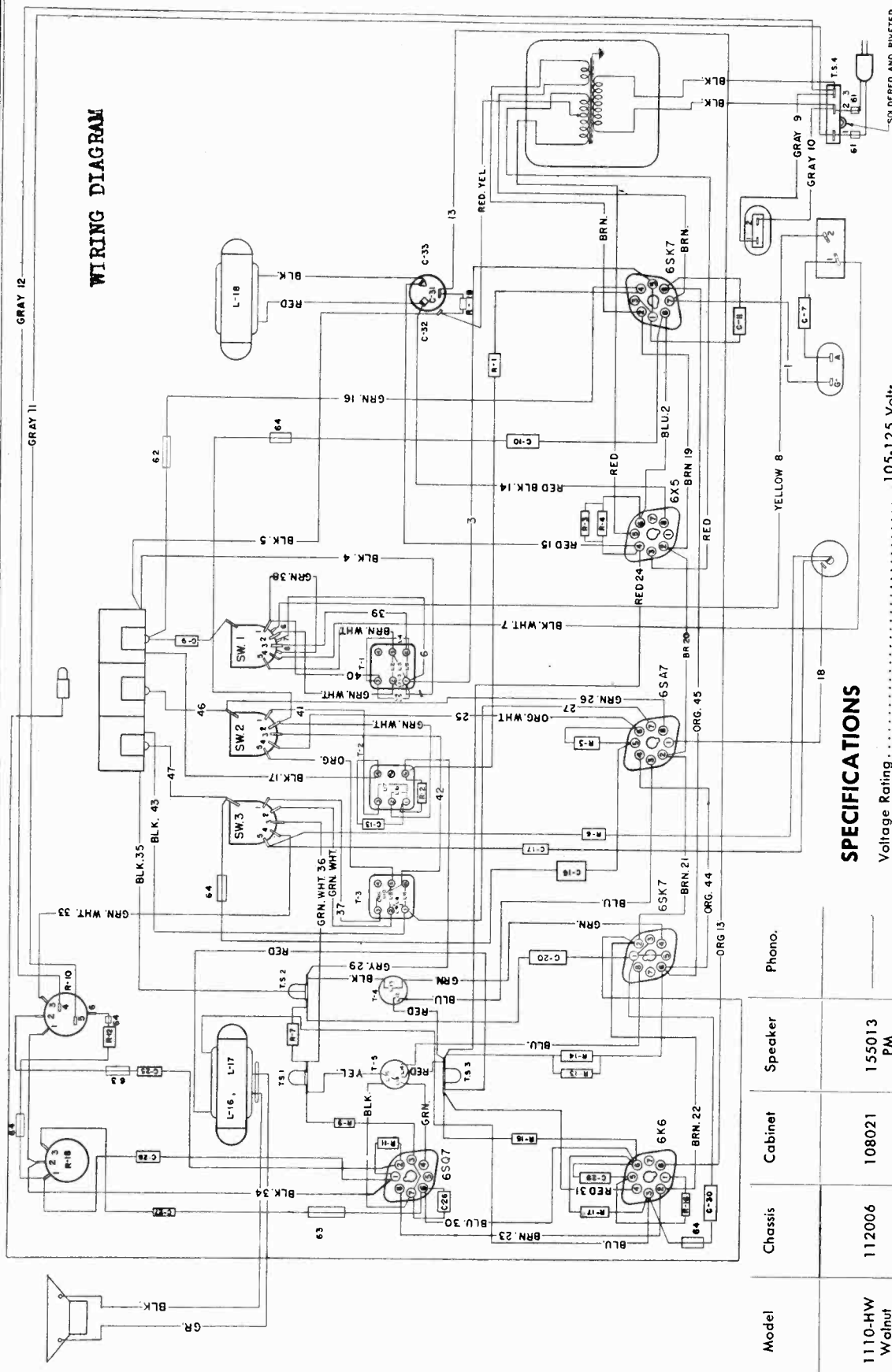


BAND-SWITCH SHOWN AT 2<sup>ND</sup> POSITION CLOCKWISE. SHORT WAVE BAND 8.7-15.5 MC.

MODEL 1110

STROMBERG CARLSON CO.

WIRING DIAGRAM



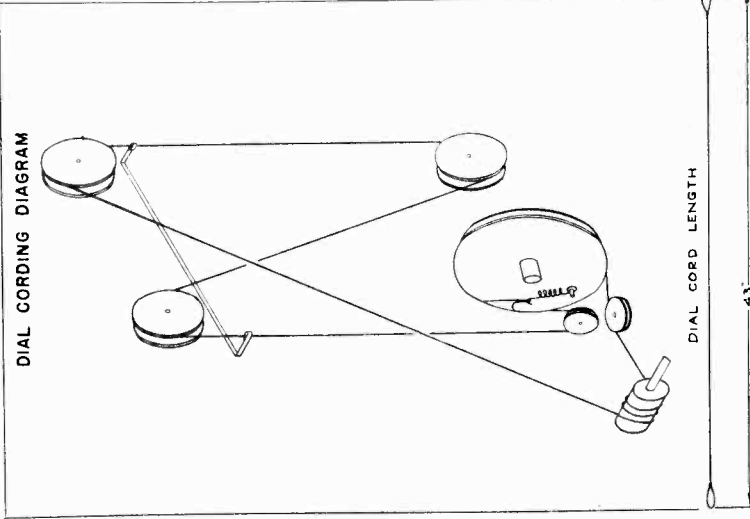
SPECIFICATIONS

- Voltage Rating . . . . . 105-125 Volts
- Type of Circuit . . . . . Superheterodyne
- Tuning Range . . S.W. 8.7—15.5 MC. Broadcast 540 KC.—1 600 KC.
- Input Power Rating . . . . . Radio. 45 Watts, Phono. 60 Watts
- Input Power Frequency . . . . . 60 Cycles AC.
- Intermediate Frequency . . . . . 455 KC.
- Speaker Voice Coil Impedance . . . . . at 400 Cycles 3.5 Ohms
- Power Output . . . . . 2 Watts

Model	Chassis	Cabinet	Speaker	Phono.
1110-HW Walnut	112006	108021	155013 PM	
110-PTW Walnut	112006	108023	155013 PM	148007

STROMBERG CARLSON CO.

MODEL 1110



PART No. 124005

Transformers, and Coils

114011	T-1 (L-2-3-4-5) (C-8)	Antenna Coil
114012	T-2 (L-6-7) (C-12)	R.F. Coil
114013	T-3 (L-8-9-10-11) (C-14-15)	Oscillator Coil
114307	T-4 (L-12-13) (C-18-49)	1st I.F. Transformer
114308	T-5 (L-14-15) (C-21-22-23-24-R-8)	2nd I.F. Transformer
155006		Speaker Cone
155013		PM Speaker Assembly
161001		Output Transformer
161207		Choke
161402		Power Transformer

Knobs and Cabinet Parts

32224	Knob,—Volume, Tone, Tuning
35725	Knob,—Range
80874	Decal—Tone, Volume-Off-on, Stations, Range
80875	Grille and Baffle, Assembly—Left Hand
80876	Grille and Baffle, Assembly—Right Hand
80877	Lid Support
80878	Hinge
107003	Push Button
125005	Escutcheon and Lens, Dial

Radio Frequency Adjustments

Standard Broadcast Range.

Antenna must remain connected for R.F. adjustments.

1. With the signal generator output lead connected to the Antenna and Ground terminal of the receiver, tune the signal generator frequency and receiver tuning dial to 1400 KC.
2. Adjust the oscillator, R.F. and antenna trimmers of the gang condenser for maximum signal.
3. Set the signal generator frequency and receiver tuning dial to 600 KC.
4. Adjust the 600 KC. padding condenser in oscillator coil shield for maximum signal.
5. Adjust the iron core in antenna transformer for maximum output. (Underside of chassis)
6. Repeat the above procedure until no further change is required.

Radio Frequency Adjustments

Short Wave Range

1. Set the range switch to Short Wave position.
2. Set the signal generator frequency and receiver tuning dial to 14 MC.
3. Connect the output of the signal generator to the antenna terminal on the chassis.
4. Adjust the oscillator, R.F. and antenna trimmers for maximum output.
5. Repeat the above procedure until no further change is required.

ALIGNING

Never realign unless absolutely necessary.

Use a good signal generator modulated at 400 or 1,000 cycles, with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the lowest possible input from the signal generator. A strong signal makes adjustments approximate.

Always have the volume control "full on."

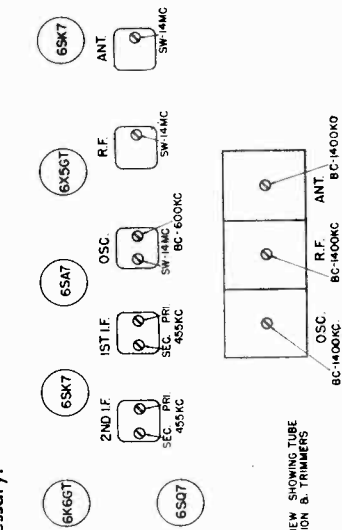
Aligning Procedure (follow this order exactly)

Intermediate Frequency Adjustments.

1. Set range switch to Standard Broadcast Position.
2. Tune set to extreme high frequency end of dial.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 KC. to the grid of the 6SA7 Converter tube (middle section of gang condenser) using a 0.1 mfd. capacitor in series with the output lead of the signal generator.
5. 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 Adjustment

With plates of the gang tuning capacitor fully engaged make certain that the dial pointer is in a horizontal position directly on the calibration marks located at the low frequency end of dial scale. Adjust the dial pointer if necessary.



Switches

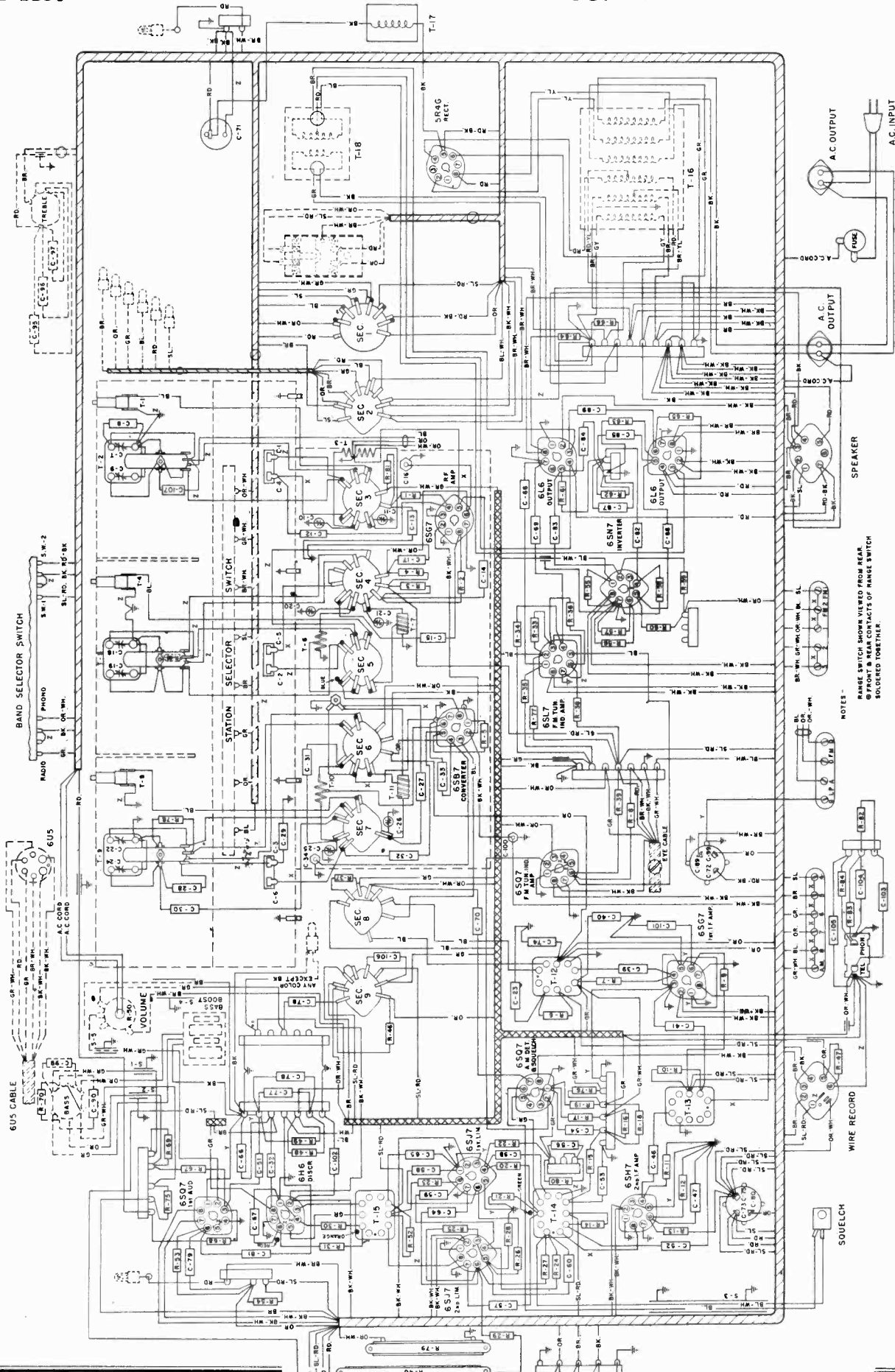
145005	Volume Control, Off-on Switch
158004	Range Switch

24135	Felt Tips
26122	Antenna—Ground Strip
28694	Socket, Pilot
29956	Lamp, Pilot
32048	Socket, A.C. Outlet
32075	Pulley, Small
32076	Pulley, Medium
32077	Pulley, Large
33218	Cord, A.C.
34421	Connector, Phone
40546	Clip, Pulley
80881	Crystal Cartridge (L-70)
101047	Back
122007	Dial Cord
124005	Dial Cord
129003	Gear Assembly, Switch Drive
143001	Plug, Antenna
144004	Pointer, Dial
146025	Station Call Letters
150007	Shaft Assembly, Dial Drive
150008	Shaft, Switch Drive
152002	Socket, Tube
152005	Socket, Loop
156008	Spring, Dial Cord

MODEL 1135

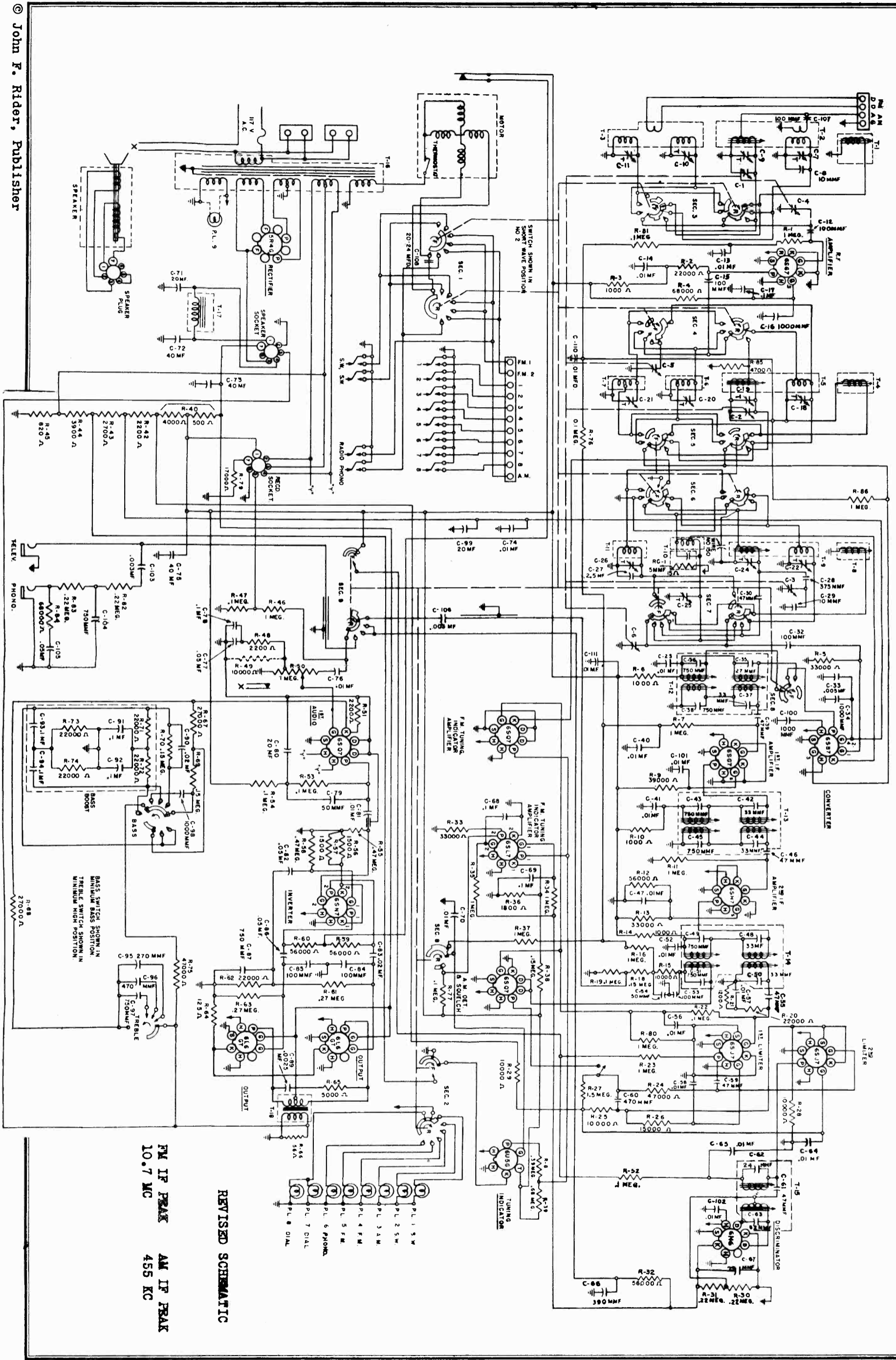
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WIRING DIAGRAM









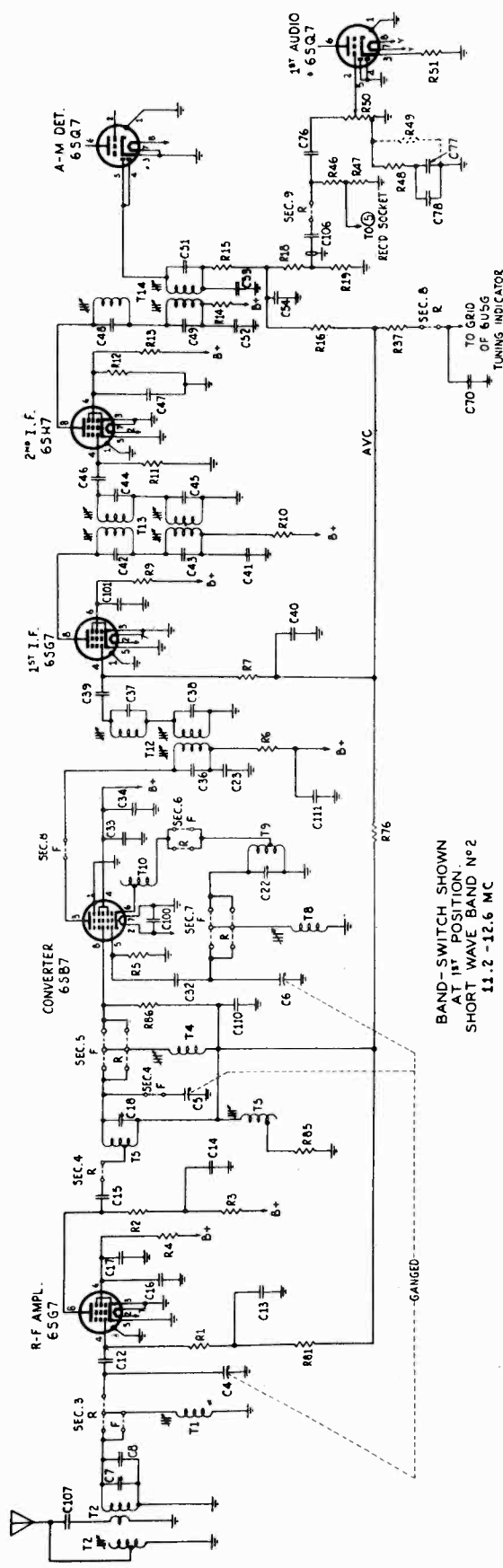
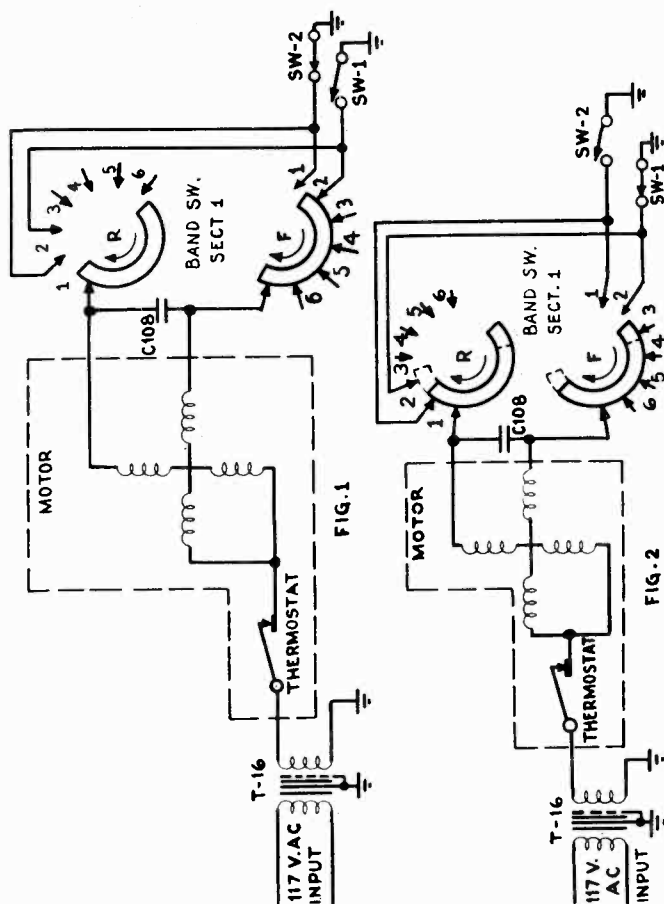
REVISED SCHEMATIC

FM IF PRAK 10.7 MC  
AM IF PRAK 455 KC

STROMBERG CARLSON CO.

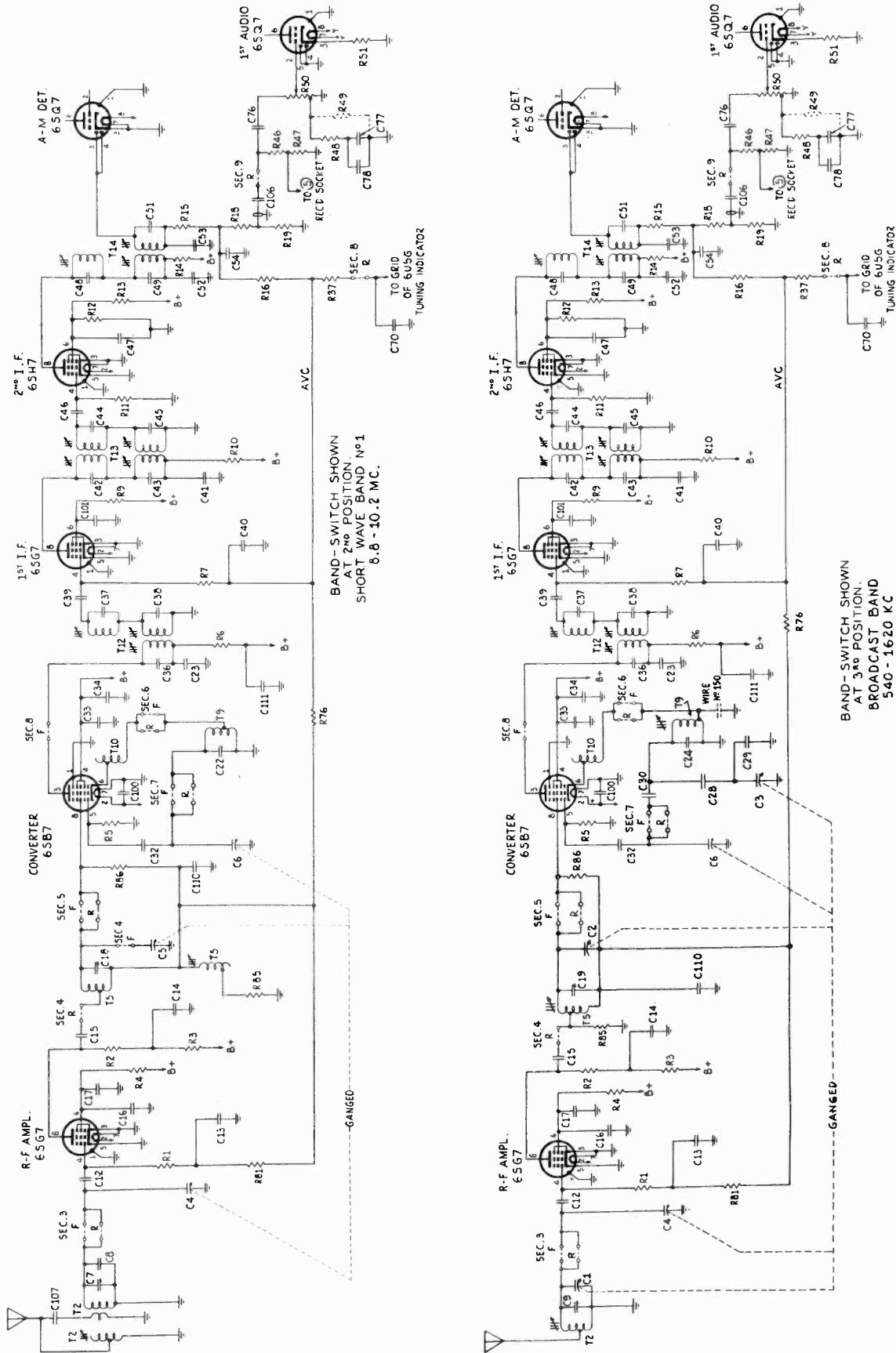
NOTES: - FIGS. 1 AND 2 SHOW SCHEMATICALLY HOW THE BAND SWITCH IS ROTATED BY THE MOTOR WHEN THE DESIRED PUSHBUTTON IS DEPRESSED. PUSHBUTTONS 1 (SHORT WAVE 2-BAND) AND 2 (SHORT WAVE 1-BAND) ARE THE ONLY ONES SHOWN FOR CLARITY OF DIAGRAM. THE OTHER PUSHBUTTONS OPERATE IN A SIMILAR MANNER. FIG. 1 SHOWS THE MOTOR AT REST WITH THE BAND SWITCH AT SW-2 POSITION, NO. 1 BUTTON DEPRESSED. IF SW-1 BAND IS DESIRED THEN NO. 2 BUTTON IS CLOSED AND NO. 1 - OPENS, THIS PUTS A GROUND THROUGH SECTION 1-P OF THE BAND SWITCH ON ONE WINDING OF THE MOTOR, COMPLETING THE CIRCUIT, WHICH CAUSES THE MOTOR TO TURN THE BAND SWITCH IN THE DIRECTION OF THE ARROWS SHOWN TO POSITION OF FIG. 2 (SOLID LINES). THE GROUND WILL THEN BE DISCONNECTED FROM THE MOTOR WINDING, OPENING THE CIRCUIT AND CAUSING THE MOTOR TO STOP. IF THE MOTOR DOESN'T STOP FAST ENOUGH AND THE BAND SWITCH IS ROTATED TOO FAR, THEN IT WILL HAVE TO ASSUME THE POSITION SHOWN IN DOTTED LINES. THIS WILL PUT A GROUND ON THE OTHER WINDING OF THE MOTOR, THROUGH CONTACT 2 OF SECTION 1-P OF THE BAND SWITCH, MAKING THE MOTOR REVERSE ITS DIRECTION OF ROTATION TO ITS NORMAL POSITION (SOLID LINES) FOR SW-1.

MOTOR BREAKDOWN FOR MODEL 1135A ONLY



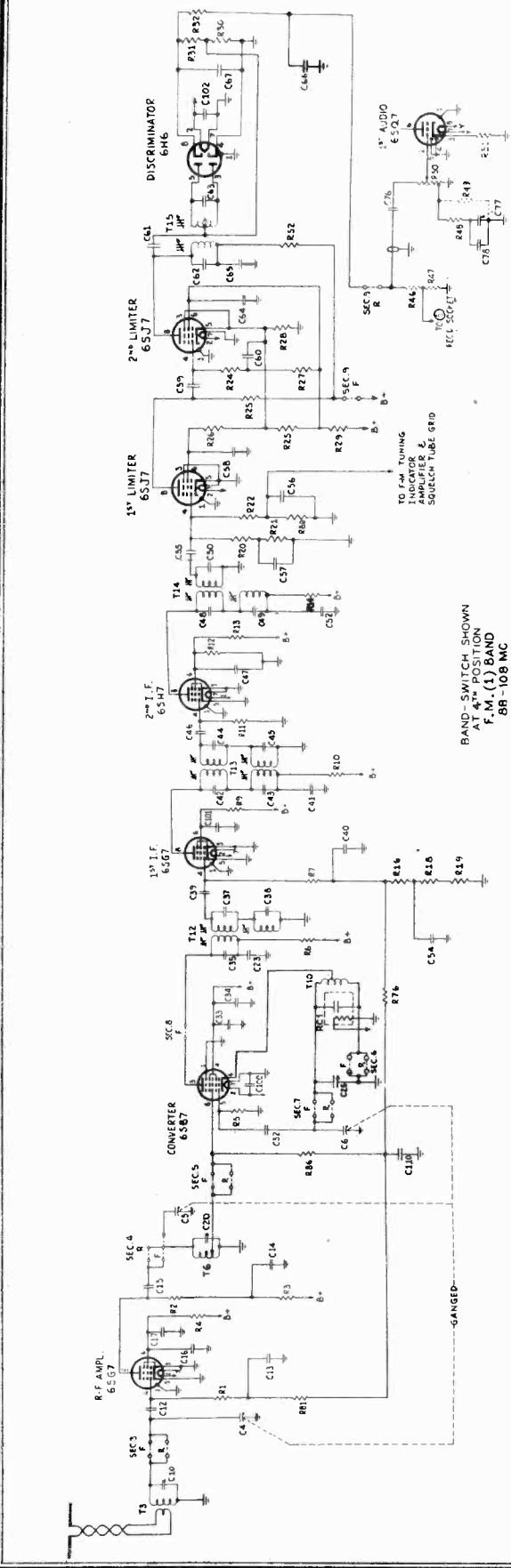
MODEL 1135A

STROMBERG CARLSON CO.

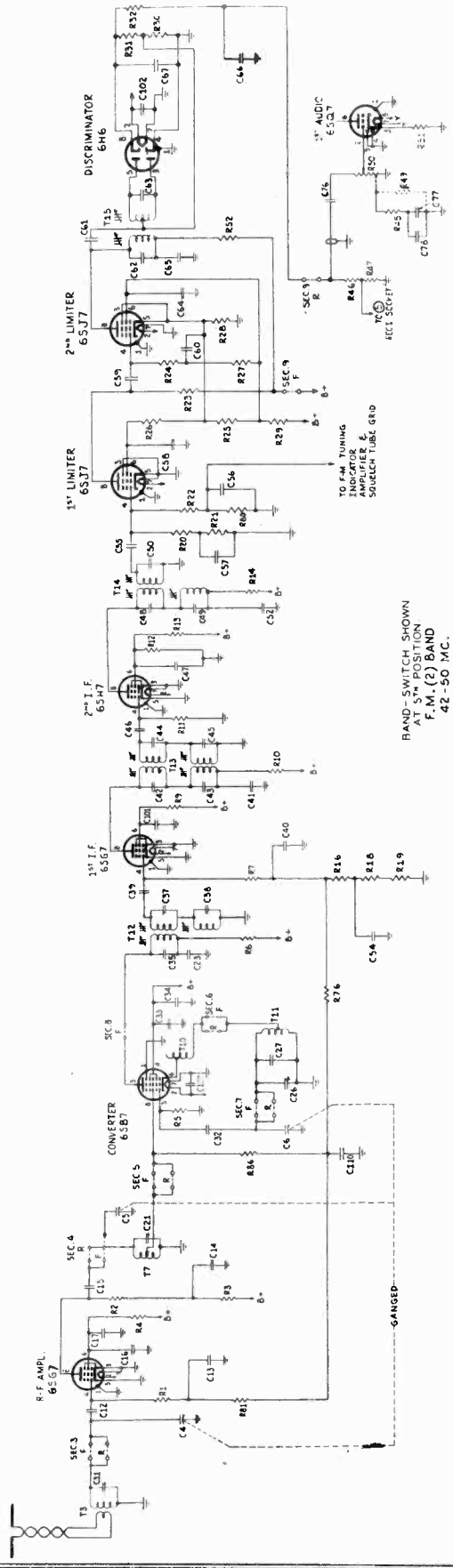


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MODEL 1135A

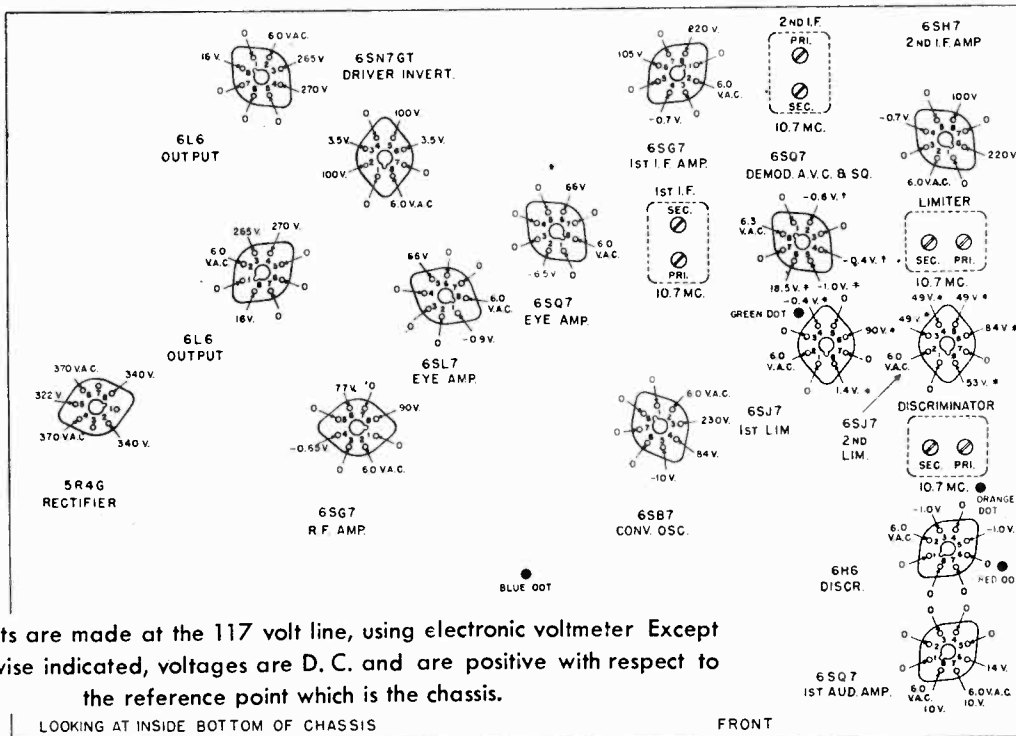


BAND-SWITCH SHOWN AT 4<sup>TH</sup> POSITION F.M. (1) BAND 88-108 MC



BAND-SWITCH SHOWN AT 5<sup>TH</sup> POSITION F.M. (2) BAND 42-50 MC

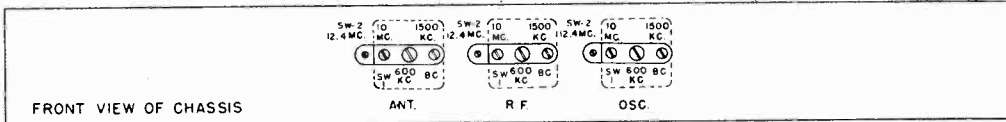
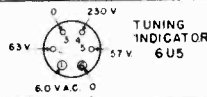
### LOCATION CHARTS TUBES, TRIMMERS AND VOLTAGE



Measurements are made at the 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 chassis.

LOOKING AT INSIDE BOTTOM OF CHASSIS

FRONT

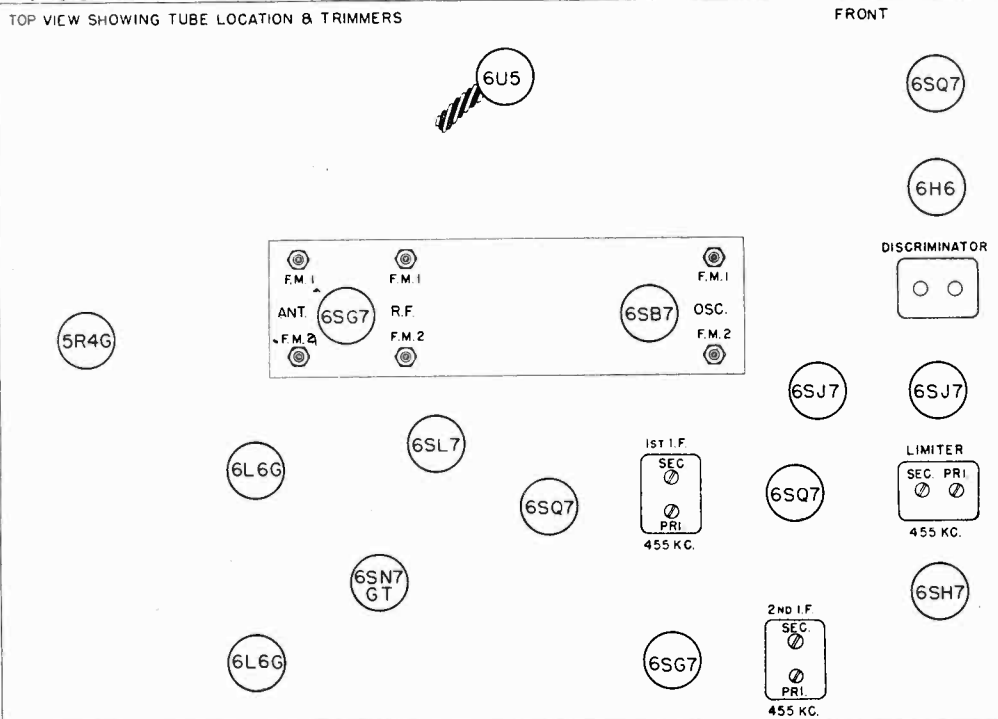


FRONT VIEW OF CHASSIS

ANT.

R.F.

OSC.



TOP VIEW SHOWING TUBE LOCATION & TRIMMERS

FRONT

## STROMBERG CARLSON CO.

MODEL 1135

**ALIGNING****Never realign unless absolutely necessary.**

Refer to "Location Chart" for alignment adjusters. Allow set to warm up 10 to 15 minutes before attempting to align.

Always align using the smallest possible input from the signal generator. A strong signal makes adjustments approximate.

Always have volume full on.

The alignment of this receiver does not require special equipment or information; however, it is well to adhere to the standard procedure as outlined.

The required equipment is: 1 Electronic Voltmeter, 1 Output Meter, 1 Standard Signal Generator, 1 High Frequency Signal Generator, 1 No. 80777 Aligning Tool.

**ALIGNING PROCEDURE (follow this order exactly)****Intermediate Frequency Adjustments****Amplitude Modulation**

The I.F. aligners that are used to adjust the amplitude modulation (AM) channel are found on the top side of the chassis. They consist of 6 adjustable iron cores used to tune the inductance of the 1st, 2nd and 3rd I.F. transformers (161202, 161200, 161201). These cores are found inside the plastic tubes protruding from the top of the I.F. transformers and are equipped with small screw-driver slots.

**Caution:** These cores are made of high quality R.F. iron and are fragile; therefore care must be used in adjusting them.

1. Connect the signal generator to the modulator grid, terminal number 8 of the 6SB7 converter tube which is connected to the wave band switch, and is identified by a blue dot.
2. Connect the output meter across the voice coil of the speaker (green and black wires from cable).
3. Adjust the signal generator to 455 KC. Use 30% modulation at 400 cycles.
4. Adjust volume control full on.
5. Adjust tone control to maximum high, minimum bass.
6. Adjust range switch to standard broadcast band, actuate any AM. push button.
7. Adjust the tuning selector to approximately 600 KC.
8. Adjust I.F. cores for maximum output with a reduced signal input.

**Frequency Modulation**

The I.F. Aligners may be found from the underside of the chassis. The adjusters are 6 iron cores used to tune the

inductance of the high frequency coils.

1. Connect the signal generator to the modulator grid, terminal number 8 of the 6SB7 converter tube, which is connected to the wave band switch, and is identified by a blue dot.
2. Connect the electronic voltmeter to the junction of the 22,000 ohm and the 100,000 ohm resistors in the first limiter grid circuit identified by a green dot. This junction point will be found underneath the limiter shield.
3. Adjust the voltmeter to the lowest negative voltage scale.
4. Actuate push button on extreme right of row of eight.
5. Adjust the tuning selector to approximately 21 on this band.
6. Adjust the signal generator to 10.7 megacycles. No modulation is required.
7. Adjust the cores for maximum output of the voltmeter. Reduce the input signal and readjust until the maximum output is secured for minimum input. (Approximately 1 volt output).

**Discriminator Alignment (FM)**

**Caution: Discriminator secondary must be zeroed at same generator setting used for FM I.F. alignment.**

1. Connect the signal generator to the grid of the second I.F. tube, terminal No. 4 of the 6SH7.
2. Connect the electronic voltmeter to the center of the diode load resistors at the point indicated by the orange dot.
3. Adjust the primary for maximum output with .1 volt from signal generator set at 10.7 megacycles.
4. Switch the electronic voltmeter to the high side of the diode load resistors, identified by a red dot.
5. Adjust the secondary for zero output.
6. Swing generator to 75 KC. higher and 75 KC. lower in frequency and note the plus and minus voltage. If these voltage values are not approximately equal, repeat operations 3, 4 and 5.

**R.F. Adjustment—Amplitude Modulation**

**The Broadcast band should be adjusted first. The built-in loop should remain connected to the antenna and ground terminals.**

1. Connect the signal generator to the AM antenna terminals, leaving the loop antenna connected. A 400 ohm resistor must be used in series with the signal generator. Use of a 30% modulated signal of 400 cycles is recommended.
2. Adjust the signal generator to 1500 KC.
3. Adjust station selector to 1500 KC.

4. Adjust range switch to AM Broadcast. Actuate any AM push button.
5. Adjust the oscillator, R.F. and antenna trimmer for maximum output.
6. Reduce the input signal and readjust the trimmers until the maximum output is secured for minimum input.
7. Adjust station selector to 600 KC.
8. Set signal generator to 600 KC.
9. Adjust iron cores in oscillator, R.F. and antenna coils for maximum output.
10. Repeat 1500 KC. and 600 KC. alignments until no further change is required.

**R.F. Adjustment—Short Wave (9-10 MC. Band)**  
**The built-in loop should remain connected to the antenna and ground terminals.**

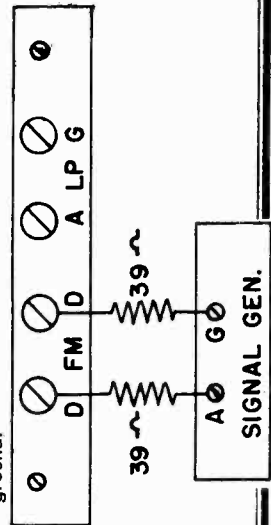
1. Connect the signal generator to the antenna and ground terminals of the receiver using a 400 ohm resistor.
2. Set the dial pointer to 10 MC.
3. Adjust signal generator to 10 MC.
4. Actuate left S.W. push button.
5. Adjust oscillator, R.F., and antenna trimmer for maximum output. (No further alignment is required on this band.)

**R.F. Adjustment—Short Wave (11.2-12.6 MC. Band)**

1. Connect the signal generator to the antenna and ground terminals of the receiver using a 400 ohm resistor in series with the signal generator.
2. Set dial pointer to 12.4 MC.
3. Adjust signal generator to 12.4 MC.
4. Actuate right S.W. push button.
5. Adjust oscillator, R.F. and antenna iron cores for maximum output.

**R.F. Adjustments—Frequency Modulation**  
**Align the FM (2) Band first.**

1. Set dial pointer to channel 90 (49 MC.)
2. Connect the signal generator to FM dipole terminals using 39 ohm resistors as indicated (disconnect dipole antenna). Connect signal generator ground to chassis ground.





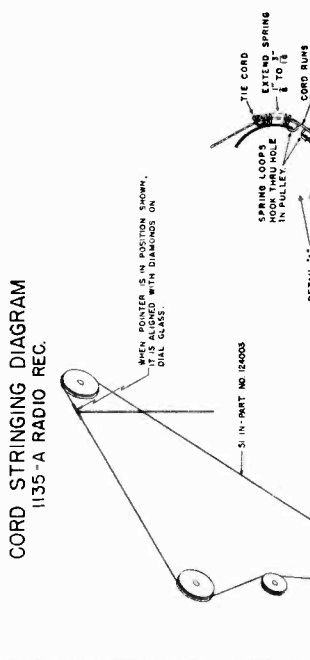


STROMBERG CARLSON CO.

MODEL 1135

Resistors

Part No.	Value	Code
27407	22,000 Ohms	R-20, R-62, R-71, R-72, R-73, R-74
27640	.15 Meg.	R-18, R-69, R-70
28006	.1 Meg.	R-19, R-22, R-23, R-47, R-52, R-53, R-54, R-77, R-81
28157	820 Ohms	R-45
28158	1,000 Ohms	R-3, R-6, R-10, R-14, R-78
28159	1,500 Ohms	R-21
28160	1,800 Ohms	R-56, R-57
28161	2,200 Ohms	R-36
28162	2,700 Ohms	R-48, R-51
28170	3,300 Ohms	R-15, R-25, R-28, R-29, R-49
28172	3,900 Ohms	R-26
28174	4,700 Ohms	R-67, R-68
28175	5,600 Ohms	R-13, R-33
28176	6,800 Ohms	R-9
28177	8,200 Ohms	R-24, R-75
28178	10,000 Ohms	R-12, R-32, R-59, R-60
28179	15,000 Ohms	R-4, R-84
28183	20,000 Ohms	R-30, R-31, R-82, R-83
28184	27,000 Ohms	R-8
28186	33,000 Ohms	R-61, R-63
28187	47,000 Ohms	R-55, R-58
28189	56,000 Ohms	R-39
28191	68,000 Ohms	R-7, R-11, R-16, R-34, R-35, R-37 R-46, R-76, R-80
28193	.22 Meg.	R-27
28196	.27 Meg.	R-17
145002	.39 Meg.	R-50
149004	.47 Meg.	R-85
149005	.68 Meg.	R-2
149006	1 Meg.	R-5
149007	1.5 Meg.	R-1
149009	2 Meg.	R-79
149010	2.7 Meg.	R-40
149078	4,700 Ohms	R-42
149164	56 Ohms, 1 W	R-66
149180	270 Ohms, 1 W	R-43
149182	3,900 Ohms, 1 W	R-44
149194	.15 Meg., 1 W	R-38
149207	5,000 Ohms, 5 W	R-65
149208	125 Ohms, 5 W	R-64



Miscellaneous

Part No.	Description	Code
25156	Fuse Holder	C-12, C-15, C-32, C-107
27958	Socket, Pilot	C-30, C-39, C-41, C-46, C-55, C-59, C-61, C-101
28694	Pilot Lamp	C-62
29956	Socket, Speaker	C-63
30152	Corner Mtg., Dial Scale	C-37, C-42, C-44, C-48, C-50
30269	Jack, Photo	C-16, C-34, C-100
31539	Pulley	C-29
32075	Cord, A.C.	C-27
33218	Cable and Socket, Eye	C-31
40546	Clip, Pulley	C-68, C-69, C-78, C-91, C-92, C-93, C-94
113002	Iron Core, I.F.	C-33
118001	Iron Core, R.F.	C-73, C-75, C-80
118002	Dial Scale	C-72, C-88, C-99
122009	Card, Pointer	
124004	Drive Cord, Condenser Gang	
124006	Drive Cord Assembly, Motor	
124010	Drive Cord, Selector	
138002	Lens, Photo	
138005	Lens, Range	
144003	Pointer, Dial	
145002	Volume Control	
147002	Pulley Assembly, Band Switch	
150004	Shaft, Knob Drive	
150005	Shield, Pilot Lamp	
151035	Socket, Tube (10)	
152002	Socket, Recorder	
152004	Socket, Pilot Bulbseye	
152007	Socket, Tube (3)	
152014	Socket, A.C.	
152026	Switch Assembly, SW, Radio, Photo.	
158019	Binding Post, Ant.	
159002	Binding Post, 6 pt.	
159008	Binding Post, 5 pt.	
159009	Base Boost	
167009	Phono. Cartridge Qtm.	
80891	Metal Needle for 80891	
80892	Jewel Needle for 80891	

Capacitors

Part No.	Value	Code
25150	.02 mf (400 V)	C-90
25484	.02 mf (600 V)	C-83
25485	.01 mf (600 V)	C-13, C-14, C-23, C-40, C-47, C-52, C-56, C-57, C-58, C-64, C-65, C-70, C-74, C-76, C-81, C-102
28325	.1 mf	C-17
29359	.75 mf	C-67
29559	.0025 mf	C-89
29891	.05 mf (600 V)	C-86
34796	.50 mf	C-54, C-79
34800	100 mf	C-53, C-84, C-85
40632	.05 mf (400 V)	C-77, C-82, C-105
46315	.003 mf (400 V)	C-103, C-106
110006	R.F. Trimmer H.F.	C-11, C-20, C-21, C-25, C-26
110007	Antenna F.M. H.F. Trimmer	C-10
110201	750 mf	C-36, C-38, C-43, C-45, C-49, C-51
110202	10 mf	C-8
110203	375 mf	C-28
110208	270 mf	C-95
110209	470 mf	C-60, C-96
110215	750 mf	C-87, C-97, C-104
110216	390 mf	C-66

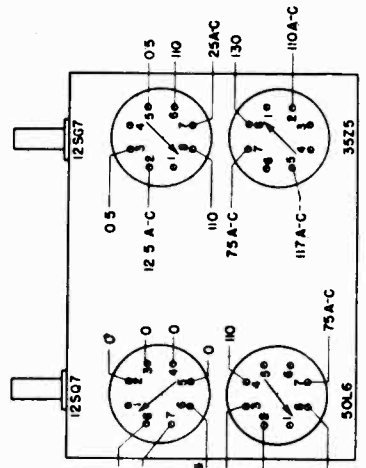
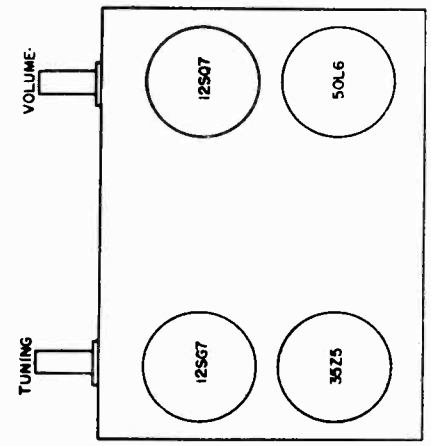
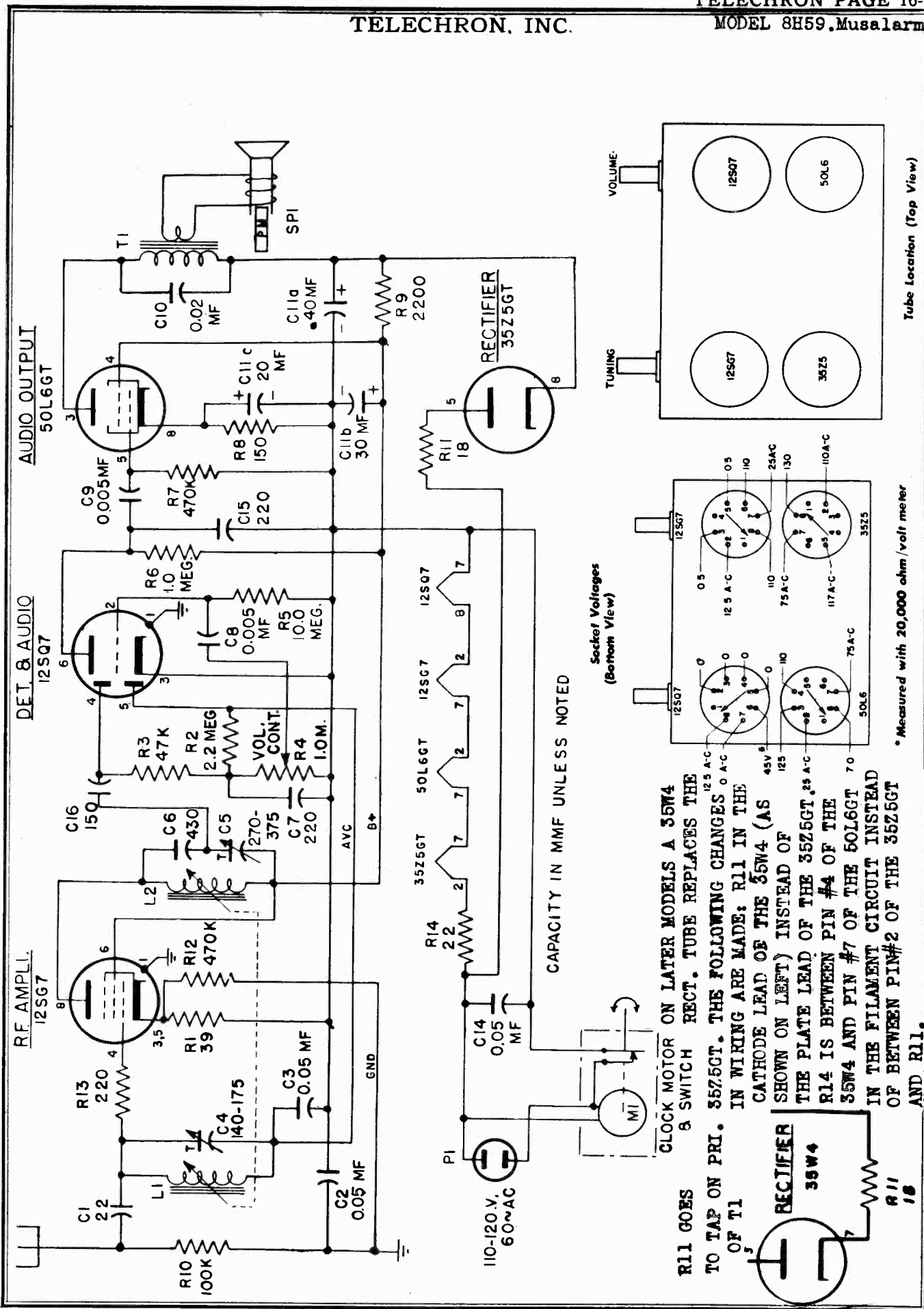
Coils—Transformers—Speaker

Part No.	Description
32460	Speaker Cone
*112008	R.F. Chassis Assembly
114003	R.F. Coil SW-1 Broadcast
T-5	Oscillator Coil SW-1 Broadcast
T-9	Antenna Coil SW-1 Broadcast
T-2	Antenna, R.F.,
T-1, T-4, T-8	Oscillator, Coil
T-15	S.W. Band (2)
140001	Discriminator Transformer
155019	Motor, Switch Drive
161002	Speaker Assembly
161200	Filter Choke
T-13	2nd I.F. Transformer
T-14	3rd I.F. Transformer
161202	1st I.F. Transformer
T-18	Output Transformer
T-16	Power Transformer
161403	Power Transformer

\*Band Switch, Sockets, Variable Capacitor, R.F. Coils all bands. This is a complete R.F. Assembly. Sold as a unit only.

**NOTE—When ordering replacement parts always specify series number as well as model and part number. Series number is stamped on back of chassis.**





R11 GOES TO TAP ON PRI. 35Z5GT. THE FOLLOWING CHANGES TO OF T1 IN WIRING ARE MADE: R11 IN THE CATHODE LEAD OF THE 35W4 (AS SHOWN ON LEFT) INSTEAD OF THE PLATE LEAD OF THE 35Z5GT. R14 IS BETWEEN PIN #4 OF THE 35W4 AND PIN #7 OF THE 50L6GT IN THE FILAMENT CIRCUIT INSTEAD OF BETWEEN PIN#2 OF THE 35Z5GT AND R11.

CLOCK MOTOR ON LATER MODELS A 35W4 & SWITCH RECT. TUBE REPLACES THE 35Z5GT. THE FOLLOWING CHANGES TO OF T1 IN WIRING ARE MADE: R11 IN THE CATHODE LEAD OF THE 35W4 (AS SHOWN ON LEFT) INSTEAD OF THE PLATE LEAD OF THE 35Z5GT. R14 IS BETWEEN PIN #4 OF THE 35W4 AND PIN #7 OF THE 50L6GT IN THE FILAMENT CIRCUIT INSTEAD OF BETWEEN PIN#2 OF THE 35Z5GT AND R11.

CAPACITY IN MMF UNLESS NOTED

\* Measured with 20,000 ohm/volt meter

Tube Location (Top View)

Socket Voltages (Bottom View)

**SPECIFICATIONS**

**CABINET:**

Height . . . . .	5¾ inches
Width . . . . .	10⅞ inches
Depth . . . . .	4¾ inches

**ELECTRICAL RATING (INPUT):**

Voltage . . . . .	105-125 volts, a-c
Frequency . . . . .	60 cycles
Wattage . . . . .	30 watts

**TUNING FREQUENCY (RADIO):**

Broadcast Band . . . . .	540-1600 kc
--------------------------	-------------

**POWER OUTPUT (117 VOLTS LINE):**

Undistorted . . . . .	1.5 watts
Maximum . . . . .	2.2 watts

**LOUDSPEAKER:**

Type . . . . .	Alnico P.M.
Outside Cone Diameter . . . . .	4 inch
Voice Coil Impedance (400 Cycles) . . . . .	3.5 ohms

**TUBE COMPLEMENT:**

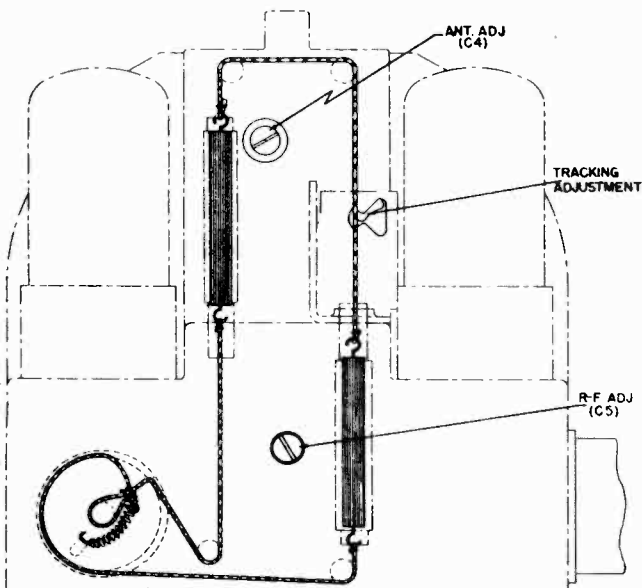
R-F Amplifier . . . . .	Type 12SG7
Detector-Audio . . . . .	Type 12SQ7
Output Power . . . . .	Type 50L6GT
Rectifier . . . . .	Type 35Z5GT

Note: Order tubes from Tube Division, Replacement Parts Section, General Electric Co., Schenectady, N. Y.

**RADIO CIRCUIT ALIGNMENT**

**ALIGNMENT FREQUENCIES**

R-F . . . . .	1620 kc and 580 kc
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**Drive Stringing and Trimmer Location**

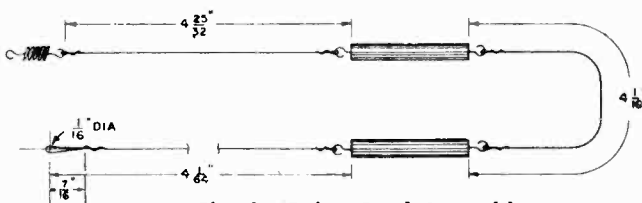
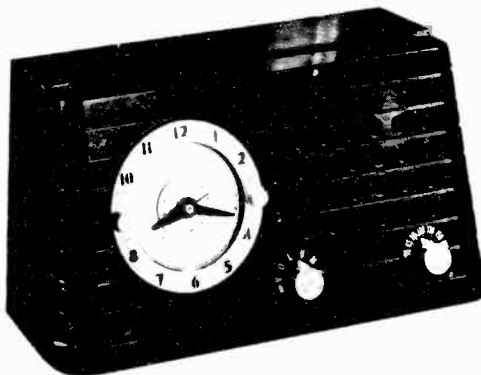


Fig. 2. Drive Cord Assembly



**EQUIPMENT REQUIRED**

1. Test oscillator with audio tone modulation.
2. A-C output meter, 1½ volts full scale.
3. 100 mmf. mica capacitor.
4. Insulated screwdriver.

**PROCEDURE**

1. Connect test oscillator through 100 mmf. to antenna lead; connect output meter across the loudspeaker voice coil leads.
2. Turn dial pointer as far clockwise as it will go.
3. Set test oscillator to 1620 kc with tone modulation. Keeping the radio volume control set for maximum and attenuating test oscillator so that the output meter reading never exceeds 1¼ volts, trim antenna (C4) and RF (C5) trimmers for maximum output.
4. Set test oscillator to 580 kc with tone modulation. While rocking tuning control in vicinity of this dial calibration, adjust tracking adjustment platform up or down to give maximum output meter reading.
5. Recheck 1620 calibration adjustment. If RF (C5) trimmer has to be changed appreciably for maximum output, recheck step 4.

**GENERAL**

**DRIVE CORD REPLACEMENT**

When replacing the drive cord, it is essential that the measurements shown in Figure 2 be maintained very accurately, otherwise alignment and dial calibration difficulties will be experienced. Use a 3/32-inch diameter nylon jacketed cord, Part No. RDC-015, for replacement.

**RADIO STAGE GAIN AND VOLTAGE CHECKS**

Stage gain measurements by vacuum tube voltmeter or similar measuring devices may be used to check circuit performance and isolate trouble. The gain values listed may have tolerances of 20 per cent. Readings are taken with low signal input.

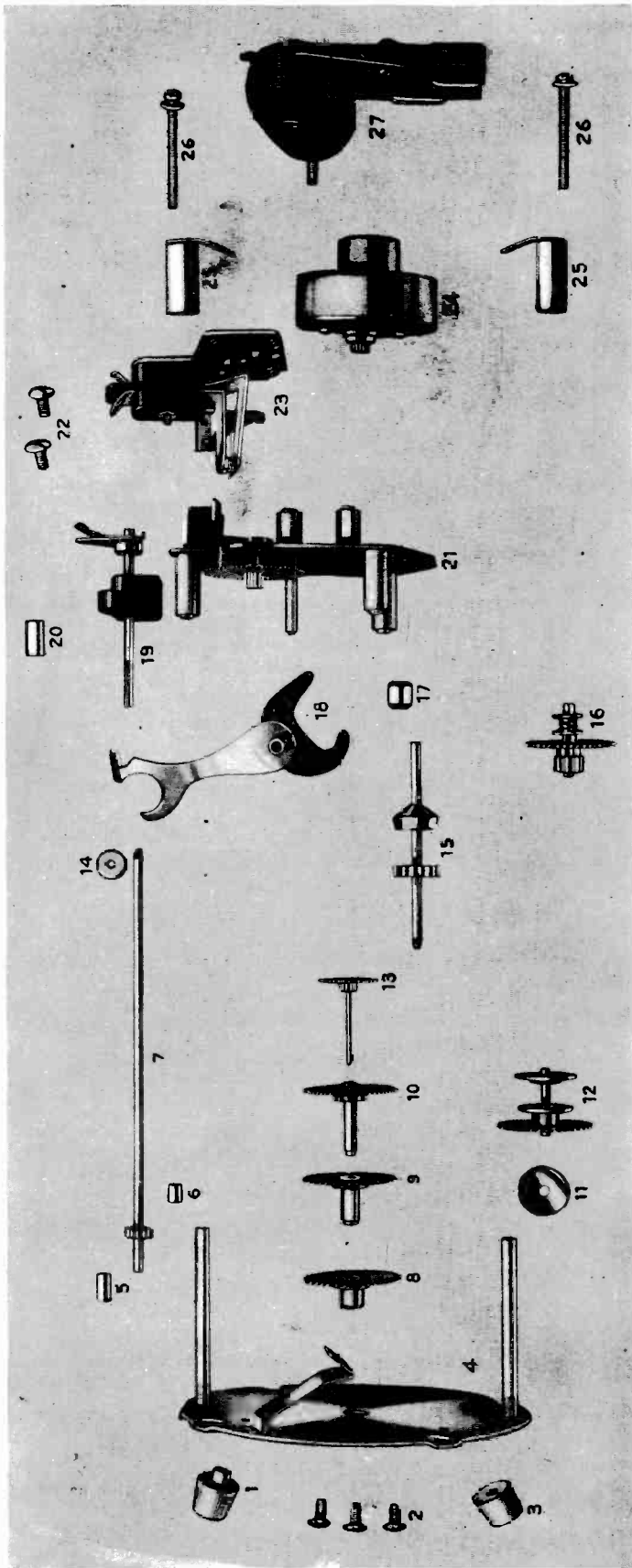
- (1) R-F Stage Gains.
 

Antenna lead to 12SG7 grid . . . . .	8 at 1000 kc
12SG7 grid to 12SQ7 diode plate . . . . .	50 at 1000 kc
- (2) Audio Gain.
 

0.06 volts at 400 cycles across volume control (R4) with control set at maximum will give approximately ½-watt output across speaker voice coil.
- (3) Socket Pin Voltages.

Figure 4 shows voltages from all points to B-. Voltage readings much lower than those specified may help localize defective components or tubes.





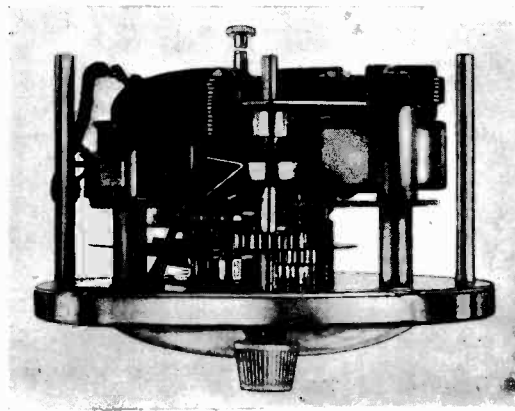
**EXPLODED VIEW OF H21 MOVEMENT**

1. Switch Knob (C40X75)
2. Front Plate Screws (C64X1)
3. Alarm Set Knob (C4X6)
4. Front Plate Assem. (C34X111)
5. Time Set Shaft Spacer (C40X262)
6. Time Set Shaft Spacer (C40X261)
7. Time Set Shaft Assem. (C10X115)
8. Alarm Hand Sleeve Assem. (C15X3)
9. Hour Hand Sleeve Assem. (C13X11)
10. Minute Hand Sleeve Assem. (C14X15)
11. Cam Friction Washer (C40X252)
12. Cam Shft Assem. (C17X8)
13. Sweep Second Shaft Assem. (C16X14)
14. Time Set Knob (C3X49)
15. Alarm Set Shaft Assem. (C11X8)
16. Intermediate Gear Shaft Assem. (C40X77)
17. Alarm Set Shaft Spacer (C40X263)
18. Switch Lever Assem. (C40X78)

19. Switch Shaft Assem. (C40X73)
20. Switch Shaft Spacer (C40X260)
21. Base Plate Assem. (C35X39)
22. Front Plate Screws (C64X1)
23. Switch Assem. (C40X76)
24. Rotor Unit M1630 (C44X38)
25. Spreader Posts (C40X202)
26. Motor Mtg. Screws (C1X1)
27. Field and Coil Assem. (C45X69)

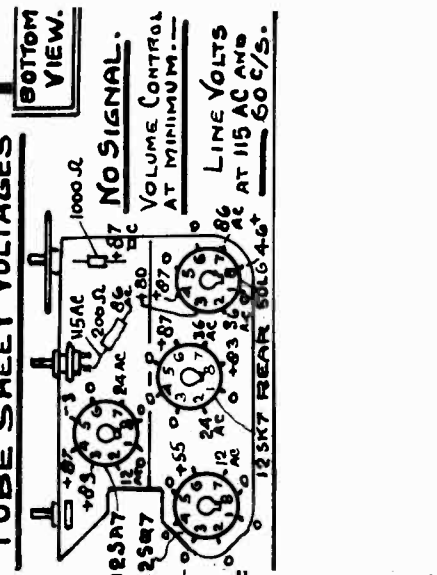
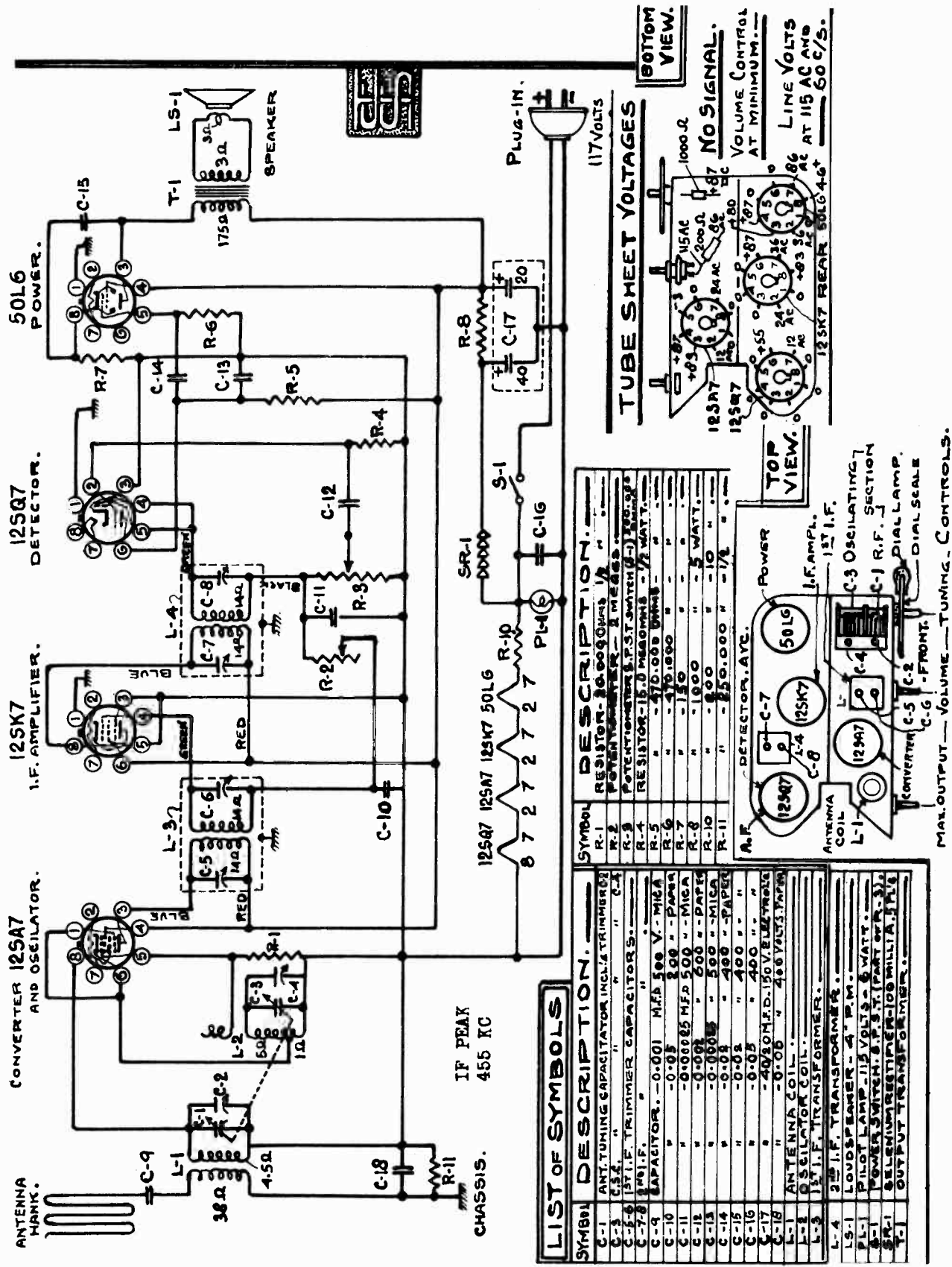
"Vistac" has been applied to the following parts of the clock movement:

1. Time set shaft before assembling, and time set shaft spacers where they touch front plate and base plate.
2. Base plate stud where the switch lever touches it.
3. Both ends of the shaft for the intermediate gear and shaft assembly.
4. Switch lever assembly where it touches the front plate.  
If it is necessary to replace any of the above parts, a very small amount of "Vistac" should be applied.



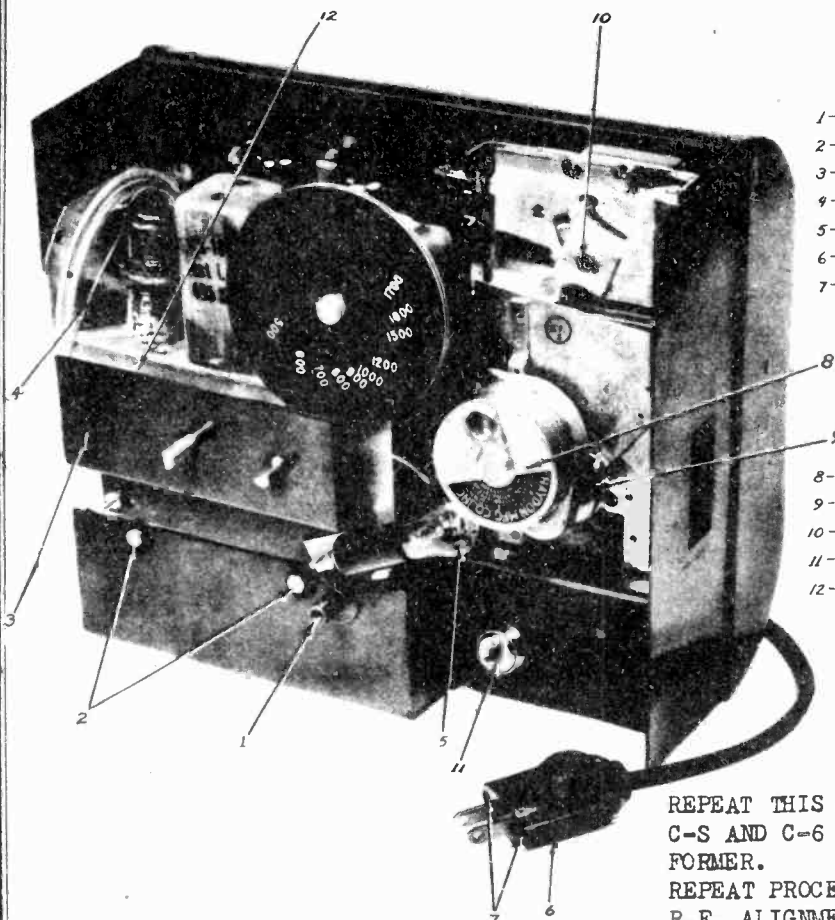
**H21 Movement Assembly**

TELECOIN CORP.



MODEL M5TS4

TELECOIN CORP.



- 1-NUT FOR CABINET STUD-TYPE LOCK.
- 2-HEX NUTS SECURING CHASSIS TO CABINET BACK.
- 3-CONTROL KNOB PANEL.
- 4-ANTENNA WIRE.
- 5-110 VOLT 6 WATT DIAL LAMP.
- 6-FUSE PLUG AND CORD.
- 7-2-110VOLT FUSES 2 OR 3 AMPS. EJECT BY PUSHING OUT WITH PENCIL OR SCREWDRIVER FROM REAR.

- 8-110 VOLT 60 CYCLE TIMER MOTOR.
- 9-TIMER ON-OFF SWITCH.
- 10-SLUG REJECTOR ASSEMBLY.
- 11-COIN BOX LOCK.
- 12-ADJUSTABLE MAXIMUM VOLUME CONTROL UNDER PANEL. (R-2 ON SCHEMATIC)

## ELECTRICAL SPECIFICATIONS

POWER SUPPLY. 105-125 V.-50/60 CYCL. AC  
 POWER CONSUMPTION - 30 WATTS  
 FREQUENCY RANGE 500-1700 KCS.  
 INTERMEDIATE FREQUENCY 455 KCS.  
 AUDIO OUTPUT 1.5 WATTS  
 TIMER.--60 CYCLES. 110 VOLTS - AC.

## LOUD SPEAKER

PERMANENT MAGNET...4" DIAMETER.

## ALIGNMENT PROCEDURE

## ALIGNMENT FREQUENCIES:

I.F. 455 KCS. R.F. 1700 KCS.

## I.F. ALIGNMENT:

CONNECT OUTPUT METER ACROSS THE VOICE COIL.--TURN THE RECEIVER VOLUME CONTROL TO MAXIMUM.

CONNECT HIGH SIDE OF ALIGNMENT OSCILLATOR, THROUGH A .05 MFD CAPACITOR, TO THE CONVERTER GRID.

SET ALIGNMENT OSCILLATOR AT 455 KCS AND ADJUST OUTPUT TO GIVE THE LOWEST CONVENIENTLY READABLE INDICATION ON THE OUTPUT METER .

ADJUST TRIMMERS C-7 AND C-8 IN 2ND I.F. TRANSFORMER TO GIVE MAXIMUM INDICATION ON OUTPUT METER.--

REPEAT THIS PROCEDURE FOR TRIMMERS C-5 AND C-6 IN THE 1ST I.F. TRANSFORMER.

REPEAT PROCEDURE TO CHECK ACCURACY.--

## R.F. ALIGNMENT :

RETAIN OUTPUT METER CONNECTED AS ABOVE AND RECEIVER VOLUME CONTROL SET AT MAXIMUM.--

CONNECT ALIGNMENT OSCILLATOR TO ANTENNA.--

SET ALIGNMENT OSCILLATOR AT 1700 KCS. AND PLACE IN OPERATION.

ROTATE RECEIVER TUNING CAPACITOR (C-1 AND C-3 TO GIVE MAXIMUM SIGNAL INDICATION ON OUTPUT METER.

ADJUST OUTPUT OF ALIGNMENT OSCILLATOR TO GIVE THE LOWEST CONVENIENTLY READABLE INDICATION ON THE OUTPUT METER.

ADJUST OSCILLATOR TRIMMER C-4 TO PEAK THE SIGNAL INDICATION ON OUTPUT METER.--

THEN ADJUST ANTENNA TRIMMER C-2 TO FURTHER PEAK THE SIGNAL.--

REPEAT PROCEDURE TO CHECK ACCURACY-- TRIMMER LOCATIONS ARE SHOWN IN

## NOTES

AN ELECTRONIC VOLTMETER MAY BE CONNECTED TO THE AVC BUS AND USED FOR ALIGNMENT INDICATION IN LIEU OF THE OUTPUT METER ACROSS THE VOICE COIL.

AN ELECTRONIC VOLTMETER OR A VOLTMETER WITH A MINIMUM RESISTANCE OF 20,000 OHMS PER VOLT SHOULD BE USED FOR VOLTAGE MEASUREMENTS.



## 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.

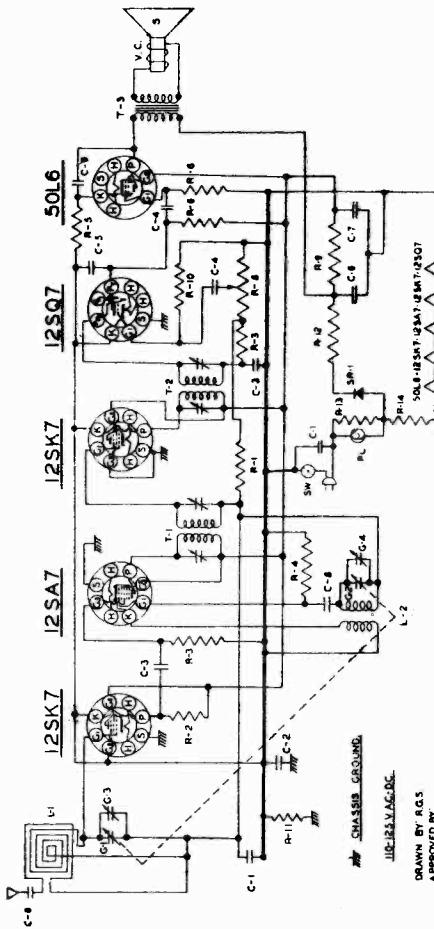
**SECOND STEP:** With the leads from the generator still connected in the same manner, adjust the Signal Generator to 1720 KC. The OSC. trimmer is located on the front of the chassis. Adjust this trimmer until the 1720 KC signal is tuned in.

**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 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.

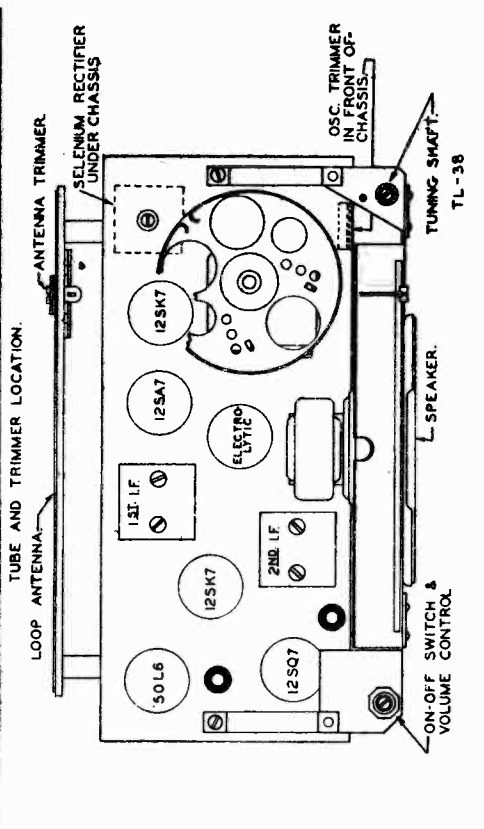
**CAUTION:** Always predetermine voltage of power source. Never try to plug this receiver into a 220 volt line, as this will cause serious damage.

**INSTALLATION:** Unwind the power cord and plug into a convenient outlet. This receiver is equipped with a sensitive loop antenna and under ordinary conditions no external antenna would be required.

Due to the directional qualities of the loop antenna the reception of some stations may be improved by placing the receiver in different positions.

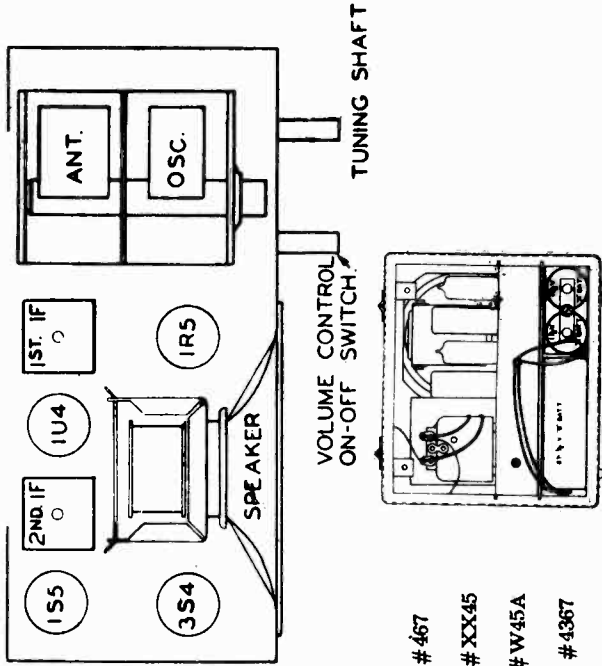


PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
IR-23	33 MEG. RESISTOR 1/2 W 10	MC-5	1000MFD MICA CONDENSER	GC-2	50 GANG CONDENSER
IR-22	3000 OHM RESISTOR 1/2 W 10	EC-10	40MFD 150V ELECTROLYTIC	TC-7	C-3 ANT TRIMMER CONDENSER
IR-9	22M OHM RESISTOR 1/2 W 20	MC-4	1000MFD MICA CONDENSER	TC-8	C-4 OSC. TRIMMER CONDENSER
IR-14	22M OHM RESISTOR 1/2 W 20	MC-7	1000MFD MICA CONDENSER	SR-1	1/4 100MFD 150V-150V
IR-11	100K OHM RESISTOR 1/2 W 20	LO-9	OSC. COIL	SR-2	300 OHM
IR-10	250K OHM RESISTOR 1/2 W 20	L-2	PLUG COIL	SR-3	300 OHM
IR-13	250K OHM RESISTOR 1/2 W 20	PT-1	PLUG COIL	SR-4	300 OHM
IR-15	250K OHM RESISTOR 1/2 W 20	PT-2	PLUG COIL	SR-5	300 OHM
IR-35	250K OHM RESISTOR 1/2 W 20	PT-3	PLUG COIL	SR-6	300 OHM
PC-3	100MFD MICA CONDENSER	L-1	LOOP ANTENNA	SR-7	SELENIUM RECTIFIER
PC-4	100MFD MICA CONDENSER	L-2	LOOP ANTENNA	SR-8	SELENIUM RECTIFIER
PC-5	100MFD MICA CONDENSER	L-3	LOOP ANTENNA	SR-9	SELENIUM RECTIFIER
PC-10	100MFD MICA CONDENSER	SPK-5	5 OHM P.M. SPEAKER		



**POWER SOURCES:** This receiver may be operated on alternating current (AC) of 110 to 125 volts at 60 cycles or on direct current (DC) of 110 to 125 volts. When used on DC, if the tubes light up but set does not play, reverse the cord plug in the power outlet.

TUBE AND TRIMMER LOCATION.



- Eveready 67 1/2 vlt. # 467
- Burgess 67 1/2 vlt. # XX45
- General 67 1/2 vlt. # W45A
- Ray-O-Vac 67 1/2 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.

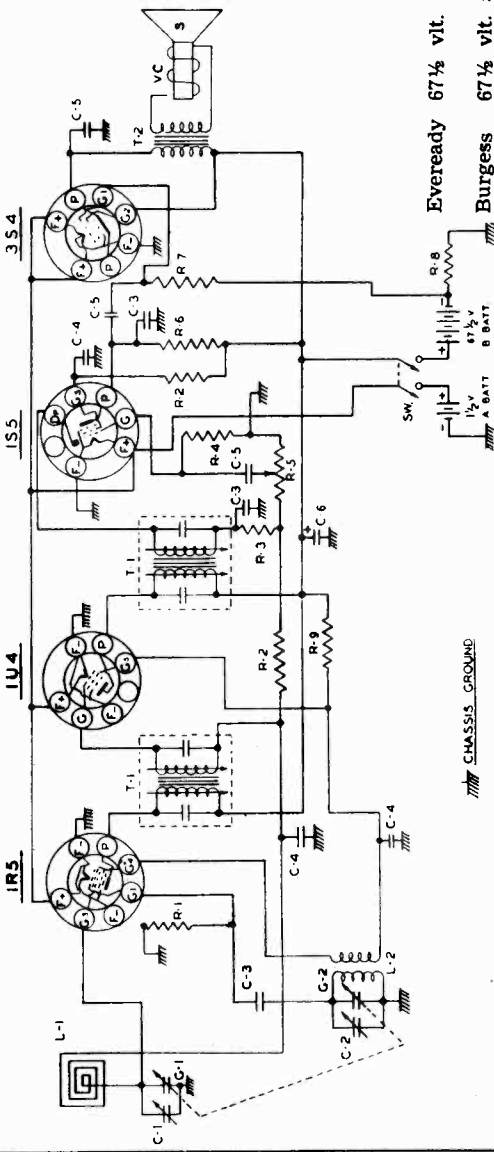
The volume control of the receiver should be turned to maximum during alignment, adjust the generator to 1400 KC. Set the dial pointer to 1400 KC on the dial scale. Adjust the oscillator trimmer until the signal is tuned in.

**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	PART NO	DESCRIPTION
R 1	220MΩ RESISTOR 1/2W	C-1	GANG CONDENSER
IR-20	IR-20	C-2	LOOP ANTENNA
IR-31	22MΩ RESISTOR 1/2W	L-2	OSC. COIL
IR-32	22MΩ RESISTOR 1/2W	L-3	IF TRANSFORMER
IR-33	10MΩ RESISTOR 1/2W	T-1	DPST. SWITCH ON VOLUME CONTROL
IR-34	10MΩ RESISTOR 1/2W	SW	SPEAKER TRANSFORMER
IR-35	10MΩ RESISTOR 1/2W	VC	VOICE COIL
IR-36	22MΩ RESISTOR 1/2W	T-2	PM SPEAKER
IR-37	10MΩ RESISTOR 1/2W	S	IR5 IU4 3S4
TC-7	ANT. TRIMMER ON GANG		
MC-2	ANT. TRIMMER ON GANG		
PC-7	100MFD 400V CONDENSER		
PC-8	.01 MFD 400V		
PC-9	.005MFD 400V		
EC-7	20MFD 60WV		

### 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.

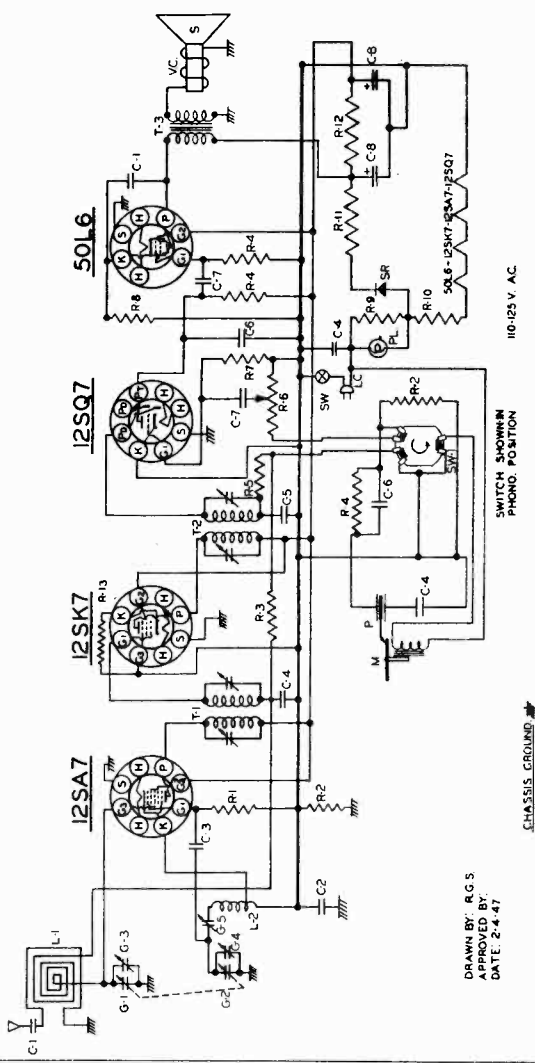
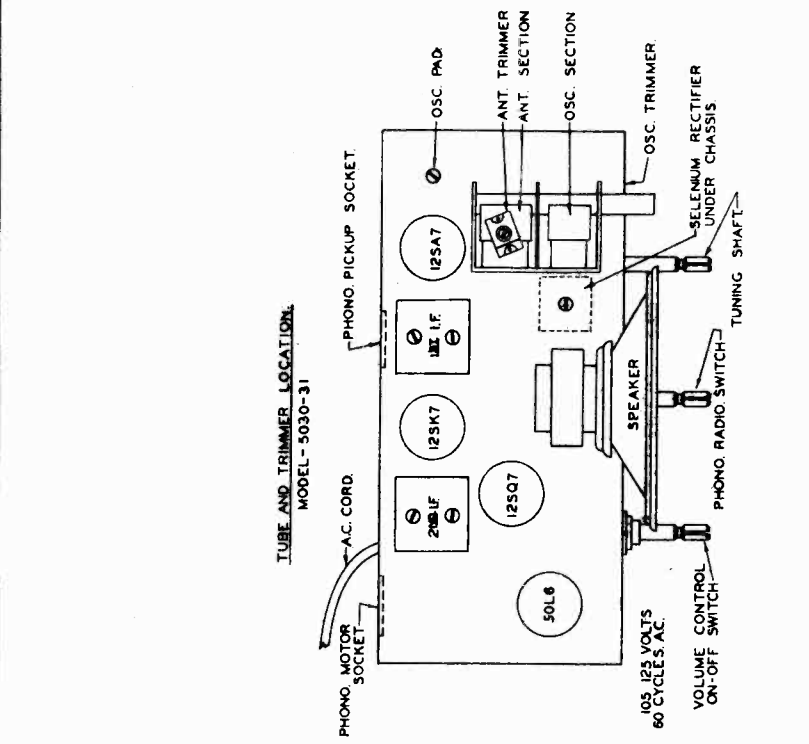
To replace the "B" battery, remove it from the cabinet. Disconnect the fasteners from the battery. Replace with a fresh battery and reconnect the fasteners. When replacing the "B" battery in the cabinet, make sure that the terminal end of the battery faces the end of the cabinet.

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.

TRAV-LER RADIO & TELEV.

MODELS 5030, 5031



PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
PC-7	0.01MFD CONDENSER 400V	IR-13	2MEG. RESISTOR 1/2W 20%	T-1	INPUT I.F. TRANSFORMER
PC-8	0.01MFD CONDENSER 500V	IR-14	150 Ω RESISTOR 1/2W 20%	T-2	OUTPUT I.F. TRANSFORMER
MC-3	0.01MFD CONDENSER 400V	WR-5	100 Ω WIREWOUND RESISTOR 5W 5%	VC	VOICE COIL
PC-5	0.01MFD MICA COND. 500V	R-10	82 Ω RESISTOR 2W 10%	SR	SELENIUM RECTIFIER
MC-5	100MMFD MICA COND. 500V	R-12	2200 Ω RESISTOR 1W 10%	M	100/60 CYCLES MOTOR
PC-10	0.01MFD MICA COND. 500V	IR-25	470 Ω RESISTOR 1/2W 20%	P	100/60 CYCLES MOTOR
EC-10	40MMFD 350V ELECTROLYTIC	IR-1	470 Ω RESISTOR 1/2W 20%	SW	RADIO-PHONO SWITCH
IR-9	22000 Ω RESISTOR 1/2W 20%	GC-1	GANG CONDENSER	LC	AC SWITCH ON VOLUME CONTROL
IR-20	220M Ω RESISTOR 1/2W 20%	TC-7	ANT. TRIMMER	LL	LINE COND.
IR-11	33MEG. RESISTOR 1/2W 20%	TC-6	OSC. TRIMMER	LL-1	OSC. CONTROL
IR-10	470M Ω RESISTOR 1/2W 20%	TC-9	800 Ω AC. TRIMMER	TU28	—
IR-6	47M Ω RESISTOR 1/2W 20%	LL-7	LOOP OSC. CONTROL		
VC-4	1MEG. VOLUME CONTROL	LL-2	—		

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.

**POWER SOURCES:** This combination will operate on an alternating (AC) current only, of 110 to 125 volts at 60 cycles.

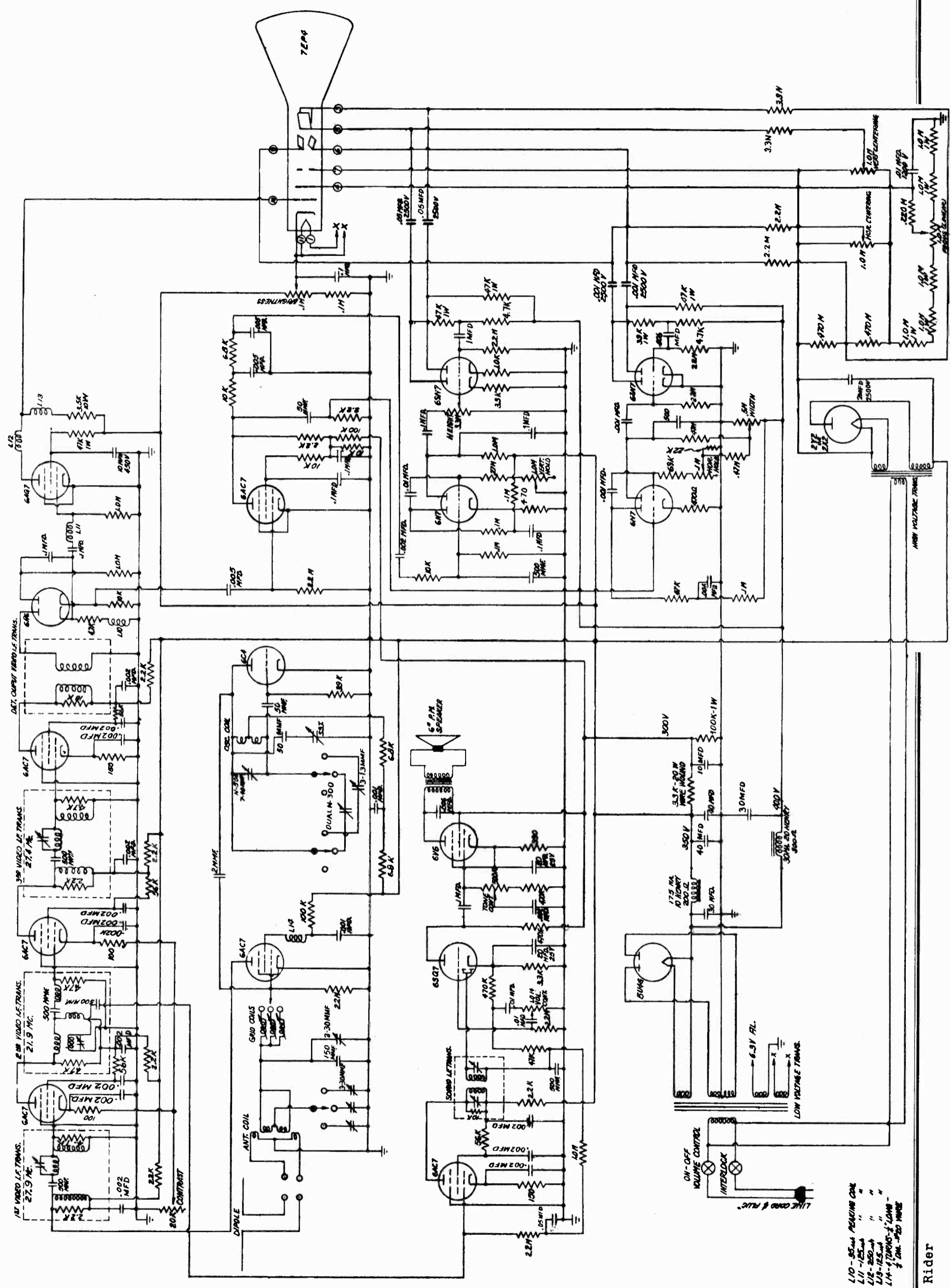
**CAUTION:** Always predetermine voltage of power source. Never try to plug this combination into a 220 volt line, as this will cause serious damage.

Never try to operate this combination on 50 cycle current, as this will cause the motor to rotate at an incorrect speed. The normal speed is 78 R.P.M. (revolutions per minute) and to insure proper reproduction of recordings 60 cycle current must be used.

Never plug this combination into a direct current (DC) source as this will seriously damage the motor which has been designed for AC operation only.



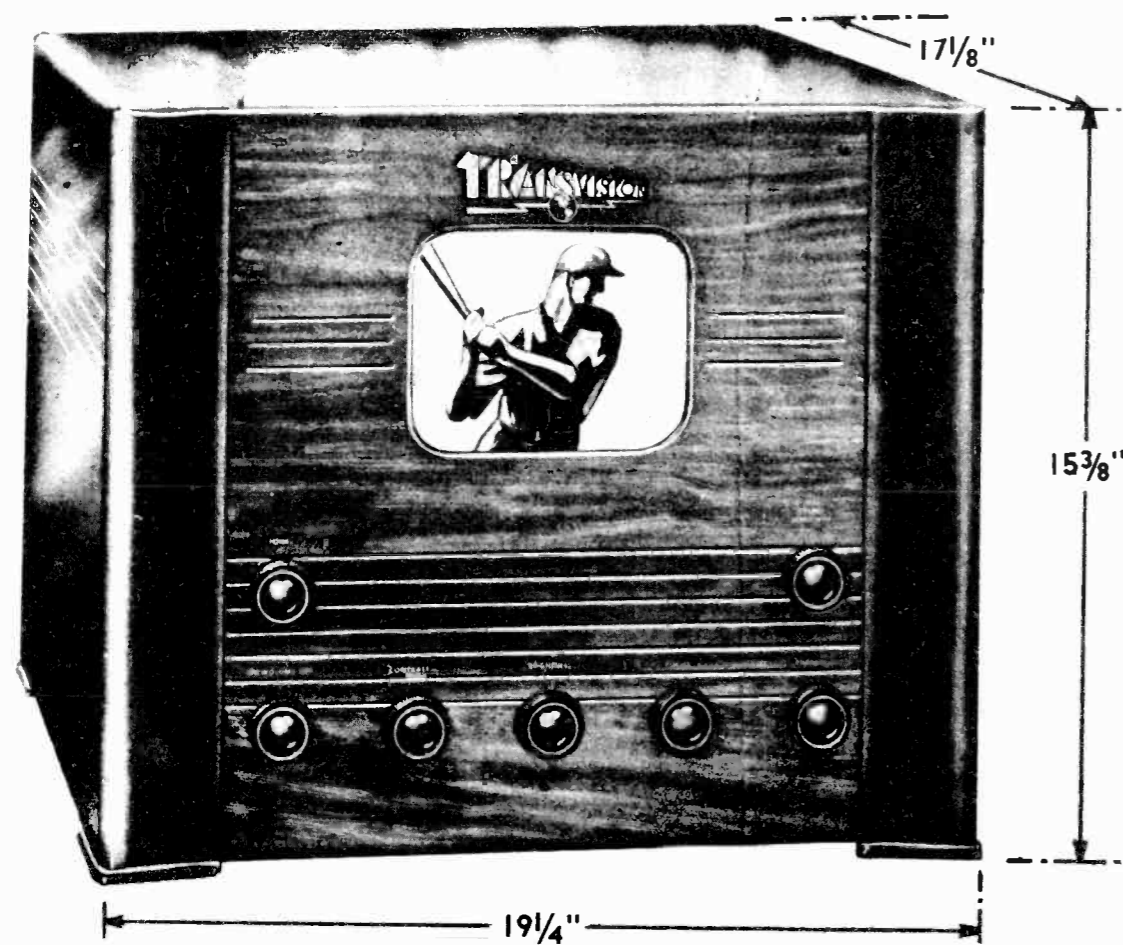
TRANSVISION, INC.



- L10 - 50µF PEELING CORE
- L11 - 125µF " "
- L12 - 250µF " "
- L13 - 125µF " "
- L14 - 470µF 5% 100V - 1/2 AM. - 1/20 MFD

TRANSVISION, INC.

7 INCH KIT



The tube lineup in the RF section is a 6AC7 mixer and a 6C4 local oscillator. This stage has been carefully designed for flat response to the entire 6.5 megacycles of all channels and, despite compactness is also capable of surprising gain.

In the video IF section there are three stages, each using a 6AC7. The Audio Intelligence is picked off of the second IF transformer by a trap tuned to 21.9 megacycles and fed into a sound IF stage that uses another 6AC7. A 6SQ7 demodulator-amplifier and a 6V6 power amplifier comprise the audio section, while the video detection and amplification are achieved by a 6H6 and 6AG7 respectively.

The sync separator is still another 6AC7 and it fires 6N7 multivibrators in both the vertical and horizontal sweep circuits. The 6SN7's that follow are push-pull amplifiers. Low voltage rectification employs a 5A4G while a 2X2 (or 2Y2) rectifies the high voltages. The picture tube is the type 7EP4.

Perhaps the most striking feature of the IF section is the system of fixed, double-tuned trap coupling. This method not only obviates the need for a signal generator, but, in spite of the high IF frequency, it simultaneously affords satisfactory gain over a 3.5 megacycle bandpass that is obtained by heavy damping. The only tuning imposed upon the constructor at all involves trimmers in the trap circuits. In the second IF can, for example, the 21.9 megacycle trap is simply adjusted for maximum output (audio), while the two remaining trimmers are set for greatest brightness.

7 INCH KIT

TRANSVISION, INC.

The selection of a relatively high intermediate frequency was dictated by image considerations. This choice fixes the various image frequencies in channels that for the present are inactive, thereby evading this problem despite the inherently poor image rejection power of television receivers in general. Measurements have indicated that at these high image frequencies conventional tubes like the 6AC7 became inoperative and in this curious manner introduce acceptable rejection properties.

A noteworthy wiring precaution that preserves IF gain at its highest possible level concerns the use of a single ground for each IF stage. This common ground is a lug securely fastened to the appropriate socket under the #1 pin. In this manner, spurious voltages that frequently reduce gain are effectively eliminated. Excellent response in the video circuit is derived through the use of low resistance in the detector circuits and through a carefully designed series-shunt peaking arrangement in both the input and output of the section.

In the audio section, demodulation is accomplished by means of slope detection, while ample volume is provided by the two stages of amplification that follow. A tone control is also included. The salient feature of the sync separator is the exceedingly low voltages employed, a provision that affords maximum limiting.

Because of the latitude present in sweep design, it is always of interest to discuss what considerations have guided final circuit decisions. The primary one, of course, pertains to the selection of impulse generator. Greater flexibility is naturally permitted in the vertical section because of its lower frequency and, consequently, the advantages of a multivibrator can be utilized here without further ado.

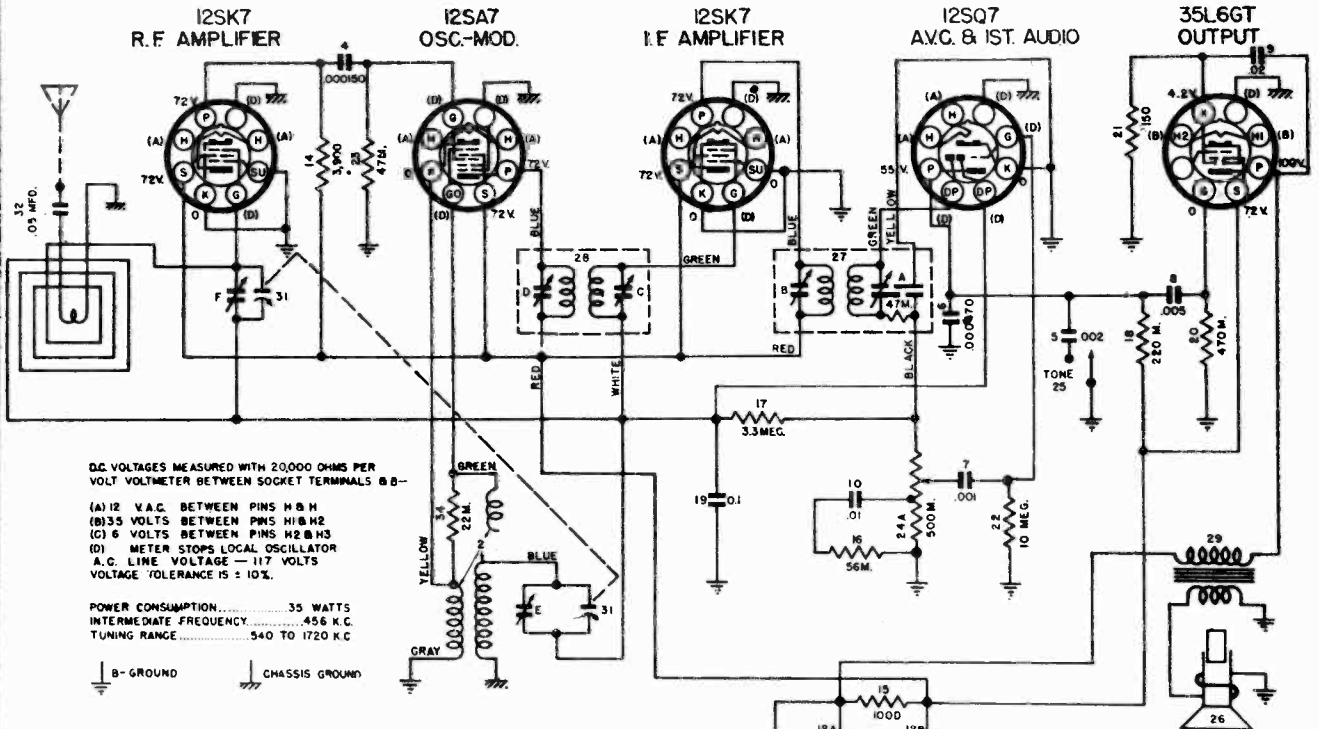
The problem of stability, however, must be considered more cautiously in horizontal design. Initial plans, therefore, tentatively called for another multivibrator in the horizontal section. Surprisingly enough, the instability that actually materialized appeared to be closely connected with the interference problem, such as ignition disturbances, for example. Investigation soon focused attention upon the long time constant of the capacity grid leak arrangement originally coupling the differentiating network to the 6N7 multivibrator. At any rate, a direct connection from differentiator to grid, together with a further lowering of the differentiator time constant, succeeded in reducing the problem to such negligible proportions that the multivibrator proved completely acceptable.

A common expedient used in the rectifier circuits to provide the kinescope with an extra 350 volts deserves a word of comment. Generally, the low side of the high voltage rectifier is returned directly to ground. But since this procedure has the disadvantage of losing the potential available in the low voltage section, it appeared sensible to connect the two rectifier circuits in series. As a precaution against noise pickup, the low side of the high voltage supply was tied to a 350 volt terminal point safely distant from the RF unit. No ill effects developed and, because of the additional voltage, the kinescope performance was materially improved.

A final consideration that demands special attention in the kit field concerns adequate protection against the high voltages present. For the under surface of the chassis, an interlock switch and a bottom plate are provided, while for the top surface a ceramic cap insulates the connection to the anode of the 2X2. The last protective measure is the use of bakelite shafts, attached, of course, to all controls possessing high voltage connections.

Despite the simplicity of design employed to make the TRANSVISION TELEVISION KIT the ideal set for the inexperienced assembler to construct, no modern television technique was omitted. As a result, we have a television kit easy to construct into a set which, when complete, provides the user with a quality television receiver.

UNITED MOTORS SERVICE CORP. MODELS R-1227, R-1228, (DIV. OF GEN. MOTORS) R-1229

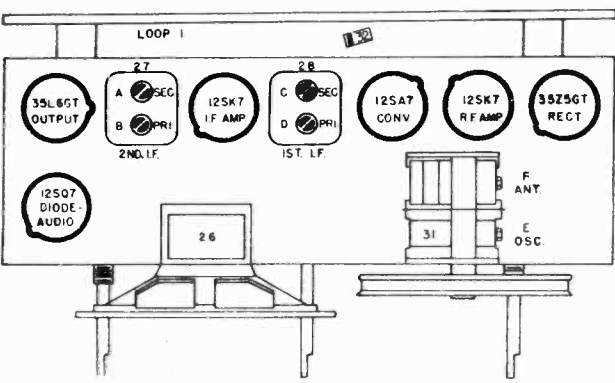
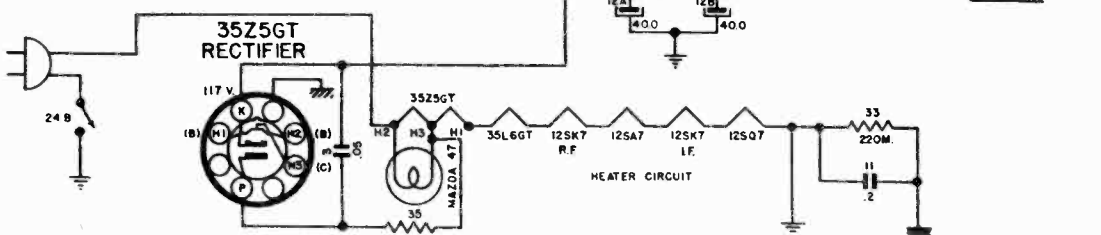


D.C. VOLTAGES MEASURED WITH 20,000 OHMS PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS B-B--

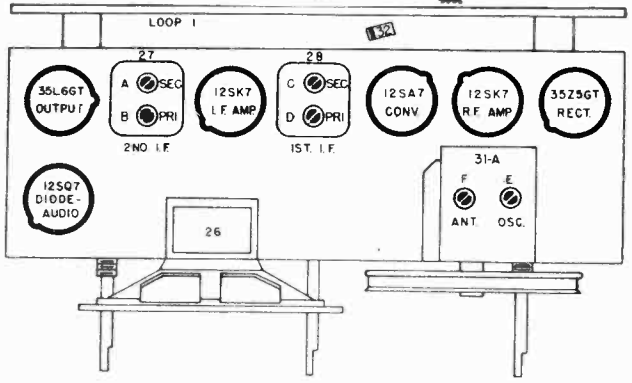
- (A) 12 V.A.C. BETWEEN PINS H & H
  - (B) 35 VOLTS BETWEEN PINS H1 & H2
  - (C) 6 VOLTS BETWEEN PINS H2 & H3
  - (D) METER STOPS LOCAL OSCILLATOR
- A.C. LINE VOLTAGE — 117 VOLTS  
VOLTAGE TOLERANCE 15 ± 10%.

POWER CONSUMPTION..... 35 WATTS  
INTERMEDIATE FREQUENCY..... 456 K.C.  
TUNING RANGE..... 540 TO 1720 K.C.

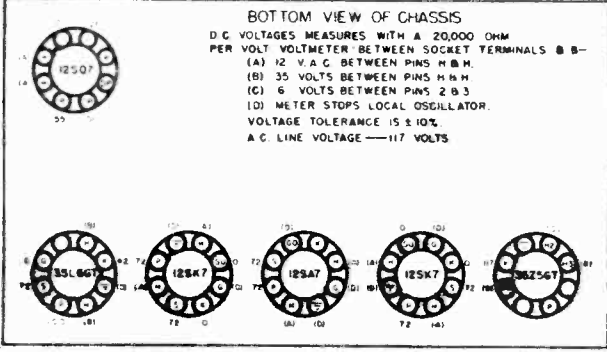
B-GROUND      CHASSIS GROUND



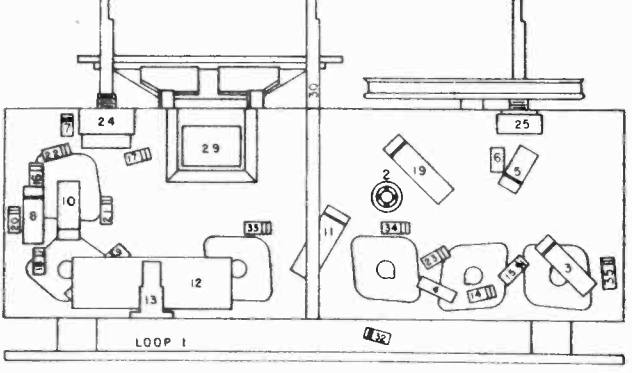
PARTS LAYOUT — TUBE VIEW  
TRIMMERS ON SIDE OF TUNING CONDENSER



PARTS LAYOUT — TUBE VIEW  
TRIMMERS ON TOP OF TUNING CONDENSER



TUBE SOCKET VOLTAGE CHART

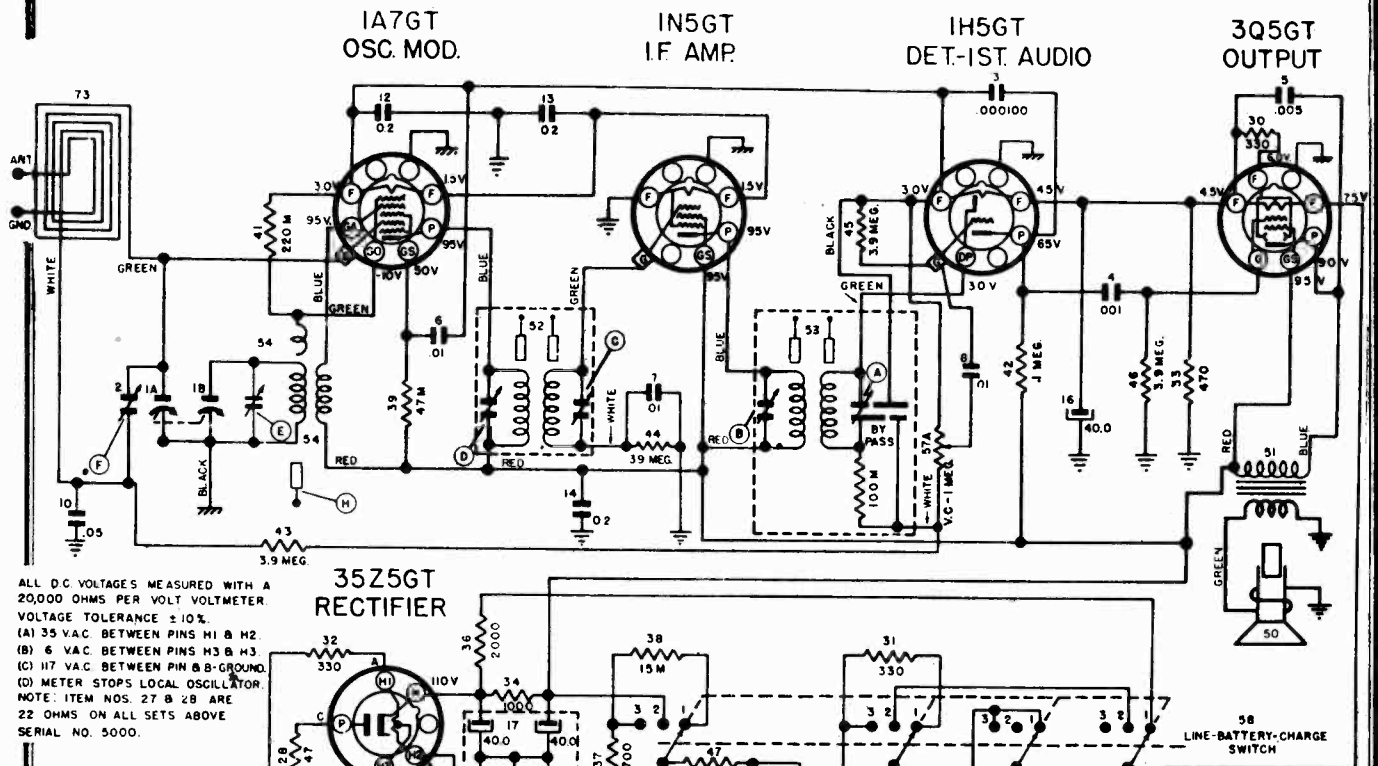


PARTS LAYOUT — CHASSIS VIEW

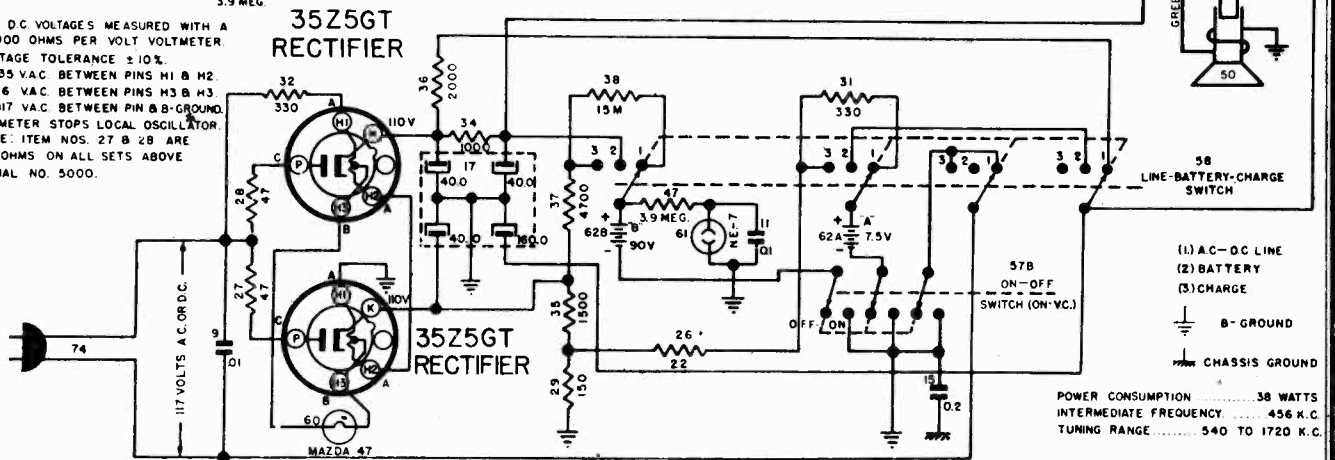




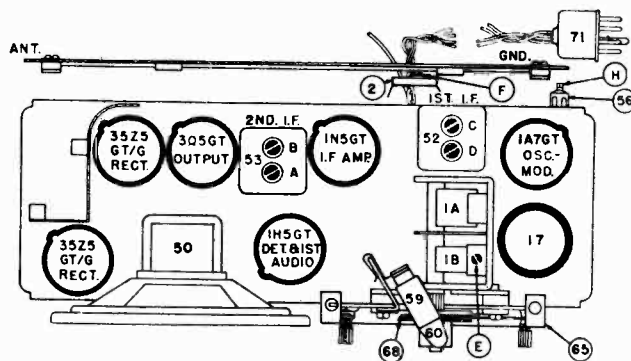
UNITED MOTORS SERVICE CORP. MODELS R-1408, R-1409  
(DIV. OF GEN. MOTORS)



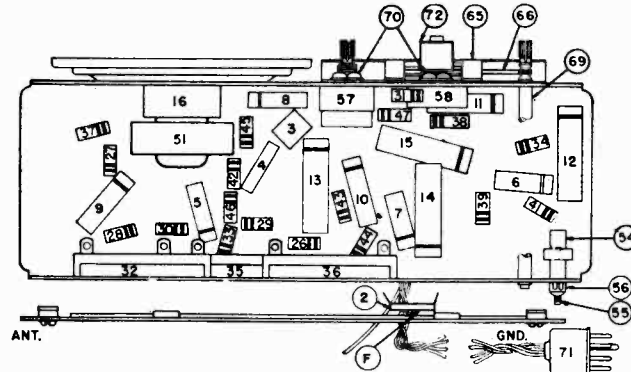
ALL D.C. VOLTAGES MEASURED WITH A 20,000 OHMS PER VOLT VOLTMETER. VOLTAGE TOLERANCE ±10%.  
(A) 35 VAC BETWEEN PINS H1 & H2  
(B) 6 VAC BETWEEN PINS H3 & H3  
(C) 117 VAC BETWEEN PIN & B-GROUND  
(D) METER STOPS LOCAL OSCILLATOR.  
NOTE: ITEM NOS. 27 & 28 ARE 22 OHMS ON ALL SETS ABOVE SERIAL NO. 5000.



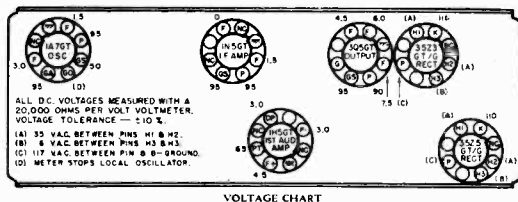
POWER CONSUMPTION ..... 38 WATTS  
INTERMEDIATE FREQUENCY ..... 456 K.C.  
TUNING RANGE ..... 540 TO 1720 K.C.



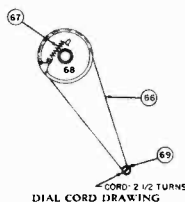
PARTS LAYOUT - TUBE VIEW



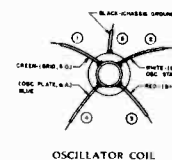
PARTS LAYOUT - CHASSIS VIEW



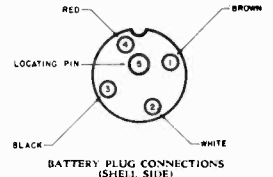
VOLTAGE CHART



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
<b>ELECTRICAL PARTS</b>		
<b>COILS</b>		
73	1217535	Antenna Assy. — Loop and Back Cover — Model R-1409 (Includes Condenser #2)
71	1217569	Antenna Assy. — Loop and Back Cover — Model R-1408 (Includes Condenser #2)
54	1217019	Oscillator
52	1216951	1st I. F.
51	1216953	2nd I. F.
<b>CONDENSERS</b>		
1	1216904	2 Gang Variable
1A		Antenna Section
1B		Oscillator Section
2	1217250	Antenna Trimmer (Included in #1217535 and 1217569)
3	G101	000100 Mfd. Moided
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	J500	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		100 Mfd. 25 V.
<b>RESISTORS</b>		
26	A220	22 Ohms 1/2 W. Insulated
27	B470	47 Ohms 1 W. Insulated
28	B470	47 Ohms 1 W. Insulated
29	B151	150 Ohms 1 W. Insulated
30	A331	330 Ohms 1/2 W. Insulated
31	A331	330 Ohms 1/2 W. Insulated
32	1216958	330 Ohms 10 W. Candohm
33	A471	470 Ohms 1/2 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	47,000 Ohms 1 W. Insulated
38	A153	15,000 Ohms 1/2 W. Insulated
39	A473	47,000 Ohms 1/2 W. Insulated
41	A224	220,000 Ohms 1/2 W. Insulated
42	A105	1 Megohm 1/2 W. Insulated
43	A395	3.9 Megohm 1/2 W. Insulated
44	A395	3.9 Megohm 1/2 W. Insulated
45	A395	3.9 Megohm 1/2 W. Insulated
46	A395	3.9 Megohm 1/2 W. Insulated
47	A395	3.9 Megohm 1/2 W. Insulated
<b>MECHANICAL PARTS</b>		
72	1836870	Bushing — Selector Switch
66	1217103	Cable Assy. — Battery
65	1212233	Cord — Universal Dial Drive — 48" Length
65	1217301	Dial and Dial Plate Assy.
65	7237173	Grommer — Neon Lamp Mtg.
70	7231480	Nut — Hex
70	1217533	Plug — Mole Chassis
70	1217255	Pointer — Dial
74	1217518	Power Cord and Socket
68	1217338	Pulley Assy.
69	1216951	Shaft — Manual Drive
59	1217539	Socket — Dial Light Assy., Less Lamp
59	7236279	Socket — Octal Base Tube
67	1217323	Spring — Cord Tension
67	245353	Washer — "C" (Use With #1216951)

62	8760
56	1217109
55	1217124
60	47
61	1217259
50	1216563
58	1216936
51	1217582
57	1216945

**MISCELLANEOUS ELECTRICAL PARTS**

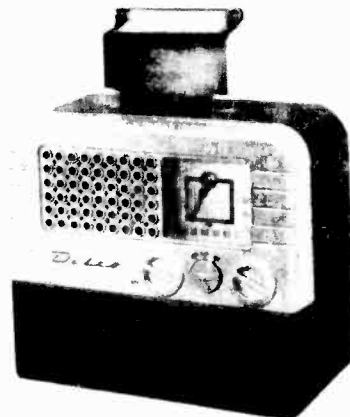
Battery — "A" 7.4 V, "B" 90 V
Fastener — Coil Form
Iron Core Assembly
Lamp — Dial
Lamp — Neon Glow
Speaker — 5" PM
Transfer Switch
Transformer Output
Volume Control and Switch

**CABINET PARTS**

Cabner — Model R-1409 — Brown Leather
Cabner — Model R-1408 — Cream Leather
Front Cover Assy. — Complete — Model R-1409
Front Cover Assy. — Complete — Model R-1408
Front Cover
Grille and Baffle Cloth
Mounting Brackets and Screws
Dial Crystal
Handle Assy. Complete
Knob — Power Volume and Tuning Control — Model R-1409
Knob — Power Volume and Tuning Control — Model R-1408
Knob and Spring — Transfer Switch — Model R-1409
Knob and Spring — Transfer Switch — Model R-1408

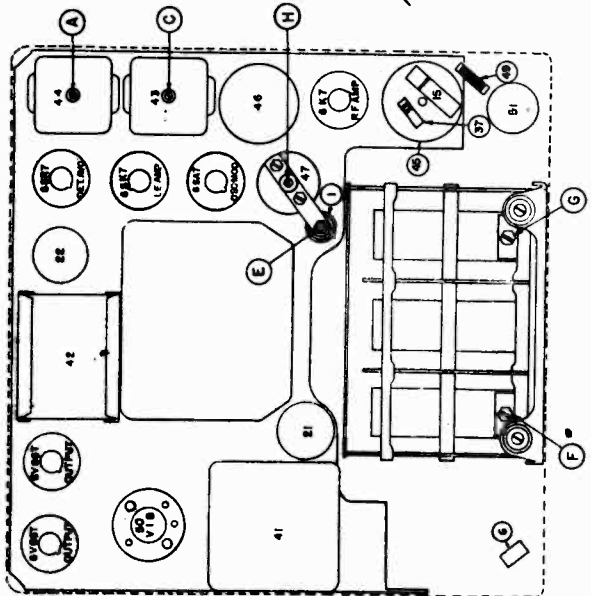
Charging Rate (Battery Charging) "A" — 15 Mils.  
 Charging Rate (Battery Charging) "B" — 4 Mils.  
 Battery Supply, "A" — 7.5 Volts  
 Battery Supply, "B" — 90 Volts  
 Power Supply — 105/125 volts AC/DC  
 Power Consumption — 38 Watts

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.

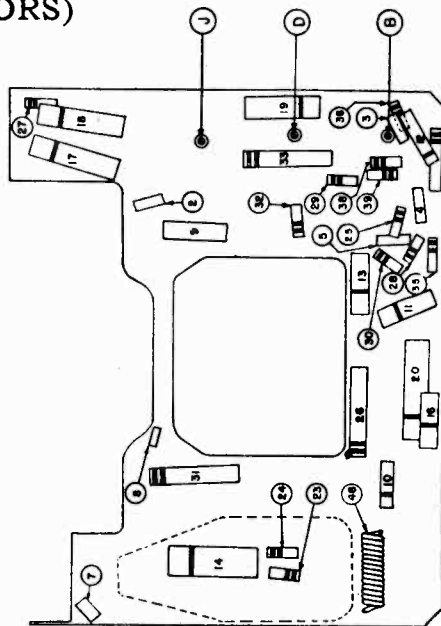




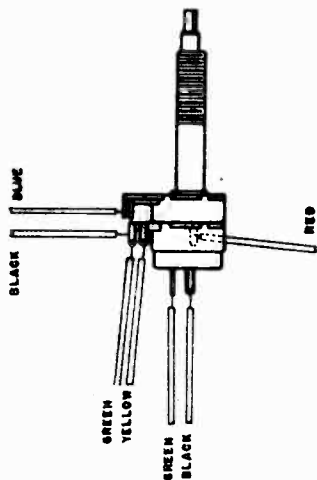
MODELS 980690, Revised, UNITED MOTORS SERVICE CORP.  
980733, Buick (DIV. OF GEN. MOTORS)



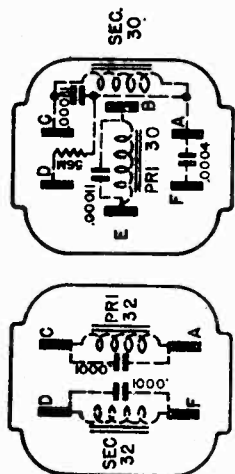
PARTS LAYOUT - TUBE VIEW



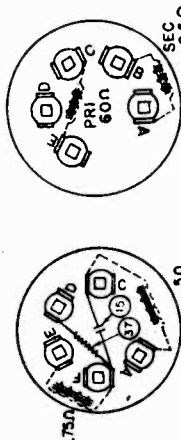
PARTS LAYOUT - CHASSIS VIEW



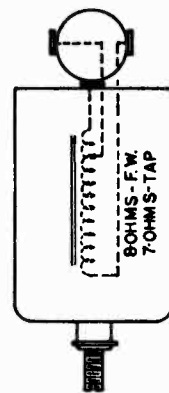
DUAL CONTROL



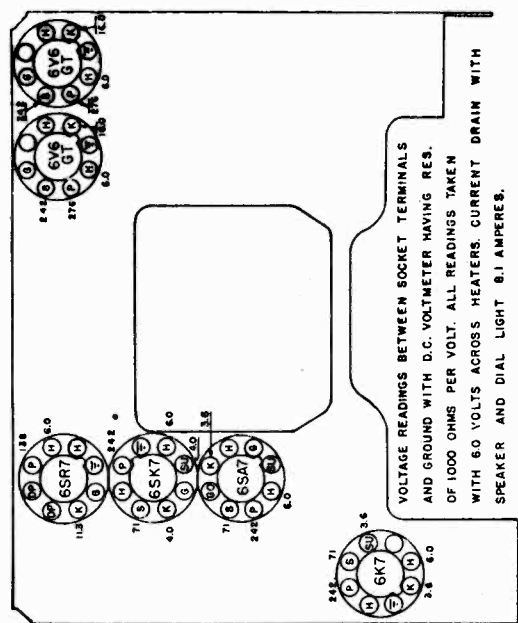
1st I. F. TRANS.      2nd I. F. TRANS.



ANT. COIL      R. F. COIL

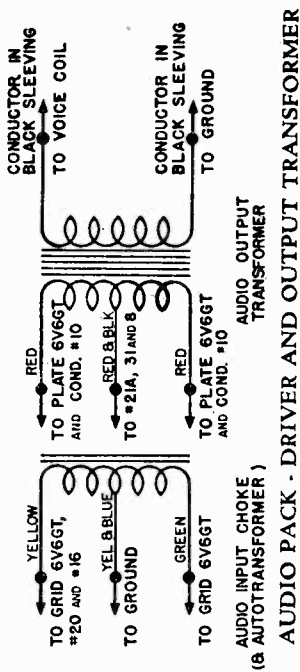


OSC. COIL

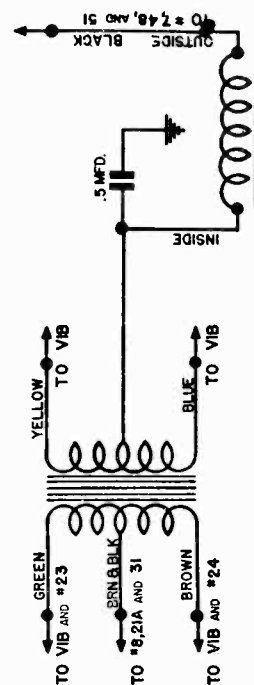


VOLTAGE READINGS BETWEEN SOCKET TERMINALS AND GROUND WITH D.C. VOLTMETER HAVING RES. OF 1000 OHMS PER VOLT. ALL READINGS TAKEN WITH 60 VOLTS ACROSS HEATERS. CURRENT DRAIN WITH SPEAKER AND DIAL LIGHT 8.1 AMPERES. \*B\* SUPPLY DRAIN 65 M.A. TOLERANCE ON VOLTAGES ± 10%

TUBE SOCKET VOLTAGE CHART



AUDIO PACK - DRIVER AND OUTPUT TRANSFORMER

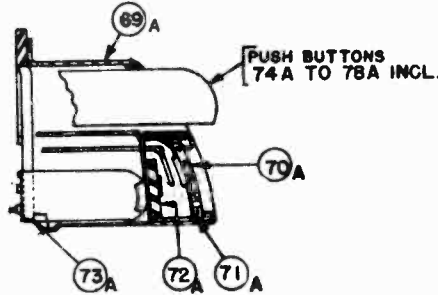


POWER TRANSFORMER

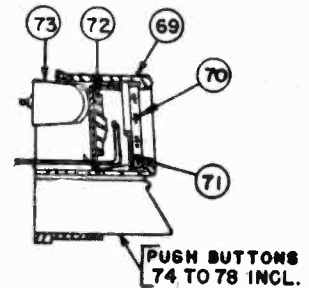
UNITED MOTORS SERVICE CORP. MODELS 980690, Revised,  
(DIV. OF GEN. MOTORS) 980733, Buick

**PUSH BUTTON SET-UP**

Release holding spring in bottom of button, pull button off. Loosen re-set screw and push in until it bottoms. Tune in desired station while holding in re-set screw. Release and tighten screw. Replace button.



MODEL 980733



MODEL 980690

**ALIGNMENT PROCEDURE**

Volume control maximum. Signal Generator output minimum for satisfactory output indication (preferably below one watt output).

**ESCUTCHEON CROSS SECTION**

Series Condenser or Dummy Antenna	Connect to	Signal Generator Frequency	Adjust Screws In Order
0.1 Mfd.	Grid side of R. F. Sec. of Gang. Cond.	262 K. C.	A B C D
0.1 Mfd.	Grid side of R. F. Sec. of Gang. Cond.	1615 K. C.	E
.000060 Mfd.	Antenna Connector	1430 K. C.	F G
.000060 Mfd.	Antenna Connector	600 K. C.	H J

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

**SPECIAL INSTRUCTIONS**

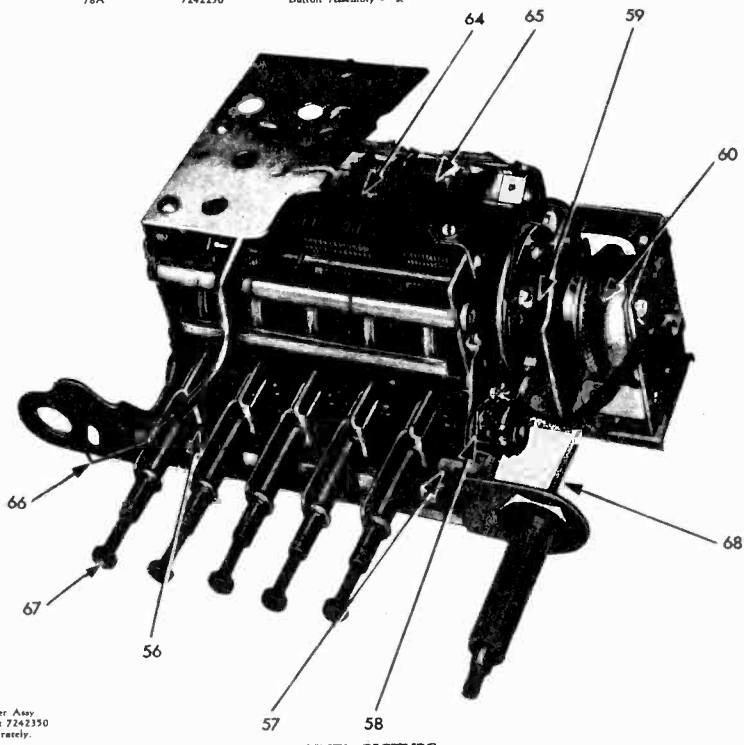
Rock gang condenser back and forth through signal during 600 K. C. adjustment of screws H and J. Repeat Alignment adjustment of trimmers F and G at 1430 K. C. and of cores H and J at 600 K. C.

**SERVICE PARTS LIST**

Illus. No.	Service Part No.	Description	Part No.	Description
<b>CONDENSERS</b>				
1	7244059	Oscillator Air Trimmer (Included in Osc. Coil Assembly. Part #7244111)	64	Cord and Spring Assembly
2	7242540	.000012 Mfd. Compensating	65	Cord and Link Assembly
3	7233313	.000047 Mfd. Molded	66	Pointer and Tip Assembly
4	7240577	.000120 Mfd. Molded	67	Reset Screw Assembly
5	7236195	.000210 Mfd. Molded	68	Tuning Shaft Assembly
6	7240566	.000160 Mfd. Mica	69	Escutcheon
7	7240566	.000160 Mfd. Mica	70	Dial - Glass
8	7240566	.000160 Mfd. Mica	71	Dial Shield
9	7235613	.000560 Mfd. Mica - Molded (Alt. for 7240566)	72	Backplate Assembly
10	7236134	.000660 Mfd. Silver Mica	73	Dial Clamp
11	7240578	.0015 Mfd. 800 V. Tubular	74	Button Assembly - "B"
12	7230912	.0025 Mfd. 400 V. Tubular	75	Button Assembly - "L"
13	1208660	.005 Mfd. 600 V. Tubular	76	Button Assembly - "I"
14	7231975	.01 Mfd. 600 V. Tubular	77	Button Assembly - "C"
15	1212099	.015 Mfd. 1500 V. Dual-Tubular	78	Button Assembly - "K"
16	1212332	.02 Mfd. 600 V. Tubular	64A	Cord and Spring Assembly
17	1207908	.025 Mfd. 400 V. Tubular	65A	Cord and Link Assembly
18	1207908	.01 Mfd. 400 V. Tubular	66A	Pointer and Tip Assembly
19	1207908	.01 Mfd. 400 V. Tubular	67A	Reset Screw Assembly
20	7240579	.02 Mfd. 400 V. Tubular	68A	Tuning Shaft Assembly
21	7240612	Electrolytic - 2 Section 20-20 Mfd. 400 V.	69A	Escutcheon Assembly
22	7238593	Electrolytic - 3 Section 20-20-20 Mfd. 25 V.	70A	Dial Glass
<b>RESISTORS</b>				
23	1213217	100 Ohms 1/2 W. Insulated	71A	Dial Shield
24	1213217	100 Ohms 1/2 W. Insulated	72A	Backplate Assembly
25	1213224	330 Ohms 1/2 W. Insulated	73A	Dial Clamp
26	1214572	330 Ohms 2 W. Insulated	74A	Button Assembly - "B"
27	1213482	500 Ohms 1/2 W. Insulated	75A	Button Assembly - "L"
28	1214543	680 Ohms 1/2 W. Insulated	76A	Button Assembly - "I"
29	1214544	820 Ohms 1/2 W. Insulated	77A	Button Assembly - "C"
30	1213217	1,000 Ohms 1/2 W. Insulated	78A	Button Assembly - "K"
31	1214573	1,800 Ohms 2 W. Insulated	78A	Button Assembly - "K"
32	1214550	22,000 Ohms 1/2 W. Insulated		
33	7240590	22,000 Ohms 2 W. Insulated		
34	1213342	27,000 Ohms 1 W. Insulated		
35	1213844	68,000 Ohms 1/2 W. Insulated		
36	1213915	120,000 Ohms 1/2 W. Insulated		
37	1213935	220,000 Ohms 1/2 W. Insulated		
38	1213282	1 Megohm 1/2 W. Insulated		
39	1213282	1 Megohm 1/2 W. Insulated		
<b>MISCELLANEOUS ELECTRICAL PARTS</b>				
40	7240469	Speaker - 8" Electrodynamic		
41	7240519	Power Transformer Assembly		
42	7240464	Audio Pack - Driver and Output Transformer		
43	7240466	First I. F. Transformer Assembly		
44	7240467	Second I. F. Transformer Assembly		
45	7242232	Antenna Coil and Shield Assembly		
46	7242238	R. F. Coil Assembly		
47	7244111	Oscillator Coil Assembly		
48	7241708	"A" Filter Choke		
49	7240251	Antenna Choke Coil		
50	8630	Vibrator - Synchronous		
51	7241967	Volume, Tone Control and Switch (Model 980690)		
	7241928	Volume, Tone Control and Switch (Model 980733)		
<b>MISCELLANEOUS CLASSIS PARTS</b>				
56	7242034	"A" Lead Connector Assembly		
57	7242035	Antenna Lead Connector Assembly		
	7238599	Vibrator Socket		
	7240279	Onal Base Tube Socket		
	7240408	Dial Light Assembly (Includes Dial Lamp)		
	125588	Bulb - Dial Lamp		
	1211177	"A" Lead Cable Assembly - Model 980690		
	1321178	"A" Lead Cable Assembly - Model 980733		
	120151	Fuse		
	1286759	Static Collector Assembly		
	1880659	Generator Condenser		
	1207820	Distributor Suppressor		
	1853686	Suppressor Adapter		
	1324056	Bracket - R. H. - Model 980690		
	1324057	Bracket - L. H. - Model 980690		
	1323926	Bracket - R. H. - Model 980733		
	1323927	Bracket - L. H. - Model 980733		
	1320624	Washer		
	120380	Lockwasher		
	120375	Hex. Nut		
	123291	Screw		
<b>TUNER UNIT AND PARTS</b>				
	7242170	Tuner Assembly Complete (Model 980690)		
	7242350	Tuner Assembly Complete (Model 980733)		
56	7240287	Shaft - Decoupling Switch Lever		
57	7240410	Decoupling Switch Lever Assembly		
	7236998	Retainer Spring		
	7240292	Spring - Decoupling Switch Lever		
58	7240397	Switch Assembly - Decoupling		
59	7240396	Drive Drum Assembly		
	7240471	Clutch Assembly Complete		
60	7231724	Universal Joint Spring		

Parts included in Part #7242170 which are serviced separately.

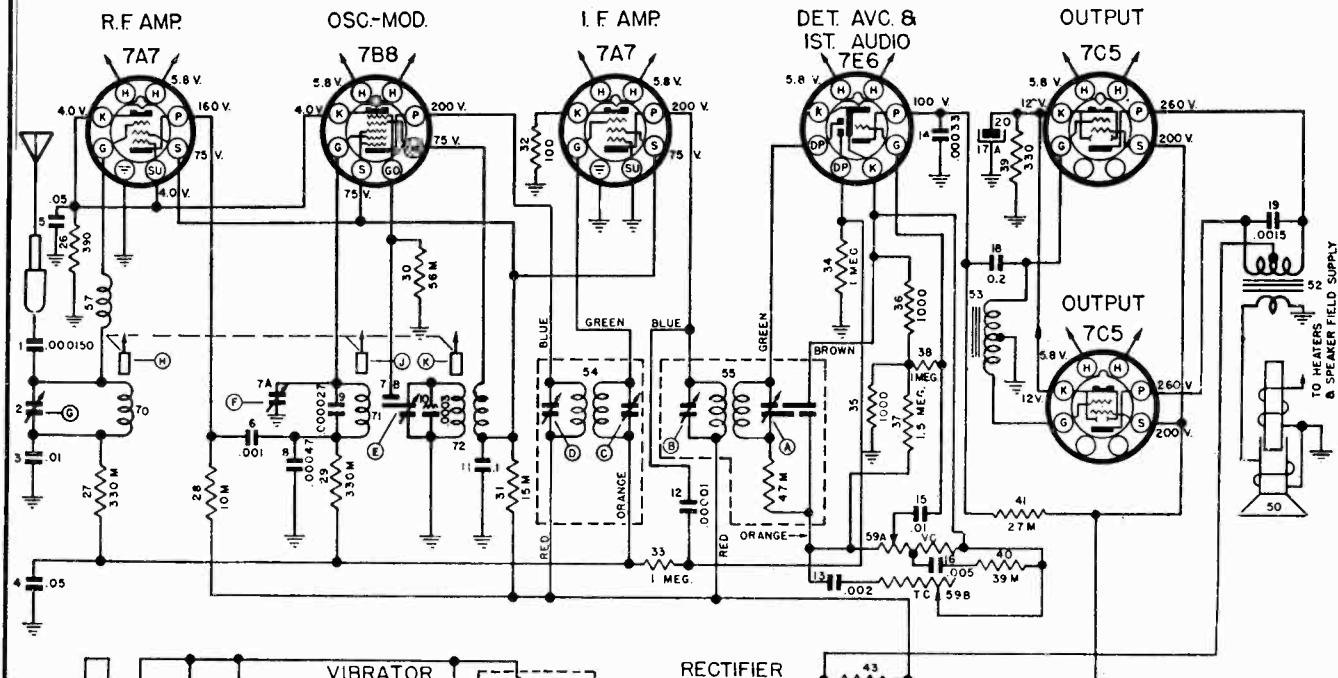
Parts included in Part #7242350 which are serviced separately.



TUNER PICTURE

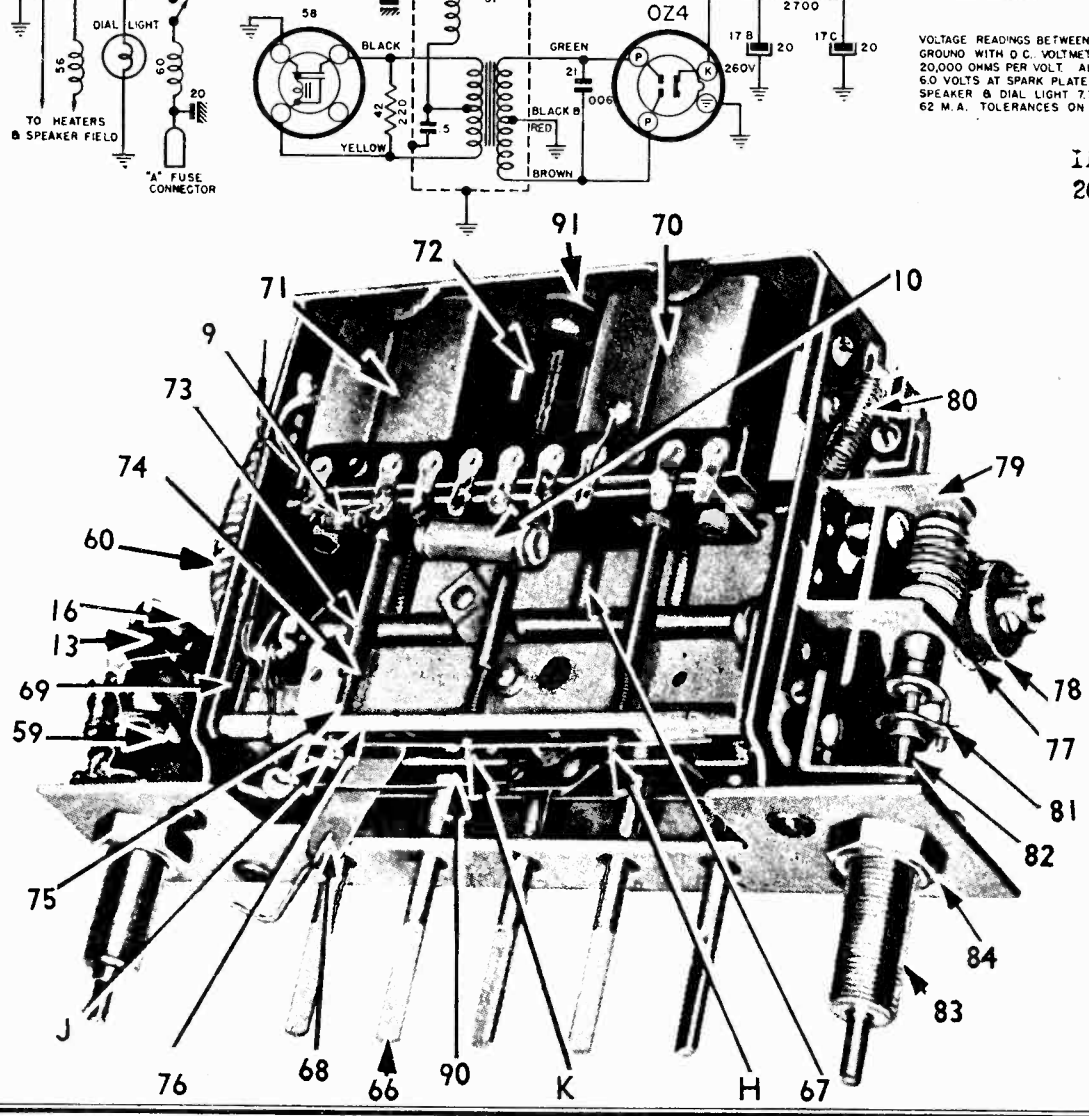
MODEL 982399,  
Oldsmobile

UNITED MOTORS SERVICE CORP.  
(DIV. OF GEN. MOTORS)



VOLTAGE READINGS BETWEEN SOCKET TERMINALS AND GROUND WITH D.C. VOLTMETER HAVING RESISTANCE OF 20,000 OHMS PER VOLT. ALL READINGS TAKEN WITH 6.0 VOLTS AT SPARK PLATE. CURRENT DRAIN WITH SPEAKER & DIAL LIGHT 7.7 AMPS "B" SUPPLY DRAIN 62 M.A. TOLERANCES ON VOLTAGES ± 10 %.

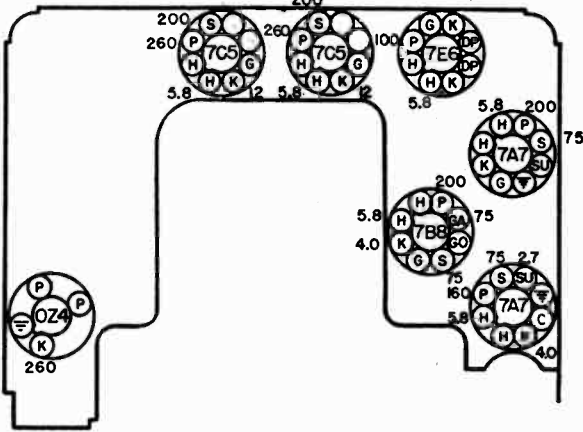
IF PEAK  
262 KC





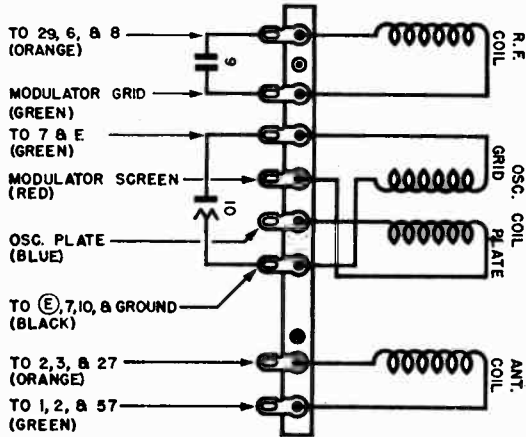
MODEL 982399,  
Oldsmobile

UNITED MOTORS SERVICE CORP.  
(DIV. OF GEN. MOTORS)

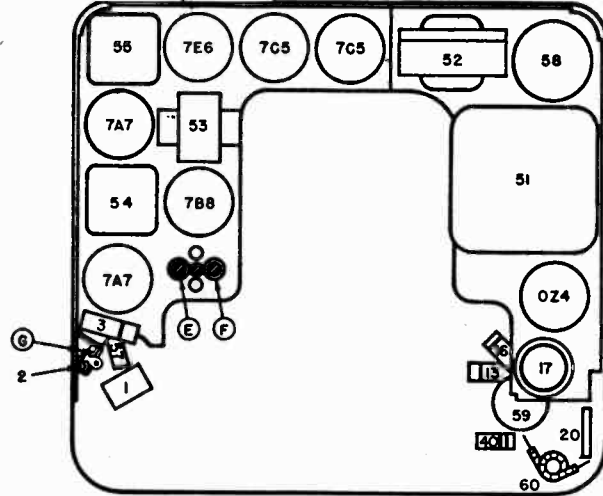


VOLTAGE READINGS BETWEEN SOCKET TERMINALS AND GROUND WITH D.C. VOLTMETER HAVING RESISTANCE OF 20,000 OHMS PER VOLT. ALL READINGS TAKEN WITH 6.0 VOLTS AT SPARK PLATE. CURRENT DRAIN WITH SPEAKER AND DIAL LIGHT 7.7 AMPS. "B" SUPPLY DRAIN 62 MA. TOLERANCES ON VOLTAGES ±10%

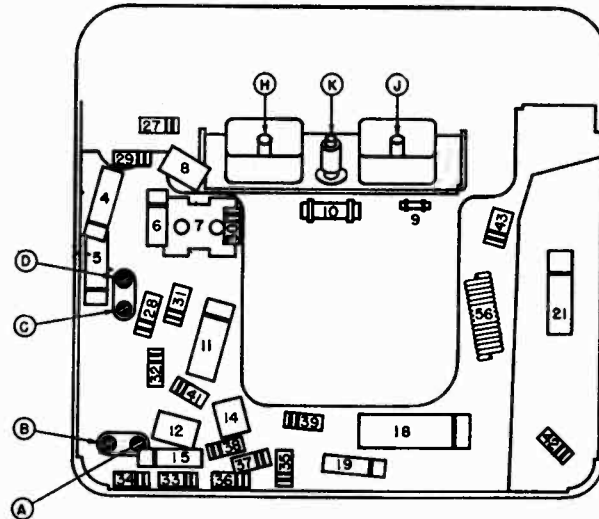
TUBE SOCKET VOLTAGE CHART



TUNER COILS



PARTS LAYOUT—TUBE VIEW



PARTS LAYOUT—CHASSIS VIEW

ALIGNMENT PROCEDURE

Volume Control Maximum — Tone Control on treble.  
Signal Generator minimum for satisfactory output indication.

Series Condenser Or Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 MFD	Grid side of Trimmer F	262 KC	A B C D
.000070 MFD	Antenna Terminal	1615 KC	E
.000070 MFD	Antenna Terminal	1430 KC	F G

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

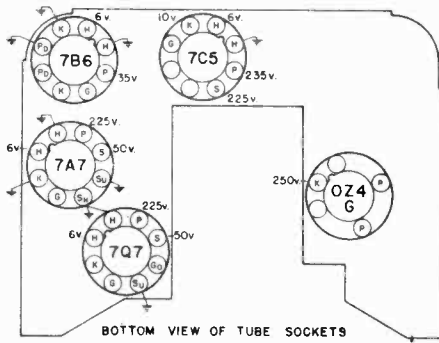
SPECIAL INSTRUCTIONS

Mechanical alignment of iron cores. Tune to stop at H.F. end of dial. Adjust cores H, J, and K to extend 1 3/8" from end of coil form. Adjust trimmers E, F, and G, (1615 KC). Adjust cores H and J for maximum output at 1430 KC. Repeat alignment of trimmers E, F, and G at 1615 KC. Repeat alignment of cores H and J at 1430 KC. Align trimmers F and G at 1430 KC.



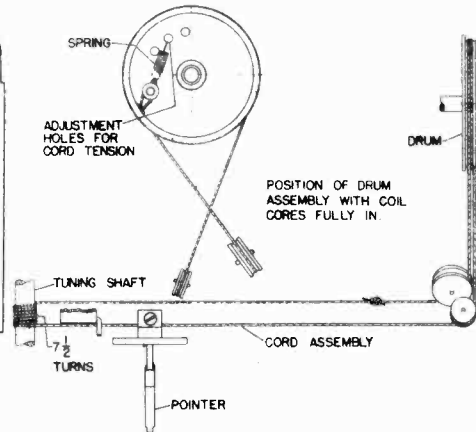


MODEL 984170, Pontiac UNITED MOTORS SERVICE CORP.  
(DIV. OF GEN. MOTORS)

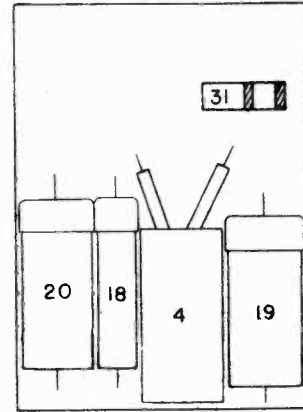


BOTTOM VIEW OF TUBE SOCKETS

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A D.C. VOLTMETER HAVING A RESISTANCE OF 1000 OHMS PER VOLT; "A" BATTERY 6.0 VOLTS, CURRENT DRAIN 6.0 AMPERES; "B" SUPPLY ORAIN APPROXIMATELY 50 M.A. ALL READINGS ± 10%

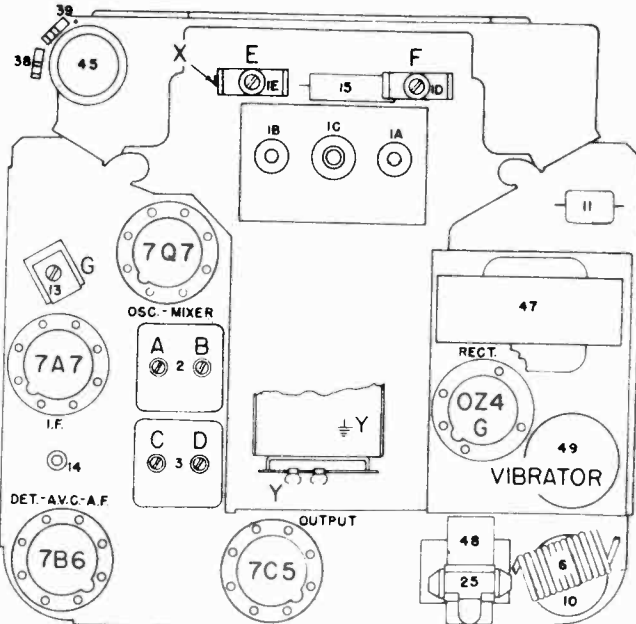
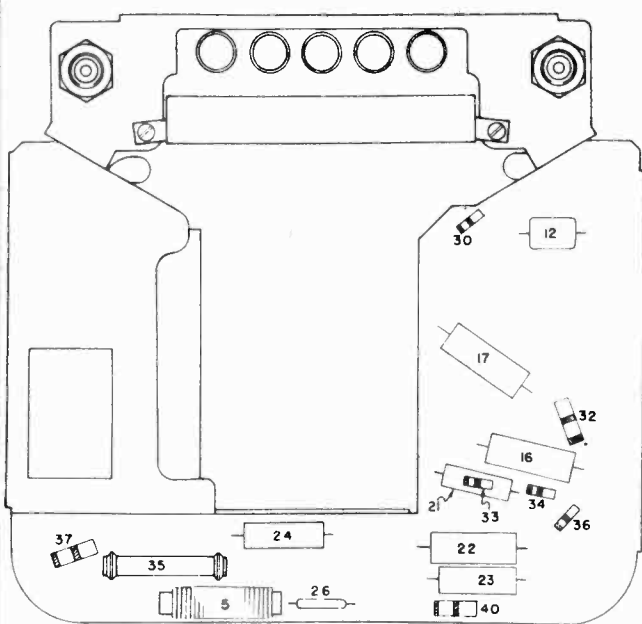


DIAL CORD HOOKUP



POWER PACK LAYOUT

SOCKET VOLTAGES



PARTS LAYOUT

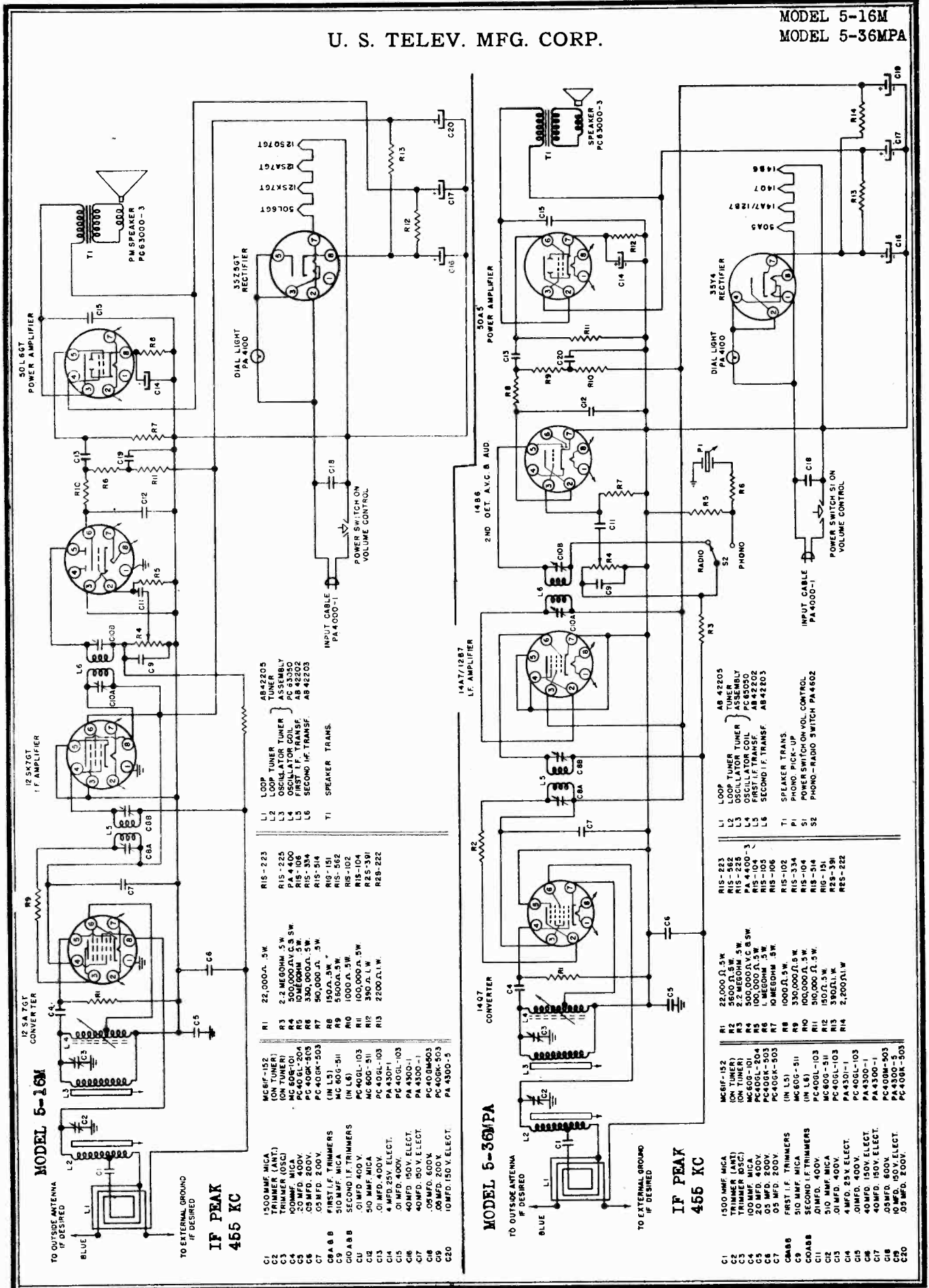
**ALIGNMENT PROCEDURE**  
Volume Control maximum.  
Tone Control on high position.  
Signal Generator Output minimum for satisfactory output indication.

Series Capacitor Or Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 mfd.	Terminal X (See Parts Layout)	260 KC	A, B, C, D
.000060 mfd.	Antenna Terminal	1610 KC	G
.000060 mfd.	Antenna Terminal	1400 KC	E, F

Low frequency alignment not required.  
Adjust Trimmer F to match car antenna (1400 KC) when radio is installed.

U. S. TELEV. MFG. CORP.

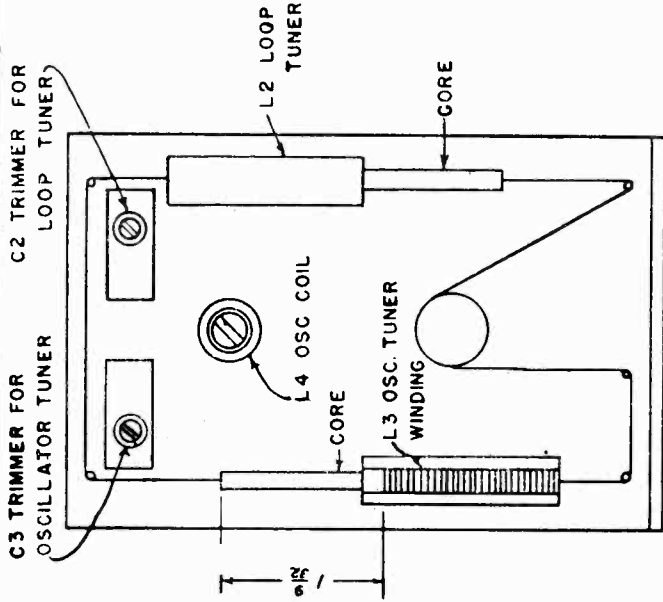
MODEL 5-16M  
MODEL 5-36MPA



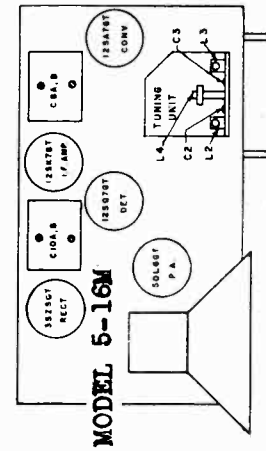
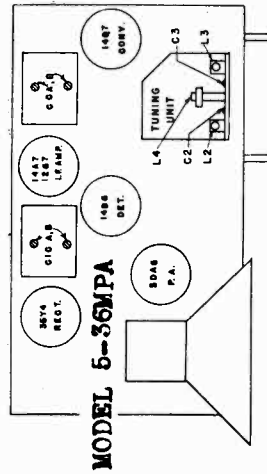
©John F. Rider

MODEL 5-16M  
MODEL 5-36MPA

U. S. TELEV. MFG. CORP.



BACK VIEW OF TUNING UNIT  
MODEL 5-16M, 5-36MPA



VOLTAGE CHART MODEL 5-36MPA

VOLUME CONTROL ON FULL WITH NO SIGNAL

TUBE	FUNCTION	Voltage of Each Socket Prong to Switch on Volume Control							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
14Q7	Converter	24*	67	85	-5.5	0	-4	0	13*
14A7/12B7	I. F. Amp.	37*	84	0	0	-5	0	24*	
14B6	2nd Det. - AVC - AF	0	55	-5	0	-5	-6	0	13*
50A5	Power Amp.	37*	76	83	-	-	0	5.6	84*
35Y4	Rectifier	117*	112*	-	112*	-	-	114.	84*

Voltage readings are for schematic diagram shown on back of sheet. Allow 15%+ or - on all measurements. Measurements were made with Simpson Model 260 Meter.  
\* AC volts.

VOLTAGE CHART MODEL 5-16M

VOLUME CONTROL ON FULL WITH NO SIGNAL

TUBE	FUNCTION	Voltage of Each Socket Prong to Switch on Volume Control							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
12SA7GT	Converter	0	24*	65	72	-6	0	12*	-4
12SK7GT	I. F. Amp.	0	36*	0	-4	0	72	24*	72
12SQ7GT	2nd Det. - AVC - AF	0	-4	0	0	-25	49	12*	0
50L6LGT	Power Amp.	0	36*	92	99	0	-	86*	6.5
35Z5GT	Rectifier	0	117*	112*	-	112*	-	86	115

Voltage readings are for schematic diagram shown on back of sheet. Allow 15%+ or - on all measurements. Measurements were made with Simpson Model 230 Meter.  
\* AC volts.

ALIGNMENT CHART FOR MODEL 5-16M 5-36MPA

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNER SETTING	TRIMMER	REMARKS
1	I.F. Core	Converter Pin No. 8	.01 mfd.	455 KC	High Freq. End	C10 A&B C 8 A&B	2nd I.F. 1st I.F.
2	Osc. Tuner Core	When tuner is against stop at high frequency end, the end of winding L3, oscillator tuner					
3	Pointer	Set pointer to coincide with the first horizontal line below 160 on dial					
4	Trimmers	Blue Ant. Lead	200 mmf.	1400 KC	1400 KC	C3 Osc. Tuner Trim. C2 Loop Tuner Trim.	Peak at max. Peak at max.
5	Oscillator	Blue Ant. Lead	200 mmf.	600 KC	Rock Tuner Control	Adjust Iron Core in L4 Osc. Coil	Use short non-metallic screw driver to fit slot of core from back of tuner
6	Repeat operations 4 and 5						
7	Check operations 1 to 6 inclusive						