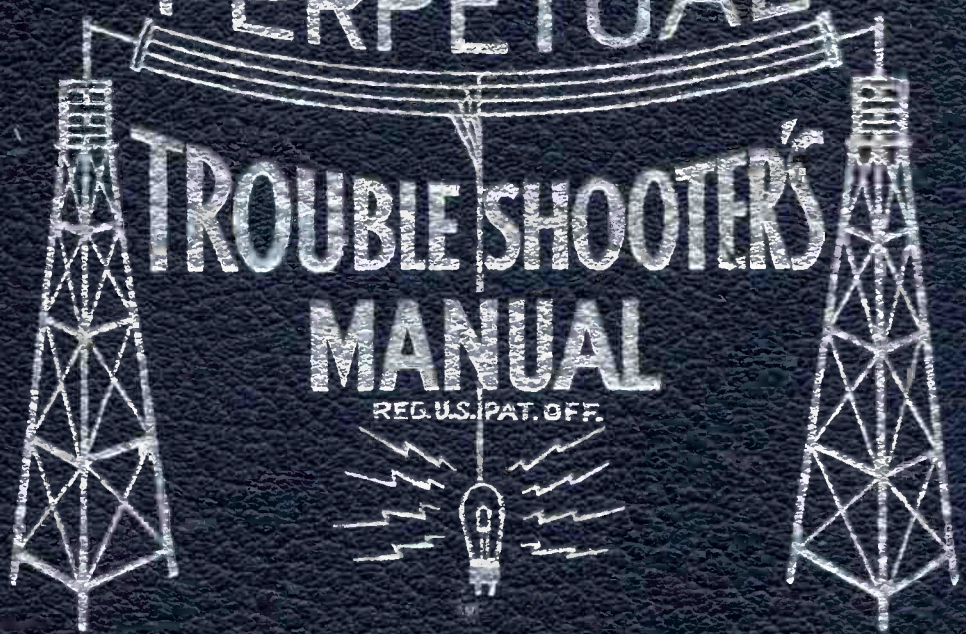
VOLUME XIII

PERPETUAL TROUBLE SHOOTER'S MANUAL

REG. U.S. PAT. OFF.



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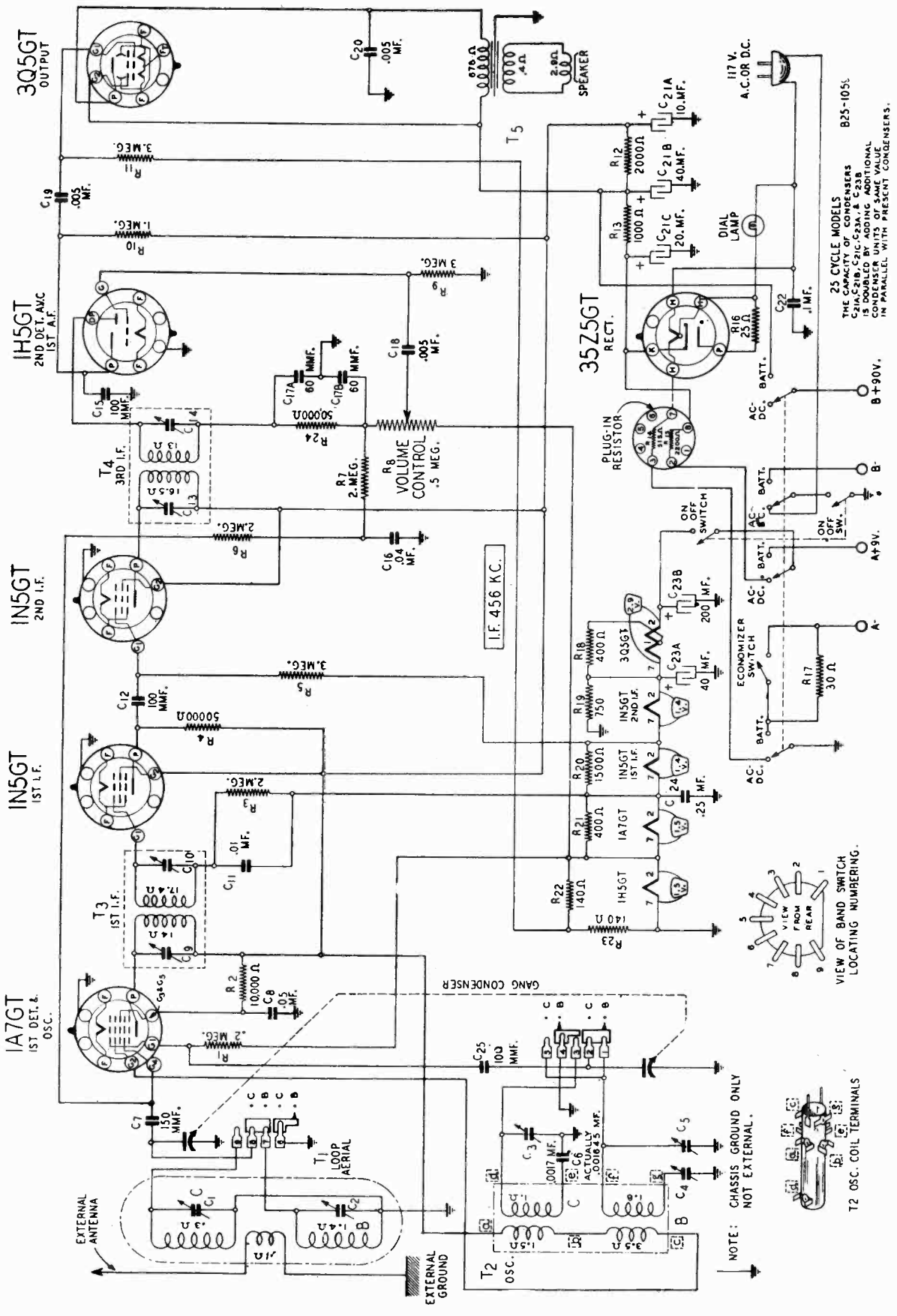
MODEL Marine Portable

SEA PAL RADIO CO.



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MODEL Marine Portable

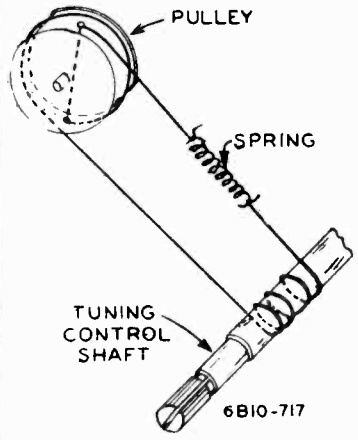
SEA PAL RADIO CO.

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.
Connect radio chassis to ground post of signal generator with a short heavy lead.
Allow Chassis and Signal Generator to "Heat Up" for several minutes.
The equipment in column at right is required for aligning:

An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter — Non-Metallic Screwdriver.
Dummy Antennas—.1 mf., 100 mmf., and 400 ohms.

	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
Remove chassis. Do not disconnect loop leads.						
I.F.	456 KC	Top Grid 1A7GT 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	3rd I.F. (C13) & (C14) 1st I.F. (C9) & (C10)
RANGE B	1610 KC	Same as Above	.1 mf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C5)
RANGE C	6700 KC	Same as Above	.1 mf.	C Range	Turn Rotor to Full Open	Oscillator Range C (C3)
Replace chassis in cabinet. Close cabinet back.						
LOOP RANGE C	6000 KC	External Ant. Clip	400 Ohm	C Range	Turn Rotor to Max. Output	Ant. Range C (C1)
LOOP RANGE B	1400 KC	External Ant. Clip	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC See Note	Ant. Range B (C2)
NOTE—If the pointer is not at 1400 KC set it at the 1400 KC mark on the dial scale.						

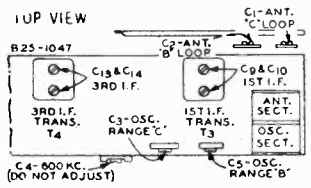


GANG CONDENSER IN CLOSED POSITION

SPECIFICATIONS

Input Voltages and Currents—Battery Operation
"A" Battery .....9 Volts—50 Ma.
"B" Battery .....90 Volts—11.5 Ma.
Power Consumption (At 117 volts AC Supply).....28 Watts
Power Output
Battery Operation - 150 Mw. Undistorted, 350 Mw. Maximum
AC Operation - - 200 Mw. Undistorted, 400 Mw. Maximum

Selectivity - 50 KC Broad at 1000 Times Signal
Intermediate Frequency - - - - - - 456 KC
Speaker - - - - - - - - 6" P.M. Dynamic
Tuning Frequency Range
B Range - - - - - - - 535 to 1610 KC
C Range - - - - - - - 2.1 to 6.7 MC
Sensitivity—External Antenna—(For .05 Watt output)
B Range - - - 20 Microvolts Average
C Range - - - 20 Microvolts Average



REPLACEMENT PARTS LIST

CONDENSERS

17A123	C1	1-12 mmf.	Loop "C" Range Trimmer	$0.15	
17A123	C2	1-12 mmf.	Loop "B" Range Trimmer	.15	
17A115	C3	2.5-35 mmf.	Oscillator "C" Range Trimmer	.15	
17A168	C4	411-505 mmf.	600 K.C. Padder	.30	
17A115	C5	2.5-35 mmf.	Oscillator "B" Range Trimmer	.15	
46X281	C6	1700 mmf.	180 V. Polystyrene	.20	
47X142	C7	150 mmf.	Molded	.10	
B66503	C8	.05 mf.	200 V. Tubular	.10	
17A165	C9 (C10	50-120 mmf.) 50-120 mmf.)	1st I.F. Trimmer	.30	
B66103	C11	.01 mf.	200 V. Tubular	.10	
47X57	C12,C15,C25	100 mmf.	Molded	.10	
17A167	(C13 (C14	50-120 mmf.) 85-185 mmf.)	3rd I.F. Trimmer	.30	
B66403	C16	.04 mf.	200 V. Tubular	.10	
47X172	(C17A (C17B	60 mmf.) 60 mmf.)	Dual Mica	.15	
B66502	C18,C19	.005 mf.	200 V. Tubular	.10	
D66502	C20	.005 mf.	400 V. Tubular	.10	
45X297	(C21A (C21B (C21C	10 mf. 40 mf. 20 mf.	150 V.) 150 V.) 150 V.) Dry Electrolytic	.70	
D66104	C22	.10 mf.	400 V. Tubular	.15	
45X301	(C23A (C23B	40 mf. 200 mf.	35 V.) 35 V.) Dry Electrolytic	.80	
B66254	C24	.25 mf.	200 V. Tubular	.15	
14A153	2 Section Gang Condenser			2.60	

RESISTORS

B95204	R1	200,000 Ohm	0.5 W. Carbon	$0.10

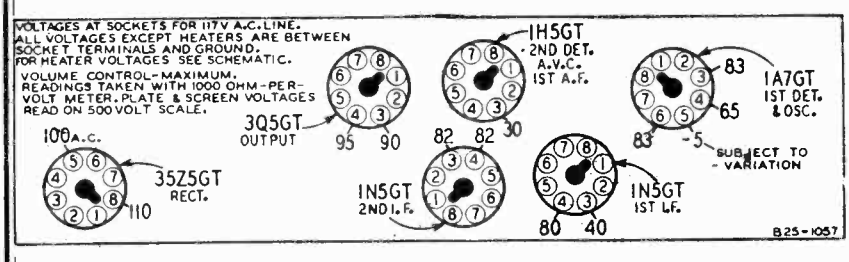
DIAL AND DRIVE ASSEMBLY

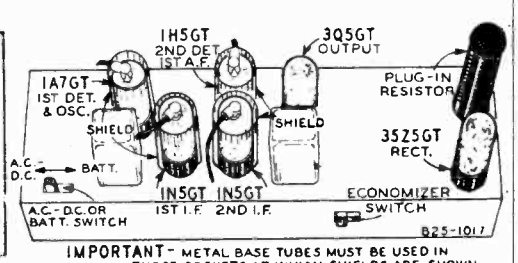
26A339	Dial Mounting Plate Assembly complete with Drive Cord Pulley and Bracket, less Dial Scale, Pointer for Dial Scale and Celluloid Crystal				$0.85
17X66	Celluloid Crystal				.20
158X550	Dial Scale				.65
15X197	Pointer for Dial Scale				.10
28X56	Snap Buttons (To hold Dial Scale and Celluloid Crystal to Dial Mounting Plate) Doz.				.10
	Drive Cord (12 Lb. Test)				.15
28X206	Tension Spring for Drive Cord				Doz. .30
104X650	Escutcheon for Dial				1.05
7A115	Dial Lamp Socket and Cable Assembly				.20
7A32	Dial Lamp (No. 51)				.15
B95103	R2	10,000 Ohm	0.5 W.	Carbon	.10
B95205	R3,R6,R7	2.0 Megohm	0.5 W.	Carbon	.10
B95503	R4	50,000 Ohm	0.5 W.	Carbon	.10
B95305	R5,R9,R11	3.0 Megohm	0.5 W.	Carbon	.10
36X289	R8	0.5 Megohm	Volume Control and On-Off Switch		.75
B95105	R10	1.0 Megohm	0.5 W.	Carbon	.10
B95202	R12	2000 Ohm	0.5 W.	Carbon	.10
B95102	R13	1000 Ohm	0.5 W.	Carbon	.10
43X106	(R14 (R15	515 Ohm 2200 Ohm	12 W.) 5 W.)	Plug-In Resistor	.55
B95250	R16	25 Ohm	0.5 W.	Carbon	.10
B94300	R17	30 Ohm	0.5 W.	Carbon	.15
B94401	R18,R21	400 Ohm	0.5 W.	Carbon	.15
B94751	R19	750 Ohm	0.5 W.	Carbon	.15
B94152	R20	1500 Ohm	0.5 W.	Carbon	.15
B94141	R22,R23	140 Ohm	0.5 W.	Carbon	.15
B95503	R24	50,000 Ohm	0.5 W.	Carbon	.10
9A1511	T1	Loop Aerial Assembly less Trimmer Condensers			$2.00
9A1513	T2	Oscillator Coil Assembly			1.20
109A1514	T3	1st I.F. Transformer and Can Assembly			1.30
9A1515	T4	3rd I.F. Transformer and Can Assembly			1.30
	T5	Output Transformer (See "Miscellaneous")			

NOTICE: There is a chassis number label on the chassis. The chassis number identifies the radio as to chassis, dial, and issue letter. When ordering parts or writing, be sure to mention the chassis number.

MISCELLANEOUS

Part No.	Description	List Price
12A358	6" P.M. Dynamic Speaker complete with Output Transformer	$6.10
	Cone and Voice Coil Assembly (Specify part number and letters stamped on Speaker)	1.20
	Output Transformer (Specify part number and letters stamped on Speaker)	1.50
14X301	Speaker Grille	1.45
3A303	Tube or Resistor Socket—Octal (8 prong)	.10
32X174	Tube Shield	.10
30X44	Grid Clips	Doz. .10
10A419	Knob (Tuning or Volume Control)	.10
10A421	Knob (Band Switch)	.10
2A217	AC-DC—Battery Switch	.50
2A175	Economizer Switch	.15
2A215	Band Change Switch	.60
13X328	Line Cord and Plug Assembly	.40
13X444	"A" Battery Cable and Plug Assembly	.30
13X445	"B" Battery Cable and Plug Assembly	.35
28X265	Phosphor Bronze Ground Plate (Under 3rd I.F. Can)	.10





IMPORTANT - METAL BASE TUBES MUST BE USED IN THOSE SOCKETS AT WHICH SHIELDS ARE SHOWN.

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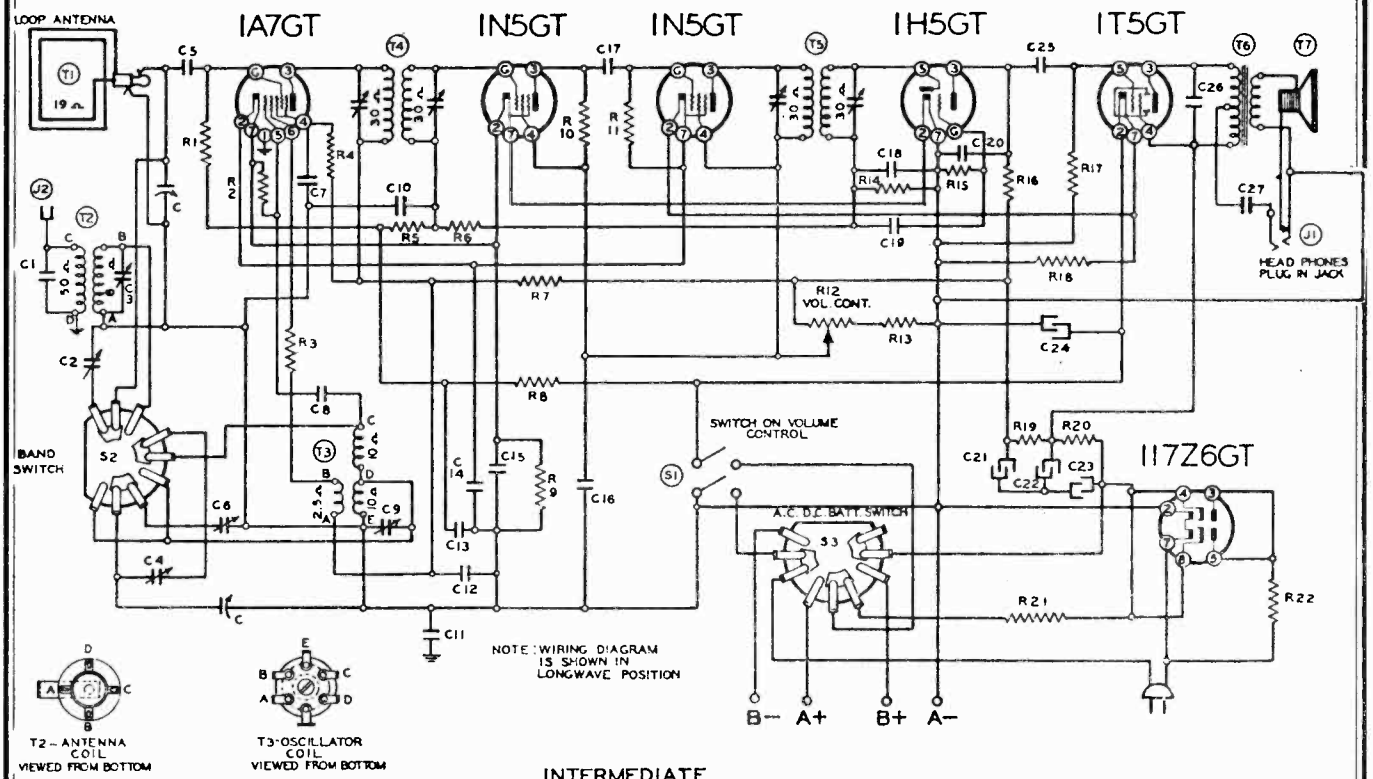
MODEL 6P21
Series A

SEA PAL RADIO CO.



T2 – ANTENNA COIL VIEWED FROM BOTTOM

T3 – OSCILLATOR COIL VIEWED FROM BOTTOM

INTERMEDIATE FREQUENCY 455 K.C.

RESISTORS

Code No.	Part No.	Description
R1	1304	3 megohm—½ w.
R2	1309	200M ohm—½ w.
R3	13022	5M ohm—½ w.
R4	1307	40M ohm—½ w.
R5	13038	3 megohm—½ w.
R6	1304	3 megohm—½ w.
R7	13017	10M ohm—½ w.
R8	130257	5 megohm—½ w.
R9	130222	350 ohm—½ w.
R10	130176	20M ohm—½ w.
R11	13068	1 megohm—½ w.
R12	101256	1 megohm—volume control
R13	13020	100M ohm—½ w.
R14	13068	1 megohm—½ w.
R15	130257	5 megohm—½ w.
R16	13068	1 megohm—½ w.
R17	13038	2 megohm—½ w.
R18	130192	2M ohm—½ w.
R19	130192	2M ohm—½ w.
R20	130192	2M ohm—½ w.
R21	10666	2500 ohm—6 w.
R22	130215	25 ohm—½ w.

PARTS

T1	111243	Loop antenna in cover
T2	111242	Antenna coil
T3	110180	Oscillator coil
T4	108174B	Input I. F. 455 kc. coil
T5	108175B	Output I.F. 455 kc. coil
T6	105129	Output transformer
T7	114244	5" PM speaker
S1		Switch on volume control
S2	125158	Band switch
S3	125158	AC-DC battery switch
J1	121255	Head phones jack
J2	121322	Ant. jack

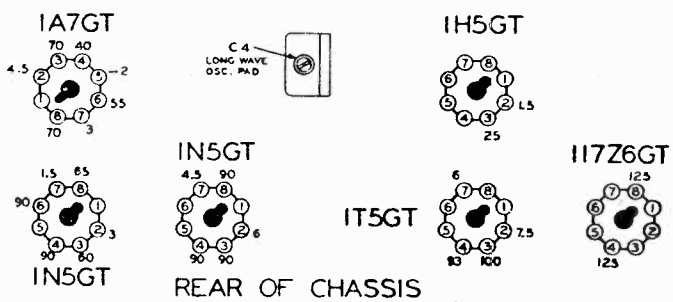
CONDENSERS

C	102144	2 gang variable condenser
C1	129177	.000045 ceramicon
C2	124168	Long wave (ant. trimmer)
C3	124168	B.C. (ant. trimmer)
C4	124167	Long wave pad
C5	12938	50 mmf. .00005 mica
C6	124128	Long wave (osc. trimmer)
C7	1006	.25 x 200
C8	12921	.0002 mica
C9	124128	B.C. (osc. trimmer)
C10	1009	.05 x 200
C11	10026	.20 mf. x 400
C12	100135	.25 mf. 200
C13	10026	.02 x 400 v.
C14	1006	.25 x 120
C15	10017	.5 x 120
C16	100135	.25 mf. 200
C17	12940	.0001 mica
C18	12912	.00025 mica
C19	10047	.002 x 600
C20	1295	.0001 mica
C21	119125	10 mfd. lytic—150 v.
C22	119125	20 mfd. lytic—150 v.
C23	119125	40 mfd. lytic—150 v.
C24	119125	200 mf. lytic—10 v.
C25	10011	.01 x 400
C26	10047	.002 x 600
C27	1006	.25 x 120

C2 and C3 are in same unit.
C6 and C9 are in same unit
C21, C22, C23, C24 are in same unit

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH A HIGH RESISTANCE VOLTMETER BETWEEN SOCKET TERMINALS AND B—



DESCRIPTION:

TUBES—

The tube complement of this chassis consists of the following tubes.

The type and function of each tube is as follows:

1—Type 1A7GT Mixer, First Detector-oscillator.

2—Type 1N5GT Remote Cut-Off Pentode, 1st and 2nd I. F. Amplifiers.

1—Type 1H5GT Second Detector, A.V.C. 1st Audio.

1—Type 1T5GT Output Amplifier.

1—Type 117Z6GT Rectifier.

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ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect generator ground to B—.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

The following equipment is required for aligning:

- An all wave signal generator which will provide an accurately calibrated signal at the test frequencies as listed.
- Output indicating meter.
- Non-metallic screwdriver.
- Dummy antennas—.1 Mfd., 50 Mmfd.

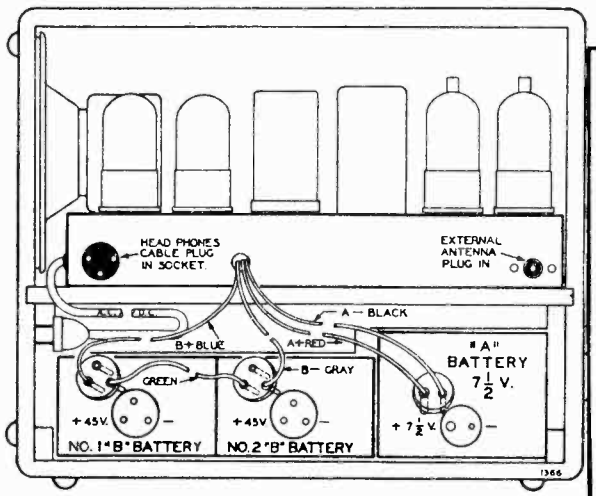
BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Conection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD.	Grid of 1A7GT	Rotor full open (Plates out of mesh)	Four trimmers on top	Output and input I. F.	(See Note "A") Adjust to maximum output
BROADCAST BAND	1560 Kc.	.1 MFD.	Grid of 1A7GT	Rotor full open (Plates out of mesh)	Trimmer C9	Broadcast Oscillator	(See Note "A") Adjust to maximum output
(Band Switch in Broadcast Position)	1400 Kc.	50 MMFD.	Antenna and Ground Terminals	Set dial at 1400	Trimmer C3—Front section of gang	Broadcast Antenna	Adjust to maximum output
LONG WAVE BAND	410 Kc.	See Note B	Grid of 1A7GT	Set dial at 410 (Rotor plates full open)	Trimmer C6	Long Wave Oscillator	Adjust to maximum output
(Band Switch in Long Wave Position)	375 Kc.	See Note B	Std. Loop	Set dial at 375 Kc.	Trimmer C2—Rear Section of gang	Long Wave Antenna	(See Note "B") Adjust to maximum output
	225 Kc.	See Note B	Std. Loop	Set dial at 225 Kc.	Padder C4	Long Wave Oscillator Series Padder	(See Note "B") Adjust to maximum output

NOTE "A"—The loop may be connected to the radio when making these adjustments. The ground of the signal generator is connected to the B— and the other lead from the signal generator in series with the proper dummy to the grid of the 1A7GT tube.

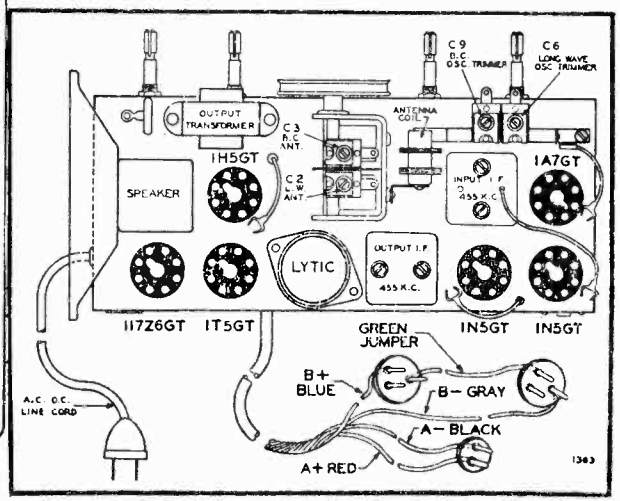
NOTE "B"—For aligning long wave band, connect a radiating loop consisting of 4 turns of wire 10" Dia. in series with .1 MFD. of condenser to terminals of signal generator. Place radiating loop 2 feet away from loop on receiver. The plane of both loop must be parallel.

FREQUENCY RANGES
535 to 1560 KC.
190 to 410 KC.

Power Consumption.....(On A.C. or D.C.) 35 Watts
Power Output.....140 Milliwatts Undistorted, 280 Milliwatts Maximum
Intermediate Frequency.....455 K.C.



View showing method of connecting batteries and the external antenna jack—An external antenna will give maximum reception on distant stations but should be disconnected for direction finding operation.



View Showing Tube Layout

In any radio compass there may be a deviation from a true reading due to the motor or other metal parts around the boat just as there is with a magnetic compass. The simplest method to determine the amount of deviation is to select a broadcast or beacon station which you can see from the ship—Point your ship directly at the station and then tune the loop to the "Null" point. If there is no error the loop pointer should point to the station straight ahead, parallel with a line from bow to stern. If there is a deviation the pointer will not point exactly straight ahead. You can either note how many degrees the variation is and allow for it in future readings or you can turn the radio case so the loop pointer points straight ahead. This will correct for the error and you won't need to make any future allowance.

Check for deviation on several stations and also with the boat turned 180 Degrees from the stations.

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MODEL R301,Ch.101.574-2B
MODEL 701,Ch.101.574-1A

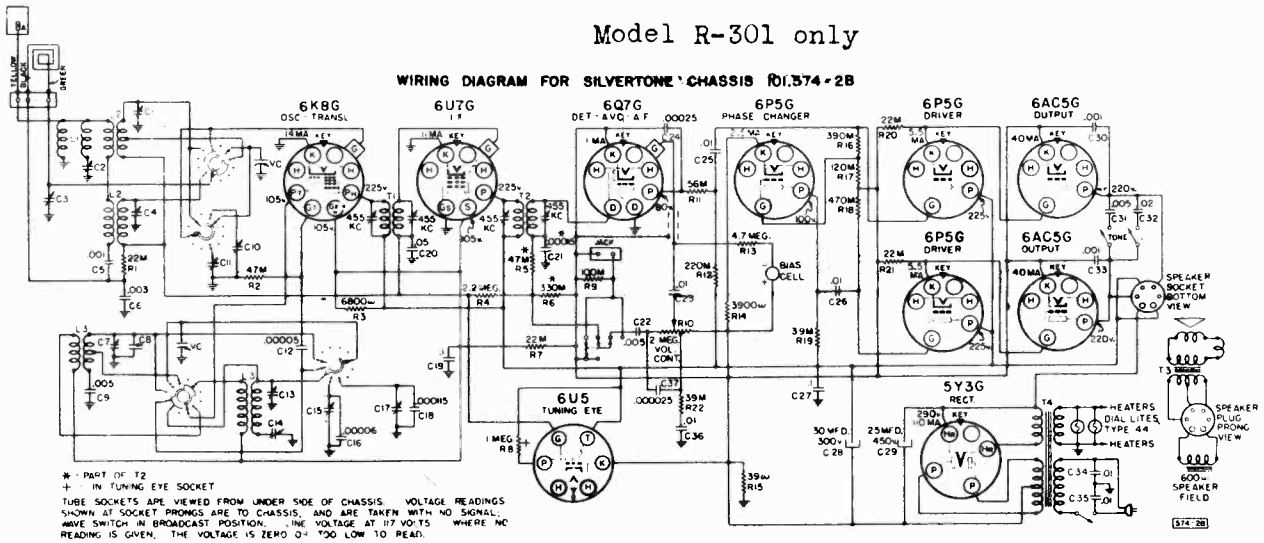
SEARS, ROEBUCK & CO.

SUBJECT: ADDITION OF SUFFIX -1A AND -2B TO 101.574:

Chassis identified by 101.574-1A have been revised to include a built-in loop antenna. There are also differences in knobs, dial, escutcheon and other appearance items because of the difference in cabinets.

Chassis identified by 101.574-2B are similar to 101.574-1A except for changes in the circuit, affecting tone, and for appearance items changes.

Model R-301 only



ALIGNMENT PROCEDURE

Models R-301,701

PRELIMINARY:

Output meter connection	Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts	1.6 volts
Approximate microvolts input for 500 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	Both buttons out
Position of Dial Pointer with variable fully closed	On first mark to left of 550 kc calibration mark

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C2*	Wave Trap	--
"A"	Fully open	1620 kc	.0002 mfd.	Ant. Term.	C13	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C3	Translator	410
"A"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C14	Padder	150
"B"	3.4 mc	3.4 mc	400 ohms	Ant. Term.	C4	Translator	110
"C"	18 mc	18 mc	400 ohms	Ant. Term.	C7**	Oscillator	--
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C1	Translator	80
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C17**	Oscillator	--
"D"	9.55 mc(rock)	9.55 mc	400 ohms	Ant. Term.	C11	Translator	75
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C15**	Oscillator	--
"E"	11.71 mc(rock)	11.71 mc	400 ohms	Ant. Term.	C10	Translator	55

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

** If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

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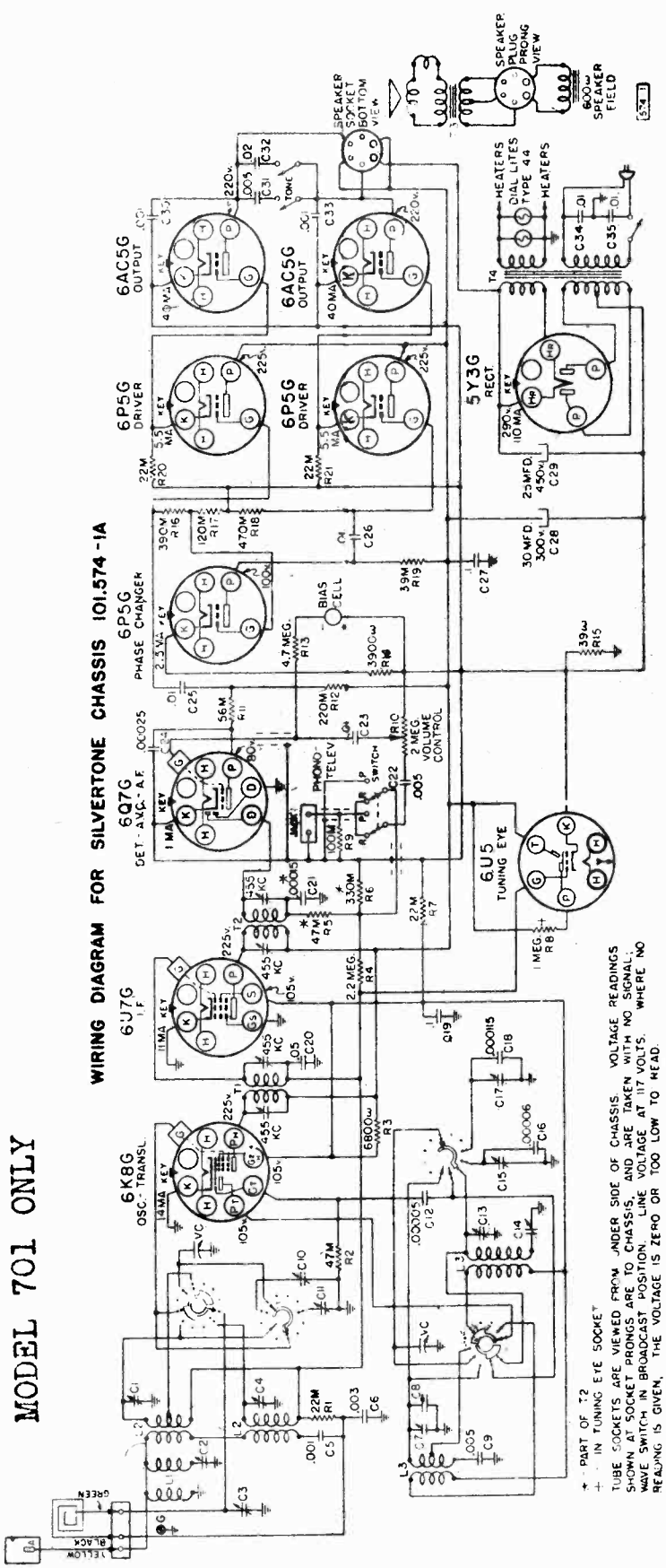
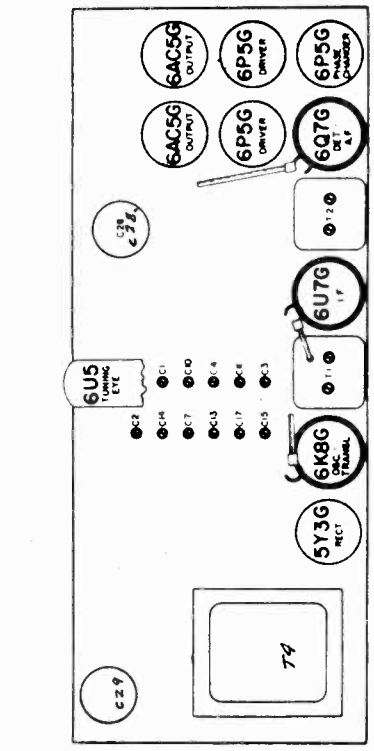
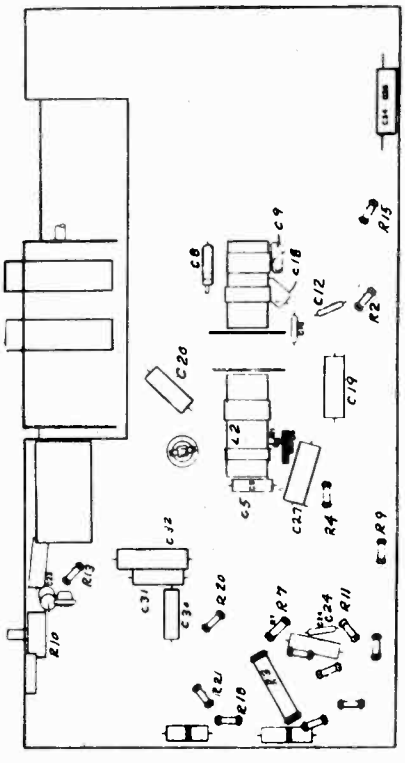
MODEL R301
MODEL 701

MODEL 701 ONLY





MODELS R-301, 701



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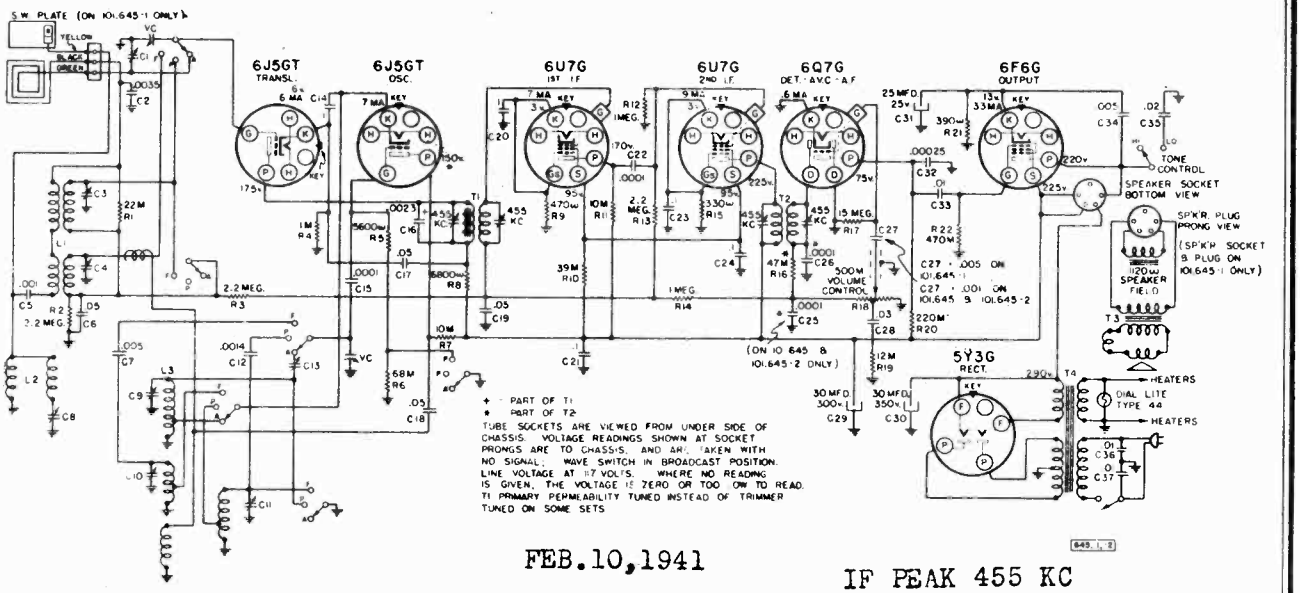
MODEL 1771, Ch. 101.645
101.645-1, 101.645-2

SEARS, ROEBUCK & CO.



FEB. 10, 1941

IF PEAK 455 KC

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection	Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts	1.6 volts
Approximate microvolts input to indicate 500 milliwatts output	See chart below
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	External ground
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	HI
Position of Dial Pointer with variable fully closed	On mark to left of 540 kc calibration mark

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"AM"	600 kc	455 kc	.00005 mfd.	Ant. Clip	C8*	Wave Trap	--
"AM"	Fully open	1620 kc	.00005 mfd.	Ant. Clip	C9	Oscillator	--
"AM"	1400 kc	1400 kc	.00005 mfd.	Ant. Clip	C1	Translator	200
"AM"	600 kc (rock)	600 kc	.00005 mfd.	Ant. Clip	C13	Padder	65
"POL"	6 mc	6 mc	400 ohms	Ant. Clip	C11	Oscillator	--
"POL"	5 mc	5 mc	400 ohms	Ant. Clip	C3	Translator	85
"FOR"	18 mc	18 mc	400 ohms	Ant. Clip	C10	Oscillator	--
"FOR"	15 mc (rock)	15 mc	400 ohms	Ant. Clip	C4	Translator	10

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

FREQUENCY RANGES:

Band "AM"	540-1600 kc
Band "POL"	2-6 mc
Band "FOR"	6-18 mc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Ant-Transl. Trimmer	Padder
1620 kc	1400 kc	600 kc
5 mc	5 mc	None
18 mc	15 mc	Fixed

FOR ADDITIONAL DATA SEE INDEX.

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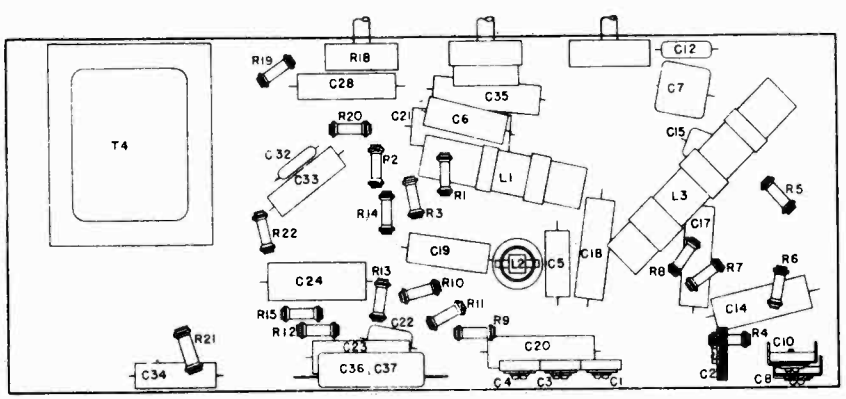
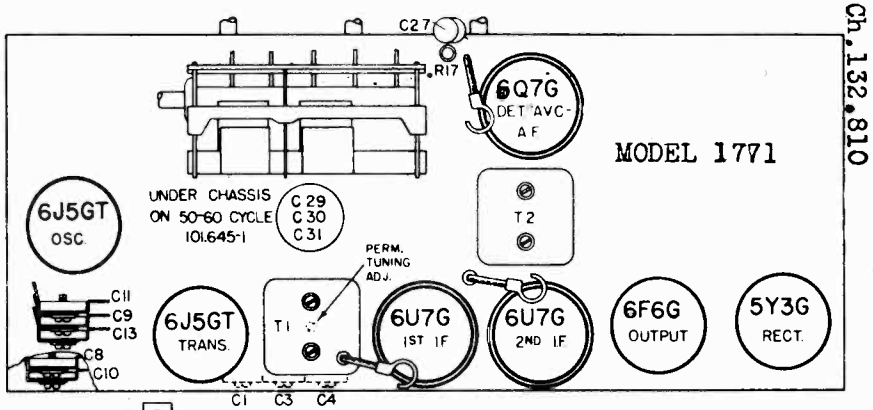


LOCATIONS OF PARTS UNDER CHASSIS - 101.645, -1

MODEL 1771



YELLOW
BLACK
GREEN

LOCATIONS OF PARTS ON TOP OF CHASSIS 101.645, -1.

ALIGNMENT PROCEDURE

MODELS 3011, 3111, 3211

PRELIMINARY:

Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.38 volts
Dummy antenna value to be in series with generator output . . . . See chart below
Connection of generator output lead . . . . . See chart below
Connection of generator ground lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Dial Pointer with variable fully closed . . . . . See note below

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION (high)	GENERATOR CONNECTION (low)	TRIMMERS ADJUSTED (in order shown)	TRIMMER FUNCTION
Open	455 kc	.1 mfd.	12SA7 grid	Var. cond. frame	T2, T1	IF
1400 kc	1400 kc	.00005 mfd.	Ant. clip	Ch. base	C2, C1	Translator
600 kc	600 kc	.00005 mfd.	Ant. clip	Ch. base	Check point	----

IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should be in a horizontal position matching the horizontal line across the face of the dial.

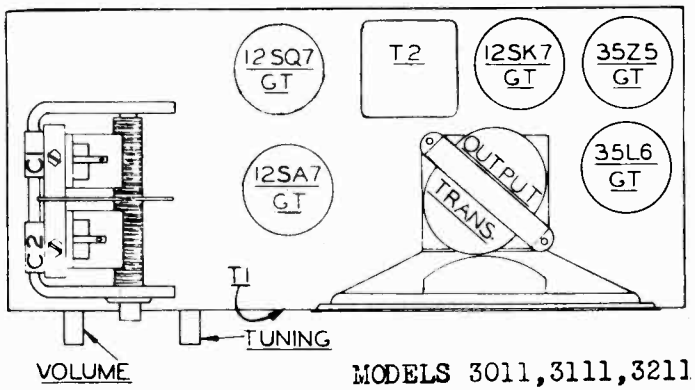
The alignment procedure should be repeated stage by stage, in the original order for greatest accuracy. Always keep the output from the test oscillator at its lowest possible value to make the AVC action of the receiver ineffective.

INTERMEDIATE FREQUENCY . . . . . 455 kc.

POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . . (.8 watts)
Maximum. . . . (1.6 watts)

LOUD SPEAKER:
Type. . . . . E.M.
Size . . . . . 4 inch

FOR ADDITIONAL DATA SEE INDEX.



MODELS 3011, 3111, 3211

LOCATION OF PARTS ON TOP OF CHASSIS

TUBES AND FUNCTIONS:
12SA7GT . . . . Oscillator Translator
12SK7GT . . . . . .IF
35Z5GT

POWER SUPPLY:
All models available . . . . . .
12SQ7GT. . . . . Detector-AVC-AF
35L6GT . . . . . Output
. . . Rectifier

105-125 volts, 50-60 cycle, AC-DC, 30 watts

ALIGNMENT FREQUENCIES: Osc. - 1400 kc.
Transl. - 1400 kc.

FREQUENCY RANGE . . . . 540 - 1750 kc.

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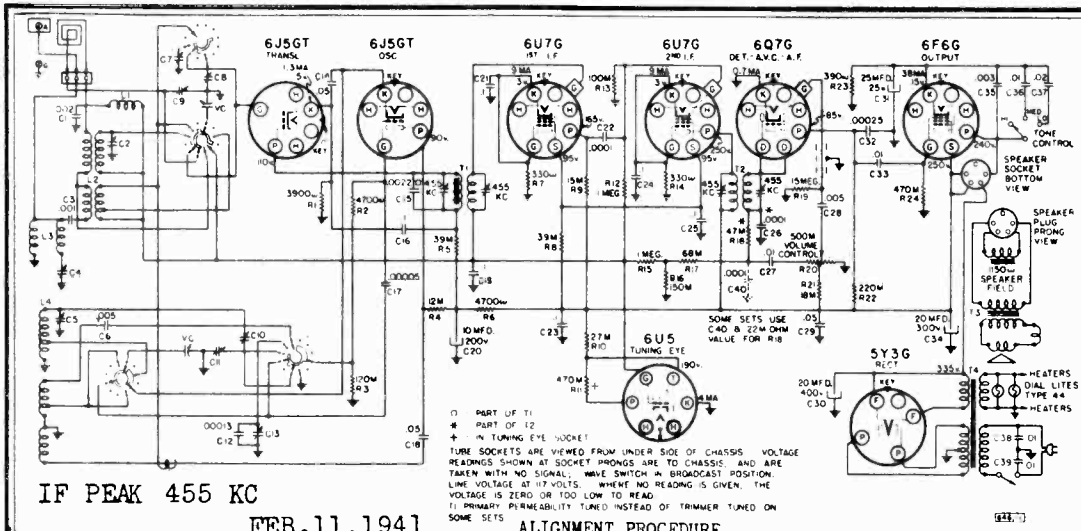
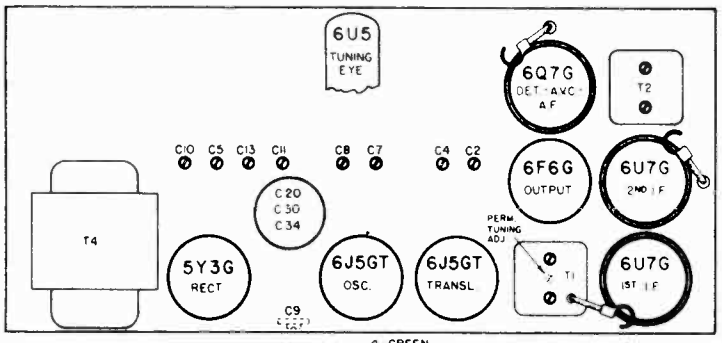
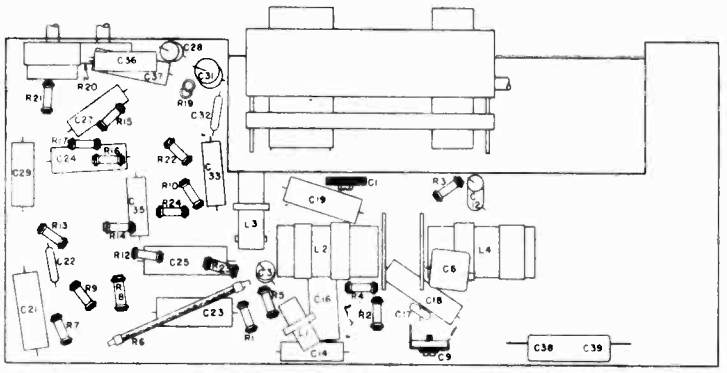




LOCATIONS OF PARTS ON TOP OF CHASSIS 101.646, -1



LOCATIONS OF PARTS UNDER CHASSIS 101.646

IF PEAK 455 KC

FEB.11,1941

ALIGNMENT PROCEDURE

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.25 volts
Approximate microvolts input to indicate 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . To external ground
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . HI
Position of Dial Pointer with variable fully closed . . . . . At block to left of 540 kc calibration mark

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc	.0002 mfd.	Ant. Term.	C4*	Wave Trap	--
"A"	Open	1620 kc	.0002 mfd.	Ant. Term.	C5	Oscillator	--
"A"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C9	Translator	75
"A"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder	45
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C2	Translator	35
"C"	Open	18.2 mc	400 ohms	Ant. Term.	C11	Oscillator	--
"C"	15 mc (rock)	15 mc	400 ohms	Ant. Term.	C7	Translator	10
"D"	9.55 mc (rock)	9.55 mc	400 ohms	Ant. Term.	C13**,C8	Osc,Transl.	30

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

** If two peaks can be had, the correct one is with the trimmer screw further out. The other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

POWER SUPPLY:

All models available . . . . . 105-125 v., 50-60 cycles AC; 75 watts
105-125 v., 25-60 cycles AC; 80 watts

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1610 kc	1400 kc	600 kc
None	2.4 mc	Fixed
18.2 mc	15 mc	Fixed
9.55 mc	9.55 mc	Fixed

FREQUENCY RANGES:

Band "A" . . . . . 540-1600 kc
Band "B" . . . . . 1.5-2.5 kc
Band "C" . . . . . 6-18 mc
Band "D" . . . . . 9.4-9.85 mc

POWER OUTPUT:

Type . . . . . Pentode
Undistorted . . . . . 2.5 watts
Maximum . . . . . 4.5 watts

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ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts	0.7 volts
Approximate microvolts input for 50 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	HI
Position of Dial Pointer with variable fully closed	Horizontal

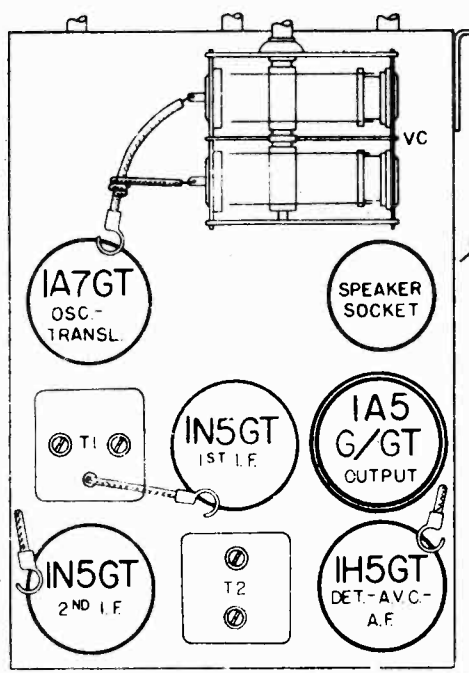
IMPORTANT ALIGNMENT NOTES

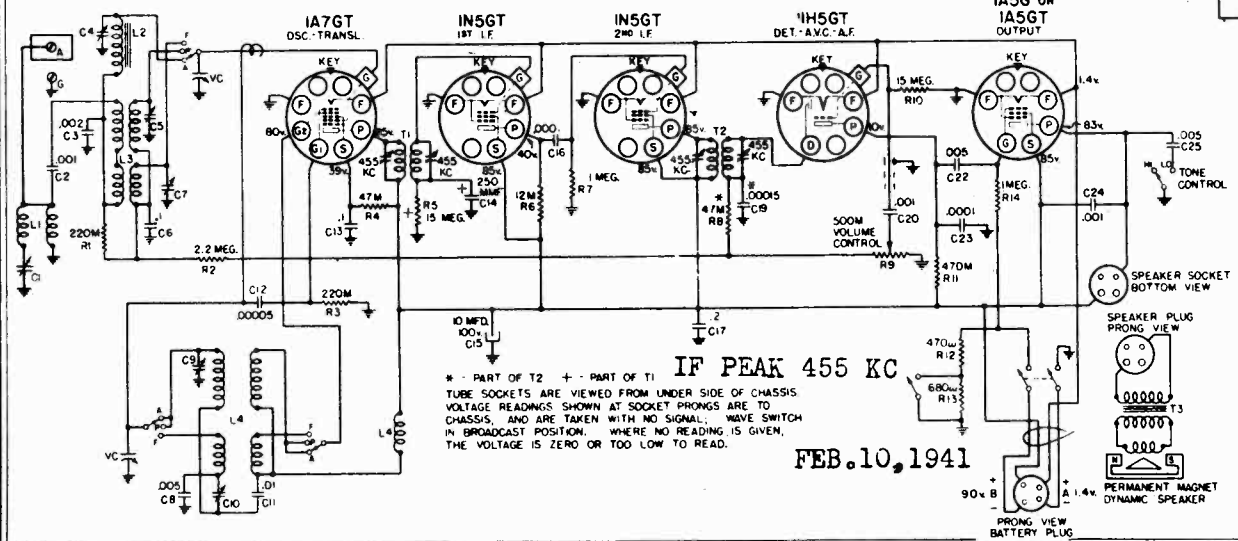
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

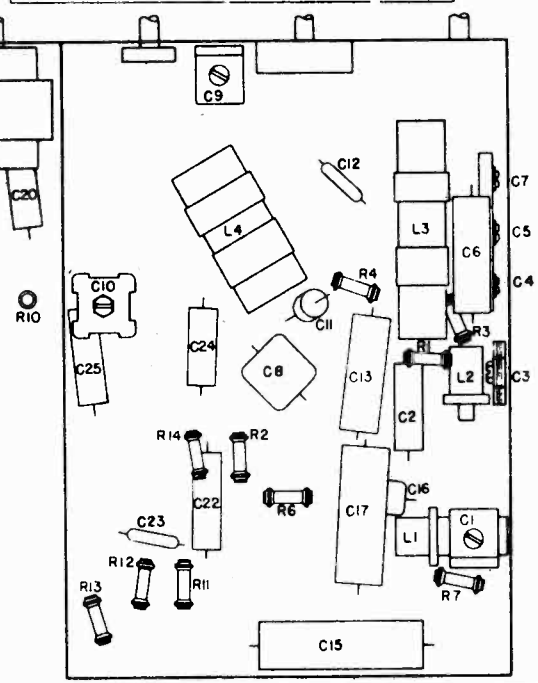
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T2,T1	IF Output IF Input	--
"AM"	600 kc	455 kc*	.0003 mfd.	Ant. Term.	C1*	Wave Trap	--
"AM"	Fully open	1750 kc	.0003 mfd.	Ant. Term.	C9	Oscillator	--
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C4	Translator	15
"AM"	600 kc(rock)	600 kc	.0003 mfd.	Ant. Term.	C10	Padder	15
"POL"	2.4 mc	3.4 mc	400 ohms	Ant. Term.	C5	Translator	25
"FOR"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C7	Translator	10





IF PEAK 455 KC

FEB.10,1941



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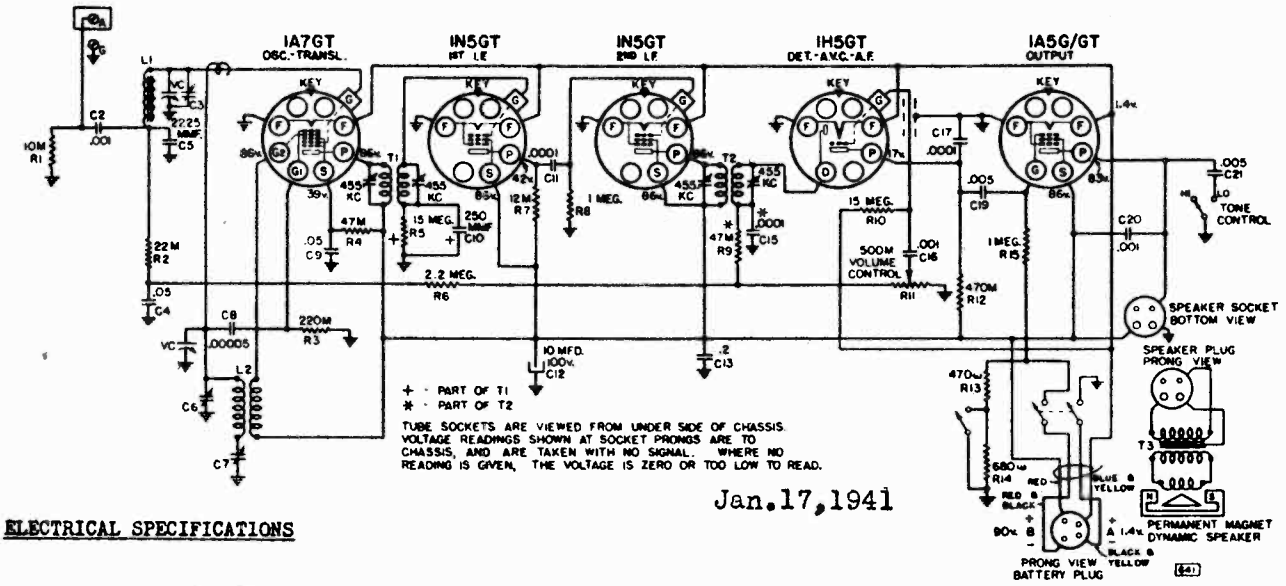
MODEL 2451, Ch. 101.641



Jan. 17, 1941

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

1A7G	Oscillator, Translator
1N5G	1st IF
1N5G	2nd IF
1H5G	Detector-AVC-AF
1A5G/GT	Output

POWER SUPPLY:

#5170	A-B block (1.5v. "A", 90V. "B")
	or
#5200	2v. Storage "A"
2 - #5150	45v. "B" battery
#5305	Adapter necessary with 2v. Storage "A"
"A" Drain	0.25 Amperes
"B" Drain	10.5 ma.

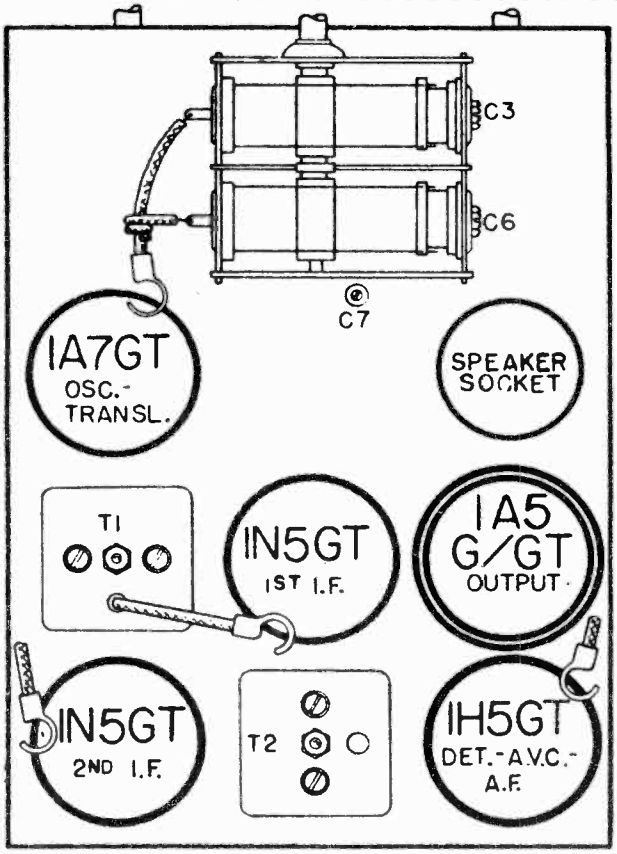
FREQUENCY RANGE:

Broadcast	530-1750 kc

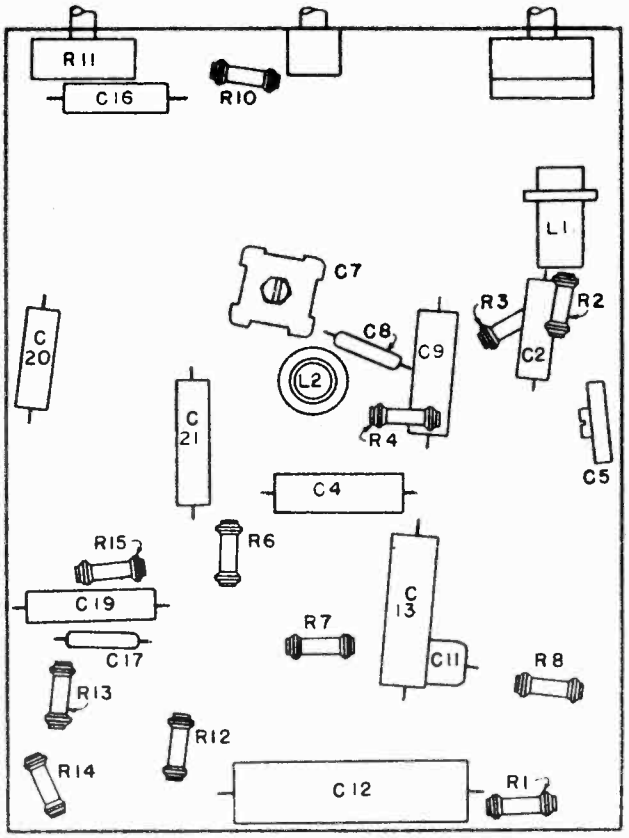
ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
	1750 kc	1400 kc	600 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc



LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS 101.641

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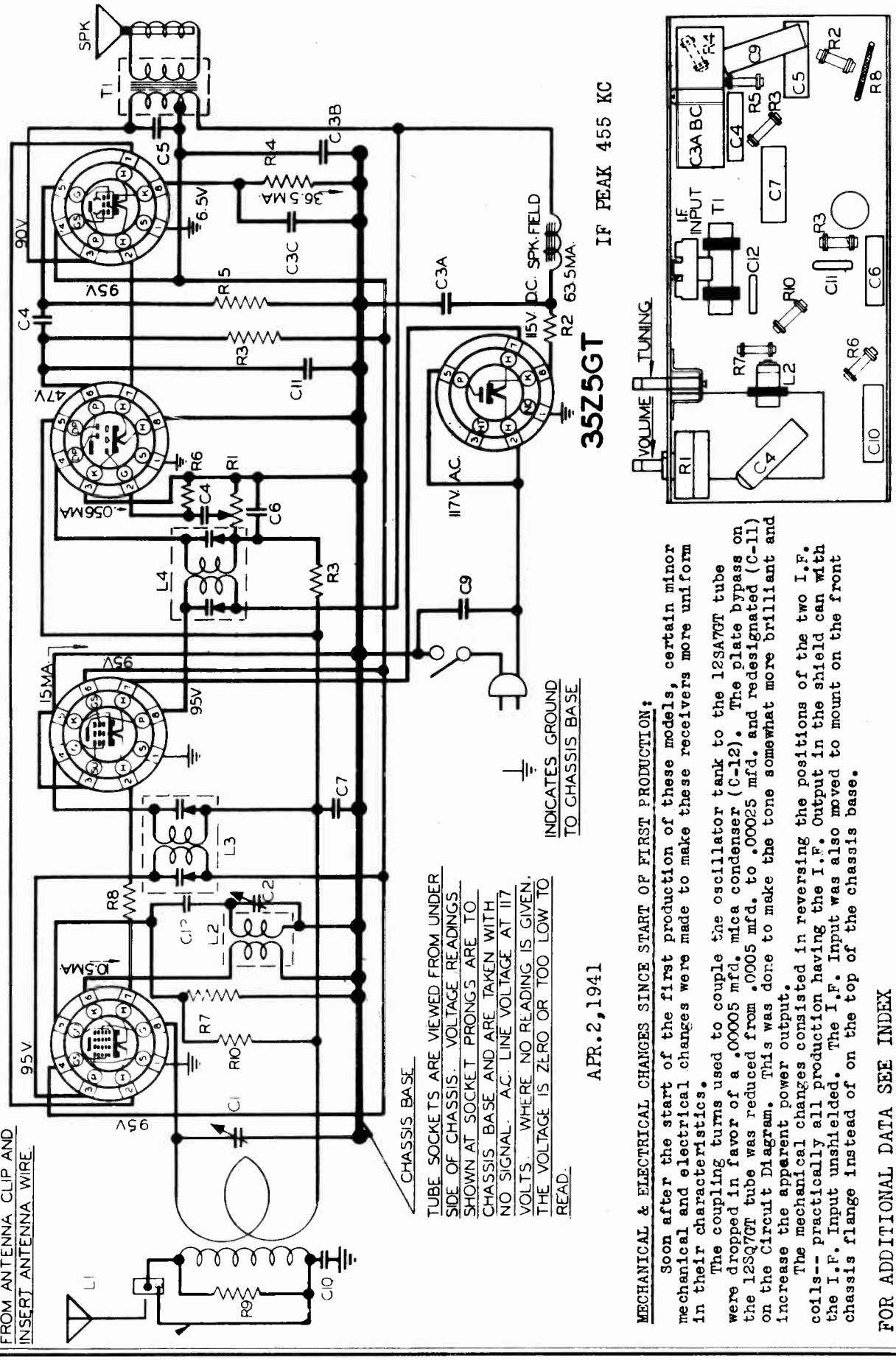
MODELS 3011,3111,3211
Ch.132.810

SEARS, ROEBUCK & CO.



MECHANICAL & ELECTRICAL CHANGES SINCE START OF FIRST PRODUCTION:

Soon after the start of the first production of these models, certain minor mechanical and electrical changes were made to make these receivers more uniform in their characteristics.

The coupling turns used to couple the oscillator tank to the 12SA7GT tube were dropped in favor of a .00005 mfd. mica condenser (C-12). The plate bypass on the 12SQ7GT tube was reduced from .0005 mfd. to .00025 mfd. and redesignated (C-11) on the Circuit Diagram. This was done to make the tone somewhat more brilliant and increase the apparent power output.

The mechanical changes consisted in reversing the positions of the two I.F. coils-- practically all production having the I.F. Output in the shield can with the I.F. Input unshielded. The I.F. Input was also moved to mount on the front chassis flange instead of on the top of the chassis base.

FOR ADDITIONAL DATA SEE INDEX

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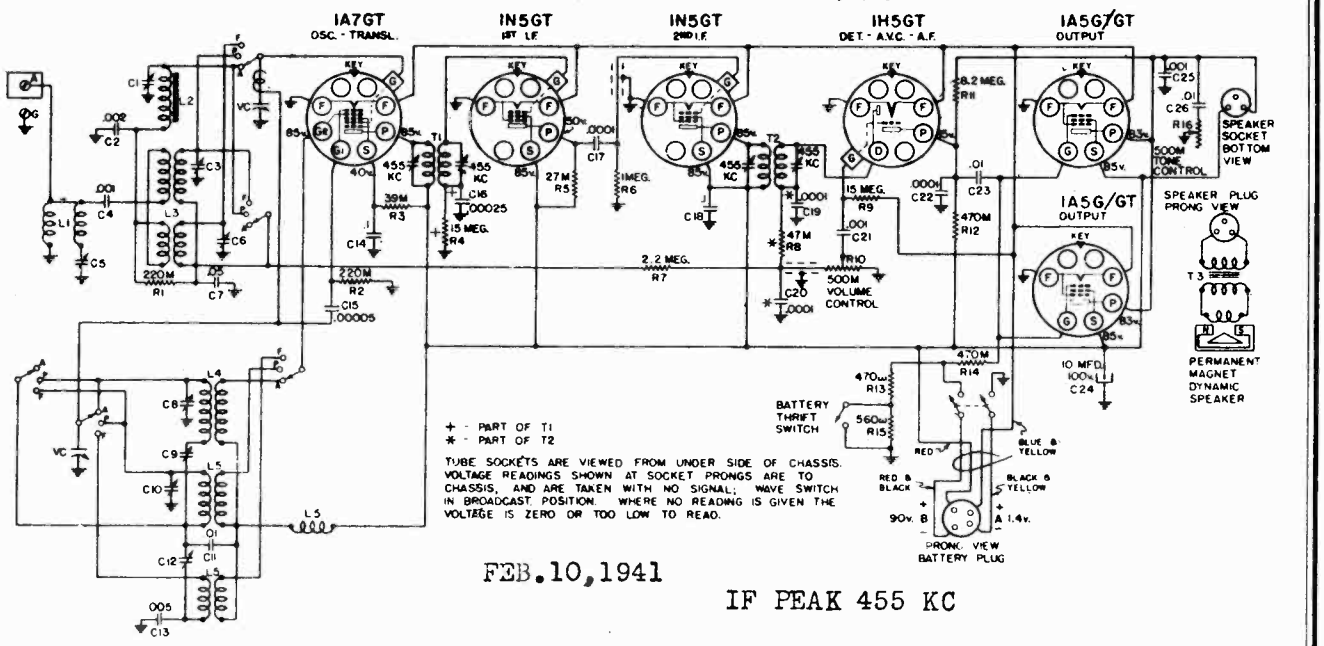
SEARS, ROEBUCK & CO.

MODELS 2461,2761
Ch.101.643

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.643



FEB.10,1941

IF PEAK 455 KC

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection	Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts	0.36 volts
Approximate microvolts input for 50 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	HI
Position of Dial Pointer with variable fully closed	On mark past 540 kc
Position of Battery Thrift Switch	Right

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T2,T1	IF	75
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C5*	Wave Trap	--
"AM"	Fully open	1725 kc	.0002 mfd.	Ant. Term.	C8	Oscillator	--
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C1	Translator	15
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C9	Padder	15
"POL"	4.5 mc	4.5 mc	400 ohms	Ant. Term.	C10,C3	Osc.,Transl.	15
"FOR"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C6	Translator	10

IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

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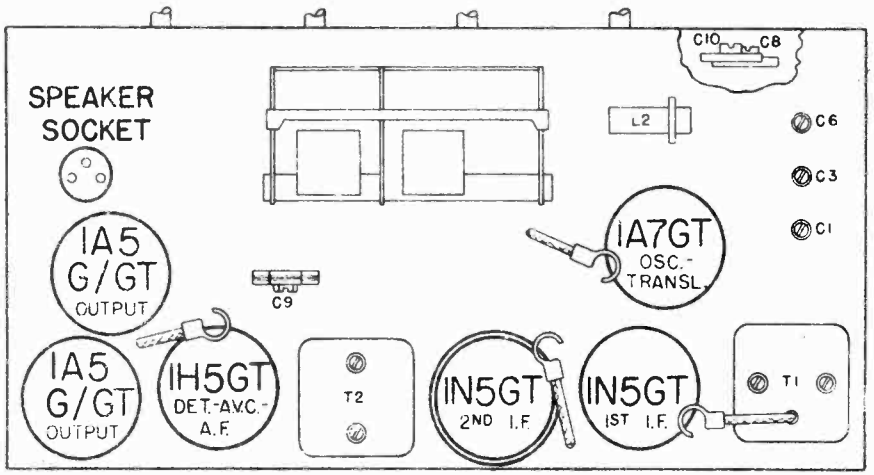
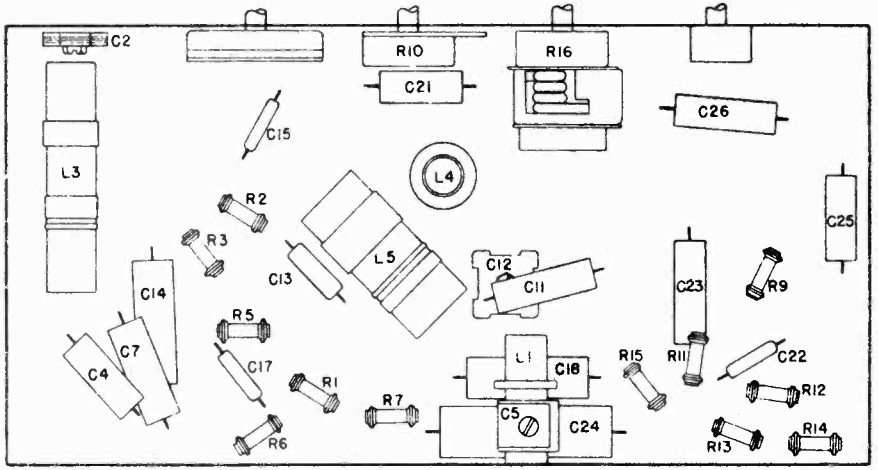


LOCATIONS OF PARTS ON TOP OF CHASSIS 101.643



LOCATIONS OF PARTS UNDER CHASSIS-101.643

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

1A7GT	Oscillator, Translator
1N5GT	1st IF
1N5GT	2nd IF
1H5GT	Detector-AVC-AF
2 - 1A5G/GT	Output

POWER SUPPLY:

#5172	A-B block (1.5v. "A", 90v. "B")
	or
#5200	2v. Storage "A"
2 - #5152	45v. "B" battery
#5306	Adapter necessary with 2 volt Storage "A"
"A" Drain	0.3 Amperes
"B" Drain	12 ma.

ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
Broadcast 532-1725 kc	1725 kc	1400 kc	600 kc
Police 1.65-5.2 mc	None	4.5 mc	None
Short Wave 5.75-18.5 mc	None	15 mc	Fixed

FREQUENCY RANGES:

Broadcast	532-1725 kc
Police	1.65-5.2 mc
Short Wave	5.75-18.5 mc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:

Type	Pentodes
Undistorted	0.155 watts
Maximum	0.25 watts

LOUDSPEAKER:

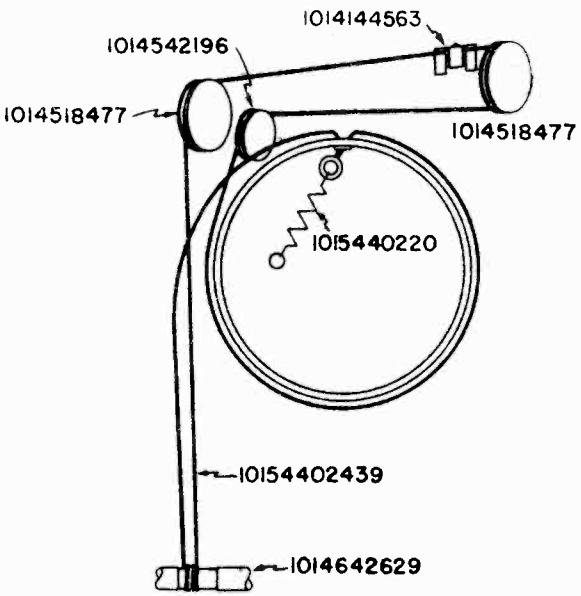
Type	PM Dynamic
Size	6 inch

OPERATING FEATURES:

- Tone Control . . . . . Variable
- Automatic Volume Control
- Battery Thrift Switch
- Monitor switch

CHASSIS FEATURES:

- Number IF stages . . . . . Two
- Built-in Wave Trap



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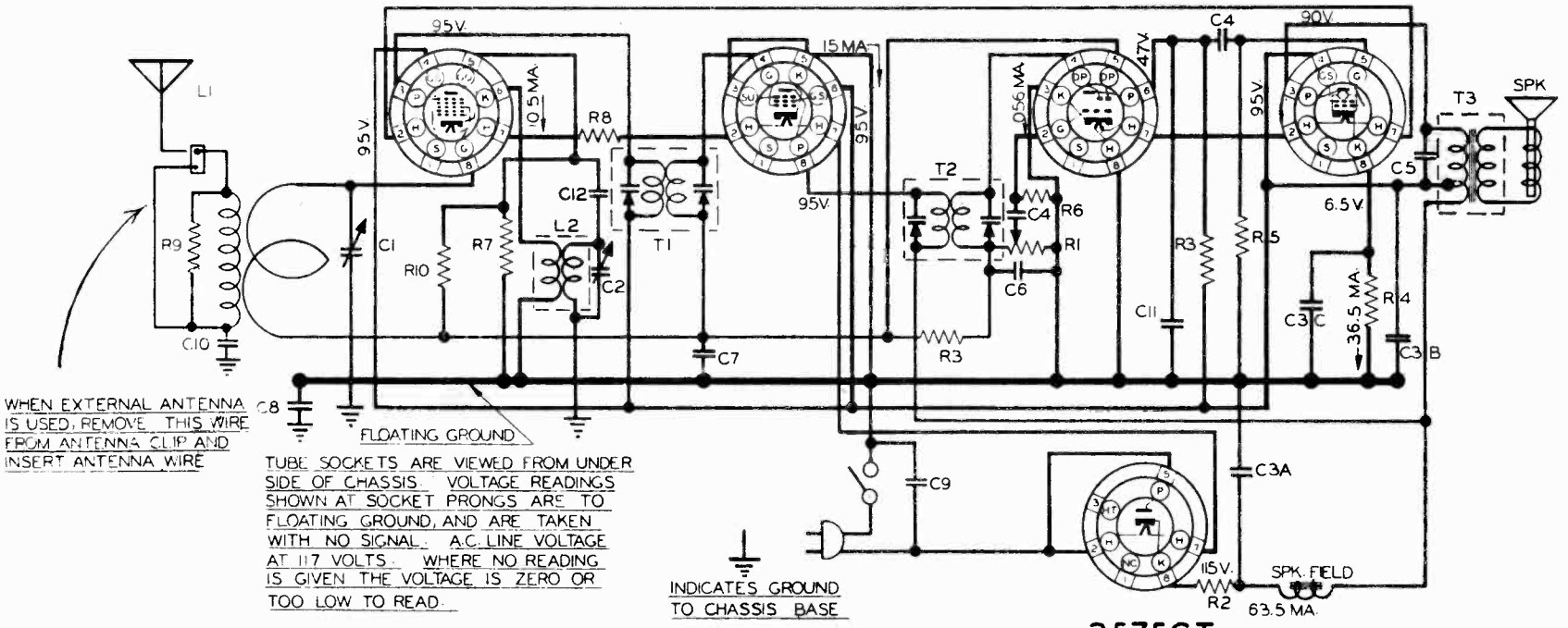
12SA7GT 12SK7GT 12SQ7GT 35L6GT



35Z5GT

APR. 2,1941

MECHANICAL & ELECTRICAL CHANGES SINCE START OF FIRST PRODUCTION:

Soon after the start of the first production of these models certain minor mechanical and electrical changes were made to make the receivers more uniform in their characteristics.

The coupling turns used to couple the Oscillator tank to the 12SA7GT tube were dropped in favor of a .00005 mfd. mica condenser (C-12). The plate bypass on the 12SQ7GT tube was reduced from .0005 mfd. to .00025 mfd. and redesignated (C-11) on the Circuit Diagram. This was done to make the tone somewhat more brilliant and increase the apparent power output.

The mechanical changes consisted in reversing the positions of the two I.F. coils-- practically all production having the I.F. Output in the shield can with the I.F. Input unshielded. The I.F. Input was also moved to mount on the front chassis flange instead of on the top of the chassis base.

INTERMEDIATE FREQUENCY . . . . . 455 kc.

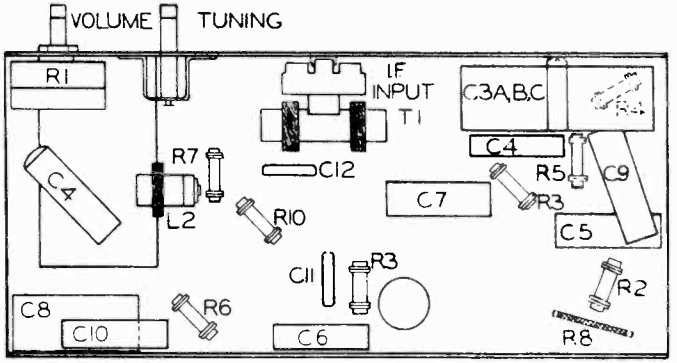
POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . .8 watts
Maximum . . . 1.6 watts

LOUD SPEAKER:
Type . . . . . EM.
Size . . . . . 4 inch

POWER SUPPLY:
All models available . . . . . 105-125 volts, 25-60 cycle, AC-DC, 30 watts

FREQUENCY RANGE . . . 540 - 1750 kc.

ALIGNMENT FREQUENCIES: Osc. - 1400 kc.
Transl. - 1400 kc.



LOCATION OF PARTS UNDER CHASSIS

FOR ADDITIONAL DATA SEE INDEX

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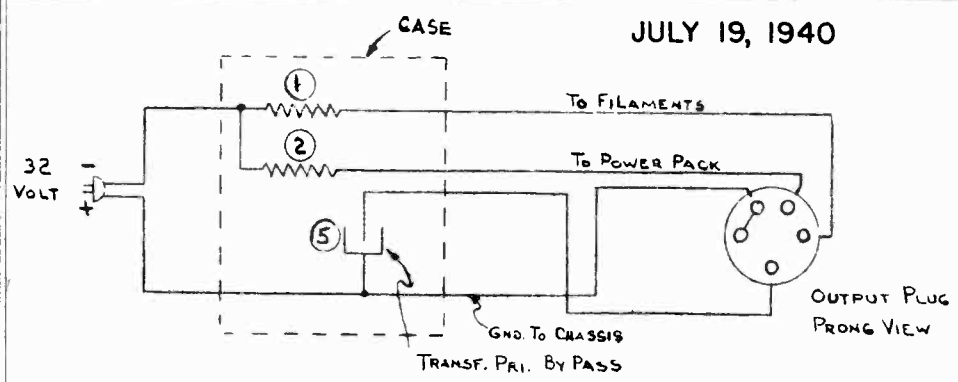
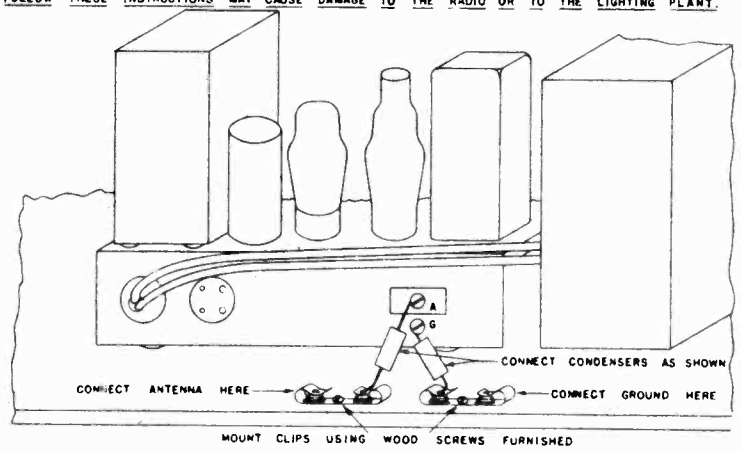
JULY 19, 1940

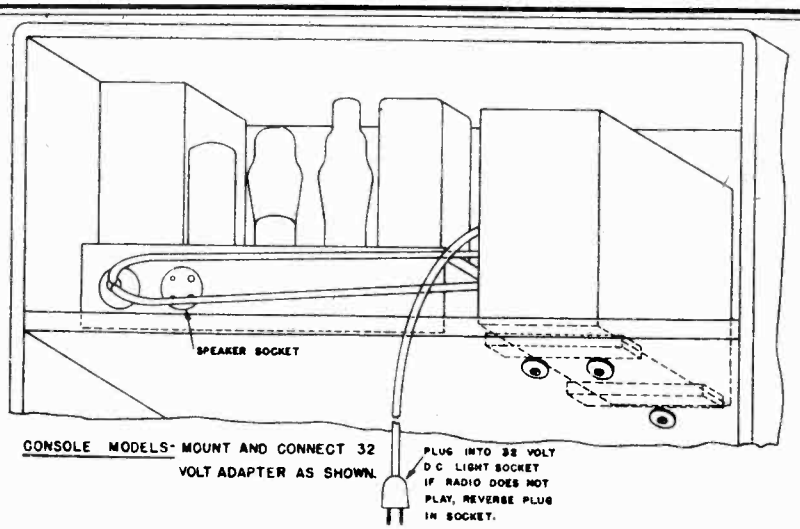
SEARS, ROEBUCK & CO.



CAUTION

DO NOT CONNECT THE ANTENNA AND GROUND WIRES DIRECTLY TO THE TERMINALS ON THE RADIO. INSTEAD, CONNECT THEM THROUGH THE CONDENSERS SUPPLIED HEREWITH, AS ILLUSTRATED. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE DAMAGE TO THE RADIO OR TO THE LIGHTING PLANT.





Console Models- Mount and connect 32 volt adapter as shown.

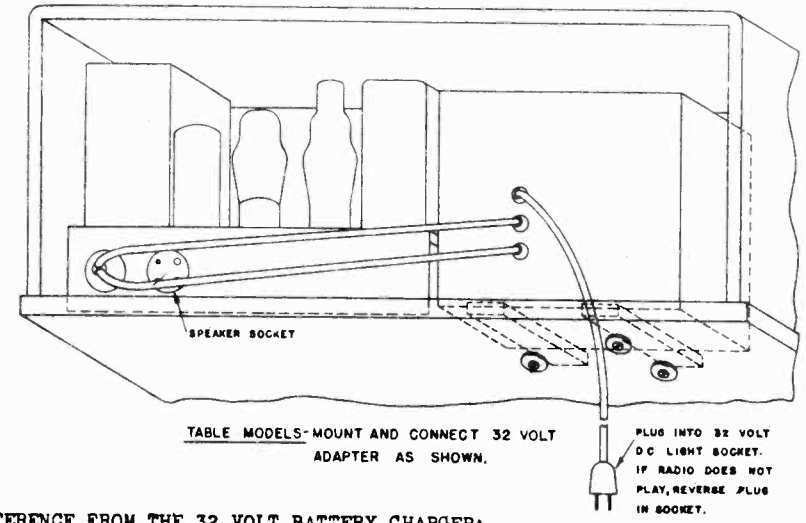


Table Models- Mount and connect 32 volt adapter as shown.

Schematic Location	Part Number	Description	Selling Price Each
	1015441936	Clip - Fahnestock, double	.04
5	1013043080	Condenser - Elect., 2000 mfd., 18 v.	2.96
		Condenser - .01 mfd., 400 v.	.08
	1015519280	Cord - Power	.30
	10154430831	Deflector - Heat	.43
	1015543133	Lead with plug, adapter to radio	.54
1		Resistor - 53 ohms, 30 w.	.36
2		Resistor - 36 ohms, 40 w.	.53
	1015943506	Sheet - Instruction	.10
	1015944014	Sheet - Instruction, condenser installation	.10

ADAPTER FOR OPERATING 6 VOLT, 1.5 AMPERE RECEIVERS FROM 32 VOLT DC SUPPLY

ELIMINATING INTERFERENCE FROM THE 32 VOLT BATTERY CHARGER:

In single cylinder plants connect a spark plug suppressor to the spark plug. In four cylinder plants connect a distributor suppressor in the center socket of the distributor cap.

Connect a .5 mfd., 200 volt generator condenser from the negative brush of the generator to the frame. If this is not sufficiently effective, connect an additional condenser from the positive brush to the frame.

Connect a .5 mfd., 200 volt generator condenser from the generator frame to the positive or negative line terminal, whichever is more effective, on the plant switchboard. Keep all condenser leads as short as possible.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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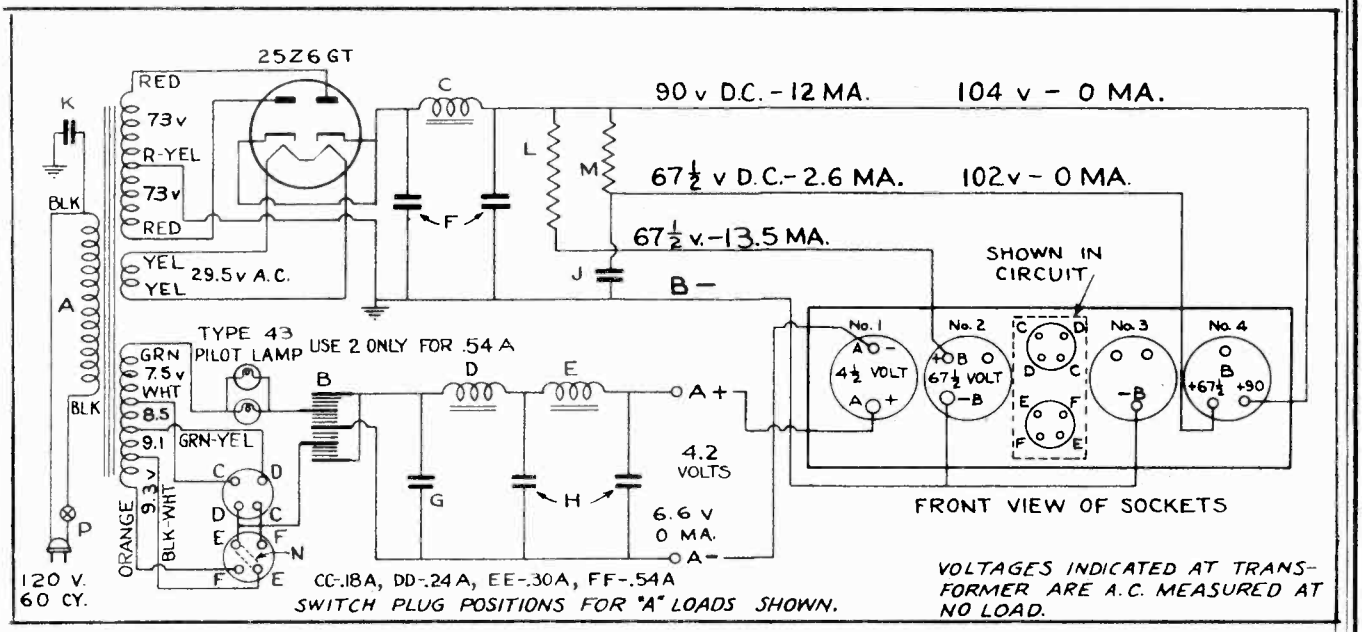
MODEL 4701 Power Shifter
Chas. 139.450



WIRING DIAGRAM FOR SILVERTONE MODEL 4701 POWR SHIFTR

"A" SUPPLY

The "A" Supply is obtained from a full wave copper sulfide rectifier filtered by a condenser input filter consisting of three high capacity condensers and two low resistance chokes. Four taps on the power transformer rectifier winding in connection with two pilot lamp ballasts as regulators allow a fairly constant output voltage to be obtained with various "A" loads and line voltages. Terminal voltages for various loads are indicated on the wiring diagram.

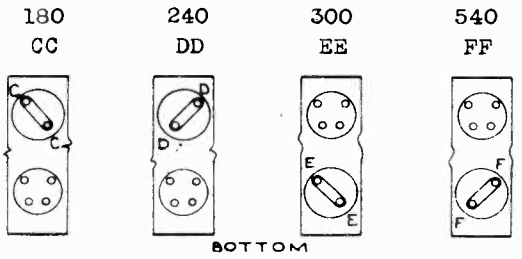
"B" SUPPLY

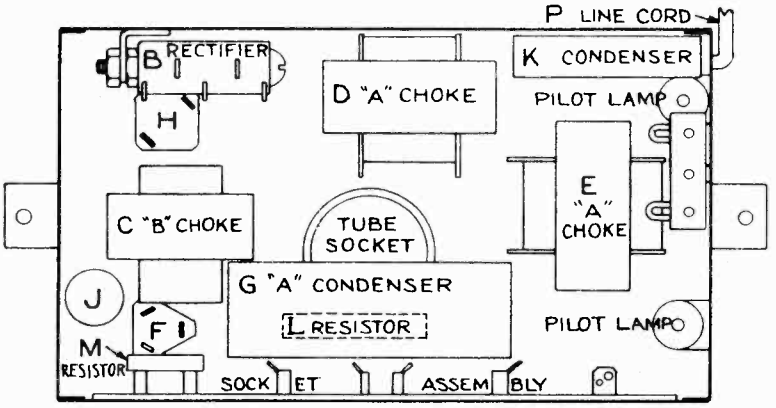
The "B" supply employs a 25Z6GT rectifier tube operated as a full wave rectifier feeding into a condenser input filter followed by a choke and another condenser. Voltage dropping resistors supply 67½ volts at two load ratings and a 90 volts D. C. tap. The "A" and "B" circuits are not common to each other or to the chassis.

POWER DRAIN

The primary input is 22 watts when the "A" circuit is loaded to 540 MA. with switch plug in proper position and both pilot lamps in the circuit, and the "B" circuit is loaded to 12 MA. The input watts under no-load should be approximately 12 watts and the primary current without load, not more than 160 MA. at 120 volts, 60 cycles.

SWITCH PLUG POSITION
FOR "A" CURRENTS IN MA.





LOCATION OF PARTS IN CHASSIS

MAY 8, 1940

FOR 4-1/2 VOLT BATTERY RADIOS

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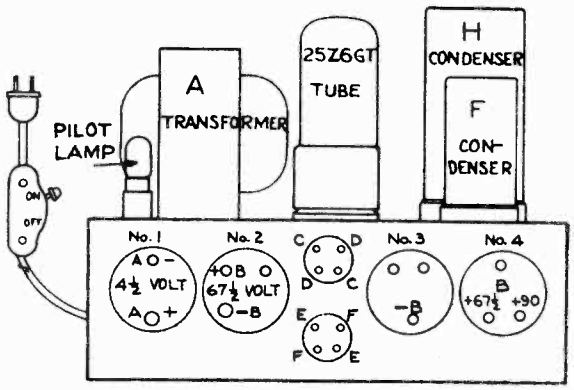
MODEL 4701

SEARS, ROEBUCK & CO.



LOCATION OF PARTS ON CHASSIS (Cover Off)

CHASSIS	SWITCH PLUG POSITION	SOCKET NUMBER
443	CC	1, 3 & 4
447	EE	1, 3 & 4
448	FF *	1, 3 & 4
464	CC	1, 3 & 4
465	EE	1, 3 & 4
472	FF *	1, 3 & 4
472 X	EE	1, 3 & 4
473	EE	1, 3 & 4
474	EE	1, 3 & 4
475	CC	1 & 2
503	CC	1 & 2
503-1	CC	1 & 2
504	DD	1, 3 & 4
505	DD	1, 3 & 4
505 X	DD	1, 3 & 4
505-1	DD	1, 3 & 4
505-1X	DD	1, 3 & 4
512	DD	1, 3 & 4
512 A	DD	1, 3 & 4
519	CC	1 & 2
524	EE	1, 3 & 4
525	DD	1, 3 & 4
532	CC	1 & 2
548	DD	1, 3 & 4
554	DD	1, 3 & 4

* Use two pilot lamps (#43)

TO OPEN CHASSIS

The chassis bottom cover is held firmly to the chassis by four snap-on indentations in the sides. To remove this bottom cover, insert a thin screw driver between cover and chassis and pry open. With a little pressure the cover will snap back in place easily.

The top cover is fixed to the chassis by two screws on each end. To remove this cover it is only necessary to loosen the screws one turn.

"A" SUPPLY FAILS

When the "A" voltage is excessively low the rectifier, condensers or transformer may be defective. Check the switch plug position carefully for correct location for load connected to "A", and also make sure one pilot lamp only is used when in the CC, DD, or EE position and two pilot lamps when in the FF position. These must be Type 43 pilot lamps.

To check the transformer remove one transformer lead from the rectifier and measure for A.C. voltage indicated on the wiring diagram. To check the rectifier remove wires from choke "D" and condenser "G", -- also disconnect one side of jumper wire and measure D.C. voltage across each side of rectifier. This should be 1.9 to 2.1 volts, D.C. with the switch plug in position CC and only one pilot lamp in the circuit.

IMPORTANT: The copper sulfide rectifier is designed to give the voltages indicated on the wiring diagram when the unit is warmed up to normal operating temperatures. This heating up period is usually about 20 minutes with the Powr Shiftr "A" circuit loaded. The rectifier's characteristics are peculiar and for an accurate check the unit must be tested when hot.

When the Powr Shiftr has been out of service for a long time (4 months or more) the "A" voltage may test low due to the inactive life of the rectifier. This is an inherent characteristic of the copper sulphide rectifier. The unit may be reactivated by placing a direct short for 3 to 4 minutes across the rectifier from the center lug to either outside lug of the rectifier. WARNING! Two pilot lamps must be in the circuit and the switch plug should be in position CC, otherwise the pilot lamps will be burnt out.

Low "A" voltage may also be caused by a dropping in capacity of the input condenser "G". To check this another condenser of 500 to 1000 MFD. can be connected across this condenser and if an appreciable rise is observed in the output voltage it is obvious that the input condenser is low in capacity.

"B" SUPPLY FAILS

The 25Z6GT tube should be tested with a standard tube tester. The transformer may be tested by measuring the A.C. voltage across each half of the plate winding with the red leads disconnected. The carbon resistors should be checked for their resistance values.

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MODELS 4620A, 4621A, 4641A, 4642A, 6050, 6051, 6150
Chas. 101.503-1

SUBJECT: DIFFERENCES BETWEEN 101.503 AND 101.503-1:

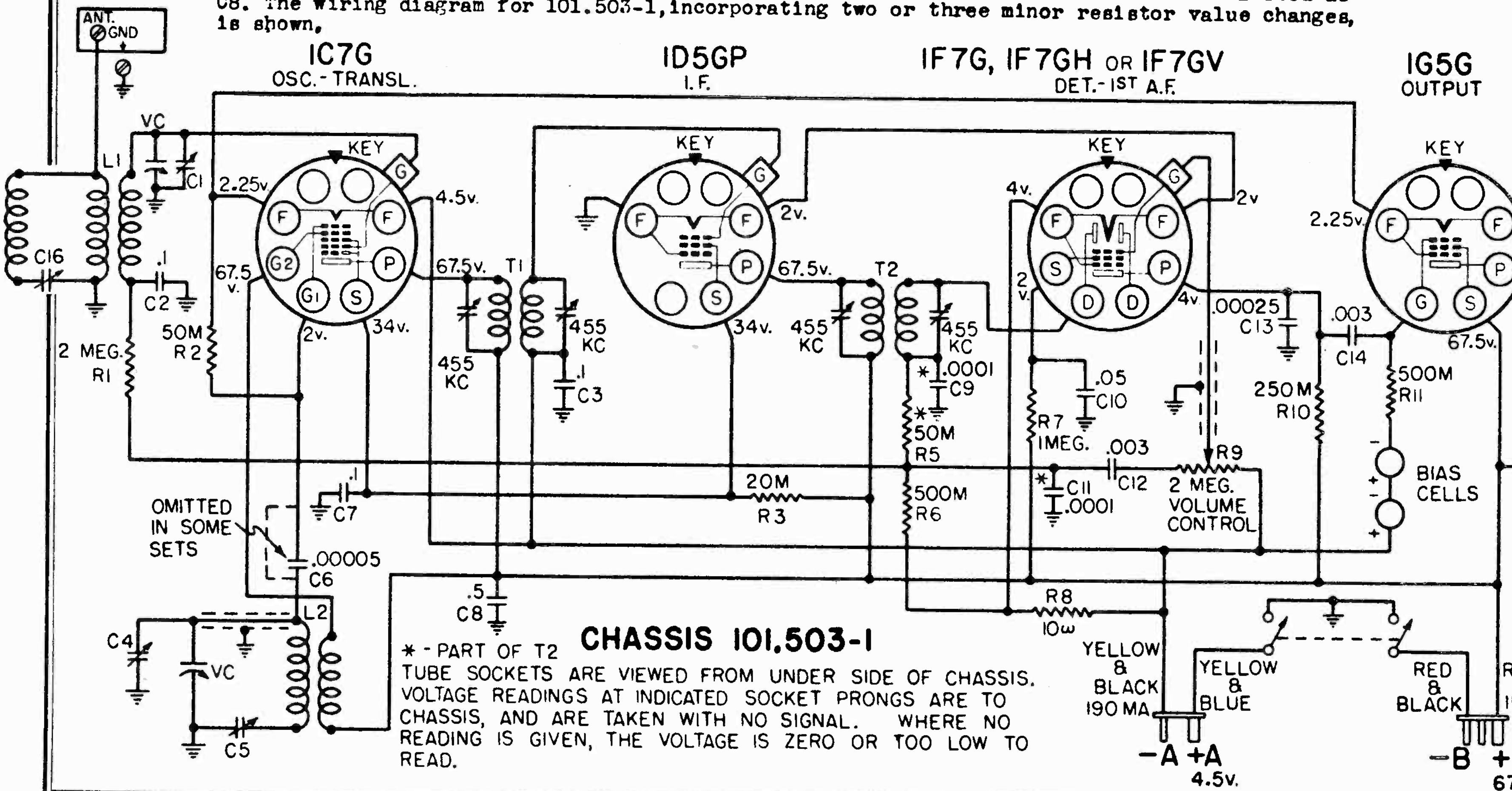
Chassis identified by 101.503-1 use 455 kc IF instead of 465 kc as used in 101.503. Different knobs and a different volume control also are used.

PART NUMBER	DESCRIPTION	SELLING PRICE EACH
1012418877	Control - Volume, with switch	.66
1013918804	Knob - Tuning	.08
1013918803	Knob - Volume	.08
1015920102	Leaflet - Instruction	.20

JAN. 11, 1939

IF PEAK 455 KC

The .5 mfd. condenser, listed as C5 in the original Manual should have been listed as C8. The wiring diagram for 101.503-1, incorporating two or three minor resistor value changes, is shown.



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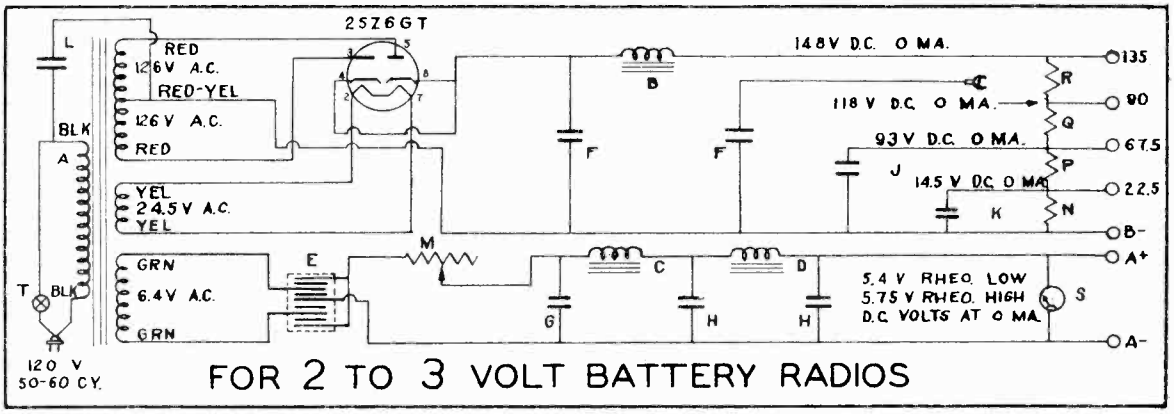
MODEL 4708 Power Shifter
Ch.139.200

SEARS,ROEBUCK & CO.

OUTPUT RATINGS:

"B" 135 V tap - 14MA. (28 MA. max.) - (148V no load)
90 V tap - 14MA. (118V no load)
67.5V tap - 2MA. load and 21 MA. on 135V tap - (93V no load)
22.5V tap - with 19 MA. load on 22.5 to 135V tap - (16V no load)

"A" 2 or 3 volts at 365 MA. to 670 MA.
Adjust voltage by turning slotted shaft.



WIRING DIAGRAM FOR SILVERTONE MODEL 4708 POWR SHIFTR

"A" SUPPLY

The "A" supply is obtained from a full wave copper sulfide rectifier filtered by a condenser input filter consisting of three high capacity condensers and two low resistance chokes. A rheostat after the rectifier allows the voltage to be controlled over a wide range which is indicated by a voltmeter across the output.

"B" SUPPLY

The "B" supply employs a 25Z6GT rectifier tube operated as a full wave rectifier feeding into a condenser input filter followed by a choke and another condenser. A lead with spade lug from the second condenser is brought thru the chassis for proper filtering by connecting this to the highest B plus voltage tap used. Voltage dropping resistors supply 22½, 67½, 90 and 135 volts.

"A" SUPPLY FAILS

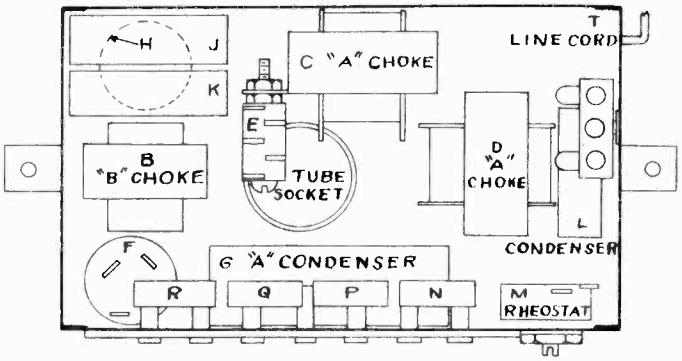
When the "A" voltage is excessively low the transformer, condensers or rectifier may be defective.

To check the transformer remove one green lead from the rectifier and measure for AC voltage indicated on the wiring diagram.

Low "A" voltage may be caused by a dropping in capacity of the input condenser "G". To test for this condition, another condenser of 500 to 1000 MFD. may be connected across this condenser, and if an appreciable rise in the output voltage is observed it is obvious that the input condenser is low in capacity.

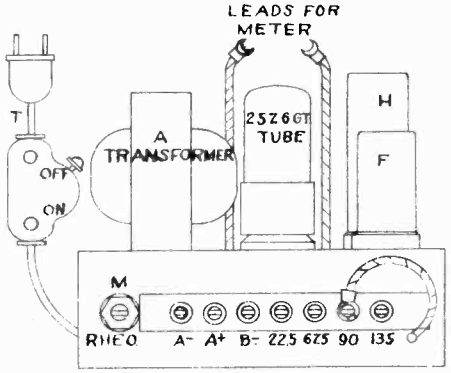
IMPORTANT: The copper sulfide rectifier is designed to give the voltages indicated on the wiring diagram when the unit is warmed up to normal operating temperatures. This heating up period is usually about 20 minutes with the Powr Shiftr "A" circuit loaded. The rectifier's characteristics are peculiar and for an accurate check the unit must be tested when hot.

When the Powr Shiftr has been out of service for some length of time (4 months or more) the "A" voltage may test low due to the inactive life of the rectifier. This is an inherent characteristic of the copper sulfide rectifier. To reactivate the rectifier it is only necessary to short the "A" plus and "A" minus terminals for a period of 4 to 5 minutes. The high temperature developed in the rectifier during this period has the tendency to restore the discs to their normal rectifying capacity. The unit will not be harmed by this process.



LOCATION OF PARTS IN CHASSIS

SEPTEMBER 16, 1940



LOCATION OF PARTS ON CHASSIS

POWER DRAIN

The primary input at 120 volts 60 cycles is 26 watts when the "A" and "B" supplies have maximum rated loads. The input watts under no-load should be 12.5 watts and the primary current without load not more than 215 MA.

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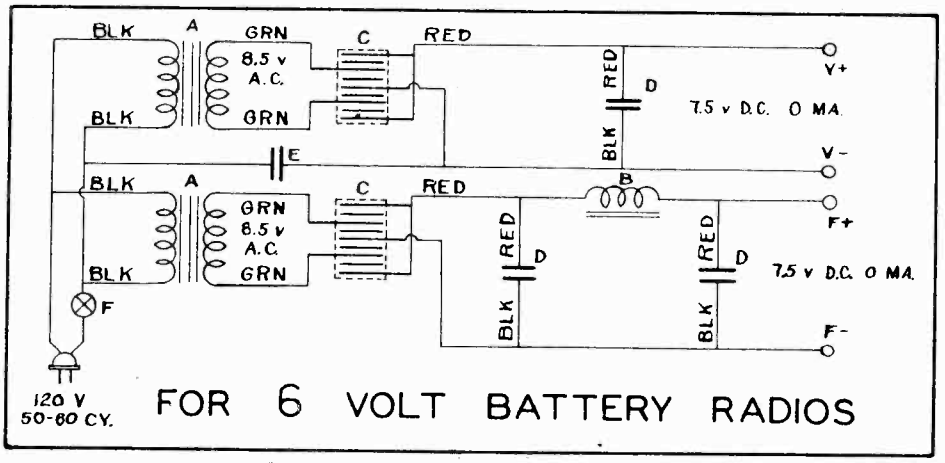
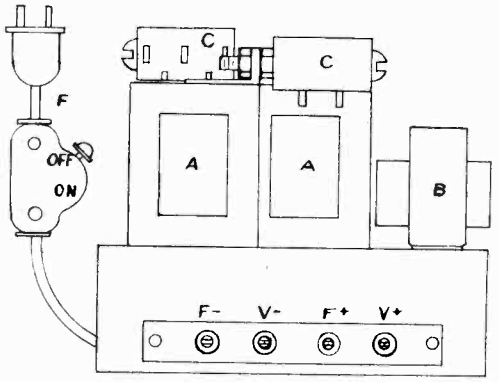
MODEL 4709 Power Shifter
Chas. 139.600

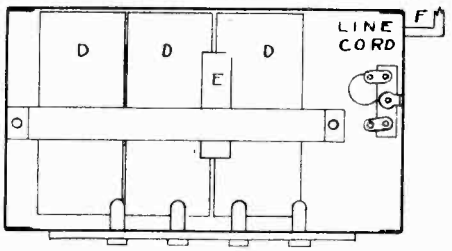


LOCATION OF PARTS IN CHASSIS

WIRING DIAGRAM FOR SILVERTONE MODEL 4709 POWR SHIFTR



LOCATION OF PARTS ON CHASSIS



CHARTS SHOWING OUTPUT OF POWR SHIFTR WITH 120V-60 CYCLE LINE INPUT

SINGLE "F" OR "V" SUPPLY	
AMPERES	VOLTS D.C.
0	7.54
.25	6.91
.50	6.62
.75	6.35
1.00	6.08
1.25	5.80
1.50	5.60

"F" AND "V" IN PARALLEL	
AMPERES	VOLTS D.C.
0	7.50
1.00	6.80
1.50	6.30
1.75	6.20
2.00	6.02
2.50	5.81
3.00	5.55

FILAMENT SUPPLY

The filament supply, marked "F" on the terminal strip, is obtained from a full wave copper sulfide rectifier feeding into a high capacity condenser input filter followed by a low resistance choke and another high capacity condenser.

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

KEY	PARTS NO.	DESCRIPTION	SELLING PRICE EACH
A	1391018	POWER TRANSFORMER	$1.80
B	1391019	FILTER CHOKE	1.35
C	1391020	RECTIFIER	4.20
D	1391017	CONDENSER 3000 MFD-6V	1.80
E	1391912	LINE CONDENSER .05 MFD 400V	.35
F	1391009	LINE CORD, SWITCH & PLUG	1.00
	1391021	TERMINAL STRIP	.40
	13920333	CHASSIS	.75
	13920326	CHASSIS BOTTOM COVER	.25
	13920330	CHASSIS TOP COVER WITH NAME PLATE	2.15
	13920337	MOUNTING BRACKETS	.15
	1391022	INSTRUCTION SHEET	

VIBRATOR SUPPLY

The vibrator supply, marked "V" on the terminal strip, is obtained from a full wave copper sulfide rectifier filtered by a single high capacity condenser. Terminal voltages for various loads are indicated on the load charts.

POWER DRAIN

The primary input with a single "V" or "F" supply loaded to 0.75 amperes is 17 watts, and with the two supplies in parallel and a 2.00 amp load the input watts are 30. At rated load of 3.0 amperes the primary drain is 43 watts.

TWO SEPARATE SUPPLIES

Several different basic designs in six volt single battery radios have made it necessary to provide separate supplies for the vibrator and for the filaments. This special design provides hum-free operation with proper installation of the Powr Shiftr. The two separate sources of D.C. power labeled "F" and "V" may be considered the equivalent of two separate six volt batteries.

SEPTEMBER 16, 1940

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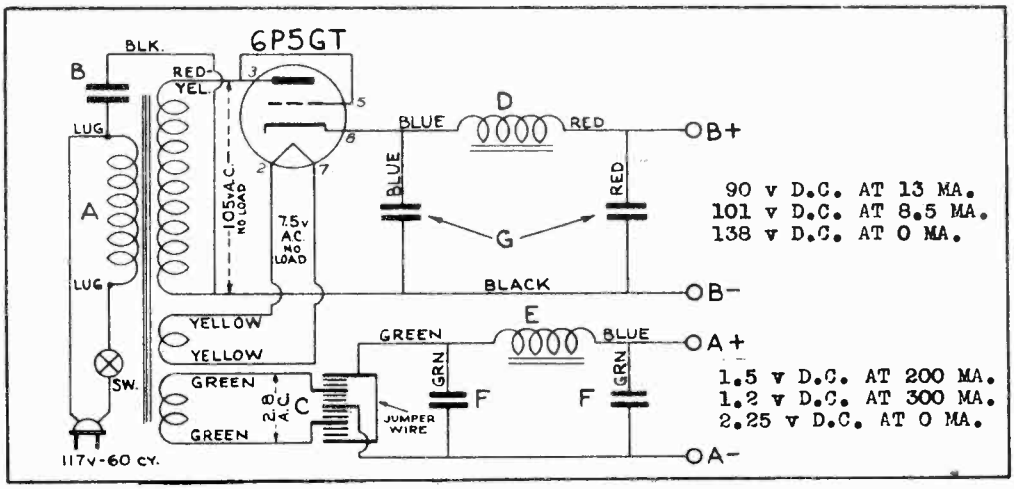
MODEL 5302 Power Shifter
Chas. 139.210

SEARS, ROEBUCK & CO.



WIRING DIAGRAM FOR SILVERTONE MODEL 5302 POWER SHIFTER

FOR 1 1/2 VOLT BATTERY RADIOS OF 4 OR 5 TUBES

"A" SUPPLY

The "A" supply is obtained from a full wave copper sulfide rectifier filtered by a condenser input filter consisting of two condensers and a low resistance choke. Terminal voltages with and without loads are indicated on wiring diagram.

"B" SUPPLY

The "B" supply employs a 6P5GT tube operated as a half wave rectifier operating into a condenser input filter of one choke followed by another condenser.

The "A" and "B" circuits are not common to each other or to the chassis. Different tube biasing methods make this necessary.

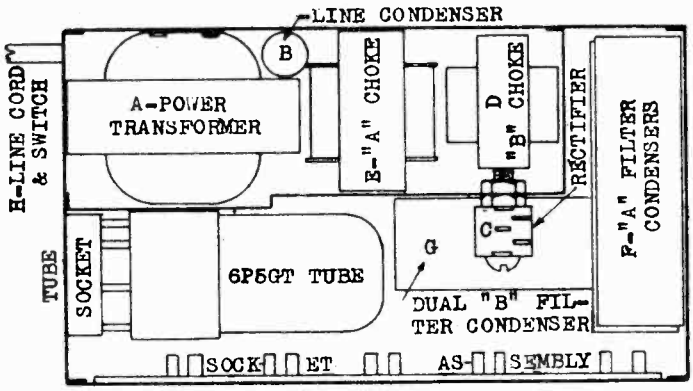
POWER DRAIN

The primary input is 7 watts when the "A" and "B" circuits are loaded as indicated on wiring diagram. The input watts under no-load should not be more than 4.5 watts and the primary current without load not more than 110 MA at 117 volts, 60 cycles.

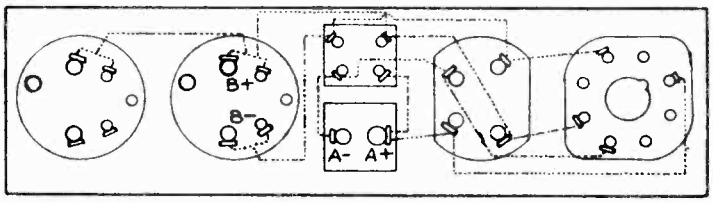
"A" SUPPLY FAILS

When the "A" voltage is excessively low the rectifier, condensers or transformer may be defective. To check the transformer remove one green lead of transformer winding from the rectifier and measure for A.C. voltage indicated on wiring diagram. To check the rectifier remove green lead from choke "E" and condenser "F", -- also

disconnect one side of jumper wire and measure D.C. voltage across rectifier. This should be 1.4 to 1.5 volts.



LOCATION OF PARTS IN CHASSIS



WIRING DIAGRAM OF SOCKET ASSEMBLY (Back)

"B" SUPPLY FAILS

The 6P5GT tube should be checked with a standard tube tester. Care should be exercised in removing this tube as all parts fit closely in chassis. A small screw driver may be used as a light pry behind the base of the tube to assist in removal. Be sure the tube is inserted with proper key alignment to tube socket. Also if a metal base tube, make certain the insulating sleeve of fibre is replaced on the tube base to prevent it from touching or contacting other parts in the chassis.

The transformer may be tested by measuring the secondary plate winding with the red-yellow lead disconnected.

NOVEMBER 15, 1939

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SEARS, ROEBUCK & CO.

MODEL 5215, Ch. 127.6150
MODEL 5252, Ch. 127.630
MODEL 5253, Ch. 127.620, -1, -2
Gas-O-Power Battery Charger

THIS CHARGER AND WHAT IT WILL DO

This engine generator has been principally designed as a battery charger and is rated, electrically, at 240 watts, 6 volts.

The engine of this charger is a single cylinder, four cycle "L" head, internal combustion engine air cooled. A ventilating fan, rotating on the crankshaft, drives off engine heat and circulates fresh air to engine and generator.

Engine lubrication is by the splash system from the crankcase, with a splash arm on the connecting rod.

Crankcase capacity is ¾ pint. Gasoline tank capacity is two (2) quarts.

The generator of this charger is of four pole design with four brushes, and supplies Direct Current.

The generator of the charger is directly coupled to the engine (no belts). The armature is keyed to the engine crankshaft which extends through the generator and serves as the generator shaft.

Because the engine of this charger operates constantly at one speed, the charging rate is permanent at approximately 25 amperes. The actual voltage development of this charger is approximately 8 volts, with the battery fully charged, and 6½ volts, when the battery is low in charge.

THE GENERATOR REQUIRES NO LUBRICANT.

The generator will charge from one to three 6 volt batteries of standard automotive and radio size at one time. The time required to charge the batteries depends upon the number of batteries being charged.

The generator is air cooled.

THIS CHARGER CANNOT BE OPERATED WITHOUT A BATTERY AND NO ATTEMPT SHOULD BE MADE TO DRAW ELECTRIC ENERGY DIRECTLY FROM THE GENERATOR.

A maximum of 240 watts of lamp load may be used at one time to incorporate a light line with the charger. Any combination of wattage bulbs may be used as long as the total wattage is not in excess of 240 watts.

The generator will charge the battery at the same time a lamp load is used, if the load does not exceed the rating of the charger.

THE ENGINE OF THIS CHARGER IS NOT INTENDED OR CLAIMED TO BE LARGE ENOUGH TO OPERATE POWER APPLIANCES, EITHER DIRECTLY OR INDIRECTLY, AS THE HORSEPOWER RATING OF THE ENGINE IS APPROXIMATELY 4/10 OR ONE HORSEPOWER.

INSTALLATION AND LOCATION OF CHARGER

The proper location of this charger is of vital importance to insure proper operation and long life.

The motor of the engine and generator of the unit incorporate air cooling. The unit should be operated in a location which permits the proper circulation of cool air. The unit should not be operated in a small closed room, nor should any cover be placed over the unit while operating. A cover may be placed over the unit when not operating to protect it from dirt and dust. The charger must also receive protection from climatic conditions.

Care should also be taken to make sure that the unit is not operating in a location where the circulation of dust and dirt would clog the cooling system, and the charger should not be installed in a hen house or barn.

The unit may be located in a garage, basement (if dry), tool shed, or similar shelter with good ventilation. Do not locate the charger near gasoline or oil storage tanks.

The charger must be in a level and secure position at all times while in operation.

For permanent installation, a concrete mounting base may be formed to fit the base measurements.

DO NOT INSTALL THE UNIT IN LIVING QUARTERS. EXHAUST GASES ARE DEADLY. UNLESS THERE IS AMPLE VENTILATION, OR FACILITIES TO PIPE THE EXHAUST OUTSIDE, THE CHARGER MUST BE LOCATED ELSEWHERE.

If the exhaust extension runs upward from the engine, a water condensation trap should be inserted in the pipe near the engine to prevent condensed moisture in the exhaust line from seeping down into the engine. Water in the engine would cause considerable damage. Empty the water trap frequently.

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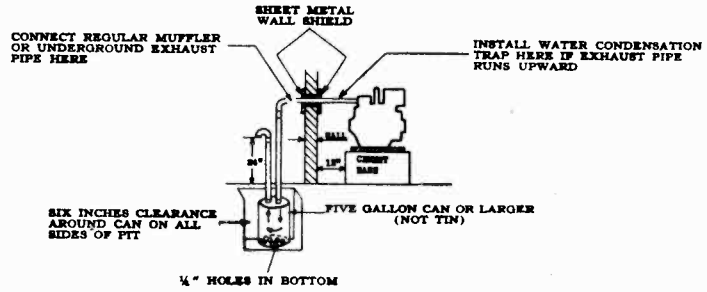
The exhaust line may be piped into a galvanized can, or barrel, buried in the ground for a more quiet muffler. The can or barrel must have holes drilled in its bottom to allow an outlet for condensation. The barrel should rest on a bed of stones or loose gravel. There must also be an extension pipe opening at top of barrel to relieve pressure. It is desirable to fill this underground muffler with course stones.

When piping the exhaust outside through the wall, a sheet metal guard should be placed in opening to prevent direct contact of the pipe to the wall.

One inch diameter flexible tubing is recommended as an exhaust extension, and the exhaust line should be installed as short as possible. Joints and elbows should be eliminated, and the exhaust line should not leak.

Check exhaust back-pressure upon installation. If the engine's operation improves when the exhaust line is disconnected, then the exhaust extension is too long.

Keep the exhaust line clean. Tapping it with a wooden mallet will loosen carbon formation so that it may be cleaned out.



BATTERY CHARGING AND ELECTRICAL INFORMATION

A battery, or batteries of correct voltage must be chosen for operation with this plant (6 volt)

Standard automotive batteries may be used and charged with this plant (6 volt) as well as radio batteries (6 volt), and if a permanent installation hook-up is used, a battery of not less than 145 ampere hour capacity is advisable.

The glass jar farm light batteries are very efficient and dependable, if the proper size is chosen. High capacity batteries will allow a load to be carried at greater length without the necessity of frequent recharging. If a heavy load is used, it is advisable to operate the plant while the load is connected.

If batteries of smaller capacities are attached to the charger for recharging, it is advisable to attach one or two lights on a line taken from the battery to eliminate too rapid a voltage rise. Battery connection must be made parallel to the lamp or line load.

An automobile battery may be charged without removing it from the vehicle. However, be certain to disconnect the automotive terminals from the battery before connecting the charger leads.

DO NOT ATTEMPT TO OPERATE THIS PLANT AT ANY TIME WITHOUT A BATTERY.

No. 4 cable, or heavier, should be used as leads from the plant to the battery to insure proper voltage relay. These leads should be as short as possible.

For better radio reception, this charger should be operated as far away as possible from the set and antenna, as most radios are susceptible to a certain amount of engine noise.

The radio should be operated with a separate battery and removed to the charger when recharging becomes necessary.

It is not advisable to operate the radio if the charger is operating on the radio battery and at the same time.

The radio battery should be at least within three feet of the radio to minimize electrical annoyances. Noise suppressors may be used on the engine of the charger if necessary.

If a connected load is installed to utilize the 240 watt capacity of the charger, the line leads of the charger must be connected to the battery terminals. A fuse block is recommended to be installed between the line lead and battery.

A 30 ampere main line fuse should be used if all the load is carried on one line. If the two circuit distribution system is incorporated, use fuses with a rating proportioned to the number of connected lamps; 5 ampere fuse capacity for each 25 watt lamp.

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MODEL 5253, Ch. 127.620, -1, -2 MODEL 5215, Ch. 127.6150
Gas-O-Power Battery Charger SEARS, ROEBUCK & CO. MODEL 5252, Ch. 127.630

NOT LESS THAN NO. 10 WIRE SHOULD BE USED FOR AN EFFECTIVE LIGHT LINE, IF THE LINE IS VERY SHORT, AND NO. 8 IS THE AVERAGE DESIRABLE SIZE.

Line connections should be very securely fastened, and it is advisable to study the individual lighting problem to obtain the greatest efficiency from 240 watts. The use of a group of low wattage lamps is more effective than two or three of greater wattage. The line should not be carried over one hundred and twenty-five feet so as to eliminate voltage drop and dim lights.

DO NOT ATTEMPT TO HANDLE WATTAGE GREATER THAN THE CHARGER'S CAPACITY.

All electrical wiring should be done in a dry location, and it should be made certain that all materials used in the construction of a light line are of good quality.

HOW TO CONNECT GAS-O-POWER FOR BATTERY CHARGING ONLY

The battery should be located as close as possible to the charger. Long leads cause voltage drop and loss of power.

Terminal leads must be of the proper size. Standard automotive cables are very desirable.

Use No. 4 wire or larger.

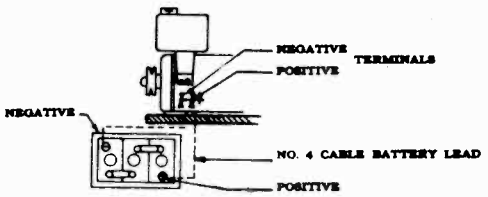
Use heavy screw clamp battery terminals on connections. X-clips are not recommended.

The charger terminals are wing nut connections.

Connect the charger positive (+) post, and the charger negative terminal (-) to the battery negative (-) post.

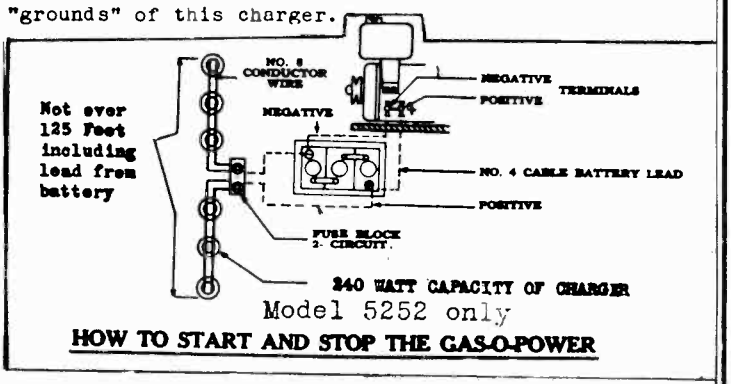
THE NEGATIVE TERMINAL OF THIS CHARGER IS GROUNDED.

Do not attempt at any time, to reverse the "grounds" of this charger.



FOR USE WITH A LIGHTING SYSTEM

HOW TO CONNECT GAS-O-POWER



Model 5252 only

HOW TO START AND STOP THE GAS-O-POWER

1. Fill the crankcase with ⅝ pint of the correct grade of good oil.

   Use S.A.E. No. 20 oil all year around, if average climatic conditions prevail.
   Use S.A.E. No. 30 oil under extreme heat conditions.
   Use S.A.E. No. 10 oil under extreme cold conditions.

   THE CRANKCASE SHOULD BE DRAINED EVERY 50-75 HOURS OF OPERATION.

2. Fill the gasoline tank within ½ inch of top. Use a good grade of white gasoline. It is not necessary to use high-test or colored fluids.

   DO NOT MIX OIL WITH GASOLINE

   Tighten gas tank cap and oil filler plug securely. Make certain that oil drain plug is tight. This unit will not operate satisfactorily with the gas tank cap off.

3. Connect battery.

4. Place choke shutter in a nearly-closed position.

5. Press starting button.

6. Proceed to open choke shutter gradually after engine is operating. (Usual choking can be accomplished by merely holding the thumb and forefinger over choke opening).

7. Adjust the carburetor needle valve after the warm-up period, if engine is not operating smoothly. This adjustment very slightly governs the engine speed until the best operating point is reached for maximum economy.

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MODEL 5215, Ch. 127.6150 MODEL 5253, Ch. 127.620, -1, -2
MODEL 5252, Ch. 127.630 SEARS, ROEBUCK & CO. Gas-O-Power Battery Charger

Turn the needle valve to the right (clockwise) to make the mixture leaner, and left (counter-clockwise) to render the mixture richer.

ALWAYS OPEN CHOKE FULLY AFTER WARM-UP PERIOD.

A check valve in the tube, extending into the gasoline tank, prevents engine stalling by not allowing gasoline to flow back into the tank after the piston intake stroke.

MANUAL STARTING may become necessary when the battery does not retain sufficient charge to crank the engine. Wind a rope counter-clockwise (outboard motor principle) around pulley, catching the end in pulley slot Adjust choke then press starting button and pull the rope at the same time. Then release starting button until the engine fires and operates.

Four (4) dry cell batteries will supply electric energy for ignition only, if the regular battery does not retain sufficient electric energy.

TO STOP THIS CHARGER.

Press and hold down the "Stop" button, located on the top of the ignition breaker assembly. Hold the button down until the charger comes to a complete rest.

SYMPTON CHART TO LOCATE DIFFICULTIES

WHEN PLANT WILL NOT CRANK

1. Loose or improper battery connection.
2. Discharged battery.
3. Generator brushes worn or dirty - poor contact.
4. Battery lead cables too small or too long.
5. Starter button - dirty contact.

WHEN PLANT WILL NOT START

1. Empty gasoline tank.
2. Check spark plug for break, dirt or loose Connection.
3. Compression leak. Blown gasket, loose spark plug, improper valve seating.
4. Clogged fuel system. Check strainer valve in gas tank.
5. Poor ignition contacts. Dirty or gap too wide.
6. Flooded spark plug.
7. Defective condenser.
8. Poor grace of gasoline.

WHEN PLANT DOES NOT GENERATE OR CARRY FULL LOAD

1. Generator brushes worn - poor contact.
2. Low engine compression.
3. Shorted armature.
4. Dirty or rough commutator.
5. Reduced engine speed - check ignition and piston assembly, also valves.
6. Adjust carburetor for maximum power.

WHEN ENGINE RUNS HOT

1. Exhaust back-up. Improper discharge.
2. Check ventilation. Is plant installed in surroundings with good air circulation?
3. Check crankcase breather for dirt.
4. Poor grade of gasoline - do not use Naphtha, or natural gasoline, or colored fluids.
5. Low oil level or improper grade for climatic temperature.

WHEN PLANT USES EXCESSIVE AMOUNTS OF OIL

1. Oil should be changed every 50 to 75 hours of operation to prevent stale oil. (depends on hours of continuous operation).
2. Too rich mixture.
3. Piston rings stuck in piston grooves because of improper lubrication, overheating or defective rings.

WHEN ENGINE OPERATES PLANT GENERATOR BUT CURRENT IS NOT AVAILABLE ON A LIGHT LINE

1. Blown fuses.
2. Open line wire.
3. Open line switch.
4. Burned out bulbs.
5. Improper wire size.
6. Carrying lights too great a distance.

IMPROPER LIGHT EFFECTS OR FLICKERING LIGHTS

1. Low battery voltage.
2. Break in line.
3. Loose connection.
4. Shorted battery cell.
5. Battery old or in poor condition.

CARE OF GAS-O-POWER AND BATTERIES

Check oil and fuel before each period of operation.

Clean the charger periodically. Do not allow the fuel lines gas tank, or crankcase to become congested with dirt or sediment. Wipe the charger free of any oil and gasoline if same is spilled when the operating liquids are being replenished.

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MODEL 5253, Ch. 127.620, -1, -2 MODEL 5215, Ch. 127.6150
Gas-O-Power Battery Charger SEARS, ROEBUCK & CO. MODEL 5252, Ch. 127.630

All plant and battery connections should be maintained tight. Do not cause an electrical short by allowing the lead wires to make contact with any other wire or metal part. Considerable damage to the generator can be caused if a short occurs.

Use good grades of fuel and lubricant. Change crankcase oil every 50 to 75 hours (depending upon periods of continuous operation).

Keep your batteries filled with Electrolyte (liquid) ½ inch above top of battery plates. Keep the battery terminals clean and tight. Grease them (vaseline) to prevent corrosion.

Keep the batteries clean and dry.

Keep the batteries charged to a certain point. Do not allow them to remain discharged for long periods of time. By keeping the batteries in good condition, their life increases. Old batteries are not efficient and will not take a full charge. Do not overcharge the batteries. However, if the battery has not been used for several weeks, it may be necessary to over charge the battery for a few hours in order to restore the battery to proper condition.

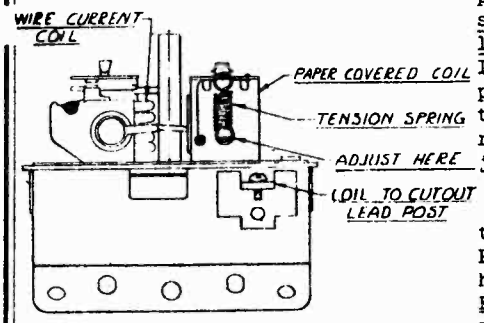
Keep the batteries fully charged in cold weather.

AUTOMATIC VOLTAGE RELAY CUTOUT

The Gas-O-Power Charger Model #127.630 is equipped with the Automatic Voltage Relay Cutout. This cutout is located on the generator housing on the starter button side of the charger. (See Photograph.) The mechanism of the cutout is covered by a metal box-like top which occasionally should be removed to inspect the parts underneath for dirt and dust which will retard operation.

The batteries must be disconnected from the charger while inspecting or adjusting the cutout.

If it has been determined that the charger is stopping before the batteries are receiving a full charge, it may be necessary to make a minor adjustment of the cutout. Remove the cutout cover and study the mechanism carefully. (Identify the correct adjusting position of the cutout as appearing in diagram.) Note the tension spring hooked between the two lugs or spring holder arms which are located directly in front of the paper covered voltage cutout coil. Its position will be further noted in that it is behind the lead post for the connection of the lead wire from the ignition coil to the cutout. (The heavy wire coil at the left-hand side is the current cutout and no attempt at any time should be made to make adjustments for any purposes whatever.)



PROPER VIEW OF CUTOUT FOR ADJUSTMENT

The tension of the spring must be very slightly increased if the charger is stopping before a full battery charge is reached. Place a blunt instrument on the edge of the lower lug or spring holder arm and exert downward pressure bending the lug slightly. Extreme Caution should be exercised when attemtping this adjustment and it may be necessary that the adjustment be made several times until the correct cutout point is reached. The correct cutting out point may be determined by testing the batteries with a hydrometer. The correct gravity reading should be between 1275 and 1300.

If it is determined that the charger continues to operate after a full battery charge has been reached, then the same blunt instruments should be placed under the bottom lug or spring arm exerting pressure slightly upward to decrease the spring tension.

Study the chargers reaction carefully if the cutout adjustment is made. Do not attempt any further adjustment of the cutout than described and if necessary request further information from the Sears store from which you purchased the charger.

SERVICE

NOTE: Because of the compact design and close fitted parts, the operator of this charger should carefully and thoroughly study the construction of both the engine and the generator before service or disassembly is undertaken.

THE CARBURETOR may be unscrewed from position on the gas tank. The needle valve, as well as the check valve in the tank, should be inspected. The gas tank can be removed by unscrewing it from its position on top of generator.

THE IGNITION may be tested by disconnecting and holding the terminal lead to spark plug 1/8 inch from engine frame. Note a hot thick spark when starter button is pressed. Check coil condenser and ignition breaker plunger (spring and point). The spark plug clearance should be between .020 and .030 Breaker point contact should be .022.

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MODEL 5215
MODEL 5252
MODEL 5253

SEARS, ROEBUCK & CO.

TIMING of the plant is correct when the line mark (/) on the crankshaft counterweight is directly in line between the camshaft gear teeth marked (0). Timing can be set and checked through the front of engine with the crankcase breather removed, and the charger at eye level.

THE VALVES may be ground by removing from the engine the exhaust line, carburetor, cylinder head and breaker box (interrupter assembly). Force valve spring up, remove stem key and retainers, then remove valves. Place a good valve grinding compound on the bevel edge of the valve and insert back into cylinder. Use a screw driver for grinding and DO NOT USE A VALVE GRINDING TOOL. A valve tool is too heavy, for a great amount of pressure should not be exerted when grinding. The valves do not require frequent grinding. The valve seats should be cleaned before reassembly (wash in gasoline or kerosene.)

VALVE TIMING is correct when the gap between valve stem and tappet is between .010 and .012. After a valve grinding operation, the operator may find it necessary to grind off the valve stem to adjust and obtain the proper clearance.

COMPRESSION may be checked by inspecting the piston rings, gaskets and valve and tappet clearance. Compression loss at the valve seat may be adjusted by grinding the valves and correctly setting the valve and tappet clearance by grinding off the stem to proper clearance.

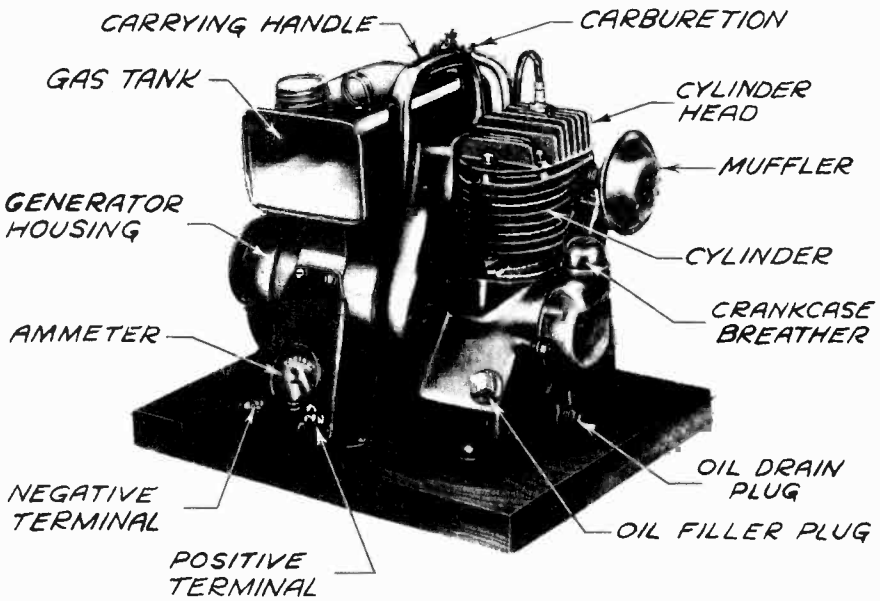
THE STARTER SWITCH should be periodically inspected and disassembled for cleaning, to insure good contact.

THE PISTONS AND PISTON RINGS may be removed from the engine for inspection after the cylinder has first been removed. If the piston rings are worn excessively or broken, they should be replaced. Clean the ring grooves of any foreign deposits. Piston clearance is .004 to .005 with a clearance feeler 3/8 inches wide, and ring openings should be spaced thirty degrees (30°) apart.

CARBON DEPOSITS in the engine should be removed periodically by cleaning with a carbon solvent to prevent valve pitting, overheating, loss of oil and mechanical failure.

THE CRANKCASE BREATHER AND EXHAUST MUFFLER should be periodically inspected and cleaned. A clean muffler eliminates exhaust back-pressure. The crankcase breather can be washed in gasoline. A clogged breather retards cooling which will result in harm to the engine.

THE GENERATOR may be inspected by removing the end housing plate, held by two screws. Note brush condition. They should not stick in the brushholders, but run free on commutator with smooth contact. The brush faces should fit the commutator in a curved arc, as they are designed in this manner. Check the brushholder spring tension for weakness. Replace worn brushes. Brush faces may be smoothed with a piece of "00" sandpaper to improve contact, if roughened. Charging rate of the generator is dependent upon good brush condition. DO NOT OIL ANY PART OF THE GENERATOR. When servicing the generator, extreme care should be exercised to insure against shorting injury to, or dislocation of, any part or wire. The correct position of all parts and connections in the generator should be carefully noted before reassembly. Do not allow any wire or metal part to touch, causing an electrical short.



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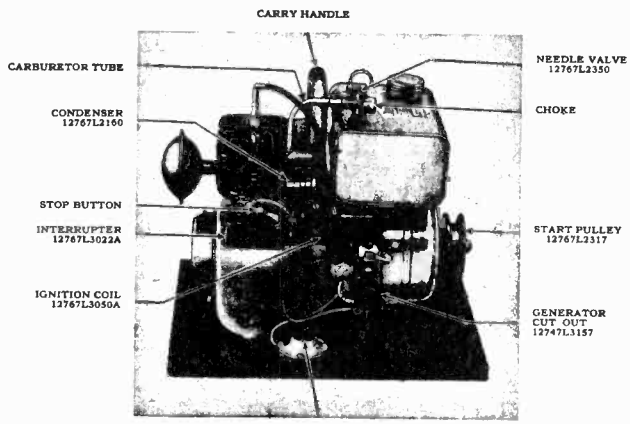

FIGURE 1

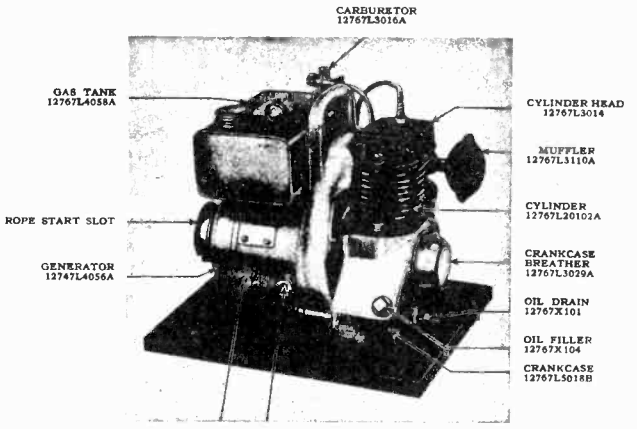

FIGURE 2

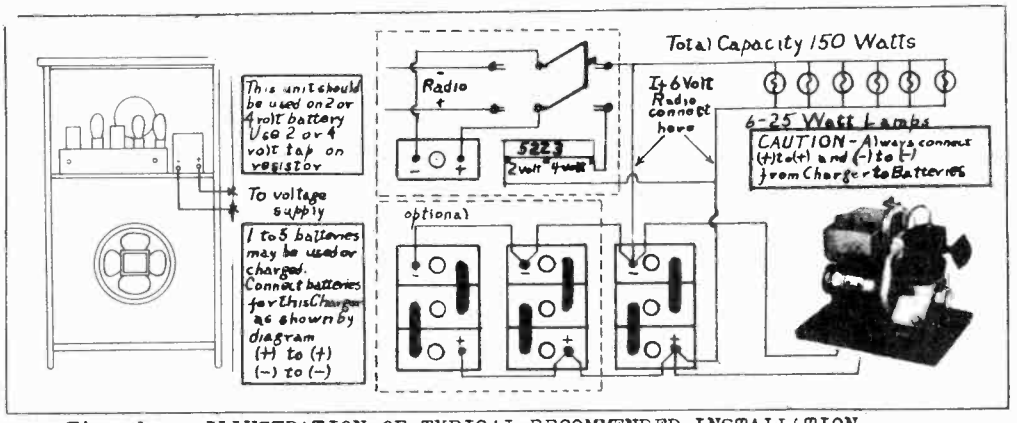

Fig. 1. ILLUSTRATION OF TYPICAL RECOMMENDED INSTALLATION

The above diagram shows connections for charging the radio battery and for six 6 volt 25 watt electric lights. Unless you wish to charge a 2 volt storage battery the extra 6 volt storage battery will not be needed if it is not intended to wire for lights. If a 2 volt storage battery is used a 6 volt battery will be necessary at this point in the circuit for furnishing ignition current to start the engine. It will also be necessary to use the Resistor shown (Sears No. 5223) for charging a 2 volt storage battery or a 4 volt storage battery.

GENERAL INFORMATION AND SERVICE HINTS

1. Handle the charger with care. Do not drop the charger, and keep it in an upright position when filled with fuel and lubricant.

2. WHERE TO INSTALL THE PLANT:

A. LENGTH OF WIRE: The plant should be installed in such a manner that the wires to the lights, batteries and radio will be as short as possible. As the wire offers a resistance to the flow of electricity, the more wire used the lower the voltage will be at the point of use. Similarly, the smaller the wire size the lower the voltage will be at the point of use. This is particularly important in the connection between the plant and the batteries, for the larger the wire size the higher the voltage at the batteries, and the result is a higher charging rate. SEE THE WIRE EXTENSION TABLE BELOW:

WIRE EXTENSION TABLE

IF THE DISTANCE BETWEEN PLANT AND RADIO BATTERY IS:

20 feet use	No. 12 wire
40 feet use	No. 10 wire
60 feet use	No. 8 wire
100 feet use	No. 6 wire
140 feet use	No. 4 wire

MARCH 21, 1938

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MODEL 5215
MODEL 5253

SEARS, ROEBUCK & CO.

MODEL 5215

Part No.	Description	No. Req'd.	Shipping Weight	Price Each
12747L3143	ARMATURE	1	4 lb.	7.95
12747L3144	Brushholder,Gene.(with fibre insul. post)	1	11 oz.	1.02
12747L3144	Brushholder,Gene.(with non-insulated grounded post)	1	11 oz.	.90
12747L20124	Cable, Cutout to Starter	1		.14
12767L20160	Carburetor Tube	1	1 ¼ oz.	.10
12767L20161	Carburetor Tube Bushing	2	4 ⅛ oz.	.05
12767L2160	Condenser	1	1 oz.	.24
12767L3001	Connecting Rod	1	1 3/8 oz.	.60
12767L2311A	CUTOUT TO COIL WIRE ASSEMBLY	1	1/4 oz.	.06
12759L20156	Customers Instruction Book	1		.20
12747L3157	Cutout, Voltage Relay Generator	1	6 oz.	.60
12767L4055	Cylinder	1	4 lb. 4 oz.	3.10
12767L20120A	CYLINDER ASSEMBLY-Includes cylinder, exhaust and intake valves, valve springs, lock and retainers, and expansion plug	1	4 lb. 5 oz.	6.00
12747L3142A	FIELD RING ASSEMBLY (6 volt) includes poles and windings.	1	12 lb. 11 oz.	7.20
12767L4058A	GASOLINE TANK ASSEMBLY-Includes tank, mounting bracket, cap & air vent	1	2 lb.	1.40
12747L4056A	GENERATOR ASSEMBLY-Includes generator main body, armature, brushes, brushholder and field ring assembly	1	19 lb.	15.00
12747L2399	Generator to Base Screw Spacer	1	3/8 oz.	.02
12767L20100	Ignition Coil Mounting Spacer	1	1/8 oz.	.04
12767X202	Lockwasher - Cylinder to Crankcase	3		.01
12767X201	Lockwasher - Gas Tank to Generator	4		.01
12767X201	Lockwasher - Generator to Crankcase	2		.01
12767L2313	Lockwasher - Interrupter to Crankcase	2		.01
12767L3110A	MUFFLER ASSEMBLY	1	6¼ oz.	.25
12767X1897	Nut - Coil Bracket Screw	1	1 1/6 oz.	.01
12767L20122	Plug, Crankcase Stud Hole	1	1/8 gram	.06
12767X2211	Plug, Cylinder Expansion	1	1/4 gram	.01
12767X101	Plug 1/4" Oil Drain	1	1/2 oz.	.02
12767X104	Plug 3/4" Oil Filler	1	2 oz.	.04
12767X3009	Screw-Coil Bracket to Tank Bracket	1	1/8 oz.	.01
12767X3107	Screw-Generator to Crankcase	2	2 gram	.02
12767L20108	Valve Spring	2	3/8 oz.	.05

Model 5253

Part No.	Name	No. Req'd	Price Each
12767L3029A	CRANKCASE BREATHER ASSEMBLY. (Below Engine Serial Number 21008)	1	.45
12767L20529A	CRANKCASE BREATHER ASSEMBLY. (Above Engine Serial Number 21007)	1	1.80
12767L20494	Crankcase Breather Stud to Crankcase. (Used with 12767L20529A Breather Assembly	2	.03
12767L20151	Crankcase Breather Stud Lockwasher	2	.01
12747L3157	Cutout, Voltage Relay Generator. (Used Charger 127.6150)	1	.60
12747L3148	Cutout, Automatic, Voltage Relay Generator. (Used Charger 127.620)	1	2.40
12767L4062	Cylinder	1	3.10
12767L20174A	CYLINDER ASSEMBLY--Includes cylinder, exhaust and intake valves, valve springs, lock and retainers, and expansion plug	1	5.00
12747L3189A	FIELD RING ASSEMBLY (6 volt) Includes poles and windings	1	7.20
12767L4058A	GASOLINE TANK ASSEMBLY--Includes tank, mounting bracket, cap and air vent	1	1.40
12747L4079A	GENERATOR ASSEMBLY--Includes generator main body, armature, brushes, brushholder and field ring assembly	1	15.00
12767X3279	Screw--Cutout to Generator	1	.01

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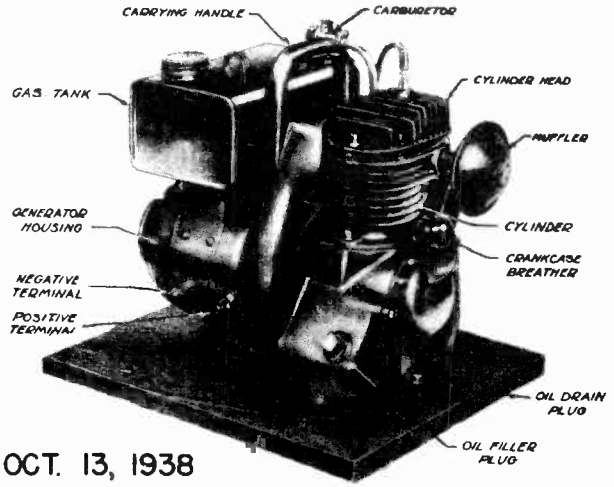
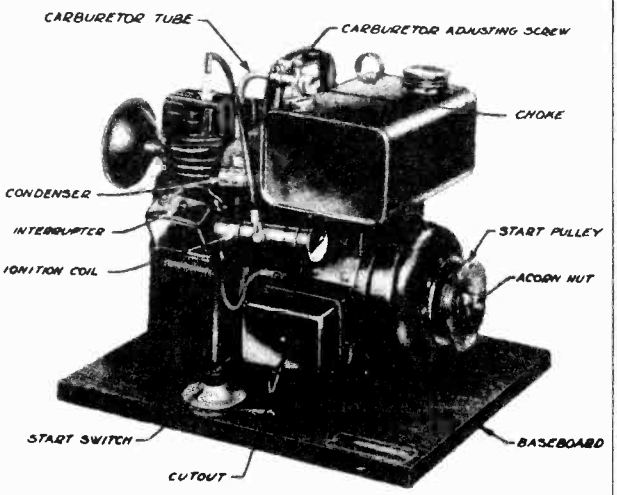
MODEL 5253

SEARS, ROEBUCK & CO.





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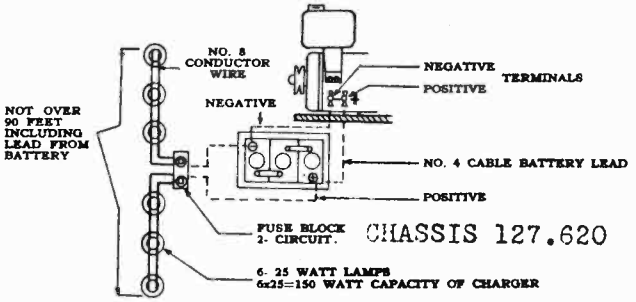

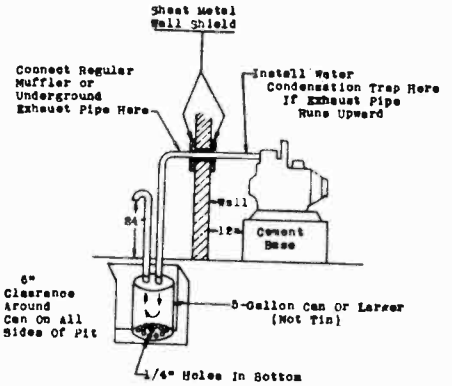

HOW TO START AND STOP THE GAS-O-POWER

SUBJECT: REVISION OF 127.620 GAS-O-POWER BATTERY CHARGER

The following changes are now in production and will be effective on all GAS-O-POWER plants numbered A-15000, upward. There has been a change in the design of the unit. The generator housing has been slotted to allow the free passage of air, and the installation of the larger fan, L3416, greatly improves the cooling of the plant.

The cylinder is interchangeable as an assembly and is to be supplied for all service replacements, but the valves, springs, retainers, and locks are not interchangeable with the old parts which must be supplied for service on all 127.620 plants, the engine number of which is not prefixed with the letter (A). The cylinder head is not interchangeable unless the spark plug is also changed. The 14 m.m. spark plug cannot be supplied for service, its use being restricted to production. The new piston is interchangeable with the old and will be furnished for all service replacements. The piston rings are also interchangeable. The new crankcase is interchangeable with the old.

The difference between 127.620-1 and 127.620-2 is the change of the fan, #L3416 superseding L3124. These parts are not interchangeable and L3124 must be supplied for service on all 127.620 and 127.620-1 plants.

SUPPLEMENT #1
FEBRUARY 20, 1940

PART NO.	DESCRIPTION	SELLING PRICE EACH
12767L20594A-1	Cylinder Assembly	5.00
12767L20551	Insert - Ex. Valve Seat	.12
12767L20549	Valve Exhaust & Intake	.44
12767L2014	Valve Spring	.02
12767L20592	Valve Spring Retainer	.05
12767L20552	Valve Spring Retainer Pin	.01
12767L3419	Piston	.86
12767L20546	Piston Ring	.15
12767L20547	Piston Ring	.20
12767L20548	Piston Ring	.24
12767L4089	Cylinder Head	1.00
12767L3411A	Cylinder Head Baffle Assembly	.50
12767L3417A	Cylinder Head Baffle Assembly	.50
12767K4085A	Crankcase Assembly	6.40
12767L3416	Fan and flywheel, for 127.620-2	1.00
12767L3124	Fan and flywheel, for 127.620 and 127.620-1	1.00
	Spark Plug 14 m. m. - (Cross Country type C-14, Source - Dept. 28)	

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PARTS LIST

Prices subject to change without notice.

Part No.	Name	No. Req'd	Price Each
12747L2304	Ammeter	1	.78
12747L3102	Ammeter Mounting Bracket	1	.13
12747L3108	Armature	1	12.00
12747L2034	Armature Support	1	.70
12767L4084	Baseboard	1	1.00
12747L2347	Brush, Generator	4	.50
12747L3109	Brushholder Generator (less brushee)	1	1.80
12767L2008A	CAMSHAFT ASSEMBLY--Includes the gear	1	1.55
12767L2006	Camshaft Idler Shaft	1	.14
12767L3016A	CARBURETOR AND CHECK VALVE ASSEMBLY	1	1.00
12767L2350	Carburetor Adjusting Screw, needle valve	1	.18
12767L2349	Carburetor Check Valve	1	.63
12767L2024	Carburetor Gasket	1	.01
12767L2083	Carburetor Tube to Cylinder	1	.10
12767L2160	Condenser	1	.24
12767L3001	Connecting Rod	1	.60
12767X601	Cotter Pin, Connecting Rod Washer	1	.01
12767L5029A	CRANKCASE ASSEMBLY--Includes oil drain plug, oil filler plug, crankshaft oil seal, bushing engine end, studs cylinder to crankcase, and screws, generator to crankcase	1	6.40
12767L20529A	CRANKCASE BREATHER ASSEMBLY	1	1.80
12767L20466	Crankcase Breather Gasket	1	.05
12767L3128A	CRANKSHAFT ASSEMBLY--Includes crankshaft, crankpin and counter balance, crankshaft gear, crankshaft gear drive pin and counterweight pin	1	2.70
12767L2004	Crankshaft Ball Bearing--Generator End	1	1.20
12767L2016	Crankshaft Bearing Lock Ring	1	.01
12767L2310	Crankshaft Bushing--Engine End	1	.20
12767L2031	Crankshaft Oil Seal	1	.20
12767L2317	Crankshaft Pulley	1	.40
12767L2303	Crankshaft Shim	1	.01
12759L20531	Customers Instruction Book	1	.20
12747L3103	Cutout, Automatic Voltage Relay--Generator	1	2.40
12767L20445A	CYLINDER ASSEMBLY--Includes cylinder, exhaust and intake valves, valve springs, lock and retainers and expansion plug	1	5.00
12767L4083	Cylinder head	1	1.00
12767L2023	Cylinder Head Gasket	1	.05
12767L2040	Cylinder to Crankcase Gasket	1	.05
12767L2311A	CUTOUT TO COIL WIRE ASSEMBLY	1	.06
12767L3124	Fan and Flywheel	1	1.00
12767L3119	Fan Air Intake Plate	1	.10
12747L3178A	FIELD RING ASSEMBLY (6 Volt) Includes poles and windings	1	9.00
12767L4003A	GASOLINE TANK ASSEMBLY--Includes tank, mounting bracket, cap and air vent	1	1.90
12747L4066A	GENERATOR ASSEMBLY--Includes generator main body, armature, brushes, brushholder and field ring assembly	1	21.00
12747L4050A	GENERATOR END HOUSING ASSEMBLY	1	2.30
12767L2017	Ignition Breaker Plunger	1	.14
12767L2016	Ignition Breaker Plunger Spring	1	.01
12747L3050A	IGNITION COIL ASSEMBLY (6 Volt)	1	1.80
12767L2168	IGNITION COIL MOUNTING BRACKET	2	.05
12747L2086A	IGNITION COIL TO BREAKER BOX WIRE ASSEMBLY	1	.05
12747L2084A	IGNITION COIL TO SPARK PLUG WIRE ASSEMBLY	1	.08
12747L3022A	INTERRUPTER ASSEMBLY	1	1.20
12747L2376	Key, Woodruff--Armature	1	.02
12767X508	Key, Woodruff--Crankshaft Pulley	1	.01
12767X508	Key, Woodruff--Fan	1	.01
12767L2313	Lockwasher, Carburetor to Bracket	2	.01
12767L2313	Lockwasher, Interrupter to Crankcase	2	.01
12767L2313	Lockwasher, Start Switch Bolts	2	.01
12767L20150	Lockwasher, Crankshaft Pulley	1	.01
12747X203A	Lockwasher, Shakeproof, Battery and Line Terminal	2	.01
12767L20151	Lockwasher, Crankcase Breather Stud	2	.01
12767L20151	Lockwasher, Miscellaneous other than listed	6	.01
12767L3110A	MUFFLER ASSEMBLY	1	.30
12767X1896	Nut, Coil Bracket Screw	1	.01
12767X18171	Nut, Acorn--Crankshaft Generator End	1	.04
12767X1801E	Nut, Cylinder to Crankcase	3	.01
12767X1600C	Nut, Generator, Breather to Crankcase	6	.01
12747L2306	Nut, Hex--Battery Terminals	3	.02
12767L3000	Piston (Standard)	1	.86
12767L2357	Piston (.005 O/S)		.86
12767L2358	Piston (.010 O/S)		.86
12767L3000A	PISTON ASSEMBLY--Includes piston, piston pin, piston rings, retainer rings	1	1.52
12767L2010	Piston Pin	1	.05
12767L2012	Piston Pin Retaining Ring	2	.01
12767L20125	Piston Ring--Standard Plain Compression	1	.15
12767L20145	Piston Ring--.005 O/S Plain Compression	1	.20
12767L20163	Piston Ring--.010 O/S Plain Compression		.20
12767L20111	Piston Ring--Standard Corner Grooved Compression	1	.20
12767L20143	Piston Ring--.005 O/S Corner Grooved Compression		.25
12767L20164	Piston Ring--.010 O/S Corner Grooved Compression		.25
12767L20112	Piston Ring--Standard Oil Control	1	.24
12767L20144	Piston Ring--.005 O/S Oil Control		.30
12767L20165	Piston Ring--.010 O/S Oil Control		.30
12767L2025	Plug Camshaft Idler Shaft Hole	1	.06
12767X101	Plug 1/4" Oil Drain	1	.02
12767X3279	Screw--Breaker Box to Crankcase	2	.01
12767X3804	Screw--Carburetor to Bracket	2	.01
12767X3804	Screw--Carburetor to Gas Tank	2	.01
12767X3307	Screw--Coil Bracket to Crankcase	1	.01
12767X3804	Screw--Condenser to Crankcase	1	.01
12767X3233	Screw--5/16--18 x 1-1/4 Cylinder Head to Cylinder	3	.02
12767X3153	Screw--5/16--18 x 3/4 Cylinder Head to Cylinder	3	.02
12767X3109	Screw--Gas Tank to Generator	4	.02
12767X3209	Screw--Engine and Generator to Baseboard	3	.02
12767L2314	Screw--Starting Switch to Baseboard	2	.01
12747L20431	Screw--Hex Head, Battery and Line Terminals (Positive)	2	.01
12747L20430	Screw--Hex Head, Battery Terminal (Negative)	1	.01
12767L2309	Screw--Cutout Mounting	2	.02
12767L2309	Screw--Ammeter Bracket to Baseboard	2	.02
12767L2348	Spark Plug	1	.35
12747L2346A	Starter Switch Assembly	1	1.14
12767X1950A	Stud, Cylinder to Crankcase	3	.03
12767X4027	Stud, Generator to Crankcase	2	.07
12767L20494	Stud, Breather to Crankcase	2	.03
12767L2013	Valve, Exhaust and Intake	2	.40
12767L20178	Valve Spring	2	.05
12767L2019	Valve Spring Retainer	2	.02
12767L2020	Valve Spring Retainer Lock	2	.01
12767L2015	Valve Tappet	2	.06
12767L2253	Washer--Connecting Rod Thrust	1	.01
12767X1469	Washer--Engine to Base	6	.01
12747L2307	Washer, Insulating--Positive Terminals	2	.02
12747L2308	Washer, Insulating--Negative Terminals	2	.02
12747L2397	Washer, Plain--Battery Terminal (Negative)	1	.01
12747X1409	Wing Nut--Battery Terminals	3	.03
12747L2316	Wire, Ground--Generator to Cutout	1	.05
12747L20499A	WIRE ASSEMBLY--Ammeter (Negative) to Start Switch	1	.05
12747L20526A	WIRE ASSEMBLY--Ammeter (Negative) to Battery Positive Terminal	1	.05
12747L20463A	WIRE ASSEMBLY--Cutout to Ammeter (Positive)	1	.18
12747L20440A	WIRE ASSEMBLY--Ammeter (Negative) to Start Switch	1	.14
12747L2312A	WIRE ASSEMBLY--Ammeter (Negative) to Battery Positive Terminal	1	.14

GAS-O-POWER BATTERY CHARGER

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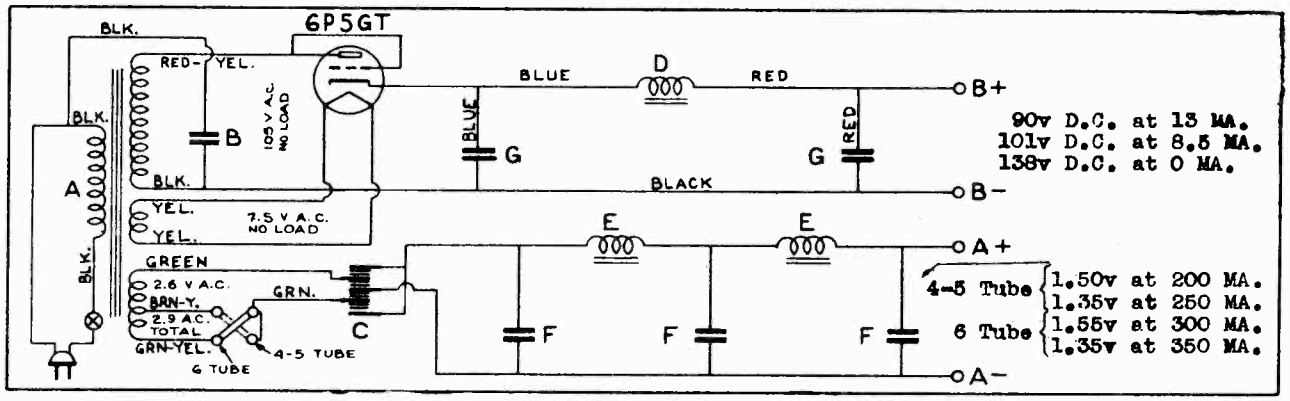
MODEL 5303, Ch. 139.700
Power Shifter

SEARS, ROEBUCK & CO.



WIRING DIAGRAM FOR SILVERTONE MODEL 5303 POWER SHIFTER

"A" SUPPLY

The "A" Supply is obtained from a full wave copper sulfide rectifier filtered by a condenser input filter consisting of three condensers and two low resistance chokes. A tap on the power transformer allows the voltage on the rectifier to be changed giving two "A" load voltages. Terminal voltages for various loads are indicated on the wiring diagram.

"B" SUPPLY

The "B" supply employs a 6P5GT tube operated as a half wave rectifier operating into a condenser input filter of one choke followed by another condenser.

The "A" and "B" circuits are not common to each other or to the chassis. Different tube biasing methods make this necessary.

POWER DRAIN

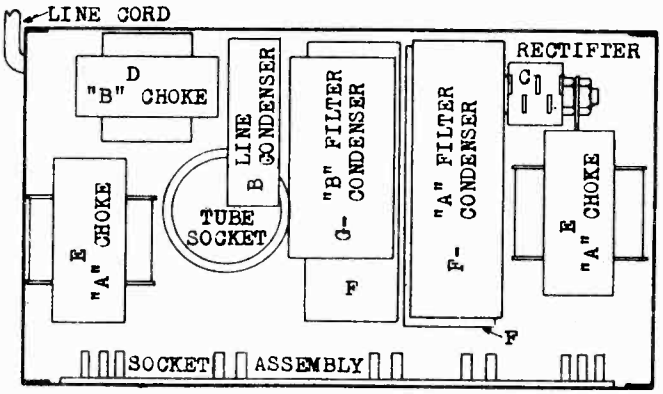
The primary input is 8 watts when the "A" and "B" circuits are loaded. The input watts under no-load should not be more than 4.5 watts and the primary current without load not more than 115 MA at 117 volts, 60 cycles.

"A" SUPPLY FAILS

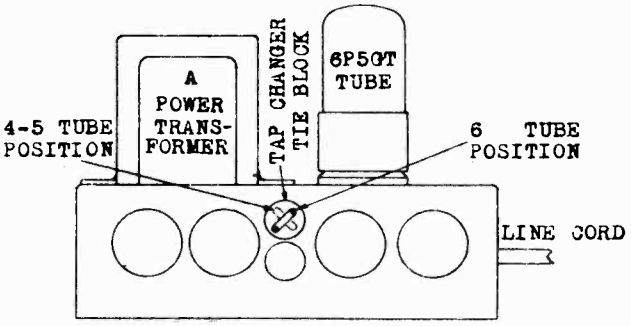
When the "A" voltage is excessively low the rectifier, condensers or transformer may be defective. To check the transformer remove one green lead of transformer winding from the rectifier and measure for A.C. voltage indicated on wiring diagram. To check the rectifier remove green lead from choke "E" and condenser "F", -- also disconnect one side of jumper wire and measure D.C. voltage across rectifier. This should be 1.4 to 1.5 volts with the tap changer tie block in the 4-5 tube position.

"B" SUPPLY FAILS

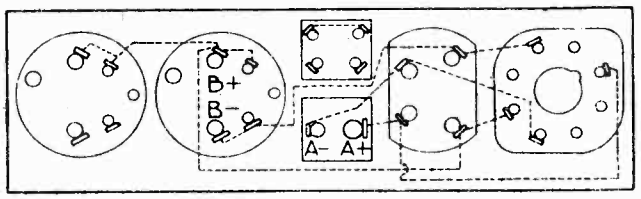
The 6P5GT tube should be tested with a standard tube tester. The transformer may be tested by measuring the A.C. voltage across the secondary plate winding with the red-yellow lead disconnected.



LOCATION OF PARTS IN CHASSIS



LOCATION OF PARTS ON CHASSIS



WIRING DIAGRAM OF SOCKET ASSEMBLY (Back)

NOVEMBER 15, 1939

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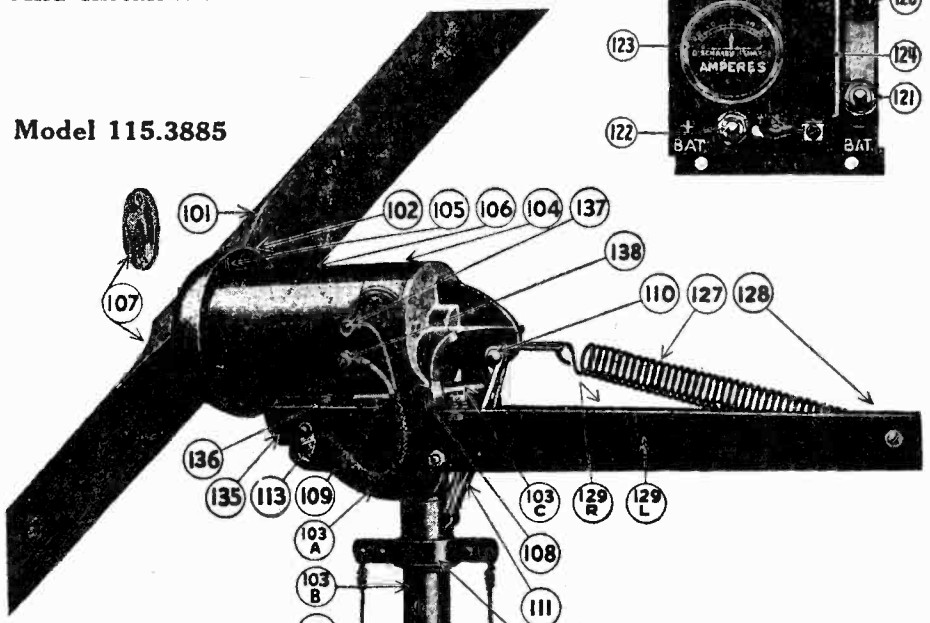
KEY TO PARTS PRICE LIST
And Installation Instructions

Model 115.3885

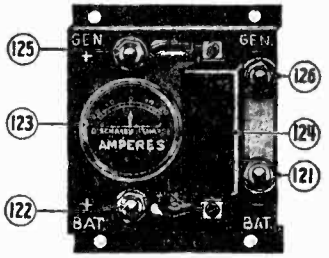


(Parts illustrated here are listed and priced on page 3)

When ordering generator parts give generator number. This will be found on a plate attached to generator

FIGURE A

Fig. B, Complete Instrument Panel



All-Steel Main-Frame and Collector Ring Assembly

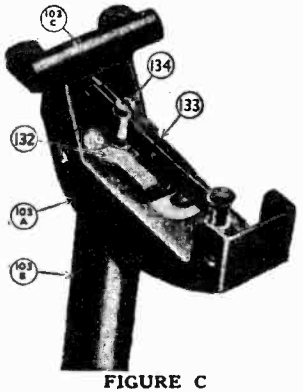
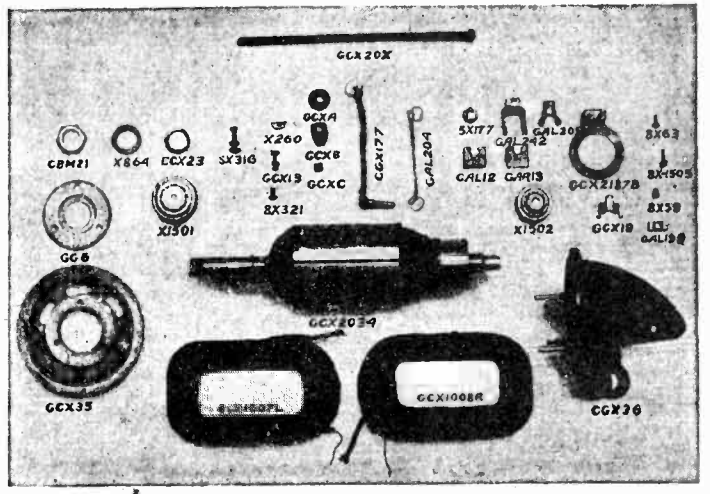
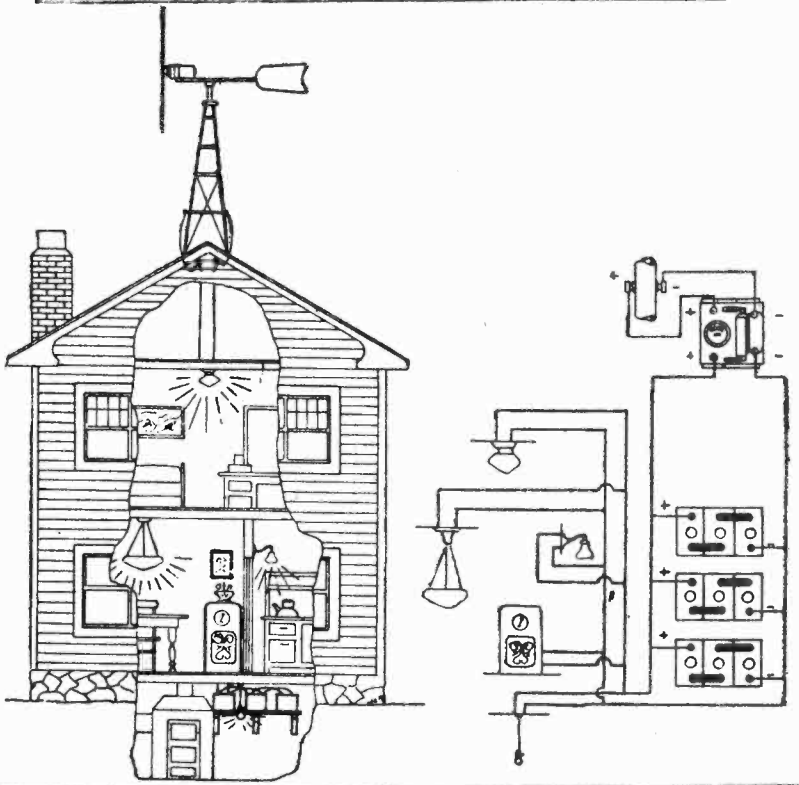


FIGURE C

GENERATOR PARTS





SIX VOLT 15 AMPERE AIR-CHARGER

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ASSEMBLING MAIN-FRAME

Note from Fig A, that the main frame head assembly consists of three integral parts. (No. 103A) the pressed steel main frame proper, (103B), the Turntable pipe, and (103C) the trunnion pin clamp. These are all electrically welded together and listed as part No. 103. In this, is mounted the collector ring assembly, which consists of the positive contact brush (133) and the negative brush assembly (132). To assemble the charger, bolt tail arms 129R and 129L to main frame as illustrated in Fig. A, using ½" x5/16" square head bolts, nuts and lockwashers having the nuts on the outside. Leave these bolts loose until trunnion pin clamp bolts are in place and tightened around trunnion pin. Then tighten the other bolts. Place cable clamps (113) over the front bolt on right hand side as you face the charger. Place distributor box cover (135) in position as shown in Fig. A, page 8. Set generator in place and slide trunnion pin (108) through the generator hinge lugs, distributor box cover ears, and trunnion pin clamp (103C). Insert 5/16x¾" square head bolts through holes in tail arms (129R and 129L) and up through holes in trunnion pin clamp (103C) and tighten down nuts over lockwashers. Then tighten other bolts. Slide throwout collar (112) and throwout bale (111) up on to turntable pipe (103B) and connect throwout bale (111) to fin on rear of generator using throwout bale pin, (No. 110), washer and cotter key, which also attaches clevis to fin. Place governor spring tail arm clip and spacer (128) in position between tail arms and bolt loosely. Hook one end of governor spring in hole in tail arm clip and spacer (128) and attach other end to clevis on generator tail fin. The tail vane comes in two sections and is bolted between the tail arms using three ½x¼" bolts, nuts and lockwashers. Now tighten all bolts carefully.

ATTACHING CABLE

After main frame assembly is completed refer to illustration and note carefully position of generator cable No. 109. Connect the red positive wire to positive generator post No. 138 between the two hexagon nuts. Connect the black negative wire to the negative screw No. 137 which is just above the positive post. Fasten cable in position under cable clamp No. 113 as shown.

PLACING MAIN-FRAME ON TOWER

Before you proceed to mount main frame on tower mast head, place the turntable ball bearing (No. 144) on mast head with the name and figures on bearing, up. Now, place small weather cap (No. 114) over the top of bearing with flange down. Before you climb tower to install head let us caution you to use some kind of a safety belt device, just in case you should slip or become over balanced. It is advisable to tie a rope around generator and main-frame assembly and pull them up in that manner. Slide mainframe pipe (103B) down over mast head (118) being sure that you do not allow machine to drop as to do so might injure the ball thrust bearing.

PROPELLER MOUNTING

Insert two 5/16x1½" machine bolts through propeller front plate (No. 107) and through holes in propeller. Place propeller hub spinner cap (102) in position over generator hub with flange toward generator. See Fig. 9 below. This part of the propeller assembly can be done before propeller is taken up on tower for mounting on the generator. In attaching the propeller to the propeller hub (No. 105), screw bolts into the threaded holes of the hub. BE SURE THE FLAT SURFACE OF THE PROPELLER FACES WIND, as stated on small sticker. Make sure to tighten down propeller bolts evenly.

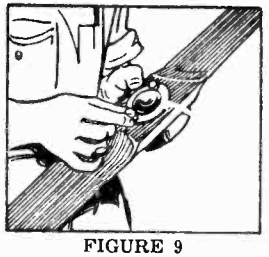

FIGURE 9

JUNE 20, 1938

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Part No.	Part Name	Shipping Weight Lb	Oz	Selling Price (each)
101	Propeller	4		$ 1.67
102	Propeller Hub Spinner		10	.15
103	Main Frame (103 A, B and C Assembly)	4		.70
104	Generator Brush Cover		7	.20
105	Propeller Hub (Concealed)	1		.35
106	Generator	25		10.85
	Generator Exchange			7.00
107	Propeller Plate		5	.09
108	Trunnion Pin		6	.10
109	Generator Cable Assembly		2	.25
110	Throwout Bale Pin & Clevis		3	.10
111	Throwout Bale		3	.10
112	Throwout Swivel Yoke Assem.	1		.17
113	Generator Cord Clamp		1	.03
114	Tower Terminal Weather Cap		5	.10
115	Positive Mast Head Terminal (Order 118)			
116	Negative Mast Head Terminal (Order 118)			
117	Tower Leg Top Clamp, Pr.		11	.12
118	Tower Mast Head Complete	4		1.00
	(Exchange Price)			.50
119	Inner Tower Bracket		8	.10
120	Throwout Loop (Not Furn.)			
121	Negative Battery Lead Post		2	.04
123	Positive Battery Lead Post		2	.04
123	Ammeter		3	.42
124	Relay Cutout		10	.67

Part No.	Part Name	Shipping Weight Lb	Oz	Selling Price (each)
125	Positive "Gen" Post		2	.04
126	Negative "Gen" Post		2	.04
127	Governor Spring		6	.10
128	Governor Spring Clip & Spacer		2	.05
129R	Tail Arm (Right)	3		.30
129L	Tail Arm (Left)	3		.30
130	Tail Vane	3	6	.79
131	Negative Mast Head Collector Plate		1	.09
132	Negative Collector Brush Assembly		2	.15
133	Positive Collector Brush		3	.15
134	Positive Collector Electrode		1	
135	Distributor Box Cover	1	1	.15
136	Generator Cushion Rest		2	.10
137	Negative Generator Terminal		2	.04
138	Positive General Terminal		2	.04
139	Short Tower Girt		8	.08
140	Upper Tower Leg	3		.30
141	Medium Tower Girt		12	.10
142	Wire Tower Brace		8	.17
143	Tower Foot		5	.09
144	Turntable Ball Bearing		4	.25
145	Pos. Wire to Inst. Panel			
146	Neg. Wire to Inst. Panel			
147	6-Volt Inst. Panel Complete	1	6	1.35
151	4-Volt Inst. Panel Complete	1	8	1.50
148	2-Volt Inst. Panel Complete	1	6	1.50
149	Long Tower Girt	1	1	.14
150	Lower Tower Leg	3		.30

GENERATOR PARTS

Part No.	Generator Part	Shipping Weight Lb	Oz	Selling Price (each)
GCX20X	Frame Screw		4	$ .17
GCX1007	Field Coil, Right	1	1	1.05
GCX1008	Field Coil, Left	1	1	1.05
GCX36	Commutator End Plate	3		3.15
GAL12	Brush (Main)		1	.10
GAR13	Brush (Third)		1	.10
GAL2012A	Set of Three Brushes (Not Illustrated)		4	.28
GCX19	Brush Spring		1	.08
8X59	No. 8 3/32x3/16 Round Head Screw		1	.05
8X	No. 8/32x3/8 Flat Head Screw		1	.05
GAL199	Brush Screw Block		1	.05
GAL204	Ground Connector Assembly		2	.14
GAL205	Third Brush Plate Retaining Spring		1	.04
GAL242	Brush Holder		3	.08
GAL2187B	3rd Brush Holder Plate		2	.29

Part No.	Generator Part	Shipping Weight Lb	Oz	Selling Price (each)
X1052	Commutator End Bear'g		5	1.90
GBM21	Armature Shaft Nut		2	.07
GCX23	Hub Spacer		2	.08
X864	.669 Lock Washer		2	.07
X260	No. 5 Woodruff Key		1	.07
GCX2034	Armature	7	8	4.50
	Armature Exchange			3.50
GCX35	Drive End Head	1	9	1.69
GC6	Bearing Retainer		2	.07
8X316	Nut, Washer & Bolt		2	.15
X1501	Front Bearing		6	2.10
8X321	Ground Screw		1	.08
5X177	Positive Nut		2	.05
GCX177	Pos. Term. & Lead		2	.15
GCX-A-B-C	Pos. Term. Insul. Wash		3	.10
8X1505	No. 6—32x9/16 Bdg. Head Screw		1	.08
GCX1B	Field Ground Screw & Nut		1	.10

FIGURE 10

PROPELLER TRACK

After propeller has been placed on charger, take a ruler and measure the distance from the propeller tip to the tower as shown in Figure 10. Now turn the propeller half over and measure the distance between the tower and other tip. The measurements should be same. Should there be a difference the bolt on the side which the tip is closest to the tower should be loosened and the other bolt should be tightened more. Should you still be unable to make propeller track, you will have to loosen both bolts and place a broad tin shim between propeller and hub.

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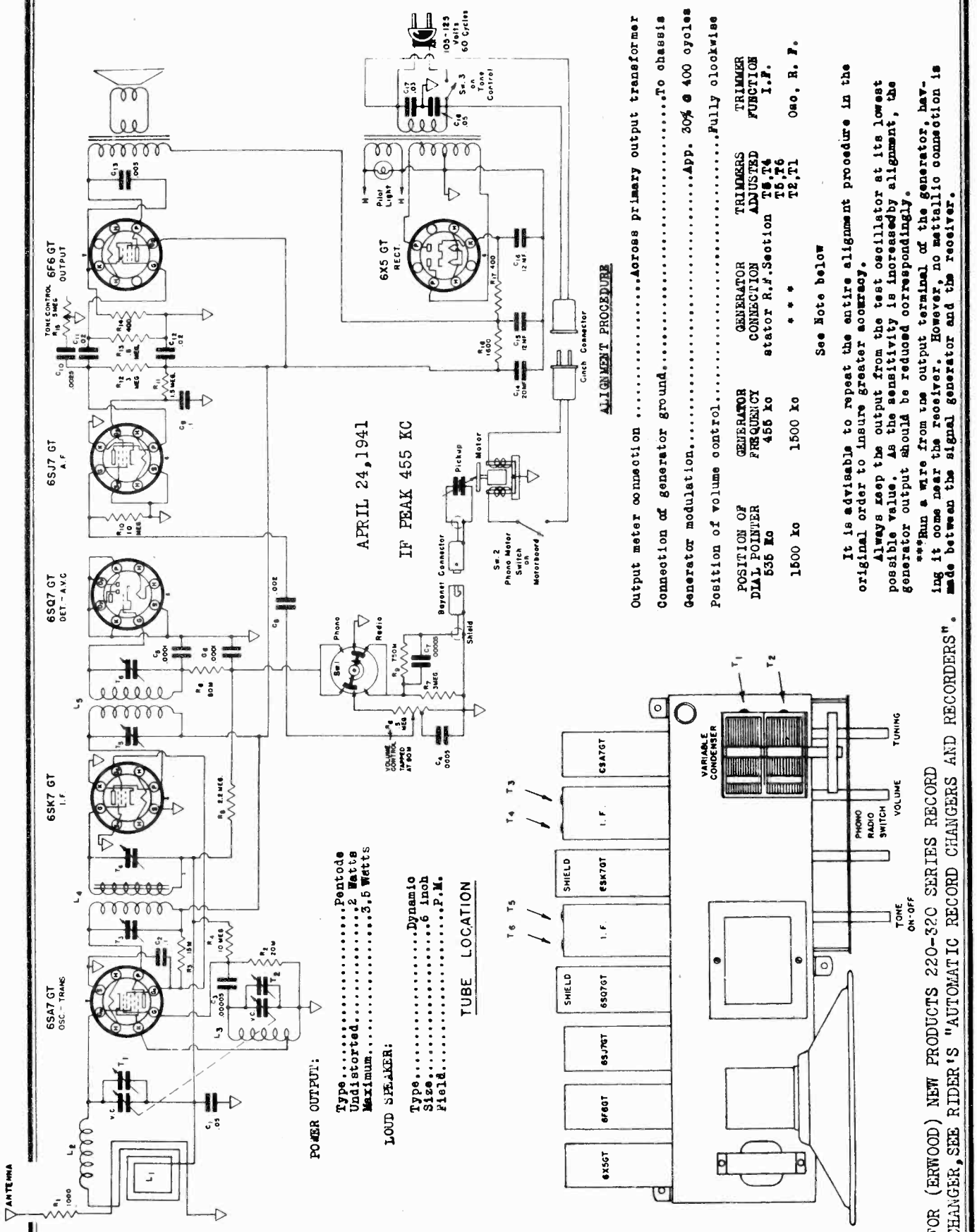
MODEL 5721
Chassis 110.418

SEARS, ROEBUCK & CO.



POWER OUTPUT:

Type.....Pentode
Undistorted.....2 Watts
Maximum.....3.6 Watts

LOUD SPEAKER:

Type.....Dynamic
Size.....6 Inch
Field.....P.M.

TUBE LOCATION

ALIGNMENT PROCEDURE

Output meter connection .....Across primary output transformer

Connection of generator ground.....To chassis

Generator modulation.....App. 30% @ 400 cycles

Position of volume control.....Fully clockwise

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
535 Ko	455 ko	stator R.F.Section	T3,T4	I.F.
			T5,T6	
1500 ko	1500 ko	* * *	T2,T1	Osc. R. F.

See Note below

It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

***Run a wire from the output terminal of the generator, having it come near the receiver. However, no metallic connection is made between the signal generator and the receiver.

FOR (ERWOOD) NEW PRODUCTS 220-320 SERIES RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

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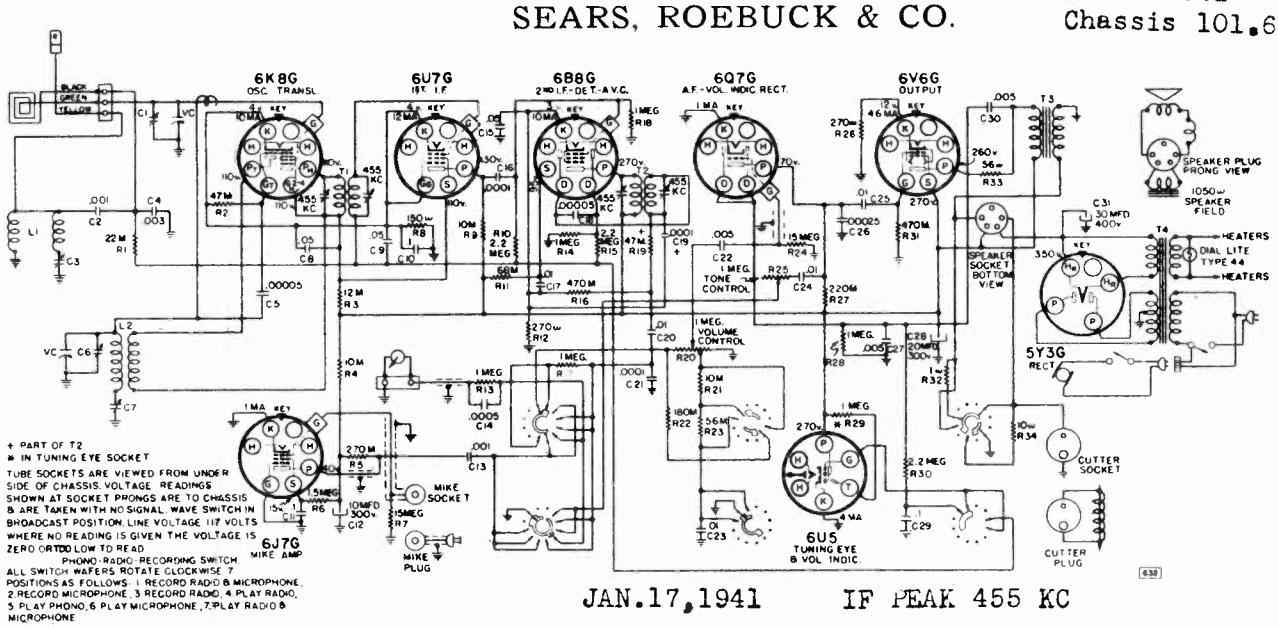
MODEL 5621
Chassis 101.632

SEARS, ROEBUCK & CO.



JAN.17,1941 IF PEAK 455 KC

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter connection	Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts	1.9 volts
Approximate microvolts input for 500 milliwatts output	See chart below
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	Receiver chassis
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	Counter-clockwise (HI)
Position of Dial Pointer with variable fully closed	On mark to left of 540 kc calibration mark

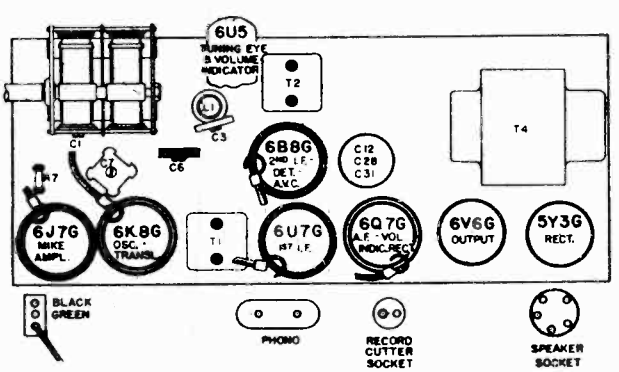
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
600 kc	455 kc	.00005 mfd.	Ant. Clip	C3*	Wave Trap	--
Fully open	1620 kc	.00005 mfd.	Ant. Clip	C6	Oscillator	--
1400 kc	1400 kc	.00005 mfd.	Ant. Clip	C1	Translator	125
600 kc (rock)	600 kc	.00005 mfd.	Ant. Clip	C7	Padder	55

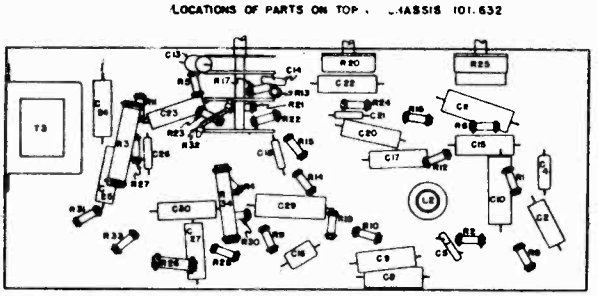
IMPORTANT ALIGNMENT NOTES

* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to 455 kc.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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





FOR (ERWOOD) NEW PRODUCTS 220-320 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

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MODEL 2451
MODEL 5621

SEARS, ROEBUCK & CO.

ELECTRICAL SPECIFICATIONS

MODEL 5621

TUBES AND FUNCTIONS:

6K8G . . . . . Oscillator-Translator	6J7G . . . . . Mike Ampl.
6U7G . . . . . 1st IF	6U5 . . . . . Tuning eye & Vol. Indic.
6B8G . . . . . 2nd IF-Det-AVC	6V6G . . . . . Output
6Q7G . . . . . AF-Vol. Indicator Rect.	5Y3G . . . . . Rectifier

POWER SUPPLY:

All models available . . . . . 105-125 v. 60 cycle AC, 95 watt
All models available . . . . . 105-125 v. 50 cycle AC, 95 watt
All models available . . . . . 105-125 v. 25 cycle AC, 100 watt

ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Translator Trimmer	Padder
FREQUENCY RANGE: . . . . . 540-1620 kc	1620 kc	1400 kc	600 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:

Type . . . . . Beam tube
Undistorted . . . . . 3.5 watts
Maximum . . . . . 6 watts

LOUDSPEAKER:

Type . . . . . Dynamic
Size . . . . . 8 inch
Field coil resistance . . . . . 1050 ohms
Approx. field coil voltage drop. . . 80 volts

OPERATING FEATURES:

Tone Control . . . . . .Continuously variable
Automatic Volume Control
Combined with Automatic Record Changer and Recorder
Tuning Eye & Recorder Vol. Indicator

CHASSIS FEATURES:

Number IF stages . . . . . Two
Number condensers in gang . . . . . Two
Antenna . . . . Built-in loop with provision for external antenna
Built-in Wave Trap
Underwriters Approved

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:

1. Left knob . . . . . Radio-Phono-Record
2. Next to left knob . . . . . Volume
3. Next to right knob. . On-Off Switch & Tone
4. Right knob . . . . . Station Selector

CONTROL OPERATION:

1. See illustration below
2. Turning right: . . . . . Volume increase
3. Turning right: . . . . On, Treble to Bass
4. Tuning ratio: 6:1

ALIGNMENT PROCEDURE

MODEL 2451

PRELIMINARY:

Output meter connections . . . . . .Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.3 volts
Approximate microvolts input to indicate 50 milliwatts output . . . . . .See chart below
Generator ground lead connection . . . . . .Receiver chassis
Dummy antenna value to be in series with generator output . . . . . .See chart below
Connection of generator output lead . . . . . .See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . .Fully on
Position of Tone Control . . . . . .HI
Position of pointer with variable fully closed . . . . . .Horizontal (To fall on block below 540 kc calibration mark.)

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	1A7G Translator Grid	T3,T1	IF	--
Fully open	1750 kc	.0002 mfd.	Ant. Term.	C6	Oscillator	--
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C3	Translator	15
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	15

IMPORTANT ALIGNMENT NOTES

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.

FOR ADDITIONAL DATA SEE INDEX.

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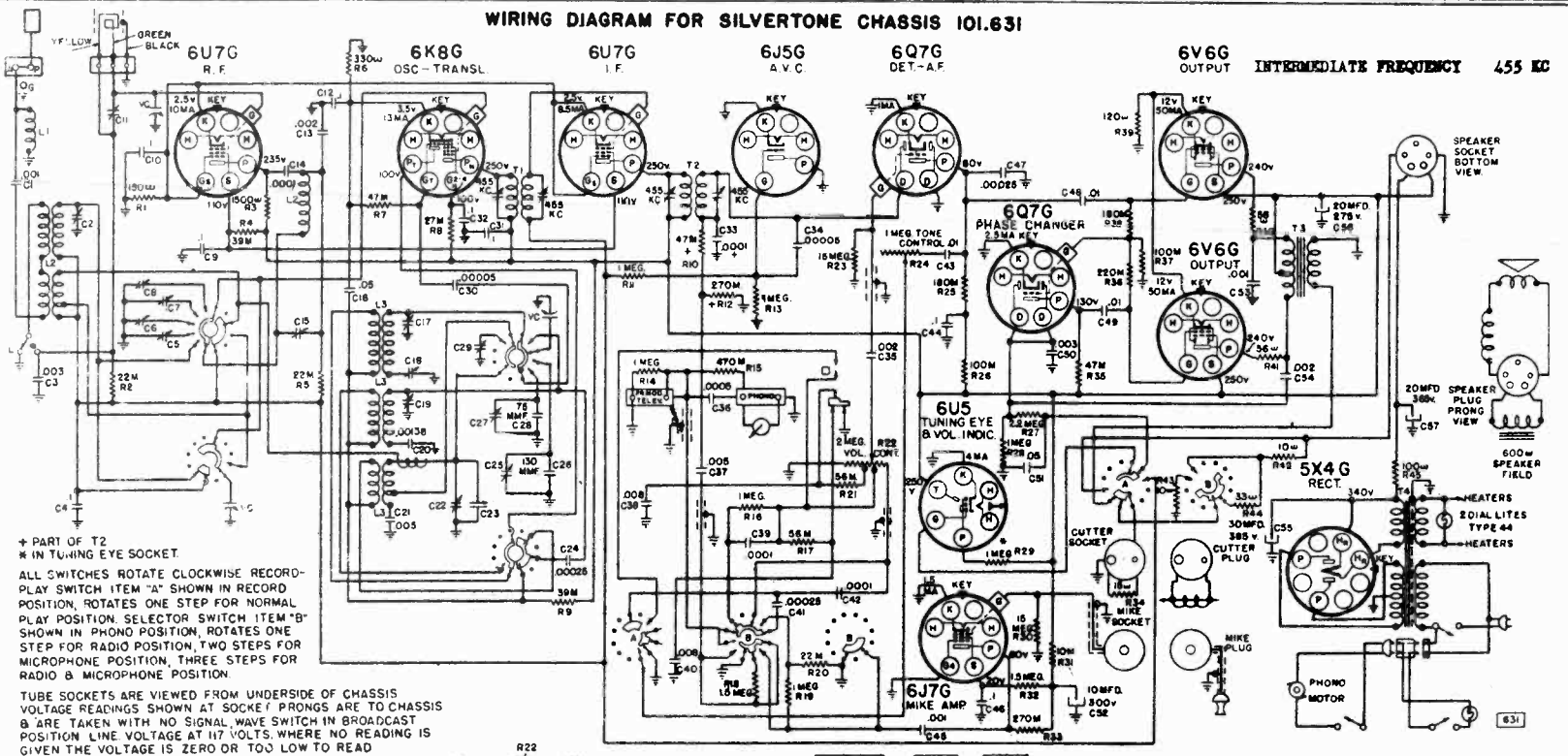
SEARS, ROEBUCK & CO.

MODEL 5571
Chassis 101.631

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.631



+ PART OF T2
* IN TUNING EYE SOCKET.

ALL SWITCHES ROTATE CLOCKWISE RECORD-PLAY SWITCH ITEM "A" SHOWN IN RECORD POSITION, ROTATES ONE STEP FOR NORMAL PLAY POSITION. SELECTOR SWITCH ITEM "B" SHOWN IN PHONO POSITION, ROTATES ONE STEP FOR RADIO POSITION, TWO STEPS FOR MICROPHONE POSITION, THREE STEPS FOR RADIO & MICROPHONE POSITION.

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

POWER OUTPUT:

Type	Push-Pull Beam
Undistorted	8 watts
Maximum	15 watts

FREQUENCY RANGES:

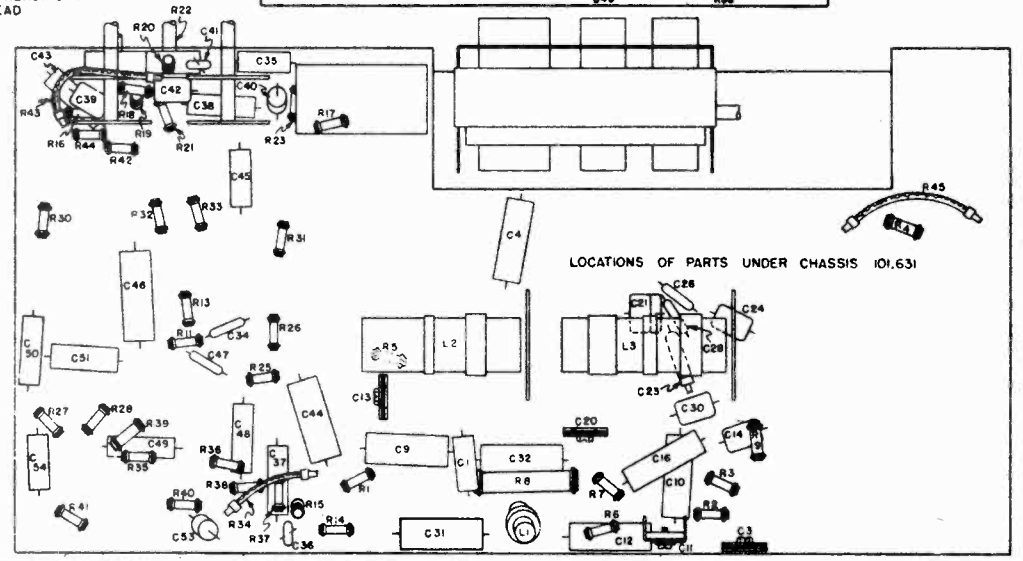
Band "A"	538-1620 kc
Band "B"	1.66-5.2 mc
Band "C"	5.88-18.2 mc
Band "D"	9.36-9.87 mc
Band "E"	10.93-12.1 mc
Band "F"	12.72-16 mc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1620 kc	1400 kc	600 kc
5.2 mc	4 mc	Fixed
18.265 mc	15 mc	Fixed
9.55 mc	9.55 mc	Fixed
11.71 mc	11.71 mc	Fixed
15.5 mc	15.5 mc	Fixed

LOUDSPEAKER:

Type	Dynamic
Size	12 inch
Approx. field coil resistance	600 ohms
Approx. field coil voltage drop	75 volts



LOCATIONS OF PARTS UNDER CHASSIS 101.631

NOV. 19, 1940

FOR DATA ON ERWOOD-NEW PRODUCTS 220, 320 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

MODEL 5571

SEARS, ROEBUCK & CO.

POWER SUPPLY:
All models available 105-125 volts, 50-60 cycles; 180 watts
All models available 105-125 volts, 25-60 cycles; 200 watts

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), releasing the plunger, then securely locking the adjustment.

PRELIMINARY:

ALIGNMENT PROCEDURE

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.6 volts
Approximate microvolts input for 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . HI
Position of Tone Buttons . . . . . Out
Position of Dial Pointer with variable fully closed . . . . . On first mark to left of 550 kc calibration mark
Position of Antenna Switch . . . . . Antenna position

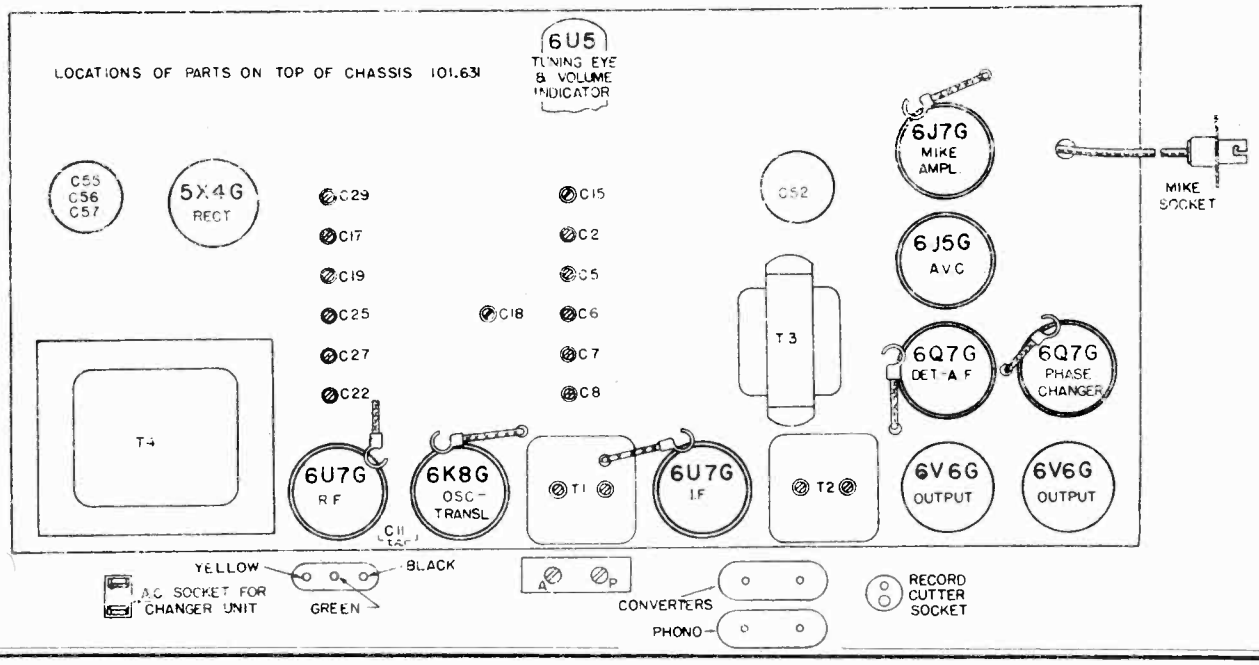
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	Fully open	1620 kc	.00005 mfd.	Ant. Term.	C17	Oscillator	--
"A"	1400 kc	1400 kc	.00005 mfd.	Ant. Term.	C11,C15	Loop,Transl.	150
"A"	600 kc (rock)	600 kc	.00005 mfd.	Ant. Term.	C18	Padder	60
"B"	5.2 mc	5.2 mc	400 ohms	Ant. Term.	C19	Oscillator	--
"B"	4 mc	4 mc	400 ohms	Ant. Term.	C2	Translator	90
"C"	Open	18.3 mc	400 ohms	Ant. Term.	C22*	Oscillator	--
"C"	15 mc (rock)	15 mc	400 ohms	Ant. Term.	C5	Translator	35
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C25*	Oscillator	--
"D"	9.55 mc (rock)	9.55 mc	400 ohms	Ant. Term.	C6	Translator	70
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C27*	Oscillator	--
"E"	11.71 mc (rock)	11.71 mc	400 ohms	Ant. Term.	C7	Translator	60
"F"	15.5 mc	15.5 mc	400 ohms	Ant. Term.	C29*	Oscillator	--
"F"	15.5 mc (rock)	15.5 mc	400 ohms	Ant. Term.	C8	Translator	40

IMPORTANT ALIGNMENT NOTES

* If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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



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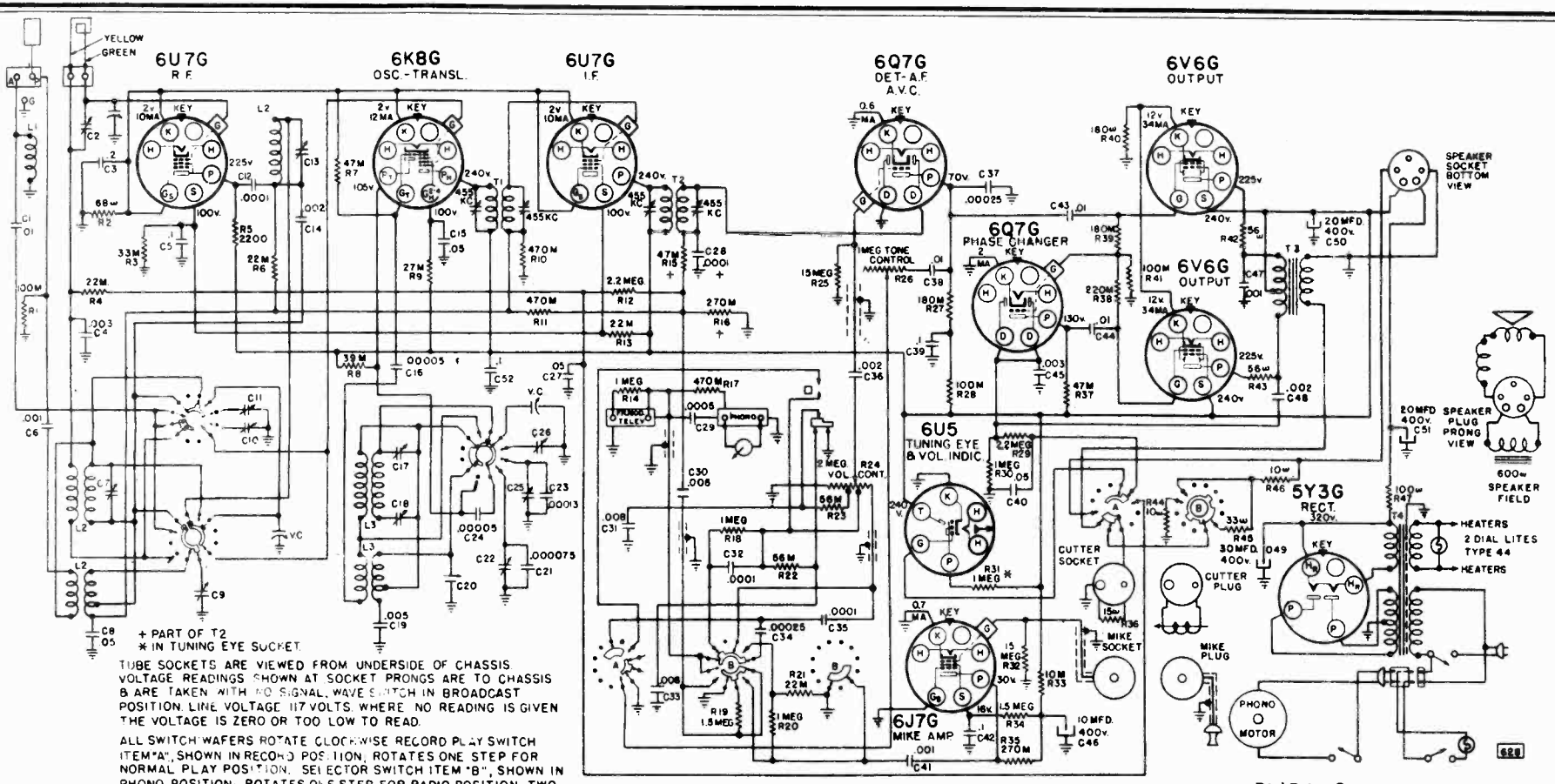
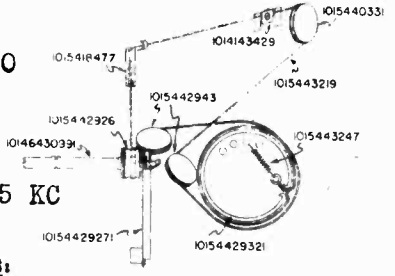


TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS & ARE TAKEN WITH NO SIGNAL, WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE 117 VOLTS. WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

ALL SWITCH WAFERS ROTATE CLOCKWISE RECORD PLAY SWITCH ITEM "A", SHOWN IN RECORD POSITION, ROTATES ONE STEP FOR NORMAL PLAY POSITION. SELECTOR SWITCH ITEM "B", SHOWN IN PHONO POSITION; ROTATES ONE STEP FOR RADIO POSITION; TWO STEPS FOR MICROPHONE POSITION; THREE STEPS FOR RADIO & MICROPHONE POSITION.

Dial Drive System



ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
Band "A" 538-1650 kc	1650 kc	1500 kc	600 kc
Band "B" 1.45-2.56 mc	2.4 mc	2.4 mc	Fixed
Band "C" 5.82-18.3 mc	18.3 mc	15 mc	Fixed
Band "D" 9.35-9.86 mc	9.55 mc	9.55 mc	Fixed
Band "E" 10.89-12.02 mc	11.71 mc	11.71 mc	Fixed

FREQUENCY RANGES:

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:

Type . . . . . Push-Pull beam
Undistorted . . . . . 6 watts
Maximum . . . . . 11 watts

NOV. 12, 1940

IF PEAK 455 KC

SUBJECT: ADDITION OF SUFFIX -1A TO CHASSIS IDENTIFICATION NO. 101.628:

Chassis identified by 101.628-1A are the same as 101.628 except for differences in the escutcheon, knobs, and control shaft lengths. Additions to the Parts List for 101.628-1A are:

FOR (ERWOOD) NEW PRODUCTS 220,320 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

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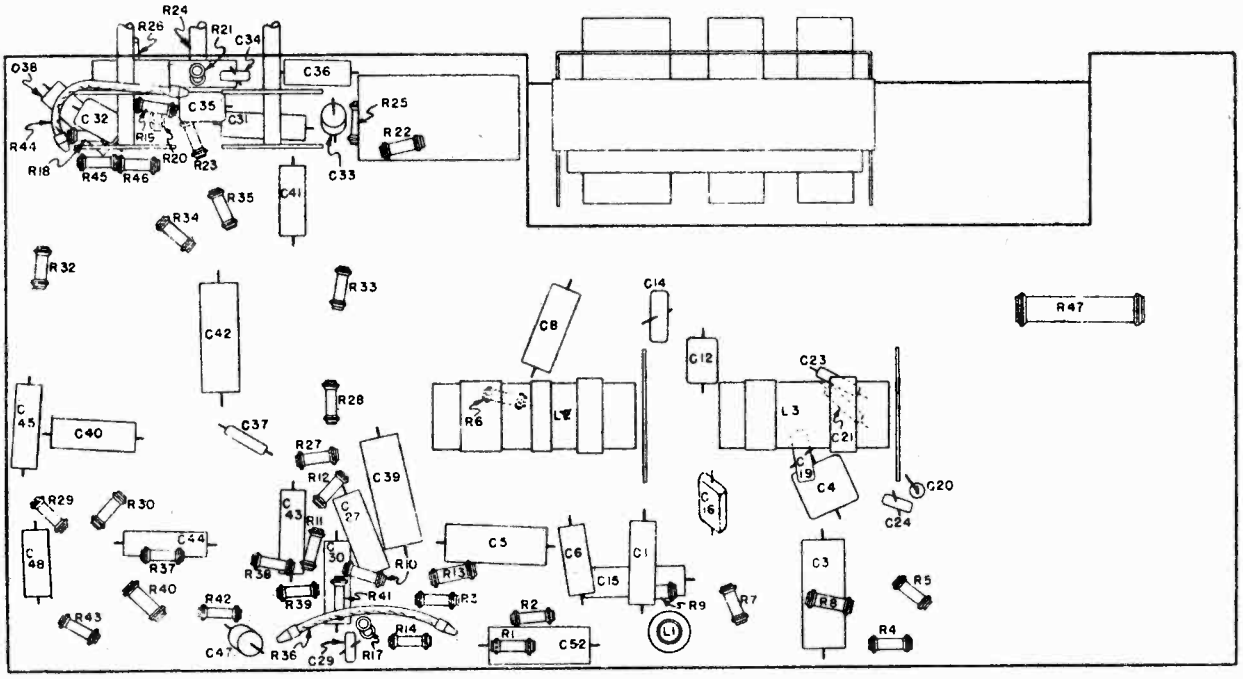
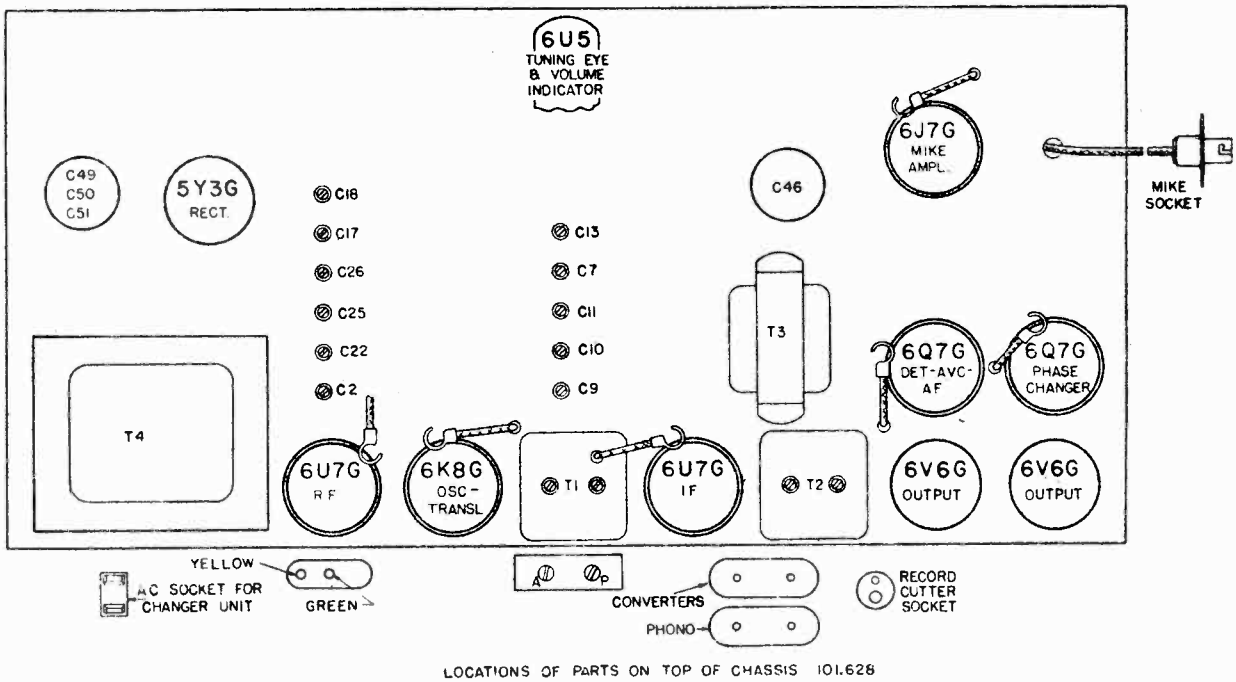
MODELS 5601A, 6449

SEARS, ROEBUCK & CO.



LOCATIONS OF PARTS UNDER CHASSIS 101.628



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.628

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), releasing the plunger, then securely locking the adjustment.

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #4704: Greatest pickup and noise reduction.
Catalog #4703: Less effective pickup and noise reduction than Catalog #4704.
Catalog #4702: Conventional antenna.

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MODELS 5601A, 6449
MODEL 7320

SEARS, ROEBUCK & CO.

MODELS 5601A, 6449

PRELIMINARY:

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.6 volts
Approximate microvolts input for 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . Receiver chassis
Dummy antennal value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . High
Position of Tone Buttons . . . . . Out
Position of Dial Pointer with variable fully closed . . . . . On first mark to left of 550 kc calibration mark

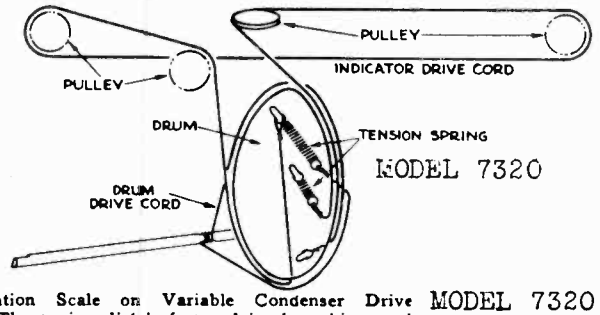
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	Fully open	1650 kc	.00005 mfd.	Ant. Term.	C17	Oscillator	--
"A"	1500 kc	1500 kc	.00005 mfd.	Ant. Term.	C2,C13	Ant,Transl.	180
"A"	600 kc (rock)	600 kc	.00005 mfd.	Ant. Term.	C18	Padder	55
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C7	Translator	120
"C"	Open	18.3 mc	400 ohms	Ant. Term.	C26*	Oscillator	--
"C"	15 mc (rock)	15 mc	400 ohms	Ant. Term.	C11	Translator	35
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C25*	Oscillator	--
"D"	9.55 mc (rock)	9.55 mc	400 ohms	Ant. Term.	C10	Translator	75
"E"	11.71 mc	11.71 mc	400 ohms	Ant. Term.	C22*	Oscillator	--
"E"	11.71 mc (rock)	11.71 mc	400 ohms	Ant. Term.	C9	Translator	75

IMPORTANT ALIGNMENT NOTES

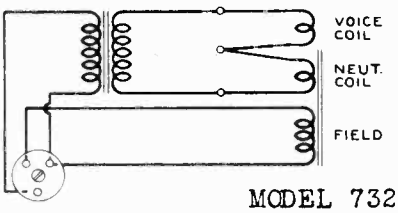
* If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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



MODEL 7320



MODEL 7320

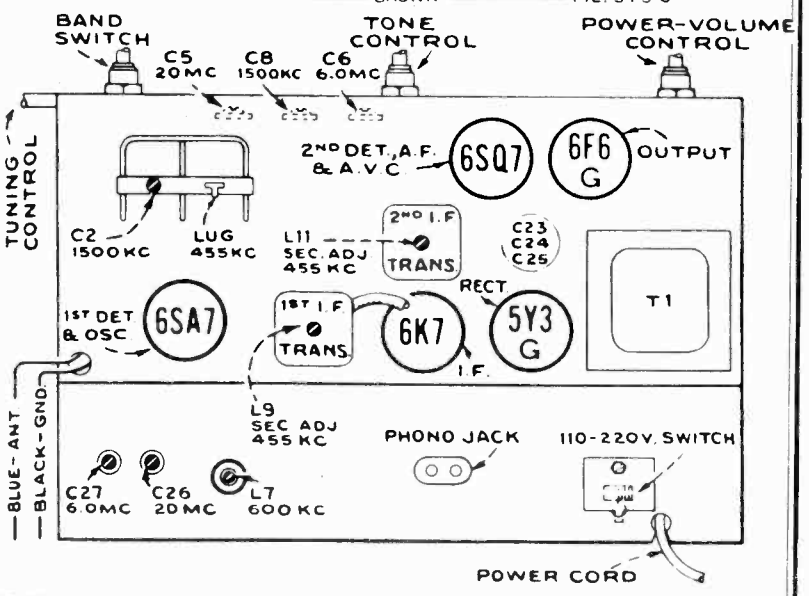
Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45° mark on the drum scale (see "Dial Drive Drawing") must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ¾-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

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

Dial - Indicator Adjustment. — After fastening the chassis in the cabinet, attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 550 kc end of Broadcast "A" band. The dial pointer has a spring clip for attachment to the cable.

MODEL 7320



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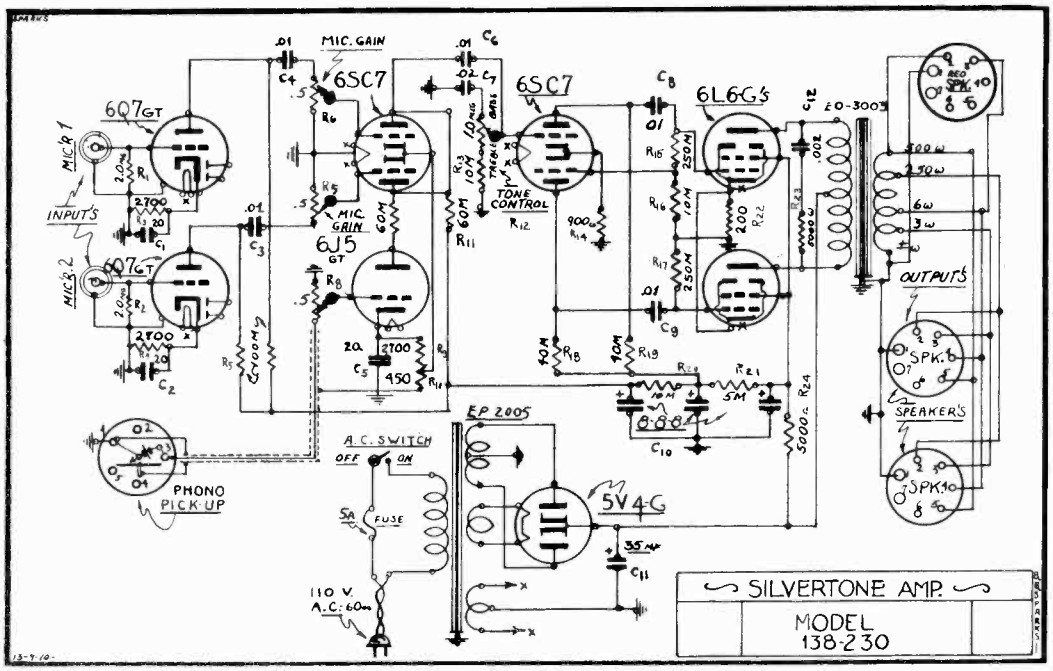
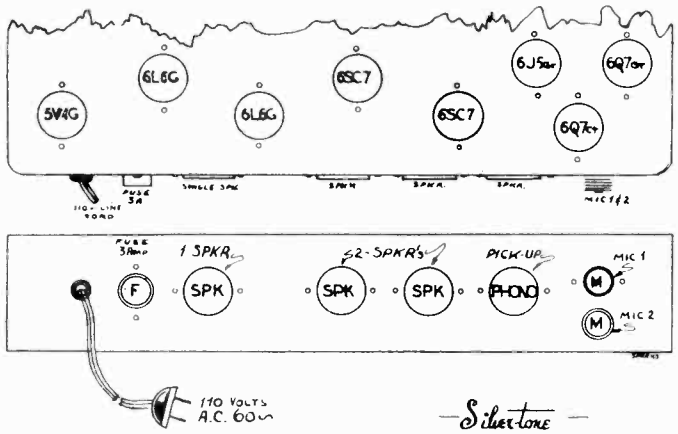
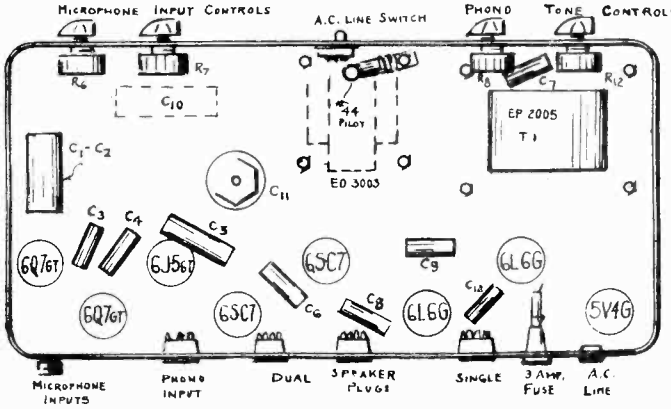
MODEL 8904 Amplifier
Chassis 138.230

SEARS, ROEBUCK & CO.



35 WATT, 8 TUBE, 4 STAGE, HIGH GAIN AMPLIFIER





INPUTS:
2 inputs to accommodate high impedance microphone.
1 input to accommodate crystal phonograph pickup.

OUTPUT IMPEDANCE:
3 - 6 - 250 - 500 ohms.

SPEAKERS: 12 inch permanent magnet type, 6 ohm voice coils. Similar to Jensen PM12H.

TUBE COMPLEMENT:
2 6Q7GT . . . . . Microphone Input
1 6SC7 . . . . . Mixer
1 6J5GT . . . . . Phonograph Input
1 6SC7. . . . . Driver Inverter
2 6L6G. . . . . Output
1 5V4G. . . . . Rectifier

POWER SUPPLY: . . . . . 110-125 volts, 50-60 cycle, AC only, 136 watts

FREQUENCY CHARACTERISTICS: . . . . . Substantially flat from 50 to 10,000 cycles per second

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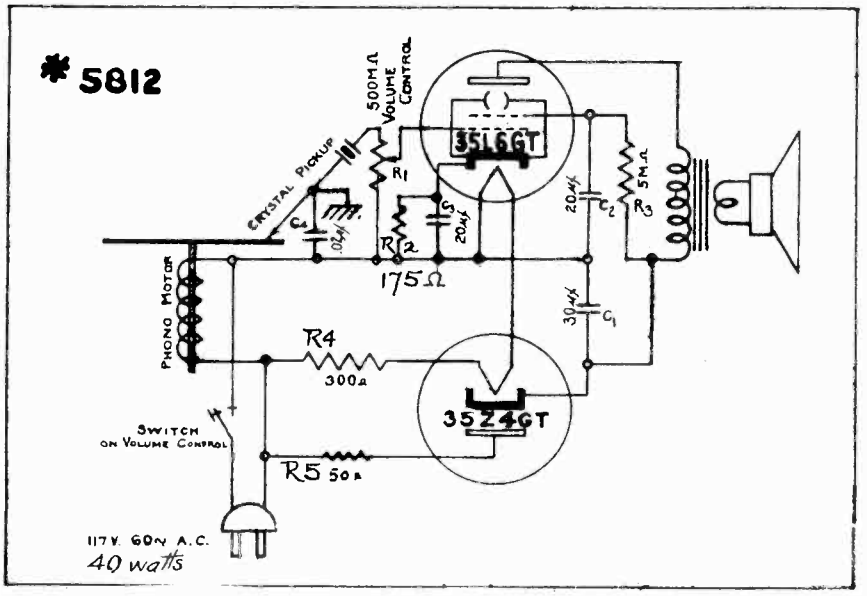
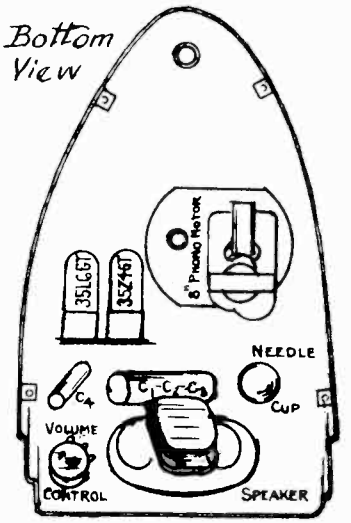
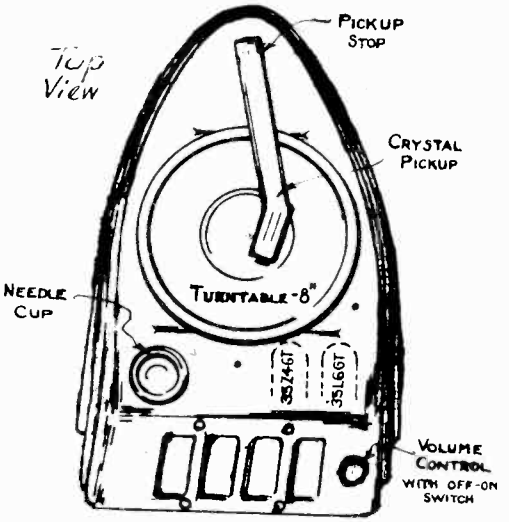
SEARS-ROEBUCK & CO.

MODEL 5812 Phono.
Ch.138.905





SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION
	13863100	Pickup, complete
	13864110	Phono motor complete
	13858066	Permanent Magnet Speaker, complete
R1	138242014	Volume control 500M ohms & switch
	13839100	Volume control knob
	13864101	Needle cup
R2		175 ohm - ½ watt resistor
R3		5000 ohm - 1/2 watt resistor
R4		300 ohm - 10 watt resistor
R5		50 ohm - ½ watt resistor
C1-C2-C3		30-30/450 - 20/25 condenser
C4		.05 mfds. 600 volt condenser
	13855258	Line Cord
	1385421813	8" Turntable
	1385421839	Idler Wheel (60 cycle)
	1385412531	Motor Field Coil (60 cycle)
	138631027	Pickup Cartridge
	138631028	Pickup Arm



SERVICE INFORMATION

The Model Number 5812, carrying identification number 138.905 is an alternating current electrical phonograph designed for the transcription of all laterally modulated records.

In first placing the equipment into operation, it should be carefully unpacked and all packing removed from the various parts associated with the operation of the equipment.

To place the equipment in operation, the attachment cord which is seen to come out of the base of the equipment, should be attached to an electrical power outlet giving power of the correct voltage and frequency as shown above. This information can be ascertained by looking at the specification on the light meter or by calling the local power company and asking for the information.

A record should be placed on the turntable. The pickup arm should be equipped with a new needle and placed in the outside groove of the record. The motor switch should be turned on causing the turntable to rotate.

When it is desired to replace the tubes in this equipment, remove the base plate by unscrewing the four screws that hold the rubber feet on the bottom. This will expose not only the tubes but the turntable motor as well.

The cartridge used in the pickup of this equipment is a crystal cartridge and will yield some distortion if used when extremely cold. The equipment should be at a temperature of approximately 70 degrees for good operation.

Unless long playing needles are used, the needle should be replaced regularly, at least every two records and preferably each time a record is played.

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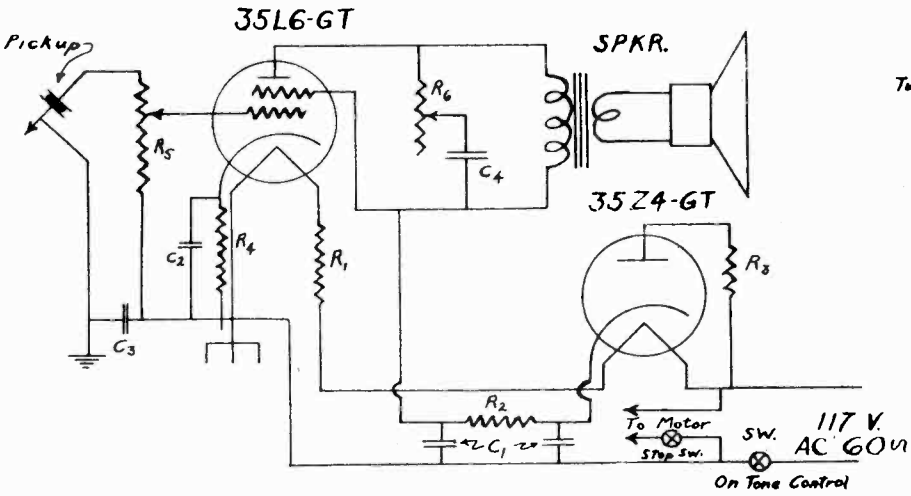
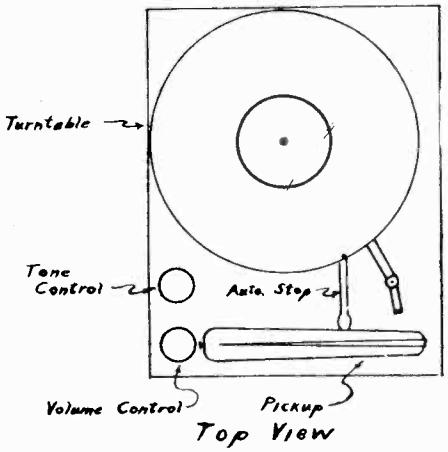
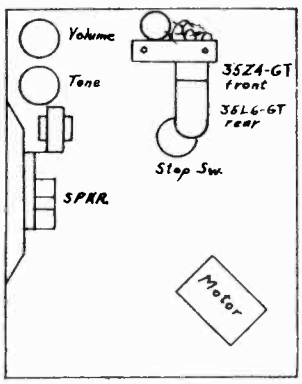
MODEL 5815 Phono.
Ch. 145.815

SEARS-ROEBUCK & CO.





SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SELLING PRICE EACH
	B589	Pickup, complete	4.50
	B590	Phono Motor complete	5.50
	B591	Permanent Magnet Speaker, complete	3.30
	B591-A	Dynamic Speaker, complete	3.75
R-5	B301	500M ohm Volume Control	.50
R-3	B300	500M ohm Tone Control & Switch	.75
	B594	Volume Control Knob	.15
	B595	Tone Control Knob	.15
	B596	Automatic Stop, complete	.90
	B597	Line Cord	.50
	B598	Pickup Cartridge	3.15
C-1	B259	Filter Condenser 40-20 mfd. 150 V.	1.10
C-2	B208	By-Pass Condenser 10 mfd. 25 V.	.45
R-1	B315	10 Watt Wirewound Resistor	.45
R-2	B592	400 ohm 1 Watt Resistor	.20
R-3	B593	50 ohm ½ Watt Resistor	.15
R-4	B599	150 ohm Flexible Resistor	.20
C-3 C-4	B600	.05 mfd. 400 V. Condenser	.25



Bottom View

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

When it is desired to replace the tubes in this equipment, remove the base plate by unscrewing the four screws that hold the rubber feet on the bottom. This will expose not only the tubes but the turntable motor as well.

The cartridge used in the pickup of this equipment is a crystal cartridge and will yield some distortion if used when extremely cold. The equipment should be at a temperature of approximately 70 degrees for good operation.

Unless long playing needles are used, the needle should be replaced regularly, at least every two records and preferably each time a record is played.

HOW TO ORDER PARTS FOR THIS PORTABLE ELECTRIC PHONOGRAPH-IDENTIFICATION NO. 145.815

On the Purchase Order always give the following information:
(1) PART NUMBER and DESCRIPTION for each part ordered. When no part number is assigned order by description and rating. Also give PRICE of part number.
(2) The IDENTIFICATION NUMBER is 145.815. This number will be found on a plate immediately underneath the turntable.

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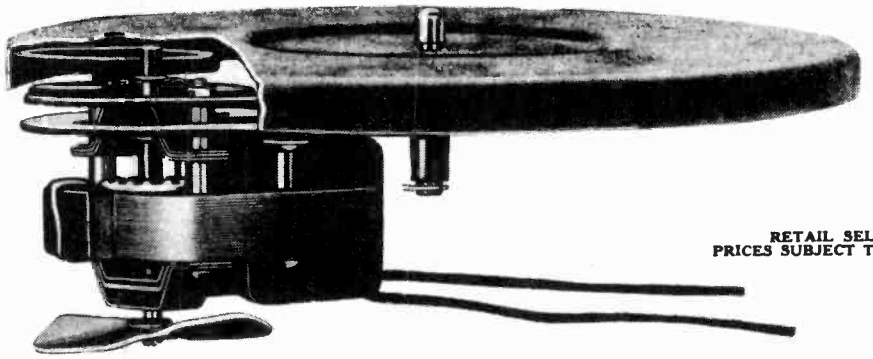
MODEL 5831 Phono.
Ch. 137.394

SEARS, ROEBUCK & CO.



DECEMBER 17, 1941

RETAIL SELLING PRICES PREPAID
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ELECTRICAL SPECIFICATIONS

POWER SUPPLY . . . . . 115 volts, 60 cycle AC, 17 watts

TURNTABLE SPEED - Constant . . . . . 78 r.p.m.

GENERAL INFORMATION AND SERVICE HINTS

Before starting the motor, see that the rubber edged driving pulley is completely under the turntable as this motor is a rim drive type, and this pulley must be in place for proper operation. This is a constant speed motor and no adjustment is necessary to obtain the proper number of revolutions per minute for correct reproductions. Be sure the electric supply is of the same voltage and frequency as that of the phonograph motor shown on a tag attached to the cord.

To play a record, insert the cord in an electrical receptor and turn on the post type switch on the side of the case near the cord. Be sure the reproducer is started on the record on the right hand side of the turntable at the very edge of the record. Needles should be changed often to preserve the life of the record. Ten selections of a 10" record may be played with each of the needles accompanying this machine.

Servicing Instructions - All parts of this phonograph have been completely serviced previous to shipment. It is recommended when servicing is necessary on the motor itself, that the entire motor be returned to the factory for the most satisfactory adjustment or replacement. However, parts can be purchased as listed for self servicing or servicing by a competent service man.

To remove the motor from the case, first be sure that the connections of the phonograph to any electrical supply is disconnected. Remove the bottom of the case and break the wiring connections from motor to switch and motor to cord. Remove the turntable and remove the three rivets that hold the motor to the case.

Caution - 1. Do not use extreme force in removing the turntable from the shaft. 2. Be sure the voltage and frequency of the power supply is the same as that of the motor. 3. Avoid hitting the reproducer or the arm on the reproducer against the side of the case, turntable or other rigid parts as this is a delicate instrument and undue movement or pressure against the small arm near the needle may damage it or subtract considerably from good reproduction.

Motor and Motor Parts and Miscellaneous Hardware

Part No.	Schematic Location		Selling Price Ea.
137542714	2714	Washer	.07
137546569	6569	Motor Mounting Washer	.07
137546654	6654	Mounting Screw	.07
137549536	9536	Clip for Lead Wire	.11
137549727	9727	Insulator Tube Used on Coil Lead	.11
1375411714	11714	Bracket	.11
1375411719	11719	Rotor Complete	2.95
1375411720	11720	End Thrust Pad	.07
1375411724	11724	Bearing Bracket with Bearing Assemb. - Shaft End	.52
1375411725	11725	Bearing Bracket with Bearing Assemb. - Closed End	.52
1375411728	11728	Washer	.14
1375411729	11729	Stud and Plate Assembly	.31
1375411732	11732	Mounting Plate for 8" Turntable	1.40
1375411738	11738	Grommet Sleeve	.11
1375411740	11740	Screw	.07
1375411747	11747	Spacer - Short	.11
1375411748	11748	Spacer - Long	.11
1375411749	11749	Tension Spring	.17
1375411754	11754	Screw	.11
1375411766	11766	Felt Washer	.07
1375411798	11798	Pulley for 8" Turntable 60 cycle	.35
1375411772		Pulley for 8" Turntable 50 cycle	.35
1371511799	11799	Field Lamination Assembly	.24
1371512531	12531	Coil Complete, 60 cycle	.23
1371512532		Coil Complete, 50 cycle	.23
1375421112	21112	Rubber Grommet	.11
1375421119	21119	Field Coil Support	.07
1375421184	21184	Lock Nut	.07
1375421817	21817	8" Turntable Complete-Flock Covered	3.95
1375421831	21831	Turntable Shaft	.52
1375421839	21839	Turntable Drive Wheel Complete	.90
1375421841	21841	Spring Clip used on Turntable Shaft	.11
1375421844	21844	Thrust Washer used on Turntable Drive Wheel	.07
1375421846	21846	Thrust Washer used on Turntable Shaft	.07
1375421874	21874	Set Screw used on Motor Pulley	.07
1375421914	21914	Spring Clip used on Turntable Drive Disc	.11
137544048		Motor Complete with Turntable	4.40
13754574		Tone Arm, Ivory	.85
13754110		Reproducer, Ivory	.90
137541		Case Complete - Tan or Maroon (Specify)	2.25
13754615		Case Only	1.60
137542		Bottom Only	.40

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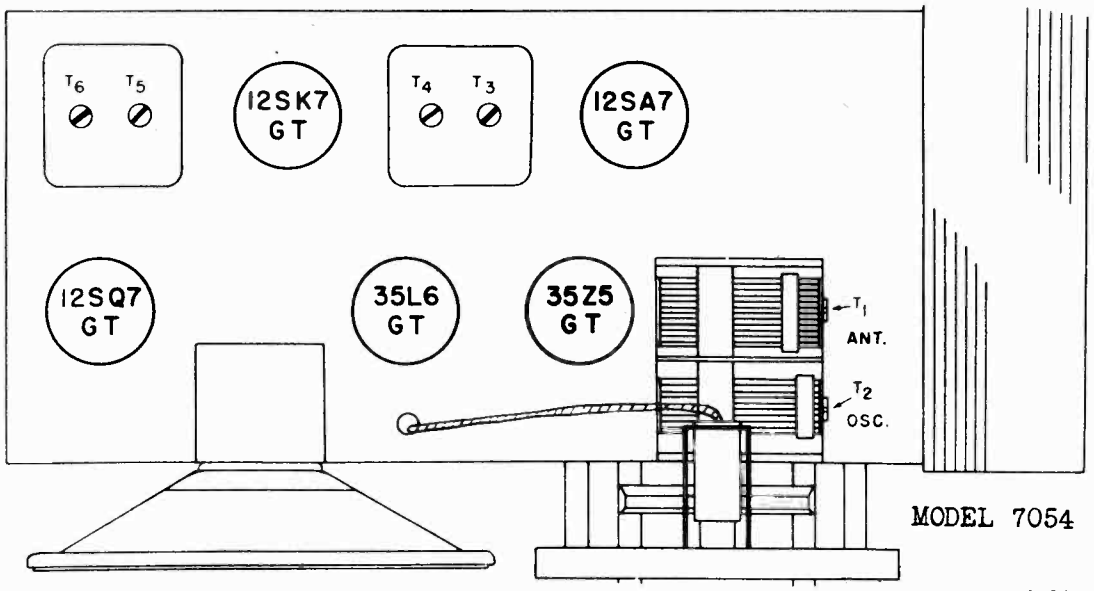
MODEL 5844 Phono.
Ch.100.355
MODEL 7054

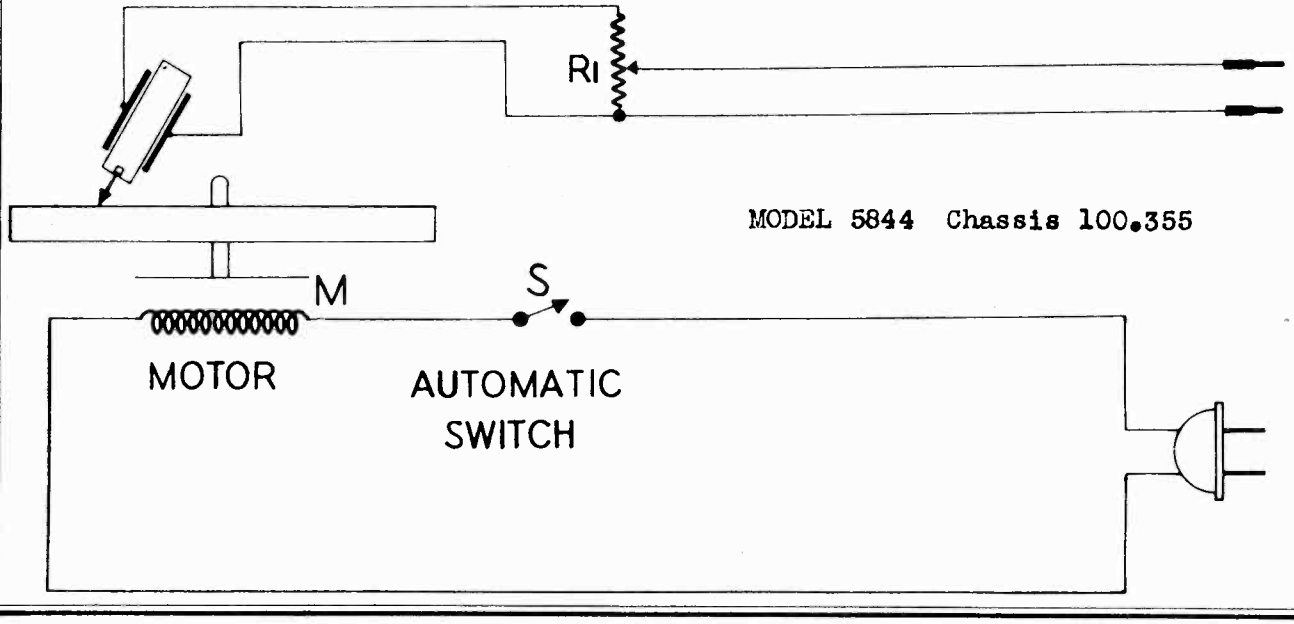
SEARS ROEBUCK & CO.



MODEL 7054

PART NUMBER	SCHEMATIC LOCATION	DESCRIPTION	LIST PRICE
10063160617		Crystal Cartridge	4.50
10025160693	S	Switch - on & off	.42
10023170768	R1	Volume control 1/4 meg.	1.00
10064160745	M	Motor - 60 cycle - less turntable	5.00
10064160788	M	Motor - 25 cycle - less turntable	13.00
10064160791	M	Motor - 50 cycle - less turntable	6.90
1005412349		Nut - 8-32 for mtg.	Per C .45
1005437484		Lockwasher - for mounting motor	Per C .50
1005485827		Set Screw - 8-32 square head	.02
10054113657		Screw 8-32 X 3/8" B.H.M.S. for bottom	.01
10054160690		Trip - lever	.05
10053160714		Bottom for cabinet (without serial numbers)	.16
10063160741		Pick up (phono)	8.00
10039160744		Knob - (volume control)	.12
10054160747		Rubber foot	.05
10060160755		Cabinet complete with decals	2.75
10054160757		Decal - silvertone	.04
10055160769		Cable - pickup	.30
10064160746		Turntable - 8" for 10064160745 motor	1.50
10064160789		Turntable - 8" for 10064160788 motor	1.50
10064160792		Turntable - 8" for 10064160791 motor	2.00
10064161104		Idler wheel for 10064150745 and 10064160791 motors	.85
10064117806		Idler wheel for 10064160788 motor	.60

WIRING DIAGRAM



MODEL 5844 Chassis 100.355

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MODEL 5832 Phono.
Ch. 137.542

SEARS-ROEBUCK & CO.

ELECTRICAL SPECIFICATIONS

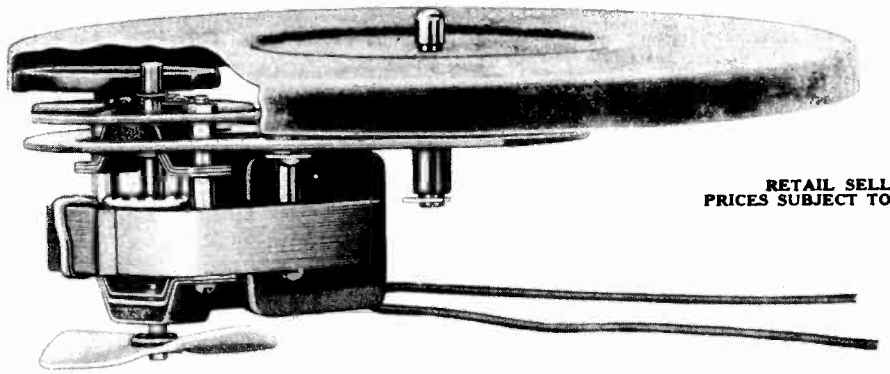
POWER SUPPLY: . . . . . .115 volts, 60 cycle AC, 17 watts

TURNTABLE SPEED - Constant: . . . . . 78 r.p.m.

Servicing Instructions - All parts of this phonograph have been completely serviced previous to shipment. It is recommended when servicing is necessary on the motor itself, that the entire motor be returned to the factory for the most satisfactory adjustment or replacement. However parts can be purchased as listed for self servicing or servicing by a competent service man.

To remove the motor from the case, first be sure that the connections of the phonograph to any electrical supply is disconnected. Remove the bottom of the case and break the wiring connections from motor to switch and motor to cord. Remove the turntable and take out the three machine screws that hold the motor to the metal mounting plate. Be careful not to lose the metal washers and rubber grommets used in holding the motor in place.

Caution - 1. Do not use extreme force in removing the turntable from the shaft. 2. Be sure the voltage and frequency of the power supply is the same as that of the motor. 3. Never attempt to close the lid while a record is playing. 4. Avoid hitting the reproducer or the arm on the reproducer against the side of the case, turntable or other rigid parts as this is a delicate instrument and undue movement or pressure against the small arm may damage it or subtract considerably from good reproduction.



RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Motor and Motor Parts

Part No.	Description	Selling Price Ea.	Part No.	Description	Selling Price Ea.
13715585	Field and Winding Assembly	2.00	137546001	Motor Assembly - 6/32 x 1 5/8 R. H. Screw	.10
13754561	Rotor Assembly	1.40			
13754626	Cabinet Mounting Plate Assemb.	.70	137541121	Motor Assembly Spacer .825	.11
13754628	Idler Plate Assembly	.58	137541122	Motor Assembly Spacer .265	.10
13754643	Tire and disc Assembly	1.15	137541123	Motor Assembly Spacer .503	.10
13754587	Rotor Shaft Pulley	.17	1375411	Cabinet Mounting Plate Grommet (Black)	.10
1375440	Rotor Shaft Oil Throw	.10			
13754326	Rotor Shaft Steel Oil Throw	.10	13754112	Cab. Mount.Plate Grommed(Gum)	.10
13754544	Rotor Shaft Spacer	.10	13754634	Cabinet Mounting Plate Spacer	.10
1375432	Rotor Shaft Felt Washer	.10	13754326	Cabinet Mounting Plate Washer	.10
1375440	Rotor Shaft Fibre Washer	.10	137546002	Cabinet Mounting Plate Screw	.10
13754326	Rotor Shaft Steel Washer	.10	13754627	Motor Mounting Plate	.30
13754737	Rotor Shaft Thrust Felt Cup	.10	137543261	Idler Plate Washer	.10
13754558	Fan Blade	.20	137541124	Idler Plate Spacer	.10
13754604	Fan Blade Cotter	.10	13754608	Idler Plate Screw	.10
13754321	Felt Washer on Fan Blade	.10	13754632	Idler Plate Spring	.11
13754326	Fan Blade Steel Washer	.10	1375432	Idler Bearing Felt Oiler	.10
13754402	Fan Blade Fibre Washer	.10	13754402	Idler Bearing Top Fibre	.10
13754655	Brg. Bracket Assemb.- Motor	.20	13754403	Idler Bearing Bottom Fibre	.10
13754600	Motor Assembly - 6/32 x 1 3/4 R. H. Screw	.10	137546041	Idler Bearing Cotter	.10
			13754630	Idler Bearing Vertical Shaft	.30
13754601	6/32 nut	.10	13754403	Vertical Shaft Fibre	.10
13754602	Lock Washer	.10	137546042	Vertical Shaft Cotter	.10

Hardware and Miscellaneous Parts

137541927	Needle Cup	.50	137542041	Bracket at Record Holder	.20
13754574	Tone Arm	.85	137541883	Reproducer Rest	.20
137542521	Lid Support	.35	137541	Record Holder Complete	.75
137541797	Leather Carrying Handle	.30	137542560	Handle Loop	.10
137541799	Cupped Washer on Motor Board	.02	137542031	Sliding Catch at Record Holder	.10
137524048	Electric Motor Complete	3.95	137542032	Sliding Arm on Record Holder	.10
13754110	Reproducer	1.20	137542567	Hinge on Record Holder	.10

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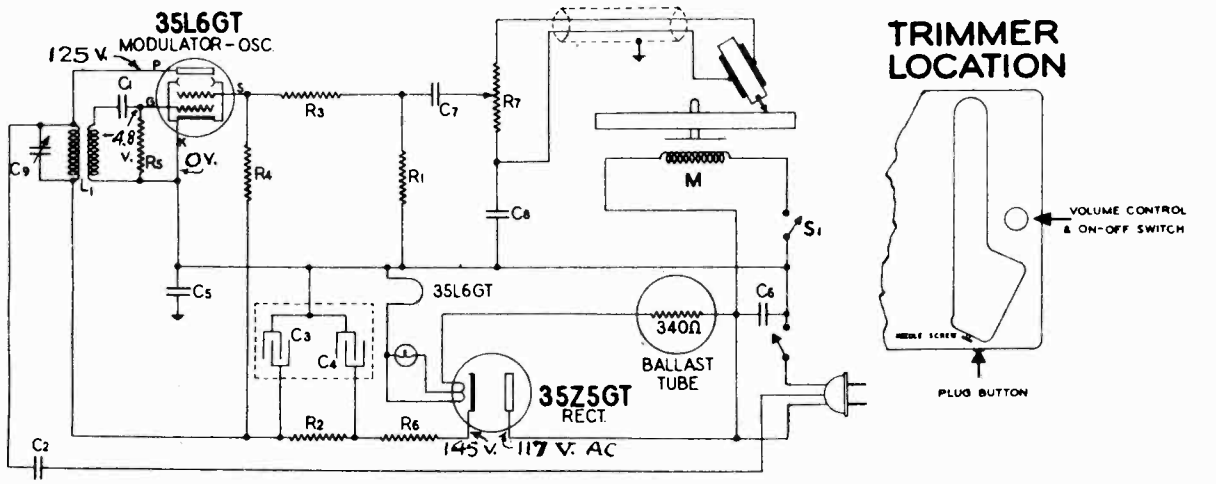
MODEL 5849
Ch. 100.356
Wireless Record Player

SEARS-ROEBUCK & CO.



POWER SUPPLY

105-125 V. 60 cycle AC.....35 watts
105-125 V. 50 cycle AC.....35 watts
105-125 V. 25 cycle AC.....35 watts

OPERATING CONTROLS

Switch for Turntable.....Automatic

Knob....."OFF-ON" Volume

CONTROL OPERATION

"OFF" when pickup arm is on rest.
"ON" when pickup arm is moved to playing position
Turning clockwise.....turns power on
Continuing to turn increases volume.

ADJUSTMENT OF MODEL 5848 WIRELESS RECORD PLAYER

1. Carefully tune your radio receiver from 540 to 700 KC. to find a dial setting where no station is heard during either the day or night. If there is no dial position where no station is heard, pick a spot where stations come in the weakest.

2. Place the record player in operation.

3. Remove the plug button on front of the record player and by means of a small screwdriver adjust the screw located beneath the plug button until the record player is heard on the radio receiver. It is suggested that you turn the screw all of the way out (counter-clockwise) very slowly, then if the record player still is not heard, turn the screw inward (clockwise) as far as necessary. After you hear the player, turn the screw back and forth slowly until the record is heard with deepest tone and minumum noise. If you find that there is a howl or whistle while records are being played, it may be necessary for you to set the receiver dial to a different position and readjust the record player for this new setting.

If the radio receiver has push button tuning, you can tune a push button to the signal of the record player in the same manner as you would adjust a button for a radio station.

ELECTRICAL PARTS

PART NUMBER	SCHEMATIC LOCATION	DESCRIPTION	LIST PRICE
10028160499	L1	Coil - oscillator	.26
1001983539	C1	Condenser - mica 260 mmfd.	.20
1001983783	C2	Condenser - mica 110 mmfd.	.20
10020116470	C3-C4	Condenser - electrolytic 20-20 mfd. 150 volt	.95
10019116625	C5-C6	Condenser - .1 mfd. 600 volt	.25
10019116819	C7-C8	Condenser - .05 mfd. 600 volt	.20
10017160501	C9	Condenser - padder	.22
10063160617		Crystal cartridge	4.50
10023110559	R1	Resistor - carbon 470,000 ohms 1/4 watt	.12
10023110569	R2	Resistor - carbon 10,000 ohms 1/4 watt	.12
10023110578	R3	Resistor - carbon 68,000 ohms 1/4 watt	.12
10023110580	R4	Resistor - carbon 3.3 meg. 1/4 watt	.12
10023116051	R5	Resistor - insulated 33,000 ohms 1/4 watt	.15
10023118823	R6	Resistor - 1,000 ohms 1 watt wire wound	.15
1004985296		Lamp - bull's eye 6 to 8 volt (Mazda 51)	.16
10021160540		Ballast tube	.60
10038160693	S1	Switch - "on" "off" for motor	.42
10024160743	R7	Volume control with switch (1/4 meg.)	1.50
10065160754		Line cord (special 3 wire)	.72
10064160745	M	Motor - 60 cycle - less turntable	5.00
10064160788	M	Motor - 25 cycle - less turntable	13.00
10064160791	M	Motor - 50 cycle - less turntable	6.90

MISCELLANEOUS PARTS

PART NUMBER	DESCRIPTION	LIST PRICE
10018116467	Base for mtg. electrolytic condenser	.04
10053160714	Bottom for cabinet (without serial numbers)	.16
10064160748	Bull's eye	.24
10060160756	Cabinet complete with bulls eye & decal	3.00
10054112798	Clip - for mtg. wave trap coil	.01
10053116471	Cover for electrolytic condenser	.05
10054160757	Decal - "Silvertone"	.04
1005477208	Flat steel washer, chassis mtg.	.01
10039160744	Knob (volume control)	.12
1005437484	Lockwasher - for mtg. motor - Per C	.50
1005412349	Nut - 8-32 for mtg. - Per C	.45
10063160741	Pick up (phono)	8.00
10054160747	Rubber foot	.06
1005485827	Set Screw - 8-32 square head	.02
10054113657	Screw - 8-32 X 3/8" B.H.M.S for bottom	.01
10054160690	Trip - lever	.05
10018114876	Socket - octal	.15
10018119791	Socket - 8 prong	.12
10018160749	Socket - pilot lamp	.21
10064160746	Turntable - 8" for 10064160745 motor	1.50
11064160789	Turntable - 8" for 10064160788 motor	1.50
10064160792	Turntable - 8" for 10064160791 motor	2.00
10064161104	Idler wheel for 10064160745 & 10064160791 motors	.85
10064117806	Idler wheel for 10064160788 motor	.60

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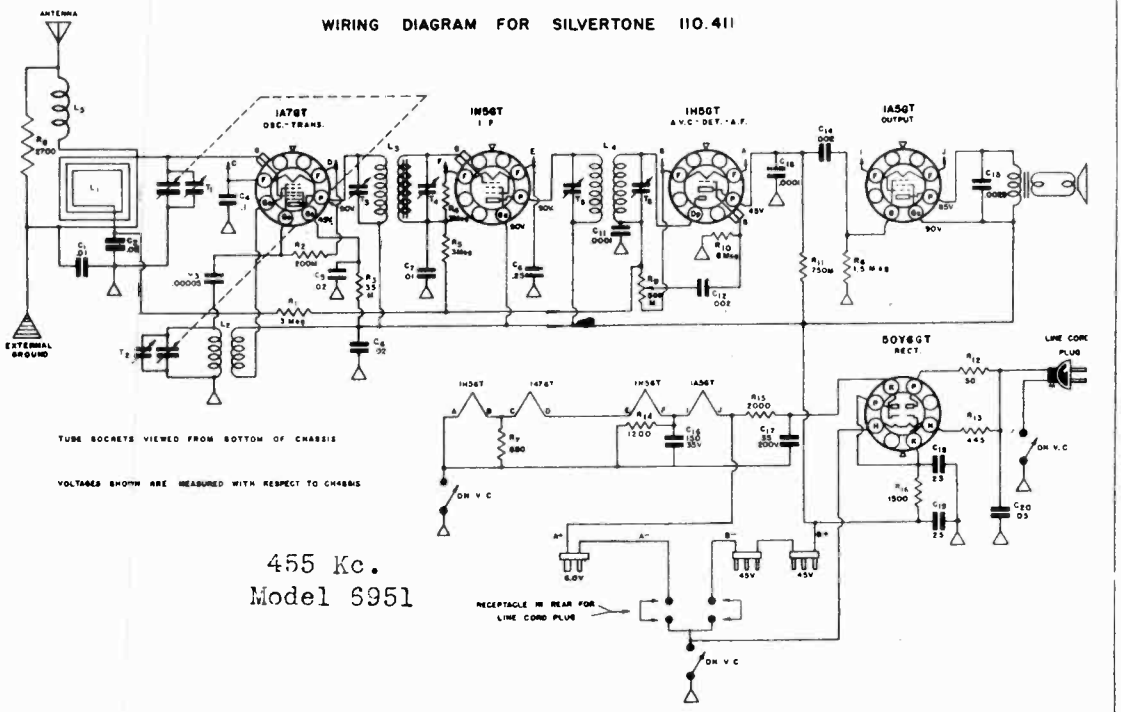
MODEL 6911,Ch.110.417
MODEL 6951,Ch.110.411

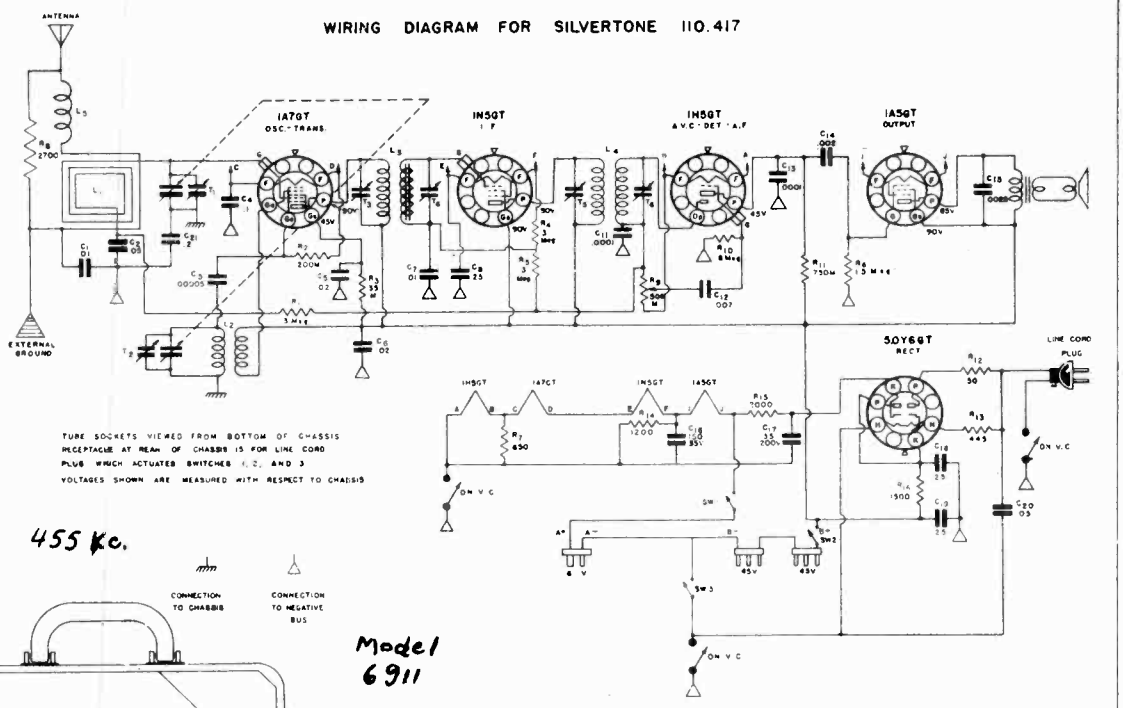
SEARS, ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE 110.411



455 Kc.
Model 6951

WIRING DIAGRAM FOR SILVERTONE 110.417

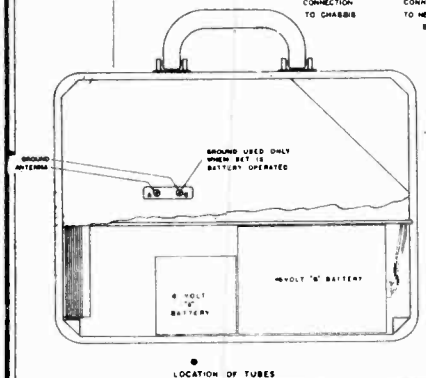


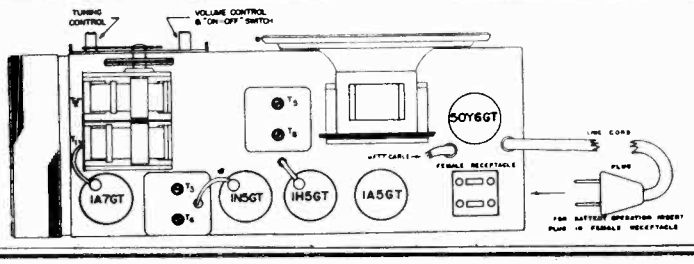
455 Kc.

CONNECTION TO CHASSIS

CONNECTION TO NEGATIVE BUS

Model 6911





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MODEL 6911
MODEL 6951

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

Output meter connections.....Across primary of output transformer

Connection of output generator lead.....See Chart below

Generator modulation.....30%, 400 cycles

Position of volume control.....Fully on

POSITION OF VARIABLE	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS	TRIMMER FUNCTION
Closed	455 KC	1A7GT Grid	T3, T4 T5, T6	I.F.
1500 KC	1500 KC	*See note below	T2, T1	Osc., R.F.

The complete assembly of loop mounting and chassis shelf should be removed as a unit in order to align the receiver

The batteries should be in the proper position when aligning the receiver.

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

*Run a wire from the output terminal of the generator, having it come near the receiver. However, no electrical connection is made between the signal generator and the receiver.

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS
1A7GT.....Transl.Oscill. 1H5GT.....A.V.C., Detector, 1st Audio
1N5GT..... IF 1A5GT..... Output
50YGT..... Rectifier

POWER SUPPLY - BATTERY OPERATION
(1)#5086..... 6.0V "A" Battery "A" Drain..... 50 MA.
(2)#5079..... 45V "B" Batteries "B" Drain..... 8.5 MA.

POWER SUPPLY - POWER LINE OPERATION
50-60 cycle.....110-125 volts A.C.-D.C. 30 Watts.

POWER OUTPUT
Type..... Pentode
Undistorted..... 100 MW
Maximum..... 260 MW

LOUD SPEAKER
Type..... Dynamic
Size..... 5"
Field..... P.M.

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS
Left Knob....."On-Off" switch & volume control
Right knob..... Tuning

CONTROL OPERATION
Turn right: Power on, volume increase

GENERAL INFORMATION AND SERVICE HINTS

THE 417 IS ALMOST IDENTICAL TO THE 411 WITH BUT A FEW MINOR CHANGES AS FOLLOWS:
1 - A TRIPLE POLE DOUBLE THROW SWITCH IS USED TO ISOLATE "A" AND "B" BATTERY PLUGS WHEN THE RECEIVER IS OPERATED FROM 110-125 VOLT SOURCE.
2 - THE PAPER CONDENSER (C20-.05MF) IS REPLACED BY A MICA MOULDED CONDENSER OF THE SAME VALUE.
3 - A NEGATIVE BUS IS USED AND IS CONNECTED TO THE CHASSIS THROUGH A .2MF CONDENSER C21

THE ANTENNA
The receiver contains a built-in "loop" antenna which will give entirely satisfactory reception from local and moderately distant stations. Additional range can be had by connecting to a conventional outdoor antenna. If such an external antenna is used, connection should also be made to a ground. A ground should never be used, however, in 110-125 volt (AC)(DC) operation.

AC-DC OPERATION
For (AC) alternating current (DC) direct current operation, the male plug is withdrawn from its receptacle at the rear of the chassis and inserted into the 110-125 volt source. The receiver may then be operated normally. This is illustrated by diagram on the following page.

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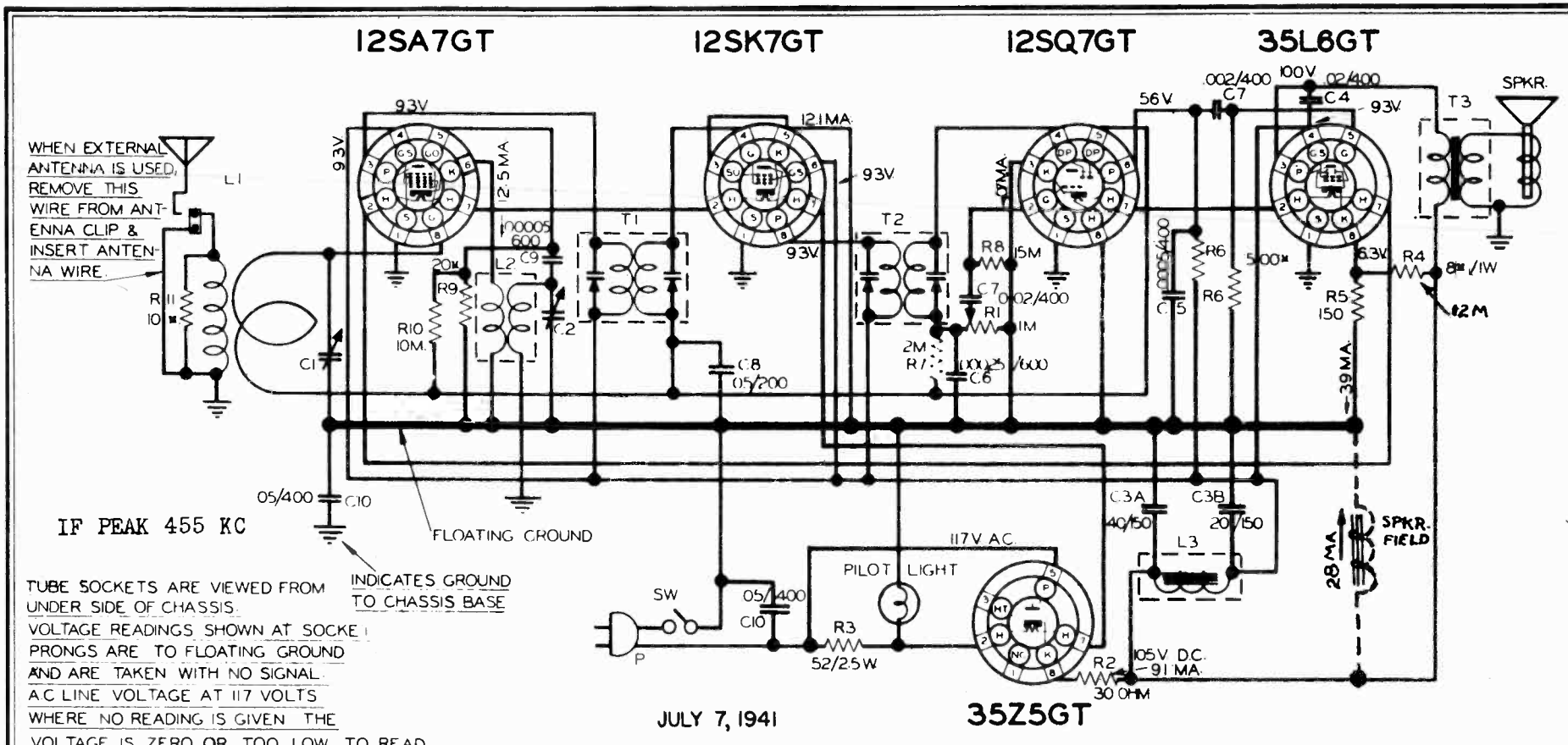


TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO FLOATING GROUND AND ARE TAKEN WITH NO SIGNAL. A.C LINE VOLTAGE AT 117 VOLTS WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

JULY 7, 1941

SUBJECT: ADDITION OF SUFFIX NUMBER -2 TO CHASSIS IDENTIFICATION NUMBER

The Pilot Lamp Shield and Snubber Assembly has been improved and simplified. This assembly which was identified by Part Number N17225 is superceded by Part Numbers N17308- Pilot Lamp Snubber and N17307- Pilot Lamp Shield.

When ordering parts for Chassis marked 132.812-2, -2A, -2B, use the parts list included in this Supplement.

SUBJECT: ADDITION OF SUFFIX NUMBER "-3" TO CHASSIS IDENTIFICATION NUMBER 132.812 AND PARTS LIST AND CIRCUIT DIAGRAM CHANGES FOR ALL MODELS.

The Oscillator Coil Pt. No. N17233 was supplanted by Pt. No. N17320.

The new coil Pt. No. N17320 may be identified by the fact that lug no. 1 is blank whereas the start of the white winding of coil no. N17233 was connected to lug no. 1. (See fig. 1)

The hookup of the coil in the circuit remains unchanged and is as follows:

Lug no. 1 - To chassis
Lug no. 2 - To Variable Condenser
Lug no. 3 - To Flt. ground
Lug no. 4 - To cathode 12SA7GT

SPEAKER FIELD (dotted position) in Chassis 132.812-1, -1A, -1B and 132.812-3, -3A, -3B only.
R4 changed to 12,000 ohms

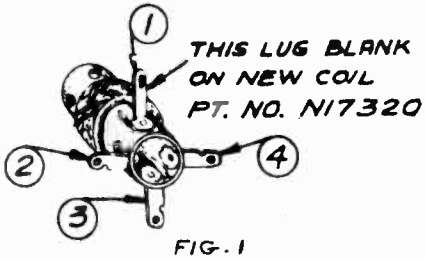


FIG. 1

MODELS 7004,7006,7008

SEARS, ROEBUCK & CO.

TUBES AND FUNCTIONS:
12SA7GT . . Oscillator Translator
12SK7GT . . . . . IF
12SQ7GT . . . . . Detector-AVC-AF
35L6GT . . . . . Output
35Z5GT . . Rectifier

POWER SUPPLY:
All models available . . . . . 105-125 volts, AC-DC, 35 watts

FREQUENCY RANGE . . . . . 540 - 1600 kc.

ALIGNMENT FREQUENCIES: Osc. - 1400 kc;
Transl. - 1400 kc;

INTERMEDIATE FREQUENCY . . . . . 455 kc.

POWER OUTPUT:
Type . . . Beam Tube
Undistorted 1.0 watts
Maximum . . 2.6 watts

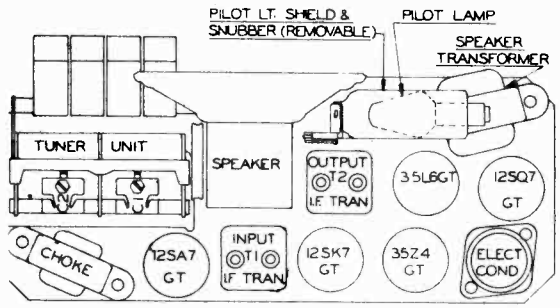
LOUD SPEAKER:
Type . . . . . Permanent Magnet
Size . . . . . 4 inch

OPERATING FEATURES:
Automatic Volume Control
AC-DC
Push Button Tuning (4 button)

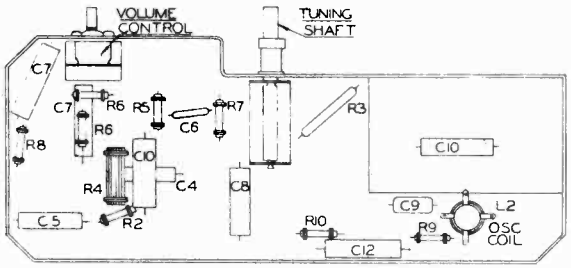
CHASSIS FEATURES:
Number IF stages . . . . . One
Built-in loop with provision for external antenna.

OPERATING CONTROLS:
1. Left knob . . . On-Off switch & volume
2. Right knob . . . . . Tuning

CONTROL OPERATION:
Turning right: ON; Volume increase
Tuning ratio: . . . . 3.3 ; 1



LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS
132 812

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts	0.38 volts
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Dial Pointer with Variable fully closed	See note below

POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (High)	GENERATOR CONNECTION (Low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION	UV INPUT TO STD. LOOP TO GIVE ½ W. OUTPUT
Open	455 kc	.1 mfd.	12SA7GT Grid	Var. cond. frame	T2,T1	IF	-----
1400 kc	1400 kc.	.00005 mfd.	Ant. clip	Ch. base	C2,C1	Translator	1600 uv.
600 kc	600 kc	.00005 mfd.	Ant. clip	Ch. Base	Check point	---	1000 uv.

IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should point vertically upward. When properly set with the variable condenser closed the pointer will point just to the right of the "54" calibration mark.

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

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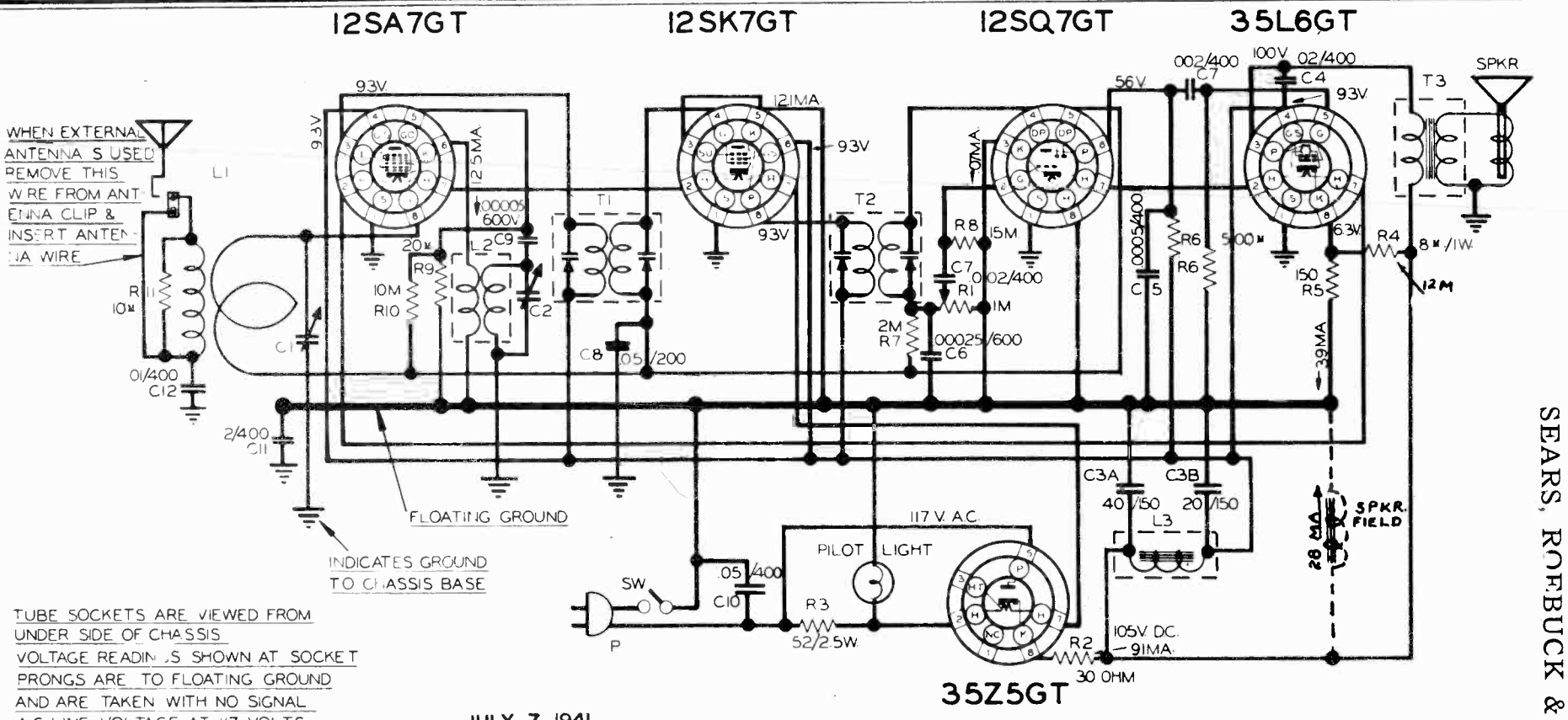
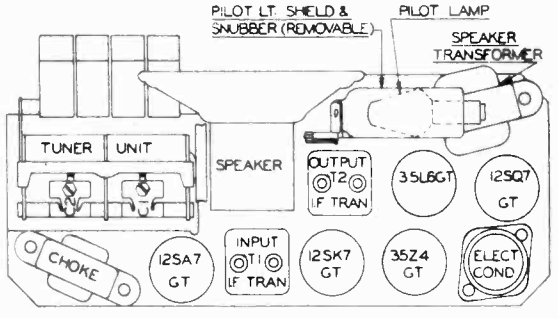


TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS
VOLTAGE READIN S SHOWN AT SOCKET PRONGS ARE TO FLOATING GROUND AND ARE TAKEN WITH NO SIGNAL
A.C LINE VOLTAGE AT 117 VOLTS
WHERE NO PEADING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ

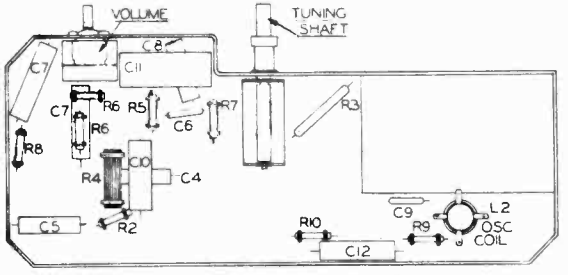
JULY 7, 1941

132.813

IF PEAK 455 KC



LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS
132 813

SPEAKER FIELD (dotted position) in Chassis 132.813-1,-1A,-1B only.
R4 changed to 12,000 ohms.
Aug. 13, 1941

SEARS, ROEBUCK & CO.

MODELS 7005, 7007, 7009
Ch. 132.813,-A,-B
132.813-1,-1A,-1B
132.813-3

MODELS 7005,7007,7009

SEARS, ROEBUCK & CO.

TUBES AND FUNCTIONS:
12SA7GT . . . Oscillator-Translator
12SK7GT . . . . . .IF
12SQ7GT . . . . . Detector-AVC-AF
35L6GT . . . . . Output
35Z5GT . . . . Rectifier

POWER SUPPLY:
All models available . . . . . 105-125 volts, AC-DC, 35 Watts

FREQUENCY RANGE: 540-1600 kc.

ALIGNMENT FREQUENCIES. . . Osc. - 1400 kc.
Transl. - 1400 kc.

INTERMEDIATE FREQUENCY: . . . . . 455 kc.

POWER OUTPUT:
Type: Beam Tube
Undistorted: 1.0 watts
Maximum: 2.6 watts

LOUD SPEAKER:
Type: Permanent Magnet
Size: 4 inch

OPERATING FEATURES:
Automatic Volume control
AC-DC
P.B. Tuning (4 button)

CHASSIS FEATURES:
Number IF stages . . . . . One
Built-in loop with provision for external antenna.
Underwriters Approved

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:
1. Left knob . . On-Off Sw. & Volume
2. Right knob . . . . . Tuning

CONTROL OPERATION:
Turning Right. . . On; Volume Increases
Tuning Ratio 3.3:1

GENERAL INFORMATION & SERVICE HINTS

ADDITION OF SUFFIX LETTERS:

Chassis identified by 132.813 are used in Cataleg number 7005, walnut cabinet. Suffix letter "-A" has been added when the chassis is used in Cataleg number 7007, ivory cabinet. Suffix letter "-B" is added when the chassis is used in Cataleg number 7009, onyx cabinet.

THE HEATER CIRCUIT:

The heaters of all of the tubes are connected in series. Accordingly, if any one tube burns out, the others will not light. It is necessary to replace only the burnt out tube; the others then will light. The burnt out tube can be located through the fact that the full line voltage will appear across its heater prongs.

POSITION OF POWER CORD PLUG:

On AC, the power cord plug should be tried in both its possible positions in the receptacle and left in the position that gives least hum. On DC, the receiver will work at only one position of the plug in its receptacle.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.38 volts
Dummy antenna value to be inseries with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Connection of generator ground lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Dial Pointer with Variable fully closed . . . . . See note below

POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (high)	GENERATOR CONNECTION (low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION	Uv. Input To Haz. Std. Loop to Give ½ Watt Output
Open	455 kc.	.1 mfd.	12SA7GT Grid	Flt. Grnd.	T2,T1	IF	--------
1400 kc	1400 kc	.00005 mfd.	Ant. clip	Ch. base	C2,C1	Translator	1600 uv.
600 kc	600 kc	.00005 mfd.	Ant. clip	Ch. base	Check point	----	1000 µv.

IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should point vertically upward. When properly set with the variable condenser closed the pointer will point just to the right of the "54" calibration mark.

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

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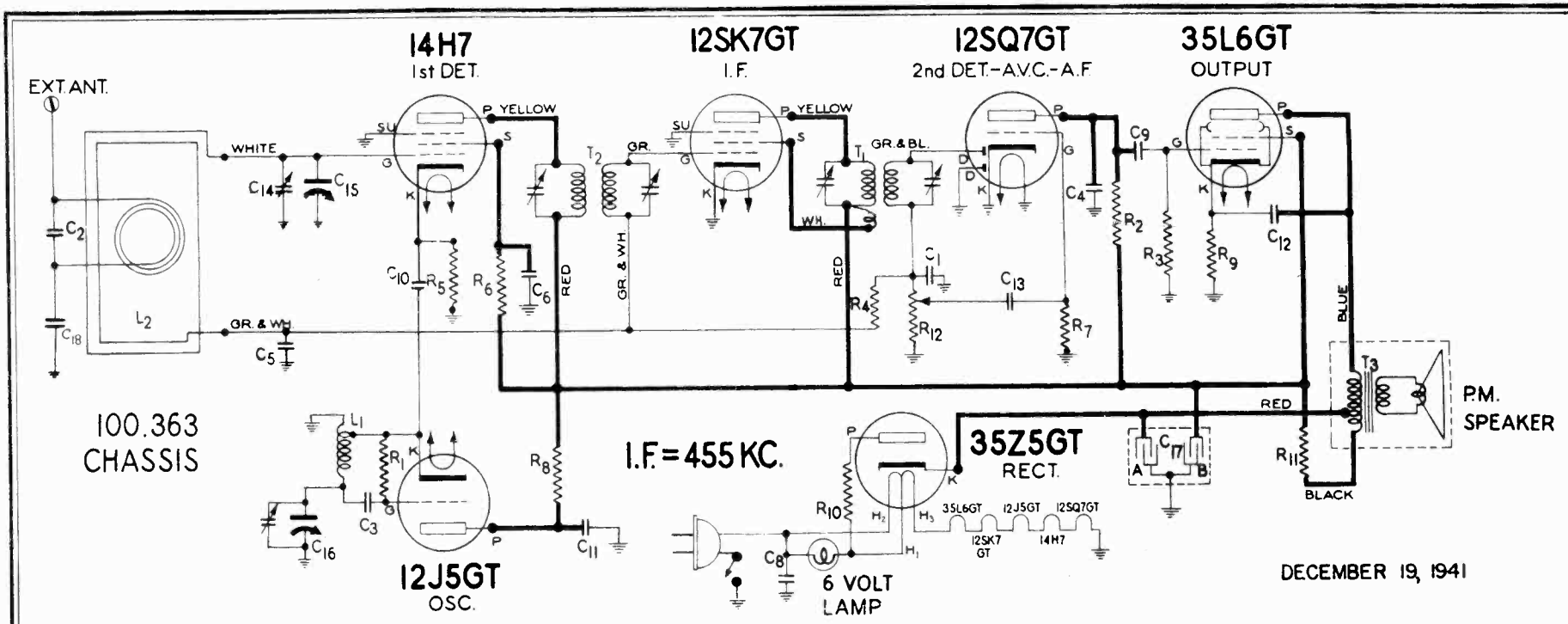
SEARS, ROEBUCK & CO.

MODELS 7010, 7034
Chassis 100.363
Chassis 100.363-1



PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	LIST PRICE
W 83539	C1	Condenser-Mica. 260 Mmfd.	.20
W 83783	C2,C3	Condenser-Mica. 110 Mmfd.	.20
W 85394	C4	Condenser-Mica. 510 Mmfd.	.25
W 116819	C5, -, C8	Condenser-.05 Mfd. 600 Volt.....	.20
W 119193	C6,C9, C10,C11	Condenser-.01 Mfd. 600 Volt	.15
W 119414	C12	Condenser-.02 Mfd. 600 Volt	.15
W 119817	C13	Condenser-.004 Mfd. 600 Volt.....	.15
W 119345	C14	Condenser-Trimmer (Loop).....	.20
W 500443	C15,C16	Condenser-Variable Tuning with Drum	2.60
W 500256	C17	Condenser-Electrolytic (50-60 Cycle)A-40 Mfd. 150 Volt (Models only)B-20 Mfd. 150 Volt)...	1.00
W 500744	C17	Condenser-Electrolytic A-80 Mfd. 150 Volt B-20 Mfd. 150 Volt..... (25 Cycle Models Only)	1.80
W 119193	C18	Condenser-.01 Mfd. 600 Volt.....	.15
W 110552	R1	Resistor-Carbon, 47000 Ohms ½ Watt..	.12
W 110553	R2	Resistor-Carbon, 220000 Ohms ½ Watt.	.12
W 110559	R3	Resistor-Carbon, 470000 Ohms ½ Watt.	.12
W 110570	R4	Resistor-Carbon, 2.2 Meg. ½ Watt....	.15
W 116079	R5	Resistor-Carbon, 1200 Ohms ½ Watt...	.12
W 110576	R6	Resistor-Carbon, 68000 Ohms ½ Watt..	.12
W 112975	R7	Resistor-Carbon, 10 Meg. ½ Watt.....	.12
W 116068	R8	Resistor-Carbon, 680 Ohms ½ Watt....	.10
W 116092	R9	Resistor-140 Ohms 1 Watt Wire-Wound.	.14
W 116752	R10	Resistor-33 Ohms 1 Watt Wire-Wound (50-60 Cycle Models Only).....	.12
W 116013	R10	Resistor-50 Ohms 1 Watt Wire-Wound (25 Cycle Models Only).....	.18
W 118824) W 500306)	R11	(Resistor-Carbon, 1500 Ohms ½ Watt (100.363 Only)..... .12 (Resistor-2000 Ohms 1 Watt (100.363-1 Only).....	.25
W 500482	R12	Volume Control-1 Meg. (With Switch).	1.25
W 160078	R13	Resistor-220 Ohms 1 Watt.....	.20
W 500408	L1	Coil-Oscillator.....	.42
W 500637) W 500644)	L2	(Loop Antenna & Cab. Back)(Plastic Cab) (Loop Antenna & Cab. Back)(Wood Cab.).	1.60 1.70
W 500835	T1	Transformer-2nd I.F.	1.10
W 500801	T2	Transformer-1st I.F.	1.20
W 500617R	T3	Transformer-Output for Spkrs.....	1.50
W 500577R		Speaker-P.M. Dynamic (100.363 Only)	5.65
W 500973R		Speaker-Electro-Dynamic (5") (100.363-1 Only).....	5.85
W 500587R		Cone & Voice Coil for Spkrs.	1.50
W 500897		Lamp-Dial (Mazda C7)(100.363-1 Only)	.26
W 118921		Lamp-Dial (Mazda #47)(100.363 Only)	.15

MISCELLANEOUS PARTS

PART NUMBER	DESCRIPTION	LIST PRICE
W-160026	Base-for Mtg. Electrolytic Condenser.....	.04
W 117057	Cord-Drive Supplied in 3' Lengths.....	.15
W 500569	Dial Scale-for Plastic Cabinets.....	.54
W 500696	Dial Scale-for Wood cabinets.....	.60
W 500732	Pointer.....	.10
W 117718	Shield-Tube.....	.07
W 116890	Socket-Octal Base.....	.12
W 160392	Socket-Octal (Rectifier).....	.12
W 180294	Socket-8 Prong for 14H7.....	.12
W 500896	Socket-Pilot Lamp (with Leads)(100.363-1 only)..	.26
W 500499	Socket-Pilot Lamp (with Leads)(100.363 only)....	.18

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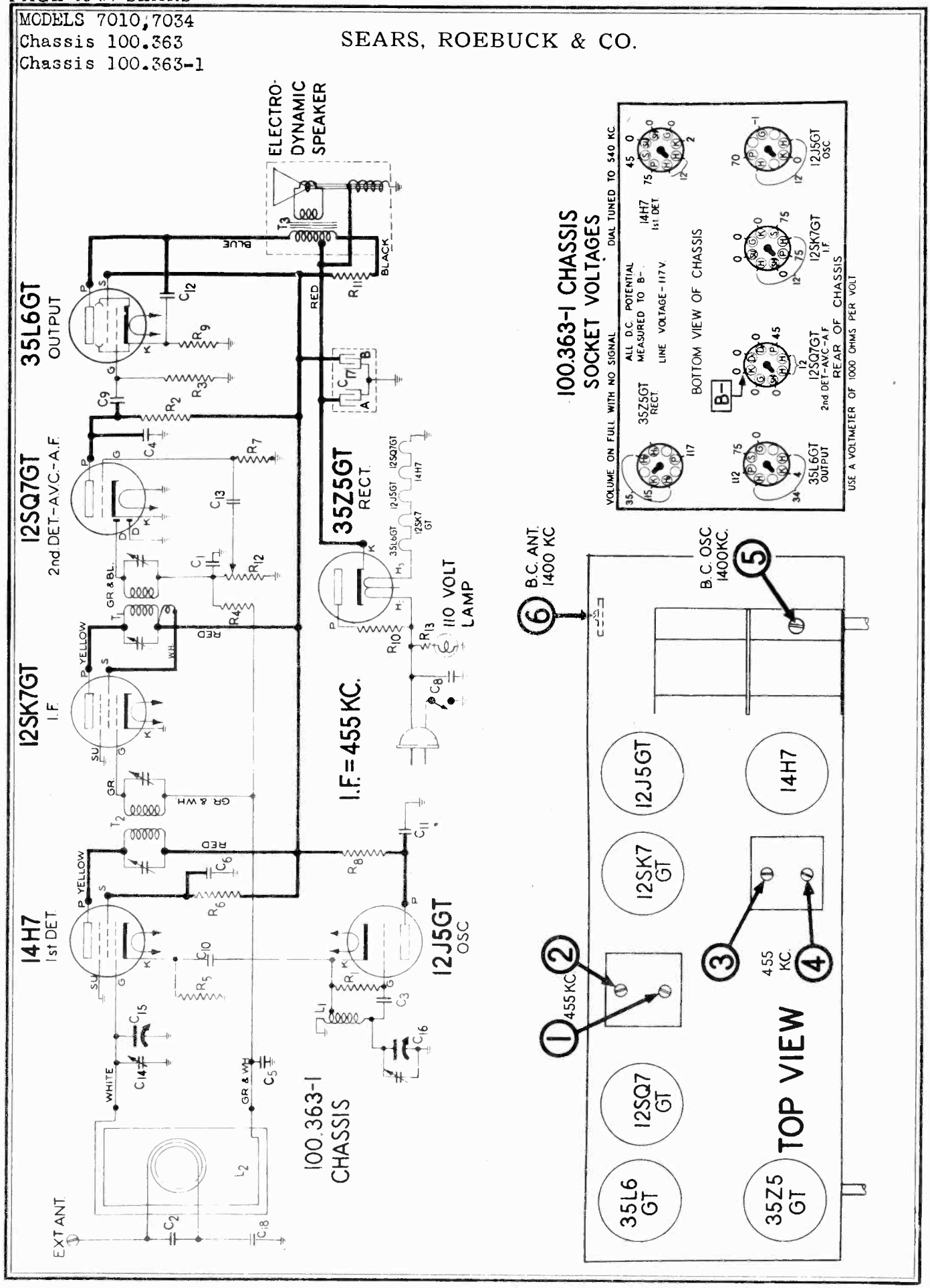
MODELS 7010, 7034
Chassis 100.363
Chassis 100.363-1

SEARS, ROEBUCK & CO.



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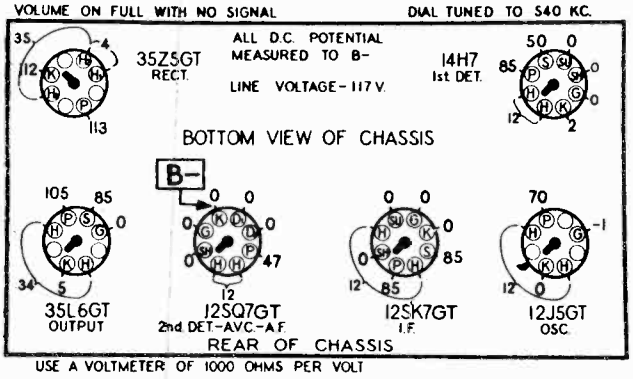
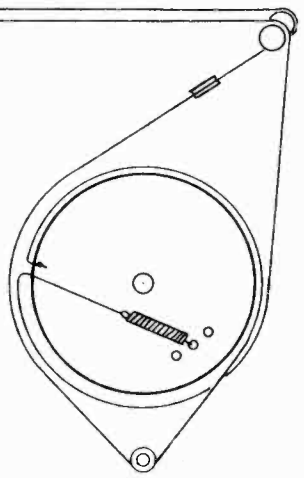
SEARS, ROEBUCK & CO.

MODELS 7010,7034
Chassis 100.363
Chassis 100.363-1

100.363 CHASSIS
SOCKET VOLTAGES



USE A VOLTMETER OF 1000 OHMS PER VOLT



DIAL DRIVE MECHANISM
AS VIEWED FROM THE FRONT

POWER SUPPLY
363 or 363-1 chassis is supplied for either 25 or 50-60 cycle power supplies

363..105-125 V. (50-60 or 25) cycles..30 watts
363-1..105-125V. (50-60 or 25) cycles.42 watts

FREQUENCY RANGE.....535 to 1725 KC.
ALIGNMENT FREQUENCIES.....455 KC,1400 KC.

INTERMEDIATE FREQUENCY..... 455 KC.

POWER OUTPUT
Type.....Pentode
Undistorted..... .9 Watts
Maximum..... 1.7 Watts

LOUD SPEAKER
Type (P.M. dynamic (363 chassis) / Electro dynamic (363-1 chassis)
Size..... 5"
Field resistance....(363-1) 3800 ohms

Before starting the alignment procedure check to see if the pointer is set to the last mark on the 550 KC. end of the dial scale with the gang condenser in full mesh.

Output meter connection----Across speaker voice coil
Output meter reading to indicate 500 milliwatts---- 1.32 volts
Dummy antenna value to be in series with generator output----See chart below
Connection of generator output lead----See chart below
Connection of generator ground lead----To 12SQ7 cathode
Generator modulation----30%, 400 cycles
Position of Volume Control----Fully clockwise
Position of Dial Pointer with gang fully closed----On mark to left of 550 KC. calibration mark
Approximate input to standard loop giving 500 MW @ 400 cycles, 30% mod.----1200 uv. average

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION SIGNAL GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. CONDENSER	STATOR ON REAR SECTION OF GANG.	455 KC	600 KC	1 - 2 3 - 4	2ND I. F. 1ST I. F.	ADJUST FOR MAXIMUM OUTPUT. THEN REPEAT ADJUSTMENT.
STANDARD ALIGNING LOOP	*STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	1400 KC	1400 KC	5	BROADCAST OSCILLATOR (SHUNT)	ADJUST FOR MAXIMUM OUTPUT.
STANDARD ALIGNING LOOP	*STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	1400 KC	1400 KC	6	BROADCAST DETECTOR	ADJUST FOR MAXIMUM OUTPUT.

* A 50 MMFD. MICA CONDENSER CONNECTED TO THE ANTENNA TERMINAL MAY BE USED IN PLACE OF THE STANDARD LOOP.

ELECTRICAL CHANGES IN 100.363 CHASSIS

The first group of 100.363 chassis produced were equipped with a Permanent Magnet speaker and a six volt pilot lamp. Later chassis were produced with electro-magnetic speakers and 110 volt pilot lights. These later chassis are identified by 100.363-1 stamped on the identification plate.

WHEN ORDERING PARTS OR REFERRING TO A CIRCUIT DIAGRAM, BE SURE TO SPECIFY OR REFER TO THE PROPER AND COMPLETE CHASSIS NUMBER AS SHOWN ON THE IDENTIFICATION PLATE.

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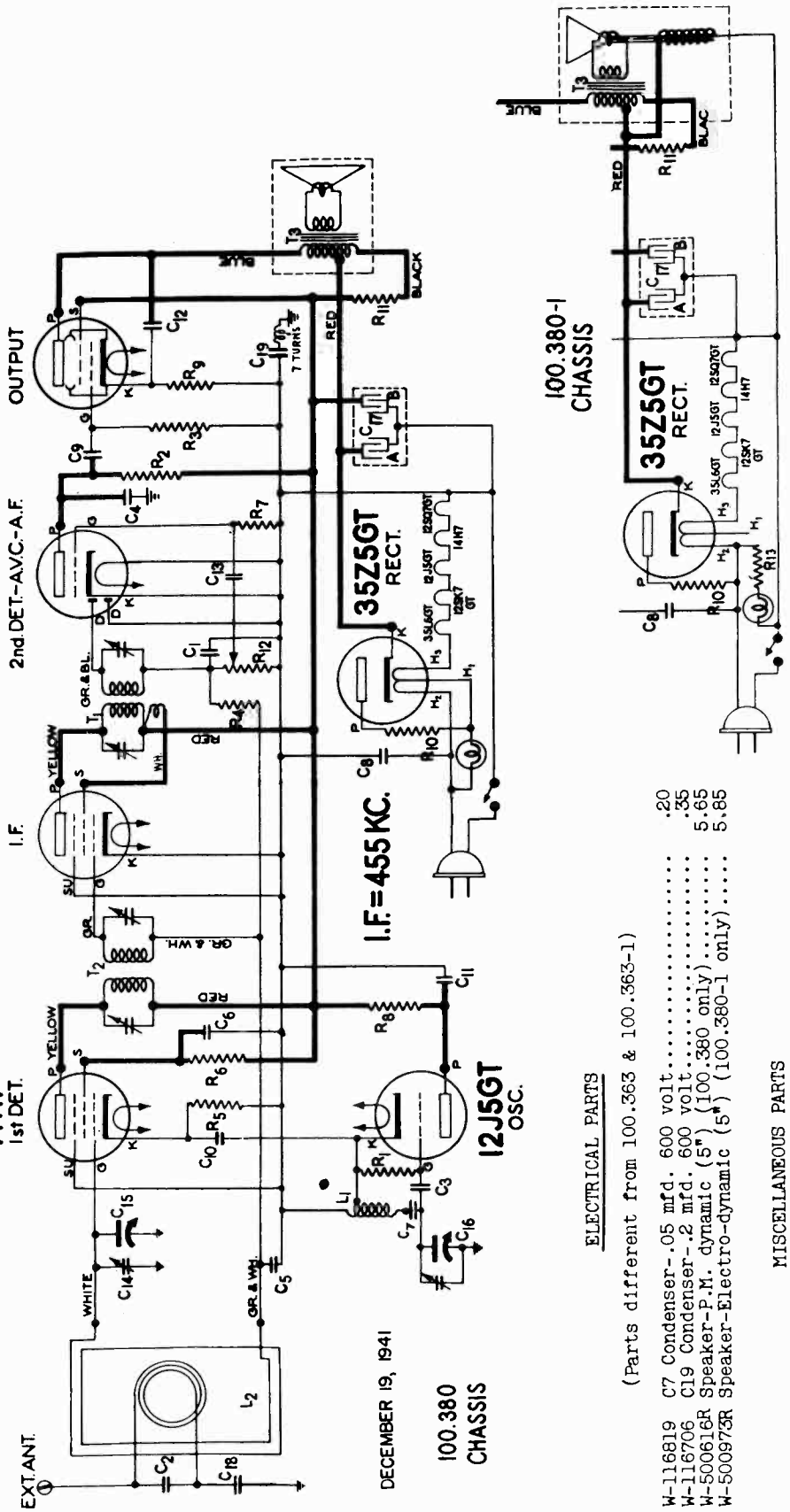
MODELS 7011,7035
Chassis 100.380
Chassis 100.380-1

SEARS, ROEBUCK & CO.



ELECTRICAL PARTS

(Parts different from 100.363 & 100.363-1)

W-116819	C7 Condenser-.05 mfd. 600 volt.....	.20
W-116706	C19 Condenser-.2 mfd. 600 volt.....	.35
W-500616R	Speaker-P.M. dynamic (5") (100.380 only).....	5.65
W-500973R	Speaker-Electro-dynamic (5") (100.380-1 only).....	5.85

MISCELLANEOUS PARTS

W-116467	Base-for mtg. electrolytic condenser.....	.04

ELECTRICAL & MECHANICAL SPECIFICATIONS

The 100.380 & 100.380-1 chassis are the Underwriters' listed versions of the 100.363 & 100.363-1 chassis respectively. The electrical and mechanical specifications are the same as those for the 100.363 & 100.363-1 chassis and may be obtained from the RL issued for these chassis. The 100.363 & 100.363-1 chassis use the metal chassis pan as the B- return. The Underwriters' listed chassis (100.380 & 100.380-1) use a separate B- return which is by-passed to the metal chassis pan through condenser C19.

The parts listed for 100.363 & 100.363-1 diagrams applies to the 100.380 & 100.380-1 diagrams

WITH THE DIFFERENCES SHOWN IN THE ABOVE PARTIAL SCHEMATIC, CHASSIS 100.380-1 IS IDENTICAL TO CHASSIS 100.380

SEE SEARS PAGE 13-53 FOR PARTS

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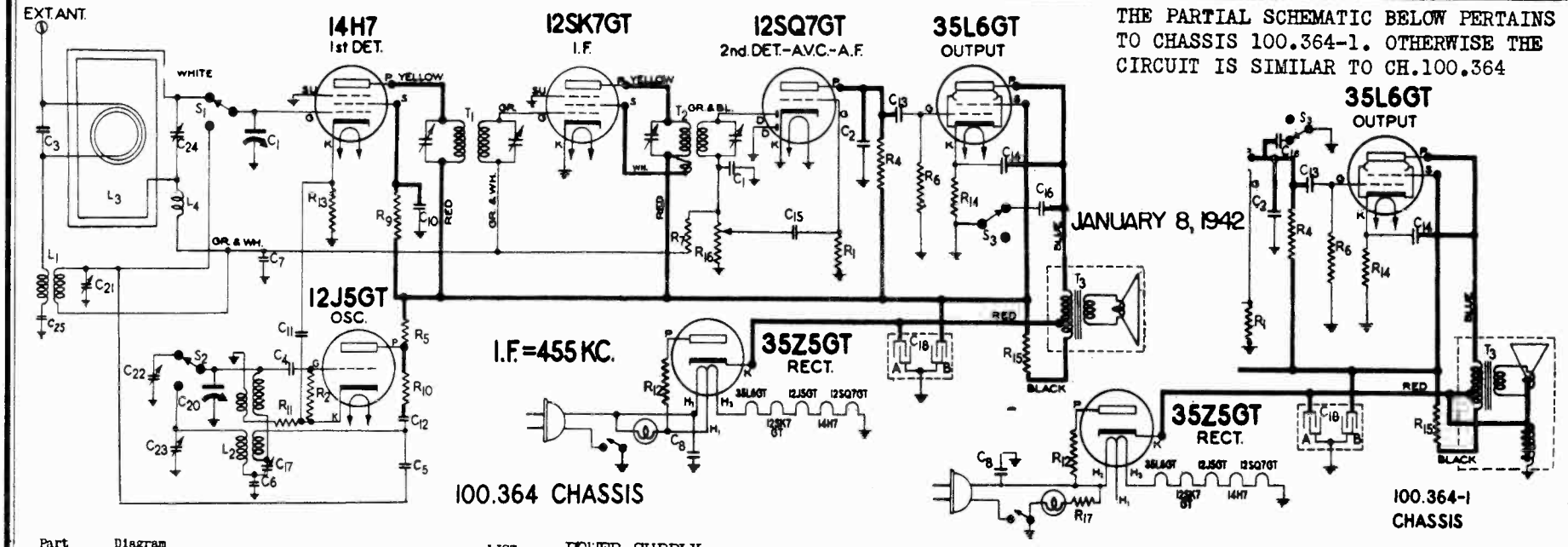

Part Number	Diagram Number	Description	LIST PRICE
W83539	C1-C2	Condenser-Mica 260 Mmfd.	.20
W83783	C3-C4	Condenser-Mica 110 Mmfd.	.20
W110510	C-5	Condenser- 3 Mmfd.	.12
W88587	C-6	Condenser-Mica .0042 Mfd.	.35
W116819	C7-C8	Condenser- .05 Mfd. 600 Volts	.20
W119193	C10-C13	Condenser- .01 Mfd. 600 Volts	.15
W119414	C-14	Condenser- .02 Mfd. 600 Volts	.15
W119817	C-15	Condenser- .004 Mfd. 600 Volts	.15
W119880	C-16	Condenser- .04 Mfd. 600 Volts (100.364 Only)	.20
W119817	C-16	Condenser- .004 Mfd. 600 Volts (100.364-1 Only)	.15
W119934	C-17	Condenser-Padder	.36
W500256		Condenser-Electrolytic, A-40 Mfd. 150 Volt; B-20 Mfd. 150 Volt (50-60 Cycle Models Only)	1.00
W500744	C-18	Condenser-Electrolytic A-80 Mfd. 150 Volt; B-20 Mfd. 150 Volt (25 Cycle Models Only)	1.80
W500442	C19-C20	Condenser-Variable tuning with drum	2.60
W500647	C21-C22 C23	Condenser-Trimmer, 3 section	.48
W119345	C24	Condenser-Trimmer (loop)	.20
W119193	C25	Condenser-.01 Mfd. 600 Volts	.15
W112975	R1	Resistor-Carbon, 10 Meg. 1/4 Watt	.12
W110552	R2	Resistor-Carbon, 47,000 Ohms 1/4 Watt	.12
W110553	R4	Resistor-Carbon, 220,000 Ohm 1/4 Watt	.12
W110557	R5	Resistor-Carbon 4700 Ohm 1/4 Watt	.12
W110559	R6	Resistor-Carbon, 470,000 Ohm 1/4 Watt	.12
W110570	R7	Resistor-Carbon, 2.2 Meg. 1/4 Watt	.15
W110578	R9	Resistor-Carbon, 68,000 Ohm 1/4 Watt	.12
W110590	R10-R11	Resistor-Carbon, 180 Ohm 1/4 Watt	.12
W116752	R12	Resistor-33 Ohm 1 Watt, Wire Wound (50-60 Cycle Models Only)	.15
W116013	R12	Resistor-50 Ohm 1 Watt, Wire Wound (25 Cycle Models Only)	.18
W116079	R13	Resistor-Insulated, 1200 Ohm 1/4 Watt.	.12
W116092	R14	Resistor-140 Ohm 1 Watt, Wire Wound	.14
W118824	R15	Resistor-Carbon, 1500 Ohm 1/2 Watt (100.364 Only)	.12
W500306	R15	Resistor-2,000 Ohm 1 Watt (100.364-1 Only)	.15
W500482	R16	Volume control- 1 Meg. (with switch)	1.25
W160078	R17	Resistor, 220 Ohms 1 Watt (100.364-1 Only)	.20
W500645	L1	Coil-Short Wave Antenna	.50
W500646	L2	Coil-Oscillator (B.C. & S.W.)	1.08
W500648	L3	Loop Antenna & Cabinet Back for Plastic Cabinets	1.70
W501331	L3	Loop Antenna & Cabinet Back for Wood Cabinets	2.08
W500911	L4	Loading Coil	.25

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

POWER SUPPLY

100.364 & 100.364-1 chassis are supplied for either 25 or 50-60 cycle power supplies.

FREQUENCY RANGES

American ..... 535 to 1735 KC.
Foreign ..... 5.6 to 16.1 MC.

INTERMEDIATE FREQUENCY

..... 455 KC.

POWER OUTPUT

Type ..... Pentode
Undistorted ..... .9 Watts
Maximum ..... 1.7 Watts

105-125 V {50-60 / 25} cycle 30 W.(100.364)

105-125 V {50-60 / 25} cycle 42 W(100.364-1)

ALIGNMENT FREQUENCIES

1400 KC, 600 KC.
14 MC.

LOUD SPEAKER

Type ...(P.M. Dynamic (100.364)
(Electro Dynamic (100.364-1)
Size ..... 5"
Field Resistance-3800 ohms(100.364-1)

ELECTRICAL CHANGES IN 100.364 CHASSIS

The 100.364 chassis as first produced used a P.M. dynamic speaker and a 6 volt pilot light. Later versions use an electro-dynamic speaker whose field is connected across the B supply in order to obtain the required excitation. These later models, which are identified by 100.364-1, also use a 110 volt pilot light. The later models have the tone control connected in the 12SQ7 plate instead of the 35L6GT plate as in the earlier models.

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MODELS 7016, 7031A
Chassis 100.364,
100.364-1

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

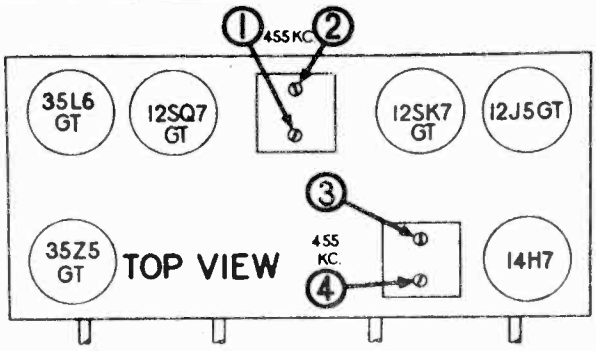
Before starting the alignment procedure check to see if the pointer is set to the last mark on the 550 KC. end of the dial scale with the gang condenser in full mesh.

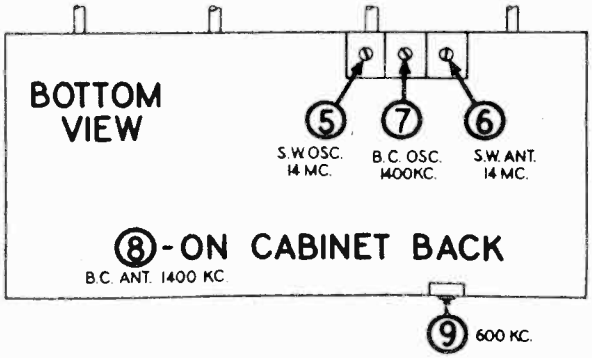
Output meter connection ---------- Across speaker voice coil
Output meter reading to indicate 500 milliwatts ---------- 1.32 volts
Dummy antenna value to be in series with generator output ---------- See chart below
Connection of generator output lead ---------- See chart below
Connection of generator ground lead ---------- To chassis
Generator modulation ---------- 30%, 400 cycles
Position of Volume Control ---------- Fully clockwise
Position of Tone Control ---------- "HI" position
Position of Dial Pointer with gang fully closed ---------- On mark to left of 550 KC. calibration mark
Approximate input to standard loop giving 500 MW @ 400 cycles, 30% mod. ---------- 1200 μv.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION SIGNAL GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. CONDENSER	STATOR ON REAR SECTION OF GANG	455 KC	"AM" POSITION	600 KC	1 - 2 3 - 4	2ND I. F. 1ST I. F.	ADJUST FOR MAXIMUM OUTPUT THEN REPEAT ADJUSTMENT.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	14 MC	"FOR" POSITION	14 MC.	5	SHORT WAVE OSCILLATOR	ADJUST FOR MAXIMUM OUTPUT. CHECK TO SEE IF PROPER PEAK WAS OBTAINED BY TUNING IN IMAGE AT APPROX. 13.1 MC. IF IMAGE DOES NOT APPEAR, REALIGN AT 14 MC. WITH TRIMMER SCREW FARTHER OUT.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	14 MC	"FOR" POSITION	14 MC	6	SHORT WAVE ANTENNA	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RE-TUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED
STANDARD ALIGNING LOOP	*STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	1400 KC	"AM" POSITION	1400 KC	7	BROADCAST OSCILLATOR (SHUNT)	ADJUST FOR MAXIMUM OUTPUT.
STANDARD ALIGNING LOOP	*STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	1400 KC	"AM" POSITION	1400 KC	8	BROADCAST DETECTOR	ADJUST FOR MAXIMUM OUTPUT.
STANDARD ALIGNING LOOP	*STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	600 KC	"AM" POSITION	600 KC	9	BROADCAST OSCILLATOR (SERIES)	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RE-TUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED

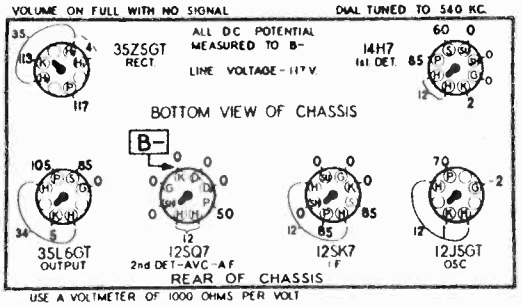
* A 50 mmfd. mica condenser connected to the Antenna Terminal may be used in place of the standard loop.

NOTE: After alignment is completed, place chassis and cabinet in their final position and repeat adjustments #8 & 9.



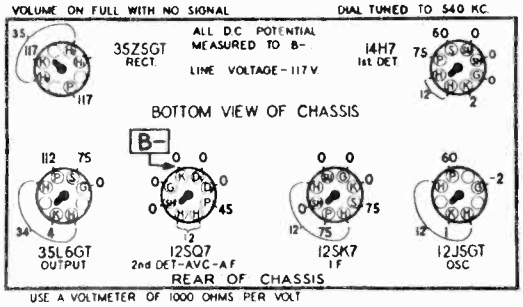


100.364
SOCKET VOLTAGES



USE A VOLTMETER OF 1000 OHMS PER VOLT

100.364-1
SOCKET VOLTAGES



USE A VOLTMETER OF 1000 OHMS PER VOLT

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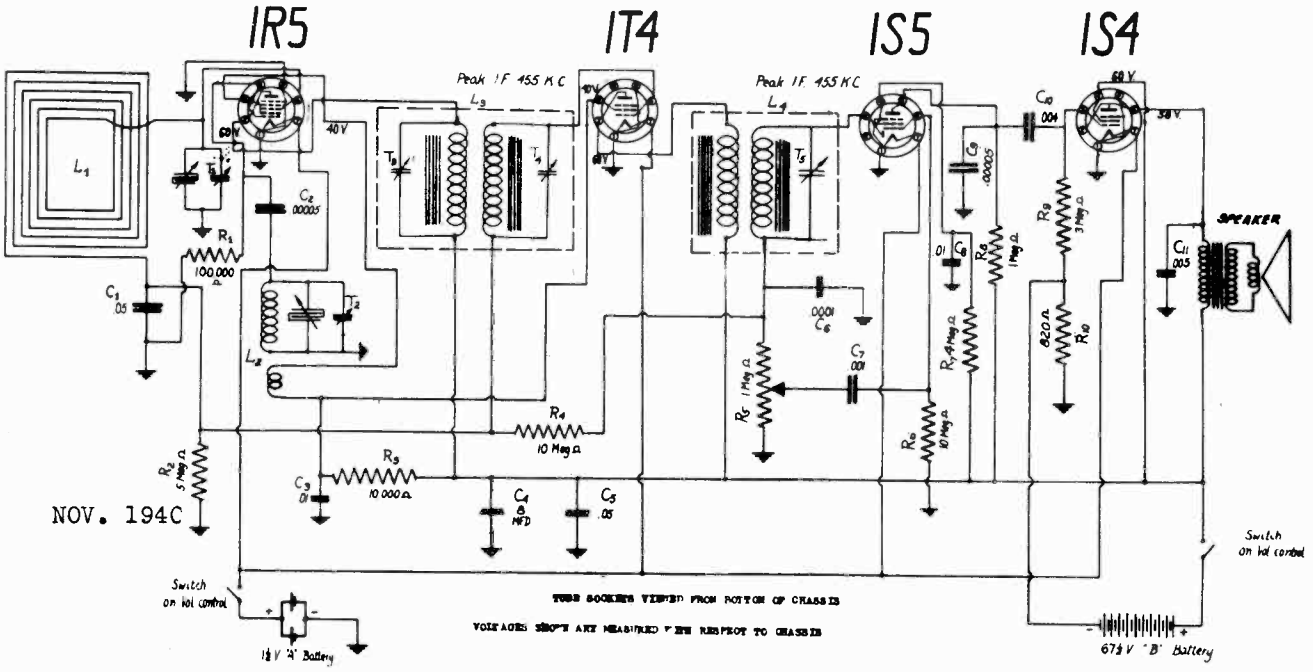
MODEL 6641
Chassis 136.410

SEARS, ROEBUCK & CO.



ALIGNMENT PROCEDURE

Output meter connections.....Across primary of output transformer

Connection of generator output lead.....See Chart below

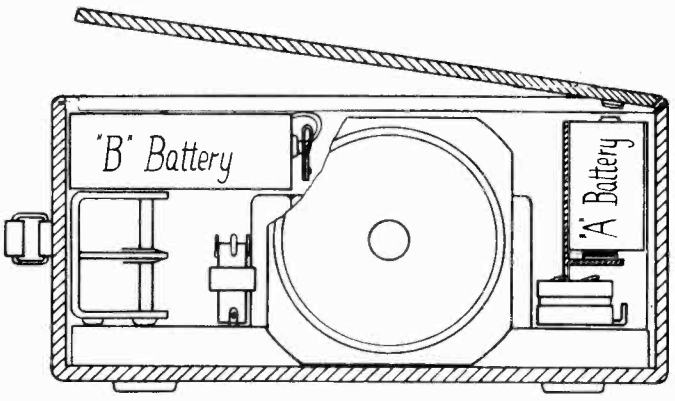
Generator modulation.....30%, 400 cycles

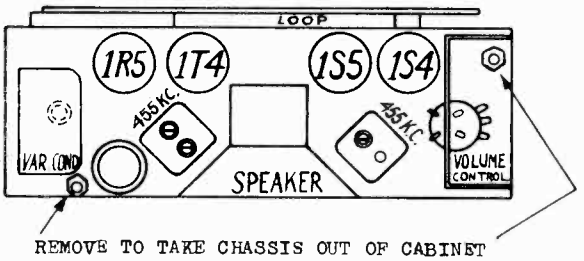
Position of Volume Control.....Fully on

POSITION OF VARIABLE	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS	TRIMMER FUNCTION
Closed	455 KC	1R5 Grid (var.cond.section)	T3,T4 T5	I.F.
1500 KC	1500 KC	*	T2,T1	Osc. R.F.

* Run a wire from the output terminal of the generator, having it come near the receiver. However, no electrical connection is made between the signal generator and the receiver.

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.





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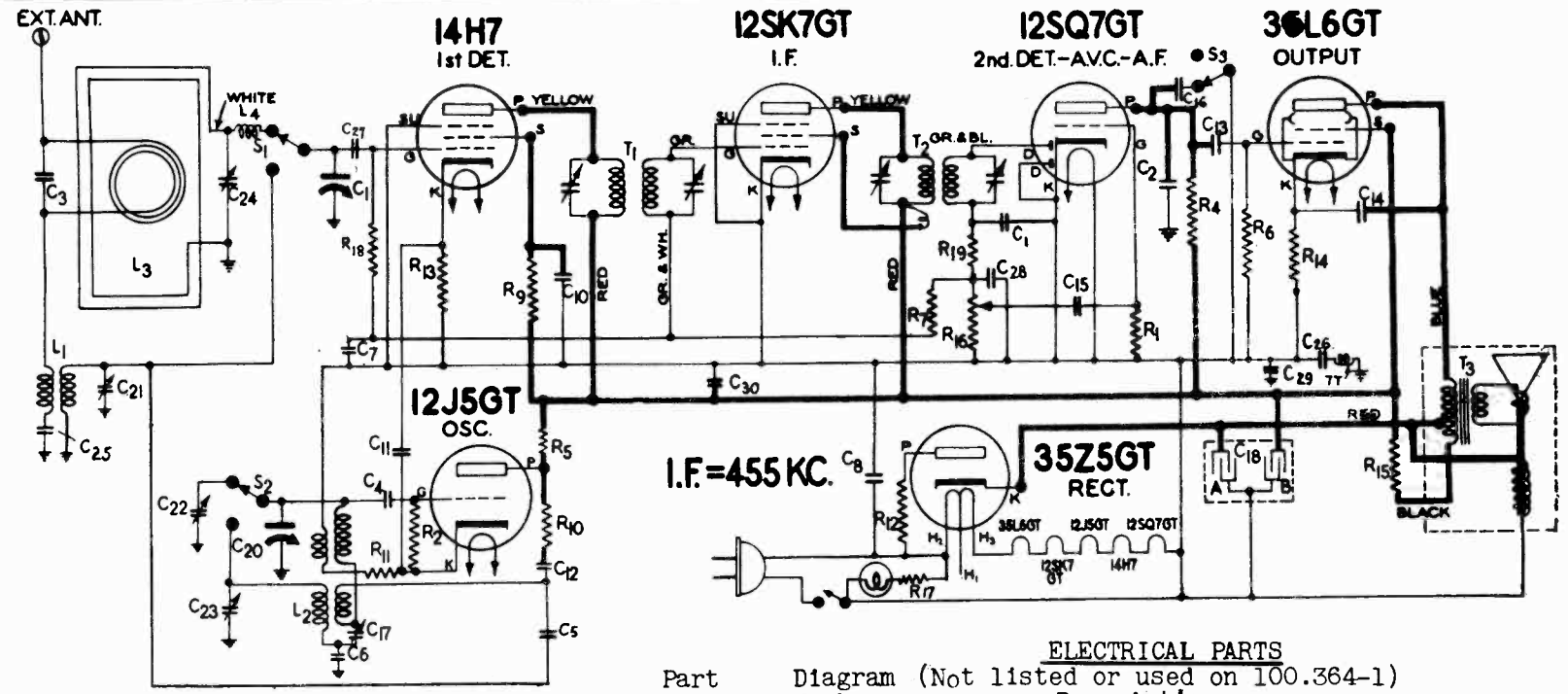

JANUARY 8, 1942

REFER TO 100.364-1
FOR PARTS NOT LISTED

SEE SEARS PAGE 13-57

ELECTRICAL PARTS
(Not listed or used on 100.364-1)

Part Number	Diagram Number	Description	
W116706	C26	Condenser- .2 Mfd. 600 Volts	.35
W83539	C27	Condenser-Mica, 260 Mmfd.	.20
W83783	C28	Condenser-Mica 110 Mmfd.	.20
W160430	C29	Condenser- .001 Mfd. 600 Volts...	.15
W116819	C30	Condenser- .05 Mfd. 600 Volts ...	.20
W110570	R18	Resistor-Carbon 2.2 Meg. 1/4 Watt	.12
W110578	R19	Resistor-Carbon, 68,000 Ohms ½ W.	.12

ELECTRICAL & MECHANICAL SPECIFICATIONS

The 100.381-1 chassis is the Underwriter's Listed version of the 100.364-1 chassis for which an R.L. has been issued. The electrical & mechanical specifications are the same as those for the 100.364-1 and can be obtained from the R.L. for that chassis. The 100.364-1 chassis uses the metal chassis pan as the B-return. The 100.381-1 chassis has a separate B-return but this return is by-passed to the chassis thru C26 & C29. On the 100.381-1 chassis the A.V.C. is shunt-fed to the grid of the 14H7 thru R18 instead of thru the loop as on the 100.364-1. This means that the loop now connects to the chassis instead of the A.V.C. line. L4 has been moved to the other side of the loop. 100.381-1 has seven parts not used on the 100.364-1; they are; C26, C27, C28, C29, C30, R18, & R19. REFER TO 57 RL 383 FOR 100.364-1 CHASSIS FOR SOCKET VOLTAGES AND ALIGNMENT DATA.

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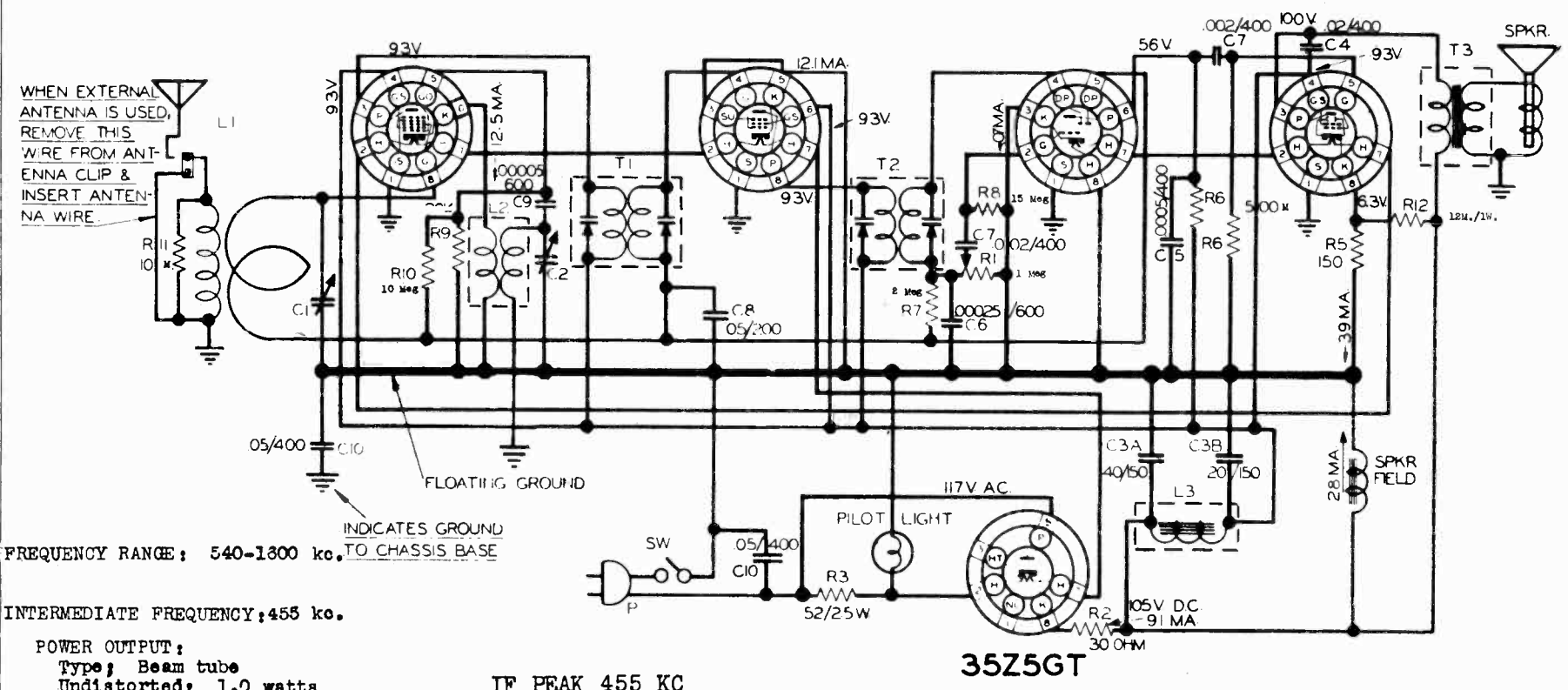


FREQUENCY RANGE: 540-1600 kc.

INTERMEDIATE FREQUENCY: 455 kc.

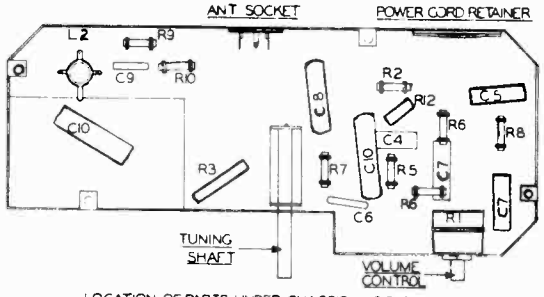
POWER OUTPUT:
Type; Beam tube
Undistorted; 1.0 watts
Maximum; 2.6 watts

LOUD SPEAKER:
Type; E.M.
Size; 4 inch

IF PEAK 455 KC

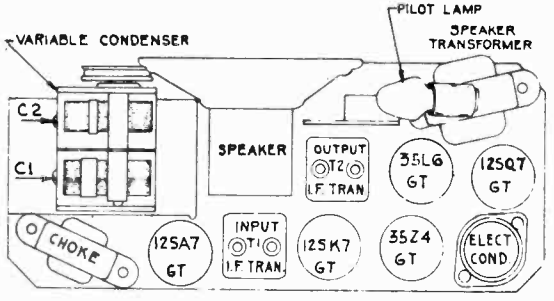
AUGUST 1941

132.806



LOCATION OF PARTS UNDER CHASSIS - 132.806

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO FLOATING GROUND AND ARE TAKEN WITH NO SIGNAL. A.C. LINE VOLTAGE AT 117 VOLTS WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.



LOCATION OF PARTS ON TOP OF CHASSIS

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MODELS 7024, 7026
Chassis 132.806

SEARS PAGE 13-61

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MODELS 7024, 7026
Chassis 132.806
Chassis 132.806-1

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.38 volts
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Connection of generator ground lead . . . . . See chart below
Generator Modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Dial Pointer with Variable fully closed . . . . . See note below

POSITION OF Variable	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (high)	GENERATOR CONNECTION (low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION	Uv. Input to Haz. Std. Loop to give ½ watt output.
Open	455 kc.	.1 mfd.	12SA7GT grid	Cond. frame	T2, T1	IF	-------
1400 kc.	1400 kc.	.00005 mfd.	Ant. clip	Chassis	C2, C1	Osc-Trans	1600 uv.
600 kc.	600 kc.	.00005 mfd.	Ant. clip	Chassis	Check point	----	1000 uv.

IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should point vertically upward. When properly set with the variable condenser closed the pointer will point just to the right of the "54" calibration mark.

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

SUBJECT: ADDITION OF SUFFIX NUMBER "-1" TO CHASSIS IDENTIFICATION NUMBER 132.806 AND PARTS LIST AND CIRCUIT CHANGES FOR ALL MODELS.

THIS SUPPLEMENT COVERS THE FOLLOWING CHANGES:

(1) Soon after start of Production on 132,806 the Oscillator coil Pt. No. N17233 was supplanted by Pt. No. N17320.
The new coil Pt. No. N17320 may be identified by the fact that lug No. 1 is blank whereas the start of the white winding of coil No. N17233 was connected to lug No. 1. (See fig. 1)
The hookup of the coil in the circuit remains unchanged and is as follows:
Lug No. 1 - To chassis
Lug No. 2 - To Var. condenser
Lug No. 3 - To Flt. Ground
Lug No. 4 - To cathode 12SA7GT

(2) The Pilot Lamp Shield and Snubber Assembly has been improved and simplified. This assembly which was identified by Pt. No. N17225 is superceded by Pt. No. N17308- Pilot Lamp Snubber and N17307- Pilot Lamp Shield.

OCTOBER 1941

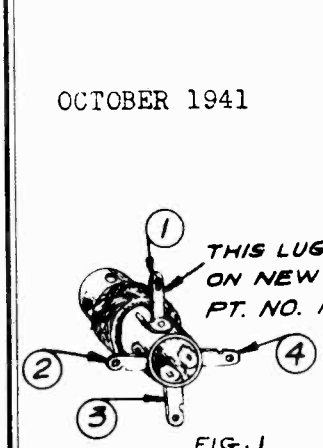
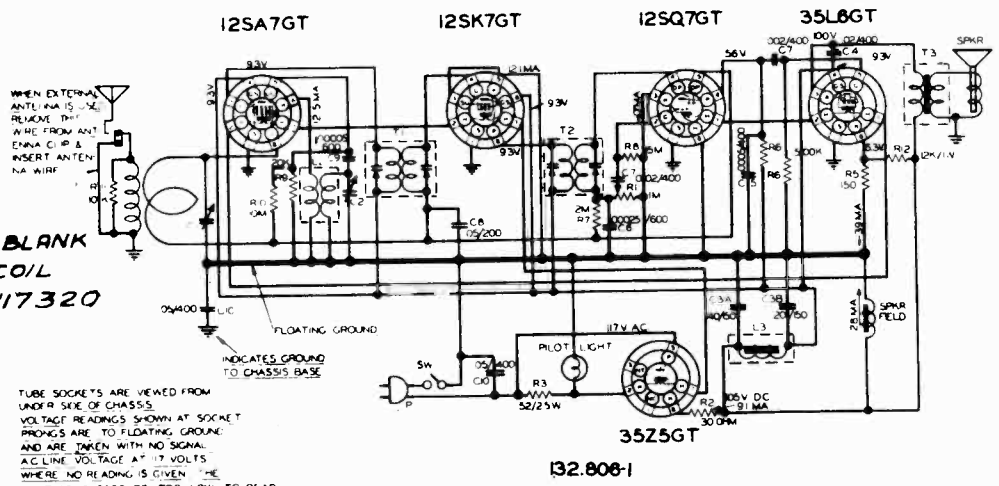


FIG. 1



132.806-1

POWER SUPPLY:
All models available

105-125 volts, AC-DC, 35 watts

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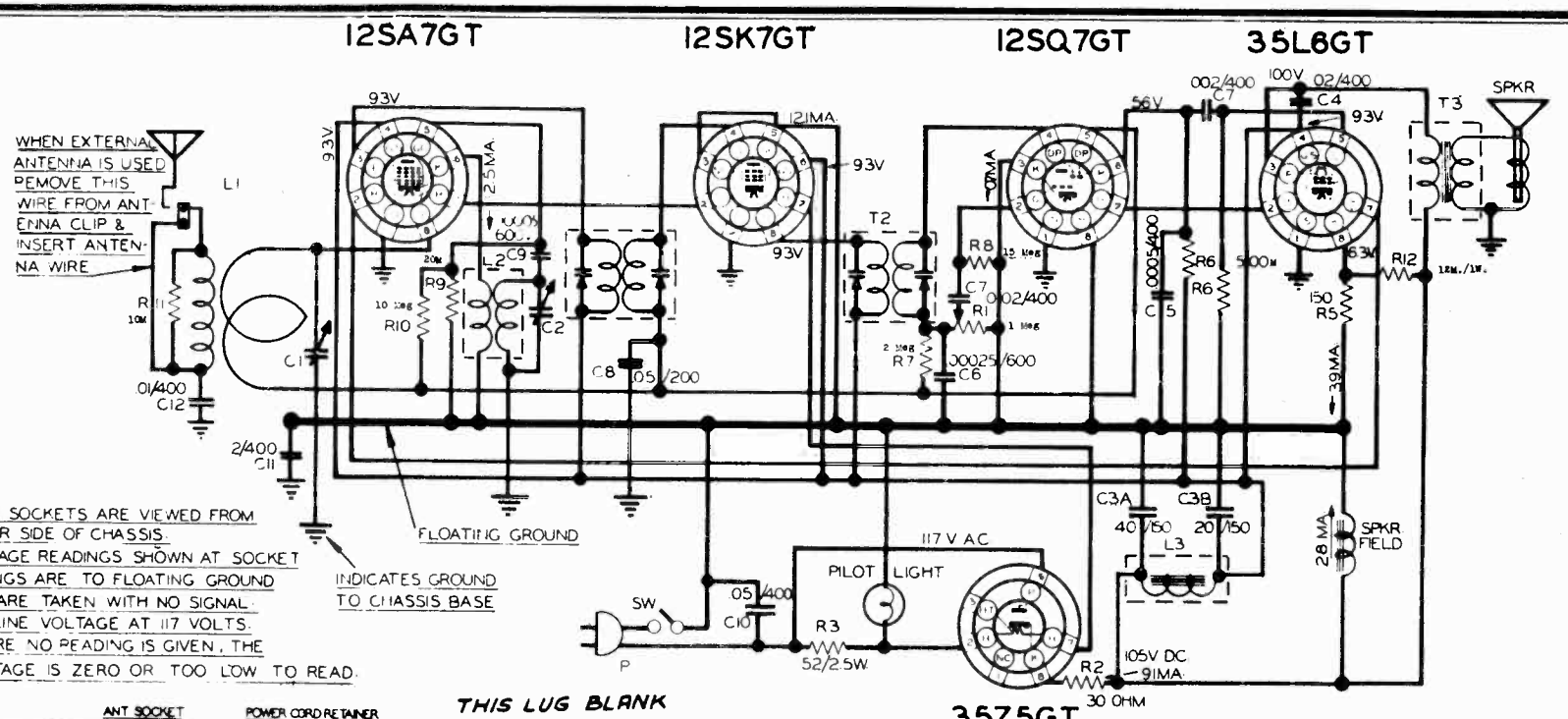

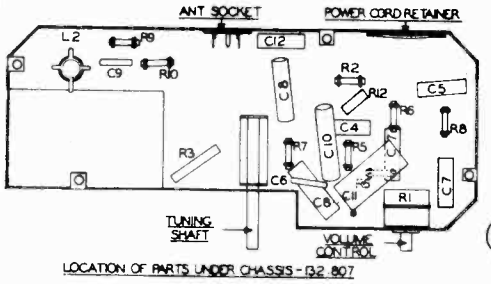

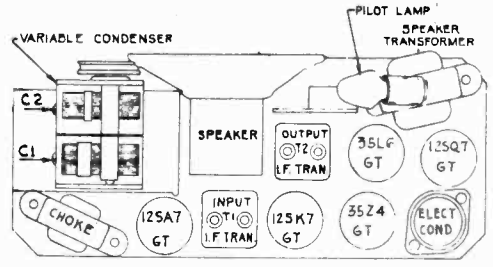

THIS LUG BLANK ON NEW COIL PT. NO. N17320

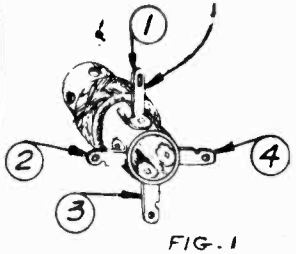

FIG. 1

CHASSIS 132.807-1
OCT.15,1941

AUGUST 1941

PRELIMINARY:

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts	0.38 volts
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Dial Pointer with Variable fully closed	See note below

POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (high)	GENERATOR CONNECTION (low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION	Uv. Input to Haz. Std. Loop to give ½ Watt Output.
Open	455 kc.	.1 mfd.	12SA7GT grid	Minus "B"	T2, T1	IF	- - - - -
1400 kc.	1400 kc.	.00005 mfd.	Ant. clip	Chassis	C2, C1	Osc-Trans	1500 uv.
600 kc.	600 kc.	.00005 mfd.	Ant. clip	Chassis	Check point	---	1000 uv.

IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should point vertically upward. When properly set with the variable condenser closed the pointer will point just to the right of the "54" calibration mark.

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

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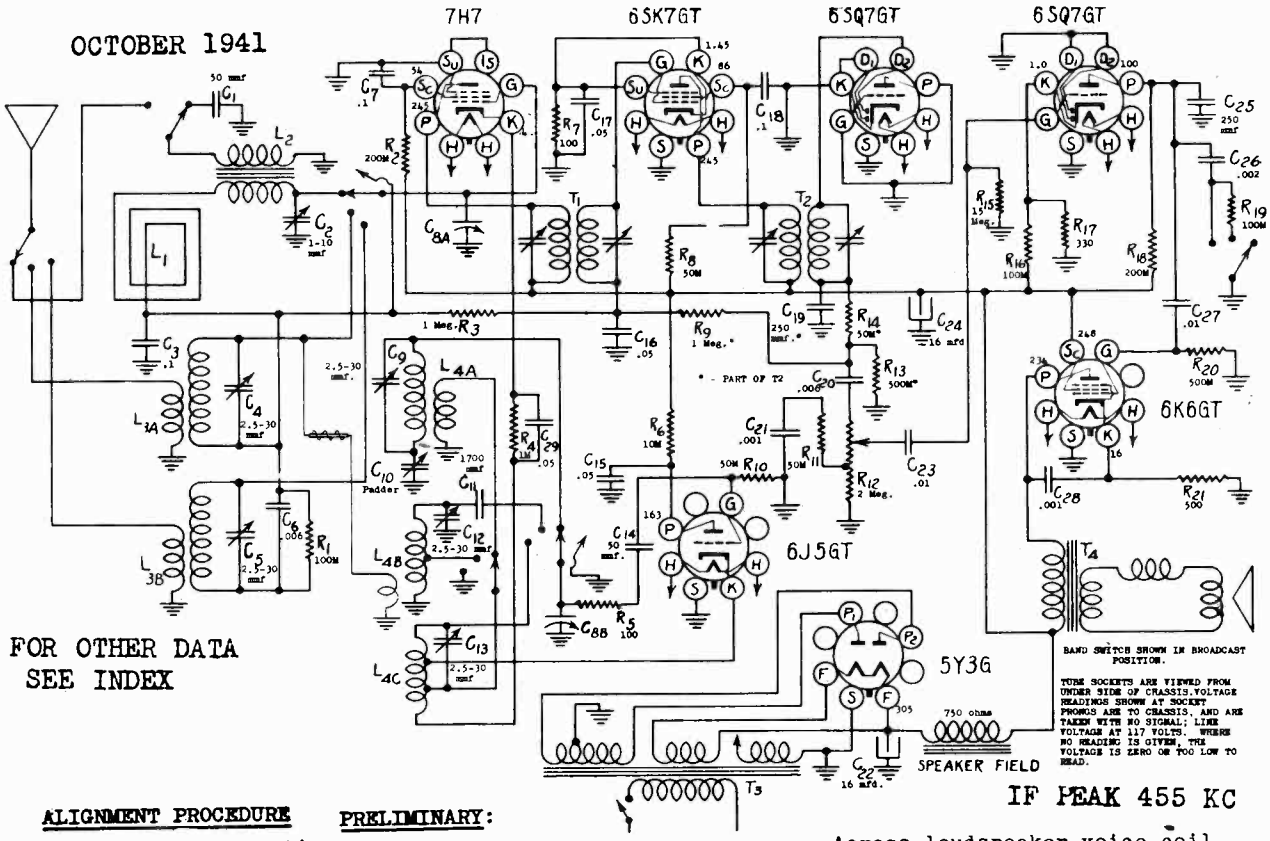
MODEL 7037
Chassis 141.415

SEARS, ROEBUCK & CO.

OCTOBER 1941



ALIGNMENT PROCEDURE **PRELIMINARY:**

Output meter connection . . . . . .Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.25 volts
Generator ground lead connection . . . . . .Receiver chassis
Dummy antenna value to be in series with generator output . . . . . .See chart below
Connection of generator output lead . . . . . .See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . .HI
Position of Dial Pointer with variable fully closed . . . . . .On first mark to left of 550 kc calibration mark.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	ANT. COUPLED APPROXIMATE MICROVOLTS
"BC"	Open	455 kc	.1 mfd.	7H7 Grid	T2, T1	IF	--
"BC"	Fully open	1720 kc	.00005 mfd.	Ant. Term.	C9	Oscillator	--
"BC"	1400 kc	1400 kc	.00005 mfd.	Ant. Term.	C2*	Antenna	75***
"BC"	600 kc(rock)	600 kc	.00005 mfd.	Ant. Term.	C10	Padder	40***
"INT"	Open	6.2 mc	400 ohms	Ant. Term.	C12	Oscillator	--
"INT"	5.0 mc	5.0 mc	400 ohms	Ant. Term.	C4	Antenna	40
"SW"	Open	18.2 mc	400 ohms	Ant. Term.	C13**	Oscillator	--
"SW"	17 mc(rock)	17 mc	400 ohms	Ant. Term.	C5	Antenna	40

IMPORTANT ALIGNMENT NOTES

* C2 should be adjusted after the receiver is in the cabinet, through a hole in the receiver back, with the loop in position.

** Two peaks can be had; the correct one is with the trimmer screw further in. This band is aligned so that the oscillator is at a lower frequency than the signal. The Broadcast and Intermediate bands are aligned with the oscillator at a higher frequency than the signal, in the normal manner.

*** **120 microvolts per meter using standard Hazeltine alignment loop 24 inches from receiver loop.**

Where indicated by the word, "rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

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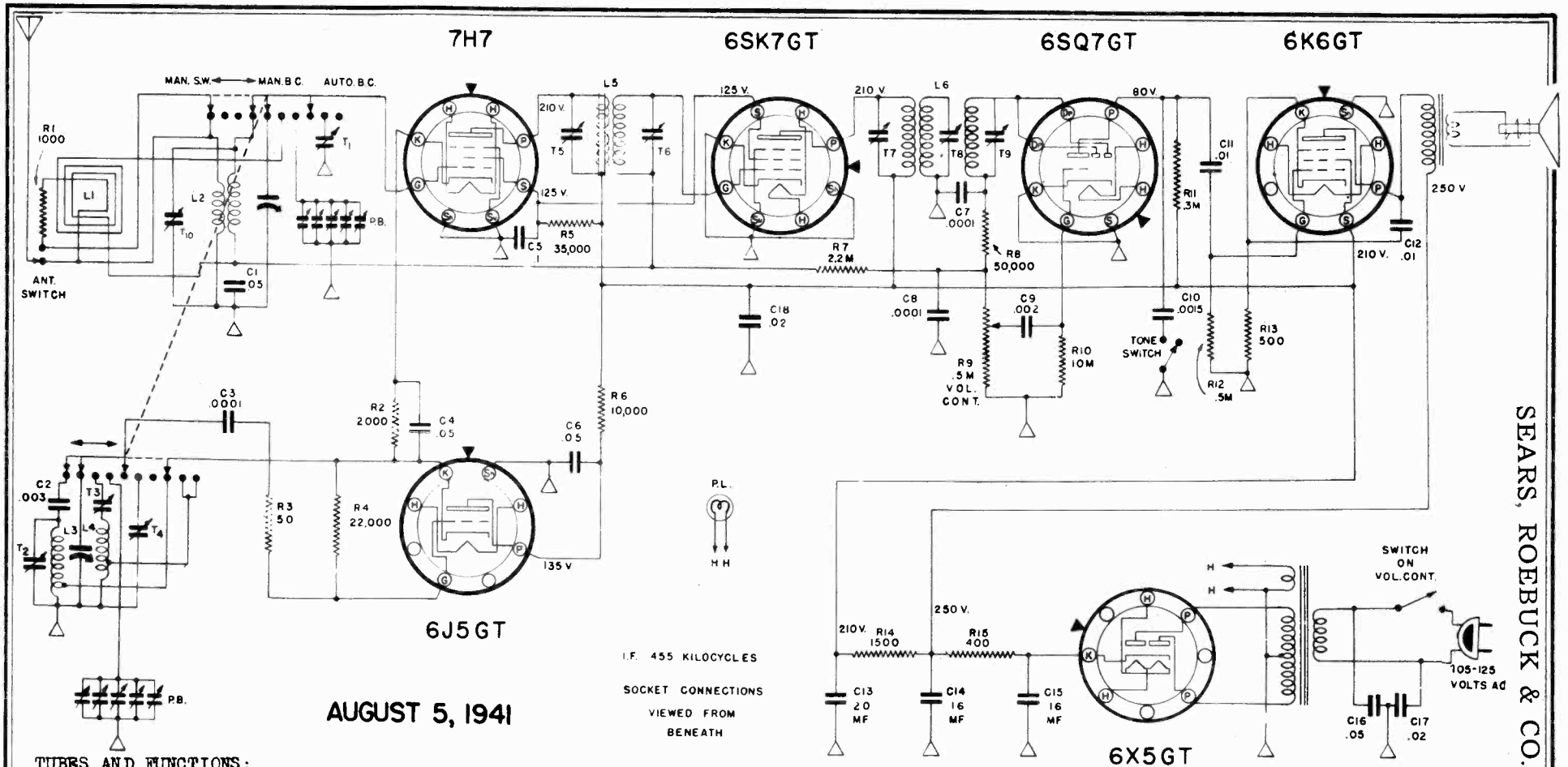
SEARS, ROEBUCK & CO.

MODEL 7036
Chassis 110.421



AUGUST 5, 1941

I.F. 455 KILOCYCLES

SOCKET CONNECTIONS VIEWED FROM BENEATH

TUBES AND FUNCTIONS:

7H7.....Translator	6J5GT.....Oscillator
6SK7GT.....IF	6K6GT.....Output
6SQ7GT.....A.V.C..detector,1st Audio	6X5GT.....Rectifier

POWER SUPPLY:
This unit uses 105-125 volts A.C. 50 watts. The frequency (cycles) is specified on the bottom ofthe cabinet.

POWER OUTPUT:
Type.....Pentode
Undistorted..... 2 Watts
Maximum..... 3.3Watts

OPERATING CONTROLS:
Left knob....."On-Off" Volume

Center Knob.....Tuning
Right Knob....."P.B.""A"B".

LOUD SPEAKER
Type.....Dynamic
Size..... 5 Inch
Field.....P.M.

FREQUENCY RANGES:

Broadcast.....	535 - 1610 KC
Short Wave.....	5.7 - 18.2 MC

INTERMEDIATE FREQUENCY.....455 KC

CONTROL OPERATION:
Turning right: power on; volume increases
Tuning ratio 12:1
The letter appearing in the vertical position indicates the position of the switch. "P.B." push-buttons, "A"-Broadcast,"B"-Short Wave.

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MODEL 7036

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

OUTPUT METER CONNECTION.....Across voice coil.
Output meter reading to indicate 1/2 watt output 1.25 volts for 3.1 ohm voice coil.
Connection of generator ground.....Receiver chassis.
Generator modulation.....Approximately 30% @ 400 cycles.
Position of volume control.....Fully clockwise.
Position of tone control switch (at rear of chassis).....High position.

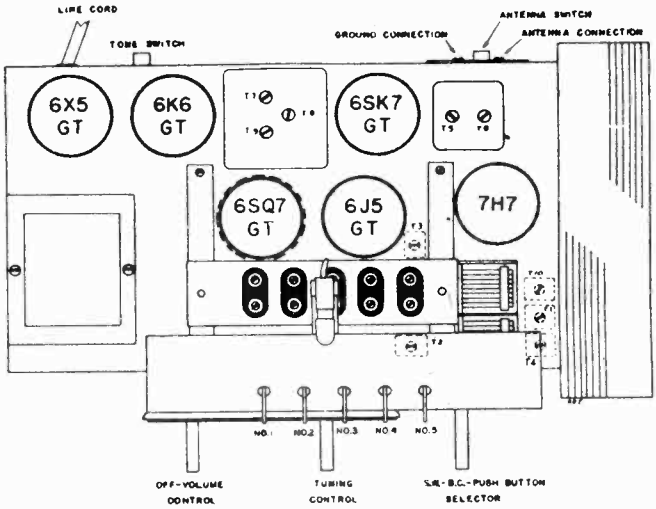
SELECTOR POSITION	POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	DUMMY ANTENNA	TRIMMERS ADJUSTED IN ORDER SHOWN.	TRIMMER FUNCTION.
"A"	540 KC	455 KC	7H7 Grid	.1 mfd	T5,T6,T8,T7,T9	I.F.
"A"	1400 KC	1400 KC	*Standard		T4, T1	Osc.-antenna
"A"	600 KC	600 KC	Radiating		T3,rock var.	Osc.-padder
"A"	1400 KC	1400 KC	Loop		Readjust T4	Osc.
"B"	18 mc	18mc	Antenna post	400 ohms	T2***	Osc.
"B"	16 mc	16 mc	**ant.post	400 ohms	T10	Ant.

IMPORTANT ALIGNMENT NOTES

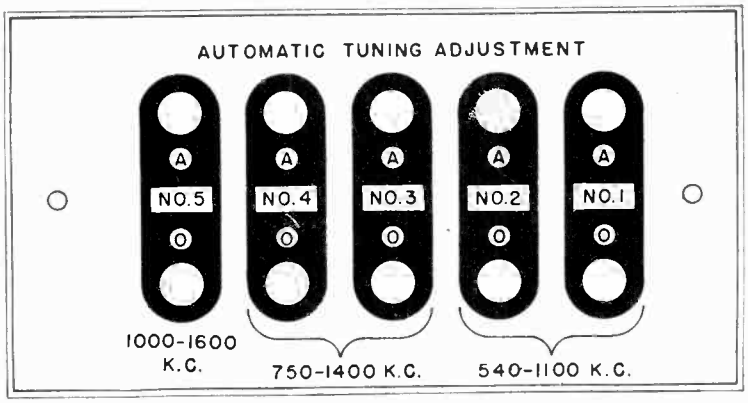
*Approx. 1.25 mv. per meter when using a standard Hazeltine loop at 24 inches from set loop for 1/2 watt output.
**60 microvolts approximately for 1/2 watt.
***If two peaks can be had, the correct one is with trimmer screws further out; the other peak is the image.

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

TUBE LOCATION



PUSH BUTTON TUNING



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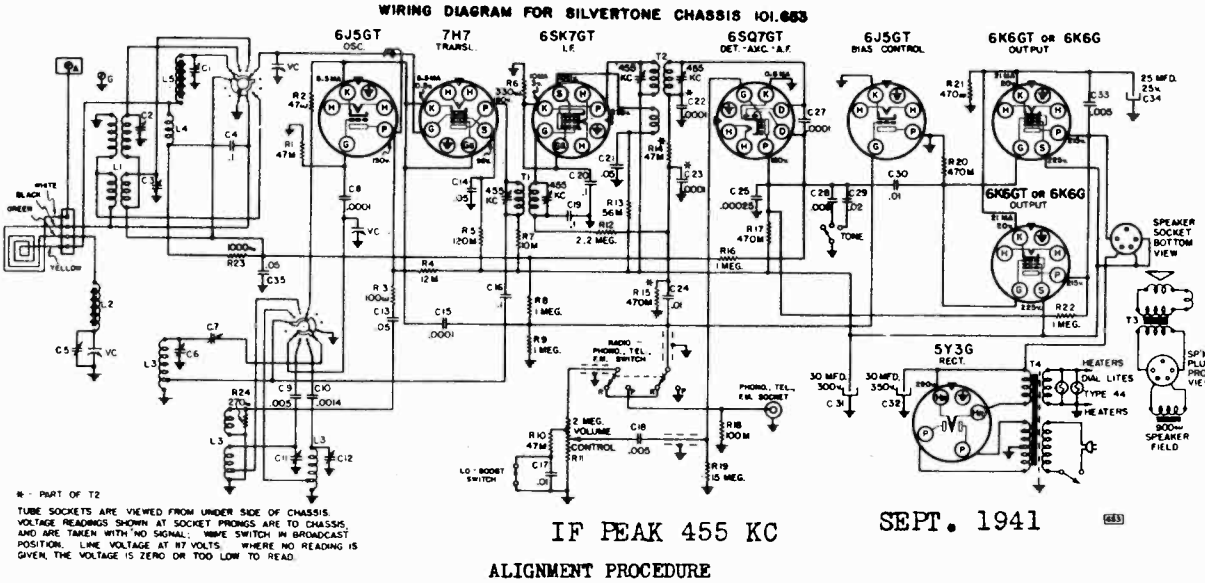
MODEL 7038
Chassis 101.653

SEARS, ROEBUCK & CO.



IF PEAK 455 KC SEPT. 1941

ALIGNMENT PROCEDURE

PRELIMINARY

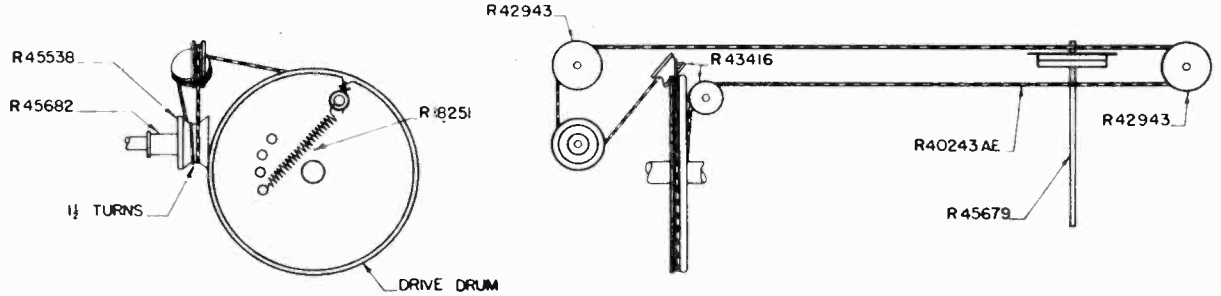
Output meter connections	Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts	1.3 volts
Approximate microvolts input to indicate 500 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully on
Position of Tone Control	HI
Position of right edge of pointer with condenser fully opened	On line scribed on top of pointer guide rail

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
A	Closed	455 kc	.1 mfd.	7H7 Transl.Grid	T2, T1	IF	—
A	Open	1750 kc	.00005 mfd.	Ant. Terminal	C6	Oscillator	—
A	1410	1410 kc	.00005 mfd.	Ant. Terminal	C5, C1	Ant. Transla.	25
A	600 (rock)	600 kc	.00005 mfd.	Ant. Terminal	C7	Padder	100
B	Open	5.5 mc	400 ohms	Ant. Terminal	C12	Oscillator	—
B	4 (rock)	4 mc	400 ohms	Ant. Terminal	C2	Transla.	35
C	Open	18.3 mc	400 ohms	Ant. Terminal	C11	Oscillator	—
C	15 (rock)	15 mc	400 ohms	Ant. Terminal	C3	Transla.	25

IMPORTANT ALIGNMENT NOTES

The alignment must be done in the order given.

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



FOR ADDITIONAL DATA SEE INDEX.

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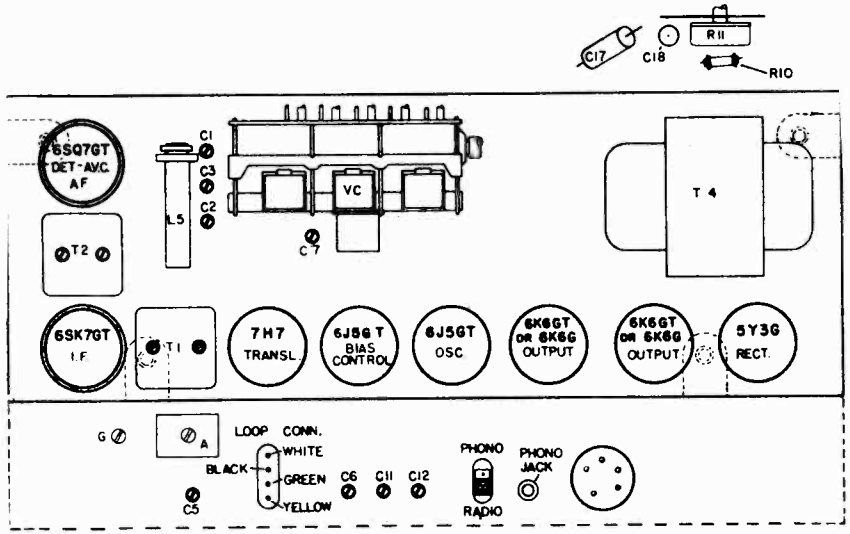
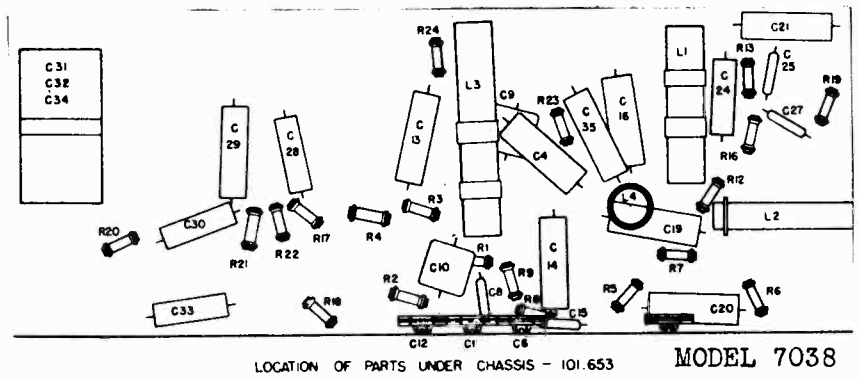
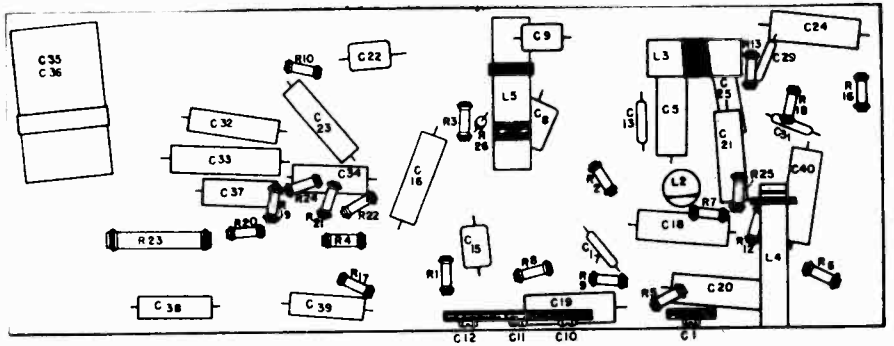


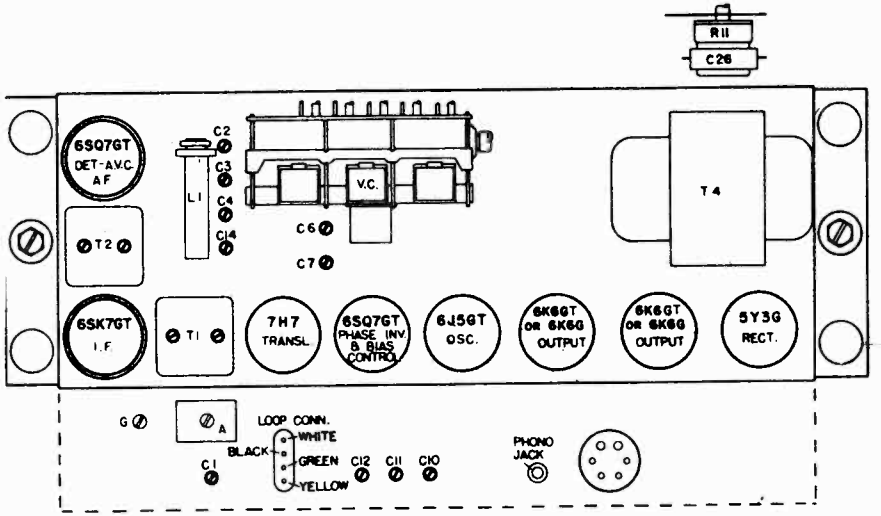
LOCATIONS OF PARTS ON TOP OF CHASSIS 101.653 MODEL 7038



LOCATION OF PARTS UNDER CHASSIS - 101.653 MODEL 7038



LOCATION OF PARTS UNDER CHASSIS - 101.657 MODEL 7048



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.657

FREQUENCY RANGES:

Band "A"	540-1700 kc
Band "B"	1.8-5 mc
Band "C"	5.5-18 mc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Ant-Transl. Trimmer	Padder
1750 kc	1410 kc	600 kc
5.5 mc	4 mc	Fixed
18.3 mc	15 mc	Fixed

POWER OUTPUT:

Type	(Parallel) Pentode
Undistorted	2.5 watts
Maximum	4 watts

LOUDSPEAKER:

Type	Dynamic
Size	9"x6" elliptical
Field coil resistance	900 ohms
Approximate field coil voltage drop	65

ALIGNMENT FREQUENCIES: MODEL 7048

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1720 kc	1410 kc	600 kc
18.3 mc	15 mc	Fixed
9.55 mc	9.55 mc	Fixed
11.8 mc	11.8 mc	Fixed

POWER OUTPUT:

Type	Push-pull pentodes
Undistorted	3.5 watts
Maximum	7 watts

FREQUENCY RANGES:

Band "A"	540-1700 kc
Band "B"	6-18 mc
Band "C"	9.4-9.84 mc
Band "D"	11-12 mc

LOUDSPEAKER:

Type	Dynamic
Size	10 inch
Field coil resistance	1000 ohms
Approx. field coil voltage drop	90 V.

FOR ADDITIONAL DATA SEE INDEX.

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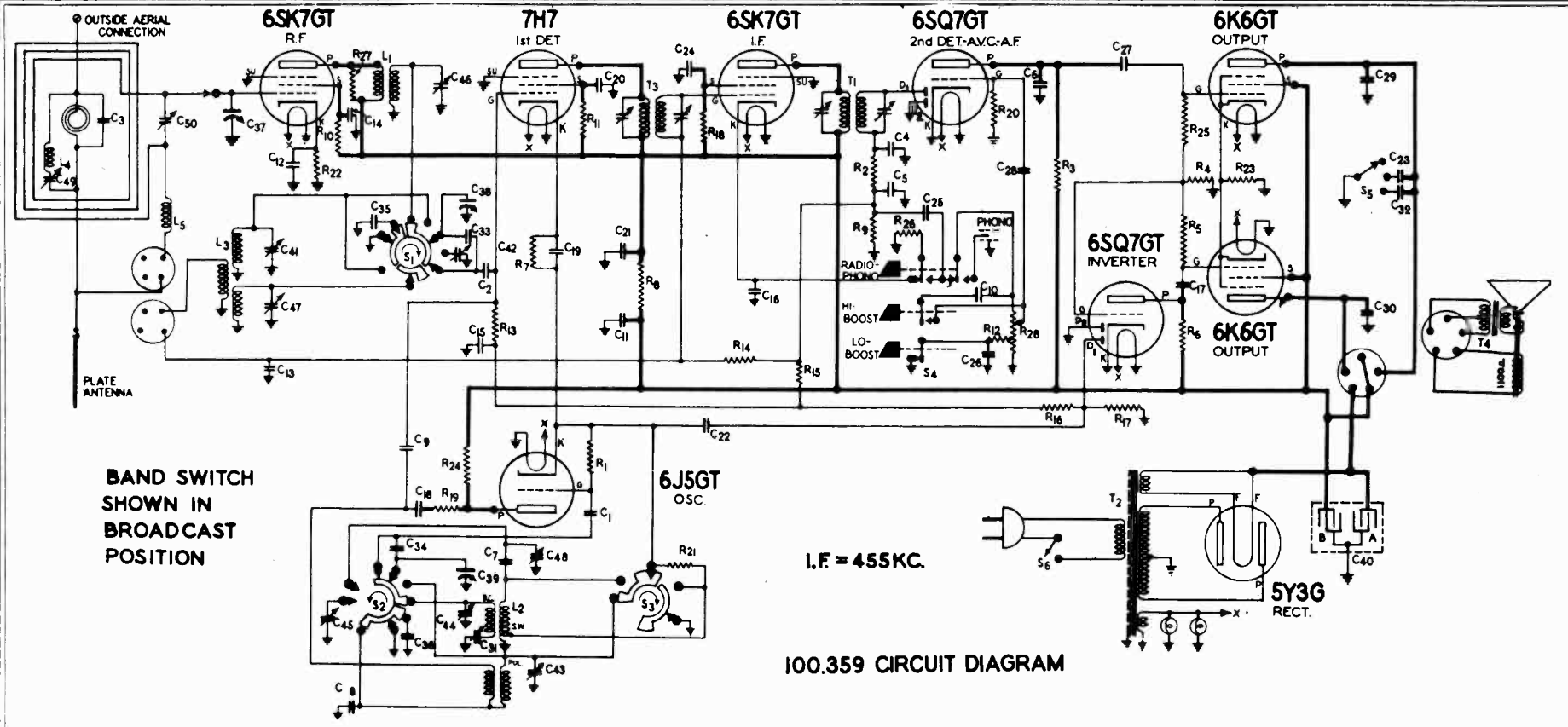


100.359 CIRCUIT DIAGRAM

OCT. 15, 1941

PART NUMBER	DIAGRAM NUMBER	DESCRIPTION
W-500803	L1	Coil, B.C. Det.
W500804	L2	Coil, oscillator (B.C.-INT.-S.W.)
W-500805	L3	Coil, short wave antenna
W-500809	L4	Coil, wave trap
W-500947	L5	Coil, loading
W-85061	C1	Condenser, mica. 51 mmfd.
W-83539	C2	Condenser, mica. 260 mmfd.
W-83783	C3 to C6	Condenser, mica. 110 mmfd.
W-88587	C7	Condenser, mica. .0042 mfd.
W-88681	C8	Condenser, mica. .00255 mfd.
W-110510	C9	Condenser, wire 3 mmfd.
W-114969	C10	Condenser, mica. 15 mmfd.
W-116625	C11	Condenser, .1 mfd. 600 volt
W-116819	C12 to C17	Condenser, .05 mfd. 600 volt
W-119193	C18 to C23	Condenser, .01 mfd. 600 volt
W119414	C24 to C27	Condenser, .02 mfd. 600 volt
W119817	C28	Condenser, .004 mfd. 600 volt
W119875	C29-C30	Condenser, .002 mfd. 600 volt
W-119934	C31	Condenser, padder
W161000	C32	Condenser, .03 mfd. 600 volt
W-500041	C33-C34	Condenser, Silver mica, 160 mmfd.
W-500213	C35-C36	Condenser, Silver mica, 350 mmfd.
W-500780	C37-C38-C39	Condenser, tuning with push button tuner
W-500807	C40	Condenser, Electrolytic (A=20 mfd. - 400 volt) (B=15 mfd. - 400 volt)
W-500836	C41 to C45	Condenser, trimmer (5 section)
W-500837	C46 to C48	Condenser, trimmer (3 section)
W-500838	C49-C50	Condenser, trimmer (2 section)
W-500858M		Cone & Voice coil for W-500650M Spkr
W-500808		Loop Antenna & cabinet back complete
W-160733		Plate antenna
W-110552	R1-R2	Resistor, carbon, 47,000 ohm ½ watt
W-110553	R3 to R6	Resistor, carbon, 220,000 ohm ½ watt
W-110556	R7	Resistor, carbon, 330 ohm ½ watt.
W-110557	R8	Resistor, carbon, 4700 ohm ½ watt
W-110559	R9	Resistor, carbon, 470,000 ohm ½ watt
W-110564	R10-R11	Resistor, carbon, 100,000 ohm ½ watt
W-110565	R12	Resistor, carbon, 22,000 ohm ½ watt
W-110570	R13 to R16	Resistor, carbon, 2.2 meg. ½ watt
W-110559	R17	Resistor, carbon, 470,000 ohm ½ watt
W-110578	R18	Resistor, carbon, 68,000 ohm ½ watt
W-110590	R19	Resistor, carbon, 180 ohm ½ watt.
W-112975	R20	Resistor, carbon, 10 meg. ½ watt.
W-112980	R21	Resistor, insulated, 1000 ohm ½ watt
W-116078	R22	Resistor, 560 ohm ½ watt.
W-117075	R23	Resistor, 300 ohm, 1 watt wire wound

PART NUMBER	DIAGRAM NUMBER	DESCRIPTION
W-118805	R24	Resistor, carbon, 10,000 ohm 1 watt
W-118825	R25	Resistor, carbon, 180,000 ohm ½ watt
W-118827	R26	Resistor, carbon, 270 ohm ½ watt
W-110557	R27	Resistor, carbon, 4700 ohm ½ watt
W-116558	R28	Volume control, 1 meg.
W-500650M		Speaker, (9" oval)
W-500793	S1-S2-S3	Switch, band
W-500830	S4	Switch, Phono-Tone
W-160557	S5-S6	Tone control, with on-off switch
W-119024	T1	Transformer, 2nd I.F.
W-160780	T2	(Transformer, power (25 cycles)
W-500116		(Transformer, power (60 cycles)
W-500801	T3	Transformer, 1st. I.F.
W-500857M	T4	Transformer, output for W-500650M Spkr

SEARS ROEBUCK & CO.

MODEL 7039
Chassis 100.359

MODEL 7039

SEARS, ROEBUCK & CO.

1. VOLTAGES MEASURED WITH NO SIGNAL INPUT
2. VOLUME CONTROL ON FULL.
3. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE INDICATED.

TUBE	FUNCTION	FIL.	K	G	SU	S	P	D_1	D_2
6SK7GT	R. F. Amp.	6.3 A.C.	2.2	NOTE A	0	80	225	-	-
7H7	1st. Det.	6.3 A.C.	1.5	NOTE A	0	95	210	-	-
6J5GT	Osc.	6.3 A.C.	0	-5	-	-	140	-	-
6SK7GT	I. F. Amp.	6.3 A.C.	2.5	NOTE A	0	95	225	-	-
6SQ7GT	2nd. Det. -A. V. C. -A. F.	6.3 A.C.	0	0	-	-	90	0	0
6SQ7GT	Phase Inverter	6.3 A.C.	0	0	-	-	70	NOTE A	0 *
6K6GT*	Output	6.3 A.C.	17	0	-	225	219	-	-
5Y3G	Rectifier	5.0 A.C.	Voltage on each plate 350 volts A.C. to center tap.						

* Readings identical on both tubes in push pull stage.

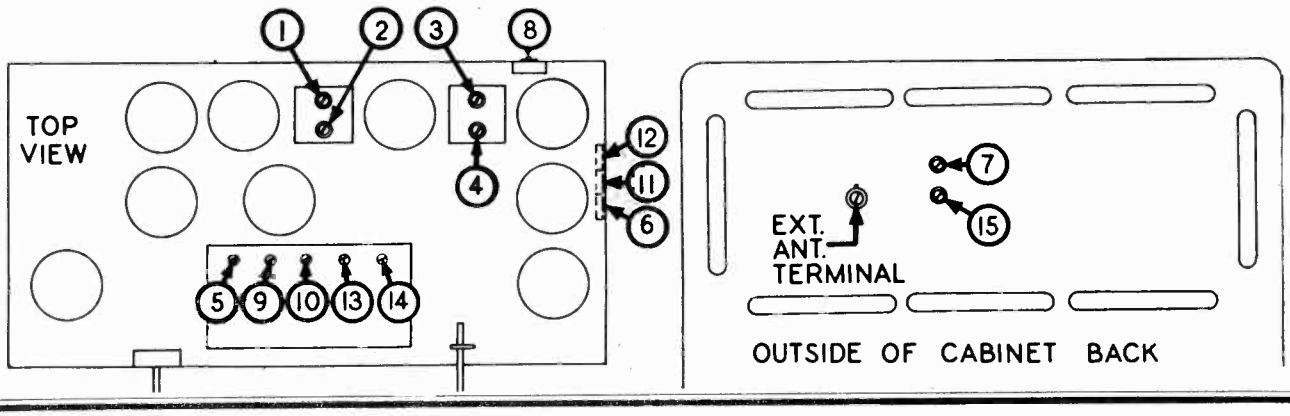
NOTE A: Voltage on the grids of the 6SK7GT R.F., 7H7 1st. Det. and 6SK7GT I.F. is variable and cannot be measured by an ordinary voltmeter.

USE A VOLTMETER OF 1000 OHMS PER VOLT.

DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION SIGNAL GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. CONDENSER	STATOR ON MIDDLE SECTION OF GANG.	455 KC	"A" POSITION	600 KC	1 - 2	2ND I. F.	ADJUST FOR MAXIMUM OUTPUT. THEN REPEAT ADJUSTMENT.
					3 - 4	1ST I. F.	
STANDARD ALIGNING LOOP	⌇ STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	1400 KC	"A" POSITION	1400 KC	5	BROADCAST OSCILLATOR (SHUNT)	ADJUST FOR MAXIMUM OUTPUT.
STANDARD ALIGNING LOOP	⌇ STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	1400 KC	"A" POSITION	1400 KC	6	BROADCAST DETECTOR	ADJUST FOR MAXIMUM OUTPUT.
					7★	BROADCAST ANTENNA	
STANDARD ALIGNING LOOP	⌇ STANDARD LOOP PLACED 24" FROM RECEIVER LOOP	600 KC	"A" POSITION	600 KC	8	BROADCAST OSCILLATOR (SERIES)	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RE-TUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	5 MC	"B" POSITION	5 MC	9	POLICE BAND OSCILLATOR	ADJUST FOR MAXIMUM OUTPUT. CHECK TO SEE IF PROPER PEAK WAS OBTAINED BY TUNING IN IMAGE AT APPROX. 4.1 MC. IF IMAGE DOES NOT APPEAR, REALIGN AT 5 MC WITH TRIMMER SCREW FARTHER OUT.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	5 MC	"B" POSITION	5 MC	10	POLICE BAND ANTENNA	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RE-TUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	16 MC	"C" POSITION	16 MC	11	SHORT WAVE 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.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	16 MC	"C" POSITION	16 MC	12	SHORT WAVE ANTENNA	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RE-TUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	9.5 MC	"D" POSITION	9.5 MC	13	BAND SPREAD OSCILLATOR	ADJUST FOR MAXIMUM OUTPUT.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	9.5 MC	"D" POSITION	9.5 MC	14	BAND SPREAD ANTENNA	ADJUST FOR MAXIMUM OUTPUT.
50 MMFD MICA CONDENSER	ANTENNA TERMINAL	455 KC	"A" POSITION	600 KC	15★	WAVE TRAP	ADJUST FOR MINIMUM OUTPUT USING A STRONG GENERATOR SIGNAL.

★ After alignment is completed, place chassis and cabinet back in their final position and repeat adjustments #7 and 15.

⌇ - A 50 mmfd. mica condenser connected to the Antenna Terminal may be used in lace of the standard loop indicated in steps 5, 6, 7, 8.



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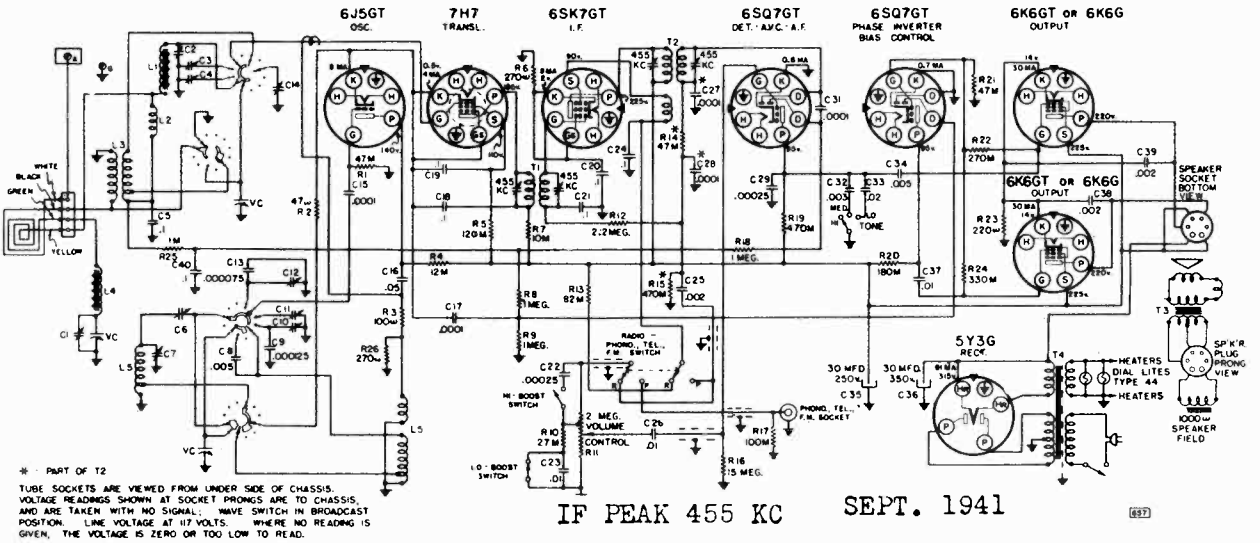
MODEL 7048
Chassis 101.657



IF PEAK 455 KC SEPT. 1941

Output meter connection	Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts	1.5 volts
Approximate microvolts input for 500 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of right edge of Dial Pointer with receiver tuned to 600 kc	On line scribed on top of pointer guide rail

PRELIMINARY

ALIGNMENT PROCEDURE

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2, T1	IF	--
"A"	Fully Open	1720 kc	.00005 mfd.	Ant. Term.	C7	Oscillator	--
"A"	1410 kc	1410 kc	.00005 mfd.	Ant. Term.	C1, C2	Loop,Transl	25
"A"	600 kc (rock)	600 kc	.00005 mfd.	Ant. Term.	C6	Padder	70
"B"	Fully Open	18.3 mc	400 ohms	Ant. Term.	C11*	Oscillator	--
"B"	15 mc (rock)	15 mc	400 ohms	Ant. Term.	C4	Translator	12
"C"	9.6 mc	9.6 mc	400 ohms	Ant. Term.	C10*	Oscillator	--
"C"	9.6 mc (rock)	9.6 mc	400 ohms	Ant. Term.	C3	Translator	15
"D"	11.8 mc	11.8 mc	400 ohms	Ant. Term.	C12*	Oscillator	--
"D"	11.8 mc (rock)	11.8 mc	400 ohms	Ant. Term.	C14	Translator	15

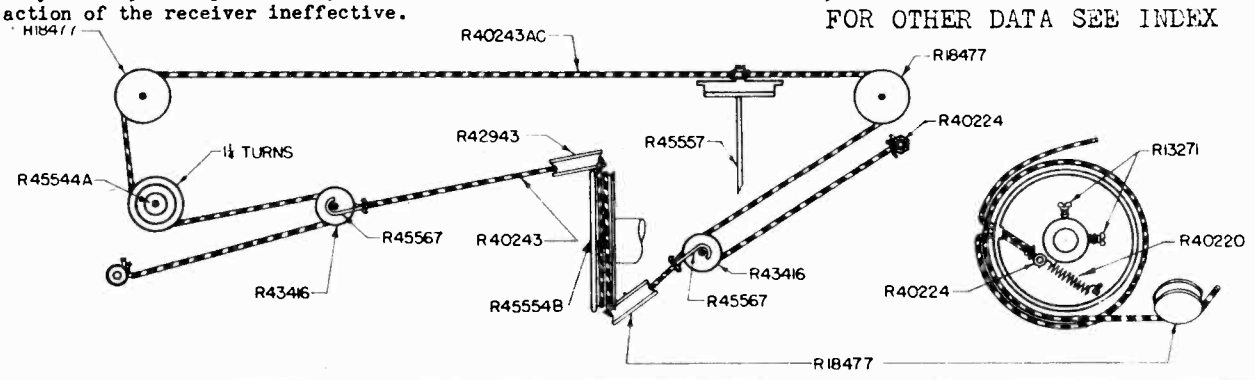
IMPORTANT ALIGNMENT NOTES

* If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

FOR OTHER DATA SEE INDEX



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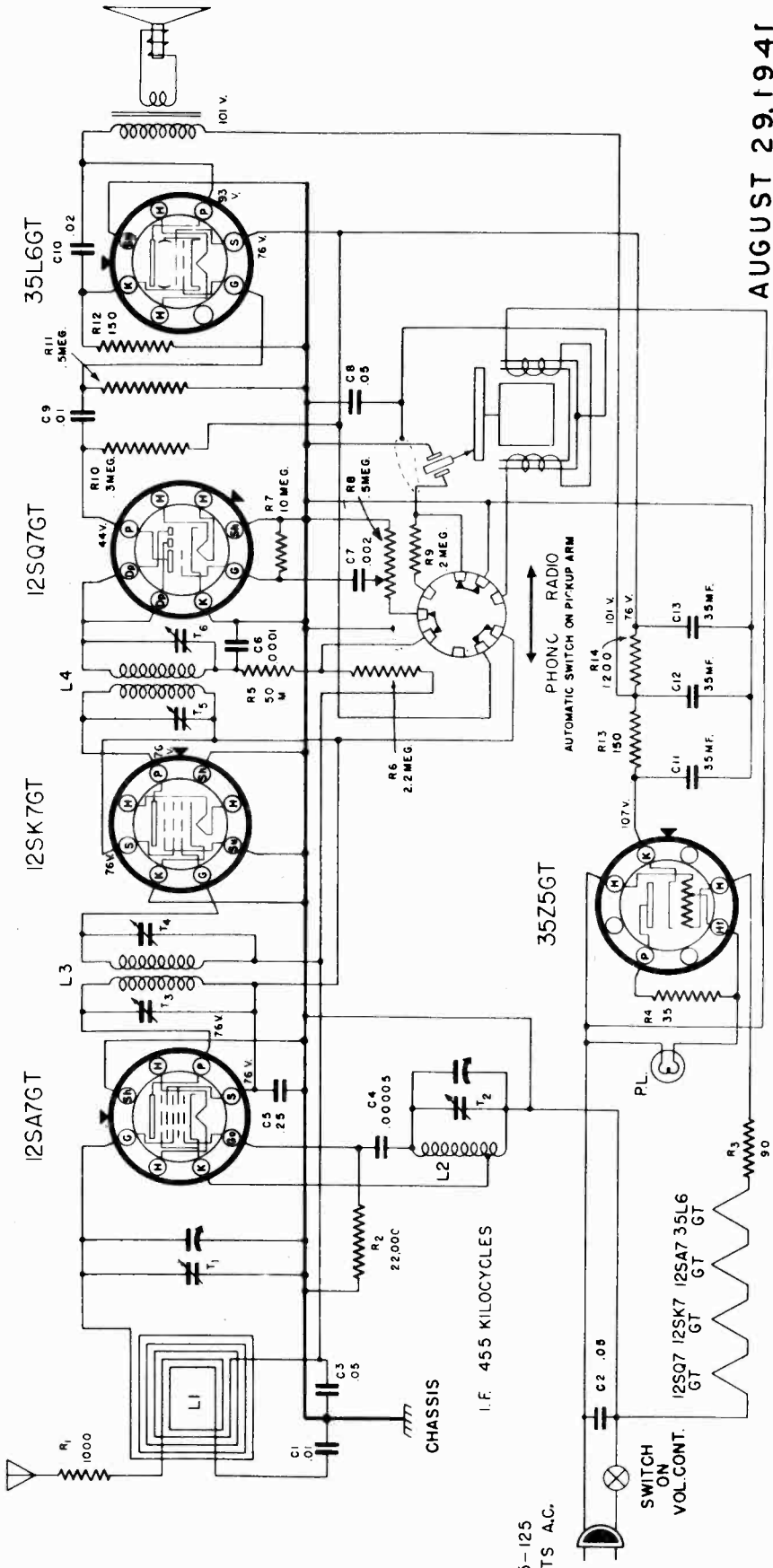
MODEL 7054
Chassis 110.426
MODEL 7055, Ch. 110.427

SEARS, ROEBUCK & CO.

AUGUST 29, 1941



ALIGNMENT - MODELS 7054 and 7055

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
540 KC	455 KC	Stator R.F. Section	T3,T4	I.F.
			T5,T6	
1500 KC	1500 KC	Standard Radiating Loop	T2,T1	Osc.,R.F.

It is advisable to repeat the entire alignment procedure in the original order to insure greater accuracy.

Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly.

Approx. 250 microvolts per meter input using standard Hazeltine alignment loop 24" from set loop for ½ watt output.

ALIGNMENT PROCEDURE

Output meter connection.....
Across Voice Coil.
Meter reading for 1/2 watt output.....1.25 volts.
Connection of generator ground.
.....To chassis.
Connection of generator ground.
.....Model 7054 (110.426)B-Bus
Generator modulation.....App.
30% @400/cycles.
Position of volume control.....
Fully clockwise.

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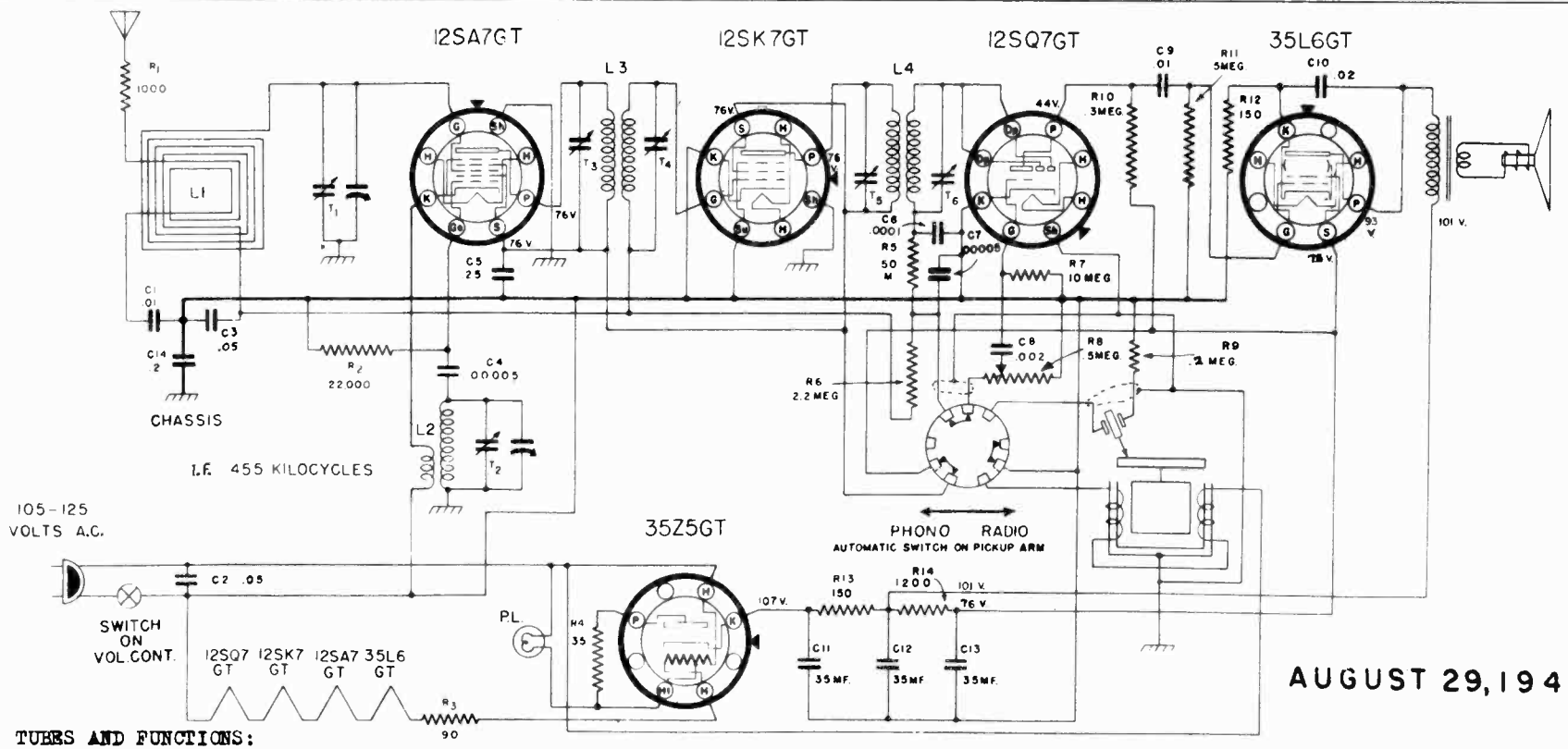

AUGUST 29, 1941

TUBES AND FUNCTIONS:

12SA7GT.....Transl. Oscill.
12SK7GT.....IF
35Z5GT.....Rectifier
12SQ7GT.....A.V.C., detector, 1st. audio
35L6GT.....Output

POWER SUPPLY:

This unit uses 105-125 volts A.C. 50 watts. The frequency (cycles) is specified on the bottom of the cabinet.

GENERAL INFORMATION AND SERVICE HINTS

ANTENNA AND GROUND:

This model has a self-contained antenna loop for the reception of local broadcasting stations. If it is desired to improve the reception of weak or distant stations, an additional outdoor antenna must be used. For this purpose, a wire lead extending from the rear of the Radionet is provided.

The automatic phono-switch of this receiver starts the turntable and switches from radio to phono when the pickup is placed on the record to be played. The pickup arm must be replaced on its rest in order to operate the radio portion of this receiver.

FREQUENCY RANGE:

Broadcast.....535 - 1730 K.C.

INTERMEDIATE FREQUENCY.....455 K.C.

POWER OUTPUT:
Type.....Beam Tetrode
Undistorted..... .82 Watts
Maximum..... 1.5 Watts

LOUD SPEAKER:
Type.....Dynamic
Size.....5 inch
Field.....P.M.

OPERATING CONTROLS:
Left knob....."Off" Volume
Right knob.....Station Selector

CONTROL OPERATION:
Turning right; power on; volume increases
Drive Ratio 8:1

FOR OTHER DATA SEE INDEX

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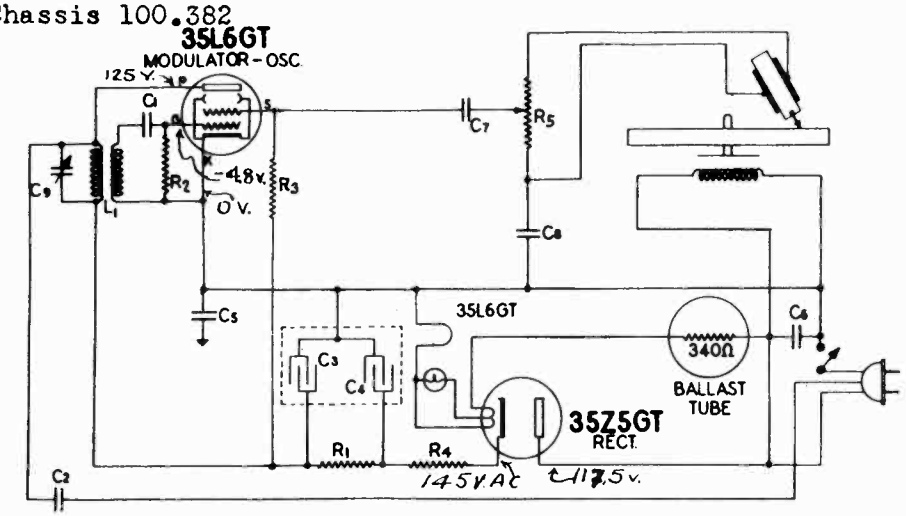
MODEL 7061,Ch.100.383
Wireless Record Player
MODEL 7059 Phono
Chassis 100.382

SEARS-ROEBUCK & CO.



MODEL 7061

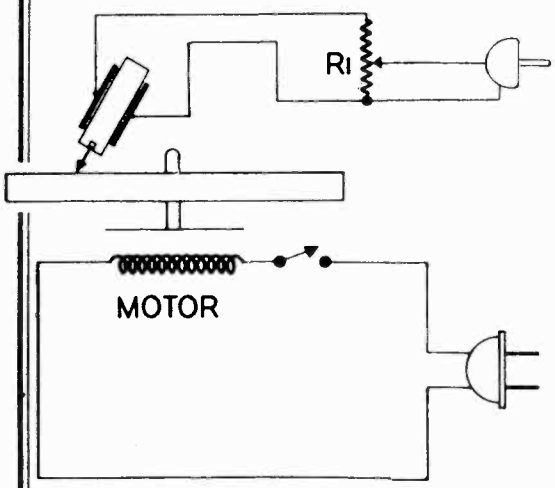
For Adjustments on this Wireless Record Player, see Model 5849.

ELECTRICAL PARTS

PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	LIST PRICE
W83783	C1, C2	Condenser, Mica 110 Mmfd.	.20
W116470	C3, C4	Condenser, Electrolytic 20-20 Mfd. 150 V	.95
W116625	C5, C6	Condenser, .1 Mfd. 600 Volt	.25
W116819	C7, C8	Condenser, .05 Mfd. 600 Volt	.20
W160501	C9	Condenser, Tuning	.22
W85296		Lamp, Dial 6 to 8 Volt (Mazda 51)	.16
W110569	R1	Resistor, carbon 10,000 ohms ½ Watt	.12
W116051	R2	Resistor, insulated 33,000 Ohms ½ Watt	.15
W118809	R3	Resistor, carbon 680,000 Ohms ½ Watt	.10
W118823	R4	Resistor, 1000 Ohms 1 Watt W.W.	.15
W500723	R5	Volume control, 1 Meg. (With Switch)	1.25
W160540		Ballast Tube	.60
W160499	L1	Coil, Oscillator	.26
W160745		Motor, 60 cycle, less turntable	5.00
W160788		Motor, 25 cycle, less turntable	13.00
W160791		Motor, 50 cycle, less turntable	6.90
W160754		Line Cord	.72
W500910		Pickup Arm complete with crystal	8.40
W160617		Crystal cartridge	4.50

PART NUMBER	DESCRIPTION	LIST PRICE
W160714	Bottom for cabinet	.16
W160748	Bull's eye	.24
W500908	Cabinet, complete	3.50
W112798	Clip, for mtg. coil	.01
W161104	Idler Wheel, for W160745 & W160791 Motor	.85
W117806	Idler Wheel, for W160788 Motor	.60
W10332	Instruction Book	.30
W160744	Knob, (Volume control)	.12
W160747	Rubber foot	.05
W119791	Socket, Octal	.12
W114876	Socket, Octal (Rectifier)	.15
W116467	Socket, Condenser Mtg.	.04
W160792	Turntable, 8" for W160791 motor	2.00
W160789	Turntable, 8" for W160788 motor	1.50
W160746	Turntable, 8" for W160745 motor	1.50

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE



Part Number	Description	List Price
W160714	Bottom for cabinet	.16
W500719	Cabinet complete (with carton)	2.75
W500718	Cable - connection to radio	.40
W10278	Instruction book	.30
W160744	Knob (volume control)	.12
W160746	Turntable - 8" for 160745 Motor	1.50
W160789	Turntable - 8" for 160788 Motor	1.50
W160792	Turntable - 8" for 160791 Motor	2.00
W161104	Idler Wheel (W160745 & 160791	.85
W117806	Idler Wheel (W160788 motor)	.60

MODEL 7059

Part Number	Description	List Price
W500722	Pickup arm complete with crystal	8.30
W500723 R1	Volume control - 1 Meg. (with switch)	1.25
W500725	Crystal cartridge	6.00
W160745	Motor - 60 cycle - less turntable	5.00
W160788	Motor - 25 cycle - less turntable	13.00
W160791	Motor - 50 cycle - less turntable	6.90

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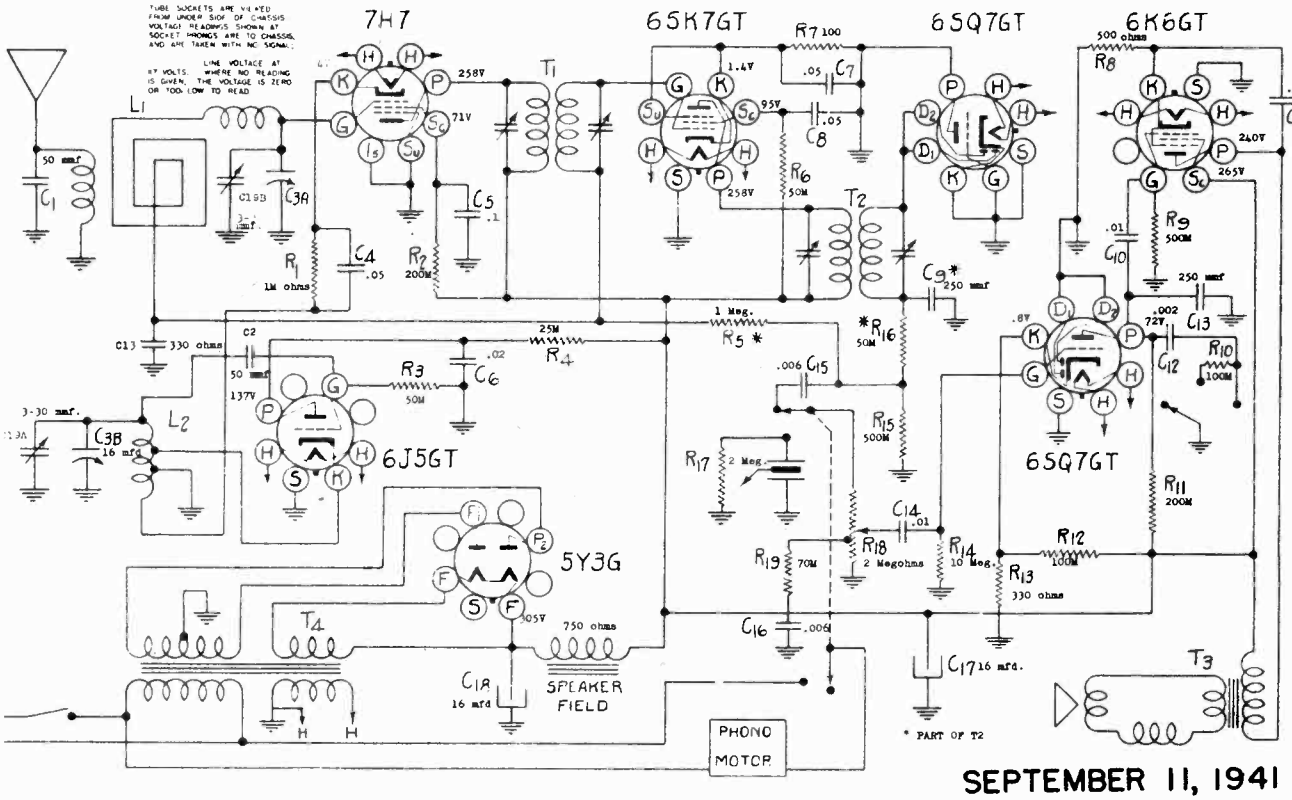
MODEL 7056
Chassis 141.417



SEPTEMBER 11, 1941

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.25 volts
Generator ground lead connection . . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . HI
Position of Dial Pointer with variable fully closed . . . . . On first mark to left of 540 kc calibration mark.

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	ANT. COUPLED APPROXIMATE MICROVOLTS
Open	455 kc	.1 mfd.	7H7 Grid	T2, T1	IF	--
Fully open	1720 kc	.00005 mfd.	Ant. Lead	C19B*	Oscillator	--
1400 kc	1400 kc	.00005 mfd.	Ant. Lead	C19A*	Antenna	80**

IMPORTANT ALIGNMENT NOTES

* C19 A and B are best adjusted when the receiver is in the cabinet, through holes provided in the back cover.

** 120 microvolts per meter using standard Hazeltine alignment loop 24 inches from receiver loop.

For operation of the chassis outside the cabinet with the phonograph plug disconnected, connect a jumper wire across the two top terminals of the phono socket.

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

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MODEL 7056

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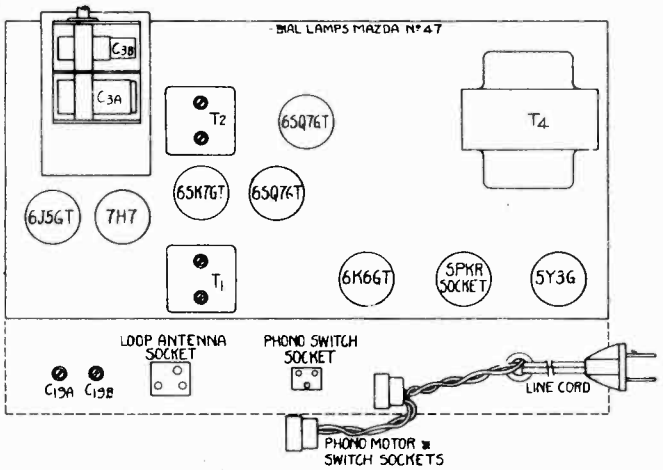


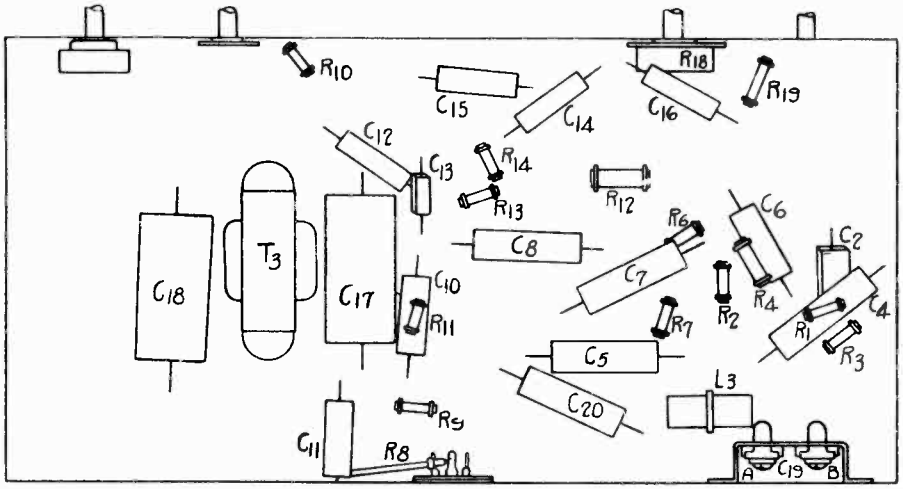
LOCATIONS OF PARTS ON TOP OF CHASSIS

OPERATING FEATURES:
- Automatic Volume Control
- Automatic Radio/Phono Switch, operated by Phono Pickup Arm.
- Three Position Switch Tone Control
- Lo-Noise Converter Circuit

CHASSIS FEATURES:
- Number IF stages . . . . . .One
- Number of condensers in gang . . .Two
- Underwriters Approved
- Built-in Loop (RADIONET Antenna System)
- Provision for external Ant. Connection

POWER OUTPUT:
- Type . . . . . Single Pentode
- Undistorted . . . . . 2.5 watts
- Maximum . . . . . 4.5 watts

LOUD SPEAKER:
- Type . . . . . .Dynamic
- Size . . . . . 6.5 inch
- Approx.field coil res. . . . 750 ohms
- Approx.field coil voltage drop . 40 V.



LOCATIONS OF PARTS UNDER CHASSIS

FREQUENCY RANGES:
Broadcast Band 540-1720 kc

INTERMEDIATE FREQUENCY 455 kc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer
1720 kc	1400 kc

TUBES AND FUNCTIONS
- 6J5GT . . . . . .Oscillator
- 7H7 . . . . . .Translator
- 6SK7GT . . . . . IF
- 6SQ7GT . . . . . Detector-AVC
- 6SQ7GT . . . . . Driver
- 6K6GT . . . . . .Output
- 5Y3G . . . . . Rectifier

POWER SUPPLY:
- All models available . . . . . 105-125 volts, 50-60 cycles; 80 watts
- All models available . . . . . 105-125 volts, 25-60 cycles; 85 watts

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:(LEFT TO RIGHT)
1. First Knob . . . . . .On-Off
2. Second Knob . . . . . Tone
3. Third Knob . . . . . .Volume
4. Fourth Knob . . . . . Tuning

CONTROL OPERATION:
1. Turning Clockwise . . . . . On
2. Turning Clockwise . . .HI, MED, LO
3. Turning Clockwise . . . . Increase
4. Tuning Ratio 3:1

GENERAL INFORMATION & SERVICE HINTS

RADIO-PHONO AUTOMATIC SWITCH:

With the power switch on, the receiver is automatically switched for record playing and the phonograph motor will start when the pick-up arm is moved in toward the turntable. Return of the pick-up arm to its rest automatically switches the receiver to resume radio reception and stops the motor.

NOTE: To obtain full switching leverage when returning the pick-up arm to its rest for radio reception, move the arm slightly to the right of the rest before lowering it.

TO SERVICE THE CHASSIS:

For operation of the chassis outside the cabinet with the phonograph plug disconnected, connect a jumper wire across the two top terminals of the phono socket.

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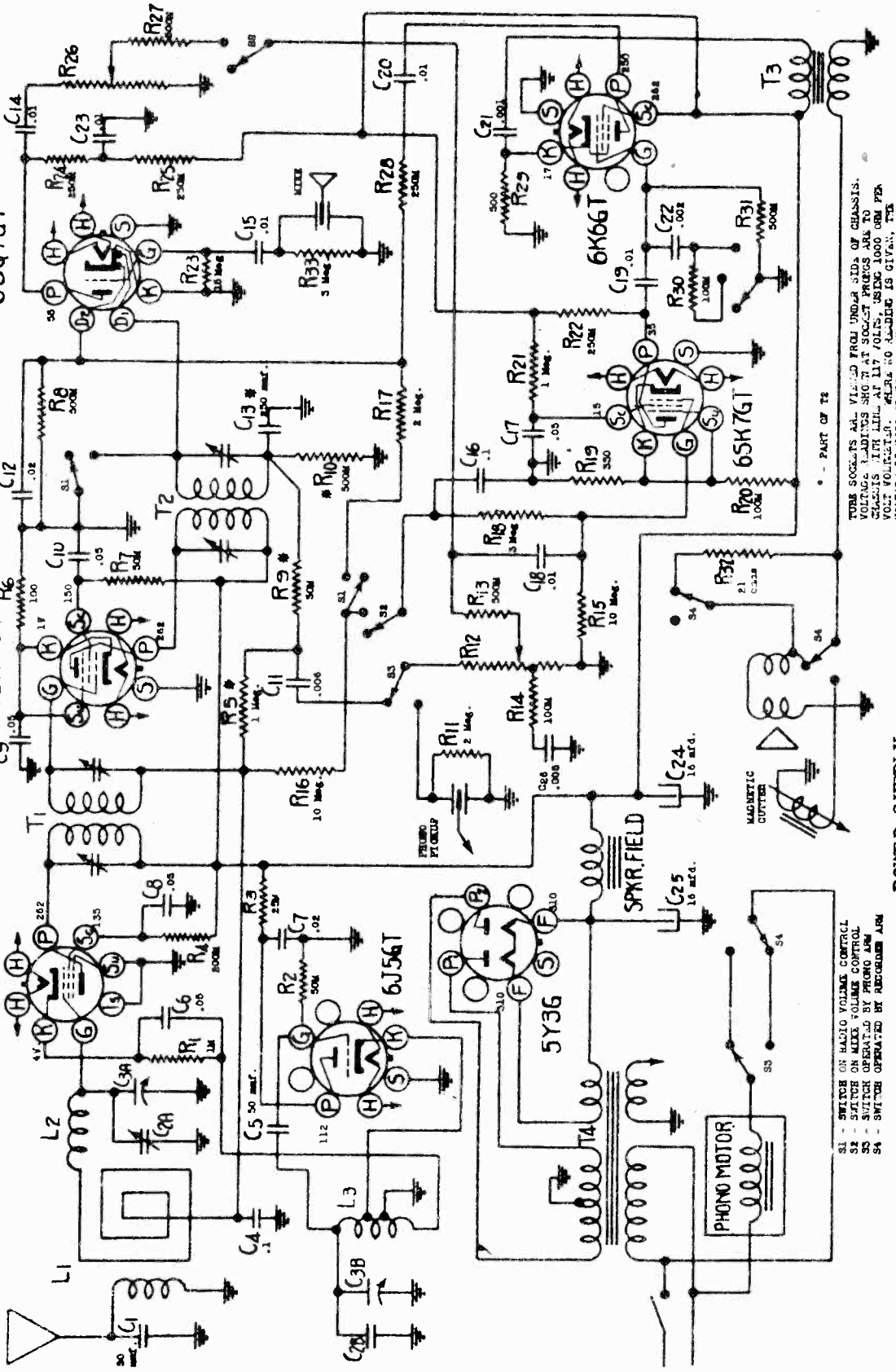
MODEL 7057
Chassis 141.418

SEARS, ROEBUCK & CO.



INTERMEDIATE FREQUENCY.....455Kc.

POWER OUTPUT:
Type.....Single Pentode
Undistorted.....2.5 Watts
Maximum.....4.5 Watts

POWER SUPPLY:
All models available.....105-125 volts, 50-60 cycles;
90 watts.

LOUD SPEAKER:
Type.....Dynamic
Size.....6.5 inch

ALIGNMENT FREQUENCIES:

Oscillator	Antenna-Transl.
Trimmer	Trimmer
1720 Kc.	1400 Kc.
Approx. field coil res. 750 ohms	
Approx. field coil vol. drop 40V.	

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MODEL 7057

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.25 volts
Generator ground lead connection . . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . HI
Position of Dial Pointer with variable fully closed . . . . . On first mark to left of 540 kc calibration mark.

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	ANT. COUPLED APPROXIMATE MICROVOLTS
Open	455 kc	.1 mfd.	7H7 Grid	T2,T1	IF	--
Fully open	1720 kc	.00005 mfd.	Ant. Lead	C2B*	Oscillator	--
1400 kc	1400 kc	.00005 mfd.	Ant. Lead	C2A*	Antenna	80**

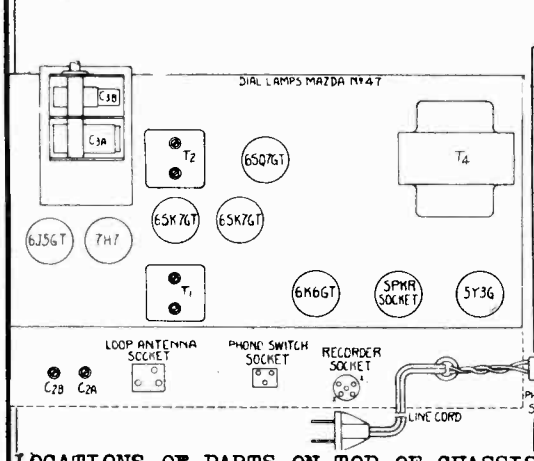
IMPORTANT ALIGNMENT NOTES

* C2 A and B are best adjusted when the receiver is in the cabinet, through vided in the back cover.

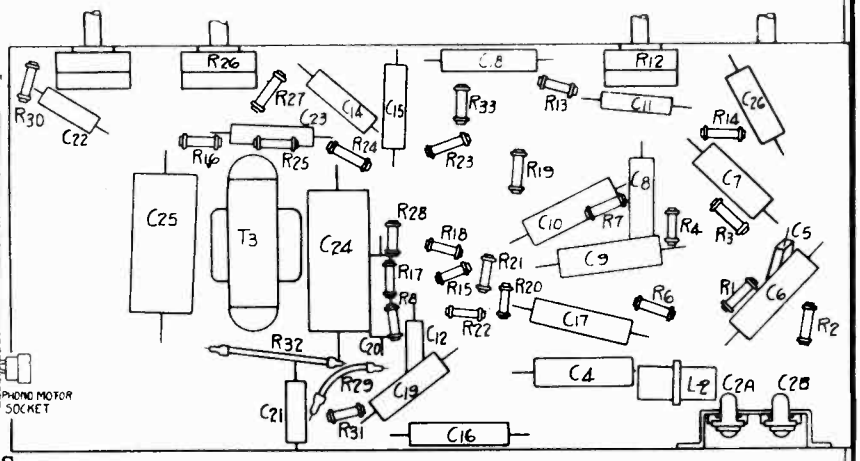
** 120 microvolts per meter using standard Hazeltine alignment loop 24 inches from receiver loop.

For operation of the chassis outside the cabinet with the phonograph plug disconnected, connect a jumper wire across the two top terminals of the phono socket, and between the two terminals marked "X" on the Recorder socket shown below.

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



LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS

RADIO-PHONO AUTOMATIC SWITCH:

With the power switch on, the receiver is automatically switched for record playing and the phonograph motor will start when the pick-up arm is moved in toward the turntable. Return of the pick-up arm to its rest automatically switches the receiver to resume radio reception and stops the motor.

Switching for Recording is also controlled by the Recorder Arm, in the manner described above.

When the pick-up and Recorder Arms are both off their rests, the motor will not revolve.

TO SERVICE THE CHASSIS:

For operation of the chassis outside the cabinet with the phonograph plug disconnected, connect a jumper wire across the two terminals of the phono socket, and between the two terminals marked "X" on the Recorder socket shown.

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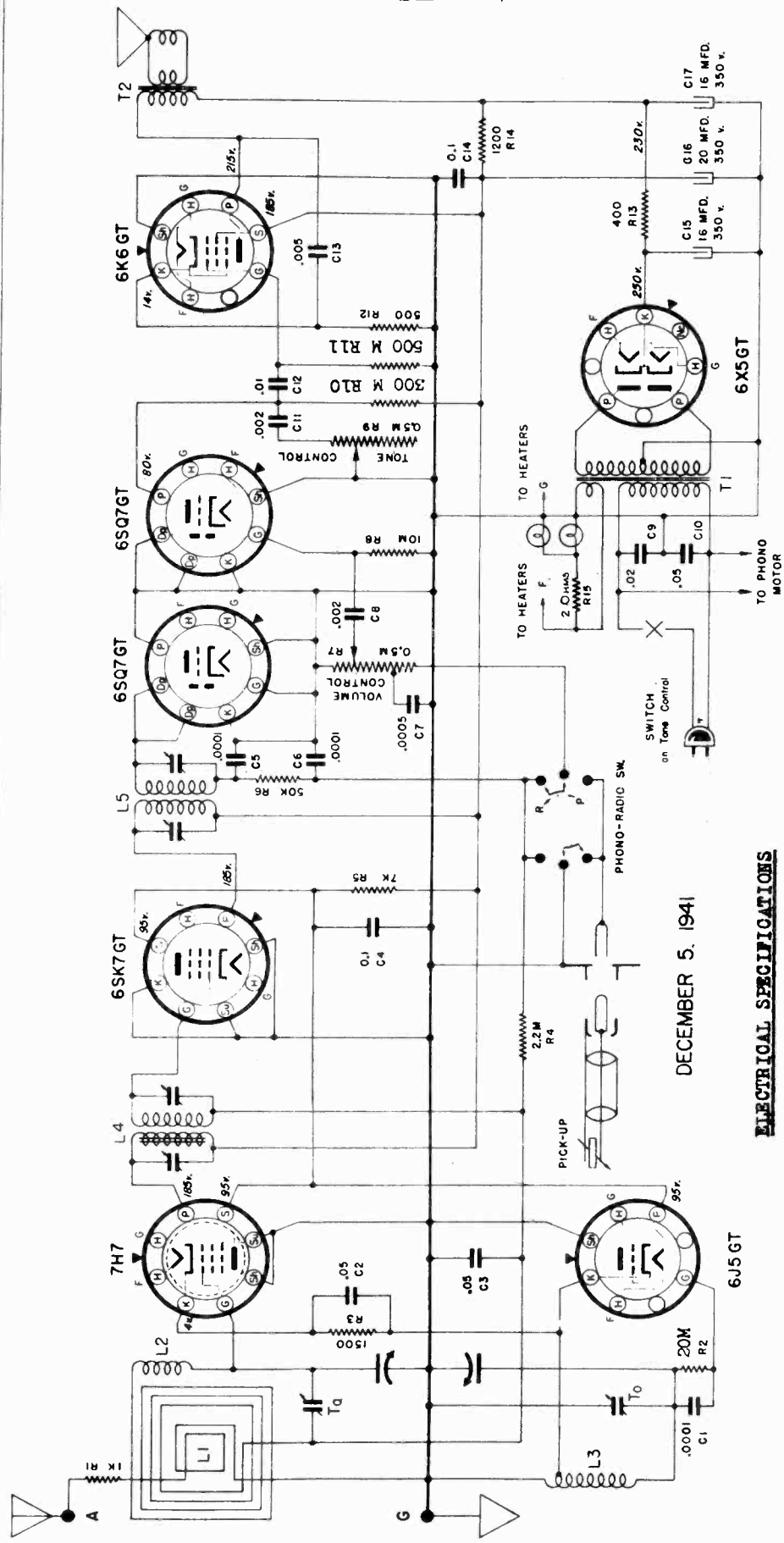
SEARS, ROEBUCK & CO.

MODEL 7058
Chassis 110.428



ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

7H7	Translator	6SQ7GT . . . . . Detector - A. V. C.
6J5GT	Oscillator	6SQ7GT . . . . . 1st Audio
6SK7GT	I. F. Amp.	6X6GT . . . . . Output
	6X5GT	. . . . . Rectifier

POWER OUTPUT:

Type	Pentode
Undistorted	2.1 Watts
Maximum	3.0 Watts

POWER SUPPLY:

This unit uses 105-125 A. C. 75 watts. The frequency (cycles) is specified on the label found on the bottom of the cabinet.

LOUDSPEAKER:

Type	Dynamic
Size	6 inch
Field	P. M.

FREQUENCY RANGE:

Broadcast . . . . . 550-1780 K. C.

INTERMEDIATE FREQUENCY . . . . . 455 K. C.

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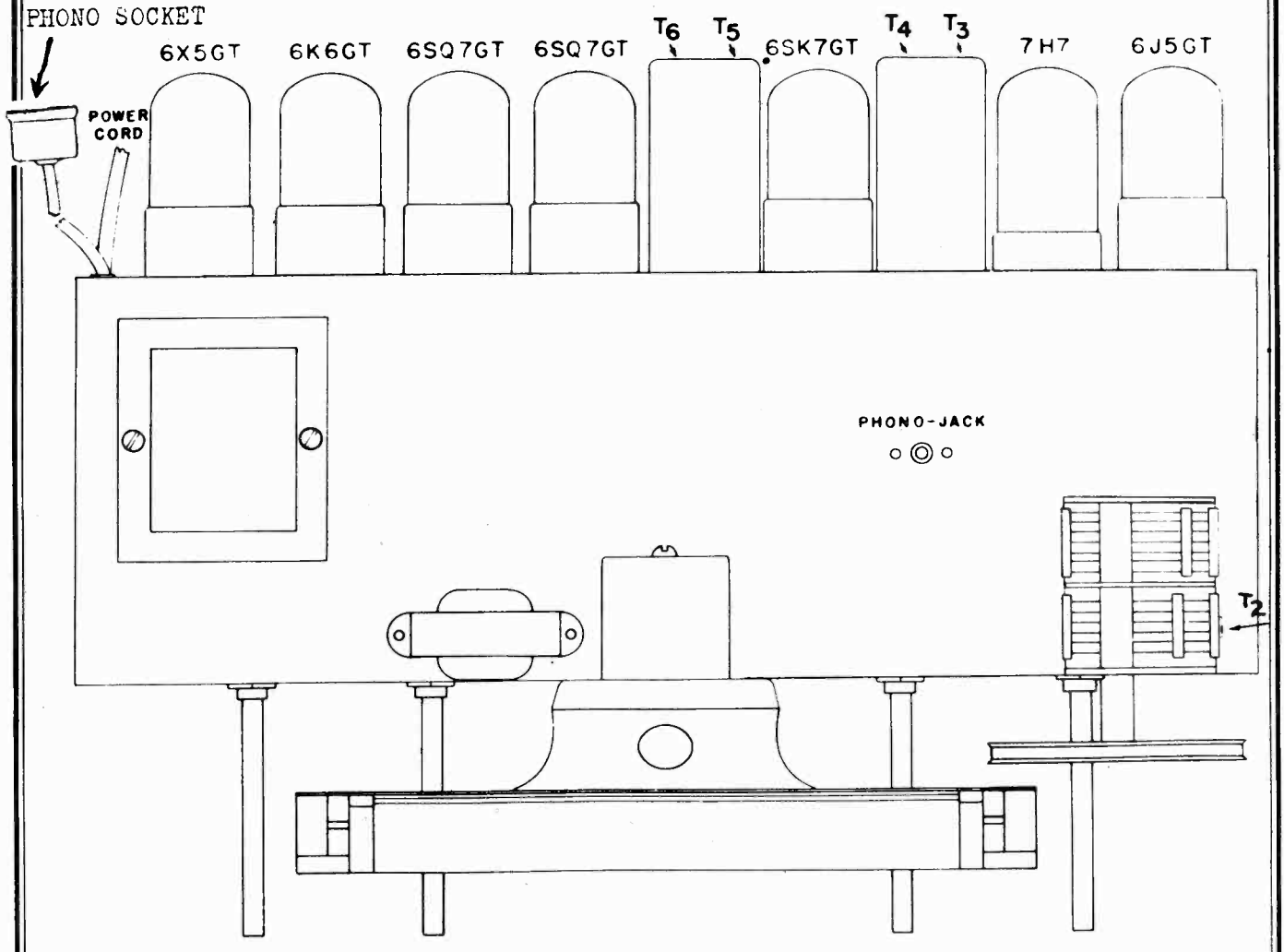
MODEL 7058

SEARS, ROEBUCK & CO.

TUBE LOCATION



ALIGNMENT PROCEDURE

Output meter connection. . . . . .Across voice coil (3.1 ohms)
Output meter reading for ½ watt output . . . . . .1.25 volts
Connection of generator ground . . . . . .To chassis
Generator Modulation . . . . . Approx. 30% at 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . Fully clockwise

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	DUMMY ANTENNA	TRIMMERS ADJUSTED IN ORDER SHOWN	TRIMMER FUNCTION
540 K. C.	455 K. C.	7H7 Grid.	.1 mfd.	T5, T6, T3, T4	I.F.
1720	1720	Standard Radiating Loop		To	Osc.
*1400	1400			Ta**	Ant.

* Approximately 100 microvolts per meter using a standard Hazeltine loop at 24 inches distance from the receiver loop for 1/2 watt output.

** On Loop Board.

The alignment procedure should be repeated stage by stage to obtain greatest accuracy. Always keep the output from the test oscillator at its lowest possible value. As the sensitivity is increased by alignment, the generator output should be reduced correspondingly so as to minimize the effect of the Automatic Volume Control.

Check alignment at 600 K. C. Tracking may be corrected by adjusting the spacing of the two pies of the loading coil found on the loop board assembly.

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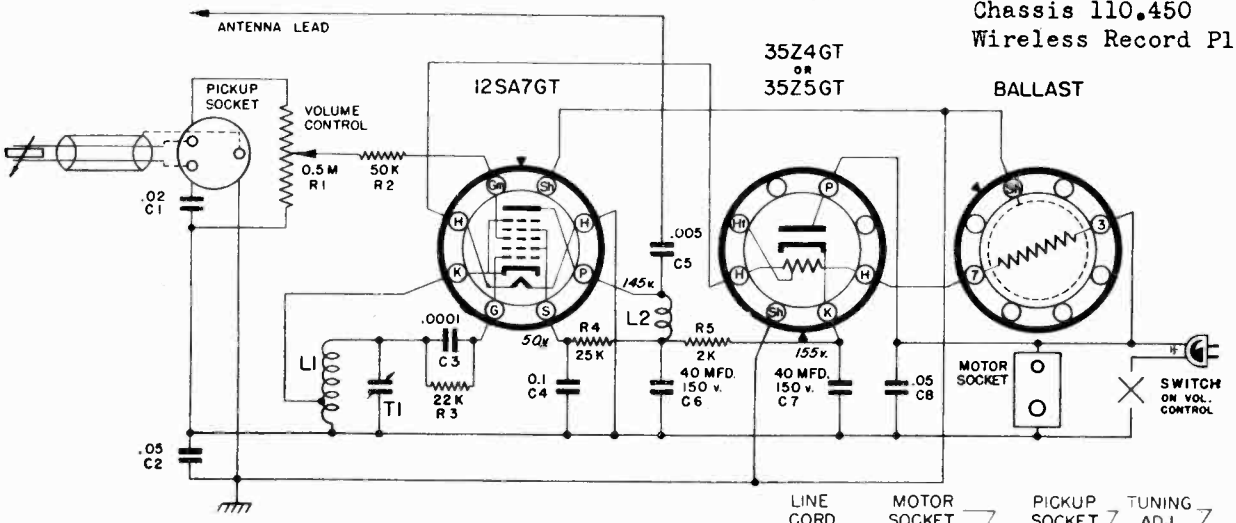
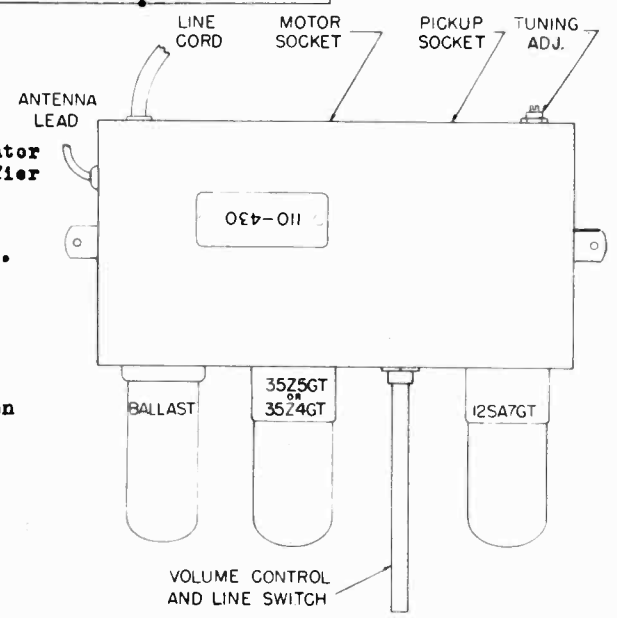
MODEL 7063
Chassis 110.450
Wireless Record Player



DECEMBER 5, 1941



TUBES AND FUNCTIONS:

12SA7GT . . . . . Modulated Oscillator
35Z4GT or 35Z5GT . . . . . Rectifier

POWER SUPPLY:

This unit uses 105-125 volts A. C. 75 watts. The frequency (cycles) is specified on the bottom of the cabinet.

FREQUENCY RANGE:

The carrier frequency may be adjusted between the limits of 540 and 1100 kilocycles.

OPERATING CONTROL:

A single knob operates the power switch and controls the modulation level.

GENERAL INFORMATION AND SERVICE HINTS.

This wireless record player uses a 12SA7GT tube in which the screen, cathode and oscillator grid are used in a Hartley oscillator circuit which may be tuned from 540 to 1100 K. C. by means of a trimmer. The output of this oscillator is electronically coupled to the plate circuit of the 12SA7GT which is loaded with a two millihenry choke. Amplitude modulation is effected by means of an audio signal impressed on the control grid. This signal serves to control the space current and the oscillator strength is not dependant upon modulation. Thus it may be seen that any energy radiated from the oscillator coil is not modulated. The modulated signal is radiated from an antenna capacitatively coupled to the plate of the 12SA7GT.

The signal from this wireles record player may be received by any broadcast receiver. The tone and volume should be controlled at the receiver as would be done when listening to a regular broadcast station.

For normal use the control on the wireless record player is advanced to the maximum clockwise position. If exceptionally loud recordings are used, the volume control may be retarded slightly to prevent distortion in the transmitter unit.

ADJUSTMENT PROCEDURE.

The radio receiver is tuned to a frequency between 540 and 1100 K. C. where there is as little interference as possible. With the record changer in operation, the adjusting screw found on the back of the chassis is turned until the wireless record player is heard through the receiver.

SPURIOUS RESPONSES.

Spurious responses may be obtained in some localities where broadcast signals are quite strong, if the wireless record player is placed too close to the receiver (e.g. on top of the cabinet). This manifests itself in the form of numerous signals in the receiver for a given setting of the wireless record player tuning adjustment, or numerous settings of the wireless record player tuning adjustment for a given receiver setting. This difficulty may be remedied by moving the wireless record player a little farther away from the radio during the set-up procedure.

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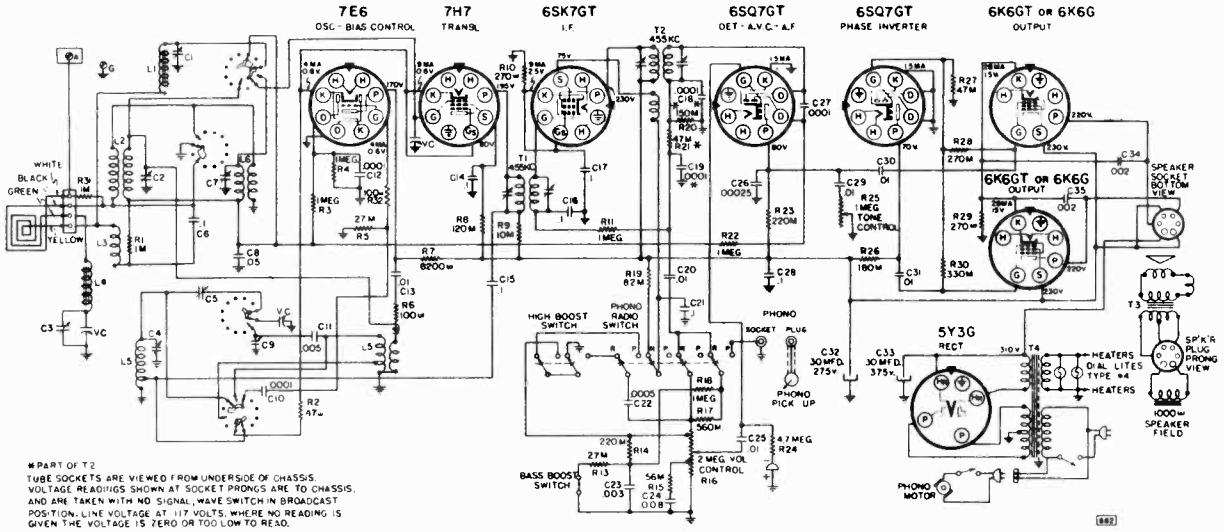
MODEL 7067
Chassis 101.662

SEARS, ROEBUCK & CO.



*PART OF T2
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL, WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 117 VOLTS, WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

BAND SWITCH POSITION	POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
A	Closed	455 Kc	.1 mfd.	7H7 Transl. grid	T2, T1	IF	—
A	Open	1720 Kc	.00005 mfd.	Ant. Terminal	C4	Oscillator	--
A	1410	1410 Kc	.00005 mfd.	Ant. Terminal	C3, C1	Ant. Transla.	30
A	600 (rock)	600 Kc	.00005 mfd.	Ant. Terminal	C5	Padder	125
POL	2.4	2.4 Mc	400 ohms	Ant. Terminal	C7	Transla.	35
B	Open	18.3 Mc	400 ohms	Ant. Terminal	C9	Oscillator	--
C	15 (rock)	15 Mc	400 ohms	Ant. Terminal	C2	Transla.	20

IMPORTANT ALIGNMENT NOTES

The alignment must be done in the order given.

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

POWER SUPPLY:
All models available . . . . . 105-125 volt, 60 cycles AC: 100 watts
All models available . . . . . 105-125 volt, 25 cycles AC: 110 watts

INTERMEDIATE FREQUENCY . . . . . 455 kc

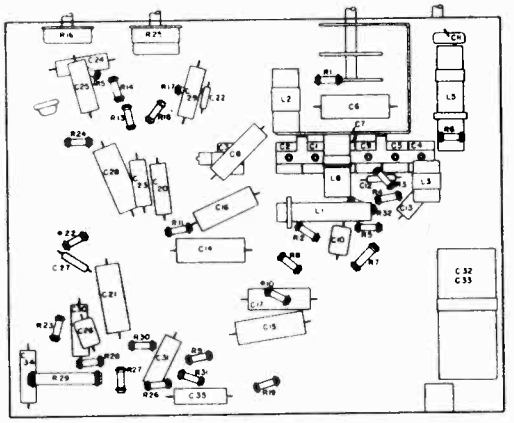
FREQUENCY RANGES:

	Band "A"	Band "POLICE"	Band "B"
	540-1700 kc	1.5-2.5 kc	6-18 mc

ALIGNMENT FREQUENCIES:

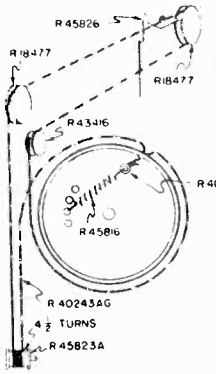
	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
Band "A"	1720 kc	1410 kc	600 kc
Band "POLICE"	None	2.4 mc	Fixed
Band "B"	18.3 mc	15 mc	Fixed

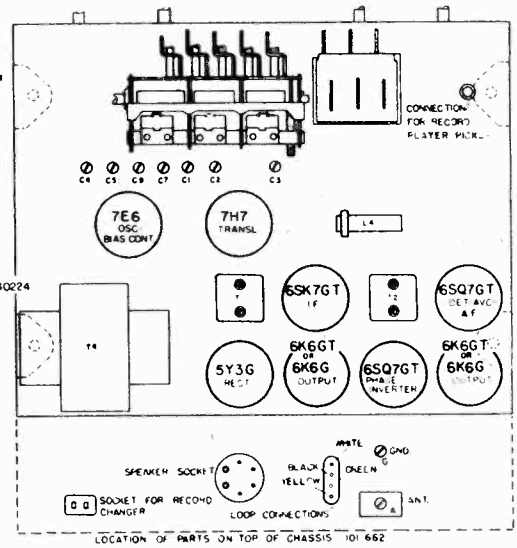
POWER OUTPUT:
Type . . . . . Push Pull Pentode
Undistorted . . . . . 3.5 watts
Maximum . . . . . 7 watts



LOCATIONS OF PARTS UNDER CHASSIS 101.662

Dial Drive System.





LOCATION OF PARTS ON TOP OF CHASSIS 101.662

PUSH BUTTON TUNING MECHANISM:

The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune the station), and securely locking the adjustment.

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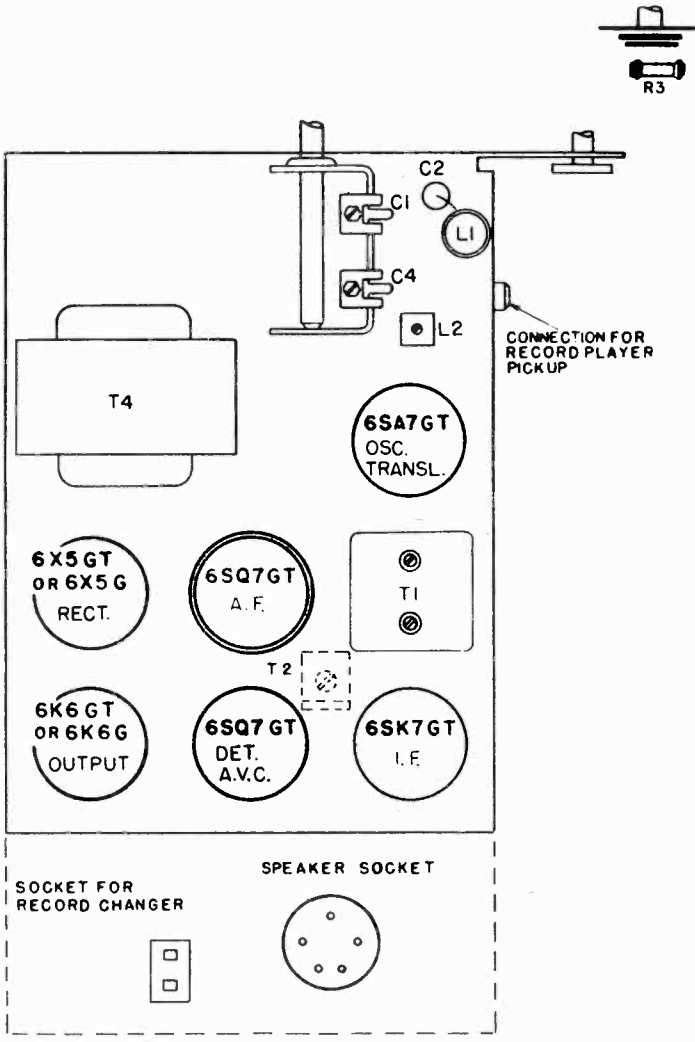
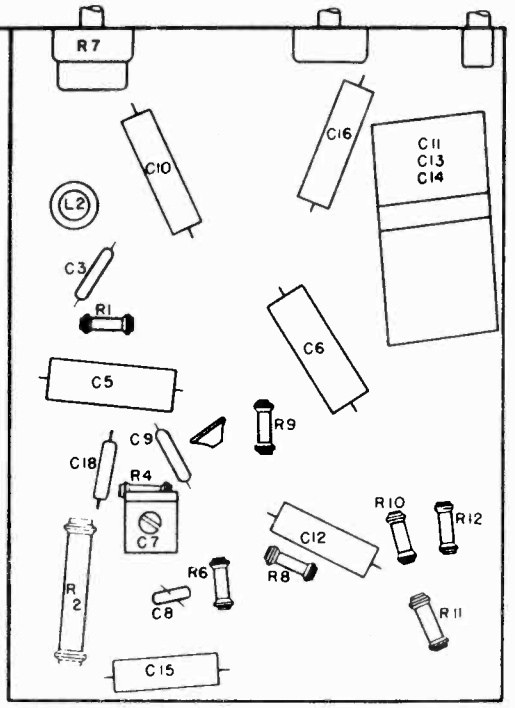
MODEL 7065
Chassis 101.660

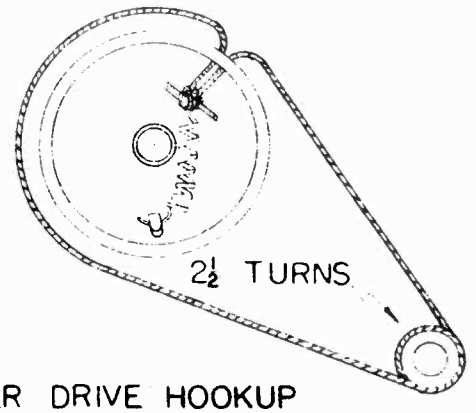
SEARS, ROEBUCK & CO.



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.660

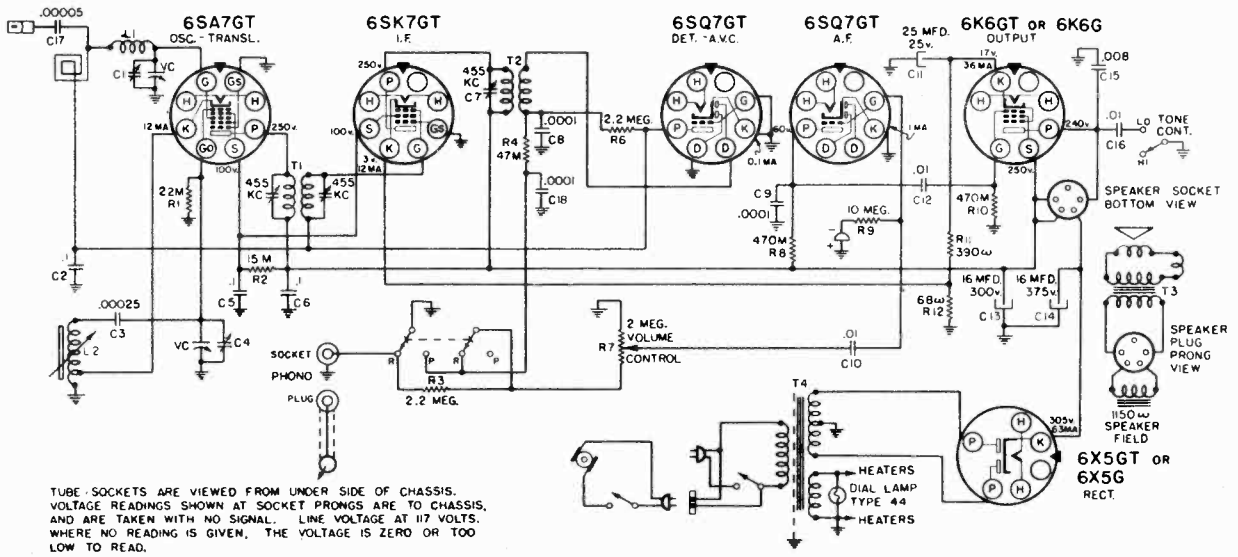


LOCATIONS OF PARTS UNDER CHASSIS 101.660



CONDENSER DRIVE HOOKUP

IF PEAK 455 KC



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

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MODEL 7065

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.25 volts
Approximate microvolts input for 500 milliwatts output. . . . . See chart below
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Connection of generator ground lead . . . . . .Receiver chassis
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control. . . . . Fully clockwise
Position of Tone Control. . . . . Counter-clockwise (HI)
Position of Dial Pointer with variable fully closed . . . . . On mark below 540 kc calibration mark

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	6SA7 Grid	T2,T1	IF	---
Fully Open	1620 kc	.00005 mfd.	Ant. Clip	C4	Oscillator	---
1410 kc	1410 kc	.00005 mfd.	Ant. Clip	C1	Translator	125
600 kc (rock)	600 kc	.00005 mfd.	Ant. Clip	L2	Padder	425

IMPORTANT ALIGNMENT NOTES

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

POWER SUPPLY:
All models available . . . . . 105-125 v. 60 cycle AC, 95 watts
All models available . . . . . 105-125 v. 25 cycle AC, 105 watts

ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Translator Trimmer	Padder
FREQUENCY RANGE: . . . . . 540-1600 kc	1620 kc	1410 kc	600 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:
Type . . . . . Pentode
Undistorted. . . . . 2.5 watts
Maximum. . . . . 6 watts

LOUDSPEAKER:
Type . . . . . Dynamic
Size . . . . . 8 inch
Field coil resistance. . . . . 1150 ohms
Approx. field coil voltage drop . . . 55 v.

OPERATING FEATURES:
Tone Control . . . . . Two position
Automatic Volume Control
Combined with Automatic Record Changer

CHASSIS FEATURES:
Number IF stages . . . . . One
Number condensers in gang. . . . . Two
Antenna. . . . .Built-in loop with provision for external antenna
Underwriters Approved

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:
1. Left knob . . . . . Phono-Radio
2. Next to left knob...On-Off Switch & Volume
3. Next to right knob . . . . . Tone
4. Right knob. . . . . Station Selector

CONTROL OPERATION:
Turning right: . . . . . Radio to phono
Turning right: . . . . . On; Volume increase
Turning right: . . . . . .Treble to bass
Tuning ratio: 3:1

GENERAL INFORMATION & SERVICE HINTS

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #4704: Greatest pickup and noise reduction.
Catalog #4703: Less effective pickup and noise reduction than Catalog #4704.
Catalog #4702: Conventional antenna.

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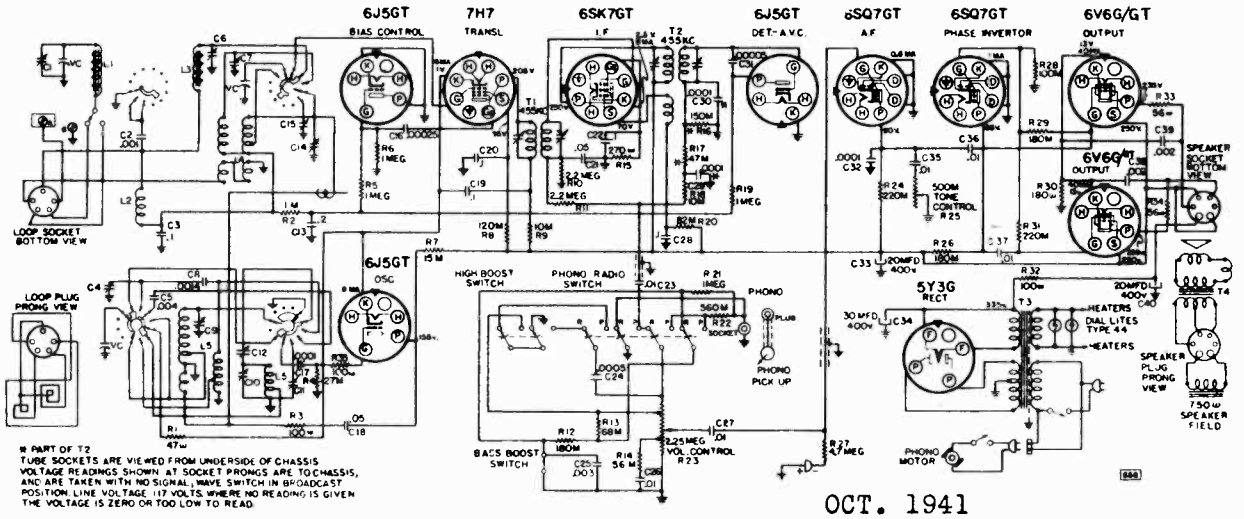
MODEL 7069
Chassis 101.658

SEARS, ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.658



OCT. 1941

PRELIMINARY:

ALIGNMENT PROCEDURE

FOR ADDITIONAL DATA SEE INDEX.

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.4 volts
Approximate microvolts input for 500 milliwatts output . . . . . See chart below
Generator ground lead connection. . . . . Receiver chassis
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Position of Volume Control. . . . . Fully clockwise
Position of Dial Pointer with variable fully opened . . . . . On first mark to right of 1700 kc calibration mark

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	7H7 Grid	T2, T1	IF	—
"A"	Fully open	1720 kc	.00005 mfd.	Ant. Term.	C10	Oscillator	—
"A"	1410 kc	1410 kc	.00005 mfd.	Ant. Term.	C1, C6	Loop,Transl	25
"A"	600 kc (rock)	600 kc	.00005 mfd.	Ant. Term.	C12	Padder	80
"B"	Fully open	5.3 mc	400 ohms	Ant. Term.	C4*	Oscillator	--
"B"	4.5 mc (rock)	4.5 mc	400 ohms	Ant. Term.	C7	Translator	35
"C"	Fully open	18.3 mc	400 ohms	Ant. Term.	C9*	Oscillator	—
"C"	16 mc (rock)	16 mc	400 ohms	Ant. Term.	C14	Translator	15
"D"	9.6 mc	9.6 mc	400 ohms	Ant. Term.	C11*	Oscillator	—
"D"	9.6 mc (rock)	9.6 mc	400 ohms	Ant. Term.	C15	Translator	25

IMPORTANT ALIGNMENT NOTES

* If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.

Where indicated by the word, "Rock", the variable should be rocked back and forth a degree or two while making the adjustment.

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

When aligning the receiver be sure that the Loop Button is in the OUT position as this connects the loop which has the outside antenna coupling turn.

FREQUENCY RANGES:	ALIGNMENT FREQUENCIES: Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
Band "A" . . . . . 540-1700 kc	1720 kc	1410 kc	600 kc
Band "B" . . . . . 1.8-5 mc	5.32 mc	4.5 mc	Fixed
Band "C" . . . . . 5.5-18 mc	18.3 mc	16 mc	Fixed
Band "D" . . . . . 9.4-9.8 mc	9.6 mc	9.6 mc	Fixed

INTERMEDIATE FREQUENCY . . . . . 455 kc

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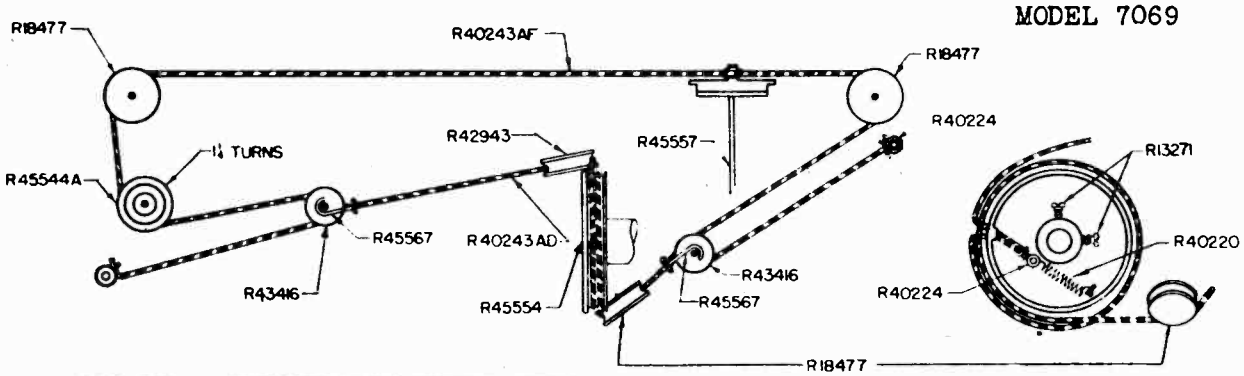
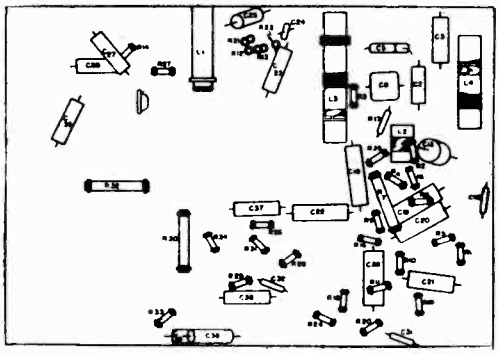
MODEL 7037
MODEL 7069

SEARS, ROEBUCK & CO.

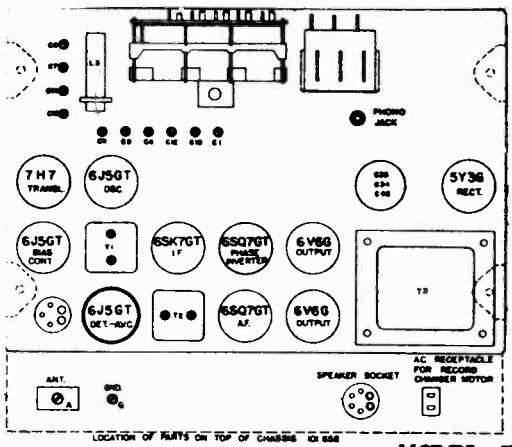
MODEL 7069





LOCATIONS OF PARTS UNDER CHASSIS 101.656

MODEL 7069



LOCATION OF PARTS ON TOP OF CHASSIS 101.656

MODEL 7069

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1720 kc	1400 kc	600 kc
6.2 mc	5 mc	Fixed
18.2 mc	17 mc	Fixed

LOUD SPEAKER:

Type . . . . . Dynamic
Size . . . . . 6.5 inch
Approx.field coil res. . . . 750 ohms
Approx.field coil voltage drop ..57 V.

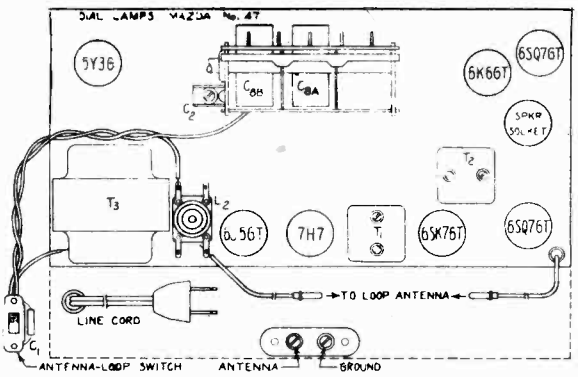
FREQUENCY RANGES:

Band "A" . . . . . 540-1720 kc
Band "B" . . . . . 1700-6000 kc
Band "C" . . . . . .6.0-18.1 mc

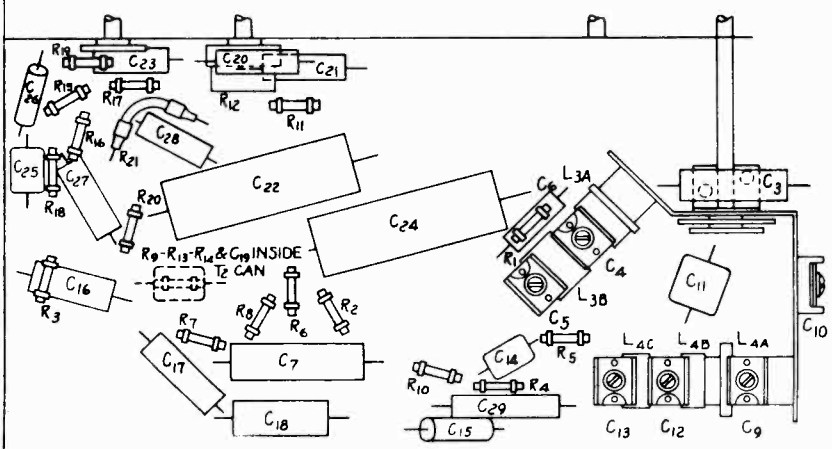
POWER OUTPUT:

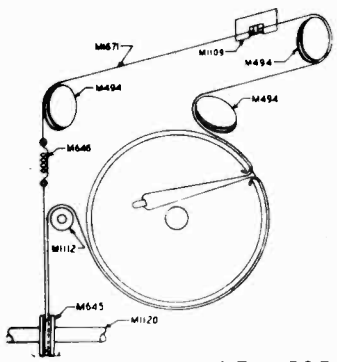
Type . . . . . Single Pentode
Undistorted . . . . . 2.5 watts
Maximum . . . . . 3.7 watts

MODEL 7037



MODEL 7037





MODEL 7037

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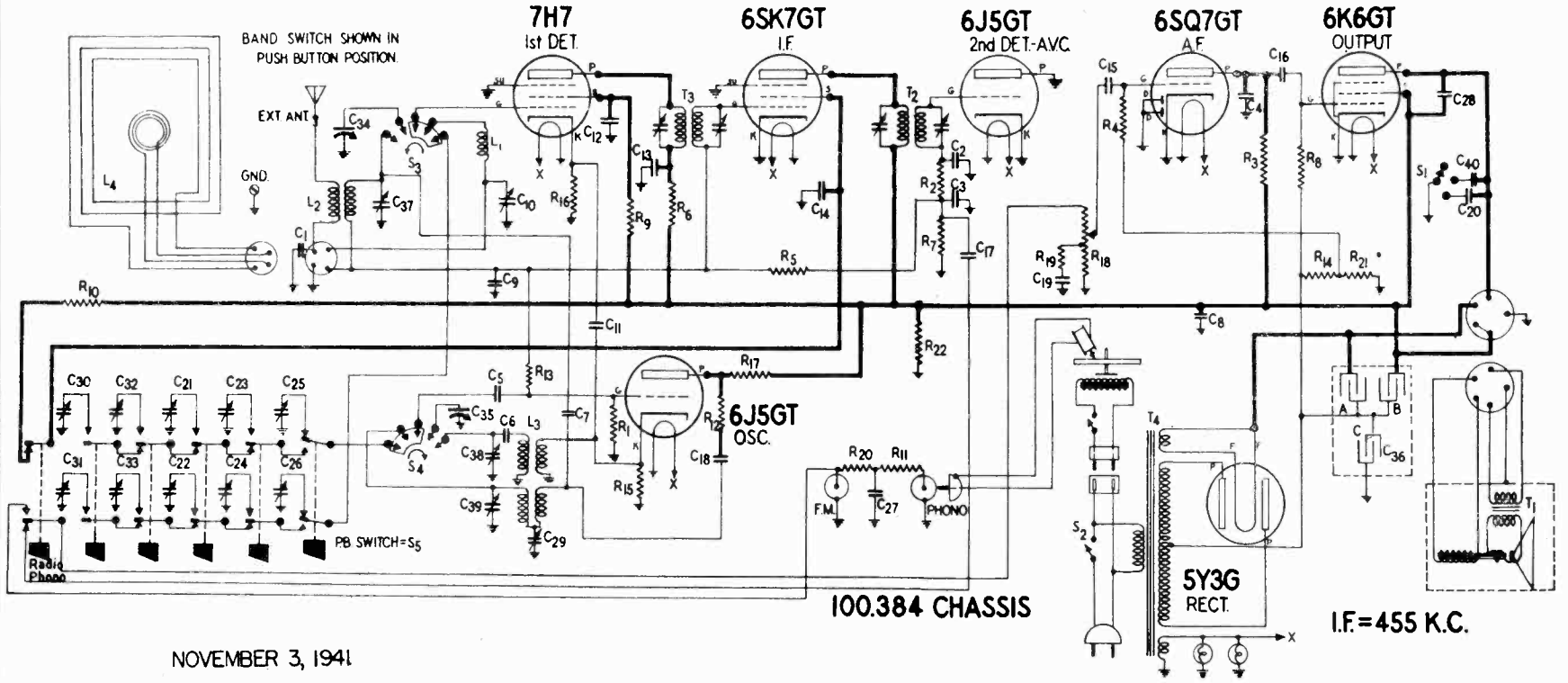
SEARS, ROEBUCK & CO.

MODEL 7071
Chassis 100.384



NOVEMBER 3, 1941

ELECTRICAL PARTS

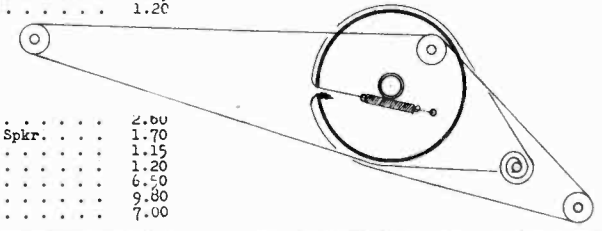
PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	
W500911	L1	Coil, Loading	.25
W501042	L2	Coil, Short Wave Antenna	.50
W501043	L3	Coil, Oscillator (B.C. & S.W.)	1.00
W501153	L4	Loop Antenna	2.80
W110629		Dial Light Bulb, 6.3 Volt (Mazda #44)	.15
W03783	C1 to C4	Condenser, Mica. 110 Mmfd.	.20
W05061	C5	Condenser, Mica. 51 Mmfd.	.15
W03587	C6	Condenser, Mica. .0042 Mfd.	.35
W110510	C7	Condenser, Wire 3 Mmfd.	.12
W116625	C8	Condenser, .1 Mfd. 600 Volt	.25
W116619	C9	Condenser, .05 Mfd. 600 Volt	.20
W119132	C10	Condenser, Trimmer	.20
W119193	C11 to C18	Condenser, .01 Mfd. 600 Volt	.15
W119414	C19 to C20	Condenser, .02 Mfd. 600 Volt	.15
W119663	C21 to C24	Condenser, Push Button Trimmer (750-1375 KC)	.24
W119664	C25 to C26	Condenser, Push Button Trimmer (980-1600 KC)	.24
W119875	C27 to C28	Condenser, .002 Mfd. 600 Volt	.15
W119934	C29	Condenser, Padder	.36
W500127	C30 to C33	Condenser, Push Button Trimmer (540-1000 KC)	.24
W501057	C34 to C35	Condenser, Variable Tuning	1.20
W501060	C36	Condenser, Electrolytic A=20 Mfd. 400 Volt) B=15 Mfd. 400 Volt) C=20 Mfd. 25 Volt)	1.70
W501067	C37 to C39	Condenser, 3 Section Trimmer	.55
W119417	C40	Condenser, .006 Mfd. 600 Volt	.15
W110552	R1 to R2	Resistor, Carbon 47,000 Ohm ½ Watt.	.12
W110553	R3	Resistor, Carbon 220,000 Ohm ½ Watt	.12
W110554	R4 to R5	Resistor, Carbon 1 Megohm ½ Watt.	.12
W110557	R6	Resistor, Carbon 4700 Ohm ½ Watt.	.12

PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	
W110559	R7 to R8	Resistor, Carbon 470,000 Ohm ½ Watt	.12
W110564	R9 to R11	Resistor, Carbon 100,000 Ohm ½ Watt	.12
W110590	R12	Resistor, Carbon 180 Ohm ½ Watt	.12
W112975	R13	Resistor, Carbon 10 Meg. ½ Watt	.12
W09762	R14	Resistor, Wire Wound, 220 Ohm 1 Watt.	.16
W116078	R15	Resistor, 560 Ohm ½ Watt.	.12
W116080	R16	Resistor, Insulated 680 Ohm ½ Watt.	.15
W118805	R17	Resistor, Carbon 10,000 Ohm 1 Watt.	.12
W119634	R18	Volume Control, 1 Megohm	.90
W110569	R19	Resistor, Carbon 10,000 Ohm ½ Watt	.12
W110564	R20	Resistor, Carbon 100,000 Ohm ½ Watt.	.12
W501196	R21	Resistor, Carbon 20 Ohm ½ Watt	.10
W116076	R22	Resistor, 33,000 Ohm 2 Watt.	.30
W501170M		Speaker, Dynamic 10 Inch	8.20
W501184M		Cone & Voice Coil for W501170M Spkr.	1.70
W119640	S1 to S2	Off-On Switch & Tone Control	.85
W501059	S3 to S4	Switch, Band	1.20
W501068	S5	Switch, Push Button	2.60
W501183M	T1	Transformer, Output for W501170M Spkr.	1.70
W119024	T2	Transformer, 2nd I.F.	1.15
W500801	T3	Transformer, 1st I.F.	1.20
W501044)	T4	(Transformer, Power 60 Cycles	6.50
W501301)		(Transformer, Power 25 Cycles	9.80
W501238		Crystal Cartridge for Tone Arm	7.00

DIAL CORD

CHASSIS VIEWED FROM FRONT

SET POINTER TO LOW FREQUENCY END OF DIAL SCALE WITH GANG IN FULL MESH (DRUM IN POSITION SHOWN).



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MODEL 7071

SEARS, ROEBUCK & CO.

FOR GENERAL INSTRUMENT 201 RECORD CHANGER, SEE RIDERS "AUTOMATIC RECORD CHANGERS AND RECORDERS".

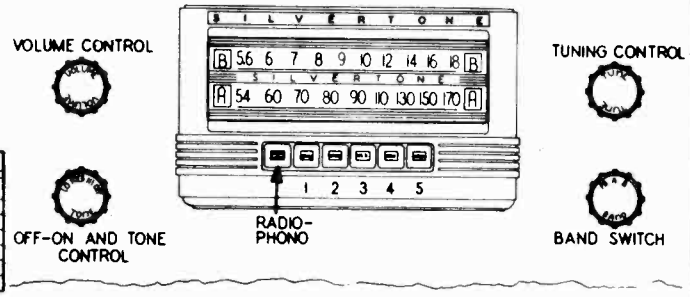
SOCKET VOLTAGES

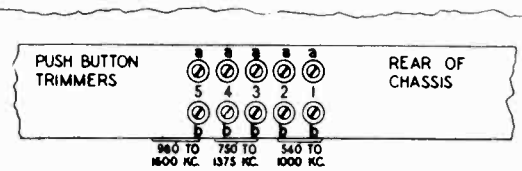
(1) VOLUME CONTROL ON FULL.
(2) SET TUNED TO APPROX. 540 KC., NO SIGNAL INPUT.

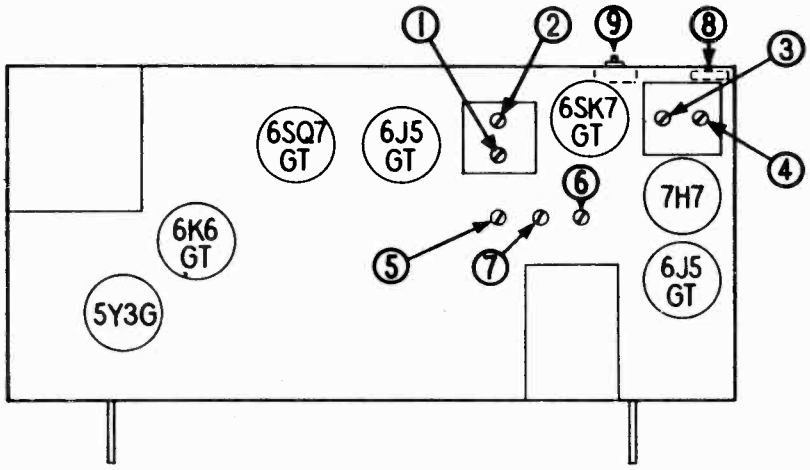
TUBE	FUNCTION	FILAMENT	K	G	SU	S	P	D1	D2
7H7	1st. Det.	6.3 A.C.	2.5	NOTE A	0	125	230	-	-
6J5GT	Osc.	6.3 A.C.	0	-5	-	-	150	-	-
6SK7GT	I.F. Amp.	6.3 A.C.	0	NOTE A	0	85	250	-	-
6J5GT	2nd. Det.	6.3 A.C.	0	0	-	-	0	-	-
6SQ7GT	A.F. Amp.	6.3 A.C.	0	NOTE B	-	-	115	0	0
6K6GT	Output	6.3 A.C.	0	NOTE C	-	250	235	-	-
5Y3G	Rectifier	5.0 A.C.	VOLTAGE ON PLATES = 320 A.C. TO C.T.						

NOTE A: Voltage on the grids of the 7H7 1st. Det. and 6SK7GT I. F. Amp. is variable and cannot be measured with a standard voltmeter.
NOTE B: Voltage on the grid of the 6SQ7GT A. F. Amp. is - 1.2 volts measured across R21.
NOTE C: Voltage on the grid of the 6K6GT output tube is -16 volts measured across resistors R21 and R14.

USE A VOLTMETER OF 1000 OHMS PER VOLT.







SETTING UP THE PUSH BUTTONS

1. Turn the Band Switch to the "A" position and tune in the desired station by means of the Tuning Control.
2. Push in a button of the proper frequency range and turn the Band Switch to the "PB" position.
3. Adjust the "a" screw with the same number as that of the button you have pushed in, until you again hear the desired station.
4. Adjust the "b" screw (below the "a" screw) for deepest tone.
5. Readjust both "a" and "b" screws for deepest tone.

POWER SUPPLY
Model 7071 is supplied for either 25 or 60 cycle power supplies.

105-125 Volts A.C. . (RADIO-65 Watts (PHONO-85 Watts

FREQUENCY RANGES
(A) Broadcast . . . . 540 to 1700 KC
(B) Short Wave . . . . 5.6 to 18 MC

ALIGNMENT FREQUENCIES
1400 KC, 600 KC
16 MC

INTERMEDIATE FREQUENCY . . . . . 455 KC

POWER OUTPUT
Type . . . . . Pentode
Undistorted . . . . . 2.8 Watts
Maximum. . . . . 5 Watts

LOUD SPEAKER
Type. . . . . Electro Dynamic
Size. . . . . 10"
Field resistance (cold) . . 900 Ohms

ALIGNMENT PROCEDURE

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Mica Condenser	Lug on Rear Section of Gang Cond.	455 KC	Broadcast	Any Point Where it Does Not Affect the Signal	1-2 3-4	2nd I.F. 1st. I.F.	Adjust for Maximum Output. Then repeat adjustment.
400 Ohm Carbon Resistor	Terminal Marked "Antenna"	16 MC	Short Wave	18 MC	5	Short Wave 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	Terminal Marked "Antenna"	16 MC	Short Wave	Tune to 16 MC Gen. Sig.	6	Short Wave Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
Standard Loop placed 24" from Rec. Loop	Aligning Loop	1400 KC	Broadcast	1400 KC	7	Broadcast Oscillator	Adjust for maximum output.
Standard Loop placed 24" from Rec.Loop	Aligning Loop	1400 KC	Broadcast	Tune to 1400 KC Gen. Sig.	8*	Broadcast Antenna	Adjust for maximum output.
Standard Loop placed 24" from Rec.Loop	Aligning Loop	600 KC	Broadcast	Tune to 600 KC Gen. Sig.	9*	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*NOTE: ADJUSTMENTS NO. 8 AND NO. 9 SHOULD BE MADE WITH THE SET IN THE CABINET AND WITH LOOP LEADS AND LOOP IN FINAL POSITION. A 50 mmfd. mica condenser in series to the antenna terminal may be used in place of the aligning loop.

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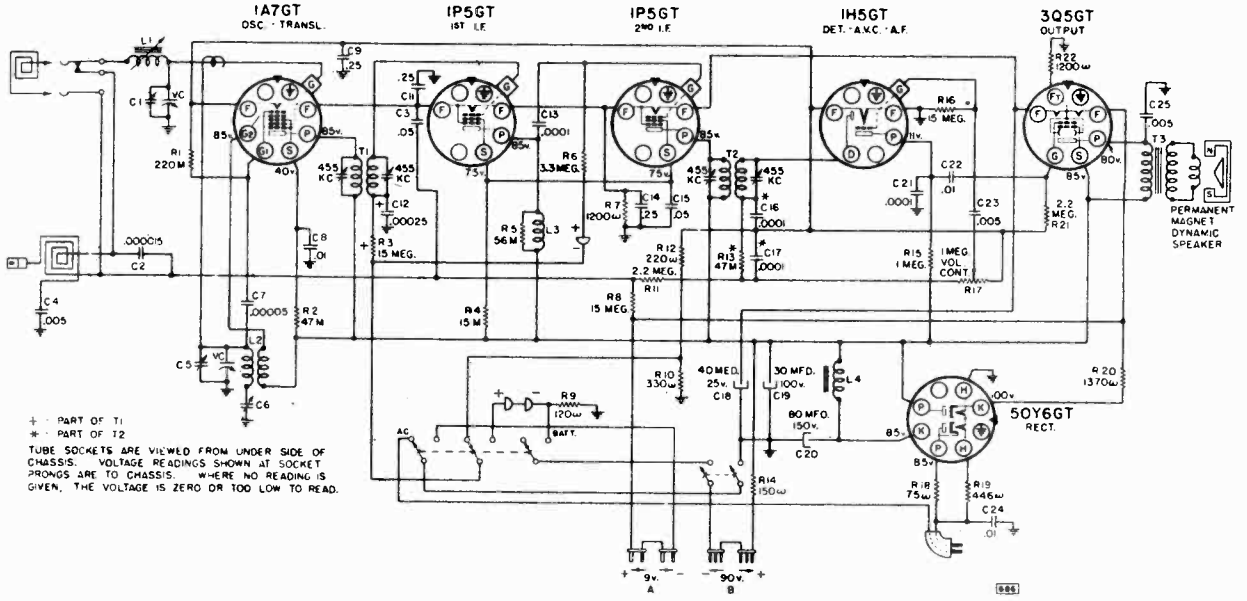
SEARS, ROEBUCK & CO.

MODELS 7083, Ch. 101.686
7087, Ch. 101.686-B,
7089, Ch. 101.686-A



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts. . . . . 0.37 volts
Approximate input to standard Hazeltine alignment loop for 50 milliwatt output . . . . See chart below
Generator ground lead connection . . . . . To chassis through 0.1 mfd. cond.
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control. . . . . Fully on
Position of Pointer with variable fully closed. . . . . On mark to left of 540 kc calibration mark.

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENT (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS PER METER
Closed	455 Kc	.1 mfd.	1A7GT Translator Grid	T2, T1	IF	
Open	1620 Kc	-	Radiating Loop	C5	Oscillator	70
1410 Kc	1410 Kc	-	Radiating Loop	C1	Translator	75
600 Kc (rock)	600 Kc	-	Radiating Loop	C6, L1	Padder	75

IMPORTANT ALIGNMENT NOTES

The chassis is removed from the case in order to align the IF but the loop antenna must be left connected.

The trimmer and padder condensers are accessible by removing the back cover.

The chassis must be in place in the cabinet during alignment. If battery supply is used, the batteries must be in place in the cabinet.

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.

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MODELS 7083, 7087, 7089

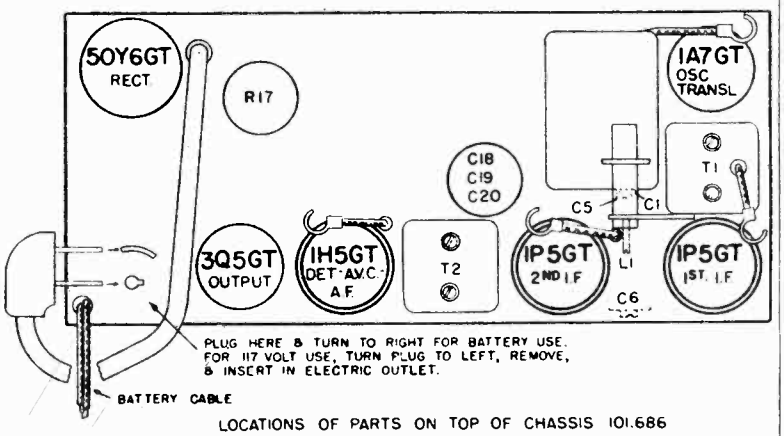
SEARS, ROEBUCK & CO.

POWER SUPPLY:
"A" Battery (4-1/2 volt). . . . . 2 - #5085
Service rating - 250 Hours,
Drain: 50 ma.
105-125 volts, AC-DC - 25 watts

"B" Batteries . . . . . 2 - #5090
Service rating - 250 Hours,
Drain: 12.5 ma.

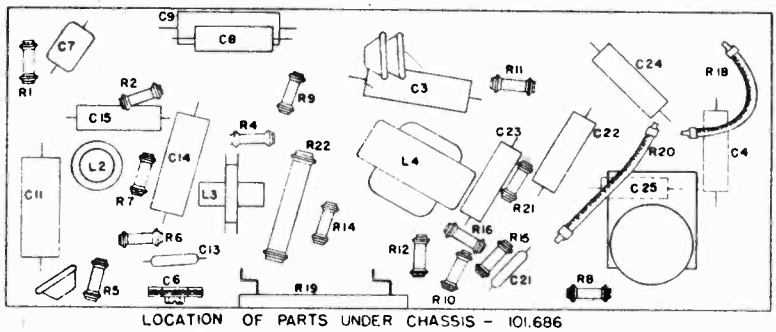
ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1620 kc	1410 kc	600 kc



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.686

OCTOBER 15, 1941



LOCATION OF PARTS UNDER CHASSIS - 101.686

FREQUENCY RANGE:
Broadcast . . . . . 540-1600 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:
Type . . . . . Beam
Undistorted . . . . . 0.155 watts
Maximum . . . . . 0.3 watts

OPERATING FEATURES:
Automatic Volume Control
Battery - AC Powered
Jack for connection of external loop

LOUDSPEAKER:
Type . . . . . PM Dynamic
Size . . . . . 5 inch

CHASSIS FEATURES:
Number IF stages . . . . . Two
Self-contained loop antenna and separate external loop
Special sensitivity compensating circuit for low battery operation

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:
1. Left knob . . . . . On-Off Switch and Volume
2. Right knob . . . . . Station Selector

CONTROL OPERATION:
Turning right: . . . . . On; Volume increase
Tuning ratio: . . . . . Direct

GENERAL INFORMATION & SERVICE HINTS

The receiver contains a built-in "loop" antenna which will give entirely satisfactory reception from local and moderately distant stations. Because this antenna is directional, it will often be found that turning the receiver case to a particular position will considerably improve reception. An external loop is provided for attachment to window of an automobile, train, or other shielded location.

Additional range can be had by connecting to a conventional outdoor antenna or even to a 20 or 30 foot length of wire, run along the floor. The connection is made to the clip on the right side of the cabinet, accessible when the backcover is opened.

If the receiver is used inside a shielded building(a building having a large amount of steel in its structure), reception may be poor even with the external loop. Under such conditions, connection to an external antenna or even to a piece of wire hung outside the window will improve reception.

When electric power supply is used, the battery cable plugs must either be in place in the batteries, or else must be inserted in the holder provided if "B" batteries are not installed in the cabinet. They must not be allowed loose in the cabinet with possibility of touching each other. Failure to observe this instruction may result in shorting of the plugs and burning out of the tubes.

DIFFERENCE BETWEEN 101.636, 101.636-A AND 101.636-B

101.636-A (Catalog 7039) is the same as 101.636 (Catalog 7033) except the case is covered in blue and tan. 101.636-B (Catalog 7037) is the same except that the case is covered in maroon and tan.

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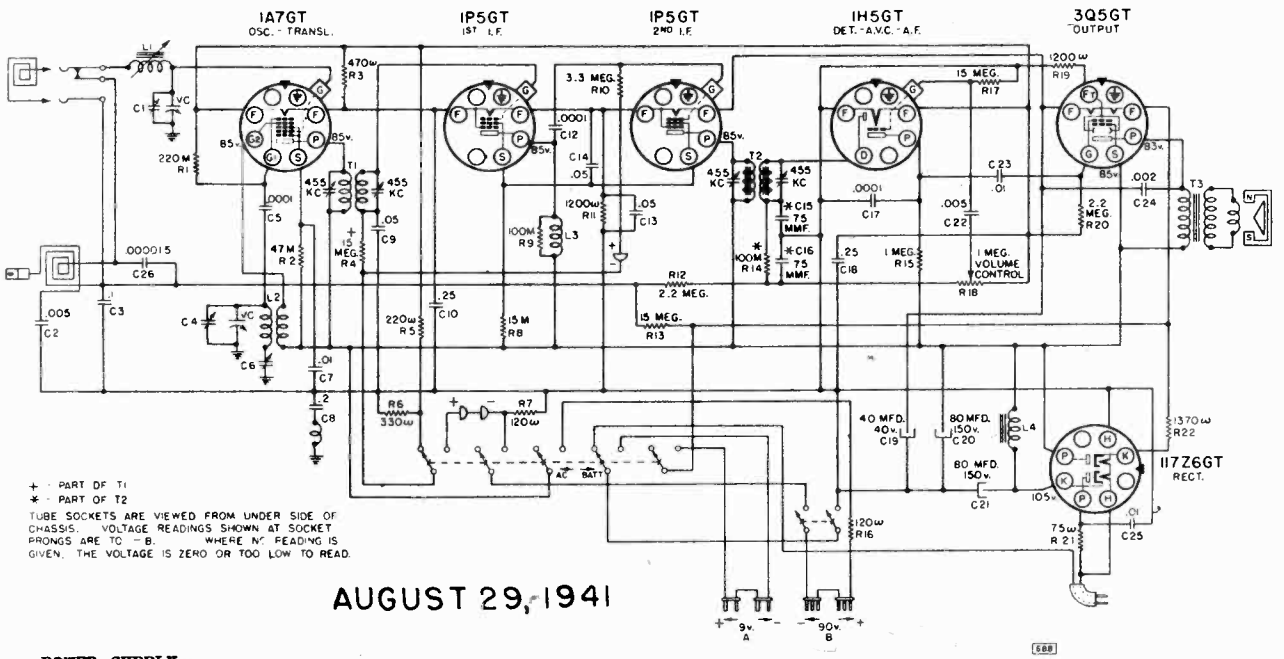
SEARS, ROEBUCK & CO.

MODELS 7085, Ch. 101.688,
7090, Ch. 101.688-A



POWER SUPPLY:
"A" Battery (4-1/2 volt). . . . . 2 - #5085
Service rating - 250 Hours,
Drain: 50 ma.
105-125 volts, AC-DC - 25 watts

"B" Batteries . . . . . 2 - #5090
Service rating - 250 Hours,
Drain: 12.5 ma.

ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
FREQUENCY RANGE: Broadcast . . . . . 540-1600 kc	1620 kc	1410 kc	600 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:
Type . . . . . Beam
Undistorted . . . . . 0.145 watts
Maximum . . . . . 0.3 watts

LOUDSPEAKER:
Type . . . . . PM Dynamic
Size . . . . . 5 inch

OPERATING FEATURES:
Automatic Volume Control
Battery - AC Powered
Jack for connection of external loop

CHASSIS FEATURES:
Number IF stages . . . . . Two
Self-contained loop antenna and separate external loop
Special sensitivity compensation for low battery operation

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:
1. Left knob . . . . . On-Off Switch and Volume
2. Right knob . . . . . Station Selector

CONTROL OPERATION:
Turning right: . . . . . On; Volume increase
Tuning ratio: . . . . . Direct

GENERAL INFORMATION & SERVICE HINTS

The receiver contains a built-in "loop" antenna which will give entirely satisfactory reception from local and moderately distant stations. Because this antenna is directional, it will often be found that turning the receiver case to a particular position will considerably improve reception. An external loop is provided for attachment to window of an automobile, train, or other shielded location.

Additional range can be had by connecting to a conventional outdoor antenna or even to a 20 or 30 foot length of wire, run along the floor. The connection is made to the clip on the right side of the cabinet, accessible when the backcover is opened.

If the receiver is used inside a shielded building(a building having a large amount of steel in its structure), reception may be poor even with the external loop. Under such conditions, connection to an external antenna or even to a piece of wire hung outside the window will improve reception.

When electric power supply is used, the battery cable plugs must either be in place in the batteries, or else must be inserted in the holder provided if "B" batteries are not installed in the cabinet. They must not be allowed loose in the cabinet with possibility of touching each other. Failure to observe this instruction may result in shorting of the plugs and burning out of the tubes.

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MODELS 7085, 7090

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts. . . . . 0.37 volts
Approximate input to standard Hazeltine alignment loop for 50 milliwatt output . . . . See chart below
Generator ground lead connection . . . . . To chassis through 0.1 mfd. cond.
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control. . . . . Fully on
Position of Pointer with variable fully closed. . . . . On mark to left of 540 kc calibration mark.

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENT (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS PER METER
Closed	455 Kc	.1 mfd.	1A7GT Translator Grid	T2, T1	IF	
Open	1620 Kc	-	Radiating Loop	C4	Oscillator	55
1410 Kc	1410 Kc	-	Radiating Loop	C1	Translator	55
600 Kc (rock)	600 Kc	-	Radiating Loop	C6, L1	Padder	55

IMPORTANT ALIGNMENT NOTES

The chassis is removed from the case in order to align the IF but the loop antenna must be left connected.

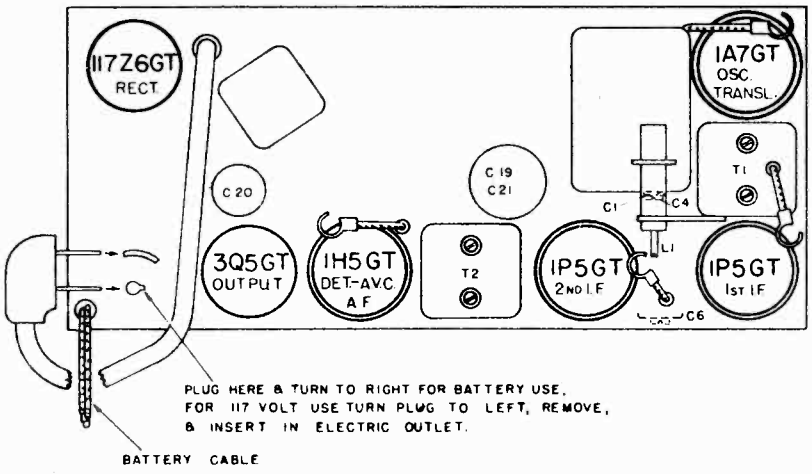
The trimmer and padder condensers are accessible by removing the back cover.

The chassis must be in place in the cabinet during alignment. If battery supply is used, the batteries must be in place in the cabinet.

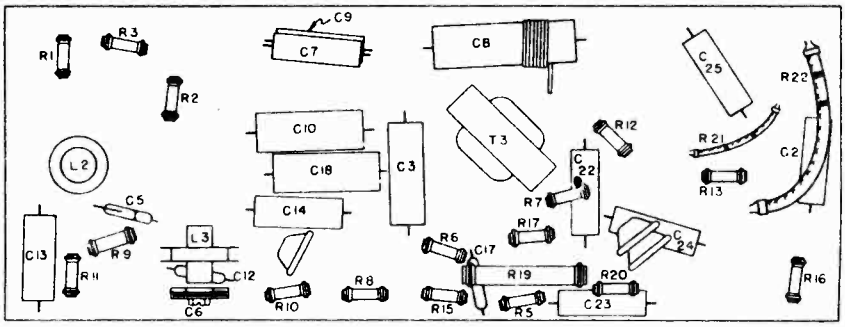
The variable should be rocked back and forth a degree or two while making the 600 Kc adjustment.

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.



LOCATION OF PARTS ON TOP OF CHASSIS 101.688



LOCATION OF PARTS UNDER CHASSIS 101.688

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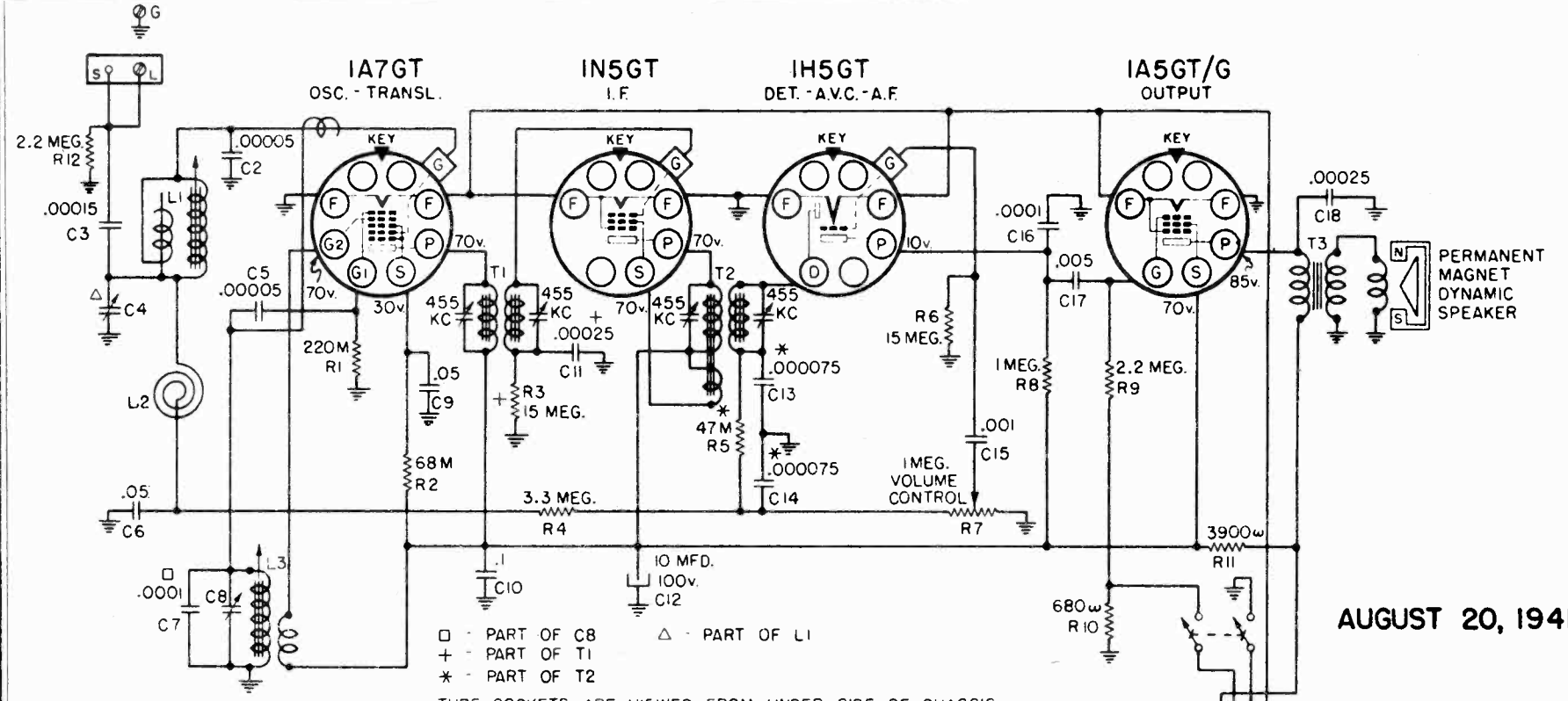


AUGUST 20, 1941

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

POWER SUPPLY:

#5178 . A-B block (1.5v. "A", 90 v. "B")

or #5174 A-B block
#5200 . . . . . 2v. Storage "A"
2 - #6150 . . . . . 45v. "B" battery

"A" Drain . . . . . 0.2 amperes
"B" Drain . . . . . 0.006 amperes
#5304 . . . . . Adaptor necessary with 2v. Storage "A"

FREQUENCY RANGE:

Broadcast. . . . . .540-1700 Kc

ALIGNMENT FREQUENCIES

Oscillator . . . . . Antenna-Transl.
Trimmer . . . . . Trimmer
1700 Kc . . . . . 1725 Kc

INTERMEDIATE FREQUENCY. . . . . .455 Kc

POWER OUTPUT:

Type . . . . . .Pentode
Undistorted . . . . . 0.07 watts.
Maximum . . . . . 0.135 watts.

LOUD SPEAKER:

Type . . . . . .PM Dynamic
Size . . . . . 5 inch

OPERATING FEATURES:

Automatic Volume Control
On-Off Indicator in Knob

CHASSIS FEATURES:

Number IF stages. . . . . .One
Plugs attached to battery cable
Two gang permeability tuned
Antenna matching adjustment

OPERATING CONTROLS:

1. Left knob . . . . . On-Off and Volume
2. Right knob . . . . Station Selector

CONTROL OPERATION:

Turning right: . . . On; Volume increase
Tuning ratio: 3:1

RECOMMENDED ANTENNA EQUIPMENT:

Catalog #4713 Stratobeam Receptor

www.americanradiohistory.com

MODELS 7100, 7114

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

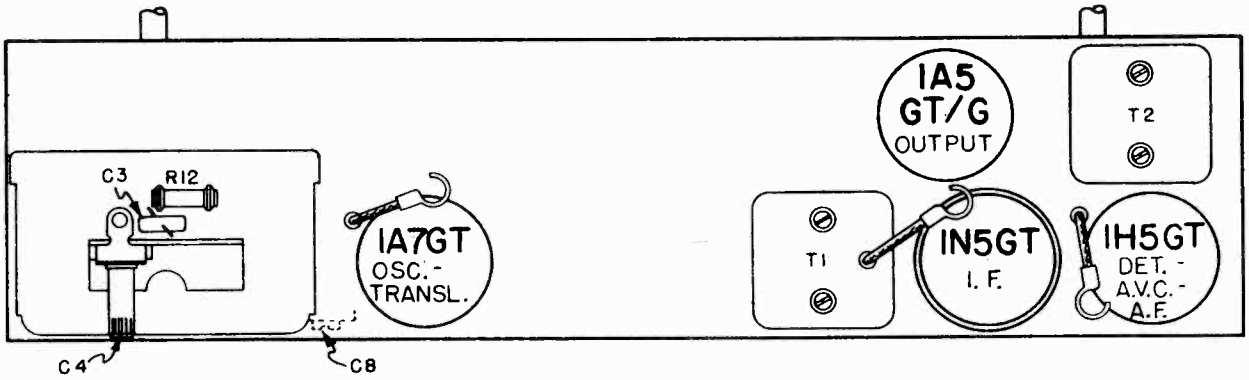
Output meter connections . . . . . Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts output. . . . . 0.37 volts
Approximately microvolts input to indicate 50 milliwatts output. . . . . See chart below
Generator ground lead connection . . . . . Receiver chassis
Dummy antenna value to be in series with generator output. . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully on
Position of pointer with tuner fully closed . . . . . To left of 540 kc calibration mark.

POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 Kc	.1 mfd.	1A7GT Translator Grid	T2, T1	IF	-
1700	1700 Kc	.00005 mfd.	Antenna Terminal	C8	Oscillator	-
1725	1725 Kc	.00005 mfd.	Antenna Terminal	C4	Translator	50

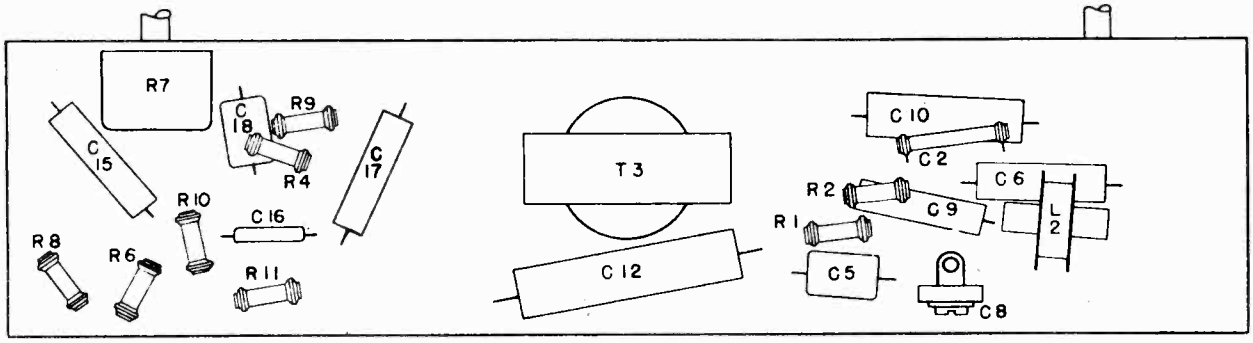
IMPORTANT ALIGNMENT NOTES

After setting the oscillator at 1700 kc, do not charge it when making the 1725 kc translator adjustment.

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.



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.661



LOCATION OF PARTS UNDER CHASSIS-101.661

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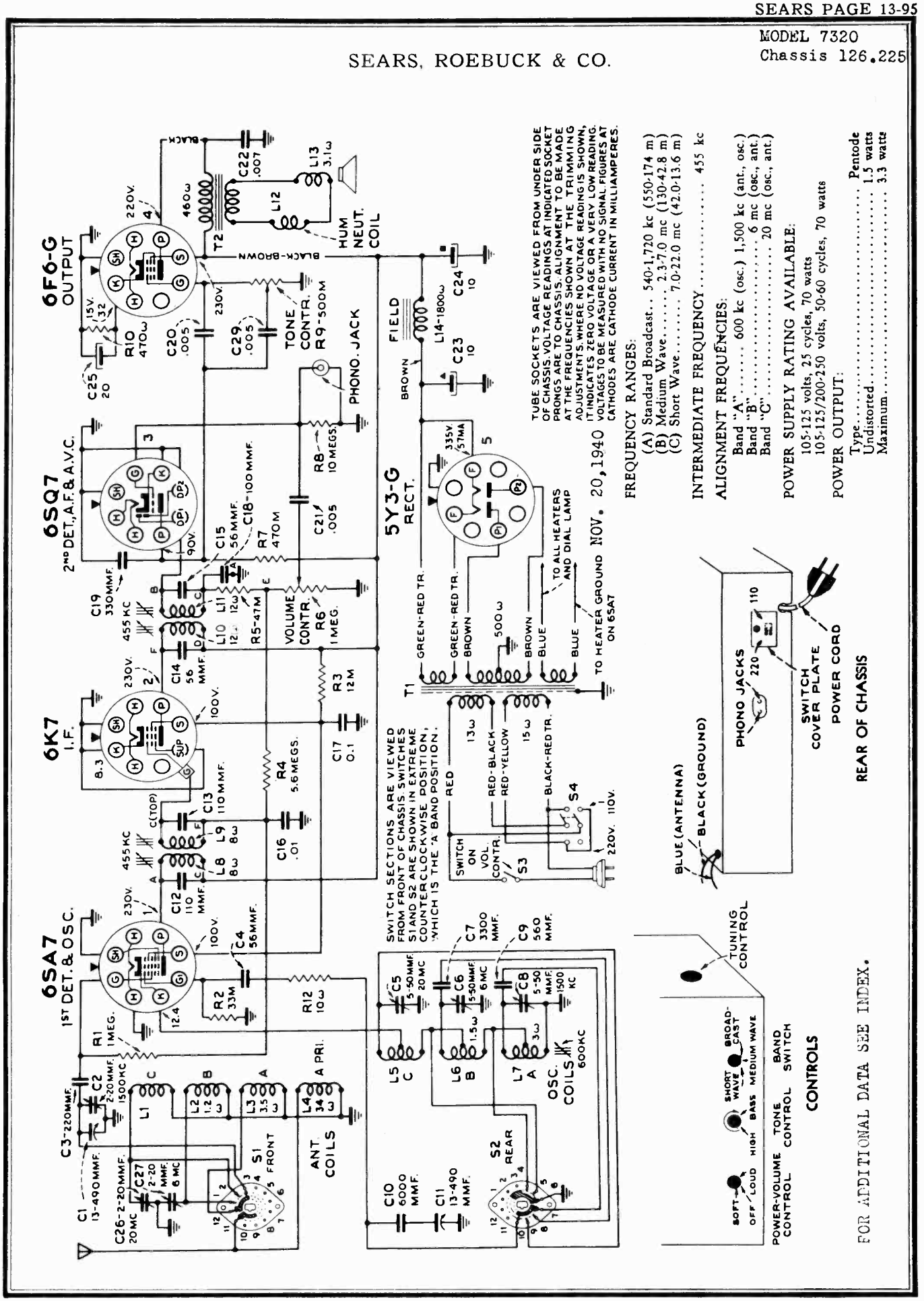
SEARS, ROEBUCK & CO.

MODEL 7320
Chassis 126.225



NOV. 20, 1940

FREQUENCY RANGES:
(A) Standard Broadcast.. 540-1,720 kc (550-174 m)
(B) Medium Wave..... 2.3-7.0 mc (130-42.8 m)
(C) Short Wave..... 7.0-22.0 mc (42.0-13.6 m)

INTERMEDIATE FREQUENCY..... 455 kc

ALIGNMENT FREQUENCIES:
Band "A"..... 600 kc (osc.) 1,500 kc (ant., osc.)
Band "B"..... 6 mc (osc., ant.)
Band "C"..... 20 mc (osc., ant.)

POWER SUPPLY RATING AVAILABLE:
105-125 volts, 25 cycles, 70 watts
105-125/200-250 volts, 50-60 cycles, 70 watts

POWER OUTPUT:
Type..... Pentode
Undistorted..... 1.5 watts
Maximum..... 3.3 watts

FOR ADDITIONAL DATA SEE INDEX.

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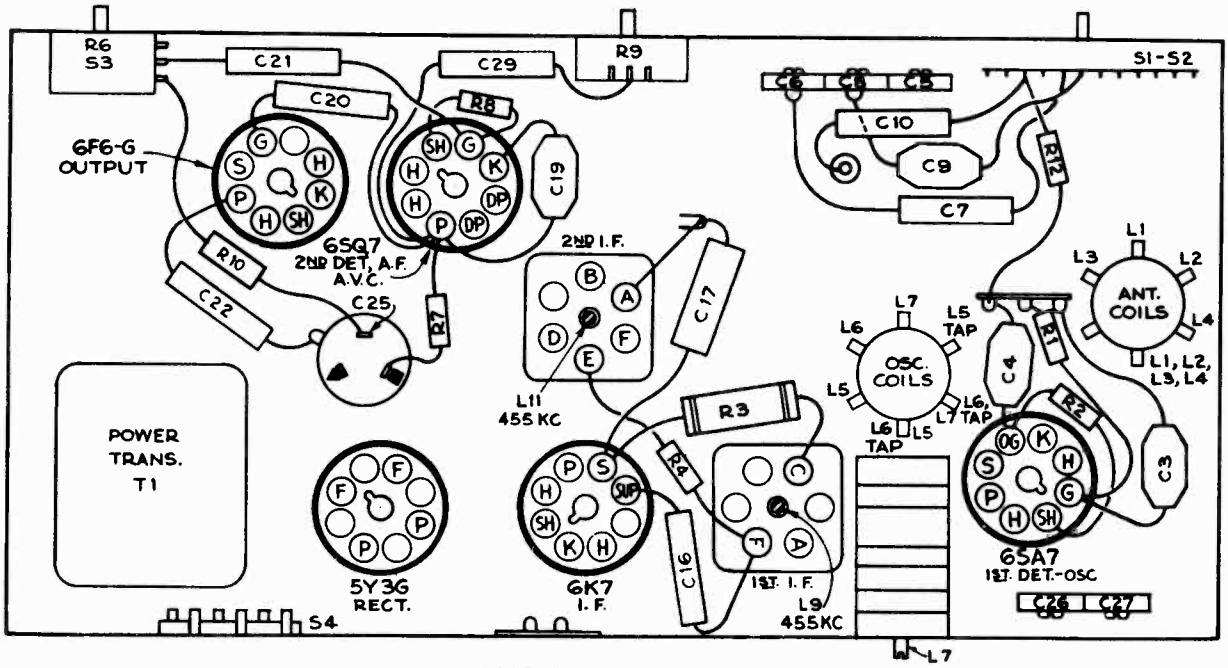
MODEL 7320

SEARS, ROEBUCK & CO.



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections ..... Across speaker voice coil
Output meter reading to indicate 1.0 watt output ..... 1.6 volts
Approximate average sensitivity in microvolts for 1.0 watt output ..... See chart below
Dummy antenna value to be inserted in series with generator output ..... See chart below
Connection of generator output lead ..... See chart below
Connection of generator ground lead ..... To chassis
Generator modulation ..... 30%, 400 cycles
Position of Volume Control ..... Fully Clockwise
Position of Tone Control ..... Fully Clockwise

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
"A"	Low End	455 kc	.001 mfd.	6K7 I-F Grid	L10, L11	2nd I-F Trans.	3,500
"A"	Low End	455 kc	.001 mfd.	Tuning Condenser Stator (osc.)	L8, L9	1st I-F Trans.	85
"A"	600 kc (33°) (rock)	600 kc	.0002 mfd.	Ant.	L7	Osc.	15
"A"	1,500 kc (152.4°)	1,500 kc	.0002 mfd.	Ant.	C8, C2	Osc., Ant.	——
"C"	20 mc (155.4°)	20 mc	300 ohms	Ant.	C5	Osc.*	——
"C"	20 mc (155.4°) (rock)	20 mc	300 ohms	Ant.	C26	Ant.	95
"B"	6.0 mc (149°)	6.0 mc	300 ohms	Ant.	C6	Osc.*	15
"B"	6.0 mc (149°)	6.0 mc	300 ohms	Ant.	C27	Ant.	——
"A"	1,500 kc (152.4°)	1,500 kc	.0002 mfd.	Ant.	C8, C2	Osc., Ant.	15

IMPORTANT ALIGNMENT NOTES

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

Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set interfering with accurate alignment.

Adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band. Grid cap leads should remain in place during alignment.

Note.—Oscillator tracks 455 kc above signal on all bands.
Values shown under, "Microvolts," are only approximate.

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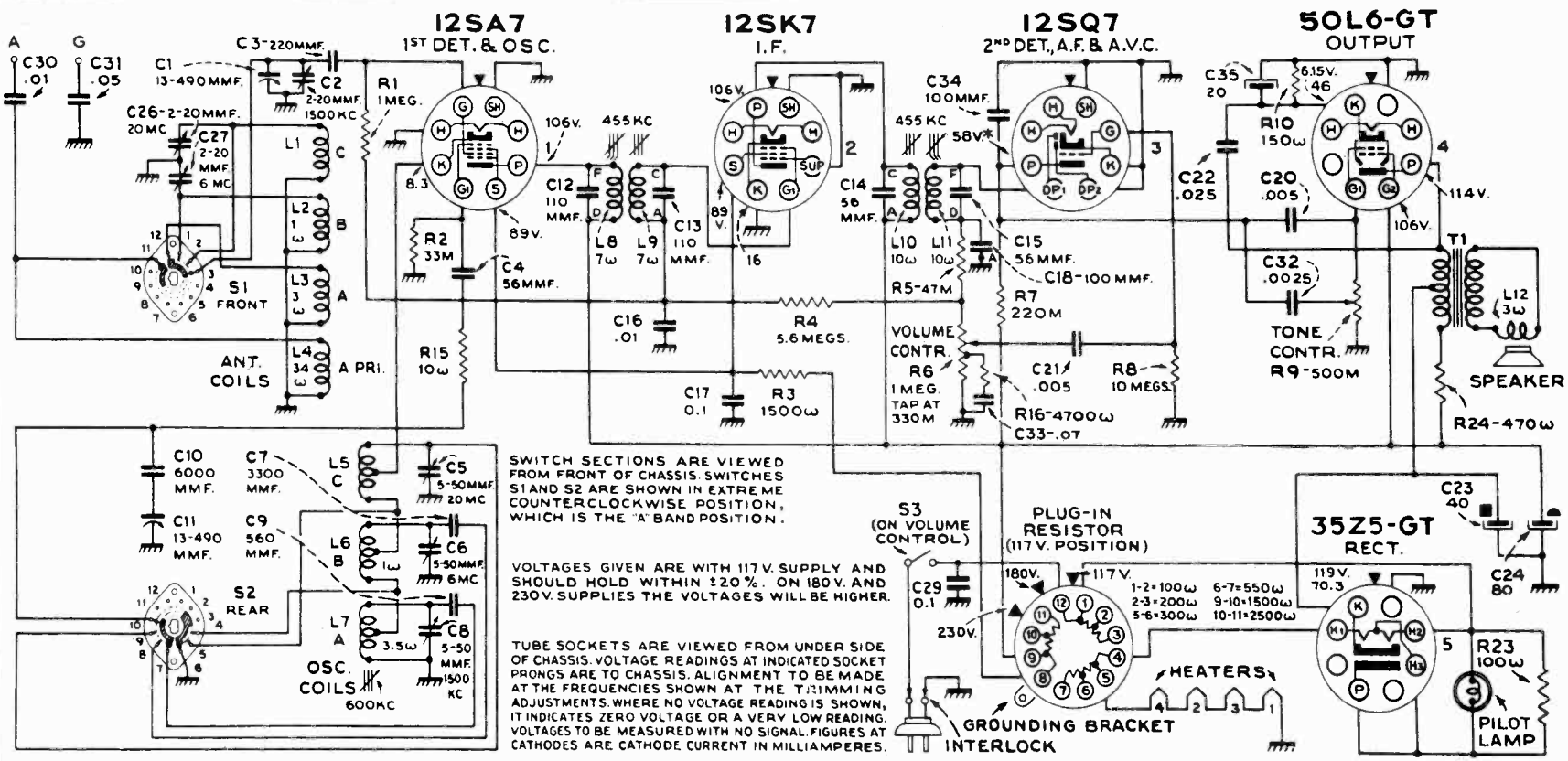
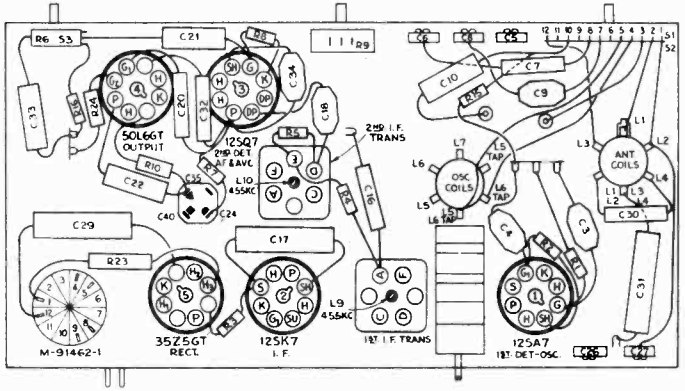
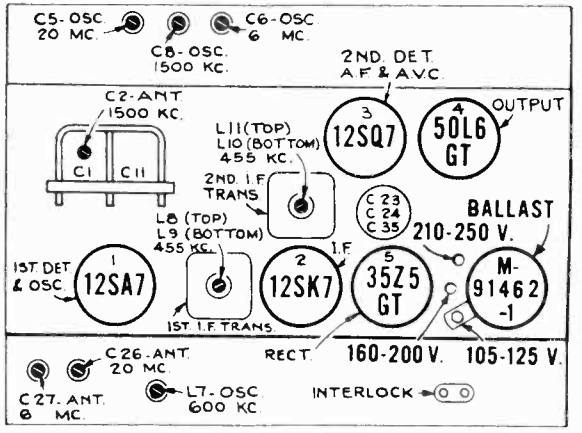




TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW



TUBE, TRIMMER AND PARTS LOCATION

DEC. 9, 1941

SEARS, ROEBUCK & CO.

MODEL 7322
Chassis 126.231

MODEL 7322

SEARS, ROEBUCK & CO.

IMPORTANT ALIGNMENT NOTES

Use minimum capacity peak if two peaks can be obtained.
Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output of the generator at its lowest possible value to prevent the AVC action of the set from interfering with accurate alignment.
Adjustment locations are shown on the top and bottom parts location views of chassis.
Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band.
Values shown under "Microvolts" are only approximate.

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
Broadcast	Low End	455 kc	.01 mfd.	12SK7 I-F Grid	L10, L11	2nd I-F Transformer	3,500
Broadcast	Low End	455 kc	.01 mfd.	12SA7 Grid	L8, L9	1st I-F Transformer	84
Broadcast	600 kc (33°) (Rock)	600 kc	0.0002 mfd.	Ant.	L7	Osc.	14
Broadcast	1,500 kc (152.4°)	1,500 kc	0.0002 mfd.	Ant.	C8, C2	Osc., Ant.	18
Short Wave	20 mc (155.4°)	20 mc	400 ohms	Ant.	C5, C26	Osc.,* Ant.	63
"Medium Wave"	6 mc (148°)	6 mc	400 ohms	Ant.	C6, C27	Osc.,* Ant.	25
Broadcast	1,500 kc (152.4°)	1,500 kc	0.0002 mfd.	Ant.	C8	Osc.	18

Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45° mark on the drum scale (see "Dial Drive Drawing") must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅛-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

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

Power Output:

Type	Beam Power
Undistorted (210-250 volt operation)	3.0 watts
Maximum	4.5 watts

Tuning Drive Ratio ..... 17 to 1

Power Supply Ratings:

105-125 volts	30 watts
160-180 volts	45 watts
210-250 volts	60 watts

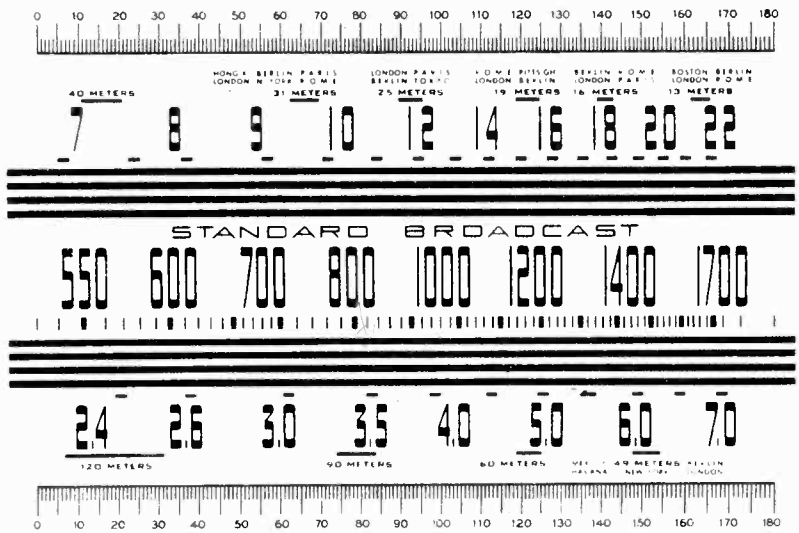
Frequency Ranges:

Standard Broadcast	540-1,720 kc (555-174 m)
Medium Wave	2.3-7.0 mc (130-42.8 m)
Short Wave	7.0-22 mc (42.8-13.6 m)

Loudspeaker:

Type	6-inch permanent-magnet dynamic
Voice Coil Impedance	3.4 ohms at 400 cycles

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 550 kc end of Broadcast "A" band. The dial pointer has a spring clip for attachment to the cable.



Calibration Scale

Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

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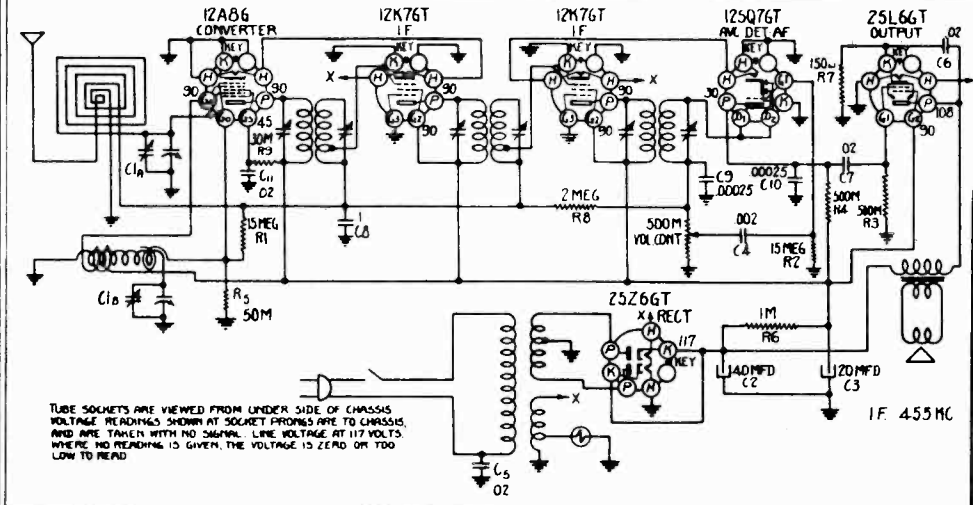
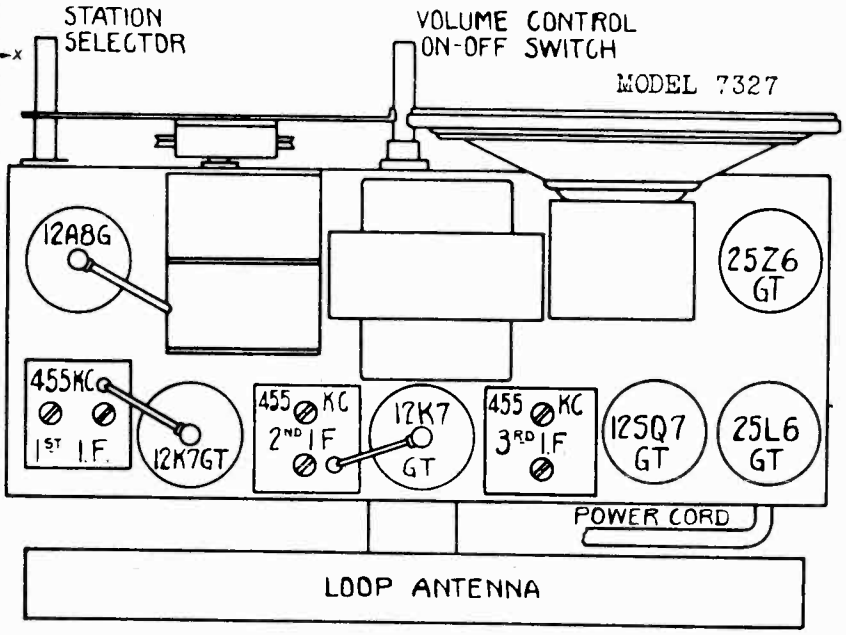


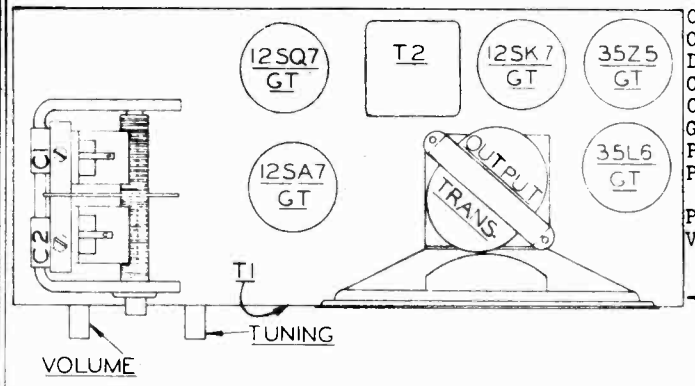
RESISTOR	OHMS	WATTS
R1	1.5 MEG	1/2
R2	1.5 MEG	1/2
R3	800 M	1/2
R4	500 M	1/2
R5	50M	1/2
R6	1M	1
R7	150 Ω	1/2
R8	2 MEG	1/2
R12	30 M	1/2

CONDENSER	CAPACITY	VOLTS & REMARKS
C1A,1B		VARIABLE
C2	40	150 DRY ELEC
C3	20	150 DRY ELEC
C4	.002	600 PAPER
C5	.02	600 PAPER
C6	.02	400 PAPER
C7	.02	400 PAPER
C8	.1	200 PAPER
C9	250 MMF	MICA
C10	250 MMF	MICA
C11	.02	400 PAPER

NOV. 1940

MODEL 7327





LOCATION OF PARTS ON TOP OF CHASSIS
MODELS 3611,3711,3811

ALIGNMENT PROCEDURE

PRELIMINARY: MODELS 3611,3711,3811

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts	0.38 volts
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Dial Pointer with variable fully closed	See note below

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION (high)	GENERATOR CONNECTION (low)	TRIMMERS ADJUSTED (in order shown)	TRIMMER FUNCTION
Open	455 kc	.1 mfd.	12SA7 grid	Flt. grnd.	T2, T1	IF
1400 kc	1400 kc	.00005 mfd.	Ant. clip	Flt. grnd.	C2, C1	Translator
600 kc	600 kc	.00005 mfd.	Ant. clip	Flt. grnd.	Check point	---

IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should be in a horizontal position matching the horizontal line across the face of the dial.

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

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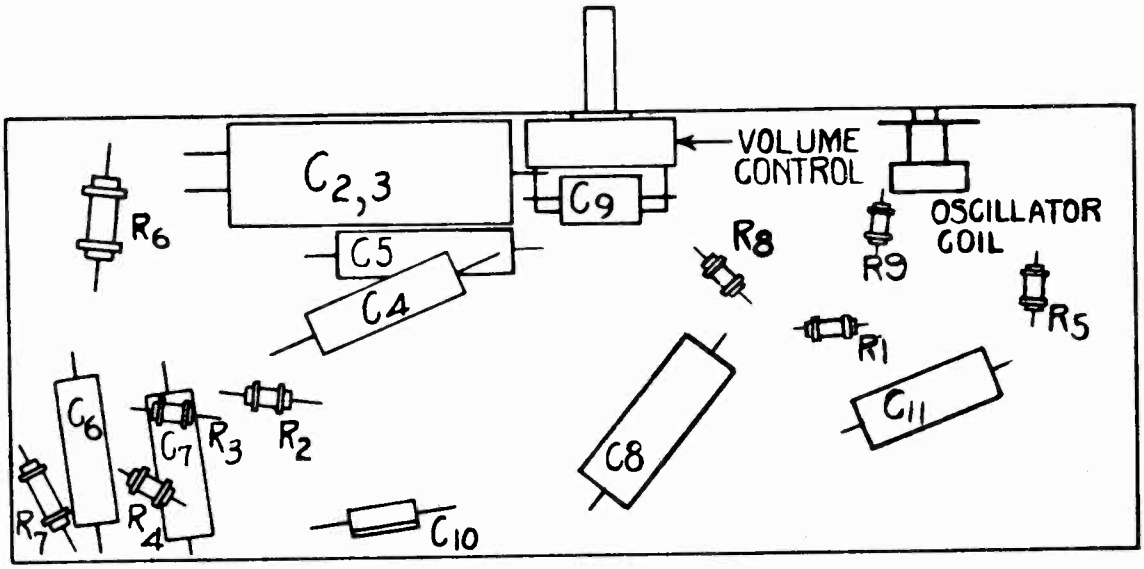
MODEL 7327

SEARS, ROEBUCK & CO.



ALIGNMENT PROCEDURE

This receiver covers the broadcast band 540-1600 KC. A "tracking section" oscillator condenser is used to accomplish tracking without a padding condenser. The only adjustments provided on the RF portion of the set are loop and oscillator trimmers. The circuit is quite conventional.

The normal alignment frequencies are shown below. It is to be noted that after aligning according to instructions, the top frequency of the set may not agree with the calibration. If an important station that should be received at the top end of the dial cannot be turned in, the condenser should be opened and the oscillator trimmer adjusted to permit the reception of the desired signal, then the antenna circuit aligned at the specified aligning frequency.

PRELIMINARY:

Output meter connection . . . . . Across loud speaker voice coil
Output meter to indicate 50 milliwatts . . . . . .0.4 volts
Dummy to be used between high side of generator and receiver . . . . . .See Note 1
Position of volume control . . . . . Fully on
Aligning Frequency . . . . . .1400 KC

It should be noted that on this set the dial is not fastened to the gang condenser or any of its supporting members, and since the condenser is flexibly mounted there can be motion of the condenser shaft with respect to the dial scale. This construction has been adopted to make the set as nearly free from microphonic howling as possible on a set with its unusual selectivity. The first step in aligning the set is to remove the pointer, by pulling it off of the condenser shaft and inspecting the shaft to see that it is approximately in the center of the hole in the dial scale. If this is not the case, the screws holding the dial should be loosened and the scale moved until the gang condenser shaft is centered in the hole. Replace the pointer, close the gang condenser and slide the pointer until it coincides with the horizontal line dividing the two scales, kilocycles and meters.

Note 1. This receiver has been designed primarily for operation on the loop without any outside antenna, therefore, it is best to align the set under the conditions under which it will be used most often. It is therefore recommended that the aligning signal be induced from another loop on the set rather than to follow the conventional practice of introducing the signal through a dummy antenna into the antenna lead. A loop 5 or 6 inches in diameter made of ordinary hook-up wire, and placed 3 or 4 inches behind the loop of the set and fed through a carbon resistor of 400 to 2000 ohms is the recommended device for inducing the aligning signal into the receiver loop.

Note 2. Due to productions variations in wiring and in condenser construction, a few loop trimmer condensers may peak wide open. Retrimming the oscillator to a 1400 KC signal when the pointer is set at a frequency slightly above 1400 KC may permit the loop trimmer to pass through a "peak".

POWER SUPPLY . . . . . 105-125 volts 60 cycles, AC only. 48 Watts

FREQUENCY RANGE . . . . . 540-1600 kc

ALIGNMENT FREQUENCY . . . . . 1400 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:
Tube . . . . . .Beam Tube
Undistorted . . . . . 0.6 Watt
Maximum . . . . . 1.8 Watt

LOUD SPEAKER:
Type . . Permanent Magnet Dynamic
Size . . . . . 5 inch
Field . . . . . Permanent Magnet

FOR ADDITIONAL DATA SEE INDEX.

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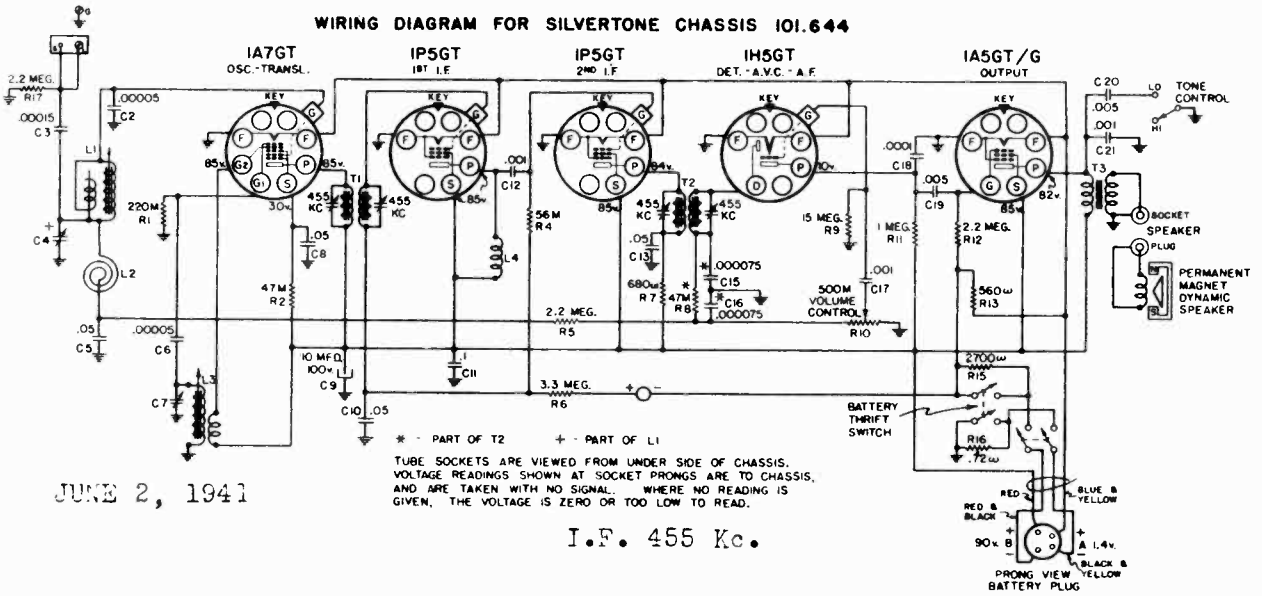
MODEL 7104
Chassis 101.644

SEARS, ROEBUCK & CO.



JUNE 2, 1941

I.F. 455 Kc.

PRELIMINARY: ALIGNMENT PROCEDURE

Output meter connections . . . . . Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . .0.37 volts
Approximately microvolts input to indicate 50 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . .Receiver chassis
Dummy antenna value to be in series with generator output . . . . . See chart below
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 30%, 400 cycles
Position of Volume Control . . . . . Fully on
Position of Tone Control . . . . . HI
Position of pointer with tuner fully closed . . . . . To left of 540 kc calibration mark .

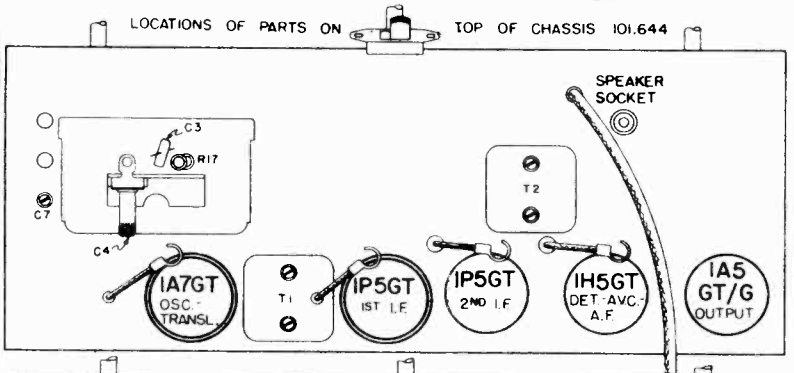
POSITION OF TUNER	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 Kc	.1 mfd.	1A7GT Translator Grid	T2, T1	IF	-
1700	1700 Kc	.00005 mfd.	Antenna Terminal	C7	Oscillator	-
1700	1700 Kc	.00005 mfd.	Antenna Terminal	C4	Translator	10

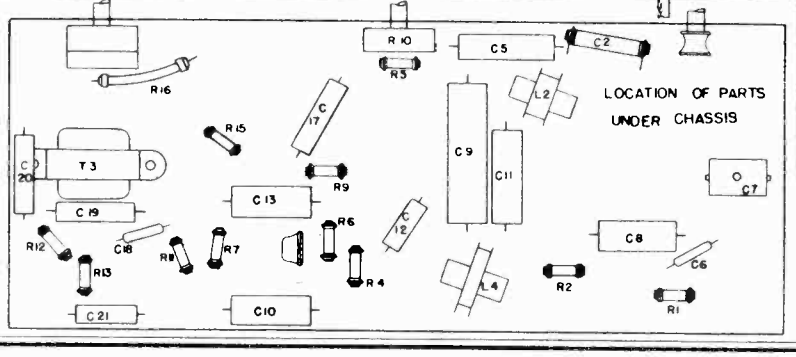
IMPORTANT ALIGNMENT NOTES

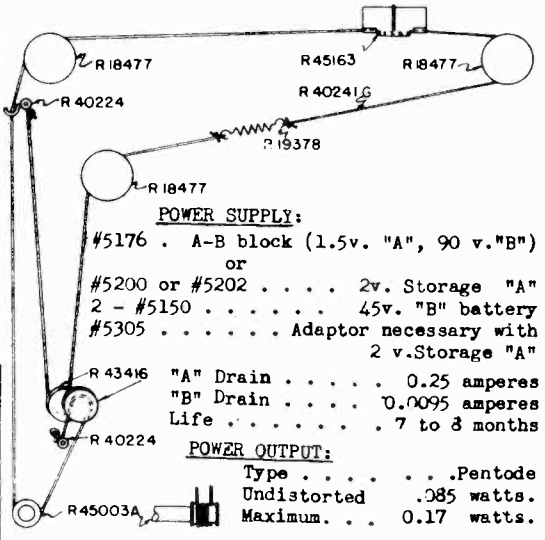
Make both the oscillator and translator antenna adjustment at 1700 KC on the BC band.

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.

LOCATIONS OF PARTS ON TOP OF CHASSIS 101.644







POWER SUPPLY:

#5176 . A-B block (1.5v. "A", 90 v."B")
or
#5200 or #5202 . . . . 2v. Storage "A"
2 - #5150 . . . . . 45v. "B" battery
#5305 . . . . . Adaptor necessary with 2 v.Storage "A"

"A" Drain . . . . . 0.25 amperes
"B" Drain . . . . 0.0095 amperes
Life . . . . . 7 to 8 months

POWER OUTPUT:

Type . . . . . .Pentode
Undistorted .085 watts.
Maximum. . . 0.17 watts.

ALIGNMENT FREQUENCIES

Oscillator	Antenna-Transl.
Trimmer	Trimmer
1700 Kc	1700 Kc

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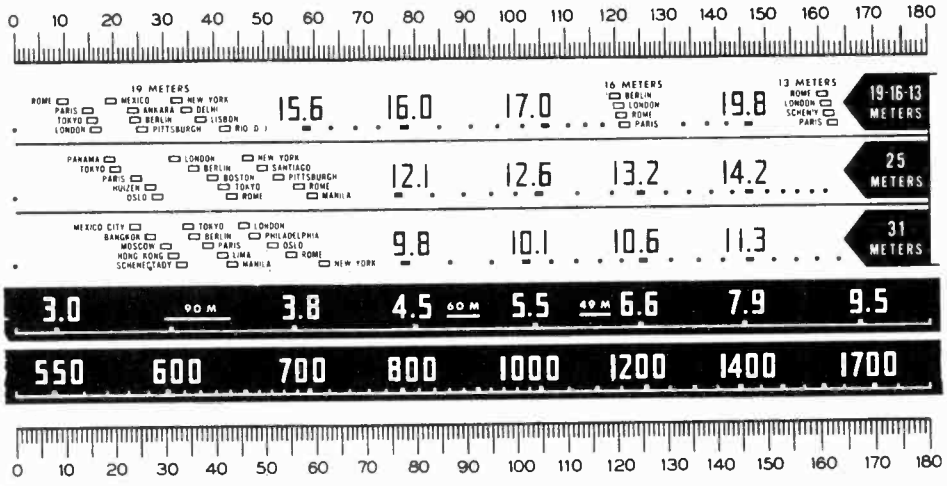
MODEL 7330
Chassis 126.227

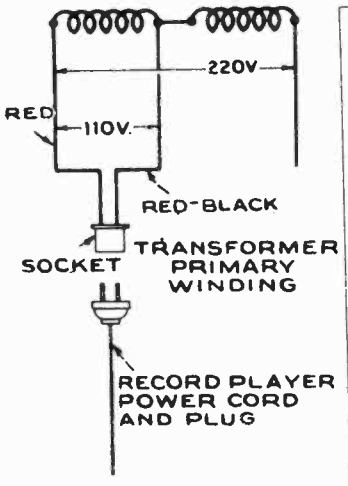
SEARS, ROEBUCK & CO.



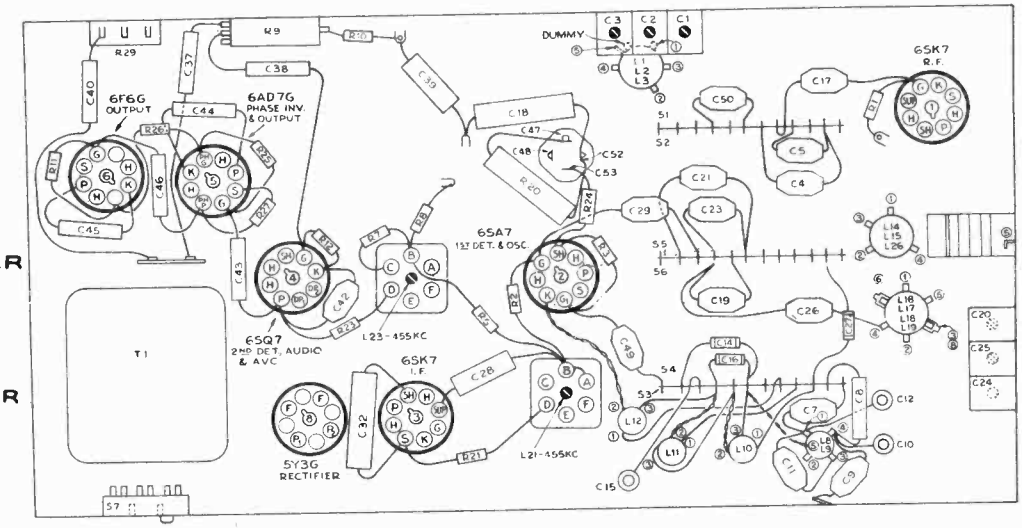
Calibration Scale

Reduced Reproduction of Receiver Dial, and Corresponding 180-0° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 30° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."



RECORD-PLAYER CONNECTIONS
(220 V—110 V)



TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

Tuning Dial:

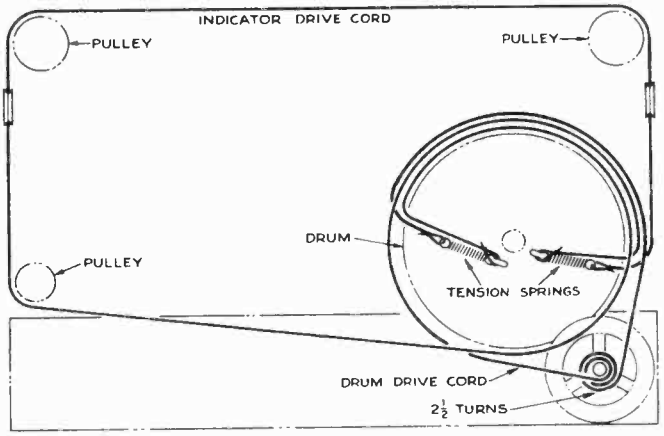
The tuning shaft is connected through a cord drive to a drum on the condenser shaft. This same cord drives the dial indicator by passing over a pulley on the chassis.

Calibration Scale on Variable Condenser Drive Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment when chassis is out of cabinet; therefore, a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be in a vertical position when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

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

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet attach the dial pointer to the drive cable with variable condenser fully closed and pointer on last calibration mark at 550 kc end of Broadcast "A" band. The dial pointer has a spring clip for attachment to the cable.



CONDENSER AND INDICATOR DRIVE CORDS

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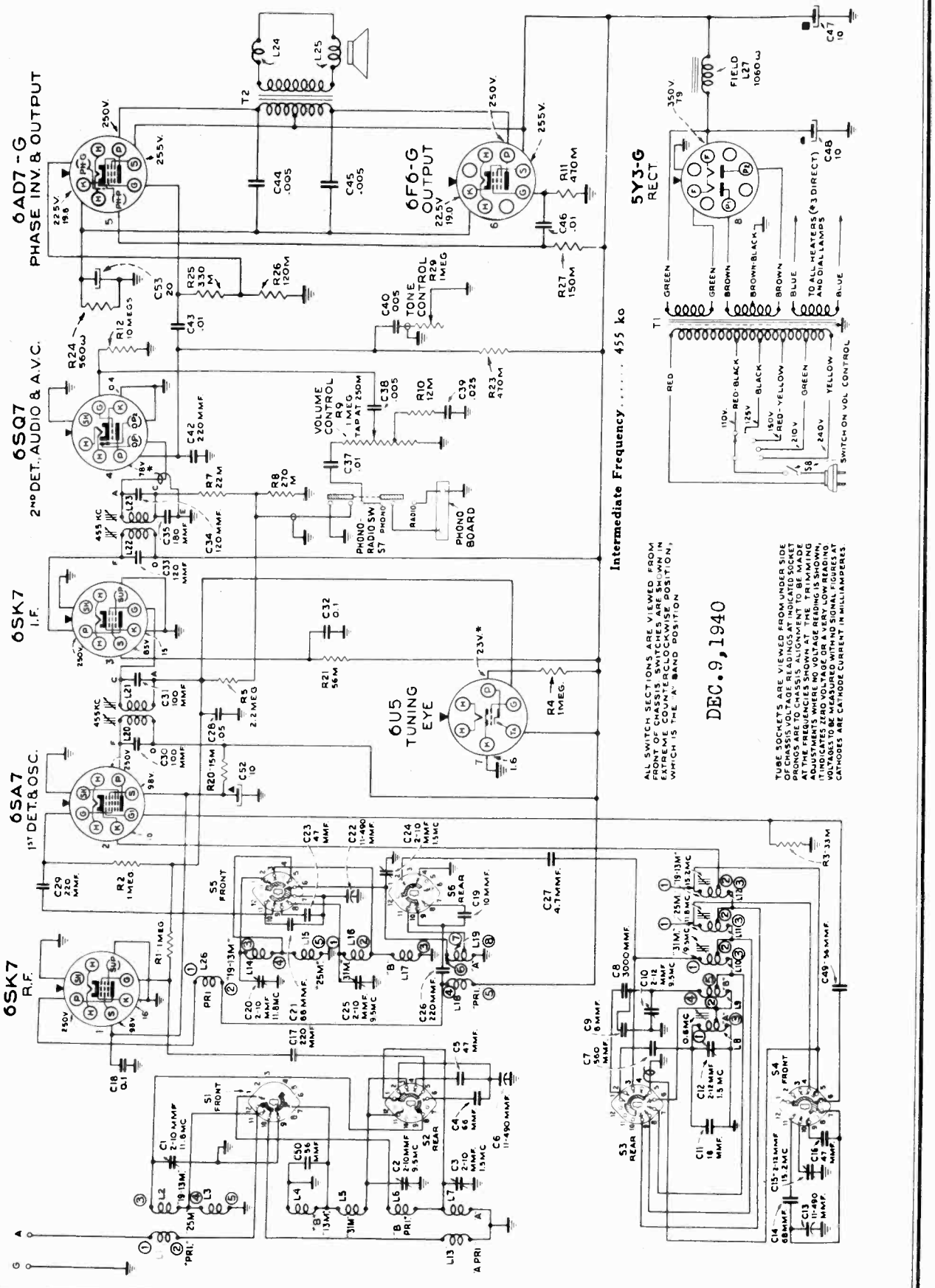
MODEL 7330
Chassis 126.227



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MODEL 7330
Ch. 126.227

SEARS, ROEBUCK & CO.

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

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

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

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

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections	Across speaker voice coil
Output meter reading to indicate 1.0 watt output	1.5 volts
Approximate average sensitivity in microvolts for 1.0 watt output	See chart below
Dummy antenna value to be inserted in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	To chassis
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully Clockwise
Position of Tone Control	Fully Clockwise

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
A Band	Low End	455 kc	.01 mfd.	6SK7 I-F Grid	L23, L22	2nd I-F Trans.	3,200
A Band	Low End	455 kc	.01 mfd.	6SA7 1st Det. Grid	L21, L20	1st I-F Trans.	71
25M Band	11.8 mc (Rock)	11.8 mc	300 ohms	Ant.	L11, C1, C20	osc., ant., det.†	3.6
25M Band	15.2 mc	15.2 mc	300 ohms	Ant.	C15	osc.*	3.8
19-13M Band	15.2 mc	15.2 mc	300 ohms	Ant.	L12	osc.*	5.4
31M Band	9.5 mc	9.5 mc	300 ohms	Ant.	L10, C2, C25	osc., ant., det.*†	2.8
B Band	9.5 mc	9.5 mc	300 ohms	Ant.	C10	osc.*	2.3
A Band	1,500 kc	1,500 kc	.0002 mfd.	Ant.	C12, C3, C24	osc., ant., det.	1.7
A Band	600 kc (Rock)	600 kc	.0002 mfd.	Ant.	L8	osc.	1.2

IMPORTANT ALIGNMENT NOTES

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

† Use maximum capacity peak if two peaks can be obtained when adjusting detector trimmer.

Where indicated by the word "Rock," the variable tuning condenser should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output of the generator at its lowest possible value to prevent the AVC action of the set from interfering with accurate alignment.

Adjustment locations are shown on the top and bottom parts location views of chassis.

Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band.

Values shown under "Microvolts" are only approximate.

Tubes and Functions:

6SK7	R-F Amplifier
6SA7	First Detector-Oscillator
6SK7	I-F Amplifier
6SQ7	Second Detector, A-F Amplifier and A.V.C.
6U5G	Tuning Indicator
6AD7G	Phase Inverter and Power Output
6F6G	Power Output
5Y3-G	Rectifier
Dial Lamp	2 Mazda 44, 6.3 volts, 0.25 amp.

Frequency Ranges:

Standard Broadcast (A	540-1,720 kc (555-174 m)
Medium Wave (B)	3-9.5 mc (100-31.5 m)
31 Meter Spread Band	9.5-11.7 mc (31.5-25.6 m)
25 Meter Spread Band	11.7-15.1 mc (25.6-19.9 m)
19-13 Meter Spread Band	15.1-22.5 mc (19.9-13.3 m)
Tuning Drive Ratio	20 to 1

Alignment Frequencies:

"A" Band	1,500 kc (osc., ant., det.) 600 kc (osc.)
"B" Band	9.5 mc (osc.)
31 Meter Band	9.5 mc (osc., ant., det.)
25 Meter Band	11.8 mc (osc., ant., det.)
19-13 Meter Band	15.2 mc (osc.)

Loudspeaker:

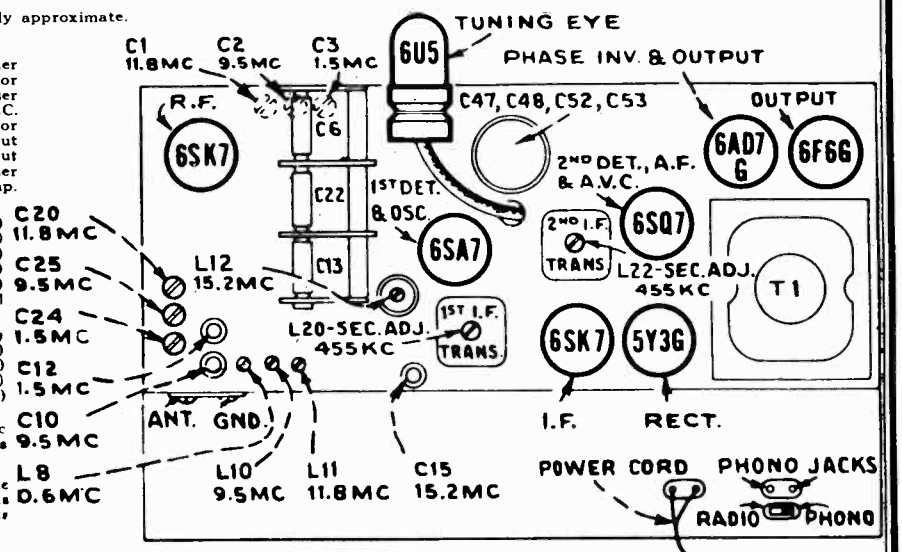
Type	8-inch Electrodynamic
Voice Coil Impedance	2.2 ohms at 400 cycles

Power Output:

Type	Push Pull Pentode
Undistorted	3 watts
Maximum	4.5 watts

Power Supply:

A	105 to 125 volts, 50 to 60 cycles, 75 watts
B	105 to 125 volts, 25 to 60 cycles, 75 watts
C	100-130, 140-160, 200 to 250 volts, 50 to 60 cycles, 75 watts



TUBE, TRIMMER AND PARTS LOCATION—TOP VIEW

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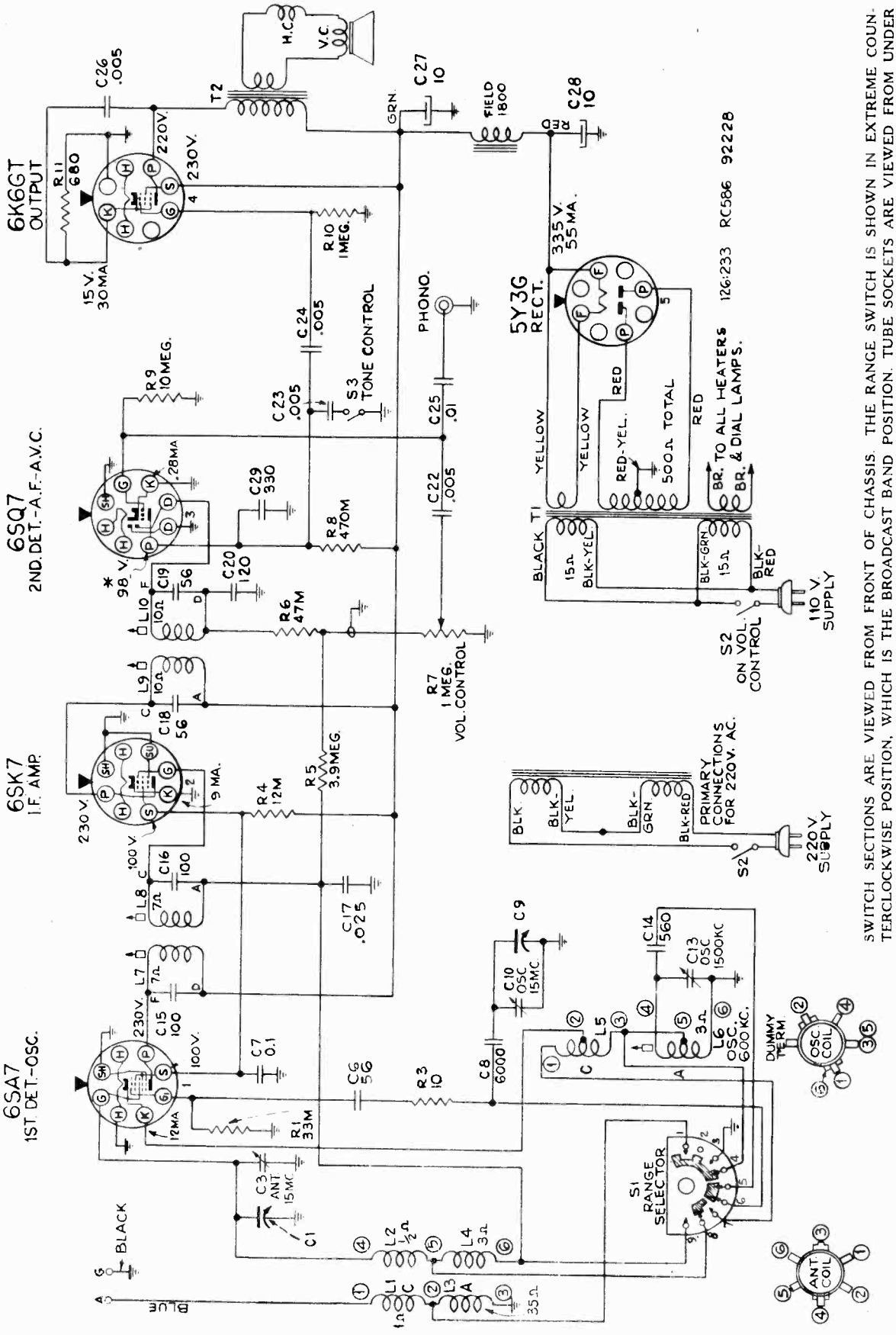
MODEL 7900
Ch.126.233
Export



SWITCH SECTIONS ARE VIEWED FROM FRONT OF CHASSIS. THE RANGE SWITCH IS SHOWN IN EXTREME COUNTERCLOCKWISE POSITION, WHICH IS THE BROADCAST BAND POSITION. TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE CATHODE CURRENTS IN MILLIAMPERES. VOLTAGES WITH STAR (★) ARE ACTUAL OPERATING VOLTAGES IN HIGH RESISTANCE CIRCUITS, MEASURED WITH ELECTRONIC VOLTMETER.

December 1, 1941

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MODEL 7900

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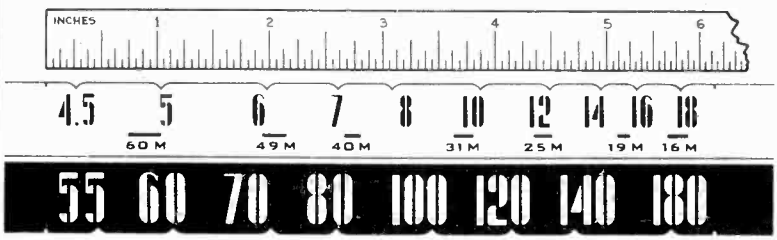
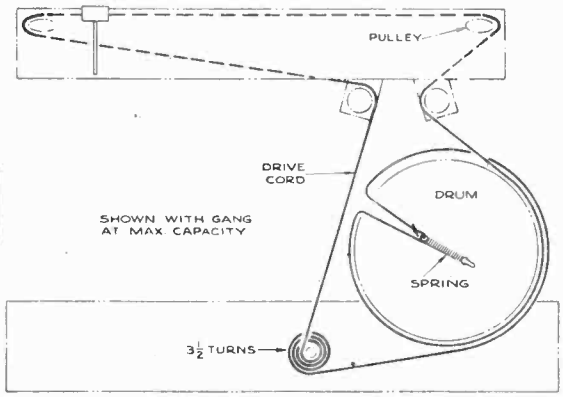
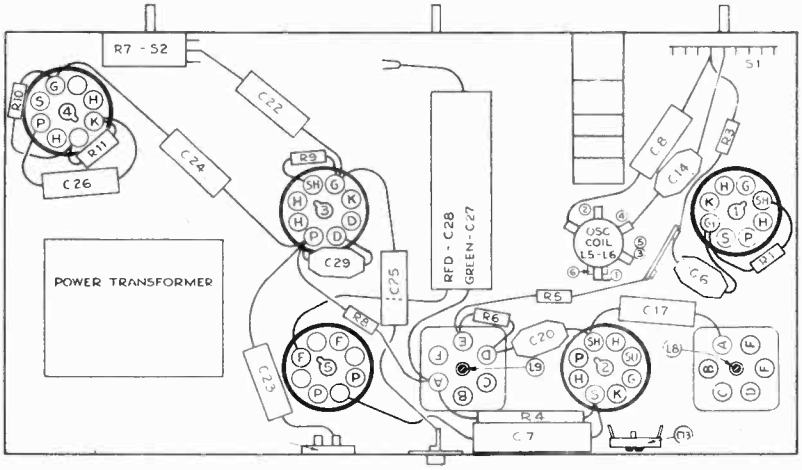


Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. Or, if necessary, the calibration scale printed in this service note can be used in conjunction with an ordinary 6-inch ruler as an accurate and convenient substitute for the regular dial.

RECEIVER DIAL SCALE AND CORRESPONDING CALIBRATION SCALE



DIAL-INDICATOR AND DRIVE MECHANISM

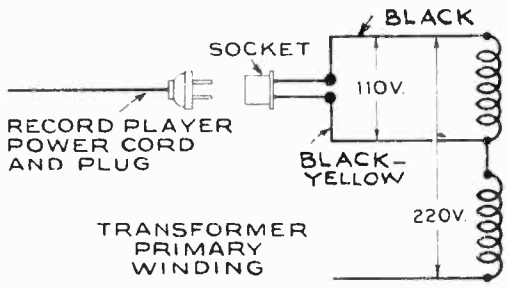


TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

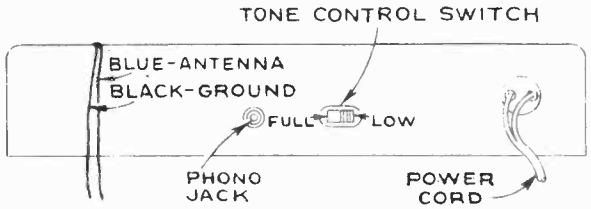
General Information and Service Hints

Record Player:

A jack is provided on the rear of chassis for connection to a No. 6227 Silvertone Record Player which is supplied only in 100-125 volts, 25, 50 or 60 cycle rating. If receiver is to be used on 220 volts, it will be necessary to connect the Record Player power cord to the 110V. primary section of the Power Transformer as shown in "Record Player connections" illustration.



RECORD PLAYER CONNECTIONS (220 V—110 V)



REAR OF CHASSIS

Loudspeaker:

The loudspeaker cone may be centered in the usual manner with three celluloid or paper feelers after gently cutting away the front dust cover. A new cover should be cemented in place upon completion of the adjustment.

CONTROLS

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MODEL 7900

SEARS, ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections	Across speaker voice coil
Output meter reading to indicate 1.0 watt output	2 volts
Approximate average sensitivity in microvolts for 1.0 watt output	See chart below
Dummy antenna value to be inserted in series with generator output	See chart below
Connection of generator output lead	See chart below
Connection of generator ground lead	To chassis
Generator modulation	30% 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	Full position
Position of Dial Pointer	at left mark on dial backing plate with gang at max. capacity

Wave-Band Switch Position	Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Trimmers Adjusted (In order shown)	Trimmer Function	Approximate Microvolts
Broadcast	Low End	455 kc	0.1 mfd.	6SK7 I-F Grid	L9, L10	2nd I-F Transformer	5200
Broadcast	Low End	455 kc	0.1 mfd.	6SA7 Grid	L7, L8	1st I-F Transformer	92
Short Wave	15 mc	15 mc	300 ohms	Ant.	C10	Osc.*	
Short Wave	15 mc (Rock)	15 mc	300 ohms	Ant.	C3	Ant.	50
Broadcast	1,500 kc	1,500 kc	0.0002 mfd.	Ant.	C13	Osc.	13
Broadcast	600 kc (Rock)	600 kc	0.0002 mfd.	Ant.	L6	Osc.	16
Broadcast	1,500 kc	1,500 kc	0.0002 mfd.	Ant.	C13	Osc.	

Frequency Ranges:

Standard Broadcast (A)	540-1,800 kc (555-166m)
Short Wave (C)	4.5-18 mc (66.7-16.6m)

Chassis Features:

Jack for Phonograph Attachment
Magnetite-Core Adjusted I-F Transformers, and "A" Band Oscillator Coil
Automatic Volume Control
Two-point Tone Control

Tuning Drive Ratio	18 to 1
Intermediate Frequency	455 kc

Alignment Frequencies:

Band "A"	1,500 kc (osc.) 600 kc (osc.)
Band "C"	(15 mc osc. and Ant.)

Loudspeaker:

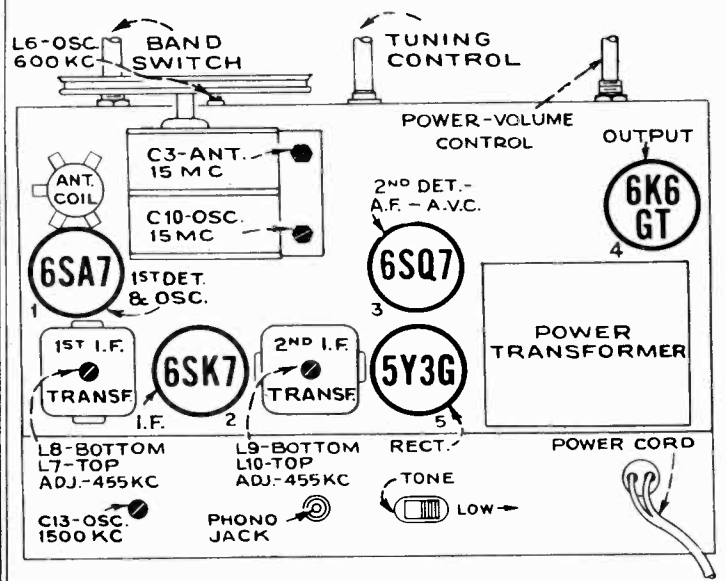
Type	5-inch electrodynamic
Voice Coil Impedance	4 ohms at 400 cycles

Power Output:

Type	Pentode
Undistorted	1.5 watts
Maximum	2.3 watts

Power Supply

A	105 to 125 volts, 50 to 60 cycles, 50 watts
B	105 to 125 volts, 25 to 60 cycles, 50 watts
C	105 to 240 volts, 50 to 60 cycles, 50 watts



TUBE, TRIMMER AND PARTS LOCATION—TOP VIEW

IMPORTANT ALIGNMENT NOTES

* Use minimum capacity peak if two peaks can be obtained. Where indicated by the word "Rock", the variable tuning condensor should be rocked back and forth a degree or two while making this adjustment.

Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output of the generator at its lowest possible value to prevent the AVC action of the set from interfering with accurate alignment. Adjustment locations are shown on the top and bottom parts location views of chassis. Only the dummy antenna indicated in the chart for any particular band should be used. Remove the dummy used for alignment in any other band. Values shown under "Microvolts" are only approximate. Note: Oscillator tracks 455 Kc. above signal on all bands.

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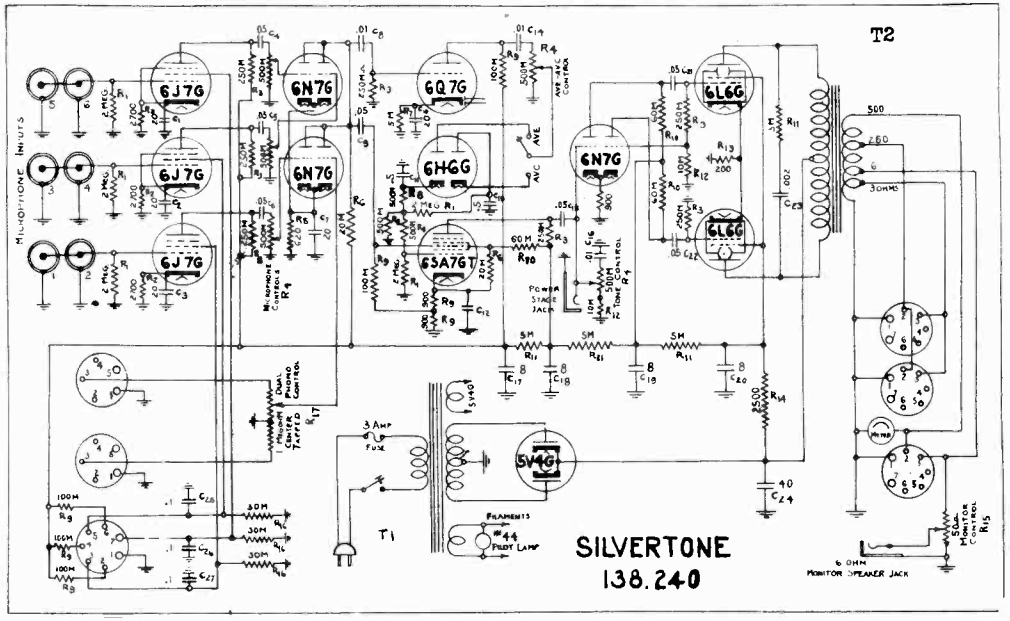
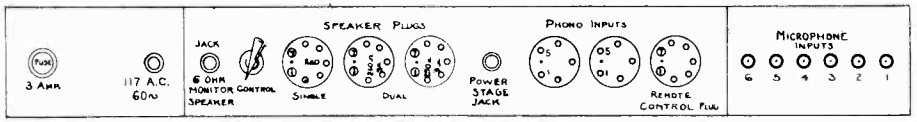
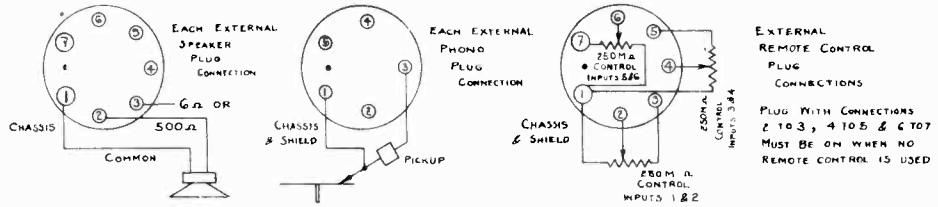






NOTE : FOR HEAD PHONE USE MONITOR SHOULD BE HIGH IMPEDANCE MONITOR CONTROL SHOULD BE USED WITH CAUTION

USE RED SPEAKER SOCKET FOR ONE 6Ω OR 500Ω SPEAKER PLUG WHEN TWO 6Ω OR 500Ω SPEAKER PLUGS ARE USED, BOTH MUST BE IN BLACK SOCKETS FOR CONNECTION TO 3 OHMS OR 250 OHMS.

TUBE COMPLEMENT:

3	6J7G	Input
2	6N7G	Mixer
1	6Q7G	Voltage Amplifier
1	6SA7GT	Expander Amplifier
1	6H6G	Expander..Rectifier
1	6N7G	Driver
2	6L6G	Output
1	5V4G	Rectifier

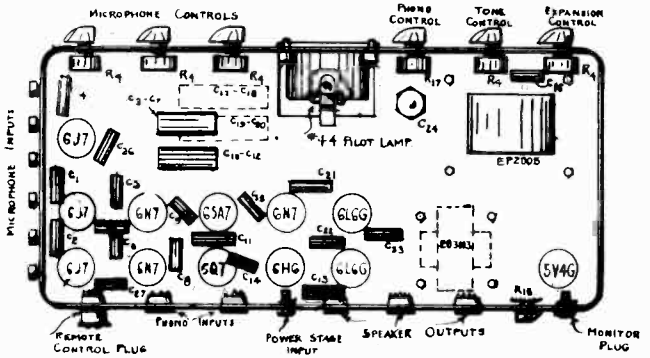
PICKUP: High impedance crystal type, 500M ohms

SPEAKERS: 12 inch permanent magnet type, 6 ohm voice coil. Standard equipment Jensen PM12H.

INPUTS:
6 input positions each to accomodate high impedance crystal velocity, or no voltage velotron microphones, and one high impedance phono unit.

MARCH 14, 1941

35 WATT, 12 TUBE, 5 STAGE, HIGH GAIN AMPLIFIER



This amplifier has five stages with input for six high impedance microphones, fader and two crystal pickups. The circuit also incorporates a volume expansion circuit for use with phonograph records and an automatic volume control circuit to automatically control microphone gain. It must be remembered, however, that this latter function will operate only within the limitations of the enclosure in which the amplifier is used.

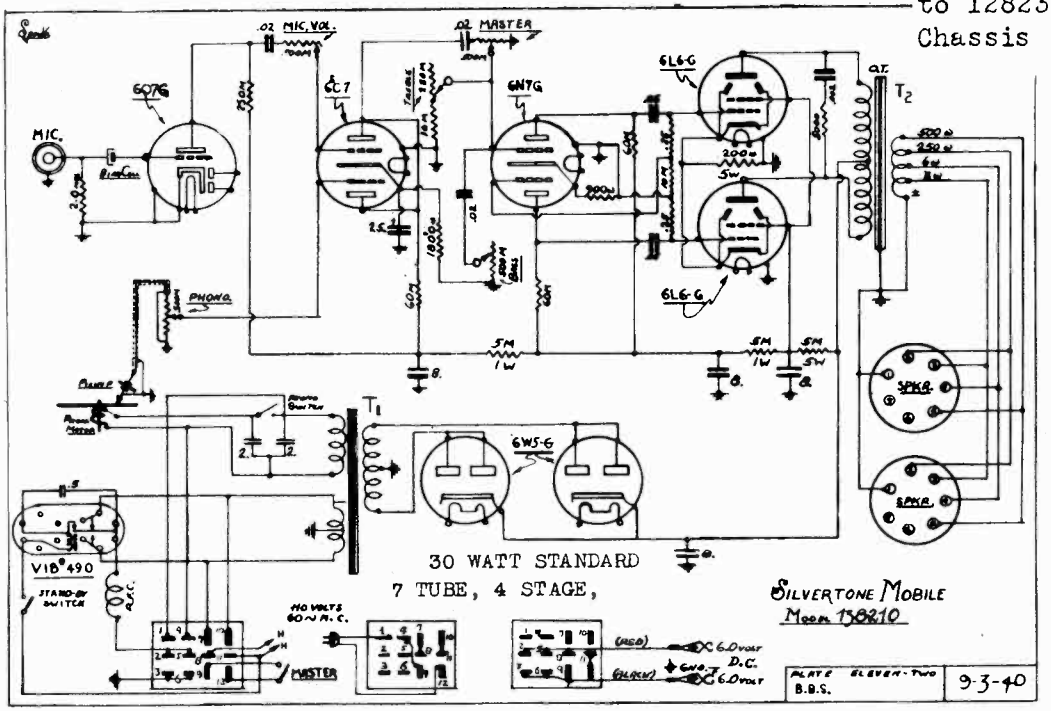
Provision is also made for use of a remote control for the three microphone inputs. If the remote control attachment is not used, be sure that the dummy plug is inserted in the remote control socket at the rear of the amplifier.

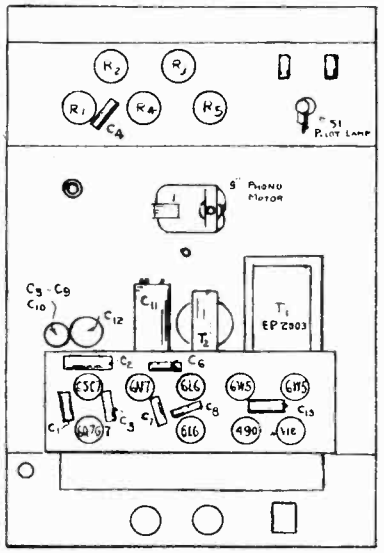
POWER SUPPLY: 110-125 volts, 50-60 cycle, AC only, 140 watts

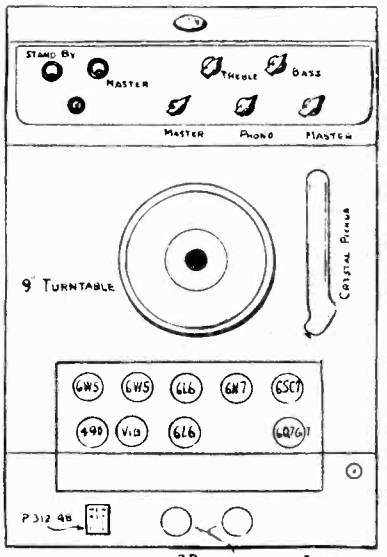
FREQUENCY CHARACTERISTICS:
Curve substantially flat from 50 to 10,000 cycles per second.

SEARS, ROEBUCK & CO.

MODELS 8903, 12816 to 12823 incl.
Chassis 138.210







MAY 1, 1941

GENERAL INFORMATION AND SERVICE HINTS

This unit is a combination 6 volt-110 volt mobile system. For AC operation use the AC cord. For DC operation, use the heavy cord that is provided with battery clips. The phonograph motor which is 110 volt-60 cycle type operates from a 110 volt winding on the transformer when the system is used on 6 volts, the vibrator functioning as a converter. The vibrator has ample capacity to carry the entire load of the amplifier.

ELECTRICAL SPECIFICATIONS

TUBE COMPLEMENT:

1 - 6Q7G . . . . . Input
1 - 6SC7G . . . . . Mixer
1 - 6N7G . . . . . Phase Inverter Driver
2 - 6L6G . . . . . Output Stage
2 - 6W5G . . . . . Rectifiers

POWER SUPPLY

This unit is so designed as to operate on 110-115 volts, 60 cycles. It requires approximately 110 watts for its operation. It may also be operated on a 6 volt storage battery. Wattage on 6 volt operation, with the motor, 141 watts.

FREQUENCY CHARACTERISTICS

Substantially flat 50 to 10,000 cycles.

INPUT - for one High Impedance Crystal or Dynamic Microphone.

PICKUP: Crystal Type

CONTROLS

1 - 500M ohm Carbon Control - Phonograph Volume
1 - 500M ohm Carbon Control - Microphone Volume
1 - 500M ohm Carbon Control - . . . . . Base
1 - 500M ohm Carbon Control - . . . . . Master
1 - 250M ohm Carbon Control - . . . . . Treble

SWITCHES:

1 Standby
1 Phono turntable switch

SPEAKERS: Use 12" permanent magnet type with 6 ohm voice coil.

OUTPUT IMPEDANCE: . . . . . 3, 6, 250, 500 ohms.

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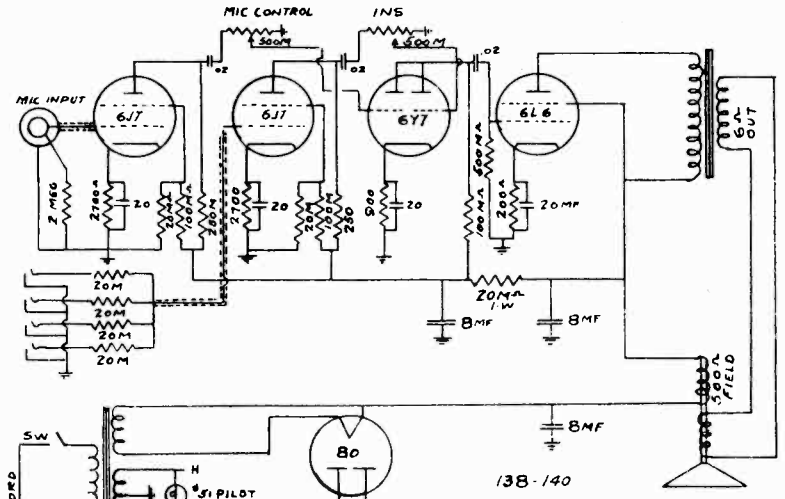
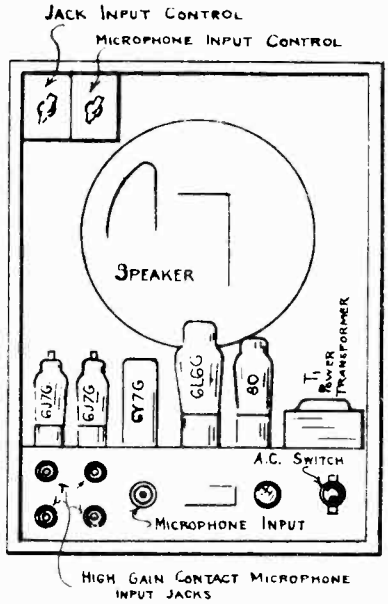
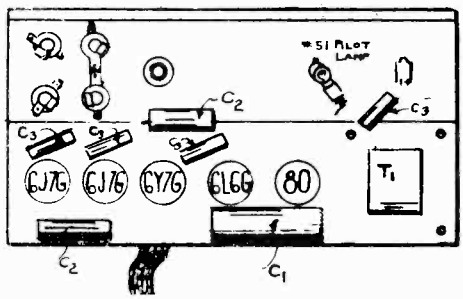
MODEL 8960 Amplifier
Chassis 138.140

SEARS, ROEBUCK & CO.

8 WATT, 5 TUBE, MUSICAL INSTRUMENT AMPLIFICATION SYSTEM







FEBRUARY 19, 1941

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

1	6J7G ..... Microphone Input	1	6Y7G ..... Mixer Tube
1	6J7G .. .. Instrument Input	1	6L6G ..... Output
	1 80 .....Rectifier		

POWER SUPPLY: . . . . . 110-125 volts 50-60 Cycles, 71 Watts

INPUTS:
1 High Gain Microphone, 4 High Gain inputs for contact microphones.

GAIN: Approximately 115 DB SPEAKER: Jensen 8" Electro-dynamic with matching transformer.

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:

1 - 500M ohm control	Microphone Volume.
1 - 500M ohm control	Instrument Volume.
1 - Master A. C. Switch	Power

GENERAL INFORMATION AND SERVICE DATA

The amplifier uses 5 tubes and has 3 stages. Each input tube has an individual volume control which is located in the upper left hand corner of the portable case.

The voice microphone used with this system should be of the high impedance crystal, velocity or dynamic types. Contact or instrument microphones should be similar to the Amperite Contact type. It will be noted that input for four contact microphones is provided. All are connected in parallel so that all must be of the same type.

TUBES:
When it is necessary to replace tubes be sure to have them checked as a shorted tube will damage the amplifier. The two 6J7 input tubes must be tested for low hum and noise level.

HUM:
If unit hums, it may be due to any one of several causes. Check your tubes.
Check your microphone cable for breaks in shielding or for inferior microphone cable if you have made replacement.

Microphone wiring should be kept well separated from the heavy power wiring, separate lights, or other electrical equipment. In order to minimize line disturbances, the chassis of the amplifier should be connected to a water pipe ground.

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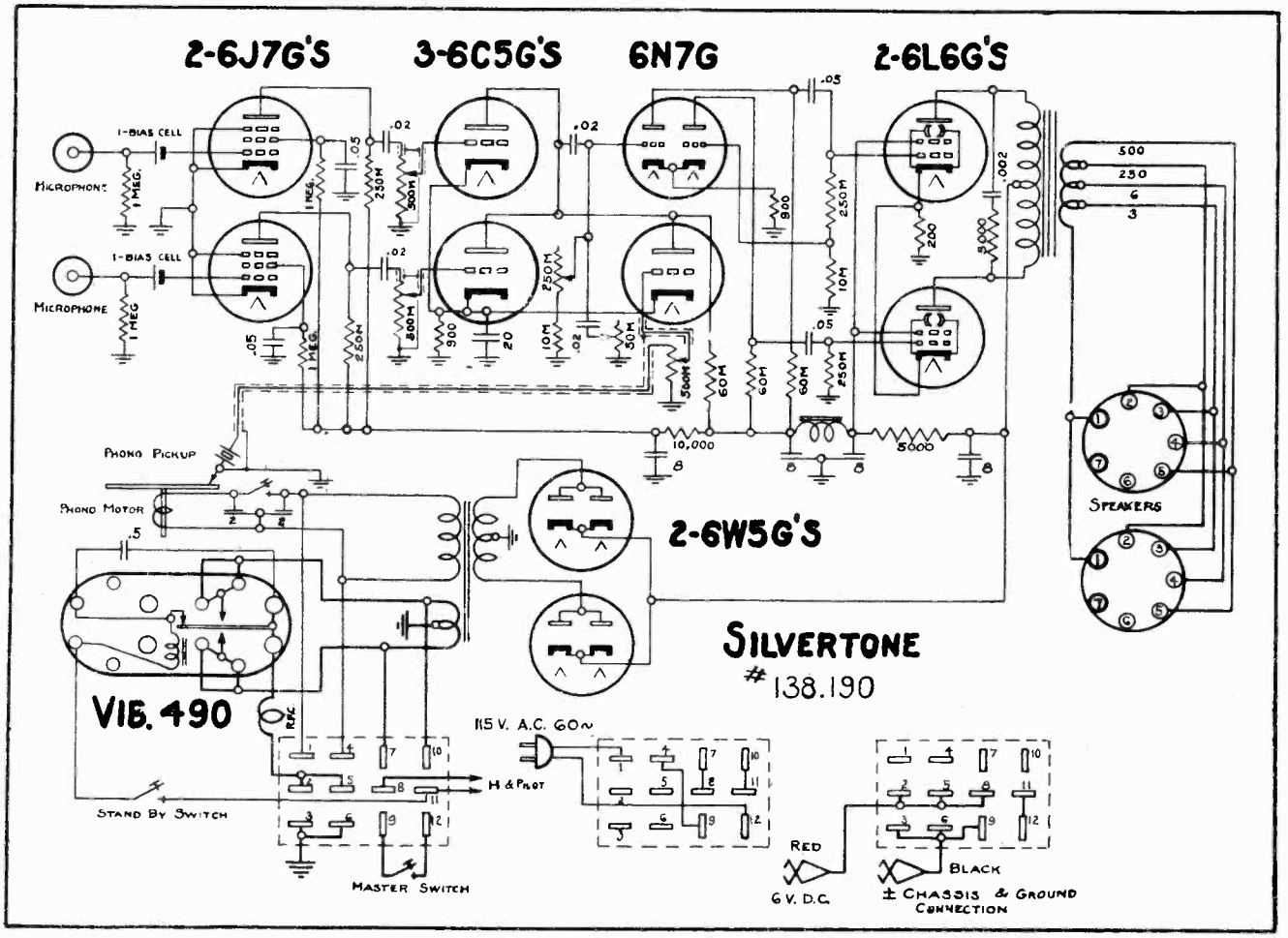
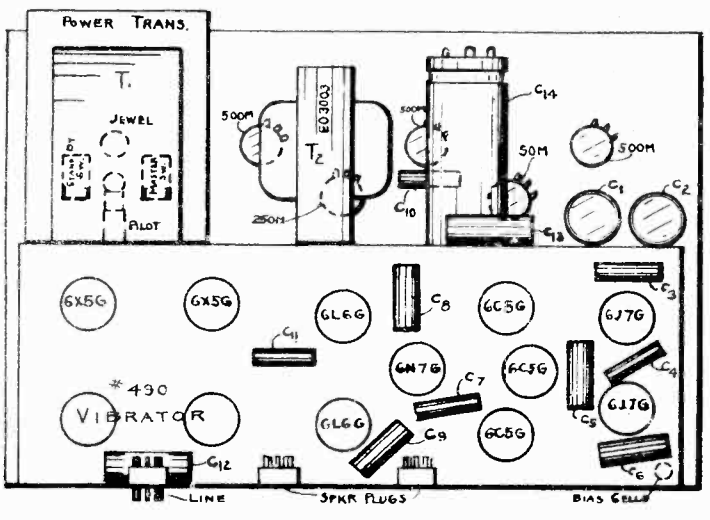
SEARS, ROEBUCK & CO.

MODELS 8928, 8930, 8950
Ch. 138.190 Amplifier

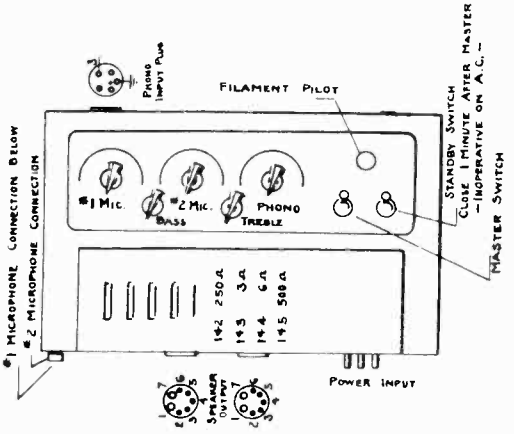


10 TUBE, 4 STAGE, HIGH GAIN AMPLIFIER



SILVERTONE
30 WATT MOBILE

138.190
amplifier only



POWER SUPPLY
This unit is so designed as to operate on 110-115 volt, 60 cycle, 110 Watts, or may be operated on 6 volt storage battery thru a vibrator and transformer. Wattage on 6 volt operation with motor is 141 Watts.

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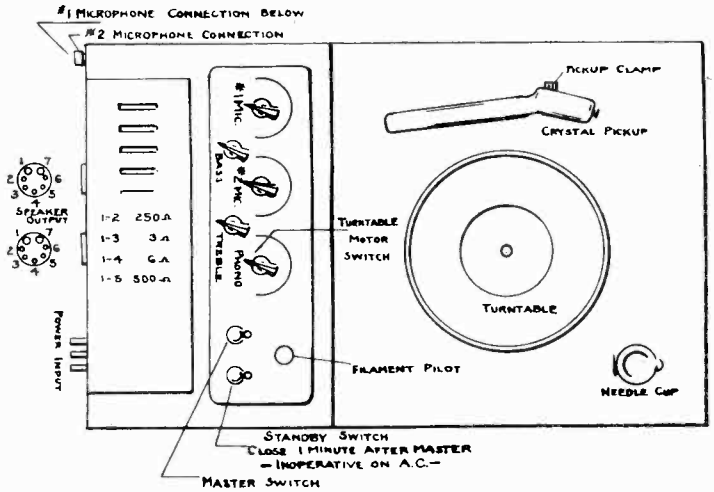
MODELS 8928,8930,8950
Chassis 138.190-1,-2,-3

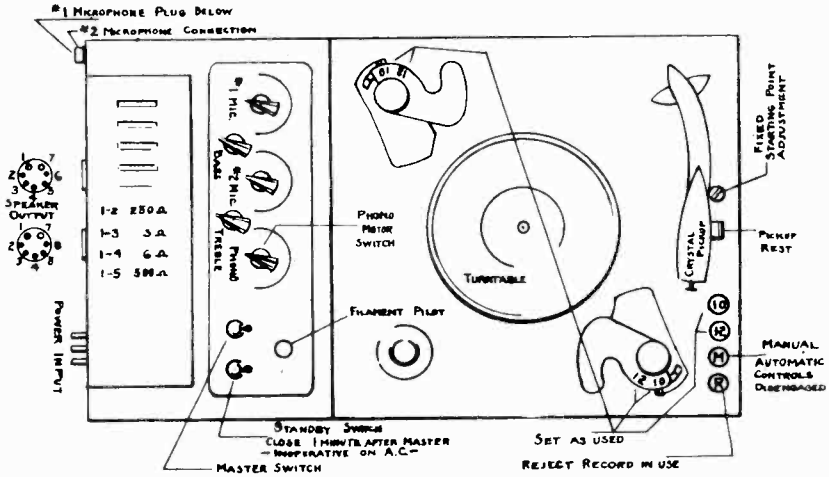
SEARS, ROEBUCK & CO.



138.190-1
with manual player

The chassis 138.190-3 incorporates a (Erwood) New Products 320 Record Changer. See Riders "Automatic Record Changers and Recorders".

The chassis 138.190-2 incorporates a Webster 210 Record Changer. See Riders "Automatic Record Changers and Recorders."



138.190-2 or3
with automatic changer

This unit contains a four stage amplifier consisting of two high impedance microphone input positions feeding two 6J7 tubes, which in turn feed into a 6C5 tube (second stage). Signal is then fed to the 6N7 driver and thru the two 6L6 output tubes. The phonograph feeds thru a 6C5 into the driver. Two 6W5 rectifiers are used in power supply.

The phonograph motor operates on 110-115 volts, 60 cycle AC current. When unit is used on 6 volt operation, the vibrator is used to transform the current from straight DC to 60 cycles pulsating current. Current is then fed thru a transformer with a secondary which produces 110 volts 60 cycles.

FREQUENCY CHARACTERISTICS
Curve - substantially flat from 50 to 10,000 cycles per second.

INPUTS
2 Input positions each to accommodate high impedance crystal, velocity or no-voltage veletron microphones.

PICKUP
High impedance crystal on models 1 -2 -3; not on 138.190.

CONTROLS
2 - 100M Ohm Carbon Controls - Microphone Volume
1 - 100M Ohm Carbon Control - Tone
1 - 50M Ohm Carbon Control - Phono Volume

SPEAKERS
12 inch permanent magnet type, 6 ohm voice coil.

SWITCHES
2 - Toggle Switches S.P.S.T.-Standby & Phono Motor
1 - Toggle Switch D.P.S.T.-Master Switch

TUBE COMPLEMENT
2 - 6J7 . . . . . Input
1 - 6N7 . . . . . Phase Inverter
2 - 6L6 . . . . . Output
3 - 6C5 . . . . . Voltage amps.
2 - 6W5 . . . . . Rectifiers

TUBES:
When it is necessary to replace tubes, be sure to check tubes as a shorted tube will damage the amplifier.

6J7 input tubes must be audio tested for low hum and noise level. This will also apply on the 6N7's, as these tubes are very critical from this standpoint, and a great deal of trouble due to noise and distortion may arise from this point. It is important that the 6J7 tubes be balanced or matched.

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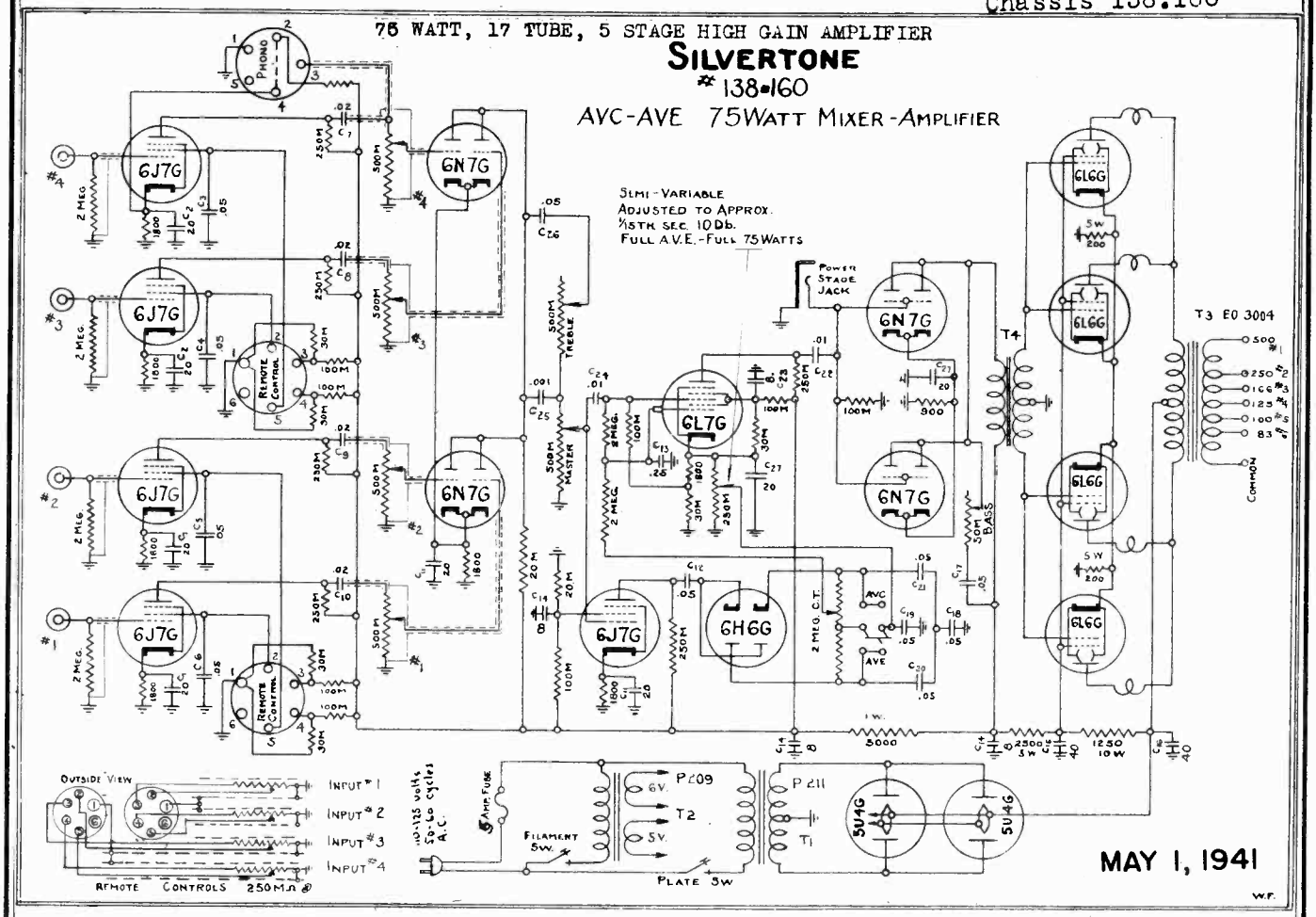
SEARS, ROEBUCK & CO. MODEL 8970 Amplifier
Chassis 138.160



FREQUENCY CHARACTERISTIC: . . . . . Substantially flat from 60 to 10,000 cycles per second

INPUTS:

4 High gain for high impedance microphones. 1 Low gain input for Crystal Pickup.

OUTPUT IMPEDANCE: . . . . . 83, 100, 125, 166, 250, and 500 ohms

SPEAKERS: . . . . . Use Heavy duty type with matching transformers

MECHANICAL SPECIFICATIONS

3	500M Carbon controls .... Microphone Volume	1	500M Carbon Control ..... Treble
1	500M Carbon control ..... Mic-Phono Volume	1	50M Carbon Control ..... Treble
1	500M Carbon Control ..... Master Gain	1	Switch .....AVE-AVC Selector
1	2 Meg Carbon Control ..... AVE-AVC	1	Switch ..... Plate Power
	1 Switch ..... Filament Supply		

GENERAL INFORMATION AND SERVICE HINTS

This amplifier is designed for high power installations, and care must be exercised in its installation. It consists of a 17 tube circuit having inputs for four microphones or three microphones and a phonograph attachment. The circuit incorporates a selector switch that permits the use of volume expansion for phonograph record reproduction or automatic volume control when using microphones. The use of this latter feature is limited by the acoustic characteristics of the enclosure.

This amplifier has been checked and inspected under laboratory test conditions for gain hum and power output.

TUBES:

When it is necessary to replace tubes, be sure to check them carefully as a shorted tube will damage the amplifier. The 6J7G tubes must be tested for hum and in order to obtain the full output of the amplifier it is necessary that the 6L6 output tubes all be of the same characteristics. Failure to obtain proper action on the part of the volume expander or volume control circuit can generally be traced to a faulty 6L7 tube.

HUM:

If this amplifier hums recheck the tubes. Be sure that the amplifier is grounded and that all input wiring is carefully shielded. Microphone wiring with a broken or incomplete shield will cause hum. Also be sure that microphone wiring is well separated from the A.C.wiring in the building or enclosure.

INSTALLATION:

In the installation of this unit be sure that the microphone is well separated from the loud speaker, otherwise sound waves from the loud speaker will be picked up by the microphone and the result will be a continuous howl that can only be eliminated by reducing the gain of the amplifier.

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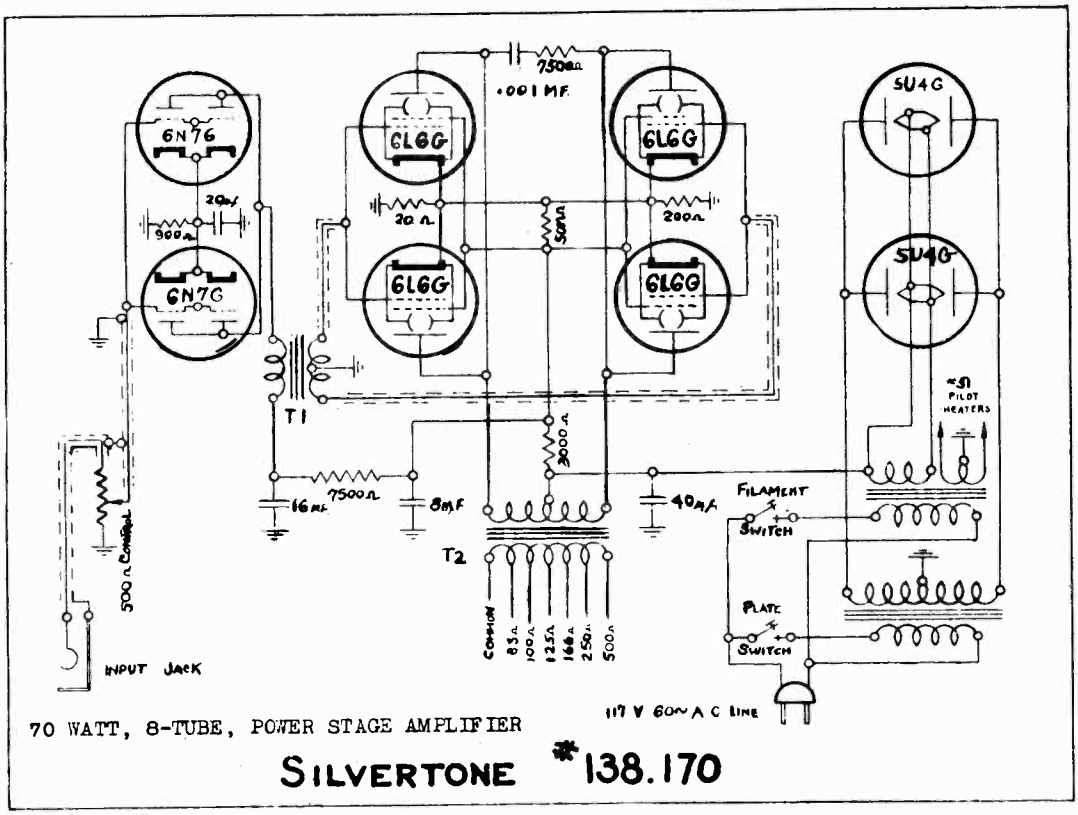
MODEL 8980 Amplifier
Chassis 138.170

SEARS, ROEBUCK & CO.



70 WATT, 8-TUBE, POWER STAGE AMPLIFIER

SILVERTONE *138.170

TUBES:

Before placing this amplifier in operation, be sure that the tubes are normal in characteristic. A shorted tube will damage the amplifier. Unbalanced 6L6G's will cause power reduction and increase hum. The rectifier tubes must have proper emission, otherwise the amplifier will not develop full power.

This amplifier has been laboratory checked for power output and hum and will give fine service when it is used correctly.

HUM:

If hum is experienced in using this amplifier, be sure that the amplifier used ahead of it is not the cause of the trouble. It is also necessary that the proper side of the input be connected to the ground of the input amplifier. Be sure to use shielded cable for inter-connection. This cable should not be more than 6 feet long. Be sure before putting this amplifier into operation that the proper speaker connections are made. Operating the amplifier without the proper speaker load will damage the power stage tubes.

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

70 WATT POWER STAGE AMPLIFIER

LOCATION	PART NUMBER	DESCRIPTION	SELLING PRICE EACH
T3	13810	Plate Transformer	8.75
T4	13811	Filament Transformer	6.90
T2	13813	Output Transformer	4.85
T1	13812	Coupling Transformer	3.20
	13824500M6	500M ohm Input Control	.75
	13818008	Octal socket - state marking	.15
	13849004	Pilot light socket & assembly	.15
	13849003	Pilot light jewel	.25
	13838401	A. C. Switch	.35
	13818111	Input Jack	.75
	13820106	20 mf. 25 volt condenser	.80
	13820115	8x8 mf 450 volt condenser	1.35
	13820121	40 mf 475 volt condenser	1.45
		200 ohm 5 watt resistors	.35
		7500 ohm 5 watt resistor	.35
		50M ohm 1 watt resistor	.15
		3000 ohm 5 watt resistor	.35
		7500 ohm 5 watt resistor	.35
		900 ohm 1 watt resistor	.15

Use #51 Pilot Light.
Use 5 ampere glass fuse.

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

2 6N7G.....Input
2 5U4G.....Rectifier
4 6L6G.....Power Stage

POWER SUPPLY: 110-125 Volts 50-60 cycle only, 220 watts

FREQUENCY CHARACTERISTICS Substantially flat 50 to 10,000 cycles.

INPUT IMPEDANCE 5000ohms.

OUTPUT IMPEDANCE 83,100, 125, 166, 250 and 500 ohms.

GAIN Approximately 35 DB.

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SEARS-ROEBUCK & CO.

MODEL 533.661 Wincharger
6V. Heavy Duty
MODEL 533.692 Wincharger
6V. 15-Amps.

Where To Install Charger

The most important part of a successful operating charger is to see that it is installed in the proper location. It must be clear of all obstructions. The general rule to follow is "THE CHARGER SHOULD BE INSTALLED 15 FEET HIGHER THAN ANY OBSTRUCTIONS WITHIN 400 FEET DISTANCE."

Any extra effort spent in selecting and making an installation meeting this requirement will be many times repaid by increased charging current.

It has often been found that an additional 10 or 15 feet height will almost double generator out-put.

Fig. 1 A good installation in the full sweep of the wind. Note how it is clear of obstructions in all directions. This is a typical installation on a farm home.

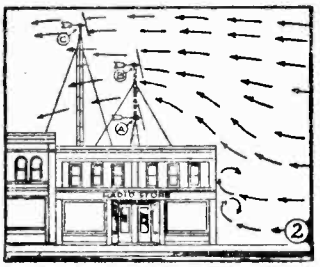

Fig. 2. Installations on a flat-roofed building. Note that wind strikes side of building and builds up a back pressure or cushion which deflects the air stream upward and over the charger, making installation "A" useless.

However, with pipe added to the regular tower, as illustrated at "B," the charger is raised from 10 to 15 feet up into the main wind stream and gives 100% performance.

Wind velocities increase with the height above ground, and still better performance is obtained by mounting charger higher up on a sectional tower as illustrated at "C."

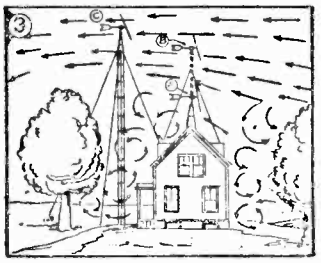

Fig 3 Shows a typical farm home surrounded by trees. Note how the trees to the right of the house deflect the air stream high above the roof top. The installation (A) is too low receiving very little power from the wind.

The installation (B) however, is satisfactory because the charger was mounted higher by adding a section of 1¼" inch pipe to the tower increasing the height 10 to 15 feet.

The same satisfactory results can be obtained by using a sectional tower illustrated in installation (C).

In making your installation **keep this in mind:** If charger location is in the clear, height of installation is not as important. But, if charger is not located in the clear, extra height must be obtained, either by using our pipe adapter, higher tower, or sectional tower.

Remember, the charger should be 15 feet higher than wind obstructions within 400 feet distance.

In selecting your location, bear in mind that it is advisable not to have the charger more than 200 feet away from the batteries. Further distances mean poor charging results as well as greater expense due to more and costlier wire.

In view of this, it is sometimes better to select a location near the house and extend the tower height by the various suggestions mentioned in this book, rather than selecting a location in the clear but a considerable distance from the batteries.

REMEMBER THE SUCCESS OR FAILURE OF YOUR CHARGER DEPENDS ON ITS LOCATION.
FOLLOW THE ABOVE INSTRUCTIONS CAREFULLY

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MODELS 533.661,
533.692

SEARS ROEBUCK & CO.

How to Fasten Tower to Roof; Increasing Height of Charger

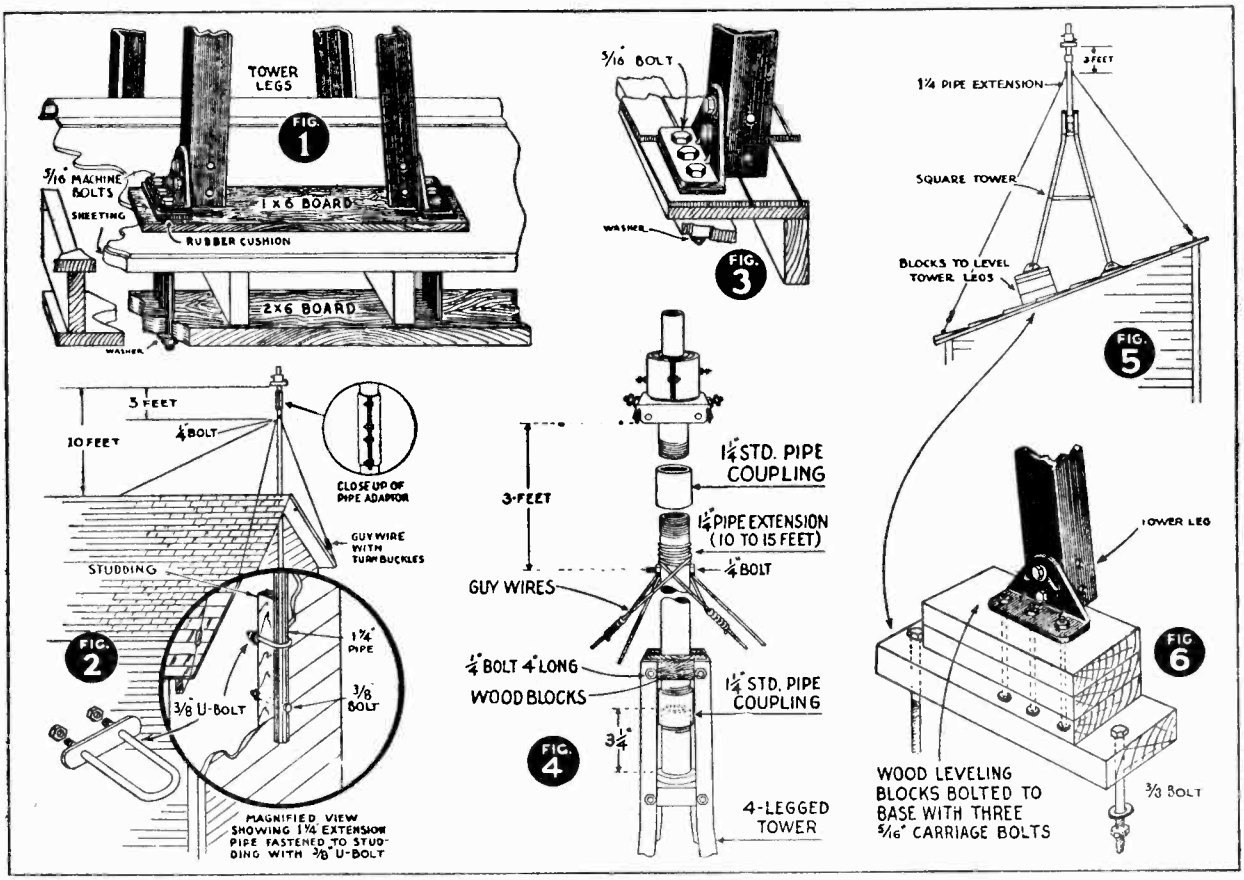

FIGURE 1. Illustrates how you securely bolt the tower to the roof. A board is placed under the rafters and 5/16" machine bolts securely bolt the tower feet to the board. Rubber cushions made of old inner tubes or rubber heels can be inserted under the tower feet to eliminate vibration.

FIGURE 2. For any mounting without a tower—a 1¼" pipe can be used to hold charger. Several ⅜" "U" bolts are recommended for securely holding the pipe in place. A straight ⅜" bolt, through pipe and studding of house as shown should be used to prevent pipe from slipping should the "U" bolts loosen.

Guy wires should be used as shown to brace the pipe. These should be fastened at least 3 to 3½ feet below the upper end of the pipe for propeller clearance. A ¼" bolt through the pipe will prevent the guy wires from slipping down the pipe. Turnbuckles should be used with guy wire to tighten them.

The charger collector ring assembly is fastened to the pipe by threading the ends of the pipe and using a standard 1¼" coupling. A pipe adapter can be obtained from the same place where you purchased the charger enabling you to clamp two 1¼" pipes together without threading the ends and using a coupling.

FIGURE 3. Illustrates another method of securely fastening the tower to the roof. A board, a foot or two in length is placed under the boards of roof (sheeting). Two 5/16" bolts or lag screws through roof and into this board will securely hold the tower.

FIGURE 4. A very effective means of increasing the height of the charger is the use of an extension 1¼" pipe. To do this, cut the 1¼" mounting pipe between the two support plates on top of the tower (cut about 3¼" from lower support plate). Thread the ends of the pipe.

The 1¼" extension pipe used, can be 10 to 15 feet tall—both ends being threaded. It is connected to the tower and charger through 1¼" standard pipe couplings. (Note illustration.)

Pipe adapters can be used to connect the ends of the pipe as illustrated in Figure 2. This eliminates the necessity of threading pipe ends and use of pipe coupling.

This additional length of pipe should have guy wires to brace it as illustrated.

FIGURE 5 AND FIGURE 6: To mount charger on a sloping roof, two tower legs must have leveling blocks, Fig. 5. The bottom block should be bolted to roof, or fastened with lag screws, as shown in Fig. 1. Round head bolts are used to bolt the feet and all other blocks to the bottom block (Fig 6).

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MODELS 533.661, 533.692

SEARS ROEBUCK & CO.

Assembling The Charger

1. TOWER ASSEMBLY

The tower comes in two sections—the 5-foot standard tower and a 5-foot extension to make a 10-foot tower.

a. Five-Foot Standard Tower—

Unpack all parts and with them laid out, study the illustration on the preceding page. You will note that the top of the tower, consisting of the upper and lower support plates, mounting pipe with collector ring assembly, comes assembled in one piece. To this part bolt the four legs and cross braces using short ¼"x½" bolts. Remember to use lock washers.

b. Five-Foot Extension to Make Ten-Foot Tower—

To the above 5-foot tower bolt the extension legs (T-4). (Note—extension legs are on OUTSIDE of upper legs.) At the same time bolt the top horizontal braces (T-3) and the long cross braces (T-6) to the LOWER hole at top end of extension leg. Keep the cross brace on the outside of horizontal brace.

Then bolt lower horizontal braces (T-5) to legs, bolting cross braces to them at the same time. Be sure to place bolt at point where cross braces cross.

Next attach the tower feet. In the lower hole use a large 5/16" diameter bolt. A smaller bolt is used in upper slotted hole—being sure to use a large washer provided so bolt head will not pull through the large slot. The cross braces are bolted BEHIND the tower legs.

2. GENERATOR

The generator is installed on a 1" shaft which extends from collector ring cover.

Place the generator on this mounting shaft, being sure that the generator brackets rest between the two small knobs on top of the collector ring cover.

Generator is securely held about this shaft by two 5/16" x 2" bolts (O).

There is a wire pin in the 1¼" mounting pipe (R) that should be removed as it is used to hold the parts together only during shipment.

3. TAIL VANE

Then fasten the one vane brace (K) to the vane as illustrated. Remember, there is only one vane brace and it is placed on the side of the vane that does not rest against the vane angle.

Next bolt the vane angle assembly to the end plate of the generator (H) using ⅜" diameter bolts.

4. PROPELLER, GOVERNOR AND BRAKE DRUM

These parts can now be bolted to the propeller hub. Note that the governor is shipped to you with the carriage bolts in place. The governor is placed in front of the propeller (**and on the FLAT side of the propeller**). Then the brake drum is placed in back of the propeller and the entire assembly bolted to the hub.

BE CERTAIN THAT THE FLAT SIDE OF THE PROPELLER FACES THE WIND. It will not operate otherwise..

At this point check the propeller track as stated in the following paragraph.

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5. PROPELLER TRACK

To avoid vibration, it is important that the propeller "track" properly. This means that both propeller tips must travel in the same path. This can be checked by measuring between the propeller tip and the tower leg as each tip passes a tower leg. Note accompanying illustration that shows how this is done. If both tips do not pass at the same distance, it can be corrected by adjusting the propeller bolts. (It may sometimes be necessary to place a small piece of cardboard between the propeller and brake drum.

6. BRAKE (Shut-Off) ASSEMBLY

Pass the brake rod (G) down through the end of the brake lever (D) and through the pipe. The loop end of wire should be kept on top of lever as illustrated, being sure washer (L) is in position. At the bottom end of brake rod attach the short spring provided (its purpose is to take up the slack of extension rope or wire, keeping the brake tightly set at all times when shut off.)

Connect an extension wire or rope to end of spring. This should be long enough to almost reach the ground so that charger may be shut off when desired.

7. CONNECTING GENERATOR WIRES TO COLLECTOR RING COVER

The generator has two terminals—one marked "P" which is positive, the other marked "N" which is negative. Connect this positive wire to the UPPER terminal (+) on collector ring cover. Connect the negative wire to the LOWER colector ring cover terminal (—).

8. CONNECTING LEAD-IN WIRES

The lead-in wires are the long wires connecting the generator assembly to the instrument panel in the house. The upper tower support plate has two terminals, one marked + (positive) and one — (negative). The positive terminal has a YELLOW sleeving underneath the support plate. The negative terminal has black sleeving.

After selecting the proper size lead-in wire, connect one wire to the + terminal and one to the — terminal on upper support plate. Identify the positive wire so that there will be no mistake on the instrument panel connections. (This can be done by putting a twist or kink in the loose end.)

These wires should be fastened to the tower legs with tape or strain insulators so that they will not be struck by the propeller or have their connections loosened by swinging in the wind.

9. NOTE

The generator is constructed with double grease sealed ball bearings on each end of the armature shaft, making it unnecessary to ever oil the generator.

The 1-inch pipe shaft is greased before leaving the factory, making it unnecessary to lubricate this part for at least three months.

CAUTION: Never allow the charger to operate without a battery connected to the circuit. It will result in serious damage to the generator.

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Wiring

NO. 8 WIRE
B & S Gauge
For use when distance from charger to battery is under 50 feet.

NO. 6 WIRE
B & S Gauge
For use when distance from charger to battery is 50 to 90 feet.

NO. 4 WIRE
B & S Gauge
For use when distance from charger to battery is 90 to 130 fet.

NO. 2 WIRE
B & S Gauge
For use when distance from charger to battery is 130 to 200 feet.

1. Remember the size of wire is of extreme importance. The above wire size must be used for the various distances. The guarantee is void unless the size wire recommended is used.

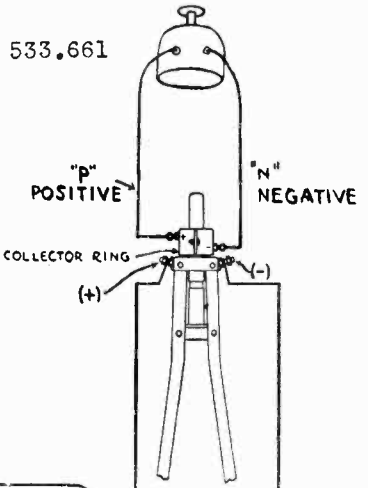
CAUTION: Do not under any circumstances use lamp cord or other small wire as it will seriously affect the operation and life of the charger. Use only insulated weather-proof copper wire in the sizes shown above.

2. LOCATION OF BATTERY AND INSTRUMENT PANEL

The battery should be located as closely as possible to the radio. If it cannot be placed next to the radio, place it in the cellar or basement directly below. The instrument panel should then be placed near the battery.

3. CONNECTING LEAD-IN WIRES TO INSTRUMENT PANEL

MODEL 533.661



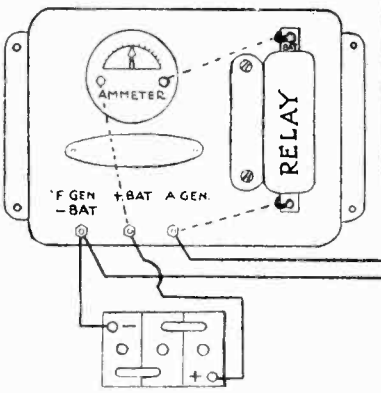
The two lead-in wires from generator should be connected to the instrument panel as shown in the diagram on right. The wire connected to the positive terminal on the upper support plate, should be connected to the right hand instrument panel terminal marked **"A" Gen.** The negative wire should be connected to the left hand terminal marked **"F" GEN. — BAT.**

In connecting the wires to the terminals, clean the insulation thoroughly from the end of the wire and make a loop of the end.

CAUTION: Do not attempt to bend the wire about the instrument panel terminal as you may crack the insulating washers.

To make good electrical contact, it is necessary to scrape the bare copper wire with a knife or file at the loop where contact is made.

4. CONNECTING BATTERY WIRES TO INSTRUMENT PANEL



Using No. 6 wire, connect the battery to the instrument panel. The positive battery terminal is connected to the middle instrument panel terminal marked **"+ BAT."** The negative battery post is connected to the left-hand instrument panel terminal marked **"F" GEN. — BAT.**

Battery clips are provided for connecting wire to the battery.

NOTE: If battery terminals are not plainly marked as to which is positive or negative they can be determined by the following test:

Connect a short wire to the one battery terminal. Connect another short wire to the other battery terminal. Hold the free end of both of these wires about ½ inch apart in a glass of salt water. A violent bubbling will be noticed about the **NEGATIVE** wire.

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5. CONNECTING RADIO WIRES TO BATTERIES

If it is necessary to use additional wire to connect the radio to the batterries, use large size wire (No. 4 or No. 6). Be sure however, that the radio wires are connected directly to the battery posts.

Do not clip the radio wires on top of the charger battery clips, for this may prove harmful to the radio. Instead, be sure that the raido clips are connected directly to the battery post.

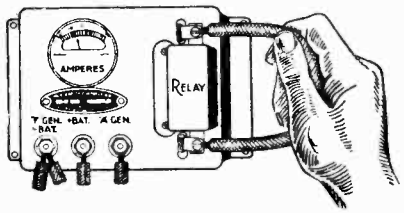
6. CONNECTING LIGHT WIRES

To connect wires for lights, connect them directly to the battery terminals or else to the two terminals on instrument panel marked ("F GEN. — BAT.") and (+ BAT.). The main light wire should be No. 8 size.

CAUTION: Be sure to use 30 ampere fuses in main light wire.

Installation Recheck

To determine if the charger is properly wired, and also to properly polarize the generator in case the wires have been reversed, it is advisable to perform the installation re-check. To perform this re-check, first stop the propeller. Then being sure that the brake has been released, take a short piece of copper wire or a pair of pliers and touch to top and bottom terminals of the relay as shown in the illustration on the right.



This "shorts" the relay, making the generator act as a motor forcing it to revolve the propeller. When doing this, carefully observe the ammeter, for it should show a discharge of approximately 4 to 6 amperes. If this occurs, it is a postive check of the correctness of the hook-up.

.If on shorting the relay, the ammeter needle should show a full deflection of the ammeter scale, it definitely indicates a short circuit somewhere in the wiring.

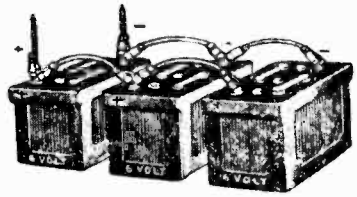
If when the re-check is performed the propeller does not revolve, and the ammeter stays at "0," then there is an open circuit, and somewhere there is a break in the wiring.

Whenever any change in wiring has been done, it is always advisable to perform this installation re-check, for should the wires be reversed the generator will be in opposite polarity with the battery. This can be corrected by the re-check and the generator will be properly polarized. This should be done particularly when there is a furious chattering of the relay, and rapid vibration of the ammeter needle.

Batteries

A great deal of the success of a wind-electric installation depends upon the size and type of battery used to store the electric energy developed by the generator. For this heavy duty 6-volt charger we recommend a radio type battery of at least 200 ampere hour capacity. If this is not available, use two smaller radio type batteries connected in parallel. (This increases capacity but allows the voltage to remain the same.) Note illustration.

Three 6-Volt Batteries—Parallel Connection

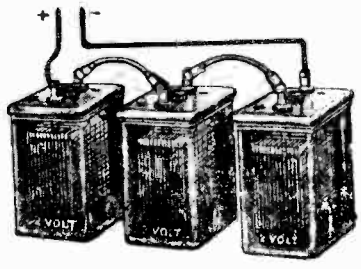


A large size battery is very important for two reasons:

1. **A large capacity battery is necessary to absorb the high charging current.**
2. **This same large capacity provides a large store of energy to carry the electrical load during periods of low wind velocity.**

The ideal type of battery is three glass jar 2-volt cells known as "Farm Lighting Type Battery," each cell to be of 200 ampere hour capacity. These three 2-volt cells should be connected in series for a 6-volt battery supply.

Three 2-Volt Cells—Series Connection



It is not desirable to use automotive batteries as their plate construction is entirely different from that of the radio type battery. The type battery needed for wind electric use is one with a large storage capacity and capable of delivering a comparatively small current (10 to 15 amperes) over a long period of time. You will realize the best results from your charger by utilizing a radio or lighting type of battery.

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SERVICE

1. PROPER LOCATION

It is absolutely necessary that the charger be located in such a position that it will obtain the full sweep of the wind from all directions. Unless your charger is so located it will be impossible for it to operate properly. The majority of cases of faulty operation are due to this cause. The first step, however, is to see that the charger is properly located, and we suggest that you check the installation against the instructions on Page 2.

REMEMBER, THE CHARGER SHOULD BE 15 FEET HIGHER THAN WIND OBSTRUCTIONS WITHIN 400 FEET DISTANCE.

Should your installation be too low, an easy method of increasing the height is shown on Page 4, Figure 4, through the use of an extension 1¼" pipe.

2. NO CHARGING CURRENT

If the generator refuses to charge at all and the relay does not close, it is probable that there is an open or short circuit present. Immediately perform the installation recheck as described on Page 9. If the ammeter shows a full deflection on discharge, it indicates that there is a short circuit. If the ammeter stays at zero and the propeller does not move, it is an open circuit. (If you are certain there is no open or short circuit, the difficulty may be due to a damaged armature.)

3. LOW CHARGING RATE

Low charging rate may be the result of worn generator brushes. To determine the condition of the brushes, remove the generator cover band found on the front of the generator. After the cover band is removed the brushes can be easily seen and the extent of wear can be determined.

If the ammeter indicates a small charge of never more than 8 or 10 amperes, first observe the charging rate when the wind velocity is high enough to force the governor blades into governing position. If at that time the charging rate is still much less than 15 amperes, there is something wrong with the generator. If the generator is suspected, it can be removed and tested at a reliable repair shop.

However, if the governing blades are forced into governing position, and the charging rate reaches 15 amperes or more, the generator and other parts are functioning properly. If the battery is not being fully charged, it is probably due to the charger being installed too low. We would suggest that you refer to Page 4, Figure 4, where you will find described an easy method of increasing the height of the charger.

4. WHAT CURRENT THE GENERATOR SHOULD PRODUCE

Revolutions per minute	Amperes
270	0.1 FOR 533.661 only
350	5
440	10
570	15
700	20
900	25

Wind Velocity (Mi. Per Hr.)	Amperes
6	0.1
8	4
10	7
12	11
14	14
16	18
18	22
20	25

5. GENERATOR BRUSHES

This is a two-brush generator—both stationary. This eliminates any brush adjustment.

CAUTION:

Never allow the generator to operate without a battery connected. The generator wil become badly over-heated and will require rewinding of the armature.

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MODELS 533.661,
533.692

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6. RADIO INTERFERENCE

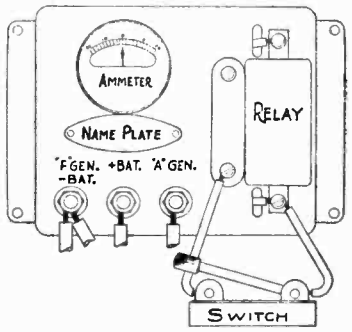
Be sure that the tower and radio are properly grounded. We recommend as an ideal ground a pipe or rod driven 6 or 7 feet into the ground and connected to a bolt on tower with a No. 4 copper wire. It is advisable that the wire connected to the grounding pipe be soldered as a loose connection will oftentimes cause radio interference.

The commutator on the generator should be clean, as a dirty commutator will cause arcing which results in radio interference. Clean the commutator with a cloth soaked in gasoline and then brighten the segments with No. 00 sandpaper.

A .5 MFD condenser connected to the third brush and to the ground will also eliminate radio interference.

In the rear end plate of the generator there is installed a noise eliminator. First check to see if this is in the proper position. The center of the noise eliminator should ride against the end of the armature shaft. Its purpose is to ground the armature to the frame of the generator.

Radio interference sometimes cannot be completely eliminated on the short wave bands by the regular condenser. However, by using a single pole, single throw switch (Shown in the accompanying diagram) the generator can be short circuited and current will not be generated. This will eliminate radio interference.



This switch may also be used to eliminate excessive radio interference on standard broadcast bands. (It is not advisable to use this switch for long periods of time in high wind velocities; instead stop propeller).

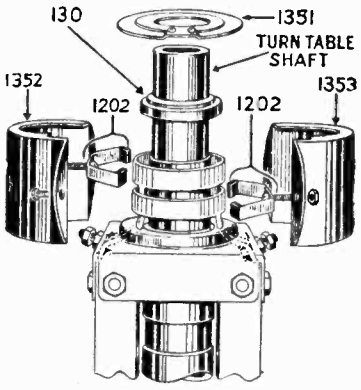
7. OILING AND GREASING CHARGER

Generator—

The generator is equipped with double grease sealed ball bearings. It will be unnecessary to oil the generator bearings for the entire life of the generator.

Collector Ring Bearing and Turntable Shaft—

You may find it necessary to grease the turntable shaft and collector ring bearing. This can be done by opening the collector ring cup (The accompanying illustration will show how this is done). The shaft can then be lifted two to three inches above the cup and a light cup grease applied to the shaft. This will allow the charger to swing freely in any change of wind direction.



COLLECTOR RING ASSEMBLY

Governor—

It is advisable to place a few drops of light oil on the pin joints of the governor flaps. This will allow the flaps to operate freely.

8. VIBRATION

If the charger vibrates badly, first check the propeller track as described. This is most important as vibration will invariably result when the propeller is out of track.

Excessive vibration may be caused by an out-of-balance propeller. This can be determined and corrected by placing it at its exact center on a knife's edge. If out of balance, it can be corrected by placing a small wood screw on the flat side of the propeller at the point where balance is restored.

An out-of-balance governor will also cause considerable vibration. To determine whether or not the governor is at fault, remove it and allow the charger to operate without it. If the governor is found to be the cause of vibration, its balance can be restored by inserting or removing small flat washers on the bolts on the governor frame.

9. BATTERIES

The storage batteries will require only the usual attention given an automobile battery. Check the water level regularly and add sufficient distilled water or rain water to keep the battery plates covered ½ inch. Keep the batteries clean and the terminals well greased with a light cup grease or vaseline to prevent corrosion. See that the battery connections are tight.

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MODELS 533.661, 533.692

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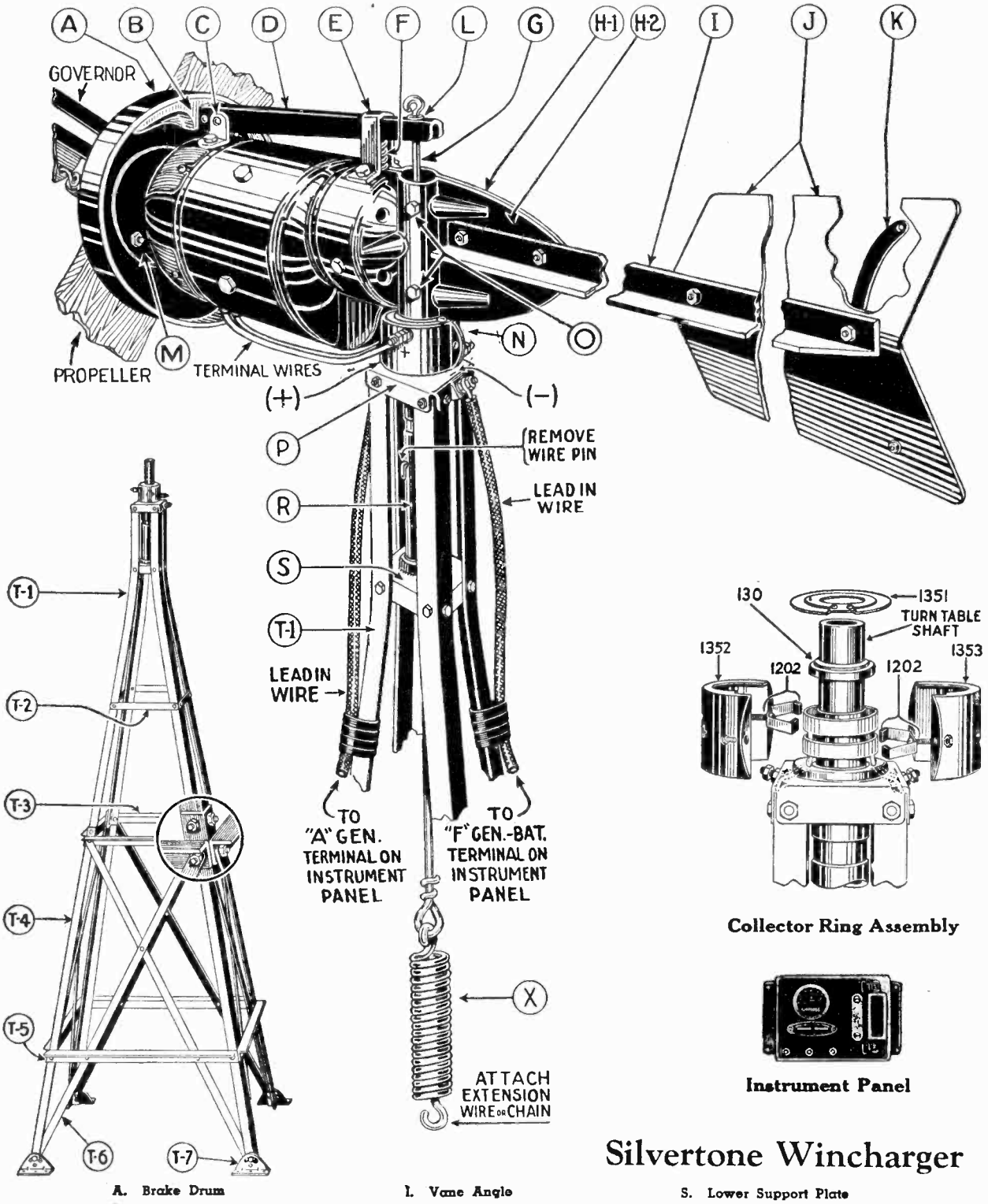

Collector Ring Assembly

Instrument Panel

Silvertone Wincharger

A. Brake Drum
B. Brake Shoe
C. Pivot Bracket
D. Brake Lever
E. Spring Housing
F. Brake Lever Spring
G. Brake Rod
H-1 Generator Bracket (Right)
H-2 Generator Bracket (Left)
I. Vane Angle
J. Vane
K. Vane Brace
L. Brake Rod Washer
M. Propeller Hub
N. Collector Ring Cup
O. Turntable Shaft Bolts
P. Upper Support Plate
R. 1¼" Mounting Pipe
S. Lower Support Plate
X. Brake Rod Spring
T-1 Stub Tower Leg
T-2 Stub Tower Brace
T-3 Upper Extension Tower Brace
T-4 Extension Tower Leg
T-5 Lower Extension Tower Brace
T-6 Long Cross Brace
T-7 Tower Foot

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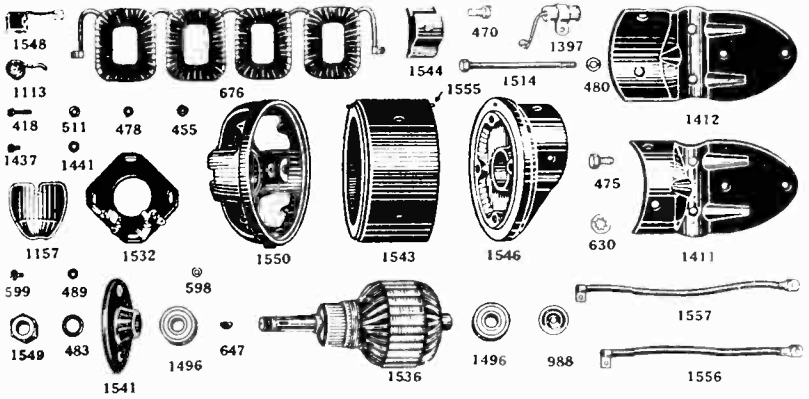
PARTS LIST

All Prices Are Subject to Change Without Notice

Letter Illus.	No. Part	PART NAME	List Price Each
		PROPELLER	
	5331581	Propeller (7½-foot)	$4.60
	5331541	Hub	.35
		GOVERNOR	
	5331410	Governor (with Mounting Bolts) (31-inch)	4.00
		INSTRUMENT PANEL	
	5331335	Instrument Panel Completely Wired (Heavy Duty)	2.50
	5331420	Ammeter	.70
	5331370	Relay (6-volt Heavy Duty)	1.50
	5331369	Relay (12-volt)	1.50
	5331488	Relay (2-volt)	.85
		BRAKE ASSEMBLY	
	5331537	Brake Shoe, Lever and Pivot Brackets (assembled)	.70
A	5331538	Brake Drum	.60
B	5331539	Brake Shoe	.25
C	5331540	Pivot Bracket (each)	.05
D	5331269	Brake Lever (without shoe)	.10
E	533114	Spring Housing	.10
F	533105	Brake Lever Spring	.10
G	533107	Brake Rod	.03
X	533998	Brake Rod Spring	.10
		COLLECTOR RING ASSEMBLY	
	5331408	Collector Ring Assembly complete (includes Mounting Pipe, Support Plates, Cup, but less Turntable Shaft)	2.00
N	533671	Collector Ring Cup Complete with Brushes	.65
	5331202	Collector Ring Brushes (set of two) (Can be used on all earlier models)	.22
	533130	Bearing for Collector Ring	.20
	5331352	Collector Ring Cup Half, Positive, No Brushes	.15
	5331353	Collector Ring Cup Half, Negative, No Brushes	.15
	5331351	Top for Collector Ring Cup	.06
	533670	Insulating Washers (set of 4) for both Collector Ring Brushes	.08
	5331433	Terminal Bolt and Nuts for Collector Ring Cup	.03
		GENERATOR MOUNTINGS	
H-2	5331411	Generator Mounting Bracket (left)	.30
H-1	5331412	Generator Mounting Bracket (right)	.30
O	533441	Bolts and Nuts for Turntable Shaft Mounting (2 required per unit)	.03
	5331409	Turntable Shaft	.25
		VANE	
J	5331257	Vane	.70
I	5331275	Vane Angle	.50
	5331515	Vane Brace	.17
		SPECIAL MOUNTINGS	
	5331501	5-foot Stub (fits Sectional Tower) (with Pipe Adapter)	6.00
	5331226	10-foot Section (Guy Wire included)	5.50
	5331502	20-foot Section (Guy Wire included)	10.00
	5331232	Windmill Adapter (Mounts Charger on Top of Tower)	8.50
	5331078	Windmill Sidemount (Mounts Charger on Side of Tower)	10.00
	5331231	Pipe Adapter complete with Bolts	.50
		TOWER	
	533672	5-foot Tower Complete with Collector Ring Assembly	4.50
	533927	5-foot Tower Extension (To make a 10-ft. Tower)	5.40
T-1	5331371	Tower Leg	.32
T-2	533124	Tower Brace	.05
R, P, S	533182	1¼-inch Mounting Pipe and Both Support Plates (includes Collector Rings—No Cup)	1.25
P, R	5331517	1¼-inch Mounting Pipe and Upper Support Plate Only—No Cup—For "No Tower" Mounting	1.10
P	5331355	Upper Support Plate	.15
S	5331356	Lower Support Plate	.15
T-3	533928	Upper Extension Tower Brace	.11
T-4	533930	Extension Tower Leg	.32
T-5	533929	Lower Extension Tower Brace	.17
T-6	533931	Long Cross Brace	.20
T-7	5331082	Tower Foot	.10
	533673	Bag of Bolts for 5-foot Tower	$ .45
	533674	Bag of Bolts for 5-foot Extension	.50
	533463	¼"x½" Bolts, Nuts, and Lock Washers for Tower	doz. .16
	533467	5/16"x¾" Bolts, Nuts, and Lock Washers for Tower Feet	doz. .28
	533878	Bag Bolts for Assembling Charger and Tower	.80



NUMBERS OF GENERATOR PARTS ILLUSTRATED ABOVE HAVE PREFIX OF "533" OMITTED.

GENERATOR PARTS

5331552	Generator complete	30.00
	Frame Assembly	
533418	Brush Plate Screw (8-32x1)	.03
533455	Brush Plate Nut (8-32)	.01
533470	Pole Shoe Bolt—⅜" x 1¼"	.03
533475	Generator Mounting Bracket Bolt—⅜" x ⅝"	.02
533478	Brush Plate Lock Washer	.01
533480	Generator Thru Bolt Lock Washer	.03
533511	Brush Plate Flat Washer	.01
533630	Generator Mounting Bracket Lock Washer ⅜" ever lock	.01
533676	Field Coils	6.00
5331411	Generator Mounting Bracket L. H.	.30
5331412	Generator Mounting Bracket R. H.	.30
5331514	Generator Thru Bolt—5/16" x 6½"	.04
5331543	Field Frame	4.25
5331544	Pole Shoe	.60
5331556	Positive Lead Wire	.20
5331557	Negative Lead Wire	.20
	Front End Plate Assembly	
533484	Brush Lower Lock Washer	.01
533598	Brush Lower Flat Washer	.01
533599	Brush Lower Screw (10.32x⅜)	.01
5331437	Brush Terminal Screw (8-32x⅜)	.01
5331157	Brush Cover	.15
5331397	Condenser (1mfd)	.45
5331532	Brush Holder Assembly	1.00
5331441	Brush Terminal Lock Washer	.01
5331113	Brush Spring	.11
5331548	Brush	.40
5331550	Front End Casting	2.85
	Armature Assembly	
533483	Armature Shaft Lock Washer	.07
533647	Woodruff Key No. 5 (½x⅝)	.07
533988	Noise Eliminator	.03
5331496	Bearing (203TT)	2.70
5331536	Armature Assembly Complete	15.00
5331541	Propeller Hub	.35
5331549	Armature Shaft Nut	.15
5331536	Armature Rewinding (old armature must be returned or add $8.00)	7.00
	Rear End Plate Assembly	
5331546	Rear End Casting	2.40

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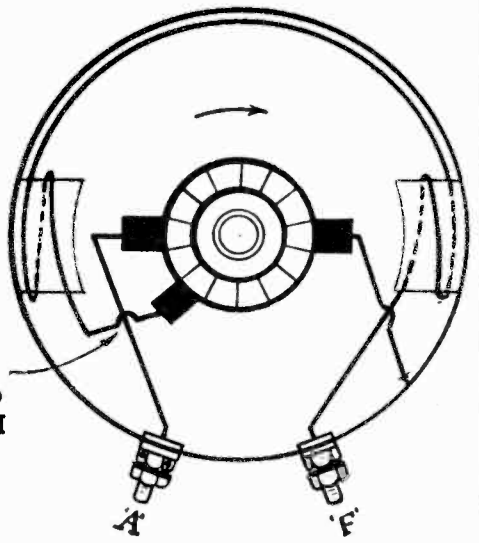
4. WHAT CURRENT THE GENERATOR SHOULD PRODUCE

The following Performance Chart is to be used in checking the generator:

Revolutions Per Minute	Amperes
330	1
370	2
440	4
600	8
700	10
860	12
1000	14
1100	17

Wind Velocity, Miles Per Hr.	Amperes
7½	1
10	4
12	7
16	12
20	17

FRONT END VIEW



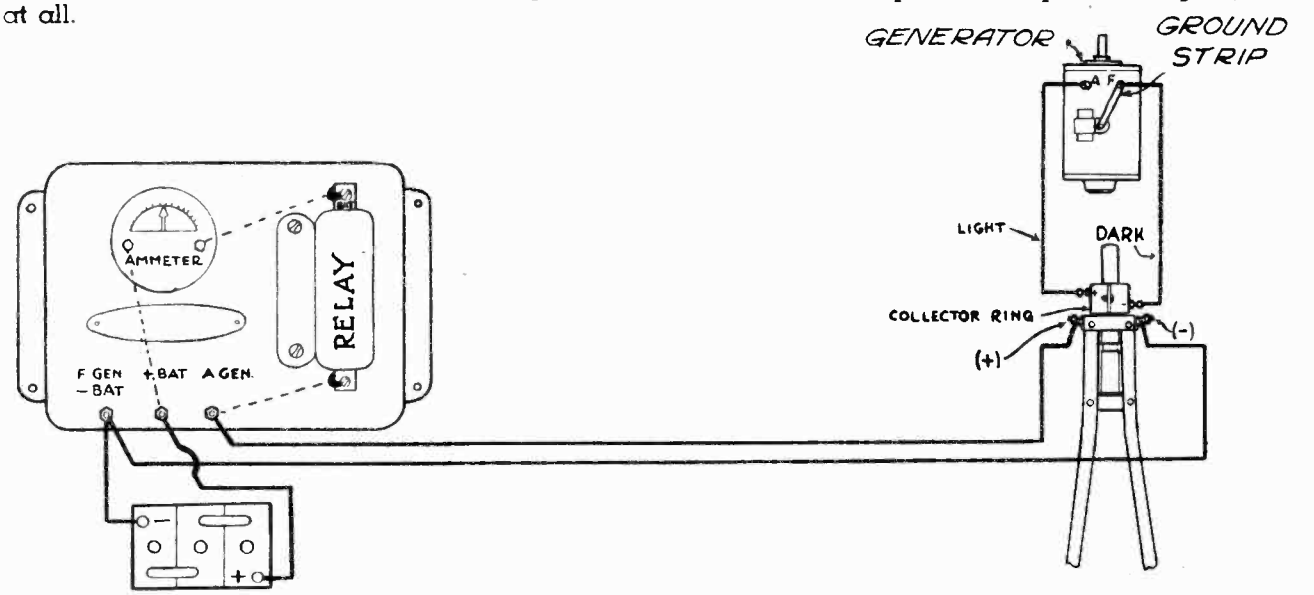
5. GENERATOR BRUSH ADJUSTMENT

The generator has a third brush which controls the charging rate. It also protects the generator from overheating during high speeds.

(The proper position of the third brush is one commutator segment away from the left-hand stationary brush when looking at the front of the generator.) NOTE THE ILLUSTRATION AT THE RIGHT.

The third brush is stationary and cannot be moved.

The chief reason for a damaged armature is allowing the generator to operate without a battery connected. The armature will become badly burned and will show only a few amperes charge or even none at all.



7. CONNECTING GENERATOR WIRES TO COLLECTOR RING COVER

The generator has two terminals--one marked "A" which is positive, the other marked "F" which is negative. To the POSITIVE terminal is connected a LIGHT wire. Connect this LIGHT wire to the UPPER terminal (+) on collector ring cover. To the NEGATIVE generator terminal is connected a DARK wire. Connect this to the LOWER collector ring cover terminal (-).

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PARTS LIST

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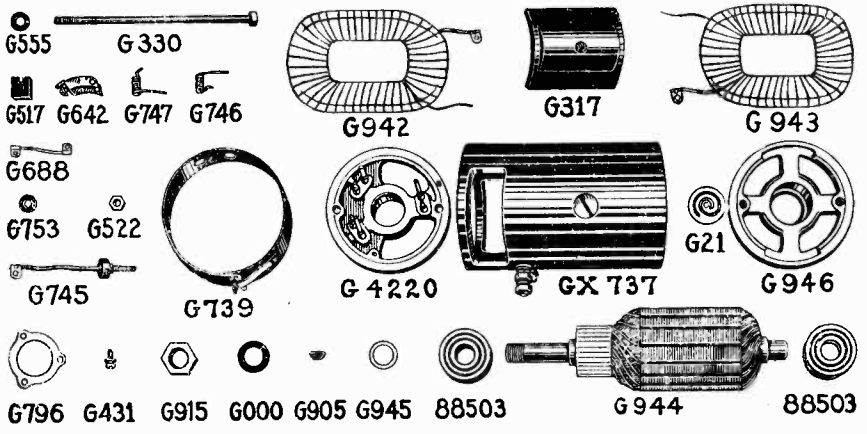
Letter Illus.	No. Part	PART NAME	List Price Each
		PROPELLER	
	533949	Propeller (6-foot)	$2.00
Y	5331413	Hub (Metal Part on Generator to Which Propeller Bolts)	.20
		GOVERNOR	
	533584	Governor (with Mounting Bolts)	2.00
		INSTRUMENT PANEL	
	533820	Instrument Panel Completely Wired	2.00
	533576	Ammeter	.55
	5331466	Relay (6-volt)	.75
	5331370	Relay (6-volt Heavy Duty)	1.00
	5331369	Relay (12-volt)	.75
	5331468	Relay (2-volt)	.75
		BRAKE ASSEMBLY	
	5331417	Brake Shoe, Lever and Pivot Brackets (assembled)	.40
A	533110	Brake Drum	.50
B	533531	Brake Shoe	.25
C	533103	Pivot Bracket (each)	.05
D	533102	Brake Lever (without shoe)	.10
E	533114	Spring Housing	.10
F	533105	Brake Lever Spring	.10
G	533107	Brake Rod	.03
X	533998	Brake Rod Spring	.10
		COLLECTOR RING ASSEMBLY	
	5331408	Collector Ring Assembly complete (includes Mounting Pipe, Support Plates, Cup, but less Turntable Shaft)	2.00
N	533671	Collector Ring Cup Complete with Brushes	.65
	5331202	Collector Ring Brushes (set of two)	.22
	533130	Bearing for Collector Ring	.20
	5331352	Collector Ring Cup Half, Positive, No Brushes	.15
	5331353	Collector Ring Cup Half, Negative, No Brushes	.15
	5331351	Top for Collector Ring Cup	.06
	533670	Insulating Washers (set of 4) for both Collector Ring Brushes	.06
	5331433	Terminal Bolt and Nuts for Collector Ring Cup	.03
		GENERATOR MOUNTINGS	
H-2	5331411	Generator Mounting Bracket (left)	.30
H-1	5331412	Generator Mounting Bracket (right)	.30
O	533441	Bolts and Nuts for Turntable Shaft Mounting (2 required per unit)	.03
	5331409	Turntable Shaft	.25
		MISCELLANEOUS	
M	5331415	Generator Terminal Wires (set of two)	.20
L	5331120	Condenser	.25
		TOWER	
	533672	5-foot Tower Complete with Collector Ring Assembly	4.50
	533927	5-foot Tower Extension (To make a 10-ft. Tower)	5.40
	533675	Bag Bolts for Assembling Charger and Tower	.65
T-1	5331371	Tower Leg	.32
T-2	533124	Tower Brace	.05
R, P, S	533182	1¼-inch Mounting Pipe and Both Support Plates (includes Collector Rings—No Cup)	1.25
P, R	5331517	1¼-inch Mounting Pipe and Upper Support Plate Only—No Cup—For "No Tower" Mounting	1.10
P	5331355	Upper Support Plate	.15
S	5331356	Lower Support Plate	.15
T-3	533928	Upper Extension Tower Brace	.11
T-4	533930	Extension Tower Leg	.32
T-5	533929	Lower Extension Tower Brace	.17
T-6	533931	Long Cross Brace	.20
T-7	5331082	Tower Foot	.10
	533673	Bag of Bolts for 5-foot Tower	.45
	533674	Bag of Bolts for 5-foot Extension	.50
	533463	¼"x½" Bolts, Nuts, and Lock Washers for Tower ..... doz.	.16
	533467	5/16"x¾" Bolts, Nuts, and Lock Washers for Tower Feet ..... doz.	.28
		VANE	
J	533565	Vane	.70
I	533115	Vane Angle	.26
K	533873	Vane Brace (each)	.04
	533888	Vane Brace Set	.17
V	533106	Vane Bushing (2 required per unit)	.02
	5331515	Vane Brace Set (new style)	.17

SPECIAL MOUNTINGS

5331501	5-foot Stub (fits Sectional Tower) (with Pipe Adapter)	6.00
5331226	10-foot Section (Guy Wire included)	5.50
5331502	20-foot Section (Guy Wire included)	10.00
5331232	Windmill Adapter (Mounts Charger on Top of Tower)	8.50
5331078	Windmill Sidemount (Mounts Charger on Side of Tower)	10.00
5331231	Pipe Adapter complete with Bolts	.50

GENERATOR PARTS LIST MODEL

5331102414	Generator complete	12.00



NUMBERS OF GENERATOR PARTS ILLUSTRATED ABOVE HAVE PREFIX OF "533" OMITTED.

Frame Assembly

533GX737	Field Frame (Shell Only)	6.00
533G943	Field Coil R. H. to "F" Terminal	1.40
533G942	Field Coil L. H. to Third Brush	1.40
533G340	Commutator Cover Band	.20
533G875	Pole Shoe Screw	.07
533G330	Thru Bolt	.20
533G555	Thru Bolt Washer	.02

Commutator End Plate Assembly

533G517	Generator Brush	.10
533G642	Brush Holder	.15
533G747	Brush Spring, Third and Ground	.07
533G748	Brush Spring, Insulated, Positive	.07
533G4220	Commutator End Plate and Pin Assembly	1.40
533G745	Terminal Stud and Lead Assembly	.14
533G522	Terminal Stud Nut	.07
533G753	Terminal Insulation Washer	.03
533G431	Retainer Plate Screw and Washer	.02
533G796	Bearing Retainer Plate	.07
533G688	Brush Ground Lead	.14

Armature Assembly

533G944	Armature (Return Old Armature) (add $1.50 if Armature Not Returned)	3.90
533G915	Armature Shaft Nut	.14
533G945	Space Washer	.07
533G000	Shaft Lock Washer	.07
533G905	Woodruff Key No. 5	.07
533G21	Noise Eliminator	.03
53288503	Ball Bearing (same for Either End)	2.70
5331413	Hub—Propeller Bolts on This Piece	.20

Rear End Plate Assembly

533G946	Rear End Plate	1.50

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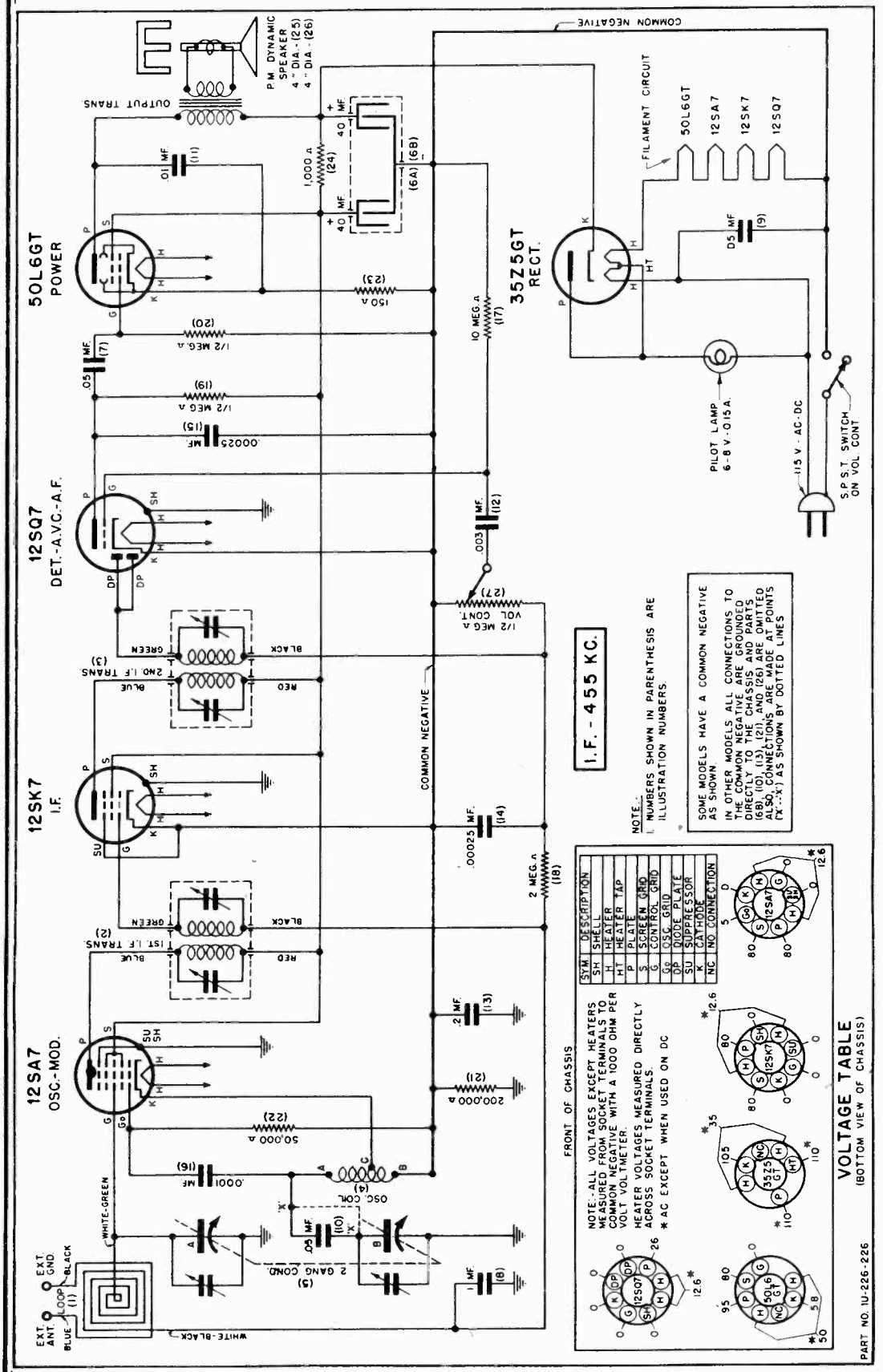
SENTINEL RADIO CORP.



VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON EITHER 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC) OR 110-120 VOLTS DIRECT CURRENT (DC)—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice.

GROUND

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

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

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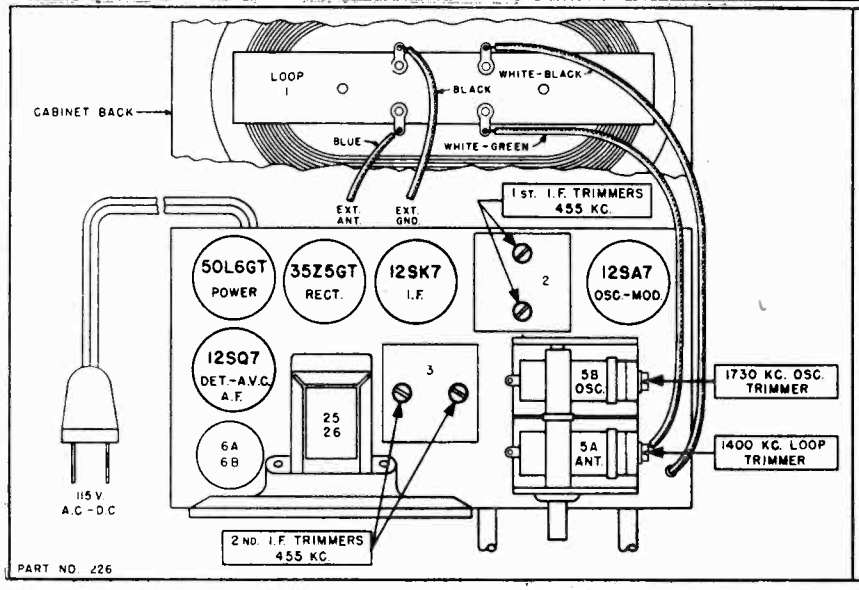
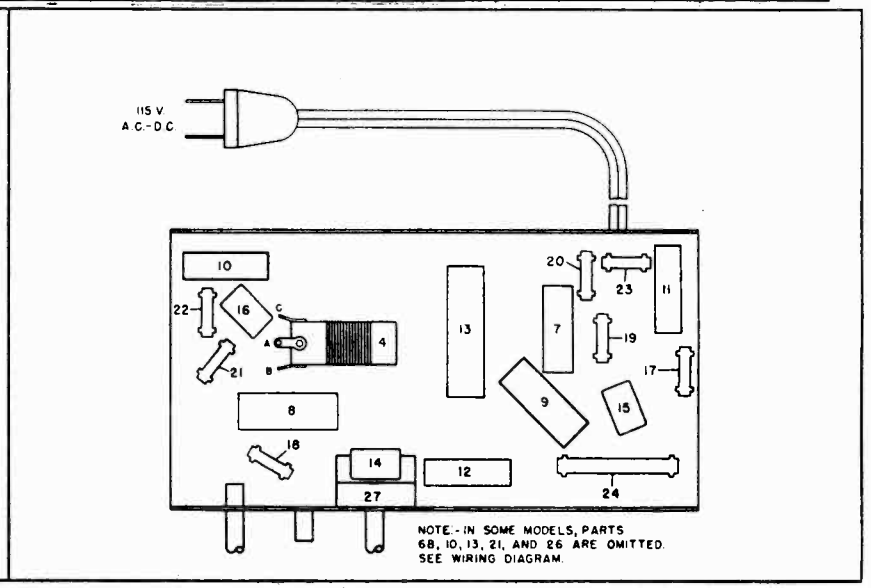
ALIGNMENT PROCEDURE

For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

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

Place band switch for operation on:	Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid of 12SA7 tube. Low side to frame of gang condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmers for maximum output. then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1 Exactly 1730 K.C.	Exactly 1730 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of gang condenser through .01 Mfd. condenser.	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of gang condenser through .01 Mfd. condenser.	While rocking gang condenser adjust 1400 K.C. loop trimmer for maximum output.





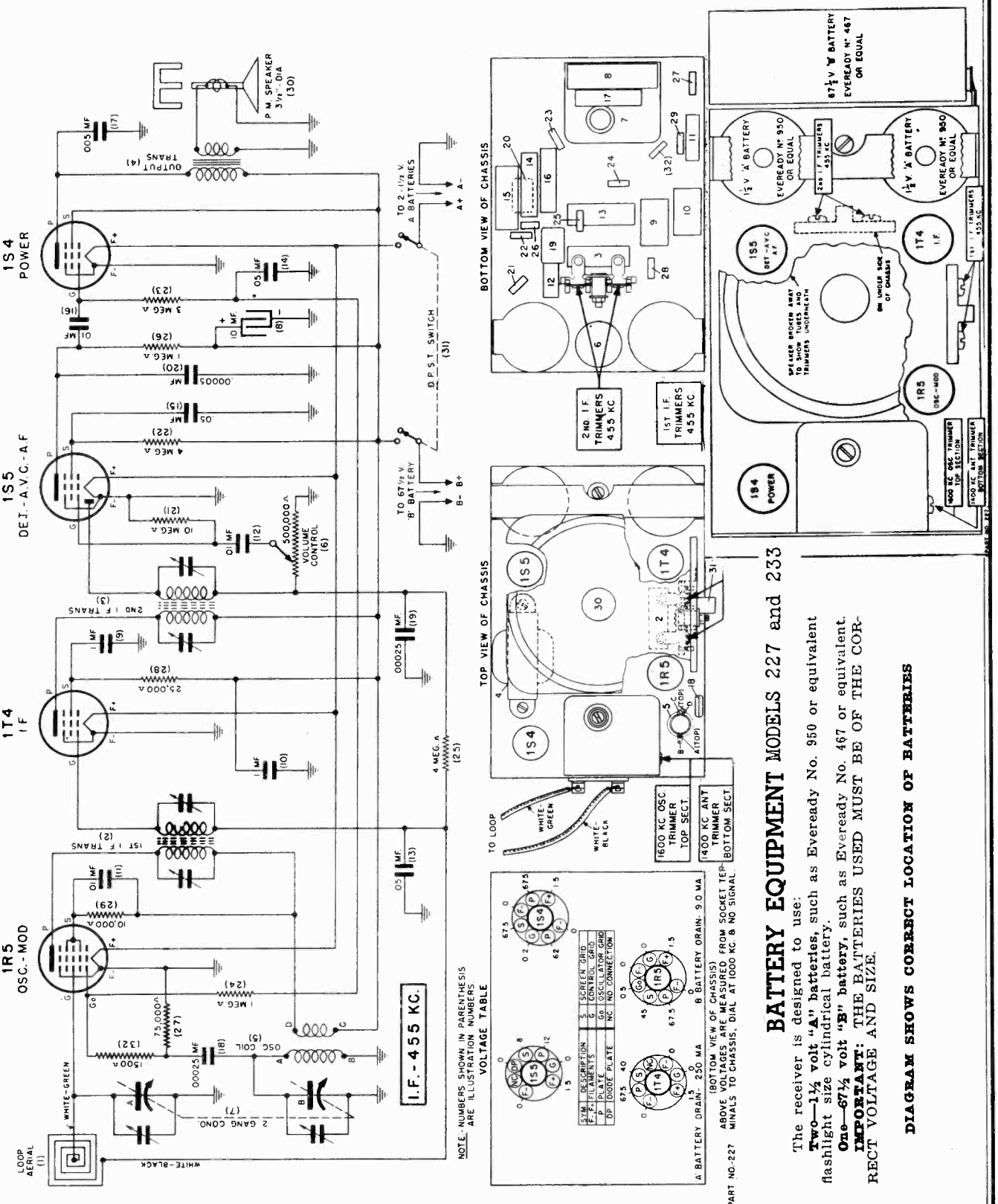
Illus. No.	Part No.	Part Name	Description	List Price
1	12520	Coil	Loop Assembly	$1.25
2	11347	Coil	1st I.F. Transformer	.90
3	11376	Coil	2nd I.F. Transformer	.80
4	11387	Coil	Oscillator	.45
5	11378	Condenser	Tuning Two Gang	1.75
6A	11493	Condenser	Tubular Dry Electrolytic 40-40 Mfd. 150 Volt. Used With Chassis Not Having Common Ground	1.00
6B	11494	Condenser	Tubular Dry Electrolytic 40-40 Mfd. 150 Volt. Used With Chassis Having Common Ground	1.10
7	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
8	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
9	9457	Condenser	Tubular .05 Mfd. 400 Volt	.18
10	9457	Condenser	Tubular .05 Mfd. 400 Volt—Used Only With Chassis Having Common Ground	.18
11	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
12	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
13	12099	Condenser	Tubular .2 Mfd. 400 Volt—Used Only With Chassis Having Common Ground	.26

Illus. No.	Part No.	Part Name	Description	List Price
14	9458	Condenser	Mica .00025 Mfd.	$0.21
15	9458	Condenser	Mica .00025 Mfd.	.21
16	7934	Condenser	Mica .0001 Mfd.	.21
17	4804	Resistor	Carbon 10 Megohm 1/3 Watt	.19
18	2705	Resistor	Carbon 2 Megohm 1/3 Watt	.19
19	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
20	6984	Resistor	Carbon 500,000 Ohm 1/3 Watt	.19
21	2155	Resistor	Carbon 200,000 Ohm 1/3 Watt—Used Only With Chassis Having Common Ground	.19
22	6879	Resistor	Carbon 50,000 Ohm 1/3 Watt	.19
23	9018	Resistor	Carbon 150 Ohm 1/3 Watt	.19
24	4998	Resistor	Carbon 1000 Ohm 1 Watt	.21
25	11390	Speaker	P.M. Dynamic 4". Used Only With Chassis Not Having Common Ground	2.70
26	11393	Speaker	P.M. Dynamic 4", Used Only With Chassis Having Common Ground	2.50
27	11389	Vol. Control	With S.P.S.T. Switch	.80
28	11860	Resistor	230 Volt Line Cord Extension	1.50
29	11861	Resistor	125 Volt Line Cord Extension	1.50

Part No.	Part Name	Description	List Price
11304	Bulb	6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	$0.10
11381	Dial Scale	Calibrated Scale	.30
8184	Dial Cord	Dial Drive Cord 12" of No. 18 Lb. Drive Cord	.10
11379	Dial Shaft	Dial Drive Shaft	.12
11985	Dial Pointer	For Dial—Red Enamel edge	.20
11384	Dial Pointer	For Dial	.15
11391	Dial Crystal	For Dial	.22
11733	Knob	Bakelite for Walnut Plastic Cabinet	.10
10207	Knob	Bakelite for Ivory, Blue & Red Plastic Cabinet	.08
268	Cabinet	Walnut Plastic	1.80
266	Cabinet	Ivory Plastic	2.15

MODEL 227
MODEL 233

SENTINEL RADIO CORP.



BATTERY EQUIPMENT MODELS 227 and 233

The receiver is designed to use:
Two—1½ volt "A" batteries, such as Eveready No. 950 or equivalent flashlight size cylindrical battery.
One—67½ volt "B" battery, such as Eveready No. 467 or equivalent.
IMPORTANT: THE BATTERIES USED MUST BE OF THE CORRECT VOLTAGE AND SIZE.

DIAGRAM SHOWS CORRECT LOCATION OF BATTERIES

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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 1600 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator. (b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

Set receiver dial to:		TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
		Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
Any point where no interfering signal is received		Exactly 455 K.C.	0.2 Mfd. condenser	High side to lug on stator of gang condenser to which loop lead is connected.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1	Exactly 1600 K.C.	Exactly 1600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1600 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.

CIRCUIT CHANGES IN MODEL 227 CHASSIS

I.F. TRANSFORMER CHANGE:

First production runs of Model 227 used part #12598 first and second I. F. transformer --- these were replaced in later production by part #12902 first and second I. F. transformer. These I.F. transformers are interchangeable, and as performance is somewhat improved with the new type, we are filling all orders for part #12598 I. F. transformers with the new type part #12902.

OSCILLATOR COIL CHANGE:

Early production runs used a #12601 oscillator coil. To increase "B" battery life and eliminate self-modulation. this oscillator coil was replaced by part #12906. IN ADDITION A 1500 OHM 1/3 WATT RESISTOR WAS USED IN SERIES WITH THE OSCILLATOR GRID OF THE 1R5 TUBE. As the old and new type oscillator coils are not interchangeable, be sure to use proper coil. ALL CHASSIS HAVING NEW TYPE 12906 OSCILLATOR COIL AND THE 1500 OHM RESISTOR HAVE A LETTER "A" STAMPED ON BACK OF CHASSIS ADJACENT TO THE SERIAL NUMBER.

VOLUME CONTROL CHANGE:

A 500,000 ohm volume control part #12604 was used in early production Model 227 Receivers. This was replaced by part #13014; a two megohm control. As the two megohm control improves sensitivity we recommend that whenever a 500,000 ohm control part #12604 is replaced that a #13014 two megohm control be used.

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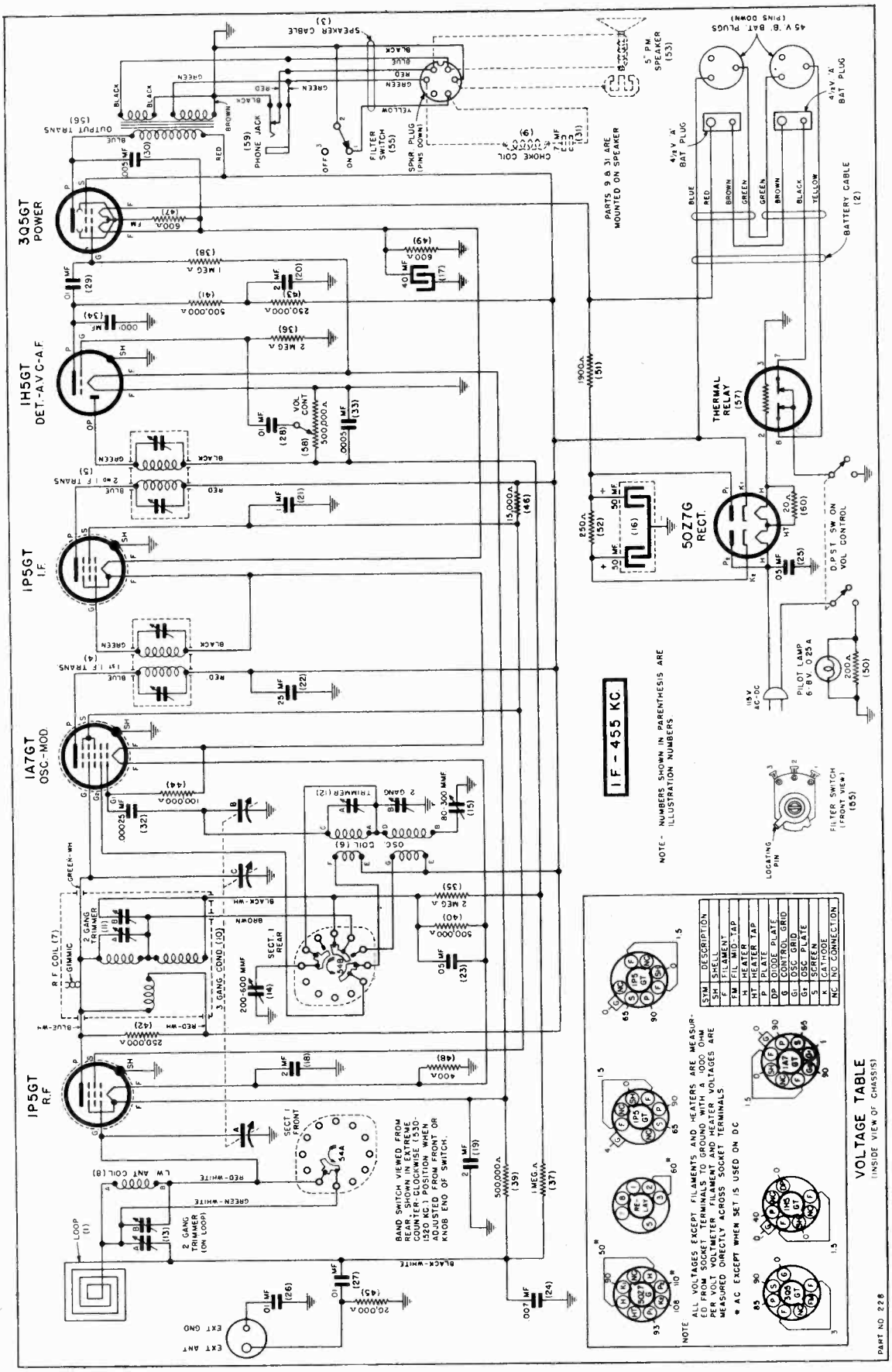
MODEL 228

SENTINEL RADIO CORP.



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.

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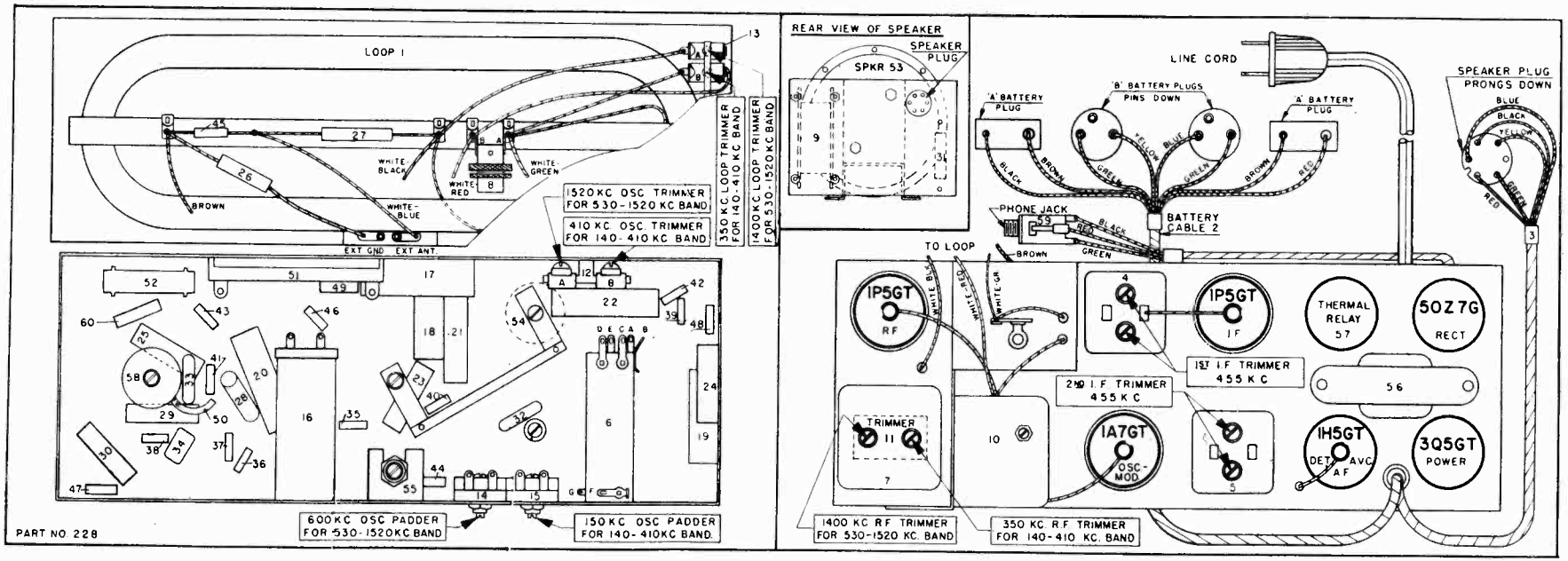
ALIGNMENT PROCEDURE

PART NO. 12896-228

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 oscillator R.F. and loop 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.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test Oscillator frequency to	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position	Any point where no interfering signal is received	Exactly 455 K.C.	.02 Mfd. condenser	High side of grid of 1A7G Tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1520 to 530 K.C. Band	1 Exactly 1520 K.C.	Exactly 1520 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 1520 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 1400 K.C. loop & R.F. trimmers for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
150 to 410 K. C. Band	1 Exactly 410 K.C.	Exactly 410 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 410 K.C. oscillator trimmer for maximum output.
	2 Approx. 350 K.C.	Approx. 350 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	Adjust 350 K.C. loop & R.F. trimmers for maximum output.
	3 Approx. 150 K.C.	Approx. 150 K.C.	None	Use Small Loop to couple test oscillator to receiver loop	While rocking gang condenser adjust 150 K.C. oscillator padder for maximum response.



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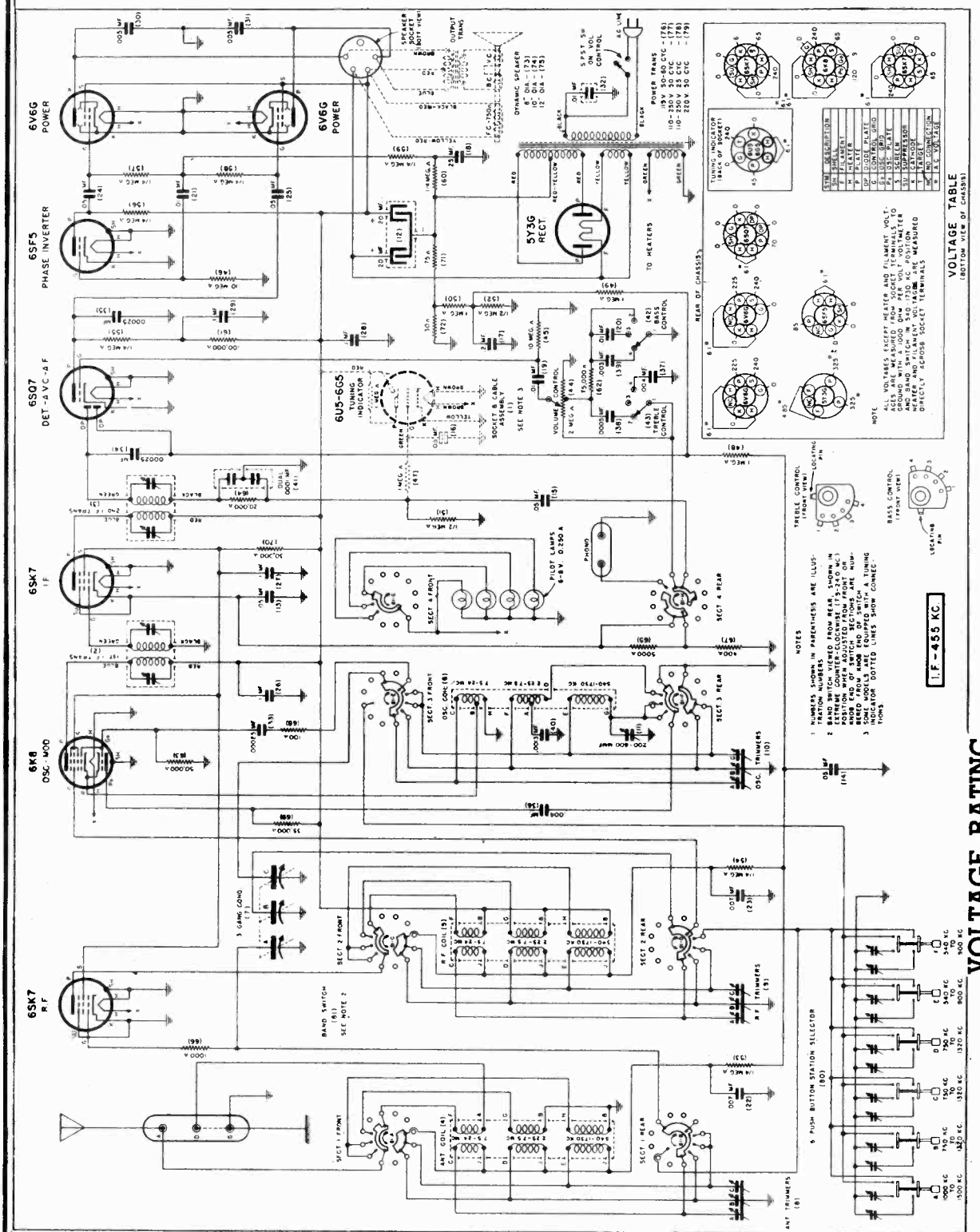
SENTINEL RADIO CORP.



VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice.

BE SURE THAT THE CURRENT RATING GIVEN ON THE LICENSE TAG IS THE SAME AS THE HOUSE CURRENT SUPPLY.

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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. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

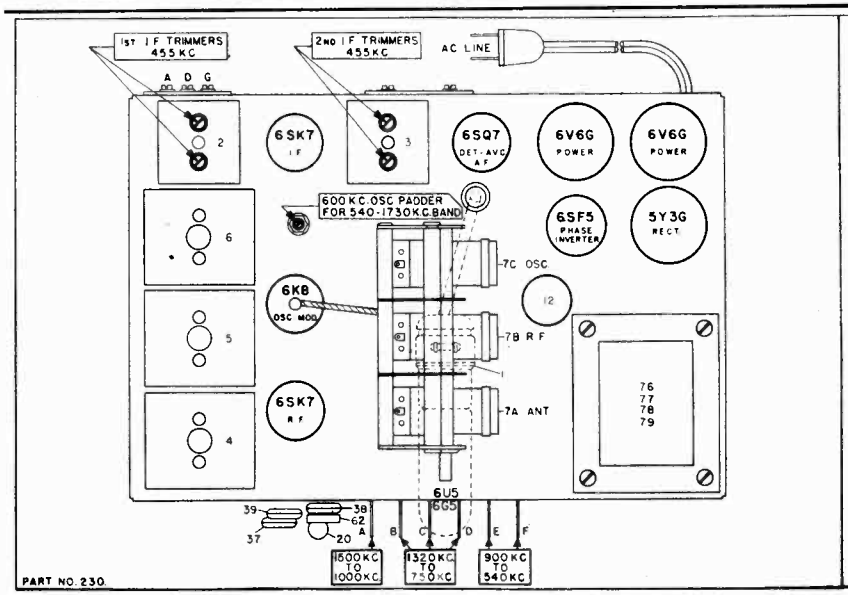
Before starting alignment:

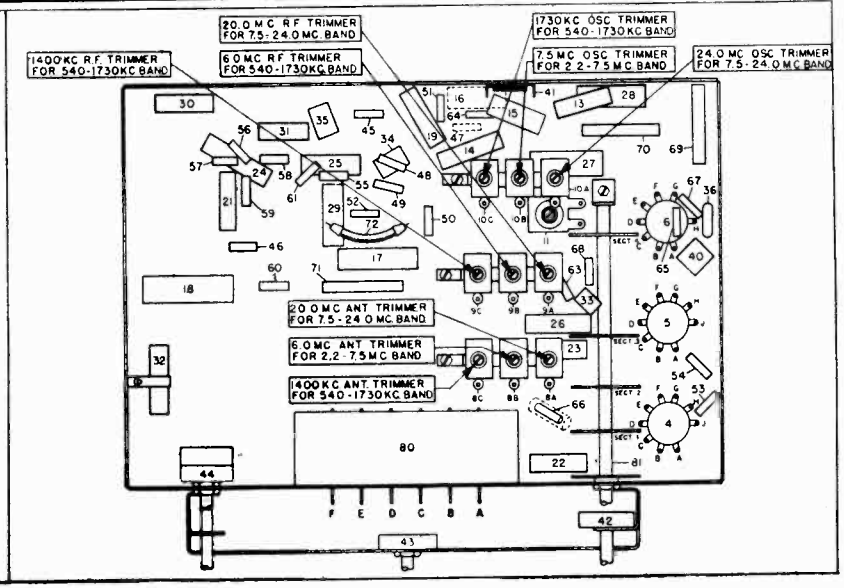
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle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

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

(c) Have ground lead of test oscillator attached to chassis.

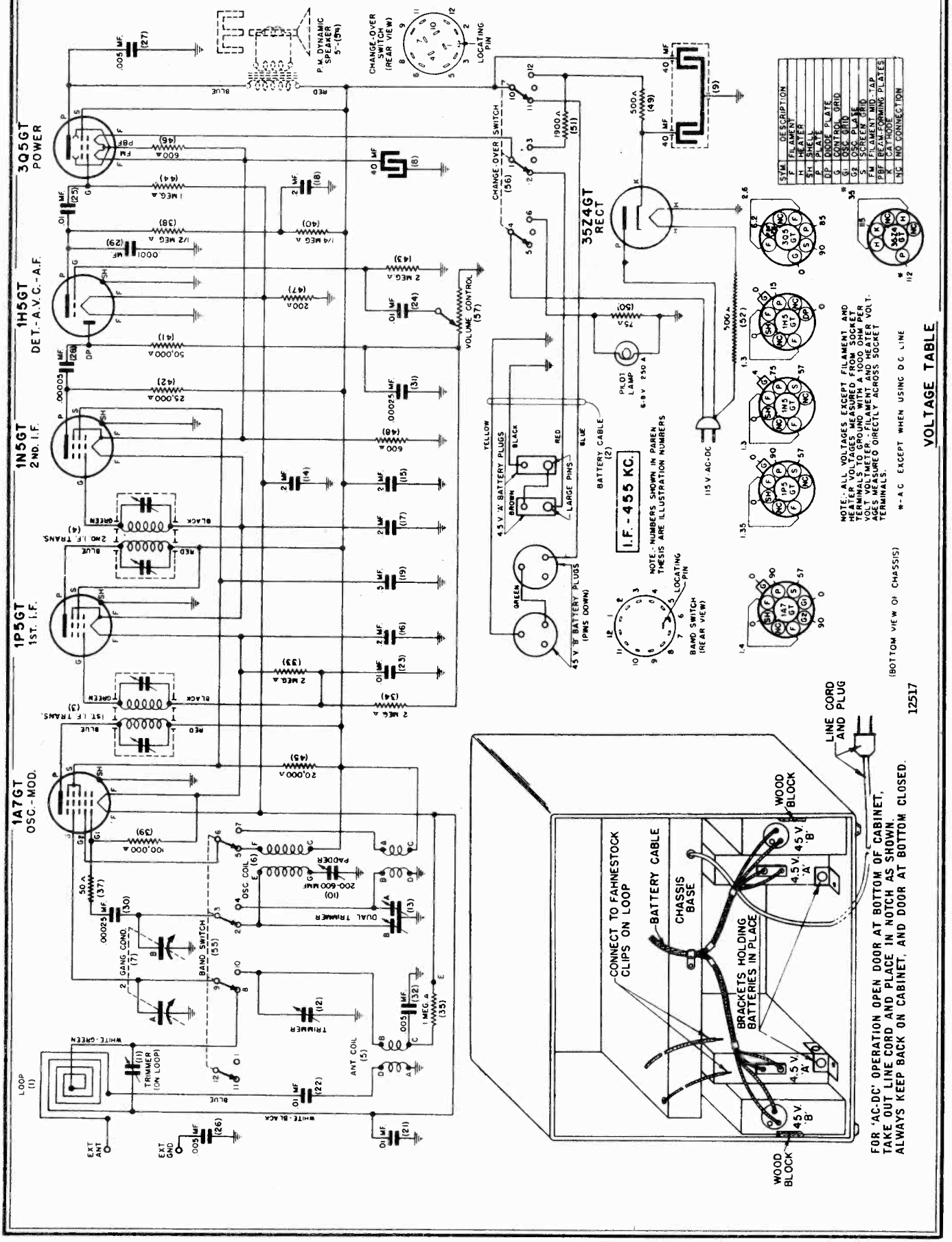
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Exactly 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna and R.F. trimmers for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
2.2-7.5 M.C. Band	1 Exactly 7.5 M.C.	Exactly 7.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.5 M.C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Exactly 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M.C. antenna and R.F. trimmers for maximum output.
7.5 to 24 M.C. Band	1 Exactly 24 M.C.	Exactly 24 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 24 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity. then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 20 M.C.	Approx. 20 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 20 M.C. antenna and R.F. trimmers for maximum output.





MODEL 231

SENTINEL RADIO CORP.



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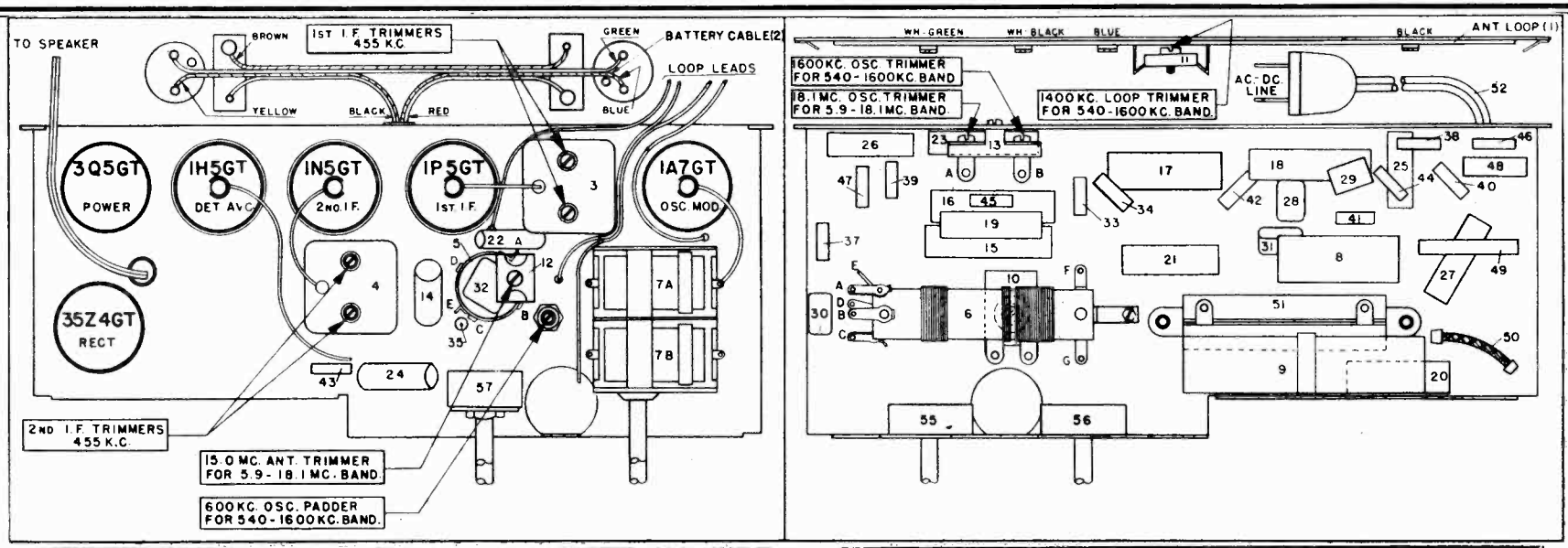

Place band switch for operation on:	Set receiver dial to:		TEST OSCILLATOR: Adjust test oscillator frequency to	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position	Any point where no interfering signal is received		Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 1A7 G tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1600 to 540 K.C. Band	1	Exactly 1600 K.C.	Exactly 1600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1600 K.C. oscillator trimmer for maximum output.
	2	Approx. 1400 KC.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.9 to 18.1 M.C. Band	1	Exactly 18.1 M.C.	Exactly 18.1 M.C.	400 Ohm carbon resistor	High side to "Ant." screw on cabinet back. Low side to "GND" screw on cabinet back.	Adjust 18 M. C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2	Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor	High side to "Ant." screw on cabinet back. Low side to "GND" screw on cabinet back.	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

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 1600 kilocycle oscillator trimmer, 1400 kilocycle antenna trimmer and 600 kilocycle oscillator padder, do not connect test oscillator to loop direct. 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.

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.

5.9-18.1 Megacycles—51-16.57 Meters

FOR SHORT WAVE—5.9-18.1 M.C.—RECEPTION BE SURE TO ATTACH A 25-50 FOOT AERIAL TO THE SCREW IN THE UPPER LEFT HAND CORNER OF CABINET BACK.

USE SECTION OF THE DIAL that is calibrated from 5.9-18.1 megacycles 51-16.57 meters.

TURN WAVE SWITCH KNOB to maximum left hand position.

TURN THE VOLUME CONTROL KNOB TO THE EXTREME RIGHT.

ROTATE TUNING KNOB VERY VERY SLOWLY so that the dial indicator needle slowly passes over the section of the dial where the desired station should come in.

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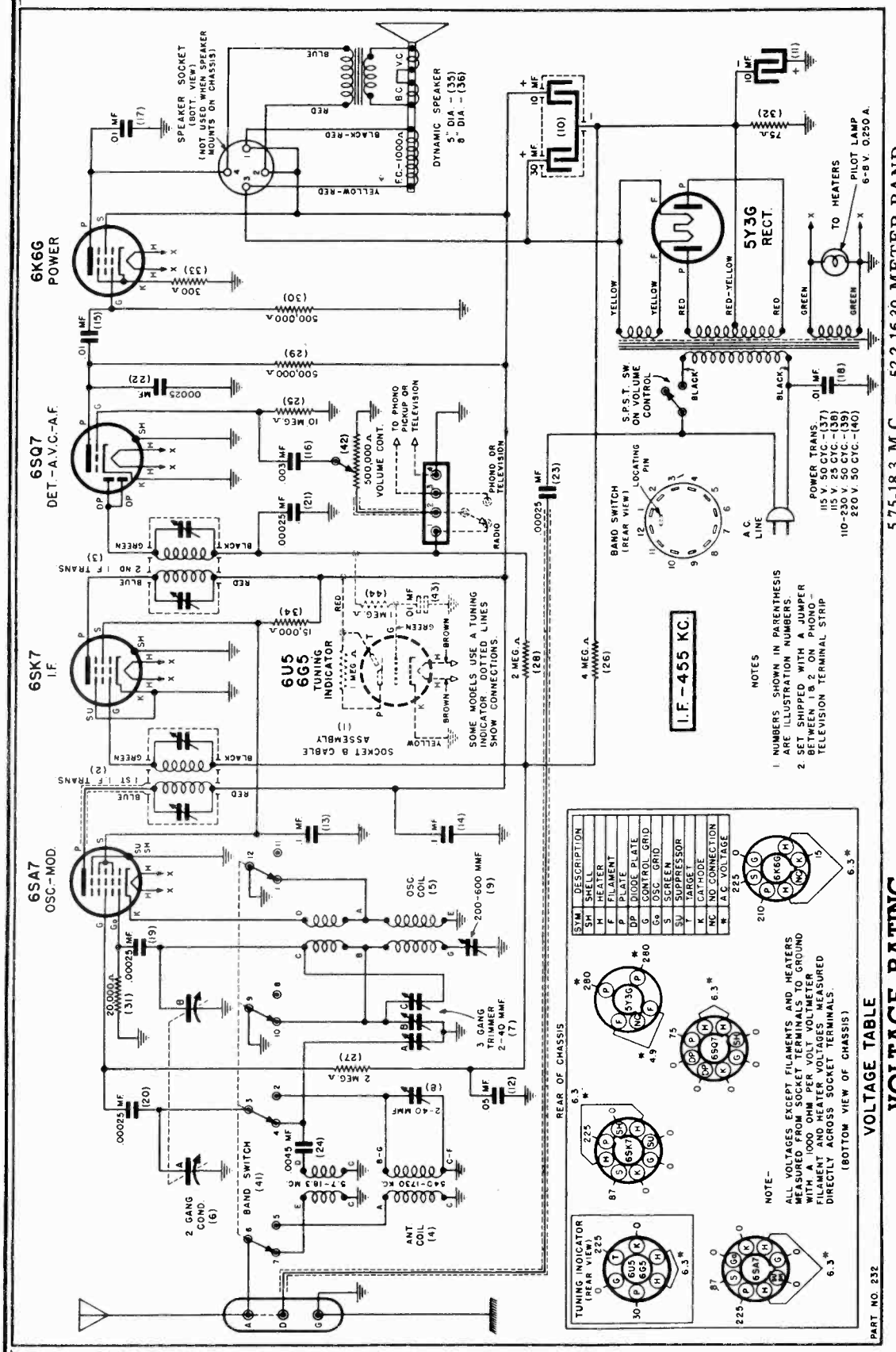
SENTINEL RADIO CORP.



VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice.

BE SURE THAT THE CURRENT RATING GIVEN ON THE LICENSE TAG IS THE SAME AS THE HOUSE CURRENT SUPPLY.

5.75-18.3 M.C. — 52.2-16.39 METER BAND

BE SURE TO ATTACH A 25-50 ft. REGULAR AERIAL TO "A" TERMINAL on rear of chassis when tuning for short wave—5.75-18.3 M.C. — stations.

USE SECTION OF THE DIAL that is calibrated from 5.75 to 18.3 M.C.

TURN WAVE BAND SWITCH KNOB to the left hand position. TURN THE VOLUME TO THE EXTREME RIGHT.

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ALIGNMENT PROCEDURE

PART NO. 12579-232

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

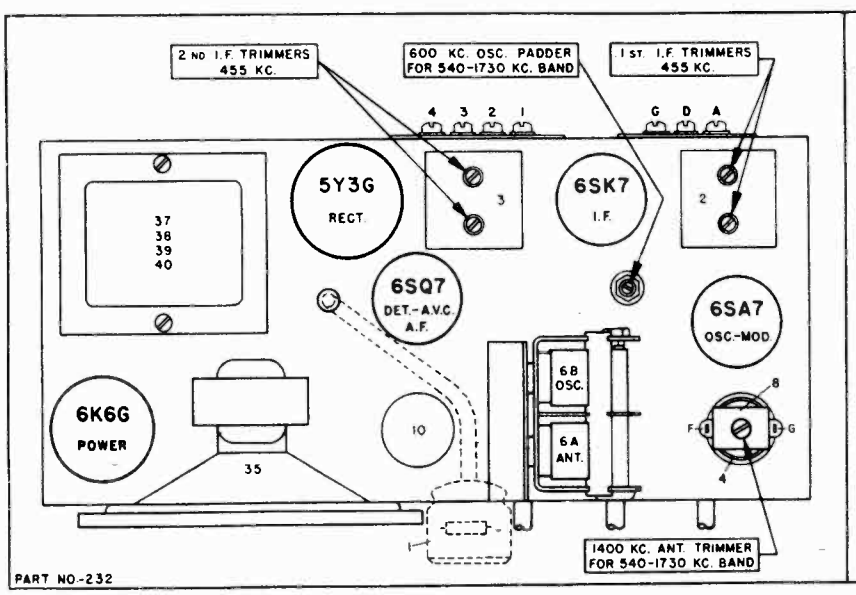
Before starting alignment:

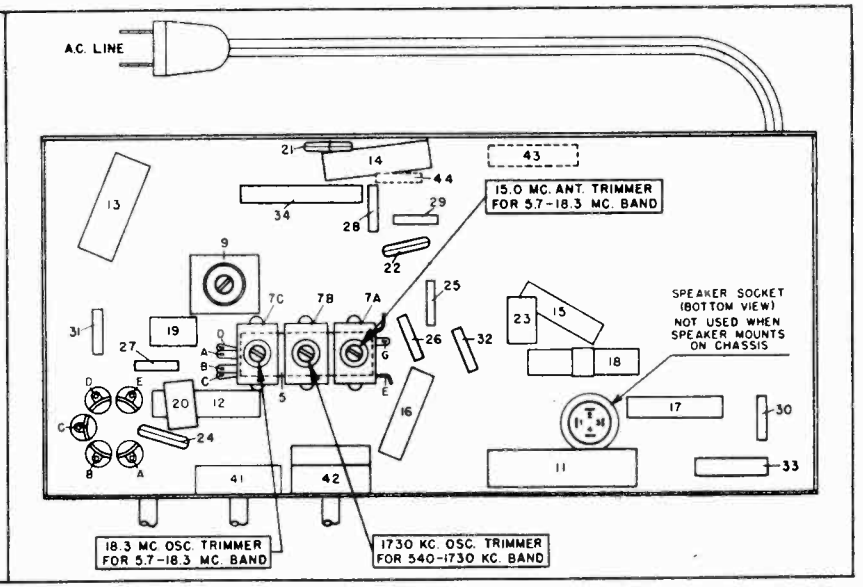
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle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

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

(c) Have ground lead of test oscillator attached to chassis.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6SA7 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.75 to 18.3 M.C. Band	1 Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use—is tuned in.
	2 Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 15 M. C. antenna trimmer for maximum output.





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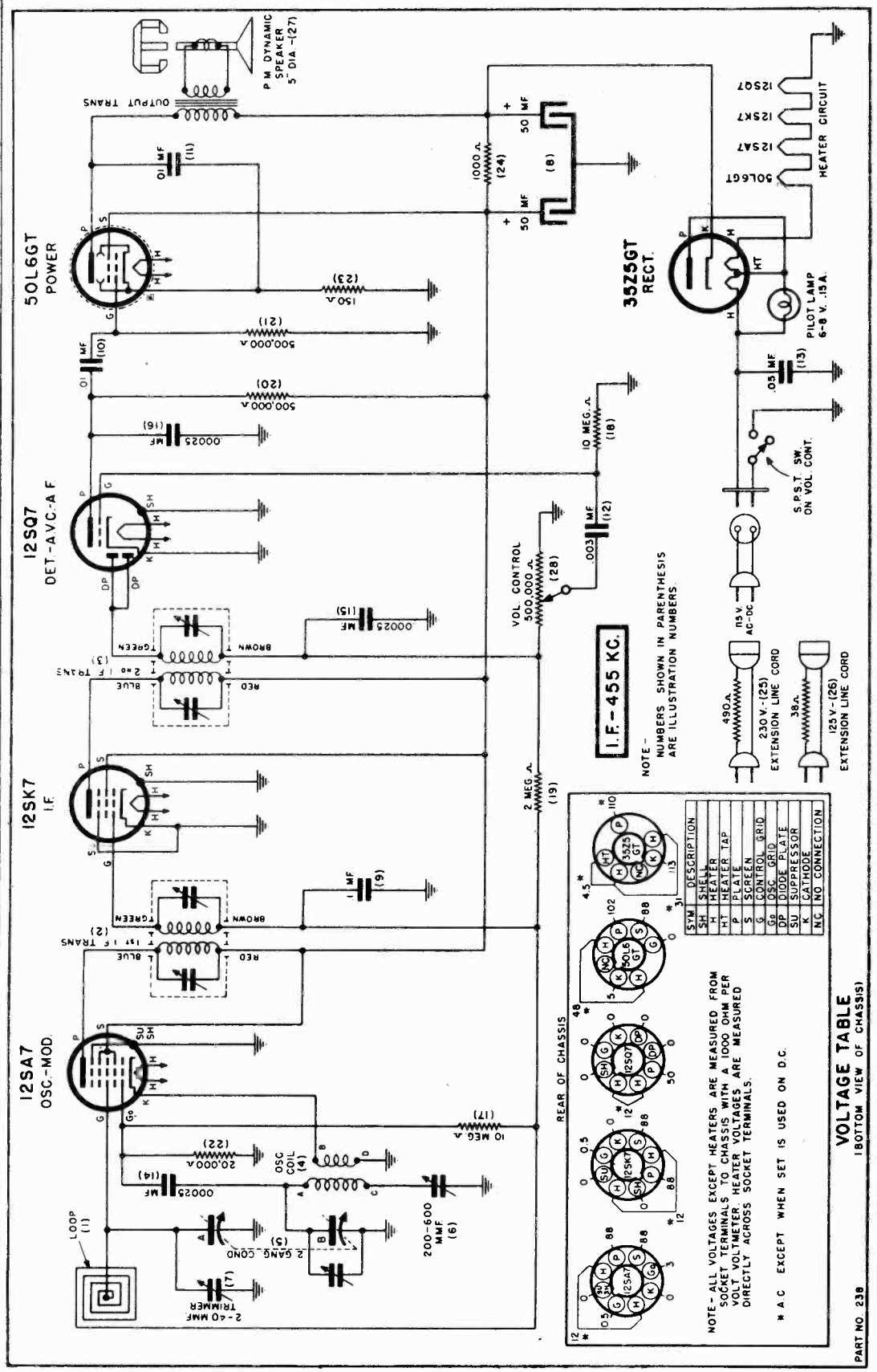
SENTINEL RADIO CORP.



VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON EITHER 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC) OR 110-120 VOLTS DIRECT CURRENT (DC)—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice.

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 receptacle.

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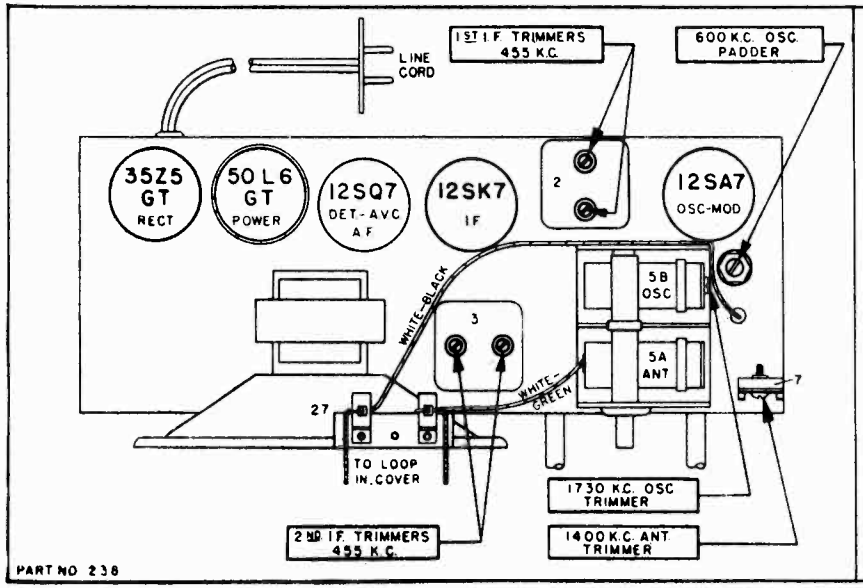
ALIGNMENT PROCEDURE

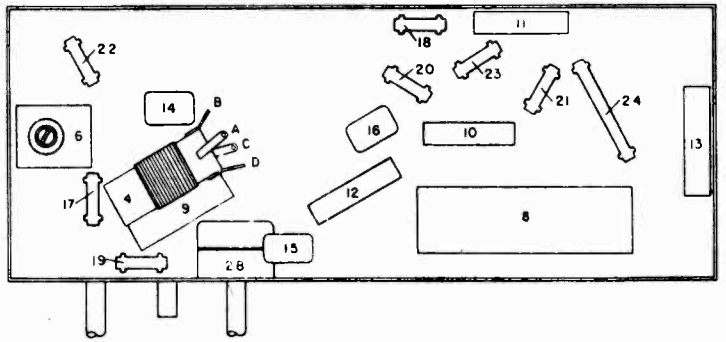
PART NO. 13008-238

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, 600 K.C. padder 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.

Place band switch for operation on:		Set receiver dial to:	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position		Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid of 12SA7 tube. Low side to frame of gang condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1730 to 540 K.C. Band	1	Exactly 1730 K.C.	Exactly 1730 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1730 K. C. oscillator trimmer for maximum output.
	2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.
	3	Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 600 K. C. oscillator padder for maximum output.





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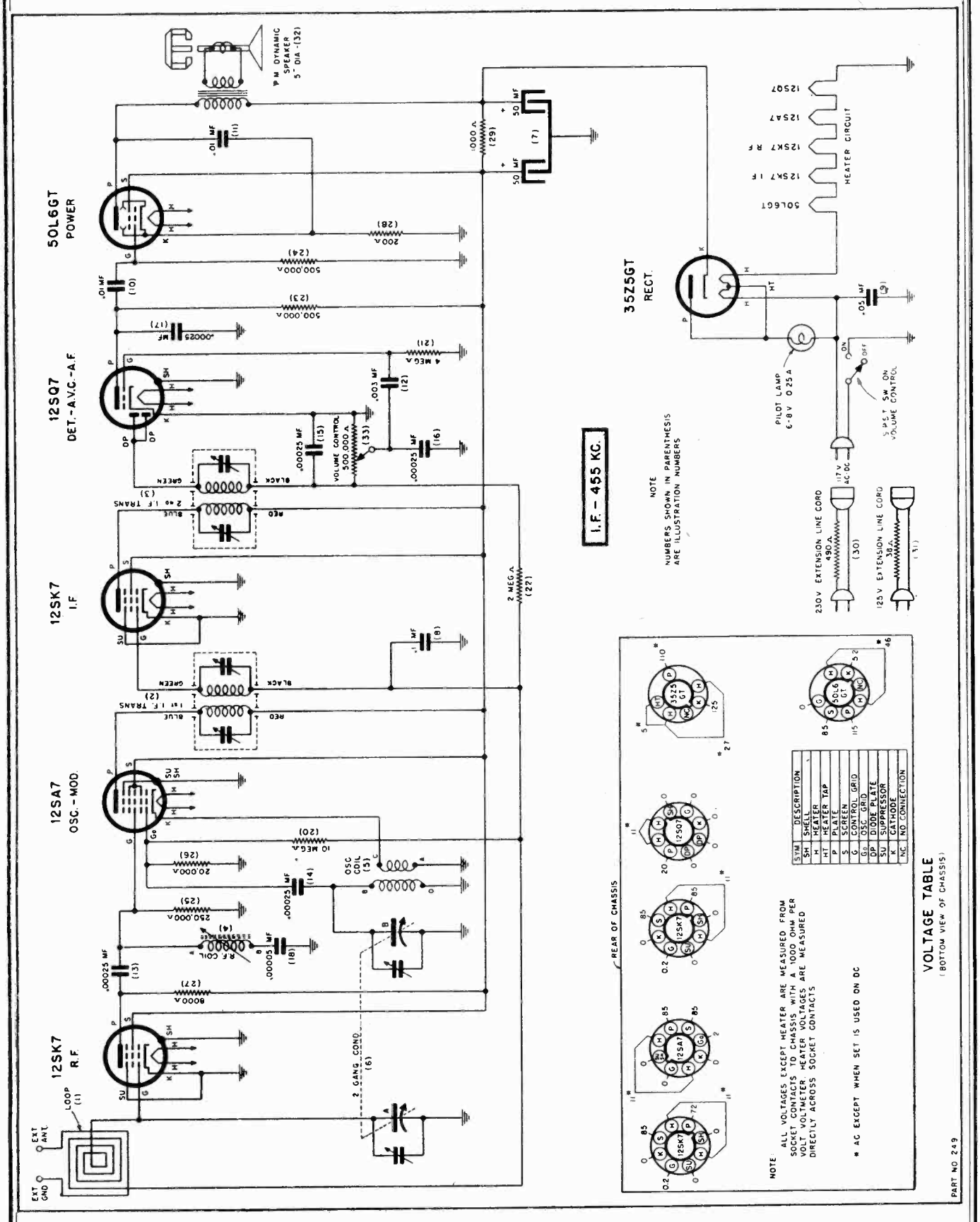
SENTINEL RADIO CORP.



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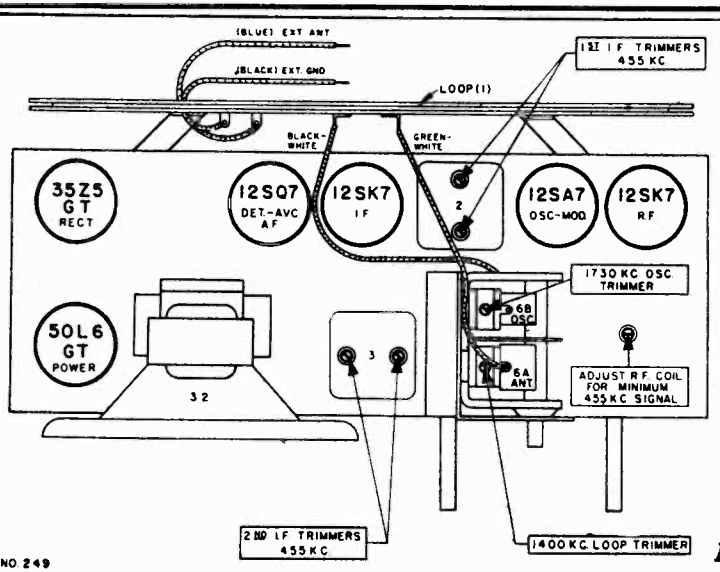

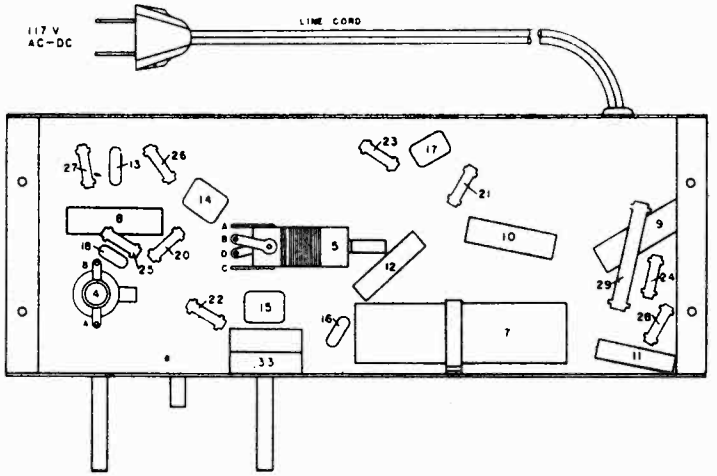

ALIGNMENT PROCEDURE

PART NO. 13232—249

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, 455 K. C. I. F. 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: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
Any point where no interfering signal is received		Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid 12SA7 tube. Low side to frame of condenser through .01 Mfd. condenser	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1	Rotate gang condenser to maximum capacity	Exactly 455 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser	Adjust R.F. coil for minimum 455 K.C. signal.
2	Exactly 1730 K.C.	Exactly 1730 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser	Adjust 1730 K.C. oscillator trimmer for maximum output.
3	Approx. 1400 K. C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser	While rocking gang condenser adjust 1400 K.C. loop trimmer for maximum output.

VOLTAGE RATING

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.

THIS RADIO IS DESIGNED FOR USE ON EITHER 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC) OR 110-120 VOLTS DIRECT CURRENT (DC)—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice.

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.

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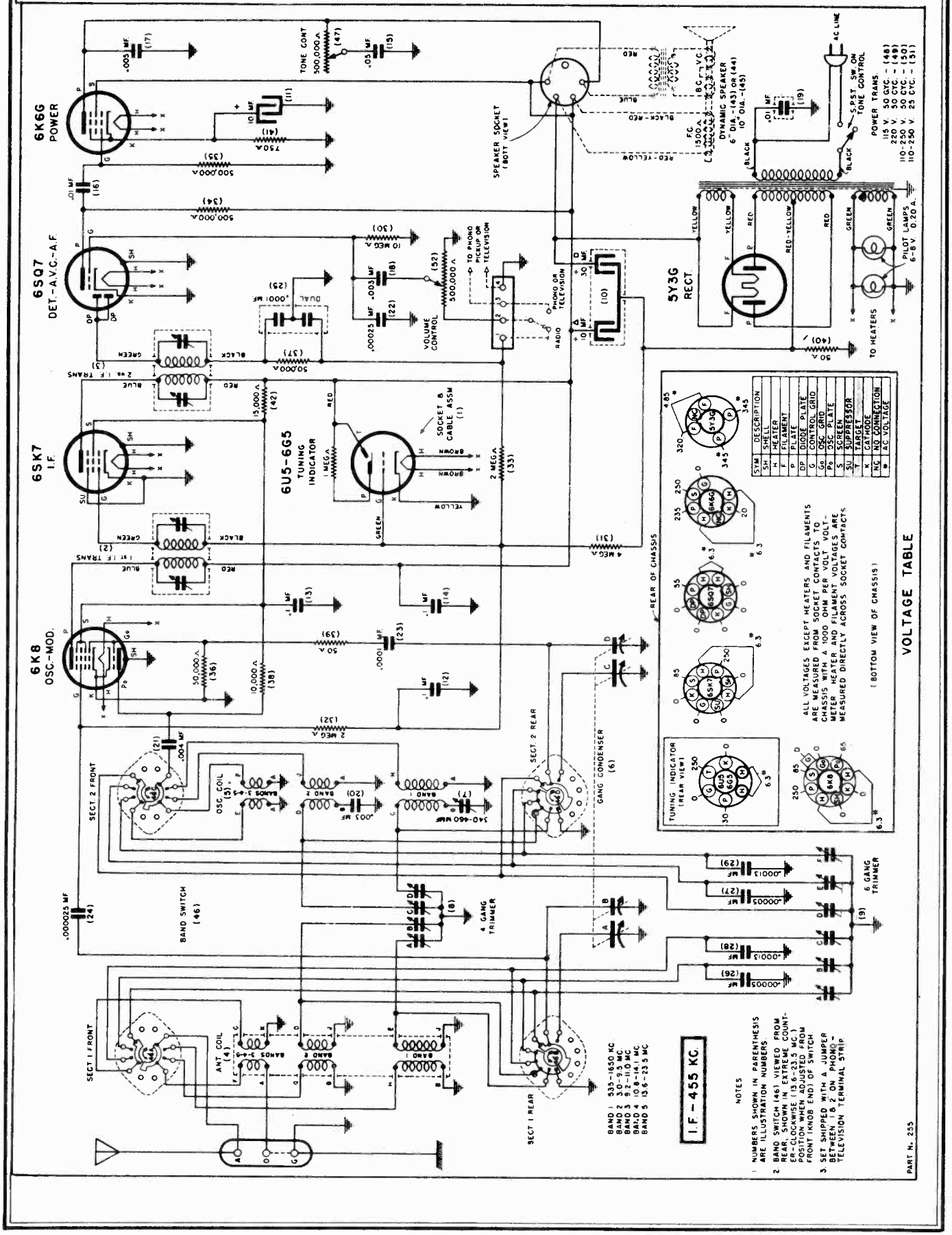
MODEL 255

SENTINEL RADIO CORP.



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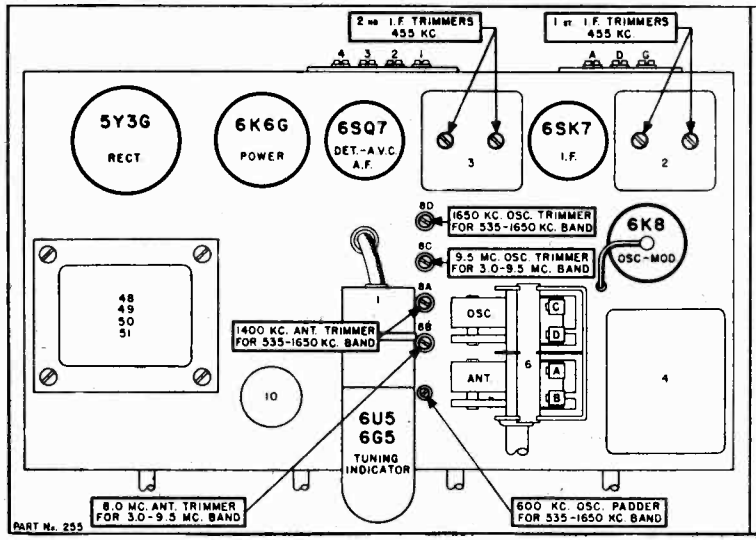
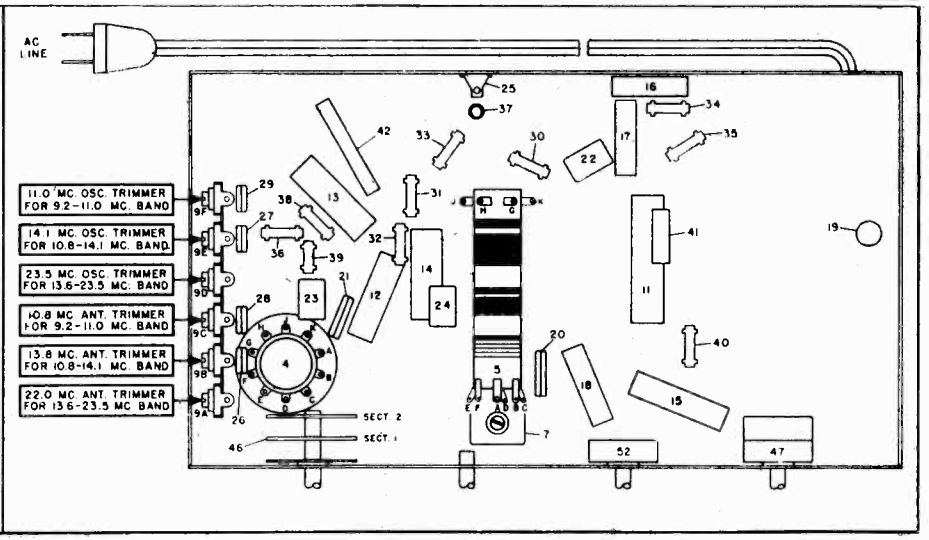
ALIGNMENT PROCEDURE

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

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Alignment procedure
I. F. alignment use any band position.	Any point where no interfering signal is received.	Exactly 455 K.C.	.02 Mfd. condenser	High side to grid cap of 6K8 tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output—then adjust each of the first I. F. transformer trimmers for maximum output.
1650 to 535 K.C. Band	Exactly 1650 K.C.	Exactly 1650 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	Adjust 1650 K.C. oscillator trimmer for maximum output.
	Approx. 1400 K.C.	Approx. 1400 K.C.	.00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	Approx. 600 K.C.	Approx. 600 K.C.	00025 Mfd. condenser	Receiver antenna "A" post	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
3 to 9.5 M.C. Band	Exactly 9.5 M.C.	Exactly 9.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 9.5 M.C. oscillator trimmer for maximum output.
	Approx. 8 M.C.	Exactly 8 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 8 M.C. antenna trimmer for maximum output.
9.2 to 11 M.C. Band	Exactly 11 M.C.	Exactly 11 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 11 M.C. oscillator trimmer for maximum output.
	Approx. 10.8 M.C.	Approx. 10.8 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 10.8 M.C. antenna trimmer for maximum output.
10.8 to 14.1 M.C. Band	Exactly 14.1 M.C.	Exactly 14.1 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 14.1 M.C. oscillator trimmer for maximum output.
	Approx. 13.8 M.C.	Approx. 13.8 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 13.8 M.C. antenna trimmer for maximum output.
13.6 to 23.5 M.C. Band	Exactly 23.5 M.C.	Exactly 23.5 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 23.5 M.C. oscillator trimmer for maximum output.
	Approx. 22 M.C.	Approx. 22 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 22 M.C. antenna trimmer for maximum output.





VOLTAGE RATING

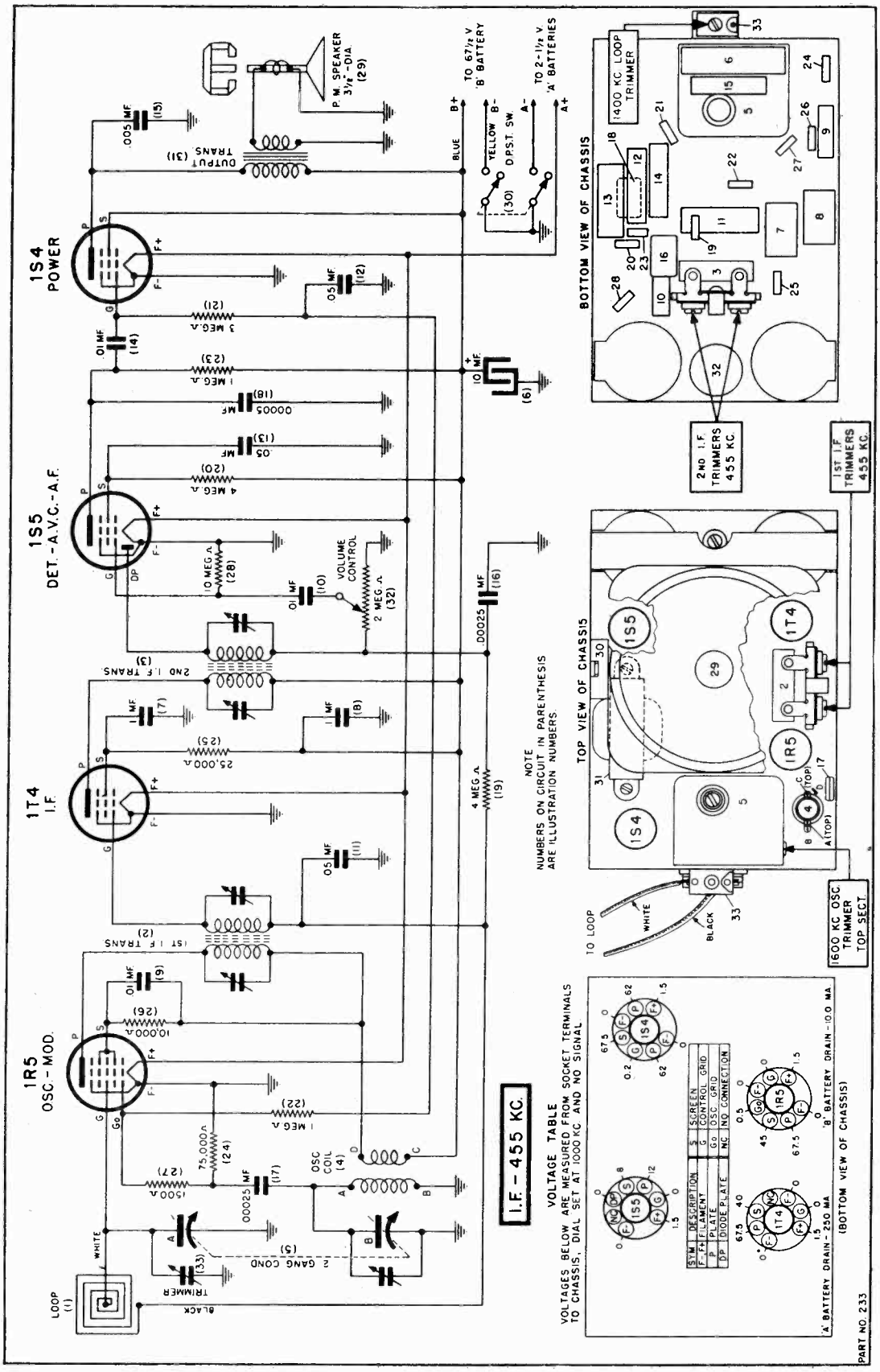
BE SURE THAT THE CURRENT RATING GIVEN ON THE LICENSE TAG IS THE SAME AS THE HOUSE CURRENT SUPPLY.

THIS RADIO IS DESIGNED FOR USE ON 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice

SENTINEL RADIO CORP.

Based on average usage, the flashlight 1½ volt "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.



FOR ALIGNMENT AND BATTERY CONNECTIONS SEE INDEX

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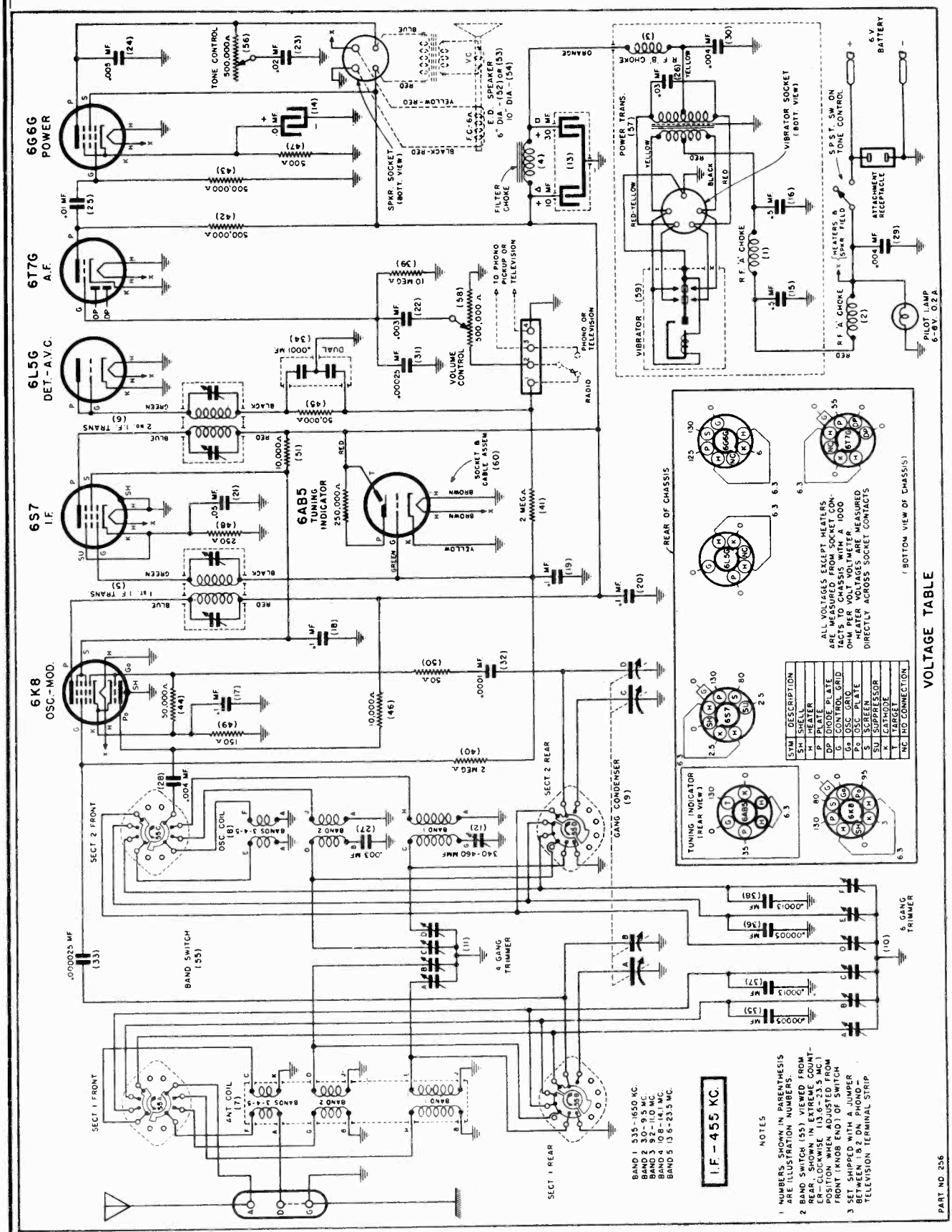
MODEL 256

SENTINEL RADIO CORP.



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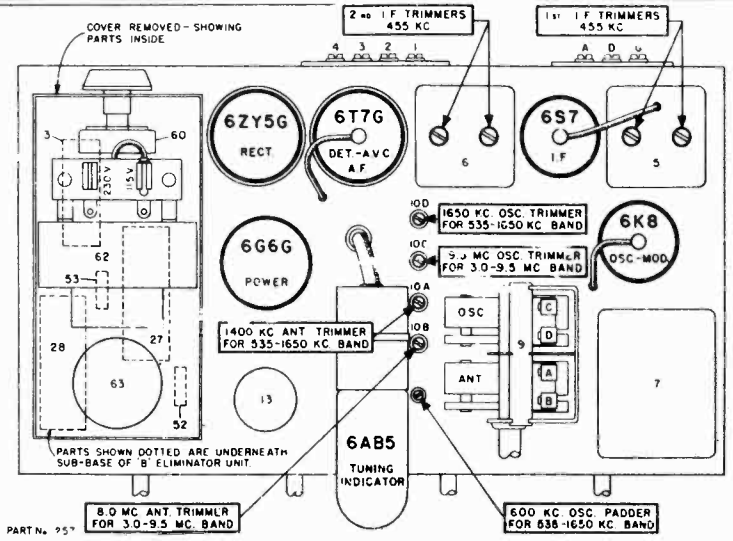
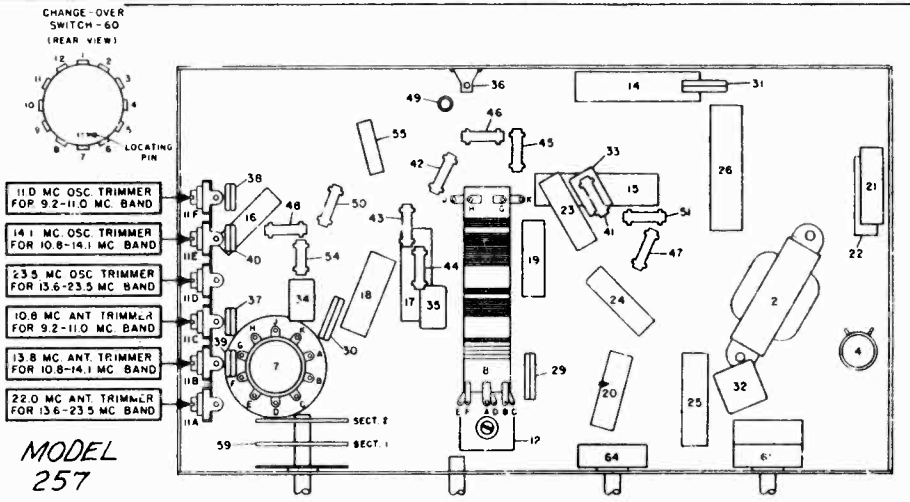
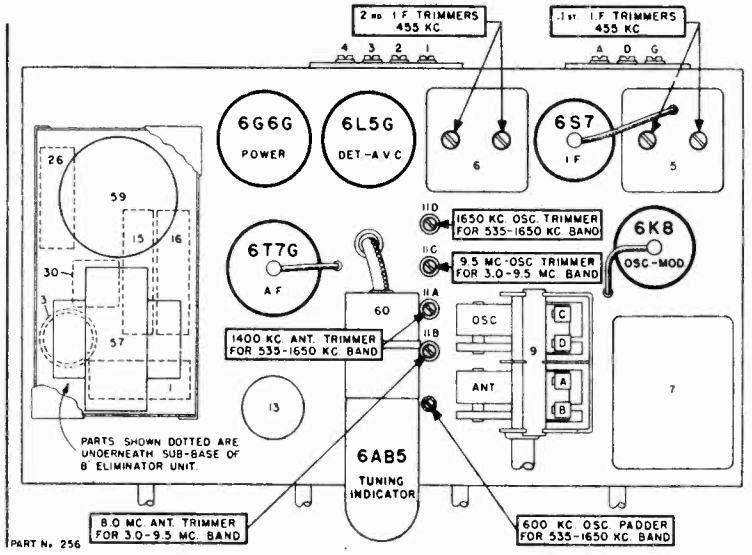


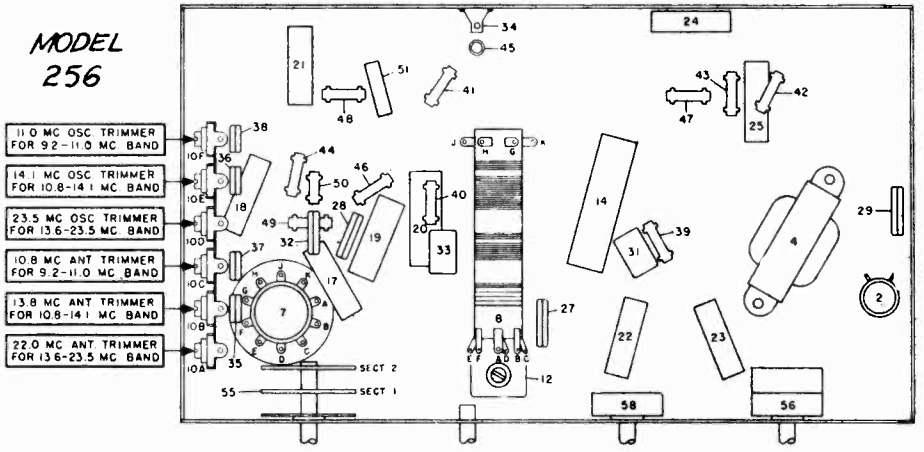


IF ELECTRIC SERVICE IS 110-125 VOLT, INSERT INTO TERMINAL MARKED 115V—if Service is 210-230 Volt insert into terminal marked 230V.

THIS RECEIVER CAN BE OPERATED WITH A SIX VOLT STORAGE BATTERY OR FROM 117 OR 230 VOLT 50 TO 60 CYCLE CURRENT.

NEVER ATTEMPT TO OPERATE THE RECEIVER WITH A 12 VOLT STORAGE BATTERY OR ON 25 CYCLE CURRENT OR ON DIRECT CURRENT (D.C.) OR WITH THE METAL TIPPED LEAD IN THE WRONG TERMINAL SOCKET BECAUSE THE SET WILL BE DAMAGED.





GROUND

A GOOD GROUND such as a cold water pipe, steam radiator, or an iron rod driven into the ground three or four feet in a place where it is moist should be attached to the post marked "G" regardless of the type of antenna used.

THE RECEPTACLE ON BACK of chassis is connected to the storage battery operating the radio. A single six volt 15 or 25 watt light may be run on the battery by inserting male plug on end of light cord into receptacle. Light cord wire must not be smaller than No. 18 nor longer than six feet, and only one six volt light should be used, otherwise the light will be dim.

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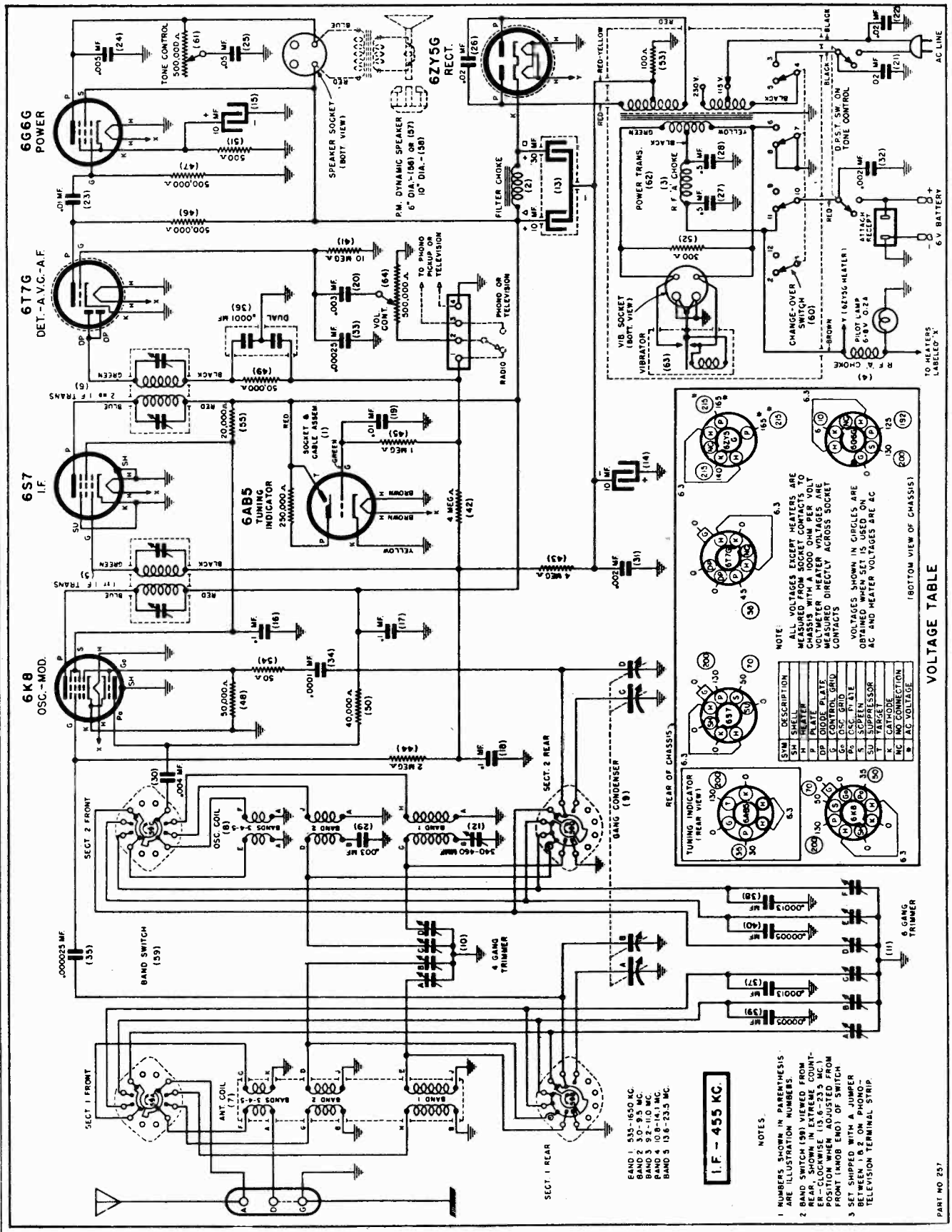
MODEL 257

SENTINEL RADIO CORP.



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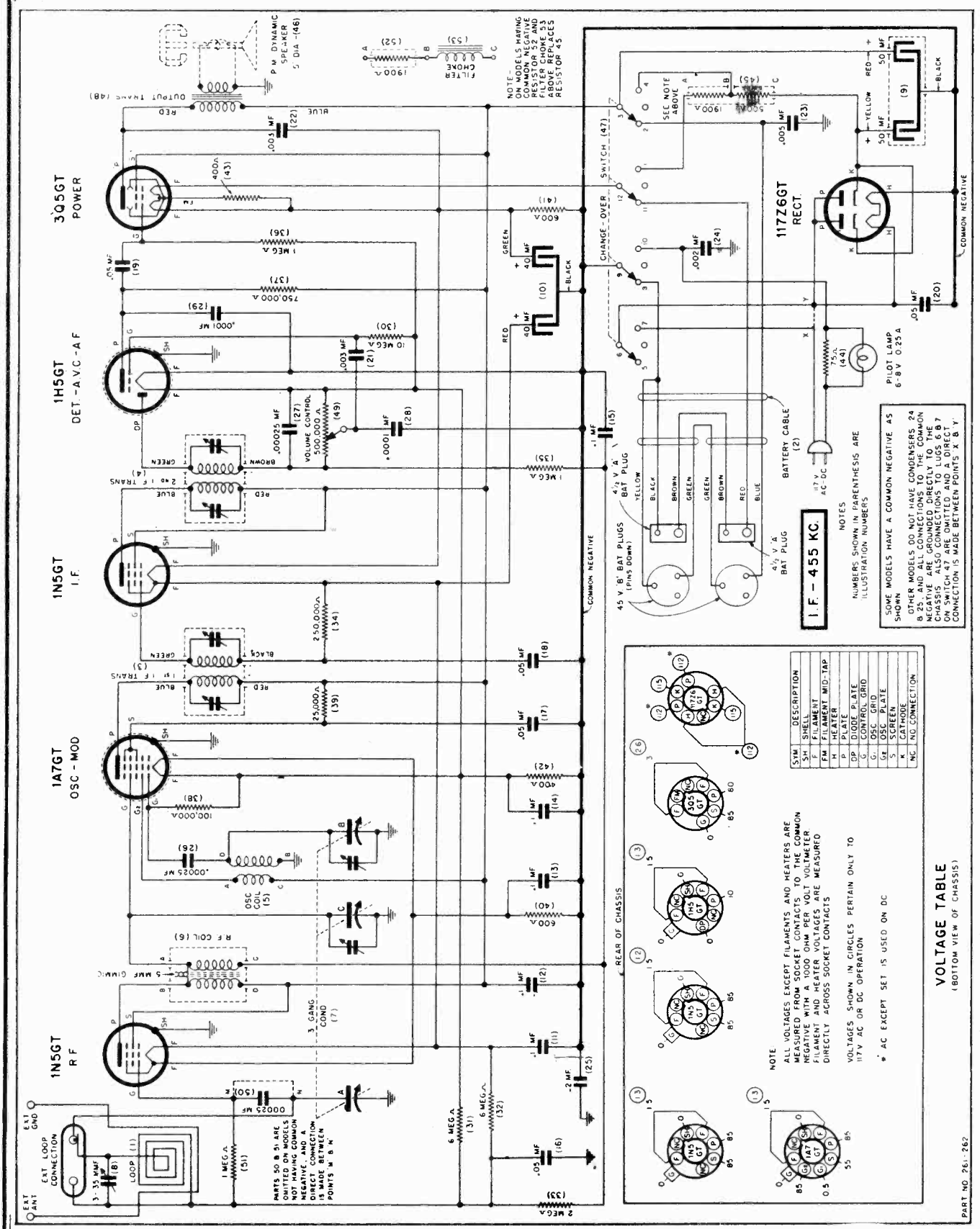
SENTINEL RADIO CORP.



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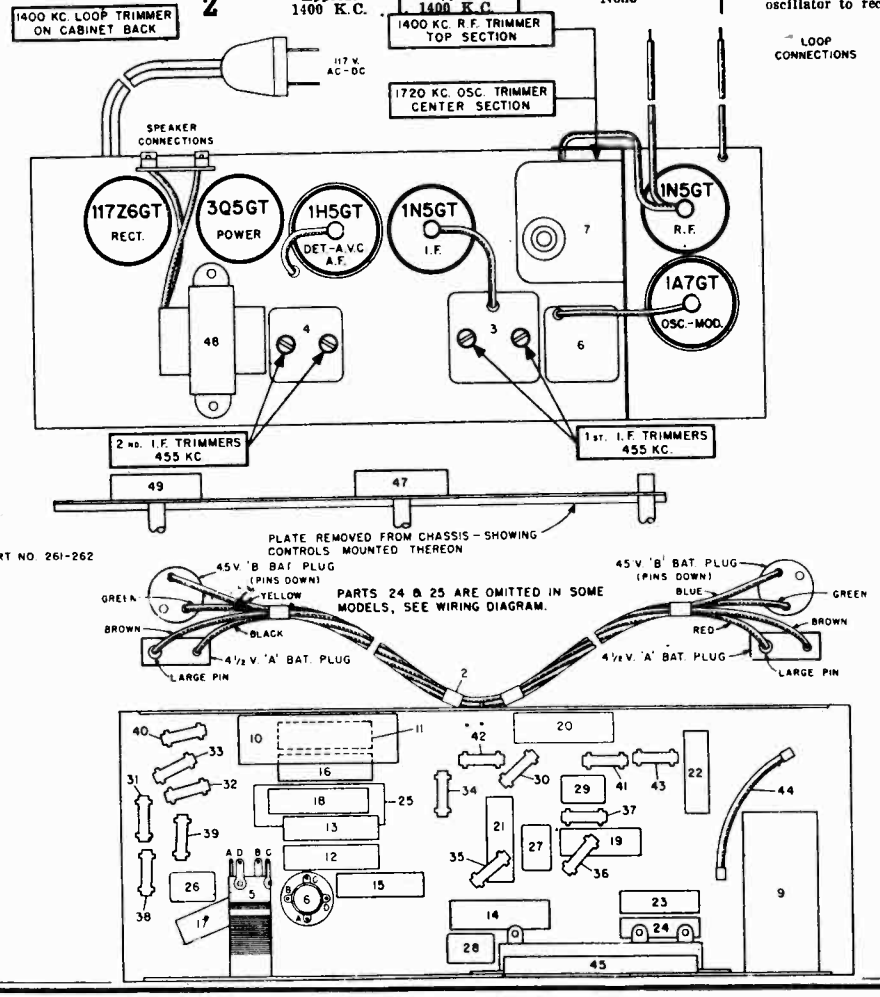
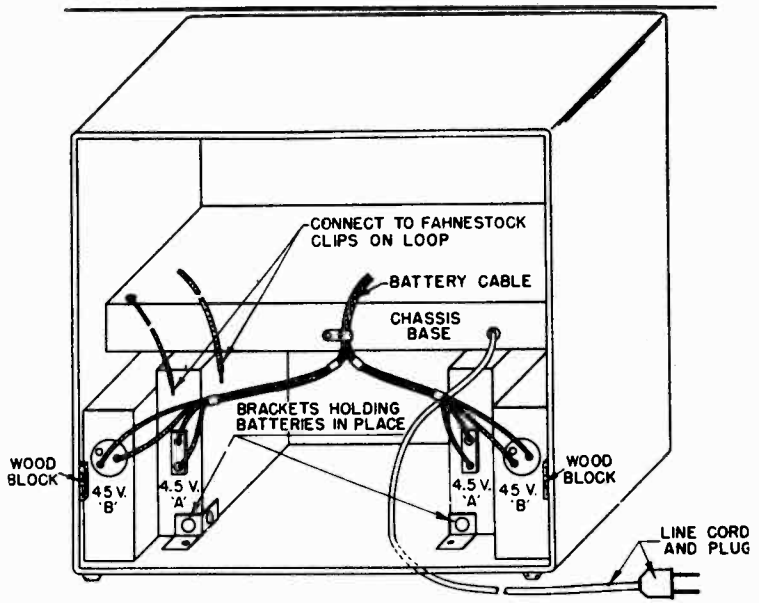
For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

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.

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:	Refer to parts layout diagram for location of trimmers mentioned below:
	Any point where no interfering signal is received.	Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid cap of 1A7GT tube. Do not remove cap.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1	Exactly 1730 K.C.	Exactly 1730 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1730 K. C. oscillator trimmer for maximum output.
2	Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1400 K.C. loop and R.F. trimmers for maximum output.





TO INSTALL BATTERIES REMOVE BACK FROM CABINET, AND PLACE BATTERIES AS SHOWN.
FOR AC/DC OPERATION BRING LINE CORD THROUGH OPENING IN BOTTOM OF CABINET.
ALWAYS KEEP BACK ON CABINET.

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

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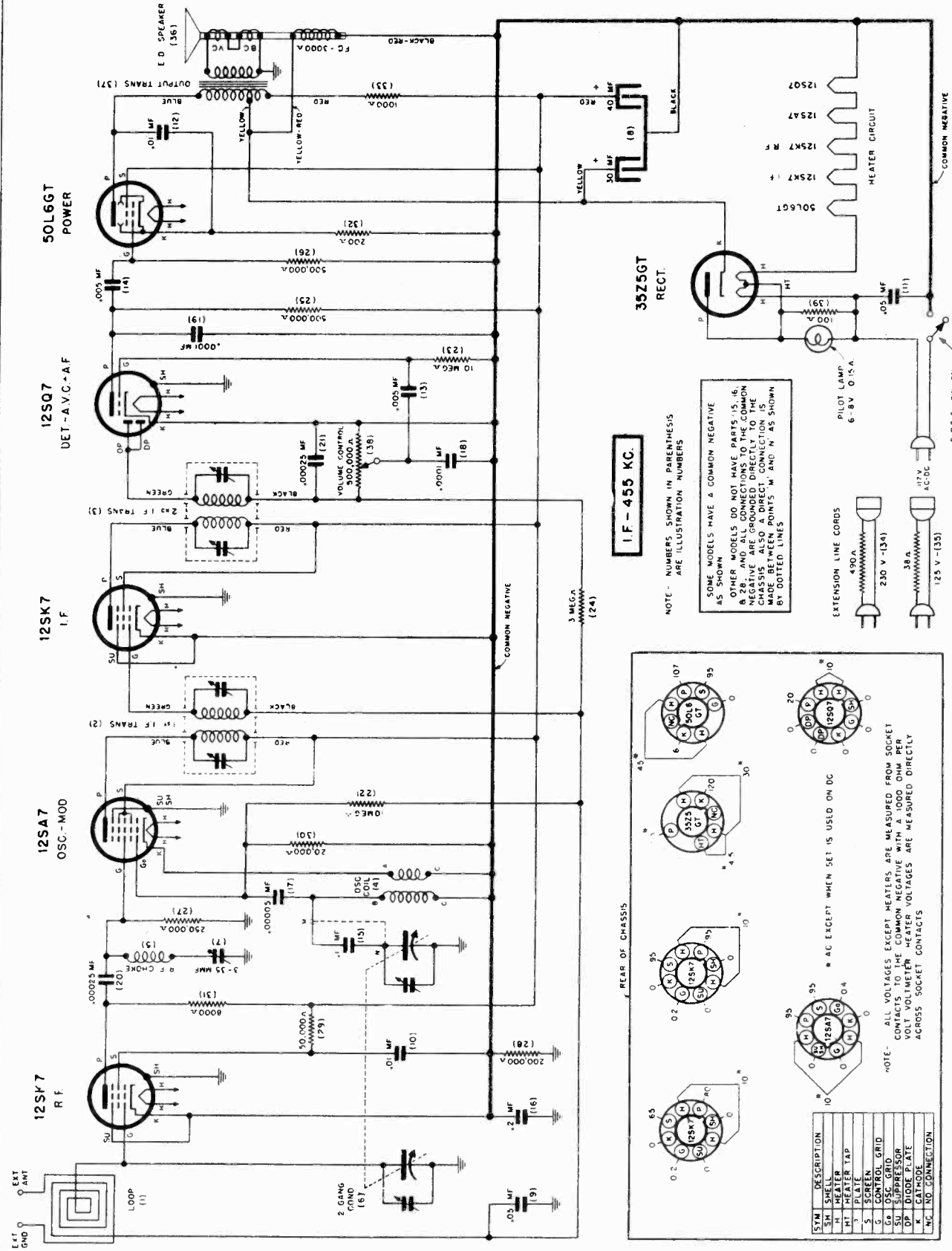
SENTINEL RADIO CORP.

MODELS 263, 1U263



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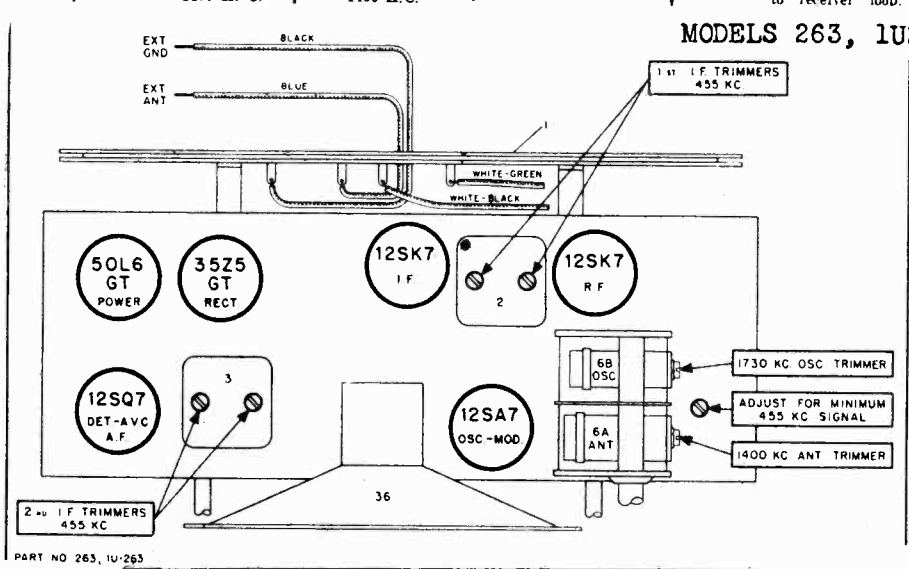
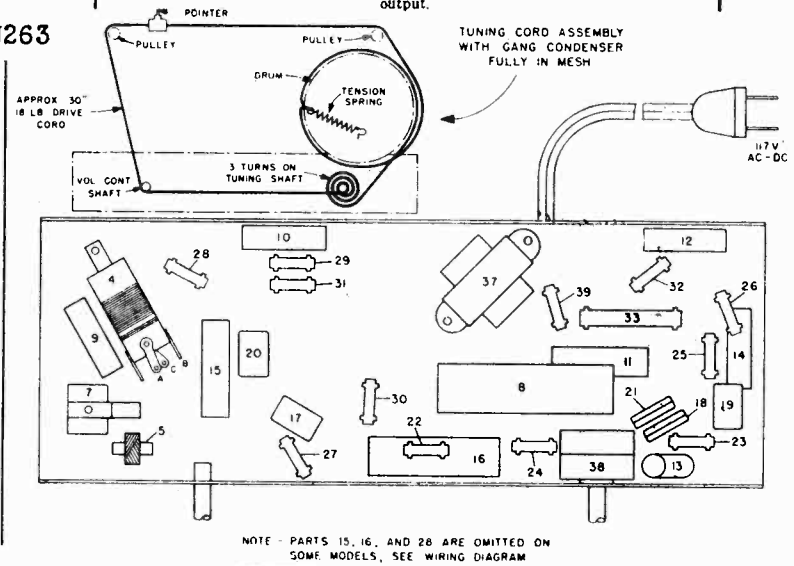
When adjusting 1730 kilocycle oscillator trimmer, 455 K. C. R. F. trimmer and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach 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: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to front stator plates of tuning condenser. Low side to frame of condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1 Rotate gang condenser to maximum capacity	Exactly 455 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser	Adjust R.F. coil trimmer for minimum 455 K.C. signal.
2 Exactly 1730 K.C.	Exactly 1730 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1730 K.C. oscillator trimmer for maximum output.
3 Approx. 1400 K. C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 1400 K.C. loop trimmer for maximum output.

MODELS 263, 1U263



PART NO 263, 1U-263



NOTE - PARTS 15, 16, AND 28 ARE OMITTED ON SOME MODELS, SEE WIRING DIAGRAM

Place band switch for operation on:	Set recei dial to	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below: MODEL 273
I. F. alignment use any band position.	Any point where no interfering signal is received.	455 K.C.	.02 MFD. condenser	High side to grid terminal of 1A7G tube. DO NOT REMOVE CAP	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
1730 40 K.C	1 Exactly 1730 K.C.	Exactly 1730 K.C.	.00025 MFD. condenser	High side to Receiver blue antenna lead	Adjust 1730 K.C. oscillator trimmer for maximum output.
	2 Exactly 1400 K.C.	Approx. 1400 K.C.	.00025 MFD. condenser	High side to Receiver blue antenna lead	While rocking gang condenser adjust 1400 K.C. antenna trimmer for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 MFD. condenser	High side to Receiver blue antenna lead	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.75 to 18.3 M.C. Band	1 Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	High side to Blue Antenna Lead	Adjust 18.3 M.C. oscillator trimmer for maximum output—be sure to use proper peak. If more than one peak is noticed, back off trimmer to minimum capacity, then screw down trimmer (add capacity) until the second peak—which is the proper one to use is tuned in.
	2 Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm	High side to Blue Ant. Lead	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

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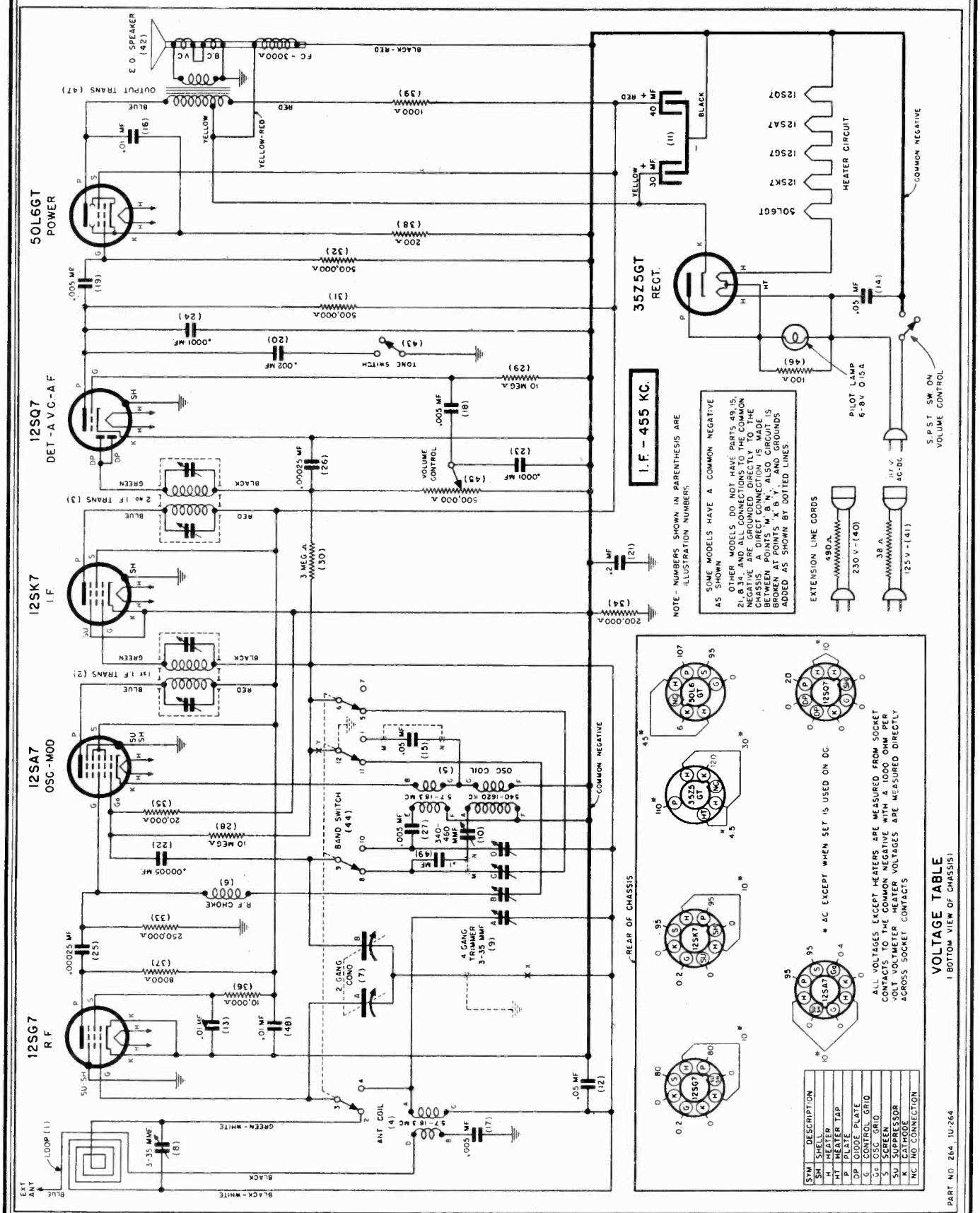
MODELS 264, 1U264

SENTINEL RADIO CORP.



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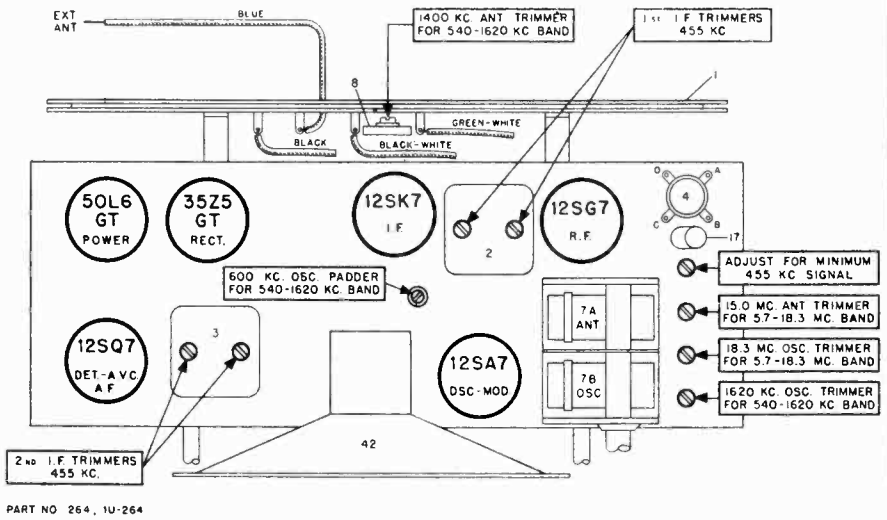
ALIGNMENT PROCEDURE

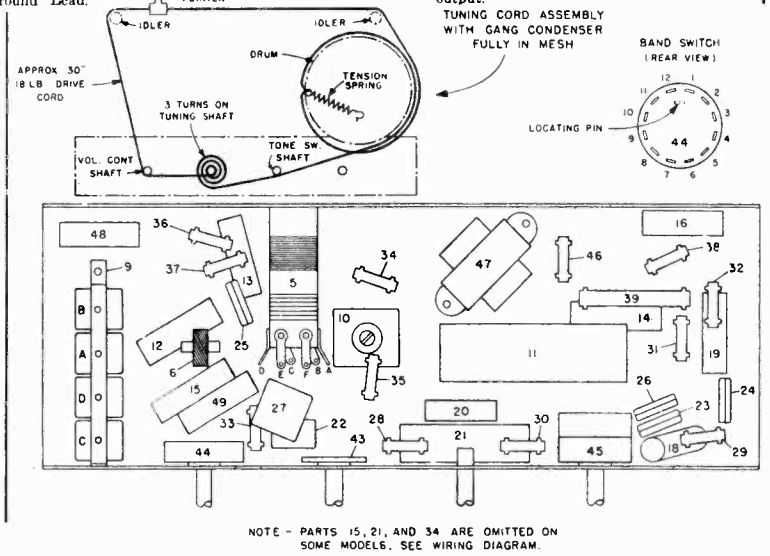
For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1620 kilocycle oscillator trimmer 600 K.C. padder, 455 K.C. R.F. 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.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to rear stator plates of tuning condenser. Low side to frame of condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1620 to 540 K.C. Band	1 Rotate gang condenser to Maximum Capacity	Exactly 455 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust R.F. coil trimmer for minimum 455 K.C. signal.
	2 Exactly 1620 K.C.	Exactly 1620 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	Adjust 1620 K. C. oscillator trimmer for maximum output.
	3 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test Oscillator to receiver loop.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.
	4 Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop.	While rocking gang condenser adjust 600 K. C. oscillator padder for maximum output.
5.7 to 18.3 M.C. Band	1 Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	High side to Blue Ant. Lead, Low side to Black Ground Lead.	Adjust 18.3 M.C. oscillator trimmer for maximum output.
	2 Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm	High side to Blue Ant. Lead, Low side to Black Ground Lead.	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.



PART NO 264, 1U-264



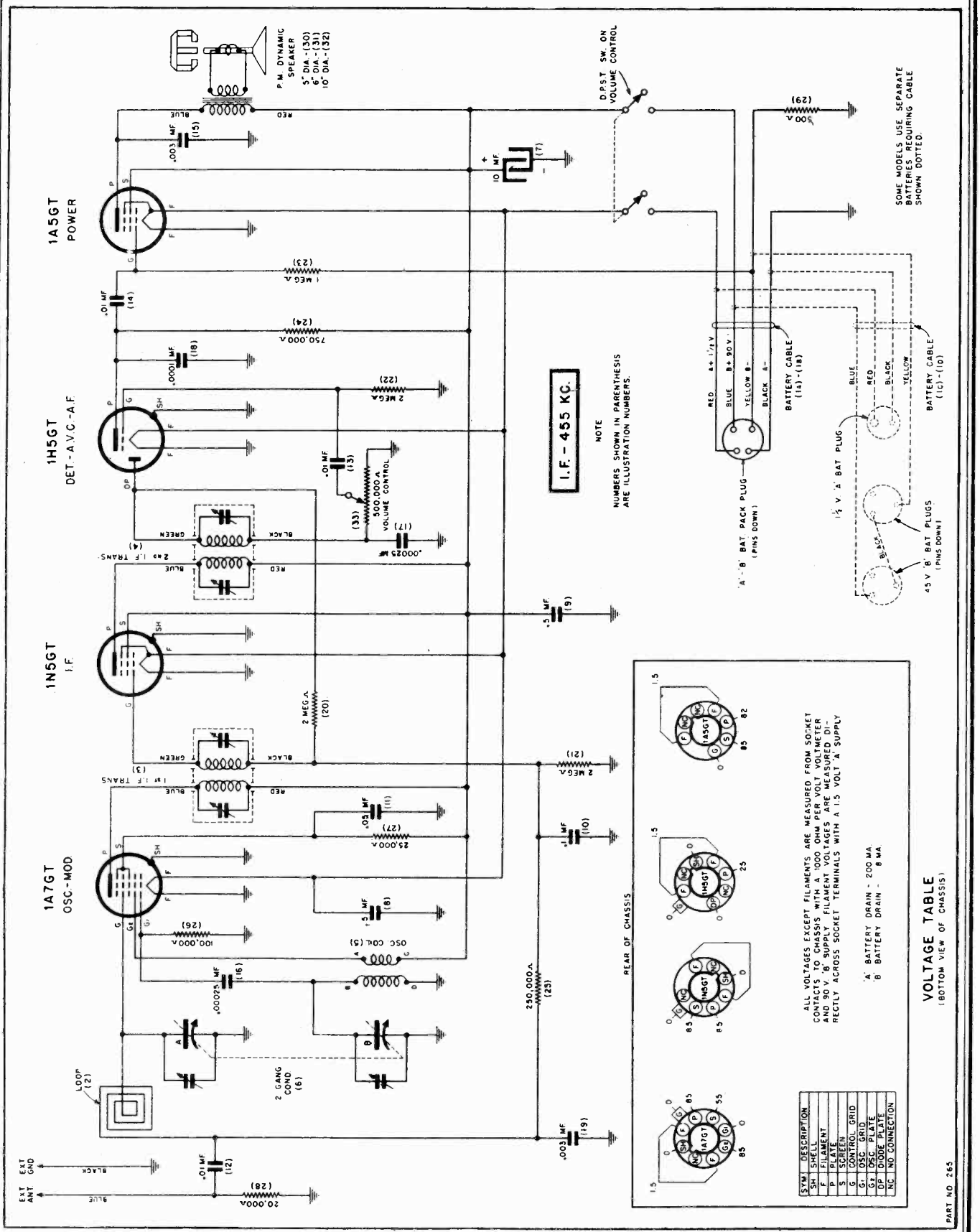
NOTE - PARTS 15, 21, AND 34 ARE OMITTED ON SOME MODELS. SEE WIRING DIAGRAM.

THIS RADIO IS DESIGNED FOR USE ON EITHER 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT (AC) OR 110-120 VOLTS DIRECT CURRENT (DC)—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently in which case the radio must only be used on the type of current shown on this notice.

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.

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

SENTINEL RADIO CORP.



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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. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next.

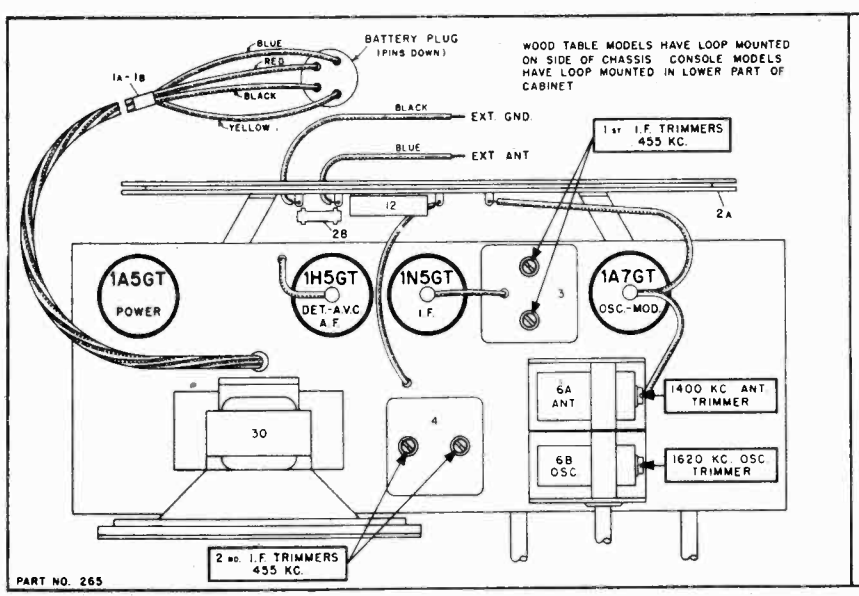
Before starting alignment:

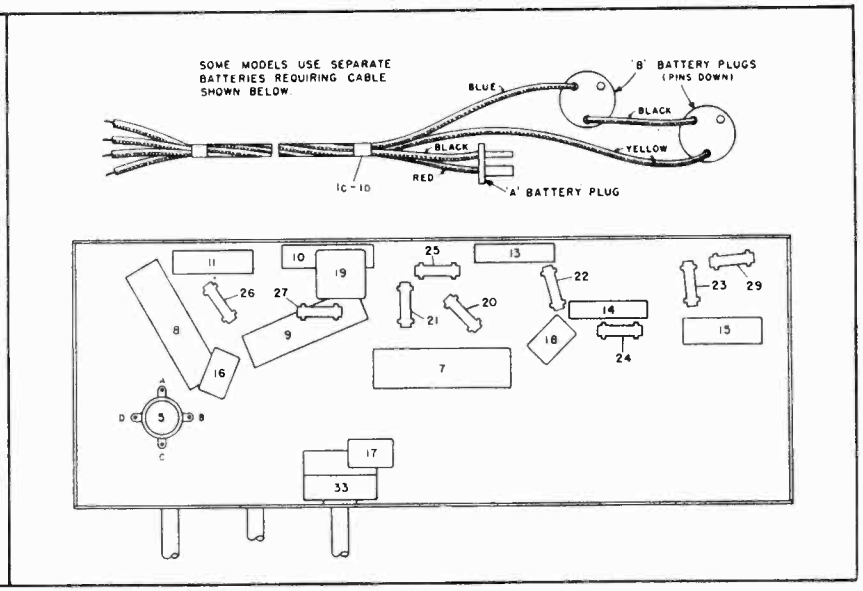
(a) Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to correct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

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

(c) Have ground lead of test oscillator attached to chassis.

Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7GT tube DO NOT REMOVE CAP	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
1 Exactly 1620 K. C.	Exactly 1620 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	Adjust 1620 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.



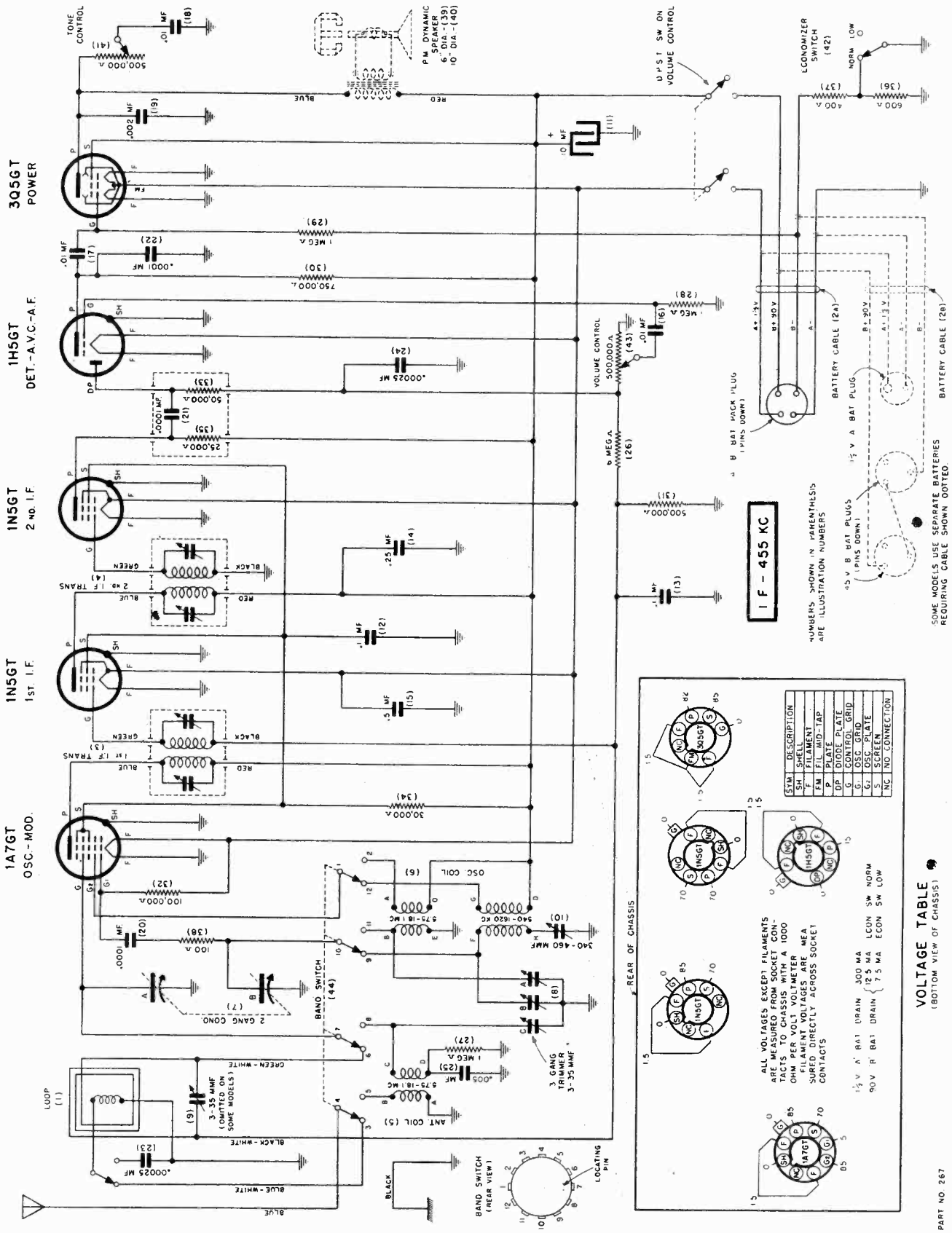


The life of the battery depends entirely on the number of hours the set is operated daily and the quality and size of the battery.

The special large size "AB" Battery Pack, designed specifically for use with this radio, will provide approximately 750 to 1,000 hours of service under normal, average operating conditions.

MODEL 267

SENTINEL RADIO CORP.



VOLTAGE TABLE

(BOTTOM VIEW OF CHASSIS)

PART NO 267

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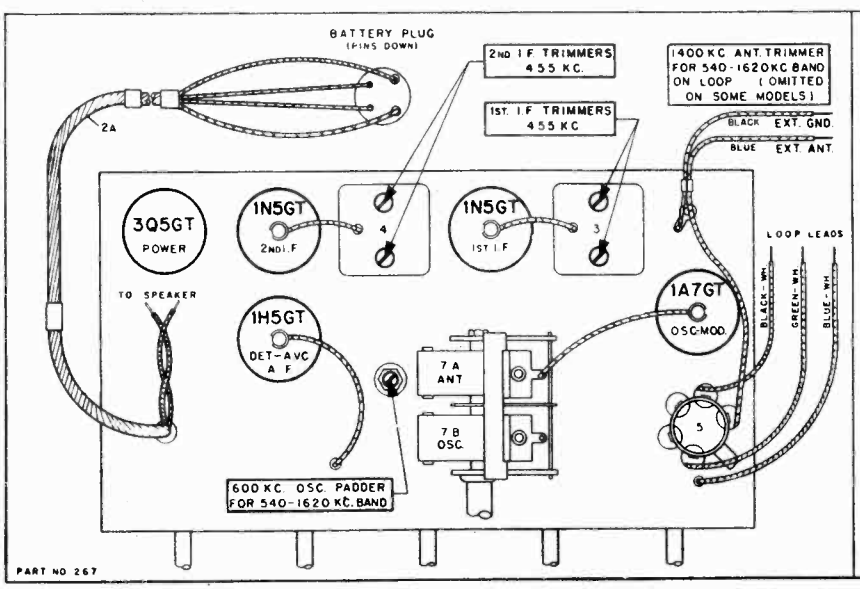
ALIGNMENT PROCEDURE

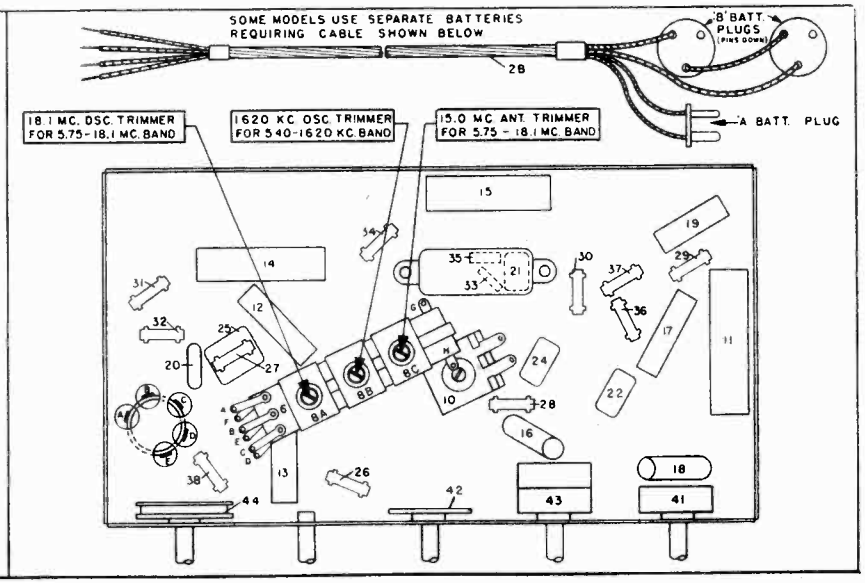
PART No. 13462—267

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 1620 kilocycle oscillator trimmer, 600 K.C. padder, 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.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test Oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid cap of 1A7GT tube. Low side to frame of condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmers for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1620 to 540 K.C. Band	1 Exactly 1620 K.C.	Exactly 1620 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser.	Adjust 1600 K.C. oscillator trimmer for maximum output.
	2 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser.	While rocking gang condenser adjust 1400 K.C. loop trimmer for maximum output.
	3 Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser through .01 Mfd. condenser.	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output.
5.75 to 18.1 M.C. Band	1 Exactly 18.1 M.C.	Exactly 18.1 M.C.	400 Ohm carbon resistor	High side to Blue Ant. Lead, Low side to black ground lead.	Adjust 18.1 M.C. oscillator trimmer for maximum output.
	2 Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm	High side to Blue Ant. Lead, Low side to black ground lead.	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.





5.75-18.1 M. C. — 52.2-16.6 METER BAND
USE SECTION OF THE DIAL that is calibrated from 5.75-18.1 M. C.

540-1620 K.C.—555-185 METER BAND
USE SECTION OF DIAL THAT IS CALIBRATED FROM 540-1620 K.C.—555-185 METERS.

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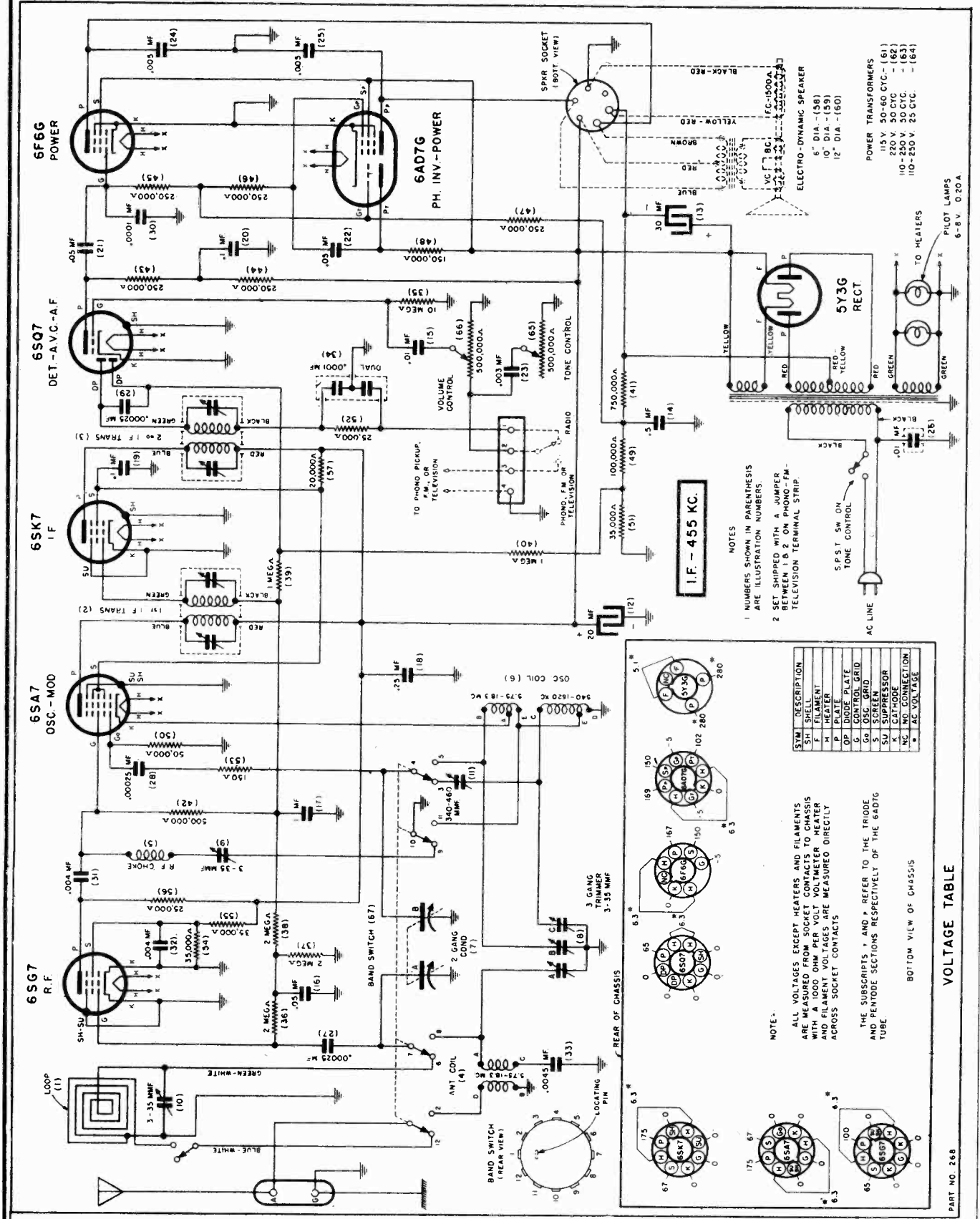
SENTINEL RADIO CORP.



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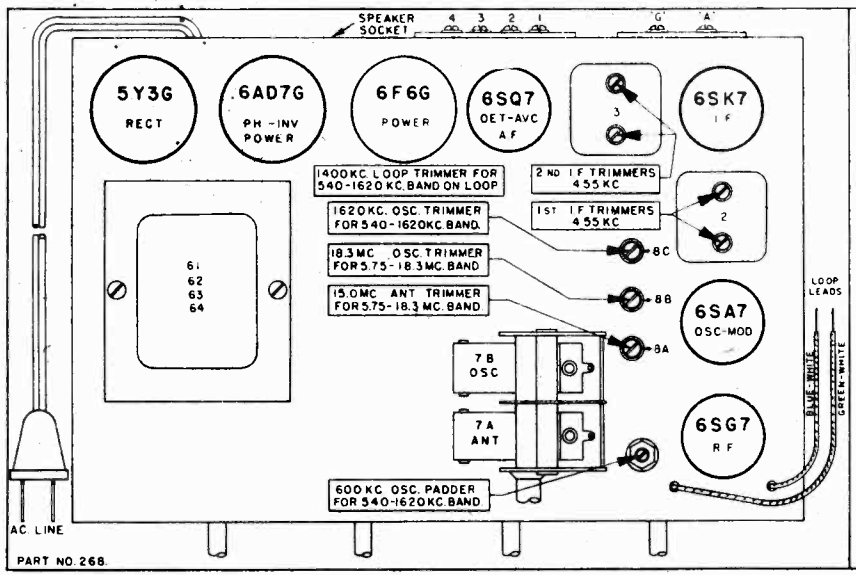
ALIGNMENT PROCEDURE

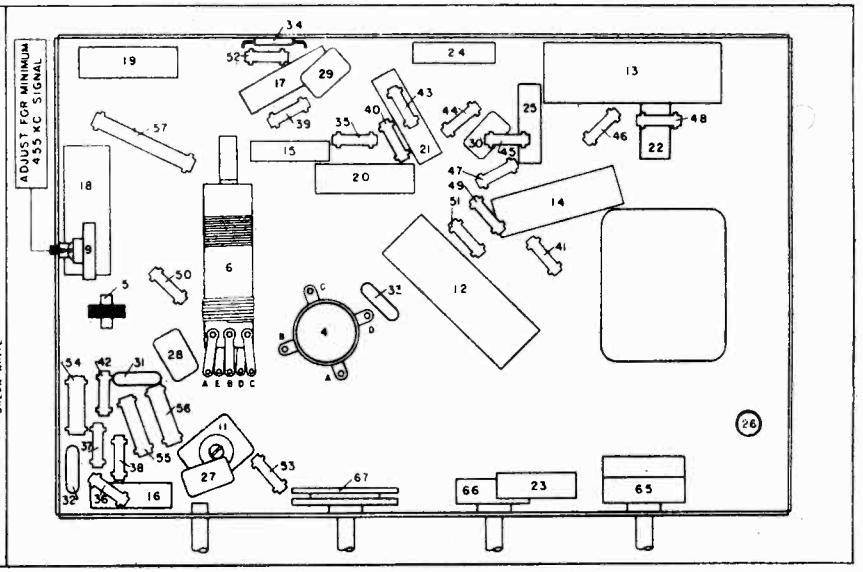
PART No. 13502—268

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 1620 kilocycle oscillator trimmer 600 K.C. padder, 455 K.C., R.F. 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.

Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	Any point where no interfering signal is received	Exactly 455 K.C.	0.2 Mfd. condenser	High side to grid of 6SA7 tube. Low side to frame of 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.
1620 to 540 K.C. Band	1 Rotate gang condenser to Maximum Capacity	Exactly 455 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	Adjust R.F. coil for minimum 455 K.C. signal.
	2 Exactly 1620 K.C.	Exactly 1620 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	Adjust 1620 K. C. oscillator trimmer for maximum output.
	3 Approx. 1400 K.C.	Approx. 1400 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	While rocking gang condenser adjust 1400 K. C. loop trimmer for maximum output.
	4 Approx. 600 K.C.	Approx. 600 K.C.	None	Use Small Loop to couple test oscillator to receiver loop. Low side to frame of condenser.	While rocking gang condenser adjust 600 K. C. oscillator padder for maximum output.
5.7 to 18.3 M.C. Band	1 Exactly 18.3 M.C.	Exactly 18.3 M.C.	400 Ohm carbon resistor	High side to "A" antenna post. Low side to frame of gang condenser.	Adjust 18.3 M.C. oscillator trimmer for maximum output.
	2 Approx. 15 M.C.	Approx. 15 M.C.	400 Ohm	High side to "A" antenna post. Low side to frame of gang condenser.	While rocking gang condenser adjust 15 M. C. antenna trimmer for maximum output.





VOLTAGE RATING

THIS RADIO IS DESIGNED FOR USE ON 110-120 VOLTS 50-60 CYCLES ALTERNATING CURRENT—unless the marking on the white paper license notice which will be found attached either to bottom or inside the cabinet is marked differently, in which case the radio must only be used on the type of current shown on this notice.

BE SURE THAT THE CURRENT RATING GIVEN ON THE LICENSE TAG IS THE SAME AS THE HOUSE CURRENT SUPPLY.

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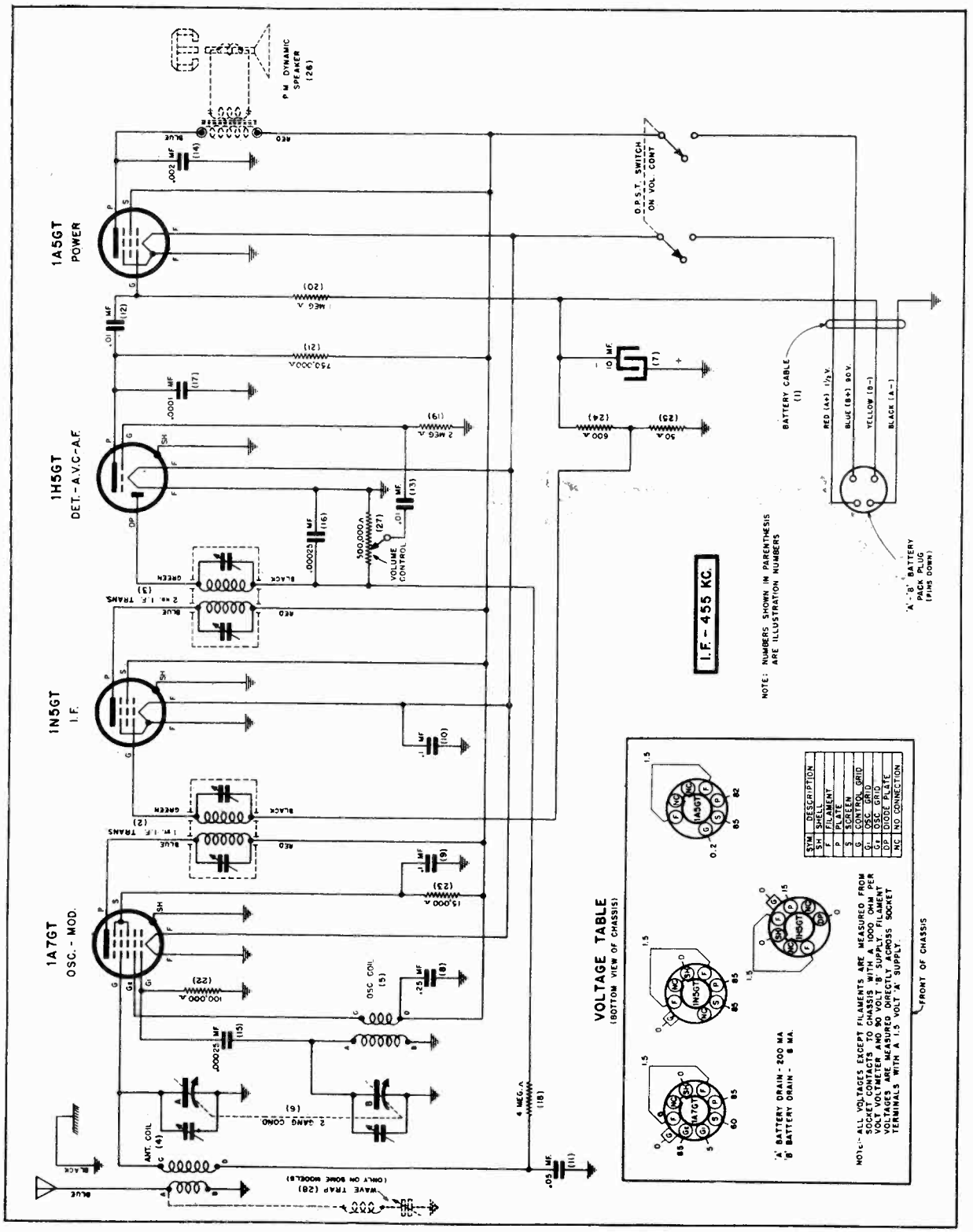
SENTINEL RADIO CORP.



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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. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next.

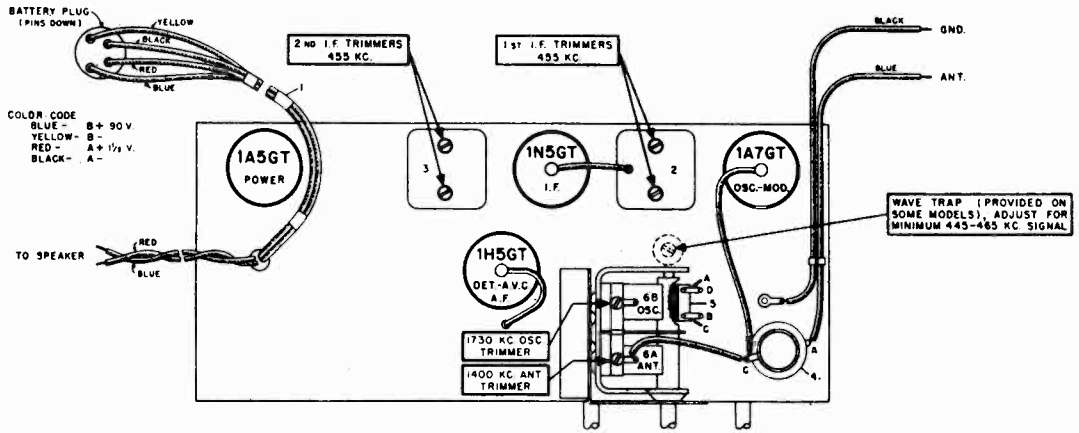
Before starting alignment:

(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.

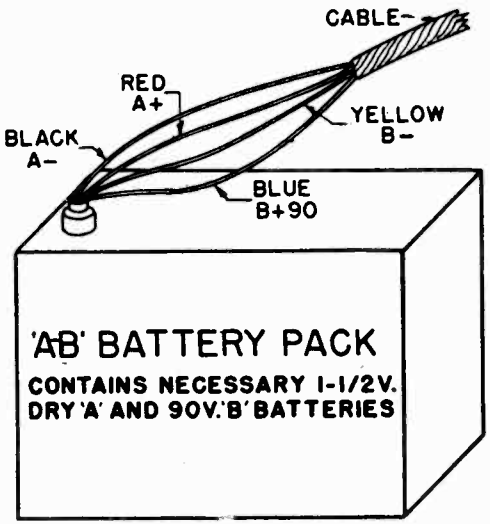
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
I.F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7GT tube. DO NOT REMOVE CAP.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
1 Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.



The life of the battery depends entirely upon the number of hours the set is operated daily and the quality and size of the battery. The special large size "AB" Battery Pack, designed specifically for use with this radio, will provide approximately 750 to 1000 hours of service under normal operating conditions.



SHOWING 4 PRONG PLUG ON END OF SET BATTERY CABLE INSERTED INTO RECEPTACLE ON TOP OF "AB" BATTERY PACK

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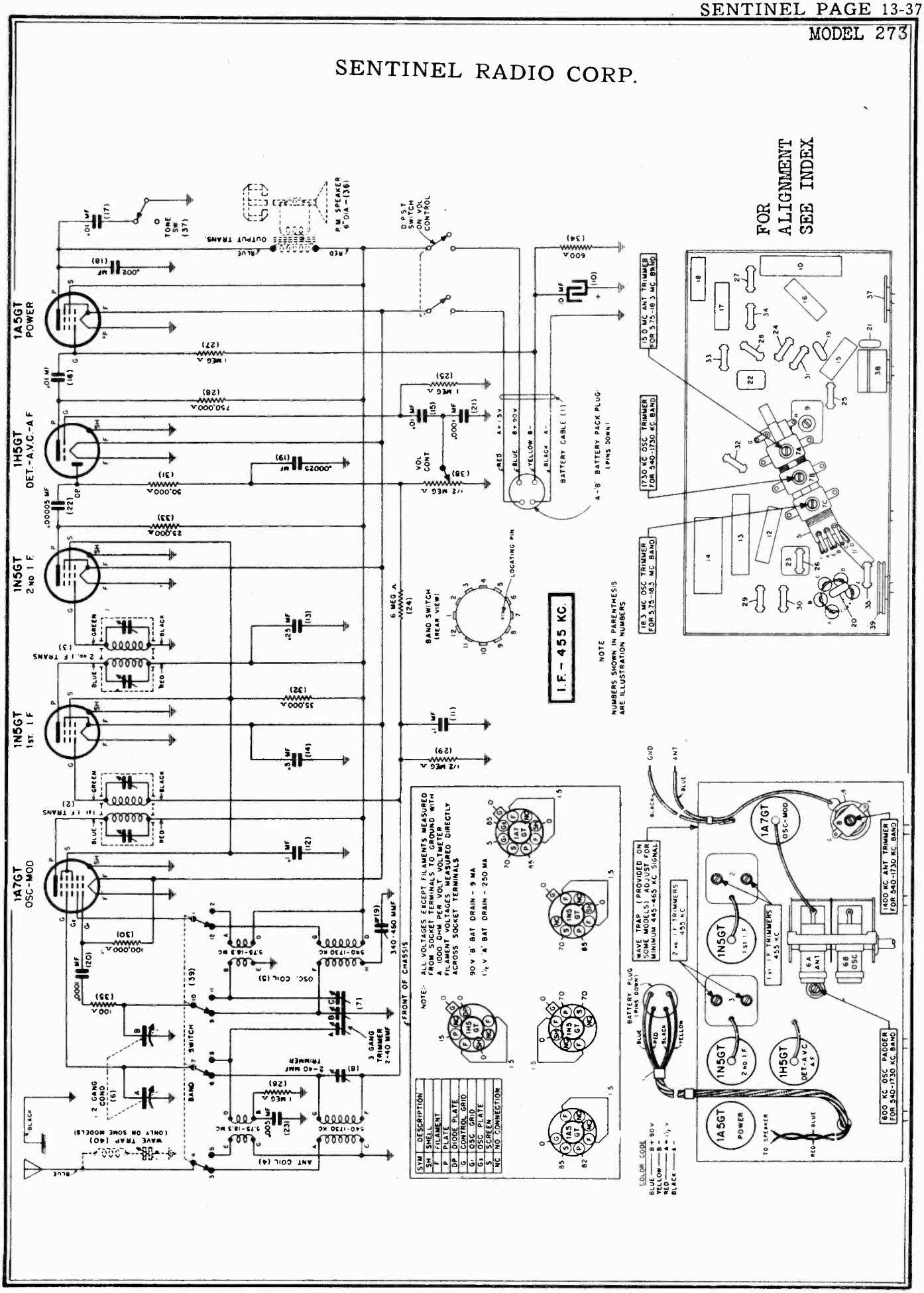
SENTINEL RADIO CORP.



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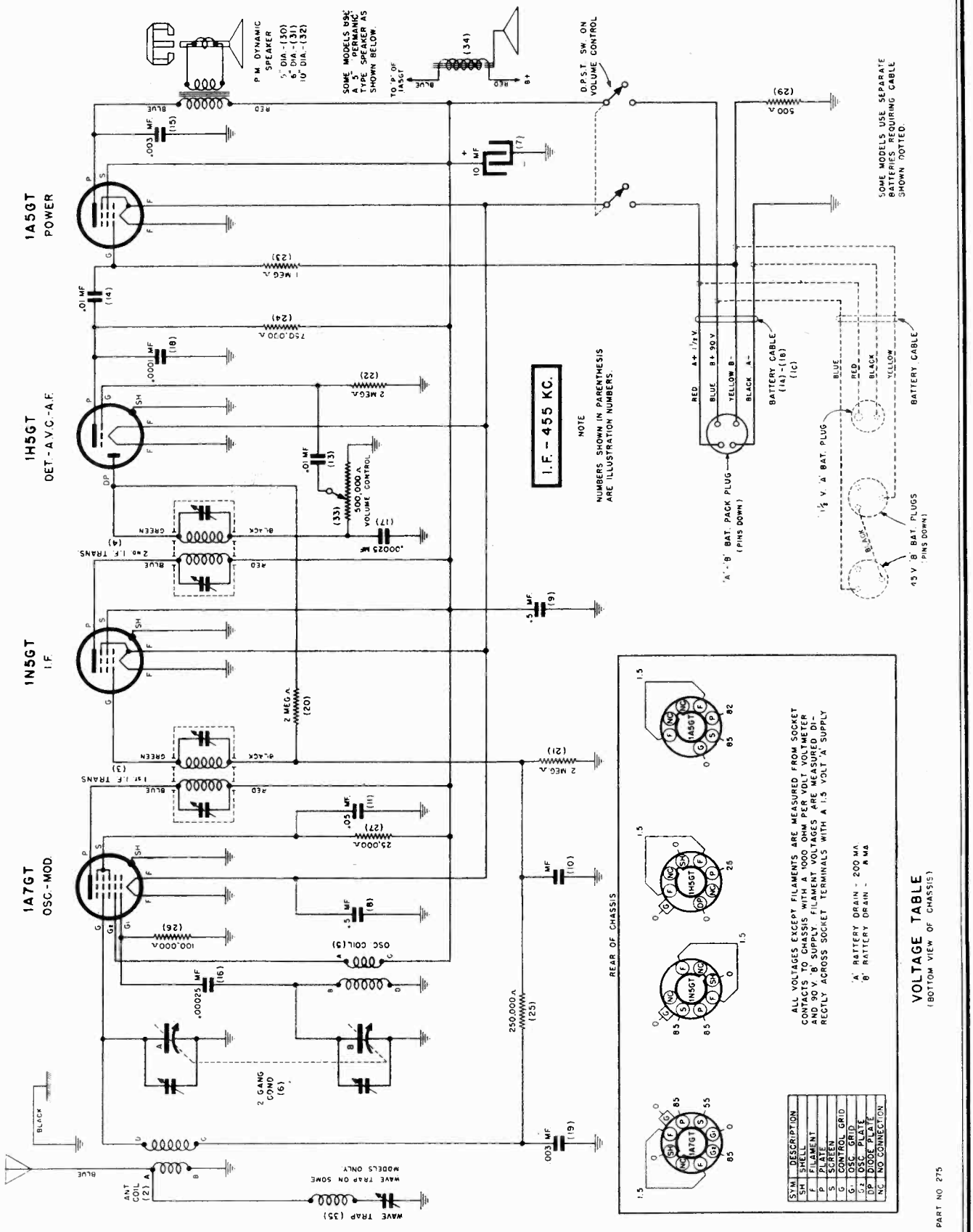
MODEL 275

SENTINEL RADIO CORP.



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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. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next.

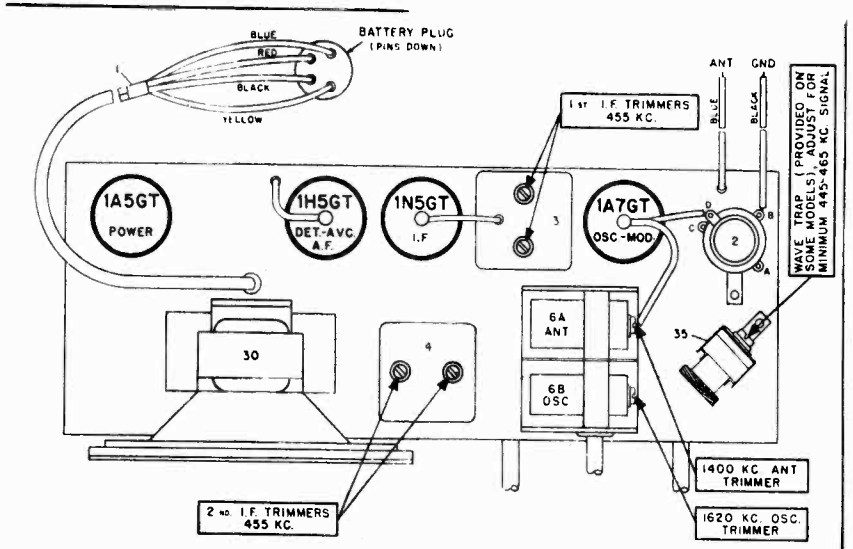
Before starting alignment:

(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.

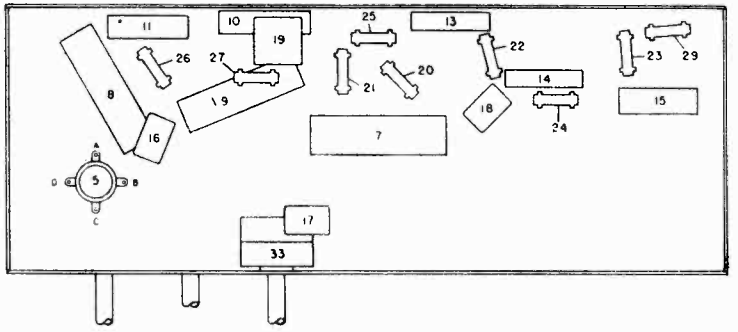
(b) Use an accurately calibrated test oscillator with some type of output measuring device.

(c) Have ground lead of test oscillator attached to chassis.

Set receiver dial to:	TEST OSCILLATOR			Refer to parts layout diagram for location of trimmers mentioned below:
	Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	
I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD. condenser	High side to grid terminal of 1A7GT tube DO NOT REMOVE CAP	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
1 Exactly 1620 K. C.	Exactly 1620 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	Adjust 1620 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.



PART NO. 275



The life of the battery depends entirely on the number of hours the set is operated daily and the quality and size of the battery.

The special "AB" Battery Pack, designed specifically for use with this radio, will provide approximately 750 to 1,000 hours of service under normal, average operating conditions.

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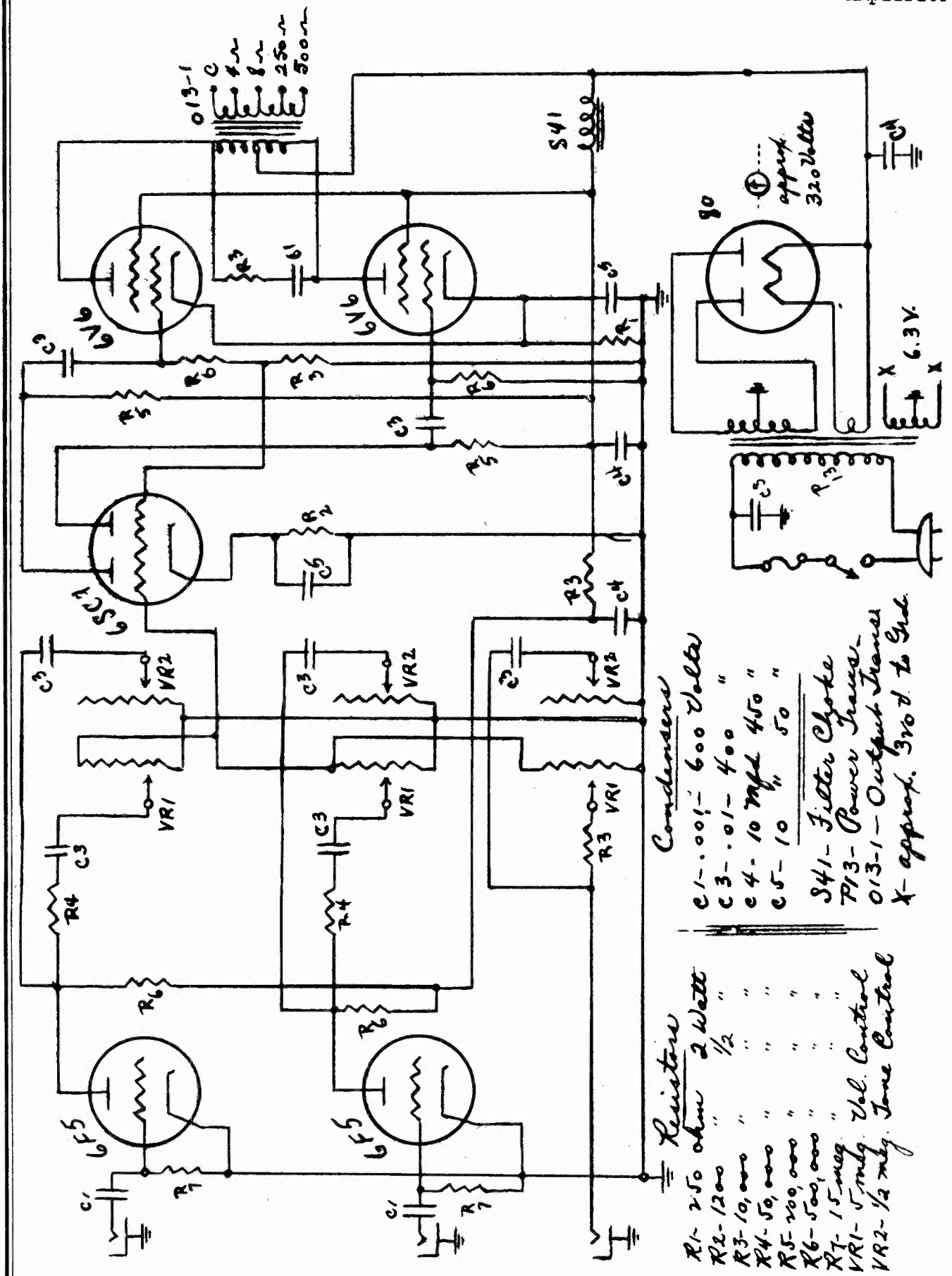
SETCHELL-CARLSON, INC.

MODEL 14
Amplifier



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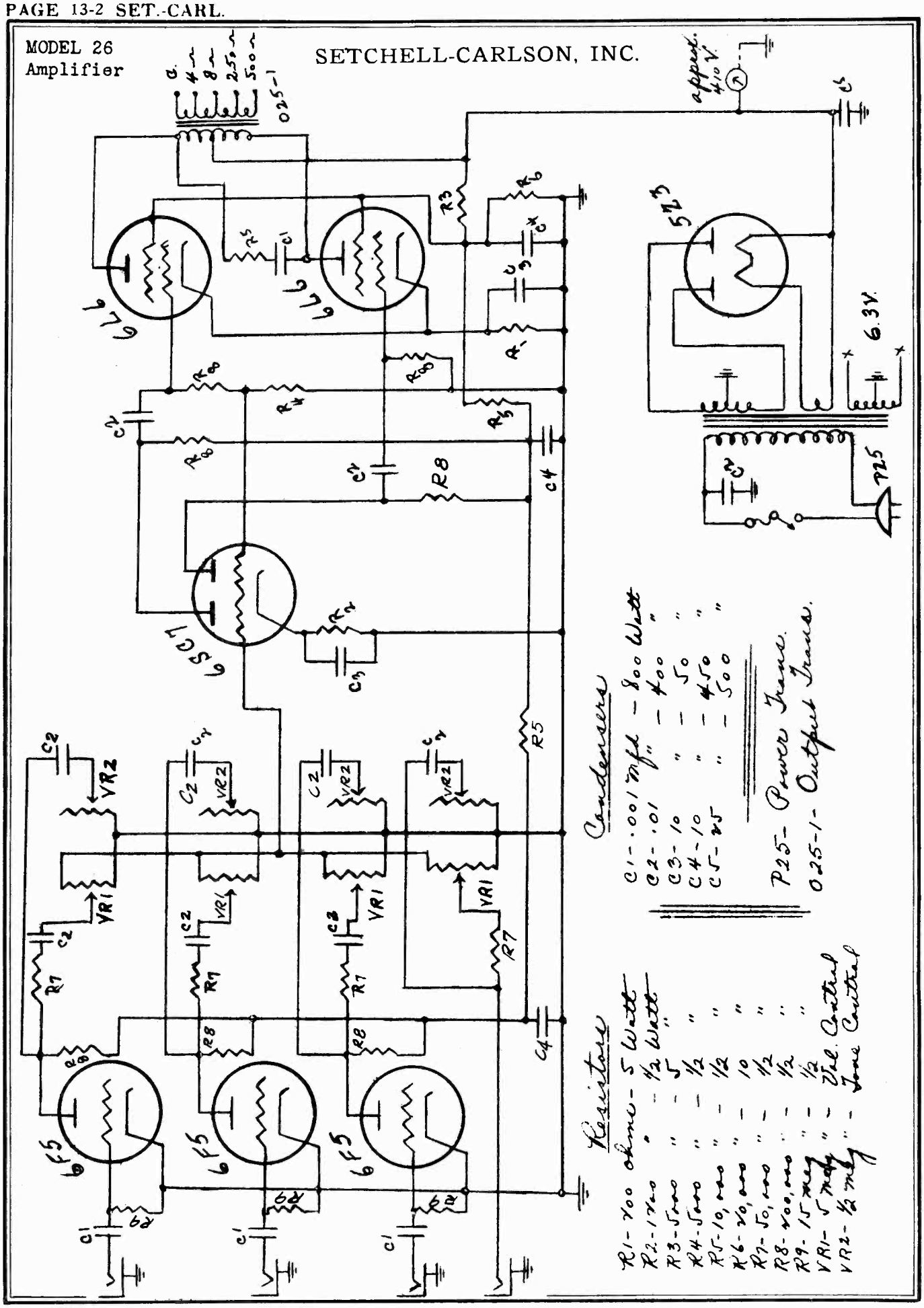
MODEL 26
Amplifier

SETCHELL-CARLSON, INC.



Condensers

C1 - .001 mfd - 600 Watt
C2 - .01 " - 400 "
C3 - 10 " - 50 "
C4 - 10 " - 450 "
C5 - 25 " - 500 "

P25 - Power Trans.
025-1 - Output Trans.

Resistors

R1 - 700 ohms - 5 Watt
R2 - 1200 " - 1/2 Watt
R3 - 5000 " - 5 "
R4 - 5000 " - 1/2 "
R5 - 10,000 " - 1/2 "
R6 - 20,000 " - 1 "
R7 - 50,000 " - 1/2 "
R8 - 400,000 " - 1/2 "
R9 - 15 meg " - 1/2 "
VR1 - 5 meg " - Vol. Control
VR2 - 1/2 meg " - Tone Control

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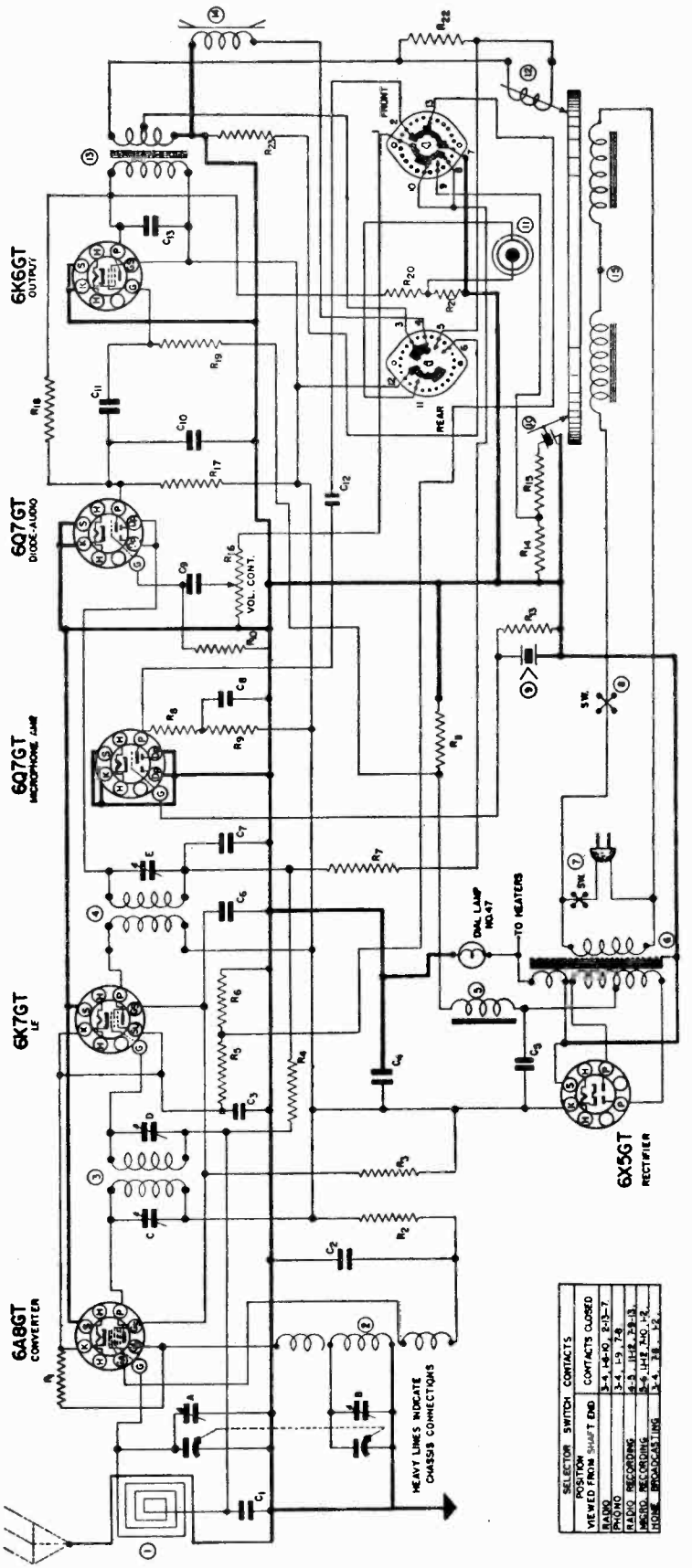
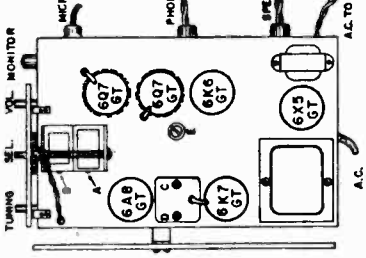
MODELS LC, LCU

SONORA RADIO & TELEV. CORP.



SELECTOR SWITCH CONTACTS	
POSITION VIEWED FROM SHAFT END	CONTACTS CLOSED
RADIO	3-4, 1-9, 7-8
PHONO	3-4, 1-9, 7-8
RADIO RECORDING	4-5, 1-2, 3-10
MICRO. RECORDING	5-6, 1-2, NO. 1-2
HOME BROADCASTING	3-4, 7-8, 1-2



I.F. 456 K.C.

6 TUBE A.C.
SUPERHETERODYNE
SINGLE BAND
RECORDER-PHONO-RADIO COMB.

DRAWN-W.F. APPROVED
JULY 9 1940
LCU

FOR GENERAL RECORDER DATA SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

SCH. SYM. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R1	N-1280	50,000 OHM .5W 20%	C1	N-1345	.05 MFD.	200V.	1	N-3464	LOOP ANTENNA COIL
R2	N-1827	20,000 OHM .5W 20%	C2	N-1345	.05 MFD.	200V.	2	N-1432	OSCILLATOR COIL
R3	N-1474	25,000 OHM .5W 20%	C3	N-479	.25 MFD.	200V.	3	N-1598	1ST. I.F. TRANSFORMER
R4	N-1262	1 MEGOHM .5W 20%	C4	N-3440	25 MFD. ELECTRO.	300V.	4	N-3463	2ND I.F. TRANSFORMER
R5	N-1495	100 OHM .5W 10%	C5	N-1354	25 MFD.	300V.	5		SPEAKER FIELD (1200 OHMS)
R6	N-1257	2,000 OHM .5W 20%	C6	N-1354	.1 MFD.	200V.	6	N-3438	POWER TRANSFORMER
R7	N-1474	25,000 OHM .5W 20%	C7	N-1374	100 MMFD.		7		SWITCH ON VOLUME CONTROL
R8	N-1779	150,000 OHM .5W 20%	C8	N-479	.25 MFD.	200V.	8	N-880	PHONO MOTOR SWITCH
R9	N-1261	250,000 OHM .5W 20%	C9	N-1344	.01 MFD.	400V.	9	N-3458	MICROPHONE
R10	N-1419	6 MEGOHM .5W 20%	C10	N-3456	75 MMFD.		10		PICK-UP (ON N-3443)
R11	N-1683	22.5 OHM 1W 10%	C11	N-1344	.01 MFD.	400V.	11	N-3389	NEON MONITOR (G.E. NE-7)
R12	N-2189	4 MEGOHM .5W 20%	C12	N-1344	.01 MFD.	400V.	12	N-3437	CUTTING HEAD (ON N-3443)
R13	N-1779	150,000 OHM .5W 20%	C13	N-3439	.004 MFD.	600V.	13	N-3436	OUTPUT TRANSFORMER
R14	N-1827	20,000 OHM .5W 20%					14	N-3435	5" DYNAMIC SPEAKER
R15	N-1683	300,000 OHM .5W 20%					15	N-3443	PHONO MOTOR AND TURNTABLE
R16	N-3085	500,000 OHM VOL. CONT.							
R17	N-1477	200,000 OHM .5W 20%							
R18	N-2188	4 MEGOHM .5W 20%							
R19	N-1454	300,000 OHM .5W 20%							
R20	N-1778	800,000 OHM .5W 20%							
R21	N-3488	1.5 MEGOHM .5W 10%							
R22	N-3432	36 OHM .5W 10%							
R23	N-3434	4.5 OHM .5W 10%							

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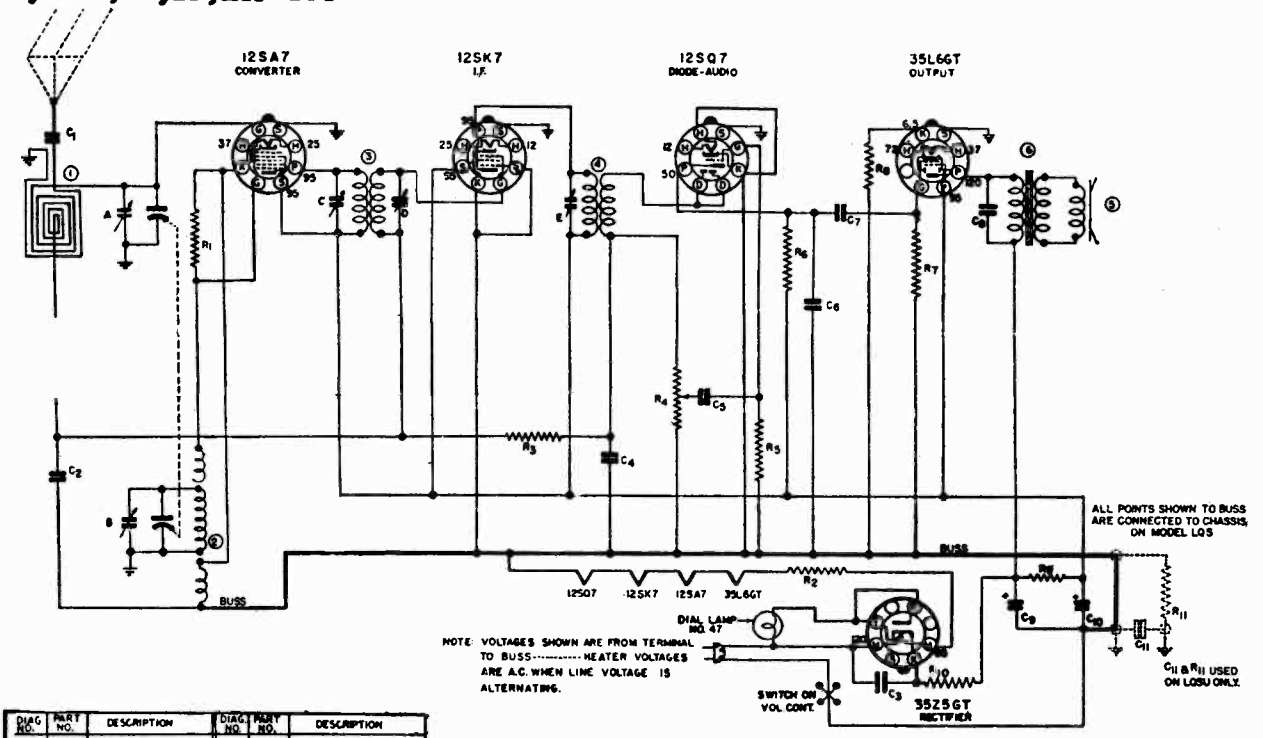
MODELS LQS, LQSU
MODELS LC, LCU, LKS, LKSU, LMS, LMSU, LR, LZ, MTF-164



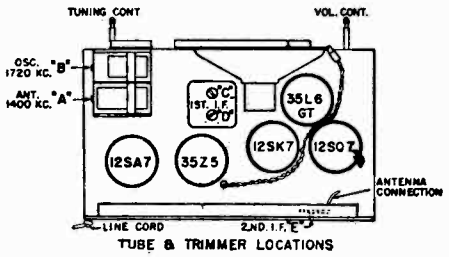
DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R1	N-4025	22,000 OHM .5W. 20%	1	N-4336	ANTENNA COIL LOOP
R2	N-4023	82 OHM 2 W. 10%	2	N-3298	OSCILLATOR COIL
R3	N-3175	1 MEGOHM .5W. 20%	3	N-4013	1ST. I.F. TRANSFORMER
R4	N-4014	.5 MEGOHM VOL. CONT.	4	N-3908	2ND. I.F. TRANSFORMER
R5	N-4028	6.8 MEGOHM .5W. 20%	5	N-4010	4" SPEAKER
R6	N-4026	220,000 OHM .5W. 20%	6	N-4011	OUTPUT TRANSFORMER
R7	N-4027	470,000 OHM .5W. 20%			
R8	N-4024	220 OHM .5W. 10%			
R9	N-3341	1000 OHM .5W. 10%			
R10	N-4022	33 OHM .5W. 20%			
R11	N-1779	150,000 OHM .5W. 20% (LQSU ONLY)		N-4012	2 GANG CONDENSER
C1	N-1344	.01 MFD. 400 V.			
C2	N-1345	.05 MFD. 200 V.			
C3	N-1346	.05 MFD. 400 V.			
C4	N-1374	100 MMFD. MICA			
C5	N-2712	.004 MFD. 400 V.			
C6	N-1447	.0005 MFD. 400 V.			
C7	N-1344	.01 MFD. 400 V.			
C8	N-1376	.02 MFD. 400 V.			
C9	N-405	35 MFD. 150 V. ELECT.			
C10		30 MFD. 150 V.			
C11	N-3080	.22 MFD. 200 V. (LQSU ONLY)			

MODELS LQS, LQSU

I.F. 456 KC.

5 TUBE AC-DC

SUPERHETERODYNE
SINGLE BAND
DRAWN [illegible] APPROVED [illegible]
JUNE, 1941



TUBE & TRIMMER LOCATIONS

ALIGNMENT FOR MODELS: LC, LCU, LKS, LKSU, LMS, LMSU, LQS, LQSU, LR, LZ, MTF-164

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 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. Remove the chassis from the cabinet and set on a bench taking care that no iron or other metal is near the loop. Do not make this setup on a metal bench. 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. With the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube* (12A8GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter. Δ

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a †200† mmfd. (.0002) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1720 K.C. 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.

* 6A8GT for MODELS: LC, LCU, 12SA7 for MODELS: LKS, LKSU, LMS, LMSU, LQSU, LQS, 1A7GT for MODELS: LR, LZ

Δ 4 I.F. TRIMMERS ON MODELS LC, LCU, LKS, LKSU

† 100 mmfd for MODELS: LKS, LKSU, LMS, LMSU, LQS, LQSU

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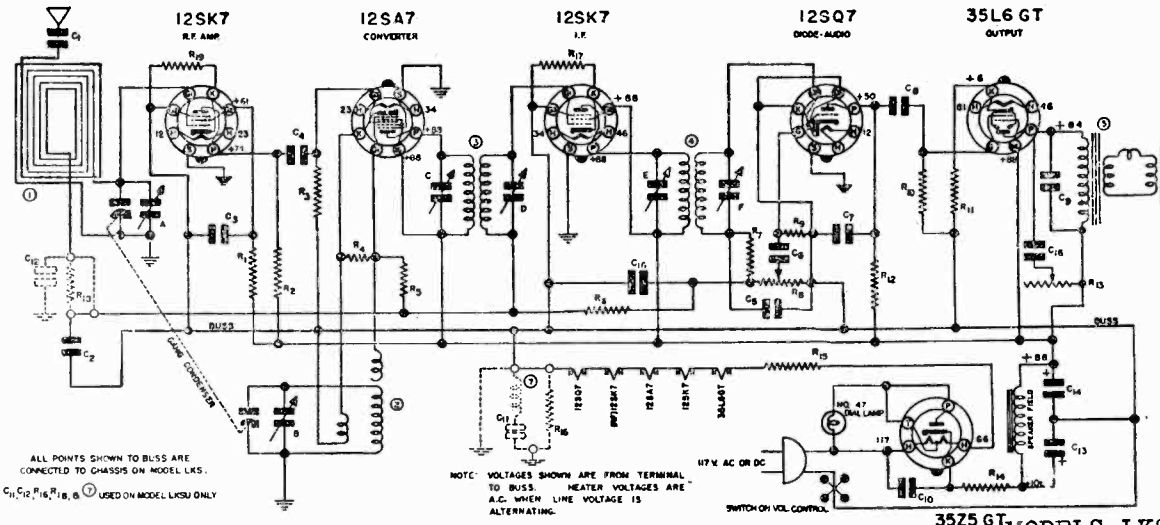
MODELS LKS, LKSU
MODELS LMS, LMSU

SONORA RADIO & TELEV. CORP.

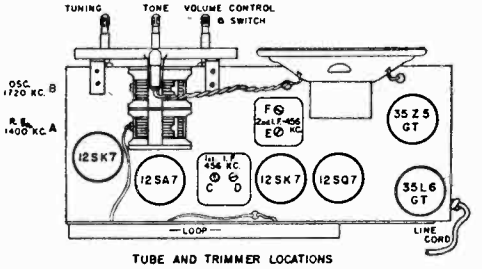


DIAG NO.	PART NO.	DESCRIPTION	DIAG NO.	PART NO.	DESCRIPTION
C1	N-1344	.01 MFD. 400 V. 20%	R11	N-4067	180 OHM 5 W. 10%
C2	N-1345	.05 MFD. 200 V. 20%	R12	4026	220,000 OHM 5 W. 20%
C3	N-1345	.05 MFD. 200 V. 20%	R13	N-4033	25,000 OHM TONE CONTROL
C4	N-2383	150 MMFD. MICA 20%	R14	N-4068	33 OHM 1.0 W 20%
C5	N-1374	100 MMFD. MICA 20%	R15	N-4068	33 OHM 1.0 W 20%
C6	N-2063	.003 MFD. 600 V. 20%	R16	N-4026	220,000 OHM 5 W 20%
C7	N-1447	.0005 MFD 400 V. 20%	R17	N-1481	75 OHM 5 W 20%
C8	N-1344	.01 MFD. 400 V. 20%	R18	N-1262	MEGOHM 5 W 20%
C9	N-1376	.02 MFD. 400 V. 20%	R19	N-1481	75 OHM 5 W 20%
C10	N-1346	.05 MFD. 400 V. 20%			
C11	N-3080	.22 MFD. 200 V. 10%	1	N-4032	ANTENNA LOOP COIL
C12	N-1345	.05 MFD. 200 V. 20%	2	N-3298	OSCILLATOR COIL
C13	N-4015	35 MFD. 150 W.V. ELECTROLYTIC	3	N-4069	1ST. I.F. TRANSFORMER
C14		30 MFD. 150 W.V.	4	N-4070	2ND. I.F. TRANSFORMER
C15	N-1346	.05 MFD. 400 V. 20%	5	N-4066	OUTPUT TRANSFORMER
C16	N-1374	100 MMFD. MICA 20%	6	N-4478	6" DYNAMIC SPEAKER
			7	——	CHOKE (WOUND ON C_{13})
R1	N-1259	15,000 OHM .5 W. 20%			
R2	N-4066	2200 OHM .5 W. 10%			
R3	N-4063	47,000 OHM .5 W 20%			
R4	N-4025	22,000 OHM .5 W 20%		N-4031	2 GANG CONDENSER
R5	N-1263	10 MEGOHM .5 W. 20%			
R6	N-4062	3.3 MEGOHM .5 W. 20%			
R7	N-4063	47,000 OHM .5 W. 20%			
R8	N-4071	0.5 MEGOHM VOLUME CONTROL			
R9	N-4061	4.7 MEGOHM .5 W. 20%			
R10	N-4027	470,000 OHM .5 W. 20%			

35Z5 GT RECTIFIER

MODELS LKS, LKSU

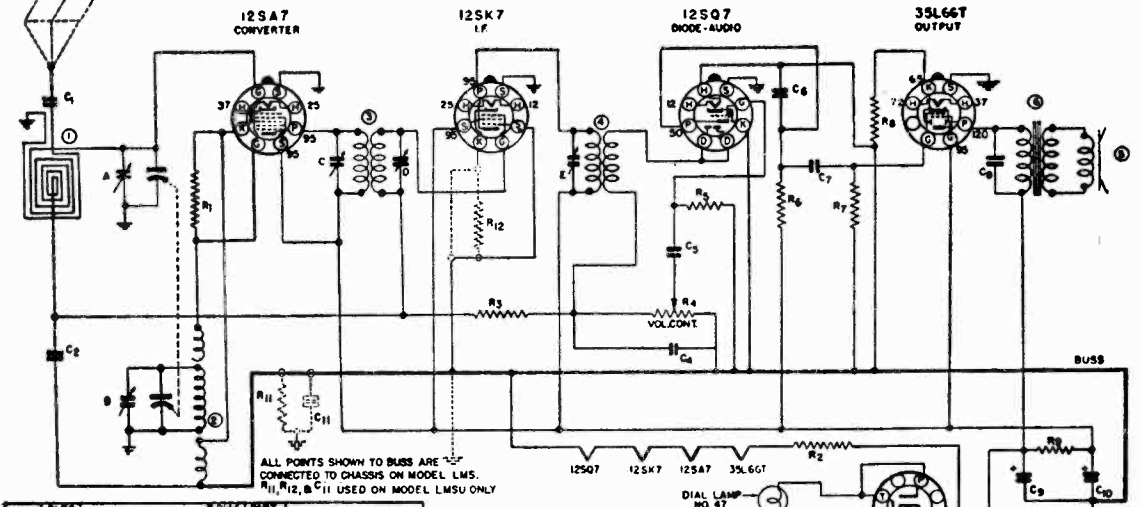
I.F.—456 K.C.



TUBE AND TRIMMER LOCATIONS

6 TUBE A.C.-D.C.
SUPERHETERODYNE
SINGLE BAND
DRAWN: [illegible] APPROVED: [illegible]
JUNE, 1941

LKS-LKSU

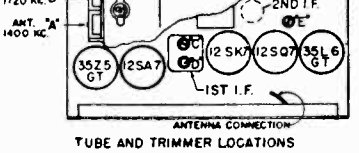


DIAG NO.	PART NO.	DESCRIPTION	DIAG NO.	PART NO.	DESCRIPTION
R1	N-1627	20,000 OHM .5W. 20%	1	N-4323	ANTENNA COIL LOOP
R2	N-1618	80 OHM .5W. 10%	2	N-3298	OSCILLATOR COIL
R3	N-1262	1 MEGOHM .5W. 20%	3	N-3676	1ST I.F. TRANSFORMER
R4	N-3877	.5 MEGOHM VOL. CONT.	4	N-3754	2 ND I.F. TRANSFORMER
R5	N-1418	6 MEGOHM .5W. 20%	5	N-4318	4" SPEAKER
R6	N-1218	250,000 OHM .5W. 20%	6	N-3699	OUTPUT TRANSFORMER
R7	N-1264	500,000 OHM .5W. 20%			
R8	N-3758	800 OHM .5W. 10%			
R9	N-3341	1,000 OHM .5W. 20%			
R10	N-1742	25 OHM .5W. 20%			
R11	N-1779	150,000 OHM .5W. 20%		N-4310	2 GANG CONDENSER
R12	N-1488	250 OHM .5W. 20%			
C1	N-1344	.01 MFD. 400V.			
C2	N-1345	.05 MFD. 200V.			
C3	N-1346	.05 MFD. 400V.			
C4	N-1374	100 MMFD.			
C5	N-2712	.004 MFD. 400V.			
C6	N-1447	.0005 MFD. 400V.			
C7	N-1344	.01 MFD. 400V.			
C8	N-1376	.02 MFD. 400V.			
C9	N-3302	35 MFD. 150V. ELECT.			
C10		30 MFD. 150V.			
C11	N-3080	.22 MFD. 200V.			

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

I.F. 456 KC.

MODELS LMS, LMSU



TUBE AND TRIMMER LOCATIONS

8 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND
DRAWN: [illegible] APPROVED: [illegible]
JUNE, 1941.

FOR ALIGNMENT SEE OPPOSITE PAGE

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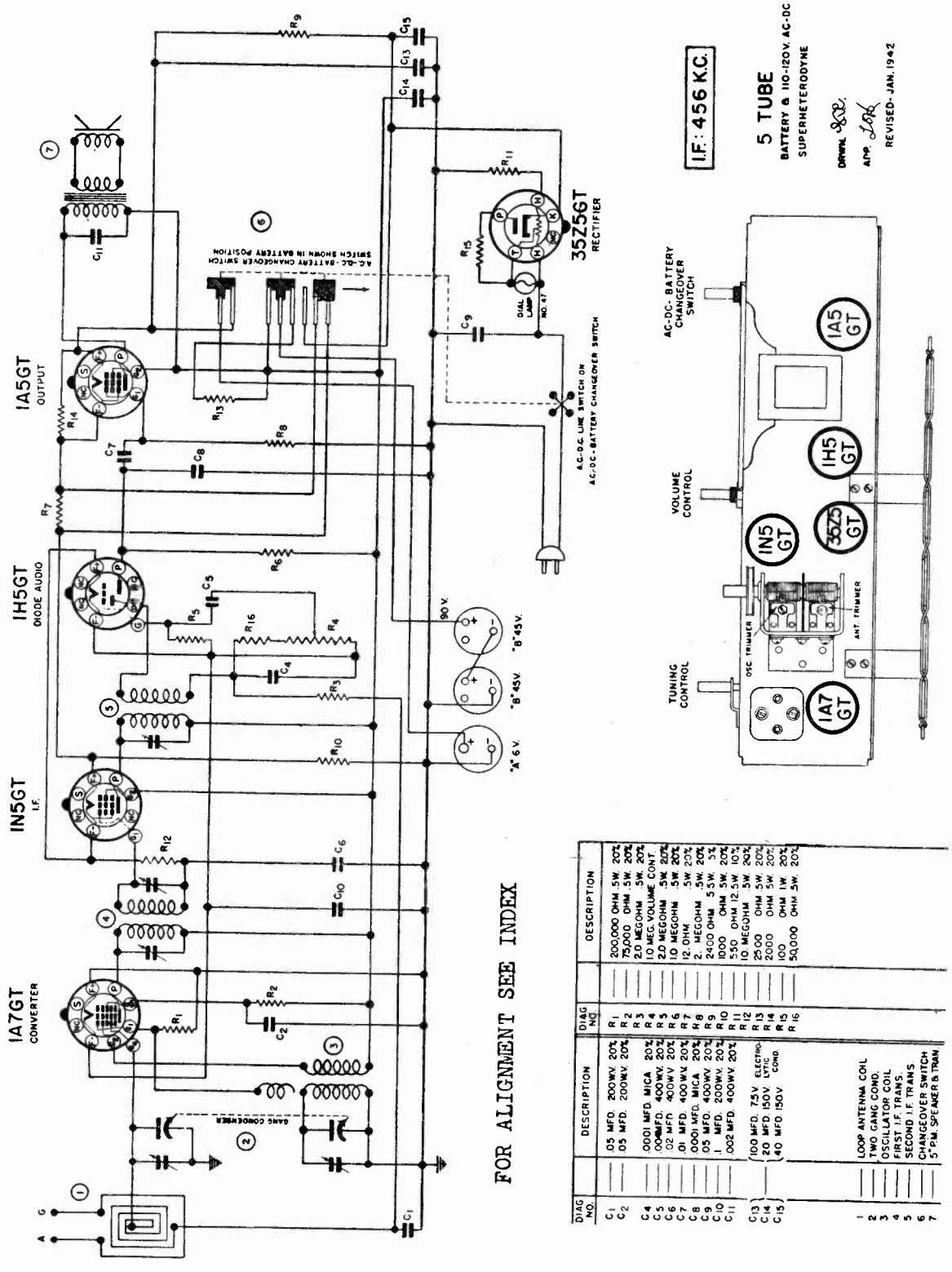
MODEL LR

SONORA RADIO & TELEV. CORP



DIAG NO.	DESCRIPTION	DIAG NO.	DESCRIPTION
C1	.05 MFD. 200 WV. 20%	R1	200,000 OHM .5W. 20%
C2	.05 MFD. 200 WV. 20%	R2	75,000 OHM .5W. 20%
		R3	2.0 MEGOHM .5W. 20%
C4	.0001 MFD. MICA 20%	R4	1.0 MEG. VOLUME CONT.
C5	.005 MFD. 400 WV. 20%	R5	2.0 MEGOHM .5W. 20%
C6	.02 MFD. 400 WV. 20%	R6	1.0 MEGOHM .5W. 20%
C7	.01 MFD. 400 WV. 20%	R7	12. OHM .5W. 20%
C8	.0001 MFD. MICA 20%	R8	2. MEGOHM .5W. 20%
C9	.05 MFD. 400 WV. 20%	R9	2400 OHM .5 W. 5%
C10	.1 MFD. 200 WV. 20%	R10	1000 OHM .5W. 20%
C11	.002 MFD. 400 WV. 20%	R11	550 OHM 12.5W. 10%
		R12	1.0 MEGOHM .5W. 20%
C13	100 MFD. 7.5 V. ELECTRO-LYTIC COND.	R13	2500 OHM .5W. 20%
C14	20 MFD. 150 V.	R14	2000 OHM .5W. 20%
C15	40 MFD. 150 V.	R15	100 OHM 1W. 20%
		R16	50,000 OHM .5W. 20%

DIAG NO.	DESCRIPTION
1	LOOP ANTENNA COIL
2	TWO GANG COND.
3	OSCILLATOR COIL
4	FIRST I.F. TRANS.
5	SECOND I.F. TRANS.
6	CHANGEOVER SWITCH
7	5" P.M. SPEAKER & TRANS.

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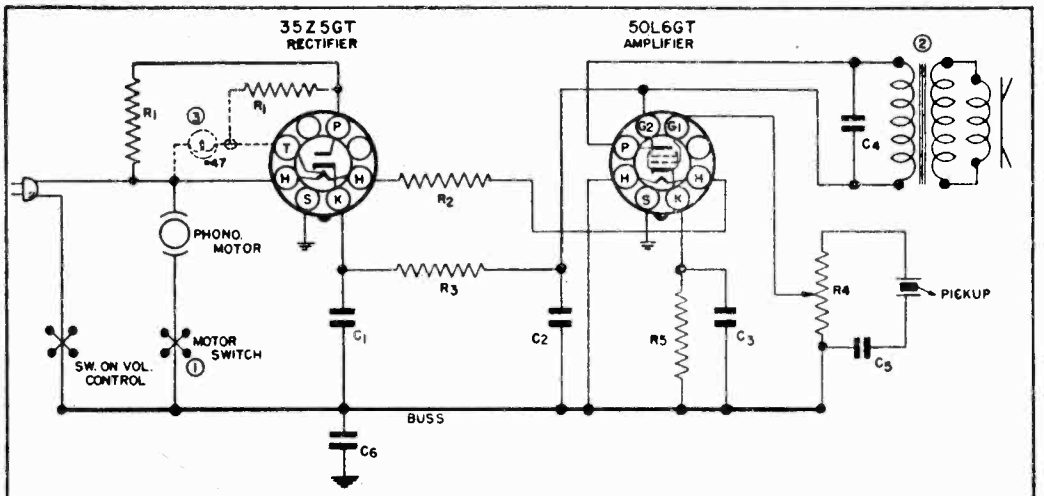
MODELS TE38, TE40, TE41
Phono
MODELS KWU78, KWU79
Phono



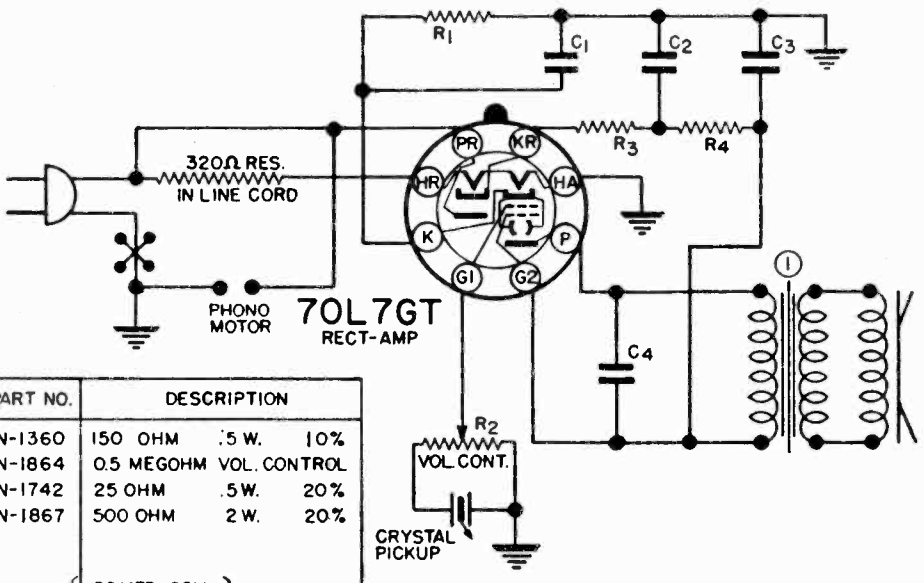
DIAG NO.	PART NO.	DESCRIPTION	DIAG NO.	PART NO.	DESCRIPTION
R1	N-1742	25 OHMS .5W. 20%	①	N-3614 OR N-3549	ROTARY SNAP SW. ON KWU-78 AUTOMATIC STOP SW. ON KWU-79
R2	N-3488	220 OHMS ARMORED 5 W.			
R3	N-1867	500 OHMS 2W. 20%			
R4	N-3248 / N-1864	.5 MEG. VOL. CONT.– KWU-78 / .5 MEG. VOL. CONT.– KWU-79	②	N-2914 / N-3618	4" P.M. SPEAKER OUTPUT TRANS. } KWU-78
R5	N-1350	150 OHMS .5W. 10%		N-3129 / N-3568	5½" P.M. SPEAKER OUTPUT TRANS. } KWU-79
C1	N-3617	40 MFD. ELECTRO. 150V.	③		G.E. NO.47 PILOT LAMP USED ON KWU-79 ONLY.
C2		40 MFD. ELECTRO. 150V.			
C3		20 MFD. 25 V.			
C4	N-1344	.01 MFD. 400V.			
C5	N-1345	.05 MFD. 200V.			
C6	N-1345	.05 MFD. 200V.			

CONNECTIONS SHOWN IN DOTTED LINES USED ON KWU-79 ONLY.

ELECTRIC PHONOGRAPH

DRAWN V.J.F. APP'D.
AUG. 7, 1940.

KWU78, KWU79



DIAG NO	PART NO.	DESCRIPTION
R1	N-1360	150 OHM .5 W. 10%
R2	N-1864	0.5 MEGOHM VOL. CONTROL
R3	N-1742	25 OHM .5W. 20%
R4	N-1867	500 OHM 2 W. 20%
C1	N-1866	20 MFD. 25V. } ELECTRO.
C2		30 MFD. 150V. } ELECTRO.
C3		30 MFD. 150V. } ELECTRO.
C4	N-1344	.01 MFD. 400V.
1	N-1863	5 1/2" P.M. SPEAKER (TE-38)
	N-1865	LINE RES. CORD
1	N-1910	5 1/2" P.M. SPKR. (TE-40 & 41)

ELECTRIC PHONOGRAPH

DRN. J.B. APP. 5-9-39

TE-38, 40 & 41

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SONORA RADIO & TELEV., CORP.

OPERATION

Controls and Moving Mechanism

(1) OFF-ON PHONOGRAPH VOLUME CONTROL — This is the only knob on the Phonograph Attachment. A twist to the right switches on the current to the turntable motor; turning the knob further increases volume. On models equipped with automatic stop switch, no off-on switch is used in conjunction with the volume control. To start the turntable motor on these models, it is only necessary to move the automatic switch lever slightly forward.

The automatic stop switch is adjustable and should be adjusted to stop the motor when the pick-up needle travels the last record groove (nearest the center). This can be done by moving the release arm to a position where it just touches the side of the pick-up arm when the needle is in the last groove and with the motor running.

(2) TURNTABLE — In placing the turntable plate on the motor spindle be sure that the small rubber tire of the motor drive wheel makes contact with the inner edge of the turntable plate. Be certain that the phonograph attachment cabinet rests squarely on a flat surface so that the turntable is level and rotates in a true horizontal plane.

(3) PICKUP — The pickup is the new crystal type. To insert a needle, raise the pickup arm to a vertical position, loosen the needle holder screw on the front, insert a needle to its full depth, tighten up the needle holder screw and lower pickup arm to its non-playing position outside the record and slip into the pickup rest holder. When commencing to play, remove pickup from holder, lift and place gently the point of needle in outside starting groove of record.

(4) RADIO RECEIVER CONTROLS — The power control or "ON-OFF" switch on your radio receiver must be in its "ON" position as for radio reception. Other radio controls will, in many cases, affect record reproduction. Adjustment of the radio set's volume and tone controls may add considerably to the enjoyment of your record selections.

(5) PLAYING RECORDS

(a) Turn on the power switch on your radio receiver. The radio dial should light up.

(b) If your radio is the type that has phono-connections applied at the factory and a switch or push-button for phono-radio switching, turn the switch to the phono position or if it has a phono-push button, this button should be depressed.

(c) Place the selected record upon the turntable and turn the knob on the Phonograph Attachment to the right (clockwise) or in the case of automatic stop models, move the switch lever forward. This should place the record in motion.

(d) Lift pickup and lower the needle point gently to the outside record groove.

(e) Adjust volume to suit, by further rotation of the phonograph attachment volume control knob. With some radios the radio volume control will be found effective. In such cases either the Phonograph Attachment volume control, or the radio volume control may be used. Two procedures are possible. The phonograph attachment control knob may be turned fully on and the radio volume control used for regulation, or, if more convenient or desirable, turn the radio volume control about two-thirds (⅔) on, and regulate volume with the phonograph attachment control. If your radio has a tone control it can also be set for best reproduction. If record and needle scratch noise is objectionable the tone control may be used to subdue or eliminate by adjustment of the tone control in the direction that favors "Bass" response. After the selection is completed, lift the pickup, swing the arm to the right beyond the edge of the record and lower and affix to the arm rest bracket.

(f) When you have finished playing, turn knob on the Phonograph Attachment fully to the left. This is unnecessary on models EQUIPPED WITH AUTOMATIC STOP. Lift pickup and place in its rest position and remove record from turntable. Never leave pickup with needle resting on record or on turntable. If you have had to connect the cable to the Grid terminal of your radio's 1st audio amplifier tube, it will have to be removed in order to play the radio only.

MOTOR SWITCH—(a) ***Models with combined motor and amplifier "on-off" switch.*** The combined switch is located on the volume control. When the volume is turned to the right the switch will click and the turntable will revolve as the amplifier heats. After the amplifier is heated, the switch should be turned off momentarily for record changing as the amplifier will cool off.

(b) ***Models with separate motor switch.*** The amplifier switch on the volume control turns on the amplifier. The operation of the motor switch does not turn the amplifier on or off. A separate push button switch is used to turn the motor "on" and "off." The button is pushed to start the motor. Another push of the button stops the motor.

(c) ***Models with automatic stop.*** These models have the motor switch incorporated in the automatic stop. To start the motor move the lever at the right side of the turntable. The automatic stop can be adjusted so that the pickup arm will strike it at the conclusion of a record and thus turn off the motor. The automatic stop operates a separate switch and does not turn the amplifier on or off.

A little oil applied to the motor, idler and turntable bearings about once every three months will suffice.

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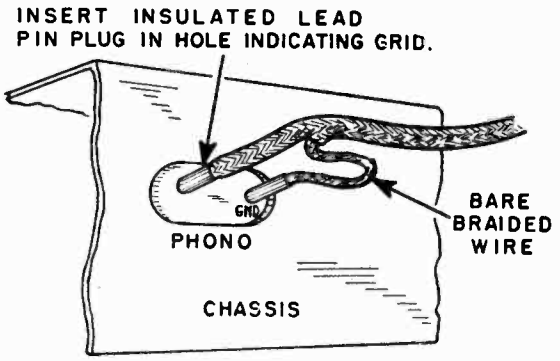
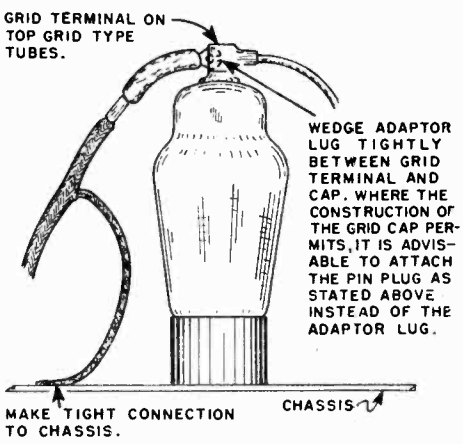


SKETCH NO. 1

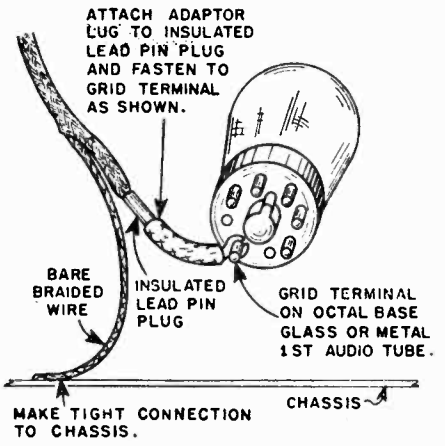
The Phonograph Attachment is designed for use on alternating current (AC) only, and may be badly damaged if subjected to use on direct current (DC). The improper application of power source will burn out the motor that drives the rotating turntable,

The Phonograph Attachment can be operated only on 110 to 125 volt AC (alternating current) 60 cycles.

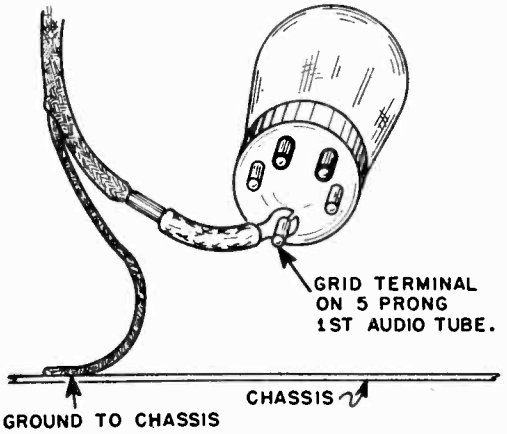
Note: To obtain proper musical rendition of phonograph records the records must revolve at a speed of 78 R.P.M. (revolutions per minute). To insure the proper turning speed to your records the power supply must be 60 cycles. A 50 cycle supply will rotate the phonograph record at reduced speed and consequently change the tempo and true tone of the musical recorded program.



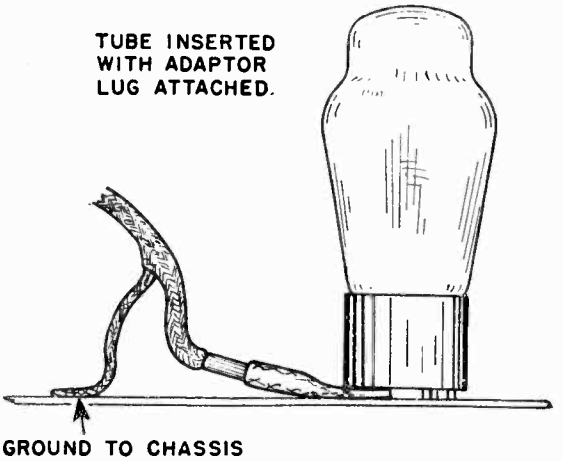
SKETCH NO. 2



SKETCH NO. 3



SKETCH NO. 4



SKETCH NO. 5

Before making any connections from the phonograph attachment to the radio receiver, be certain that the power to the radio set is turned off; a mild electric shock may be experienced if the chassis is touched by the hand on some radios. To prevent any possibility of such an unpleasant occurrence many radios are equipped with means for connecting a phonograph attachment. On such radios a small strip of insulated material (see sketch 1) with two terminals or phono-tip jacks will be marked phono. It is only necessary to connect the pin plug connectors to this strip if your radio has this provision and follow **operating** instructions of your Phonograph Attachment and your radio. If no provision for phonograph adaption exists on your radio set, the following procedure becomes necessary:

Locate the first audio tube in the radio chassis by reference to radio set manufacturers' instructions or the tube location chart that usually is attached to the interior or bottom of the radio cabinet. There are three (3) distinctive types of tubes that may be found in use in this position and the three accompanying sketches 2, 3, and 4 show their differences and the proper treatment of connection to each type. The insulated pin-plug should be connected to the "Grid" terminal of the first audio tube and the bare braided wire lead to the chassis, as indicated in the sketches. In connecting the insulated lead to grid terminal of tube types as shown in sketch 2 and 3 it will be necessary to attach the adaptor lug furnished separately to the insulated lead pin-plug and fasten to the grid terminal by removing the tube and then replacing the tube with the connection made. This is clearly illustrated in sketches 3, 4 and 5.

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MODEL MTF-164

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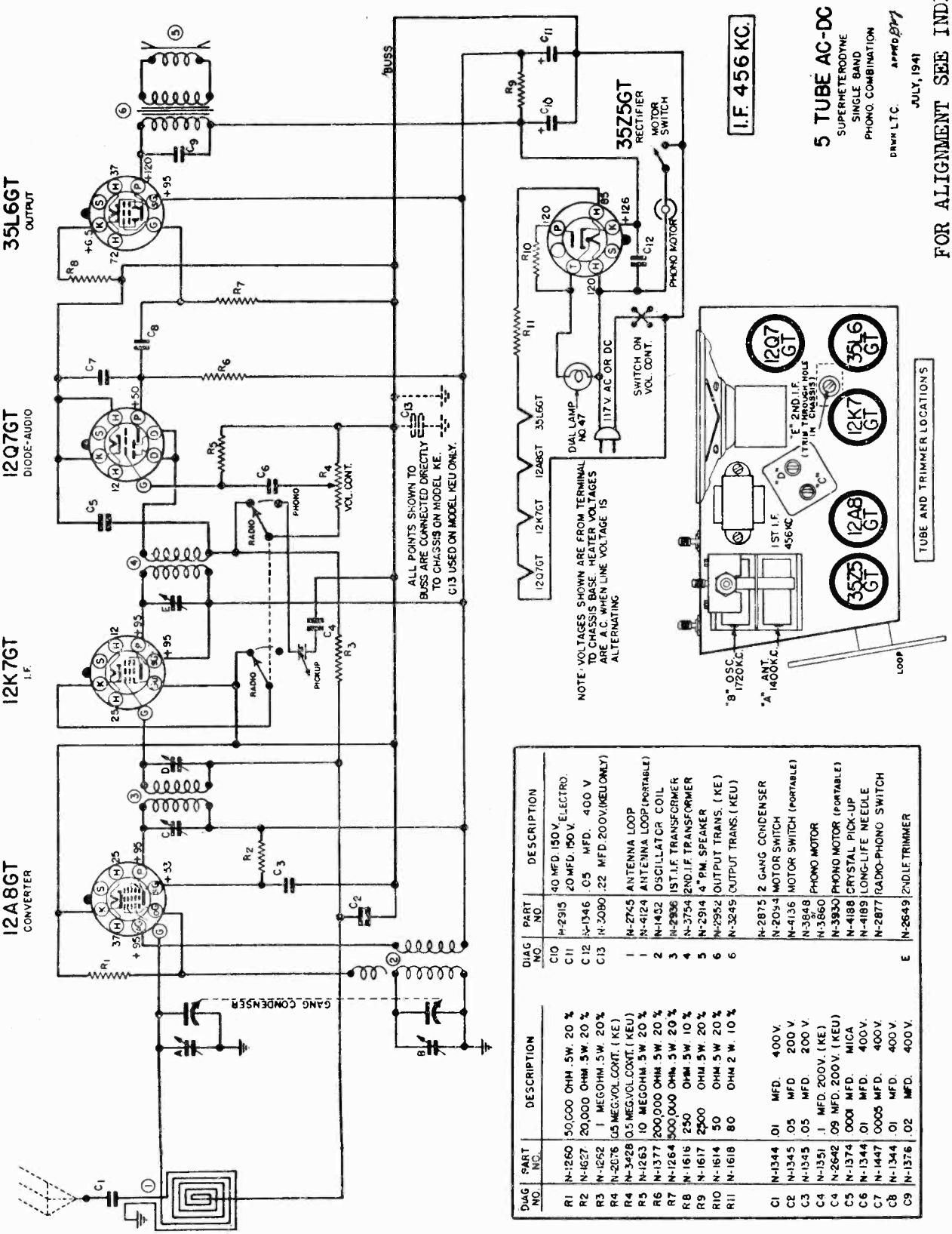

DIAG NO.	PART NO.	DESCRIPTION
R1	N-1260	50,000 OHM .5W. 20 %
R2	N-1627	20,000 OHM .5W. 20 %
R3	N-1262	1 MEGOHM .5W. 20%
R4	N-2076	.05 MEG. VOL. CONT. (KE)
R4	N-3428	0.5 MEG. VOL. CONT. (KEU)
R5	N-1263	10 MEGOHM .5W 20 %
R6	N-1377	200,000 OHM .5W 20 %
R7	N-1264	500,000 OHM .5W 20 %
R8	N-1616	250 OHM .5W. 10 %
R9	N-1617	2500 OHM .5W. 20 %
R10	N-1614	50 OHM 5 W 20 %
R11	N-1618	80 OHM 2 W. 10 %
C1	N-1344	.01 MFD. 400 V.
C2	N-1345	.05 MFD 200 V.
C3	N-1345	.05 MFD. 200 V.
C4	N-1351	.1 MFD. 200 V. (KE)
C4	N-2642	.09 MFD. 200 V. (KEU)
C5	N-1374	.0001 MFD. MICA
C6	N-1344	.01 MFD. 400 V.
C7	N-1447	.0005 MFD. 400 V.
C8	N-1344	.01 MFD. 400 V.
C9	N-1376	.02 MFD. 400 V.

DIAG NO.	PART NO.	DESCRIPTION
C10	N-2915	40 MFD. 150 V. ELECTRO.
C11		20 MFD. 150 V.
C12	N-1346	.05 MFD. 400 V
C13	N-3080	.22 MFD. 200 V. (KEU ONLY)
	N-2745	ANTENNA LOOP
1	N-4124	ANTENNA LOOP (PORTABLE)
2	N-1452	OSCILLATOR COIL
3	N-2936	1ST I.F. TRANSFORMER
4	N-3754	2ND I.F. TRANSFORMER
5	N-2914	4" P.M. SPEAKER
6	N-2952	OUTPUT TRANS. (KE)
6	N-3249	OUTPUT TRANS. (KEU)
	N-2875	2 GANG CONDENSER
	N-2094	MOTOR SWITCH
	N-4136	MOTOR SWITCH (PORTABLE)
	N-3848 & N-3860	PHONO MOTOR
	N-3930	PHONO MOTOR (PORTABLE)
	N-4188	CRYSTAL PICK-UP
	N-4189	LONG-LIFE NEEDLE
	N-2877	RADIO-PHONO SWITCH
E	N-2649	2ND I.F. TRIMMER

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MODELS LV-181, LV-186

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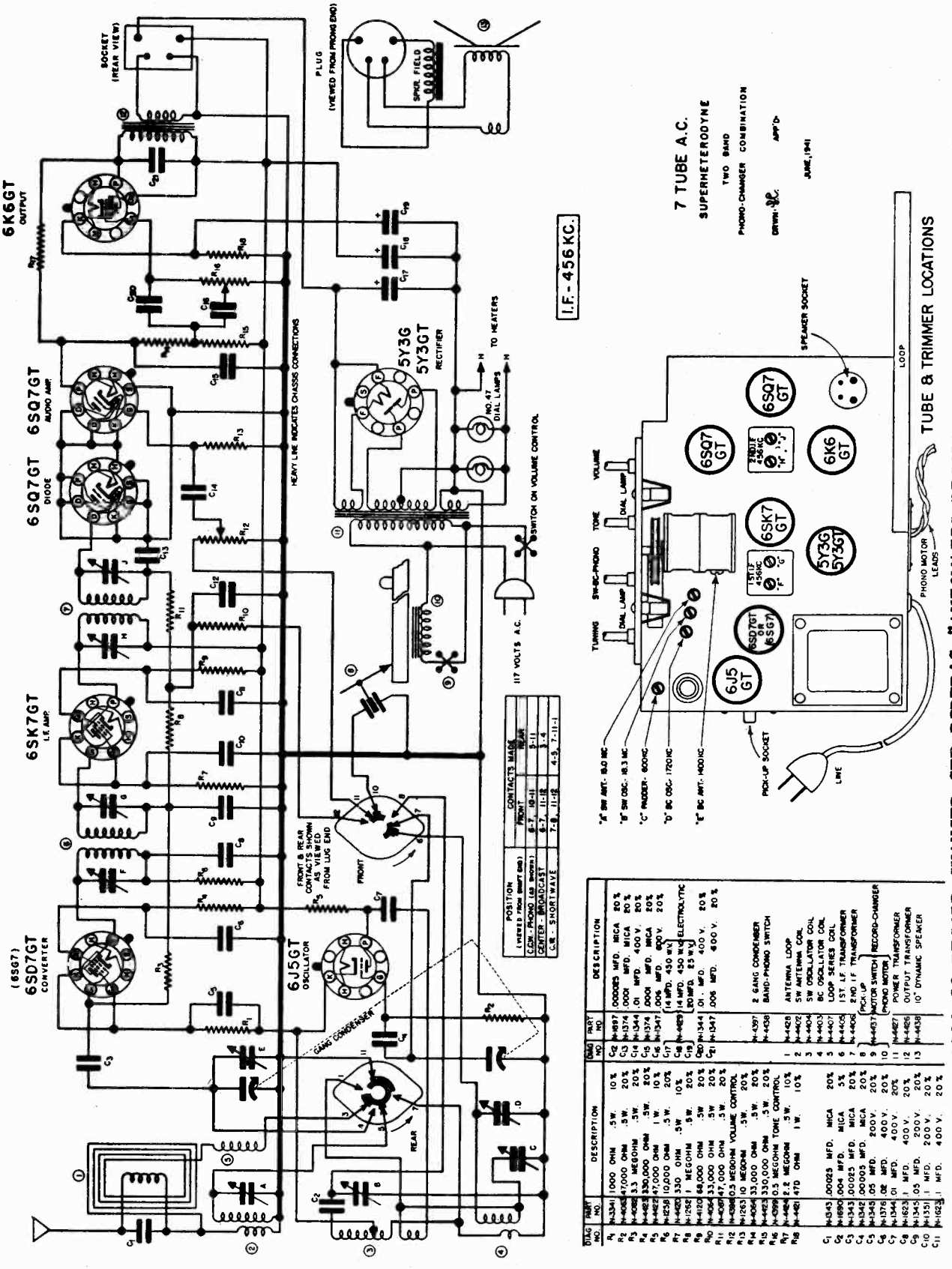

DIAG NO	PART NO	DESCRIPTION	DIAG NO	PART NO	DESCRIPTION
R1	N-1341	1000 OHM .5W. 10%	C2	N-1897	0000025 MFD. MICA 20%
R2	N-1068	47,000 OHM .5W. 20%	C3	N-1374	.001 MFD. MICA 20%
R3	N-1088	3.3 MEGOHM .5W. 20%	C14	N-1344	.01 MFD. 400 V. 20%
R4	N-1422	330,000 OHM .5W. 20%	C15	N-1374	.001 MFD. MICA 20%
R5	N-1422	47,000 OHM 1 W. 10%	C16	N-1347	.006 MFD. 400 V. 20%
R6	N-1258	10,000 OHM .5 W. 10%	C17		(14 MFD. 450 WV. ELECTROLYTIC
R7	N-1402	330 OHM .5W. 10%	C18	N-1423	14 MFD. 450 WV. ELECTROLYTIC
R8	N-1052	1 MEGOHM .5W. 20%	C19		(8 MFD. 25 WV.)
R9	N-1420	68,000 OHM .5W. 20%	C20	N-1344	.01 MFD. 400 V. 20%
R10	N-1068	33,000 OHM .5W. 20%	C21	N-1347	.006 MFD. 400 V. 20%
R11	N-1067	47,000 OHM .5W. 20%			
R12	N-1088	0.5 MEGOHM VOLUME CONTROL			
R13	N-1053	10 MEGOHM .5W. 20%		N-1397	2 GANG CONDENSER
R14	N-1068	33,000 OHM .5W. 20%		N-1458	BAND-PHONO SWITCH
R15	N-1423	330,000 OHM .5W. 20%			
R16	N-1099	0.5 MEGOHM TONE CONTROL		N-1428	ANTENNA LOOP
R17	N-1424	2.2 MEGOHM .5W. 10%	1	N-1402	SW ANTENNA COIL
R18	N-1421	470 OHM 1W. 10%	2	N-1404	SW OSCILLATOR COIL
			3	N-1403	BC OSCILLATOR COIL
C1	N-1343	.00025 MFD. MICA 20%	4	N-1407	LOOP SERIES COIL
C2	N-1890	.004 MFD. MICA 5%	5	N-1405	1ST. I.F. TRANSFORMER
C3	N-1343	.00025 MFD. MICA 20%	6	N-1406	2ND I.F. TRANSFORMER
C4	N-1342	.00005 MFD. MICA 20%	7		PICK-UP
C5	N-1345	.05 MFD. 200 V. 20%	8	N-1437	MOTOR SWITCH RECORD-CHANGER
C6	N-1376	.02 MFD. 400 V. 20%	9		PHONO MOTOR
C7	N-1344	.01 MFD. 400 V. 20%	10	N-1427	POWER TRANSFORMER
C8	N-1623	1 MFD. 400 V. 20%	11	N-1426	OUTPUT TRANSFORMER
C9	N-1345	.05 MFD. 200 V. 20%	12	N-1438	10" DYNAMIC SPEAKER
C10	N-1351	1 MFD. 200 V. 20%	13		
C11	N-1623	1 MFD. 400 V. 20%			

FOR OAK 4200-39 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

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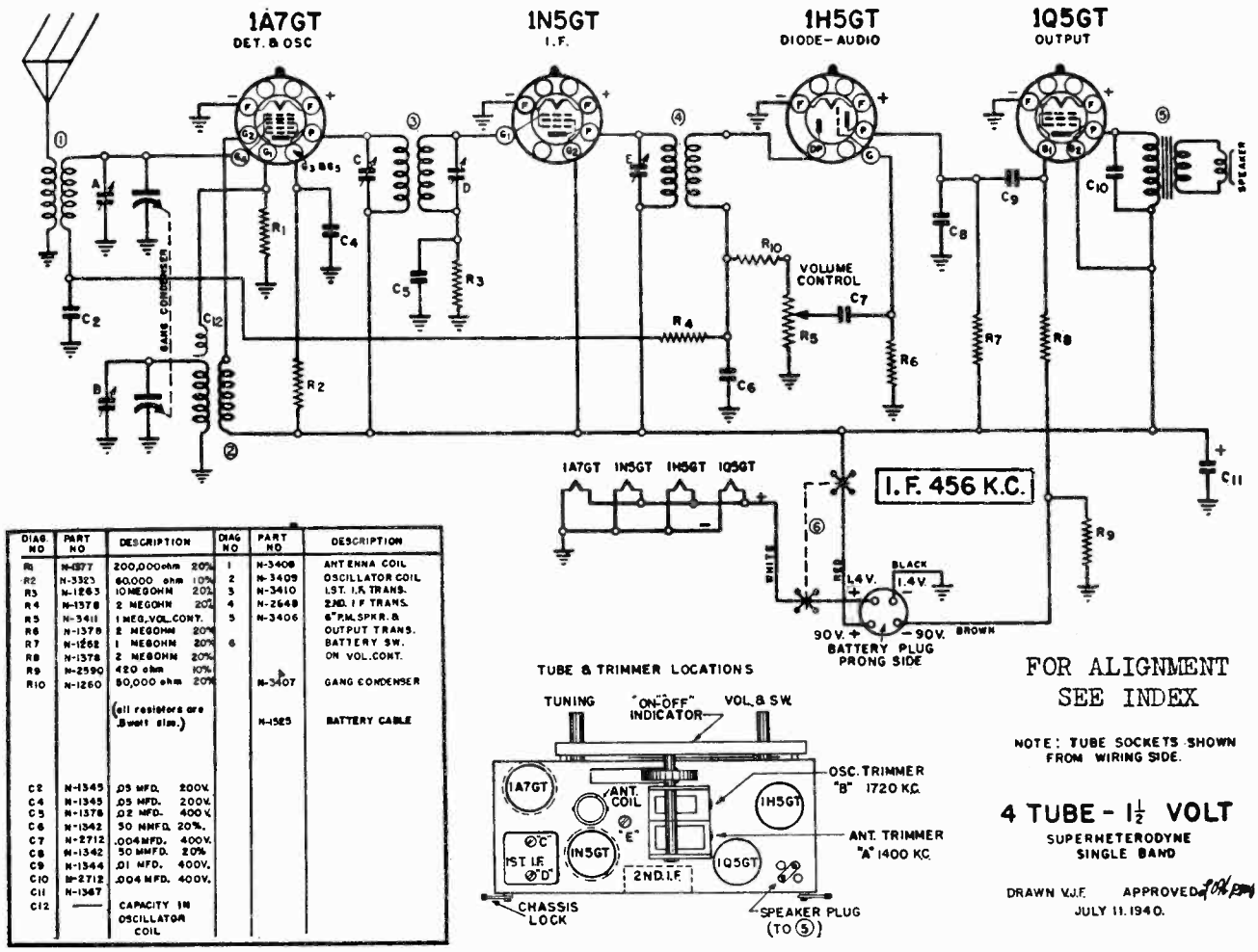
MODEL LZ
MODELS LV-181, KL-185
LV-186



DIAG NO	PART NO	DESCRIPTION	DIAG NO	PART NO	DESCRIPTION
R1	N-1377	200,000 ohm 20%	1	N-3408	ANTENNA COIL
R2	N-3323	60,000 ohm 10%	2	N-3409	OSCILLATOR COIL
R3	N-1263	10 MEGOHM 20%	3	N-3410	1ST. I.F. TRANS.
R4	N-1378	2 MEGOHM 20%	4	N-2648	2ND. I.F. TRANS.
R5	N-3411	1 MEG. VOL. CONT.	5	N-3406	6" P.M. SPKR. & OUTPUT TRANS.
R6	N-1378	2 MEGOHM 20%	6		BATTERY SW. ON VOL. CONT.
R7	N-1262	1 MEGOHM 20%			
R8	N-1378	2 MEGOHM 20%			
R9	N-2590	420 ohm 10%			
R10	N-1260	50,000 ohm 20%		N-3407	GANG CONDENSER
		(all resistors are 1/2 watt size.)		N-1525	BATTERY CABLE
C2	N-1345	.05 MFD. 200V.			
C4	N-1345	.05 MFD. 200V.			
C5	N-1378	.02 MFD. 400V.			
C6	N-1342	50 MMFD. 20%.			
C7	N-2712	.004 MFD. 400V.			
C8	N-1342	50 MMFD. 20%			
C9	N-1344	.01 MFD. 400V.			
C10	N-2712	.004 MFD. 400V.			
C11	N-1367				
C12	——	CAPACITY IN OSCILLATOR COIL			

FOR ALIGNMENT SEE INDEX

NOTE: TUBE SOCKETS SHOWN FROM WIRING SIDE.

4 TUBE - 1½ VOLT
SUPERHETERODYNE
SINGLE BAND

DRAWN V.J.F. APPROVED
JULY 11, 1940.

ALIGNMENT FOR MODELS: LV-181, KL-185, LV-186

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 600, 1400, 1720, 6000, 15000 and 18300 KC and an output meter to be connected across the primary or secondary of the output transformer. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible to prevent the AVC from operating and giving false readings.

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

I.F. ALIGNMENT. With the wave switch in the Broadcast Band and the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube*(6SG7 or 6SD7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis base. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. With the switch turned to the broadcast position, connect the antenna to the generator through a 100† MMF dummy and the ground of the set (Black wire) to the generator ground. Set the dial and generator at 1720 KC. Align the BC oscillator trimmer for maximum output. Set the generator at 1400 KC and tune-in signal with the dial. Adjust antenna trimmer for maximum output. Next set the generator at 600 KC and tune in the signal with the dial. Adjust the BC pad by rocking the gang back and forth while adjusting the pad until maximum output is attained. Recheck the adjustment at 1400 KC as the pad adjustment may have caused misalignment.

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

* 6SA7 for MODEL KL-185 † 200 mmf for MODEL KL-185

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MODEL KL-185

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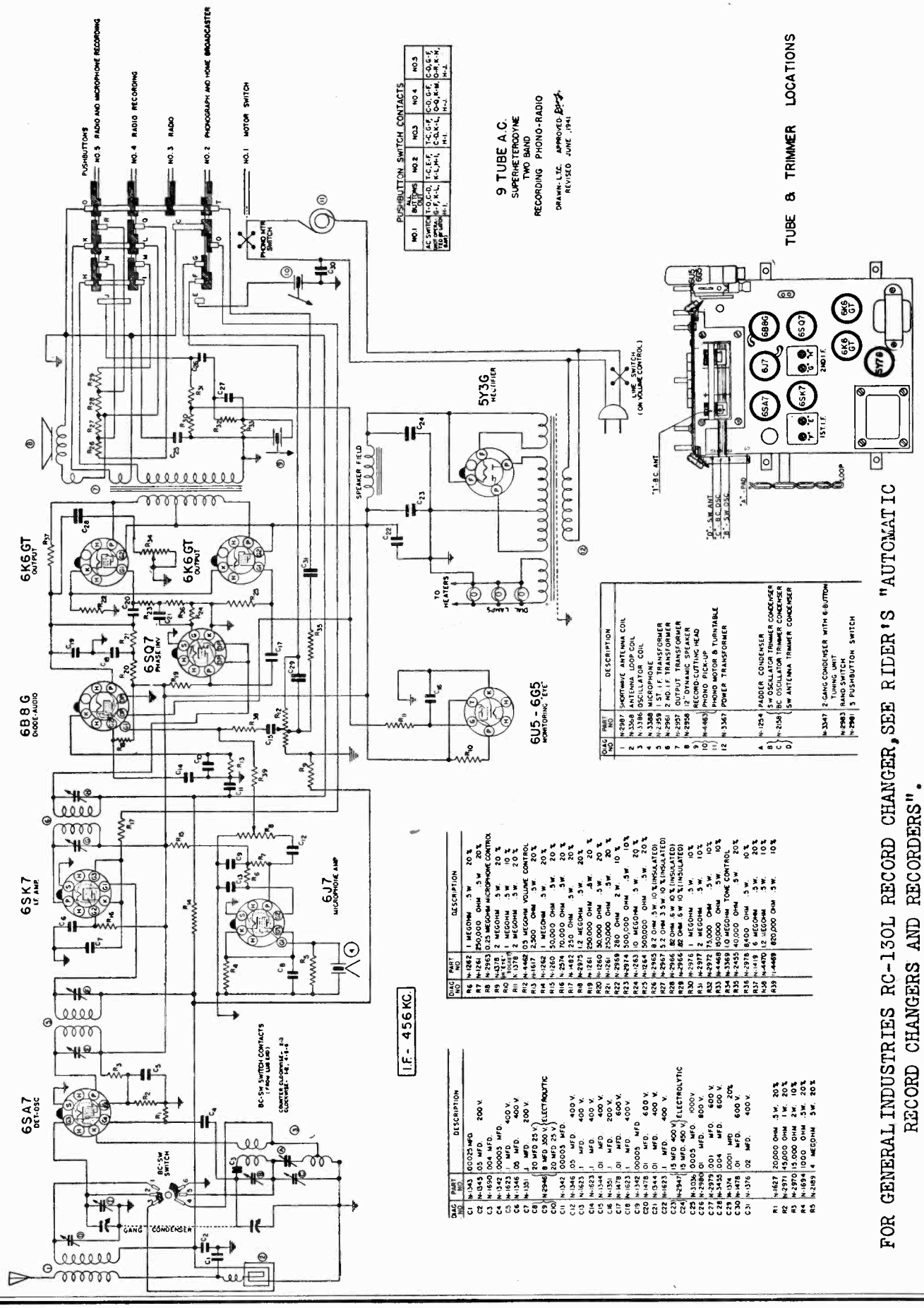

DIAG NO	PART NO	DESCRIPTION
C1	N-1343	.00025 MFD.
C2	N-1345	.05 MFD. 200 V.
C3	N-1690	.004 MFD.
C4	N-1342	.00005 MFD.
C5	N-1623	.1 MFD. 400 V.
C6	N-1346	.05 MFD. 400 V.
C7	N-1351	.1 MFD. 200 V.
C8		20 MFD 25 V.
C9	N-2946	(8 MFD 350 V. ELECTROLYTIC
C10		20 MFD 25 V.
C11	N-1342	.00005 MFD.
C12	N-1346	.05 MFD. 400 V.
C13	N-1623	.1 MFD. 400 V.
C14	N-1623	.1 MFD. 400 V.
C15	N-1344	.01 MFD. 400 V.
C16	N-1351	.1 MFD. 200 V.
C17	N-1478	.01 MFD. 600 V.
C18	N-1623	.1 MFD. 400 V.
C19	N-1342	.00005 MFD.
C20	N-1478	.01 MFD. 600 V.
C21	N-1344	.01 MFD. 400 V.
C22	N-1623	.1 MFD. 400 V.
C23	N-2947	(15 MFD 400 V. ELECTROLYTIC (15 MFD. 450 V.)
C24		
C25	N-3036	.0005 MFD. 4000 V.
C26	N-2980	.01 MFD. 600 V.
C27	N-2979	.001 MFD. 600 V.
C28	N-1345	.05 MFD. 600 V.
C29	N-1374	.0001 MFD. 20%
C30	N-1478	.01 MFD. 600 V.
C31	N-1376	.02 MFD. 400 V.
R1	N-1627	20,000 OHM .5 W. 20%
R2	N-2971	45,000 OHM 1 W. 20%
R3	N-2970	15,000 OHM 2 W. 10%
R4	N-1694	1000 OHM .5 W. 20%
R5	N-2189	4 MEGOHM .5 W. 20%

DIAG NO	PART NO	DESCRIPTION
R6	N-1282	1 MEGOHM .5 W. 20 %
R7	N-1261	250,000 OHM .5 W. 20 %
R8	N-2963	0.25 MEGOHM MICROPHONE CONTROL
R9	N-1378	2 MEGOHM .5 W. 20 %
R10	N-1261	250,000 OHM .5 W. 20 %
R11	N-1378	2 MEGOHM .5 W. 20 %
R12	N-1682	.05 MEGOHM VOLUME CONTROL
R13	N-1617	2,500 OHM .5 W. 20 %
R14	N-1282	1 MEGOHM .5 W. 20 %
R15	N-1260	50,000 OHM .5 W. 20 %
R16	N-1260	50,000 OHM .5 W. 20 %
R17	N-482	250 OHM .5 W. 20 %
R18	N-2975	1.2 MEGOHM .5 W. 20 %
R19	N-1261	250,000 OHM .5 W. 20 %
R20	N-1260	50,000 OHM .5 W. 20 %
R21	N-1261	250,000 OHM .5 W. 20 %
R22	N-2959	280 OHM 2 W. 10 %
R23	N-2974	500,000 OHM .5 W. 10 %
R24	N-1263	10 MEGOHM .5 W. 20 %
R25	N-1264	500,000 OHM .5 W. 20 %
R26	N-2965	8.2 OHM 3 W. 10 % (INSULATED)
R27	N-2967	5.2 OHM 3.5 W. 10 % (INSULATED)
R28	N-2966	82 OHM 6 W. 10 % (INSULATED)
R29	N-2956	22 OHM 6 W. 10 % (INSULATED)
R30	N-2971	45,000 OHM .5 W. 10 %
R31	N-2972	2 MEGOHM .5 W. 10 %
R32	N-2972	75,000 OHM .5 W. 10 %
R33	N-4468	180,000 OHM .5 W. 10 %
R34	N-3369	10 MEGOHM TONE CONTROL
R35	N-2455	40,000 OHM .5 W. 20%
R36	N-2978	8,400 OHM .5 W. 10 %
R37	N-1419	6 MEGOHM .5 W. 20 %
R38	N-4470	12 MEGOHM .5 W. 10 %
R39	N-4469	820,000 OHM .5 W. 10 %

DIAG NO	PART NO	DESCRIPTION
1	N-2987	SHORTWAVE ANTENNA COIL
2	N-3366	ANTENNA LOOP COIL
3	N-3368	OSCILLATOR COIL
4	N-3380	MICROPHONE
5	N-2959	1 ST. I.F. TRANSFORMER
6	N-2961	2 ND I.F. TRANSFORMER
7	N-2957	OUTPUT TRANSFORMER
8	N-2958	12" DYNAMIC SPEAKER
9	N-4463	RECORD-CUTTING HEAD
10		PHONO PICK-UP
11	N-3367	PHONO MOTOR & TURNTABLE
12		POWER TRANSFORMER
A	N-1254	PADDER CONDENSER
B	N-2156	.5 M OSCILLATOR TRIMMER CONDENSER
C		.25 OSCILLATOR TRIMMER CONDENSER
D		.5 M ANTENNA TRIMMER CONDENSER
	N-3347	2 GANG CONDENSER WITH 6 B/BTTON TUNING UNIT
	N-2983	BAND SWITCH
	N-2981	5 PUSHBUTTON SWITCH

FOR GENERAL INDUSTRIES RC-130L RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

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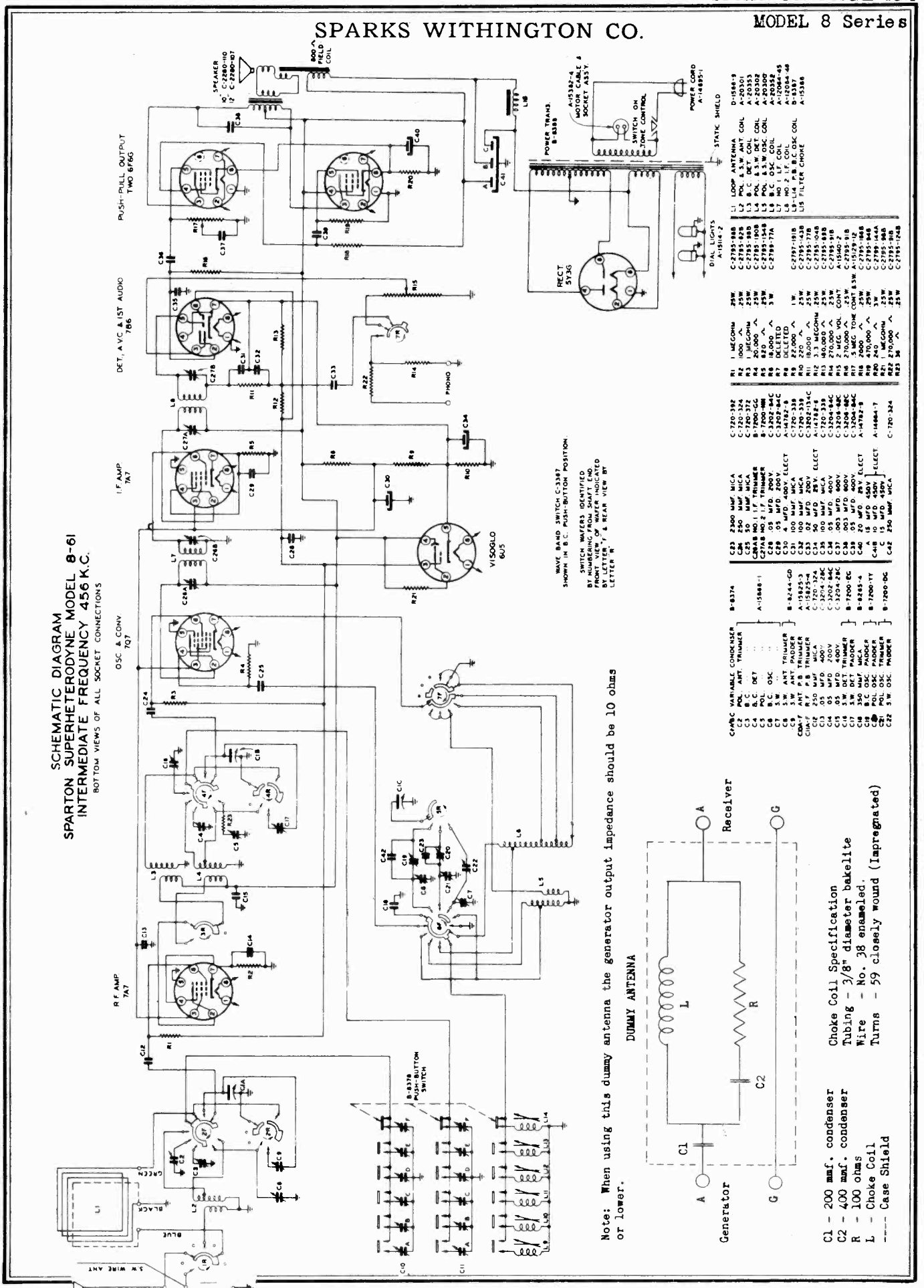
SPARKS WITHINGTON CO.

MODEL 8 Series



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SPARKS WITHINGTON CO.

Sparton Superheterodyne Model 8-Series

VOLTAGE CHART

Models 8W31, 8W71 and 8W61.

Line Voltage: 117 Volts A.C. Position of Volume Control: Full with Antenna Disconnected
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. See Prong Nos. on Schematic Diagram								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
7A7	R-F Amplifier	0	260	65	3	0	0	3	6.2*	-
7Q7	Osc - Converter	0	260	65	-4	0	0	0	6.2*	-
7A7	I-F Amplifier	0	245	70	2.5	0	0	2.3	6.2*	-
7B6	2nd Det - AVC - 1st Audio	0	180	0	.8	.4	0	.7	6.2*	-
6F6G	Power Amplifier	0	0	245	240	0	260	6.2*	18	-
6F6G	Power Amplifier	0	0	245	255	0	0	6.2*	18	-
6U5	Viso-Glo	6.2*	270	0	280	0	0	-	-	-
5Y3G	Rectifier	0	340	0	345*	0	345*	0	340	-

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 20000 ohms per volt voltmeter.
*AC volts.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with left hand stop line with condenser gang fully meshed.							
2	I.F.	*	.1 MFD	456 KC	B.C.	Open	C27 A&B	Peak Accurately
3							C26 A&B	Peak Accurately
4	Broadcast Band	Ant.	See Note	1500 KC	B.C.	1500 KC	C6 Osc.	" "
							C4 R.F.	" "
							C3 Ant.	" "
5				600 KC	B.C.	600 KC	C19 Pad	Rock **
6	Repeat operation 4.							
7	Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC.							
8	Police Band	Ant.	See Note	7 MC	Police	7 MC	C21 Osc.	Peak Accurately
							C5 R.F.	" "
							C2 Ant.	" "
9				2.5 MC	Police	2.5 MC	C20 Pad	Rock **
10	Check calibration and sensitivity at 7 MC, 4 MC and 2.5 MC.							
11	Short Wave Band	Ant.	See Note	11.7	S.W.	11.7	C70sc. trim	Peak Accurately
							C16 RF. trim	Rock **
							C8 Ant.trim	" **
12				9.3	S.W.	9.3	C22 osc.pad	Peak Accurately
							C17 RF pad	Rock **
							C9 Ant. pad	Rock **
13	Repeat operations 12 as many times as necessary until additional gain cannot be obtained.							
14	Check calibration and sensitivity at 11.7 and 9.3.							
15	Check operations 1 to 14.							

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

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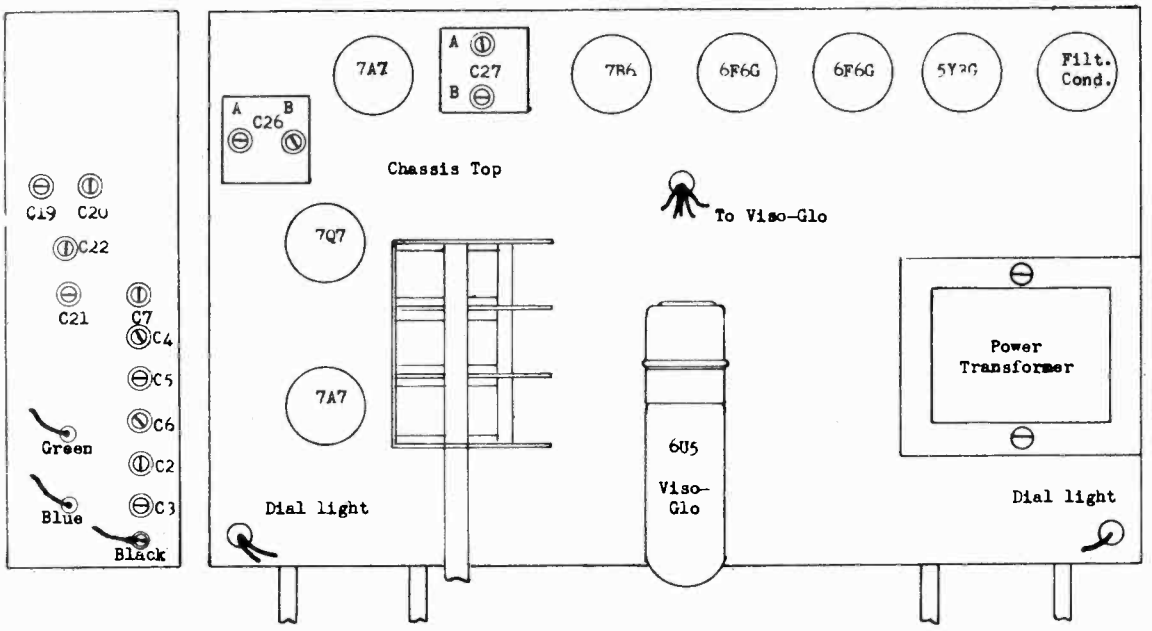
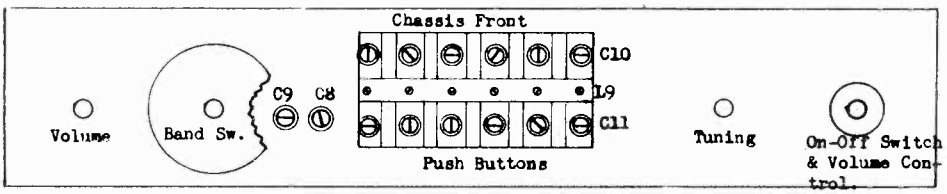
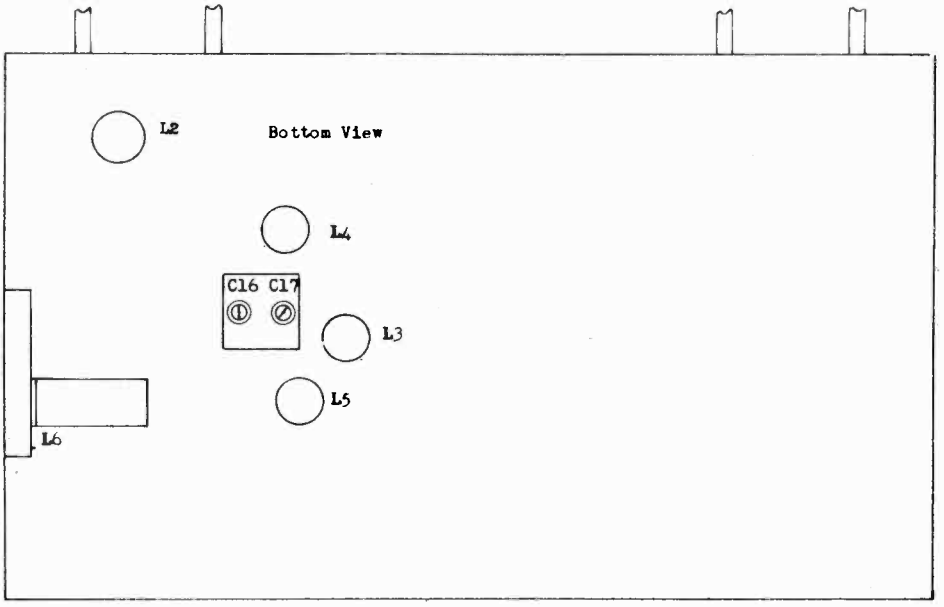
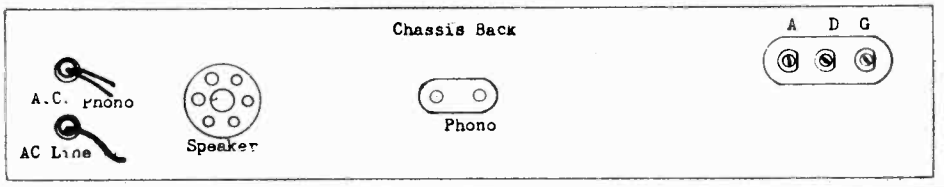
CHASSIS DIAGRAM









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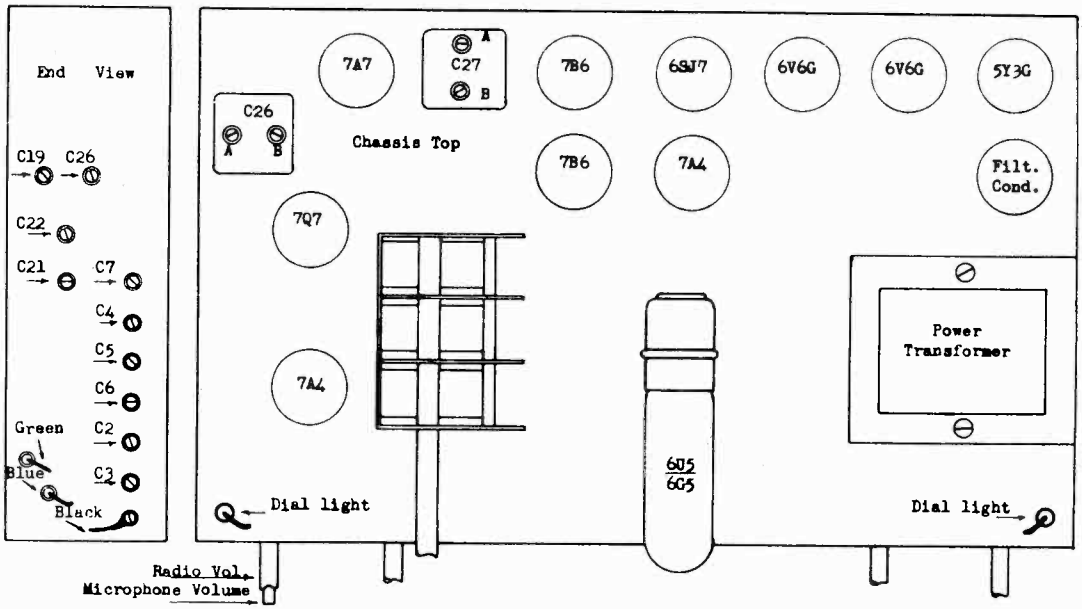
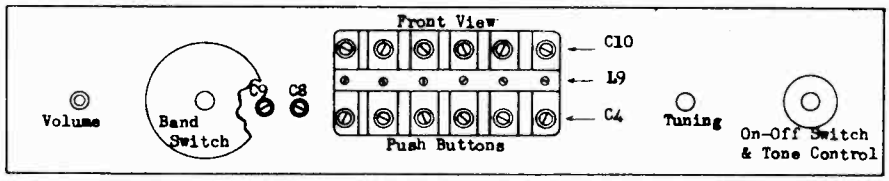
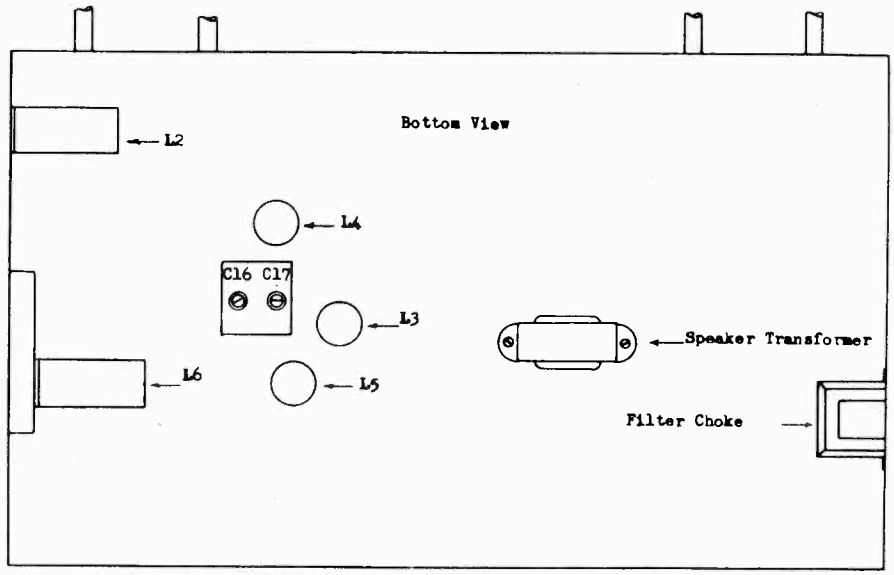
MODEL 11-36

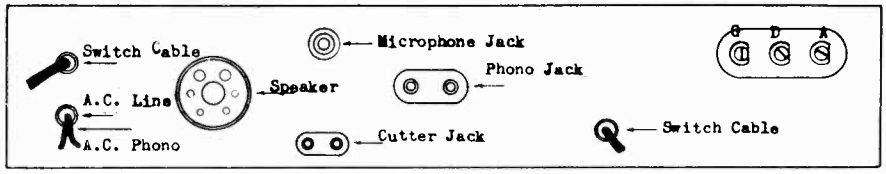
SPARKS WITHINGTON CO.

CHASSIS DIAGRAM









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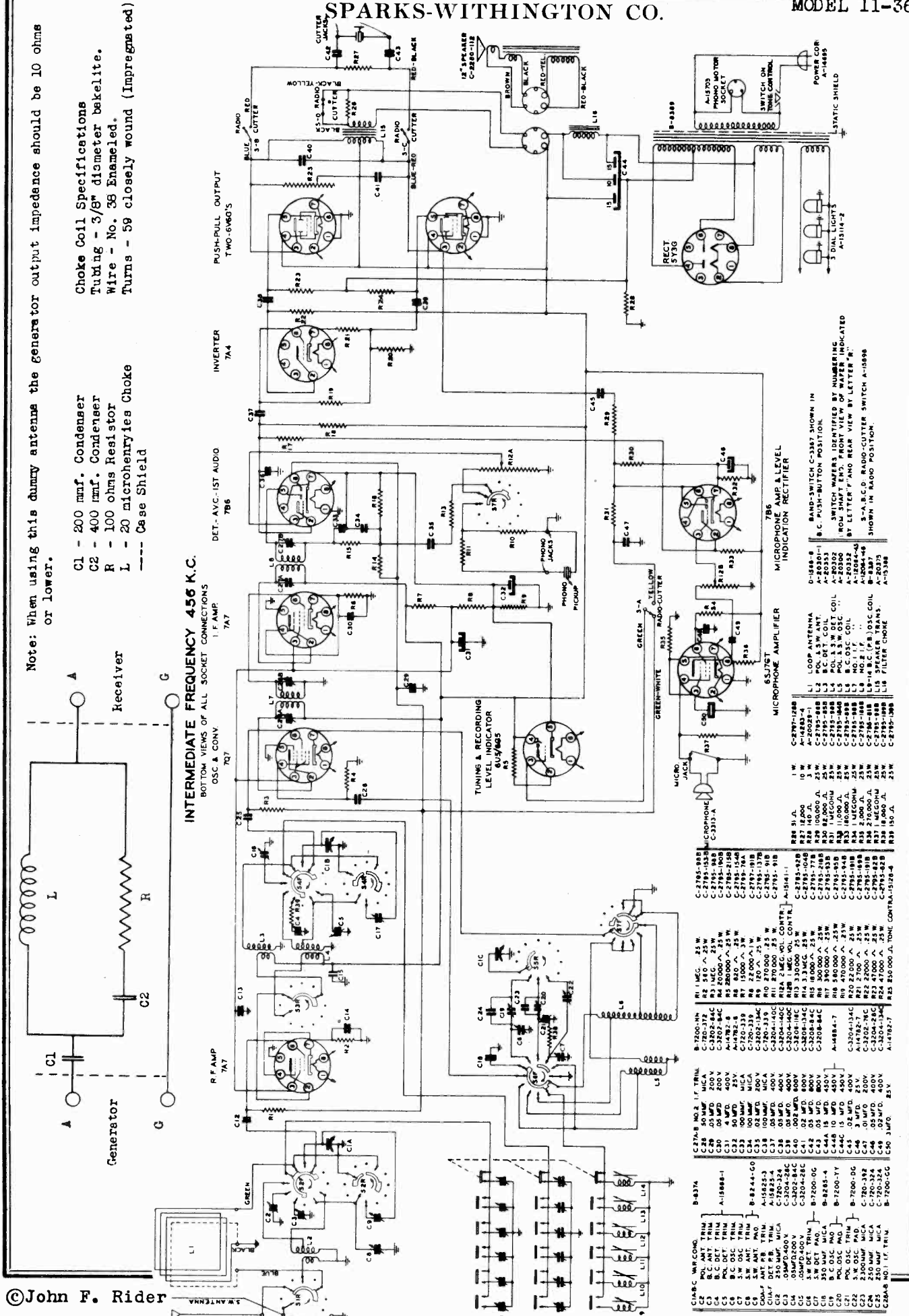
SPARKS-WITHINGTON CO.

MODEL 11-36



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MODEL 11-36

SPARKS WITHINGTON CO.

VOLTAGE CHART

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

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. See Prongs Nos. on Schematic Dia.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
7A7	R-F Amplifier	0	250	67	2.8	0	0	2.8	6.2*	-
7Q7	Oscillator & Converter	0	250	67	-6.2	0	0	0	6.2*	-
7A7	I.F. Amplifier	0	250	67	2.8	0	0	2.8	6.2*	-
7B6	Det - AVC - 1st Audio	0	108	0	.8	.1	0	7	6.2*	-
6SJ7GT	Microphone Amp.	0	0	1.8	0	.8	43	6.2*	49	-
7B6	Level Indicator Amp.	0	180	0	2	1.2	0	2	6.2*	-
7A4	Inverter	0	205	46	249	0	15	50	6.2*	-
6V6G	Push-Pull Output	0	0	237	250	-15	0	6.2*	0	-
6V6G	Push-Pull Output	0	0	237	250	-16	-15	6.2*	0	-
6U5/6G5	Tuning Eye/Level Indicator	6.2*	210	0	250	.2	0	-	-	-
5Y3G	Rectifier	0	360	0	350*	0	350*	0	360	-

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.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMERS	REMARKS
1	Set dial pointer even with left hand stop line with condenser gang fully meshed.							
2	I.F.	*	.1 mfd.	456 KC	BC	Open	C27 A&B	Peak accurately
3							C26 A&B	Peak accurately
4	Broadcast Band	Ant.	See Note	1500 KC	BC	1500 KC	C6 Osc.Trim.	Peak accurately
							C4 RF Trim.	Peak accurately
							C3 Ant.Trim.	Peak accurately
5				600 KC	BC	600 KC	C19 Osc.Pad.	**
6	Repeat operation 4.							
7	Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC.							
8	Police Band	Ant.	See Note	7 MC	Police	7 MC	C21 Osc.Trim	Peak accurately
							C5 RF Trim.	Peak accurately
							C2 Ant.Trim.	Peak accurately
9				2.5 MC	Police	2.5 MC	C20 Osc.Pad.	**
10	Repeat operation No. 8							
11	Check calibration and sensitivity at 7 MC, 4 MC and 2.5 MC							
12	Short Wave Band	Ant.	See Note	11.7 MC	SW	11.7 MC	C7 Osc.Trim	Peak accurately
							C16 RF Trim.	Peak accurately
							C8 Ant. Trim	Peak accurately
13				9.3 MC	SW	9.3 MC	C22 Osc.Pad.	**
							C17 RF Pad.	**
							C9 Ant. Pad.	**
14	Repeat operation 13 as many times as necessary until additional gain cannot be obtained							
15	Check calibration and sensitivity at 11,7 MC and 9.3.							
16	Check operation 1 to 15.							

Notes: Use Dummy Antenna as described on page 1 of this bulletin.
*Connect generator to pin #6 on 7Q7 Oscillator Converter tube.
**Rock dial while adjusting for maximum output.

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MODELS 411-1,4121

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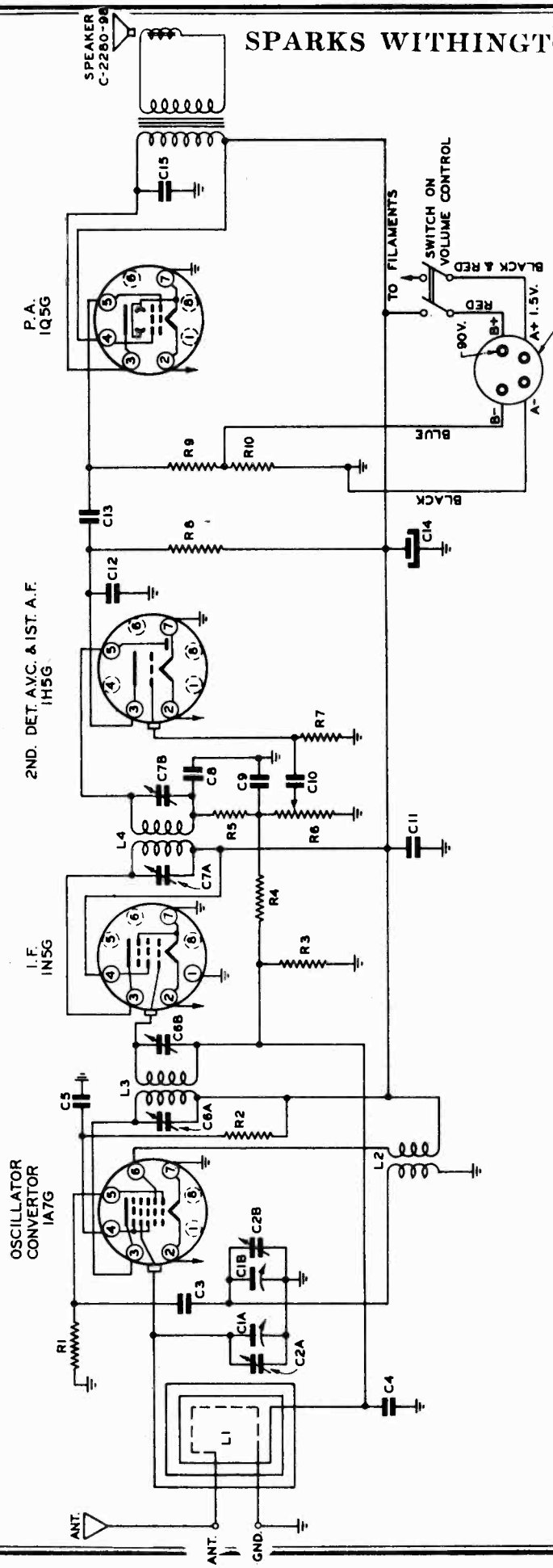

C1A&B	VARIABLE CONDENSER	B-8204
C2A&B	TRIMMERS ON VARIABLE COND.	C-720-325
C3	100 MMF. MICA	C-3202-140C
C4	.05 MFD. 200 V.	C-3202-28C
C5	.05 MFD. 200 V.	B-7200-GG
C6A&B	NO. 1 I.F. TRIMMER	B-7200-GG
C7A&B	NO. 2 I.F. TRIMMER	A-15697-1
C8	100 MMF. MICA	C-3202-132C
C9	100 MMF. MICA	C-3202-140C
C10	.01 MFD. 200 V.	C-720-325
C11	.05 MFD. 200 V.	C-3204-132C
C12	100 MMF. MICA	A-14958
C13	.01 MFD. 400 V.	C-3210-114C
C14	8 MFD. 150 V. ELECT.	
C15	.001 MFD. 1000 V.	

R1	180,000 Ω	.25 W.	C-2795-89B
R2	68,000 Ω	.25 W.	C-2795-84B
R3	2.2 MEGOHM	.25 W.	C-2795-102B
R4	2.2 MEGOHM	.25 W.	C-2795-102B
R5	56,000 Ω	.25 W.	C-2795-83B
R6	.5 MEGOHM VOL. CONT.		A-15132-1
R7	10 MEGOHM	.25 W.	C-2795-110B
R8	1 MEGOHM	.25 W.	C-2795-98B
R9	2.2 MEGOHM	.25 W.	C-2795-102B
R10	390 Ω	.25 W.	C-2795-57B

L1	LOOP ANTENNA	C-3290-1
L2	B.C. OSC. COIL	A-15232-9
L3	NO. 1 I.F. COIL	A-12064-35
L4	NO. 2 I.F. COIL	A-12064-35

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

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MODELS 411-1,4121

SPARKS WITHINGTON CO.

VOLTAGE CHART

"A" Battery Voltage: 1.5 Volts
"B" Battery Voltage: 90 Volts

Volume Control: Full with dial tuned to quiet channel.

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	GC
1A7G	Oscillator-Converter	0	1.5	90	45	-4.6	90	0	-	0
1N5G	I.F. Amplifier	0	1.5	90	90	0	—	0	0	0
1H5G	2nd Det-AVC-1st A.F.	0	1.5	62.5	0	0	0	0	0	0
1Q5G	P.A.	0	1.5	85	90	-1	-5	0	0	-

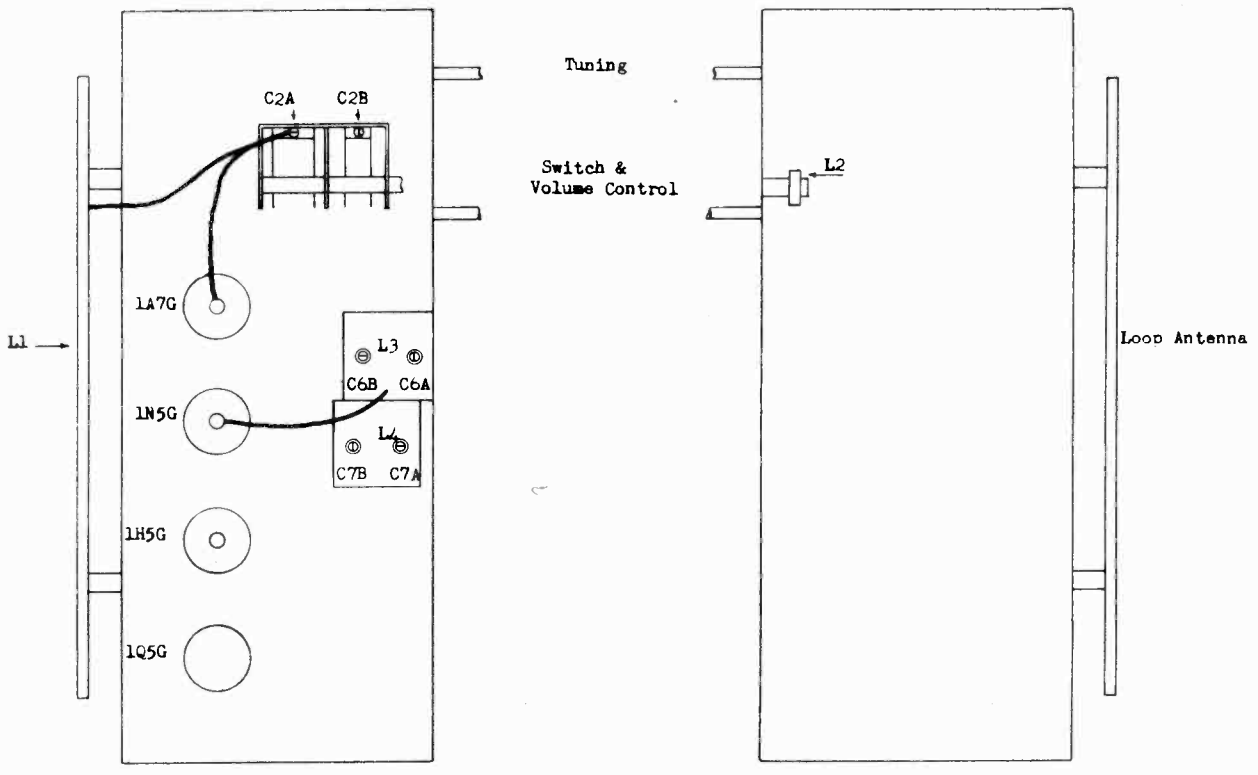
Notes: Allow 15% + or 15% - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with 20,000 ohms per volt voltmeter.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer with last calibration mark with condenser gang fully meshed.						
2	I.F.	*	.1 mf.Con.	456 KC	Open	C7 A&B	Peak accurately
						C6 A&B	Peak accurately
3	Broadcast	Ant.	200 mf.	1500 KC	1500 KC	C2B Osc.Tri.	Peak accurately
						C2A Ant. Tr.	Peak accurately
4	Repeat operation 3.						
5	Check calibration and sensitivity at 600 KC and 1500 KC.						

Notes: *Generator connected to grid cap of 1A7G tube.

CHASSIS DIAGRAM



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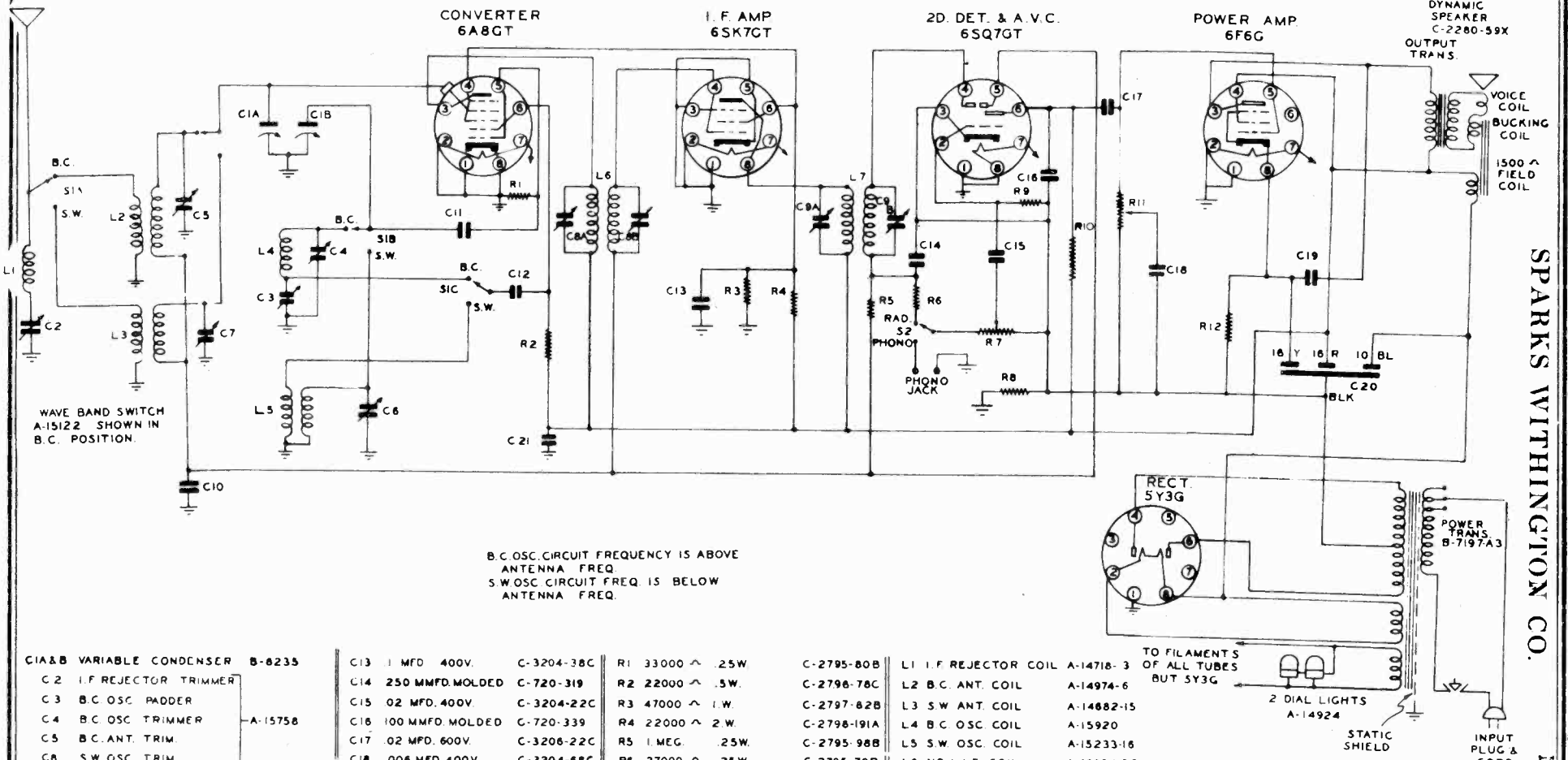
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEW OF ALL SOCKET CONNECTIONS



C1A&B	VARIABLE CONDENSER	B-8235
C2	I.F. REJECTOR TRIMMER	A-15758
C3	B.C. OSC. PADDER	
C4	B.C. OSC. TRIMMER	
C5	B.C. ANT. TRIM.	
C6	S.W. OSC. TRIM	
C7	S.W. ANT. TRIM	A-14088-5
C8A&B	NO. 1 I.F. TRIM	B-7200-GN
C9A&B	NO. 2 I.F. TRIM	B-7200-GN
C10	.05 MFD. 600V.	C-3206-28C
C11	50 MMFD. MOLDED	C-720-372
C12	.001 MFD. 600V.	C-3206-58C
C13	.1 MFD. 400V.	C-3204-38C
C14	250 MMFD. MOLDED	C-720-319
C15	.02 MFD. 400V.	C-3204-22C
C16	100 MMFD. MOLDED	C-720-339
C17	.02 MFD. 600V.	C-3206-22C
C18	.006 MFD. 400V.	C-3204-68C
C19	.006 MFD. 600V.	C-3206-68C
C20	16-16-10 MFD. ELECT.	A-14780-1
C21	.1 MFD. 600V.	C-3206-38C

R1	33000 Ω .25W.	C-2795-80B
R2	22000 Ω .5W.	C-2796-78C
R3	47000 Ω 1.W.	C-2797-82B
R4	22000 Ω 2.W.	C-2798-191A
R5	1. MEG. .25W.	C-2795-98B
R6	27000 Ω .25W.	C-2795-79B
R7	.5 MEG. VOL. CONT.	A-15130-5
R8	56 Ω .5W.	C-2796-47C
R9	5.6 MEG. .25W.	C-2795-107B
R10	270000 Ω .25W.	C-2795-91B
R11	.5 MEG. TONE CONT. & SW.	A-15129-2
R12	680 Ω 1.W.	C-2797-60B

L1 I.F. REJECTOR COIL	A-14718-3
L2 B.C. ANT. COIL	A-14974-6
L3 S.W. ANT. COIL	A-14682-15
L4 B.C. OSC. COIL	A-15920
L5 S.W. OSC. COIL	A-15233-16
L6 NO. 1 I.F. COIL	A-12064-39
L7 NO. 2 I.F. COIL	A-12064-17
S1A-B-C WAVE BAND SW.	A-15122
S2 PHONO-RADIO SW.	A-15754-1

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MODELS 531X, 532X

SPARKS WITHINGTON CO.

VOLTAGE CHART

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

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	Grid Cap
6A8GT	Converter	0	6*	249	95	-8.2	162	0	0	-4.2
6SK7GT	I-F Amplifier	0	0	0	-2	0	95	6*	249	-
6SQ7GT	2nd Det & AVC	0	-1.4	-1.2	-1.6	-1.8	105	6*	0	-
6F6G	Power Amplifier	0	0	230	249	-.4	-1.2	6*	96	-
5Y3G	Rectifier	0	310	0	300*	0	300*	0	310	-

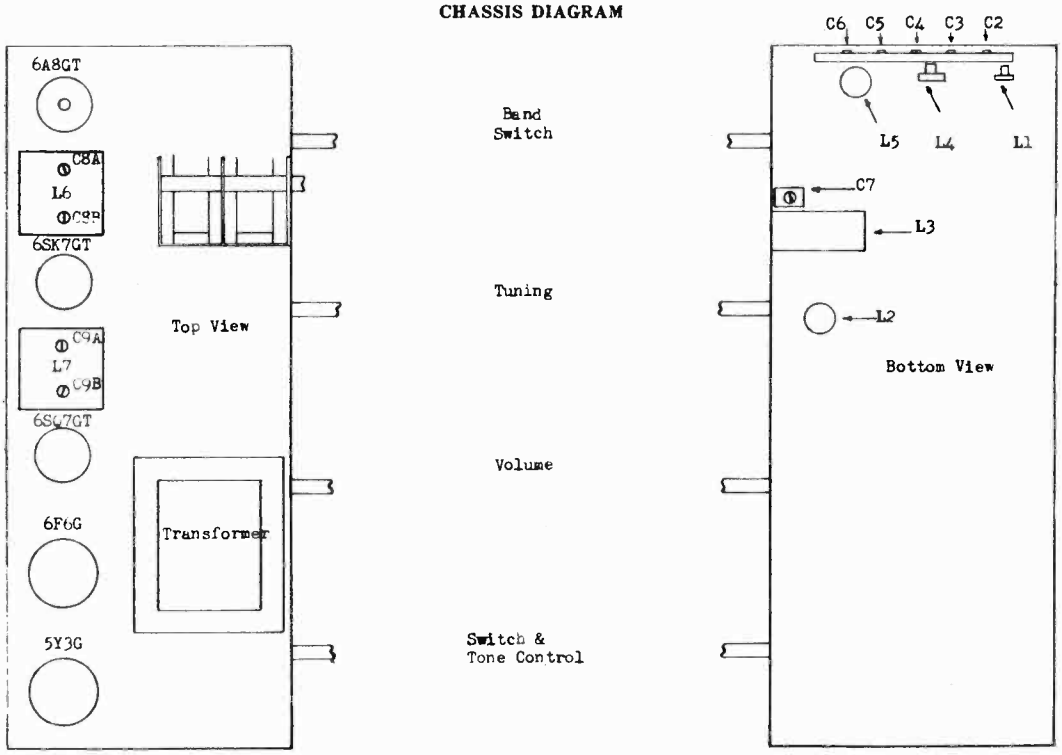
Notes: Voltage readings are for schematic in this Bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter.
*AC volts.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left hand stop line when condenser plates are fully meshed.							
2	I.F.	6A8GT Grid	.1 mf.Con.	456 KC	Broad cast	Open	C9 A&B	Peak accurately
							C8 A&B	Peak accurately
3	I.F. Rej.	Ant.	.1 mf.Con.	456 KC	BC	Closed	C2 A	Adjust to minimum
4	BC	Ant.	200 mf. Cond.	1600 KC	BC	1600KC	C4 Osc.Trim	Peak accurately
							C5 Ant.Trim	Peak accurately
5				600 KC	BC	1600 KC	C3 Osc.Pad.	**
6	Repeat operation 4.							
7	Check calibration and sensitivity at 600 KC, 900 KC and 1600 KC.							
8	SW	Ant.	*	18 MC	SW	18 MC	C6 Osc.Trim	**
							C7 Ant.Trim	**
9	Repeat operation 8.							
10	Check calibration and sensitivity at 7 MC.							

*100 ohms and 200 mf. in series.
**Rock dial while adjusting for maximum output.

CHASSIS DIAGRAM



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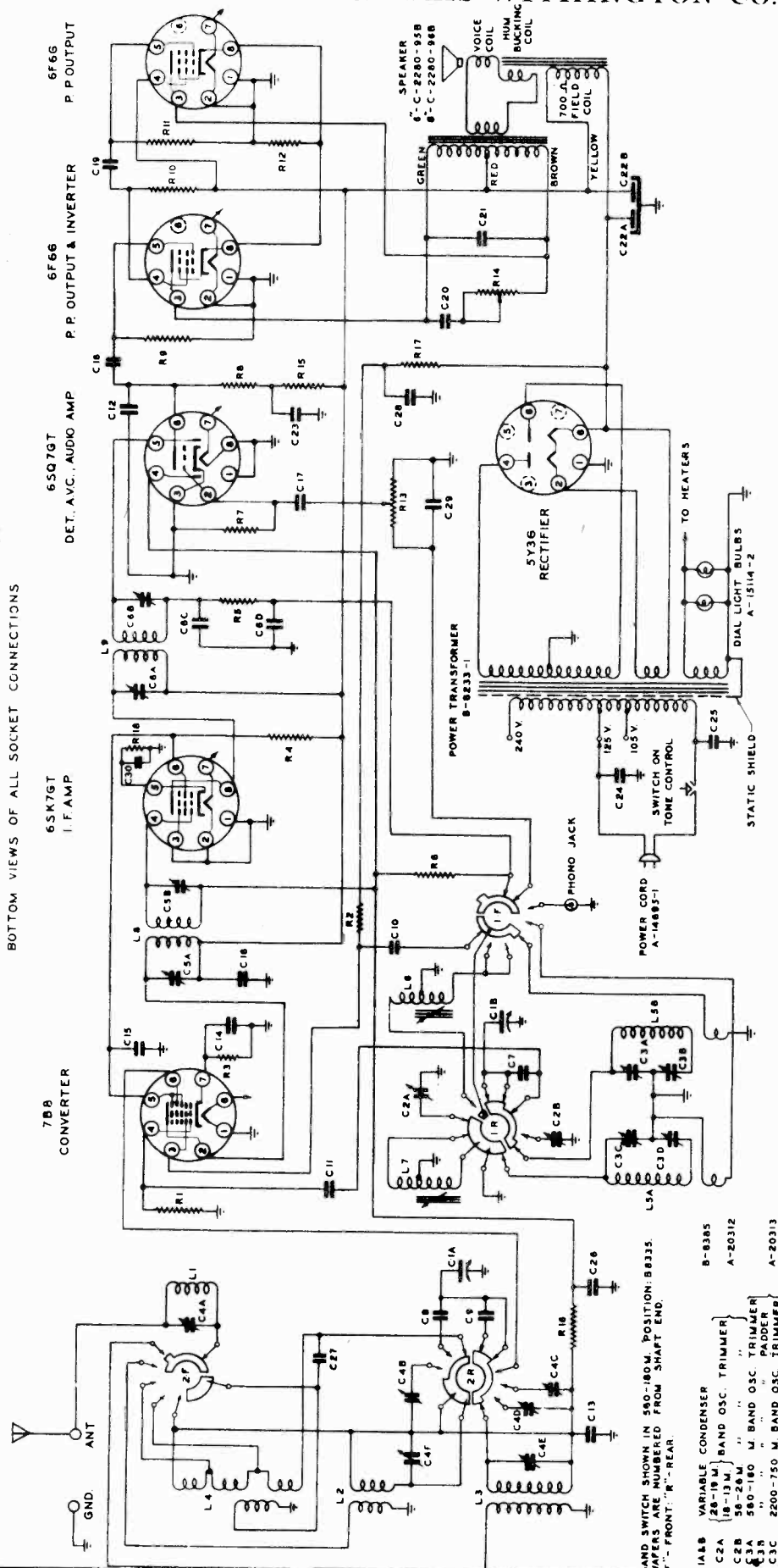
SPARKS WITHINGTON CO.

MODELS 652X, 652XD

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VARIABLE CONDENSER			B-8385
C2A	26-19 M. BAND OSC. TRIMMER			A-20312
C2B	18-13 M. " " "			
C3A	56-26 M. BAND OSC. TRIMMER			A-20313
C3B	560-180 M. " " "			
C3C	2200-750 M. " " "			
C3D	" " " "			
C4A	I.F. REJECTOR TRIMMER			A-20314
C4B	18-13 M. BAND ANT. TRIMMER			
C4C	26-19 M. " " "			
C4D	56-26 M. " " "			
C4E	560-180 M. " " "			
C4F	2200-750 M. " " "			
C5A&B	NO. 1 I.F. TRIMMER			B-7200-GN
C6A&B	NO. 2 I.F. TRIMMER			A-20114
C6C&D	100-100 MMF. TWEET FILTER			
C7	70 MMF CERAMIC			A-20252-1
C8	75 MMF CERAMIC			A-20252-2
C9	2000 MMF MICA 56-26 M. ANT. PADDER			C-720-394
C10	500 MMF MICA			C-720-318
C11	50 MMF "			C-720-315
C12	250 MMF "			C-720-324
C13	.05 MFD 600 V. TUBULAR COND.			C-3206-285
C14	2.5	MFD. 200 V.	TUBULAR COND	C-3202-415
C15	.1	MFD. 600 V.	" "	C-3206-385
C16	.1	MFD. 600 V.	" "	C-3206-385
C17	.02	MFD. 600 V.	" "	C-3206-225
C18	.03	MFD. 600 V.	" "	C-3206-1365
C19	.04	MFD. 600 V.	" "	C-3206-785
C20	.02	MFD. 600 V.	" "	C-3206-1345
C21	.002	MFD. 600 V.	" "	C-3206-1165
C22A	15	MFD 450 V.	ELECTROLYTIC	A-20318
C22B	30	MFD 450 V.	"	
C23	.1	MFD. 600 V.	TUBULAR COND.	C-3206-385
C24	.008	MFD. 600 V.	" "	C-3206-1245
C25	.006	MFD. 600 V.	" "	C-3206-1245
C26	.05	MFD. 600 V.	" "	C-3206-285
C27	15	MMF MICA		C-720-390
C28	18	MFD. 400 V.	ELECTROLYTIC	A-14782-11
C29	100	MMF MICA		C-720-325
C30	.1	MFD. 400 V.	TUBULAR COND	C-3204-385

R1	58 K.Ω.	.25W	C-2795-838
R2	22 K.Ω.	.5 W	C-2796-78C
R3	300 Ω.	.25 W.	C-2795-148
R4	33 K.Ω.	1 W.	C-2797-1958
R5	56 K.Ω.	.25W.	C-2795-838
R6	1 MEG.	.25 W.	C-2795-988
R7	15 MEG.	.25 W.	A-15789
R8	220 K.Ω.	.5 W	C-2796-90C
R9	470 K.Ω.	.25 W.	C-2795-948
R10	2700 Ω.	.5 W	C-2798-188C
R11	470 K.Ω.	.25 W.	C-2795-948
R12	330 Ω.	1 W.	C-2797-1478
R13	500 K.Ω.	VOL CONTROL	A-15130-6
R14	500 K.Ω.	TONE CONTROL	A-15131-2
R15	100 K.Ω.	.25W	C-2795-868
R16	100 K.Ω.	.25W	C-2795-868
R17	1.2 K.Ω.	1 W	C-2797-1858
R18	300 Ω.	.25 W	C-2795-1468

L1	I.F. REJECTOR		A-15772-2
L2	2200-750 M.	BAND ANT. COIL	A-15408-1
L3	560-180 M.	" " "	A-14879-4
	56-26 M.	" " "	
L4	26-19 M.	" " "	A-20322
	18-13 M.	" " "	
L5A	2200-750 M.	BAND OSC. COIL	A-14213-15
L5B	560-180 M.	" " "	
L6	56-26 M.	" " "	A-20320
	26-19 M.	" " "	
L7	18-13 M.	" " "	A-20320-1
L8	NO 1 I.F. COIL		A-12084-47
L9	NO 2 I.F. COIL		A-12084-48

BAND SWITCH SHOWN IN 560-180 M. POSITION: B8335. WAFERS ARE NUMBERED FROM SHAFT END. "F"-FRONT "R"-REAR.

ON 2200-750 M & 560-180 M. BANDS, OSC. FREQ. IS ABOVE SIGNAL FREQ
ON 56-26 M., 26-19 M & 18-13 M. " " " BELOW " "

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MODELS 652X, 652XD

SPARKS-WITHINGTON CO.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left hand stop line with variable condenser gang fully meshed.							
2	I.F.	*	.1 mf Cond.	456 KC	Band #1	Open	C6 A&B	Peak accurately
							C5 A&B	Peak accurately
3	I.F. Rej	Ant.	.1 mf C.	456 KC	Band #2	Closed	C4 A	Adjust to minimum
4	Broad cast #1	Ant.	**	1600 KC	BC	1600 KC	C3 A Osc.Tr.	Peak accurately
							C4 E Ant. "	Peak accurately
5				600 KC	BC	600 KC	C3 B Osc.Pad	***
6	Repeat operation 4.							
7	Check calibration and sensitivity at 600 KC, 900 KC and 1600 KC.							
8	S.W. #2	Ant.	**	400 KC	SW #2	400 KC	C3 Osc. Tri.	Peak accurately
							C47 Ant. Tr.	Peak accurately
9				150 KC	SW #2	150 KC	C3D Osc.Pad.	***
10	Repeat operation 8.							
11	Check calibration and sensitivity at 400 KC, and 150 KC.							
12	S.W. #4	Ant.	**	20 M	SW #4	20 M	C2 A Osc.Tr.	***
							C4 C Ant. "	***
13				26 M	#4 Band	26 M	Adjust L6 Slug.	
14	Repeat operation 12 and 13.							
15	Check calibration & sensitivity at 24M. If this band fails to track correctly, C203C trimmer & L6 slug have not been properly adjusted.							
16	SW Band #3	Ant.	**	26 M	SW Band #3	26 M	C2B Osc. Tr.	***
							C4D Ant. "	***
							C9 Ant. Pad.	See Operation 17.
17	Antenna Padder C9 is precision set at the factory and should not be readjusted in the field.							
18	Check calibration and sensitivity at 55 M and 38 M. If this band fails to track correctly, trimmers C2A and L6 slug have not been properly adjusted.							
19	SW Band #5	Ant.	**	15 M	SW Band #5	15 M	adjust L7 slug	
							C4B Ant.Tr.	***
20	Check calibration and sensitivity at 18 M. If this band fails to track correctly, Band #4 has not been properly adjusted.							

*Connect generator to #6 Pin on 7B8 converter tube.
**Use Dummy Antenna as described on Page 1 of this bulletin.
***Rock dial while adjusting for maximum output.
Special Note: All band trimmers should be adjusted to the fundamental of the test signal and not to the image.

VOLTAGE CHART

Line Voltage: 117Volts A.C.

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

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. See Prong Nos. on Schematic Dia.								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9
7B8	Converter	0	245	60	-1.6	82	-.2	2	6.2*	-
6SK7GT	I.F. Amp.	0	0	0	-.2	2.1	82	6.2*	245	-
6SQ7GT	2nd Det. AVC 1st Audio	0	-.3	0	-.2	-.2	100	6.2*	0	-
6F6G	P.P. Out-put Inverter	0	0	235	232	0	290	6.2*	18	-
6F6G	P.P. Out-put	0	0	237	247	0	0	6.2*	18	-
5Y3G	Rectifier	0	295	0	300*	0	300*	0	295	-

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

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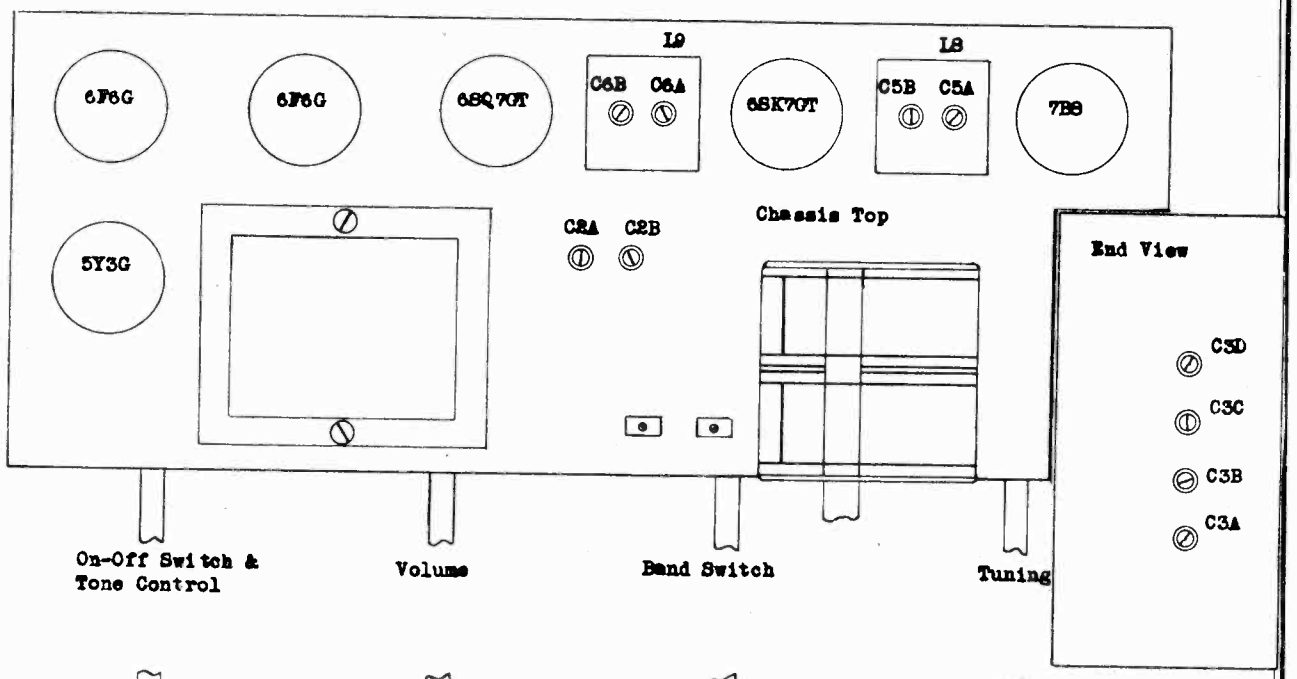
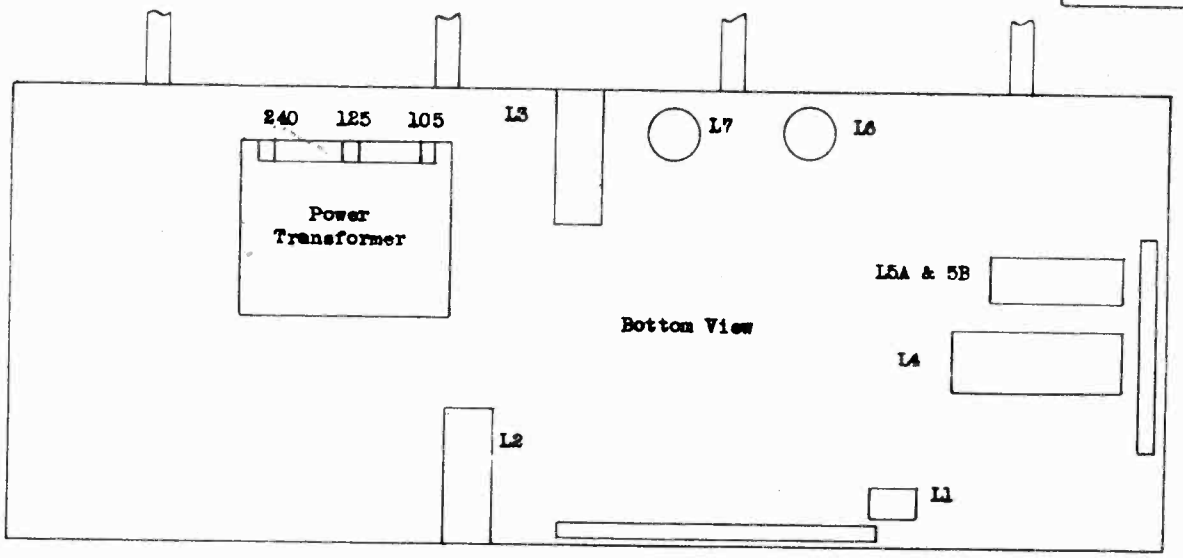
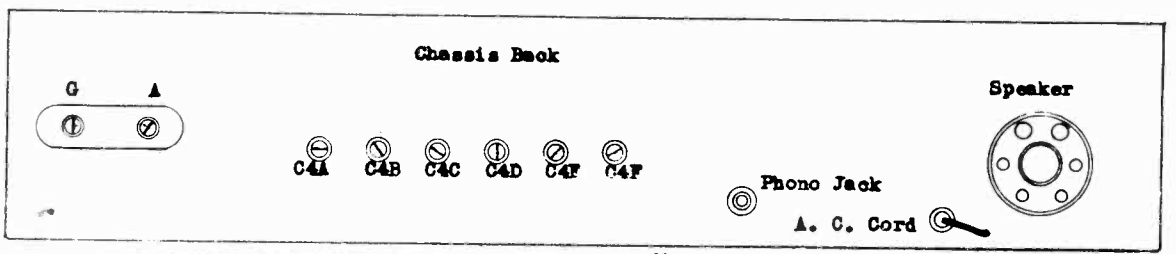
SPARKS-WITHINGTON CO.

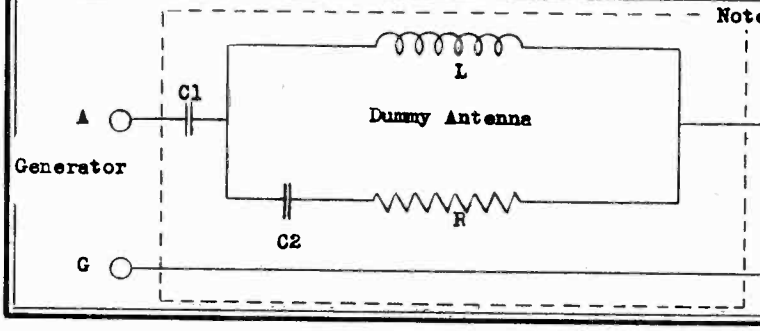
MODELS 652X, 652XD

CHASSIS DIAGRAM









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

C1 - 200 mmf. Condenser
C2 - 400 mmf. Condenser
R - 100 ohms
L - Choke Coil
---- Case Shield

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

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MODEL 6021

SPARKS WITHINGTON CO.

VOLTAGE CHART

Receiver operated on: AC
Line Voltage: 117 Volts

Volume Control Full: With dial tuned to Quiet Channel.

TUBE	FUNCTION	Voltage of each socket prong to #1 pin on 1S5 tube							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
1T4	RF Amplifier	2.6 f	80	39	0	-	0	3.9 f	-
1R5	Osc.-Converter	1.24 f	80	39	.38	1.24	0	2.3 f	-
1T4	I.F. Amplifier	4 f	80	39	-	4	0	5.2 f	-
1S5	Det-AVC-1st Audio	B-**	80	0	13	14.25	0	1.25 f	-
3Q5GT	Output	-	8 f	85	90	0	.6	5.3 f	6.5 f
117Z6GT	Rectifier	-	0	117*	135	117*	-	117*	135

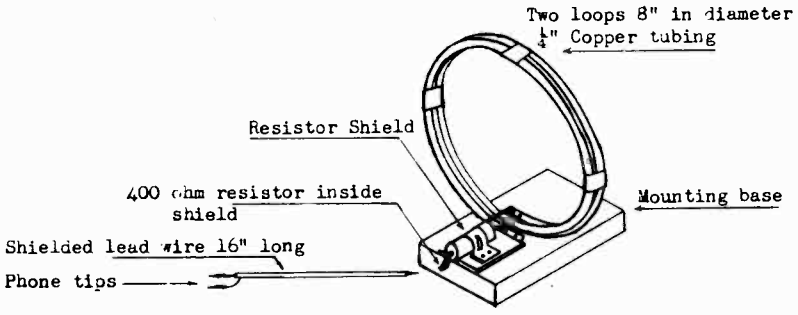
NOTES: f Filament Voltage
* A.C. Voltage
** All voltages measured from this point to socket prongs.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMERS	REMARKS
1	(Set dial pointer even with last calibration point with condenser gang fully meshed).						
2	I.F.	*	.1 mf. Cond.	456KC	Open	C12 A&B	Peak Accurately
						C11 A&B	Peak Accurately
3	Broad-cast	Seperate Loop	**	1500KC	1500KC	C2C osc. trim	" "
						C2B RF trim	" "
						C2A Ant. trim	" "
4				600KC	600KC	C2B osc. pad	***
5	(Repeat operation 3).						
6	(Check calibration and sensitivity at 600KC, 1000KC and 1500KC).						
7	(Check operation 1 to 6 inclusive).						

Notes: The generator must be connected to the dummy loop antenna and not to the loop of the receiver for RF Alignments.
* Generator connected to #6 Pin on 1R5 tube.
** Use dummy antenna as described below.
*** Rock dial while adjusting for maximum output.

DUMMY ANTENNA



SPECIFICATIONS

Two loops of ¼" copper tubing 8" in diameter spaced ¼" apart with 400 ohms resistor in series.
Connecting cable and resistor must be shielded.
The loop should be spaced twice the diameter of the loop from the receiver being aligned to prevent an over modulated signal and poor alignment of the receiver.

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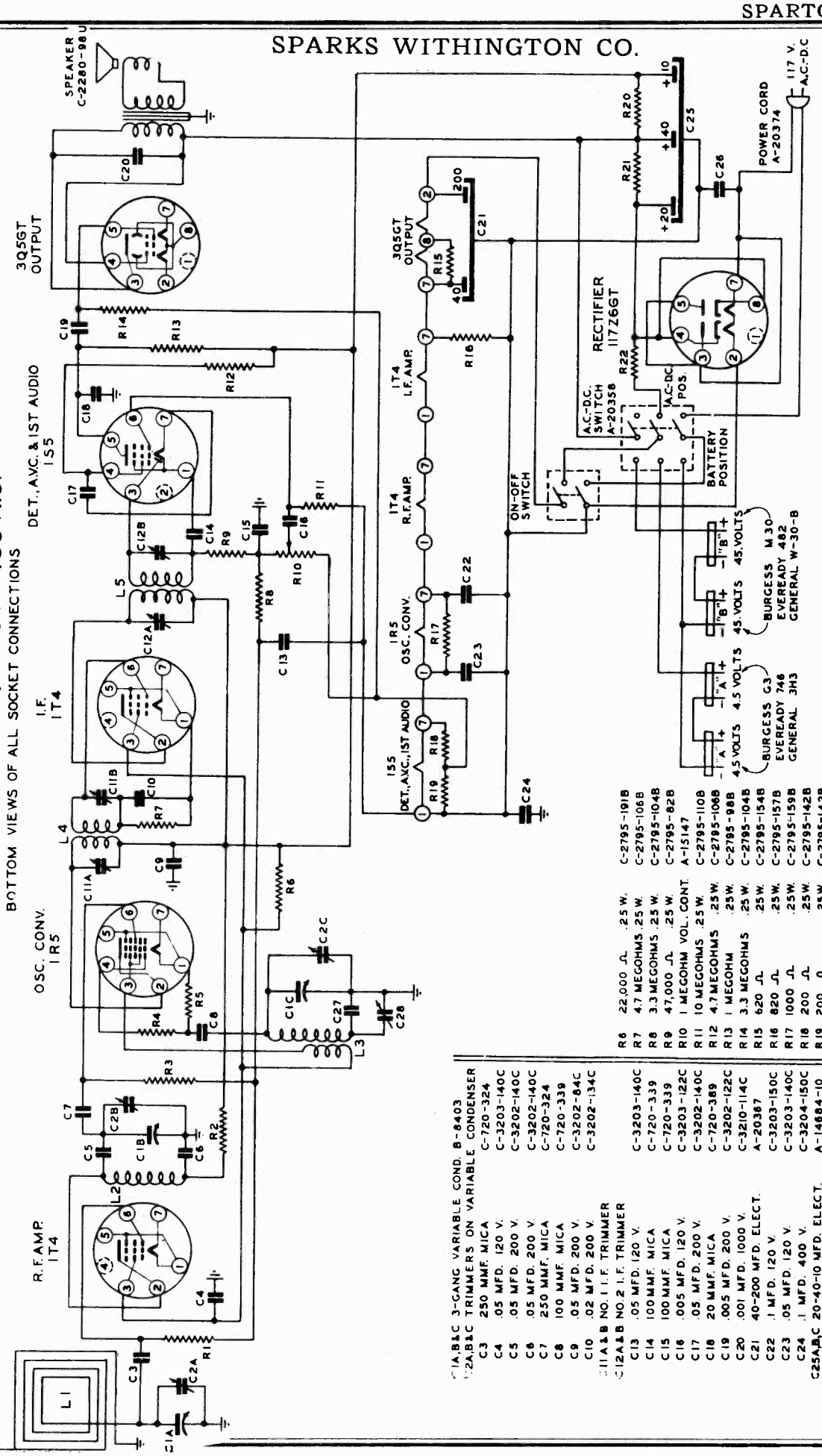
SPARKS WITHINGTON CO.

MODEL 6021

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1A,B&C	3-GANG VARIABLE COND. B-8403				
C2A,B&C	TRIMMERS ON VARIABLE CONDENSER	C-720-324			
C3	250 MMF. MICA	C-720-324	R6	22,000 Ω .25 W.	C-2795-191B
C4	.05 MFD. 120 V.	C-3203-140C	R7	4.7 MEGOHMS .25 W.	C-2795-106B
C5	.05 MFD. 200 V.	C-3202-140C	R8	3.3 MEGOHMS .25 W.	C-2795-104B
C6	.05 MFD. 200 V.	C-3202-140C	R9	47,000 Ω .25 W.	C-2795-62B
C7	250 MMF. MICA	C-720-324	R10	1 MEGOHM VOL. CONT.	A-15147
C8	100 MMF. MICA	C-720-339	R11	10 MEGOHMS .25 W.	C-2795-110B
C9	.05 MFD. 200 V.	C-3202-84C	R12	4.7 MEGOHMS .25 W.	C-2795-106B
C10	.02 MFD. 200 V.	C-3202-134C	R13	1 MEGOHM .25 W.	C-2795-98B
C11A&B	NO. 1 I.F. TRIMMER		R14	3.3 MEGOHMS .25 W.	C-2795-104B
C12A&B	NO. 2 I.F. TRIMMER		R15	620 Ω .25 W.	C-2795-154B
C13	.05 MFD. 120 V.	C-3203-140C	R16	820 Ω .25 W.	C-2795-157B
C14	100 MMF. MICA	C-720-339	R17	1000 Ω .25 W.	C-2795-159B
C15	100 MMF. MICA	C-720-339	R18	200 Ω .25 W.	C-2795-142B
C16	.005 MFD. 120 V.	C-3203-122C	R19	200 Ω .25 W.	C-2795-142B
C17	.05 MFD. 200 V.	C-3202-140C	R20	2,000 Ω .50 W.	C-2796-166C
C18	20 MMF. MICA	C-720-369	R21	3,900 Ω 2 W.	C-2798-173A
C19	.005 MFD. 200 V.	C-3202-122C	R22	2,834 Ω 10 W.	A-14263-3
C20	.001 MFD. 1000 V.	C-3210-114C			
C21	40-200 MFD. ELECT.	A-20367	L1	LOOP ANTENNA	A-20361
C22	.1 MFD. 120 V.	C-3203-150C	L2	B.C. DET. COIL	A-15232-10
C23	.05 MFD. 120 V.	C-3203-140C	L3	B.C. OSC. COIL	A-20379-1
C24	.1 MFD. 400 V.	C-3204-150C	L4	NO. 1 I.F. COIL	A-20379-1
C25A,B,C	20-40-10 MFD. ELECT.	A-14684-10	L5	NO. 2 I.F. COIL	A-20379-2
C26	.05 MFD. 400 V.	C-3204-140C			
C27	300 MMF. MICA	C-720-397			
C28	OSCILLATOR PADDER	A-14088-4			
R1	1 MEGOHM .25 W.	C-2795-98B			
R2	1,000 Ω .25 W.	C-2795-62B			
R3	20,000 Ω .25 W.	C-2795-190B			
R4	1,500 Ω .25 W.	C-2795-64B			
R5	100,000 Ω .25 W.	C-2795-86B			

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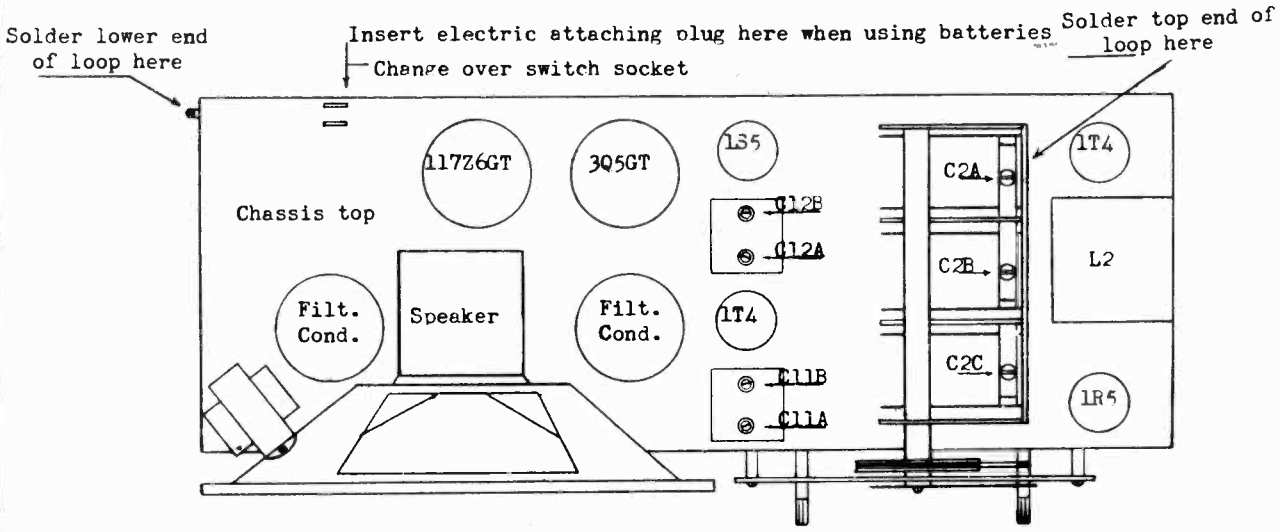
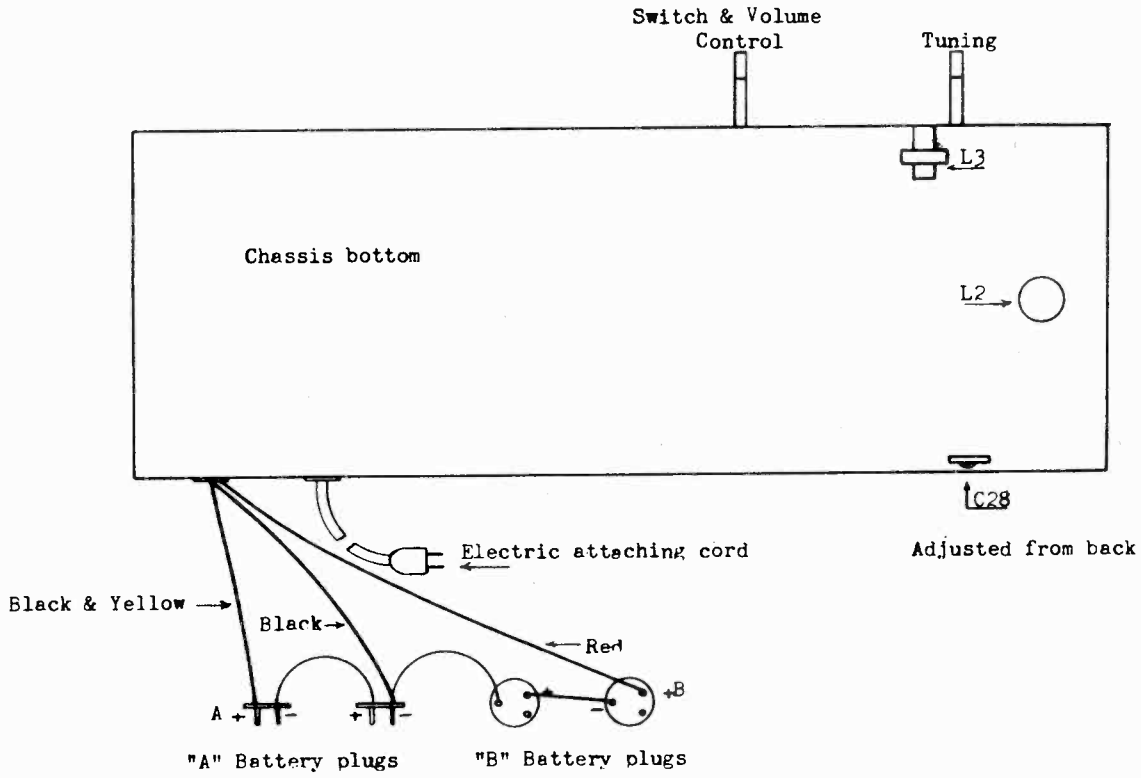
MODEL 6021

SPARKS WITHINGTON CO.

CHASSIS DIAGRAM





THIS IS A SIX TUBE SUPERHETERODYNE AC/DC OR BATTERY RECEIVER.

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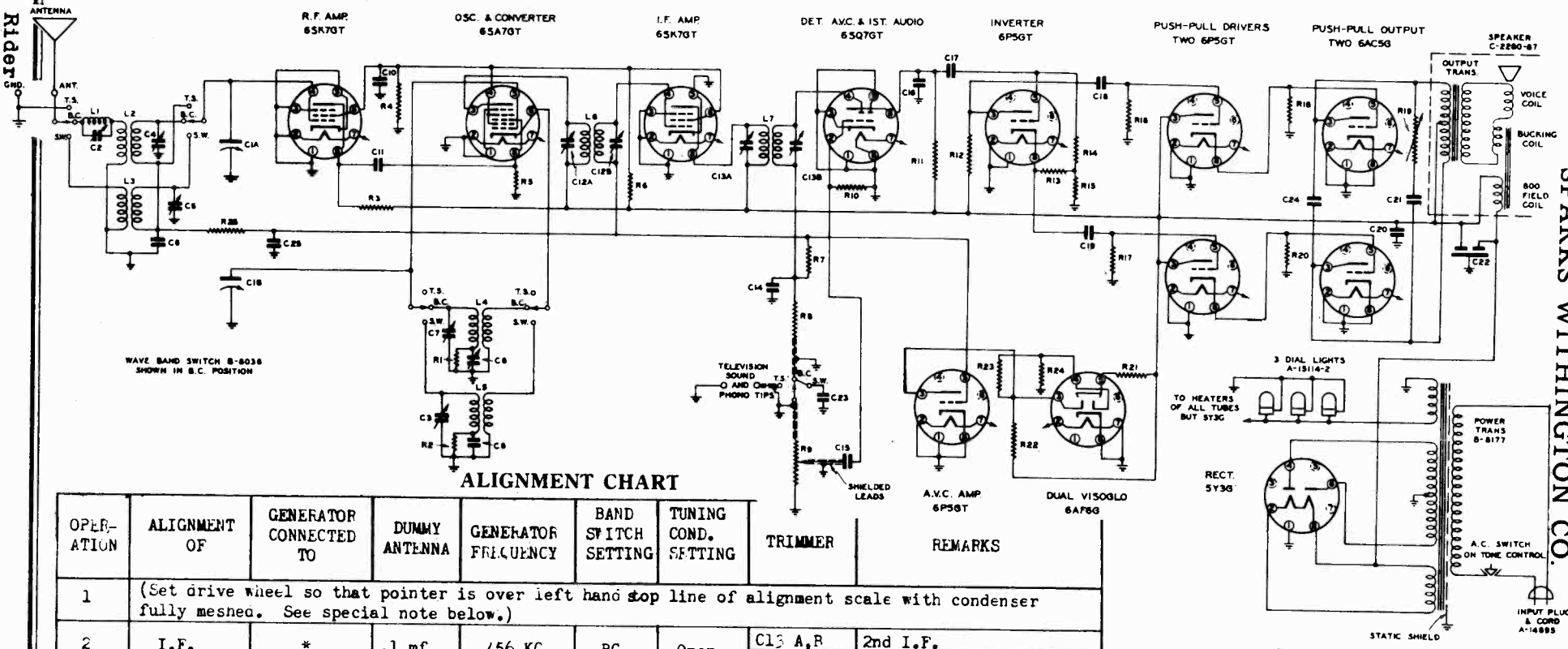
INTERMEDIATE FREQUENCY 456K.C

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set drive wheel so that pointer is over left hand stop line of alignment scale with condenser fully meshed. See special note below.)							
2	I.F.	*	.1 mf.	456 KC	BC	Open	C13 A,B	2nd I.F.
							C12 A,B	1st I.F.
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1400 KC	BC	1400 KC	C7 (Osc.)	***
							C4 (Ant.)	***
5				600 KC	BC	600 KC	C8 (Pad.)	***
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1400 KC)							
8	Shortwave Band	Ant.	**	18 MC	SW	18 MC	C3 (Osc.)	***
							C5 (Ant.)	***
9	(Check calibration and sensitivity at 6 MC and 18. MC)							
10	(Check operations 1 to 9 inclusive.)							

Notes: *Pin No. 8 of 6SA7GT Osc-Converter tube.
**100 ohm resistor and 200 mmf. condenser in series.
***Rock dial while adjusting for maximum output.
Special Note: For accurate alignment, the special scale (C-3282) reproduced in this bulletin must be used. The scale and full directions for using it will be found on page 4 and 5, Bulletin 27.

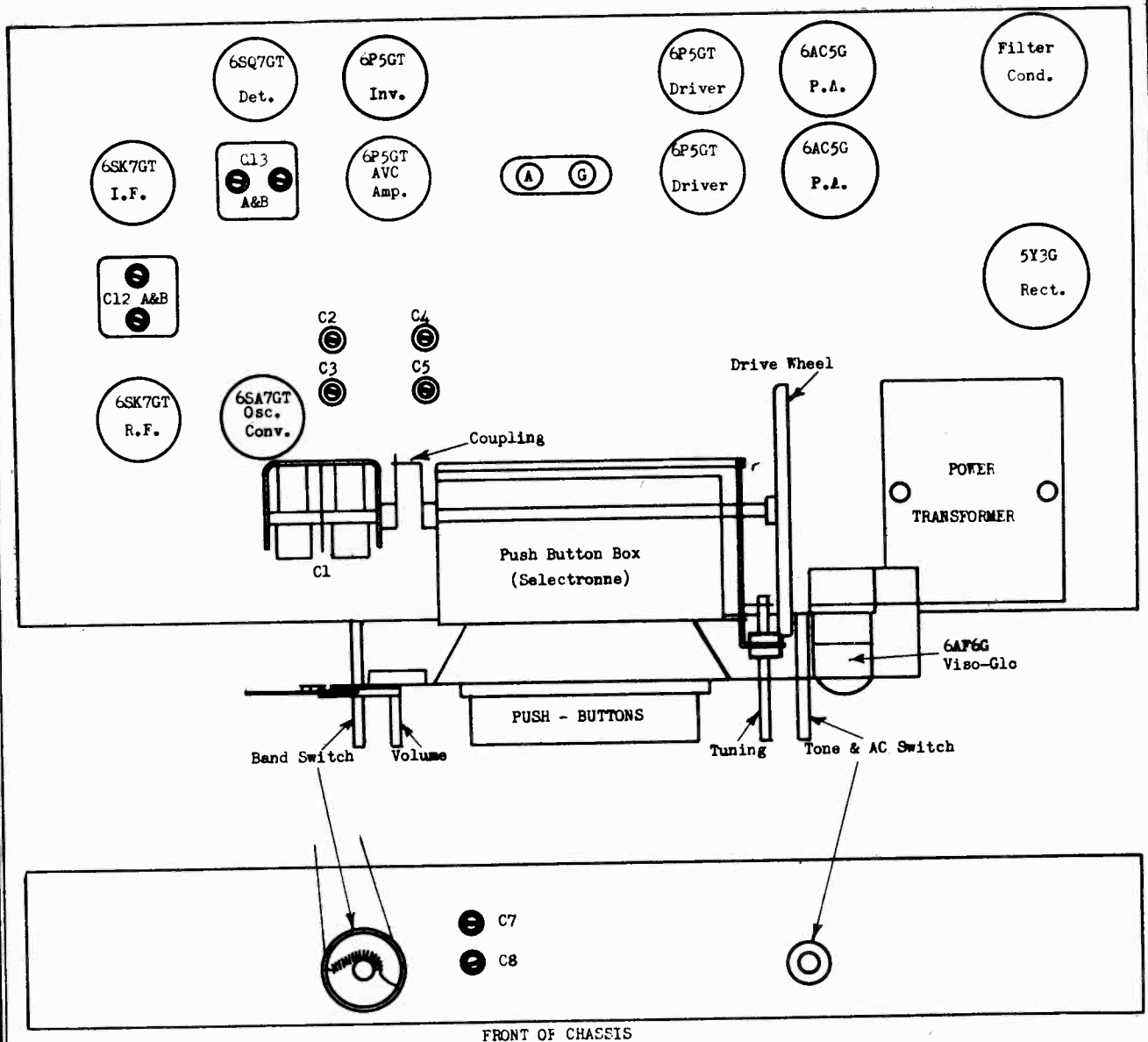
C1A&B	VARIABLE CONDENSER	B-7229	
C2	I.F. REJECT. TRIMMER	A-14200-2	
C3	S.W. OSC. TRIMMER		
C4	B.C. ANT. TRIMMER	A-14200	
C5	S.W. ANT. TRIMMER		
C6	.03 MFD. 200V.	C-3202-84C	
C7	B.C. OSC. TRIMMER	B-7199-EY	
C8	B.C. OSC. PADDER		
C9	2700 MMF. MICA	A-15451	
C10	.05 MFD. 400V.	C-3204-28C	
C11	40 MMF. MICA	C-720-381	
C12A&B	NO.1 I.F. TRIMMER	B-7200-GN	
C13A&B	NO.2 I.F. TRIMMER	B-7200-GN	
C14	250 MMF. MICA	C-720-324	
C15	.02 MFD. 400V.	C-3204-22C	
C16	250 MMF. MICA	C-720-324	
C17	.05 MFD. 400V.	C-3204-28C	
C18	.05 MFD. 400V.	C-3204-28C	
C19	.05 MFD. 400V.	C-3204-28C	
C20	.05 MFD. 400V.	C-3204-28C	
C21	.03 MFD. 600V.	C-3208-24C	
C22	16-16 MFD. 450V. ELECT.	A-15423	
C23	100 MMF. MICA	C-720-339	
C24	.008 MFD. 600V.	C-3208-72C	
C25	.05 MFD. 200V.	C-3202-84C	

R1	56,000 Ω	.25W.	C-2795-83B
R2	39,000 Ω	.25W.	C-2795-81B
R3	3300 Ω	.25W.	C-2795-68B
R4	27,000 Ω	.5W.	C-2796-79C
R5	2.2 MEGOHM	.25W.	C-2795-102B
R6	33,000 Ω	2W.	C-2798-80A
R7	1 MEGOHM	.25W.	C-2795-98B
R8	56,000 Ω	.25W.	C-2795-83B
R9	500,000 Ω VOL. CONT.		A-15130-2
R10	4.7 MEGOHM	.25W.	C-2795-106B
R11	270,000 Ω	.25W.	C-2795-91B
R12	39,000 Ω	.5W.	C-2796-107C
R13	2700 Ω	.25W.	C-2795-69B
R14	1 MEGOHM	.25W.	C-2795-98B
R15	33,000 Ω	.5W.	C-2796-105C
R16	270,000 Ω	.25W.	C-2795-91B
R17	270,000 Ω	.25W.	C-2795-91B
R18	22,000 Ω	.25W.	C-2795-76B
R19	TONE CONT. & SW.		A-15128-1U
R20	22,000 Ω	.25W.	C-2795-76B
R21	56,000 Ω	.25W.	C-2795-83B
R22	180,000 Ω	.25W.	C-2795-89B
R23	1 MEGOHM	.25W.	C-2795-98B
R24	1 MEGOHM	.25W.	C-2795-98B
R25	270,000 Ω	.25W.	C-2795-91B

L1	I.F. REJECTOR COIL	A-14677-2
L2	B.C. ANT. COIL	A-14679-3
L3	S.W. ANT. COIL	A-14682-7
L4	B.C. OSC. COIL	A-15377
L5	S.W. OSC. COIL	A-15233-7
L6	NO. 1 I.F. COIL	A-12084-39
L7	NO. 2 I.F. COIL	A-12084-17

MODEL 1271

SPARKS WITHINGTON CO.



FRONT OF CHASSIS

VOLTAGE CHART

Line Voltage: 117 Volts

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

Tube	Function		Voltage of Socket Prongs to Gnd. (See Nos. on Schematic Diagram)								
			No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Gric Cap
6SK7GT	R-F Amplifier		0	0	0	-.1a	0	40	*6.3	235	-
6SA7GT	Osc - Converter		0	0	250	40	-.3a	0	*6.3	0	-
6SK7GT	I-F Amplifier		0	0	0	-.1a	0	40	*6.3	250	-
6SQ7GT	Det - AVC - Audio Amp.		0	-.1a	0	-.04a	0	43	*6.3	0	-
6P5GT	Phase Inverter		0	0	160	52	b	265	*6.3	62	-
6P5GT	Driver	Push-pull	0	0	255	—	0	150	*6.3	13.5	-
6P5GT	Driver		0	0	255	—	0	---	*6.3	13.5	-
6AC5G	Power Amp.	Push-pull	0	0	245	—	13.5	---	*6.3	0	-
6AC5G	Power Amp.		0	0	245	—	13.5	---	*6.3	0	-
6P5GT	AVC Amplifier		0	0	22	--	-.14a	---	*6.3	0	-
6AF6G	Dual Viso-Glo		0	*6.3	21.5	b	150	---	0	0	-
5Y3G	Rectifier		-	*385	0	*330	—	*330	*240	*380	-

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 1000 ohms per volt voltmeter.
*-A.C. Scale.
a-1- volt scale.
b-Cannot be measured with 1000 ohms/volt voltmeter.

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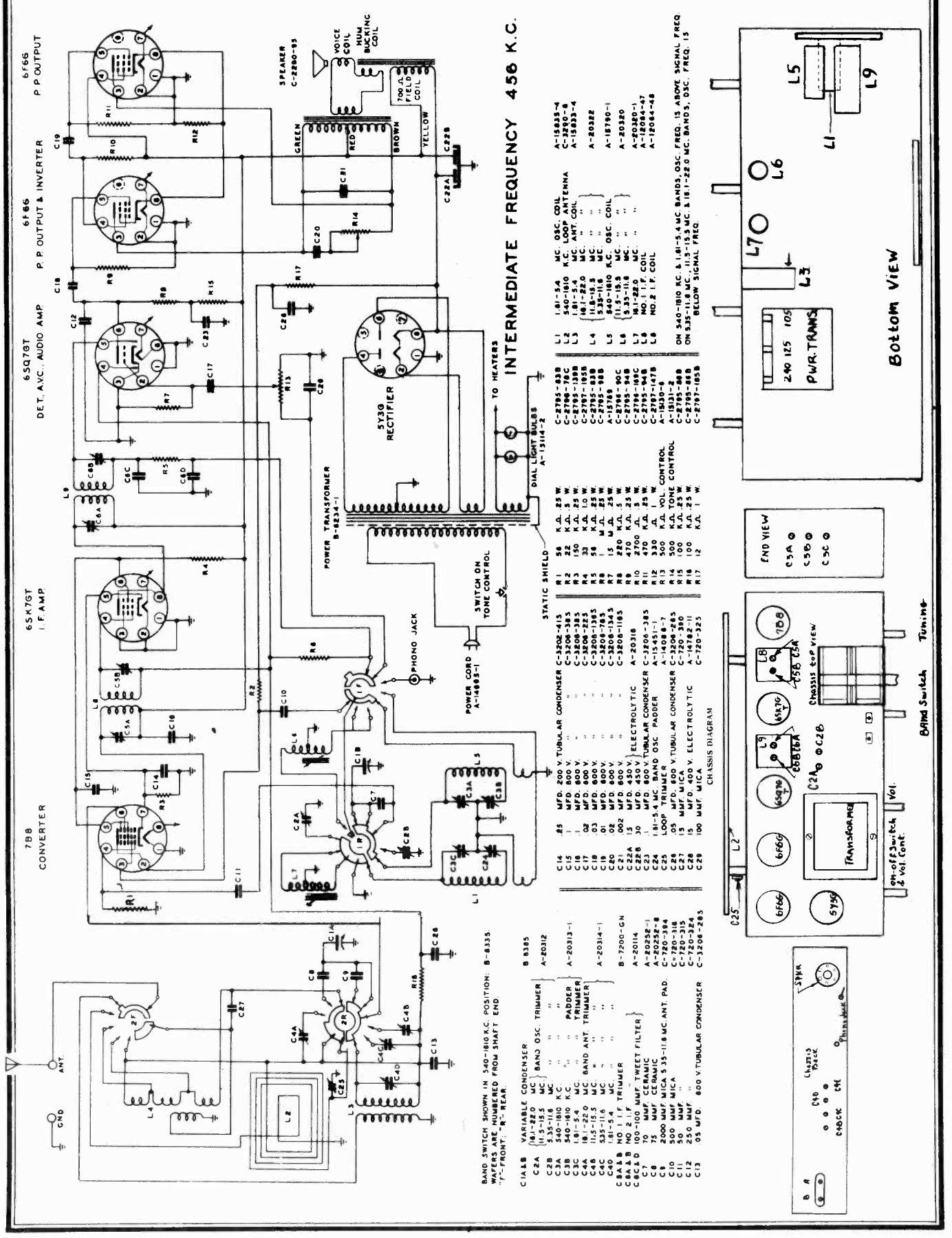
MODEL 6521

SPARKS WITHINGTON CO.



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MODEL 6521

SPARKS WITHINGTON CO.

VOLTAGE CHART

Line voltage: 117 Volts A.C. Position of Volume Control: Full with dial tuned to quiet channel.
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7B8	Oscillator Converter	0	245	60	-1.6	82	-.2	2	6.2*
6SK7GT	I-F Amplifier	0	0	0	-.2	2.1	82	6.2*	245
6SQ7GT	2nd Det - AVC - 1st Audio	0	-.3	0	-.2	-.2	100	6.2*	0
6F6G	Power Amplifier	0	0	235	232	0	290	6.2*	18
6F6G	Power Amplifier	0	0	237	247	0	0	6.2*	18
5Y3G	Rectifier	0	295	0	300*	0	300*	0	295

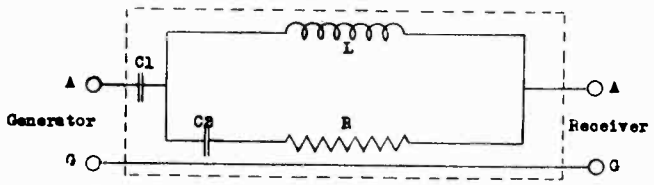
Notes: Voltages readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 20,000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter.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

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left hand stop line with variable condenser gang fully meshed.							
2	I.F.	*	.1 mf Con.	456 KC	BC	Open	C6 A&B	Peak accurately
							C5 A&B	Peak accurately
3	Broad cast Band	Ant.	**	1600 KC	BC	1600 KC	C3A Osc.Tri.	Peak accurately
							C25 Loop Tr.	Peak accurately
4				600 KC	BC	600 KC	C3B Osc.Pad.	***
5	Repeat operation 3.							
6	Check calibration and sensitivity at 600 KC, 1000 KC and 1600 KC.							
7	Police #2 Band	Ant.	**	5 MC	Police #2 Band	5 MC	C3C Osc.Tri.	***
							C4D Ant.Tri.	***
							C24 Osc.Pad.	See operation #9
8	Check calibration and sensitivity at 5 MC.							
9	Oscillator padder C24 is precision set at the factory and should not be readjusted in the field.							
10	SW #4 Band	Ant.	**	15 MC	SW #4 Band	15 MC	C2A Osc.Tri.	***
							C4B Ant.Tri.	***
11				11.6 MC	SW #4 Band	11.6 MC	Adjust L6 Slug	
12	Check calibration and sensitivity at 12.5 MC if not tracking properly, readjust C2A & C4B.							
13	Repeat operation 10 and 11.							
14	SW #3 Band	Ant.	**	11.4 MC	SW #3 Band	11.4 MC	C2B Osc.Tri.	***
							C4 Ant. Tri.	***
15	Check calibration and sensitivity at 6 MC and 9 MC. If this band fails to track SW band #4 has not been properly adjusted.							
16	SW #5 Band	Ant.	**	21 MC	SW #5 Band	21 MC	Adjust L7 Slug.	
							C4A Ant. Tri.	***
17	Check calibration and sensitivity at 18 MC. If this band fails to track SW Band #4 has not been properly adjusted.							

Notes: *Connect generator to #6 pin on 7B8 converter tube.
**Use Dummy Antenna as described on page 1 of this bulletin.
***Rock dial while adjusting for maximum output.

DUMMY ANTENNA



C1 - 200 mmf. Condenser
C2 - 400 mmf. Condenser
R - 100 ohms
L - Choke Coil
---- Case Shield

Note: When using this Dummy Antenna the generator output impedance should be 100 ohms or lower.

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

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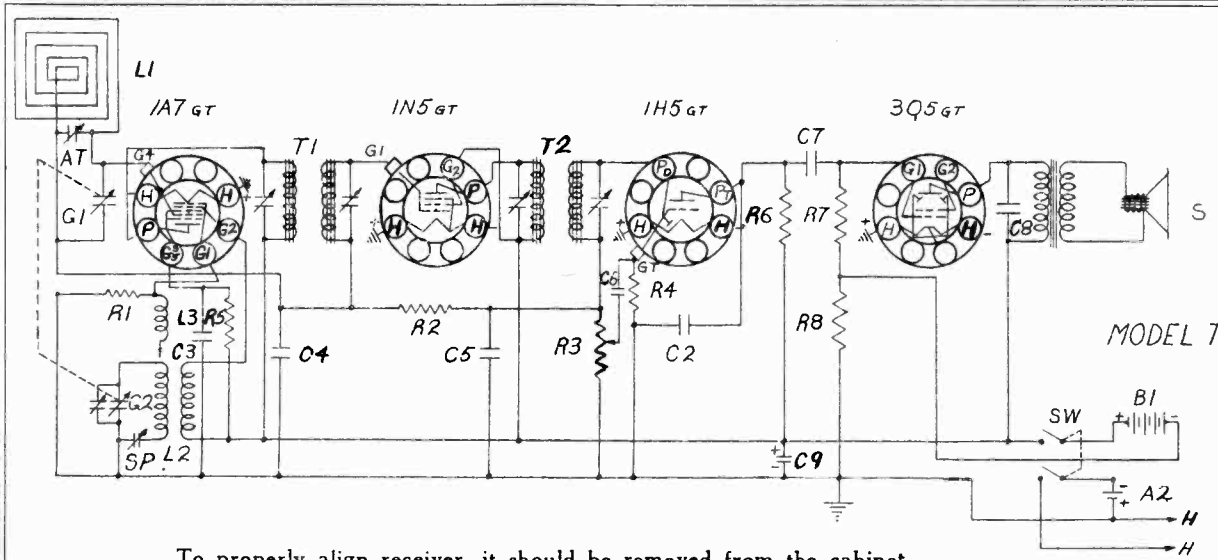


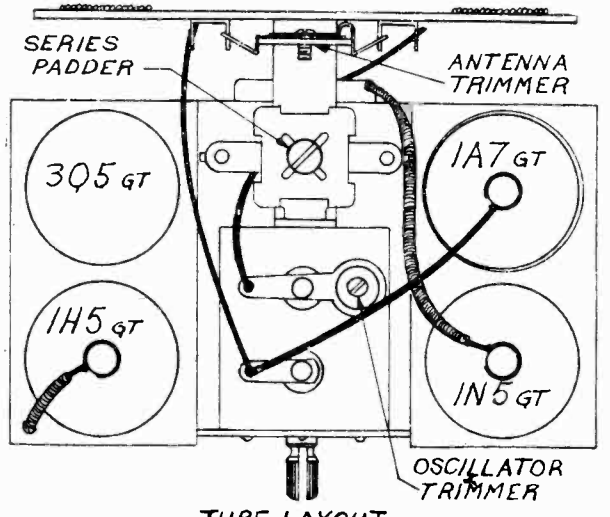
Part No.	Schematic Location	Description
3-304	R1	100,000 Ohm ¼ W. 20%
3-301	R2	4 Megohm ¼ W. 20%
5-300	R3	1 Megohm Vol. Control
3-300	R4	6 Megohm ¼ W. 20%
3-305	R5	30,000 Ohm ¼ W. 20%
3-303	R6	1 Megohm ¼ W. 20%
3-302	R7	2 Megohm ¼ W. 20%
3-306	R8	300 Ohm ¼ W. 20%
10-300	G1 } G2 }	2 Section Gang Variable Condenser
6-303	C2	.0005 MFD. 120 V. 20%
6-300	C3	.01 MFD. 120 V. 20%
6-301	C4	.05 MFD. 120 V. 20%
8- 10	C5	.0001 MFD. Mica 20%
6-300	C6	.01 MFD. 120 V. 20%
6-300	C7	.01 MFD. 120 V. 20%
6-302	C8	.001 MFD. 120 V. 20%
7-300	C9	10 MFD. 75 V. Electrolytic
9- 47	AT	¼ Plate Trimmer 0-8 MFD.
15-300	L1	Loop
15-301	L2	Oscillator Coil
	L3	Grid Coupling Coil
16-300	T1	IFT Iron Input
16-301	T2	IFT Iron Output
43-300	S	Speaker P. M.
9-300	SP	Series Pad. 287 MMFD. 3%
	SW	Off & On Switch
40-300	1A7GT	Oscillator-Mixer
	1N5GT	IF Amplifier
	1H5GT	Detector-Audio
	1Q5GT	Power
42-301	A2	"A" Battery
42-300	B1	"B" Battery

To properly align receiver, it should be removed from the cabinet.

A signal generator is required, having the following frequencies: 456KC, 1400KC, 1720KC. An output meter of some kind is also necessary.

First Step: Connect generator lead to grid cap of 1A7GT tube through a .1MFD condenser. Generator ground lead should be connected to any available spot on the metal chassis of the receiver. Turn tuning condenser so that its plates are completely unmeshed. This puts circuit at 1720KC. Adjust manual volume control to maximum clockwise rotation. This will prevent the automatic volume control from working and giving false readings. All alignment adjustments should be made with manual volume control at maximum. Now adjust the signal generator to 456KC. Align the intermediate frequency amplifier (IF) to this frequency by adjusting the screws in the small metal cans underneath the chassis. There are four screws in all, two for the input IF which is at the rear of the chassis and two for the output IF which is located closer to the front of the chassis. Adjust each screw until a maximum reading is obtained on an output meter which has been connected across the speaker leads. After the IF coils have been aligned, with tuning coils completely unmeshed, turn signal generator to 1720KC and adjust oscillator trimmer condenser which is on top of the tuning condenser (see figure 2 layout) until a maximum reading is noted on the output device. This is the proper oscillator setting for 1720KC. Remove signal generator leads from receiver and connect both to a transmitting loop antenna. This can be made with two turns of wire about 6 inches in diameter, and placed about one foot from the loop antenna of the receiver. It will be necessary to increase the output of the signal generator. Next adjust the generator to 1400KC. Turn tuning condenser so that the plates mesh and the 1400KC signal is tuned in. Adjust trimmer condenser which is located on loop antenna of receiver for maximum output. Unless set has been damaged, no further adjustments are necessary, as the coils and condensers in this receiver have been specially handled at the factory so as to insure proper alignment at the lower frequency end of the dial. As a final step of alignment after the set has been reinstalled in the cabinet, tune in a weak station between 1400KC and 1500KC and readjust loop antenna trimmer for maximum signal strength. This should be done only after receiver has been mounted in place along with the batteries.

IF PEAK 456 KC



TUBE LAYOUT

FIGURE-2

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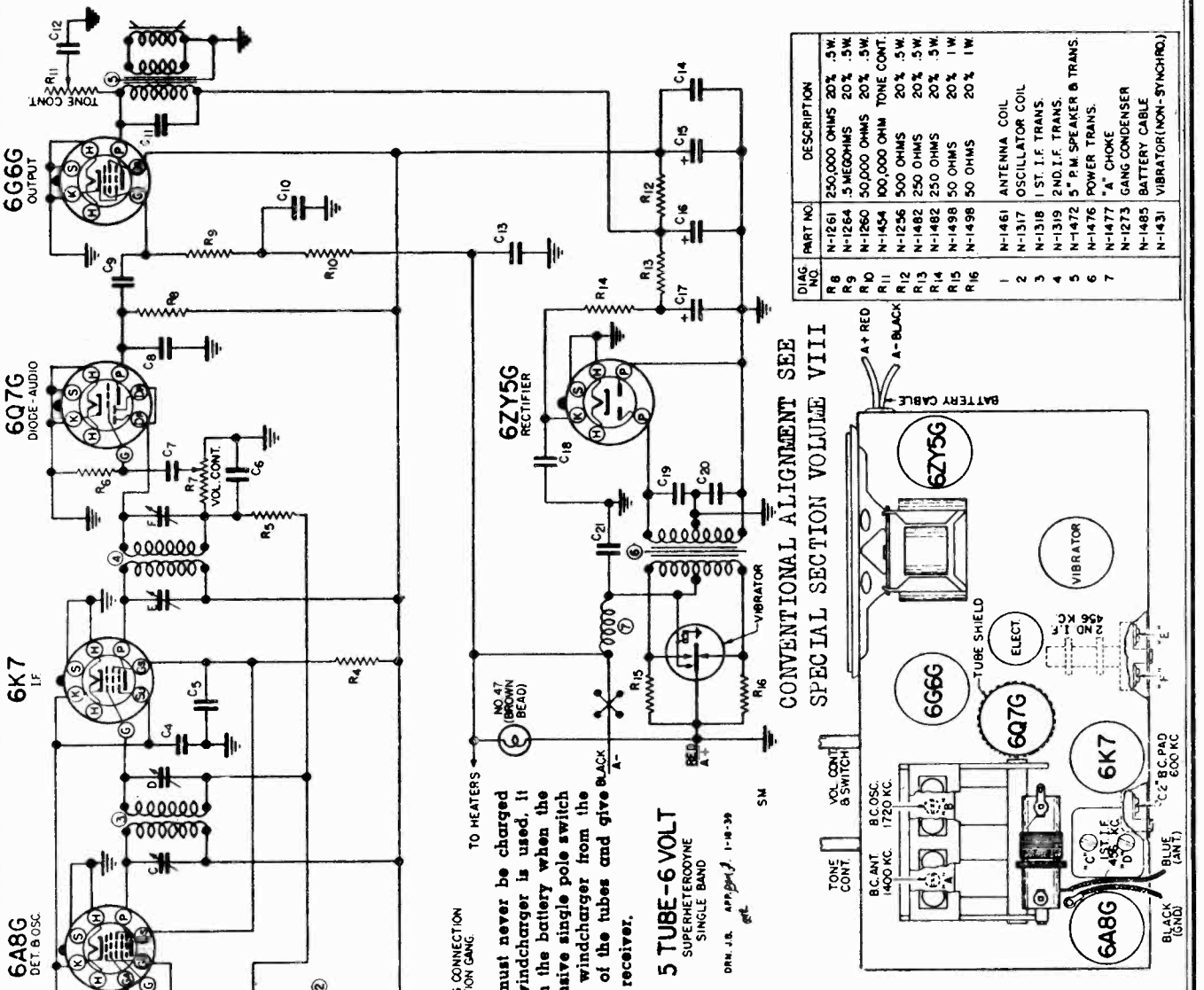
MODEL 204
Chassis SM
MODELS W102,W216,W300,W302,W312

SPIEGEL, INC.



DIAG NO	PART NO	DESCRIPTION
C 1	N-1345	.05 MFD. 200V.
C 2	N-1323	300-600 MMFD. PADDER
C 3		CAPACITY INCLUDED IN OSCILLATOR COIL
C 4	N-1479	.25 MFD 200V.
C 5	N-1351	.1 MFD. 200V.
C 6	N-1374	100 MMFD. 20%
C 7	N-1347	.006 MFD. 600V.
C 8	N-1343	250 MMFD. 20%
C 9	N-1344	.01 MFD. 400V.
C 10	N-1345	.05 MFD. 200V.
C 11	N-1347	.006 MFD. 600V.
C 12	N-1376	.02 MFD. 400V.
C 13	N-1471	.5 MFD. 50 V.
C 14	N-1351	.1 MFD. 200V.
C 15	N-1468	20 MFD. 150V. ELECTRO.
C 16		20 MFD. 150V. ELECTRO.
C 17		10 MFD. 250V.
C 18	N-1478	.01 MFD. 600V.
C 19	N-1480	.01 MFD. (OIL) 1000V.
C 20	N-1480	.01 MFD. (OIL) 1000V.
C 21	N-1471	.5 MFD. 50 V.
R 1	N-1259	15,000 OHMS 20% .5W.
R 2	N-1473	200 OHMS 10% .5W.
R 3	N-1260	50,000 OHMS 20% .5W.
R 4	N-1474	25,000 OHMS 20% .5W.
R 5	N-1378	2 MEGOHMS 20% .5W.
R 6	N-1263	10 MEGOHMS 20% .5W.
R 7	N-1320	1 MEGOHM VOL. CONT. SET WITH CUT SECTION GANG
C 2	N-1323	PADDER, ELIMINATED
	N-1338	GANG CONDENSER
2	N-1337	OSCILLATOR COIL

DIAG NO	PART NO	DESCRIPTION
R 8	N-1261	250,000 OHMS 20% .5W.
R 9	N-1264	.5 MEGOHMS 20% .5W.
R 10	N-1260	50,000 OHMS 20% .5W.
R 11	N-1454	100,000 OHM TONE CONT.
R 12	N-1256	500 OHMS 20% .5W.
R 13	N-1482	250 OHMS 20% .5W.
R 14	N-1482	250 OHMS 20% .5W.
R 15	N-1498	50 OHMS 20% 1W.
R 16	N-1498	50 OHMS 20% 1W.
1	N-1461	ANTENNA COIL
2	N-1317	OSCILLATOR COIL
3	N-1318	1 ST. I.F. TRANS.
4	N-1319	2 ND. I.F. TRANS.
5	N-1472	5" P.M. SPEAKER & TRANS.
6	N-1476	POWER TRANS.
7	N-1477	"A" CHOKE
	N-1273	GANG CONDENSER
	N-1485	BATTERY CABLE
	N-1431	VIBRATOR (NON-SYNCHRO.)

AUTOMATIC TUNING

For Chassis

ADJUSTMENT. All adjustments are simply made from the top of the cabinet without the use of tools since the push-button knobs serve this purpose.

To make adjustments, turn each knob to the left about 1 complete turn. The knob is knurled to provide a positive grip for this purpose.

With the knob turned free, tune to any desired station with the manual tuning control. Depress the push button knob as far as possible and turn to the right to tighten adjustment. Meanwhile, hold the manual tuning control in position to the station tuned.

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 stations, the tuner is ready for operation.

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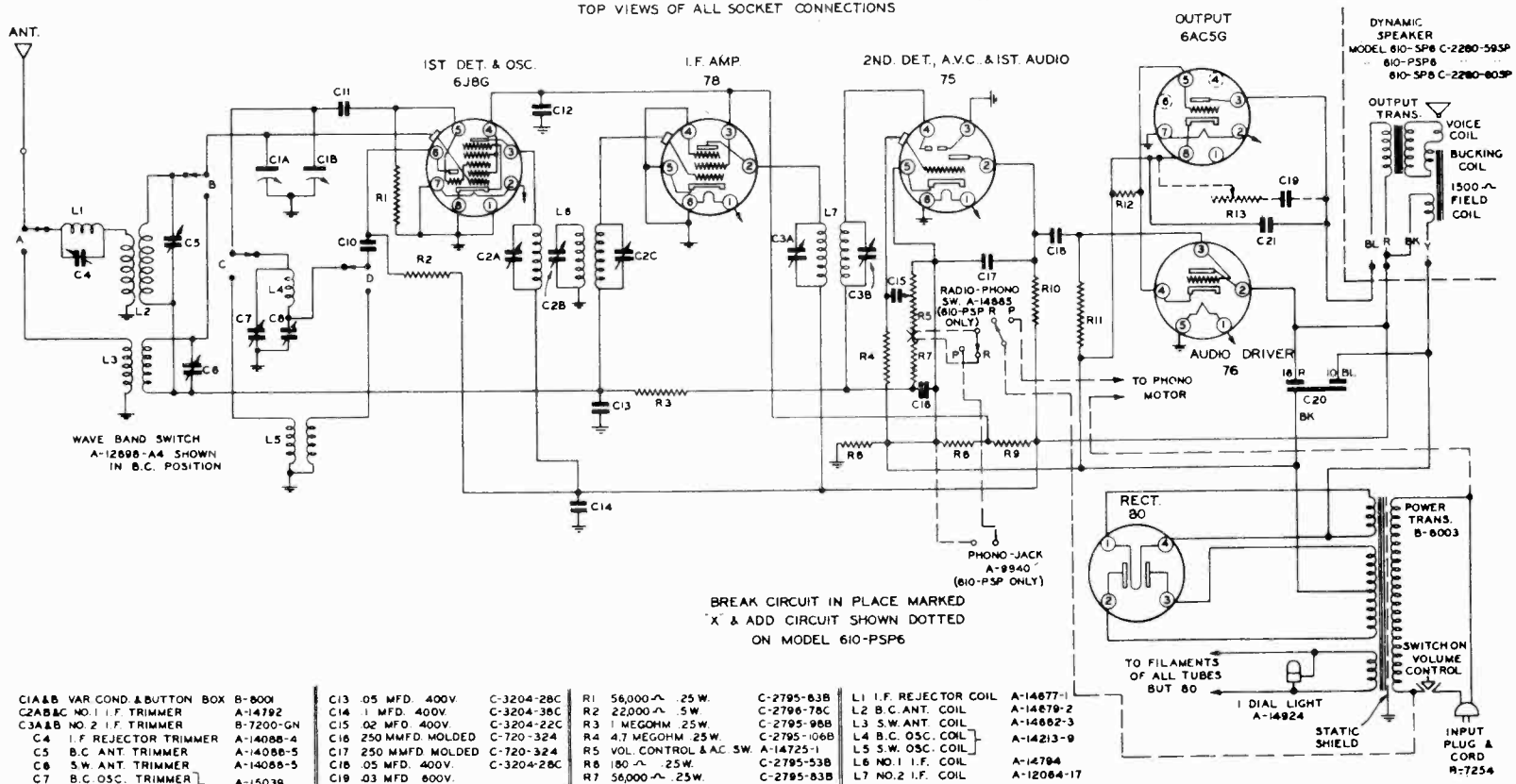
SCHEMATIC DIAGRAM
AIR CASTLE SUPERHETERODYNE MODEL 610 SERIES
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VAR. COND. & BUTTON BOX	B-8001
C2A&B&C	NO. 1 I.F. TRIMMER	A-14792
C3A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	S.W. ANT. TRIMMER	A-14088-5
C7 C8	B.C. OSC. TRIMMER & PADDER	A-15039
C10	.001 MFD. 400V.	C-3204-2C
C11	50 MMFD. MOLDED	C-720-320
C12	.1 MFD. 400V.	C-3204-38C
C13	.05 MFD. 400V.	C-3204-28C
C14	1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 400V.	C-3204-22C
C16	250 MMFD. MOLDED	C-720-324
C17	250 MMFD. MOLDED	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.03 MFD. 600V. (610-PSP ONLY)	C-3206-60C
C20	18-10 MFD. ELECT.	A-14799-1
C21	.004 MFD. 600V. (610-SP ONLY)	C-3206-66C
R1	56,000 Ω .25 W.	C-2795-63B
R2	22,000 Ω .5 W.	C-2796-78C
R3	1 MEGOHM .25 W.	C-2795-98B
R4	4.7 MEGOHM .25 W.	C-2795-106B
R5	VOL. CONTROL & A.C. SW.	A-14725-1
R6	180 Ω .25 W.	C-2795-53B
R7	56,000 Ω .25 W.	C-2795-83B
R8	33,000 Ω 1 W.	C-2797-80B
R9	15,000 Ω 2 W.	C-2798-76A
R10	270,000 Ω .25 W.	C-2795-91B
R11	1 MEGOHM .25 W.	C-2795-98B
R12	27,000 Ω .25 W.	C-2795-79B
R13	TONE CONTROL (610-PSP ONL.)	A-12987-A1
L1	I.F. REJECTOR COIL	A-14877-1
L2	B.C. ANT. COIL	A-14879-2
L3	S.W. ANT. COIL	A-14882-3
L4	B.C. OSC. COIL	A-14213-9
L5	S.W. OSC. COIL	
L6	NO. 1 I.F. COIL	A-14794
L7	NO. 2 I.F. COIL	A-12084-17

MODEL W116 IS THE SAME AS MODEL W104 WITH THE ADDITION OF A 6U5 CONNECTED AS SHOWN ON PAGE 13-57

The tube equipment is:

1—Type 6J8G —Converter Heptode
1—Type 78 —Intermediate-Frequency Pentode
1—Type 75 —Duplex-Diode-Triode Second Detector—A. V. C. and Audio Amplifier
1—Type 76 —Driver
1—Type 6AC5G—Power Amplifier Triode
1—Type 80 —Full-Wave Vacuum Rectifier

2. **POWER SUPPLY:** On models designed for operation on 60-cycle current the receptacle plug may be attached to any outlet from 110 to 120 volts, 50 to 60 cycle alternating current (a. c.) power supply system.

This model is available in either 25 cycle or 60 cycle alternating current (a. c.).

This model receiving set, designed for operation on 25 cycle current, will operate satisfactorily on 60 cycle current; however, **a radio set designed for operation on 60 cycle current WILL NOT operate on 25 cycle current.**

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MODELS W104,W108,W114,W120,
W150,W164,Z7056,Z7058,W116

SPIEGEL, INC.

VOLTAGE CHART

Line Voltage: 115 volts — Position of Volume Control: Full with Antenna Disconnected

Tube	Function	Voltage of Socket Prongs to Gnd.(See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6J8G	Converter	0	6.1	250	94	*-6	12	0	0	0
78	I.F. Amp.	6.1	250	60	0	0	0	-	-	0
75	2nd Det. AVC-Audio	6.1	57	0	-.5	-1.5	0	-	-	-.7
76	Driver	6.1	250	0	10	0	-	-	-	-
6AC5G	P.A.	0	0	225	0	10	0	6.1	-	-
80	Rectifier	325	270	270	325	-	-	-	-	-

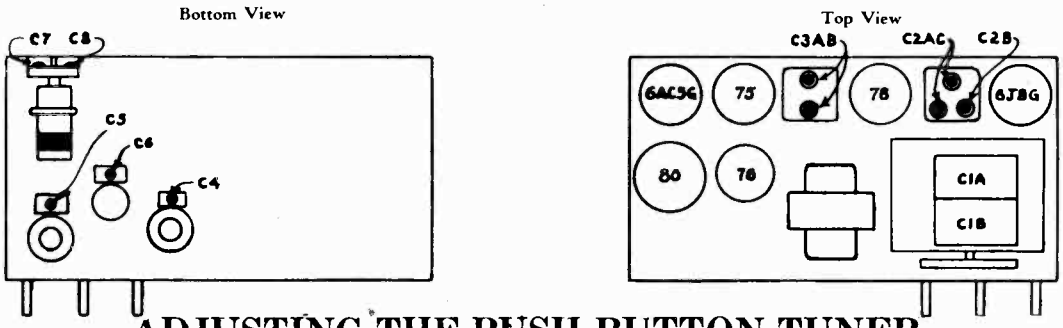
Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages. *150 V. scale.

ALIGNMENT

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark on scale when condenser plates are flush)							
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C5A,B;C2A,B,C	Adjust to approx. peak
3							C2B(Transfer)	Detune by tightening ½ t.
4							C5A,B;C2A,C	Peak accurately
5							C2B	Peak accurately*
6	Rejector	Ant.	200 mmf.	456 KC	BC	Open	C4	Adjust to minimum
7	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C7 BC osc.trim	Peak accurately
8							C5 BC ant.trim	Peak accurately
9				600 KC	BC	600 KC	C8 BC osc.pad	Peak accurately
10	(Repeat operations 7 and 8)							
11	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
12	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6 SW ant.trim	**
13	(Check calibration and sensitivity at 6.0 MC and 18 MC)							
14	(Check operations 1 to 13 inclusive)							

*100 ohm non-inductive resistor and 200 mmf. condenser in series.
**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurately.

CHASSIS DIAGRAM



ADJUSTING THE PUSH-BUTTON TUNER

1 Select four favorite nearby broadcast stations and detach the corresponding call letter tabs from the station call letter tab sheets.

2. Insert the station call letter tabs. 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 extreme left. This, however, is not vital, since the tuner will operate with any arrangement of the tabs.

3. **TO ADJUST BUTTONS,** loosen selected button by turning one-half turn to the left (counter-clockwise). Push this loosened button in as far as it will go, and while in this position, tune in manually the station desired or indicated by tab under button.

Then, with the button still pushed in as far as it will go, tighten by turning button to the right (clockwise) until it can be tightened no more.

Be sure the station is tuned in accurately when pushed in button is tightened.

4. Repeat the procedure in paragraph 3 for each of the remaining three buttons and stations.

5. Be sure the buttons have been tightened firmly.

6. Check all buttons by pushing them in, one at a time, to determine whether desired stations are tuned in properly.

6. Any of the four stations to which the push button tuner has been adjusted may now be instantly received simply by pushing the button for the desired station.

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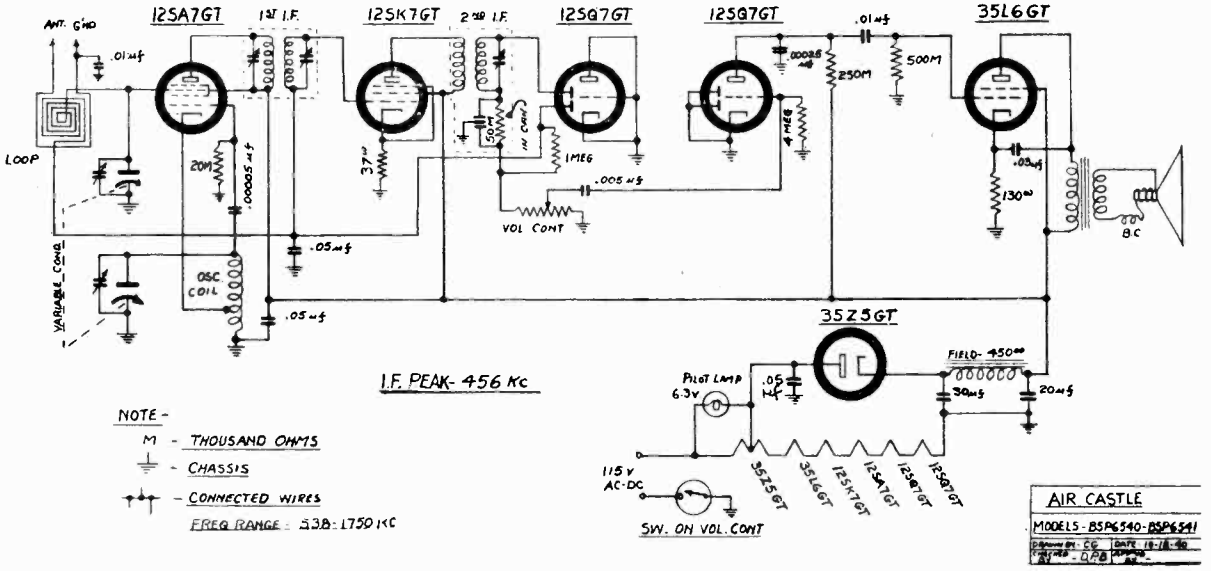
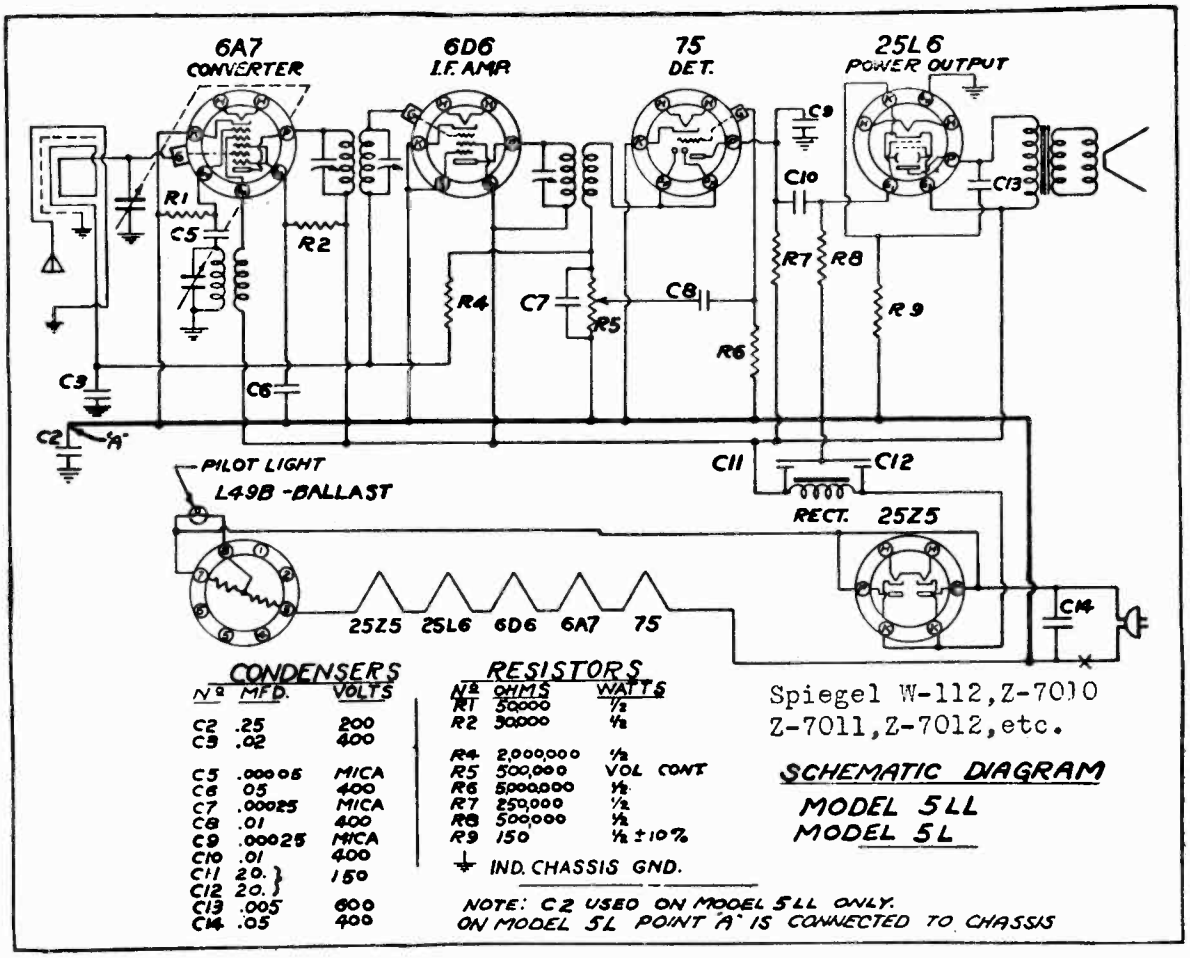
SPIEGEL, INC.

MODELS W112, Z7010, Z7011, Z7012, Chassis 5L
MODELS 540, 541

Models 540-541





CONDENSERS		
Nº	MFD.	VOLTS
C2	.25	200
C3	.02	400
C5	.00005	MICA
C6	.05	400
C7	.00025	MICA
C8	.01	400
C9	.00025	MICA
C10	.01	400
C11	20.	150
C12	20.	
C13	.005	600
C14	.05	400

RESISTORS		
Nº	OHMS	WATTS
R1	50,000	½
R2	30,000	½
R4	2,000,000	½
R5	500,000	VOL CONT
R6	5,000,000	½
R7	250,000	½
R8	500,000	½
R9	150	½ ±10%

⏚ IND. CHASSIS GND.

NOTE: C2 USED ON MODEL 5LL ONLY.
ON MODEL 5L POINT A IS CONNECTED TO CHASSIS

Spiegel W-112, Z-7010
Z-7011, Z-7012, etc.

SCHEMATIC DIAGRAM
MODEL 5LL
MODEL 5L

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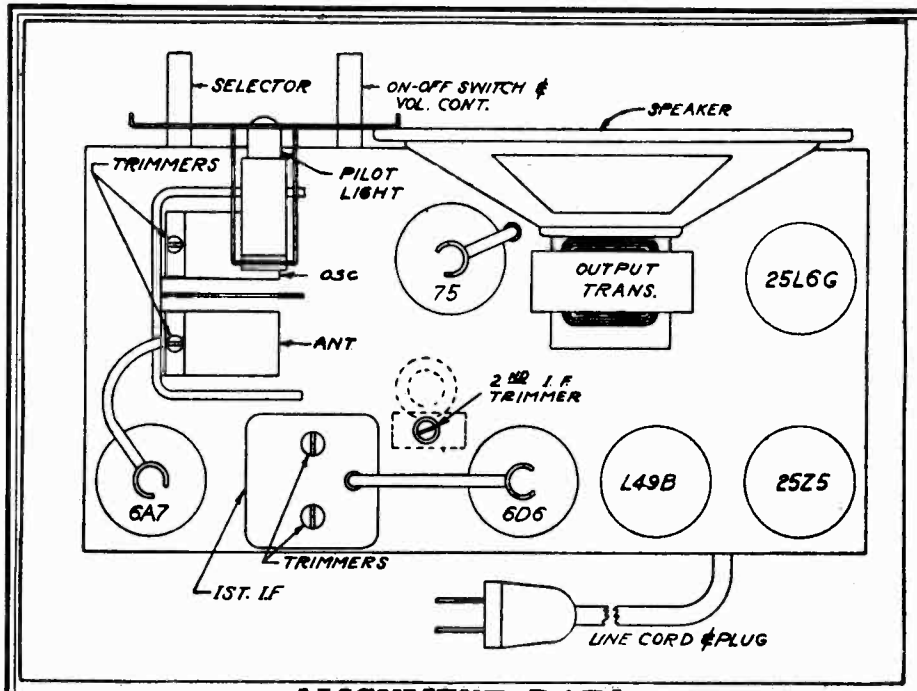

ALIGNMENT DATA

GENERAL DATA The alignment of this receiver requires the use of a signal generator that will cover the frequencies of 455, 600, 1400, and 1730, 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 signal generator output as low as possible, to prevent the AVC from operating and giving false readings.

I.F. ALIGNMENT Adjust the signal generator to 455 KC and connect the output to the grid of the first detector tube (6A7) through a .05 or .1 mfd. condenser. Connect ground of signal generator to chassis ground through a .1 mfd. condenser Align all I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT Adjust the signal generator to 1730 KC and connect the output to the antenna lead, through a .0002 mfd. mica condenser. Set the gang condenser to minimum capacity and adjust the oscillator trimmer to receive this signal. After this has been carefully done, the next step is to set the signal generator to 1400 KC and after tuning in the signal adjust the antenna trimmer to peak. Set the signal generator to 600 KC, tune the signal and check the sensitivity; if it is low bend the plates into the position for maximum output.

SERVICE INFORMATION

Voltages—Line 115 Volts A.C. Power Consumption 44 Watts.

Volume Control minimum. Antenna shorted to ground. Meter 1,000 ohms per volt.

Cathode of 25Z5 tube to Ground	124 volts
Screen of 25L6 tube to Ground	95 volts
Screen of 6A7 tube to Ground	44 volts
Cathode of 25L6 tube to Ground	5.7 volts

Speaker (Part No. P2218)

Field resistance	450 ohms
D.C. voice coil resistance	4.6 ohms
Voice coil impedance at 400 cycles	5 ohms

First I.F. Transformer (Part No. P2998)

Primary—Blue white, plate; red white B+—Resistance 26.9 ohms.

Secondary—White, grid; black white, AVC—Resistance 26.5 ohms.

Second I.F. Transformer (Part No. 2999)

Starting at the mounting strip in a clockwise direction the terminals are—No. 1, plate; No. 2, diode; No. 3, AVC; No. 4, B+.

Primary—No. 1 and No. 4—Resistance 33.2 ohms.

Secondary—No. 2 and No. 3—Resistance 34.3 ohms.

Oscillator Coil (Part No. P3003) (Blue Dot)

Looking at the connection end (with dot) in a clockwise direction starting at the chassis the terminals are—No. 1, grid; No. 2, plate; No. 3, B+; No. 4, ground.

Primary—No. 2 and No. 3—Resistance 3.5 ohms.

Secondary—No. 4 and No. 1—Resistance 6.5 ohms.

Electrolytic Condenser (Part No. P2936)

Red, 20 mfd., 150 volt; green, 20 mfd., 150 volt; black, negative for both sections.

Loop Antenna

Since the loop antenna acts also as the antenna coil the set will not operate properly with the loop antenna disconnected.

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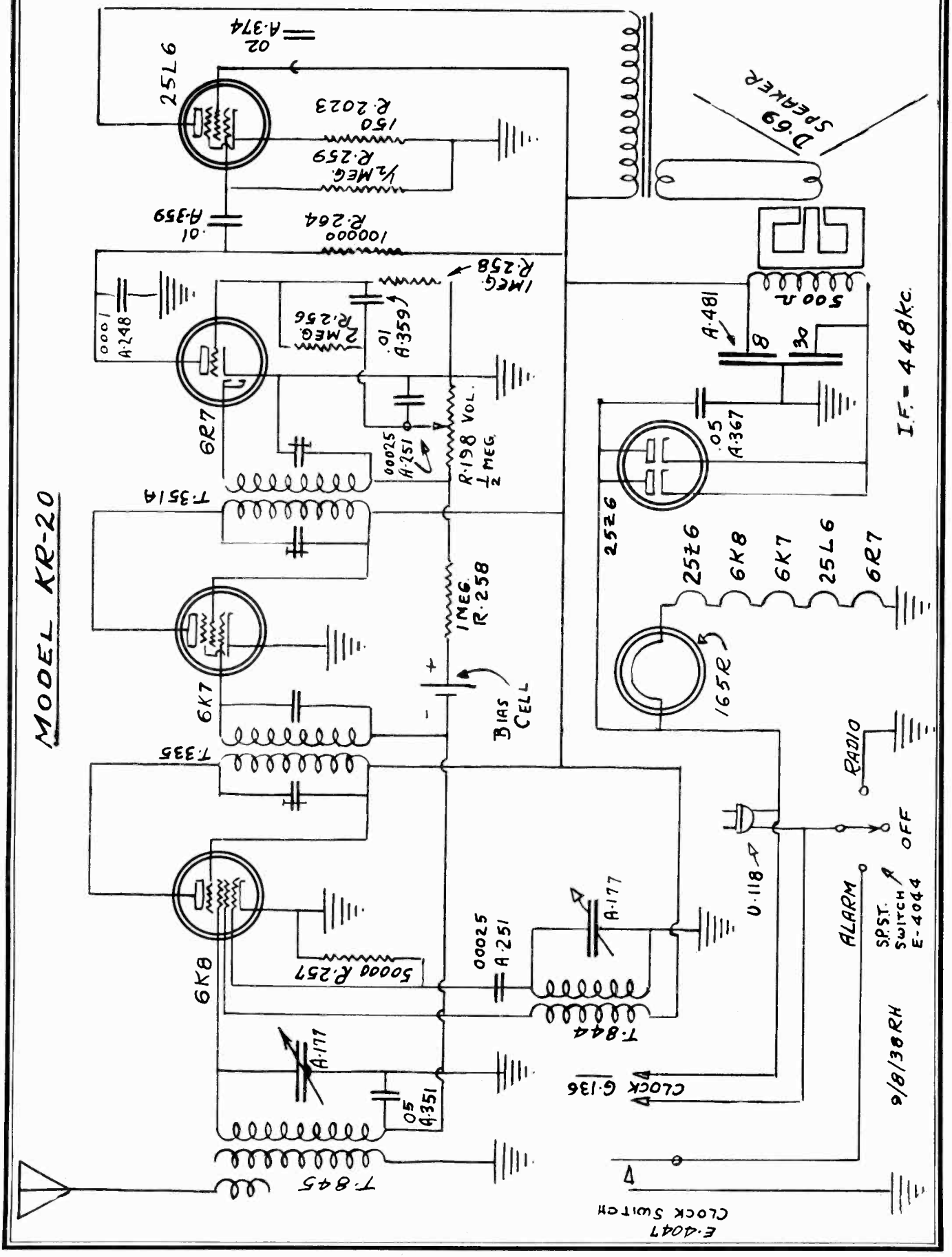

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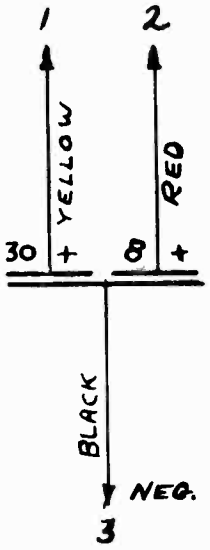
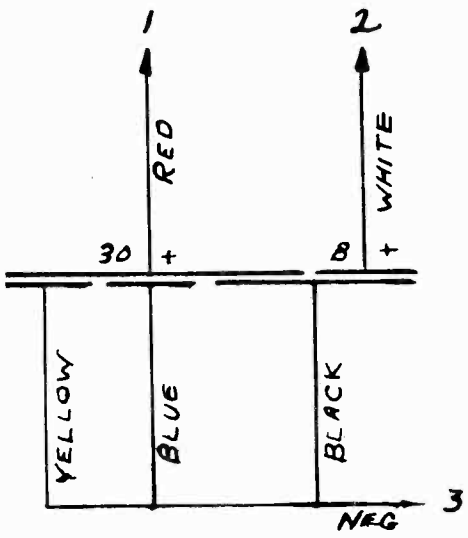
NOTE : SUPPLEMENT TO KR-20 CIRCUIT DIAGRAM

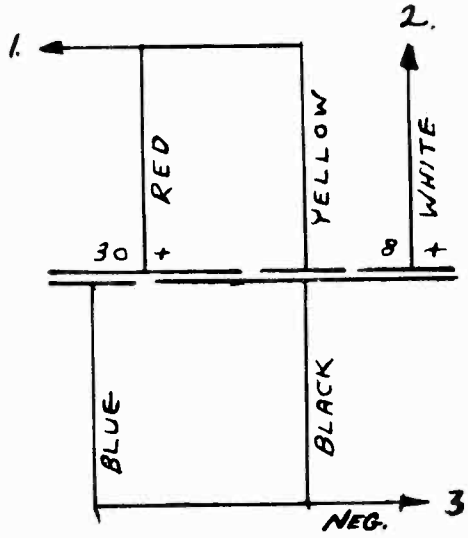
THESE PARTS ARE INTERCHANGEABLE ON MODEL KR-20, BUT MUST BE CONNECTED AS SHOWN.



A-481



A-468



A-469

This chassis is designed to operate from 110-125 volt power lines alternating current.
ESSENTIAL DATA: The intermediate frequency employed is 448 Kc.

The standard type of output meter should be used to indicate signal strength. It should be connected from the plate of the 25L6 tube to ground.
Aligning of broadcast band should be done on 1500, 1000 and 600 kilocycles.
I.F. TRIMMERS: To align the I.F. circuits, set the signal generator to 448 Kc. and feed its modulated signal direct to the antenna. Adjust the first I.F. transformer trimmers for maximum meter reading. Go over both adjustments at least three or four times for accuracy. Repeat this process on the second I.F. transformer. If adjustments are not made accurately, selectivity will be poor and I.F. oscillation may result.
R.F. TRIMMERS: Turn the dial to 1500 Kc. and feed a very weak 1500 Kc. modulated signal from your signal generator to the antenna. Adjust the oscillator trimmer for maximum reading. Then peak the antenna trimmer to this setting.
There is no adjustment padder condensor on this model so resonance on lower frequencies is accomplished by onding plates on tuning condensers.
AVERAGE SOCKET VOLTAGES:

TUBE	POSITION	Ek	Ea	Es	Ep
6K8	Det. Osc.	-	100	100	100
6K7	I.F.	-	-	100	100
6R7	2nd. Det.	-	-	-	25
25L6	Output	6	-	100	90
25Z6	Rect.	100	-	-	-

Line 118 volts. Volume control full on. 10% variation allowable.
Measurements made from tube prongs to circuit ground with 1000 ohms per volt meter.

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MODEL W180

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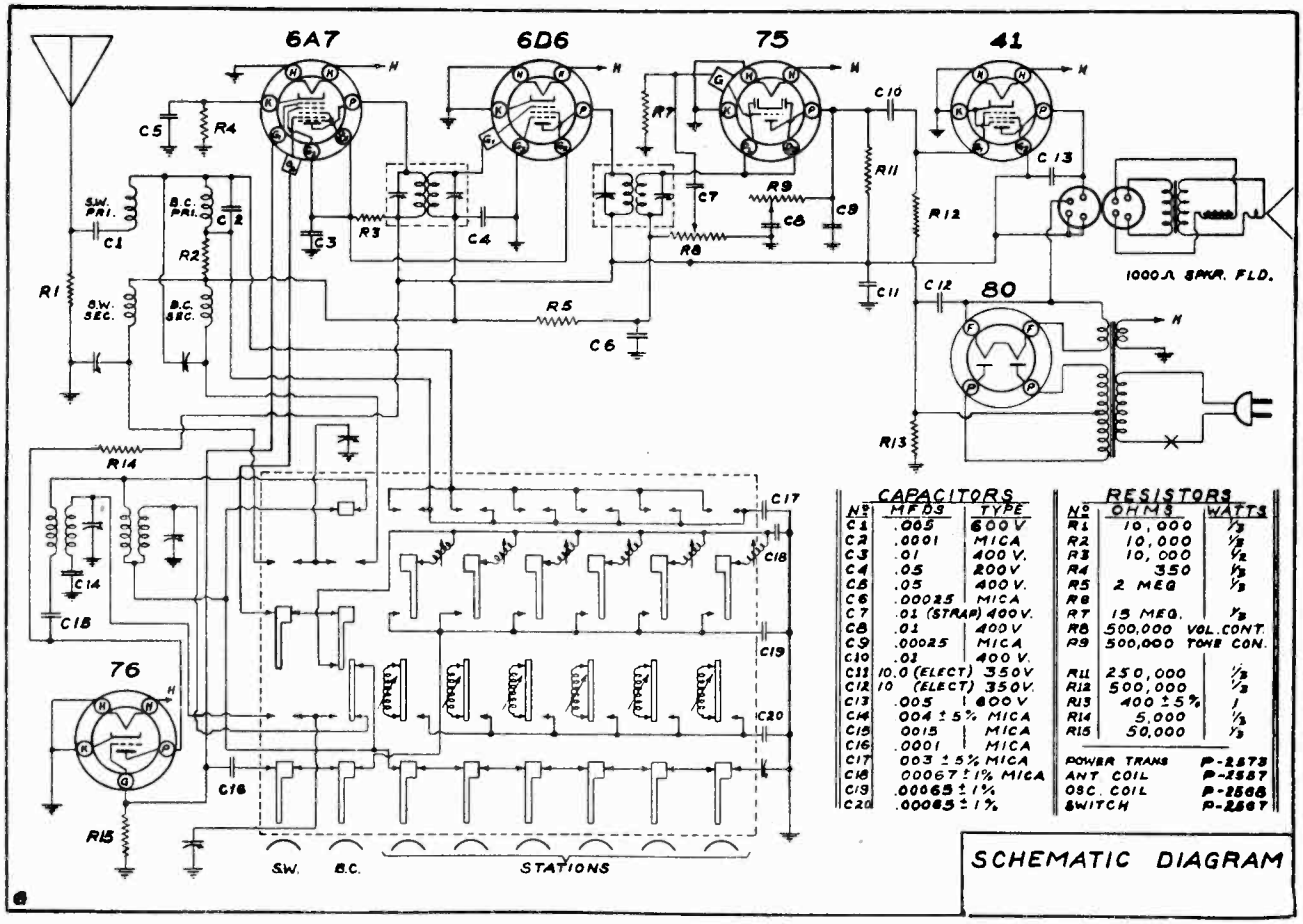


CAPACITORS

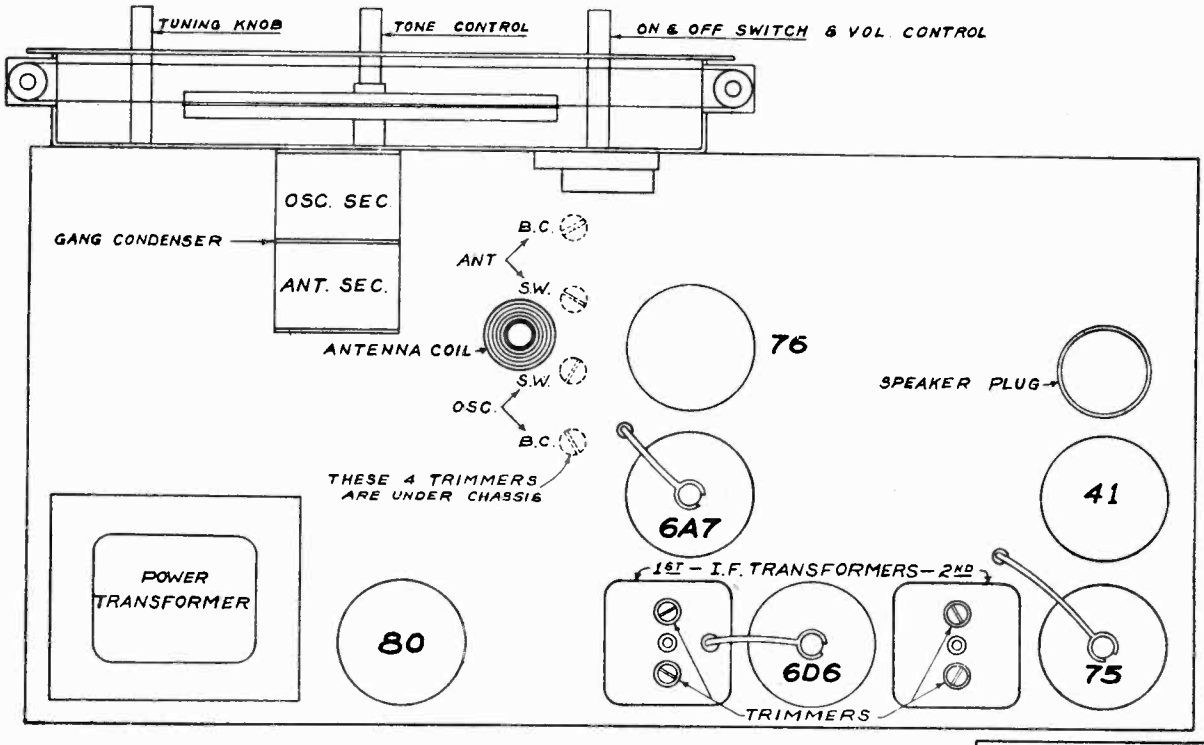
No	MFDS	TYPE
C1	.005	600 V
C2	.0001	MICA
C3	.01	400 V.
C4	.05	200 V
C5	.05	400 V.
C6	.00025	MICA
C7	.01 (STRAP)	400 V.
C8	.01	400 V
C9	.00025	MICA
C10	.01	400 V.
C11	10.0 (ELECT)	350 V
C12	10 (ELECT)	350 V.
C13	.005	600 V
C14	.004 ± 5%	MICA
C15	.0015	MICA
C16	.0001	MICA
C17	.003 ± 5%	MICA
C18	.00067 ± 1%	MICA
C19	.00065 ± 1%	
C20	.00065 ± 1%	

RESISTORS

No	OHMS	WATTS
R1	10,000	1/2
R2	10,000	1/2
R3	10,000	1/2
R4	350	1/2
R5	2 MEG	1/2
R6		
R7	15 MEG.	1/2
R8	500,000	VOL. CONT.
R9	500,000	TONE CON.
R11	250,000	1/2
R12	500,000	1/2
R13	400 ± 5%	1
R14	5,000	1/2
R15	50,000	1/2

POWER TRANS	P-2573
ANT COIL	P-2587
OSC. COIL	P-2588
SWITCH	P-2567

SCHEMATIC DIAGRAM



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MODEL W180
MODEL 2460, Late

SPIEGEL, INC.

PROCEDURE FOR SETTING UP AUTOMATIC PUSH BUTTONS

MODEL 2460

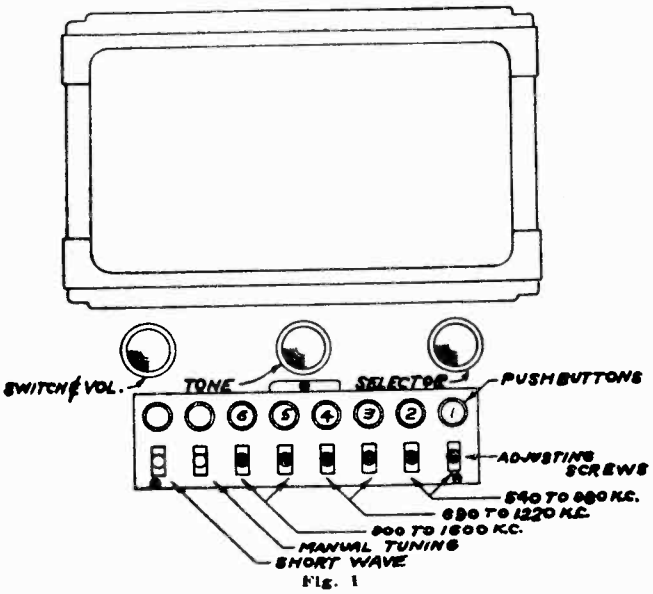


Fig. 1

A glance at Fig. 1 will show that there are eight (8) push buttons, six (6) of which are for automatic use; the adjusting screws are located directly below these push buttons. Fig. 1 also shows the tuning range or frequencies covered by each button.

The remaining two (2) push buttons, located at the extreme left hand end of the push button plate are for short wave and manual tuning. Short wave tuning is accomplished by pressing "short wave" button and tuning with the selector knob. By pressing "manual tuning" button, the automatic disconnects and the selector knob becomes active for the broadcast band.

1. Choose a station having a frequency within the range of button No. 1 (540 to 980 kc).
2. Press "Manual Tuning" button and tune this station conventionally by using the selector knob.
3. Now press button No. 1 and turn adjusting screw in either direction until the previously selected station is heard. Adjust the screw until the station is received with maximum volume.
4. Remove the call letters of the station from the call letter sheet furnished and insert in the window of the adjusting screw.
5. Repeat the above procedure for the remaining five (5) stations.

NOTE: It is advisable to retain the call letter sheet in case of station change later on.

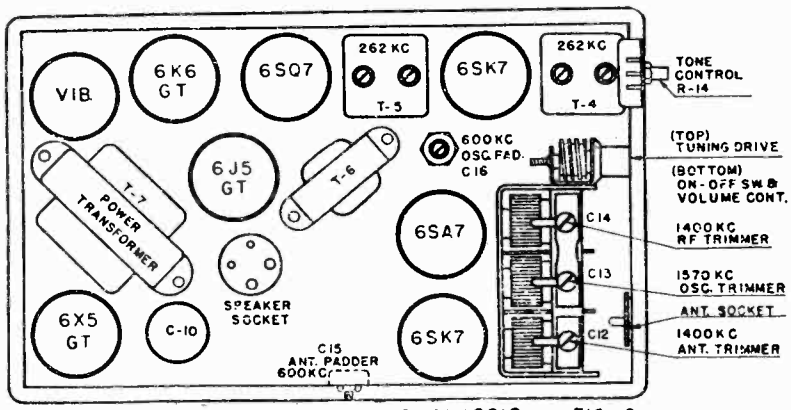
49 METER BAND The popular 49 meter band is the area adjacent to the 6 megacycle calibration and offers the most consistent reception from Italy, Germany, Africa and Java. This area also affords the most popular reception of North and South American Short Wave Broadcasts and many other Foreign Countries. (Best evening reception all year round.)

31 METER BAND The 31 meter band is the area extending from the 10 megacycles and lists Spain, Italy, Portugal and Australia as the most favorable of the Foreign Countries in this range. (Late afternoon and early evening.)

25 METER BAND The 25 meter band is the area adjacent to the 12 megacycle calibration and associates itself with the listing of Russia, France, England and Holland. (Late afternoon and early evening. This band is unusually free from static during the summer months when maximum static is prevalent on the Standard Broadcast Band.)

19 METER BAND The 19 meter band is the area adjacent to 15 megacycle calibration and lists France, Holland England and Amateur phones.

16 METER BAND The 16 meter band is the area between 17 and 18 megacycles and lists Germany and England.



LOCATION OF PARTS ON TOP OF CHASSIS FIG. 6

MODEL W180

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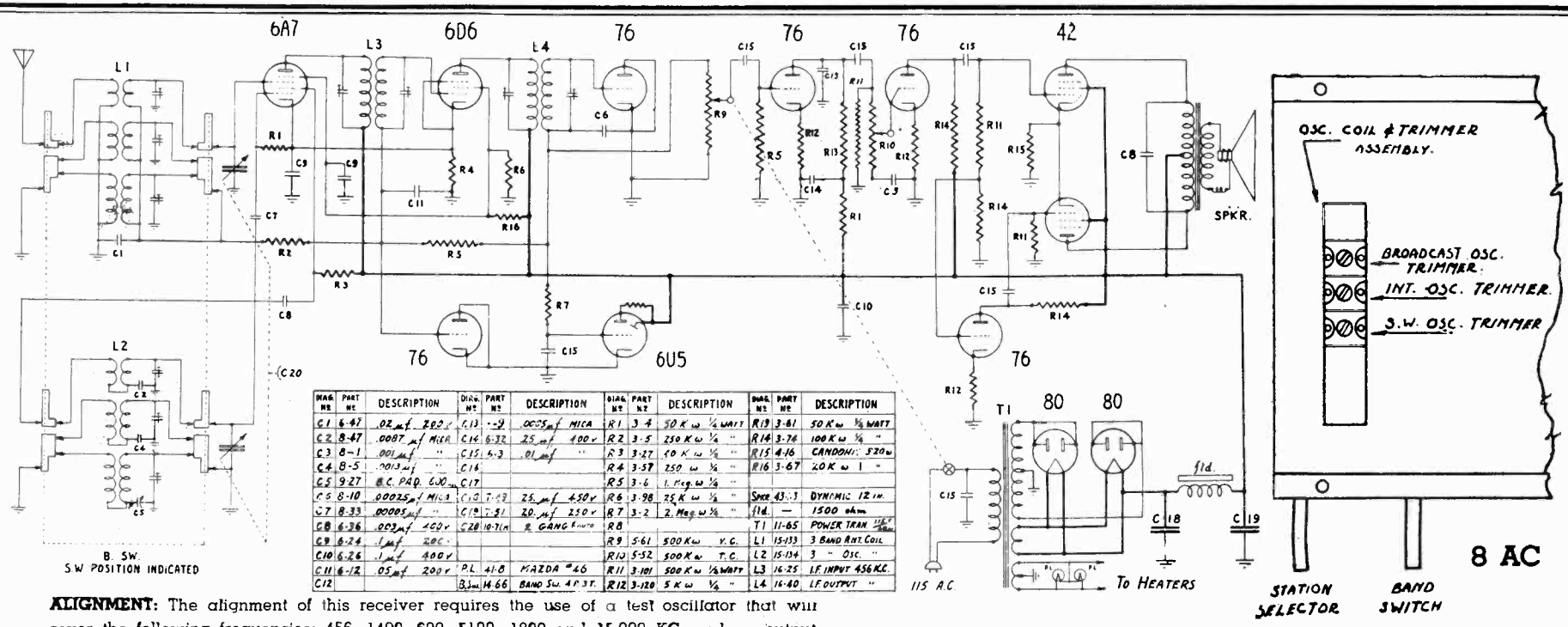


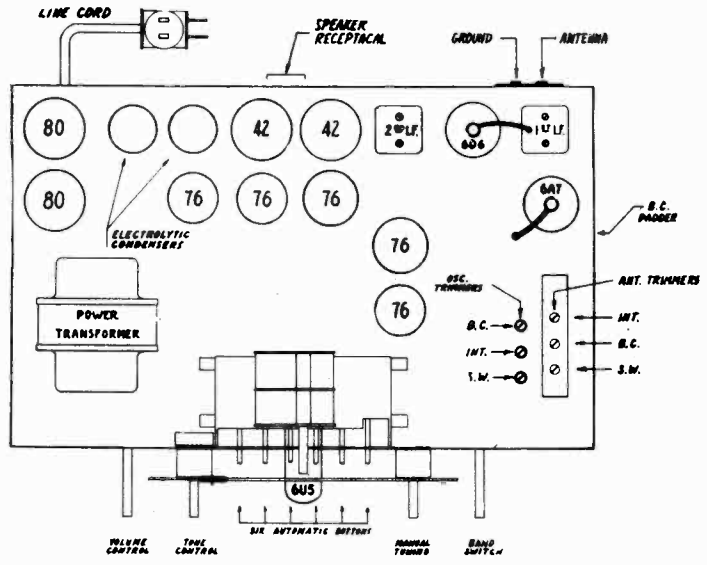
DIAG. NO	PART NO	DESCRIPTION	DIAG. NO	PART NO	DESCRIPTION	DIAG. NO	PART NO	DESCRIPTION	DIAG. NO	PART NO	DESCRIPTION
C1	6-47	.02 mf 200 v	C13	-9	0005 mf MICA	R1	3-4	50 K ω ½ WATT	R13	3-61	50 K ω ½ WATT
C2	8-47	.0007 mf MICA	C14	6-32	.25 mf 400 v	R2	3-5	250 K ω ½ "	R14	3-76	100 K ω ½ "
C3	8-1	.001 mf "	C15	6-3	.01 mf "	R3	3-27	10 K ω ½ "	R15	4-16	CANDOHM 520 ω
C4	8-5	.0013 mf "	C16			R4	3-57	250 ω ½ "	R16	3-67	40 K ω 1 "
C5	9-27	B.C. PAD 600 ω	C17			R5	3-6	1 Meg ω ½ "			
C6	8-10	.00025 mf MICA	C18	T-42	25 mf 450 v	R6	3-98	25 K ω ½ "	SPKR	43-3	DYNAMIC 12 in.
C7	8-33	.00005 mf "	C19	T-51	20 mf 250 v	R7	3-2	2 Meg ω ½ "	fld.	—	1500 ohm
C8	6-36	.003 mf 400 v	C20	10-7(m	2 GANG Trimmer	R8			T1	11-65	POWER TRAN 115 V 60 ~
C9	6-24	.1 mf 200 "				R9	5-61	500 K ω V.C.	L1	15-133	3 BAND ANT. COIL
C10	6-26	.1 mf 400 v				R10	5-52	500 K ω T.C.	L2	15-134	3 " OSC. "
C11	6-12	.05 mf 200 v	P.L.	41-8	MAZDA #46	R11	3-101	500 K ω ½ WATT	L3	16-25	I.F. INPUT 456 KC.
C12			B.Sw.	14-66	BAND SW. 4P 3T.	R12	3-120	5 K ω ½ "	L4	16-40	I.F. OUTPUT "

ALIGNMENT: The alignment of this receiver requires the use of a test oscillator that will cover the following frequencies: 456, 1400, 600, 5100, 1800 and 15,000 KC, and an output meter which is to be connected across the output transformer on the speaker. All alignments should be made with the volume control set at maximum and the output of the test oscillator set as low as possible to prevent the automatic volume control from operating and thus giving incorrect reading during alignment.

INTERMEDIATE FREQUENCY: Set oscillator to 456 KC. Feed this to the grid of the (6A7) tube. Adjust trimmers on the intermediate frequency transformers for peak readings as indicated on the output meter which is to be placed across the output transformer.

BROADCAST BAND: Set the band switch for broadcast reception. Adjust oscillator to 1400 KC and connect the output of the generator to the antenna connection at the rear of the chassis through a .0002 mfd. mica condenser. Set the pointer on the dial to 1400 KC making sure that the volume control is set at its maximum position. Adjust the broadcast antenna and broadcast oscillator trimmers for maximum signal (as indicated on the output meter). Re-set the dial pointer on the receiver and on the test oscillator to 600 KC. Slowly increase or decrease the **broadcast padding** condenser while tuning back and forth across the signal with the station selector knob until the maximum reading is obtained on the output meter. Re-check the 1400 KC alignment as the adjustment at 600 KC may have slightly disturbed the original 1400 KC setting.

INTERMEDIATE BAND: For a dummy antenna use a .0002 mfd. mica condenser in series with a 400 ohm carbon resistor. Set band switch to the intermediate band position and feed a 5100 KC signal from the oscillator. Set dial pointer at 5100 KC. Adjust intermediate antenna and intermediate oscillator trimmers for maximum output.



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MODEL W310, Late

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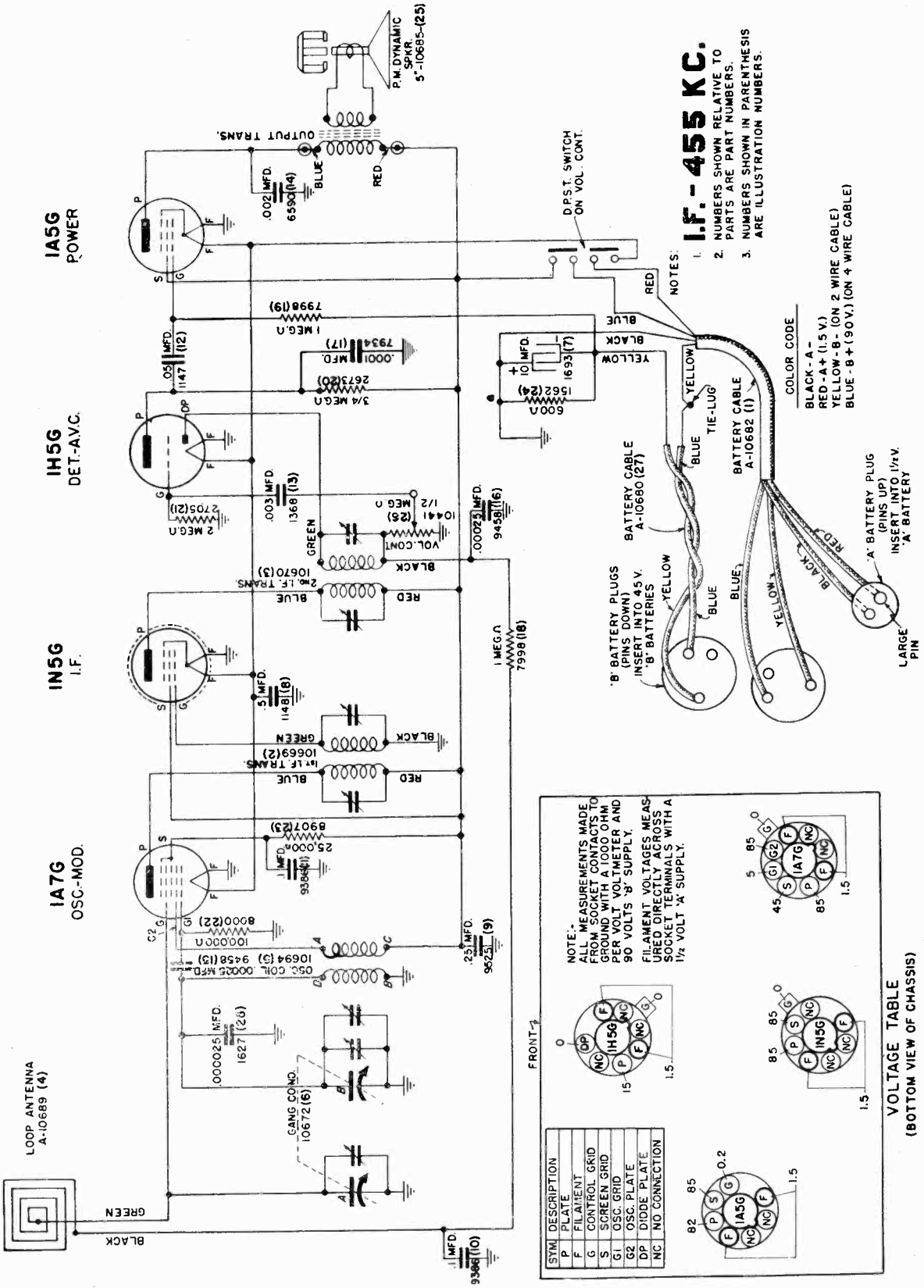

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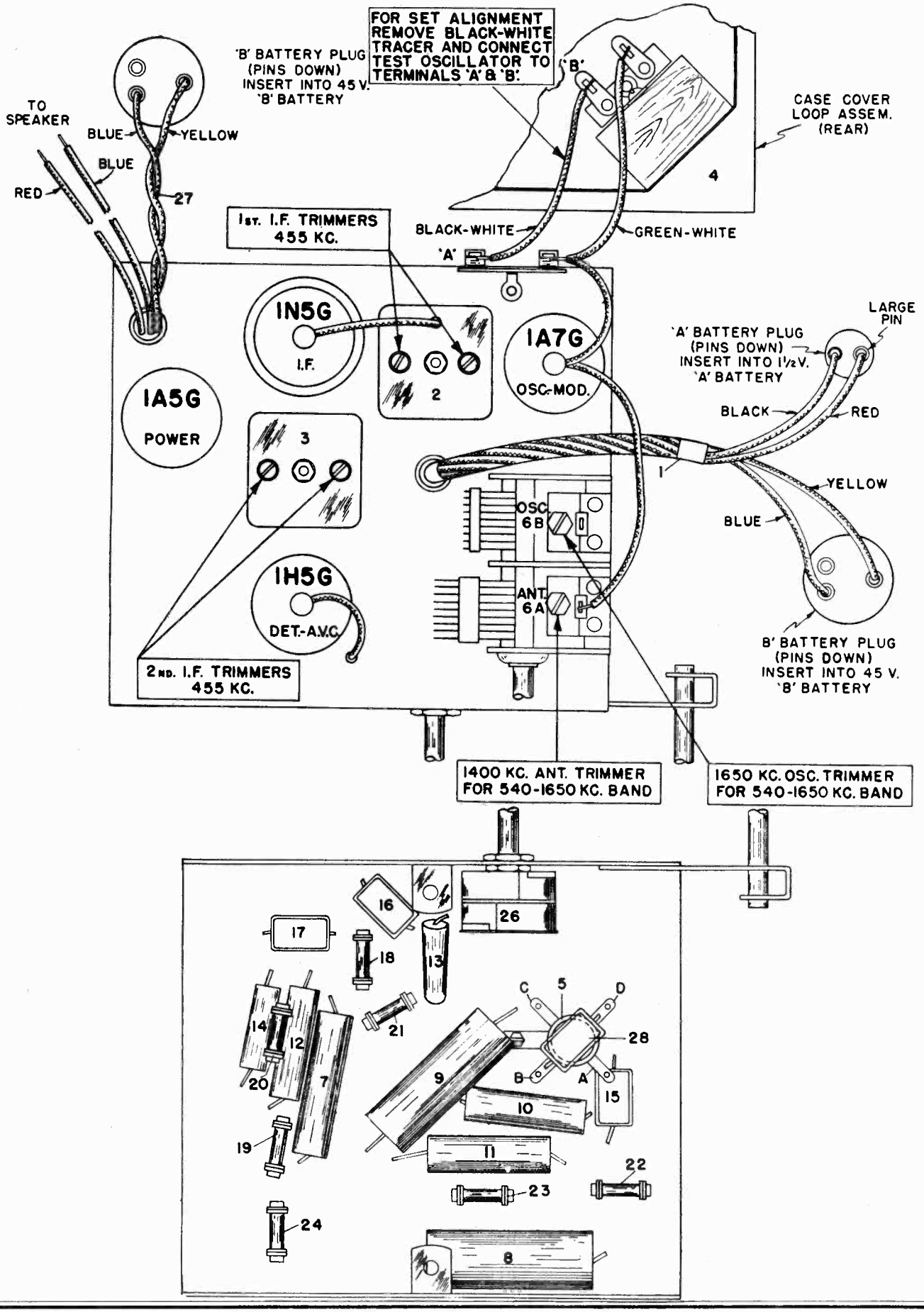
MODEL W310, Late

SPIEGEL, INC.



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MODEL W310, Late

SPIEGEL, INC.

1½ Volt Battery Operated Superheterodyne

ALIGNMENT PROCEDURE IN TABULATED FORM

Be sure to follow procedure carefully and in the order given—otherwise the receiver will be insensitive and the dial calibration incorrect. For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third.

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

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

BEFORE ALIGNING, PLACE LOOP ANTENNA AND THE "A" AND "B" BATTERIES IN THE SAME APPROXIMATE POSITION IN THE BACK OF CHASSIS THAT THEY WILL BE IN WHEN THE SET IS IN THE CABINET AND THE CABINET BACK CLOSED.

When adjusting 1650 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, place test oscillator in series with set loop by:

1. Remove the black with white tracer wire used to connect loop antenna to Fahenstock clip on chassis.
2. Attach test oscillator to terminals marked "A" and "B" on parts layout diagram.

IMPORTANT—No condenser should be in series with generator leads.

Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below—and:
I. F. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 1A7G tube Low side to chassis DO NOT REMOVE CAP.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
(1) Exactly 1650 K. C.	Exactly 1650 K. C.	None	Attach in series with "A" and "B" Loop Terminals	Adjust 1650 K. C. oscillator trimmer for maximum output.
(2) Approx. 1400 K. C.	Exactly 1400 K. C.	None	Attach in series with "A" and "B" Loop Terminals	Adjust 1400 K. C. antenna trimmer for maximum output.

PARTS LIST

Illus.	Part No.	Part Name	Description	List Price
1	10682	Cable	Battery, 4 Conductor With Plugs	$ .65
2	10669	Coil	1st I.F. Transformer	1.15
3	10670	Coil	2nd I.F. Transformer	1.15
4	10689	Loop	Antenna, Complete With Frame	1.25
5	10694	Coil	Oscillator	.50
6	10672	Condenser	Tuning Two Gang	1.75
7	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 V. D.C.	.75
8	1148	Condenser	Tubular 5 Mfd. 200 Volt	.40
9	9525	Condenser	Tubular .25 Mfd. 200 Volt	.24
10	9386	Condenser	Tubular .1 Mfd. 200 Volt	.19
11	9386	Condenser	Tubular .1 Mfd. 200 Volt	.19
12	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19
13	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
14	6590	Condenser	Tubular .002 Mfd. 400 Volt	.19
15	9458	Condenser	Mica .00025 Mfd.	.21
16	9458	Condenser	Mica .00025 Mfd.	.21
17	7934	Condenser	Mica .0001 Mfd.	.21
18	7998	Resistor	Carbon 1 Meg Ohm ⅓ Watt	.19
19	7998	Resistor	Carbon 1 Meg Ohm ⅓ Watt	$ .19
20	2673	Resistor	Carbon 750,000 Ohm ⅓ Watt	.19
21	2705	Resistor	Carbon 2 Meg Ohm ⅓ Watt	.19
22	8000	Resistor	Carbon 100,000 Ohm ⅓ Watt	.19
23	8907	Resistor	Carbon 25,000 Ohm ⅓ Watt	.19
24	1562	Resistor	Carbon 600 Ohm ⅓ Watt	.19
25	10685	Speaker	P.M. Dynamic 5"	4.00
26	10441	Volume Control	With Switch	.95
27	10680	Cable	Battery 2 Conductor With Plug	.10
28	1627	Condenser	Mica .000025 Mfd. ± 20%	.21

MISCELLANEOUS PARTS

Part No.	Part Name	Description	List Price
10676	Dial Scale	Calibrated Scale	.30
3814	Dial Cord	Dial Drive Cord	.15
4975	Dial Shaft	Dial Drive Shaft	.15
10686	Escutcheon	For Dial	.60
4958	Knob	Marked Tuning	.12
4959	Knob	Marked "Off-Volume"	.12
8117	Shaft Clamp	"C" Retainer Washer for Drive Shaft	.02

Prices are subject to change without notice.

PART No. 178BL

When ordering parts be sure to mention part number.

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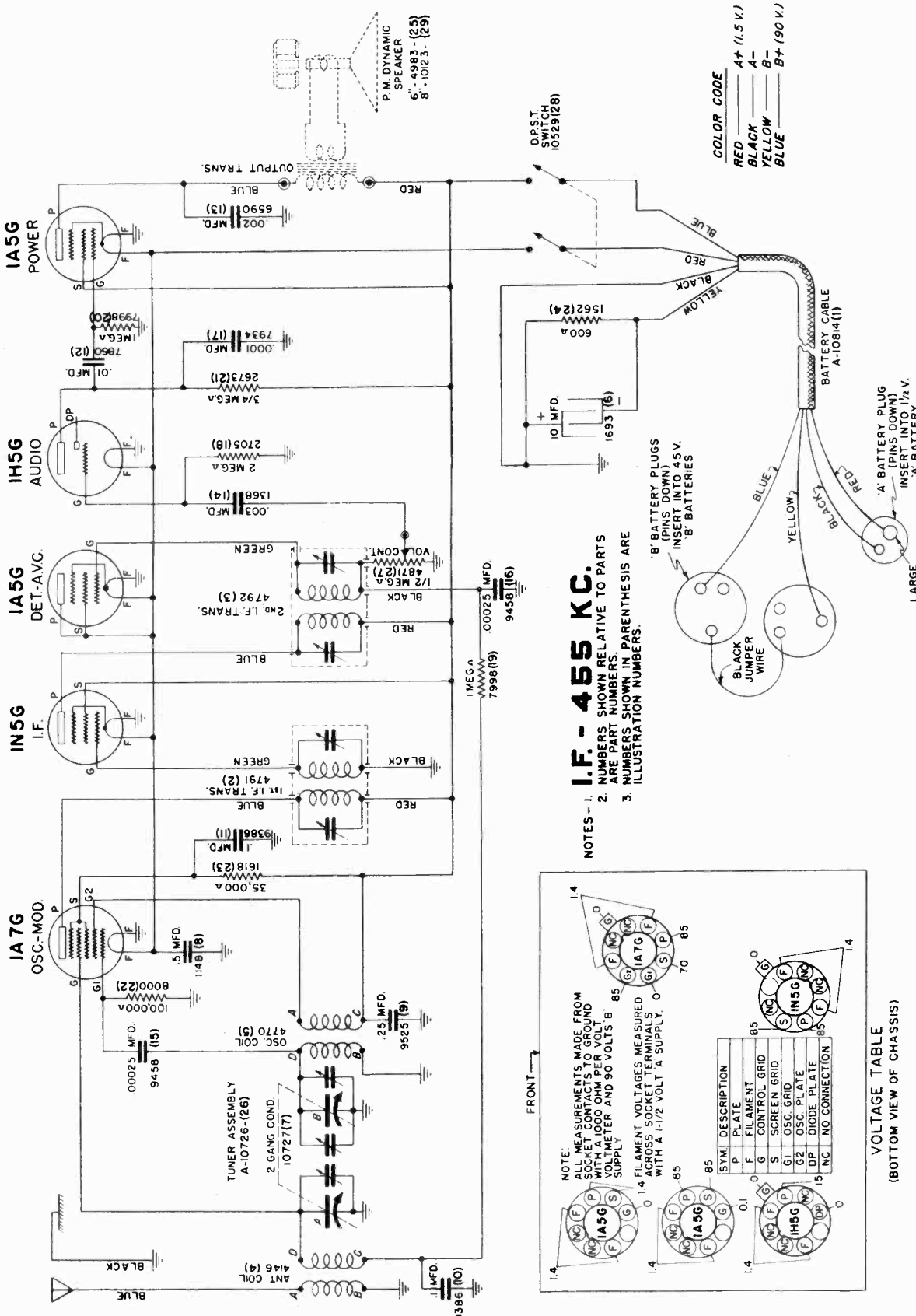
MODELS W314, W316
Chassis 187B



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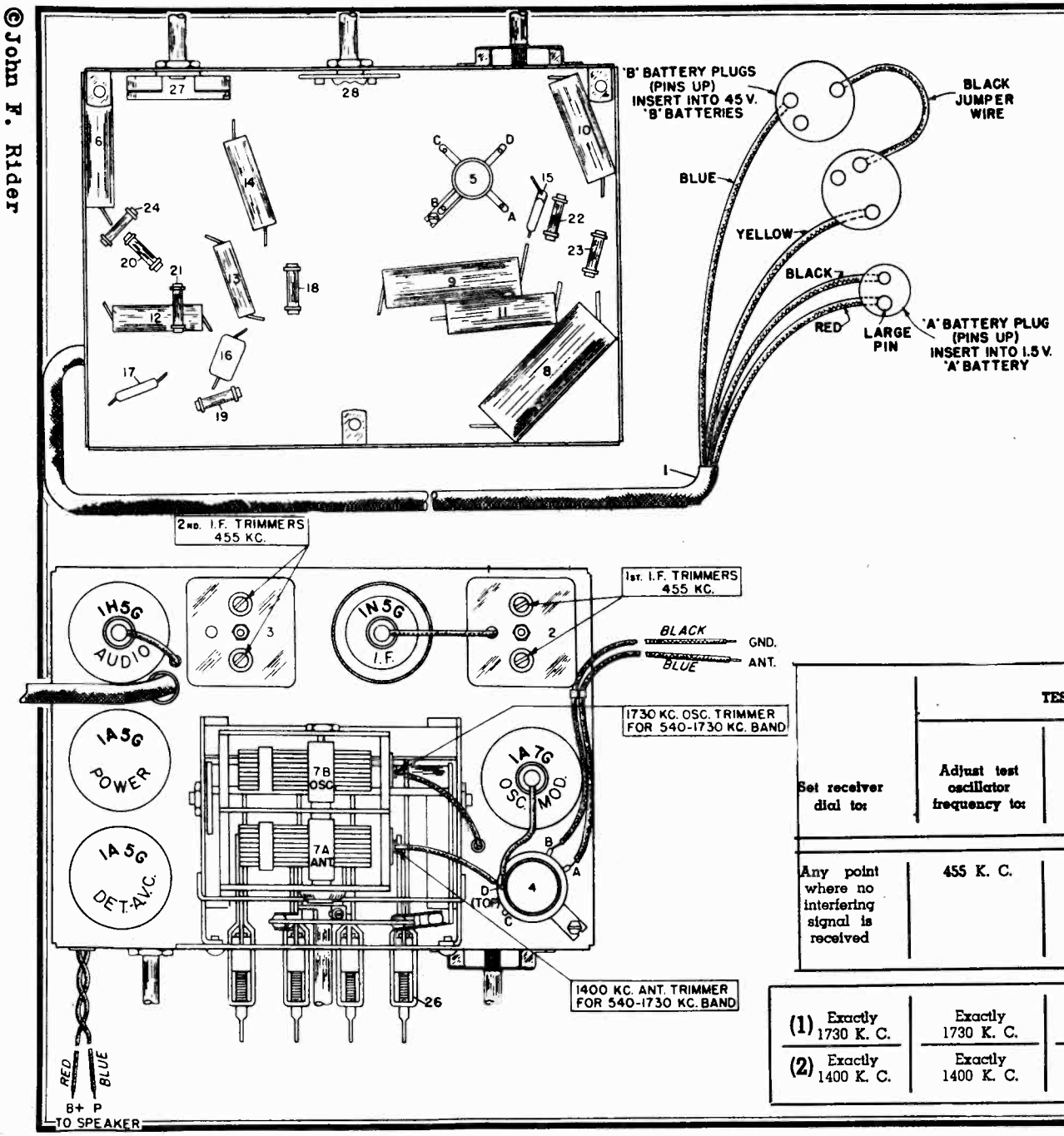

ALIGNMENT PROCEDURE IN TABULATED FORM

ALIGNMENT PROCEDURE IN TABULATED For alignment procedure read tabulations from left to right. If more than one adj. is required on any band, make adj. marked (1) first, (2) next, (3) third. Before starting alignment, check tuning dial adj. by: turn gang cond. until plates touch max. capacity stop (completely in mesh) at which point dial indicator must be exactly even with last line at low frequency end of dial calibration. If dial needle does not point exactly to last line move needle to correct position. Use accurately calibrated test osc. with some type of output measuring device. Have ground lead of test osc. attached to chassis.

Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below—and:
Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 1A7G tube DO NOT REMOVE CAP.	Adjust each of the second I. F. transformer trimmers for maximum output—then adjust each of the first I. F. trimmers for maximum output.
(1) Exactly 1730 K. C.	Exactly 1730 K. C.	.00025 MFD condenser	Receiver blue antenna lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
(2) Exactly 1400 K. C.	Exactly 1400 K. C.	.00025 MFD condenser	Receiver blue antenna lead	Adjust 1400 K. C. antenna trimmer for maximum output.

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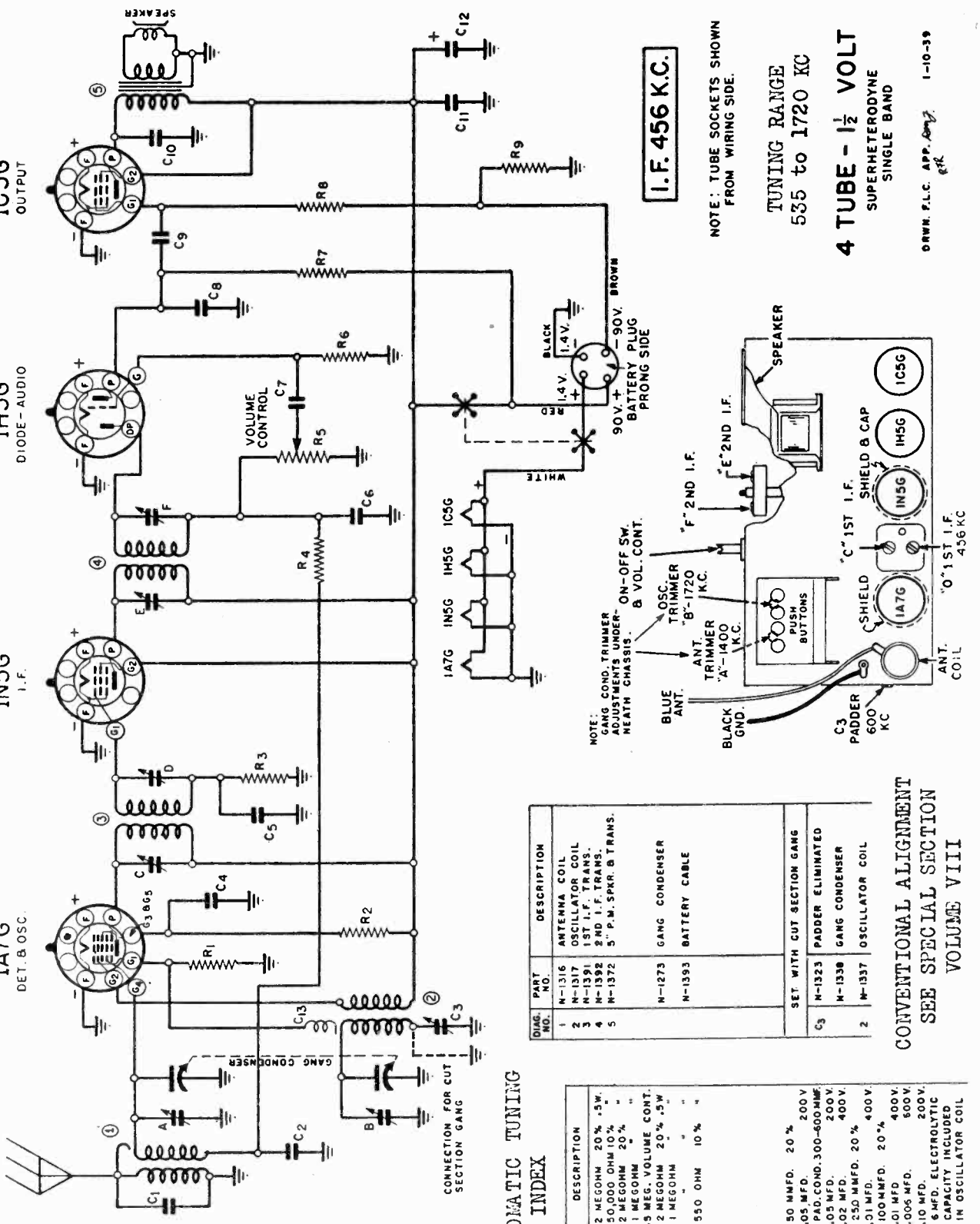

DIAG. NO.	PART NO.	DESCRIPTION
1	N-1316	ANTENNA COIL
2	N-1317	OSCILLATOR COIL
3	N-1391	1ST I.F. TRANS.
4	N-1392	2ND I.F. TRANS.
5	N-1372	5" P.M. SPKR. & TRANS.
	N-1273	GANG CONDENSER
	N-1393	BATTERY CABLE

		SET WITH CUT SECTION GANG
C_3	N-1323	PADDER ELIMINATED
	N-1338	GANG CONDENSER
2	N-1337	OSCILLATOR COIL

DIAG. NO.	PART NO.	DESCRIPTION	
R_1	N-1377	.2 MEGOHM 20% .5W.	
R_2	N-1353	50,000 OHM 10% "	
R_3	N-1378	2 MEGOHM 20% "	
R_4	N-1262	1 MEGOHM "	
R_5	N-1373	.5 MEG. VOLUME CONT.	
R_6	N-1378	2 MEGOHM 20% .5W	
R_7	N-1262	1 MEGOHM " "	
R_8	N- "	" "	
R_9	N-1379	550 OHM 10% "	
C_1	N-1342	50 MMFD. 20 %	200 V
C_2	N-1345	.05 MFD.	200 V
C_3	N-1323	PAD. COND. 300-600 MMF	
C_4	N-1345	.05 MFD.	200 V.
C_5	N-1376	.02 MFD.	400 V.
C_6	N-1343	250 MMFD. 20 %	400 V.
C_7	N-1344	.01 MFD.	400 V.
C_8	N-1374	100 MMFD. 20 %	
C_9	N-1344	.01 MFD	400 V.
C_{10}	N-1347	.006 MFD.	600 V.
C_{11}	N-1351	.10 MFD.	200 V.
C_{12}	N-1367	6 MFD. ELECTROLYTIC CAPACITY INCLUDED IN OSCILLATOR COIL	
C_{13}			

FOR AUTOMATIC TUNING
SEE INDEX

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

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MODELS W404,A2460,27452, 2P7452

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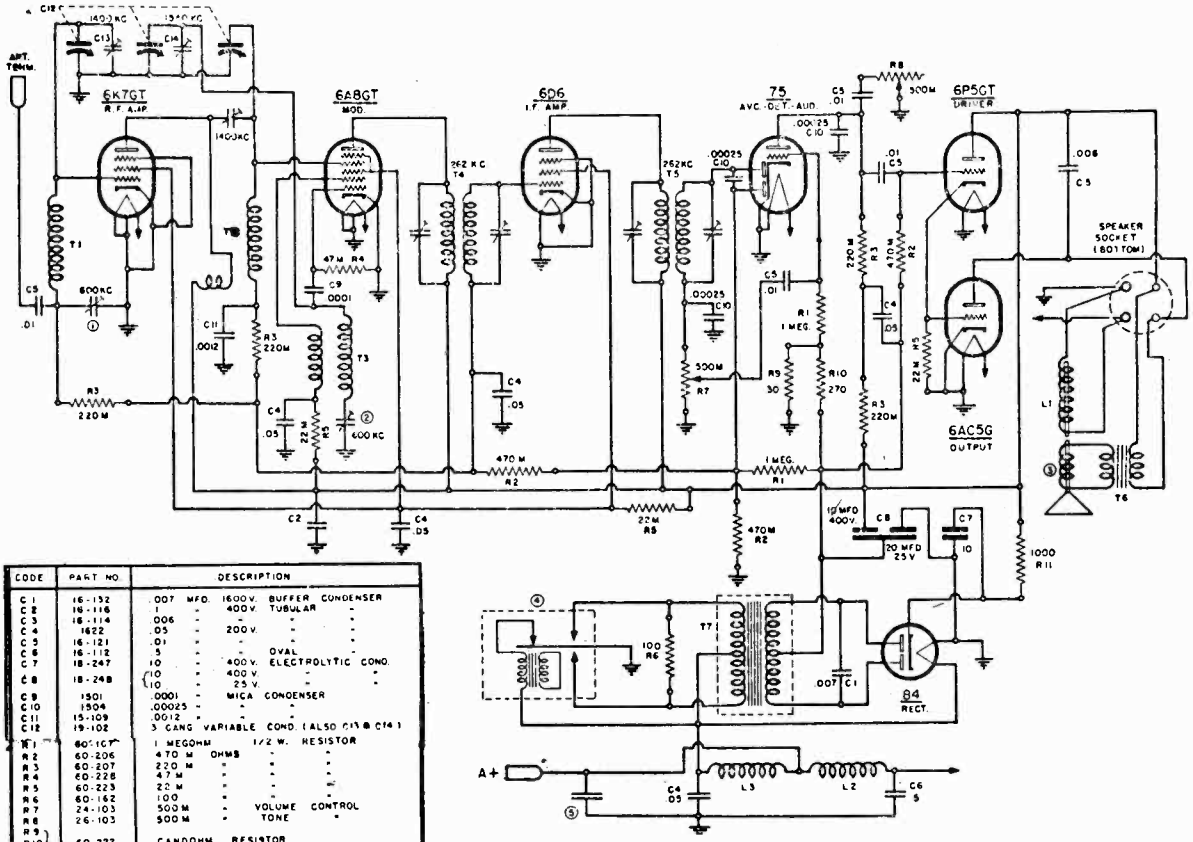

CODE	PART NO.	DESCRIPTION
C1	16-132	.007 MFD. 1600 V. BUFFER CONDENSER
C2	16-116	1 " 400 V. TUBULAR "
C3	16-114	.006 " " " "
C4	1622	.05 " 200 V. " "
C5	16-121	.01 " " " "
C6	16-112	.5 " " OVAL "
C7	18-247	10 " 400 V. ELECTROLYTIC COND.
C8	18-248	{10 " 400 V. " " 10 " 25 V. " "
C9	1501	.0001 " MICA CONDENSER
C10	1504	.00025 " " "
C11	15-109	.0012 " " "
C12	19-102	3 GANG VARIABLE COND. (ALSO C13 & C14)
R1	60-167	1 MEGOHM 1/2 W. RESISTOR
R2	60-206	470 M OHMS " "
R3	60-207	220 M " " "
R4	60-228	47 M " " "
R5	60-223	22 M " " "
R6	60-162	100 " " "
R7	24-103	500 M " VOLUME CONTROL
R8	26-103	500 M " TONE "
R9, R10, R11	60-222	CANDOHM RESISTOR
L1	------	FIELD COIL (ON SPEAKER)
L2	33-210	FILAMENT CHOKE
L3	33-211	VIBRATOR
T1	10-208	ANTENNA COIL
T2	10-209	R.F. COIL
T3	10-210	OSCILLATOR COIL
T4	10-211	1 ST I.F. TRANSFORMER
T5	10-212	2 ND. " "
T6	------	OUTPUT TRANSFORMER (ON SPEAKER)
T7	80-102	POWER "
1	20-116	9 PLATE PADDING CONDENSER
2	20-117	5 " " "
3	79-207	6" DYNAMIC SPEAKER
4	34-101	VIBRATOR
5	99-1	SPARK PLATE

IF PEAK 262 KC

CONVENTIONAL ALIGNMENT

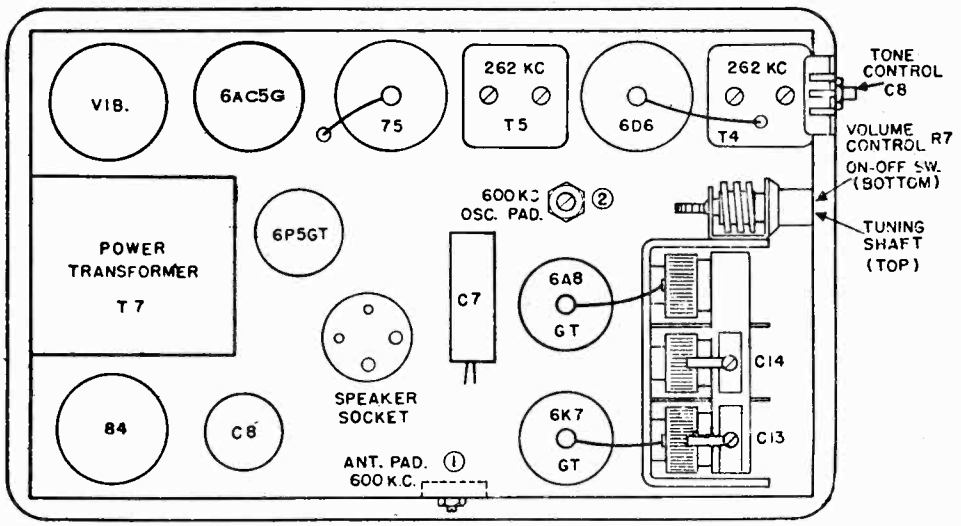

FIG. 6 LOCATION OF PARTS ON TOP OF CHASSIS

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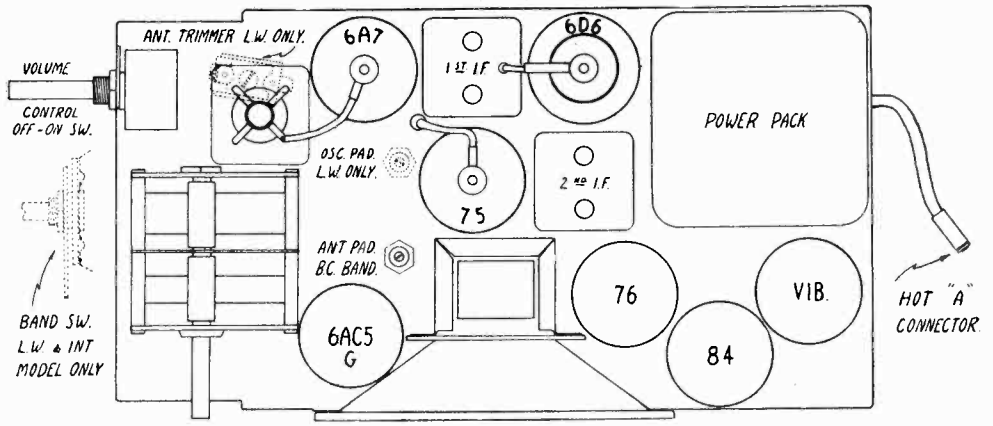
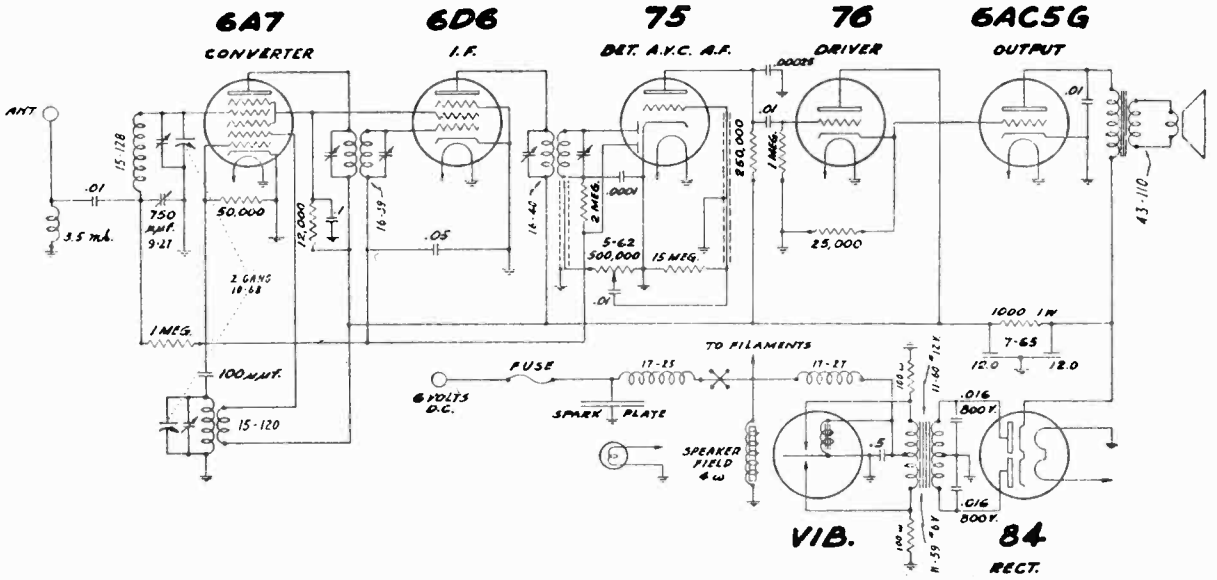
MODELS W406, Z7450
Chassis 620

SPIEGEL, INC.





I. F. ALIGNMENT Set the variable condenser at **minimum** capacity, (dial pointer at 1560 K.C.). Connect the two leads from a good, modulated signal generator, the ground lead to the radio chassis and the other lead through a .1 mfd. condenser, to the grid cap of the 6A7, with the tube's grid lead still in place.

Connect the leads from a fully charged 6 volt storage battery to the receiver chassis and battery lead, the polarity being reversible.

With the set in operation and the volume control full on, set the signal generator to 456 K.C. and increase its output until the signal is heard in the set's speaker. Starting with the second I. F., adjust the I. F. trimmers for maximum output, decreasing the signal generator output as the receiver output increases.

The generator output in all the alignment adjustments should be adjusted so the meter will read approximately .4 volts continually.

R. F. ALIGNMENT With the variable condenser still full open, set the generator to 1560 K.C. Connect the generator lead to the antenna lead through a .0001 mfd condenser as dummy antenna. Adjust the oscillator trimmer for maximum output. Set the receiver dial and the generator to 1400 K.C. so the signal comes through, and adjust the antenna trimmer for maximum output.

Set the receiver dial and generator to 600 K.C. and adjust the oscillator padder for maximum output by rocking the variable condenser (with the tuning knob) as the padder is adjusted.

Return the dial and generator setting to 1400 K.C. and check for alignment.

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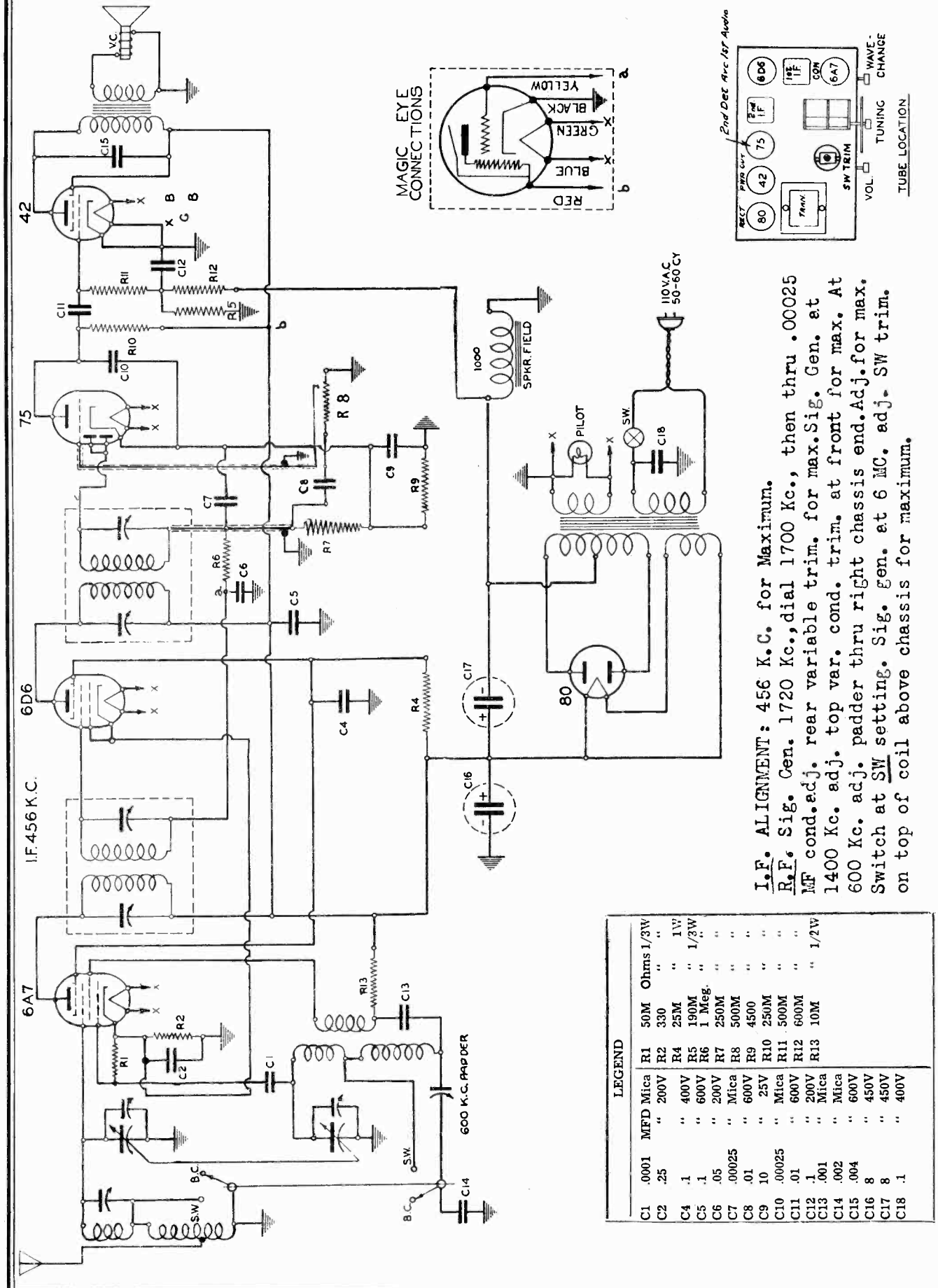
MODEL 510

SPIEGEL, INC.



I.F. ALIGNMENT: 456 K.C. for Maximum.
R.F. Sig. Gen. 1720 Kc., dial 1700 Kc., then thru .00025 MF cond. adj. rear variable trim. for max. Sig. Gen. at 1400 Kc. adj. top var. cond. trim. at front for max. At 600 Kc. adj. padder thru right chassis end. Adj. for max. Switch at SW setting. Sig. gen. at 6 MC. adj. SW trim. on top of coil above chassis for maximum.

LEGEND

C1	.0001	MFD	Mica	R1	50M	Ohms	1/3W
C2	.25	"	200V	R2	330	"	"
C4	.1	"	400V	R4	25M	"	1W
C5	.1	"	600V	R5	190M	"	1/3W
C6	.05	"	200V	R6	1 Meg.	"	"
C7	.00025	"	Mica	R7	250M	"	"
C8	.01	"	600V	R8	500M	"	"
C9	10	"	25V	R9	4500	"	"
C10	.00025	"	Mica	R10	250M	"	"
C11	.01	"	600V	R11	500M	"	"
C12	.1	"	200V	R12	600M	"	"
C13	.001	"	Mica	R13	10M	"	1/2W
C14	.002	"	Mica				
C15	.004	"	600V				
C16	8	"	450V				
C17	8	"	450V				
C18	.1	"	400V				

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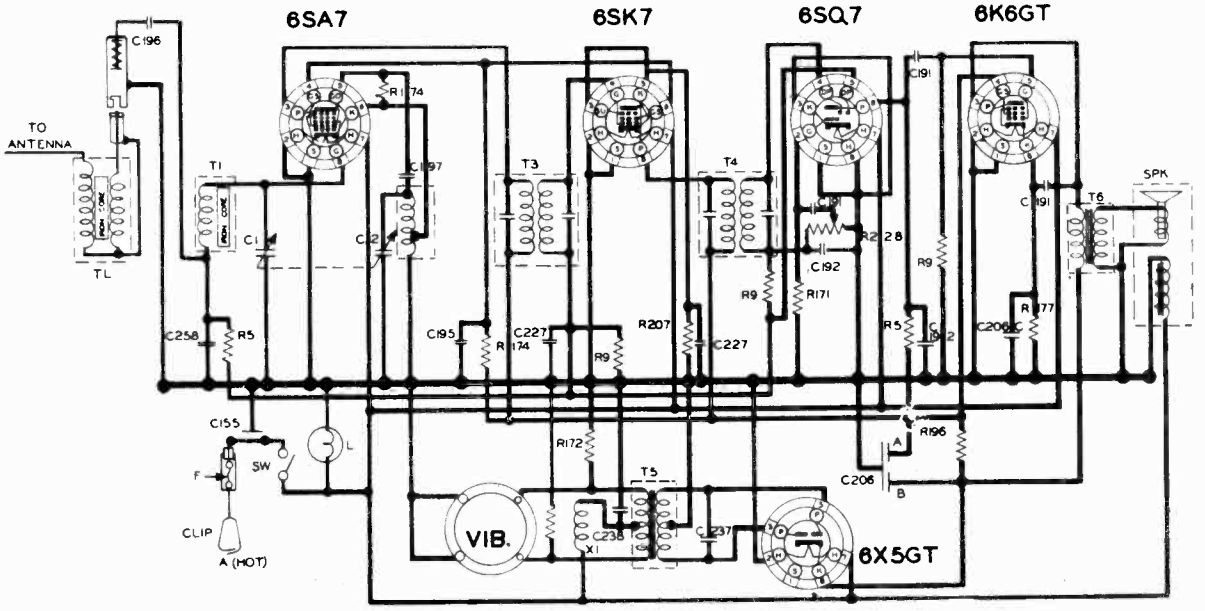
SCHEMATIC CIRCUIT DIAGRAM
AIRCASTLE CAR RADIO CHASSIS RE-84



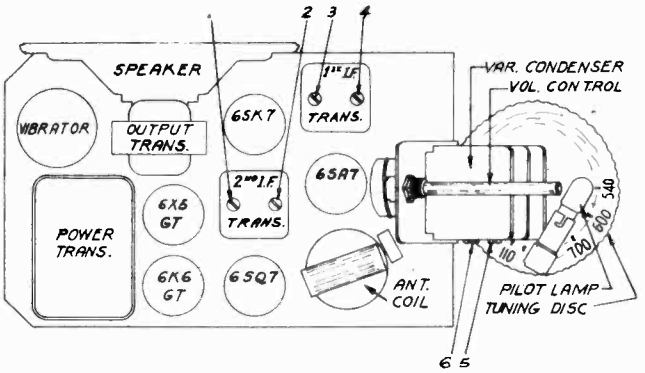
RESISTORS			
R	OHMS	W	PART NO
5	500P	1/4	17-3070
9	1 M	1/4	17-2080
171	1.5 M	1/4	17-14288
172	100	1/4	17-14288
174	20 K	1/4	7-1429H
177	850	1/4	17-14298
228	1 M	V.C.	17-17008
198	500		17-14340
207	500	1/4	17-14361

CONDENSERS			
C	CAPACITY	VOLT	PART NO
1	TWO GANG		
2	VARIABLE		
55	.0002	250	17-14217
237	.005	400	17-14345
206A	10 MFD	300	
206B	10 MFD	100	17-14297
206C	20 MFD	25	
191	.01	400	17-14272
192	.00025	600	7-14273
195	.05	400	17-14278
196	.1	200	17-14277
197	.0001	600	17-14278
236	.5	150	17-14346
227	.05	200	17-14323
238	.004	800	17-14381

CHOKES & TRANSFORMERS		
T-#	TYPE	PART NO
1	ANTENNA COIL	00-1644
2	OSCILLATOR COIL	00-18898
3	FIRST I.F. COIL	00-17003
4	SECOND I.F. COIL	00-17004
5	POWER TRANSF	00-18446
6	OUTPUT TRANSF	00-18445
X	CHOKE	
	SUPPRESSION CHOKE	20-18457

MISCELLANEOUS UNITS		
SYMBOL	DESCRIPTION	PART NO
F	FUSE - 20 AMP	17-2228
L	DIAL LIGHT BULB - MAZDA NO 47	17-18378
SPK	SPEAKER ASSEMBLY	17-18458
SW	POWER SWITCH	17-17008
TL	TRANSMISSION LINE	00-18889
VIB	VIBRATOR	17-14367

I.F. PEAK 455 KC
FREQUENCY RANGE 1575 TO 540 K.C.



Balancing Instructions

All sensitivities given for 1/2 watt output 1.4 across Voice Coil

Operation No.	*Connect Bal. Oscillator To*	*Bal. Oscillator Frequency*	*Adjust Padder No.*	*Dial Setting*	*Sensitivity*
1	6SA7 Grid	455	1,2,3 & 4	550 KC	50uv
2	Antenna Coupler Through 20 uuf	1400	5	1400	
3	"	1400	6	1400	10uv

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MODELS 542,543
MODEL 560B

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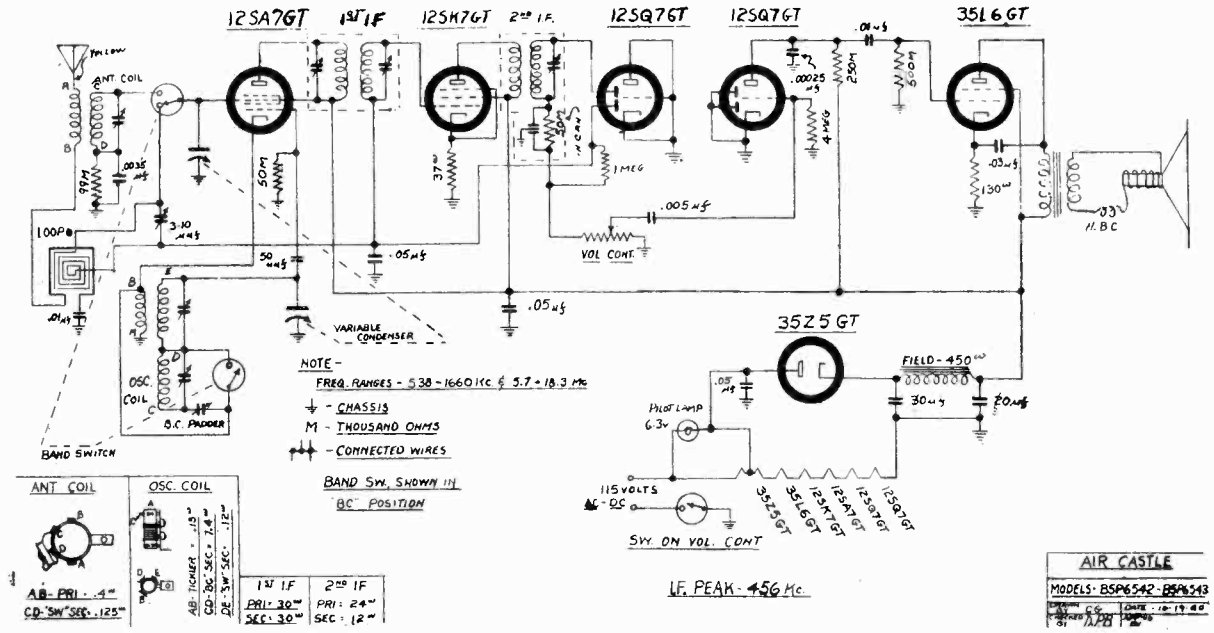
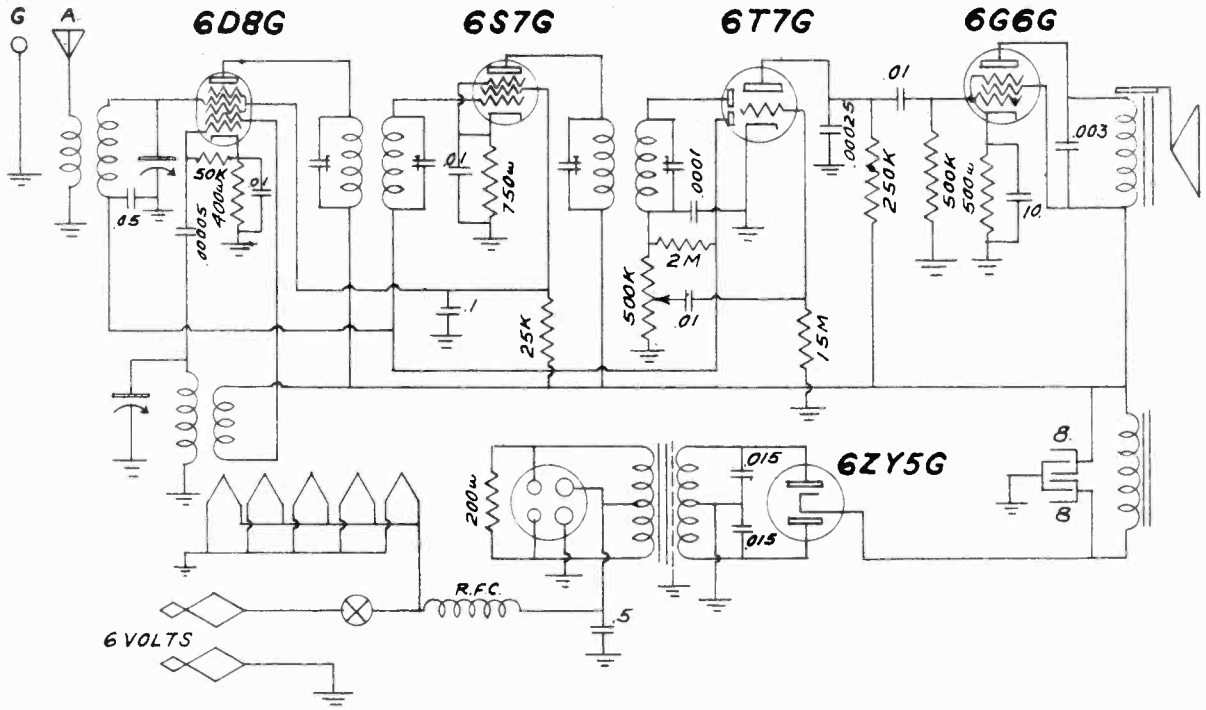


MODELS 542,543



MODEL 560B

FOR OTHER DATA SEE INDEX

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MODEL 571-1

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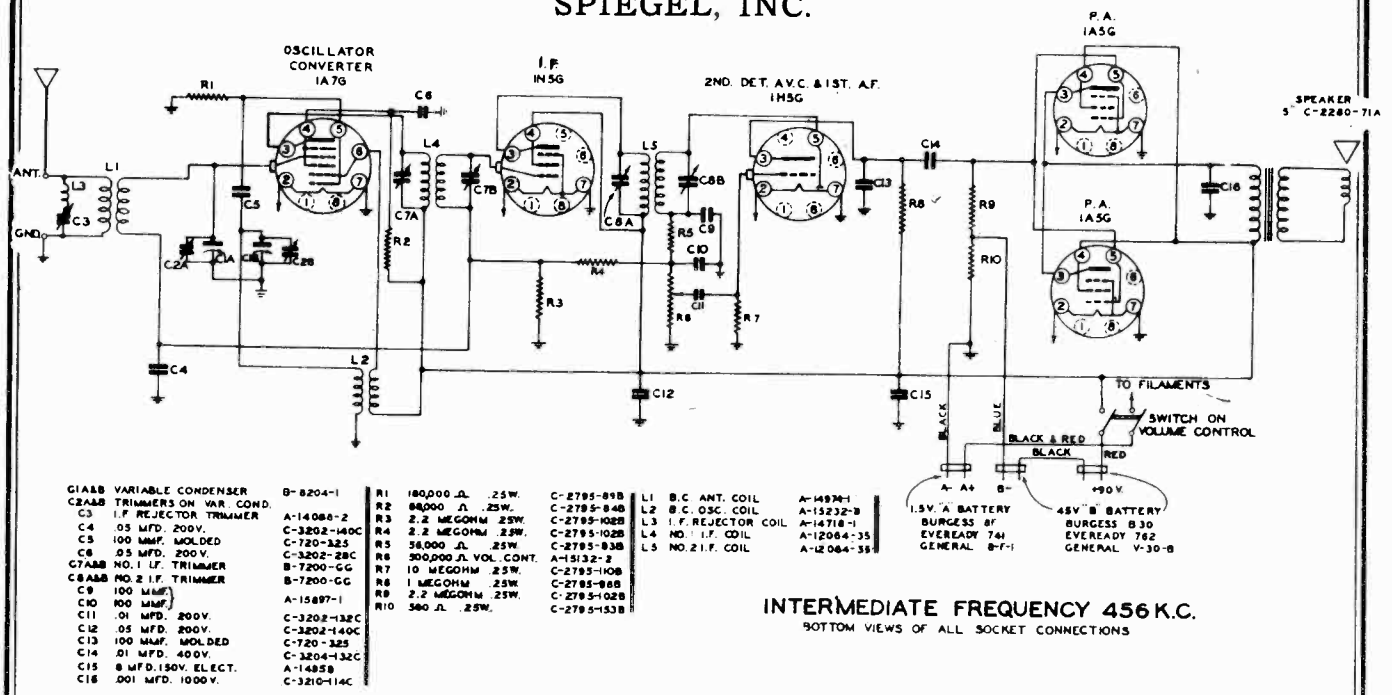


C1A&B	VARIABLE CONDENSER	B-8204-1	R1	180,000 Ω. .25W.	C-2795-89B	L1	B.C. ANT. COIL	A-14974-1
C2A&B	TRIMMERS ON VAR. COND.		R2	68,000 Ω. .25W.	C-2795-84B	L2	B.C. OSC. COIL	A-15232-B
C3	I.F. REJECTOR TRIMMER	A-14086-2	R3	2.2 MEGOHM .25W.	C-2795-102B	L3	I.F. REJECTOR COIL	A-14718-1
C4	.05 MFD. 200V.	C-3202-140C	R4	2.2 MEGOHM .25W.	C-2795-102B	L4	NO. 1 I.F. COIL	A-12084-35
C5	100 MMF. MOLDED	C-720-325	R5	56,000 Ω. .25W.	C-2795-83B	L5	NO. 2 I.F. COIL	A-12084-35
C6	.05 MFD. 200 V.	C-3202-28C	R6	500,000 Ω. VOL. CONT.	A-15132-2			
C7A&B	NO. 1 I.F. TRIMMER	B-7200-GG	R7	10 MEGOHM .25W.	C-2795-110B			
C8A&B	NO. 2 I.F. TRIMMER	B-7200-GG	R8	1 MEGOHM .25W.	C-2795-96B			
C9	100 MMF.	A-15897-1	R9	2.2 MEGOHM .25W.	C-2795-102B			
C10	100 MMF.		R10	380 Ω. .25W.	C-2795-153B			
C11	.01 MFD. 200V.	C-3202-132C						
C12	.05 MFD. 200V.	C-3202-140C						
C13	100 MMF. MOLDED	C-720-325						
C14	.01 MFD. 400V.	C-3204-132C						
C15	8 MFD. 150V. ELECT.	A-14858						
C16	.001 MFD. 1000 V.	C-3210-114C						

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

VOLTAGE CHART

"A" Battery Voltage: 1.5 volts
"B" Battery Voltage: 90. volts

Position of Volume Control: Full with Antenna disconnected

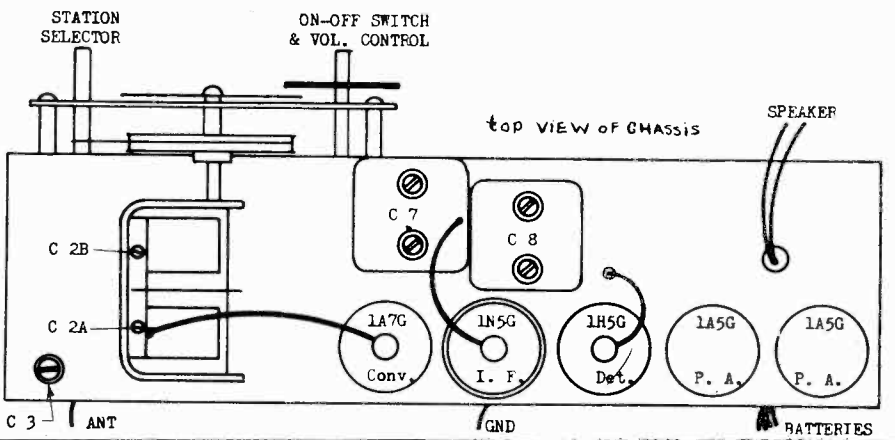
Tube	Function	Voltage of socket prongs to Gnd. (See No's. on schematic diagram)								
		No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	Grid Cap
1A7G	Osc-Converter	83	1.3	83	18	*	83	0	83	0
1N5G	I-f Amplifier	0	1.3	83	83	-	-	0	0	0
1H5G	Det-AVC-Audio	-	1.3	*	-	0	0	0	-	0
1A5G	Power Amplifier	-	1.3	78	83	0	-	0	0	-
1A5G	Power Amplifier	-	1.3	78	82	0	-5	0	0	-

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% - or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All measurements made with 1000 ohms per volt voltmeter.

* Cannot be measured with 1000 ohms/volt voltmeter.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING CONDENSER SETTING	TRIMMER	REMARKS
1	(Set pointer parallel with horizontal lines on scale with gang condenser plates fully closed)						
2	I. F.	1A7G grid	.1 mf.	456 kc	open	C 12 A & B	2nd. I. F.
						C 11 A & B	1st. I. F.
3	Rejector	Ant.	200 mmf.	456 kc	closed	C 2	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 kc	1500 kc	C 2B	Oscillator
						C 2A	Antenna
5	(Check calibration and sensitivity at 600 kc, 900 kc and 1500 kc)						
6	(Check operations 1 to 5 inclusive)						



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MODELS 579,1140,1141
Chassis 559; V1140,2307,
2308,Ch.101505;T2307,
Chassis 101505,599

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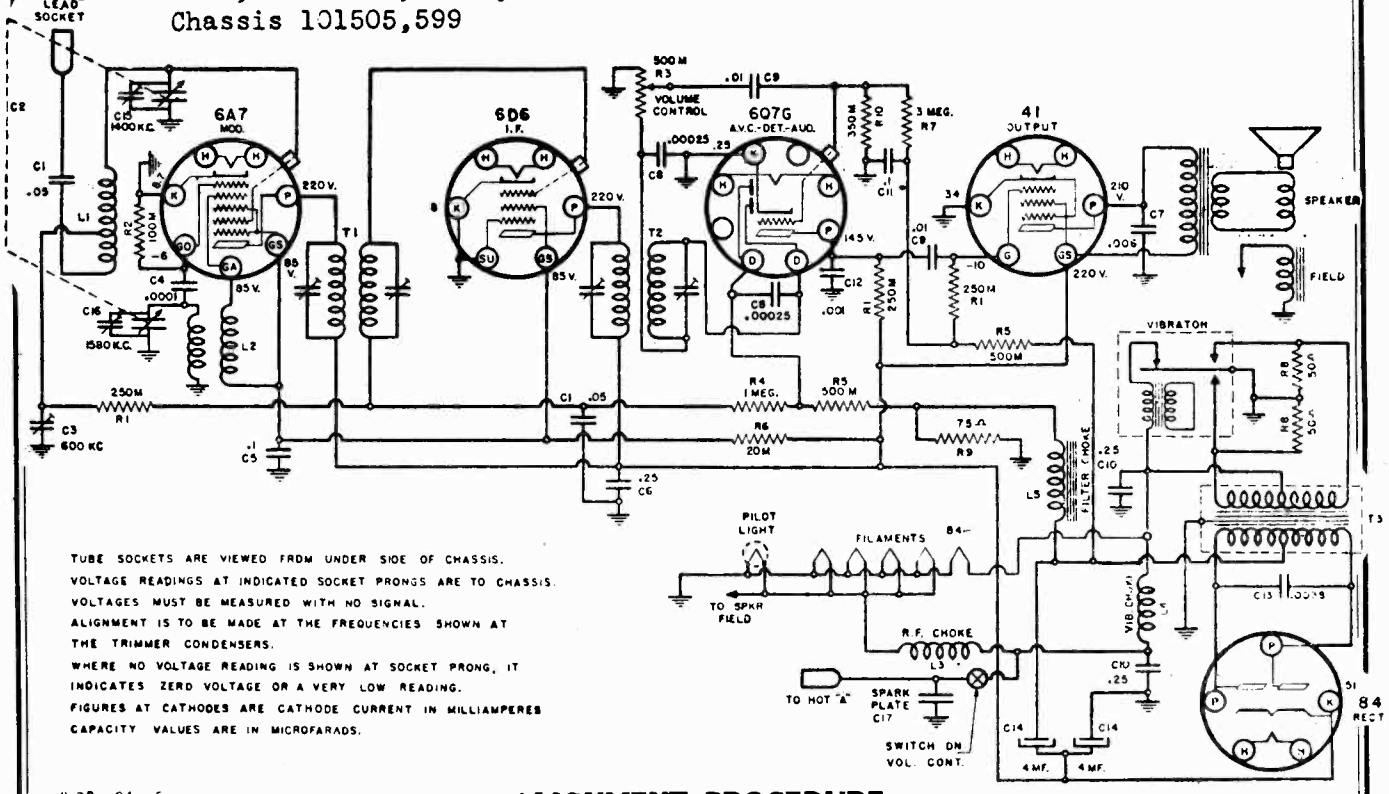


9-38--94--5

ALIGNMENT PROCEDURE

PRELIMINARY

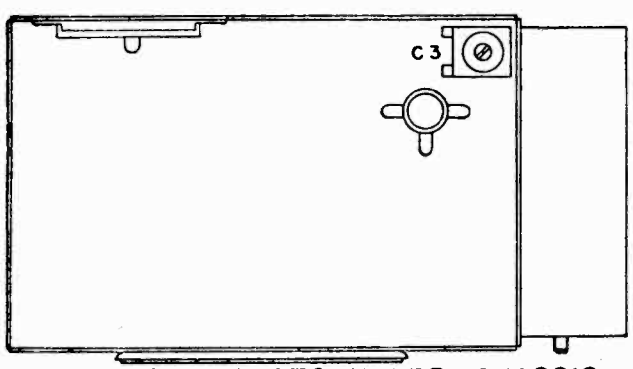
Output Meter Connections	Across Loud Speaker Voice Coil
Output Meter Reading to Indicate 1 Watt	1.85 Volts
Generator Ground Lead Connection	Receiver Chassis
Dummy Antenna Value to Be in Series with Generator Output	See Chart Below
Connection of Generator Output Lead	See Chart Below
Generator Modulation	30%, 400 Cycles
Position of Volume Control	Fully On

Position of Variable	Generator Frequency	Dummy Antenna	Generator Connection	Trimmer Adjustments (In Order Shown)	Trimmer Function
Closed	456 KC	.1 mfd.	6A7 Grid	T2, T1	I. F.
Fully Open	1580 KC	.0002 mfd.	Antenna Conn.	C16	Oscillator Trimmer
1400 KC	1400 KC	.0002 mfd.	Antenna Conn.	C15	Antenna Trimmer
600 KC	600 KC	.0002 mfd.	Antenna Conn.	C3	Antenna Padder

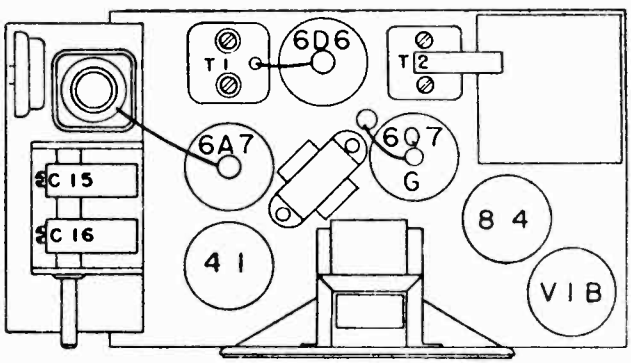
The variable condenser should be at 600 k.c. for antenna adjustment.

The alignment procedure should be repeated in the original order, step by step, to insure greater accuracy. A final adjustment of antenna padder condenser C3 is always made after the receiver is installed in the car, in order to match the car antenna.

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



LOCATIONS OF PARTS UNDER CHASSIS



LOCATIONS OF PARTS ON TOP OF CHASSIS

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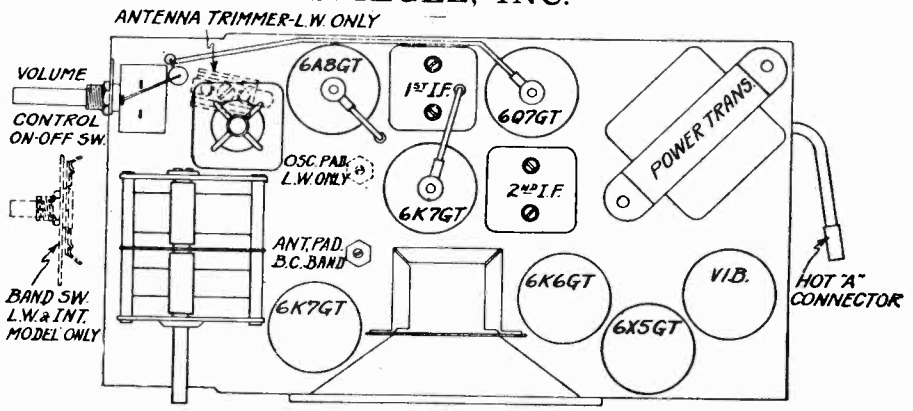

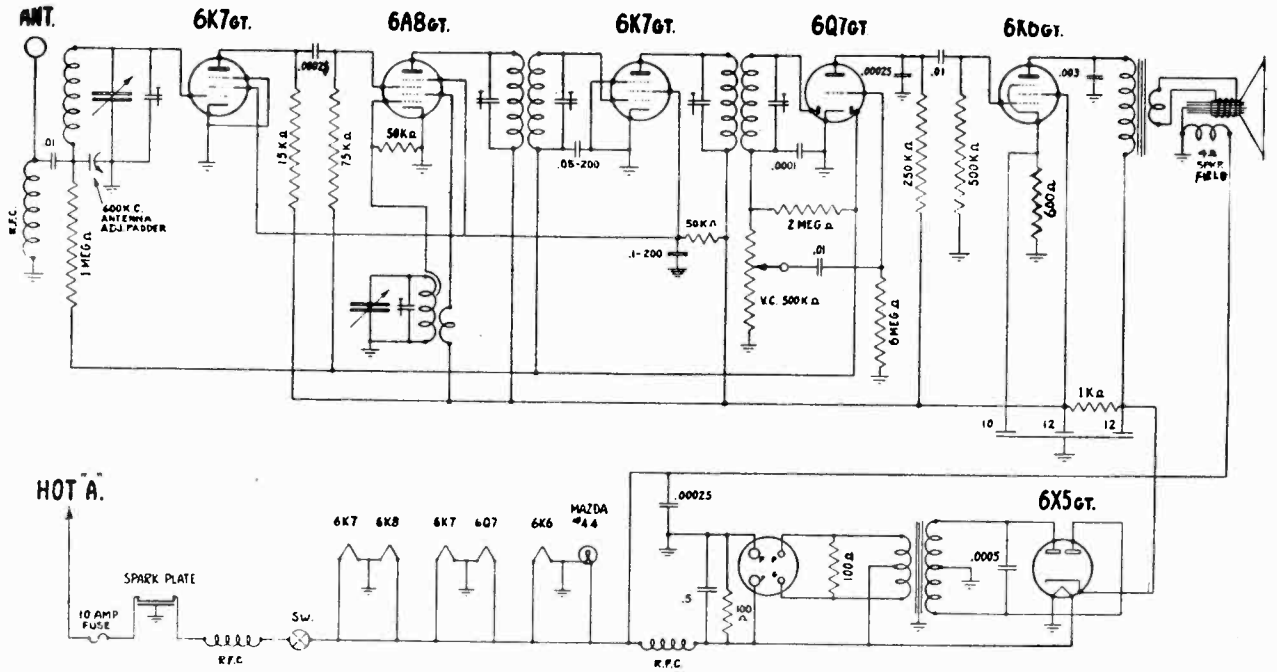

I. F. ALIGNMENT Set the variable condenser at minimum capacity, (dial pointer at 1550 K.C.). Connect the two leads from a good, modulated signal generator, the ground lead to the radio chassis and the other lead through a .1 mfd. condenser, to the grid cap of the 6A8GT with the tube's grid lead still in place.

Connect the leads from a fully charged 6 volt storage battery to the receiver chassis and battery lead, the polarity being reversible.

With the set in operation and the volume control full on, set the signal generator to 456 K.C. and increase its output until the signal is heard in the set's speaker. Starting with the second I. F., adjust the I. F. trimmers for maximum output, decreasing the signal generator output as the receiver output increases.

The generator output in all the alignment adjustments should be adjusted so the meter will read approximately .4 volts continually.

R. F. ALIGNMENT With the variable condenser still full open, set the generator to 1550 K.C. Connect the generator lead to the antenna lead through a .0001 mfd. condenser as dummy antenna. Adjust the oscillator trimmer for maximum output. Set the receiver dial and the generator to 1400 K.C. so the signal comes through, and adjust the antenna trimmer for maximum output.

Set the receiver dial and generator to 600 K.C. and adjust the oscillator padder for maximum output by rocking the variable condenser (with the tuning knob) as the padder is adjusted.

Return the dial and generator setting to 1400 K.C. and check for alignment.

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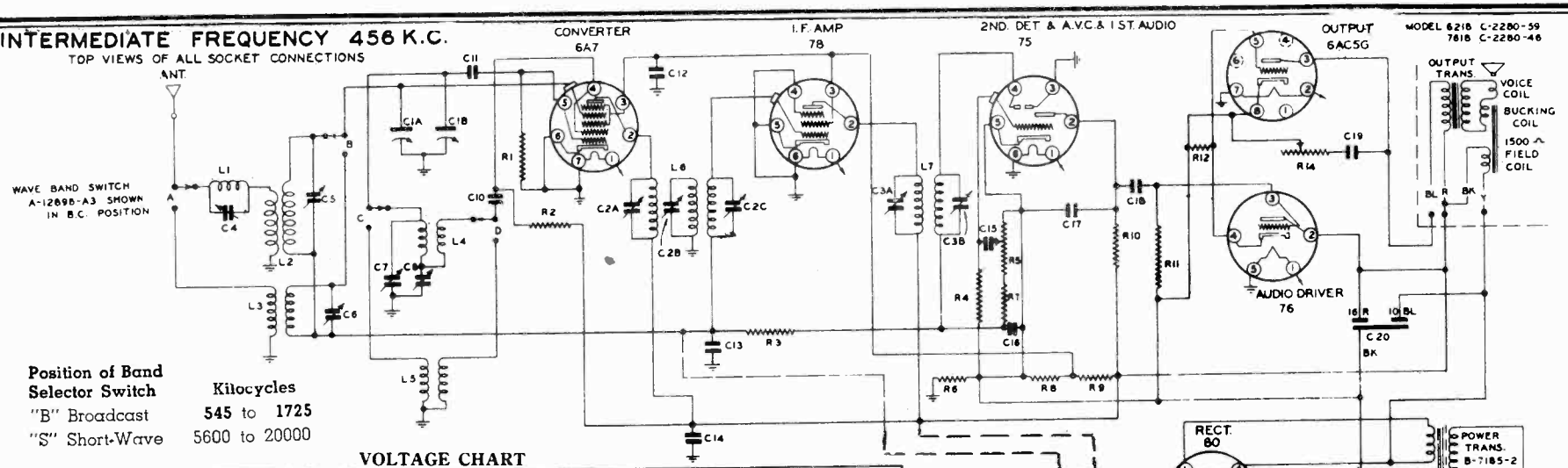
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



Position of Band Selector Switch — **Kilocycles**

"B" Broadcast — 545 to 1725

"S" Short-Wave — 5600 to 20000

VOLTAGE CHART

Line Voltage: 115 volts — Position of Volume Control: Full with Antenna Disconnected

Tube	Function	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6A7	Converter	6.1	250	60	150	-9	0	0	-	0
78	I.F. Amp.	6.1	250	60	0	0	0	-	-	0
75	2nd Det. AVC-Audio	6.1	37	0	-.5	-1.5	0	-	-	-.7
76	Driver	6.1	250	0	10	0	-	-	-	-
6AC5G	P.A.	0	0	225	0	10	0	6.1	-	-
80	Rectifier	525	270	270	525	-	-	-	-	-
6U5	Tuning Indicator	6.1	50	.2	250	3	0	-	-	-

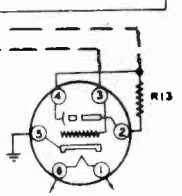
Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.

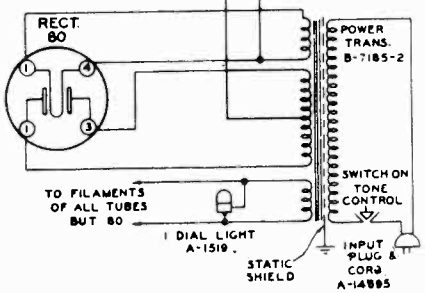
ALIGNMENT

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark on scale when condenser plates are flush)							
2	I.F.	6A7 Grid	.1 mf.	456 KC	BC	Open	C3A,B;C2A,B,C	Adjust to approx. peak
3							C2B (Transfer)	Detune by tightening ½ t.
4							C3A,B;C2A,C	Peak accurately
5							C2B	Peak accurately*
6	Rejector	Ant.	200 mmf.	456 KC	BC	Open	C4	Adjust to minimum
7	Broad-cast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C7 BC osc. trim	Peak accurately
8							C5 BC ant trim	Peak accurately
9				600 KC	BC	600 KC	C8 BC osc. pad	Peak accurately
10	(Repeat operations 7 and 8)							
11	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
12	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6 SW ant trim	**
13	(Check calibration and sensitivity at 6.0 MC and 18 MC)							
14	(Check operations 1 to 13 inclusive)							

*100 ohm non-inductive resistor and 200 mmf. condenser in series.

**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurately.



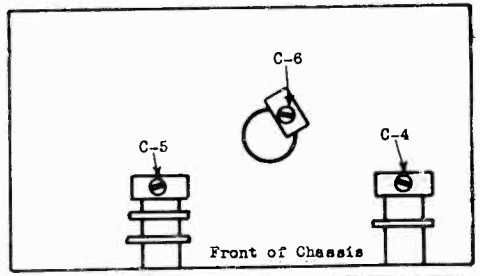


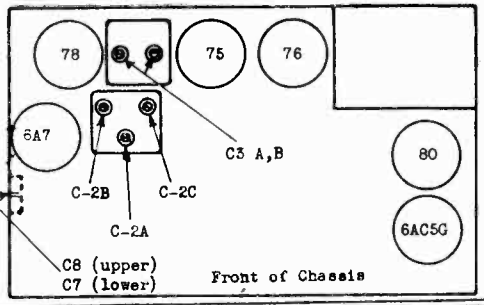
L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-1
L4	B.C. OSC. COIL	A-14213-2A
L5	S.W. OSC. COIL	
L6	NO.1 I.F. COIL	A-14788
L7	NO.2 I.F. COIL	A-12064-17

C1A&B	VARIABLE CONDENSER	B-7229
C2A&C	NO.1 I.F. TRIMMER	A-14792
C3A&B	NO.2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	S.W. ANT. TRIMMER	A-14088-6
C7	B.C. OSC. TRIMMER	B-7199-AT
C8	B.C. OSC. PADDER	

C10	.001 MFD. 400V.	C-3204-2C
C11	50 MMFD. MOLDED	C-720-320
C12	.1 MFD. 200V.	C-3202-38C
C13	.05 MFD. 200V.	C-3202-28C
C14	.1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 200V.	C-3202-22C
C16	250 MMFD. MOLDED	C-720-324
C17	250 MMFD. MOLDED	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.03 MFD. 800V.	C-3206-80C
C20	16-10 MFD. ELECT.	A-14799

R1	56,000 Ω .25W.	C-2795-83B
R2	22,000 Ω .5W.	C-2796-78C
R3	1 MEGOHM .25W.	C-2795-96B
R4	4.7 MEGOHM .25W.	C-2795-104B
R5	500,000 Ω VOL. CONTROL	A-14779
R6	180 Ω .25W.	C-2795-52B
R7	56,000 Ω .25W.	C-2795-83B
R8	27,000 Ω 1W.	C-2797-79A
R9	33,000 Ω 3W.	C-2799-80A
R10	270,000 Ω .25W.	C-2795-91B
R11	1 MEGOHM .25W.	C-2795-96B
R12	27,000 Ω .25W.	C-2795-79B
R13	1 MEGOHM .25W.	C-2795-96B
R14	TONE CONTROL & SW.	A-14778





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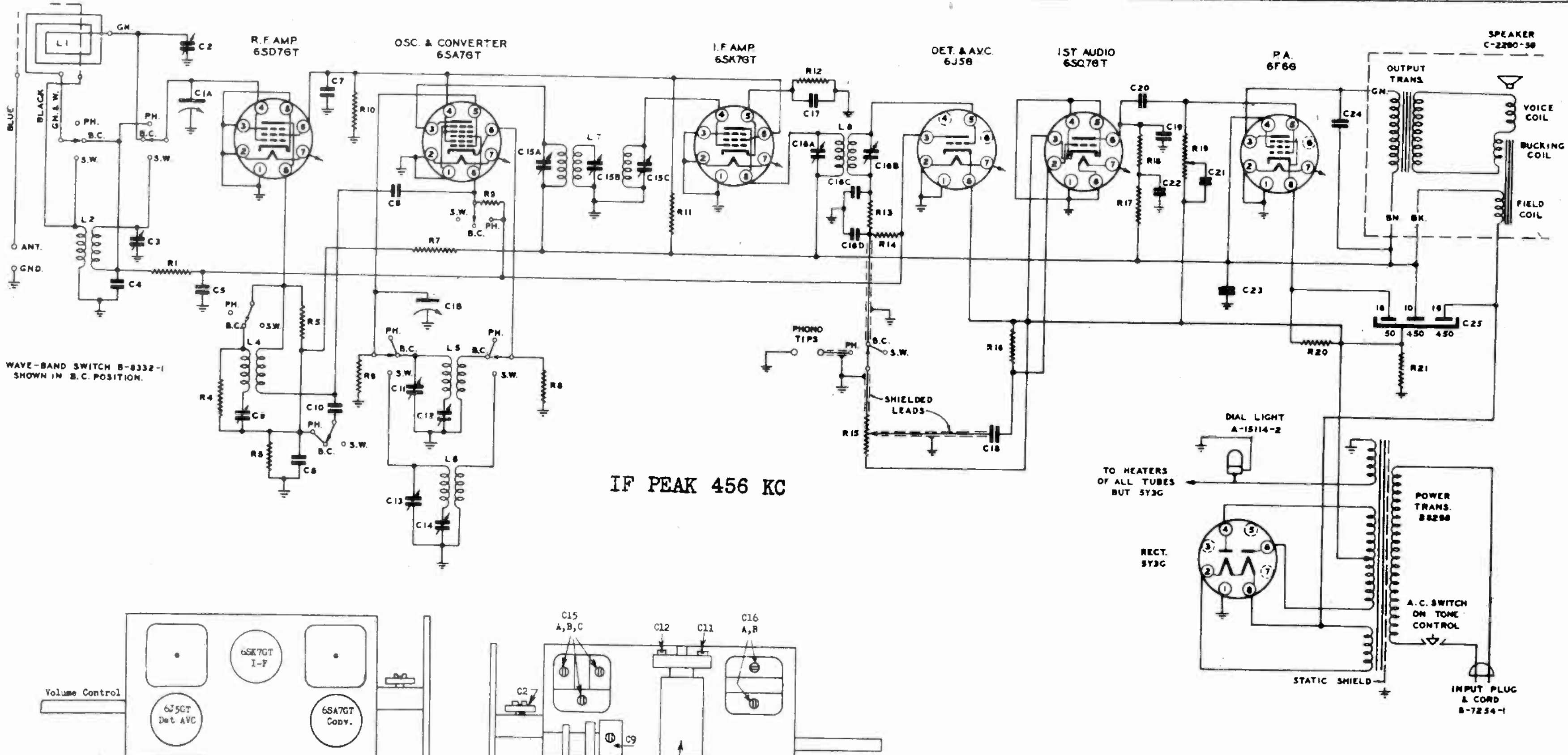
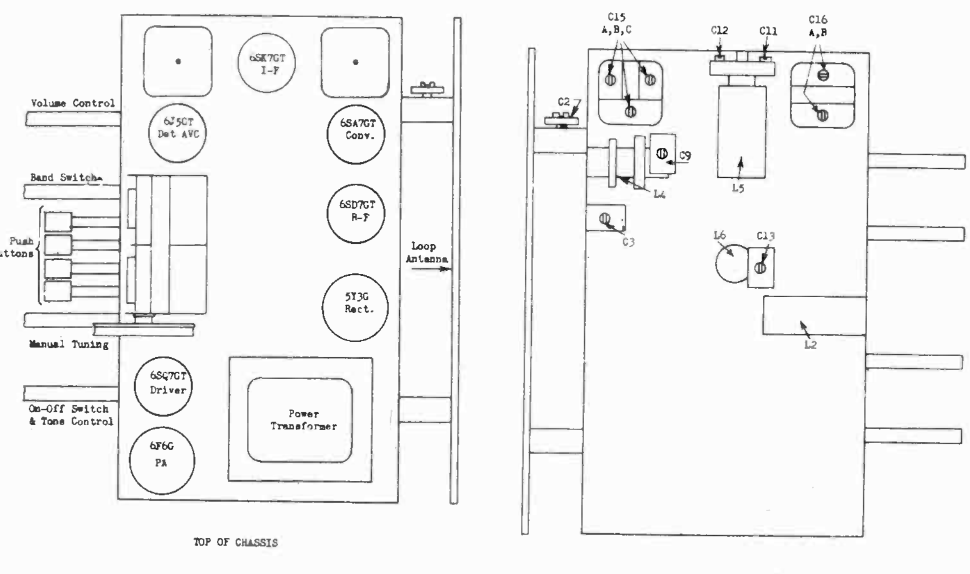


IF PEAK 456 KC



C1A&B	2-GANG VARIABLE CONDENSER	B-8299
C2	B.C. ANT. TRIMMER	A-14088-7
C3	S.W. ANT. TRIMMER	A-14088-5
C4	.1 MFD 400 V.	C-3204-38C
C5	.1 MFD. 400 V.	C-3204-38C
C6	.1 MFD. 400 V.	C-3204-38C
C7	.1 MFD. 400 V.	C-3204-38C
C8	100 MMF. MICA	C-720-339
C9	I.F. REJ. TRIMMER	A-14088-4
C10	40 MMF. MICA	C-720-381
C11	B.C. OSC. TRIMMER	B-7199-DY
C12	B.C. OSC. PADDER	
C13	S.W. OSC. TRIMMER	A-14088-5
C14	S.W. OSC. PADDER	A-15481-6
C15A B&C	NO. 1 I.F. TRIMMERS	A-14792
C16ABCD	NO. 2 I.F. TRIMMERS	A-20114
C17	.1 MFD. 200 V.	C-3202-38C
C18	.02 MFD. 400 V.	C-3204-22C
C19	250 MMF. MICA	C-720-324
C20	.05 MFD. 400 V.	C-3204-140C
C21	.006 MFD. 400 V.	C-3204-88C
C22	.1 MFD. 400 V.	C-3204-38C
C23	.1 MFD. 400 V.	C-3204-38C
C24	.006 MFD. 800 V.	C-3208-88C
C25	ELECTROLYTIC	A-14780-8

R1	270,000 Ω	.25 W.	C-2796-91B
R3	15,000 Ω	.5 W.	C-2796-76C
R4	5,600 Ω	.25 W.	C-2795-71B
R5	33,000 Ω	1. W.	C-2797-80B
R6	15,000 Ω	.5 W.	C-2796-76C
R7	15,000 Ω	.5 W.	C-2796-76C
R8	680 Ω	.25 W.	C-2795-158B
R9	270,000 Ω	.25 W.	C-2795-91B
R10	27,000 Ω	1. W.	C-2797-79B
R11	10,000 Ω	2. W.	C-2798-74A
R12	300 Ω	.25 W.	C-2795-146B
R13	56,000 Ω	.25 W.	C-2795-83B
R14	1 MEG.	.25 W.	C-2795-98B
R15	VOL. CONTROL		A-15130-5
R16	4.7 MEG.	.25 W.	C-2795-106B
R17	100,000 Ω	.25 W.	C-2795-86B
R18	270,000 Ω	.25 W.	C-2795-91B
R19	TONE CONTROL		A-15129-2
R20	680 Ω	1. W.	C-2797-60B
R21	110 Ω	.5 W.	C-2796-136C

L1	B.C. LOOP	C-3328-1
L2	S.W. ANT. COIL	A-14960-4
L4	I.F. TRAP & IMAGE REJ.	A-15696
L5	B.C. OSC.	A-15377-8
L6	S.W. OSC.	A-14967-6
L7	NO. 1 I.F.	A-14794-3
L8	NO. 2 I.F.	A-12064-42

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MODEL 752
MODEL 560B

SPIEGEL, INC.

VOLTAGE CHART

Line Voltage: 117 Volts AC

Position of Volume Control: Full with dial turned to quiet channel

Position of Band Switch: Broadcast

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
6SD7GT	R-F Amplifier	0	0	0	**	0	75	6*	50
6SA7GT	Osc - Converter	0	0	225	75	-7.5	**	6*	0
6SK7GT	I-F Amplifier	0	0	0	**	2.5	75	6*	225
6J5G	Detector - AVC	0	0	0	**	**	—	6*	**
6SL7GT	Driver	0	0	0	0	0	45	6*	0
6F6G	Power Amplifier	0	0	225	225	**	130	6*	15
5Y3G	Rectifier	0	300	225	275*	—	275*	150	225

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 1000 ohms per volt voltmeter.
*AC volts.
**Cannot test with M-665 Analyzer.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with calibration mark at extreme counter-clockwise position with variable condenser gang fully closed.)							
2	I.F.	Ant. Term. of Loop	200 mmf.	456 KC	BC	Open	C15 B *	**
3							C15 A&C C15 B	Peak accurately
4							C16 A&B	Peak accurately
5	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C9	Adjust to minimum
6	Broadcast Band	Ant.	200 mmf.	1600 KC	BC	1600 KC	C11 (Osc.) C2 (Ant)	Peak accurately Peak accurately
7				600 KC		600 KC	C12 (Pad)	Peak accurately
8	(Repeat operation 6)							
9	(Check calibration and sensitivity at 600 KC, 1,000 KC and 1,600 KC)							
10	Shortwave Band	Ant.	***	18 MC	SW	18 MC	C13 (Osc.) C3 (Ant.)	Peak accurately ****
11	(Check calibration and sensitivity at 6 MC and 18 MC)							
12	(Check operations 1 to 11 inclusive.)							

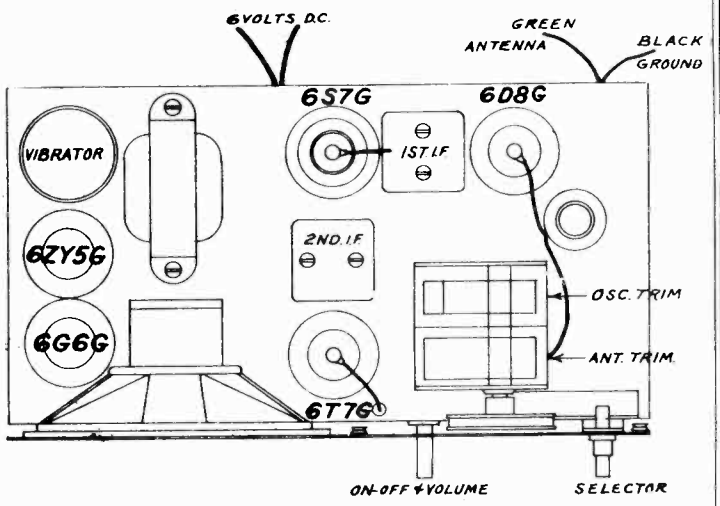
Notes: *Bronze color trimmer screw.
**Turn trimmer screw all the way down.
***100 ohms and 200 mmf. in series.
****Rock dial while adjusting for maximum output.
(ANTENNA Trimmer Condenser C2 is located on the loop antenna assembly.)

MODEL 560 B

ALIGNMENT

I.F. Sig. gen. at 456 Kc., dial at 1720 Kc. Vol. con. full on, adj. sig. gen. output until sig. is heard. Adj. IF trims. for max.

B.C. Sig. gen. and dial at 1720 Kc. adj. osc. trim. for max. thru .0002 M.F. cond. Sig. gen. and dial at 1400 Kc. adj. ant. trim. for max. Check for alignment at 600 Kc. on sig. gen. and rec.dial.



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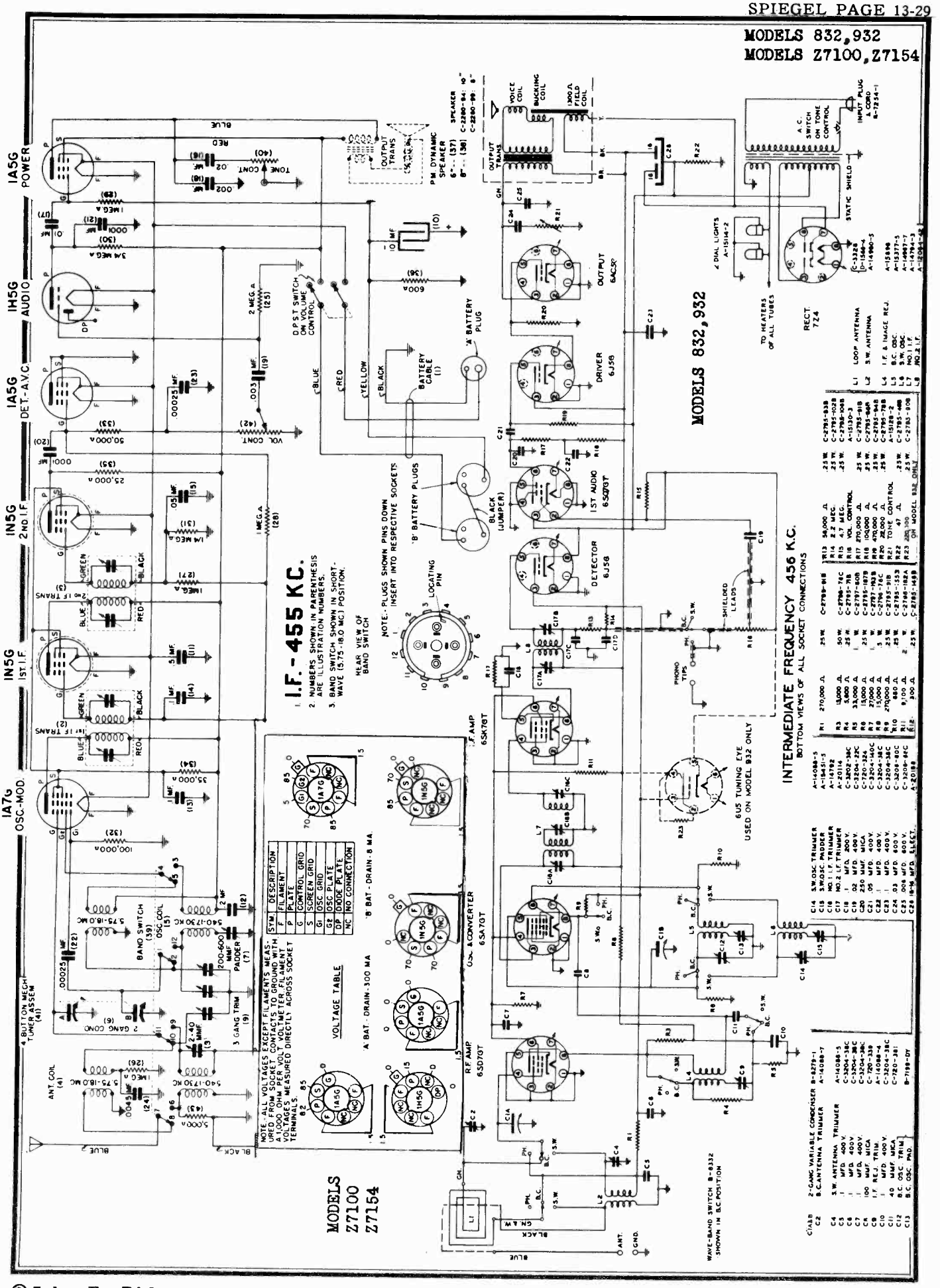

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MODELS 832,932

SPIEGEL, INC.

VOLTAGE CHART

Line Voltage: 117 Volts

Position of Volume Control: Full with dial turned to quiet channel.

Position of Band Switch: Broadcast

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
6SD7GT	R-F Amplifier	0	0	0	0	0	80	6*	88
6SA7GT	Osc - Converter	0	0	225	80	0	0	6*	0
6SK7GT	I-F Amplifier	0	0	0	0	0	90	6*	250
6J5GT	Detector - AVC	0	0	**	0	0	160	6*	0
6SQ7GT	1st A-F Amplifier	0	0	0	0	0	50	6*	0
6J5GT	Audio Driver	0	0	225	80	0	0	6*	10
6AC5G	Power Amplifier	0	0	220	—	0	0	6*	0
724	Rectifier***	6*	0	300*	0	0	300*	0	0

Notes: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.

*AC volts.

**Cannot be tested with M-665 Analyzer.

***Rectifier tube type 724 check from socket contacts to ground with tube out.

Type 6U5 Tuning Eye used on Model 932 only.

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.	Ant. Term. of Loop	200 mmf.	456 KC	BC	Open	C16 B *	**
3							C16 A&C C16 B	Peak accurately
4							C17 A &B	Peak accurately
5	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C9	Adjust to minimum
6	Broadcast Band	Ant.	200 mmf.	1600 KC	BC	1600 KC	C12 (Osc.) C2 (ANT)	Peak accurately Peak accurately
7				600 KC		600 KC	C13 (Pad)	Peak accurately
8	(Repeat operation 6)							
9	(Check calibration and sensitivity at 600 KC, 1000 KC and 1600 KC)							
10	Shortwave Band	Ant.	***	18 MC	SW	18 MC	C14 (Osc.) C4 (ANT)	Peak accurately ****
11	(Check calibration and sensitivity at 6 MC and 18 MC)							
12	(Check operations 1 to 11 inclusive)							

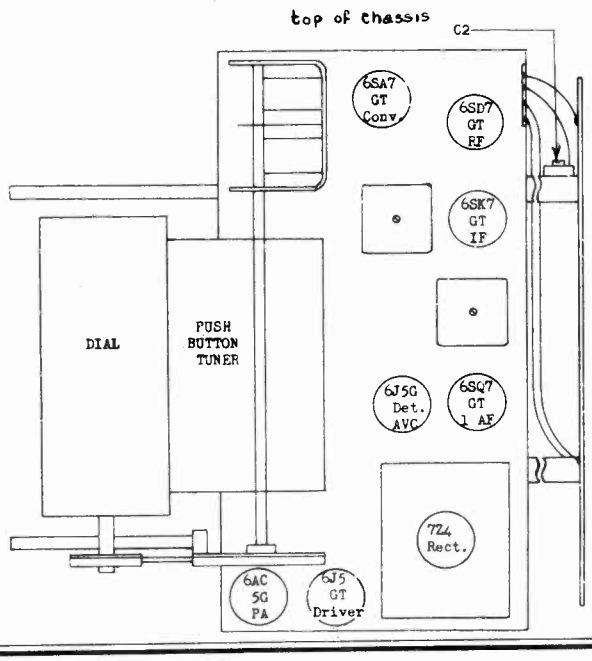
NOTES: *Bronze color trimmer screw.

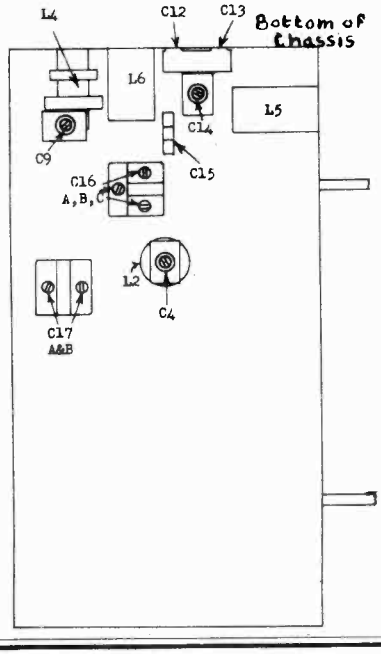
**Turn trimmer screw all the way down.

***100 ohms and 200 mmf. in series

****Rock dial while adjusting for maximum output

(Antenna Trimmer Condenser C2 is located on the loop antenna assembly.)





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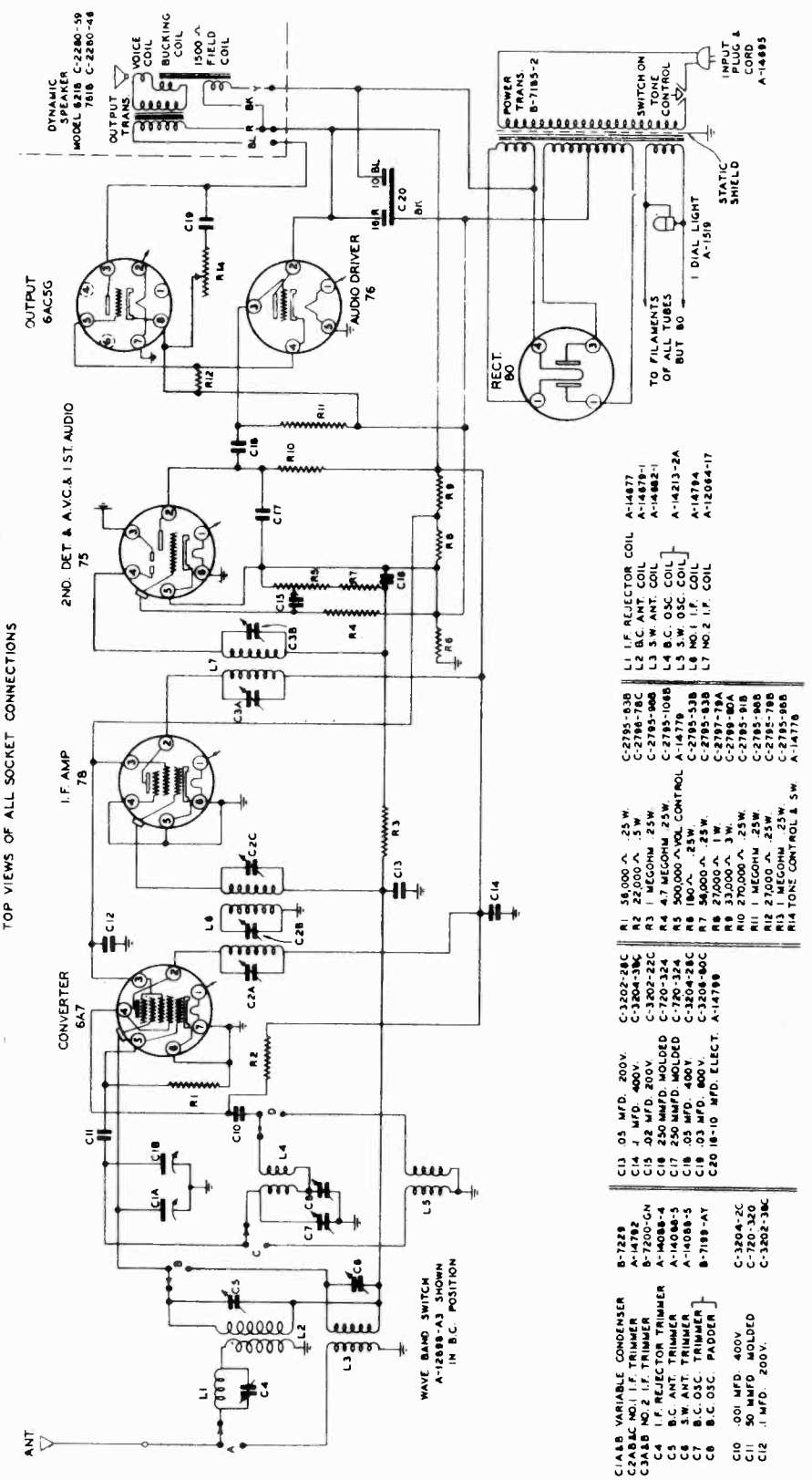
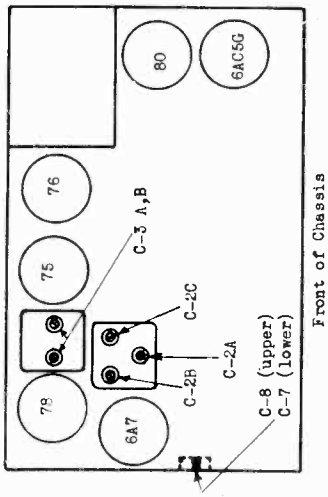
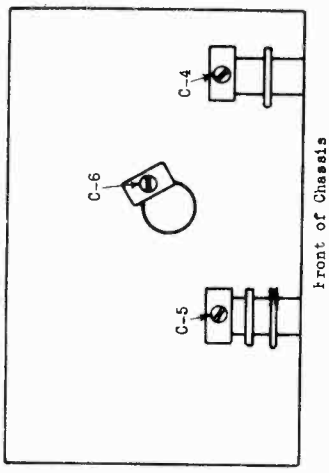
MODELS 1050, 1051, V1050
Chassis 529



Chassis Layout



Trimmer Locations under Chassis



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MODELS 1050,1051,
V1050,Ch.529

SPIEGEL, INC.

VOLTAGE CHART

Line Voltage: 115 volts — Position of Volume Control: Full with Antenna Disconnected

Tube	Function	Voltage of Socket Prongs to Gnd.(See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6A7	Converter	6.1	255	60	150	-9	0	0	-	0
78	I.F. Amp.	6.1	255	60	0	0	0	-	-	0
75	2nd Det. AVC-Audio	6.1	87	0	-.5	-1.75	0	-	-	-.7
76	Driver	6.1	255	0	10	0	-	-	-	-
6AC5G	P.A.	0	0	225	0	10	0	6.1	-	-
80	Rectifier	326	275	275	326	-	-	-	-	-

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.

ALIGNMENT

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer to last mark on scale when condenser plates are flush)							
2	I.F.	6A7 Grid	.1 mf.	456 KC	BC	Open	C3A,B;C2A,B,C	Adjust to approx. peak
3							C2B (Transfer)	Detune by tightening ½ t.
4							C3A,B;C2A,C	Peak accurately
5							C2B	Peak accurately*
6	Rejector	Ant.	200 mmf.	456 KC	BC	Open	C4	Adjust to minimum
7	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C7 BC osc.trim	Peak accurately
8							C5 BC ant.trim	Peak accurately
9				600 KC	BC	600 KC	C8 BC osc.pad.	Peak accurately
10	(Repeat operations 7 and 8)							
11	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
12	S.W. Band	Ant.	*	18 MC	SW	18 MC	C6 SW ant trim	**
13	(Check calibration and sensitivity at 6.0 MC and 18 MC)							
14	(Check operations 1 to 13 inclusive)							

*100 ohm non-inductive resistor and 200 mmf. condenser in series.
**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurataly.

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. Remove the escutcheon plate from the front of the cabinet by means of the two screws and insert the station call letter tabs. 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 extreme left.

3. Using a small screwdriver or other tool that will fit the slot 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. Replace escutcheon.

7. Any of the six stations to which the automatic push-button mechanism has been adjusted may now be received simply by pushing the button for the desired station.

1. **DESCRIPTION:** Equipped with six-button automatic push button tuner; Dial having tuning scale for Broadcast Band and Short-Wave Band; Automatic Volume Control; Interference Rejector Circuit; Band Selector Switch; Full Dynamic Speaker and six Tubes, with equivalent performance of nine single-purpose tubes.

The tube equipment is:

1—Type 6A7 —Converter Heptode
1—Type 78 —Intermediate-Frequency Pentode
1—Type 75 —Duplex-Diode-Triode Second Detector—A. V. C. and Audio Amplifier
1—Type 76 —Driver
1—Type 6AC5G —Power Amplifier Triode
1—Type 80 —Full-Wave Vacuum Rectifier

2. **POWER SUPPLY:** On models designed for operation on 60-cycle current the receptacle plug may be attached to any outlet from 110 to 120 volts, 50 to 60 cycle alternating current (a. c.) power supply system.

This model is available in either 25 cycle or 60 cycle alternating current (a. c.).

This model receiving set, designed for operation on 25 cycle current, will operate satisfactorily on 60 cycle current; however, **a radio set designed for operation on 60 cycle current WILL NOT operate on 25 cycle current.**

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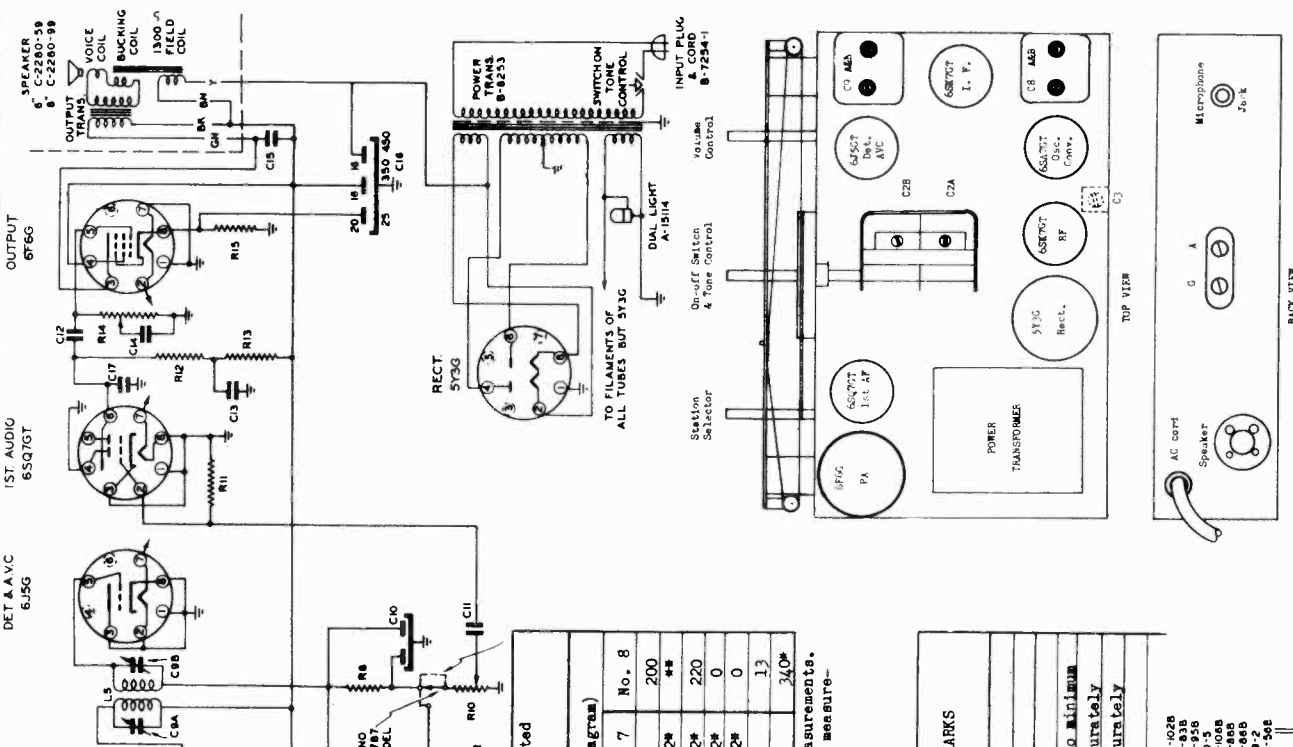

VOLTAGE CHART

Line Voltage: 117 volts — Position of Volume Control: Full with Antenna Disconnected

TUBE	FUNCTION	Voltage of Socket Prongs to Cad. (See Nos. on Schematic Diagram)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6SK7GT	R-F Amplifier	0	6.2*	0	0	0	55	0	200
6SA7GT	Osc. Converter	0	0	225	54	-2	0	6.2*	**
6SK7GT	I-F Amplifier	0	0	0	-**	0	54	6.2*	220
6J5GT	Det - AVC	0	0	0	-**	-3	225	6.2*	0
6SQ7GT	1st Audio	0	-**	0	0	0	33	6.2*	0
6F6G	Power Amplifier	0	6.2*	210	230	0	90	0	13
5Y3G	Rectifier	0	340*	0	280*	0	280*	0	340*

NOTES: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements.
Always use meter scales which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.
*AC readings
**Cannot be measured with 1000 ohms per volt voltmeter.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING CONDENSER SETTING	TRIMMER	REMARKS
1	(Set pointer to last calibration mark on KC scale with gang fully closed.)						
2	I.F.	Prong No. 8 of 6SA7GT	.1 mf	456 KC	Open	C9 A&B	2nd I.F.
						C8 A&B	1st I.F.
3	Rejector	Ant.	200 mmf.	456 KC	Closed	C3	Adjust to minimum
4	Broadcast band	Ant.	200 mmf.	1500 KC	1500 KC	C2B Osc.	Peak accurately
						C2A Ant.	Peak accurately
5	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)						
6	(Check operations 1 to 5 inclusive.)						

C1A,B VARIABLE CONDENSER B-6225
C2A,B TRIMMER, ANT. COND. C-14086-2
I.F. REJECT. TRIMMER C-720-361
C4 40 MMF. MICA C-720-324
C5 250 MMF. MICA C-720-324
C6 .1 MFD. 400V C-3204-38C
C7 .1 MFD. 400V C-3204-38C
C8A,B NO 1 I.F. TRIMMER B-7200-GN
C9A,B NO 2 I.F. TRIMMER B-7200-GN
C10 250-100 MMF. MICA C-720-324
C11 .02 MFD 200 V. C-3202-22C
C12 .02 MFD 400 V. C-3204-22C
C13 .1 MFD. 400 V. C-3204-38C
C14 .006 MFD 400 V. C-3204-36C
C15 .006 MFD. 400 V. C-3204-36C
C16 ELECT. COND. A-15786
C17 250 MMF MICA C-720-324
C18 .1 MFD 400 V C-3204-38C
R1 15 MEGOHM .25 W A-15789
R2 3900 Ω .25 W C-2795-173B
R3 13,000 Ω .25 W C-2795-788
R4 2.2 MEGOHM .25 W C-2795-102B
R5 470 Ω .25 W C-2795-151B
R6 22,000 Ω 2 W C-2798-78A
R7 2.2 MEGOHM .25 W C-2795-102B
R8 56,000 Ω .25 W C-2795-83B
R9 560,000 Ω .25 W C-2795-95B
R10 1.5 MEG. POT. CONT. A-15150-5
R11 4.7 MEGOHM .25 W C-2795-106B
R12 150,000 Ω .25 W C-2795-88B
R13 100,000 Ω .25 W C-2795-88B
R14 TONE CONTROL & SW A-15129-2
R15 330 Ω 1 W C-2797-56B
L1 I.F. REJECT COIL A-14716-1
L2 R.C. ANT COIL A-14974-5
L3 R.C. OSC COIL A-15780
L4 NO 1 I.F. COIL A-12044-39
L5 NO 2 I.F. COIL A-12044-17

MODEL 751 OMIT SWITCH & CONNECT AS PER DOTTED LINES.

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MODEL V1068, Ch. 6TAC
MODEL 6810, Ch. 660

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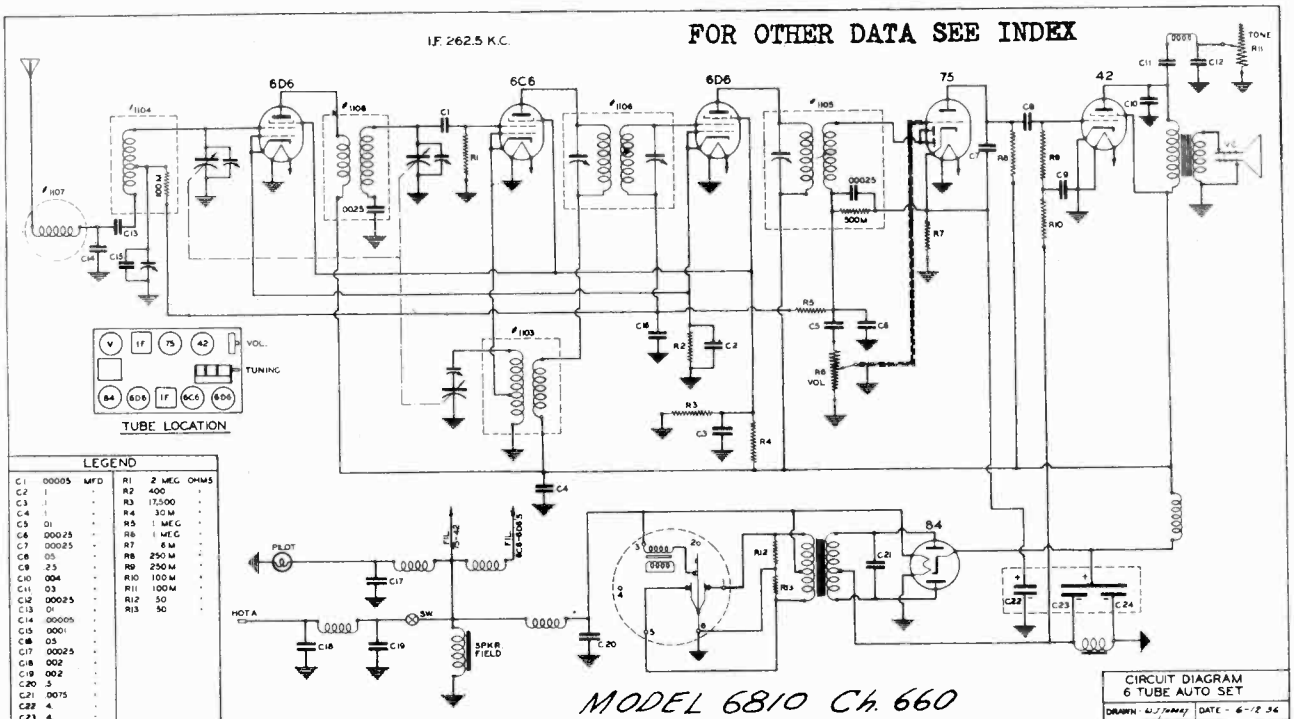

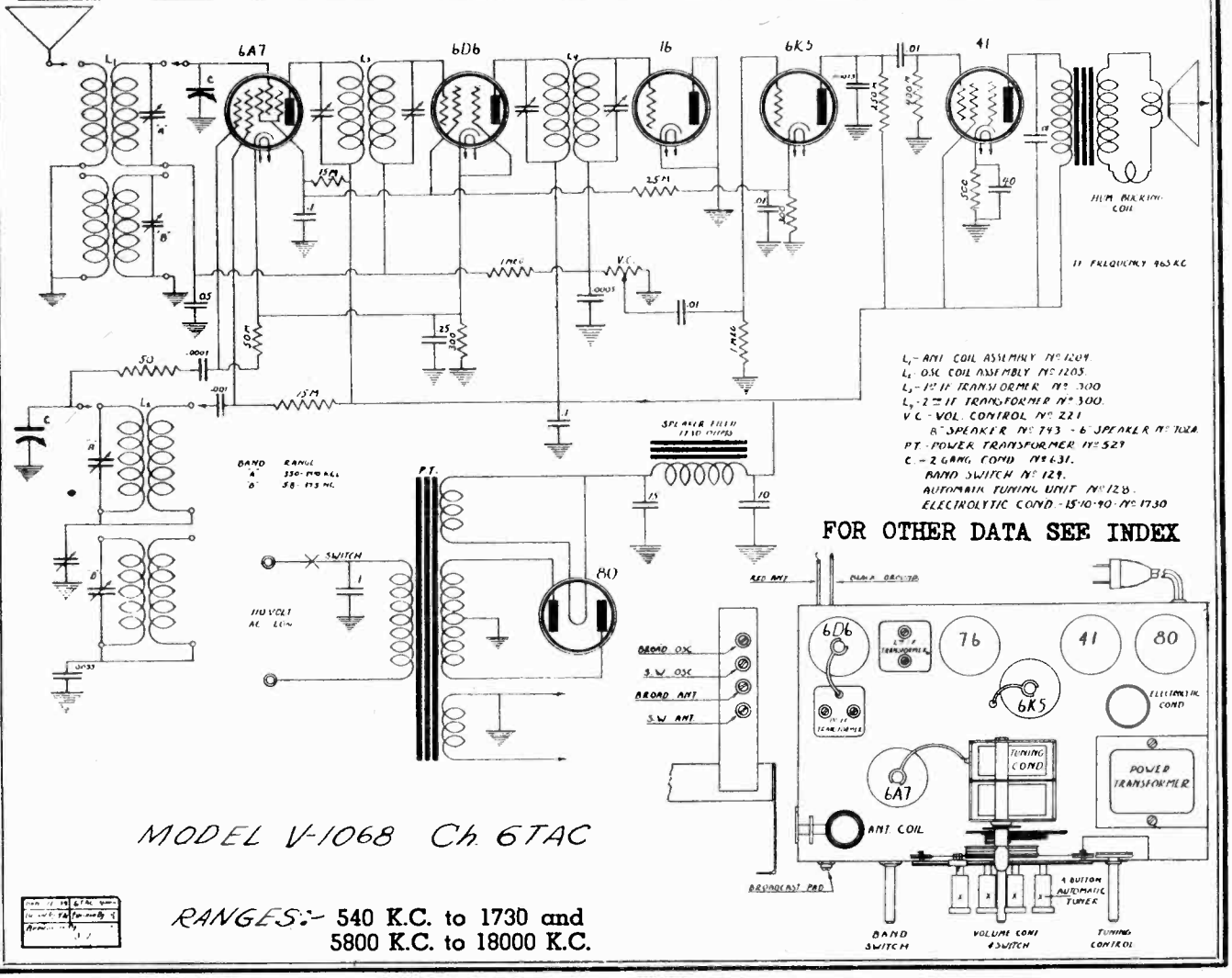

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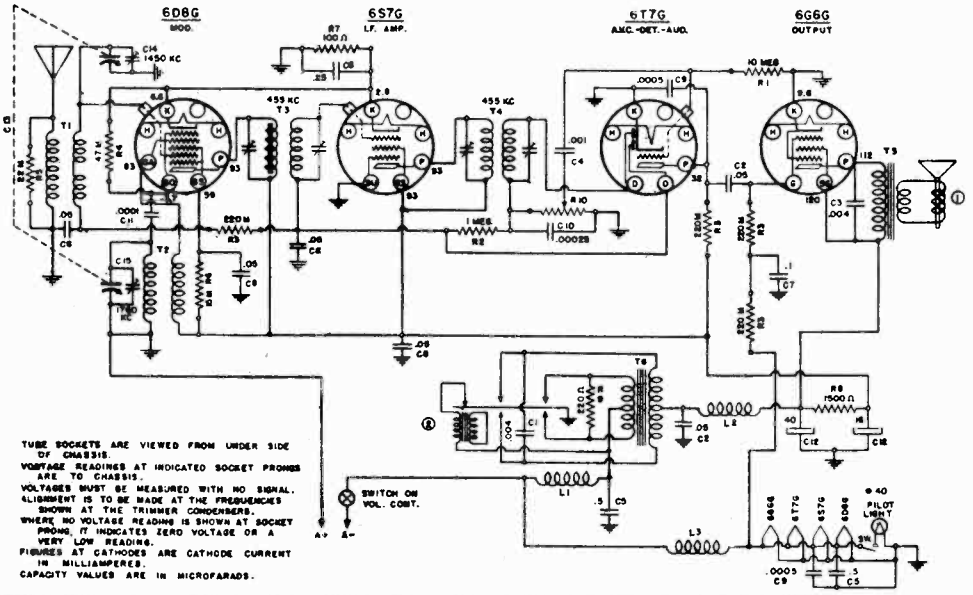
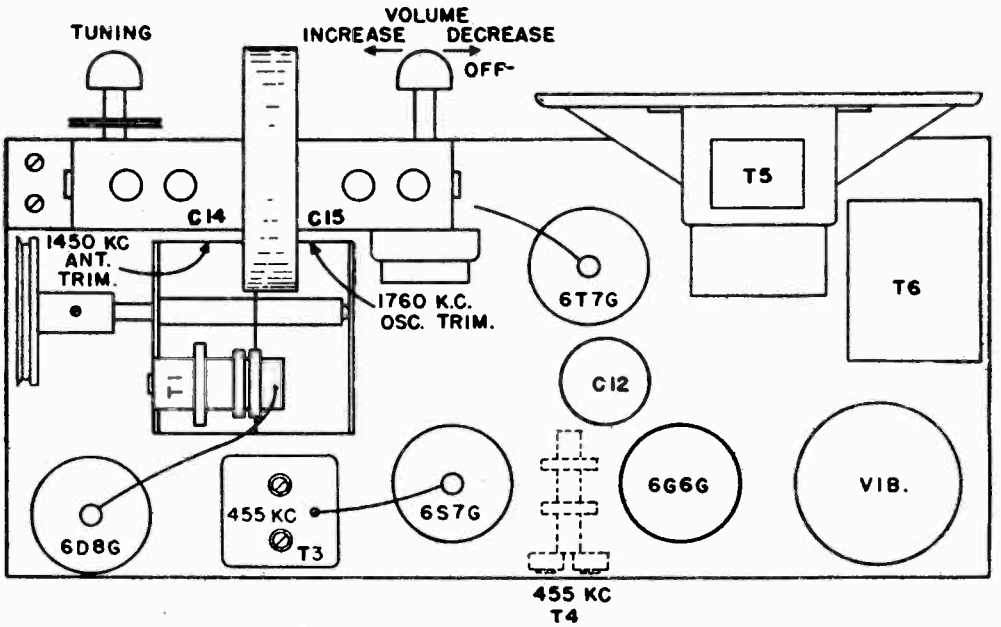


CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 408
R1	80-193	10 MEGOHM 1/3W RESISTOR	C1	16-127	.004 MFD. 1000 V. BUFFER COND	T1	10-239	ANTENNA TRANSFORMER
R2	80-195	1 " " " "	C2	1607	.05 " " 400 V TUB. CONDENSER	T2	10-240	OSCILLATOR "
R3	80-180	220 M OHM " "	C3	16-129	.004 " " " "	T3	10-253	1ST I.F. "
R4	80-177	47 M " " "	C4	16-121	.001 " " " "	T4	10-252	2 ND. I.F. "
R5	80-193	22 M " " "	C5	16-112	.5 " 200 V. " "	T5		OUTPUT TRANS.(ON SPKR.)
R6	80-202	15 M " " "	C6	16-120	.25 " " " "	T6	80-160	VIBRATOR TRANSFORMER
R7	80-197	100 " " "	C7	16-115	.1 " " " "	L1	33-217	VIBRATOR CHOKE
R8	80-203	1500 " 1/2 W "	C8	1622	.05 " " " "	L2	10-246	R.F. "Q" "
R9	80-199	220 " " "	C9	15-112	.0005 " MICA CONDENSER	L3	33-218	FILAMENT "
R10	24-124	VOLUME CONTROL 500M Ω	C10	1504	.00025 " " "		79-256	SPEAKER 5" P.M.
			C11	1501	.0001 " " "		34-103	VIBRATOR
			C12	18-138	40 & 10 MFD ELECTROLYTIC			
			C13	19-132	2 GANG VARIABLE CONDENSER C14 & C15			

PUSH BUTTON DATA:

1. By means of Selector Knob tune in WITH RIGHT HAND AS ACCURATELY AS POSSIBLE station with lowest frequency.
2. After station has been tuned in continue to hold in its position with left hand loosen Push-Button to be set up for station by unscrewing Push-Button one turn to left (counter-clockwise).
3. After Push-Button has been depressed, tighten it gently (clockwise). Release Push-Button slowly when in normal position grip button and tighten. Push-Button is now set up for first selected station of lowest frequency and Call Letter Tab for station should be at extreme right of Call Letter Holders. Second station set up will be second lowest in frequency.



LOCATION OF PARTS ON TOP OF CHASSIS

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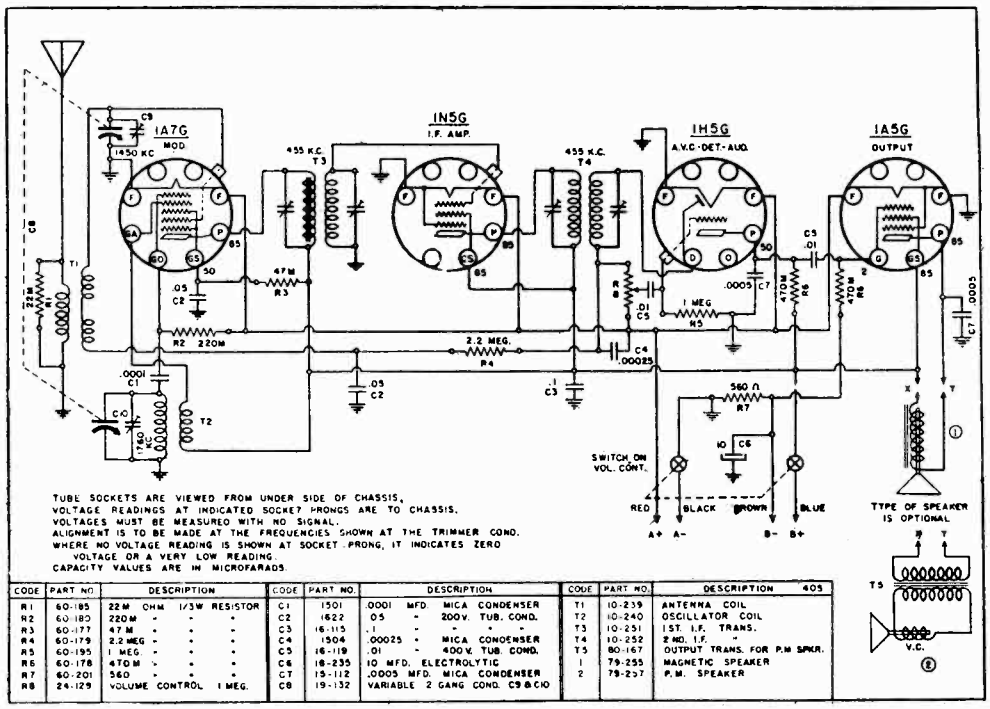
MODEL V1216
Chassis 405

SPIEGEL, INC.



CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 405
R1	60-185	22 M OHM 1/3W RESISTOR	C1	1501	.0001 MFD. MICA CONDENSER	T1	10-239	ANTENNA COIL
R2	60-180	220M " " "	C2	1622	.05 " 200V. TUB. COND.	T2	10-240	OSCILLATOR COIL
R3	60-177	47 M " " "	C3	16-115	.1 " " "	T3	10-251	1ST. I.F. TRANS.
R4	60-179	2.2 MEG " " "	C4	1504	.00025 " MICA CONDENSER	T4	10-252	2 ND. I.F.
R5	60-195	1 MEG " " "	C5	16-119	.01 " 400 V. TUB. COND.	T5	80-167	OUTPUT TRANS. FOR P.M SPKR.
R6	60-178	470 M " " "	C6	16-235	10 MFD. ELECTROLYTIC	1	79-255	MAGNETIC SPEAKER
R7	60-201	560 " " "	C7	19-112	.0005 MFD. MICA CONDENSER	2	79-257	P.M. SPEAKER
R8	24-129	VOLUME CONTROL 1 MEG.	C8	19-132	VARIABLE 2 GANG COND. C9 & C10			

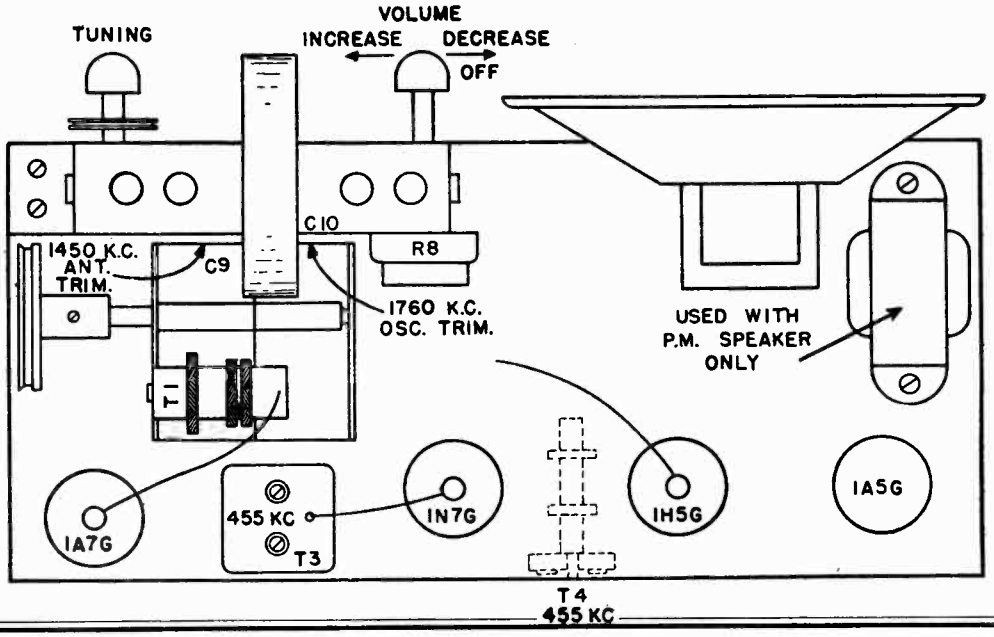
Follow the procedure outlined below, in order to adjust the push-buttons properly:

1. By means of the Station Selector Knob tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the lowest frequency.

2. After the station has been tuned in accurately with the right hand, continue to hold it in its exact position firmly, and with the left hand loosen the Push-Button to be set up for that station by unscrewing the Push-Button about one turn to the left (counter-clockwise).

3. Continuing to hold the Station Selector Knob in its exact position, PUSH THE PUSH-BUTTON IN ALL THE WAY with the left hand.

4. After the Push-Button has been depressed all the way, tighten it gently toward the right (clockwise). Release Push-Button slowly and when in normal position grip button and tighten firmly.



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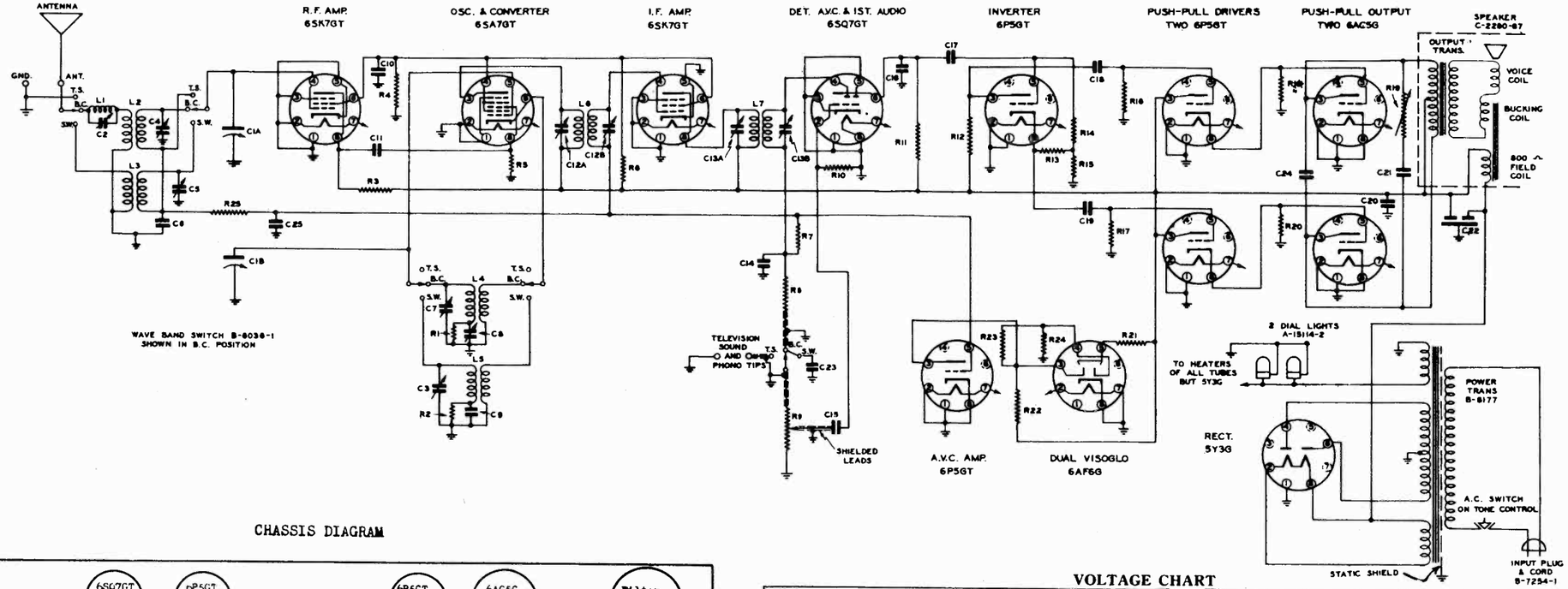
MODEL 1271SP



C1A&B VARIABLE CONDENSER B-7229
C2 I.F. REJECT. TRIMMER
C3 S.W. OSC. TRIMMER } A-14200-2
C4 B.C. ANT. TRIMMER
C5 S.W. ANT. TRIMMER } A-14200
C6 .05 MFD. 200 V. C-3202-84C
C7 B.C. OSC. TRIMMER
C8 B.C. OSC. PADDER } B-7199-EY
C9 .2700 MMF. MICA A-15451
C10 .05 MFD. 400V. C-3204-28C
C11 40 MMF. MICA C-720-381
C12A&B NO.1 I.F. TRIMMER B-7200-GN
C13A&B NO.2 I.F. TRIMMER B-7200-GN

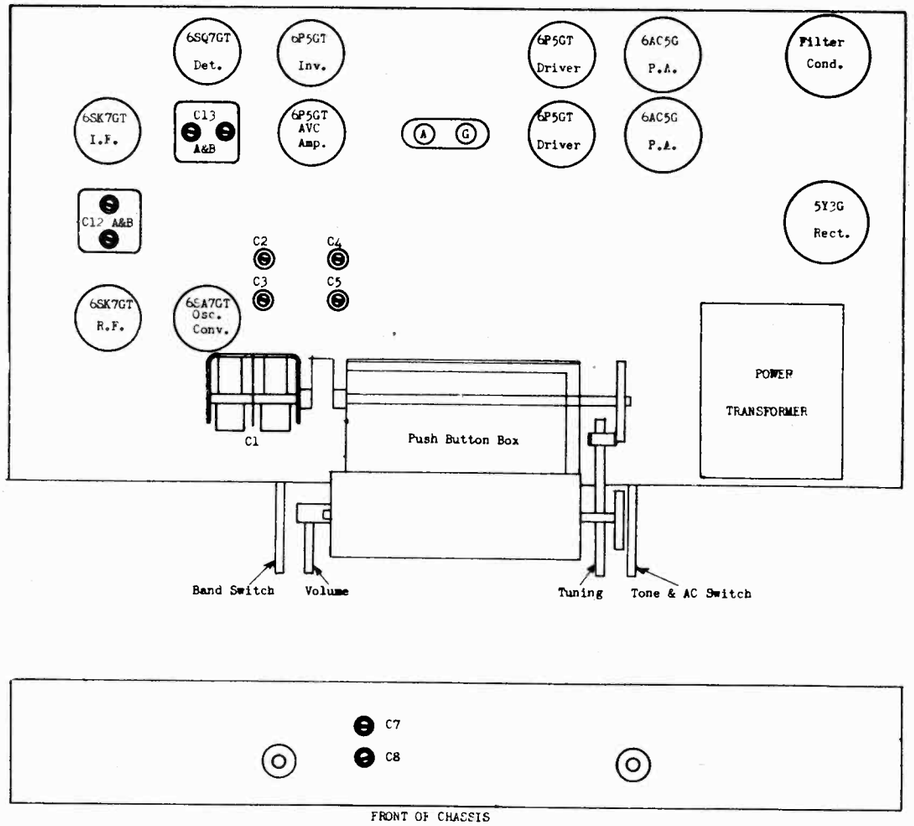
C14 250 MMF. MICA C-720-324
C15 .02 MFD. 400V. C-3204-22C
C16 250 MMF. MICA C-720-324
C17 .05 MFD. 400V. C-3204-28C
C18 .05 MFD. 400V. C-3204-28C
C19 .05 MFD. 400V. C-3204-28C
C20 .05 MFD. 400V. C-3204-28C
C21 .03 MFD. 600V. C-3208-24C
C22 16-16 MFD. 450V. ELECT. A-15825
C23 100 MMF. MICA C-720-339
C24 .006 MFD. 600V. C-3206-72C
C25 .05 MFD. 200V. C-3202-84C

R1 56,000 Ω .25W. C-2795-83B
R2 39,000 Ω .25W. C-2795-81B
R3 3300 Ω .25W. C-2795-68B
R4 27,000 Ω .5W. C-2798-78C
R5 2.2 MEGOHM .25W. C-2795-102B
R6 33,000 Ω 2W. C-2798-80A
R7 1 MEGOHM .25W. C-2795-98B
R8 56,000 Ω .25W. C-2795-83B
R9 500,000 Ω VOL. CONT. A-15130-3
R10 4.7 MEGOHM .25W. C-2795-106B
R11 270,000 Ω .25W. C-2795-91B
R12 39,000 Ω .5W. C-2798-197C
R13 2700 Ω .25W. C-2795-69B

R14 1 MEGOHM .25W. C-2795-98B
R15 33,000 Ω .5W. C-2798-195C
R16 270,000 Ω .25W. C-2795-91B
R17 270,000 Ω .25W. C-2795-91B
R18 22,000 Ω .25W. C-2795-78B
R19 TONE CONT. & SW. A-15128-3
R20 22,000 Ω .25W. C-2795-76B
R21 56,000 Ω .25W. C-2795-83B
R22 150,000 Ω .25W. C-2795-89B
R23 1 MEGOHM .25W. C-2795-98B
R24 1 MEGOHM .25W. C-2795-98B
R25 270,000 Ω .25W. C-2795-91B

L1 I.F. REJECTOR COIL A-14877-2
L2 B.C. ANT. COIL A-14679-3
L3 S.W. ANT. COIL A-14882-7
L4 B.C. OSC. COIL A-15377
L5 S.W. OSC. COIL A-15233-7
L6 NO. 1 I.F. COIL A-12064-39
L7 NO. 2 I.F. COIL A-12064-17

CHASSIS DIAGRAM



VOLTAGE CHART

Line Voltage: 117 Volts

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

Tube	Function	Voltage of Socket Prongs to Gnd. (See Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6SK7GT	R-F Amplifier	0	0	0	-.1a	0	40	*6.3	235	-
6SA7GT	Osc - Converter	0	0	250	40	-.3a	0	*6.3	0	-
6SK7GT	I-F Amplifier	0	0	0	-.1a	0	40	*6.3	250	-
6SQ7GT	Det - AVC - Audio Amp.	0	-.1a	0	-.04a	0	43	*6.3	0	-
6P5GT	Phase Inverter	0	0	160	52	b	265	*6.3	62	-
6P5GT	Driver (Push-pull)	0	0	255	—	0	150	*6.3	13.5	-
6P5GT	Driver (Push-pull)	0	0	255	—	0	---	*6.3	13.5	-
6AC5G	Power Amp. (Push-pull)	0	0	245	—	13.5	---	*6.3	0	-
6AC5G	Power Amp. (Push-pull)	0	0	245	—	13.5	---	*6.3	0	-
6P5GT	AVC Amplifier	0	0	22	—	-.1a	---	*6.3	0	-
6AF6G	Dual Viso-Glo	0	*6.3	21.5	b	150	---	0	0	-
5Y3G	Rectifier	-	*385	0	*330	—	*330	*240	*380	-

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 1000 ohms per volt voltmeter. *-A.C. Scale.
a-1- volt scale.
b-Cannot be measured with 1000 ohms/volt voltmeter.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set drive wheel so that pointer is over left hand stop line of alignment scale with condenser fully meshed. See special note below.)							
2	I.F.	*	.1 mf.	456 KC	BC	Open	C13 A,B	2nd I.F.
							C12 A,B	1st I.F.
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1400 KC	BC	1400 KC	C7 (Osc.)	***
							C4 (Ant.)	***
5				600 KC	BC	600 KC	C8 (Pad.)	***
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1400 KC)							
8	Shortwave Band	Ant.	**	18 MC	SW	18 MC	C3 (Osc.)	***
							C5 (Ant.)	***
9	(Check calibration and sensitivity at 6.MC and 18. MC)							
10	(Check operations 1 to 9 inclusive.)							

Notes: *Pin No. 8 of 6SA7GT Osc-Converter tube.
**100 ohm resistor and 200 mmf. condenser in series.
***Rock dial while adjusting for maximum output.

SCHEMATIC DIAGRAM
AIR CASTLE SUPER
HETERODYNE MODEL
1271-SP
INTERMEDIATE
FREQUENCY 456 K.C.
Bottom View of all
Socket connections.

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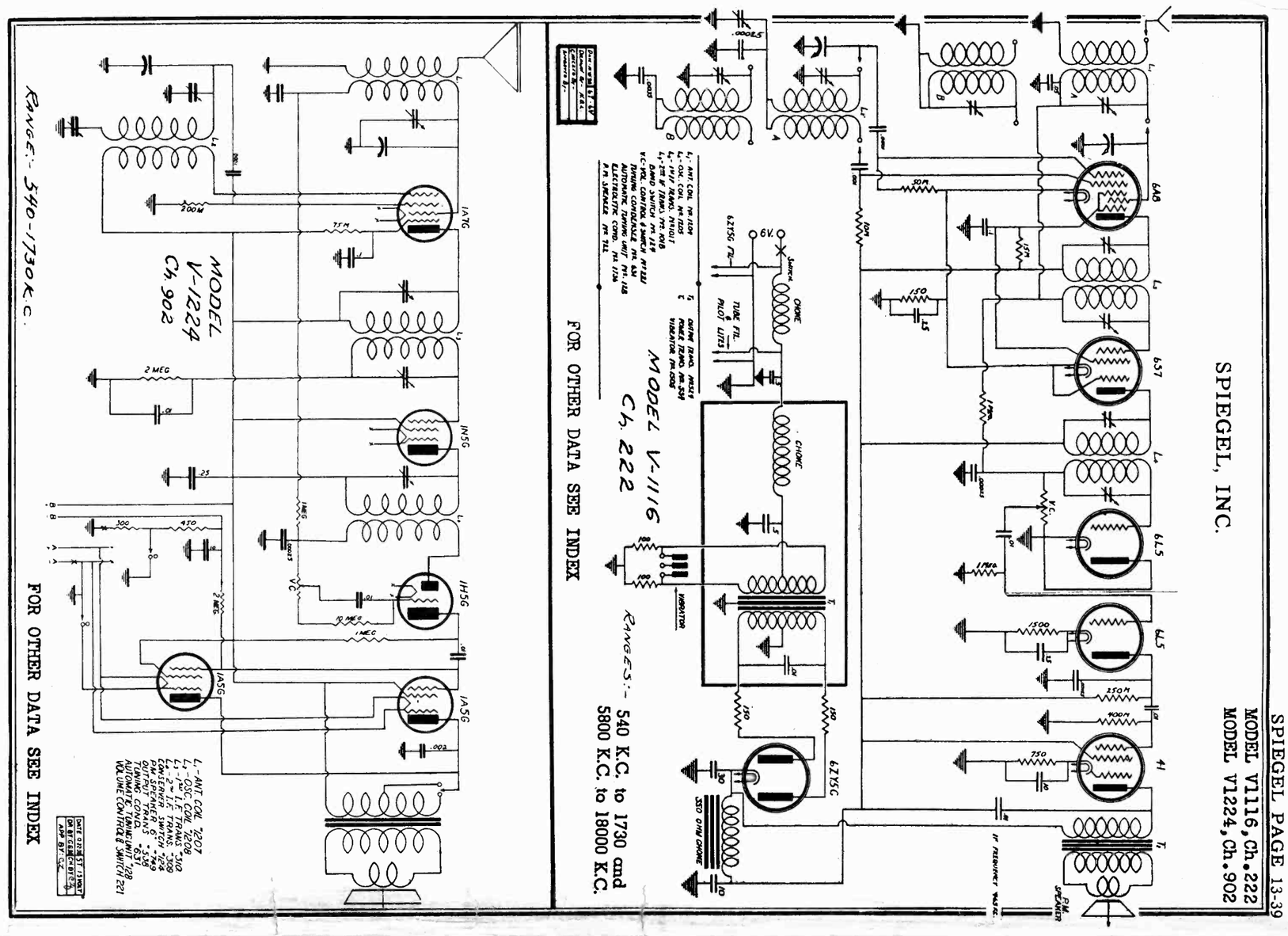
MODEL V1116, Ch. 222
MODEL V1224, Ch. 902



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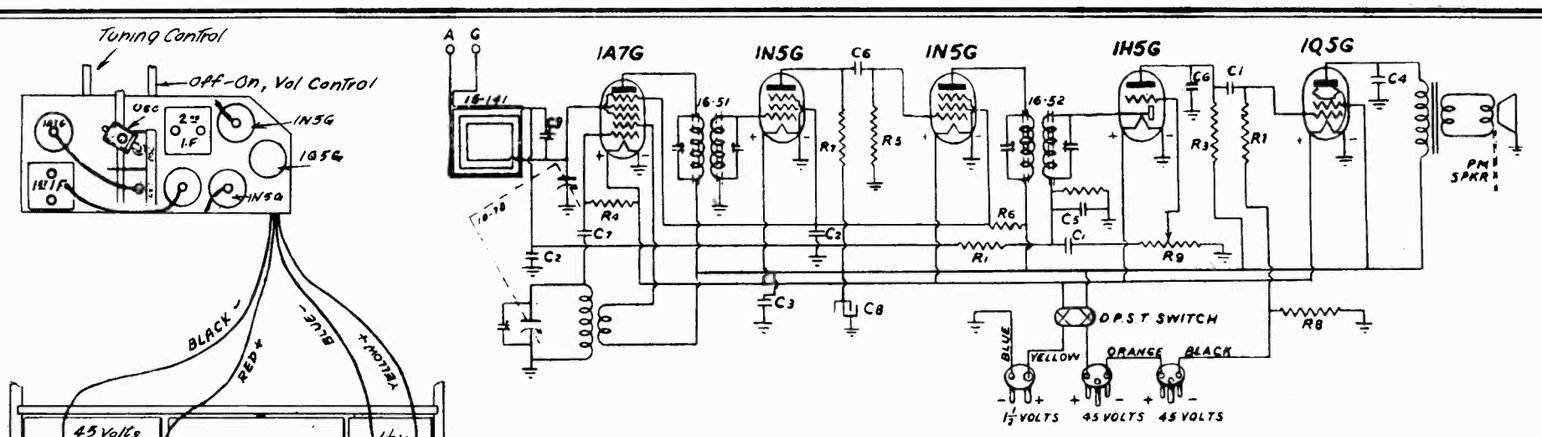

I. F. Alignment

Set the pointer to 1500 K. C. Connect the generator leads to the 1A7G grid and to the chassis thru a .1 Mfd. condenser. Adjust the I. F. trimmers for maximum output indication.

R. F. Alignment

Connect the generator leads to the 1A7G grid and to the chassis through a .1 Mfd. condenser. Set the signal generator at 1400 KC., and set the receiver pointer at 1400 KC. Adjust the oscillator shunt trimmer for resonance.

Fasten the back cover. Connect the generator to the antenna and ground terminal, and adjust the loop antenna trimmer at 1400 KC. for maximum output.

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	6-1	.01 Mfd.	R1	3-2	2 Megohms
C2	6-12	.05 Mfd.	R2	3-6	1 Megohms
C3	6-24	.2 Mfd.	R3	3-1	500K ohms
C4	6-50	.002 Mfd.	R4	3-62	200K ohms
C5	8-6	.0001 Mfd.	R5	3-51	75X ohms
C6	8-10	.00025 Mfd.	R6	3-26	30K ohms
C7	8-13	.00005 Mfd.	R7	3-14	10 Kohms
C8	7-56	.8 Mfd.	R8	3-175	350 ohms
C9	9-49	.000008 Mfd.	R9	5-65	1 Megohm V.C.

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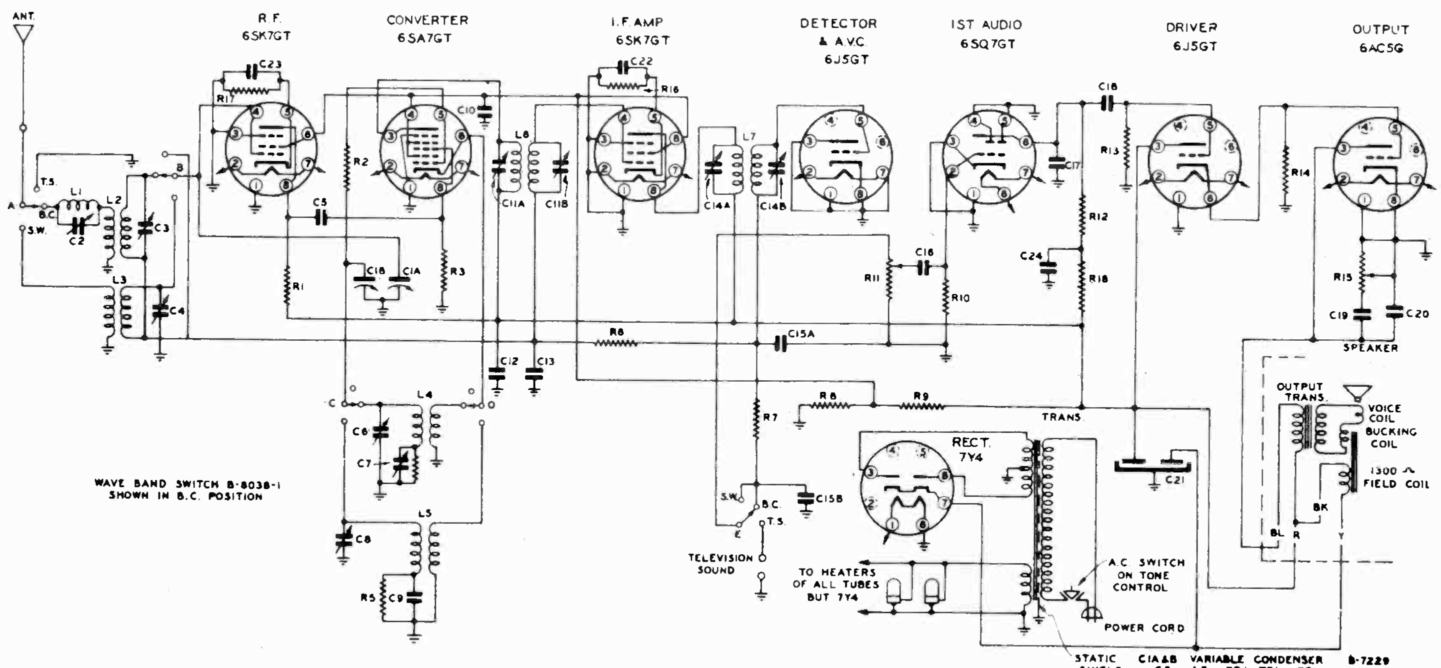
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VARIABLE CONDENSER	B-7229
C2	I.F. REJ. TRIMMER	A-14088-4
C3	B.C. ANT. TRIMMER	A-14088-5
C4	S.W. ANT. TRIMMER	A-14088-8
C5	40 MMF. MICA	C-720-381
C6	B.C. OSC. TRIMMER	B-7199-ZY
C7	B.C. OSC. PADDER	B-7199-ZY
C8	S.W. OSC. TRIMMER	A-14088-8
C9	2700 MMF. MICA	A-15451
C10	.2 MFD. 200V.	C-3202-40C
C11A&B	NO. 1 I.F. TRIMMER	B-7200-GN
C12	.1 MFD. 400V.	C-3204-38C

C13	.05 MFD. 200 V.	C-3202-84C
C14A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C15A	250 MMF. MICA	A-15897
C15B	100 MMF. MICA	A-15897
C16	.02 MFD. 200 V.	C-3202-22C
C17	250 MMF. MICA	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.03 MFD. 600V.	C-3208-80C
C20	.006 MFD. 600 V.	C-3206-68C
C21	18-18 MFD. ELECT.	A-15741
C22	.1 MFD. 200V.	C-3202-38C
C23	.1 MFD. 200V.	C-3202-38C
C24	.1 MFD. 400V.	C-3204-38C

R1	3,300	Ω	.25 W.	C-2795-68B
R2	68	Ω	.25 W.	C-2795-48B
R3	2.2 MEG.		.25 W.	C-2795-102B
R4	22,000	Ω	.25 W.	C-2795-78B
R5	22,000	Ω	.25 W.	C-2795-78B
R6	1 MEG.		.25 W.	C-2795-98B
R7	56,000	Ω	.25 W.	C-2795-83B
R8	39,000	Ω	1 W.	C-2797-81B
R9	15,000	Ω	3 W.	C-2799-76A
R10	4.7 MEG.		.25 W.	C-2795-106B
R11	5 MEG. VOL. CONT.			A-15130-3
R12	150,000	Ω	.25 W.	C-2795-88B
R13	470,000	Ω	.25 W.	C-2795-94B
R14	22,000	Ω	.25 W.	C-2795-78B
R15	2.5 MEG. T.C. & SWITCH			A-15128-2
R16	270	Ω	.25 W.	C-2795-35B
R17	270	Ω	.25 W.	C-2795-35B
R18	100,000	Ω	.25 W.	C-2795-86B

L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-10
L4	B.C. OSC. COIL	A-15377-2
L5	S.W. OSC. COIL	A-15233-8
L6	NO. 1 I.F. COIL	A-12064-39
L7	NO. 2 I.F. COIL	A-12064-17

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.

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MODEL 1831

SPEIGEL, INC.

VOLTAGE CHART

Line voltage: 117 volts — Position of Volume control: Full with Antenna disconnected — Position of Band Switch: Broadcast

Tube	Function	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

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.

* AC volts

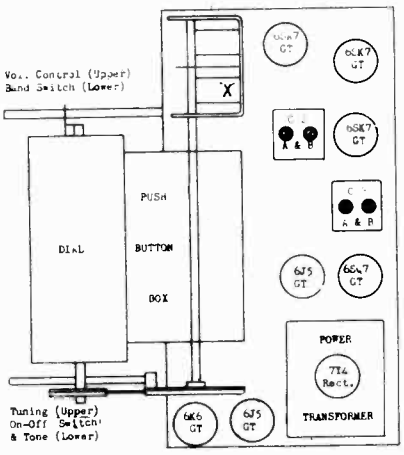
** Cannot be measured with 1000 ohms/volt voltmeter.

*** Tube removed from socket to enable test prods to reach socket prongs.

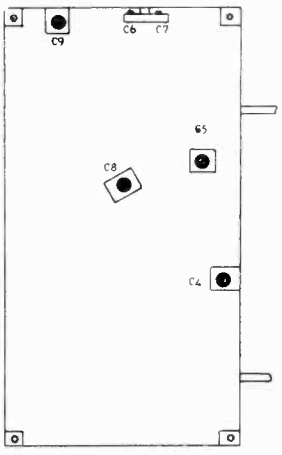
ALIGNMENT CHART

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
							C2 A&B	1st I-F
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C4	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C6 Osc.	
							C5 Ant.	
5				600 KC	BC	600 KC	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.	Rock dial while adjusting for maximum output
							C8 Ant.	
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 mmf. in series



TOP VIEW OF CHASSIS



BOTTOM VIEW OF CHASSIS

2. **POWER SUPPLY:** On models designed for operation on 60-cycle current the receptacle plug may be attached to any outlet from 110 to 120 volts, 50 to 60 cycle alternating current (A. C.) power supply system.

Any receiving set designed for operation on 25-cycle current will operate satisfactorily on 60-cycle current; however, **a radio set designed for operation on 60 cycle current WILL NOT operate on 25 cycle current.**

1. **DESCRIPTION:** Equipped with six-button automatic push button tuner; new Rocket-Roto Dial with scales for Broadcast Band and Short-Wave Band; Automatic Volume Control; Continuously variable Tone Control; Interference Rejector Circuit; Band Selector Switch with positions for "Broadcast," "Short-wave" and "Television Sound," which is also used for reproducing phonograph records by means of an electrical pick-up; Full dynamic speaker and eight tubes.

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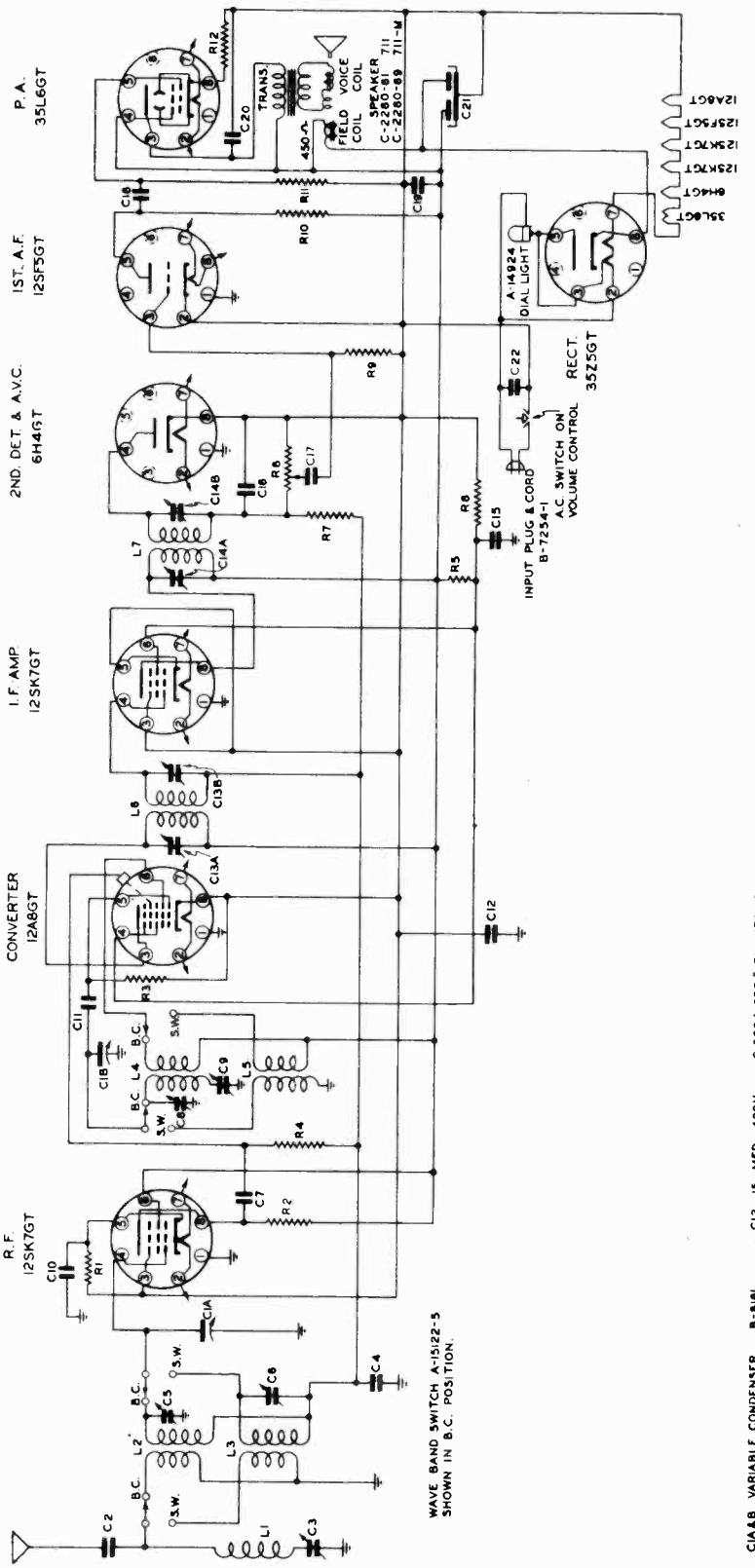
SPEIGEL, INC.

MODELS A2008, A2010, A2016, A2022



A-2008
A-2010
A-2016
A-2022

C1A&B	VARIABLE CONDENSER	B-8181	C12 .15 MFD. 400V.	C-3204-95C	R1 470 Ω .25W.	C-2795-151B	L1 I.F. REJECTOR COIL A-14718-1
C2	.001 MFD. 400V.	C-3204-58C	C13A&B NO.1 I.F. TRIM.	B-7200-GG	R2 3900 Ω .25W.	C-2795-99B	L2 B.C. ANT. COIL A-14974-2
C3	I.F. REJECT. TRIMMER	A-14088-2	C14A&B NO.2 I.F. TRIM.	B-7200-GN	R3 56,000 Ω .25W.	C-2795-103B	L3 S.W. ANT. COIL A-14682-9
C4	.05 MFD. 200V.	C-3202-84C	C15 .05 MFD. 200V.	C-3202-84C	R4 56,000 Ω .25W.	C-2795-93B	L4 B.C. OSC. COIL A-15232-4
C5	B.C. ANT. TRIMMER	A-14086-1	C16 500 MMF. MICA	C-720-316	R5 3300 Ω .5W.	C-2796-98C	L5 S.W. OSC. COIL A-15233-4
C6	S.W. ANT. TRIMMER	A-14086-1	C17 .01 MFD. 200V.	C-3202-20C	R6 10,000 Ω .5W.	C-2796-74C	L6 NO.1 I.F. COIL A-12084-32
C7	100 MMF. MICA	C-720-339	C18 .01 MFD. 200V.	C-3202-20C	R7 1 MEGOHM .25W.	C-2795-96B	L7 NO.2 I.F. COIL A-12084-17
C8	B.C. OSC. TRIMMER	A-15573	C19 .1 MFD. 200V.	C-3202-38C	R8 500,000 Ω VOL. CONT. & SWITCH	A-15129-1	
C9	B.C. OSC. PADDER		C20 .03 MFD. 400V.	C-3204-80C	R9 5.6 MEGOHM .25W.	C-2795-107B	
C10	.01 MFD. 200V.	C-3202-20C	C21 .25-25 MFD. ELECT.	A-15571	R10 270,000 Ω .25W.	C-2795-91B	
C11	50 MMF. MICA	C-720-372	C22 .01 MFD. 400V.	C-3204-20C	R11 560,000 Ω .25W.	C-2795-95B	
					R12 180 Ω .5 W.	C-2796-53C	

ALL PARTS SAME FOR MODEL 711-W EXCEPT AS FOLLOWS:

C1	VARIABLE CONDENSER	B-8189	
R8	VOLUME CONTROL & SW.	A-15129-2	
L2	B.C. ANT. COIL	A-14974-3	
L5	S.W. OSC. COIL	A-15233-10	
	WAVE BAND SWITCH	A-15122	

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MODELS A2008,A2010,
A2016,A2022

SPEIGEL, INC.

VOLTAGE CHART

Line voltage 116 AC — Position of Volume Control: Full with Antenna Disconnected
Position of Band Switch - Broadcast

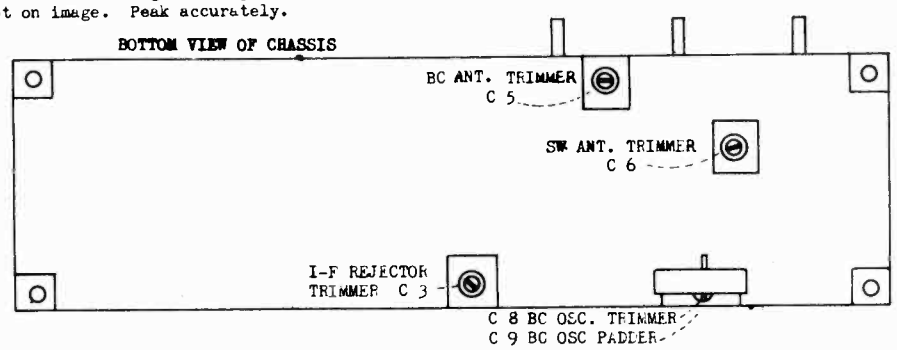
TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
12SK7GT	R-F Amplifier	0	*24	0	-.025	1.6	60	*35	78	--
12A8GT	Converter	0	*12	98	60	-.025	95	0	0	-.04
12SK7GT	I-F Amplifier	0	*48	0	-.025	0	60	*36	95	--
6H4GT	Det - AVC	0	*52	0	-.025	-.025	-.025	*48	0	--
12SF5GT	1st Audio	0	0	-.05	--	**58	--	*24	*12	--
35L6GT	Power Amplifier	---	*85	90	95	0	0	*52	5.6	--
35Z5GT	Rectifier	---	*116	*110	--	*110	---	*85	*116	

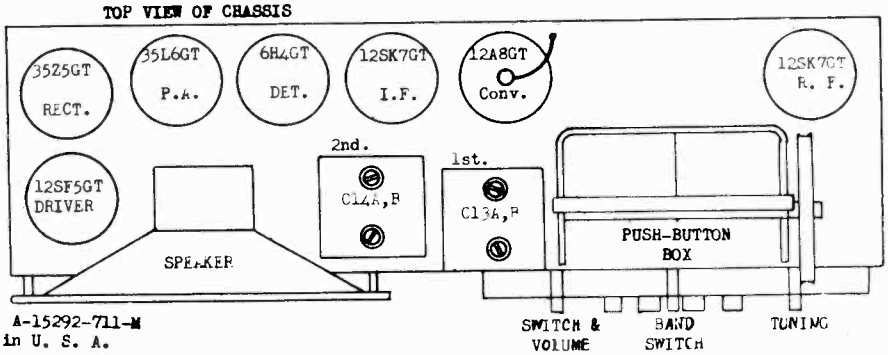
Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scales which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.
*AC readings
**100 V scale.

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with horizontal dial marks with condenser gang closed)							
2	I. F.	12A8GT Grid	.1 mf.	456 KC	BC	Open	C13A,B;C14A,B	
3	Rejector	Ant.	200mmf.	456 KC	BC	Closed	C 3	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C 8 (Osc) C 5 (Ant)	
5				600 KC	BC	600 KC	C 9 (Pad)	**
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
8	SW Band	Ant.	*	18 MC	SW	18 MC	C 6 (Ant)	
9	(Check calibration and sensitivity at 6. MC and 18 MC)							
10	(Check operations 1 to 9 inclusive)							

*100 ohm non-inductive resistor and 200 mmf. condenser in series.
**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurately.





Part No. A-15292-711-M
Printed in U. S. A.

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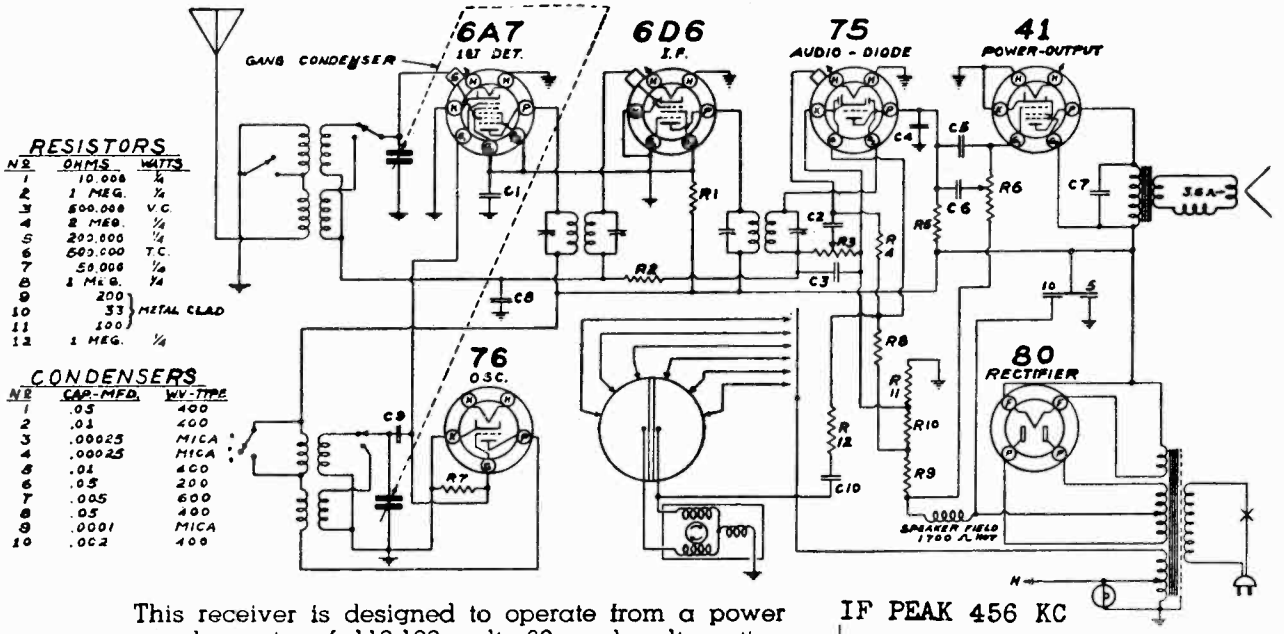
MODELS 2002,2003,2020,2021
2052,2074,2075.Chas. 6B



RESISTORS

NO	OHMS	WATTS
1	10,000	½
2	1 MEG.	½
3	500,000	V.C.
4	2 MEG.	½
5	200,000	½
6	500,000	T.C.
7	50,000	½
8	1 MEG.	¼
9	200	METAL CLAD
10	33	METAL CLAD
11	100	METAL CLAD
12	1 MEG.	½

CONDENSERS

NO	CAP-MFD.	WV-TYPE
1	.05	400
2	.01	400
3	.00025	MICA
4	.00025	MICA
5	.01	400
6	.05	200
7	.005	600
8	.05	400
9	.0001	MICA
10	.002	400

This receiver is designed to operate from a power supply main of 110-120 volt, 60 cycle alternating current AC). **Never plug into a DC outlet.**

GROUND Where ever possible, a good ground should be employed. Water pipes and steam or hot water radiators make a very desirable ground connection. The ground wire should be connected to the "Black" lead.

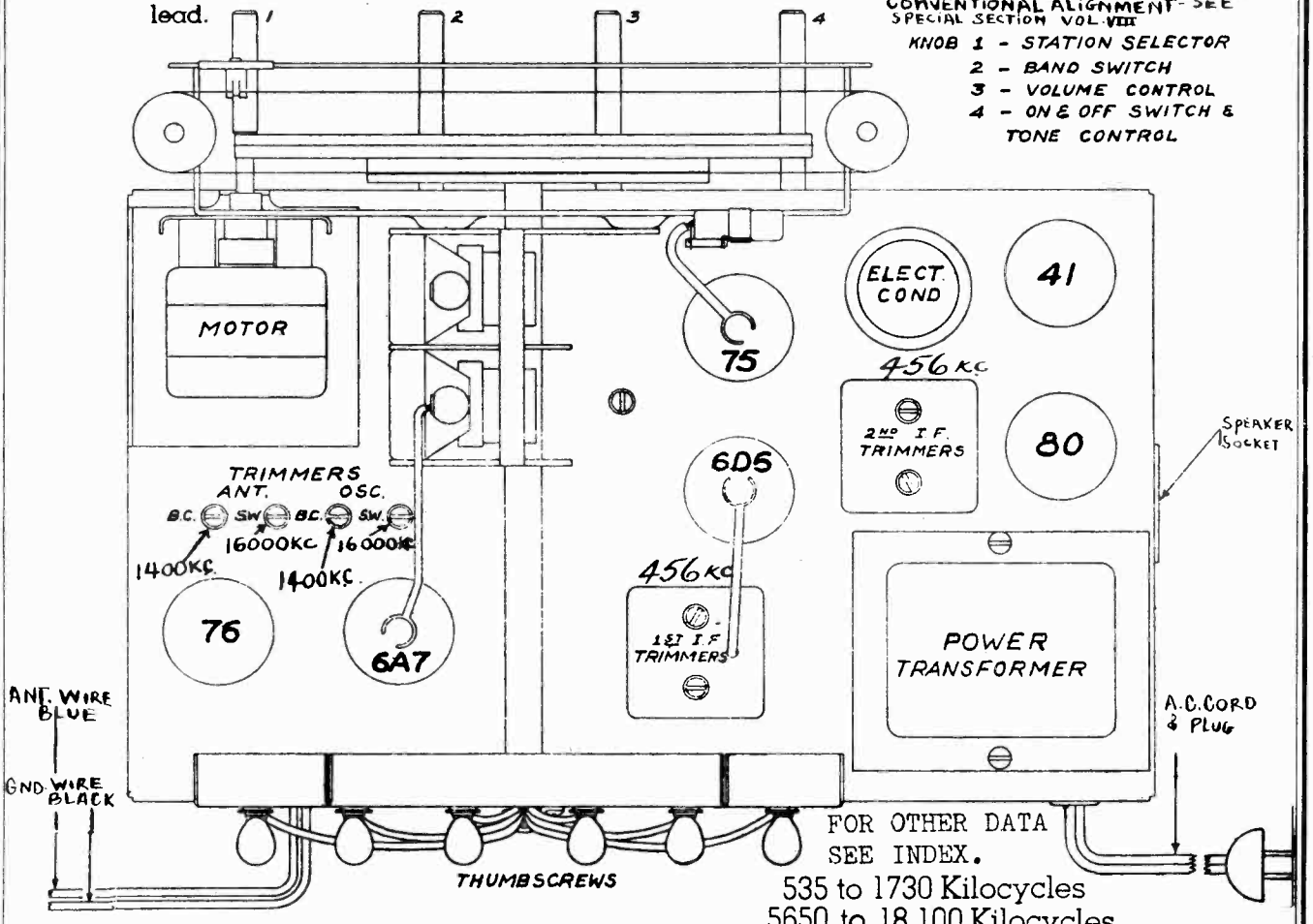
IF PEAK 456 KC

BAND SWITCH IN BROADCAST POSITION
I.F. - 456 K.C.
V.C. - VOLUME CONTROL
T.C. - TONE CONTROL

SCHEMATIC DIAGRAM
MODEL 6B

CONVENTIONAL ALIGNMENT - SEE SPECIAL SECTION VOL. VIII

KNOB 1 - STATION SELECTOR
2 - BAND SWITCH
3 - VOLUME CONTROL
4 - ON & OFF SWITCH & TONE CONTROL



FOR OTHER DATA SEE INDEX.

535 to 1730 Kilocycles
5650 to 18,100 Kilocycles

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MODEL A2054, Chas. 1012

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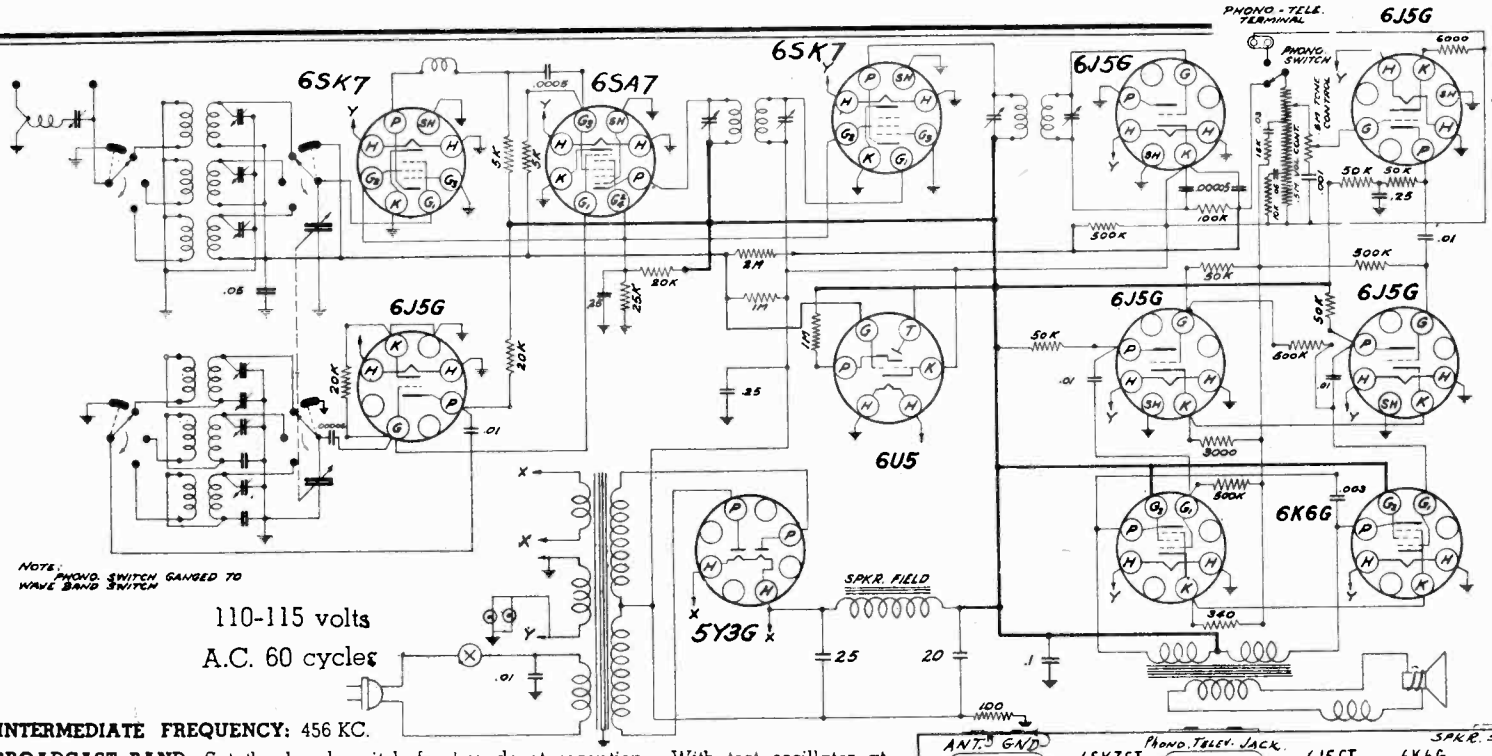


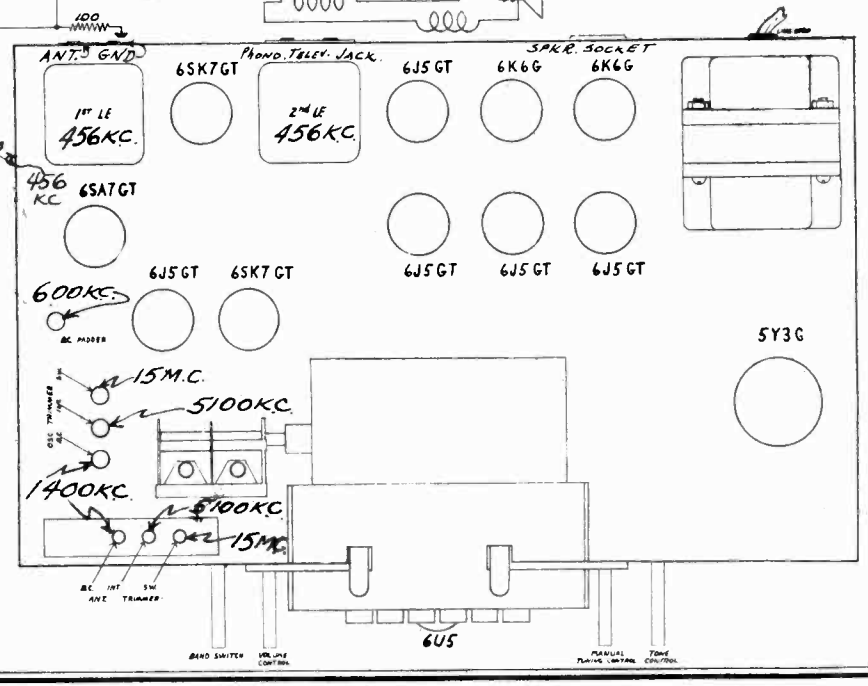
INTERMEDIATE FREQUENCY: 456 KC.

BROADCAST BAND: Set the band switch for broadcast reception. With test oscillator at 456KC and maximum signal, adjust wave trap for a minimum (or dip) in output. Care in this adjustment will insure best rejection of interfering signals at I. F. frequency. Adjust oscillator to 1400 KC and connect the output of the generator to the antenna connection at the rear of the chassis through a .0002 mfd. mica condenser. Set the pointer on the dial to 1400 KC making sure that the volume control is set at its maximum position. Adjust the broadcast antenna and broadcast oscillator trimmers for maximum signal (as indicated on the output meter). Re-set the dial pointer on the receiver and on the test oscillator to 600 KC. Slowly increase or decrease the **broadcast padding** condenser while tuning back and forth across the signal with the station selector knob until the maximum reading is obtained on the output meter. Re-check the 1400 KC alignment as the adjustment at 600 KC may have slightly disturbed the original 1400 KC setting.

INTERMEDIATE BAND: For a dummy antenna use a .0002 mfd. mica condenser in series with a 400 ohm carbon resistor. Set band switch to the intermediate band position and feed a 5100 KC signal from the oscillator. Set dial pointer at 5100 KC. Adjust intermediate antenna and intermediate oscillator trimmers for maximum output.

SHORT WAVE: Set band switch on short wave position. Connect the antenna of the radio receiver to the output of the test oscillator through a 400 ohm carbon resistor. Set oscillator and receiver dial at 15 megacycles. Adjust the short wave antenna and short wave oscillator trimming condensers for maximum output as indicated by readings on the output meter. No other adjustments are necessary for aligning this band.

It is advisable to check the sensitivity at 6000 KC to determine whether the circuits are properly aligned.



P.B. ADJUSTMENT

Six button auto. tuner on receiver can be adj. to any station on reg. B.C.Band.To adj. use screw driver furnished with receiver.To turn,insert screw driver,keep turning while holding button in.Notice dial turn until desired station is tuned in perfectly. Insert call letter tab to cover adj. screw head.

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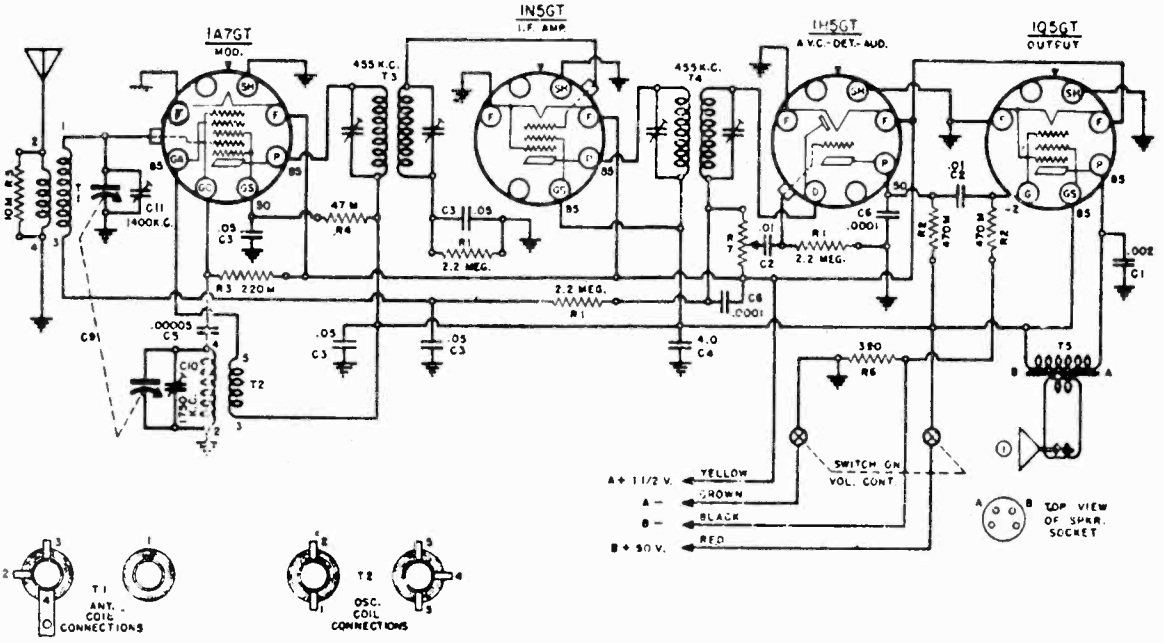
SPEIGEL, INC.

MODEL A2104, Chas. 0-44

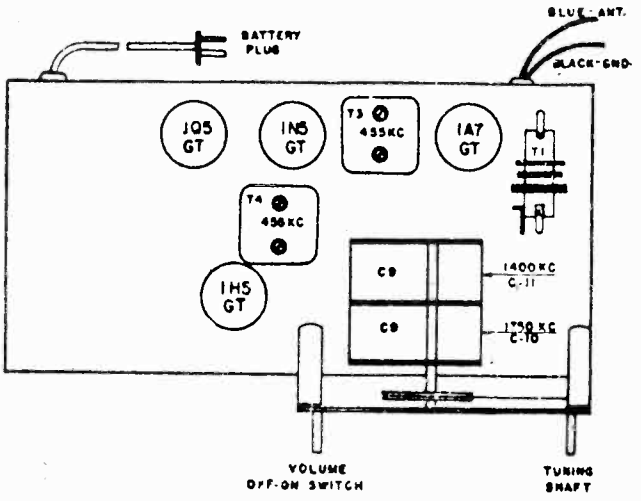
MODEL A-2104 Ch. 0-44



IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDS.
CAPACITY VALUES ARE IN MICROFARADS.

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-44
R 1	60-179	2.2 MEGOHM 1/4 W. RESISTOR	C 1	16-130	.002 MFD. 400V. TUBULAR COND.	T 1	10-344	ANTENNA TRANSFORMER
R 2	60-178	470M " " "	C 2	16-121	.01 " 200V. " "	T 2	10-341	OSCILLATOR "
R 3	60-180	220M " " "	C 3	1622	.05 " " " "	T 3	10-342	1 ST. I.F. "
R 4	60-177	47M " " "	C 4	18-250	4.0 " 150W.V. ELECTROLYTICS	T 4	10-343	2 ND. I.F. "
R 5	60-215	10M " " "	C 5	15-120	.00005 MFD. MICA CONDENSER	T 5	.....	OUTPUT TRANS. (ON SPKR.)
R 6	60-221	390 " " "	C 6	1501	.0001 " " "	1	79-297	5" P.M. SPEAKER
R 7	24-149	1 MEGOHM VOLUME CONTROL	C 9	12-165	2 GANG VAR. COND. ALSO C10 & C11			



LOCATION OF PARTS ON TOP OF CHASSIS BASE

CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII

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MODEL A2134, Ch. BP12

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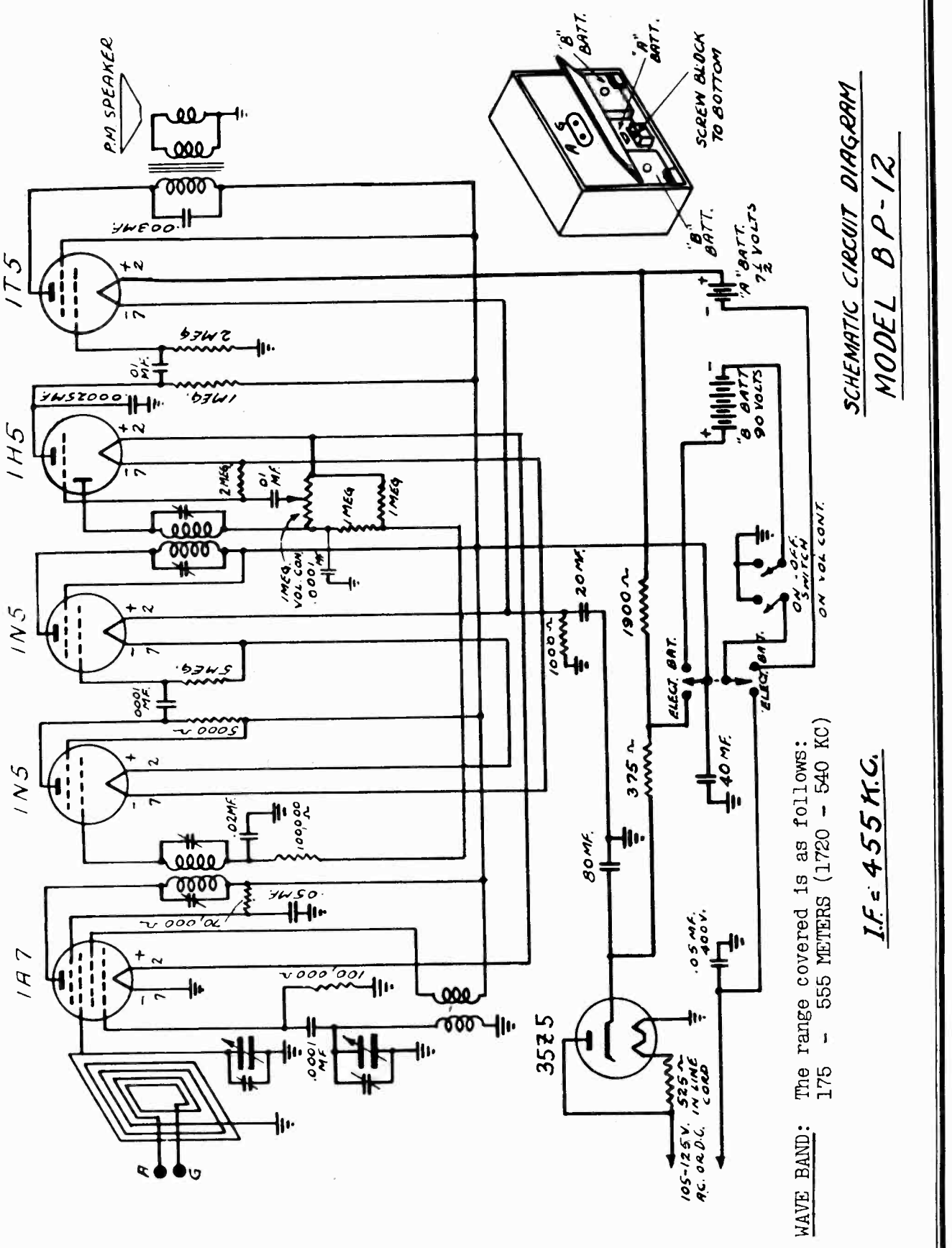

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MODEL A2136, Chas. BP11S

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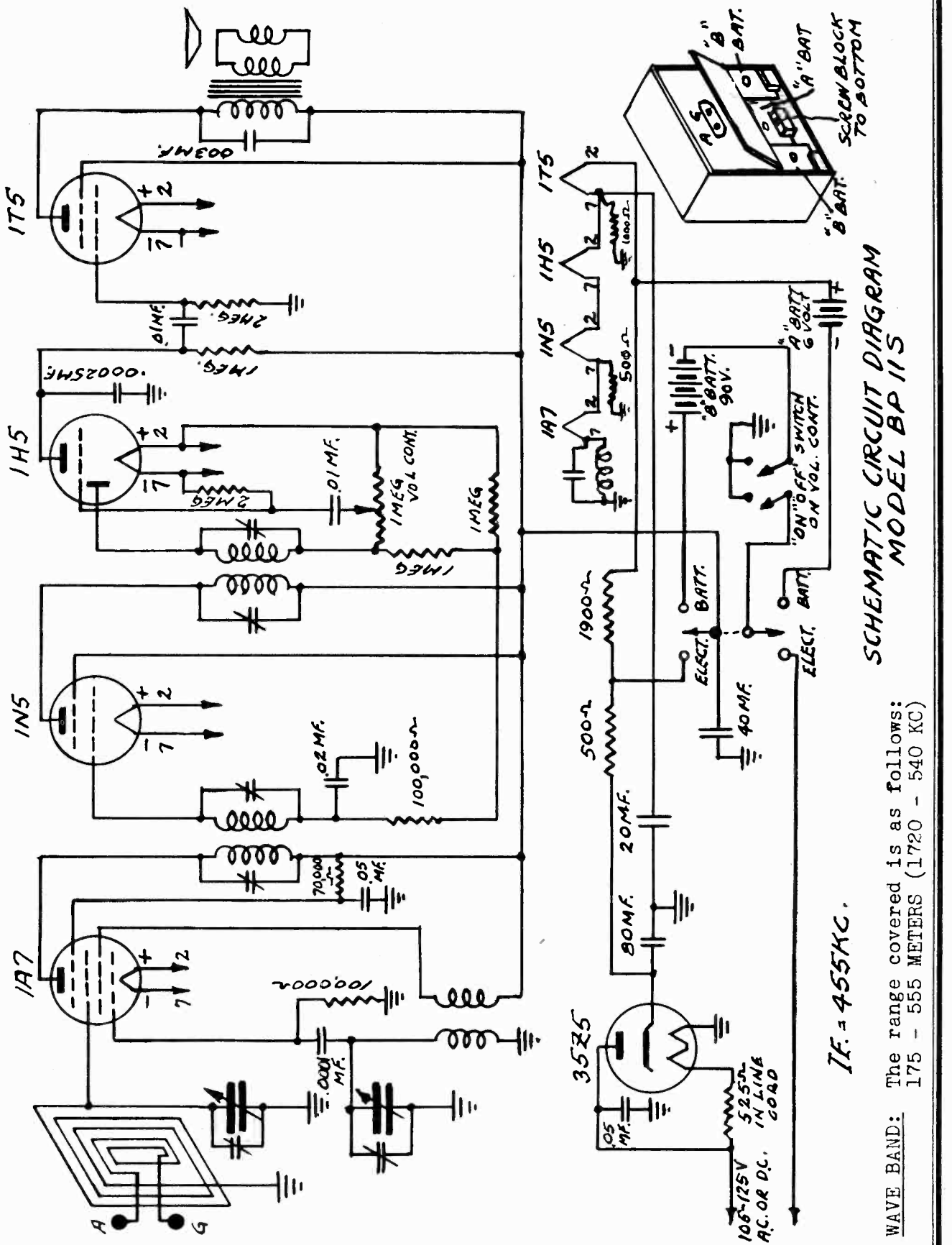

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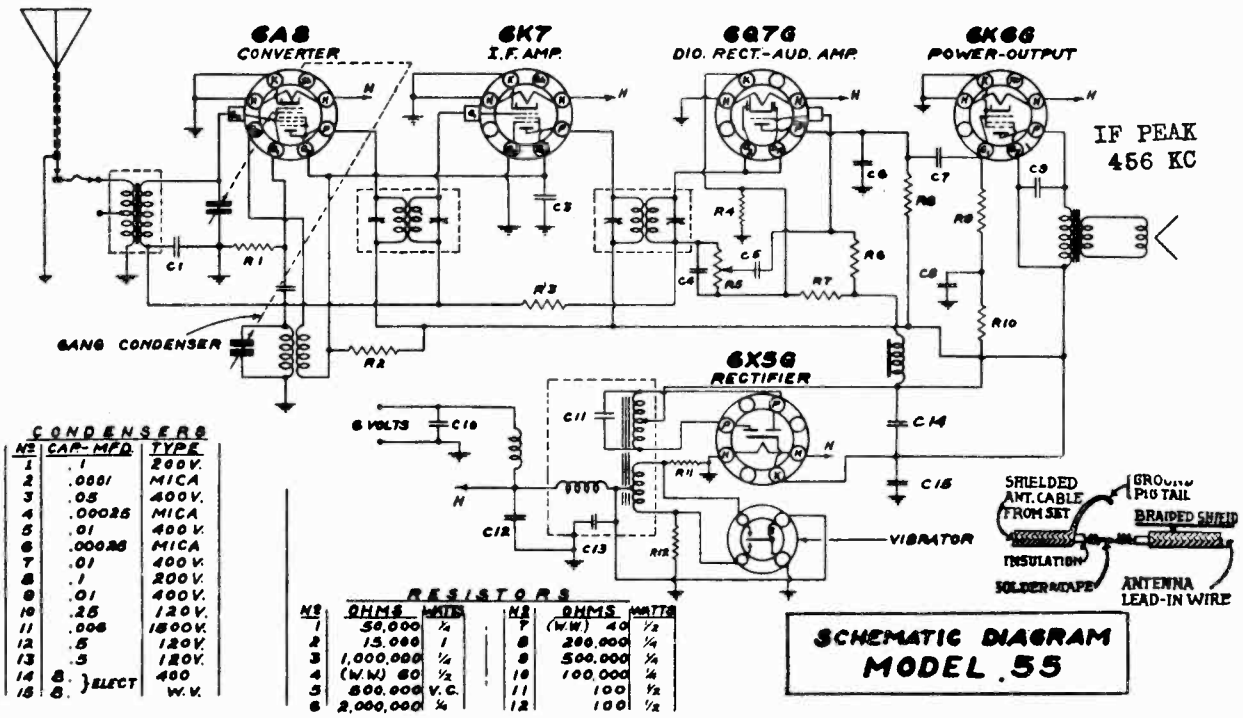
MODELS 2305, 2306
Chassis 55

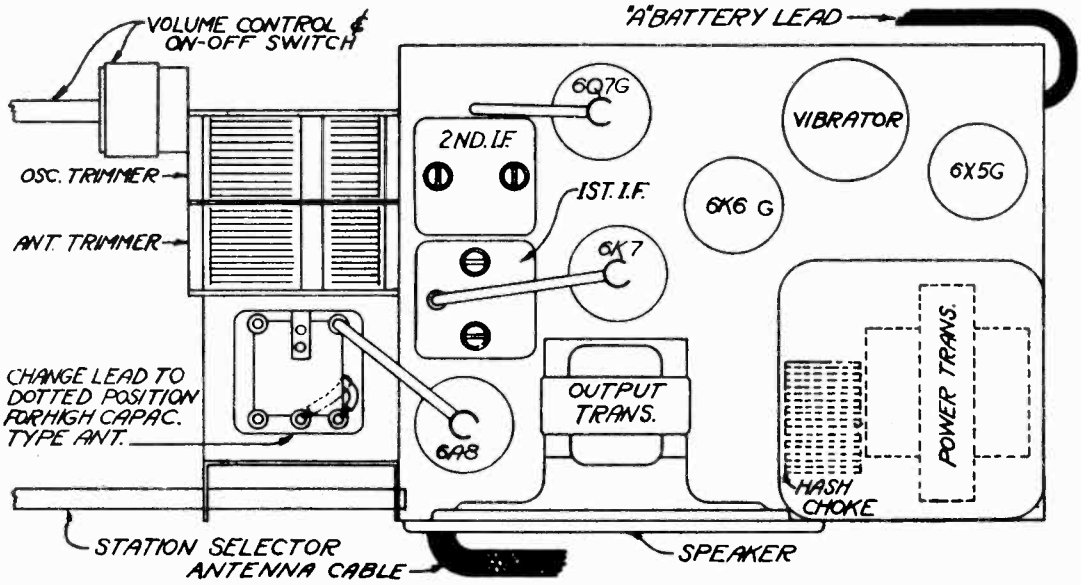
SPIEGEL, INC.



CONDENSERS		
№	CAP-MFD.	TYPE
1	.1	200V.
2	.0001	MICA
3	.05	400V.
4	.00025	MICA
5	.01	400V.
6	.00035	MICA
7	.01	400V.
8	.1	200V.
9	.01	400V.
10	.25	120V.
11	.006	1500V.
12	.5	120V.
13	.5	120V.
14	8. } ELECT	450
15	8. }	W.V.

RESISTORS					
№	OHMS	WATTS	№	OHMS	WATTS
1	56,000	½	7	(W.W.) 40	½
2	15,000	1	8	250,000	¼
3	1,000,000	½	9	500,000	½
4	(W.W.) 60	½	10	100,000	¼
5	500,000	V.C.	11	100	½
6	2,000,000	¼	12	100	½

SCHEMATIC DIAGRAM
MODEL 55



GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 600, 1400, 1550 and an output meter to be connected across the primary or secondary of the output transformers. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible, to prevent the AVC from operating and giving false readings.

CORRECT ALIGNMENT PROCEDURE. The intermediate frequency (I.F.) stage should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the Broadcast Band alignment should be the next procedure.

I.F. ALIGNMENT. Adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tubes (6A8) through a .05 or .1 mfd. condenser. The ground on the test oscillator can be connected to the chassis ground. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the output of the oscillator to the antenna lead of the receiver through a 50 mmfd. condenser. This antenna lead should be a two foot length of standard low capacity shielded loom fitted with the proper bayonet type plug to accomodate the antenna input receptacle on the receiver. Set the oscillator to 1550 KC and with the gang condenser at minimum, adjust the oscillator trimmer to receive this signal. Then set the oscillator to 1400 KC and adjust the antenna trimmer to give maximum output.

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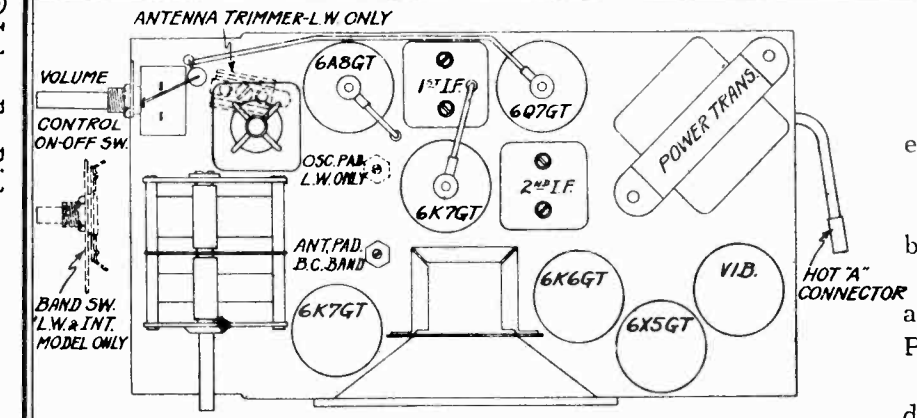

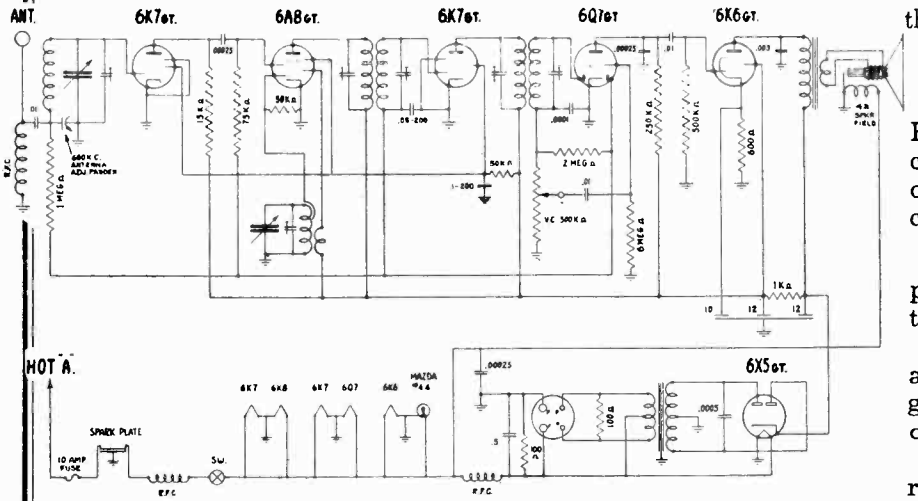

I. F. ALIGNMENT

Set the variable condenser at minimum capacity, (dial pointer at 1550 K.C.) Connect the two leads from a good, modulated signal generator, the ground lead to the radio chassis and the other lead through a .1 mfd. condenser, to the grid cap of the 6A8GT with the tube's grid lead still in place.

Connect the leads from a fully charged 6 volt storage battery to the receiver chassis and battery lead, the polarity being reversible.

With the set in operation and the volume control full on, set the signal generator to 456 K.C. and increase its output until the signal is heard in the set's speaker. Starting with the second I. F., adjust the I. F. trimmers for maximum output, decreasing the signal generator output as the receiver output increases.

The generator output in all the alignment adjustments should be adjusted so the meter will read approximately .4 volts continually.

ANTENNA MATCHING ADJUSTMENT

As the sizes and types of antennas vary considerably, it is necessary to adjust the radio to "match" the antenna used. To do this, tune in a station, accurately, at roughly 600 kilocycles, reduce the volume of the set, pry out the plug on the underside of the set, insert a screw driver, and turn for maximum output. Replace the plug when this has been accomplished, and the radio is ready to operate efficiently on any station.

PUSH BUTTON ADJUSTMENT

Six push button station selectors are incorporated in this receiver, and each may be set to select any frequency or station within the range of the set.

To adjust each button, follow these instructions.

1. With the set in operation, tune in any station the push button is to be set for, with the right hand tuning knob.

2. Keep a firm grip on the tuning knob so the station will not be detuned, and turn the push button about one turn to the left to loosen the mechanism. Press the button all the way in and turn it to the right until it is tight.

Repeat these operations with the other five buttons, setting each for a different station. Insert the correct call letter tab into the space provided in the panel just above the push buttons.

R. F. ALIGNMENT

With the variable condenser still full open, set the generator to 1550 K.C. Connect the generator lead to the antenna lead through a .0001 mfd. condenser as dummy antenna. Adjust the oscillator trimmer for maximum output. Set the receiver dial and the generator to 1400 K.C. so the signal comes through, and adjust the antenna trimmer for maximum output.

Set the receiver dial and generator to 600 K.C. and adjust the oscillator padder for maximum output by rocking the variable condenser (with the tuning knob) as the padder is adjusted.

Return the dial and generator setting to 1400 K.C. and check for alignment.

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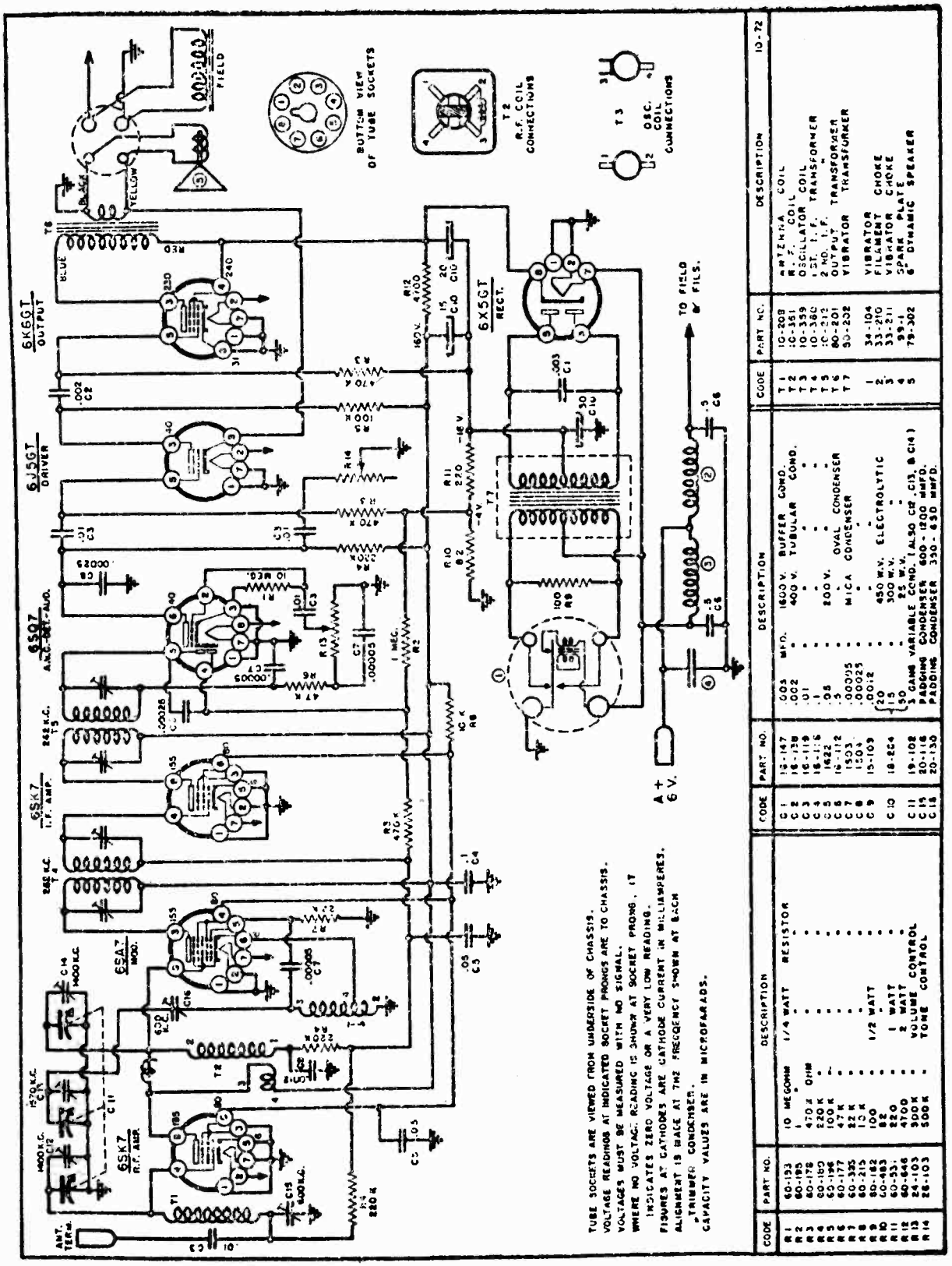
MODEL 2460, Late

SPIEGEL INC.



CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R2	60-185	1 " " "
R3	60-178	470 Ω OHM " "
R4	60-189	220 K " "
R5	60-196	100 K " "
R6	60-177	47 K " "
R7	60-385	22 K " "
R8	60-215	10 K " "
R9	60-182	100 " 1/2 WATT "
R10	60-483	82 " " "
R11	60-551	220 " 1 WATT "
R12	60-646	4700 " 2 WATT "
R13	24-103	300 K " VOLUME CONTROL
R14	24-103	500 K " TONE CONTROL

CODE	PART NO.	DESCRIPTION
C1	15-147	.005 MFD. 1600 V. BUFFER COND.
C2	15-138	.002 " 400 V. TUBULAR COND.
C3	15-119	.01 " " " "
C4	15-116	.1 " " " "
C5	1622	.05 " 200 V. OVAL CONDENSER
C6	15-112	.00035 " MICA CONDENSER
C7	1503	.00025 " "
C8	1504	.0002 " "
C9	15-109	20 " 450 W.V. ELECTROLYTIC
C10	18-264	20 " 300 W.V. "
		15 " 25 W.V. "
		3 GANG VARIABLE COND. (ALSO CR. C13, & C14)
C11	19-108	PADDING CONDENSER 600-1200 MMFD.
C15	20-116	PADDING CONDENSER 350-630 MMFD.
C16	20-130	

CODE	PART NO.	DESCRIPTION
T1	10-208	ANTENNA COIL
T2	10-351	R.F. COIL
T3	10-359	OSCILLATOR COIL
T4	10-360	1ST. I.F. TRANSFORMER
T5	10-213	2 ND. I.F. "
T6	80-201	OUTPUT TRANSFORMER
T7	50-232	VIBRATOR TRANSFORMER
1	34-104	VIBRATOR
2	33-210	FILAMENT CHOKE
3	33-211	VIBRATOR CHOKE
4	99-1	SPARK PLATE
5	79-302	6" DYNAMIC SPEAKER

10-72

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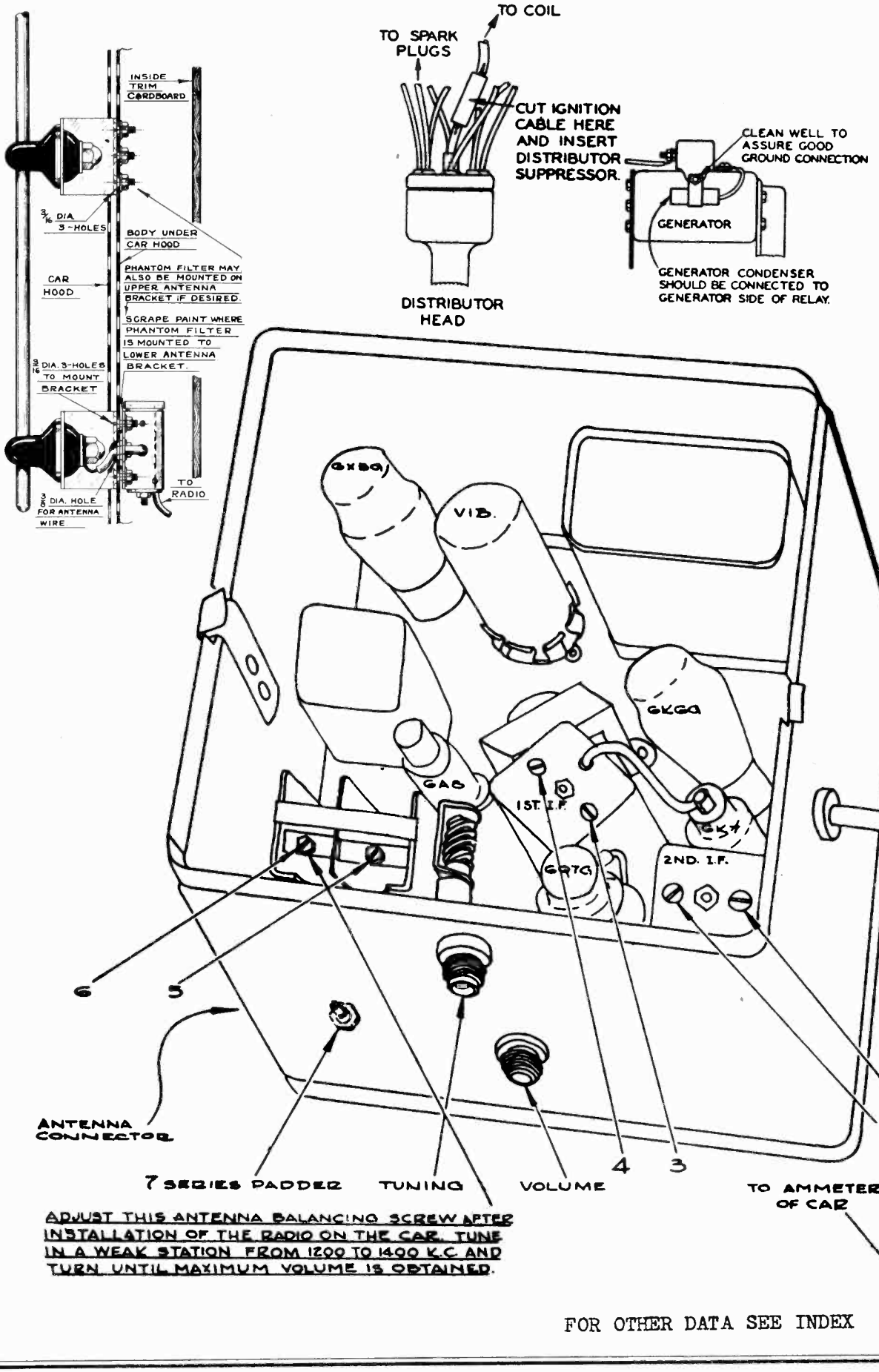
MODEL A2462

SPIEGEL INC.



FOR OTHER DATA SEE INDEX

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MODELS CP5020, CP5060,
CP5062
MODELS 5120, 5121

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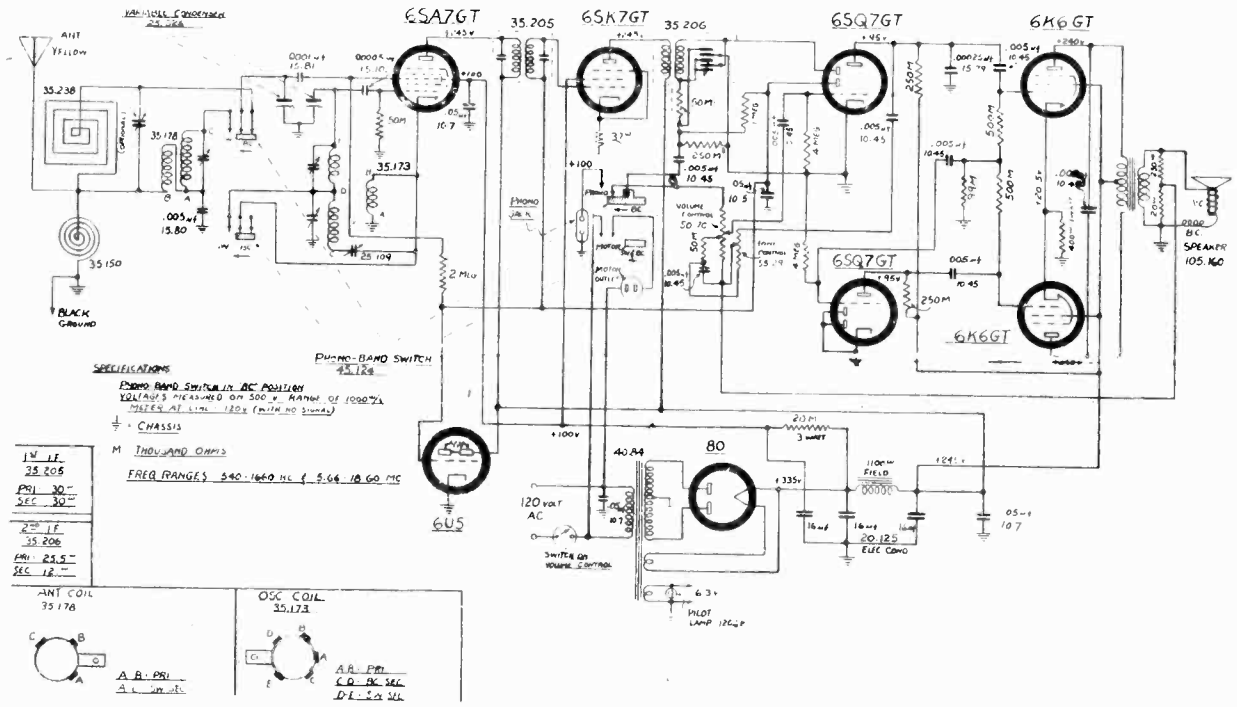
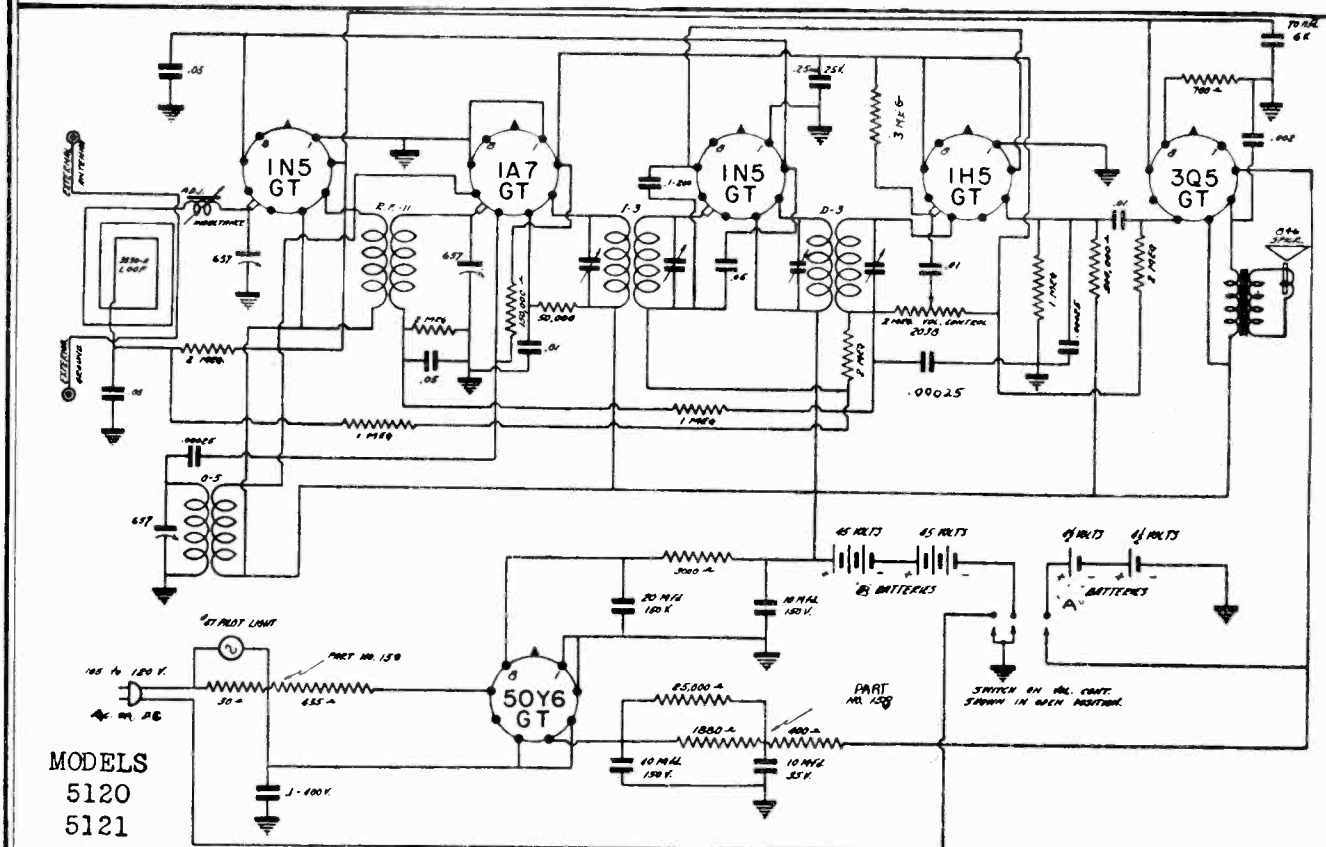


MODELS CP5020, CP5060, CP5062



MODELS
5120
5121

When set is initially equipped with batteries, the antenna trimmer is properly adjusted at the factory and no further adjustment is necessary. However, in changing batteries, or installing outside antenna, it may be necessary to adjust this antenna trimmer. If so, proceed as follows:

(1) Tune the receiver to a radio station somewhere near 1400 kilocycles, which is about 140 on the dial.
(2) Remove the plug button from the right hand side of the cabinet (when looking at the front of the set).
(3) Adjust antenna trimmer with a screw driver very slowly until this station is heard the loudest.

No other adjustments are necessary in this set.

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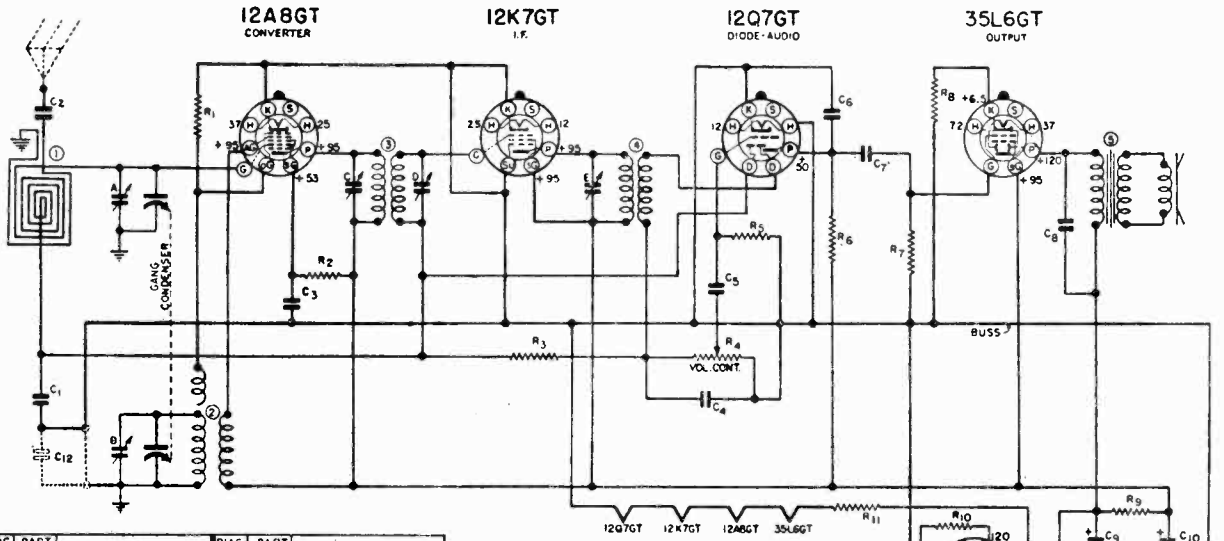
MODELS LB6517, LB6518

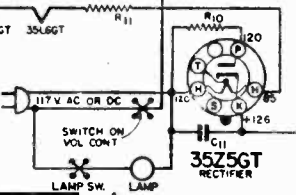
SPIEGEL, INC.



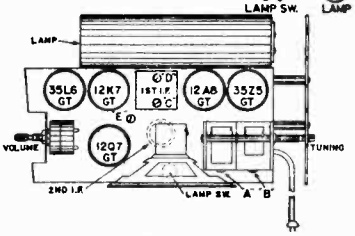
DIAG NO.	PART NO.	DESCRIPTION
R1	N-1260	50,000 OHM .5W. 20%
R2	N-1259	15,000 OHM .5W. 20%
R3	N-1262	1 MEGOHM .5W. 20%
R4	N-3248	.5 MEGOHM VOL. CONTROL
R5	N-1263	10 MEGOHM .5W. 20%
R6	N-3591	200,000 OHM .5W. 20%
R7	N-1264	500,000 OHM .5W. 20%
R8	N-1616	250 OHM 5W. 10%
R9	N-1257	2000 OHM 5W. 20%
R10	N-1742	25 OHM 5W. 20%
R11	N-1618	80 OHM 2W. 10%
C1	N-1345	.05 MFD. 200 V.
C2	N-1344	.01 MFD. 400 V.
C3	N-1345	.05 MFD. 200 V.
C4	N-1374	100 MMFD.
C5	N-1344	.01 MFD. 400 V.
C6	N-1447	.0005 MFD. 400 V.
C7	N-1344	.01 MFD. 400 V.
C8	N-1376	.02 MFD. 400 V.
C9 C10	N-3554	(40 MFD. ELECT. 25 MFD. COND.) 150 V.
C11	N-1346	.05 MFD. 400 V.
*C12	N-3080	.22 MFD. 200 V.

DIAG NO.	PART NO.	DESCRIPTION
1	N-3536	ANTENNA COIL LOOP
2	N-3555	OSCILLATOR COIL
3	N-3043	1ST. I.F. TRANSFORMER
4	N-3091	2ND. I.F. TRANSFORMER
5	N-3538 / N-3539	4" SPEAKER & TRANS.
	N-2094	LAMP SWITCH
	N-3575	110 V. 40 W. G.E. T-10 LAMP
E	N-2649	2ND. I.F. TRIMMING COND.
	N-3541	2 GANG CONDENSER
*		C12 USED ONLY ON MODEL LBU. BUSS IS CONNECTED TO GND. IN MODEL LB.

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



I.F.-456 KC



TUBE AND TRIMMER LOCATIONS

5 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND

DRWN. LTC. CHK'D. APP'D. DMJ
AUG. 6, 1940.

LB-LBU

Alignment Data and Servicing

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as a weak or defective tube or speaker, open or grounded bias resistor, bypass cond. Never attempt to realign set until all other possible sources of trouble have been thoroughly investigated and 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

I. F. ALIGNMENT. With the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (12A8GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 200 mmfd. (.0002) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1720 K.C. 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.

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 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. Remove the chassis from the cabinet and set on a bench taking care that no iron or other metal is near the loop. Do not make this setup on a metal bench. 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.

Voltages shown on the circuit diagram are from socket terminals to chassis base. In measuring voltages use a voltmeter having a resistance of at least 1000 ohms per volt. Allowances should be made for variations in line voltage.

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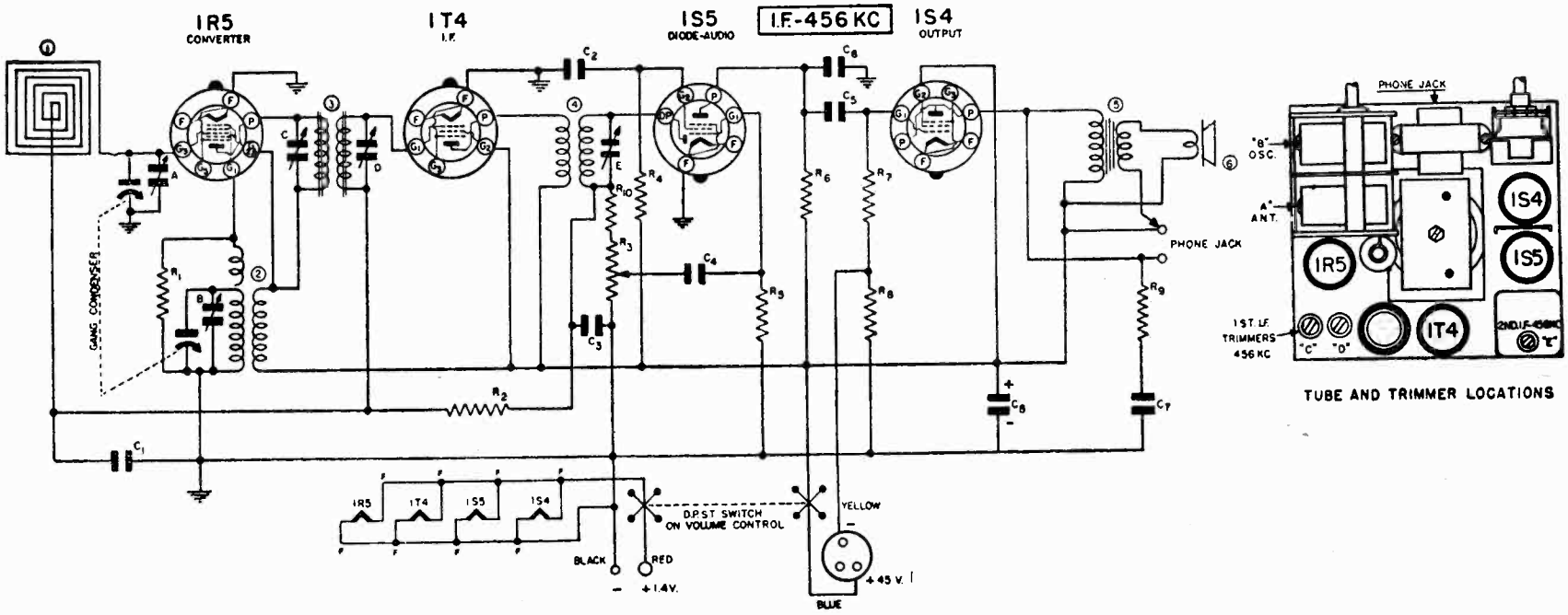

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 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. With the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (1R5) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT. Remove chassis, battery pack, and loop antenna from 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. Make a loop consisting of two turns of wire approximately one foot in diameter and connect across the generator terminals. Place this loop parallel to the loop antenna and about six inches away from it.

Set the dial and generator at 1720 KC (gang at minimum capacity). Adjust the oscillator trimmer for maximum output. Set the generator at 1400 KC and tune in the signal. Adjust the antenna trimmer maximum output. Check the sensitivity at 600 KC to determine if the gang or the coils have been damaged.

4 TUBE PORTABLE
SUPERHETERODYNE
SINGLE BAND

DIAG NO.	PART NO.	DESCRIPTION	DIAG NO.	PART NO.	DESCRIPTION
R1	N-3172	100,000 OHM .5W. 20%	C5	N-3094	.01 MFD. 400 V.
R2	N-3173	2 MEGOHM .5W. 20%	C6	N-1374	.0001 MFD. MICA
R3	N-3092	1 MEGOHM VOLUME CONTROL	C7	N-3094	.01 MFD. 400 V.
R4	N-3174	3 MEGOHM .5W. 20%	C8	N-3151	8 MFD. 50 V. ELECTROLYTIC
R5	N-3093	6 MEGOHM .5W. 20%			
R6	N-3175	1 MEGOHM .5W. 20%	1	N-3096	ANTENNA LOOP COIL
R7	N-3173	2 MEGOHM .5W. 20%	2	N-3097	OSCILLATOR COIL
R8	N-3176	500 OHM .5W. 5%	3	N-3098	1ST. I.F. TRANSFORMER
R9	N-3177	15,000 OHM .5W. 20%	4	N-3099	2ND. I.F. TRANSFORMER
R10	N-3184	50,000 OHM .5W. 20%	5	N-3100	OUTPUT TRANSFORMER
			6	N-3101	4" P.M. SPEAKER
C1	N-1345	.05 MFD. 200 V.			
C2	N-3094	.01 MFD. 400 V.			
C3		.0001 MFD. (IN SHIELD)		N-3102	2 GANG CONDENSER
C4	N-3094	.01 MFD. 400 V.			

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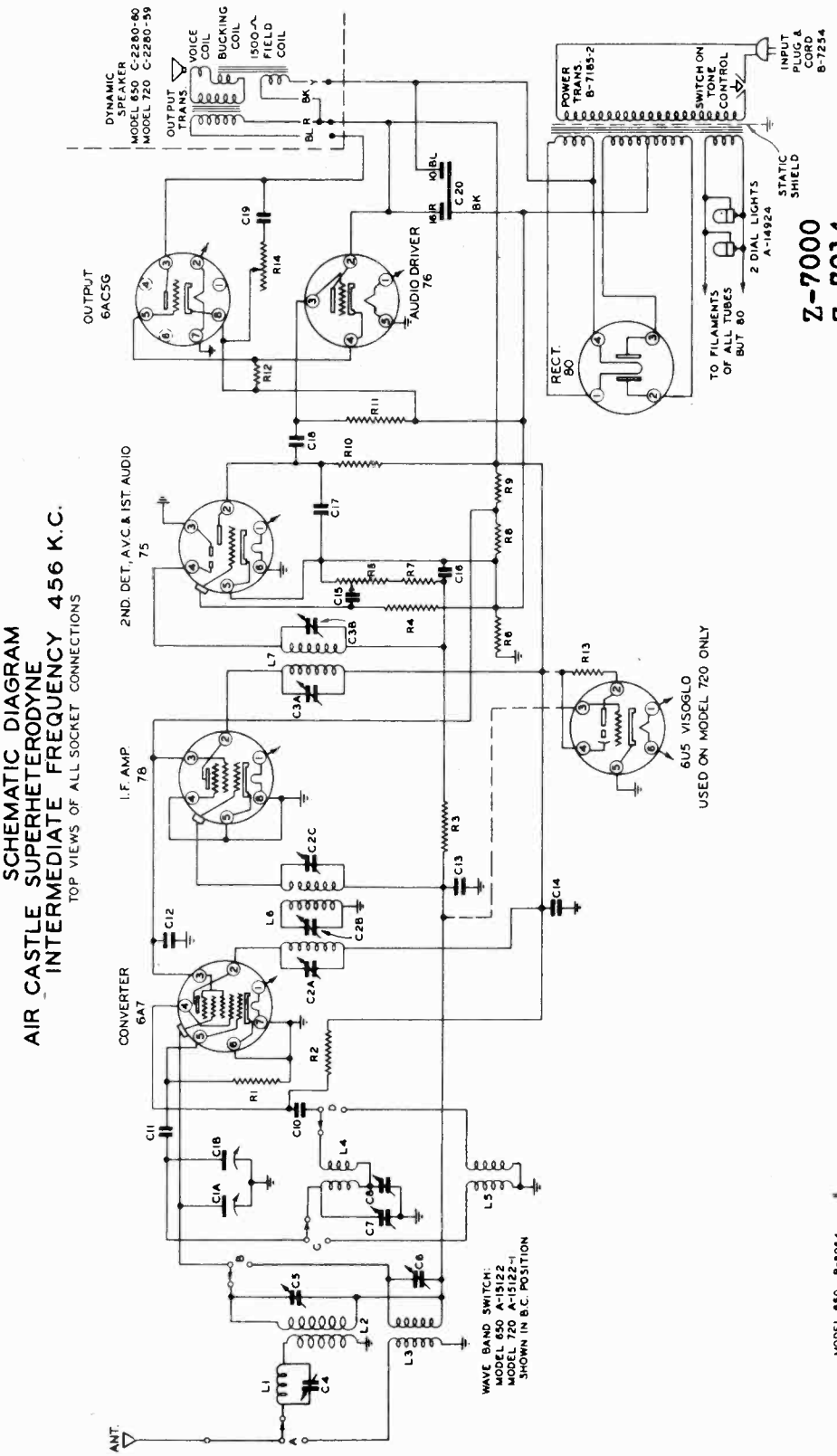
MODELS W166,720,Z7000,
Z7014,Z7016,Z7050,
Z7064



C1A&B	VAR. COND. MODEL 650	B-8064
	MODEL 720	B-7229
C2A&C	NO.1 I.F. TRIMMER	A-14782
C3A&B	NO.2 I.F. TRIMMER	B-7200-GN
C4	I.F. REJECTOR TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-3
C6	S.W. ANT. TRIMMER	A-14088-5
C7	B.C. OSC. TRIMMER	A-14088-5
C8	B.C. OSC. PADDER	B-7199-BY
C10	.001 MFD. 400V.	C-3204-2C
C11	50 MMFD. MOLDED	C-1220-320
C12	.1 MFD. 200V.	C-3202-38C
C13	.05 MFD. 200V	C-3202-28C
C14	.1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 200V.	C-3202-22C
C16	250 MMFD. MOLDED	C-1220-324
C17	250 MMFD. MOLDED	C-1220-324
C18	.05 MFD. 400V.	C-3204-42C
C19	.03 MFD. 600V.	C-3206-60C
C20	18-10 MFD. ELECT.	A-14799
R1	56,000 Ω. .25W.	C-2795-83B
R2	22,000 Ω. .5W	C-2796-76C
R3	1 MEGOHM .25W	C-2795-98B
R4	4.7MEGOHM .25W	C-2795-106B
R5	500,000Ω VOL. CONTROL	A-15130-1
R6	180 Ω. .25W	C-2795-53B
R7	56,000 Ω. .25W	C-2795-83B
R8	27,000 Ω. 1W.	C-2797-79B
R9	33,000 Ω. 1W.	C-2799-80A
R10	270,000 Ω. .25W.	C-2795-91B
R11	1 MEGOHM .25W.	C-2795-98B
R12	27,000 Ω. .25W.	C-2795-79B
R13	220,000 Ω. .25W.	C-2795-90B
R14	TONE CONT. MODEL 650 & SW. MODEL 720	A-15128 A-15128-1
L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-4
L4	B.C. OSC. COIL	A-14213-2A
L5	S.W. OSC. COIL	A-14794
L6	NO.1 I.F. COIL	A-12084-17
L7	NO.2 I.F. COIL	

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MODEL Z7002, Chassis 0-51

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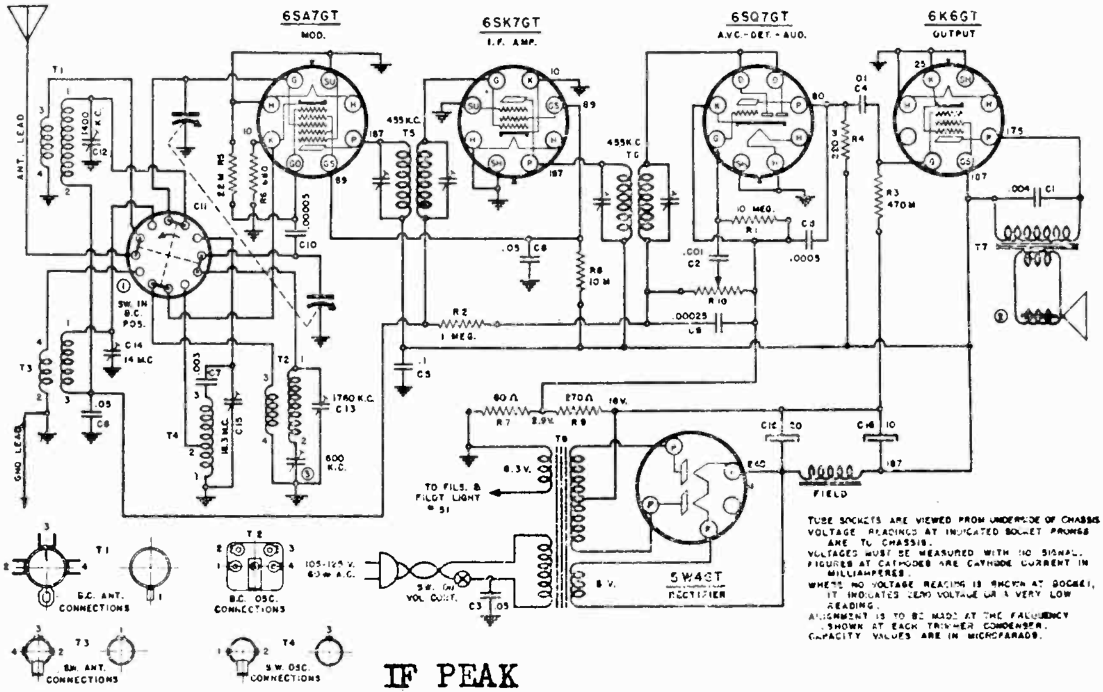
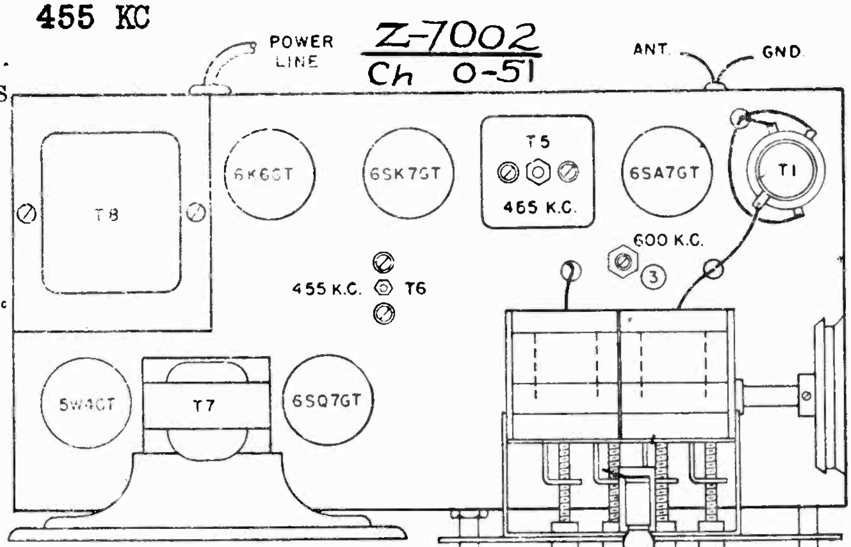


IF PEAK
455 KC

Bands:-
537 K.C. to 1760 K.C.
5.7 to 18.3 megacycles



CODE	PART NO.	DESCRIPTION
C1	16-125	.004 MFD. 400 V. TUBULAR COND.
C2	14-124	.001 " " " "
C3	1607	.05 " " " "
C4	16-119	.01 " " " "
C5	16-116	.1 " " " "
C6	1622	.05 " 200 V. " "
C7	15-118	.003 " MICA CONDENSER
C8	15-112	.0005 " " "
C9	1504	.00025 " " "
C10	1503	.00005 " " "
C11	95-8	2 GANG. VARIABLE CONDENSER
C12, C13, C14, C15	20-125	TRIMMER BLOCK
C16	16-254	20 X 10 MFD. 350 W.V. ELECTROLYTIC
R1	60-193	10 MEGOHM 1/4 WATT RESISTOR
R2	60-185	1 " " " "
R3	60-178	470M. OHM " " "
R4	60-180	220M " " " "
R5	60-135	22 M " " "
R6	60-246	680 " " " "
R7	60-182	60 " 1/2 " "
R8	60-247	10M " " " "
R9	60-245	270 " " " "
R10	24-140	500 M " VOLUME CONTROL & SW
T1	10-306	B.C. ANTENNA COIL
T2	10-308	B.C. OSCILLATOR COIL
T3	10-307	S.W. ANTENNA COIL
T4	10-309	S.W. OSCILLATOR COIL
T5	10-305	1ST. I.F. TRANSFORMER
T6	10-281	2ND. I.F. "
T7		OUTPUT TRANSFORMER (ON SPKR.)
T8	80-179	POWER TRANSFORMER 60 ~
1	[illegible]	BAND SWITCH
2	75-273	[illegible] SPEAKER
3	20-117	PADDING CONDENSER

Position of Variable	Generator Freq.	Dummy Ant. mfd.	Generator Connections	Trimmer Adjustment		Trimmer Function
Closed	455 kc.	.1	6SA7 Grid.	T5	T6	I. F.
Fully Open	1760 kc	.0002	Antenna	C13		B. C. Osc.
600 kc	600 kc	.0002	Antenna	(3)		B. C. Padder
1400 kc	1400 kc	.0002	Antenna	C12		B. C. Ant.
Fully Open	18.3 mc	.0002	Antenna	C15		S. W. Osc.
14 mc	14 mc	.0002	Antenna	C14		S. W. Ant.

FOR PUSH BUTTON DATA SEE INDEX

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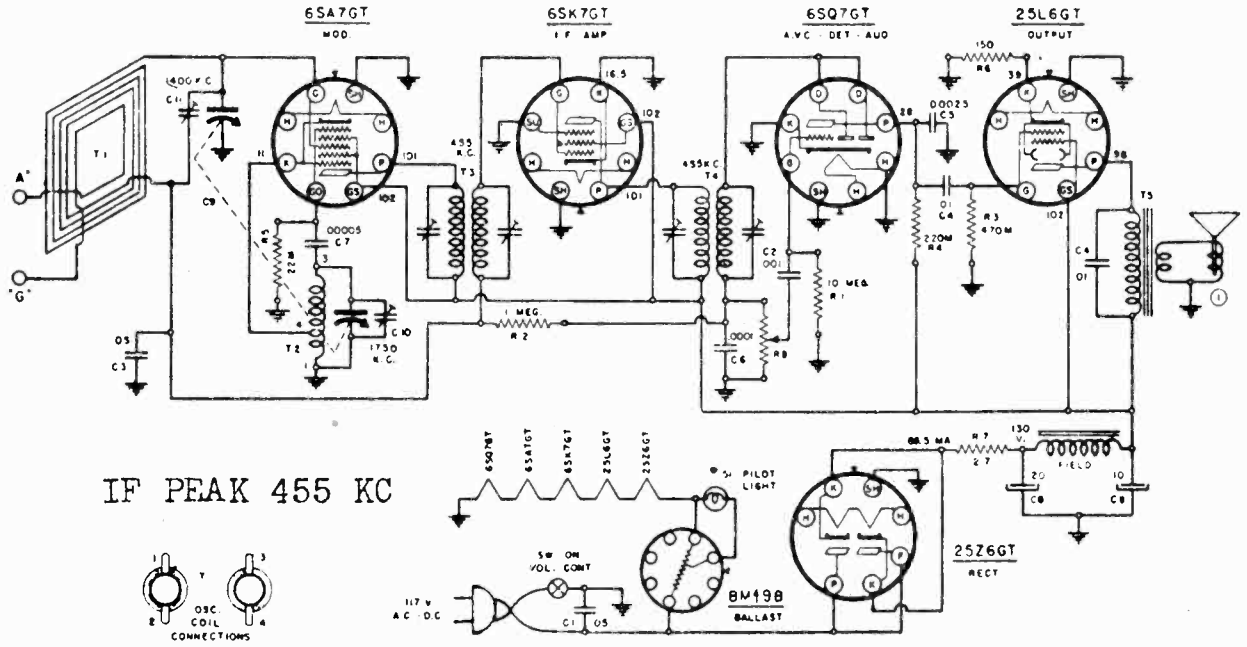
MODEL Z7018, Chassis 0-61



IF PEAK 455 KC

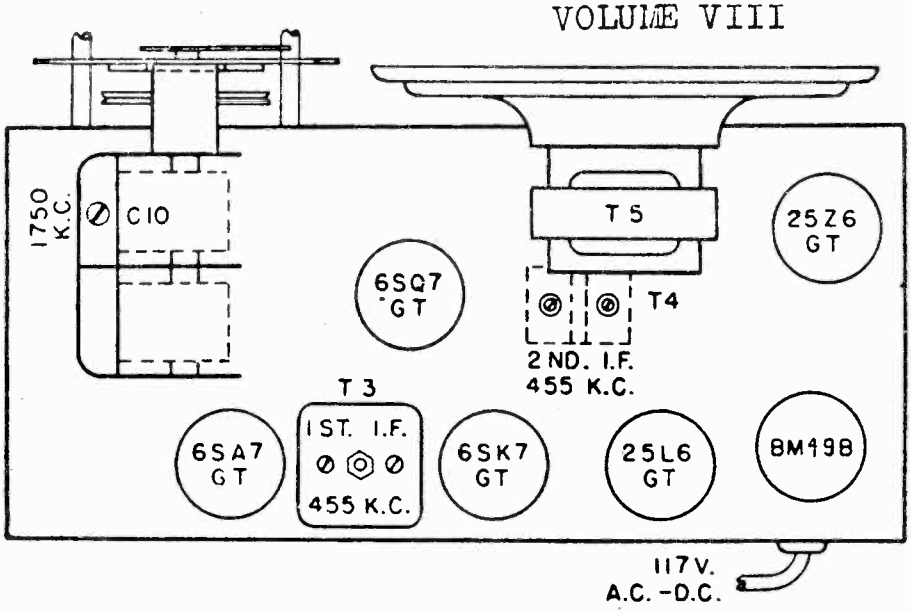
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS.
VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER

CODE	PART NO.	DESCRIPTION
R 1	60-193	10 MEGOHM 1/4 W. RESISTOR
R 2	60-195	1 " " "
R 3	60-178	470M OHM " "
R 4	60-180	220M " " "
R 5	60-185	22M " " "
R 6	60-184	150 " " "
R 7	60-220	27 " " "
R 8	24-142	500M " VOLUME CONTROL (WITH SW.)

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-61
C 1	1607	.05 MFD 400 V TUBULAR COND	T 1	82-8	LOOP ANTENNA
C 2	18-124	.001 " " " "	T 2	10-332	OSCILLATOR COIL
C 3	1622	.05 " 200 V " "	T 3	10-333	1 ST. I.F. TRANSFORMER
C 4	18-121	.01 " " " "	T 4	10-281	2 ND. " "
C 5	1504	.00025 MFD MICA CONDENSER	T 5	.....	OUTPUT TRANSFORMER (On SPKR.)
C 6	1506	.0001 " " "			
C 7	1503	.00005 " " "			
C 8	18-241	20 X 10 " 150 W.V. ELECTROLYTIC	1	79-283	5" DYNAMIC SPEAKER
C 9	19-154	2 GANG VARIABLE COND. ALSO C10			
C 11	20-129	TRIMMER (ON LOOP)			

Z-7018 Ch. 0-61

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII



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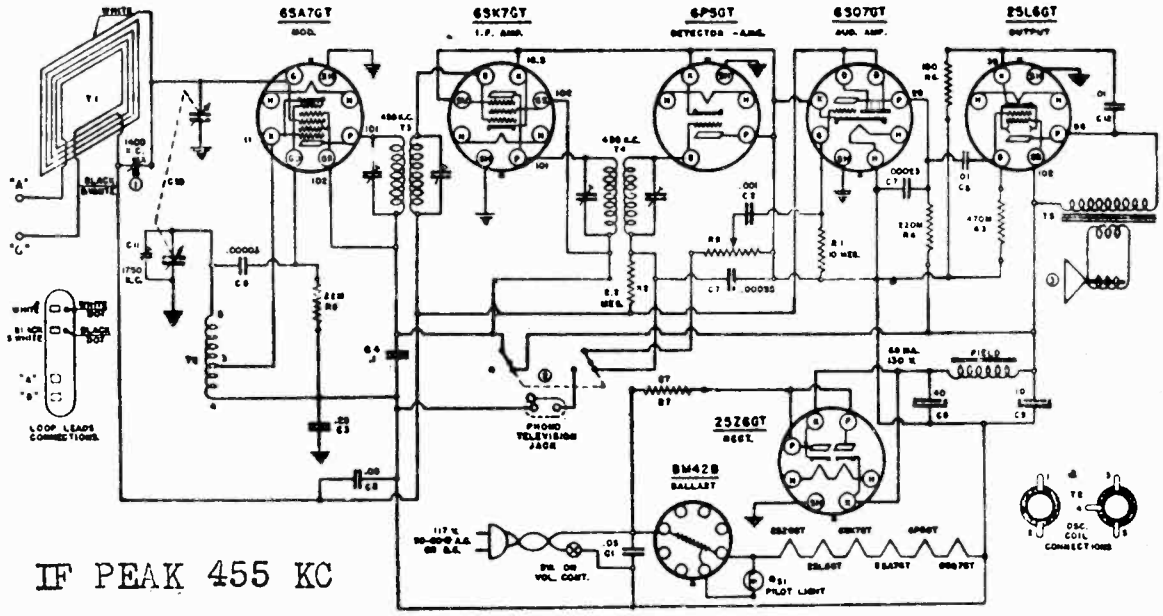
MODEL Z7026, Chassis 0-77

SPIEGEL INC.

MODEL Z-7026 Ch. 0-77

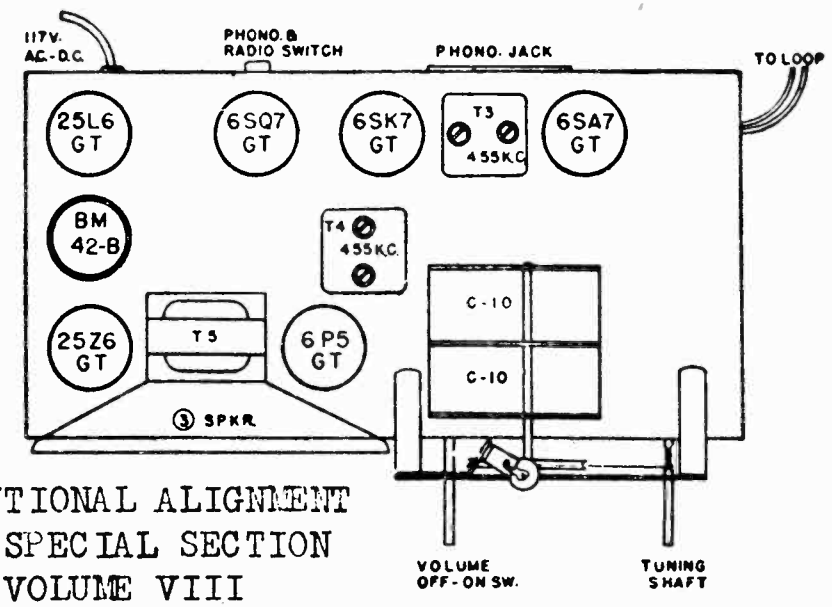


IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO COMMON GROUND.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
ALIGNMENT IS TO BE MADE AT THE FREQUENCY SHOWN AT EACH TRIMMER CONDENSER.
CAPACITY VALUES ARE IN MICROFARADS.
VOLTAGES ARE MEASURED WITH 1000 OHM PER VOLT VOLTMETER.

TUNING RANGE: 540 to 1750 KC

CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION	CODE	PART NO.	DESCRIPTION 0-77
C1	16GT	.05 MFD. 400 V. TUBULAR CONDR	R1	60-193	4M MEGOHM 1/4 W. RESISTOR	T1	82-10	LOOP ANTENNA
C2	16-126	.001 " " " "	R2	60-179	8.2 " " "	T2	10-311	OSCILLATOR COIL
C3	16-120	.25 " 600 W. " "	R3	60-178	470M OHMS " "	T3	10-317	I ST. I.F. TRANSFORMER
C4	16-115	.1 " " " "	R4	60-180	220M " "	T4	10-312	2 ND. " "
C5	1622	.05 " " " "	R5	60-185	22M " "	T5	.....	OUTPUT TRANSFORMER (ON SPKR)
C6	16-121	.01 " " " "	R6	60-184	150 " "			
C7	1504	.00025 MFD. MICA CONDENSER	R7	60-180	87 " "	1	20-125	TRIMMER (ON LOOP)
C8	1503	.00303 " "	R8	24-146	5000 VOLUME CONTROL & SW.	2	68-140	PHONO SWITCH
C9	18-255	40 X 10 " 150 W.V. ELECTROLYTIC				3	79-283	5" DYNAMIC SPEAKER
C10	15-199	3 GANG VARIABLE CONDENSER (ALSO CH)						
C11	16-118	.01 MFD 600 V. TUBULAR CONDENSER						



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

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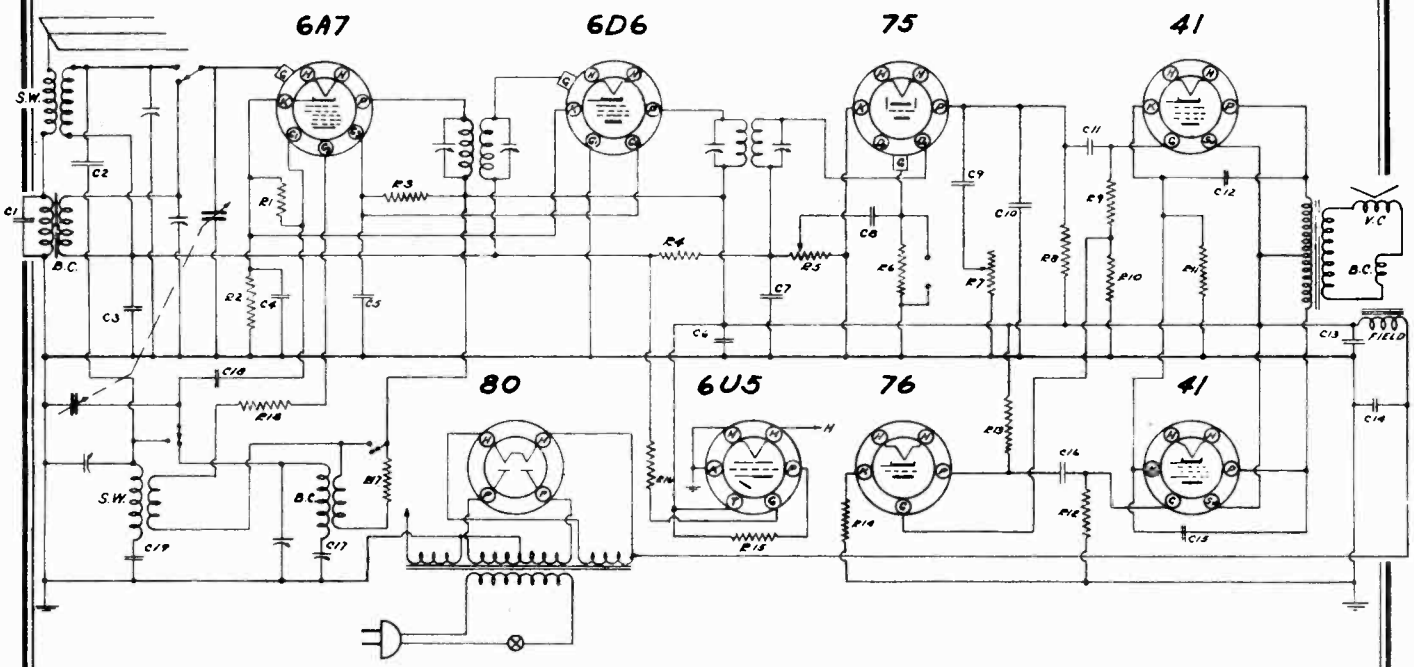
SPIEGEL INC.

MODEL Z7028, Chassis 8C



CAPACITORS						RESISTORS					
No.	MFDS.	VOLTS	No.	MFDS.	VOLTS	No.	OHMS	WATTS	No.	OHMS	WATTS
C1	.0001	MICA	C11	.01	400	R1	50,000	1/2	R11	300	1/2
C2	GIMMICK		C12	.003	600	R2	200	1/2	R12	1/2 Meg	1/2
C3	.05	200	C13	10.0	350	R3	20,000	1/2	R13	30,000	1/2
C4	.25	200	C14	10.0	350	R4	2 Meg.	1/2	R14	3,000	1/2
C5	.05	400	C15	.003	600	R5	1/2 "	V.C.	R15	1 Meg	1/2
C6	.05	400	C16	.01	400	R6	5 "	1/2	R16	1 "	1/2
C7	.00025	MICA	C17	.0005-.0006	PADDER	R7	1/2 "	T.C.	R17	1000	1/2
C8	.01	400	C18	.0001	MICA	R8	1/2 "	1/2	R18	250	1/2
C9	.005	400	C19	.004 ± 5%		R9	400,000	1/2			
C10	.00025	MICA				R10	100,000	1/2			

I.F. 455 K.C.

BAND SWITCHES SHOWN IN BROADCAST POSITION

BOTTOM VIEW OF TUBE SOCKETS SHOWN

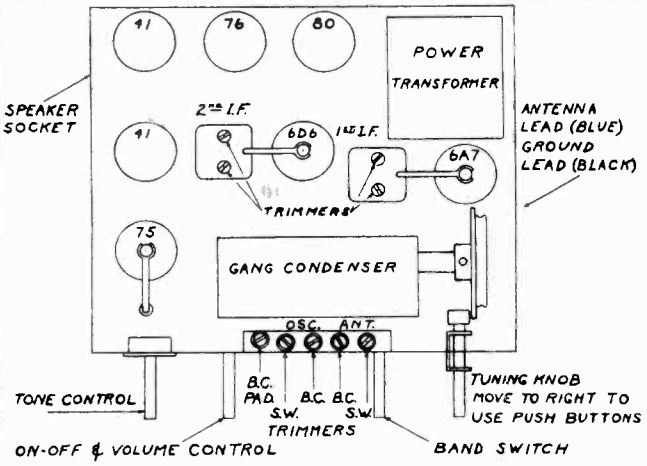


Fig. 2—Top View

ALIGNMENT DATA

I.F. ALIGNMENT

Adjust the signal generator to 455 KC and connect the output to the grid of the first detector tube (6A7) through a .05 or .1 mfd. condenser. Align all I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT

Adjust the signal generator to 1730 KC and connect the output to the antenna lead (blue) through a .0002 mfd. mica condenser. Set the gang condenser to minimum capacity and adjust the oscillator trimmer to receive this signal. The oscillator and antenna trimmers may be reached by removing the dial escutcheon. (See Fig. 2 for trimmer locations.) The next step is to set the signal generator to 1400 KC and after tuning in the signal adjust the antenna trimmer to peak. Next, re-set the dial pointer on the receiver and the signal generator to 600 KC. Slowly increase or decrease the oscillator padding condenser and at the same time continuously tune back and forth across the signal with the receiver until the maximum reading is obtained on the output meter.

Return to 1400 KC and again go over the adjustments of this frequency to be certain that they were not put slightly out of alignment when adjustment was made at 600 KC.

SHORT WAVE BAND ALIGNMENT

The short wave band is adjusted by setting the signal generator to 18100 KC and connecting the output to the antenna lead through a 400 ohm resistor. Set the gang at minimum and adjust the "short wave oscillator trimmer" to receive the signal. Set the generator at 16,000 KC, tune in the signal and adjust the "short wave antenna" trimmer to give maximum output. As there is no variable low frequency padding condenser on this band, the sensitivity of the receiver should be checked at 6000 KC to determine whether the circuits are in line at this frequency. Should the receiver lack sensitivity at 6000 KC, the antenna and oscillator coils, as well as the mica padding condenser, should be tested.

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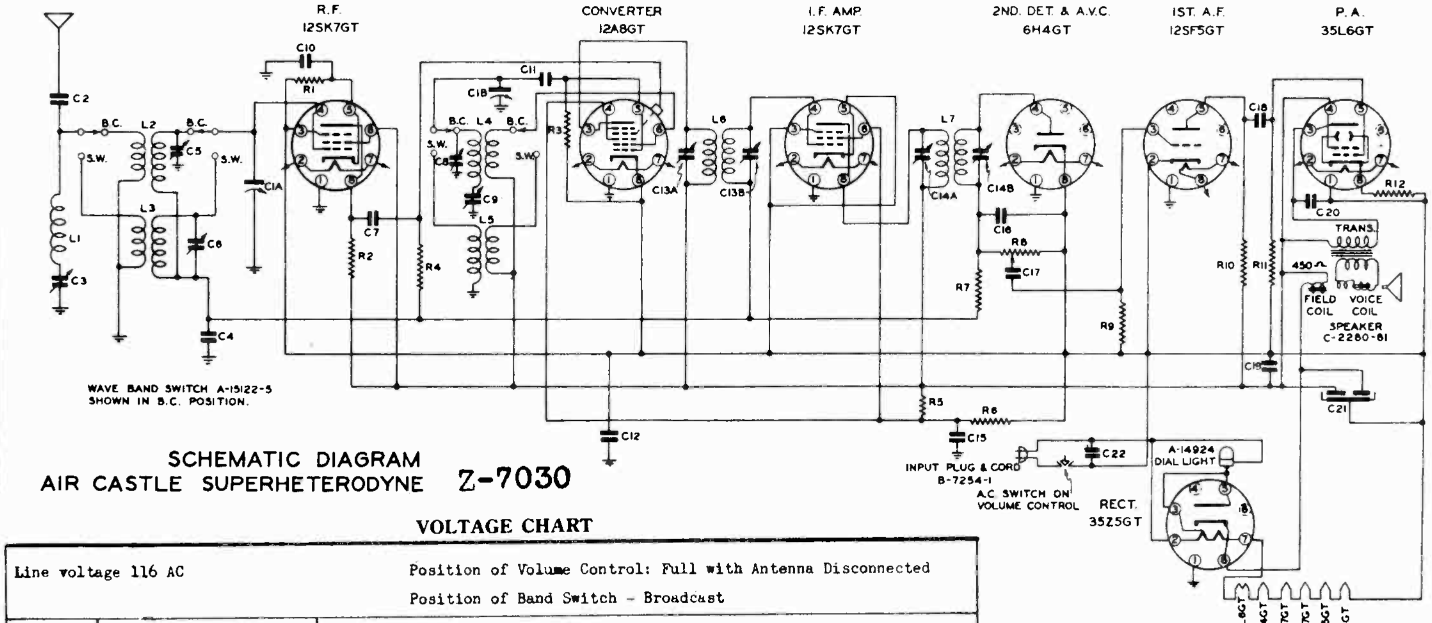
MODEL Z7030

SPIEGEL, INC.

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



SCHEMATIC DIAGRAM
AIR CASTLE SUPERHETERODYNE Z-7030

C1A&B	VARIABLE CONDENSER	B-8161
C2	.001 MFD. 400V.	C-3204-58C
C3	I.F. REJECT. TRIMMER	A-14088-2
C4	.05 MFD. 200V.	C-3202-84C
C5	B.C. ANT. TRIMMER	A-14088-1
C6	S.W. ANT. TRIMMER	A-14088-1
C7	100 MMF. MICA	C-720-339
C8	B.C. OSC. TRIMMER	A-15573
C9	B.C. OSC. PADDER	A-15573
C10	.01 MFD. 200V.	C-3202-20C
C11	50 MMF. MICA	C-720-372
C12	.15 MFD. 400V.	C-3204-95C
C13A&B	NO.1 I.F. TRIM.	B-7200-GG
C14A&B	NO.2 I.F. TRIM.	B-7200-GN.
C15	.05 MFD. 200V.	C-3202-84C
C16	500 MMF. MICA	C-720-318
C17	.01 MFD. 200V.	C-3202-20C
C18	.01 MFD. 200V.	C-3202-20C
C19	.1 MFD. 200V.	C-3202-38C
C20	.03 MFD. 400V.	C-3204-80C
C21	25-25 MFD. ELECT.	A-15571
C22	.01 MFD. 400V.	C-3204-20C
R1	470 Ω .25W.	C-2795-151B
R2	3900 Ω .25W.	C-2795-69B
R3	56,000 Ω .25W.	C-2795-83B
R4	56,000 Ω .25W.	C-2795-83B
R5	3300 Ω .5W.	C-2796-68C
R6	10,000 Ω .5W.	C-2796-74C
R7	1 MEGOHM .25W.	C-2795-98B
R8	500,000 Ω VOL. CONT. & SWITCH	A-15129-1
R9	5.6 MEGOHM .25W.	C-2795-107B
R10	270,000 Ω .25W.	C-2795-91B
R11	560,000 Ω .25W.	C-2795-95B
R12	180 Ω .5W.	C-2796-53C
L1	I.F. REJECTOR COIL	A-14718-1
L2	B.C. ANT. COIL	A-14974-2
L3	S.W. ANT. COIL	A-14682-9
L4	B.C. OSC. COIL	A-15232-4
L5	S.W. OSC. COIL	A-15233-4
L6	NO.1 I.F. COIL	A-12084-32
L7	NO.2 I.F. COIL	A-12084-17

VOLTAGE CHART

Line voltage 116 AC

Position of Volume Control: Full with Antenna Disconnected

Position of Band Switch - Broadcast

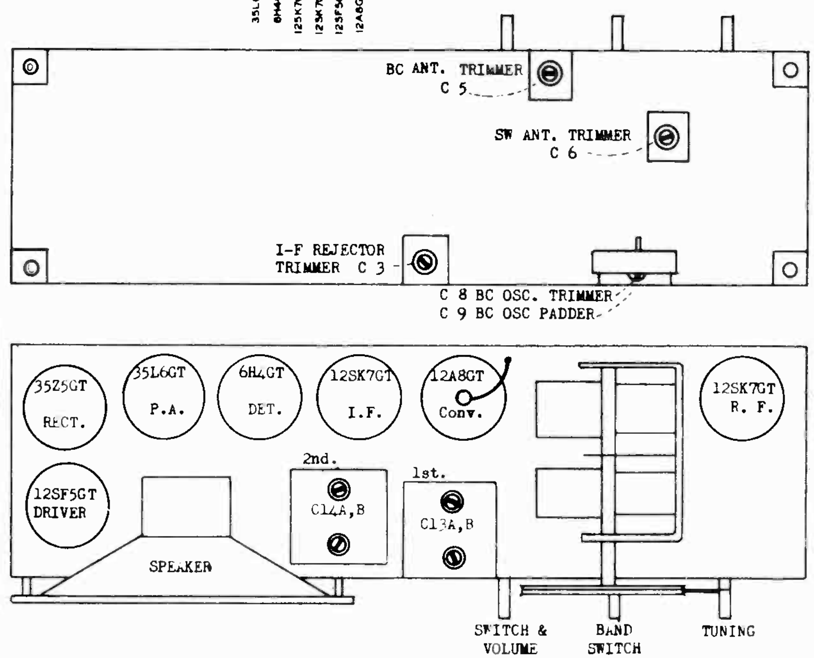
TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
12SK7GT	R-F Amplifier	0	*24	0	-.025	1.6	60	*35	78	--
12A8GT	Converter	0	*12	98	60	-.025	95	0	0	-.04
12SK7GT	I-F Amplifier	0	*48	0	-.025	0	60	*36	95	--
6H4GT	Det - AVC	0	*52	0	-.025	-.025	-.025	*48	0	--
12SF5GT	1st Audio	0	0	-.05	—	**58	--	*24	*12	--
35L6GT	Power Amplifier	—	*85	90	95	0	0	*52	5.6	--
35Z5GT	Rectifier	—	*116	*110	—	*110	—	*85	*116	

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scales which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.
*AC readings
**100 V scale.

ALIGNMENT CHART

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with horizontal dial marks with condenser gang closed)							
2	I. F.	12A8GT Grid	.1 mf.	456 KC	BC	Open	C13A,B;C14A,B	
3	Rejector	Ant.	200mmf.	456 KC	BC	Closed	C 3	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C 8 (Osc)	
							C 5 (Ant)	
5				600 KC	BC	600 KC	C 9 (Pad)	**
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC and 1500 KC)							
8	SW Band	Ant.	*	18 MC	SW	18 MC	C 6 (Ant)	
9	(Check calibration and sensitivity at 6. MC and 18 MC)							
10	(Check operations 1 to 9 inclusive)							

*100 ohm non-inductive resistor and 200 mmf. condenser in series.
**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurately.



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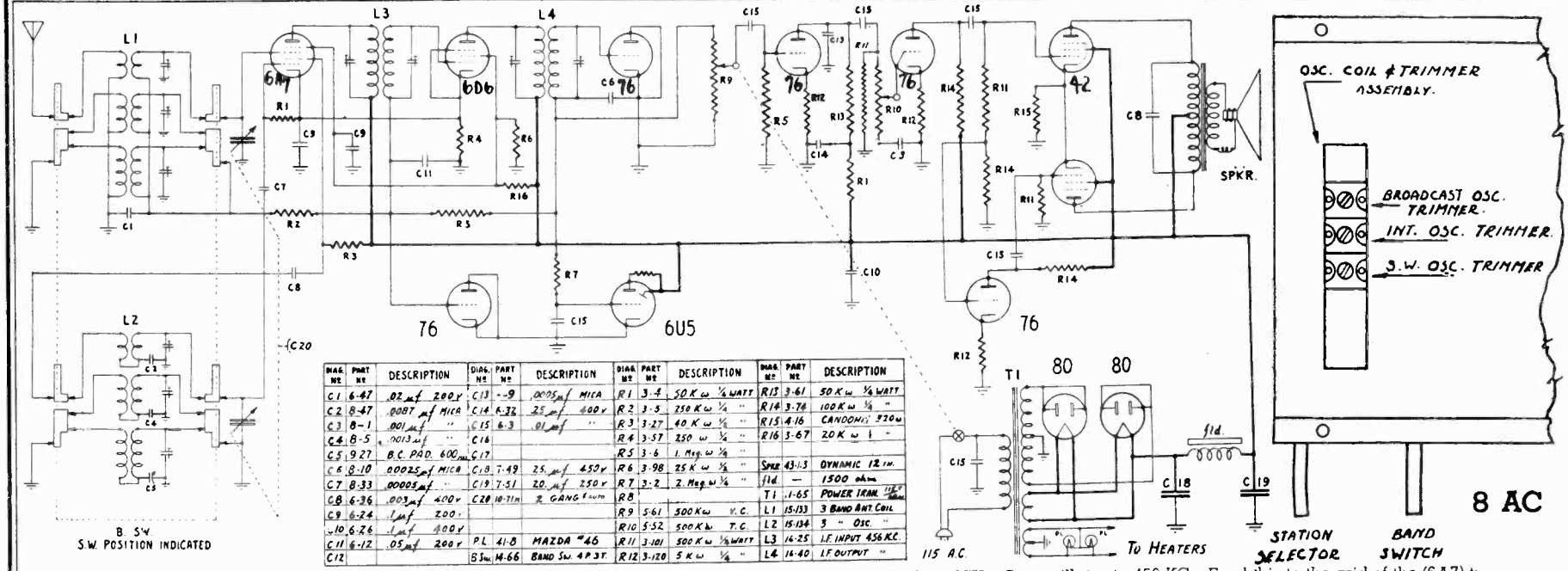
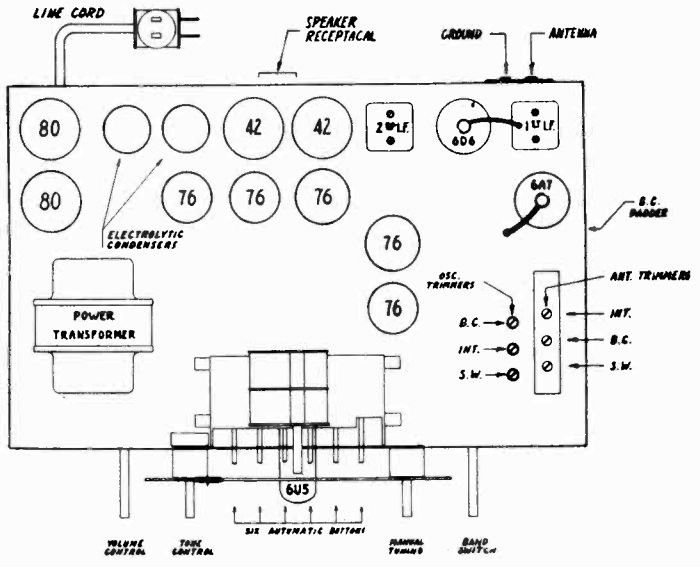


DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	6-47	.02 mf 200 v	C13	--9	.0005 mf MICA	R1	3-4	50 K ω ½ WATT	R13	3-61	50 K ω ½ WATT
C2	8-47	.0087 mf MICA	C14	6-32	.25 mf 400 v	R2	3-5	250 K ω ¼ "	R14	3-74	100 K ω ½ "
C3	8-1	.001 mf "	C15	6-3	.01 mf "	R3	3-27	40 K ω ½ "	R15	4-16	CANDOHM 920 ω
C4	8-5	.0013 mf "	C16			R4	3-57	250 ω ¼ "	R16	3-67	20 K ω 1 "
C5	9-27	B.C. PAD. 600 KC	C17			R5	3-6	1. Meg. ω ½ "			
C6	8-10	.00025 mf MICA	C18	7-49	.25 mf 450 v	R6	3-98	25 K ω ½ "	SPKR	43-13	DYNAMIC 12 IN.
C7	8-33	.00005 mf "	C19	7-51	.20 mf 250 v	R7	3-2	2. Meg. ω ½ "	fld.	—	1500 ohm
C8	6-36	.003 mf 400 v	C20	10-71	2 GANG C. AUTO	R8			T1	1-65	POWER TRAN.
C9	6-24	.1 mf 200 v				R9	5-61	500 K ω V.C.	L1	15-133	3 BAND ANT. COIL
C10	6-26	.1 mf 400 v				R10	5-52	500 K ω T.C.	L2	15-134	3 " OSC. "
C11	6-12	.05 mf 200 v	PL	41-8	MAZDA #46	R11	3-101	500 K ω ½ WATT	L3	16-25	I.F. INPUT 456 KC.
C12			BSw	14-66	BAND SW. 4 P 3 T.	R12	3-120	5 K ω ½ "	L4	16-40	I.F. OUTPUT "



INTERMEDIATE FREQUENCY: Set oscillator to 456 KC. Feed this to the grid of the (6A7) tu... Adjust trimmers on the intermediate frequency transformers for peak readings as indicated on the output meter which is to be placed across the output transformer.

BROADCAST BAND: Set the band switch for broadcast reception. Adjust oscillator to 1400 KC and connect the output of the generator to the antenna connection at the rear of the chassis through a .0002 mfd. mica condenser. Set the pointer on the dial to 1400 KC making sure that the volume control is set at its maximum position. Adjust the broadcast antenna and broadcast oscillator trimmers for maximum signal (as indicated on the output meter). Re-set the dial pointer on the receiver and on the test oscillator to 600 KC. Slowly increase or decrease the **broadcast padding** condenser while tuning back and forth across the signal with the station selector knob until the maximum reading is obtained on the output meter. Re-check the 1400 KC alignment as the adjustment at 600 KC may have slightly disturbed the original 1400 KC setting.

INTERMEDIATE BAND: For a dummy antenna use a .0002 mfd. mica condenser in series with a 400 ohm carbon resistor. Set band switch to the intermediate band position and feed a 5100 KC signal from the oscillator. Set dial pointer at 5100 KC. Adjust intermediate antenna and intermediate oscillator trimmers for maximum output.

SHORT WAVE: Set band switch on short wave position. Connect the antenna of the radio receiver to the output of the test oscillator through a 400 ohm carbon resistor. Set oscillator and receiver dial at 15 megacycles. Adjust the short wave antenna and short wave oscillator trimming condensers for maximum output as indicated by readings on the output meter. No other adjustments are necessary for aligning this band.

It is advisable to check the sensitivity at 6000 KC to determine whether the circuits are properly aligned. Should the receiver lack sensitivity at this frequency check the .0087 mica condenser for short circuit.

SPIEGEL INC.

MODELS 27054, 27062
Chassis 912

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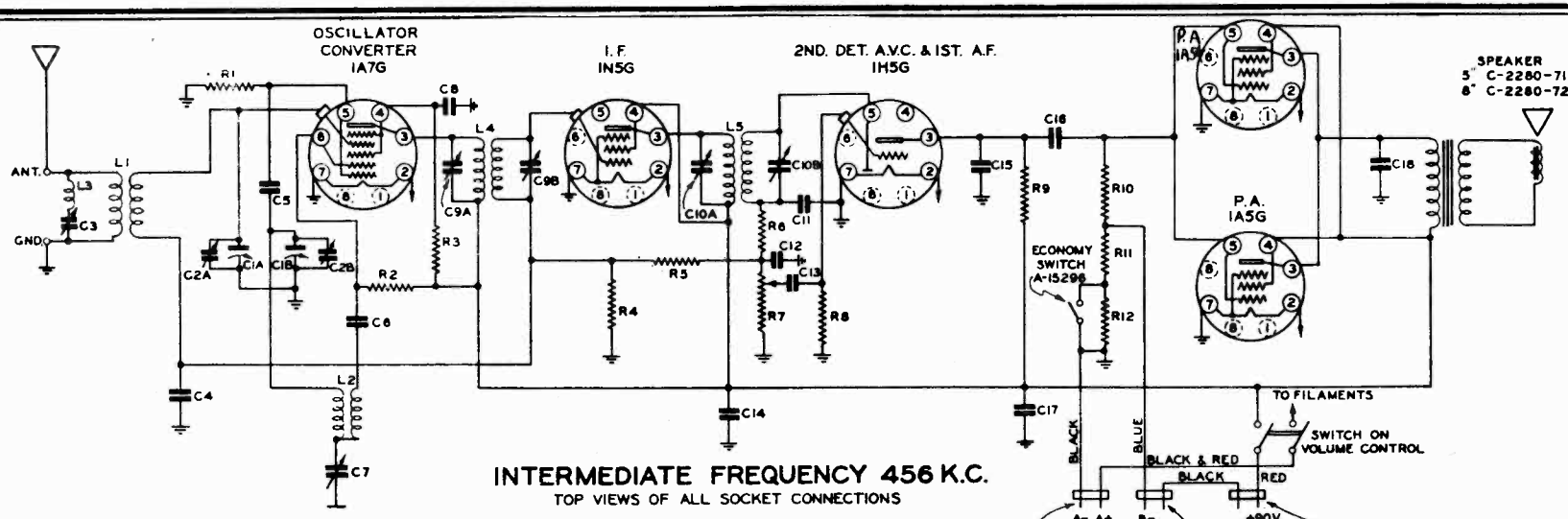
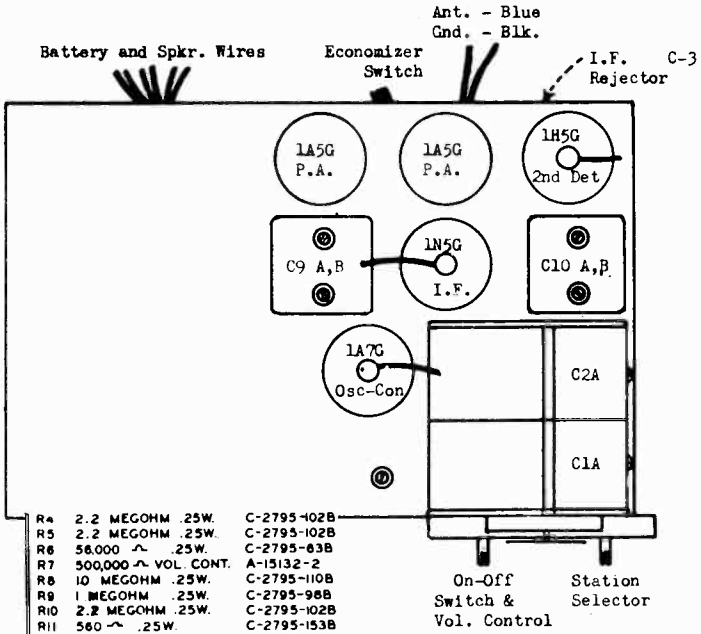


INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial pointer parallel with horizontal lines on dial with gang fully closed)						
2	I.F.	1A7G Grid	.1 mf.	456 KC	Open	C10 A&B	2nd I.F.
						C9 A&B	1st I.F.
3	I.F.Rejector	Antenna	200 mmf.	456 KC	Closed	C3	Adjust to minimum
4	Broadcast Band	Antenna	200 mmf.	1500 KC	1500 KC	C1A	BC Osc.
						C2A	BC Trimmer
5				600 KC	600 KC	C7	BC Padder*
6	(Repeat operation 4)						
7	(Check calibration and sensitivity at 1500 KC, 900 KC and 600 KC)						
8	(Check operations 1 to 7 inclusive)						

*Rock gang condenser while adjusting for maximum output.

VOLTAGE CHART

Condition of Batteries: Good — Position of Volume Control: Full with Antenna Disconnected
Position of "Economizer" Switch: "OFF"

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd.(See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
1A7G	Oscillator - Converter	80	1½	80	30	0	45	0	45	0
1N5G	I-F Amplifier	0	1½	80	80	0	0	0	0	0
1H5G	2nd Det-AVC-1st A.F.	-	1½	10	0	0	0	0	-	0
1A5G	Power Amplifier	-	1½	75	80	0	0	0	-	-
1A5G	Power Amplifier	-	1½	75	80	0	-6	0	0	-

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits.

C1A&B	VARIABLE CONDENSER	B-8078	C8	.05 MFD. 200V.	C-3202-28C	C15	100 MMF MOLDED	C-720-325
C2A&B	TRIMMERS ON VAR. COND.		C9A&B	NO. 1 I.F. TRIMMER	B-7200-GG	C16	.01 MFD. 400V.	C-3204-132C
C3	I.F. REJECTOR TRIMMER	A-14088-2	C10A&B	NO. 2 I.F. TRIMMER	B-7200-GG	C17	8 MFD. 150V. ELECT.	A-14956
C4	.05 MFD. 200V.	C-3202-140C	C11	100 MMF. MOLDED	C-720-325	C18	.001 MFD. 1000V.	C-3210-114C
C5	100 MMF. MOLDED	C-720-325	C12	100 MMF. MOLDED	C-720-325			
C6	.001 MFD. 200V.	C-3202-58C	C13	.01 MFD. 200V.	C-3202-132C	R1	180,000 Ω .25W.	C-2795-89B
C7	B.C. OSC. PADDER	A-14911-4A	C14	.05 MFD. 200V.	C-3202-140C	R2	27,000 Ω .5W	C-2796-79C
						R3	68,000 Ω .25W.	C-2795-84B

R4	2.2 MEGOHM .25W.	C-2795-102B
R5	2.2 MEGOHM .25W.	C-2795-102B
R6	56,000 Ω .25W.	C-2795-63B
R7	500,000 Ω VOL. CONT.	A-15132-2
R8	10 MEGOHM .25W.	C-2795-110B
R9	1 MEGOHM .25W.	C-2795-98B
R10	2.2 MEGOHM .25W.	C-2795-102B
R11	560 Ω .25W.	C-2795-153B
R12	360 Ω .25W.	C-2795-148B
L1	B.C. ANT. COIL	A-15231
L2	B.C. OSC. COIL	A-15232-3
L3	I.F. REJECTOR COIL	A-14718-1
L4	NO.1 I.F. COIL	A-12064-35
L5	NO.2 I.F. COIL	A-12064-35

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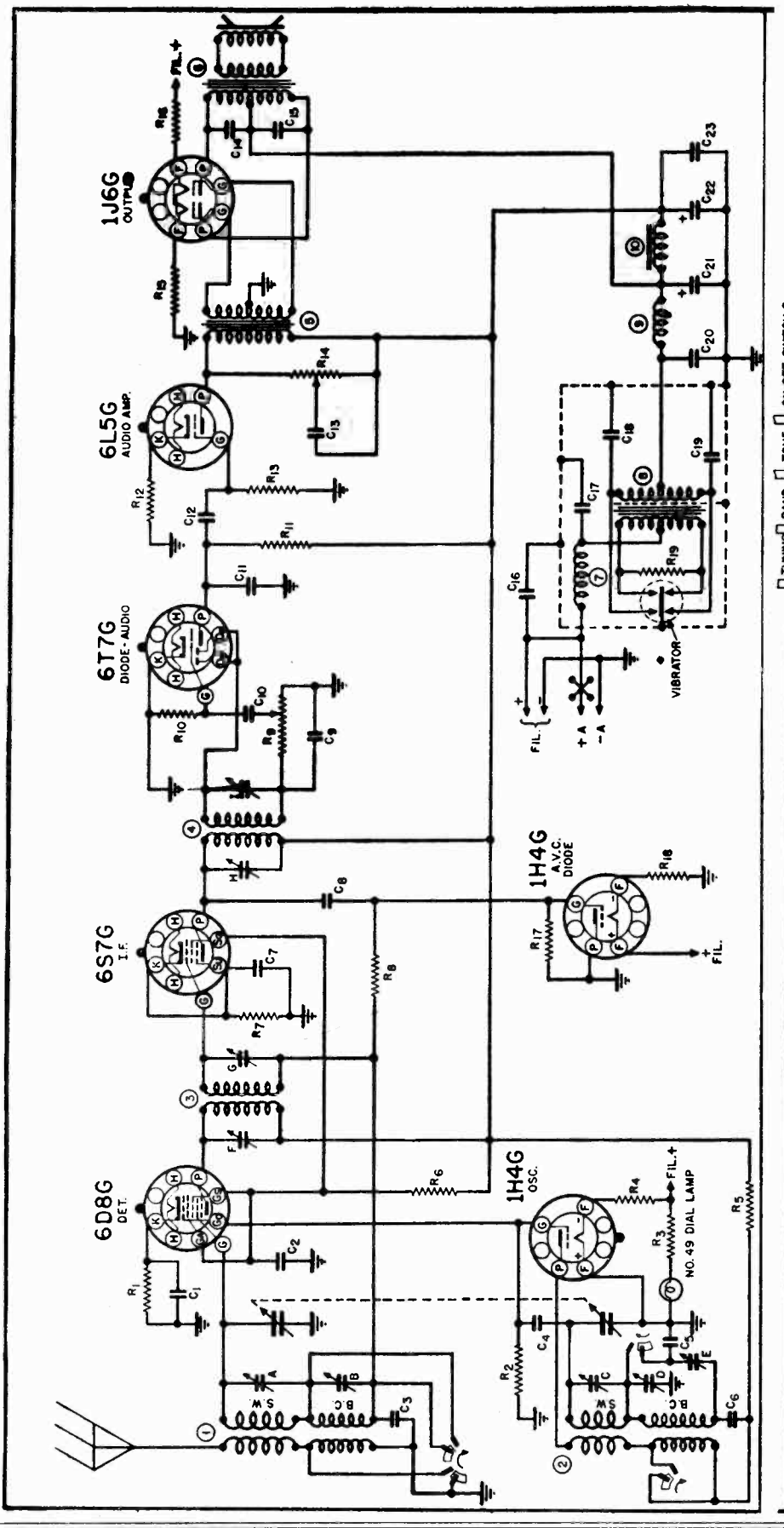
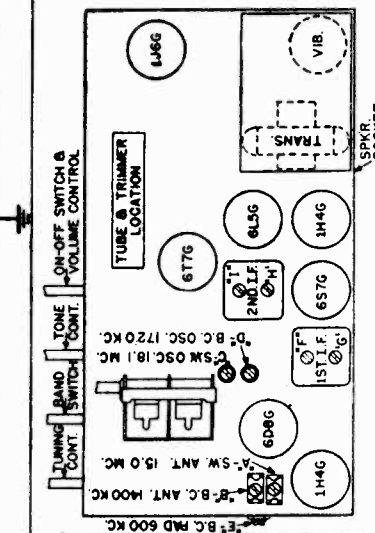
SPIEGEL INC.

MODELS W200,W230,W240
W254,W264,W270,Z7200
Chassis QT





SCHEMATIC AND PARTS LIST INCLUDING CHASSIS LAYOUT AND TUBE POSITIONS

DIAG. NO.	PART NO.	DESCRIPTION
C1	C-13	.05 MFD. 200 V.
C2	C-1	.1 MFD. 200 V.
C3	C-13	.05 MFD. 200 V.
C4	C-115	50 MMFD.
C5	C-109C	4,000 MMFD. 5%
C6	C-4	.01 MFD. 400 V.
C7	C-13	.05 MFD. 200 V.
C8	C-115	50 MMFD.
C9	C-110	100 MMFD.
C10	C-27	.006 MFD. 800 V.
C11	C-111	250 MMFD.
C12	C-4	.01 MFD. 400 V.
C13	C-5	.01 MFD. 600 V.
C14	C-4	.01 MFD. 400 V.
C15	C-4	.01 MFD. 400 V.
C16	C-22	.5 MFD. 50 V.
C17	C-22	.5 MFD. 50 V.
C18	C-7-1	.01 MFD. (OIL) 1,000 V.
C19	C-7-1	.01 MFD. (OIL) 1,000 V.
C20	C-5	.01 MFD. 600 V.
C21	C-242	10 MFD. 250 V.
C22		15 MFD. 250 V.
C23	C-1	.1 MFD. 200 V.
R1	N-1256	500 OHM .5 W.
R2	N-1260	50,000 OHM .5 W.
R3	N-1266	67.0 OHM .5 W.
R4	N-1266	67.0 OHM .5 W.
R5	N-1258	10,000 OHM .5 W.
R6	N-1259	15,000 OHM .5 W.
R7	N-1255	400 OHM .5 W.
R8	N-1262	1 MEGOHM .5 W.
R9	V-20	1 MEG. VOLUME CONT. .5 W.
R10	N-1263	10 MEGOHM .5 W.
R11	N-1264	.5 MEGOHM .5 W.
R12	N-1257	2,000 OHM .5 W.
R13	N-1264	.5 MEGOHM .5 W.
R14	V-112	75,000 Ω TONE CONT. .5 W.
R15	N-1267	8.3 OHM 5% .5 W.
R16	N-1267	8.3 OHM 5% .5 W.
R17	N-1262	1 MEGOHM .5 W.
R18	N-1266	67.0 OHM .5 W.
R19	N-1265	200 OHM .5 W.
X-17		BAND SWITCH
G-21		GANG CONDENSER
F-4		SYN. VIBRATOR
W-207		BATTERY CABLE

DIAG. NO.	PART NO.	DESCRIPTION
1	L-72	ANTENNA COIL
2	L-63	OSCILLATOR COIL
3	I-38	1ST. I.F. TRANS.
4	I-28	2ND. I.F. "
5	T-103	AUDIO "
#6	N-1271	SPKR. 6" & TRANS.
7	H-208	"A" CHOKE
8	T-26	POWER TRANS.
9	H-207	R.F. CHOKE
10	H-9	AUDIO CHOKE.
A		2-35 MMFD. "
B		" "
C		" "
D		" "
E	N-1254	300-600 MMFD.
#6	S-27	SPKR. 8" & TRANS.

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MODELS W200,W230,W240,
W254,W264,W270,Z7200

SPIEGEL INC.

AUTOMATIC TUNING
ADJUSTMENT AND OPERATION

Automatic tuning is a standard feature on this Model. It provides instantaneous selection of any six 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 without the use of tools since the push-button knobs serve this purpose.

To make adjustments, turn each knob to the left about 1 complete turn. The knob is knurled to provide a positive grip for this purpose. A groove is also provided across the knob for use of a small coin to lock each setting with ease and surety.

With the knob turned free, depress as far as possible and hold down, meanwhile tune to any desired station with the manual tuning control. At this point, the automatic push button knob should be turned to the right until securely tightened. Be sure the knob is being held down in position while it is being tightened. 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 stations, the tuner is ready for operation.

OPERATION. With the set tuned 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 operates free and independent of the automatic unit.

The station call letter tabs furnished should be inserted in the escutcheon above the push-buttons using designations corresponding to the station selected for each button.

ALIGNMENT PROCEDURE

GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 600, 1720, 6000, and 18100 KC and an output meter to be connected across the primary or secondary of the output transformers. 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 Short Wave and Broadcast bands in the order given, should be aligned.

I.F. ALIGNMENT. With the wave switch in the Broadcast Band and the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6D8G) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all four I.F. trimmers to peak or maximum reading on the output meter.

SHORT WAVE BAND ALIGNMENT. With the band switch turned to the S. W. position, connect the generator to the antenna with a 400 ohm dummy. Adjust the S. W. oscillator to give a maximum output with the dial at 18100 KC (extreme end). Set the generator at 15000 KC and tune-in the signal with the dial. Adjust the antenna trimmer for maximum output. With a strong signal input turn the dial to approximately 1 M. C. lower in frequency and pick up the image frequency. If the image is not received, it will be necessary to return the dial to 18100 KC to reduce the capacity in the oscillator trimmer until a second signal is received. Proceed as before with the alignment of the antenna and recheck for image frequency. Check the sensitivity at 6000 KC to determine if the coils and mica pad are not defective.

BROADCAST BAND ALIGNMENT. With the switch turned to the broadcast position, connect the antenna to the generator through a 200 MMF dummy and set the dial and generator at 1720 KC. Align the BC oscillator trimmer for maximum output. Set the generator at 1400 KC and tune-in signal with the dial. Adjust antenna trimmer for maximum output. Next set the generator at 600 KC and tune in the signal with the dial. Adjust the BC pad by rocking the gang back and forth while adjusting the pad until maximum output is attained. Recheck the adjustment at 1400 KC as the pad adjustment may have caused misalignment.

ALIGNMENT DATA AND SERVICING

Lack of sensitivity and poor tone quality may be due to any one or a combination of causes such as a weak or defective tubes or speaker. Open or grounded bias resistor, bypass condenser, inadequate or excessively long antenna etc. Never attempt to realign set until all other possible sources of trouble have been first thoroughly investigated and definitely proven 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 TRIMMER AND PADDING CONDENSERS WILL BE REFERRED TO BY THEIR FUNTION AS INDICATED ON THE PARTS DIAGRAM.

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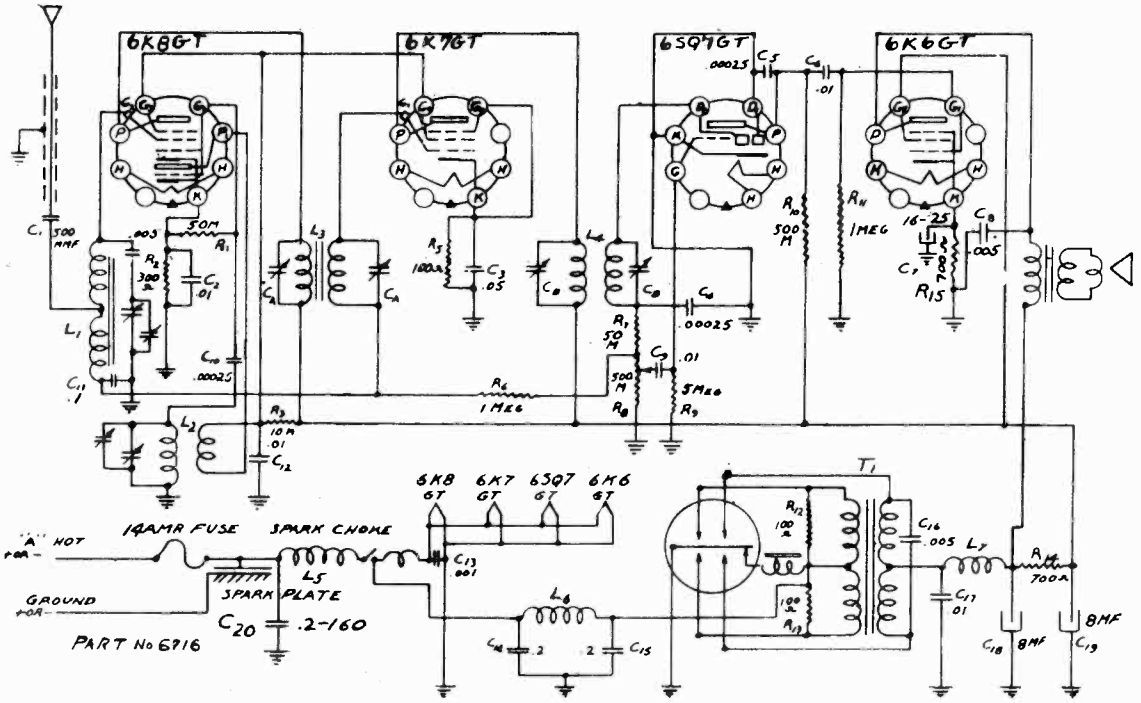
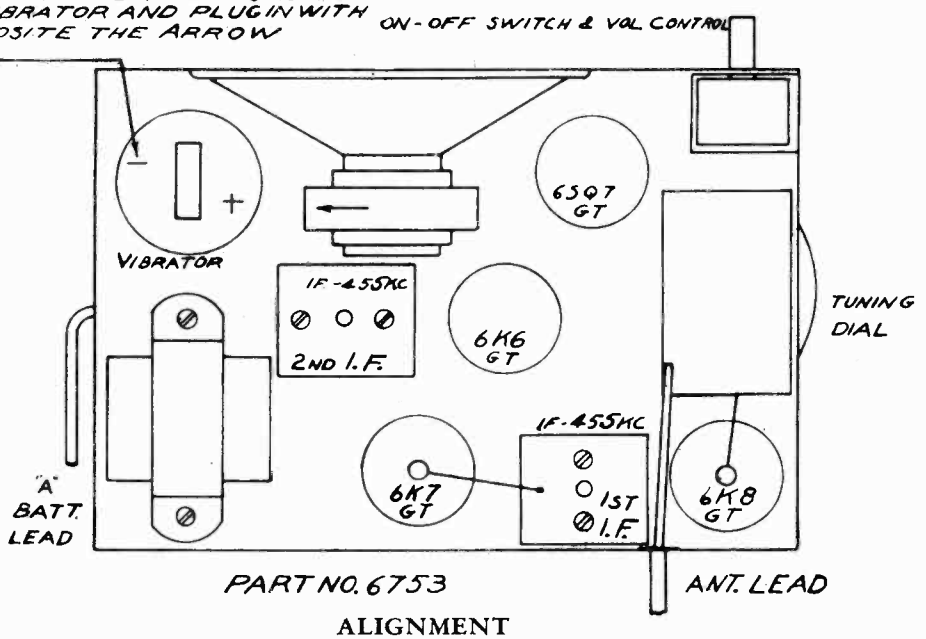
SPIEGEL INC.

MODELS Z7456, Z7458
Chassis 297



*FOR CARS WITH NEGATIVE BATTERY GROUND PULL OUT THE VIBRATOR AND PLUG IN WITH — (MINUS SIGN) OPPOSITE THE ARROW



ALIGNMENT

I.F. Frequency	455 KC.
Frequency Range	1550—540 KC.
Dummy Antenna	30 MMF.
Input to I.F.	1/10 MF.

To align the I.F., feed the signal generator or test oscillator through a 1/10 MF condenser to the grid of the 6K8 tube, ground the ground side of signal generator to the case. With volume control full on and a weak signal, adjust screws of 1st and 2nd I.F. transformers using a suitable output meter to indicate resonance.

The oscillator should be set at 1550 K.C. Turn variable condenser to minimum capacity and with a 30 MMF dummy antenna condenser connected to the antenna cable and a low signal input, set the oscillator to its top frequency. The antenna trimmer should be adjusted at 1400 KC. The antenna trimmer should be readjusted at this frequency when the set is installed in the car.

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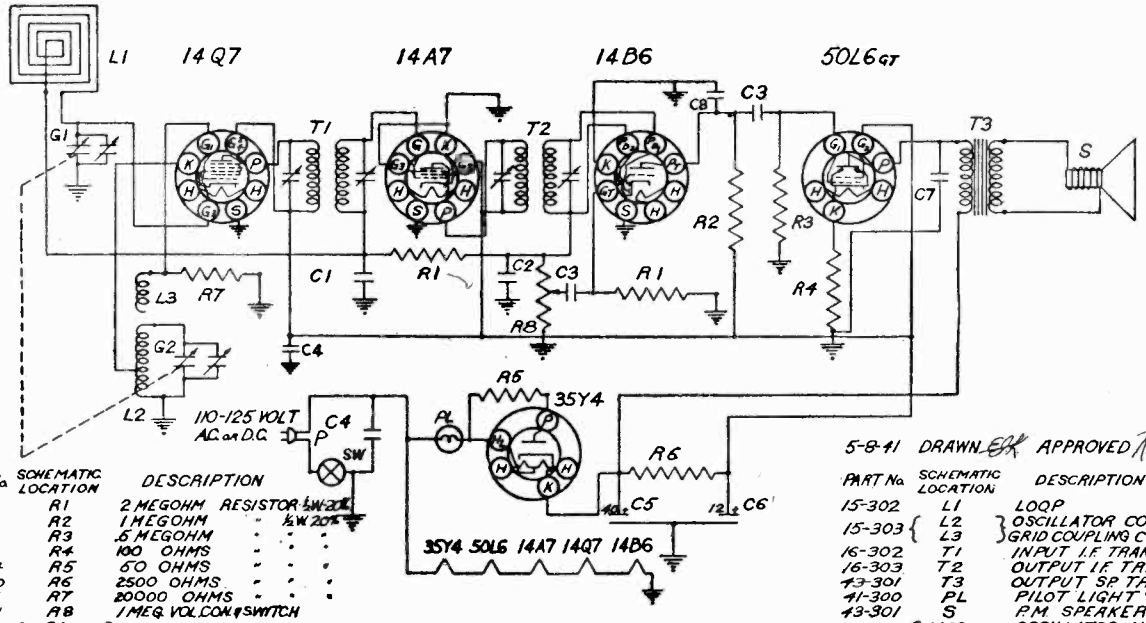
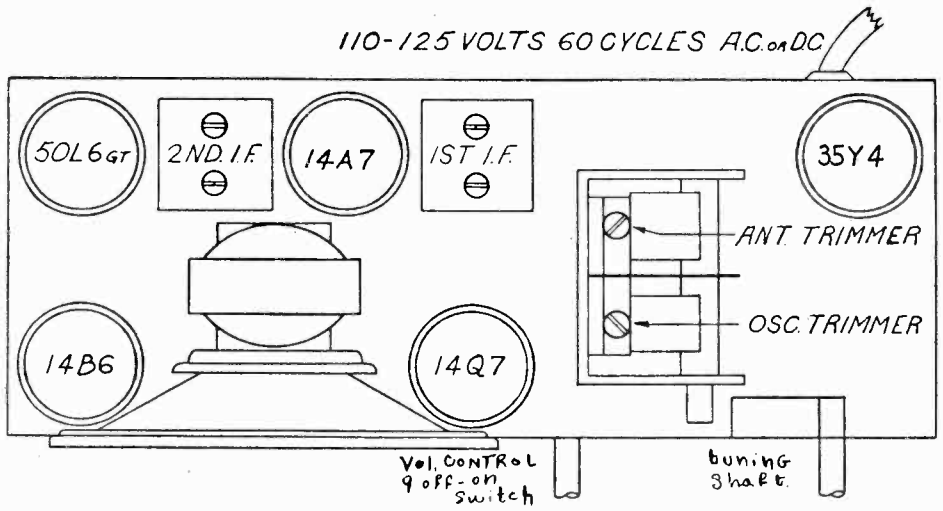
MODELS EP2000-1, DP7001-2, Ch. T530



PART No.	SCHEMATIC LOCATION	DESCRIPTION
3-2	R1	2 MEGOHM RESISTOR ½W 20%
3-6	R2	1 MEGOHM " ½W 20%
3-1	R3	.5 MEGOHM " " "
3-31	R4	100 OHMS " " "
3-174	R5	50 OHMS " " "
3-120	R6	2500 OHMS " " "
3-26	R7	20000 OHMS " " "
5-301	R8	1 MEG. VOL. CON. & SWITCH
10-301	G1, G2	GANG CONDENSER
6-12	C1	.05 MFD. 200V. COND.
6-8	C2	.0001 MFD. MICA "
6-3	C3	.01 MFD. 400V. "
6-14	C4	.05 MFD. 400V. "
7-301	C5	40 MFD. ELECTROLYTIC
	C6	12 MFD. ELECTROLYTIC
6-306	C7	.005 MFD. 600V. COND.
6-305	C8	.0006 MFD. 400V. "

5-8-41 DRAWN EBK APPROVED RCA

PART No.	SCHEMATIC LOCATION	DESCRIPTION
15-302	L1	LOOP
15-303	L2	OSCILLATOR COIL
	L3	GRID COUPLING COIL
16-302	T1	INPUT I.F. TRANS.
16-303	T2	OUTPUT I.F. TRANS.
43-301	T3	OUTPUT SP. TRANS
41-300	PL	PILOT LIGHT #47
43-301	S	P.M. SPEAKER
10-301	14Q7	OSCILLATOR MIXER
	14A7	I.F. AMPLIFIER
	14B6	DETECTOR-AUDIO
	50L6 GT	AUDIO AMPLIFIER
	35Y4	RECTIFIER
34-5	P	LINE CORD
6-301	SW	SWITCH ON VOL CON.



Remove chassis from cabinet for alignment.

A signal generator is required having the following frequencies: 456KC, 1400KC, 1720KC.

First Step: Connect the generator lead through a .1 mfd. condenser to the terminal lug next to the Antenna trimmer on top of the tuning condenser. The ground lead from the generator may be connected to any convenient spot on the metal chassis. Adjust generator to 456KC and adjust IF trimmer screws until a maximum reading is noted on the output meter which has been connected across the speaker. The tuning condenser should be turned out to complete minimum capacity when aligning the IF. With generator lead still connected to antenna trimmer terminal, adjust generator frequency to 1720KC, and with tuning condenser still at minimum, adjust oscillator trimmer till the 1720KC signal is tuned in. Next, remove generator leads from set and connect both to a transmitting loop. This loop can be made with 2 turns of wire about 6 inches in diameter. Adjust generator frequency to 1400KC. Turn tuning condenser until the signal is tuned in and adjust antenna trimmer until a maximum reading is noted. 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 so as to insure proper alignment at the lower frequency end of the dial.

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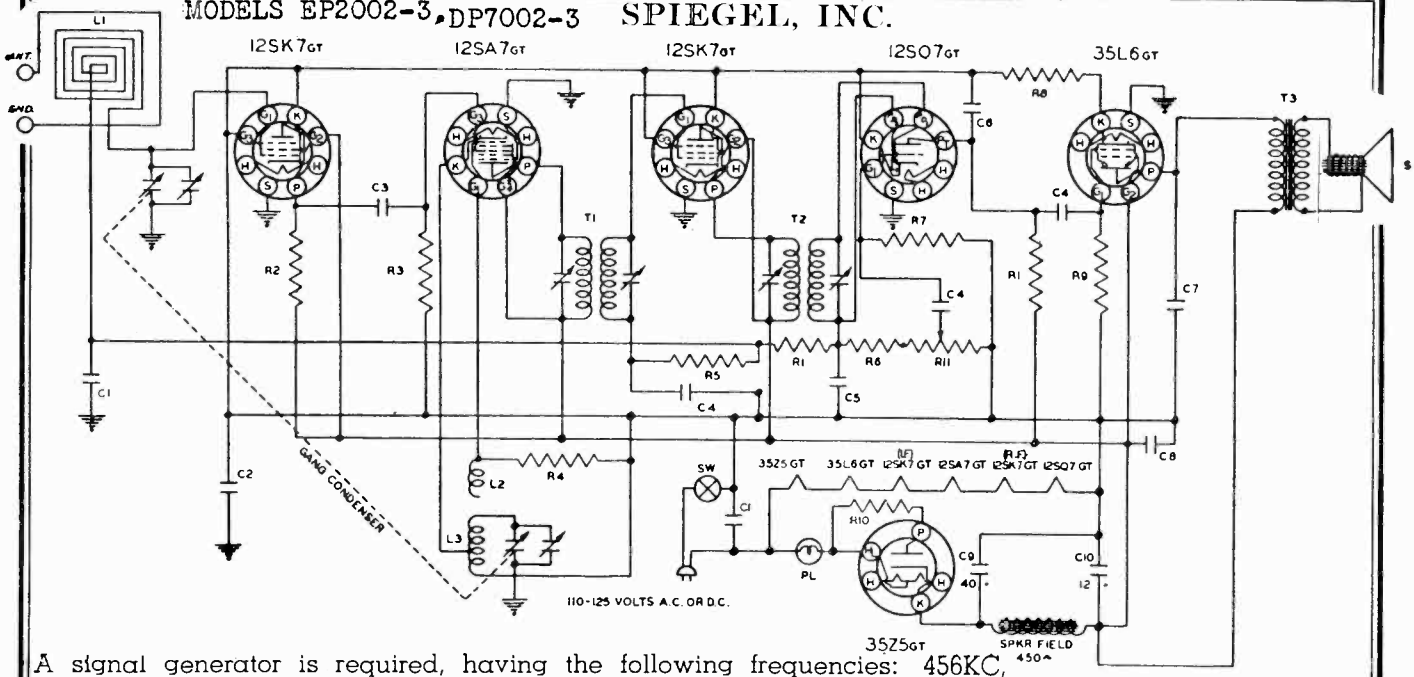
MODELS EP2002-3, DP7002-3 SPIEGEL, INC.



A signal generator is required, having the following frequencies: 456KC, 1400KC, 1720KC. An output meter of some kind is also necessary. (See figure No. 1 for trimmer locations).

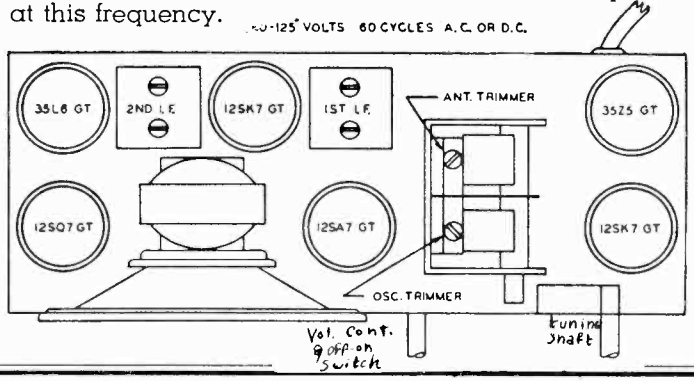
All adjustments in aligning this receiver should be made with the volume control fully turned on, so as to prevent the A. V. C. from working and giving false readings. It is also advisable to keep the gang condenser turned all the way out to complete minimum capacity and keep the signal from the generator down as low as possible so as to prevent false peaks when aligning the I. F. transformers.

FIRST STEP: Connect the generator lead through a .1 condenser to the No. 8 pin at the 12SA7GT socket base (this is the control grid) and connect the generator ground lead to some point on the floating ground, above the .25 MFD floating ground condenser. Adjust the signal generator to 456KC and adjust the I. F. trimmer screws till a maximum reading is noted on the output meter which has been connected across the speaker leads. With the generator leads still connected to the 12SA7GT grid, adjust the generator frequency to 1720KC and adjust the oscillator trimmer till the signal is tuned in, with the gang condenser still at complete minimum.

SECOND STEP: Disconnect the generator leads from the receiver and connect both to a transmitting loop which may be made with two turns of wire about six inches in diameter and placed about one foot from the receiver loop. Adjust the generator frequency to 1400KC and turn the tuning condenser till this signal is tuned in. Adjust the antenna trimmer on the gang till a maximum reading is noted on the output meter.

THIRD STEP: Adjust the generator frequency to 600KC and turn tuning condenser till signal is tuned in. The alignment may be checked at this point but no adjustment should be necessary at this point as the coils and gang condenser have been thoroughly checked at the factory to insure proper alignment at this frequency.

PART NO.	SCHEMATIC LOCATION	DESCRIPTION
3-6	R1	1 MEG. Ω ½ WATT 20% RESISTOR
3-36	R2	1500 Ω " " "
3-17	R3	100000 Ω " " "
3-26	R4	30000 Ω " " "
3-141	R5	6 MEG. Ω " " "
3-4	R6	50000 Ω " " "
3-2	R7	2 MEG Ω " " "
3-34	R8	100 Ω " " "
3-1	R9	500000 Ω " " "
3-313	R10	50 Ω " " "
5-301	R11	1 MEGOHM VOLUME CONTROL
	SW	SWITCH
6-14	C1	.05 MFD. 400 VOLTS CONDENSER
6-30	C2	.25 " 200 " "
6-8	C3	.0001 " MICA "
6-3	C4	.01 " 400 VOLTS "
6-10	C5	.00025 " MICA "
6-305	C6	.0005 " 600 VOLTS "
6-306	C7	.005 " " " "
6-26	C8	.1 " 400 " "
7-301	C9	40 " 150 " } ELECTROLYTIC
	C10	12 " 150 " }
15-302	L1	LOOP
15-309	L2, L3	OSCILLATOR COIL
16-302	T1	INPUT I.F. TRANSFORMER
16-303	T2	OUTPUT I.F. "
43-307	T3	OUTPUT " ON
	S	SPEAKER (ELECTRODYNAMIC)
41-300	PL	PILOT LIGHT #47
40-306	12SK7GT	R.F. AMPLIFIER
	12SA7GT	CONVERTER
	12SK7GT	I.F. AMPLIFIER
	12SQ7GT	DETECTOR - AUDIO
	35L6GT	AUDIO AMPLIFIER
	35Z5GT	RECTIFIER
10-301		GANG CONDENSER



TUBE AND TRIMMER LOCATION

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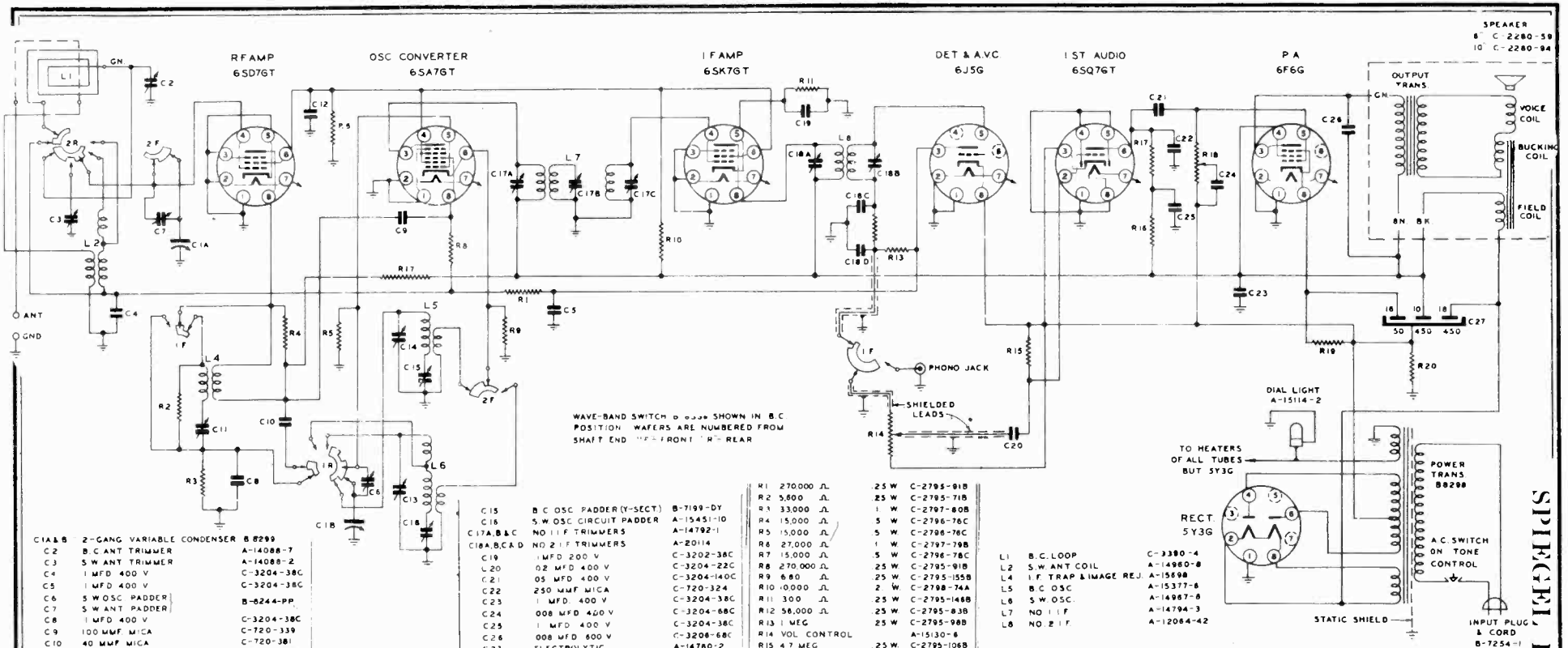

C1A&B	2-GANG VARIABLE CONDENSER	B-8299
C2	B.C ANT TRIMMER	A-14088-7
C3	S.W ANT TRIMMER	A-14088-2
C4	1 MFD 400 V	C-3204-38C
C5	1 MFD 400 V	C-3204-38C
C6	S.W OSC PADDER	B-8244-PP
C7	S.W ANT PADDER	
C8	1 MFD 400 V	C-3204-38C
C9	100 MMF MICA	C-720-339
C10	40 MMF MICA	C-720-381
C11	I.F REJ TRIMMER	A-14088-4
C12	1 MFD 400 V	C-3204-38C
C13	S.W OSC TRIMMER	A-14088-2
C14	B.C OSC TRIMMER (D-SECTION)	B-7199-DY
C15	B.C OSC PADDER (Y-SECT)	B-7199-DY
C16	S.W OSC CIRCUIT PADDER	A-15451-10
C17A,B&C	NO 1 I.F TRIMMERS	A-14792-1
C18A,B,C&D	NO 2 I.F TRIMMERS	A-20114
C19	1 MFD 200 V	C-3202-38C
C20	02 MFD 400 V	C-3204-22C
C21	05 MFD 400 V	C-3204-14QC
C22	250 MMF MICA	C-720-324
C23	1 MFD 400 V	C-3204-38C
C24	008 MFD 400 V	C-3204-68C
C25	1 MFD 400 V	C-3204-38C
C26	008 MFD 600 V	C-3208-68C
C27	ELECTROLYTIC	A-14780-2

R1	270,000 Ω	.25 W	C-2795-91B
R2	5,600 Ω	.25 W	C-2785-71B
R3	33,000 Ω	1 W	C-2797-80B
R4	15,000 Ω	5 W	C-2796-76C
R5	15,000 Ω	5 W	C-2796-76C
R6	27,000 Ω	1 W	C-2797-79B
R7	15,000 Ω	5 W	C-2796-76C
R8	270,000 Ω	.25 W	C-2795-91B
R9	680 Ω	.25 W	C-2795-155B
R10	10,000 Ω	2 W	C-2798-74A
R11	300 Ω	.25 W	C-2795-146B
R12	56,000 Ω	.25 W	C-2795-83B
R13	1 MEG	.25 W	C-2795-98B
R14	VOL CONTROL		A-15130-6
R15	4.7 MEG	.25 W	C-2795-106B
R16	100,000 Ω	.25 W	C-2795-86B
R17	270,000 Ω	.25 W	C-2795-91B
R18	TONE CONTROL		A-15129-9
R19	680 Ω	1 W	C-2797-60B
R20	110 Ω	5 W	C-2796-136C

L1	B.C LOOP	C-3380-4
L2	S.W ANT COIL	A-14960-8
L4	I.F TRAP & IMAGE REJ.	A-15698
L5	B.C OSC	A-15377-6
L6	S.W OSC	A-14967-8
L7	NO 1 I.F	A-14794-3
L8	NO 2 I.F	A-12084-42

Line Voltage: 117 Volts AC — Position of Volume Control: Full with dial turned to quiet channel.

Position of Band Switch: Broadcast

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
6SD7GT	R-F Amplifier	0	0	0	0	0	75	6*	50
6SA7GT	Osc - Converter	0	0	225	75	-7.5	0	6*	0
6SK7GT	I-F Amplifier	0	0	0	0	2.5	75	6*	225
6J5G	Detector - AVC	0	0	0	0	0	—	6*	0
6SQ7GT	Driver	0	0	0	0	0	45	6*	0
6F6G	Power Amplifier	0	0	225	225	0	130	6*	15
5Y3G	Rectifier	0	300	225	275*	—	275*	150	225

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

IF PEAK 456KC

SPIEGEL, INC.

SPIEGEL PAGE 13-71
MODELS EP2010, DP7012-50-60
Chassis 722

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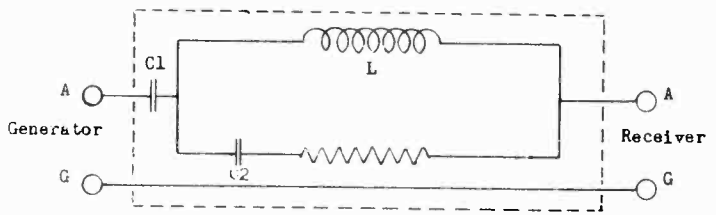
ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left hand stop line with condenser plates fully meshed.							
2	I.F.	#5 pin 6SA7GT Tube	.1 mfd. Cond.	456 KC	BC	Open	C18 A&B	Peak accurately
							C17 B*	**
							C17 A&C	Peak accurately
							C17 B	Peak accurately
3	C18 A&B and C17 A&C should not be readjusted after C17B has been peaked.							
4	Rejector	Ant.	.1 mfd.	456 KC	BC	Closed	C11	Adjust to minimum
5	Broad cast Band	Ant.	See Note	1600 KC	BC	1600 KC	C14 Osc.Tri.	Peak accurately
							C2 Ant. Tri.	Peak accurately
6				600 KC		600 KC	C15 Osc.Pad	Peak accurately
7	Repeat operation 5.							
8	Check calibration and sensitivity at 600 KC, 1,000 KC and 1600 KC.							
9	#3 S.W. Band	Ant.	See Note	16 MC	#3 S.W. Band	16 MC	C13 Osc.Tri.	***
							C3 Ant. Tri.	***
10	#2 S.W. Band	Ant.	See Note	6 MC	#2 S.W. Band	6 MC	C6 Osc.Pad.	***
							C7 Ant. Pad.	***
							C16 Osc.Pad.	See Note A
11				Check at 9.5 MC				
12	Note A: This padder is precision set at the factory and should not be readjusted.							
13	#3 S.W. Band	Ant.	See Note	Check at 12 MC.				
14	Check operations 1 to 13 inclusive.							

*Bronze color trimmer screw.
**Turn trimmer screw all the way down.
***Rock dial while adjusting for maximum output.
Note: Use dummy antenna as described below. All band trimmers should be adjusted to the fundamental of the test signal.

DUMMY ANTENNA



C1 - 200 mmf. Condenser
C2 - 400 mmf. Condenser
R - 100 ohms
L - Choke coil
---- Case Shield

Choke Coil Specification
Tubing - 3/8" Diameter bakelite.
Wire - No. 38 enameled.
Turns - 59 closely wound (impregnated)

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

PROCEDURE FOR SETTING THE AUTOMATIC PUSH-BUTTONS

IMPORTANT: Read carefully before setting the automatic push buttons.

1. Select four 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 extreme left.

3. Pull off push-button knobs so that slots in end of shafts are accessible.

4. Using the small screwdriver furnished with the radio or other tool that will fit the slot in the end of the shaft, push the shaft 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 shaft is pushed all the way in and the station is tuned in accurately.

5. Repeat the procedure in paragraph 4 for each of the remaining three buttons.

6. Check all buttons by pushing them in, one at a time, to determine whether desired stations are tuned properly.

7. Insert proper tab in end of each button knob, and replace knob.

8. Any of the four stations to which the push-button tuner has been adjusted may now be received simply by pushing the button for the desired station.

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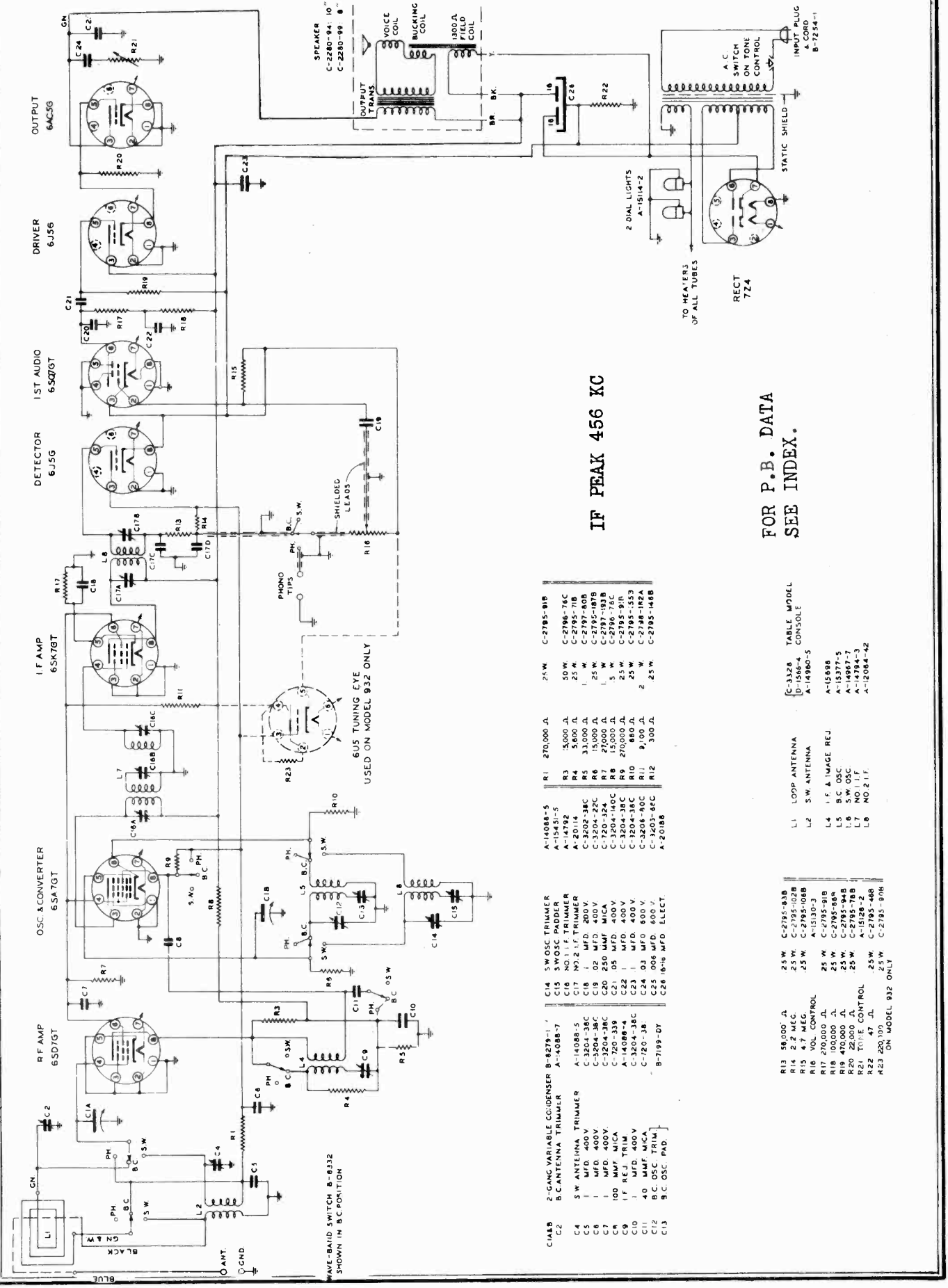

C1A&B	2-GANG VARIABLE CONDENSER	B-8279-1	C14	S.W. OSC. TRIMMER	A-14088-5	R1	270,000 Ω	2 W	C-2795-918
C2	B.C. ANTENNA TRIMMER	A-14088-7	C15	S.W. OSC. PADDER	A-15431-5	R3	15,000 Ω	50 W	C-2796-76C
			C16	NO. 1 I.F. TRIMMER	A-14792	R4	5,600 Ω	25 W	C-2795-718
C4	S.W. ANTENNA TRIMMER	A-14088-5	C17	NO. 2 I.F. TRIMMER	A-20114	R5	33,000 Ω	1 W	C-2797-808
C5	.1 MFD. 400 V	C-3204-38C	C18	.1 MFD. 200 V.	C-3202-38C	R6	15,000 Ω	25 W	C-2795-1078
C6	.1 MFD. 400 V	C-3204-38C	C19	.02 MFD. 400 V.	C-3204-22C	R7	27,000 Ω	1 W	C-2797-787
C7	.1 MFD. 400 V	C-3204-38C	C20	250 MMF MICA	C-3204-140C	R8	15,000 Ω	1 W	C-2796-76C
C8	100 MMF MICA	C-720-339	C21	.05 MFD. 400 V.	C-3204-36C	R9	270,000 Ω	25 W	C-2795-918
C9	I.F. REJ. TRIM	A-14088-4	C22	.1 MFD. 400 V.	C-3204-38C	R10	680 Ω	25 W	C-2795-553
C10	.1 MFD. 400 V	C-3204-38C	C23	.1 MFD. 400 V.	C-3204-38C	R11	2,700 Ω	2 W	C-2798-1R2A
C11	40 MMF MICA	C-720-38	C24	.03 MFD. 600 V.	C-3206-30C	R12	300 Ω	25 W	C-2795-1468
C12	B.C. OSC. TRIM	B-7199-DY	C25	.006 MFD. 600 V.	C-3203-8EC				
C13	S.C. OSC. PAD		C26	16-16 MFD. ELECT.	A-20188				

R13	58,000 Ω	25 W	C-2795-838	L1	LOOP ANTENNA	C-3328	TABLE MODEL		
R14	2.2 MEG.	25 W.	C-2795-1028			D-1568-4	CONSOLE		
R15	4.7 MEG.	.25 W.	C-2795-1068	L2	S.W. ANTENNA	A-14980-5			
R16	VOL. CONTROL		A-15130-3						
R17	270,000 Ω	25 W	C-2795-918	L4	I.F. & IMAGE REJ	A-15698			
R18	100,000 Ω	25 W	C-2795-868	L5	B.C. OSC.	A-15377-5			
R19	470,000 Ω	25 W	C-2795-948	L6	S.W. OSC.	A-14967-7			
R20	22,000 Ω	25 W	C-2795-788	L7	NO. 1 I.F.	A-14794-3			
R21	TONE CONTROL		A-15128-2	L8	NO. 2 I.F.	A-12064-42			
R22	47 Ω	.25 W	C-2795-488						
R23	220,100 ON MODEL 932 ONLY	25 W	C-2795-908						

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MODEL EP2060

SPIEGEL, INC.

VOLTAGE CHART

Line Voltage: 117 Volts

Position of Volume Control: Full with dial turned to quiet channel.

Position of Band Switch: Broadcast

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
6SD7GT	R-F Amplifier	0	0	0	0	0	80	6*	88
6SA7GT	Osc - Converter	0	0	225	80	0	0	6*	0
6SK7GT	I-F Amplifier	0	0	0	0	0	90	6*	250
6J5GT	Detector - AVC	0	0	**	0	0	160	6*	0
6SQ7GT	1st A-F Amplifier	0	0	0	0	0	50	6*	0
6J5GT	Audio Driver	0	0	225	80	0	0	6*	10
6AC5G	Power Amplifier	0	0	220	—	0	0	6*	0
724	Rectifier***	6*	0	300*	0	0	300*	0	0

Notes: Voltage readings are for schematic diagram in this bulletin. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.

*AC volts.

**Cannot be tested with M-665 Analyzer.

***Rectifier tube type 724 check from socket contacts to ground with tube out.

Type 6U5 Tuning Eye used on Model 932 only.

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.	Ant. Term. of Loop	200 mmf.	456 KC	BC	Open	C16 B *	**
3							C16 A&C	Peak accurately
4							C16 B	
5	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C17 A &B	Peak accurately
6	Broadcast Band	Ant.	200 mmf.	1600 KC	BC	1600 KC	C9	Adjust to minimum
							C12 (Osc.)	Peak accurately
7				600 KC		600 KC	C2 (ANT)	Peak accurately
8	(Repeat operation 6)						C13 (Pad)	Peak accurately
9	(Check calibration and sensitivity at 600 KC, 1000 KC and 1600 KC)							
10	Shortwave Band	Ant.	***	18 MC	SW	18 MC	C14 (Osc.)	Peak accurately
							C4 (ANT)	****
11	(Check calibration and sensitivity at 6 MC and 18 MC)							
12	(Check operations 1 to 11 inclusive)							

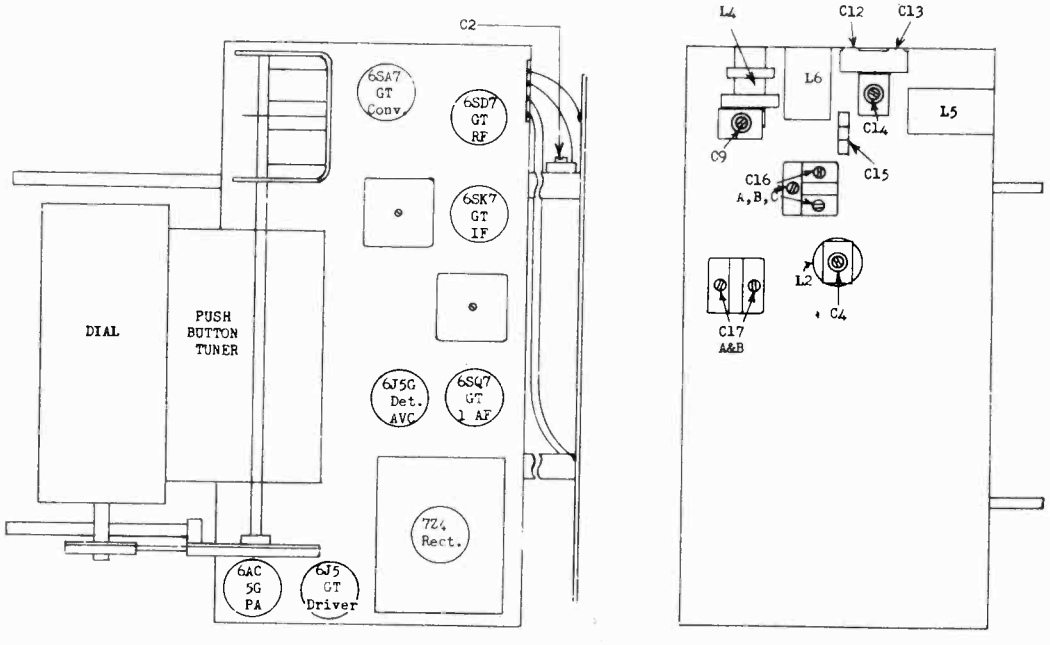
NOTES: *Bronze color trimmer screw.

**Turn trimmer screw all the way down.

***100 ohms and 200 mmf. in series

****Rock dial while adjusting for maximum output

(Antenna Trimmer Condenser C2 is located on the loop antenna assembly.)



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VOLTAGE CHART

"A" Battery Voltage 1½ Volts
"B" Battery Voltage 90 Volts

Position of Volume Control Full with Antenna Disconnected

TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. See Nos. on Schematic Diagram							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
1A7G	Osc - Converter	85	1.5	83	38	-8	82	0	85
1N5G	I-F Amplifier	0	1.5	62	82	0	0	0	0
1N5G	I-F Amplifier	0	1.5	82	82	0	0	0	0
1H5G	Det - AVC - AF	0	1.5	55	82	0	0	0.	0
3Q5GT	Power Amplifier	0	1.5	82	83	-.8	-6	1.5	0

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection with scale limits. All DC measurements made with 20,000 ohms per volt voltmeter.

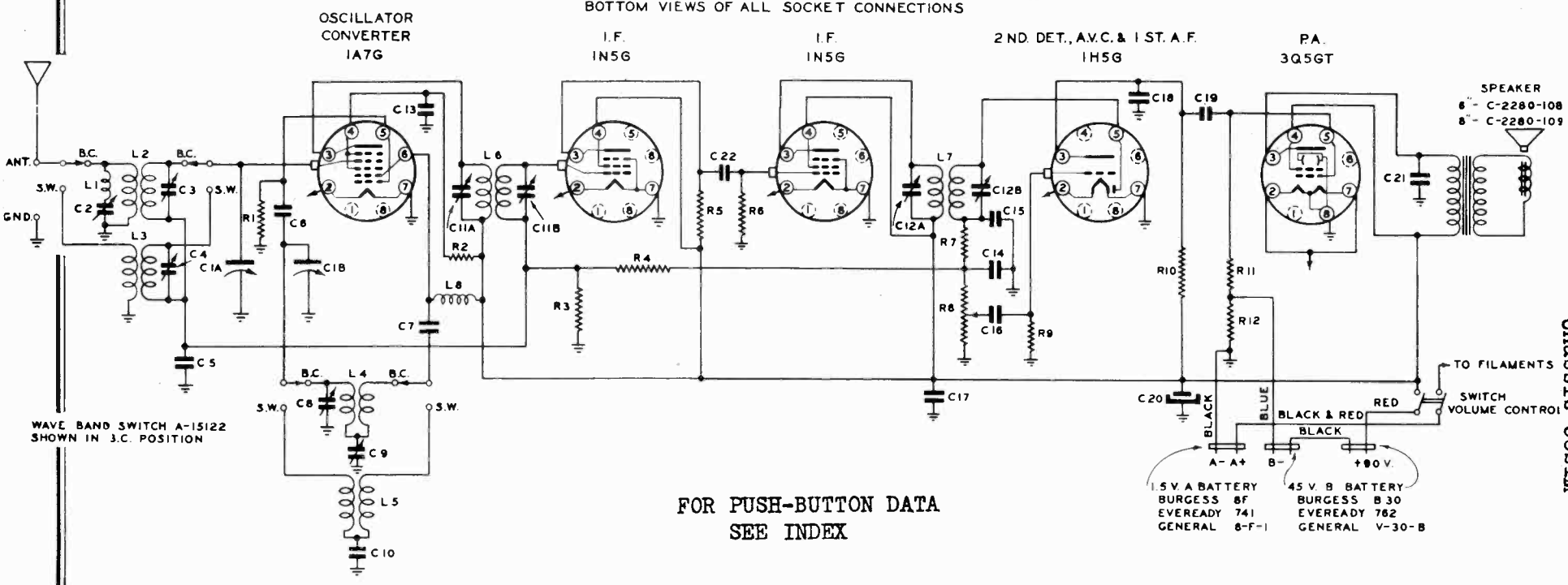
C1A&B	VARIABLE CONDENSER	B-8169
C2	I.F. REJECTOR TRIMMER	A-14088-2
C3	B.C. ANT. TRIMMER	A-14088-1
C4	S.W. ANT. TRIMMER	A-14088-1
C5	.05 MFD. 200 V.	C-3202-140C
C6	100 MMF. MICA	C-720-325
C7	.001 MFD. 200 V.	C-3202-58C
C8	B.C.OSC. TRIMMER	A-15573
C9	B.C.OSC. PADDER	
C10	1940 MMF. MICA	C-720-387
C11A&B	NO.1 I.F.TRIMMER	B-7200-GG
C12A&B	NO.2 I.F. TRIMMER	B-7200-GG
C13	.05 MFD. 200 V.	C-3202-28C
C14	100 MMF. MICA	A-15697-1
C15	100 MMF. MICA	
C16	.01 MFD. 200 V.	C-3202-132C
C17	.05 MFD. 200 V.	C-3202-140C
C18	100 MMF. MICA	C-720-325
C19	.01 MFD. 400 V.	C-3204-132C
C20	8 MFD. 150 V. ELECT.	A-14958
C21	.001 MFD. 1000 V.	C-3210-114C
C22	250 MMF. MICA	C-720-324

R1	180,000 Ω	.25W.	C-2795-89B
R2	68,000 Ω	.25W.	C-2795-84B
R3	2.2 MEGOHMS	.25W.	C-2795-102B
R4	3.3 MEGOHMS	.25W.	C-2795-104B
R5	22,000 Ω	.25W.	C-2795-91B
R6	3.3 MEGOHMS	.25W.	C-2795-104B
R7	56,000 Ω	.25W.	C-2795-83B
R8	500,000 Ω V.C.& SW.		A-15132-5
R9	10 MEGOHMS	.25W.	C-2795-110B
R10	1 MEGOHM	.25W.	C-2795-98B
R11	2.2 MEGOHMS	.25W.	C-2795-102B
R12	470 Ω	.25W.	C-2795-151B

L1	I.F. REJECTOR COIL	A-14718-1
L2	B.C. ANT. COIL	A-14974-7
L3	S.W. ANT. COIL	A-14682-14
L4	B.C.OSC. COIL	A-15781
L5	S.W.OSC. COIL	A-15233-15
L6	NO. 1 I.F. COIL	A-12064-40
L7	NO. 2 I.F. COIL	A-12064-40
L8	OSC. PLATE CHOKE	A-14718-1

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



FOR PUSH-BUTTON DATA SEE INDEX

SPIEGEL, INC.
MODELS EP2104, DP7108, Chassis 5821M

SPIEGEL PAGE 13-75

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MODELS EP2104,DP7108

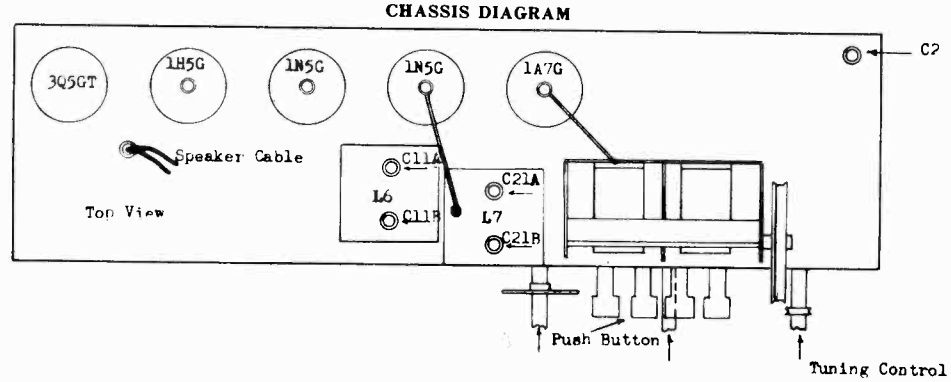
SPIEGEL, INC.

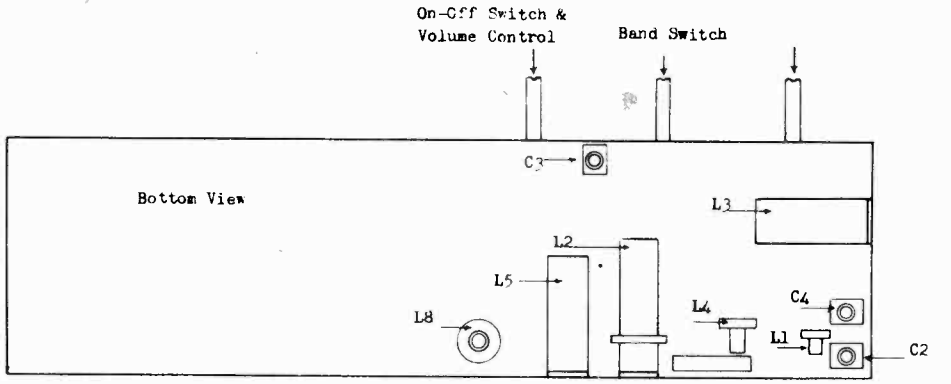
ALIGNMENT CHART

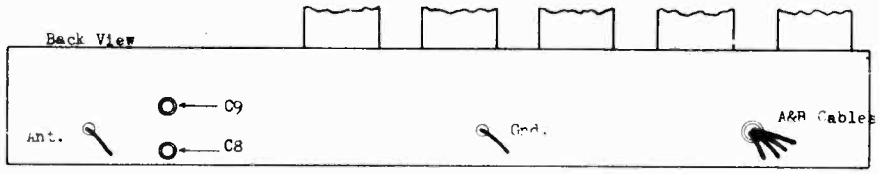
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with last calibration mark when condenser gang is fully meshed.							
2	I.F.	1A7G Grid	.1 mfd Cond.	456 KC	BC	Open	C12 A&B	Peak accurately
							C11 A&B	Peak accurately
3	I-F. Rej.	Ant.	.1 mfd.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broad-cast band	Ant.	200 mf.	1500 KC	BC	1500 KC	C8 Osc.Trim	Peak accurately
							C3 Ant. "	Peak accurately
5				600 KC	BC	600 KC	C9 Osc. Pad	**
6	Repeat operation 4.							
7	Check calibration and sensitivity at 1500 KC, 900 KC and 600 KC.							
8	S.W. Band	Ant.	*	18 MC	SW	18 MC	C4 Ant. Tri.	**
9	Check calibration and sensitivity at 6 MC and 18 MC.							
10	Check operations 1 to 9 inclusive.							

Notes: * 100 ohm non-inductive resistor in series.
**Rock dial while adjusting for maximum output.
Make certain that adjustments are made on fundamental signal and not on image.

CHASSIS DIAGRAM







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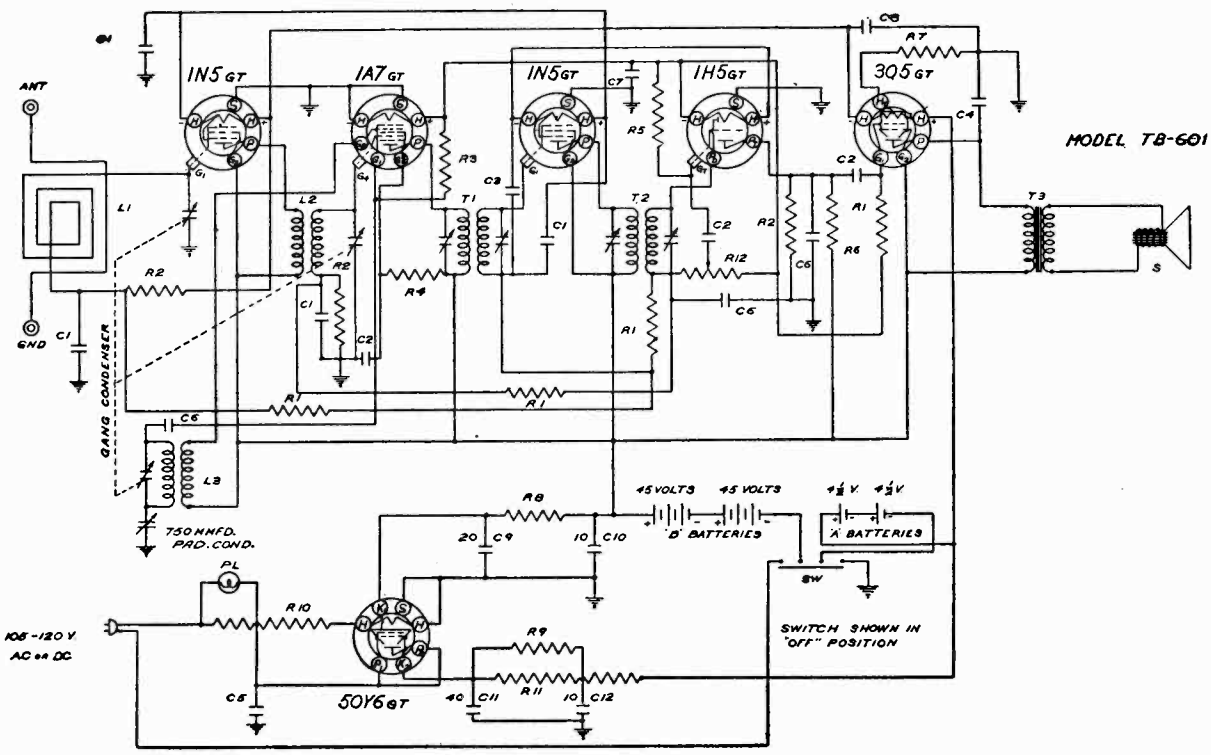
SPIEGEL INC.

SCHEMATIC DIAGRAM



DRAWN BY E.J.K. APPROVED BY J.F.R.

PART No.	SCHEMATIC LOCATION	DESCRIPTION
3-2	R1	2 MEG ½ W 20% RESISTOR
3-6	R2	1 " " " "
3-108	R3	100000 " " " "
3-157	R4	60000 " " " "
3-311	R5	8 MEG " " " "
3-309	R6	600000 " " " "
3-24	R7	700 " " " "
3-312	R8	3000 " " " "
3-8	R9	25000 " " " "
4-301	R10	465 " WIREWOUND
4-302	R11	2280 " "
6-304	R12	2 MEG " VOLUME CONTROL
	SW	¶ SWITCH
6-12	C1	.05 MFD. 200V. CONDENSER
6-3	C2	.01 MFD. 400V "
6-46	C3	.1 MFD. 200V "
6-60	C4	.002 MFD. 400V "
6-42	C5	1 MFD. 400V "
6-307	C6	.00005 MFD. MICA "
6-308	C7	.25 MFD. 25V "
7-305	C8	70 MFD. 7V ELECT. "
7-304	C9	20 MFD. 150V ELECTROLYTIC CONDENSER
	C10	10 MFD. 150V ELECTROLYTIC CONDENSER
	C11	40 MFD. 150V ELECTROLYTIC CONDENSER
7-306	C12	20 MFD. 80V ELECT. COND.
15-306	L1	LOOP
15-307	L2	RF COIL
15-308	L3	OSCILLATOR COIL
16-306	T1	INPUT I.F. TRANSFORMER
16-305	T2	OUTPUT I.F. "
19-308	T3	OUTPUT "
41-300	S	ON P.M. SPEAKER
	PL	PILOT LIGHT #47
40304	1N5 GT	RF AMPLIFIER
	1A7 GT	OSCILLATOR-MIXER
	1N5 GT	I.F. AMPLIFIER
	1H5 GT	DETECTOR-AUDIO
	30 5 GT	POWER AMPLIFIER
	50Y6 GT	RECTIFIER

TO CHANGE FROM BATTERY TO AC OR DC

When the set is to be used as a strictly portable set using the batteries for power, it is only necessary to turn on the volume control knob as described above and the set is operating on batteries.

When it is desired to operate this set on house current, merely remove the cord from the back of the set, plug it into the outlet making sure that the outlet is alive and the set will be operating on either AC or DC, whichever is available. It is not necessary to use any switches whatsoever to make this change. Just plugging into a live outlet automatically changes from battery to AC or DC.

This set is designed to operate on 110 volts, either AC or DC. If you are in doubt as to the voltage at the outlet to be used, check with your service man or local power company.

When operating this set on DC, plug the cord into the outlet and turn the set on. After about three minutes have elapsed, giving the rectifier tube a chance to warm up, reverse the plug in the outlet, watching the pilot light to see which position gives the greatest brilliance. That is the position in which the set should be operated.

When changing from AC or DC operation to battery operation merely remove the plug from the outlet and the set will be running on batteries.

BATTERY LIFE

In normal use (three to four hours daily) the batteries your set is originally equipped with, will give approximately 250 or more working hours' service. Replacement should be made with one of the following kits of batteries, or their equivalent in another make:

2—"Ray-O-Vac" 45 V. "B" No. 5303.
2—"Ray-O-Vac" stand. 4½ V. "A" P83A.
2—"General" 45 V. "B" Bat. No. V-30-B.
2—"General" 4½ V. "A" Bat. 3H3.

If batteries inferior to the ones initially installed are used, service may be shortened considerably.

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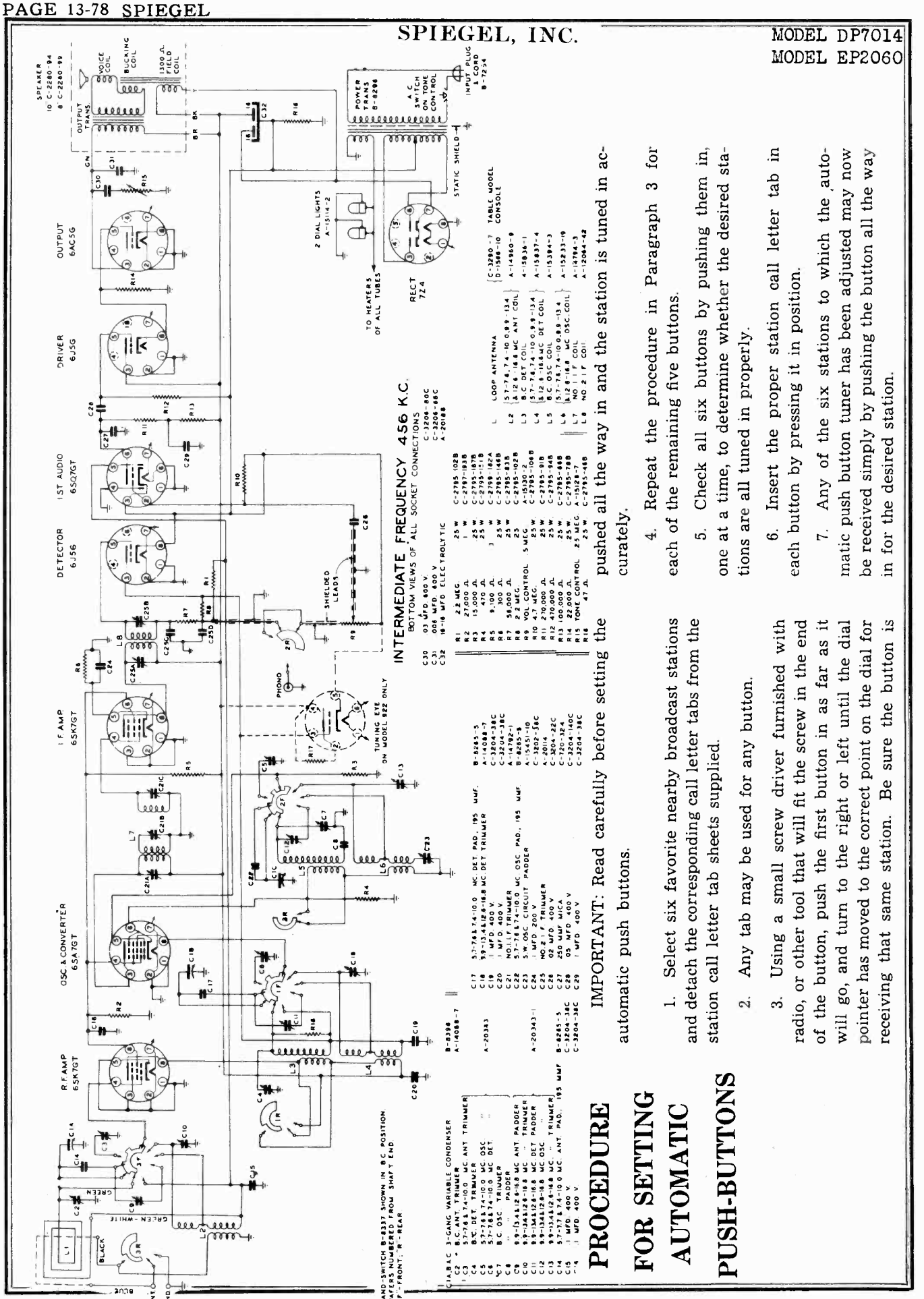
SPIEGEL, INC.

MODEL DP7014
MODEL EP2060



PROCEDURE FOR SETTING AUTOMATIC PUSH-BUTTONS

IMPORTANT: Read carefully before setting the automatic push buttons.

1. Select six favorite nearby broadcast stations and detach the corresponding call letter tabs from the station call letter tab sheets supplied.

2. Any tab may be used for any button.

3. Using a small screw driver furnished with radio, or other tool that will fit the screw in the end of the button, push the first button in as far as it will go, and turn to the right or left until the dial pointer has moved to the correct point on the dial for receiving that same station. 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 six buttons by pushing them in, one at a time, to determine whether the desired stations are all tuned in properly.

6. Insert the proper station call letter tab in each button by pressing it in position.

7. Any of the six stations to which the automatic push button tuner has been adjusted may now be received simply by pushing the button all the way in for the desired station.

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SPIEGEL, INC.

VOLTAGE CHART

Line Voltage: 117 Volts A.C. Position of Volume Control: Full with dial turned to quiet channel. Position of Band Switch: Broadcast

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
6SK7GT	R-F Amplifier	0	0	0	-2.3	0	85	6.2*	225
6SA7GT	Osc - Converter	0	0	225	85	-3.2	0	6.2*	-2.2
6SK7GT	I.F. Amplifier	0	0	0	0	3	85	6.2*	225
6J5G	Detector	0	0	-2.2	-2.1	-3	182	6.2*	-2.1
6SQ7GT	1st Audio	0	-2.3	-2.1	0	-2.3	80	6.2*	0
6J5G	Driver	0	0	220	85	0	0	6.2*	8.3
6AC5G	Power Amplifier	0	0	210	0	8.3	-2.1	6.2*	0
7Z4	Rectifier	6.2*	0	290*	0	0	290	0	0

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

ALIGNMENT CHART

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	Set dial pointer even with left hand stop line when condenser gang is fully meshed.							
2	I.F.	#4 Pin 6SA7GT	.1 MFD Cond.	456 KC	BC	Open	C25 A&B	Peak accurately
3							C21 B*	**
4							C21 A&C	Peak accurately
5							C21B	Peak accurately
6	BC	Ant.	See Note	1600 KC	BC	1600 KC	C7 Osc. Tr.	Peak accurately
							C2 Ant. Tr.	Peak accurately
							C4 Det. Tr.	Peak accurately
7				600 KC	BC	600 KC	C8 Osc.Pad.	***
8	Repeat operations 6 and 7.							
9	Check calibration and sensitivity at 600 KC, 1000 KC and 1600 KC.							
10	#5 Band	Ant.	See Note	16.5 MC	#5 Band	16.5 MC	C13 Osc.Tr.	Peak accurately
							C10 Ant.Tr.	Peak accurately
							C18 Det.Tr.	Peak accurately
11				12.6 MC	#5 Band	12.6 MC	C12 Osc.Pad	***
							C9 Ant.Pad.	***
							C11 Det.Pad	***
12	Repeat operations 10 and 11.							
13	Check calibration and sensitivity at 12.6 MC and 16.5 MC.							
14	#4 Band	Ant.	See Note		#4 Band	Check calibration and sensitivity at 13 MC, 11 MC and 10 MC.		
15	#3 Band	Ant.	See Note	9.75 MC	#3 Band	9.75 MC	C5 Osc.Tr.	***
							C3 Ant.Tr.	***
							C6 Det.Tr.	***
16	Check calibration and sensitivity of #3 band at 7.6 MC.							
17	#2 Band	Ant.	See Note	7.6 MC	#2 Band	7.6 MC	Check calibration and sensitivity at 7.6 MC.	
18	Repeat operations on bands #5, 4, 3 and 2 in this sequence as many times as necessary until additional gain cannot be obtained.							

*Bronze color trimmer screw.
**Turn trimmer screw all the way down.
***Rock dial while adjusting for maximum output.
Note: Use Dummy Antenna as described on page 2.

Eight-tube Superheterodyne with Push-Button Tuning

(Five Bands—Broadcast and Four Short-wave Band Spread)

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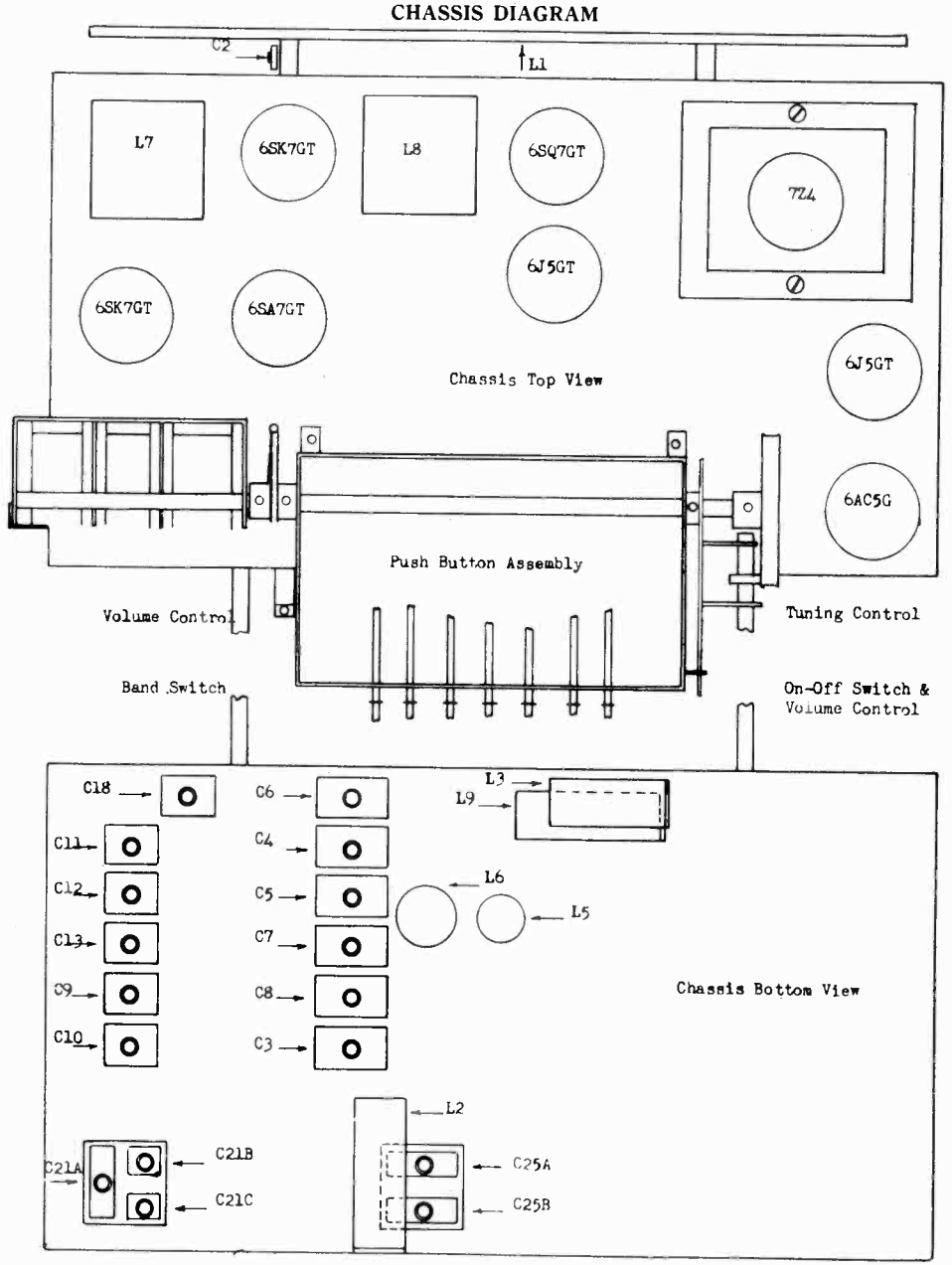
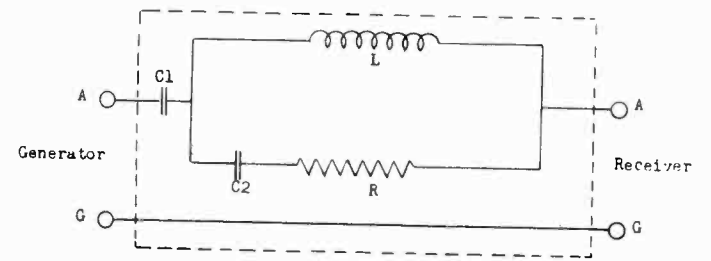
CHASSIS DIAGRAM



DUMMY ANTENNA



C1 - 200 mmf. Condenser
C2 - 400 mmf. Condenser
R - 100 ohms
L - Choke Coil
---- Case Shield

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

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

POWER SUPPLY:

CAUTION: This radio, unless otherwise marked, must be connected to 110 to 120 volts, 50 to 60 cycle alternating current (AC) supply only. If you are in doubt about the voltage or "cycle" of your electric outlets, consult your local power company before connecting the radio. Do not connect radio unless all tubes and speaker plug are in their proper sockets.

Receivers of this model which are to be used on power supplies other than 110-120 volts, 50-60 cycle, are marked accordingly.

The tuning range of each band is as follows:

Position of Switch		Meters	Kilocycles	Megacycles
1	Broadcast	548 to 186	547 to 1,610	.54 to 1.61
2	Short-wave	18 to 24	16,800 to 12,600	16.8 to 12.6
3	Short-wave	22.5 to 30	13,400 to 9,900	13.4 to 9.9
4	Short-wave	20 to 40	10,000 to 7,400	10.0 to 7.4
5	Short-wave	40 to 53	7,600 to 5,700	7.6 to 5.7
6	Phono—Use Tip Jack at Back of Chassis.			

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STEWART-WARNER CORP.

MODELS 205CA to 205CZ
Chassis 205C

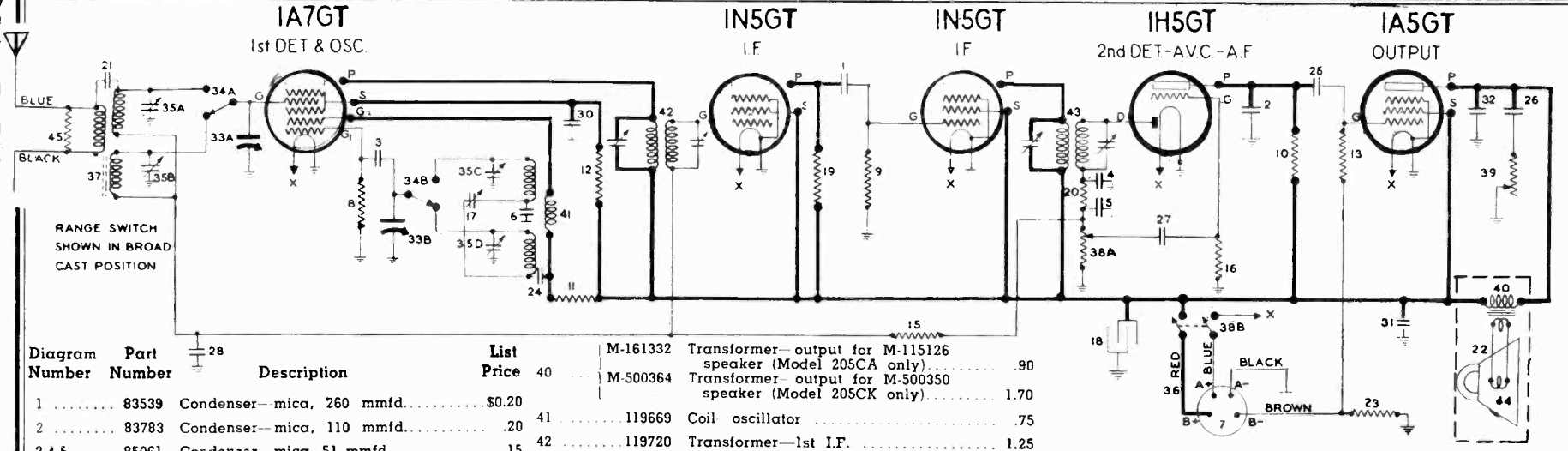


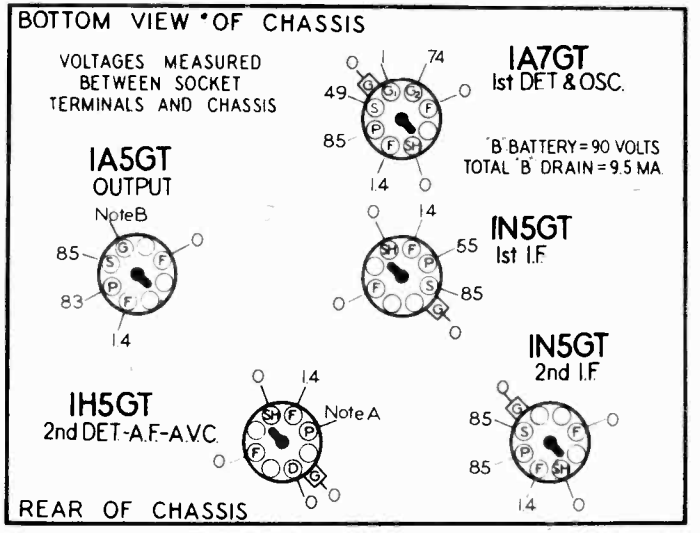
Diagram Number	Part Number	Description	List Price
1	83539	Condenser—mica, 260 mmfd.	$0.20
2	83783	Condenser—mica, 110 mmfd.	.20
3-4-5	85061	Condenser—mica, 51 mmfd.	.15
6	88587	Condenser—mica, .0042 mfd.	.35
7	88631	Plug—4 prong, male	.06
8	110553	Resistor—carbon, 220,000 ohms, ¼ watt	.12
9	110580	Resistor—carbon, 3.3 meg. ¼ watt	.12
10	110554	Resistor—carbon 1 megohm ¼ watt	.12
11	110557	Resistor—carbon, 4,700 ohms, ¼ watt	.12
12	110566	Resistor—carbon, 33,000 ohms, ¼ watt	.12
13	110570	Resistor—carbon, 2.2 meg., ¼ watt	.15
15-16	110580	Resistor—carbon, 3.3 meg., ¼ watt	.12
17	112799	Condenser—padder	.36
18	112898	Condenser—electrolytic 16 mfd., 150 volt	.50
19	116063	Resistor—carbon, 10,000 ohms, ¼ watt	.12
20	110565	Resistor—carbon, 22,000 ohms, ¼ watt	.12
21	114969	Condenser—mica, 15 mmfd.	.12
22	M-115126	Speaker P.M. (6") Model 205CA only	5.50
	M-500350	Speaker P.M. (8") Model 205CK only	6.30
23	116078	Resistor 560 ohms, ¼ watt	.12
24-25-26	119193	Condenser .01 mfd., 600 volt	.15
27	119817	Condenser .004 mfd., 600 volt	.15
28 to 30	116819	Condenser .05 mfd., 600 volt	$0.20
31	116625	Condenser .1 mfd., 600 volt	.25
32	119875	Condenser .002 mfd., 600 volt	.15
33A-33B	500358	Condenser—tuning (with drum)	3.50
34A-34B	119859	Range switch	.65
35A-35D	119536	Condenser—trimmer (4 sections)	.60
36	119537	Battery cable	.40
37	119541	Coil antenna	1.25
38A-38B	500356	Volume control—1 meg. (with switch)	1.40
39	500357	Tone control 100,000 ohms	.90
40	M-161332	Transformer—output for M-115126 speaker (Model 205CA only)	.90
	M-500364	Transformer—output for M-500350 speaker (Model 205CK only)	1.70
41	119669	Coil oscillator	.75
42	119720	Transformer—1st I.F.	1.25
43	119673	Transformer—2nd I.F.	1.25
44	M-161334	Cone & voice coil for M-115126 speaker (Model 205CA only)	1.20
	M-119750	Cone & voice coil for M-500350 speaker (Model 205CK only)	1.60
45	116063	Resistor—carbon, 10,000 ohms, ¼ watt	.12

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

BATTERIES REQUIRED: One of the following or its equivalent is required: Eveready No. 748, Burgess 17G-D60, General 60DL-11L, Ray-O-Vac AB82. A special battery cable assembly (Part No. 116566) is available so that heavy duty batteries may be used with this receiver.

ANTENNA GROUNDED DIAL TUNED TO 540 KC.

INTERMEDIATE FREQUENCY
455 KC



Note A: Only a small voltage will be measured at the plate of the 1H5GT when using a voltmeter having a resistance of 1000 ohms per volt.

Note B: The bias on the 1A5GT grid is -5 volts measured across resistor No. 23.

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MODELS 205CA to 205CZ
Chassis 205C

STEWART-WARNER CORP.

ALIGNMENT PROCEDURE

FOR ALIGNMENT an output meter and an accurately calibrated signal generator are required.

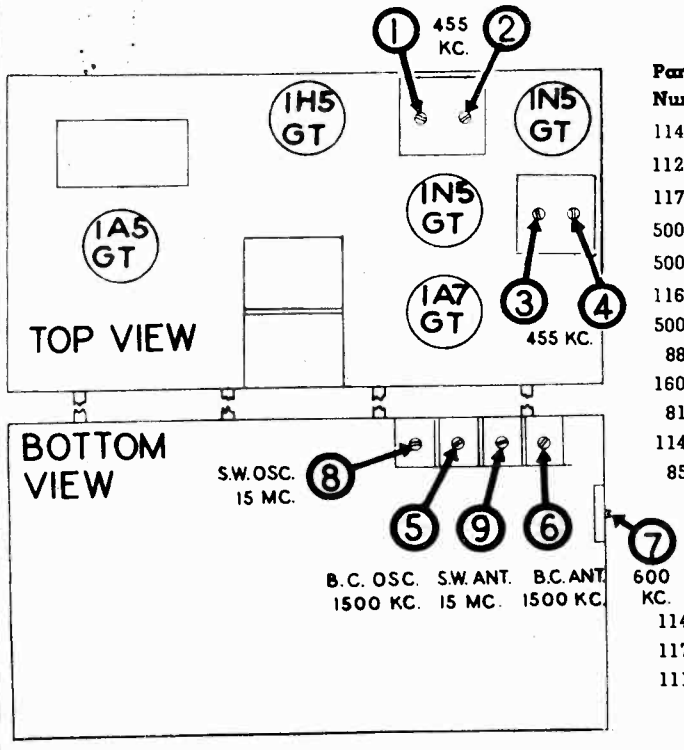
Connect the output meter across the voice coil or between the plate of the 1A5GT output tube and ground through a 0.1 Mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)

Connect the ground lead of the signal generator to the black ground wire or the chassis.

Turn the volume control to the maximum volume position and keep it in this position while aligning.

With the gang condenser in full mesh, set the dial pointer to the low frequency edge of the dial scale.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output To Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Control Grid of 1A7GT	455 KC	Broadcast	Any Point Where It Does Not Affect The Signal	1-2	2nd I. F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I. F.	
200 MMFD. Mica Condenser	Antenna Lead (Blue Wire)	1500 KC	Broadcast	1500 KC	5	Broadcast Oscillator (Shunt)	Adust for maximum output.
200 MMFD. Mica Condenser	Antenna Lead (Blue Wire)	1500 KC	Broadcast	Tune To 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	Antenna Lead (Blue Wire)	600 KC	Broadcast	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	Antenna Lead (Blue Wire)	15 MC	Foreign	15 MC	8	Foreign Oscillator (Shunt)	Adjust for maximum output. Check to see if proper peak was obtained by tuning in image at approx. 14.1 MC. If image does not appear realign at 15 MC, with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Antenna Lead (Blue Wire)	15 MC	Foreign	15 MC	9	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.



MISCELLANEOUS PARTS

Part Number	Description	List Price
114955	Clamp, for Dial Cord	$0.01
112745	Clip, Coil Mounting	.01
117057	Cord, Drive supplied in 3 Ft. Lengths	.15
500475	Dial Scale	.45
500503	Escutcheon—Dial with glass	1.35
116773	Knob	.10
500382	Lever, for on-off indicator	.12
88631	Plug, 4 prong male for battery cable	.06
160436	Pointer	.18
81145	Retaining Ring, for tuning shaft	Per C .50
114914	Screw, Special Head for Mtg. Escutcheon	Per Doz. .15
85827	Set Screw, 8-32 Sq. Head for Ind. Lever	.02
500354	Shaft, tuning	.12
116592	Shield, Tube	.10
119791	Socket, Octal	.12
111090	Spacer, Steel Mtg. for gang	.02
114968	Spring, Dial cord tension	.03
117157	Spring, for On-Off indicator	.03
111456	Washer, Spring washer for tuning shaft	Per C .50

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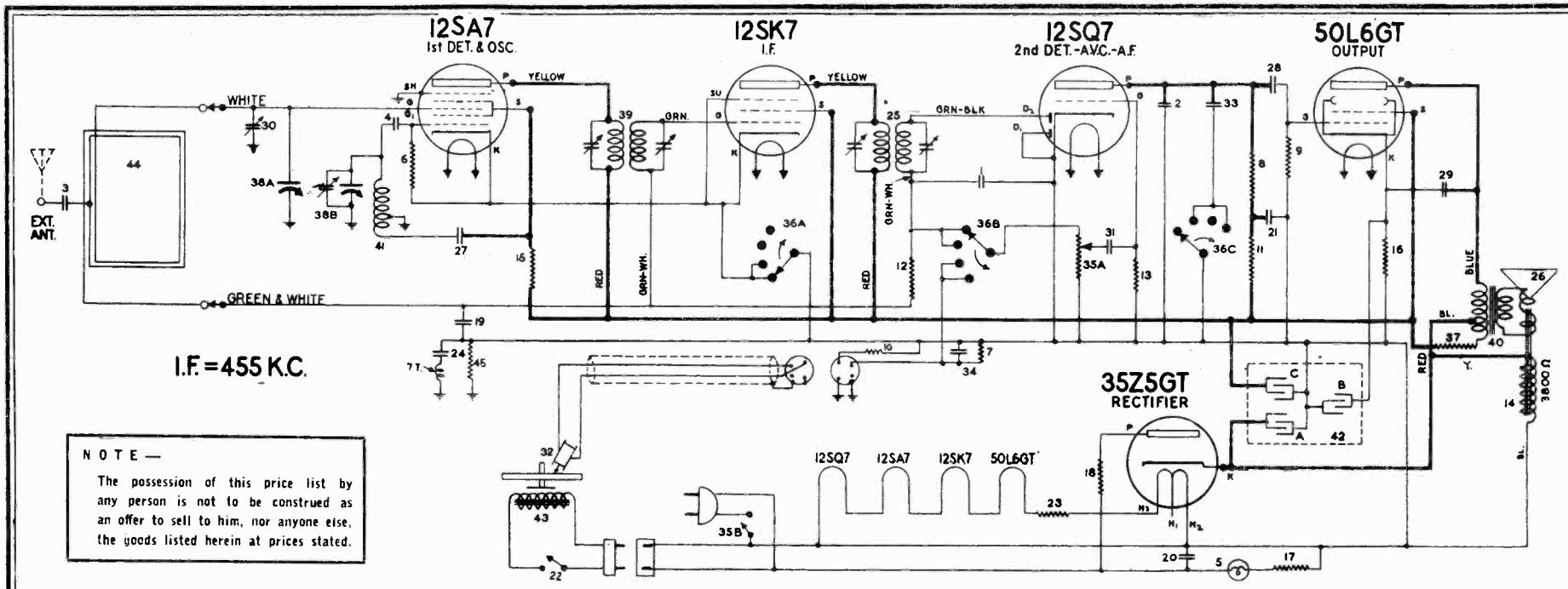
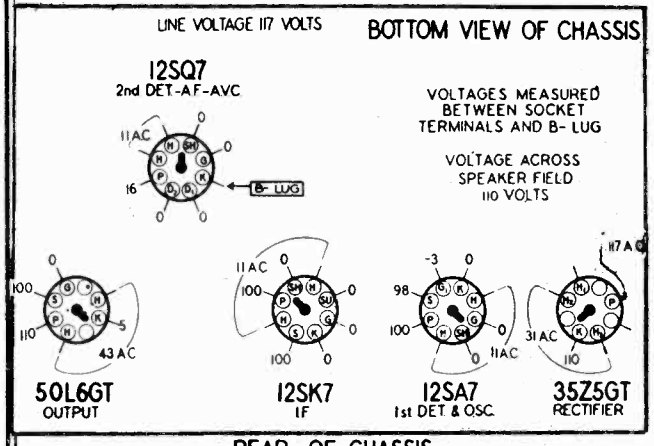


NOTE —

The possession of this price list by any person is not to be construed as an offer to sell to him, nor anyone else, the goods listed herein at prices stated.

SOCKET VOLTAGES

Volume on full with no signal. Dial tuned to 540 KC.



Use a Voltmeter of 1000 ohms per volt.

TONE & PHONO SWITCH POSITIONS

The radio-phonograph switch and the tone control are combined in one switch. This table shows the various positions.

POSITION OF SWITCH	COMBINATION
FIRST POSITION (Fully Counter-Clockwise) Circuit shows switch in this position	Radio — Treble
SECOND POSITION	Radio — Bass
THIRD POSITION	Phono — Treble
FOURTH POSITION (Fully Clockwise)	Phono — Bass

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3	83783	Condenser—mica 110 mmfd.	.20
4	85061	Condenser—mica 51 mmfd.	.15
5	500897	Lamp-dial (Mazda No. C7)	.26
6	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
7	112962	Resistor—carbon 150,000 ohms ¼ watt	.12
8-9	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
10	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
11	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
12	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
13	112975	Resistor—carbon 10 meg. ¼ watt	.12
14	R-501204	Speaker—dynamic (5")	$4.75
15	118803	Resistor—680 ohms ¼ watt	.12
16	116092	Resistor—140 ohms 1 watt W.W.	.15
17	160078	Resistor—220 ohms 1 watt W. W.	.20
18	116752	Resistor—33 ohms 1 watt wire wound	.15
19 to 21	116819	Condenser—.05 mfd. 600 volt	.20
22	116964	Switch—"on-off" for phono motor	.32
23	117395	Resistor—20 ohms 1 watt	.16
24	116625	Condenser—.1 mfd. 600 volts	.35
25	501166	Transformer—2nd I.F.	1.20
26	R-500425	Cone & Voice Coil for R-501204 speaker	1.60
27 to 29	119193	Condenser—.01 mfd. 600 volt	.15
30	119345	Condenser—trimmer	.20
31	119875	Condenser—.002 mfd. 600 volt	.15
32	500725	Crystal cartridge	7.00
33-34	119875	Condenser—.002 mfd. 600 volt	.15
35A-35B	119912	Volume control—1 meg. (with switch)	1.40
36A-36B-36C	119921	Switch—tone & phonograph (See table for switch positions)	1.00
37	500306	Resistor—2000 ohms 1 watt	.25
38A-38B	119928	Condenser—variable tuning	2.40
39	501233	Transformer—1st I.F.	1.20
40	R-501205	Transformer—output for R-501204 Speaker	1.80
41	119954	Coil—oscillator	.36
42A-42B-42C	160012	Condenser—electrolytic, A—40 mfd.—200 volt; B—20 mfd.—25 volt; C—20 mfd.—200 volt	1.15
43	160093	Phonograph motor—60 cycle (less turntable)	6.00
44	160140	Loop antenna & back (complete)	1.40
45	110553	Resistor—carbon 220,000 ohms ¼ watt	.12

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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MODEL 205FA
Chassis 205F

STEWART-WARNER CORP.

SERVICE DATA FOR 205F CHASSIS (RECEIVER MODEL 205FA)

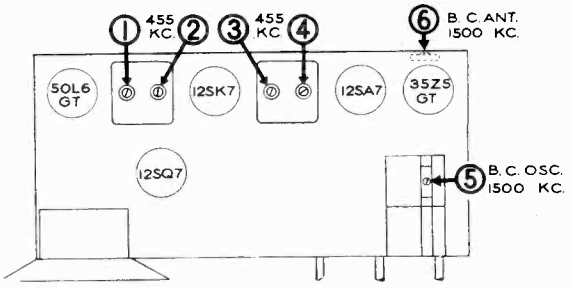
ALIGNMENT PROCEDURE

FOR ALIGNMENT: An output meter and an accurately calibrated signal generator are required.

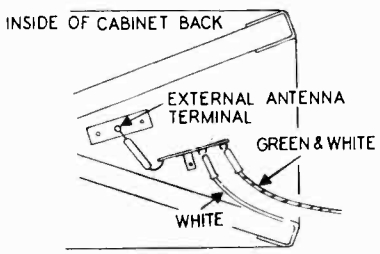
1. Connect the output meter across the voice coil; or, using a condenser in series, connect between the plate of the 50L6GT output tube and B— as shown on the voltage chart. The more sensitive type should be connected across the voice coil.
2. Connect the ground lead of the signal generator to the B— lug (shown on the voltage chart) through a .25 mfd. condenser and keep it connected in this manner throughout the entire alignment procedure. Failure to use the series condenser may have serious results, as one side of the power line may be grounded in the signal generator, or hum may be encountered.
3. Turn the volume control to the maximum volume position and leave it in this position throughout the entire alignment procedure.
4. Set the Dial Pointer to last mark after 55 on the dial with the gang condenser in full mesh.
5. The loop must be connected at all times.

Dummy Ant. in Series with Signal Generator	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Mica Condenser	White wire of Loop (loop must be connected)	455 KC	Any point where it does not affect the signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
No Connection	Place Lead from Signal Generator near Loop	1500 KC	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for maximum output.
No Connection	Place Lead from Signal Generator near Loop	1500 KC	Tune to 1500 KC Generator Signal	6*	Broadcast Antenna (Shunt)	Adjust for maximum output.

*Make adjustment of trimmer No. 6 with the chassis in the cabinet, and with the loop mounted to the cabinet by the top-center mounting screw. The loop and cabinet back may be tilted on this screw to permit reaching the trimmer.



LOOP CONNECTIONS



MISCELLANEOUS PARTS

Part Number	Description	List Price
117117	Cable—motor (complete with plug)	$0.38
112745	Clip—coil mounting	.01
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18
160016	Dial scale	.18
161104	Idler wheel for 160093 motor	1.00
160021	Knob (cream)	.10
160022	Knob (with indicator)	.16
160033	Needle—cup	.08
119945	Pointer	.11
81145	Retaining ring—for drive shaft	Per C .50
116690	Socket—octal base (four used)	.12
160392	Socket—octal base (one used)	.12
160171	Socket—four prong	.12
500896	Socket—Pilot light	.25
111981	Spring—for dial cord tension	.03
119910	Tuning shaft	.10
160092	Turntable (8")	1.15
111456	Washer—spring washer	Per C .50
119896	Window—dial	.38

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

REDUCING HUM

If excessive hum is encountered on connecting an external antenna to this receiver, try reversing the power cord plug in the power outlet.

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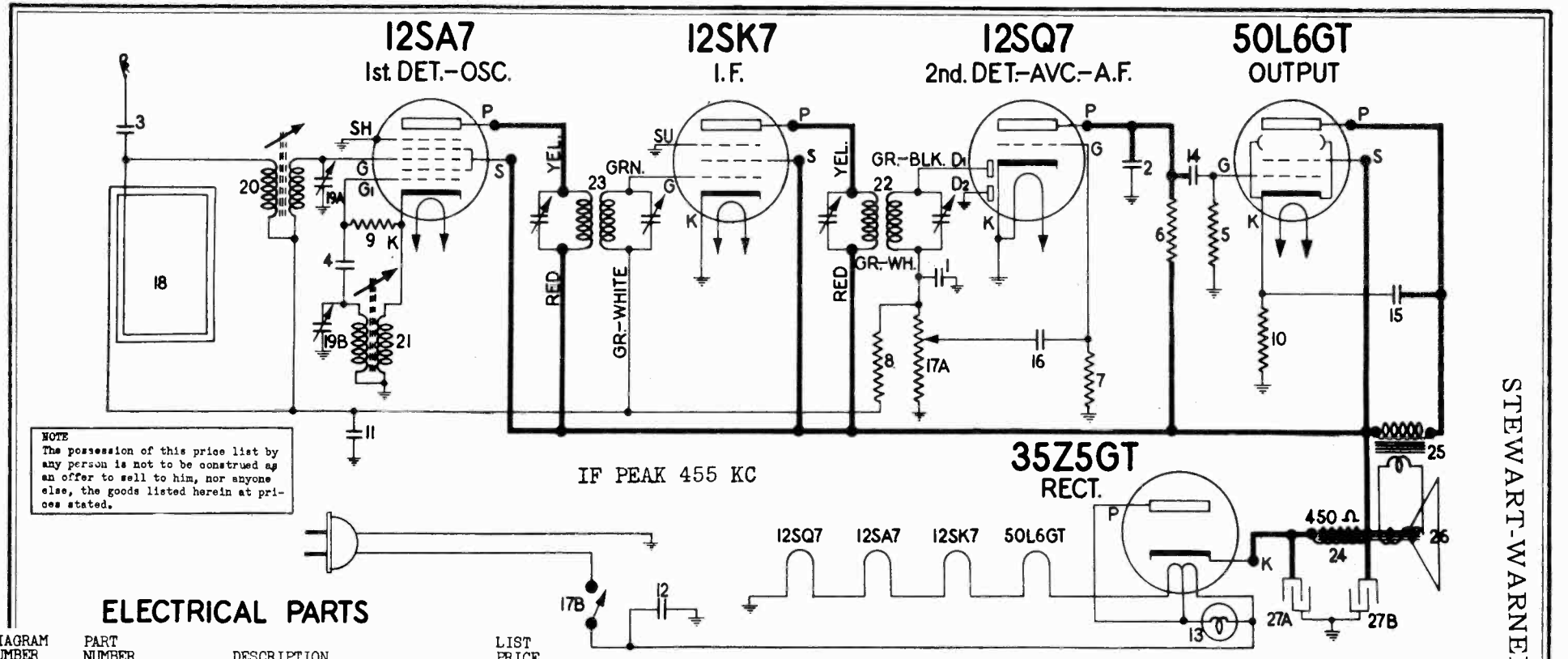
STEWART-WARNER CORP. MODELS 205GA to 205GZ Chassis 205G



NOTE
The possession of this price list by any person is not to be construed as an offer to sell to him, nor anyone else, the goods listed herein at prices stated.

ELECTRICAL PARTS

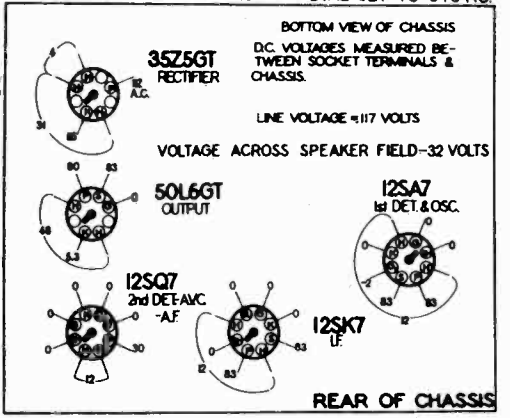
DIAGRAM NUMBER	PART NUMBER	DESCRIPTION	LIST PRICE
1-2	83539	Condenser - mica 260 mmfd.	.20
3	85061	Condenser - mica 51 mmfd.	.15
4	88686	Condenser - mica 200 mmfd.	.14
5	112971	Resistor - insulated, 470,000 ohm ½ watt	.15
6	112987	Resistor - insulated, 220,000 ohm ½ watt	.15
7	116050	Resistor - insulated, 10 meg. ½ watt	.12
8	116056	Resistor - 2.2 meg. ½ watt	.10
9	116059	Resistor - insulated, 22,000 ohm ½ watt	.12
10	116092	Resistor - 140 ohm, 1 watt-wire wound	.14
11-12	116819	Condenser - .05 mfd. 600 volt	.20
13	118921	Lamp-Dial (Mazda #47)	.15
14-15	119193	Condenser - .01 mfd. 600 volt	.15
16	119875	Condenser - .002 mfd. 600 volt	.15
17A-17B	500223	Volume Control - 1 meg. (with switch)	.95
18	501368	Loop Antenna	1.50
19A-19B	501223	Condenser - trimmer (2 sections) (A-35 mmfd.) (B-238 mmfd.)	.40
20	501157	Coil - antenna (with slug)	1.20
21	501158	Coil - oscillator (with slug)	1.20
22	501166	Transformer - 2nd I.F.	1.20
23	501233	Transformer - 1st I.F.	1.20
24	R-500916	Speaker - dynamic (4")	3.90
25	R-501163	Transformer - output for R-500916 Spkr.	1.50
26	R-501164	Cone & Voice Coil for R-500916 Spkr.	1.50
27A-27B	501213	Electrolytic Condenser (A-40 mfd. - 150 volt) (B-20 mfd. - 150 volt)	1.00

MISCELLANEOUS PARTS

PART NUMBER	DESCRIPTION	LIST PRICE
501372	Cabinet back only	.20
114955	Clamp - for drive cord	.01
112764	Clip - coil mounting	.01
118948	Cord - tuning mech. drive (6 ft. length)	.18
117057	Cord - dial drive (3 ft. length)	.15
501099	Dial Scale	.12
501140	Drive - drum & bushing	.20
501135	Drive - shaft & disc	.18
501370	Escutcheon	2.25
501367	Knob - tuning or volume	.15
500218	Pointer	.08
81145	Retaining ring - for tuning shaft - Per C	.50
85827	Set Screw - 8/32 square head	.02
160026	Socket - condenser mtg. (used with alum. can only)	.04
116690	Socket - octal base	.12
500499	Socket - pilot lamp (with leads)	.18
161384	Spring - dial cord tension	.08
501145	Spring - tension for tuning mech.	.03
500216	Tuning shaft	.25
111972	Washer - extruded & tapped (mtg.)	.05
111456	Washer - spring washer for tuning shaft - Per C	.50
500219	Window - dial	.30

SOCKET VOLTAGES

VOLUME CONTROL ON FULL — DIAL SET TO 540 KC.



USE A VOLTMETER OF 1000 OHMS PER VOLT

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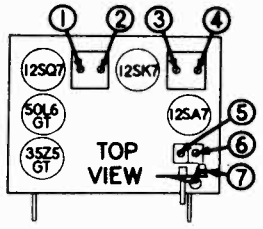
MODELS 205GA to 205GZ
Chassis 205G

STEWART-WARNER CORP.

1. Connect output meter across voice coil or from 50L6GT plate through a .1 mfd. condenser to chassis.
2. Set Volume Control in maximum position.
3. Connect signal generator ground through a .1 mfd. condenser to chassis.
4. Set dial pointer to 160 with slugs all the way out.

Dummy Ant. in Series with Sig. Gen.	Connection Sig. Gen. Output to Receiver	Sig. Gen. Freq.	Receiver Dial Setting	Trimmer No.	Trimmer Description	Type of Adjustment
200 Mmfd. Mica Condenser	Grid of 12SA7 Tube	455 KC	Any place where it does not affect signal	1-2 3-4	2nd I.F. 1st I.F.	Adjust screws on top of I.F. cans for maximum output
200 Mmfd. Mica Condenser	Antenna Terminal	1600 KC	1600 KC	5	B.C. Osc.	Adjust for maximum output
200 Mmfd. Mica Condenser	Antenna Terminal	1600 KC	Tune to 1600 KC Gen. Sig.	6	B.C. Ant.	Adjust for maximum output
200 Mmfd. Mica Condenser	Antenna Terminal	1400 KC	Tune to 1400 KC Gen. Signal	7	B.C. Ant. Coil	Adjust moveable Antenna Coil for maximum output



NOTE: After completing adjustment No. 7 return slugs to maximum out position and check trimmer No. 6. If no appreciable change in trimmer adjustment is necessary for maximum output, the antenna circuit is tracking. If the trimmer No. 6 requires considerable change it will be necessary to repeat adjustment No. 7 again. These two adjustments (Nos. 6 & 7) should be made several times until no change in trimmer adjustment for maximum output is necessary at either point.

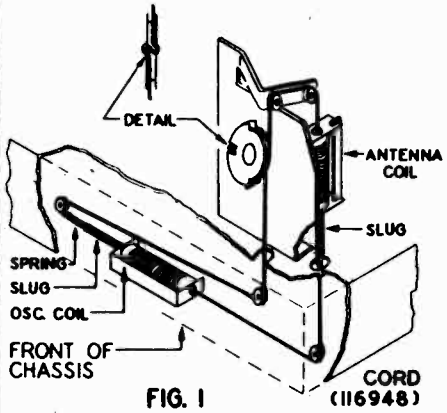


FIG. 1

DRUM SHOWN WITH SLUGS IN FULL OUT POSITION

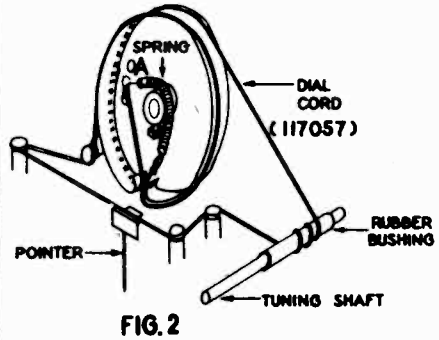


FIG. 2

TO RESTRING TUNING MECHANISM

1. Form a loop in one end of the cord and attach it to the hook nearest to the dot on the slug marked with a yellow dot. Form another loop through the hook farthest from the dot on the slug with the white dot and adjust the length so that the distance from the iron end of one slug to the iron end of the other is 2 15/16 inches.
2. Attach another length of cord to the other end of the yellow dot slug and drop the assembly through the hole in the top of the antenna coil leaving the newly added length of cord on the top end.
3. Pass the lower slug through the hole in the chassis, around the lower pulley and through the oscillator coil.
4. Now pass the cord from the top end over the two pulleys at the top of the mounting bracket, around the rear side of the small irregularly shaped pulley (see Fig. 1) threading it through the slots as shown in the "Detail" drawing and across the front down through the second hole in the chassis. Pass the cord under the upper pulley and around the top of the left hand pulley.
5. Form a loop and attach to spring (part no. 501145). Attach spring to slug in oscillator coil and adjust loop in cord to give normal tension.
6. The iron slug in the oscillator coil should project 1/2" from the end of the coil when the drive pulley is in its maximum counter-clockwise position. This may be adjusted by sliding the cord in the slots shown in the "Detail" drawing.
7. If the procedure outlined in the steps above has been carefully followed, the colored dot ends of the slugs will enter the coil last when the slugs are fully entered in the coils.
8. After restringing tuning mechanism, perform the alignment indicated under " Alignment Procedure " above.

TO RESTRING DIAL CORD

1. Set drum to position shown in Figure 2 with slugs in full out position (shown in Fig. 1).
2. Attach one end of the dial cord to point A on the drum.
3. Pass the cord through the opening at the bottom of the drum around the rear of the left side over the top and make two and one half turns around the rubber bushing on the tuning shaft as shown in Fig. 2.
4. Pass the cord around the guides as shown and over the front edge of the drum around and up through the opening at the bottom of the drum.
5. Attach spring to point A and bring it over hub of drum.
6. Form a loop in the cord and adjust for normal tension on the spring. (See Fig. 2).
7. Set the pointer to 1600 KC on the dial scale with the drum in the maximum counter-clockwise position.

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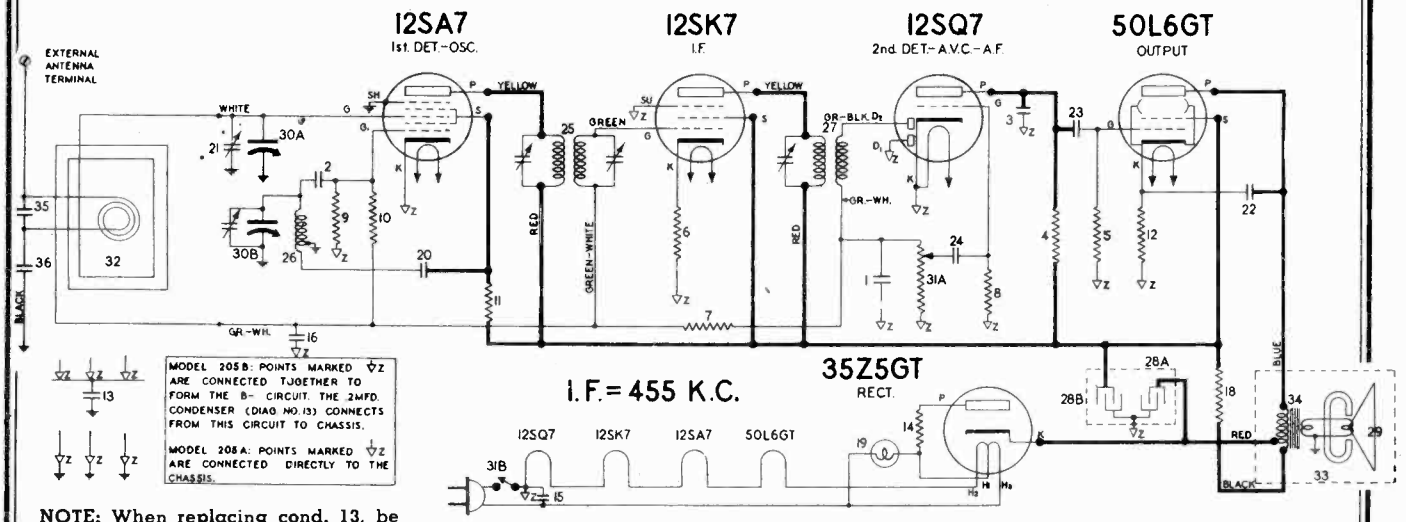
MODELS 205BA to 205BZ
Chassis 205B

STEWART-WARNER CORP.

MODELS 205AA to 205AZ
Chassis 205A



NOTE: When replacing cond. 13, be sure to replace five series turns.

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	83539	Condenser—mica, 260 mmfd.	$0.20
2	83783	Condenser—mica, 110 mmfd.	.20
3	85394	Condenser—mica, 510 mmfd.	.25
4	110553	Resistor—carbon, 220,000 ohms ¼ watt	.12
5	110559	Resistor—carbon, 470,000 ohms ¼ watt	.12
6	110560	Resistor—carbon, 100 ohms ¼ watt	.12
7	110570	Resistor—carbon, 2.2 meg. ¼ watt	.15
8	110580	Resistor—carbon, 3.3 meg. ¼ watt	.12
9	112958	Resistor—carbon, 18,000 ohms ¼ watt	.12
10	112975	Resistor—carbon, 10 meg. ¼ watt	.12
11	116068	Resistor—carbon, 680 ohms ¼ watt	.10
12	116092	Resistor—140 ohms 1 watt W.W.	.14
13	116706	Condenser—.2 mfd. 600 volt (205B only)	.35
14	116752	Resistor—33 ohms 1 watt W.W.	.15
15-16	116819	Condenser—.05 mfd. 600 volt	.20
18	118824	Resistor—carbon, 1500 ohms ½ watt	.12
19	118921	Lamp—Dial (Mazda No. 47)	.15
20	119193	Condenser—.01 mfd. 600 volt	.15
21	119345	Condenser—Trimmer	.20
22	119414	Condenser—.02 mfd. 600 volt	.15
23	119417	Condenser—.006 mfd. 600 volt	.15
24	119817	Condenser—.004 mfd. 600 volt	.15
25	500131	Transformer—1st I.F.	1.00
26	500232	Coil—Oscillator	.52
27	500236	Transformer—2nd I.F.	1.10
28A-28B	500256	Condenser—Electrolytic A—40 mfd.—150 volt / B—20 mfd.—150 volt	1.00
29	C-500329	Cone and voice coil for C-500594 speaker	1.25
30A-30B	500443	Condenser—variable tuning, with drum	2.50
31A-31B	500480	Volume Control—1 meg. (with switch)	1.20
32	500566	Loop Antenna & Cabinet Back (205AA & 205BA)	1.60
	500567	Loop Antenna & Cabinet Back (205AB & 205BB)	1.60
	500576	Loop Antenna & Cabinet Back (205AC &205BC)	1.60
33	C-500594	Speaker—P.M. (4")	3.50
34	C-500615	Transformer—output for C-500594 speaker	1.10
35	83783	Condenser—mica, 110 mmfd.	.20
36	119193	Condenser—.01 mfd. 600 volt (205A only)	.15

MISCELLANEOUS PARTS

Part Number	Description	List Price
116467	Base for mounting electrolytic condenser	$0.04
114955	Clamp for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—drive supplied in 3' lengths	.15
500562	Dial Scale	.40
500422	Knob (for 205AA & 205AC) (205BA & 205BC)	.05
500428	Knob (for 205AB & 205BB)	.06
500527	Pointer	.06
81145	Retaining ring for tuning shaft	Per C .50
116690	Socket—octal base	.12
160392	Socket—octal (rectifier)	.12
500499	Socket—pilot lamp (with leads)	.18
161384	Spring—dial cord tension	.06
500497	Stud—dial scale retaining	.02
111456	Washer—spring washer for tuning shaft	Per C .50

CABINETS

500539	Cabinet—walnut, complete (205AA & 205BA)	3.20
500565	Cabinet—sprayed ivory, complete (205AB & 205BB)	4.20
500572	Cabinet—wood (205AC & 205BC)	7.60

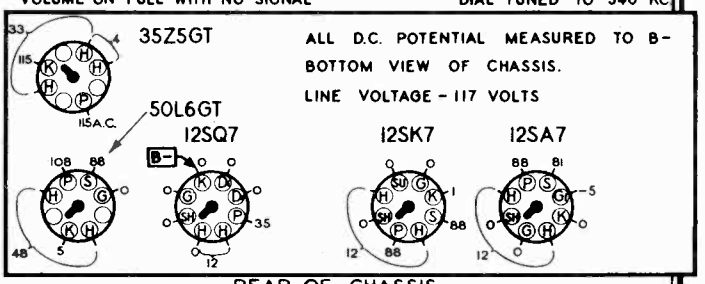
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ALIGNMENT PROCEDURE

1. Connect output meter across the voice coil; or from 50L6GT plate to B— as shown on voltage chart.
2. Connect the ground lead of the signal generator to the chassis through a .25 mfd. condenser.
3. Set the volume control to the maximum volume position.
4. Set dial pointer to lowest frequency point on dial scale with gang in full mesh.
5. Connect the antenna lead of the signal generator to the lug on the top of the rear section of the gang, using a 200 mmfd. mica condenser in series.
6. Set the signal generator to 455 KC. Set receiver dial to a point where it does not affect signal. Adjust the trimmer screws on the top of each I.F. Transformer for maximum output.
7. Connect the output of the signal generator in series with a 200 mmfd. mica condenser to the antenna terminal on the cabinet back. Set the receiver dial to 1500 KC.
8. Set the signal generator to 1500 KC and adjust the trimmer on the front section of the gang condenser for maximum output of the oscillator signal.
9. Place the loop antenna in its correct position at the rear of the cabinet and adjust the trimmer screw on the back of the chassis for maximum output at 1500 KC.

SOCKET VOLTAGES

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



REAR OF CHASSIS

Use a voltmeter of 1000 ohms per volt.

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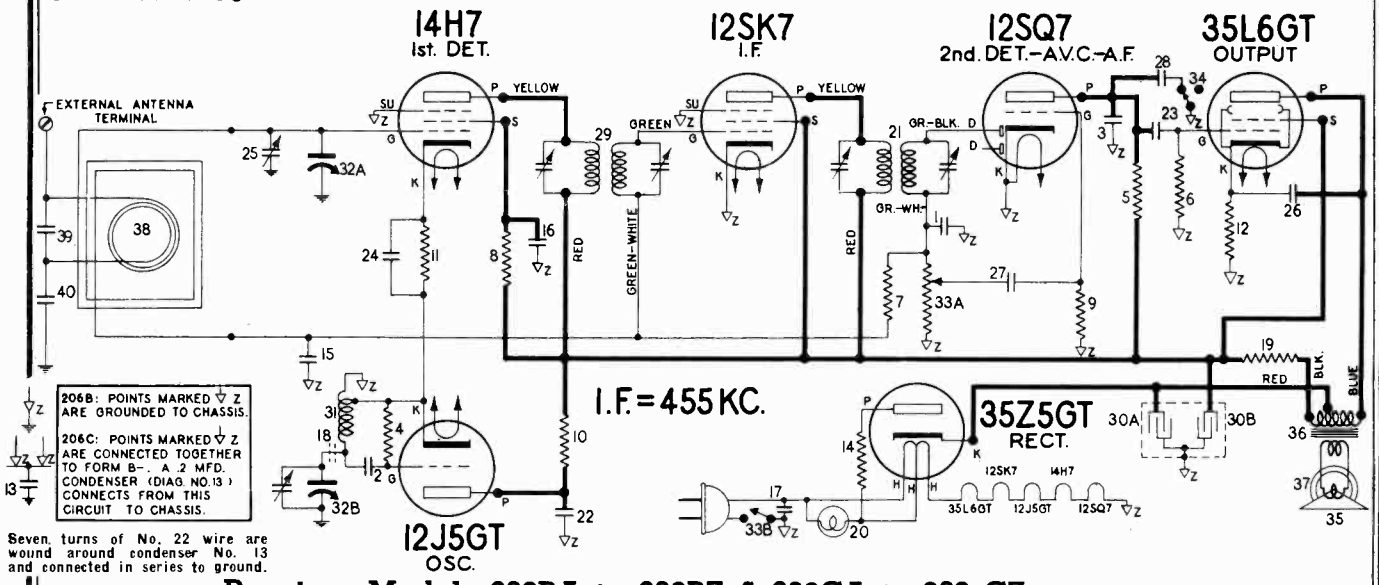
MODELS 206BA to 206BZ
Chassis 206B
MODELS 206CA to 206CZ
Chassis 206C

STEWART-WARNER CORP.



Seven turns of No. 22 wire are wound around condenser No. 13 and connected in series to ground.

Receiver Models 206BA to 206BZ & 206CA to 206 CZ
APPLIES ONLY TO THE ABOVE MODELS WITH P.M. SPEAKERS

Diagram Number	Part Number	Description	List Price
1	83539	Condenser—mica, 260 mmfd.	$0.20
2	83783	Condenser—mica, 110 mmfd.	.20
3	85394	Condenser—mica, 510 mmfd.	.25
4	110552	Resistor—carbon 47,000 ohms 1/4 watt	.12
5	110553	Resistor—carbon 220,000 ohms 1/4 watt	.12
6	110559	Resistor—carbon 470,000 ohms 1/4 watt	.12
7	110570	Resistor—carbon 2.2 meg. 1/4 watt	.15
8	110578	Resistor—carbon 68,000 ohms 1/4 watt	.12
9	110580	Resistor—carbon 3.3 meg. 1/4 watt	.12
10	116068	Resistor—carbon 680 ohms 1/4 watt	.10
11	116079	Resistor—carbon 1200 ohms 1/4 watt	.12
12	116092	Resistor—140 ohms, 1 watt W.W.	.14
13	116706	Condenser—.2 mfd. 600 volt (206C)	.35
14	116752	Resistor—33 ohms 1 watt W.W.	.15
15-17	116819	Condenser—.05 mfd. 600 volt	.20
16	119193	Condenser—.01 mfd. 600 volt	.15
18	116819	Condenser—.05 mfd. 600 volt (206C only)	.20
19	118824	Resistor—carbon 1,500 ohms 1/2 watt	.12
20	118921	Lamp—dial (Mazda No. 47)	.15
21	119024	Transformer—2nd I.F.	1.15
22-23-24	119193	Condenser—.01 mfd. 600 volt	.15
25	119345	Condenser—trimmer (loop)	.20
26	119414	Condenser—.02 mfd. 600 volt	.15
27	119817	Condenser—.004 mfd. 600 volt	.15
28	119875	Condenser—.002 mfd. 600 volt	.15
29	500131	Transformer—1st I.F.	1.00
30A-30B	500256	Condenser—Electrolytic { A-40 mfd. 150 volt / B-20 mfd. 150 volt }	1.00
31	500408	Coil—oscillator	.42
32A-32B	500443	Condenser—variable tuning with drum	2.60
33A-33B	500480	Volume Control—1 meg. (with switch)	1.20
34	500509 / 500546	Switch—tone (206B only) / Switch—tone (206C only)	.55 / .55
35	R-500587	Cone & Voice Coil for R-500618 speaker	1.50
36	R-500617	Transformer—output for R-500618 speaker	1.50
37	R-500618	Speaker—P.M. dynamic (5")	4.10
38	500580 / 500581 / 500678	Loop Antenna & Cabinet Back (206BA & 206CA) / Loop Antenna & Cabinet Back (206BB & 206CB) / Loop Antenna & Cabinet Back (206BC & 206CC)	1.50 / 1.50 / 1.60
39	83783	Condenser—mica, 110 mmfd.	.20
40	119193	Condenser—.01 mfd. 600 volt (206B only)	.15

MISCELLANEOUS PARTS

Part Number	Description	List Price
116467	Base for mounting Electrolytic Condenser (206C)	$0.04
160026	Base for mounting Electrolytic Condenser (206B)	.04
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—Drive, supplied in 3' lengths	.15
500563	Dial Scale	.42
500422	Knob—(walnut)	.05
500428	Knob—(ivory)	.06
500527	Pointer	.06
81145	Retaining ring for tuning shaft	Per C .50
116690	Socket—octal base	.12
160392	Socket—octal (rectifier)	.12
160294	Socket—8 prong for 14H7	.12
500499	Socket—pilot lamp (with leads)	.18
161384	Spring—dial cord tension	.06
500497	Stud—dial scale retaining	.02
500289	Tuning Shaft	.22
111456	Washer—spring washer for tuning shaft	Per C .50

ALIGNMENT PROCEDURE

1. Connect the output meter across the voice coil or from the plate of the 35L6GT output tube to B— through a .25 mfd. condenser.
2. Connect the ground lead from signal generator to B— through a .25 mfd. condenser for all alignment steps.
3. Set volume control in maximum position.
4. Set dial pointer to last marking on dial with gang in full mesh.
5. Connect hot lead from signal generator to stator on rear section of gang using 200 mmfd. in series as dummy.
6. Set generator to 455 KC. and adjust trimmer screws on top of I.F. transformer cans for maximum output.
7. Connect hot lead to antenna terminal on loop through a 200 mmfd. condenser as a dummy. Set dial to 1500 KC. and adjust trimmer on front section of gang for maximum output on a 1500 KC. generator signal.
8. Place chassis in cabinet and using connections in "7," place loop in position and adjust loop trimmer at rear of chassis for maximum output while tuning dial to maximum signal.

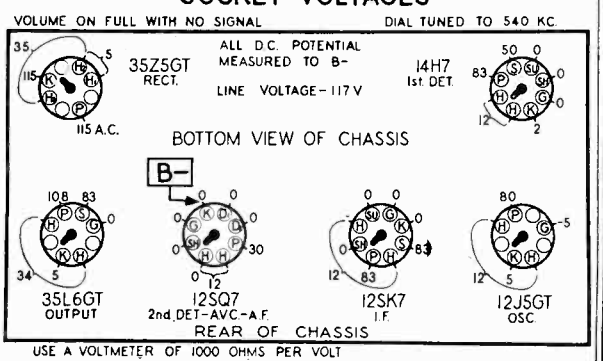
NOTE: Place the chassis in the cabinet to find dial settings.

CABINETS

500578	Cabinet—walnut (plastic)	3.50
500579	Cabinet—sprayed ivory (plastic)	4.80
500548	Cabinet—wood	10.20

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

SOCKET VOLTAGES



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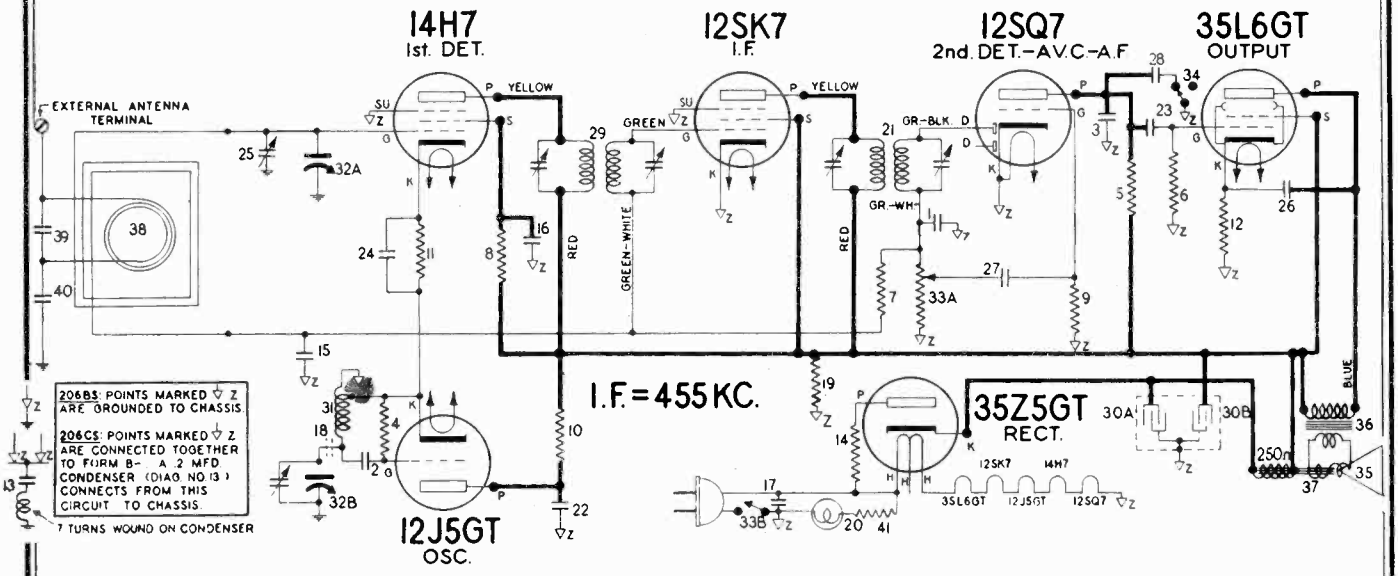
STEWART-WARNER CORP.

MODELS 206BAS to 206BZS
Chassis 206BS
MODELS 206CAS to 206CZS
Chassis 206CS



Receiver Models 206BAS to 206BZS & 206CAS to 206CZS

APPLIES Only to the Above MODELS with ELECTRO-DYNAMIC SPEAKERS

Diagram Number	Part Number		
1	83539	Condenser—mica, 260 mmfd.	$0.20
2	83783	Condenser—mica, 110 mmfd.	.20
3	85394	Condenser—mica, 510 mmfd.	.25
4	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
5	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
6	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
7	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
8	110578	Resistor—carbon 68,000 ohms ¼ watt	.12
9	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
10	116068	Resistor—carbon 680 ohms ¼ watt	.10
11	116079	Resistor—carbon 1200 ohms ¼ watt	.12
12	501093	Resistor—120 ohms, 1 watt W.W.	.20
13	116706	Condenser—.2 mfd. 600 volt (206CS)	.35
14	116752	Resistor—33 ohms 1 watt W.W.	.15
15-17	116819	Condenser—.05 mfd. 600 volt	.20
16	119193	Condenser—.01 mfd. 600 volt	.15
18	116819	Condenser—.05 mfd. 600 volt (206CS only)	.20
19	118813	Resistor—carbon—5000 ohms, 2 watts	.18
20	500897	Lamp—dial (Mazda C7)	.26
21	119024	Transformer—2nd I.F.	1.15
22-23-24	119193	Condenser—.01 mfd. 600 volt	.15
25	119345	Condenser—trimmer (loop)	.20
26	119414	Condenser—.02 mfd. 600 volt	.15
27	119817	Condenser—.004 mfd. 600 volt	.15
28	119875	Condenser—.002 mfd. 600 volt	.15
29	500131	Transformer—1st I.F.	1.00
30A-30B	500256	Condenser—Electrolytic { A-40 mfd. 150 volt / B-20 mfd. 150 volt }	1.00
31	500408	Coil—oscillator	.42
32A-32B	500443	Condenser—variable tuning with drum	2.60
33A-33B	500480	Volume Control—1 meg. (with switch)	1.20
34	500509 / 500546	Switch—tone (206BS only) / Switch—tone (206CS only)	$0.55 / .55
35	R-500731	Cone & Voice Coil for R-500924 speaker	1.30
36	R-500925	Transformer—output for R-500924 speaker	1.35
37	R-500924	Speaker—dynamic (5")	4.50
38	500580 / 500581 / 500678	Loop Antenna & Cabinet Back (206BAS & 206CAS) / (206BBS & 206CBS) / (206BCS & 206CCS)	1.50 / 1.50 / 1.60
39	83783	Condenser—mica, 110 mmfd.	.20
40	119193	Condenser—.01 mfd. 600 volt (206BS only)	.15
41	160078	Resistor—carbon 220 ohms, 1 W.	.20

ALIGNMENT PROCEDURE

1. Connect the output meter across the voice coil or from the plate of the 35L6GT output tube to B— through a .25 mfd. condenser.
2. Connect the ground lead from signal generator to B— through a .25 mfd. condenser for all alignment steps.
3. Set volume control in maximum position.
4. Set dial pointer to last marking on dial with gang in full mesh.
5. Connect hot lead from signal generator to stator on rear section of gang using 200 mmfd. in series as dummy.
6. Set generator to 455 KC. and adjust trimmer screws on top of I.F. transformer cans for maximum output.
7. Connect hot lead to antenna terminal on loop through a 200 mmfd. condenser as a dummy. Set dial to 1500 KC. and adjust trimmer on front section of gang for maximum output on a 1500 KC. generator signal.
8. Place chassis in cabinet and using connections in "7," place loop in position and adjust loop trimmer at rear of chassis for maximum output while tuning dial to maximum signal.

NOTE: Place the chassis in the cabinet to find dial settings.

MISCELLANEOUS PARTS

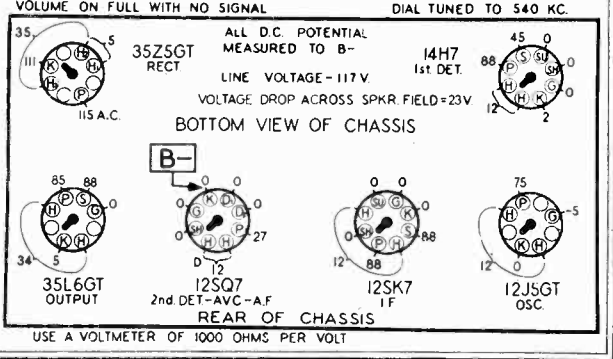
Part Number	Description	List Price
116467	Base for mounting Electrolytic Condenser (206CS)	$0.04
160026	Base for mounting Electrolytic Condenser (206BS)	.04
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—Drive, supplied in 3' lengths	.15
500563	Dial Scale	.42
500422	Knob—(walnut)	.05
500428	Knob—(ivory)	.06
500527	Pointer	.06
81145	Retaining ring for tuning shaft	Per C .50
116690	Socket—octal base	.12
160392	Socket—octal (rectifier)	.12
160294	Socket—8 prong for 14H7	.12
500896	Socket—pilot lamp (with leads)	
161384	Spring—dial cord tension	.06
500497	Stud—cabinet back retaining	.02
500289	Tuning Shaft	.22
111456	Washer—spring washer for tuning shaft	Per C .50

CABINETS

500578	Cabinet—walnut (plastic)	3.50
500579	Cabinet—sprayed ivory (plastic)	4.80
500548	Cabinet—wood	10.20

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

SOCKET VOLTAGES



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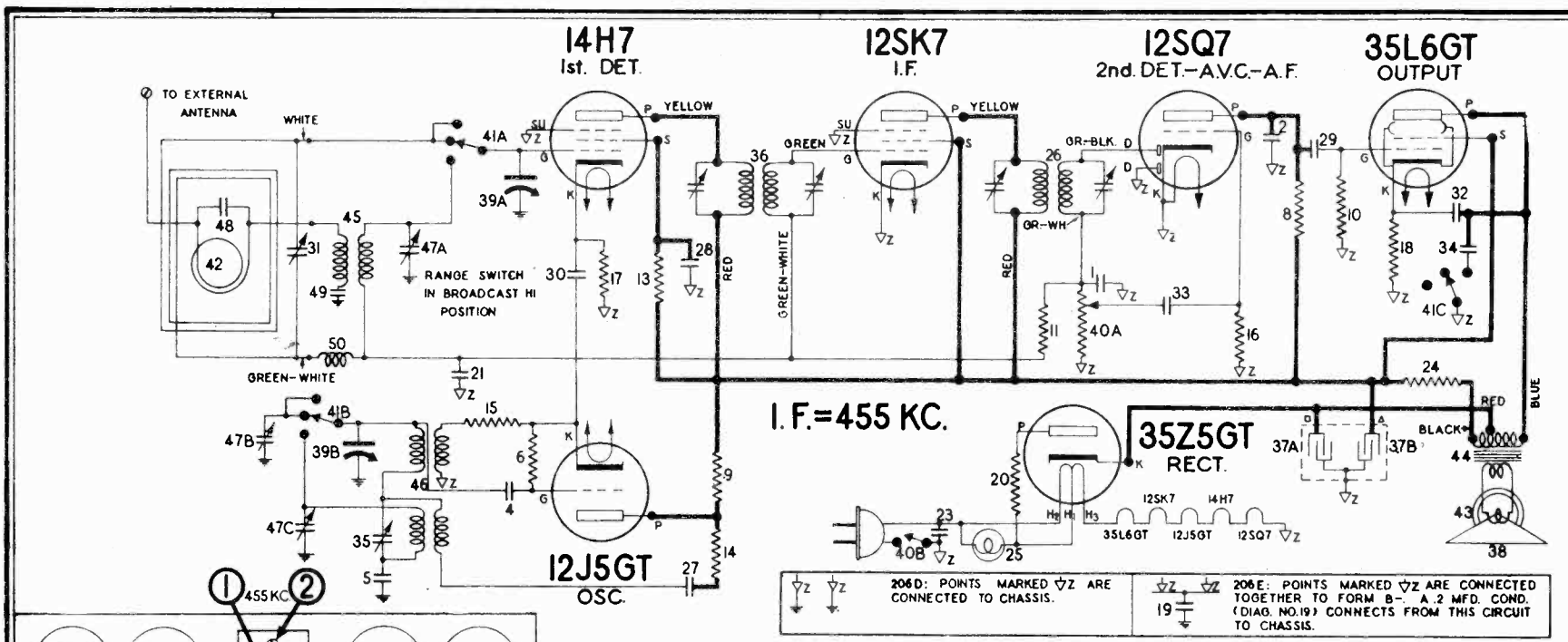

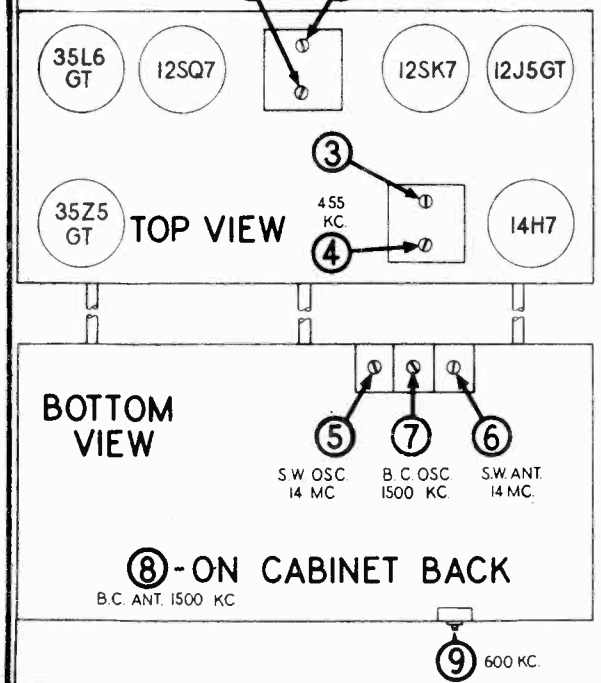

ELECTRICAL PARTS

Diagram No.	Part No.	Description	List Price
1-2	83539	Condenser, Mica 260 Mmfd.	$ .20
4	83783	Condenser, Mica 110 Mmfd.	.20
5	88587	Condenser, Mica .0042 Mfd.	.35
6	110552	Resistor, Carbon—47,000 Ohms ¼ Watt	.12
8	110553	Resistor, Carbon—220,000 Ohms ¼ Watt	.12
9	110557	Resistor, Carbon—4,700 Ohms ¼ Watt	.12
10	110559	Resistor, Carbon—470,000 Ohms ¼ Watt	.12
11	110570	Resistor, Carbon—2.2 Meg. ¼ Watt	.15
13	110578	Resistor, Carbon—68,000 Ohms ¼ Watt	.12
14-15	110590	Resistor, Carbon—180 Ohms ¼ Watt	.12
16	110580	Resistor, Carbon—3.3 Meg. ¼ Watt	.12
17	116079	Resistor, Insulated 1200 Ohms ¼ Watt	.12
18	116092	Resistor, 140 Ohms 1 Watt—W.W.	.14
19	116706	Condenser, .2 Mfd. 600 Volt (206E only)	.35
20	116752	Resistor, 33 Ohms, 1 Watt—W.W.	.15
21 to 23	116819	Condenser, .05 Mfd. 600 Volt	.20
24	118824	Resistor, Carbon—1,500 Ohms ½ Watt	.12
25	118921	Lamp, Dial (Mazda No. 47)	.15
26	119024	Transformer, 2nd I.F.	1.15
27 to 30	119193	Condenser, .01 Mfd. 600 Volt	.15
31	119345	Condenser, Trimmer (Loop)	.20
32	119414	Condenser, .02 Mfd. 600 Volt	.15
33	119817	Condenser, .004 Mfd. 600 Volt	.15
34	119880	Condenser, .04 Mfd. 600 Volt	$ .20
35	119934	Condenser, Padder	.36
36	500131	Transformer, 1st I.F.	1.00
37A-37B	500256	Condenser, A—40 Mfd. 150 Volt / Electrolytic B—20 Mfd. 150 Volt	1.00
38	R-500331	Cone & Voice Coil for R-500620 Spkr.	1.50
39A-39B	500442	Condenser, Variable Tuning (with drum)	2.60
40A-40B	500480	Volume Control, 1 Meg. (with switch)	1.20
41A-41B-41C	500508	Switch, Tone & Band	.90
42	500612	Loop Antenna & Cabinet Back (206DA & 206EA)	1.50
	500613	Loop Antenna & Cabinet Back (206DB & 206EB)	1.50
	500660	Loop Antenna & Cabinet Back (206DC & 206EC)	1.60
43	R-500620	Speaker, P.M. Dynamic (6" Oval)	4.80
44	R-500621	Transformer, Output for R-500620 Spkr.	1.50
45	500645	Coil, Short Wave Antenna	.50
46	500646	Coil, Oscillator (B.C. & S.W.)	1.00
47A to 47C	500647	Condenser, Three Section Trimmer	.48
48	83783	Condenser, Mica 110 Mmfd.	.20
49	119193	Condenser, .01 Mfd., 600 Volt (206D only)	.15
50	500911	Loading Coil	.25

MISCELLANEOUS PARTS LIST ON OTHER SIDE

RECEIVER MODELS 206DA to 206DZ and 206EA to 206EZ

APPLIES ONLY TO RECEIVERS WITH P.M. SPEAKERS

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STEWART-WARNER CORP.

CHASSIS 206D, 206E
CHASSIS 206DS, 206ES

1. Connect the output meter across the voice coil or from plate of the 35L6GT output tube to B— through a .1 mfd condenser.
2. Connect ground lead from signal generator to B— (cathode on 12SQ7) through a .25 mfd. condenser.
3. Turn volume control to maximum position throughout alignment.
4. Use a weak signal from the signal generator.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MFD. Mica Condenser	Lug on Rear Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
400 Ohm Carbon Resistor	Terminal Marked "Antenna"	14 MC	Short Wave	14 MC	5	Short Wave Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 13.1 MC. If Image does not appear, Realign at 14 MC. with Trimmer Screw farther out. Recheck Image.
400 Ohm Carbon Resistor	Terminal Marked "Antenna"	14 MC	Short Wave	Tune to 14 MC Generator Signal	6	Short Wave Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
200 MMFD. Mica Condenser	Terminal Marked "Antenna"	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	Terminal Marked "Antenna"	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	Terminal Marked "Antenna"	600 KC	Broadcast	Tune to 600 KC Generator Signal	9*	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*NOTE: ADJUSTMENTS No. 8 AND No. 9 SHOULD BE MADE WITH THE SET IN THE CABINET AND WITH LOOP LEADS AND LOOP IN FINAL POSITION.

MISCELLANEOUS PARTS

Part Number	Description	List Price
116467	Base for Mtg. Elec. Condenser (206E)	$ .04
160026	Base for Mtg. Elec. Condenser (206D)	.04
114955	Clamp for Dial Cord	.01
112745	Clip, Coil Mounting	.01
117057	Cord, Drive Supplied in 3' Lengths	.15
500564	Dial Scale	.50
500422	Knob (Walnut)	.05
500428	Knob (Ivory)	.06
500495	Knob, "Tone" (Walnut)	.05
500496	Knob, "Tone" (Ivory)	.05
500527	Pointer	.06
81145	Retaining Ring for Tuning Shaft	Per C .50
116690	Socket, Octal Base	.12
160392	Socket, Octal (Rectifier)	.12
160294	Socket, 8 Prong for 14H7	.12
500499	Socket, Pilot Lamp (With Leads)	.18
161384	Spring—Tension for dial cord	.06
500497	Stud, Dial Scale Retaining	.02
500289	Tuning Shaft	.22
111456	Washer, Spring Washer for Tuning Shaft	Per C .50
500583	Cabinet, Walnut (206DA & 206EA)	3.50
500584	Cabinet, Sprayed Ivory (206DB & 206EB)	4.80
500600	Cabinet, Wood (206DC & 206EC)	10.50

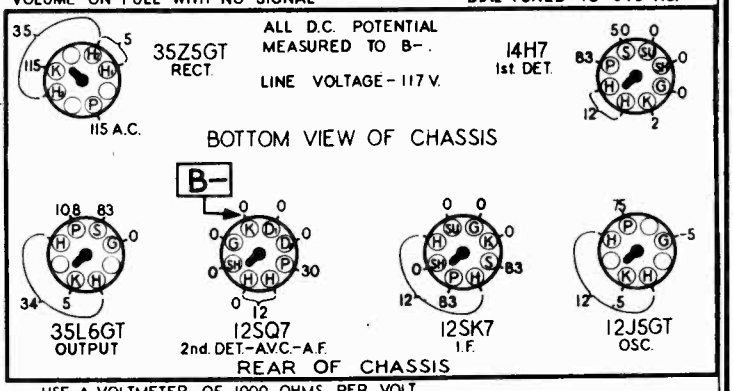
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

RANGE-TONE SWITCH

The range and tone switch are combined in this receiver. This table shows the various positions.

SWITCH POSITION	BAND	TONE
EXTREME COUNTER-CLOCKWISE	BROADCAST	LOW
MIDDLE POSITION Shown on Circuit Diagram)	BROADCAST	HIGH
EXTREME CLOCKWISE	FOREIGN	HIGH

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



USE A VOLTMETER OF 1000 OHMS PER VOLT

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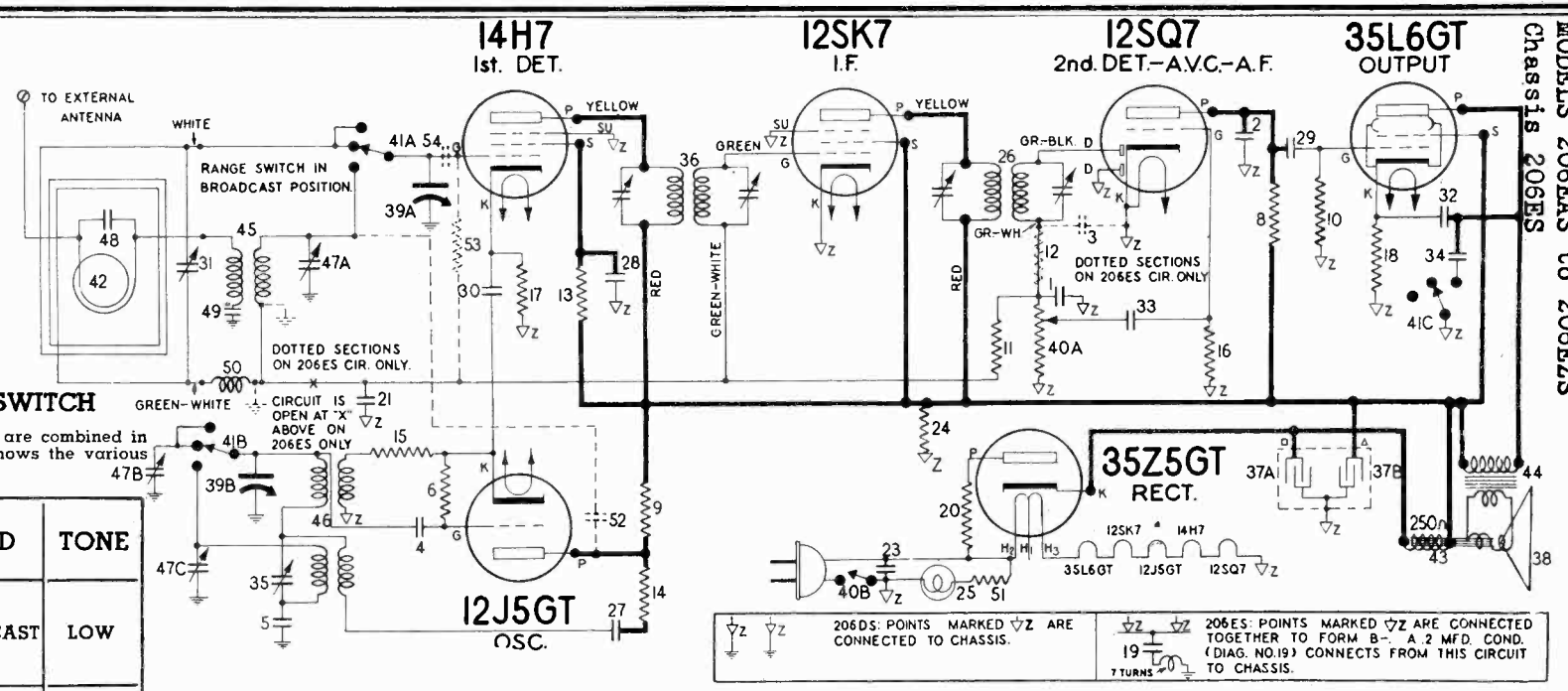
I.F.=455 KC.



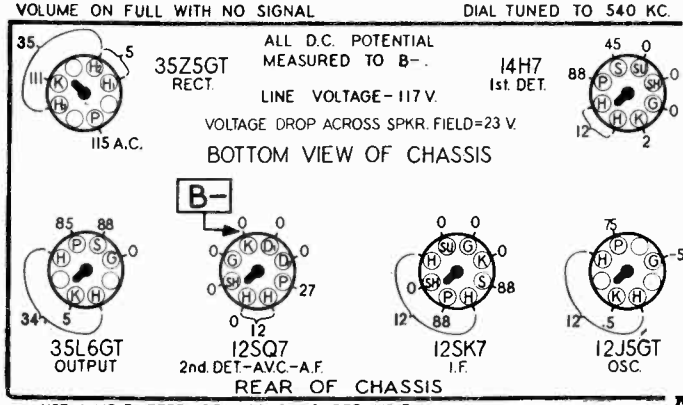
RANGE-TONE SWITCH

The range and tone switch are combined in this receiver. This table shows the various positions.

SWITCH POSITION	BAND	TONE
EXTREME COUNTER-CLOCKWISE	BROADCAST	LOW
MIDDLE POSITION Shown on Circuit Diagram)	BROADCAST	HIGH
EXTREME CLOCKWISE	FOREIGN	HIGH

SOCKET VOLTAGES

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



USE A VOLTMETER OF 1000 OHMS PER VOLT

ELECTRICAL PARTS

Diagram No.	Part No.	Description	List Price
1-2	83539	Condenser, Mica 260 Mmfd.	$ .20
3-4	83783	Condenser, Mica 110 Mmfd.	.20
5	88587	Condenser, Mica .0042 Mfd.	.35
6	110552	Resistor, Carbon—47,000 Ohms ¼ Watt	.12
3	110553	Resistor, Carbon—220,000 Ohms ¼ Watt	.12
9	110557	Resistor, Carbon—4,700 Ohms ¼ Watt	.12
10	110559	Resistor, Carbon—470,000 Ohms ¼ Watt	.12
11	110570	Resistor, Carbon—2.2 Meg. ¼ Watt	.15
12-13	110578	Resistor, Carbon—68,000 Ohms ¼ Watt	.12
14-15	110590	Resistor, Carbon—180 Ohms ¼ Watt	.12
16	110580	Resistor, Carbon—3.3 Meg. ¼ Watt	.12
17	116079	Resistor, Insulated 1200 Ohms ¼ Watt	.12
18	501093	Resistor, 120 Ohms, 1 Watt W.W.	.15
19	116706	Condenser, .2 Mfd. 600 Volt (206E only)	.35
20	116752	Resistor, 33 Ohms, 1 Watt—W.W.	.15
21 to 23	116819	Condenser, .05 Mfd. 600 Volt	.20
24	118813	Resistor, Carbon—5000 Ohms 2 W.	.18
25	500897	Lamp, Dial (Mazda C7)	.26
26	119024	Transformer, 2nd I.F.	1.15
27 to 30	119193	Condenser, .01 Mfd. 600 Volt	.15
31	119345	Condenser, Trimmer (Loop)	.20
32	119414	Condenser, .02 Mfd. 600 Volt	.15
33	119817	Condenser, .004 Mfd. 600 Volt	.15
34	119880	Condenser, .04 Mfd. 600 Volt	.20
35	119934	Condenser, Padder	.36

Diagram No.	Part No.	Description	List Price
36	500131	Transformer, 1st I.F.	$1.00
37A-37B	500256	Condenser, A—40 Mfd. 150 Volt Electrolytic B—20 Mfd. 150 Volt	1.00
38	R-500331	Cone & Voice Coil for R-500920 Spkr.	1.50
39A-39B	500442	Condenser, Variable Tuning (with drum)	2.60
40A-40B	500480	Volume Control, 1 Meg. (with switch)	1.20
41A-41B-41C	500508	Switch, Tone & Band	.90
42	500612	Loop Antenna & Cabinet Back (206DAS & 206EAS)	1.50
	500613	Loop Antenna & Cabinet Back (206DBS & 206EBS)	1.50
	500660	Loop Antenna & Cabinet Back (206DCS & 206ECS)	1.60
43	R-500920	Speaker, Electro-Dynamic (6" Oval)	5.00
44	R-500921	Transformer, Output for R-500920 Spkr.	1.35
45	500645	Coil, Short Wave Antenna	.50
46	500646	Coil, Oscillator (B.C. & S.W.)	1.00
47A to 47C	500647	Condenser, Three Section Trimmer	.48
48	83783	Condenser, Mica 110 Mmfd.	.20
49	119193	Condenser, .01 Mfd., 600 Volt (206DS only)	.15
50	500911	Loading Coil	.25
51	160078	Resistor, 220 Ohms, 1 Watt W.W.	.25
52	110510	Condenser, Wire 3 Mmfd.	.12
53	110570	Resistor, Carbon—2.2 Meg. ¼ Watt	.15
54	83539	Condenser, Mica—260 Mmfd. (206ES only)	.20

MISCELLANEOUS PARTS LIST ON OTHER SIDE

RECEIVER MODELS 206DAS to 206DZS and 206EAS to 206EZS

APPLIES ONLY TO ABOVE RECEIVERS WITH ELECTRO-DYNAMIC SPEAKERS

MODELS 206GA to 206GZ

STEWART-WARNER CORP.

Chassis 206G

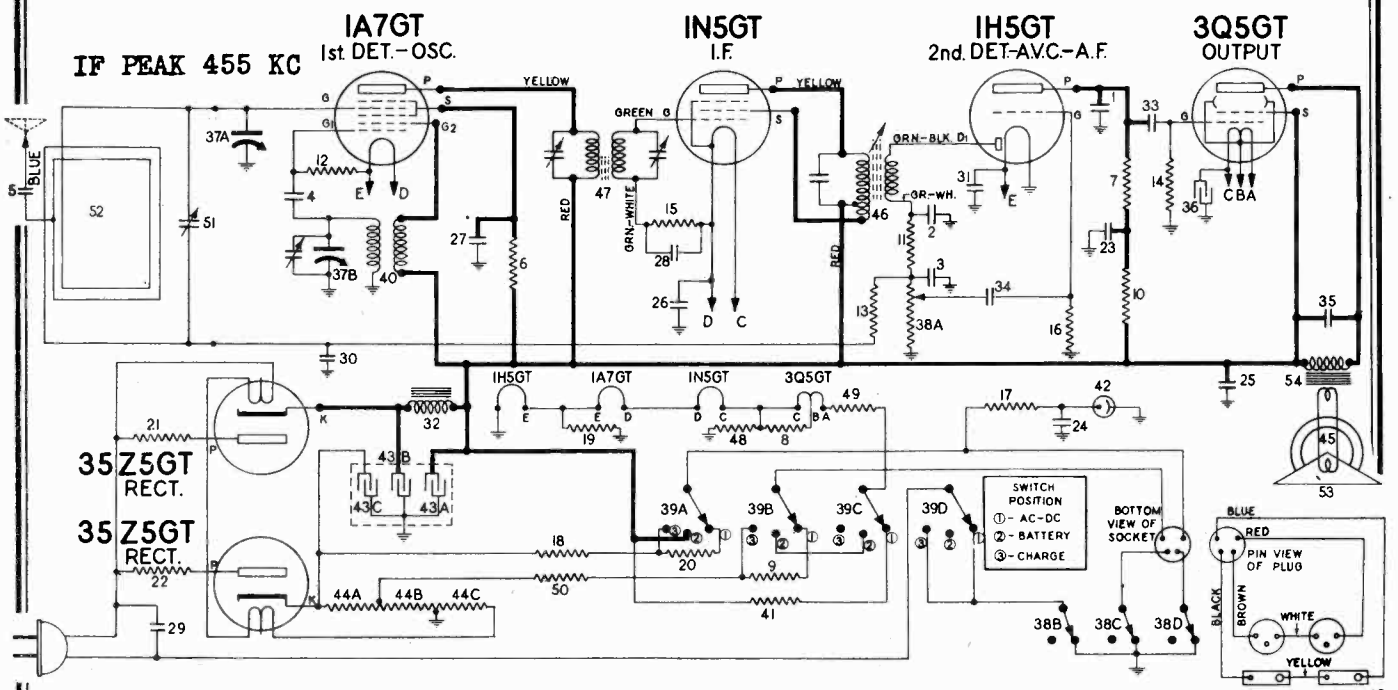


Diagram Number	Part Number	Description	List Price
1	83783	Condenser, Mica. 110 Mmfd.	$0.20
2-3-4	85061	Condenser, Mica. 51 Mmfd.	.15
5	85563	Condenser, Mica. 26 Mmfd.	.15
6	110552	Resistor, Carbon—47,000 Ohms ¼ Watt	.12
7	110554	Resistor, Carbon—1 Megohm ¼ Watt	.12
8-9	110556	Resistor, Carbon—330 Ohm ¼ Watt	.12
10	110559	Resistor, Carbon—470,000 Ohms ¼ Watt	.12
11	110564	Resistor, Carbon—100,000 Ohms ¼ Watt	.12
12-13-14	110570	Resistor, Carbon—2.2 Meg. ¼ Watt	.15
15-16-17	110580	Resistor, Carbon—3.3 Meg. ¼ Watt	.12
18	110588	Resistor, Carbon—6800 Ohms ¼ Watt	.12
19	112974	Resistor, Carbon—220 Ohm ¼ Watt	.15
20	112995	Resistor, Carbon—15,000 Ohm ¼ Watt	.12
21-22	116013	Resistor, 50 Ohm 1 Watt	.18
23 to 26	116625	Condenser, .1 Mfd. 600 Volts	.25
27 to 31	116819	Condenser, .05 Mfd. 600 Volts	.20
32	117888	Filter Choke	.85
33	119193	Condenser, .01 Mfd. 600 Volts	.15
34	119817	Condenser, .004 Mfd. 600 Volts	.15
35	119875	Condenser, .002 Mfd. 600 Volts	.15
36	161273	Condenser, Electrolytic 50 Mfd. 25 Volt	.50
37A-37B	500443	Condenser, Variable Tuning—with drum	2.60
38A to 38D	500481	Volume Control, 1 Meg. (with switch)	1.20
39A to 39D	500507	Switch, AC—DC & Battery	.90
40	500689	Coil, Oscillator	.55
41	500712	Resistor, 1830 Ohms 5 Watt, Wire Wound	.24
42	500713	Neon Glow Lamp	.75
43A to 43C	500714	Condenser, Electrolytic— A—20 Mfd. 200 Volt; B—20 Mfd. 200 Volt; C—20 Mfd. 150 Volt	1.25
44A to 44C	500715	Resistor, Load— A—1460 Ohms 10 Watt; B— 155 Ohms 1 Watt; C— 310 Ohms 10 Watt	1.00
45	R-500730	Speaker, P.M. Dynamic (5")	4.50
46	500749	Transformer, 2nd I.F.	1.30
47	500759	Transformer, 1st I.F.	1.20
48	500832	Resistor, Carbon—430 Ohms ¼ Watt	.10
49-50	500833	Resistor, Carbon—27 Ohms ¼ Watt	.10
51	500842	Condenser, Trimmer for loop	.20
52	500853	Loop Antenna	1.70
53	R-500731	Cone & Voice Coil for R-500730 Speaker	1.30
54	R-500729	Transformer—Output for R-500730 Speaker	1.30

MISCELLANEOUS PARTS

Part Number	Description	List Price
500740	Cabinet & Back (206-GA)	$7.20
500741	Cabinet & Back (206-GB)	11.60
500746	Cable, Battery	.85
500774	Cable, Extension	.50
114955	Clamp, for Dial Cord	.01
112745	Clip, Coil Mounting	.01
117057	Cord, Drive (Supplied in 3 Ft. Lengths)	.15
500571	Dial Scale	.50
500492	Knob, "AC — DC — Battery"	.06
500494	Knob, "Tune"	.06
500493	Knob, "Volume"	.06
117769	Name Plate (Stewart-Warner)	.07
500748	Plug, 2 prong male for battery cable	.03
116398	Plug, 3 prong male for battery cable	.06
500747	Plug, 4 prong male for battery cable	.05
500527	Pointer	.06
81145	Retaining Ring for Tuning Shaft	Per C .50
500501	Shaft, Tuning	.22
117716	Shield, Tube	.07
160026	Socket, Condenser Mtg.	.04
500681	Socket, 4 prong (special)	.10
116690	Socket, Octal Base	.12
161384	Spring, Dial Cord Tension	.06
111456	Washer, Spring Washer	Per C .50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

INDICATOR LAMP

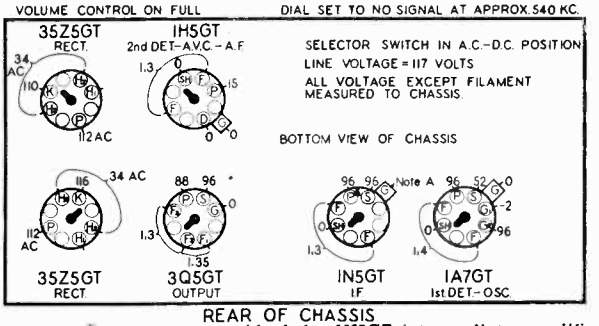
This receiver is equipped with a neon lamp on the dial scale which indicates the condition of the batteries. The neon lamp is included in an oscillating (R-C) circuit which has been designed to oscillate at approximately 3 pulses per second when the batteries are in a fully charged condition. As the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

When the battery voltage is low (approximately 72 volts) the light flickers more slowly (approximately 1 a second). The set should not be operated from battery power after this point is reached. The batteries should be charged for at least twice the time they were used—as soon as possible after they have been run down. (See "Charging Batteries" on other side).

The indicator lamp shows the condition of the batteries only when the Selector Switch is in the "Battery" position, as the voltage is much higher during charging or AC-DC operation.

SOCKET VOLTAGES

VOLUME CONTROL ON FULL — DIAL SET TO NO SIGNAL AT APPROX. 540 KC.



NOTE A: Voltage on the grid of the 1N5GT intermediate amplifier tube cannot be measured with a standard voltmeter because of the high resistance of resistor No. 15.

Use A Voltmeter of 1000 Ohms Per Volt.

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MODELS 206GA to 206GZ
Chassis 206G

STEWART-WARNER CORP.

1. Connect the output meter across the voice coil of the speaker or between the plate of the 3Q5GT output tube and chassis through a .1 mfd. condenser.
2. Connect the ground lead of the signal generator to chassis through a .25 mfd. condenser.
3. Set the volume control in the maximum position and use a weak signal from the generator.
4. Set Selector Switch in AC-DC position.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Condenser	Lug on Rear Section of Gang Condenser	455 KC.	Any Point Where It Does Not Affect Signal	1	2nd I.F.	Adjust the screws on the top of each I.F. can for maximum output. Then repeat adjustment.
				2-3	1st I.F.	
200 MMFD. Condenser	"A" Terminal	1500 KC.	1500 KC	4 (On front section of variable condenser)	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
200 MMFD. Condenser	"A" Terminal	1500 KC.	Tune To 1500 KC Generator Signal	5 (Located on cabinet back)	Broadcast Antenna	Adjust for maximum output.

Now disconnect the output meter and signal generator leads and replace the chassis and batteries in the cabinet being sure to connect the loop. Bring the antenna lead of the signal generator near the loop until the 1500 KC. signal is heard weakly and re-adjust trimmer No. 5 for maximum output by ear.

CHARGING BATTERIES

A separate charging system consisting of a 35Z5GT rectifier and a suitable resistor voltage dividing network and filter is incorporated in this receiver. The circuit is arranged to provide a very light charging current when the receiver is operated from either AC or DC. This is just enough to maintain the batteries but will not charge up used batteries. A separate charging position is provided for rapid recharging of the batteries. The resistance voltage divider is designed to give a charging rate of approximately one third the discharge rate, this having been found to give best results. It is recommended that the batteries be left on charge at least twice the time they were used. As the batteries age it is necessary to charge for a longer period. For longest battery life the batteries should be placed on charge immediately after they have been used. Batteries deteriorate from standing idle so if the set is not used on AC or DC occasionally, the batteries should be charged for a short time every few weeks even though they have not been used. The batteries are automatically maintained if the set is used on house current at regular intervals.

IMPORTANT:

1. **Completely dead batteries cannot be recharged.**
2. **Check polarity by operating set from power line before attempting to charge batteries from D.C.**
3. **The batteries will be discharged if the ON-OFF switch is left on when the power cord is not connected.**

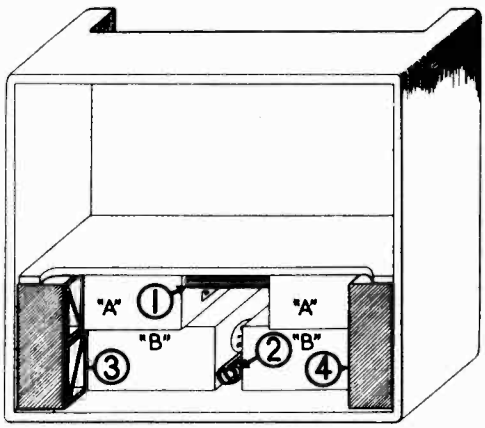

FIG. 1

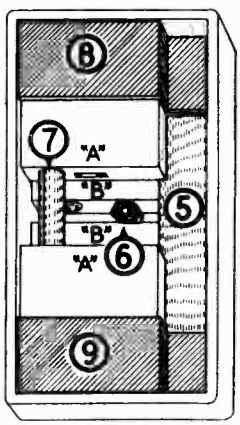

FIG. 2

4½ Volt "A" Battery	45 Volt "B" Battery
Eveready No. 746	Eveready No. 482
Burgess No. G3	Burgess No. M30
Ray-O-Vac No. P83A	Ray-O-Vac No. P7830

REPLACING THE BATTERIES

When the Selector Switch is turned to the Battery position, the flickering red neon light indicates the condition of the batteries. (See section INDICATOR LAMP on front page). As the batteries age the dropping off in voltage after charging becomes more rapid. The batteries should be replaced when the operating period is reduced to two hours, after the batteries have been fully charged. For satisfactory results all the batteries MUST be replaced at one time.

INSTALLING THE BATTERIES

Plug the two prong plugs on the battery cable into the sockets on the tops of the "A" batteries and the three prong plugs into the sockets on the tops of the "B" batteries.

Model 206GA: Place the two "B" batteries on the bottom and the two "A" batteries on the top, in the battery compartment at the bottom of the cabinet with the battery plug sockets facing each other at the center. Insert the long corrugated board piece (1) between the "A" batteries, and the corrugated board roll (2) between the "B" batteries. Insert pieces (3) and (4) at each end as shown in Figure 1. Plug the four prong plug on the battery cable into the socket at the rear of the chassis.

Model 206GB: Place the two "B" batteries in the bottom of the battery compartment. Insert the long rectangular corrugated board piece (5) alongside the batteries and force the small corrugated board roll (6) in between the ends of the "B" batteries. Place the "A" batteries on top of the "B" batteries and force the long roll of corrugated board (7) lengthwise between them. The sockets of both "A" and "B" batteries face each other at the center. The offset pieces (8) and (9) are placed on top of each "A" battery as shown in Figure 2. Plug the four prong plug on the battery cable in the socket on the bottom of the cabinet. The extension from this socket must be plugged into the socket on the rear of the chassis.

CAUTION: DO NOT LEAVE BATTERIES IN CABINET AFTER THEY ARE DISCHARGED AS THEIR SWELLING MAY CAUSE DAMAGE.

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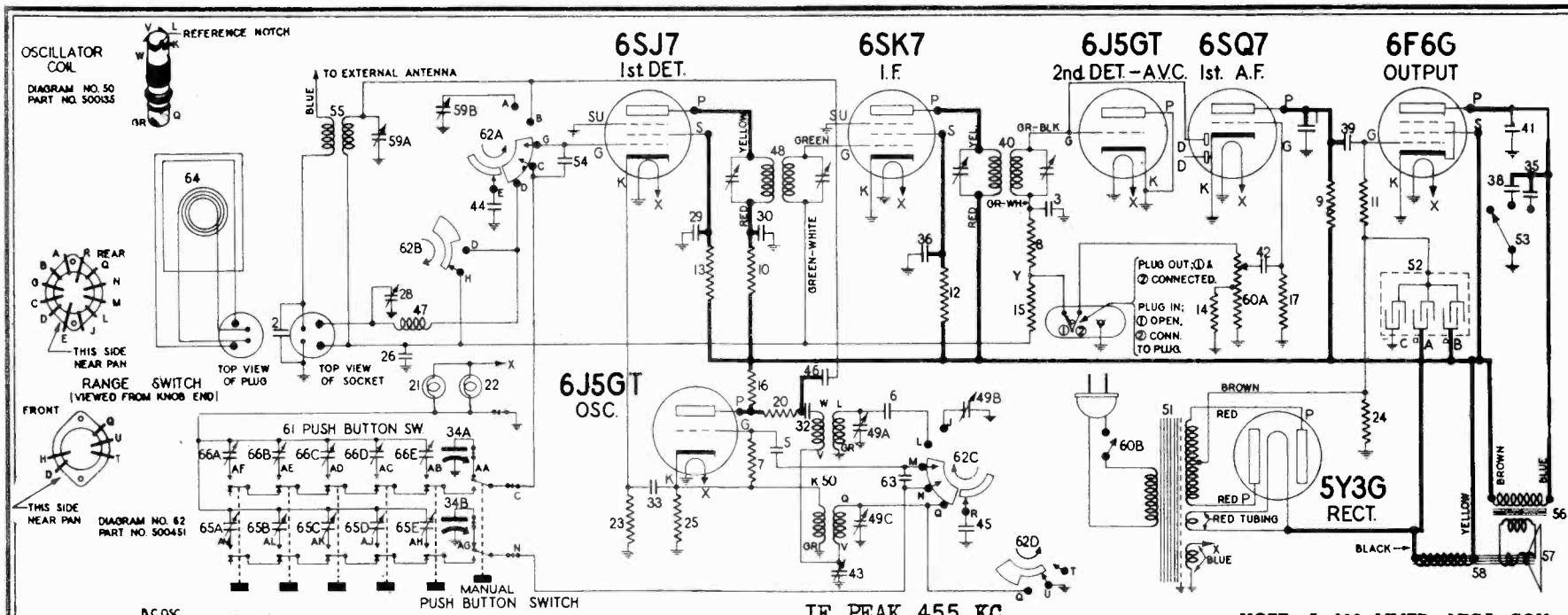


IF PEAK 455 KC

NOTE: RESISTOR No. 7 RETURNS TO CHASSIS INSTEAD OF CATHODE AS SHOWN.

NOTE: A 110 MMFD. MICA CONDENSER IS CONNECTED FROM POINT "Y" TO CHASSIS.

Diagram Number	Part Number	Description	List Price
1	83783	Condenser—mica 110 mmfd.	$0.20
2-3	83539	Condenser—mica 260 mmfd.	.20
5	85061	Condenser—mica 51 mmfd.	.15
6	88587	Condenser—mica .0042 mfd.	.35
7-8	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
9	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
10	110557	Resistor—carbon 4700 ohms ¼ watt	.12
11	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
12-13	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
14	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
15	110570	Resistor—carbon 2.2 Meg. ¼ watt	.15
16	110576	Resistor—carbon 10,000 ohms ½ watt	.12
17	112975	Resistor—carbon 10 Meg. ¼ watt	.12
18-19	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
20	110590	Resistor—carbon 180 ohms ¼ watt	.12
21-22	110629	Dial Light Bulb—6.3 volt (Mazda No. 44)	.15
23	112952	Resistor—carbon 3300 ohms ¼ watt	.10
24	117075	Resistor—300 ohm 1 watt w.w.	.16
25	116078	Resistor—560 ohms ¼ watt	.12
26-27	116819	Condenser—.05 mfd. 600 volt	.20
28	119132	Condenser—trimmer	.20
29 to 33	119193	Condenser—.01 mfd. 600 volt	.15
34A-34B	119291	Condenser—variable tuning	2.75
35	119880	Condenser—.04 mfd. 600 volt	.20
36-37	119414	Condenser—.02 mfd. 600 volt	.15
38	119416	Condenser—.008 mfd. 600 volt	.15
39	116819	Condenser—.05 mfd. 600 volt	.20
40	119024	Transformer—2nd I.F.	1.15
41	119417	Condenser—.008 mfd. 600 volt	.15
42	119875	Condenser—.002 mfd. 600 volt	$0.15
43	119934	Condenser—padder	.36
44-45	160646	Condenser—compensating, 100 mmfd.	.28
46	161315	Condenser—twisted wire—5 mmfd.	.16
47	500108	Coil—compensating	.50
48	500131	Transformer—1st I.F.	1.00
49A-49B-49C	500133	Condenser—three section trimmer	.50
50	500135	Coil—B.C. & S.W. Osc.	.75
51	500137	Transformer—power (60 cycles)	3.50
	500202	Transformer—power (25 cycles)	5.60
52	500201	Condenser—electrolytic A—20 mfd.—350 volt, B—10 mfd.—350 volt, C—20 mfd.—25 volt	1.35
53	500207	Switch—tone	55
54	500212	Condenser—compensating 200 mmfd.	.35
55	500249	Coil—short wave antenna	.50
56	R-500710	Transformer—output for R-500426 Spkr.	1.35
57	R-500711	Cone & Voice Coil for R-500426 Spkr.	1.25
58	R-500426	Speaker, dynamic (6")	4.80
59A-59B	500438	Condenser—trimmer two section	.35
60A-60B	500439	Volume Control—1 Meg. (with switch)	1.40
61	500440	Switch—push button	2.25
62A to 62D	500451	Switch—and	1.51
63	500484	Condenser—compensating, 215 mmfd.	.38
64	500490	Loop antenna & cabinet back	1.90
65A to 65E	500553	Trimmers—push button (top bank)	1.10
66A to 66E	500554	Trimmers—puh button (bottom bank)	1.10

MISCELLANEOUS PARTS LIST ON OTHER SIDE

MODELS 207BA to 207BZ
Chassis 207B

STEWART-WARNER CORP.

ALIGNMENT EQUIPMENT & PROCEDURE

THIS RECEIVER MAY BE ALIGNED IN THE CABINET WITH LOOP CONNECTED

1. Connect the output meter across the voice coil or from the plate of the 6F6G output tube to chassis through a .1 mfd. condenser.
2. Connect the ground lead of the signal generator to the receiver chassis.
3. Make sure that the wires coming from the chassis and push button switch are connected as shown in the figure below.
4. Push in the "manual" button and keep it pushed in. Check the pointer to see that it is correctly set to 540 KC. with gang in full mesh.
5. Turn the volume control to the maximum volume position, and the tone control to the "speech" position.
6. FOLLOW THE ORDER OF ALIGNMENT INDICATED BELOW.

Dummy Ant. In Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD Condenser	Lug on Outer Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
400 OHM Carbon Resistor	Blue Lead from Chassis	16 MC	Foreign	16 MC	5	Foreign 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	Blue Lead from Chassis	16 MC	Foreign	Tune to 16 MC Generator Signal	6	Foreign 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	Blue Lead from Chassis	11.5 MC	Intermediate	11.5 MC	7	Spread Band Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 10.6 MC. If Image does not appear, Realign at 11.5 MC, with Trimmer Screw farther out. Recheck Image.
400 OHM Carbon Resistor	Blue Lead from Chassis	11.5 MC	Intermediate	Tune to 11.5 MC Generator Signal	8	Spread Band Antenna	Adjust for Maximum Output.
No Connection	Place Lead from Signal Gen. Near Loop	1500 KC	Broadcast	1500 KC	9	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.

NOW PLACE THE CABINET BACK AND LOOP ANTENNA INTO POSITION AT THE BACK OF THE CABINET.

No Connection	Place Lead from Signal Gen. Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	10	Broadcast Antenna	Adjust for Maximum Output.
No Connection	Place Lead from Signal Gen. Near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	11	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

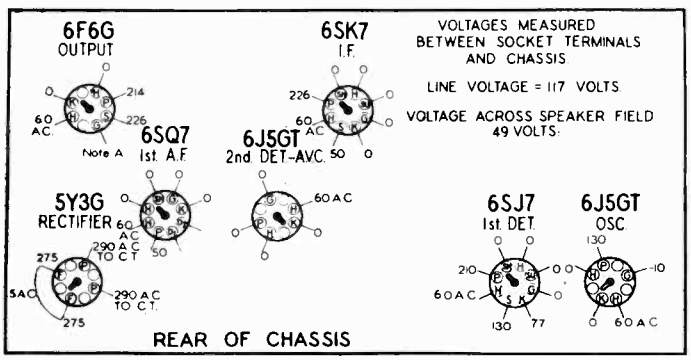
MISCELLANEOUS PARTS

Part Number	Description	List Price
116467	Base for mounting electrolytic condenser	$ .04
83552	Bolt—chassis mounting No. 10—⅞	.03
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—drive—supplied in 3' lengths	.15
500436	Dial background	.14
500401	Dial Scale	3.00
113402	Drum—dial cord drive	.56
500552	Knob	.10
12349	Nut—8-32 for mounting gang	Per C .45
119911	Phono—terminal strip	.16
500445	Pointer	.20
500551	Push Button	.10
81145	Retaining ring for tuning shaft	Per C .50
83624	Screw—self tapping 8 x ¼	.01
85827	Set screw—8-32 square head	.02
500411	Shaft—tuning	.30
111090	Spacer—steel mounting for gang	.02
113177	Spring—dial cord tension	.09
500051	Socket for loop antenna	.15
119791	Socket—octal	.12
114876	Socket—octal (rectifier)	.15
114878	Socket—octal with special ground	.15
117315	Tabs—station call letter	.55
111456	Washer—spring washer for tuning shaft	Per C .50

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

SOCKET VOLTAGES

Volume on Full with no Signal **Dial Tuned to 540 KC.**



NOTE A: Grid voltage on the 6F6G output tube is —17 volts measured across resistor No. 24.

Use a high resistance voltmeter of 1000 ohms per volt.

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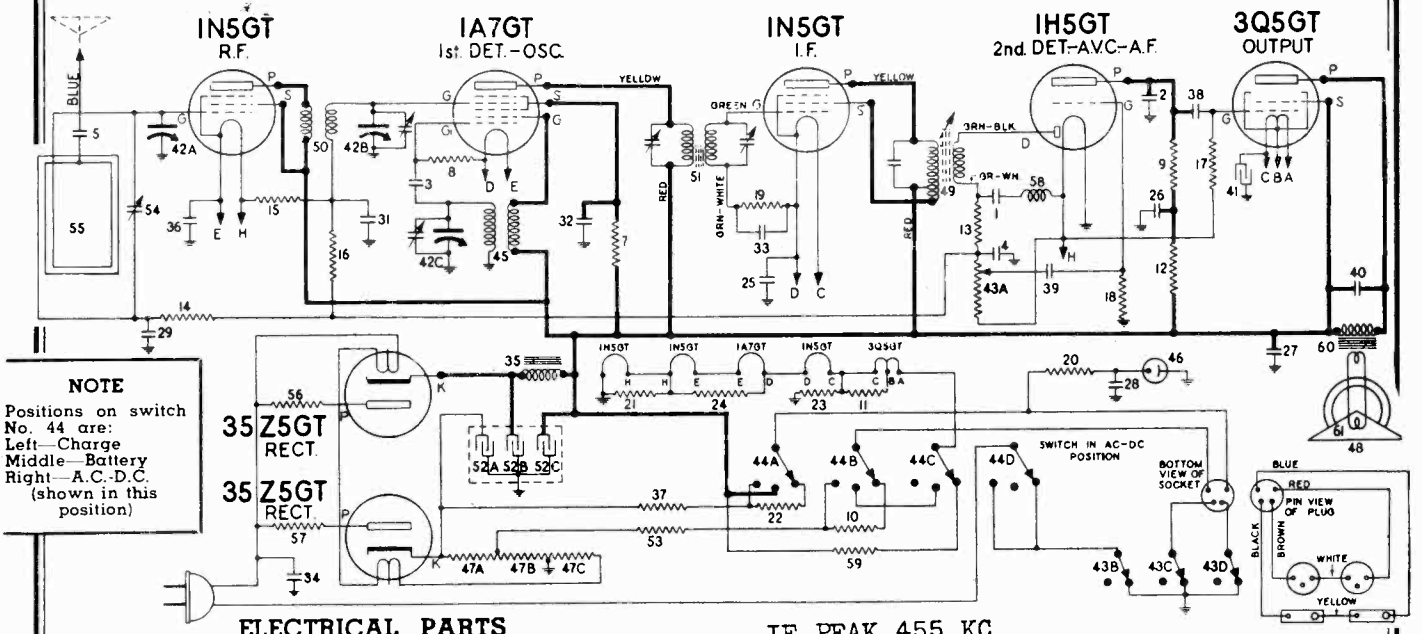
MODELS 207CA to 207CZ
Chassis 207C



NOTE

Positions on switch No. 44 are:
Left—Charge
Middle—Battery
Right—A.C.-D.C.
(shown in this position)

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	83109	Condenser, mica 100 mmfd.	$ .20
2	83783	Condenser, mica 110 mmfd.	.20
3-4	85061	Condenser, mica 51 mmfd.	.15
5-6	85563	Condenser, mica 26 mmfd.	.15
7	110552	Resistor, carbon 47,000 ohms 1/4 Watt	.12
8	110553	Resistor, carbon 220,000 ohms 1/4 Watt	.12
9	110554	Resistor, carbon 1 megohm 1/4 Watt	.12
10-11	110556	Resistor, carbon 330 ohms 1/4 Watt	.12
12	110559	Resistor, carbon 470,000 ohms 1/4 Watt	.12
13	110564	Resistor, carbon 100,000 ohms 1/4 Watt	.12
14 to 17	110570	Resistor, carbon 2.2 meg. 1/4 Watt	.15
18 to 20	110580	Resistor, carbon 3.3 meg. 1/4 Watt	.12
21	112974	Resistor, carbon 220 ohms 1/4 Watt	.15
22	112995	Resistor, carbon 15,000 ohms 1/4 Watt	.12
23-24	116080	Resistor, insulated 680 ohms 1/4 Watt	.15
25 to 28	116625	Condenser, .1 mfd. 600 Volt	.25
29 to 34	116819	Condenser, .05 mfd. 600 Volt	.20
35	117888	Filter choke	.85
36	118231	Condenser, 25 mfd. 150 Volt	.32
37	118816	Resistor, carbon 6800 ohms 1/4 Watt	.12
38	119193	Condenser, .01 mfd. 600 Volt	.15
39	119817	Condenser, .004 mfd. 600 Volt	.15
40	119875	Condenser, .002 mfd. 600 Volt	.15
41	161273	Condenser, electrolytic 50 mfd. 25 Volt	.50
42A to 42C	500441	Condenser, variable tuning with drum	3.75
43A to 43D	500481	Volume control, 1 meg. (with switch)	1.20
44A to 44D	500507	Switch, A.C.-D.C. and Battery	.90
45	500689	Coil, oscillator	.55
46	500713	Neon glow lamp	.75
47A to 47C	500715	Resistor, load— (A—1460 Ohms 10 Watt / B—155 Ohms 1 Watt / C—310 Ohms 10 Watt)	1.00
48	R-500730	Speaker, P.M. dynamic (5")	4.50
49	500749	Transformer, 2nd I.F.	1.30
50	500750	Coil R.F.—Complete with shield can	1.40
51	500759	Transformer, 1st I.F.	1.20

IF PEAK 455 KC

52A to 52C	500766	Condenser, Electrolytic— (A—20 Mfd. 150 Volt / B—20 Mfd. 200 Volt / C—20 Mfd. 200 Volt)	$1.25
53	500833	Resistor, carbon 27 ohms 1/4 Watt	.10
54	500842	Condenser, trimmer	.20
55	500854	Loop antenna	1.80
56-57	116013	Resistor, 50 ohms 1 Watt	.18
58	500888	Choke coil assembly	.40
59	500712	Resistor, carbon 1830 ohms 5 Watt	.24
60	R-500729	Transformer, output for R-500730 speaker	1.30
61	R-500731	Cone & Voice Coil for R-500730 speaker	1.30

MISCELLANEOUS PARTS

Part Number	Description	List Price
500742	Cabinet and Back (207CA)	$8.20
500746	Cable, Battery	.85
114955	Clamp, for dial cord	.01
112745	Clip, coil mounting	.01
117057	Cord, drive (supplied in 3 ft. lengths)	.15
500571	Dial scale (glass)	.50
500492	Knob, "A.C.-D.C. Battery"	.06
500494	Knob, "Tune"	.06
500493	Knob, "Volume"	.06
117769	Name Plate (Stewart-Warner)	.07
500748	Plug, 2 prong male for battery cable	.03
116398	Plug, 3 prong male for battery cable	.06
500747	Plug, 4 prong male for battery cable	.05
500527	Pointer	.06
81145	Retaining ring for tuning shaft	Per C .50
113672	Rubber grommet (on tuning shaft)	.02
500501	Shaft, tuning	.22
117716	Shield, tube	.07
500681	Socket, 4 prong	.10
116690	Socket, octal base	.12
161384	Spring, dial cord tension	.06
111456	Washer, spring washer	Per C .50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

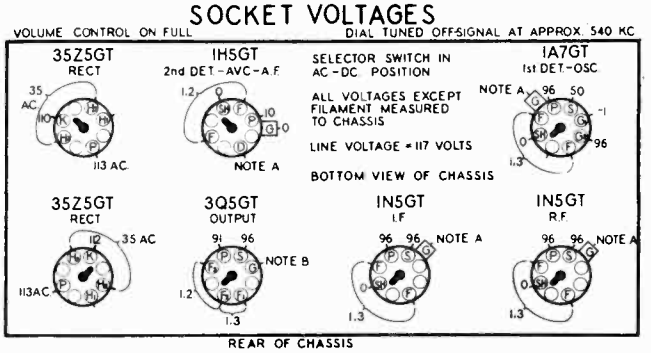
INDICATOR LAMP

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

When the battery voltage is low (approximately 72 volts) the light flickers more slowly (approximately 1 a second). The set should not be operated from battery power after this point is reached. The batteries should be charged for at least twice the time they were used—as soon as possible after they have been run down. (See "Charging Batteries" on other side).

The indicator lamp shows the condition of the batteries only when the Selector Switch is in the "Battery" position, as the voltage is much higher during charging or AC-DC operation.

SOCKET VOLTAGES



NOTE A: Voltages on these elements cannot be measured with a standard voltmeter because of high series resistance.

NOTE B: Bias on the grid of the 3Q5GT output tube is obtained across the filaments of the 1N5GT R.F., 1A7GT 1st Det.—Osc., and the 1N5GT I.F. in series.

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MODELS 207CA to 207CZ
Chassis 207C

STEWART-WARNER CORP.

1. Connect the output meter across the voice coil of the speaker or between the plate of the 3Q5GT output tube and chassis through a .1 mfd. condenser.
2. Connect the ground lead of the signal generator to chassis through a .25 mfd. condenser.
3. Set the volume control in the maximum position and use a weak signal from the generator.
4. Set Selector Switch in AC-DC position.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Condenser	Lug on Middle Section of Gang Condenser	455 KC.	Any Point Where It Does Not Affect Signal	1	2nd I.F.	Adjust the screws on the top of each I.F. can for maximum output. Then repeat adjustment.
				2-3	1st I.F.	
200 MMFD. Condenser	Blue Wire on Cabinet Back	1500 KC.	1500 KC	4 (On front section of gang)	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
200 MMFD. Condenser	Blue Wire on Cabinet Back	1500 KC.	Tune To 1500 KC Generator Signal	5 (Middle section of gang)	Broadcast Det.	Adjust for maximum output. Repeat adjustment.
				6 (On cabinet back)	Broadcast Ant.	

Now disconnect the output meter and signal generator leads and replace the chassis and batteries in the cabinet being sure the loop is connected. Bring the antenna lead of the signal generator near the loop until the 1500 KC. signal is heard weakly and re-adjust trimmer No. 6 for maximum output by ear.

CHARGING BATTERIES

A separate charging system consisting of a 35Z5GT rectifier and a suitable resistor voltage dividing network and filter is incorporated in this receiver. The circuit is arranged to provide a very light charging current when the receiver is operated from either AC or DC. This is just enough to maintain the batteries but will not charge up used batteries. A separate charging position is provided for rapid recharging of the batteries. The resistance voltage divider is designed to give a charging rate of approximately one third the discharge rate, this having been found to give best results. It is recommended that the batteries be left on charge at least twice the time they were used. As the batteries age it is necessary to charge for a longer period. For longest battery life the batteries should be placed on charge immediately after they have been used. Batteries deteriorate from standing idle so if the set is not used on AC or DC occasionally, the batteries should be charged for a short time every few weeks even though they have not been used. The batteries are automatically maintained if the set is used on house current at regular intervals.

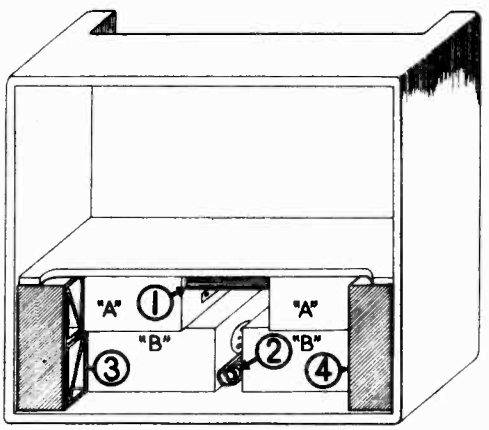

FIG. 1

4½ Volt "A" Battery	45 Volt "B" Battery
Eveready No. 746	Eveready No. 482
Burgess No. G3	Burgess No. M30
Ray-O-Vac No. P83A	Ray-O-Vac No. P7830

REPLACING THE BATTERIES

When the Selector Switch is turned to the Battery position, the flickering red neon light indicates the condition of the batteries. (See section INDICATOR LAMP on front page). As the batteries age the dropping off in voltage after charging becomes more rapid. The batteries should be replaced when the operating period is reduced to two hours, after the batteries have been fully charged. For satisfactory results all the batteries MUST be replaced at one time.

INSTALLING THE BATTERIES

Plug the two prong plugs on the battery cable into the sockets on the tops of the "A" batteries and the three prong plugs into the sockets on the tops of the "B" batteries.

Model 207CA. Place the two "B" batteries on the bottom and the two "A" batteries on the top, in the battery compartment at the bottom of the cabinet with the battery plug sockets facing each other at the center. Insert the long corrugated board piece (1) between the "A" batteries, and the corrugated board roll (2) between the "B" batteries. Insert pieces (3) and (4) at each end as shown in Figure 1. Plug the four prong plug on the battery cable into the socket at the rear of the chassis.

CAUTION: DO NOT LEAVE BATTERIES IN CABINET AFTER THEY ARE DISCHARGED AS THEIR SWELLING MAY CAUSE DAMAGE.

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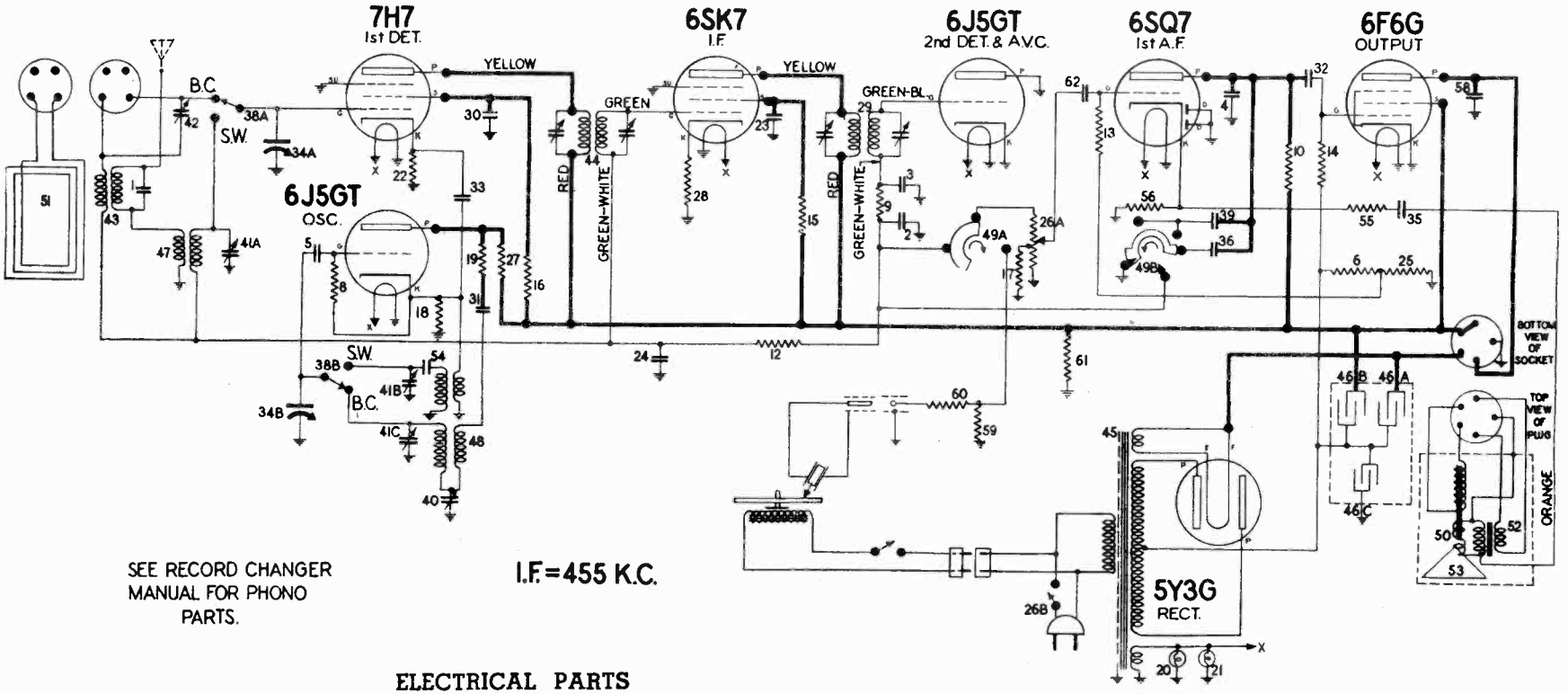


ELECTRICAL PARTS

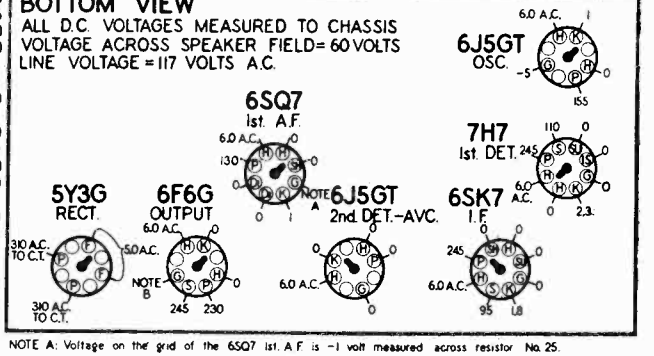
Diagram Number	Part Number	Description	List Price
1 to 3	83783	Condenser—mica 110 mmfd	$0.20
4	83539	Condenser—mica 260 mmfd.	.20
5	85061	Condenser—mica 51 mmfd.	.15
6	88762	Resistor—220 ohms, wire wound, 1 watt	.16
8-9	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
10-11	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
12-13	110554	Resistor—carbon 1 megohm ¼ watt	.12
14	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
15-16	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
17	110569	Resistor—carbon 10,000 ohms ¼ watt	.12
18-19	110590	Resistor—carbon 180 ohms ¼ watt	.12
20-21	110629	Dial Light Bulb—6.3 volt (Mazda No. 44)	.15
22	116078	Resistor—560 ohms ¼ watt	.12
23-24	116819	Condenser—.05 mfd. 600 volt	.20
25	117395	Resistor—20 ohm 1 watt	.16
26A-26B	118669	Volume Control—1 meg. (with switch)	1.40
27	118805	Resistor—carbon 10,000 ohm 1 watt	.12
28	118827	Resistor—carbon 270 ohm ¼ watt	.10
29	119024	Transformer, 2nd I.F.	1.15
30 to 33	119193	Condenser—.01 mfd. 600 volt	.15
34A-34B	119291	Condenser—variable tuning	2.75
35	116625	Condenser—.1 mfd. 600 volt	.25
36	119416	Condenser—.008 mfd. 600 volt	.15
37	160430	Condenser—.001 mfd. 600 volt	.15
38A-38B	119859	Switch—band	.65
39	119875	Condenser—.002 mfd. 600 volt	.15
40	119934	Condenser—padder	$0.36
41A to 41C	160415	Condenser—trimmer, 3 section	.48
42	160449	Condenser—trimmer (Loop)	.18
43	500255	Coil—B.C. antenna loading	1.05
44	500801	Transformer—1st I.F.	1.20
45	501044	Transformer—power, 60 cycle	6.50
46A to 46C	501060	Condenser—Electrolytic— A—20 Mfd. 400 V. B—15 Mfd. 400 V. C—20 Mfd. 25 V.	1.70
47	501159	Coil—short wave antenna	.40
48	501160	Coil—oscillator (B.C. & S.W.)	1.00
49A-49B	501180	Switch—tone	1.20
50	M-501225	Speaker—Dynamic (12")	9.50
51	501226	Loop Antenna Complete	1.50
52	M-501280	Transformer—output for M-501225 Spkr.	2.00
53	M-501281	Cone & Voice Coil for M-501225 Spkr.	2.00
54	88587	Condenser—mica .0042 mfd.	.35
55	118816	Resistor—6800 ohms ¼ watt	.12
56	116078	Resistor—560 ohms ¼ watt	.12
58	119875	Condenser—.002 mfd. 600 volt	.15
59	110584	Resistor—330,000 ohms ¼ watt	.12
60	112962	Resistor—150,000 ohms—¼ watt	.12
61	116076	Resistor—33,000 ohms 2 watt	.30
62	119193	Condenser—.01 mfd. 600 volt	.15
	501366	Crystal Cartridge	4.80

SOCKET VOLTAGES

NO SIGNAL INPUT—VOLUME CONTROL ON FULL — DIAL SET TO APPROXIMATELY 540 KC.

BOTTOM VIEW

ALL D.C. VOLTAGES MEASURED TO CHASSIS
VOLTAGE ACROSS SPEAKER FIELD=60 VOLTS
LINE VOLTAGE=117 VOLTS A.C.



NOTE A: Voltage on the grid of the 6SQ7 1st. A.F. is −1 volt measured across resistor No. 25.

NOTE B: Voltage on the grid of the 6F6G Output Tube is −16 volts measured across Resistors No. 25 and 6.

USE A VOLTMETER OF 1000 OHMS PER VOLT.

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MODEL 207DK,
Chassis 207D

STEWART-WARNER CORP.

ALIGNMENT EQUIPMENT & PROCEDURE

1. Connect the output meter across the voice coil or from plate of the 6F6G output tube to chassis through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis.
3. Turn the RADIO-PHONO TONE SWITCH to the "Radio-Speech" position.
4. Turn the volume control to the maximum position and keep it in this position throughout the alignment procedure.
5. Check the pointer to see that it is correctly set to low freq. end of dial scale with gang in full mesh.
6. The loop must be connected as indicated in circuit diagram at all times.

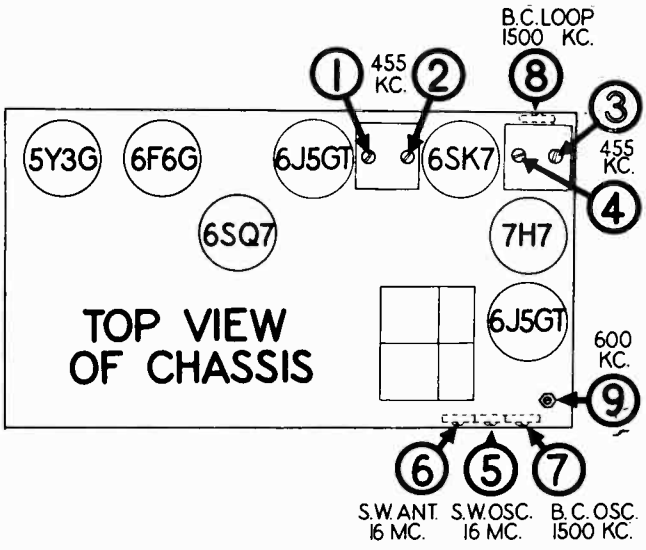
Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Lug on front Section of Gang Cond.	455 KC	American	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
400 OHM Carbon Resistor	Antenna Terminal (Blue Wire)	16 MC	Foreign	16 MC	5	Foreign 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	Antenna Terminal (Blue Wire)	16 MC	Foreign	Tune to 16 MC Generator Signal	6	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
200 MMFD. Mica Condenser	Antenna Terminal (Blue Wire)	1500 KC	American	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.

Now replace the chassis and loop antenna in the cabinet before proceeding further.

200 MMFD. Mica Condenser	Antenna Terminal (Blue Wire)	1500 KC	American	Tune to 1500 KC Generator Signal	8	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Antenna Terminal (Blue Wire)	600 KC	American	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

MISCELLANEOUS PARTS

Part Number	Description	List Price
160395	Cable—motor	$0.48
117493	Cable—pickup	.40
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—drive (order in 6 foot lengths)	.30
501366	Crystal Cartridge	4.80
501200	Dial scale	.50
113402	Drum—dial cord drive	.56
160182	Escutcheon—dial with glass	2.10
88348	Eyelet—for pointer cord Per Dz.	.05
160219	Knob	.06
12349	Nut—8-32 for mounting Per C	.45
119451	Pointer	.06
81145	Retaining ring for tuning shaft Per C	.50
113463	Rubber Bushing—chassis mounting	.03
85040	Screw—No. 6 Hex. Hd. Per C	.35
112874	Screw—No. 10 x 1⅛ chassis mounting	.01
114914	Screw—special head for mtg. escutcheon Per Dz.	.15
118606	Shaft—tuning	.18
117704	Socket—5 prong (for Spkr.)	.13
160294	Socket for 7H7, 8 prong	.12
119791	Socket—octal	.12
114878	Socket—octal with special ground	.15
114876	Socket—octal (rectifier)	.15
500051	Socket—for loop antenna	.15
160039	Socket—phono	.08
111090	Spacer—steel, mtg. for gang	.02
113177	Spring—dial cord tension	.09
110829	Washer—flat steel, for mtg. chassis	.01
111456	Washer—spring washer for tuning shaft Per C	.50



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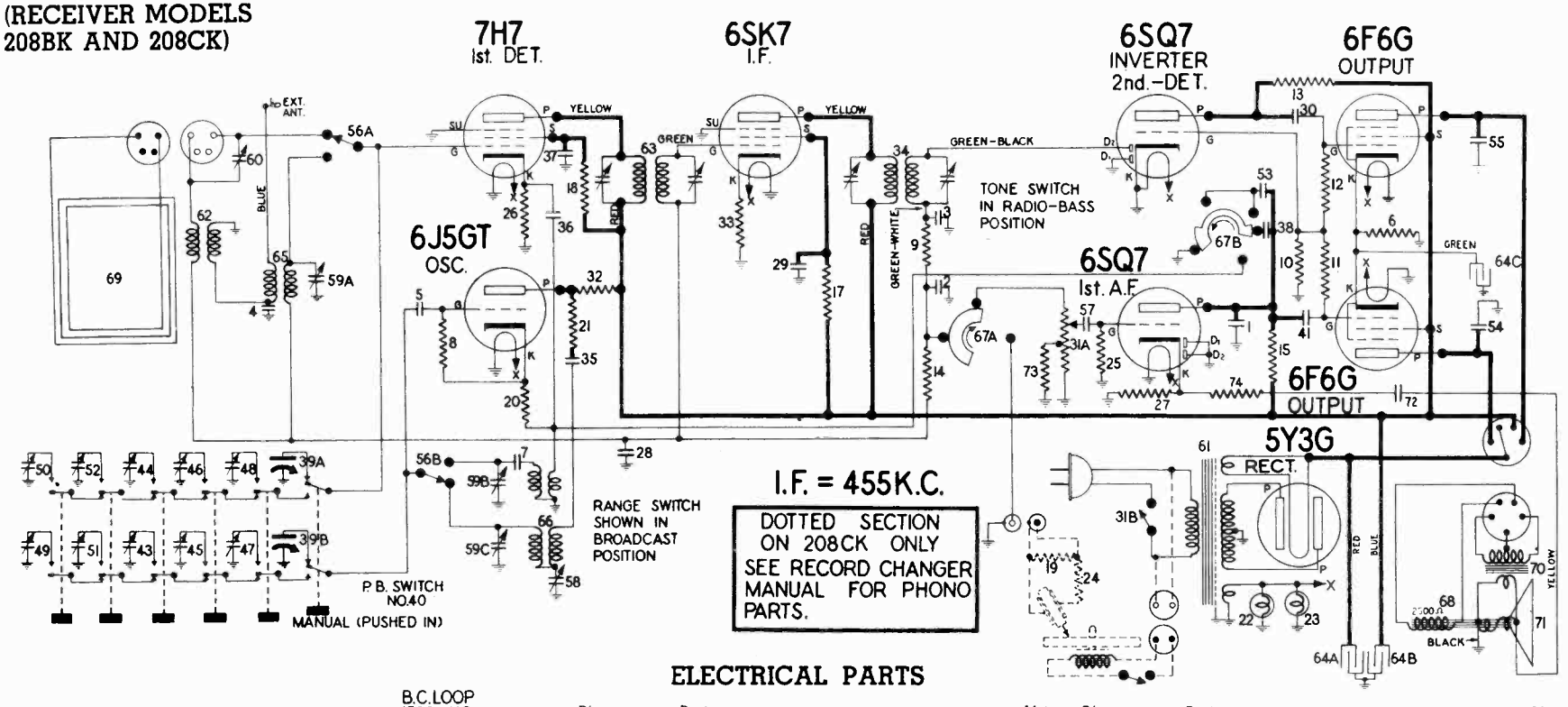
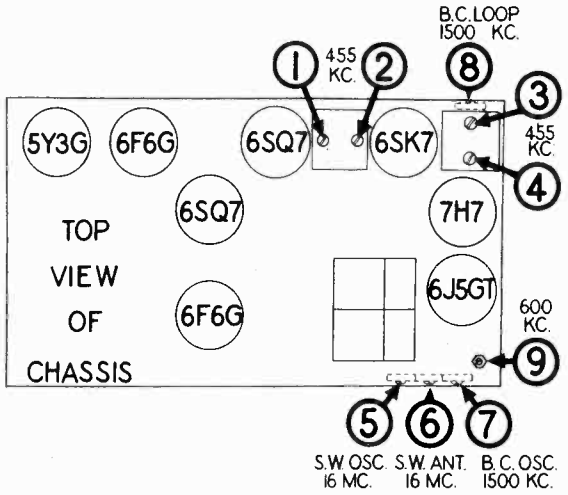
STEWART-WARNER CORP.

MODELS 208BK, Chas. 208B; 208CK, Chassis 208C

(RECEIVER MODELS 208BK AND 208CK)





ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1 to 4	83783	Condenser—mica 110 mmfd.	$0.20
5	85061	Condenser—mica 51 mmfd.	.15
6	88462	Resistor—wire wound 270 ohms 1 watt	.15
7	88587	Condenser—mica .0042 mfd.	.35
8-9	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
10 to 13	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
14	110554	Resistor—carbon 1 meg. ¼ watt	.12
15	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
17-18	110564	Resistor—carbon 100,000 Ohms ¼ watt	.12
	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
19	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
20-21	110590	Resistor—carbon 180 ohms ¼ watt	.12
22-23	110629	Dial Light Bulb—6.3 volt (Mazda No. 44)	.15
24	112962	Resistor—carbon 150,000 ohms ¼ watt	.12
25	112975	Resistor—carbon 10 meg. ¼ watt	.12
26-27	116078	Resistor—560 ohms ¼ watt	.12
	116625	Condenser—.1 mfd. 600 volt	.25
28 to 30	116819	Condenser—.05 mfd. 600 volt	.20
31A-31B	118669	Volume Control—1 meg. (with switch)	1.40
32	118805	Resistor—carbon 10,000 ohm 1 watt	.12
33	118827	Resistor—carbon 270 ohms ¼ watt	.10
34	119024	Transformer—2nd I.F.	1.15
35 to 38	119193	Condenser—.01 mfd. 600 volt	.15
39A-39B	119291	Condenser—variable tuning	2.75
40	119346	Switch—push button	2.25
41	119414	Condenser—.02 mfd. 600 volt	.15
43 to 46	119663	Condenser—push button trimmer (Med. Freq.)	.24
47-48	119664	Condenser—push button trimmer (High Freq.)	$0.24
49 to 52	119753	Condenser—push button trimmer (Low Freq.)	.24
53 to 55	119817	Condenser—.004 mfd. 600 volt	.15
56A-56B	119859	Switch—band	.65
57	119875	Condenser—.002 mfd. 600 volt	.15
58	119934	Condenser—padder	.36
59A to 59C	160415	Condenser—trimmer—3 section	.48
60	160449	Condenser—trimmer for loop	.18
61	500116	Transformer—power (60 cycles)	6.50
62	500255	Coil—B. C. antenna loading	1.05
63	500801	Transformer—1st I.F.	1.20
64A to 64C	501060	Condenser—electrolytic A—20 mfd. 400 volt, B—15 mfd. 400 volt, C—20 mfd. 25 volt	1.70
65	501159	Coil—short wave antenna	.40
66	501160	Coil—oscillator (B.C. & S.W.)	1.00
67A-67B	501180	Switch—tone	1.20
68	M-501245	Speaker—dynamic 12"	12.50
69	501293	Loop Antenna	1.85
70	M-501304	Transformer—output for M-501245 Spkr.	1.95
71	M-501305	Cone & Voice Coil for M-501245 Spkr.	1.95
72	116625	Condenser—.1 mfd.	.25
73	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
74	110569	Resistor—carbon 10,000 ohms ¼ watt	.12

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MODELS 208BK, Chas. 208B;
208CK, Chassis 208C

STEWART-WARNER CORP.

ALIGNMENT EQUIPMENT & PROCEDURE

1. Connect the output meter across the voice coil or from the plate of one 6F6G output tube to chassis through a .1 mfd. condenser.

2. Connect the ground lead of the signal generator to the receiver chassis.

3. Check the pointer to see that it is correctly set to the low freq. end of the dial scale with gang in full mesh.

4. Push in the "manual" button and keep it pushed in.

5. Turn the volume control to the maximum volume position, and the tone control to the "Radio-Speech" position.

6. FOLLOW THE ORDER OF ALIGNMENT INDICATED BELOW.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD Condenser	Lug on Rear Section of Gang Cond.	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat Adjustment.
					3-4	1st I.F.	
400 OHM Carbon Resistor	Blue Lead from Chassis	16 MC	Foreign	16 MC	5	Foreign Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obained 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	Blue Lead from Chassis	16 MC	Foreign	Tune to 16 MC Generator Signal	6	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
No Connection	Place Lead from Signal Gen. Near Loop	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.

NOW PLACE THE CHASSIS AND LOOP ANTENNA INTO POSITION IN THE CABINET.

No Connection	Place Lead from Signal Gen. Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8	Broadcast Antenna	Adjust for Maximum Output.
No Connection	Place Lead from Signal Gen. Near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

MISCELLANEOUS PARTS

Part Number	Description	List Price
501182	Cable—motor (with receptacle)	$0.45
117493	Cable—pickup	.40
114355	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
117057	Cord—drive (specify 6 ft. lengths)	.30
501199	Dial Scale	.40
113402	Drum—dial cord drive	.56
160182	Escutcheon—dial with glass	2.10
160634	Escutcheon—push button (complete)	1.20
88348	Eyelet—for pointer cord	Per Dz. .05
160219	Knob	.06
12349	Nut—8-32 for mounting	Per C .45
116952	Pin for push buttons	.02
119451	Pointer	.06
160185	Push button	.06
81145	Retaining ring for tuning shaft	Per C .50
113463	Rubber Bushing—chassis mounting	.03
118606	Shaft—tuning	.18
112874	Screw—No. 10 x 1⅛ chassis mounting	.01
114314	Screw—special head for mounting escutcheon	Per Dz. .15
85827	Set Screw—8-32 Sq. Hd. for drive drum	.02
119791	Socket—octal	.12
114378	Socket—octal, with special ground	.15
114876	Socket—octal (rectifier)	.15
160294	Socket for 7H7 8 prong	.12
500051	Socket for loop antenna	.15
160039	Socket—phono	.08
117704	Socket—for speaker 5 prong	.13
111030	Spacer—steel mounting for gang	.02
113177	Spring—dial cord tension	.09
117458	Spring—for push button	.05
110829	Washer—flat steel for mounting chassis	.01
111456	Washer—spring washer for tuning shaft	Per C .50

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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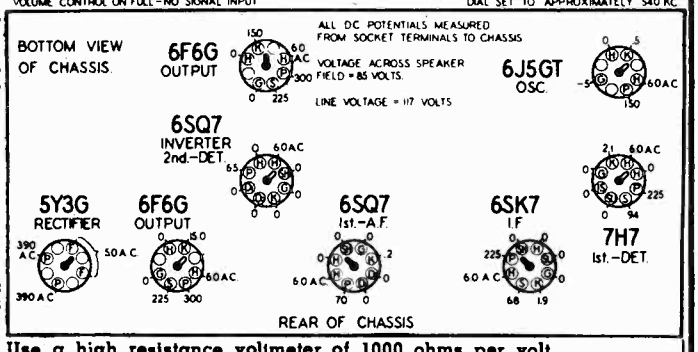
SOCKET VOLTAGES

RADIO-PHONO SWITCH IN RADIO POSITION
VOLUME CONTROL ON FULL—NO SIGNAL INPUT
DIAL SET TO APPROXIMATELY 540 KC



Use a high resistance voltmeter of 1000 ohms per volt.

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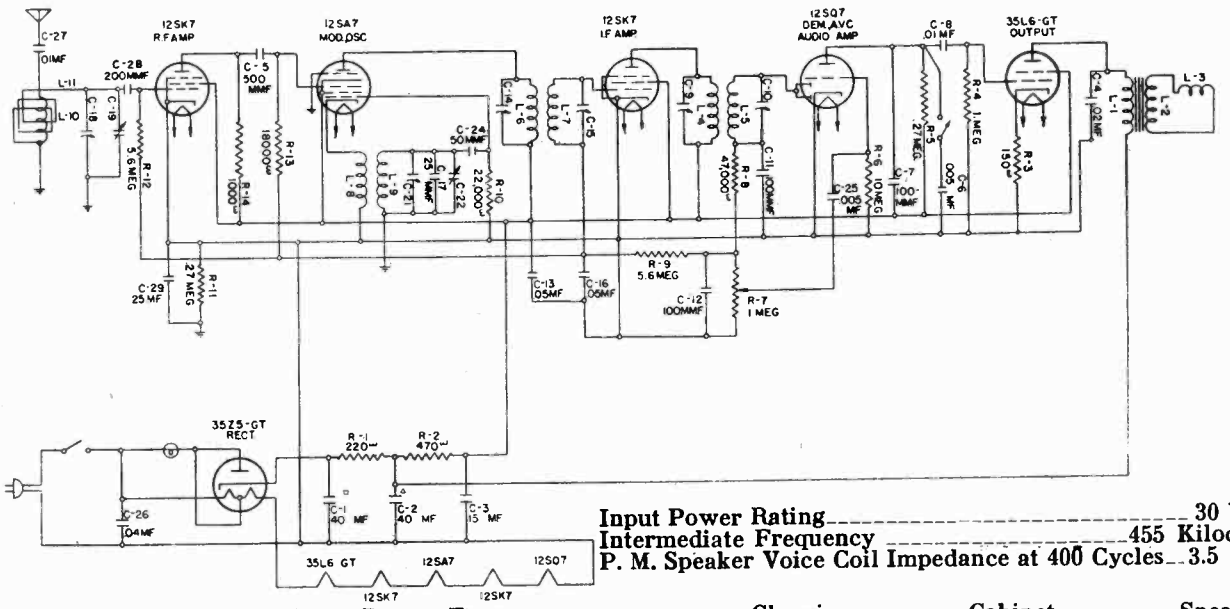
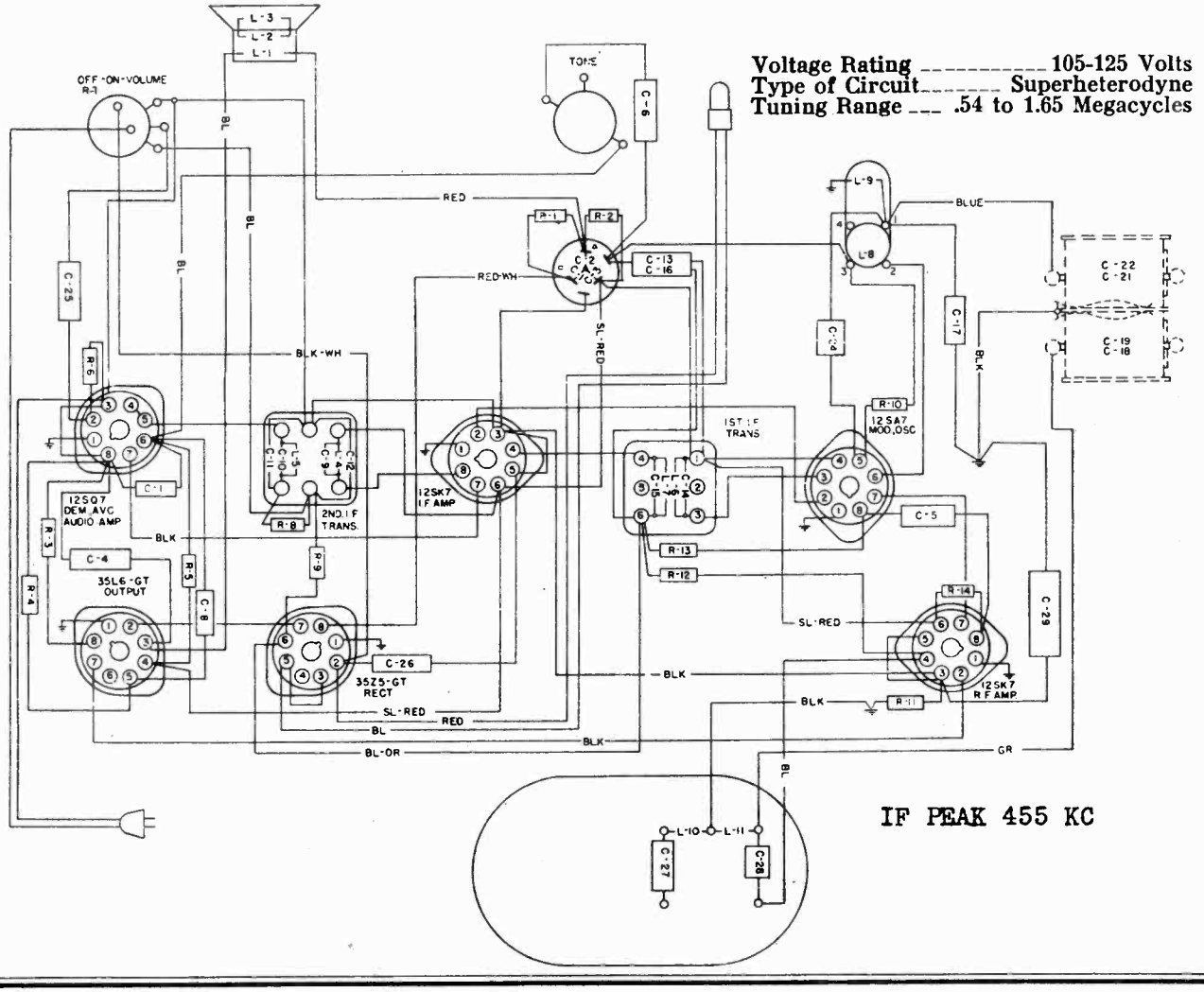
MODEL 500

STROMBERG-CARLSON TEL. MFG. CO.



Input Power Rating	30 Watts
Intermediate Frequency	455 Kilocycles
P. M. Speaker Voice Coil Impedance at 400 Cycles	3.5 Ohms

Model		Input Power Frequency	Chassis	Cabinet	Speaker
500-H	Blue	25-60 Cycles AC (or DC)	31674	31806	31696
500-H	Brown	25-60 Cycles AC (or DC)	31985	32812	31976
500-H	Silver	25-60 Cycles AC (or DC)	31674	32813	31976
500-H	Ivory	25-60 Cycles AC (or DC)	31985	32814	31976
500-J		25-60 Cycles AC (or DC)	31985	31981	31696
500-S		25-60 Cycles AC (or DC)	31985	32026	31696



Voltage Rating	105-125 Volts
Type of Circuit	Superheterodyne
Tuning Range	.54 to 1.65 Megacycles

IF PEAK 455 KC

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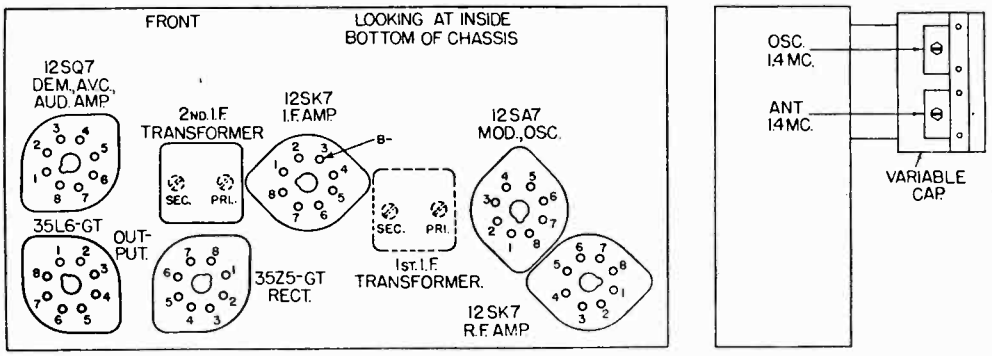
MODEL 500

STROMBERG-CARLSON TEL. MFG. CO.

ADJUSTING DIAL LAMP

To adjust the dial lamp simply push the pilot lamp and socket forward until maximum illumination of the dial is obtained.



Location Chart

ALIGNING INFORMATION

Never realign unless absolutely necessary.

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

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

Always have the volue control "full on".

Important: Be sure the metal plate is fastened in place on the bottom of the chassis before alignment is attempted.

ALIGNING PROCEDURE (follow this order exactly).

I. Dial Pointer Adjustment.

With the plates of the gang tuning capacitor fully engaged set the dial pointer in a vertical position directly on the calibration marks located at the top and bottom of the dial scale.

II. **Intermediate Frequency Adjustments.**

1. Tune the set to the extreme low frequency position. (Variable capacitor plates all the way in).
2. Connect the ground terminal of the signal generator to the chassis base.
3. Introduce a modulated signal of 455 kilocycles using a .01 M. F. capacitor in series with the lead from the signal generator to the oscillator aligning capacitor located on the front section of the variable capacitor.
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.

III. **Radio Frequency Adjustments.**

1. Replace the .01 M. F. capacitor in series with the output lead of the signal generator with a 200 mmf. capacitor and connect them to the antenna terminal located on the back of the loop assembly.
2. Set the signal generator's frequency and the receiver's tuning dial to 1.4 megacycles.
3. Adjust the oscillator and antenna aligning capacitors for maximum signal.
4. Set both the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles and check calibration.

   NOTE: If the calibration is too far off at 0.6 megacycles, operations 2 and 3 may be repeated until the best results are obtained.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
12SK7	R. F. Amp.	—	*52*	0	0	0	+91	*37*	+86
12SA7	Mod. and Osc.	—	*37*	+86	+91	+7.5*	0	*24.8*	0
12SK7	I. F. Amp.	0	*24.8*	0	0	0	+91	*12.5*	+86
12SQ7	Demod., AVC and Audio Amp.	0	0	0	0	0	+23	*12.5*	0
35L6GT	Output	0	*86*	+98	+91	0	—	*52*	+4.8
35Z5GT	Rectifier	—	*120*	*114*	—	*114*	—	*86*	+115

***Read on 100 V. scale of meter having a resistance of 1000 ohms per volt.**

Take all D. C. voltage readings on the 500 volt scale except where an asterisk appears.

Take all readings with chassis operating and tuned to 1000 Kc.—no signal.

Use a line voltage of 120 volts or make allowance for the variation.

Read from indicated socket terminals to terminal No. 3 of the 12SK7 I. F. Amp. Socket (B—).

A. C. Voltages are indicated by italics; when the receiver is operated from a D. C. power supply, D. C. voltages will be obtained in place of A. C. voltages shown.

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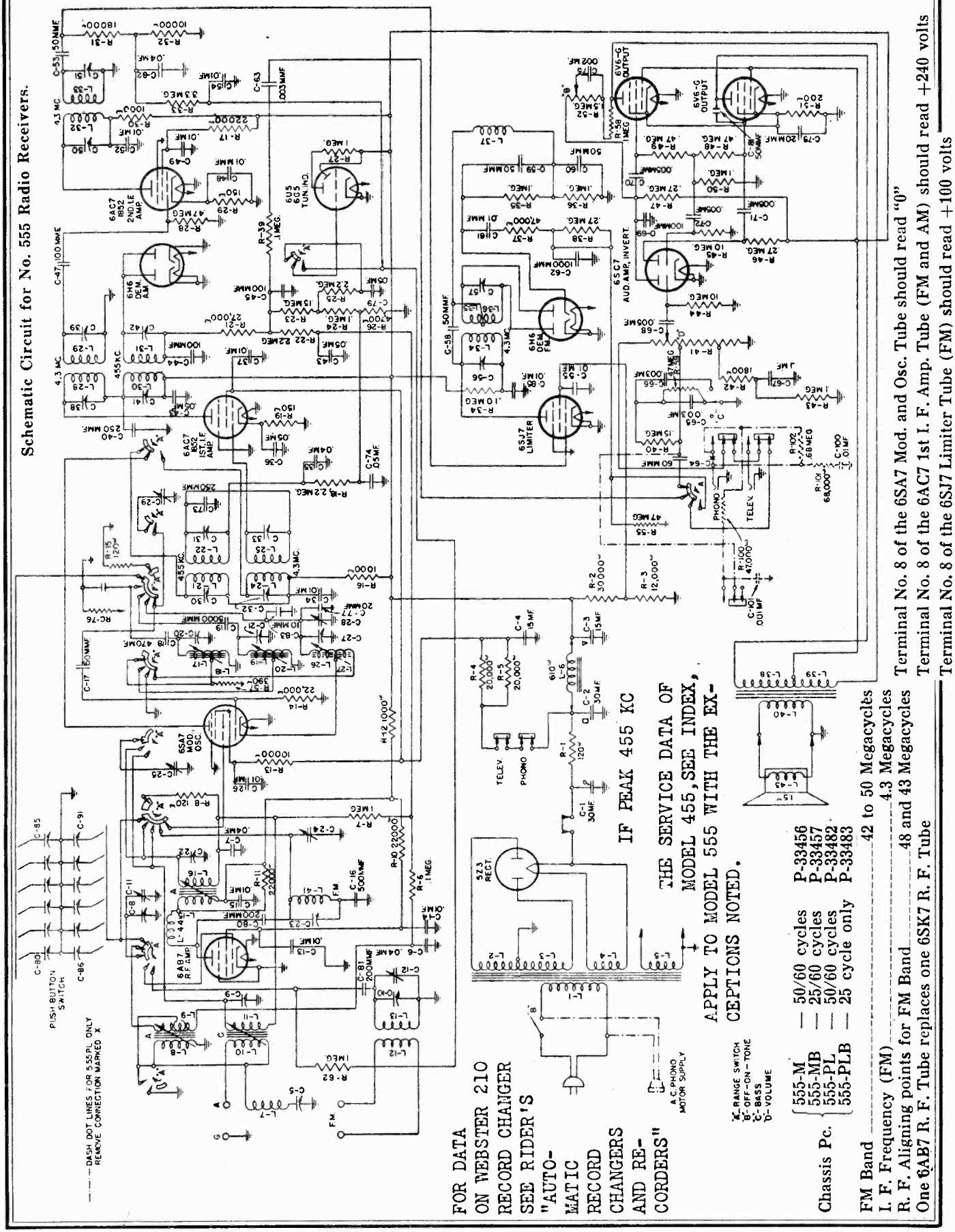
STROMBERG-CARLSON TEL. MFG. CO.

MODEL 555

Schematic Circuit for No. 555 Radio Receivers.



FOR DATA ON WEBSTER 210 RECORD CHANGER SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS"

IF PEAK 455 KC THE SERVICE DATA OF MODEL 455, SEE INDEX, APPLY TO MODEL 555 WITH THE EXCEPTIONS NOTED.

Chassis Pc.		
555-M	— 50/60 cycles	P-33456
555-MB	— 25/60 cycles	P-33457
555-PL	— 50/60 cycles	P-33482
555-PLB	— 25 cycle only	P-33483

FM Band ..... 42 to 50 Megacycles
I. F. Frequency (FM) ..... 4.3 Megacycles
R. F. Aligning points for FM Band ..... 48 and 43 Megacycles
One 6AB7 R. F. Tube replaces one 6SK7 R. F. Tube

Terminal No. 8 of the 6SA7 Mod. and Osc. Tube should read "0"
Terminal No. 8 of the 6AC7 1st I. F. Amp. Tube (FM and AM) should read +240 volts
Terminal No. 8 of the 6SJ7 Limiter Tube (FM) should read +100 volts

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MODEL 600H

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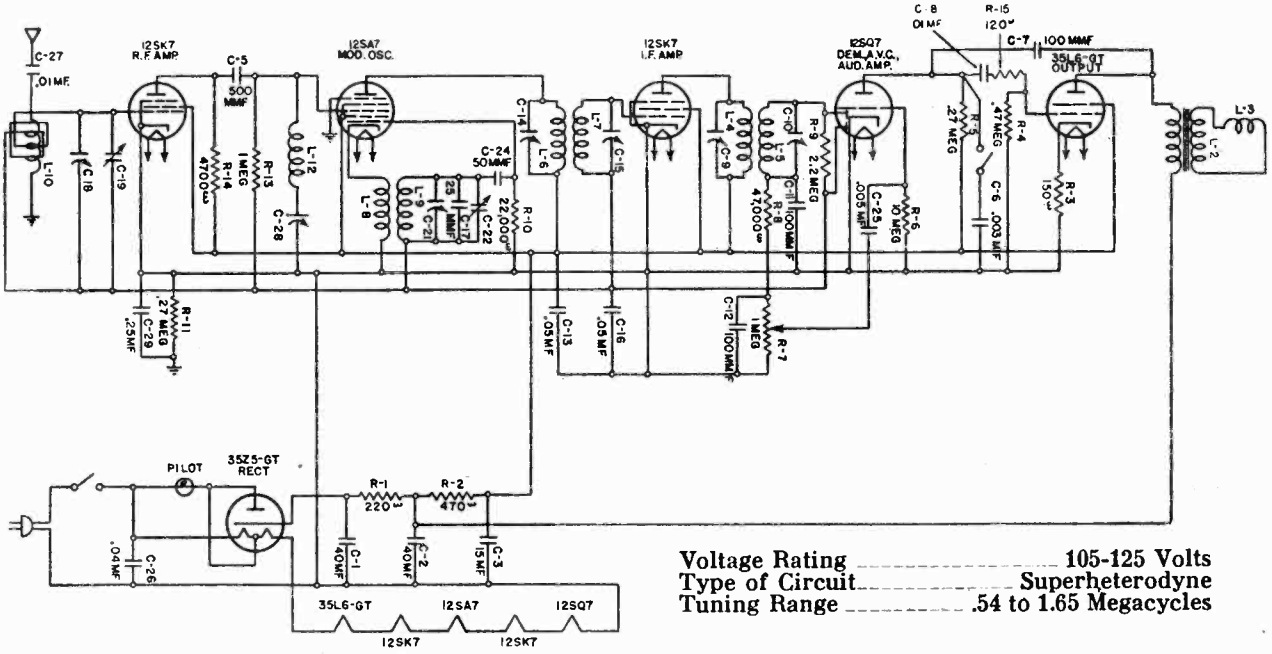
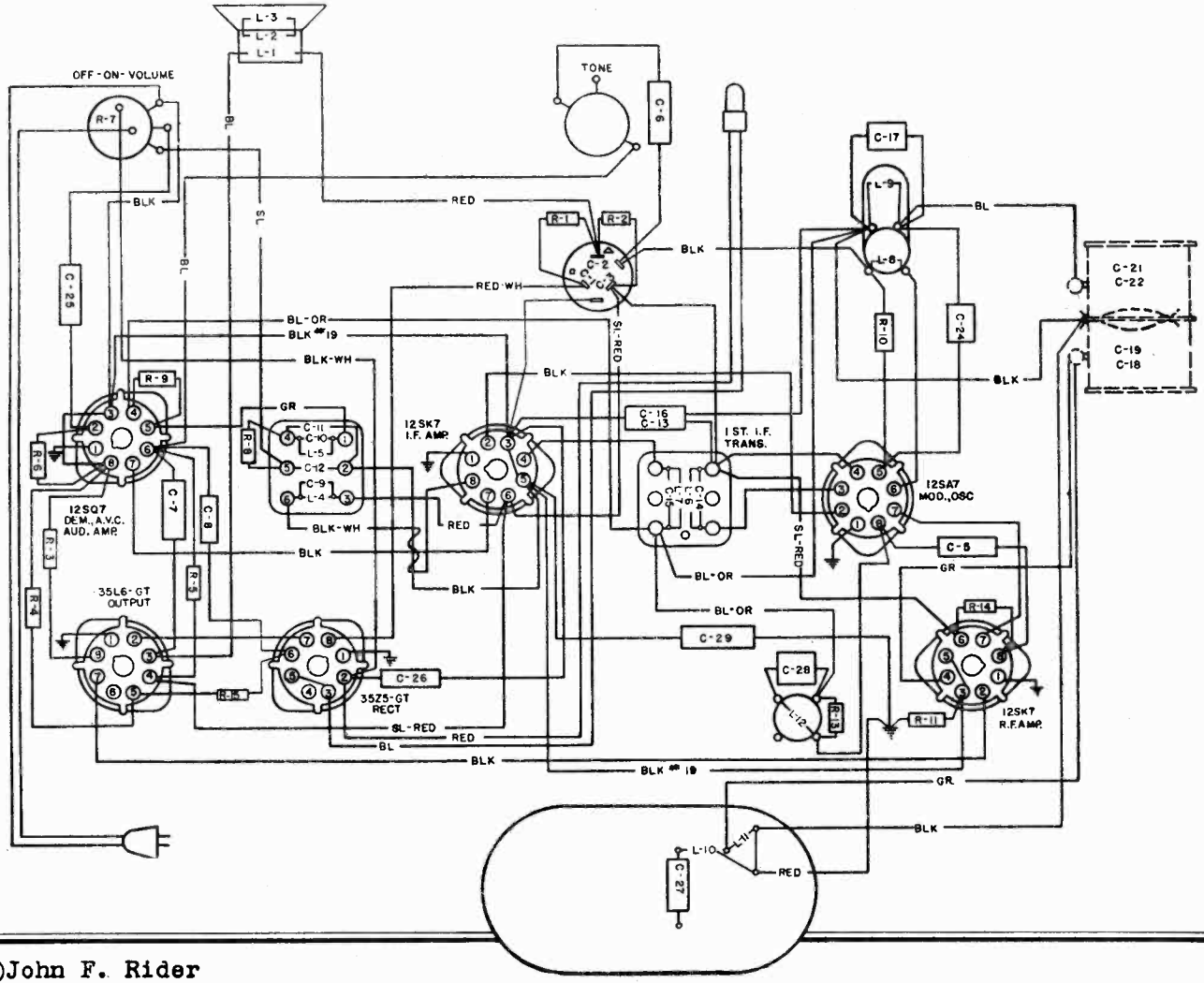


Voltage Rating	105-125 Volts
Type of Circuit	Superheterodyne
Tuning Range	.54 to 1.65 Megacycles

600-H Ivory	25-60 Cycles AC (or DC)	33196	32814	31696
600-H Brown	25-60 Cycles AC (or DC)	33196	32812	31696

Input Power Rating	30 Watts
Intermediate Frequency	455 Kilocycles
P. M. Speaker Voice Coil Impedance at 400 Cycles	Approximately 3.5 Ohms



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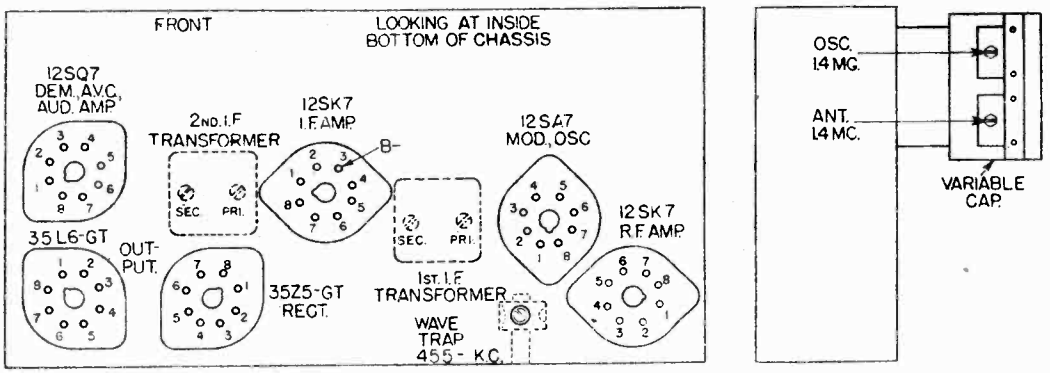
MODEL 600H
MODEL 900H, 900J



Location Chart

ALIGNING INFORMATION

Never realign unless absolutely necessary.

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

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

Always have the volume control "full on".

Important: Be sure the metal plate is fastened in place on the bottom of the chassis before alignment is attempted.

ALIGNING PROCEDURE (follow this order exactly).

I. **Dial Pointer Adjustment.**

With the plates of the gang tuning capacitor fully engaged set the dial pointer in a horizontal position directly on the top of the calibration mark located at 550 Kc. on the dial scale.

II. **Intermediate Frequency Adjustments.**

1. Tune the set to the extreme low frequency position. (Variable capacitor plates all the way in.)
2. Connect the ground terminal of the signal generator to the chassis base.
3. Introduce a modulated signal of 455 kilocycles using a .01 M. F. capacitor in series with the lead from the signal generator to the oscillator aligning capacitor located on the front section of the variable capacitor.
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.

III. **Radio Frequency Adjustments.**

1. Replace the .01 M. F. capacitor in series with the output lead of the signal generator with a 200 mmf. capacitor and connect them to the antenna terminal located on the back of the loop assembly.
2. Set the signal generator's frequency and the receiver's tuning dial to 1.4 megacycles.
3. Adjust the oscillator and antenna aligning capacitors for maximum signal.
4. Set both the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles and check calibration.

   NOTE: If the calibration is too far off at 0.6 megacycles, operations 2 and 3 may be repeated until the best results are obtained.

Wave Trap Adjustment.

(Leave the receiver connected in the same manner as when making the Radio Frequency Adjustments.)

1. Tune set to 1000 K. C.
2. Set the signal generator frequency to 455 K. C. and introduce a fairly strong Modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
12SK7	R. F. Amp.	—	*52*	0	0	0	+91	*37*	+86
12SA7	Mod. and Osc.	—	*37*	+86	+91	+7.5*	0	*24.8*	0
12SK7	I. F. Amp.	0	*24.8*	0	0	0	+91	*12.5*	+86
12SQ7	Demod., AVC and Audio Amp.	0	0	0	0	0	+23	*12.5*	0
35L6GT	Output	0	*86*	+98	+91	0	—	*52*	+4.8
35Z5GT	Rectifier	—	*120*	*114*	—	*114*	—	*86*	+115

***Read on 100 V. scale of meter having a resistance of 1000 ohms per volt.**

Take all D. C. voltage readings on the 500 volt scale except where an asterisk appears.

Take all readings with chassis operating and tuned to 1000 Kc.—no signal.

Use a line voltage of 120 volts or make allowance for the variation.

Read from indicated socket terminals to terminal No. 3 of the 12SK7 I. F. Amp. Socket (B—).

A. C. Voltages are indicated by italics; when the receiver is operated from a D. C. power supply, D. C. voltages will be obtained in place of A. C. voltages shown.

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MODELS 900H, 900J

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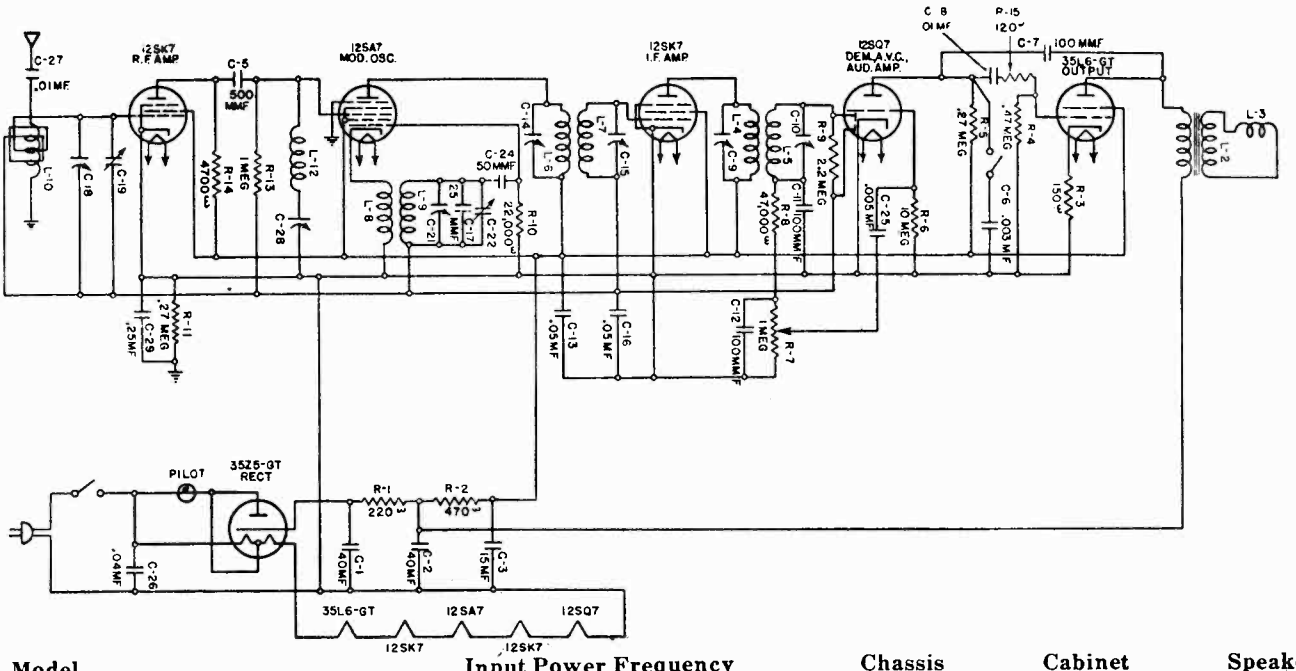
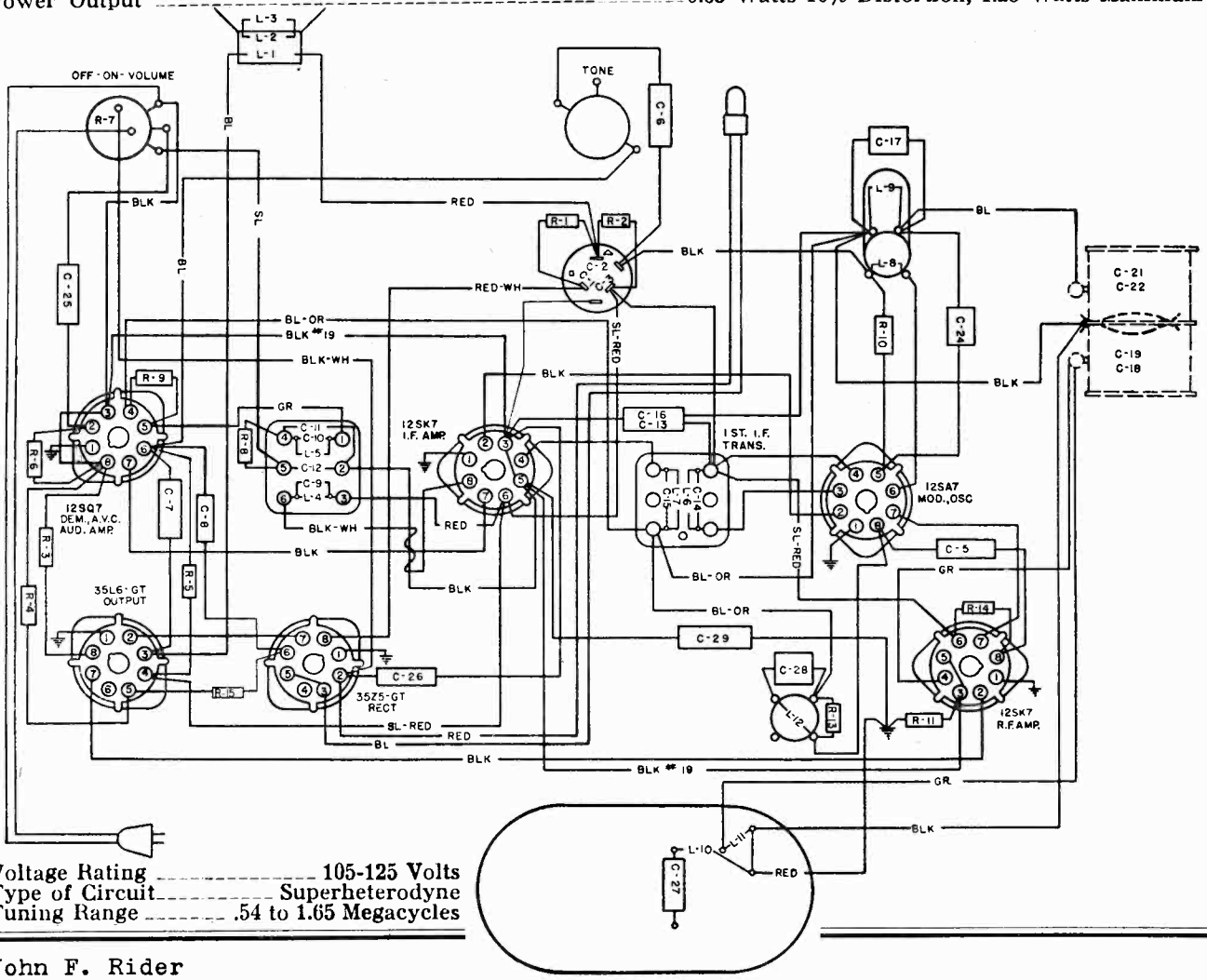


Model		Input Power Frequency	Chassis	Cabinet	Speaker
900-H	Brown and Ivory	25-60 Cycles AC (or DC)	33527	33528	31696
900-J	Burgundy and Ivory	25-60 Cycles AC (or DC)	33527	33961	31696

Input Power Rating ..... 30 Watts
Intermediate Frequency ..... 455 Kilocycles
P. M. Speaker Voice Coil Impedance at 400 Cycles ..... Approximately 3.5 Ohms
Power Output ..... 0.65 Watts 10% Distortion, 1.25 Watts Maximum



Voltage Rating ..... 105-125 Volts
Type of Circuit ..... Superheterodyne
Tuning Range ..... .54 to 1.65 Megacycles

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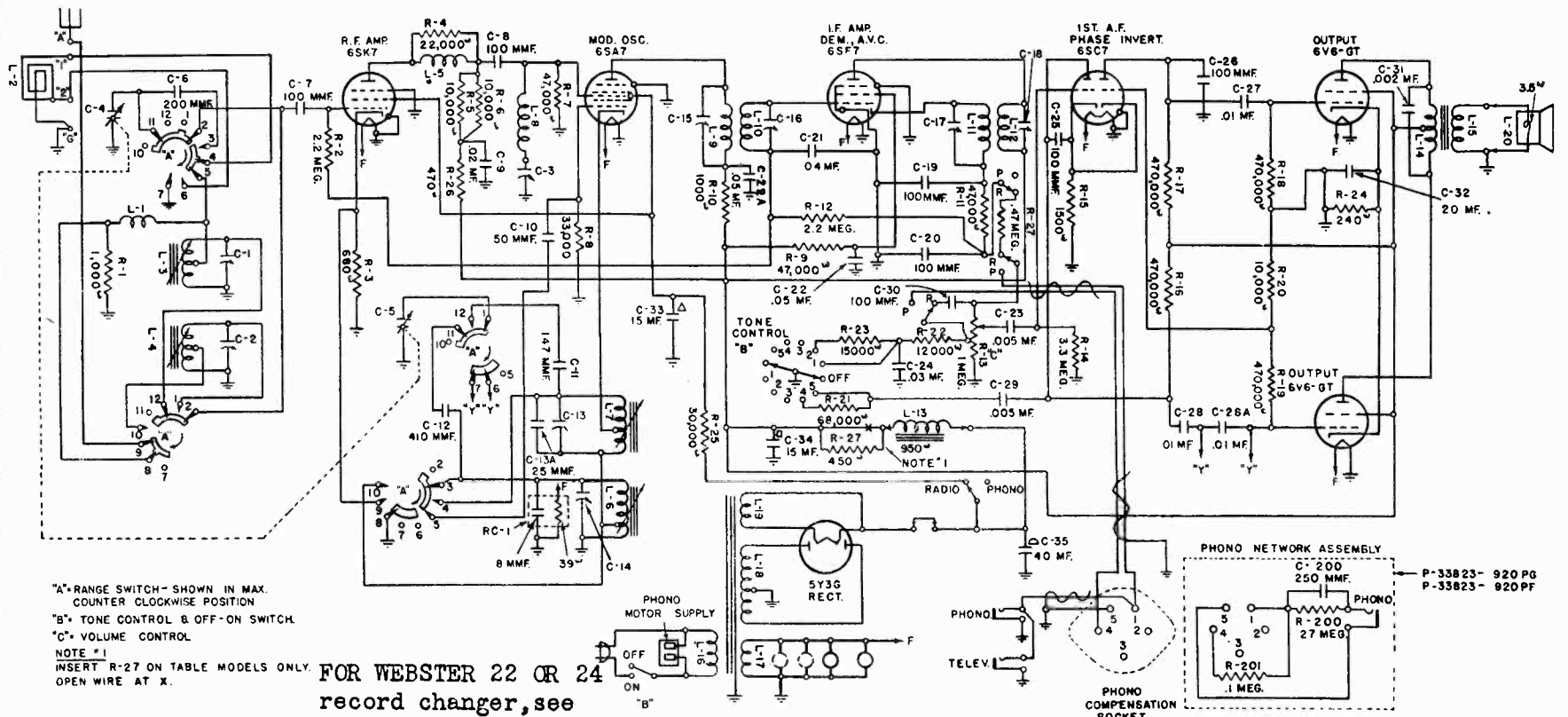
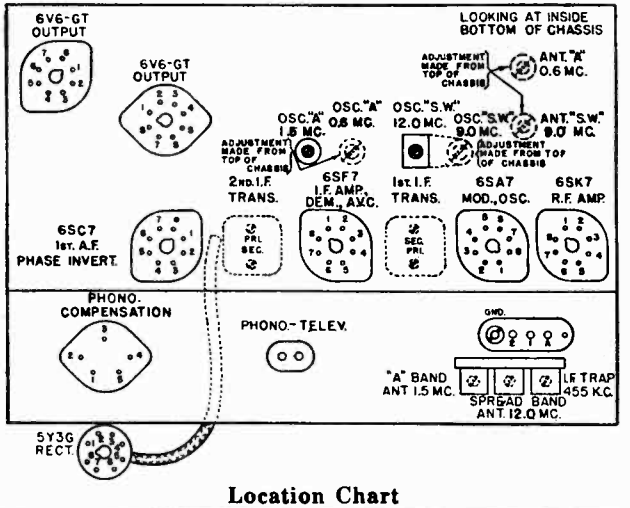


FOR WEBSTER 22 OR 24 record changer, see Rider's "Automatic Record Changers and Recorders"

Model	Input Power Frequency	Chassis	Cabinet	Speaker	Phonograph Equipment
920-H	50-60 Cycles	33449	33825	33517	Use a Stromberg-Carlson Record Player
920-HB	25-60 Cycles	33450	33825	33517	Use a Stromberg-Carlson Record Player
920-L	50-60 Cycles	33449	33451	33435	Use a Stromberg-Carlson Record Player
920-LB	25-60 Cycles	33450	33451	33435	Use a Stromberg-Carlson Record Player
920-PF	60 Cycle	33449	33827	33435	33929
920-PFB	25 Cycle	33450	33827	33435	33930
920-PG	60 Cycle	33449	33795	33435	33929
920-PGB	25 Cycle	33450	33795	33435	33930

Type of Circuit	Superheterodyne with Push Button Tuning
Tuning Ranges	A—540 to 1600 Kc., C—8.8 to 12 Mc.
Voltage Rating	A.C. 105 to 125 Volts
Input Power Rating, 520-H, and L	96 Watts
Input Power Rating, 520-PF and PG	115 Watts
Intermediate Frequency	455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles	Approximately 3.5 Ohm
Speaker Field Coil Resistance	Approximately 1000 Ohms
Power Output	9 watts 10% distortion 12 watts maximum



Location Chart

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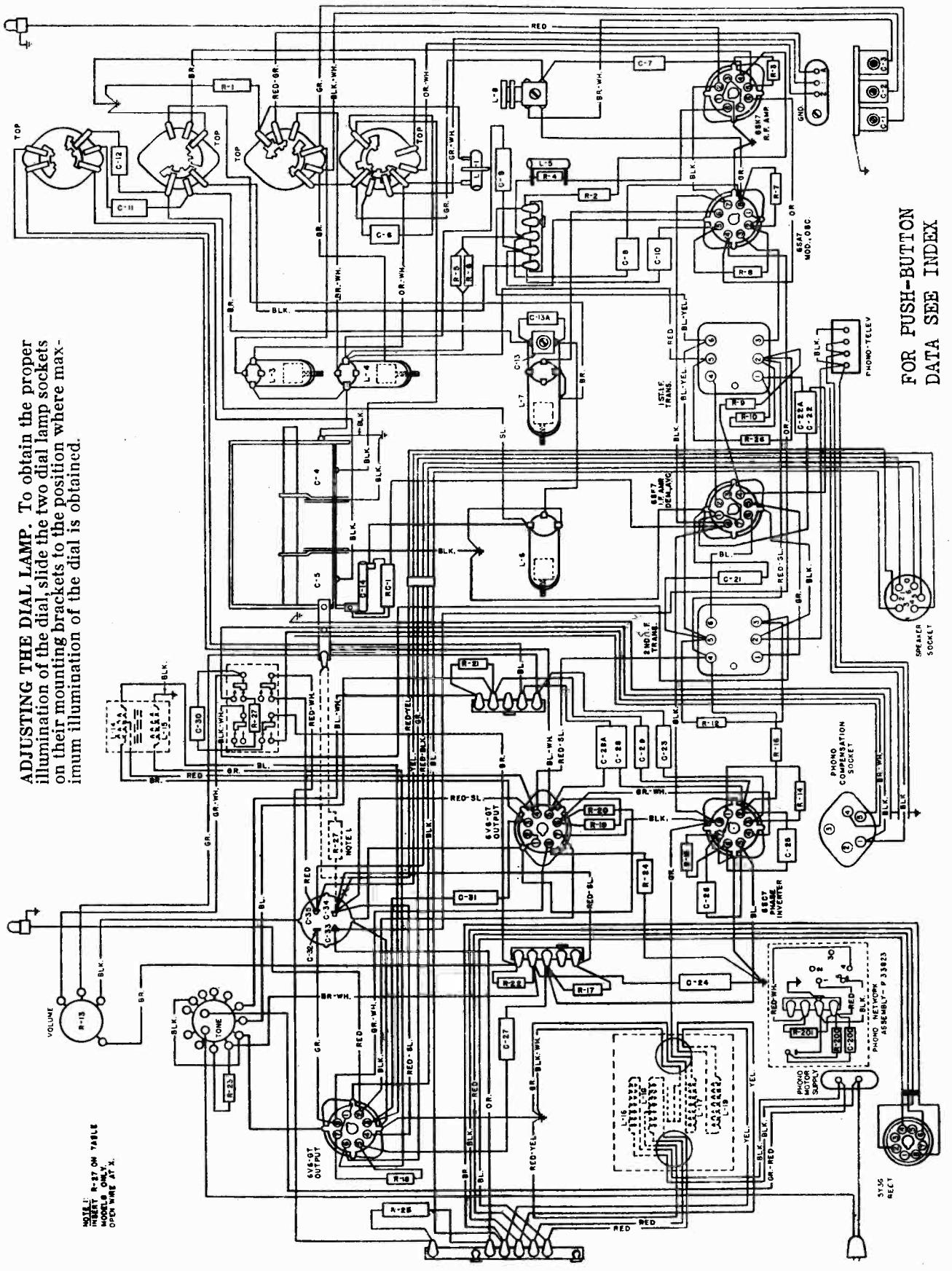
MODEL 920

STROMBERG-CARLSON TEL. MFG. CO.



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STROMBERG-CARLSON TEL. MFG. CO.

Use a good modulated signal generator (test oscillator with variable output voltage and a sensitive output meter across the voice coil of the speaker.)

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

Always have the volume control "full on".

ALIGNING PROCEDURE. (Follow this order exactly.)

I. Dial pointer adjustment.

With the plates of the gang tuning capacitor fully engaged, check to be sure that the dial pointer is in a vertical position directly on the calibration marks located at the low frequency end of the dial scale. Adjust the dial pointer if necessary.

II. Intermediate frequency adjustments.

1. Set range switch to Standard Broadcast position.
2. Tune set to extreme low 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 kilocycles to the grid of the 6SA7 Modulator and Oscillator tube (terminal No. 8) using a 0.1 microfarad 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.

III. Radio frequency adjustments.

Short Wave Range

1. Remove the output lead of the signal generator and the 0.1 microfarad capacitor from the grid of the 6SA7 tube.
2. Disconnect the output lead from the signal generator and replace with a few turns of wire connected to the signal generator output terminals.
3. Place the signal generator two or three feet from the receiver's loop.
4. Set the range switch to the short-wave range position.
5. Set the signal generator frequency and the receiver tuning dial to 9 megacycles.
6. Adjust the 9 megacycle oscillator and loop aligners (iron cores) for maximum signal.
7. Set the signal generator frequency and the receiver tuning dial to 12 megacycles.
8. Adjust the 12 megacycle oscillator aligning capacitors for maximum signal. Then rock the tuning gang capacitor slowly through resonance and adjust the 12 megacycle loop aligning capacitor for maximum signal.
9. Repeat operations 5 and 6.
10. Repeat operations 7 and 8.

Standard Broadcast Range

1. Set the range switch to the "Loop" position.
2. Set the signal generator frequency and the receiver tuning dial to 600 kilocycles.
3. Adjust the 600 K. C. oscillator and loop aligner (iron cores) for maximum signal.
4. Set the signal generator frequency and the receiver tuning dial to 1500 kilocycles.
5. Adjust the 1500 K. C. oscillator and loop aligning capacitors for maximum signal.
7. Repeat operations 2 and 3.
8. Repeat operations 4 and 5.

IV. Wave trap adjustment

1. Tune the receiver to 1000 kc.
2. Set the signal generator frequency to 455 kc., and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligning capacitor for minimum signal.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
6SK7	R. F. Amp.	0	*6.3*	0	0	0	+85	0	+178
6SA7	Osc. and Mod.	0	0	+240	+85	0	0	*6.3*	0
6SF7	I. F. Amp. Demod. and A. V. C.	0	0	0	+95	0	+240	0	*6.3*
6SC7	Audio Amp. and Inverter	0	+65	0	0	+65	4*	0	*6.3*
6V6GT	Output	0	0	+235	+240	0	0	*6.3*	13*
6V6GT	Output	0	*6.3*	+235	+240	0	0	0	13*
5Y3G	Rectifier	0	+380	—	*380*	—	*380*	—	+380

***Read on lowest possible scale of voltmeter**

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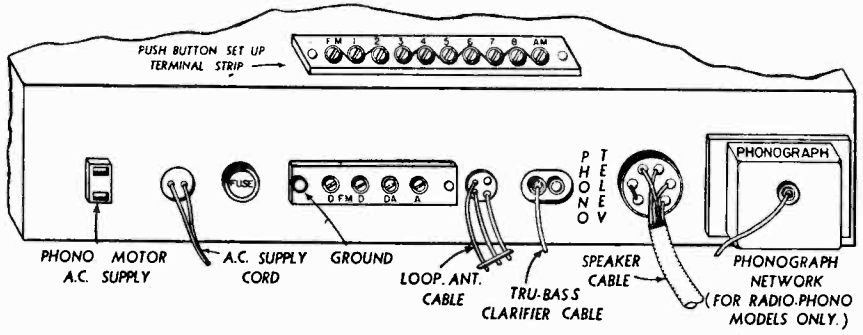
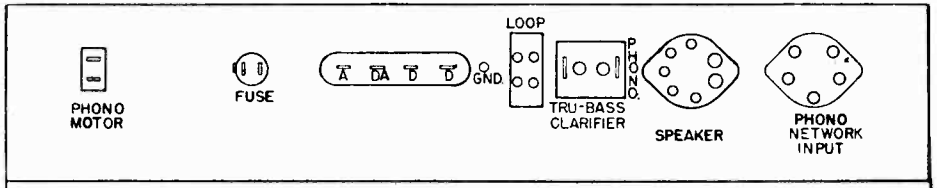
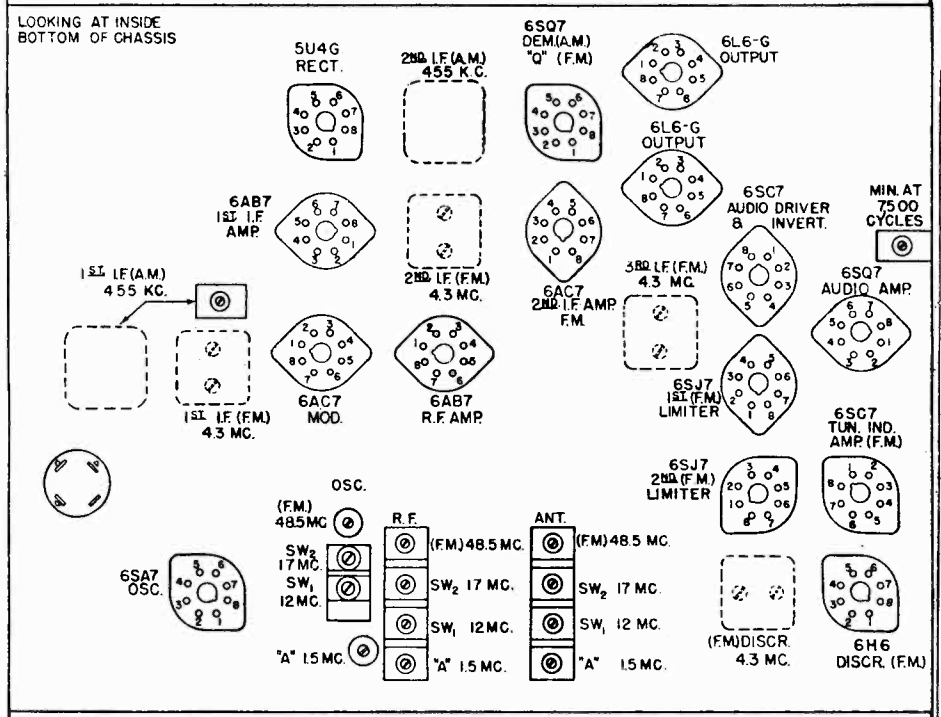
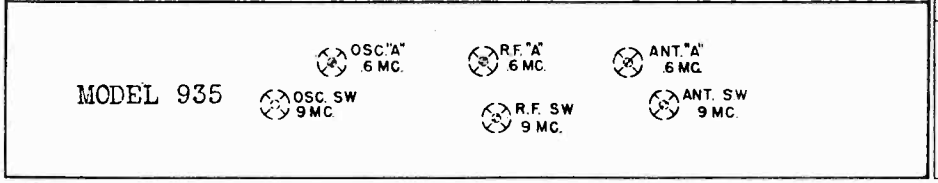
PHONOGRAPH OPERATION. The 935-PL, PF and PR Phonograph Models are equipped with an automatic record changer using a one ounce sapphire pick-up in conjunction with specially equalized circuits. This type of pick-up eliminates the frequent changing of needles and reduces record wear to a minimum. This record player shifts and plays the standard 10 or 12 inch records. The 935-M Receivers are provided with a phonograph jack on the back of the chassis into which a record player may be plugged.

ADJUSTING THE DIAL LAMP. To obtain the proper illumination of the dial, slide the two dial lamp sockets on their mounting brackets to the position where maximum illumination of the dial is obtained.

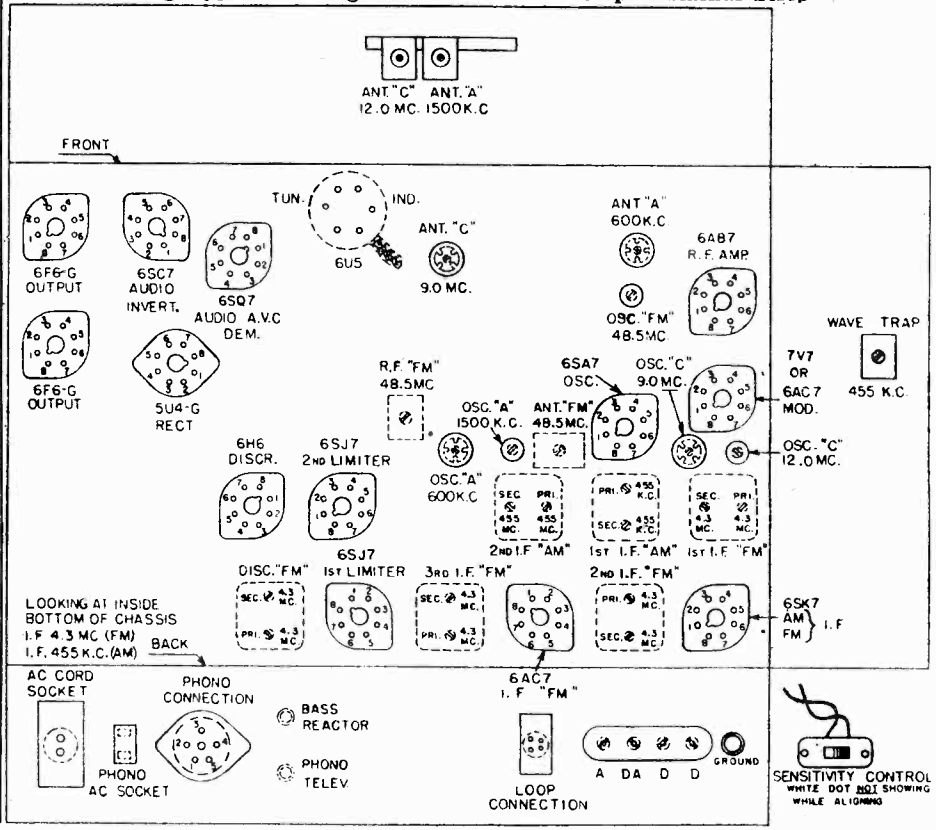








Showing Typical Wiring of Push Button Set-up Terminal Strip



MODEL 925

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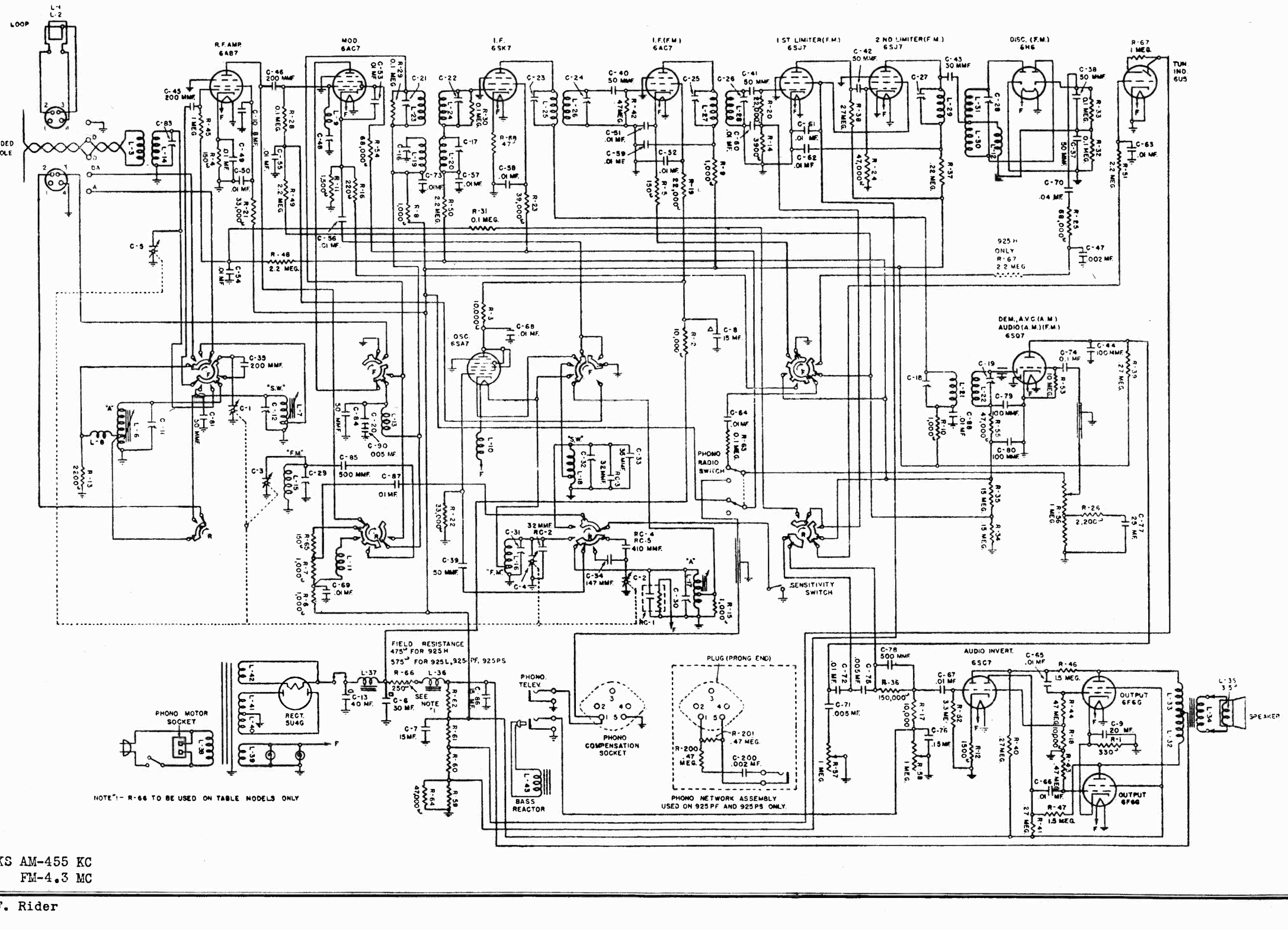

IF PEAKS AM-455 KC
FM-4.3 MC

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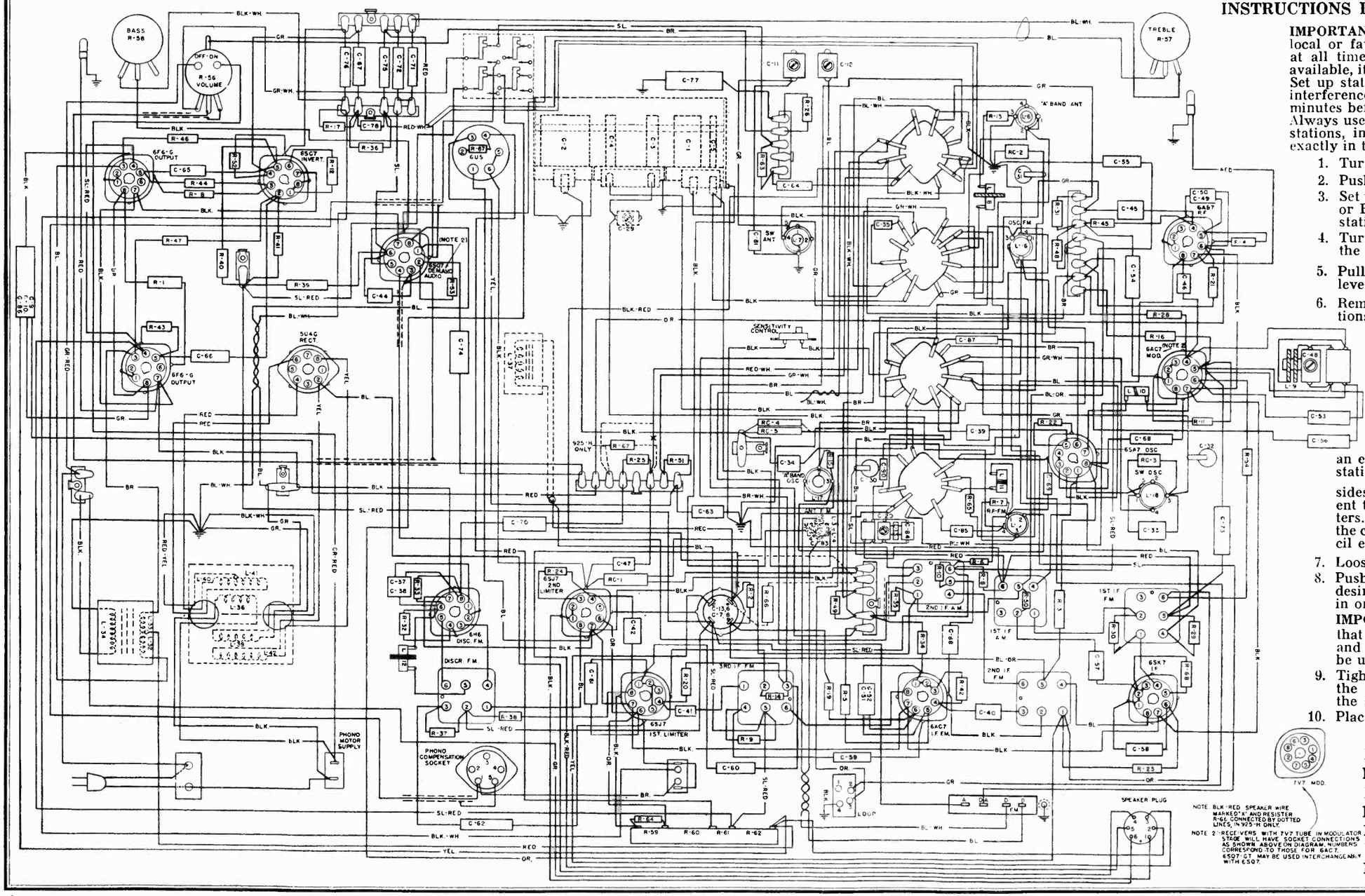
MODEL 925

STROMBERG-CARLSON TEL. MFG. CO.

Model	Input Power Frequency	Chassis	Cabinet	Speaker	Phonograph Equipment
925-H	50-60 cycles	33264	33803	33974	Use a Stromberg-Carlson Record Player
925-HB	25-60 cycles	33265	33803	33974	Use a Stromberg-Carlson Record Player
925-L	50-60 cycles	33264	33840	33982	Use a Stromberg-Carlson Record Player
925-LB	25-60 cycles	33265	33840	33982	Use a Stromberg-Carlson Record Player
925-PF	60 cycles	33264	34026	33982	33993
925-PFM	60 cycles	33264	34103	33982	33993
925-PFB	25 cycles	33265	34026	33982	33994
925-PS	60 cycles	33264	34027	33982	34066
925-PSY	60 cycles	32264	34146	33982	34066
925-PSB	25 cycles	33265	34027	33982	34067

SPECIFICATIONS

Tuning Ranges	Standard Broadcast 540 to 1600 kilocycles Short Wave Spread Band 8.8 to 12 megacycles Frequency Modulation 42 to 50 megacycles
Voltage Rating	105 to 125 Volts
Input Power Rating 925-H, L	160 Watts
Input Power Rating 925-PF, PS	190 Watts
Intermediate Frequency	455 Kilocycles (Amplitude Modulation) 4.3 Megacycles (Frequency Modulation)
Speaker Field Coil Resistance	925-H—475 ohms; 925-L, PF, PS—575 ohms
Speaker Voice Coil Impedance	3.5 ohms
Power Output	10 watts 10% distortion, 16 watts maximum



NOTE BLK-RED SPEAKER WIRE MARKED 'K' AND RESISTER R-67, CONNECTED BY DOTTED LINES, IN 925-H ONLY.

NOTE 2 - RECEIVERS WITH 7V7 TUBE IN MODULATOR STAGE WILL HAVE SOCKET CONNECTIONS AS SHOWN ABOVE ON DIAGRAM, NUMBERS CORRESPOND TO THOSE FOR 6AG7. 6SQ7-GT MAY BE USED INTERCHANGEABLY WITH 6SQ7.

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

IMPORTANT: The stations selected should be the local or favorite stations which give good reception at all times. If a Frequency Modulation station is available, it may be set up on one of the push buttons. Set up stations in the daytime to avoid unnecessary interference. Allow the set to run for about twenty minutes before setting up stations.
Always use the tuning indicator unit when setting up stations, in order to determine when the station is exactly in tune.

1. Turn the receiver "On".
2. Push in the button designated "Radio".
3. Set the range switch to the Standard Broadcast or F. M. position depending on the particular stations which are to be set up.
4. Turn volume control about three-quarters of the way on (in a clockwise direction).
5. Pull the six station push buttons off their levers.
6. Remove the call letters of the six selected stations from the call letter sheets, which are in an envelope stapled to the cabinet. Insert the station call letters part way in the slots at the sides of the buttons. Next, insert a transparent tab in each slot in front of the station letters. Then push both the transparent tabs and the call letters all the way into the slot. (A pencil eraser may be helpful.)
7. Loosen the set screw of the lever to be set up.
8. Push in the lever and manually tune in the desired station, observing the tuning indicator in order to obtain exact resonance.
   IMPORTANT: For accurate set-up, be sure that the lever is pushed in, in the same manner and with the same amount of pressure as will be used when operating the push buttons.
9. Tighten the set screw. Be sure not to disturb the adjustment in any way while tightening the screw.
10. Place the proper button on the lever.

IN MODEL 925PF, WEBSTER 22 or 24 RECORD CHANGER IS USED.
IN MODEL 925PS, FARNSWORTH CAPEHART P44 RECORD CHANGER IS USED.
FOR DATA ON THESE, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

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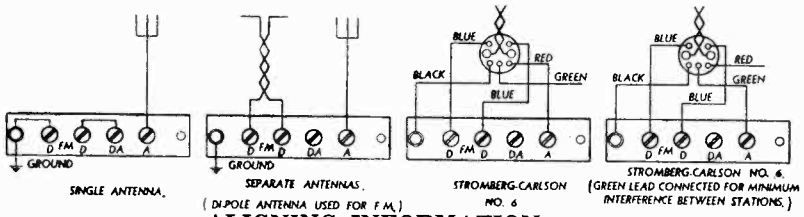

ALIGNING INFORMATION

NEVER REALIGN UNLESS ABSOLUTELY NECESSARY.

GENERAL. All aligning adjustments are carefully made at the factory with special equipment which is designed for aligning Frequency Modulation receivers. The limitations of commercial oscillographs and other ordinary test equipment are such that alignment should not be attempted in the field unless absolutely necessary.

If alignment is attempted, it will not be successful unless the instructions which follow are adhered to exactly.

The following equipment will be required:

1. Standard signal generator with sweep circuit.
2. Wide band sweep signal generator.
3. Oscillograph.
4. Microammeter—0 to 200 microamps.
5. Center "0" microammeter with 100 divisions either side of "0".

See location chart for location of all aligners.

ALIGNING PROCEDURE (AMP. MOD.)

I. Dial Pointer Adjustment. (A. M.)

With the plates of the gang tuning capacitor fully engaged, check to be sure that the dial pointer is in a vertical position directly on the calibration marks located at the low frequency end of the dial scale. Adjust if necessary.

II. Intermediate Frequency Adjustments. (A. M.)

1. Set the range switch to standard broadcast position.
2. Tune set to extreme low 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 kilocycles to the grid of the 6AC7 or 7V7 Modulator, using a 0.1 mmf. 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.

III. Wave Trap Adjustment.

(Leave the signal generator connected in the same manner as when making the A. M. I. F. Frequency adjustments.)

1. Tune the set to 1000 kc.
2. Introduce a fairly strong modulated signal to the grid of the modulator tube and adjust the wave trap aligner for minimum signal.

IV. Radio Frequency Adjustments. (A. M.)

Standard Broadcast Range (A Band)

1. Remove the output lead from the signal generator and the grid of the modulator tube.
2. Connect a few turns of wire to the output terminals of the signal generator.
3. Place the signal generator two or three feet away from the receiver's loop.
4. Set the range switch to the Standard Broadcast range (A Band).
5. Set the signal generator frequency and the receiver tuning dial to 600 kc.
6. Adjust the 600 kc. oscillator and antenna aligners (iron cores) for maximum signal.
7. Set the signal generator frequency and the receiver tuning dial to 1500 kc.
8. Adjust the 1500 kc. oscillator and antenna aligning capacitors for maximum signal.
9. Repeat operations three and four.
10. Repeat operations five and six.

Short Wave Range (C Band)

1. Set the range switch to the Short Wave Range (C Band).
2. Set the signal generator frequency and the receiver tuning dial to 9 megacycles.
3. Adjust the 9 megacycle oscillator and antenna aligners (iron cores) for maximum signal.
4. Set the signal generator frequency and the receiver tuning dial to 12 megacycles.
5. Adjust the 12 megacycle oscillator and antenna aligning capacitors for maximum signal.
6. Repeat operations three and four.
7. Repeat operations five and six.

Note: After the receiver has been placed in the cabinet, plug the loops into their respective sockets and readjust the Standard Broadcast and Short Wave antenna high frequency shunt aligners for maximum signal.

ALIGNING PROCEDURE (FREQ. MOD.)

V. Intermediate Frequency Adjustments (F. M.)

Note: All I. F. adjustments are made using a wide band sweep signal generator with a sweep circuit of plus or minus 300 kilocycles.

1. Set the range switch to the F. M. position.
2. Tune the set to the extreme high frequency end of the dial (50 megacycles).
3. Connect the 0-200 microammeter between the R-14, 3900-ohm resistor and ground.
4. Connect the oscillograph between ground and the tap of the limiter grid resistors R-14 and R-20.
5. Connect the ground terminal of the wide band sweep signal generator to the ground terminal of the 6AC7 second I. F. tube socket.
6. Introduce a signal of 4.3 megacycles to the grid of the 6AC7 second I. F. tube socket (terminal No. 4), using a 0.1 capacitor in series with the output lead of the signal generator. Keep the 0 to 200 microammeter at approximately 100 microamps.
7. Adjust the secondary and primary of the third I. F. transformer for maximum reading on the 0 to 200 microammeter. Check pattern on oscilloscope for symmetrical curve.
8. Connect the output lead of the wide band sweep signal generator and the 0.1 microfarad capacitor in series with it to the grid of the 6SK7 first I. F. tube socket (terminal No. 4).
9. Connect the ground lead of the signal generator to the ground terminal of the 6SK7 first I. F. tube socket.
10. Adjust the second I. F. transformer for maximum reading of microammeter.
11. Connect the output lead of the wide band sweep signal generator with the 0.1 microfarad capacitor in series with it to the grid of the 6AB7 R. F. tube.

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12. Connect the ground terminal of the signal generator to the ground terminal of the 6AB7 tube socket.
13. Adjust the first I. F. transformer for maximum reading on microammeter. Adjust slightly for symmetrical curve on oscilloscope.

VI. **Discriminator Adjustment. (F. M.)**

1. Connect the ground terminal of the standard unmodulated signal generator to the ground terminal of the 6SK7 first I. F. tube socket.
2. Connect the output lead of the unmodulated standard signal generator to the grid of the 6SK7 first I. F. tube (terminal No. 4), using a 0.1 microfarad capacitor in series with the output lead of the standard signal generator, leaving the wide band sweep signal generator connected to the grid of the 6AB7 R. F. tube socket.
3. Adjust the attenuator of the wide band sweep signal generator for a curve on the oscillograph.
4. Set the frequency of the unmodulated standard signal generator to approximately 4.3 megacycles and adjust the attenuator for interference patterns on the oscillograph. Adjust the unmodulated standard signal generator frequency until interference patterns on each trace come together. (This is done in order to assure that the frequency of the standard signal generator which is used to align the discriminator coincides with the mean frequency of the wide band sweep signal generator.)
5. Remove the wide band sweep signal generator.
6. Connect the center "0" microammeter with a .5 megohm resistor in series across one-half of the discriminator load. (From ground to the junction of the two .1 megohm resistors R-32 and R-33.)
7. Set the attenuator of the standard signal generator for maximum output.
8. Adjust the primary of the discriminator transformer for maximum reading on the center "0" microammeter.
9. Connect the center "0" microammeter and the .5 megohm resistor in series with it across the whole discriminator load. (From ground to the junction of R-33 .1 megohm resistor and C-70 .04 mf. capacitor.)
10. Adjust the secondary of the discriminator transformer for center "0" reading of the microammeter.
11. Vary the frequency of the standard signal generator, making sure that the voltage peaks, which should be of the same magnitude, are the same number of kilocycles off on either side of resonance. Any departure from these conditions may be corrected by a slight readjustment of the primary.

    Note: Leave the wide band sweep signal generator connected to the grid of the 6SB7 R. F. tube socket and make slight readjustments of the I. F. transformers for proper curve, since there is some interaction between these stages and the discriminator.

VII. **Radio Frequency Adjustments (F. M.)**

1. Set the signal generator frequency and the receiver tuning dial to 48.5 megacycles.
2. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm resistor and connect it to one of the F. M. terminals on the back of the chassis.
3. Connect the ground lead of the signal generator to the other F. M. terminal.
4. Adjust the oscillator aligner (air trimmer) for maximum signal.
5. Adjust the R. F. and antenna aligners for maximum signal on the 0 to 200 microammeter, maintaining the center "0" microammeter at "0" at all times by rotating the receiver dial slightly back and forth.

NORMAL VOLTAGE READINGS

NOTE: These receivers use either a 6AC7 or 7V7 tube in the modulator stage. (See wiring diagram

Take all readings with chassis operating and tuned manually to 1000 kc. or 47 megacycles—no signal.
Use a line voltage of 120 volts or make allowance for the variation.

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.
Take all D. C. readings on the 500 volt scale, except when an asterisk appears.
Read from indicated terminals to chassis base.
See location chart for position of terminals.
A. C. voltages are indicated by italics.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
6AB7	R. F. Amplifier	0	0	0	0	+2.4	+182	*6.3*	+275
6AC7	Modulator	0	0	0	0	+6	+218	*6.3*	+300
or 7V7		0	+300	+218	0	0	0	+6	*6.3*
6SA7	Oscillator	0	0	+120	+120	−5	0	*6.3*	+120
6SK7	I. F. Amplifier	0	0	0	0	0	+110	*6.3*	+290
6AC7	2nd I. F. Amplifier (F. M.)	0	0	0	0	+8	+265	*6.3*	+300
6SJ7	1st Limiter (F. M.)	0	0	0	0	0	+54	*6.3*	+2
6SJ7	2nd Limiter (F. M.)	0	0	0	0	0	+54	*6.3*	+3
6H6	Discriminator (F. M.)	0	0	0	0	0	0	*6.3*	0
6SQ7	Demod., A. V. C. (A. M.), Audio Amplifier	0	0	0	0	0	+100*	0	*6.3*
6SC7	Audio Amp. and Inverter	0	+140*	0	0	+130*	+2	*6.3*	0
6F6G	Output	0	0	+340	+300	0	0	*6.3*	+22
6F6G	Output	0	0	+340	+300	0	0	*6.3*	+22
5U4G	Rectifier	0	+450	0	*415*	0	*415*	0	+450
6U5	Tuning Indicator	*6.3*	+80	0	+250	0	0	—	—

*Read on 1000 volt scale of voltmeter.
Between terminals 2 and 8 of rectifier socket—5 volts A. C.

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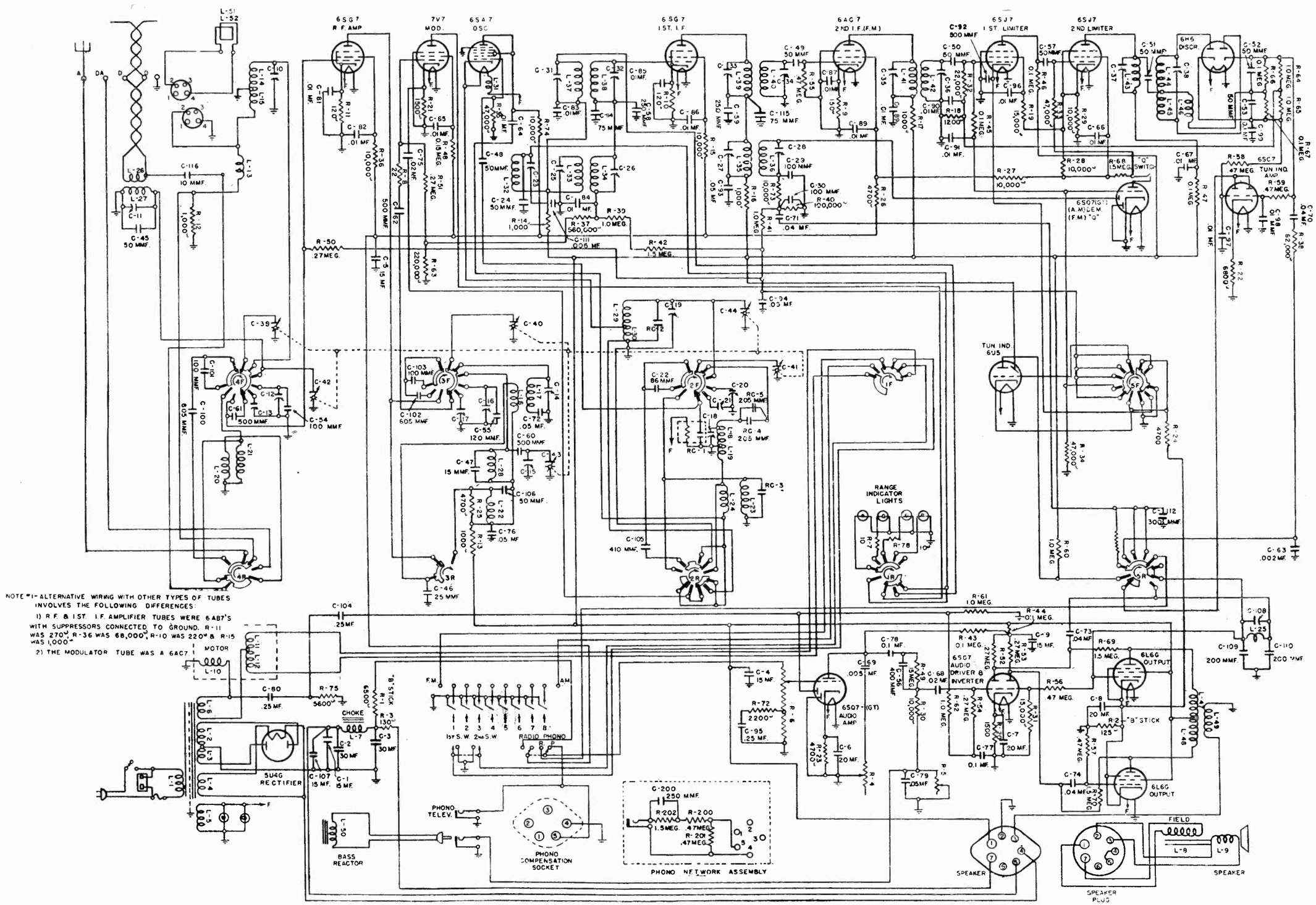

NOTE "1" - ALTERNATIVE WIRING WITH OTHER TYPES OF TUBES INVOLVES THE FOLLOWING DIFFERENCES:

1) R.F. & 1ST. I.F. AMPLIFIER TUBES WERE 6AB7's WITH SUPPRESSORS CONNECTED TO GROUND. R-11 WAS 270Ω, R-36 WAS 68,000Ω, R-10 WAS 220Ω & R-15 WAS 1,000Ω.

2) THE MODULATOR TUBE WAS A 6AC7

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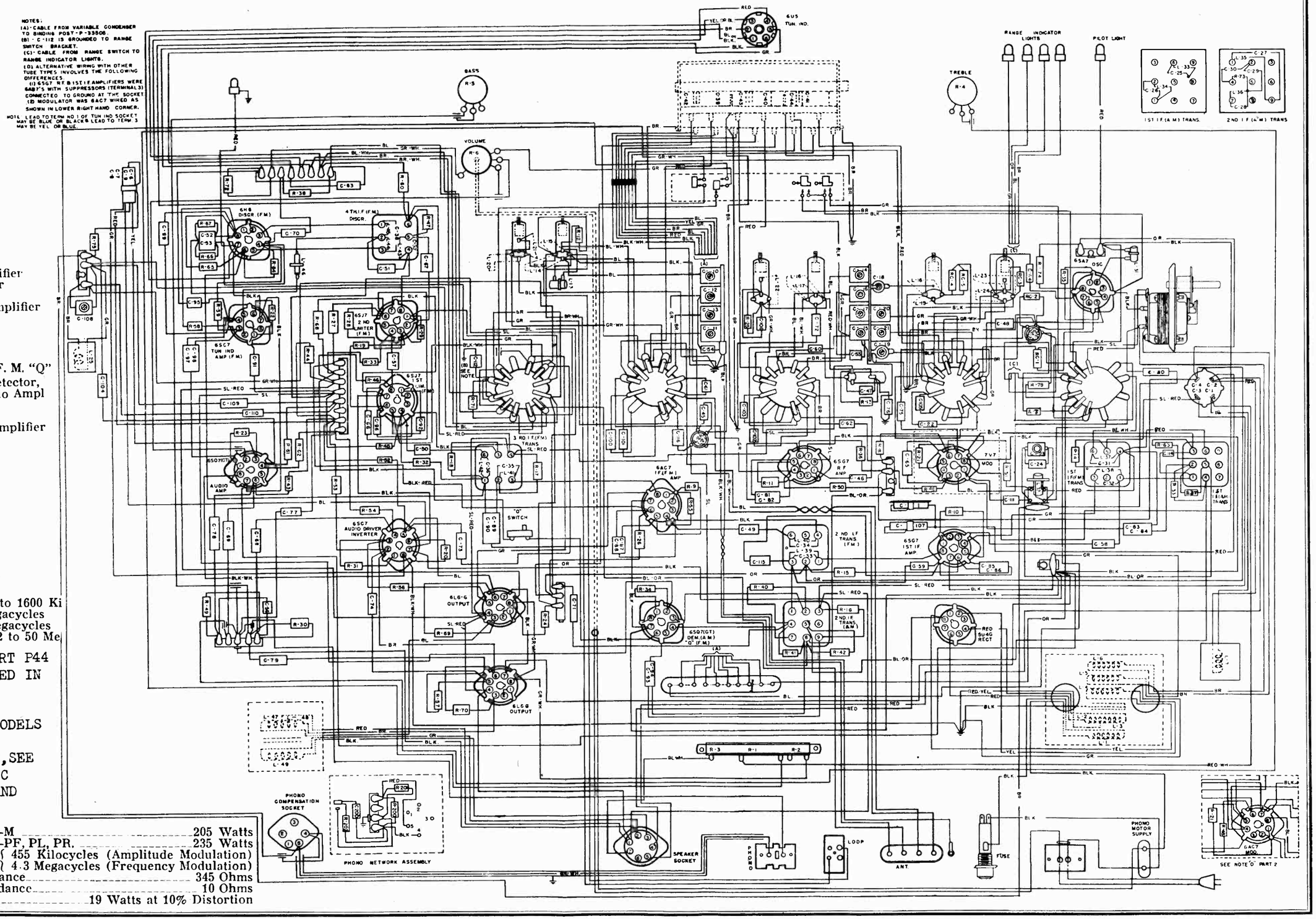
MODEL 935

STROMBERG-CARLSON TEL. MFG. CO.

Model	Input Power Frequency	Chassis	Cabinet	Speaker		Phonograph Equipment
935-M	50-60 cycles	33842	33950	33963	Use a	Stromberg-Carlson Record Player
935-PF	50-60 cycles	33842	34075	33963	33989	
935-PL	50-60 cycles	33842	34090	33963	34066	
935-PR	50-60 cycles	33842	34077	33963	33989	



Number of Tubes—16

6AB7 or 6SG7 R. F. Amplifier
6AC7 or 1—7V7 Modulator
6SA7 Oscillator
6AB7 or 6SG7 1st I. F. Amplifier
6AC7 2nd I. F. Amplifier
6SJ7 1st Limiter
6SJ7 2nd Limiter
6H6 Discriminator

F. M. "Q"

6SQ7 or 6SQ7GT A. M. Detector,
6SQ7 or 6SQ7GT 1st Audio Ampl
6SC7 Driver and Inverter
6U5 Tuning Indicator
6SC7 F. M. Tuning Ind. Amplifier
6L6G Power Output
5U4G Rectifier

Tuning Ranges

Standard Broadcast 540 to 1600 Ki
Short Wave 8.8 to 12 Megacycles
Short Wave 14.4 to 18 Megacycles
Frequency Modulation 42 to 50 Me

FARNSWORTH CAPEHART P44 RECORD CHANGER USED IN MODEL 935 PL.
WEBSTER 41 RECORD CHANGER USED IN MODELS 935PF, 935PR.
FOR DATA ON THESE, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

Input Power Rating	935-M	205 Watts
	935-PF, PL, PR.	235 Watts
Intermediate Frequency	455 Kilocycles (Amplitude Modulation)	
	4.3 Megacycles (Frequency Modulation)	
Speaker Field Coil Resistance		345 Ohms
Speaker Voice Coil Impedance		10 Ohms
Power Output		19 Watts at 10% Distortion

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VOLTAGE READING AT 120 V. LINE

Type	Function	1	2	3	4	5	6	7	8
		0	0	0	—	0.8*	122	6.2	272
†† 6AB7	R. F. Amplifier	0	0	0	—	0.8*	114	6.2	272
		0	0	0	—	1.8*	101	6.2	275
†† 6AC7	Modulator	0	0	0	—	1.8*	112	6.2	275
		0	6.2	101	101	—	0	0	101
6SA7	Oscillator	0	6.2	95	95	—	0	0	95
		0	0	0	—	1.4*	200	6.2	266
†† 6AB7	1st I. F. Amp.	0	0	0	—	1.4*	200	6.2	266
		0	0	0	—	1.2*	165	6.2	263
6AC7	2nd I. F. Amp.	0	0	0	—	1.2*	158	6.2	263
		0	0	0	—	3.5*	63	6.2	227
6SJ7	1st Limiter	0	0	0	—	0	35	6.2	45
		0	0	70	26	70	110	6.2	235†
6SJ7	2nd Limiter	0	0	47	45*	47	100	6.2	235†
		0	0	—	—	—	—	6.2	—
6H6	Discriminator	0	0	—	—	—	—	6.2	—
	A. M. Detector	0	—	0	—	0	0.6‡	6.2	0
6SQ7	F. M. "Q"	0	—	0	—	0	0.5‡	6.2	0
		0	—	1.2*	—	0	113	6.2	0
6SQ7	1st Audio Amp.	0	—	1.2*	—	0	113	6.2	0
		0	86	—	—	86	1.0*	6.2	0
6SC7	Driver and Inverter	0	86	—	—	86	1.0*	6.2	0
		0	0	268	276	—	85	6.2	16
6L6G	Power Output (2)	0	0	268	276	—	85	6.2	16
		—	38.4	—	365	—	365	—	364
5U4G	Rectifier	—	38.4	—	365	—	365	—	364
		6.2	50	—	275	20	0		
6U5	Tuning Indicator	6.2	50	—	275	20	0		
	F. M. Tuning Ind.	0	0	—	—	0	0	6.2	0
6SC7	Amplifier	0	50	—	—	50	0.8*	6.2	0
		276	0	0	364		—	343	
—	Speaker Socket	276	0	0	364		—	343	

†† WHERE THE FOLLOWING TUBES ARE USED IN THESE STAGES THE VOLTAGES LISTED APPLY

Tube	Function	1	2	3	4	5	6	7	8
		0	270	77	0	0	—	2.8*	6.2
7V7	Modulator	0	275	72	0	0	—	2.6*	6.2
		0	0	1.5*	—	1.5*	145	6.2	270
6SG7	R. F. Amplifier	0	0	1.6*	—	1.6*	140	6.2	260
		0	0	2.0*	—	2.0*	135	6.2	260
6SG7	1st I. F. Amp.	0	0	2.0*	—	2.0*	132	6.2	260

Upper values are for Broadcast Band.
Lower values are for F. M. Band.

* Use 10 volt scale. All others except AC on 500 volt scale. 1000 ohm per voltmeter used on DC.
† Value is for white dot showing on "Q" switch, with white dot not showing these values change to 100 volts.
‡ Value shown is for white dot showing; white dot not showing, value is zero. Rectifier filament voltage is 4.6 volts.

ALIGNING INFORMATION

Never Realign Unless Absolutely Necessary

If alignment is attempted, it will not be successful unless the instructions which follow are adhered to exactly.

The following equipment will be required:

1. Standard signal generator.
2. F. M. signal generator with wide band sweep circuit.
3. Oscillograph.
4. Volt ohmyst or equivalent.

ALIGNING PROCEDURE (AMP. MOD.)

I. **Intermediate Frequency Adjustments (A. M.)**

1. Set the range switch to standard broadcast position.
2. Tune set to 1000 kc.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 kilocycles to the grid of the modulator tube, using a 0.1 mf. Capacitor in series with the output lead of the signal generator.
5. Adjust the following I. F. aligners for maximum output.
   - 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.
   - E. Tertiary of first I. F. circuit.

II. **Radio Frequency Adjustments (A. M.) Standard Broadcast Range (A Band)**

1. Replace the 0.1 mf. capacitor in series with the output lead of the signal generator with a 200 mmf. capacitor and connect it to the antenna terminal of the chassis. Be sure loop antenna is plugged in.
2. Set the signal generator frequency and the receiver tuning dial to 600 kc.
3. Set the range switch to the standard broadcast range (A Band).
4. Adjust the 600 kc. oscillator and R. F. aligners (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 kc.
6. Adjust the 1500 kc. oscillator, R. F. and antenna aligning capacitors for maximum signal.
7. Repeat operations five and six.

1st Short Wave Spread Band (Red)

1. Replace the 0.1 mf. capacitor in series with the output lead from the signal generator with a 400 ohm carbon type resistor and connect it to the antenna terminal of the chassis.
2. Ground the F. M. dipole terminal which is nearest the ground binding post.
3. Switch to Red Band.
4. Set the signal generator frequency and the receiver tuning dial to 12 megacycles.
5. Adjust the oscillator R. F. and antenna aligning capacitors for maximum signal.
6. Set pointer to 9.0 megacycles on dial and adjust oscillator, R. F. and antenna iron cores for a maximum.
7. Repeat operations 3, 4 and 5.

2nd Short Wave Spread Band (Green)

1. Leave the signal generator connected in the same manner.
2. Switch to Green Band.
3. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
4. Adjust the oscillator, R. F. and antenna trimmers for maximum signal.

ALIGNING PROCEDURE (FREQ. MOD.)

I. **Intermediate Frequency Adjustments (F. M.)**

Note: All I. F. adjustments are made using a wide band sweep signal generator with a sweep circuit of plus or minus 300 kilocycles.

1. Switch to F. M. band.
2. Tune the set to the extreme high frequency end of the dial (50 megacycles).
3. Connect a volt ohmyst or equivalent between ground and terminal 6 of the 6SQ7 "Q" tube socket.
4. Connect the oscillograph between same points as Volt Ohmyst.
5. Connect the ground terminal of the wide band sweep signal generator to the ground terminal of the 6AC7 second I. F. tube socket.
6. Introduce a signal of 4.3 megacycles to the grid of the 6AC7 second I. F. tube socket (terminal No. 4), using a 0.1 mf. capacitor in series with the output lead of the signal generator. Maintain a reading of about two volts on the Volt Ohmyst.
7. Adjust the secondary and primary of the third I. F. transformer for maximum reading.
8. Connect the output lead of the wide band sweep signal generator and the 0.1 microfarad capacitor in series with it to the grid of the first I. F. tube socket terminal No. 4.
9. Connect the ground lead of the signal generator to the ground terminal of the first I. F. tube socket.
10. Adjust the second I. F. transformer in the same manner.
11. Connect the output lead of the wide band sweep signal generator with the 0.1 microfarad capacitor in series with it to the grid of the Modulator tube.
12. Adjust the first I. F. transformer in the same manner.

II. **Discriminator Adjustment (F. M.)**

1. Connect the ground terminal of the standard unmodulated signal generator to the ground terminal of the first I. F. tube socket.
2. Connect the output lead of the unmodulated standard signal generator to the grid of the first I. F. tube (terminal No. 4) using a 0.1 microfarad capacitor in series with the output lead of the standard signal generator.
3. Place "Q" switch in position where white dot does not show.
4. Ground terminal 8 of 6H6 socket.
5. Connect the Volt Ohmyst across one half of the discriminator load (from ground to the junction of the two .1 megohm resistors R-66 and R-67.
6. Set the attenuator of the standard signal generator for maximum output.
7. Adjust the primary of the discriminator transformer for maximum reading.
8. Connect the volt ohmyst across the whole discriminator load (from ground to the junction of R-66, 0.1 megohm resistor and C-70 .04 mf. capacitor).
9. Adjust the secondary of the discriminator transformer for center "O" reading.
10. Vary the frequency of the standard signal generator making sure that the voltage peaks, which should be of the same magnitude, are the same number of kilocycles off on either side of resonance. Any departure from these conditions may be corrected by a slight readjustment of the primary.
11. Remove ground from terminal 8 of 6H6 tube socket.

Radio Frequency Adjustments (F. M.)

1. Set the signal generator frequency and the receiver tuning dial to 48.5 megacycles.
2. Connect a wire between the ground binding post and the nearest F. M. dipole connection.
3. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm resistor and connect it to the other F. M. terminal on the back of the chassis.
4. Connect Volt Ohmyst between ground and terminal No. 6 of the 6SQ7, "Q" tube socket.
5. Adjust the oscillator aligner (Air trimmer) for maximum signal.
6. Adjust the R. F. and antenna aligners for maximum signal.

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MODEL 920
MODELS 935 and 955

STROMBERG-CARLSON TEL. MFG. CO.

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

MODEL 920

IMPORTANT: The stations selected should be the local or favorite stations which give good reception at all times.

Set up stations in the daytime to avoid unnecessary interference.

Allow the set to run for about twenty minutes before setting up stations.

1. Turn the receiver "On".
2. Push in the "Radio" button.
3. Set the Range Switch as follows:
   a. If an external antenna is used, set knob so arrow points to designation "ANT.".
   b. If the built-in loop antenna is used, set knob so arrow points to designation "Loop".
4. Turn volume control about three-quarters of the way on (in a clockwise direction).
5. Pull the six station push buttons off their levers.
6. Remove the call letters of the six selected stations from the call letter sheets, which are in an envelope stapled to the cabinet. Insert the station call letters part way in the slots at the sides of the buttons. Next, insert a transparent tab in each slot in front of the station letters. Then push both the transparent tabs and the call letters all the way into the slot. A pencil eraser may be helpful.
7. Loosen the set screw of the lever to be set up.
8. Push in the lever and manually tune in the desired station, observing the tuning indicator in order to obtain exact resonance.

   IMPORTANT: For accurate set-up, be sure that the lever is pushed in, in the same manner and with the same amount of pressure as will be used when operating the push buttons.
9. Tighten the set screw. Be sure not to disturb the adjustment in any way while tightening the screw.
10. Place the proper button on the lever.
11. Check the accuracy of the adjustment by detuning the station and retuning with the button several times, pushing the button with an even pressure. Readjust if necessary.
12. Set up the other five stations in the same manner.

MODEL 935
MODEL 955

IMPORTANT. The eight selected broadcast stations should be local or favorite stations which give good reception at all times. Set up stations in the daytime to avoid unnecessary interference. Allow the set to run for about twenty minutes before setting up stations. Always use the tuning indicator unit when setting up stations in order to determine when the station is correctly tuned in.

1. Turn the receiver "on" by rotating the "Off-On-Volume" control.
2. Push in the button designated, "Radio".
3. Decide which buttons are to be used for F. M. stations and which for standard broadcast stations. (Button No. 1 is the extreme right-hand button.)

   On the push-button set-up terminal strip (see Figure 3), connect the F. M. button terminal to the end terminal labelled F. M., and the standard broadcast button terminals to the other end terminal labelled A. M.

   NOTE: All station buttons may be used for either the F. M. or standard broadcast range, but if it is desired to tune in both F. M. stations and standard broadcast stations either manually or with push buttons, at least one station button must be set up for each range.
4. Turn the Volume control to about three-quarters of its maximum rotation (in clockwise directions).
5. Pull the eight station push buttons off their levers.
6. Remove the station identification tabs from the sheets which will be found in the envelope stapled to the cabinet. For stations located in the standard broadcast range, call letters are provided; for identification of F. M. stations, assigned channel numbers from 21 to 99 are provided for the push buttons. Push buttons set up for F. M. stations should be designated by inserting the appropriate channel number tabs.

   For example, assume that a local F. M. station's call is W51R. This indicates that its assigned frequency is 45.1 megacycles. Therefore, the channel number tab, 51, which corresponds to the last two numbers of the assigned frequency would be inserted in the push button. Channel numbers for F. M. stations will not be repeated in the same or nearby localities; thus the tabs provided will always be suitable for these stations. Insert the station identification tabs part way in the slots at the sides of the buttons. Next insert a transparent tab in each slot in front of the station identification tabs. Then push both the transparent tab and the station identification tabs all the way into the slot.
7. Loosen the set screw of the lever to be set up.
8. Push in the lever and manually tune in the desired station, observing the tuning indicator in order to obtain exact resonance.

   IMPORTANT. For accurate set up, it is essential that the lever be pushed in, in the same manner and with the same amount of pressure as will be used in the normal operation of the push buttons.
9. Tighten the set screw. **Be sure not to disturb the adjustment in any way while tightening the screw.**
10. Place the proper button on the lever.
11. Check the accuracy of the adjustment by detuning the station and returning with this button several times, pushing the button with an even pressure. Readjust if necessary.
12. Set up the other seven stations in the same manner.

    In order that the push buttons may be set up for either A. M. or F. M. stations we have provided a terminal strip in the rear of the chassis which has ten screw type terminals. The F. M. connection is on the left end (facing the rear of the chassis), the A. M. connection on the right. It is possible, therefore, to connect any one of the eight push button terminals for either A. M. or F. M. operation by merely connecting the push button terminals required for F. M. operation to the terminal marked F. M. and the buttons to be used on the A. M. band to terminal marked A. M. When the sets leave our factory terminals one and two are connected for F. M., the other six for A. M. See cut below.

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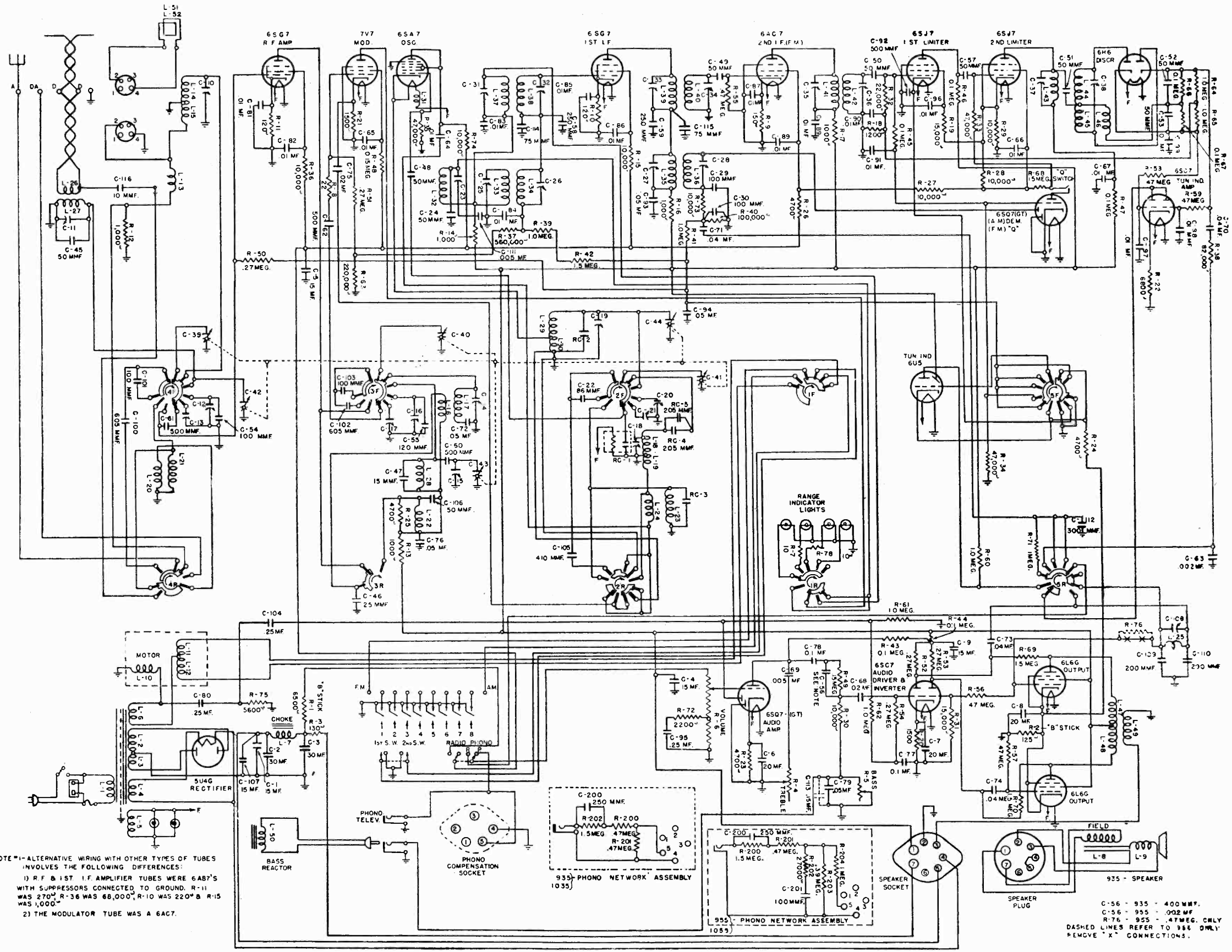

NOTE "1" - ALTERNATIVE WIRING WITH OTHER TYPES OF TUBES INVOLVES THE FOLLOWING DIFFERENCES:

1) R.F. & 1ST. I.F. AMPLIFIER TUBES WERE 6AB7'S WITH SUPPRESSORS CONNECTED TO GROUND. R-11 WAS 270Ω, R-36 WAS 68,000Ω, R-10 WAS 220Ω & R-15 WAS 1,000Ω.

2) THE MODULATOR TUBE WAS A 6AC7.

C-56 - 935 - 400 MMF.
C-56 - 955 - .002 MF.
R-76 - 955 - .47 MEG. ONLY
DASHED LINES REFER TO 955 ONLY
REMOVE "X" CONNECTIONS.

IF PEAKS AM-455 KC
FM-4.3 MC

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MODEL 955-PF

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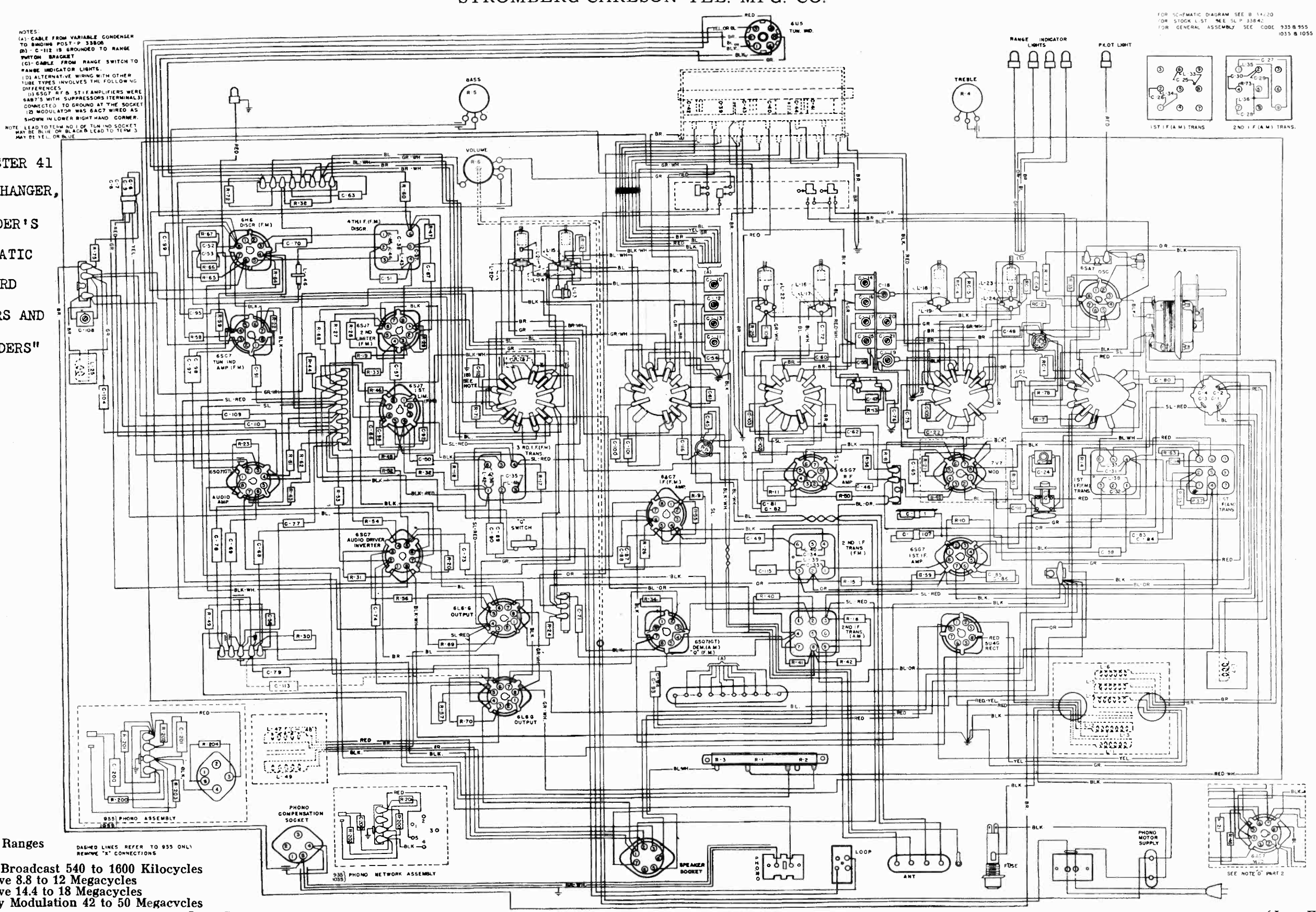

FOR WEBSTER 41 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS"

Tuning Ranges

Standard Broadcast 540 to 1600 Kilocycles
Short Wave 8.8 to 12 Megacycles
Short Wave 14.4 to 18 Megacycles
Frequency Modulation 42 to 50 Megacycles

Model	Input Power Frequency	Chassis	Cabinet	Speaker	Phonograph Equipment
955-PF	50-60 Cycles	34033	34038	{ 34036 Lo-F / 33765 Hi-F }	33989

Input Power Rating, 955-PF ____ 320 Watts including Phono Motor
Intermediate Frequency ____ { 455 Kilocycles (Amplitude Modulation) / 4.3 Megacycles (Frequency Modulation) }
Speaker Field Coil Resistance—Low Frequency Speaker ____ 345 Ohms
Speaker Voice Coil Impedance { Low Freq 12 Ohms / High Freq 11 Ohms }
Power Output ____ 30 Watts at 10% Distortion

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MODEL 955-PF

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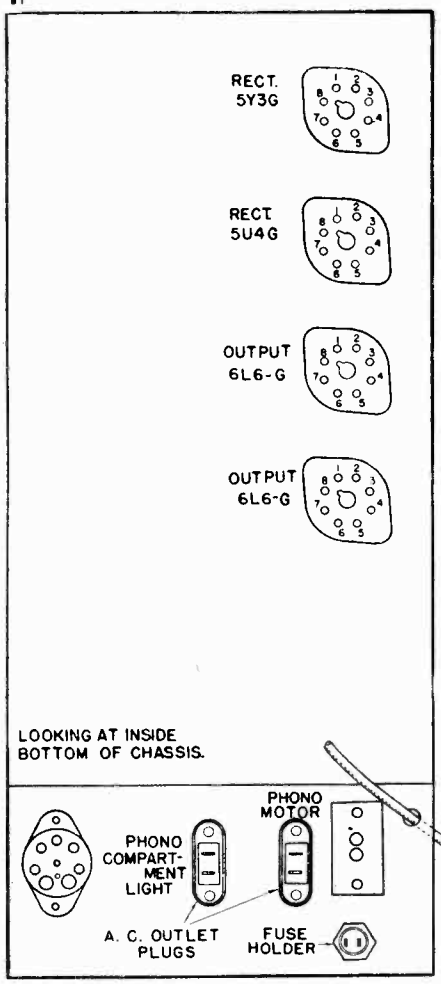


Location Chart—Amplifier

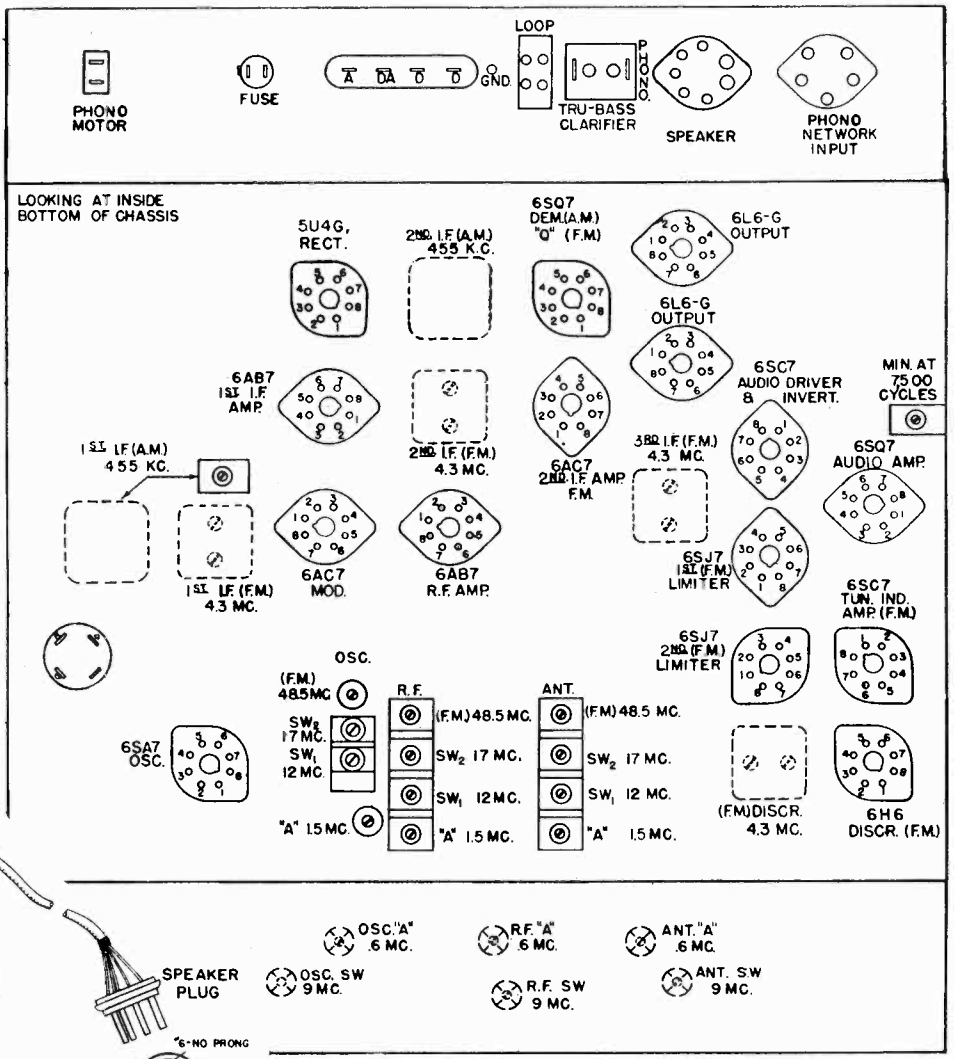
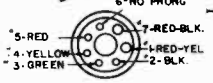
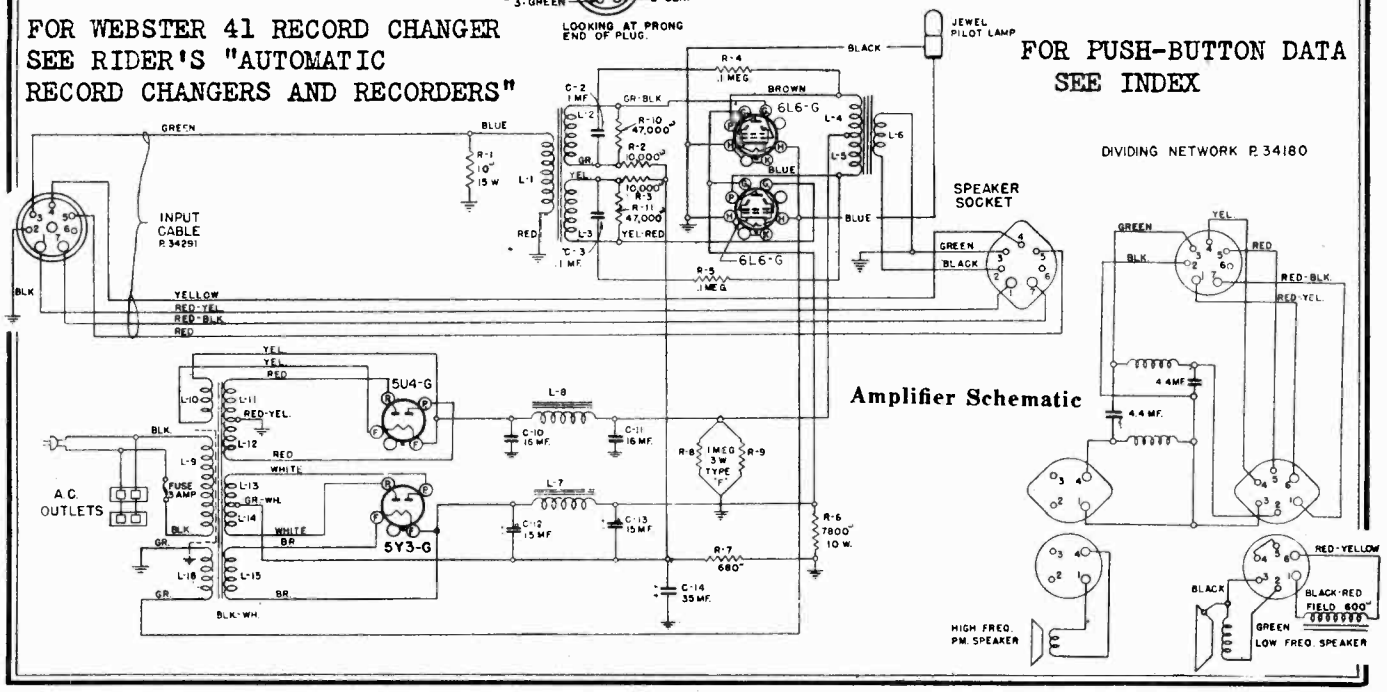


Fig. 2—Location Chart—Tuner



FOR WEBSTER 41 RECORD CHANGER SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS"

FOR PUSH-BUTTON DATA SEE INDEX



Amplifier Schematic

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VOLTAGE READING TUNER CHASSIS AT 120 V. LINE

Type	Function	1	2	3	4	5	6	7	8
		0	0	0	—	0.8*	122	6.2	272
†† 6AB7	R. F. Amplifier	0	0	0	—	0.8*	114	6.2	272
		0	0	0	—	1.8*	101	6.2	275
†† 6AC7	Modulator	0	0	0	—	1.8*	112	6.2	275
		0	6.2	101	101	—	0	0	101
6SA7	Oscillator	0	6.2	95	95	—	0	0	95
		0	0	0	—	1.4*	200	6.2	266
†† 6AB7	1st I. F. Amp.	0	0	0	—	1.4*	200	6.2	266
		0	0	0	—	1.2*	165	6.2	263
6AC7	2nd I. F. Amp.	0	0	0	—	1.2*	158	6.2	263
		0	0	0	—	3.5*	63	6.2	227
6SJ7	1st Limiter	0	0	0	—	0	35	6.2	45
		0	0	70	26	70	110	6.2	235†
6SJ7	2nd Limiter	0	0	47	45*	47	100	6.2	235†
		0	0	—	—	—	—	6.2	—
6H6	Discriminator	0	0	—	—	—	—	6.2	—
	A. M. Detector	0	—	0	—	0	0.0‡	6.2	0
6SQ7	F. M. "Q"	0	—	0	—	0	0.5‡	6.2	0
		0	—	1.2*	—	0	113	6.2	0
6SQ7	1st Audio Amp.	0	—	1.2*	—	0	113	6.2	0
		0	86	—	—	86	1.0*	6.2	0
6SC7	Driver and Inverter	0	86	—	—	86	1.0*	6.2	0
		0	0	268	276	—	85	6.2	16
6L6G	Power Output (2)	0	0	268	276	—	85	6.2	16
		—	36.4	—	365	—	365	—	364
5U4G	Rectifier	—	36.4	—	365	—	365	—	364
		6.2	50	—	275	20	0		
6U5	Tuning Indicator	6.2	50	—	275	20	0		
	F. M. Tuning Ind.	0	0	—	—	0	0	6.2	0
6SC7	Amplifier	0	50	—	—	50	0.8*	6.2	0
		276	0	0	364		—	343	
—	Speaker Socket	276	0	0	364		—	343	

†† WHERE THE FOLLOWING TUBES ARE USED IN THESE STAGES THE VOLTAGES LISTED APPLY

Tube	Function	1	2	3	4	5	6	7	8
		0	270	77	0	0	—	2.8*	6.2
7V7	Modulator	0	275	72	0	0	—	2.6*	6.2
		0	0	1.5 *	—	1.5*	145	6.2	270
6SG7	R. F. Amplifier	0	0	1.6*	—	1.6*	140	6.2	260
		0	0	2.0*	—	2.0*	135	6.2	260
6SG7	1st I. F. Amp.	0	0	2.0*	—	2.0*	132	6.2	260

Upper values are for Broadcast Band.
Lower values are for F. M. Band.
*** Use 10 volt scale. All others except AC on 500 volt scale. 1000 ohm per voltmeter used on DC.**
† Value is for white dot showing on "Q" switch, with white dot not showing these values change to 100 volts.
‡ Value shown is for white dot showing; white dot not showing, value is zero. Rectifier filament voltage is 4.6 volts.

POWER AMPLIFIER VOLTAGE TABLE

Tube	Function	1	2	3	4	5	6	7	8
6L6G	Output (2)	0	0	386	290	—27	386	6.2	0
5U4G	Rectifier	—	390	—	535	—	535	—	390
5Y3G	Rectifier	—	292	—	276	—	275	—	292
Speaker Socket		276	0	0	364	364	—	343	

5U4G Rectifier Filament 4.75 Volts AC
5Y3G Rectifier Filament 4.75 Volts AC

ALIGNING PROCEDURE (AMP. MOD.)

I. Intermediate Frequency Adjustments (A. M.)

1. Set the range switch to standard broadcast position.
2. Tune set to 1000 kc.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce a modulated signal of 455 kilocycles to the grid of the modulator tube, using a 0.1 mf. Capacitor in series with the output lead of the signal generator.
5. Adjust the following I. F. aligners for maximum output.

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.
E. Tertiary of first I. F. circuit.

II. Radio Frequency Adjustments (A. M.)
Standard Broadcast Range (A Band)

1. Replace the 0.1 mf. capacitor in series with the output lead of the signal generator with a 200 mmf. capacitor and connect it to the antenna terminal of the chassis. Be sure loop antenna is plugged in.
2. Set the signal generator frequency and the receiver tuning dial to 600 kc.
3. Set the range switch to the standard broadcast range (A Band).
4. Adjust the 600 kc. oscillator and R. F. aligners (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 kc.
6. Adjust the 1500 kc. oscillator, R. F. and antenna aligning capacitors for maximum signal.
7. Repeat operations five and six.

1st Short Wave Spread Band (Red)

1. Replace the 0.1 mf. capacitor in series with the output lead from the signal generator with a 400 ohm carbon type resistor and connect it to the antenna terminal of the chassis.
2. Ground the F. M. dipole terminal which is nearest the ground binding post.
3. Switch to Red Band.
4. Set the signal generator frequency and the receiver tuning dial to 12 megacycles.
5. Adjust the oscillator R. F. and antenna aligning capacitors for maximum signal.
6. Set pointer to 9.0 megacycles on dial and adjust oscillator, R. F. and antenna iron cores for a maximum.
7. Repeat operations 3, 4 and 5.

2nd Short Wave Spread Band (Green)

1. Leave the signal generator connected in the same manner.
2. Switch to Green Band.
3. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
4. Adjust the oscillator, R. F. and antenna trimmers for maximum signal.

ALIGNING PROCEDURE (FREQ. MOD.)

I. Intermediate Frequency Adjustments (F. M.)

Note: All I. F. adjustments are made using a wide band sweep signal generator with a sweep circuit of plus or minus 300 kilocycles.

1. Switch to F. M. band.
2. Tune the set to the extreme high frequency end of the dial (50 megacycles).
3. Connect a volt ohmyst or equivalent between ground and terminal 6 of the 6SQ7 "Q" tube socket.
4. Connect the oscillograph between same points as Volt Ohmyst.
5. Connect the ground terminal of the wide band sweep signal generator to the ground terminal of the 6AC7 second I. F. tube socket.
6. Introduce a signal of 4.3 megacycles to the grid of the 6AC7 second I. F. tube socket (terminal No. 4), using a 0.1 mf. capacitor in series with the output lead of the signal generator. Maintain a reading of about two volts on the Volt Ohmyst.
7. Adjust the secondary and primary of the third I. F. transformer for maximum reading.
8. Connect the output lead of the wide band sweep signal generator and the 0.1 microfarad capacitor in series with it to the grid of the first I. F. tube socket terminal No. 4.
9. Connect the ground lead of the signal generator to the ground terminal of the first I. F. tube socket.
10. Adjust the second I. F. transformer in the same manner.
11. Connect the output lead of the wide band sweep signal generator with the 0.1 microfarad capacitor in series with it to the grid of the Modulator tube.
12. Adjust the first I. F. transformer in the same manner.

II. Discriminator Adjustments (F. M.)

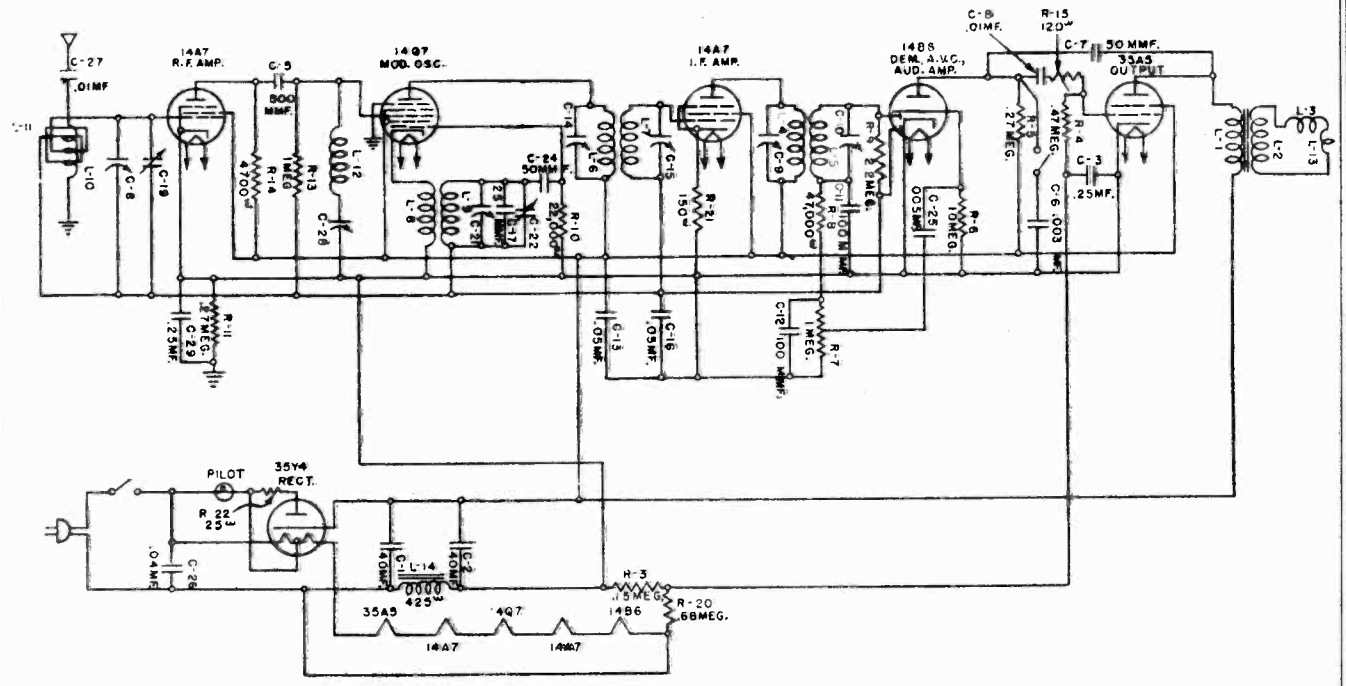
1. Connect the ground terminal of the standard unmodulated signal generator to the ground terminal of the first I. F. tube socket.
2. Connect the output lead of the unmodulated standard signal generator to the grid of the first I. F. tube (terminal No. 4) using a 0.1 microfarad capacitor in series with the output lead of the standard signal generator.
3. Place "Q" switch in position where white dot does not show.
4. Ground terminal 8 of 6H6 socket.
5. Connect the Volt Ohmyst across one half of the discriminator load (from ground to the junction of the two .1 megohm resistors R-66 and R-67).
6. Set the attenuator of the standard signal generator for maximum output.
7. Adjust the primary of the discriminator transformer for maximum reading.
8. Connect the volt ohmyst across the whole discriminator load (from ground to the junction of R-66, 0.1 megohm resistor and C-70 .04 mf. capacitor).
9. Adjust the secondary of the discriminator transformer for center "0" reading.
10. Vary the frequency of the standard signal generator making sure that the voltage peaks, which should be of the same magnitude, are the same number of kilocycles off on either side of resonance. Any departure from these conditions may be corrected by a slight readjustment of the primary.
11. Remove ground from terminal 8 of 6H6 tube socket.

Radio Frequency Adjustments (F. M.)

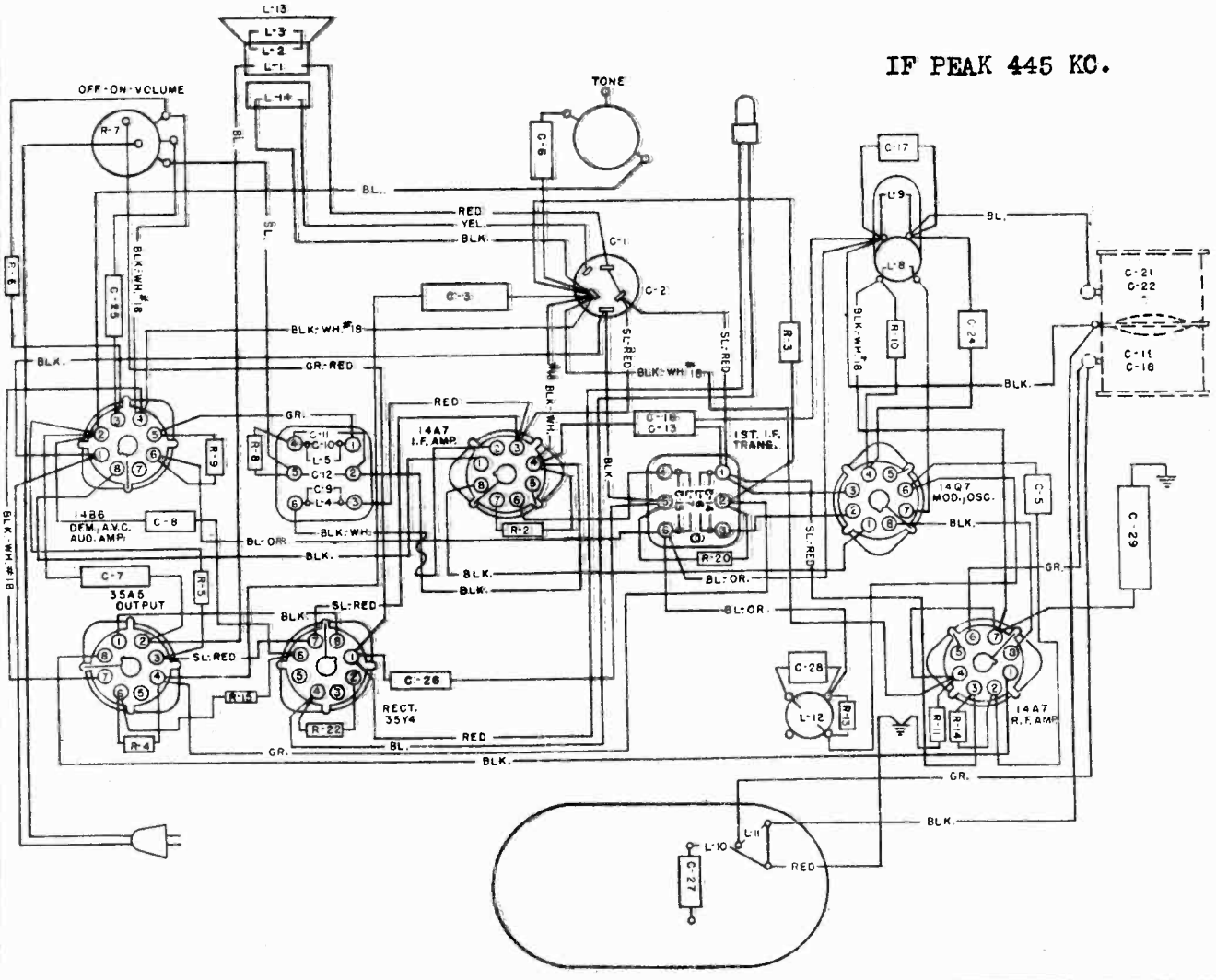
1. Set the signal generator frequency and the receiver tuning dial to 48.5 megacycles.
2. Connect a wire between the ground binding post and the nearest F. M. dipole connection.
3. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm resistor and connect it to the other F. M. terminal on the back of the chassis.
4. Connect Volt Ohmyst between ground and terminal No. 6 of the 6SQ7, "Q" tube socket.
5. Adjust the oscillator aligner (Air trimmer) for maximum signal.
6. Adjust the R. F. and antenna aligners for maximum signal.

MODELS 1000H, 1000J

STROMBERG-CARLSON TEL. MFG. CO.



IF PEAK 445 KC.



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MODELS 1000H, 1000J

STROMBERG-CARLSON TEL. MFG. CO.

The 1000 series is similar to 900 series except for tube complement, and small circuit changes, all of which are shown here.

IDENTIFICATION TABLE

Model		Input Power Frequency	Chassis	Cabinet	Speaker
1000-H	Brown and Ivory	25-60 Cycles AC (or DC)	34498	33528	34505
1000-J	Burgundy and Ivory	25-60 Cycles AC (or DC)	34498	33961	34505

SPECIFICATIONS

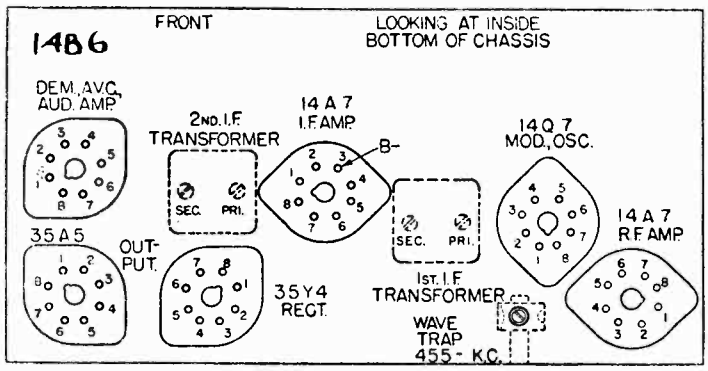
Voltage Rating ..... 105-125 Volts
Type of Circuit ..... Superheterodyne
Tuning Range ..... .54 to 1.65 Megacycles
Number and type of tubes—6
1—14A7 R. F. Amplifier
1—14Q7 Modulator and Oscillator
1—14A7 I. F. Amplifier
1486 1— Demodulator, AVC and Audio
1—35A5 Output
1—35Y4 Rectifier
Input Power Rating ..... 30 Watts
Intermediate Frequency ..... 455 Kilocycles
Speaker Voice Coil Impedance ..... Approximately 3.5 Ohms
Speaker Field Coil Resistance ..... 425 Ohms
Power Output ..... 0.65 Watts 10% Distortion, 1.25 Watts Maximum

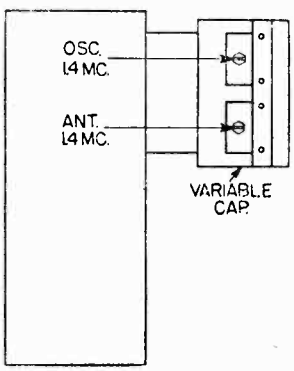
VOLTAGE TABLE

		TERMINALS							
Tube	*Use*	1	2	3	4	5	6	7	8
14A7	R. F. Amp.	56 AC	42	82	0	0	0	0	45 AC
14Q7	Mod. Osc.	35 AC	82	82	0	0	0	0	45 AC
14A7	I. F. Amp.	32 AC	82	83	0	0	0	1.5	35 AC
1486	Dem., AVC. Audio	32 AC	61	0	0	0	0	0	32 AC
35A5	Output	92 AC	76	83	—5	0	—5	0	112 AC
35Y4	Rectifier	125 AC	120 AC	0	120 AC	0	—5	83	92 AC

Read on 100 V. scale of meter having a resistance of 1000 ohms per volt.
Voltages measured to — B
120 V. line

LOCATION CHART





REPLACEMENT PARTS

Piece No.	Circuit Designation	Part
34506	C-1, 2	Capacitor
29973	C-3	Capacitor
27305	C-7	Capacitor
26367	R-20	Resistor
26323	R-21	150 Ohm Resistor
34587	R-22	25 Ohm Resistor
26359	R-3	.15 Megohm Resistor
34590		Tube Socket
34505		Speaker

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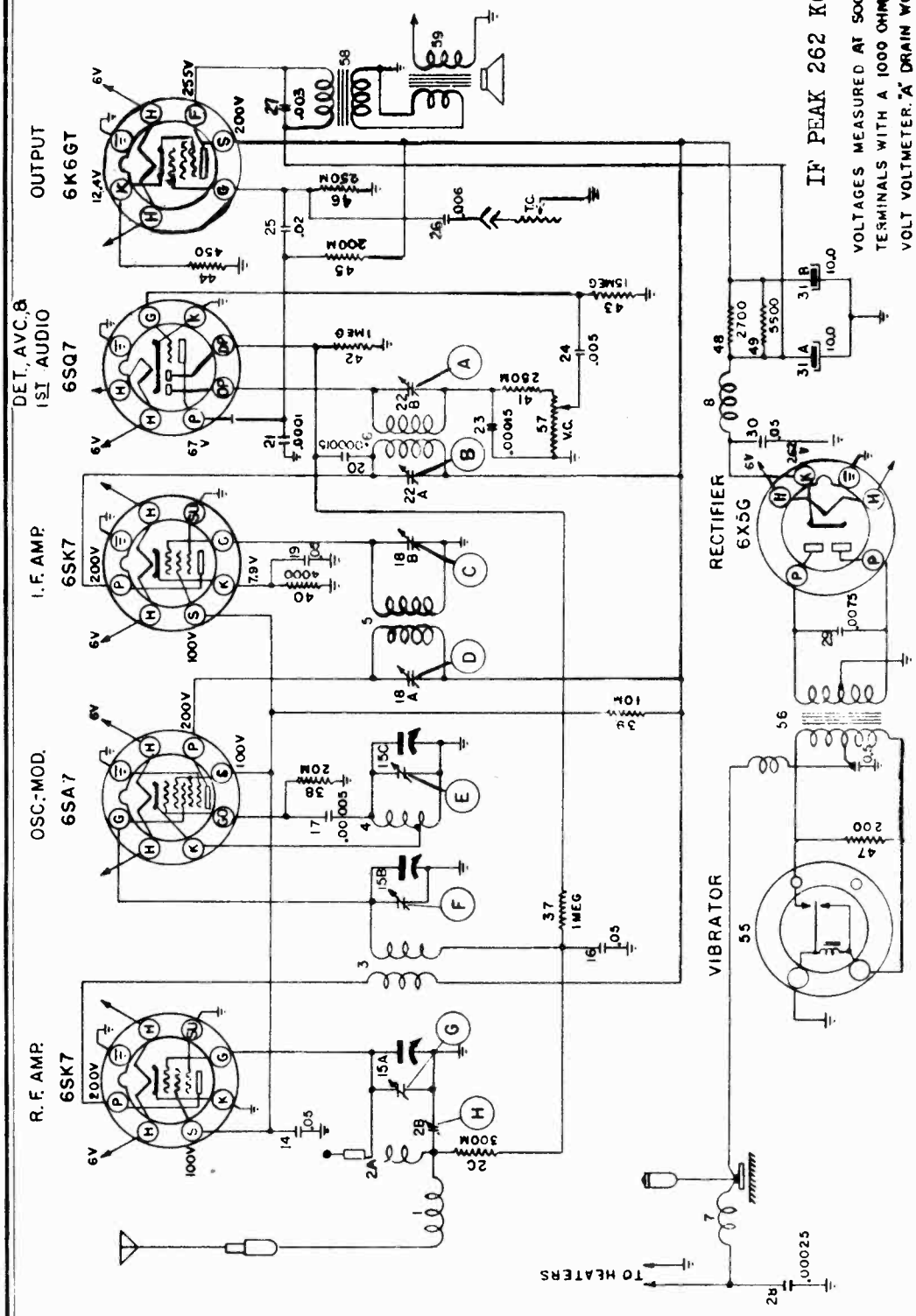
MODEL R-698



GENERAL

MOUNTING--Universal.

TUBES--Six.

SPEAKER--7" Dynamic.

TUNING--Manual Control Only.

CAR ANTENNA CAPACITY--.000050 Mfd. to .000225 Mfd.

TUNING RANGE--540 - 1530 K.C.

Delco R-698

Date: 3-27-41

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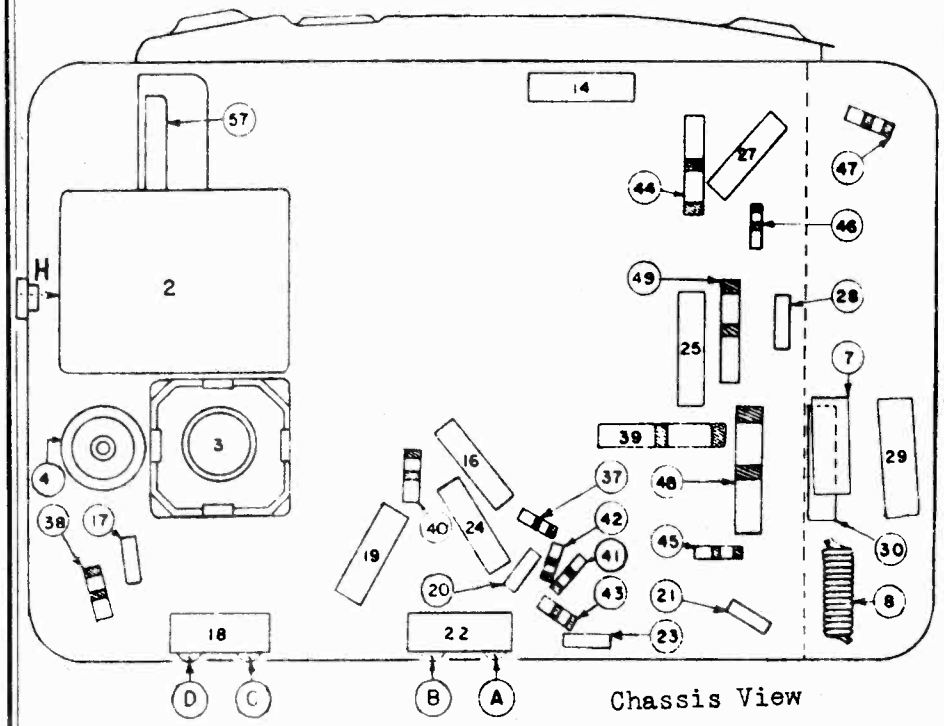
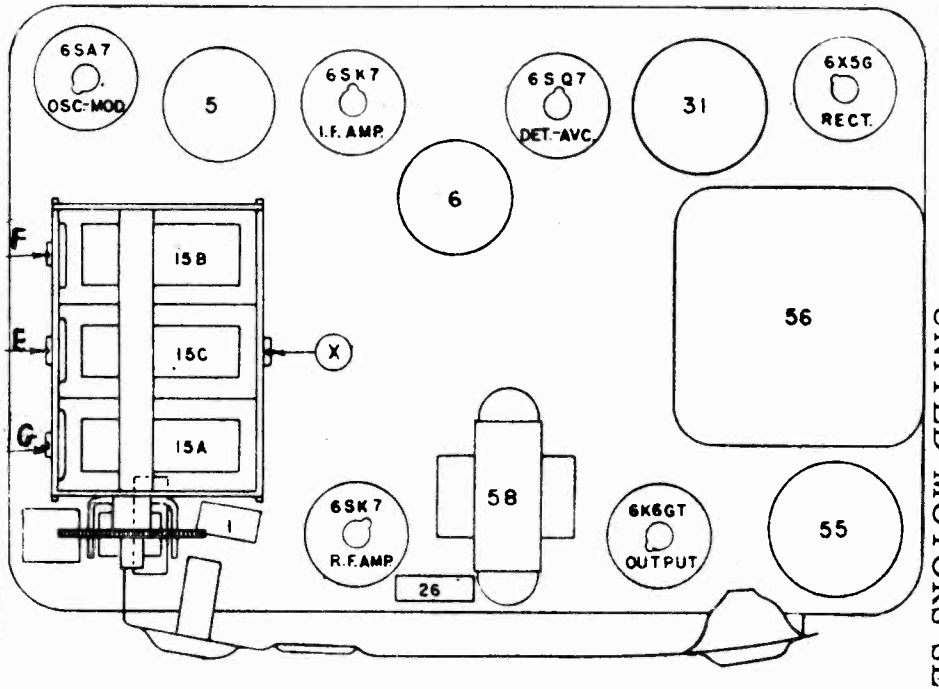
Tube View



Chassis View



TUBE VIEW

ALIGNMENT PROCEDURE

VOLUME CONTROL MAXIMUM.

SIGNAL GENERATOR MINIMUM FOR SATISFACTORY OUTPUT INDICATION.

Series Condenser Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 Mfd.	Grid Side 15B	262 K.C.	A B C D
.000070 Mfd.	Antenna Terminal	1530 K.C.	E
.000070 Mfd.	Antenna Terminal	1400 K.C.	F G
.000070 Mfd.	Antenna Terminal	600 K.C.	H
.000070 Mfd.	Antenna Terminal	1400 K.C.	F G

Adjust trimmer (H) to match car antenna (600 K.C.) when radio is installed.

Trimmer (X) is in parallel with trimmer (E) and has been set at the factory. This should not be touched in the field.

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MODEL R-701
MODEL R-699

1. Superheterodyne Theory and Alignment

Most Auto Radios employ the superheterodyne circuit which uses an intermediate frequency (I-F) amplifier, the characteristics of which largely govern the selectivity of the receiver. The I-F amplifier characteristics are determined principally by the adjustment and design of the I-F transformers. It is, therefore, important that the I-F amplifier be correctly adjusted to provide the best selectivity. These adjustments may be in the form of adjustable trimmers connected across the coils or movable iron cores placed within the coils. During alignment, it is necessary only to adjust these trimmers or iron cores as specified in the tabular Alignment Procedure, to obtain the best operation.

Incorporated in every superheterodyne is a local oscillator, the output of which mixes with the incoming signal from the antenna. The local oscillator does not operate at the same frequency as the incoming signal which is to be received. The resonant (acceptance) frequency of the I-F amplifier establishes the difference in frequency required; 262 KC is commonly used. In most auto radios the local oscillator operates at a frequency higher than the incoming signal frequency. When the local oscillator output mixes with the incoming signal, the two predominating resultant frequencies produced are the sum and difference of the two frequencies. The design of most superheterodyne receivers is such that the difference in frequency is the same as the I-F amplifier resonant frequency. Modulation of the incoming signal will be present as modulation of input to the I-F amplifier.

2. Effects of R-F or I-F Misalignment

The effects of misaligned R-F or I-F stages are most commonly observed as a loss of sensitivity either over a portion or over the entire band; loss of selectivity, often characterized by the selectivity being noticeably unequal on the two sides of the point of best reception; change in fidelity; and inaccurate dial readings. Loss of Fidelity will be apparent as a loss of high or low audio frequencies. If the I-F amplifier is not tuned to the specified frequency, the oscillator and other tuned circuits will not track. The dial readings will then be incorrect and a portion of the band will have low sensitivity.

3. Alignment Preliminaries

The radio receiver should be functioning normally before the various aligning adjustments are made. The trouble shooting, if necessary, should precede the final alignment.

Receiving signals at the correct dial setting depends upon having the proper relation between tuning condenser or iron cores and the dial scale. Pointer or dial setting is necessary because the scales are not linear with frequency and all scales are precalibrated for maximum accuracy.

4. Test Oscillator Connection -- Dummy Antenna Use

The chassis or frame of the radio receiver is considered as being at ground potential and the "O" or "GND" terminal of the Test Oscillator should be connected to the chassis wherever good contact can be established.

The "Ant" or "High" terminal of the Test Oscillator output must be connected to the Antenna connector or other points in the radio receiver as specified in the Alignment Procedure. The use of a fixed condenser in series with the Test Oscillator lead, is specified in some instances. A .1 mfd. condenser is usually used in aligning the I-F stages and a smaller condenser is used in series with the antenna connector. This condenser, sometimes called a "Dummy Antenna", provides the proper input loading to the receiver. It is important that this condenser be connected at the point where the Test Oscillator lead joins the radio set, and should not be connected at the

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test oscillator. In order to provide d-c bias to the tubes, the grid caps should be left connected if test oscillator connection is made also. Shielded leads should be used.

5. Output Meter Connections

Any standard type of output meter can be employed during alignment. The meter should be connected across either the primary or secondary of the output transformer. It is best to leave the voice coil connected while using the output meter. It is essential that an Output Meter with sufficient sensitivity be used to avoid the possibility of using too much Test Oscillator Output to get a readable indication on the Output Meter. Sometimes it is desirable to connect the output meter from the output tube plate to ground; when this connection is employed be sure that a .1 mfd. condenser is connected in series with the meter to afford protection from the d-c potential.

6. Alignment of the Tuned Circuits

Tuning adjustments with trimmers or adjustable iron cores is accomplished while applying a modulated signal, of the specified frequency, to the input of the stage being adjusted. Maximum Output Meter indication, of the amplitude of Audio-Frequency output, of the radio receiver, shows when tuning is correct.

The various, tuned circuits are aligned by adjusting each in this manner. During all alignment adjustments, the output of the Test Oscillator must be kept as low as possible, consistent with a reasonable output meter indication, to prevent A-V-C action from taking place and making all adjustments seem very broad.

The tuning tool used must have a minimum of metal so it will cause little or no tuning reaction. If removing the tool, after making an adjustment, reduces the output appreciably, a slight compensating mis-tuning will correct the error and produce maximum output when the tool is removed.

7. Rocking-In Adjustments

Provisions are incorporated in the Oscillator circuit of some Superheterodyne receivers for a tracking adjustment at the low frequency end of the band. This consists of a variable oscillator tracking condenser or magnetic core. Tuning frequencies specified in Alignment Procedure Table for making these adjustments should be carefully followed because the tuned circuits design is such that only this procedure will produce correct dial calibration.

For maximum sensitivity at low frequency end of the band, this should be a rocking adjustment. To make a rocking adjustment, change the setting of the specified oscillator tracking condenser or magnetic core slightly, then tune the gang condenser for maximum output regardless of dial setting, and note the exact reading of the output meter. Now repeat this procedure and note if the Output Meter reading so obtained is greater, or less than the first one. If the Second Reading is greater than the first, continue this process while changing the Oscillator tracking adjustment in the same direction until the highest possible output meter reading is obtained. If the second reading is less than the first, continue this process while changing the Oscillator tracking adjustment in the opposite direction until the highest possible output reading is obtained. The maximum amplitude setting which produces the most accurate dial calibration should be used.

This procedure increases the receiver sensitivity by effectively tuning the local Oscillator circuit simultaneously with the R-F and 1st Detector stages at the low frequency end of the band. Simultaneous adjustment is necessary to maintain correct tracking. An adjustment at the low-frequency end of a band should be followed by readjustments at the high frequency end because each tuning adjustment affects the other.

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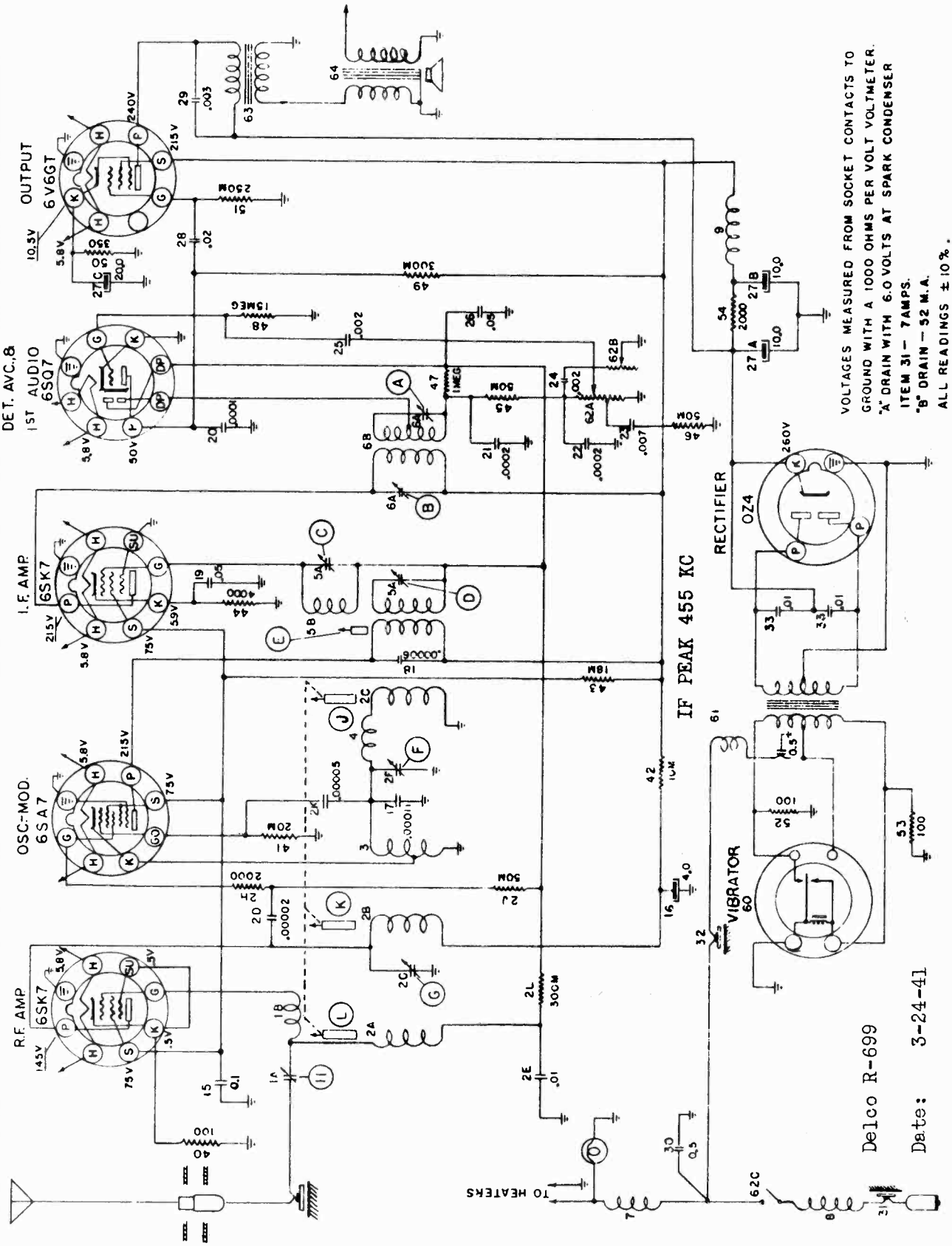

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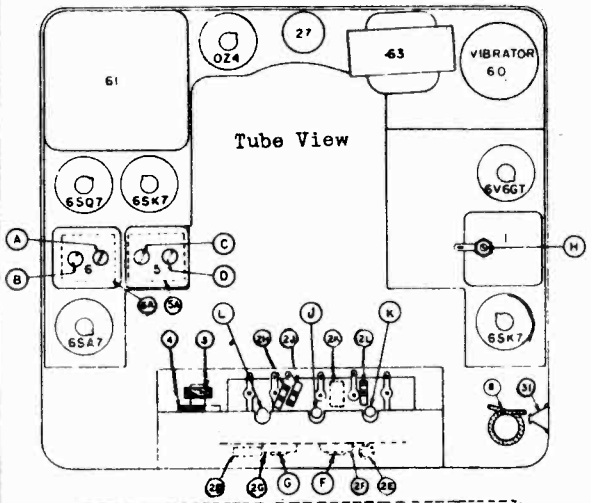
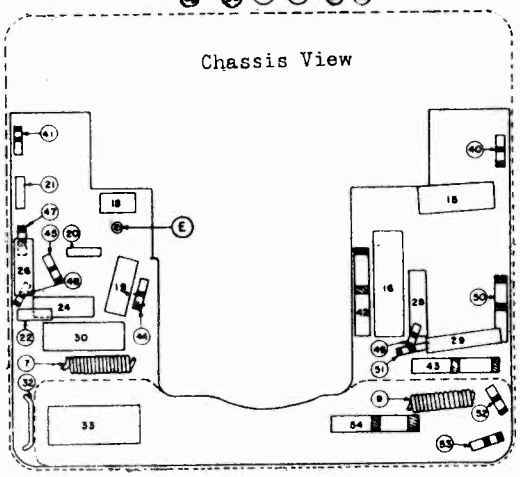
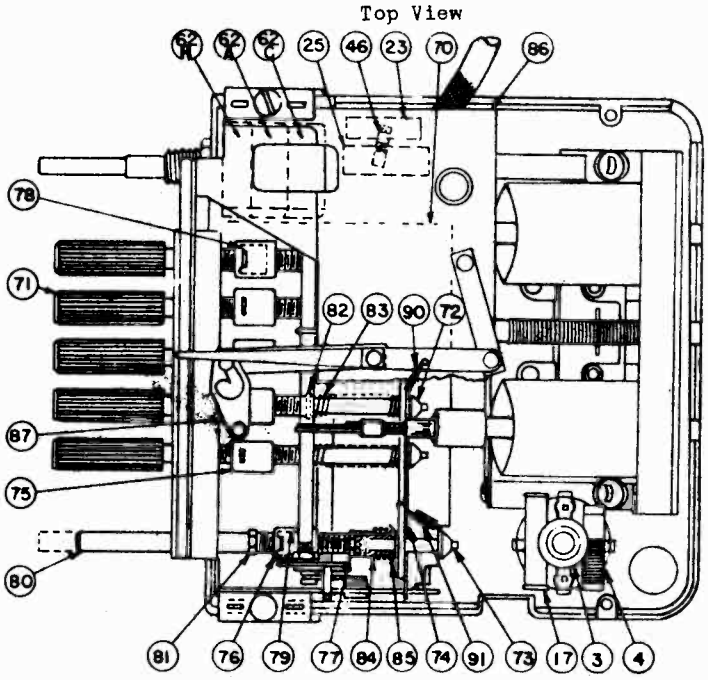
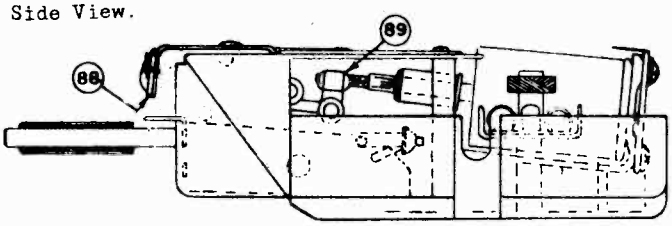
LAYOUT DIAGRAMS







Side View.



ALIGNMENT PROCEDURE

Volume Control Maximum.

Signal Generator output minimum for satisfactory output indication.

Series Condenser Or Dummy Antenna	Connect To	Signal Generator Frequency	Adjust Screws In Order
0.1 Mfd.	Grid side of Resistor 2H	455 K.C.	A B C D E
.00007 Mfd.	Antenna Terminal	1560 K.C.	F
.00007 Mfd.	Antenna Terminal	600 K.C.	G H

Adjust trimmer H to match car antenna (600 K.C.) when radio is installed.

SPECIAL INSTRUCTIONS

FOR ALIGNMENT NOTES SEE INDEX

Mechanical Alignment of Iron Cores: Tune to stop at H.F. end of dial. Adjust oscillator core (J) to extend 1-3/8" from end of coil winding. Line up antenna and R.F. cores (K&L) as far out as the oscillator core. Adjust trimmer (F) (S. G. at 1560 K.C.). With S. G. at 1400, adjust (K&L) then follow electrical alignment shown above.

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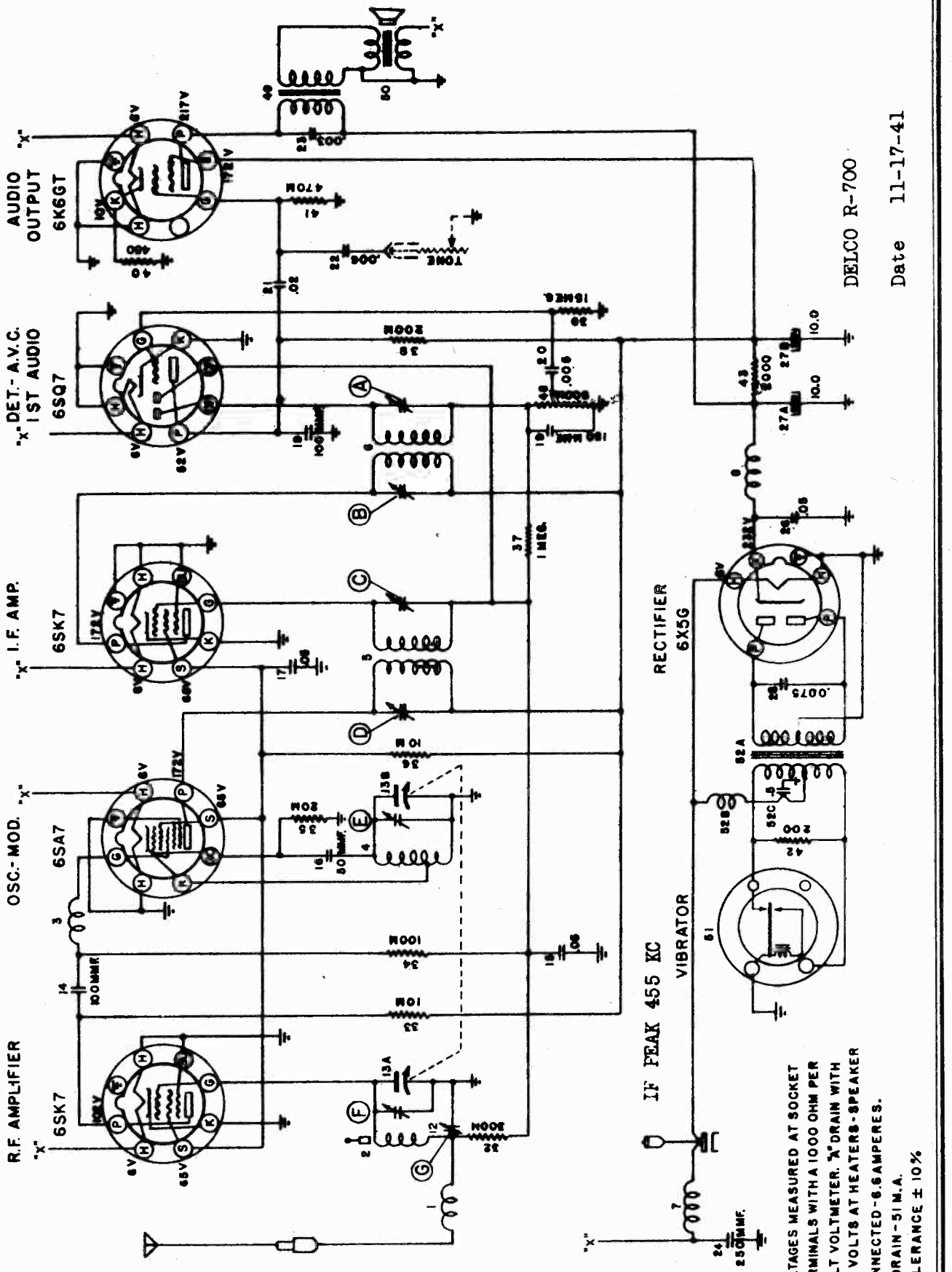
MODEL R-700



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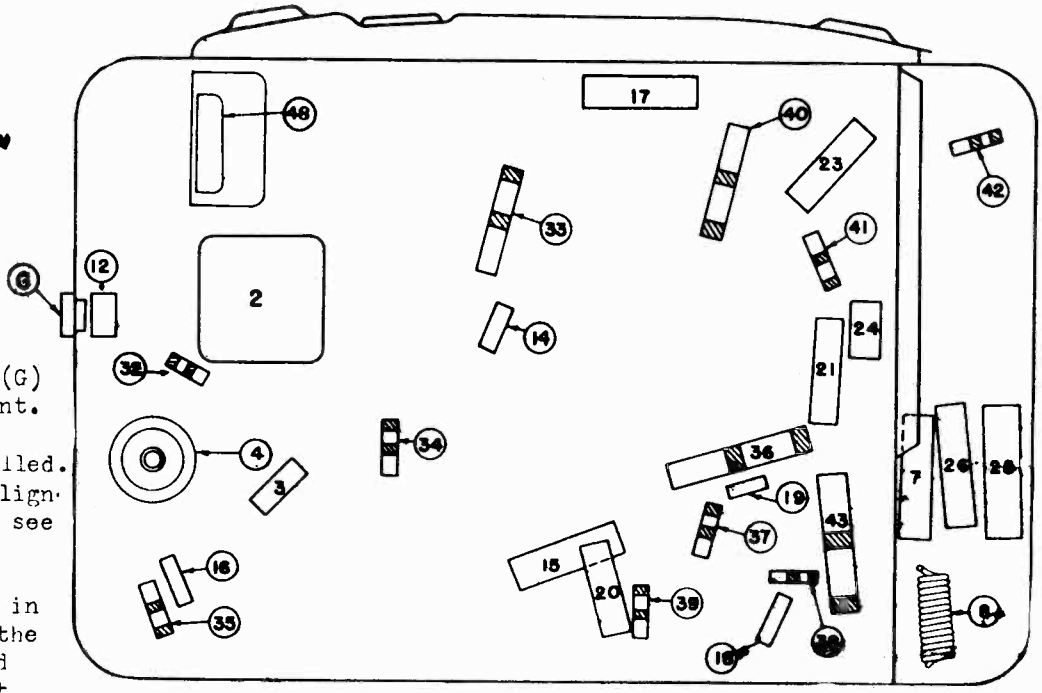
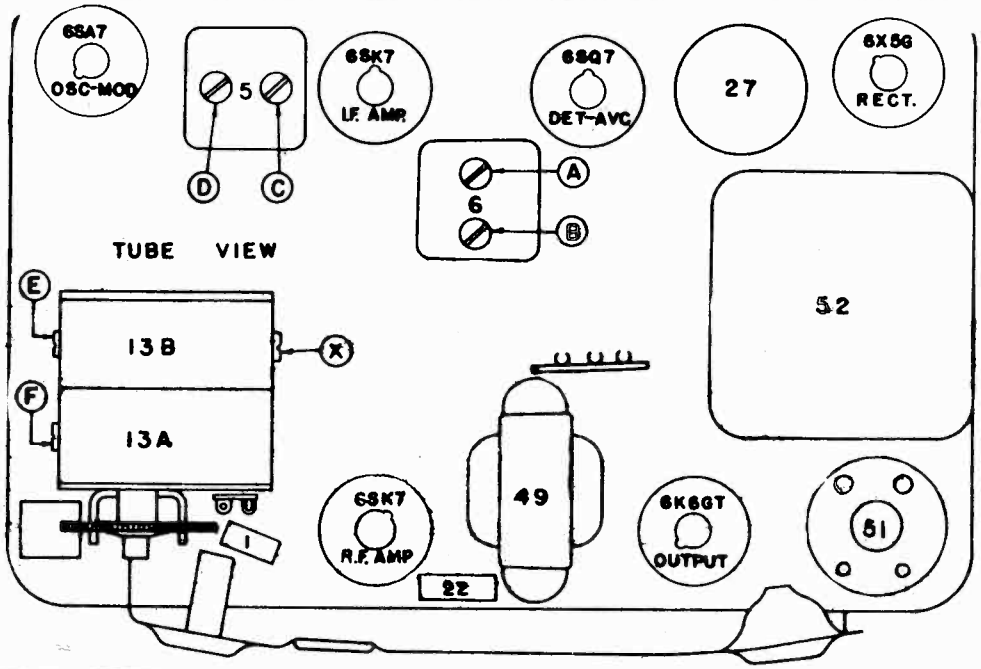
CHASSIS VIEW



Adjust Trimmer(G) to match car ant. (600KC.) when radio is installed. For complete alignment procedure see Model R-698.

Trimmer(X) is in Parallel with the trimmer (E) and has been set at the factory. This should not be touched in the field.

TUBE VIEW



ALIGNMENT PROCEDURE

Volume Control Maximum.

Signal Generator minimum for a satisfactory output indication.

Series Condenser Or Dummy Antenna	Connect to	Signal Generator Frequency	Adjust Screws In Order
0.1 Mfd.	Grid Side of 13A	455 K.C.	A B C D
.000070 Mfd.	Antenna Terminal	1615 K.C.	E
.000070 Mfd.	Antenna Terminal	1400 K.C.	F
.000070 Mfd.	Antenna Terminal	600 K.C.	G
.000070 Mfd.	Antenna Terminal	1400 K.C.	F

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MODEL R-701

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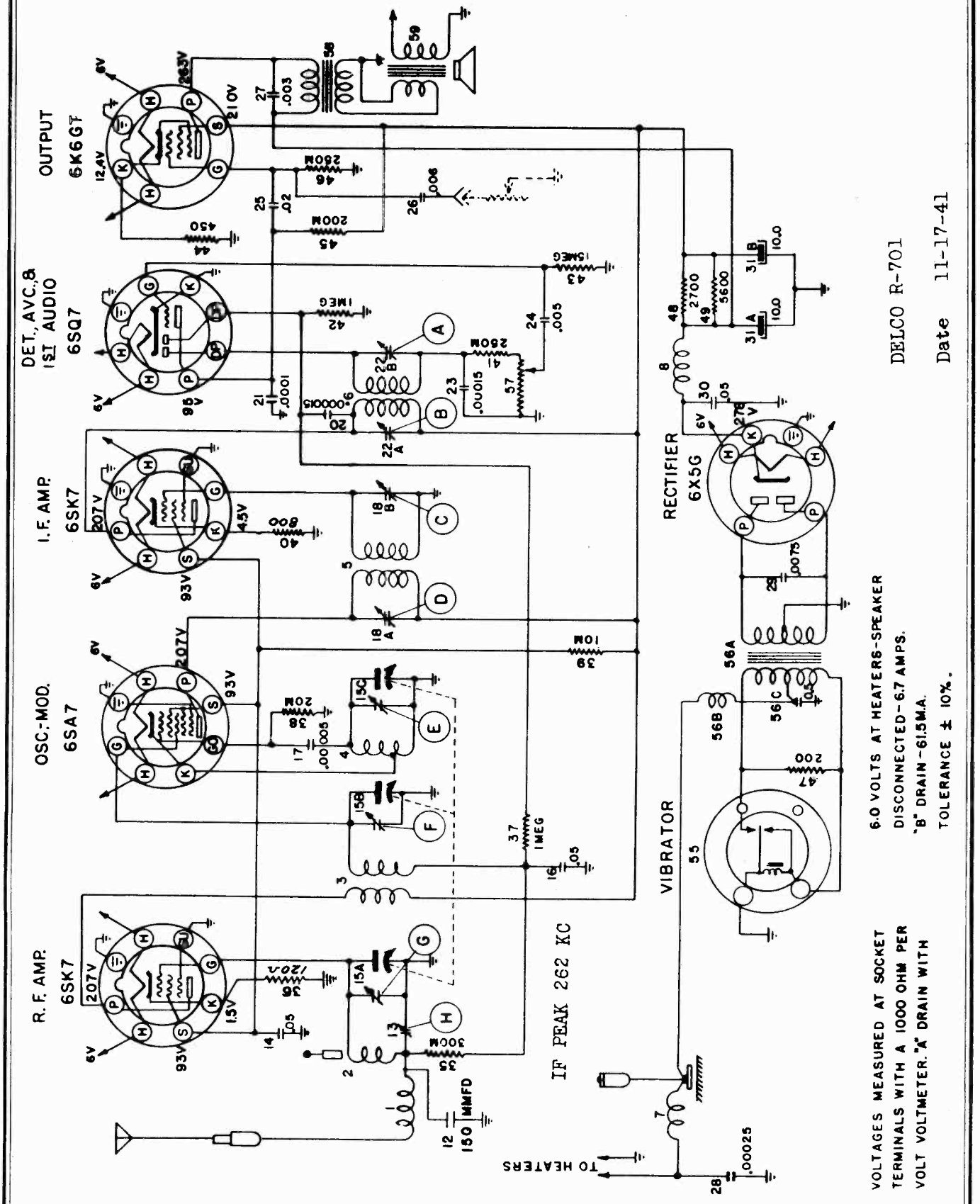

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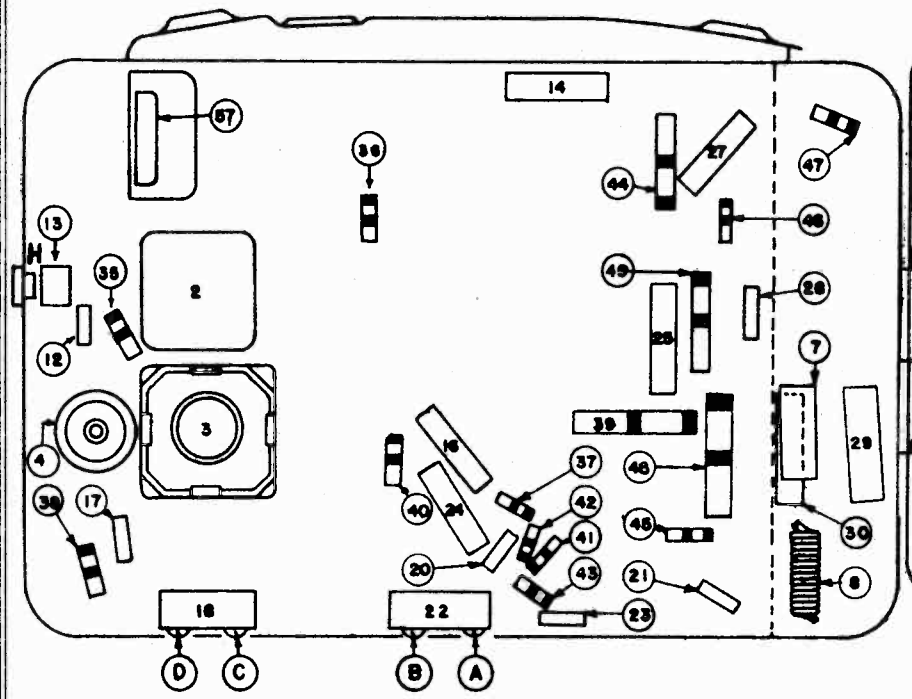
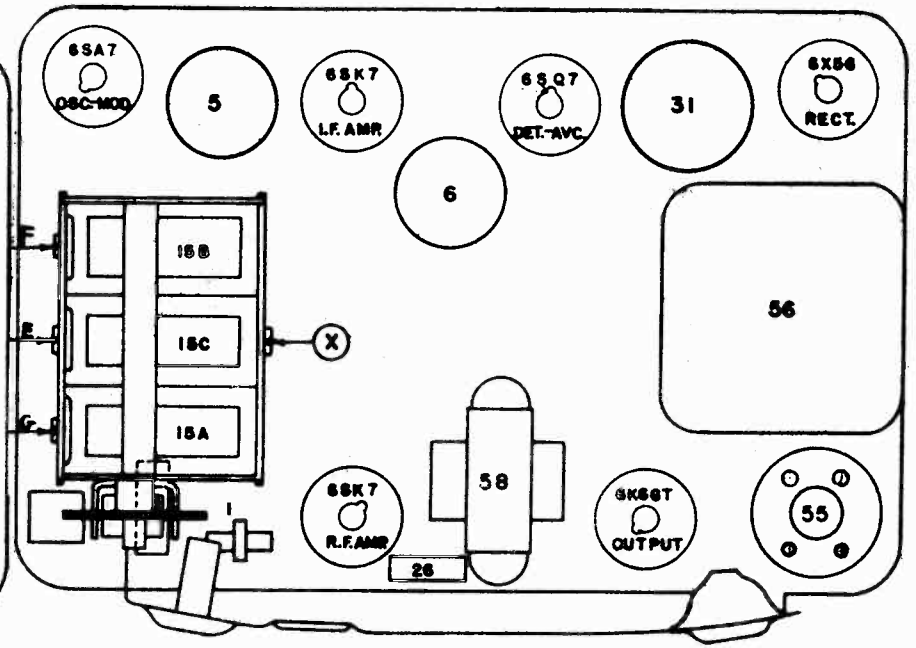


CHASSIS VIEW



TUBE VIEW

ALIGNMENT PROCEDURE

Volume control Maximum.
Signal generator minimum for satisfactory output indication.

TUBES------Six. SPEAKER-----7"Dynamic
CAR ANTENNA CAPACITY----- .000050 to .000225 Mfd.

TUNING RANGE--------550-1600Kc.

FOR ALIGNMENT NOTES SEE INDEX

Series Condenser Or Dummy Antenna	Connect to	Signal Generator Frequency	Adjust Screws In Order
0.1 Mfd.	Grid side of 15 B	262 K.C.	A B C D
.000070 Mfd.	Antenna Terminal	1615 K.C.	E
.000070 Mfd.	Antenna Terminal	1400 K.C.	F G
.000070 Mfd.	Antenna Terminal	600 K.C.	H
.000070 Mfd.	Antenna Terminal	1400 K.C.	F G

Adjust trimmer (H) to match car antenna (600 K.C.) when radio is installed.

Trimmer (X) is in parallel with trimmer (E) and has been set at the factory. This should not be touched in the field.

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MODELS R-1200 to R-1203 incl.

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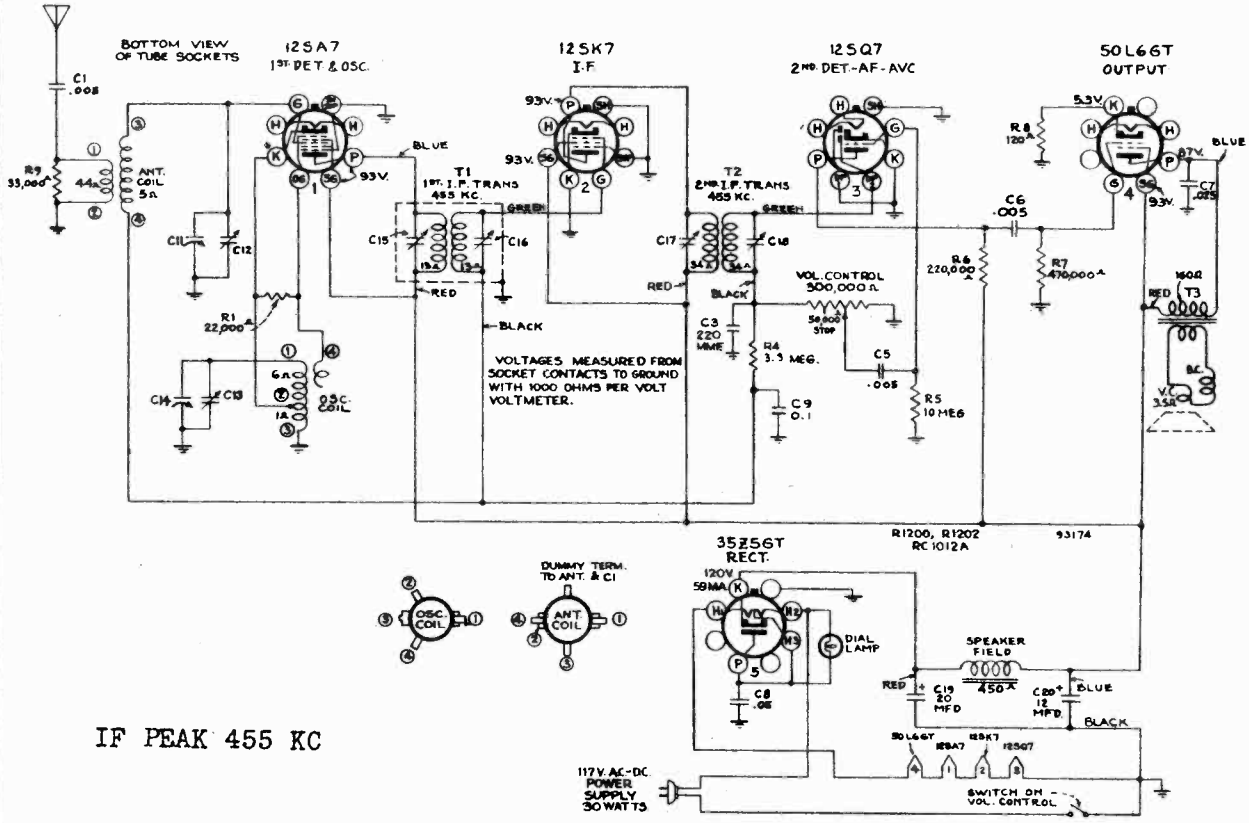
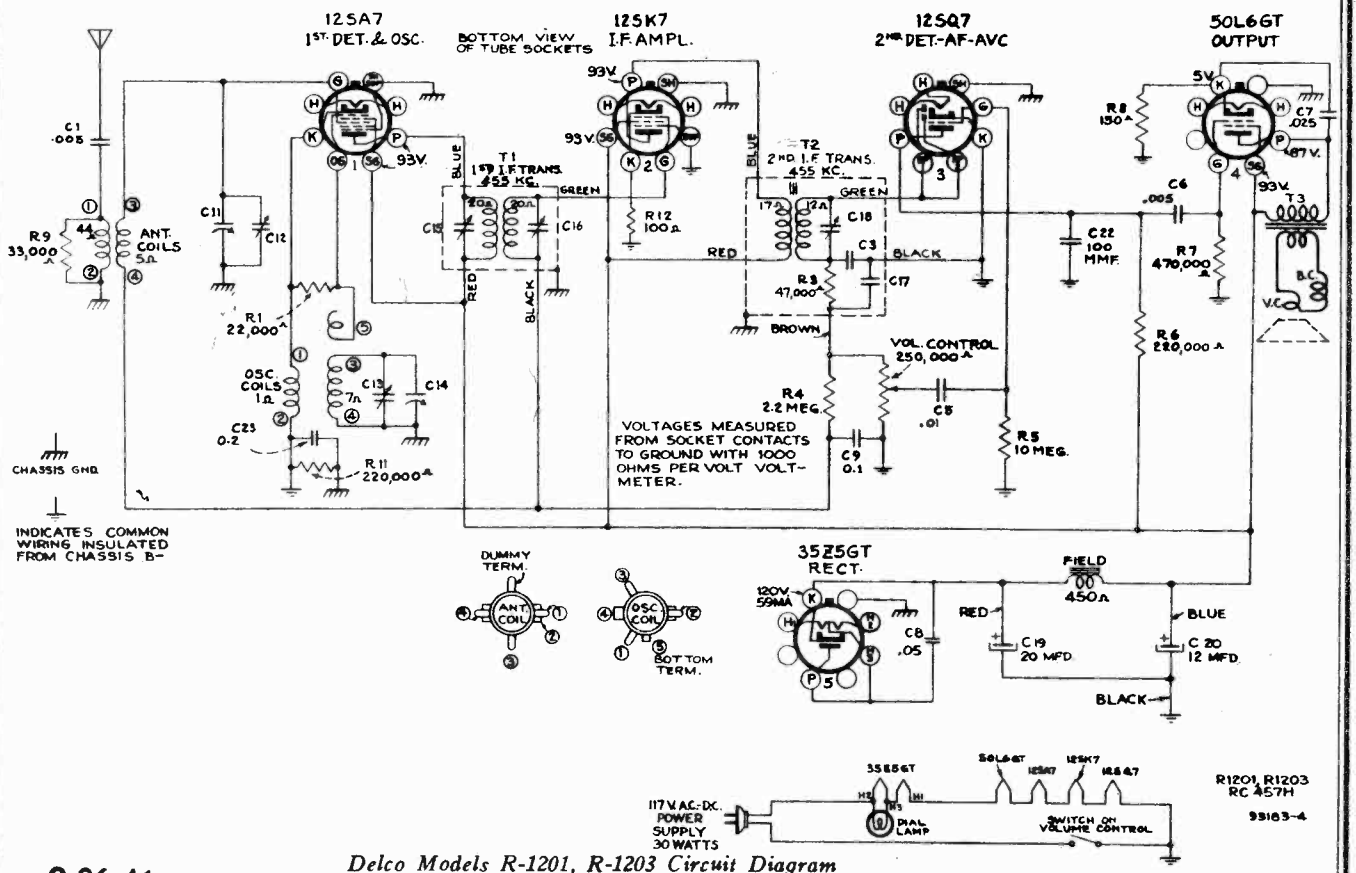


IF PEAK 455 KC

Delco Models R-1200, R-1202 Circuit Diagram



Delco Models R-1201, R-1203 Circuit Diagram

9-26-41

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MODELS R-1200 to R-1203 incl.

UNITED MOTORS SERVICE

GENERAL

Tubes	Five
Speaker	4-in. Electrodynamic
Tuning	Manual
Tuning Range	540-1,720 kc
Intermediate Frequency	455 kc

POWER SUPPLY RATING

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

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

These Delco Models are identical with the exception of minor circuit changes—see schematic diagrams and parts list.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

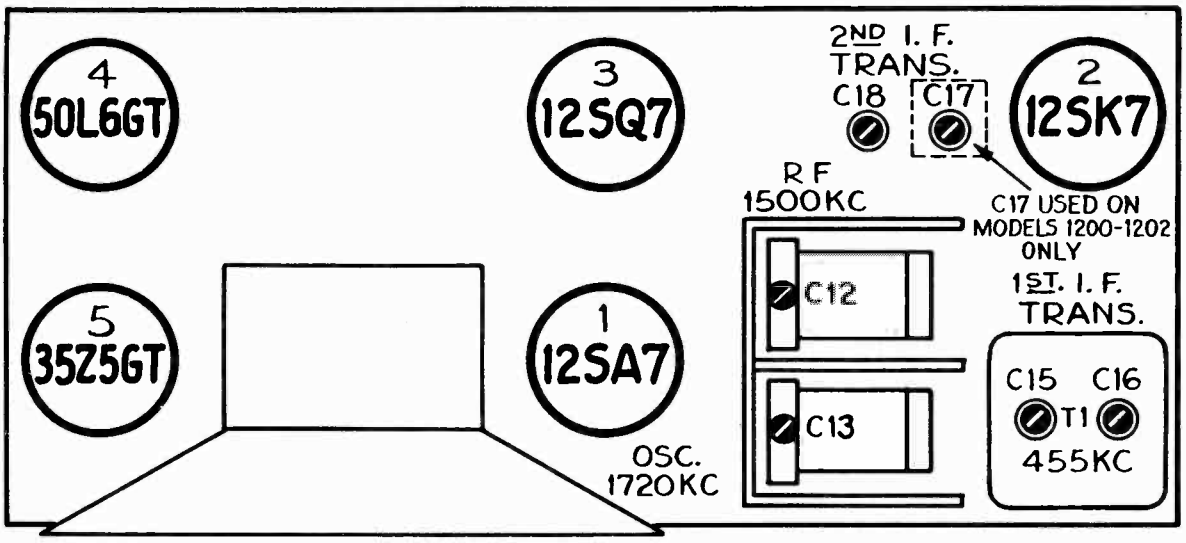
Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

ALIGNMENT PROCEDURE

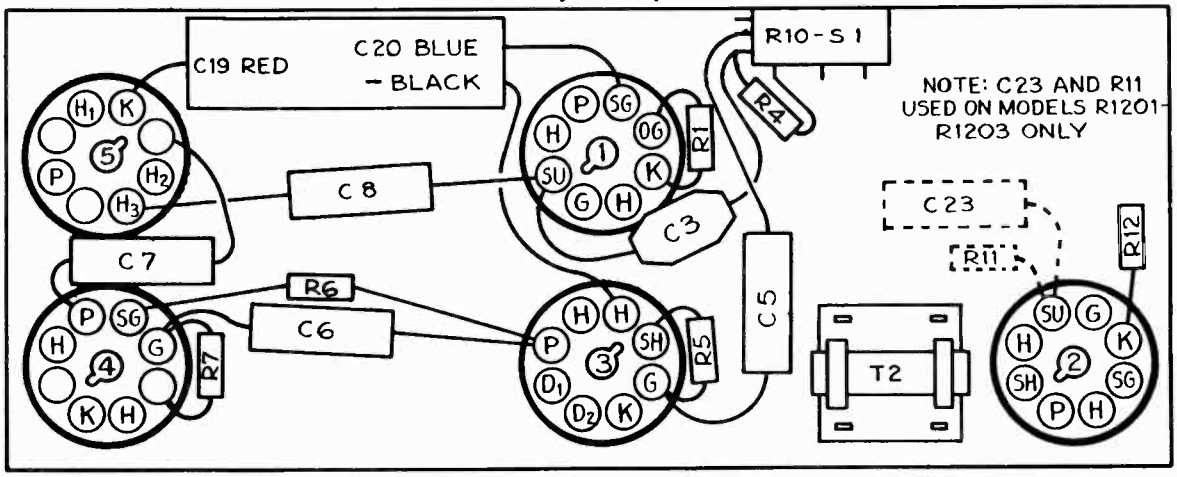
Volume Control maximum, Signal Generator output minimum for satisfactory output indication.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 I-F grid in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	(C17*) C18 (2nd I-F trans.)
2	Tuning Condenser stator (osc.) in series with .01 mfd.			C15 and C16 (1st I-F trans.)
3	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C13 (oscillator)
4		1,400 kc	Resonance on 1,400 kc signal	C12 (antenna)

*C17 used on Models R-1200, R-1202 only.



Parts Layout—Top View



Parts Layout—Bottom View

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MODELS R-1204, R-1205

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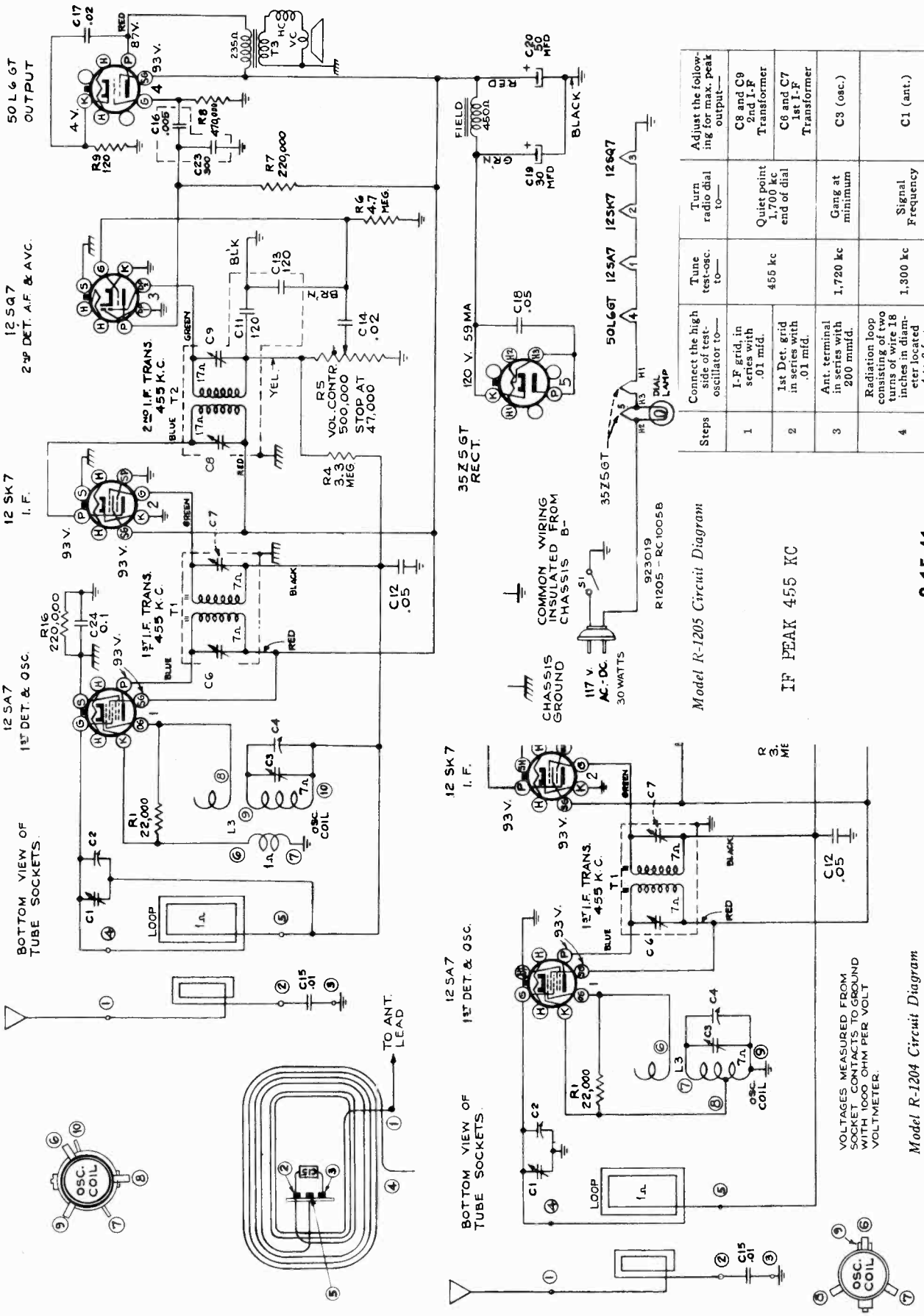

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,700 kc end of dial	C8 and C9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C6 and C7 1st I-F Transformer
3	Ant. terminal in series with 200 mmfd.	1,720 kc	Gang at minimum	C3 (osc.)
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,300 kc	Signal Frequency	C1 (ant.)
5	Repeat steps 3 an 4.			

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MODELS R-1204, R-1205

UNITED MOTORS SERVICE

POWER SUPPLY RATING

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

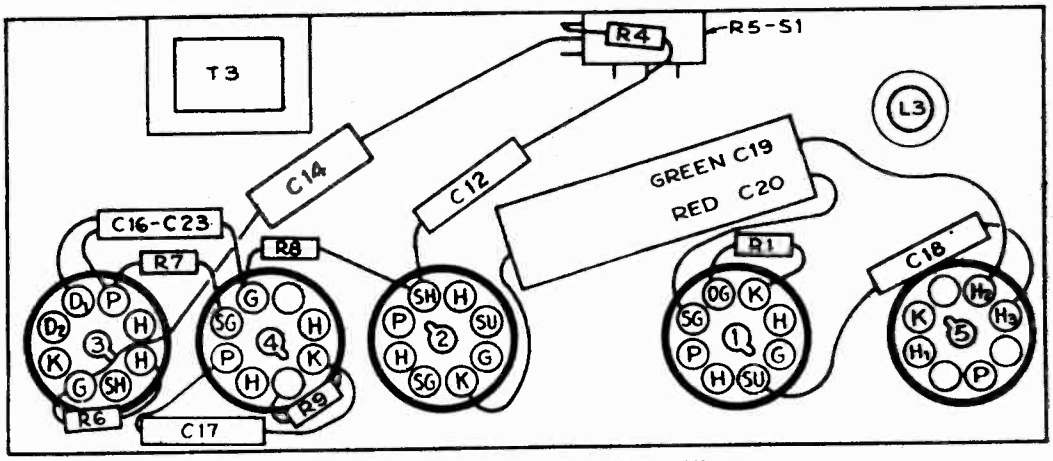
These Delco Models are identical with the exception of minor circuit changes — see schematic diagrams and parts list.

ALIGNMENT PROCEDURE

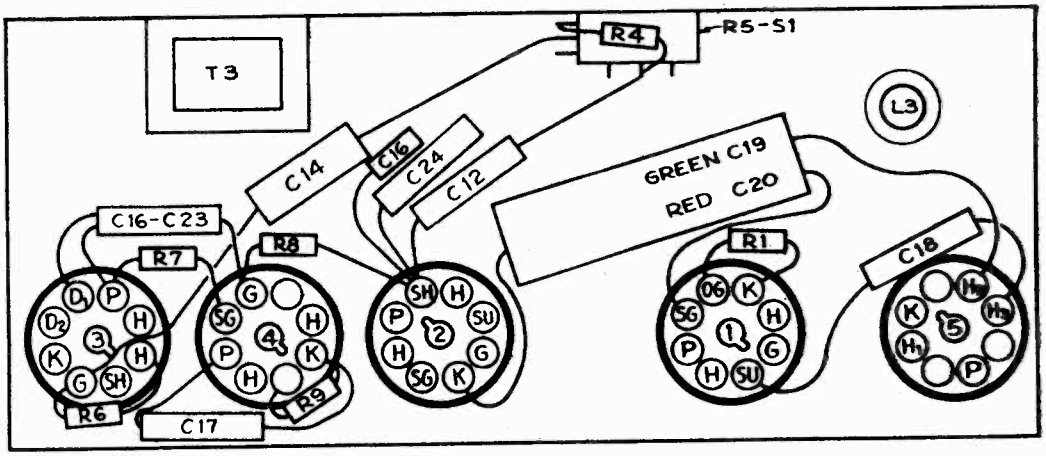
Volume Control maximum, Signal Generator output minimum for satisfactory output indication.

GENERAL

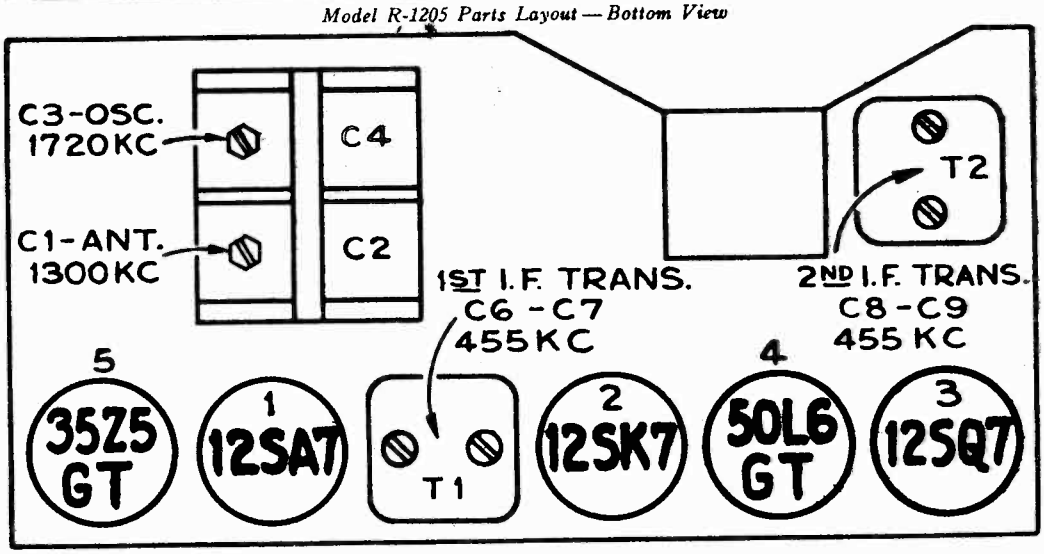
Tubes	Five
Speaker	5-in. Electrodynamic
Antenna	Built-in Loop or external
Tuning	Manual
Tuning Range	540-1,720 kc
Intermediate Frequency	455 kc



Model R-1204 Parts Layout — Bottom View



Model R-1205 Parts Layout — Bottom View



Models R-1204 and R-1205 Parts Layout — Top View

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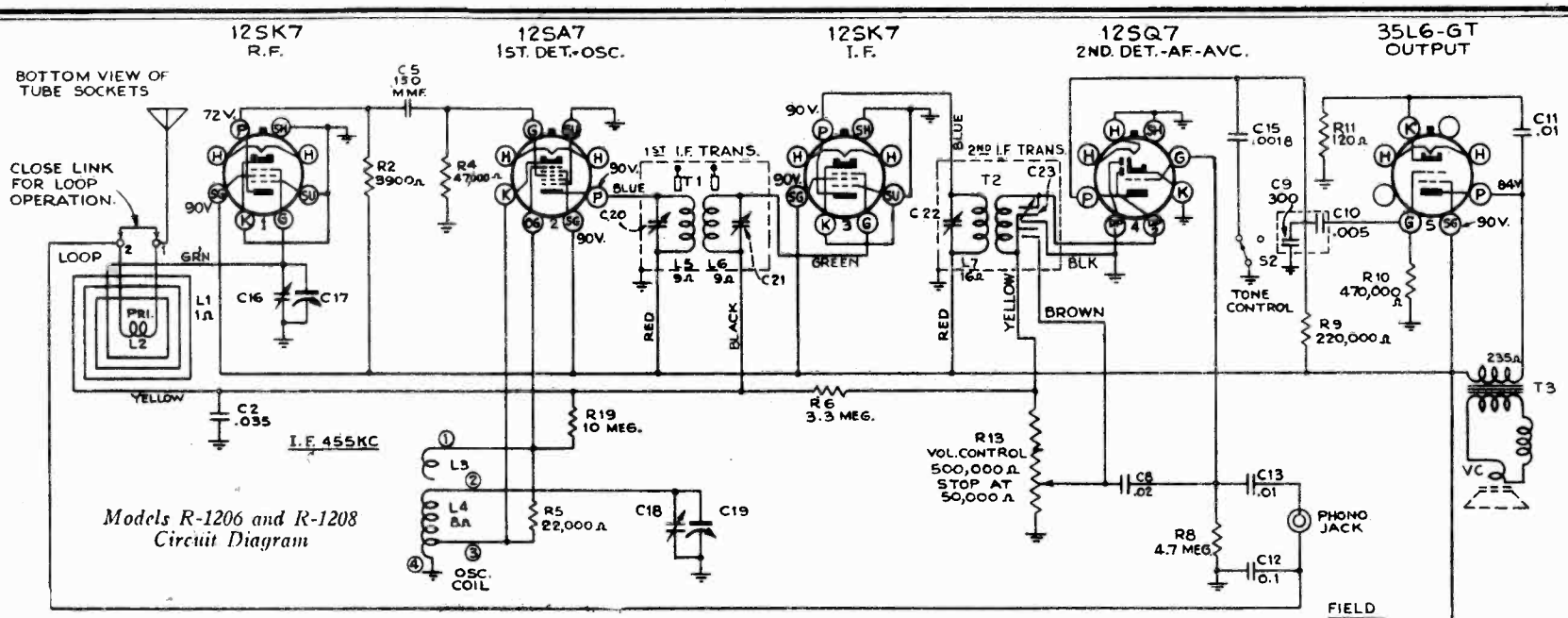
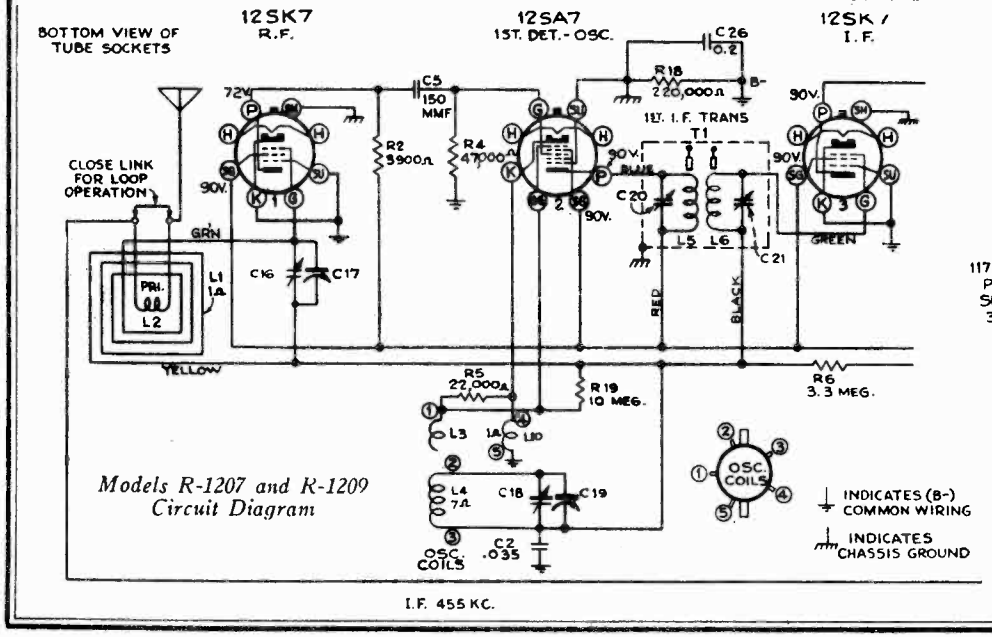
R-1206, R-1208,



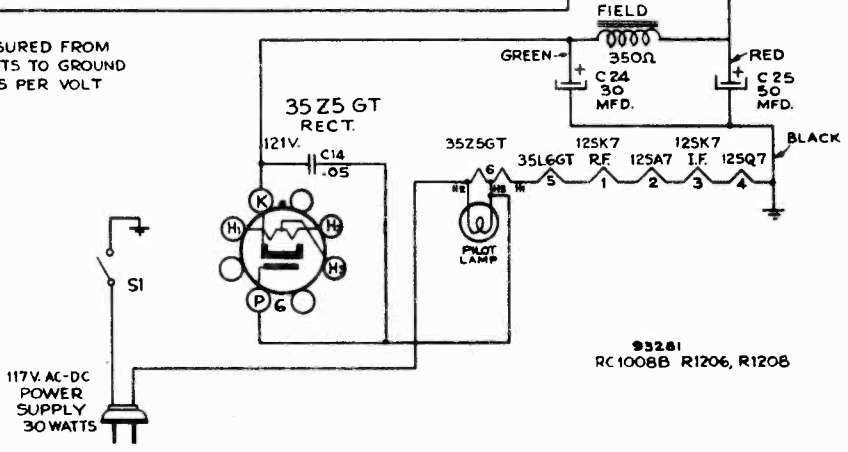
Models R-1206 and R-1208 Circuit Diagram

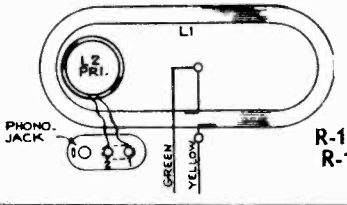
Models R-1207, R-1209 are the same as Model R-1206 with the exceptions shown below

VOLTAGES MEASURED FROM SOCKET CONTACTS TO GROUND WITH 1000 OHMS PER VOLT VOLTMETER



Models R-1207 and R-1209 Circuit Diagram





FOR SOCKET AND PARTS LAYOUTS, SEE INDEX

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MODELS R-1206 to R-1209 incl.

UNITED MOTORS SERVICE

Models R-1206, R-1207, R-1208 and R-1209 Home Radio

GENERAL

Tubes	Six
Speaker	5-in. Electrodynamic
Antenna	Built-in Loop or external
Tuning	Manual
Tuning Range	540-1,720 kc
Intermediate Frequency	455 kc

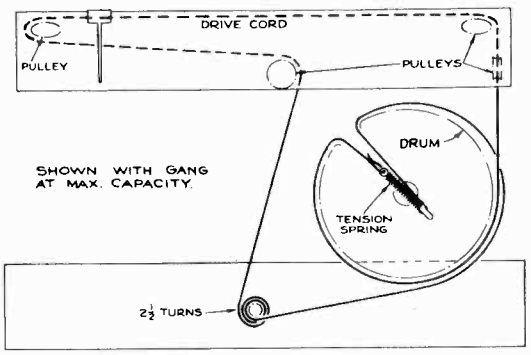
POWER SUPPLY RATING

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

These Delco Models are identical with the exception of minor circuit changes—see schematic diagrams and parts list.

ALIGNMENT PROCEDURE

Volume Control maximum, Signal Generator output minimum for satisfactory output indication.



Dial Cord Layout

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,700 kc end of dial	C23 and C22 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C21 and C20 1st I-F Transformer
3	Ant. terminal in series with 200 mmfd.	1,720 kc	Gang at minimum	C18 (osc.)
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,300 kc	Signal Frequency	C16 (ant.)
5	Repeat steps 3 and 4.			

Chassis Electrical Parts

Illus. No.	Service Part No.	Part Name	Description
C2	1211201	Condenser	.035 mfd. 400 V. tubular
C5	7230893	Condenser	.00015 mfd. moulded
C8	1212099	Condenser	.02 mfd. 600 V. tubular
C9	1216115	Condenser	.0003—.005 mfd. Dual Section
C10	"	Condenser	
C11	1208600	Condenser	.01 mfd. 600 V. tubular
C12	1207908	Condenser	.1 mfd. 400 V. tubular
C13	1208600	Condenser	.01 mfd. 600 V. tubular
C14	7230592	Condenser	.05 mfd. 400 V. tubular
C15	1209148	Condenser	.002 mfd. 800 V. tubular
C16	1215722	Condenser	Trimmer
C17	"	Condenser	Tuning
C18	"	Condenser	Trimmer
C19	"	Condenser	Tuning
C24	1214758	Condenser	30 mfd. 150 V. electrolytic
C25	"	Condenser	50 mfd. 150 V. electrolytic
C26	7240579	Condenser	0.2 mfd. 300 V. tubular (R1207, 1209)
L1	1215723	Loop	Antenna
L2	1215724	Coil	Loop primary coil
L3	1215725	Coil Assy.	Oscillator coil (R1206, 1208)
L4	"	Coil Assy.	
L3	1215726	Coil Assy.	Oscillator coil (R1207, 1209)
L4	"	Coil Assy.	
R2	1211060	Resistor	4,000 ohms ½ watt
R4	1211107	Resistor	45,000 ohms ½ watt
R5	1210882	Resistor	20,000 ohms ½ watt
R6	1211149	Resistor	3 meg. ½ watt
R8	1211154	Resistor	5 meg. ½ watt
R9	1210119	Resistor	200,000 ohms ½ watt
R10	1210470	Resistor	500,000 ohms ½ watt
R11	1211000	Resistor	100 ohms ½ watt
R13	1215727	Control	Volume, and power switch
R18	1210119	Resistor	200,000 ohms ½ watt (R1207, 1209)
R19	1212980	Resistor	10 meg. ½ watt
S1		Switch	(Included in R13)
S2	1215728	Switch	Tone control (R1206, 1208)
S2	1215729	Switch	Tone control (R1207, R1209)
T1	1214620	Transformer	1st I. F.
T2	1215730	Transformer	2nd I. F.
T3	1215755	Transformer	Output transformer
		Speaker	5-inch E.M.
1215840		Cone	Speaker cone and voice coil
1215665		Cap	Cone dust cap
1215756		Coil	Field coil

Chassis Miscellaneous Parts

1215732	Board	Receptacle and terminal board
1215733	Bracket	Dial lamp bracket
1215734	Clamp	L.H. dial clamp
1215735	Clamp	R.H. dial clamp
7241702	Cord	Drive cord (approx. 49-in. long)
1215736	Dial	Glass dial scale
1215737	Drum	Drive drum
1215738	Fastener	Push fastener for cabinet back
1215739	Indicator	Station selector indicator
1215740	Knob	Walnut knobs (R1206, 1207)
1215741	Knob	Ivory knobs (R1208, 1209)
51.....	Lamp	Dial lamp
1215742	Plate	Dial back plate complete with pulleys (less dial)
1215743	Pulley	Drive cord pulley
1215744	Shaft	Tuning knob shaft
1215745	Socket	Dial lamp socket (R1206, R1208)
1215746	Socket	Dial lamp socket (R1207, R1209)
1215747	Socket	Tube socket (moulded type)
7230283	Socket	Tube socket (wafer type)
1214519	Spring	Drive cord spring
1215684	Spring	Retaining spring for knobs
1215177	Washer	Tuning shaft "C" washer

Tubes

1213812	12SK7	R. F.
1213809	12SA7	1st Det.—Osc.
1213812	12SK7	I. F.
1213813	12SQ7	2nd Det.—A.F. and A.V.C.
1213818	35L6GT	Output
1213848	35Z5GT	Rectifier

Cabinet Parts

1215748	Back	Cabinet back (R1206, R1207)
1215749	Back	Cabinet back (R1208, R1209)
1215750	Cabinet	Models R1206 and R1207
1215751	Cabinet	Models R1208 and R1209

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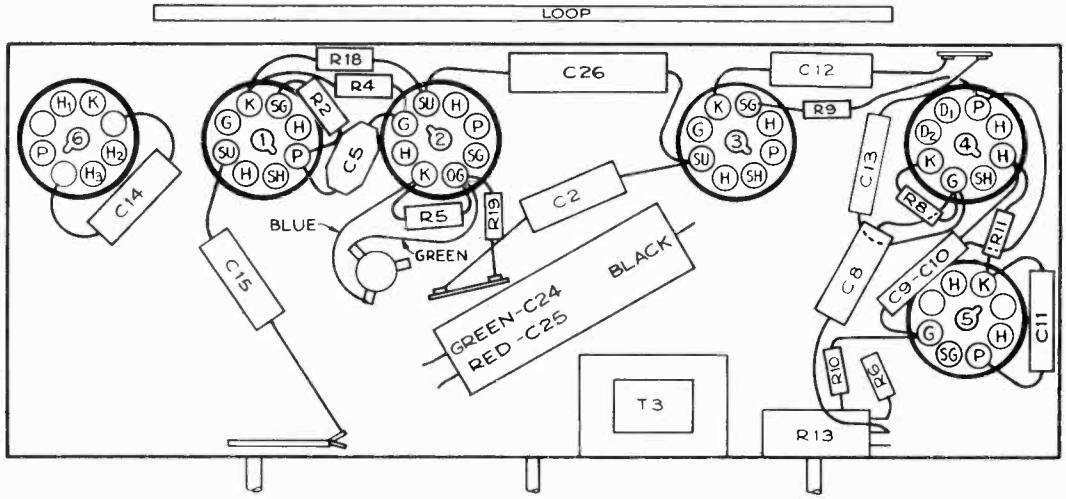
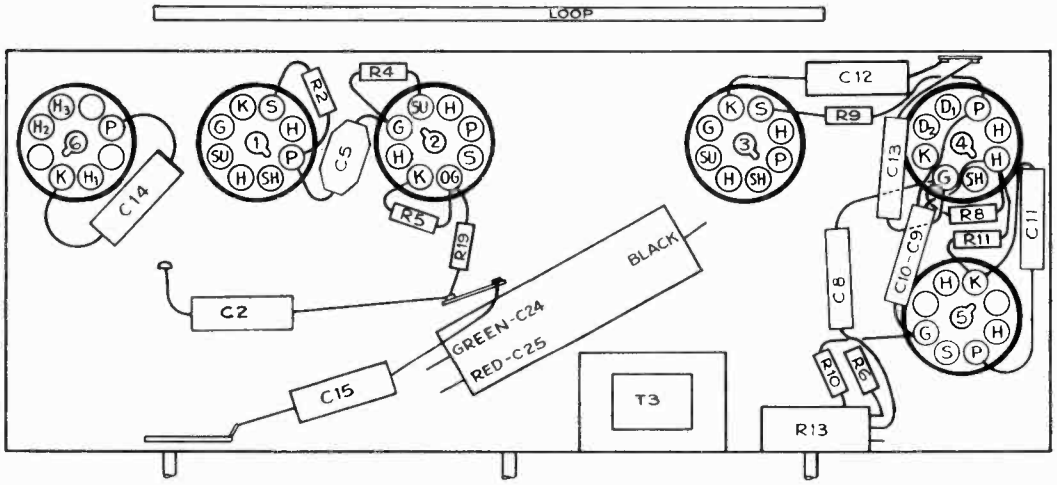
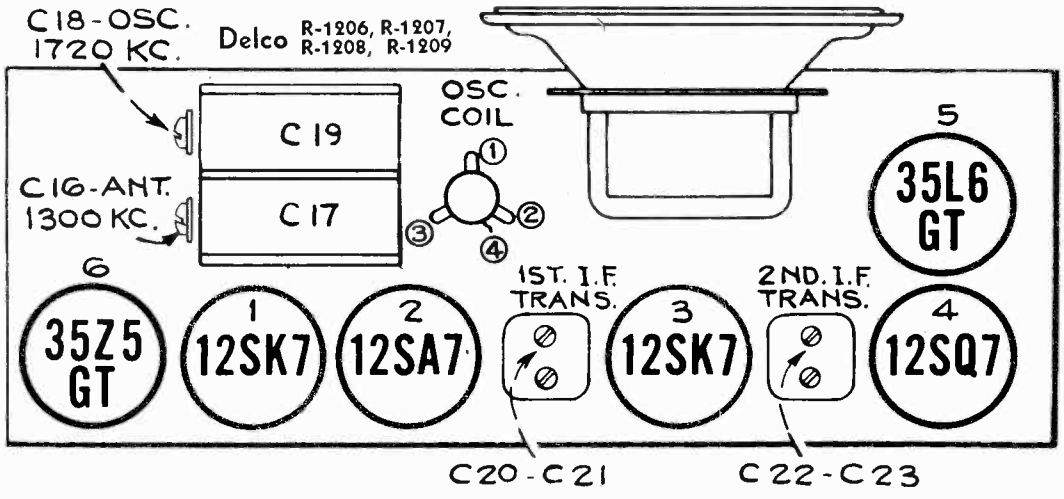


Models R-1207 and R-1209
Parts Layout—Bottom View



Models R-1206 and R-1208
Parts Layout—Bottom View



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MODEL R-1212
MODEL R-1406

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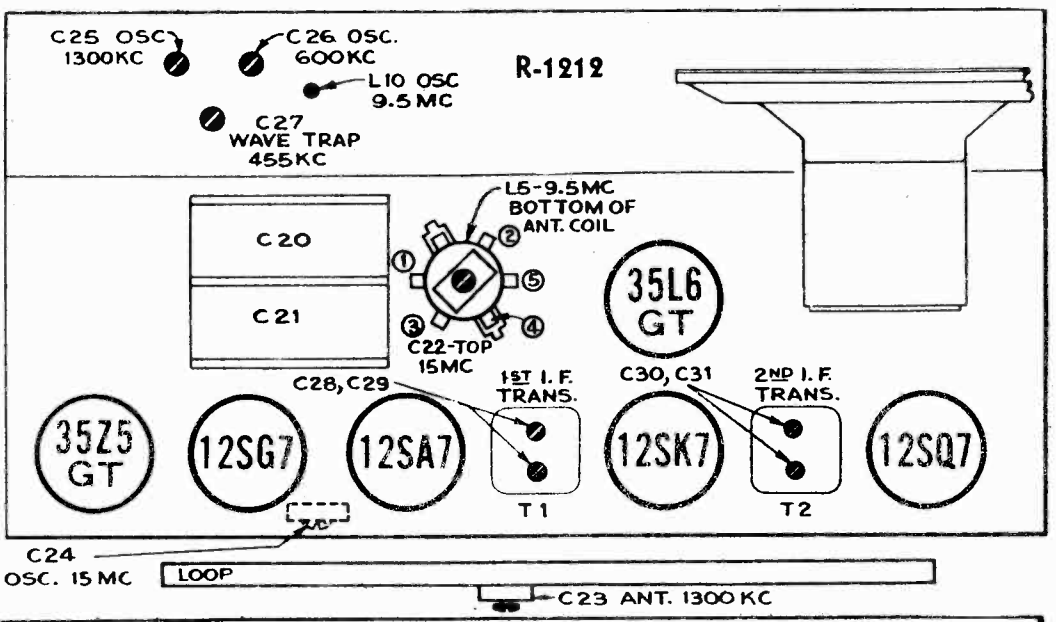

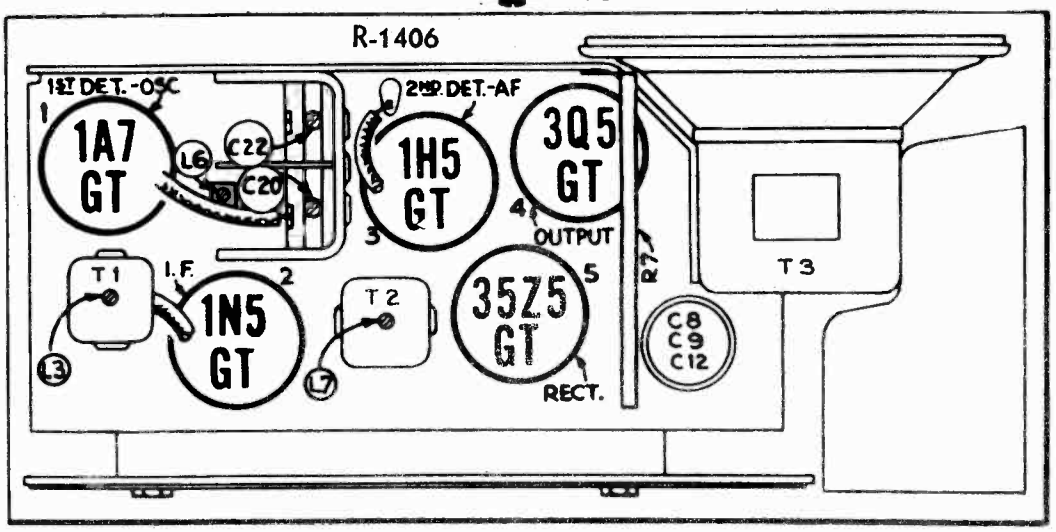

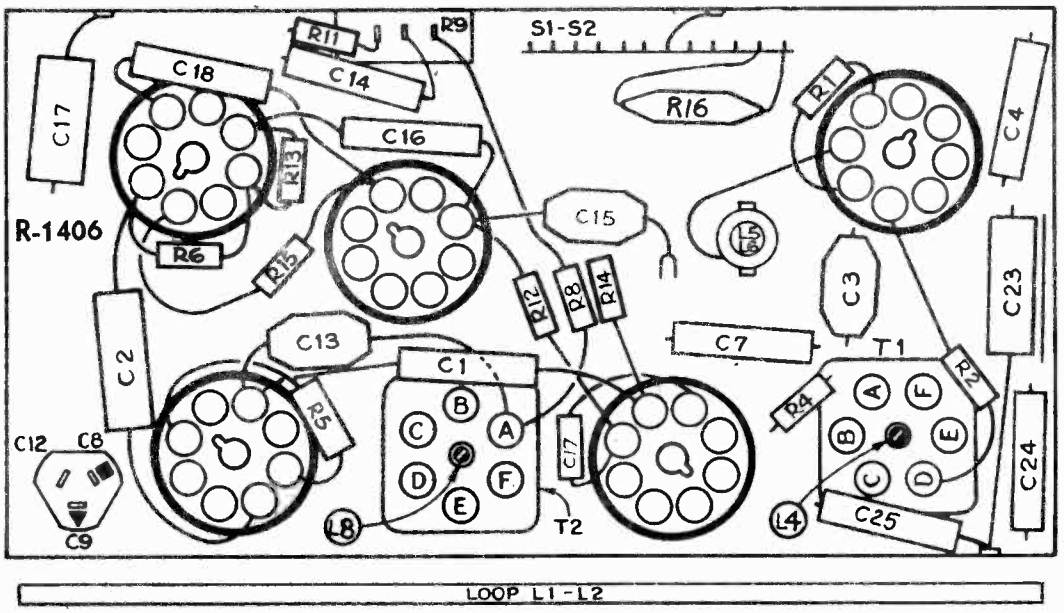

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MODEL R-1212

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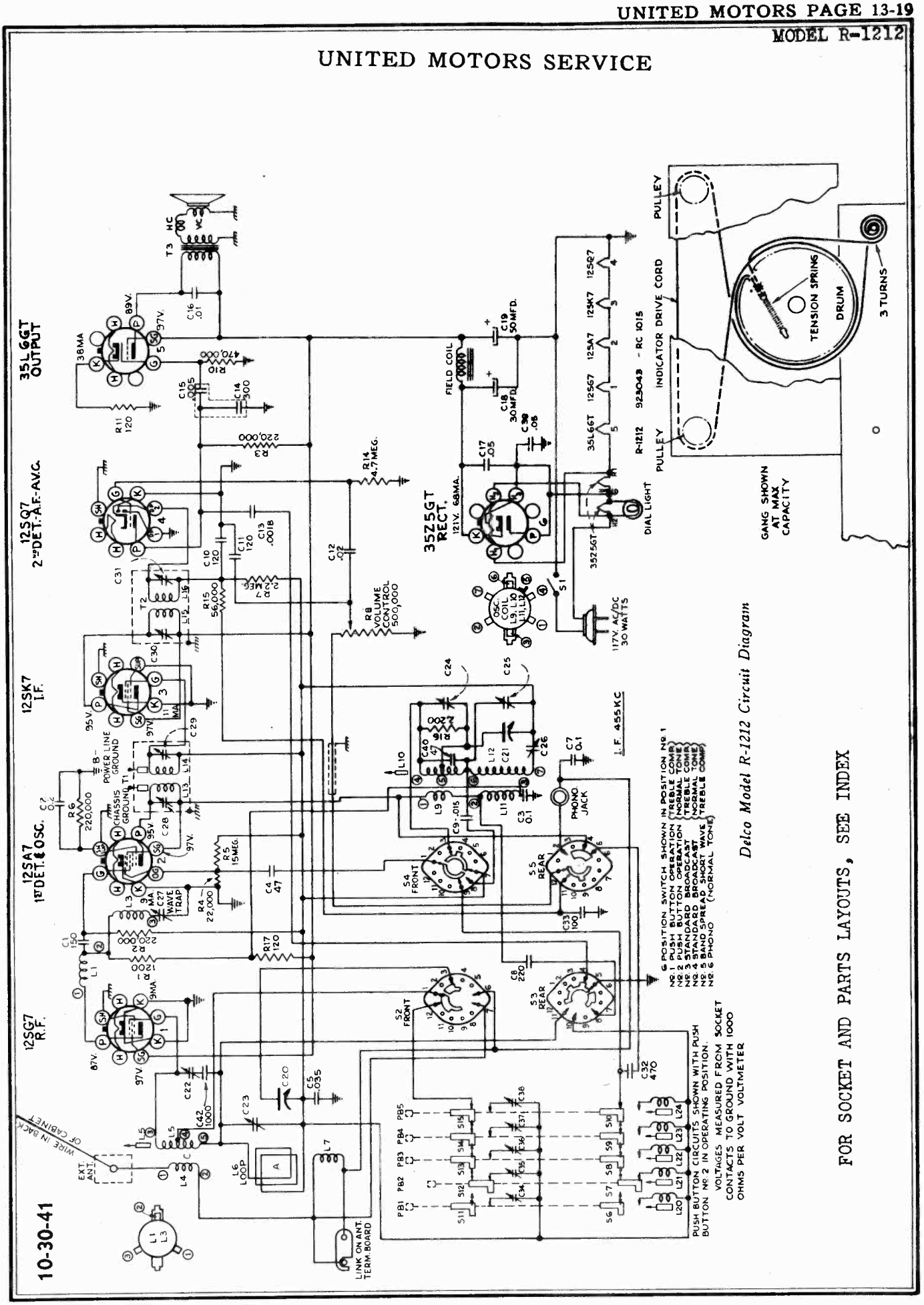

Delco Model R-1212 Circuit Diagram

FOR SOCKET AND PARTS LAYOUTS, SEE INDEX

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MODEL R-1212
MODEL R-1214

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ALIGNMENT PROCEDURE

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

Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I.F. grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C-30, C-31
2	1st det. grid in series with 0.1 mfd.			C-28, C-29
3	R.F. grid in series with 0.1 mfd.			C-27**
4	Ant. terminal in series with 47 mmf. (link open)	15 mc	15 mc "C" Band	C-24 (osc.)* C-22 (ant.)
5		9.5 mc	9.5 mc "C" Band	L-10 (osc.) L-5 (ant.)
6		Repeat steps 4 and 5.		
7	Ant. terminal in series with 220 mmf. (link open)	1,300 kc	1,300 kc "A" band	C-25 (osc.) C-23 (ant.)
8		600 kc	600 kc "A" Band	C-26 (osc.)
9		Repeat steps 7 and 8.		

* Use minimum capacity peak if two peaks can be obtained.
** Adjust C-27 for minimum signal with 455 kc applied to R.F. grid.
Note.—Oscillator tracks 455 kc above signal on all bands.

Speaker ..... 5-inch Electrodynamic
Antenna ..... Built-in Loop or External
Tuning ..... Manual and 5 electric push-buttons
Tuning Range ..... 540-1,600 kc, 9-15.5 mc
Power Supply ..... 105-125 A. C., 50-60 cy. or D. C.

MODELS R-1212 and R-1214

ADJUSTMENT FOR ELECTRIC TUNING

The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool and allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure.

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to Broadcast band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations.
4. After oscillator core is adjusted properly, adjust antenna trimmer No. 1 for maximum output.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust each of the remaining stations in the same manner.

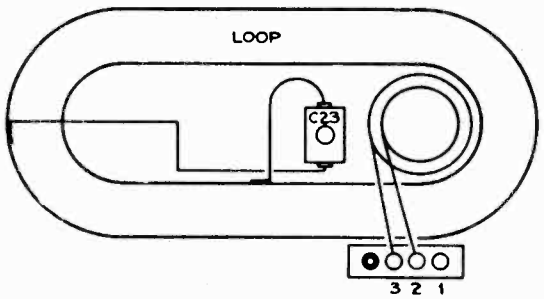
Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

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

Phono Attachment.—A jack is provided on the rear of cabinet for connecting a Phono Attachment into the audio-amplifying circuit.

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

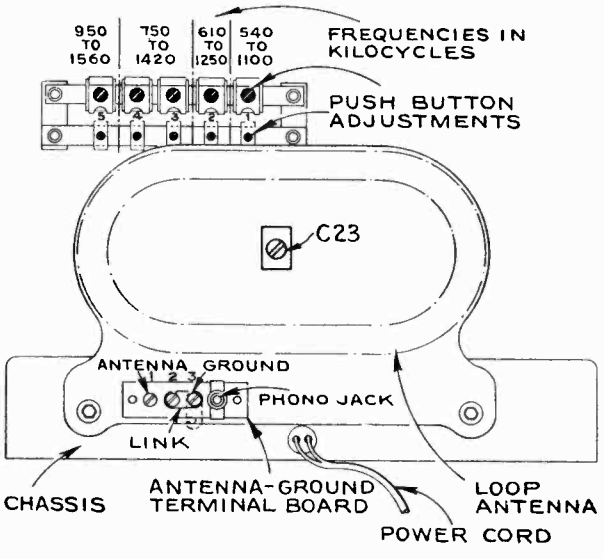
With gang in full mesh, move the dial pointer to the last mark at the left-hand end of the dial scale.



Loop Antenna Connections

6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On push-button No. 5, the higher frequency stations may be obtained with the oscillator core No. 5 either in or out. (Oscillator frequency either 455 kc below or above the signal.) The out position should be used so the oscillator is 455 kc above the signal.



Rear View—Push Button Adjustments

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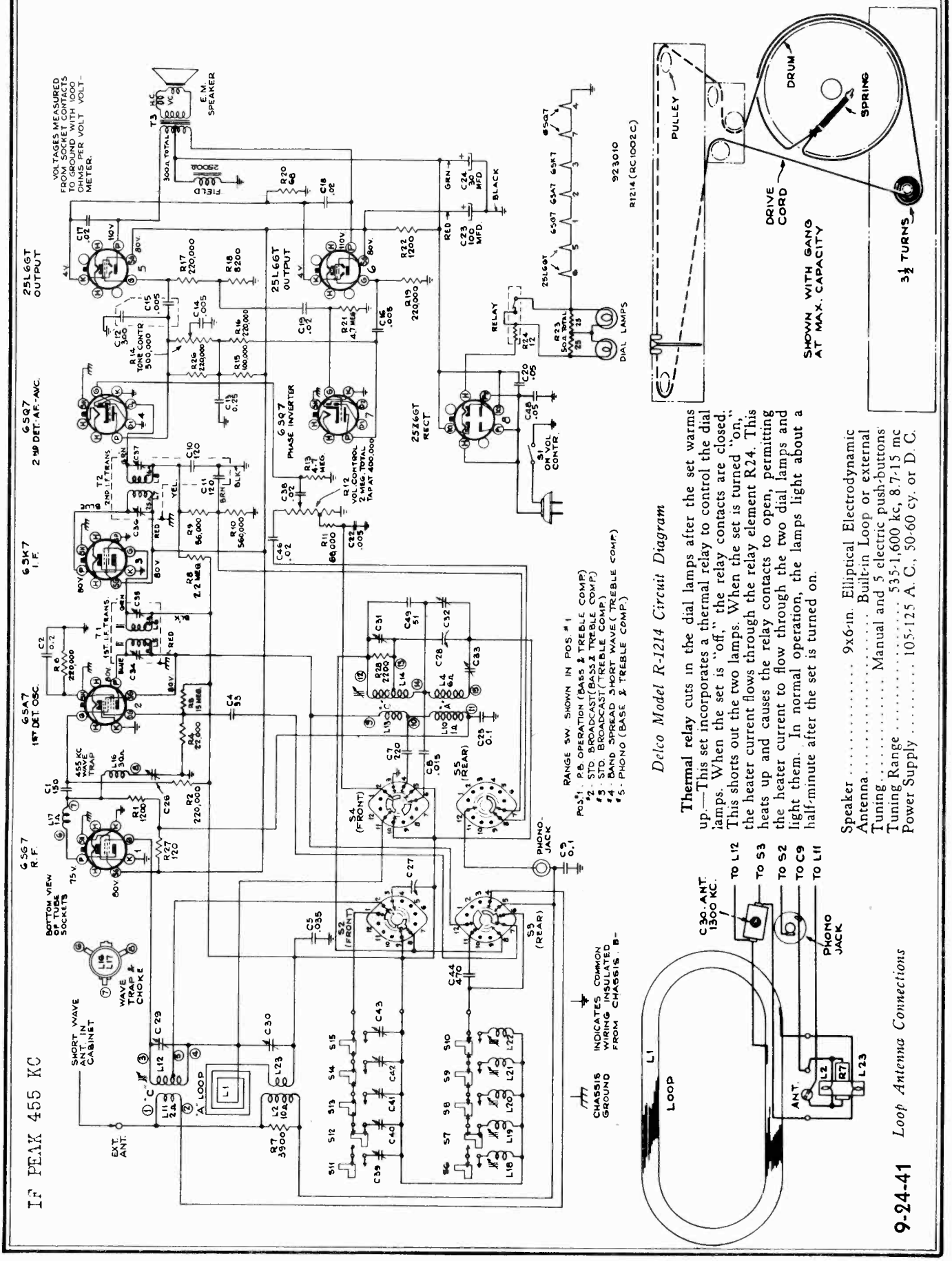
MODEL R-1214

UNITED MOTORS SERVICE



Delco Model R-1214 Circuit Diagram

Thermal relay cuts in the dial lamps after the set warms up.—This set incorporates a thermal relay to control the dial lamps. When the set is "off," the relay contacts are closed. This shorts out the two lamps. When the set is turned "on," the heater current flows through the relay element R24. This heats up and causes the relay contacts to open, permitting the heater current to flow through the two dial lamps and light them. In normal operation, the lamps light about a half-minute after the set is turned on.

Speaker ..... 9x6-in. Elliptical Electrodynamic
Antenna ..... Built-in Loop or external
Tuning ..... Manual and 5 electric push-buttons
Tuning Range ..... 535-1,600 kc, 8.7-15 mc
Power Supply ..... 105-125 A. C., 50-60 cy. or D. C.

Loop Antenna Connections

9-24-41

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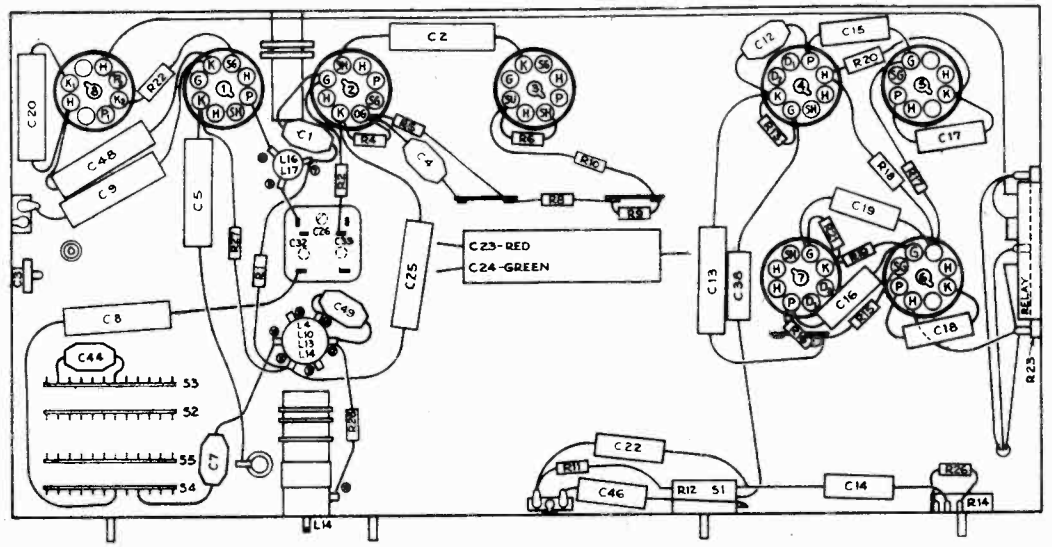
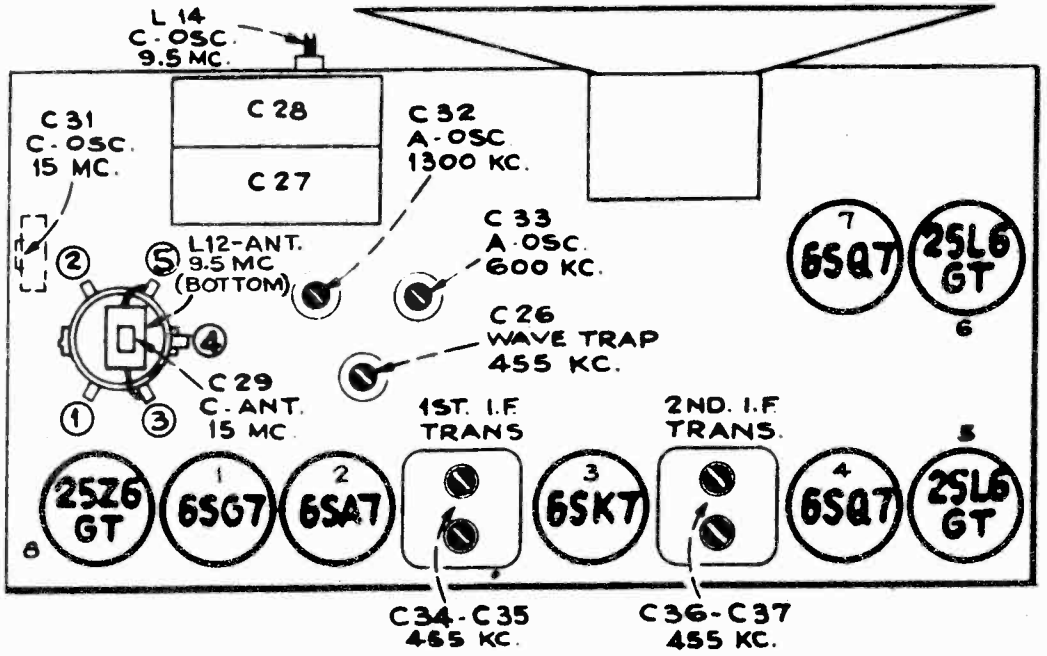
Steps	Connect the high side of test osc. to—	Tune test. osc. to—	Range Switch to—	Turn Radio dial to—	Adjust the following for max. peak output
1	I-F grid in series with .01 mfd.	455 kc	A	Quiet Point near middle of dial	C-36, C-37 2nd I-F trans.
2	Det. grid in series with .01 mfd.				C-34, C-35 1st I-F trans.
3	Ant. lead in series with 50 mmfd.	15 mc	C	15 mc	C-31 (osc.)* C-29 (ant.)
4		9.5 mc	C	9.5 mc	L-14 (osc.) L-12 (ant.)
		Repeat steps 3 and 4.			
5	Antenna terminal in series with 200 mmfd.	1,300 kc	A	1,300 kc	C-32 (osc.) C-30 (ant.)
6		600 kc	A	600 kc	C-33 Rock in
7		Repeat steps 5 and 6.			
8	R-F grid in series with .01 mfd.	455 kc	A	low end of dial	C-26** (Wave Trap)

*Oscillator should track on high frequency side of signal.
If two peaks are obtained use high frequency (minimum capacity peak).
**Feed a high signal level of 455 kc into R.F. grid and adjust C-26 for minimum signal.

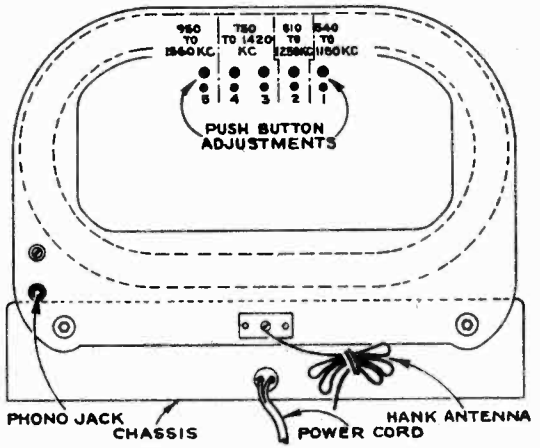


Parts Layout—Bottom View

FOR PUSH-BUTTON DATA, SEE INDEX



Parts Layout—Top View



Rear View—Push Button Adjustments

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

Phono Attachment.—A jack is provided on the rear of cabinet for connecting a Phono Attachment into the audio-amplifying circuit.

Dial Pointer Adjustment.—The dial pointer should be set at the left-hand end dial marks, with the gang in full mesh.

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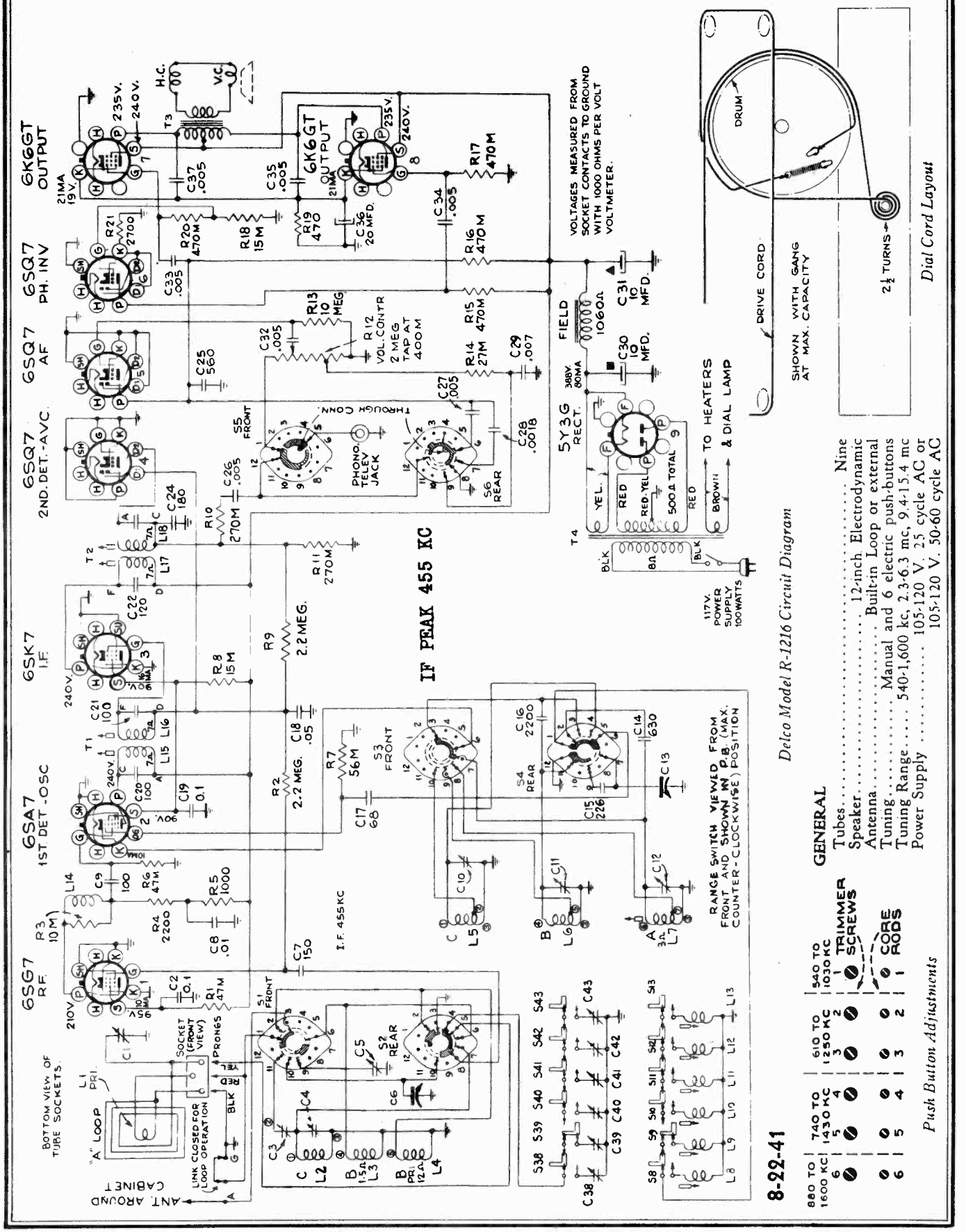
UNITED MOTORS SERVICE

MODEL R-1216



GENERAL

Tubes..... Nine
Speaker..... 12-inch Electrodynamic
Antenna..... Built-in Loop or external
Tuning..... Manual and 6 electric push-buttons
Tuning Range..... 540-1,600 kc, 2.3-6.3 mc, 9.4-15.4 mc
Power Supply ..... 105-120 V. 25 cycle AC or
105-120 V. 50-60 cycle AC

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MODEL R-1216
MODEL R-1217

UNITED MOTORS SERVICE

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Range Switch	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A"	Quiet Point near 180°	L17 and L18 (2nd I-F Trans.)
2	6SA7 Det. grid in series with .01 mfd.				L-15 and L-16 (1st I-F Trans.)
3	Ant. section of Gang Condenser	1,500 kc	"A"	160°	C-12 (osc.)
4		600 kc		30.5°	L-7 (osc.)
5	Ant. terminal "A" in series with 47 mmf. link open	6,100 kc	"B"	161°	C-11 (osc.)* C-5 (ant.)
6		15,200 kc	"C"	167°	C-10 (osc.)* C-4 (ant.)
7		9,500 kc		32°	C-3 (ant.) (Rock Gang)
8		Repeat steps 6 and 7.			
9	Fasten chassis in cabinet, see that link is closed on antenna terminal board, indicator at left end of dial scales with gang at maximum capacity.				
10	A radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	"A"	1,500 kc signal	C-1 (ant.) on loop
11		600 kc		600 kc	L-7 (osc.) (Rock Gang)
12		Repeat steps 10 and 11.			

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

External Antenna. — When using an External Antenna, peak C3 for max. output on a station in the 31 meter band.

ADJUSTMENT FOR ELECTRIC TUNING

This model has six push buttons for electric tuning. The buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool, and allow at least five minutes warm-up period before making adjustments.

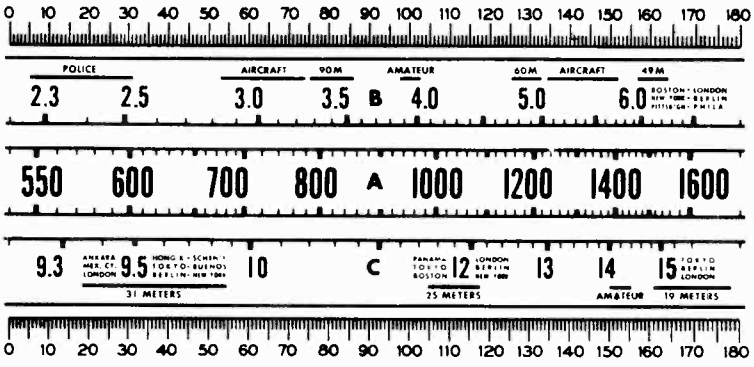
The procedure is as follows:

1. Make a list of the six desired stations, arranged in order from low to high frequencies.
2. Turn Range Control knob to "A" position, and manually tune in the first station on the list.
   Turn the Loop Antenna to give **minimum** pickup of signal, no outside antenna should be used and link on antenna board should be closed.
3. Turn Range Control knob to "PB" and press push button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.
   Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push button antenna trimmers to minimum capacity before adjusting the oscillator cores.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining five stations in the same manner.
6. After all six stations are tuned-in on the buttons, turn the Loop Antenna to a position giving the best signal pickup and make a final careful adjustment of all core rods until best reception is obtained for each. Outdoor antenna should now be reconnected if used.

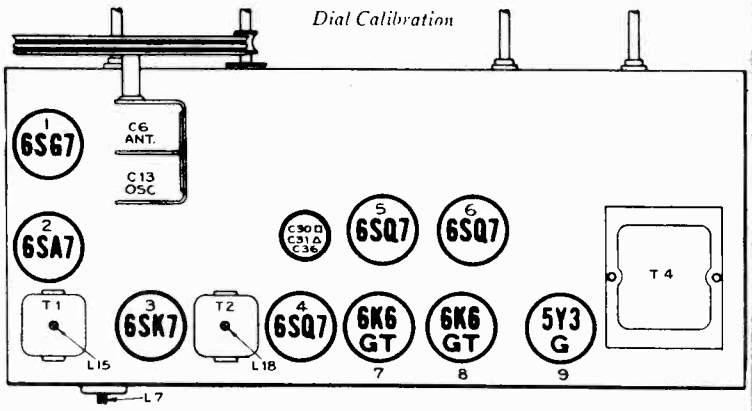
Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser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

As the first step in R.F. alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are in minimum capacity position. The drum is held to the shaft by means of plastic cement which must be securely fastened when the drum is in the correct position.

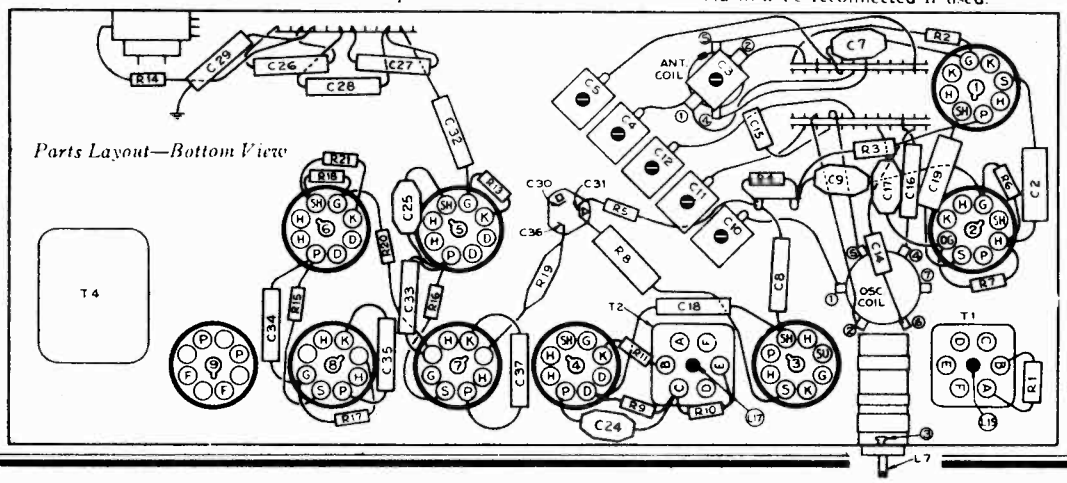
To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing



Dial Calibration



Parts Layout—Top View



Parts Layout—Bottom View

PUSH-BUTTON DATA ON THE LEFT FOR MODELS R-1216 and R-1217

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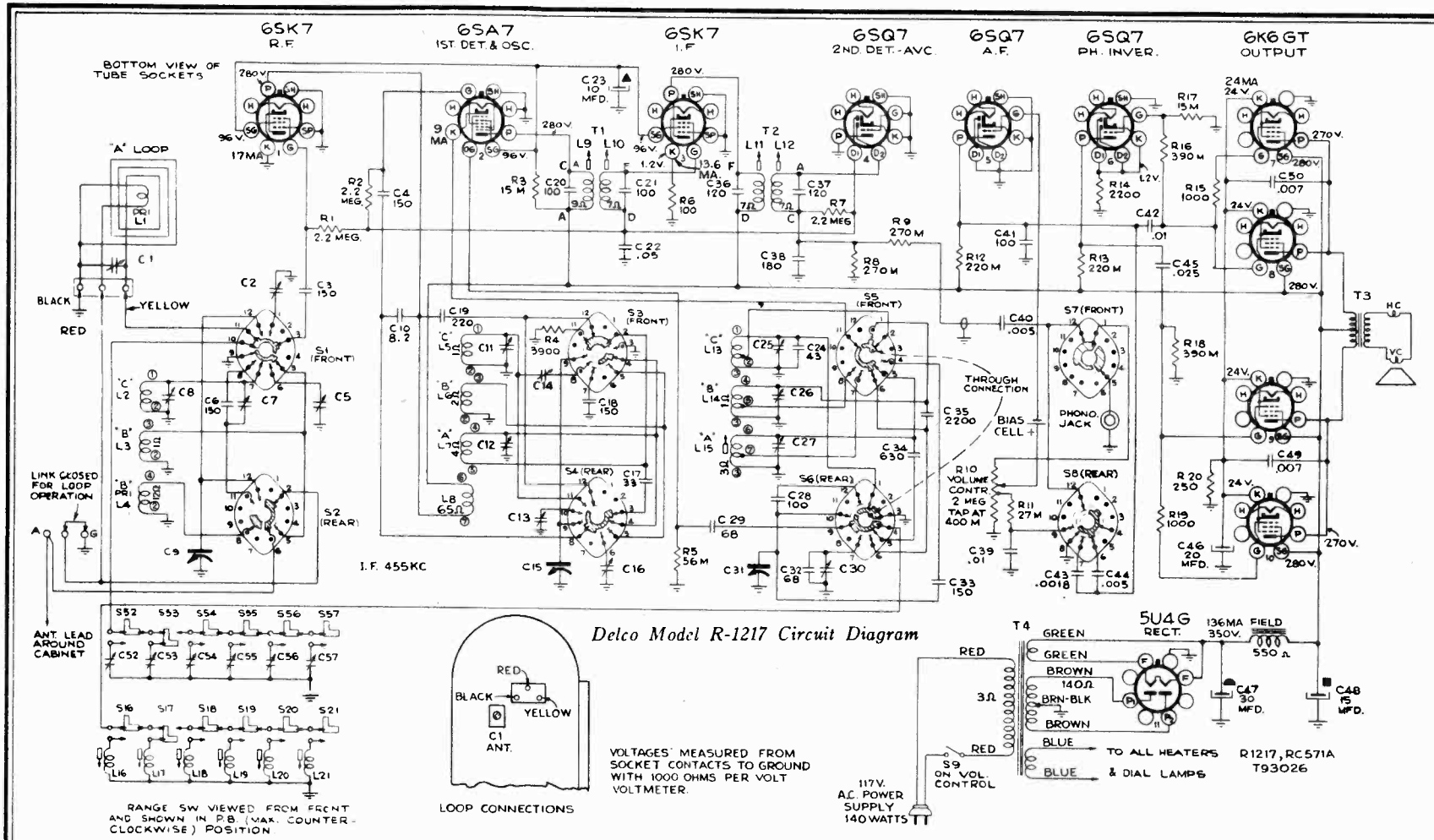

Delco Model R-1217 Circuit Diagram

IF PEAK 455 KC

9-26-41

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

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

As the first step in R.F. alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are in minimum capacity position. The drum is held to the shaft by means of plastic cement which must be securely fastened when the drum is in the correct position.

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

Speaker	12-inch Electrodynamic
Antenna	Built-in Loop or external
Tuning	Manual and 6 electric push-buttons
Tuning Range—	
Broadcast "A"	540-1,600 kc
Medium Wave "B"	2.3-6.3 mc
Spread Band	9.35-9.75 mc
Short Wave "C"	11.7-15.4 mc
Power Supply	105-120 V. 25 cycle AC or 105-120 V. 50-60 cycle AC

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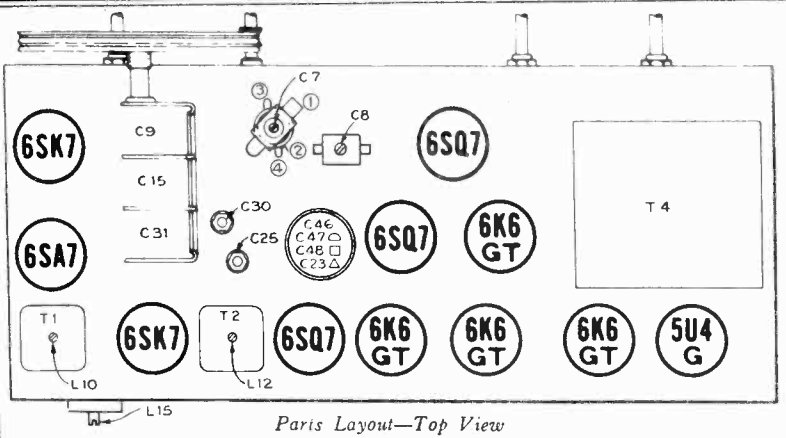
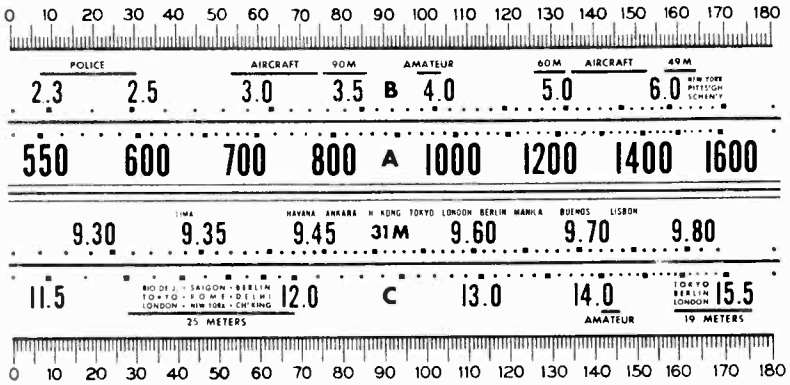


Parts Layout—Top View

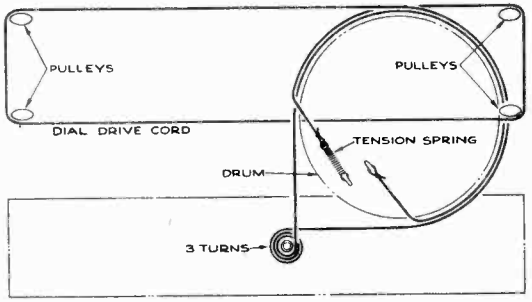


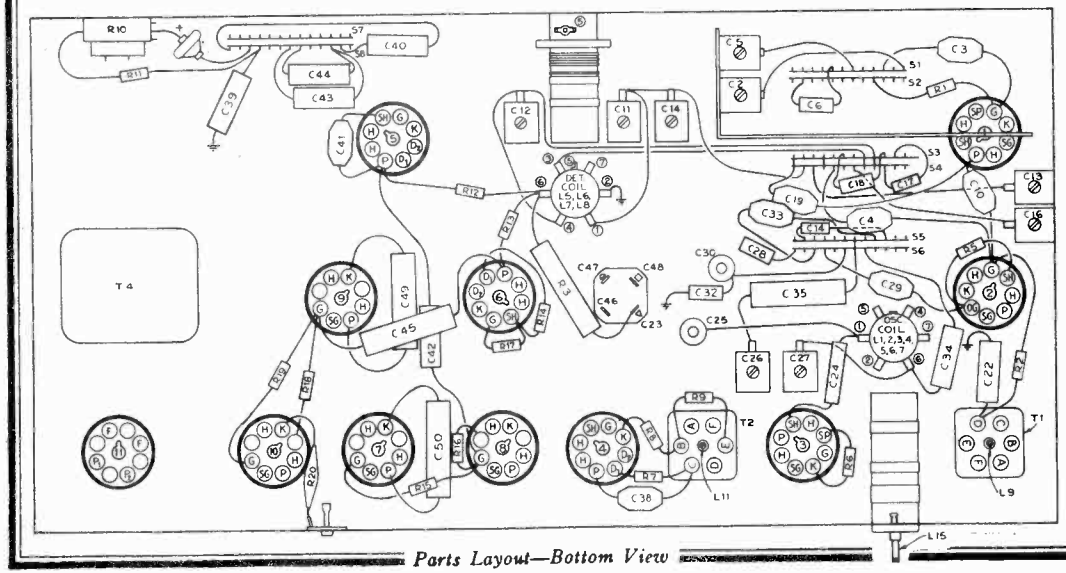
Dial Calibration

External Antenna.—When using an External Antenna, Peak C7 for max. output on a station in the 31-meter band.

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

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





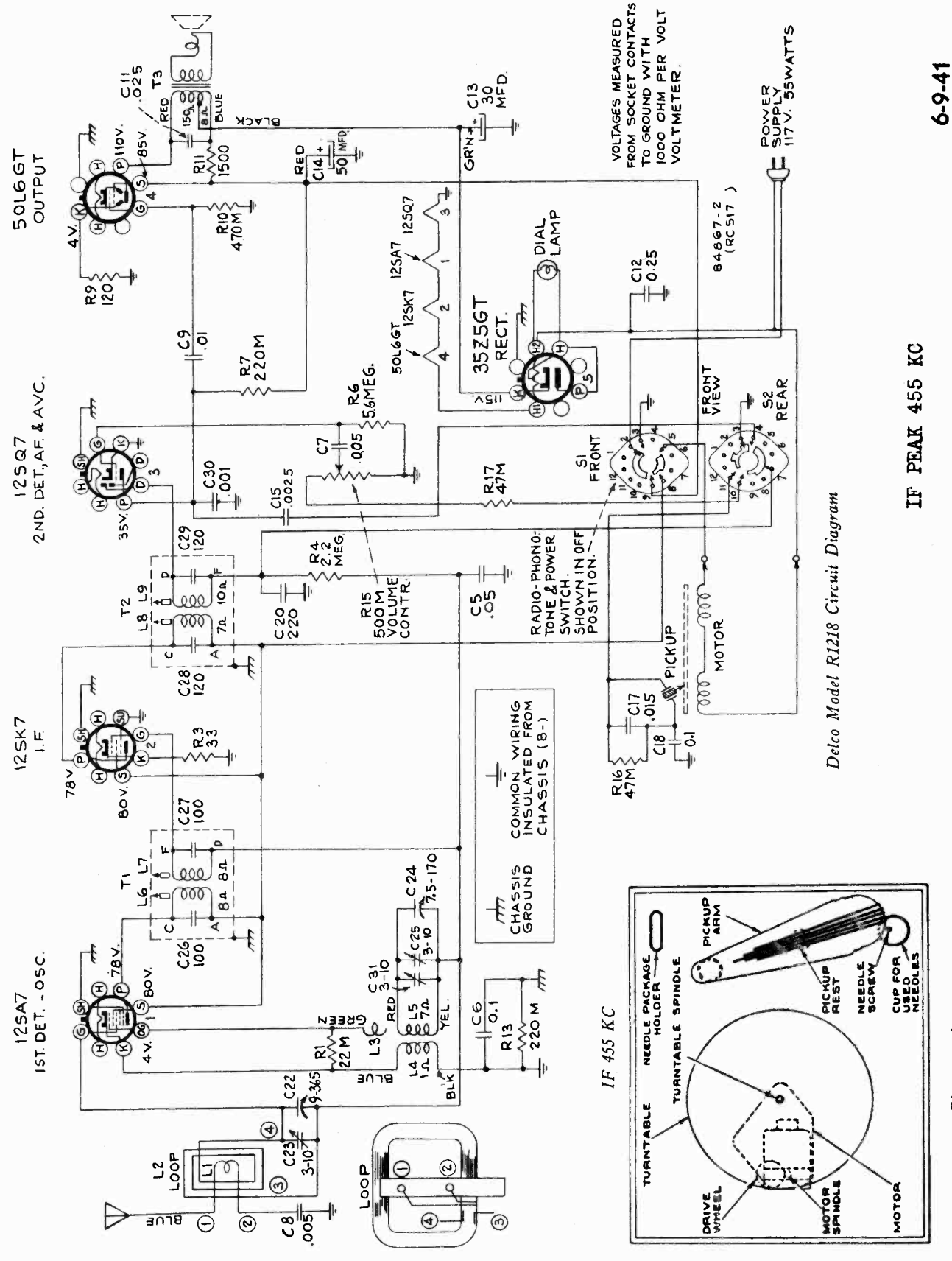
Parts Layout—Bottom View

Steps	Connect the high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	Quiet Point on "A" Band	L-11 and L-12 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			L-9 and L-10 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf.	1,500 kc	1,500 kc (160°) "A" Band	C-27 (osc.) C-12 (det.)
4		600 kc	600 kc (30.5°)	L-15 (osc.) Rock
5		Repeat steps 3 and 4.		
6	Antenna terminal (A) in series with 47 mmfd. (link open)	6,100 kc	6,100 kc (161°) "B" Band	C-26 (osc.)* C-13 (det.) Rock C-2 (ant.) Gang
7		15.2 mc	15.2 mc (165°) "C" Band	C-26 (osc.)* C-11 (det.) Rock C-8 (ant.) Gang
8		11.8 mc	11.8 mc (52°) "C" Band	C-7 (ant.) C-14 (det.) Rock Gang
9		Repeat steps 7 and 8.		
10		9.5 mc	9.5 mc (87.5°) 31M-Band	C-30 (osc.)* C-5 (ant.) Rock C-16 (det.) Gang
11	Fasten chassis in cabinet, close ant. link, adjust indicator to left-hand end of dial scales with gang closed.			
12	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	1,500 kc signal "A" Band	C-1 (ant.) on loop
13		600 kc	600 kc signal "A" Band	L-15 (osc.) Rock Gang
14	Repeat steps 12 and 13.			

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

MODEL R-1218

UNITED MOTORS SERVICE



Delco Model R1218 Circuit Diagram

6-9-41

IF PEAK 455 KC

IF 455 KC

Phonograph

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MODEL R-1218

UNITED MOTORS SERVICE

GENERAL

The Delco Model R-1218 is a five-tube, single-band, AC, superheterodyne radio and phonograph with 5-inch permanent magnet dynamic speaker and built-in loop antenna.

ANTENNA

A loop antenna is attached to the chassis. This type of antenna is somewhat directional, therefore, the radio should be tried in different positions to determine the position which will produce the best reception. An antenna lead is provided for coupling an outside antenna to the receiver.

ALIGNMENT PROCEDURE

Volume Control maximum, Signal Generator output minimum for satisfactory output indication.

PHONOGRAPH MOTOR

The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S.A.E. 20 oil on the turntable spindle and saturating the felt oil retaining pads on the motor shaft.

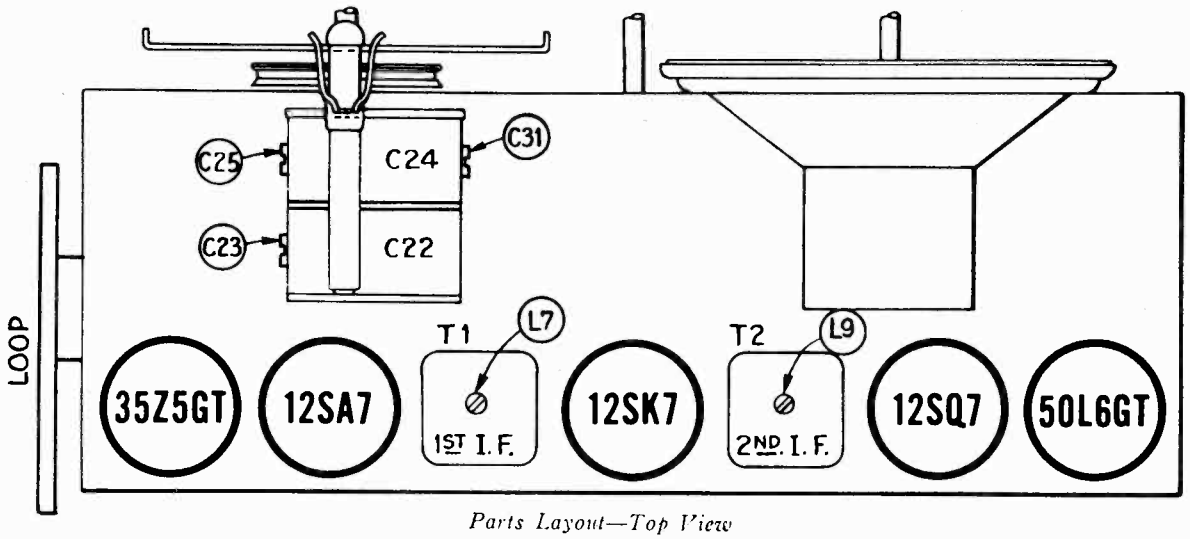
CAUTION

The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.

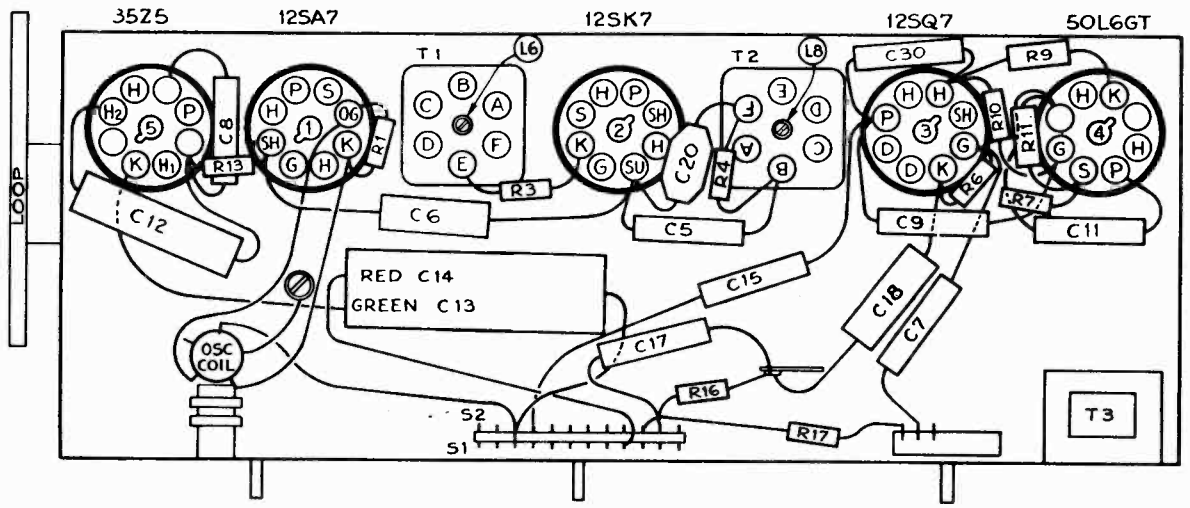
POWER SUPPLY

Although this model employs an AC-DC chassis, it is not suitable for use on DC, as this would damage the motor.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F Transformer
3	Ant. terminal in series with 200 mmfd.	1,650 kc	Gang at minimum	C25 (osc.) C31 (osc.)
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1300 kc	Signal Frequency	C23 (ant.)
5	Repeat steps 3 and 4.			



Parts Layout—Top View



Parts Layout—Bottom View

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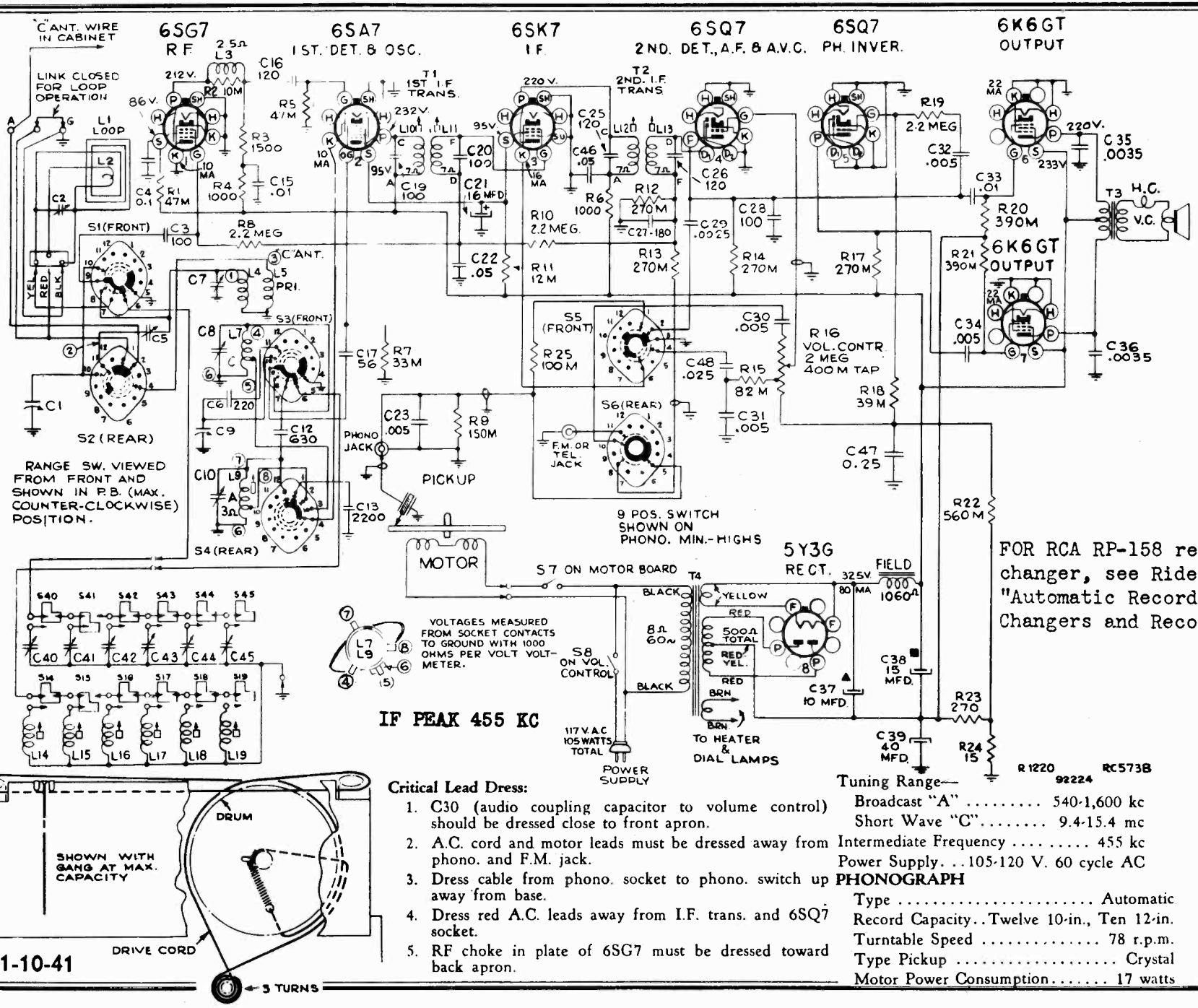

FOR RCA RP-158 record changer, see Rider's "Automatic Record Changers and Recorders"

Critical Lead Dress:

1. C30 (audio coupling capacitor to volume control) should be dressed close to front apron.
2. A.C. cord and motor leads must be dressed away from phono. and F.M. jack.
3. Dress cable from phono. socket to phono. switch up away from base.
4. Dress red A.C. leads away from I.F. trans. and 6SQ7 socket.
5. RF choke in plate of 6SG7 must be dressed toward back apron.

Tuning Range—
Broadcast "A" ..... 540-1,600 kc
Short Wave "C"..... 9.4-15.4 mc
Intermediate Frequency ..... 455 kc
Power Supply. . .105-120 V. 60 cycle AC

PHONOGRAPH

Type ..... Automatic
Record Capacity..Twelve 10-in., Ten 12-in.
Turntable Speed ..... 78 r.p.m.
Type Pickup ..... Crystal
Motor Power Consumption..... 17 watts

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MODEL R-1220
MODEL R-1221

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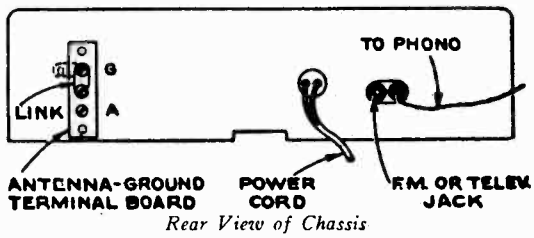
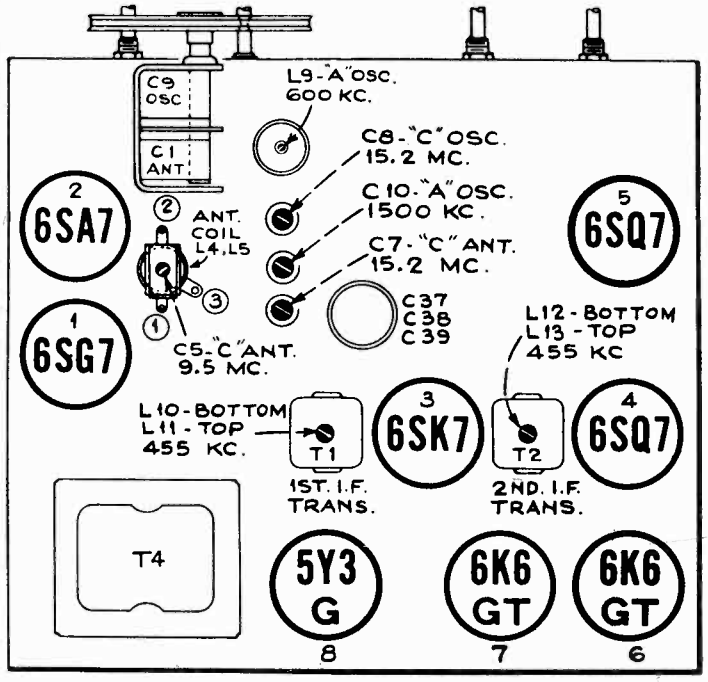
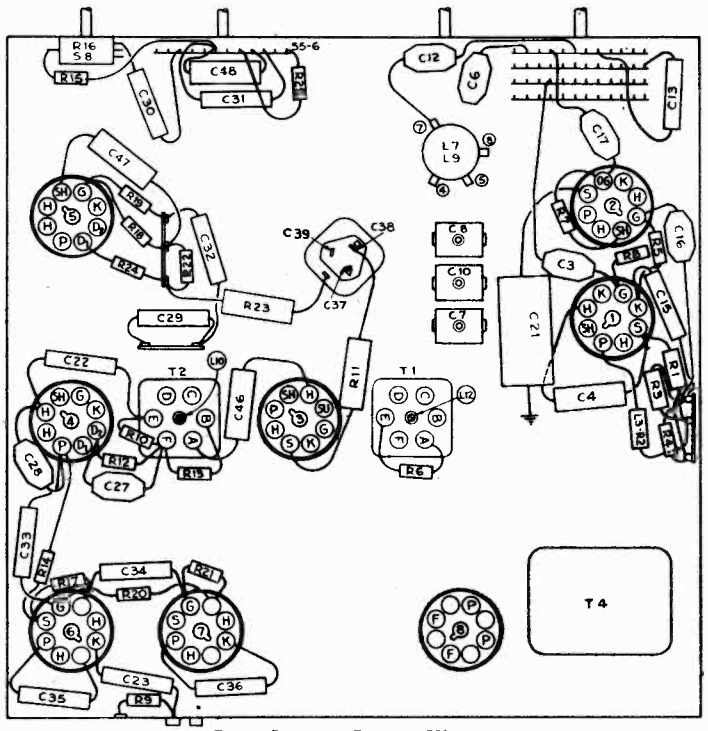


Rear View of Chassis

MODELS
R-1220
R-1221



Parts Layout—Top View



Parts Layout—Bottom View

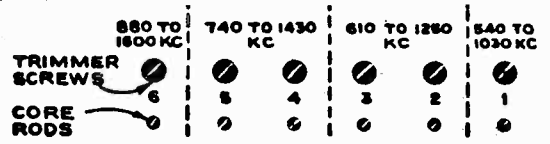
GENERAL

Tubes ..... Eight
Speaker ..... 12-inch Electrodynamic
Antenna ..... Built-in Loop or external
Tuning ..... Manual and 6 electric push-buttons

The procedure is as follows:

1. Make a list of the six desired stations, arranged in order from low to high frequencies.
2. Turn Range Control knob to standard broadcast position, and manually tune in the first station on the list. No outside antenna should be used and link on antenna board should be closed.
3. Turn Range Control knob to electric tuning and press push button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.
   Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push button antenna trimmers to minimum capacity before adjusting the oscillator cores.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining five stations in the same manner.

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



Push Button Adjustments

Using Tuning Dial.—

1. Remove glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the glass dial in place.

"C" Band Reception—For best reception on "C" band with an outside antenna, adjust the trimmer screw on the RF coil on the chassis. Turn screw carefully with an insulated screwdriver while the receiver is tuned to a station in the 31-meter band, and make setting for best reception. If returning to internal antenna at any time, close the link on the center terminal and adjust "C" band antenna trimmer for best reception on 31-meter band.

Steps	Connect test-osc. output to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" band 540 kc	L12 and L13 (2nd I-F trans.)
2	1st Det. grid in series with .01 mfd.			L10 and L11 (1st I-F trans.)
3	A-Terminal in series with 47 mmfd. (link closed)	15.2 mc	"C" band 15.2 mc	C8 (osc.)* C7 (ant.)
4		9.5 mc	"C" band 9.5 mc	C5 (ant.) (Rock gang)
5		Repeat steps 3 and 4		
6	Yellow loop lead in series with 200 mmfd. (link closed)	1,500 kc	"A" band 1,500 kc	C10 (osc.)
7		600 kc	"A" band 600 kc	L9 (osc.)
8		Repeat steps 6 and 7		
9	Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc. and peak the "A" band trimmer C2 (on loop). Rock in L9 for peak output at 600 kc.			

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

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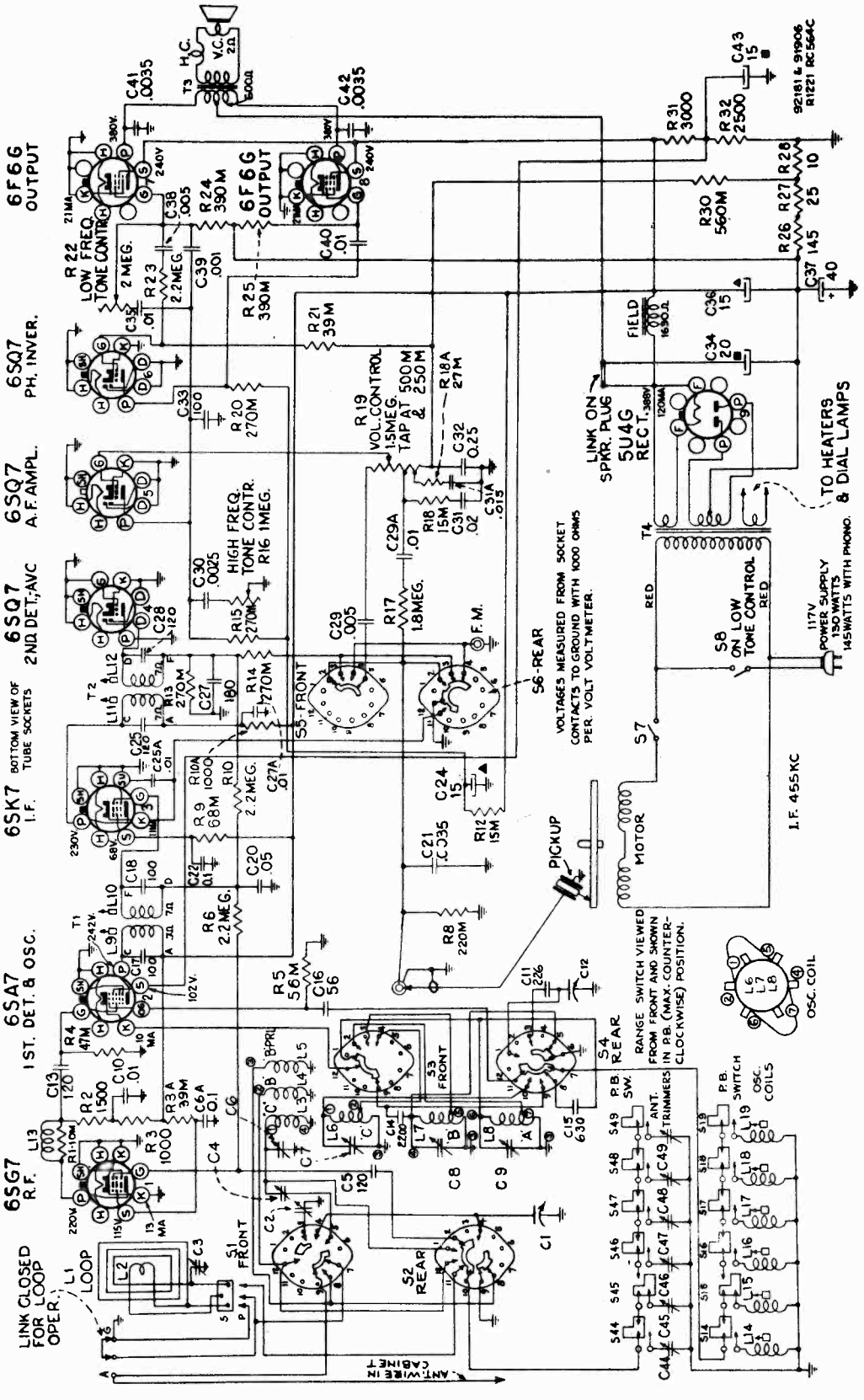
MODEL R-1221

UNITED MOTORS SERVICE



Delco Model R-1221 Circuit Diagram

GENERAL

Tubes	Nine
Speaker	12-in. Electrodynamic
Antenna	Built-in Loop or external
Tuning	Manual and 6 electric push-buttons
Tuning Range—	
Standard Broadcast (A)	540-1,600 kc
Medium Wave (B)	2.3-6.3 mc
Short Wave (C)	9.3-15.4 mc
Intermediate Frequency	455 kc
Power Supply	105-125 V. 60 cycle AC

PHONOGRAPH

Type	Automatic
Record Capacity	Twelve 10-in., Ten 12-in.
Turntable Speed	78 r.p.m.
Type Pickup	Crystal
Motor Power Consumption	17 watts

FOR PUSH-BUTTON DATA
SEE INDEX

For RCA RP-158 record changer, see Rider's "Automatic Record Changers and Recorders".

11-28-41

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MODEL R-1221

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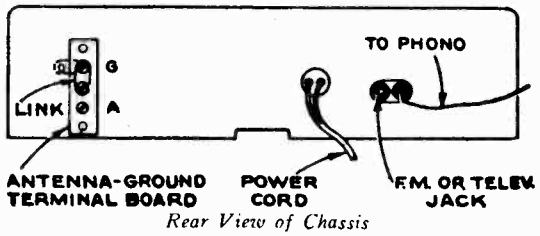
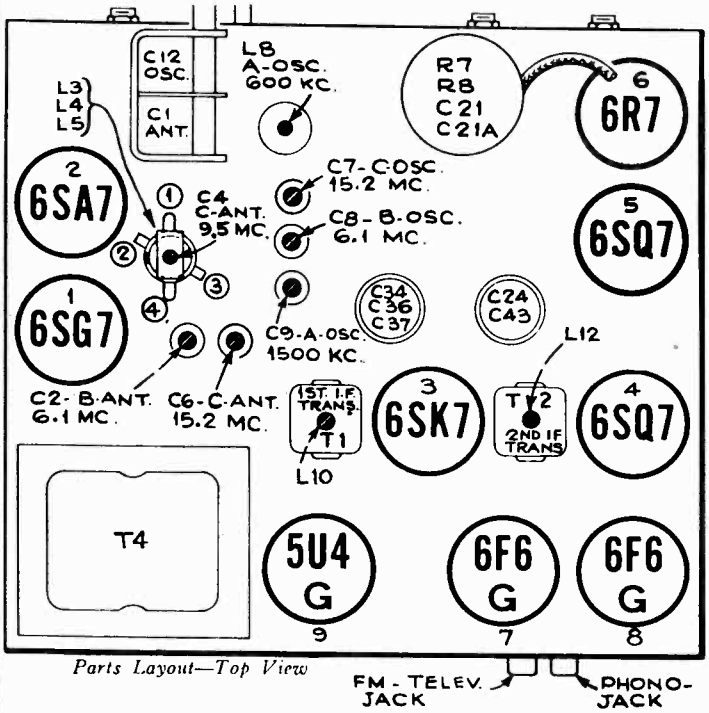
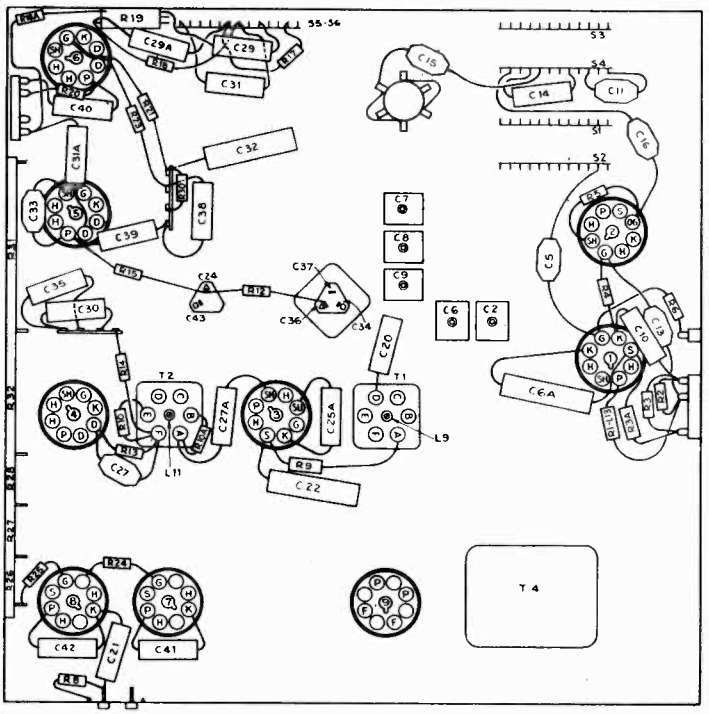


Rear View of Chassis



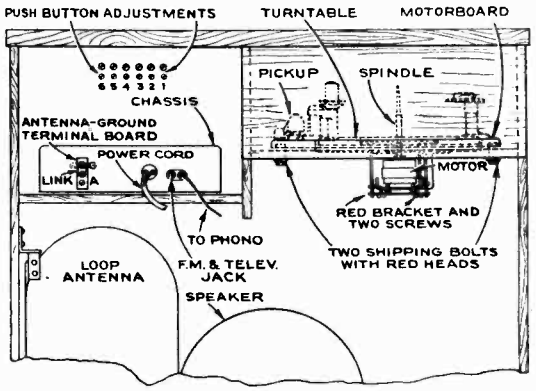
Parts Layout—Top View



Parts Layout—Bottom View

Critical Lead Dress

1. Push button, R.F. and oscillator leads should be separated as much as possible to reduce degeneration on push button reception.
2. R.F. choke in plate circuit of 6SG7 should be dressed towards the back apron.
3. Dress green push button lead under clamp and away from "C" band series capacitor.
4. Dress heater leads away from grids and diodes.
5. Dress green lead from 6SA7 screen to electrolytic down close to chassis.
6. Keep yellow loop lead clear of all wiring.
7. Dress oscillator grid capacitor (56 mmfd.) up and away from the screen and plate of 6SA7 socket.
8. Keep all leads away from Phono.-FM jack to prevent audio oscillation and hum. Dress underneath the shield provided.
9. Remove all excess slack from pilot light assembly and dress it close to chassis base away from volume control.
10. A-C leads to "off-on" switch should be kept away from tone control cable to reduce hum.



Rear View of Cabinet

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" Band 540 kc	L12, L11 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			L10, L9 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf. (link closed)	1,500 kc	"A" Band 1,500 kc	C9 (osc.)
4		600 kc	"A" Band 600 kc	L8 (osc.)
5	Repeat steps 3 and 4			
6	Ant. terminal in series with 47 mmf. (link closed)	6.1 mc	"B" Band 6.1 mc	C8 (osc.)* C2 (ant.)
7		15.2 mc	"C" Band 15.2 mc	C7 (osc.)* C6 (ant.)
8		9.5 mc	"C" Band 9.5 mc	C4 (ant.)
9	Repeat steps 7 and 8			
10	Install and connect chassis in cabinet, with link closed. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band ant. trimmer C3 (on loop). Rock in L8 for peak output at 600 kc.			

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

For other alignment notes and drive-cord data, see Model R-1220

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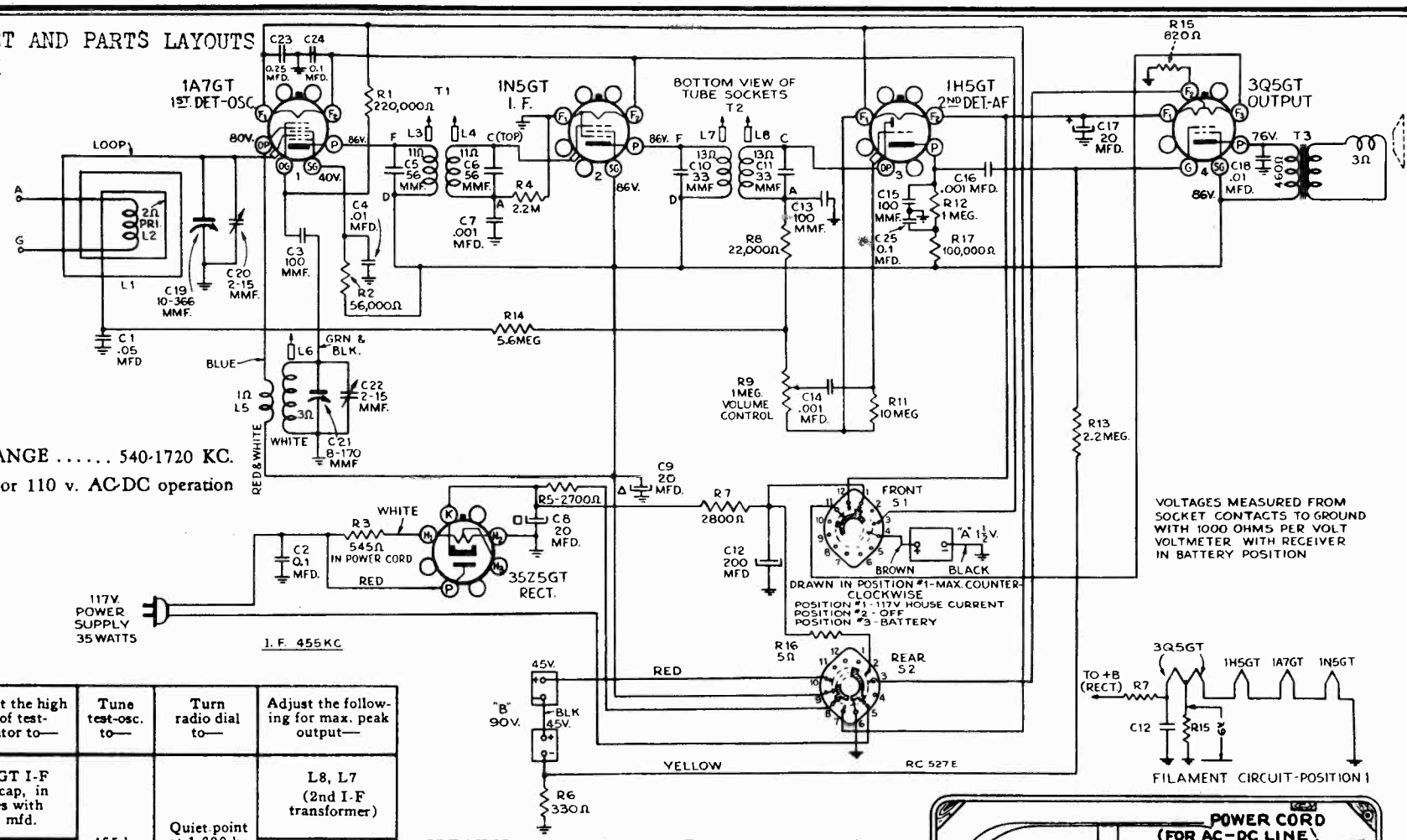
FOR SOCKET AND PARTS LAYOUTS SEE INDEX



TUNING RANGE ..... 540-1720 KC.

BATTERY..or 110 v. AC-DC operation

VOLTAGES MEASURED FROM SOCKET CONTACTS TO GROUND WITH 1000 OHMS PER VOLT VOLTMETER WITH RECEIVER IN BATTERY POSITION

6-2-41

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1N5GT I-F grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	L8, L7 (2nd I-F transformer)
2	1A7GT 1st-Det. grid cap, in series with .01 mfd.			L4, L3 (1st I-F transformer)
3	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,720 kc	signal frequency	C22 (Osc. Trimmer)
4		1,400 kc		C20 (Ant. Trimmer)
5		600 kc		L6 (Rock in)
6	Repeat steps 3, 4 and 5 until aligned.			

SPEAKER.....5-in. Permanent-magnet dynamic

ANTENNA.....Built-in Loop or external

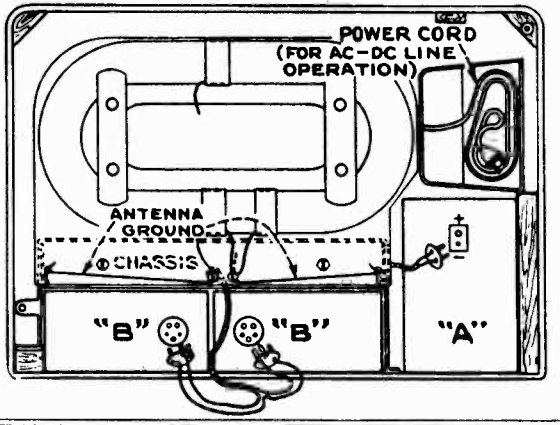
CURRENT CONSUMPTION

BATTERY OPERATION..... { "A" 0.25 amperes / "B" 11.5 milliamperes

A-C—105-125 volt 50-60 cycles
D-C—105-125 volt } .....35 watts

"A"-ONE 1.5 VOLT RAYOVAC * P96A, EVEREADY * 743, OR EQUAL.

"B"-TWO 45 VOLT RAYOVAC * P 7830, EVEREADY * 482, OR EQUAL.



Battery Installation

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MODEL R-1212
MODEL R-1407

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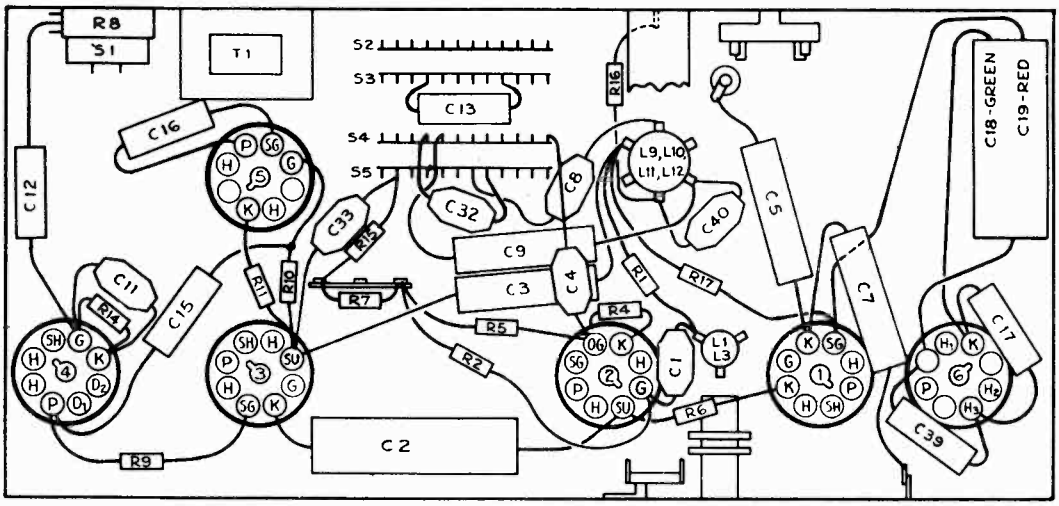
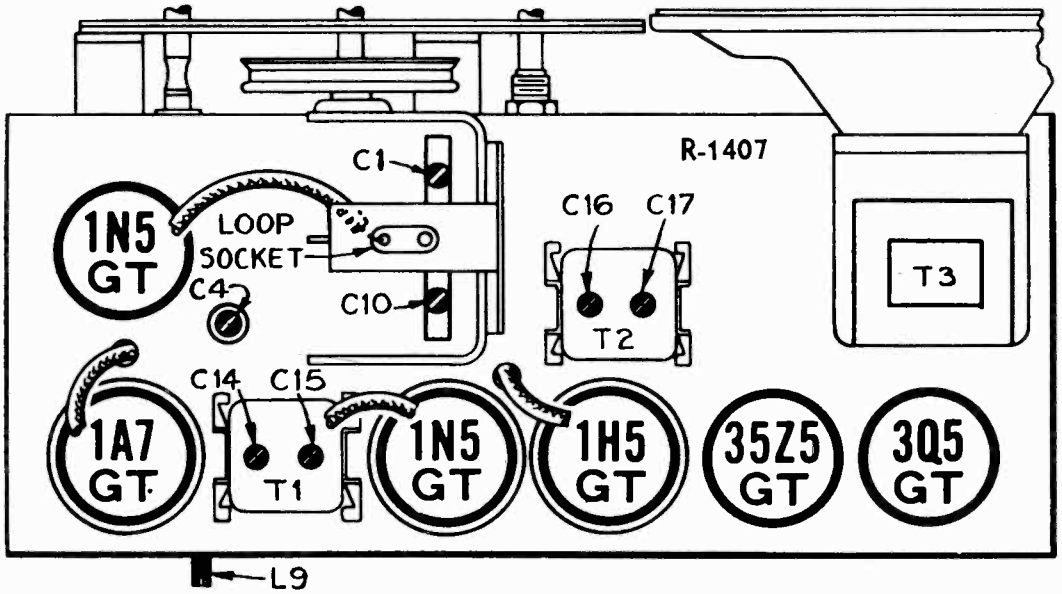
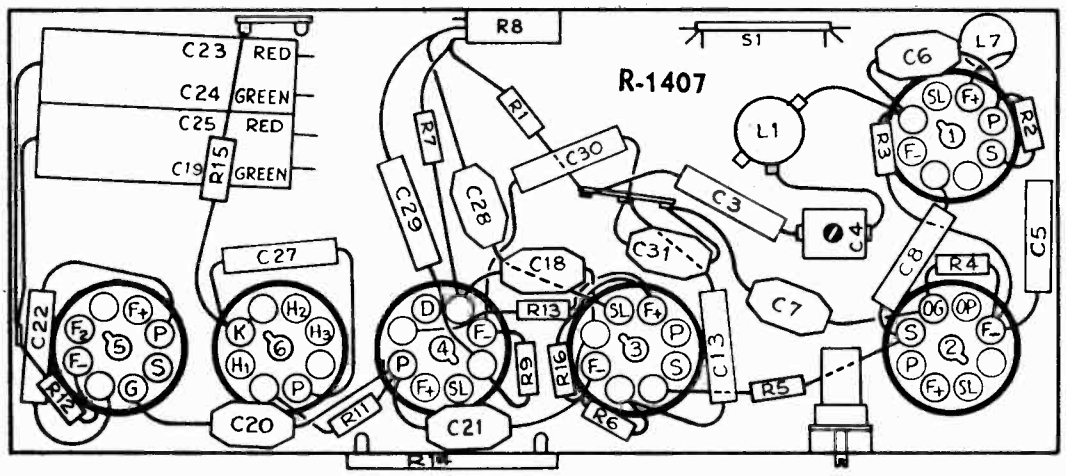


MODEL R-1212 *Parts Layout—Bottom View*





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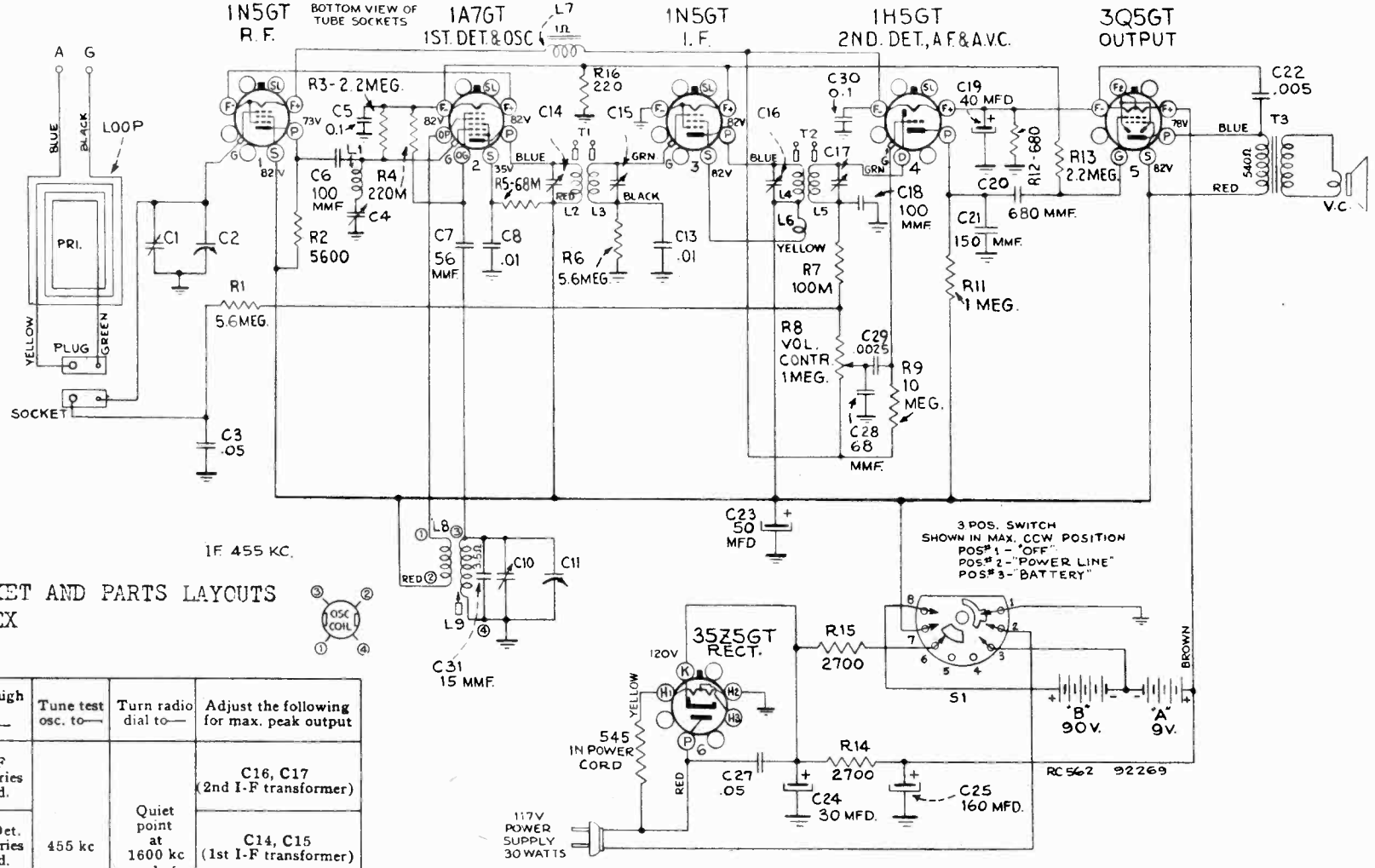

FOR SOCKET AND PARTS LAYOUTS SEE INDEX

Steps	Connect the high side of test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	1N5GT I-F grid cap, in series with .01 mfd.	455 kc	Quiet point at 1600 kc end of dial	C16, C17 (2nd I-F transformer)
2	1A7GT 1st Det. grid cap, in series with .01 mfd.			C14, C15 (1st I-F transformer)
3	Antenna terminal in series with 200 mmfd.			C4 Wave trap for *minimum* output
4		600 kc	600 kc	L9 (osc.) (Rock in)
5		1,600 kc	1,600 kc	C10 (osc.)
6		1,300 kc	1,300 kc	C1 (ant.)
7	Repeat steps 4, 5 and 6 until aligned			

Delco Model R1407 Circuit Diagram

"A" – TWO 4.5-VOLT EVEREADY NO. 746, BURGESS NO. G-3, RAY-O-VAC NO. P-63-A, OR EQUIVALENT.
"B" – TWO 45-VOLT EVEREADY NO. 482, BURGESS NO. M-30, RAY-O-VAC NO. P-7830, OR EQUIVALENT.

CURRENT CONSUMPTION

BATTERY OPERATION..... { "A" 0.05 amperes; "B" 14 milliamperes

A-C—105-125 volt 50-60 cycles } ..... 30 watts
D-C—105-125 volt }

VOLTAGES MEASURED FROM SOCKET CONTACTS TO GROUND WITH 1000 OHMS PER VOLT VOLTMETER WITH RECEIVER IN BATTERY POSITION

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MODEL 983705

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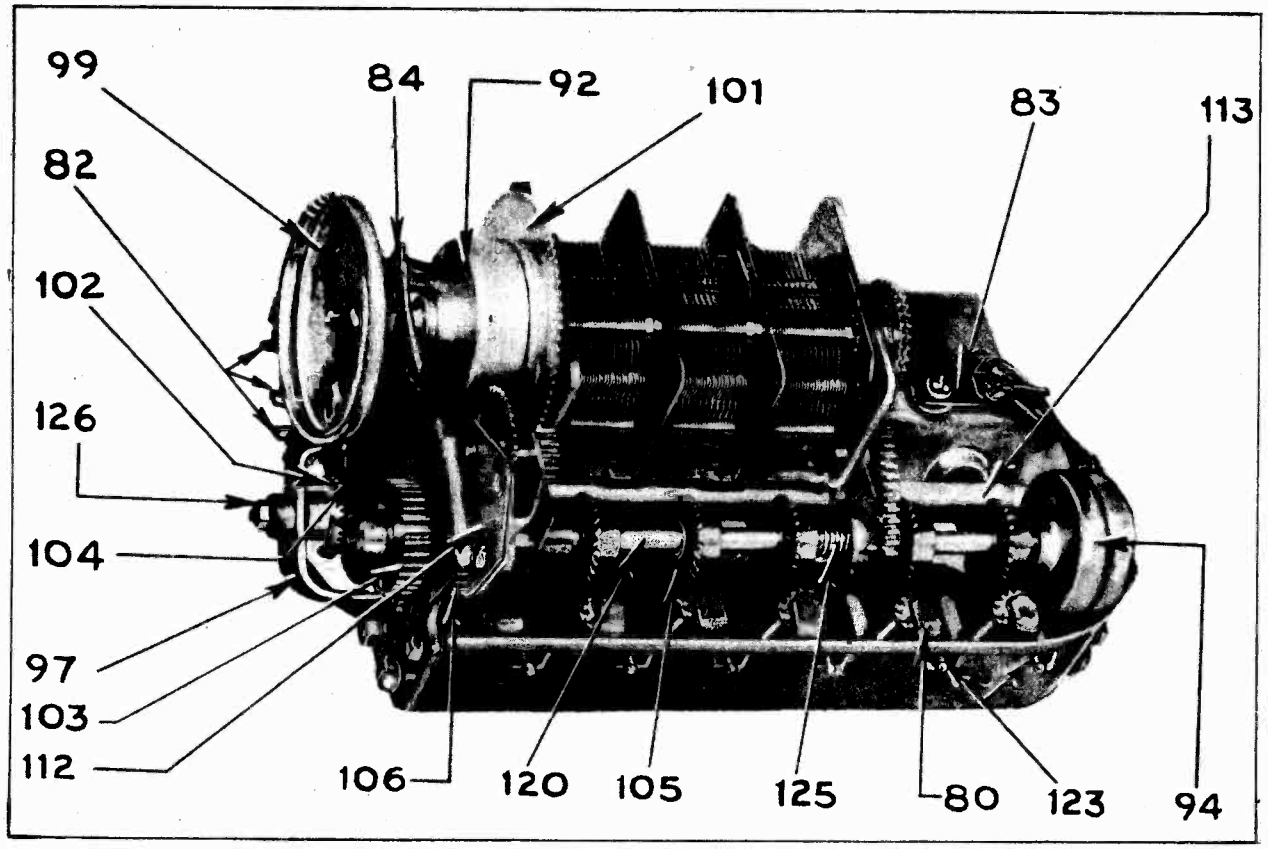
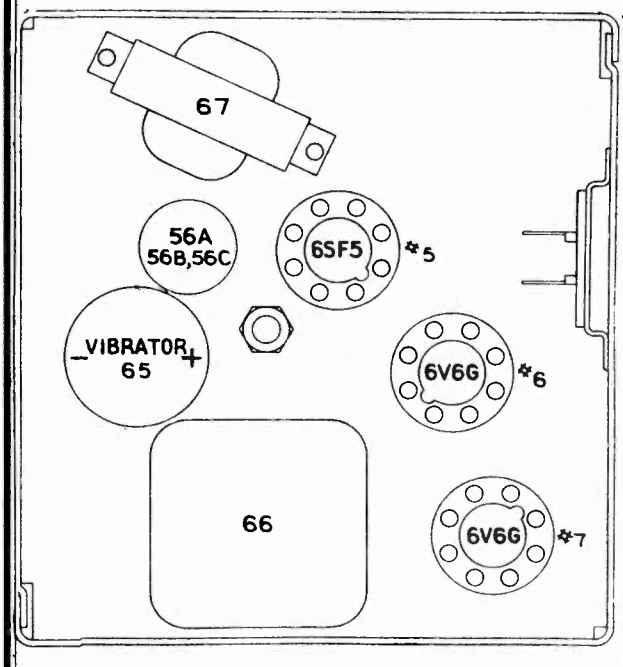


FIG. 9--PARTS LAYOUT--TUNER UNIT



-PARTS LAYOUT--DASH UNIT--TOP VIEW

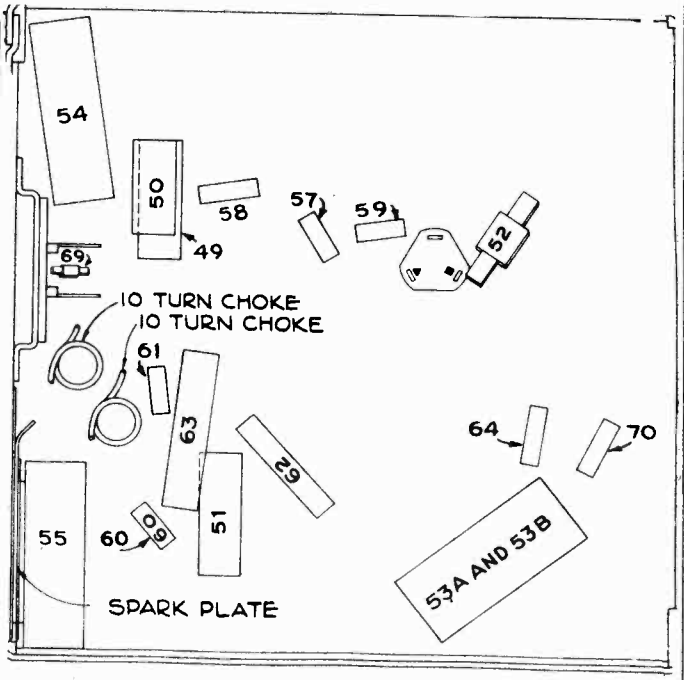


FIG. 8--PARTS LAYOUT--DASH UNIT--BOTTOM VIEW

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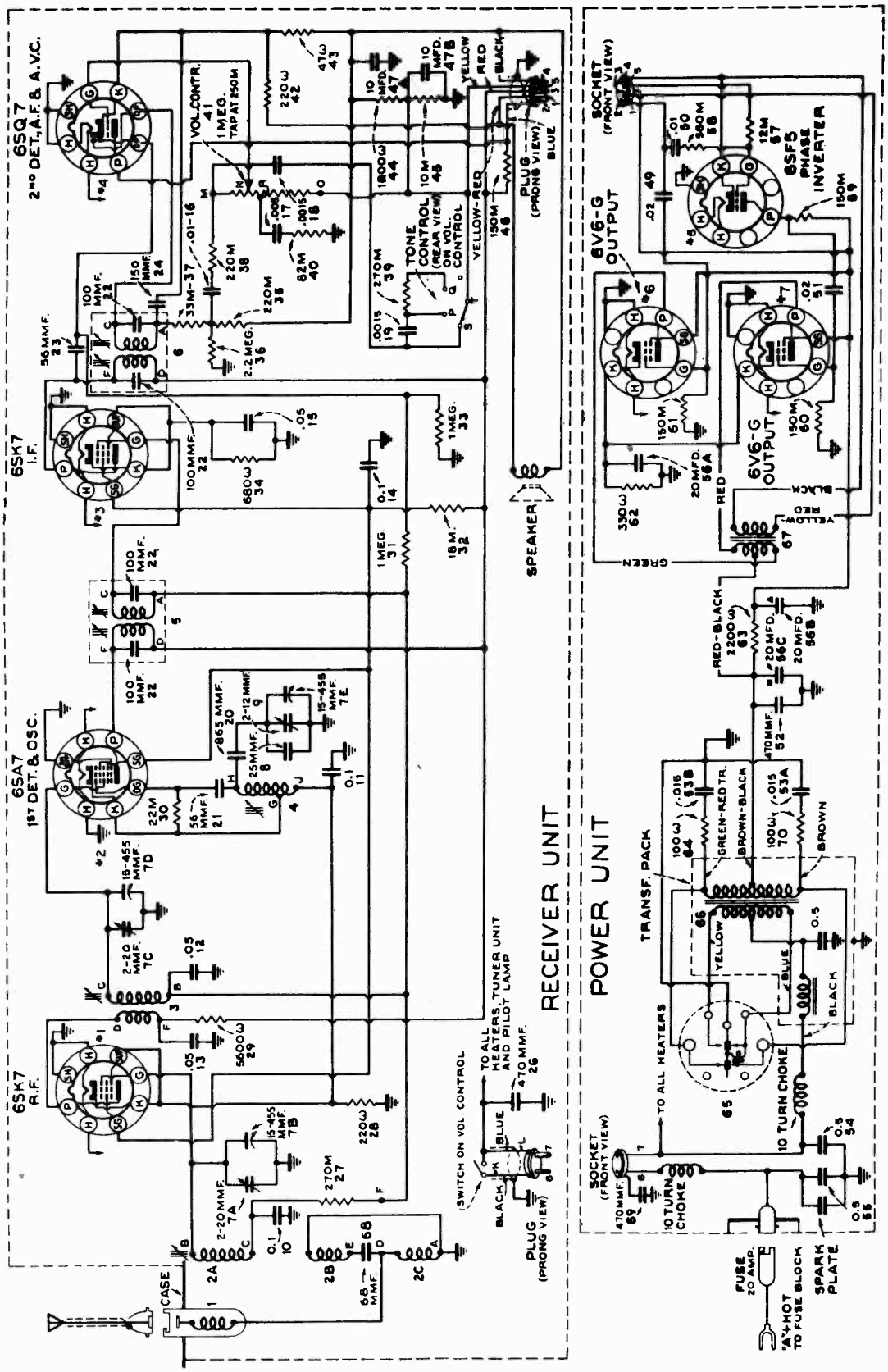

-PONTIAC MODEL 983705

CIRCUIT DIAGRAM

GENERAL: The Pontiac Model 983705 is a seven-tube, two unit superheterodyne receiver with automatic push-button tuning and an 8 inch P. M. speaker, and is designed specifically for the 1940 Pontiac automobile.

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CIRCUIT ALIGNMENT

If realignment is found necessary the circuits can be properly adjusted only with the use of a calibrated test oscillator or signal generator and an output meter.

All adjustments on back of the tuner unit are accessible by removing the back cover. During I.F. alignment, the speaker cover must be removed from the tuner unit to permit access to the two I.F. adjustments located in front of the chassis. Turn the volume control full on, to maximum volume position.

1. Aligning I.F. Stages at 260 kilocycles

   (a) Connect the signal lead of the signal generator to the control grid of the 6SA7 tube (Pin #8) through a .1 mfd. condenser.
   (b) Connect the ground lead of the signal generator to the chassis frame.
   (c) Connect the output meter from the plate prong of one 6V6G to the plate prong of the other 6V6G.
   (d) Set the signal generator to exactly 260 k. c.
   (e) Adjust the core screws on the I.F. coils carefully (Ill. 5 & 6 Figs. 5 & 6, one on bottom and one on top of each I.F. coil) for maximum output. These adjustments should be repeated several times and during alignment, the signal generator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1560 kilocycles

   (a) Leave the signal generator leads connected the same as for aligning the I.F. circuits.
   (b) Turn the rotor plates of the gang condenser all the way out of mesh and against the high frequency stop.
   (c) Set the signal generator to 1560 kilocycles.
   (d) Adjust the parallel trimmer for the oscillator section of the condenser gang (Ill. 9 Fig. 5) for a maximum output. It is very important that this frequency be set accurately, as a slight missetting will cause the receiver to be out of track over the entire high frequency end of the dial.

3. Aligning at 545 kilocycles

   (a) Leave the signal generator leads connected the same as before.
   (b) Turn the rotor plates of the gang condenser all the way into mesh so that they rest against the low frequency stop.
   (c) Set the signal generator to 545 k. c.
   (d) Adjust the magnetite core of the oscillator coil (Ill. 4 Fig. 5) to maximum output.

   (This adjustment sets the low frequency tuning range of this receiver to 545 k. c.)

4. Realigning at 1560 kilocycles

   Recheck alignment of oscillator parallel trimmer as given in paragraph #2.

5. Aligning at 1400 kilocycles

   (a) Remove the signal lead of the signal generator from the control grid of the 6SA7 tube and connect to the antenna connector of the receiver through a .00006 mfd. mica condenser connected in place of the .1 mfd. condenser previously used.
   (b) Set the signal generator to 1400 k. c.
   (c) Turn the condenser rotor plates until this frequency is tuned in with maximum output.
   (d) Adjust the R.F. parallel trimmer on the condenser gang (Ill. 7C, Fig. 6 & 10) and the antenna parallel trimmer on the gang condenser (Ill. 7A, Fig. 6 & 10) for maximum output.

TUNING CONTROL PARTS

Illus. No.	Part No.	Part Name	Description
80	1214173	Armature Assy.	Station Selector Complete
	1214174	Bar	Pointer Slide
82	1212942	Board	Nine contact terminal
83	1214281	Board	One contact terminal
84	1214280	Board	Two contact clutch terminal
	1214175	Bracket Assy.	L.H. Pointer slide, pulley, shield
	1214176	Bracket Assy.	R.H. Pointer slide & pulleys
	1214177	Bracket	Tuner mtg. bottom
	1214274	Bracket	Tuner top mtg.
	1214179	Button	Pushbutton
	1214180	Cable Assy.	"A" lead & 2 prong plug
	1214181	Cable Assy.	Power & A.F. 5 prong plug
	504844	Call Letters	Complete Set
92	1212939	Coil	Cond. drive clutch
	1212944	Coil	Key Solenoid
94	1212949	Coil	Station setting magnet
	1212233	Cord	Pointer Drive (6' length)
97	1214282	Cradle	Man. tuning gear
	1214182	Dial	Calibrated
99	1214268	Drum	Pointer Drive Cord
	1214189	Escutcheon	Dial escutcheon & crystal
101	1212938	Gear	Cond. drive (large)
102	1214269	Gear	Man. tuning dual
103	1214267	Gear	Man. tuning key setting
104	1214266	Gear Assy.	Man. tuning shaft connector
105	1212952	Gear	Station
106	1212953	Gear	Station setting bevel
	1212941	Insulator	Clutch coil
	1212945	Insulator	Solenoid Coil
	1212950	Insulator	Station setting coil
	7238487	Knob	Tone control
	7238288	Knob	Tuning & Volume
	504909	Knob	Dummy
	7238749	Washer	Felt
	1214184	Lamp	Dial lamp (special)
112	1214185	Plate	Gear Plate Assy.
113	1214271	Plate Assy.	Rocker & Sector Gear
	1214187	Plug Assy.	2 Prong "A"
	1214186	Plug Assy.	5 Prong Power
	1214188	Pointer	Station Indicator
	1213313	Pole Piece	Key solenoid
	140852	Screw	8-32 x 1/8 set
	1214190	Shaft	Flexible tuning
120	1214264	Shaft	Key setting
	1212940	Silencer	Clutch silencer
	1214192	Socket	Dial lamp
123	1212946	Spring	Key return
	1214193	Spring	Cord tension
125	1214283	Spring	Key setting shaft
128	1214272	Stud	Man. tuning gear mtg.
	1214194	Switch Assy.	Push button switch

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MODEL 983705

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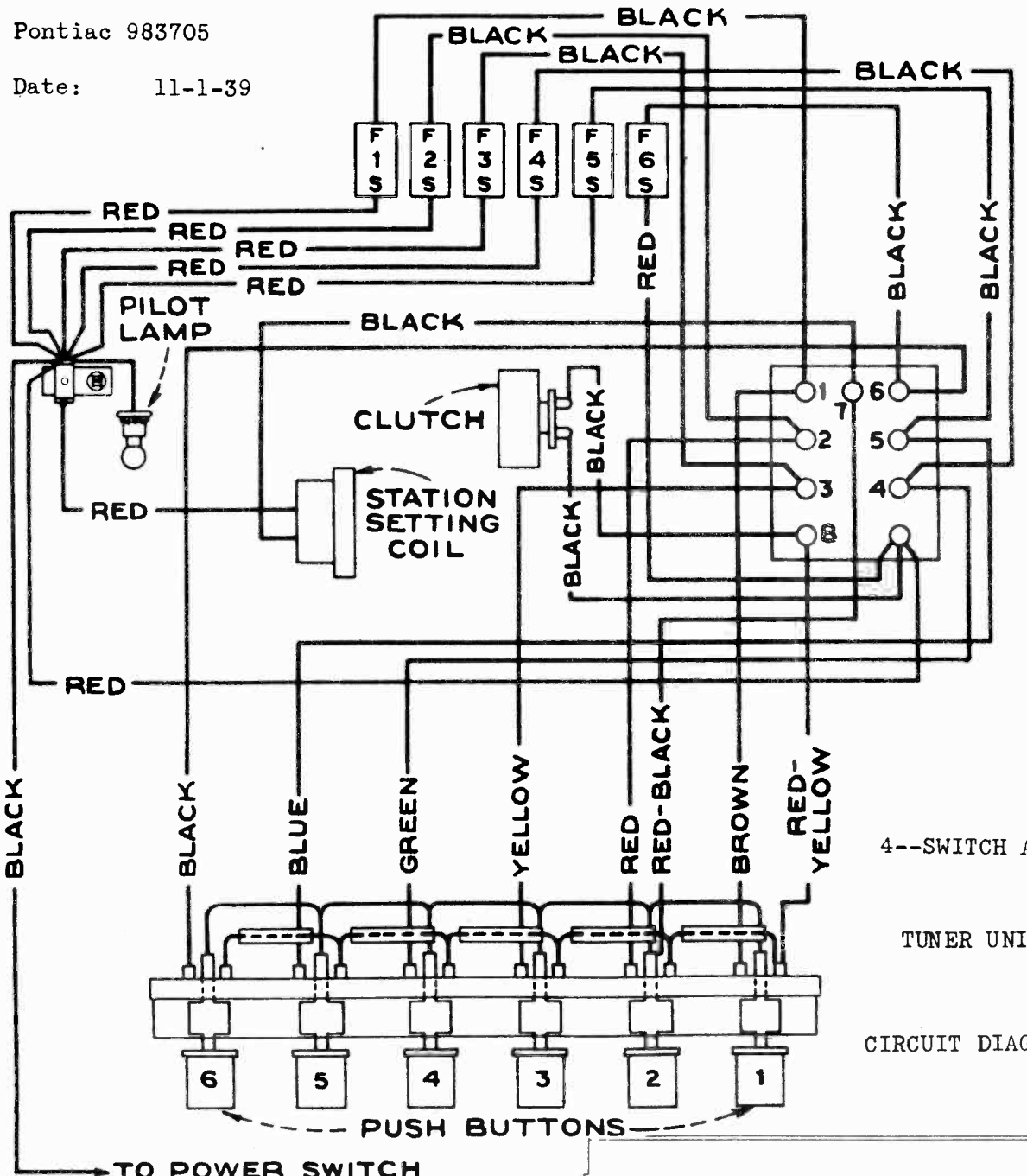
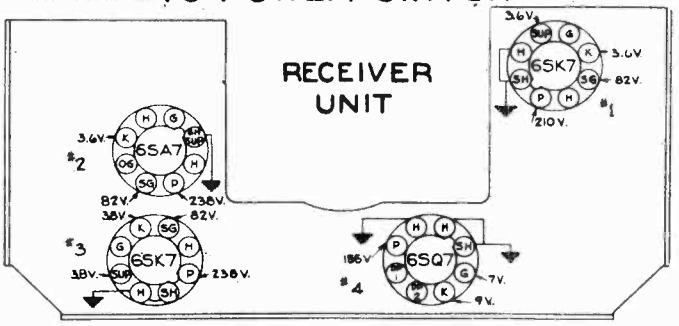
Pontiac 983705

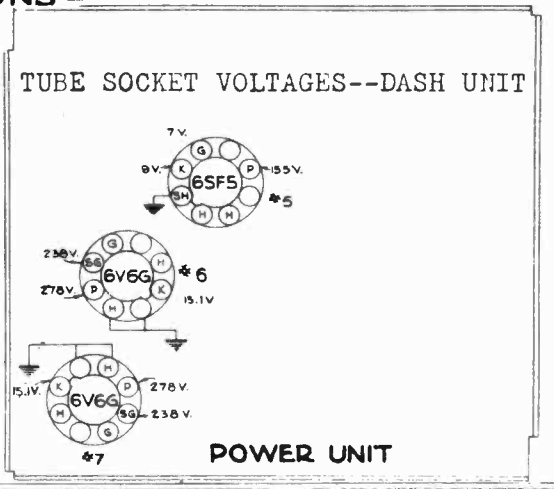
Date: 11-1-39



4--SWITCH AND TUNER UNIT CIRCUIT DIAGRAM



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 6.3 VOLTS. CURRENT DRAIN OF 7.3 AMPERES. "B" SUPPLY DRAIN APPROXIMATELY 75 M.A..



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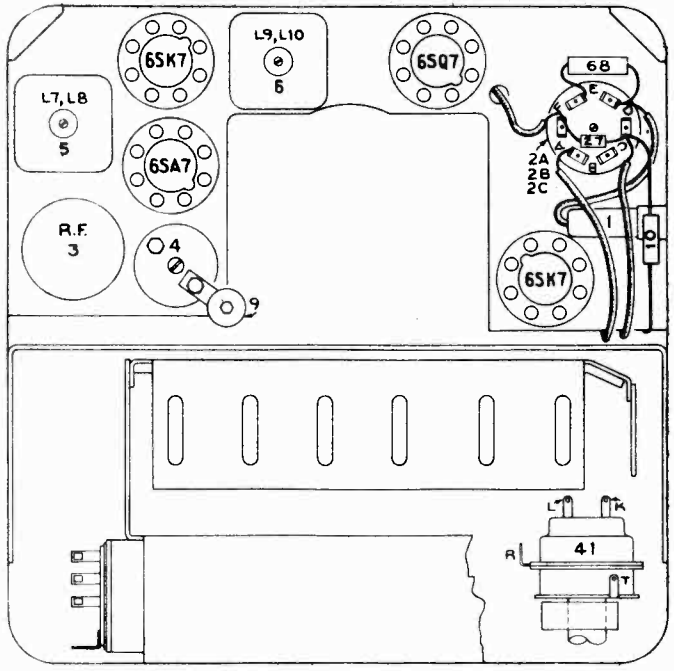

FIG. 5--PARTS LAYOUT--I-P UNIT--TOP VIEW

Tuning is by conv. manual tuning or by six P.B. which control the circuits of solenoids which rotate tuning cond. to any setting.

1. slight touch and movement of less than 1/8" is required to tune receiver with P.B. after button is adj.

2. Heavier pressure and movement of about 1/4" is required when button is set to station selected. To adj. button, P.B. in and hold in that pos. while tuning desired station accurately as possible with manual tuning knob. Release button and station is set.

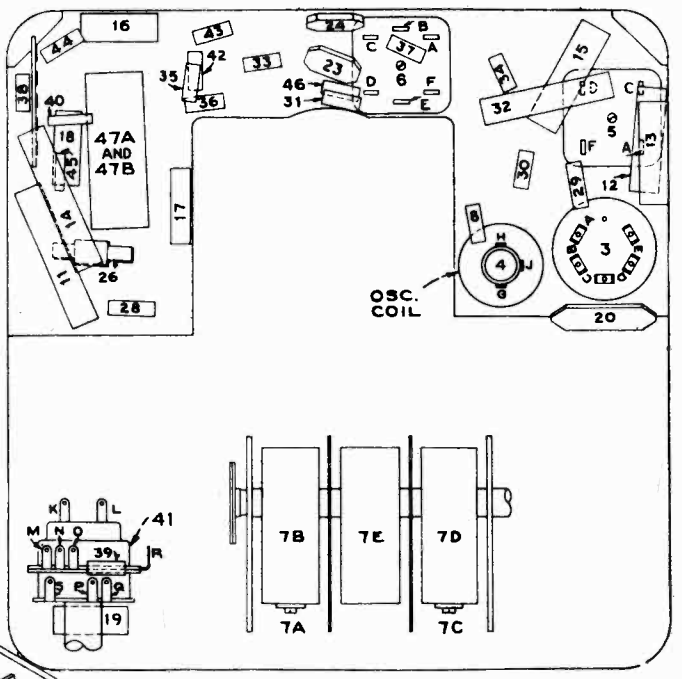

FIG. 6--PARTS LAYOUT--I-P UNIT--BOTTOM VIEW

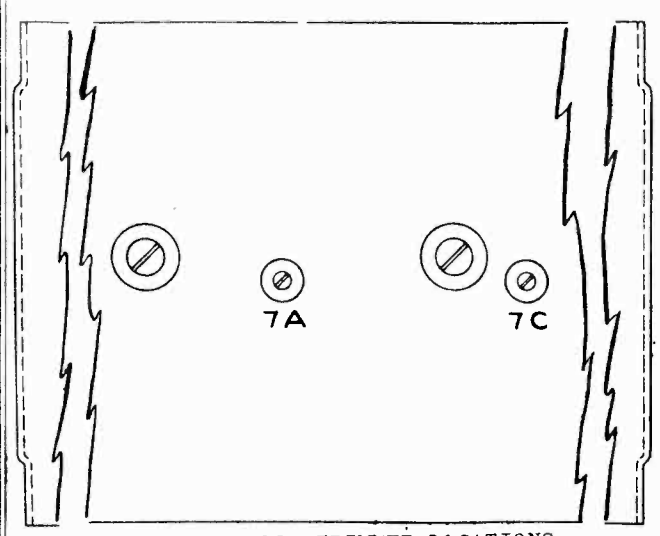

FIG. 10--TRIMMER LOCATIONS

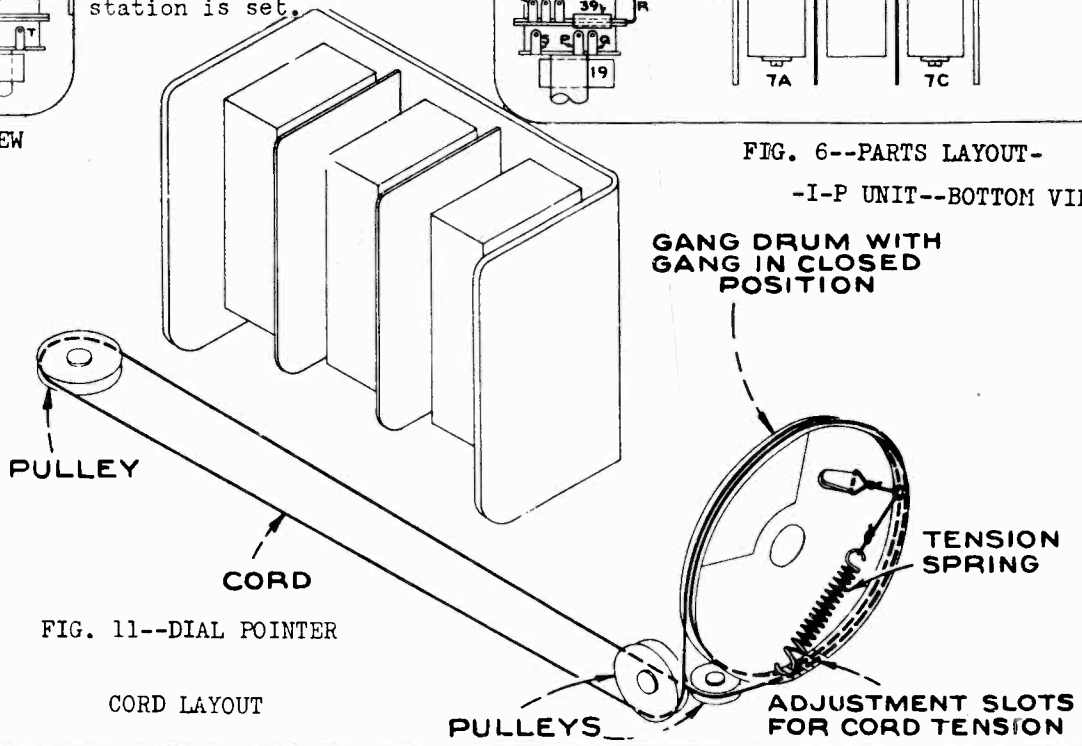

FIG. 11--DIAL POINTER CORD LAYOUT

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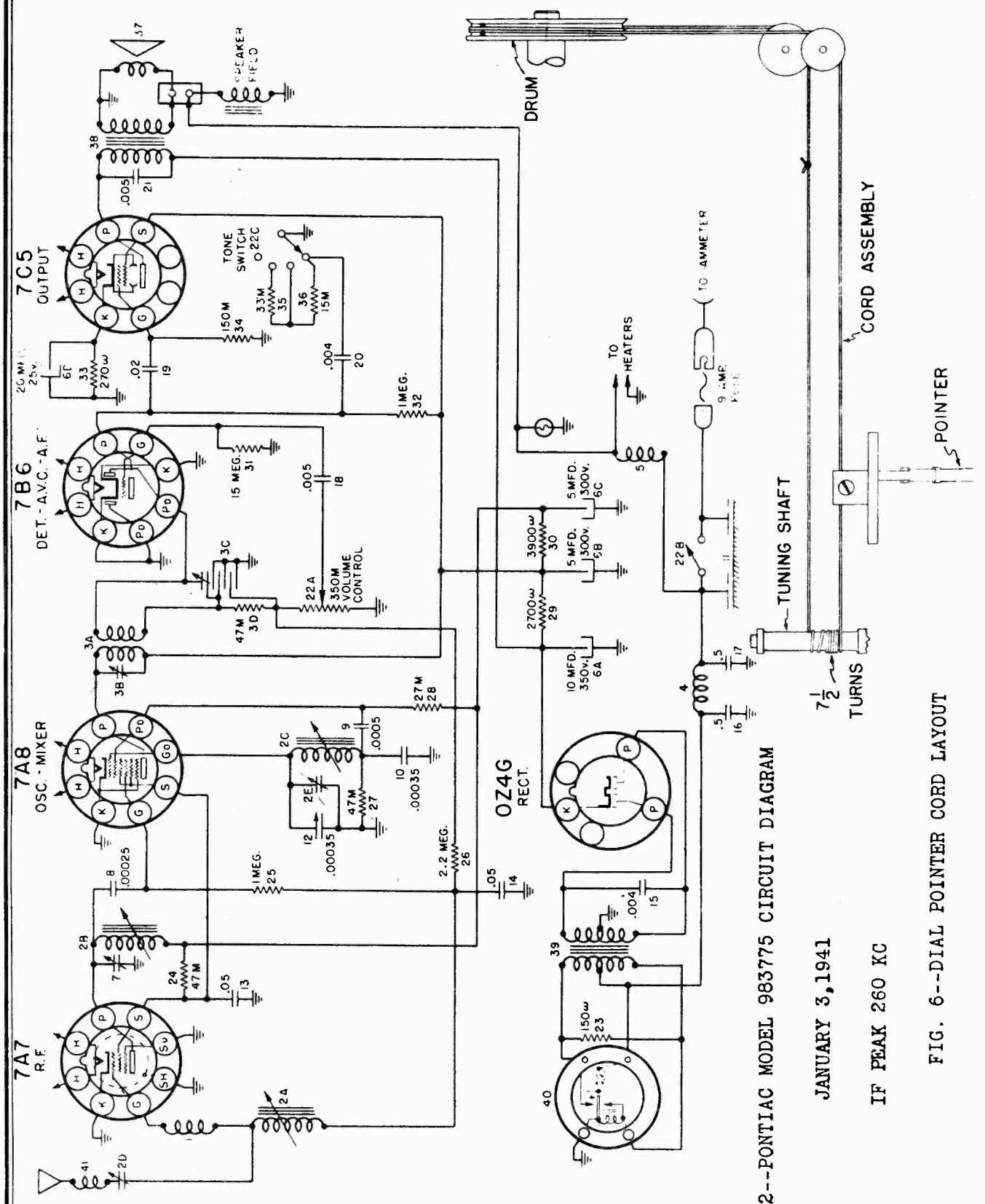

FIG. 2--PONTIAC MODEL 983775 CIRCUIT DIAGRAM

JANUARY 3,1941

IF PEAK 260 KC

FIG. 6--DIAL POINTER CORD LAYOUT

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CIRCUIT ALIGNMENT

If realignment is found necessary the circuits can be properly adjusted only with the use of a calibrated test oscillator or signal generator and an output meter. It is not necessary to remove the chassis from the case for alignment.

1. Aligning I-F stages at 260 kilocycles

   (a) Connect the ground lead of the test oscillator to the chassis.
   (b) Connect the signal lead of the test oscillator to terminal (Illus. X, Fig. 4) through a .1 mfd. condenser.
   (c) Connect the output meter across the speaker voice coil at the terminal board mounted on the speaker.
   (d) Set the test oscillator to 260 K.C.
   (e) Adjust the trimmers (Illus. A-B, Fig. 4) on the I-F coil for maximum output. These adjustments should be repeated several times and during alignment the test oscillator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1610 kilocycles

   (a) Leave the test oscillator leads connected as for aligning the I-F circuite.
   (b) Loosen lock screw (Illus. C, Fig. 4) and turn the receiver by means of the manual control to the extreme high frequency position, against the stop, and tighten screw (Illus. C*, Fig. 4).
   (c) Set the test oscillator to 1610 K.C.
   (d) Adjust the condenser (Illus. D, Fig. 4) for maximum output.

3. Aligning at 1400 kilocycles.

   (a) Connect the signal lead of the test oscillator to the antenna connections of the receiver, through a 50 mmfd. mica condenser.
   (b) Set the test oscillator to 1400 K.C.
   (c) Tune the receiver until this frequency is tuned in with maximum output.
   (d) Adjust the R.F. trimmer (Illus. F, Fig. 4) for maximum output.

*IMPORTANT NOTE: Lock Screw (Illus. C, Fig. 4) maintains the location of the mechanical stop at the high frequency end of the band. New frequency assignments to 1600 K.C. make it desirable for the receiver to cover this range, but due to local ordinances it is not permissable in all locations. The stop is set at 1560 K.C. at the factory and to increase the frequency range, where permissable, loosen lock screw (Illus. C, Fig. 4) and tune manually to the frequency to be covered and tighten the screw.

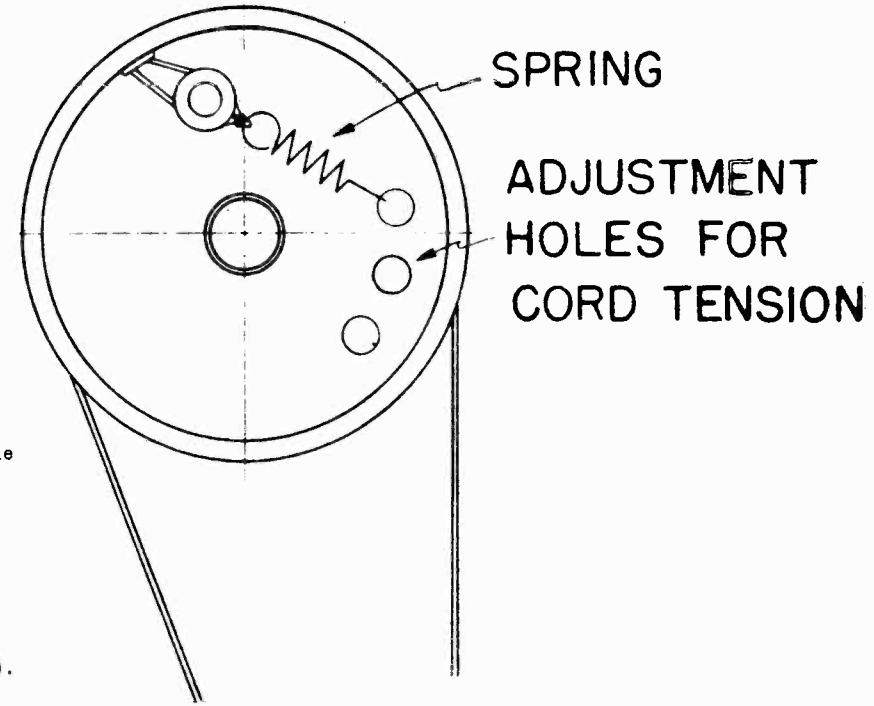

FIG. 7--POSITION OF DRUM ASSY. WITH COIL CORES FULLY IN

ANTENNA SYSTEM: The antenna system used with the receiver consists of a rod type antenna with a specially designed low capacity lead-in.

TUNING CONTROLS: Tuning is accomplished by means of the conventional manual control or by means of 5 push-buttons which mechanically drive the permeability cores to pre-selected settings.

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UNITED MOTORS SERVICE

GENERAL: The Pontiac Model 983775 is a five tube, single unit receiver with automatic push-button tuning and a 6" dynamic speaker. This set is designed specifically for mounting behind the dash of the 1941 Pontiac car.

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 6.5 AMPERES. "B" SUPPLY DRAIN APPROXIMATELY 50 M.A.

FIG. 1--TUBE SOCKET VOLTAGES

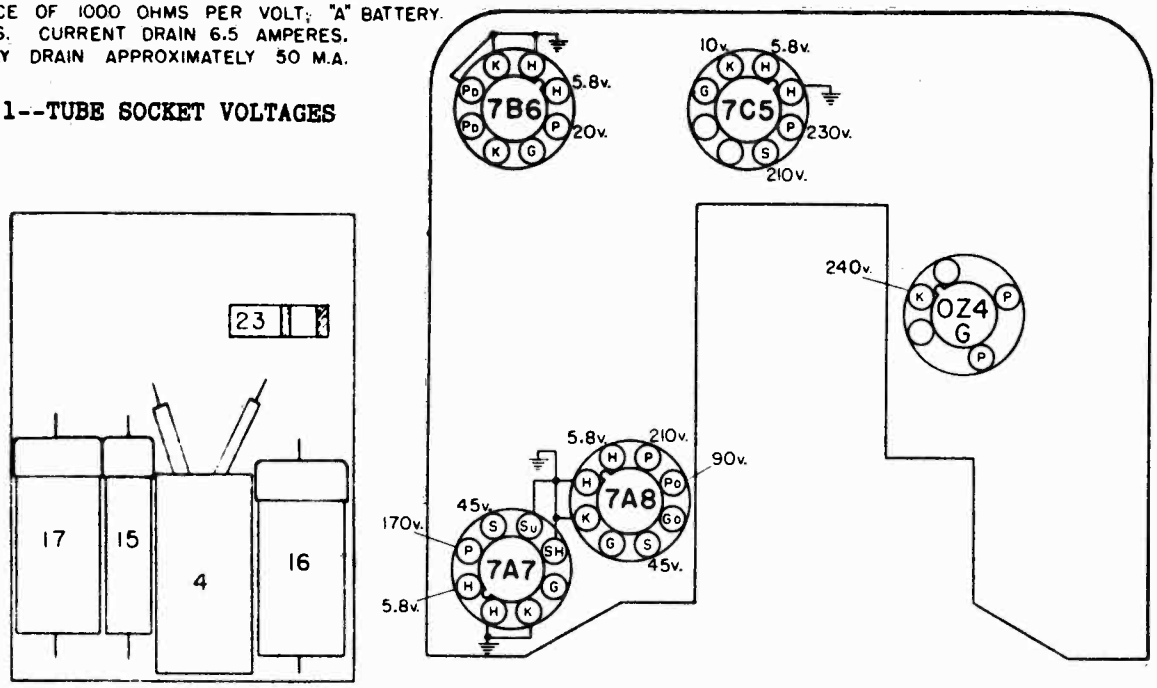

FIG. 5--PARTS LAYOUT--POWER SUPPLY--Bottom View

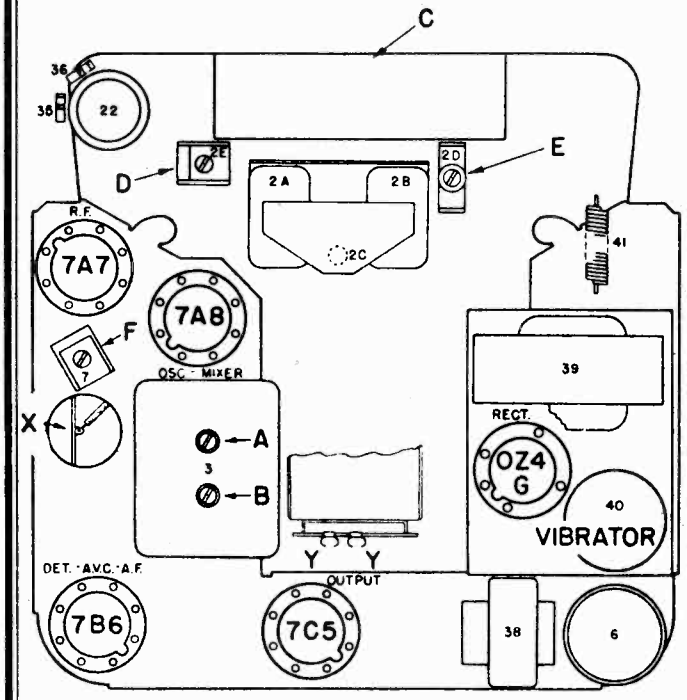

FIG. 4--PARTS LAYOUT--Top View

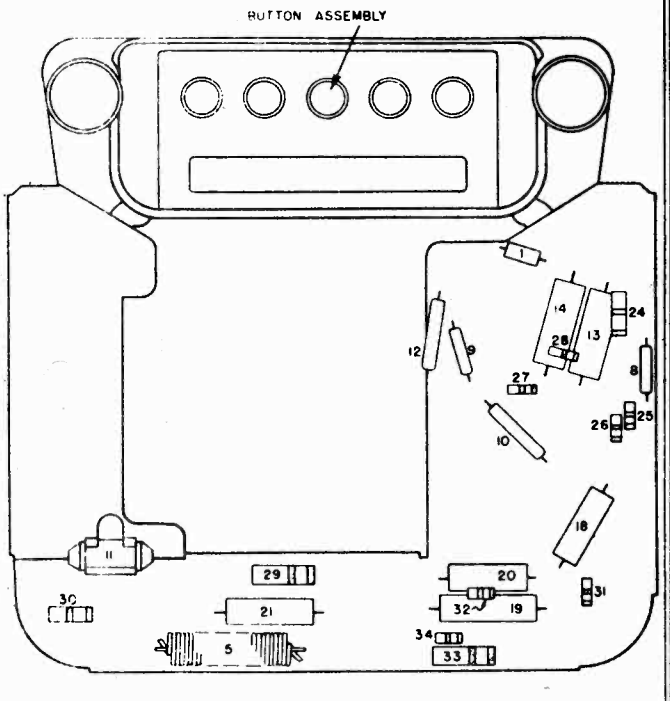

FIG. 3--PARTS LAYOUT--Bottom View

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MODEL 983776

UNITED MOTORS SERVICE

GENERAL: The Pontiac Model 983776 is a seven tube, single unit superheterodyne receiver with an 8" P.M. speaker. The unit is custom built for 1941 Pontiac and mounts behind the instrument panel.

ANTENNA: The receiver is designed to operate at maximum efficiency with a cowl type antenna and a specially designed low capacity lead-in.

TUNING CONTROLS: Tuning is accomplished by means of a conventional manual tuning knob, or by five push-buttons which mechanically rotate the tuning condenser to pre-selected frequencies.

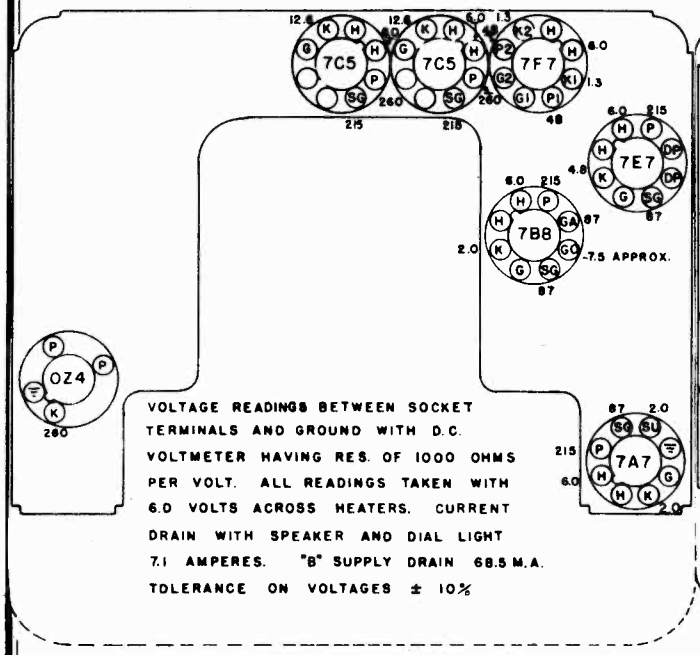

FIG. 1--TUBE SOCKET VOLTAGES

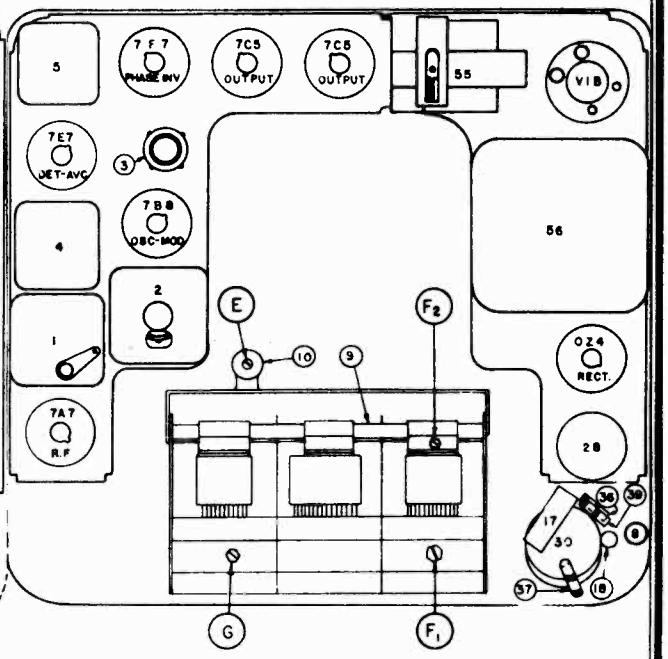

FIG. 3--PARTS LAYOUT--Top View

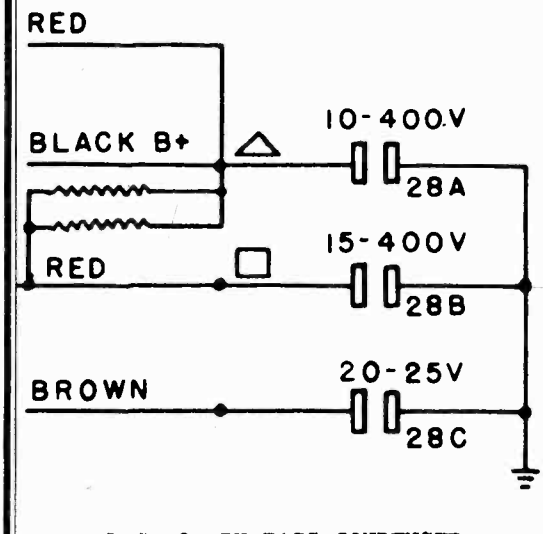

FIG. 8--BY-PASS CONDENSER

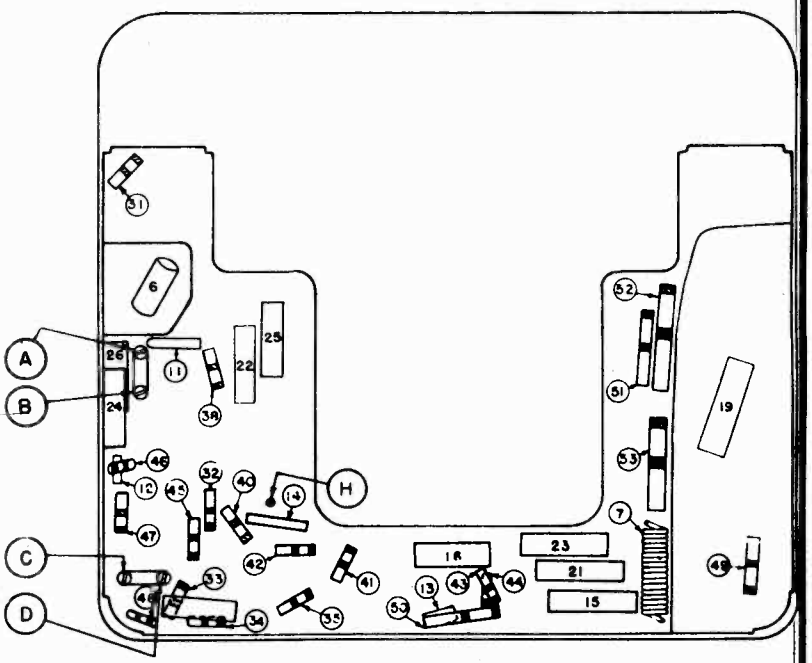

FIG. 4--PARTS LAYOUT--Bottom View

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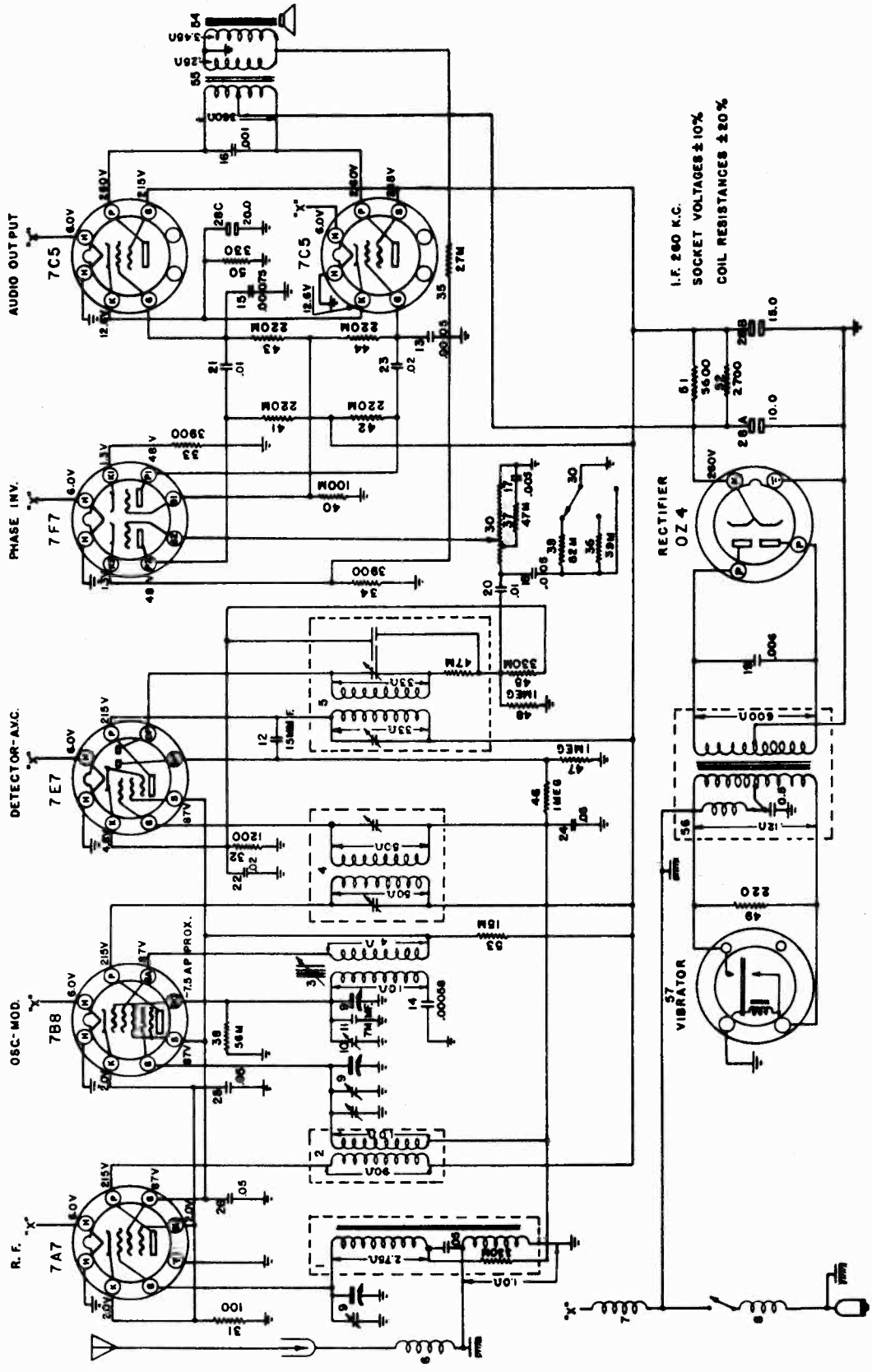

FIG. 2--PONTIAC MODEL 983776 CIRCUIT DIAGRAM

Date: 1-29-41

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CIRCUIT ALIGNMENT

If alignment is found necessary, the circuits can be properly aligned only with the use of a calibrated test oscillator or signal generator and an output meter. The back and front covers must be removed for alignment.

1. Aligning I-F Stages at 260 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis frame.
   (b) Connect the signal lead of the signal generator to the R.F. trimmer condenser, (Illus. F, Fig. 3) through a .1 mfd. condenser.
   (c) Connect the output meter from the speaker lead connector to the chassis. Leave the speaker connected in the circuit and ground the speaker to the case.
   (d) Set the signal generator to exactly 260 kilocycles.
   (e) With volume control on full, adjust the trimmers (Illus. A,B,C, D, Fig. 4) for maximum output. These adjustments should be repeated several times and during alignment, the signal generator output should be kept to as low a value as in consistent with obtaining a readable indication on the output meter.

2. Aligning at 1560 Kilocycles

   (a) Connect the signal lead of the signal condenser to the antenna connection of the receiver through a .000075 mfd. mica condenser.
   (b) Turn the rotor plates of the gang condenser all the way out against the high frequency stop.
   (c) Set the signal generator to exactly 1560 kilocycles.
   (d) Adjust the oscillator trimmer (Illus. E, Fig. 3) for maximum output.

3. Aligning at 1400 Kilocycles

   (a) Leave the signal generator leads connected the same as before.
   (b) Set the signal generator to 1400 kilocycles.
   (c) Tune the receiver until this signal is tuned in with maximum output.
   (d) Adjust the trimmers (Illus. F1, G, Fig. 3) for maximum output. NOTE: (Illus. F2, Fig. 3) is sealed at the factory and SHOULD NOT be adjusted.

4. Aligning at 600 Kilocycles

   (a) Leave the signal generator leads connected the same as before.
   (b) Set the signal generator to 600 kilocycles.
   (c) Tune the receiver until this signal is tuned in with maximum output.
   (d) Adjust the oscillator coil core screw (Illus. H, Fig. 4) while rocking the rotor plates back and forth through the signal until maximum output is obtained.

5. Realignment at 1560 and 1400 Kilocycles

   Repeat alignment of R.F. and antenna sections of the gang condenser as outlined under paragraphs 2 and 3.

   When the set is reinstalled in the car, the antenna trimmer (Illus. G, Fig. 3) should be readjusted on a weak signal at approximately 1400 K.C. for maximum output.

TUNER SERVICE PARTS

58	7240495	Bracket	Tuner end bkt. R. H.
59	7240496	Bracket	Tuner end bkt. L. H.
60	7241218	Bar	Latch bar assy.
61	7240700	Bracket	Dial back strip
62	7240871	Bracket	Calibration strip
63	7230263	Bumper	Rubber--plunger return
64	7241219	Button	Push button assy.
65	7240667	Bracket	Tuner mtg. bkt. assy.
66	7240793	Cord	Cord and link assy.
67	7240792	Cord	Cord and spring assy.
68	7240872	Dial	Glass
69	7240746	Dial	Back strip
70	7240677	Escutcheon	
71	7241590	Gear	Crown gear assy.
72	7241209	Bracket	Man. drive mtg. bkt. assy.
73	7241216	Light	Dial light assy.
74	7240523	Plate	Brake spring
75	7241220	Plate	Guide plate assy. (includes items 10, 78 and 88)
76	7240387	Pointer	Pointer & guide pin & pointer tip assy.
77	7240795	Pulley	Pointer drive pulley assy.
78	7240386	Pulley	Pulley and stud pkg.
79	7240706	Shield	Felt pad light shield
80	7240878	Shield	Light shield
81	7241207	Spring	Brake spring assy.
82	7238950	Spring	Plunger return
83	7240368	Screw	Reset
84	7238861	Spring	Latch bar hook-up
85	7230933	Bushing	Latch bar hook-up insulating
86	7240698	Bushing	Manual drive
87	7241647	Pad	Rubber pad
88	7238581	Pin	Pointer pivot pin
89	7238531	Spacer	Latch bar
90	7241153	Washer	Latch bar hook-up insulating
9	7240575	Tuner	Push button tuner

MISCELLANEOUS PARTS

7238455	Socket	Loctal tube
7234925	Socket	Vibrator
7236279	Socket	Octal tube
7241179	Cable	Shielded volume control cable
505627	Knob	Tuning & volume
505626	Knob	Tone control
505625	Knob	Dummy knob
505631	Escutcheon	Escutcheon trim plate
7241210	Cover	Rear cover assy.
505630	Washer	Felt, tone control knob
505765	Spacer	
5273906	"A" lead assy.	"A" lead & female fuse holder
115273	Lamp	Dial lamp
7240797	Fuse holder assy.	Spark plate & fuse holder assy.
7235968	Hex nut	
7238755	Spring washer	

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MODEL 983776

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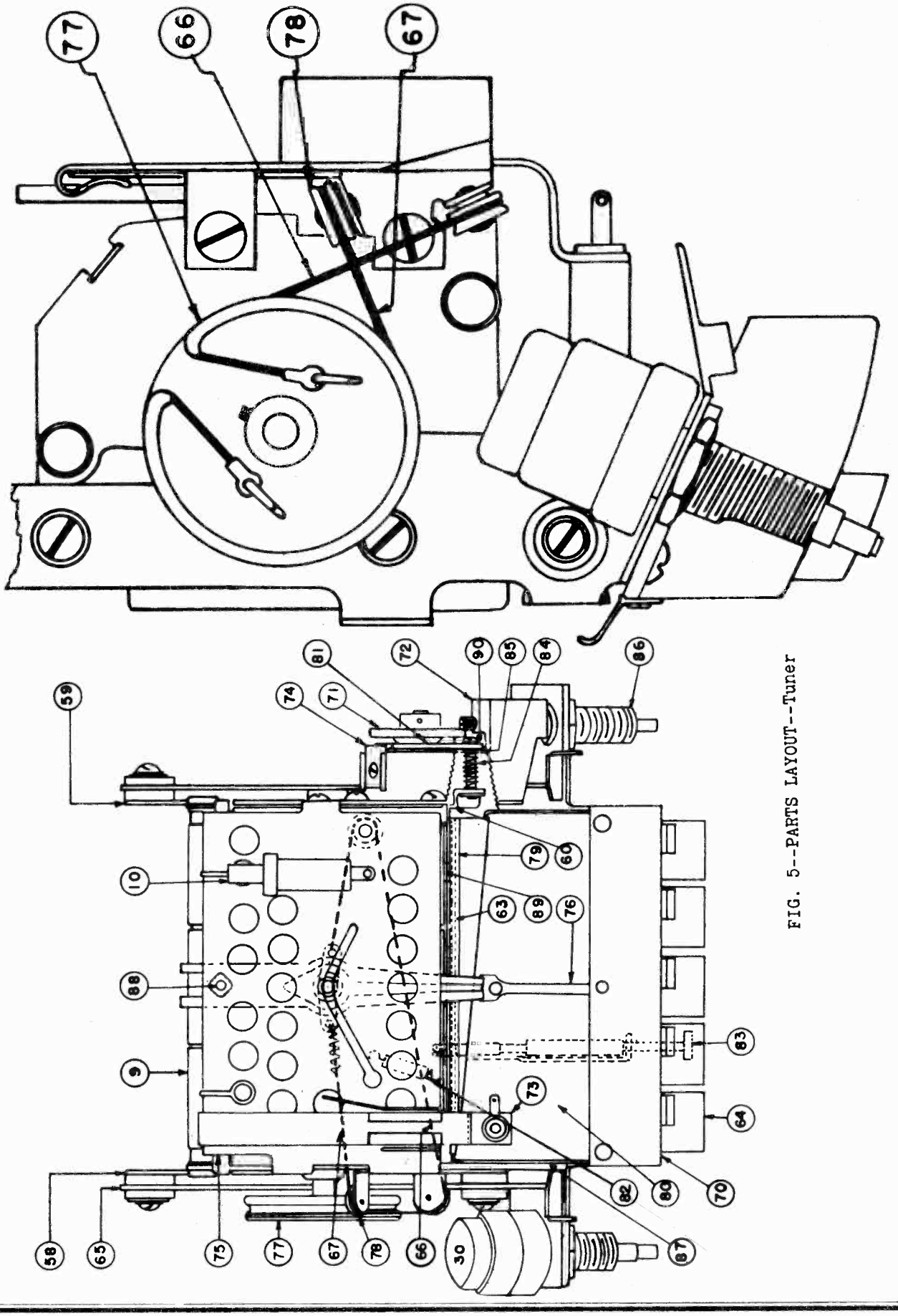

FIG. 5--PARTS LAYOUT--Tuner

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MODEL 983777

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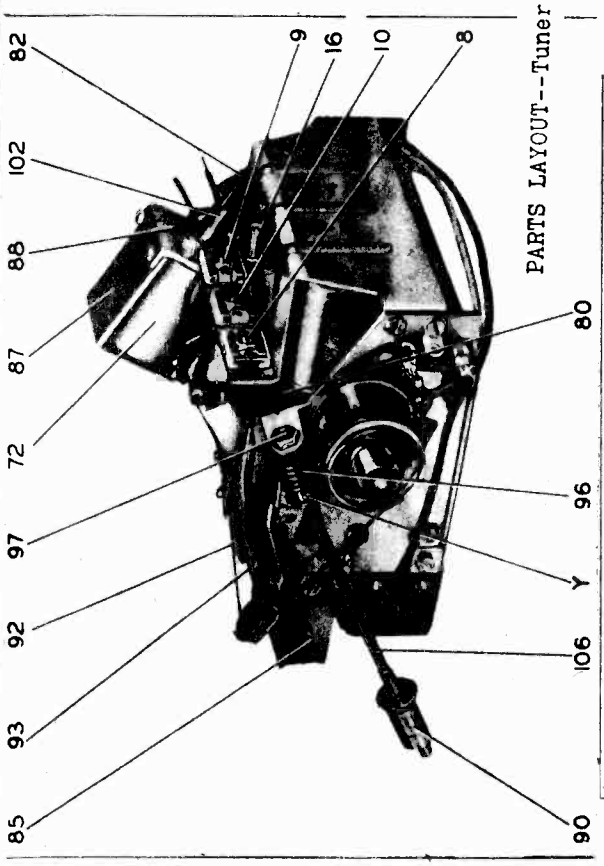
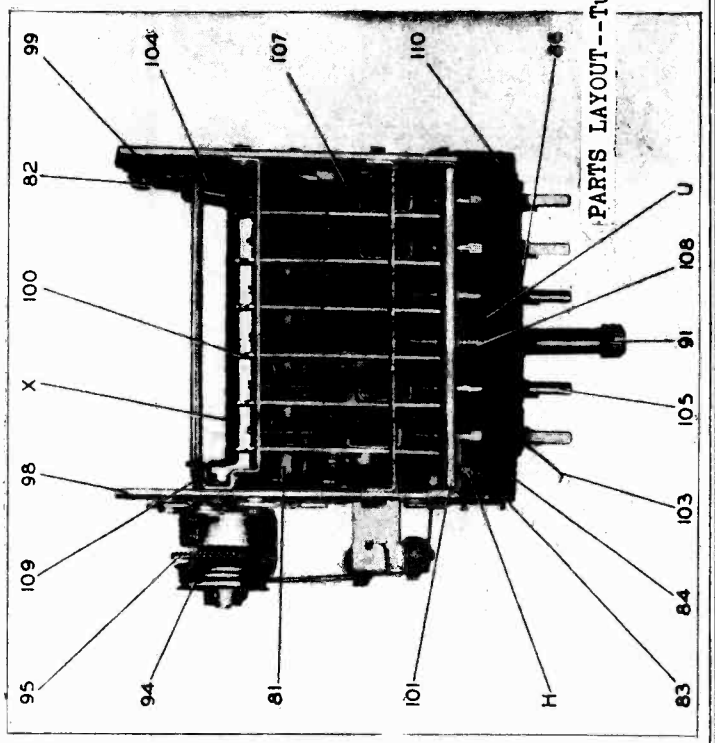
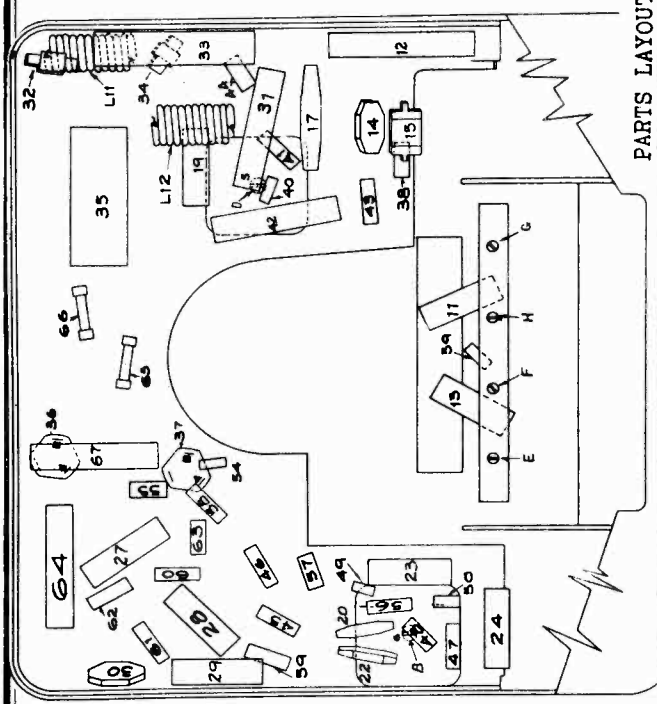
PARTS LAYOUT--Tuner



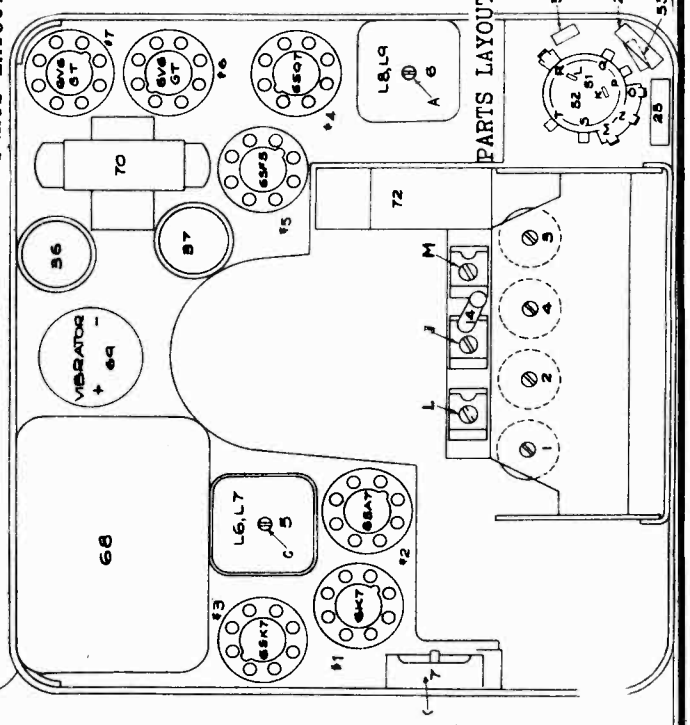
PARTS LAYOUT--Tuner



PARTS LAYOUT--Top View



PARTS LAYOUT--Bottom View



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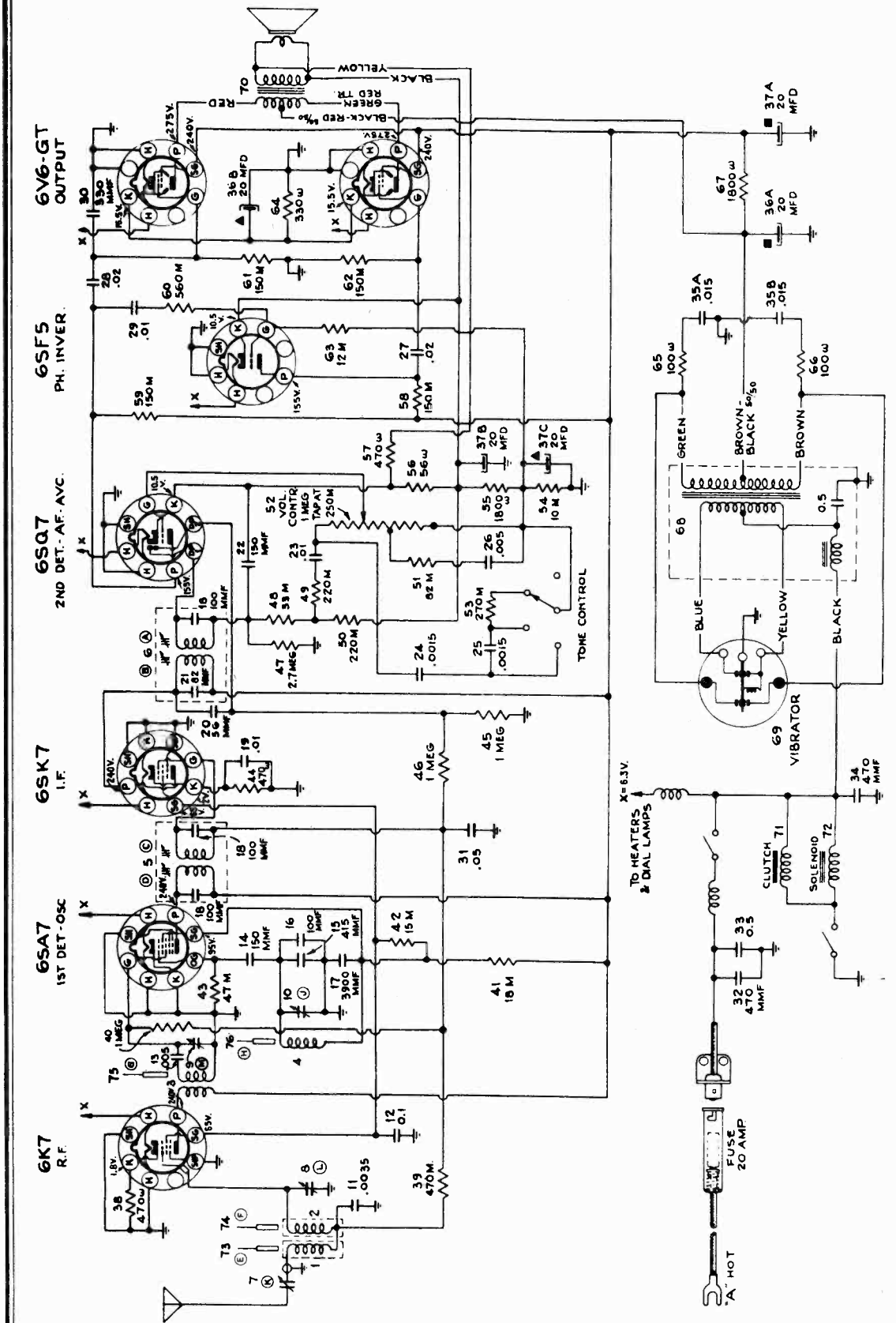

FIG. 2--PONTIAC MODEL 983777 CIRCUIT DIAGRAM

ANTENNA SYSTEM: This set is designed to operate at maximum efficiency with either a Pontiac standard mast or vacuum mast type antenna and a special low capacity lead-in.

Date: 1-27-41

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CIRCUIT ALIGNMENT

If realignment is found necessary the circuits can be properly adjusted only with the use of a calibrated test oscillator or signal generator and an output meter.

All R.F. and I.F. adjustments are accessible by removing the front and rear covers. Turn the volume control full on, to maximum volume position.

1. Aligning I.F. Stages at 260 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis frame of the receiver.
   (b) Connect the signal lead of the signal generator to the control grid of the 6SA7 tube (PIN #8, Fig. 2) through a .01 mfd. condenser.
   (c) Connect the output meter across the speaker voice coil.
   (d) Set the signal generator to 260 kilocycles.
   (e) Adjust the core screws on the I.F. coils (Illus. A,B,C,D, Figs. 3 & 4) for maximum output.

   These adjustments should be repeated several times and during alignment, the signal generator output should be kept to as low a value as is consistent with obtaining a readable indication on the output meter.

2. Aligning at 1645 Kilocycles

   (a) Connect the signal lead of the signal generator to the antenna connector through a .000075 mfd. mica condenser.
   (b) Tune the receiver to the extreme high frequency end against the stop.
   (c) Turn each of the four iron core screws (Illus. E,F,G,H, Fig. 4) in a counter-clockwise direction, four turns.
   (d) Set the signal generator to 1645 Kilocycles.
   (e) Adjust the oscillator trimmer (Illus. J, Fig. 3) for maximum output.
   (f) Adjust the antenna and R.F. trimmers (Illus. K,L,M, Fig. 3) for maximum output.

3. Aligning at 1620 Kilocycles

   (a) Leave the signal generator connected the same as before.
   (b) Set the signal generator to 1620 kilocycles.
   (c) Turn the oscillator iron core adjustment (Illus. H, Fig. 4) clockwise until maximum output is obtained.
   (d) Adjust antenna and R.F. iron core (Illus. E,F,G, Fig. 4) for maximum output by turning them clockwise and reduce signal generator output to a satisfactory level.

4. Aligning at 1200 Kilocycles

   (a) Leave signal generator connected same as before.
   (b) Set signal generator to 1200 kilocycles.
   (c) Tune receiver for maximum signal at 1200 kilocycles.
   (d) Adjust antenna and R.F. cores (Illus. E,F,G, Fig. 4) for maximum output.

5. Aligning at 600 Kilocycles.

   (a) Leave the signal generator connected the same as before.
   (b) Set the signal generator to 600 kilocycles.
   (c) Tune receiver for maximum signal at 600 kilocycles.
   (d) Adjust antenna and R.F. trimmers (Illus. K,L,M, Fig. 3) for maximum output.
   (e) Repeat adjustments under alignment number 4.

TUNER PARTS

Illus No.	Service Part No.	Part Name	Description
	145635	Ball	Steel ball for worm gear bearing
80	1214461	Bar	Coil draw bar
81	1214458	Bar	Rocker bar and segment gear
82	1214447	Bar	Solenoid draw bar and link
83	1214484	Bar	Switch finger bar
84	1214485	Bar	Switch finger latch bar (pawl)
	1214465	Bracket	Clutch and worm gear brkt. and rocker bar drive gear and shaft
85	1214504	Bracket	Dial back plate bkt.
	1214830	Bracket	Dial pointer arm (less pointer)
86	1214481	Bracket	Push button guide bkt.
87	1214450	Bracket	Solenoid coil holder (bottom section)
88	1214449	Bracket	Solenoid coil holder (top section)
	1214451	Bracket	Solenoid mtg. bkt.
89	1214476	Bracket	Tuning coil mtg. bkt.
90	1214478	Bushing	Tuning shaft bushing
	1214479	Button	Push button
91	1214446	Button	Set up button
	1214833	Can	Ant. R.F. or Osc. shield can
92	1214507	Cord	Dial cord--link and spring
93	1214508	Cord	Dial cord and link (no spring)
	7235945	Disc	Clutch drive disc (rubber)
94	1214468	Drum	Clutch drive drum and disc assy.
95	1214467	Disc	Clutch friction disc and gear assy.
96	1214842	Gear	Worm gear
	1214462	Link	Coil draw for link
	1305217	Nut	Locknut for solenoid pole piece
97	1214821	Nut	Locknut for worm gear bearing screw
	1214457	Plate	Bottom plate with pulleys
	1214505	Plate	Dial back plate
	1214443	Plate	Front bearing plate
98	1214442	Plate	L. H. end plate
99	1214441	Plate	R. H. end plate
100	1214444	Plate	Rear bearing plate
	1214459	Plate	Set-up button retaining plate
101	1214460	Plate	Set-up button stop plate & switch rear contact
	1214509	Plate	Tuner mtg. top plate
102	1214475	Plunger	Solenoid plunger and stud
103	1214506	Pointer	Dial pointer only (less bkt.)
	1214452	Pole piece	Solenoid pole piece
	1214834	Ring	Retaining ring for ant. R.F. or Osc. coil
104	1214822	Retainer	Solenoid draw bar retaining clip
105	1214445	Rod	Push rod assy.
	1214847	Screw	Coil draw bar mtg. screw
	1214820	Screw	Mtg. screw for set-up button retaining
	1214579	Screw	Tuning coil mtg. screw
	7240316	Screw	Worm gear bearing screw
106	1214477	Shaft	Flexible shaft--less bushing
	1214483	Shaft	Latch bar and finger bar hinge rod
	1214469	Shaft	Solenoid draw for shaft
	1214464	Shell	Clutch coil housing
	1214486	Shield	Light shield (Mounts below P.B. guide bkt.)
	1214466	Spring	Clutch spring
	1214843	Spring	Coil draw bar link spring
	1214831	Spring	Coil draw bar spring
	1214482	Spring	P.B. retaining spring strap
	1214844	Spring	Push rod return spring
107	7236121	Spring	Rocker bar segment gear spring
108	1214470	Spring	Set-up button spring
109	1214826	Spring	Solenoid draw bar spring
	1214825	Spring	Switch finger bar spring
110	1214824	Spring	Switch finger latch bar spring
	7235001	Washer	"C" washer for flexible shaft
	1214835	Washer	Felt washer for set-up button
	1214837	Washer	Felt washer for solenoid draw for shaft
	148473	Washer	Tuning coil mtg. screw lock washer
	1214823	Washer	Worm gear thrust washer (bronze)
	7235892	Washer	Worm gear thrust washer (fibre)

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MODEL 983777

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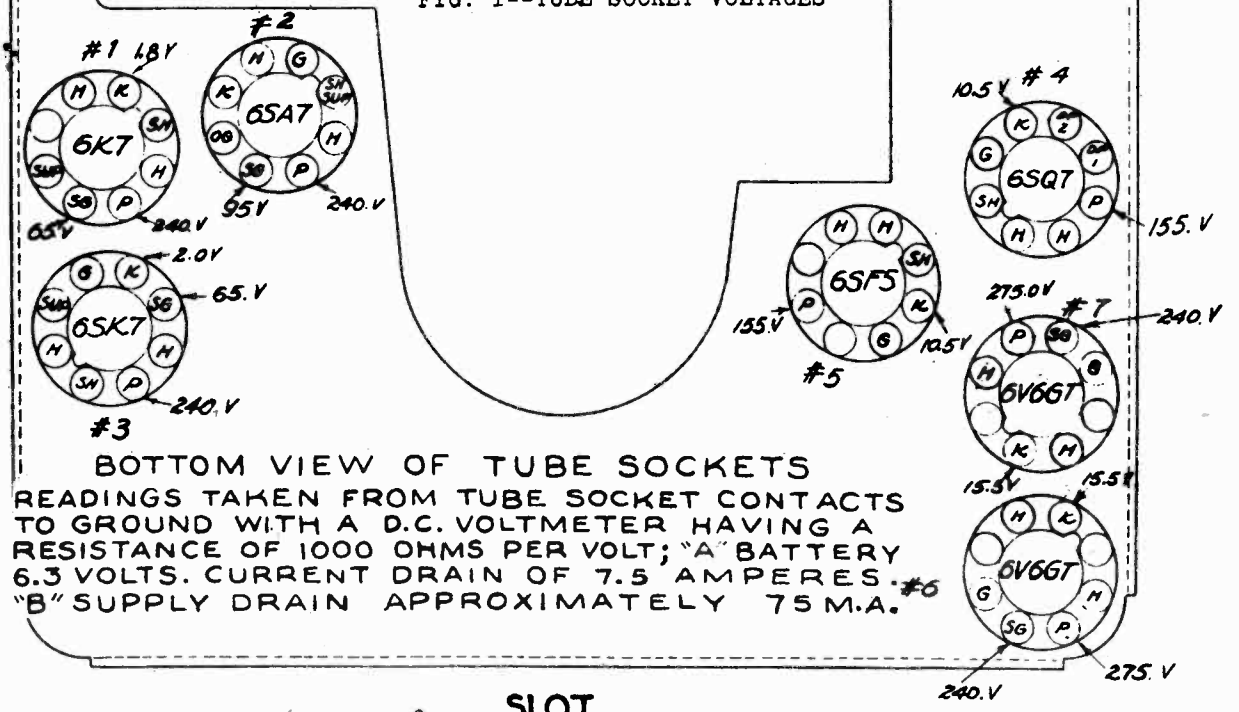
FIG. 1--TUBE SOCKET VOLTAGES



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 6.3 VOLTS. CURRENT DRAIN OF 7.5 AMPERES. "B" SUPPLY DRAIN APPROXIMATELY 75 M.A.

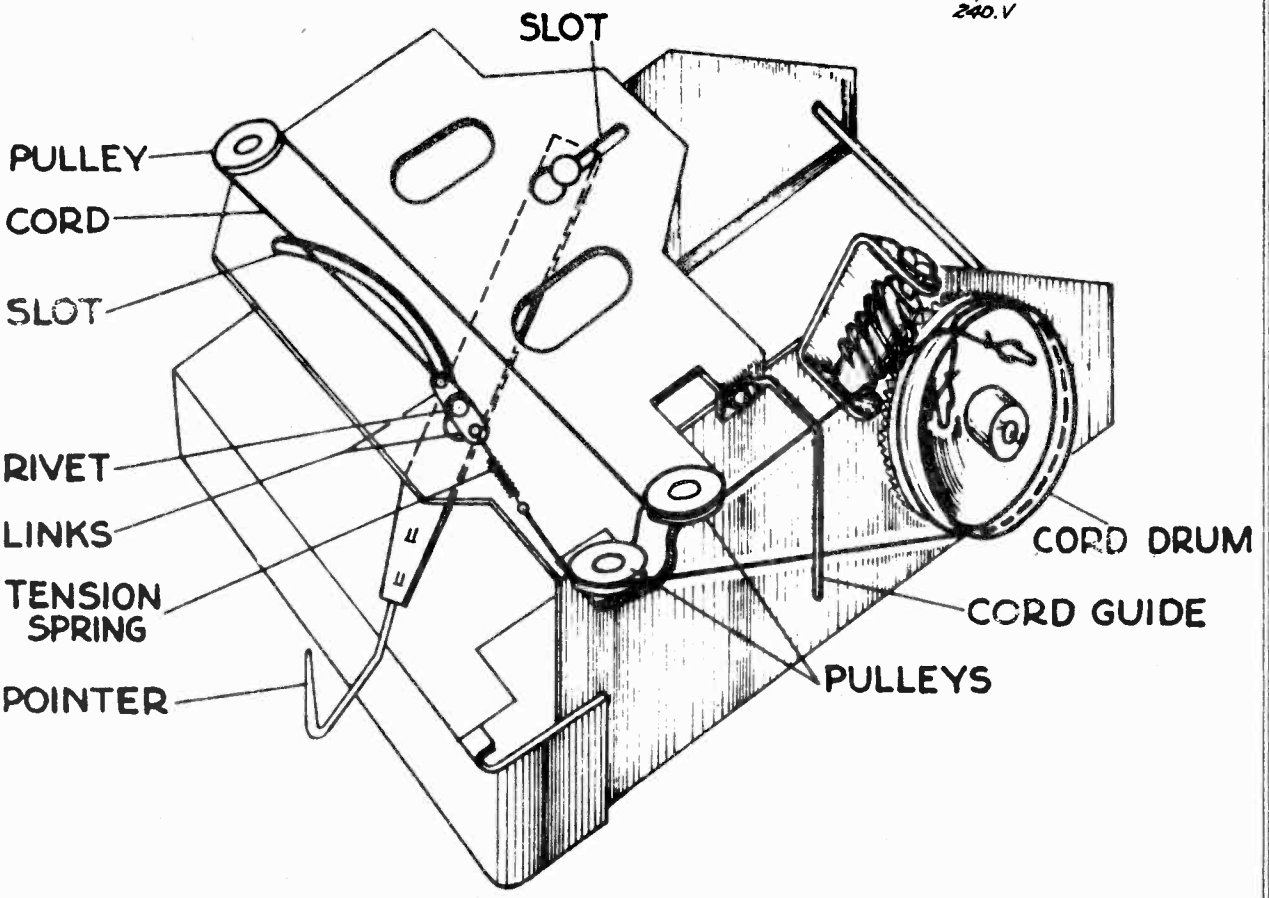


FIG. 7--DRIVE CORD LAYOUT

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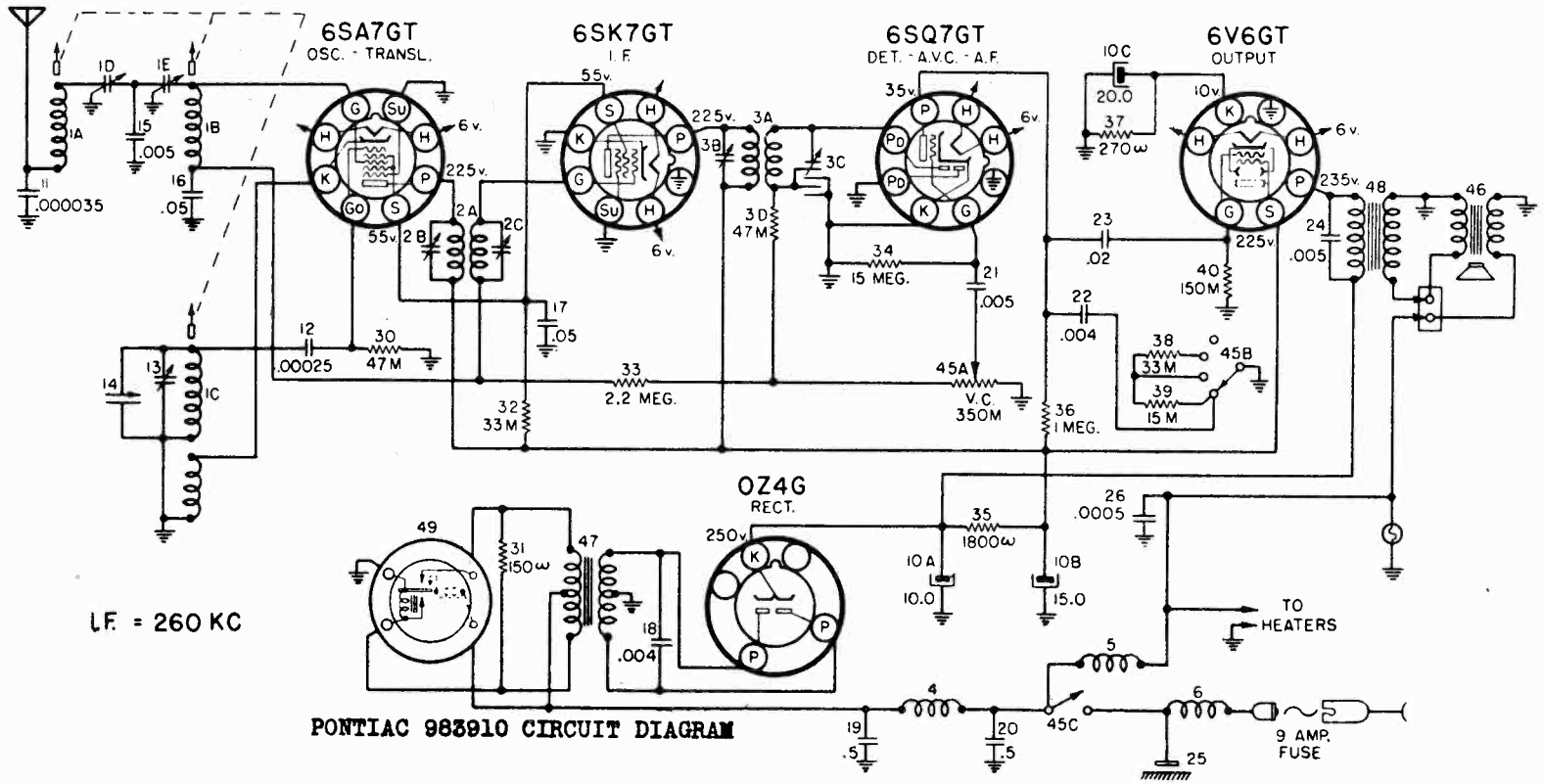


PONTIAC 983910 CIRCUIT DIAGRAM

ALIGNMENT PROCEDURE

Volume Control Maximum

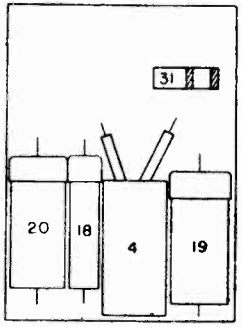
Signal Generator Output minimum for satisfactory output indication

Series Condenser or Dummy Antenna	Connect to	Signal Generator Frequency	Adjust Screws In Order
0.1 mfd	Terminal X	260 KC	A-B-C-D
0.1 mfd	Terminal X	1610 KC	E
.000060 mfd.	Antenna Terminal	1400 KC	F-G

Low frequency alignment not required.

Adjust Trimmer F to match car antenna (1400 KC) when radio is installed.

READINGS TAKEN FROM TUBE SOCKET CONTACTS TO GROUND WITH A 1000 OHMS PER VOLT D.C. VOLTMETER. "A" BATTERY - 6.0 VOLTS. CURRENT DRAIN - 6.0 AMPERES. "B" SUPPLY DRAIN - APPROX. 50 MA. ALL READINGS ±10%



Power Supply

Date: 7-23-41

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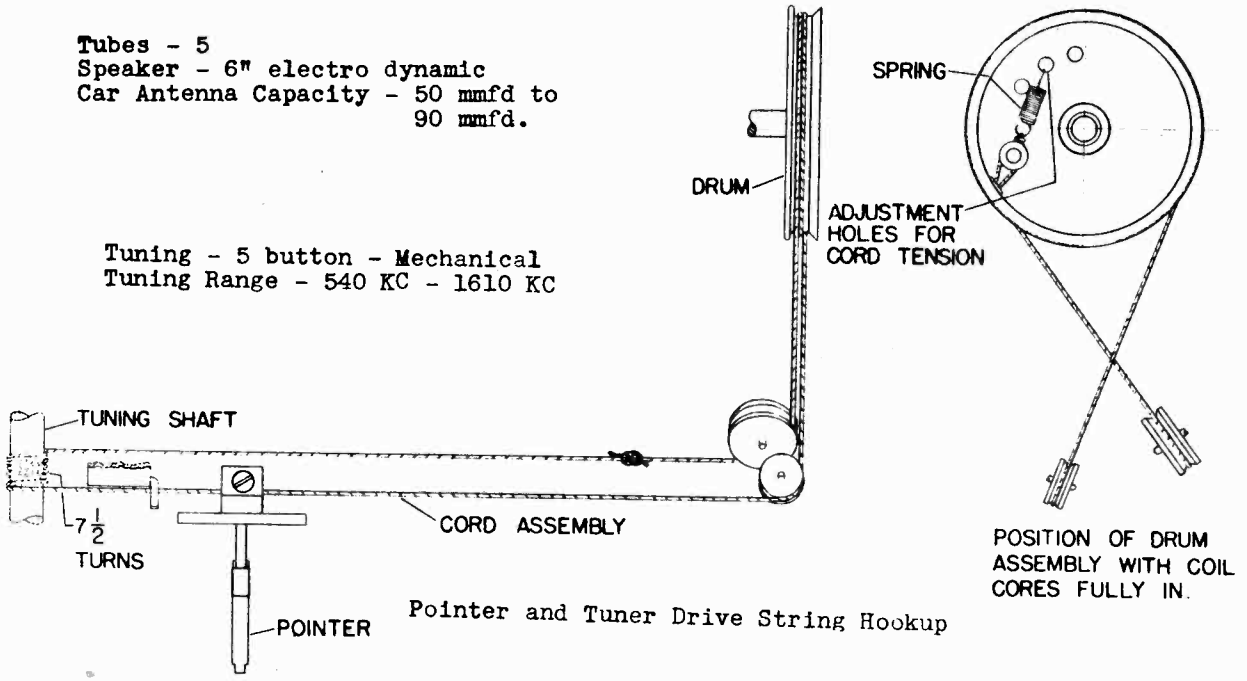
UNITED MOTORS SERVICE

Pontiac 1942 Master Radio - Model 983910

Date: 7-23-41

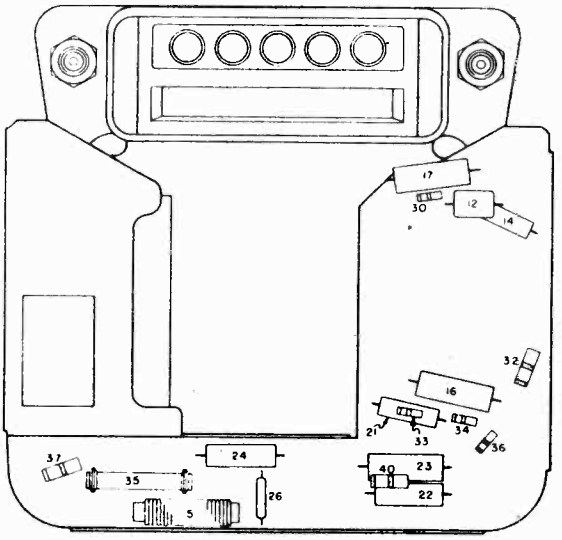
Tubes - 5
Speaker - 6" electro dynamic
Car Antenna Capacity - 50 mmfd to 90 mmfd.

Tuning - 5 button - Mechanical
Tuning Range - 540 KC - 1610 KC

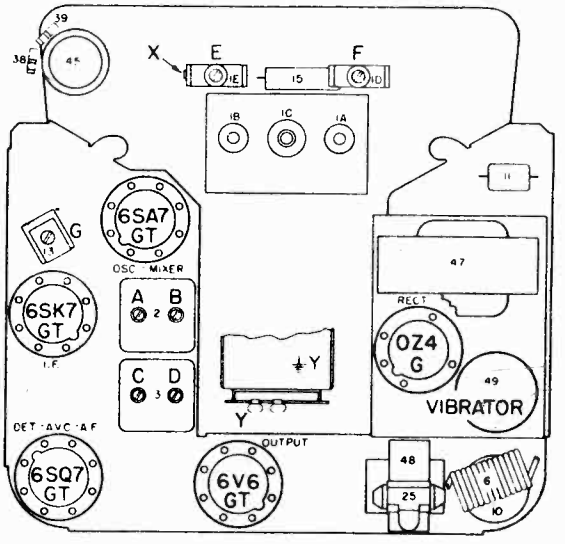


Pointer and Tuner Drive String Hookup

PUSH BUTTON SET UP - Turn counter-clockwise - Tune manually - Depress loosened button - Turn button clockwise to tighten.



Chassis View



Tube View

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MODEL 983911

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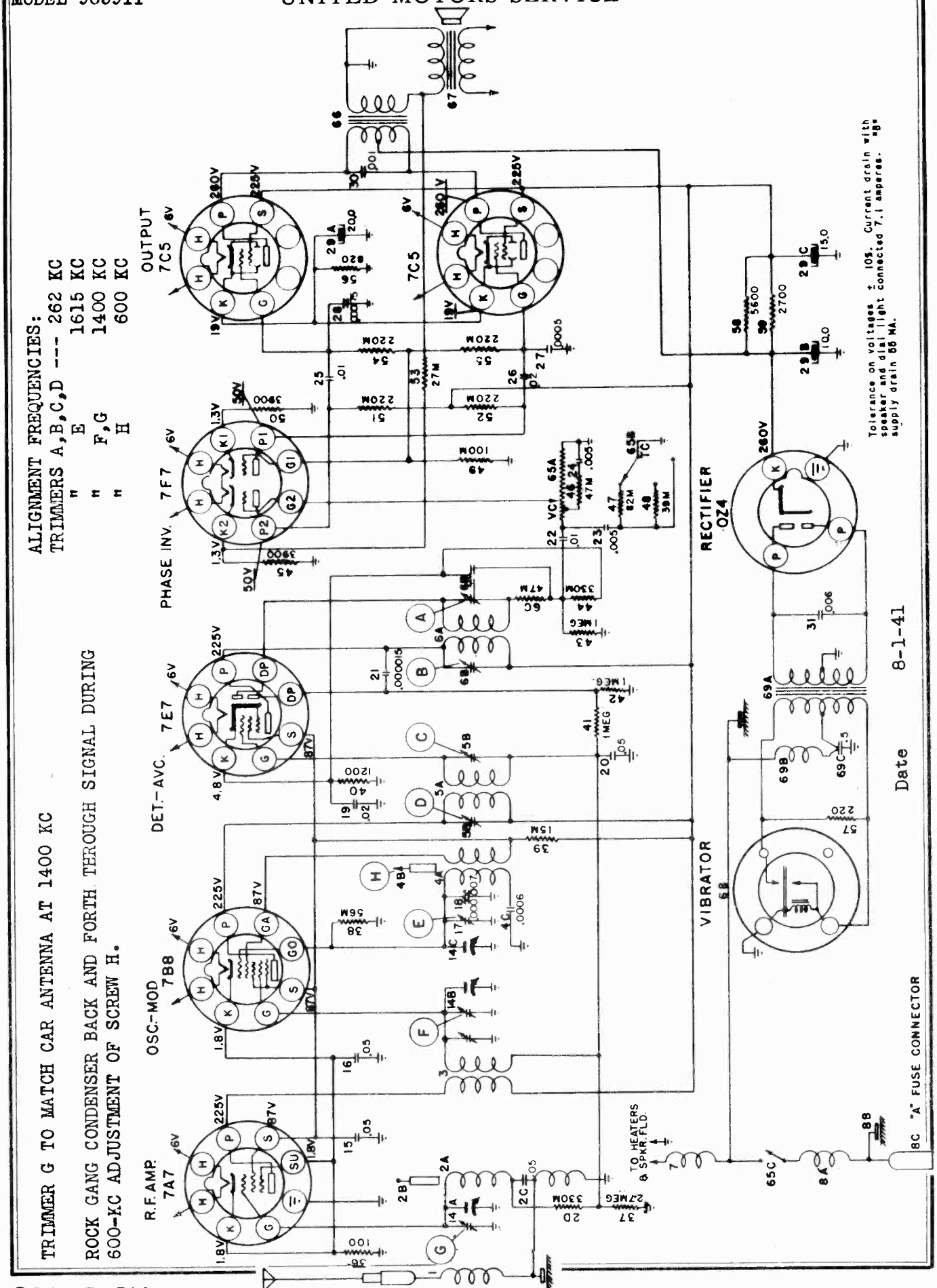

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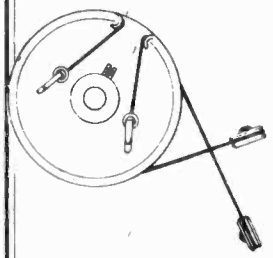
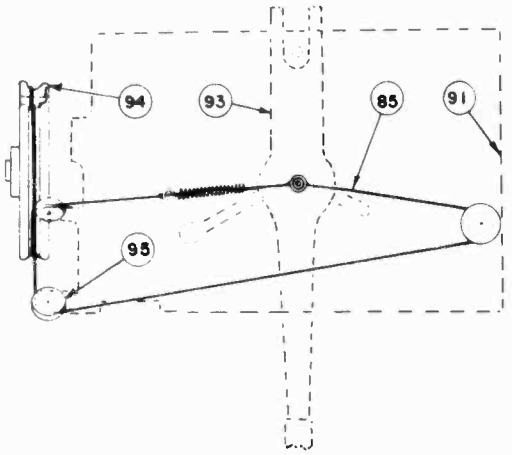
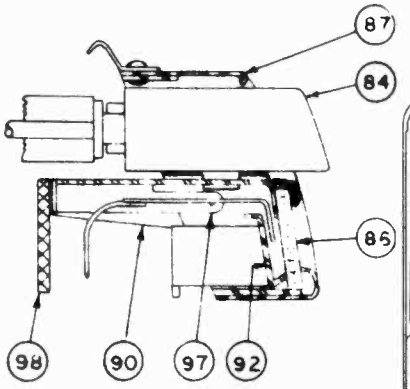
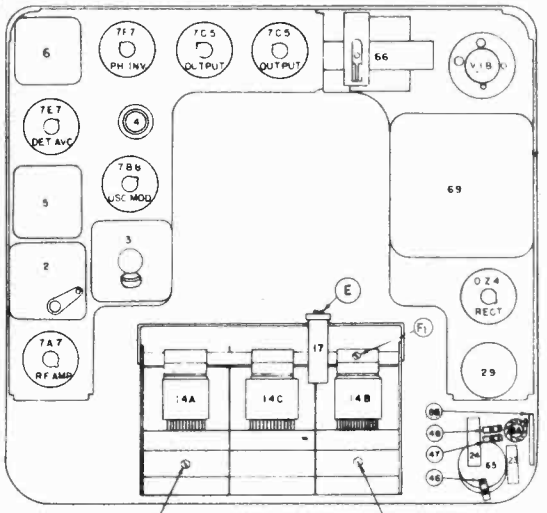




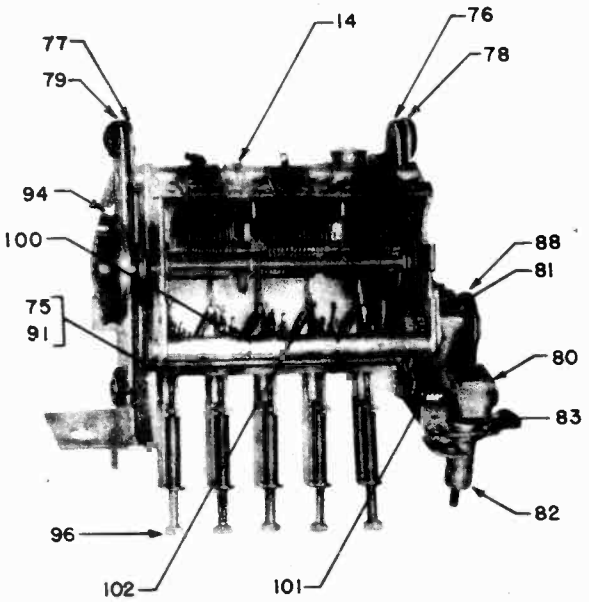
POINTER CORD ASSEMBLY



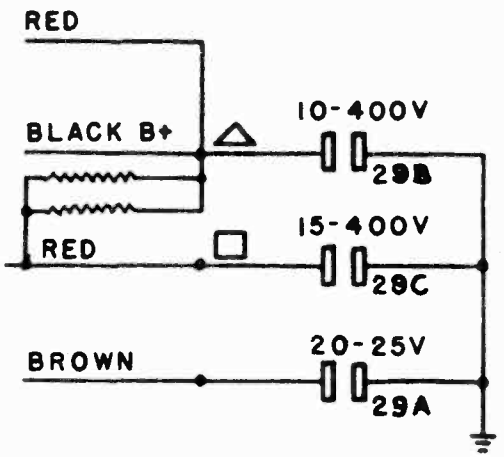
ESCUTCHEON CROSS SECTION



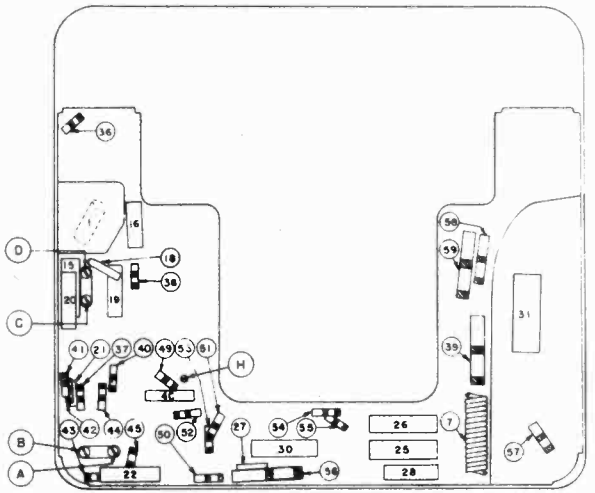
PARTS LAYOUT - TUBE VIEW



TUNER PICTURE



FILTER CONDENSER



PARTS LAYOUT-CHASSIS VIEW

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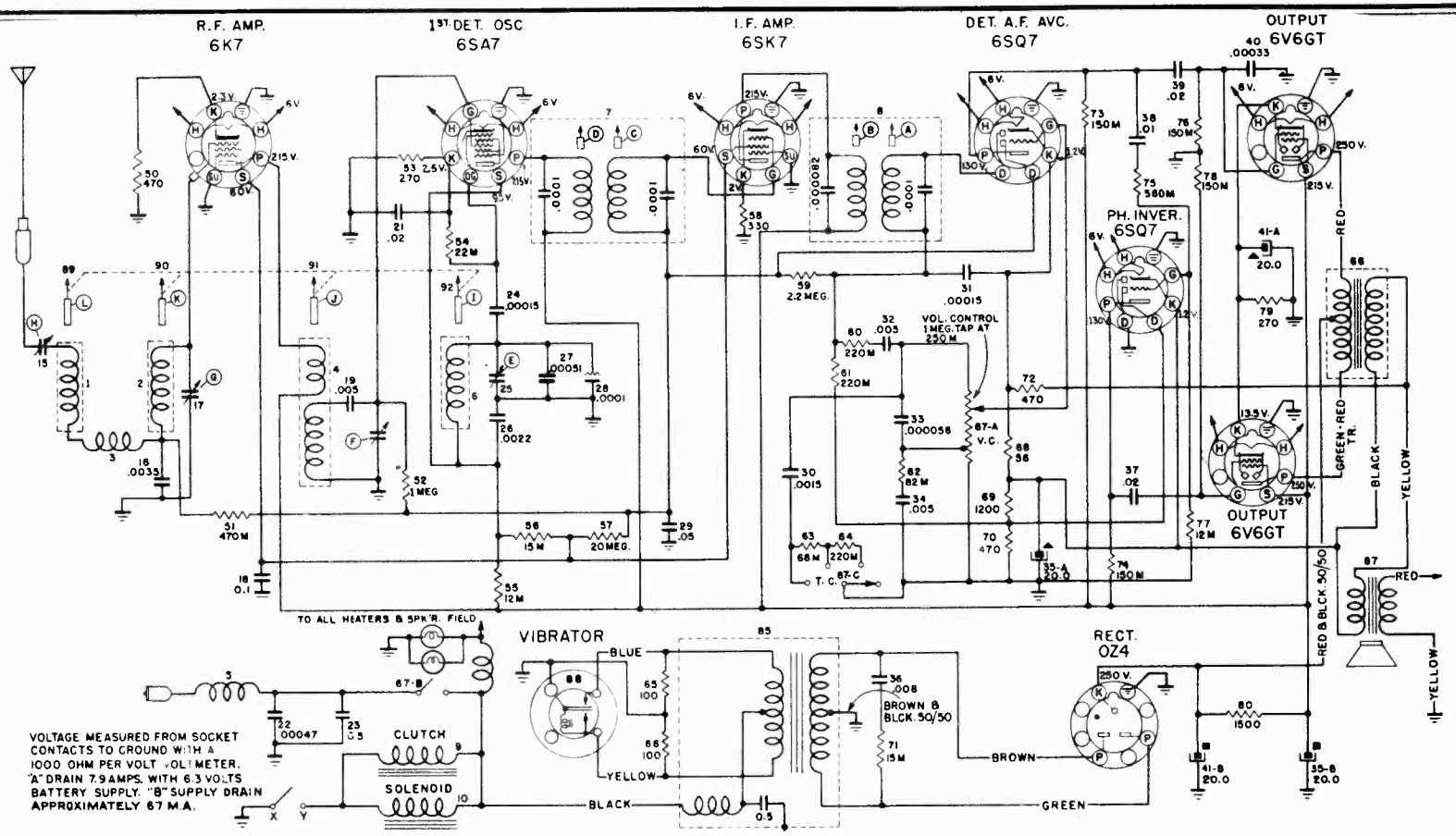


Alignment

Volume Control maximum. Signal Generator output minimum for satisfactory output indication.

Series Condenser Dummy Antenna	Connect to	Signal Generator Frequency	Tune Receiver To	Adjust Screws in Order
.1 Mfd.	6SK7 Grid	260 K.C.	No Broadcast Signal	A, B
.1 Mfd.	6SA7 Grid	260 K.C.	No Broadcast Signal	C, D
*.000072	Antenna	1,645 K.C.	Extreme High Freq. End	E, F, G, H
.000072	Antenna	1,620 K.C.	Extreme High Freq. End	I, J, K, L
.000072	Antenna	1,200 K.C.	Signal Generator	J, K, L
.000072	Antenna	600 K.C.	Signal Generator	F, G, H
.000072	Antenna	1,200 K.C.	Signal Generator	J, K, L

Before making this adjustment, turn core screws, I, J, K, L several turns in a counter clockwise direction until the threaded stud extends 5/8" through the core bar (Illus. 94) The purpose of this adjustment is to completely remove the tuning cores from the coils for the initial trimmer adjustments.
Adjust trimmer (H) to match car antenna (1,200 K.C.) when radio is installed.

MODEL 983912

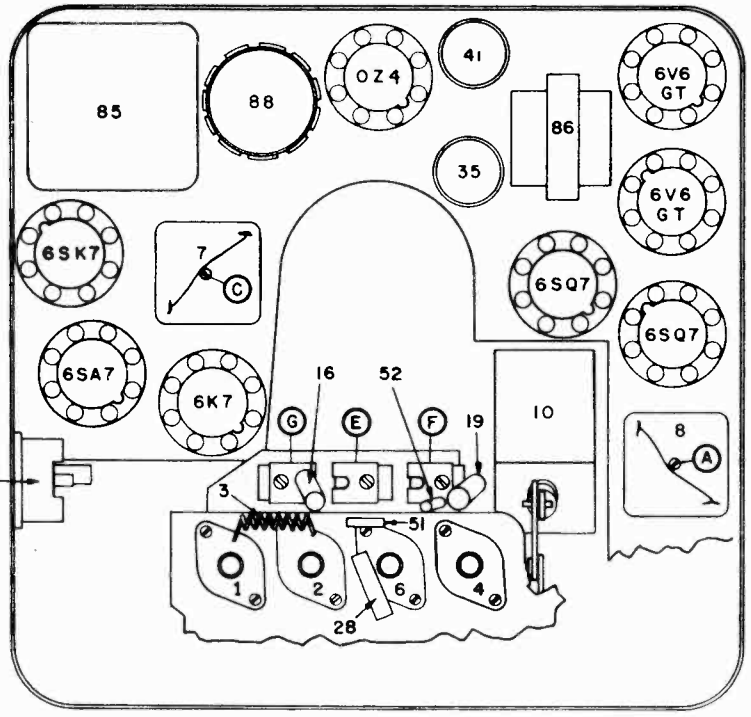
UNITED MOTORS SERVICE

Tuner Mechanical Parts

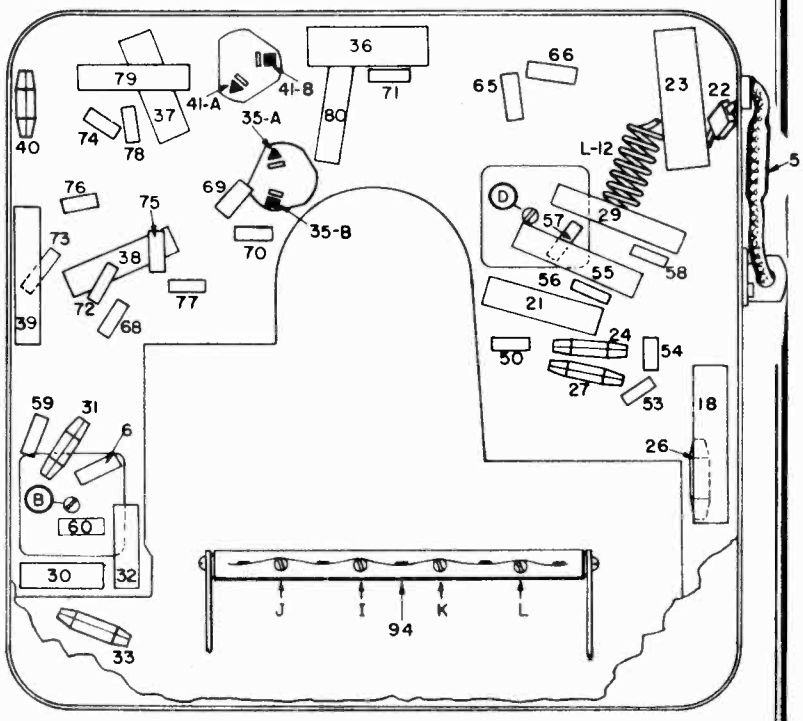
	145635	Ball—For worm gear
94	1214461	Bar—Coil core draw
	1214484	Bar—Contact latch
	1214458	Bar—Rocker and gear
95	1214447	Bar—Solenoid draw and link
96	1215812	Bracket—Clutch and bearing assembly
	1214481	Bracket—Push button guide
97	1214478	Bushing—Tuning shaft
98	1215813	Button—Push
99	1215814	Button—Set-up
100	1215815	Can—Coil shield
101	1215816	Cord—Pointer cord and long link
102	1214508	Cord—Pointer cord and short link
	1215817	Dial—Tuning
	7235945	Disc—Rubber disc for clutch
103	1214468	Drum—Drive drum and clutch disc (rubber)
	1215818	Escutcheon—Dial
104	1216092	Gear—Drive gear and clutch friction disc assembly
105	1214842	Gear—Worm gear—less set screw
	1215819	Grommet—Rubber grommet for antenna or R.F. coils
	1215820	Grommet—Rubber grommet for oscillator coil
	1214462	Link—Coil draw bar
	1305217	Nut—Locknut for solenoid pole piece
	1214821	Nut—Locknut for worm gear bearing screw
	1309864	Nut—Mounting nut for tuning shaft bushing
	1215821	Pawl—Switch finger
106	1215822	Plate—L.H. end
107	1215823	Plate—R.H. end
108	1215824	Plate—Bottom plate with pulleys
	1215825	Plate—Dial back
	1214443	Plate—Front bearing
	1214444	Plate—Rear bearing
	1214460	Plate—Set-up button stop plate and switch rear contact
109	1214475	Plunger—Solenoid plunger and stud
	1215826	Pointer—Dial pointer and holder
110	1214452	Pole Piece—Solenoid
	1214822	Retainer—Solenoid draw bar retaining clip
	1214503	Retainer—Tuning dial
	1215827	Rod—Push rod and cam assembly
	132688	Screw—Dial back plate mounting
	1214845	Screw—Dial escutcheon
	1215121	Screw—Set screw for drive drum
	127555	Screw—Set screw for worm gear
	7240316	Screw—Set screw for worm gear bearing
	1214483	Shaft—Contact latch bar, and switch finger pawl shaft
111	1214477	Shaft—Flexible tuning shaft—less bushing
	1214469	Shaft—Solenoid draw bar
	1214464	Shell—Clutch coil cover
112	1215828	Spindle—Clutch spindle and gear assembly
	1214465	Spring—Clutch
	1214843	Spring—Coil draw bar link
	1214831	Spring—Coil draw bar
	1214825	Spring—Contact latch bar
113	1216208	Spring—Pointer cord
	1214482	Spring—Push button retaining spring strip
	1214844	Spring—Push rod return
	1215235	Spring—Rocker bar gear
114	1216118	Spring—Set-up button
	1214826	Spring—Solenoid draw bar
	1214824	Spring—Switch finger pawl
	7236121	Spring—Tension spring for drive gear
	1216209	Spring—Tension spring for rocker bar
	7236001	Washer—"C" washer for flexible shaft
	1214835	Washer—Felt washer for push rods
	7235892	Washer—Fibre washer for worm gear thrust
	1214837	Washer—Flat washer for solenoid draw bar
	1214823	Washer—Spring washer for worm gear thrust

Pontiac **983912**

Date **6-18-41**



Tube View



Chassis View

Push Button Set-Up

Remove button cover to expose the set-up button. Push button all the way in and release. Tune in the desired Station. Replace button cover.

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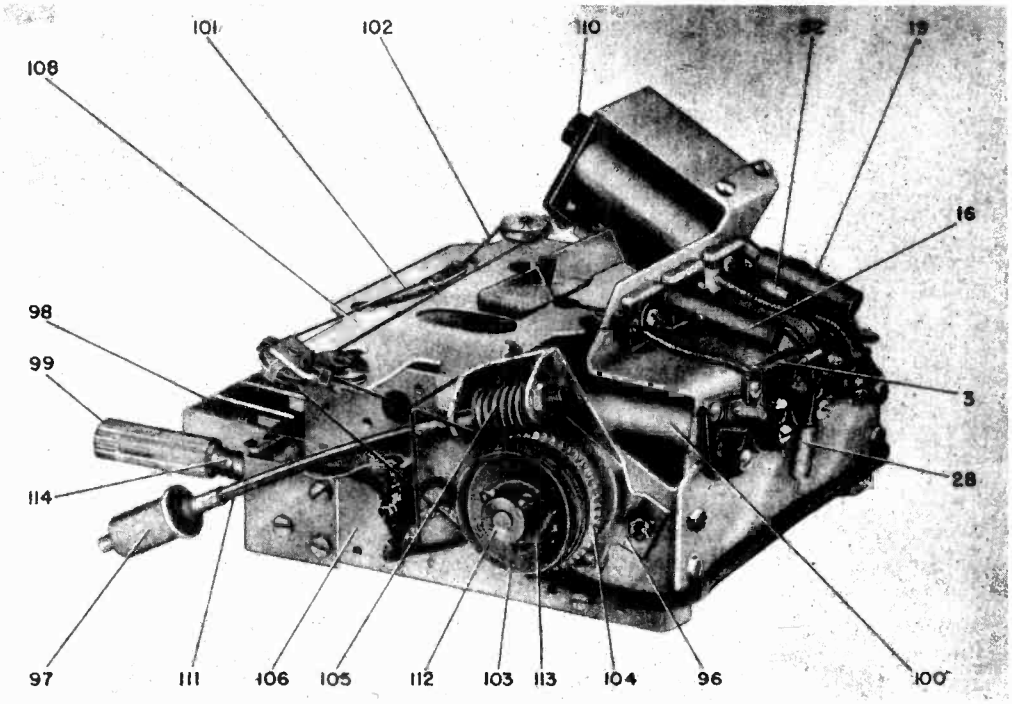
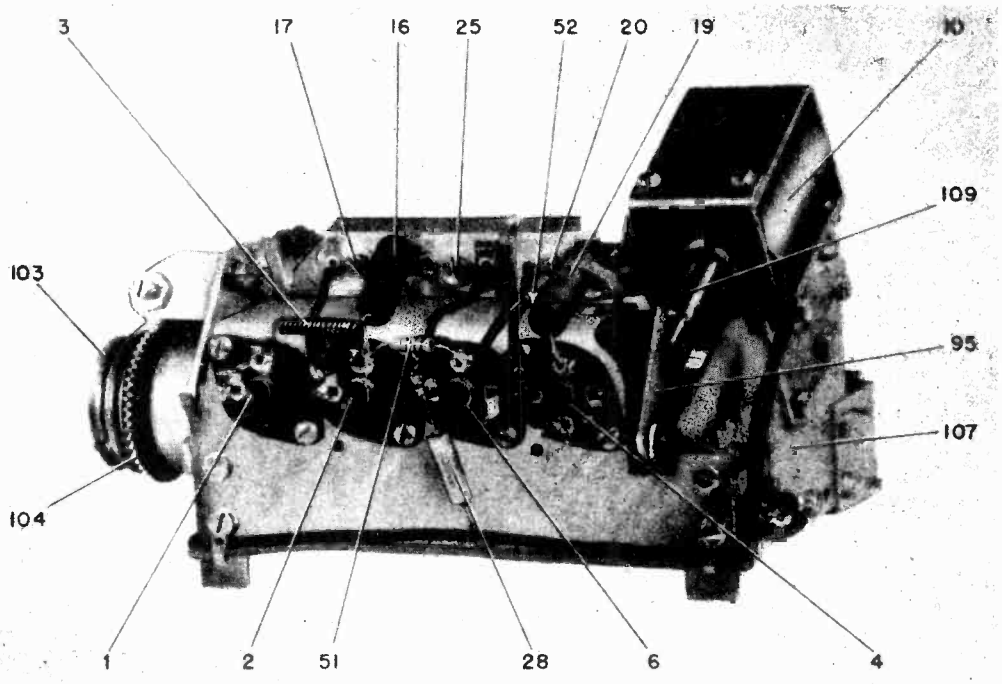
MODEL 983912

UNITED MOTORS SERVICE



Tuner Side View



Tuner Coil View

General

MOUNTING—Instrument Panel

TUBES—Eight

SPEAKER—6″ x 9″ Elliptical Dynamic

TUNING—Manual and 6 P. B. Electrical

CAR ANTENNA CAPACITY—.000072 Mfd.

TUNING RANGE—540-1,600 K.C.

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