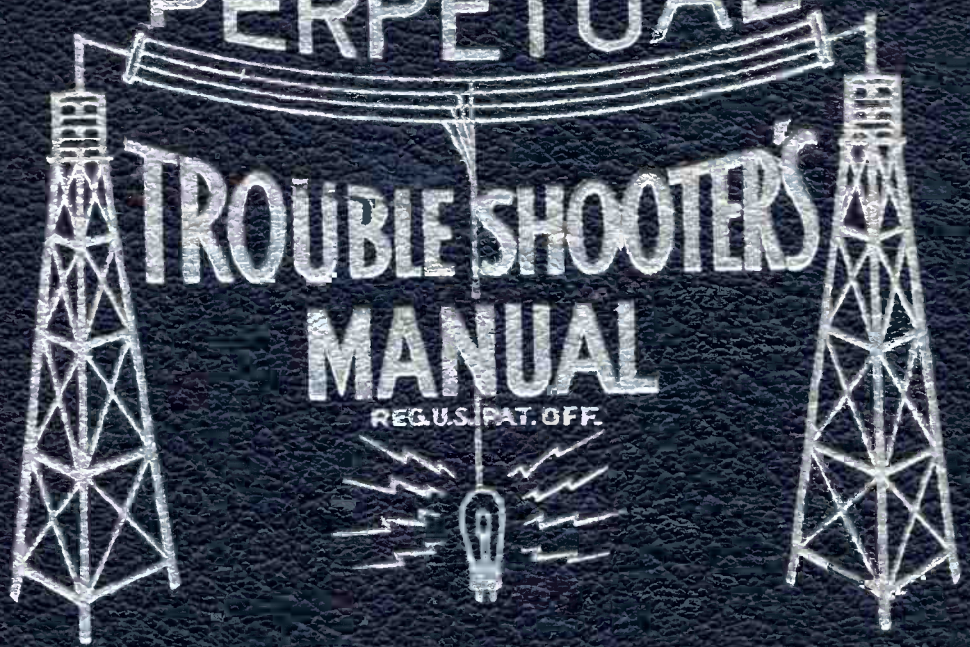
VOLUME XII

PERPETUAL TROUBLE SHOOTER'S MANUAL

REG. U.S. PAT. OFF.

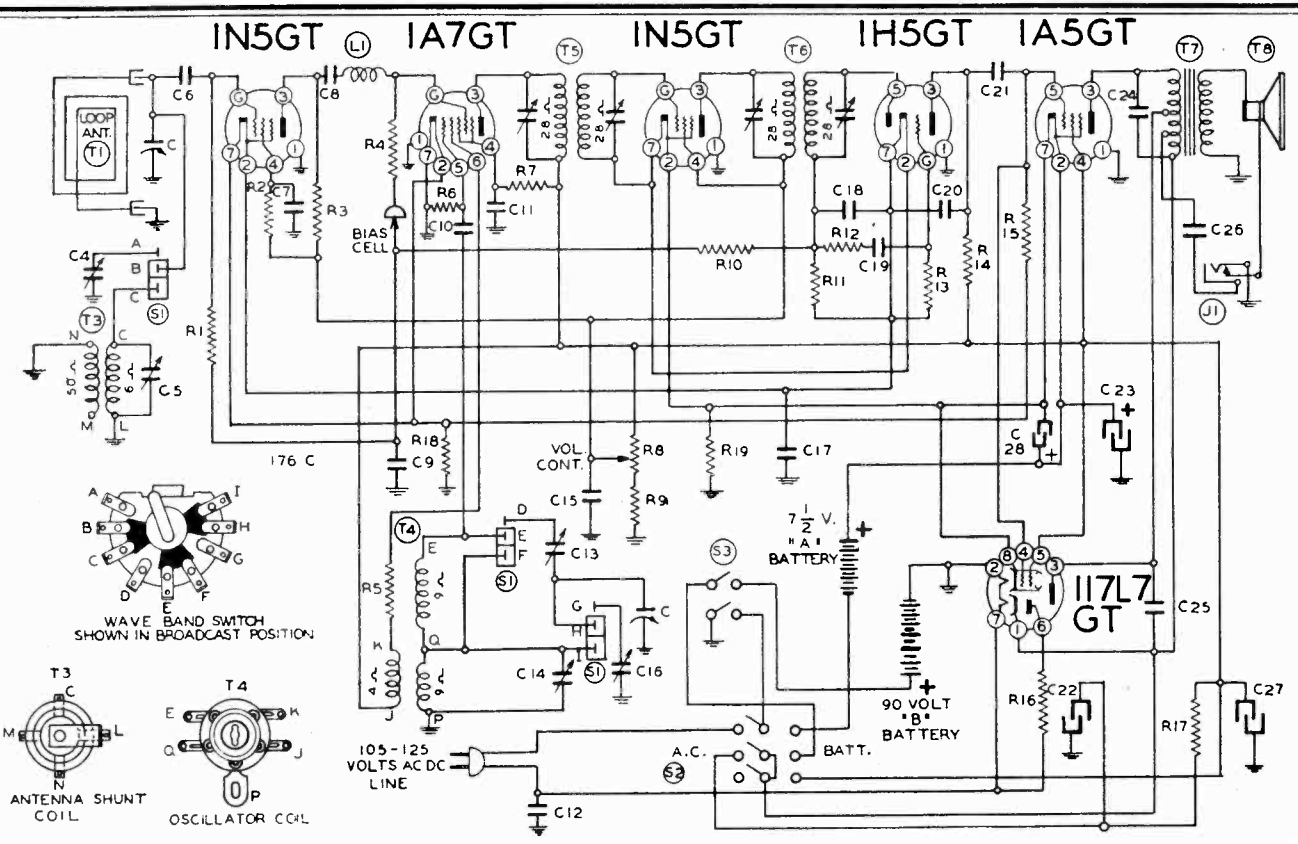


JOHN F. RIDER

SEA PAL RADIO CO.

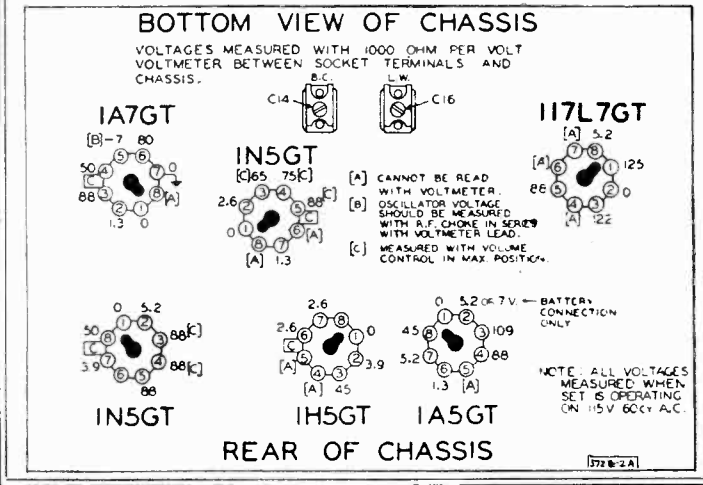
MODELS 101, 202

Radio Compass



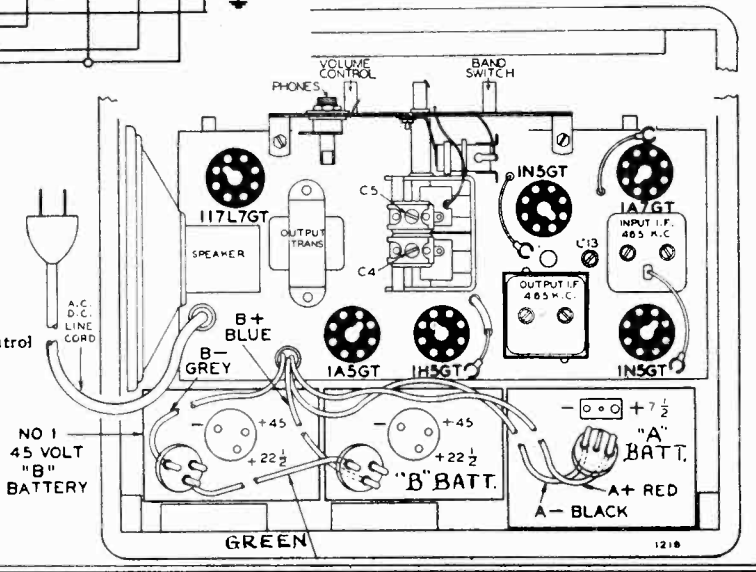
CONDENSERS

C	102130	2 gang variable
C4	124128	Long Wave Antenna Trimmer
C5	124128	Broadcast Antenna Trimmer
C6	12938	.00005 mica
C7	1009	.05 x 200 v.
C8	12912	.00025 mica
C9	1009	.05 x 200 v.
C10	12921	.0002 mica
C11	1009	.05 x 200 v.
C12	10013	.05 x 400 v.
C13	124133	Long Wave Padder Condenser
C14	124129	Broadcast Oscillator Trimmer
C15	10020	.1 x 200 v.
C16	124129	Long Wave Oscillator Trimmer
C17	100104	.5 x 100 v.
C18	1295	.0001 mica
C19	10025	.002 x 600 v.
C20	12936	.0003 mica
C21	10011	.01 x 400 v.
C22	119107	40 mfd. lytic 150 w.v.
C23	119107	200 mfd. lytic 6 w.v.
C24	10025	.002 x 600 v.
C25	10019	.006 x 600 v.
C26	10011	.01 x 400 v.
C27	119107	20 mfd. lytic 150 w.v.
C28	119113	200 Mfd. Lytic 10 w. v. C22, C23 and C27 in same unit. C4 and C5 in same unit. C14 and C16 in same unit.
T1	111205	Loop Antenna (in cabinet)
T3	111175	Loop Antenna Shunt Coil
T4	110148	Oscillator Coil
T5	108174	Input I. F. Coil—465 kc.
T6	108175	Output I. F. Coil—465 kc.
T7	105107	Output Transformer
T8	114190	5" P. M. Speaker
S1	125109	Wave Band Switch
S2	125110	Power Supply Switch
S3		On Volume Control
L1	1238	R. F. Choke
J1	121255	Phones Jack



IF PEAK 465 KC

Code No.	Part No.	Description
		RESISTORS
R1	13019	1 megohm—⅓ w.
R2	130176	20M ohm—⅓ w.
R3	130176	20M ohm—⅓ w.
R4	13019	1 megohm—⅓ w.
R5	130218	5M ohm—⅓ w.
R6	1309	200M ohm—⅓ w.
R7	1307	40M ohm—⅓ w.
R8	101212	1 megohm volume control
R9	13020	100M ohm—⅓ w.
R10	130170	3 megohm—⅓ w.
R11	13019	1 megohm—⅓ w.
R12	13020	100M ohm—⅓ w.
R13	130257	5 megohm—⅓ w.
R14	130309	350M ohm—⅓ w.
R15	1303	500M ohm—⅓ w.
R16	130310	30 ohm—⅓ w.
R17	13071	4M ohm—⅓ w.
R18	13092	1M ohm—⅓ w.
R19	130294	1200 ohm—⅓ w.



ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect generator ground to shell of antenna socket.
- 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	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 1A7GT	Rotor full open (Plates out of mesh)	Four trimmers on top (See Fig. 1)	Output and input I. F.	(See Note "A") Adjust to maximum output
BROADCAST BAND (Band Switch in Broadcast Position)	1560 Kc.	.1 MFD.	Grid of 1A7GT	Rotor full open (Plates out of mesh)	Trimmer C14 (See Fig. 3)	Broadcast Oscillator	(See Note "A" and "C") Adjust to maximum output
	1400 Kc.	50 MMFD.	Antenna and Ground Terminals	Set dial at 1400	Trimmer C5—Front section of gang (See Fig. 1)	Broadcast Antenna	(See Note "B") Adjust to maximum output
LONG WAVE BAND (Band Switch in Long Wave Position)	410 Kc.	50 MMFD.	Grid of 1A7GT	Set dial at 410 (Rotor plates full open)	Trimmer C16 (See Fig. 3)	Long Wave Oscillator	(See Note "A" and "C") Adjust to maximum output
	400 Kc.	50 MMFD.	Antenna and Ground Terminals	Set dial at 400 Kc.	Trimmer C4—Rear Section of gang (See Fig. 1)	Long Wave Antenna	(See Note "B") Adjust to maximum output
	275 Kc.	50 MMFD.	Antenna and Ground Terminals	Set dial at 275 Kc.	Padder C13 (See Fig. 1)	Long Wave Oscillator Series Padder	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 shell of the antenna socket and the other lead from the signal generator in series with the proper dummy to the grid of the 1A7GT tube.

NOTE "B"—This adjustment should be made with the ground lead of the signal generator connected to the shell of the antenna socket. The other lead of the signal generator is connected in series with a 50 Mmf. dummy to the antenna terminal.

NOTE "C"—Trimmers C14 and C16 can be reached by removing the Sea Pal Nameplate on the side of the cabinet.

Power Consumption.....(On A.C. or D.C.) 35 Watts

Power Output.....600 Milliwatts Undistorted, 1200 Milliwatts Maximum

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

When carefully used the instrument will indicate points within ± 1 Degree.

A Radio Beacon Broadcast Chart may be obtained from the United States Coast Guard at Washington, D. C. This chart contains instructions for its use

The Sea Pal should not be installed too near your compass or the speaker magnet may affect the reading of the compass. It is advisable to keep the unit away from metal as much as possible to eliminate excessive error in the readings.

Place the unit in line with the ship, that is, if you want the controls directly in front when you face the bow the back of the cabinet should point directly toward the bow. If the unit is used on one side of your cabin then it should be lined up so that it is parallel with a line drawn between the bow and the stern. The reason for keeping the unit in a parallel relation to the boat is that it will be easier to set the compass scale on top of the cabinet to conform to your compass settings when taking bearing.

There is an index marker opposite the compass scale locking screw which aids you to set the scale in exact agreement with your compass when required.

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.

To use your compass as a homing device—Tune in the station near the harbor. Rotate the loop to the point where the signal is loudest. This point is quite broad and is therefore not accurate enough to follow. You must therefore find the "Null" point (the point at which the station is weakest).

The Null point will be where the flat side of the loop faces the station. The pointer on the Loop should then point to the station. Follow this "Null" point all the way in toward the station. When near the harbor of course you'll pick up the harbor lights and marker buoys.

Since the "Null' point can be obtained when the loop pointer points either to the station or directly away from it you should check with your magnetic compass just to be certain your direction is not away from the station.

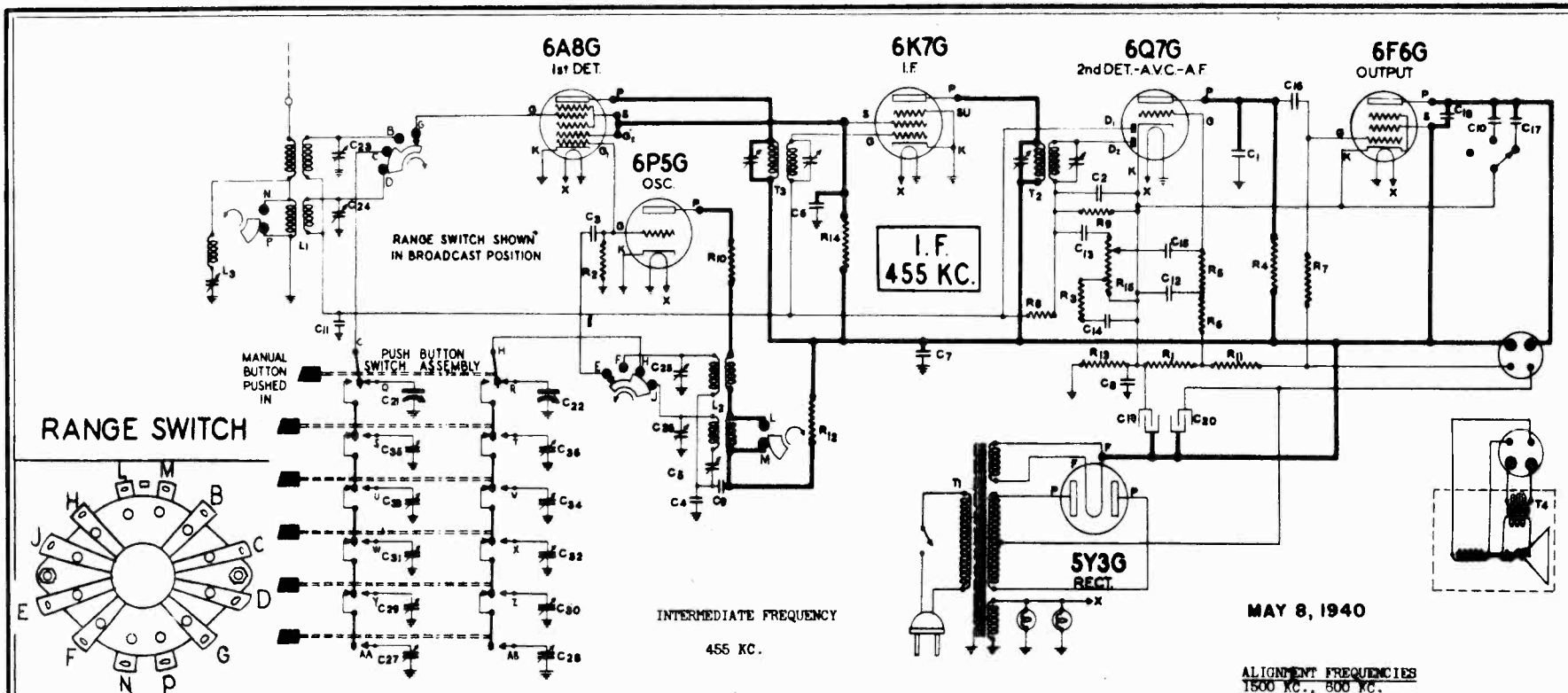
To determine your position at Sea it is only necessary to take bearings on two broadcast stations and transfer these bearings to your chart (map). To find your position first loosen the locking screws on the compass scale on top of the Sea Pal. Rotate the scale so it reads the same as your ships compass. Make the same correction as you would for your compass and hold the ships course steady.

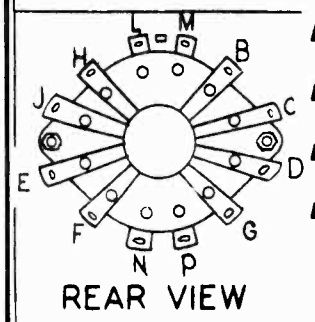
Now tune in a broadcast or beacon station the position of which you know. Rotate the loop to a point where the signal is loudest—Now turn the loop approximately 90 degrees to the "Null Point" (The point of weakest signal). You may have to adjust the volume either up or down to find the "Null Point". Having found the "Null", the loop pointer should point directly at the station and on the loop scale you can now read in degrees the position of the station. Draw a line from this point on land with a parallel rule out to sea, on your chart.

Now repeat the same operation on another known station which is located farther along shore. When you draw your line from this station it will cross the first line at some point on the water—The point at which the lines cross is your position.

SEARS ROEBUCK & CO.

MODEL S61
Chassis 100.350





ELECTRICAL PARTS

PART NUMBER	SCHEMATIC LOCATION	DESCRIPTION	LIST PRICE
10028119687	L1	Coil - antenna	1.10
10028119688	L2	Coil - oscillator	1.00
10031119754	L3	Coil - wave trap with trimmer	.40
1001983539	C1	Condenser - mica, 260 mmfd.	.20
1001983763	C2	Condenser - mica, 110 mmfd.	.20
1001985061	C3	Condenser - mica, 51 mmfd.	.15
1001988587	C4	Condenser - mica, .0042 mfd.	.35
10017112799	C5	Condenser - padder	.36
	C6-C7	Condenser - .1 mfd. 600 volt	.25
10020110377	C8	Condenser - 10 mfd. 35 volt	.80
	C9-C10	Condenser - .01 mfd. 600 volt	.15
	C11-C12	Condenser - .05 mfd. 600 volt	.20
	C13-C14-C15-C16	Condenser - .02 mfd. 600 volt	.15
	C17	Condenser - .04 mfd. 600 volt	.20
	C18	Condenser - .002 mfd. 600 volt	.15
10020118421	C19-C20	Condenser - electrolytic 10-15 mfd. 450V	1.50
10016118619	C21-C22	Condenser - variable tuning	3.00
10017118920	C23-C24-C25-C26-C27-C28-	Trimmer strip (2 section)	.30
10017119783	C29-C30	Push button trimmer condenser(540-1000KC)	.28
10017119663	C31-C32-C33-C34	Push button trimmer condenser(750-1375KC)	.24
10017119664	C35-C36	Push button trimmer condenser(980-1700KC)	.24
10049110629		Lamp - 6.3 volt - (Mazda #44)	.15
1002188465	R1	Resistor - 25 ohms 1/2 watt, wire wound	.16
	R2-R3	Resistor - carbon, 47,000 ohms 1/4 watt	.12
	R4	Resistor - carbon 220,000 ohms 1/4 watt	.12
	R5-R6	Resistor - carbon, 1 megohm 1/4 watt	.12
	R7	Resistor - carbon 470,000 ohms 1/4 watt	.12
	R8	Resistor - carbon, 2.2 meg. 1/4 watt	.15
	R9	Resistor - carbon 330,000 ohms 1/4 watt	.12
	R10	Resistor - carbon, 180 ohms 1/4 watt	.12
10021117075	R11	Resistor - 300 ohms 1 watt, wire wound	.16
	R12	Resistor - 10,000 ohms 1 watt	.12
	R13	Resistor - 110 ohms 1 watt	.25
	R14	Resistor - 22,000 ohms 2 watts	.30
10024119634	R15	Volume control - 1 megohm	.90
10058115096		Speaker - dynamic (8 in.)	6.50
10057119597		Cone & Voice coil for 10058115096 speaker	2.00
10037119626		Range swith	1.00
10038119715		Push button switch	2.40
10025119640		Tone control and switch	.85
10010118498	T1	Transformer - power (50-60 cycles)	3.20
10011119804	T1	Transformer - power (25 cycles)	5.35
10035119024	T2	Transformer - 2nd I.F.	1.15
10033119220	T3	Transformer - 1st I.F.	1.30
10013119596	T4	Transformer - output for(speaker 1005811-5096)	1.95

ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

ANTENNA SYSTEM

This radio is equipped with a built-in antenna which consists of a metal foil plate built into the cabinet back. An external antenna maybe connected to the set by connecting the antenna lead-in to the clip provided on the cabinet back. When removing the chassis from the cabinet for alignment or test purposes, unsolder the blue wire at the clip on the cabinet back.

ALIGNMENT FREQUENCIES
1500 KC., 600 KC.
16 MC.

POWER SUPPLY
Model 61 is supplied for either 25 or 60 cycle power supplies

105-125 volts - 25 cycle - 55 watts
105-125 volts - 50-60 cycle - 55 watts

FREQUENCY RANGES
"AMERICAN" Band.....540 to 1725 KC.
"FOREIGN" Band.....5.5 to 18.1 MC.

POWER OUTPUT
Type.....Pentode
Undistorted.....2 watts
Maximum.....3 watts

OPERATING FEATURES
Tone control.....Three point
Automatic tuning.....Five station
Dial lighting.....Edge lit.
Pointer.....Slide-rule type

LOUD SPEAKER
Type.....Dynamic
Size.....8"
Field coil resistance.....920 ohms
App. field coil voltage drop.....50 volts

CHASSIS FEATURES
Number of I. F. stages.....one
Built-in antenna.....plate type
Wave trap.....455 KC.
Number of condensers in gang.....two

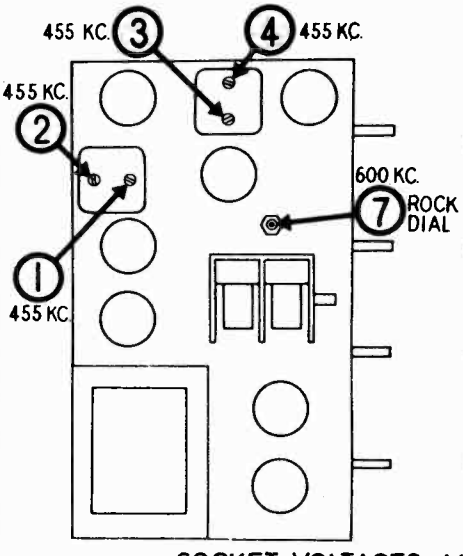
MODEL S61
Chassis 100.350

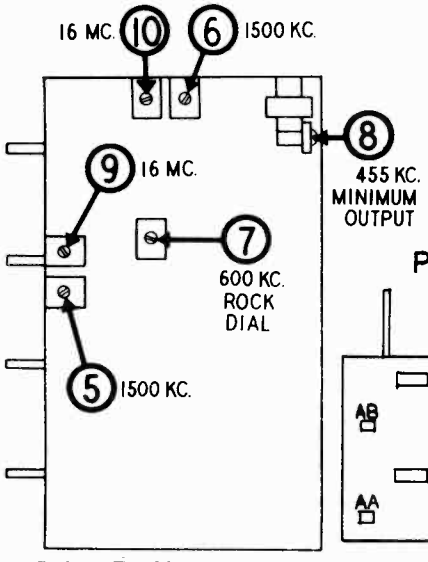
SEARS ROEBUCK & CO.

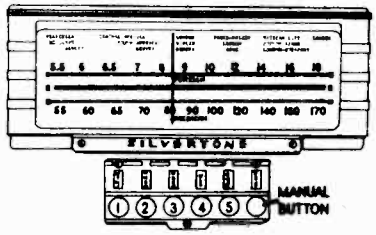
Before attempting to align the receiver see that the dial pointer is correctly set. With the gang condenser in full mesh, set the pointer to the last mark on the left end of the dial scale. If the pointer is incorrectly set, it is only necessary to loosen the set screw in the dial cord drive drum and push the gang condenser in full mesh with the pointer properly set, then retighten the set screw.

Output meter connection----Across loud speaker voice coil
Output meter reading to indicate 200 milliwatts----.831 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----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 550 kc calibration mark

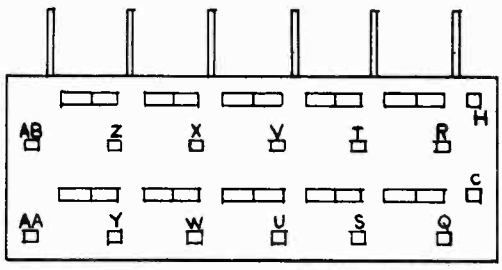
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION OF SIGNAL GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. CONDENSER	CONTROL GRID OF 6A8G TUBE	455 KC	AMERICAN	ANY POINT WHERE IT DOES NOT AFFECT THE SIGNAL	1-2	2ND I.F.	ADJUST FOR MAXIMUM OUTPUT. THEN REPEAT ADJUSTMENT.
					3-4	1ST I.F.	
200 MMFD. CONDENSER	ANTENNA TERMINAL	1500 KC	AMERICAN	1500 KC	5	BROADCAST OSCILLATOR (SHUNT)	ADJUST FOR MAXIMUM OUTPUT.
200 MMFD. CONDENSER	ANTENNA TERMINAL	1500 KC	AMERICAN	TUNE TO 1500 KC GENERATOR SIGNAL	6	BROADCAST ANTENNA	ADJUST FOR MAXIMUM OUTPUT.
200 MMFD. CONDENSER	ANTENNA TERMINAL	600 KC	AMERICAN	TUNE TO 600 KC GENERATOR SIGNAL	7	BROADCAST OSCILLATOR (SERIES)	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RETUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.
200 MMFD. CONDENSER	ANTENNA TERMINAL	455 KC	AMERICAN	600 KC	8	WAVE TRAP	ADJUST FOR MINIMUM OUTPUT. USING A STRONG GENERATOR SIGNAL
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	16 MC	FOREIGN	16 MC	9	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	16 MC	FOREIGN	TUNE TO 16 MC GENERATOR SIGNAL	10	FOREIGN ANTENNA	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RETUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.







PUSH BUTTON SWITCH



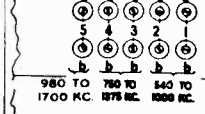
SOCKET VOLTAGES-ALL D.C. MEASURED TO CHASSIS

ANTENNA GROUNDED — DIAL TUNED TO 540 KC.

TUBE	FUNCTION	H	K	G	G_1	G_2	S	SU	P	D_1	D_2
6A8G	1st DET.	6.0A.C	0	Note A	-5	85	85		240		
6P5G	OSC.	6.0A.C	0	-5					168		
6K7G	I.F.	6.0A.C	0	Note A			85	0	240		
6Q7G	2nd DET.-A.V.C.-A.F.	6.0A.C	-2.4	Note B					95	Note A	Note A
6F6G	OUTPUT	6.0A.C	-2.4	Note C			240		225		
5W4G	RECT.	5.0A.C	PLATES = 350 A.C. TO CENTER TAP								

NOTE A: The bias on these elements is -2.4 volts measured across R 13.
NOTE B: The bias on the 6Q7G grid is -1.4 volts measured across R_1.
NOTE C: The bias on the 6F6G grid is -16 volts measured across R_1 and R_{11}.
USE A HIGH RESISTANCE VOLTMETER HAVING A RESISTANCE OF AT LEAST 1000 OHMS PER VOLT.

PUSH BUTTON TRIMMERS



VIEWED FROM REAR OF CHASSIS

PUSH BUTTON ADJ. - BAND SW. AT "AM" POS. - "MANUAL" BUTTON IN, TUNE IN DESIRED STATION WITH TUNING CONTROL. PUSH IN FREQ. RANGE BUTTON AND ADJUST CORRESPONDING SCREW "A". ADJUST SCREW "B" (ONE BELOW "A") FOR DEEPEST TONE. READJUST "A" & "B" SCREWS FOR DEEPEST TONE. SEE ABOVE DWGS

SEARS ROEBUCK & CO.

MODELS R71,671
Chassis 101.612
101.612A

MODEL R381

POWER SUPPLY:
All models available . . . . . .105-125 v., 50-60 cycles AC; 70 watts
All models available . . . . . .105-125 v., 25-60 cycles AC; 75 watts

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

FREQUENCY RANGES:
Band "A" . . .540-1610 kc
Band "B" . . .1475-3510 kc
Band "C" . . .5.95-18.3 mc

LOUDSPEAKER
Type . . . . . .Dynamic
Size . . . . . 8 inch
Field coil resistance. . . .1100 ohms
Approx.field coil voltage drop. .85 v.

PRELIMINARY:

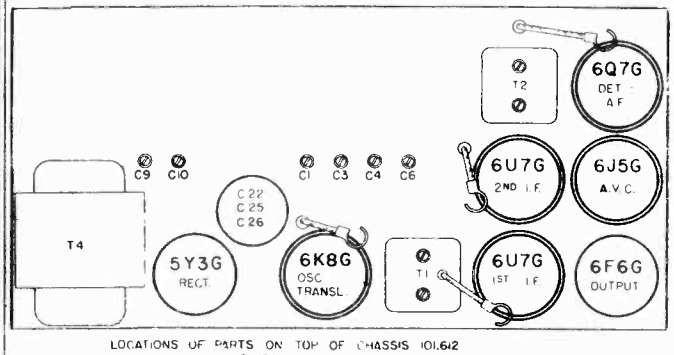
Output meter connection . . . . . .Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . .1.2 volts
Approximate microvolts input to indicate 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . .To chassis
Dummy antenna value to 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.. . . . . At mark to left of 550 kc calibration mark.

MODELS R71,671 AND R381

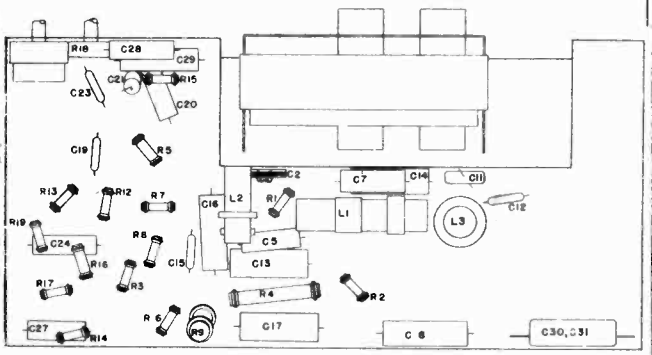
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	(FOR MODELS R71, 671 ONLY) APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2, T1	IF	50
"A"	600 kc	455 kc	.00005 mfd.	Ant. Term.	C6*	Wave Trap	--
"A"	Open	1610 kc	.00005 mfd.	Ant. Term.	C9	Oscillator	--
"A"	1400 kc	1400 kc	.00005 mfd.	Ant. Term.	C1	Translator	85
"A"	600 kc(rock)	600 kc	.00005 mfd	Ant. Term.	C10	Padder	35
"B"	3.4 mc	3.4 mc	400 ohms	Ant. Term.	C3	Translator	30
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	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.

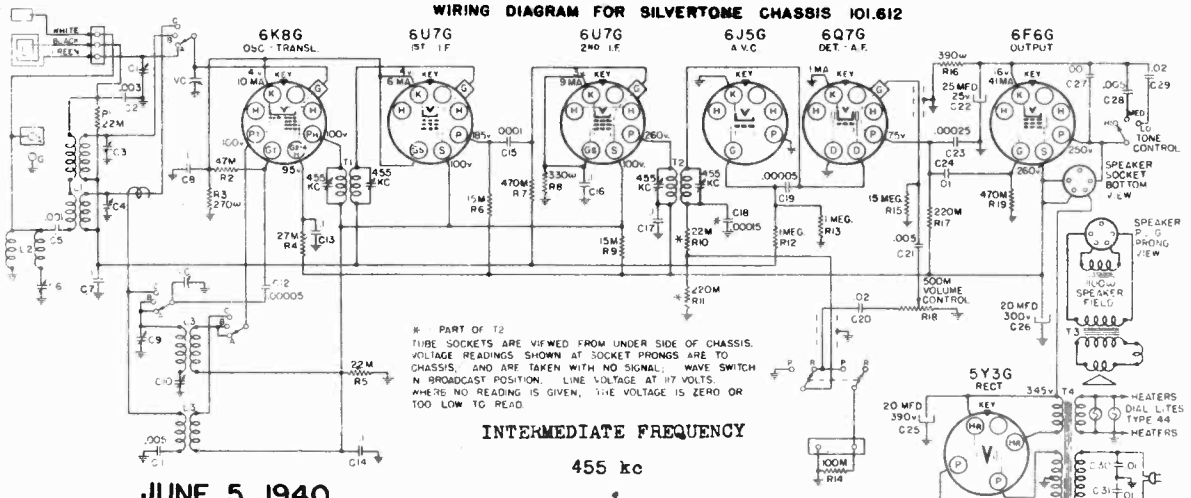


LOCATIONS OF PARTS ON TOP OF CHASSIS 101.612



LOCATIONS OF PARTS UNDER CHASSIS 101.612, 101.612-A

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.612



JUNE 5, 1940

MODEL R81
Chassis 101.613

SEARS ROEBUCK & CO.

JUNE 18, 1940

POWER OUTPUT:
Type . . . . . .Push-pull pentodes
Undistorted . . . . . .4 watts
Maximum . . . . . .6 watts

FREQUENCY RANGES:
Band "A" . . . . . 540-1610 kc
Band "B" . . . . . .1475-3510 kc
Band "C" . . . . . 5.95-18.2 mc
Band "D" . . . . . 9.3-9.85 mc

POWER SUPPLY:
All models available .105-125 v., 50-60 cycles AC; 35 watts
All models available .105-125 v., 25-60 cycles AC;100 watts

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . .Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.55 volts
Approximate microvolts input for 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . To 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 . . . . . At mark to left of 550 kc calibration mark

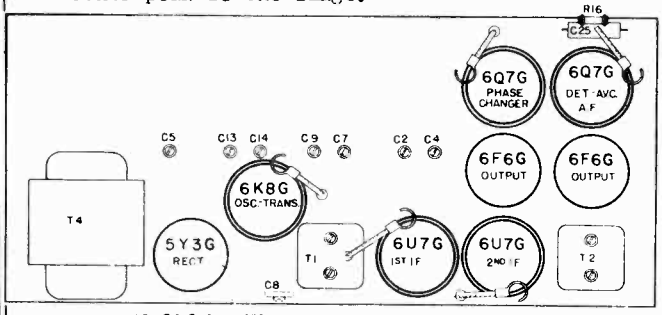
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	600 kc	455 kc	.00005 mfd	Ant. Term.	C4*	Wave Trap	--
"A"	Open	1610 kc	.00005 mfd	Ant. Term.	C13	Oscillator	--
"A"	1400 kc	1400 kc	.00005 mfd	Ant. Term.	C8	Translator	220
"A"	600 kc(rock)	600 kc	.00005 mfd	Ant. Term.	C5	Padder	85
"B"	2.4 mc(rock)	2.4 mc	400 ohms	Ant. Term.	C2	Translator	65
"C"	15 mc(rock)	15 mc	400 ohms	Ant. Term.	C7	Translator	15
"D"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C14**	Oscillator	--
"D"	9.55 mc(rock	9.55 mc	400 ohms	Ant. Term.	C9	Translator	60

IMPORTANT ALIGNMENT NOTES

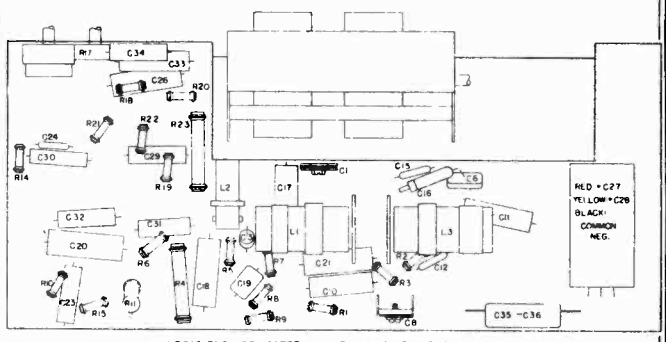
FOR TUNER DATA SEE INDEX

* 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.



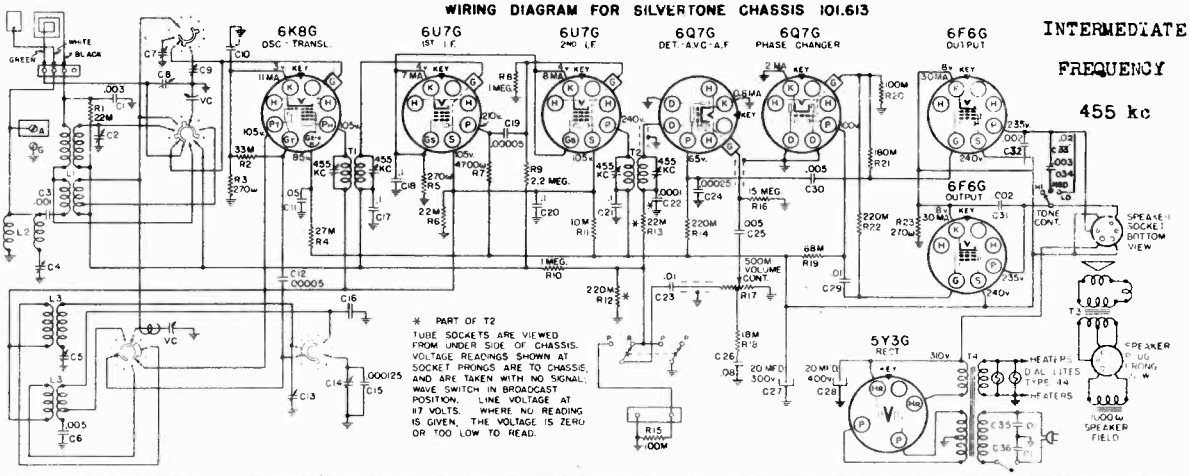
LOCATIONS OF PARTS ON TOP OF CHASSIS 101.613



LOCATIONS OF PARTS UNDER CHASSIS 101.613

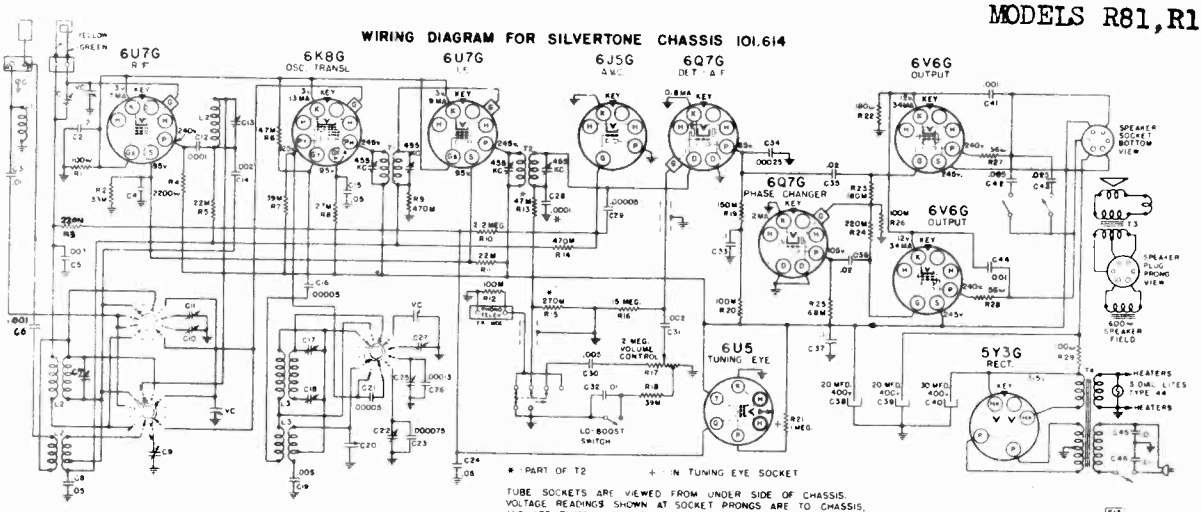
GREEN BLACK WHITE

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.613



SEARS-ROEBUCK & CO.

MODEL R101
Chassis 101.614
MODELS R81,R1171



JUNE 18, 1940

ALIGNMENT PROCEDURE

INTERMEDIATE FREQUENCY 455 kc

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
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"	Fully open	1650 kc	.00005 mfd	Ant. Term.	C17	Oscillator	--
"A"	1400 kc	1500 kc	.00005 mfd	Ant. Term.	C1,C13	Ant,Transl	160
"A"	600 kc(rock)	600 kc	.00005 mfd	Ant. Term.	C18	Padder	65
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C7	Translator	150
"C"	Open	18.3 mc	400 ohms	Ant. Term.	C27*	Oscillator	--
"C"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C11	Translator	60
"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	90
"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	90

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

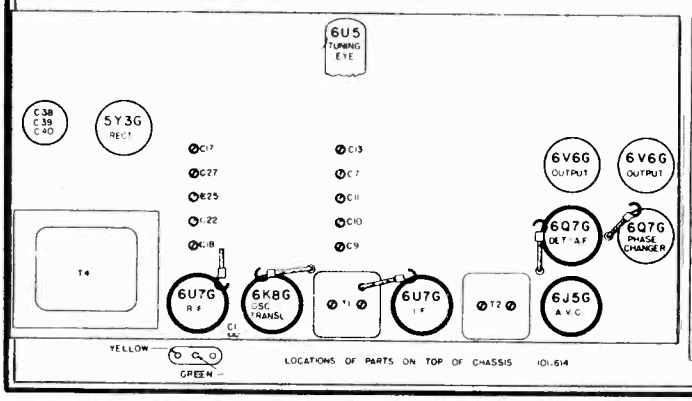
PUSH BUTTON TUNING MECHANISM: MODELS R81, R101,R1171

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 by holding the screw driver lightly in the screwhead allowing the spring tension to hold the plunger against the screw driver.

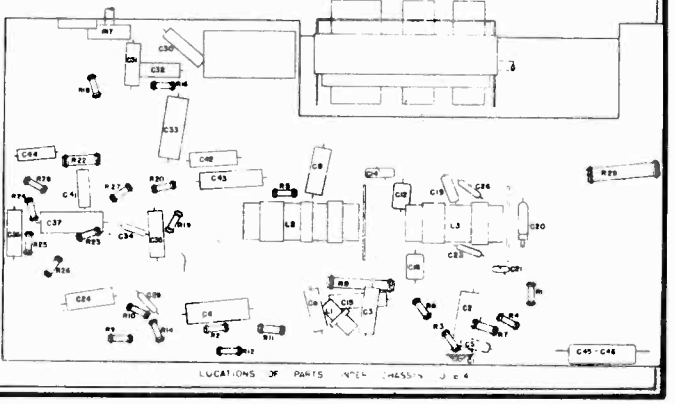
POWER SUPPLY:
All models available .105-125 volt AC; 50-60 cycle; 110 watts
All models available .105-125 volt AC; 25-60 cycle; 120 watts

POWER OUTPUT:
Type . . . . . Push-Pull beam
Undistorted . . . . . 6 watts
Maximum . . . . . 11 watts

FREQUENCY RANGES:
Band "A" . . . . . 540-1650 kc
Band "B" . . . . . 1475-3510 kc
Band "C" . . . . . 5.95-18.3 mc
Band "D" . . . . . 9.3-9.85 mc
Band "E" . . . . . 11-12 mc



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.614


LOCATIONS OF PARTS UNDER CHASSIS 101.614

MODEL R101 (Late)
Chassis 101.614-1

MODEL 1581
Chassis 101.572-2A

SEE PREVIOUS PAGE
FOR OTHER DATA

SEARS ROEBUCK & CO.

MODEL R101

FACTORY IDENTIFICATION NO. 101.614-1

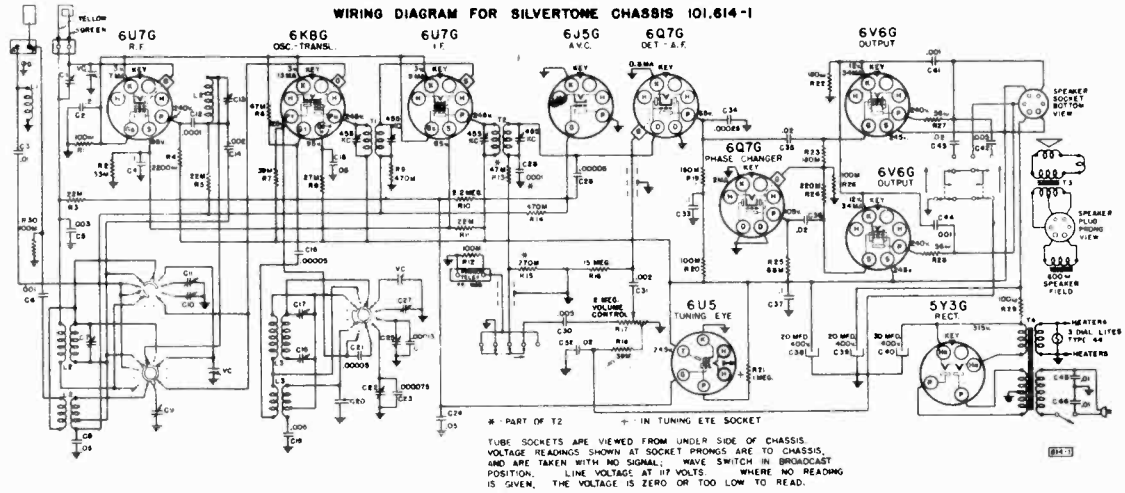
OCT. 15, 1940

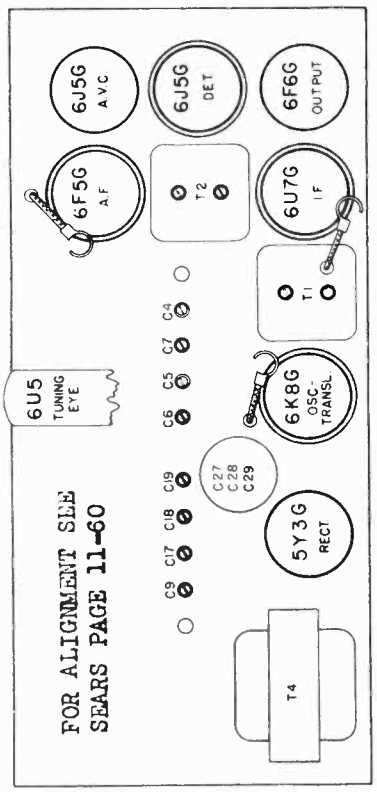
ADDITION OF SUFFIX NUMBER -1 TO CHASSIS IDENTIFICATION NUMBER 101.614:

Chassis identified by 101.614-1 omit the low boost switch from the back of the chassis and incorporate its function in the tone push buttons.

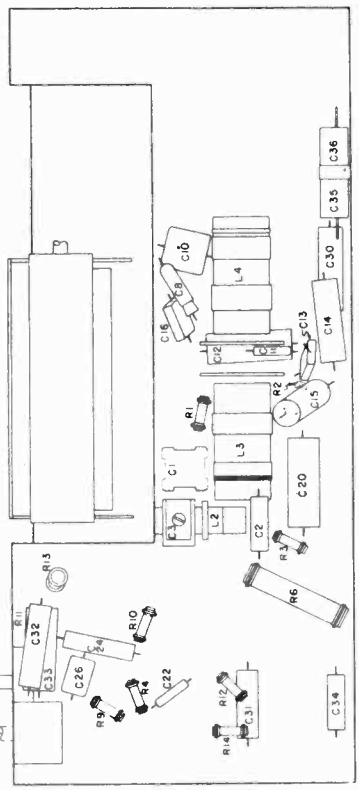
The new Tone-Phono-Television-Frequency Modulation push button switch is part number 1013843862, selling price $1.02.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.614-1





LOCATION OF PARTS ON TOP OF CHASSIS 101.572-2A

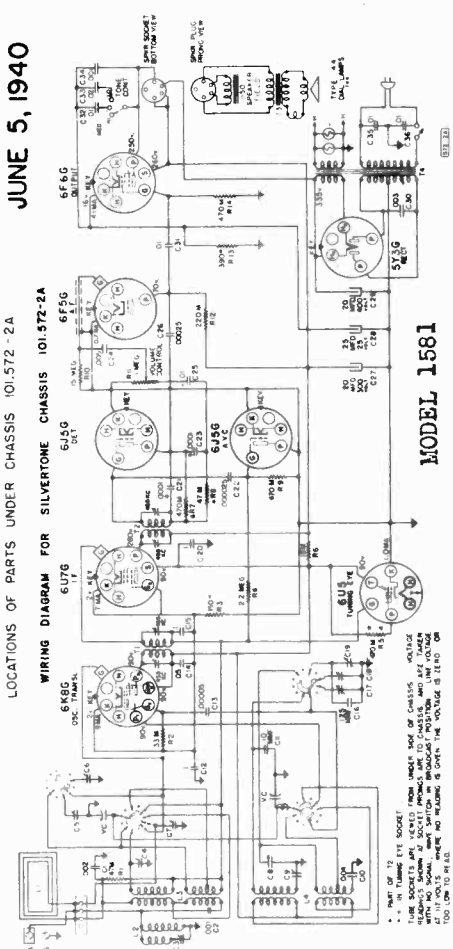


JUNE 5, 1940

MODEL 1581

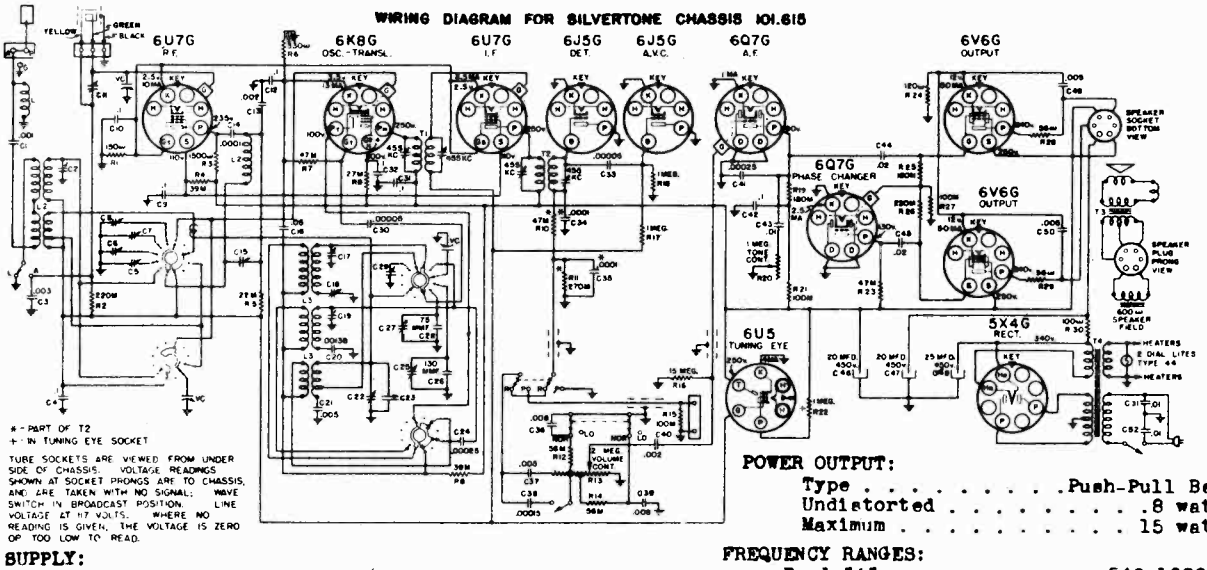
LOCATIONS OF PARTS UNDER CHASSIS 101.572-2A

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.572-2A



SEARS ROEBUCK & CO.

MODEL R111
Chassis 101.615



POWER OUTPUT:

Type	Push-Pull Beam
Undistorted	.8 watts
Maximum	15 watts

POWER SUPPLY:

All models available 105-125 volts, 50-60 cycles; 130 watts
All models available 105-125 volts, 25-60 cycles; 130 watts

FREQUENCY RANGES:

Band "A"	540-1630 kc
Band "B"	1675-5200 kc
Band "C"	5.95-18.265 mc
Band "D"	9.3-9.85 mc
Band "E"	11-12 mc
Band "F"	12.9-15.95 mc

INTERMEDIATE FREQUENCY . . . . .455 kc

ALIGNMENT PROCEDURE

PRELIMINARY:

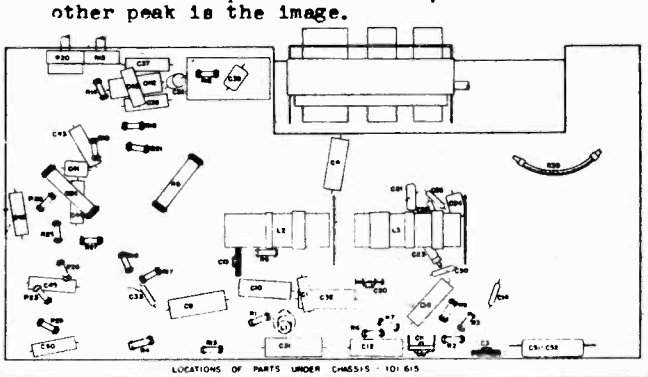
Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.6 volts
Approximate microvolts input for 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . Receiver chassis
Dummy antenna value to be in 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
Position of Antenna Switch . . . . . Antenna position

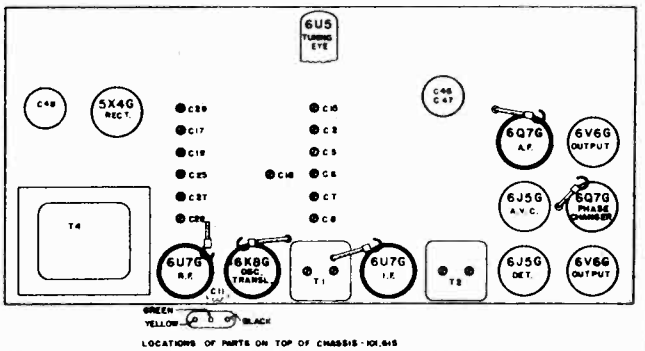
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"A"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"A"	Fully open	1630 kc	.00005 mfd	Ant. Term.	C17	Oscillator	--
"A"	1400 kc	1400 kc	.00005 mfd	Ant. Term.	C11,C15	Loop,Transl	120
"A"	600 kc(rock)	600 kc	.00005 mfd	Ant. Term.	C18	Padder	50
"B"	5 mc	5.2 mc	400 ohms	Ant. Term.	C19	Oscillator	--
"B"	4 mc	4 mc	400 ohms	Ant. Term.	C2	Translator	80
"C"	Open	18.265 mc	400 ohms	Ant. Term.	C23*	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	50
"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

JUNE 18, 1940

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

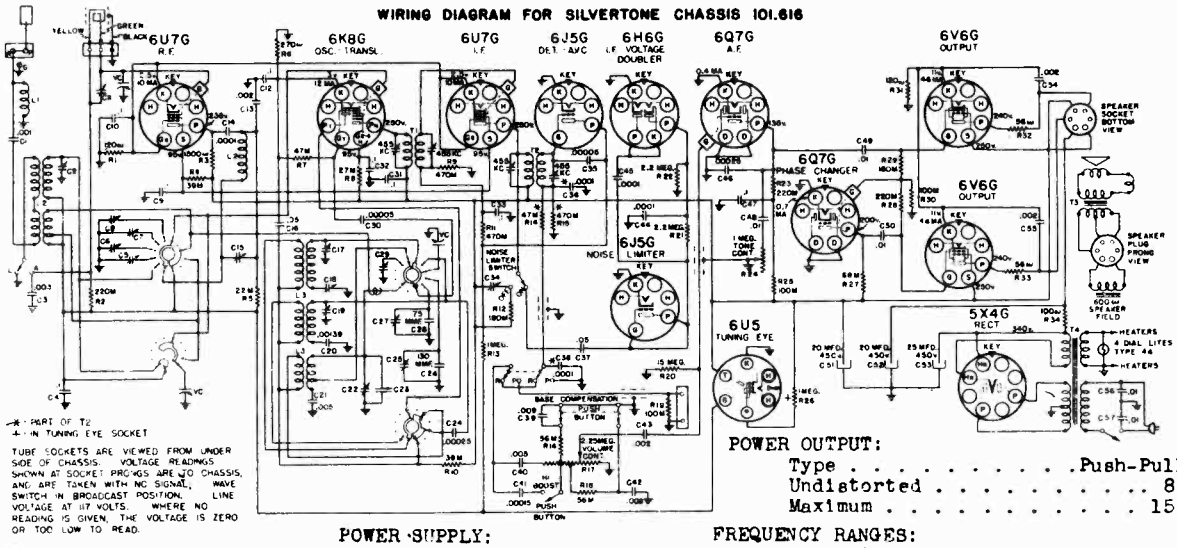




MODELS R121,721
Chassis 101.616

SEARS ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.616



POWER OUTPUT:

Type	Push-Pull Beam
Undistorted	8 watts
Maximum	15 watts

INTERMEDIATE FREQUENCY

455 kc

POWER SUPPLY:

All models available

105-125 volts, 50-60 cycles; 125 watts
105-125 volts, 25-60 cycles; 135 watts

FREQUENCY RANGES:

Band "A"	540-1620 kc
Band "B"	1675-5200 kc
Band "C"	5.95-18.365 mc
Band "D"	9.3-9.85 mc
Band "E"	11-12 mc
Band "F"	13.9-15.95 mc

ALIGNMENT PROCEDURE

PRELIMINARY:

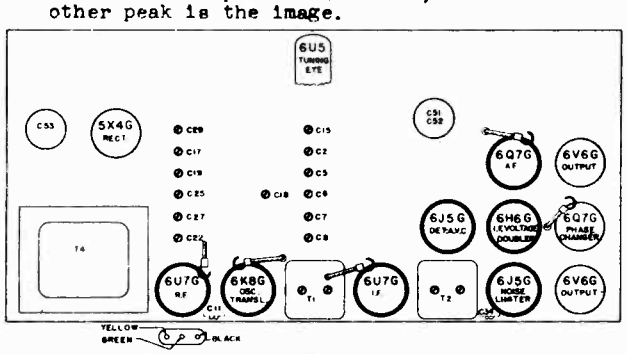
Output meter connection	Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts	1.6 volts
Approximate microvolts input for 500 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	Tone knob counter-clockwise and both buttons out
Position of Dial Pointer with variable fully closed	On first mark to left of 550 kc calibration mark.
Position of Anti-Static Switch	"Off" except when peaking T1 and T2

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"	Closed	455 kc	.1 mfd.	6K8G Grid	C34	Anti-Static	--
"A"	Fully open	1620 kc	.00005 mfd	Ant. Term.	C17	Oscillator	--
"A"	1400 kc	1400 kc	.00005 mfd	Ant. Term.	C11,C15	Loop,Transl	125
"A"	600 kc(rock)	600 kc	.00005 mfd	Ant. Term.	C18	Padder	65
"B"	5.2 mc	5.2 mc	400 ohms	Ant. Term.	C19	Oscillator	80
"B"	4 mc	4 mc	400 ohms	Ant. Term.	C3	Translator	75
"C"	Open	18.365 mc	400 ohms	Ant. Term.	C23*	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	60
"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	50
"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

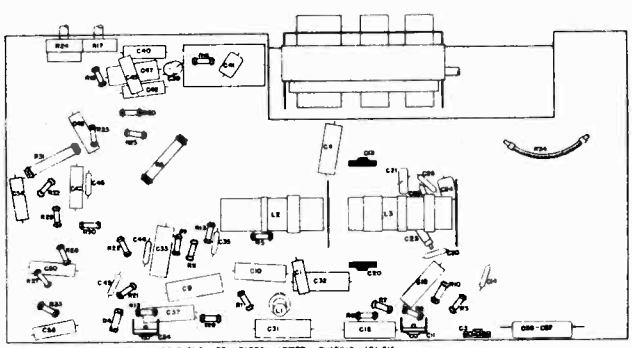
IMPORTANT ALIGNMENT NOTES

JUNE 18, 1940

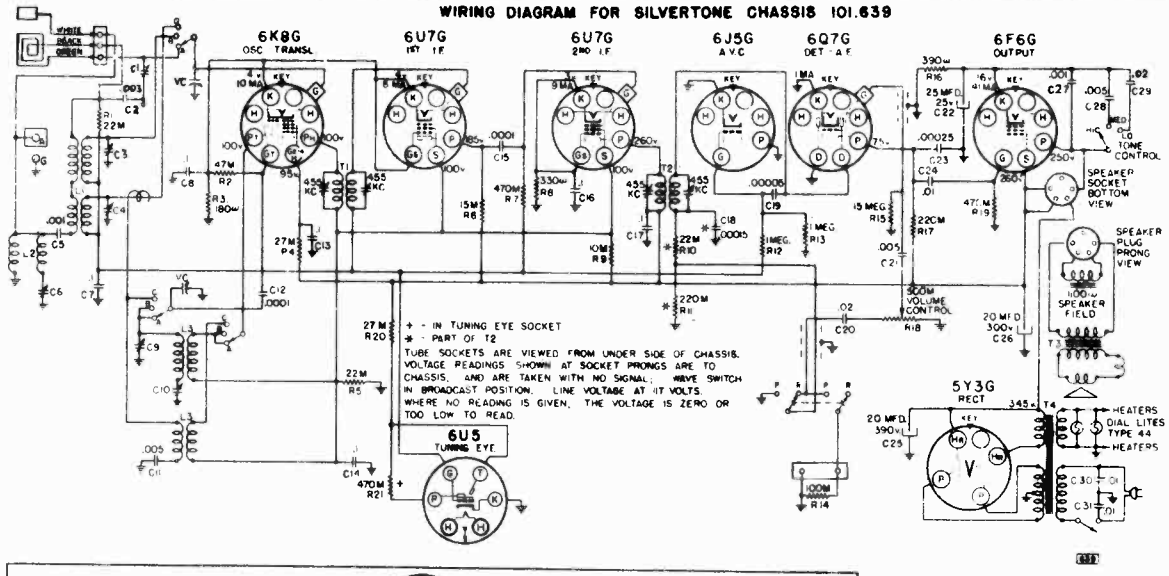
* If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.



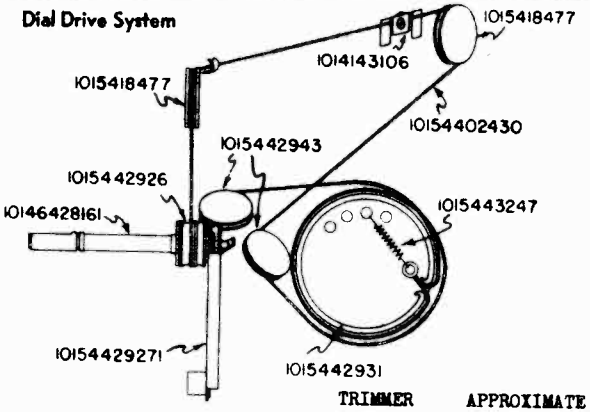
LOCATION OF PARTS ON TOP OF CHASSIS - 101.616


LOCATIONS OF PARTS UNDER CHASSIS - 101.616

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.639

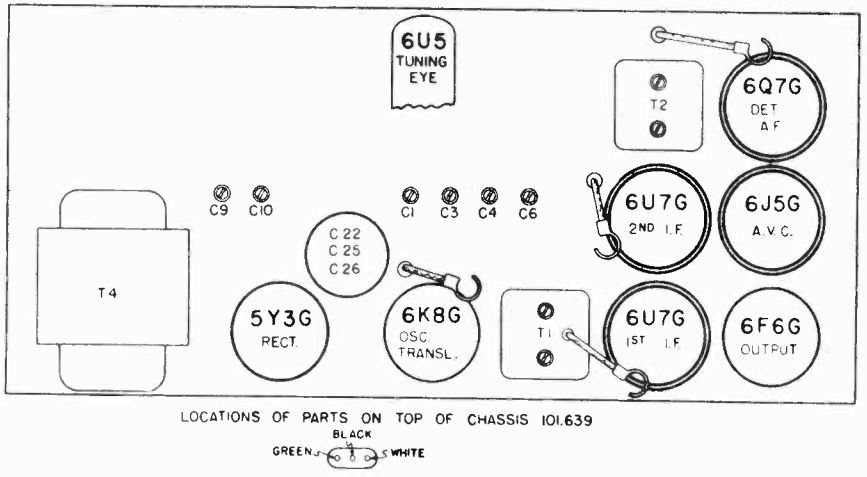


Dial Drive System



ALIGNMENT IS THE SAME AS FOR MODEL R71 EXCEPT FOR MICROVOLT DATA

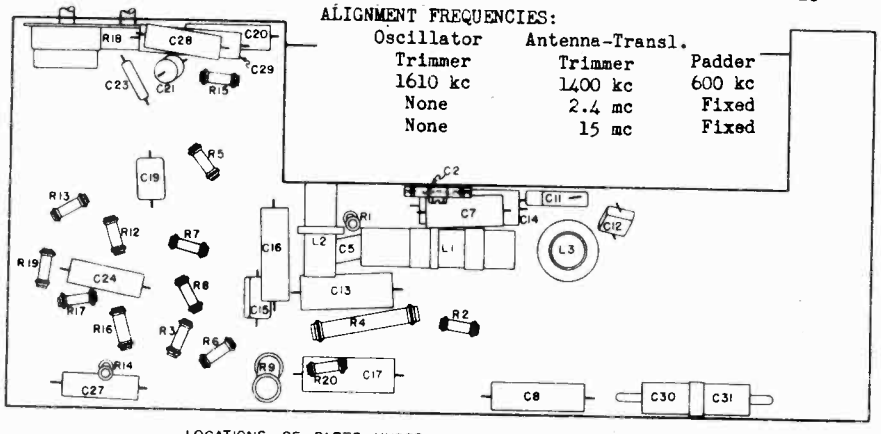
TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
IF	--
Wave Trap	--
Oscillator	--
Translator	100
Padder	45
Translator	35
Translator	10



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.639

ALIGNMENT FREQUENCIES:

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



LOCATIONS OF PARTS UNDER CHASSIS 101.639

FREQUENCY RANGES:

Band "A"	540-1610 kc
Band "B"	1.45-2.54 mc
Band "C"	5.72-18.53 mc

POWER OUTPUT:

Type	Pentode
Undistorted	2.5 watts
Maximum	4.5 watts

POWER SUPPLY:

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

INTERMEDIATE FREQUENCY . . . . . 455 kc

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.

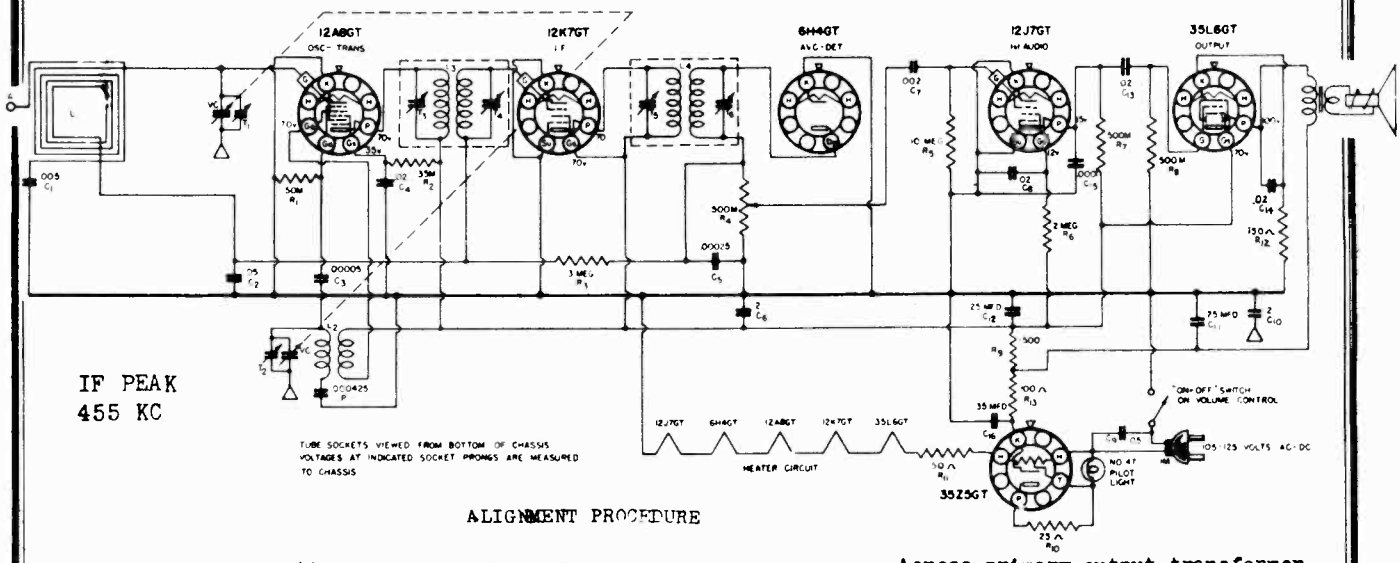
OCTOBER 18, 1940

LOUDSPEAKER

Type	Dynamic
Size	8 inch
Approx. field coil res.	1100 ohms
Approx. field coil voltage drop	85 volts

MODEL R1061
Ch. 110.400

SEARS-ROEBUCK & CO.



ALIGNMENT PROCEDURE

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

Output meter reading to indicate 0.050 watt
for Weston type 571 output meter on 15 volt scale. . . . . 9 volts

Connection of generator ground. . . . . .B- bus

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

Position of volume control. . . . . .Fully clockwise

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
**	455 kc	12k7GT,Grid	T5,T6	I.F.
**	455 kc	12A8GT.Grid	T3,T4	I.F.
1500 kc	1500 kc	***	T2,T1	Osc.,R.F.

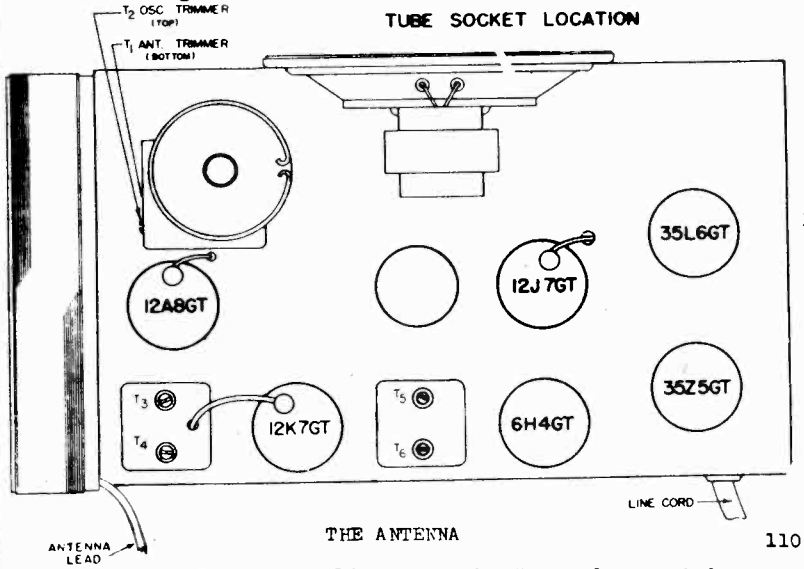
Important Alignment Notes

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.

** Short oscillator section of variable condenser.

*** Connect generator output to a separate radiating loop and pickup 1500 kc signal on receiver.



TUBE SOCKET LOCATION

THE ANTENNA

This receiver has a self-contained antenna loop and does not require an additional antenna connection. If it is desired to improve reception of weak or distant stations, an additional outdoor antenna may be used. For this purpose an antenna connection is provided on the loop.

JUNE 5, 1940

ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Oscil. Padder
Broadcast. .	.1500 KC	Fixed

FREQUENCY RANGE:
Broadcast. . . . . .535-1700 KC

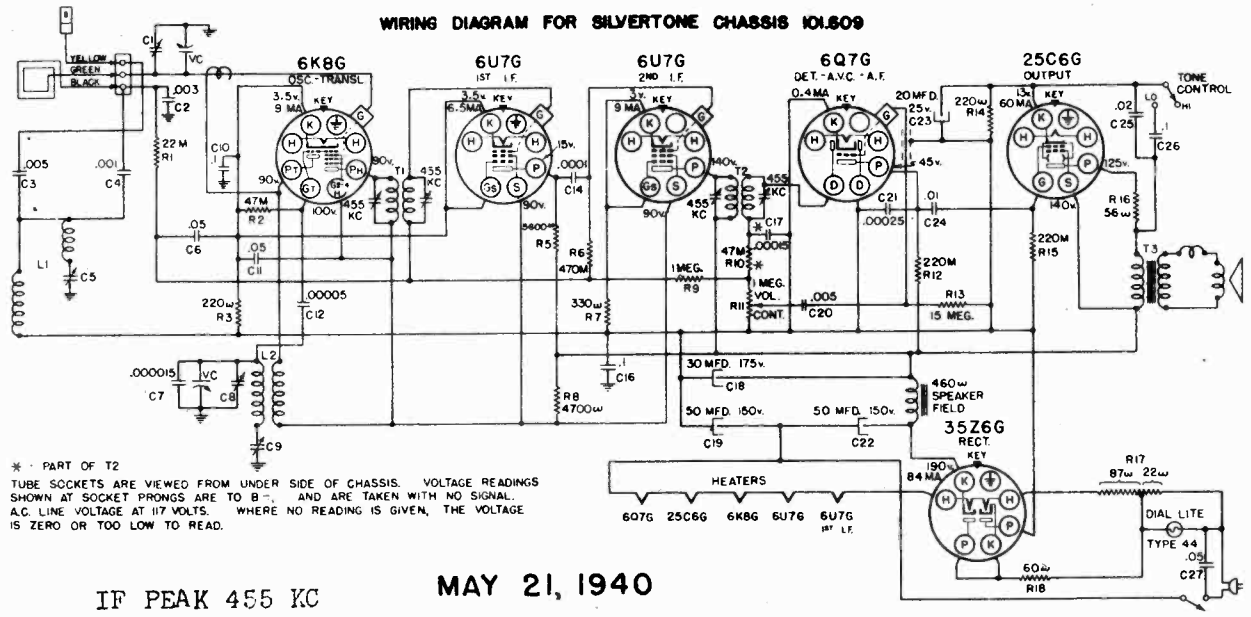
LOUD SPEAKER:
Type.....Dynamic
Size.....5"
Field.....P.M.

POWER OUTPUT
Type.....Beam Power
Undistorted.....1.0
Maximum.....1.5

POWER SUPPLY:
All models available
110-125 volts, 25-60 cycle AC or DC, 30 watts

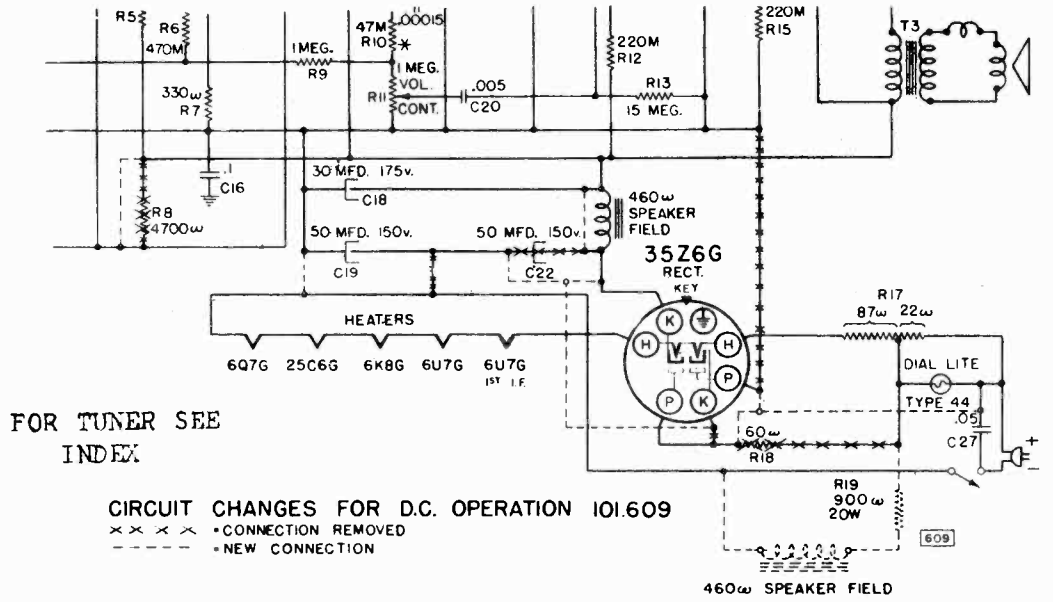
SEARS-ROEBUCK & CO.

MODEL R1161
Chassis 101.609



IF PEAK 455 KC

MAY 21, 1940



POWER SUPPLY:
All models available . . . . . .105-125 v. 25-60 cycle AC, 70 watts

	ALIGNMENT FREQUENCIES: Oscillator Trimmer	Translator Trimmer	Padder
FREQUENCY RANGE: . . . . . .540-1650 kc	1650 kc	1400 kc	600 kc

INTERMEDIATE FREQUENCY . . . . . .455 kc

POWER OUTPUT:
Type . . . . . Pentode
Undistorted . . . . . 1.9 watts
Maximum . . . . . 3.5 watts

LOUDSPEAKER:
Type . . . . . Dynamic
Size . . . . . 5 inch
Field coil resistance . . . . 460 ohms

OPERATING FEATURES:
Tone Control . . . . . .Two position
Automatic Volume Control
Push Button Tuning (5 Button)

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

MODEL R1161
Chassis 101.609

SEARS ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.3 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 . . . . . 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 550 kc calibration mark.

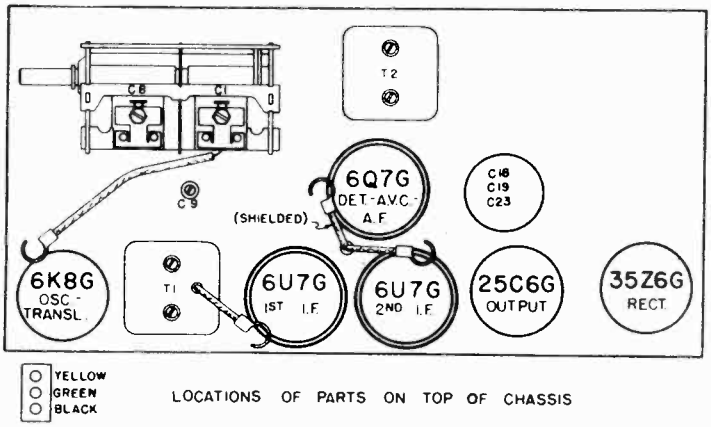
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	6K8G Grid	T3,T1	IF	--
600 kc	455 kc	.0002 mfd.	Ant. Clip	C5*	Wave Trap	--
Fully open	1650 kc	.0002 mfd.	Ant. Clip	C8	Oscillator	--
1400 kc	1400 kc	.0002 mfd.	Ant. Clip	C1	Translator	140
600 kc(rock)	600 kc	.0002 mfd.	Ant. Clip	C9	Padder	75

IMPORTANT ALIGNMENT NOTES

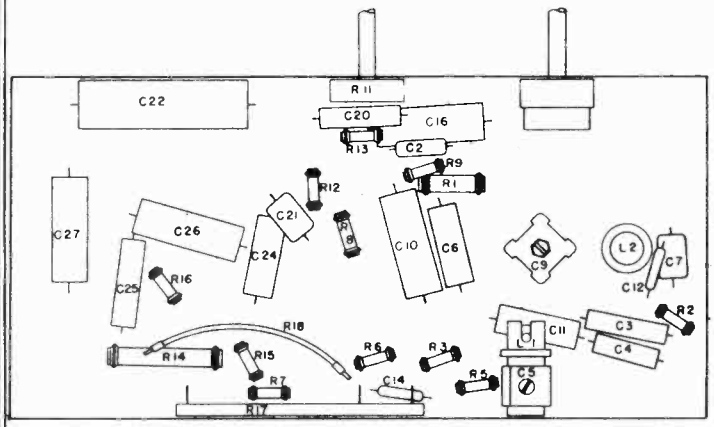
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to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



LOCATIONS OF PARTS ON TOP OF CHASSIS



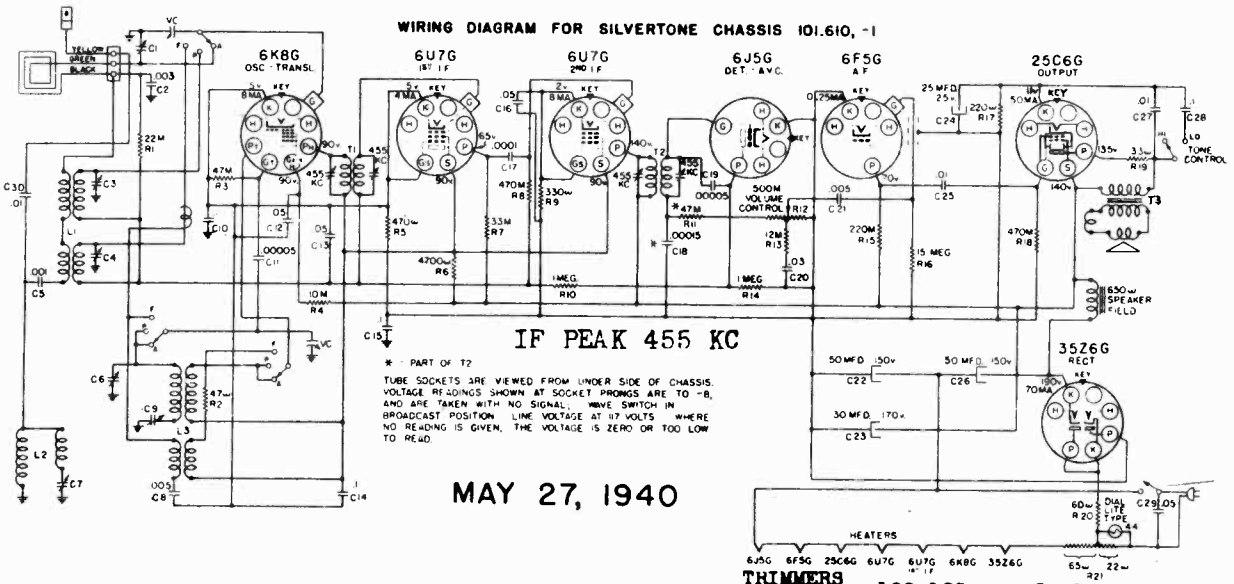
LOCATIONS OF PARTS UNDER CHASSIS - 101.609

PUSH BUTTON TUNING MECHANISM: Adj. for each button is locked or unlocked by tightening or loosening slotted screwhead when button knob is pulled off plunger. Stations are set by unlocking mechanism, tuning in station, pushing in plunger (do not detune station), releasing plunger, locking adj. by holding screw driver lightly in screwhead allowing spring tension to hold plunger against screw driver.

MODEL 1571
Chassis 101.610-1

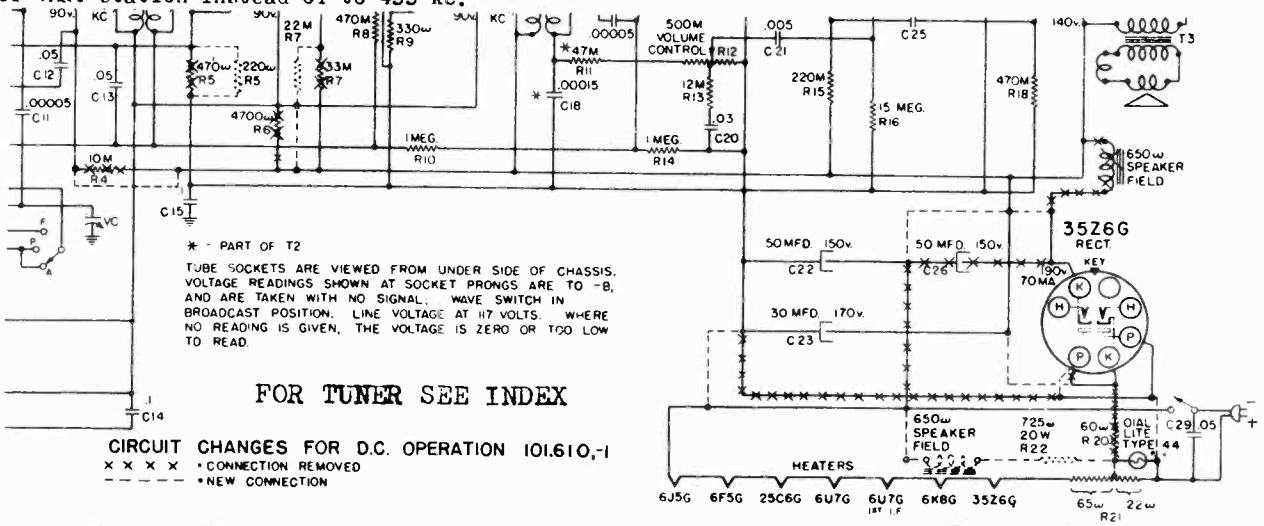
SEARS ROEBUCK & CO.

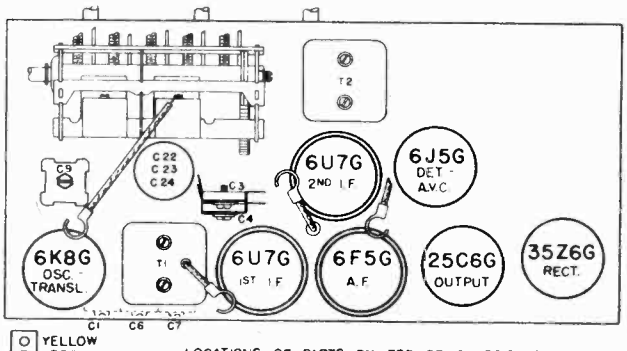
MODEL R1171
Chassis 101.610-1



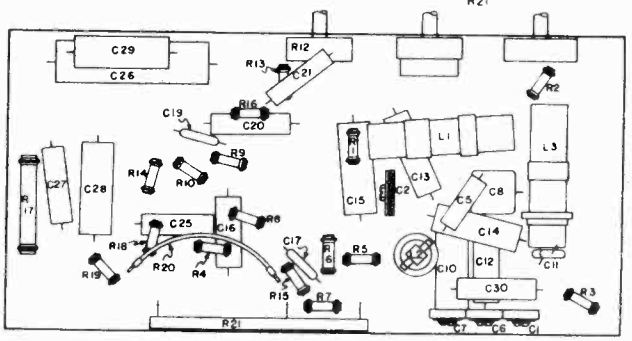
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
"AM"	600 kc	455 kc	.00005 mfd.	Ant. Clip	C7*	Wave Trap	--
"AM"	Fully open	1620 kc	.00005 mfd.	Ant. Clip	C6	Oscillator	--
"AM"	1400 kc	1400 kc	.00005 mfd.	Ant. Clip	C1	Translator	375
"AM"	600 kc(rock)	600 kc	.00005 mfd.	Ant. Clip	C9	Padder	160
"POL"	2.4 mc	2.4 mc	400 ohms	Ant. Clip	C3	Translator	50
"FOR"	15 mc(rock)	15 mc	400 ohms	Ant. Clip	C4	Translator	35

* 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.





LOCATIONS OF PARTS ON TOP OF CHASSIS 101.610, -1

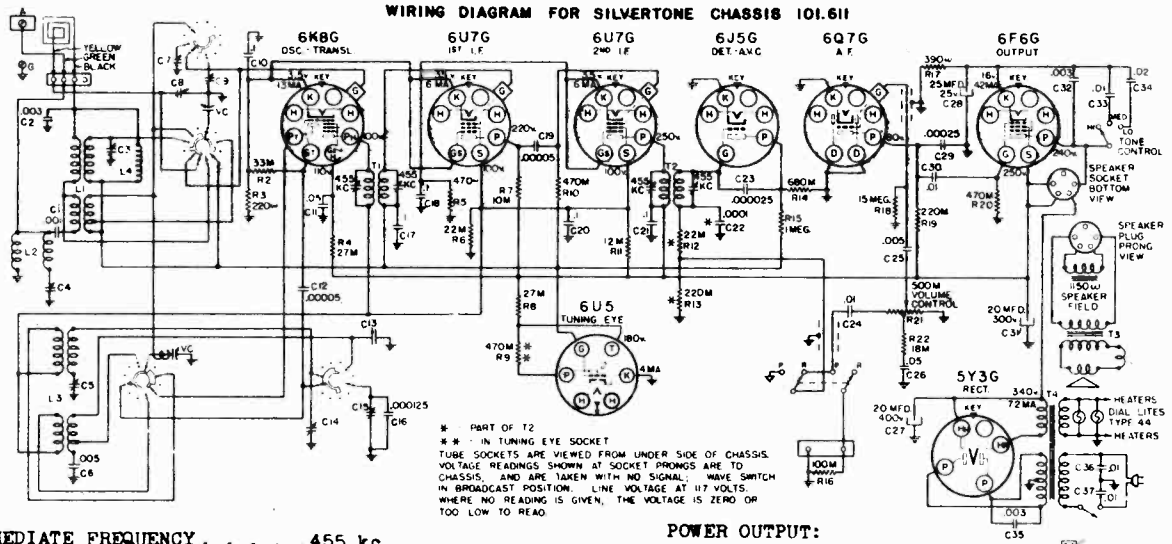


LOCATIONS OF PARTS UNDER CHASSIS - 101.610, -1

MODEL R1181
Chassis 101.611

SEARS-ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.611



INTERMEDIATE FREQUENCY . . . . .455 kc

FREQUENCY RANGES:

Band "A"	540-1610 kc
Band "B"	1475-3510 kc
Band "C"	5.95-18.2 mc
Band "D"	9.3-9.85 mc

JUNE 5, 1940

POWER OUTPUT:

Type	Pentode
Undistorted	2.5 watts
Maximum	4.5 watts

POWER SUPPLY:
All models available

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

PRELIMINARY: ALIGNMENT PROCEDURE

Output meter connection	Across loudspeaker 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	To 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	At mark to left of 550 kc calibration mark.

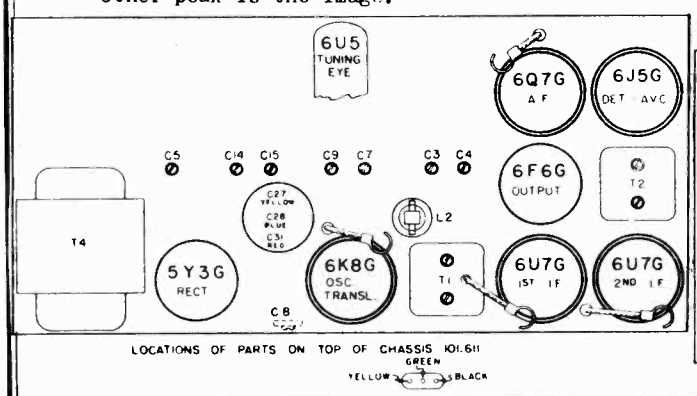
FOR TUNER, SEE MODEL R101

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	90
"A"	600 kc	455 kc	.00005 mfd	Ant. Term.	C4*	Wave Trap	--
"A"	Open	1610 kc	.00005 mfd	Ant. Term.	C14	Oscillator	--
"A"	1400 kc	1400 kc	.00005 mfd.	Ant. Term.	C8	Translator	150
"A"	600 kc(rock)	600 kc	.00005 mfd	Ant. Term.	C5	Padder	100
"B"	2.4 mc	2.4 mc	400 ohms	Ant. Term.	C3	Translator	70
"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.	C15**,C9	Osc.,Transl.	40

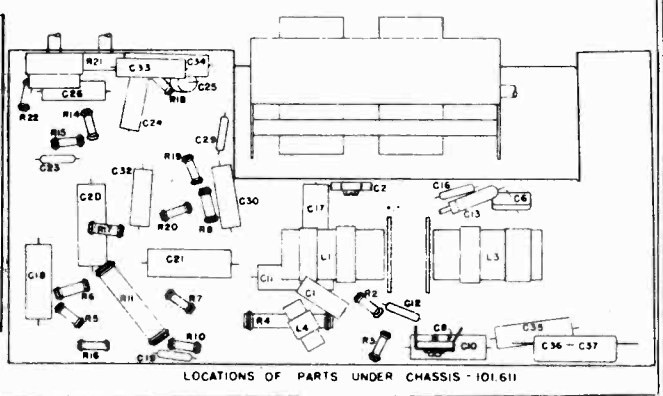
IMPORTANT ALIGNMENT NOTES

* 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.

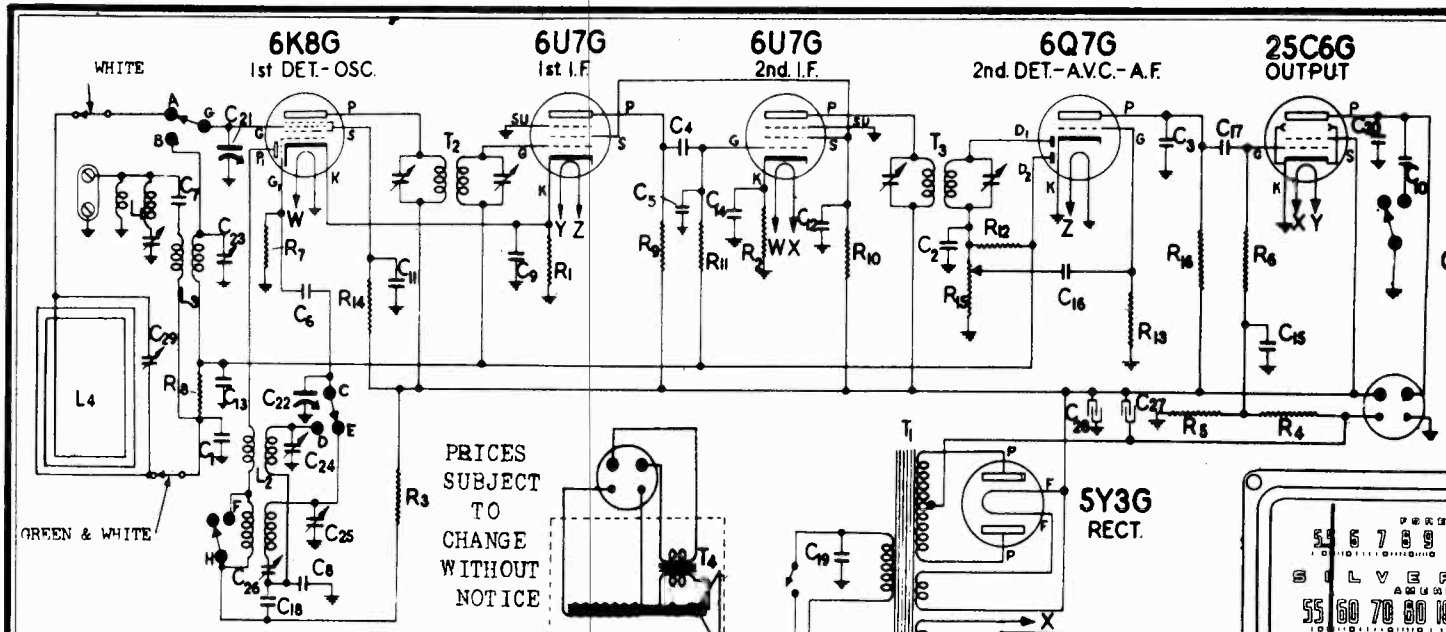
** If two peaks can be had, the correct one is with the trimmer screw further out. The other peak is the image.

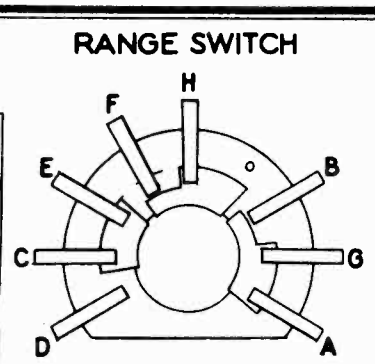


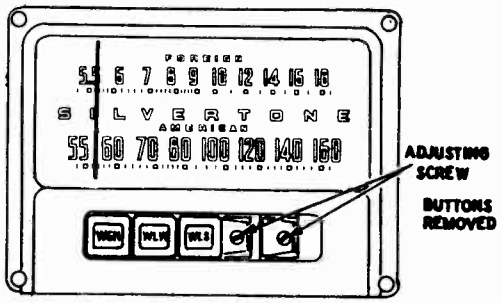
LOCATIONS OF PARTS ON TOP OF CHASSIS 101.611



LOCATIONS OF PARTS UNDER CHASSIS - 101.611







PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	LIST PRICE
10031160065	L1	Wave trap & antenna choke (with trimmer)	1.25
10028160097	L2	Coil-oscillator (B.C. & S.W.)	.70
10028160098	L3	Coil-short wave antenna	.60
10028160317	L4	Loop antenna complete	1.30
1001981282	C1	Condenser - mica, .003 mfd.	.50
1001983539	C2-C3	Condenser - mica, 260 mmfd.	.20
1001983783	C4-C5	Condenser - mica, 110 mmfd.	.20
10019859061	C6	Condenser - mica, 51 mmfd.	.15
10019859394	C7	Condenser - mica, 510 mmfd.	.25
10019885187	C8	Condenser - mica .0042 mfd.	.35
10019116625	C9-C10-C11	Condenser - .1 mfd. 600 volt	.25
10019116819	C12-C13-C14	Condenser - .05 mfd. 600 volt	.20
10019116706	C15	Condenser - .2 mfd. 600 volt	.35
10019119817	C16	Condenser - .004 mfd. 600 volt	.15
10019119193	C17	Condenser - .01 mfd. 600 volt	.15
10019119817	C18	Condenser - .004 mfd. 600 volt	.15
10019119857	C19	Condenser - .01 mfd. 600 volt	.20
10019119414	C20	Condenser - .02 mfd. 600 volt	.15
10016119966	C21-C22	Condenser-tuning with push button tuner	5.30
10017119174	C23-C24-C25	Condenser - trimmer 3 section	.45
10017119934	C26	Condenser - padder	.36
10020160095	C27	Condenser - 40 mfd. 300 volts	.90
10029160096	C28	Condenser - 20 mfd. 300 volts	.85
10017119132	C29	Condenser - loop trimmer	.12
100388461	R1	Resistor-carbon 150 ohms ± watt	.12
10023110556	R2	Resistor-carbon 330 ohms ± watt	.12
10023110577	R3	Resistor-carbon 3300 ohms ± watt	.12
10023118809	R4	Resistor-carbon 680000 ohms ± watt	.10
10023118826	R5	Resistor-carbon 470000 ohms ± watt	.12
10023112956	R6	Resistor-carbon 220000 ohms ± watt	.12
10023110552	R7-R8	Resistor-carbon 47000 ohms ± watt	.12
10023110550	R9-R10	Resistor-carbon 10000 ohms ± watt	.15
10023110564	R11	Resistor-carbon 100000 ohms ± watt	.12
10023110570	R12	Resistor-carbon 2.2 meg. ± watt	.15
10023112975	R13	Resistor-carbon 10 meg. ± watt	.12
10023118817	R14	Resistor-carbon 6800 ohms ± watt	.12
10023160006	R15	Volume control 1/2 meg.	.90
10023112956	R16	Resistor-carbon 220000 ohms ± watt	.12
10025160007		Switch - tone & on-off	.78
10049110629		Dial light - 6.3 volt (Mazda #44)	.15
10058115104-U		Speaker 6" (for Model R-1261)	5.50
10058115103-U		Speaker 5" (for Model 1561)	5.00
10037160104		Range switch	.60
10013160425-U	T4	Transformer - output for 10058115104-U speaker	1.80
10013160313-U		Transformer - output for 10058115103-U speaker	1.70
10057160426-U		Cone & Voice coil for 10058115104-U speaker	1.75
10057160314-U		Cone & Voice coil for 10058115103-U speaker	1.70

PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	LIST PRICE
10010160100	T1	Transformer - power (50-60 cycles)	4.30
10011160470		Transformer - power (25 cycles)	8.00
10031160070	T2	Transformer - 1st I.F.	1.25
10035160270	T3	Transformer - 2nd I.F.	1.20

1. Turn the set on and remove the Push Button knobs by pulling them toward you.
2. Insert a screwdriver into the adjusting screw on one of the Push Buttons and loosen it by turning it counter-clockwise about one turn.
3. Turn Band Switch to the "AM" position and, keeping the screwdriver inserted in the slot, push against the screwdriver until it reaches a stop.
4. Still pushing against the screwdriver tune in the desired station by means of the Tuning Control and then retighten the screw by turning it clockwise.

Set up the remaining buttons in the same way.

SOCKET VOLTAGES-ALL D.C. MEASURED TO CHASSIS

AUGUST 8, 1940

NO SIGNAL CONDITION — DIAL TUNED TO 540 KC.

TUBE	FUNCTION	H	K	G	G_1	P_1	S	SU	P	D_1	D_2
6K8G	1st DET.-OSC.	6.0 A.C.	2.3	0	-5	118	100		135		
6U7G	1st I.F.	6.0 A.C.	2.3	0			95	0	72		
6U7G	2nd I.F.	6.0 A.C.	2.5	0			95	0	135		
6Q7G	2nd DET.-A.V.C.-A.F.	6.0 A.C.	0	0					55	0	0
25C6G	OUTPUT	25 A.C.	0	Note A			135		122		
5Y3G	RECT.	5.0 A.C.	PLATES = 250 V A.C. TO CENTER TAP								

NOTE A: The bias on the 25C6G grid is -12.5 volts measured across R5. This voltage cannot be read on ordinary instruments. USE A HIGH RESISTANCE VOLTMETER OF AT LEAST 1000 OHMS PER VOLT.

SEARS-ROEBUCK & CO.
MODELS R1261, 1561
Chassis 100.351

MODELS R1261,1561
Chassis 100,351

SEARS ROEBUCK & CO.

ELECTRICAL SPECIFICATIONS

TUBE COMPLEMENT

1 6K8-G	1st Det. & Osc.
1 6U7-G	I. F. Amp.
1 6U7-G	I. F. Amp.
1 6Q7-G	2nd Det.-A.V.C.-A.F.
1 25C6-G	Output
1 5Y3-G	Rectifier

POWER SUPPLY
Models R-1261 & 1561 are supplied for either 25 or 60 cycle power supplies

105-125 volts - 25 cycle - 70 watts
105-125 volts - 50-60 cycle - 70 watts

FREQUENCY RANGES

"AMERICAN" Band	540 to 1620 KC.
"FOREIGN" Band	5.5 to 18.1 MC.

ALIGNMENT FREQUENCIES
1400 KC., 600 KC.
16 MC

INTERMEDIATE FREQUENCY.....455 KC

POWER OUTPUT

Type	Pentode
Undistorted	1.8 watts
Maximum	3.0 watts

LOUD SPEAKER

Type	Dynamic
Size	5" for 1561, 6" for R-1261
Field coil resistance	360 ohms (cold)
App. field coil voltage drop	31 volts

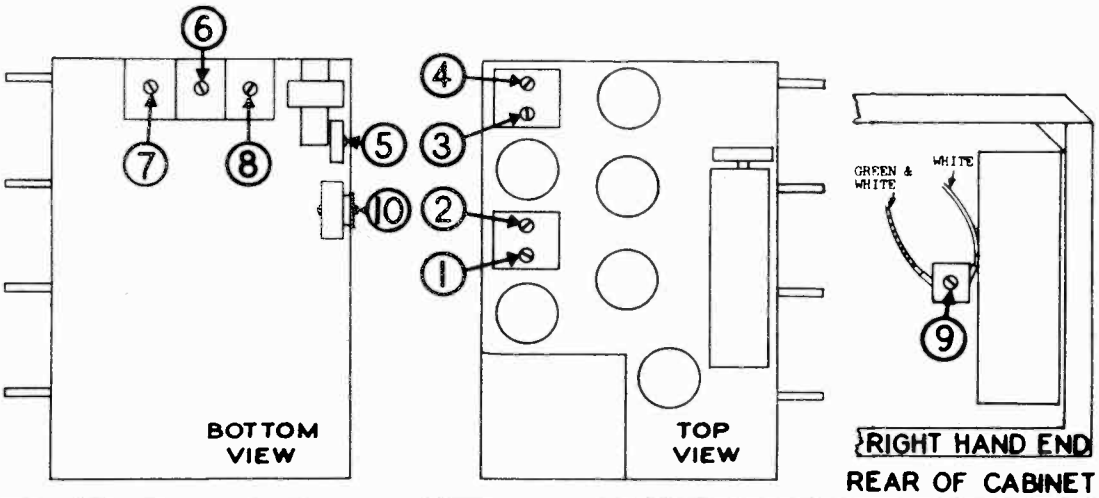
ALIGNMENT PROCEDURE

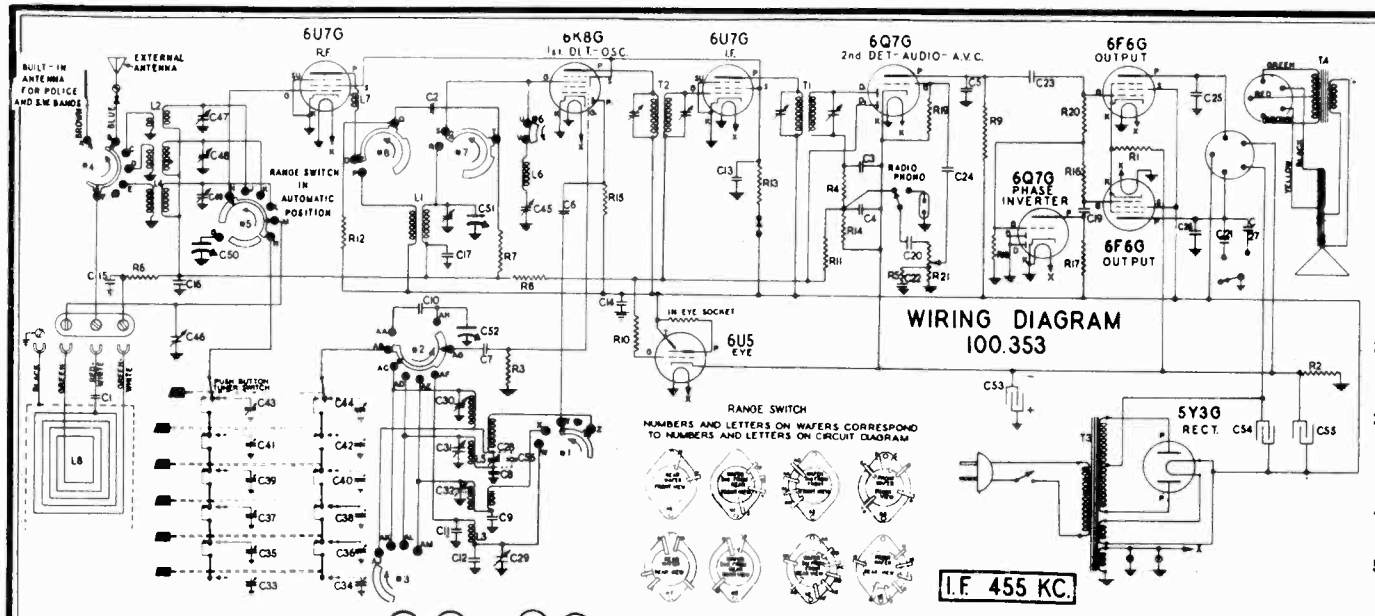
Before starting the alignment procedure the pointer should be set to the last division on the 550 KC end of the dial scale with the gang condenser in full mesh. Cement the pointer securely to the pointer cord in this position and allow to dry before moving.

Output meter connection----Across loud speaker voice coil
Output meter reading to indicate .5 Watt----1.3 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----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 550 KC calibration mark.

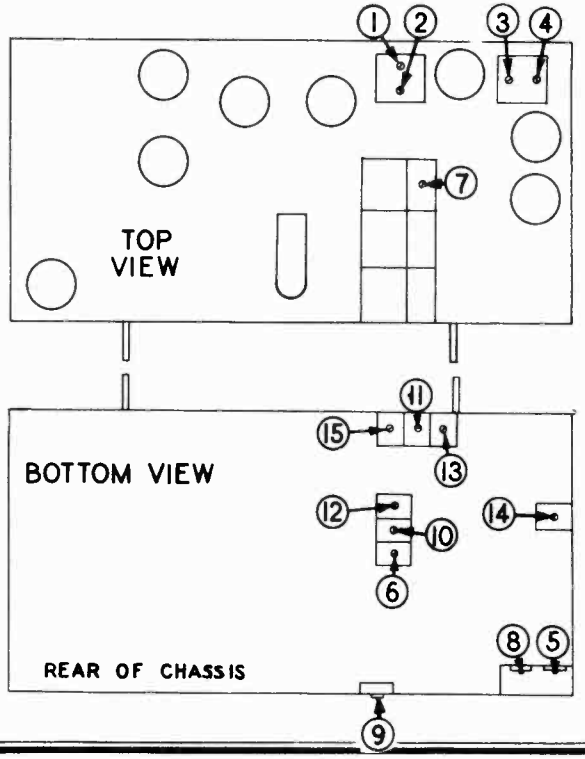
DUMMY ANT. IN SERIES WITH SIGNAL GENERATOR	CONNECTION OF SIGNAL GENERATOR OUTPUT TO RECEIVER	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POSITION	RECEIVER DIAL SETTING	TRIMMER NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
.1 MFD. CONDENSER	CONTROL GRID OF 6K8G TUBE	455 KC	AMERICAN	ANY POINT WHERE IT DOES NOT AFFECT THE SIGNAL	1 - 2 3 - 4	2ND I. F. 1ST I. F.	ADJUST FOR MAXIMUM OUTPUT. THEN REPEAT ADJUSTMENT.
200 MMFD. CONDENSER	ANTENNA TERMINAL	455 KC	AMERICAN	ANY POINT WHERE IT DOES NOT AFFECT THE SIGNAL	5	WAVE TRAP	ADJUST FOR MINIMUM OUTPUT. USING A STRONG GENERATOR SIGNAL
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	16 MC	FOREIGN	16 MC	6	FOREIGN OSCILLATOR	ADJUST FOR MAXIMUM OUTPUT. IF TWO PEAK CAN BE HAD, THE CORRECT ONE IS WITH THE TRIMMER SCREW FARTHER OUT. THE OTHER PEAK IS THE IMAGE.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL	16 MC	FOREIGN	TUNE TO 16 MC GENERATOR SIGNAL	7	FOREIGN ANTENNA	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RETUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.
200 MMFD. CONDENSER	ANTENNA TERMINAL	1400 KC	AMERICAN	1400 KC	8	BROADCAST OSCILLATOR (TRIMMER)	ADJUST FOR MAXIMUM OUTPUT
200 MMFD. CONDENSER	ANTENNA TERMINAL	1400 KC	AMERICAN	TUNE TO 1400 KC. GENERATOR SIGNAL	9	BROADCAST ANTENNA	ADJUST FOR MAXIMUM OUTPUT
200 MMFD. CONDENSER	ANTENNA TERMINAL	600 KC	AMERICAN	TUNE TO 600 KC GENERATOR SIGNAL	10	BROADCAST OSCILLATOR (PADDER)	ADJUST FOR MAXIMUM OUTPUT. TRY TO INCREASE OUTPUT BY DETUNING TRIMMER AND RETUNING RECEIVER DIAL UNTIL MAXIMUM OUTPUT IS OBTAINED.

***NOTE: THE SET SHOULD BE PLACED IN THE CABINET BEFORE STEPS 9 & 10 ARE TAKEN. THE LOOP AND ITS LEADS MUST BE IN THEIR FINAL POSITION AT THIS TIME. MAKE A FINAL CHECK AFTER INSTALLATION USING A WEAK RADIATED 1400 KC. SIGNAL.**

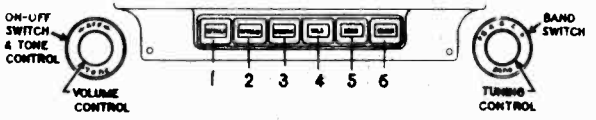


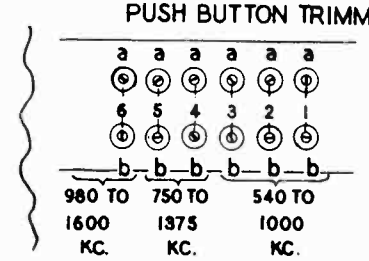


1. Turn the Band Switch to the "A" position and tune in the desired station by means of the Tuning Control.
2. Push in a button of the proper frequency range and turn the Band Switch to the "PB" position.
3. Adjust the "a" screw with the same number as that of the button you have pushed in, until you 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 or maximum TUNING EYE closure.



PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	
10019835 39	C1-C2	Condenser - mica 260 mmfd	.20
10019837 83	C3-C4-C5	Condenser - mica 110 mmfd	.20
10019848 33	C6	Condenser - mica 70 mmfd	.26
10019850 61	C7	Condenser - mica 51 mmfd	.15
10019854 73	C8	Condenser - mica .00123 mfd	.25
10019110906	C9	Condenser - mica .00332 mfd	.40
10019160625	C10	Condenser - mica .00006 mfd. (low drift)	.25
10019160645	C11	Condenser - mica .0001 mfd. (low drift)	.20
10019160646	C12	Condenser - compensating .0001 mfd	.28
10019116625	C13	Condenser - .1 mfd. 600 volt	.25
10019116706	C14	Condenser - .2 mfd. 600 volt	.35
10019116819	C15 to C19	Condenser - .05 mfd. 600 volt	.20
10019119193	C20-C21	Condenser - .01 mfd. 600 volt	.15
10019119414	C22-C23	Condenser - .02 mfd. 600 volt	.15
10019119817	C24	Condenser - .004 mfd. 600 volt	.15
10019119875	C25-C26	Condenser - .002 mfd. 600 volt	.15
10019161000	C27	Condenser - .03 mfd. 600 volt	.20
10017112799	C28	Condenser - padder - used on early sets	.36
10017119934		Condenser - padder - used on late sets	.36
10017116879	C29	Condenser - trimmer	.15
10017119174	C30-C31-C32	Condenser - trimmer 3 section	.45
10017119662	C33 to C38	Condenser - single trimmer (low freq.)	.24
10017119663	C39 to C42	Condenser - single trimmer (med. freq.)	.24
10017119664	C43-C44	Condenser - single trimmer (high freq.)	.24
10017160526	C45-C46	Condenser - trimmer - 2 section	.38
10017160629	C47-C48-C49	Condenser - trimmer - 3 section	.50
10016160577	C50-C51-C52	Condenser - variable tuning	.45
10020110377	C53	Condenser - electrolytic 10 mfd. 35 volt	.80
10020160975	C54-C55	Condenser - dual elect. 30-20 mfd. 450 V.	1.85
10019111575	C56	Condenser - mica - used on early sets	.20
10035119024	T1	Transformer - 2nd I.F	1.15
10033119220	T2	Transformer - 1st I.F	1.30
10010160432	T3	Transformer - power (50-60 cycle)	5.60
10011160780		Transformer - power (25 cycle)	8.00
10013160822-M	T4	Transformer - output for 10058115117-M spkr.	2.00
10022118830	R1	Resistor - 430 ohms 1 watt	.15
10022118831	R2	Resistor - 75 ohms 1 watt	.15
10023110552	R3-R4-R5	Resistor - carbon 47,000 ohms 1/4 watt	.12
10023110559	R6 to R9	Resistor - carbon 470,000 ohms 1/4 watt	.12
10023110570	R10-R11	Resistor - carbon 2.2 meg. 1/4 watt	.15
10023110573	R12	Resistor - carbon 2,200 ohms 1/4 watt	.12
10023110575	R13	Resistor - carbon 12,000 ohms 2 watts	.30
10023110584	R14	Resistor - carbon 330,000 ohms 1/4 watt	.12
10023110592	R15	Resistor - carbon 22,000 ohms 1 watt	.18
10023112956	R16-R17-R18	Resistor - carbon 220,000 ohms 1/4 watt	.12
10023112975	R19	Resistor - carbon 10 meg. 1/4 watt	.12
10023118825	R20	Resistor - carbon 180,000 ohms 1/4 watt	.12
10024160558	R21	Volume control - 1 meg	1.00
10028160502	L1	Coil - Broadcast R. F	.65
10028160592	L2	Coil - Antenna (band spread)	.22





PART NUMBER	DIAGRAM NUMBER	DESCRIPTION	
10028160593	L3	Coil - Oscillator (band spread)	.25
10028160595	L4	Coil - Police & Short Wave antenna	1.00
10028160598	L5	Oscillator coil & trimmer assembly	2.30
10031160606	L6	Wave trap coil	.25
10030160626	L7	Compensating coil	.20
10028160725	L8	Loop antenna & cabinet back - complete	3.10
10038160580		Switch - push button	2.50
10037160539		Switch - range	2.80
10038114141		Switch - D.P.D.T	.44
10025160557		Tone control - with on-off switch	.85
10058115117-M		Speaker - dynamic (8")	6.70
10049112836		Lamp - dial (Mazda #44)	.25
10013160822-M		Transformer - output for 10058115117-M spkr.	2.00
10C57160823-M		Cone & voice coil for 10058115117 speaker	2.00

MODEL 1591
Chassis 100.353

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----------1.28 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----------Brilliant position
Position of Dial Pointer with gang fully closed.----------On mark to left of 550 KC. calibration mark

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	CONTROL GRID OF 6K8G TUBE	455 KC	"A" POSITION	300 KC.	1 - 2	2ND I. F.	ADJUST FOR MAXIMUM OUTPUT. THEN REPEAT ADJUSTMENT.
					3 - 4	1ST I. F.	
50 MMFD MICA CONDENSER	ANTENNA TERMINAL (BLUE WIRE)	455 KC	"PB" POSITION	PUSH ANY PUSH BUTTON IN WHICH DOES NOT AFFECT SIGNAL	5	WAVE TRAP	ADJUST FOR MINIMUM OUTPUT USING A STRONG GENERATOR SIGNAL.
50 MMFD. MICA CONDENSER	ANTENNA TERMINAL (BLUE WIRE)	1400 KC	"A" POSITION	1400 KC	6	BROADCAST OSCILLATOR (SHUNT)	ADJUST FOR MAXIMUM OUTPUT.
50 MMFD. MICA CONDENSER	ANTENNA TERMINAL (BLUE WIRE)	1400 KC	"A" POSITION	1400 KC	7	BROADCAST DETECTOR	ADJUST FOR MAXIMUM OUTPUT.
					8*	BROADCAST R.F.	
50 MMFD. MICA CONDENSER	ANTENNA TERMINAL (BLUE WIRE)	600 KC	"A" POSITION	600 KC	9	BROADCAST OSCILLATOR (SERIES)	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 TERMINAL (BLUE WIRE)	5 MC	"B" POSITION	5 MC	10	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 (BLUE WIRE)	5 MC	"B" POSITION	5 MC	11	POLICE BAND 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	ANTENNA TERMINAL (BLUE WIRE)	16 MC	"C" POSITION	16 MC	12	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 (BLUE WIRE)	16 MC	"C" POSITION	16 MC	13	SHORT WAVE 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	ANTENNA TERMINAL (BLUE WIRE)	9.5 MC	"D" POSITION	9.5 MC	14	BAND SPREAD OSCILLATOR	ADJUST FOR MAXIMUM OUTPUT.
400 OHM CARBON RESISTOR	ANTENNA TERMINAL (BLUE WIRE)	9.5 MC	"D" POSITION	9.5 MC	15	BAND SPREAD ANTENNA	ADJUST FOR MAXIMUM OUTPUT.

* Replace chassis and cabinet back in cabinet and repeat adjustment #8 using a weak radiated signal.

POWER SUPPLY
Model R-1591 is supplied for either 25 or 60 cycle power supplies

105-125 volts - 25 cycle - 85 watts
105-125 volts - 50-60 cycle - 85 watts

FREQUENCY RANGES
Broadcast.....540 to 1600 KC
Intermediate band.....1.6 to 5.4 MC
Short Wave.....5.4 to 18.1 MC
Band Spread.....9.25 to 9.9 MC

CHASSIS FEATURES
No. of I.F. stages.....1
Built in antenna.....Short wave plate and loop
Wave trap.....in automatic position
T.R.F. Preselector.....in Manual B.C. position

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

LOUD SPEAKER
Type.....Electro dynamic
Size.....8"
Field resistance (cold).....450 ohms

USE A VOLTMETER OF 1000 OHMS PER VOLT

Note A. Due to the high value of resistance involved, this voltage cannot be measured with a voltmeter of 1000 ohms per volt.

Note B. This voltage is - 3 volts measured across resistor R 2.

SOCKET VOLTAGES—ALL D.C. MEASURED TO CHASSIS

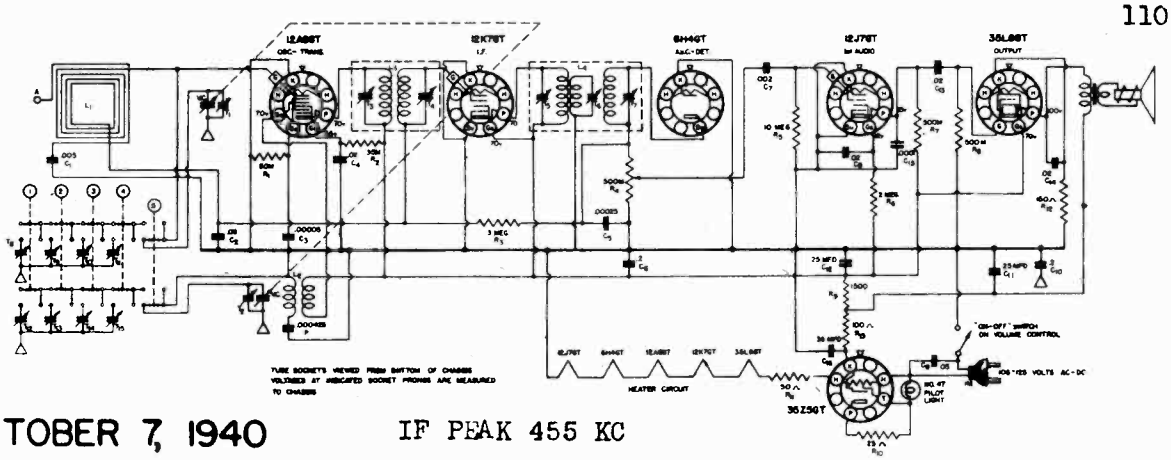
BAND SWITCH IN AUTOMATIC POSITION — DIAL TUNED TO 540 K.C.

TUBE	FUNCTION	H	K	G	G_1	P	S	SU	P_1	D_1	D_2	T
6U7G	R.F.	6.3 A.C.	0	NOTE B		216	105	0				
6K8G	1st DET.-OSC.	6.3 A.C.	0	NOTE B	-10	220	105		134			
6U7G	I.F.	6.3 A.C.	0	NOTE B		220	105	0				
6Q7G	2nd. DET.-A.V.C. -A.F.	6.3 A.C.	-3	NOTE A		50				NOTE B	NOTE B	
6Q7G	PHASE INVERTER	6.3 A.C.	0	0		55				0	0	
* 6F6G	OUTPUT	6.3 A.C.	14	0		212	220					
6U5	EYE	6.3 A.C.	-3	NOTE B		NOTE A						220
5Y3G	RECTIFIER	5.0 A.C.	PLATES—330 A.C. TO CHASSIS									

* Pushpull Stage - Data same for each tube.

SEARS-ROEBUCK & CO.

MODEL 1661
Chassis 110.414
110.415



OCTOBER 7, 1940

IF PEAK 455 KC

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

POWER OUTPUT
Type.....Beam Power
Undistorted 1.0
Maximum.....1.5

POWER SUPPLY
All models available..... 110-125 volts, 25-60 cycle AC or DC, 30 watts

ALIGNMENT NOTES

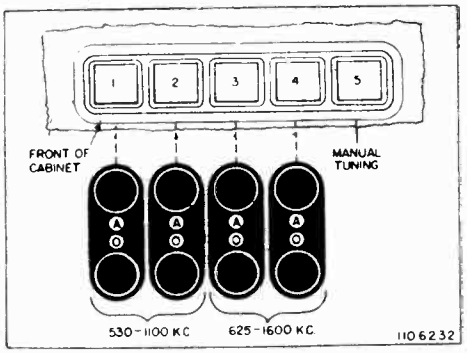
*First time T5 is misaligned by loosening center screw one turn.

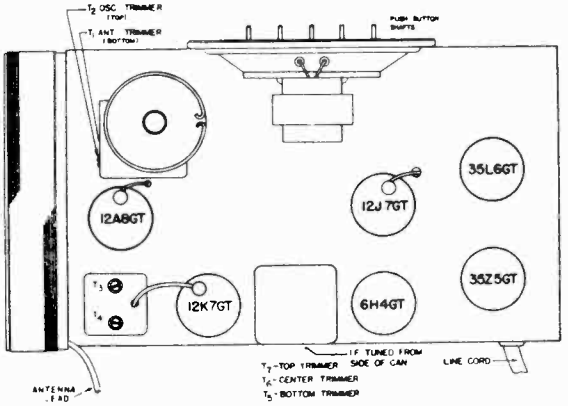
**Short oscillator section of variable condenser. Second I.F. alignment must be done twice to secure flat top tuning.

*** Connect generator output to a separate radiating loop and pickup 1500 KC signal on receiver.

PUSH BUTTON SWITCH POSITION	POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
Manual "IN"	**	455 kc	12K7GT,Grid	T6*,T5,T7	I.F.
"	**	455 kc	12A8GT,Grid	T3,T4	I.F.
"	1500 kc	1500 kc	***	T2,T1	Osc.,R.F.

TRIMMER ADJUSTMENT CARD





AUTOMATIC TUNING CONTROL ADJUSTMENT

From the diagram, after finding where the proper pair of adjustment screws are located, trace the dotted line connecting these screws to one of the push buttons. This is the button which after the adjustments are completed, will tune in the station.

Push this button "IN".

Turn the volume control knob on full(to the extreme right) and adjust screw marked "O" until the desired station is heard. If when making this adjustment, a number of stations can be brought in as the screw is turned and it is doubtful which station is the correct one, press button No. 5(Manual Tuning) "IN" and turn the station selector knob to the number on the dial that corresponds to the frequency of the station. Listening to the program being broadcast will identify the station when adjusting the screw "O".

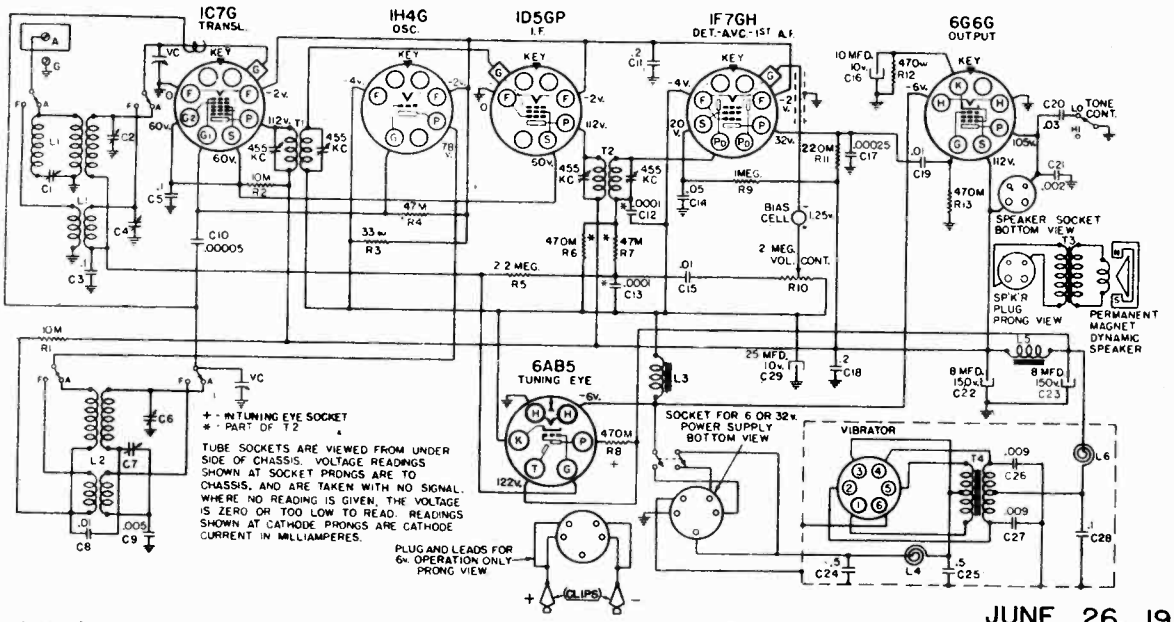
Adjust the screw marked "A" for maximum volume, retarding the volume control and readjusting if necessary. This completes the adjustments for this particular station.

Proceed in the same manner to adjust the tuning screws for the other stations on your list.

MODELS 2061,2421
Chassis 101.602

SEARS-ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.602



JUNE 26, 1940

FREQUENCY RANGES:
Band "AM" . . . . . .550-1700 kc
Band "FOR" . . . . . .5.95-18.2 mc

POWER OUTPUT:
Type . . . . . Pentode
Undistorted . . . . . 0.25 watts
Maximum . . . . . .0.5 watts

INTERMEDIATE FREQUENCY . . . . . .455 kc

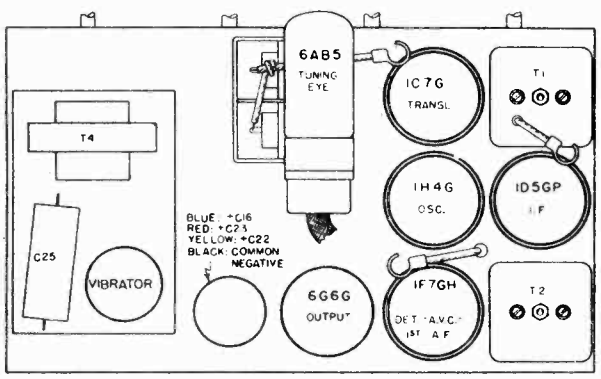
IMPORTANT ALIGNMENT NOTES

* 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.

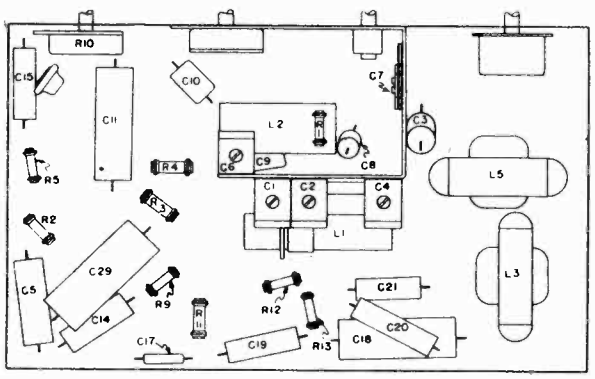
PRELIMINARY:

Output meter connection . . . . . .Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . .0.37 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 moudulation . . . . . .30%, 400 cycles
Position of Volume Control . . . . . Fully clockwise
Position of Tone Control . . . . . .HI
Position of Dial Pointer with variable fully closed . . . . . Horizontal

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.	1C7G Grid	T2,T1	IF Output IF Input	--
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C6,C3	Osc.,Transl.	65
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	50
"SW"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C4	Translator	70

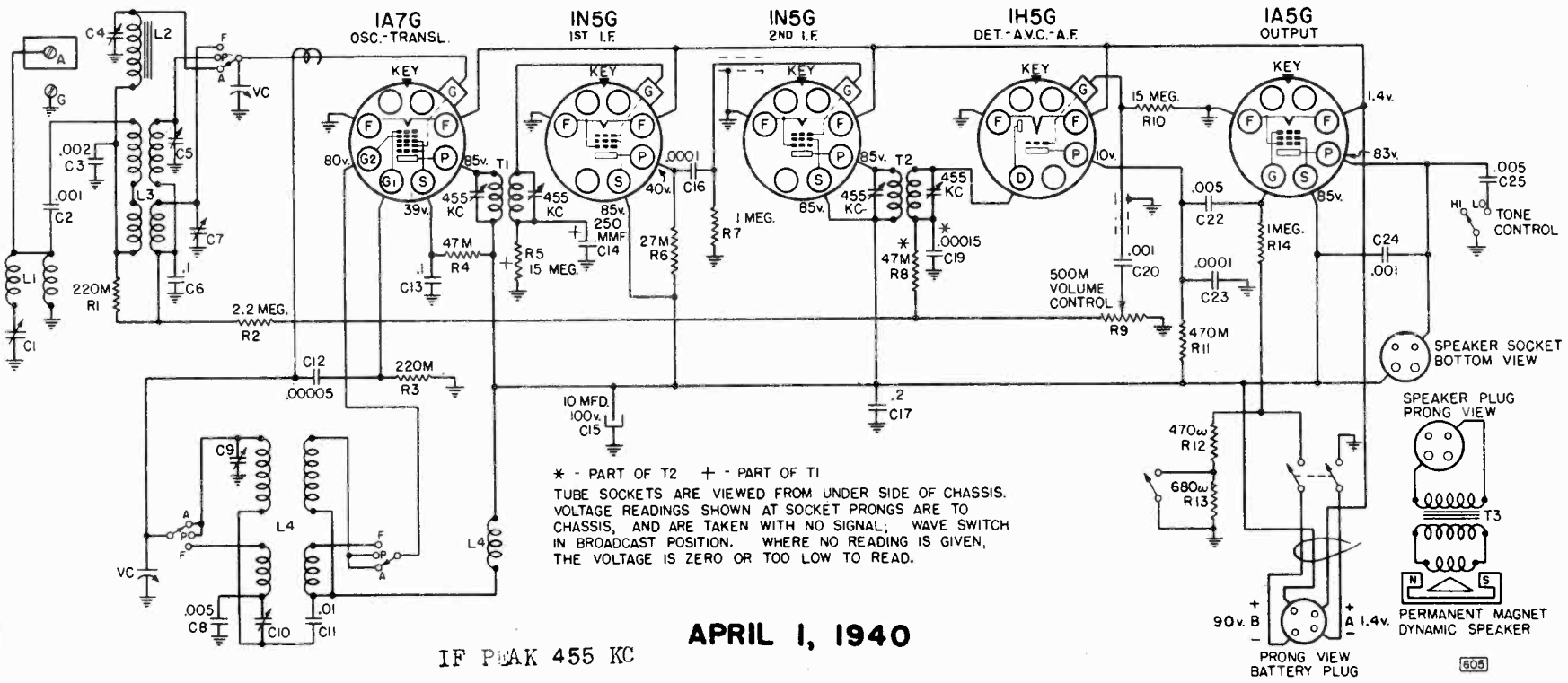


LOCATIONS OF PARTS ON TOP OF CHASSIS.



LOCATIONS OF PARTS UNDER CHASSIS 101.602

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.605



* - PART OF T2 + - PART OF T1

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

APRIL 1, 1940

IF PEAK 455 KC

POWER SUPPLY:

#5170. . A-B block(1.5v. "A",90v. "B")
or
#5200 . . . . . .2v. Storage "A"
2 - #5150 . . . . . 45v. "B" battery
#5071. . .Adaptor necessary with 2 volt Storage "A"

FREQUENCY RANGES:

Broadcast	.545-1750 kc
Police	.1455-2650 kc
Short Wave	5.95-18.2 mc

INTERMEDIATE FREQUENCY . . . . . .455 kc

POWER OUTPUT:

Type	Pentode
Undistorted	.0.1 watts
Maximum	0.18 watts

"A" Drain	0.25 Amperes
"B" Drain	10.35 ma.

ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
	1750 kc	1400 kc	600 kc
	None	2.4 mc	None
	None	16 mc	Fixed

LOUDSPEAKER:

Type	PM Dynamic
Size	6 inch

OPERATING CONTROLS:

1. Left knob . . . . . Volume
2. Next to left knob . . . . . .Tone
3. Next to right knob. . . Wave switch
4. Right knob . . . . Station Selector
5. Top knob. . . "On-Off" & Time Delay
6. Chassis rear..Battery Thrift Switch

CONTROL OPERATION:

Turning right: . . . . Volume increase
Turning right: . . . . . ."HI", "LO"
Turning right: . . ."AM", "POL", "FOR"
Tuning ratio: 6:1
Turning part way right: . . . . . .ON; all way right:. . On-Time Delay
"LO": Maximum battery life
"HI": Increased volume and range

MODELS 2511,2611,2711
Chassis 101.605

SEARS ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.3 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

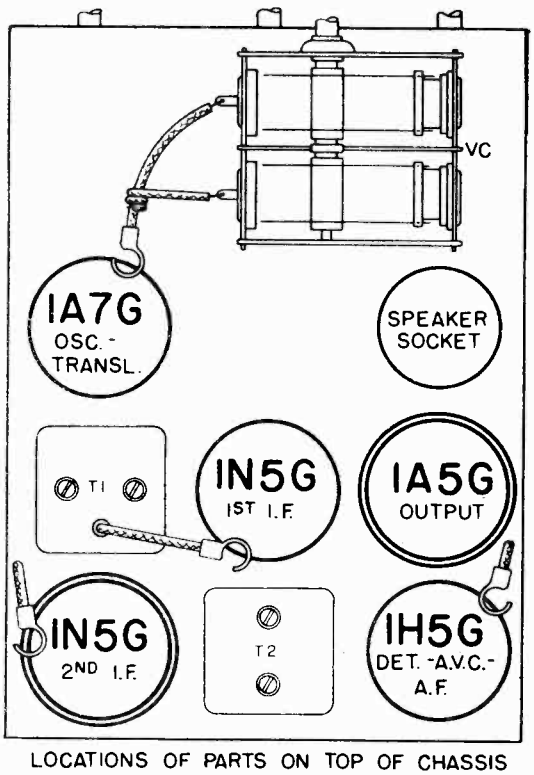
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T2,T1	IF Output IF Input	--
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C1*	Wave Trap	--
"AM"	Fully open	1750 kc	.0002 mfd.	Ant. Term.	C9	Oscillator	45
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C4	Translator	32
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C10	Padder	35
"POL"	3.4 mc	3.4 mc	400 ohms	Ant. Term.	C5	Translator	60
"FOR"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C7	Translator	30

IMPORTANT ALIGNMENT NOTES

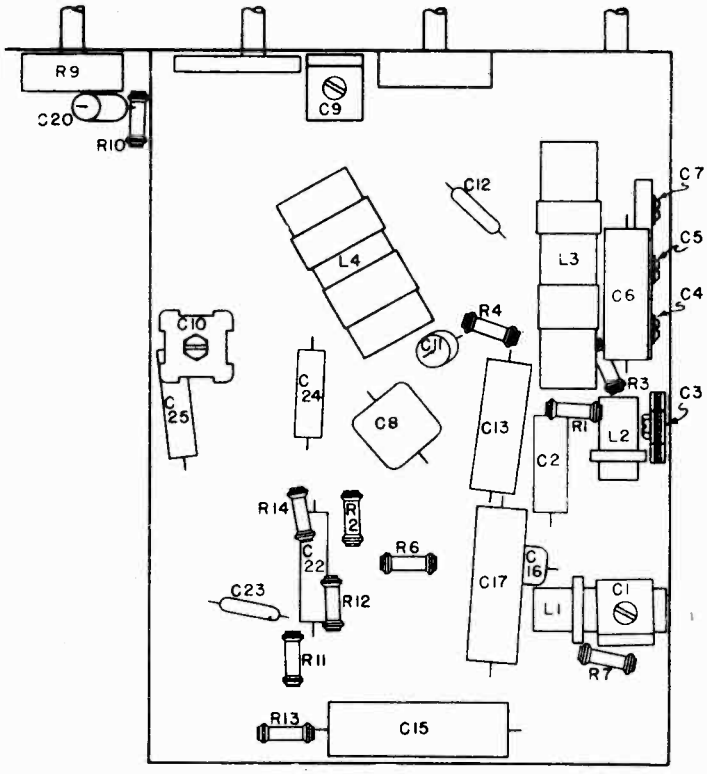
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to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

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.

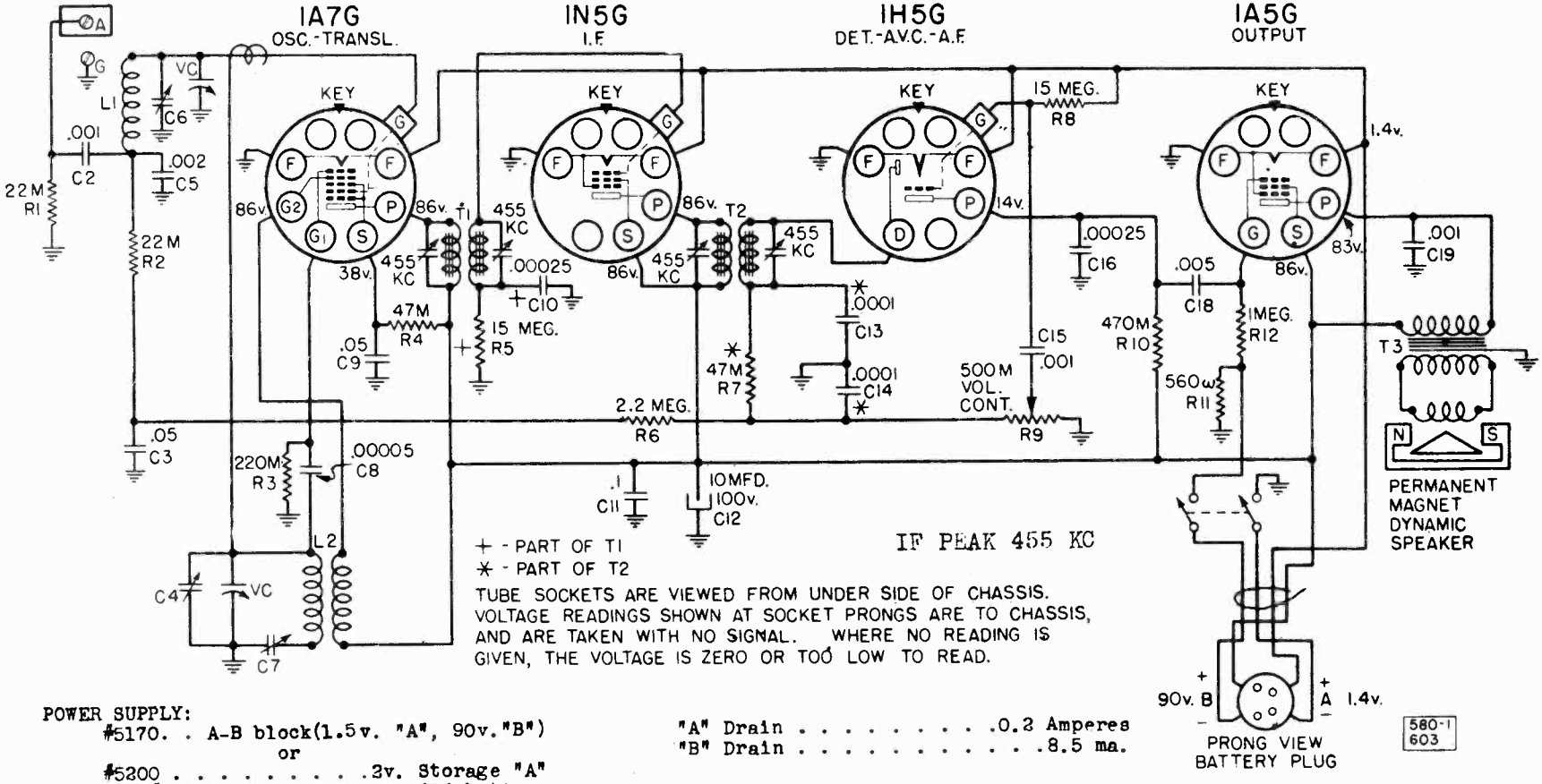


LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATIONS OF PARTS UNDER CHASSIS 101.605

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.603



\+ - PART OF T1
✳ - PART OF T2

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. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

POWER SUPPLY:

#5170. . A-B block(1.5v. "A", 90v."B")
or
#5200 . . . . . .2v. Storage "A"
2 - #5150 . . . . . 45v. "B" battery
#5070 . . . Adaptor necessary with 2v. Storage "A"

"A" Drain . . . . . .0.2 Amperes
"B" Drain . . . . . .8.5 ma.

FREQUENCY RANGE:

Broadcast . . . . . .540-1750 kc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Translator Trimmer	Padder
1750 kc	1400 kc	600 kc

INTERMEDIATE FREQUENCY . . . . . .455 kc

POWER OUTPUT:

Type . . . . . Pentode
Undistorted . . . . . .0.1 watts
Maximum . . . . . 0.18 watts

LOUD SPEAKER:

Type . . . . . .PM Dymanic
Size . . . . . .5 inch

FOUR TUBE, BATTERY POWERED SUPERHETERODYNE

MODEL 2541, 3641, 3741

MARCH 22, 1940

SEARS-ROEBUCK & CO.

MODELS 2541, 2641, 2741
Chassis 101.603

MODELS 2541,2641,2741
Chassis 101.603

SEARS ROEBUCK & CO.

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.3 volts
Approximate average sensitivity in microvolts 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 on
Position of pointer with variable fully closed . . . . . Horizontal (To fall on block below 550 kc calibration mark.)

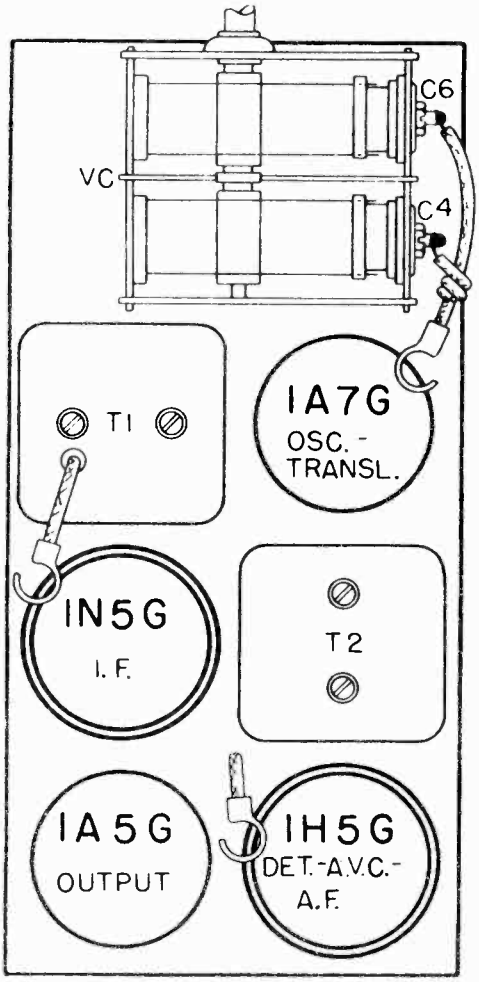
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	1A7G Translator Grid	T2,T1	IF	--
Open	1750 kc	.0002 mfd.	Ant. Term.	C4	Oscillator	--
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C6	Translator	50
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	50

IMPORTANT ALIGNMENT NOTES

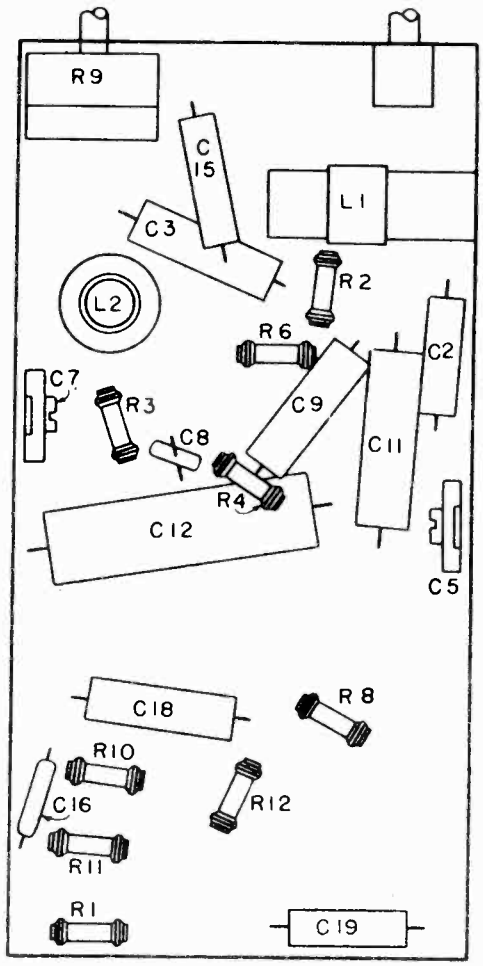
The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

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.



LOCATIONS OF PARTS ON TOP OF CHASSIS.



LOCATION OF PARTS UNDER CHASSIS 101.603

SEARS ROEBUCK & CO.

MODELS 2551,2751
Chassis 101.604
MODEL 2761
Chassis 101.606

MODEL 2551, 2651, 2751

FIVE TUBE, BATTERY POWERED SUPERHET

POWER OUTPUT:
Type . . . . . Pentode
Undistorted . . . . .0.1 watts
Maximum . . . . . 0.18 watts

FOR OTHER DATA, SEE INDEX

MODEL 2761

SIX TUBE, BATTERY POWERED SUPERHET

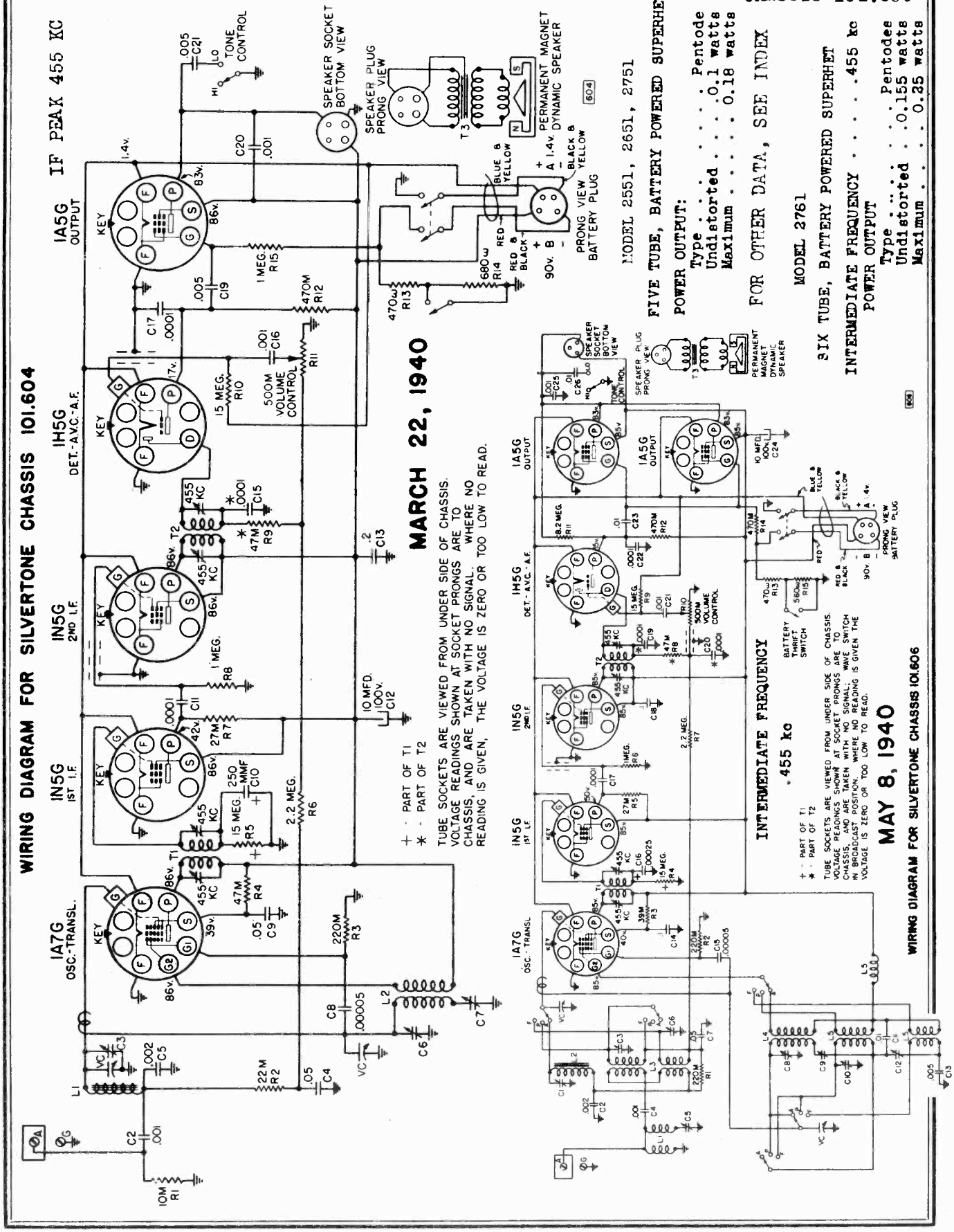
INTERMEDIATE FREQUENCY . . . . .455 kc
POWER OUTPUT
Type . . . . . Pentodes
Undistorted . . . . .0.155 watts
Maximum . . . . . 0.25 watts

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.604

MARCH 22, 1940

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.

+ - PART OF T1
* - PART OF T2



ALIGNMENT PROCEDURE

PRELIMINARY: MODELS 2551, 2751, Chassis 101.604

Output meter connections . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.7 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 550 kc calibration mark.)

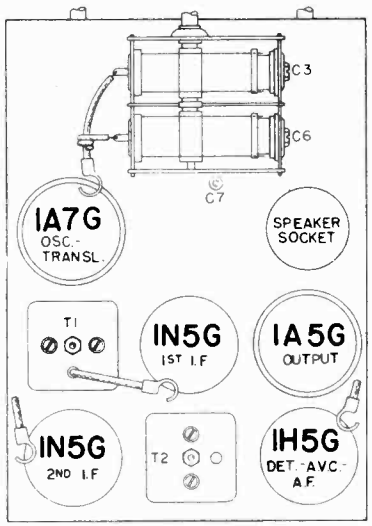
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	1A7G Translator Grid	T2,T1	IF	--
Fully open	1750 kc	.0002 mfd.	Ant. Term.	C6	Oscillator	--
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C3	Translator	15
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C7	Padder	15

IMPORTANT ALIGNMENT NOTES

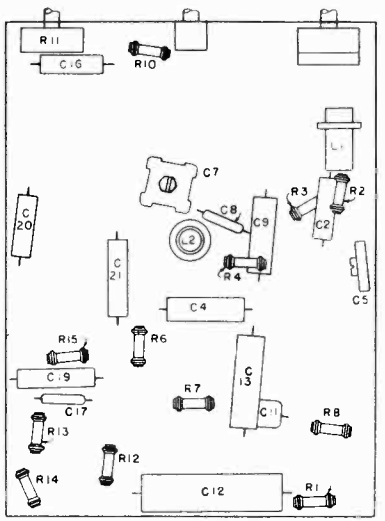
The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

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.



LOCATIONS OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS 101.604

POWER SUPPLY:
#5170. .A-B block (1.5v. "A", 90v."B")
or
#6300 . . . . . 2v. Storage "A"
2 - #5150 . . . . . 45v. "B" battery
#5071 . . . . . Adaptor necessary with 2v. Storage "A"

"A" Drain . . . . . 0.35 Amperes
"B" Drain . . . . . 10.25 ma

LOUD SPEAKER:
Type . . . . . PM Dynamic
Size . . . . . .5 inch

THE LOOP ANTENNA: MODELS 3051,3151,3251, Chassis 109,352-A,-B

The loop antenna built into the receiver cabinet is bi-ectional in its reception characteristics. Therefore, reception may be improved or interference reduced by turning the set to a particular position. In locations where the signal strength is too low to give satisfactory reception from the loop antenna alone, an outside antenna may be connected to the wire projecting from the rear of the receiver. No attempt should be made to use a ground connection.

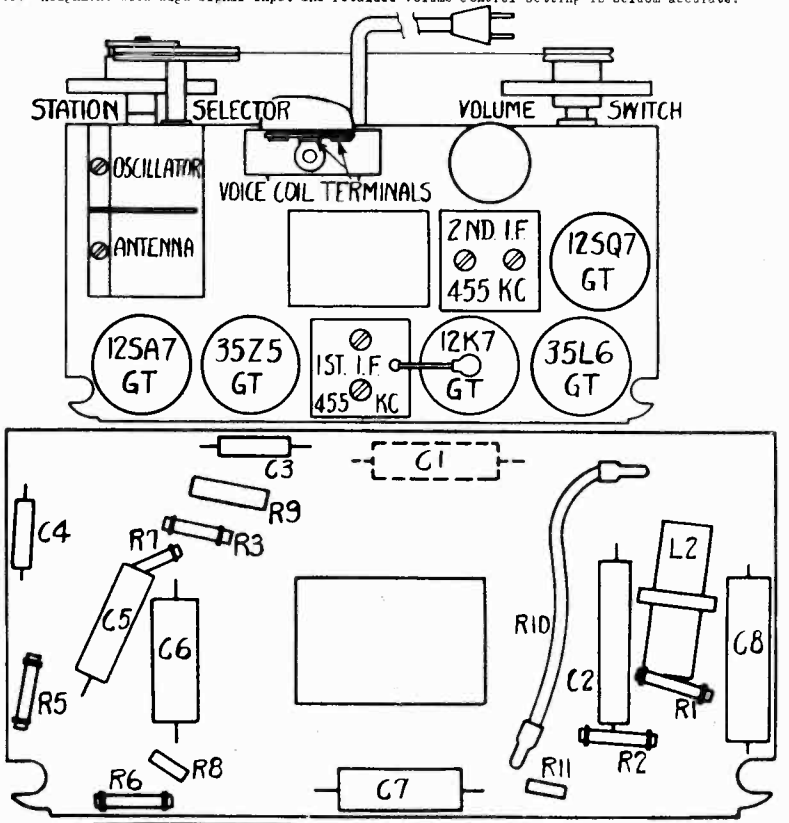
REMOVING THE CHASSIS FROM THE CABINET:

The chassis is held in the cabinet by two ordinary machine screws near the top edge of the chassis and by two fiber machine screws through the bottom of the cabinet. Since the power line is connected to the chassis the fiber screws should never be replaced with metal screws. Care should be exercised when inserting or removing the fiber screws not to damage them since they are not as strong as metal screws.

ALIGNMENT PROCEDURE

See tube layout diagram for location of trimmers. Alignment may be made without removing the set from the cabinet. Connect the output meter to the two terminals shown in the tube layout diagram. These terminals are mounted on an insulated terminal strip on top of the output transformer. These terminals connect to the voice coil.

Connect the signal generator ground to the receiver chassis through a 0.1 MFD condenser. Using a .05 to .25 MFD condenser in series with the high side of the generator output, apply a 455 KC signal to the grid of the 12K7GT I.F. amplifier tube and align the 2nd IF transformer. Repeat for the first I.F. transformer, applying the signal to the antenna section of the tuning condenser. Using a 50 MMF condenser as a dummy antenna apply the mF signal to the antenna lead. Turn the tuning condenser to minimum capacity, set the generator to 1580 KC and trim the oscillator section. Set the generator to 1400 KC, tune in the signal and adjust the antenna trimmer. (The antenna and oscillator trimmers are located on top of the tuning condenser.) NOTE: Best alignment is obtained with the volume control at maximum and the applied signal only strong enough to give satisfactory indications on the output meter. Alignment with high signal input and retarded volume control setting is seldom accurate.



SEARS ROEBUCK & CO.

MODEL 2761
Chassis 101.606

ALIGNMENT PROCEDURE

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 550 kc
Position of Battery Thrift Switch . . . . . Right

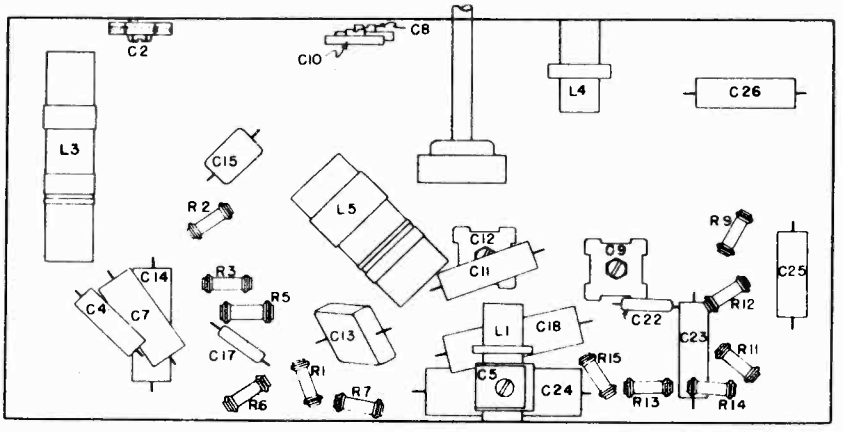
WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	1A7G Grid	T2,T1	IF	75
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Term.	C5*	Wave Trap	--
"AM"	Fully open	1720 kc	.0002 mfd.	Ant. Term.	C8	Oscillator	--
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C1	Translator	30
"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.	20
"FOR"	16 mc(rock)	16 mc	400 ohms	Ant. Term.	C6	Translator	10

IMPORTANT ALIGNMENT NOTES

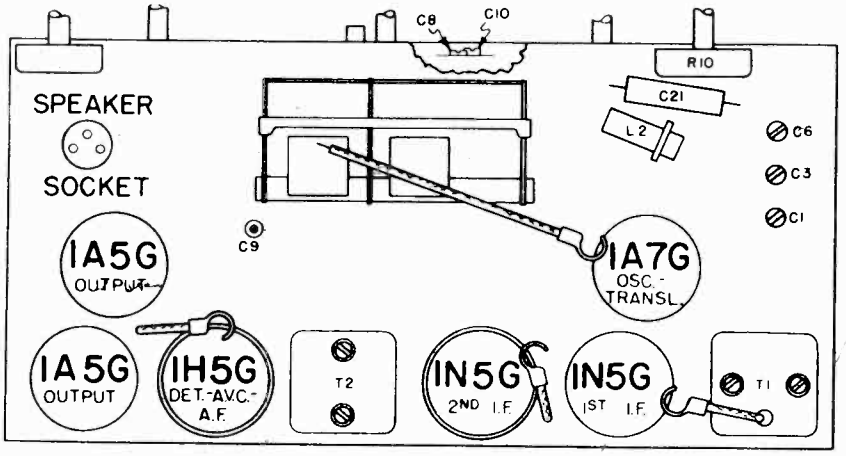
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to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



LOCATIONS OF PARTS UNDER CHASSIS 101.606

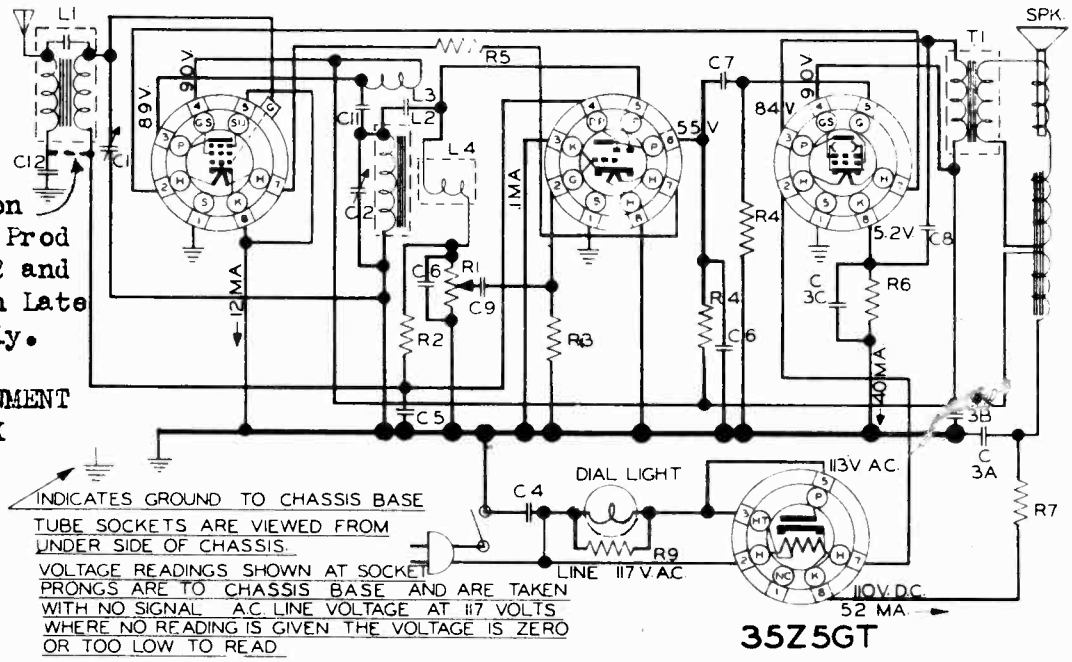


LOCATIONS OF PARTS ON TOP OF CHASSIS 101.606

MODELS 3041,3141,3241
Chassis 132.804
132.804-1
132.804-1A
132.804-1B

SEARS ROEBUCK & CO.

12K7GT 12SQ7GT 35L6GT



Connection in Early Prod only. C12 and Ground in Late Prod. only.

FOR ALIGNMENT SEE INDEX

INDICATES GROUND TO CHASSIS BASE

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.

VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS BASE 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

AUGUST 8, 1940

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SELLING PRICE EACH
	1325514464	Antenna Hank	.15
L1	1325516769	Antenna Coil (includes blocking cond.	.90
	1324916378	Bulb-Dial Light #47 (C-12).	.10
	1326016941	Cabinet Assembly (Black)	1.25
	1326016942	Cabinet Assembly (Walnut)	1.35
	1326016943	Cabinet Assembly (Ivory)	1.60
L3&4	1323016771	Choke-Diode & Plate	.24
	1325413053	Grid Clip	.01
L2	1322817009	Coil-R.F.	.90
C1&2	1321616767	Condenser-Variable	1.40
C3	1322016838	Condenser-Electrolytic 40-20 mfd. 150 V. 20 mfd. 25 V.	.86
C4		Condenser .05 mfd. 400 V.	.10
C5		Condenser .05 mfd. 200 V.	.09
C6		Condenser .00025 mfd. 600 V.	.10
C7		Condenser .002 mfd. 400 V.	.10
C8		Condenser .04 mfd. 400 V.	.10
C9		Condenser .002 mfd. 400 V. metal-clad	.17
C11	1321914358	Condenser .000014 mfd. 600 V.	.08
C12		Condenser .01 mfd. 400 V.	.10
R1	1322416763	Control-Volume & Switch	.60
	1325516805	Cord-Power	.29
	1324016765	Dial Scale Plate (Maroon)	.45
	1324016773	Dial Scale Plate (Green)	.45
	1323916831	Knob-(Black)	.07
	1323916768	Knob-(walnut)	.07
	1323916830	Knob-(Ivory)	.07
R2		Resistor 2 megohm $\frac{1}{4}$ watt	.12
R3		Resistor 15 megohm $\frac{1}{4}$ watt	.12
R4		Resistor 500,000 ohm $\frac{1}{4}$ watt	.12
R5	1322114372	Resistor 154 ohm 3.5 watt	.25
R6		Resistor 150 ohm $\frac{1}{4}$ watt	.12
R7		Resistor 30 ohm $\frac{1}{4}$ watt	.12
R9		Resistor 100 ohm $\frac{1}{4}$ watt	.12
	1321816709	Socket-Tube-Wafer type	.09
	1321816353	Socket-Dial Light	.15
	1325816725	Speaker 4"	2.50
T1	1321316817	Transformer-Speaker	.75
	1326016766	Pyra lin Window	.15
	132603366	Carton (Complete with fillers)	.20

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:
12K7GT . . . R.F. Amp.
12SQ7GT . . Detector-AVC-AF
35L6GT . . . . . Output
35Z5GT . . . Rectifier

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

ALIGNMENT FREQUENCIES:
R.F. - 1400 kc
Ant. - 1400 kc

LOUD SPEAKER:
Type . . . Electro dynamic
SIZE . . . . . 4 inch

FREQUENCY RANGE: 540 1725 kc

POWER OUTPUT:
Type . . . . Beam Tube
Undistorted . 800 Milliwatts
Maximum . . . 1.58 watts

OPERATING FEATURES:
Automatic Volume Control
AC-DC

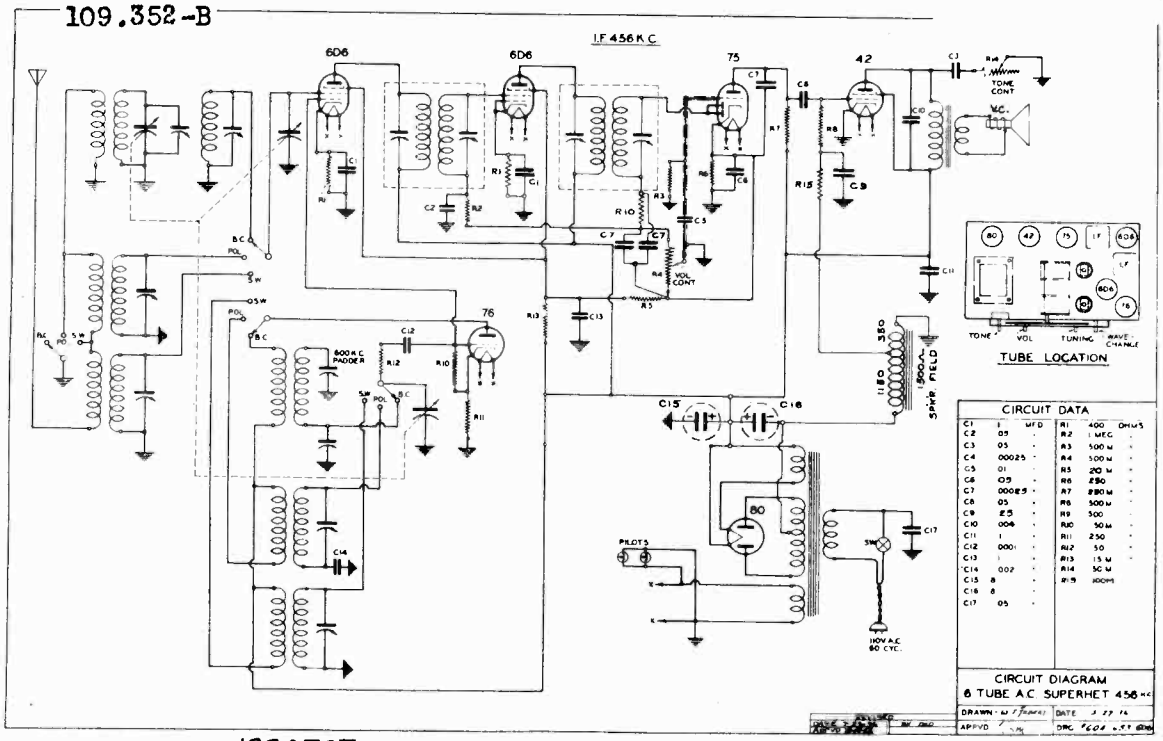
CONTROL OPERATION:
Turning right: On; Volume increase.
Tuning ratio: . . . 3:1

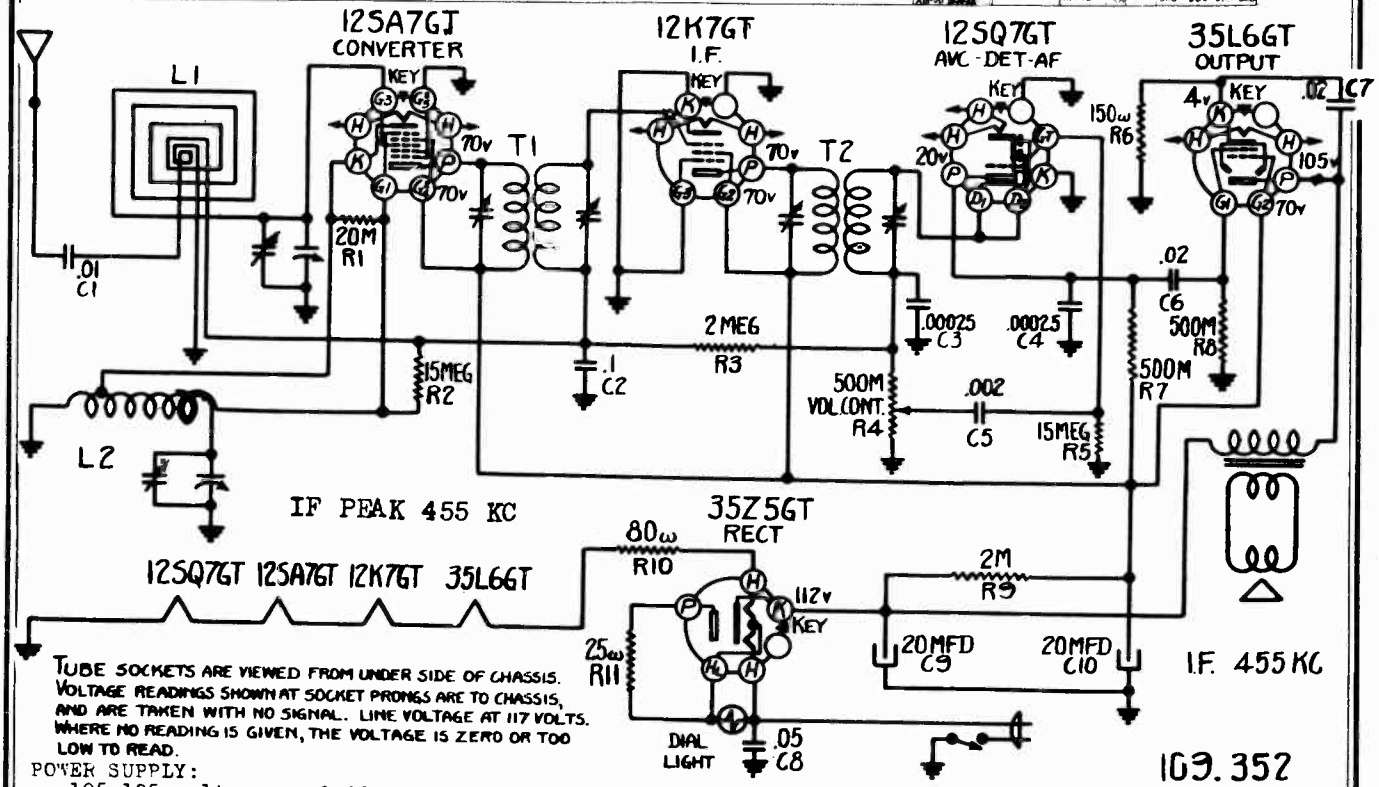
OPERATING CONTROLS:
Left Knob . . . On-Off switch & Volume
Right Knob . . . . . Tuning

MODELS 3051,3151,3251
Chassis 109.352-A
109.352-B

SEARS ROEBUCK & CO.

MODEL 6 TUBE A.C.-
SUPER. (1936)





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.

109.352

POWER SUPPLY:
105-125 volts 50-60 cycle or DC . . . . . 30 Watts

FREQUENCY RANGE 535kc-1580kc

ALIGNMENT FREQUENCIES Osc. 1580 Ant 1400 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . . . . . .7 Watts
Maximum . . . . . 1.2 Watts

FIVE TUBE, AC-DC, SUPERHETERODYNE

LOUD SPEAKER:
Type . . . . . P.M.Dynamic
Size . . . . . 4 inch
Field Permanent Magnet

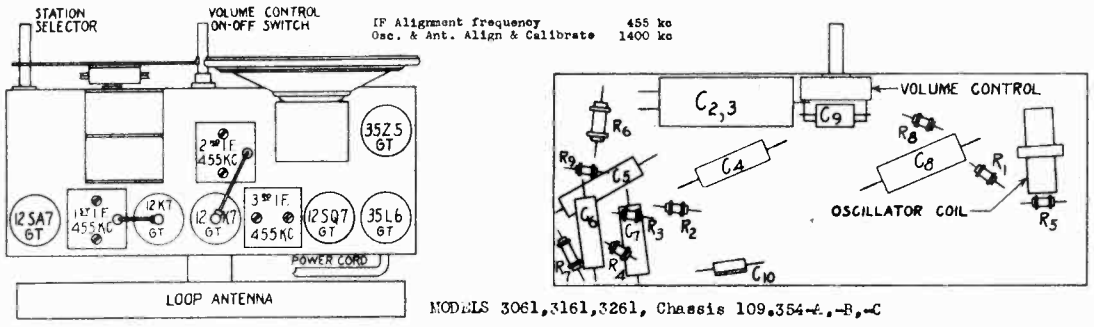
CHASSIS FEATURES:
Number IF stages . . . . . one
Condenser tuned. Built-in loop with provision for external antenna

MODELS 3051, 3151, 3251 JULY 11, 1940

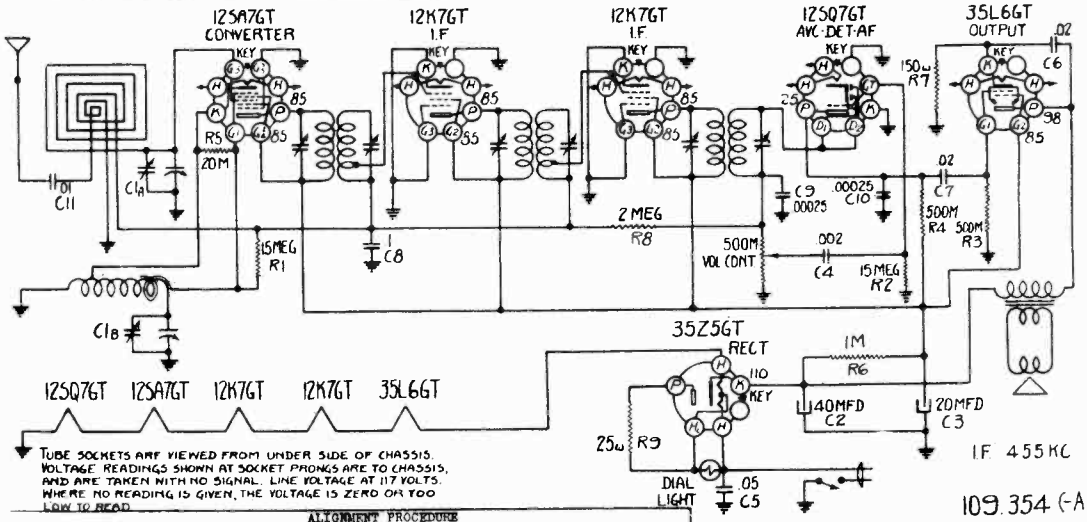
Chassis 109.354-A
109.354-B
109.354-C

SEARS-ROEBUCK & CO.

MODELS 3061,3161,3261 1521
MODELS 3041,3141,3241
Chassis 132.804 to
132.804-1B



MODELS 3061,3161,3261, Chassis 109.354-A,-B,-C



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.

109.354 (-A,-B,-C)

SEPTEMBER 16, 1940

ALIGNMENT PROCEDURE

MODELS 3041,3141,3241, Chassis 132.804

PRELIMINARY:

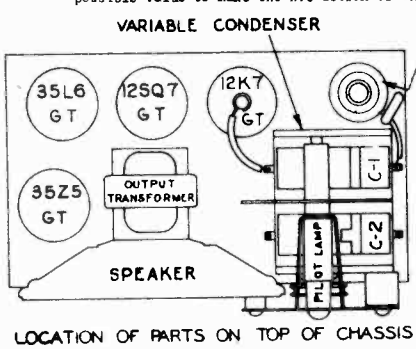
Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.38 volts
Dummy antenna value to be in series with generator output . . . . . See chart below.
Connection of generator output lead . . . . . See chart below
Generator modulation . . . . . 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	TRIMMERS ADJUSTED (in order shown)	TRIMMER FUNCTION
1400 kc	1400 kc	.000075 mfd.	Ant. hank	C2, C1	R.F. Amp.
600 kc	600 kc	.000075 mfd.	Ant. hank	Check point	-----

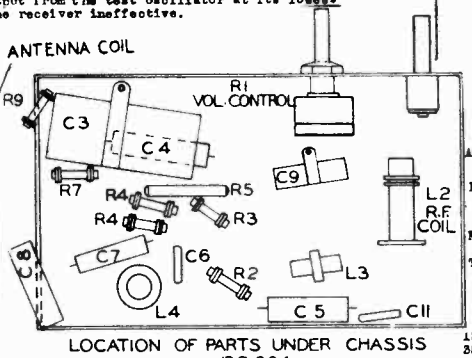
IMPORTANT ALIGNMENT NOTES

With the variable condenser closed the pointer should point to the horizontal line just below the fig. "55".

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.



LOCATION OF PARTS ON TOP OF CHASSIS



LOCATION OF PARTS UNDER CHASSIS 132.804

ELECTRICAL SPECIFICATIONS

POWER OUTPUT:
Tube. . . . . Beam Tube
Undistorted . . . . . .0.8 Watt
Maximum . . . . . .1.4 Watt

OPERATING FEATURES:
Automatic Volume Control
AC-DC

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

CHASSIS FEATURES:
Number of IF Stages . . . . . two
Condenser tuned. Built in loop for broadcast reception with provision for external antenna for better reception where signals are weak.

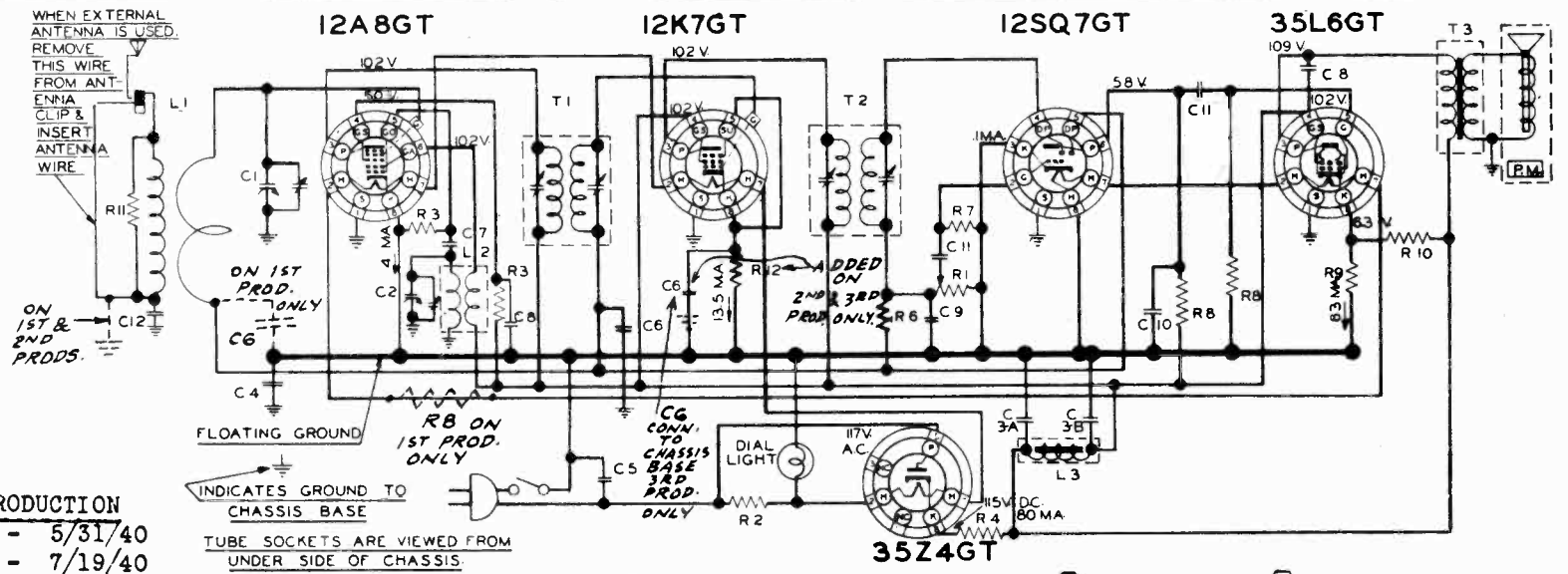
POWER SUPPLY. . . .
105-125 volts 50-60 cycles, or DC. 30 Watts

ALIGNMENT FREQUENCY. . . . . 1400 kc

INTERMEDIATE FREQUENCY . . . . 455 kc

FREQUENCY RANGE . . . . . 540-1600 kc

TUBES AND FUNCTIONS:
12 SA7GT . . . . .Oscillator-Trans
12 K7GT. . . . . First IF Ampl
12 K7GT. . . . . .Second IF Ampl
12 SQ7GT . . . . . .Detector-AVC-AF
35 L6GT. . . . . Output
35 Z5GT. . . . . .Rectifier



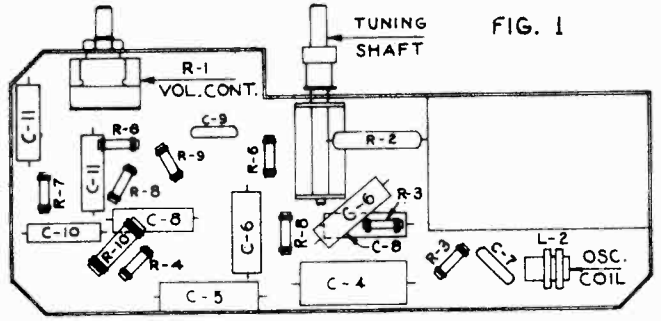
PRODUCTION
1st - 5/31/40
2nd - 7/19/40
3rd - 10/30/40

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.

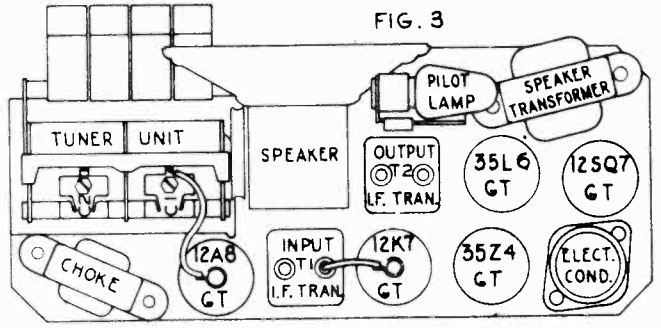
132595388
132.803

FIG. 1



LOCATION OF PARTS UNDER CHASSIS

FIG. 3



LOCATION OF PARTS ON TOP OF CHASSIS

PUSH BUTTON ADJUSTMENT: Each button is set up by loosening screw (under PB key), tuning in station, depressing button, and then tightening screw.

ADD. of SUFFIX -1 to CHASSIS NO., CIRCUIT DIAGRAM CHANGES - 7/19/40 - To minimize variation in overall I.F. gain bet. receivers of this model 2 circuit changes were made, and -1 added to chassis no. Variation in I.F. gain was due to operating 12K7GT tube under "no bias" condition. Ref. to diagram in RL supp. shows bias has been applied to 12K7GT by addition of R-12 bypassed by C-6. Also R-8 and C-6 were unnecessary and eliminated. In a few receivers bias was placed on the 12K7GT and also the 12A8GT by conn. 15 megohm resistor from grid end of 50,000 ohm osc. leak to AVC cir. This did not produce uniform results and was abandoned.

ADD. of SUFFIX -2C, -2D, -2E to CHASSIS NO. 132.803 - CIRCUIT DIAGRAM & PARTS LIST CHANGES FOR ALL MODELS - 9/30/40 - Circuit change amounts to add. of C-12 to increase impedance bet. ant. clip and power line. To elim. discoloration of control knobs, push button caps, and dial background, the knobs and caps were moulded out of gold tenite and dial background paper changed to match. To reduce common coupling, bypass cond. C-6 was returned to chassis base instead of to ground.

ALIGNMENT

POS. OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONN(high)	GENERATOR CONN(low)	TRIM. ADJ. (ord. shown)	TRIMMER FUNC.
Closed	455 kc	.1mf.	12A8GT Grid	Floating Gnd.	T2, T1	IF
1400 kc	1400 kc	.00005mf.	Ant. clip	Chassis base	C2, C1	Translator
600 kc	600 kc	.00005mf.	Ant. clip	Chassis base	Check Point	----

MODELS 3321,3421,3521,3721
Chassis 109.357,-A,-B,-C

SEARS ROEBUCK & CO.

POWER SUPPLY . . . 105-125 volts 50-60 cycles or DC 30 Watts. 25 cycle models available

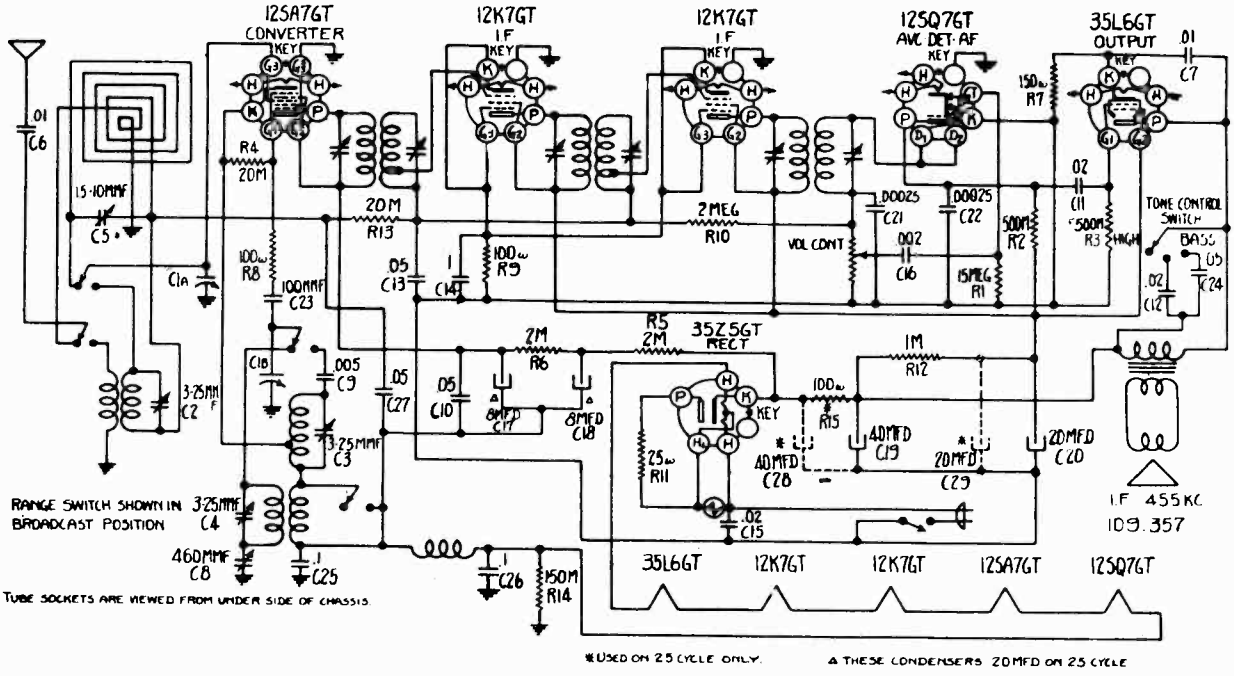
FREQUENCY RANGE. . . . . 540-1600 kc
5500-18500 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

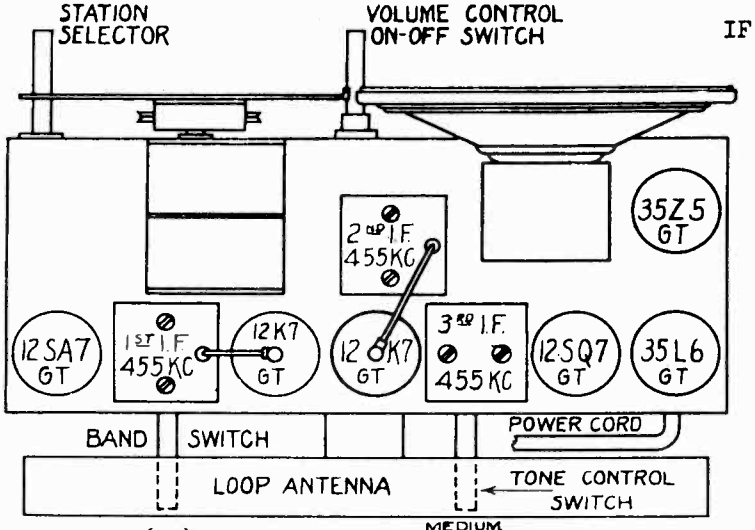
ALIGNMENT FREQUENCIES: . . 1400-600 kc
16000 kc

POWER OUTPUT:
Type. . . . . Beam Tube
Undistorted . . . . . .0.8 Watt
Maximum . . . . . .1.4 Watt

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

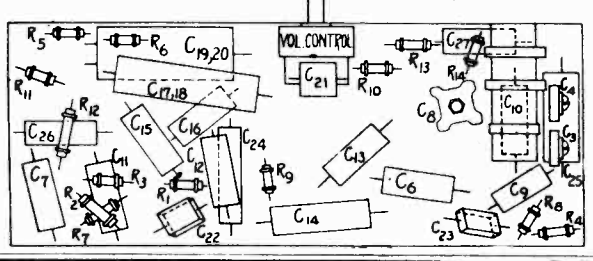


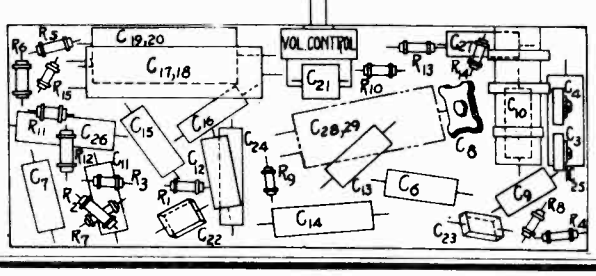
FOR ALIGNMENT SEE INDEX



IF PEAK 455 KC

SEPTEMBER 16, 1940



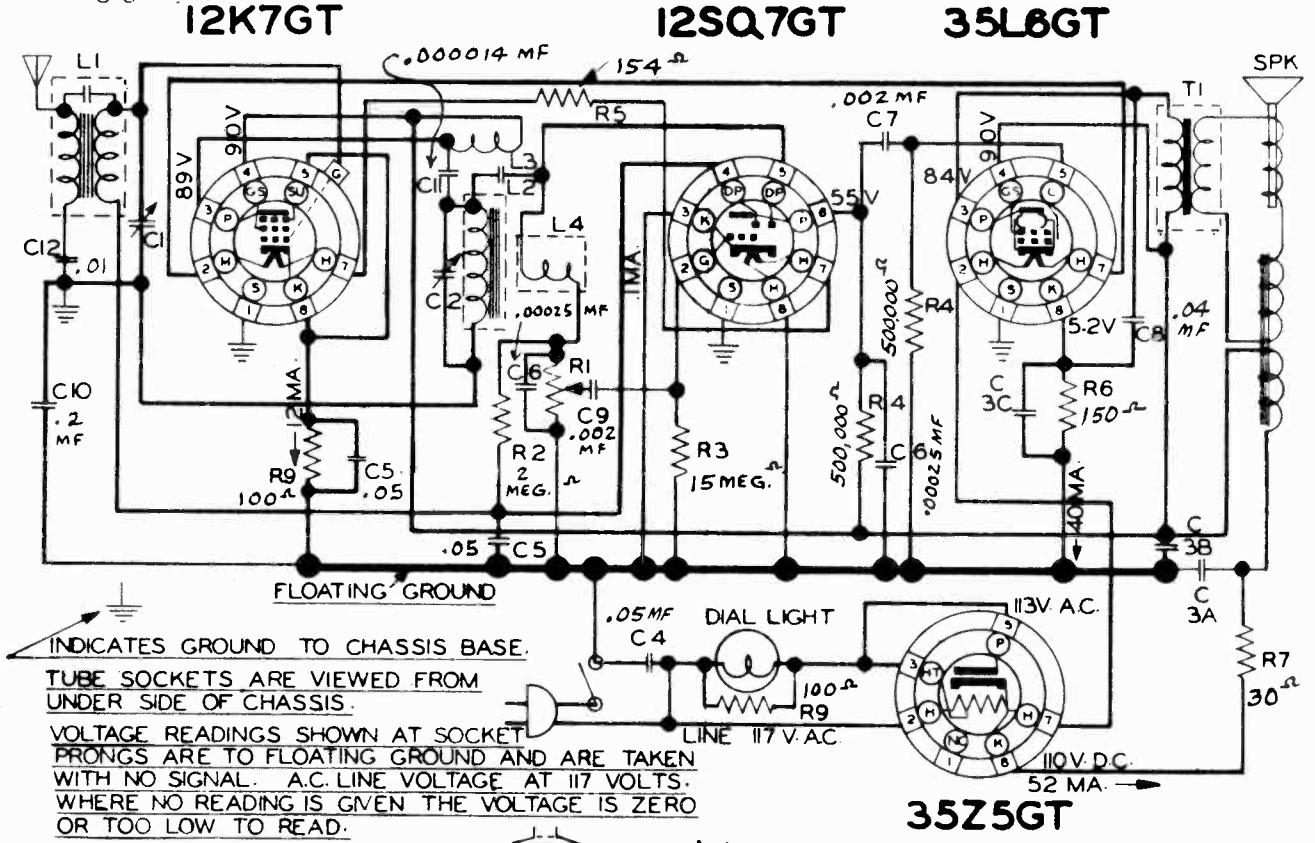


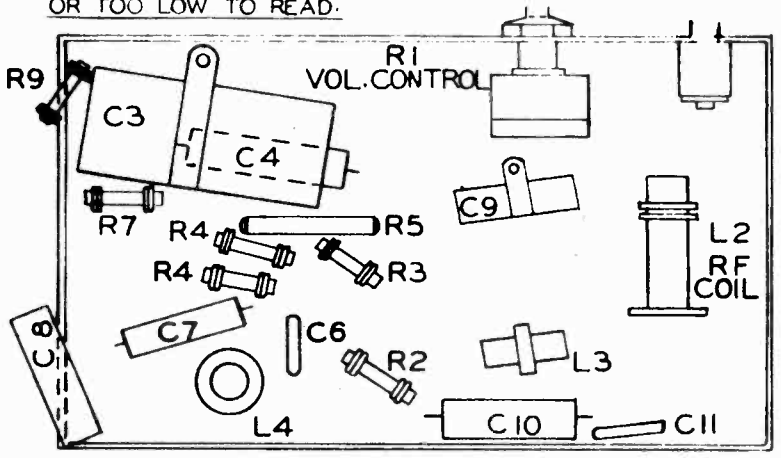
Chassis 132.305-1.-1A,-1B (late)

SEARS-ROEBUCK & CO.

MODELS 3341,3441,3541
Chassis 132.805,-A.-B (early)

To comply with the requirements of the Underwriters Laboratories, a .01 mfd., 400 V. paper tubular condenser (C-12), was added in the antenna circuit, as isolation between the antenna and floating ground.





LOCATION OF PARTS UNDER CHASSIS

TUBES AND FUNCTIONS:
12K7GT . . . . . R.F. Amp.
12SQ7GT . . . . Detector-AVC-AF

35L6GT . . . . . Output
35Z5GT . . . . . Rectifier

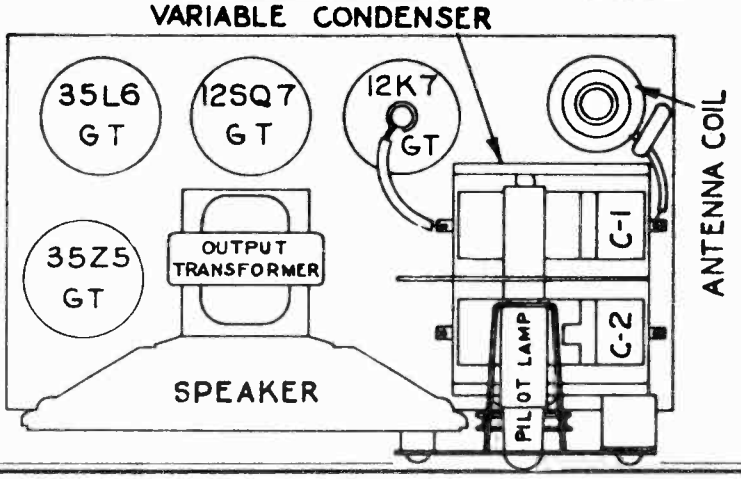
POWER SUPPLY:
All models available

105-125 volts, AC-DC, 30 watts

POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . . 800 Milliwatts
Maximum . . . . 1.58 watts

FREQUENCY RANGE: . 540 - 1725 kc.

ALIGNMENT FREQUENCIES: R.F. - 1400 kc
Ant. - 1400 kc
POINTER AT 55 CHECK 600 K.C.
LOUD SPEAKER:
Type . . . . . .
Size . . . . . .

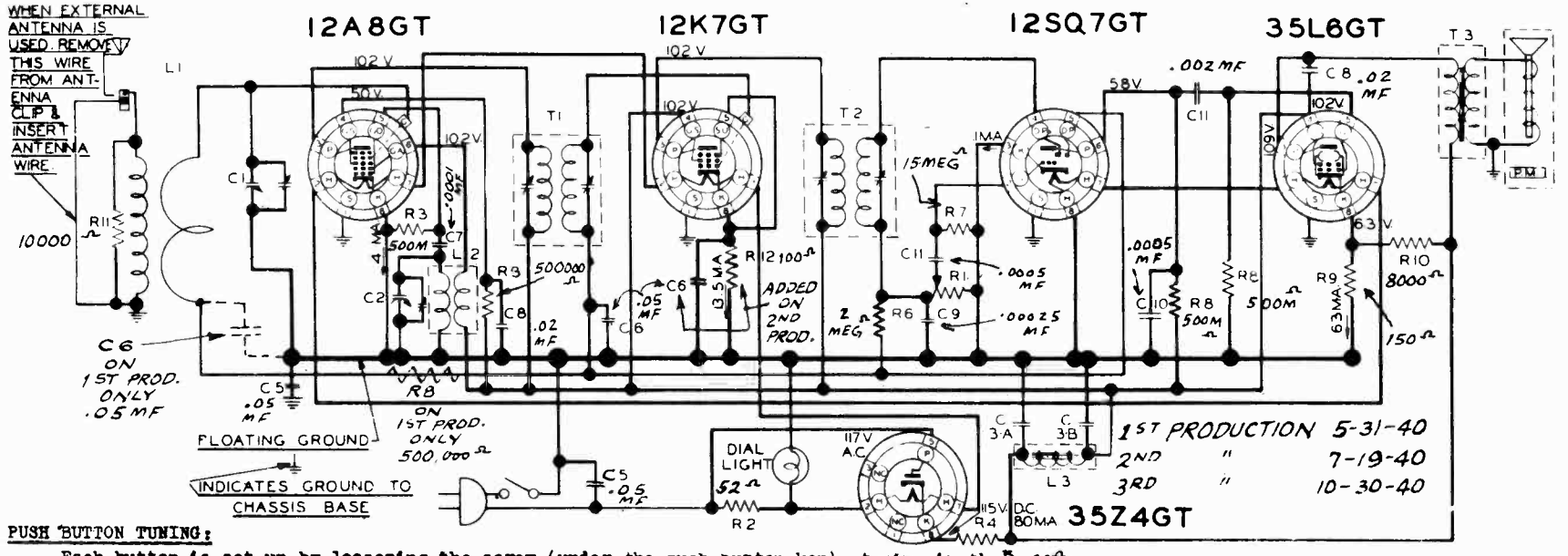


LOCATION OF PARTS ON TOP OF CHASSIS

SEPTEMBER 30, 1940

MODELS 3351,3451,3551
Chassis 132.802,-A,-B
132.802-1,-1A,-1B
132.802-1C,-1D,-1E

SEARS-ROEBUCK & CO.



PUSH BUTTON TUNING:

Each button is set up by loosening the screw (under the push button key), tuning in the station, depressing the button and then tightening the screw.

INTERMEDIATE FREQUENCY . . . . . .455 kc

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.

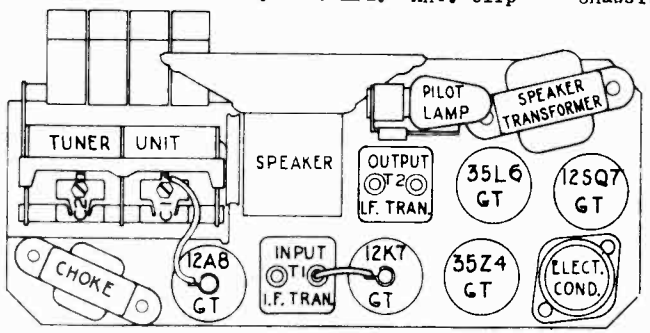
Position of Volume Control . . . . . Fully clockwise
Position of Dial Pointer with variable fully closed . . . . . See note below
Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.38 volts

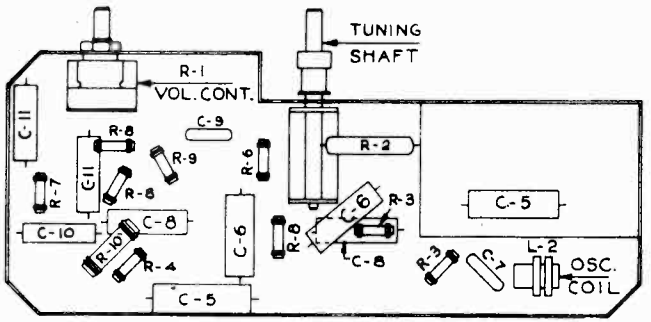
POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (High)	GENERATOR CONNECTION (Low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION
Closed	455 kc	.1 mfd.	12A8GT Grid	Var. Cond. Frame	T2, T1	IF
1400 kc	1400 kc	.00005 mfd.	Ant. clip	Chassis Base	C2, C1	Translator
600 kc	600 kc	.00005 mfd.	Ant. clip	Chassis Base	Check Point	- - - -

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.

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

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





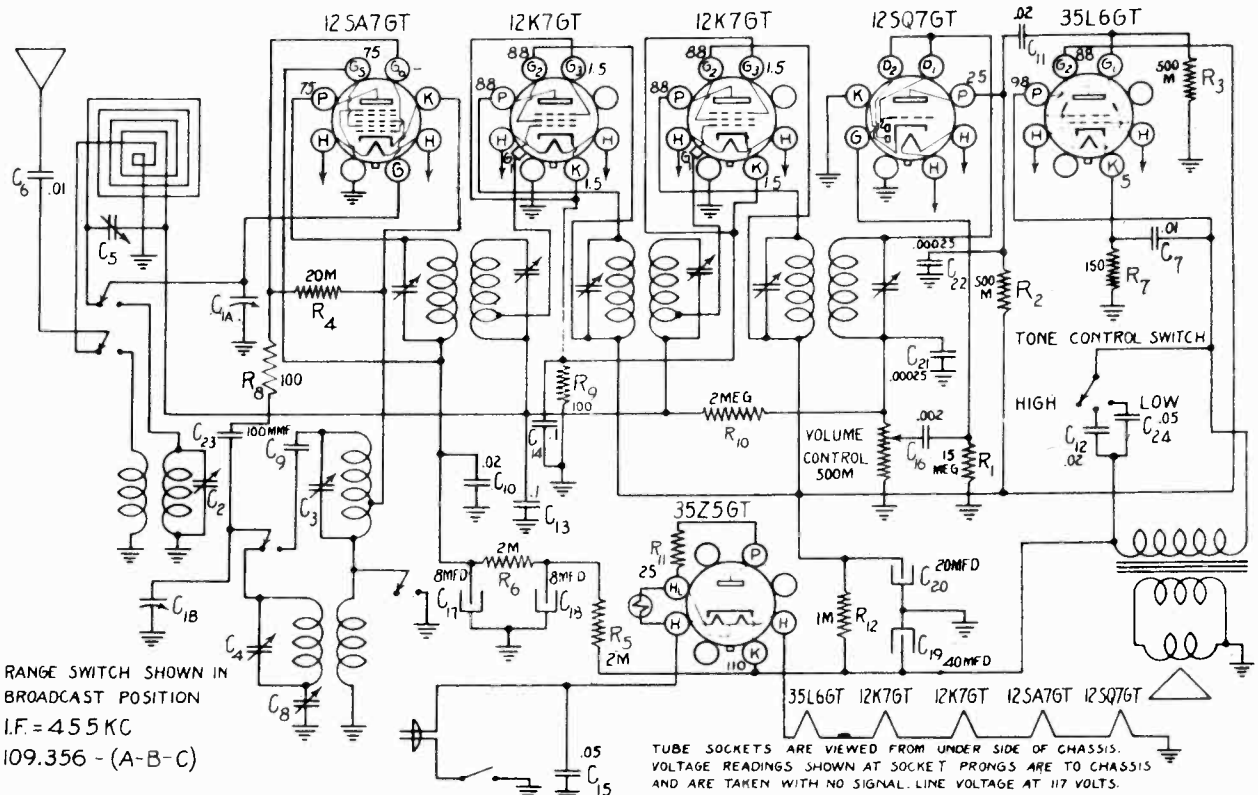
POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . . 1.0 watts
Maximum . . . . 2.6 watts

TUBES AND FUNCTIONS:
12A8GT Oscillator-Translator
12K7GT . . . . . .IF
35Z4GT . . . . . Rectifier
12SQ7GT . . Detector-AVC-AF
35L6GT . . . . . Output

MODELS 3321,3421,3521,3721
Chassis 109.357,-A,-B,-C

SEARS-ROEBUCK & CO.

MODELS 3361,3461,3561,3621
Chassis 109.356-A.-B.-C



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

RANGE SWITCH SETTING	GENERATOR FREQUENCY	DUMMY ANTENNA	DUMMY CONNECTED TO	FUNCTION	OPERATION
Broadcast	455 KC exact	.1 MFD	2nd IF Grid	IF Trim	Align
Broadcast	455 KC exact	.1 MFD	1st IF Grid	IF Trim	Align
Broadcast	455 KC exact	.1 MFD	Ant. Gang	IF Trim	Align
Broadcast	1400 KC exact	50 MMF	Ant. lead	Osc. trim	Adjust gang to indicate 1400 KC and align osc. trimmer for max. response.
Broadcast	1400 KC exact	50 MMF	Ant lead	Loop trim	with gang as above, adjust loop trimmer for max. response. See Note 1.
Broadcast	600 KC approx.	50 MMF	Ant lead	Osc. pad	Adjust broadcast padding condenser while rocking gang condenser.
Short Wave	16000 KC exact	400 ohms	Ant lead	S.W. osc. trim	Set condenser to indicate 16000 KC and adjust osc. trimmer for max. response See Note 2.
Short Wave	16000 KC exact	400 ohms	Ant lead	S.W. ant. trim	Rock gang condenser through signal while adjusting antenna trimmer.

SEPTEMBER 16, 1940

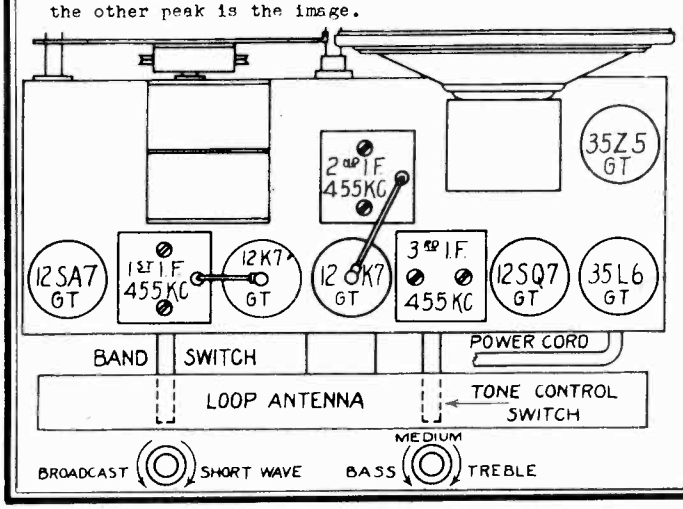
ALSO ALIGNMENT FOR MODELS 3321, 3421,3521 and 3721.

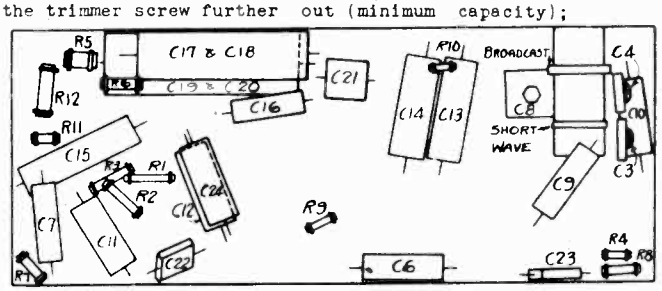
NOTE 1:

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".

NOTE 2:

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





TUBES AND FUNCTIONS:

12 SA7GT . . . . . .Oscillator-Translator
12 Z7GT. . . . . First IF Amplifier
12 K7GT. . . . . .Second IF Amplifier
12 SQ7GT . . . . . .Detector-AVC-AF
35 L6GT. . . . . Output
35 Z5GT. . . . . .Rectifier

POWER OUTPUT:

Type. . . . . Beam Tube
Undistorted . . . . . .0.8 Watt
Maximum . . . . . .1.4 Watt

MODELS 3651,3751,3851
Chassis 109.353.-A.-B

SEARS-ROEBUCK & CO.

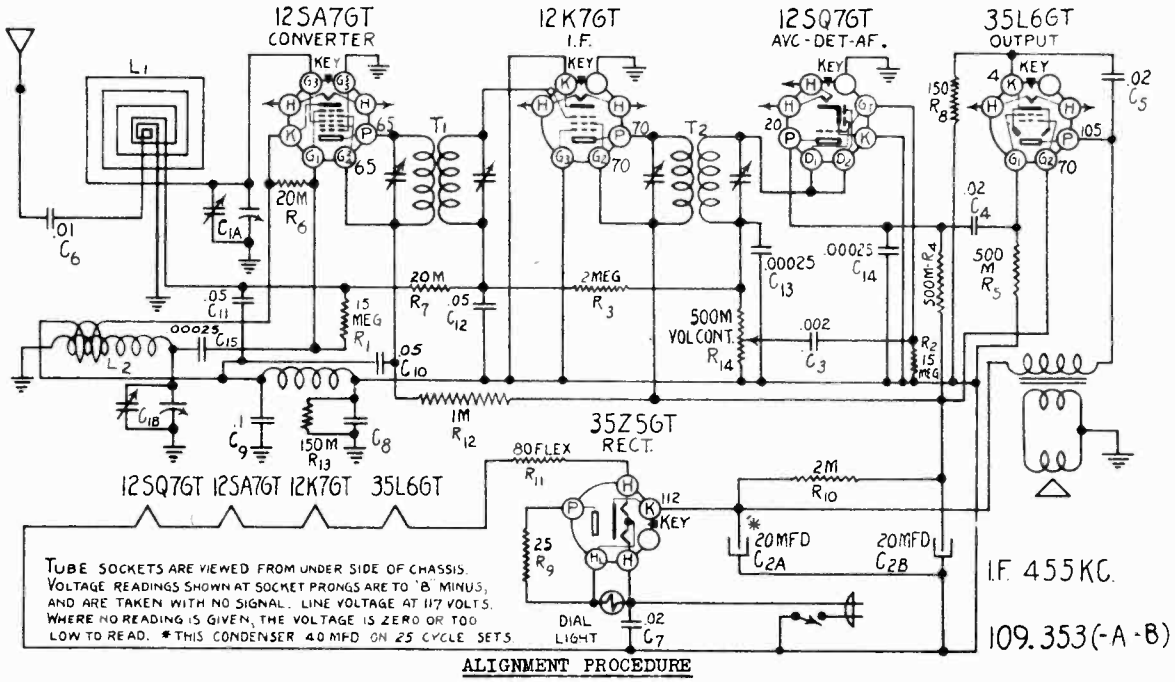
POWER SUPPLY:
105-125 volts 50-60 cycle or DC (25 cycle model available) . . . . . 50 Watts

FREQUENCY RANGE . . . . . 535kc-1580kc ALIGNMENT FREQUENCIES Osc. 1580 Ant. 1400 kc

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . . . . . .7 Watts
Maximum . . . . . 1.2 Watts

LOUD SPEAKER:
Type . . . . . P.M.Dynamic
Size . . . . . 4 inch
Field . . . . . Permanent Magnet



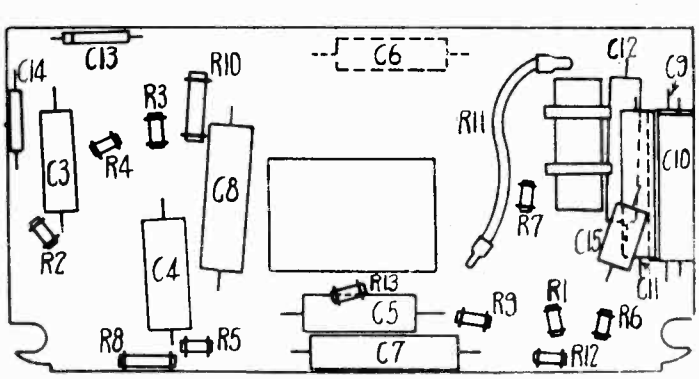
ALIGNMENT PROCEDURE

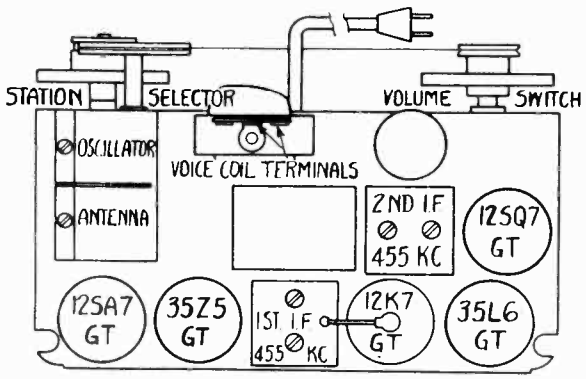
See tube layout diagram for location of trimmers. Alignment may be made without removing the set from the cabinet. Connect the output meter to the two terminals shown in the tube layout diagram. These terminals are mounted on an insulated terminal strip on top of the output transformer. These terminals connect to the voice coil.

Connect the signal generator ground to the receiver chassis through a 0.1 MFD condenser. Using a .05 to .25 MFD condenser in series with the high side of the generator output, apply a 455 KC signal to the grid of the 12K7GT I.F. amplifier tube and align the 2nd IF transformer. Repeat for the first I.F. transformer, applying the signal to the antenna section of the tuning condenser. Using a 50 MMF condenser as a dummy antenna apply the RF signal to the antenna lead. Turn the tuning condenser to minimum capacity, set the generator to 1580 KC and trim the oscillator section. Set the generator to 1400 KC, tune in the signal and adjust the antenna trimmer. (the antenna and oscillator trimmers are located on top of the tuning condenser.) NOTE: Best alignment is obtained with the volume control at maximum and the applied signal only strong enough to give satisfactory indications on the output meter. Alignment with high signal input and retarded volume control setting is seldom accurate.

THE LOOP ANTENNA:

The loop antenna built into the receiver cabinet is directional in its reception characteristics. Therefore, reception may be improved or interference reduced by turning the set to a particular position. In locations where the signal strength is too low to give satisfactory reception from the loop antenna alone, an outside antenna may be connected to the wire projecting from the rear of the receiver. No attempt should be made to use a ground connection.





SEARS ROEBUCK & CO. MODELS R5501, R5501-A, Chassis R5501-B
101.618, 101.618-1A

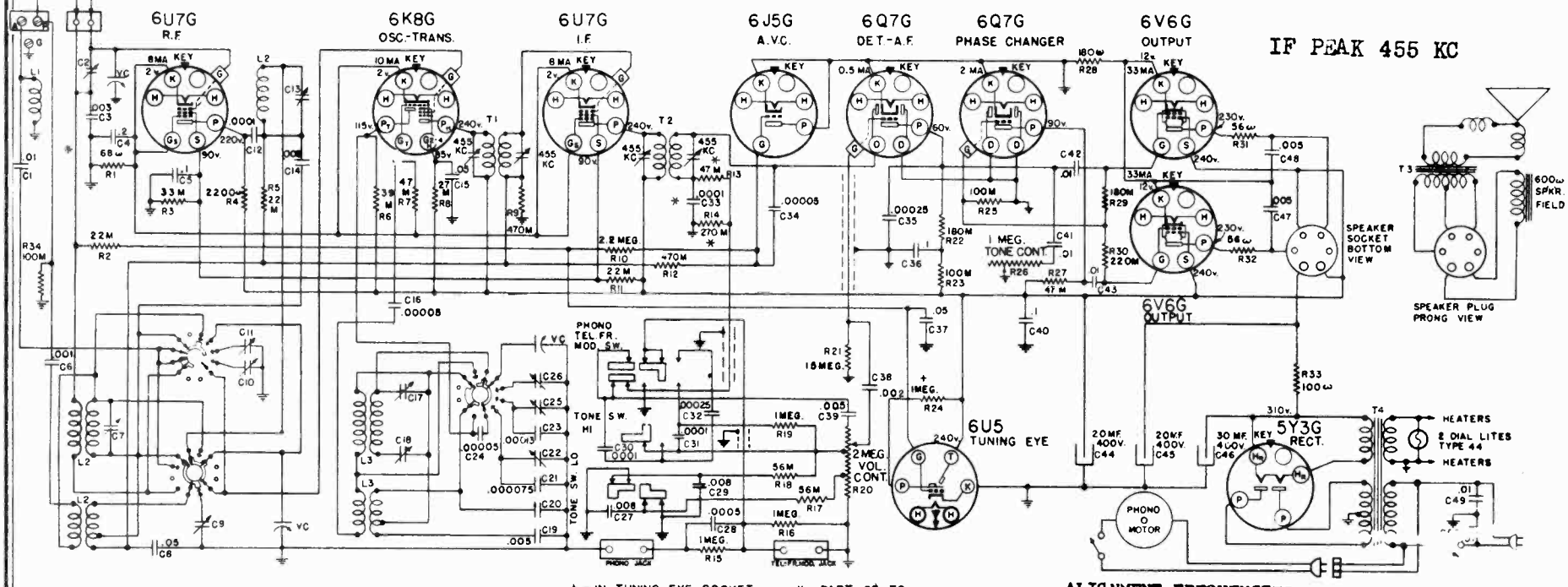
SEPTEMBER 16, 1940

DIFFERENCES BETWEEN 101.618 AND 101.618-1A CHASSIS:

101.618-1A is identical with 101.618 except for different shaft lengths and different cabinet and appearance items.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.618, -1A

IF PEAK 455 KC



\+ - IN TUNING EYE SOCKET * - PART OF T2

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

FREQUENCY RANGES:

Band "A"	540-1650 kc
Band "B"	1475-3510 kc
Band "C"	5.95-18.3 mc
Band "D"	9.3-9.85 mc
Band "E"	11-12 mc

INTERMEDIATE FREQUENCY . . . . . 455 kc

LOUDSPEAKER:

Type	Dynamic
Size	12 inch
Approx. field coil res.	600 ohms
Approx. field coil voltage drop	70 v.

POWER OUTPUT:

Type	Push-Pull beam
Undistorted	5 watts
Maximum	10 watts

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1650 kc	1500 kc	600 kc
2.4 mc	2.4 mc	Fixed
18.3 mc	16 mc	Fixed
9.55 mc	9.55 mc	Fixed
11.71 mc	11.71 mc	Fixed

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.

RECORD CHANGER:

101.330, 331, 332 Record Changer Unit.

POWER SUPPLY:

All models available	105-125 volt AC; 60 cycle: 140 watts
All models available	105-125 volt AC; 50 cycle; 140 watts
All models available	105-125 volt AC; 25 cycle: 150 watts

MODELS R5501, R5501-A
R5501-B

SEARS-ROEBUCK & CO.

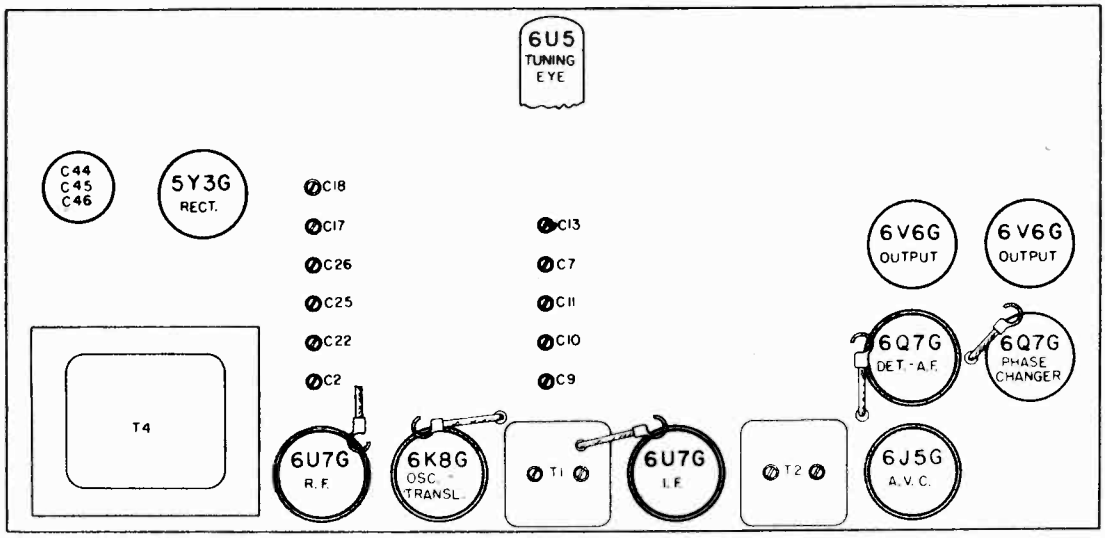
Chassis 101.618
101.618-1A

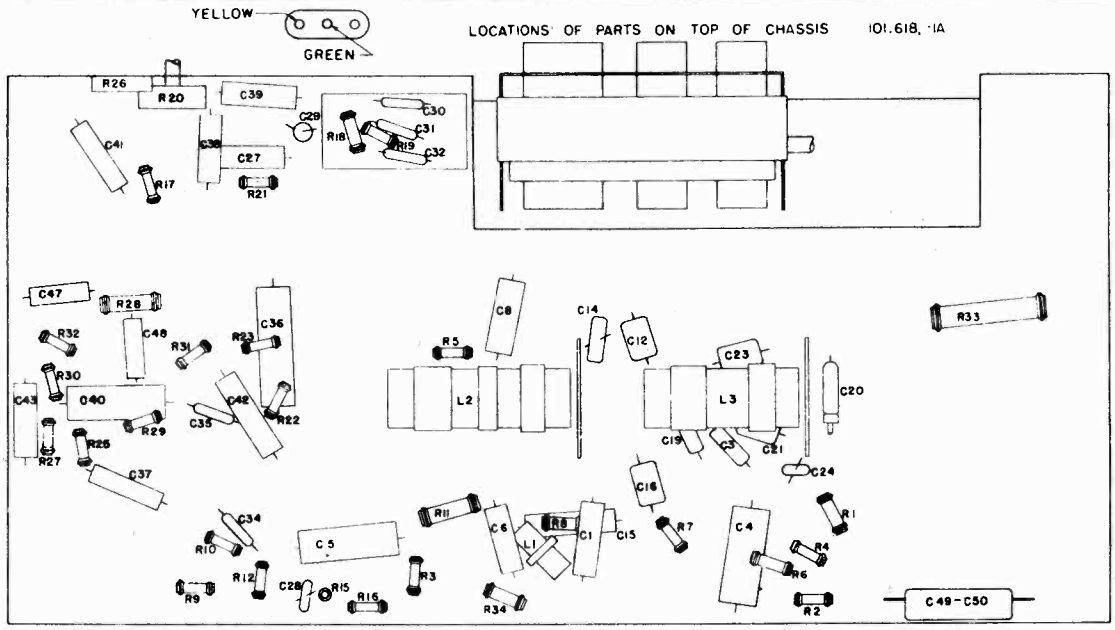
Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.6 volts
Approximate microvolts input for 500 milliwatts output . . . . . See chart below
Generator ground lead connection . . . . . Receiver chassis
Dummy antenna value to be in 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"	Fully open	1650 kc	.00005 mfd.	Ant. Term.	C17	Oscillator	--
"A"	1500 kc	1500 kc	.00005 mfd.	Ant. Term.	C3, 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	180
"C"	Open	18.3 mc	400 ohms	Ant. Term.	C26*	Oscillator	--
"C"	16 mc(rock)	16 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

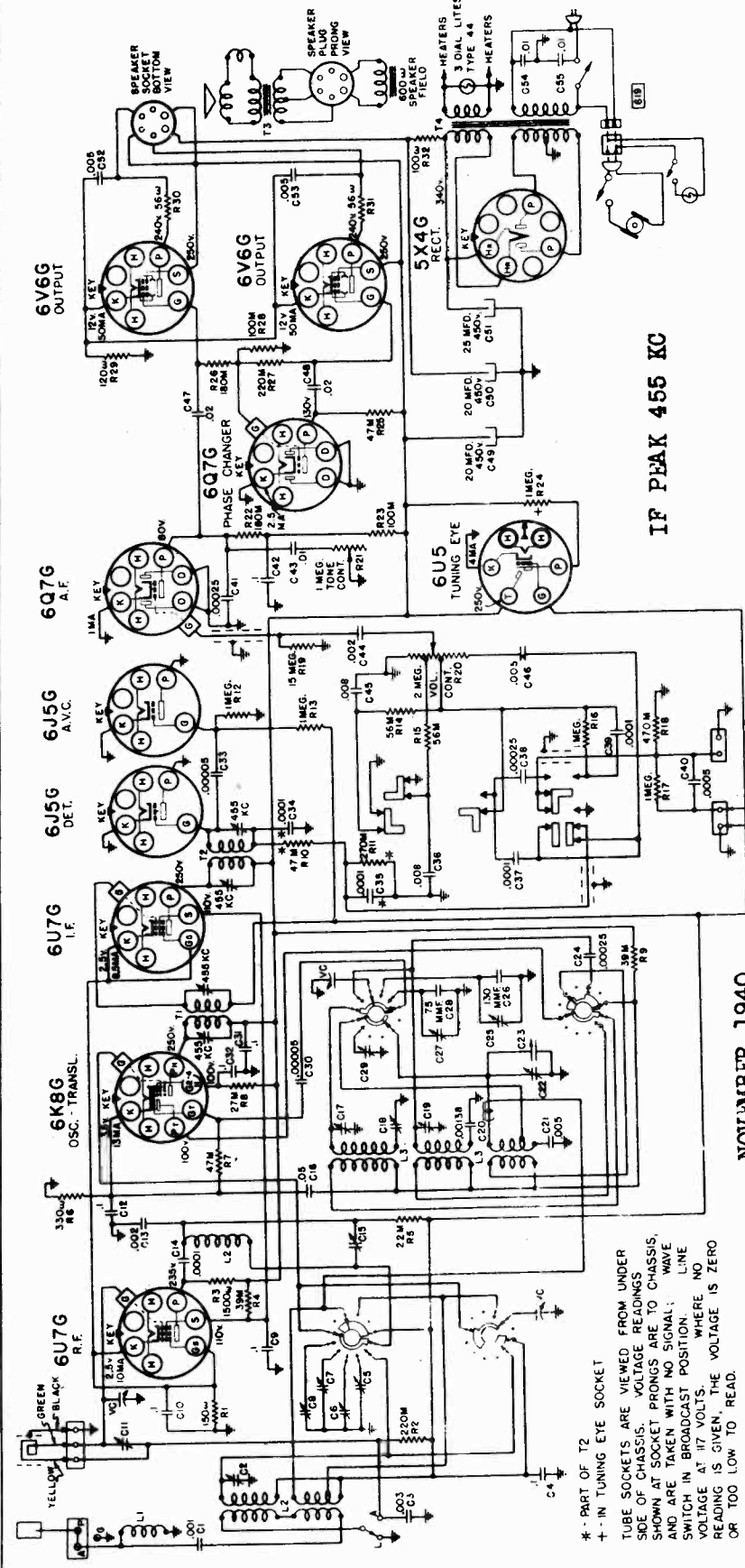
* If two peaks can be had, the correct one is with the trimmer screw further out; the other peak is the image.



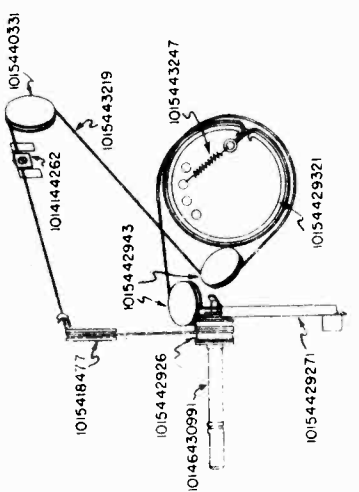


SEARS ROEBUCK & CO.

MODELS 5511, 5511-A
Chassis 101.619
101.619-A



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



POWER SUPPLY:
All models available . . . . . 105-125 volts, 50-60 cycles; 150 watts
All models available . . . . . 105-125 volts, 25-60 cycles; 160 watts

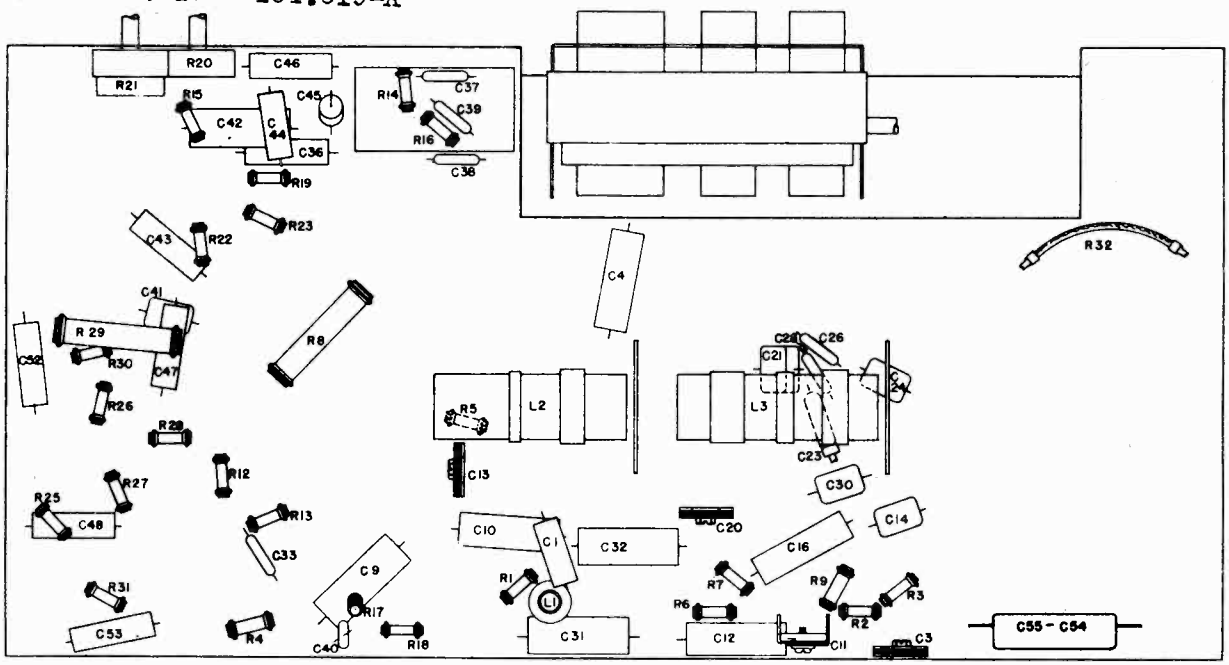
ALIGNMENT FREQUENCIES:

	Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
FREQUENCY RANGES:			
Band "A" . . . . . 538-1620 kc	1620 kc	1400 kc	600 kc
Band "B" . . . . . 1.66-5.2 mc	5.2 mc	4 mc	Fixed
Band "C" . . . . . 5.38-18.2 mc	18.3 mc	15 mc	Fixed
Band "D" . . . . . 9.36-9.87 mc	9.55 mc	9.55 mc	Fixed
Band "E" . . . . . 10.93-12.1 mc	11.71 mc	11.71 mc	Fixed
Band "F" . . . . . 12.72-16 mc	15.5 mc	15.5 mc	Fixed
INTERMEDIATE FREQUENCY			455 kc

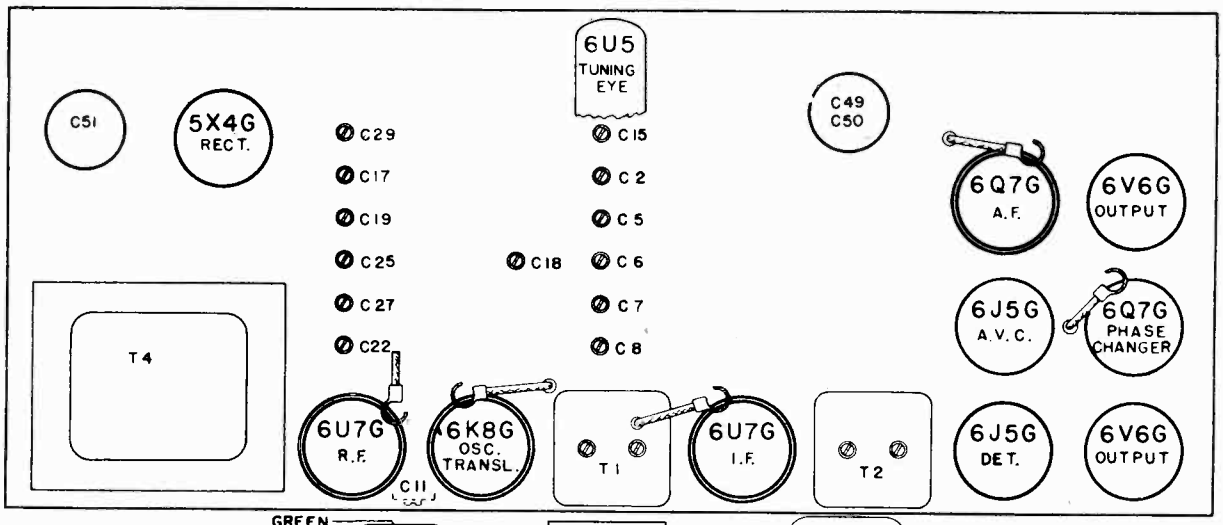
The adjustment for each push button is locked or unlocked by tightening or loosening the slotted screwhead made accessible when the push button knob is pulled off of its plunger. Stations are set up by unlocking the mechanism, tuning in the station, pushing in the plunger (being careful not to detune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

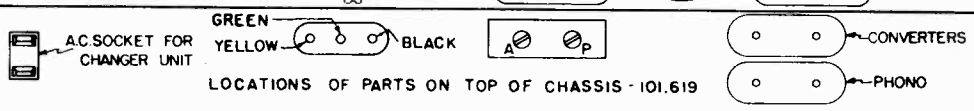
MODELS 5511,5511-A
Chassis 101.619 101.619-A

SEARS ROEBUCK & CO.



LOCATIONS OF PARTS UNDER CHASSIS 101.619





LOCATIONS OF PARTS ON TOP OF CHASSIS - 101.619

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.

SEARS ROEBUCK & CO.

MODELS 3661,3761,3861,1621
Chassis 109,355,-A,-B,-C

SEPTEMBER 16, 1940

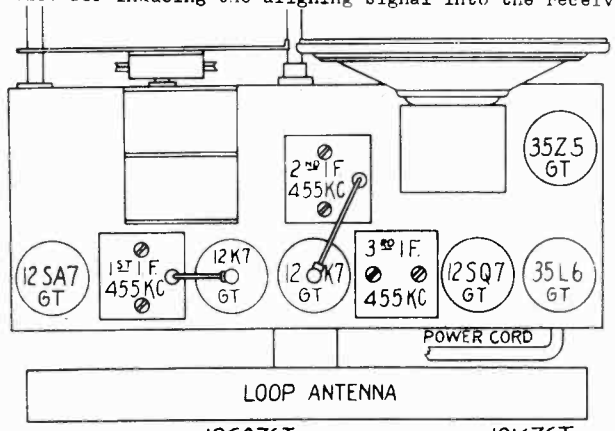
POWER SUPPLY. . . . 105-125 volts 50-60 cycles or DC - 30 Watts. 25 cycle models available.
FREQUENCY RANGE . . . . . 540-1600 kc ALIGNMENT FREQUENCIES: . . . . 1400 kc
INTERMEDIATE FREQUENCY . . . . . 455 kc

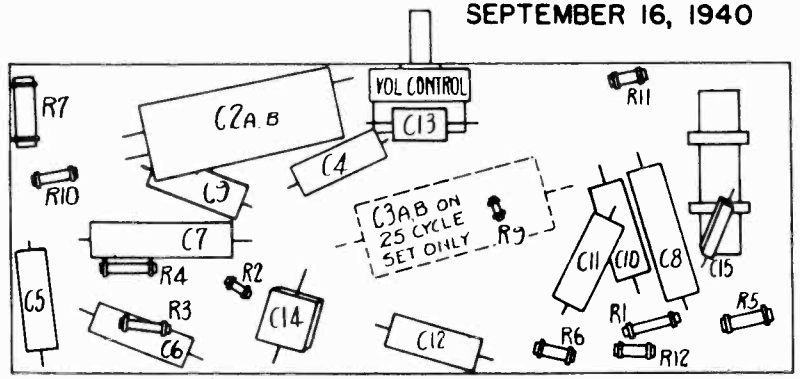
IF Alignment frequency 455 kc
Osc. & Ant. Align & Calibrate 1400 kc

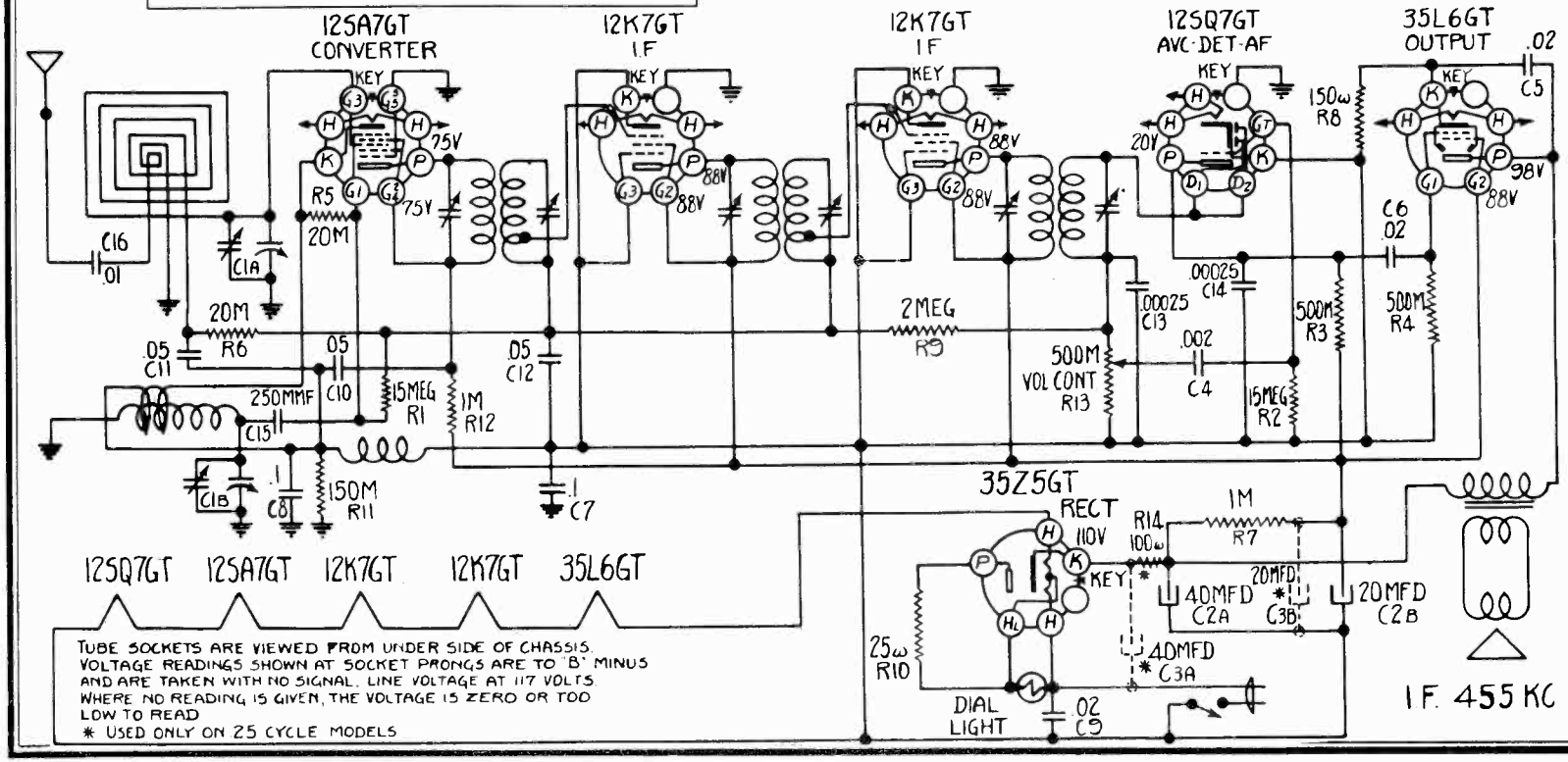
POWER OUTPUT:
Type. . . . . Beam Tube
Undistorted . . . . . .0.8 Watt
Maximum . . . . . .1.4 Watt

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 receiver are the loop and oscillator trimmers. The circuit is quite conventional.

It is recommended that the aligning signal be induced from another loop into the 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.



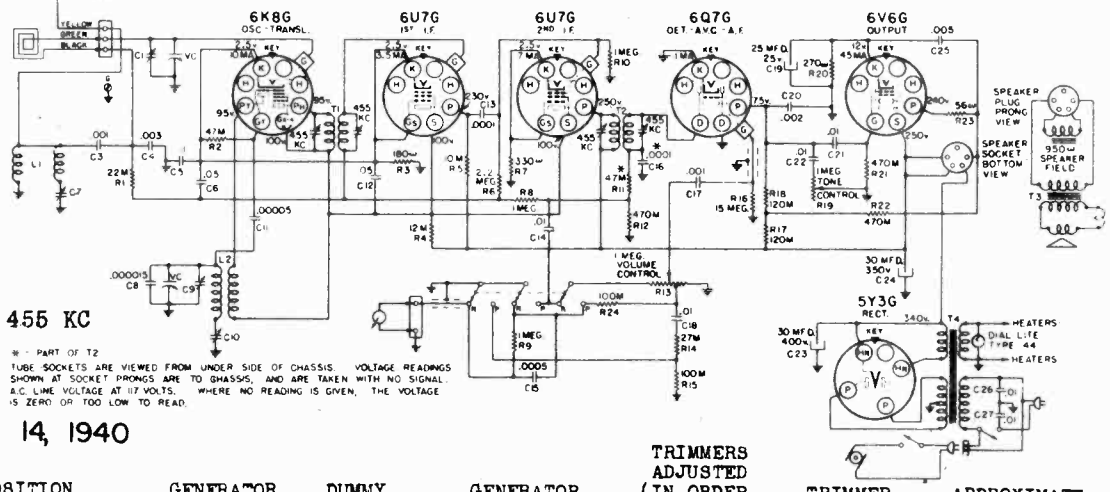




TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO 'B' MINUS AND ARE TAKEN WITH NO SIGNAL. LINE VOLTAGE AT 117 VOLTS WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ
* USED ONLY ON 25 CYCLE MODELS

MODEL R5561
Chassis 101.617

SEARS ROEBUCK & CO.



IF PEAK 455 KC

* - PART OF T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO GHASSIS, 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.

AUGUST 14, 1940

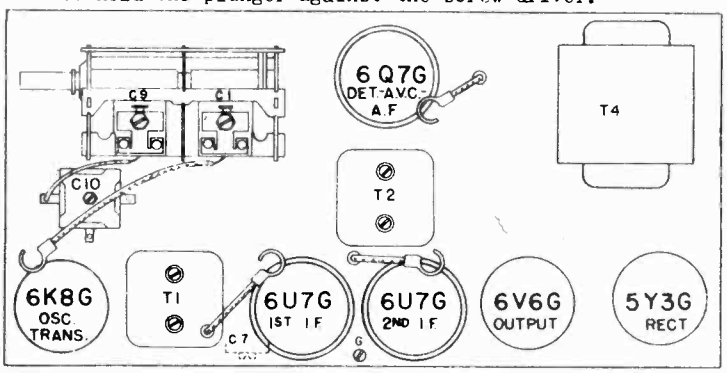
POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
Closed	455 kc	.1 mfd.	6K8G Grid	T2,T1	IF	--
600 kc	455 kc	.00005 mfd.	Ant. Clip	C7*	Wave Trap	--
Fully open	1620 kc	.00005 mfd.	Ant. Clip	C9	Oscillator	--
1400 kc	1400 kc	.00005 mfd.	Ant. Clip	C1	Translator	150
600 kc(rock)	600 kc	.00005 mfd.	Ant. Clip	C10	Padder	65

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
Position of Tone Control . . . . . Counter-clockwise (HI)
Position of Dial Pointer with variable fully closed . . . . . On mark to left of 550 kc calibration mark

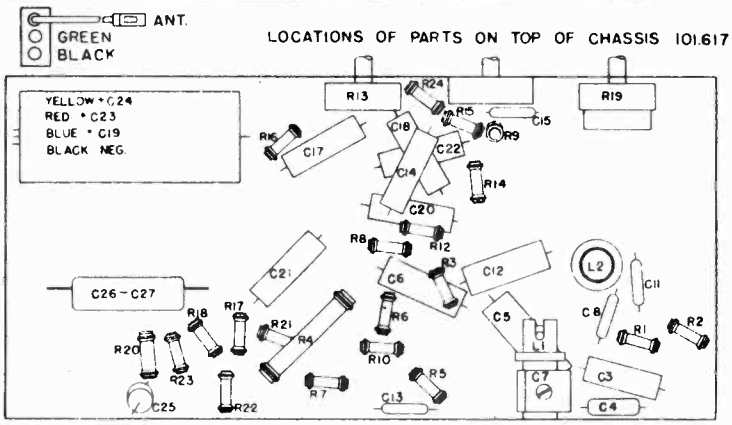
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to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

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 by holding the screw driver lightly in the screwhead allowing the spring tension to hold the plunger against the screw driver.



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.617



LOCATIONS OF PARTS UNDER CHASSIS 101.617

INTERMEDIATE FREQUENCY . . . . . 455 kc

POWER SUPPLY:
All models available . . . . . .
105-125 v. 60 cycle AC, 70 watts
105-125 v. 50 cycle AC, 70 watts
105-125 v. 35 cycle AC, 75 watts

POWER OUTPUT:
Type . . . . . Beam tube
Undistorted . . . . . 4 watts
Maximum . . . . . 6 watts

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Translator Trimmer	Padder
1620 kc	1400 kc	600 kc

FREQUENCY RANGE: . . . . . 540-1620 kc

LOUDSPEAKER:
Type . . . . . Dynamic
Size . . . . . 10 inch
Field coil resistance . . . . 950 ohms
Approx. field coil voltage drop. 90 V.

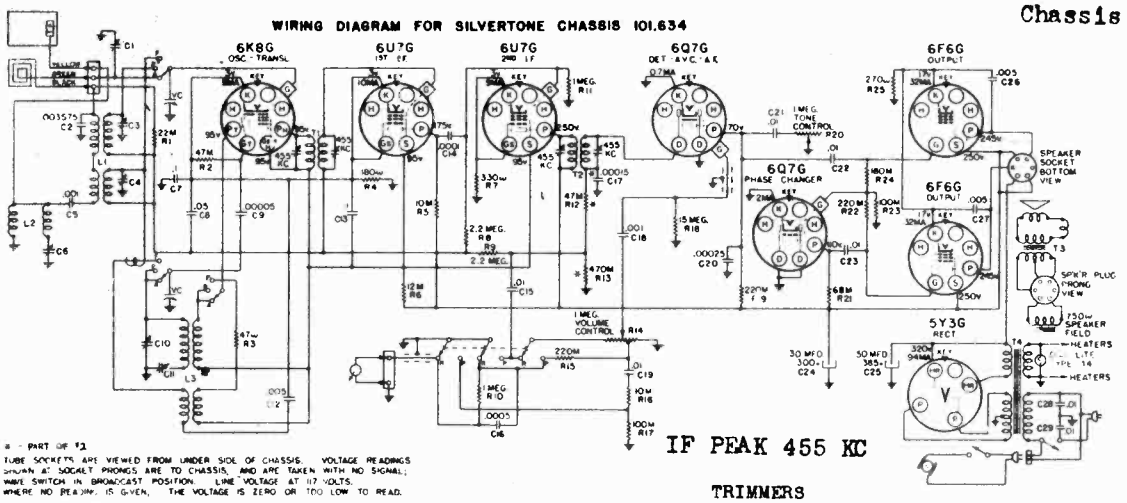
OPERATING FEATURES:
Tone Control. . .Continuously variable
Automatic Volume Control
Push Button Tuning (5 Button)
Combined with Automatic Record Changer

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

SEARS ROEBUCK & CO.

MODEL 5581
Chassis 101.634

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.634



IF PEAK 455 KC

* - PART OF S2

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

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	C6*	Wave Trap	--
"AM"	Fully open	1620 kc	.00005 mfd.	Ant. Clip	C10	Oscillator	--
"AM"	1400 kc	1400 kc	.00005 mfd.	Ant. Clip	C1	Translator	200
"AM"	600 kc(rock)	600 kc	.00005 mfd.	Ant. Clip	C11	Padder	100
"POL"	3.4 mc	3.4 mc	400 ohms	Ant. Clip	C3	Translator	35
"FOR"	15 mc(rock)	15 mc	400 ohms	Ant. Clip	C4	Translator	10

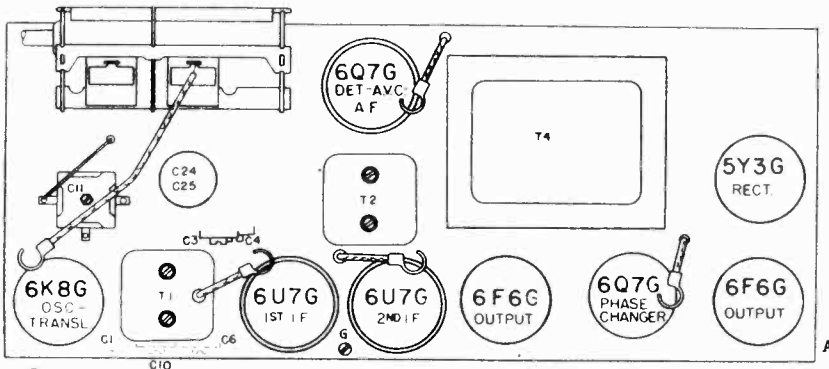
Output meter connection . . . . . Across loudspeaker voice coil
Output meter reading to indicate 500 milliwatts . . . . . 1.1 volts
Approximate microvolts input to indicate 500 milliwatts output . . . . . See chart below
Position of Tone Control . . . . . Treble
Position of Dial Pointer with variable fully closed . . . . . On mark to left of 550 kc calibration mark

* 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.

PUSH BUTTON TUNING MECHANISM:

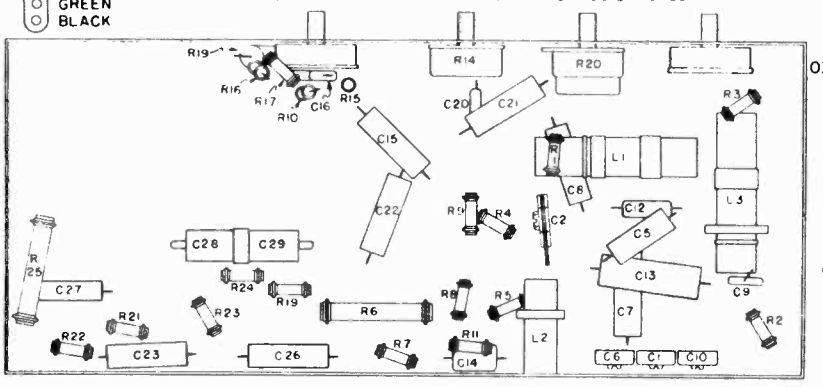
SEPTEMBER 6, 1940

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.



LOCATIONS OF PARTS ON TOP OF CHASSIS 101.634

YELLOW
GREEN
BLACK



LOCATIONS OF PARTS UNDER CHASSIS 101.634

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER SUPPLY:
All models available . . . . . .
105-125 volt, 60 cycles AC: 115 watts
105-125 volt, 50 cycles AC: 115 watts
105-125 volt, 25 cycles AC: 130 watts

POWER OUTPUT:
Type . . . . . Pentode
Undistorted . . . . . 4 watts
Maximum . . . . . 7 watts

FREQUENCY RANGES:
Band "A" . . . . . 540-1620 kc
Band "B" . . . . . 1450-3530 kc
Band "C" . . . . . 5.8-18.5 mc

ALIGNMENT FREQUENCIES:

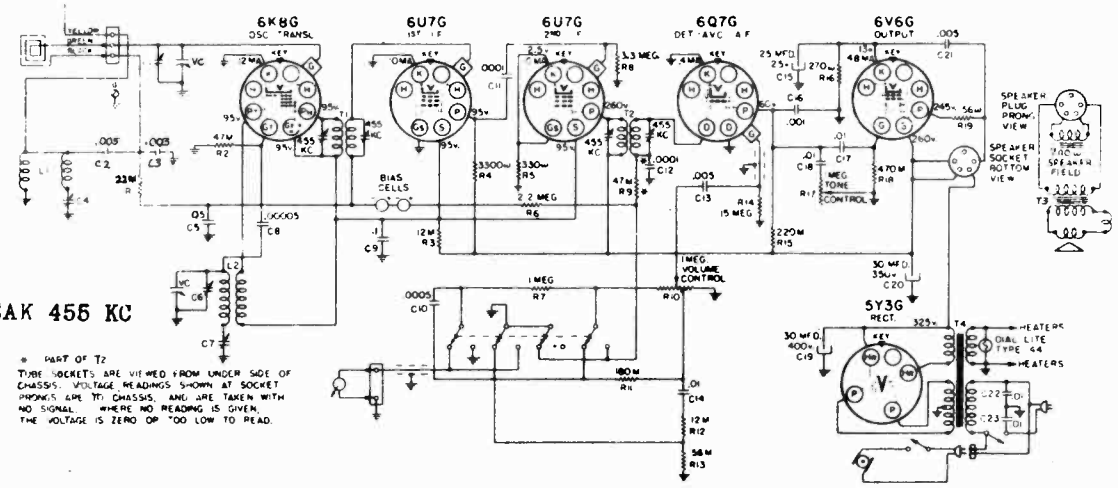
Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1620 kc	1400 kc	600 kc
None	3.4 mc	Fixed
None	15 mc	Fixed

OPERATING FEATURES:
Automatic Volume Control
Push Button Tuning (5 buttons)
Tone Control. . . Continuously variable
Combined with Automatic Record Changer

LOUDSPEAKER:
Type . . . . . Dynamic
Size . . . . . 10 inch
Field coil resistance . . . . 750 ohms
Approx. field coil voltage drop.. 70 v.

CHASSIS FEATURES:
Number IF stages . . . . . Two
Number condensers in gang . . . . Two
Underwriters Approved
Built-in rotatable loop for Broadcast band and plate for Short Wave bands (RADIONET Antenna System).
Built-in IF Wave Trap

MODEL 5661 SEARS ROEBUCK & CO. Chassis 101,633



IF PEAK 455 KC

* PART OF T2

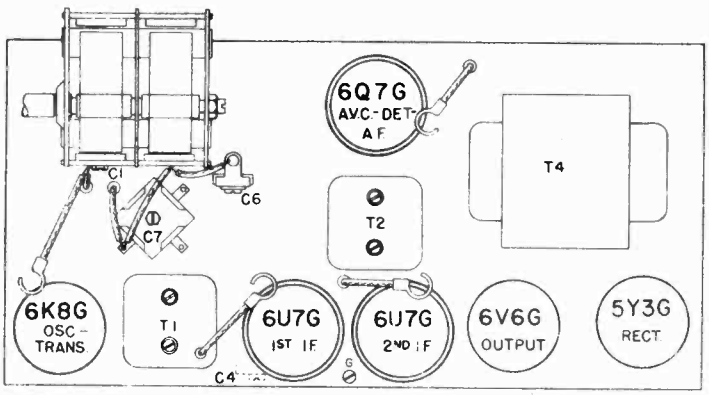
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

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	C4*	Wave Trap	--
Fully open	1630 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

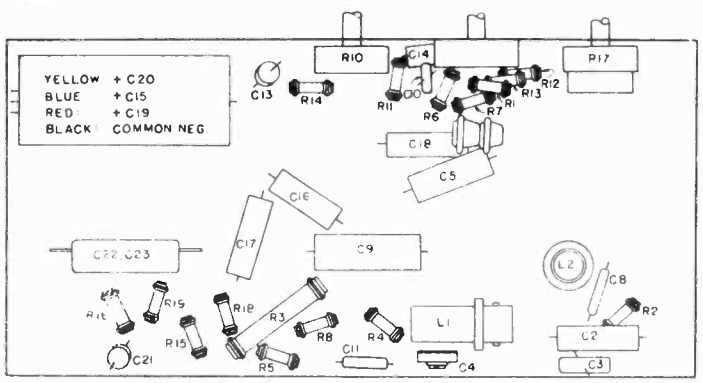
* The generator should be adjusted for high output. The trimmer should be adjusted for minimum output meter reading instead of the usual maximum reading. If the frequency of an interfering station around 455 kc is known, the generator should be adjusted to the frequency of that station instead of to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

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
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 550 kc calibration mark



ANT
GREEN
BLACK

LOCATIONS OF PARTS ON TOP OF CHASSIS 101.633



LOCATIONS OF PARTS UNDER CHASSIS 101 633

SEPTEMBER 17, 1940

INTERMEDIATE FREQUENCY . . . . . 455 kc

FREQUENCY RANGE: . . . . . 540-1620 kc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Translator Trimmer	Padder
1620 kc	1400 kc	600 kc

POWER SUPPLY:
All models available
105-125 v. 60 cycle AC, 85 watts
105-125 v. 50 cycle AC, 85 watts
105-125 v. 25 cycle AC, 90 watts

POWER OUTPUT:
Type . . . . . Beam tube
Undistorted . . . . . 2.5 watts
Maximum . . . . . 5 watts

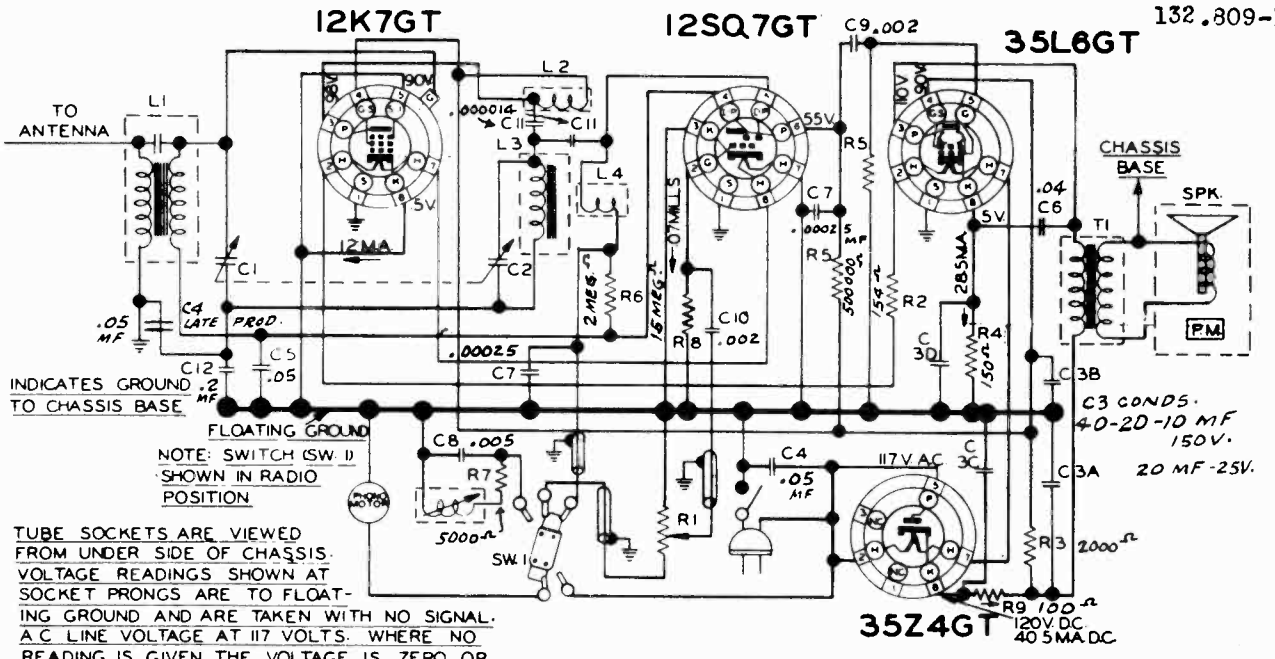
OPERATING FEATURES:
Tone Control. . .Continuously variable
Automatic Volume Control
Combined with Automatic Record Changer

LOUDSPEAKER:
Type . . . . . Dynamic
Size . . . . . 10 inch
Field coil resistance . . . . 700 ohms
Approx. field coil voltage drop... 65 v.

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

SEARS ROEBUCK & CO.

MODEL 5701
Chassis 132.809
132.809-1



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.

ALIGNMENT PROCEDURE

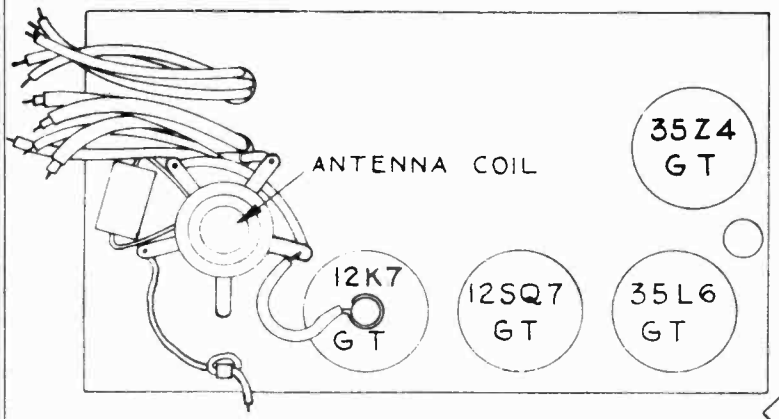
POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (high)	GENERATOR CONNECTION (Low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION
1400 kc	1400 kc	.00005 mfd.	Ant. hank	Chassis base	C2, C1	R.F. Tank
600 kc	600 kc	.00005 mfd.	Ant.. hank	Chassis base	Check Point	R.F. Tank

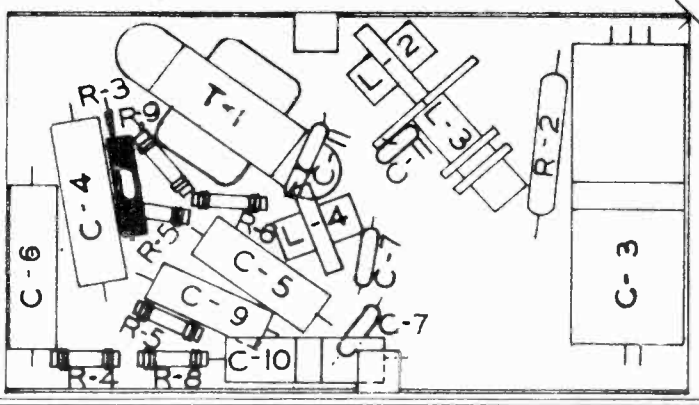
Output meter connection . . . . . Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.38 volts

When properly set with the variable condenser closed the pointer will point to 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.

Position of Volume Control . . . . . Fully clockwise
Position of Dial Pointer with variable fully closed . . . . . See note





FREQUENCY RANGE . . . . . 540-1720 kc

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

OPERATING FEATURES:
Automatic Volume Control
AC only; 60 cycles & 50 cycles *

JUNE 18, 1940

TUBES AND FUNCTIONS:
12K7GT . . . . . RF
12SQ7GT . . Dectector-AVC-AF
35L6GT . . . . . Output
35Z4GT . . . . . Rectifier

POWER SUPPLY:
All models available . . . . . .
105-125 volts, AC-only-60 cycles, 45 watts
50 cycles

ALIGNMENT FREQUENCIES: Ant.- 1400 kc
R.F.-1400 kc

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

CHASSIS FEATURES:
Number TRF stages . . . . . two

MODEL 5711
Chassis 110.409

SEARS-ROEBUCK & CO.

POWER SUPPLY:
All models available. . . . . .110-125 volts, 25-60 cycle AC or DC,30 watts

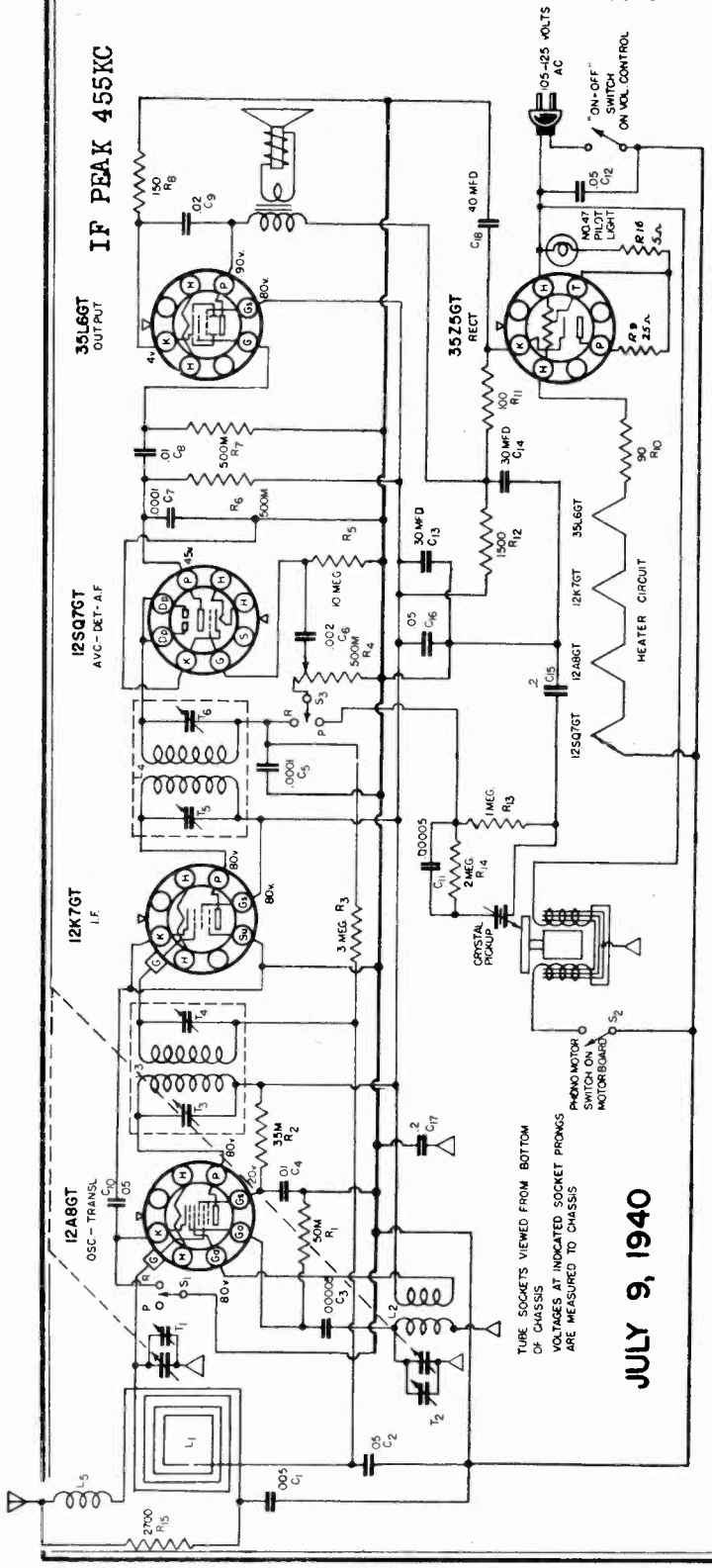
FREQUENCY RANGE:
Broadcast . . . . . .540-1730 KC

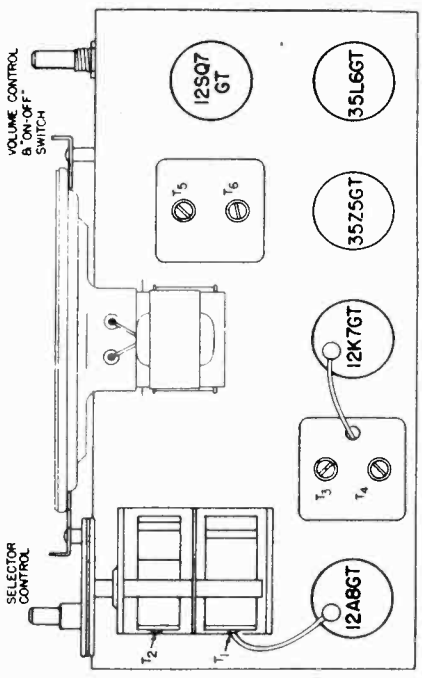
ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Oscil. Padder
Broadcast	1500 KC	Fixed

POWER OUTPUT:
Type.....Beam Power
Undistorted 1.0
Maximum.....1.5

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





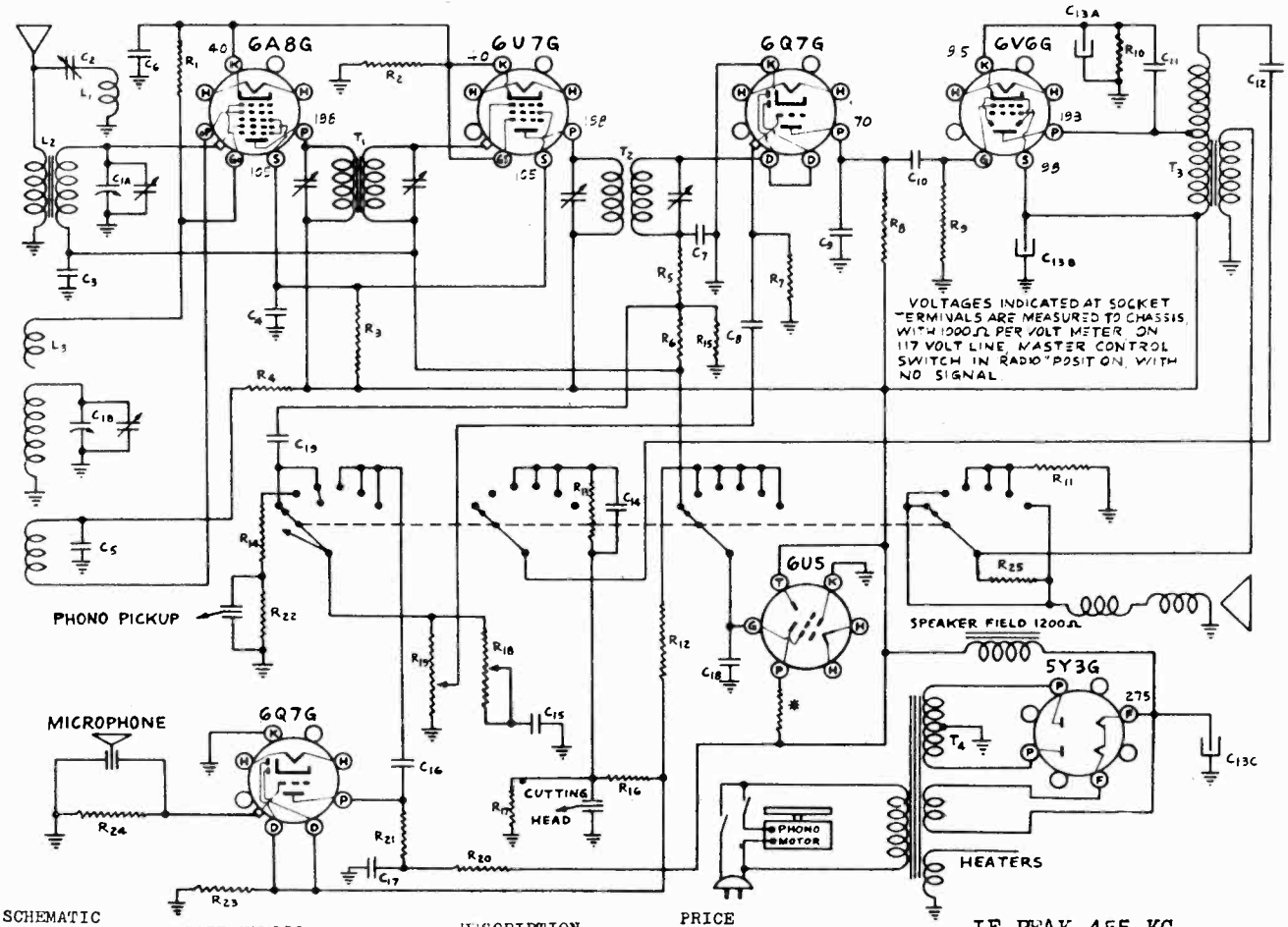
ALIGNMENT PROCEDURE

Output meter conn. ... Across primary o.p. transf.
Dummy ant. in series with gen. o.p. ... 100 mmfds.
Conn. of gen. ground ..... B Minus Bus
Gen. Modulation ..... App. 30% @ 400 cycles
Pos. of vol. control ..... Fully clockwise
Always keep o.p. from test oscillator at its lowest possible value. As sensitivity is increased by alignment, the gen. o.p. should be reduced correspondingly. **Short Oscillator section of variable condenser. ***Connect gen. o.p. to a separate radiating loop and pickup 1500 KC signal on receiver.

POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
**	455 KC	12K7GT, Grid	T5, T6	I.F.
**	455 KC	12A8GT, Grid	T3, T4	I.F.
1500 KC	1500 KC	***	T2, T1	Osc., R.F.

SEARS-ROEBUCK & CO.

MODELS 5731, 5761
Chassis 109.359



SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	PRICE EACH
R19	109288260	Control, Volume and Switch	1.25
R18	109258519	Control, Tone	.80
	109542562	Cap, Tube Shield	.10
L1	109288624	Coil, Wave Trap	.40
L2	109288261	Coil, Antenna	1.15
L3	109288446	Coil, Oscillator	.75
C1a,b	109168472	Condenser, Variable	2.75
C2	109173272	Condenser, Trimmer	.30
C3,17,18		Condenser, .1 mfd. 200 volt	.20
C4,6		Condenser, .2 mfd. 200 volt	.25
C5,16		Condenser, .01 mfd. 400 volt	.20
C7,9		Condenser, 250 mmf. mica	.25
C10		Condenser, .02 mfd. 400 volt	.20
C11,15,18		Condenser, .002 mfd. 600 volt	.20
C12		Condenser, .01 mfd. 600 volt	.20
C13a,b,c	109208339	Condenser, Electrolytic	1.65
C14		Condenser, .001 mfd. 400 volt	.20
R1,5,13		Resistor, 50 M 1/3 watt	.15
R2		Resistor, 200 ohm 1/3 watt	.15
R3		Resistor, 15 M 1 watt	.20
R4		Resistor, 20 M 1/3 watt	.15
R6,15		Resistor, 1 meg 1/3 wa tt	.15
R7		Resistor, 10 meg 1/3 watt	.15
R16,24		Resistor, 5 meg 1/3 watt	.15
R8,14,21,22		Resistor, 200 M 1/3 watt	.15
R9,20		Resistor, 500 M 1/3 watt	.20
R10		Resistor, 300 ohm 1/3 watt	.15
R11		Resistor, 5 ohm 1 watt	.15
R17		Resistor, 300 M 1/3 watt	.20
R12,23		Resistor, 2 meg 1/3 watt	.15
R25		Resistor, 20 ohm 1 watt	.15
T1	109338415	Transformer, 1st IF	.20
T2	109358456	Transformer, 2nd IF	2.25
T3	109138278	Transformer, Output	2.25
T4	109108455	Transformer, Power 60 cycle	2.00
	109108625	Transformer, Power 50 cycle	4.50
	109408448	Dial Chart	5.50
	109418451	Pointer	.35
	109542541	Tube Shield	.35
	109548298	Shaft, Pointer	.15
	109544313	Bracket, Tuning Tube	.20
	109598461	Book, Instruction	.20
	109598283	Dial Crystal	.30
	109668285	Microphone	.25
	109448477	Plate, Motor Switch	.25
	109388454	Switch, Motor	.65
	109588295	Speaker, 6½" Dynamic	5.00

IF PEAK 455 KC

TUBES AND FUNCTIONS

6A8G.....Oscillator-Translator
6U7G.....IF Amplifier
6Q7G.....Detector-AVC-Audio
6Q7G.....Pre-amplifier for Microphone
6V6G.....Power Output
5Y3G.....Rectifier
6U5....Tuning/Volume Indicator

POWER SUPPLY.....

105-125 volts AC 78 Watts
50 and 60 cycle models available.

FREQUENCY RANGE..... 540 to 1720 KC.

ALIGNMENT FREQUENCIES

Intermediate frequency 455 kc., Wave Trap 455 kc.
Oscillator 1720 kc., Antenna 1400 kc.

POWER OUTPUT

Type.....Beam Tube
Undistorted..... 2.0 Watts
Maximum..... 3.5 Watts

SPEAKER

Type.....Dynamic
Size.....6½ Inch
Field Resistance.....1150 Ohms

OPERATING FEATURES

Automatic Volume Control
Tuning Eye
Crystal Phono Pickup
Crystal Recording Head

SEPTEMBER 16, 1940

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 5731, 5761
Chassis 109.559

SEARS ROEBUCK & CO.

ALIGNMENT PROCEDURE

Output meter connection ..... Across speaker voice coil
Connection of generator lead ..... See chart below
Connection of generator ground lead ..... To chassis
Dummy antenna value ..... See chart below
Position of volume control ..... Fully clockwise
Position of Master Control Switch ..... "Radio" (Position No.1)

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
Open (Minimum capacity)	455 kc	.1 Mfd.	Grid of 6A8G	T2, T1	IF
Open	1720 kc	200 MMF.	Antenna lead	C1b	Oscillator
Tune in signal from generator	1400 kc	200 MMF.	Antenna lead	C1a	Antenna
Closed	455 kc	200 MMF.	Antenna lead	C2**	Wave trap

** Adjust C2 for minimum response.

The alignment procedure should be repeated stage by stage in the orgional order for greatest accuracy.

Always keep the output from the generator at the lowest possible level so that the AVC action will be ineffective.

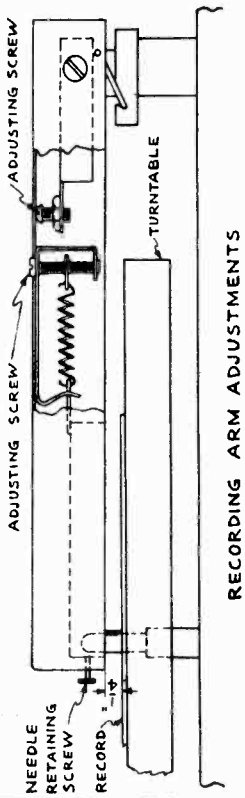
The location of all the alignment adjustments is shown on the top view of the chassis on the next page.

RECORDING ARM ADJUSTMENTS

The bottom of the recording arm should be exactly 1/4 inch from the surface of the record. This should be measured beside the needle retaining screw on the end of the arm. the screw for making this adjustment can be found when the arm is raised on a small platform near the hinge. Turning the adjusting screw to the left raises the arm, turning to the right lowers it. In making an adjustment turn the screw only a small fraction of a turn at a time.

Make a cut of at least ten turns to see whether or not the needle is exerting the correct pressure on the record. This is correct when the groove cut by the needle is approximately the same width as the space between grooves. On top of the recording arm is a flat head screw. Turning this screw to the right increases the depth of cut, to the left decreases it. This adjustment is quite critical and the screw should be turned not more than 1/4 turn at a time.

The diagram below shows the location of these adjustments.

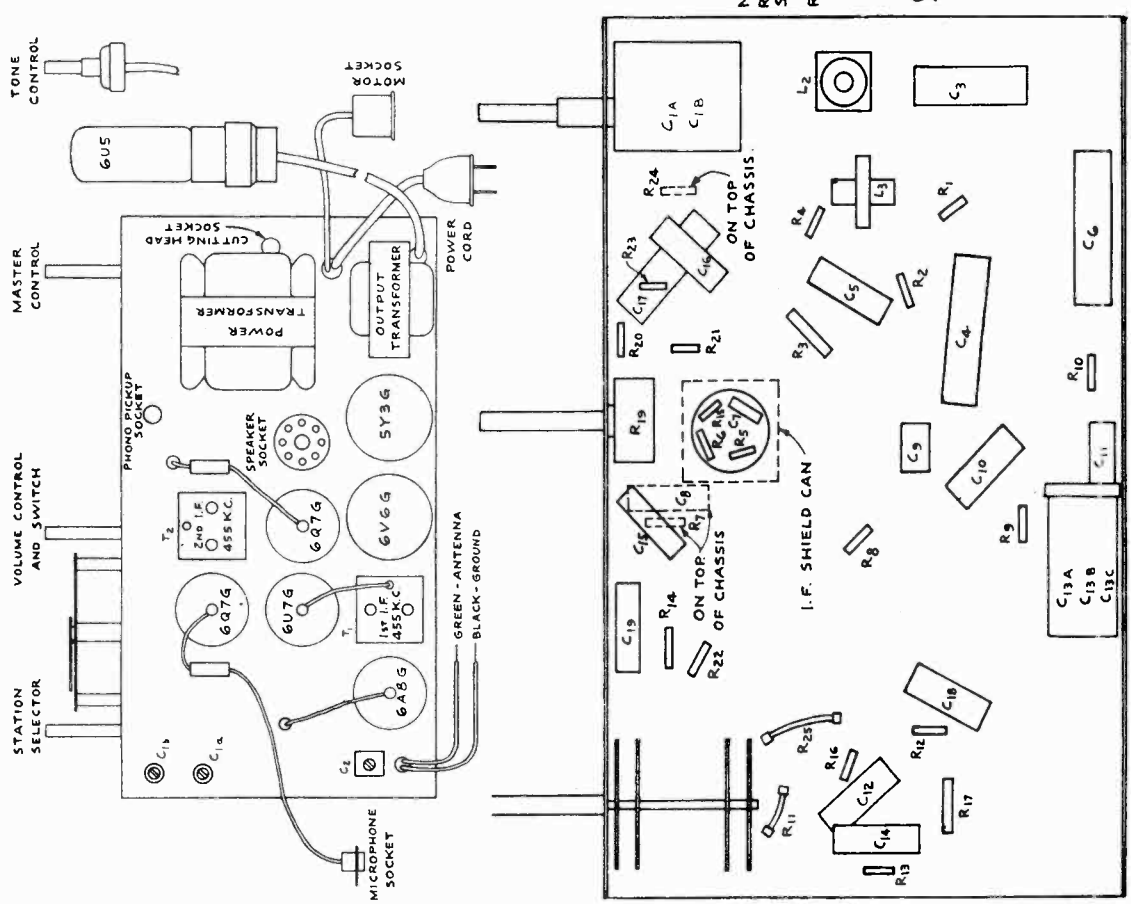


RECORDING ARM ADJUSTMENTS

In the recording positions (Positions 3,4, and 5 of the Master Control Switch) the volume from the speaker is reduced. This is done automatically by the switch for three reasons, some of the power from the output tube is needed for operating the recording head, the volume level necessary for recording is too high for the average room, and to prevent the sound from the speaker from reaching the microphone.

If the recording needle is not very sharp the quality of the recording will be poor. A needle which has become dull through use or which has been otherwise damaged should be replaced.

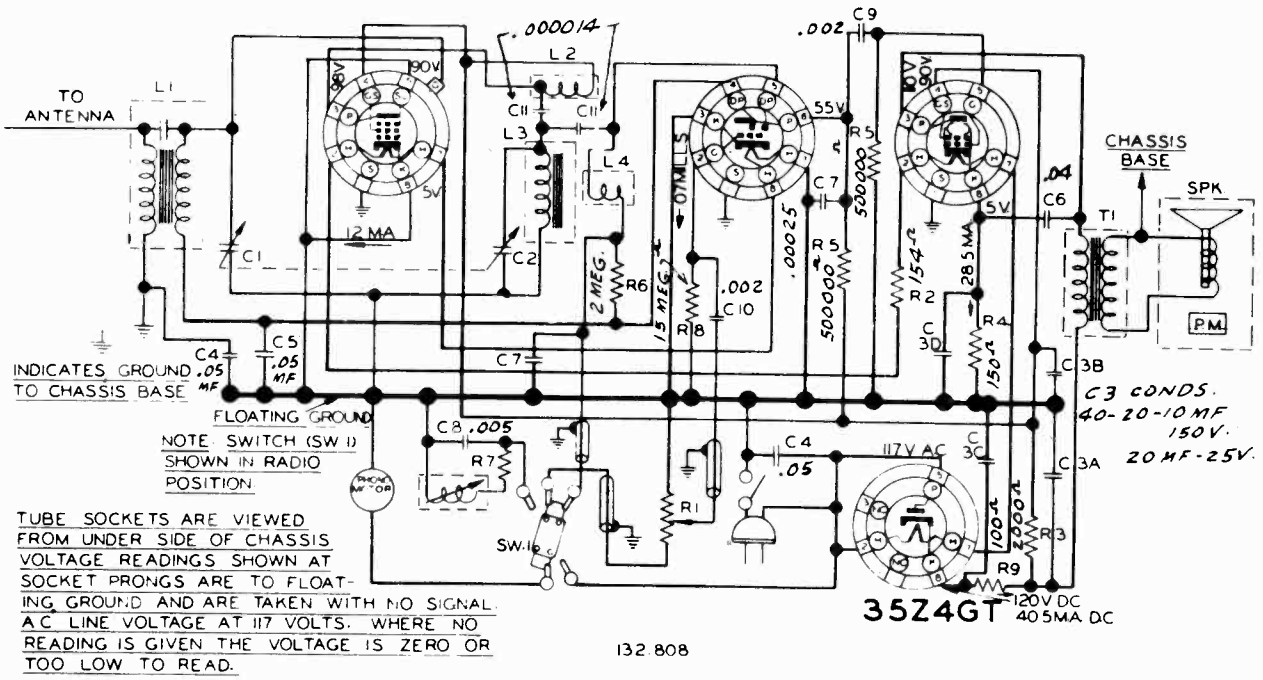
The Master Control Switch should always be turned to the No. 1 (Radio) position when listening to radio programs.



SEARS-ROEBUCK & CO.

MODEL 5741
Chassis 132.808

12K7GT 12SQ7GT 35L6GT



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.

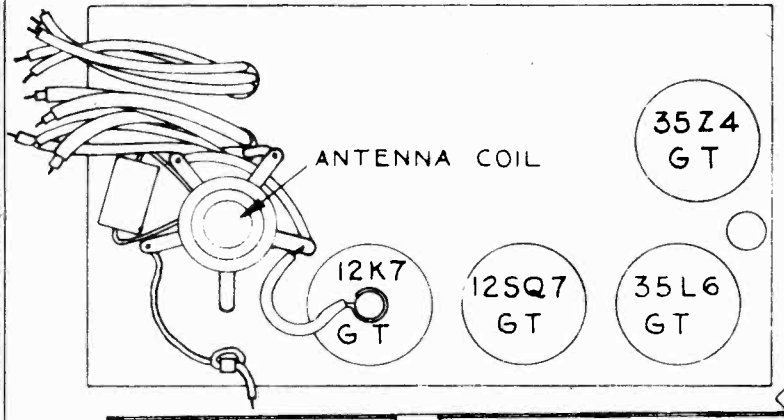
132.808

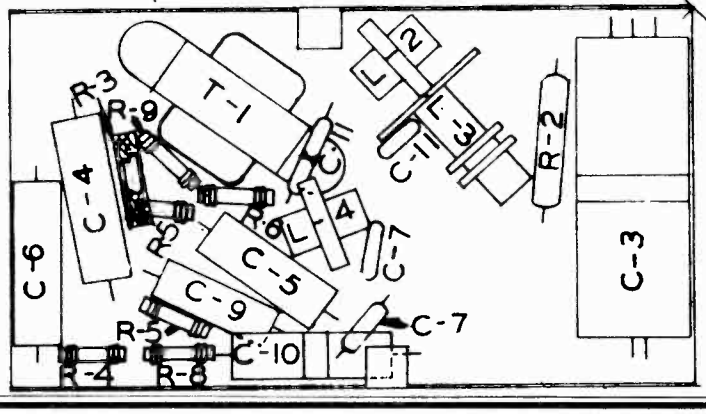
POSITION OF VARIABLE	FREQUENCY GENERATOR	DUMMY ANTENNA	GENERATOR CONNECTION (High)	GENERATOR CONNECTION (Low)	TRIMMERS ADJUSTED (In order shown)	TRIMMER FUNCTION
1400 kc	1400 kc	.00005 mfd.	Ant. hank	Chassis base	C2, C1	R.F. Tank
600 kc	600 kc	.00005 mfd.	Ant. hank	Chassis base	Check Point	R.F. Tank

IMPORTANT ALIGNMENT NOTES

When properly set with the variable condenser closed the pointer will point to the "54" calibration mark.

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
Position of Volume Control . . . . . Fully clockwise
Position of Dial Pointer with variable fully closed . . . . . See note below





JUNE 18, 1940

TUBES AND FUNCTIONS:
12K7GT . . . . . R.F.
12SQ7GT . . Detector-AVC-AF

35L6GT . . . . . Output
35Z4GT . . . . . Rectifier

POWER SUPPLY:
All models available

105-125 volts, AC-only -60 cycles
45 watts

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

OPERATING FEATURES:
Automatic Volume Control
AC only; - 60 cycles

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

ALIGNMENT FREQUENCIES. Ant.- 1400 kc;
RF.- 1400 kc;

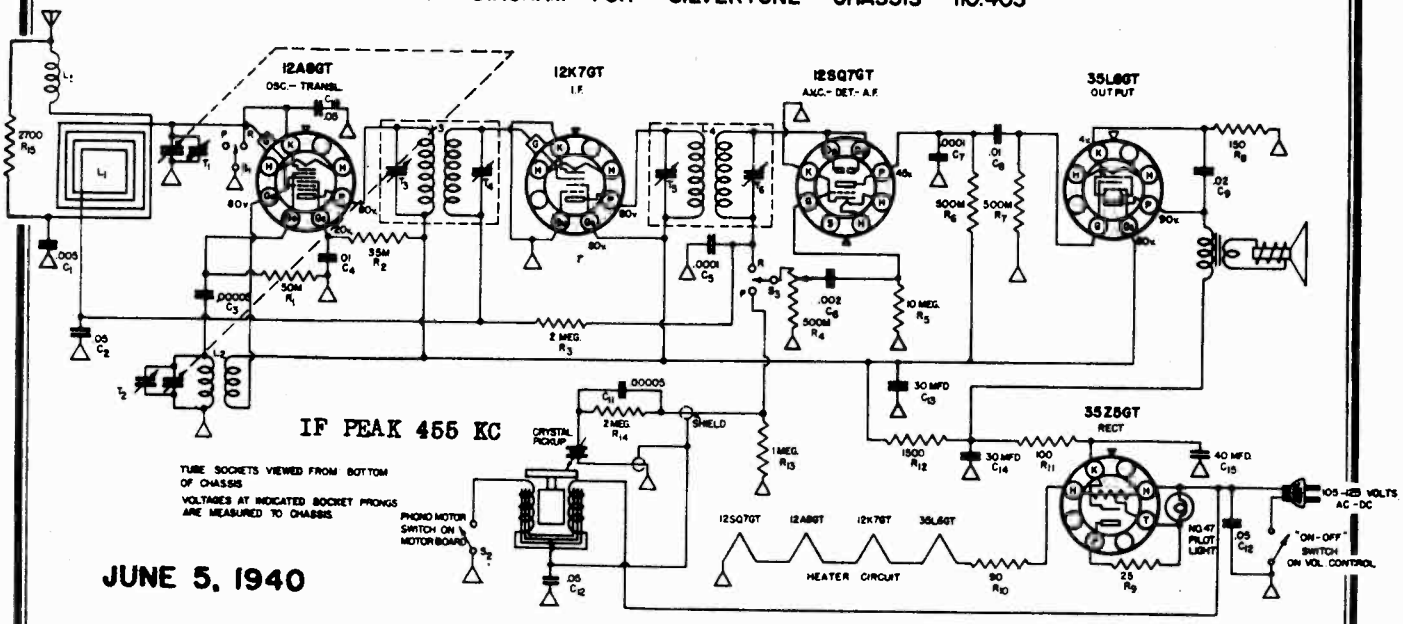
LOUD SPEAKER:
Type . . . . . Permanent Magnet
Size . . . . . 4 inch

CHASSIS FEATURES:
Number TRF stages . . . . . two

MODEL 5751
Chassis 110.403

SEARS-ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.403



JUNE 5, 1940

ALIGNMENT PROCEDURE

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

Connection of generator ground. . . . . 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
**	45 5KC	12K7GT,Grid	T5,T6	I.F.
** 1500 KC	455 KC 1500 KC	12A8GT,Grid ***	T3,T4 T2,T1	I.F. Osc.,R.F.

IMPORTANT ALIGNMENT NOTES

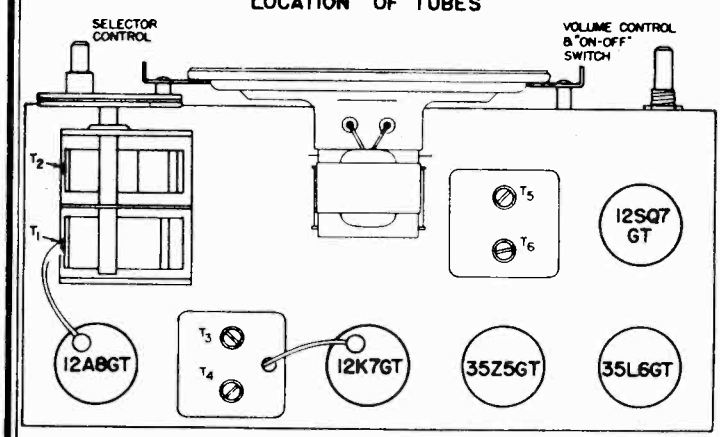
It is advisable to repeat the entire alignment proceedure in the original order to insure greater accuracy.

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.

** Short oscillator section of variable condenser.

*** Connect generator output to a separate radiating loop and pickup 1500 KC signal on receiver.

LOCATION OF TUBES



FREQUENCY RANGE

Broadcast . . . . . 540-1730 KC

POWER OUTPUT:
Type.....Beam Power
Undistorted.....1.0
Maximum.....1.5

POWER SUPPLY:
All models available

110-125 volts, 25-60 cycle AC or DC, 30 watts

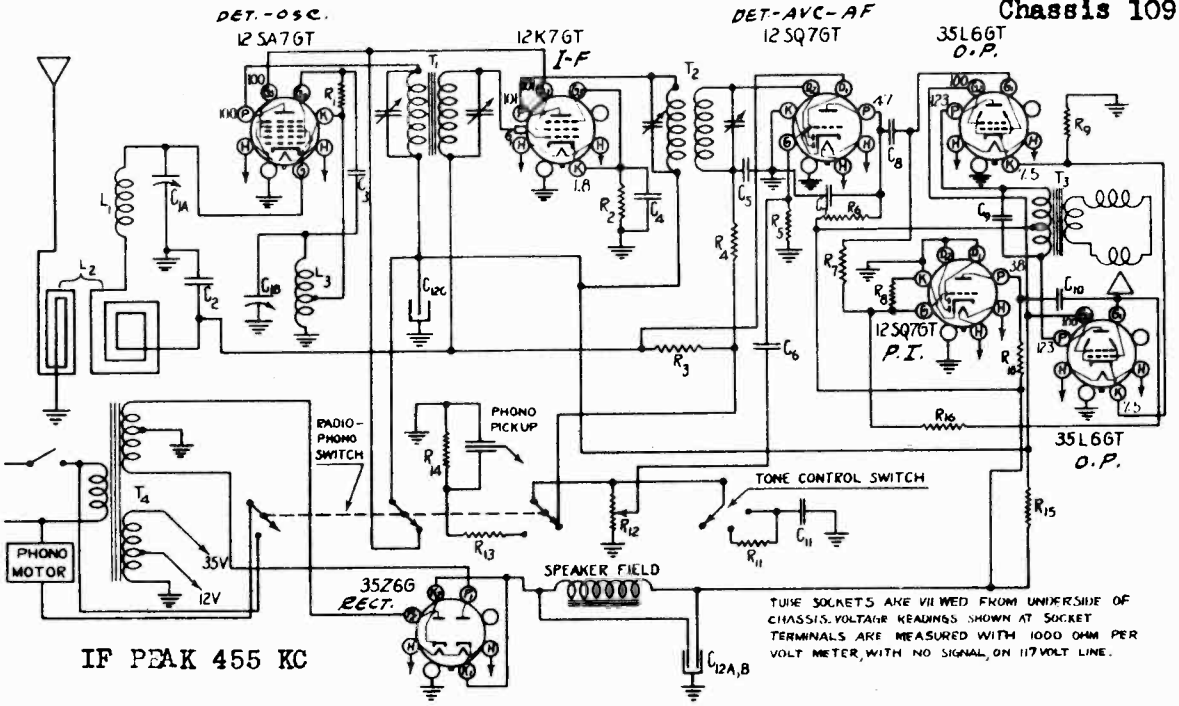
ALIGNMENT FREQUENCIES:

	Oscil. Trimmer	Oscil. Padder
Broadcast	1500 KC	Fixed

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

SEARS-ROEBUCK & CO.

MODEL 5771
Chassis 109.358



PARTS LIST-

AUGUST 21, 1940

RETAIL SELLING PRICES PREPAID
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SELLING PRICE EACH
	109544417	Button, Snap (Dial mounting)	.02
	109542163	Cable, Drive	.05
	109543227	Cap, Grid	.03
R12	109248421	Control, Volume & Switch	1.25
	109551732	Cord, Line	.45
	109546424	Clamp, Line Cord	.10
L3	109288422	Coil, Oscillator	1.00
L1	109288423	Coil, Tracking	1.00
	109178504	Condenser, Dual Trimmer	.70
C1a,b	109168424	Condenser, Tuner (With pulley)	5.00
C12a,b,c	109208425	Condenser, Electrolytic	1.50
C10		Condenser, .05 mfd. 400 volt	.20
C9		Condenser, .001 mfd. 600 volt	.20
C2		Condenser, .1 mfd. 200 volt	.20
C8		Condenser, .01 mfd. 400 volt	.20
C6,11		Condenser, .002 mfd. 600 volt	.20
C4		Condenser, .05 mfd. 200 volt	.20
C3		Condenser, 100 mmf. Mica	.25
C5,7		Condenser, 250 mmf. Mica	.25
	109408436	Dial Chart	.35
	109542729	Grommet, Rubber (Dial bracket Mtg.)	.05
	109456244	Pulley, Idler	.10
	109416026	Pointer	.35
	109541207	Retainer ("C" washer)	.01
R2		Resistor, 200 ohm 1/3 watt	.15
R11		Resistor, 100 M ohm 1/3 watt	.15
R1		Resistor, 20 M ohm 1/3 watt	.15
R6,7,8,10 13,14,16		Resistor, 200 M ohm 1/3 watt	.15
R5		Resistor, 10 meg. 1/3 watt	.15
R9		Resistor, 120 ohm flexohm ½ watt	.20
R15		Resistor, 1000 ohm 1 watt	.25
	109188440	Socket, Dual Dial Lamp	.30
	109548648	Spring, Drive Cable	.10
	109388428	Switch, Tone Control	.50
	109388429	Switch, Radio/Phono	1.00
	109188267	Socket, 1 prong (For phono pickup)	.10
	109588442	Speaker, 6½ inch Dynamic	5.50
T4	109108433	Transformer, Power 60 cycle	5.00
	109108496	Transformer, Power 50 cycle	5.75
	109118501	Transformer, Power 25 cycle	7.50
T3	1091384421	Transformer, Output	1.25
T1	109338434	Transformer, 1st IF	2.25
T2	109358435	Transformer, 2nd IF	2.25
	109638481	Arm, Phono pickup (Complete)	6.00
		Crystal Cartridge only	5.00

MODEL 5771
Chassis 109.358

SEARS ROEBUCK & CO.

PUSH BUTTON TUNING

Pull the button off its shaft. Loosen the mechanism by turning the locking screw a turn or two counterclockwise. Continue to press in firmly with the screwdriver holding the shaft in as far as it will go. Carefully tune in the desired station while holding the shaft in. Continue to press in firmly with the screwdriver and lock the mechanism by turning the screw clockwise until it is tight. Tighten the screw just enough so that the adjustment is held firmly. If the screw is turned too tight the shaft may be forced out of line and make the buttons rub together.

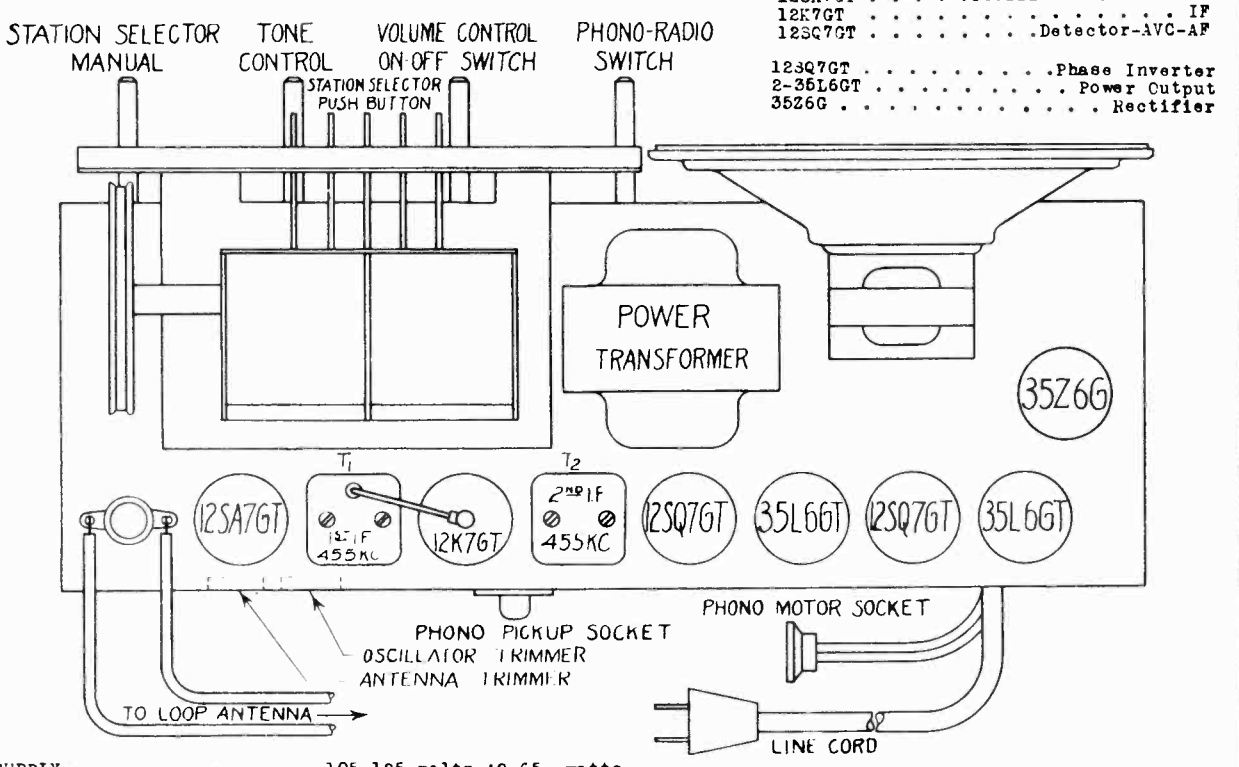
ALIGNMENT PROCEDURE

See diagram at the bottom of this page for the location of all trimmers.

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (In order shown)
OPEN (Minimum capacity)	455 kc.	.1 Mfd.	Antenna section of variable	T2, T1.
MINIMUM CAPACITY	1720 kc.	50 mmf.	Antenna terminal	Oscillator Trimmer
TUNE IN SIG. FROM GENERATOR	1400 kc.	50 mmf.	Antenna terminal	Antenna Trimmer

The alignment procedure should be repeated stage by stage, in the origional order for greatest accuracy. Always keep the output from the generator at the lowest possible level so that the AVC action of the receiver is ineffective.

TUBES AND FUNCTIONS
- 12SA7GT . . . . .Oscillator-Translator
- 12K7GT . . . . . IF
- 12SQ7GT . . . . . .Detector-AVC-AF
- 12SQ7GT . . . . . .Phase Inverter
- 2-35L6GT . . . . . Power Output
- 35Z6G . . . . . Rectifier



POWER SUPPLY . . . . . 105-125 volts AC 65 watts
25,50 and 60 cycle models available.

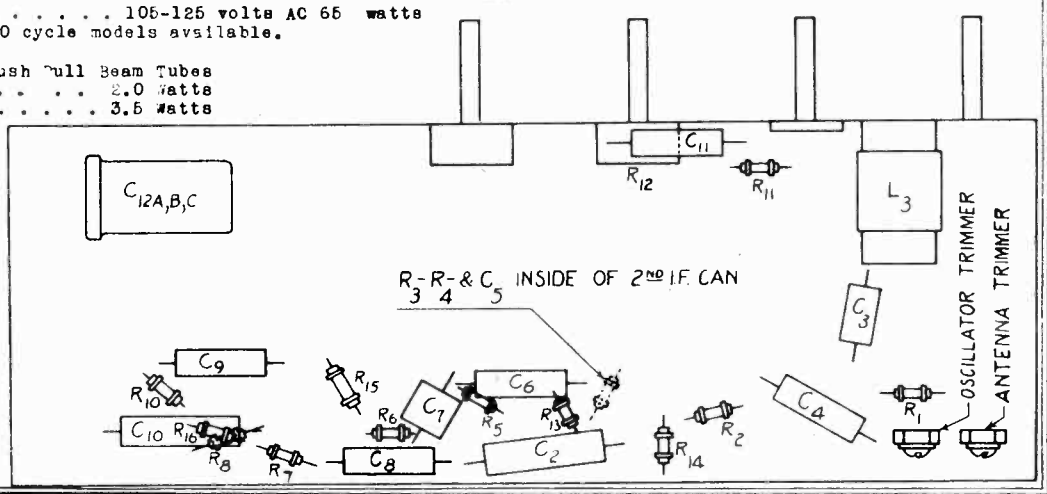
POWER OUTPUT
- Type . . . . . Push Pull Beam Tubes
- Undistorted . . . . . 2.0 Watts
- Maximum . . . . . 3.5 Watts

SPEAKER
- Type . . . . . Dynamic
- Size . . . . . 6½ Inch
- Field Resistance 500 Ohms

FREQUENCY RANGE

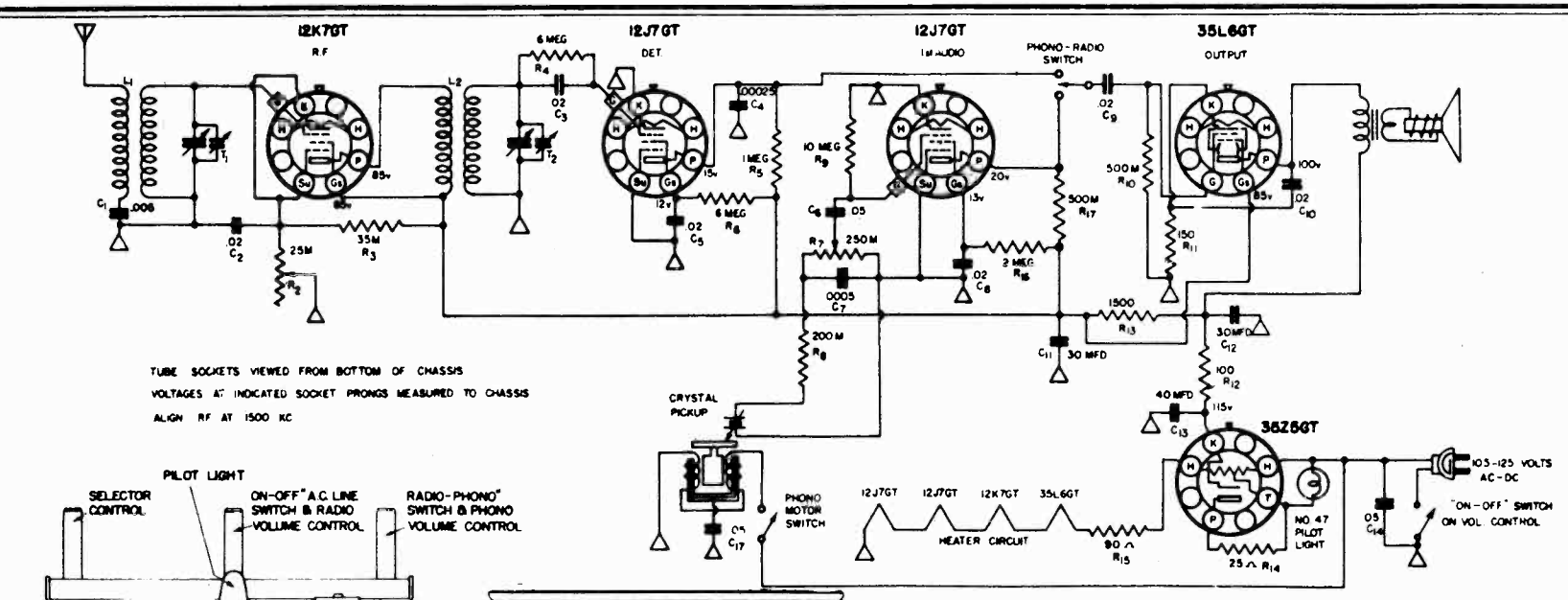
540 to 1720 kc.

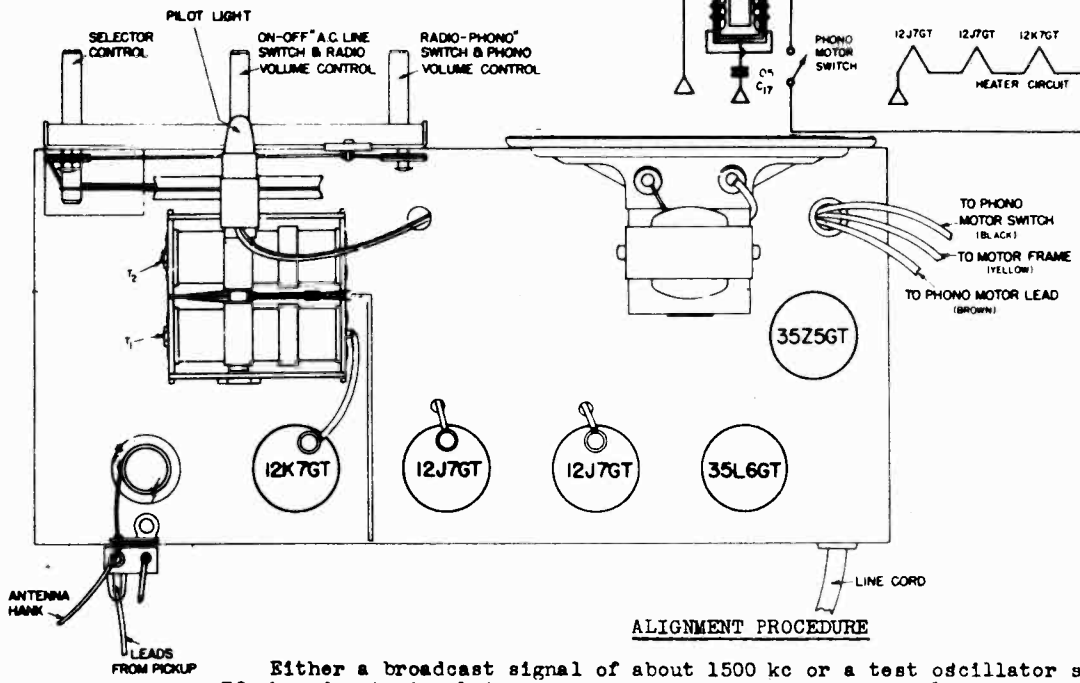
LOCATION OF PARTS UNDER CHASSIS



SEARS-ROEBUCK & CO.

MODEL 6326A
Chassis 110.987-1





FREQUENCY RANGE:

Broadcast.....530-1730 KC

POWER OUTPUT:

Type.....Beam Power
Undistorted..... 1. watt
Maximum..... 1.5 watts

POWER SUPPLY:

All models available.....

105-125 Volts, 60-cycle A.C.....50 watts

LOUD SPEAKER:

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

ALIGNMENT FREQUENCY:

1500 KC

APRIL 30, 1940

ALIGNMENT PROCEDURE

Either a broadcast signal of about 1500 kc or a test oscillator signal may be used. If abroadcast signal is used, the antenna of the receiver should be extended as in a normal installation. If a test oscillator signal is used, a wire should be connected to the test oscillator output and run parallel to but isolated from the receiver's antenna wire. The generator ground connection should be connected to ground.

Tune in the 1500 kc signal and adjust the trimmers for maximum loud speaker response. This can be done accurately if the volume control setting is reduced to give a low volume level. The location of this trimmer is shown in the tube socket location diagram.

MODEL 6491-A
Chassis 110.410

SEARS ROEBUCK & CO.

POWER SUPPLY:

All models available . . . . . 105-125 volts, 60 cycle AC, 50 Watts

FREQUENCY RANGE:

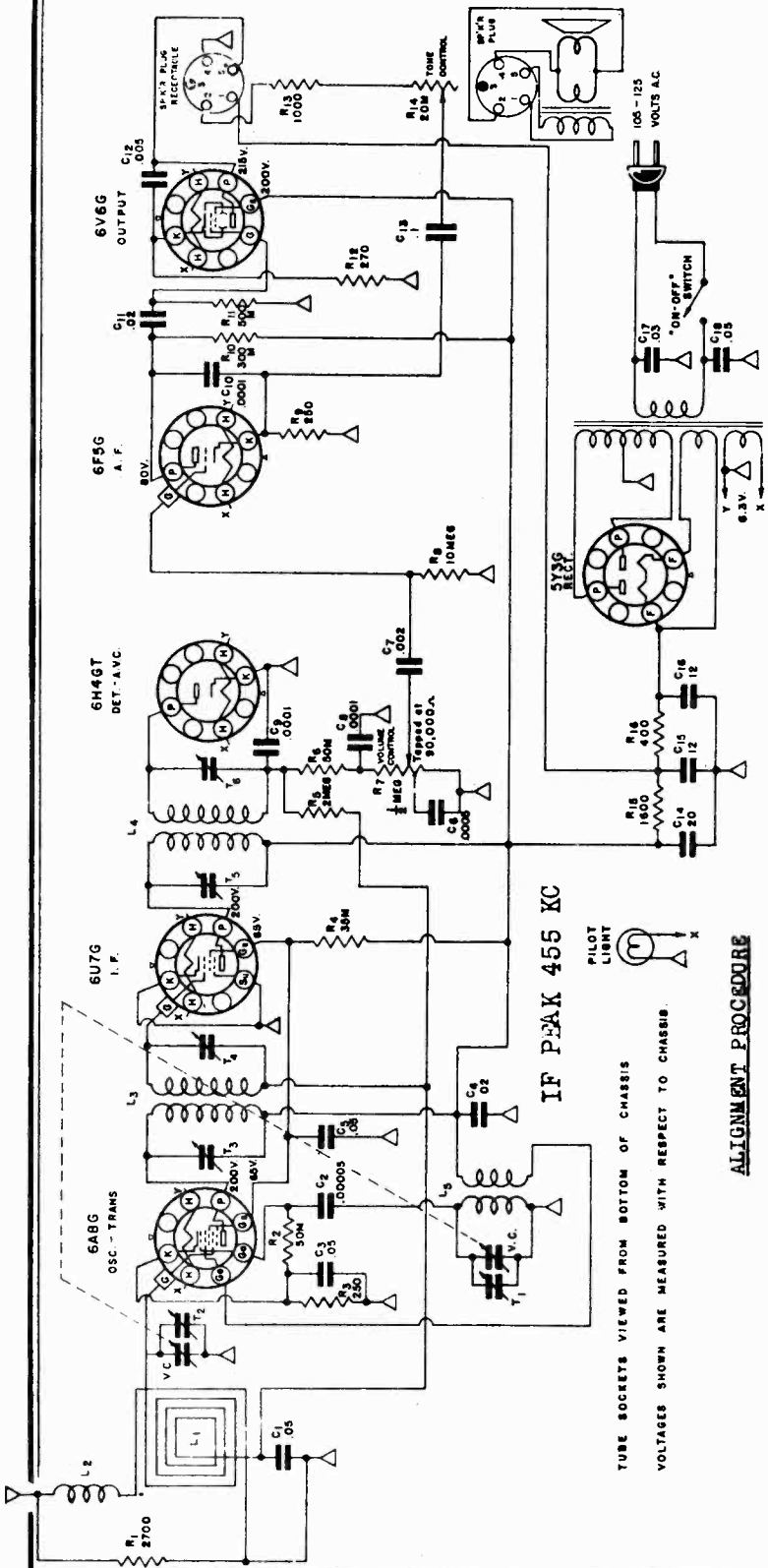
Broadcast . . . . . 535 - 1700 KC

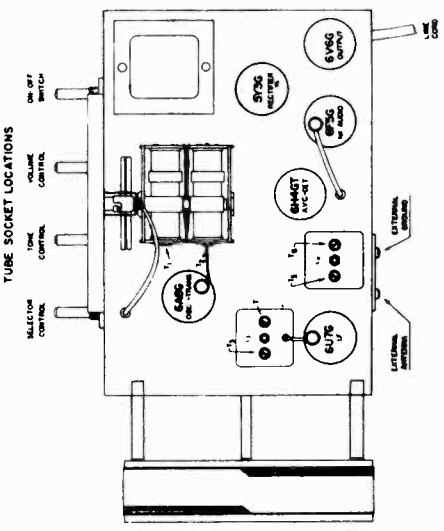
POWER OUTPUT:

Type..... Beam Power
Undistorted..... 2.5
Maximum..... 3.75

LOUD SPEAKER:

Type.....Dynamic
Size..... 6 1/2"
Field ..... P.M.





NOVEMBER 4, 1940

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
* *	455 kc	6A8G, Grid	T3, T4, T5, T6	I.F.
1500 kc	1500 kc	* * *	T1, T2	Osc., R.F.

See note below

IMPORTANT ALIGNMENT NOTES

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.

**Short oscillator section of variable condenser

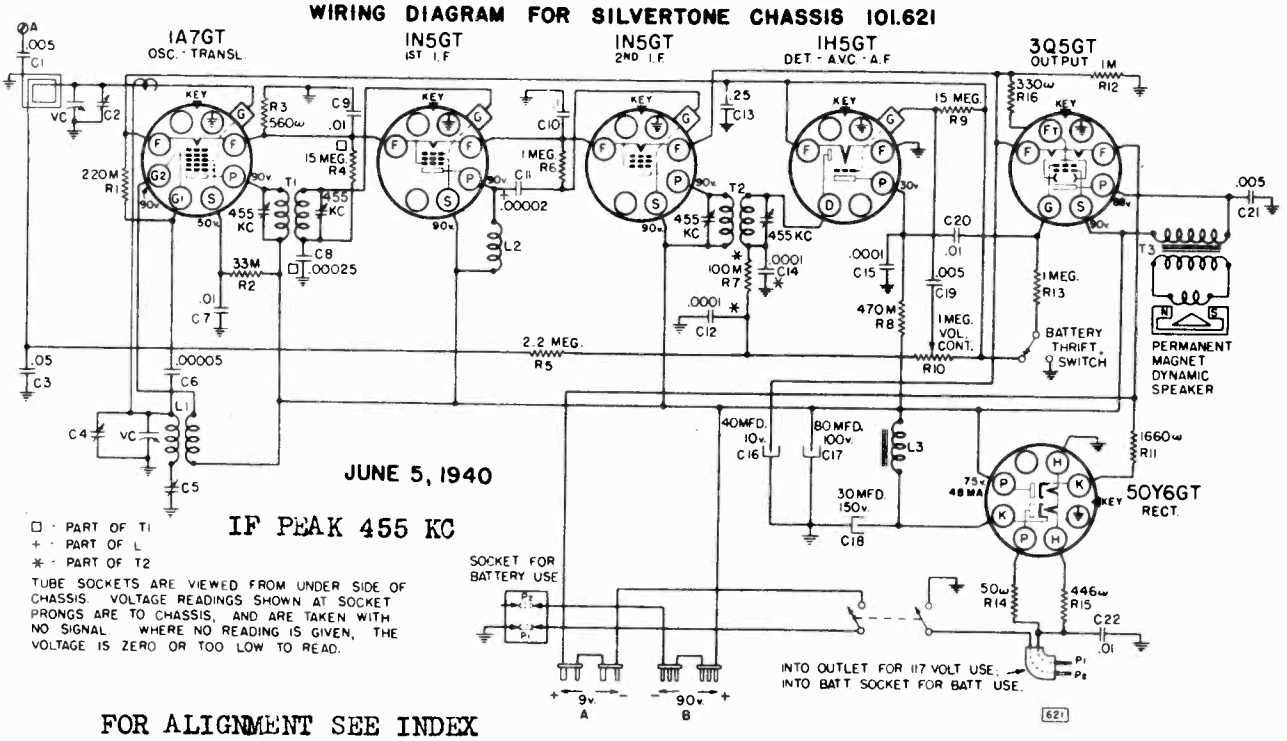
***Run a wire from the output terminal of the generator, having it come near the receiver. However, no metallic connection is made between the signal generator and the receiver.

Chassis 101.621-1,-1A, -1B,-1C (late)

SEARS ROEBUCK & CO.

MODELS 6561,6661,6961, 6521
Chassis 101.621,101.621-A (early)

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.621



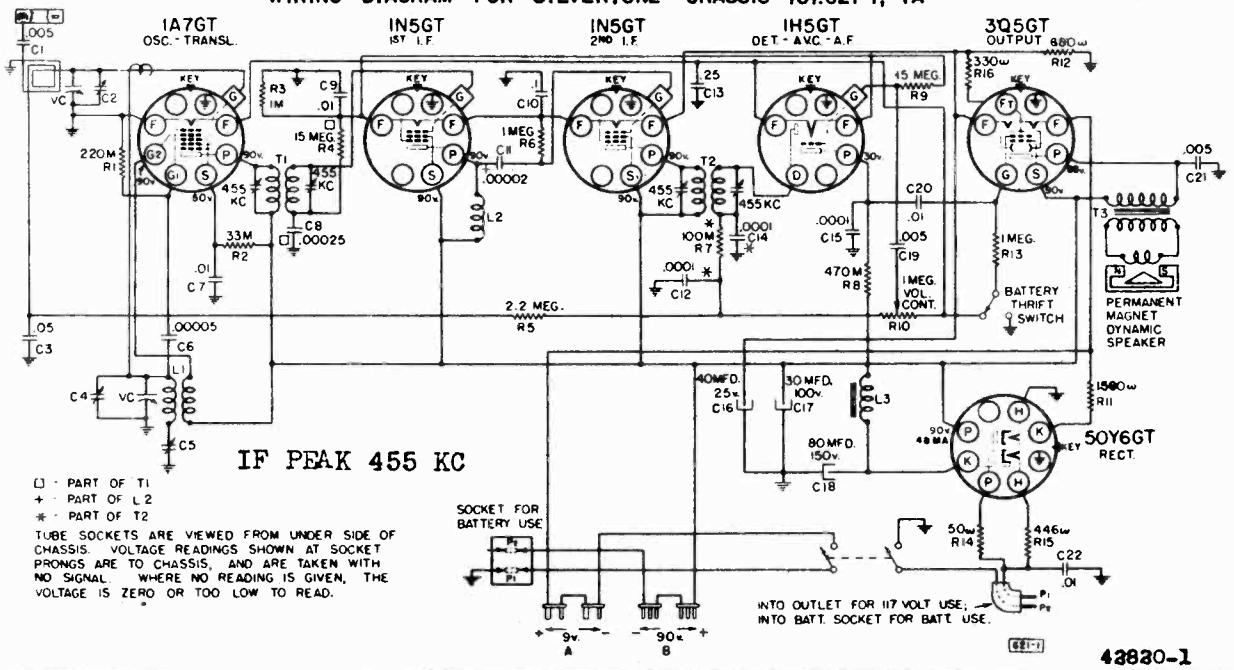
FOR ALIGNMENT SEE INDEX

SUBJECT: ADDITION OF SUFFIX NUMBER -1 TO 101.621 CHASSIS:

Chassis identified as 101.621-1, -1A, -1B, or -1C use a different loop than the original 101.621 chassis. On these chassis, the antenna terminal connection is accessible by opening the hinged part of the back cover. Be sure to order the correct loop on replacement orders. There are also filament circuit differences as shown in the following Wiring Diagram.

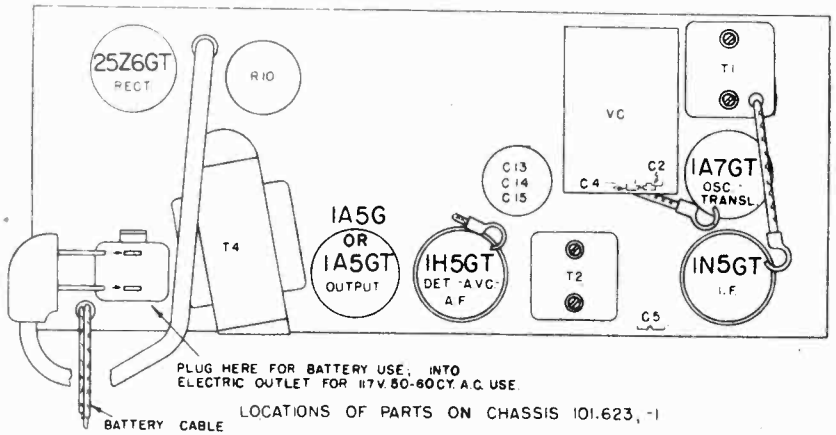
AUGUST 21, 1940

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.621-1,-1A

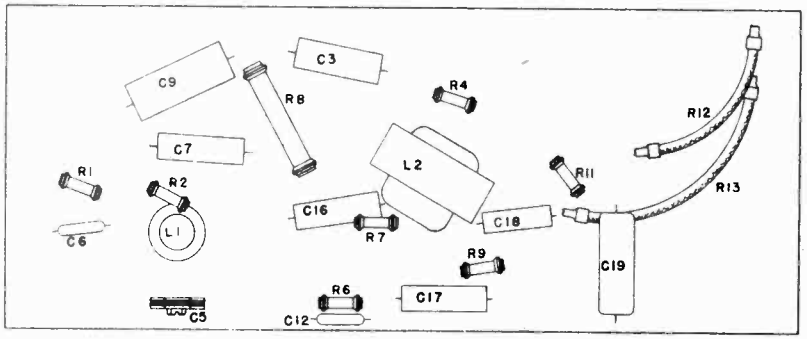


42820-1

MODEL 6751



LOCATIONS OF PARTS ON CHASSIS 101.623, -1



LOCATIONS OF PARTS UNDER CHASSIS-101.623, -1

FREQUENCY RANGE:
Broadcast . . . . . 550-1600 kc

POWER SUPPLY:
"A" Battery (6 volt) . . . . 1 - #5080
Service rating - 250 Hours
105-125 v., 60 cycle, AC, 30 watts
"A" Drain: 50 ma.

"B" Batteries . . . . . 2 - #5079
Service rating - 250 Hours
"B" Drain: 8.7 ma.

ALIGNMENT FREQUENCIES:

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

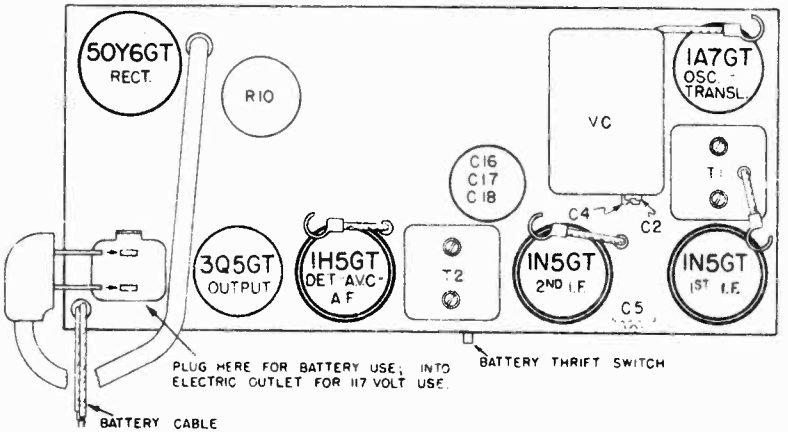
INTERMEDIATE FREQUENCY

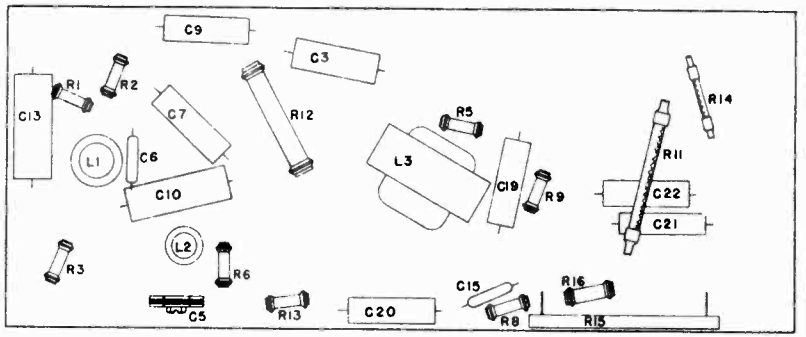
. .455 kc

POWER OUTPUT:
Type . . . . . Pentode
Undistorted 0.09 watts
Maximum . . .0.2 watts

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

MODELS 6521,6561,6661,6961





LOCATIONS OF PARTS UNDER CHASSIS-101.621

FREQUENCY RANGE:
Broadcast . . . . . 540-1630 kc

POWER SUPPLY:
"A" Battery (4-1/2 volt). . . 2 - #5085
Service rating - 250 Hours, with thrift switch
105-125 volts AC or DC - 30 watts

"B" Batteries . . . . . .2 - #5090
Service rating - 250 Hours with thrift switch

ALIGNMENT FREQUENCIES:

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

INTERMEDIATE FREQUENCY

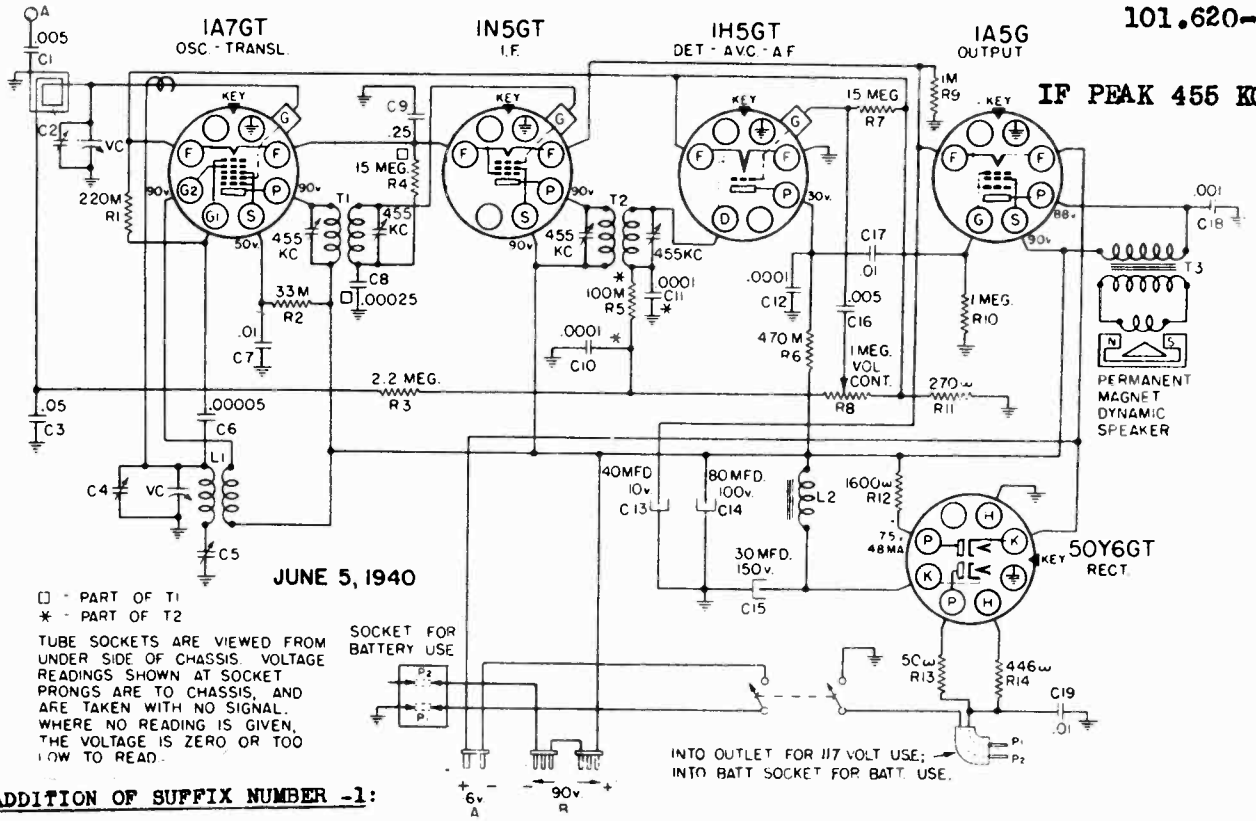
. . .455 kc

POWER OUTPUT:
Type . . . . . Beam
Undistorted 0.165 watts
Maximum . . . 0.3 watts

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

SEARS-ROEBUCK & CO.

MODEL 6551
Chassis 101.620
101.620-1



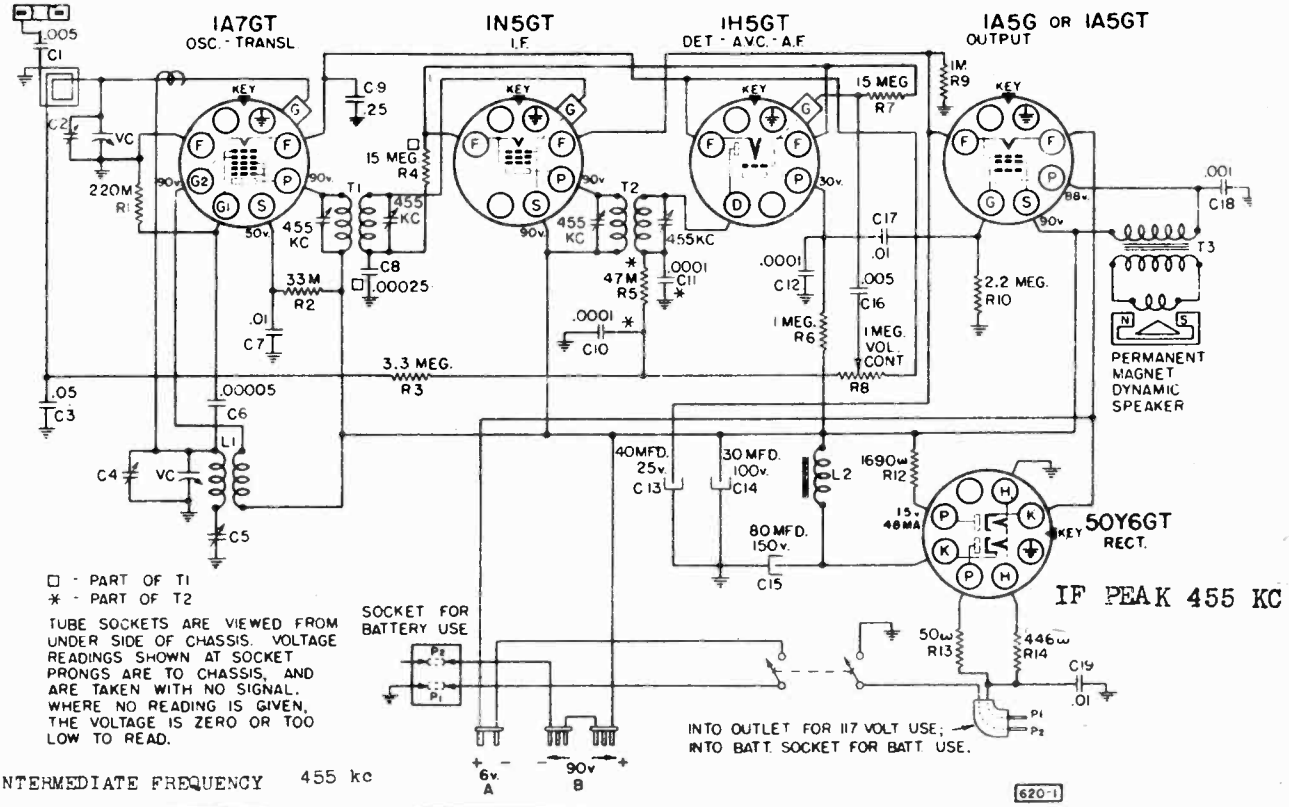
ADDITION OF SUFFIX NUMBER -1:

Chassis identified by the addition of suffix number -1 use a different loop. On these chassis, the antenna terminal connection is accessible by opening the hinged part of the back cover. Be sure to order the correct loop on replacement orders. There are also filament circuit differences as shown in the following Wiring Diagram.

JULY 30, 1940

Changes in the Parts

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.620-1



INTERMEDIATE FREQUENCY 455 kc

MODEL 6751
Chassis 101.623,-1
MODELS 6521,6561,6661,6961
Chassis 101.621 (early,late)

SEARS ROEBUCK & CO.

MODEL 6551
Chassis 101.620,-1

ALIGNMENT PROCEDURE

MODELS 6521,6561,6661,6961
MODEL 6751

PRELIMINARY:

MODEL 6551

Output meter connections . . . . . Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . 0.39 volts
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 550 kc calibration mark.

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 kc	.1 mfd.	1A7GT Translator Grid	T2,T1	IF
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C2,C4	Translator Oscillator
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C5	Padder

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 dropping the hinged part of the back cover.

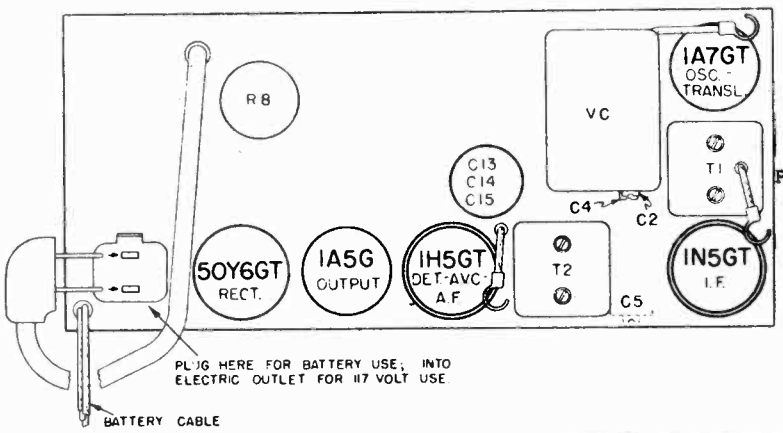
The chassis must be in place in the cabinet during alignment. If battery supply is used, the batteries must be in place in the cabinet.

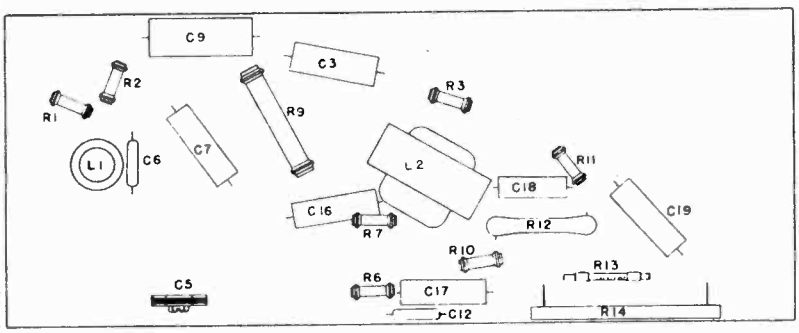
The variable should be rocked back and forth a degree or two while making the 600 kc adjustment.

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.

Whenever batteries are replaced, C2 should be repeaked using a weak signal at about 1400 kc.





LOCATION OF PARTS UNDER CHASSIS-101.620

TUBES AND FUNCTIONS:
1A7GT . . . . . Osc.-Transl.
1N5GT . . . . . IF
1H5GT . . . . . Detector-AVC-AF
1A5G . . . . . Output
50Y6GT . . . . . Rectifier

FREQUENCY RANGE:
Broadcast . . . . . 540-1630 kc

POWER SUPPLY:
"A" Battery (6 volt) . . . . . 1 - #5080
Service rating - 250 Hours
105-125 v. AC or DC, 30 watts

"B" Batteries . . . . . 2 - #5079
Service rating - 250 Hours

ALIGNMENT FREQUENCIES:

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

POWER OUTPUT:
Type . . . . . Pentode
Undistorted . . . . . 0.09 watts
Maximum . . . . . 0.2 watts

OPERATING FEATURES:
Automatic Volume Control
Battery or AC-DC Powered

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

CHASSIS FEATURES:
Number IF stages . . . . . One
Self-contained loop antenna

SEARS-ROEBUCK & CO.

MODEL 6541
Chassis 110.401

MODEL 6651
Chassis 110.402

Alignment Notes

** Short oscillator section of variable condenser.

*** Connect generator output to a separate radiating loop and pickup 1500 kc signal on receiver.

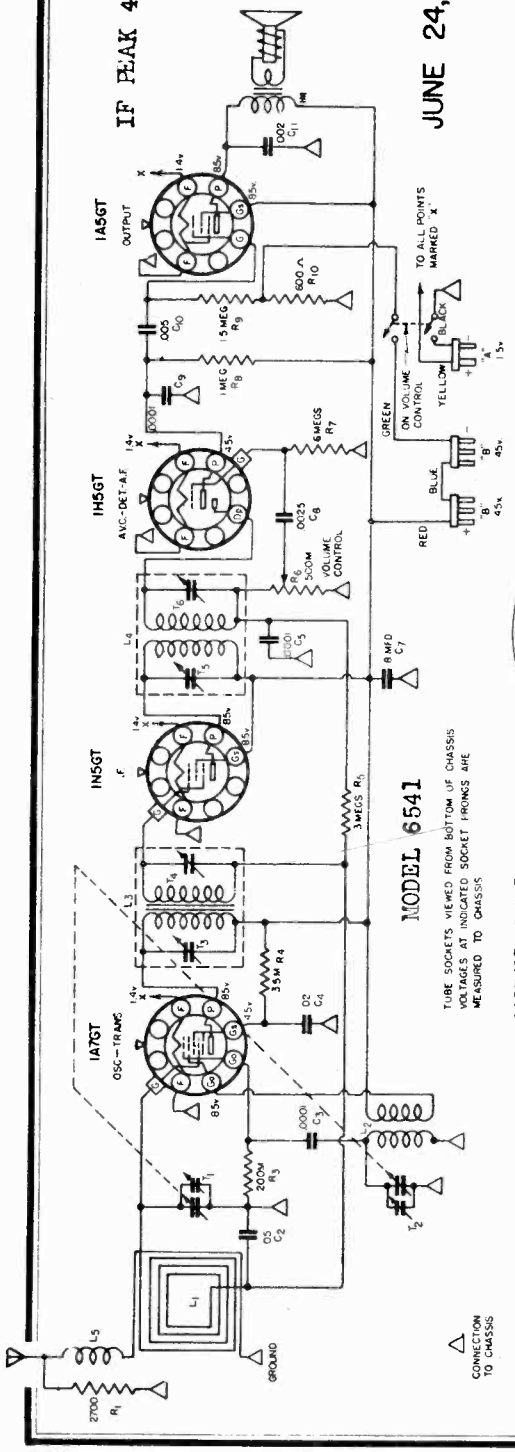
POSITION OF DIAL POINTER	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMERS ADJUSTED	TRIMMER FUNCTION
**	455 kc	1N5GT, Grid	T5, T6	I.F.
**	455 kc	1A7GT, Grid	T3, T4	I.F.
1500 kc	1500 kc	***	T2, T1	Osc., R.F.

POWER SUPPLY
#5087.....1½ v. "A" Battery
2 -#5090.....45 v. "B" Battery

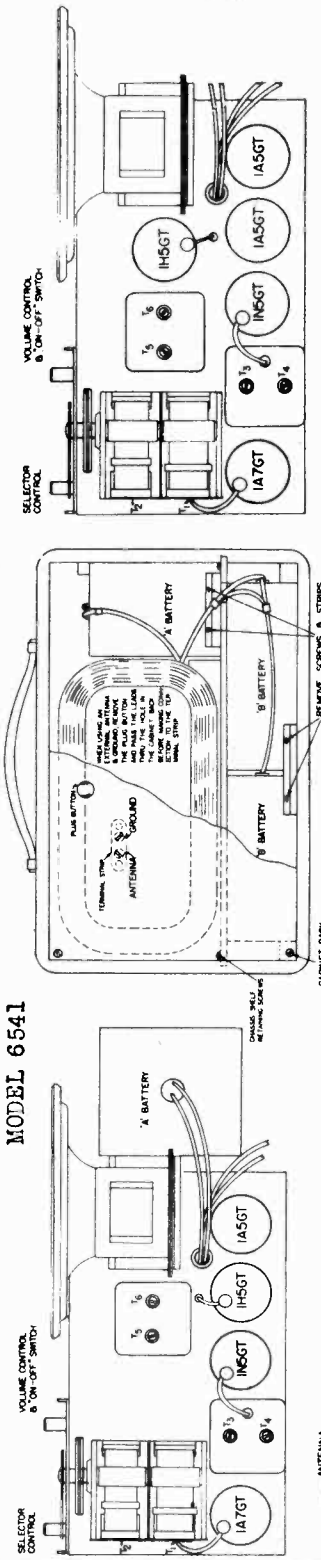
"A" Drain..... .25 Amperes
"B" Drain..... 11.5 ma.

IF PEAK 455 KC

JUNE 24, 1940

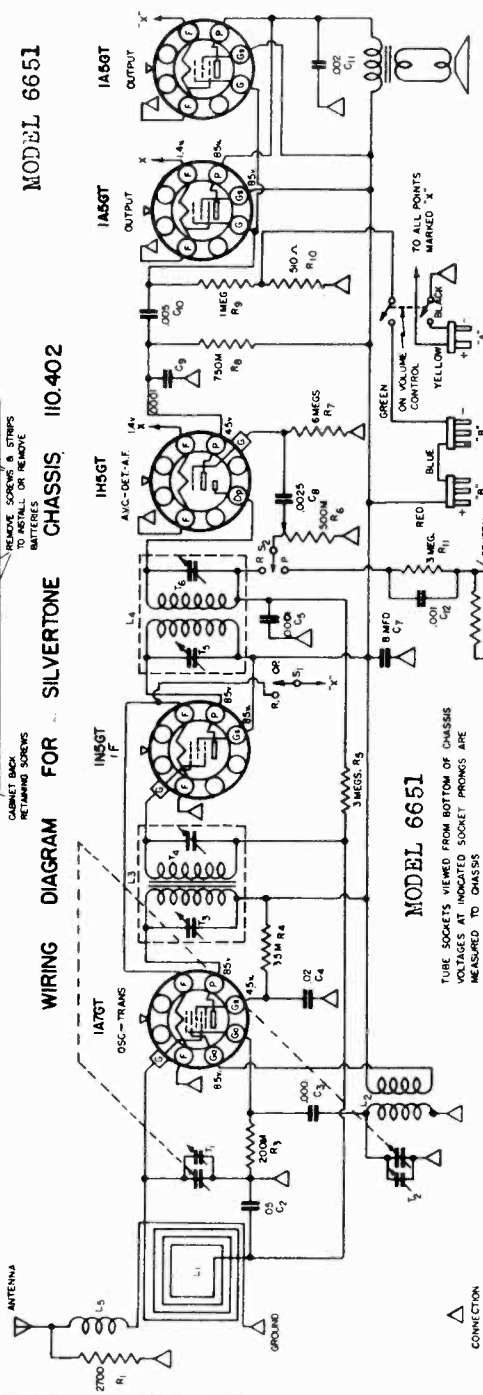


MODEL 6541



MODEL 6651

WIRING DIAGRAM FOR SILVERTONE CHASSIS 110.402



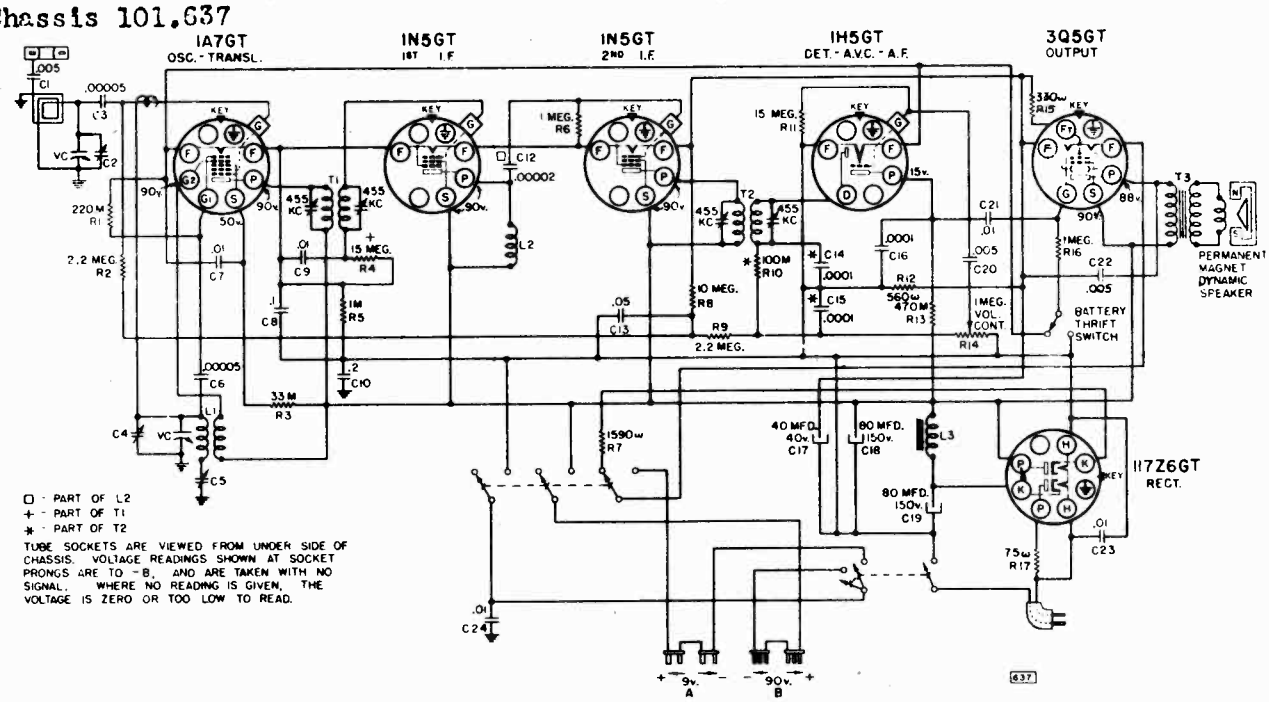
MODEL 6651

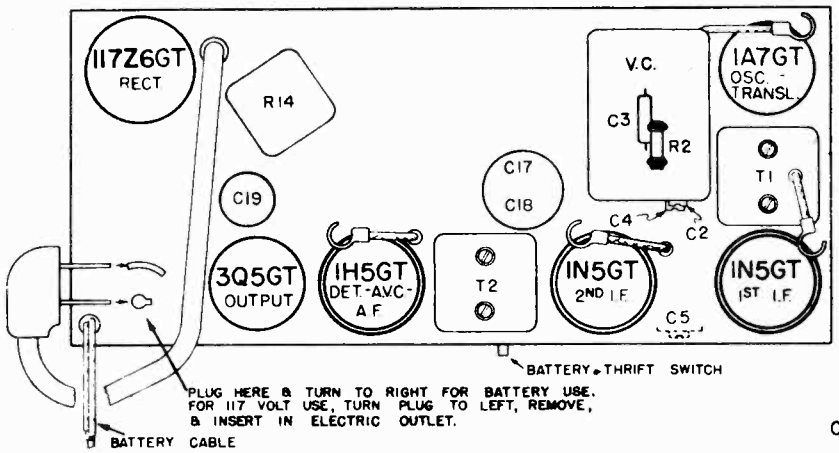
IF PEAK 455 KC

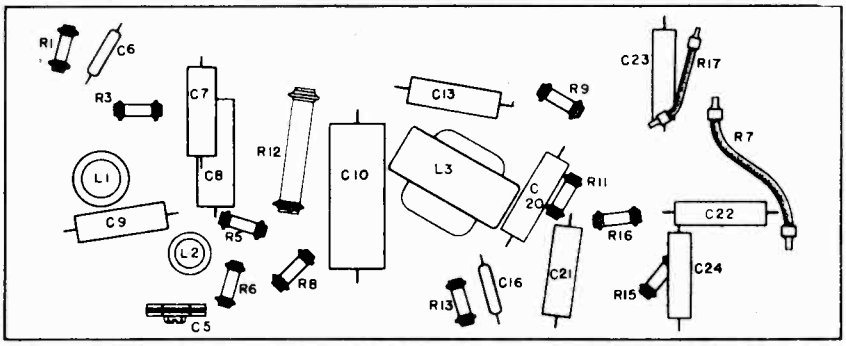
AUGUST 29, 1940

MODELS 6621,6761A,6921
Chassis 101.637

SEARS ROEBUCK & CO.







LOCATIONS OF PARTS UNDER CHASSIS-101.637

SEPTEMBER 30, 1940

INTERMEDIATE FREQUENCY . . . . 455 kc

POWER SUPPLY:
"A" Battery (4-1/2 volt). . . 2 - #5085
Service rating - 200 Hours,
Drain: 50 ma.
105-125 volts, AC-DC - 35 watts

"B" Batteries . . . . . 2 - #5090
Service rating - 200 Hours,
Drain: 13.9 ma.

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1620 kc	1400 kc	600 kc

FREQUENCY RANGE:
Broadcast . . . . 540-1620 kc

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

POWER OUTPUT:
Type . . . . . Beam
Undistorted . . . . 0.165 watts
Maximum . . . . . 0.3 watts

ALIGNMENT PROCEDURE

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMER ADJUSTMENTS (IN ORDER SHOWN)	TRIMMER FUNCTION
Closed	455 kc	.1 mfd.	1A7GT Translator Grid	T2,T1	IF
Open	1620 kc	.0002 mfd.	Ant. Term.	C4	Oscillator
1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C2	Translator
600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C5	Padder

position of Volume Control . . . . . .Fully on
Position of Pointer with variable fully closed . . . . . .On mark to left of 550 kc calibration mark.
Output meter connections . . . . . Across loudspeaker voice coil
Output meter reading to indicate 50 milliwatts . . . . . .0.37 volts

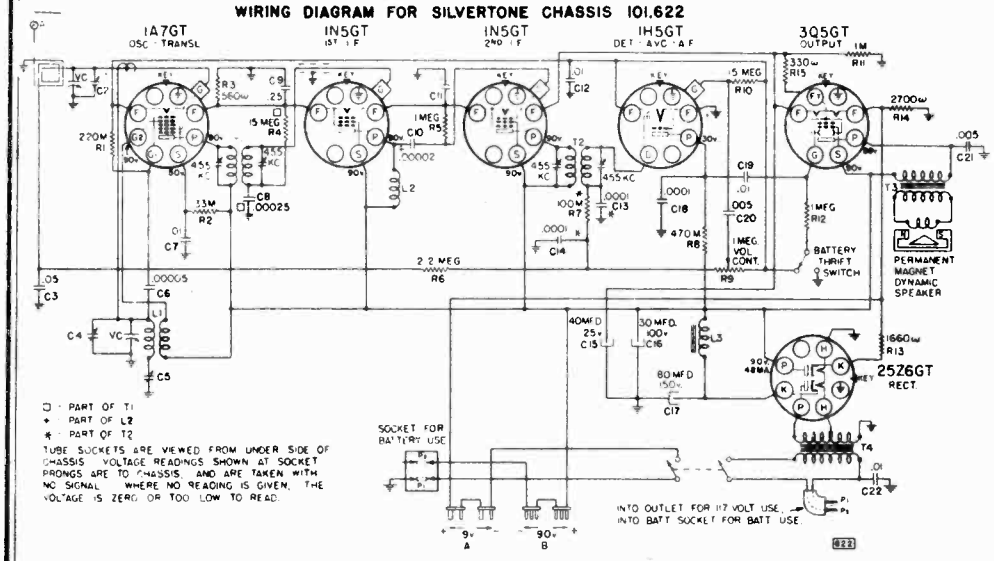
SEARS ROEBUCK & CO.

MODELS 6721, 6761
Chassis 101.622
101.622-1

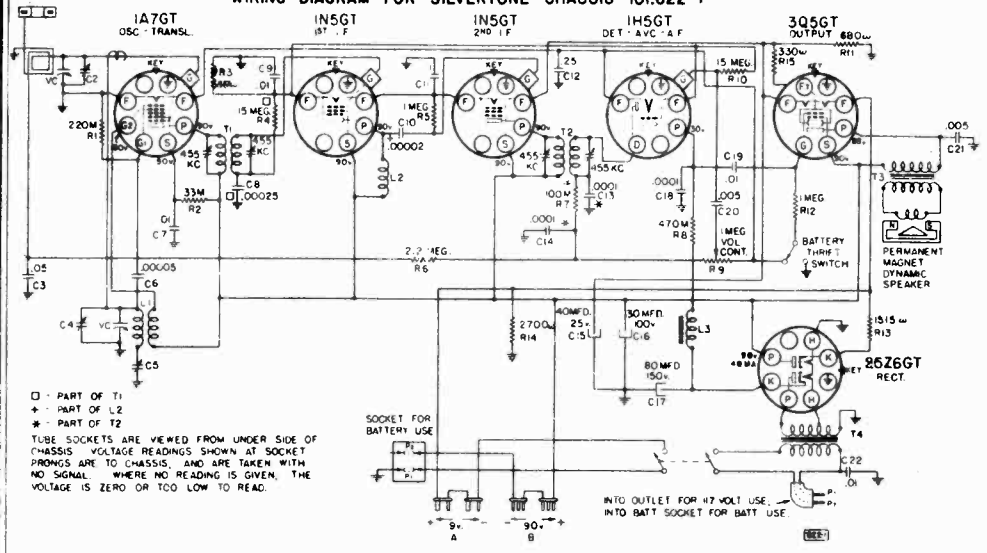
CONVENTIONAL ALIGNMENT

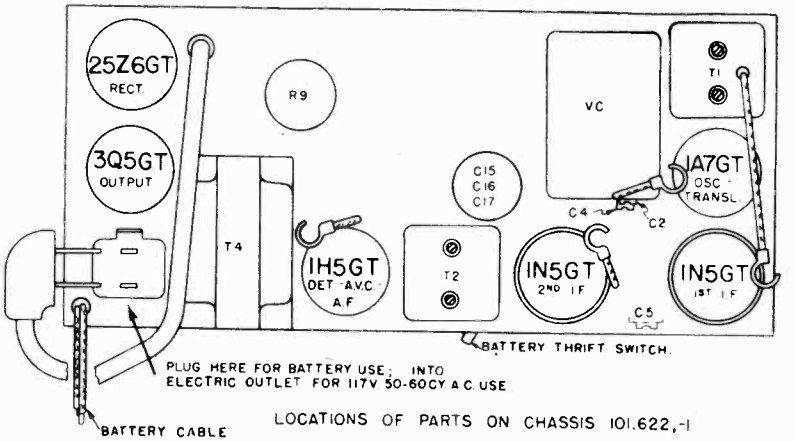
JULY 3, 1940

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.622

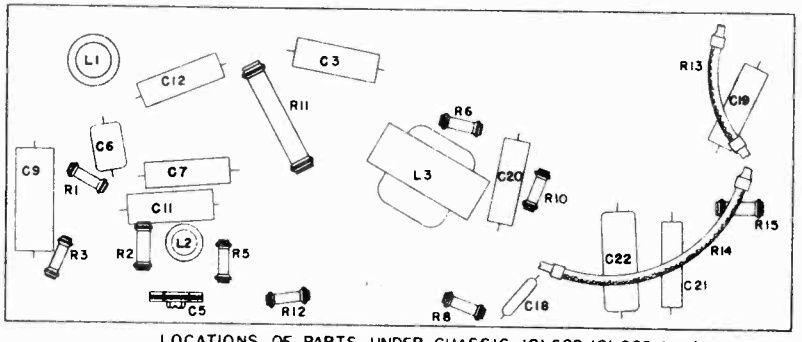


WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.622-1





LOCATIONS OF PARTS ON CHASSIS 101.622,-1



LOCATIONS OF PARTS UNDER CHASSIS-101.622,101.622-A,-1

FREQUENCY RANGE:
Broadcast . . . . . 550-1600 kc

POWER SUPPLY:
"A" Battery (4-1/2 volt). . . 2 - #5085
Service rating - 350 Hours, with Thrift Switch. Drain: 50 ma.
105-135 volts, 60 cycle AC - 30 watts

"B" Batteries . . . . . 2 - #5090
Service rating - 350 Hours, with Thrift Switch. Drain: 13.9 ma.

ALIGNMENT FREQUENCIES:

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

POWER OUTPUT:
Type . . . . . Beam
Undistorted . . . . . 0.165 watts
Maximum . . . . . 0.3 watts

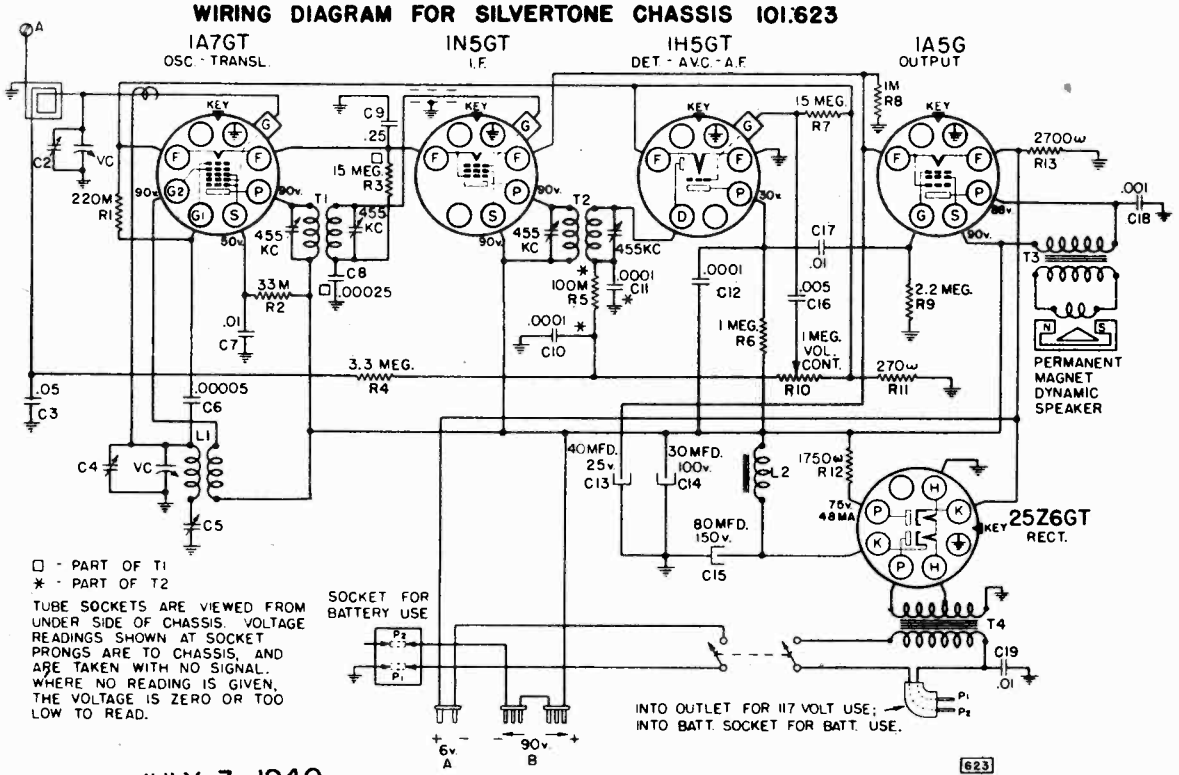
INTERMEDIATE FREQUENCY . . .
. . . . . 455 kc

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

MODEL 6751
Chassis 101.623
101.623-1

SEARS ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.623

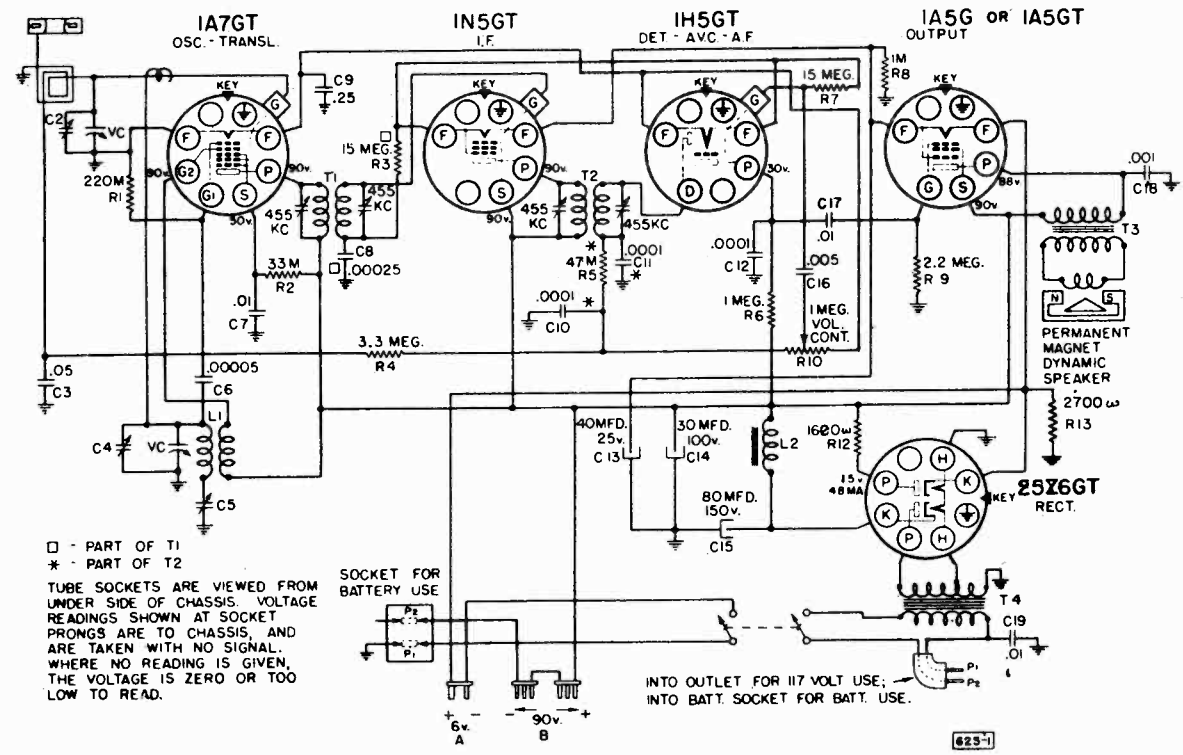


JULY 3, 1940

IF PEAK 455 KC

FOR OTHER DATA, SEE INDEX

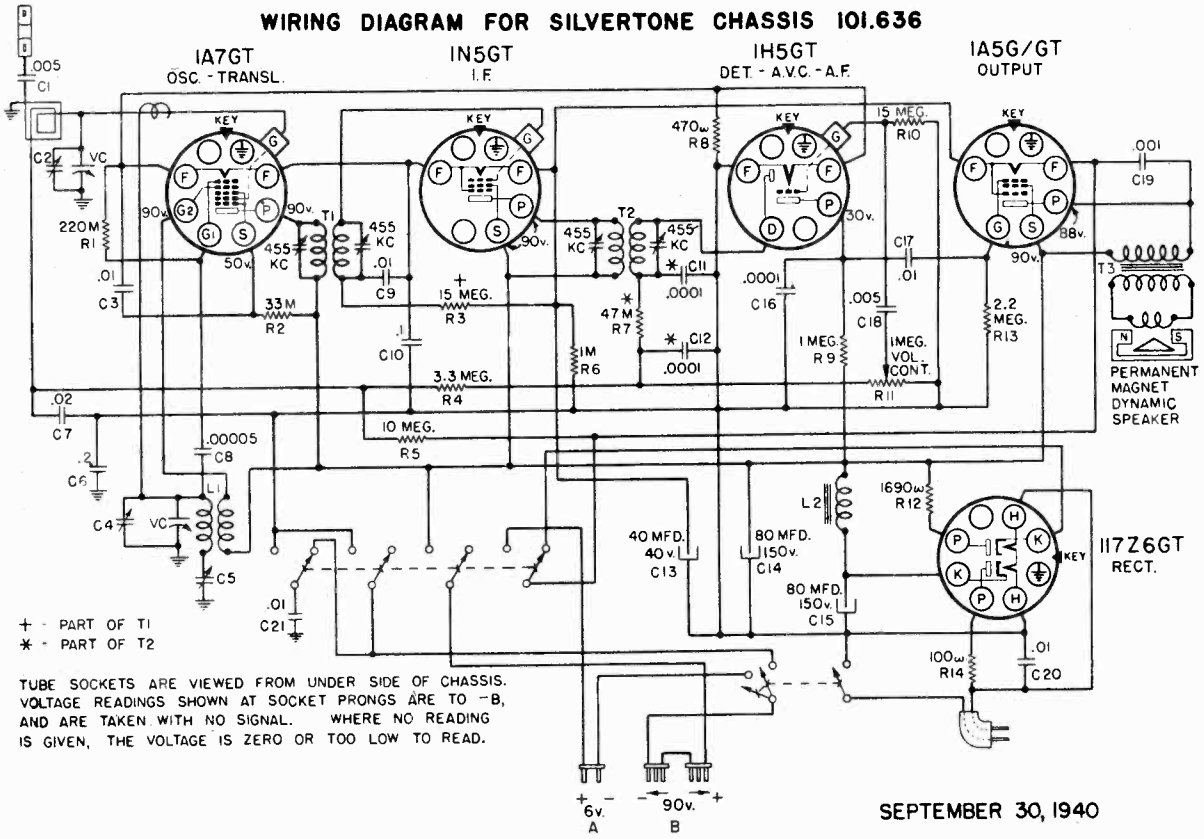
WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.623-1



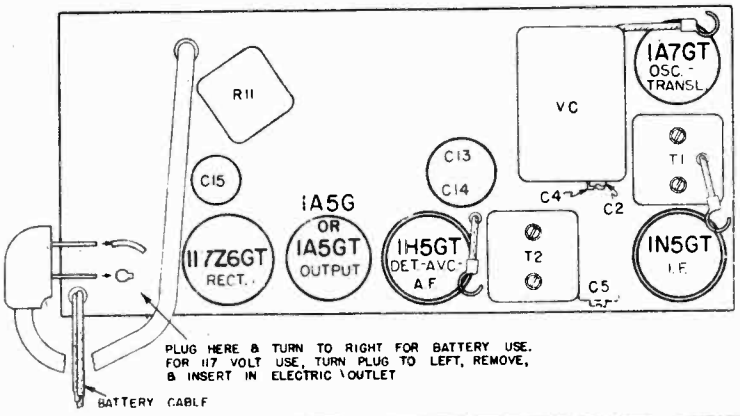
SEARS ROEBUCK & CO.

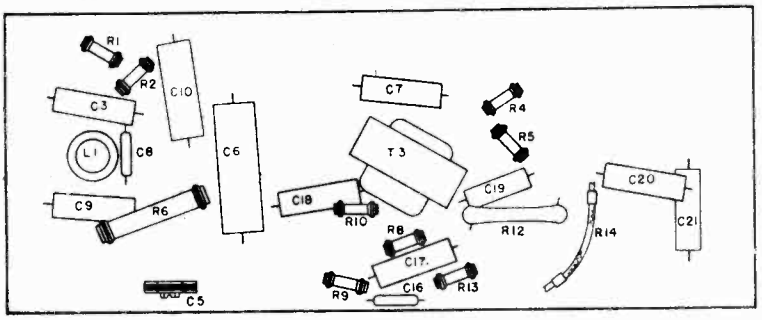
MODEL 6751-A
Chassis 101.636

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.636



SEPTEMBER 30, 1940





LOCATIONS OF PARTS UNDER CHASSIS - 101.636

INTERMEDIATE FREQUENCY . . .
. . . . . 455 kc

FREQUENCY RANGE:
Broadcast . . . . . 540-1620 kc

POWER SUPPLY:
"A" Battery (6 volt) . . . . 1 - #5080
Service rating - 200 hours
105-125 v., AC-DC, 35 watts
"A" Drain: 50 ma.

"B" Batteries . . . . . 2 - #5079
Service rating - 200 hours
"B" Drain: 9.1 ma.

ALIGNMENT FREQUENCIES:

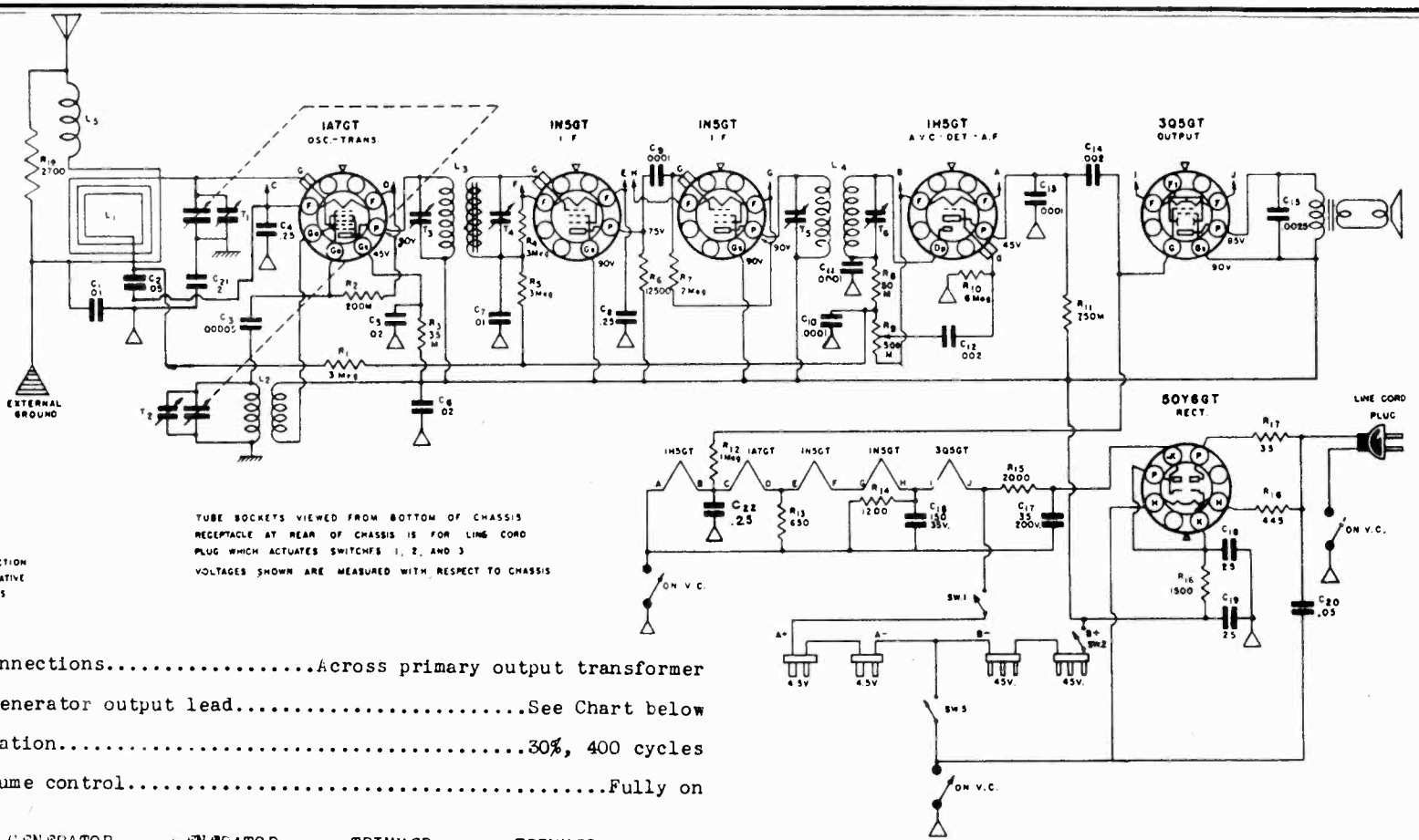
Oscillator Trimmer	Antenna-Transel. Trimmer	Padder
1620 kc	1400 kc	600 kc

POWER OUTPUT:
Type . . . . . Pentode
Undistorted . . . . . 0.09 watts
Maximum . . . . . 0.3 watts

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

CHASSIS FEATURES:
Number IF stages . . . . . One
Self-contained loop antenna
Underwriters Approved

OPERATING FEATURES:
Automatic Volume Control
Battery or AC-DC Powered



Output meter connections.....Across primary 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	1A7GT Grid	T3,T4,T5,T6	I.F.
1500 KC	1500 KC	*	T2, T1	Osc. R.F.

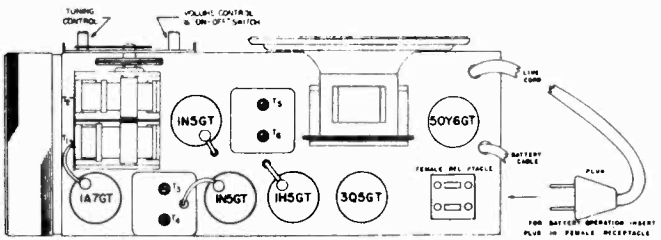
The complete assembly of loop mounting and chassis shelf should be removed as a unit in order to align the receiver.

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

* 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.

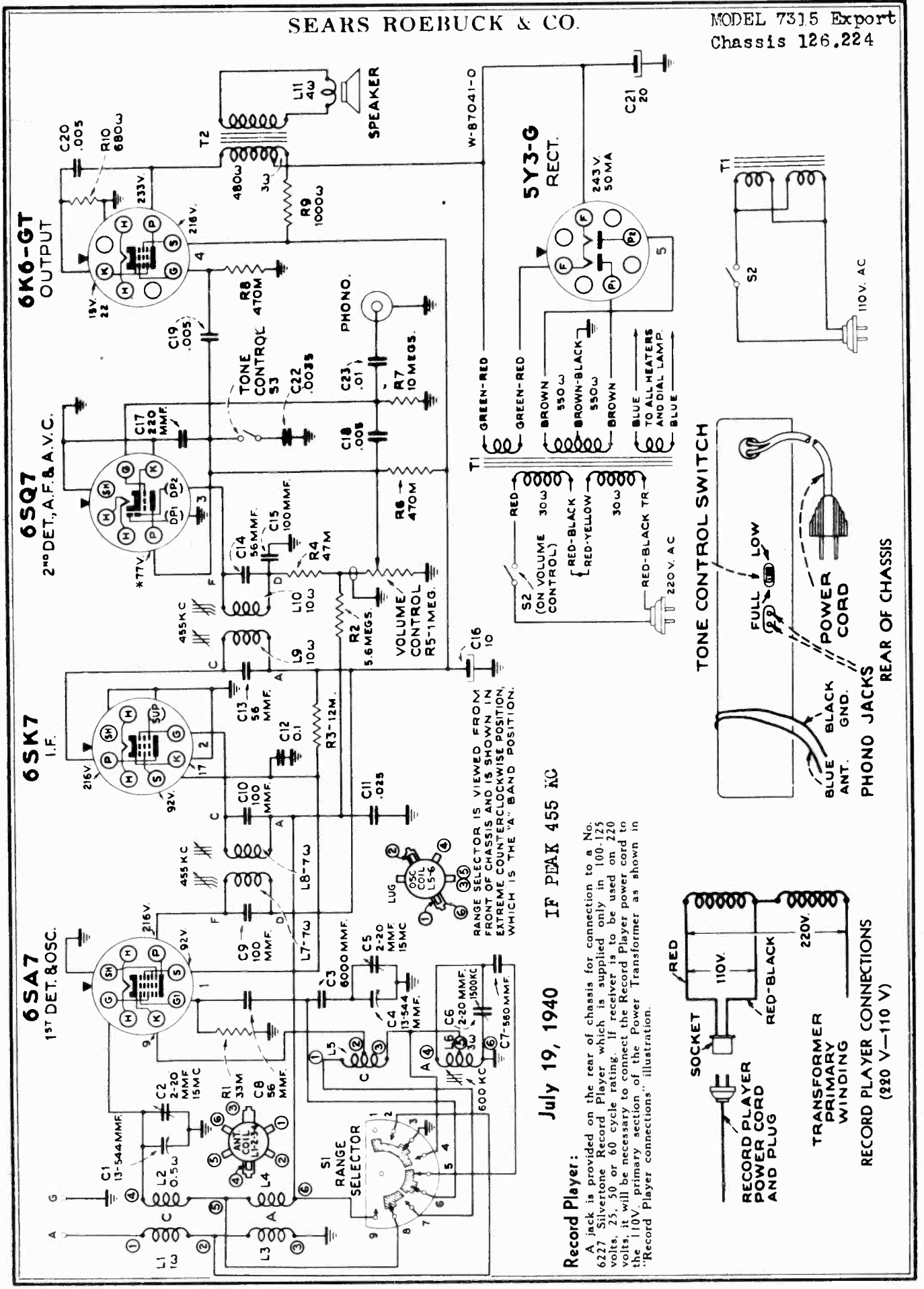
IF PEAK 455 KC



NOVEMBER 12, 1940

SEARS ROEBUCK & CO.

MODEL 7315 Export
Chassis 126,224



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.

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.	C5	Osc.*	
Short Wave	15 mc (Rock)	15 mc	300 ohms	Ant.	C2	Ant.**	50
Broadcast	1,500 kc	1,500 kc	0.0002 mfd.	Ant.	C6	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.	C6	Osc.	

Output meter connections ..... Across speaker voice coil
Output meter reading to indicate 1.0 watt output ..... 2 volts

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

Values shown under "Microvolts" are only approximate.

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.

Position of Volume Control ..... Fully clockwise
Position of Tone Control ..... Full position
Position of Dial Pointer with variable tuning condenser fully closed ..... Horizontal

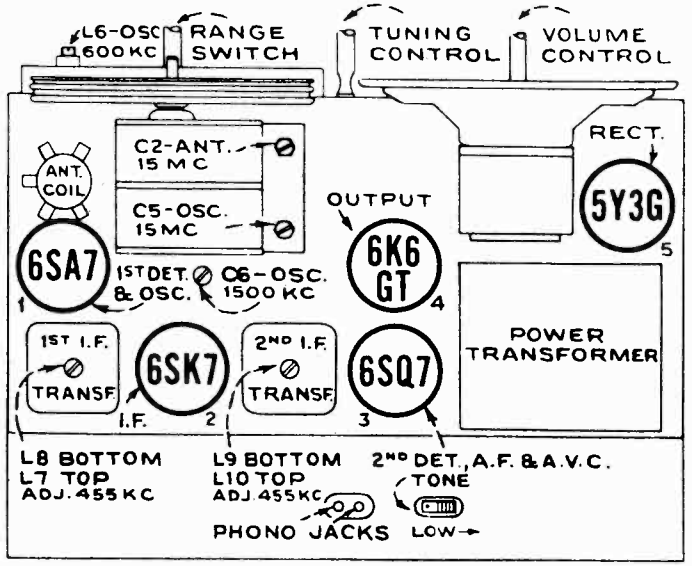
Frequency Ranges:
Standard Broadcast (A) ..... 540-1,800 kc (555-166m)
Short Wave (C) ..... 4.5-18 mc (66.7-16.6m)

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

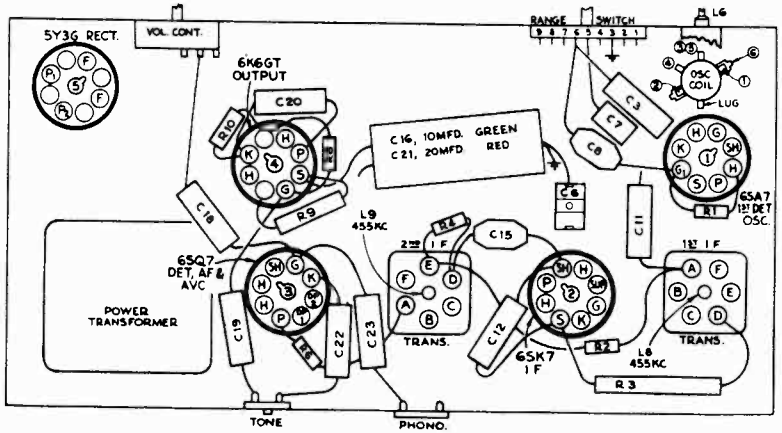
Power Output:
Type ..... Pentode
Undistorted ..... 1.5 watts
Maximum ..... 2.3 watts

Power Supply
A ..... 105 to 125 volts, 50 to 60 cycles, 40 watts
B ..... 105 to 125 volts, 25 to 60 cycles, 40 watts
C ..... 200 to 250 volts, 50 to 60 cycles, 40 watts

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 ..... 25 to 1



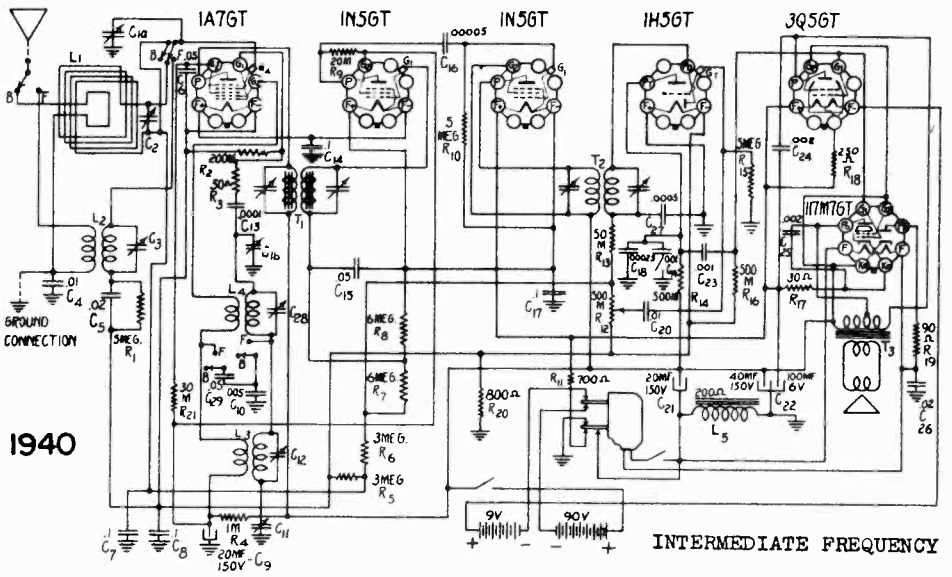
TUBE, TRIMMER AND PARTS LOCATION—TOP VIEW



TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

SEARS-ROEBUCK & CO.

MODEL 7318
Chassis 109.369



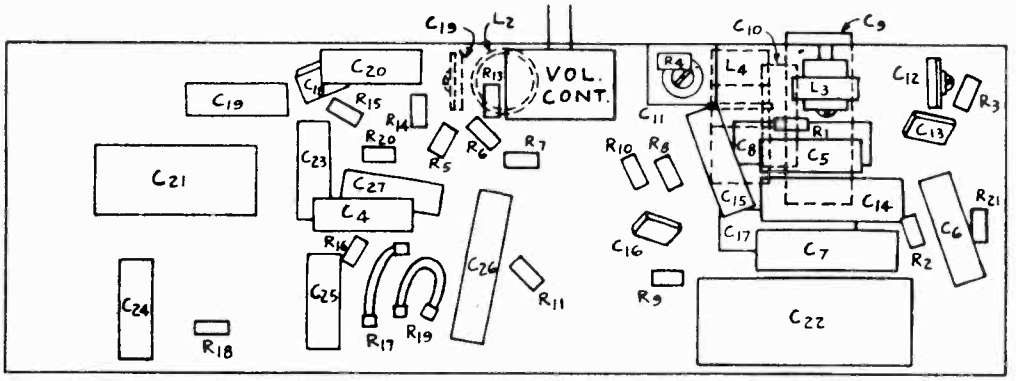
NOVEMBER 4, 1940

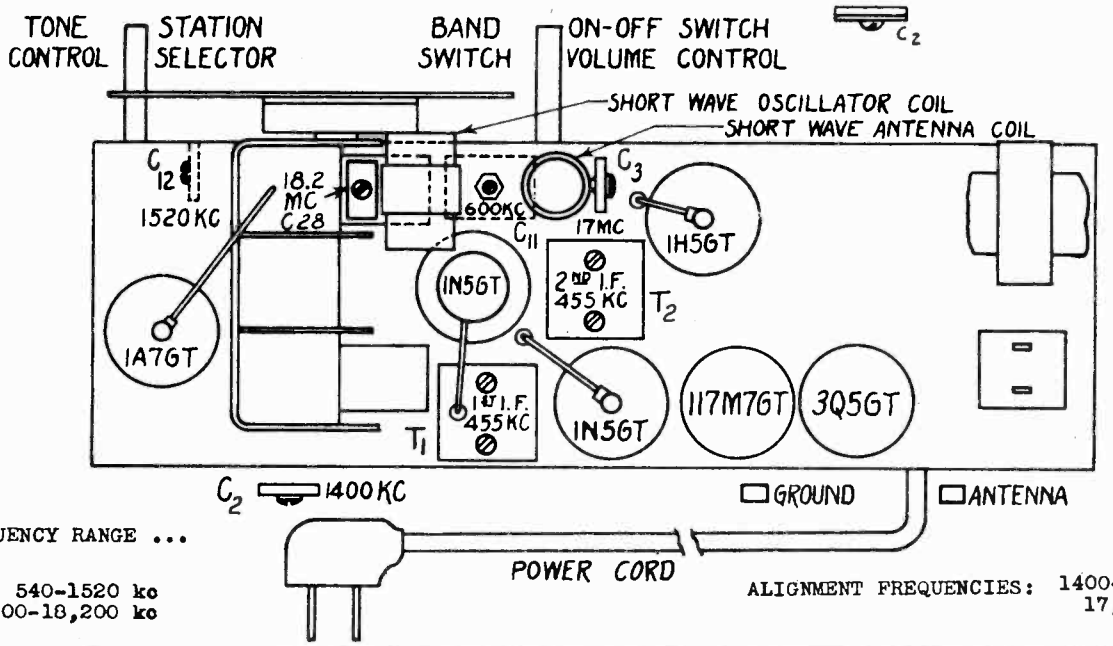
INTERMEDIATE FREQUENCY . . 455 kc

POWER SUPPLY . . . . . Battery, 105-125 Volts 50-60 cycles or DC 20 Watts.

TUBES AND FUNCTIONS:

1A7GT ..... Oscillator-Translator
1N5GT ..... First IF Amplifier
1N5GT ..... Second IF Amplifier
1H5GT ..... Detector-AVC-1st AF
3Q5GT ..... Output, Battery
117M7GT ..... Rectifier-Output, Power





FREQUENCY RANGE ...

..... 540-1520 kc
5900-18,200 kc

ALIGNMENT FREQUENCIES: 1400-600 kc
17,000 kc

MODEL 7318 ALIGNMENT PROCEDURE

This receiver is a two band set covering the broadcast band 540-1520 kc, and the short wave band 5900-18,200 kc. The circuit is conventional. Two padding condensers are used for tracking. The broadcast padder is adjustable over a narrow range. The short wave padder is a fixed condenser of close tolerance. The gang condenser has both sections alike.

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 calibretion. If an important station that should be received at the top end of the dial cannot be tuned 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 loudspeaker voice coil
Output meter reading to indicate 50 milliwatts	4 volts
Dummy to be used between high side of generator and receiver	See chart below
Position of volume control	fully on
Position of tone control	maximum high response
Position of band switch	as required.

RANGE SWITCH	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	DUMMY CONNECTED TO	TRIMMERS ADJUSTED (in order shown)	FUNCTION
Broadcast	closed	455 kc	.1 mfd	Grid of 1A7GT	T2, T1	IF
Short Wave	open	18,200 kc	400 ohms	Antenna clip	C2	Oscillator
Short Wave	17,000 kc	17,000 kc*	400 ohms	Antenna clip	C3	RF Transl.
Broadcast	open	1520 kc	.1 mfd	Grid of 1A7GT	C10	Oscillator
Broadcast	1400 kc	1400 kc	Note	Note	C2	RF Transl.
Broadcast	600 kc	600 kc*	Note	Note	C11	Oscillator

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

NOTE In making the broadcast band adjustments (1400 kc and 600 kc), the loop antenna should be in the same position in relation to the chassis and batteries that it will be in the cabinet. Do not align the broadcast band with the loop near a large metal object such as the top of a metal workbench.

Connect a one turn loop to the terminals of the signal generator and couple this loop very loosely to the receiver loop.

If two peaks can be had, the correct one is with the trimmer screw further out (minimum capacity); 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 signal generator at its lowest possible value in order to make the AVC action of the receiver ineffective.

THE LOOP ANTENNA:

The self contained loop antenna is directional in its characteristic, therefore, reception may sometimes be improved, or interference reduced, by turning the set in a particular direction. In locations where the signal strength is too low to give satisfactory reception, either because of distance from the station, or because of shielding resulting from metal lath, steel girders or equivalent metal objects in the building, an outside antenna is necessary. This antenna should be connected to the clip in the rear of the receiver.

SHORT WAVE ANTENNA:

A reel antenna is provided for the short wave range of this receiver. This antenna should be fully unwound and may be strung around a picture moulding or under a rug. Where greater signal pickup is necessary a good outdoor antenna should be used.

GROUND:

When either the reel antenna or an outdoor antenna is used, a good ground is necessary for best reception when the receiver is operated on batteries. Do not connect a ground to this receiver when it is operating on a power line.

THE HEATER CIRCUIT:

The heater of the 117M7GT tube is connected directly across the power line. The 1A7GT, 1N5GT, 1H5GT, filaments in series are heated by the cathode current of the 117M7GT output section on AC-DC operation. The 1A7GT, 1N5GT, 1H5GT and 3Q5GT filaments in series are heated by a nine volt battery on battery operation. If any one of the battery tubes burn out it can be located through the fact that the full "A" battery voltage will appear across its filament terminals.

POSITION OF THE POWER CORD PLUG:

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

POWER OUTPUT:

Type	Beam Tube	
Undistorted,	3Q5GT	0.12 watt
Undistorted,	117M7GT	0.53 watt
Maximum	3Q5GT	0.25 watt
Maximum	117M7GT	1.00 watt

LOUD SPEAKER:

Type.....Permanent Magnet Dynamic
Size..... 5 inch
Field..... Permanent Magnet

ALIGNMENT PROCEDURE

MODEL 7814

PRELIMINARY

MARCH 28, 1940

Output meter connections	Across loud speaker voice coil
Output meter reading to indicate 50 milliwatts	0.4 volts
Generator ground lead connection	Receiver chassis
Connection of generator output lead	See chart below
Dummy antenna value to be in series with generator output	See chart below
Approximate microvolts input to indicate 50 milliwatts output	See chart below
Generator modulation	30%, 400 cycles
Position of volume control	Fully on
Position of pointer with variable fully closed	Over first heavy line below 550 kc
Position of electric battery switch	Battery

POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROX. MICROVOLTS
Open	465 kc.	.05 Mfd.	1A7G Grid	T2, T1	I.F.	150
Open	1650 kc.	.00005 Mfd.	Antenna	C2	Oscillator	200
1400 kc.	1400 kc.	.00005 Mfd.	Antenna	C1	Translator	150
600 kc. (Rock)	600 kc.	.00005 Mfd.	Antenna	C3	Padder	150

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 chassis is removed from the case in order to make alignment adjustments, however, the loop antenna should be placed in the same relative position to the chassis as it occupies in the case.

Alignment should be done with the receiver operating from batteries.

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 action of the receiver from interfering with accurate alignment.

ELECTRICAL SPECIFICATIONS

TUBES AND FUNCTIONS:

1A7G	Translator-Oscillator
1N5G	IF
1H5G	Detector-AVC-AF
1A5G	Output
35Z4GT	Rectifier

POWER SUPPLY:

105 - 120 Volts, A.C.-D.C. 35 Watts

Batteries

#5086	6v. "A" battery	"A" Drain	56 ma
2 - #5090	45v. "B" battery	"B" Drain	8.5 ma

FREQUENCY RANGE:

Broadcast 540-1650 kc

ALIGNMENT FREQUENCIES:

Oscillator Trimmer	Antenna-Transl. Trimmer	Padder
1650 kc	1400 kc	600 kc

INTERMEDIATE FREQUENCY 465 kc

POWER OUTPUT:

Type	Pentode
Undistorted	0.095 watts
Maximum	0.15 watts

LOUD SPEAKER:

Type	PM Dynamic
Size	5 inch

MECHANICAL SPECIFICATIONS

OPERATING CONTROLS:

1. Left knob. Volume
2. Center knob..Batt.-Off-AC-DC Switch
3. Right knob. .Station Selector

CONTROL OPERATION:

Turning right	Volume increase
Turning right	Battery: Off: AC-DC
Tuning ratio	5½:1

SEARS ROEBUCK & CO.

MODEL 7321 Export
Chassis 126.229

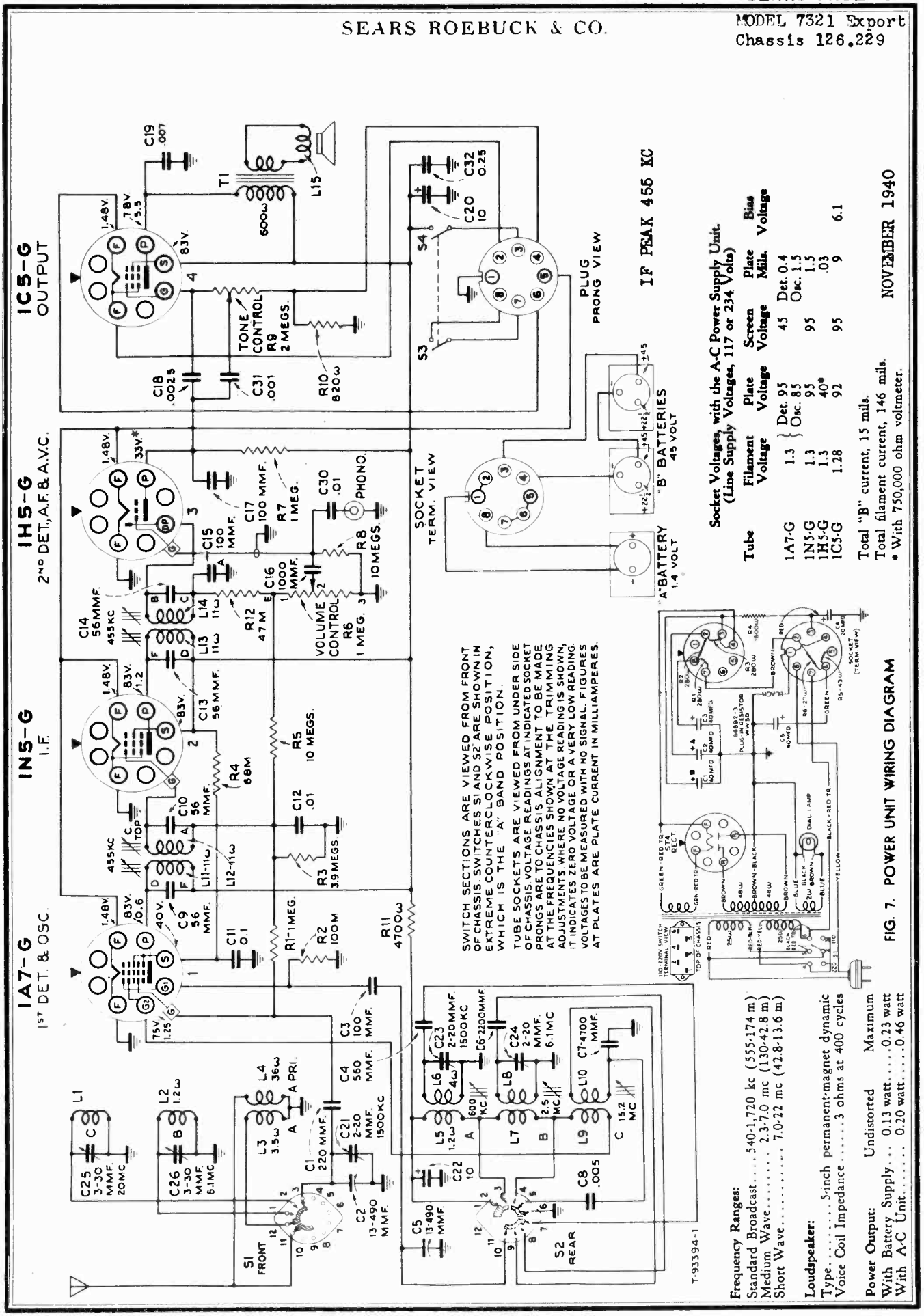


FIG. 7. POWER UNIT WIRING DIAGRAM

Socket Voltages, with the A-C Power Supply Unit. (Line Supply Voltages, 117 or 234 Volts)

Tube	Filament Voltage	Plate Voltage	Screen Voltage	Plate Mils.	Bias Voltage
1A7-G	1.3	Det. 95	45	Det. 0.4	
		Osc. 85		Osc. 1.5	
1N5-G	1.3	95	95	1.5	
1H5-G	1.3	40*		.03	
1C5-G	1.28	92	95	9	6.1

Total "B" current, 15 mils.
Total filament current, 146 mils.
* With 750,000 ohm voltmeter.

NOVEMBER 1940

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.....5-inch permanent-magnet dynamic
Voice Coil Impedance.....3 ohms at 400 cycles

Power Output: Undistorted Maximum
With Battery Supply... 0.13 watt.....0.23 watt
With A-C Unit..... 0.20 watt.....0.46 watt

ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections ..... Across speaker voice coil
Output meter reading to indicate 0.05 watt output ..... 0.4 volts
Approximate average sensitivity in microvolts for 0.05 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
"Broadcast"	High End	455 kc	.001 mfd.	1N5-G I-F Grid Cap	L13, L14	2nd I-F Trans.	4,000
"Broadcast"	High End	455 kc	.001 mfd.	1A7-G Det. Grid Cap	L11, L12	1st I-F Trans.	50
"Broadcast"	1,500 kc (152.5°)	1,500 kc	.0002 mfd.	Ant.	C23, C21	Osc., Ant.	12
"Broadcast"	600 kc (33°) (Rock).	600 kc	.0002 mfd.	Ant.	L6	Osc.	6
"Medium Wave"	6.1 mc (151°)	6.1 mc	300 ohms	Ant.	C24, C26	Osc.,* Ant.	12
"Medium Wave"	2.5 mc (29.5°) (Rock)	2.5 mc	300 ohms	Ant.	L8	Osc.	18
"Short Wave"	15.2 mc (122°)	15.2 mc	300 ohms	Ant.	L10	Osc.	15
"Short Wave"	20 mc (155.5°) (Rock)	20 mc	300 ohms	Ant.	C25	Ant.**	18
"Broadcast"	1,500 kc (152.5°)	1,500 kc	.0002 mfd.	Ant.	C23	Osc.	12

IMPORTANT ALIGNMENT NOTES

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

**Use maximum 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.

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.

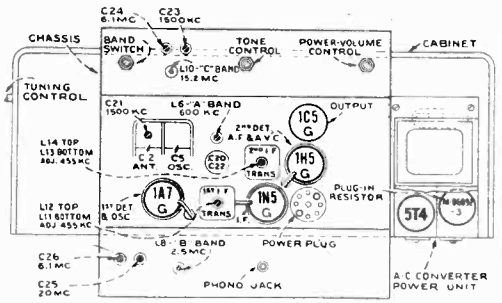
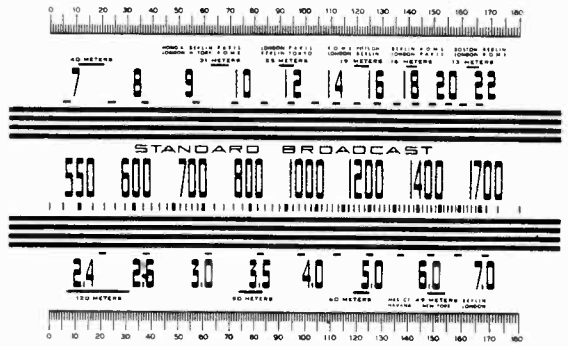


FIG. 2. TUBE TRIMMER AND PARTS LOCATION



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: 38° 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."

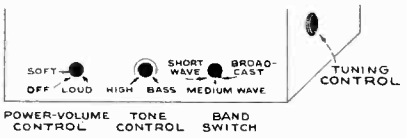


FIG. 3. CONTROLS

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.

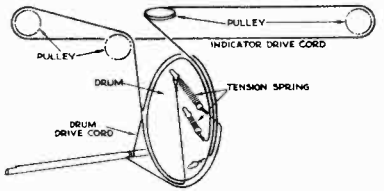


FIG. 4. CONDENSER AND INDICATOR DRIVE CORDS

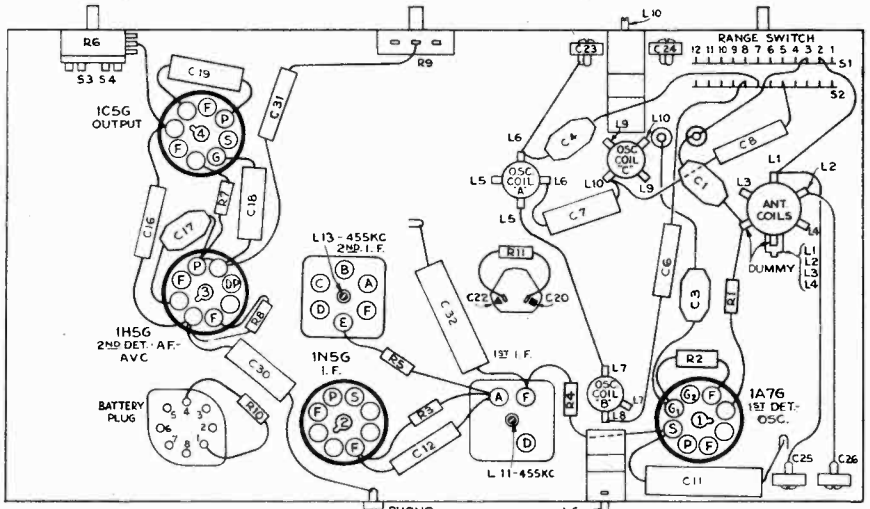
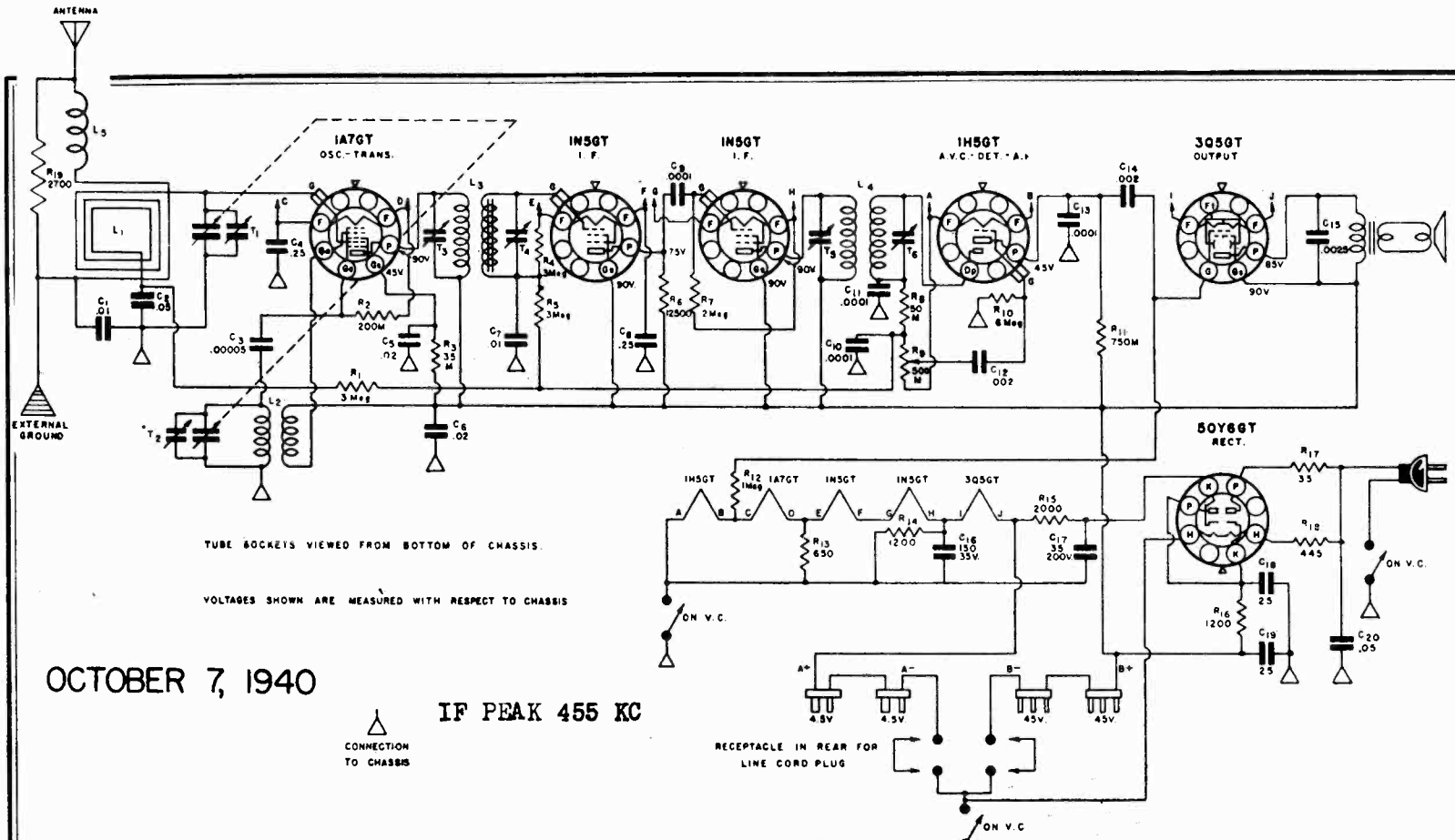


FIG. 5. TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

SEARS ROEBUCK & CO.

MODEL 6861
Chassis 110.412



OCTOBER 7, 1940

IF PEAK 455 KC

FREQUENCY RANGE
Broadcast.....535-1730

POWER SUPPLY:
All models available....

BATTERY AND 110-125 VOLTS AC-DC

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

POWER OUTPUT
Type..... Beam Pentode
Undistorted.....175 MW
Maximum.....350 MW

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	*	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.

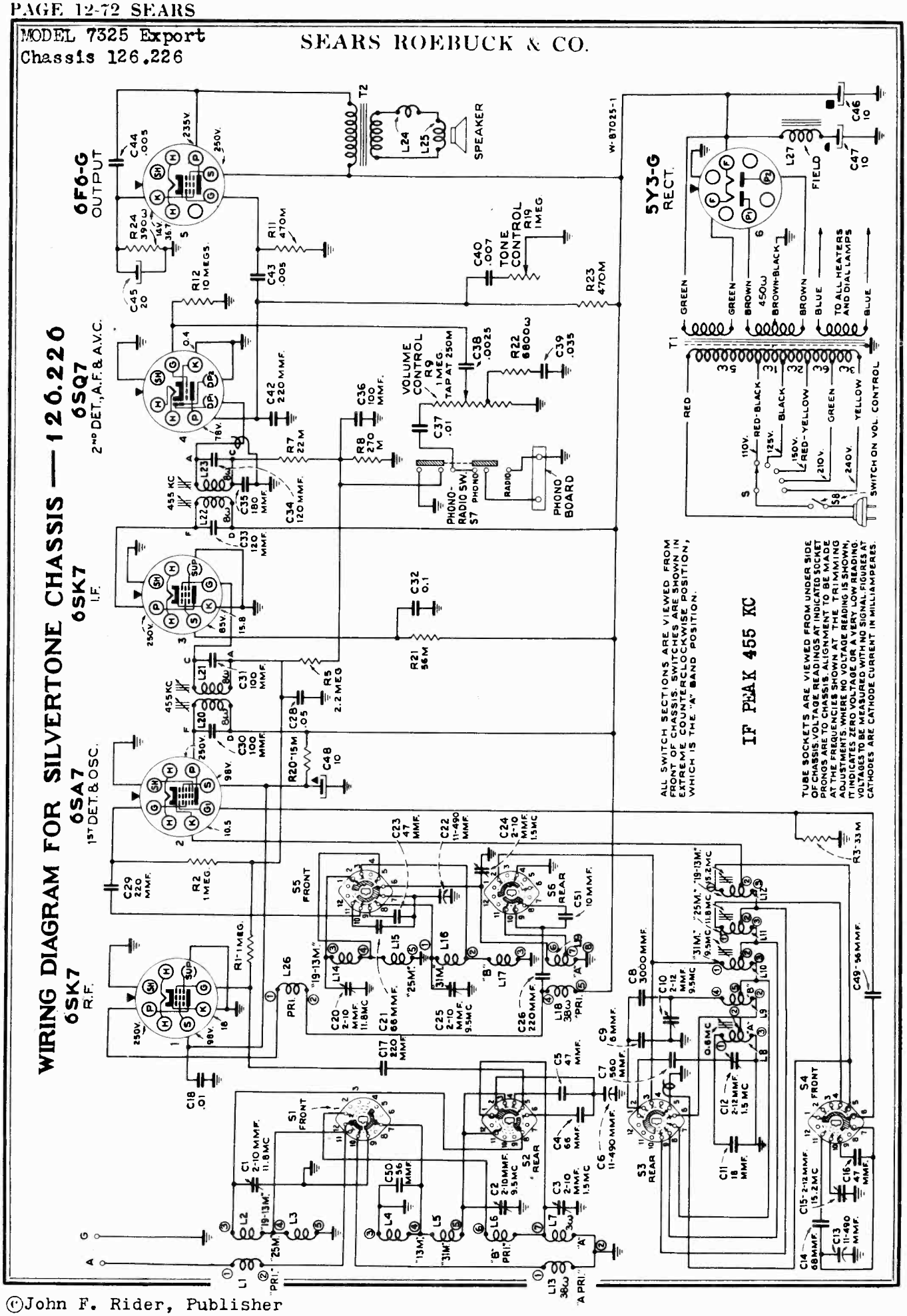
* Run a wire from the output terminal of the generator, having it come near the receiver. However, no electrical connection is made between the signal generator and the receiver.

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.

MODEL 7325 Export
Chassis 126.226

SEARS ROEBUCK & CO.

WIRING DIAGRAM FOR SILVERTONE CHASSIS — 126.226



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connections	Across speaker voice coil
Output meter reading to indicate 1.0 watt output	1.8 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	To chassis
Connection of generator ground lead	30%, 400 cycles
Generator modulation	Fully clockwise
Position of Volume Control	Fully clockwise
Position of Tone Control	

LOCATION OF PARTS AND ALIGNMENT ADJUSTMENTS ON TOP OF CHASSIS

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.	6SK7 I-F Grid	L22, L23	2nd I-F Trans.	4,000
"A"	Low End	455 kc	.001 mfd.	6SA7 Det.-Osc. Grid	L20, L21	1st I-F Trans.	70
"25 Meter"	11.8 mc (138.5°)	11.8 mc	300 ohms	Ant.	L11, C1, C20	Osc.,* Ant., Det.	7
"25 Meter"	15.2 mc (18.5°)	15.2 mc	300 ohms	Ant.	C15	Osc.*	8.5
"19-13 Meter"	15.2 mc (156°)	15.2 mc	300 ohms	Ant.	L12	Osc.*	7
"31 Meter"	9.5 mc (156°)	9.5 mc	300 ohms	Ant.	L10, C2, C25	Osc.,* Ant., Det.	5.6
"Medium Band"	9.5 mc (11.5°)	9.5 mc	300 ohms	Ant.	C10	Osc.*	3
"Standard Band"	1,500 kc (27°)	1,500 kc	.0002 mfd.	Ant.	C12, C3, C24	Osc., Ant., Det.	2
"Standard Band"	600 kc (149.5°) (Rock)	600 kc	.0002 mfd.	Ant.	L8	Osc.	1.5

IMPORTANT ALIGNMENT NOTES

* Use minimum capacity peaks 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.

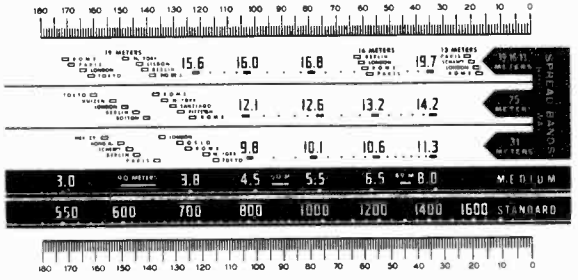
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value to prevent the a-v-c action of the set interfering with accurate alignment.

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.

Note.—Oscillator tracks 455 kc above signal on all bands.

Values shown under, "Microvolts," are only approximate.



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: 150° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

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.

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 180° mark on the drum scale (see "Dial Drive Drawing") 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 "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet attach the dial 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.

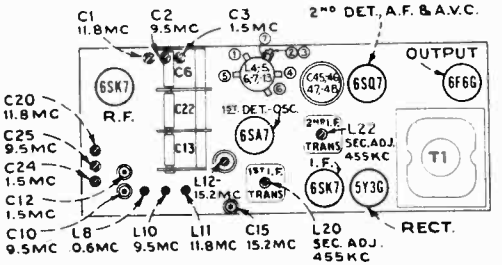


FIG. 3. TUBE, TRIMMER AND PARTS LOCATION

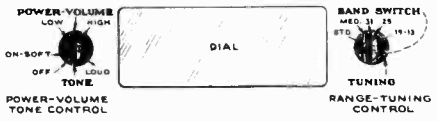


FIG. 4. CONTROLS

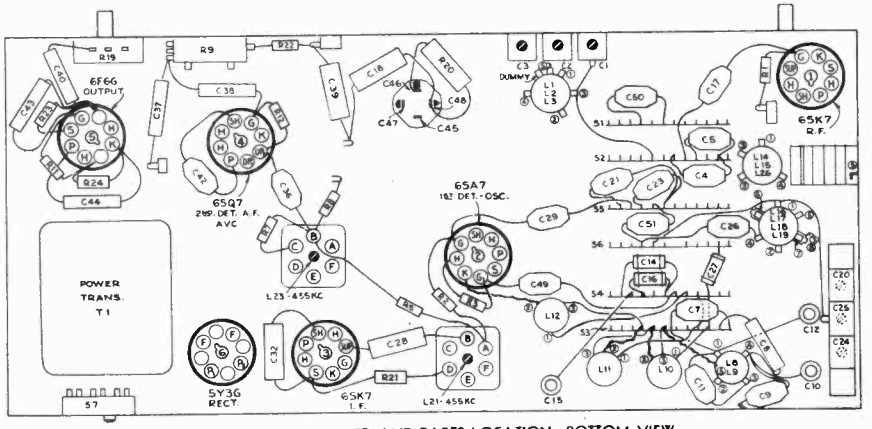


FIG. 5. TUBE, TRIMMER AND PARTS LOCATION—BOTTOM VIEW

Electrical and Mechanical Specifications

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.
6P6-G	Power Output
5Y3-G	Rectifier

Frequency Ranges:

Standard Broadcast	540-1,720 kc (555-174 m)
Medium Wave	3,000-9,500 kc (100-31.5 m)
31 Meter Spread Band	9,500-12,500 kc (31.5-24.0 m)
25 Meter Spread Band	11,800-16,000 kc (25.5-18.8 m)
19-16-13 Meter Spread Band	15,500-22,500 kc (19.5-13.3 m)

Chassis Features:

Jack and Switch for Phonograph Attachment
Magnetite-Core Adjusted I-F Transformers, and Oscillator Coils
Automatic Volume Control
High-Frequency Tone Control
Aural-Compensated Volume Control

No. R-F Stages (all bands)	one
No. I-F Stages	one
Spread Bands for Short Wave Reception	

Intermediate Frequency	455 kc

Alignment Frequencies:

Standard Broadcast	1,500 kc (osc.)—(ant.) 600 kc (osc.)
Medium Band	9.5 mc (osc.)
31 Meter Spread Band	9.5 mc (osc.) (det.) (ant.)
25 Meter Spread Band	11.8 mc (osc.) (det.) (ant.) 15.2 mc (osc.)
19-13 Meter Spread Band	15.2 mc (osc.)

Loudspeaker:

Type	6-inch electrodynamic
Voice Coil Impedance at 400 Cycles	3.4 ohms
Field Coil Resistance	1,060 ohms

Power Output:

Type	Pentode
Undistorted	2.5 watts
Maximum	4.5 watts

Power Supply Rating:

105-120 volts, 25 cycle	75 watts
105-120 volts, 50-60 cycle	75 watts
105-130, 140-160, 200-250 volts, 50-60 cycle	75 watts

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

Schematic Location	Part No.	DESCRIPTION	Selling Price Each
	1265434502	Arm—Operating arm between knob shaft and range switch	.25
	1265537053	Board—"Antenna-Ground" board	.20
	1265937153	Book—Instruction book	.25
	1265437054	Bracket—Pulley support bracket complete with pulley—fastened on bracket, Stock No. 1265434131	.20
	1265434130	Bracket—pulley support bracket complete with pulley—located on left hand side of chassis	.30
	1265434131	Bracket—Pulley support bracket complete with 2 pulleys—located on right hand side of chassis	.55
	1264035795	Calibrator—Drive drum calibrator	.25
L4, L5, L6, L7, L19	1262837055	Coil—Antenna coil—"A," "B" and "31 meter" bands	1.80
L1, L2, L3	1262837056	Coil—Antenna coil—"25, 19, 13 meter" band	1.00
L8, L9	1262837093	Coil—Oscillator coil—"A," and "B" bands	.85
L18	1262835624	Coil—Oscillator coil—"19-13 meter" band—25 meter	.45
L11	1262835625	Coil—Oscillator coil—"25 meter" band	.50
L10	1262835626	Coil—Oscillator coil—"31 meter" band	.45
L14, L15	1262837058	Coil—R.F. coil—"25 meter" and 19-13 meter" bands	.80
L16, L17, L18, L19	1262837057	Coil—R.F. coil—"A," "B" and "31 meter" bands	1.60
C45, C46, C47, C48	1262033014	Condenser—Electrolytic comprising three sections of 10 mfd. —450 volts each and one section of 20 mfd.—25 volts	1.90
C18, C32	126194839	Condenser—0.1 mfd., 400 volts, tubular	.30
C28	1261932787	Condenser—.05 mfd., 400 volts, tubular	.20
C39	1261936248	Condenser—.036 mfd., 400 volts, tubular	.20
C37	126194937	Condenser—.01 mfd., 1,000 volts, tubular	.25
C40	126195148	Condenser—.007 mfd., 500 volts, tubular	.20
C43, C44	1261933584	Condenser—.005 mfd., 1,200 volts, tubular	.25
C8	1261935643	Condenser—.003 mfd., tubular	.55
C38	1261934459	Condenser—.0025 mfd., 1,400 volts, tubular	.20
C7	1261931433	Condenser—.00056 mfd., silvered mica	.35
C35	1261936616	Condenser—.00022 mfd., mica	.30
C17, C26, C29, C42	1261912694	Condenser—.00022 mfd., moulded	.35
C33, C34	1261931813	Condenser—.00012 mfd., mica	.30
C30, C31	1261930904	Condenser—.0001 mfd., mica	.25
C36	1261912720	Condenser—.0001 mfd., moulded	.35
C14	1261935645	Condenser—.000068 mfd., ceramic	.35
C4, C21	1261936072	Condenser—.000068 mfd., silvered mica	.30
C49, C50	1261912723	Condenser—.000056 mfd., ceramic	.35
C16	1261935644	Condenser—.000047 mfd., ceramic	.35
C5, C23	1261937329	Condenser—.000047 mfd., silvered mica	.35
C11	1261931360	Condenser—.000018 mfd., silvered mica	.30
C51	1261913200	Condenser—.00001 mfd., moulded	.35
C9	1261935648	Condenser—.000006 mfd., moulded	.35
C27	1261933097	Condenser—.0000047 mfd., ceramic	.35
C10, C19, C16	1261712714	Condenser—Air trimmer—medium, 9-12 mmfd.	.50
C20, C24, C25	1261737059	Condenser—Mica trimmer comprising 3 sections each, 2-10 mmfd.	.60
C1, C2, C3	1261737059	Condenser—Mica trimmer comprising 3 sections of 2-10 mmfd., each	.60
C6, C13, C22	1261637151	Condenser—Variable tuning condenser	6.25
R19	1262537052	Control—Tone control	1.00
R9, S8	1262437051	Control—Volume control and power switch	2.00
	1264534862	Cord—Indicator drive cord	.25
	1265432634	Cord—Tuning condenser drive cord	.10
	1261731259	Core—Adjustable core and stud	.15
	1261735788	Core—Adjustable core and stud for "A," "B" and "C" band oscillator coil	.15
	1261731259	Core—Adjustable core and stud for the 25 meter and 31 meter bands oscillator coils	.15
	1265435387	Decalcomania—"Power-Volume" decalcomania	.05
	1265437182	Decalcomania—"Range" decalcomania	.15
	1265435388	Decalcomania—"Tone" decalcomania	.05
	1265436909	Decalcomania—Trade mark decalcomania	.15
	1265435391	Decalcomania—"Tuning" decalcomania	.05
	1264037116	Dial—Glass dial scale	1.35
	1264633770	Drive—Planetary tuning drive less balls, shafts, and shaft retainer	.90
	1264533773	Drum—Tuning condenser drive drum	.90
	1265437216	Frame—Dial frame complete, less pointer and carriage, pointer carriage guide shafts and dial	2.00
	1265433185	Gear—Volume control gear and hub	.50
	1264911765	Lamp—Dial lamp—Mazda No. 55	.17
	1265433767	Link—Operating link between knob shaft and range switch	.60
	1265435853	Mounting—Rubber mounting for speaker	.20
	126195119	Plug—3-contact female plug for speaker cable	.25
	1264137217	Pointer—Station selector pointer and carriage	.40
	1264536627	Pulley—Drive cord pulley only fastened to bracket, Stock No. 1265434130	.10
	1264535630	Pulley—Drive cord pulley only —fastened to brackets, Stock Nos. 1265434131 and 1265437054	.10
R12	1262313601	Resistor—10 megohm, ½ watt	.20
R5	1262312879	Resistor—2.2 megohm, ½ watt	.20
R1, R2	1262313730	Resistor—1 megohm, ½ watt	.20
R23	1262330648	Resistor—470,000 ohms, ½ watt	.20
R11	1262312285	Resistor—470,000 ohms, ½ watt	.20
R8	1262312189	Resistor—270,000 ohms, ½ watt	.20
R21	1262330650	Resistor—56,000 ohms, ½ watt	.20
R3	1262318454	Resistor—33,000 ohms, ½ watt	.20
R7	1262313898	Resistor—22,000 ohms, ½ watt	.20
R20	1262335875	Resistor—15,000 ohms, 3 watt	.35
R22	1262312285	Resistor—6,8,000 ohms, ½ watt	.20
R24	1262331388	Resistor—390 ohms, 1 watt	.22
	1265414345	Ring—Retaining ring for tone control	.03
	1265431611	Screw—No. 8-32 milled head set screw for gear, Stock No. 1265433188	.02
	1265414350	Screw—No. 8-32 square head set screw for drive drum	.03
	1265434491	Shaft—Pointer carriage guide shaft	.15
	1265434134	Shaft—Range switch shaft	.80

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.

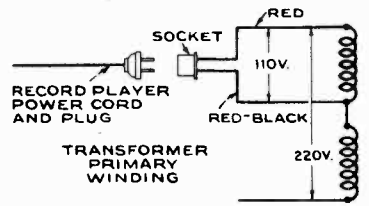


FIG. 1. RECORD PLAYER CONNECTIONS (220V—110V)

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.

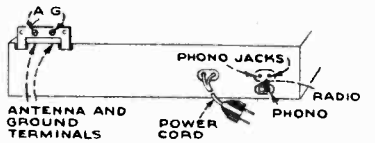


FIG. 2. REAR OF CHASSIS

Tuning Dial:

The tuning shaft is connected through a cord drive to a drum on the condenser shaft. A second cord drives the dial indicator by passing over a pulley on the chassis. Figure 6 shows the complete cord drive assembly and the correct number of turns which the cord should be wrapped around the drive shaft and condenser drum.

Schematic Location	Part No.	DESCRIPTION	Selling Price Each
	1265434132	Shaft—Shaft and gear for tone control	.55
	1264634135	Shaft—Tuning shaft	.70
	1261931364	Socket—Dial lamp socket	.20
	1261834187	Socket—Phono input socket	.15
	1261831251	Socket—Tube socket	.25
		Always show number on speaker when ordering replacement parts.	
	1265835848	Speaker—6-inch dynamic speaker complete—less output transformer and plug	3.50
	1265732907	Cap—Dust cap	.02
L27	1261533868	Coil—Field coil	1.70
L24	1265732906	Coil—Neutralizing coil	.25
L25	1265735441	Cone—Cone complete with voice coil, suspension and dust cap	1.25
	126575118	Plug—3-prong male speaker plug	.25
T2	1261332906	Transformer—Output transformer	1.35
	1265431418	Spring—Drive cord spring	.05
	1264633769	Spring—Planetory tuning drive spring	.15

Schematic Location	Part No.	DESCRIPTION	Selling Price Each
	1265413638	Spring—Pointer cord spring	.08
	1265431261	Spring—Retaining spring for cores and studs	.01
	1265431261	Spring—Retaining spring for oscillator coil, No. 1262835624	.01
S7	1263833491	Switch—Radio-phono switch	.35
S1, S2, S3, S4, S5, S6	1263737050	Switch—Range switch	3.50
L20, L21, C30, C31	1263335636	Transformer—First I.F. transformer	1.70
L22, L23, C33, C34, C35	1263536615	Transformer—Second I.F. transformer	1.60
T1	1261131734	Transformer—Power transformer —105-120 volts, 25 cycle	10.35
T1	1261031733	Transformer—Power transformer —105-120 volts, 50-60 cycle	4.75
T1	1261031735	Transformer—Power transformer —105-130, 140-160, 200-250 volts, 50-60 cycle	10.80
	126462917	Washer—"C" washer for tuning drive	.03

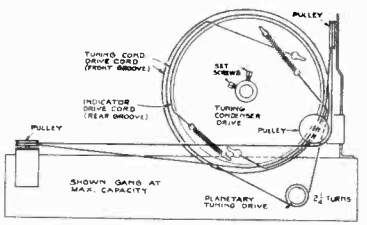


FIG. 6. CONDENSER AND INDICATOR DRIVE CORD

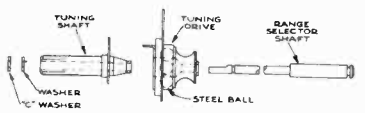


FIG. 7. PLANETARY TUNING DRIVE ASS'Y

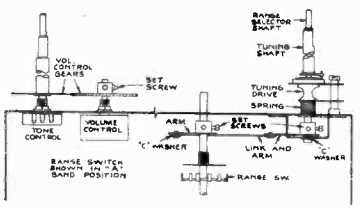
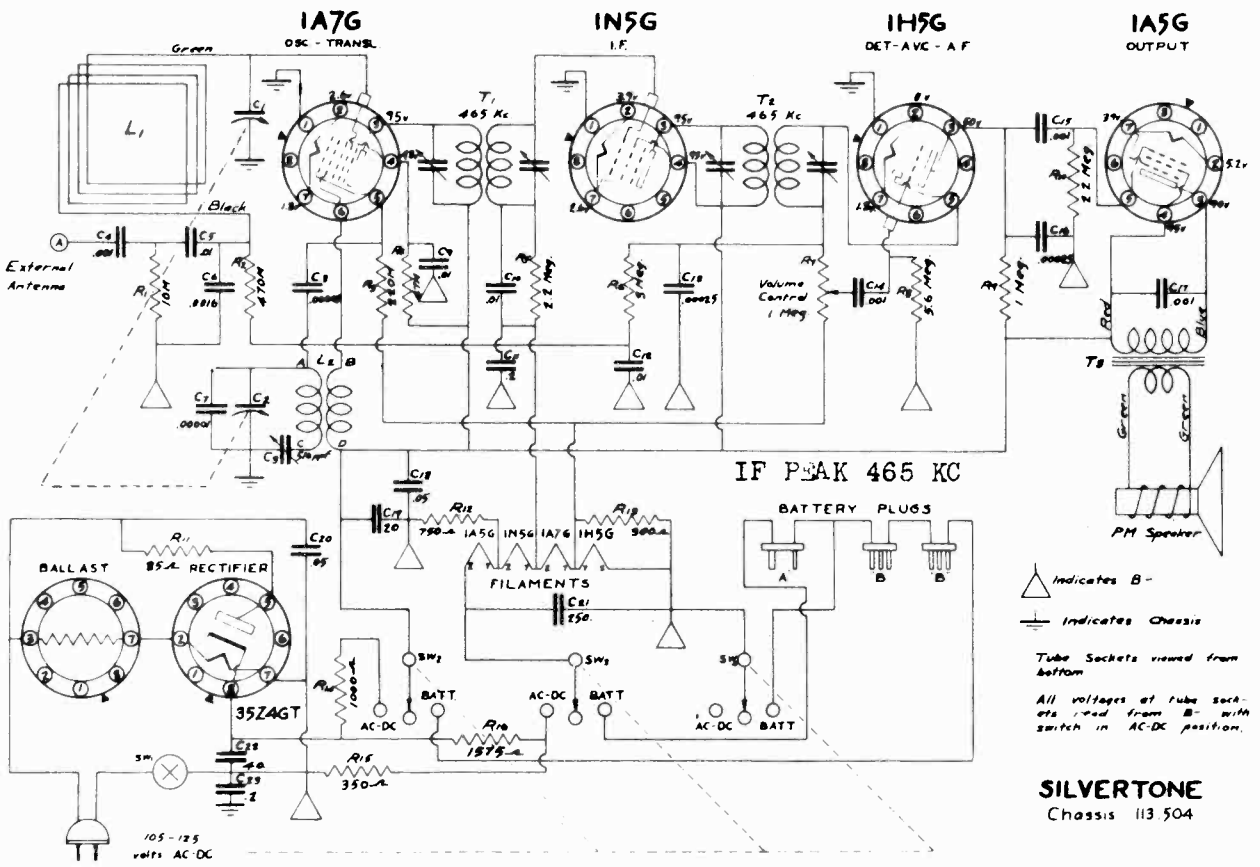


FIG. 8. BOTTOM VIEW OF CONTROLS

SEARS ROEBUCK & CO.

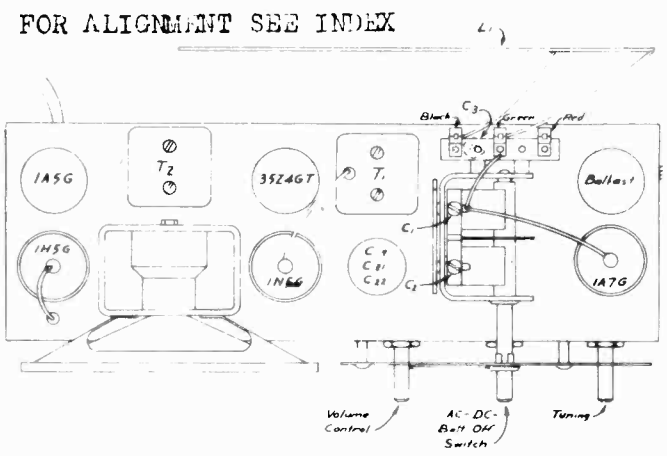
SEARS-ROEBUCK & CO.

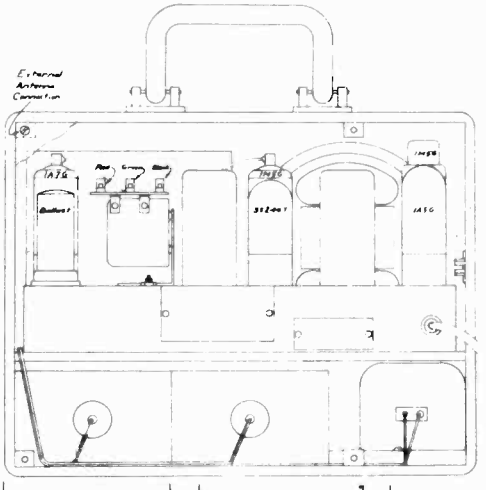
MODEL 7814
Chassis 113.304

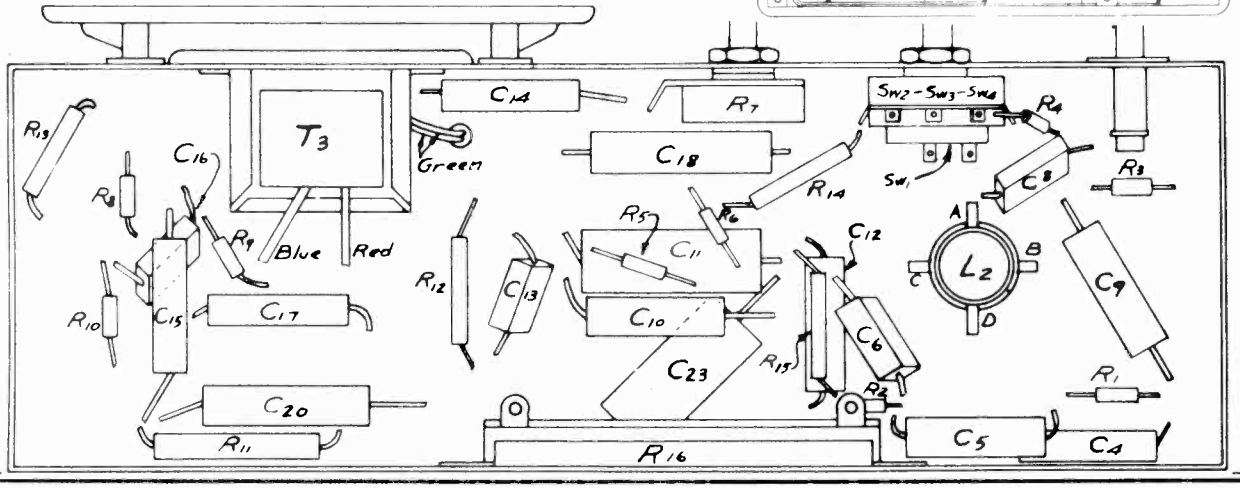


SILVERTONE
Chassis 113.504

FOR ALIGNMENT SEE INDEX







MODEL 7245
Chassis 107.375

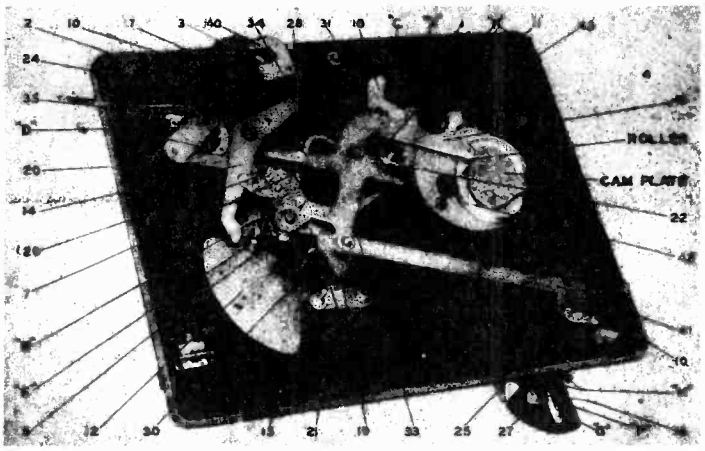
SEARS-ROEBUCK & CO.

AUTOMATIC RECORD CHANGER

ADJUSTMENTS

A. MAIN LEVER.--This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. FRICTION CLUTCH.--The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5". If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B". If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.



NOTE: Numbers refer to parts—letters refer to adjustments

C. PICKUP LIFT CABLE SCREW.--During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D.& E. NEEDLE LANDING ON RECORD.--The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17". The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17". Leave approximately 1/32 inch end play between hob of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D".

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F.& G. RECORD SEPARATING KNIFE.--The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .005 -.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072-.078 inch.

H. RECORD SUPPORT SHELF.--The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15", and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H", run mechanism through cycle several times to check action, then tighten cone pointed screw "H".

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. TONE ARM REST SUPPORT (not shown).--When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. TRIP PAWL STOP PIN.--The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

LUBRICATION.--Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

Apply a few drops of light machine oil to the motor spindle bearing and oil hole adjacent to the spindle bearing. The oil hole has a screw plug.

Do not allow oil or grease to come in contact with, rubber mounting of tone arm base, rubber bumper, or rubber spindle cap.

MISCELLANEOUS SERVICE HINTS

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc., are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

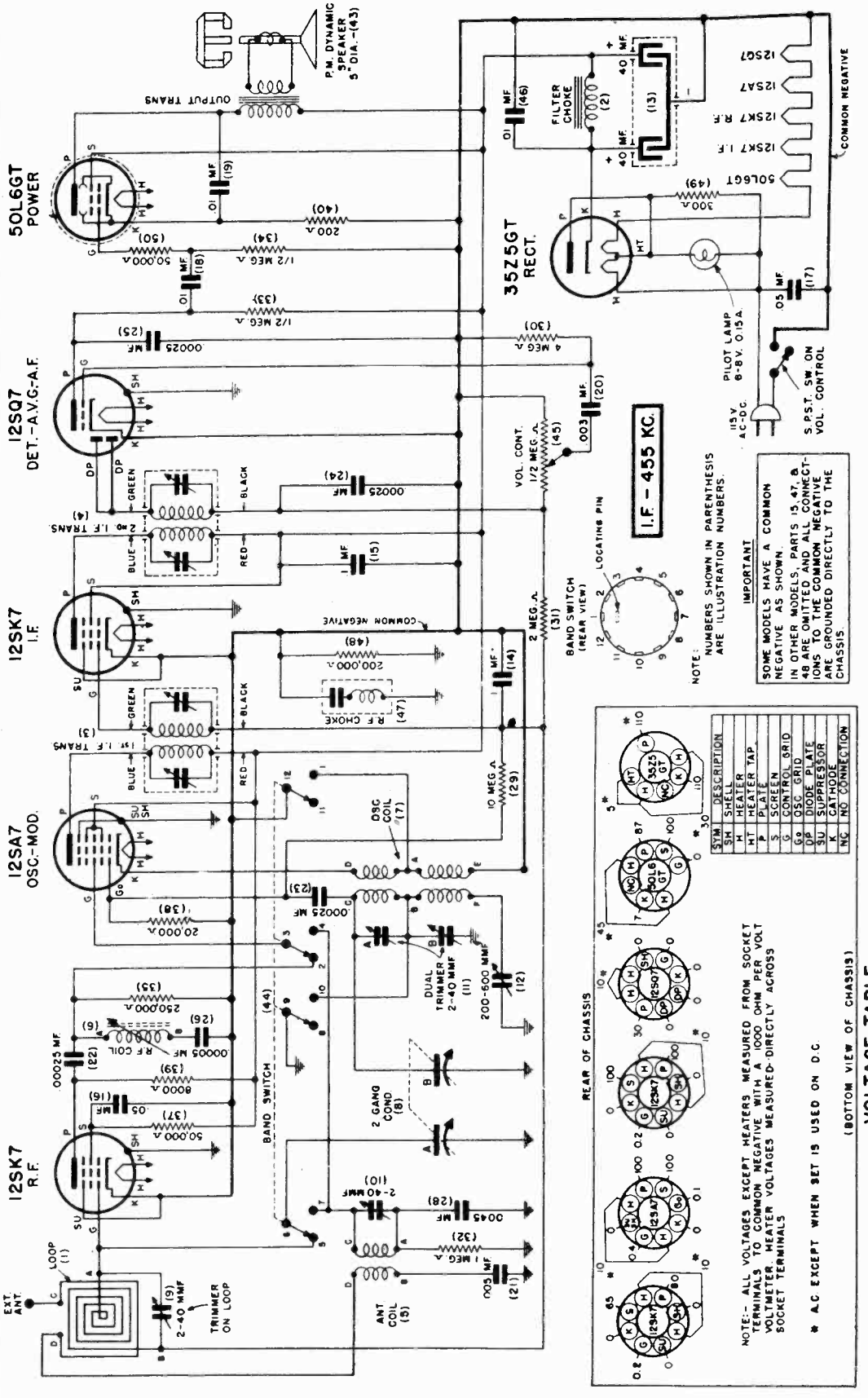
The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A".
2. Needle does not land properly on both 10 and 12 inch records--Make complete adjustments "D" and "E".
3. Needle does not land properly on 12 inch record but correct on 10 inch--Effect adjustment "E".
4. Failure to trip at end of record--Increase clutch "5" friction by means of screw "B". Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable--Adjust lift cable per adjustment "C".
6. Needle does not track after landing--Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete--Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction--Record is defective; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records--Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly--Adjust record shelf assemblies in respect to shaft by means of adjustment "H".
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed--Increase tension of pickup locating lever spring "34".

SENTINEL RADIO CORP.

MODELS 1U-212UL
212UL



VOLTAGE TABLE

PART NO.- 1U-212UL, 212UL

OUTSIDE AERIAL

When the radio is used in shielded areas or when located a great distance from broadcast stations, the volume of stations operating in the 540-1600 K.C. band may not be ample in which case it would be necessary to ATTACH A 25-50 ft. OUTDOOR AERIAL TO THE BLUE LEAD COMING OUT THE REAR OF THIS CHASSIS to obtain satisfactory results.

DIAL LIGHT

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

Always use a 6.3 volt .15 ampere dial light.

Printed in U.S.A.—4-40—

MODELS 1U-212UL, 212UL ALIGNMENT PROCEDURE

PART NO. A12050—212 & 1U-212

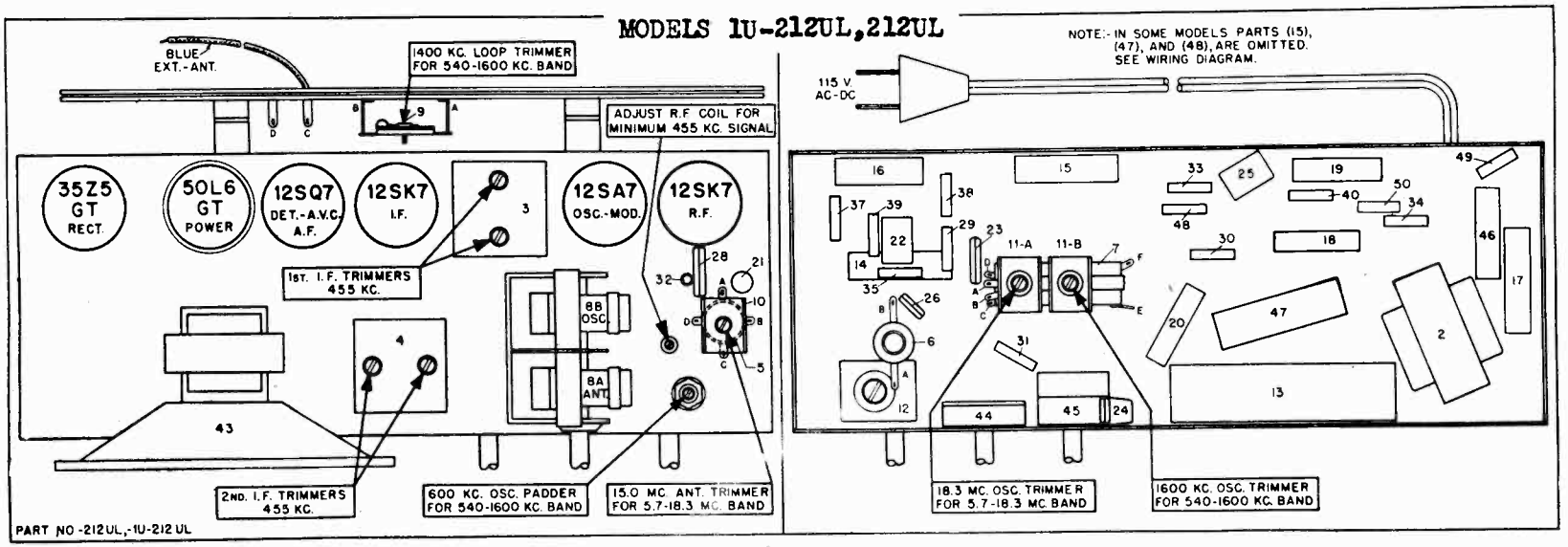
For alignment procedure read tabulations from left to right. If more than one adjustment is required on any one band, make the adjustment marked (1) first, (2) next, (3) third. IMPORTANT: BEFORE ALIGNING, PLACE LOOP ANTENNA IN THE SAME POSITION IT WILL BE IN WHEN THE SET IS IN THE CABINET.

When adjusting 1600 kilocycle oscillator trimmer 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.

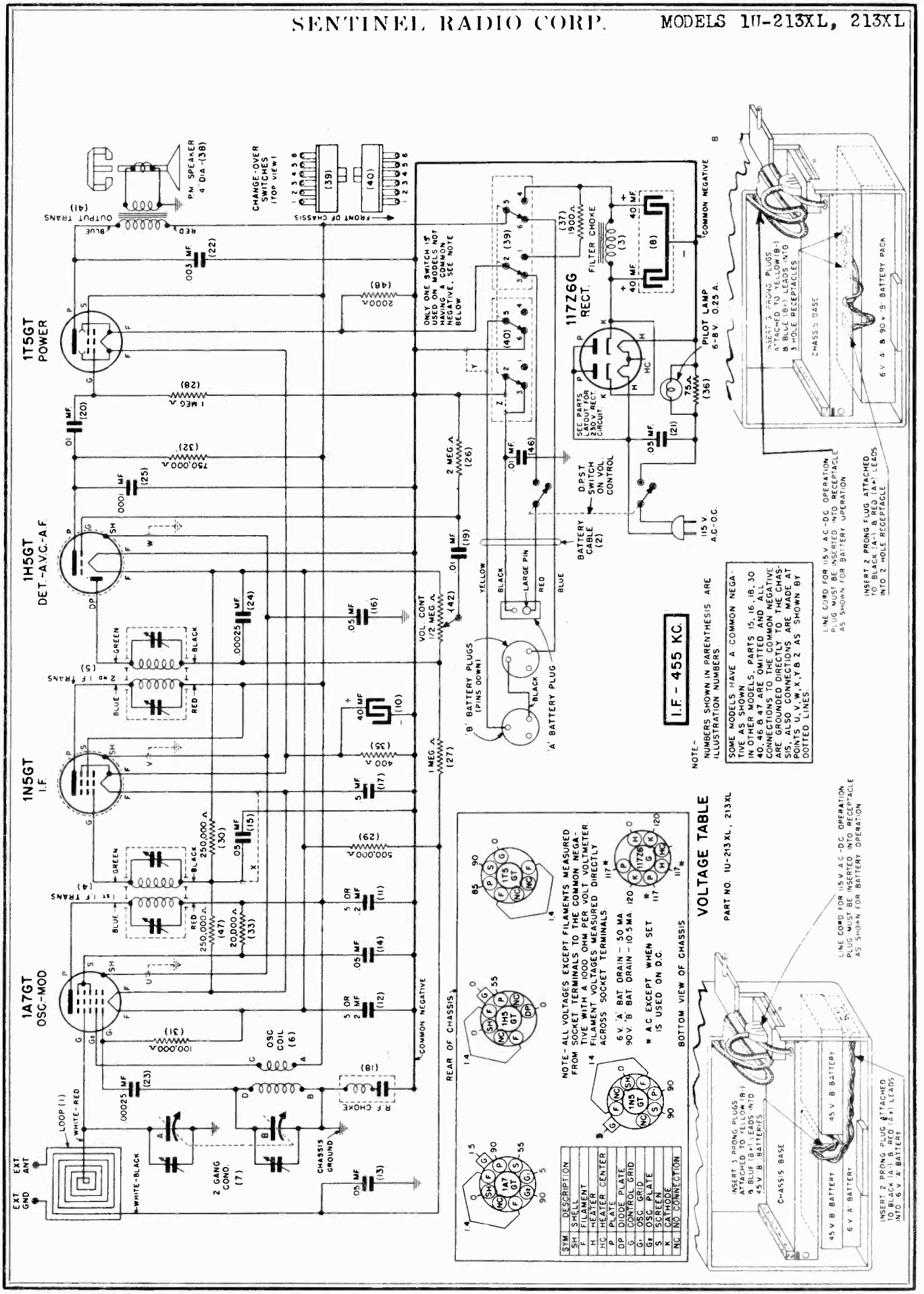
FOLLOW THIS PROCEDURE FOR MODELS 1U-214UL, 214UL. FOR TRIMMERS SEE PAGE 12-14

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 12SA7 tube. Low side to frame of condenser through .01 Mfd. condenser.	Adjust each of the second I.F. transformer trimmer for maximum output, then adjust each of the first I.F. transformer trimmers for maximum output.
1600 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 through .01 Mfd. condenser.	Adjust R.F. coil for minimum 455 K.C. signal.
	2 Exactly 1600 K.C.	Exactly 1600 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.
	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.
	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 through .01 Mfd. 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 Blue Ant. Lead, Low side to frame of gang condenser through .01 Mfd. condenser.	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, Low side to frame of gang condenser.	While rocking gang condenser adjust 15 M. C. antenna trimmer for maximum output.

MODELS 1U-212UL, 212UL



SENTINEL RADIO CORP. MODELS 1U-213XL, 213XL

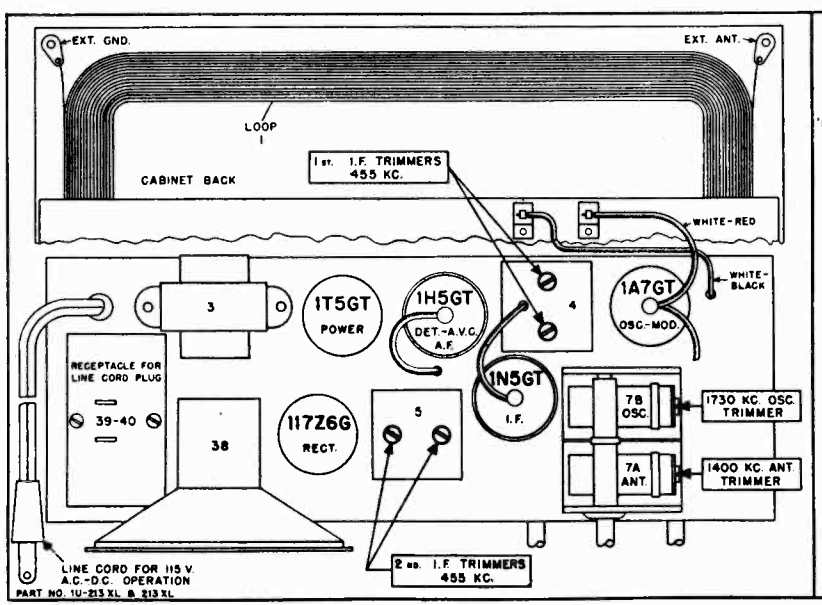


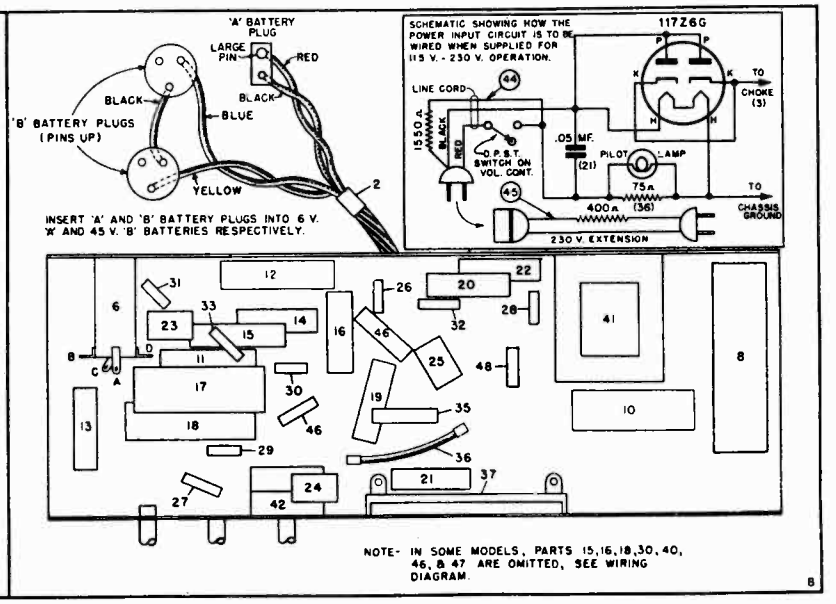
ALIGNMENT PROCEDURE

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.

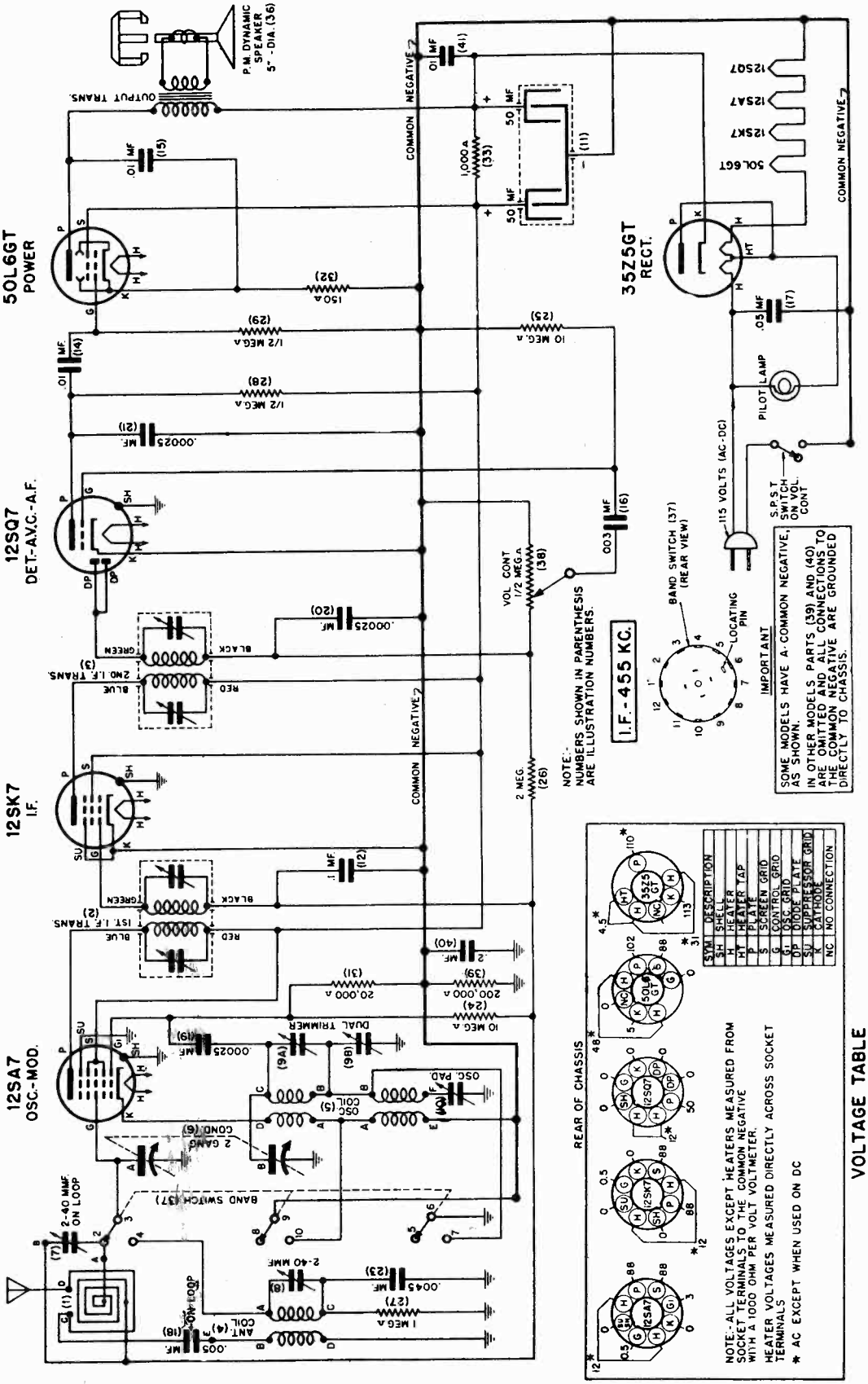
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of 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. 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.	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.





SENTINEL RADIO CORP.

MODELS 1U-214UL, 214UL



VOLTAGE TABLE

(BOTTOM VIEW OF CHASSIS)

PART NO.-214UL,-1U-214UL

OUTSIDE AERIAL

When the radio is used in shielded areas or when located a great distance from broadcast stations, the volume of stations operating in the 540-1600 K.C. band may not be ample in which case it would be necessary to ATTACH A 25-50 ft. OUTDOOR AERIAL TO THE BLUE LEAD COMING OUT THE REAR OF THIS CHASSIS to obtain satisfactory results.

FOR OTHER DATA, SEE INDEX

DIAL LIGHT

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

Always use a 6.3 volt .15 ampere dial light.

MODEL 170-BL

SENTINEL RADIO CORP.

ALIGNMENT PROCEDURE

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.

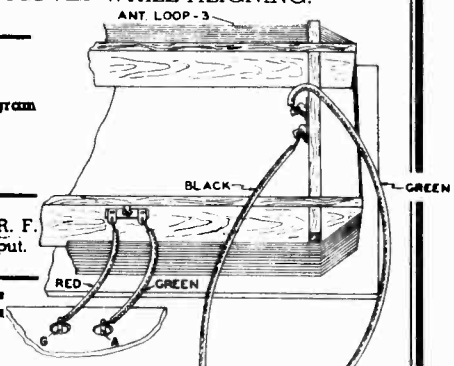
When adjusting 1400 kilocycle antenna and R. F. trimmer, do not connect test oscillator to terminals on bottom of cabinet back.

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.

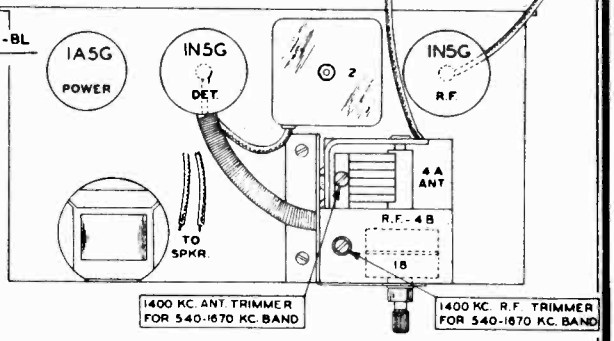
b) Place test oscillator loop near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

	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—and:
(1) Exactly 1400 K. C.	Exactly 1400 K. C.	None	Use small loop to couple test oscillator to receiver loop	Adjust 1400 K. C. Ant. and R. F. trimmers for maximum output.



3 TUBE PORTABLE
1½ Volt Battery

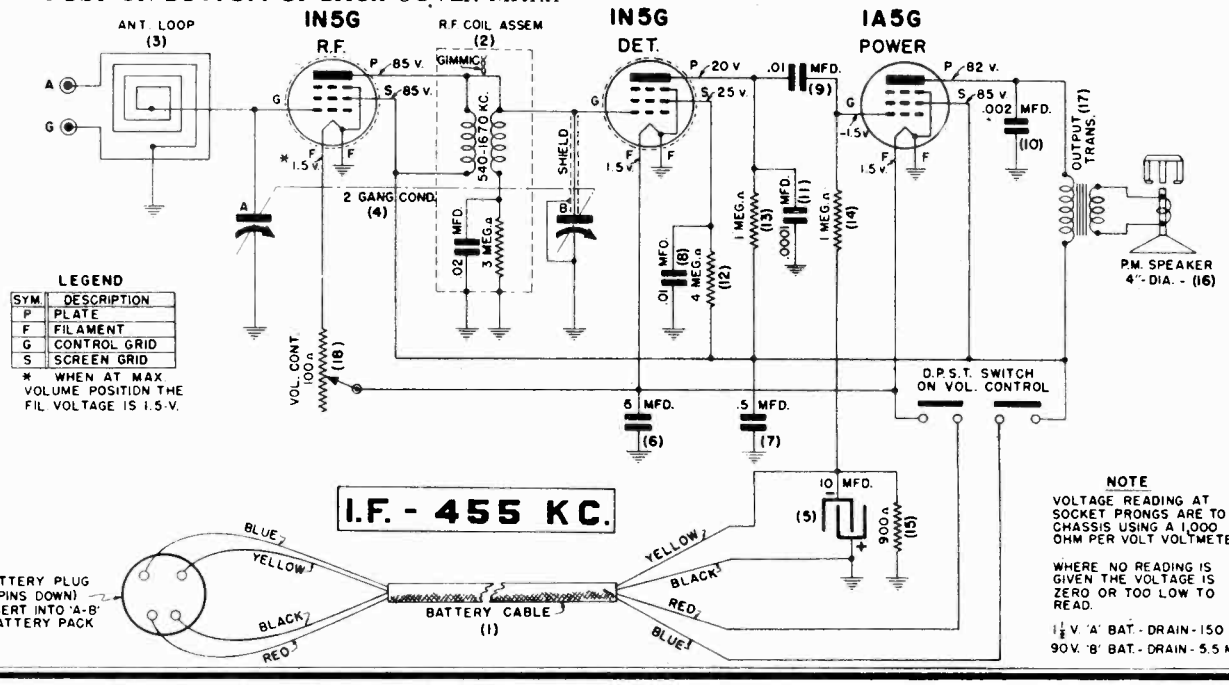
PART Nº-170-BL



Because of the directional effect of the loop aerial, it is important TO TUNE IN THE SIGNAL TO THE POINT OF LOUDEST VOLUME AND CLEAREST TONE WITH THE TUNING KNOB AND THEN ROTATE THE RADIO TO THE POSITION OF GREATEST VOLUME.

THE DAYLIGHT RANGE OF THIS RADIO IS APPROXIMATELY 50 MILES—NIGHT TIME RANGE WILL BE GREATER THAN THIS. When the radio is used in a location a great distance from broadcast stations, or when the volume of the stations received is not ample, or when it is operated in boats, buildings, etc., constructed with a large amount of steel, IT MAY BE NECESSARY TO USE AN OUTSIDE AERIAL. The outside aerial should be 35 to 50 feet in length erected as high as possible and must be attached to the terminal post marked "A" mounted on the bottom of back cover.

WHEN USING AN EXTERNAL AERIAL A GROUND MUST BE ATTACHED TO OTHER POST ON BOTTOM OF BACK COVER MARKED "G." A wire attached to a metal stake driven two to four feet in moist ground or to a water pump or to a nail driven in any large body of water such as a stream, lake, brook, creek, well, etc., will provide a suitable ground.



NOTE

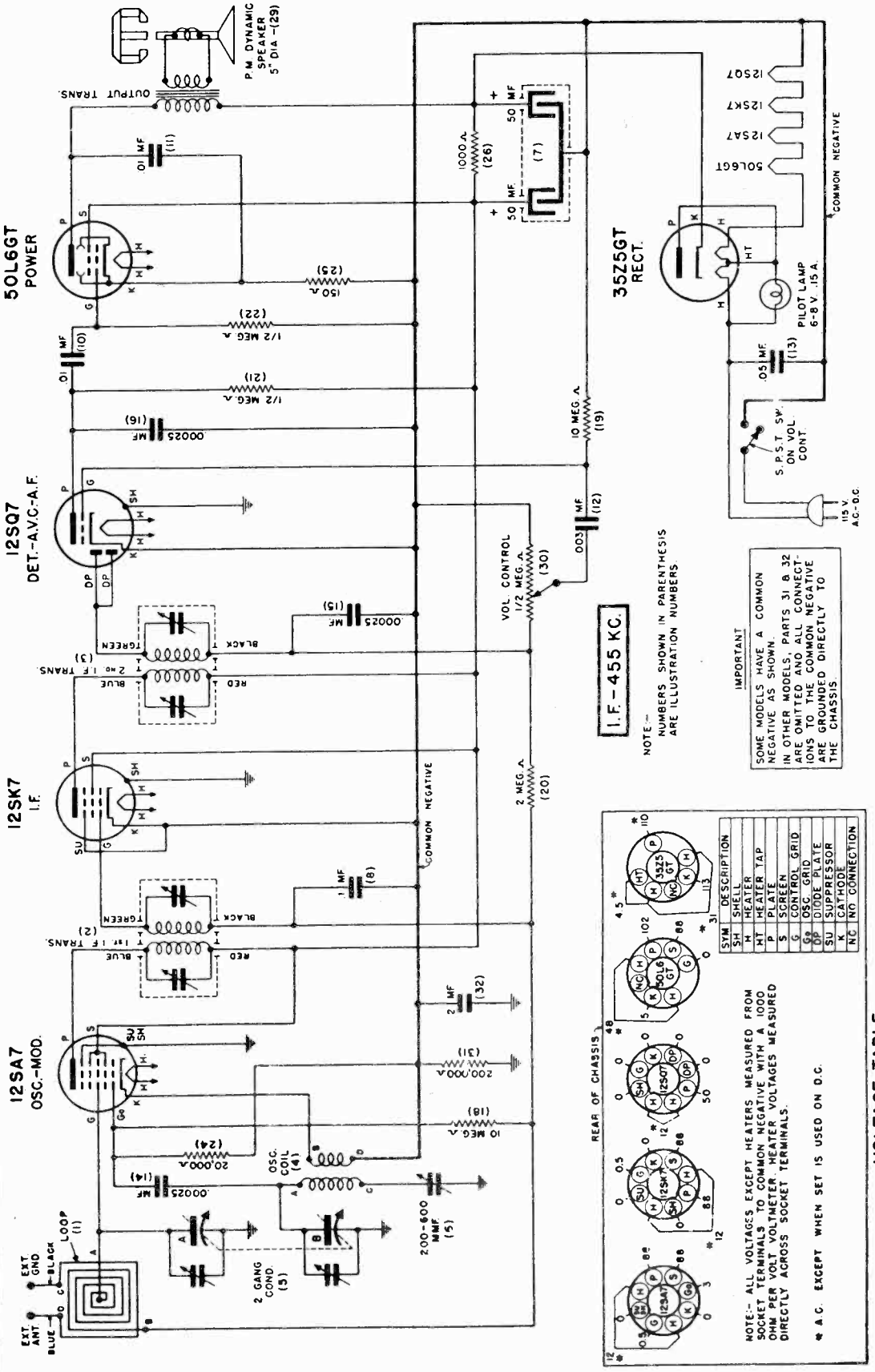
VOLTAGE READING AT SOCKET PRONGS ARE TO CHASSIS USING A 1,000 OHM PER VOLT VOLTMETER.

WHERE NO READING IS GIVEN THE VOLTAGE IS ZERO OR TOO LOW TO READ.

1½ V. 'A' BAT. - DRAIN - 150 MA.
90 V. 'B' BAT. - DRAIN - 5.5 MA.

SENTINEL RADIO CORP.

MODEL 1U-213UL, 218UL



VOLTAGE TABLE

(BOTTOM VIEW OF CHASSIS)

PART NO. 218UL, 1U-218UL

DIAL LIGHT

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

Always use a 6.3 volt .15 ampere dial light.

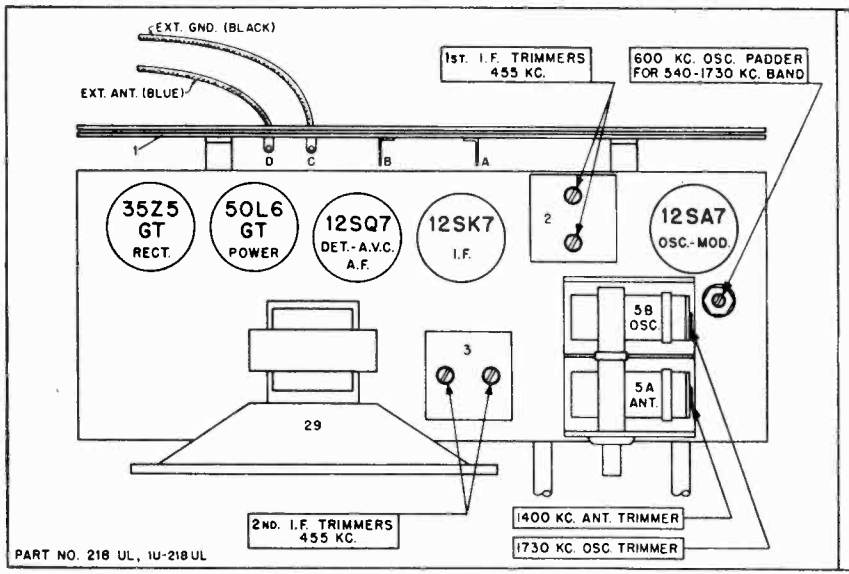
WARNING—Do not attach a ground direct to the radio chassis—ANY EXTERNAL GROUND CONNECTION TO ANY METAL PART OF THE CHASSIS WILL CAUSE A SHORT AND POSSIBLE DAMAGE.

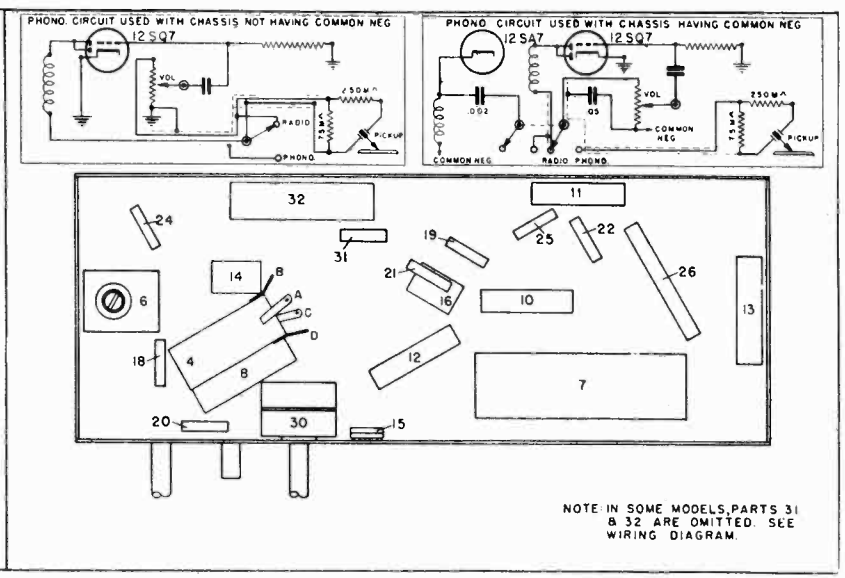
ALIGNMENT PROCEDURE

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.

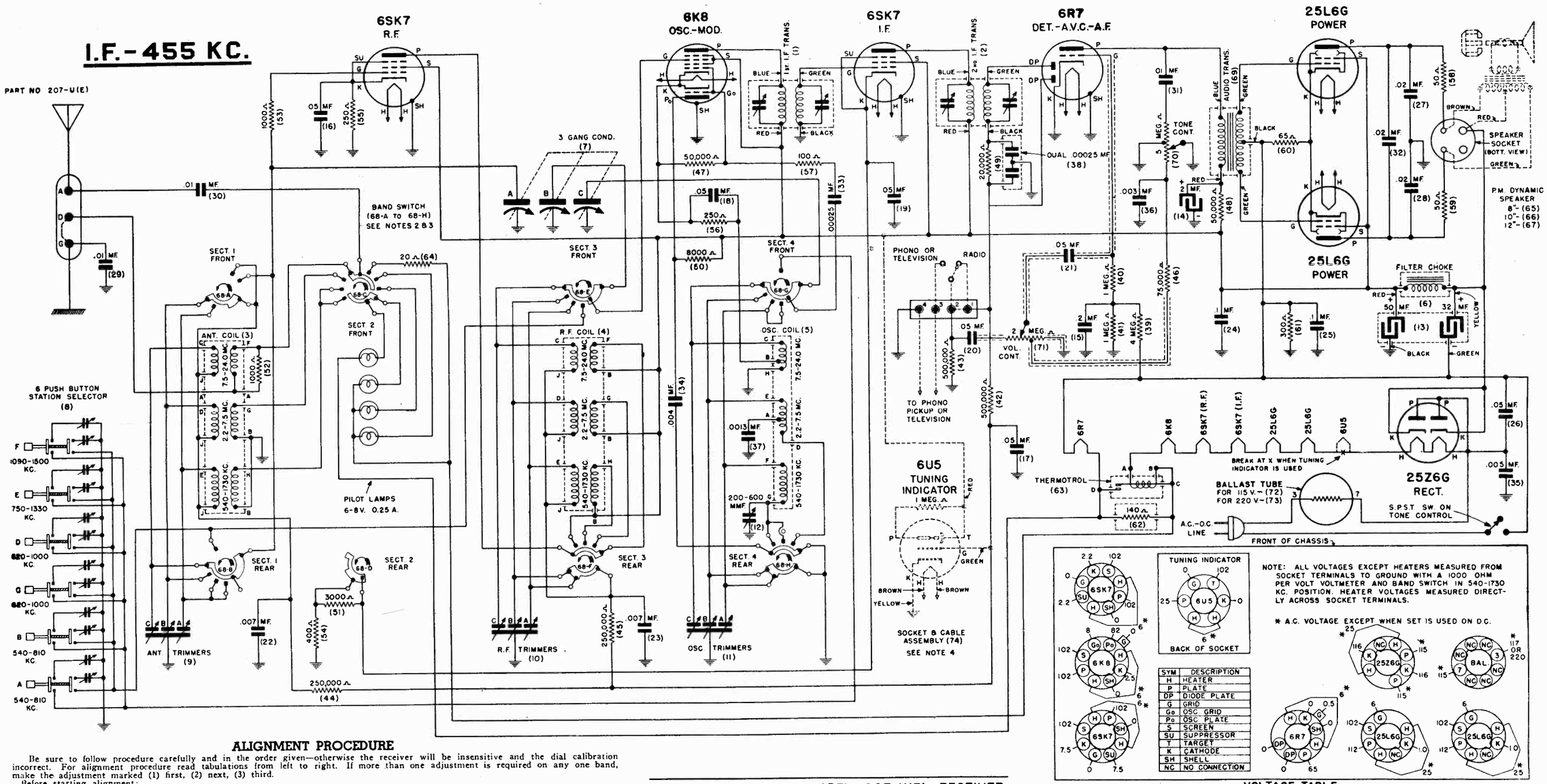
When adjusting 1730 kilocycle oscillator trimmer, 600 K.C. padder and 1400 kilocycle antenna trimmer, do not connect test oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across 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. 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.
	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 gang condenser through .01 Mfd. condenser.	While rocking gang condenser adjust 600 K. C. oscillator padder for maximum output.





I.F.-455 KC.



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 TO 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

WIRING DIAGRAM FOR MODEL 207-U(E) RECEIVER

VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

4-40

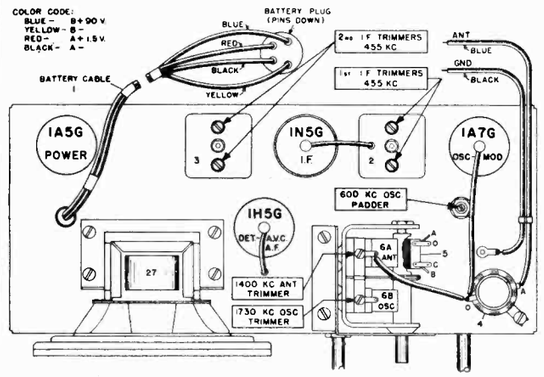
NOTES:

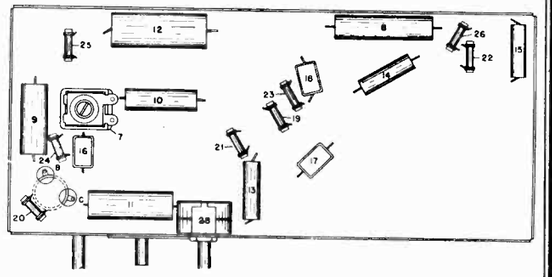
1. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
2. BAND SWITCH VIEWED FROM REAR, SHOWN IN EXTREME COUNTER-CLOCK-WISE 17.5-24.0 MC.) POSITION.
3. SECTIONS OF BAND SWITCH (68-A TO 68-H) ARE REFERRED TO ON DIAGRAM BEGINNING WITH SECTION No 1 WHICH IS AT KNOB END OF SHAFT.
4. SOME MODELS OF THIS SERIES ARE EQUIPPED WITH 6U5 TUNING INDICATOR, DOTTED LINES SHOW CONNECTIONS
5. REMOVE JUMPER BETWEEN TERMINALS 1&2 WHEN SET IS USED FOR PHONO OR TELEVISION OPERATION.

SENTINEL RADIO CORP. MODELS 207U, 207UE
MODEL 210B

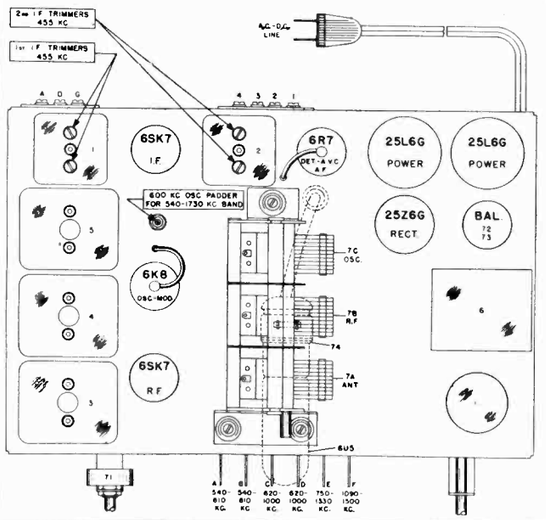
MODEL 210B

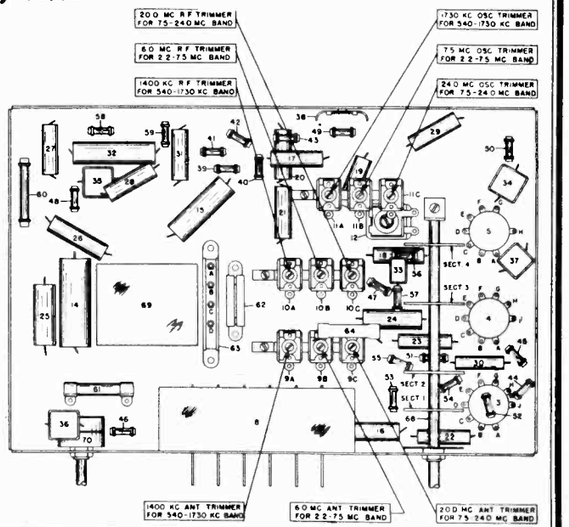
Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	Use dummy antenna in series with output of test oscillator consisting of:	Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I.F. Any point where no interfering signal 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 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.
3 Approx. 600 K. C.	Approx. 600 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 600 K. C. padder to maximum output.



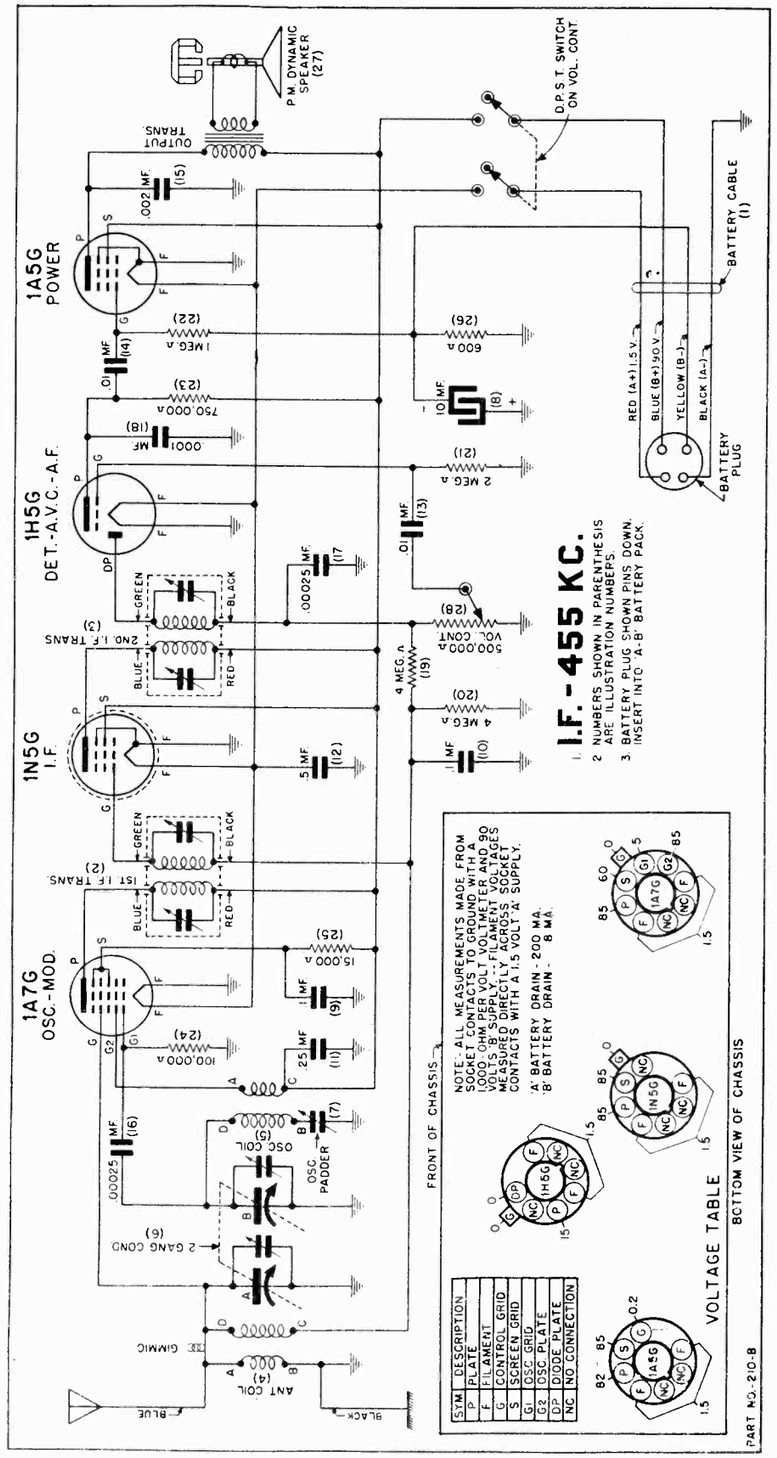


MODELS 207U, 207UE





MODEL 210B SENTINEL RADIO CORP.



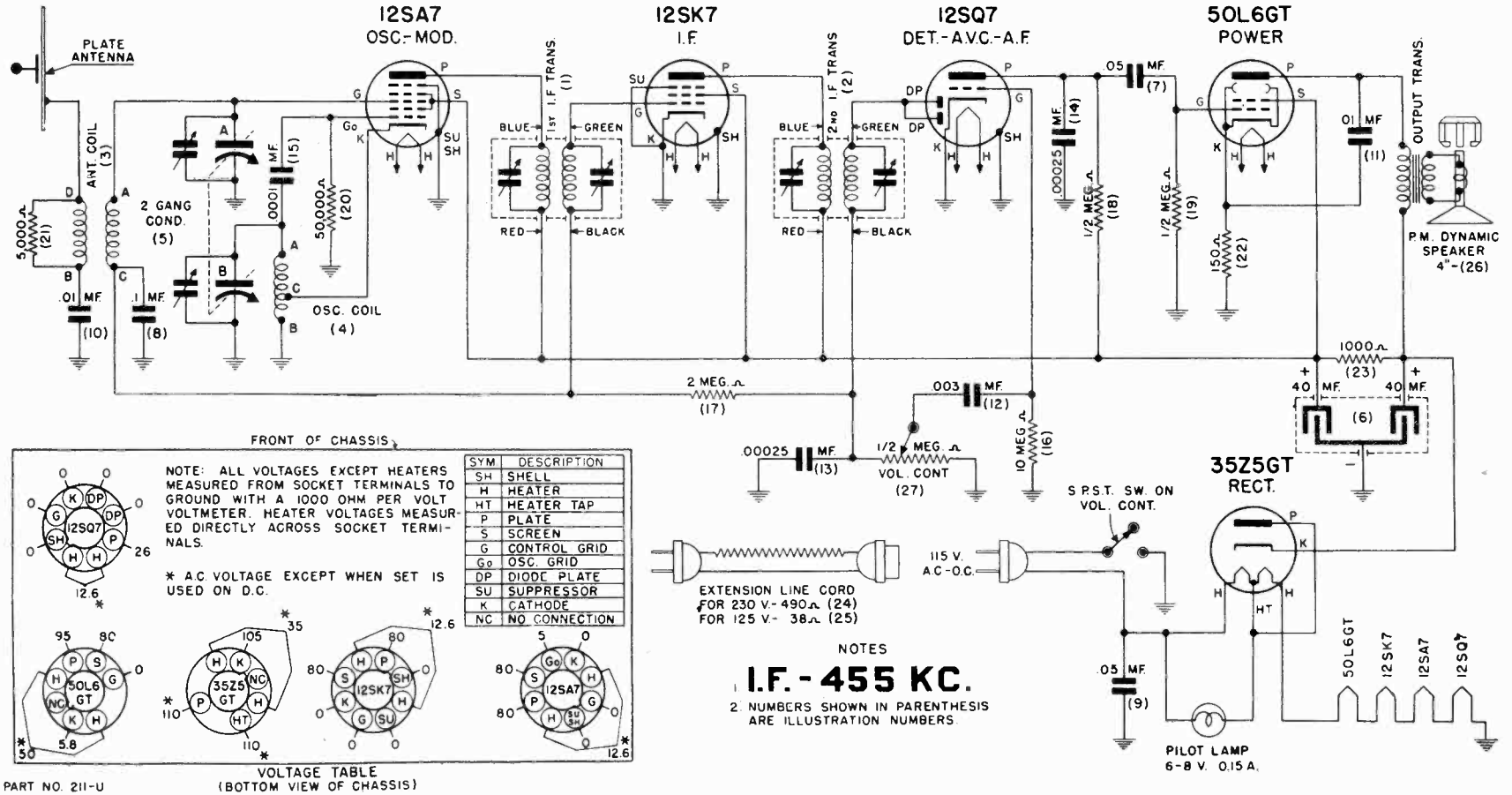
PARTS LIST

Illus. No.	Part No.	Description	List Price
1	11125	Battery Assembly with 4 Prong Plug	$ .25
2	10967	Coil 1st I.F. Transformer	1.10
3	10769	Coil 2nd I.F. Transformer	1.10
4	12054	Coil Antenna	.45
5	11955	Coil Oscillator	.55
6	11954	Condenser Tuning Two Gang	1.60
7	3287	Condenser Padding 340-460 Mmf.	.45
8	1693	Condenser Tubular Dry Electrolytic 10 Mfd. 25 Volt D.C. Wkg.	.75
9	1151	Condenser 1 Mfd. 200 Volt	.20
10	1151	Condenser 1 Mfd. 200 Volt	.20
11	9032	Condenser .25 Mfd. 200 Volt	.25
12	2131	Condenser 5 Mfd. 200 Volt	.55
13	9468	Condenser .01 Mfd. 400 Volt	.17
14	9468	Condenser .01 Mfd. 400 Volt	.17
15	10762	Condenser .002 Mfd. 400 Volt	.19
16	9458	Condenser Mica .00025 Mfd.	.21
17	9458	Condenser Mica .0001 Mfd.	.21
18	7834	Condenser Ceramic .5 Mmf.	.19
19	1694	Resistor Carbon 4 Megohm ½ Watt	.19
20	1694	Resistor Carbon 2 Megohm ½ Watt	.19
21	2705	Resistor Carbon 1 Megohm ½ Watt	.19
22	7998	Resistor Carbon 750,000 Ohm ½ Watt	.19
23	2673	Resistor Carbon 100,000 Ohm ½ Watt	.19
24	8000	Resistor Carbon 15,000 Ohm ½ Watt	.19
25	9385	Resistor Carbon 600 Ohm ½ Watt	.19
26	1562	Resistor Power 5 Ohm 5 In.	4.00
27	11128	Speaker P.M. Dynamic 5 In.	.80
28	11132	Volume Control With D.P.S.T. Switch	

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

Illus. No.	Part No.	Description	List Price
		MISCELLANEOUS PARTS	
	11108	Bulb 2 Cell 2.2 Volt White Bead Type	.07
	11961	Dial Scale Calibrated Dial Scale	.25
	8184	Dial Cord 24 in. of 18 lb. Drive Cord	.15
	11017	Dial Shaft Drive Shaft	.11
	11936	Dial Indicator Off-On Indicator	.15
	11626	Dial Pointer Needle	.30
	11963	Dial Crystal Phillips R.H. No. 2 x ¼ for Mounting Dial	.75
	8301	Dial Screws 3.00M Net	.10
	4978	Plug 4 Prong Battery Plug	.08
	10207	Knob Antique Ivory	.10
	11733	Knob Walnut	

4-40 PART NO. 210B



FRONT OF CHASSIS

NOTE: ALL VOLTAGES EXCEPT HEATERS MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM PER VOLT VOLTMETER. HEATER VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.

* A.C. VOLTAGE EXCEPT WHEN SET IS USED ON D.C.

SYM	DESCRIPTION
SH	SHELL
H	HEATER
HT	HEATER TAP
P	PLATE
S	SCREEN
G	CONTROL GRID
Go	OSC. GRID
DP	DIODE PLATE
SU	SUPPRESSOR
K	CATHODE
NC	NO CONNECTION

VOLTAGE TABLE (BOTTOM VIEW OF CHASSIS)

PART NO. 211-U

NOTES

1. I.F. - 455 KC.
2. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.

PARTS LIST

Illus. No.	Part No.	Description	List Price
1	11347	Coil — 1st I.F. Transformer	.90
2	11376	Coil — 2nd I.F. Transformer	.80
3	11386	Coil — Antenna	.50
4	11387	Coil — Oscillator	.45
5	11378	Condenser — Tuning Two Gang	1.75
6	11493	Condenser — Tubular Dry Electrolytic 40-40 Mfd. 150 Volt	1.00
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	9468	Condenser — Tubular .01 Mfd. 400 Volt	.17
11	9468	Condenser — Tubular .01 Mfd. 400 Volt	.17
12	1368	Condenser — Tubular .003 Mfd. 400 Volt	.17
13	9458	Condenser — Mica .00025 Mfd.	.21
14	9458	Condenser — Mica .00025 Mfd.	.21
15	7934	Condenser — Mica .0001 Mfd.	.21
16	4804	Resistor — Carbon 10 Megohm 1/2 Watt	.19
17	2705	Resistor — Carbon 2 Megohm 1/2 Watt	.19
18	6984	Resistor — Carbon 500,000 Ohm 1/2 Watt	.19
19	6984	Resistor — Carbon 500,000 Ohm 1/2 Watt	.19
20	6879	Resistor — Carbon 50,000 Ohm 1/2 Watt	.19
21	9693	Resistor — Carbon 5,000 Ohm 1/2 Watt	.19
22	9018	Resistor — Carbon 150 Ohm 1/2 Watt	.19
23	4998	Resistor — Carbon 1,000 Ohm 1 Watt	.21
24	11860	Resistor — 230 Volt Line Cord Extension	1.50
25	11861	Resistor — 125 Volt Line Cord Extension	1.50
26	11390	Speaker — P.M. Dynamic 4 in.	2.70
27	11389	Volume Control With S.P.S.T. Switch	.80

MISCELLANEOUS PARTS

Part No.	Description	List Price
11304	Bulb — 6-8 Volt .150 Ampere Dial Light No. 47 Bayonet Base	.10
11381	Dial Scale — Calibrated Scale	.30
8184	Dial Cord — Dial Drive Cord 12 in. of No. 18 lb. Drive	.10
11379	Dial Shaft — Dial Drive Shaft	.12
11985	Dial Pointer — For Dial—Red Enamel	.20
11384	Dial Pointer — For Dial	.15
11391	Dial Crystal — For Dial	.22
11733	Knob — Bakelite for Walnut Plastic Cabt.	.10
10207	Knob — Bakelite for Ivory Plastic Cabt.	.08
	Cabinet — Walnut Plastic	1.80
	Cabinet — Ivory Plastic	2.15
11968	Cabinet Back — Metal Back	.10

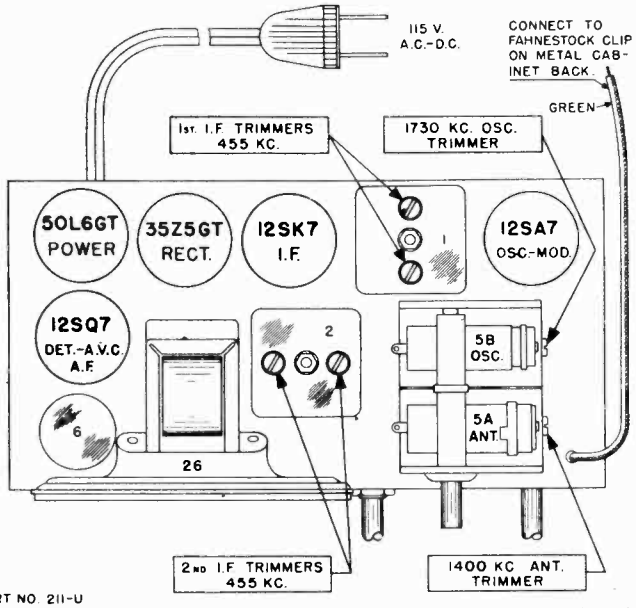
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

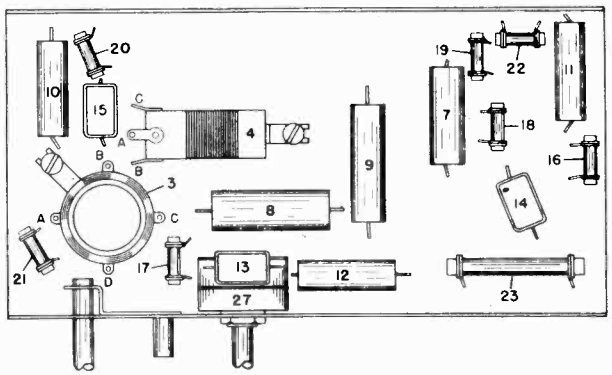
W. 3M 4-40 PART NO. 211U

MODEL 211U
MODELS 1U-214UL, 214UL

SENTINEL RADIO CORP.



MODEL 211U



PART NO. 211-U

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:

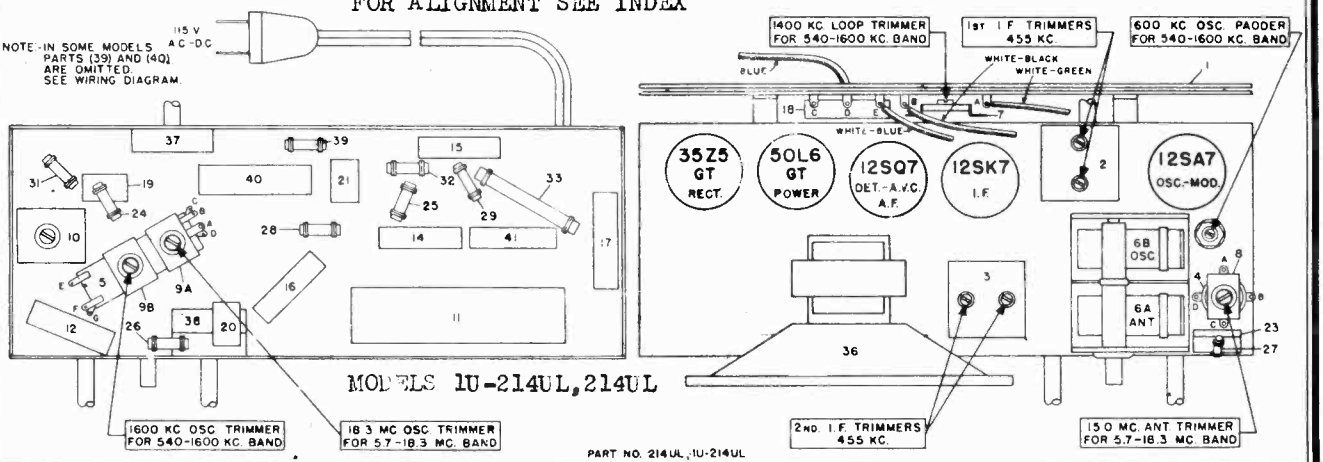
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to 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 gang condenser frame through .01 MFD Condenser.

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. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of 12SA7 tube DO NOT REMOVE CAP.	Adjust 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	Post on metal back	Adjust 1730 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD condenser	Post on metal back	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

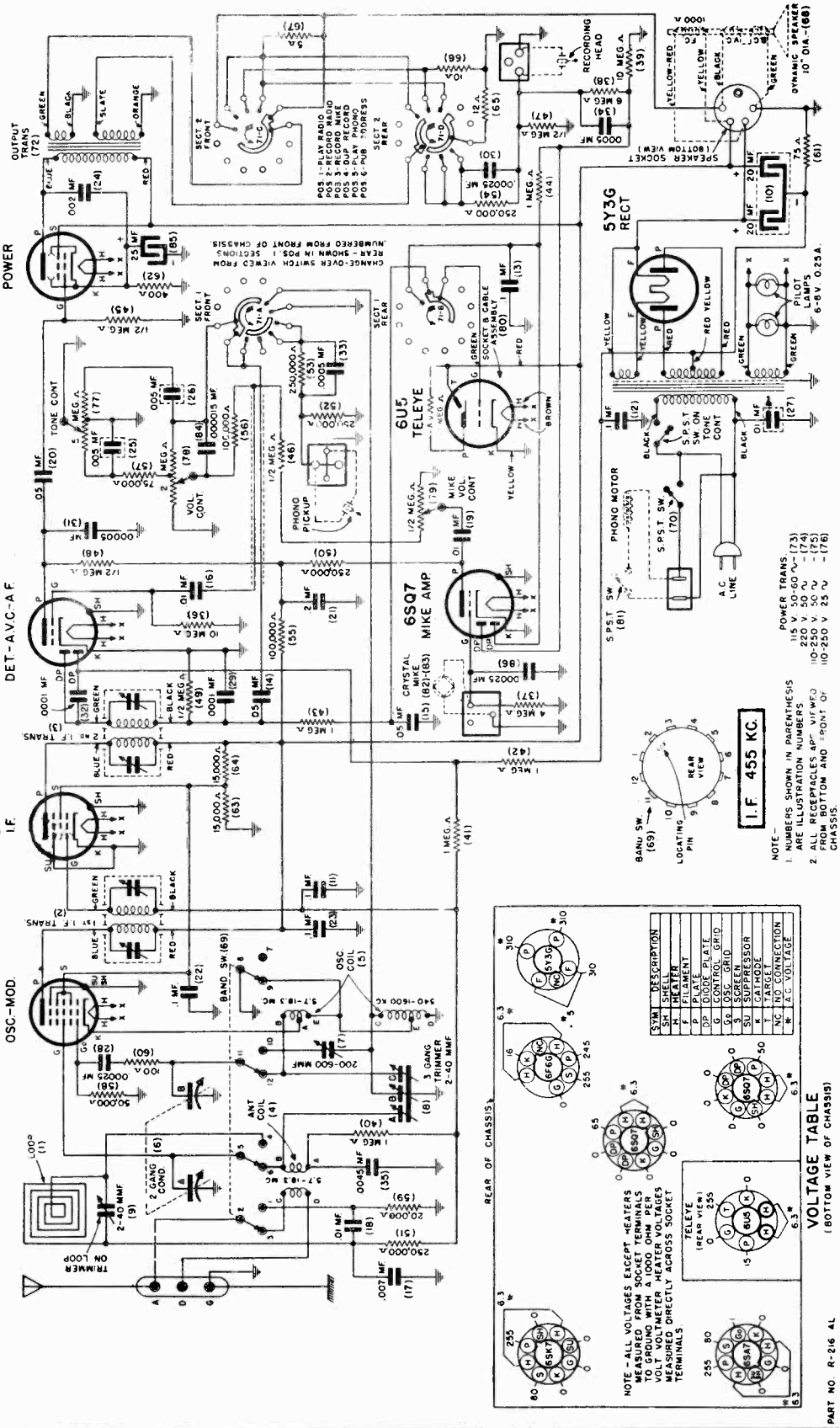
FOR ALIGNMENT SEE INDEX



PART NO. 214UL, 1U-214UL

SENTINEL RADIO CORP.

MODEL 216



VOLTAGE RATING

WHILE THE RADIO MAY BE OPERATED ON EITHER 50 OR 60 CYCLE 100-120 VOLT ALTERNATING CURRENT (A.C.), THE PHONOGRAPH MOTOR MUST BE USED ON THE FREQUENCY DESIGNATED ON THE PAPER LICENSE TAG, which will be found attached to the cabinet.

AERIAL

THE LOOP AERIAL SUPPLIED with the radio should provide ample 540-1600 kilocycle band reception in average locations.

LOOP AERIALS ARE NOT SATISFACTORY FOR SHORT WAVE RECEPTION, AND BECAUSE OF THIS AN EXTERNAL AERIAL MUST BE ATTACHED TO THE RADIO WHEN TUNING FOR SHORT WAVE STATIONS. Also, if the radio is used in shielded areas or when located a great distance from broadcast stations, the volume of the stations operating in the 560-1600 kilocycle band may not be ample, in which case it would be necessary to attach a 35 to 50 foot outdoor aerial to the receiver to obtain satisfactory results.

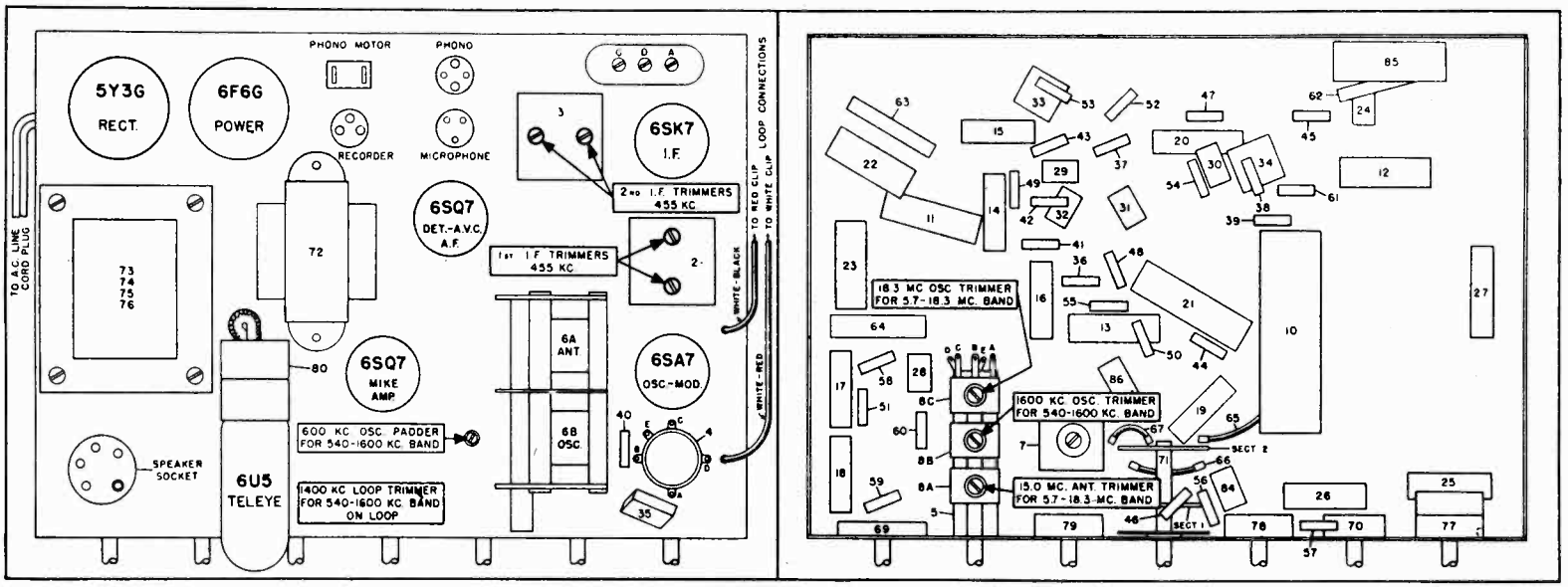
When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

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, AND HAVE CHANGE OVER SWITCH KNOB IN "PLAY RADIO" POSITION.

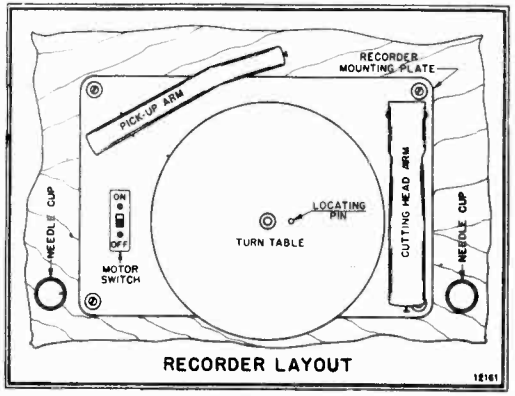
When adjusting 1600 kilocycle oscillator trimmer and 1400 kilocycle antenna trimmer, do not connect oscillator to loop. Couple test oscillator to receiver loop by: (a) Make a loop consisting of five to ten turns of No. 20 to 30 size wire wound on a three inch form and attach across output of test oscillator. (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.	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 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.
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" Post. Low side to chassis.	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 "A" Post. Low side to chassis.	While rocking gang condenser adjust 15 M. C. antenna trimmer for maximum output.



RECORDING INSTRUCTIONS

Properly made recordings will supply many satisfactory playings with quality equal to that of commercial phonograph recordings. Remember there is only one right way to make recordings—for best results carefully read all of the following instructions.



RECORDER LAYOUT

RECORDING NEEDLES

Handle cutting needles carefully—needle edges are razor sharp and can be easily damaged. Do not rest needle on table top or other metal surface.

When cutting edge becomes dull or if needle is dropped on metal surface and edge is damaged, the needle must be replaced. To install cutting needle in cutting head just:

1. Loosen needle retaining screw on front of cutting head arm and place cutting head needle all the way in hole on the underside of cutting head arm, with the flat portion of the needle shank towards the front and placed directly under the head of retaining screw. **IF NEEDLE IS IN BACKWARDS OR AT WRONG ANGLE, IT WILL NOT CUT PROPERLY.**
2. Each time a new needle is used, cut a few grooves on a test record, listening closely to be sure it is cutting quietly. IF EXCESSIVE HISSING OR SCRAPING NOISES ARE HEARD, THE NEEDLE IS DULL OR SET AT THE WRONG ANGLE. Remember, any noises made by the needle will be recorded on blank disc and will be heard when the record is replayed.

PLAY BACK NEEDLES

Use only soft steel needles to play recordings—never use thorn or wooden needles. A needle that has been used to play a regular commercial record should never be used on a recorded disc.

CUTTING ARM AND HEAD ADJUSTMENT

The cutting arm and head is properly adjusted when the recorder leaves the factory, and unless altered or damaged should not be touched. If it is believed that the cutting arm adjustment is not correct proceed to check by:

a) Place cutting needle on blank record and measure distance from top of record to bottom of front end of cutting head arm—this should be EXACTLY ONE-QUARTER OF AN INCH.

b) If less than one-quarter of an inch, lift cutting arm and turn the adjusting screw located underneath arm to the left.
If more than one-quarter of an inch, turn adjusting screw to right. THIS ADJUSTMENT IS VERY CRITICAL AND SHOULD BE CAREFULLY MADE—THE DISTANCE BETWEEN THE TOP OF THE RECORD AND THE BOTTOM OF THE CUTTING ARM SHOULD BE EXACTLY ONE-QUARTER OF AN INCH.

c) Next cut five to ten grooves on the blank record and examine the grooves made with magnifying glass. If depth screw is properly adjusted, the groove and the space between the groove will be approximately equal in width.
If groove width is not correct—turn the screw on top of the cutting arm to the right to increase width of groove, and to the left to decrease. This is a critical adjustment and should be made by adjusting the screw in quarter turns, only, never full turn adjustments.
When the groove is properly made, the thread cut from record will be straight and black and about the thickness of a human hair.
When the groove is too wide, the thread will be coarse and kinky and there will be little or no space between the grooves.
If the groove is too narrow, the thread will be thin, silky, and grayish in color, and there will be more space between the grooves than the grooves occupy.

USE TUNING EYE IN DETERMINING CORRECT VOLUME LEVEL FOR RECORDING

As it is very important that neither too little nor too much volume be used when recording, the unit is so designed that the tuning eye can be used as a guide in selecting proper volume level for recordings.

IT IS A SIMPLE MATTER TO SET VOLUME TO PROPER RECORDING LEVEL—BEFORE STARTING TO CUT DISC, ALWAYS ROTATE THE "VOLUME CONTROL" OR THE "MIKE CONTROL" KNOBS SO THAT THE TWO ENDS OF THE GREEN INVERTED "V" ON THE TUNING EYE APPROXIMATELY TOUCH ON SIGNAL PEAKS. Do not set controls so that the ends overlap on the peaks, as this will be too much volume for recordings—never adjust controls to compensate for loud and soft passages when recording orchestras, otherwise orchestra expression will be lost and the volume will increase and decrease when record is played back.

TO RECORD RADIO PROGRAMS

FIRST ROTATE "TONE-ON-OFF SWITCH" KNOB TO "BRILLIANT"—MAXIMUM RIGHT HAND POSITION AND "MIKE CONTROL" KNOB TO MAXIMUM LEFT HAND MINIMUM MICROPHONE VOLUME POSITION.

a) Place a blank disc on turn table so that small locating pin on turn table protrudes through small hole in blank disc.

b) Place "CHANGE OVER SWITCH" knob to maximum left hand position—small indicator needle will point to "PLAY RADIO" printed on dial.

c) Carefully tune in the radio program which is to be recorded.

d) Rotate "CHANGE OVER SWITCH" knob to the next to maximum left hand position — small needle on dial will point to "RECORD RADIO." NOTE: VOLUME OF SIGNAL WILL DROP.

e) Set volume to proper recording level by adjusting "VOLUME CONTROL" knob until the ends of the green inverted "V" on the tuning eye approximately touch ON SIGNAL PEAKS.

f) Turn "MOTOR SWITCH" knob on front panel of radio to the right hand "ON" position and the "MOTOR SWITCH" adjacent to the recorder turn table to the "ON" position. The turn table will now start to revolve.

g) Carefully lift up needle end of cutting head arm to an angle of approximately 45°, swing arm to edge of record and gently place cutting needle on blank disc ⅛ of an inch from outer edge.

Just before needle reaches paper label on inside of disc, reduce volume to zero and cut three to five blank grooves in record, then lift cutting arm. Be sure to lift the cutting arm from disc before needle reaches the label, and always place it on arm rest. Failure to lift arm in time will cause needle to cut into the paper label with possible injury to the needle.

MICROPHONE RECORDING

Voice or music that can be picked up by the microphone with sufficient volume can be recorded. Remember, all extraneous noises picked up by the microphone will be recorded on the disc.

Any explanatory or introductory announcements, giving date, description, data, title, etc., can be faded into the recording being made from a radio program or from another record. To do this turn "VOLUME CONTROL" knob towards minimum volume position while at the same time speaking into the microphone and turning "MIKE VOLUME" knob towards right. To use the microphone for recording just:

1. Rotate "CHANGE OVER SWITCH" knob to the third position from the left, small needle will point to "RECORD MIKE" on dial.
2. Turn radio "VOLUME CONTROL" knob to minimum volume position.
3. Set volume to proper recording level by holding lips 4 to 6 inches from microphone and speaking into the microphone with a normal tone of voice and adjusting "MIKE VOLUME" knob until the two ends of the green inverted "V" on the tuning eye approximately touch on signal peaks.
4. Place blank disc on turn table.
5. Turn "MOTOR SWITCH" knob and "OFF AND ON SWITCH" adjacent to recorder turn table to "ON" position.
6. Lay cutting needle on revolving blank disc ⅛ of an inch from outer edge.
7. Talk in normal tone of voice into microphone keeping lips approximately 4 to 6 inches away.

Microphone can be placed near point where music or other subject to be recorded will be picked up by the microphone—be sure to adjust "MIKE VOLUME" control knob to proper level.

TO MAKE A RECORD FROM ANOTHER RECORD

Some models of this series are equipped with automatic record changer in addition to the regular recording unit and with this model duplicate records can be made of home recordings or commercial records by:

a) Place blank disc on recording turn table.

b) Place the record which you wish to duplicate on automatic record changer turn table.

c) Rotate "CHANGE OVER SWITCH" to third position from right—needle will point to "DUPLICATE RECORD" printed on dial.

d) Place automatic record changer pickup needle in outside groove of the record to be duplicated.

e) Lift cutting head arm and place needle on blank disc ⅛ of an inch from outer edge.

f) The recorder and automatic record changer turn tables must start to revolve at the same time. To do this simultaneously turn recorder and automatic record changer to "ON" position—then turn "MOTOR SWITCH" TO "ON" position.

g) Adjust "VOLUME CONTROL KNOB" until the two ends of the green inverted "V" on the tuning eye approximately TOUCH ON SIGNAL PEAKS.

A record from another record can be made with the type recorder not equipped with an automatic record changer providing another combination radio and phonograph is available. To do this:

1. Place a blank disc on recorder turn table.
2. Lift cutting head arm and place ⅛ of an inch from outer edge of blank disc.
3. Place the record you wish to duplicate on the combination radio-phonograph turn table.
4. Place the combination radio-phonograph pick-up needle in outside groove of record to be duplicated.
5. Rotate "CHANGE OVER" switch to third position from the left—indicator needle will point to "RECORD MIKE" printed on the dial.
6. Place microphone approximately one-half foot from other radio speaker.
7. Turn recorder "VOLUME CONTROL" knob to minimum volume position, and combination radio-phonograph volume control to approximately half volume position.
8. Adjust "MIKE VOLUME" control until the two ends of the green inverted "V" on the tuning eye approximately touch on signal peaks.
9. Turn recorder "MOTOR SWITCH" and "MOTOR SWITCH" of combination radio to "ON" position simultaneously so that the recorder and the combination radio turn tables start to revolve at the same time.

TO PLAY BACK RECORDINGS

To play home recordings or commercial records just:

(a) Rotate "CHANGE OVER SWITCH" to the next to the maximum right hand position—indicator needle will point to "PLAY PHONO" printed on the dial.

(b) Place record on turn table.

(c) Insert needle in pickup arm and place needle in the outside groove on record.

(d) Turn "MOTOR SWITCH" knob to "ON" position.

(e) Adjust "VOLUME" knob for desired volume.

USING MICROPHONE AND RADIO AS PUBLIC ADDRESS SYSTEM

The radio and microphone may be used as a public address system by:

(1) Turn the "CHANGE OVER SWITCH" knob to maximum right hand position—needle will point to "PUBLIC ADDRESS" printed on the dial.

(2) Speak into the microphone in a normal tone of voice or place microphone near point where it can pick up voice, music, or other subject to be amplified.

(3) Adjust "MIKE VOLUME" control knob for desired volume level.

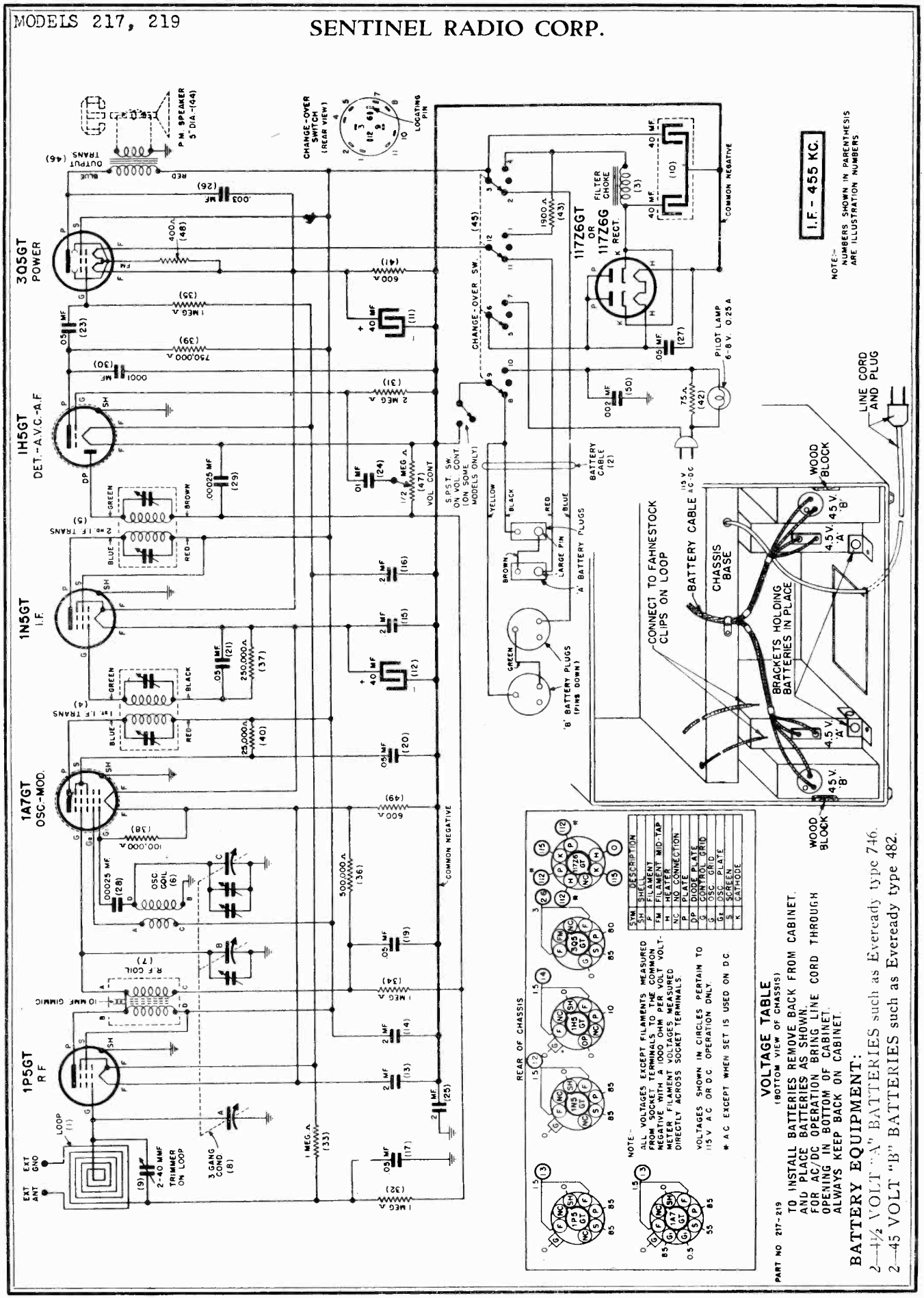
IF ACOUSTICAL FEEDBACK BETWEEN LOUD SPEAKER AND MICROPHONE—HEARD AS A HOWLING SOUND—IS ENCOUNTERED, place microphone as far to the side or rear of recorder as possible.

CAUTION: MICROPHONE VOLUME CONTROL KNOB MUST ALWAYS BE IN MINIMUM VOLUME—LEFT HAND POSITION—WHEN MICROPHONE IS NOT BEING USED. FAILURE TO DO THIS WILL RESULT IN A HOWLING SOUND AND THE MICROPHONE WILL PICK UP EXTRANEOUS AND UNWANTED VOICES, NOISES, ETC., ALL OF WHICH WILL BE RECORDED ON THE DISC.

WHEN RECORDING ALWAYS HAVE THE "TONE CONTROL" KNOB IN THE MAXIMUM RIGHT HAND "BRILLIANT" POSITION.

MODELS 217, 219

SENTINEL RADIO CORP.

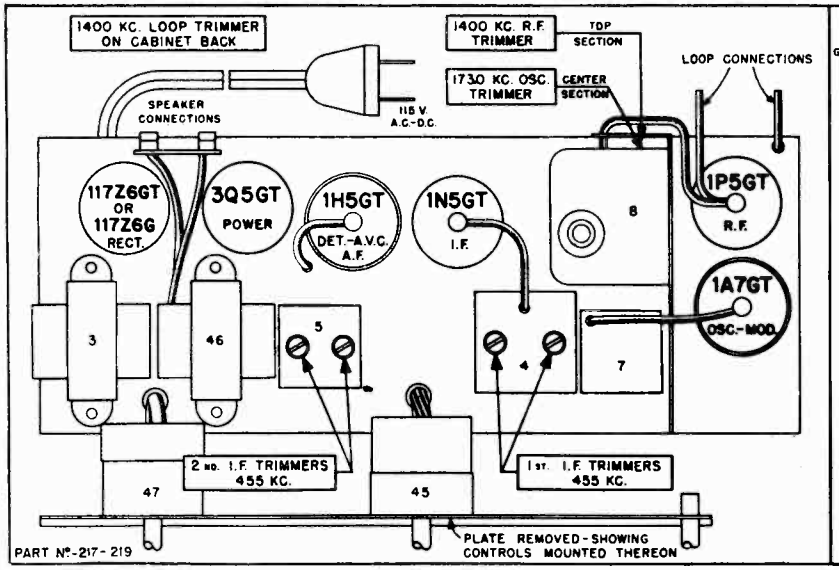


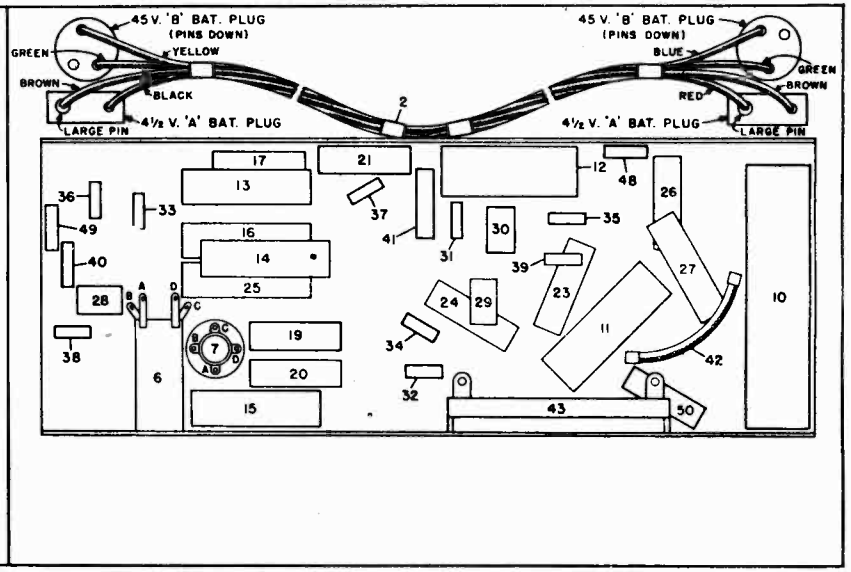
ALIGNMENT PROCEDURE

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 near set loop—BE SURE THAT NEITHER MOVES WHILE ALIGNING.

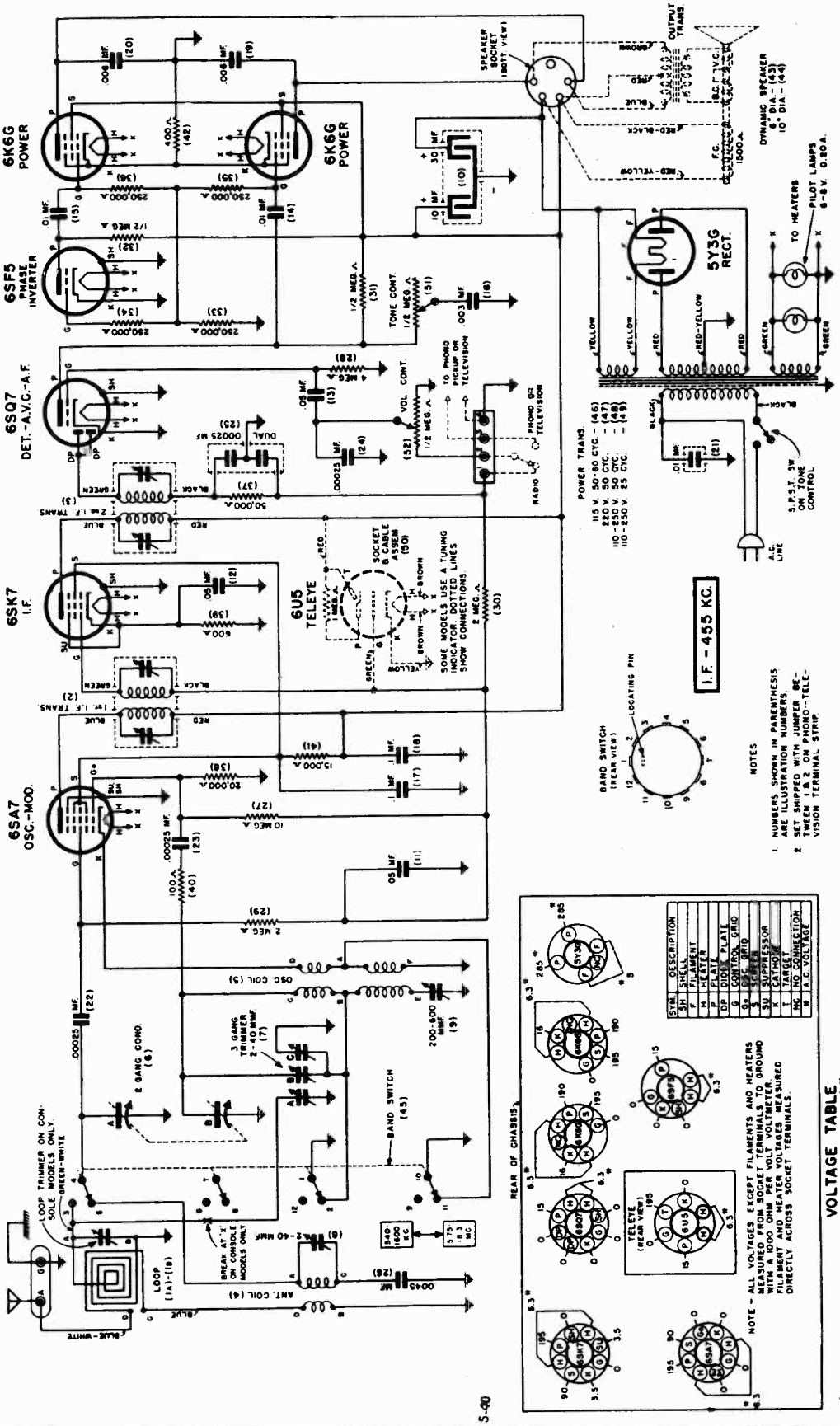
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of 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. 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.	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.





MODEL 220

SENTINEL RADIO CORP.



VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

PART NO. 220

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.

OUTSIDE AERIAL

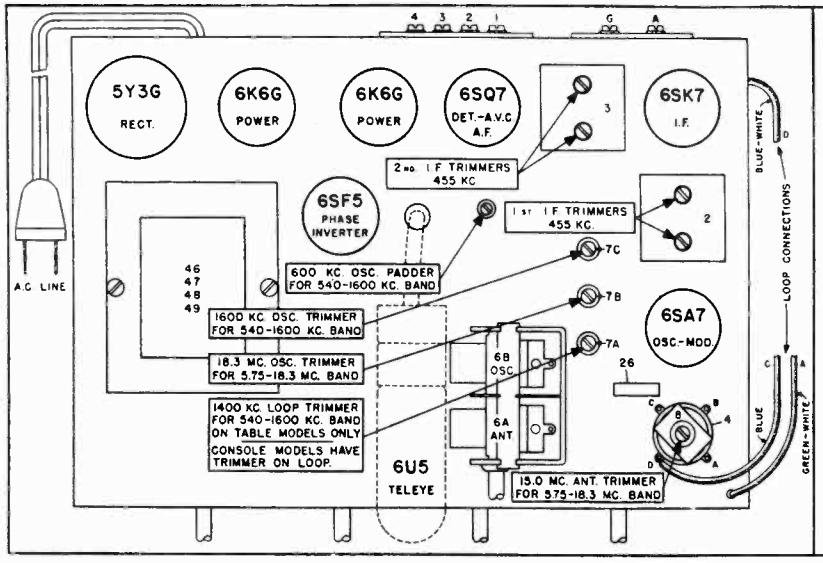
When the radio is used in shielded areas or when located a great distance from broadcast stations, the volume of stations operating in the 540-1600 K.C. band may not be ample in which case it would be necessary to ATTACH A 25-50 ft. OUTDOOR AERIAL TO THE "A" TERMINAL ON THE REAR OF THIS CHASSIS to obtain satisfactory results.

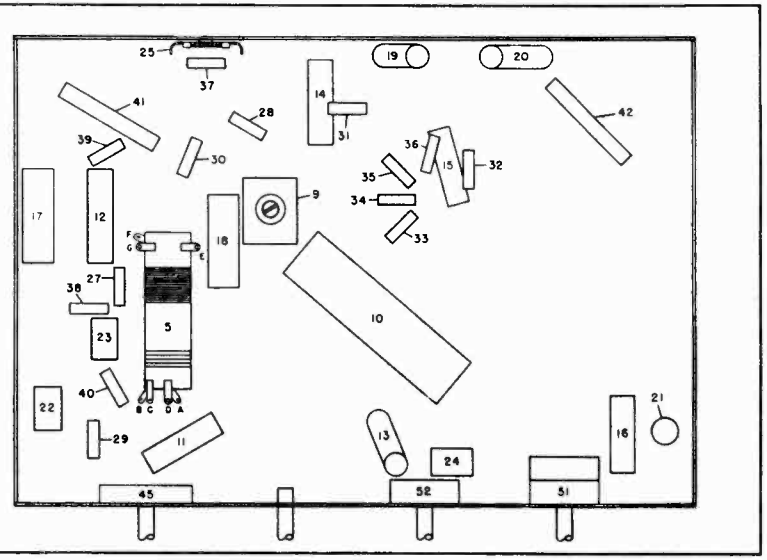
ALIGNMENT PROCEDURE

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 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 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.
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 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.
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" Post. Lead, Low side to frame of gang condenser.	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 "A" Post. Lead, Low side to frame of gang condenser.	While rocking gang condenser adjust 15 M. C. antenna trimmer for maximum output.





ELIMINATION OF INTERFERENCE CAUSED BY A 32-VOLT LIGHT PLANT

GENERAL

Two kinds of static-like noise may be heard when you operate your 32 volt radio at the same time the generating plant is charging the plant batteries.

Static-like noise, due to the action of the brushes on the commutator, may reach the set through the supply lines. Such noise can generally be eliminated by the use of .5 Mfd. 200 volt condensers, as shown in Figs. 1 and 3.

Static-like noise, due to the operation of the high tension circuit may radiate through the air to the antenna of the set. Radiation has been found to extend a half mile in extreme cases. Proper placement of the antenna, along with the use of a spark plug suppressor and correct shielding will entirely eliminate this type of noise.

When eliminating these electrical disturbances always apply the remedies given in the order in which they appear.

USUAL INSTALLATIONS

Install spark plug suppressor on the spark plug and connect the high tension lead to the suppressor, as shown in Figure 3.

For four cylinder plants use four spark plug suppressors, one attached to each spark plug.

CAUTION: Disconnect batteries from generator before attaching suppressor equipment.

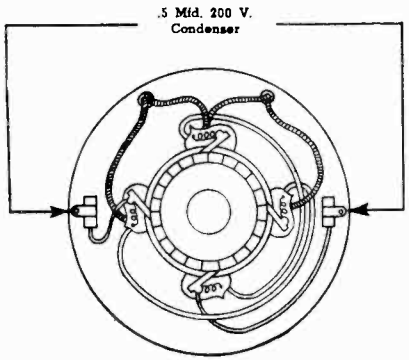


Fig. 1

Connect one .5 Mfd. 200 volt condenser between one positive brush and the generator frame and one condenser btween one negative brush and the generator frame as shown in Figure 1.

FOUR CYLINDER PLANTS. For four cylinder plants attach a condenser to the positive and negative brushes as shown in Figure 2.

EXTREME CASES

To determine if the high tension wiring is radiating into the antenna disconnect the antenna and ground from the receiver and if the noise is eliminated or materially reduced, the noise is being picked up by the

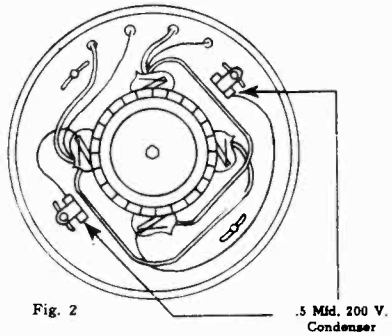


Fig. 2

antenna. In such a case, obtain a piece of electrician's loom which will just slide over the high tension wire and a piece of copper braid shielding which will just slip over the loom. Cut a piece of loom just long enough to cover the high tension wire from the coil to the spark plug suppressor. Cut a piece of shielding that will be one inch shorter than the loom when the shielding is extended over the loom.

Slip the loom over the high tension lead. Slip the shielding over the loom so that it is one-half inch from each end of the loom. Wrap some fine copper wire around the shielding near the end of the shielding to hold the shielding in place. Solder the wire to the shielding so it will not slip due to plant vibration. The shield may be taped in place if the tape is very adhesive. DO NOT USE FRICTION TAPE.

Solder a short braid pig-tail to the shielding and ground it under the nearest screw in the generator frame.

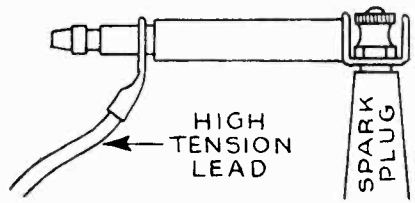


Fig. 3

IGNITION NOISE ON BATTERY LEADS

Sometimes the ignition interference will travel up the battery leads. This condition can be corrected as follows: Attach a .5 Mfd. condenser between the POSITIVE terminal at the top of the control box and the frame of the box. (Be sure the frame of the box is well grounded to the generator frame). Attach a .5 Mfd. condenser between the NEGATIVE terminal at the top of the control box and the control box frame.

IGNITION INTERFERENCE ON SUPPLY LEADS

In extreme cases the ignition interference will travel up the supply leads to the radio receiver. This condition can be corrected by attaching a .5 Mfd. condenser between the ungrounded side of the line (in the main switch box) and ground (or the grounded side of the line if one side of the line is grounded).

GROUNDING

Some cases may require a thorough ground of the system. This may be accomplished by running a No. 12 B. & S. gauge wire from the generator frame to a good ground. Conduit and metal switch boxes should also be grounded.

If it is necessary to ground one side of the supply lines, first ground them temporarily, one at a time through a 32 volt lamp. One side of the line will light the light, the other will not. The side which WILL NOT light the light should be grounded.

DO NOT apply any of the remedies listed under "Extreme Cases," before trying the ones listed under "Usual Cases."

IF RECEIVER SHOULD FAIL TO OPERATE, CHECK FOR:

1. Defective tubes.
2. Tubes not properly inserted in the sockets.
3. Grid caps not connected on grid terminal of tubes.
4. Not sufficient aerial.
5. Supply cord plug reversed.
6. Defective fuse.

MODEL 221

PUSH BUTTON TUNING

SIX STATIONS OPERATING IN THE 1500-540 K.C. BAND MAY BE "AUTOMATIC PUSH BUTTON" TUNED BY PROPERLY SETTING THE 6 SETS OF TRIMMER SCREWS LOCATED UNDERNEATH PUSH BUTTON ESCUTCHEON ON FRONT OF CABINET.

As the push buttons are not preset at the factory for any definite stations, be sure to set them by:

(a) It is important to have the aerial, if an outdoor antenna is to be used, attached to the radio when adjusting the trimmers.

(b) BE SURE TO OPERATE THE RADIO AT LEAST ONE-HALF HOUR BEFORE ADJUSTING TRIMMERS. If set is not thoroughly warmed up when trimmers are adjusted, the trimmers may shift position after they do become warm, resulting in poor tone, weak signals and excessive background noise.

(c) Obtain the transmitter frequency—number of kilocycles—and call letters of the six stations you wish to "Push Button" tune. FOR BEST RESULTS SET PUSH BUTTONS FOR LOCAL OR STRONG NEAR-BY STATIONS ONLY.

(d) Remove push button escutcheon from front of cabinet by unscrewing small wood screws that hold this in place.

(e) Rotate band switch to the next to the maximum right hand position.

(f) Using manual tuning knob, carefully tune in to the point of clearest tone, one of the selected stations whose transmitter frequency is somewhere between 540 and 900 kilocycles.

(g) Rotate band switch knob to the maximum right hand position.

(h) Press in either one of the two push buttons indicated on label adjacent to trimmers marked 540 to 900 K.C. Note: Station signal will disappear, or may be distorted and in some instances another station may be heard.

(i) Using a screwdriver ADJUST THE LARGE 540 TO 900 KILOCYCLE ADJUSTING SCREW, LOCATED ABOVE THE PUSH BUTTON THAT IS PUSHED IN—until the 540 to 900 kilocycle station that had been previously tuned in with the manual tuning knob, is heard with maximum volume and clearest tone. AFTER ADJUSTING THE LARGE SCREW CAREFULLY ADJUST THE SMALL SCREW DIRECTLY BELOW THE LARGE ONE FOR CLEAREST TONE AND MAXIMUM VOLUME.

(j) Remove the printed tab, having the call letters of the station tuned in, from the paper call letter sheet. Press this into the depression in the push button escutcheon that will be adjacent to the push button just adjusted when the escutcheon is remounted in place on the cabinet.

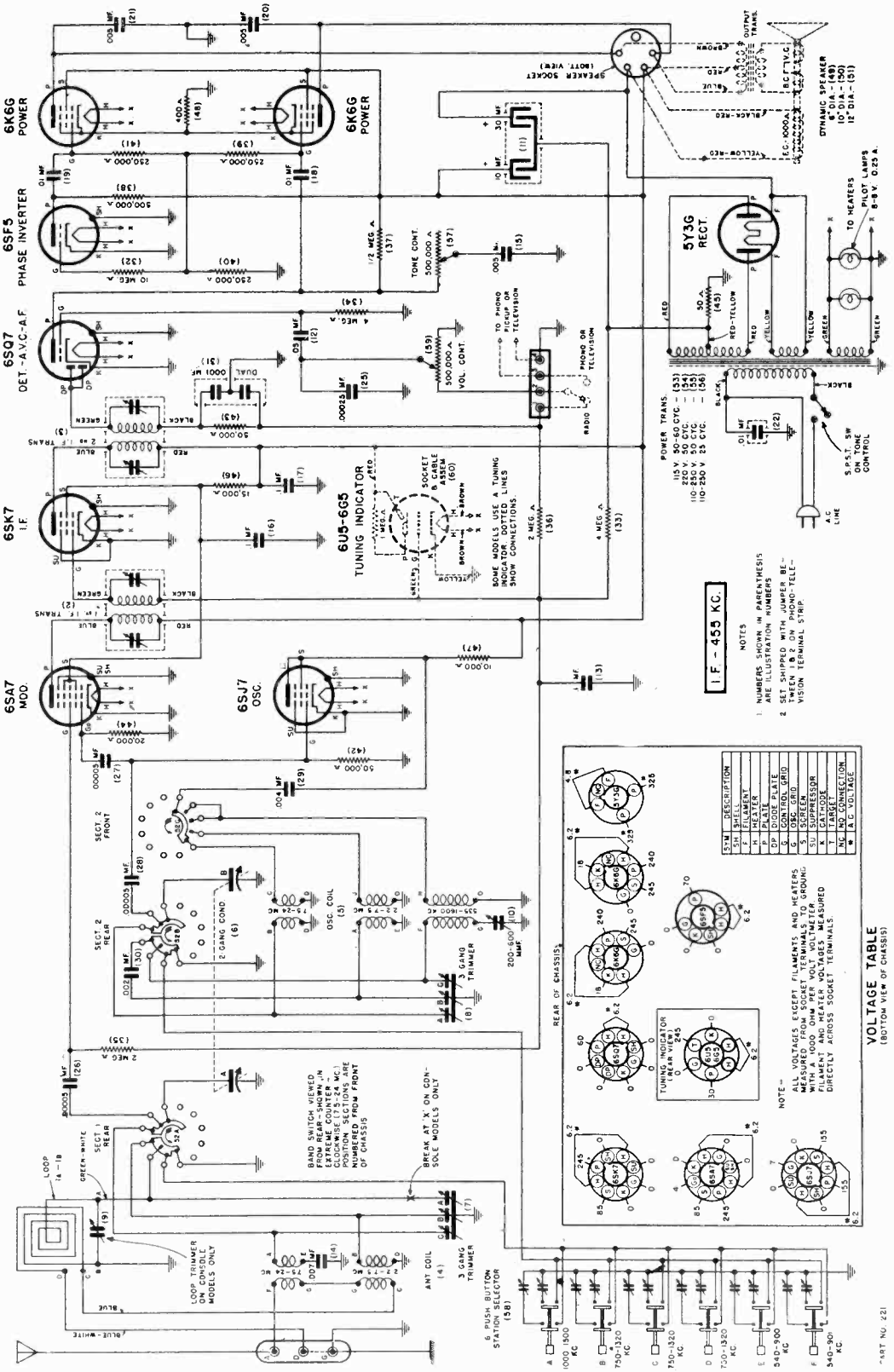
(k) Set other trimmers for selected stations operating between the frequency range of the trimmers, as indicated on the label.

IMPORTANT: THE WAVE SWITCH KNOB MUST BE IN THE MAXIMUM RIGHT HAND POSITION FOR PUSH BUTTON TUNING.

In some instances it may be necessary, after the set is operated for a period of time, to reset the trimmers as they may drift due to heat, humidity, etc.

SENTINEL RADIO CORP.

MODEL 221



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.

AERIAL

THERE ARE THREE POSTS marked "A," "D," and "G" on the rear of the chassis. When the receiver is shipped from the factory a flexible wire is connected to post "D" and "G." When a straight aerial is used this wire should be left in this position and the aerial lead-in connected to the post marked "A."

When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

Printed in U.S.A.—S.P.—7-40—1100

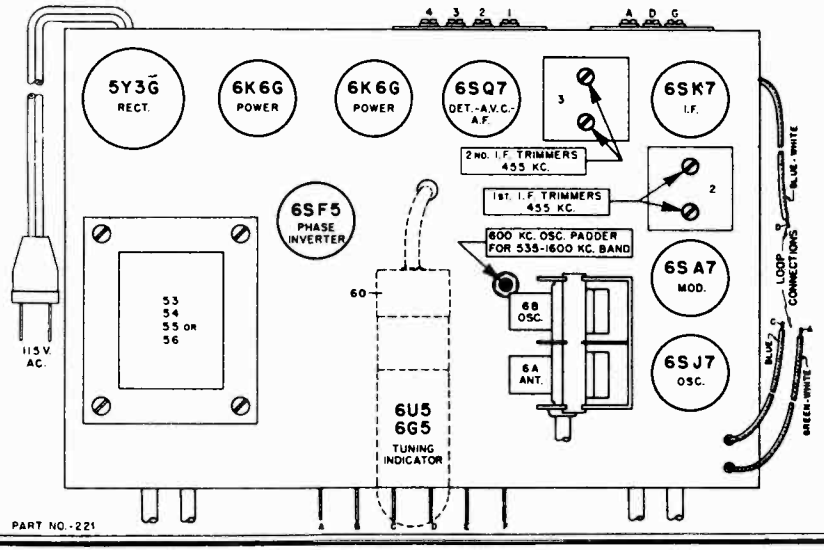
ALIGNMENT PROCEDURE

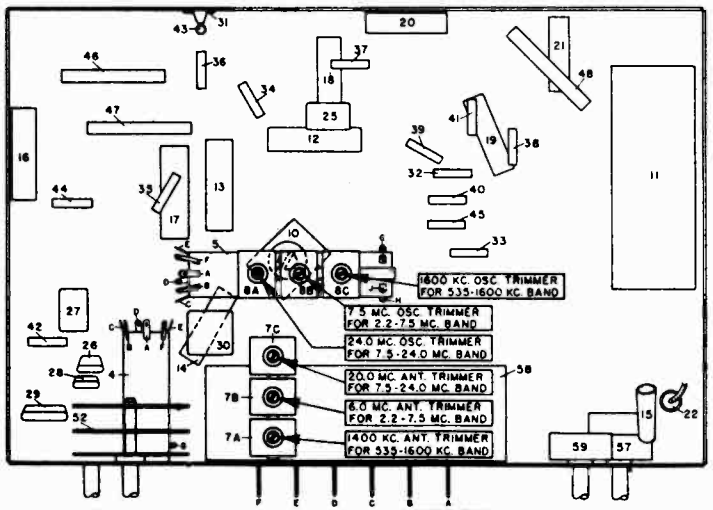
PART NO. 12407-221

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, 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.

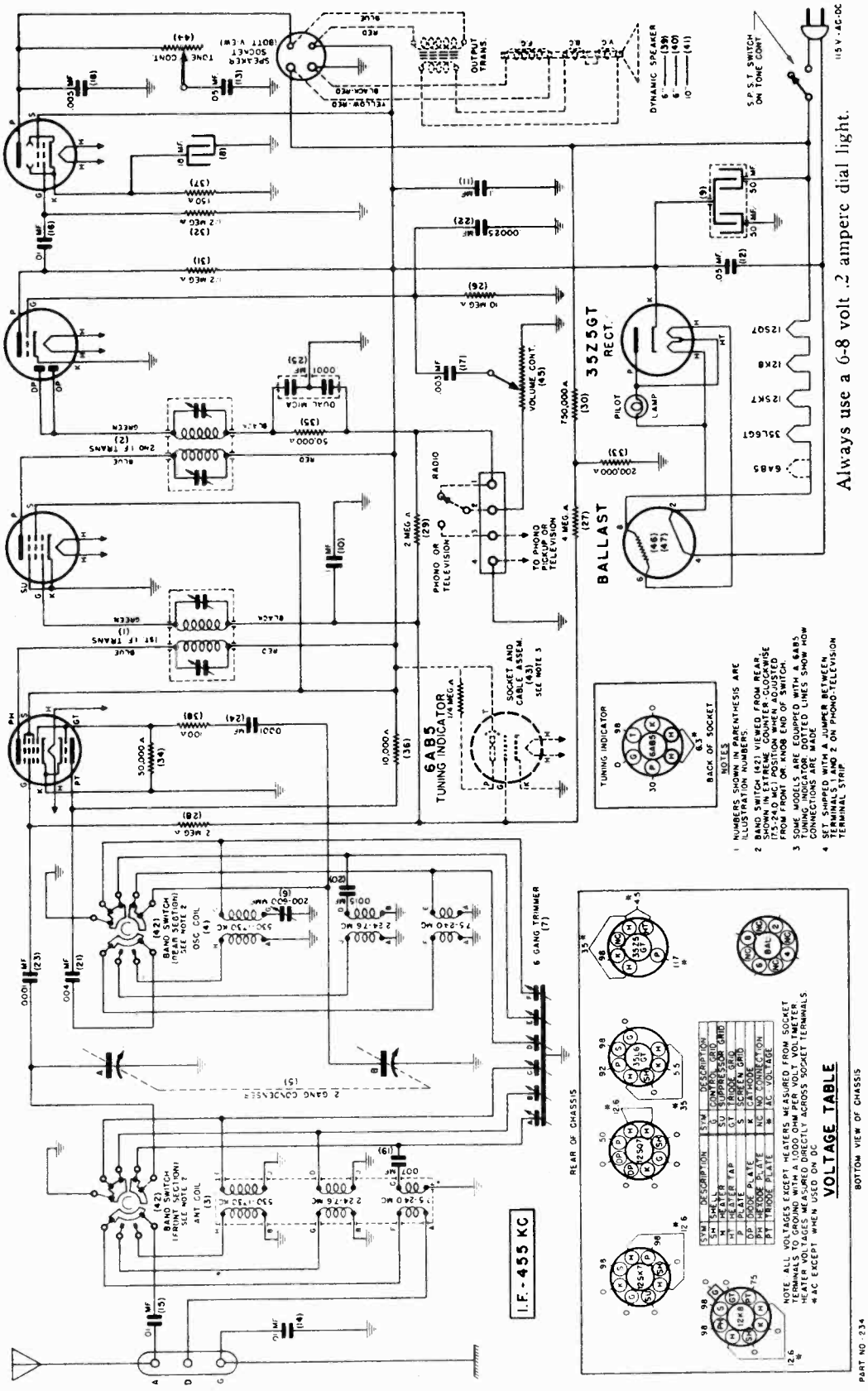
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of 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 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.
1600 to 535 K.C. Band Using Loop Aerial	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 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. loop oscillator padder for maximum output.
2.2 to 7.6 M.C. Band	1 Exactly 7.6 M.C.	Exactly 7.6 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.6 M. C. oscillator trimmer for maximum output.
	2 Approx. 6. M.C.	Approx. 6. M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	While rocking gang condenser adjust 6 M. C. antenna trimmer for maximum output.
7.4 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 trimmer for maximum output.





SENTINEL RADIO CORP.

MODEL 234



VOLTAGE RATING

THIS RECEIVER MAY BE OPERATED ON 100-120 VOLT DIRECT CURRENT (D.C.) and 100-120 volts, 50-60 cycle alternating current (A.C.) by using a No. 11222 line voltage regulator tube in regulator socket on top of radio chassis.

FOR 210-240 VOLT D.C. or 210-240 VOLT 50-60 CYCLE A.C. OPERATION, a No. 11223 line voltage regulator tube must be used in the regulator socket.

Always use a 6-8 volt .2 ampere dial light.

AERIAL

THERE ARE THREE POSTS marked "A," "D," and "G" on the rear of the chassis. When the receiver is shipped from the factory a flexible wire is connected to post "D" and "G."

When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

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.

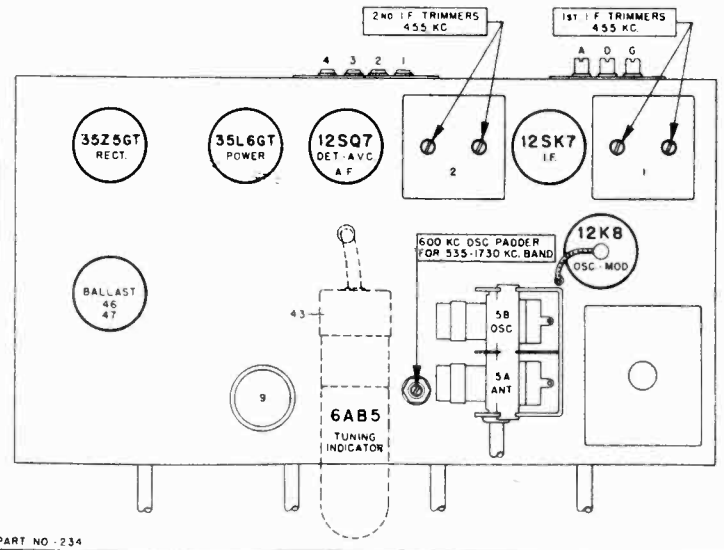
Before starting alignment:

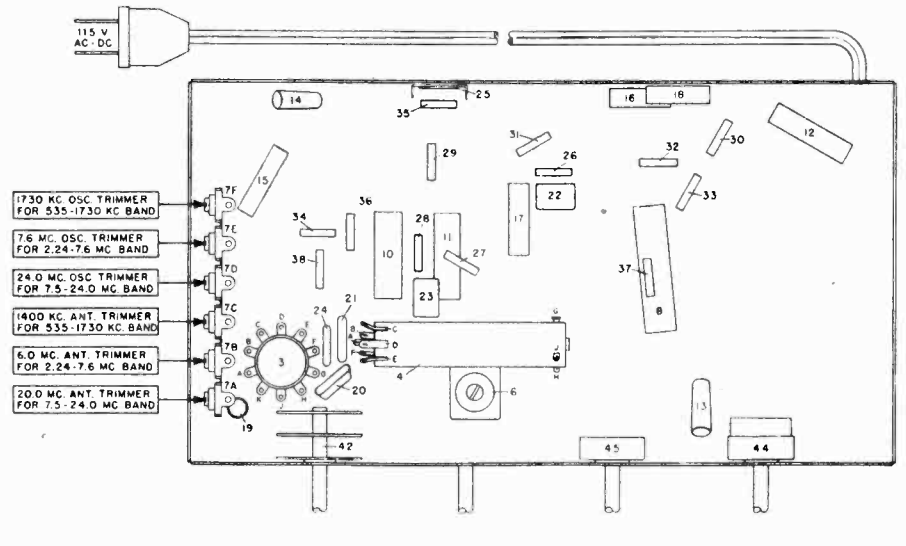
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle 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 12K8 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 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.
2.24 to 7.6 M.C. Band	1 Exactly 7.6 M.C.	Exactly 7.6 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.6 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 trimmer 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 trimmer for maximum output.

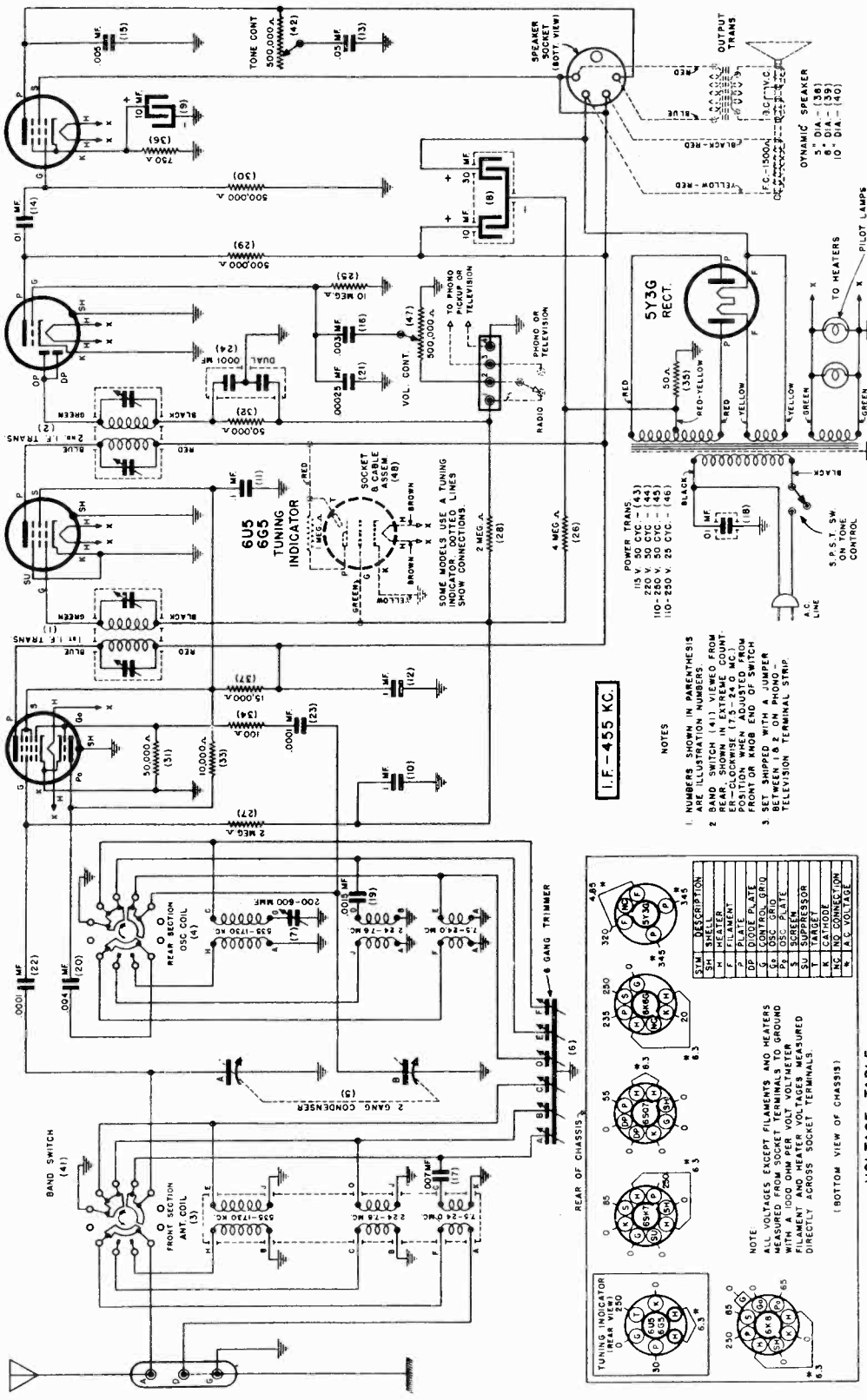




PART NO. 234

SENTINEL RADIO CORP

MODEL 235



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.

AERIAL

THERE ARE THREE POSTS marked "A," "D," and "G" on the rear of the chassis When the receiver is shipped from the factory a flexible wire is connected to post "D" and "G."

When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

PART NO 235
Printed in U. S. A.—7-40

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.

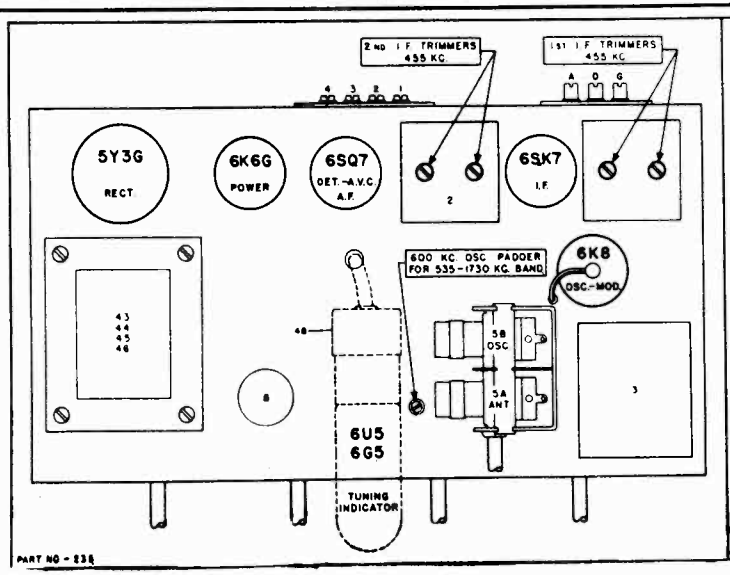
Before starting alignment:

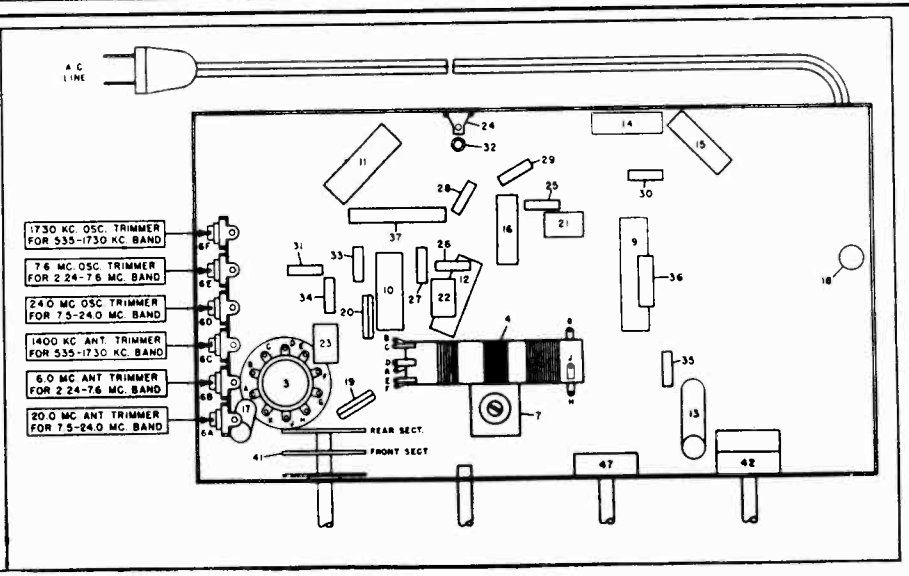
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle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

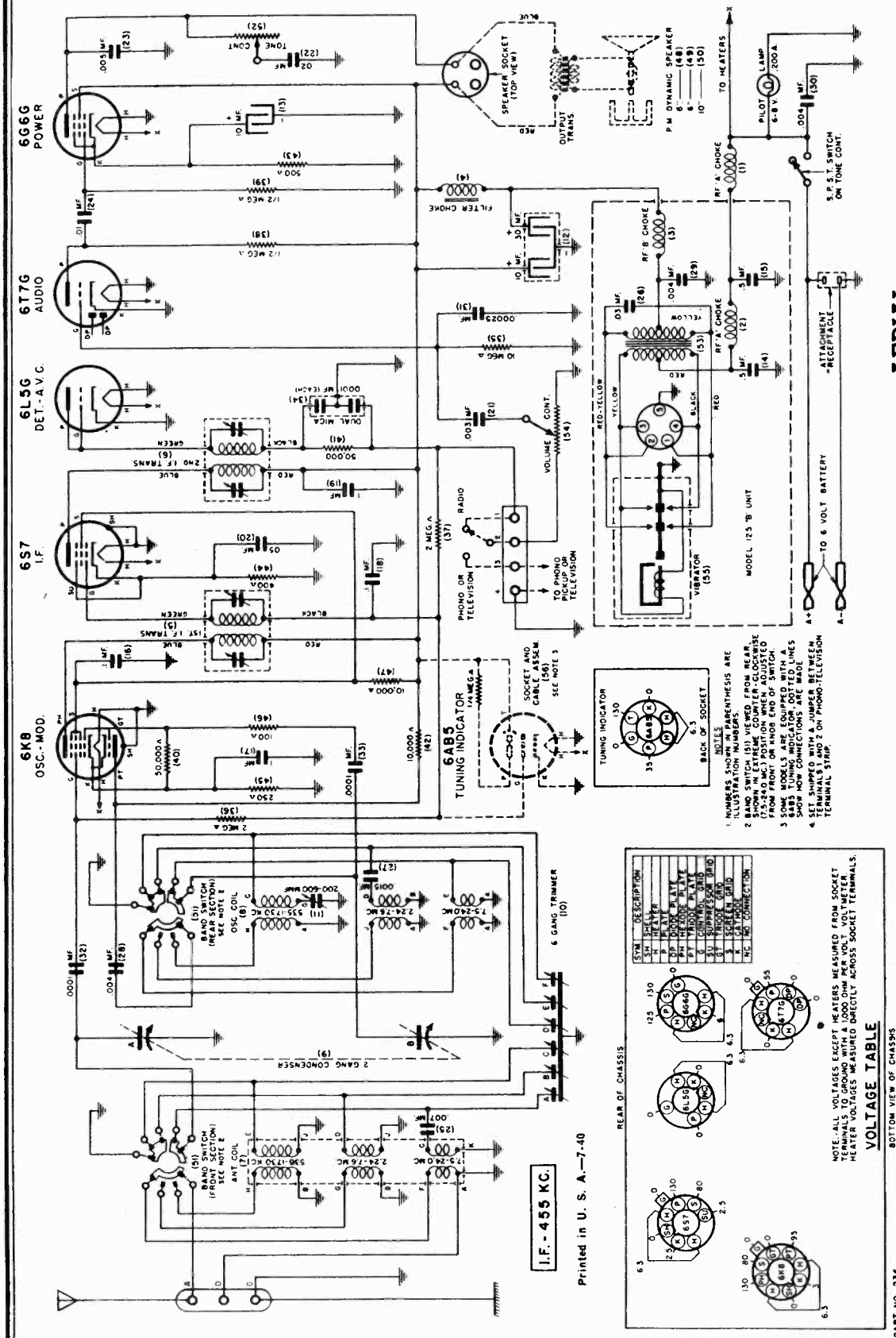
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of 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 535 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.
2.24 to 7.6 M.C. Band	1 Exactly 7.6 M.C.	Exactly 7.6 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.6 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 trimmer 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 trimmer for maximum output.





SENTINEL RADIO CORP.

MODEL 236



Printed in U. S. A.—7-40

AERIAL

THERE ARE THREE POSTS marked "A," "D," and "G" on the rear of the chassis. When the receiver is shipped from the factory a flexible wire is connected to post "D" and "G."

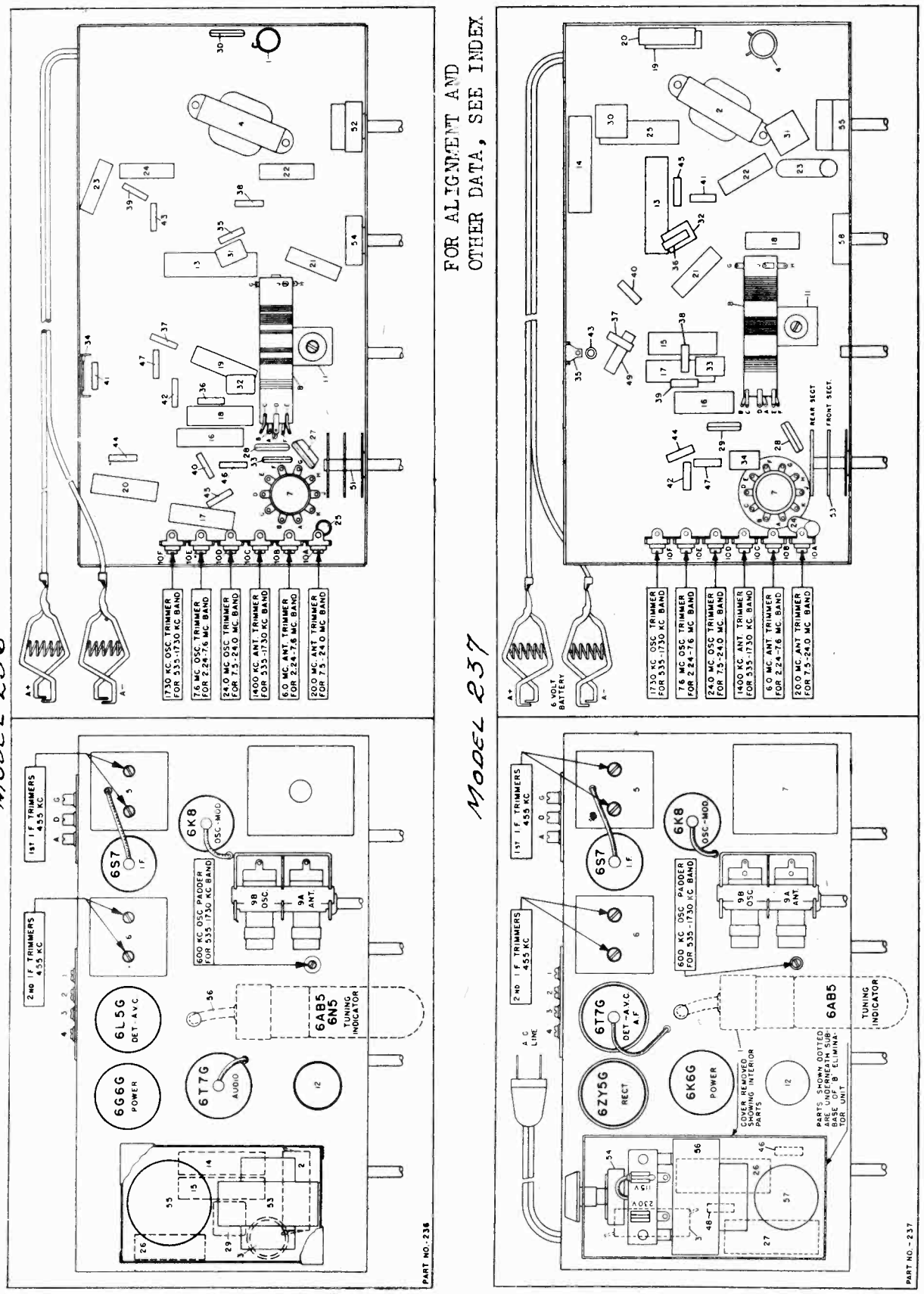
When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

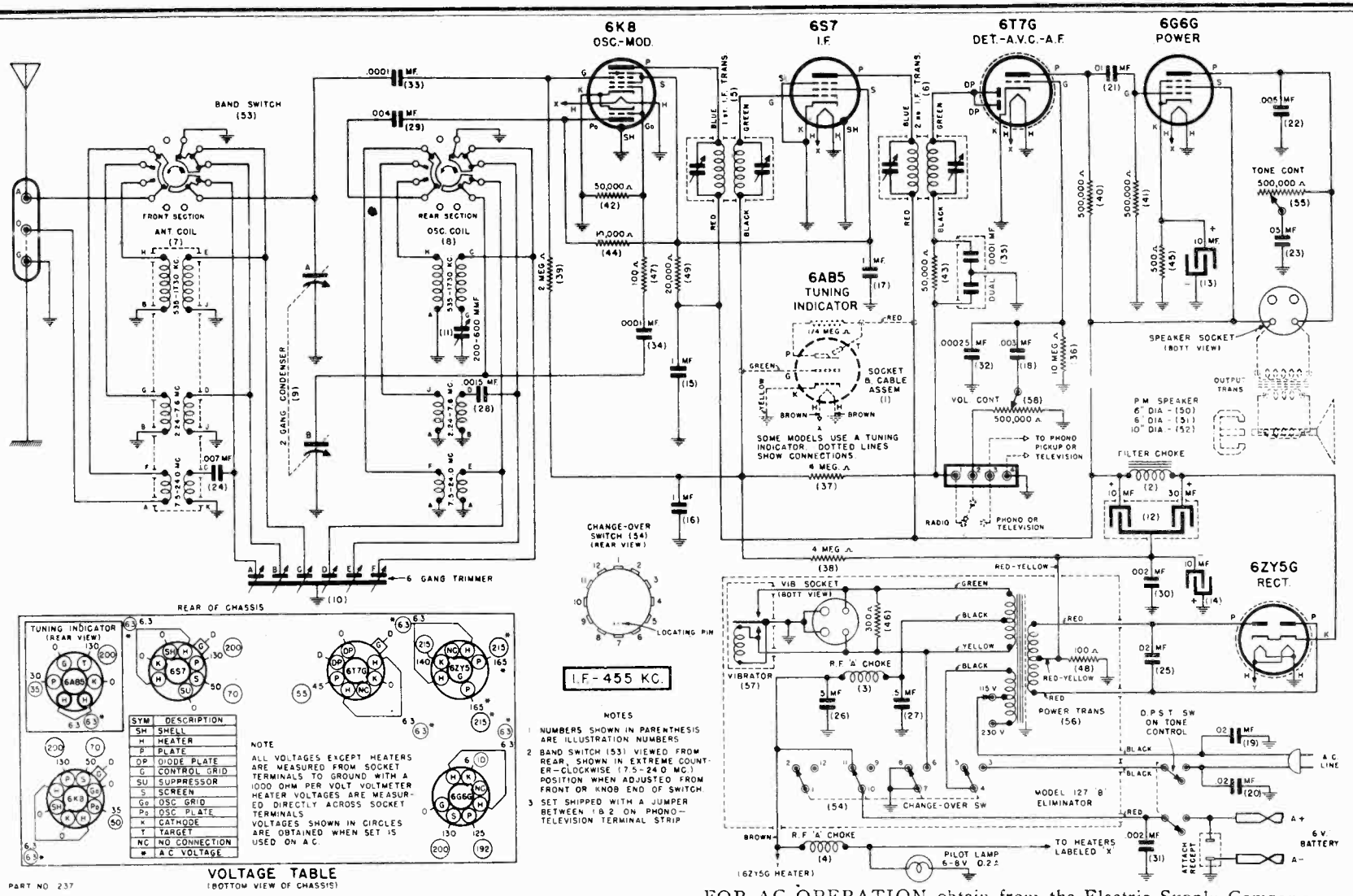
THE RECEPTACLE ON BACK of chassis is connected to the storage battery operating the radio. A single six volt 15 or 25 watt light may be run on the battery by inserting male plug on end of light into receptacle. Light cord wire must not be smaller than No. 18 nor longer than six feet, and only one six volt light should be used, otherwise the light will be dim.

MODEL 236
MODEL 237

SENTINEL RADIO CORP.

FOR ALIGNMENT AND
OTHER DATA, SEE INDEX





VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

PART NO 237

Printed in U. S. A.—7-40

VOLTAGE RATING

THIS RECEIVER CAN BE OPERATED WITH A SIX VOLT STORAGE BATTERY OR FROM 115 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.

FOR AC OPERATION obtain from the Electric Supply Company the voltage and current rating of the local Electric Service and — — — remove top cover from power unit and insert metal tipped lead into proper terminal socket that will be found underneath top cover of power unit.

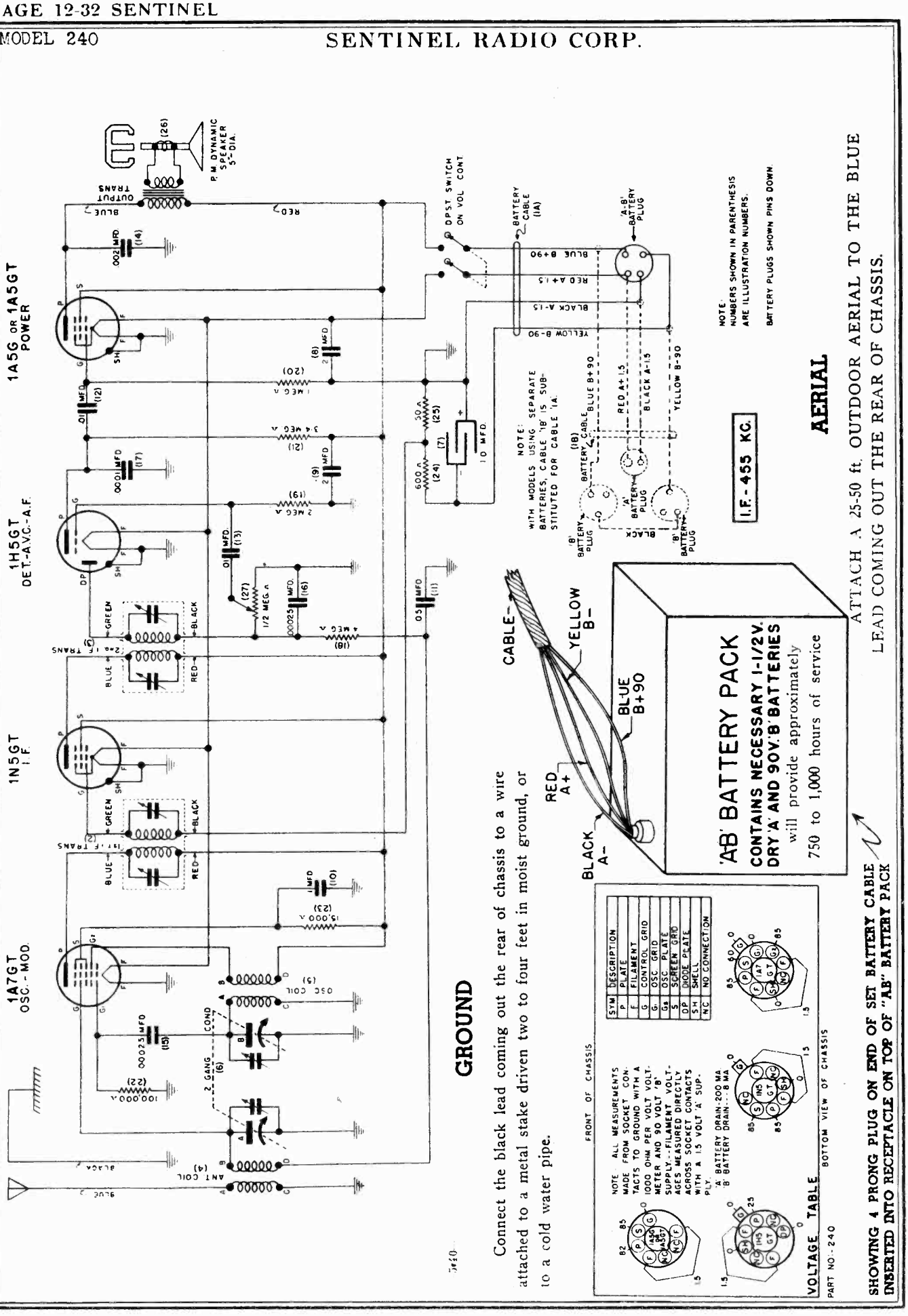
Place voltage selector switch knob in "115—230" position and plug set power cord plug into house lighting outlet.

WITH 6 VOLT STORAGE BATTERY:

Place voltage selector switch on back of the "B" unit and accessible from the rear of the chassis to position marked 6.V.

MODEL 240

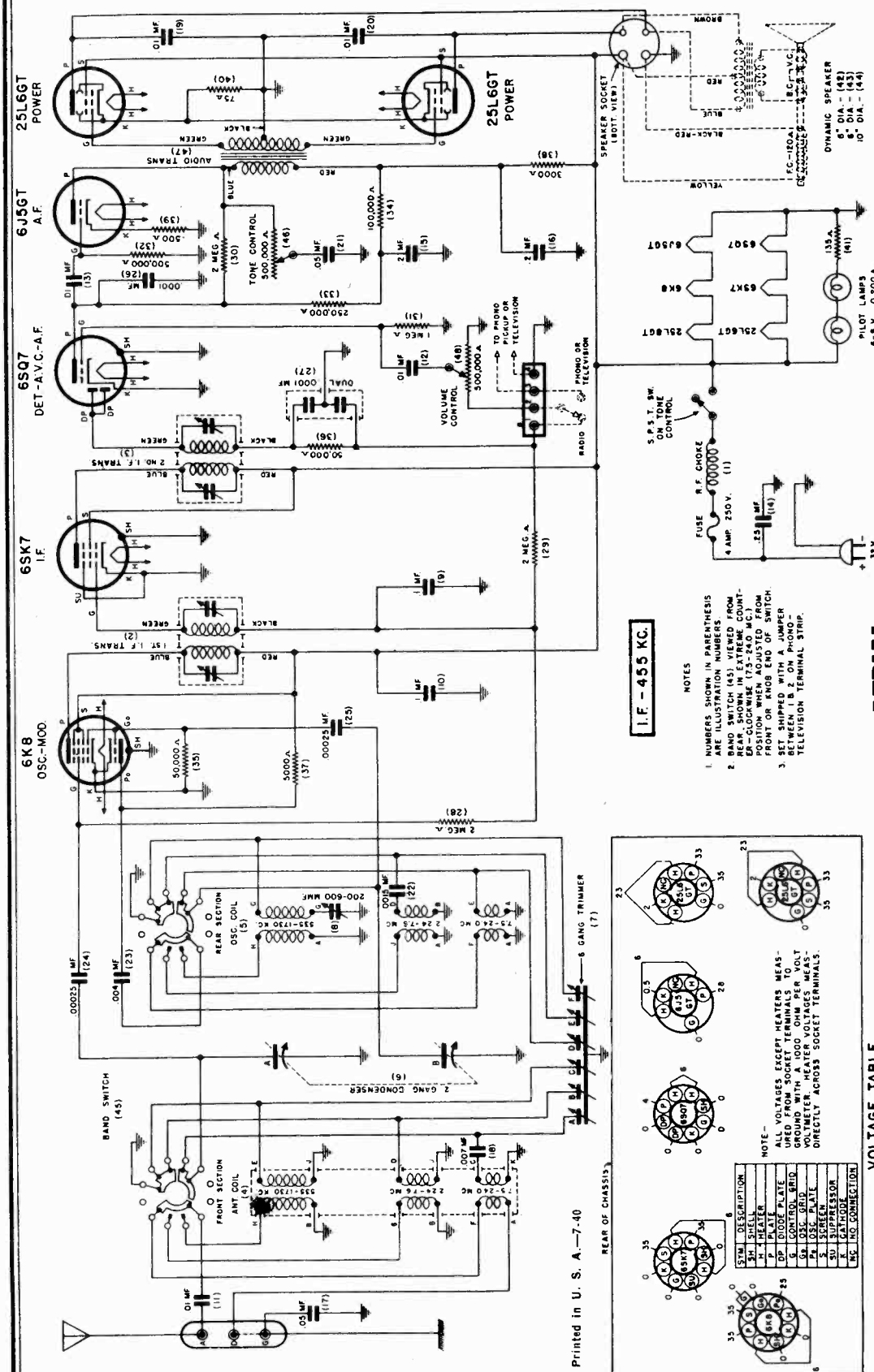
SENTINEL RADIO CORP.



SHOWING 4 PRONG PLUG ON END OF SET BATTERY CABLE INSERTED INTO RECEPTACLE ON TOP OF "AB" BATTERY PACK

SENTINEL RADIO CORP.

MODEL 239



VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

AERIAL

THERE ARE THREE POSTS marked "A," "D," and "G" on the rear of the chassis. When the receiver is shipped from the factory a flexible wire is connected to post "D" and "G."

When a doublet type antenna is used, remove the small piece of wire connecting "G" and "D" posts together and attach one of the doublet antenna lead-ins to "A" post and the other to "D" post.

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

PART NO 239

The power plug attached to the end of the power cord must be inserted correctly IN THE 32 VOLT POWER SUPPLY OUTLET OR RECEPTACLE, OTHERWISE THE SET WILL NOT OPERATE. If after inserting the plug and turning the receiver on, the set does not operate after approximately two minutes, remove this plug and turn it half-way around and reinsert it in the power receptacle. If set still does not operate examine the fuse on back of chassis.

FUSE: A 4 ampere fuse is located on the back of the chassis adjacent to the speaker plug and protects the receiver from damage should a defect occur in the set or if it is connected to the improper power supply.

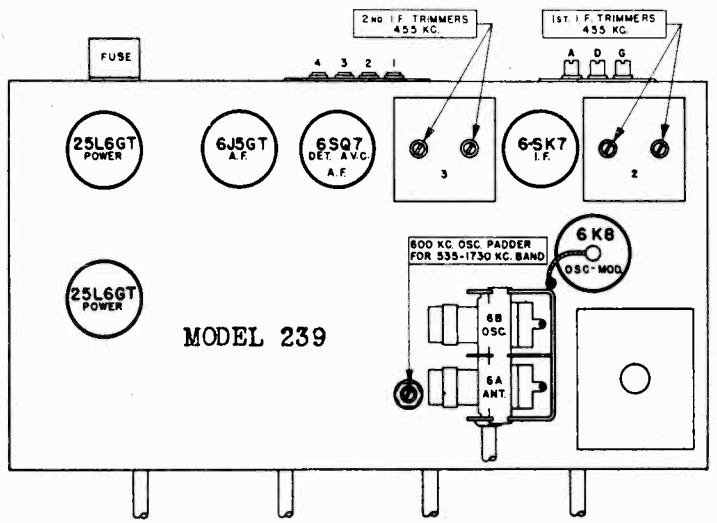
Printed in U. S. A.—7-40

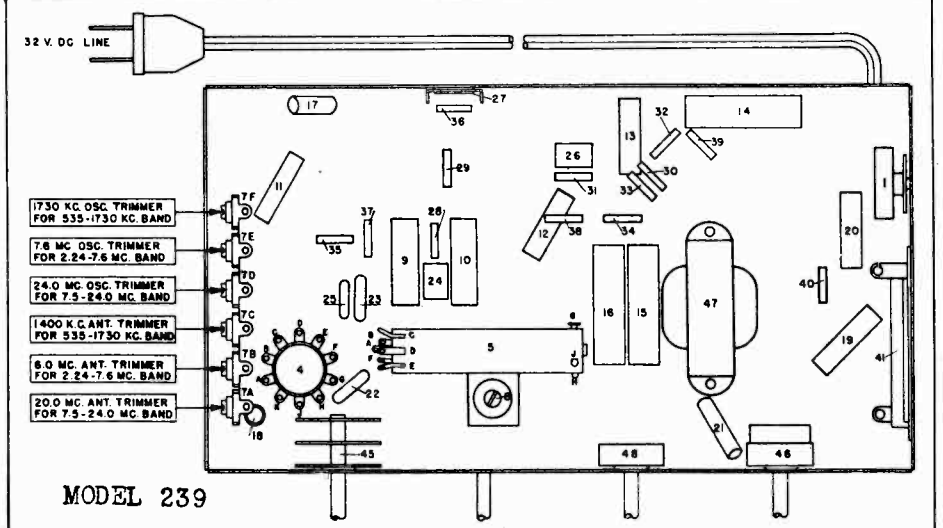
ALIGNMENT PROCEDURE MODELS 236, 237, 239

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.

(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.

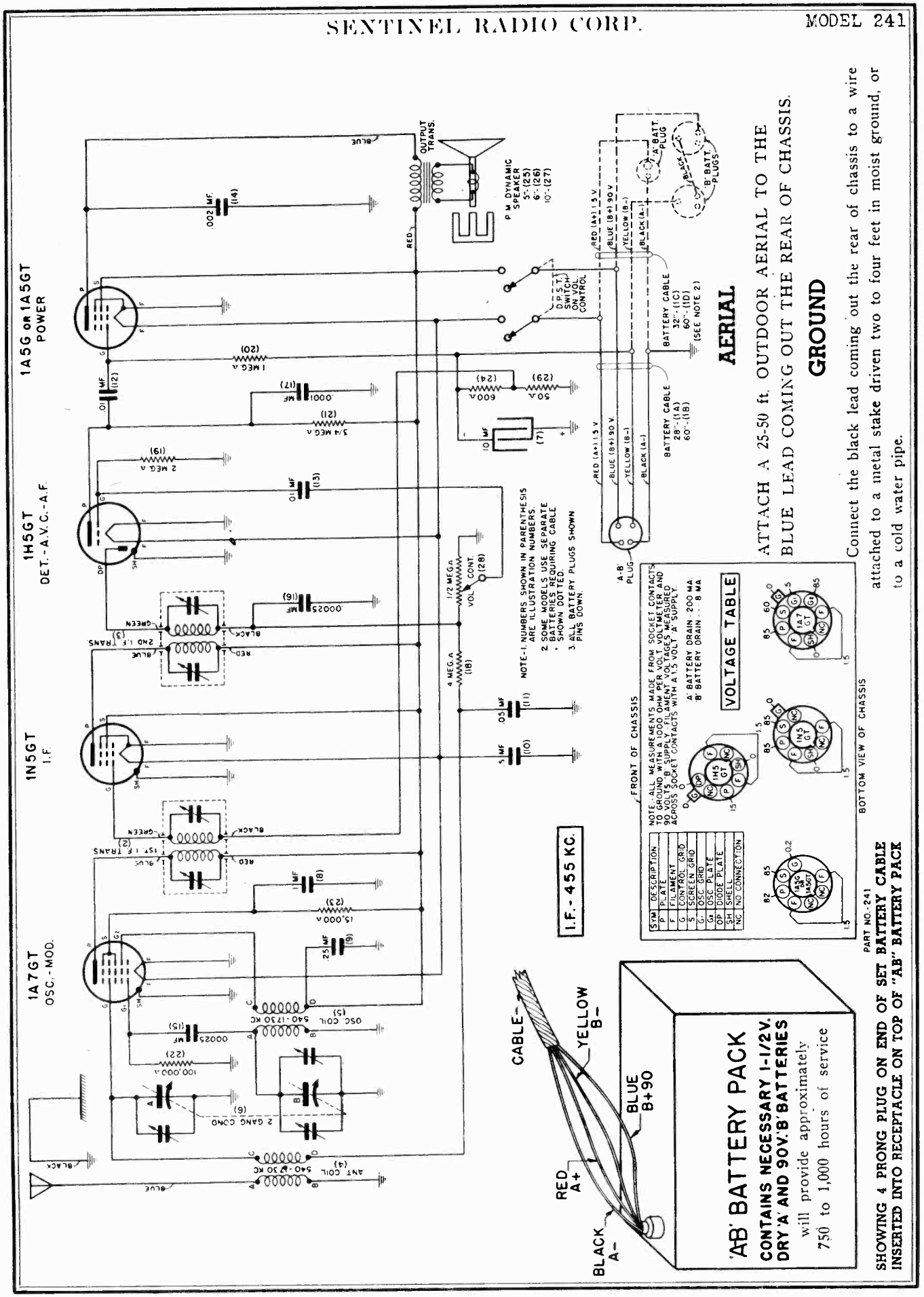
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator: consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location 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 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.
2.24 to 7.6 M.C. Band	1 Exactly 7.6 M.C.	Exactly 7.6 M.C.	400 Ohm carbon resistor	Receiver antenna "A" post	Adjust 7.6 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 trimmer 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 trimmer for maximum output.





PART NO.-239

SENTINEL RADIO CORP. MODEL 241



MODEL 240
MODEL 241
MODEL 242

SENTINEL RADIO CORP.

ALIGNMENT PROCEDURE MODELS 240, 241, 242

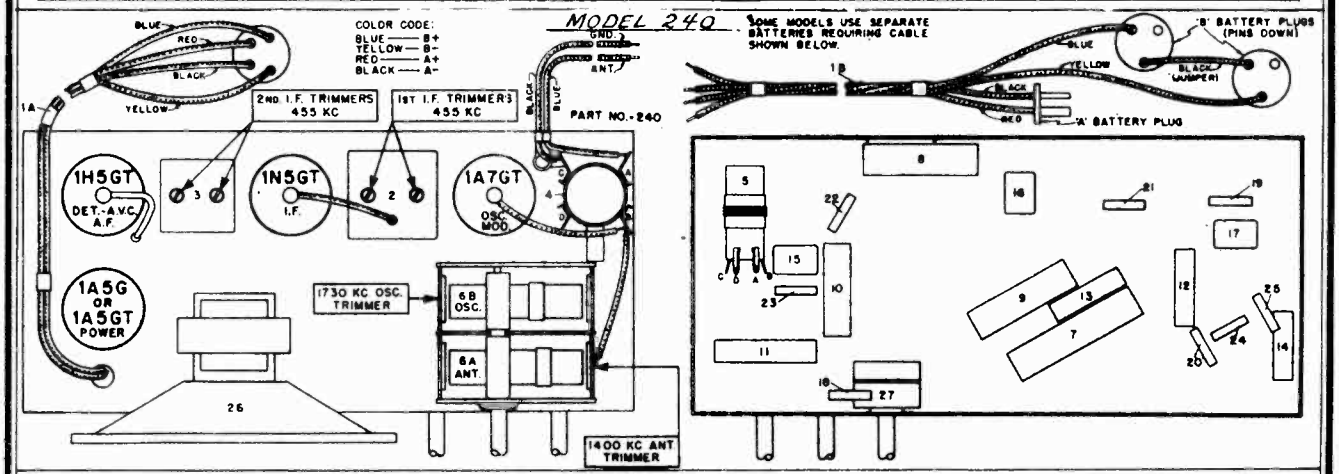
Before starting alignment:

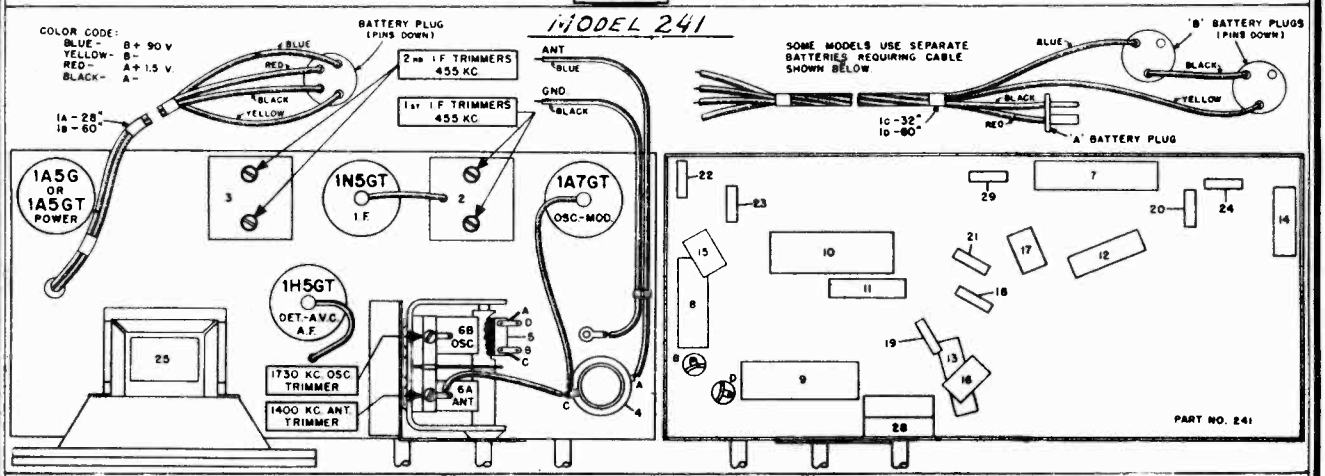
Check tuning dial adjustment by tuning gang condenser until plates touch maximum capacity stop at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point to last line move to correct position.

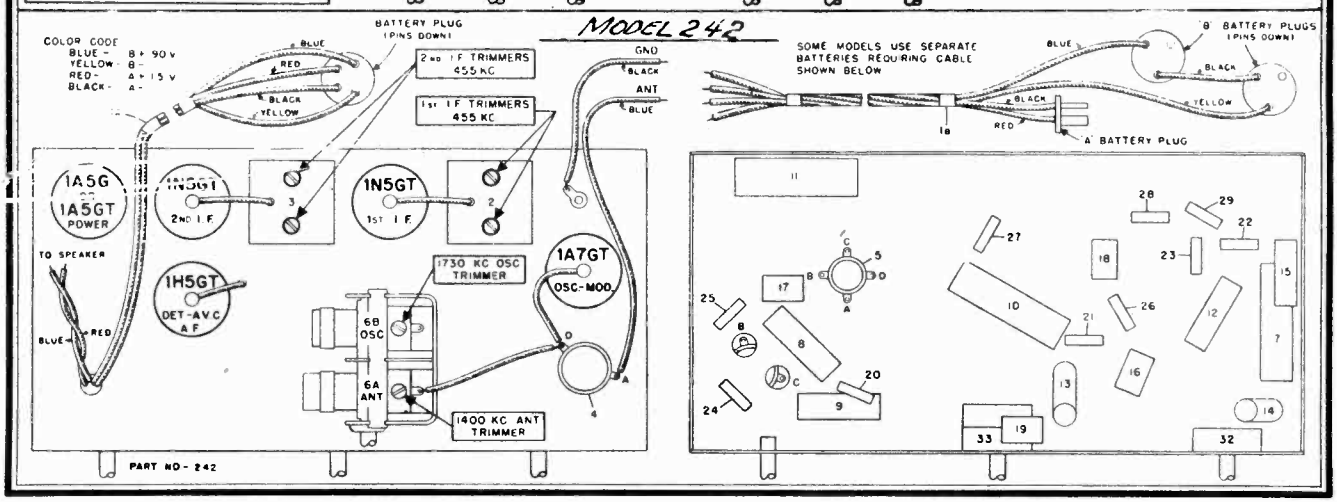
Use an accurately calibrated test oscillator with some type of output measuring device.

Have ground lead of test oscillator attached to chassis.

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:	
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.
Exactly 1730 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	Adjust 1730 K. C. oscillator trimmer for maximum output.
Exactly 1400 K. C.	.00025 MFD. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

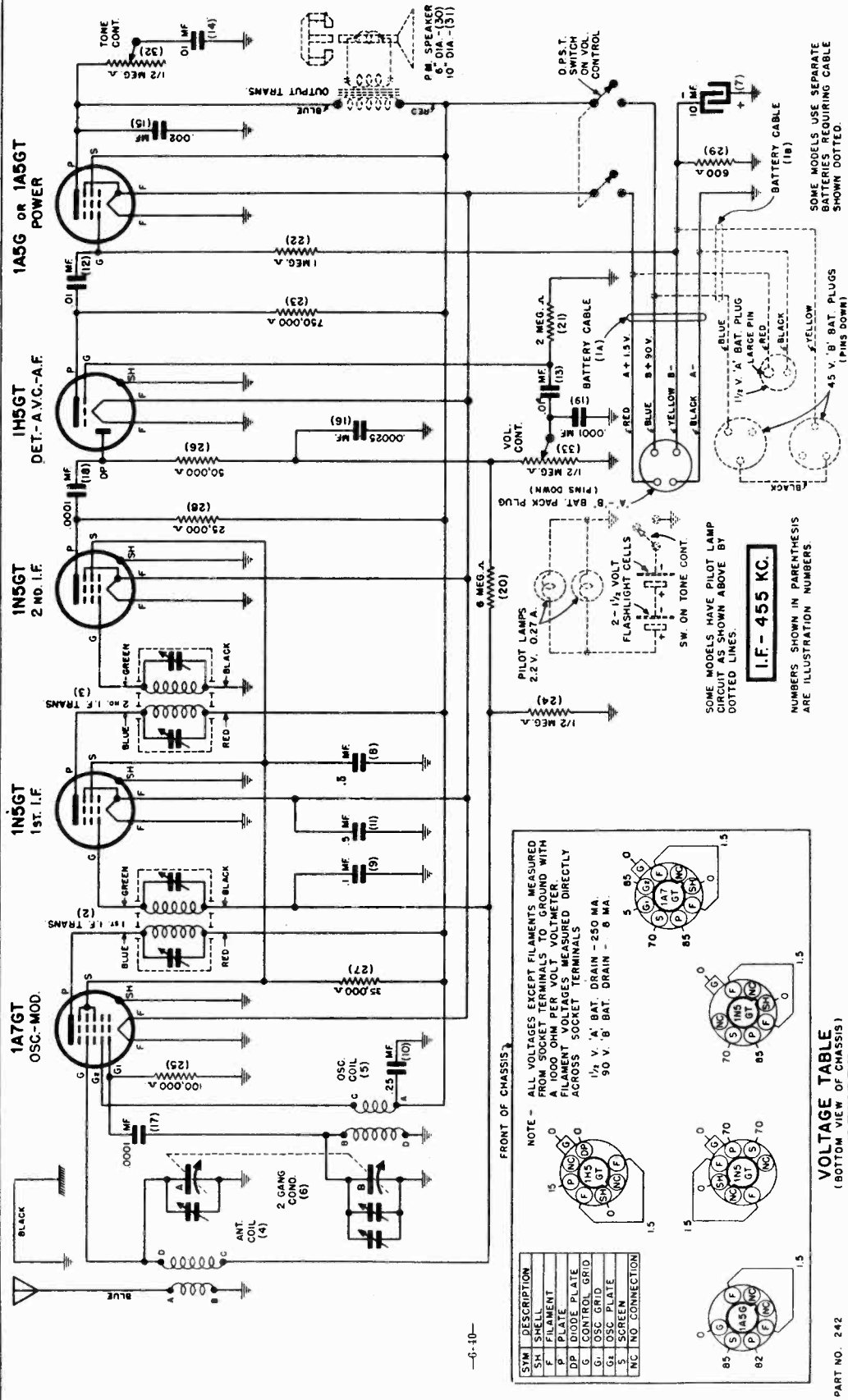






SENTINEL RADIO CORP.

MODEL 242



PART NO. 242

AERIAL

ATTACH A 25-50 ft. OUTDOOR AERIAL TO THE BLUE LEAD COMING OUT THE REAR OF CHASSIS.

GROUND

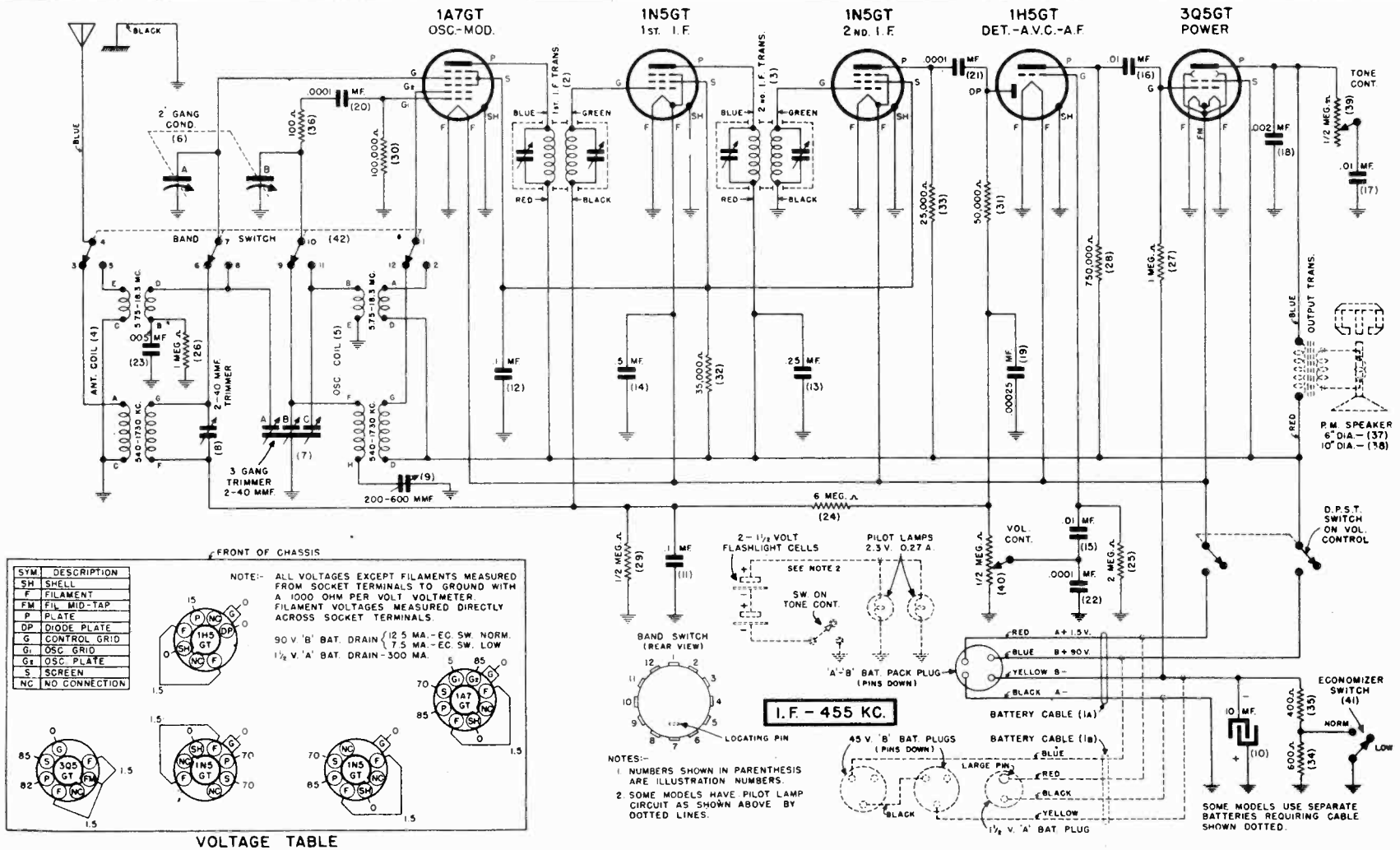
Connect the black lead coming out the rear of chassis to a wire attached to a metal stake driven two to four feet in moist ground, or to a cold water pipe.

DIAL LIGHT

Some of this series of receivers have a pilot light which illuminates the dial when the tone control knob is pushed inward. A two cell 2.3 volt flash light bulb, type 710, is used, operated by TWO 1½ VOLT FLASH LIGHT BATTERIES which MUST BE PLACED IN THE METAL HOLDER THAT WILL BE FOUND INSIDE THE CABINET.

When manual tuning receiver—illuminate the dial by pushing inward on the tone control knob with the left hand and rotate the tuning knob with the right hand. After selected station has been correctly tuned in release knob and dial light will go out.

As the life of the 1½ volt flash light batteries would be shortened if the dial light were to remain lit at all times, the dial light is lit only when the tone control knob is pushed inward.



SYM.	DESCRIPTION
SH	SHELL
F	FILAMENT
FM	FIL. MID-TAP
P	PLATE
DP	DIODE PLATE
G	CONTROL GRID
G1	OSC. GRID
G2	OSC. PLATE
S	SCREEN
NC	NO CONNECTION

NOTE:- ALL VOLTAGES EXCEPT FILAMENTS MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1000 OHM PER VOLT VOLTMETER. FILAMENT VOLTAGES MEASURED DIRECTLY ACROSS SOCKET TERMINALS.

90 V. 'B' BAT. DRAIN { 12.5 MA.-EC. SW. NORM. / 7.5 MA.-EC. SW. LOW

1 1/2 V. 'A' BAT. DRAIN-300 MA.

VOLTAGE TABLE
(BOTTOM VIEW OF CHASSIS)

NOTES:-
1. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
2. SOME MODELS HAVE PILOT LAMP CIRCUIT AS SHOWN ABOVE BY DOTTED LINES.

PART NO. 243

—5-40—

BATTERY LIFE

The life of the battery depends entirely on the average position of the "BATTERY ECONOMIZER" switch, 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 600 to 800 hours of service under normal average operating conditions.

DIAL LIGHT

Some of this series of receivers have a pilot light which illuminates the dial when the tone control knob is pushed inward. A two cell 2.3 volt flash light bulb, type 710, is used, operated by TWO 1½ VOLT FLASHLIGHT BATTERIES which MUST BE PLACED IN THE METAL HOLDER FOUND INSIDE THE CABINET

When tuning receiver—illuminate the dial by pushing inward on the tone control knob with the left hand and rotate the tuning knob with the right hand. After selected station has been correctly tuned in release knob and dial light will go out.

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.

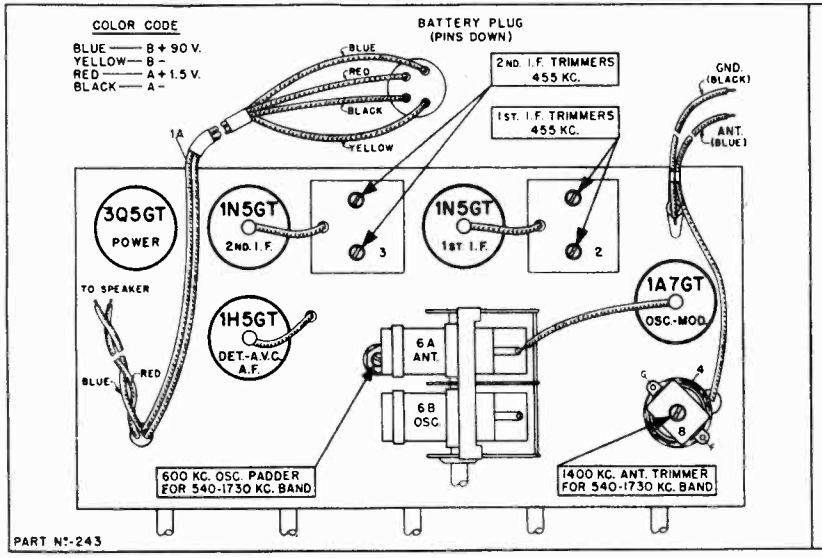
Before starting alignment:

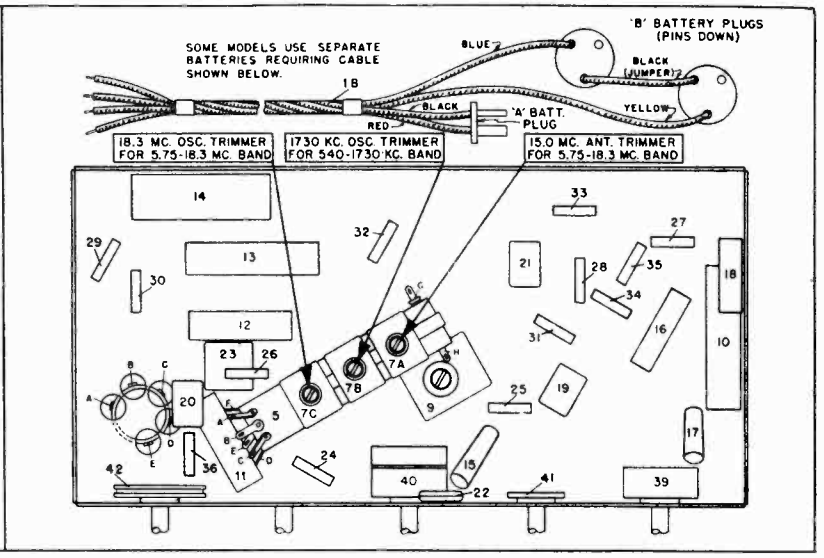
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move to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

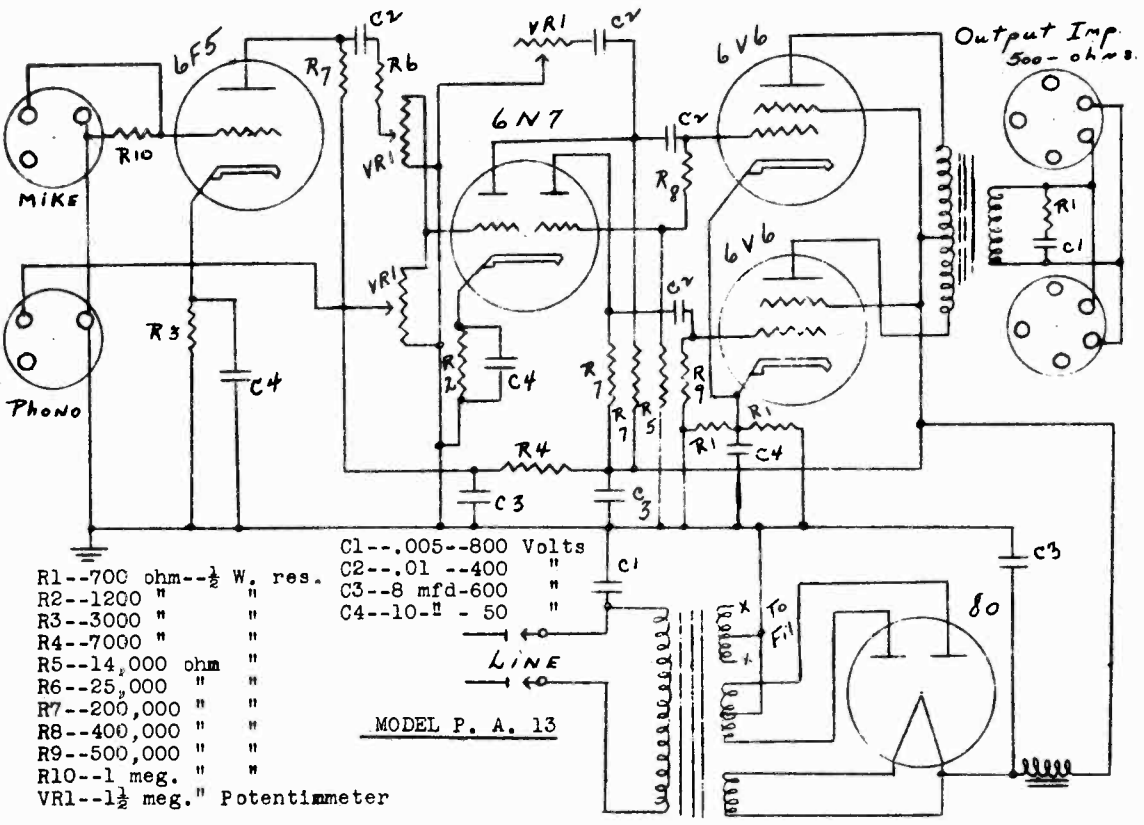
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of trimmers mentioned below:
I. F. alignment use any band position.	I.F. 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 to 540 K.C. Band	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 Approx. 1400 K.C.	Exactly 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	None	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 Ant. 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.





SETCHELL CARLSON, INC.

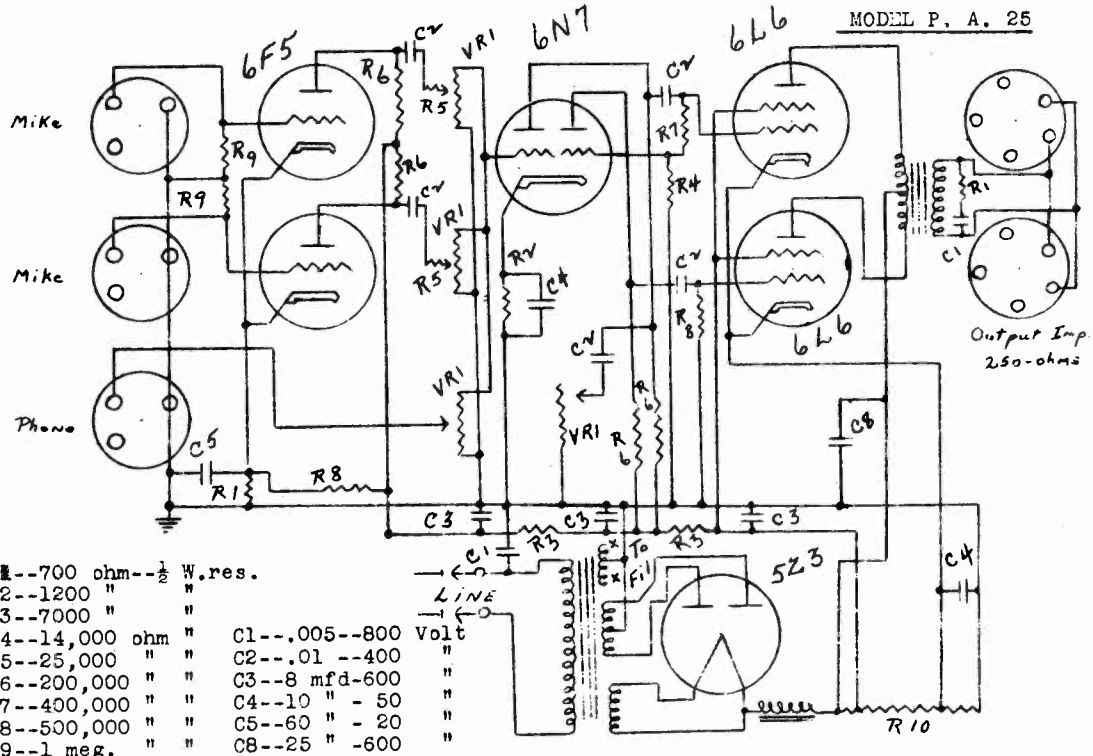
MODEL PA-13
MODEL PA-25



R1--700 ohm--½ W. res.
R2--1200 " " "
R3--3000 " " "
R4--7000 " " "
R5--14,000 ohm " "
R6--25,000 " " "
R7--200,000 " " "
R8--400,000 " " "
R9--500,000 " " "
R10--1 meg. " "
VR1--1½ meg." Potentimmeter

C1--.005--800 Volts
C2--.01 --400 "
C3--8 mfd-600 "
C4--10-" - 50 "

MODEL P. A. 13

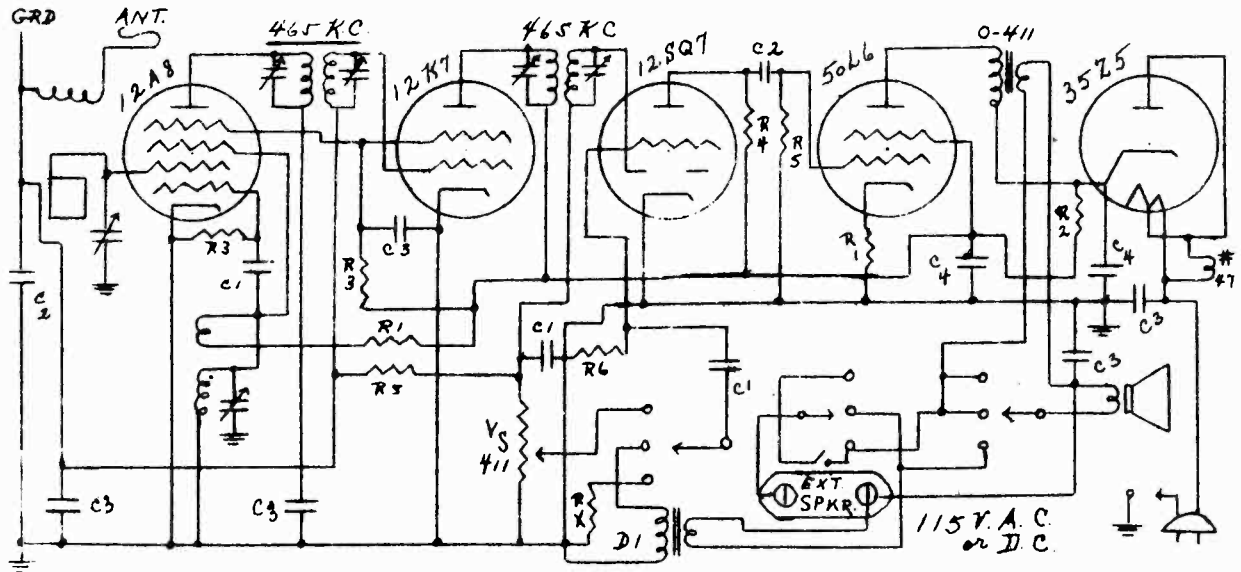


R1--700 ohm--½ W.res.
R2--1200 " "
R3--7000 " "
R4--14,000 ohm " "
R5--25,000 " " "
R6--200,000 " " "
R7--400,000 " " "
R8--500,000 " " "
R9--1 meg. " "
R10--6635 Ohm tapped 100 W.
VR1--1½ meg." Potentiometer

C1--.005--800 Volt "
C2--.01 --400 "
C3--8 mfd-600 "
C4--10 " - 50 "
C5--60 " - 20 "
C8--25 " -600 "

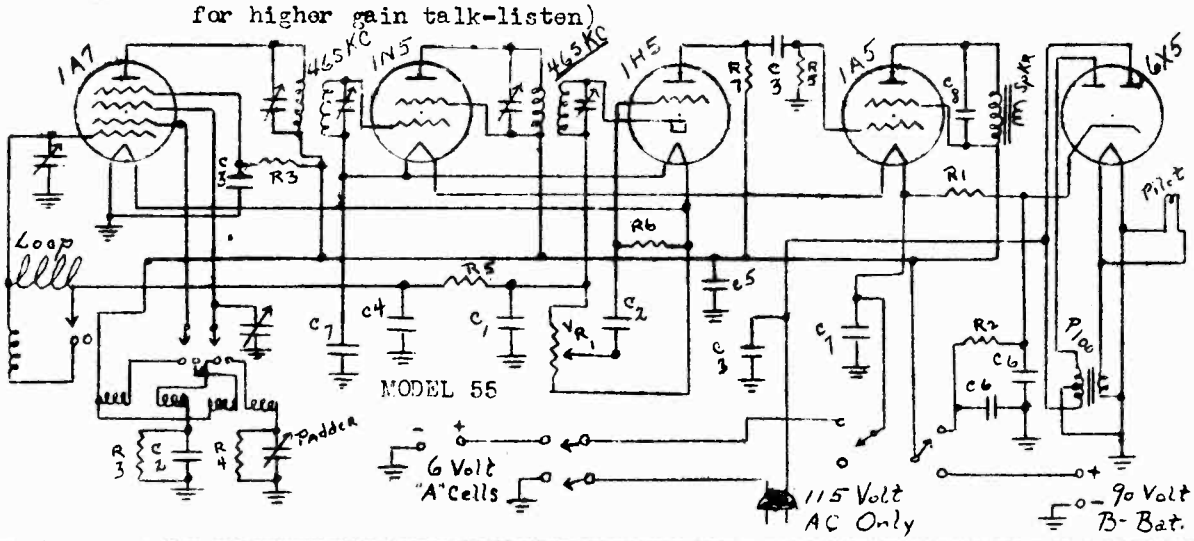
MODEL 411
RADIO-DOR-PHONE
MODEL 55

SETCHELL CARLSON, INC.

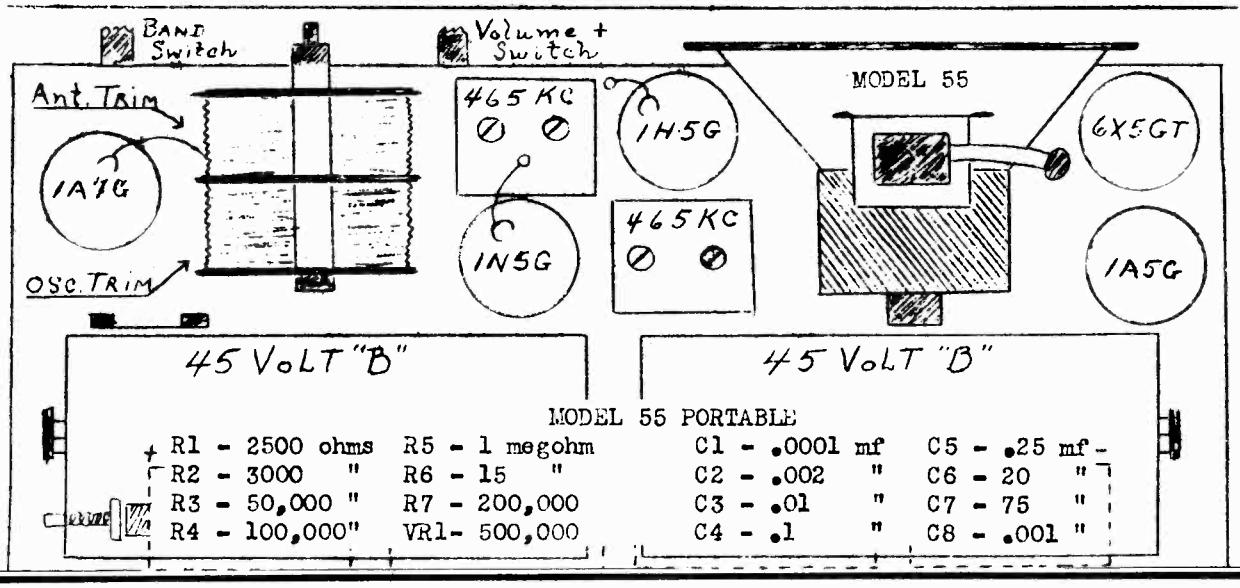


MODEL 411 RADIO-DOR-PHONE

R1 - 200 ohms
R2 - 1200 "
R3 - 50,000 "
R4 - 200,000"
R5 - 500,000 ohms
R6 - 15 megohms
RX - 100,000 ohms (Raise or omit for higher gain talk-listen)
C1 - .0005 mf
C2 - .01 "
C3 - .05 "
C4 - 50-20 150V.
VS411 - 0.5 meg.Vol.Cont. with switch



MODEL 55

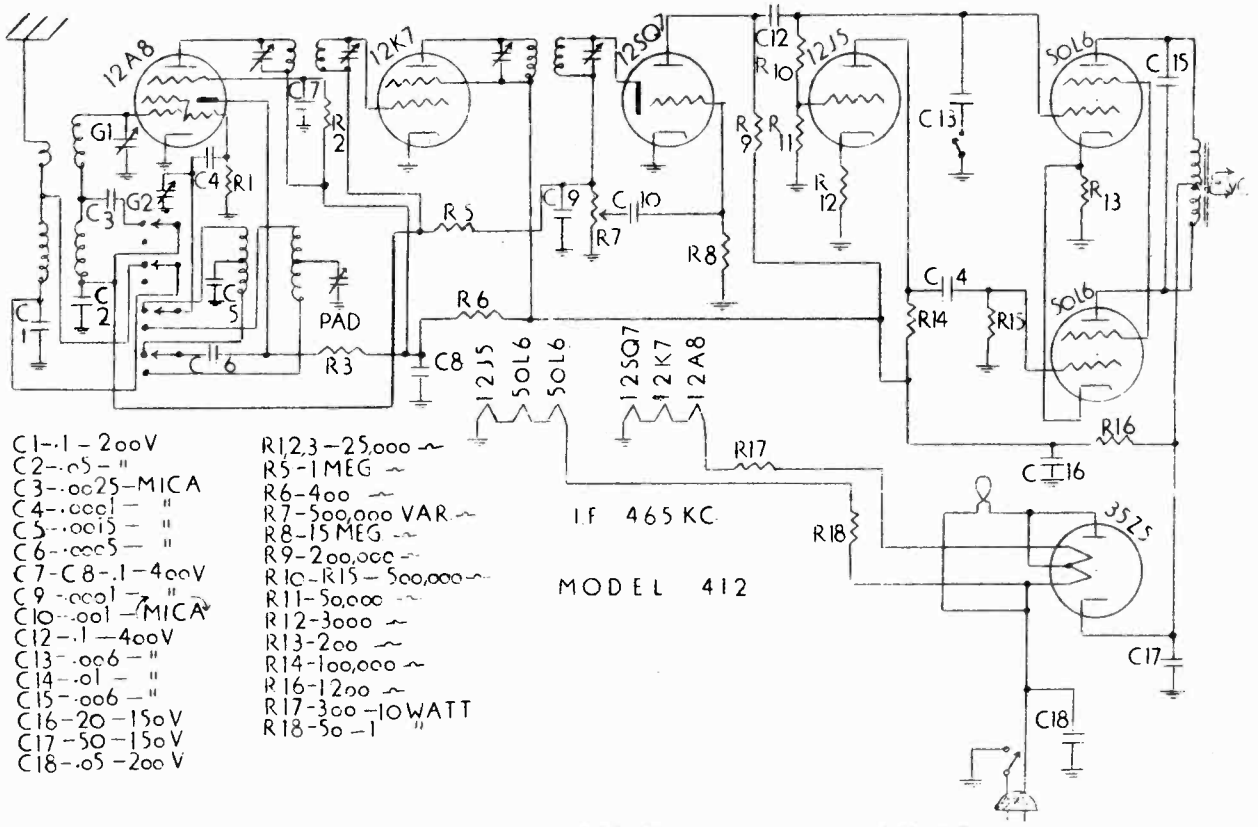


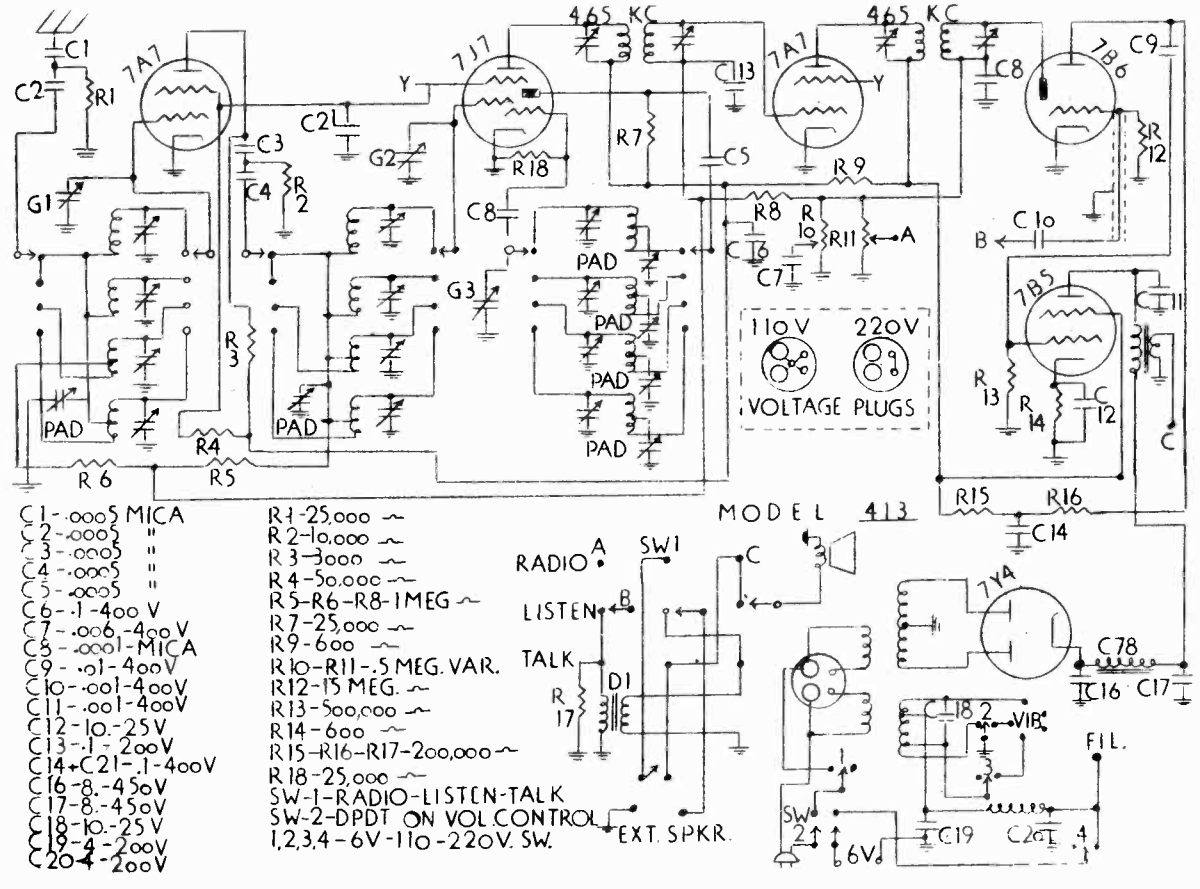
MODEL 55 PORTABLE

R1 - 2500 ohms
R2 - 3000 "
R3 - 50,000 "
R4 - 100,000"
R5 - 1 megohm
R6 - 15 "
R7 - 200,000
VR1- 500,000
C1 - .0001 mf
C2 - .002 "
C3 - .01 "
C4 - .1 "
C5 - .25 mf
C6 - 20 "
C7 - 75 "
C8 - .001 "

SETCHELL CARLSON, INC.

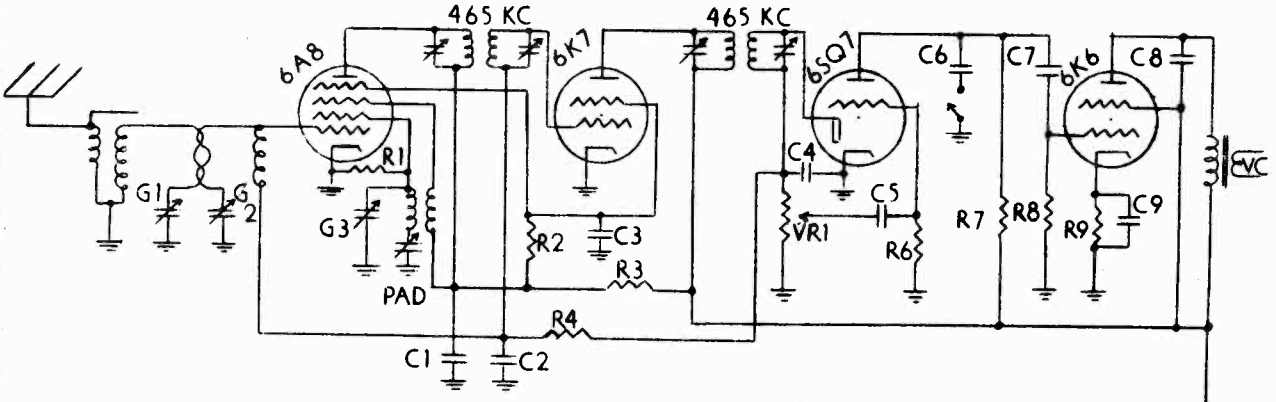
MODEL 412
MODEL 413





MODEL 589
MODEL 4160

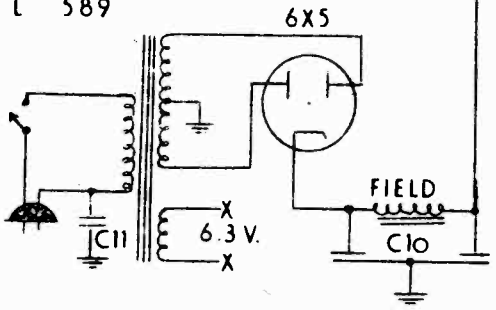
SETCHELL CARLSON, INC.

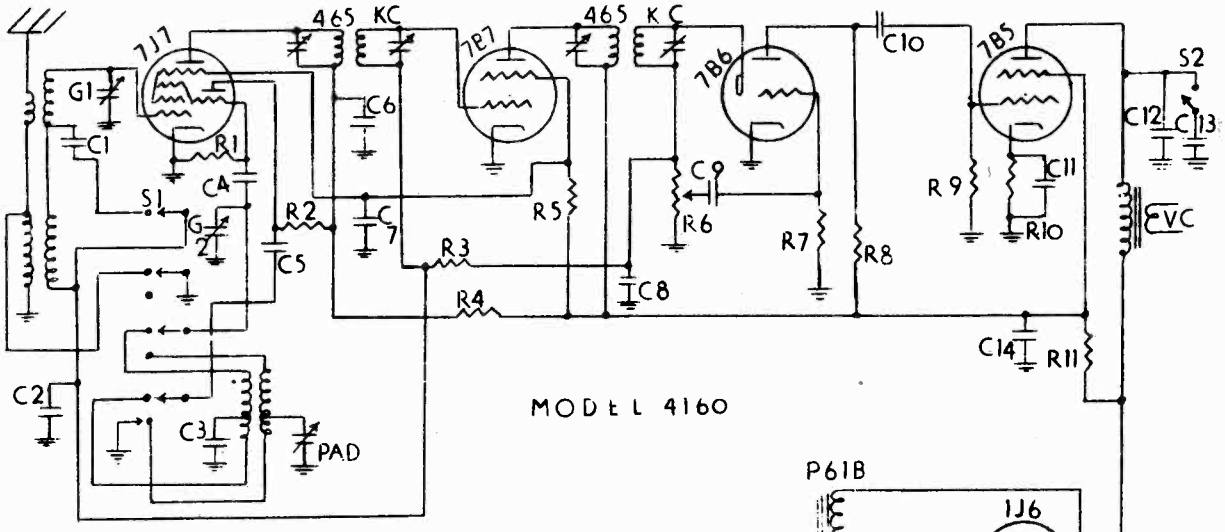


C1 — .1 - 400 V
C2 — .1 - 200 V
C3 — .1 - 400 V
C4 — .00025 - 800V
C5 — .001 - 800V
C6 — .006 - 800V
C7 — .01 - 800V
C8 — .001 - 800V
C9 — 10. - 25 V
C10 — 8-8-450V
C11 — .05 - 400V

R1 - 50,000 ~
R2 - 50,000 ~
R3 - 3000 ~
R4 - 1 MEG
VR1 - 500,000 ~
R6 - 15 - MEG
R7 - 500,000 ~
R8 - 500,000 ~
R9 - 600 ~

MODEL 589

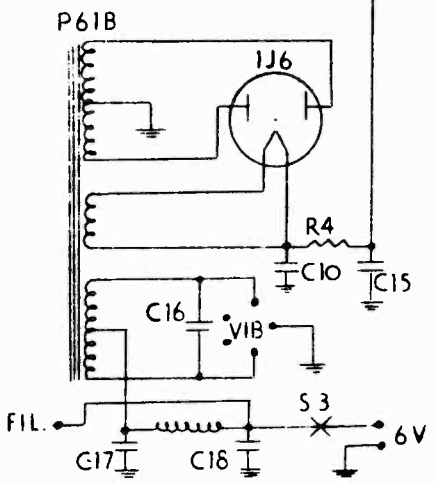


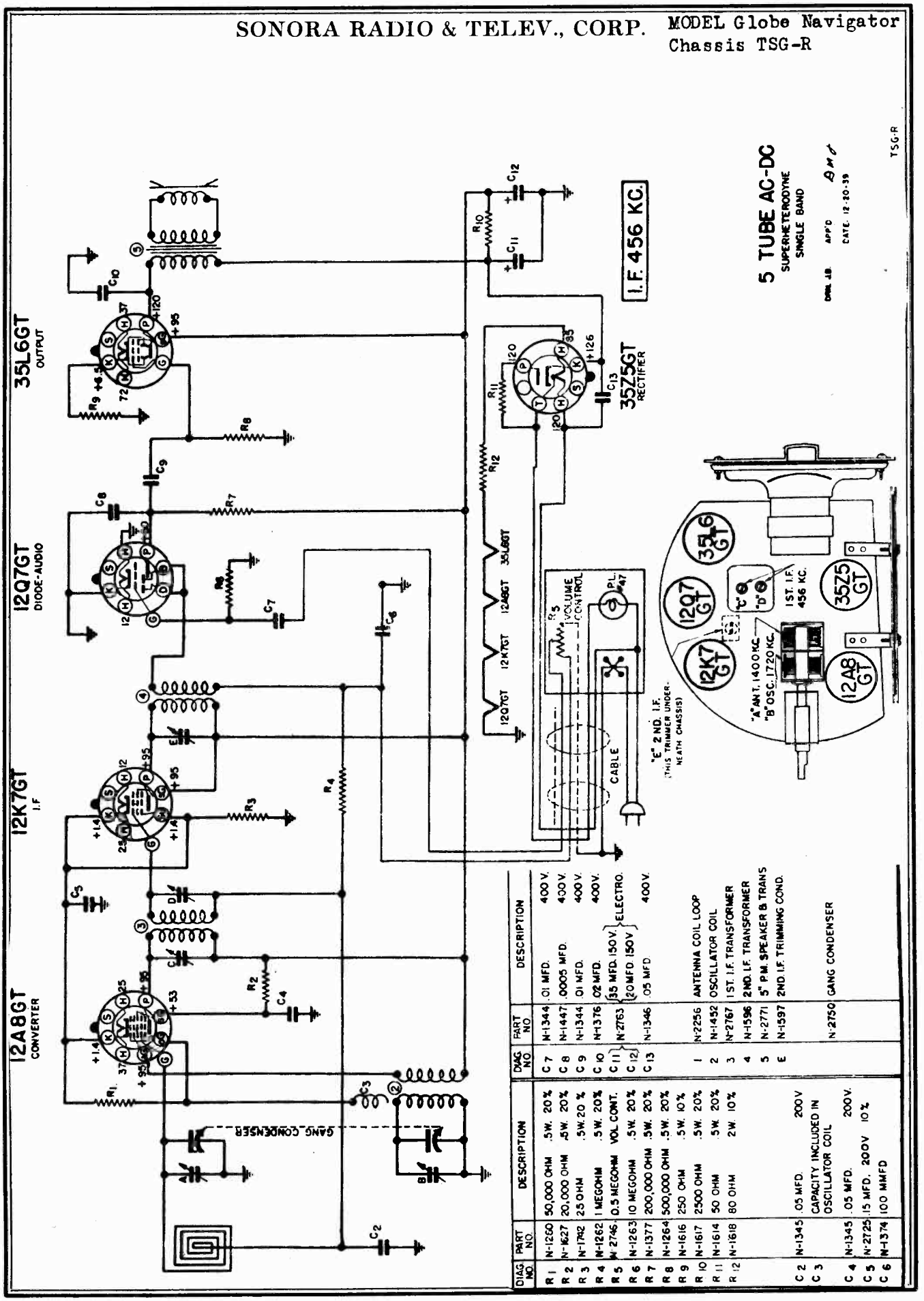


MODEL 4160

C1 - .0025 MICA
C2 - .05 - 200 V
C3 - .0015 MICA
C4 - .0001 "
C5 - .0005 "
C6 - .1 - 400 V
C7 - .1 - 400 V
C8 - .0001 MICA
C9 - .001 - 400 V
C10 - .01 - 400 V
C11 - 10. - 25 V
C12 - .001 - 400V
C13 - .01 - 400V
C14 - 20 - 150 V
C15 - 50 - 150V
C16 - 10 - 25 V
C17 - .4 - 200V
C18 - .4 - 200V

R1 - 25,000
R2 - 25,000
R3 - 1 MEG
R4 - 150
R5 - 25,000
R6 - 500,000 VC
R7 - 15 MEG
R8 - 200,000
R9 - 500,000
R10 - 700
R11 - 1200
S1 - 4P2T WAVE SW.
S2 - SPST TONE SW.
S3 - POWER SW.





DIAG NO	PART NO	DESCRIPTION
R 1	N-1260	50,000 OHM .5W. 20%
R 2	N-1627	20,000 OHM .5W. 20%
R 3	N-1742	25 OHM .5W. 20%
R 4	N-1262	1 MEGOHM .5W. 20%
R 5	N-2746	0.5 MEGOHM VOL. CONT.
R 6	N-1263	10 MEGOHM .5W. 20%
R 7	N-1377	200,000 OHM .5W. 20%
R 8	N-1264	500,000 OHM .5W. 20%
R 9	N-1616	250 OHM .5W. 10%
R 10	N-1617	2500 OHM .5W. 20%
R 11	N-1614	50 OHM .5W. 20%
R 12	N-1618	80 OHM 2W. 10%
C 2	N-1345	.05 MFD. 200V
C 3		CAPACITY INCLUDED IN OSCILLATOR COIL
C 4	N-1345	.05 MFD. 200V.
C 5	N-2725	.15 MFD. 200V 10%
C 6	N-1374	100 MMFD

DIAG NO	PART NO	DESCRIPTION
C 7	N-1344	.01 MFD. 400 V.
C 8	N-1447	.0005 MFD. 400 V.
C 9	N-1344	.01 MFD. 400 V.
C 10	N-1376	.02 MFD. 400V.
C 11	N-2763	{35 MFD. 150 V. / 20 MFD 150 V.} ELECTRO.
C 12		
C 13	N-1346	.05 MFD 400 V.
1	N-2256	ANTENNA COIL LOOP
2	N-1452	OSCILLATOR COIL
3	N-2767	1ST. I.F. TRANSFORMER
4	N-1596	2ND. I.F. TRANSFORMER
5	N-2771	5" P.M. SPEAKER & TRANS
E	N-1597	2ND. I.F. TRIMMING COND.
	N-2750	GANG CONDENSER

MODEL Globe Navigator
Chassis TSG-R
Chassis LD, LDU

SONORA RADIO & TELEV., CORP.

CHASSIS LD, LDU

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, 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 (12SA7) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the black lead of the electrolytic condenser. 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 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.

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 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.

MODEL GLOBE NAVIGATOR
Chassis TSG-R

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 (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.

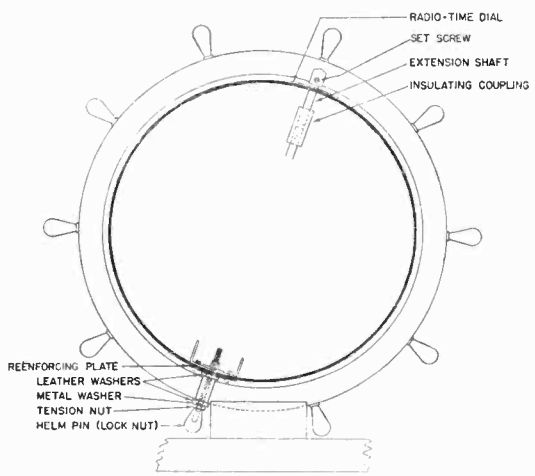
BROADCAST BAND ALIGNMENT. Remove chassis from the GLOBE and set it up on the bench. Care should be taken to have no iron or other metal near the loop. Do not make this set-up on a metal bench.

Make a loop consisting of 10 to 20 turns of wire approximately 3 to 4 inches 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 for maximum output. Check the sensitivity at 600 KC to determine if the gang or the coils have been damaged.

REMOVAL OF CHASSIS FOR SERVICING

To remove chassis for servicing and tube replacement, the following proceedure should be used:
(1) Slit the Equator band around the GLOBE with a sharp knife or razor blade. (The GLOBE consists of two halves joined at the horizontal center line or Equator.)
(2) Remove the helm pin, nut, washers and screw at the lower axial pivot on the meridian, the ring which encircles the GLOBE (South Pole.)
(3) Remove the set screw of the upper axial pivot on the meridian (North Pole.)
(4) Remove GLOBE from meridian ring mounting and separate upper half of GLOBE.
The lower half of the GLOBE can be detached from the chassis assembly by removing two screws at the bottom.

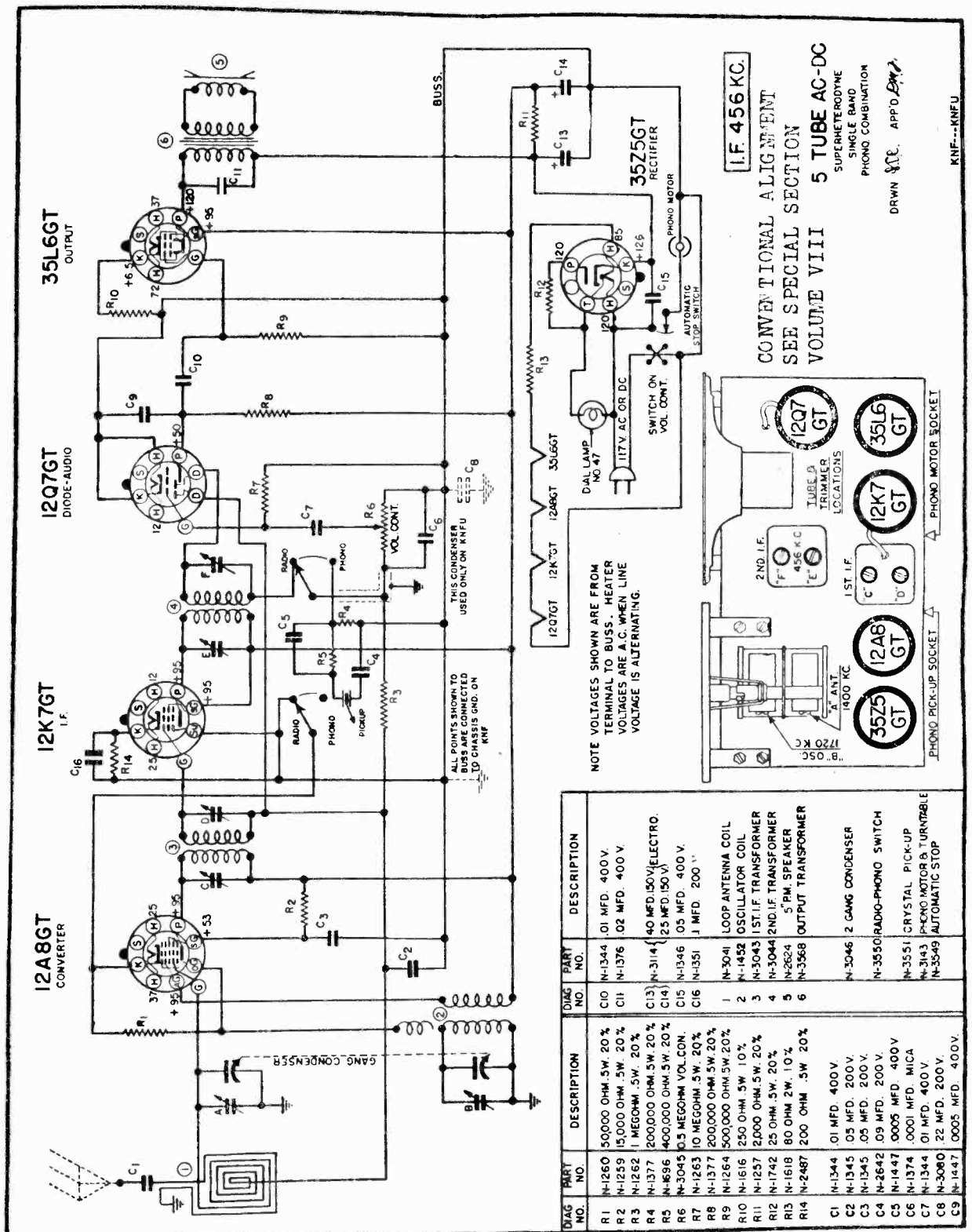


The chassis and GLOBE should be assembled by reversing the proceedure outlined above with the exception of the lower axial pivot fastening.

At this point the GLOBE tension should be adjusted. The hexagon nut serves this purpose and should be adjusted to a point whereby the GLOBE tension is sufficient to maintain an even balance of the GLOBE in any position and still permit the GLOBE to be rotated smoothly. When the adjustment is correct, screw on the helm pin tightly against the adjusting nut. This serves as a lock nut.

Two spare Equator bands are furnished attached to the inner side of the GLOBE. After the GLOBE is completely assembled, the Equator band tape should be cemented around the GLOBE where the upper and lower halves are joined.

SONORA RADIO & TELEV., CORP. Chassis KNF, KNFU

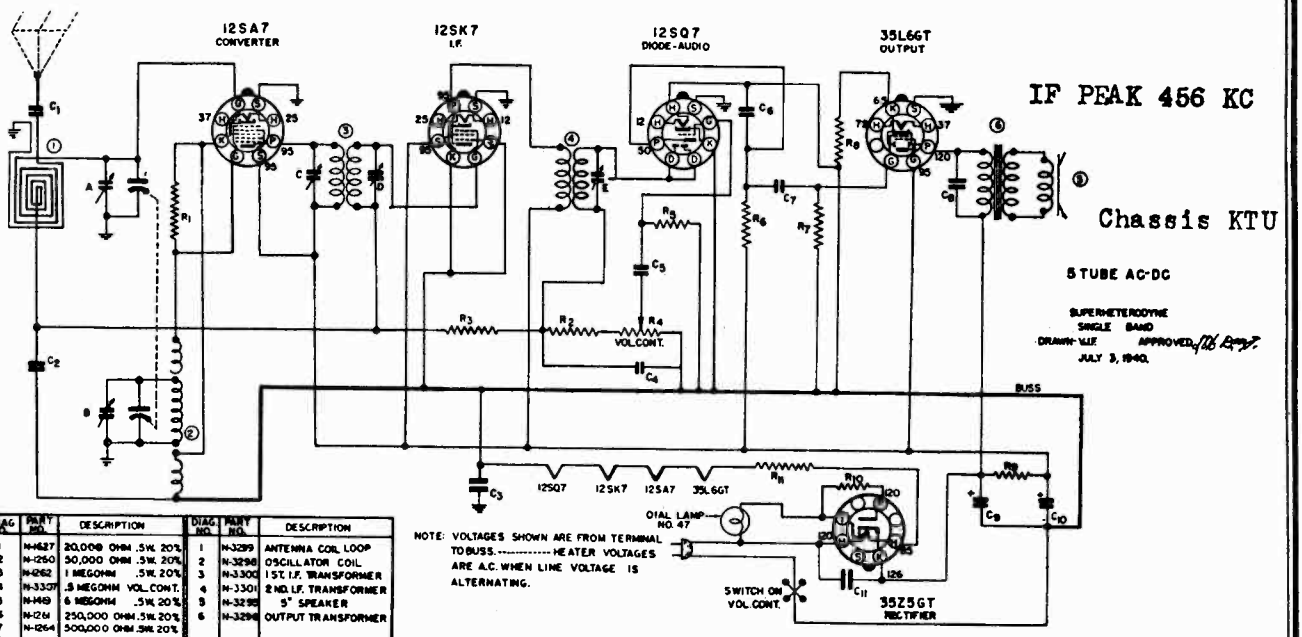


DIAG NO.	PART NO.	DESCRIPTION
R1	N-1260	50,000 OHM .5W. 20%
R2	N-1259	15,000 OHM .5W. 20%
R3	N-1262	1 MEGOHM .5W. 20%
R4	N-1377	200,000 OHM .5W. 20%
R5	N-1696	400,000 OHM .5W. 20%
R6	N-3045	0.5 MEGOHM VOL.CON.
R7	N-1263	10 MEGOHM .5W. 20%
R8	N-1377	200,000 OHM .5W. 20%
R9	N-1264	500,000 OHM .5W. 20%
R10	N-1616	250 OHM .5W. 10%
R11	N-1257	2,000 OHM .5W. 20%
R12	N-1742	25 OHM .5W. 20%
R13	N-1618	80 OHM 2W. 10%
R14	N-2487	200 OHM .5W 20%
C1	N-1344	.01 MFD. 400 V.
C2	N-1345	.05 MFD. 200 V.
C3	N-1345	.05 MFD. 200 V.
C4	N-2642	.09 MFD. 200 V.
C5	N-1447	.0005 MFD 400 V
C6	N-1374	.0001 MFD. MICA
C7	N-1344	.01 MFD. 400 V
C8	N-3080	22 MFD. 200 V.
C9	N-1447	.0005 MFD. 400 V.

DIAG NO.	PART NO.	DESCRIPTION
C10	N-1344	.01 MFD. 400 V.
C11	N-1376	.02 MFD. 400 V.
C13	N-3114	40 MFD.150 V. ELECTRO.
C14		25 MFD.150 V.
C15	N-1346	.05 MFD. 400 V.
C16	N-1351	.1 MFD. 200 V.
1	N-3041	LOOP ANTENNA COIL
2	N-1452	OSCILLATOR COIL
3	N-3043	1ST I.F. TRANSFORMER
4	N-3044	2ND I.F. TRANSFORMER
5	N-2624	5" PM. SPEAKER
6	N-3568	OUTPUT TRANSFORMER
	N-3046	2 GANG CONDENSER
	N-3550	RADIO-PHONO SWITCH
	N-3551	CRYSTAL PICK-UP
	N-3143	PHONO MOTOR & TURNTABLE
	N-3549	AUTOMATIC STOP

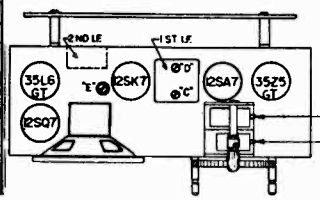
Chassis KTU
Chassis KF, KFU

SONORA RADIO & TELEV., CORP.



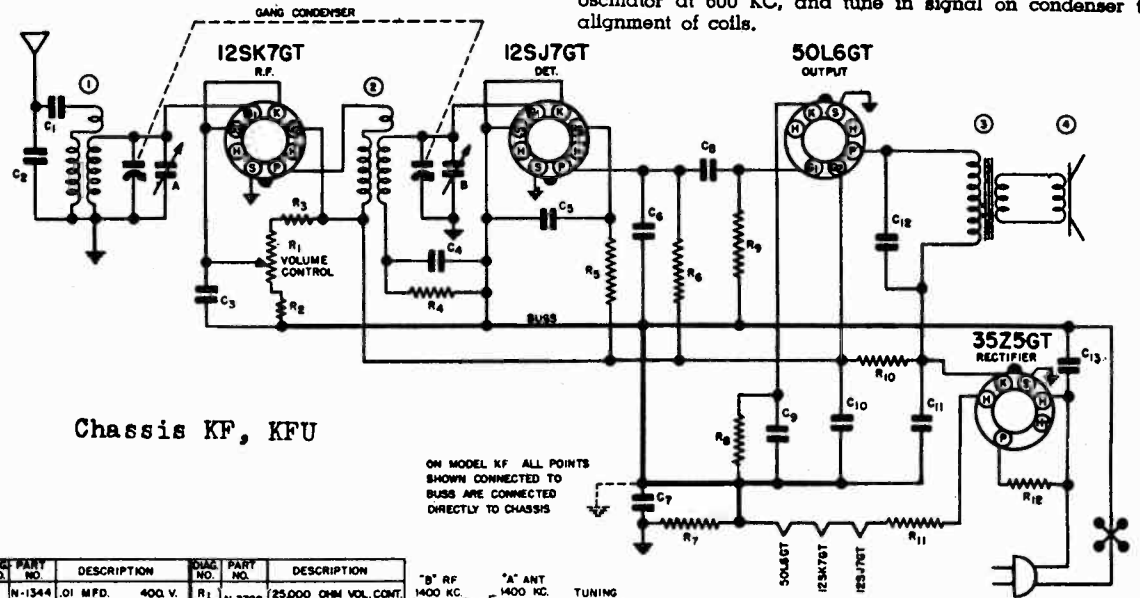
DIAG. NO.	PART NO.	DESCRIPTION
R1	N-1427	20,000 OHM .5W. 20%
R2	N-1250	50,000 OHM .5W. 20%
R3	N-1252	1 MEGOHM .5W. 20%
R4	N-3307	.5 MEGOHM VOL. CONT.
R5	N-1419	6 MEGOHM .5W. 20%
R6	N-1261	250,000 OHM .5W. 20%
R7	N-1264	500,000 OHM .5W. 20%
R8	N-1516	250 OHM .5W. 10%
R9	N-3341	1000 OHM .5W. 20%
R10	N-1742	25 OHM .5W. 20%
R11	N-1518	80 OHM .5W. 10%
C1	N-1344	.01 MFD. 400V.
C2	N-1345	.05 MFD. 200 V.
C3	N-3080	22 MFD. 200V.
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. 50V.
C11	N-1346	.05 MFD. 400V.

DIAG. NO.	PART NO.	DESCRIPTION
1	N-3299	ANTENNA COIL LOOP
2	N-3298	OSCILLATOR COIL
3	N-3300	1ST I.F. TRANSFORMER
4	N-3301	2 ND. I.F. TRANSFORMER
5	N-3295	5" SPEAKER
6	N-3296	OUTPUT TRANSFORMER
	N-3297	2 GANG CONDENSER



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 (12SA7) 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.

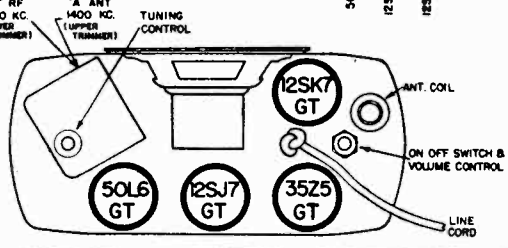
BROADCAST BAND ALIGNMENT. Connect the test oscillator to the antenna of the set through a 200 mmfd. (.0002) condenser. With the gang condenser set at minimum capacity, set the test oscillator at 1720 K.C. and adjust the oscillator (or 1720 KC trimmer) on gang condenser. Next—set the test oscillator at 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.



Chassis KF, KFU

DIAG. NO.	PART NO.	DESCRIPTION
C1	N-1344	.01 MFD. 400. V.
C2	——	20. MMFD. BUILT IN
C3	N-1345	.05 MFD. 200. V
C4	N-1345	.05 MFD. 200. V
C5	N-1344	.01 MFD. 400. V.
C6	N-1374	100. MMFD. MICA
C7	N-2642	.09 MFD. 200 V. 20% USED ON MODEL KFU ONLY
C8	N-1344	.01 MFD. 400. V.
C9	N-3734	20 MFD. 25V. ELECTROLYTIC
C10		15 MFD. 150 V.
C11		40 MFD. 150 V.
C12	N-1344	.01 MFD. 400. V
C13	N-1346	.05 MFD. 400 V.
	N-3731	GANG CONDENSER

DIAG. NO.	PART NO.	DESCRIPTION
R1 R2	N-3728	25,000 OHM VOL. CONT. 110 OHM 20% .5 W. IN VOLUME CONTROL
R3	N-1684	75,000 OHM 20% .5 W.
R4	N-1418	3.5 MEG. 20% .5 W.
R5	N-1835	6. MEG. 20% .5 W.
R6	N-1262	1. MEG. 20% .5W.
R7	N-1378	2. MEG. 20% .5 W. USED ON MODEL KFU ONLY
R8	N-1787	250. OHM 10% .5 W.
R9	N-1264	.5 MEG. 20% .5 W.
R10	N-1417	3 000. OHM 20% .5 W.
R11	N-1618	80. OHM 10% 2. W.
R12	N-1742	25. OHM 20% 5 W.
1	N-3722	ANTENNA COIL
2	N-3733	R.F. COIL
3	N-3729	OUTPUT TRANS.
4	N-3730	SPEAKER



4 TUBE T.R.F.

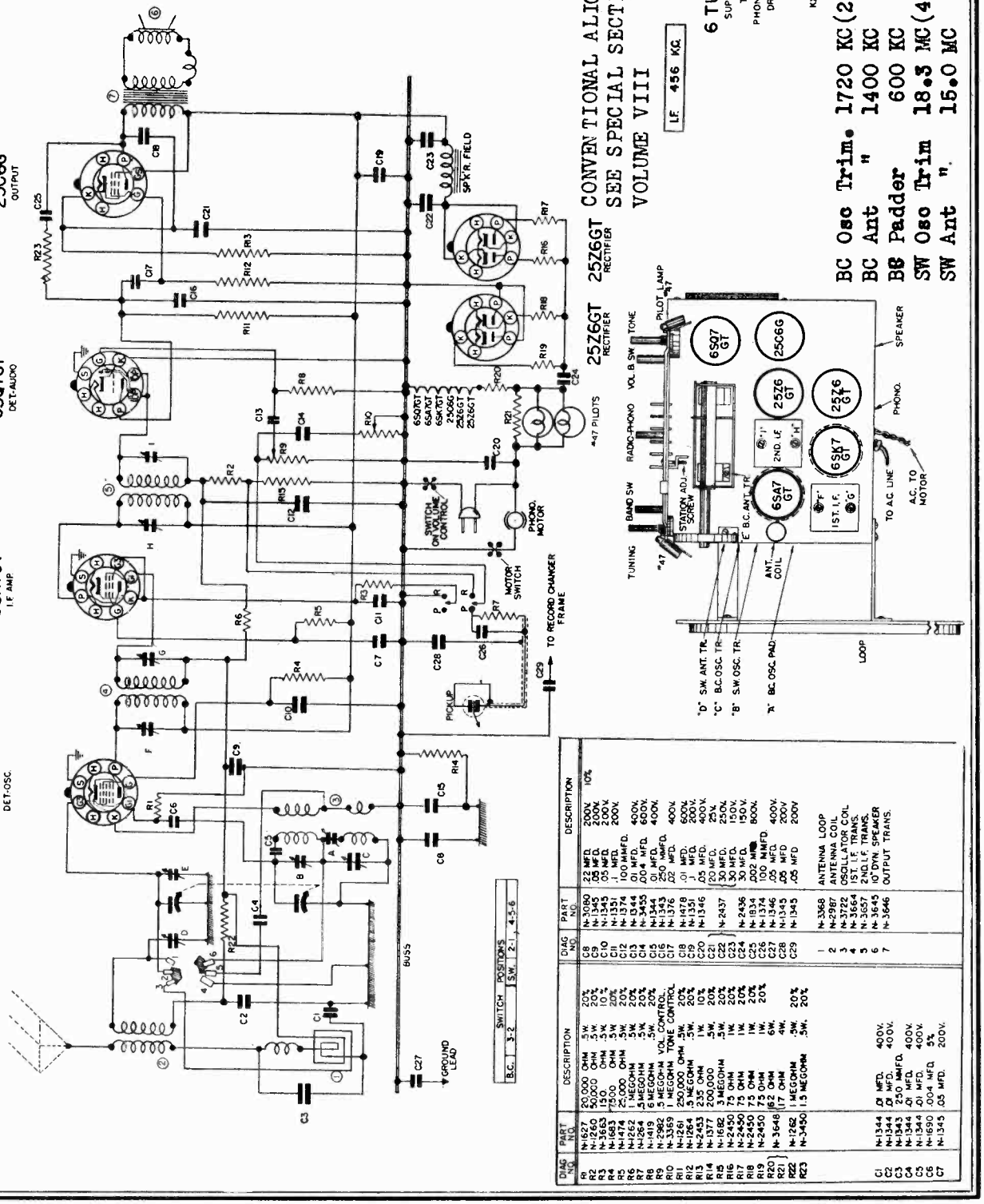
DRWN. R.K. APP. L.O.R. DWG.

9-10-40

KF-KFU

SONORA RADIO & TELEV., CORP.

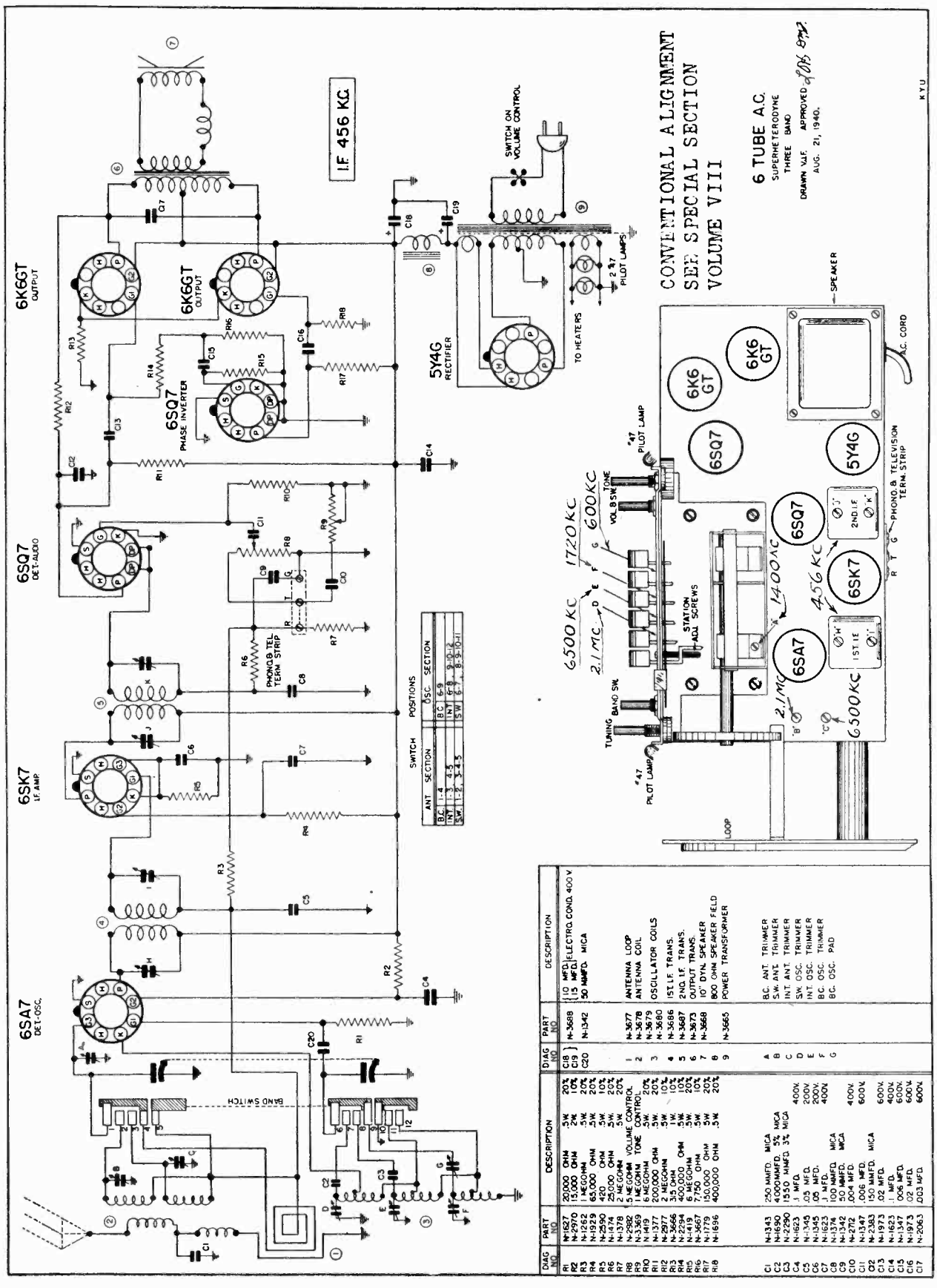
Chassis KXF, KXFU



DIAG NO	PART NO	DESCRIPTION
R1	N-1627	20,000 OHM .5W. 20%
R2	N-1260	50,000 OHM .5W. 20%
R3	N-3663	150 OHM .5W. 10%
R4	N-1683	75,000 OHM .5W. 20%
R5	N-1474	25,000 OHM .5W. 20%
R6	N-1262	1 MEGOHM .5W. 20%
R7	N-1264	.5 MEGOHM .5W. 20%
R8	N-1419	6 MEGOHM .5W. 20%
R9	N-2982	.5 MEGOHM VOL. CONTROL
R10	N-3369	1 MEGOHM TONE CONTROL
R11	N-1261	250,000 OHM .5W. 20%
R12	N-1264	.5 MEGOHM .5W. 20%
R13	N-2453	235 OHM 1W. 10%
R14	N-1677	300,000 OHM .5W. 20%
R15	N-1682	3 MEGOHM .5W. 20%
R16	N-2450	75 OHM 1W. 20%
R17	N-2450	75 OHM 1W. 20%
R18	N-2450	75 OHM 1W. 20%
R19	N-2450	75 OHM 1W. 20%
R20	N-3648	162 OHM 6W.
R21		117 OHM 4W.
R22	N-1262	1 MEGOHM .5W. 20%
R23	N-3450	1.5 MEGOHM .5W. 20%
C1	N-1344	.01 MFD. 400V.
C2	N-1343	.250 MMFD. 400V.
C3	N-1344	.01 MFD. 400V.
C4	N-1344	.01 MFD. 400V.
C5	N-1690	.004 MFD. 5%
C6	N-1345	.05 MFD. 200V.
C7		.23 MFD. 200V.
C8	N-3060	.05 MFD. 200V.
C9	N-1345	.05 MFD. 200V.
C10	N-1345	.1 MFD. 200V.
C11	N-1351	100 MMFD.
C12	N-1374	.01 MFD. 400V.
C13	N-1344	.004 MFD. 600V.
C14	N-1345	.02 MFD. 400V.
C15	N-1344	250 MMFD.
C16	N-1343	.02 MFD. 400V.
C17	N-1376	.01 MFD. 600V.
C18	N-1478	.1 MFD. 200V.
C19	N-1351	.05 MFD. 400V.
C20	N-1346	20 MFD. 25V.
C21	N-2437	30 MFD. 250V.
C22		30 MFD. 150V.
C23		30 MFD. 150V.
C24	N-2436	.002 MFD. 600V.
C25	N-1834	100 MMFD.
C26	N-1374	.05 MFD. 400V.
C27	N-1346	.05 MFD. 200V.
C28	N-1345	.05 MFD. 200V.
C29	N-1345	
		— N-3358 ANTENNA LOOP
		2 N-2987 ANTENNA COIL
		3 N-3722 OSC. COIL
		4 N-3664 1ST. I.F. TRANS.
		5 N-3657 2ND. I.F. TRANS.
		6 N-3645 10" DYN. SPEAKER
		7 N-3646 OUTPUT TRANS.

Chassis KY, KYU

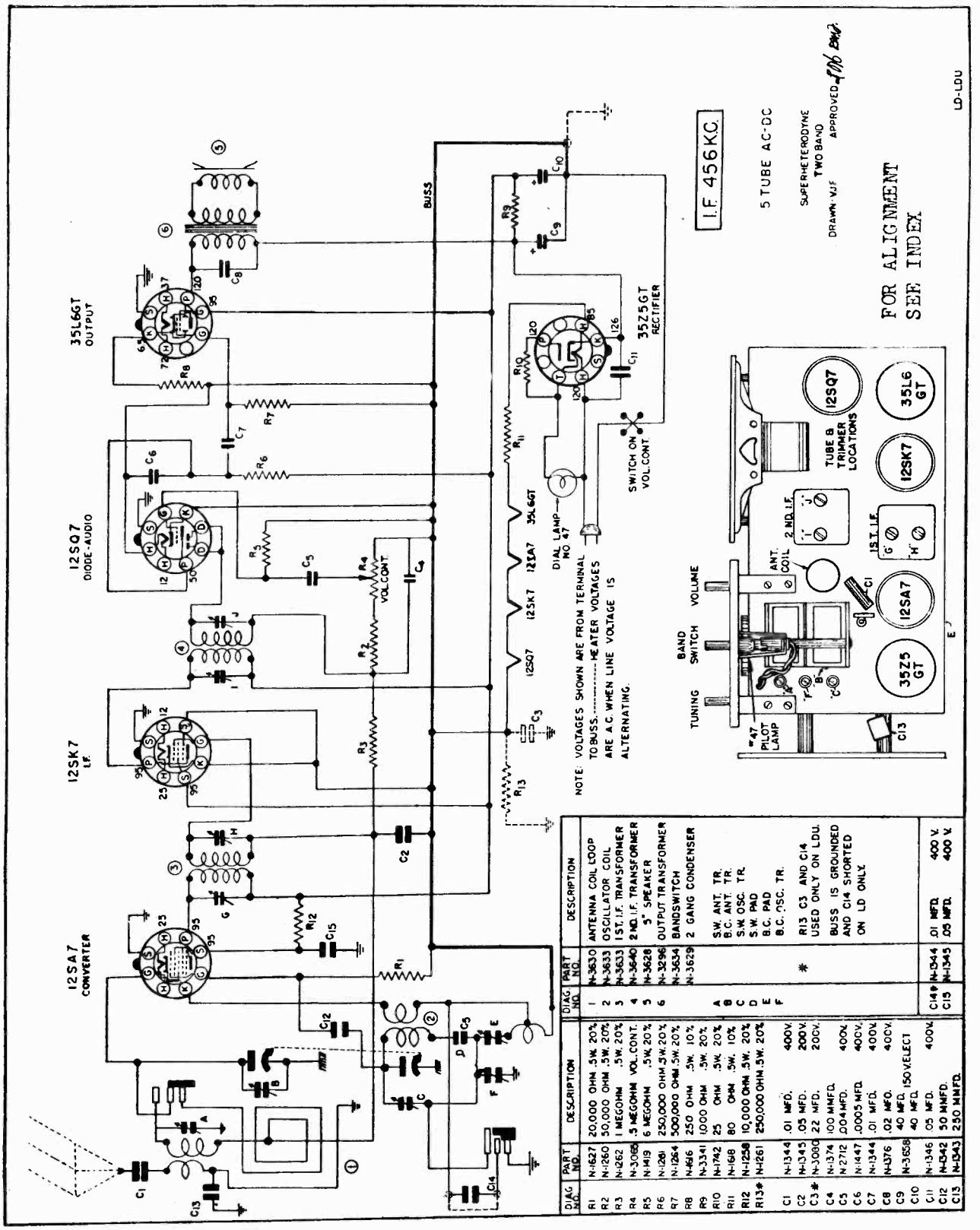
SONORA RADIO & TELEV., CORP.



DIAG NO	PART NO	DESCRIPTION			DIAG NO	PART NO	DESCRIPTION
R1	N-1627	20,000 OHM	.5W	20%	C18 }	N-3688	.10 MFD. ELECTRO. COND. 400 V
R2	N-2970	15,000 OHM	.5W	10%	C19 }		.15 MFD.
R3	N-1262	1 MEGOHM	.5W	20%	C20	N-1342	50 MMFD. MICA
R4	N-1619	65,000 OHM	.5W	20%			
R5	N-2590	420 OHM	.5W	10%			
R6	N-1474	25,000 OHM	.5W	20%			
R7	N-1378	2 MEGOHM	.5W	20%		N-3677	ANTENNA LOOP
R8	N-2982	.5 MEGOHM VOLUME CONTROL			1	N-3678	ANTENNA COIL
R9	N-3369	1 MEGOHM TONE CONTROL			2	N-3679	OSCILLATOR COILS
R10	N-1419	2,000 OHM	.5W	20%	3	N-3680	
R11	N-1377	800 OHM	.5W	20%			
R12	N-2977	2 MEGOHM	.5W	10%		N-3686	1ST I.F. TRANS.
R13	N-3666	3.5 OHM	1W.	10%	4	N-3687	2ND. I.F. TRANS.
R14	N-2294	400,000 OHM	.5W	10%	5	N-3673	OUTPUT TRANS.
R15	N-1419	6 MEGOHM	.5W	20%	6	N-3668	10" DYN. SPEAKER
R16	N-1377	150,000 OHM	.5W	20%	7		800 OHM SPEAKER FIELD
R17	N-1378	2 MEGOHM	.5W	20%	8	N-3665	POWER TRANSFORMER
R18	N-1696	400,000 OHM	.5W	20%	9		
C1	N-1343	250 MMFD. MICA			A		B.C. ANT. TRIMMER
C2	N-1690	4000MMFD. 5% MICA			B		S.W. ANT. TRIMMER
C3	N-2290	1550 MMFD. 3% MICA			C		INT. ANT. TRIMMER
C4	N-1623	.1 MFD.		400V	D		S.W. OSC. TRIMMER
C5	N-1345	.05 MFD.		200V	E		INT. OSC. TRIMMER
C6	N-1345	.05 MFD.		200V	F		B.C. OSC. TRIMMER
C7	N-1623	.1 MFD.		400V	G		B.C. OSC. PAD
C8	N-1374	100 MMFD.	MICA				
C9	N-1342	50 MMFD.	MICA				
C10	N-272	.004 MFD.		400V			
C11	N-1347	.006 MFD.		600V			
C12	N-2383	150 MMFD.	MICA				
C13	N-1973	.02 MFD.		600V			
C14	N-1623	.1 MFD.		400V			
C15	N-1347	.006 MFD.		600V			
C16	N-1973	.02 MFD.		600V			
C17	N-2063	.003 MFD.		600V			

SONORA RADIO & TELEV., CORP.

Chassis ID, LDU



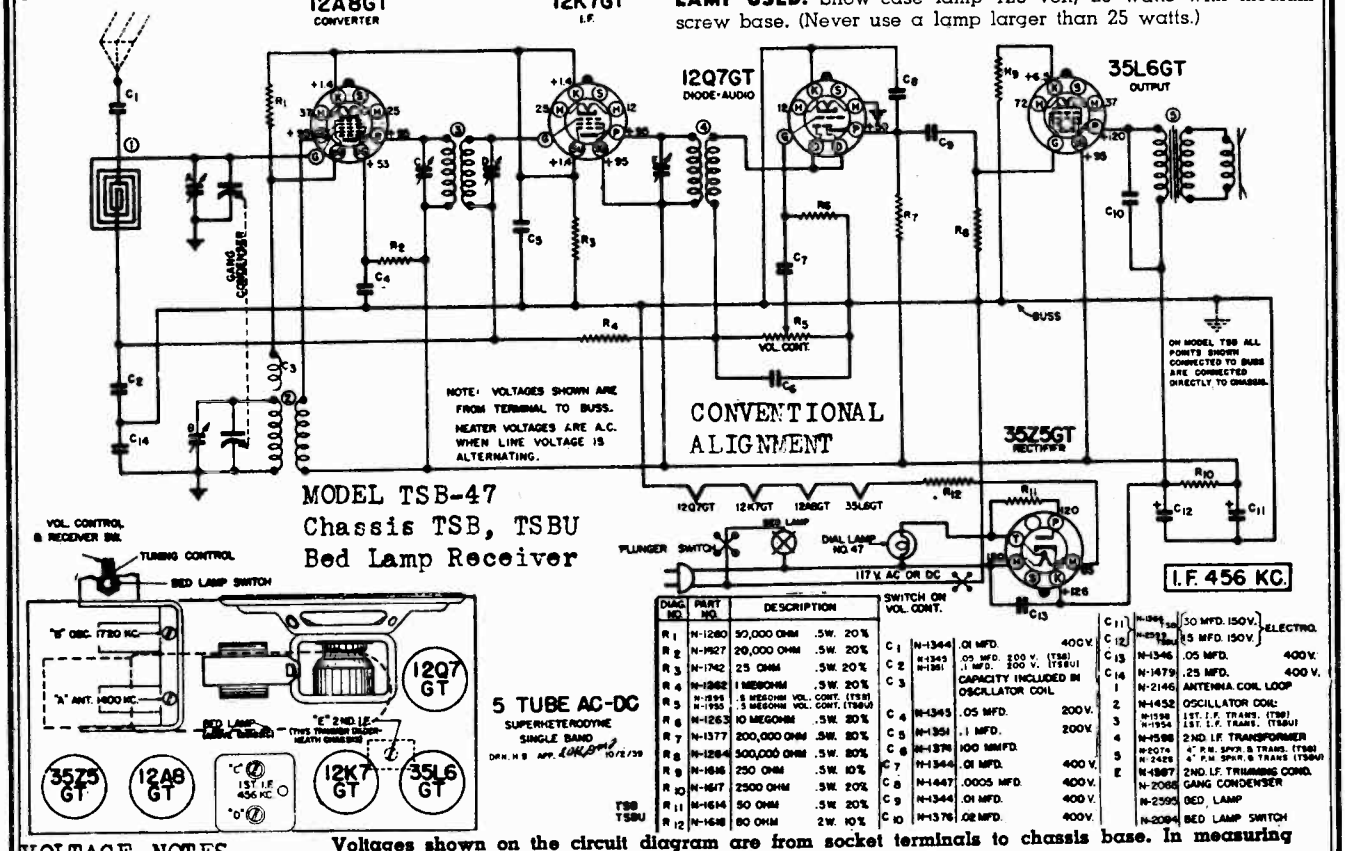
DIAG NO.	PART NO.	DESCRIPTION
R1	N-1627	20,000 OHM .5W. 20%
R2	N-1260	50,000 OHM .5W. 20%
R3	N-262	1 MEGOHM .5W. 20%
R4	N-3063	.5 MEGOHM VOL. CONT.
R5	N-1419	6 MEGOHM .5W. 20%
R6	N-1261	250,000 OHM .5W. 20%
R7	N-1264	500,000 OHM .5W. 20%
R8	N-646	250 OHM .5W. 10%
R9	N-3341	1,000 OHM .5W. 20%
R10	N-1742	25 OHM .5W. 20%
R11	N-1648	80 OHM .5W. 10%
R12	N-1258	10,000 OHM .5W. 20%
R13*	N-1261	250,000 OHM .5W. 20%
C1	N-1344	.01 MFD. 400V.
C2	N-1345	.05 MFD. 200V.
C3 *	N-3060	.22 MFD. 200V.
C4	N-1374	100 MMFD. 400V.
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-3658	40 MFD. 150 V. ELECT
C10		40 MFD.
C11	N-1346	.05 MFD. 400V.
C12	N-542	50 MMFD.
C13	N-543	230 MMFD.

DIAG NO.	PART NO.	DESCRIPTION
1	N-3630	ANTENNA COIL LOOP
2	N-3633	OSCILLATOR COIL
3	N-3633	1ST. I.F. TRANSFORMER
4	N-3640	2 ND. I.F. TRANSFORMER
5	N-3628	5" SPEAKER
6	N-3296	OUTPUT TRANSFORMER
	N-3634	BANDSWITCH
	N-3629	2 GANG CONDENSER
A		S.W. ANT. TR.
B		B.C. ANT. TR.
C		S.W. OSC. TR.
D		S.W. PAD
E		B.C. PAD
F		B.C. OSC. TR.
*		R13 C3 AND C14 USED ONLY ON LDU.
		BUSS IS GROUNDED AND C14 SHORTED ON LD ONLY.
C14 #	N-544	.01 MFD. 400 V.
C15	N-1345	.05 MFD. 400 V.

MODEL TSB-47,
Chassis TSB, TSBU
MODEL TSU-105

SONORA RADIO & TELEV., CORP.

LAMP USED. Show case lamp 120 volt, 25 watts with medium screw base. (Never use a lamp larger than 25 watts.)



5 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND

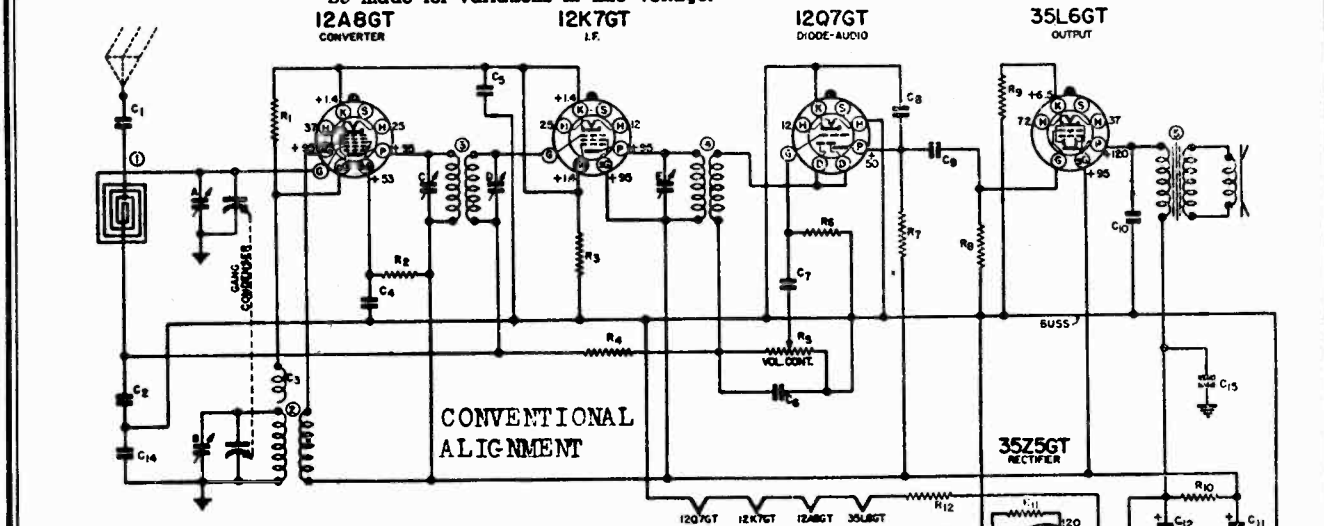
TSB
TSBU

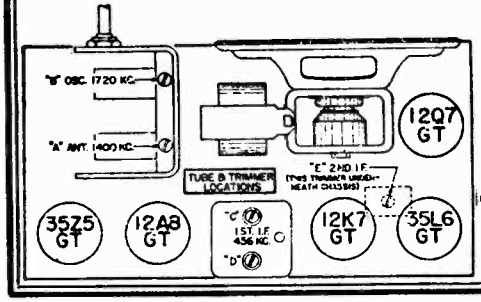
DIAG. NO.	PART NO.	DESCRIPTION		
R 1	N-1280	50,000 OHM	.5W.	20%
R 2	N-1927	20,000 OHM	.5W.	20%
R 3	N-1742	25 OHM	.5W.	20%
R 4	N-1382	1 MEGOHM	.5W.	20%
R 5	N-1599 N-1955	.5 MEGOHM VOL. CONT. (TSB) .5 MEGOHM VOL. CONT. (TSBU)		
R 6	N-1263	10 MEGOHM	.5W.	20%
R 7	N-1377	200,000 OHM	.5W.	20%
R 8	N-1284	500,000 OHM	.5W.	20%
R 9	N-1616	250 OHM	.5W.	10%
R 10	N-1617	2500 OHM	.5W.	20%
R 11	N-1614	50 OHM	.5W.	20%
R 12	N-1618	80 OHM	2W.	10%

C 1	N-1344	.01 MFD.	400 V.
C 2	N-1343 N-1351	.05 MFD. 200 V. (TSB) .1 MFD. 200 V. (TSBU)	
C 3		CAPACITY INCLUDED IN OSCILLATOR COIL	
C 4	N-1345	.05 MFD.	200 V.
C 5	N-1351	.1 MFD.	200 V.
C 6	N-1376	100 MMFD.	
C 7	N-1344	.01 MFD.	400 V.
C 8	N-1447	.0005 MFD.	400 V.
C 9	N-1344	.01 MFD.	400 V.
C 10	N-1376	.02 MFD.	400 V.
C 11	N-1366 N-2094	50 MFD. 150 V. 25 MFD. 150 V.	ELECTRO.
C 12			
C 13	N-1346	.05 MFD.	400 V.
C 14	N-1479	.25 MFD.	400 V.
I	N-2146	ANTENNA COIL LOOP	
2	N-1452	OSCILLATOR COIL	
3	N-1599 N-1954	1ST. I.F. TRANS. (TSB) 1ST. I.F. TRANS. (TSBU)	
4	N-1598	2ND I.F. TRANSFORMER	
5	N-2076 N-2488	4" P.M. SPKR. & TRANS. (TSB) 4" P.M. SPKR. & TRANS. (TSBU)	
E	N-1967	2ND. I.F. TRIMMING COND.	
	N-2088	GANG CONDENSER	
	N-2595	BED LAMP	
	N-2089	BED LAMP SWITCH	

VOLTAGE NOTES FOR BOTH SCHEMATICS

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.





5 TUBE AC-DC
SUPERHETERODYNE
SINGLE BAND

TSU

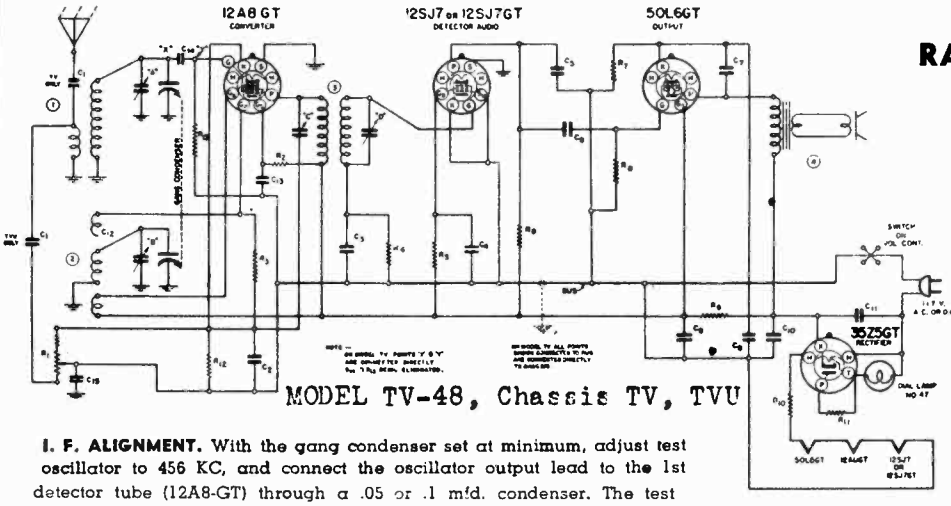
DIAG. NO.	PART NO.	DESCRIPTION		
R 1	N-1280	50,000 OHM	.5W.	20%
R 2	N-1480	30,000 OHM	.5W.	20%
R 3	N-1615	100 OHM	.5W.	10%
R 4	N-1382	1 MEGOHM	.5W.	20%
R 5	N-1955	0.5 MEGOHM	VOL. CONT.	
R 6	N-1263	10 MEGOHM	.5W.	20%
R 7	N-1377	200,000 OHM	.5W.	20%
R 8	N-1284	500,000 OHM	.5W.	20%
R 9	N-1616	250 OHM	.5W.	10%
R 10	N-1617	2500 OHM	.5W.	20%
R 11	N-1614	80 OHM	.5W.	20%
R 12	N-1618	80 OHM	2W.	10%

C 1	N-1344	.01 MFD.	400 V.
C 2	N-1351	.1 MFD.	200 V.
C 3		CAPACITY INCLUDED IN OSCILLATOR COIL	
C 4	N-1345	.05 MFD.	200 V.
C 5	N-1351	.1 MFD.	200 V.
C 6	N-1376	100 MMFD.	
C 7	N-1344	.01 MFD.	400 V.
C 8	N-1447	.0005 MFD.	400 V.
C 9	N-1344	.01 MFD.	400 V.
C 10	N-1376	.02 MFD.	400 V.
C 11	N-1366	25 MFD. 150 V.	ELECTRO.
C 12		15 MFD. 150 V.	
C 13	N-1346	.05 MFD.	400 V.
C 14	N-1479	.25 MFD.	200 V.
C 15	N-1351	.1 MFD.	200 V.
I	N-1994	ANTENNA COIL LOOP	
2	N-1452	OSCILLATOR COIL	
3	N-1954	1ST. I.F. TRANSFORMER	
4	N-1598	2ND. I.F. TRANSFORMER	
5	N-1952	4" P.M. SPEAKER & TRANS.	
E	N-1967	2ND. I.F. TRIMMING COND.	
	N-1953	GANG CONDENSER	

SONORA RADIO & TELEV., CORP.

MODEL TV-48
Chassis TV, TVU
MODELS KVU-85, KVU-97

RANGE 535 to 1720 Kilocycles



MODEL TV-48, Chassis TV, TVU

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R1	N-4173	50,000 OHM VOL. CONT. (TV)	C5	N-4374	100 MMFD
	N-4180	50,000 OHM VOL. CONT. (TVU)	C6	N-3848	.04 MFD. 400 V.
R2	N-4181	20,000 OHMS 5W 20%	C7	N-3848	.01 MFD. 400 V.
R3	N-1262	50,000 OHMS 5W 20%	C8		
R4	N-2819	4 MEGOHMS 5W 20%	C9	N-4174	(20 MFD 25 V. / 15 MFD 150 V. / 30 MFD 150 V.) ELYTIC
R5	N-4189	6 MEGOHMS 5W 20%	C10		
R6	N-1266	1 MEGOHMS 5W 20%	C11	N-4346	.05 MFD. 400 V.
R7	N-2828	275 OHMS 5W 10%	C12		CAPACITY BETWEEN COILS
R8	N-1264	3 MEGOHMS 5W 20%	C13	N-3845	.05 MFD. 400V
R9	N-4817	1000 OHMS 5W 20%	C14	N-4647	.0005 MFD 400V (TVU ONLY)
R10	N-1265	60 OHMS 2W 10%	C15	N-1351	1 MFD 200 V. ONLY
R11	N-1650	25 OHMS 5W 20%	①	N-2170	ANT. COIL
R12	N-4258	10,000 OHMS 5W 20%	②	N-4172	OSCILLATOR COIL
R13	N-4378	2 MEGOHMS (TVU) 5W 20%	③	N-4171	(I.F. TRANSFORMER (TV) / I.F. TRANSFORMER (TVU))
		(I.F. V. A.C. OR D.C.)	④	N-4170	
C1	N-4144	m.m.f. 500 V. (TV)	⑤	N-4176	
	N-4647	.0005 MFD 400 V. (TVU)		N-2169	GANG CONDENSER
C2	N-2173	.010 MFD 200 V.			
C3	N-3845	.05 MFD 200 V.			
C4	N-3848	.01 MFD 400 V.			

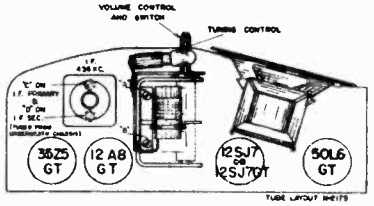
4 TUBE A.C.-D.C.
SUPERHETERODYNE
SINGLE BAND

I.F. 456 KC.

TV & TVU

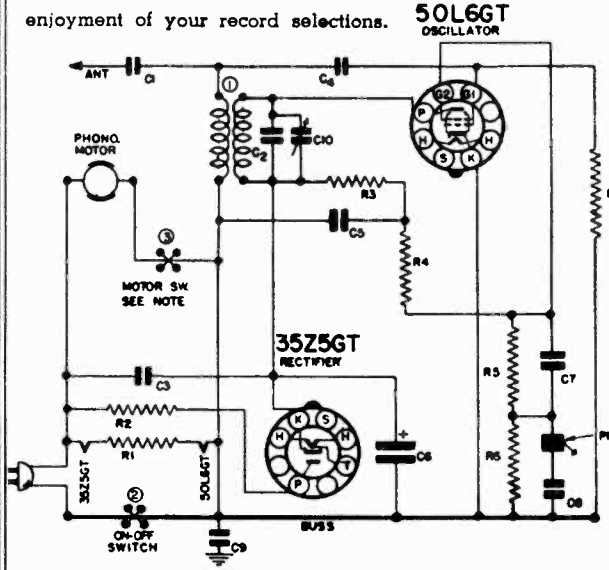
I. F. ALIGNMENT. With the gang condenser set at minimum, adjust test oscillator to 456 KC, and connect the oscillator output lead to the 1st detector tube (12A8-GT) through a .05 or .1 mfd. condenser. The test oscillator ground lead should be connected to the chassis base. Proceed by adjusting the two I.F. trimmers for maximum signal, or swing on output meter, if available. The two trimmers for the transformer I.F. will be found below the coil next to the base.

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



TUBE & TRIMMER LAYOUT

RADIO RECEIVER CONTROLS — Volume will be controlled by the volume control on the radio receiver as for radio reception. Other radio controls will affect record reproduction. Adjustment of the radio set's fidelity and tone controls may add considerably to the enjoyment of your record selections.



MODELS
KVU-85
KVU-97

2 TUBE
PHONOGRAPH OSCILLATOR
DRAWN-V.J.F. APP'D. J.F.R.
AUG. 15, 1940.

DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
R1	N-3498	220 OHM 5W 10%	C7	N-1630	500 MMFD.
R2	N-1683	7,500 OHM 5W.	C8	N-2642	.09 MFD. 400V.
R3	N-1682	.5 MEGOHM .5W.	C9	N-3080	.22 MFD. 200V.
R4	N-1262	1 MEGOHM .5W.	C10	N-3480	OSC. TRIMMER
R5	N-1604	75,000 .5W.			
R6	N-2976	5 MEGOHM .5W. 10%	1	N-3479	OSC. COILS
R7	N-1460	30,000 OHM .5W.	2	N-3884	UNIT ON-OFF SW.
			3	N-2094 OR	PUSH SW. ON KVU-85
C1	N-1897	25 MMFD.		N-3049	AUTO. STOP SW. ON KVU-97
C2	N-3481	140 MMFD. CERAMIC 5%			
C3	N-1623	.1 MFD. 400V.			
C4	N-1374	100 MMFD.			
C5	N-1351	.1 MFD. 200V.			
C6	N-1675	20 MFD. 200 V.			

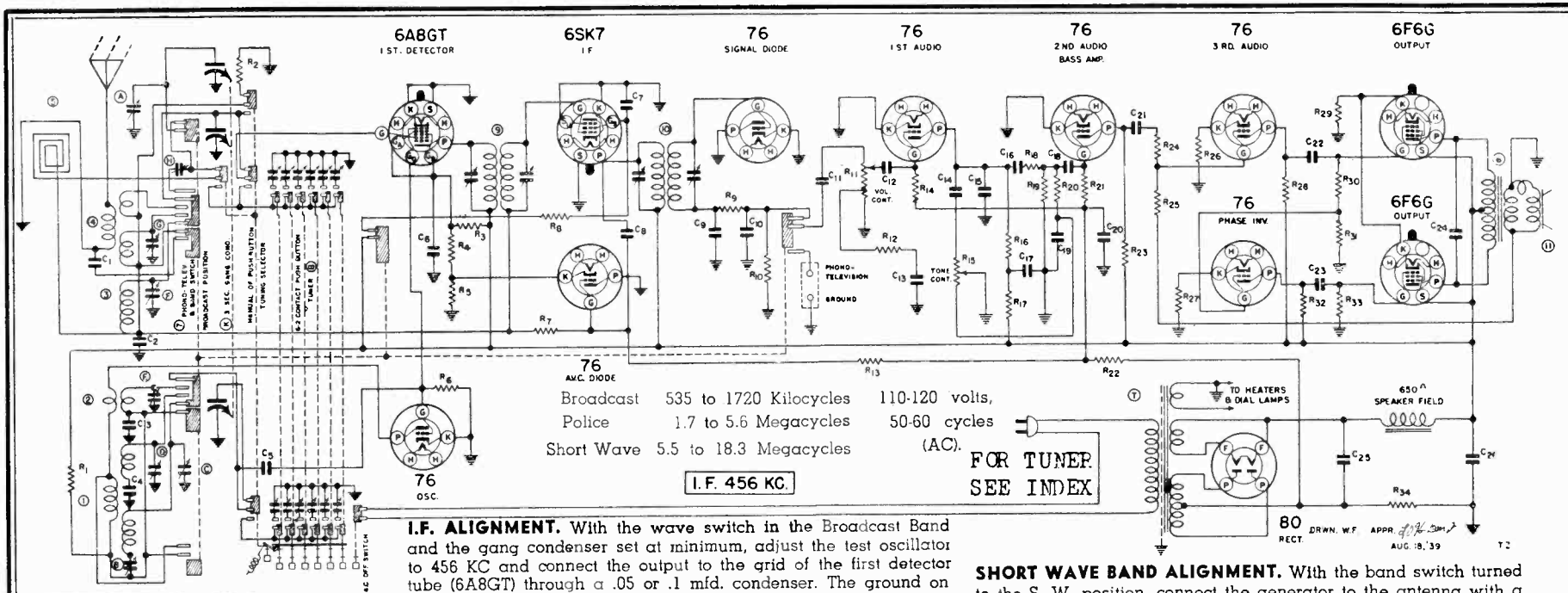
KVU-85 KVU-97

ANTENNA — The single lead attached to the record player is the transmitting antenna. If the record player is located within a distance of ten feet from the receiving set no additional antenna will be required. An antenna not longer than ten feet may be added to operate over greater distances.

OPERATION — Turn on the power switch allowing about one minute for the tubes to warm up, place the selected record upon the turntable and start the motor. Lift pickup and lower the needle point gently to the outside record groove.

Next go to your radio and tune to approximately 600 K.C. at which setting the phonograph signal will be received.

FREQUENCY ADJUSTMENT — If a local station is operating at a frequency of approximately 600 KC, interference will be encountered in the form of a continuous squeal or howl. To avoid this interference tune the radio receiver to a point at which no local station can be heard. With the unit in operation insert a screw driver in the hole located underneath the unit on the metal chassis and adjust the screw. If the radio receiver has been set at a point below 600 KC, (for example 550 KC) turn to the right until the phonograph signal is heard. If the receiver has been above 600 KC turn the adjusting screw to the left.



Broadcast	535 to 1720 Kilocycles	110-120 volts,
Police	1.7 to 5.6 Megacycles	50-60 cycles
Short Wave	5.5 to 18.3 Megacycles	(AC).

I. F. 456 KC.

DIAG NO.	PART NO.		DIAG NO.	PART NO.	
R_1	N-2548	50,000 OHM 1. W. 20%	R_{24}	N-2572	300,000 OHM .5W. 10%
R_2	N-1419	6 MEGOHM .5W. 20%	R_{25}	N-2570	200,000 OHM .5W. 10%
R_3	N-2573	25,000 OHM 1 3W. 20%	R_{26}	N-1695	5000 OHM .5W. 20%
R_4	N-1353	50,000 OHM .5W 20%	R_{27}	N-1695	5000 OHM .5W. 20%
R_5	N-2567	7,500 OHM .5W 10%	R_{28}	N-1778	100,000 OHM .5W. 20%
R_6	N-1260	50,000 OHM .5W. 20%	R_{29}	N-2566	240 OHM 2. W. 10%
R_7	N-1262	1 MEGOHM .5W. 20%	R_{30}	N-2571	250,000 OHM .5W. 10%
R_8	N-2569	75,000 OHM 1. W. 20%	R_{31}	N-1353	50,000 OHM .5W. 10%
R_9	N-1260	50,000 OHM .5W. 20%	R_{32}	N-1778	100,000 OHM .5W. 20%
R_{10}	N-1264	.5 MEGOHM .5W. 20%	R_{33}	N-1261	250,000 OHM .5W. 20%
R_{11}	N-2482	1. MEGOHM VOL. CONT.	R_{34}	N-2565	40 OHM .5W. 10%
R_{12}	N-2574	70,000 OHM .5W. 20%			
R_{13}	N-1262	1 MEGOHM .5W 20%			
R_{14}	N-1262	1 MEGOHM .5W. 20%	C_1	N-1447	500 MMFD. 400 V. 20%
R_{15}	N-2483	.5 MEGOHM TONE CONT.	C_2	N-2594	.05 MFD. 200 V. 10%
R_{16}	N-1779	150,000 OHM .5W. 20%	C_3	N-1690	4000 MMFD. 5%
R_{17}	N-1778	100,000 OHM .5W. 20%	C_4	N-2290	1550 MMFD. 3%
R_{18}	N-1261	250,000 OHM .5W. 20%	C_5	N-1342	50 MMFD. 20%
R_{19}	N-2570	200,000 OHM .5W 10%	C_6	N-2579	.25 MFD. 400 V. 20%
R_{20}	N-1460	30,000 OHM .5W. 20%	C_7	N-1623	.1 MFD. 400 V. 20%
R_{21}	N-1262	1 MEGOHM .5W. 20%	C_8	N-1342	50 MMFD. 20%
R_{22}	N-1261	250,000 .5W. 20%	C_9	N-1342	50 MMFD. 20%
R_{23}	N-1261	250,000 .5W. 20%	C_{10}	N-1342	50 MMFD. 20%

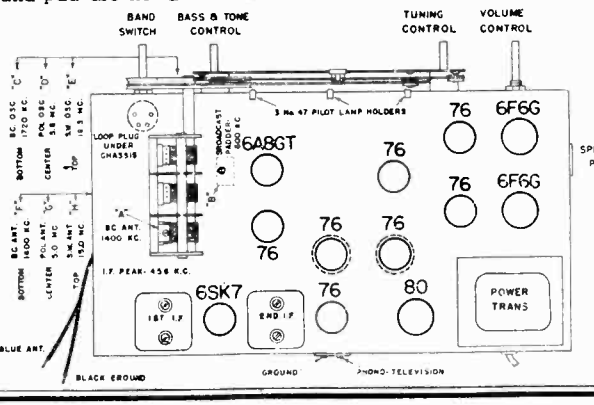
DIAG NO.	PART NO.		DIAG NO.	PART NO.	
C_{11}	N-1344	.01 MFD. 400 V. 20%	4	N-2534	INT. & S.W. ANT. COIL
C_{12}	N-1344	.01 MFD. 400 V. 20%	5	N-2003	LOOP ANT.
C_{13}	N-1347	.006 MFD. 600 V. 20%	6	N-2513	OUTPUT TRANS.
C_{14}	N-1344	.01 MFD. 400 V. 20%	7	N-2486	BAND SWITCH
C_{15}	N-1374	100 MMFD. 20%	8	N-2465	Push Button Tuner & Switch
C_{16}	N-1376	.02 MFD. 400 V. 20%	9	N-2531	1st. I. F. Transformer
C_{17}	N-1623	1 MFD. 400 V. 20%	10	N-2532	2nd I. F. Transformer
C_{18}	N-1344	.01 MFD. 400 V. 20%	11	N-2512	12" DYN. SP. 650Ω FIELD
C_{19}	N-1376	.02 MFD. 400 V. 20%			
C_{20}	N-1479	.25 MFD. 200 V. 20%			
C_{21}	N-1376	.02 MFD. 400 V. 20%	T	N-2514	POWER TRANSFORMER
C_{22}	N-1376	.02 MFD. 400 V. 20%	K	N-2484	GANG CONDENSER
C_{23}	N-1376	.02 MFD. 400 V 20%			
C_{24}	N-2578	.006 MFD. 1000 V. 20%	a	N-2315	BC. ANT. TRIM. COND. #1
C_{25}	N-2459	15 MFD. 450WV. 20%	B	N-2205	BC. PADDING COND.
C_{26}	N-2460	15 MFD. 450WV 20%	C	N-2158	(BC. OSC. TRIM. COND.
			D		(POL. OSC. TRIM. COND.
			E		(SW. OSC. TRIM. COND.
			F		(BC. ANT. TRIM. COND. #2
			G	N-2158	(POL. ANT. TRIM. COND.
			H		(SW. ANT. TRIM. COND.
1	N-2535	BC. & INT. OSC COIL			
2	N-2536	SW. OSC COIL			
3	N-2533	BC. ANT. COIL			

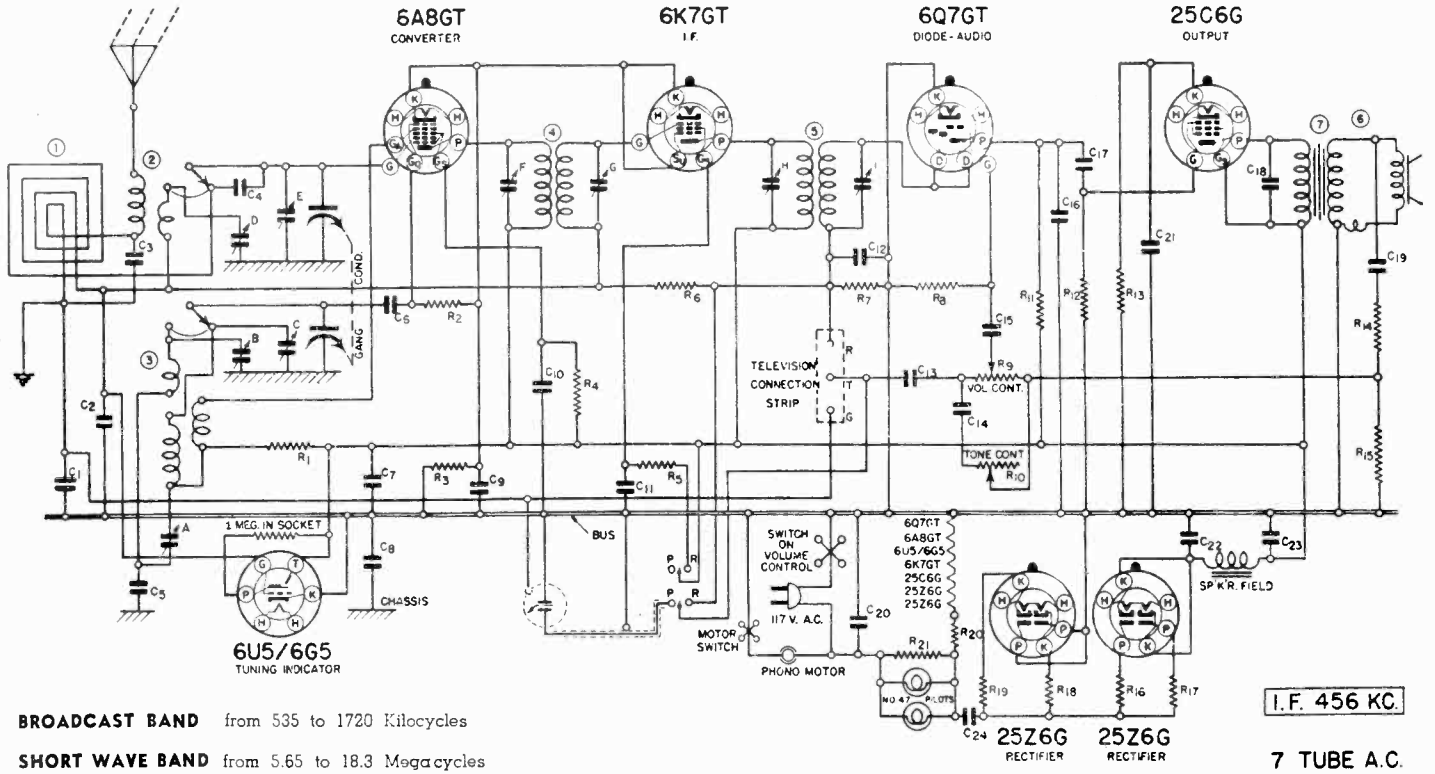
I.F. ALIGNMENT. With the wave switch in the Broadcast Band and the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A8GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all four I.F. trimmers to peak or maximum reading on the output meter.

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 both antenna trimmers 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. In making the BC alignment the loop should be located in the same position with respect to the chassis as it occupies in the cabinet. No metal should be near the loop.

POLICE BAND ALIGNMENT. With the band switch turned to the Pol. position, connect the generator to the antenna with a 400 ohm dummy. Adjust the Pol. oscillator to give a maximum output with the dial at 5600 KC (extreme end). Set the generator at 5000 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 5600 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 2000 KC to determine if the coils and pad are not defective.

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 18,300 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 18,300 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 pad are not defective.





BROADCAST BAND from 535 to 1720 Kilocycles

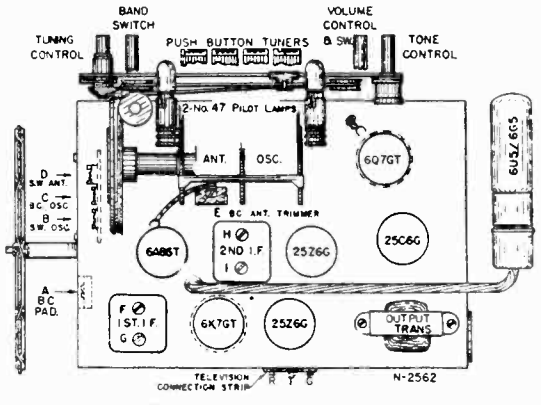
SHORT WAVE BAND from 5.65 to 18.3 Megacycles

I.F. 456 KC.

7 TUBE A.C.
SUPERHETERODYNE
TWO BAND
PHONO RECORD-CHANGER
DRN. H.B. APP.
SEPT. 25, 1939

DIAG NO.	PART NO.	DESCRIPTION
R_1	N-1627	20,000 OHM .5W. 20%
R_2	N-1260	50,000 OHM .5W. 20%
R_3	N-1787	250 OHM .5W. 10%
R_4	N-1460	30 000 OHM .5W. 20%
R_5	N-2455	40,000 OHM .5W. 20%
R_6	N-1262	1 MEGOHM .5W. 20%
R_7	N-1264	0.5 MEGOHM .5W. 20%
R_8	N-1419	6 MEGOHM .5W. 20%
R_9	N-2411	0.5 MEGOHM VOL. CONT.
R_{10}	N-2435	1 MEGOHM TONE CONT.
R_{11}	N-1261	.25 MEGOHM .5W. 20%
R_{12}	N-1264	0.5 MEGOHM .5W. 20%
R_{13}	N-2453	235 OHM 1 W. 10%
R_{14}	N-2454	5000 OHM .5W. 10%
R_{15}	N-1473	200 OHM .5W. 10%
R_{16}	N-2452	100 OHM 1-3 W. 20%
R_{17}	N-2452	100 OHM 1-3 W. 20%
R_{18}	N-2451	75 OHM 1 W. 20%
R_{19}	N-2451	75 OHM 1 W. 20%
R_{20} R_{21}	N-2430	42 OHM, 17 OHM } ARMORED WIRE RES.
C_1	N-1344	.01 MFD. 400 V. 20%
C_2	N-1345	.05 MFD. 200 V. 20%
C_3	N-1897	25 MMFD. 20%
C_4	N-1897	25 MMFD. 20%
C_5	N-1690	4000 MMFD. 5%
C_6	N-1342	50 MMFD. 20%
C_7	N-1351	0.1 MFD. 200 V. 20%
C_8	N-1479	.25 MFD. 200 V. 20%
C_9	N-1479	.25 MFD. 200 V. 20%
C_{10}	N-1345	.05 MFD. 200 V 20%
C_{11}	N-1345	.05 MFD. 200 V. 20%
C_{12}	N-1374	100 MMFD. 20%
C_{13}	N-1344	.01 MFD. 400 V. 20%
C_{14}	N-2450	.002 MFD. 400 V. 20%
C_{15}	N-1344	.01 MFD. 400 V. 20%
C_{16}	N-1343	250 MMFD. 20%
C_{17}	N-1376	.02 MFD. 400 V. 20%
C_{18}	N-1344	.01 MFD. 400 V. 20%
C_{19}	N-1351	0.1 MMFD. 200 V. 20%
C_{20}	N-1346	.05 MFD. 400 V. 20%
C_{21}	N-2437	20 MFD. 25 V. ELECT. COND.
C_{22}		30 MFD. 250 V.
C_{23}		30 MFD. 150 V.
C_{24}	N-2436	30 MFD. 150 V.
1	N-2154	ANTENNA LOOP
2	N-2010	S.W. ANTENNA COIL
3	N-2008	OSC. COIL
4	N-2461	1ST I.F. TRANS.
5	N-2462	2ND. I.F. TRANS.
6	N-2433	12" DYN. SPKR. (CONSOLE)
7	N-2447	OUTPUT TRANS.
-	N-2205	BC PADDING COND.
B	N-2158	S.W. OSC. TRIM COND.
C		B.C. OSC. TRIM COND.
D		S.W. ANT. TRIM COND.
	N-2218	GANG COND. & TUNER
	N-2164	BAND SWITCH

TXF



ALIGNMENT PROCEDURE

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 (6A8GT) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis buss. 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 200 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.

TELEVISION CONNECTOR

This receiver is fully designed to provide sound reception when connected to a television receiver. To make this connection attach the two leads from your television receiver to terminals "T" and "G". The black lead or the outside shield (in case a shielded lead is used) should be connected to terminal "G", and the other lead to terminal "T". For complete directions consult the instruction sheet of your television receiver.

MODEL TXF-67
Chassis TXF
Chassis TZ

SONORA RADIO & TELEV., CORP.

AUTOMATIC TUNING

Chassis TZ

SETTING-UP PROCEDURE. To set up a list of stations on the automatic tuner proceed as follows:

(1) Make a list of the stations you listen to most frequently.

(2) Determine their frequencies from a station list or by adding a zero to their position on the dial, thus: 56 is 560 KC.

(3) Arrange them in order, starting with the lowest frequency first; then the next highest and so on until not more than six of your favorite stations have been selected.

(4) Select the proper button for each station, starting at the top of your list (the lowest frequency station) and determine if it is within the required range of button No. 7 as shown on the button diagram below. If it is in this range assign button No. 7 to this station. Take the second station on your list and determine if it can be assigned to the button to the left of the one already assigned. If it can be applied, assign the station to this button. If not, go to the next button to the left which has the proper range to accommodate the station. Proper assigning of stations to buttons will make it possible to set up the buttons to all principal stations in every locality.

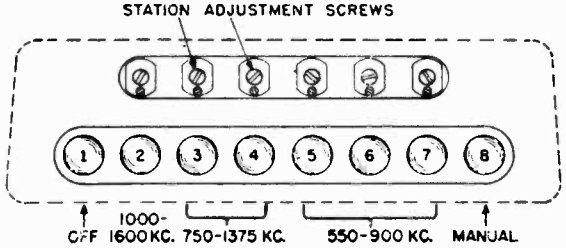
(5) Turn the band switch to the broadcast position and depress button No. 8 (manual button at extreme right); then tune in with the manual tuning control, the station on the top of your list (the lowest frequency station).

(6) Remove the push button escutcheon by unscrewing the screw at each end. Depress the button assigned to this station and with a screw driver carefully turn the large screw head above the depressed button until the desired station is tuned in. Turning to the right lowers the frequency and turning to the left raises the frequency. Never try to turn the screw past the ends of its travel as you will damage the tuner. The screw has approximately three complete turns. The small screw head located below the large screw should not be disturbed as it is set at the factory.

(7) When the station is picked up adjust the screw carefully for maximum volume and least noise. Push the manual button and the same station will be heard if you have tuned in the correct station.

(8) After all six stations have been set up replace the escutcheon. Select a gummed tab with the proper call letters and insert in each slot above the button.

PUSH BUTTON ARRANGEMENT



AUTOMATIC TUNER ALIGNMENT: With the band switch turned to the broadcast position connect the generator to the antenna lead through a 200 MMF dummy. Depress button No. 2, set the generator to 1200 KC and tune in the signal by adjusting the large head screw located above the button. After the signal is carefully turned in adjust the small screw located below the large screw head for maximum output. This procedure should be repeated on the remaining buttons using the frequencies as listed below:

Button	2	3	4	5	6	7
Freq. (KC):	1200	950	950	650	650	650

In any specific locality where the customer has already set up his stations, the tuner alignment may be made at the actual frequency being used on each button.

OPERATION. With the set turned on to a moderate level of volume the automatic tuner is operated by merely pressing the button set to the desired station. The volume and tone are then adjusted to suit individual requirements.

To tune in stations with the manual control depress the manual button, select the band desired with the band switch and tune in your stations with the manual control.

When using the automatic tuning the wave band selector switch must be turned to the broadcast position.

TELEVISION AND PHONOGRAPH CONNECTOR. This receiver is fully designed to provide sound reception when connected to a television receiver. To make this connection attach the two leads from your television receiver to terminals "T" and "G". The black lead or the outside shield (in case a shielded lead is used) should be connected to terminal "G", and the other lead to terminal "T". For complete directions consult the instruction sheet of your television receiver.

To use this attachment with a phonograph, connect the two terminals from the phonograph pick-up to terminals "T" and "G". If one of the pick-up leads is a shield connect it to the terminal "G". If both leads are unshielded, try reversing the terminals if the hum is excessive. If hum is still present reverse the power plug in the wall socket. Consult the instruction sheets on your phonograph for additional information.

With the connections made as described above simply turn the band change switch to the extreme left position and your television sound channel or phonograph pickup is connected in.

AUTOMATIC TUNING

MODEL TXF-67, Chassis TXF

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

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

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

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

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

To assur 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.

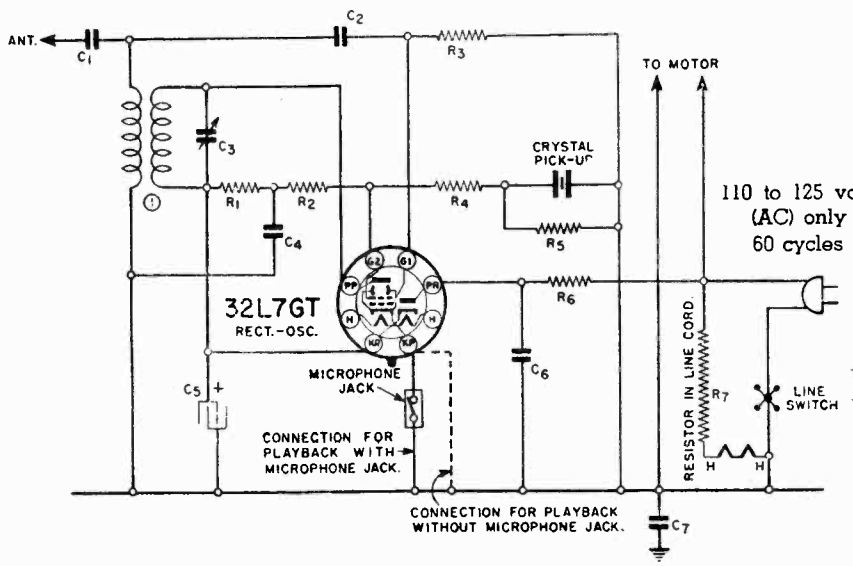
It is not necessary to follow any particular sequence of stations since each button is adjustable to any station.

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

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

Station selection may be made automatically or manually at will since the manual tuning control operates free and independent of the automatic unit.

The station call letter tabs furnished should be inserted into the slot of the push-buttons using designations corresponding to the station selected for each button. After inserting call letter tabs the buttons may be replaced.



DIAG. NO.	PART NO.	DESCRIPTION
C1	N-1681	10 MMFD. 20 %
C2	N-1374	100 MMFD. "
C3	N-1323	PADDER COND.
C4	N-1351	.10 MFD. 200 V.
C5	N-1675	20 MFD. "
C6	N-1351	.10 MFD. "
C7	N-1351	.10 MFD. "

DIAG NO.	PART NO.	DESCRIPTION
R1	N-1682	3 MEGOHM .5W 20%
R2	N-1262	1.0 MEGOHM " "
R3	N-1460	30,000 OHM " "
R4	N-1684	75,000 OHM " "
R5	N-1264	.5 MEGOHM " "
R6	N-1683	7,500 OHM " "
R7	N-1677	RESISTOR IN LINE CORD 285 OHM 25W. .3 AMP.
①	N-1671	OSC. COIL

1. **OFF-ON SWITCH** — This is the only knob on the device. Turn to the right to switch on the power.

2. **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.

3. **MOTOR SWITCH** — On models in wooden cabinets which have the automatic stop, the motor switch is incorporated in the automatic stop. To start motor move the lever at tho 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.

   On models in metal cabinets the motor switch is located in the front panel on the right side.

4. **ANTENNA** — The single lead attached to the record player is the transmitting antenna. If the record player is located within a distance of ten feet from the receiving set no additional antenna will be required. An antenna not longer than ten feet may be added to operate over greater distances.

5. **OPERATION** — Turn on the power switch allowing about two minutes for the tube to warm up, place the selected record upon the turntable and start the motor. Lift pickup and lower the needle point gently to the outside record groove.

   Next go to your radio and tune to approximately 600 K.C. at which setting the phonograph signal will be received.

6. **FREQUENCY ADJUSTMENT** — If a local station is operating at a frequency of approximately 600 KC, interference will be encountered in the form of a continuous squeal or howl. To avoid this interference tune the radio receiver to a point at which no local station can be heard. Pry out the button located between the turntable and the ON-OFF switch. With the unit in operation insert a screw driver in the hole and adjust the screw. If the radio receiver has been set at a point below 600 KC, (for example 550 KC) turn to the right until the phonograph signal is heard. If the receiver has been set above 600 KC turn the adjusting screw to the left.

7. **RADIO RECEIVER CONTROLS** — Volume will be controlled by the volume control on the radio receiver as for radio reception. Other radio controls will affect record reproduction. Adjustment of the radio set's fidelity and tone controls may add considerably to the enjoyment of your record selections.

8. **HUM** — If hum is present it may be necessary to re-verse the power plug in the wall socket.

NEEDLES

High quality needles are important to your enjoyment of recorded music. Use good full-tone steel needles. If long playing needles are used, do not change the position of the needle in the pickup after it has once been played, as this will injure the record grooves.

Note: The needle point wears down gradually in use and wears down in conformity with the shape of the record groove. Changing the position of the needle in the pickup after it has been played will provide a new fit to the groove and will damage the record groove by changing the shape of the groove. The life of the record depends upon maintaining the original record groove. To summarize this important message, never reinsert a used needle in the pickup, since this will do permanent injury to the record and shorten your record life materially.

MICROPHONE ATTACHMENT

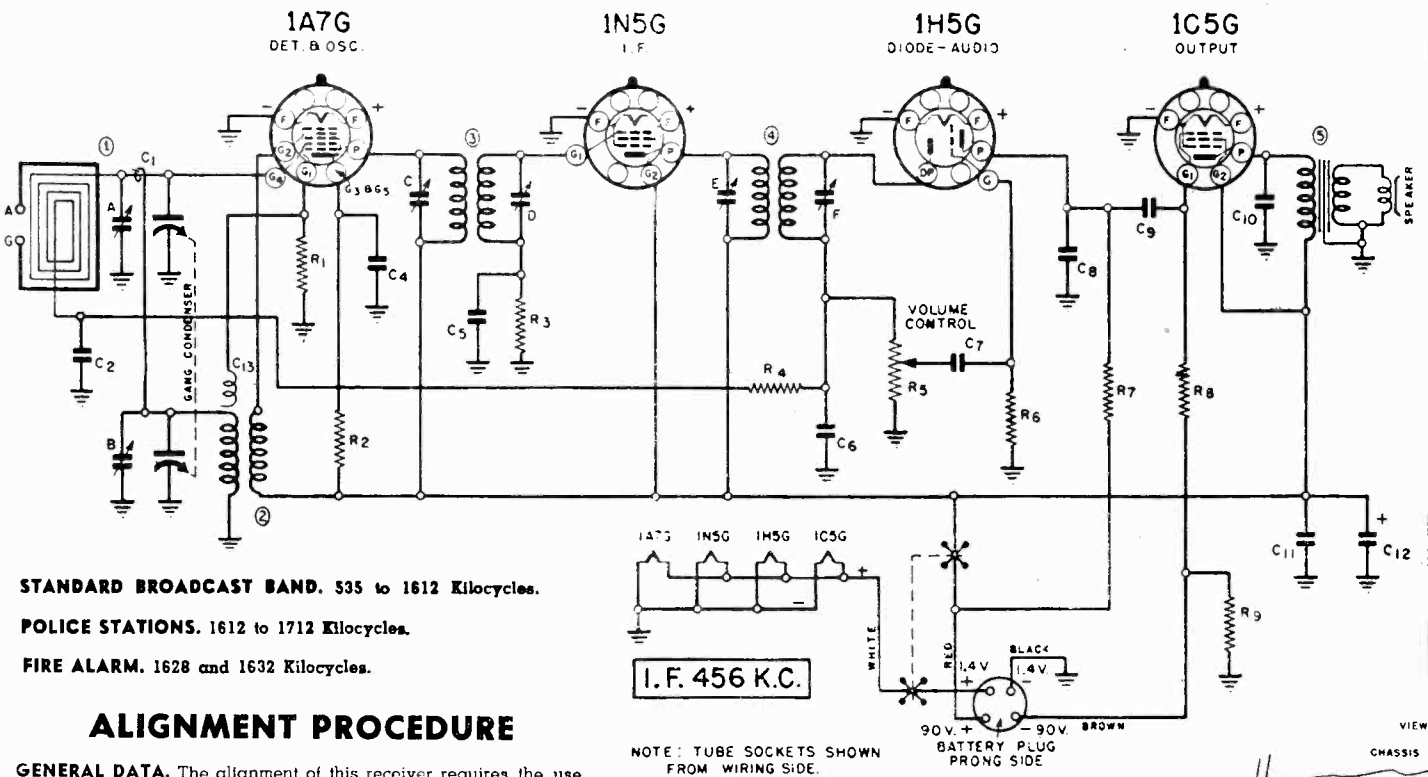
On models in wooden cabinets a jack is provided in the rear of the cabinet for using a microphone. Use only a low impedance (200 ohms or less) carbon button microphone. Most low-priced microphones are of this type. To attach microphone simply insert the phone tips in the jack.

Warning!! One of the terminals is directly connected to one terminal of the line cord. In using a microphone make certain all parts are fully insulated.

SERVICE

As the phonograph motor is the only moving part it is the only part of your record player that will require any attention.

A little oil applied to the motor, idler and turntable bearings about once every three months will suffice.



D-AG 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-1282	1 MEGOHM " "
R_5	N-1504	.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	——	GIMMIC
C_2	N-1345	.05 MFD 200 V.
C_4	N-1345	.05 MFD. 200 V.
C_5	N-1376	.02 MFD. 400 V.
C_6	N-1343	250 MMFD. 20%
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
C_{13}	–	CAPACITY INCLUDED IN OSCILLATOR COIL.
1	N-1508	LOOP ANTENNA
2	N-1532	OSCILLATOR COIL
3	N-1391	1ST I.F. TRANS.
4	N-1509	2ND I.F. TRANS.
5	N-1507	5" P.M. SPKR. & TRANS.
	N-1499	GANG CONDENSER
	N-1510	BATTERY CABLE

STANDARD BROADCAST BAND. 535 to 1612 Kilocycles.

POLICE STATIONS. 1612 to 1712 Kilocycles.

FIRE ALARM. 1628 and 1632 Kilocycles.

ALIGNMENT PROCEDURE

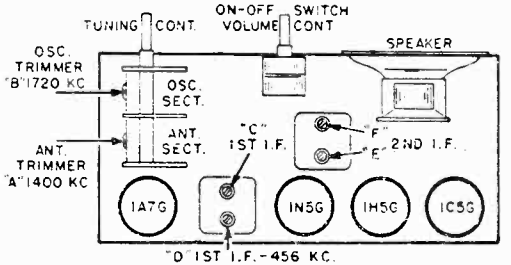
GENERAL DATA. The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 600, 1400 and 1720 KC and an output meter to be connected across the primary or secondary of the output transformers. If possible, all alignments should be made with the volume control 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 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 (1A7G) 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.

BROADCAST BAND ALIGNMENT. Connect the antenna terminal to the generator through a 200 MMF dummy and the ground terminal to the generator ground. Set the dial and generator at 1720 KC (gang at minimum capacity). Align the BC oscillator trimmer for maximum output. Set the test oscillator at 1400 KC and tune in the signal with the dial and adjust the antenna trimmer for maximum output. Check the sensitivity at 600 to determine if the gang or the coils have been damaged.

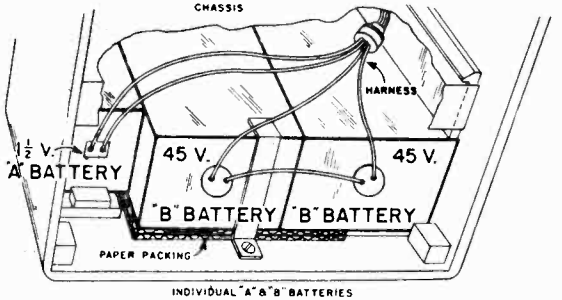
TUBE LAYOUT & TRIMMER LOCATION



PORTABLE
4 TUBE - 1½ VOLT
SUPERHETERODYNE
SINGLE BAND

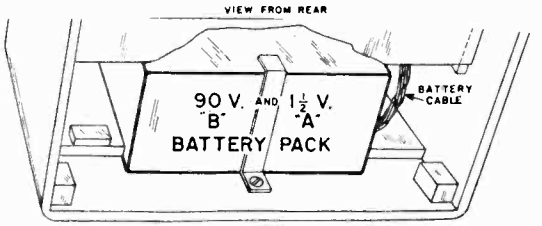
DRWN. F.L.C. APP. 1-24-39

VIEW FROM REAR

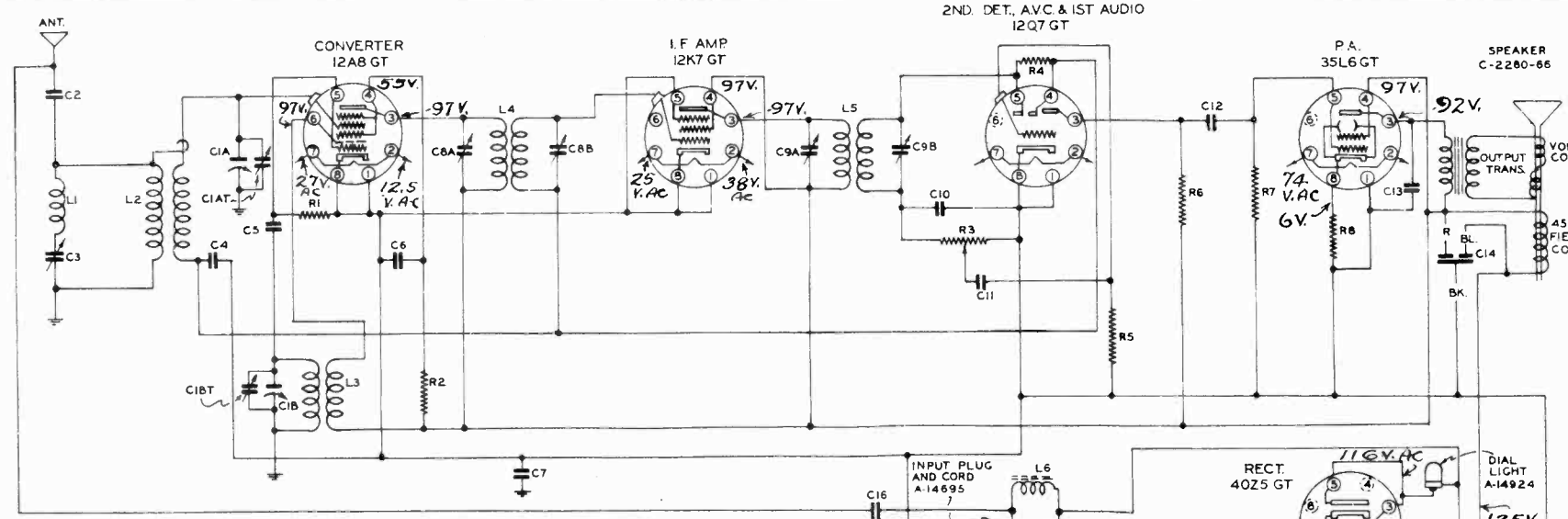


INDIVIDUAL "A" & "B" BATTERIES

VIEW FROM REAR



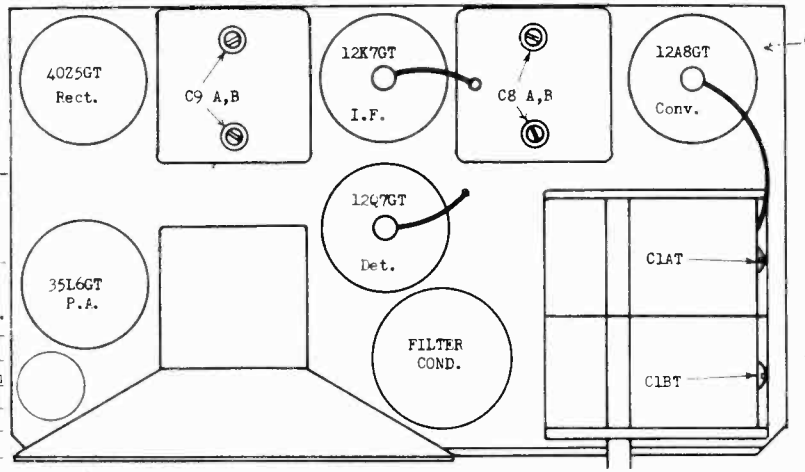
SINGLE UNIT "A" & "B" BATTERY



C1A&1B	VARIABLE CONDENSER	B-7288-3 (380-pf) B-8115 (400c)	R1	56,000 Ω	.25 W.	C-2795-83B	L1	I.F. REJECTOR COIL A-14718-1
C1AT	B.C. ANT. TRIMMER	ON VAR. COND.	R2	22,000 Ω	.25 W.	C-2795-78B	L2	B.C. ANTENNA COIL A-14974-1
C1BT	B.C. OSC. TRIMMER		R3	500,000 Ω	VOL. CONT. & SWITCH A-15129		L3	B.C. OSC. COIL A-14975
C2	.001 MFD.	400 V. C-3204-58C	R4	1.8 MEGOHM	.25 W.	C-2795-101B	L4	NO.1 I.F. COIL A-12064-32
C3	I.F. REJECTOR TRIMMER	A-14088-2	R5	5.6 MEGOHM	.25 W.	C-2795-107B	L5	NO.2 I.F. COIL A-12064-17
C4	.05 MFD.	200 V. C-3302-84A	R6	270,000 Ω	.25 W.	C-2795-91B	L6	ANT. LINE CHOKE A-15418
C5	50 MMF.	MOLDED C-720-372	R7	560,000 Ω	.25 W.	C-2795-95B		
C6	.05 MFD.	200 V. C-3302-84A	R8	150 Ω	.25 W.	C-2796-52C		
C7	.15 MFD.	400 V. C-3204-95U						
C8	NO.1 I.F.	TRIMMER B-7200-GG						
C9	NO.2 I.F.	TRIMMER B-7200-GN						
C10	500 MMF.	MOLDED C-720-316						
C11	.01 MFD.	200 V. C-3302-20A						
C12	.01 MFD.	200 V. C-3302-20C						
C13	.03 MFD.	400 V. C-3304-80A						
C14	25-25 MFD.	ELECT. A-15124-1						
C15	.01 MFD.	400 V. C-3304-20A						
C16	250 MMF.	MOLDED C-720-324						

SPARTON SUPERHETERODYNE MODEL 500-C, 500-Y, 500-Z
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEWS OF ALL SOCKET CONNECTIONS



December 28, 1939

ALIGNMENT CHART

ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
Set pointer 3/16 inch from right-hand end of guide plate opening with condenser plates fully meshed.							
I.F.	12A8GT Grid Cap	200 mmf.	456KC	BC	Open	C9 A&B	2nd. I.F.
						C8 A&B	1st. I.F.
Rejector	Ant.	200 mmf.	456KC	BC	Closed	C3	Adjust to minimum
Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C1BT OSC.	Peak at max.
						C1AT	Peak at max.
(Check calibration and sensitivity at 1500 KC, 900 KC and 600 KC)							
(Check operations 1 to 5 inclusive)							

SPARKS WITHINGTON CO.

MODELS 500CB, 500CG, 500CR, 500Y, 500Z

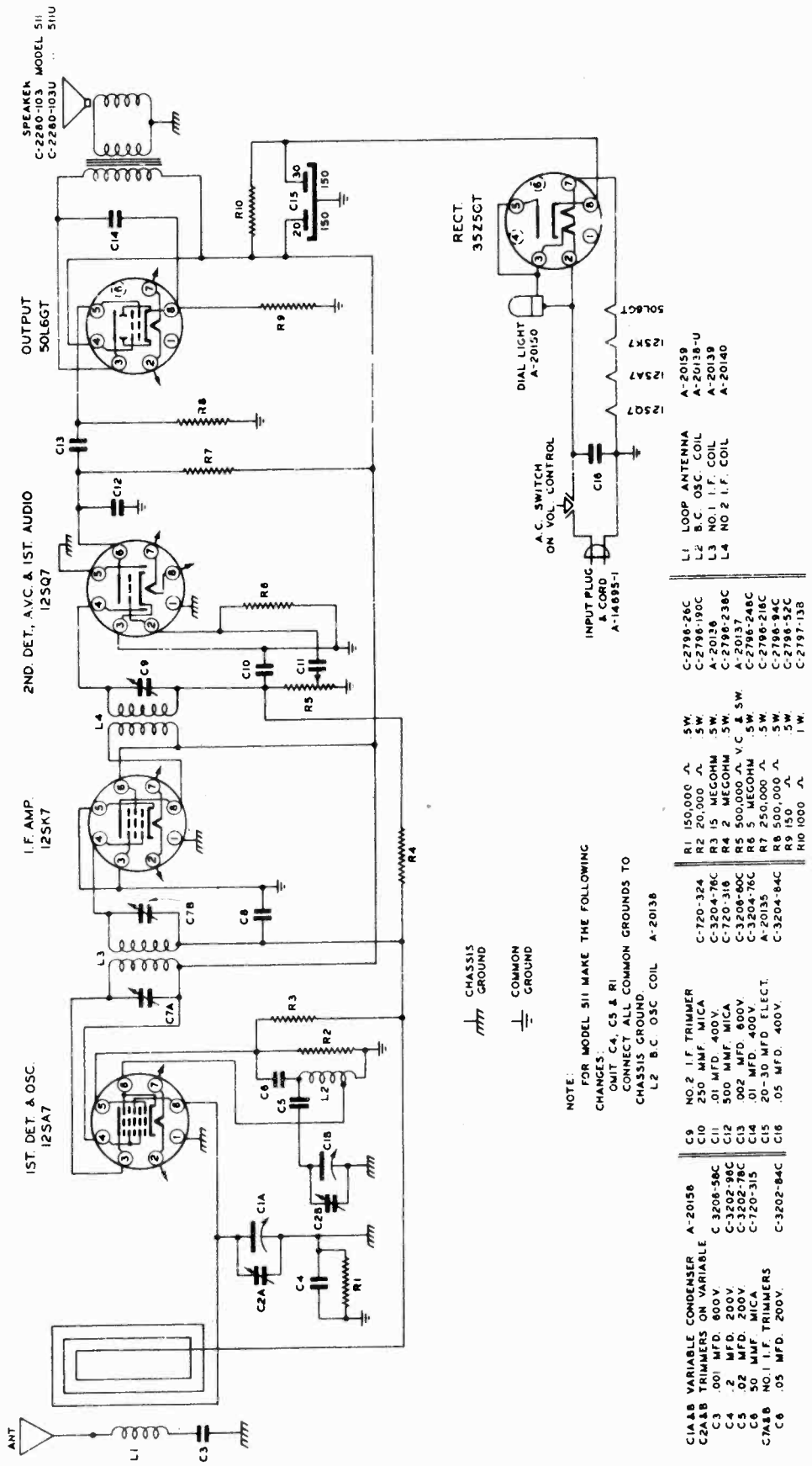
SPARTON PAGE 121

MODELS 511, 511U

SPARKS WITHINGTON CO.

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODEL 511U & 511 (SEE NOTE)
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

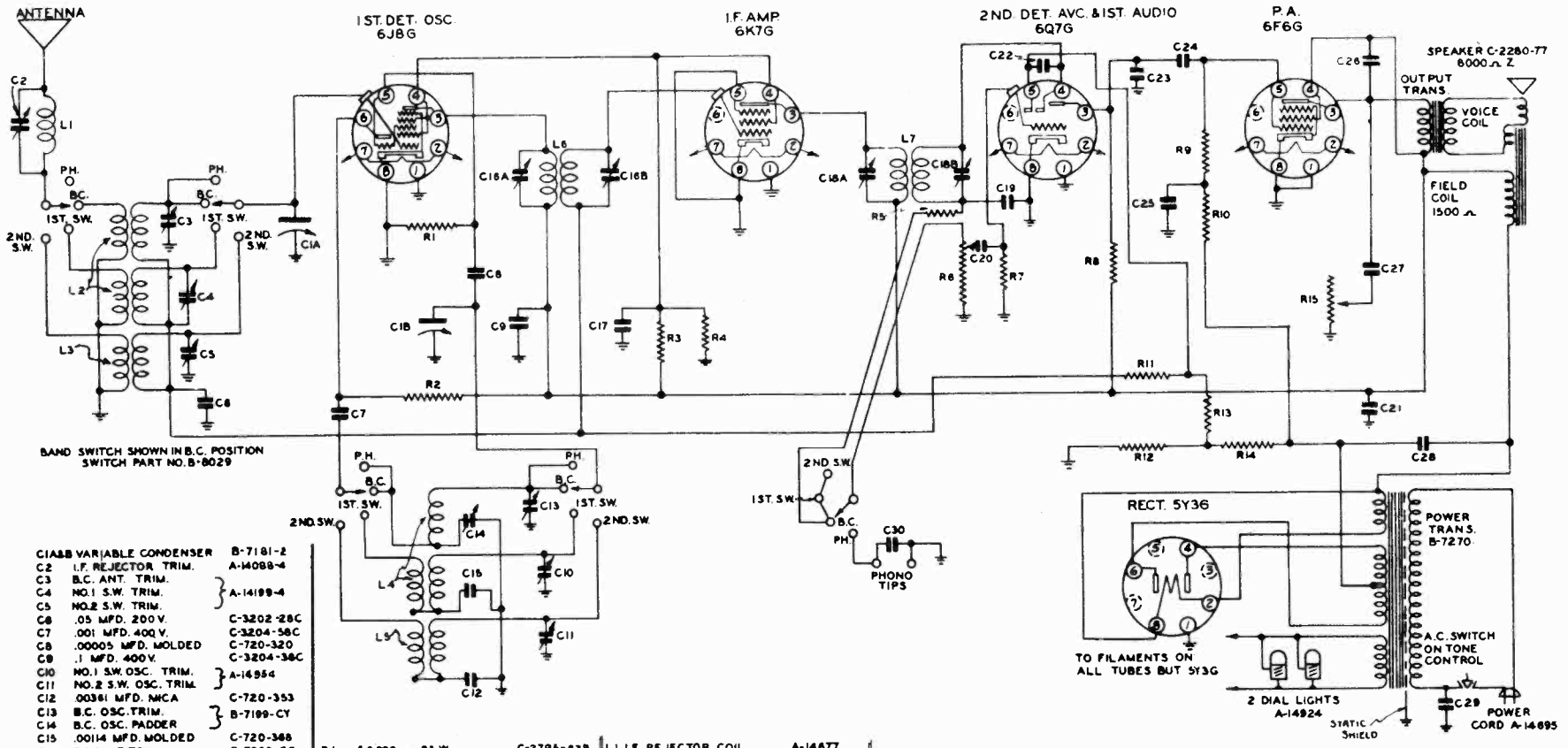


NOTE:
FOR MODEL 511 MAKE THE FOLLOWING CHANGES:
OMIT C4, C5 & R1
CONNECT ALL COMMON GROUNDS TO CHASSIS GROUND.
L2 B.C. OSC. COIL A-20138

C1A&B VARIABLE CONDENSER	A-20158	C9	NO.2 I.F. TRIMMER	C-720-324	R1 150,000 Ω	5W.	C-2796-26C
C2A&B TRIMMERS ON VARIABLE		C10	250 MMF. MICA	C-3204-76C	R2 20,000 Ω	5W.	C-2796-190C
C3 .001 MFD. 600V.	C-3206-58C	C11	.01 MFD. 400V.	C-720-316	R3 15 MEGOHM	5W.	A-20136
C4 .2 MFD. 200V.	C-3202-98C	C12	500 MMF. MICA	C-3206-60C	R4 2 MEGOHM	5W.	C-2796-238C
C5 .02 MFD. 200V.	C-3202-78C	C13	.002 MFD. 600V.	C-3204-76C	R5 500,000 Ω V.C. & SW		A-20137
C6 50 MMF. MICA	C-720-315	C14	.01 MFD. 400V.	A-20135	R6 5 MEGOHM	5W.	C-2796-248C
C7A&B NO.1 I.F. TRIMMERS		C15	20-30 MFD. ELECT.	C-3204-84C	R7 250,000 Ω	5W.	C-2796-216C
C8 .05 MFD. 200V.	C-3202-84C	C16	.05 MFD. 400V.		R8 500,000 Ω	5W.	C-2796-94C
					R9 150 Ω	5W.	C-2796-52C
					R10 1000 Ω	1W.	C-2797-138

L1 LOOP ANTENNA	A-20159
L2 B.C. OSC. COIL	A-20138-U
L3 NO.1 I.F. COIL	A-20139
L4 NO 2 I.F. COIL	A-20140

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODEL 541 SX
INTERMEDIATE FREQUENCY 456 K.C.
TOP VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VARIABLE CONDENSER	B-7181-2
C2	I.F. REJECTOR TRIM.	A-14088-4
C3	B.C. ANT. TRIM.	A-14199-4
C4	NO.1 S.W. TRIM.	
C5	NO.2 S.W. TRIM.	
C6	.05 MFD. 200 V.	C-3202-28C
C7	.001 MFD. 400 V.	C-3204-58C
C8	.00005 MFD. MOLDED	C-720-320
C9	.1 MFD. 400 V.	C-3204-38C
C10	NO.1 S.W. OSC. TRIM.	A-14954
C11	NO.2 S.W. OSC. TRIM.	
C12	.00361 MFD. MICA	C-720-353
C13	B.C. OSC. TRIM.	B-7199-CY
C14	B.C. OSC. PADDER	
C15	.00114 MFD. MOLDED	C-720-368
C16A&B	NO.1 I.F. TRIM.	B-7200-GG
C17	.1 MFD. 400 V.	C-3204-38C
C18A&B	NO.2 I.F. TRIM.	B-7200-GN
C19	.00025 MFD. MOLDED	C-720-319
C20	.05 MFD. 200 V.	C-3202-28C
C21	.30 MFD. 300 V. ELECT.	A-14072-A
C22	.0001 MFD. MOLDED	C-720-318
C23	.00025 MFD. MOLDED	C-720-319
C24	.05 MFD. 400 V.	C-3204-84C
C25	.1 MFD. 200 V.	C-3202-38C
C26	.006 MFD. 600 V.	C-3206-88C
C27	.03 MFD. 600 V.	C-3206-80C
C28	16 MFD. 450 V. ELECT.	A-14073-A
C29	.006 MFD. 600 V.	C-3206-12C
C30	.003 MFD. 200 V.	C-3202-62C

R1	56 000 Ω .25 W.	C-2795-83B
R2	22 000 Ω .5 W.	C-2796-78C
R3	24 000 Ω 2 W.	C-2798-192A
R4	27 000 Ω 1 W.	C-2797-79B
R5	27 000 Ω .25 W.	C-2795-79B
R6	.5 MEG. VOL. CONTROL	A-15130
R7	5.6 MEG. .25 W.	C-2795-107B
R8	270 000 Ω .25 W.	C-2795-91B
R9	270 000 Ω .25 W.	C-2795-91B
R10	270 000 Ω .25 W.	C-2795-91B
R11	1 MEGOHM .25 W.	C-2795-98B
R12	82 Ω .25 W.	C-2795-133B
R13	1 MEGOHM .25 W.	C-2795-98B
R14	220 Ω 1 W.	C-2797-143B
R15	1 MEG. TONE CONTROL	A-15131

L1	I.F. REJECTOR COIL	A-14677
L2	B.C. & 1ST. S.W. ANT. COIL	A-14209-6
L3	2 ND. S.W. ANT. COIL	A-14879-1
L4	B.C. & 1ST. S.W. OSC. COIL	A-14213-6
L5	2 ND. S.W. OSC. COIL	A-14880-1
L6	NO.1 I.F. COIL	A-12064-29
L7	NO.2 I.F. COIL	A-12064-30

Power Transformer (All voltage) 25 Cycle B-6775-25-4

Power Transformer (All voltage) 50 Cycle B-7270

Power Transformer 115 volts 50 Cycle B-8129

January 2, 1940

MODEL 541SX

SPARKS WITHINGTON CO.

541-SX

VOLTAGE CHART

Line Voltage: 112 volts
Power Transformer Tap: 95-115

Position of Volume Control: Full with Ant. Disconnected
Position of Band Selector Switch: Broadcast (medium-wave)

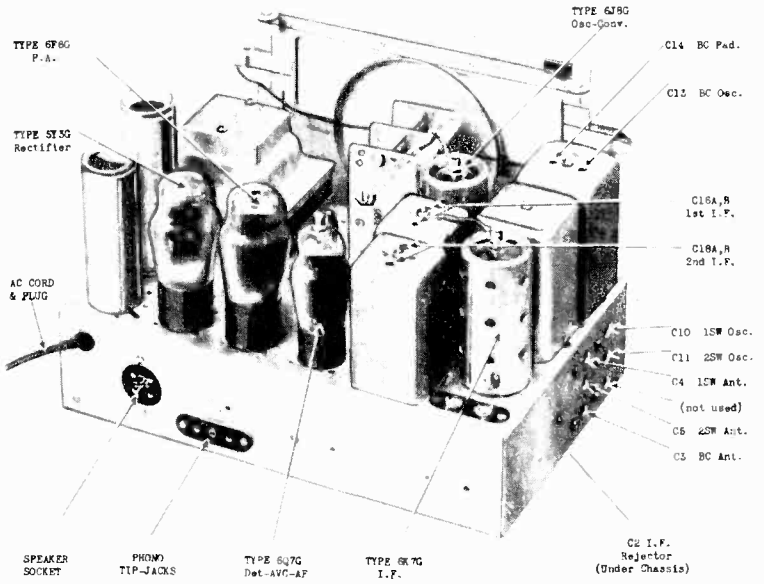
Tube	Function	Voltage of Socket Prongs to Gnd.(See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6J8G	Osc.-Conv.	0	0	250	95	-4 a	140	6.3*	0	-.3 a
6K7G	I-F Amp.	0	6.3*	250	95	0	-	0	0	-.3 a
6Q7G	Det. AVC AF	0	0	44 b	-1.5	-1.5	-.3 a	6.3*	0	-.2 a
6F6G	Power Amp.	0	0	230	250	-.4 a	-.6 a	6.3*	0	-
5Y3G	Rectifier	0	330	-	340*	-	340*	-	330	-

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. a: 0-5 volt scale. b: 0-100 volt scale.

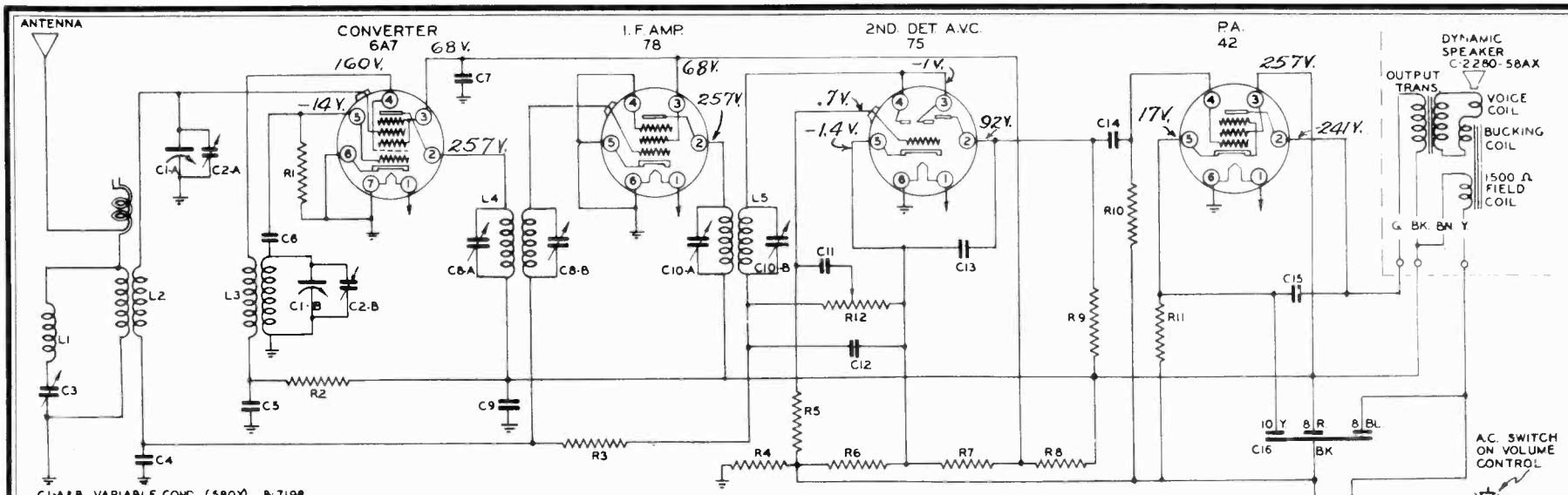
ALIGNMENT

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 at end of scale with tuning condenser closed)							
2	I.F.	6J8G Grid	.1 mf.	456 KC	BC	Open	C18 A,B	2nd I.F.
							C16 A,B	1st I.F.
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broadcast	Ant.	200 mmf.	1400 KC	BC	1400 KC	C13 Osc.	
							C3 Ant.	
5	Band			600 KC	BC	600 KC	C14 Pad	Rock dial for peak adj.
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 1000 KC, 1400 KC)							
8	1st SW Band	Ant.	*	7. MC	1 SW	7. MC	C10 Osc.	
							C4 Ant.	
9	(Check calibration and sensitivity at 2.5 MC, 4. MC and 7. MC)							
10	2nd SW Band	Ant.	*	22. MC	2 SW	22. MC	C11 Osc.	
							C5 Ant.	Rock dial for peak adj.
11	(Check calibration and sensitivity at 8. MC, 15. MC and 22. MC)							

* Use 200 mmf. condenser and 100 ohm non-inductive resistor in series.



CHASSIS ILLUSTRATION

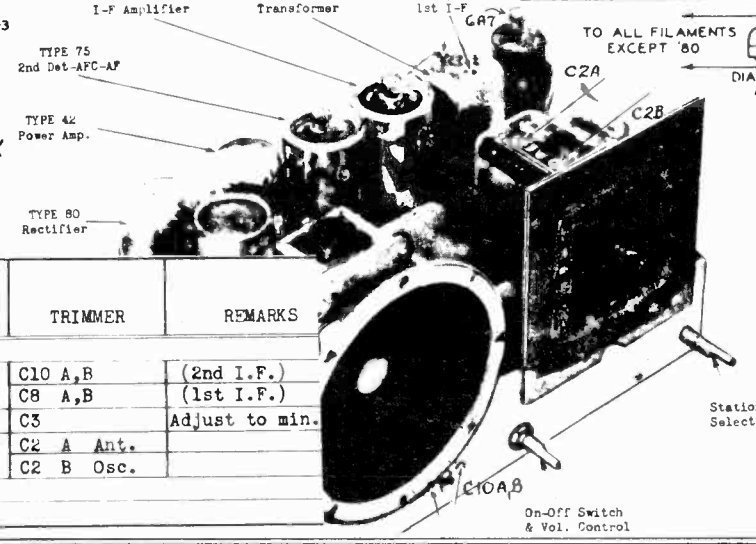


C1-A&B VARIABLE COND. (580X) B-7198
C1-A&B VARIABLE COND. (5518-A) B-7237-1
C2 TRIMMERS ON VARIABLE CONDENSER
C3 I.F. REJECTOR TRIMMER A-14088-2

C4	.05 MFD. 200 V.	C-3202-28C
C5	.006 MFD. 400 V.	C-3204-12C
C6	50 MMF. MOLDED	C-720-320
C7	.1 MFD. 200 V.	C-3202-38C
C8-A&B	NO.1 I.F. TRIMMER	B-7200-GG
C9	.1 MFD. 400 V.	C-3204-38C
C10-A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C11	.02 MFD. 200 V.	C-3202-22C
C12	250 MMF. MOLDED	C-720-324
C13	250 MMF. MOLDED	C-720-324
C14	.05 MFD. 400 V.	C-3204-28C
C15	.01 MFD. 600 V.	C-3206-76C
C16	10-8-8 MFD. ELECT. (580X)	A-14715
C16	10-8-8 MFD. ELECT. (5518-A)	A-14785

R1	56,000 Ω .25 W.	C-2795-83B
R2	22,000 Ω .5 W.	C-2796-78C
R3	1 MEGOHM .25 W.	C-2795-31B
R4	220 Ω .25 W.	C-2795-143B
R5	560,000 Ω .25 W.	C-2795-95B
R6	470 Ω .25 W.	C-2795-151B
R7	27,000 Ω 1 W.	C-2797-79B
R8	33,000 Ω 3 W.	C-2799-80A
R9	270,000 Ω .25 W.	C-2795-91B
R10	680,000 Ω .25 W.	C-2795-30B
R11	680 Ω .5 W.	C-2796-60C
R12	.5 MEG. VOLUME CONT. & SWITCH	A-15129-3

L1	I.F. REJECTOR COIL	A-14718-1
L2	ANTENNA COIL	B-7094-1
L3	OSCILLATOR COIL	A-12052-4
L4	NO. 1 I.F. TRANS.	A-12064-16
L5	NO. 2 I.F. TRANS.	A-12064-17



SPARTON SUPERHETERODYNE MODEL 581-X
INTERMEDIATE FREQUENCY 456 K.C.

TOP VIEW OF ALL SOCKET CONNECTIONS

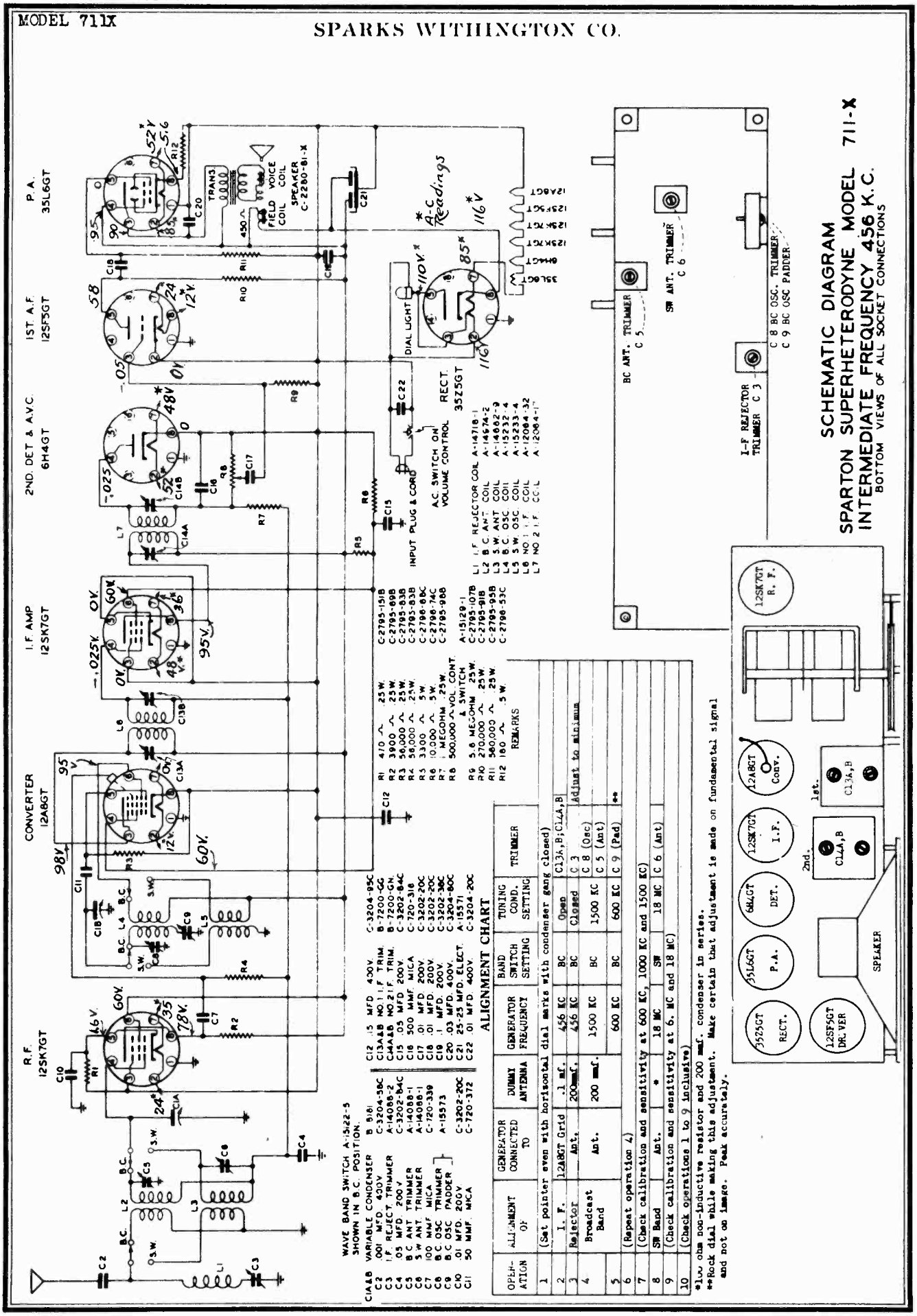
July 18, 1940

ALIGNMENT

ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
(Set dial pointer to end of scale with condenser gang closed)						
I.F.	6A7 Grid	.1 mf.	456	Closed	C10 A,B	(2nd I.F.)
					C8 A,B	(1st I.F.)
Rejector	Ant.	150 mmf.	456	Closed	C3	Adjust to min.
Broadcast Band	Ant.	150 mmf.	1500	1500	C2 A Ant.	
					C2 B Osc.	
(Check for dial reading and sensitivity at 600 kc., 1000 kc.)						
(Check operations 1 to 5 inclusive)						

MODEL 711X

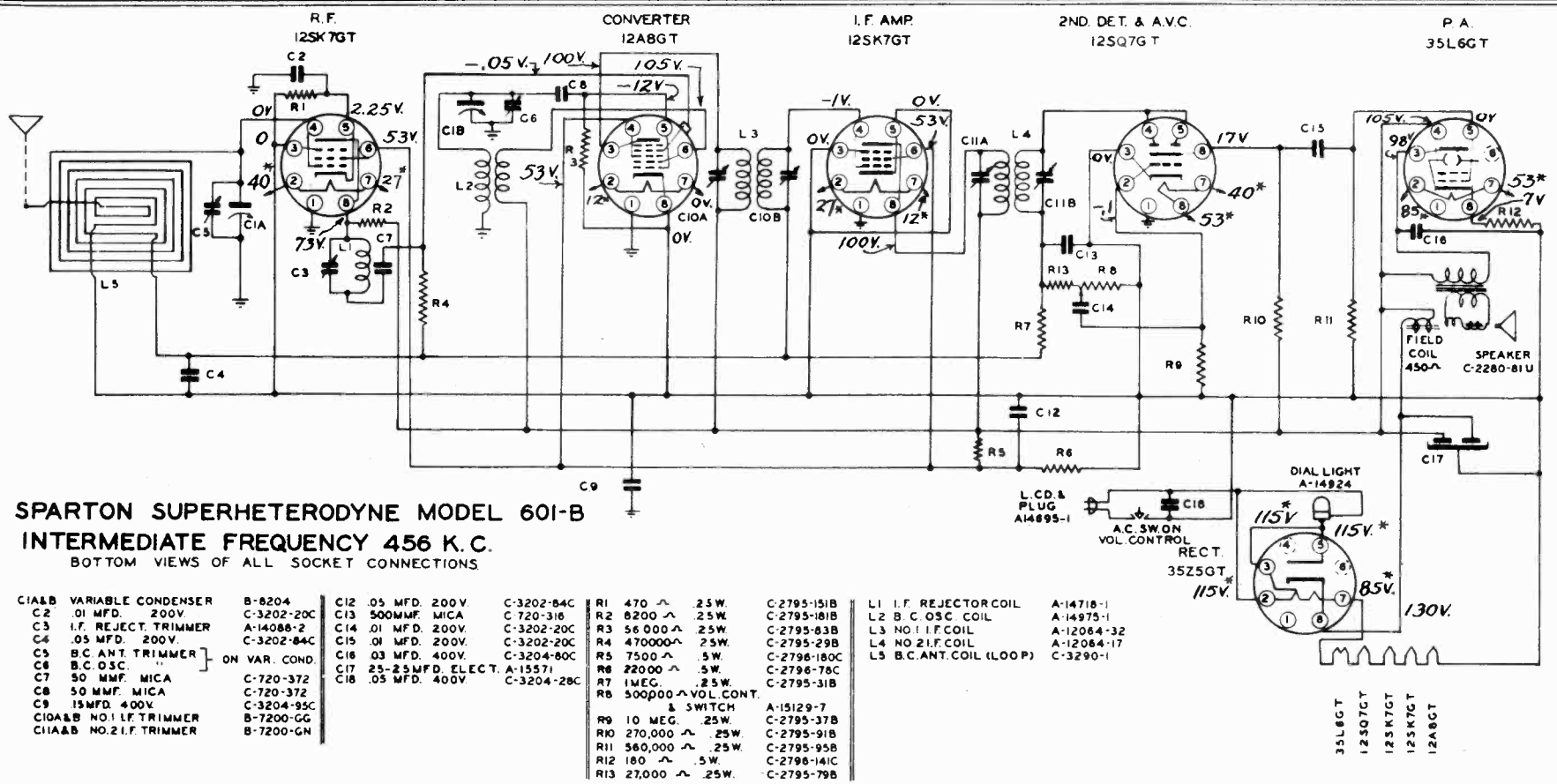
SPARKS WITHINGTON CO.



ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER
1	(Set pointer even with horizontal dial marks with condenser gang closed)						C13A,B; C14A,B
2	I. F.	12A8GT Grid	.1 mf.	456 KC	BC	Open	C13A,B; C14A,B
3	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C 3 Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C 8 (Osc)
5							C 5 (Ant)
6	(Repeat operation 4)			600 KC	BC	600 KC	C 9 (Pad) **
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.



SPARTON SUPERHETERODYNE MODEL 601-B

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

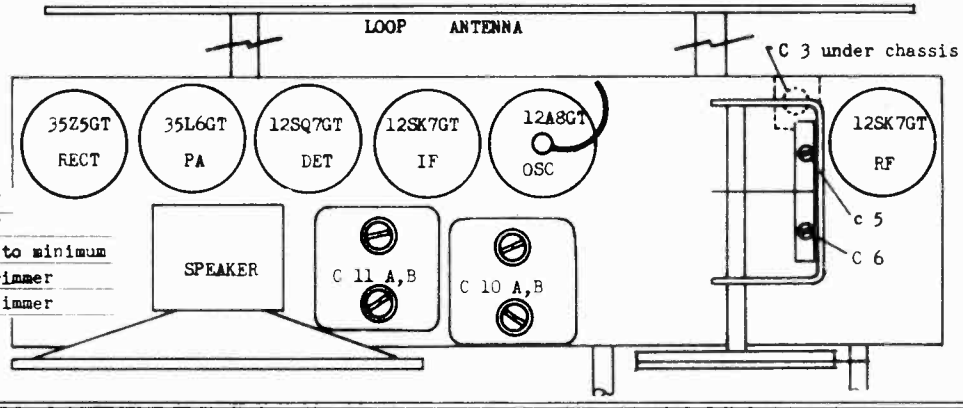
C1A&B	VARIABLE CONDENSER	B-8204
C2	.01 MFD. 200V.	C-3202-20C
C3	I.F. REJECT. TRIMMER	A-14088-2
C4	.05 MFD. 200V.	C-3202-84C
C5	B.C. ANT. TRIMMER } ON VAR. COND.	
C6	B.C. OSC. "	
C7	50 MMF. MICA	C-720-372
C8	50 MMF. MICA	C-720-372
C9	15MFD. 400V.	C-3204-95C
C10A&B	NO.1 I.F. TRIMMER	B-7200-GG
C11A&B	NO.2 I.F. TRIMMER	B-7200-GN
C12	.05 MFD. 200V.	C-3202-84C
C13	500MMF. MICA	C-720-316
C14	.01 MFD. 200V.	C-3202-20C
C15	.01 MFD. 200V.	C-3202-20C
C16	.03 MFD. 400V.	C-3204-80C
C17	25-25MFD. ELECT.	A-15571
C18	.05 MFD. 400V	C-3204-28C
R1	470 Ω .25W.	C-2795-151B
R2	8200 Ω .25W.	C-2795-181B
R3	56 000Ω .25W.	C-2795-83B
R4	470000Ω .25W.	C-2795-29B
R5	7500 Ω .5W.	C-2796-180C
R6	22000 Ω .5W.	C-2796-78C
R7	1MEG. .25W.	C-2795-31B
R8	500ρ00Ω VOL.CONT. & SWITCH	A-15129-7
R9	10 MEG. .25W.	C-2795-37B
R10	270,000 Ω .25W.	C-2795-91B
R11	560,000 Ω .25W.	C-2795-95B
R12	180 Ω .5W.	C-2796-141C
R13	27,000 Ω .25W.	C-2795-79B
L1	I.F. REJECTOR COIL	A-14718-1
L2	B.C. OSC. COIL	A-14975-1
L3	NO.1 I.F. COIL	A-12064-32
L4	NO.2 I.F. COIL	A-12064-17
L5	B.C. ANT. COIL (LOOP)	C-3290-1

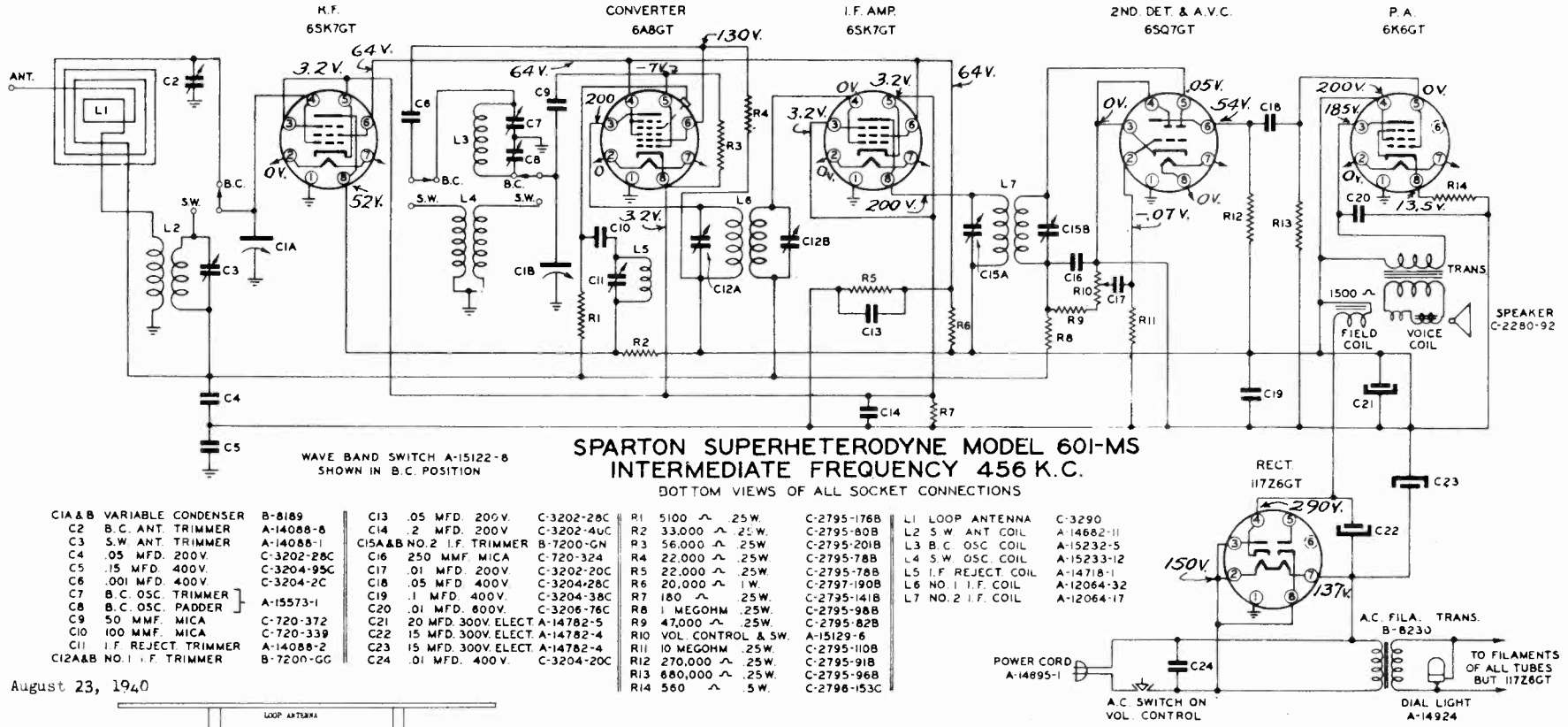
ALIGNMENT CHART

ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	
(Set pointer even with last calibration mark when condenser gang is closed.)						
I.F.	12A8GT Grid Cap	.1 mf.	456 KC	Open	C11 A & B	2nd I-F
					C10 A & B	1st I-F
Rejector	*	200 mmf.	456 KC	Closed	C3	Adjust to minimum
Broadcast Band	*	200 mmf.	1500 KC	1500 KC	C6	Osc. Trimmer
					C5	Ant. Trimmer
(Check calibration and sensitivity at 1500 KC, 1000 KC and 600 KC.)						
(Check operations 1 to 6 inclusive.)						

*Connect dummy antenna to blue wire of loop winding.

August 23, 1940





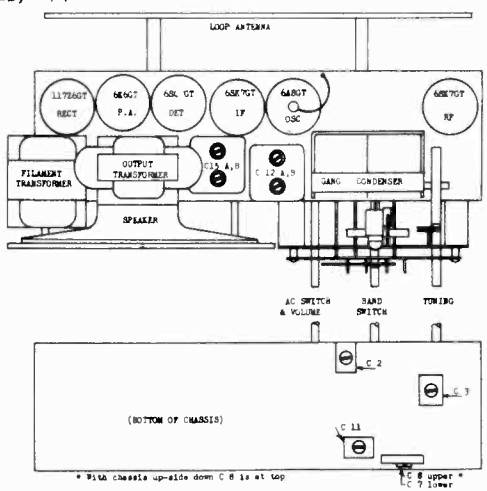
WAVE BAND SWITCH A-15122-8
SHOWN IN B.C. POSITION

SPARTON SUPERHETERODYNE MODEL 601-MS
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

C1A & B	VARIABLE CONDENSER	B-8189
C2	B.C. ANT. TRIMMER	A-14088-8
C3	S.W. ANT. TRIMMER	A-14088-1
C4	.05 MFD. 200V.	C-3202-28C
C5	.15 MFD. 400V.	C-3204-95C
C6	.001 MFD. 400V.	C-3204-2C
C7	B.C. OSC. TRIMMER	A-15573-1
C8	B.C. OSC. PADDER	
C9	50 MMF. MICA	C-720-372
C10	100 MMF. MICA	C-720-339
C11	I.F. REJECT. TRIMMER	A-14088-2
C12A&B	NO. 1 I.F. TRIMMER	B-7200-GG
C13	.05 MFD. 200V.	C-3202-28C
C14	.2 MFD. 200V.	C-3202-40C
C15A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C16	250 MMF. MICA	C-720-324
C17	.01 MFD. 200V.	C-3202-20C
C18	.05 MFD. 400V.	C-3204-28C
C19	.1 MFD. 400V.	C-3204-38C
C20	.01 MFD. 600V.	C-3206-76C
C21	20 MFD. 300V. ELECT.	A-14782-5
C22	15 MFD. 300V. ELECT.	A-14782-4
C23	15 MFD. 300V. ELECT.	A-14782-4
C24	.01 MFD. 400V.	C-3204-20C
R1	5100 Ω .25W.	C-2795-176B
R2	33,000 Ω .25W.	C-2795-80B
R3	56,000 Ω .25W.	C-2795-201B
R4	22,000 Ω .25W.	C-2795-78B
R5	22,000 Ω .25W.	C-2795-78B
R6	20,000 Ω 1W.	C-2797-190B
R7	180 Ω .25W.	C-2795-141B
R8	1 MEGOHM .25W.	C-2795-98B
R9	47,000 Ω .25W.	C-2795-82B
R10	VOL. CONTROL & SW.	A-15129-6
R11	10 MEGOHM .25W.	C-2795-110B
R12	270,000 Ω .25W.	C-2795-91B
R13	680,000 Ω .25W.	C-2795-96B
R14	560 Ω .5W.	C-2796-153C
L1	LOOP ANTENNA	C-3290
L2	S.W. ANT COIL	A-14682-11
L3	B.C. OSC. COIL	A-15232-5
L4	S.W. OSC. COIL	A-15233-12
L5	I.F. REJECT. COIL	A-14718-1
L6	NO. 1 I.F. COIL	A-12064-32
L7	NO. 2 I.F. COIL	A-12064-17

August 23, 1940

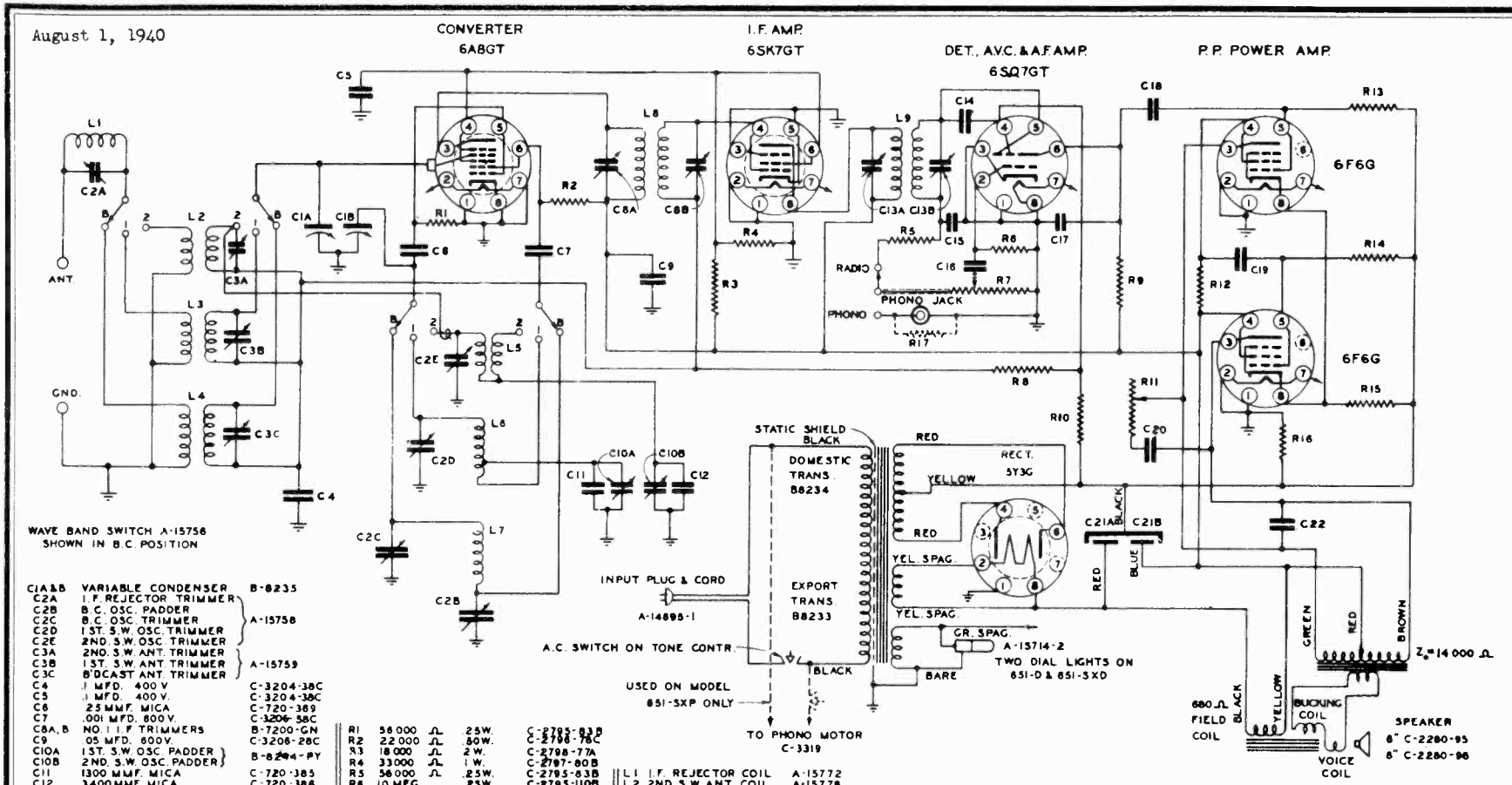


ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer even with last calibration mark when condenser gang is fully closed.)							
2	I. F.	6A8GT Grid Cap	.1 mf.	456 KC	BC	Open	C15 A & B	2nd I-F
							C12 A & B	1st I-F
3	Rejector	*	200 mmf.	456 KC	BC	Closed	C11	Adjust to minimum
4	Broad-cast band	*	200 mmf.	1500 KC	BC	1500 KC	C7	Osc. Trimmer
							C2	Ant. Trimmer
5				600 KC	BC	600 KC	C8	Osc. Pad.
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 1500 KC, 1000 KC and 600 KC.)							
8	SW Band	*	**	18. MC	SW	18.MC	C3	Ant. Trimmer
9	(Check calibration and sensitivity at 18. MC, 9. MC and 6 MC)							
10	(Check operation 1 to 9 inclusive.)							

Notes: *Connect dummy antenna to blue wire of loop winding.
**200 mmf. and 100 ohms in series.

August 1, 1940



C1A&B	VARIABLE CONDENSER	B-8235
C2A	I.F. REJECTOR TRIMMER	A-15758
C2B	B.C. OSC. PADDER	
C2C	B.C. OSC. TRIMMER	
C2D	1 ST. S.W. OSC. TRIMMER	
C2E	2ND. S.W. OSC. TRIMMER	
C3A	2ND. S.W. ANT. TRIMMER	A-15759
C3B	1 ST. S.W. ANT. TRIMMER	
C3C	B'DCAST ANT. TRIMMER	
C4	.1 MFD. 400 V	C-3204-38C
C5	.1 MFD. 400 V.	C-3204-38C
C6	.25 MMF. MICA	C-720-389
C7	.001 MFD. 600 V.	C-3206-38C
C8A, B	NO. 1 I.F. TRIMMERS	B-7200-GN
C9	.05 MFD. 600 V.	C-3206-28C
C10A	1 ST. S.W. OSC. PADDER	B-8294-PY
C10B	2 ND. S.W. OSC. PADDER	
C11	1300 MMF. MICA	C-720-385
C12	3400 MMF. MICA	C-720-386
C13A, B	NO. 2 I.F. TRIMMERS	B-7200-GN
C14	100 MMF. MICA	C-720-339
C15	250 MMF. MICA	C-720-319
C16	.01 MFD. 400 V.	C-3204-132C
C17	100 MMF. MICA	C-720-339
C18	.03 MFD. 600 V.	C-3206-136C
C19	.03 MFD. 600 V.	C-3206-136C
C20	.03 MFD. 600 V.	C-3206-136C
C21A	15 MFD. 450 V. ELECT.	A-15755
C21B	30 MFD. 300 V. ELECT.	
C22	.003 MFD. 800 V.	C-3208-118C

R1	56 000 Ω	.25 W.	C-2795-83B	
R2	22 000 Ω	.50 W.	C-2798-75C	
R3	18 000 Ω	2 W.	C-2798-77A	
R4	33000 Ω	1 W.	C-2797-80B	
R5	56 000 Ω	.25 W.	C-2795-83B	
R6	10 MEG.	.25 W.	C-2795-110B	
R7	.5 MEG. VOL. CONTROL		A-15130-4	
R8	1 MEG.	.25 W.	C-2795-98B	
R9	270 000 Ω	.25 W.	C-2795-91B	
R10	1 MEG.	.25 W.	C-2795-98B	
R11	1 MEG. T.C. & SWITCH		A-15131-1	
R12	2700 Ω	.25 W.	C-2795-169B	
R13	470 000 Ω	.25 W.	C-2795-223B	
R14	470 000 Ω	.25 W.	C-2795-223B	
R15	330 Ω	1 W.	C-2797-147B	
R15	680 Ω 1 W.		C-2797-155B	ON 25 ~ RECEIVERS ONLY
R16	100 Ω .25 W.		C-2795-135B	
R17	10 000 Ω .25 W.		C-2795-74B	ON MODEL 651 SXP ONLY

L1	I.F. REJECTOR COIL	A-15772
L2	2ND S.W. ANT. COIL	A-15778
L3	1 ST S.W. ANT. COIL	A-15774
L4	B.C. ANT. COIL	A-14864-1
L5	2 ND S.W. OSC. COIL	A-15233-14
L6	1 ST S.W. OSC. COIL	A-15773
L7	B.C. OSC. COIL	A-15771
L8	NO. 1 I.F. COIL	A-12064-39
L9	NO. 2 I.F. COIL	A-12064-17

MODELS 651, 651-D, 651-SX, 651-SXD, 651-SXP
INTERMEDIATE FREQUENCY 456 K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

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

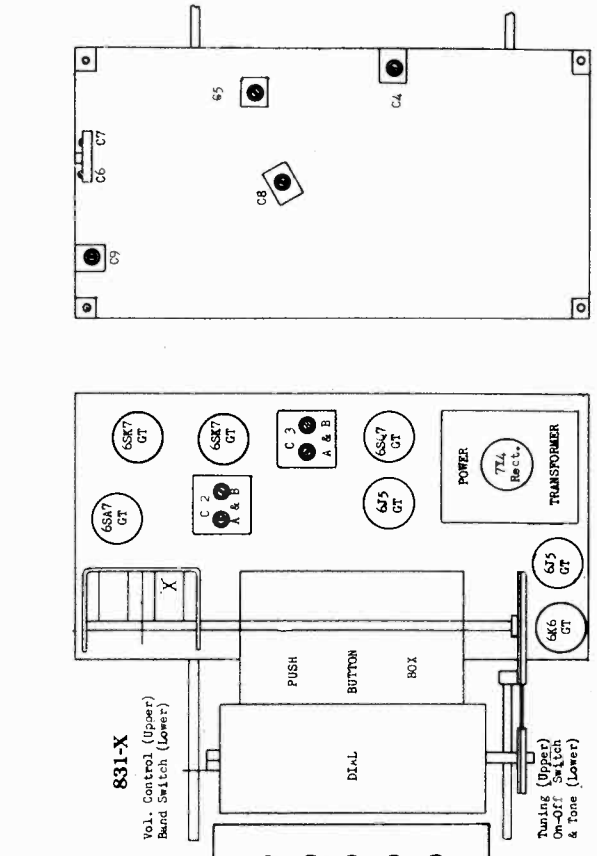
TUBE	FUNCTION Line Voltage: 117 volts	Voltage of Socket Prongs to Gnd. (See Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid cap
6A8GT	Osc. - Converter	0	6.2*	230	82	-3	150	0	0	-.
6SK7GT	I-F Amplifier	0	0	0	-.2	0	80	6.2*	230	-
6SQ7GT	Det - AVC - 1st Audio	0	-.3	0	-.2	**	35	6.2*	0	-
6F6G	Power Amplifier	0	0	225	220	0	-3	6.2*	15	-
6F6G	Power Amplifier	0	0	225	235	0	-3	6.2*	15	-
5Y3G	Rectifier	0	320*	0	300*	0	300*	0	320*	-

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements.

*AC
** Cannot be measured with 1000 ohms/volt voltmeter.

MODELS 651, 651D,
651-SX, 651-SXD, 651-SXP
MODEL 831-X

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 drum so that last mark on BC scale is directly toward front of set when condenser plates are fully meshed.)							
2	I.F.	6A8GT Grid	.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	C2A	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C2C Osc.	**
							C3C Ant.	**
5				600 KC		600 KC	C2B Pad.	***
6	(Repeat operation 4)							
7	1st Short-Wave Band	Ant.	*	7 MC	1 SW	7 MC	C2D Osc.	**
							C3B Ant.	**
8				2.5 MC		2.5 MC	C10A Pad.	***
9	(Repeat operation 7)							
10	2nd Short-Wave Band	Ant.	*	21 MC	2 SW	21. MC	C2E Osc.	**
11				9. MC		9. MC	C3A Ant.	**
							C10B Pad.	***
12	(Repeat operation 10)							
13	(Check operations 1 to 12 inclusive)							

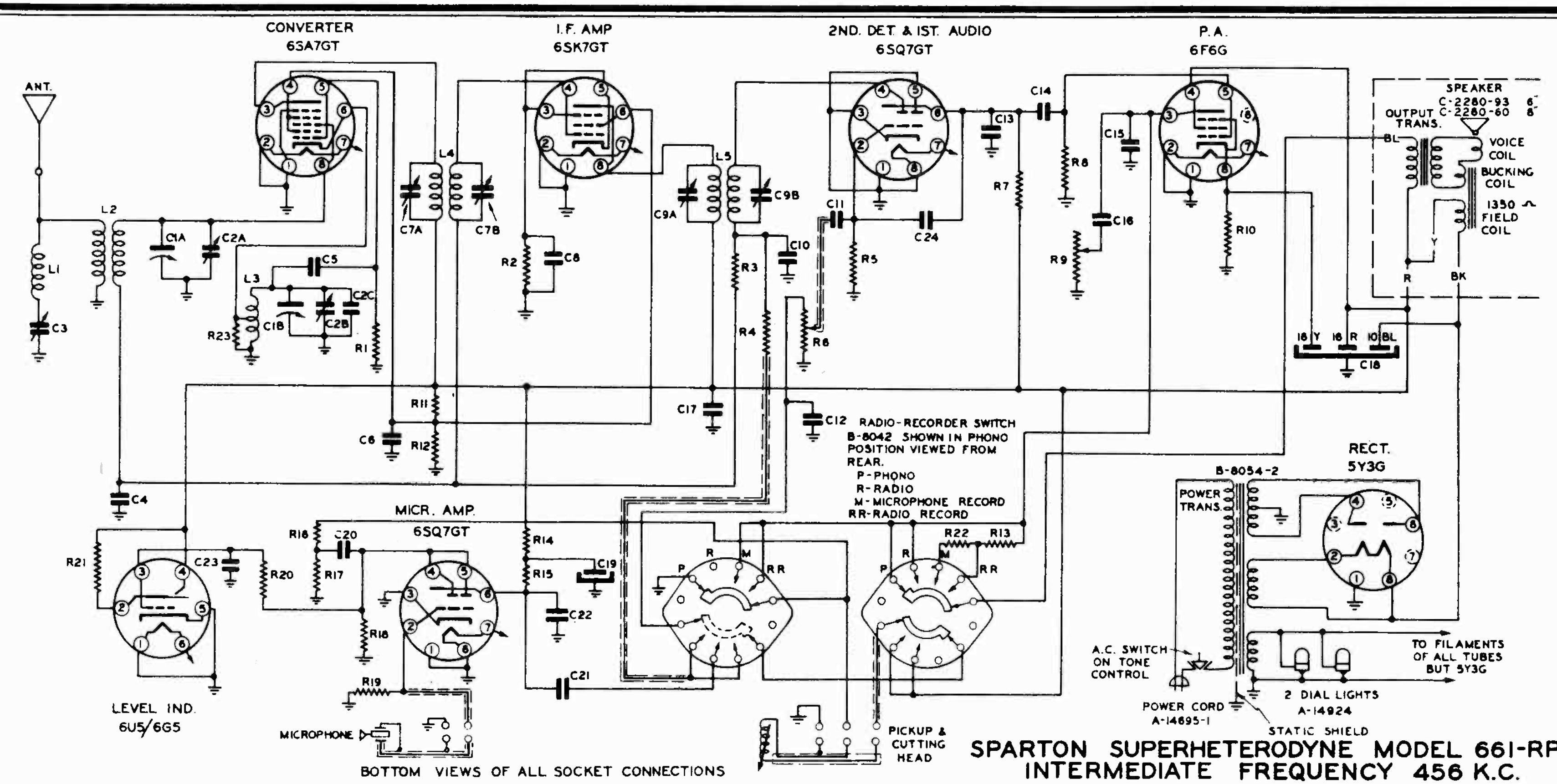
Notes: * 100 ohm non-inductive resistor and 200 mmf. condenser in series.
** Peak accurately.
*** Rock dial while making this adjustment. Adjust to fundamental signal and not to image. Peak accurately.

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.		*	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	C2A	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C2C Osc.	**
							C3C Ant.	**
5				600 KC		600 KC	C2B Pad.	***
6	(Repeat operation 4)							
7	1st Short-Wave Band	Ant.	*	7 MC	1 SW	7 MC	C2D Osc.	**
							C3B Ant.	**
8				2.5 MC		2.5 MC	C10A Pad.	***
9	(Repeat operation 7)							
10	2nd Short-Wave Band	Ant.	*	21 MC	2 SW	21. MC	C2E Osc.	**
11				9. MC		9. MC	C3A Ant.	**
							C10B Pad.	***
12	(Repeat operation 10)							
13	(Check operations 1 to 9 inclusive)							

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

SPARKS-WITHINGTON CO.



SPARTON SUPERHETERODYNE MODEL 661-RP
INTERMEDIATE FREQUENCY 456 K.C.

C1A&B	VARIABLE CONDENSER	B-8225
C2A,B,C	TRIMMERS ON VAR. COND.	
C3	I.F. REJECT TRIMMER	A-14088-2
C4	.05 MFD. 200 MFD	C-3202-28C
C5	50 MMF. MICA	C-720-372
C6	.05 MFD. 400 V	C-3204-28C
C7A&B	NO. 1 I.F. TRIMMER	B-7200-GN
C8	.05 MFD. 200 V	C-3202-28C
C9A&B	NO. 2 I.F. TRIMMER	B-7200-GN
C10	100 MMF. MICA	C-720-339
C11	.02 MFD. 200 V	C-3202-22C
C12	250 MMF. MICA	C-720-324
C13	100 MMF. MICA	C-720-339
C14	.02 MFD 400 V.	C-3204-22C
C15	.003 MFD. 600 V.	C-3206-62C
C16	.03 MFD. 600 V.	C-3206-80C
C17	.05 MFD. 400 V.	C-3204-28C
C18	16-16-10 MFD. ELECT.	A-14780-2
C19	8 MFD. 250 V.	A-14782-1
C20	.01 MFD. 400 V	C-3204-76C
C21	.02 MFD. 400 V.	C-3204-22C
C22	.01 MFD. 400 V.	C-3204-76C
C23	.01 MFD. 400 V.	C-3204-76C
C24	12 MMF. MICA	C-720-356

R1	27,000 Ω	.25W.	C-2795-79B
R2	330 Ω	.25W.	C-2795-56B
R3	1 MEGOHM	.25W.	C-2795-98B
R4	27,000 Ω	.25W.	C-2795-79B
R5	5.6 MEGOHM	.25W.	C-2795-107B
R6	500,000 Ω VOL. CONT.		A-15130-5
R7	220,000 Ω	.25W.	C-2795-90B
R8	560,000 Ω	.25W.	C-2795-95B
R9	TONE CONTROL & SW.		A-15128
R10	470 Ω	1 W.	C-2797-58B
R11	15,000 Ω	2 W	C-2798-76A
R12	68,000 Ω	.25W.	C-2795-84B
R13	22,000 Ω	1 W.	C-2797-78B
R14	220,000 Ω	.25W.	C-2795-90B
R15	100,000 Ω	.25W.	C-2795-86B
R16	1.5 MEGOHM	.25W.	C-2795-100B
R17	1.2 MEGOHM	.25W.	C-2795-99B
R18	10 MEGOHM	.25W	C-2795-110B
R19	5.6 MEGOHM	.25W.	C-2795-107B
R20	1 MEGOHM	.25W.	C-2795-98B
R21	220,000	.25W.	C-2795-90B
R22	56,000 Ω	.25W.	C-2795-83B
R23	330 Ω	.25W.	C-2795-56B

L1	I.F. REJECT. COIL	A-14718-1
L2	B.C. ANT. COIL	A-14974-4
L3	B.C. OSC. COIL	A-15232-6
L4	NO. 1 I.F. COIL	A-12084-41
L5	NO. 2 I.F. COIL	A-12084-17

ALIGNMENT CHART

OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer to last calibration mark at low end of dial with condenser gang fully closed)							
2	I. F.	Ant.	.1 mf.	456 kc	*	open	C8 A & B	2nd. I.F.
							C7 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	oscillator
5				1500 kc	*	1500 kc	C2A	antenna
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 kc, 900 kc, and 1500 kc.)							

(Check operations 1 to 7 inclusive)

* "RECEIVE RADIO"

Sparton Superheterodyne Model 661-RP

VOLTAGE CHART

Line voltage: 117 volts

Position of Volume Control; Full with Ant. disconnected

Position of Band Switch: Broadcast

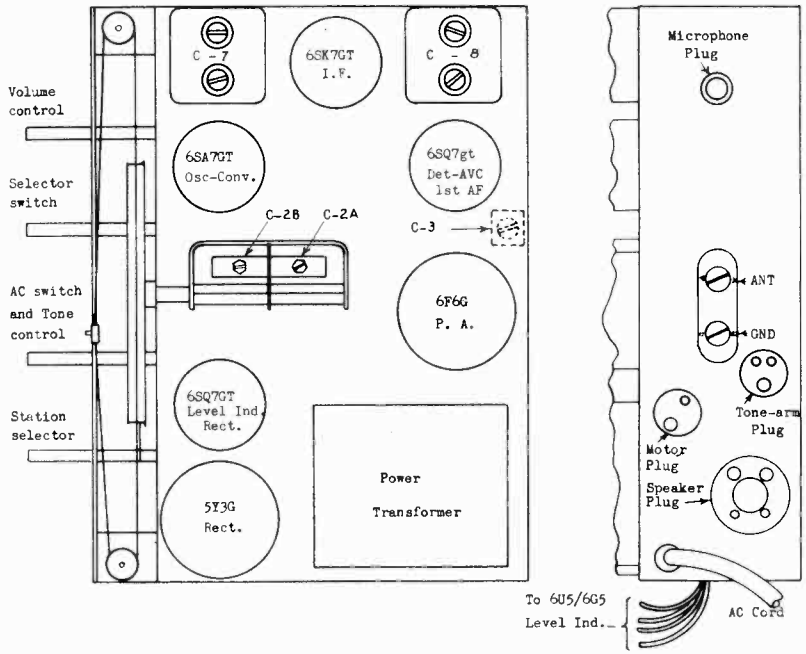
Tube	Function	Voltage of socket prongs to Gnd. (See prong no's. on diagram)							
		No 1	No 2	No 3	No 4	No 5	No 6	No 7	No 8
6SA7GT	Oscillator-Converter	0	0	220	77	-7.2	0	6.1*	0
6SK7GT	I-f Amplifier	0	0	2.7	0	2.7	77	6.1*	220
6SQ7GT	Det-AVC-1st Audio	0	**	0	0	0	58	6.1*	0
6F6G	Power Amplifier	0	0	200	220	0	57	6.1*	15
6SQ7GT	Microphone Amplifier	0	**	0	**	**	45	6.1*	0
6U5/6G5	Record. Level Indicator	6.1*	19	0	220	0	0	-	-
5Y3G	Rectifier	0	320*	-	280*	-	280*	-	320*

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 otherwise designated, voltages in table are + DC voltages.

* AC volts

** Cannot be measured with 1000 ohms/volt voltmeter.

Check cutting head voltage with cutting head connected using signal generator (1000 KC 30% modulated) connected to "Ant" and "Gnd". With Selector switch in "Record Radio" position, advance gain until Level Indicator (6U5/6G5 tube) closes without over-lapping. AC voltage as measured from 6F6G plate to ground (AC meter in series with .1 mf. 400 volt condenser) should be approximately 52 volts.



HOW TO ADJUST THE CUTTING HEAD

The Model 661-RP features a combination "cutting" and "play back" head on the tone arm. The adjustment is controlled by the position of a knurled screw on the side of the arm, and the correct position of the screw is very important, otherwise record discs may not be correctly cut (or played back).

Loosening the screw will allow it to be moved up or down - up for cutting records and down for playing records. The slot in which the screw travels is designed so that the screw may be tightened in several intermediate positions, as well as in the extreme up or extreme down positions. These intermediate positions actually compensate for exceptionally hard or soft discs and new or used needles.

In general, three (3) positions of the screw will take care of all grades of record hardness and sharpness of the cutting needle.

(1) With the screw midway between maximum up (cut position) and maximum down (play position) for "soft" records and new cutting needles.

(2) With the screw approximately two-thirds of the way toward "cut position" for average hardness (Presto) records and slightly used needles.

(3) With the screw up as far as possible for extremely hard records and dull needles.

NOTE: It is never good practice to use dull needles.

The screw must always be all the way "down" at "play position" when records are played.

IMPORTANT:

Don't forget to insert a cutting needle in the tonearm head when a recording is to be made, and don't forget to remove the cutting needle and insert a play-back needle before playing any type of record.

The cutting needle must be inserted correctly with the needle screw tightened firmly against the flat spot on the shank of the needle.

Play-back needles should not be used too many times or they will ruin the cut in the record and cause fuzzy distorted reproduction.

HOW TO ADJUST THE VOLUME FOR BEST RESULTS

In order to make good records there must be just the right amount of volume whether it is a radio program that is being recorded, or whether the microphone is being used.

To make it easy to tell when the volume is "just right", SPARTON Record Makers are equipped with a Level Indicator Tube which acts something like a Viso-Glo or Magic Eye Tuning Tube for radios. The circuits in the Record Makers are so arranged that the "eye" just closes without overlapping when the proper amount of volume is obtained. The volume control is used in the regular way to increase or decrease volume and the "eye" tells when the level is just right.

When a recording is being made do not attempt to turn the volume control up so that normal room volume is heard through the loud speaker.

SPARTON Engineers designed the Record Makers so that only a part of the music or speech comes through the speaker while a recording is being made, and this enables the user to know exactly what is "going on the record". This applies whether the selector switch is in the "Record Radio" position or in the "Record Microphone" position.

When recordings are being made the circuits are correctly matched for the cutting arm rather than the loud speaker. As a result, the tone volume is correct for the recording but the program will not sound natural through the loud speaker.

An important thing to remember is that the volume control should never be turned so high up that the "eye" over-laps on music or speech as this will cause "over-cutting" and spoil an otherwise good recording.

Model 761

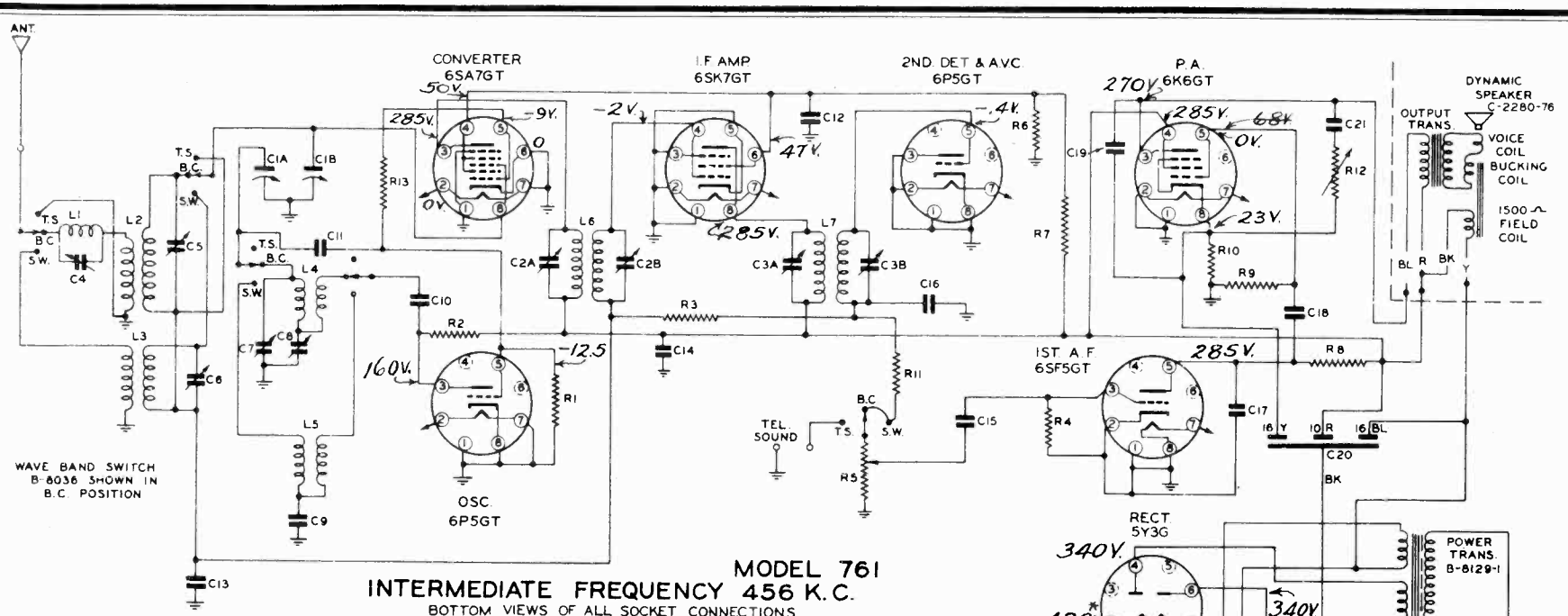
ALIGNMENT CHART

Operation	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer at last calibrated mark with condenser gang closed.)							
2	I.F.	*	.1 mf.	456 KC	BC	Open	C3 A&B C2 A&B	
3	I-F Rej.	Ant.	200 mf.	456 KC	BC	Closed	C4	Adjust to minimum
4	Broad-cast Band	Ant.	200 mf.	1500 KC	BC	1500 KC	C7 (Osc.) C5 (Ant.)	
5				600 KC	BC	600 KC	C8 (Pad.)	***
6	(Repeat operation 4).							
7	(Check calibration and sensitivity at 1500 KC, 900 KC and 600 KC)							
8	SW Band	Ant.	**	18 MC	SW	18 MC	C6 (Ant.)	***
9	(Check calibration and sensitivity at 6. MC and 18. MC)							
10	(Check operations 1 to 9 inclusive.)							

*Connect to point marked "X" in drawing below.

**100 ohms and 200 mmf. in series.

***Rock dial while adjusting for maximum output. Be sure to adjust on fundamental signal and not on image.



MODEL 761

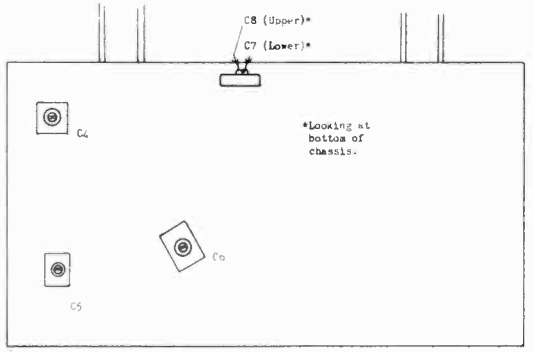
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

C1A&B	VARIABLE CONDENSER	B-7229
C2A&B	NO. 1 I.F. TRIMMER	B-7200-GN
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	B.C. OSC. TRIMMER	B-7199-EY
C8	B.C. OSC. PADDER	
C9	2700 MMFD. MOLDED	A-15451
C10	250 MMFD. MOLDED	C-720-324
C11	50 MMFD. MOLDED	C-720-315
C12	MFD. 200V.	C-3202-38C
C13	.05 MFD. 200V.	C-3202-84C
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	.003 MFD. 600V.	C-3206-62C
C20	16-10-16 MFD. ELECT.	A-14780
C21	.03 MFD. 600V.	C-3206-80C

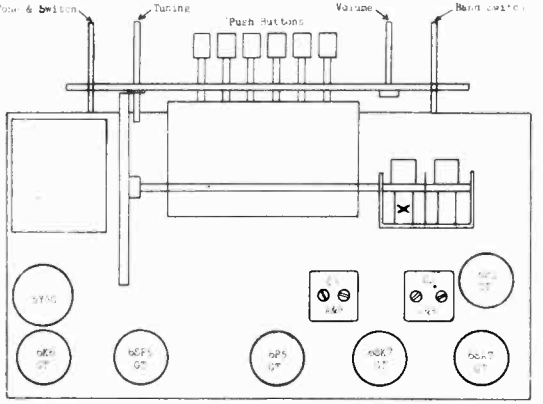
R1	56,000 Ω .25W.	C-2795-83B
R2	22,000 Ω .5W.	C-2796-78C
R3	1 MEGOHM .25W.	C-2795-98B
R4	4.7 MEGOHM .25W.	C-2795-106B
R5	500,000 Ω VOL. CONT.	A-15130-2
R6	27,000 Ω 1W.	C-2797-79B
R7	33,000 Ω 3W.	C-2799-80A
R8	270,000 Ω .25W.	C-2795-91B
R9	680,000 Ω .25W.	C-2795-30B
R10	680 Ω 1W.	C-2797-60B
R11	56,000 Ω .25W.	C-2795-83B
R12	TONE CONT. & SW.	A-15128-1
R13	560 Ω .25W.	C-2795-59B

L1	I.F. REJECTOR COIL	A-14677
L2	B.C. ANT. COIL	A-14679-1
L3	S.W. ANT. COIL	A-14682-8
L4	B.C. OSC. COIL	A-15377-1
L5	S.W. OSC. COIL	A-15233-3
L6	NO. 1 I.F. COIL	A-12064-39
L7	NO. 2 I.F. COIL	A-12064-17



BOTTOM VIEW OF CHASSIS

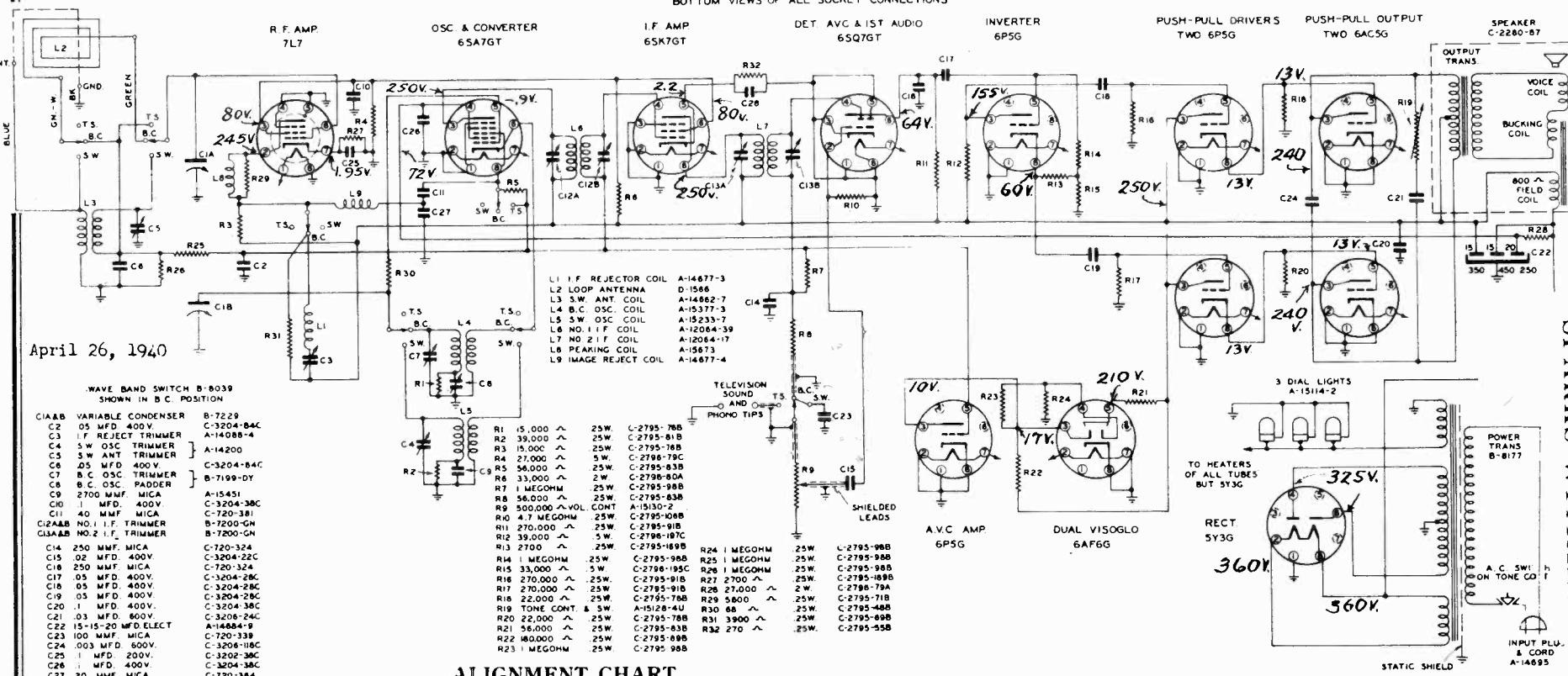
FOR OTHER DATA, SEE INDEX



TOP VIEW OF CHASSIS

January 2, 1940

SPARTON SUPERHETERODYNE MODEL 1281
INTERMEDIATE FREQUENCY 456 K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS



April 26, 1940

WAVE BAND SWITCH B-8039 SHOWN IN B.C. POSITION

C1A&B	VARIABLE CONDENSER	B-7229
C2	.05 MFD. 400 V.	C-3204-84C
C3	I.F. REJECT TRIMMER	A-14088-4
C4	S.W. OSC. TRIMMER	A-14200
C5	S.W. ANT. TRIMMER	
C6	.05 MFD. 400 V.	C-3204-84C
C7	B.C. OSC. TRIMMER	B-7199-DY
C8	B.C. OSC. PADDER	
C9	2700 MMF. MICA	A-15451
C10	.1 MFD. 400 V.	C-3204-38C
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. 400 V.	C-3204-22C
C16	250 MMF. MICA	C-720-324
C17	.05 MFD. 400 V.	C-3204-28C
C18	.05 MFD. 400 V.	C-3204-28C
C19	.05 MFD. 400 V.	C-3204-28C
C20	.1 MFD. 400 V.	C-3204-38C
C21	.03 MFD. 600 V.	C-3208-24C
C22	15-15-20 MFD. ELECT	A-14884-9
C23	100 MMF. MICA	C-720-339
C24	.003 MFD. 600 V.	C-3208-118C
C25	.1 MFD. 200 V.	C-3202-38C
C26	.1 MFD. 400 V.	C-3204-38C
C27	20 MMF. MICA	C-720-384
C28	.1 MFD. 200 V.	C-3202-38C

R1	15,000 Ω	.25 W.	C-2795-76B
R2	39,000 Ω	.25 W.	C-2795-81B
R3	15,000 Ω	.25 W.	C-2795-76B
R4	27,000 Ω	.5 W.	C-2796-79C
R5	56,000 Ω	.25 W.	C-2795-83B
R6	33,000 Ω	.2 W.	C-2796-80A
R7	1 MEGOHM	.25 W.	C-2795-98B
R8	56,000 Ω	.25 W.	C-2795-83B
R9	500,000 Ω VOL. CONT		A-15130-2
R10	4.7 MEGOHM	.25 W.	C-2795-106B
R11	270,000 Ω	.25 W.	C-2795-91B
R12	39,000 Ω	.5 W.	C-2796-187C
R13	2700 Ω	.25 W.	C-2795-189B
R14	1 MEGOHM	.25 W.	C-2795-98B
R15	33,000 Ω	.5 W.	C-2796-195C
R16	270,000 Ω	.25 W.	C-2795-91B
R17	270,000 Ω	.25 W.	C-2795-91B
R18	22,000 Ω	.25 W.	C-2795-78B
R19	TONE CONT. &	.5 W.	A-15128-4U
R20	22,000 Ω	.25 W.	C-2795-78B
R21	56,000 Ω	.25 W.	C-2795-83B
R22	180,000 Ω	.25 W.	C-2795-89B
R23	1 MEGOHM	.25 W.	C-2795-98B
R24	1 MEGOHM	.25 W.	C-2795-98B
R25	1 MEGOHM	.25 W.	C-2795-98B
R26	1 MEGOHM	.25 W.	C-2795-98B
R27	2700 Ω	.25 W.	C-2795-189B
R28	27,000 Ω	2 W.	C-2796-79A
R29	5600 Ω	.25 W.	C-2795-71B
R30	68 Ω	.25 W.	C-2795-48B
R31	3900 Ω	.25 W.	C-2795-69B
R32	270 Ω	.25 W.	C-2795-55B

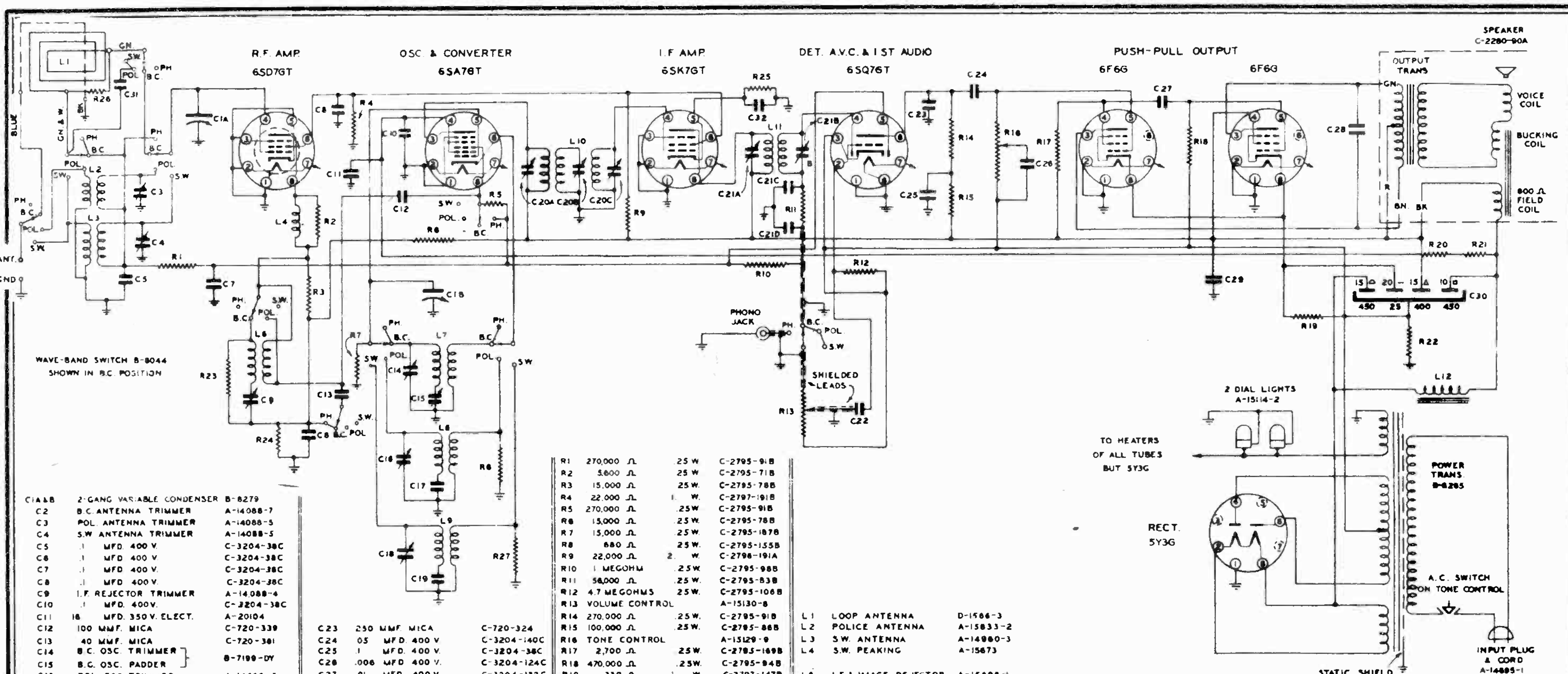
ALIGNMENT CHART

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	BC	1600 KC	C13 A&B	2nd I.F.
							C12 A&B	1st I.F.
3	Rejector	**	200 mmf	456	BC	600 KC	C3	Adjust to minimum
4	Broadcast Band	**	200 mmf	1500 KC	BC	1500 KC	C7 (Osc.)	***
5				600 KC	BC	600 KC	C8 (Pad.)	***
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 750 KC, 1000 KC and 1500 KC)							
8	Shortwave Band	**	****	18 MC	SW	18 MC	C4 (Osc.)	***
							C5 (Ant.)	***
9	(Check calibration and sensitivity at 6.0 MC, 9.0 MC and 18.0 MC)							
10	(Check operations 1 to 9 inclusive.)							

Special Note: For accurate alignment, the special scale found on page 12-22 should be used.

Notes: *Pin No. 8 of 6SA7GT Osc-Converter tube.
**Connect dummy antenna to "Antenna" of loop winding.
***Rock dial while adjusting for maximum output.
****100 ohms resistor and 200 mmf. condenser in series.

MODEL 782PA



C1A&B	2-GANG VARIABLE CONDENSER	B-8279
C2	B.C. ANTENNA TRIMMER	A-14088-7
C3	POL. ANTENNA TRIMMER	A-14088-5
C4	S.W. ANTENNA TRIMMER	A-14088-5
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	.1 MFD. 400 V.	C-3204-38C
C9	I.F. REJECTOR TRIMMER	A-14088-4
C10	.1 MFD. 400 V.	C-3204-38C
C11	16 MFD. 350 V. ELECT.	A-20104
C12	100 MMF. MICA	C-720-339
C13	40 MMF. MICA	C-720-381
C14	B.C. OSC. TRIMMER	B-7199-DY
C15	B.C. OSC. PADDER	(B-7199-DY)
C16	POL. OSC. TRIMMER	A-14088-5
C17	POL. OSC. PADDER	A-15451-3
C18	S.W. OSC. TRIMMER	A-14088-5
C19	S.W. OSC. PADDER	A-15451-4
C20A,B&C	NO. 1 I.F. TRIMMER	A-14792
C21A,B,C,D	NO. 2 I.F. TRIMMER	A-20014
C22	.02 MFD. 400 V.	C-3204-22C

C23	250 MMF. MICA	C-720-324
C24	.05 MFD. 400 V.	C-3204-140C
C25	.1 MFD. 400 V.	C-3204-38C
C26	.006 MFD. 400 V.	C-3204-124C
C27	.01 MFD. 400 V.	C-3204-132C
C28	.003 MFD. 600 V.	C-3206-118C
C29	.1 MFD. 400 V.	C-3204-38C
C30A	15 MFD. 400 V. ELECT.	A-20110
C30B	10 MFD. 450 V. ELECT.	(A-20110)
C30C	20 MFD. 25 V. ELECT.	(A-20110)
C30D	15 MFD. 450 V. ELECT.	(A-20110)
C31	250 MMF. MICA	C-720-324
C32	.1 MFD. 200 V.	C-3202-38C

R1	270,000 Ω	.25 W.	C-2795-91B
R2	5,600 Ω	.25 W.	C-2795-71B
R3	15,000 Ω	.25 W.	C-2795-78B
R4	22,000 Ω	1. W.	C-2797-191B
R5	270,000 Ω	.25 W.	C-2795-91B
R6	15,000 Ω	.25 W.	C-2795-78B
R7	15,000 Ω	.25 W.	C-2795-187B
R8	680 Ω	.25 W.	C-2795-155B
R9	22,000 Ω	2. W.	C-2798-191A
R10	1 MEGOHM	.25 W.	C-2795-98B
R11	56,000 Ω	.25 W.	C-2795-83B
R12	4.7 MEGOHMS	.25 W.	C-2795-106B
R13	VOLUME CONTROL		A-15130-8
R14	270,000 Ω	.25 W.	C-2795-91B
R15	100,000 Ω	.25 W.	C-2795-86B
R16	TONE CONTROL		A-15129-9
R17	2,700 Ω	.25 W.	C-2795-169B
R18	470,000 Ω	.25 W.	C-2795-94B
R19	330 Ω	1. W.	C-2797-147B
R20	12,000 Ω	1. W.	C-2797-185B
R21	8,200 Ω	1. W.	C-2797-73B
R22	100 Ω	.25 W.	C-2795-135B
R23	5,600 Ω	.25 W.	C-2795-71B
R24	33,000 Ω	1. W.	C-2797-80B
R25	820 Ω	.25 W.	C-2795-154B
R26	5,600 Ω	.25 W.	C-2795-71B
R27	680 Ω	.25 W.	C-2795-187B

L1	LOOP ANTENNA	D-1566-3
L2	POLICE ANTENNA	A-15833-2
L3	S.W. ANTENNA	A-14980-3
L4	S.W. PEAKING	A-15673
L6	I.F. & IMAGE REJECTOR	A-15698-1
L7	B.C. OSC.	A-15377-4
L8	POL. OSC.	A-15835-1
L9	S.W. OSC.	A-14967-5
L10	NO. 1 I.F.	A-14794-3
L11	NO. 2 I.F.	A-12084-42
L12	FILTER CHOKE	A-15386

SPARTON SUPERHETERODYNE MODEL 782PA
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

(Original) Effective January 15, 1941

Line Voltage: 117 Volts AC

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

*AC volts.
**Cannot be measured with Model 665 Analyzer.

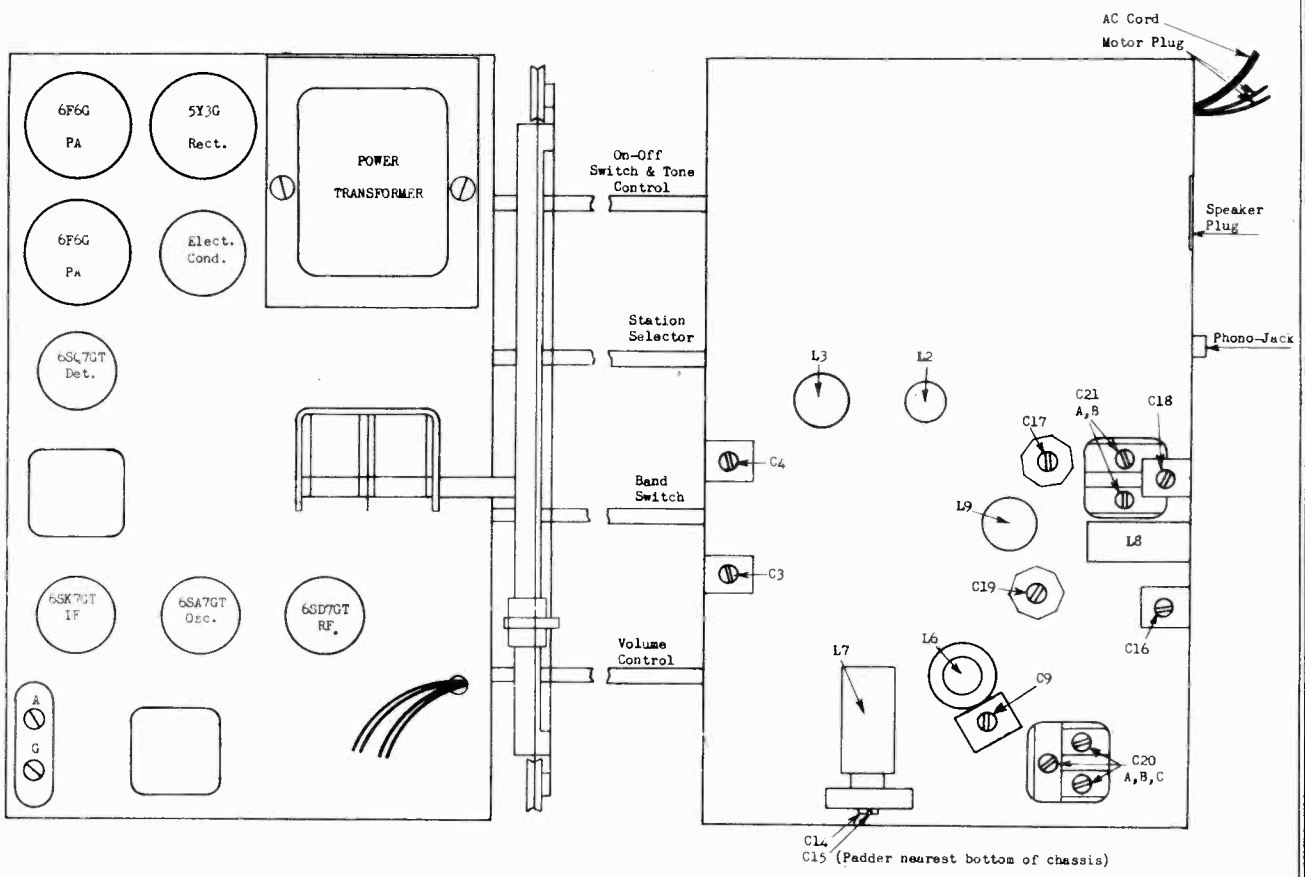
TUBE	FUNCTION	Voltage of Socket Prongs to Gnd. (See Schematic Diagram)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
6SD7GT	R-F Amplifier	0	0	0	**	0	90	6*	125
6SA7GT	Oscillator & Converter	0	0	230	90	**	0	6*	**
6SK7GT	I.F. Amplifier	0	0	0	**	4	90	6*	**
6SQ7GT	Det AVC & 1st Audio	0	**	**	**	**	30	6*	0
6F6G	Power Amplifier	0	0	230	230	**	--	6*	14
6F6G	Power Amplifier	0	0	230	230	**	80	6*	14
5Y3G	Rectifier	0	325	200	325*	0	325*	--	325

MODEL 782-PA

SPARKS WITHINGTON CO.

Sparton Superheterodyne Model

782-PA



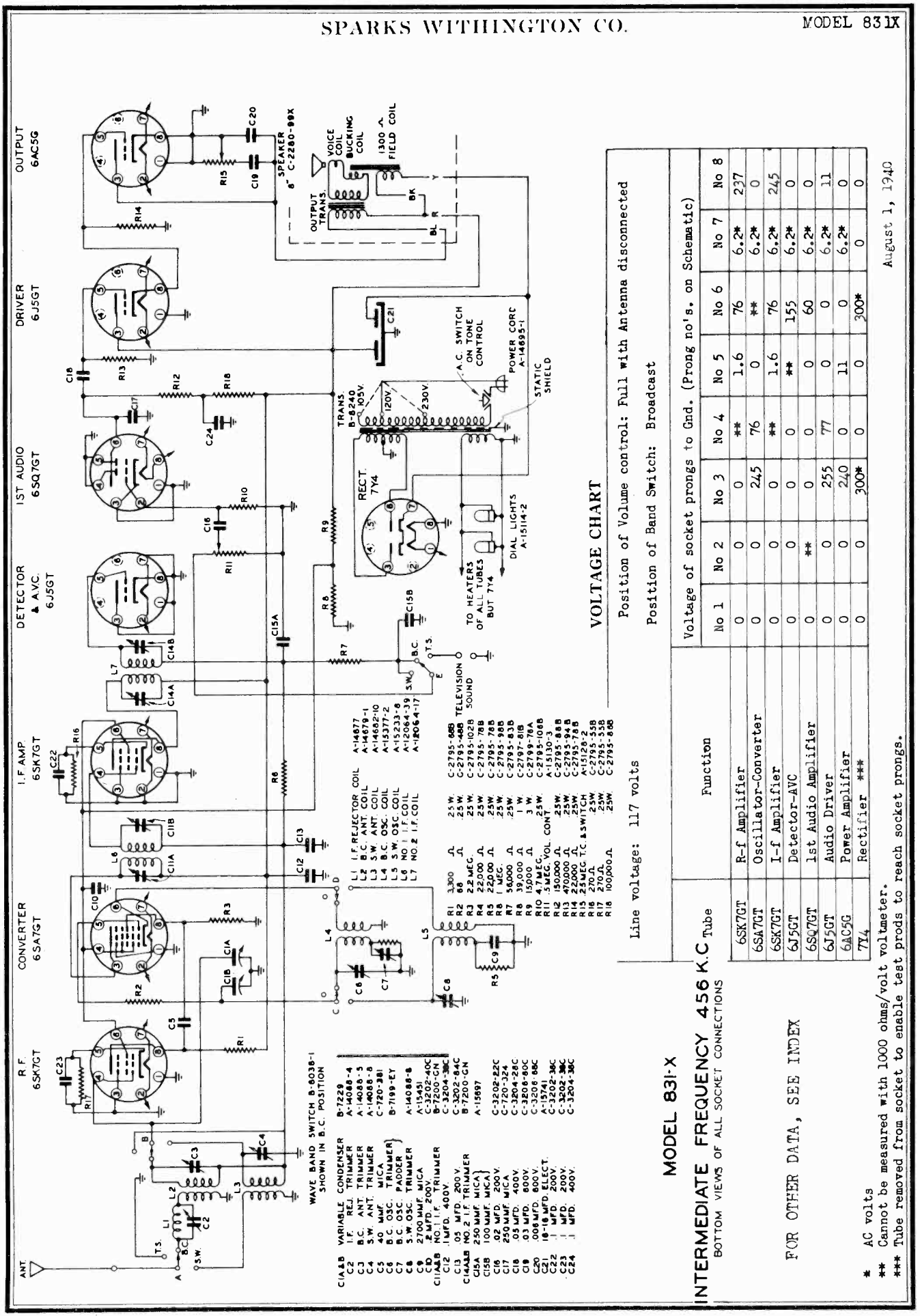
ALIGNMENT CHART

OPER-ATION	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 plates fully meshed.)							
2	I.F.	*	.1 mf.	456 KC	BC	Open	C20 B **	***
3							C20 A&C C20 B	Peak accurately
4							C21 A&B	Peak accurately
5	Rejector	Ant.	200 mmf.	456 KC	BC	Closed	C9	Adjust to minimum
6	Broad cast	Ant.	200 mmf.	1600 KC	BC	1600 KC	C14 (Osc.)	Peak accurately
7	Band			600 KC		600 KC	C15 (Pad.)	Peak accurately
8	(Repeat operation 6)							
9	(Check calibration and sensitivity at 600 KC, 1000 KC and 1600 KC)							
10	Police Band	Ant.	****	5. MC	Pol.	5. MC	C16 (Osc.) C3 (Ant.)	Peak accurately *****
11	(Repeat operation 10)							
12	(Check calibration and sensitivity at 2 MC, 3.5 MC and 5 MC)							
13	Short-Wave Band	Ant.	*****	18 MC	SW	18 MC	C18 (Osc.) C4 (Ant.)	Peak accurately *****
14	(Repeat operation 14)							
15	(Check calibration and sensitivity at 6 MC, 12 MC and 18 MC)							
16	(Check operations 1 to 15 inclusive.)							

Notes: *Connect to terminal No. 8 of type 6SA7GT Osc - Conv. tube.
**Bronze color trimmer screw.
***Turn trimmer screw all the way down.
****100 ohms, 200 mmf. in series.
*****Rock dial while adjusting for maximum output.

SPARKS WITHINGTON CO.

MODEL 831X



MODEL 831-X

INTERMEDIATE FREQUENCY 456 K.C

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

FOR OTHER DATA, SEE INDEX

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

VOLTAGE CHART

Position of Volume control: Full with Antenna disconnected

Position of Band Switch: Broadcast

Line voltage: 117 volts

August 1, 1940

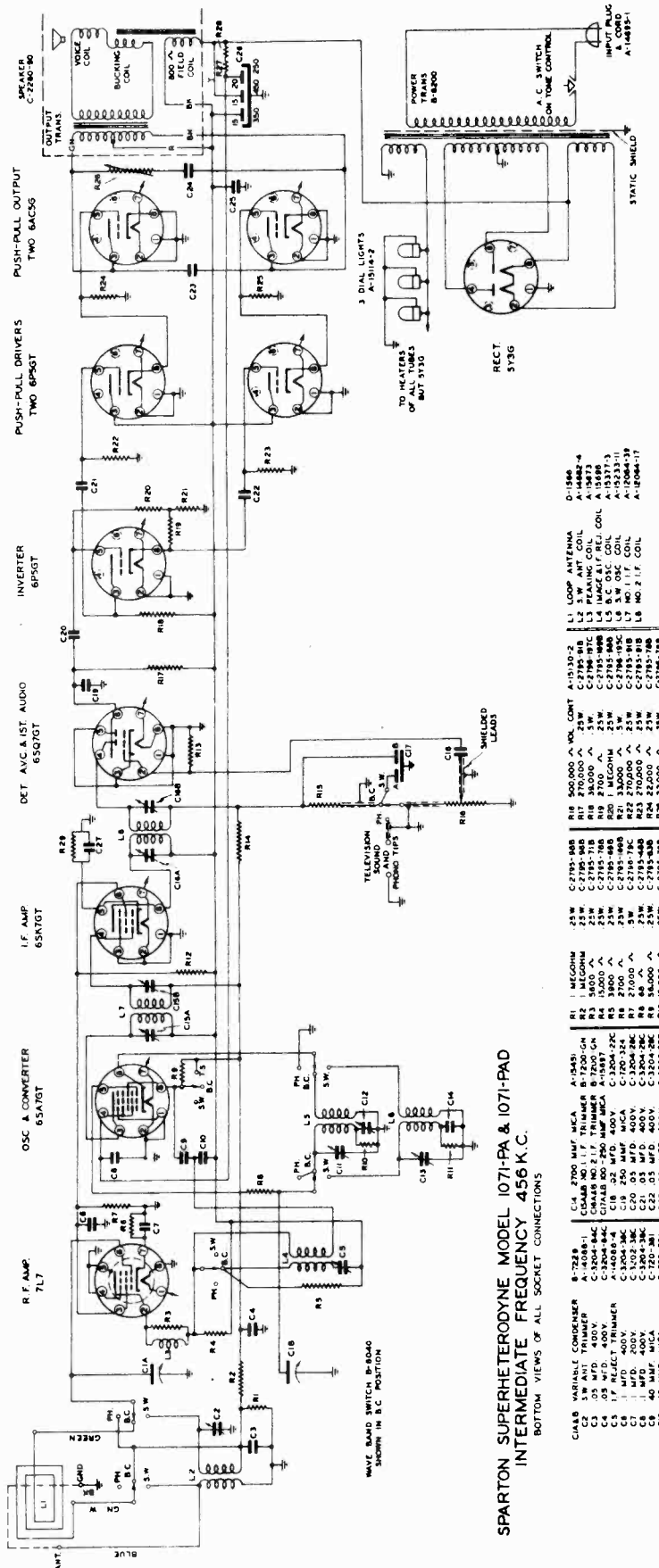
* AC volts

** Cannot be measured with 1000 ohms/volt voltmeter.

*** Tube removed from socket to enable test prods to reach socket prongs.

MODELS 1071-PA, 1071-PAD

SPARKS WITHINGTON CO.



SPARTON SUPERHETERODYNE MODEL 1071-PA & 1071-PAD
INTERMEDIATE FREQUENCY 456 K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

C1A&B VARIABLE CONDENSER B-7228
C2 .5 M.M. ANT. TRIMMER A-14068-11
C3 .05 MFD. 400V. C-3204-84C
C4 .05 MFD. 400V. C-3204-84C
C5 .1 MEG. GRID LEAK C-3204-64
C6 1 MFD. 400V. C-3204-38C
C7 1 MFD. 200V. C-3202-38C
C8 40 M.M. MICA C-3204-38C
C9 40 M.M. MICA C-720-381
C11 B.C. OSC. TRIMMER B-7199-DT
C12 B.C. OSC. PADDER A-14068-5
C13 S.W. OSC. TRIMMER
C14 2700 M.M.F. MICA A-1545
C15A&B 140 + 140 M.M.F. TRIMMER B-7200-GH
C16A&B 140 + 140 M.M.F. TRIMMER A-14067-2
C17 .02 MFD. 400V. C-3204-22C
C18 250 M.M.F. MICA C-720-324
C20 .05 MFD. 400V. C-3204-28C
C21 .05 MFD. 400V. C-3204-28C
C22 .05 MFD. 400V. C-3204-28C
C23 .001 MFD. 600V. C-3208-38C
C24 .03 MFD. 600V. C-3208-24C
C25 .1 MFD. 400V. C-3204-38C
C26 .1 MFD. 400V. SELECT. C-3204-38C
C27 1 MFD. 200V. C-3202-38C
R1 1 MEGOHM .25W C-2795-985
R2 1 MEGOHM .25W C-2795-985
R3 5600 Ω .25W C-2795-718
R4 1500 Ω .25W C-2795-685
R5 3800 Ω .25W C-2795-685
R6 2700 Ω .25W C-2795-1005
R7 27,000 Ω 1W C-2795-73C
R8 68,000 Ω .25W C-2795-745
R9 68,000 Ω .25W C-2795-745
R10 15,000 Ω .25W C-2795-765
R11 22,000 Ω .25W C-2795-785
R12 33,000 Ω 2W C-2795-80A
R13 .25 MEGOHM .25W C-2795-985
R14 1 MEGOHM .25W C-2795-985
R15 56,000 Ω .25W C-2795-838
R16 500,000 Ω VOL. CONT. A-15130-2
R17 270,000 Ω .25W C-2795-945
R18 270,000 Ω .25W C-2795-945
R19 2500 Ω .25W C-2795-718
R20 1 MEGOHM .25W C-2795-985
R21 33,000 Ω .5W C-2795-1005
R22 270,000 Ω .25W C-2795-945
R23 270,000 Ω .25W C-2795-945
R24 22,000 Ω .25W C-2795-785
R25 22,000 Ω .25W C-2795-785
R26 TONE CONT. 4.3W A-15128-4
R27 12,000 Ω 1W C-2795-765
R28 1500 Ω .25W C-2795-718
R29 270 Ω .25W C-2795-558
L1 LOOP ANTENNA D-1566
L2 S.W. ANT. COIL A-14842-4
L3 S.W. OSC. COIL A-1523
L4 IMAGE & I.F. REJ. COIL A-15686
L5 B.C. OSC. COIL A-15377-3
L6 S.W. OSC. COIL A-15233-11
L7 1ST I.F. COIL A-14068-13
L8 NO. 2 I.F. COIL A-12064-17

VOLTAGE CHART

Line Voltage: 117 Volts
Position of Volume Control: Full with set 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
7L7	R-F Amplifier	—	185	58	—	—	**	1.25b	6*
6SA7GT	Osc-Converter	—	—	190	78	-1.25b	0	6*	0
6SK7GT	I-F Amplifier	—	—	—	**	1.25b	58	6*	190
6SQ7GT	Det - AVC - 1st AF	—	0	—	0	—	17	6*	—
6P5GT	Inverter	—	—	145	245	**	43	6*	43
6P5GT	Driver	—	—	245	—	**	—	6*	12.5a
6P5GT	Driver	—	—	245	—	**	—	6*	12.5a
6AC5G	Power Amplifier	—	—	230	—	12.5a	—	6*	—
6AC5G	Power Amplifier	—	—	230	80	12.5a	—	6*	—
5Y3G	Rectifier	—	325	230	325*	0	325*	200	360

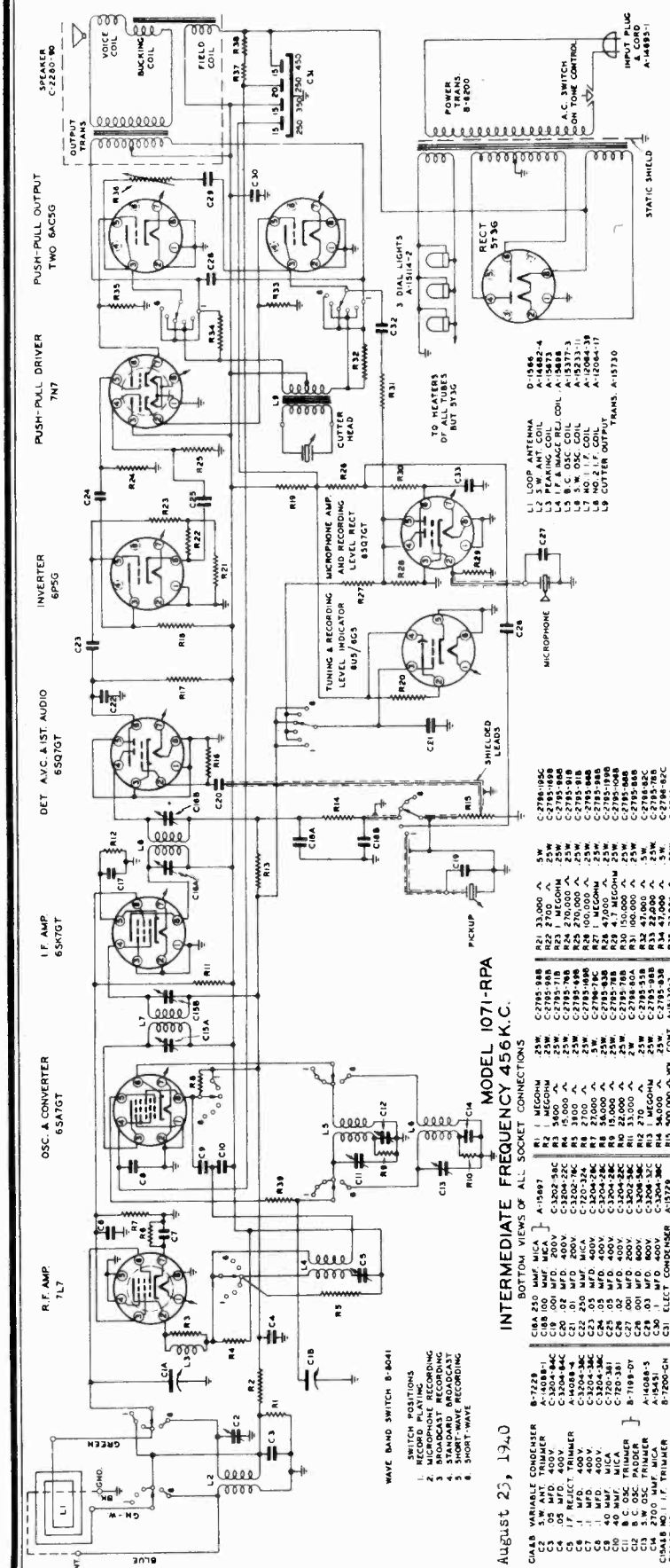
*-AC volts.
**-Cannot be measured with 1000 ohms per volt voltmeter.

FOR OTHER DATA, SEE INDEX

A-25 volt DC scale.
B-2.5 volt DC scale

MODEL 1071-RPA

SPARKS WITHINGTON CO.



August 23, 1940

INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

MODEL 1071-RPA

C1A,B	VARIABLE CONDENSER	B-7228	
C2	5 MMF TRIMMER	A-15089-1	
C3	.05 MFD. 400V	C-3204-84C	
C4	.05 MFD. 400V	C-3204-84C	
C5	I.F. REJECT TRIMMER	A-14088-4	
C6	.1 MFD. 400 V.	C-3202-94C	
C7	.1 MFD. 400 V.	C-3204-38C	
C8	.1 MFD. 400 V.	C-3204-38C	
C9	40 MMF MICA	C-720-381	
C10	40 MMF MICA	C-720-381	
C11	B.C. OSC. TRIMMER	B-7199-DT	
C12	B.C. OSC. PADDER	B-7199-DT	
C13	S.W. OSC. TRIMMER	A-14088-5	
C14	2200 MMF MICA	C-720-222	
C15A,B	NO. 1 I.F. TRIMMER	B-7200-GN	
C16A,B	NO. 2 I.F. TRIMMER	B-7200-GN	
C17	.1 MFD 400V	C-3204-38C	
C18A	250 MMF MICA	A-15697	
C18B	100 MMF MICA		
C19	.1 MFD 200V	C-3202-94C	
C20	.02 MFD 400V	C-3204-84C	
C21	.01 MFD 200V	C-3202-96C	
C22	250 MMF MICA	C-720-324	
C23	.1 MFD 400V.	C-3204-38C	
C24	.05 MFD 400V.	C-3204-84C	
C25	.05 MFD 400V.	C-3204-84C	
C26	.02 MFD 400V.	C-3204-82C	
C27	.001 MFD 400V.	C-3204-80C	
C28	.03 MFD 400V.	C-3204-86C	
C29	ELECTROLYTIC	A-15139	
C30	.02 MFD 400V.	C-3204-82C	
C31	.02 MFD 400V.	C-3204-82C	
C32	.006 MFD 400V.	C-3204-78C	
C33	.006 MFD 400V.	C-3204-78C	

R1	1 MEGOHM	.25W	C-2795-988
R2	1 MEGOHM	.25W	C-2795-988
R3	15,000 Ω	.25W	C-2795-918
R4	15,000 Ω	.25W	C-2795-918
R5	3900 Ω	.25W	C-2795-898
R6	2700 Ω	.25W	C-2795-898
R7	47,000 Ω	.25W	C-2795-938
R8	2700 Ω	1W	C-2796-78C
R9	15,000 Ω	.25W	C-2795-918
R10	22,000 Ω	.25W	C-2795-928
R11	15,000 Ω	.25W	C-2795-918
R12	270 Ω	.25W	C-2795-868
R13	1 MEGOHM	.25W	C-2795-988
R14	56,000 Ω	.25W	C-2795-938
R15	500,000 OHM VOL. CONT		A-15130-2
R16	39,000 Ω	.5W	C-2796-97C
R17	270,000 Ω	.25W	C-2795-948
R18	39,000 Ω	.5W	C-2796-97C
R19	75,000 Ω	.5W	C-2796-98C
R20	220,000 Ω	.25W	C-2795-958
R21	33,000 Ω	.5W	C-2796-95C
R22	2700 Ω	.25W	C-2795-898
R23	1 MEGOHM	.25W	C-2795-988
R24	2,200,000 Ω	.25W	C-2795-978
R25	270,000 Ω	.25W	C-2795-948
R26	100,000 Ω	.25W	C-2795-928
R27	1 MEGOHM	.25W	C-2795-988
R28	4,000 Ω	.25W	C-2795-878
R29	4.7 MEGOHM	.25W	C-2795-998
R30	150,000 Ω	.25W	C-2795-948
R31	100,000 Ω	.25W	C-2795-928
R32	22,000 Ω	.25W	C-2795-928
R33	22,000 Ω	.5W	C-2796-92C
R34	47,000 Ω	.5W	C-2796-82C
R35	22,000 Ω	.25W	C-2795-928
R36	500,000 OHM CONT. & SW.		A-15128-4
R37	12,000 Ω	1W	C-2797-78S
R38	12,000 Ω	1W	C-2797-758
R39	68 Ω	.25W	C-2795-488

C16A	.0001 MFD	5W	C-2796-19C
C16B	.0001 MFD	5W	C-2796-19C
C17	.0001 MFD	5W	C-2796-19C
C18A	.0001 MFD	5W	C-2796-19C
C18B	.0001 MFD	5W	C-2796-19C
C19	.0001 MFD	5W	C-2796-19C
C20	.0001 MFD	5W	C-2796-19C
C21	.0001 MFD	5W	C-2796-19C
C22	.0001 MFD	5W	C-2796-19C
C23	.0001 MFD	5W	C-2796-19C
C24	.0001 MFD	5W	C-2796-19C
C25	.0001 MFD	5W	C-2796-19C
C26	.0001 MFD	5W	C-2796-19C
C27	.0001 MFD	5W	C-2796-19C
C28	.0001 MFD	5W	C-2796-19C

FOR OTHER DATA, SEE INDEX

VOLTAGE CHART

Line Voltage: 117 volts

Position of Vol. Control: Full, with Set Tuned to Quiet Channel
Position of Band Switch: Standard Broadcast

Tube	Function	Voltage of Socket Prongs to Gnd. (See Nos. on Schematic)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7L7	R-F Amplifier	0	270	72	0	0	0	9.3	6.2*
6SA7GT	Osc. - Converter	0	0	280	90	-4.3	0	6.2*	0
6SK7GT	I-F Amplifier	0	0	0	-.2	2.2	75	6.2*	280
6SQ7GT	Det - AVC - 1st Audio	0	-.2	0	-.2	0	44	6.2*	0
6P5G	Phase Inverter	0	0	175 a	280	**	48	6.2*	69
7N7	Push-pull Driver	0	11	275	0	0	275	11	6.2*
6AC5G	Power Amplifier	0	0	270	0	11	0	6.2*	0
6AC5G	Power Amplifier	0	0	270	90	11	0	6.2*	0
6SQ7GT	Mike Amp. & Indicator	0	0	0	0	0	23 b	.6.2*	0
6U5/6G5	Viso-Glo & Indicator Tube Removed	6.2*	8 c	0	185	0	0	-	-
5Y3G	Rectifier	0	370*	74	330*	0	330*	210	370*

*A.C. volts.
**Cannot measure with M665 analyser.
a. Use 250 V. scale.
b. Use 50 V. scale.
c. Use 10 V. scale.

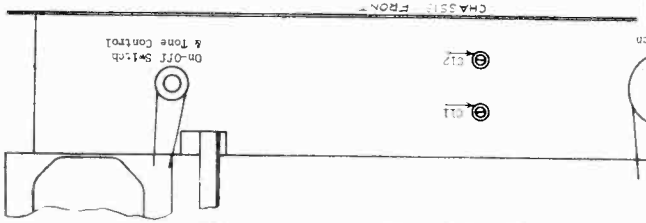
Sparton Superheterodyne Models

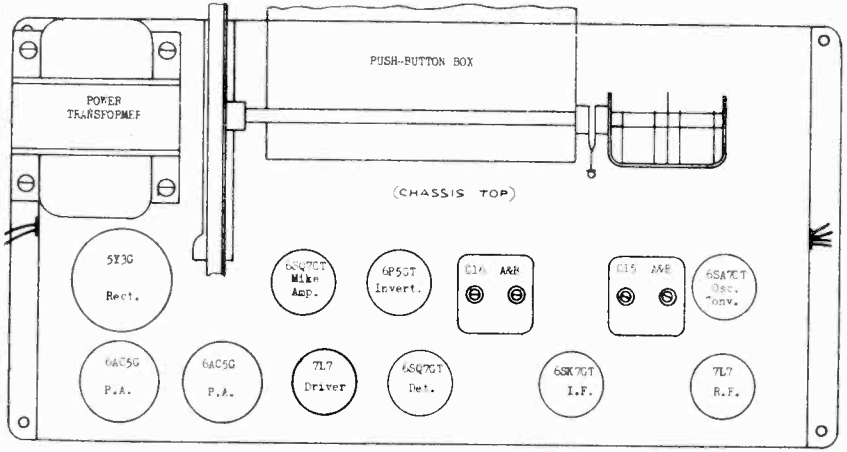
1071-PA 1071-PAD

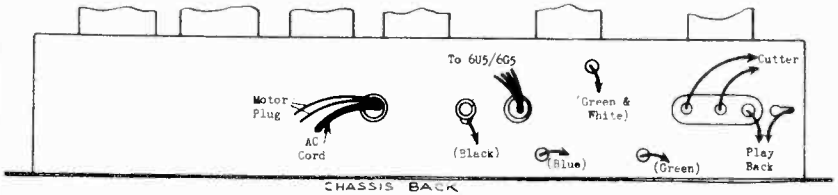
1071-RPA

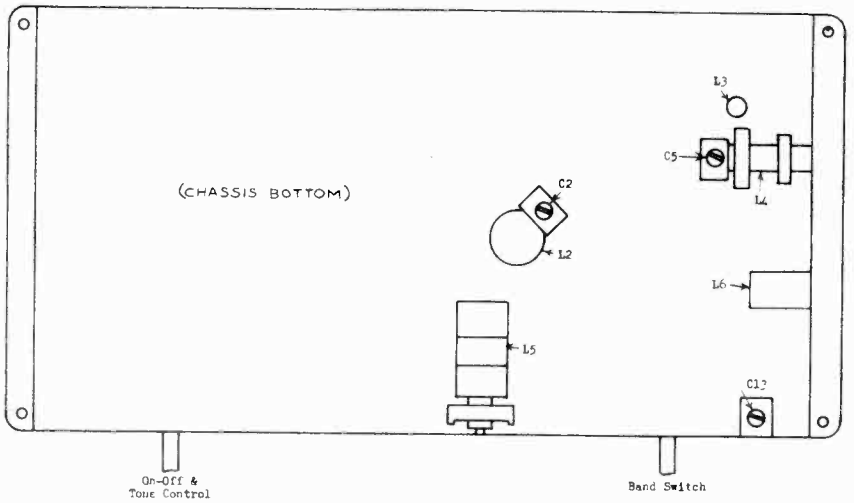
OPER-ATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set drive wheel so that pointer is over left-hand stop line of alignment scale with condenser plates fully meshed. See special note below.)							
2	I.F.	*	.1 mf.	456 KC	BC	1600 KC	C16 A&B	2nd I.F.
							C15 A&B	1st I.F.
3	Rejector	**	200 mmf.	456 KC	BC	600 KC	C5	Adjust to minimum
4	Broadcast Band	**	200 mmf.	1500 KC	BC	1500 KC	C11 (osc.)	***
5				600 KC	BC	600 KC	C12 (pad.)	
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 750 KC, 1000 KC and 1500 KC)							
8	Short-wave Band	**	****	18 MC	SW	18 MC	C13 (osc.)	***
							C2 (ant.)	
9	(Check calibration and sensitivity at 6. MC, 9. MC and 18 MC)							
10	(Check operations 1 to 9 inclusive.)							

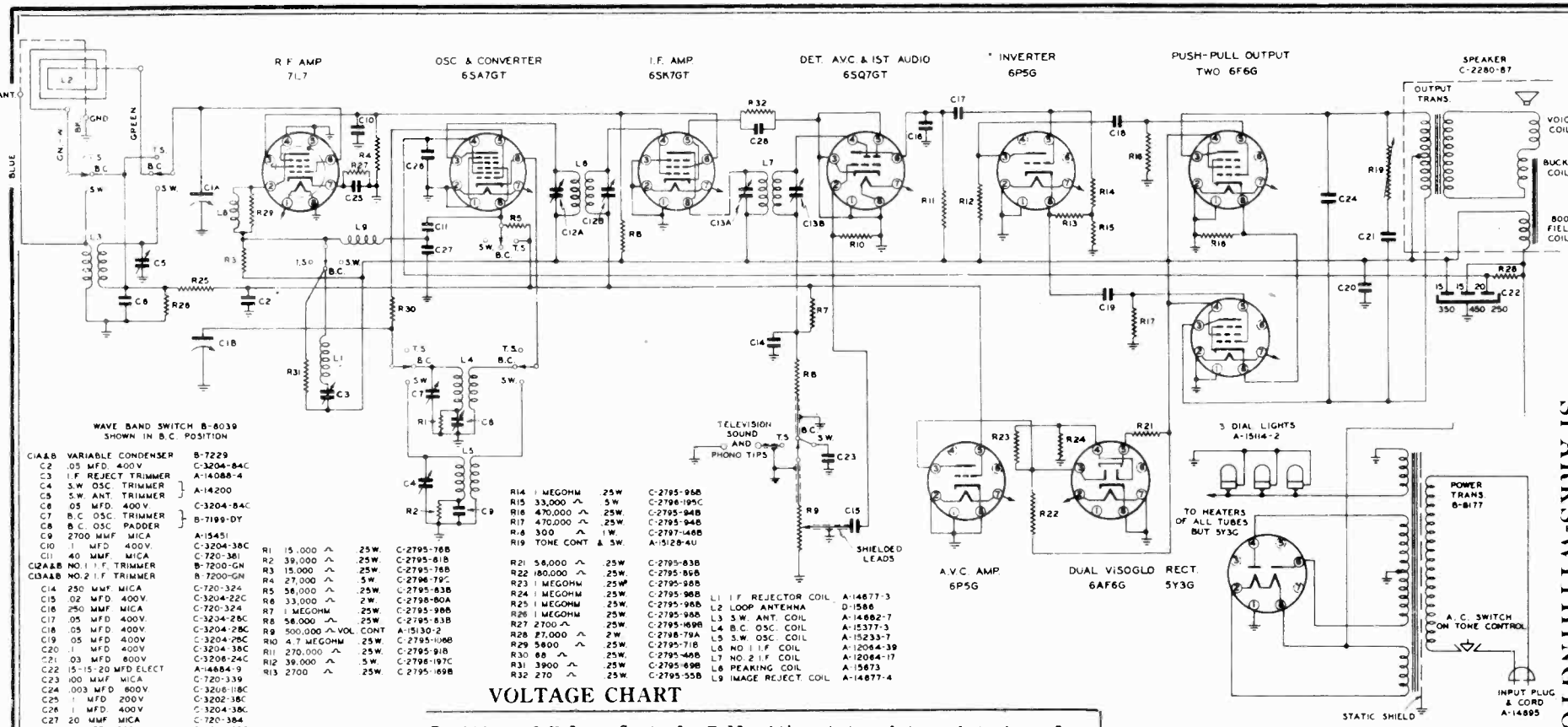
NOTES: *Pin No. 8 of 6SA7GT Oscillator-Converter tube
**Connect dummy antenna to "Antenna" of loop winding
***Rock dial while adjusting for maximum output.
****100 ohms and 200 mmf. in series.











WAVE BAND SWITCH B-8039
SHOWN IN B.C. POSITION

C1A&B	VARIABLE CONDENSER	B-7229
C2	.05 MFD. 400 V	C-3204-84C
C3	I.F. REJECT. TRIMMER	A-14088-4
C4	S.W. OSC. TRIMMER	A-14200
C5	S.W. ANT. TRIMMER	
C6	.05 MFD. 400 V	C-3204-84C
C7	B.C. OSC. TRIMMER	B-7199-DY
C8	B.C. OSC. PADDER	
C9	2700 MMF MICA	A-15451
C10	1 MFD 400 V.	C-3204-38C
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. 400 V.	C-3204-22C
C16	250 MMF MICA	C-720-324
C17	.05 MFD. 400 V.	C-3204-28C
C18	.05 MFD. 400 V.	C-3204-28C
C19	.05 MFD. 400 V	C-3204-28C
C20	1 MFD. 400 V	C-3204-38C
C21	.03 MFD. 800 V	C-3206-24C
C22	15-15-20 MFD ELECT	A-14884-9
C23	100 MMF. MICA	C-720-339
C24	.003 MFD. 600 V.	C-3206-18C
C25	1 MFD. 200 V.	C-3202-38C
C26	1 MFD. 400 V.	C-3204-38C
C27	120 MMF MICA	C-720-384
C28	.1 MFD. 200 V.	C-3202-38C

R1	15,000 Ω	.25 W.	C-2795-76B
R2	39,000 Ω	.25 W.	C-2795-81B
R3	15,000 Ω	.25 W.	C-2795-76B
R4	27,000 Ω	.5 W.	C-2798-79C
R5	56,000 Ω	.25 W.	C-2795-83B
R6	33,000 Ω	.2 W.	C-2798-80A
R7	1 MEGOHM	.25 W.	C-2795-98B
R8	56,000 Ω	.25 W.	C-2795-83B
R9	500,000 Ω VOL. CONT		A-15130-2
R10	4.7 MEGOHM	.25 W.	C-2795-106B
R11	270,000 Ω	.25 W.	C-2795-91B
R12	39,000 Ω	.5 W.	C-2798-197C
R13	2700 Ω	.25 W.	C-2795-69B
R14	1 MEGOHM	.25 W.	C-2795-98B
R15	33,000 Ω	.5 W.	C-2798-195C
R16	470,000 Ω	.25 W.	C-2795-94B
R17	470,000 Ω	.25 W.	C-2795-94B
R18	300 Ω	1 W.	C-2797-148B
R19	TONE CONT. & SW.		A-15128-4U
R20	56,000 Ω	.25 W	C-2795-83B
R21	180,000 Ω	.25 W.	C-2795-89B
R22	1 MEGOHM	.25 W	C-2795-98B
R23	1 MEGOHM	.25 W.	C-2795-98B
R24	1 MEGOHM	.25 W.	C-2795-98B
R25	1 MEGOHM	.25 W.	C-2795-98B
R26	2700 Ω	.25 W.	C-2795-69B
R27	27,000 Ω	2 W.	C-2798-79A
R28	5800 Ω	.25 W.	C-2795-71B
R29	68 Ω	.25 W.	C-2795-44B
R30	3900 Ω	.25 W	C-2795-69B
R31	270 Ω	.25 W.	C-2795-55B
R32			

L1	I.F. REJECTOR COIL	A-14877-3
L2	LOOP ANTENNA	D-1586
L3	S.W. ANT. COIL	A-14882-7
L4	B.C. OSC. COIL	A-15377-3
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
L8	PEAKING COIL	A-15673
L9	IMAGE REJECT. COIL	A-14877-4

VOLTAGE CHART

Line Voltage: 117 volts AC

Position of Volume Control: Full with set tuned to quiet channel.
Position of Band Switch: Broadcast

TUBE	FUNCTION	Voltage of 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
7L7	R-F Amplifier	6.*	250	90	--	--	0	2a	--
6SA7GT	Osc-Converter	--	--	250	74	-.1b	0	6.*	***
6SK7GT	I-F Amplifier	--	--	--	-.1b	0	78	6.*	250
6SQ7GT	Det - AVC - 1st A-F	--	-.1b	--	0	--	60	6.*	--
6P5G	Inverter	--	--	155	45	0	250	6.*	62.
6F6G	Power Amplifier	--	--	245	250	0	0	6.*	0
6F6G	Power Amplifier	--	--	245	250	0	130	6.*	0
6P5G	AVC Amplifier	--	--	18.5	--	1.1b	--	6.*	--
6AF6G	Dual Viso-Glo	--	6.*	25	**	150	--	--	--
5Y3G	Rectifier	--	370*	0	320*	--	320*	260*	370*

*-AC volts.
**-Cannot be measured with 1000 ohms per volt voltmeter.

A-2.5 volt DC scale.
B-1. volt DC scale.

SEPT. 1940

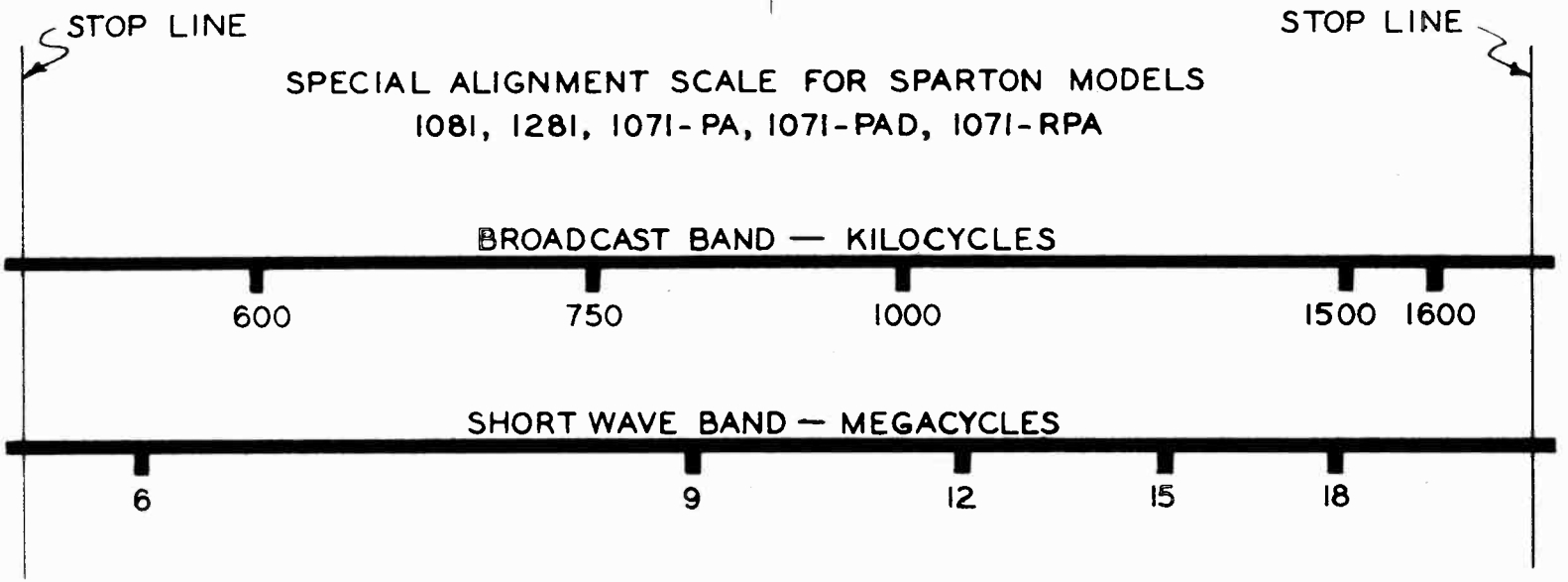
SPARTON SUPERHETERODYNE MODEL 1081
INTERMEDIATE FREQUENCY 456 K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

SPARKS-WITHINGTON CO.

SPARTON PAGE 12-21 MODEL 1081

Cut on dotted line

Make three holes as indicated



Cut on dotted line

TO USE SCALE PROCEED AS FOLLOWS:

1. MAKE ACCURATE TRACING OF SCALE WITH CARBON PAPER ON CARDBOARD.
2. CUT OR PUNCH OUT THE HOLES AS INDICATED.
3. PLACE THE SCALE IN POSITION OVER THE CHASSIS DIAL PLATE SO THE SCALE HOLES AND PLATE HOLES COINCIDE. USE PINS OR SCREWS TO HOLD SCALE IN PLACE.

These SPARTON Models are designed with the dial scale as a part of the cabinet escutcheon for the dial. Since the actual dial scale is not a part of the chassis, accurate calibration and setting of the pointer become difficult unless a duplicate or auxiliary scale is used.

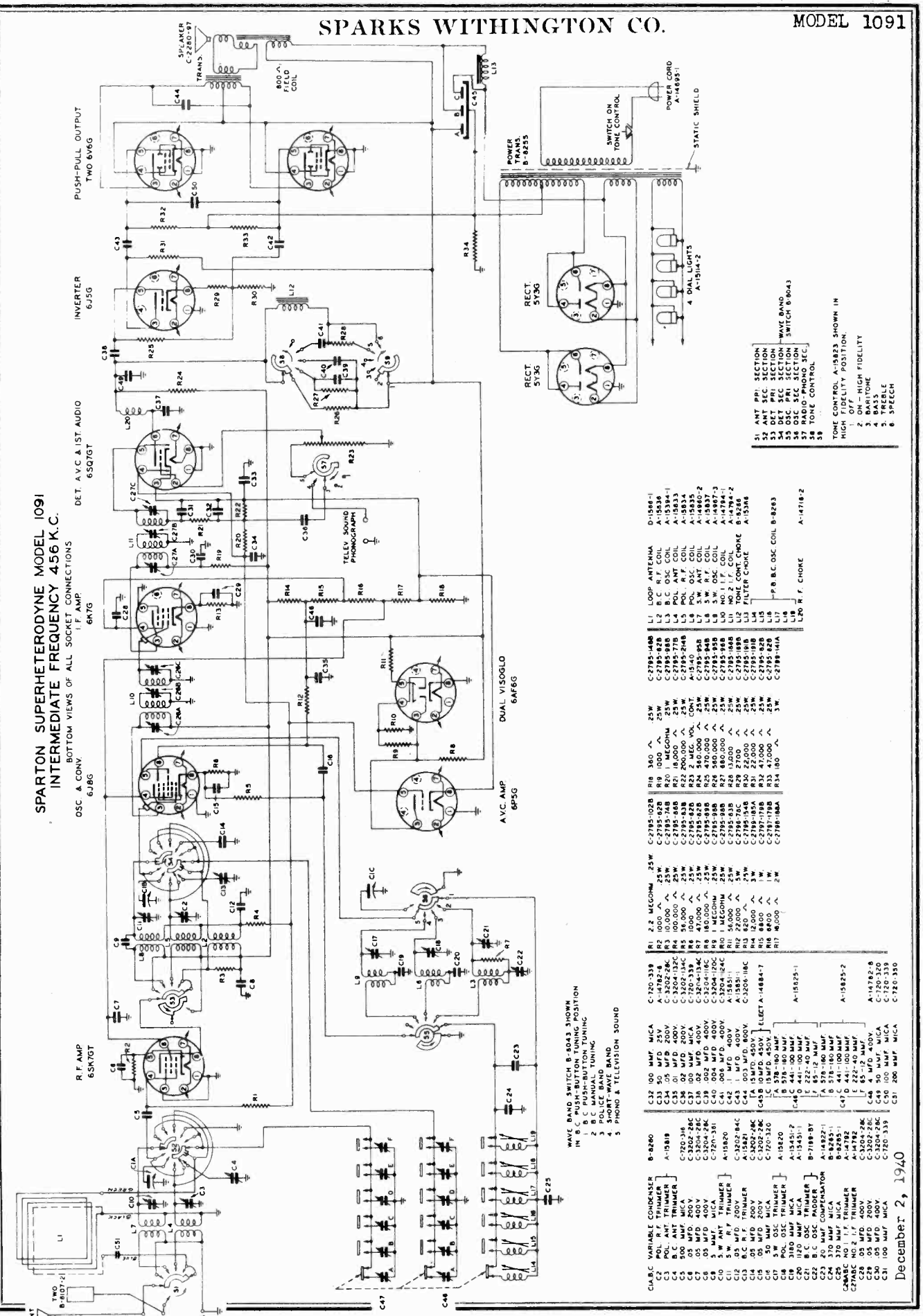
ALIGNMENT NOTES:

A. "Stop Lines" on scale indicate actual stopping points of pointer travel with complete 180 degress rotation of variable tuning condenser. Therefore, the "STOP LINES" on the scale are reference points and allow correct positioning of the various parts associated with the dial indicating mechanism.

B. Pointer must always be at LEFT HAND Stop Line with condenser closed. Then if pointer is not at RIGHT HAND Stop Line with condenser fully open, make necessary adjustments.

SPARKS WITHINGTON CO.

MODEL 1091



December 2, 1940

Sparton Superheterodyne Model 1091

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	0	4.2	60	6.2*	300	-
6J8G	Osc. & Converter	0	0	300	60	**	80	6.2*	4.2	0
6K7G	I-F Amplifier	0	0	300	100	0	-	6.2*	4.2	0
6SQ7GT	Det. & AVC 1st Audio	0	0	**	**	**	130	6.2*	0	-
6J5G	Phase Inverter	0	0	225	300	**	80	6.2*	60	-
6V6G	Power Amplifier	0	0	300	300	**	0	6.2*	0	-
6V6G	Power Amplifier	0	0	300	300	**	0	6.2*	0	-
6P5G	AVC Amplifier	0	0	**	-	**	50	6.2*	0	-
6AF6G	Dual Visoglo	0	0	0	300	0	22	6.2*	0	-
5Y3G	Rectifier	0	400	-	375	375	375	0	400	-
5Y3G	Rectifier	0	400	-	375	-	375	-	400	-

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 measured with Weston Analyzer #665.

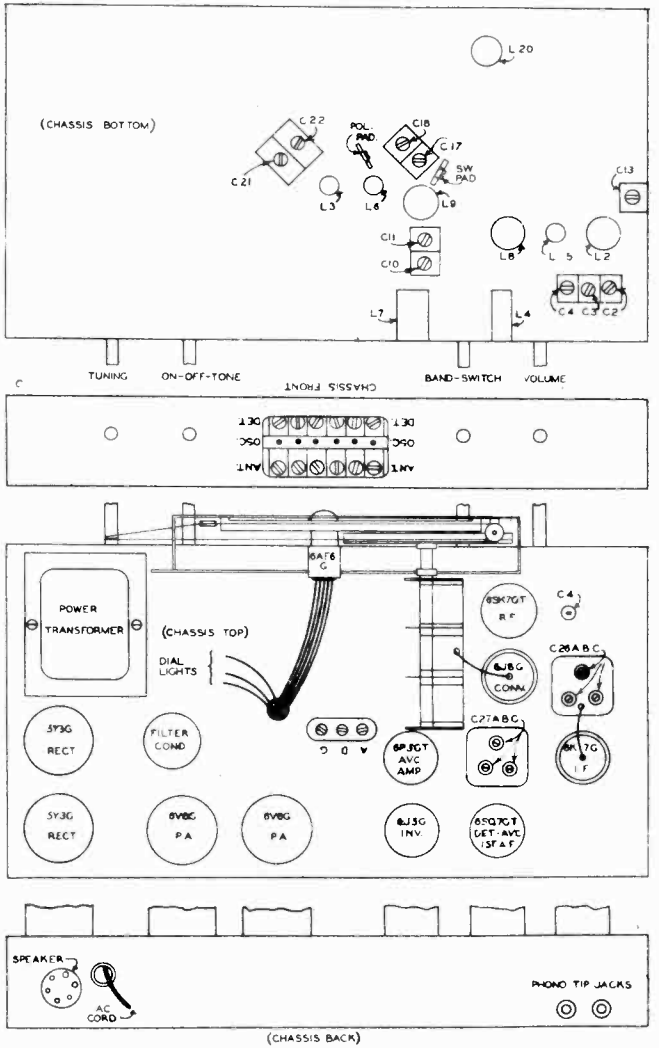
ALIGNMENT CHART

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 gang fully meshed.)							
2	I.F.	Grid Cap of 6J8G Osc. Conv.	.1 mf.	456 KC	BC	Open	C27 B *	**
3							C27 A C27 C	Peak accurately
4							C27 B *	Peak accurately
5							C26 B *	**
6							C26 A C26 C	Peak accurately
7							C26 B *	Peak accurately
8	CAUTION: Do not readjust trimmers 27A&C and 26A&C after red spot trimmers 27B and 26B have been peaked.							
9	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C21 (Osc.)	Peak accurately
							C13 (RF)	Peak accurately
							C4 (ANT)	Peak accurately
10				600 KC	BC	600 KC	C22 (Pad.)	Rock ***
11	(Repeat operation 9)							
12	(Check calibration and sensitivity at 1500 KC, 1000 KC and 600 KC)							
13	Police Band	Ant.	100 ohms 200 mmf. series	5 MC	Police	5 MC	C18 (Osc.)	Peak accurately
							C2 (RF)	Peak accurately
							C3 (ANT)	Peak accurately
14	(Check calibration and sensitivity at 5 MC, 3 MC and 1.6 MC)							
15	Short Wave Band	Ant.	100 ohms 200 mmf. series	18 MC	S.W.	18 MC	C17 (Osc.)	Peak accurately
							C11 (RF)	Rock ***
							C10 (ANT)	Peak accurately
16	(Check calibration and sensitivity at 18 MC, 12 MC and 6 MC)							
17	(Check operations 1 to 14 inclusive)							

NOTES: *Bronze color trimmer screw
**Turn trimmer screw all the way down
***Rock dial while adjusting for maximum output.

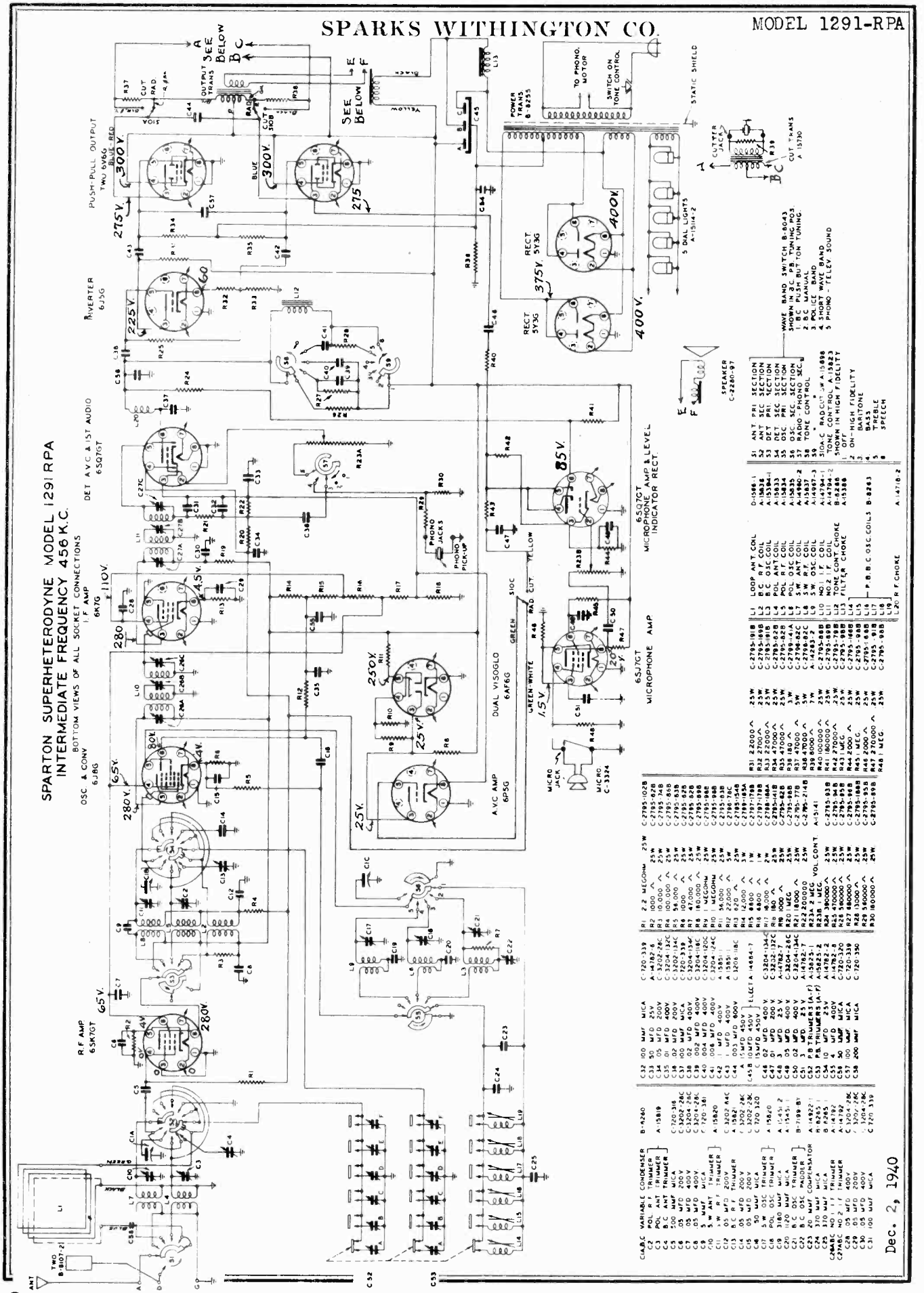
Sparton Superheterodyne Model 1091

CHASSIS DIAGRAM



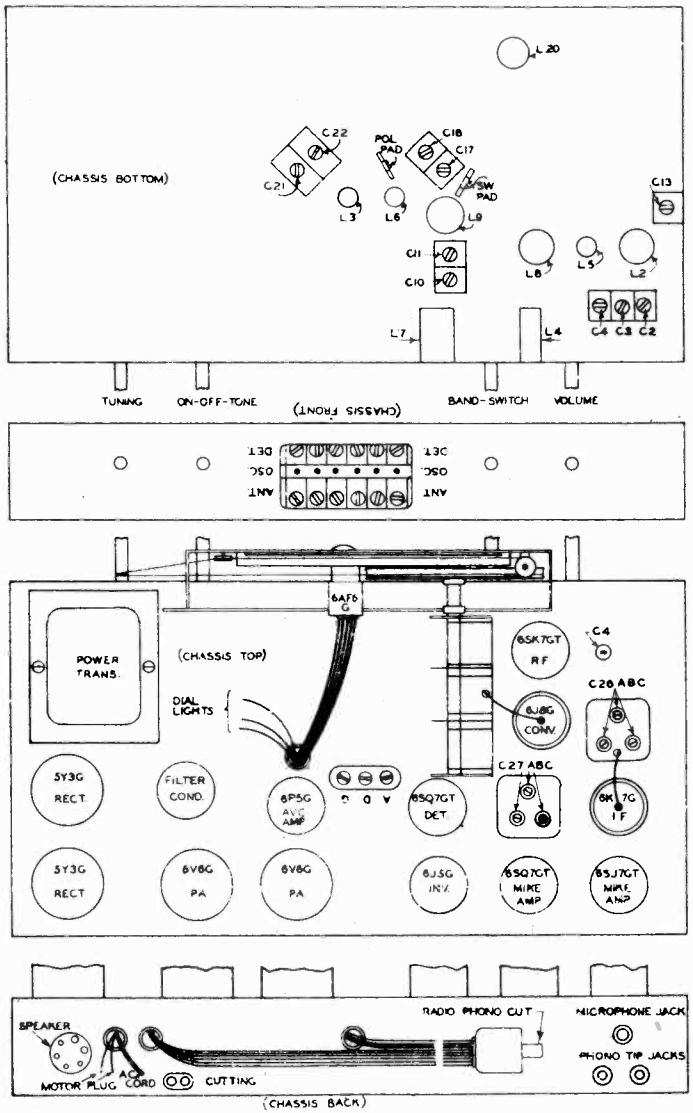
SPARKS WITHINGTON CO.

MODEL 1291-RPA



Sparton Superheterodyne Model 1291-RPA

CHASSIS DIAGRAM



Sparton Superheterodyne Model 1291-RPA

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 line of alignment scale with condenser gang fully meshed)							
2	I.F.	Grid Cap of 6J8G Osc. Conv.	.1 mf.	456 KC	BC	Open	C27 B *	**
3							C27 A C27 C	Peak accurately
4							C27 B *	Peak accurately
5							C26 B *	**
6							C26 A C26 C	Peak accurately Peak accurately
7							C26 B *	Peak accurately
8	CAUTION: Do not readjust trimmers 27A&C and 26A&C after red spot trimmers 27B and 26B have been peaked.							
9	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C21 (Osc.)	Peak accurately
							C13 (RF)	Peak accurately
							C4 (ANT)	Peak accurately
10				600 KC	BC	600 KC	C22 (Pad)	Rock ***
11	(Repeat operation 7)							
12	(Check calibration and sensitivity at 1500 KC, 1000 KC and 600 KC)							
13	Police Band	Ant.	100 ohms 200 mmf. series	5 MC	Police	5 MC	C18 (Osc.)	Peak accurately
							C2 (RF)	Peak accurately
							C3 (ANT)	Peak accurately
14	(Check calibration and sensitivity at 5 MC, 3 MC and 1.6 MC)							
15	Short Wave Band	Ant.	100 ohms 200 mmf. series	18 MC	S.W.	18 MC	C17 (Osc.)	Peak accurately
							C11 (RF)	Rock ***
							C10 (ANT)	Peak accurately
16	(Check calibration and sensitivity at 18 MC, 12 MC and 6 MC)							
17	(Check operations 1 to 14 inclusive.)							

NOTES: *Bronze color trimmer screw
**Turn trimmer screw all the way down.
***Rock dial while adjusting for maximum output.

Model 1081

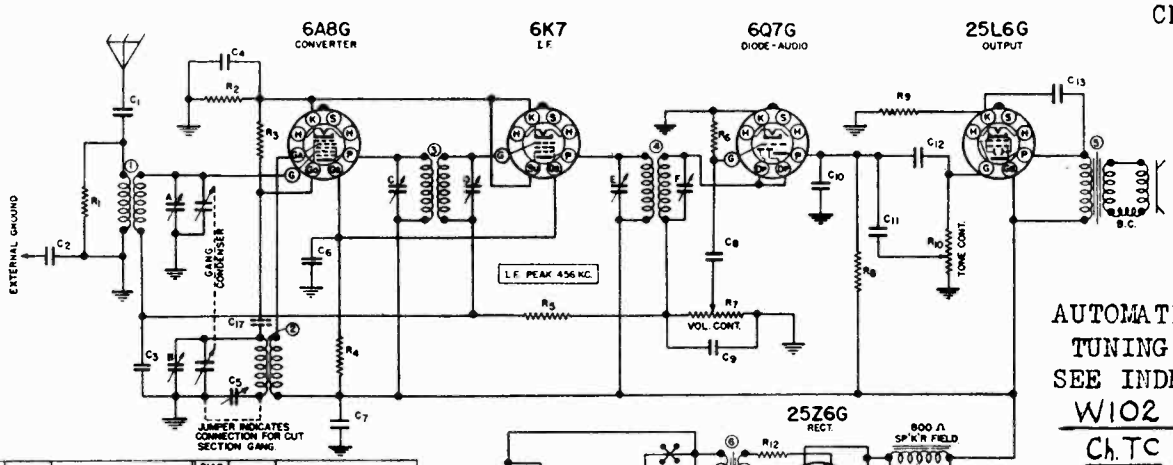
ALIGNMENT CHART

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	BC	1600 KC	C13 A & B	2nd I.F.
							C12 A & B	1st I.F.
3	Rejector	**	200 mmf.	456	BC	600 KC	C3	Adjust to minimum
4	Broadcast Band	**	200 mmf.	1500 KC	BC	1500 KC	C7 (Osc.)	***
5				600 KC	BC	600 KC	C8 (Pad.)	***
6	(Repeat operation 4)							
7	(Check calibration and sensitivity at 600 KC, 750 KC, 1000 KC and 1500 KC)							
8	Shortwave Band	**	****	18 MC	SW	18 MC	C4 (Osc.)	***
							C5 (ANT.)	***
9	(Check calibration and sensitivity at 6.0 MC, 9.0 MC and 18.0 MC)							
10	(Check operations 1 to 9 inclusive.)							

NOTES: *Pin No. 8 of 6SA7GT Osc-Converter tube.
**Connect dummy antenna to "Antenna" of loop winding.
***Rock dial while adjusting for maximum output.
****100 ohm resistor and 200 mmf. condenser in series.
Special Note: For accurate alignment, the special scale reproduced in this bulletin must be used. The scale and full directions for using it will be found on page

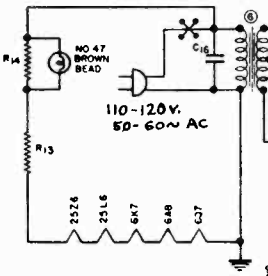
SPIEGEL, INC.

MODEL W102, Ch. TC
MODELS A2002, Z7006
Ch. TSA



DIAG NO	PART NO	DESCRIPTION	
C1	N-1344	.01 MFD.	400V.
C2	N-1344	.01 MFD.	400V.
C3	N-1345	.05 MFD.	200V.
C4	N-1351	.1 MFD.	200V.
C5	N-1323	300-600 MMFD. PADDER	
C6	N-1345	.05 MFD.	200V.
C7	N-1345	.05 MFD.	200V.
C8	N-1347	.006 MFD.	600V.
C9	N-1343	250 MMFD.	
C10	N-1343	250 MMFD.	
C11	N-1347	.006 MFD.	600V.
C12	N-1344	.01 MFD.	400V.
C13	N-1344	.01 MFD.	400V.
C14	N-1312	15 MFD.	150V.
C15		20 MFD.	200V.
C16	N-1346	.05 MFD.	400V.
C17		CAPACITY INCLUDED IN OSCILLATOR COIL	
R1	N-1352	15,000 OHMS	.5 W.
R2	N-1360	150 OHMS	.5 W.
R3	N-1353	50,000 OHMS	.5 W.
R4	N-1352	15,000 OHMS	.5 W.
R5	N-1355	1 MEGOHM	.5 W.
R6	N-1356	15 MEGOHMS	.5 W.
R7	N-1320	1 MEGOHM VOLUME CONT.	
R8	N-1354	300,000 OHMS	.5 W.
R9	N-1350	150 OHMS	.5 W. ±10%
R10	N-1321	.5 MEGOHM TONE CONT.	

DIAG NO	PART NO	DESCRIPTION	
R11	N-1349	100 OHMS	.5 W.
R12	N-1349	100 OHMS	.5 W.
R13	N-1322	150 OHMS	ARMORED
R14		30 OHMS	WIRE RES.
1	N-1316	ANTENNA COIL	
2	N-1317	OSCILLATOR COIL	
3	N-1318	1ST I.F. TRANSFORMER	
4	N-1319	2ND I.F. TRANSFORMER	
5	N-1314	SPEAKER & TRANSFORMER	
6	N-1315	POWER TRANSFORMER	
	N-1273	GANG CONDENSER	
SET WITH CUT SECTION GANG			
	N-1337	OSCILLATOR COIL	
	N-1338	GANG CONDENSER	
C5	N-1323	PADDER, ELIMINATED	

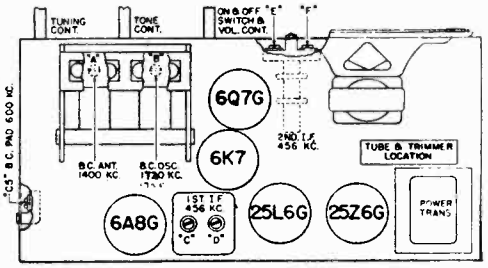


AUTOMATIC TUNING
SEE INDEX
W102
Ch. TC

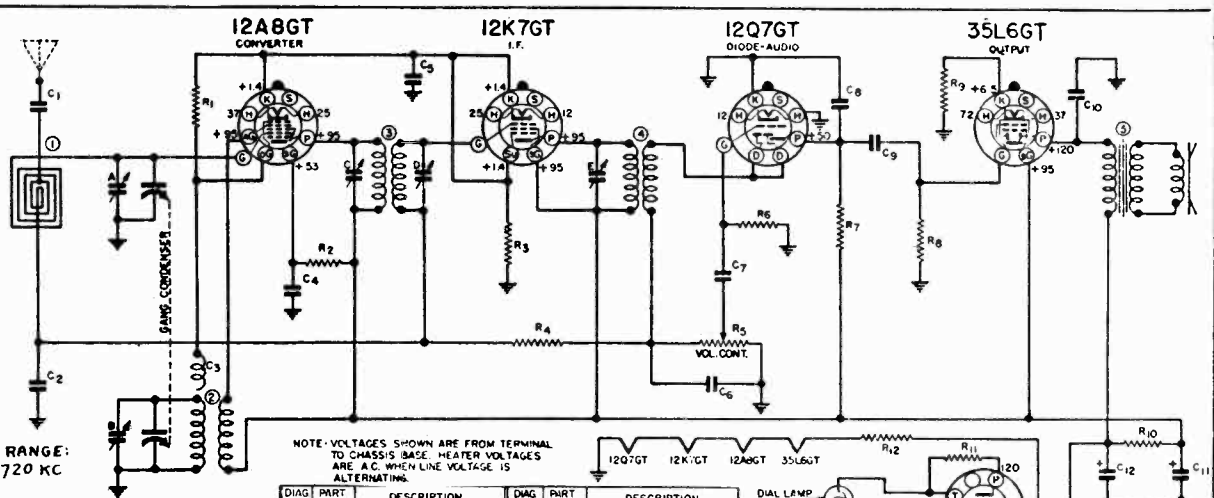
IF PEAK 456 KC

RANGE: 535-1720 KC

5 TUBE A.C.
SUPERHETERODYNE
SINGLE BAND
CHASSIS -TC



CONVENTIONAL ALIGNMENT SEE SPECIAL SECTION VOLUME VIII



NOTE - VOLTAGES SHOWN ARE FROM TERMINAL TO CHASSIS (BASE). HEATER VOLTAGES ARE A.C. WHEN LINE VOLTAGE IS ALTERNATING.

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

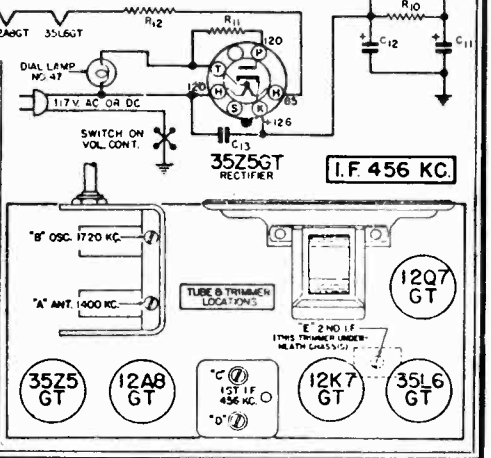
A2002, Z7006
Ch. TSA

TSA:

DO NOT
USE
EXTERNAL
GROUND

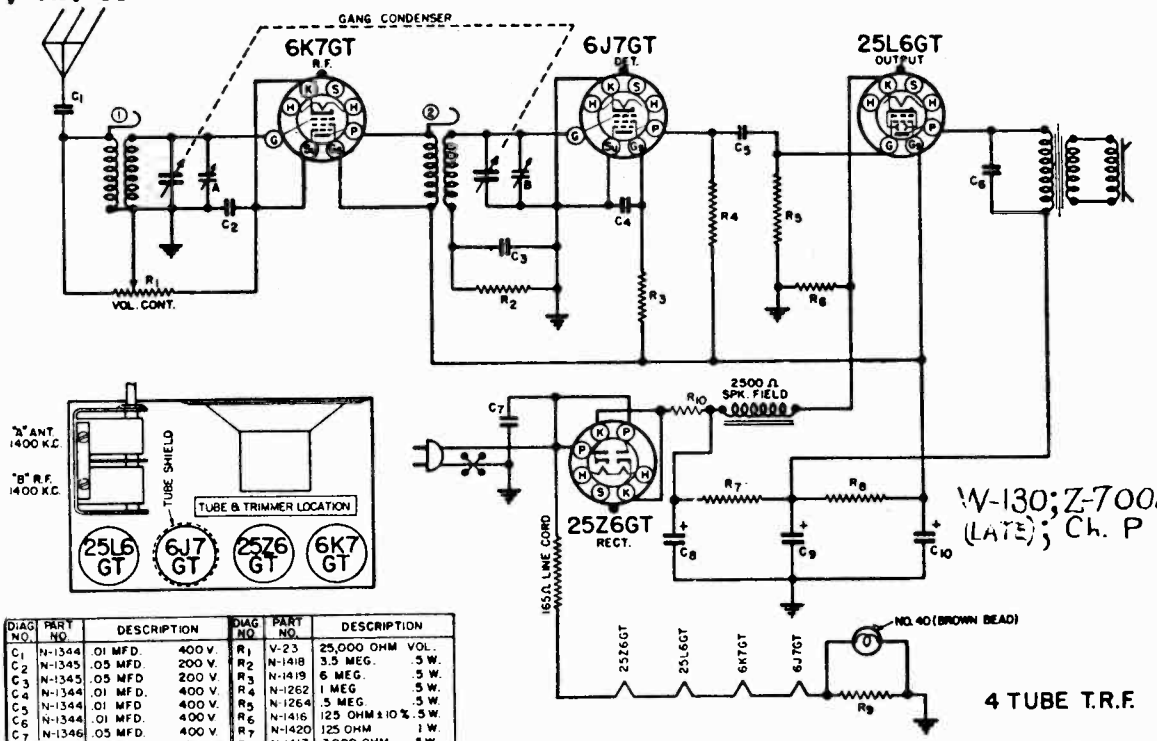
DIAG NO	PART NO	DESCRIPTION	
R1	N-1260	50,000 OHM	.5W. 20%
R2	N-1460	30,000 OHM	.5W. 20%
R3	N-1615	100 OHM	.5W. 10%
R4	N-1262	1 MEGOHM	.5W. 20%
R5	N-1595	0.5 MEGOHM	VOL. CONT.
R6	N-1263	10 MEGOHM	.5W. 20%
R7	N-1377	200,000 OHM	.5W. 20%
R8	N-1264	500,000 OHM	.5W. 20%
R9	N-1616	250 OHM	.5W. 10%
R10	N-1617	2500 OHM	.5W. 20%
R11	N-1614	50 OHM	.5W. 20%
R12	N-1618	80 OHM	2W. 10%
C1	N-1344	.01 MFD.	400V.
C2	N-1345	.05 MFD.	200V.
C3		CAPACITY INCLUDED IN OSCILLATOR COIL	
C4	N-1345	.05 MFD.	200V.
C5	N-1351	.1 MFD.	200V.
C6	N-1374	100 MMFD.	

DIAG NO	PART NO	DESCRIPTION	
C7	N-1344	.01 MFD.	400V.
C8	N-1447	.0005 MFD.	400V.
C9	N-1344	.01 MFD.	400V.
C10	N-1376	.02 MFD.	400V.
C11	N-1366	25 MFD. 150V.	ELECTRO.
C12		15 MFD. 150V.	
C13	N-1346	.05 MFD.	400V.
1	N-1594	ANTENNA COIL LOOP	
2	N-1452	OSCILLATOR COIL	
3	N-1598	1ST. I.F. TRANSFORMER	
4	N-1596	2ND. I.F. TRANSFORMER	
5	N-1585	4" P.M. SPEAKER & TRANS	
E	N-1597	2ND. I.F. TRIMMING COND.	
	N-1431	GANG CONDENSER	



MODELS W-130, Z-7008-9 (Late), Ch. P
MODEL Z-7008-9 (Late), Ch. TP

SPIEGEL, INC.

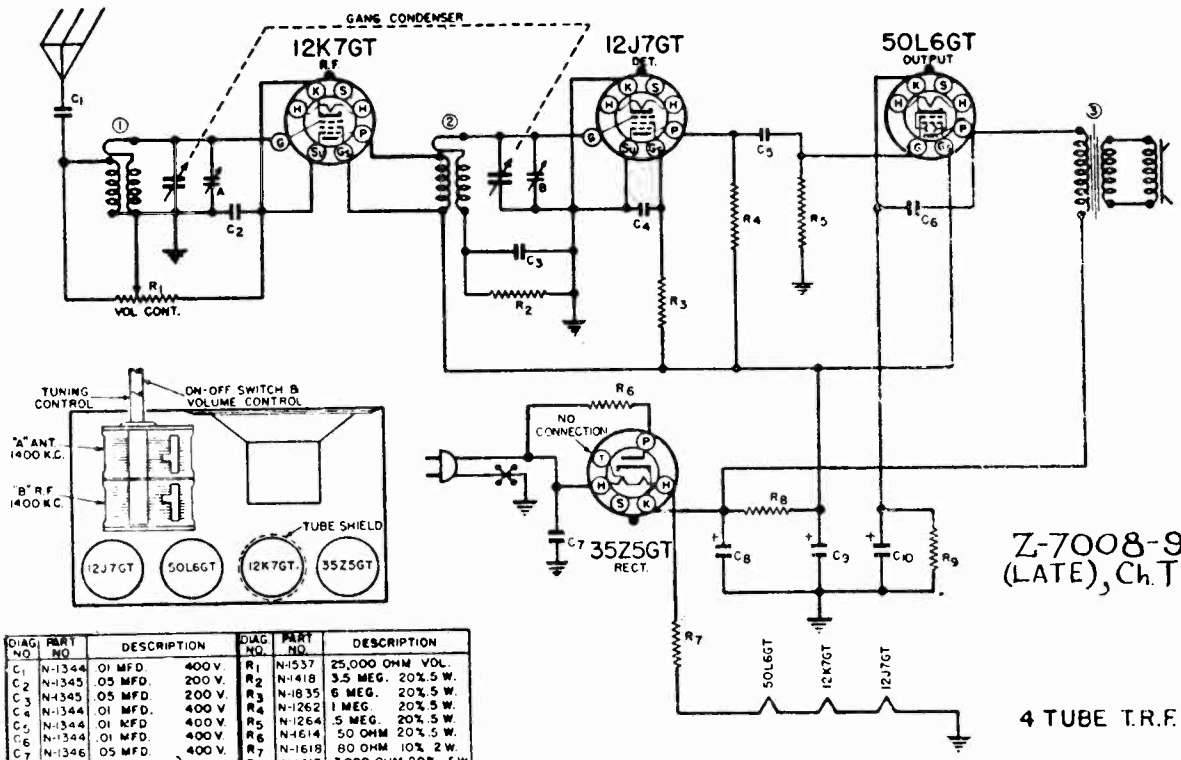


W-130; Z-7008-9 (LATE); Ch. P

4 TUBE T.R.F.

DIAG NO.	PART NO.	DESCRIPTION		DIAG NO.	PART NO.	DESCRIPTION
C1	N-1344	.01 MFD.	400 V.	R1	V-23	25,000 OHM VOL.
C2	N-1345	.05 MFD.	200 V.	R2	N-1418	3.5 MEG. .5 W.
C3	N-1345	.05 MFD	200 V.	R3	N-1419	6 MEG. .5 W.
C4	N-1344	.01 MFD.	400 V.	R4	N-1262	1 MEG .5 W.
C5	N-1344	.01 MFD	400 V.	R5	N-1264	.5 MEG. .5 W.
C6	N-1344	.01 MFD.	400 V.	R6	N-1416	125 OHM ±10% .5 W.
C7	N-1346	.05 MFD.	400 V.	R7	N-1420	125 OHM 1 W.
C8	C-233	16 MFD	150 W.V.	R8	N-1417	3,000 OHM .5 W.
C9		8 MFD.	150 W.V.	R9	N-1415	30 OHM 1.0 W.
C10		6 MFD	150 W.V.	R10	N-1251	25 OHM 1 W.
	S-300	SPEAKER		1	L-110	ANTENNA COIL
	G-25	GANG CONDENSER		2	L-111	R.F. COIL

OPERATES ON 110-120 V., 50-60~ AC or DC
DO NOT CONNECT TO EXTERNAL GROUND.



Z-7008-9 (LATE), Ch. TP

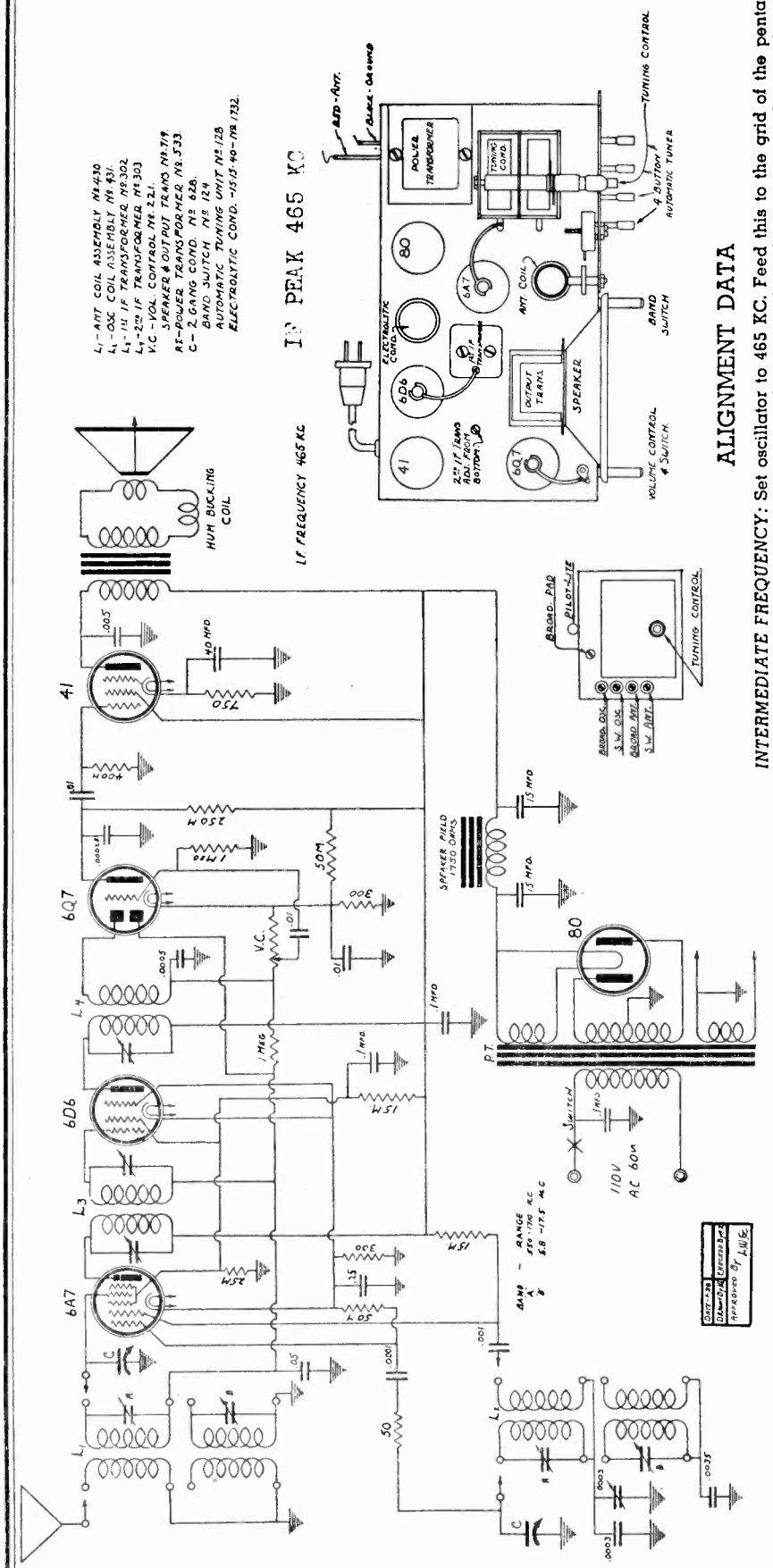
4 TUBE T.R.F.

DIAG NO.	PART NO.	DESCRIPTION		DIAG NO.	PART NO.	DESCRIPTION
C1	N-1344	.01 MFD.	400 V.	R1	N-1537	25,000 OHM VOL.
C2	N-1345	.05 MFD.	200 V.	R2	N-1418	3.5 MEG. 20% .5 W.
C3	N-1345	.05 MFD.	200 V.	R3	N-1835	6 MEG. 20% .5 W.
C4	N-1344	.01 MFD.	400 V.	R4	N-1262	1 MEG. 20% .5 W.
C5	N-1344	.01 MFD	400 V.	R5	N-1264	.5 MEG. 20% .5 W.
C6	N-1344	.01 MFD.	400 V.	R6	N-1614	50 OHM 20% .5 W.
C7	N-1346	.05 MFD.	400 V.	R7	N-1618	80 OHM 10% 2 W.
C8	N-1850	25 MFD 150 V.	ELECT	R8	N-1417	3,000 OHM 20% .5 W.
C9		10 MFD 150 V.		R9	N-1718	250 OHM 10% .5 W.
C10		20 MFD 25 V.		1	N-1790	ANTENNA COIL
	N-1401	GANG CONDENSER		2	N-1791	R.F. COIL
	N-1847			3	N-2047	SPEAKER & TRANS

OPERATES ON 110-120V, 50-60~ AC or DC.
DO NOT CONNECT TO EXTERNAL GROUND

SPIEGEL, INC.

MODELS W-132, V-1032
Chassis 601



ALIGNMENT DATA

INTERMEDIATE FREQUENCY: Set oscillator to 465 KC. Feed this to the grid of the pentagrid (6A7) converter 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.

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 .0035 mica condenser for short circuit.

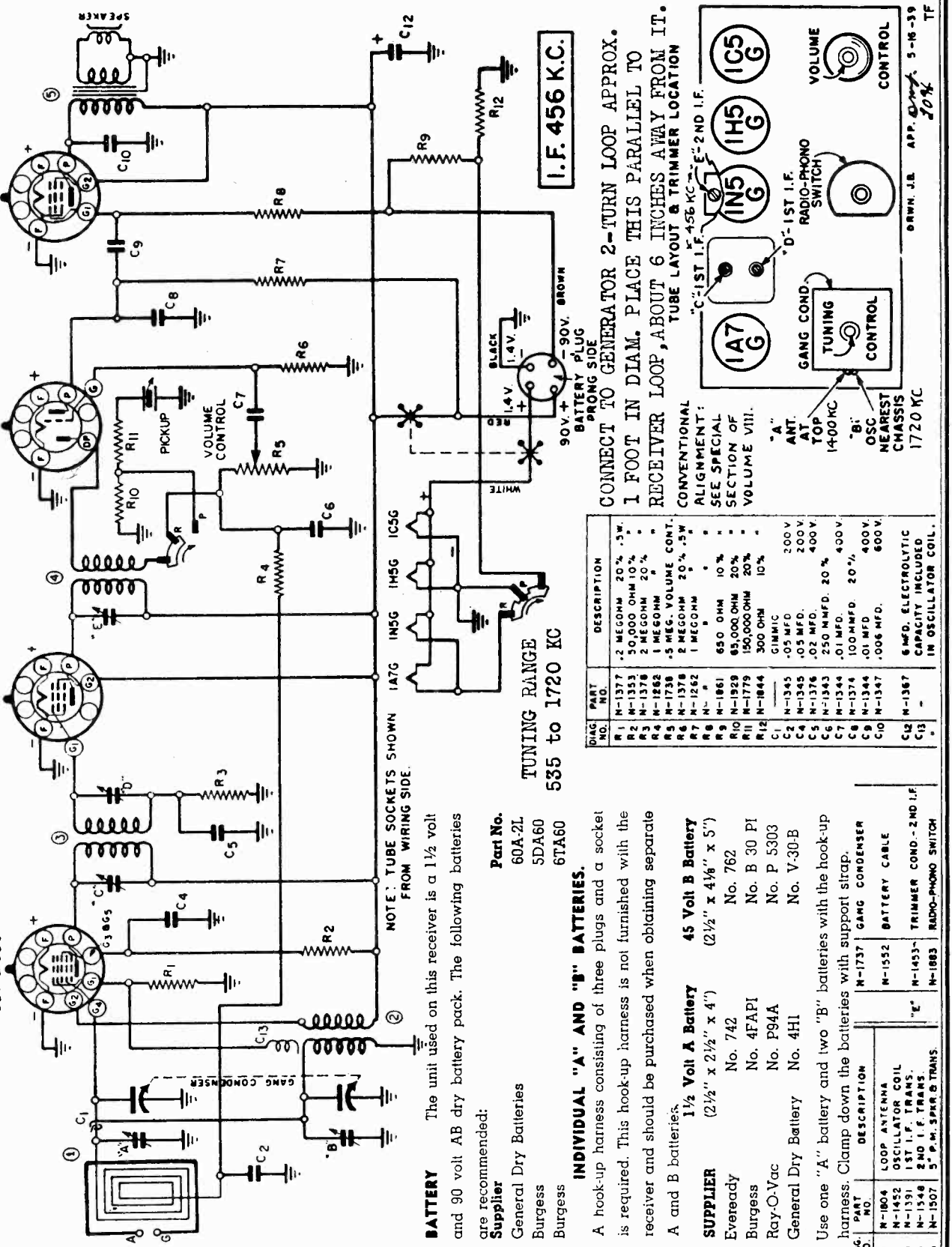
This receiver is designed to operate over two tuning ranges. The broadcast range which extends from 540 K.C. to 1730 and the foreign short wave band which extends from 5800 K.C. to 18000 K.C.

STATION SELECTOR

The four button automatic tuner on this receiver can be adjusted to any station desired by the listener regardless of the frequency of the station. To adjust: Tune in the station desired with the manual control. Loosen the first automatic tuning button by turning the button counterclockwise. Press it in all the way while holding the manual control knob tuned to the desired station. Rotate button clockwise to lock it. The remaining three buttons are adjusted in the same way. The adjustments can be changed at any time desired.

MODELS W-134, Z7124
Chassis TF

SPIEGEL, INC.



DIAG. NO.	PART NO.	DESCRIPTION
R1	N-1377	.2 MEGOHM 20% .5W.
R2	N-1353	30,000 OHM 10% "
R3	N-1378	2 MEGOHM 20% "
R4	N-1282	1 MEGOHM " "
R5	N-1738	.5 MEG. VOLUME CONT.
R6	N-1378	2 MEGOHM 20% .5W
R7	N-1262	1 MEGOHM " "
R8	N- "	" " "
R9	N-1861	650 OHM 10% "
R10	N-1929	83,000 OHM 20% "
R11	N-1779	150,000 OHM 20% "
R12	N-1844	300 OHM 10% "
C1	—	GIMMIC 200 V
C2	N-1345	.05 MFD 200 V
C4	N-1345	.05 MFD. 200 V
C5	N-1376	.02 MFD. 400 V
C6	N-1343	250 MMFD. 20 %
C7	N-1344	.01 MFD. 400 V
C8	N-1374	100 MMFD. 20 %
C9	N-1344	.01 MFD 400 V.
C10	N-1347	.006 MFD. 600 V.
C12	N-1367	6 MFD. ELECTROLYTIC CAPACITY INCLUDED IN OSCILLATOR COIL.
C13	-	

BATTERY The unit used on this receiver is a 1½ volt and 90 volt AB dry battery pack. The following batteries are recommended:

Supplier	Part No.
General Dry Batteries	60A-2L
Burgess	5DA60
Burgess	6TA60

INDIVIDUAL "A" AND "B" BATTERIES. A hook-up harness consisting of three plugs and a socket is required. This hook-up harness is not furnished with the receiver and should be purchased when obtaining separate A and B batteries.

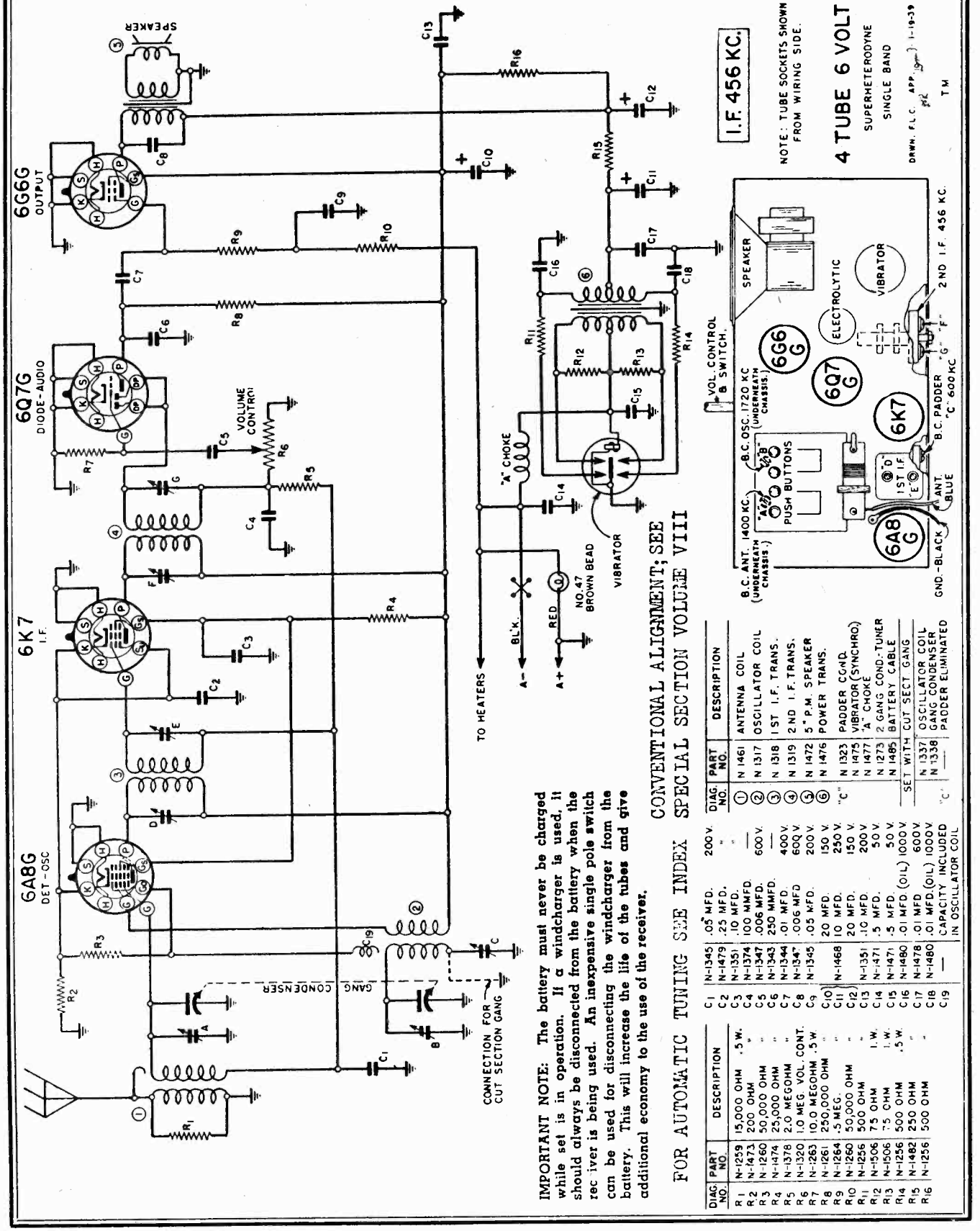
SUPPLIER	1½ Volt A Battery (2½" x 2½" x 4")	45 Volt B Battery (2½" x 4⅛" x 5")
Eveready	No. 742	No. 762
Burgess	No. 4FAPI	No. B 30 PI
Ray-O-Vac	No. P94A	No. P 5303
General Dry Battery	No. 4H1	No. V-30-B

Use one "A" battery and two "B" batteries with the hook-up harness. Clamp down the batteries with support strap.

DIAG. NO.	PART NO.	DESCRIPTION		PART NO.	DESCRIPTION
1	N-1804	LOOP ANTENNA		N-1737	GANG CONDENSER
2	N-1452	OSCILLATOR COIL		N-1552	BATTERY CABLE
3	N-1391	1ST I.F. TRANS.	"E"	N-1433	TRIMMER COND.-2ND I.F.
4	N-1548	2ND I.F. TRANS.			
5	N-1507	5" P.M. SPKR. & TRANS.		N-1883	RADIO-PHONO SWITCH

SPIEGEL, INC.

MODEL W216
Chassis TM



IMPORTANT NOTE: The battery must never be charged while set is in operation. If a windcharger is used, it should always be disconnected from the battery when the receiver is being used. An inexpensive single pole switch can be used for disconnecting the windcharger from the battery. This will increase the life of the tubes and give additional economy to the use of the receiver.

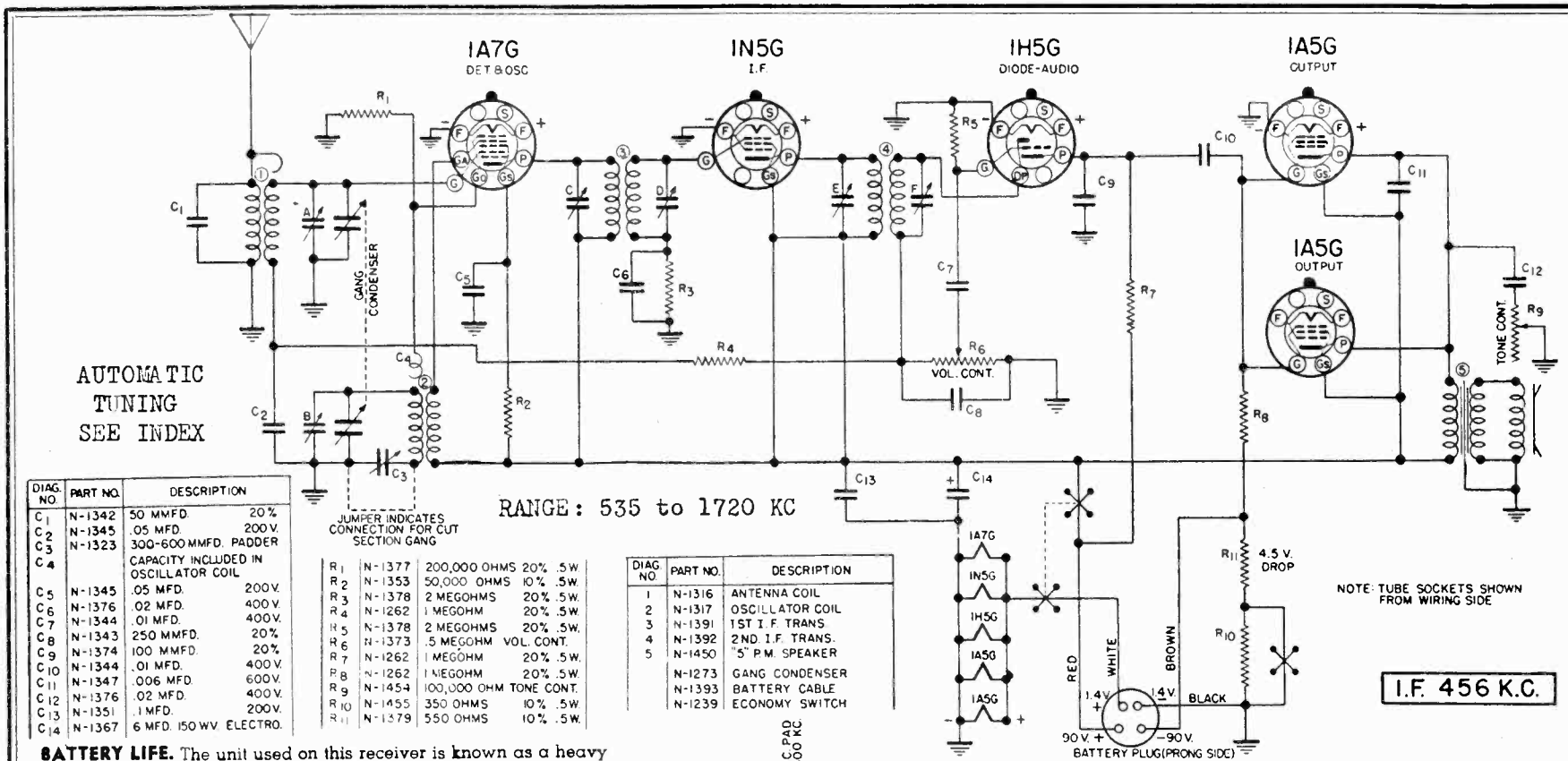
CONVENTIONAL ALIGNMENT; SEE SPECIAL SECTION VOLUME VIII

FOR AUTOMATIC TUNING SEE INDEX

DIAG. NO.	PART NO.	DESCRIPTION
R1	N-1259	15,000 OHM .5 W.
R2	N-1473	200 OHM "
R3	N-1260	50,000 OHM "
R4	N-1474	25,000 OHM "
R5	N-1378	2.0 MEGOHM "
R6	N-1320	1.0 MEG. VOL. CONT.
R7	N-1263	10.0 MEGOHM .5 W
R8	N-1261	250,000 OHM "
R9	N-1264	.5 MEG. "
R10	N-1260	50,000 OHM "
R11	N-1256	500 OHM 1 W.
R12	N-1506	75 OHM 1 W.
R13	N-1506	75 OHM 1 W.
R14	N-1256	500 OHM .5 W.
R15	N-1482	250 OHM "
R16	N-1256	500 OHM "

DIAG. NO.	PART NO.		
C1	N-1345	.05 MFD.	200 V.
C2	N-1479	.25 MFD.	"
C3	N-1351	.10 MFD.	"
C4	N-1374	100 MMFD.	—
C5	N-1347	.006 MFD.	600 V.
C6	N-1343	250 MMFD.	—
C7	N-1344	.01 MFD.	400 V.
C8	N-1347	.006 MFD	600 V.
C9	N-1345	.05 MFD.	200 V.
C10		20 MFD.	150 V.
C11	N-1468	10 MFD.	250 V.
C12		20 MFD.	150 V.
C13	N-1351	.10 MFD.	200 V.
C14	N-1471	.5 MFD.	50 V.
C15	N-1471	.5 MFD	50 V.
C16	N-1480	.01 MFD (OIL)	1000 V.
C17	N-1478	.01 MFD	600 V.
C18	N-1480	.01 MFD (OIL)	1000 V.
C19	—	CAPACITY INCLUDED IN OSCILLATOR COIL	

DIAG. NO.	PART NO.	DESCRIPTION
①	N 1461	ANTENNA COIL
②	N 1317	OSCILLATOR COIL
③	N 1318	1ST I.F. TRANS.
④	N 1319	2ND I.F. TRANS.
⑤	N 1472	5" P.M. SPEAKER
⑥	N 1476	POWER TRANS.
"C"	N 1323	PADDER COND.
	N 1475	VIBRATOR (SYNCHRO.)
	N 1477	"A" CHOKE
	N 1273	2 GANG COND.-TUNER
	N 1485	BATTERY CABLE
	SET WITH	CUT SECT. GANG
	N 1337	OSCILLATOR COIL
	N 1338	GANG CONDENSER
"C"	—	PADDER ELIMINATED



DIAG. NO.	PART NO.	DESCRIPTION	
C_1	N-1342	50 MMFD.	20%
C_2	N-1345	.05 MFD.	200 V.
C_3	N-1323	300-600 MMFD. PADDER	
C_4		CAPACITY INCLUDED IN OSCILLATOR COIL	
C_5	N-1345	.05 MFD.	200 V.
C_6	N-1376	.02 MFD.	400 V.
C_7	N-1344	.01 MFD.	400 V.
C_8	N-1343	250 MMFD.	20%
C_9	N-1374	100 MMFD.	20%
C_{10}	N-1344	.01 MFD.	400 V.
C_{11}	N-1347	.006 MFD.	600 V.
C_{12}	N-1376	.02 MFD.	400 V.
C_{13}	N-1351	.1 MFD.	200 V.
C_{14}	N-1367	6 MFD. 150 WV. ELECTRO.	

R_1	N-1377	200,000 OHMS	20%	.5 W.
R_2	N-1353	50,000 OHMS	10%	.5 W.
R_3	N-1378	2 MEGOHMS	20%	.5 W.
R_4	N-1262	1 MEGOHM	20%	.5 W.
R_5	N-1378	2 MEGOHMS	20%	.5 W.
R_6	N-1373	.5 MEGOHM VOL. CONT.		
R_7	N-1262	1 MEGOHM	20%	.5 W.
R_8	N-1262	1 MEGOHM	20%	.5 W.
R_9	N-1454	100,000 OHM TONE CONT.		
R_{10}	N-1455	350 OHMS	10%	.5 W.
R_{11}	N-1379	550 OHMS	10%	.5 W.

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-1450	"5" P.M. SPEAKER
	N-1273	GANG CONDENSER
	N-1393	BATTERY CABLE
	N-1239	ECONOMY SWITCH

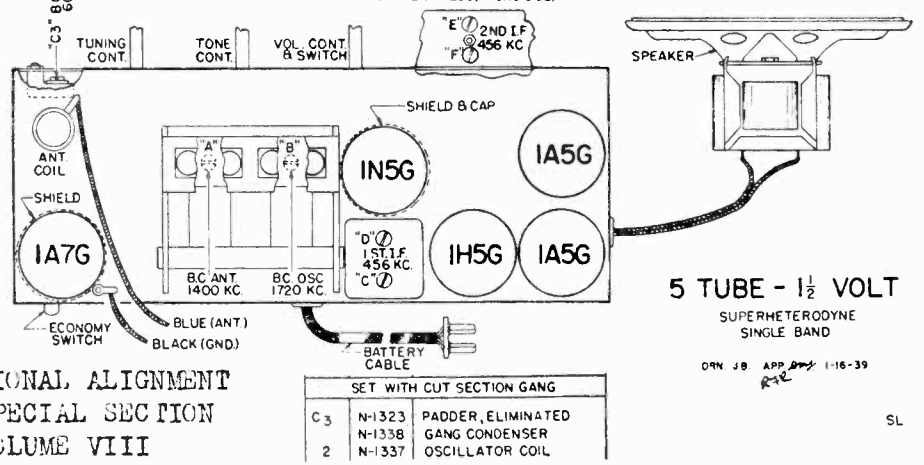
BATTERY LIFE. The unit used on this receiver is known as a heavy duty 1½ volt and 90 volt AB dry battery pack, approximately sixteen inches long, four and a half inches wide and six and a half inches high with a socket type connector. A battery of this type has a probable life of six to seven months with three hours daily use and a longer or shorter life as the daily usage is decreased or increased when the set is operated in the "power position"

REAR SWITCH. (Two Position Economy Switch.) The switch is provided to obtain the maximum of battery life without sacrificing the performance of the set.

The switch should be operated in the "Economy" (left hand) position until the performance of the radio receiver drops sufficiently to indicate the end of the batteries' **normal** life.

When the battery is new the set gives sufficient power output and sensitivity in the economy position and the life of the battery is materially increased.

When the battery becomes old the "Power" position (right hand) makes it possible to use the battery to the complete end of the batteries' useful life and still retain good reception.



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII

SET WITH CUT SECTION GANG		
C_3	N-1323	PADDER, ELIMINATED
	N-1338	GANG CONDENSER
2	N-1337	OSCILLATOR COIL

5 TUBE - 1½ VOLT
SUPERHETERODYNE
SINGLE BAND

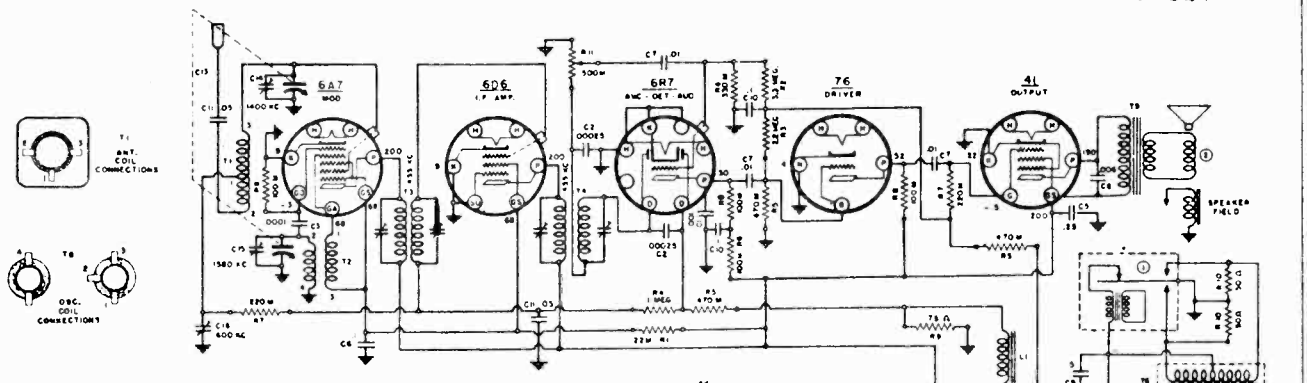
DRN JB APP 1-16-39

SL

SPIEGEL, INC.

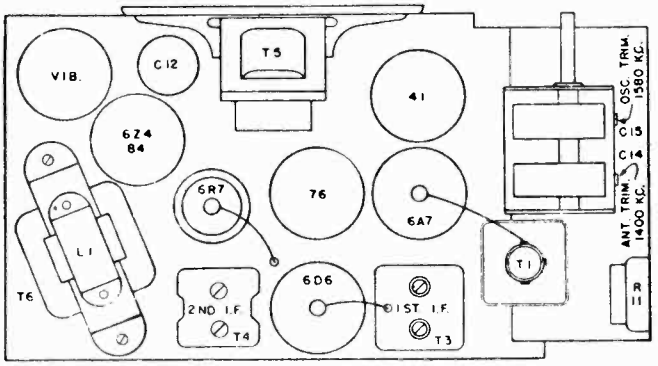
SPIEGEL, INC.

MODELS W400, V1148
Chassis 9-627



IF PEAK 456 KC

FOR OTHER DATA SEE INDEX



LOCATION OF PARTS ON TOP OF CHASSIS

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
CAPACITY VALUES ARE IN MICROFARADS
VOLTAGES TAKEN WITH A 1M INPUT
TUBE SOCKETS ARE VIEWED FROM UNDERSIDE OF CHASSIS
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS
VOLTAGES MUST BE MEASURED WITH NO SIGNAL
ALIGNMENT IS TO MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS

CODE	PART NO	DESCRIPTION
T1	10-223	ANTENNA TRANSFORMER
T2	10-224	OSCILLATOR
T3	10-225	1 ST I.F.
T4	10-226	2 ND I.F.
T5		OUTPUT TRANSFORMER
T6	80-169	POWER TRANSFORMER
L1	33-219	FILTER CHOKE
L2	33-210	FILAMENT CHOKE
L3	33-211	VIBRATOR CHOKE
	34-102	VIBRATOR
S	76-240	S SPEAKER

CODE	PART NO	DESCRIPTION
R1	60-214	22 M OHM 1 W CARBON RES
R2	60-209	3.3 MEGOHM 1/2 W
R3	60-208	2.2 " " "
R4	60-187	1 " " "
R5	60-206	470 M OHM " "
R6	60-210	330 M " "
R7	60-207	220 M " "
R8	60-172	100 M " "
R9	60-211	75 " " "
R10	60-216	50 " " "
R11	70-116	VOLUME CONTROL 500 M OHMS

CODE	PART NO	DESCRIPTION
C1	15-111	.001 MFD MICA CONDENSER
C2	1504	.0025 " " "
C3	1501	.004 " " "
C4	16-169	.004 MFD 1400 V BUFFER COND
C5	16-117	.25 " 400 V TUB CONDENSER
C6	16-116	1 " " " "
C7	16-119	.01 " " " "
C8	16-120	.008 " " " "
C9	16-112	5 " 200 V OVAL "
C10	16-115	1 " " TUB "
C11	1822	.05 " " "
C12	18-240	60 & 5 MFD ELECTROLYTIC 300 V
C13	18-127	3 GANG VARIABLE COND ALSO C14 & C15
C16	70-117	300-600 MFD PADDING CONDENSER
C17	69-1	SPARE PLATE

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 Connections	Trimmer Adjustment (In Order Shown)	Trimmer Function
Closed	455 Kc.	.1 mfd.	6A7 Grid	T3 T4	I. F.
Fully Open	1580 K. C.	.0002 mfd.	Antenna Conn.	C15	Osc. Trimmer
1400 K.C.	1400 K.C.	.0002 mfd.	Antenna Conn.	C14	Ant. Trimmer
600 K. C.	600 K. C.	.0002 mfd.	Antenna Conn.	C16	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 C16 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.

THE AMMETER LEAD

The ammeter cable (See "H" in Fig. 1) has a spring clip at one end and a fuse receptacle at the other. Compress the spring clip and slide it over the ammeter stud on the back of the car's ammeter. When the clip is released it will spring out and grip the stud securely. (See fig 1.) (The cable clip may be connected to either stud of the ammeter. If connected to one stud, the current taken by the radio will register on the ammeter. If connected to the other stud, it will not register.) In a few cars such as the first models of the Ford V-8 the ammeter does not have terminals. In such cases the spring clip should be fastened to any available terminal behind the dash which is connected to the ungrounded side of the battery at all times. Some terminals will be so connected only when the ignition or light switches are turned "On." Insert the fibre sleeve and fuse (See "J" and "K" in Fig. 1) in the other end of the ammeter cable. The black wire coming from the radio receiver has a plug at its end which should be inserted into the fuse receptacle after the fuse sleeve and fuse have been inserted.

THE GENERATOR CONDENSER

The Generator Condenser should be mounted to the generator frame by means of any one of the generator assembly bolts. Scrape all dirt and paint away so that a clean metal to metal contact is made. The flexible lead from the Generator Condenser should be connected to the output terminal of the generator.

MODEL T-2307, Ch. 101505-599
MODEL V-1140, Ch. 101.505

SPIEGEL, INC.

MODELS W400, V1148, Ch. 9-627
MODELS 579, 1140, 1141, Ch. 559
MODELS 2307, 2308, Ch. 101.505

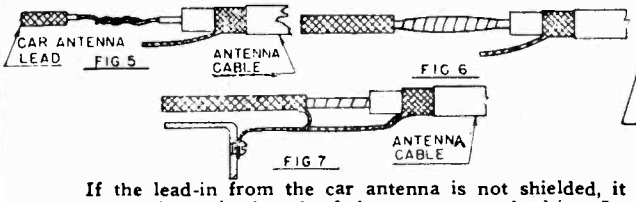
ANTENNA

Insert the single prong of the antenna cable (See "G" in Fig. 1) into its receptacle located on the bottom of the receiver case and near the front left hand corner. Note that the other end of this cable has a white covered wire protruding from its end and a bright metal pigtail. The white covered inner-wire and the bright metal pigtail are to be connected to the car's antenna in the following manner:

If an antenna was located coming from the corner post of the car, it will probably have an inner wire covered with the metal braid. (If it has a plug at its end, cut off the plug). Scrape clean and solder the white wire of the receiver's antenna lead to the inner wire of the car antenna lead. Be certain these inner wires do not at any time touch the outer shield. (See Fig. 5.)

After the connection is cleaned and connected, cover the joint carefully with tape. (See Fig. 6.)

Connect the pigtail of the receiver's antenna wire to the pigtail braid of the car's antenna lead-in. Wrap pigtails and solder together using rosin core solder. IMPORTANT—Make certain when bolting soldered pigtail ends to car that the section is scraped clean and a good chassis ground. (See Fig. 7.)



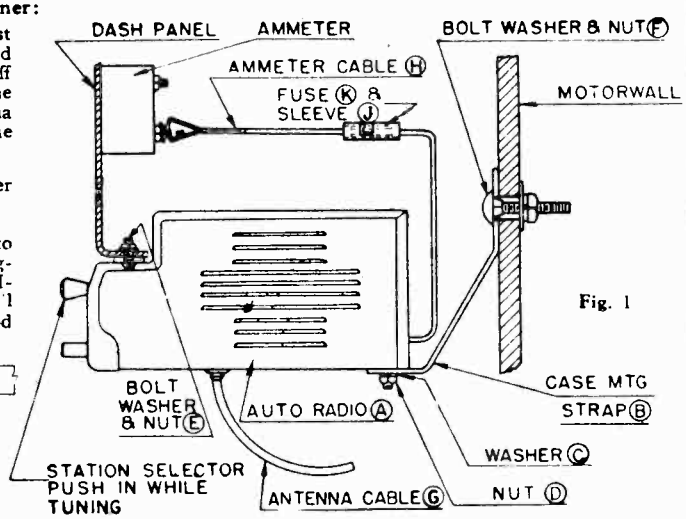


Fig. 1

If the lead-in from the car antenna is not shielded, it is advisable to do so to overcome motor noise. Slip a shielded loom over the entire length of the car antenna lead-in. In some cases where a roof antenna is used, the lead-in is brought down through a corner post of the car frame at the end of the windshield (See Figure 2). If the radio antenna cable is long enough to be inserted several inches into the corner post, connect antenna lead-in and the radio antenna cable as shown in Figures 5, 6 and 7, and after taping, insert the splice and all the unshielded portion of the lead-in up into the corner post. If this cannot be done, this type of lead-in should be covered with a shielded loom several inches into the corner post. Connect the lead-in and shielding as illustrated in Figures 5, 6 and 7. The other end of the shielding at the car antenna should be grounded. To eliminate crackling and noisy reception due to antenna lead-in pick-up, the shielded antenna lead-in should be either insulated from chassis (or car body) or grounded at interval points, leading from the radio antenna cable to the car antenna. Be sure to use car chassis or grounded section of body only for grounding.

THE DISTRIBUTOR SUPPRESSOR

To install the distributor suppressor, cut the CENTER lead from the distributor cap in two, as close as possible to the distributor cap. Screw the Distributor Suppressor to one end of the cut cable and then to the other end leading to the distributor cap.

SETTING PUSH-BUTTONS

1. By means of the Station Selector Knob, tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the lowest frequency—that is, your selected station which is tuned in nearest the right-hand side of the dial.

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).

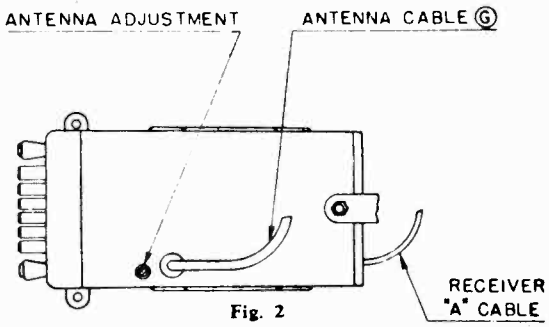


Fig. 2

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.

The Push-Button tuning system is now correctly set up for your first selected station of lowest frequency and the Call Letter Tab for this station should be at the extreme right of the Call Letter Holder.

Follow through with this same procedure, setting up the other 5 stations in the order of their frequency—that is, the second station set up will be second lowest in frequency and the third station set up will be third lowest in frequency.

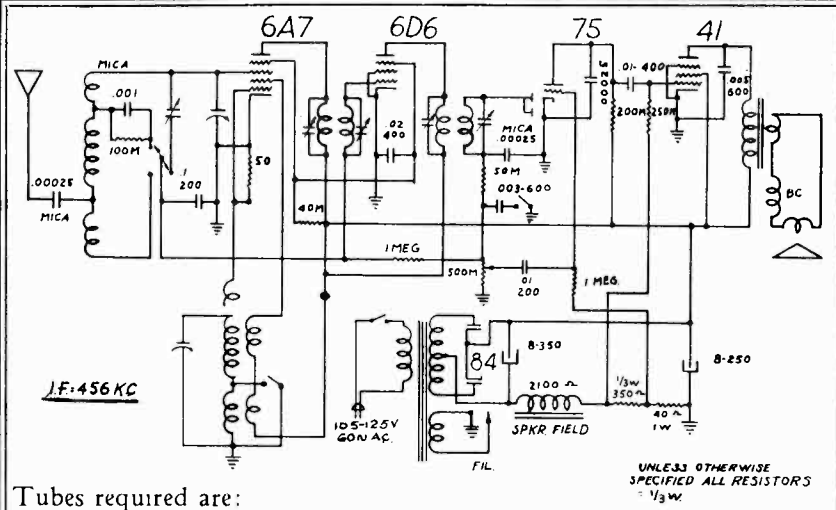
Carefully check each Push-Button for the accuracy of its setting. If, when tuning in any station with its Automatic Push-Button it does not have equal volume or clarity to that obtained with manual tuning, this may indicate the automatic adjustment for that station was not made accurately. Should there be any inaccuracy in any one of the Push-Button adjustments, correction can be made by repeating the above procedure for that button only. Do not reset those Push-Buttons that are accurately adjusted.

No further adjustments are necessary to operate your auto radio automatically or manually. To receive any one of your six selected stations for automatic operation, merely push in ALL THE WAY the Button set up for that station.

To receive all other stations in the regular manner, push in the Station Selector Knob and turn it to the frequency of the station desired.

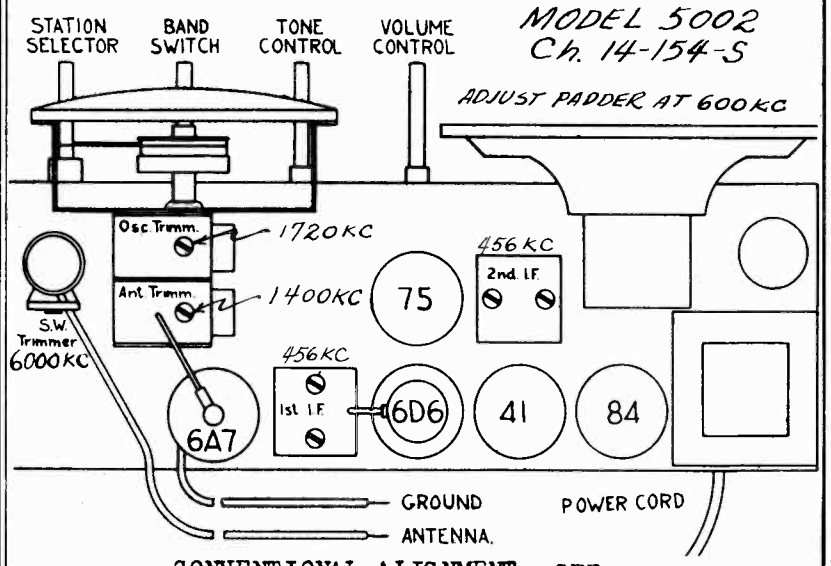
IMPORTANT: ANTENNA ADJUSTMENT

The antenna adjustment control is located close to the antenna cable receptacle as shown in Figure 2. To make the adjustment first, remove plug button from bottom of case by inserting a screwdriver between case and plug button, then tune in a weak station with full volume at or very close to 600 kilocycles (60) on the dial. Second, insert a small screwdriver into the antenna adjustment screw shown in Figure 2 and turn the screwdriver either to the left or right until the volume of the station is at its maximum point. While adjusting the antenna adjustment screw it is advisable to vary the station selector knob a degree or two to obtain the best adjustment. Now insert plug button into case. The receiver is now balanced and no further radio electrical adjustments are necessary.



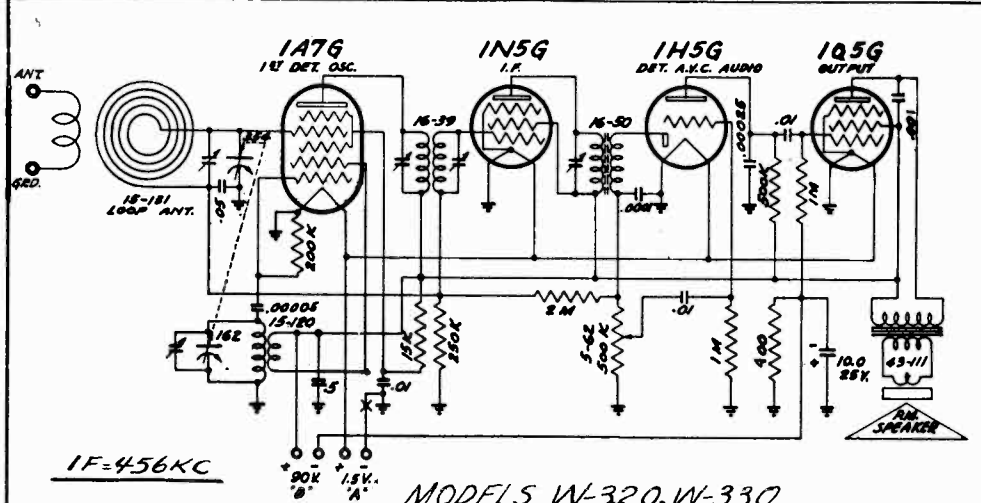
Tubes required are:

1—6A7 Oscillator-Translator
1—6D6 I. F. Amplifier
1— 75 Detector-A.V.C., Audio Amplifier
1— 41 Output
1— 84 Rectifier



CONVENTIONAL ALIGNMENT, SEE SPECIAL SECTION VOLUME VIII

Tubes must be in proper position and connected as shown.



MODELS W-320, W-330
Ch 553

I. F. ALIGNMENT

From a good signal generator connect the proper leads, one to the radio chassis and the other thru a .1 mfd condenser to the grid cap of the 1A7G tube, with the tube's grid lead still in place. Set the receiver dial to 1720 K. C. and the signal generator to 456 K. C. With the receiver's volume control full on, adjust the signal generator's output until the signal is heard in the speaker and the output meter reads approximately .3 volts. Adjust the I. F. trimmers for maximum output, decreasing the generator output as the receiver output increases, so the meter always reads approximately .3 volt.

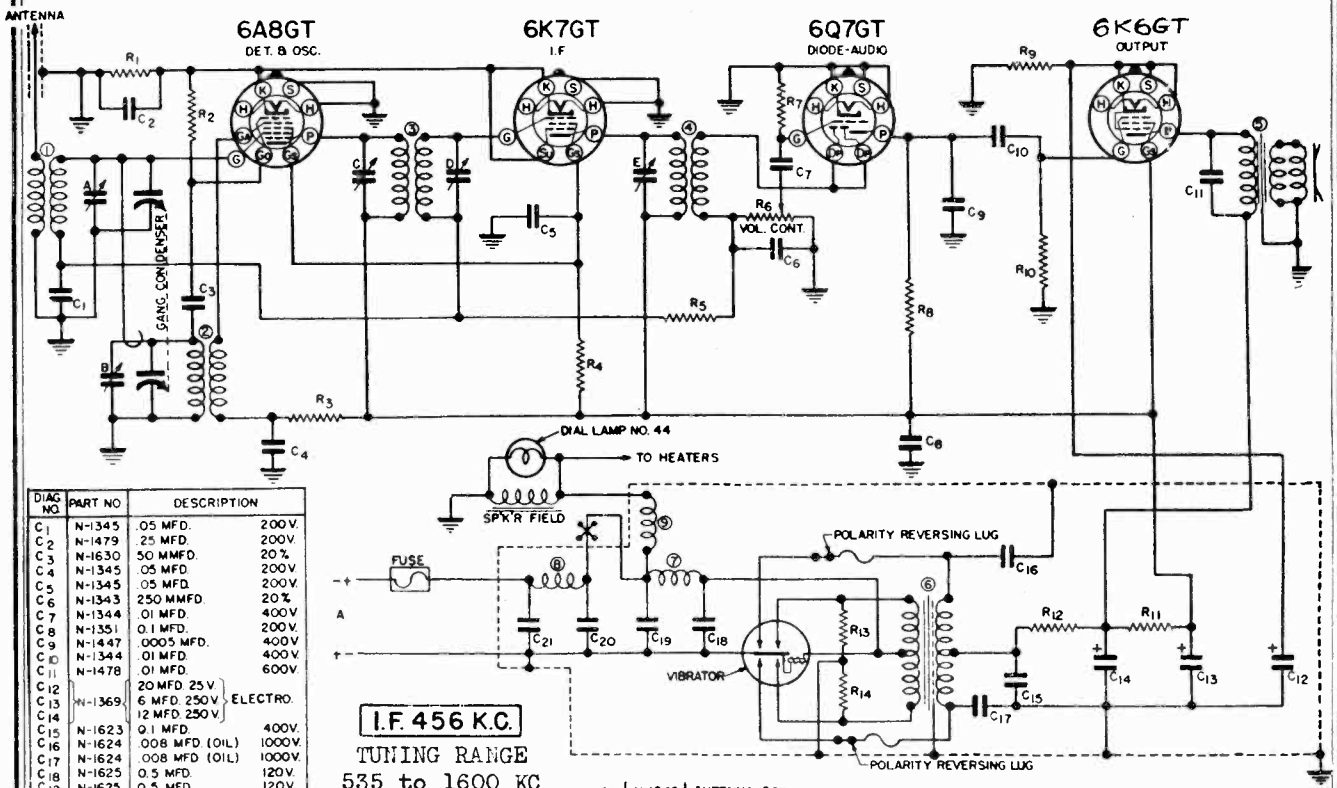
R. F. ALIGNMENT

When aligning the antenna and oscillator circuits the loop antenna should be placed in its approximate position in relation to the radio chassis and speaker as it is placed in the cabinet. No leads are connected from the signal generator, but the generator leads are connected to a three or four turn loop about three inches in diameter, of ordinary insulated hookup wire. This loop is placed about four inches from the loop antenna and parallel to it.

The radio dial and generator are set to 1720 K. C. and the oscillator trimmer set for maximum output, still using a .3 volt meter reading. The dial and generator are then set to 1400 K. C. so the signal comes thru, and the trimmer on the loop antenna is adjusted for maximum output. Check for alignment at 600 K. C.

MODEL W408
Ch. AU-10

SPIEGEL, INC.



DIAG NO.	PART NO	DESCRIPTION	
C1	N-1345	.05 MFD.	200 V.
C2	N-1479	.25 MFD.	200 V.
C3	N-1630	50 MMFD.	20 %
C4	N-1345	.05 MFD.	200 V.
C5	N-1345	.05 MFD.	200 V.
C6	N-1343	250 MMFD.	20 %
C7	N-1344	.01 MFD.	400 V.
C8	N-1351	0.1 MFD.	200 V.
C9	N-1447	.0005 MFD.	400 V.
C10	N-1344	.01 MFD.	400 V.
C11	N-1478	.01 MFD.	600 V.
C12	N-1369	20 MFD. 25 V.	ELECTRO.
C13		6 MFD. 250 V.	
C14		12 MFD. 250 V.	
C15	N-1623	0.1 MFD.	400 V.
C16	N-1624	.008 MFD. (OIL)	1000 V.
C17	N-1624	.008 MFD (OIL)	1000 V.
C18	N-1625	0.5 MFD.	120 V.
C19	N-1625	0.5 MFD.	120 V.
C 20	N-1343	250 MMFD.	20 %
C 21	N-1343	250 MMFD.	20 %
P1	N-1473	200 OHM	.5 W. 10 %
R2	N-1260	50,000 OHM	.5 W. 20 %
R3	N-1627	20,000 OHM	.5 W. 20 %
R4	N-1627	20,000 OHM	.5 W. 20 %
R5	N-1262	1 MEGOHM	.5 W. 20 %
R6	N-1238	0.5 MEGOHM	VOL. CONT.
R7	N-1419	6 MEGOHM	.5 W. 20 %
R8	N-1261	250,000 OHM	.5 W. 20 %
R9	N-1628	750 OHM	.5 W. 10 %
R10	N-1264	0.5 MEGOHM	.5 W. 20 %
R11	N-1256	500 OHM	.5 W. 20 %
R12	N-1482	250 OHM	.5 W. 20 %
R13	N-1629	100 OHM	1 W. 20 %
R14	N 1629	100 OHM	1 W. 20 %

1	N-1249	ANTENNA COIL	
2	N-1250	OSCILLATOR COIL	
3	N-1248	1 ST. I.F. TRANS.	
4	N-1596	2 ND. I.F. TRANS.	
5	N-1235	4" SPEAKER & TRANS.	
6	N-1540	VIBRATOR TRANS.	
7	N-1477	HASH CHOKE	
8	N-1632	MOTOR NOISE CHOKE	
9	N-1631	HEATER CHOKE	
	N-1236	VIBRATOR (SYNCHRONOUS)	
	N-1237	GANG CONDENSER	
	N-1241	TUNING DIAL	
	N-1539	BATTERY LEADS	
	N-1239	TOGGLE SWITCH	

4 TUBE-6 VOLT

SUPERHETERODYNE
SINGLE BAND
AUTO SET

DRN. J.B. APP. 2-25-39 AU

MOTOR NOISE ELIMINATION

1. Ground the antenna lead-in shield at one or more points to the cowl or any other metal surface in contact with the lead-in.

2. Move the battery lead around to a point of least noise pick-up and fasten in place with tying cord or tape.

3. Bond together the throttle rod, choke rod and any metal tubing with a piece of copper braid and ground to the fire wall. This should be done on the engine side.

4. Bond steering post to firewall.

5. Bond hood, side panel and other protective covering for engine if it is not making a positive contact to the body.

In extreme cases, a distributor resistor and generator condenser will reduce noise interference to a minimum. These parts are available at your dealer.

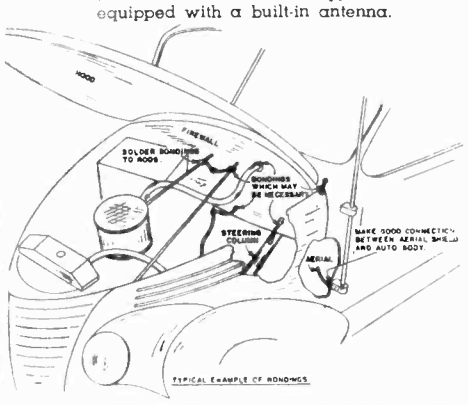
From the standpoint of motor noise, the whip type antenna recommended has been found to be the most satisfactory. It is advisable to use this type antenna even if the car is equipped with a built-in antenna.

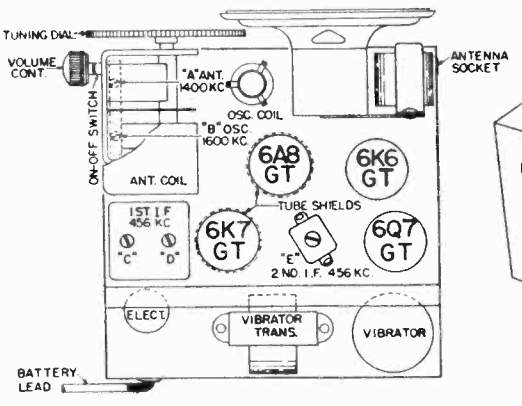
I. F. ALIGNMENT. With the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A8G) through a .05 or .1 mfd. condenser. The ground on the test oscillator should be connected to the chassis ground. Align all three trimmers to peak or maximum reading on the output meter.

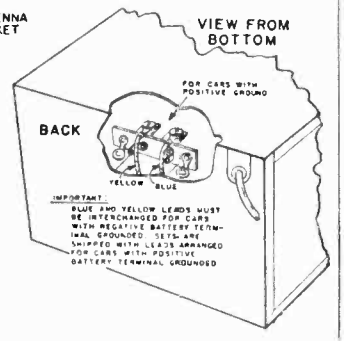
ANT. AND OSC. ALIGNMENT. Connect the antenna to the generator through a 65 MMF dummy* and set the dial and generator at 1600 KC (gang at minimum capacity). Align the BC oscillator trimmer for maximum output. Set the test oscillator at 1400 KC and tune in the signal with the dial and adjust the antenna trimmer for maximum output.

Next set the test oscillator at 600 KC and tune in the signal with the dial to check the sensitivity at this point.

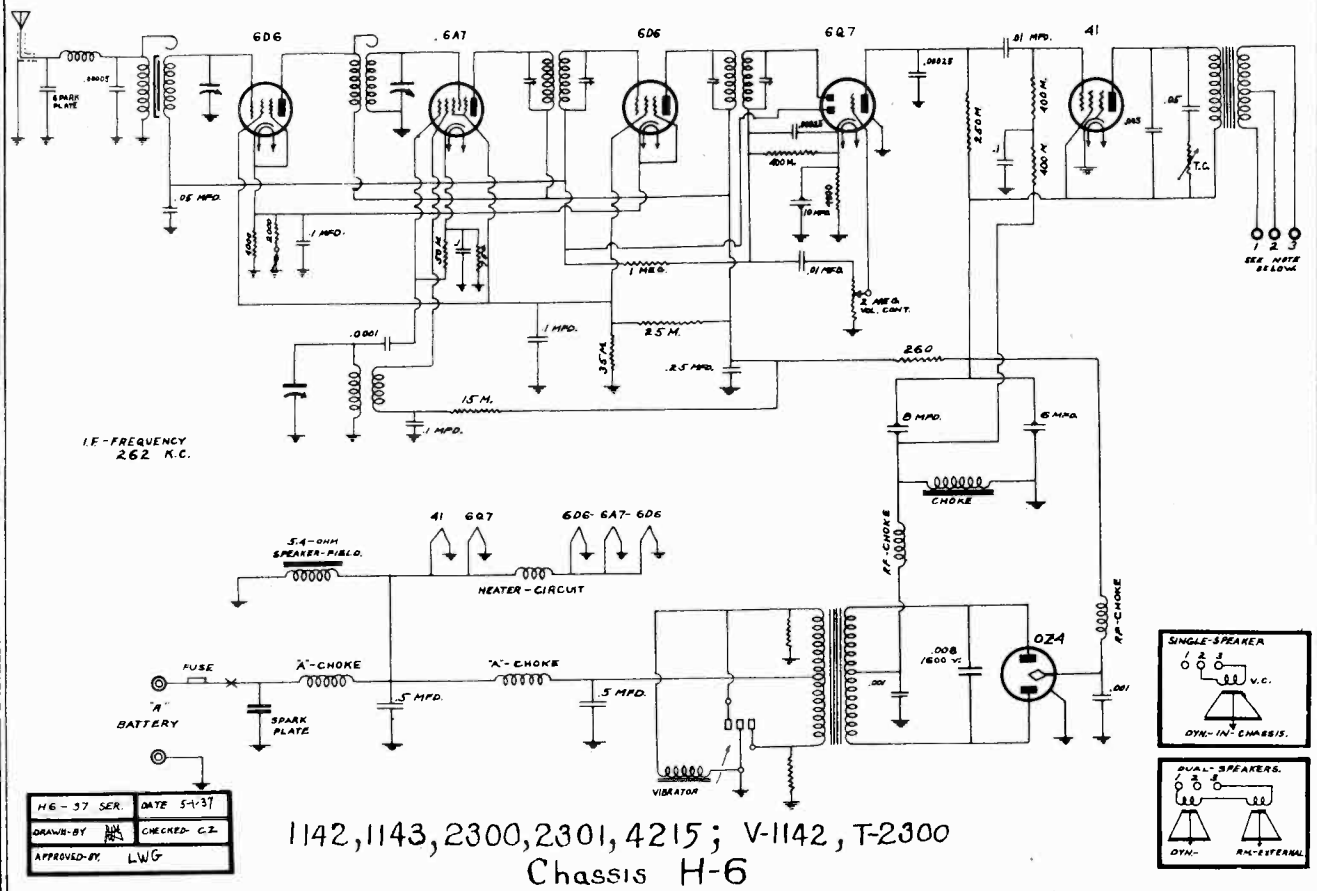
*If the antenna is aligned using a whip antenna shielded lead use a 30 MMF dummy antenna.







SPIEGEL, INC. MODELS 1142, 1143, 2300, 2301, 4215; V-1142, T-2300, Ch. H-6
MODEL A2026, Ch. 10-70
MODEL Z-7002, Ch. 0-51



1142, 1143, 2300, 2301, 4215; V-1142, T-2300
Chassis H-6

ADJUSTING PUSH BUTTONS FOR MODELS A2026 Ch. 10-70; Z-7002 Ch. 0-51

Cut the call letters of your four selected stations from the list supplied with your receiver and slip them into the top of the Push-Buttons, with the clear celluloid on top of the call letters to protect them. Arrange the call letters in the buttons from left to right, having the lowest frequency station (that is, the station closest to 600 K.C. at the left and work progressively towards the right, so that the highest frequency station is toward the right.

Follow the procedure outline below, in order to adjust the push-buttons properly:

1. By means of the tuning knob, tune in with the right hand as accurately as possible the desired station having the lowest frequency.

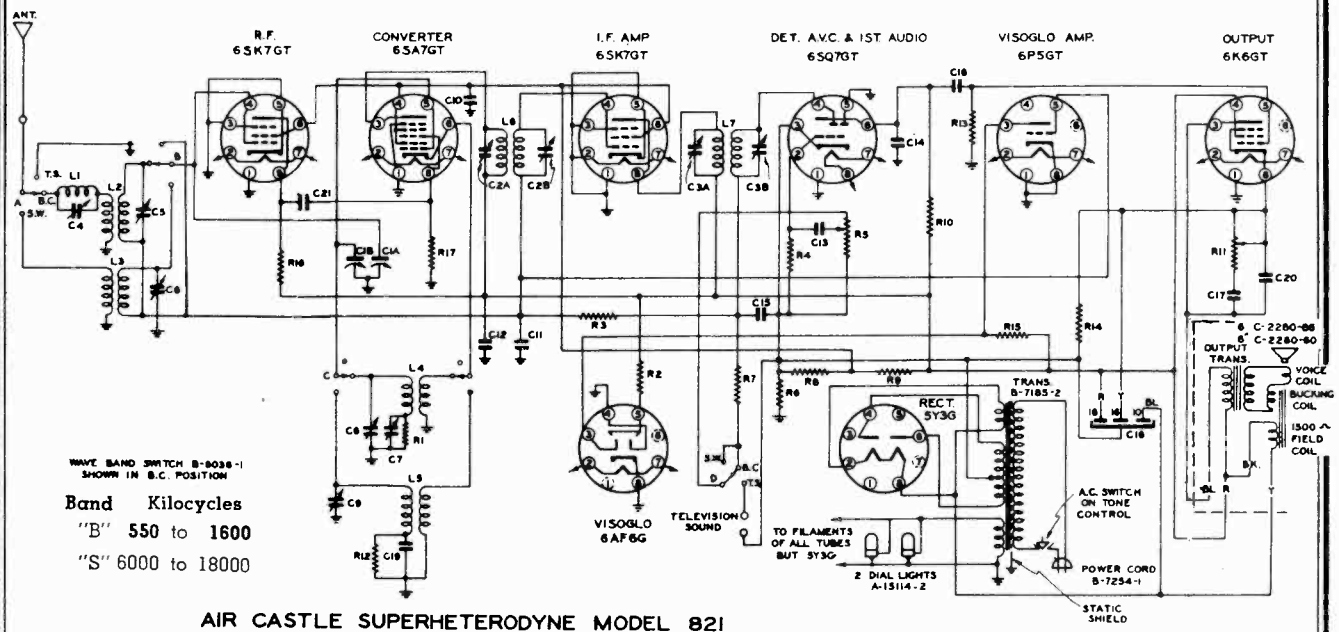
2. Continuing to hold the tuning control knob in its exact position with the right hand, loosen with the left hand the push-button to be set up for that station, (the one farthest toward the left) by unscrewing the push-button about one turn to the left (counter-clockwise).

3. Push the push-button in all the way, and then tighten it gently toward the right (clockwise). Release push-button slowly and when in normal position grip button and tighten firmly.

The push-button tuning system is now correctly set up for your first selected station of lowest frequency.

Follow through with this same procedure, setting up the other three stations in the order of their frequency, that is, the second station set up will be second lowest in frequency, etc.

MODEL A-2000, Ch. 821 SPIEGEL, INC.



AIR CASTLE SUPERHETERODYNE MODEL 821
INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

C1A&B	VARIABLE CONDENSER	B-7229
C2A&B	NO. 1 I. F. TRIMMER	B-7200-GN
C3A&B	NO. 2 I. F. TRIMMER	B-7200-GN
C4	I.F. REJ. TRIMMER	A-14088-4
C5	B.C. ANT. TRIMMER	A-14088-5
C6	B.C. OSC. TRIMMER	B-7199-BY
C7	B.C. OSC. PADDER	
C8	S.W. ANT. TRIMMER	A-14088-6
C9	S.W. OSC. TRIMMER	A-14088-8
C10	.1 MFD. 200 V.	C-3202-38C
C11	.05 MFD. 200 V.	C-3202-34C
C12	.1 MFD. 400 V.	C-3204-38C
C13	.02 MFD. 200 V.	C-3202-22C
C14	250 MMF. MICA	C-720-324
C15	230 MMF. MICA	C-720-324
C16	.05 MFD. 400 V.	C-3204-28C
C17	.03 MFD. 600 V.	C-3208-80C
C18	16-10-10 MFD. ELECT.	A-14760-1
C19	2700 MMF. MICA	A-15431
C20	.003 MFD. 600 V.	C-3206-62C
C21	40 MMF. MICA	C-720-38I

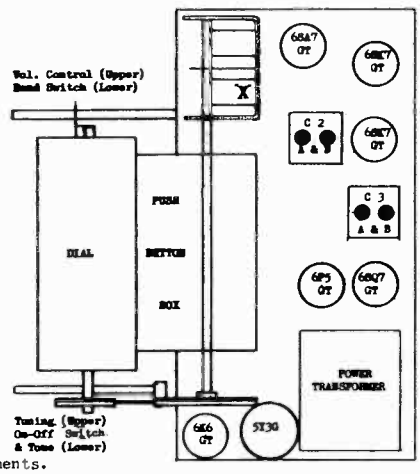
R1	22,000 Ω	.25 W.	C-2795-76B
R2	56,000 Ω	.25 W.	C-2795-83B
R3	1 MEGOHM	.25 W.	C-2795-98B
R4	4.7 MEGOHM	.25 W.	C-2795-106B
R5	.5 MEG. VOL. CONTROL		A-15130-3
R6	150 Ω	.25 W.	C-2795-52B
R7	56,000 Ω	.25 W.	C-2795-83B
R8	39,000 Ω	1 W.	C-2797-81B
R9	15,000 Ω	3 W.	C-2799-78A
R10	270 000 Ω	.25 W.	C-2795-91B
R11	.25 MEG. T.C. & SWITCH		A-15128-2
R12	22,000 Ω	.25 W.	C-2795-78B
R13	680,000 Ω	.25 W.	C-2795-30B
R14	470 Ω	1 W.	C-2797-56B
R15	1 MEGOHM	.25 W.	C-2795-98B
R16	3,300 Ω	.25 W.	C-2795-64B
R17	2.2 MEG.	.25 W.	C-2795-102B

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

VOLTAGE CHART

Line Voltage: 110 volts
Position of Volume Control: Full with Antenna Disconnected
Position of Band Switch: Broadcast

Tube	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
6SA7	0	0	218	70	-.05	0	*5.8	-.015
6SK7 RF	0	0	0	-.1	0	70	*5.8	190
6SK7 IF	0	0	0	-.1	0	70	*5.8	210
6SQ7	0	-1.9	-3	-3	-.2	52	*5.8	0
6P5	0	0	.2	200	-.1	—	*5.8	0
6AF6	0	*5.8	A	—	200	—	0	0
6K6	0	0	190	210	0	—	*5.8	12.5
5Y3	0	270	—	*270	—	*270	—	270



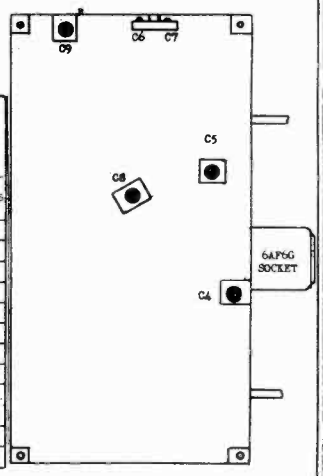
TOP VIEW OF CHASSIS

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.
*AC volts
A - Cannot be measured with 1000 ohms per volt voltmeter.

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



BOTTOM VIEW OF CHASSIS

SPIEGEL, INC. MODELS 2004, 2005, 2082, 2083, T-2004, T-2054, T-2082, Ch. 175E

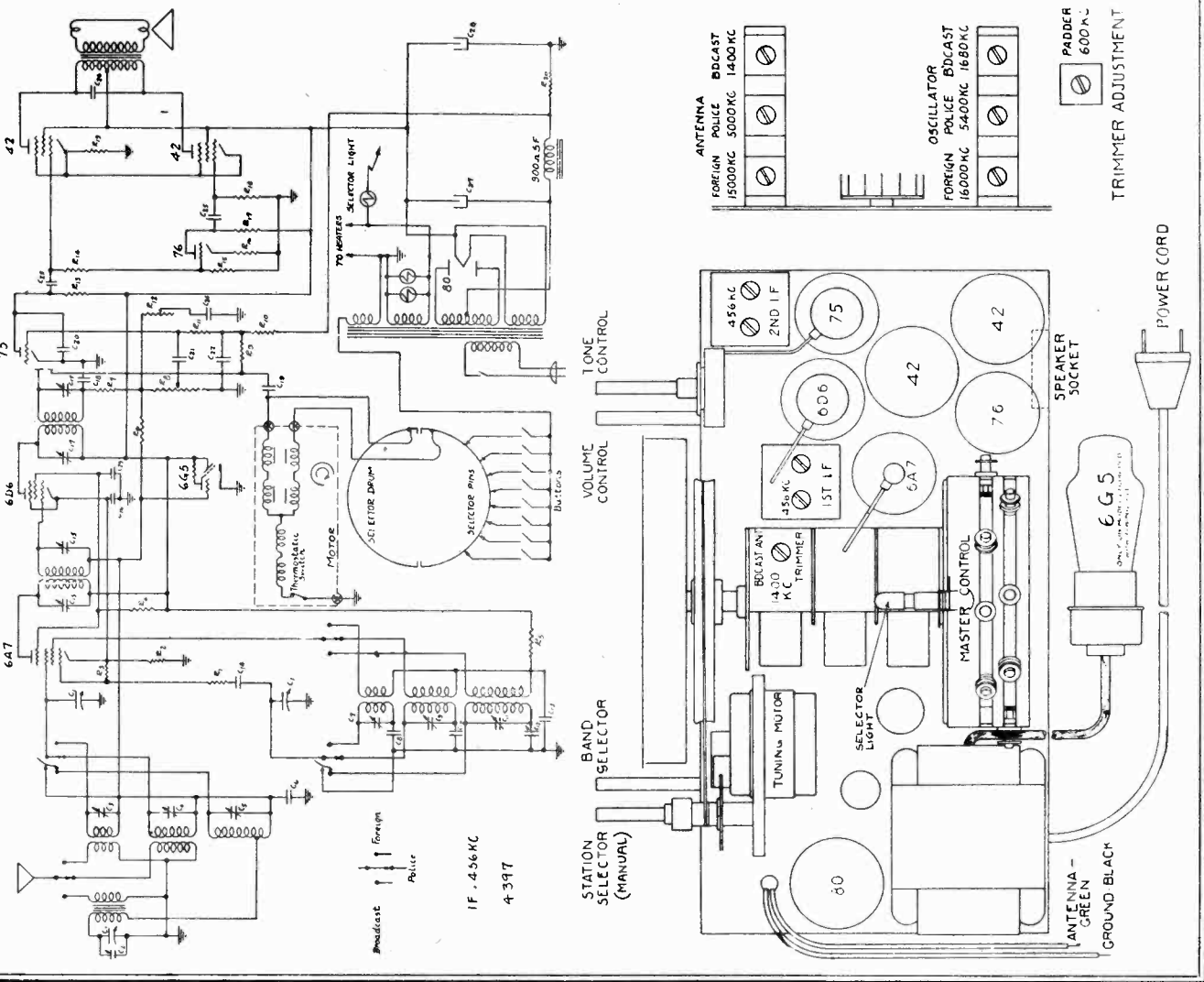
TUBES

Tubes required are:

1—6A7 Oscillator-translator
1—6D6 Intermediate Frequency Amplifier
1—75 Detector AVC—First Audio Amplifier
1—76 Driver—Phase Inverter
2—42 Power Output
1—80 Rectifier
1—6G5 Cathode Ray Tuning Tube (on models equipped with "eye" tuning indicator)

Do not use tubes of types different from those shown above. When replacing tubes or checking connections, refer to the ***Tube Layout Chart.***

Symbol	Part No.	Description
C1	4354	12-375 mmf Variable
C3,11	1611	3-35 mmf trimmer
C4,5,7,9	2597	1-10 mmf trimmer
C6,22	572	1-200v
C8	2793	006 padder
C10	2741	1330 padder
C12	2560	200-400 mmf padder
C13	575	.1-400v
C14	2780	50 mmf mica
C15,17		IF trimmers
C16	2792	.2-200v
C18,20	1286	250 mmf mica
C19	580	.05-200v
C21	565	.01-200v
C23,25	576	.02-400v
C24	581	.005-600v
C26	824	.002-600v
C27	3375	16 mf 450v
C28	3351	8 mf 225 V. reg.
C29	3358	.2-400v
R1,2	2689	100 ohm 1/3w
R3,7,17	631	50M 1/3w
R4	636	40M 1/3w
R5	617	20M 1/3w
R6,9,10,11	624	1 meg. 1/3w
R8	2726	500M VC
R12	2737	2 meg TC
R13	2730	200M 10% 1/3w
R14	2881	400M 10% 1/3w
R15	2880	100M 10% 1/3w
R16	2883	5M 10% 1/3w
R18	2731	500 M 10% 1/3w
R19	3353	250 ohm 2 W.
R20	2882	15 ohm 10% 1/3w
	4387	Power transformer
	3462-1	1st IF transformer
	3464-1	2nd IF transformer
	2724	Band Switch
	2771	Antenna Coil
	2772	Oscillator Coil
	2845	B. C. Antenna Coil
	4392	Contact Ribbon
	4377	Contact Pins
	4394	Motor Assembly
	3346	Speaker 8"
	3710	Speaker 10"



MODELS 2004, 2005, 2082, 2083, T-2004, T-2054, T-2082, Ch. 175E — SPIEGEL, INC.

INSTRUCTIONS FOR ADJUSTMENT AND OPERATION OF THE ELECTRIC AUTOMATIC TUNING SYSTEM

Before attempting to adjust the automatic tuner, read the following instructions carefully and proceed exactly as directed. Setting up the ***Master Selector*** requires no tools, and is very easily accomplished when the proper procedure is followed.

The tuning unit consists essentially of three parts, which may be described briefly as follows:

Master Selector: This includes the ***Selector Drum***, the ***Selector Pins***, and the ***Selector Light***. These parts are mounted on the rear of the variable condenser, together with their associated brackets and wiring.

Motor and Drive: This assembly consists of an induction motor having a mechanical drive clutch with magnetic throw-out, and a train of gears operating directly onto the ***Manual Station Selector*** drive shaft. No oiling is necessary.

Push Button Assembly: These buttons are located on the front of the chassis, and extend through the escutcheon below the dial. Stations are tuned in automatically when the button under the call letters of the desired station is depressed and held down until the motor stops and the station is heard. When the button is pushed down, an automatic silencer mutes the receiver until the desired station is exactly on tune.

SETTING UP THE MASTER SELECTOR

As a means of simplifying these operations, list eight of your favorite *local* or strong near-by stations according to frequency or position on the dial. Setting up weak or distant stations is not recommended. Call the station nearest the left-hand end of the dial (nearest 1600 kc) the ***No. 1*** station, and number the other stations similarly going from left to right across the dial. For example, assume that you favorite stations operate on frequencies of 1500 kc, 1400 kc, 1300 ks, 1200 kc, 1000 kc, 900 kc, 700 kc, and 600 kc. Then the 1500 kc station would be ***No. 1***, the 1400 kc station would be ***No. 2***, and so on down the list with the 600 kc station being designated ***No. 8***. Reference to the push buttons is not necessary since they are not used until ***After*** the ***Master Selector*** has been set up.

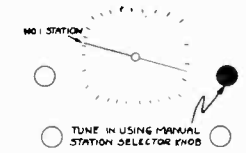
On the back of the receiver will be found the ***Selector Drum*** and the eight ***Contact Pins*** which determine the points at which the tuner will stop when the buttons are pressed. Referring to the diagrams, ***Fig. 1*** shows the general layout and relation of the drum and contacts. ***Fig. 2*** shows one of the contact pins in detail: note that while the position of the contact may be varied at will by sliding it along the slot in the bracket, it is held securely by a strong spring which will not allow it to move when the selector drum turns under it. ***Fig. 3*** shows the arrangement of the ***Contact Pins***, each pin being numbered according to the system suggested for numbering the stations, thus ***pin No. 1*** will be used for ***Station No. 1***, ***pin No. 2*** will be used for ***Station No. 2***, and so on down the list.

On the ***Selector Drum*** are two pairs of ***Contact Ribbons***. Note that there is a ***Paint Dot*** on the edge of the drum directly opposite the break in the ribbons on the upper half of the drum. This ***Paint Dot*** is for the purpose of locating the approximate position at which a given ***Contact Pin*** should be set in order to have the ***Drum*** stop for a particular station.

It is very important that the following steps be followed exactly as outlined; any deviation may necessitate re-setting some of the stations:

1. Set the receiver for reception of ***Standard Broadcast Stations***, as outlined previously under "***Operation.***" Turn the receiver "***On,***" let it run for ***at Least Ten Minutes*** to allow the tubes to reach their final operating temperature.

2. Using the ***Manual Station Selector*** (upper right) knob, tune in the No. 1 station, that is, the one nearest the 1600 kc end of the dial. Watch the tuning eye closely, making certain that the station is tuned in **perfectly**.



3. Face the rear of the chassis. Attach the lead from the ***Selector Light*** to the ***No. 1 Contact Pin;*** unless the pin happens to be set exactly, the lamp will glow when the lead is touched to the pin.

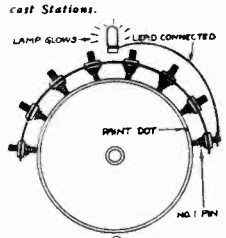
4. Observe the position of the ***Paint Dot*** on the edge of the ***Drum***. Grasp the No. 1 pin firmly and slide it toward the ***Paint Dot***, being careful not to break the connection between the ***Selector Light*** lead and the pin. When the pin is directly opposite the ***Paint Dot***, the light will go out, indicating that the contact is properly set. To insure greatest accuracy in making this setting, slide the pin back and forth across the break between the ribbons, leaving it set half way between the points where the lamp lights. ***Be very careful not to move the Selector Drum while the pin is being set.*** When the pin is definitely in its proper position, ***Disconnect the Selector Light Lead from the Pin.***

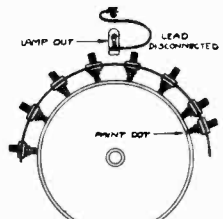
5. Repeat the above procedure for the ***No. 2*** station; tune in the station, connect the ***Selector Light*** lead to the ***No. 2*** contact pin, move this pin opposite the ***Paint Dot*** so that the light goes out, then ***Disconnect the Selector Light Lead.***

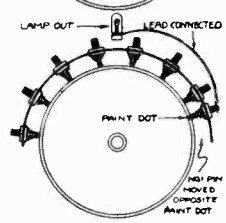
6. Using similar procedure, set up the other six stations, in each case using the ***Contact Pin*** bearing the ***same number as that assigned to the station being set up.*** Always ***Disconnect the Selector Light Lead*** as soon as a station has been set up; failure to do so will cause the receiver to hum, and may result in the lamp being burned out.

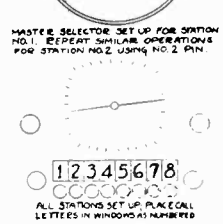
7. After all the stations have been set up, locate the ***Call Letters*** of your stations on the printed sheets supplied with the receiver. Remove the desired call letter blocks from the sheets, and insert them in the proper pockets above the push buttons.

8. The only operations necessary to receive any of the eight stations set up as outlined above are: Turn the power switch on by rotating the lower left knob to the right—***turn the control a few degrees beyond the point at which the switch snaps on*** — allow about one minute for the tubes to heat, press the button under the call letters of the desired station ***Holding the Button Down Until the Pointer Stops Moving and the Station is Heard,*** then adjust the tone and volume. Be sure that the ***Band Selector*** switch is in the proper position for reception of ***Standard Broadcast Stations.***









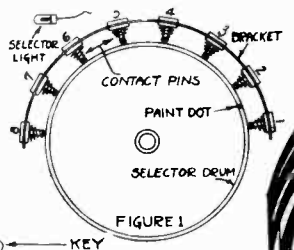


FIGURE 1

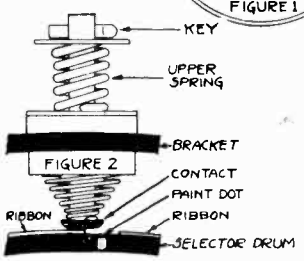


FIGURE 2

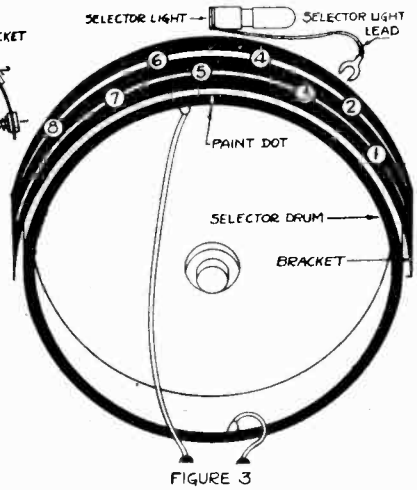


FIGURE 3

ALINEMENT PROCEDURE

IF. Connect the generator ground to receiver chassis. Using .1 mfd. condenser in series with high side of the generator, apply 456 kc. signal to the grid of the 6D6 IF amplifier tube and aline second IF transformer trimmers. Repeat for first IF transformer, applying signal to grid of the 6A7 tube. (See above diagram for location of tubes and transformers.)

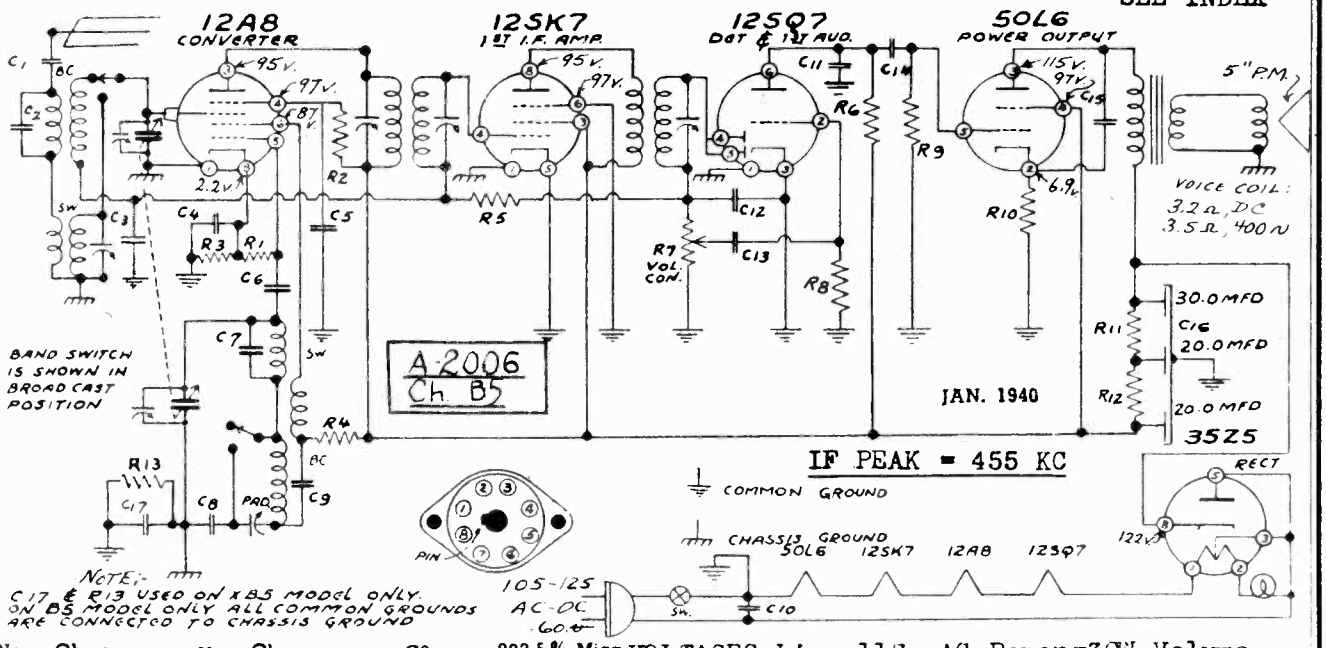
RF. (See circuit diagram for location of trimmers.) Using a 200 mmf. condenser in series with the high side of the generator, turn band selector switch all the way to the left, tuning condenser to minimum capacity, feed 1680 kc. signal to antenna terminal and adjust broadcast oscillator trimmer for top frequency. Set generator frequency at some point around 1400-1500 kc., and adjust broadcast antenna and RF trimmers. Set generator for 600 kc., tune receiver to signal and adjust the padder. The tuning condenser should be rocked back and forth through the signal while varying the padder in order to assure perfect alinement.

A 400 ohm resistor must be used in series with the generator as a "dummy" antenna for proper alinement of the two short wave bands. Set the band selector switch in the center position, adjust the oscillator top frequency for 5400 kc., then aline the antenna trimmer at about 5000 kc. With the band selector in the extreme right position, adjust the top frequency of the high frequency band to 16,000 kc., and aline the antenna trimmer at about 15,000 kc. In order to make sure that the top end of the last band is set properly, it is best to screw the oscillator trimmed down tight, then unscrew to the second peak. The antenna trimmer should be screwed down tight, then unscrewed to the first peak. This procedure must be followed in order that the oscillator and RF circuits will be set in the correct relation to each other, otherwise a "dead" spot at a lower frequency will result, and the dial calibration will not be correct. Usually, it is best to rock the tuning condenser back and forth slightly while making these adjustments at high frequencies.

SPIEGEL, INC.

MODEL A-2006, Ch. B5

MODEL A-2132, Ch. F5 FOR LAYOUT SEE INDEX

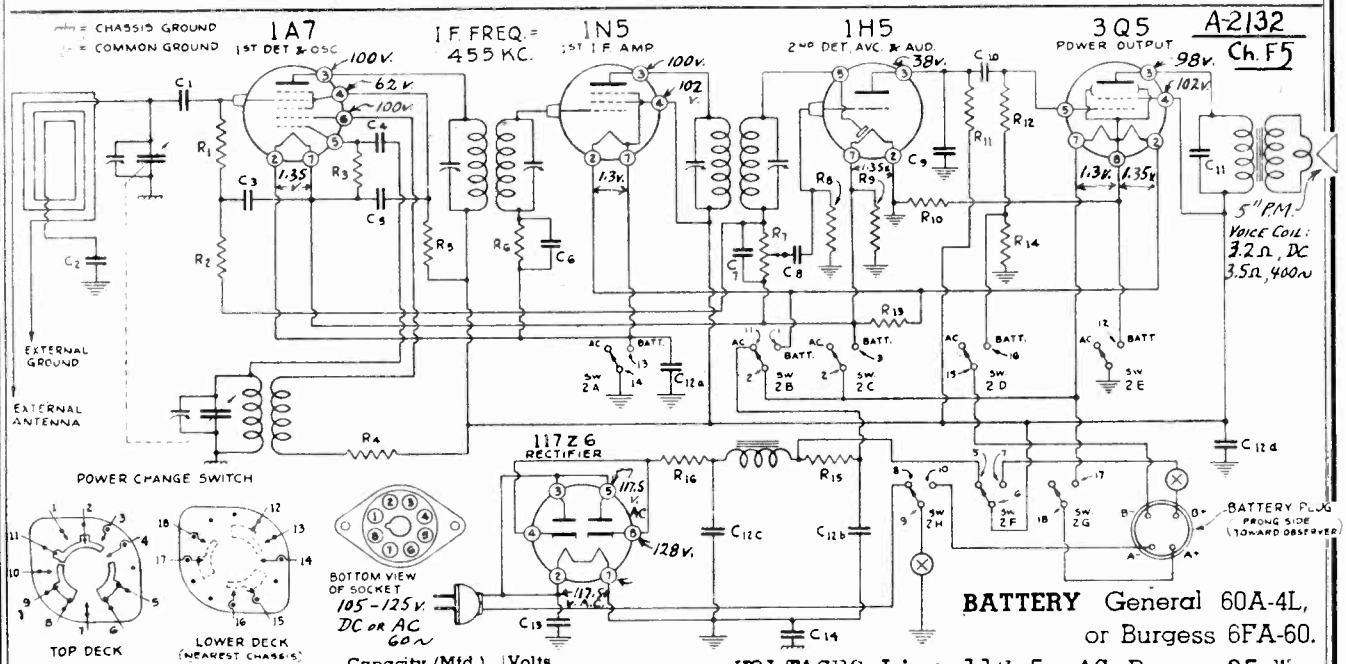


No.	Ohms		No.	Ohms				
R1	50,000	½ Watt	R12	500	½ Watt	C8	.003-5%	Mica
R2	20,000	½ Watt	R13	150,000	½ Watt	C9	.005	600
R3	440	½ Watt				C10	.05	400
R4	3,000	½ Watt	No.	Capacity	Volts	C11	.0005	Mica
R5	2,000,000	½ Watt	C1	.001	600	C12	.00025	Mica
R6	250,000	½ Watt	C2	.00005	Mica	C13	.01	400
R7	500,000	Vol. Cont.	C3	.05	200	C14	.002	400
R8	5,000,000	½ Watt	C4	.05	200	C15	.01	400
R9	500,000	½ Watt	C5	.05	200	C16	30.0	150
R10	200	½ Watt	C6	.0001	Mica		20.0	150
R11	500	½ Watt	C7	.00001	Mica	C17	.25	200

VOLTAGES: Line=117v.AC; Power=30W. Volume Cont'l=Max. Meter=1000 ohms/volt(150 v. scale). Measure with respect to common gnd

ALIGNMENT PROCEDURE(See 7C-PH Automatic):

Trim OSC. at 1730 KC (Broadcast)
Pad OSC. at 600 KC (Broadcast)
Trim ANT. at 1400 KC (Broadcast)
Trim ANT at 15000 KC (Short Wave)



BATTERY General 60A-4L, or Burgess 6FA-60.

No.	Ohms	Watts	No.	Ohms	Watts	Capacity (Mfd.)	Volts
R1	1,000,000	½	R9	110		C1 .00025	Mica
R2	1,000,000	½	R10	750—10%		½ C2 .1	200
R3	200,000	½	R11	250,000		½ C3 .01	200
R4	500	½	R12	1,000,000		½ C4 .0005	Mica
R5	30,000	½	R13	400		½ C5 .05	200
R6	5,000,000	½	R14	400—10%		½ C6 .01	200
R7	1,000,000	V.C.	R15	2,100		½ C7 .00025	Mica
R8	5,000,000	½	R16	30		5 C8 .01	400
						½ C9 .00025	Mica

C10	.01	400	C12a	40. 25
C11	.002	400	C12b	40. 25
C12c	30.	150	C12d	30. 150
C13	.05	400	C14	.25 200

VOLTAGES: Line=117.5v.AC; Power=25 W. Vol.Cont'l=Max. Meter=1000 ohms/volt Measure with respect to common gnd.

ALIGNMENT(use common gnd): IF=455KC

Trim Osc. at 1550 KC, Ant. at 1400KC

*TRIM USING EXTERNAL G.N.D.

APRIL 1940

In Model F5 switch points 4, 15, 16, 17 and 18 are not used. Switch points 4 is also not used on Model XF5. Power change switch 2A thru 2H and the pictorial view shown in the "AC-DC" position.

In late models C2 is not used.

PHONOGRAPH OPERATION

W-134 Ch. TF ; Z-7124 Ch. TF

MOTOR. The motor is a strong mechanical type hand wound spring motor. Insert the crank in the hole at the right. When the motor is fully wound the phonograph will play two full ten-inch records before rewinding is required.

TURNTABLE. To start turntable move the brake lever forward. To stop turntable pull lever toward you. Speed may be regulated by the control arm. For correct pitch adjust this speed to 78 revolutions per minute.

WARNING: Do not forget to turn off radio set when through playing records or the battery will run down. Battery life is appreciably shortened by continuous operation over long periods of time.

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 the needle on the smooth outer rim of the record and slide into the first groove of the record.

PLAYING RECORDS

(a) Turn on the volume control and "on-off" switch on the receiver.

(b) Turn the "Radio-phono" switch to the phono position.

(c) Place the selected record upon the turntable and move the starting lever forward. This will place the record in motion.

(d) Lift pickup and lower the needle point gently to the smooth outer rim of the record and slide into the first groove of the record.

(e) Adjust volume to proper level by rotation of the volume control knob. 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, lift pickup and place in its rest position and remove record from turntable. Never leave pickup with needle resting on record or on turntable.

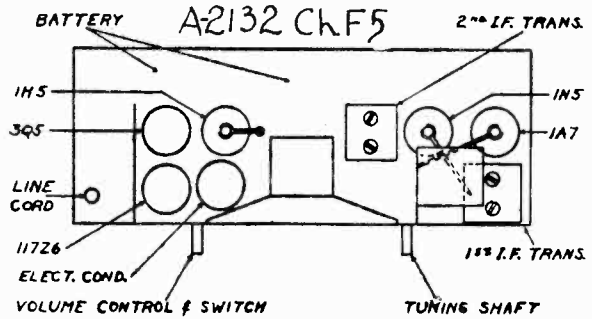
RECORD HOLDER. Eight ten-inch records may be carried in the record holder in the cabinet lid. To remove record holding clamp turn it ninety degrees. Place records in lid, replace clamp, sliding it up tight against records before turning it.

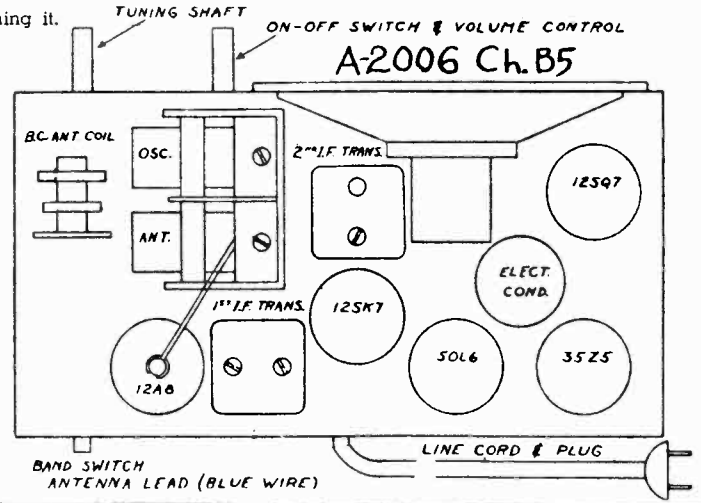
SERVICE. The phonograph motor will require oiling once every three months. Apply 3 or 4 drops of Number 10 S. A. E. oil to the turntable bearings, to the bearings at each end of the governor shaft, to the felt pad on the governor brake, and to the gears and bearings on the gear shafts.

NEEDLES

High quality needles are important to your enjoyment of recorded music. Use good half-tone steel needles or Kacti-needles to prolong the life of the records. If long playing needles are used, do not change the position of the needle in the pickup after it has once been played, as this will injure the record grooves.

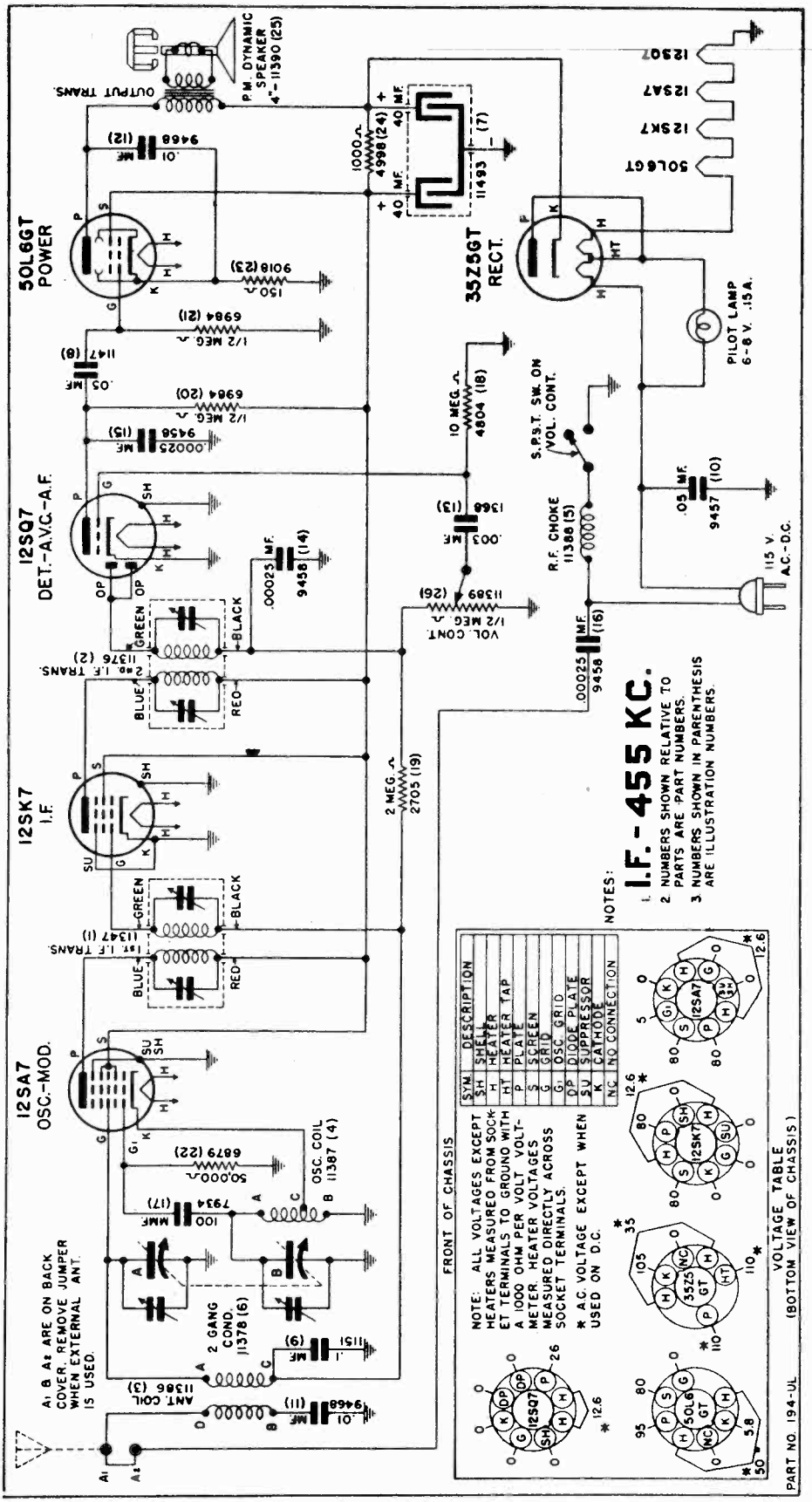
Note: The needle point wears down gradually in use and wears down in conformity with the shape of the record groove. Changing the position of the needle in the pickup after it has been played will provide a new fit to the groove and will damage the record groove by changing the shape of the groove. The life of the record depends upon maintaining the original record groove. To summarize this important message, never reinsert a used needle in the pickup, since this will do permanent injury to the record and shorten your record life materially.





SPIEGEL, INC.

MODEL A-2012
Ch. 194U



PARTS LIST

Part No.	Description	List Price
1	11347 Coil — 1st I. F. Transformer	$ .90
2	11376 Coil — 2nd I. F. Transformer	.80
3	11386 Coil — Antenna	.50
4	11387 Coil — Oscillator	.45
5	11388 Coil — Antenna Line Choke	.25
6	11378 Condenser — Tuning Two Gang	1.75
7	11493 Condenser — Tubular Dry Elec. .40 Mfd. .40 Mfd. 200 Volt	1.00
8	1147 Condenser — Tubular .05 Mfd. 200 Volt	.19
9	1151 Condenser — Tubular .1 Mfd. 200 Volt	.20
10	9457 Condenser — Tubular .05 Mfd. 400 Volt	.18
11	9468 Condenser — Tubular .01 Mfd. 400 Volt	.17
12	9468 Condenser — Tubular .01 Mfd. 400 Volt	.17
13	1368 Condenser — Tubular .003 Mfd. 400 Volt	.17
14	9458 Condenser — Mica .00025 Mfd.	.21
15	9458 Condenser — Mica .00025 Mfd.	.21
16	9458 Condenser — Mica .00025 Mfd.	.21
17	7934 Condenser — Mica .0001 Mfd.	.21
18	4804 Resistor — Carbon 10 Megohm ½ Watt	.19
19	2705 Resistor — Carbon 2 Megohm ½ Watt	.19
20	6984 Resistor — Carbon 500,000 Ohm ½ Watt	.19
21	6984 Resistor — Carbon 500,000 Ohm ½ Watt	.19
22	6879 Resistor — Carbon 50,000 Ohm ½ Watt	.19
23	9018 Resistor — Carbon 150 Ohm ½ Watt	.19
24	4998 Resistor — Carbon 1000 Ohm 1 Watt	.21
25	11390 Speaker — P. M. Dynamic 4 in.	2.70
26	11389 Volume Control With S.P.S.T. Switch	.80

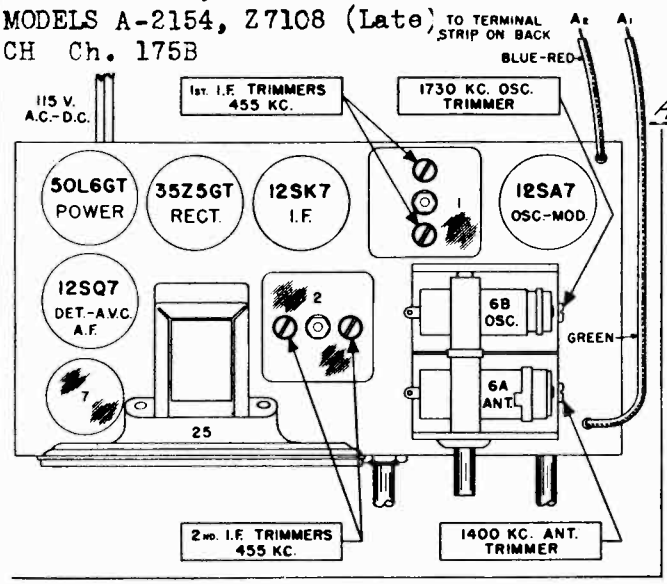
MISCELLANEOUS PARTS

	Part No.	Description	List Price
	11304	Bulb — 6-8 Volt .150 Ampere Dial Light	.10
		No. 47 Bayonet Base	
	11381	Dial Scale — Calibrated Scale	.30
	8184	Dial Cord — Dial Drive Cord	.10
	11379	Dial Shaft — Dial Drive Shaft	.12
	11725	Dial Pointer — For Dial-Bronze	.15
	11384	Dial Pointer — For Dial	.15
	11391	Dial Crystal — For Dial	.22
	11563	Knob — Bakelite Tuning for Walnut Plastic Cabinet	.10
	10207	Knob — Bakelite Push Button for Ivory Plastic Cabinet	.08
		Cabinet — Walnut Plastic	1.80
		Cabinet — Ivory Plastic	2.15

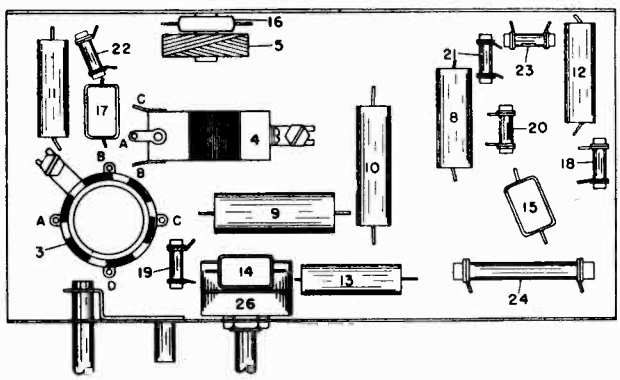
PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. W. 4,000 10-39

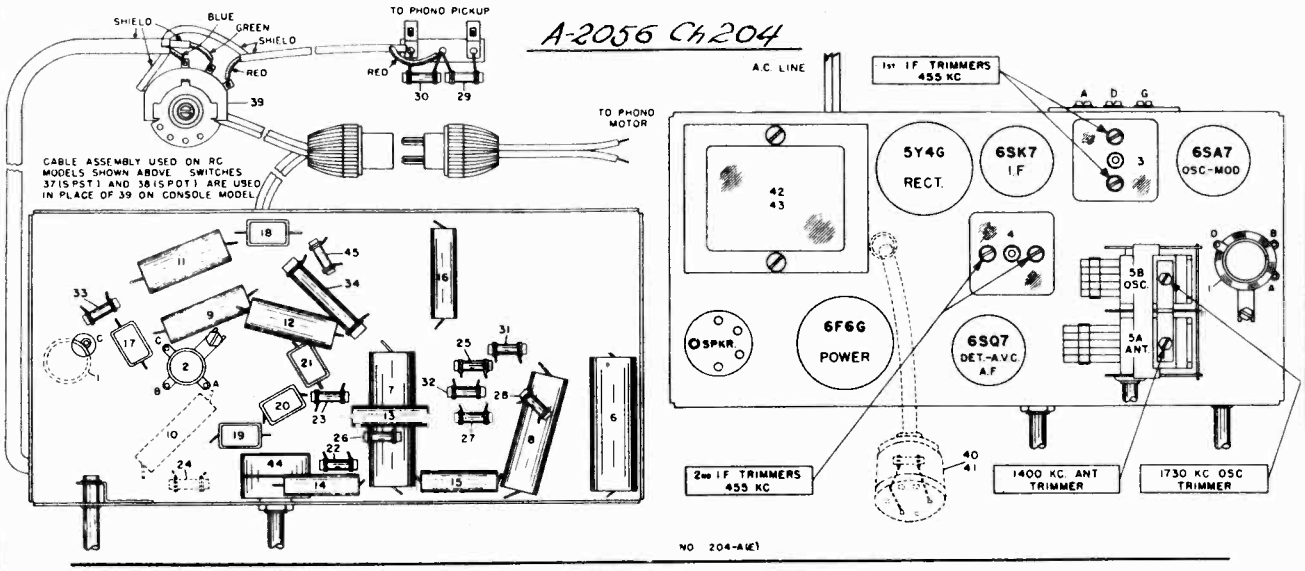
MODEL A-2012, Ch. 194U
MODEL A-2056, Ch. 204
MODELS A-2154, Z7108 (Late), CH Ch. 175B

SPIEGEL, INC.



A-2012 Ch. 194U





A-2056 Ch. 204

MODELS A-2012, A2056 ALIGNMENT PROCEDURE A-2154, Z7108 (LATE)

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 to correct position.

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

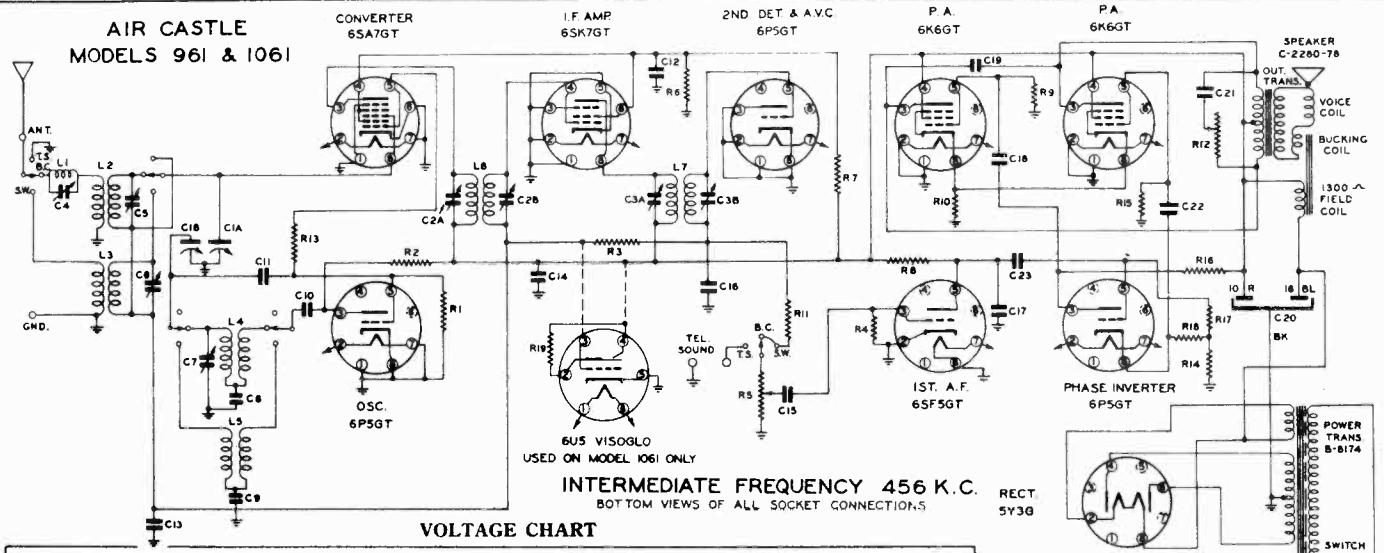
(c) Have ground lead of test oscillator attached to gang condenser frame.

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. Any point where no interfering signal is received	455 K. C.	.02 MFD condenser	High side to grid terminal of *12SA7 tube DO NOT REMOVE CAP.	Adjust the second I. F. transformer trimmer 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 "A1" post	Adjust 1730 K. C. oscillator trimmer for maximum output.
2 Approx. 1400 K. C.	Approx. 1400 K. C.	.00025 MFD condenser	Receiver antenna "A1" post	While rocking gang condenser adjust 1400 K. C. antenna trimmer for maximum output.

*1A7G tube FOR A2154, Z7108 (LATE)

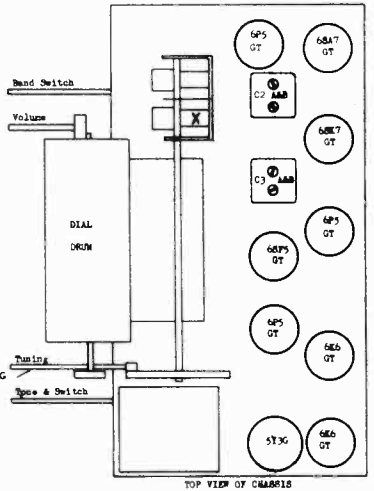
*6SA7 tube For A-2056

AIR CASTLE
MODELS 961 & 1061



BROADCAST BAND
540 to 1720 Kilocycles

SHORT-WAVE BAND
5.7 to 21.5 Megacycles



TOP VIEW OF CHASSIS

INTERMEDIATE FREQUENCY 456 K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

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
6SA7GT	Converter	0	0	230	48	-.1C	0	*5.9	-.1c
6P5GT	Oscillator	0	0	125	230	-.1C	-	*5.9	0
6SK7GT	I-F Amplifier	0	0	0	-A	0	48	*5.9	230
6P5GT	Det - AVC	0	0	0	0	-A	-	*5.9	0
6SF5GT	1st Audio Amplifier	0	0	A	-	52B	230	*5.9	0
6P5GT	Phase Inverter	0	0	135	-	A	40	*5.9	55
6K6GT	Power Amplifier	0	0	225	230	0	-	*5.9	18.5
6K6GT	Power Amplifier	0	0	225	230	0	-	*5.9	18.5
5Y3G	Rectifier	0	*380	-	*325	-	*325	-	*380
6U5**	Tuning Indicator**	*5.9	90	-.02C	225	0	0	-	-

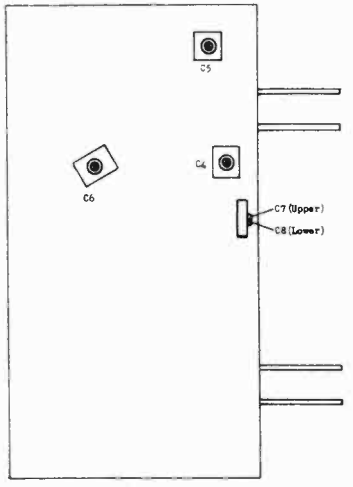
Notes: Voltage readings are for schematic diagram. Allow 15% + or - on all measurements.
Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter.
A - Cannot be measured on 1000 ohms/volt meter.
B - 100 volt scale. D - 10 volt scale.
C - 1 volt scale.
*A.C. **On Model 1061 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 indicator points to last mark with gang closed.)							
2	I.F.	*	.1 mf.	456 KC	BC	Open	C3 A&B	
							C2 A&B	
3	I-F Rej.	Ant.	200 mf.	456 KC	BC	Closed	C4	Adjust to minimum
4	Broadcast Band	Ant.	200 mf.	1500 KC	BC	1500 KC	C7 (Osc.)	
							C5 (Ant.)	
5				600 KC	BC	600 KC	C8 (Pad.)	***
6	(Repeat operation 4).							
7	(Check calibration and sensitivity at 1500 KC, 900 KC and 600 KC)							
8	SW Band	Ant.	**	18 MC	SW	18 MC	C6 (Ant.)	***
9	(Check calibration and sensitivity at 6. MC and 18. MC)							
10	(Check operations 1 to 9 inclusive.)							

*Connect to point marked "X" in drawing **100 ohms and 200 mmf. in series.
***Rock dial while adjusting for maximum output. Be sure to adjust on fundamental signal and not on image.

C1A&B	VARIABLE CONDENSER	B-7228
C2A&B	NO.1 I.F. TRIMMER	B-7200-GN
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	B.C. OSC. TRIMMER	B-7199-EY
C8	B.C. OSC. PADDER	
C9	2700 MMF. MICA	A-15451
C10	250 MMF. MICA	C-720-324
C11	50 MMF. MICA	C-720-315
C12	.1 MFD. 200V.	C-3202-38C
C13	.05 MFD. 200V.	C-3202-84C
C14	.1 MFD. 400V.	C-3204-38C
C15	.02 MFD. 200V.	C-3202-22C
C16	250 MMF. MICA	C-720-324
C17	250 MMF. MICA	C-720-324
C18	.05 MFD. 400V.	C-3204-28C
C19	.001 MFD. 600V.	C-3206-58C
C20	18-10 MFD. ELECT.	A-14789-2
C21	.015 MFD. 600V.	C-3206-77C
C22	.05 MFD. 400V.	C-3204-28C
C23	.05 MFD. 400V.	C-3204-28C
R1	56,000 Ω .25W.	C-2795-63B
R2	22,000 Ω .5W.	C-2796-78C
R3	1 MEGOHM .25W.	C-2795-98B
R4	4.7 MEGOHM .25W.	C-2795-106B
R5	500,000 Ω VOL. CONT.	A-15130-3
R6	27,000 Ω 1W.	C-2797-79B
R7	33,000 Ω 3W.	C-2799-80A
R8	270,000 Ω .25W.	C-2795-91B
R9	680,000 Ω .25W.	C-2795-30B
R10	330 Ω 1W.	C-2797-54B
R11	56,000 Ω .25W.	C-2795-63B
R12	TONE CONT. & SW.	A-15128-3
R13	560 Ω .25W.	C-2795-59B
R14	33,000 Ω .5W.	C-2796-105C
R15	680,000 Ω .25W.	C-2795-94B
R16	38,000 Ω .5W.	C-2796-107C
R17	1 MEGOHM .25W.	C-2795-98B
R18	2700 Ω .25W.	C-2795-169B
R19	220,000 Ω .25W. (USED ON MODEL 1061 ONLY)	C-2795-90B
L1	I.F. REJECT. COIL	A-14877
L2	B.C. ANT. COIL	A-14878-1
L3	S.W. ANT. COIL	A-14882-8
L4	B.C. OSC. COIL	A-15377-1
L5	S.W. OSC. COIL	A-15233-3A
L6	NO. 1 I.F. COIL	A-12084-38
L7	NO. 2 I.F. COIL	A-12084-17

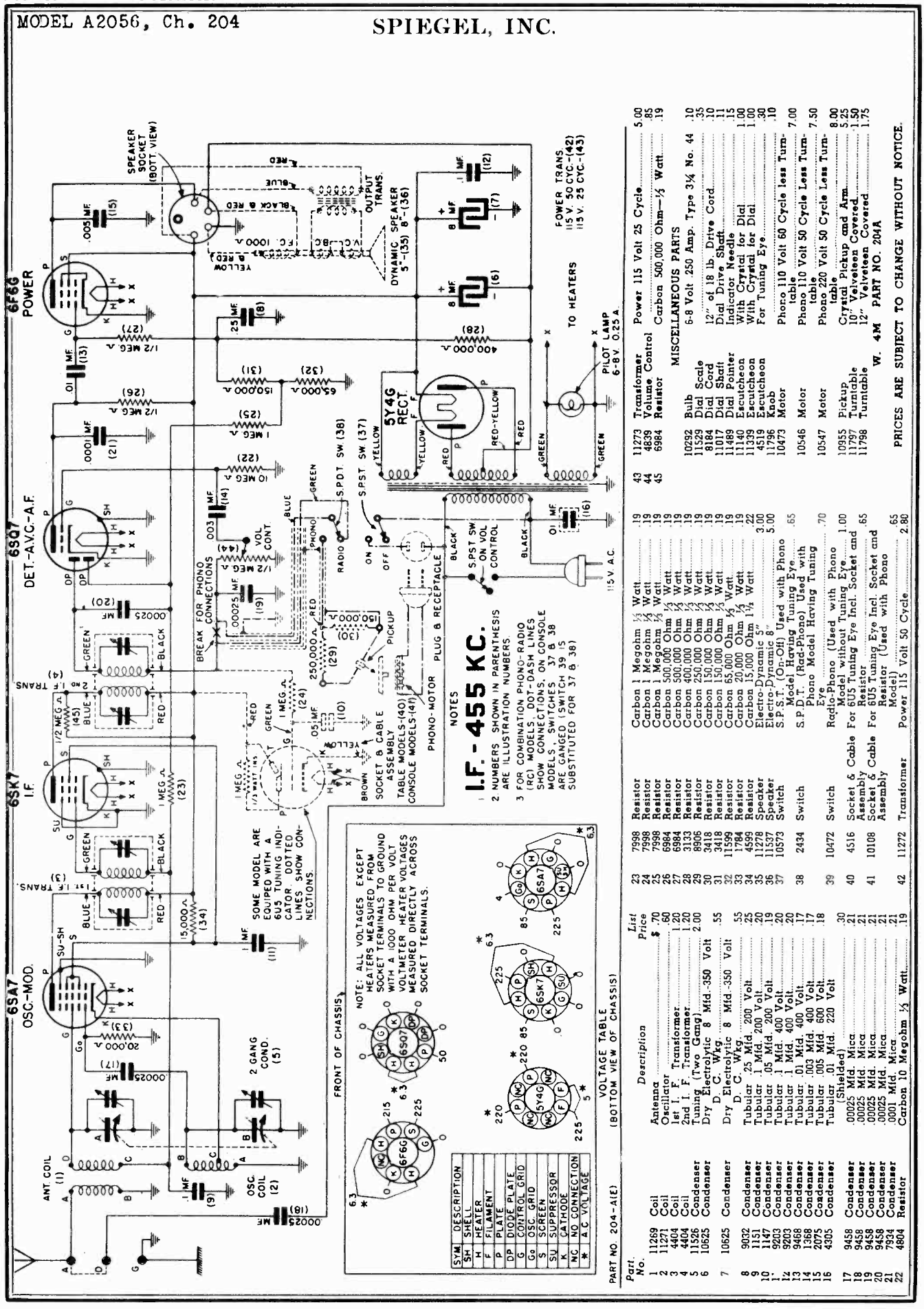


BOTTOM VIEW OF CHASSIS

SPIEGEL, INC. MODELS A2052, A2060, A2062
Ch. 961-1061

MODEL A2056, Ch. 204

SPIEGEL, INC.



PART NO. 204-A(E)

Part No.		Description	List Price					
1	11269	Coil	Antenna	$ .70	23	7998	Resistor	Carbon 1 Megohm ½ Watt .19
2	11271	Coil	Oscillator	.60	24	7998	Resistor	Carbon 1 Megohm ½ Watt .19
3	4404	Coil	1st I. F. Transformer	1.20	25	7998	Resistor	Carbon 1 Megohm ½ Watt .19
4	4404	Coil	2nd I. F. Transformer	1.20	26	6984	Resistor	Carbon 500,000 Ohm ½ Watt .19
5	11526	Condenser	Tuning (Two Gang)	1.20	27	6984	Resistor	Carbon 500,000 Ohm ½ Watt .19
6	10625	Condenser	Dry Electrolytic 8 Mfd.-350 Volt D. C. Wkg.	2.00	28	3133	Resistor	Carbon 400,000 Ohm ½ Watt .19
7	10625	Condenser	Dry Electrolytic 8 Mfd.-350 Volt D. C. Wkg.	.55	29	8906	Resistor	Carbon 250,000 Ohm ½ Watt .19
8	9032	Condenser	Tubular .25 Mfd. 200 Volt	.55	30	3418	Resistor	Carbon 150,000 Ohm ½ Watt .19
9	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20	31	3418	Resistor	Carbon 150,000 Ohm ½ Watt .19
10	1147	Condenser	Tubular .05 Mfd. 200 Volt	.19	32	11599	Resistor	Carbon 65,000 Ohm ½ Watt .19
11	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20	33	1784	Resistor	Carbon 20,000 Ohm ½ Watt .19
12	9203	Condenser	Tubular .1 Mfd. 400 Volt	.20	34	4599	Resistor	Carbon 15,000 Ohm 1½ Watt .22
13	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17	35	11278	Speaker	Electro-Dynamic 5" 3.00
14	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17	36	11537	Speaker	Electro-Dynamic 8" 5.00
15	2075	Condenser	Tubular .005 Mfd. 600 Volt	.17	37	10573	Switch	S.P.S.T. (On-Off) Used with Phono Model Having Tuning Eye .65
16	4305	Condenser	Tubular .01 Mfd. 220 Volt (Shielded)	.18	38	2434	Switch	S.P.D.T. (Rad-Phono) Used with Phono Model Having Tuning Eye .70
17	9458	Condenser	.00025 Mfd. Mica	.30	39	10472	Switch	Radio-Phono (Used with Phono Model without Tuning Eye 1.00
18	9458	Condenser	.00025 Mfd. Mica	.21	40	4516	Socket & Cable Assembly	For 6U5 Tuning Eye Incl. Socket and Resistor .65
19	9458	Condenser	.00025 Mfd. Mica	.21	41	10108	Socket & Cable Assembly	For 6U5 Tuning Eye Incl. Socket and Resistor (Used with Phono Model) .65
20	9458	Condenser	.00025 Mfd. Mica	.21				
21	7934	Condenser	.0001 Mfd. Mica	.21	42	11272	Transformer	Power 115 Volt 50 Cycle 2.80
22	4804	Resistor	Carbon 10 Megohm ½ Watt	.19				

43	11273	Transformer	Power 115 Volt 25 Cycle 5.00
44	4839	Volume Control	Carbon 500,000 Ohm—½ Watt .19
45	6984	Resistor	Carbon 500,000 Ohm—½ Watt .19

MISCELLANEOUS PARTS

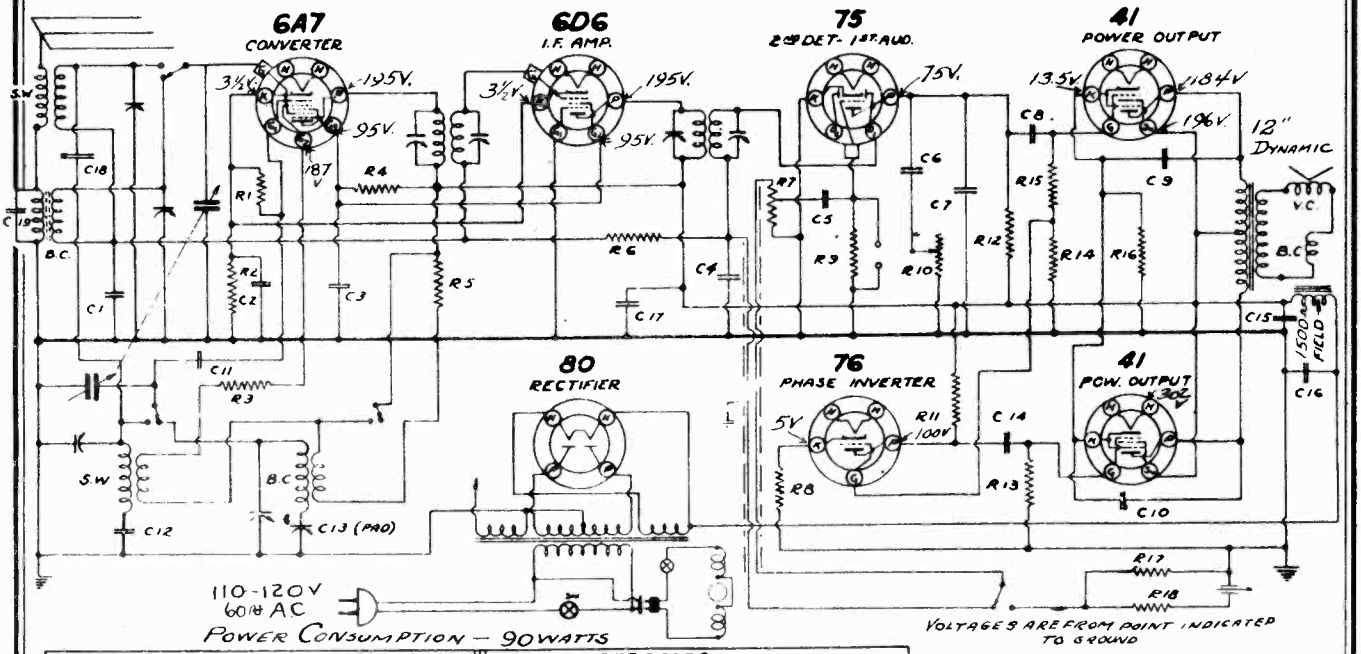
10292	Bulb	6-8 Volt .250 Amp. Type 3¼ No. 44 .10
11529	Dial Scale	.35
8184	Dial Cord	12" of 18 lb. Drive Cord .10
11017	Dial Shaft	Dial Drive Shaft .11
11489	Dial Pointer	Indicator Needle .15
11140	Escutcheon	With Crystal for Dial 1.00
11339	Escutcheon	With Crystal for Dial 1.00
4519	Escutcheon	For Tuning Eye .30
11796	Knob	.10
10473	Motor	Phono 110 Volt 60 Cycle less Turntable 7.00
10546	Motor	Phono 110 Volt 50 Cycle Less Turntable 7.50
10547	Motor	Phono 220 Volt 50 Cycle Less Turntable 8.00
10955	Pickup	Crystal Pickup and Arm 5.25
11797	Turntable	10" Velveteen Covered 1.50
11798	Turntable	12" Velveteen Covered 1.75

W. 4M PART NO. 204A

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

SPIEGEL, INC.

MODELS A2080, Z7080
Ch. 7C-PH



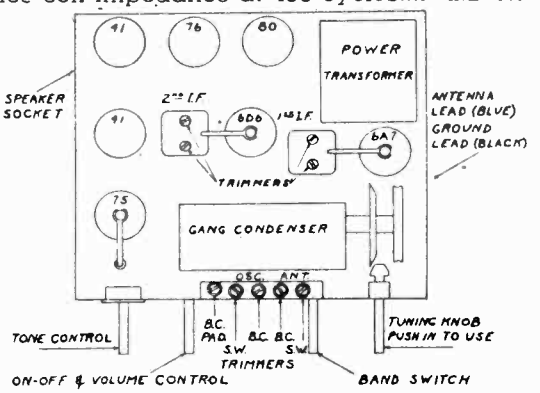
CAPACITORS					
No.	MFDS.	VOLTS	No.	MFDS.	VOLTS
C1	.06	200	C11	.0001	MICA
C2	.25	200	C12	.004 ±5%	MICA
C3	.05	400	C13	300-600 m/m fd.	PADDER
C4	.00025	MICA	C14	.01	400
C5	.01	400	C15	10.0	350
C6	.005	600	C16	10.0	350
C7	.00025	MICA	C17	.05	400
C8	.01	400	C18	GIMMICK	
C9	.005	600	C19	.0001	MICA
C10	.005	600			

RESISTORS					
No.	OHMS	WATTS	No.	OHMS	WATTS
R1	50,000	½	R11	50,000	½
R2	200	½	R12	250,000	½
R3	250	½	R13	500,000	½
R4	20,000	½	R14	100,000	½
R5	1,000	½	R15	400,000	½
R6	2 MEG.	½	R16	300	½
R7	600,000	VOL. CON.	R17	250,000	½
R8	3,000	½	R18	500,000	½
R9	5 MEG.	½			
R10	500,000	TONE CON.			

I.F. - 455 K.C.

BAND SWITCHES SHOWN IN BROADCAST POSITION
BOTTOM VIEW OF TUBE SOCKETS SHOWN
GANG CONDENSER CAPACITY 443 m-mfds.

D.C. voice coil resistance..... 1.9 ohms
Voice coil impedance at 400 cycles.... 2.2 ohms



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. 3 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.

AUTOMATIC RECORD CHANGER

This **Record Changer** will automatically play a series of eight 10" or seven 12" records of the standard 78 R.P.M. type. Records of the last few years with the standard eccentric or spiral stopping groove on the inside and an eccentric on the outside will operate the automatic mechanism. However, records of any size up to 12" may be played manually.

OPERATION

Before operating the phonograph, either automatically or manually, be sure that the pickup is down and can be moved by hand. If not, a "cycle" must be completed to bring it down. To do this, throw **Turntable Switch** "On". The turntable will begin to revolve and the cycle of motion on the pickup arm will be resumed. When the pickup arm comes down, turn off the **Turntable Switch.**

CAUTIONS

1. Never use force to start or stop the motor or any part of the record-changing mechanism or pickup arm.

2. The use of records which have become warped or damaged through improper care, may cause the mechanism to jam and damage the instrument. Records which have become warped, will slide on one another when playing, resulting in unsatisfactory reproduction.

3. This instrument is not recommended for playing 10" and 12" records in mixed sequence. If this service is desired, all records must be perfectly flat and free from warp. The **index** and **record reject lever** must be set at "10" and after playing the last selection, the pickup will come down in position for a 10" record and repeat the playing of the record on a 10" diameter unless the **turntable switch** is turned off. Any jamming of the mechanism under these conditions indicates that the records used are not perfectly flat or that their edges are not sufficiently smooth to permit normal operation of the separators in dropping each record in sequence onto the turntable.

4. Do not leave records on the record holder posts, as they are liable to warp, particularly so in warmer climates. Keep your records in a record file (album or cabinet) when not in use.

5. The needle must be installed according to directions under "Pickup and Top-Loading Needle Socket" for proper operation of this instrument.

6. The two red mounting bolts which hold the Automatic Record Player solid for shipping must be removed before using the Automatic Record Player so it can "float" on the spring mountings.

7. LEVELING—When a record has been played the pickup moves out, another record is dropped down, and the needle is fed automatically into the starting groove of this record. If the needle fails to enter the starting groove, raise the right-hand side of the cabinet by inserting thin spacers under the feet on that side. If the needle slides over a few grooves, raise the left-hand side of the cabinet in a similar manner.

8. LUBRICATION—A few drops of good quality light machine oil should be applied about once every six months at the base of the spindle below the metal washer under the turntable.

CONTROLS AND MECHANISM

INDEX AND RECORD REJECT LEVER

This lever is located near the right front corner of the motorboard with its index plate marked for four positions—"Manual", "12", "10", and "Reject" When it is desired to change record selections manually, this lever should be set in the "Manual" Position. With the lever in the "12" position, the mechanism is set to play a series of 12" records automatically. To play either a series of 10" records or 10" and 12" records mixed, the lever should be set at the "10" position. To reject a record being played, or to start the record changing cycle in case the record just played does not have the standard eccentric or spiral stopping groove, simply push the lever to the "reject" position and let go. The pickup will rise and swing outwards and the next record will drop down. Upon releasing the lever, it will automatically return to the "10" position. If a series of 12" records is to be played, the lever should be returned to the "12" position after rejecting a record. Keep the lever in its "Manual" position when not actually playing records automatically.

TURNTABLE SWITCH

The Slide Switch located just in front of the **Index** and **Record Reject Lever** controls the current to the turntable motor. To start the turntable, push the switch to the "On" position. To stop the turntable, push the switch to the "Off" position.

NEEDLES

The use of high grade long playing needles is absolutely essential for the proper operation of this instrument, as the regular needles are only good for one or at the most two records. If any needle is used too long, distortion and poor quality will be obtained and also the records will be damaged.

PICKUP AND TOP-LOADING NEEDLE SOCKET

The pickup is the new crystal type, with a hole in the top for insertion of needles. When not playing records, the pickup arm should be moved out to the right beyond the turntable and placed at rest on the support with the edge of the pickup arm in the groove and the pickup over the needle gauge plate. The pickup must be in this position to change needles.

To insert a needle initially, loosen the needle screw on the front of the pickup, place needle in hole at top so that it drops down against the needle plate and then tighten the needle screw.

NEEDLE EJECTOR

The extending tab on the needle gauge plate of the needle box operates the needle ejector. To change a needle, place pickup in rest position, loosen needle screw and press the extending tab on the needle gauge plate to drop the used **needle** into the box below. Release tab allowing the **needle** gauge plate to swing back, and then insert a **new** needle in the pickup as described above.

RECORD HOLDER SHELVES

To place a record on the turntable or to remove records, raise the record holder shelves by lifting with the fingers under the shelf, and swing clear of the outer edge of record. Also push back vertical lever adjacent to the rear record holder post. The turntable is now accessible. Before loading the magazine for **automatic operation,** swing the record holder shelves back into position.

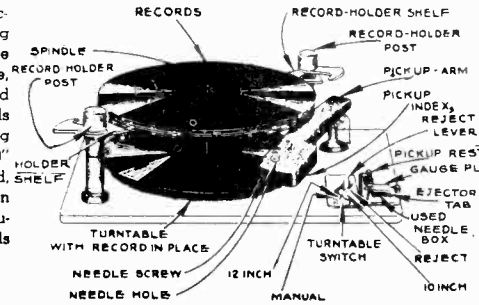


Fig. 2—Top View of Automatic Record Changer

AUTOMATIC OPERATION

1. See that the pickup is over the needle gauge plate with the needle properly in place. If not, complete a "cycle" as explained in the first paragraph under "Operation".

2. With the **Index** and **Record Reject Lever** at **"Manual"**, place the first of the series of records on the turntable and the remainder of the series (up to seven 10" or six 12" records) on the record holder posts (as shown in Fig. 2). The records should **be** arranged in the desired order with the desired **selection** face up and the last selection on top.

3. Set the **Index** and **Record Reject Lever** to **the** proper position. (See **Controls: Index and Record Reject Lever.)**

4. Push the turntable switch to the left—**"On"** turntable should commence to revolve.

5. When the turntable has attained speed, lift pickup and lower gently on to the record so that the needle point enters the outside groove.

6. Adjust volume control to the desired intensity and tone control to the preferred setting.

7. Close the lid of the cabinet to eliminate mechanical reproduction of sound by the needle. The whole series of records will now play without further attention, and the last record will repeat until the **Turntable Switch** is turned off. Allow the record-changing mechanism to complete its **cycle** before the turntable is stopped. Then lift the pickup, swing the arm to the right beyond the edge of the record and lower it onto the pickup rest **with the** pickup over the needle gauge plate. **The record** player is then ready for reloading, or **for manual** operation.

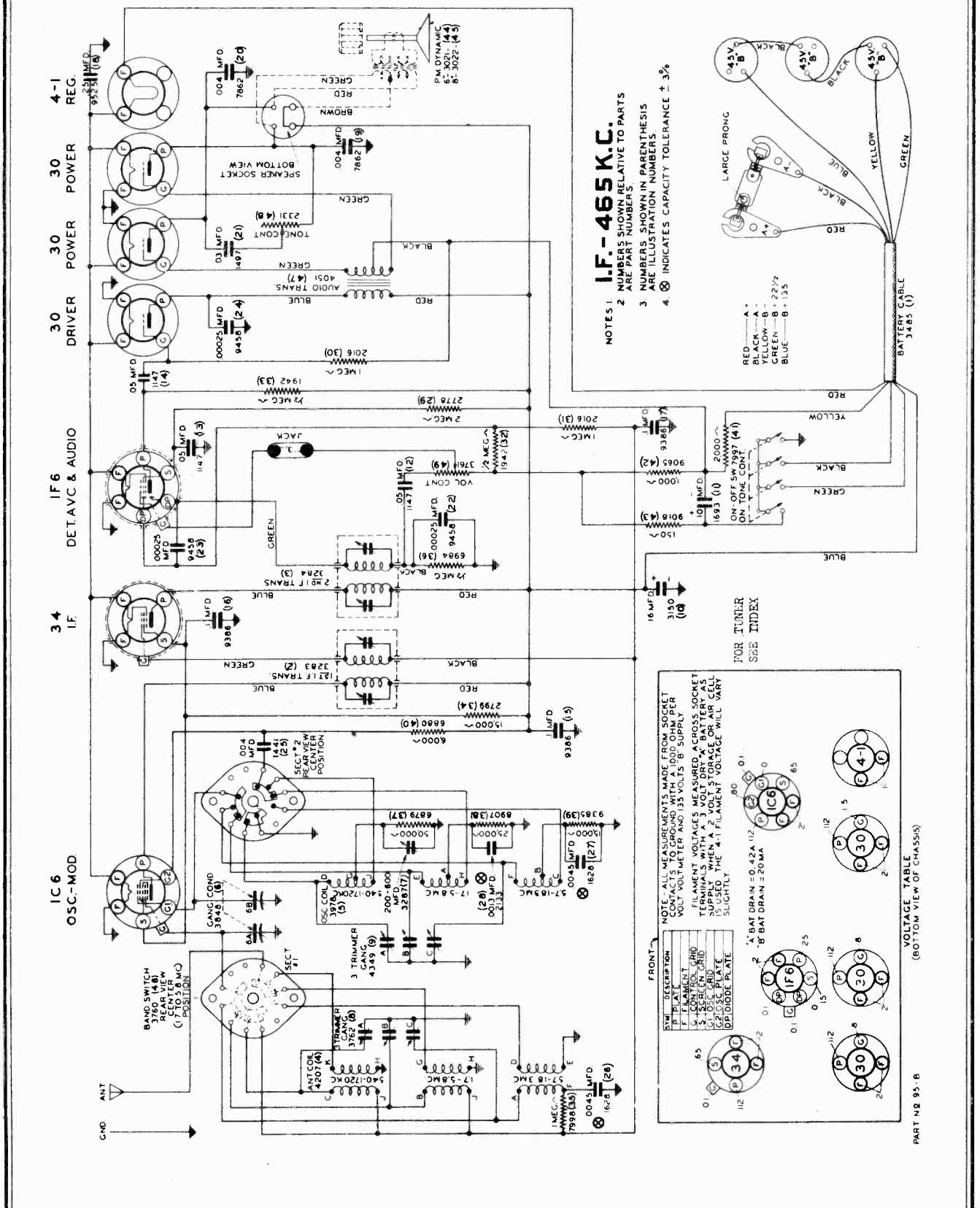
SETTING UP PUSH BUTTONS

Loosen one of the push buttons by turning the push button knob counter clockwise a turn or less and push it in; while holding the button in, tune in a desired station by means of the station selector knob. Turn the selector very slowly back and forth until the signal is clearest. Now while holding the push button in, tighten it by turning clockwise. Release the push button and turn the station selector to one end of the dial; push the tuning knob to the right and then check the button by pushing it in and if the station is tuned to the center of the area on the dial covered by the station the adjustment is correct.

Release the push button and loosen another push button and repeat the above procedure, doing this for the remaining buttons.

SPIEGEL, INC.

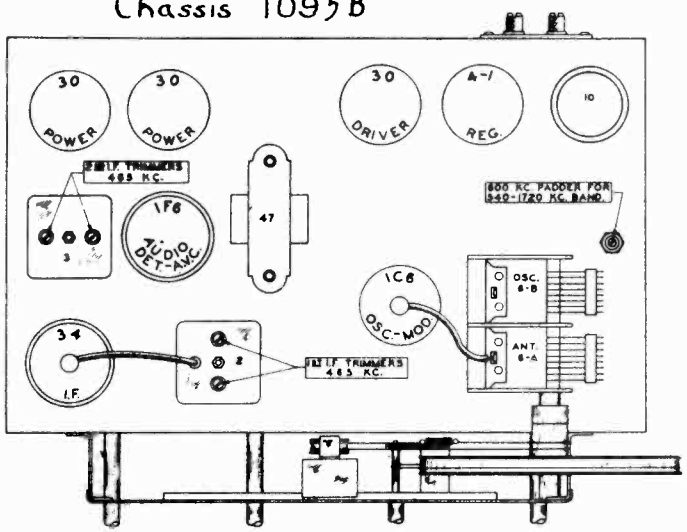
MODELS 2104, 2105, 2106, 2107, Ch. 1095B

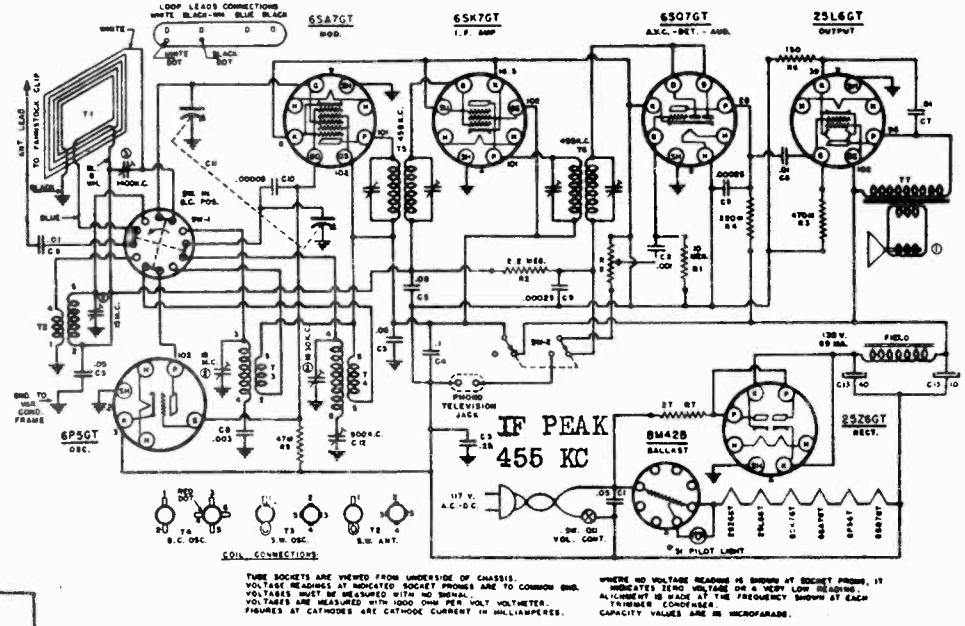


MODEL A2026, Ch. 10-70
MODELS 2104, 2105,
2106, 2107, Ch. 1095B

SPIEGEL, INC.

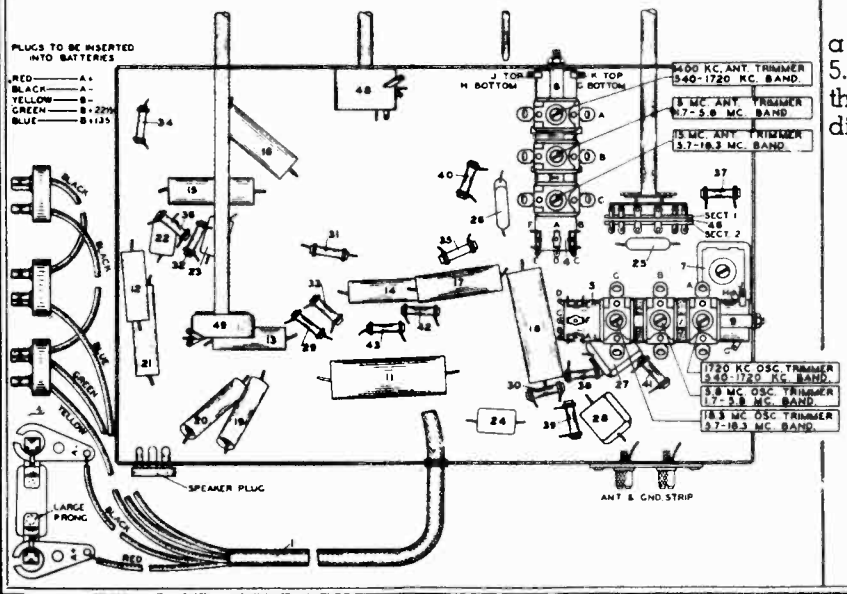
2104, 2105, 2106, 2107
Chassis 1095B





CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOL. VIII.

DUMMY ANTENNAS:-I.F.-.02 MFD., 1720-540KC.-.00025MFD., 1.7-5.8 MC.-.00025MF. WITH 400-Ω IN SERIES, 5.7-18.3 MC.-400-Ω.

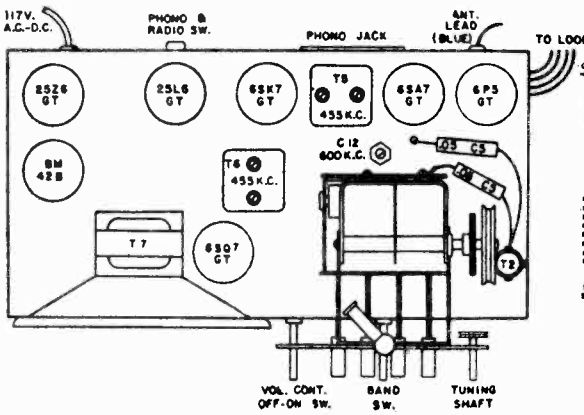


A-2026
Ch. 10-70

CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOLUME VIII

This model has been designed to cover two seperate frequency bands, a broadcast band from 540 K.C. to 1630 K.C. and a short wave band from 5.7 to 18 M.C. The dial scale has been calibrated directly in kilocycles (less the final 0) on the broadcast band, while the short wave band is calibrated directly in megacycles.

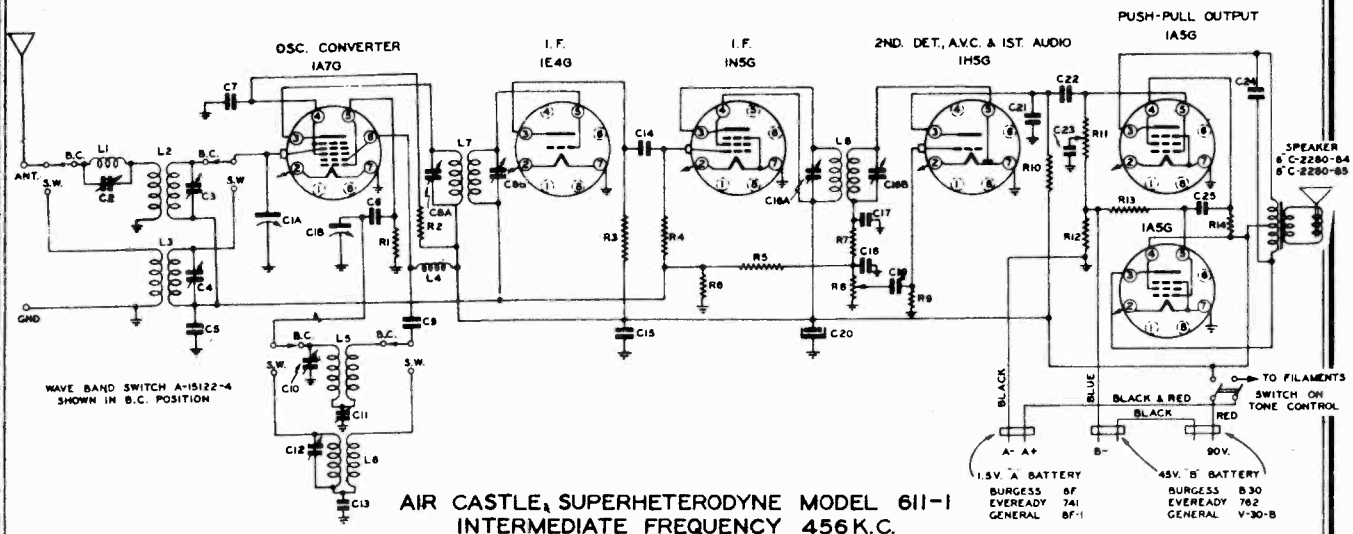
For push button data, see index.



CODE	PART NO.	DESCRIPTION
C1	1007	.05 MFD. 400 V. TUBULAR CONDENSER
C2	10-124	.001 " " " "
C3	10-120	.25 " " 200 V. " "
C4	10-119	.1 " " " "
C5	1432	.05 " " " "
C6	10-121	.01 " " " "
C7	10-118	.01 " " 600 V. " "
C8	10-110	.003 MFD. MICA CONDENSER
C9	1504	.00025 " " "
C10	1503	.00005 " " "
C11	10-162	3 GANG VARIABLE CONDENSER
C12	10-130	PADDING CONDENSER
C13	10-253	40 X 40 MFD. 150 W.V. ELECTROLYTIC
R1	60-103	1/2 MEGOHM 1/10 W. RESISTOR
R2	60-179	2.2 " " "
R3	60-176	470M OHM " "
R4	60-100	220M " " "
R5	60-157	47M " " "
R6	60-104	150 " " "
R7	60-220	27 " " "
R8	24-146	500M " VOLUME CONTROL
SW1	89-148	BAND SWITCH
SW2	89-140	PHONO "
T1	82-11	LOOP ANTENNA (B.C.)
T2	10-337	S.W. ANTENNA COIL
T3	88-338	S.W. OSCILLATOR COIL
T4	10-340	B.C. " "
T5	10-317	1ST. I.F. TRANSFORMER
T6	10-318	2ND. " "
T7		OUTPUT TRANS. (ON SPKR.)
-	75-293	6" DYNAMIC SPEAKER
C	20-127	TRIMMER BLOCK
S	20-129	TRIMMER (ON LOOP)

SPIEGEL, INC.

MODELS A2100, A2150
Ch. 611



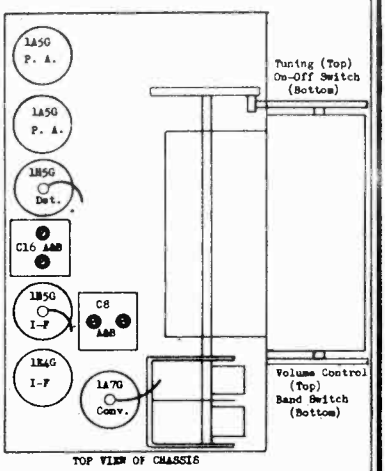
AIR CASTLE, SUPERHETERODYNE MODEL 611-1
INTERMEDIATE FREQUENCY 456 K.C.
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

BROADCAST BAND—540 to 1720 Kilocycles

SHORT-WAVE BAND—5.8 to 18 Megacycles

C1A&B	VARIABLE CONDENSER	B-7228	C14	250 MMF. MICA	C-720-324
C2	I.F. REJECT. TRIMMER	A-14088-4	C15	.05 MFD. 200V.	C-3202-140C
C3	B.C. ANT. TRIMMER	A-14088-5	C8A&B	NO.2 I.F. TRIMMER	B-7200-GG
C4	S.W. ANT. TRIMMER	A-14088-1	C17	100 MMF. MICA	C-720-339
C5	.05 MFD. 200V.	C-3202-140C	C18	100 MMF. MICA	C-720-339
C6	100 MMF. MICA	C-720-339	C19	.01 MFD. 200V.	C-3202-76C
C7	.05 MFD. 200V.	C-3202-28C	C20	8 MFD. 150V. ELECT.	A-14958
C8A&B	NO.1 I.F. TRIMMER	B-7200-GG	C21	100 MMF. MICA	C-720-339
C9	.001 MFD. 200V.	C-3202-114C	C22	.01 MFD. 200V.	C-3202-78C
C10	B.C. OSC. TRIMMER	B-7199-BY	C23	.001 MFD. 200V.	C-3202-58C
C11	B.C. OSC. PADDER		C24	.001 MFD. 1000V.	C-3210-114C
C12	S.W. OSC. TRIMMER	A-15088-5	C25	.01 MFD. 200V.	C-3202-76C
C13	2870 MMF. MICA	C-720-370			

R1	180,000 Ω .25W.	C-2795-89B	L1	I.F. REJECTOR COIL	A-14877
R2	68,000 Ω .25W.	C-2795-84B	L2	B.C. ANT. COIL	A-14679-1
R3	6800 Ω .25W.	C-2795-72B	L3	S.W. ANT. COIL	A-14682-4
R4	470,000 Ω .25W.	C-2795-94B	L4	OSC. CHOKE COIL	A-14718-1
R5	2.2 MEGOHM .25W.	C-2795-102B	L5	B.C. OSC. COIL	A-15232
R6	2.2 MEGOHM .25W.	C-2795-102B	L6	S.W. OSC. COIL	A-14987-2
R7	47,000 Ω .25W.	C-2795-82B	L7	NO.1 I.F. COIL	A-12064-40
R8	500,000 Ω VOL. CONT.	A-15130-3	L8	NO.2 I.F. COIL	A-12064-40
R9	10 MEGOHM .25W.	C-2795-110B			
R10	1 MEGOHM .25W.	C-2795-98B			
R11	2 MEGOHM TONE CONT.	A-15138			
R12	470 Ω .25W.	C-2795-151B			
R13	2.2 MEGOHM .25W.	C-2795-102B			
R14	7500 Ω .25W.	C-2795-180B			

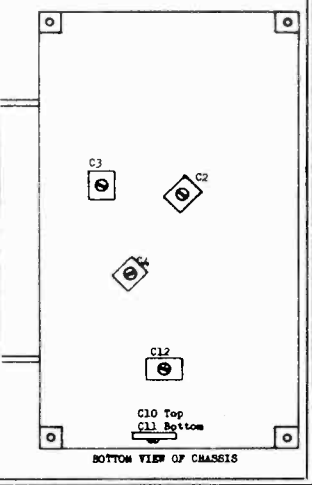


TOP VIEW OF CHASSIS

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial drum so that last mark is directly toward front of set with gang closed.)							
2	I. F.	1A7G Grid	.1 mf.	456 KC	BC	Open	C16 A&B C8 A&B	
3	I.F. Rej.	Ant.	200 mmf.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C10 Osc. C3 Ant.	
5				600 KC	BC	600 KC	C11 Pad.	**
6	(Repeat operation 4)							
7	(Check calibration and sensivity at 1500 KC, 900 KC and 600 KC)							
8	Shortwave Band	Ant.	*	18 MC	SW	18 MC	C12 Osc. C4 Ant.	
9	(Check calibration and sensitivity at 6 MC and 18 MC)							
10	(Check operations 1 to 9 inclusive)							

*100 ohms and 200 mmf. in series.
**Rock variable condenser while adjusting for maximum output.



BOTTOM VIEW OF CHASSIS

VOLTAGE CHART

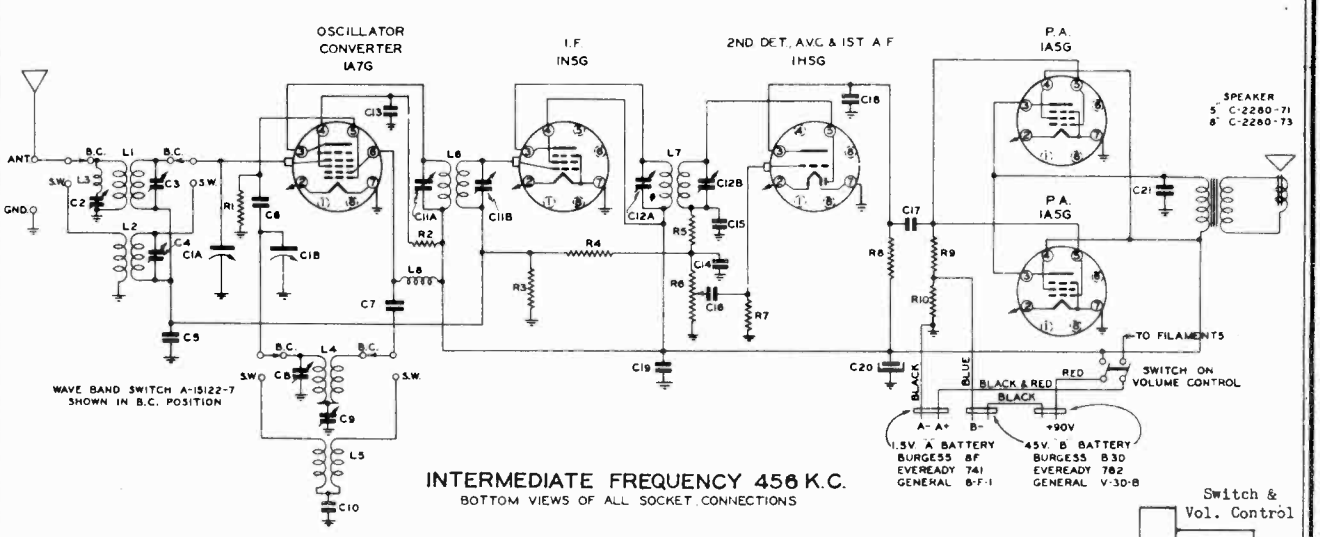
"A" Battery voltage: 1½ volts
"B" Battery voltage: 90 volts
Position of Volume Control: Full with Antenna Disconnected
Position of Band Selector Switch: Broadcast

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
1A7G	Osc. - Converter	0	+1.4	83	9.8[B]	-.2	83	0	0	0
1E4G	1st I-F	0	1.4	63	83	0	0	0	0	-
1N5G	2nd I-F	0	1.4	83	84	0	-	0	0	0
1H5G	Det. AVC-AF	-	1.4	A	83	0	0	-	-	0
1A5G	P.A.	-	1.4	80	75	-A	-	0	-	-
1A5G	P.A.	-	1.4	80	84	-A	-5.3	0	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.
A - Cannot be measured with 1000 ohms per volt voltmeter.
B - On 10 volt scale.

MODELS A-2108, A-2112, A-2116
Ch. 561-561M

SPIEGEL, INC.

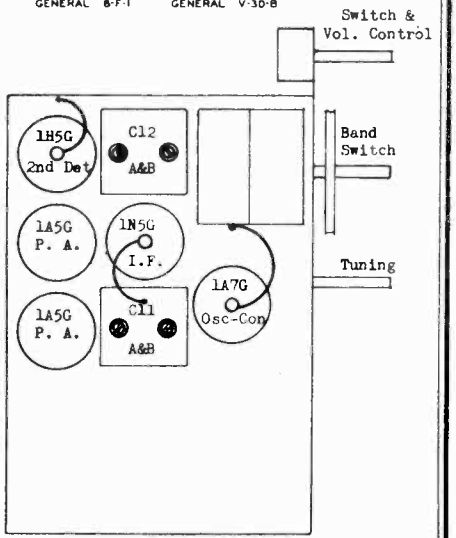


INTERMEDIATE FREQUENCY 456 K.C.

BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

C1A&B	VARIABLE CONDENSER	B-8173	C12A&B	NO.2 I.F. TRIMMER	B-7200-GG
C2	I.F. REJECTOR TRIMMER	A-14068-2	C13	.05 MFD. 200V.	C-3202-28C
C3	B.C. ANT. TRIMMER	A-14200	C14	100 MMF. MICA	C-720-325
C4	S.W. ANT. TRIMMER		C15	100 MMF. MICA	C-720-325
C5	.05 MFD. 200V.	C-3202-140C	C16	.01 MFD. 200V.	C-3202-132C
C6	100 MMF. MICA	C-720-325	C17	.01 MFD. 400V.	C-3204-132C
C7	.001 MFD. 200V.	C-3202-58C	C18	100 MMF. MICA	C-720-325
C8	B.C. OSC. TRIMMER	B-7199-BY	C19	.05 MFD. 200V.	C-3202-140C
C9	B.C. OSC. PADDER		C20	8 MFD. 150 V. ELECT.	A-14958
C10	2950 MMF. MICA	C-720-382	C21	.001 MFD. 1000V.	C-3210-114C
C11A&B	NO.1 I.F. TRIMMER	B-7200-GG			

R1	180,000 Ω .25W.	C-2795-89B	L1	B.C. ANT. COIL	A-15231
R2	68,000 Ω .25W.	C-2795-84B	L2	S.W. ANT. COIL	A-14682-12
R3	2.2 MEGOHMS .25W.	C-2795-102B	L3	I.F. REJECT. COIL	A-14718-1
R4	2.2 MEGOHMS .25W.	C-2795-102B	L4	B.C. OSC. COIL	A-15232-3
R5	56,000 Ω .25W.	C-2795-63B	L5	S.W. OSC. COIL	A-15233-8
R6	500,000 Ω V.C. & S.W.	A-15132-1	L6	NO.1 I.F. COIL	A-12064-35
R7	10 MEGOHM .25W.	C-2795-110B	L7	NO.2 I.F. COIL	A-12064-35
R8	1 MEGOHM .25W.	C-2795-98B	L8	OSC. PLATE CHOKE	A-14718-1
R9	2.2 MEGOHMS .25W.	C-2795-102B			
R10	560 Ω .25W.	C-2795-153B			



TOP VIEW OF CHASSIS

BROADCAST BAND—530 to 1720 Kilocycles (565 to 174 Meters)

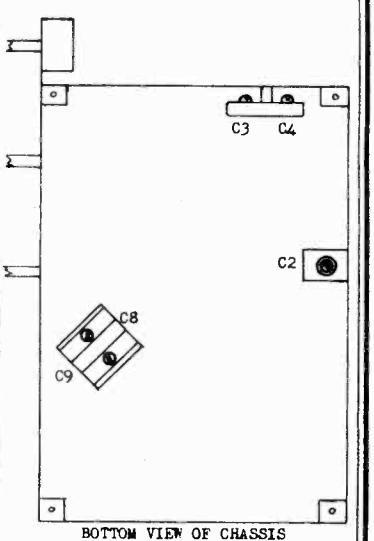
SHORT-WAVE BAND—5.8 to 18 Megacycles (52 to 16.6 Meters)

ALIGNMENT CHART

OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set pointer parallel with horizontal lines on dial with gang fully closed.)							
2	I.F.	1A7G Grid	.1 mf.	456 KC	BC	Open	C12 A&B C11 A&B	
3	I-F Rej.	Ant.	200 mf.	456 KC	BC	Closed	C2	Adjust to minimum
4	Broadcast Band	Ant.	200 mf.	1500 KC	BC	1500 KC	C8 (Osc.) C3 (Ant.)	
5				600 KC	BC	600 KC	C9 (Pad.)	**
6	(Repeat operation 4).							
7	(Check calibration and sensitivity at 1500 KC, 900 KC and 600 KC)							
8	SW Band	Ant.	*	18 MC	SW	18 MC	C4 (Ant.)	**
9	(Chetk 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.



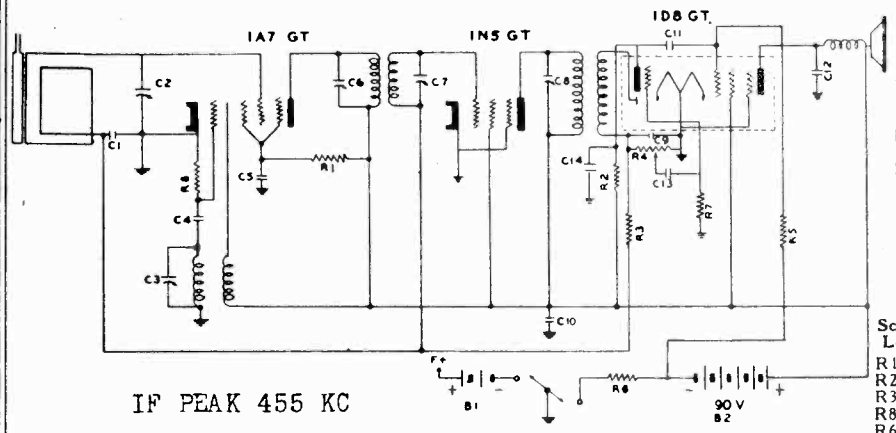
BOTTOM VIEW OF CHASSIS

VOLTAGE CHART

"A" Battery voltage: 1½ volts — Position of Volume Control: Full with Antenna Disconnected
"B" Battery voltage: 90 volts — Position of Band Selector 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
1A7G	Osc. - Converter	83	1.3	83	18	*	83	0	83	0
1N5G	I.F Amp.	0	1.3	83	83	-	-	0	0	0
1H5G	Det. AVC-AF	-	1.3	*	-	0	0	0	-	0
1A5G	P.A.	-	1.3	78	83	0	-	0	0	-
1A5G	P.A.	-	1.3	88	82	0	-5	0	0	-

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.
*Cannot be measured with 1000 ohms per volt voltmeter.



IF PEAK 455 KC

A-2120

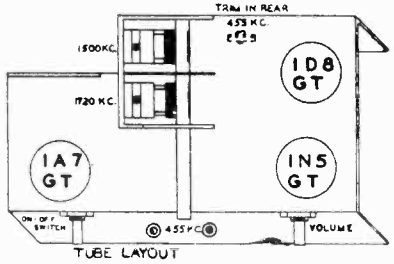
1—1A7GT	Combined oscillator and 1st detector.
1—1N5GT	Intermediate frequency amplifier.
1—1D8GT	Combined second detector, Audio driver, and Power output.

MODEL 130U

Schematic Location	Part No.	Description	Schematic Location	Part No.	Description
R1	R-105	Carbon res. 5K ohm	C1	C-45	Tubular cond. .05 mfd. 200V
R2	R-102	Carbon res. 1 meg.	C2, C3	Y-CV-46	Variable Condenser
R3, R5, R7	R-101	Carbon res. 2 meg.	C4	CM-31	Mica cond. 100 mmfd.
R8	R-99	Carbon res. 200K ohm	C5, C11	C-48	Tubular cond. .01 mfd. 400V
R6	R-103	Carbon res. 600 ohm	C6, C7	CT-1	Trimmer condenser
			C8	CT-32	Trimmer condenser
B1	1—6F1	General Battery 1.5V	C9, C14	CM-30	Mica cond. 250 mmfd.
B2	2—V30B	General Battery 45V	C10	CE-58	4 mfd. 100V Electrolytic
			C12, C13	C-47	Tubular cond. .004 mfd. 400V

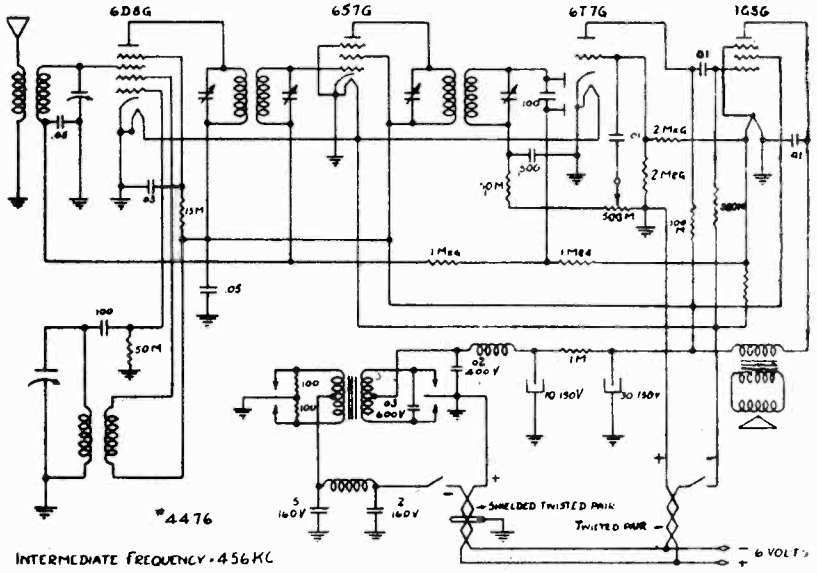
MODEL 130

Schematic Location	Part No.	Description
R1	R-105	Carbon res. 5K ohm
R2 R7	R-102	Carbon res. 1 meg.
R3 R5	R-101	Carbon res. 2 meg.
R8	R-113	Carbon res. 100K ohm
R6	R-103	Carbon res. 60 ohm
B1	No. 9	Air Castle Battery No. 9 1.5V
B2	No. 3A40P	Air Castle Battery No. 3A40P 60V



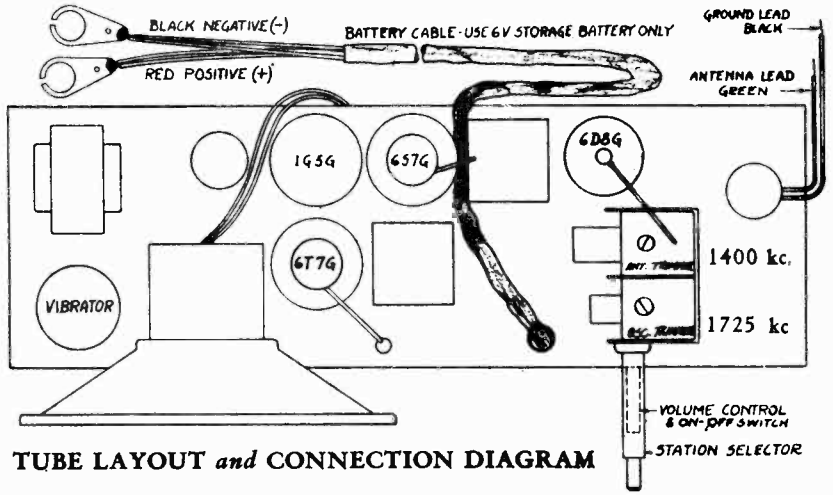
TUBE LAYOUT

CONVENTIONAL ALIGNMENT



MODELS 2208, 2209, 2210, 2211, ch. 184

CONVENTIONAL ALIGNMENT



TUBE LAYOUT *and* CONNECTION DIAGRAM

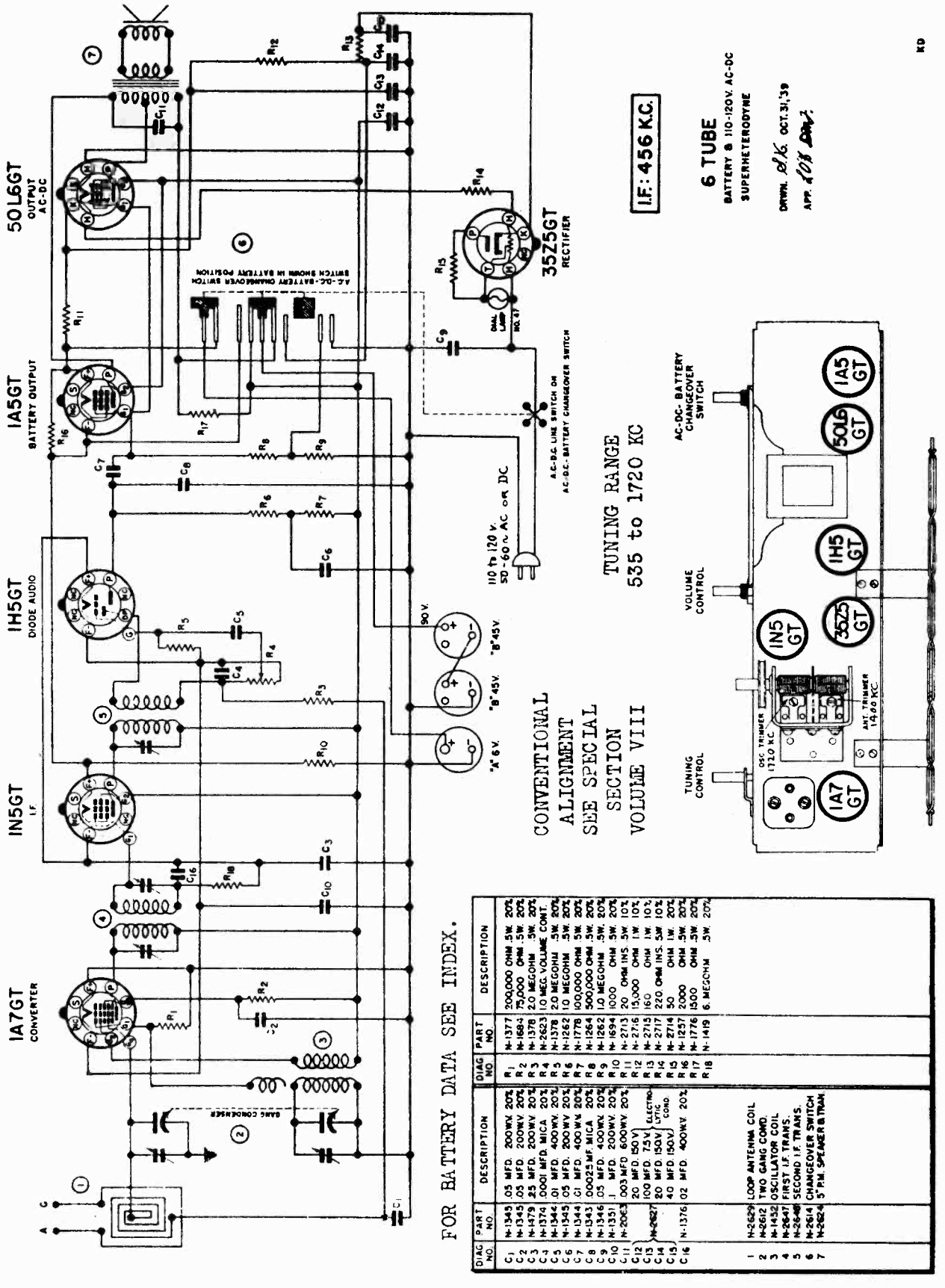
184

Range 540KC-1725KC

Tubes: Tubes required are:
1—6D8G Oscillator-Translator.
1—6S7G Intermediate frequency amplifier.
1—6T7G Detector—automatic volume control—first audio amplifier.
1—1G5G Power output.
Do not use tubes of types different from those shown above.

MODEL A-2122, Ch. KD

SPIEGEL, INC.

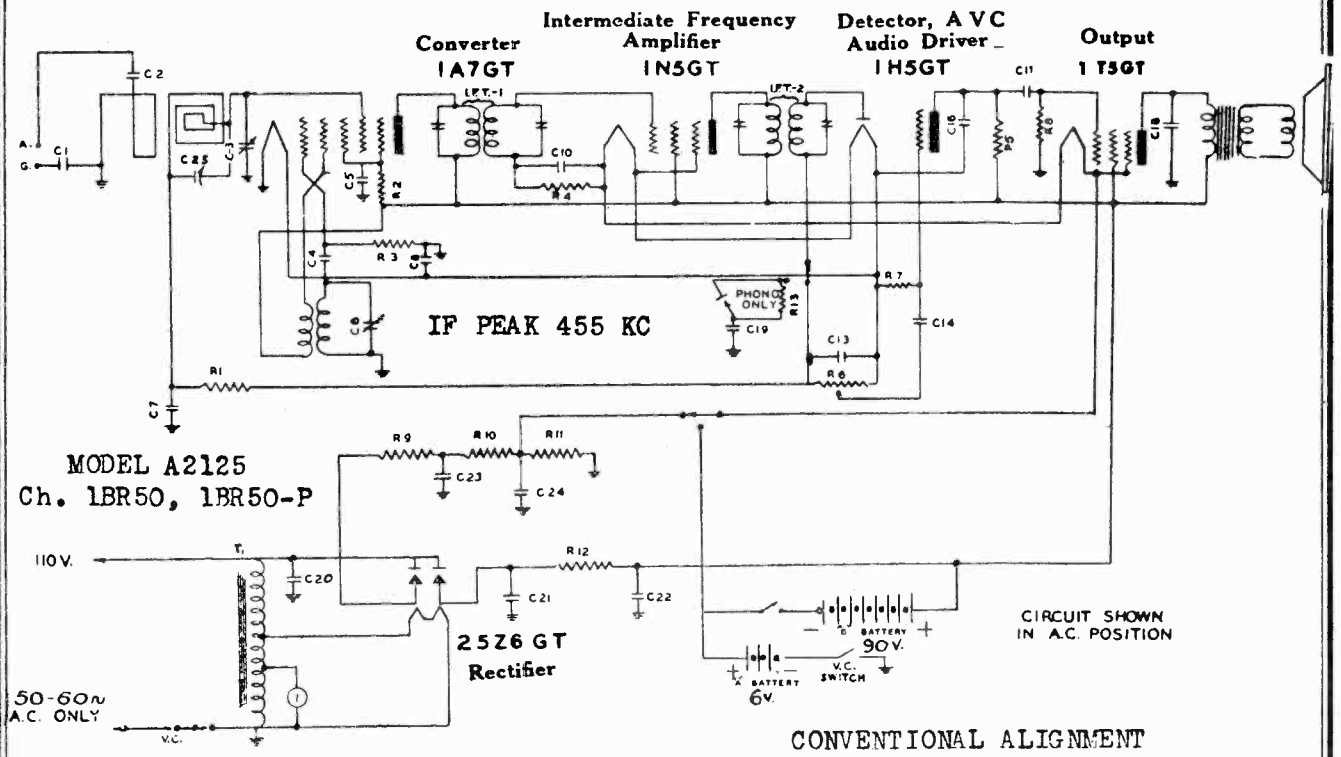


DIAG NO.	PART NO.	DESCRIPTION
C1	N-1343	.05 MFD. 200 W.V. 20%
C2	N-1345	.05 MFD. 200 W.V. 20%
C3	N-1479	.25 MFD. 200 W.V. 20%
C4	N-1374	.0001 MFD. MICA 20%
C5	N-1344	.01 MFD. 400 W.V. 20%
C6	N-1345	.05 MFD. 200 W.V. 20%
C7	N-1344	.01 MFD. 400 W.V. 20%
C8	N-1343	.00025 MF. MICA 20%
C9	N-1346	.05 MFD. 400 W.V. 20%
C10	N-1351	.1 MFD. 200 W.V. 20%
C11	N-2063	.003 MFD 600 W.V. 20%
C12	N-2627	20 MFD. 150 V. ELECTRO. LYTIC COND.
C13		100 MFD. 75 V.
C14		20 MFD 150 V.
C15		40 MFD 150 V.
C16	N-1376	.02 MFD. 400 W.V. 20%
1	N-2629	LOOP ANTENNA COIL
2	N-2612	TWO GANG COND.
3	N-1432	OSCILLATOR COIL
4	N-2647	FIRST I.F. TRANS.
5	N-2648	SECOND I.F. TRANS.
6	N-2614	CHANGEOVER SWITCH
7	N-2624	5" P.M. SPEAKER & TRAN

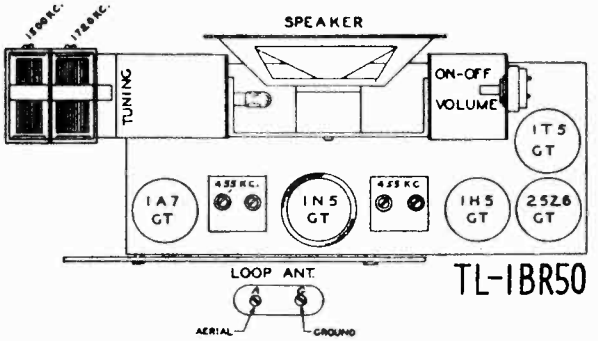
DIAG NO.	PART NO.	DESCRIPTION
R1	N-1377	200,000 OHM .5W. 20%
R2	N-1684	75,000 OHM .5W. 20%
R3	N-1378	2.0 MEGOHM .5W. 20%
R4	N-2623	10 MEG. VOLUME CONT.
R5	N-1378	2.0 MEGOHM .5W. 20%
R6	N-1262	1.0 MEGOHM .5W. 20%
R7	N-1778	100,000 OHM .5W. 20%
R8	N-1264	500,000 OHM .5W. 20%
R9	N-1262	1.0 MEGOHM .5W. 20%
R10	N-1694	1000 OHM .5W. 20%
R11	N-2713	20 OHM WW 5W 10%
R12	N-2716	15,000 OHM 1W 10%
R13	N-2715	160 OHM 1W 10%
R14	N-2717	220 OHM WW 5W 10%
R15	N-2714	50 OHM 1W. 20%
R16	N-1257	2000 OHM .5W. 20%
R17	N-1776	1500 OHM .5W. 20%
R18	N-1419	6. MEGOHM .5W. 20%

SPIEGEL, INC.

Chassis 611, 629, 631,721, 821, 961-1061, 1271
Chassis 1BR50. 1BR50P



CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION
VOLUME VIII



Schematic Location	Part No.	Description
C2,C1		
C10,C17	C-15754	Tubular cond. .01 mfd. 400 V
C3 C6	Y-CV-44	Variable Condenser
C13,C4,C16	CM-21	Mica cond. 100 mmfd. 30%
C5,C7	C-15752	Tubular cond. .05 mfd. 200 V
C8	C-15761	Tubular cond. .1 mfd. 200 V
C18 C14	C-15753	Tubular cond. .002 mfd. 600V
C19	C-15761	Tubular cond. .1 mfd. 200 V
C20	C 15756	Tubular cond., .05 mfd. 400 V
C21,C22	Y-CE-47	Electr. cond. 8-16 mfd. 150WV
C23,C24	Y CE 57	Electr. cond.40-100 mfd. 50WV
T1	Y-TP-55	Power Transformer
IFT-1	Y-CI-77	1st I. F. Transformer
IFT-2	Y-CI-78	2nd I. F. Transformer
R1,R4	R-15500	Carbon res. 2 meg. ½W 20%
R2	R-15617	Carbon res. 30K ohm ½W 20%
R3	R-15523	Carbon res 200K ohm ½W 20%
R5	R-15520	Carbon res. 500K ohm ½W 20%
R6	Y-VC-41	Volume Control
R7	R-15559	Carbon res. 3 meg. ½W 20%
R8	R-15517	Carbon res. 1 meg. ½W 20%
R9,R10,R11	Y-RC-10	Vol. Div. 350 800 300 ohm 10%
R12	R-16	Carbon res. 8K ohm ½W 20%
R13	R-15512	Carbon res. 250K ohm ½W 20%

ADJUSTING THE PUSH-BUTTON TUNER

MODELS W100, W110, W118, W152, W160, W162; 1000, 1001, 1004, 1005, 1006, 1007, 1020, 1021, 1054, 1055, 1056, 1057, 1080, 1081; V1000, V1004, V1006, V1014, V1020, V1054, V1056, V1060, V1064; Ch. 629

MODEL A2000, Ch. 82
MODELS A2200, A2250 Ch. 631
MODEL A2050, Ch. 721
MODELS A2052, A2060, A2062, Ch. 961-1061
MODEL A2062, Ch.1271
MODELS A2100, A2150 Ch. 611

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.

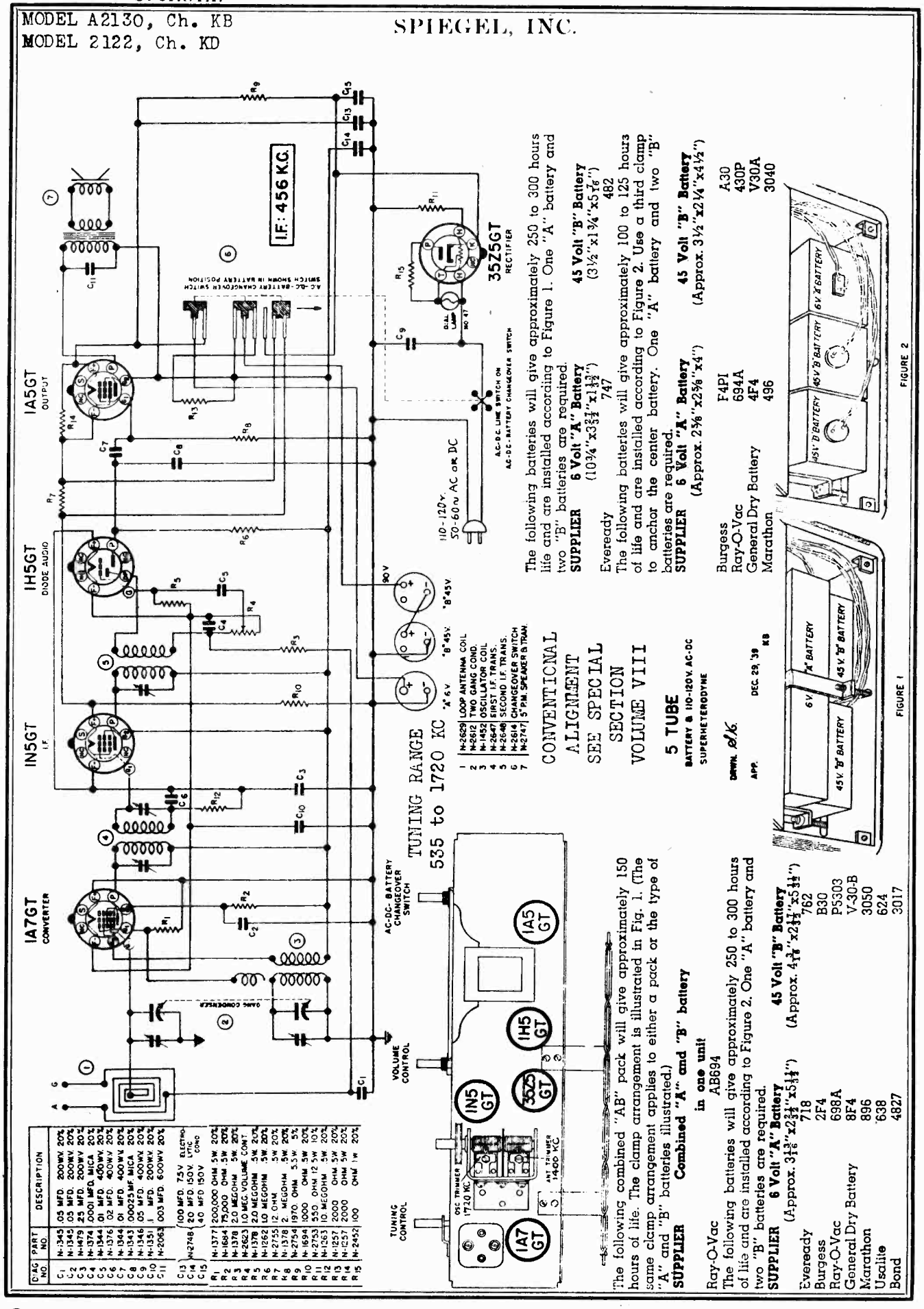
5. Check all buttons by pushing them in, one at a time, to determine whether desired stations are tuned properly.

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.

MODEL A2130, Ch. KB
MODEL 2122, Ch. KD

SPIEGEL, INC.



DIAG NO.	PART NO.	DESCRIPTION
C1	N-1345	.05 MFD. 200WV 20%
C2	N-1345	.05 MFD. 200WV 20%
C3	N-1479	.25 MFD. 200WV 20%
C4	N-1374	.0001 MFD. MICA 20%
C5	N-1344	.01 MFD. 400WV 20%
C6	N-1376	.02 MFD. 400WV 20%
C7	N-1344	.01 MFD. 400WV 20%
C8	N-1343	.00025 MF MICA 20%
C9	N-1346	.05 MFD. 400WV 20%
C10	N-1351	.1 MFD. 200WV 20%
C11	N-2063	.003 MFD. 600WV 20%
C12	N-2748	100 MFD. 75V ELECTRO LYTIC
C13		20 MFD 150V COMB
C14		40 MFD 150V
C15		
R1	N-1377	200,000 OHM .5W 20%
R2	N-1684	75,000 OHM .5W 20%
R3	N-1378	2.0 MEGOHM .5W 20%
R4	N-2623	1.0 MEG. VOLUME CONT.
R5	N-1378	2.0 MEGOHM .5W 20%
R6	N-1262	1.0 MEGOHM .5W 20%
R7	N-2755	12 OHM .5W 20%
R8	N-1378	2. MEGOHM .5W 20%
R9	N-2754	1970 OHM .5W 5%
R10	N-1694	1000 OHM 5W 20%
R11	N-2753	550 OHM 12 5W 10%
R12	N-1261	10 MEGOHM .5W 20%
R13	N-1237	2000 OHM 5W 20%
R14	N-1237	2000 OHM 5W 20%
R15	N-2452	100 OHM 1W 20%

The following combined "AB" pack will give approximately 150 hours of life. The clamp arrangement is illustrated in Fig. 1. (The same clamp arrangement applies to either a pack or the type of "A" and "B" batteries illustrated.)

SUPPLIER **Combined "A" and "B" battery in one unit**

Ray-O-Vac AB694

The following batteries will give approximately 250 to 300 hours of life and are installed according to Figure 2. One "A" battery and two "B" batteries are required.

SUPPLIER	6 Volt "A" Battery (Approx. $3\frac{1}{16}$"x$2\frac{3}{4}$"x$5\frac{1}{4}$")	45 Volt "B" Battery (Approx. $4\frac{1}{8}$"x$2\frac{3}{4}$"x$5\frac{1}{4}$")
Eveready	718	762
Burgess	2F4	B30
Ray-O-Vac	698A	P5303
General Dry Battery	8F4	V-30-B
Marathon	896	3050
Usalite	638	624
Bond	4827	3017

The following batteries will give approximately 250 to 300 hours life and are installed according to Figure 1. One "A" battery and two "B" batteries are required.

SUPPLIER	6 Volt "A" Battery (10¾"x$3\frac{3}{4}$"x$1\frac{13}{16}$")	45 Volt "B" Battery ($3\frac{1}{2}$"x$1\frac{3}{4}$"x$5\frac{7}{8}$")
Eveready	747	482

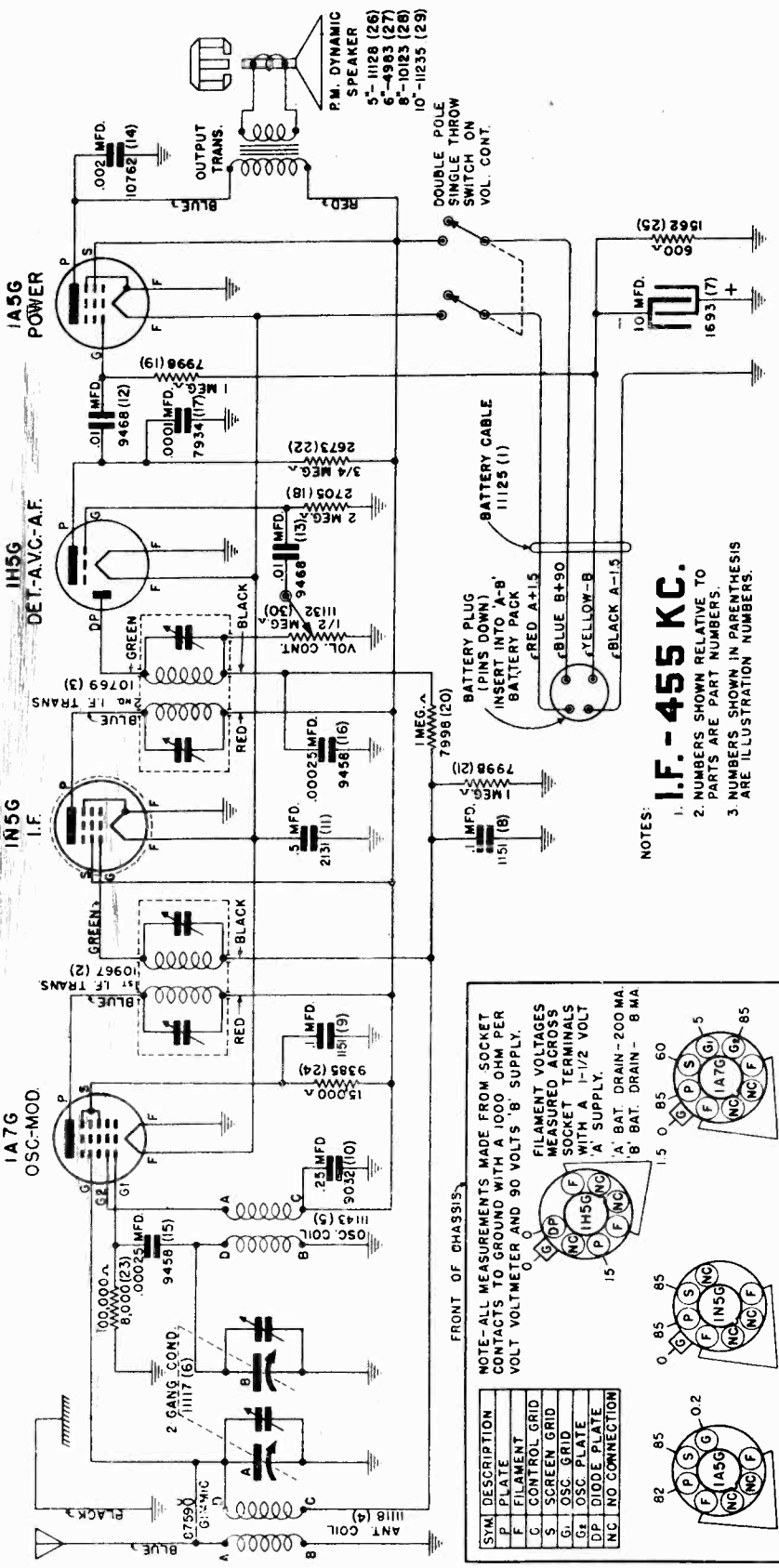
The following batteries will give approximately 100 to 125 hours of life and are installed according to Figure 2. Use a third clamp to anchor the center battery. One "A" battery and two "B" batteries are required.

SUPPLIER	6 Volt "A" Battery (Approx. 2⅝"x2⅝"x4")	45 Volt "B" Battery (Approx. $3\frac{1}{2}$"x$2\frac{1}{4}$"x$4\frac{1}{2}$")
Burgess	F4PI	A30
Ray-O-Vac	694A	430P
General Dry Battery	4F4	V30A
Marathon	496	3040

FIGURE 1 FIGURE 2

SPIEGEL, INC.

MODELS A2154; Z7108(Late)
Ch. 175B



PARTS LIST

PART NO. 175-B

Illus. No.	Part No.	Description	List Price	Illus. No.	Part No.	Description	List Price
1(a)	11125	Cable		13	9468	Condenser Tubular .01 Mfd. 400 Volt	.17
1(b)	11332	Cable		14	10762	Condenser Tubular .002 Mfd. 400 Volt	.19
		Battery (With 4 Prong Plug)	$ .25	15	9458	Condenser Mica .00025 Mfd.	.21
		Battery (With 2-3 Prong and 1-2 Prong Plug)	.37	16	9458	Condenser Mica .00025 Mfd.	.21
2	10967	Coil 1st I.F. Transformer	1.10	17	7934	Condenser Mica .0001 Mfd.	.21
3	10769	Coil 2nd I.F. Transformer	1.10	18	2705	Resistor Carbon 2 Megohm ½ Watt	.19
4	11118	Coil Antenna	.55	19	7938	Resistor Carbon 1 Megohm ½ Watt	.19
5	11143	Coil Oscillator	.45	20	7998	Resistor Carbon 1 Megohm ½ Watt	.19
6	11117	Condenser Tuning (2 Gang)	2.00	21	7998	Resistor Carbon 1 Megohm ½ Watt	.19
7	1693	Condenser Tubular Dry Elec. 10 Mfd. 25 V. D. C.	.75	22	2673	Resistor Carbon 750,000 Ohm ½ Watt	.19
8	1151	Condenser Tubular .1 Mfd. 200 Volt	.20	23	8000	Resistor Carbon 100,000 Ohm ½ Watt	.19
9	1151	Condenser Tubular .1 Mfd. 200 Volt	.20	24	9385	Resistor Carbon 15,000 Ohm ½ Watt	.19
10	9032	Condenser Tubular .25 Mfd. 200 Volt	.25	25	1562	Resistor Carbon 600 Ohm ½ Watt	.19
11	2131	Condenser Tubular .5 Mfd. 200 Volt	.55	26	11128	Speaker P. M. Dynamic 5 in.	4.00
12	9468	Condenser Tubular .01 Mfd. 400 Volt	.17	27	4983	Speaker P. M. Dynamic 6 in.	4.25
				29	11235	Speaker P. M. Dynamic 10 in.	7.50
				30	11132	Volume Control with "off-on" Switch	.95

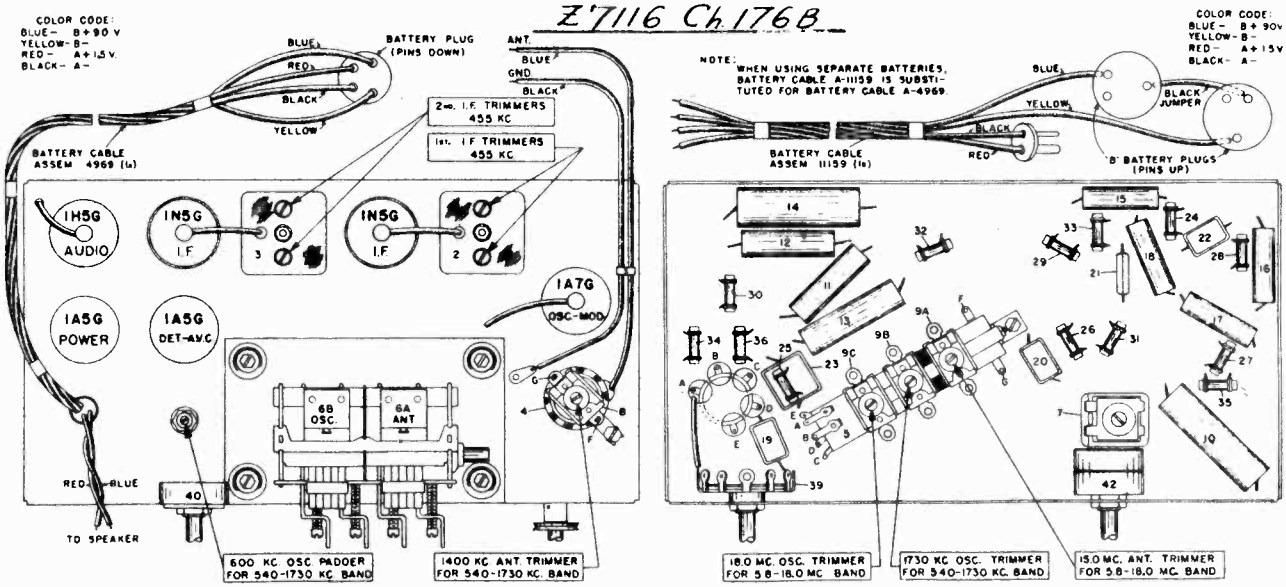
Part No.	Description	List Price
	MISCELLANEOUS PARTS	
11108	Bulb	2 Cell 2.2 Volt White Bead Type	.07
11121	Dial Scale	Calibrated Dial Scale	.40
8184	Dial Cord	24 in. of 18 lb. Cord	.10
11119	Dial Shaft		.15
11127	Dial Indicator	"Off-On" Switch	.15
11626	Dial Pointer		.15
11627	Dial Crystal	For Dial	.30
11140	Dial Escutcheon	For Cabinet	.30
4978	Plug	4 Prong Battery Plug	1.25
10207	Knob	Antique Ivory Tuning Control	.06
11145	Knob	Walnut Tuning Control	.10

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

W. 4M 9-39 PART NO. 175B

MODELS A2154, Z7108(Late) SPIEGEL, INC.
Ch. 175B
MODEL Z7116, Ch. 176B

Z7116 Ch 176B



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:

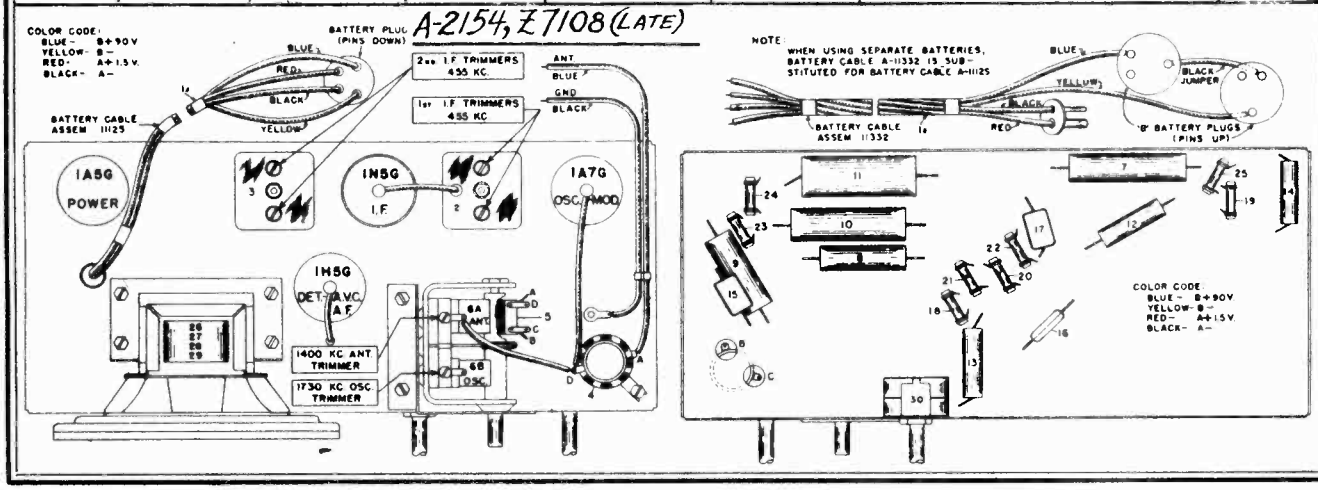
(a) Check tuning dial adjustment by turning gang condenser until plates touch maximum capacity stop (completely in mesh) at which point the dial needle must be exactly even with the last line at the low frequency end of the dial calibration. If dial needle does not point exactly to last line move needle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

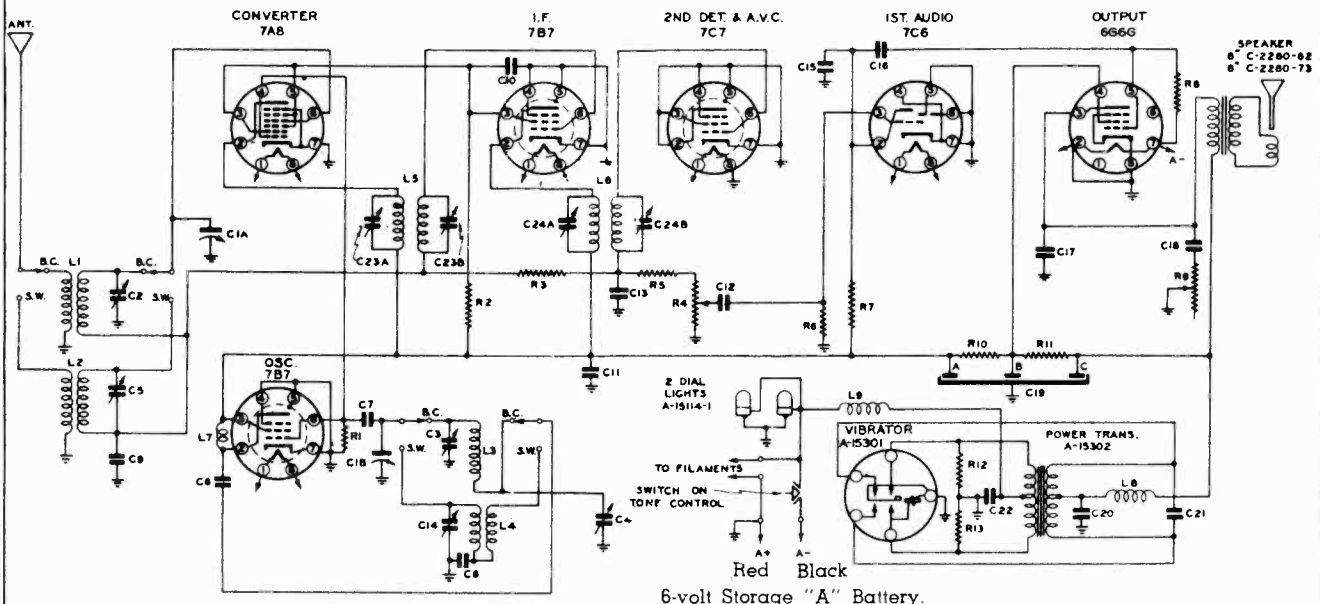
Place band switch for operation on:	Set receiver dial to:	TEST OSCILLATOR: Adjust test oscillator frequency to:	TEST OSCILLATOR: Use dummy antenna in series with output of test oscillator consisting of:	TEST OSCILLATOR: Attach output of test oscillator to:	Refer to parts layout diagram for location of 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 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.
1730 to 540 K.C. Band	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
	3 Approx. 600 K.C.	Approx. 600 K.C.	.00025 Mfd. condenser	Receiver blue antenna lead	While rocking gang condenser adjust 600 K.C. oscillator padder for maximum output
5.8 to 18 M.C. Band	1 Exactly 18 M.C.	Exactly 18 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	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.	Exactly 15 M.C.	400 Ohm carbon resistor	Receiver blue antenna lead	While rocking gang condenser adjust 15 M.C. antenna trimmer for maximum output.

A-2154, Z7108 (LATE)



SPIEGEL, INC.

MODELS A2200, A2250
Ch. 631



6-volt Storage "A" Battery.
No "B" or "C" Batteries are required.

INTERMEDIATE FREQUENCY 456 K.C.

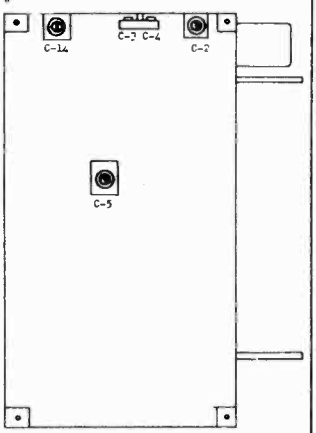
BOTTOM VIEWS OF ALL SOCKET CONNECTIONS

AIR CASTLE SUPERHETERODYNE MODEL 631-6

C1A&B	VARIABLE CONDENSER	B-7229	C13	250 MMF. MICA	C-720-324	R1	56,000 Ω	.25W.	C-2795-83B	L1	B.C. ANT. COIL	A-15349-1
C2	B.C. ANT. TRIMMER	A-14088-B	C14	S.W. OSC. TRIMMER	A-14088-B	R2	18,000 Ω	.5 W.	C-2798-77C	L2	S.W. ANT. COIL	A-14682-3
C3	B.C. OSC. TRIMMER	B-7199-EY	C15	250 MMF. MICA	C-720-324	R3	1 MEGOHM	.25W.	C-2795-98B	L3	B.C. OSC. COIL	A-15352-1
C4	B.C. OSC. PADDER		C16	.05 MFD. 200V.	C-3202-28C	R4	500,000 Ω VOLUME CONT.		A-15130-3	L4	S.W. OSC. COIL	A-15233-5
C5	S.W. ANT. TRIMMER	A-14088-5	C17	.001 MFD. 400V.	C-3204-58C	R5	47,000 Ω	.25W.	C-2795-23B	L5	NO. 1 I.F. COIL	A-12064-39
C6	2700 MMF. MICA	A-15451	C18	.02 MFD. 400V.	C-3204-78C	R6	4.7 MEGOHM	.25W.	C-2795-35B	L6	NO. 2 I.F. COIL	A-12064-17
C7	50 MMF. MICA	C-720-315	C19A,B,C	20-20-20 MFD. 150V. ELECT.	A-14884-8	R7	220,000 Ω	.25W.	C-2795-27B	L7	B+ PLATE CHOKE	A-14881-1
C8	250 MMF. MICA	C-720-324	C20	1000 MMF. MICA	C-720-297	R8	1 MEGOHM	.25W.	C-2795-98B	L8	B+ HASH CHOKE	A-14718-2
C9	.05 MFD. 200V.	C-3202-84C	C21	.01 MFD. 600V.	C-3206-132C	R9	TONE CONTROL & SWITCH		A-15128-2	L9	A LEAD HASH CHOKE	A-14944
C10	.1 MFD. 200V.	C-3202-34C	C22	.5 MFD. 120V.	C-3203-46B	R10	330 Ω	.5 W.	C-2798-10C			
C11	.1 MFD. 200V.	C-3202-38C	C23	NO.1 I.F. TRIMMER	B-7200-GN	R11	68 Ω	.5 W.	C-2798-48C			
C12	.02 MFD. 200V.	C-3202-22C	C24	NO.2 I.F. TRIMMER	B-7200-GN	R12	68 Ω	.5 W.	C-2796-8C			
						R13	68 Ω	.5 W.	C-2796-8C			

BROADCAST BAND—550 to 1600 Kilocycles (545 to 187 Meters)

SHORT-WAVE BAND—6 to 18 Megacycles (50 to 16.6 Meters)



BOTTOM VIEW OF CHASSIS

VOLTAGE CHART

Condition of Storage Battery Good (6 Volts) Position of Volume Control: Full with Antenna Disconnected
Band Switch - Broadcast

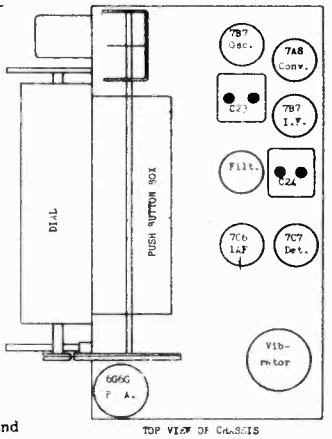
Tube	Function	Voltage of Socket Prongs to Gnd. (See Nos. on Schematic Diagram)							
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
7A8	Converter	6	110	45	-20	45	0	0	0
7B7	Oscillator	6	110	110	0	0	-20	0	0
7B7	I. F. Amp.	6	110	45	0	0	0	0	0
7C7	2 Det. AVC	6	0	0	0	0	0	0	0
7C6	1st Aud. Amp.	6	16	0	--	0	0	0	0
6G6G	Power Amp.	0	0	110	115	0	--	6	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.

ALIGNMENT CHART

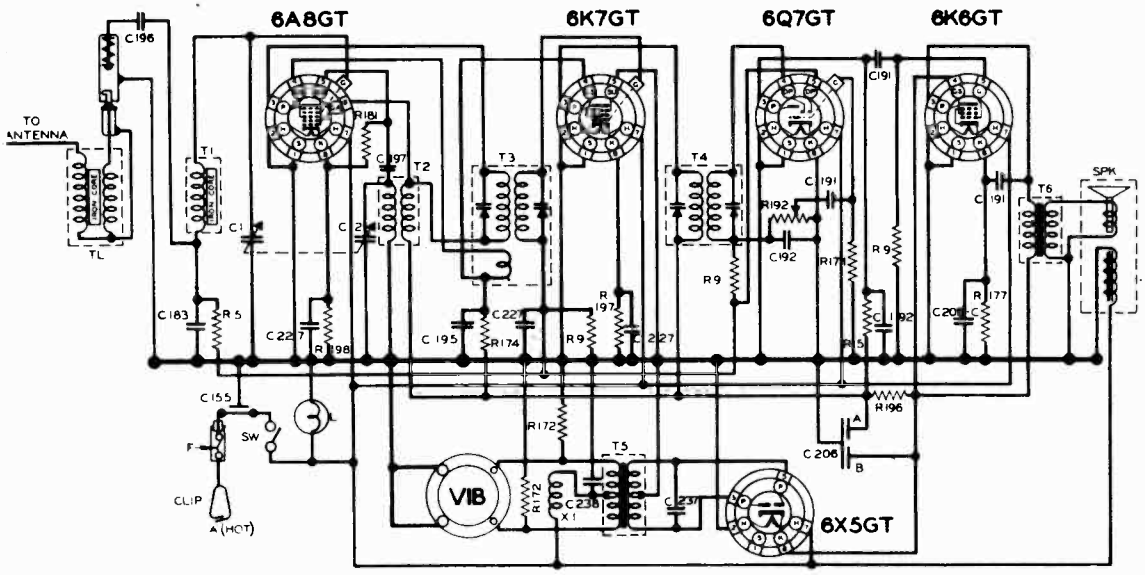
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	BAND SWITCH SETTING	TUNING COND. SETTING	TRIMMER	REMARKS
1	(Set dial drum so that indicator points to last dial mark when gang is fully closed.)							
2	I.F.	Ant.	.1 mf.	456 KC	BC	Open	C24 A&B	2nd I-F
							C23 A&B	1st I-F
3	Broadcast Band	Ant.	200 mmf.	1500 KC	BC	1500 KC	C3 (Osc.)	Peak accurately
							C2 (Ant.)	Peak accurately
4				600 KC	BC	600 KC	C4 (Pad.)	Peak accurately
5	(Repeat operation 3)							
6	(Check calibration and sensitivity at 600 KC, 900 KC and 1500 KC)							
7	SW Band	Ant.	*	18 MC.	SW	18 MC	C14 (Osc.)	**
							C5 (Ant.)	**
8	(Check calibration and sensitivity at 6 MC and 18 MC)							
9	(Check operations 1 to 8 inclusive.)							

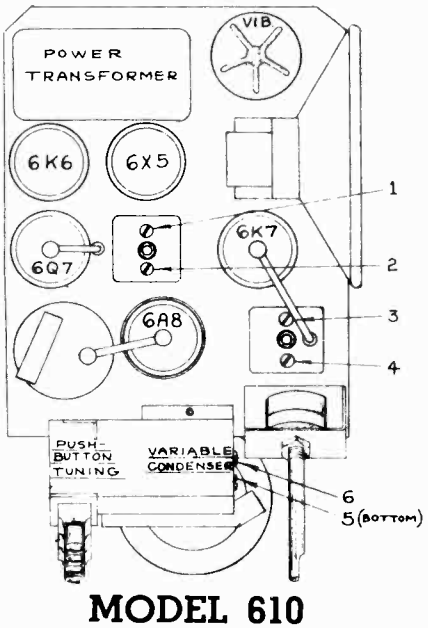
*100 ohms non-inductive resistor and 200 mmf. condenser in series.
**Rock dial while making this adjustment. Make certain that adjustment is made on fundamental signal and not on image. Peak accurately.



TOP VIEW OF CHASSIS

MODELS A2454, Z7460, Ch. 510; SPIEGEL, INC.
A2456, Z7462, Ch. 61C





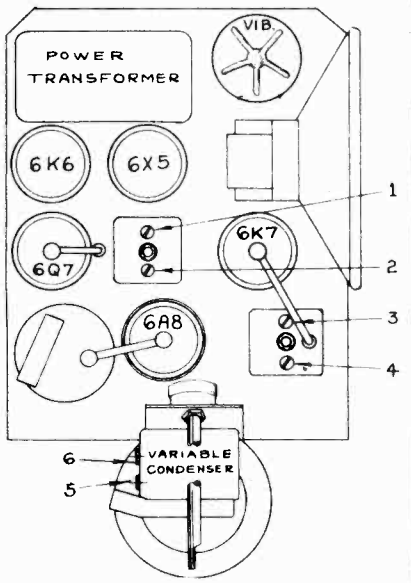
MODEL 610

RESISTORS				CONDENSERS				
#	OHMS	W	PART NO	C	CAPACITY	VOLT	PART NO
3	300M	½	17-2070	1	TWO-GANG		17-16421
9	1M	½	17-2080	2	VARIABLE		
171	15M	½	17-14288	135	.0002	200	17-16217
172	100	½	17-14289	231	.005	1200	17-16343
				208A	10 MFD	350	
174	20K	½	17-14291	208B	10 MFD	300	17-14297
177	850	½	17-14298	208C	20 MFD	25	
181	100K	½	17-14303	191	.01	400	17-14272
182	1M	VC	17-16422	192	.00025	800	17-14273
198	500	1	17-14340	193	.003	800	17-14294
197	800	½	17-14342	195	.05	400	17-14276
196	400	½	17-14345	199	.1	200	17-14277
				197	.0001	800	17-14278
				238	.5	150	17-14346
				227	.05	800	17-16823

CHOKES & TRANSFORMERS		
T-#	TYPE	PART NO
1	ANTENNA COIL	00-16441
2	OSCILLATOR COIL	00-8442
3	FIRST I.F. COIL	00-8443
4	SECOND I.F. COIL	00-8444
5	POWER TRANS	00-8446
6	OUTPUT TRANS	00-8445
1	CHOKE	
1	SUPPRESSION CHOKE	20-8457

MISCELLANEOUS UNITS		
SYMBOL	DESCRIPTION	PART NO
F	FUSE 20 AMP	17-2228
L	DIAL LIGHT BULB - MAZDA NO 44	17-3803
SPK	SPEAKER ASSEMBLY	17-16458
SW	POWER SWITCH	17-16422
TL	TRANSMISSION LINE	00-16456
VIB	VIBRATOR	17-14147

IF PEAK 455 KC
FREQUENCY RANGE 1575 TO 540 KC



MODEL 510

Model 610 PUSH BUTTON ADJUSTMENT:

Any button may be set to any station desired. First, tune in the desired station by means of the thumb wheel. Second, turn the push button counter-clockwise two full turns. Then depress this button the full length of its stroke, and while depressed, tighten the button again by turning it clockwise. The button may now be released. To check the correct setting for this button, turn the thumb wheel to some other point and depress the push button. This will return the tuning mechanism to the station just set up. If it does not, repeat the foregoing sequence of operations more carefully. Each of the remaining buttons may be set to other stations in a like manner.

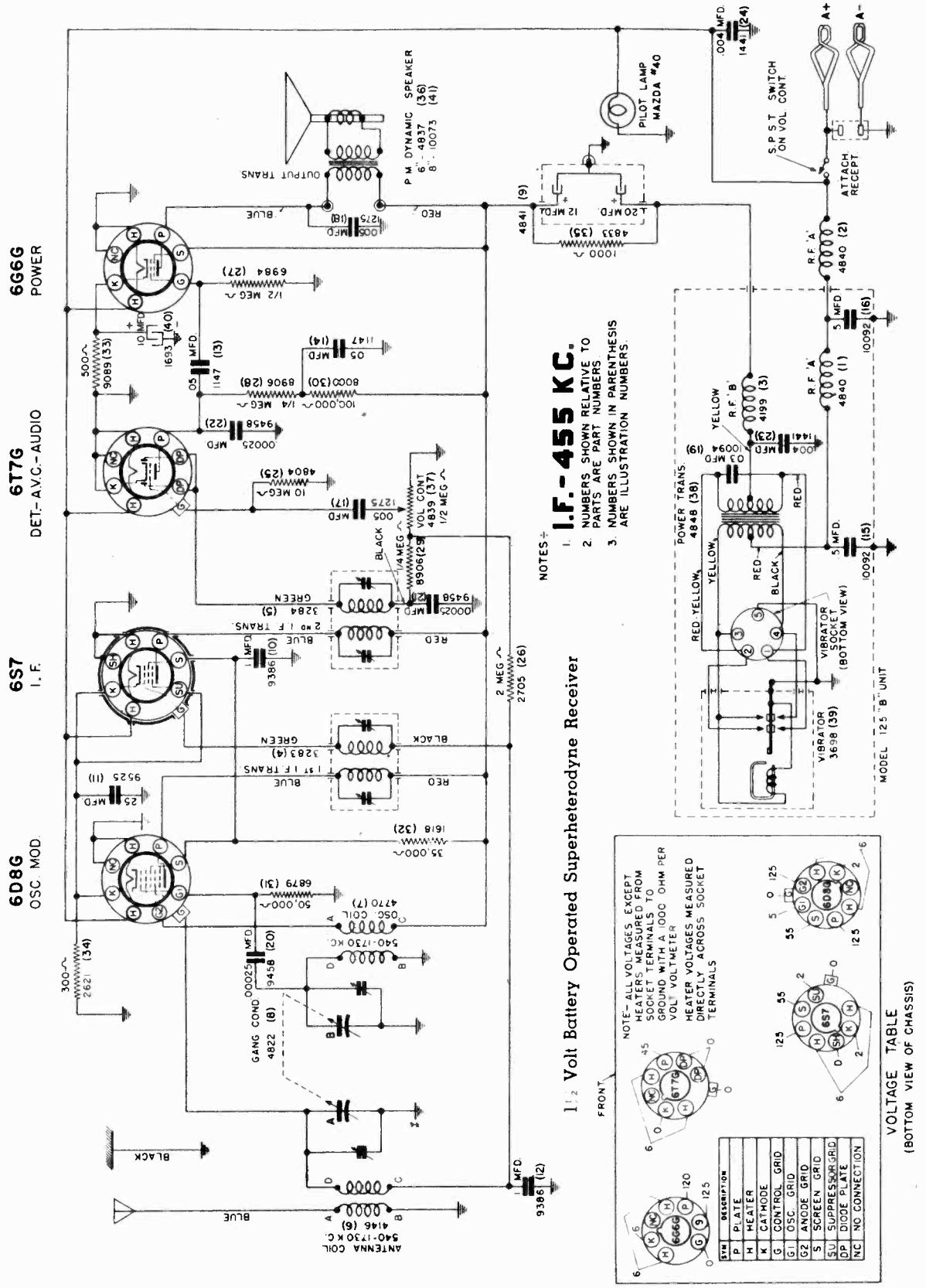
BALANCING INSTRUCTIONS:

All sensitivities given for ½ watt output = 1.4 V. across Voice Coil

Operation No.	Connect Bal. Oscillator to	Bal. Oscillator Frequency	Adjust Padder No.	Dial Setting	Sensitivity
1	6A8 Grid	455	1, 2, 3 & 4	550 KC	50 uv
2	Ant. Coupler Through 20 uuf	1400	5	1400	
3	"	1400	6	1400	10 uv

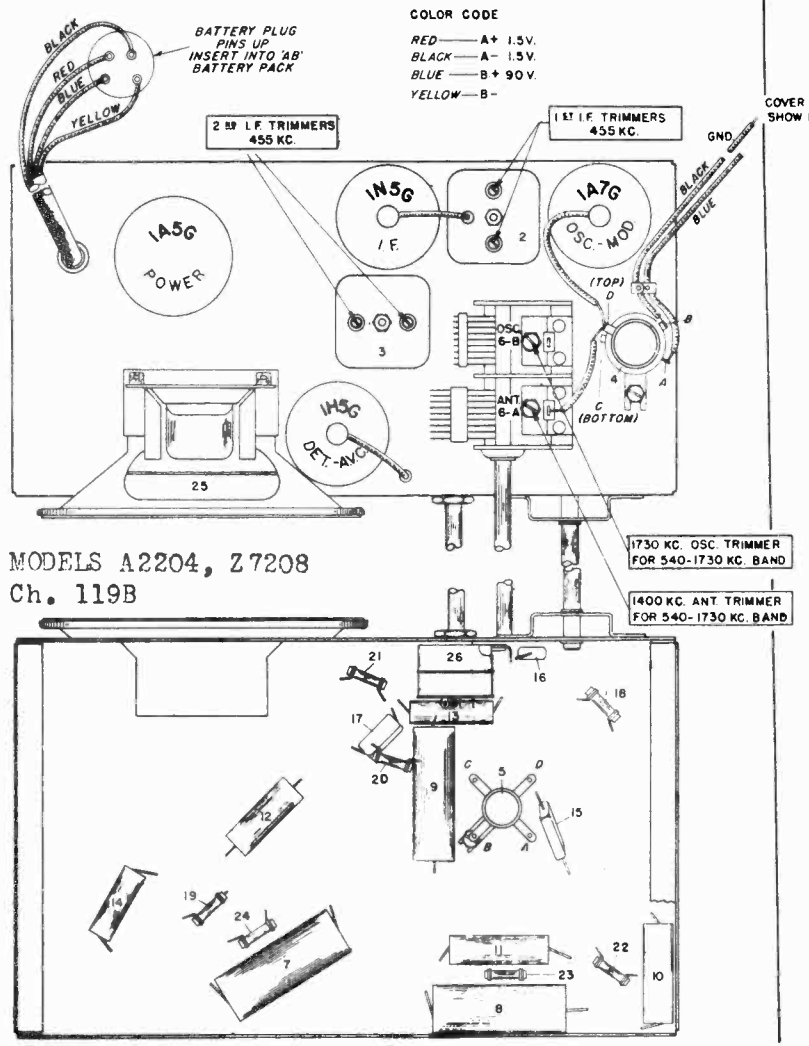
SPIEGEL, INC.

MODELS A2204, Z7208
Ch. 119B



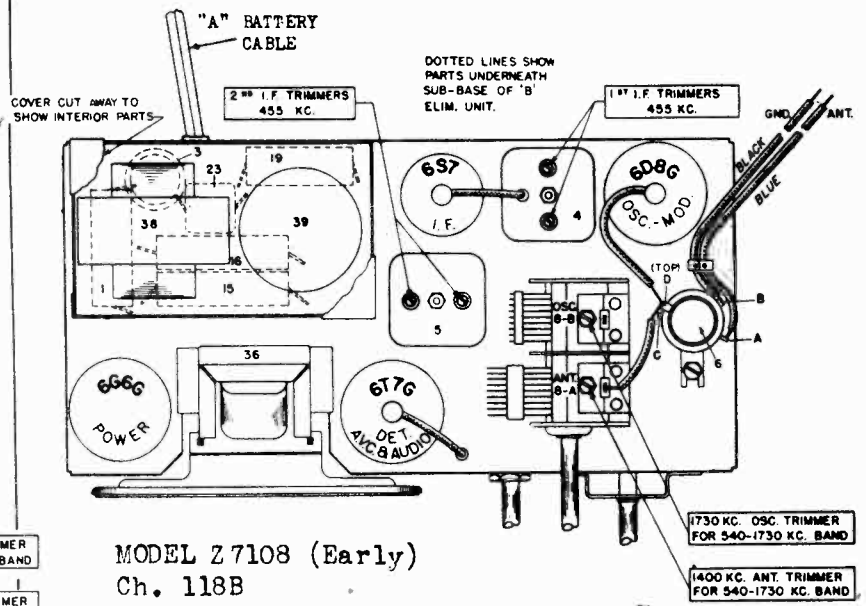
MODEL Z7108(Early), Ch. 118B
MODELS A2204, Z7208, Ch. 119B
SPIEGEL, INC.

ALIGNMENT:-I.F. 455 KC THROUGH A .02 MFD. CONDENSER TO GRID CAP OF 1A7G TUBE--DO NOT REMOVE GRID CAP--ADJUST IF TRIMMERS TO MAXIMUM OUTPUT AT 1730 KC THROUGH .00025 MFD. CONDENSER TO RECEIVER ANTENNA (BLUE) LEAD, ADJUST OSCILLATOR TRIMMER TO MAXIMUM. AT 1400 KC ANT. TRIMMER TO MAX

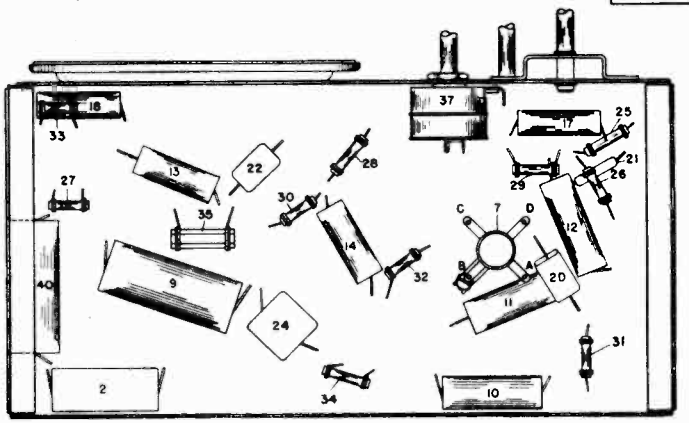


MODELS A2204, Z7208
Ch. 119B

ALIGNMENT:- I.F. 455 KC THROUGH A .02 MFD. CONDENSER TO GRID CAP OF 6D8G TUBE--DO NOT REMOVE CAP-- ADJUST IF TRIMMERS TO MAXIMUM OUTPUT. AT 1730 KC THROUGH .00025 MFD. CONDENSER TO RECEIVER ANTENNA (BLUE) LEAD, ADJUST OSCILLATOR TRIMMER TO MAX. AT 1400 KC, ANTENNA TRIMMER TO MAX.

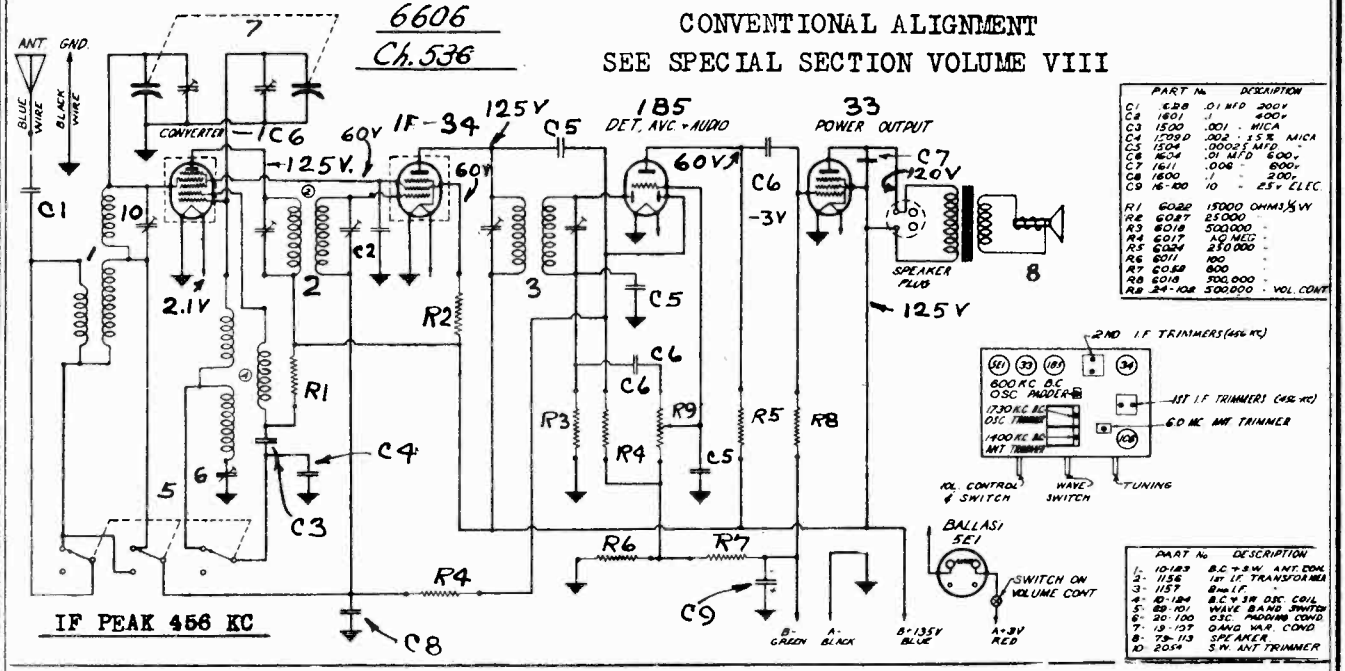


MODEL Z7108 (Early)
Ch. 118B



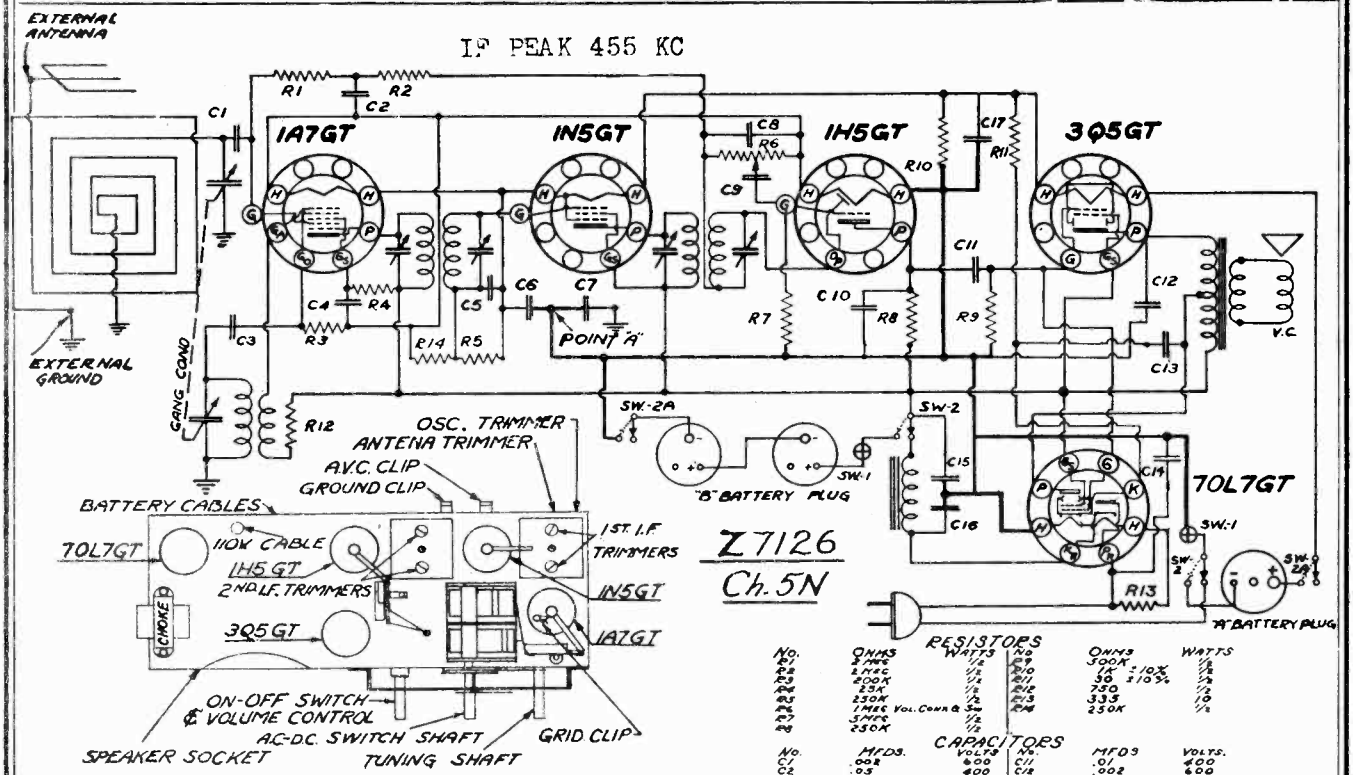
SPIEGEL, INC.

MODEL 6606, Ch. 536
MODEL Z7126, Ch 5N



PART No.	DESCRIPTION
C1	16-28 .01 MFD 200V
C2	1601 .1 " 400V
C3	1500 .001 " MICA
C4	1709 D .002 " 5% MICA
C5	1504 .0002 5 MFD "
C6	1604 .01 MFD 600V
C7	1611 .006 " 600V
C8	1600 .1 " 200V
C9	16-100 10 " 25V ELEC.
R1	6022 15000 OHMS 1/2 W
R2	6027 25000 "
R3	6018 500,000 "
R4	6017 .5 MEG "
R5	6024 250,000 "
R6	6011 100 "
R7	6058 600 "
R8	6018 500,000 "
R9	24-108 500,000 " VOL. CONT.

PART No.	DESCRIPTION
1-	10-183 B.C. T.R.F. ANT. COIL
2-	1156 1ST I.F. TRANSFORMER
3-	1157 2ND I.F. "
4-	12-184 B.C. T.R.F. OSC. COIL
5-	22-101 WAVE BAND SWITCH
6-	20-100 OSC. PADDING COND.
7-	19-107 GANG VAR. COND.
8-	73-113 SPEAKER
10-	2054 S.W. ANT. TRIMMER



Z7126
Ch. 5N

RESISTORS

No.	OHMS	WATTS	No.	OHMS	WATTS
R1	2 MEG	1/2	R10	500K	1/2
R2	1 MEG	1/2	R11	1K ±10%	1/2
R3	500K	1/2	R12	50 ±10%	1/2
R4	2.5K	1/2	R13	750	1/2
R5	250K	1/2	R14	333	10
R6	1 MEG Vol. Cont. & Sw.		R15	250K	1/2
R7	500K	1/2			
R8	250K	1/2			
R9					

CAPACITORS

No.	MFDS.	VOLTS	No.	MFDS	VOLTS.
C1	.002	600	C11	.01	400
C2	.05	400	C12	.002	400
C3	.00005	Mica	C13	.01	400
C4	.05	400	C14	.05	400
C5	.02	400	C15	20 (Elect)	150
C6 (C11)	40 (Elect.)	25	C16	30 "	
C7	25 (3W.) Only	200	C17 (C6)	40 (Elect.)	25
C8	.00025	Mica			
C9	.01	400			
C10	.00025	Mica			

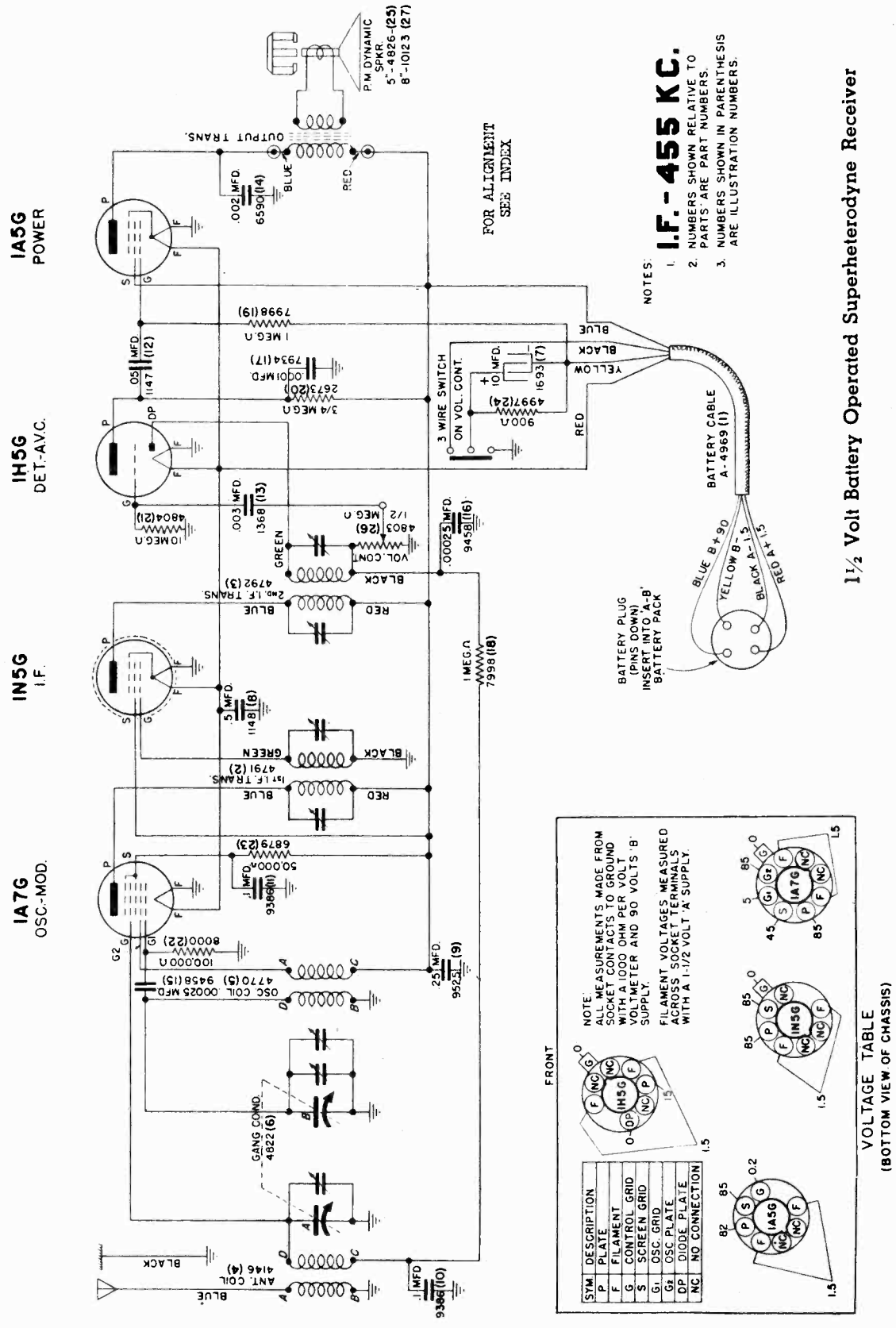
CONVENTIONAL ALIGNMENT
SEE SPECIAL SECTION VOL. VIII.
TRIM OSC- 1550 KC, TRIM ANT- 1400 KC
PAD- 600 KC

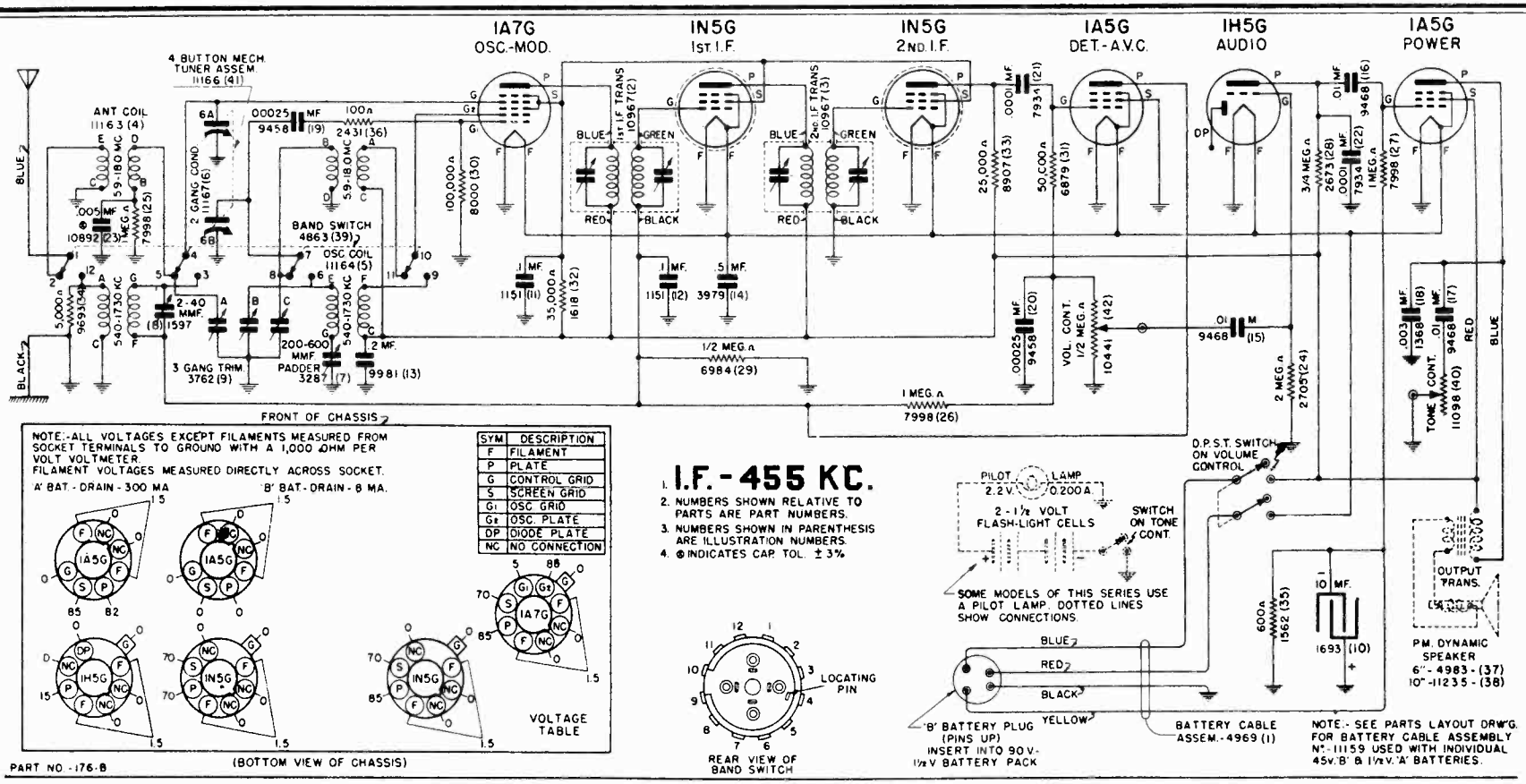
TUBE FUNCTIONS
1A7GT- MIXER-OSCILLATOR
1N5GT- I.F. AMPLIFIER
1H5GT- 2ND DET-AVC-1ST A.F.
3Q5GT- OUTPUT
70L7GT-RECTIFIER

NOTE:-
C7 USED ON MODEL 5NL ONLY.
ON MODEL 5N POINT "A" IS CONNECTED TO CHASSIS.
SWITCH-1 IS ON-OFF.
SWITCH-2 IS A.C.-D.C. & BATTERY.
SWITCH-2 SHOWN FOR A.C.-D.C.
I.F. 455 K.C.
ON MODEL 5N SWITCH, SWITCH 2A NOT USED.

MODEL Z7108, Ch. 118B
(Early)

SPIEGEL, INC.





NOTE:-ALL VOLTAGES EXCEPT FILAMENTS MEASURED FROM SOCKET TERMINALS TO GROUND WITH A 1,000 OHM PER VOLT VOLTMETER.
FILAMENT VOLTAGES MEASURED DIRECTLY ACROSS SOCKET.
'A' BAT.-DRAIN-300 MA. 'B' BAT.-DRAIN-8 MA.

SYM	DESCRIPTION
F	FILAMENT
P	PLATE
G	CONTROL GRID
S	SCREEN GRID
G_1	OSC. GRID
G_2	OSC. PLATE
DP	DIODE PLATE
NC	NO CONNECTION

PART NO.-176-B (BOTTOM VIEW OF CHASSIS)

1. **I.F.-455 KC.**
2. NUMBERS SHOWN RELATIVE TO PARTS ARE PART NUMBERS.
3. NUMBERS SHOWN IN PARENTHESIS ARE ILLUSTRATION NUMBERS.
4. © INDICATES CAP. TOL. ± 3%

REAR VIEW OF BAND SWITCH

PARTS LIST

Illus. No.	Part No.		Description	List Price
1A	4969	Cable	Battery with Four Prong Plug	$ .35
1B	11159	Cable	Battery with 2-3 Prong "B" and 1-2 Prong "A" Plugs	.55
2	10967	Coil	1st I. F. Transformer	1.10
3	10967	Coil	2nd I. F. Transformer	1.10
4	11163	Coil	Antenna	.70
5	11164	Coil	Oscillator	.60
6	11167	Condenser	Two Gang with Four Button Mechanical Tuner Assembly	3.00
7	3287	Condenser	Padder 200-600 Mmf.	.45
8	1597	Condenser	Trimmer	.21
9	3762	Condenser	Trimmer Three Gang	.47
10	1693	Condenser	Tubular Dry Electrolytic 10 Mfd. 25 Volt D.C. Wkg.	.75
11	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
12	1151	Condenser	Tubular .1 Mfd. 200 Volt	.20
13	9981	Condenser	Tubular .2 Mfd. 200 Volt	.29
14	3979	Condenser	Tubular .5 Mfd. 200 Volt	.40
15	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
16	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
17	9468	Condenser	Tubular .01 Mfd. 400 Volt	.17
18	1368	Condenser	Tubular .003 Mfd. 400 Volt	.17
19	9458	Condenser	Mica .00025 Mfd.	.21
20	9458	Condenser	Mica .00025 Mfd.	.21
21	7934	Condenser	Mica .0001 Mfd.	.21
22	7934	Condenser	Mica .0001 Mfd.	.21
23	10892	Condenser	Mica .005 Mfd. ± 3%	.30
24	2705	Resistor	Carbon 2 Megohm ½ Watt	.19
25	7998	Resistor	Carbon 1 Megohm ½ Watt	.19
26	7998	Resistor	Carbon 1 Megohm ½ Watt	.19
27	7998	Resistor	Carbon 1 Megohm ½ Watt	.19
28	2673	Resistor	Carbon 750,000 Ohm ½ Watt	.19
29	6984	Resistor	Carbon 500,000 Ohm ½ Watt	.19
30	8000	Resistor	Carbon 100,000 Ohm ½ Watt	.19
31	6879	Resistor	Carbon 50,000 Ohm ½ Watt	.19
32	1618	Resistor	Carbon 35,000 Ohm ½ Watt	.19
33	8907	Resistor	Carbon 25,000 Ohm ½ Watt	.19
34	9693	Resistor	Carbon 5,000 Ohm ½ Watt	.19
35	1562	Resistor	Carbon 600 Ohm ½ Watt	.19
36	2431	Resistor	Carbon 100 Ohm ½ Watt	.19
37	4983	Speaker	P. M. Dynamic 6"	4.25
38	11235	Speaker	P. M. Dynamic 10"	7.50
39	4863	Switch	Wave	.60
40	11098	Tone Control	With Dial Light Switch	.80
41	11166	Tuner Unit	Complete with Four Button Mech. Assem. Two Gang Condenser and Mechanical Drive Assembly	3.95
42	10441	Volume Control	With D. P. S. T. "On-Off" Switch	.95

MISCELLANEOUS PARTS

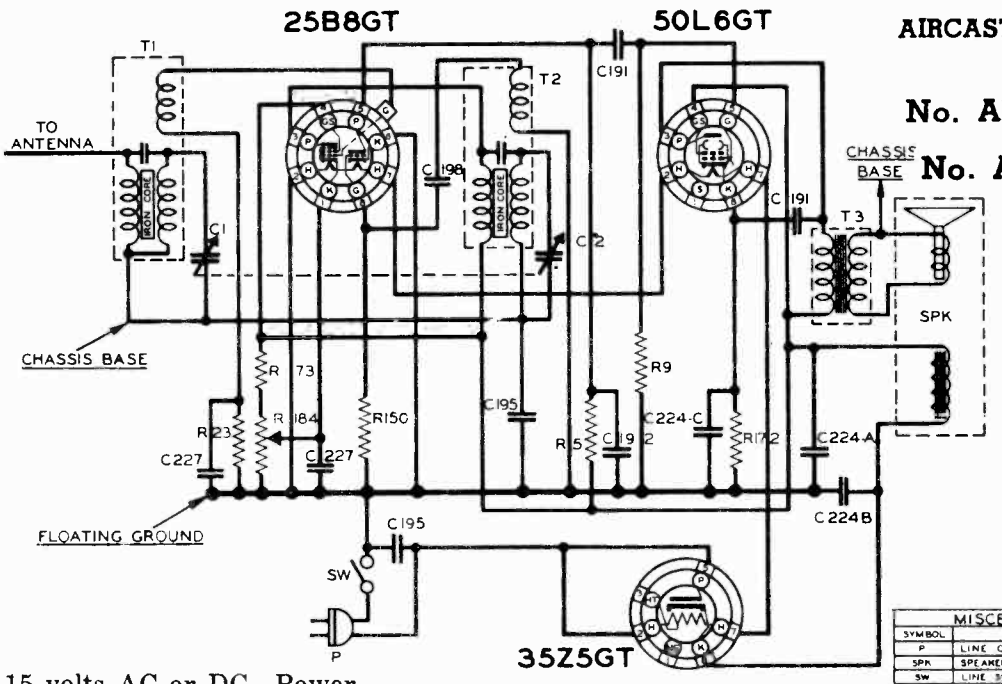
Illus. No.	Part No.	Description	List Price
8184	Cord	12" of 18 lb. Drive Cord	.10
11189	Dial Scale	Calibrated Scale Only	.55
11173	Dial Assembly	Complete Drive Mechanism Less Scale	.75
11193	Dial Pointer	For Dial	.16
11198	Escutcheon	For Dial with Mtg. Screw Holes in Corners	1.25
11199	Escutcheon	For Dial with Mtg. Screw Holes away from Corners	1.25
11200	Escutcheon	Pushbutton Used with 11198 Dial Escutcheon	.35
11201	Escutcheon	Pushbutton Used with 11199 Dial Escutcheon	.35
4958	Knob	Marked "Tuning"	.12
4959	Knob	Marked "Off-Volume"	.12
4960	Knob	Marked "Tone"	.12
4961	Knob	Marked "Band Switch"	.12
3487	Plug	3 Prong "B"	.10
10351	Plug	2 Prong "A"	.10
4978	Plug	4 Prong "AB"	.10
11197	Dial Spring	Gear Drive Shaft Tension	.16
4589	Dial Spring	Cord Tension	.04
11185	Dial Shaft	Gear Drive Shaft Assembly	.35

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

WHEN ORDERING PARTS BE SURE TO ORDER BY PART NUMBER

MODEL A-2462, Ch. 710 **SPIEGEL, INC.**

MODELS AP-2004, AP-2005, Ch. 402



AIRCASTLE HOME RADIO
MODEL 402
No. AP-2004 Walnut
No. AP-2005 Ivory

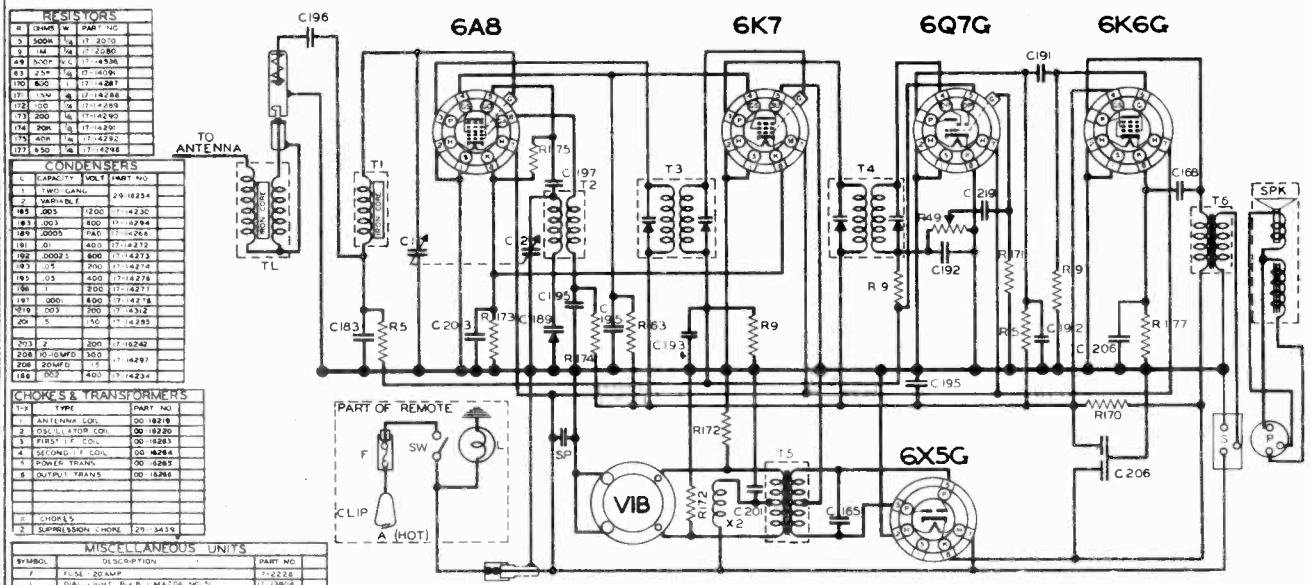
RESISTORS			
R	OHM	W	PART NO.
5	500K	1/2	17-2070
9	1M	1/2	17-2080
23	250K	1/2	17-3011
73	30K	1/2	17-4278
150	5M	1/2	17-14242
172	100	1/2	17-14269
184	10K	VC	17-14320

CONDENSERS			
C	CAPACITY	VOLT	PART NO
1	TWO-GANG		17-18318
2	VARIABLE		
191	.01	400	17-14272
192	.00025	600	17-14273
195	.05	400	17-14278
198	.005	400	17-14279
224A	10 MFD.	150	
224B	20 MFD.	150	17-14319
224C	20 MFD.	25	
227	.05	200	17-14323

MISCELLANEOUS UNITS		
SYMBOL	DESCRIPTION	PART NO
P	LINE CORD & PLUG ASSEMBLY	17-18338
SPK	SPEAKER ASSEMBLY	17-18489
SW	LINE SWITCH	17-14320
T1	ANTENNA COIL	00-18508
T2	R.F. COIL	00-18509
T3	OUTPUT TRANSFORMER	00-18510

115 volts AC or DC. Power consumption is 25 watts.

FREQUENCY RANGE
1700 K.C. TO 540 K.C.



RESISTORS			
R	OHMS	W	PART NO
5	500K	1/2	17-2070
9	1M	1/2	17-2080
49	500K	VC	17-4536
63	25K	1/2	17-14091
170	800	1	17-14287
171	1M	1/2	17-14288
172	100	1/2	17-14269
173	200	1/2	17-14290
174	20K	1/2	17-14291
175	40K	1/2	17-14292
177	650	1/2	17-14296

CONDENSERS			
C	CAPACITY	VOLT	PART NO
1	TWO GANG		29-18254
2	VARIABLE		
185	.005	1200	17-14230
183	.003	800	17-14294
189	.0005	MICA	17-14266
191	.01	400	17-14272
192	.00025	600	17-14273
193	.05	200	17-14274
195	.05	400	17-14278
198	.1	200	17-14277
197	.001	400	17-14276
1010	.003	700	17-14312
201	5	150	17-14285
203	2	200	17-18242
208	10-10MFD	300	
208	20MFD.	15	17-14297
186	.002	400	17-14234

CHOKES & TRANSFORMERS		
T-2	TYPE	PART NO
1	ANTENNA COIL	00-18219
2	OSCILLATOR COIL	00-18220
3	FIRST I.F. COIL	00-18283
4	SECOND I.F. COIL	00-18284
5	POWER TRANS.	00-18285
6	OUTPUT TRANS.	00-18286
1	CHOKES	
2	SUPPRESSION CHOKE	29-3439

MISCELLANEOUS UNITS		
SYMBOL	DESCRIPTION	PART NO
F	FUSE .20 AMP.	1-2228
L	DIAL LIGHT BULB - MAZDA NO. 51	17-3804
P	SPEAKER PLUG	17-6740
S	SPEAKER SOCKET	17-5611
SPK	SPEAKER ASSEMBLY	17-18517
SW	POWER SWITCH	
TL	TRANSMISSION LINE	00-18233
VP	SPARE PLATE	
VIB	VIBRATOR	17-4141

I.F. PEAK 455 K.C.
FREQUENCY RANGE 1575 TO 540 K.C.

MODEL A-2462 Ch. 710

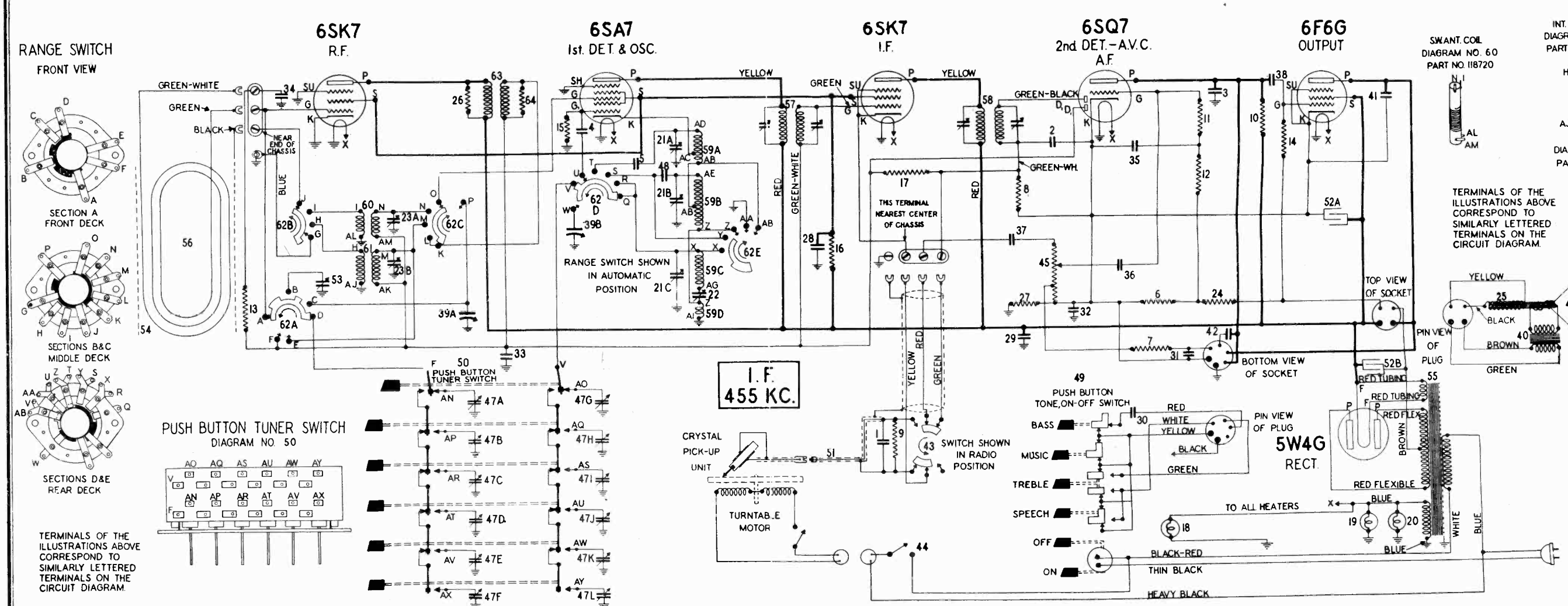
BALANCING INSTRUCTIONS

All sensitivities given for ½ watt output equals 1.4 V. across Voice Coil

Operation No.	Connect Bal. Oscillator to	Bal. Oscillator Frequency	Adjust Padder No.	Dial Setting	Sensitivity
1	6A8 Grid	455 kc	1, 2, 3 & 4	550 kc	50 uv
2	Ant. Coupler Through 20 uuf	1400 kc	5	1400 kc	
3	Through 20 uuf	1400 kc	6	1400 kc	10 uv
4	Through 20 uuf	600 kc	7	600 kc	10 uv

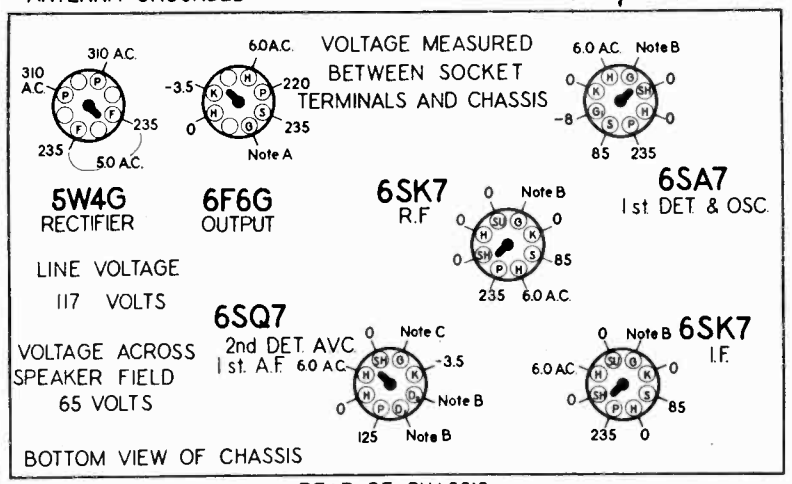
STEWART-WARNER CORP.

MODEL 01-6F9
Chassis 01-6F



SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC.



NOTE A: The bias on the control grid of the 6F6G tube is —16 volts measured across resistors No. 6 and 24.

NOTE B: The bias on control grids of the 6SK7 R.F., 6SK7 I.F., 6SA7 1st Det. tubes and the diode plates of the 6SQ7 tube, is —3.5 volts measured across resistor No. 27.

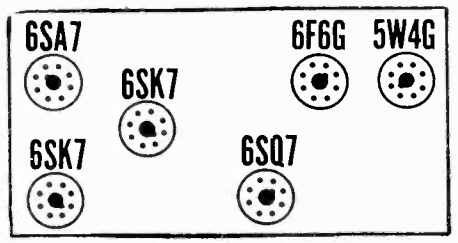
NOTE C: The bias on the control grid of the 6SQ7 tube is —1.5 volts measured across resistor No. 6.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ELECTRICAL PARTS LIST

Diagram Number	Part Number	Description	List Price
1	81156	Condenser—mica—.001 mfd.	$0.30
2-3	83539	Condenser—mica 260 mmfd.	.20
4	85061	Condenser—mica 51 mmfd.	.15
5	85440	Condenser—mica .00351 mfd. 3%	.40
6	88465	Resistor—wire wound 25 ohms—½ watt	.15
7	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
8-9-10	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
11-12	110554	Resistor—carbon 1 megohm ¼ watt	.12
13-14	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
15	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
16	110575	Resistor—carbon 12,000 ohms 2 watts	.30
17	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
18	110629	Lamp—6.3 volt—.25 amps	.15
19-20	112636	Lamp—dial (frosted) 6-8 volt—.25 amp.	.25
21A-21B-21C	113319	Condenser—trimmer—(3 section)	.54
22	113346	Condenser—padding	.38
23A-23B	114937	Condenser—2 section trimmer	.40
24	114970	Resistor—wire wound 240 ohms 1 watt	.15
25	U-115061	Speaker—electro dynamic 12"	10.50
26	116053	Resistor—carbon 68,000 ohms 1/10 watt	.12
27	116077	Resistor—carbon 150 ohms ¼ watt 10%	$0.12
28-29	116625	Condenser—.1 mfd. 600 volt	.25
30-31	116640	Condenser—.01 mfd. 600 volt	.15
32	116706	Condenser—.2 mfd. 600 volt	.35
33-34-35	116819	Condenser—.05 mfd. 600 volt	.20
36-37-38	116893	Condenser—.02 mfd. 600 volt	.15
39A-39B	116996	Condenser—variable gang	3.30
40	U-117004	Transformer—output for U-115061 speaker	2.50
41-42	117022	Condenser—.002 mfd. 600 volt	.15
43	117067	Switch (radio phono)	.55
44	117068	Switch for phono motor	.60
45	117069	Volume control	.85
46	U-117071	Cone and voice coil assembly for U-115061 speaker	2.30
47A to 47L	117081	Push button trimmer gang condenser assembly	5.20
48	117113	Condenser—mica .00176 mfd.	.30
49	117115	Switch—push button for tone control etc.	2.30
50	117126	Switch—push button for tuning	2.40
51	117127	Cable (phono pickup)	.40
52A-52B	118421	Condenser—electrolytic 10-15 mfd. 450 volts	1.50
53	118431	Condenser—trimmer	$0.22
54	118475	Shield for loop antenna	1.00
55	118498	Power transformer	5.00
56	118696	Loop antenna assembly complete	2.75
57	118707	Transformer—1st I.F.	1.20
58	118708	Transformer—2nd I.F.	1.20
59A to 59D	118709	Coil—complete oscillator assembly	1.00
60	118720	Coil—short wave antenna	.50
61	118721	Coil—police antenna	.40
62A to 62E	118725	Range switch	2.10
63	118727	Transformer—R.F.	1.00
64	118801	Resistor—10,000 ohms 1/10 watt	.12

TUBE LOCATIONS



Rear of Chassis

STEWART-WARNER CORP. MODEL 01-6F9 Chassis 01-6F

Connect the output meter across the voice coil or between the plate of the 6F6G output tube and ground through a .1 mfd. condenser. The connection will depend 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 receiver chassis. Disconnect the blue wire coming from the antenna terminal strip and allow it to float free of the chassis. The loop wires should be connected to the terminal strip as shown in the circuit diagram when aligning.

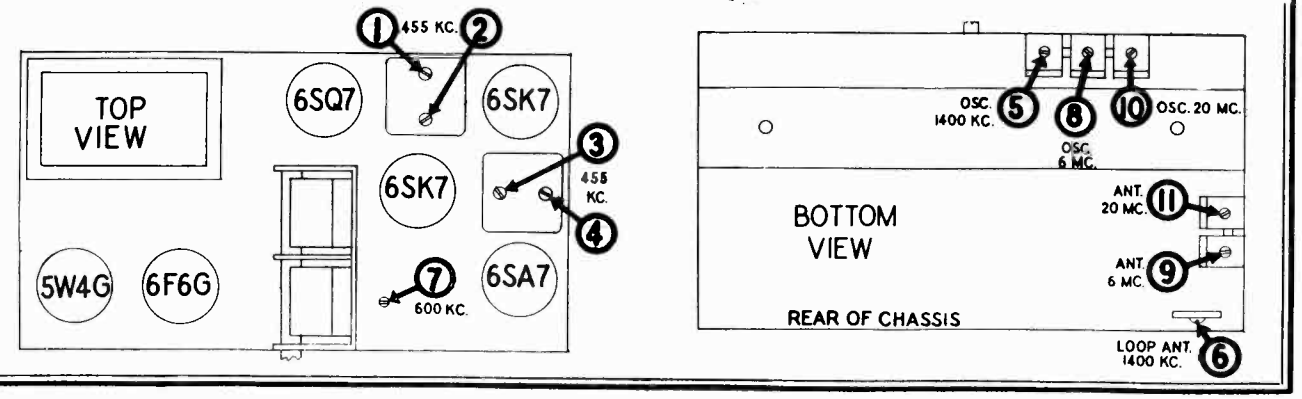
On the phonograph terminal strip, ground the terminal nearest the center of chassis. Connect the two remaining terminals together, using a short piece of wire.

Turn the volume control to the maximum volume position and keep it in this position throughout the alignment procedure.

With the gang condenser in full mesh; set the pointer at a point 1⅜" from the left flange of the brown dial plate. This point corresponds to the last mark on the low frequency end of the dial scale. If the pointer is incorrectly set, it is only necessary to loosen the set screws on the dial drive drum and push the gang condenser in full mesh with the pointer set properly, then retighten the set screws. See paragraph on "Setting the Dial Pointer".

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output To Receiver	Signal Generator Frequency	Band Switch Position	Dial Pointer Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Stator of front gang condenser	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	Black loop wire on terminal strip	1400 KC	Broadcast	1400 KC (2⅛" from right Dial Plate End)	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Black loop wire on terminal strip	1400 KC	Broadcast	Tune to 1400 KC Generator Signal	6	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD. Mica Condenser	Black loop wire on terminal strip	600 KC	Broadcast	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series)	Adjust for Maximum Output. Try to increase output by detuning trimmer and retuning receiver dial until Maximum output is obtained.
400 OHM Carbon Resistor	Black loop wire on terminal strip	6.0 MC	Intermediate	6.0 MC (2⅜" from Right Dial Plate Flange)	8	Intermediate Oscillator	Adjust for Maximum Output. Check to see if proper peak was obtained by tuning in image at approx. 5.1 MC. If image does not appear, realign at 6 MC with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Black loop wire on terminal strip	6.0 MC	Intermediate	Tune to 6.0 MC Generator Signal	9	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	Black loop wire on terminal strip	20 MC	Foreign	20 MC (2⅛" from Right Dial Plate End)	10	Foreign Oscillator	Adjust for Maximum Output. Check to see if proper peak was obtained by tuning in image at approx. 19.1 MC. If image does not appear, realign at 20 MC with trimmer screw farther out. Recheck image.
400 OHM Carbon Resistor	Black loop wire on terminal strip	20 MC	Foreign	Tune to 20 MC Generator Signal	11	Foreign Antenna	Adjust for Maximum Output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

After replacing the set in the cabinet, connect the blue wire coming from the terminal strip to the screw adjacent to this strip, tune in a weak signal near 1400 KC, and adjust trimmer No. 6 for maximum output.



MODEL 01-6F9 Chassis 01-6F STEWART-WARNER CORP.

HINTS ON REMOVING AND REPLACING CHASSIS

The suggestions given here will facilitate the servicing of this receiver. To remove the chassis for service purposes, proceed as follows:

1. Pull off the volume control and range switch knobs at front of cabinet. Pull off tuning knob on top of cabinet. Take care not to lose the paper washers underneath the knobs.
2. Pull off the shaft extension on the tuning shaft.
3. Using a 5/16" socket wrench, remove the three screws holding down the chassis. Two of these screws are located in recesses in the wooden blocks at the sides of the chassis. The third one is located near the bottom of the receiver chassis at the front of the cabinet. The chassis then rests only on the rubber bushings which are on top of the three mounting blocks.
4. Slide chassis off blocks. The chassis will now drop down enough to permit placing it on a box or other support so it can be serviced without the necessity of removing any wires or cables.

When removing a chassis, put a few drops of speaker cement on each of the three rubber bushings and put them in their proper places on top of the mounting blocks. This will facilitate the replacement of the chassis, as the rubber bushings will be held in place by the cement.

If it becomes necessary to remove the chassis completely from the cabinet, in addition to the items mentioned, the following procedure must also be used:

a. Remove the five wood screws holding the wooden panel at the front of the record changer compartment. This panel will then lift out, exposing to view the tone control switch, on-off switches for both motor and receiver, radio-phono switch, and the pilot light.
b. Disconnect the green, red, and yellow leads from the terminals on the chassis. Also disconnect the shield covering these wires. Remove the speaker and tone control plugs from their respective sockets. Remove the wood screw mounting the pilot light bracket.
c. Disconnect the wires coming from the loop antenna.
d. Remove the wood screws holding the entire switch assembly. The thin black wire and the black and red wire can now be unsoldered from the on-off switch. Note to which terminal of the switch each wire goes, so that they can be replaced properly. Also remove the heavy black wire extending from the receiver chassis to the motor on-off switch. If one wishes to cut and splice these three wires steps "a" and "c" may be omitted. The chassis can now be removed from the cabinet.
e. When replacing either the tone control switch or the chassis into the cabinet, difficulty may be experienced because the push buttons will spring inwards. This slight difficulty can be overcome by lightly wedging a toothpick or other fairly soft material between each push button and the escutcheon to hold the buttons out.

LOOP CONNECTIONS

BUILT-IN ANTENNA: The loop forms the antenna coil for the broadcast position and must therefore be connected at all times. The loop shield should be grounded in the broadcast position by connecting the blue wire coming from the terminal strip to the terminal provided on the chassis. On the intermediate and short wave positions the shield serves as the antenna.

EXTERNAL ANTENNA: When an external antenna is to be used, connect it to the screw nearest the end of the chassis on the antenna terminal strip. The black wire should remain connected to this same screw at all times.

When the external antenna is to be used on all bands, disconnect the blue wire from the chassis and tape it.

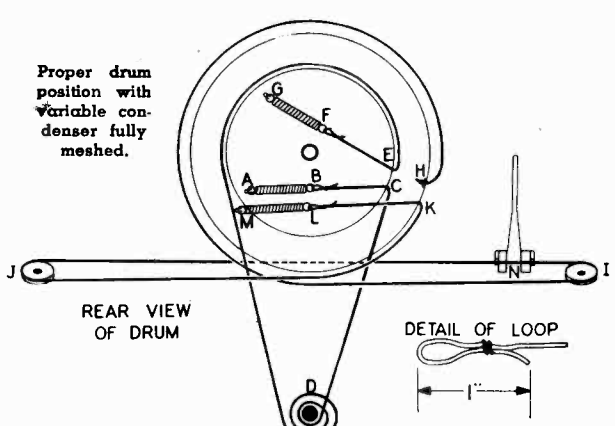
When you wish to use the built-in antenna on broadcast and the external antenna on the intermediate and short wave positions, connect the blue wire to the chassis.

SETTING THE DIAL POINTER

Since the dial scale is printed on the escutcheon glass, the serviceman will not know whether the pointer is set correctly unless the set is in place in the cabinet. With the gang condenser in full mesh, the dial pointer should be at a point 1⅜ inches from the left end of the brown dial plate. If the pointer is not set correctly, loosen the two set screws holding the dial drum to the condenser shaft. Then hold the condenser in full mesh and move the dial drum until the pointer reaches the proper point, then tighten the set screws.

When replacing the chassis in the cabinet, be sure it is in the position giving most accurate dial calibration.

REPLACING THE DRIVE CORDS



TO REPLACE THE DIAL DRIVE CORD

1. 19¾ inches of dial drive cord (Part No. 117057) are required. Make a one-inch loop in each end of this cord, using a dial cord clip, (Part No. 114955) (See sketch above for detail of loop).
2. Fasten a tension spring (Part No. 113177) to tab A and fasten one end of the cord to the spring at point B.
3. Pass the other end of the dial cord through hole C in the inner drum.
4. Make two and a half turns of the cord about tuning shaft D.
5. Continue the cord clockwise about the inner drum and pass it through hole E.
6. Fasten a tension spring, (Part No. 113177) to the other loop of the cord at point F and fasten the spring to the tab G.

TO REPLACE THE POINTER DRIVE CORD

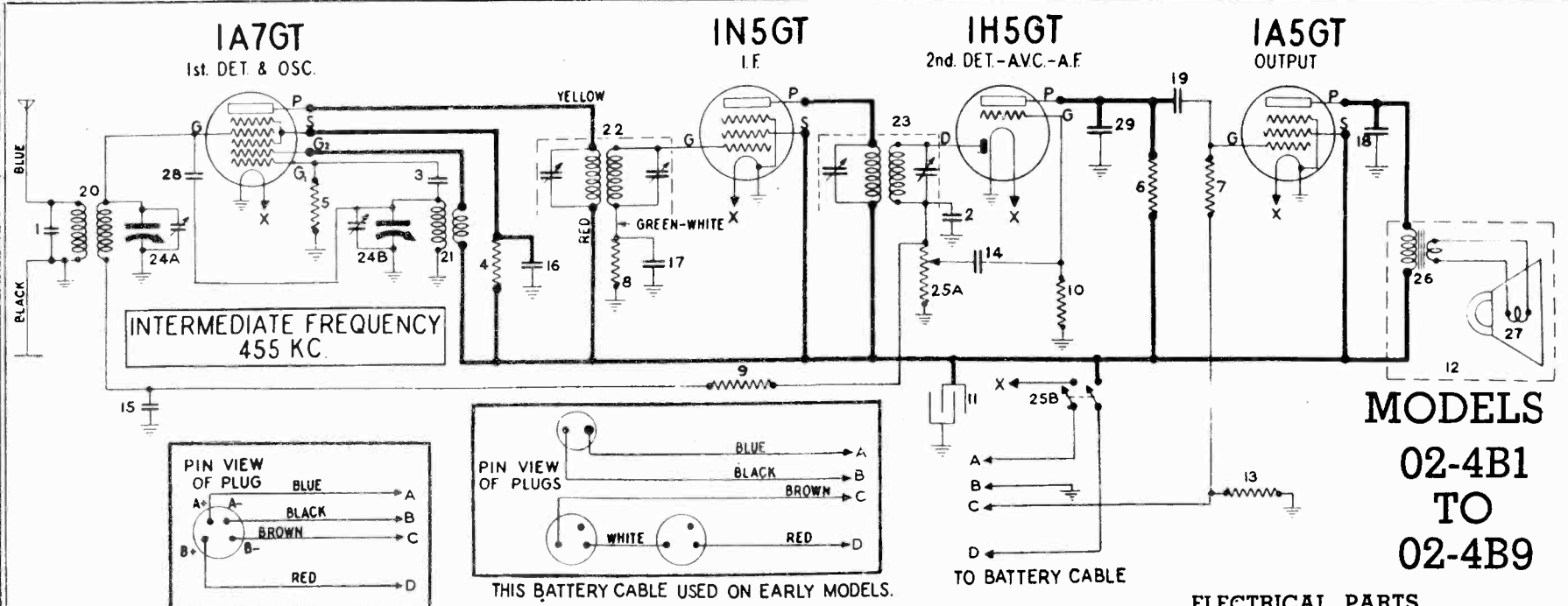
1. 37" of pointer drive cord, (Part No. 116948) are required. Fasten an eyelet (Part No. 88348) at a point one-half inch from one end of this cord.
2. Fashion a one-inch loop at the other end of the pointer cord, (see detail of loop in illustration), using a dial cord clip (Part No. 114955).
3. Pass the loop end of the cord outward through hole H in the larger drum.
4. Continue the cord counter-clockwise around the larger drum and around the rear of pulley I.
5. Go from pulley I around the front of pulley J and counter-clockwise around the larger drum to hole K.
6. Pass the loop through hole K and fasten it to one end of a tension spring (Part No. 113177) at point L, the other end of the spring being fastened to point M.
7. Clip the dial pointer to the cord. With the drum in the position shown, and with the gang condenser in full mesh, fasten the pointer so that it is at a point 1⅜" from the left end of the brown dial plate.

FOR AUTOMATIC RECORD CHANGER, SEE VOLUME XI, PAGES 11-9, 11-10, 11-11

MISCELLANEOUS PARTS

Part Number	Description	List Price	Part Number	Description	List Price
117117	Cable—motor	$0.38	81145	Retaining ring—for drive shaft	Per C $0.50
118747	Call tabs and instructions	.45	113463	Rubber bushing—chassis mtg.	.03
114955	Clamp—for dial cord	.01	83624	Screw—self tapping 8 x ¼	.01
112745	Clip—coil mounting	.01	85040	Screw—No. 6 Hex. Hd.	Per C .35
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18	85827	Set Screw—8-32 Square Head	.02
117057	Cord—drive (supplied in 2 ft. lengths)	.15	113191	Screw—special No. 8-32 x 1⅛	.01
117028	Dial plate & pulley assembly	1.00	114914	Screw—special head—for mtg.	Per Dz. .15
118712	Dial scale & escutcheon	1.65	81834	Socket—6 prong	.10
117029	Drive drum & bushing	.50	110501	Socket—4 prong (for speaker)	.16
116998	Escutcheon for push buttons	.30	116690	Socket—small octal base	.12
88348	Eyelet—for dial cord	Per Dz. .05	114117	Socket—dial lamp	.18
117131	Indicator button (bulls eye)	.12	117123	Socket—for pilot light	.26
116773	Knob—tuning or volume	.10	111090	Spacer—steel, mechanism mtg. to chassis	.02
117586	Light shield	.12	113177	Spring—dial cord tension	.09
84571	Needle cup for phono	.10	116981	Spring—for pointer	.02
116952	Pin for push buttons	.02	117458	Spring—for push buttons	.05
117114	Plug (male for motor cable)	.15	84412	Terminal strip—phono	.03
117036	Pointer assembly	.28	117103	Tuning shaft	.06
116999	Push buttons	.08	117102	Tuning shaft extension	.10
116970	Record changer unit	44.95	111456	Washer—spring washers	Per C .50
117019	Reflector for pilot lights	.04	116530	Washer (paper) for back of knobs	.005

PRICES SUBJECT TO CHANGE WITHOUT NOTICE



MODELS 02-4B1 TO 02-4B9

THIS BATTERY CABLE USED ON LATE MODELS.

THIS BATTERY CABLE USED ON EARLY MODELS.

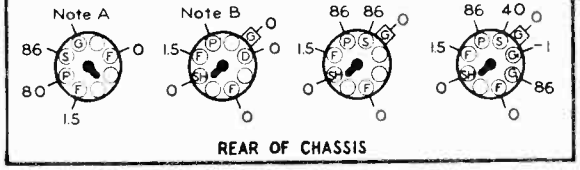
TO BATTERY CABLE

SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC

VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS

BOTTOM VIEW OF CHASSIS
AVERAGE "B" DRAIN-8.0 MA.
"B" BATTERY = 90 VOLTS



NOTE A: The bias for the control grid of the 1A5GT tube is —4 volts measured across resistor 13.

NOTE B: Due to the high resistance of plate resistor No. 6 only a slight deflection will be obtained when using a meter having a resistance of 1000 ohms per volt.

MISCELLANEOUS PARTS

Part Number	Description	List Price
119453	Battery cable (3 plug type)	$0.80
119906	Battery—cable (single plug, 4 prong type)	.90
119439	Cabinet—complete with window and decalcomania (02-4B1 only)	2.40
119438	Cabinet back	.08
119150	Cabinet (wood)—see decal 119427 below (02-4B4 only)	7.20
112745	Clip—coil mounting	.01
116948	Cord—dial drive (supplied in 6 ft. lengths)	.18
119427	Decal—"Off"—for cabinet 119150 (02-4B4 only)	.16
119444	Dial scale	.10
119441	Knob—ivory—Volume (02-4B1)	.16
119442	Knob—ivory—Tuning (02-4B1)	.16
119175	Knob—tan—(02-4B4)	.10
88631	Plug—4 prong male—for 119906 cable	.06
116397	Plug—2 prong male—for 119453 cable	.05
116567	Plug—3 prong male—for 119453 cable	.04
119011	Pointer	.06
85040	Screw—No. 6 Hex. Hd.	Per C .35
118953	Shaft—tuning	.15
116592	Shield—tube	.10
116690	Socket—small octal base	.12
111981	Spring—for dial cord tension	.03
117411	Tr mount stud	.01

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83783	Condenser—mica 110 mmfd.	$0.20
3	85061	Condenser—mica 51 mmfd.	.15
4	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
5	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
6	110554	Resistor—carbon 1 meg. ¼ watt	.12
7	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
8-9-10	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
11	113118	Condenser—electrolytic 8 mfd. 150 volt	.56
12	R-115090	Speaker—P.M. 4"	5.25
13	116078	Resistor—560 ohms ¼ watt	.12
14	116647	Condenser—.004 mfd. 600 volt	.15
15-16-17	116819	Condenser—.05 mfd. 600 volt	.20
18	117022	Condenser—.002 mfd. 600 volts	.15
19	119193	Condenser—.01 mfd. 600 volt	.15
20	119407	Coil—antenna	.52
21	119408	Coil—oscillator	.32
22	119409	Transformer—1st I.F.	1.10
23	119411	Transformer—2nd I.F.	1.10
24A-24B	119425	Condenser—variable tuning	3.00
25A-25B	119426	Volume control (1 meg.) with switch	1.10
26	R-119457	Transformer—output for R-115090 spkr.	1.65
27	R-119458	Cone & Voice Coil for R-115090 speaker	1.65
28	119466	Capacitor—wire (2 mmfd.)	.12
29	83783	Condenser—mica, 110 mmfd.	.20

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 02-4B1 to 02-4B9
Chassis 02-4B

STEWART-WARNER CORP.

02-4B . 02-4C CHASSIS

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.)

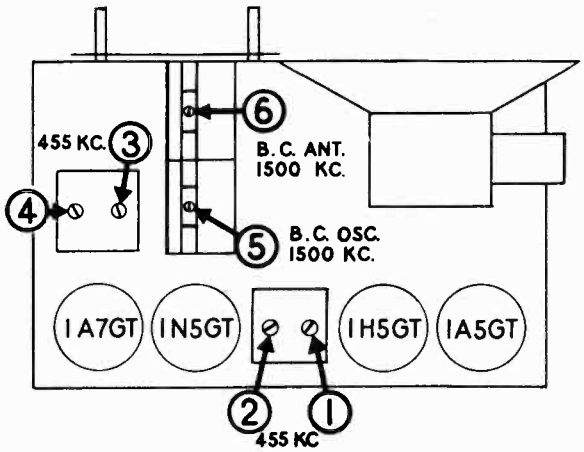
Connect the ground lead of the signal generator to the Ground Terminal or the chassis.

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 last mark on the left hand end of the dial scale.

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
.1 MFD Condenser	Control Grid of 1A7GT	455 KC	Any Point Where It Does Not Affect Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD. Condenser	Antenna Lead (Blue Wire)	1500 KC	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
200 MMFD. Condenser	Antenna Lead (Blue Wire)	1500 KC	Tune To 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.

MODELS 02-4B1 TO 02-4B9



BATTERY CABLES

Two types of battery cables were used on this model. On the early production a battery cable having 3 plugs was used (Part No. 119453). The three-pronged plugs on this cable will fit the sockets on standard 45 volt "B" batteries and the two-pronged plug will fit the socket on a standard 1½ volt "A" battery. Single unit battery packs suitable for use with this cable are listed in the adjoining column. Late models of this radio use a battery cable having a single four-pronged plug. This plug will fit the socket on a standard combination "A"-"B" battery pack, some of which are listed in the adjoining column.

SINGLE UNIT BATTERIES

FOR USE WITH 3 PLUG BATTERY CABLE	FOR USE WITH SINGLE PLUG BATTERY CABLE
Eveready No. 748	Eveready No. 748
Burgess 17G-D60 (with adapter)	Burgess 17G-D60
General 60DL-11L	General 60DL-11L
Ray-O-Vac AB28U	Ray-O-Vac AB82

POWER LINE OPERATION

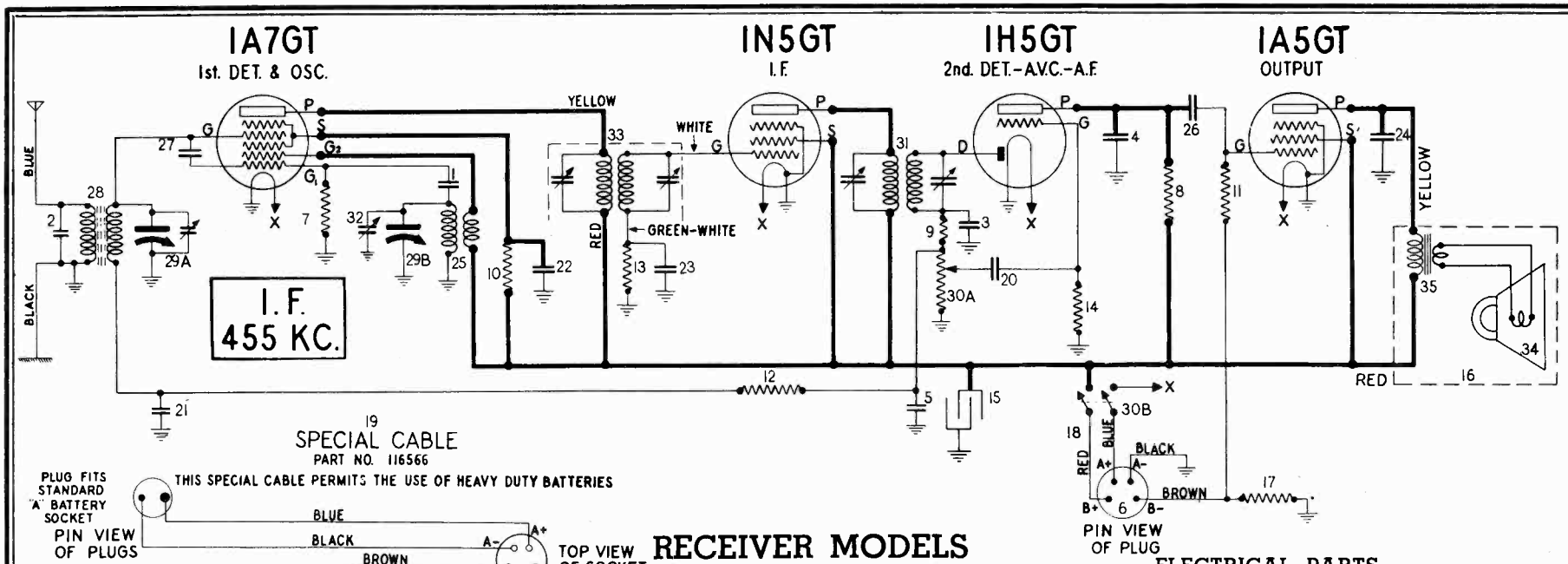
To use this set on 110 volt 50-60 cycle A.C. power lines, use one of the following power packs:

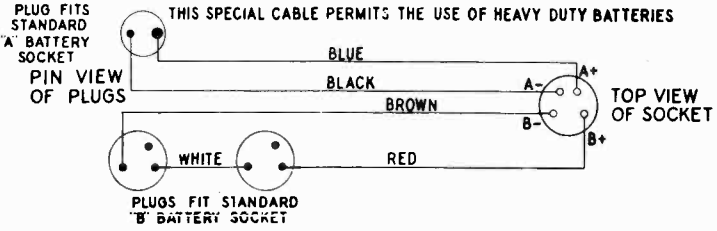
Porta-Power Model "G"
Porta-Power Model "U"

These units are manufactured by the General Transformer Corporation, 1250 W. Van Buren, Chicago, Ill.

SPECIAL BATTERY CABLE

A special battery cable assembly (Part No. 116566) is available for use with sets using the single plug battery cable. This cable will allow the use of heavy duty batteries which are larger than those contained in the single unit battery packs and will give longer service. The special cable available is 30 inches in length and it will permit locating these batteries beneath the table or behind the receiver cabinet. Complete instructions for use are packed with each cable, which may be purchased from the Stewart-Warner Corporation, Chicago, Illinois. It has a list price of 85c.



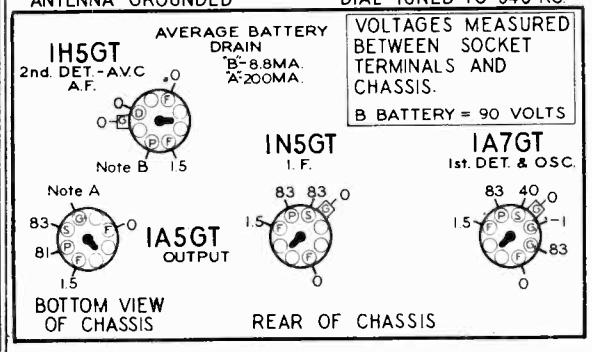


19
SPECIAL CABLE
PART NO. 116566

RECEIVER MODELS

02-4C1 TO 02-4C9

SOCKET VOLTAGES



NOTE A: The bias for the control grid of the 1A5GT tube is —8 volts measured across resistor 17.

NOTE B: Due to the high resistance of plate Resistor No. 8 only a slight deflection will be obtained when using a meter having a resistance of 1000 ohms per volt.

MISCELLANEOUS PARTS

Part Number	Description	List Price
114955	Clamp—for dial cord	$0.01
110140	Clip—grid	.01
117057	Cord—drive supplied in 3 ft. lengths	.15
119532	Dial scale	.24
119710	Escutcheon dial	1.50
116411	Indicator lever assembly	.09
119167	Knob—tuning or volume	.10
12349	Nut—8-32 for speaker mtg.	Per C .45
119718	Pointer	.14
81145	Retaining ring—for drive shaft	Per C .50
119587	Screw—Escutcheon Mounting	.02
83624	Screw—self tapping 8 x 1/4	.01
116690	Socket—small octal base	.12
114968	Spring—dial cord tension	.03
119525	Tuning Shaft	.10
111456	Washer—spring washer	Per C .50

ELECTRICAL PARTS

1-2-3-4-5	85061	Condenser—mica 51 mmfd.	$0.15
6	88631	Plug—4 prong, male, used on 116549 cable	.06
7	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
8	110554	Resistor—carbon 1 megohm ¼ watt	.12
9	110565	Resistor—carbon 22,000 ohms ¼ watt.	.12
10	110568	Resistor—carbon 33,000 ohms ¼ watt.	.12
11	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
12-13-14	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
15	112898	Condenser—electrolytic 16 mfd. 150 volt	.50
16	M-115095	Speaker—P.M. 6"	7.10
17	116078	Resistor—560 ohms ¼ watt	.12
18	116549	Cable—Battery	.45
19	116566	Battery cable—for heavy duty batteries (not supplied with receiver)	.85
20	116647	Condenser—.004 mfd. 600 volt	.15
21-22-23	116819	Condenser—.05 mfd. 600 volt	.20
24	117022	Condenser—.002 mfd. 600 volt	.15
25	117741	Coil—oscillator	.35
26	119193	Condenser—.01 mfd. 600 volt	.15
27	119466	Capacitor—wire (2 mmfd.)	.12
28	119473	Coil—B. C. antenna	1.10
29A-29B	119528	Condenser—tuning (with drum)	2.90
30A-30B	119529	Volume control 1 meg. (with switch)	1.25
31	119673	Transformer—2nd I.F.	1.25
32	119719	Condenser—trimmer	.16
33	119720	Transformer—1st I.F.	1.25
34	M-119748	Cone & Voice coil for M-115095 speaker	1.60
35	M-119749	Transformer—output for M-115095 speaker	1.75

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

MODELS 02-4B1, 02-4B4
Chassis 02-4B

STEWART-WARNER CORP.

MODEL 02-5T1
Chassis 02-5T
MODEL 02-4C1
Chassis 02-4C

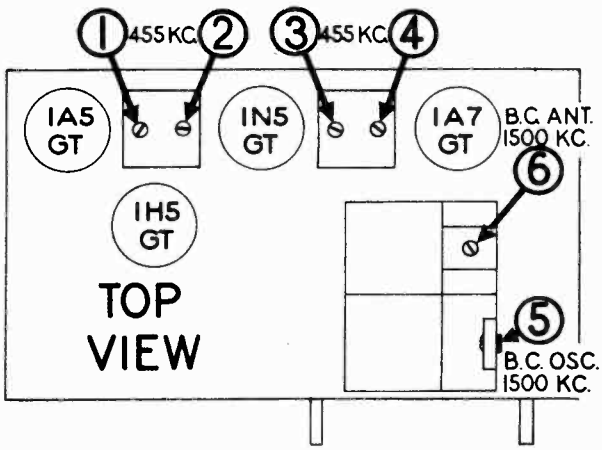
Chassis Number	Radio Model	June 4, 1940
02-4B	02-4B1, 02-4B4	
02-4C	02-4C1	
02-5T	02-5T1	

The first production release of the 02-4B chassis used a three plug type of battery cable so that it could be connected to separate A and B batteries. Most battery packs on the market are equipped with sockets for this three plug cable as well as for a single large plug so that they could be used with this set if desired. However, some battery manufacturers put out special battery packs that were equipped only with the single large socket. To use this special battery pack with the early production 02-4B chassis, obtain the correct adapter from the battery manufacturer.

Later production 02-4B as well as all 02-4C and 02-5T sets used the single large plug to connect to any battery pack. For those preferring to use separate A and B batteries, we provide our part #116566 battery cable and adapter. This cable is priced at $.85 list.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 02-4C1 TO 02-4C9



OSCILLATION

Be sure the antenna and ground wires are pulled straight out from the set and that they do not pass close to the antenna coil or to the tubes.

These wires have been attached to the cabinet at the factory and should be reattached in a similar manner after the set has been serviced.

Failure to observe this precaution may cause oscillation and instability in this receiver.

FOR POWER LINE OPERATION

To use this set on 110 volt 50-60 cycle A.C. power lines, use one of the following power packs:

Porta-Power Model "G"
Porta-Power Model "U"

These units, are manufactured by the General Transformer Corporation, 1250 W. Van Buren, Chicago, Ill.

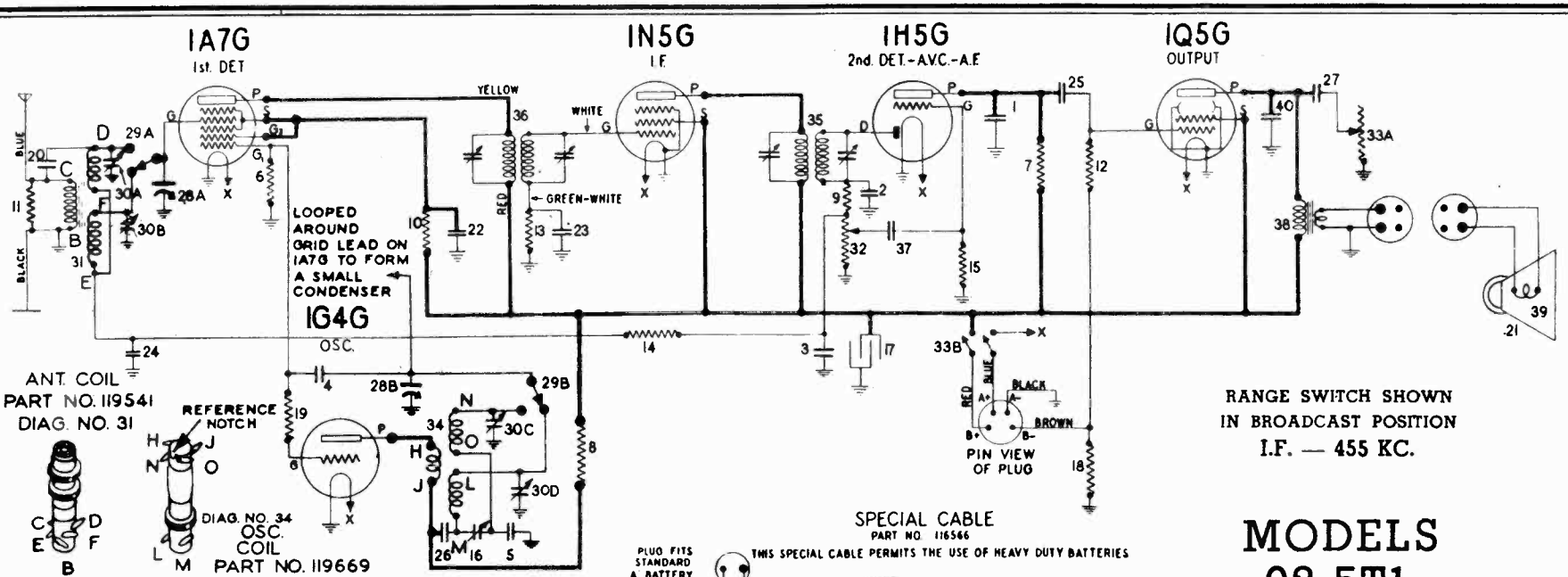
INSTALLATION OF BATTERIES

BATTERIES REQUIRED: This receiver is designed to operate from a single unit battery pack which fits into the receiver cabinet directly behind the chassis. The following battery packs will fit into the receiver cabinet in back of the chassis:

Burgess 17G-D60
General 60DL-11L
Eveready No. 748
Ray-O-Vac AB82
or equivalent

The 4-prong plug on the end of the cable extending from the chassis is plugged into the 4-hole socket on top of the battery pack. No other battery connections are necessary.

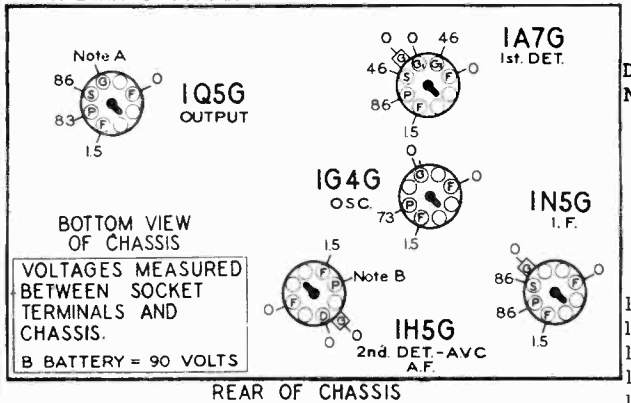
HEAVY-DUTY BATTERIES: A special battery cable assembly (Part No. 116566) is available so that heavy duty batteries may be used with this receiver. These batteries are larger than those contained in the single unit power pack and will give considerably longer service, but due to their larger size, they will not fit into the cabinet. The special cable available is 30 inches in length and it will permit locating these batteries beneath the table, behind the receiver cabinet, or in the bottom portion of the console cabinet. Complete instructions for use are packed with each cable, which may be purchased from the Stewart-Warner Corporation, Chicago, Illinois.



MODELS 02-5T1 TO 02-5T9

SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC.



NOTE A: The bias for the control grid of the 1Q5G tube is —4 volts measured across resistor 18.

NOTE B: Due to the high resistance of plate Resistor No. 7 only a slight deflection will be obtained when using a meter having a resistance of 1000 ohms per volt.

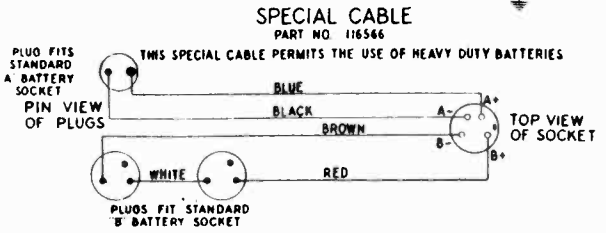


Diagram Number	Part Number	Description	List Price
1	83783	Condenser—mica, 110 mmfd.	$0.20
2-3-4	85061	Condenser—mica, 51 mmfd.	.15
5	88587	Condenser—mica .0042 mfd.	.35
6	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
7	110554	Resistor—carbon 1 megohm ¼ watt	.12
8	110557	Resistor—carbon 4,700 ohms ¼ watt	.12
9	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
10	110566	Resistor—carbon 33,000 ohms ¼ watt	.12
11	110569	Resistor—carbon 10,000 ohms ¼ watt	.12
12	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
13-14-15	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
16	112799	Condenser—padder	.36
17	112898	Condenser—electrolytic 16 mfd. 150 volt	.50
18	112951	Resistor—carbon 400 ohms ¼ watt	.12
19	112994	Resistor—carbon 220 ohms ¼ watt	.16
20	114969	Condenser—mica 15 mmfd.	.12
21	O-115099	Speaker—P. M. (6")	7.00
22-23-24	116819	Condenser—.05 mfd. 600 volt	.20
25-26	119193	Condenser—.01 mfd. 600 volt	.15
27	119414	Condenser—.02 mfd. 600 volt	.15
28A-28B	119533	Condenser—tuning (with drum)	3.00
29A-29B	119534	Range switch	.80
30A-30D	119536	Condenser—trimmer (4 section)	.60
31	119541	Coil—antenna	1.25
32	119551	Volume control—1 meg.	.95
33A-33B	119552	Tone control—100,000 ohms with switch	.95
34	119669	Coil—oscillator	.75
35	119673	Transformer—2nd I.F.	1.25
36	119720	Transformer—1st I.F.	1.25
37	119817	Condenser—.004 mfd. 600 volt	.15
38	O-119862	Transformer—output for O-115099 speaker	1.20
39	O-119873	Cone & Voice Coil for O-115099 speaker	1.86
40	119875	Condenser—.002 mfd. 600 volt	.15

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MODELS 02-5T1 to 02-5T9
Chassis 02-5T

STEWART-WARNER CORP.

PRICES BELOW ARE SUBJECT TO CHANGE WITHOUT NOTICE

RECEIVER MODELS 02-5T1 TO 02-5T9 ALIGNMENT PROCEDURE

FOR ALIGNMENT an output meter and an accurately calibrated signal generator are required.

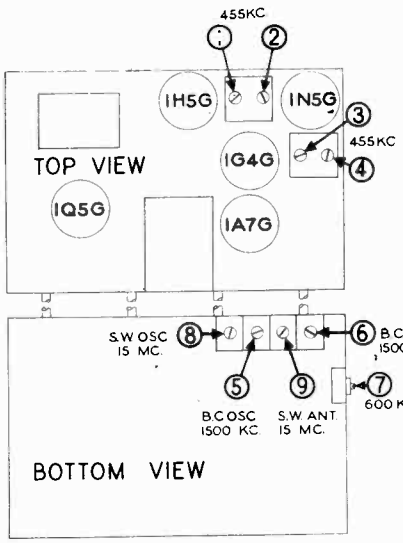
Connect the output meter across the voice coil or between the plate of the 1Q5G output tube and ground through a 0.1 Mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)

Connect the ground lead of the signal generator to the black 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 in a horizontal position. If the pointer is incorrectly set, it is merely necessary to move the pointer to the correct position by hand, while holding the gang in the full mesh position.

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 1A7G	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)	Adjust 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	Tune To 15 MC Gen. Signal	9	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.



FOR POWER LINE OPERATION

To use this set on 110 volt 50-60 cycle A.C. power lines, use one of the following power packs:

Porta-Power Model "G"

Porta-Power Model "U"

These units are manufactured by the General Transformer Corporation, 1250 W. Van Buren, Chicago, Ill.

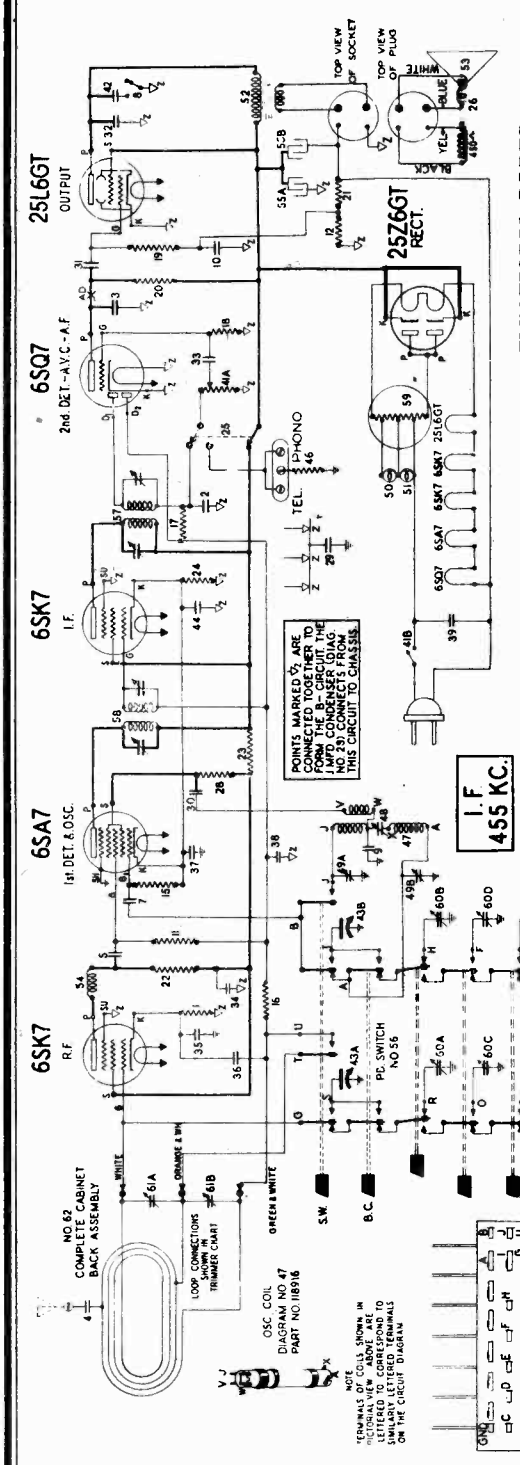
BATTERIES REQUIRED: One of the following or its equivalent is required: Eveready No. 748, Burgess 17G-D60, General 60DL-11L, Ray-O-Vac AB82. A special battery cable assembly (Part No. 116566) is available so that heavy duty batteries may be used with this receiver.

MISCELLANEOUS PARTS

Part Number	Description	List Price
116566	Battery cable—for heavy duty batteries	$0.85
116549	Cable—battery	.45
114955	Clamp—for dial cord	.01
112745	Clip—coil mounting	.01
110140	Clip—grid	.01
117057	Cord—drive—supplied in 3 ft. lengths	.15
119828	Dial escutcheon	.20
119830	Dial scale	.38
77208	Flat steel washer for gang condenser mtg.	.01
119167	Knob—tuning or volume	.10
12349	Nut—8-32 for gang mtg.	Per C .45
88631	Plug—4 prong, male (for battery cable)	.06
119855	Pointer	.16
81145	Retaining ring—for drive shaft	Per C .50
119587	Screw—for escutcheon	.02
116392	Shield base—tube	.03
116395	Shield-tube	.08
110501	Socket—4 prong (for speaker)	.16
85427	Socket—octal base (standard)	.15
111090	Spacer—steel mtg. (for gang condenser)	.02
114968	Spring—dial cord tension	.03
113169	Spring—for indicator lever	.01
119525	Tuning shaft	.10
116530	Washer (paper) for back of knobs	.005
111456	Washer—spring washer	Per C .50

STEWART-WARNER CORP.

MODELS 03-6N-1, 03-6N1-Z
Chassis 03-6N
03-6NZ



ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	67981	Resistor—carbon 400 ohms ¼ watt	$0.25
2-3	83539	Condenser—mica 260 mmfd.	.20
4-5	83783	Condenser—mica 110 mmfd.	.20
7	85061	Condenser—mica 51 mmfd.	.15
8	88054	Switch—tone	.30
9	89275	Condenser—mica .002 mfd.	.40
10	116825	Condenser—.1 mfd. 600 volt	.25
11	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
12	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
15	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
16	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
17-18	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
19	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
20-21	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
22	112952	Resistor—carbon 3,300 ohms ¼ watt	.10
23	112964	Resistor—carbon 1,500 ohms ¼ watt	.15
24	112994	Resistor—carbon 220 ohms ¼ watt	.12
25	114141	Switch—D.P.D.T.	.44
26	R-115083	Speaker—dynamic (5")	4.00
28	116068	Resistor—carbon 680 ohms ¼ watt	.12
29	115625	Condenser—.1 mfd. 600 volt	.25
30-31-32	116640	Condenser—.01 mfd. 600 volt	.15
33	116647	Condenser—.004 mfd. 600 volt	.15
34	116706	Condenser—.2 mfd. 600 volt	.35
35 to 39	116819	Condenser .05 mfd. 600 volt	.20
41A-41B	116834	Volume control—1 megohm (with switch)	1.10
42	116984	Condenser—.04 mfd. 600 volts	.20
43A-43B	117625	Condenser tuning (with drum)	3.00
44	118206	Condenser—.25 mfd. 600 volts	.35
46	110553	Resistor—220,000 ohms ¼ watt (on Underwriters' approved sets)	
47	118916	Coil—oscillator	.52
48	118919	Condenser—padding	.40
49A-49B	118920	Trimmer strip (2 section)	.30
50-51	110629	Lamp—dial 6.3 volts .25 amps.	.15
52	118996	Transformer—output	1.00
53	R-118999	Cone & Voice coil for R-115083 speaker	1.70
54	119001	Coil—R. F.	.28
55A-55B	119021	Condenser—electrolytic—20-40 mfd. 150 volt	1.00
56	119022	Switch—push button	3.00
57	119024	Transformer—2nd I.F.	1.15
58	119042	Transformer—1st I.F.	1.10
59	119109	Ballast tube	.75
60A-60J	119662	Push button trimmer (Low 540 to 1000 KC)	.24
	119663	Push button trimmer (Med. 750 to 1375 KC)	.24
	119664	Push button trimmer (High 980 to 1550 KC)	.24
61A-61B	119126	Trimmer condenser—2 section	.35
62	119946	Cabinet back & loop antenna assembly	1.40

FOR ALIGNMENT SEE INDEX

SOCKET VOLTAGES

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

BOTTOM VIEW OF CHASSIS — MEASURE ALL VOLTAGES EXCEPT FILAMENT BETWEEN THE TUBE SOCKET TERMINALS AND B- — LINE VOLTAGE 117 VOLTS

25Z6GT RECTIFIER — 110 AC

BALLAST — 6.5 AC

25L6GT OUTPUT — 25 AC

6SA7 1st DET. & OSC.

6SQ7 2nd DET.-AF-AVC — Note A — Note B

6SK7 I.F.

6SK7 R.F.

REAR OF CHASSIS

These readings taken using a voltmeter of 1000 ohms per volt.

NOTE A: The bias on the 25L6GT grid is -4 volts measured across resistor No. 12.

NOTE B: Due to the high resistance of resistor No. 20, only a small voltage will be read at the plate of the 6SQ7 when using a voltmeter having a resistance of 1000 ohms per volt.

Note: If excessive hum is encountered, placing a 40 mfd.—150 volt condenser (Part No. 113472) across 55B and changing condenser No. 33 from .004 mfd. to .04 mfd. (Part No. 119880) will correct the condition in many cases.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

03-6N and 03-6N-Z CHASSIS

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 .1 mfd. condenser in series connect between the 25L6GT tube plate and B— as shown on the voltage chart.
2. Connect the ground lead of the signal generator through a .25 mfd. condenser to B— as shown on the voltage chart.
3. Connect the loop antenna to the radio, being sure to connect the wires to the proper receptacles on the loop antenna as shown in drawing below.
4. With the gang condenser in full mesh, the pointer should be in a horizontal position. If it is not, it should be moved to this position before alignment.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Push Button Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD Mica Condenser	Lug on Rear Section of Variable Condenser	455 KC	"Broadcast" Button Pushed In	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for Maximum Output. Then repeat adjustment.
					3-4	1st I.F.	
200 MMFD Mica Condenser	External Aerial Terminal	6 MC	"Short Wave" Button Pushed In	6 MC	5	Short Wave Oscillator	Adjust for Maximum Output. Check to see if Proper Peak was Obtained by Tuning in Image at Approx. 5.1 MC. If Image does not appear, Realign at 6 MC. with Trimmer Screw farther out. Recheck Image.
200 MMFD. Mica Condenser	External Aerial Terminal	6 MC	"Short Wave" Button Pushed In	Tune to 6 MC Generator Signal	6*	Short Wave Antenna	Adjust for Maximum Output
200 MMFD Mica Condenser	External Aerial Terminal	1500 KC	"Broadcast" Button Pushed In	1500 KC	7*	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
200 MMFD. Mica Condenser	External Aerial Terminal	1500 KC	"Broadcast" Button Pushed In	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	Adjust for Maximum Output.
200 MMFD Mica Condenser	External Aerial Terminal	600 KC	"Broadcast" Button Pushed In	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: When making these adjustments, the loop should be in the same relative position to the chassis as when mounted in the cabinet. Adjustments 6 & 8 should be repeated after the set and loop have been replaced in the cabinet.

ALIGNMENT PROCEDURE FOR 11-7A CHASSIS

NOTE: This chassis may be completely aligned while in the cabinet.

1. Connect the output meter across the voice coil or from plate to plate of the 6F6G output tubes through a .1 mfd. condenser.
2. Connect the ground lead of the signal generator to the receiver-chassis. Turn the volume control to position of maximum volume and keep it in this position throughout the alignment procedure.
3. Connect the loop as shown in diagram on back page. The loop must remain in the circuit at all times.

Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Generator Output to Receiver	Signal Gen. Frequency	Band Switch Position	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Lug on Section of Gang Cond Nearest the Dial Drum	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	Orange and White Wire from Loop	16 MC	Short Wave	16 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	Orange and White Wire from Loop	16 MC	Short Wave	Tune to 16 MC Generator Signal	6	Short Wave Antenna	Adjust for Maximum Output.
Chassis must be in cabinet before the following adjustments are made.							
No Connection	Lead from Sig. Gen. Placed Near Loop	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
No Connection	Lead from Sig. Gen. Placed Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8	Broadcast Antenna	Adjust for Maximum Output.
No Connection	Lead from Sig. Gen. Placed Near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	9	Broadcast Oscillator (Series Padder)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

CHASSIS 11-7A

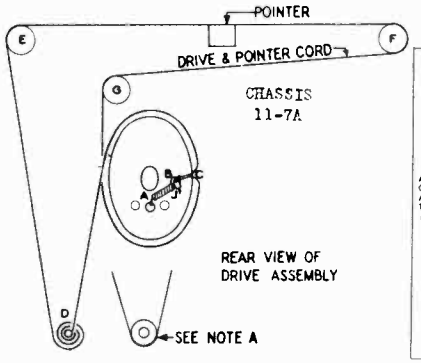
REPLACING DIAL AND POINTER DRIVE CORD

1. Hook a tension spring (Part No. 119823) through small hole at point A and losten end of dial cord (Part No. 113178) to spring at point B.
2. Pass the other end of the dial cord through hole C in drum
3. Make three and one half turns of the cord about tuning shaft D. (NOTE A: In some sets of this model there is a grommet (Part No. 113672) on the drive shaft. In this case the drive cord is simply passed under the grommet—approximately ½ turn.)
4. Continue cord around pulley E and thence to and around pulley F.
5. From Pulley F pass cord over pulley G and around drum in counter-clockwise direction (in reference to diagram) to hole C in drum.
6. Slip cord through loop at end of spring B, adjust tension until spring is stretched to approximately seven-eighths inch, and tie securely

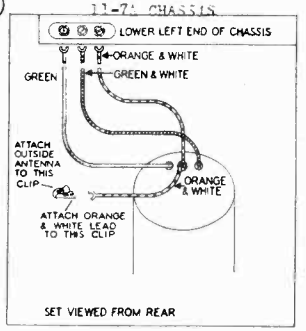
TO SET POINTER

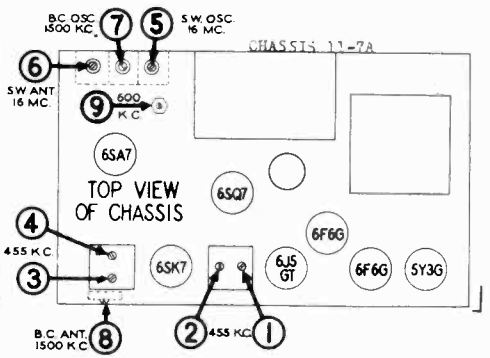
The pointer should be set to 540 K.C on the dial scale when the tuning condenser is in full mesh. Cement pointer to cord at this point and allow to dry before moving.

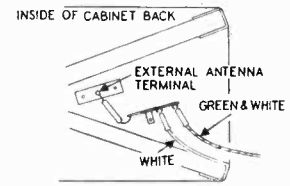
REPLACING THE DRIVE CORD



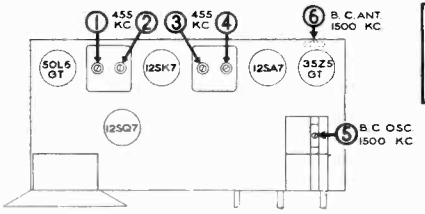
LOOP CONNECTIONS

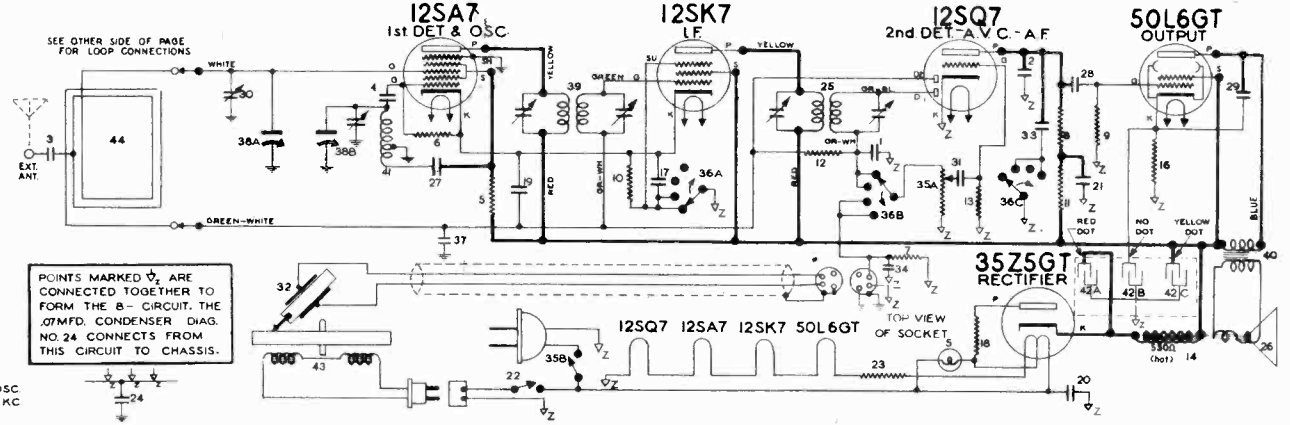






LOOP CONNECTIONS





I.F. 455 KC

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.

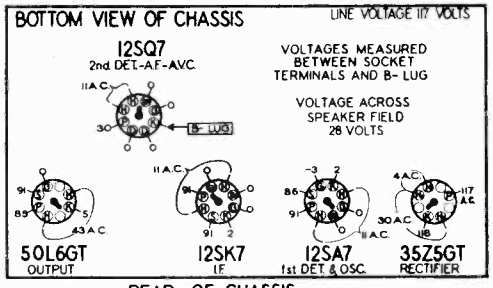
Dummy Ant. in Series with Signal Generator	Connection of Sig. Generator Output to Receiver	Signal Generator Frequency	Receiver Dial Setting	Trimmer Number	Trimmer Description	Type of Adjustment
200 MMFD. Mica Condenser	White wire of Loop (loop must be connected)	455 KC	Any point where it does not affect 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 mdximum 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.

ELECTRICAL PARTS

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

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	85296	Lamp dial 6 to 8 volt (Mazda 51)	.16
6	110552	Resistor carbon 47,000 ohms ¼ watt	.12
7	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
8 9	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
10	110560	Resistor carbon 100 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-115102	Speaker dynamic (5")	$4.30
15	118803	Resistor 680 ohms ¼ watt	.12
16	116092	Resistor 140 ohms 1 watt W.W.	.15
17	116706	Condenser .2 mfd. 600 volt	.35
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	118487	Condenser—.07 mfd. 600 volts	.25
25	118903	Transformer—2nd I.F.	1.10
26	118999	Cone & Voice Coil for R-115102 speaker	1.70
27 to 29	119193	Condenser—.01 mfd. 600 volt	.15
30	119345	Condenser—trimmer	.20
31	119817	Condenser .004 mfd. 600 volt	.15
32	119864	Crystal cartridge with leads and needle screw	5.25
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	119193	Condenser .01 mfd. 600 volt	.15
38A-38B	119928	Condenser—variable tuning	2.40
39	119935	Transformer—1st I.F.	1.10
40	R-119944	Transformer output for R-115102 Speaker	1.60
41	119854	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

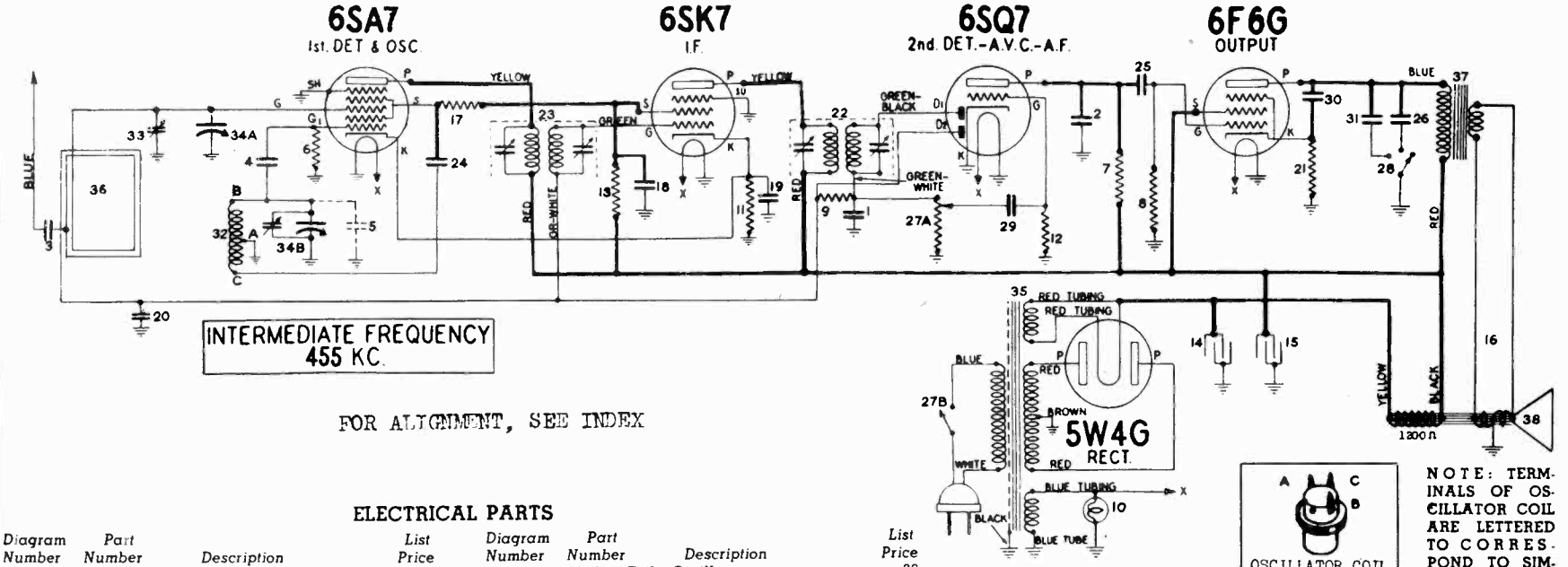


REAR OF CHASSIS

Use a Voltmeter of 1000 ohms per volt.

Sept. 10, 1940

CIRCUIT CHANGE--TOP OF PHONO PICK-UP SOCKET HAS ONE OF ITS TERMINALS CONNECTED DIRECTLY TO "Z" (B- return lead) AS SHOWN ABOVE. ON LATER PRODUCTION, A 220,000 ohm ¼ watt RESISTOR (carbon) is connected BETWEEN THIS SOCKET TERMINAL AND "Z".

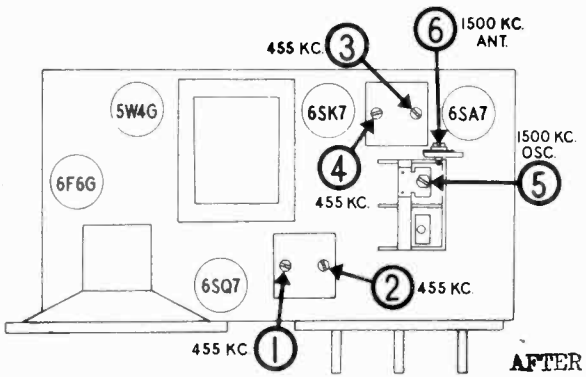


FOR ALIGNMENT, SEE INDEX

ELECTRICAL PARTS

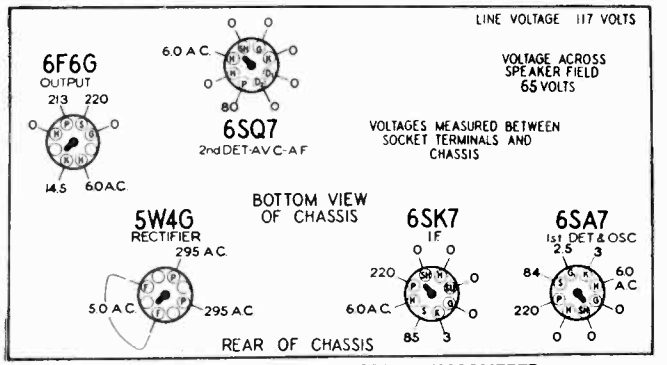
Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—Mica, 260 Mmfd.	$ .20
3	83783	Condenser—Mica, 110 Mmfd.	.20
4	85061	Condenser—Mica, 51 Mmfd.	.15
5	85563	Condenser—Mica, 26 Mmfd. (used only on some sets)	.15
6	110552	Resistor—Carbon, 47,000 Ohms, ¼ Watt	.12
7-8	110553	Resistor—Carbon, 220,000 Ohms, ¼ Watt	.12
9	110580	Resistor—Carbon 3.3 meg. ¼ W.	.12
10	110629	Dial Light—6.3 Volt (Mazda No. 44)	.15
11	112974	Resistor—Carbon—220 Ohms, ¼ Watt	.15
12	112975	Resistor—Carbon—10 Meg, ¼ W.	.12
13	112997	Resistor—Carbon—22,000 Ohms, 1 Watt	.15
14-15	114258	Condenser—Electrolytic—8 mfd., 450 Volt	.98
16	U-115114	Speaker—Dynamic (5")	4.50
17	116068	Resistor—680 Ohms, ¼ Watt	.12
18-19	116625	Condenser—.1 Mfd., 600 Volt	.25
20	116819	Condenser—.05 Mfd., 600 Volt	.20
21	116978	Resistor — 420 Ohm — ½ Watt Wire Wound	.15
22	119024	Transformer—2nd I. F.	1.15
23	119042	Transformer—1st I.F.	1.10
24-25-26	119193	Condenser—.01 Mfd., 600 Volt	.15
27A-27B	119629	Vol. Control—(1 meg.) & Switch	1.30
28	119630	Tone Switch	.65
29-30	119817	Condenser—.004 Mfd., 600 Volt	.15
31	119880	Condenser—.04 Mfd., 600 Volt	.20
32	119954	Coil—Oscillator	.36
33	160346	Condenser—Trimmer	.18
34A-34B	160347	Condenser—Variable Tuning	2.30
35	160367	Transformer—Power (50-60 Cycle)	3.60
	161230	Transformer—Power (25 Cycle)	3.90
36	160388	Loop Antenna (Complete)	.80
37	U-160458	Transformer—Output for U-115114 Speaker	1.50
38	U-160459	Cone & Voice Coil for U-115114 Speaker	1.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE



SOCKET VOLTAGES

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

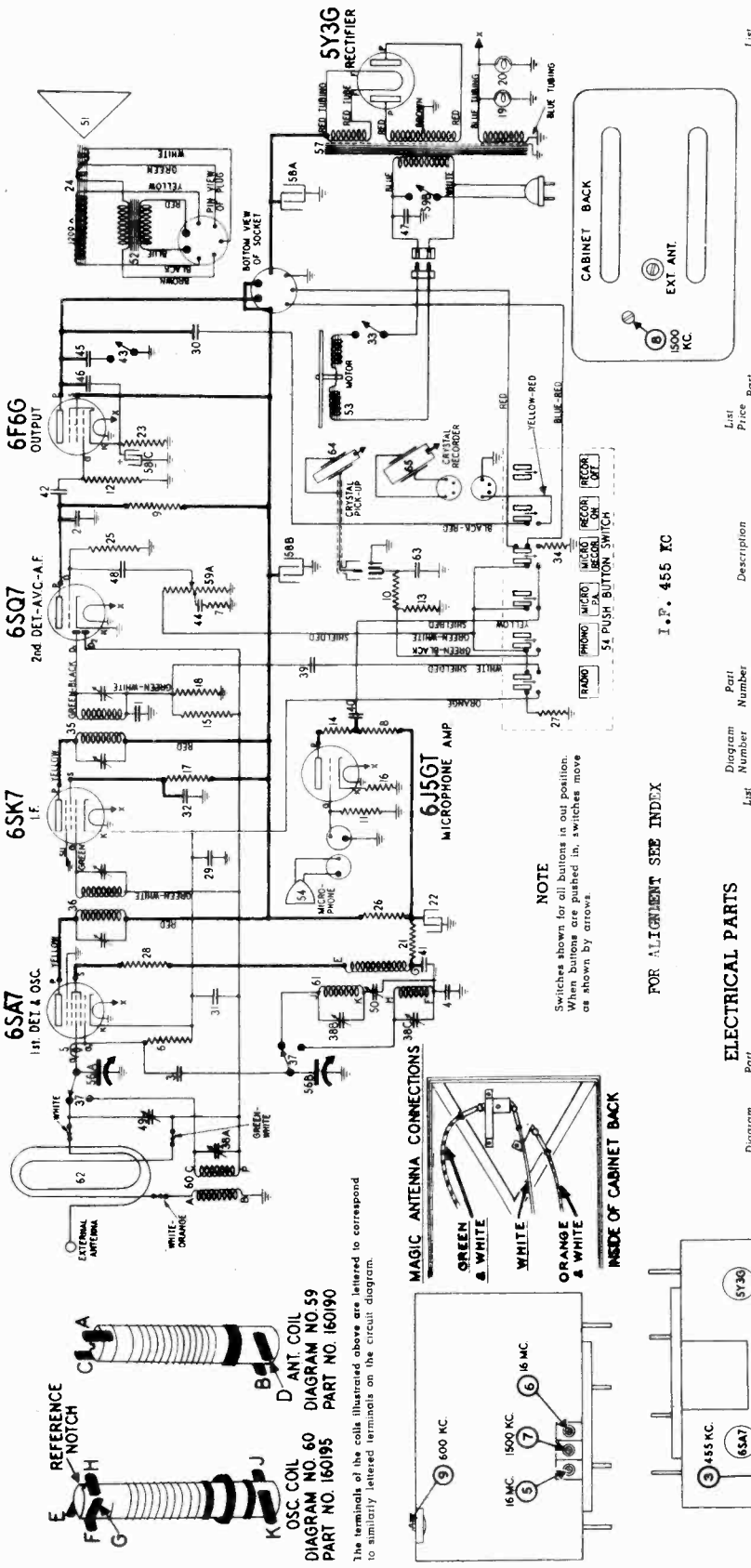


USE A 1000 OHM PER VOLT — VOLTMETER

AFTER ALIGNMENT - Replace the set in the cabinet and using a weak signal generator or station signal at 1500 KC., readjust trimmer No. 6.

Reduce to 9⅞"

STEWART-WARNER CORP. MODELS 11-6T1 to 11-6T9 11-6T1S to 11-6T9S Chassis 11-6T, 11-6T8



ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3	88173	Condenser—mica 50 mmfd.	.20
4	88587	Condenser—mica .0042 mfd.	.35
5	110510	Condenser—wire 3 mmfd.	.12
6-7-8	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
9-10	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
11	110554	Resistor—carbon 1 megohm ¼ watt	.12
12	110558	Resistor—carbon 470,000 ohms ¼ watt	.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	.12
16	110573	Resistor—carbon 2,200 ohms ¼ watt	.12
17	110578	Resistor—carbon 68,000 ohms ¼ watt	.12
18	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
19-20	110625	Dial light—6.3 volt	.10
21	112952	Resistor—carbon 3,300 ohms ½ watt	.10
22	114005	Condenser—electrolytic mfd. 350 volt	.72
23	114107	Resistor—wire wound 430 ohms 2 watts	.20
24	U-115107	Speaker—dynamic	6.10
25	116050	Resistor—insulated 10 meg. ¼ watt	.12
26	116055	Resistor—carbon 22,000 ohms ½ watt	.12
27-28	116062	Resistor—150 ohms ¼ watt	.12
29-30	116625	Condenser—.05 mfd. 600 volt	.25
31-32	116819	Condenser—.05 mfd. 600 volt	.20
33	116964	Switch—on-off for phono motor with escutcheon	.32
34	118018	Resistor—5 ohms 1 watt wire wound	.14
35	119024	Transformer—2nd I.F.	1.15
36	119042	Transformer—1st I.F.	1.10
37	119085	Range switch	.50
38A to 38C	119174	Condenser—trimmer—3 section	.45
39-40-41-42	119193	Condenser—.01 mfd. 600 volt	.15
43	119214	Switch—tone control	.45
44-45	119414	Condenser—.02 mfd. 600 volt	.15
46	119416	Condenser—.008 mfd. 600 volt	.15
47	119757	Condenser—metal clad .01 mfd. 600 volt	.20
48	119817	Condenser—.004 mfd. 600 volt	.15
49	119845	Condenser—trimmer (on loop)	.16
50	119934	Condenser—padder	.36
51	U-160028	Cone & voice coil for U-115107 speaker	1.60
52	U-160029	Transformer—output for U-115107 speaker	1.55
53	160026	Motor (less turntable)	8.00
54	160038	Microphone switch	12.50
55	160111	Push button switch	2.30
56A-56B	160170	Condenser—variable tuning	2.40
57	160172	Transformer—power supply (50-60 cycles)	4.20
58A to 58C	160174	Condenser—electrolytic Section A—20 mfd. 400 volt	.30
		Section B—15 mfd. 400 volt	.30
		Section C—10 mfd. 25 volt	
59A-59B	160175	Volume control—1 meg. (with switch)	1.40
60	160190	Coil—antenna (S.W.)	.44
61	160195	Coil—oscillator	.75
62	160279	Loop antenna & cabinet back complete (Model 11-6T9)	1.40
	160783	Loop antenna & cabinet back (with trimmer) (Model 11-6T8)	1.40
63	160430	Condenser—.001 mfd. 600 volt	.15
64	161289	Crystal Pickup Cartridge	5.00
65	161288	Crystal Recorder Cartridge	9.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

Description	List Price
Cable—motor	$0.38
Clamp—for dial cord	.01
Clip—dial scale retaining	.01
Cord—drive (supplied in 3 ft. lengths)	.15
Dial scale	.28
Escutcheon—dial	.80
Knob	.10
Knob—push button	.08
Name Plate (S.W.) (Model 11-6T8)	.08
Name Plate (Off-Vol.) (Model 11-6T8)	.07
Name Plate (Tuning) (Model 11-6T8)	.05
Name Plate (Tone) (Model 11-6T8)	.05
Name Plate (F.B) (Model 11-6T8)	.06
Needle cup	.06
Phonograph needles. Envelope of 10	.08
Pointer	.10
Retaining ring for drive shaft	.16
Screw—escutcheon mounting	Per C .50
Shaft—tuning	.02
Socket—dial lamp	.10
Socket—2 prong	.12
Socket—4 prong	.10
Socket—7 prong for speaker	.12
Socket—8 prong	.14
Socket—octal	.12
Socket for pick up	.15
Spring—dial cord tension	.08
Tabs & windows for recorder push buttons	.09
Washer—spring washer	.10
	Per C .50

ALIGNMENT PROCEDURE FOR 11-9B & 11-9B-Z CHASSIS

1. Connect the output meter across the voice coil or from plate to plate of the 6F6G output tubes 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 and change the black wire from the outer to the inner clip on top of the loop drum.
3. Turn the volume control to the maximum position and keep it in this position throughout the alignment procedure.
4. Push in the Manual button and keep it pushed in.
5. The loop must be connected as indicated in circuit diagram at all times.
6. With some signal generators, it may be found that the signal cannot be reduced to a useable value using the dummy antennas recommended below. On the Short Wave and Intermediate positions the shield wire (black) may be disconnected from its jack and the output of the signal generator connected to the black wire terminal through a 400 ohm resistor.

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	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.	
No Connection	Place Lead from Signal Generator Near Loop	1500 KC	Broadcast	1500 KC	5	Broadcast Oscillator Shunt)	Adjust for Maximum Output.
No Connection	Place Lead from Signal Generator Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	6*	Broadcast Antenna	Adjust for Maximum Output.
No Connection	Place Lead from Signal Generator Near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	7*	Broadcast Oscillator (Series Padder)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.
400 OHM Carbon Resistor	Clip on Side of Loop Drum	5 MC	Intermediate	5 MC	8	Intermediate 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. Recheck Image.
400 OHM Carbon Resistor	Clip on Side of Loop Drum	5 MC	Intermediate	Tune to 5 MC Generator Signal	9	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	Clip on Side of Loop Drum	16 MC	Foreign	16 MC	10	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	Clip on Side of Loop Drum	16 MC	Foreign	Tune to 16 MC Generator Signal	11	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*Realign trimmer No. 6 on 1500 KC. and trimmer No. 7 on 600 KC. after set is in cabinet.

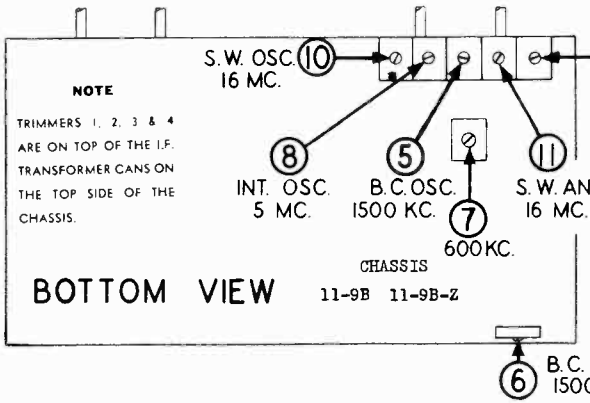
ALIGNMENT PROCEDURE FOR 11-6T & 11-6T-S CHASSIS

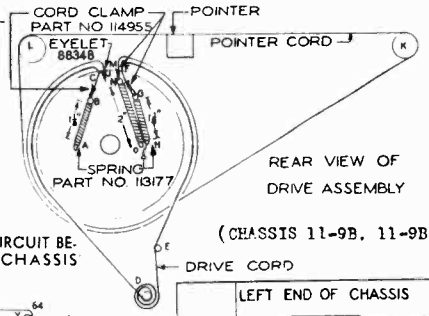
IMPORTANT:

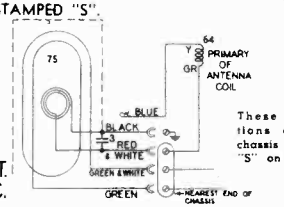
1. The loop must be connected to the receiver at all times.
2. Push in button marked "Radio."
3. Connect an output meter to the receiver. Connect the ground lead of the signal generator to the receiver chassis.
4. With gang condenser in full mesh, set the dial pointer so that its position is horizontal.
5. Turn the volume control to maximum and keep it in this position throughout the alignment procedure.

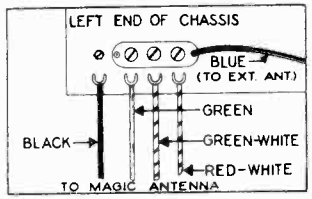
Dummy Ant. in Series with Sig. Gen.	Connection of Sig. Gen. Output to Receiver	Sig. Gen. Frequency	Band Switch Position	Receiver Dial Setting	Trimmer No.	Trimmer Description	Type of Adjustment
.1 MFD. Condenser	Stator Lug on Rear Section of Gang Condenser	455 KC	Broadcast	Any Point Where It Does Not Affect the Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
No Connection	Disconnect Signal Generator Leads from Set and Place Near Loop	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, re-align at 16 MC with trimmer screw farther out.
No Connection	Disconnect Signal Generator Leads from Set and Place Near Loop	16 MC	Foreign	Tune to 16 MC. Gen. Signal	6	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and re-tuning receiver dial.
200 MMFD Mica Condenser	Antenna Terminal on Loop	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	Antenna Terminal on Loop	1500 KC	Broadcast	Tune to 1500 KC Gen. Signal	8	Broadcast Antenna	Place loop antenna in same position relative to chassis as it occupies when in cabinet. Adjust for maximum output.
200 MMFD. Mica Condenser	Antenna Terminal on Loop	600 KC	Broadcast	Tune to 600 KC Gen. Signal	9	Broadcast Oscillator Series Padder	Adjust for maximum output. Try to increase output by detuning trimmer and re-tuning receiver dial until maximum output is obtained.

Install speaker, chassis and loop in the cabinet, then repeat adjustment of trimmers 8 and 9.

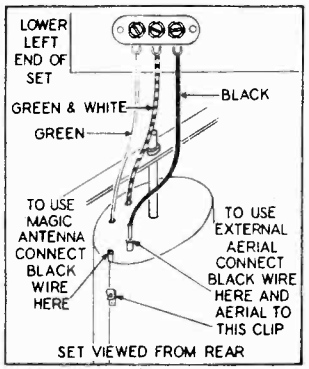








CHASSIS 11-9B, 11-9B-Z CONNECTIONS SHOWN BELOW APPLY TO THE CHASSIS NOT STAMPED WITH A LETTER ON THE BACK



STEWART-WARNER CORP. MODELS 11-6T1 to 11-6T9
11-6T1S to 11-6T9S
Chassis 11-6T,11-6TS

RECORDER SERVICE DATA

PUSH BUTTONS

The six push buttons shown on this circuit control the various functions of this receiver. The "**RADIO.**" "**PHONO.**" "**MICRO.-P.A.**" and "**MICRO.-RECOR.**" buttons are mechanically interconnected so that when any one of them is pushed in, it releases any of the other three buttons which was pushed in.

The "**RECOR. ON**" and "**RECOR. OFF**" buttons are mechanically coupled to each other, but are independent of the other four buttons. Pushing in the "RECOR. ON" button releases the "RECOR. OFF" button, and vice versa.

ACTION OF VARIOUS PUSH BUTTONS

RADIO—Button in: Cathode circuits of 6SA7 and 6SK7 completed to ground through resistor No. 27. Volume control connected across diode load resistor No. 18.

Button out: 6SA7 and 6SK7 Cathode circuits opened. Volume control disconnected from diode load resistor No. 18.

PHONO—Button in: Output of crystal pick-up connected across Volume Control.

Button out: Crystal pick-up disconnected from Volume Control.

MICRO-P.A.—Button in: Output of microphone amplifier connected across volume control. Loudspeaker connected to reproduce sound.

Button out: Output of microphone amplifier disconnected from Volume Control.

MICRO-RECOR.—Button in: Microphone amplifier connected as under "MICRO-P.A." In addition speaker is silenced by disconnecting the voice coil and connecting the output transformer secondary to resistor No. 34. This prevents acoustical feed-back from speaker to microphone when recording.

Button out: Microphone amplifier disconnected from volume control. Voice coil of speaker connected to output transformer secondary.

RECOR-ON—Button in: This button connects the crystal recorder to the output of the receiver.

Button out: Crystal recorder disconnected from receiver output.

RECOR.-OFF—Button in: This releases "RECOR.-ON" button, as it is mechanically coupled to it.

Button out: This indicates "RECOR.-ON" button has been pushed in, thus connecting the recorder to the set's output stage. The "RECOR.-ON" and "RECOR.-OFF" buttons operate independently of the four buttons described previously.

GENERAL RECORDER TROUBLE DATA

For complete recording mechanism service data, refer to the separate Recorder Service Manual, Form No. 9948, which will be published later. The receiver instructions, Form 9741, give complete data for the use of this recorder.

IMPORTANT: It is essential that the recorder be placed on a level surface when making recordings. If the recorder does not stand in a level position, it will change the effective pressure of the cutting head and proper results cannot be obtained.

ADJUSTMENT OF CUTTING HEAD

Before attempting any adjustments of the cutting head, first make certain that such adjustments are required. It is advisable to try a new cutting needle, or one known to be in perfect condition. Also the serviceman should have available a record blank of known quality. If a cutting head is suspected of being out of adjustment, make a test recording, using the new needle.

DEFECTIVE CUTTING NEEDLE

A cutting needle is considered worn when the background hiss becomes objectionable, or when the thread cut from the record becomes ragged. A dull needle may also cause the depth of cut to be incorrect.

The condition of the cutting needle can be determined by examining the point by means of a powerful magnifying glass or low power microscope, and comparing it with a good needle viewed in a similar manner. Another good check on the condition of the cutting needle is the appearance of a freshly cut record. If the record has a dull or grayish appearance instead of its usual shiny appearance, the needle should be replaced.

ADJUSTING THICKNESS OF SHAVING

The proper thickness of the shaving produced when a record is cut is about the thickness of a human hair. If the cutting needle is sharp and in good condition, and the cutting head adjusted to give the correct depth of cut, the shaving should come off as a long continuous ribbon. With some types of recording blanks, the ribbon cut by the cutting needle will come off as a straight band, while with others it may produce a curly thread. This ribbon should not, however, be too fine or extremely crinkly as this indicates a dull cutting needle or insufficient pressure of the recording head.

When the cutting head is placed on a record blank, the needle locking screw should be halfway between the top and bottom of the hole in the head. The position of the cutting needle screw may be changed by raising the cutter arm and adjusting the screw and locknut under this arm. Turning this screw clockwise will raise the stylus screw—counter clockwise rotation will lower it.

The depth of cut can be varied by means of the adjusting screw on the recorder arm. This screw is located on top of the arm and is readily accessible for adjustment. Turning this screw clockwise increases the thickness of the shaving, while turning it counter-clockwise decreases the thickness. However, if the cutting needle is dull or damaged, turning this adjusting screw will have very little effect on the depth of cut.

The proper depth of cut may be determined by cutting several grooves with no voltage impressed on the cutter head (RECOR.-OFF button pushed in). Then examine these blank grooves by reflecting light from the record and viewing the grooves through a low-power microscope. The width of the space between the grooves should be slightly less than the width of the grooves.

PROPER RECORDING LEVEL

When recording, the volume control should be adjusted to a setting somewhat higher than that required for good room volume, but below the point of overloading and distortion. If too high a volume level is used, an echo may be heard when playing back or "overcutting" of the grooves may result—that is, on loud passages one groove may actually cut into the adjacent groove, causing distortion when the record is being played. If this occurs the volume control setting should be decreased while recording, until the recorded level is normal.

On the other hand, if the level of the program being recorded is too low, it will necessitate increasing the volume control setting when playing back the recording, and the hiss and background noise will be excessive.

RECORDER HEAD INOPERATIVE

A quick check of the recorder head can be made by pushing in the "RECOR.-ON" button and the "RADIO" button and then tuning in a station. If the recorder is operating, this fact is easily determined by holding the cutting stylus of the cutter between the thumb and forefinger. Vibration of this stylus indicates that the cutter head is in operating condition.

If the recorder does not operate, check first to determine if an A.C. voltage exists across the terminals of the recorder socket. This can best be measured using the 0-150 volt scale of a rectifier type A.C. Voltmeter. With proper recording volume the peaks of the voltage appearing across these terminals should be 80 to 120 volts. If no voltage exists under these conditions, check the contacts of the "RECOR.-ON" switch, and the condenser No. 30 coupling the recorder to the 6F6G plate. If these circuits are found to be all right check the recorder crystal cartridge and replace if necessary.

CORRECT NEEDLE ANGLE

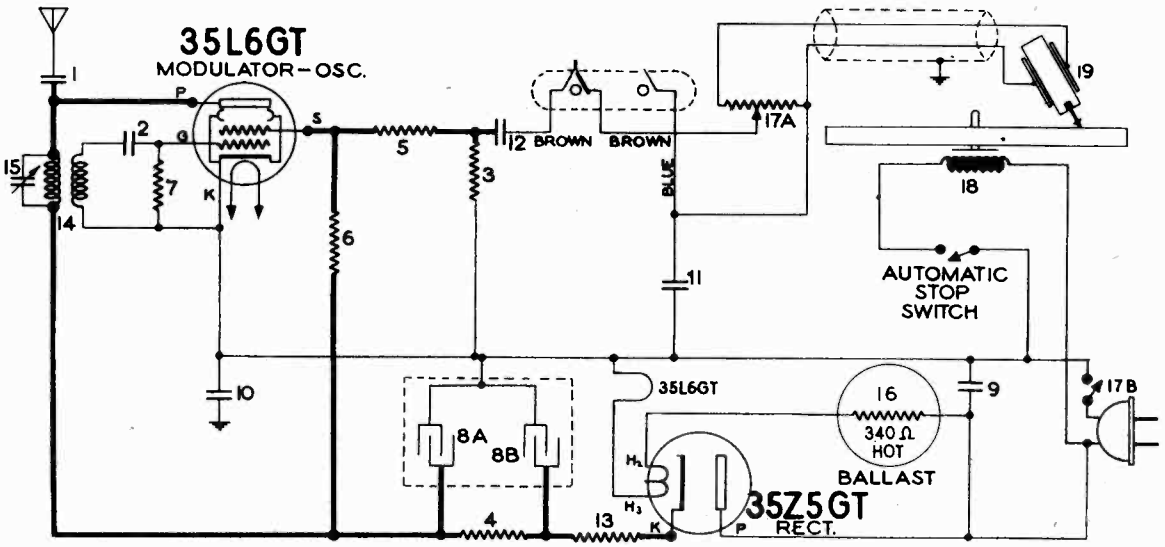
When making a recording, the cutting needle should be set at such an angle that the thread cut from the record will be thrown toward the center of the record. Otherwise the thread may be caught under the cutting needle, causing it to cut the grooves improperly.

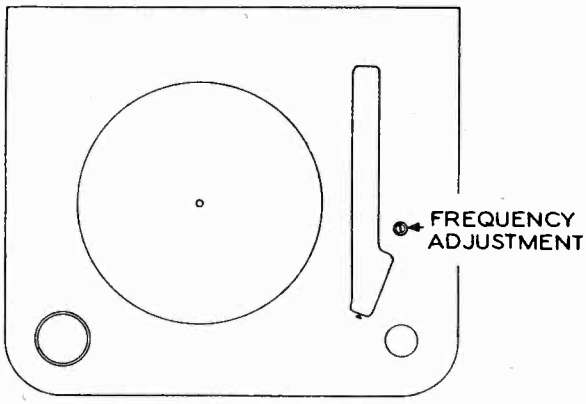
If the thread is not thrown toward the center of the record, loosen the thumb screw holding the recording needle in the cutter head, then retightening it again. This will generally change the angle of the needle slightly, causing the thread to wind about the center pin of the turntable.

CAUTION: Never use thorn, cactus or wooden playback needles on home recordings. Their friction coefficient is high, and they score the grooves.

MODEL 11-2A1 Chassis 11-2A
Wireless Record-Player
Chassis 11-2A

STEWART-WARNER CORP.





ADJUSTMENTS

Set the receiver that is to be used with this record player to some frequency between 540 and 750 KC. Choose a frequency that is clear and free from interfering stations. Keep in mind the fact that strong signals may be present at night where there are no signals in the daytime. Remove the plug near the volume control on top of the record player. Using an insulated screwdriver turn the screw, located beneath this plug, until the signal from the record player is heard in the receiver. This will be heard as a reduction in noise as the signal comes in tune with the receiver. If a record is being played, the music or sound from it may be tuned in. If it is desired to change the frequency, set the receiver to the new frequency and turn the screw until the signal is heard. Turning the adjusting screw clockwise increases the frequency and turning it counter-clockwise lowers the frequency.

When the record player is located at some distance from the receiver, or under conditions when the signal from it is too weak, the coil of wire from the record player should be uncoiled enough to give a satisfactory signal. Under no conditions should more wire be uncoiled than is necessary for a reasonably strong signal in the receiver.

TO REMOVE THE CHASSIS

1. Unsolder the shielded pickup lead from the chassis.
2. Unsolder the two brown leads from the microphone input jack and the black lead from the volume control.
3. Remove the two nuts holding the chassis to the cabinet.
4. Remove the strap holding the power cord.
5. The chassis may now be turned for inspection or repair.

HOWLS OR SQUEALS

Howls or squeals from this unit may be caused by the following:

1. Interference caused by choosing a frequency which is not clear. To remedy, change the record player frequency to one where there is no interference.
2. Too weak a signal permitting interference from a weak station. To remedy, uncoil some of the wire from the coil under the record player, or move the record player nearer the set.
3. Too strong a signal permitting vibration from the speaker to cause microphonics. (The record player and receiver are in this case usually very close together.) To remedy, place the record player on another support or mount it on sponge rubber. Coiling up the wire coming from the chassis may help if the signal is too strong.

ELECTRICAL PARTS

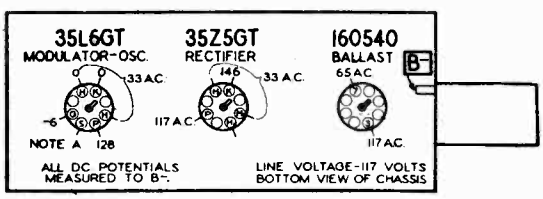
Diagram Number	Part Number	Description	List Price
1	83539	Condenser—mica, 260 mmfd.	$0.20
2	83783	Condenser—mica, 110 mmfd.	.20
3	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
4	110569	Resistor—carbon 10,000 ohms ¼ watt	.12
5	110578	Resistor—carbon 68,000 ohms ¼ watt	.12
6	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
7	116051	Resistor—insulated 33,000 ohms ¼ watt	.15
8A-8B	116470	Condenser—electrolytic 20-20 mfd. 150 volt	.95
9-10	116625	Condenser—.1 mfd. 600 volt	.25
11-12	116819	Condenser—.05 mfd. 600 volt	.20
13	118823	Resistor—1000 ohms 1 watt Wire Wound	.15
14	160499	Coil—oscillator	.26
15	160501	Condenser—tuning	.22
16	160540	Ballast tube	.60
17A-17B	160576	Volume control—250,000 ohms with switch	1.45
18	160603	Motor—less turntable	5.65
19	160617	Crystal cartridge	4.50

MISCELLANEOUS PARTS

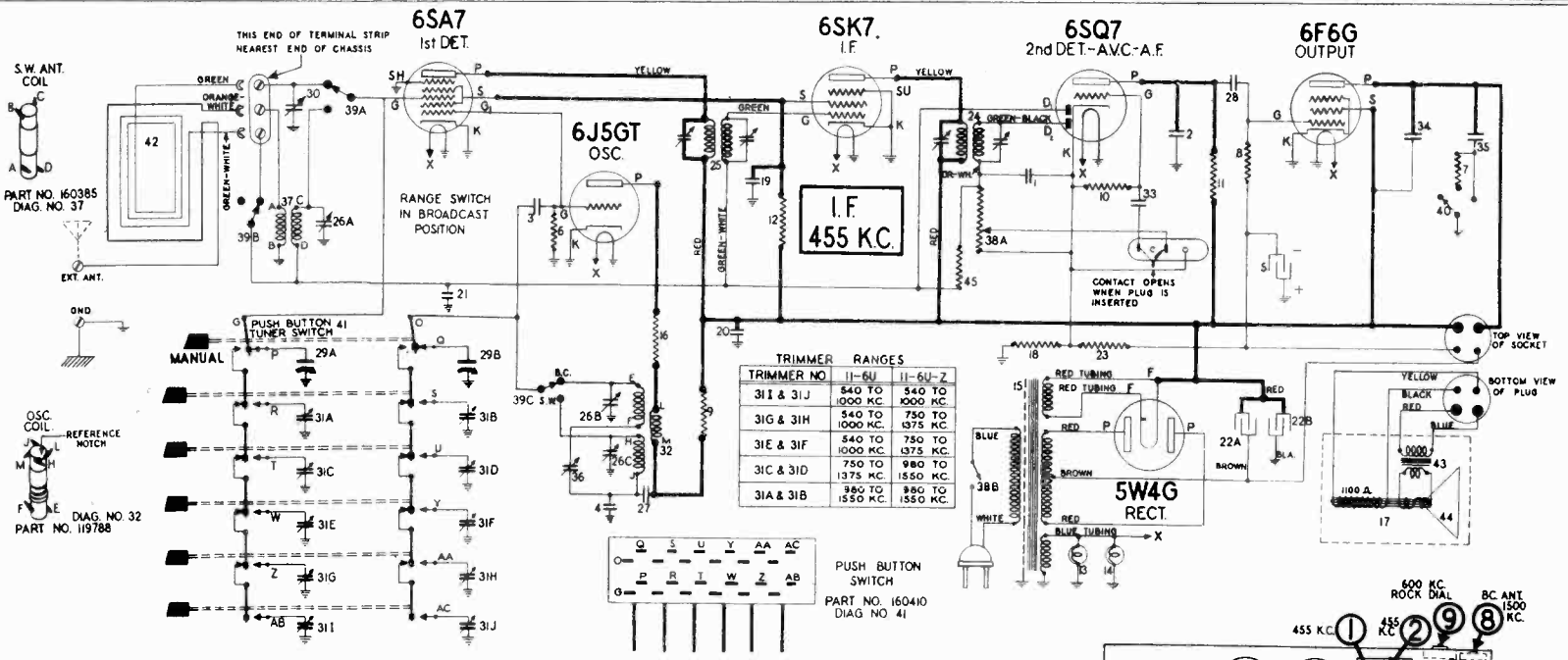
Part Number	Description	List Price
119619	Automatic stop for phonograph	$1.70
116467	Base for mtg. electrolytic condenser	.04
112798	Clip—for mtg. oscillator coil	.01
160617	Crystal cartridge	4.50
160588	Escutcheon plate & terminal strip	.32
161104	Idler wheel with rubber rim	1.00
160219	Knob—push on	.06
160033	Needle cup	.08
160575	Phono pickup arm complete	6.25
113463	Rubber bushing—motor mtg.	.03
119791	Socket—8 prong	.12
114876	Socket—octal base	.15
119729	Turntable—9"	1.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

SOCKET VOLTAGES

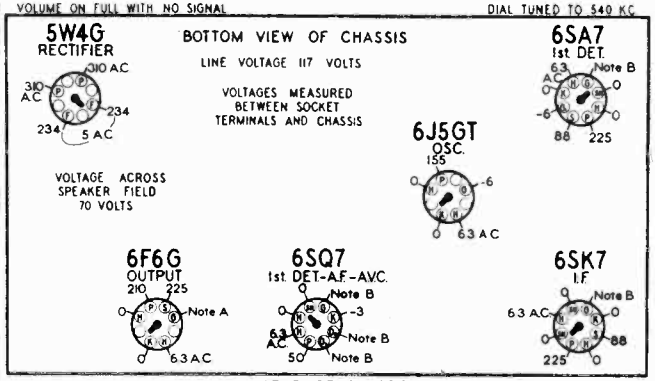


NOTE A: Voltage on the screen of the 35L6GT cannot be measured with the ordinary voltmeter because of the high resistance of resistor No. 6.
Use a voltmeter of at least 1000 ohms per volt.



FOR ALIGNMENT, DRIVE CORD DATA, SEE INDEX

SOCKET VOLTAGES



NOTE A: Bias for the 6F6G output tube is 14 volts measured across resistors 18 and 23.

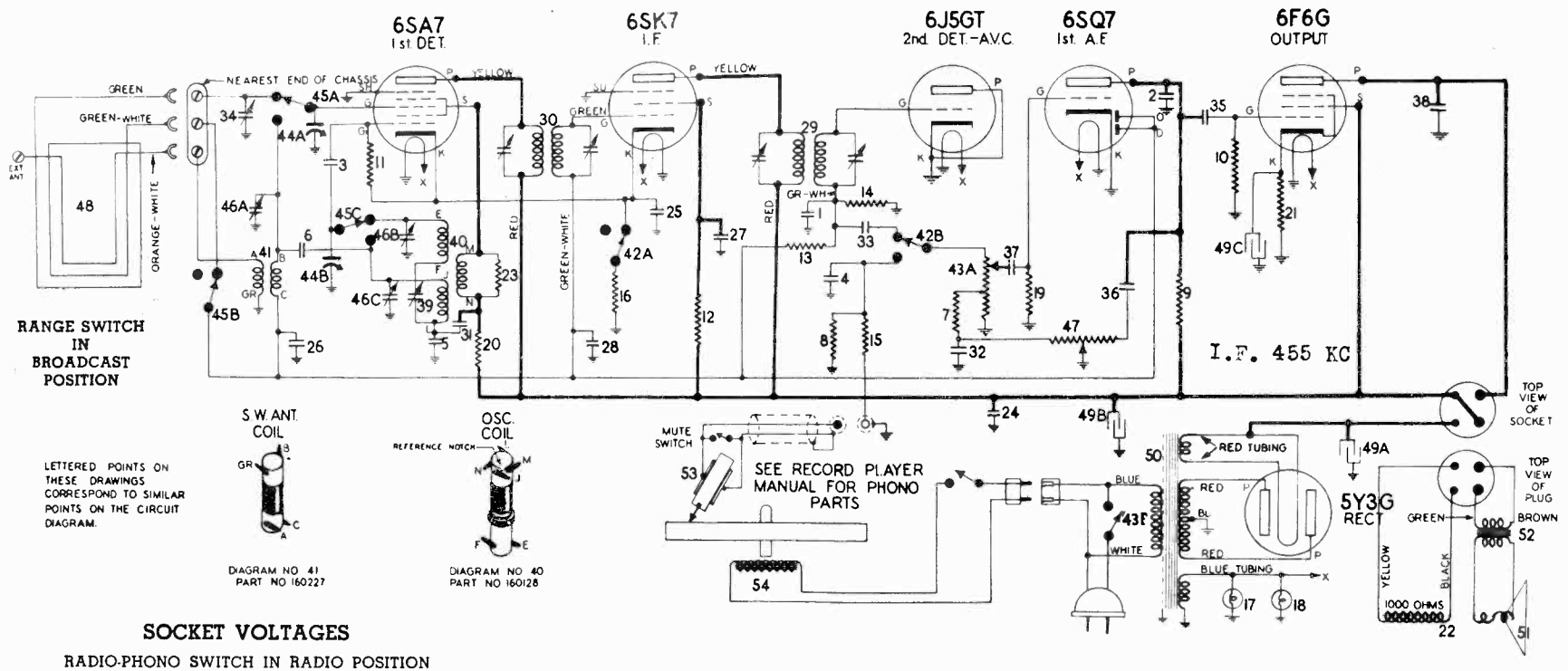
NOTE B: Bias for the 6SA7 1st selector, and 6SK7 I. F. tubes and the voltage appearing on the diodes and grid of the 6SQ7 is 3 volts measured across resistor No. 18.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3	85061	Condenser—mica 51 mmfd.	.15
4	88587	Condenser—mica .0042 mfd.	.35
5	110377	Condenser—electrolytic 10 mfd. 35 volt	.80
6	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
7	110557	Resistor—carbon 4,700 ohms ¼ watt	.12
8	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
9	110576	Resistor—carbon 10,000 ohms ½ watt	.12
10	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
11	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
12	110592	Resistor—carbon 22,000 ohms 1 watt	.12
13-14	112636	Lamp—dial (frosted) 6-8 volt .25 amp.	.25
15	112887	Transformer—power 117 volt 60 cycle	3.50
	112836	Transformer—power 117 volt 25 cycle	5.00
16	112994	Resistor—carbon 220 ohm ¼ watt	.16
17	M-115115	Speaker—dynamic—8"	6.80
18	116275	Resistor—wire wound 50 ohms ½ watt	.15
19-20	116625	Condenser—.1 mfd. 600 volt	.25
21	116819	Condenser—.05 mfd. 600 volt	.20
22A	117034	Condenser (Electrolytic) 15 mfd. 450 volt	1.45
22B		10 mfd. 450 volt	
23	118812	Resistor 180 ohms 1 watt wire wound	.12
24	119024	Resistor 29A-29B	.12
25	119042	Resistor 30	.12
26A to 26C	119174	Resistor 31A to 31I	.12
27-28	119193	Resistor 33-34	.12
29A-29B	119291	Resistor 35	.12
30	119345	Resistor 38A-38B	.16
31A	119663	Resistor 39A to 39C	.08
to	119664	Resistor 40	.15
31J	119753	Resistor 41	.25
32-34	119817	Resistor 42	.20
35	119880	Resistor 43	M-160618
36	119934	Resistor 44	M-160619
37	160385	Resistor 45	110580
38A-38B	160407		
39A to 39C	160408		
40	160409		
41	160410		
42	160454		
43	M-160618		
44	M-160619		
45	110580		

Description	List Price
Transformer—2nd I. F.	1.15
Transformer—1st I. F.	1.10
Condenser—trimmer (3 section)	.45
Condenser—.01 mfd. 600 volt	.15
Condenser—variable tuning	2.75
Condenser—trimmer	.20
Condenser—P. B. trimmers (med. freq.)	.24
Condenser—P. B. trimmers (high freq.)	.24
Condenser—P. B. trimmers (low freq.)	.24
Coil—oscillator	.85
Condenser—.004 mfd. 600 volt	.15
Condenser—.04 mfd. 600 volt	.20
Condenser—padder	.36
Coil—short wave antenna	.60
Volume control—with switch	1.40
Switch—range	.75
Switch—tone	.60
Switch—push button	2.50
Loop antenna—complete	1.60
Transformer—output for M-115115 spkr.	1.50
Cone & Voice coil for M-115115 spkr.	1.25
Resistor—carbon 3.3 meg. ¼ watt	.12



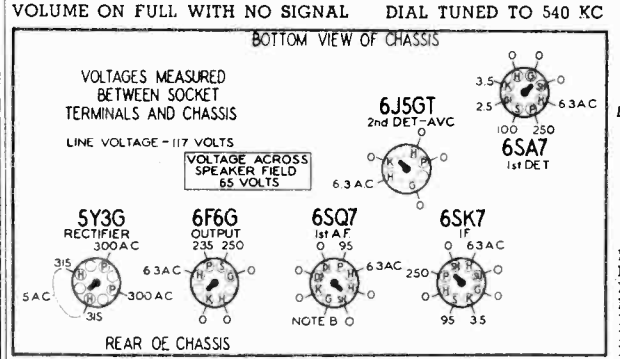
LETTERED POINTS ON THESE DRAWINGS CORRESPOND TO SIMILAR POINTS ON THE CIRCUIT DIAGRAM.

DIAGRAM NO. 41
PART NO 160227

DIAGRAM NO. 40
PART NO 160128

SOCKET VOLTAGES

RADIO-PHONO SWITCH IN RADIO POSITION
VOLUME ON FULL WITH NO SIGNAL DIAL TUNED TO 540 KC



USE A 1000 OHM PER VOLT — VOLTMETER

NOTE B: The bias for 6SQ7 grid, provided by resistor No. 19, can not be measured with any ordinary instrument.

FOR ALIGNMENT, TRIMMER LOCATIONS, DIAL DRIVE, SEE INDEX

ELECTRICAL PARTS

Diagram No.	Part No.	Description	List Price
1-2	83783	Condenser—mica 110 mmfd.	$ .20
3	85061	Condenser—mica 51 mmfd.	.15
4	85394	Condenser—mica 510 mmfd.	.25
5	88587	Condenser—mica .0042 mfd.	.35
6	161315	Condenser—wire 5 mmfd.	.18
7	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
8-9	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
10	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
11-12	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
13	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
14-15	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
16	110590	Resistor—carbon 180 ohms ¼ watt	.12
17-18	110629	Dial Light Bulb—6.3 volt (Mazda No. 44)	.15
19	112975	Resistor—carbon 10 meg. ¼ watt	.12
20	112997	Resistor—carbon 22,000 ohms 1 watt	.15
21	114335	Resistor—wire wound 430 ohms 2 watts	.20
22	M-115112	Speaker—dynamic (10")	8.20
23	116068	Resistor—680 ohms ¼ watt	.10
24	116625	Condenser—.1 mfd. 600 volt	.25
25	116706	Condenser—.2 mfd. 600 volt	.35
26 to 28	116819	Condenser—.05 mfd. 600 volt	.20
29	119024	Transformer—2nd I.F.	1.15
30	119042	Transformer—1st I.F.	1.10
31-32-33	119193	Condenser—.01 mfd. 600 volt	.15
34	119345	Condenser—trimmer	.20
35	119414	Condenser—.02 mfd. 600 volt	.15
36	119417	Condenser—.006 mfd. 600 volt	.15
37	119817	Condenser—.004 mfd. 600 volt	.15
38	119875	Condenser—.002 mfd. 600 volt	.15
39	119934	Condenser—padder	.36
40	160128	Coil—oscillator	.70
41	160227	Coil—S. W. antenna	.58
42A-42B	160237	Switch—"Radio-Phono"	.60
43A-43B	160238	Volume control—1 meg. (with switch)	1.40
44A-44B	160247	Condenser—tuning—complete with P. B. tuner	5.15
45A to 45C	160334	Range switch	.70
46A to 46C	160344	Condenser—trimmer (3 section)	.45
47	160361	Tone control—1 meg.	.95
48	161189	Loop antenna complete	1.70
49A to 49C	161193	Condenser—electrolytic A-20 mfd.—450 volt / B-15 mfd.—450 volt / C-10 mfd.—25 volt	1.60
50	161200	Transformer—power (50-60 cycles)	4.20
51	M-161214	Cone & Voice coil for M-115112 speaker	1.80
52	M-161215	Transformer—output for M-115112 speaker	1.60
53	161289	Crystal cartridge	5.00
54	160086	Motor (60 cycle)	6.95

ALIGNMENT PROCEDURE

CHASSIS 15-5Y

1. Connect the output meter across the voice coil of the speaker between the plate of the 3Q5GT output tube and chassis through a .1 mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the chassis through a .25 mfd. condenser.
3. The set can be aligned either using battery or power line operation.
4. Turn the volume control to the maximum volume position and keep it in this position while aligning. The cabinet back must be connected as shown in the figure below.
5. With the gang condenser in full mesh, the dial pointer should point to the last mark on the low frequency end of the dial scale. If the pointer is incorrectly set, hold the gang in full mesh and move the pointer to the correct position by hand.

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 Front 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 rear 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 readjust trimmer No. 5 for maximum output by ear.

ALIGNMENT PROCEDURE FOR 11-6U and 11-6U-Z CHASSIS RECEIVER MODELS 11-6U1 to 11-6U9 and 11-6U1-Z to 11-6U9-Z

1. Connect the ground lead of the signal generator to the chassis.
2. Turn the volume control to maximum volume during entire alignment.
3. Set the pointer to last mark on low frequency end of dial with gang in full mesh.
4. Connect an output meter to read audio output.

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	Rear Lug of Gang Condenser	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	External Antenna Terminal	16 MC	Foreign	16 MC	5	Foreign Oscillator (Shunt)	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.
No Connection	Lead from Sig. Gen. Placed Near Loop	1500 KC	Broadcast	1500 KC	6	Broadcast Oscillator (Shunt)	Adjust for maximum output.
400 OHM Carbon Resistor	External Antenna Terminal	16 MC	Foreign	Tune to 16 MC Generator Signal	7	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.
No Connection	Lead from Sig. Gen. Placed Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	PLACE CHASSIS IN CABINET BEFORE MAKING ADJUSTMENTS No. 8 & 9. Adjust for maximum output.
No Connection	Lead from Sig. Gen. Placed Near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	9*	Broadcast Oscillator (Series Pad)	Adjust for maximum output. Try to increase output by detuning trimmer and retuning receiver dial until maximum output is obtained.

*NOTE: Chassis must be in cabinet when making adjustments 8 & 9.

ALIGNMENT PROCEDURE FOR 11-6V CHASSIS

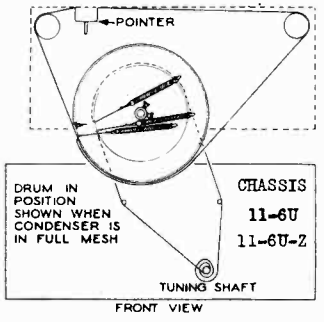
NOTE: THIS SET MAY BE COMPLETELY ALIGNED WITHOUT REMOVING FROM THE CABINET.

1. Connect the loop as indicated in the circuit diagram and keep it in the circuit at all times.
2. Connect the output meter across the voice coil or from the plate of the 6F6G output tube to ground through a .1 mfd. condenser. Connect the ground lead of the signal generator to the receiver chassis.
3. Turn volume control to the maximum position and keep it in this position throughout 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 Condenser	Lug on Section of Gang Cond. Nearest Drum	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	Screw on Side of Loop Antenna	16 MC	Short Wave	16 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	Screw on Side of Loop Antenna	16 MC	Short Wave	Tune to 16 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	Screw on Side of Loop Antenna	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator	Adjust for maximum output.
200 MMFD. Mica Condenser	Screw on Side of Loop Antenna	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8*	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Mica Condenser	Screw on Side of Loop 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 MUST BE MADE WITH THE SET IN THE CABINET AND WITH LOOP LEADS IN THEIR FINAL POSITION.

REPLACING THE DIAL CORDS

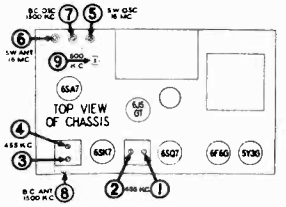


FRONT VIEW

The set-screws holding the drum may be loosened so that the most convenient positions for stringing the cords may be found, since it will be necessary to turn the drum on the condenser shaft in order to reach the tabs.

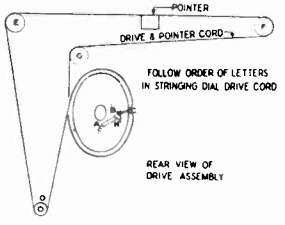
A pair of long-nosed pliers is useful for attaching the springs.

If the dial scale is to be replaced, it will be found that there is a notch in the metal dial plate behind it, permitting easy access to the drive mechanism.

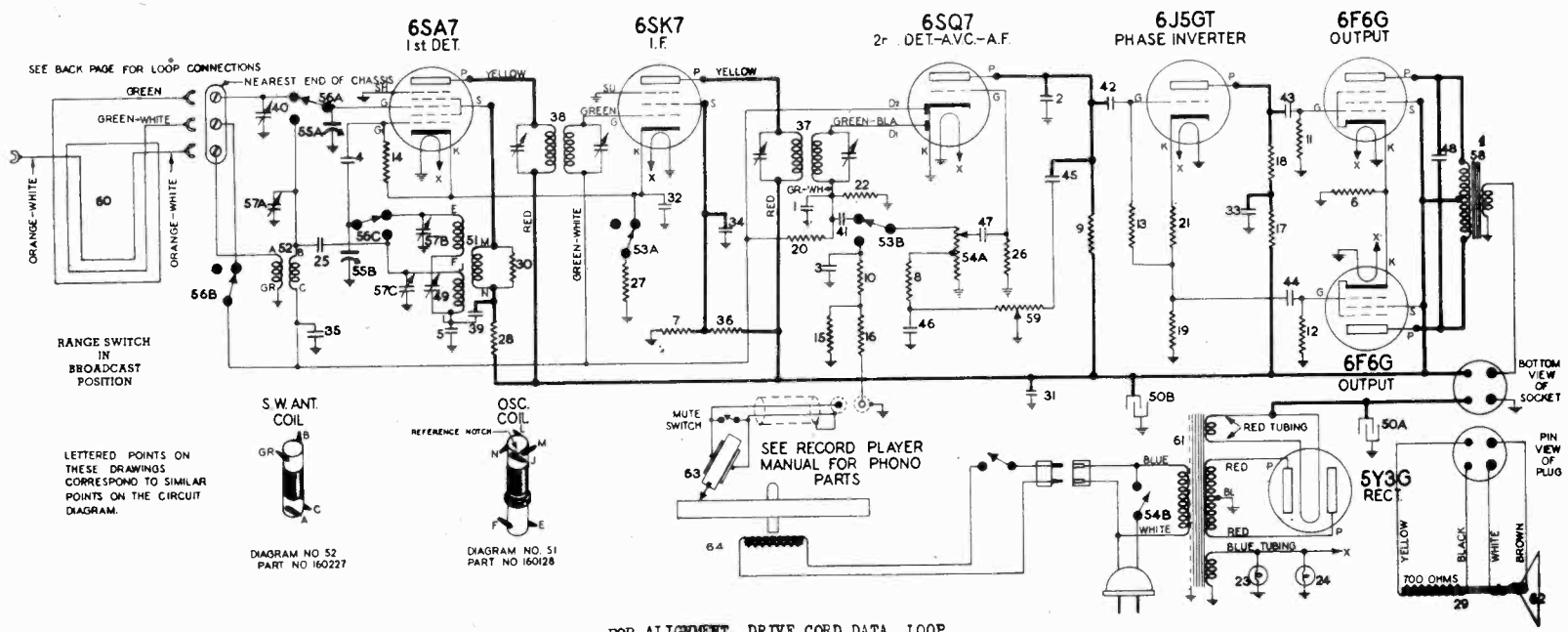


CHASSIS 11-6V

DIAL DRIVE ASSEMBLY



MODELS 11-7A1 to 11-7A9 STEWART-WARNER CORP.
Chassis 11-7A

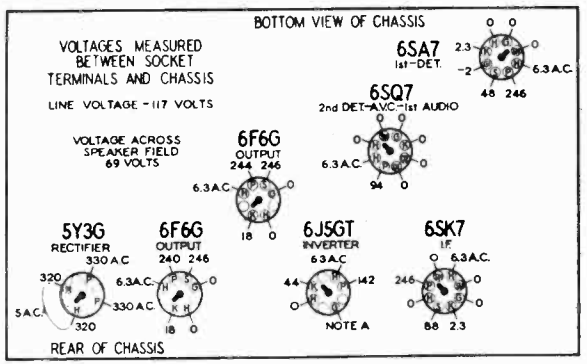


SOCKET VOLTAGES

RADIO-PHONO SWITCH IN RADIO POSITION.

VOLUME ON FULL WITH NO SIGNAL

DIAL TUNED TO 540 K.C.



USE A HIGH RESISTANCE VOLTMETER OF 1000 OHMS PER VOLT.

NOTE A: Bias for the 6J5GT phase inverter is -2.5 volts measured across resistor No. 21.

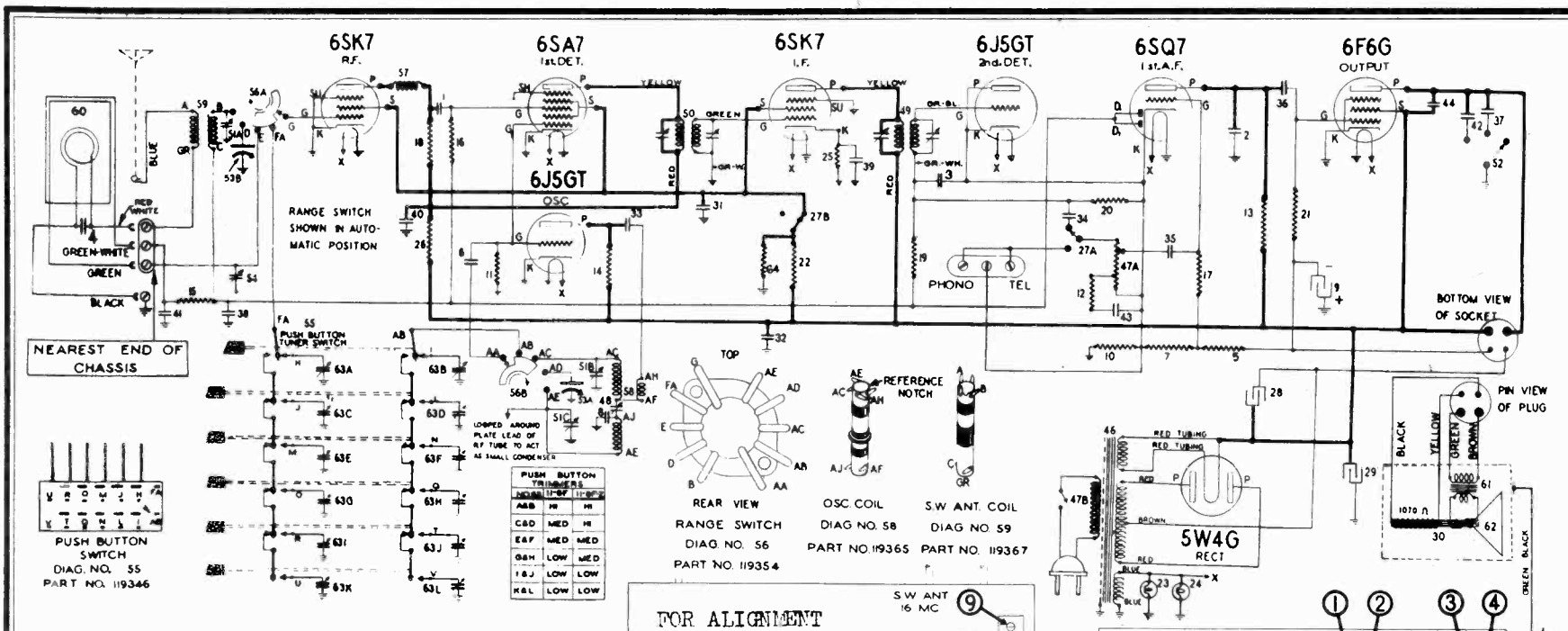
FOR ALIGNMENT, DRIVE CORD DATA, LOOP CONNECTIONS AND TRIMMER LOCATIONS, SEE INDEX

I.F. 455 KC

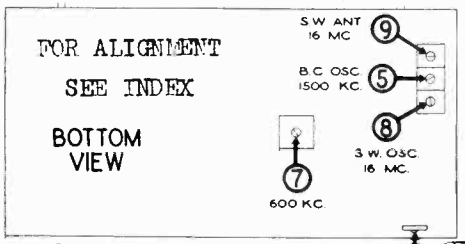
ELECTRICAL PARTS

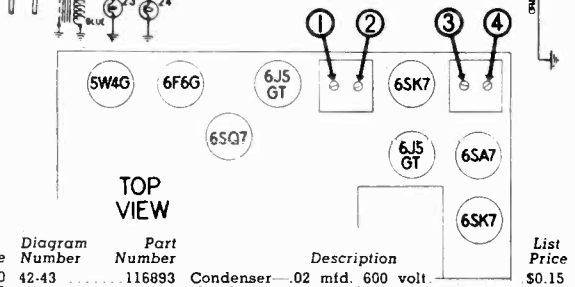
Diagram Number	Part Number	Description	List Price
1-2-3	83539	Condenser—mica 260 mmfd.	.5 .20
4	85061	Condenser—mica 51 mmfd.	.15
5	88587	Condenser—mica .0042 mfd.	.35
6	89439	Resistor—240 ohms 2 watts wire wound	.12
7-8	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
9-10	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
11 to 13	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
14 to 16	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
17 to 19	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
20	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
21	110573	Resistor—carbon 2,200 ohms ¼ watt	.12
22	110584	Resistor—carbon 330,000 ohms ½ watt	.12
23-24	110629	Dial Lamp—6.3 volt (Mazda No. 44)	.15
25	161315	Condenser—(twisted wire) 5 mmfd.	.18
26	112975	Resistor—carbon 10 meg. ¼ watt	.12
27	112994 88461	Resistor—carbon 220 ohms ¼ watt (used in some sets) Resistor—carbon 150 ohms ¼ watt	.16 .12
28	112997	Resistor—carbon 22,000 ohms 1 watt	.15
29	M-115109	Speaker	7.00
30	116068	Resistor—680 ohms ¼ watt	.10
31	116625	Condenser—.1 mfd. 600 volt	.25
32-33	116706	Condenser—.2 mfd. 600 volt	.35
34-35	116819	Condenser—.05 mfd. 600 volt	.20
36	118820	Resistor—carbon 47,000 ohms 1 watt	.12
37	119024	Transformer—2nd I.F.	1.15
38	119042	Transformer—1st I.F.	1.10
39	119193	Condenser—.01 mfd. 600 volt	.15
40	119345	Condenser—trimmer	.20
41	119875	Condenser—.002 mfd. 600 volt	.15
42 to 44	119414	Condenser—.02 mfd. 600 volt	.15
45	119417	Condenser—.006 mfd. 600 volt	.15
46	119817	Condenser—.004 mfd. 600 volt	.15
47-48	119875	Condenser—.002 mfd. 600 volt	.15
49	119934	Condenser—padder	.36
50A-50B	160008	Condenser—electrolytic (A-30 mfd. 450 volts, B-15 mfd. 450 volts)	1.50
51	160128	Coil—oscillator	.70
52	160227	Coil—S. W. Antenna	.58
53A-53B	160237	Switch—(Radio-Phono)	.60
54A-54B	160238	Volume control—1 meg. (with switch)	1.40
55A-55B	160247	Condenser—tuning—complete with P.B. tuner	5.15
56A to 56C	160334	Range switch	.70
57A to 57C	160344	Condenser—trimmer (3 section)	.45
58	160358	Transformer—output	1.58
59	160361	Tone control—1 meg.	.95
60	160377 160383	Loop antenna—complete (for Model 11-7A8 only) Loop antenna—complete (for Model 11-7A9 only)	3.00 3.00
61	160390	Transformer—power (50-60 cycle)	4.80
62	M-160457	Cone & Voice coil for M-115109 Speaker	1.80
63	161289	Crystal cartridge	5.00
64	160086	Motor (60 cycle)	9.95

STEWART-WARNER CORP. MODELS 11-8M to 11-8F9 11-8F12 to 11-8F9-Z Chassis 11-8F, 11-8F-Z



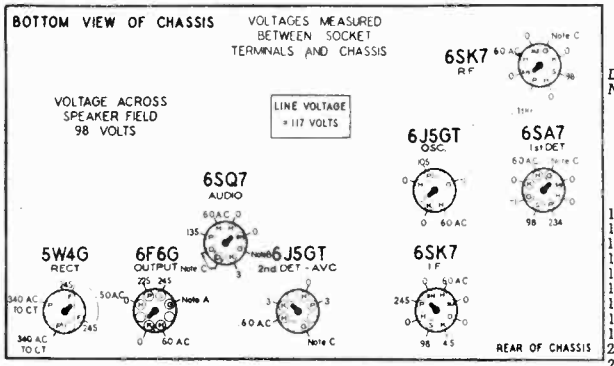
PRICES SUBJECT TO CHANGE WITHOUT NOTICE





SOCKET VOLTAGES

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



All measurements made with a voltmeter of 1000 ohms per volt.

NOTE A: Bias for the 6F6G output tube is —23.5 volts measured across resistors No. 10, 7 & 5.

NOTE B: Voltage on the triode grid of the 6SQ7 audio tube is — 2 volts measured across resistor No. 7.

NOTE C: Bias for the 6SK7 R.F and 6SA7 1st det. grids and voltage on the 6J5GT 2nd det. grid and diode plates on 6SQ7 is —3 volts measured across resistor No. 10.

Diagram Number	Part Number	Description	List Price
1-2-3	83539	Condenser—mica 260 mmfd.	$0.20
4	83783	Condenser—mica 110 mmfd.	.20
5	88460	Resistor—wire wound 150 ohms ½ watt	.12
6	85061	Condenser—mica 51 mmfd.	.15
7	88465	Resistor—25 ohms ½ watt W.W.	.15
8	88587	Condenser—mica .0042 mfd.	.35
9	110377	Condenser—electrolytic 10 mfd. 35 volt	.80
10	110534	Resistor—wire wound 40 ohms ½ watt	.12
11-12	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
13	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
14	110558	Resistor—carbon 33,000 ohms ½ watt	.12
15	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
16	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
17	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
18	112954	Resistor—carbon 10,000 ohm—1 watt	.16
19	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
20-21	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
22	112953	Resistor—carbon 10,000 ohms 3 watts	.25
23-24	110629	Lamp—6.3 volt—.25 amps.	.15
25	112978	Resistor—insulated 470 ohms ¼ watt	.12
26	112980	Resistor—carbon 1000 ohms ¼ watt	.15
27A-27B	114141	Switch—D.P.D.T.	.44
28-29	114972	Condenser—electrolytic 16 mfd. 450 volt	.78
30	U-115091	Speaker—dynamic 10"	8.75
31-32	116625	Condenser—.1 mfd. 600 volt	.25
33 to 37	116640	Condenser—.01 mfd. 600 volt	.15
38 to 41	116819	Condenser—.05 mfd. 600 volt	.20
42-43	116893	Condenser—.02 mfd. 600 volt	$0.15
44	117022	Condenser—.002 mfd. 600 volt	.15
46	118665	Transformer—power	6.00
47A-47B	118669	Volume control with switch 1 meg.	1.40
48	118919	Condenser—padding	.40
49	119024	Transformer—2nd I.F.	1.15
50	119042	Transformer—1st I.F.	1.10
51A-51B-51C	119174	Condenser—trimmer—3 section	.45
52	119289	Switch—tone	.60
53A-53B	119291	Condenser—variable tuning	2.75
54	119345	Condenser—trimmer	.20
55	119346	Switch—push button	2.25
56A-56B	119354	Switch—range	.90
57	119362	Coil—compensating	.25
58	119365	Coil—oscillator	.75
59	119367	Coil—S. W. antenna	.65
60	161301	Loop Antenna Complete	3.00
61	U-119464	Transformer—output for U-115091 speaker	1.50
62	U-119465	Cone & Voice coil for U-115091 speaker	2.50
63A to 63L	119662	Condenser—push button trimmer (Low) 540 to 1000 KC	.24
	119663	Condenser—push button trimmer (Med.) 750 to 1375 KC	.24
	119664	Condenser—push button trimmer (Hi) 980 to 1550 KC	.24
64	112999	Resistor carbon 33,000 ohm 1 watt	.20

ALIGNMENT PROCEDURE FOR 11-8F & 11-8F-Z CHASSIS

1. Connect the output meter across the voice coil or from the plate of the 6F8G output tube to ground 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 volume control to the maximum position and keep it in this position throughout the alignment procedure.
4. Check the pointer to see that it is correctly set to 540 KC with gang in full mesh.
5. 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 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.	
No Connection	Lead from Sig. Gen. placed near Loop	1500 KC	Broadcast	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
No Connection	Lead from Sig. Gen. placed near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	6*	Broadcast Antenna	Adjust for Maximum Output.
No Connection	Lead from Sig. Gen. placed near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	7	Broadcast Oscillator (Series)	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 Wire from Chassis	16 MC	Foreign	16 MC	8	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 Wire from Chassis	16 MC	Foreign	Tune to 16 MC Generator Signal	9	Foreign Antenna	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

*NOTE: Realign trimmer No. 6 after set is in cabinet by placing range switch in broadcast position, and adjusting for maximum output on a weak signal at approximately 1500 KC.

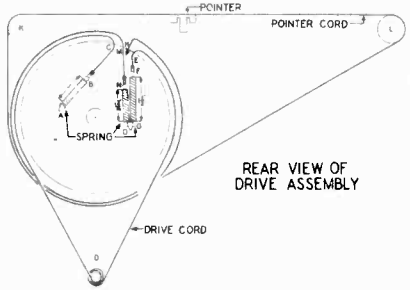
NOTES FOR 11-10A and 11-10A-Z CHASSIS

AUDIO HOWLS

For proper operation, this chassis must be allowed to float on the rubber cushions on which it is mounted. If this is not done, the set may howl when receiving strong signals. Loosen the four bolts holding the chassis to the cabinet. The wood strips which support some chassis during shipment should be removed. Make sure that neither the control knobs, their shafts, nor any part of the dial mechanism touches the cabinet or the set may still howl.

NOTE On chassis not stamped with the letter "S", tendency to howl or rumble may be eliminated in most cases by changing the value of condenser No. 60 from .01 mfd. to .002 mfd. Removing the rear rubber grommet on which the gang condenser is mounted and replacing it with a soft gum rubber grommet will also help. The washers and mounting bolt should not be replaced if this is done.

REPLACING THE DRIVE CORDS



TO SET DRUM ON CONDENSER SHAFT

With the tuning condenser plates in the horizontal (half mesh) position, the holes in the drum should be at the top. To change position of drum, loosen set screws.

TO REPLACE DIAL DRIVE CORD

1. Make a one inch loop in end of cord (Part No. 117057) using a dial cord clip (Part No. 114955).
2. Fasten a tension spring (Part No. 113177) to tab A and one end of the cord to the spring at point B.
3. Pass the other end of the dial cord through hole C on the rear of the drum.
4. Make two and one half turns of the cord about tuning shaft D.
5. Continue the cord to hole E in the rear of the drum.
6. The cord length should be adjusted so that the springs will be stretched to approximately the dimension indicated. Fasten a tension spring (Part No. 113177) to the cord by forming a new loop at F and then fasten spring to tab G.

TO REPLACE THE POINTER DRIVE CORD

1. Fasten an eyelet (Part No. 88348) at a point one-half inch from one end of the cord (Part No. 117057).
2. Pass cord through hole H at the front of the drum.
3. Continue cord clockwise around drum and around pulley K.
4. From pulley K go over pulley L and around front of drum through hole M.
5. The length of cord should be adjusted until the spring is stretched to approximately the length indicated. Fasten cord to spring at point N with a loop and clip as indicated.
6. Fasten spring to tab O.

TO SET POINTER

The pointer should be set to 540 K.C. on the dial scale when the tuning condenser is in full mesh. Cement pointer to cord at this point and allow to dry before moving.

ALIGNMENT PROCEDURE FOR 11-10A & 11-10A-Z CHASSIS

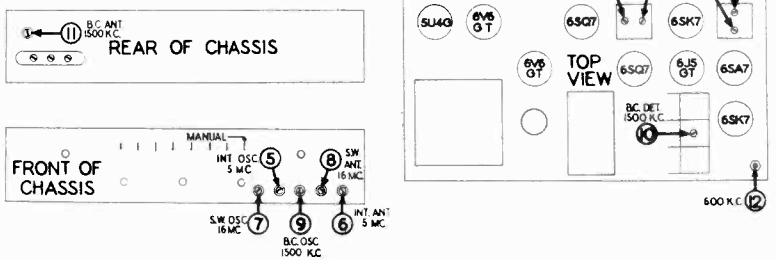
1. Connect the output meter across the voice coil or from plate to plate of the 6V6GT output tubes through a .1 mfd. condenser. (The more sensitive type should be connected across the voice coil.)
2. Connect the ground lead of the signal generator to the receiver chassis and change the black wire from the outer to the inner clip on top of the loop drum.
3. Turn the volume control to the maximum position and keep it in this position throughout the alignment procedure.
4. Push in the Manual button and keep it pushed in.
5. The loop must be connected as indicated in circuit diagram at all times.
6. With some signal generators, it may be found that the signal cannot be reduced to a useable value using the dummy antennas recommended below. In such cases the signal generator may be disconnected entirely from the set and the R. F. lead of the signal generator placed in the vicinity of the loop. On the Short Wave position the shield wire (black) may be disconnected from its jack and the output of the signal generator connected to the black wire through a 400 ohm resistor.

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 Middle 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	Black Wire from Loop	5 MC	Intermediate	5 MC	5	Intermediate 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. Recheck Image.
400 OHM Carbon Resistor	Black Wire from Loop	5 MC	Intermediate	Tune to 5 MC Generator Signal	6	Intermediate Antenna	Adjust for Maximum Output.
400 OHM Carbon Resistor	Black Wire from Loop	16 MC	Short Wave	16 MC	7	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	Black Wire from Loop	16 MC	Short Wave	Tune to 16 MC Generator Signal	8	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	Clip on Side of Loop Drum	1500 KC	Broadcast	1500 KC	9	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
Trimmers 10, 11 & 12 must be aligned after chassis and loop are placed in the cabinet.							
200 MMFD. Mica Condenser	Clip on Side of Loop Drum	1500 KC	Broadcast	1500 KC	10	Broadcast Detector	Adjust for Maximum Output.
					11*	Broadcast Antenna	
200 MMFD. Mica Condenser	Clip on Side of Loop Drum	600 KC	Broadcast	Tune to 600 KC Generator Signal	12*	Broadcast Oscillator (Series Padder)	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

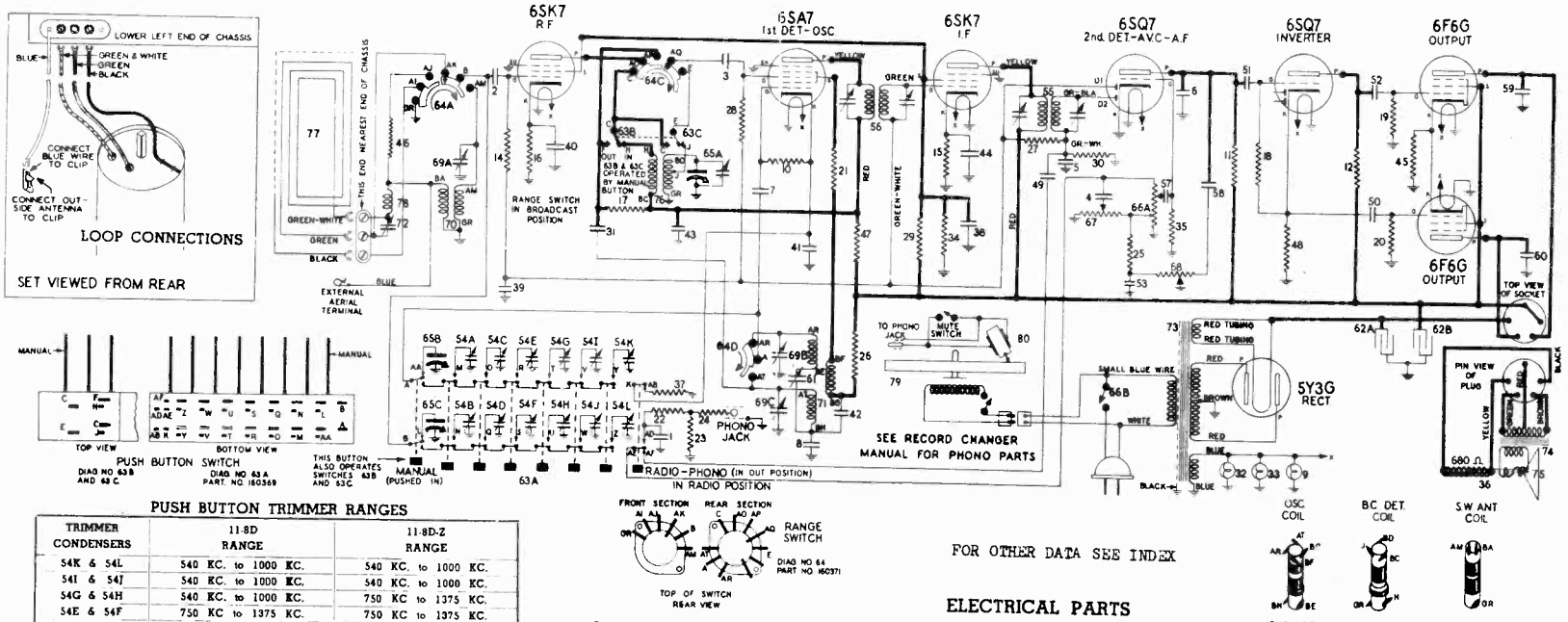
*Trimmers 11 and 12 may be adjusted using the radiated signal from the signal generator.

TRIMMER LOCATIONS

CHASSIS 11-10A, 11-10A-Z



STEWART-WARNER CORP. MODELS 11-8D1 to 11-8D9 11-8D1-Z to 11-8D9-Z Chassis 11-8D, 11-8D-Z



PUSH BUTTON TRIMMER RANGES

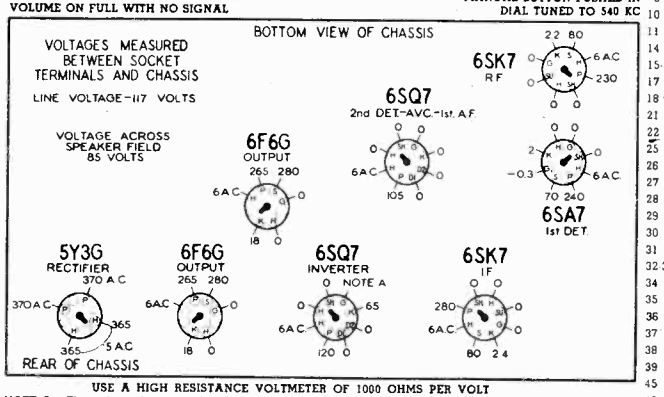
TRIMMER CONDENSERS	11-8D RANGE	11-8D-Z RANGE
54K & 54L	540 KC. to 1000 KC.	540 KC. to 1000 KC.
54I & 54J	540 KC. to 1000 KC.	540 KC. to 1000 KC.
54G & 54H	540 KC. to 1000 KC.	750 KC to 1375 KC.
54E & 54F	750 KC to 1375 KC.	750 KC to 1375 KC.
54C & 54D	750 KC to 1375 KC.	980 KC. to 1550 KC.
54A & 54B	980 KC. to 1550 KC.	980 KC. to 1550 KC.

I.F. 455 KC

SOCKET VOLTAGES

RANGE SWITCH IN BROADCAST POSITION
VOLUME ON FULL WITH NO SIGNAL

MANUAL BUTTON PUSHED IN
DIAL TUNED TO 540 KC



USE A HIGH RESISTANCE VOLTMETER OF 1000 OHMS PER VOLT

NOTE A: The voltage between chassis and the grid of the 6SQ7 Phase Inverter is 65 volts. This voltage cannot be measured with a meter of 1000 ohms per volt because of the high resistance of resistor No. 18.

FOR OTHER DATA SEE INDEX

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	81155	Condenser—500 mmfd. mica	$ .25
2 to 4	83539	Condenser—mica, 260 mmfd.	.20
5-6	83783	Condenser—mica, 110 mmfd.	.20
7	85563	Condenser—mica 26 mmfd.	.15
8	88587	Condenser—mica .0042 mfd.	.35
9	85296	Lamp—Turntable light, 6 to 8 volt (Mazda 51)	.16
10	110552	Resistor—carbon 47,000 ohms ½ watt	.12
11 to 13	110553	Resistor—carbon 220,000 ohms ½ watt	.12
14	110554	Resistor—carbon 1 megohm ¼ watt	.12
15-16	110556	Resistor—carbon 330 ohms ¼ watt	.12
17	110557	Resistor—carbon 4700 ohms ¼ watt	12
18 to 20	110559	Resistor—carbon 470,000 ohms ½ watt	.12
21	110560	Resistor—carbon 100 ohms ¼ watt	.12
22 to 24	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
25	110566	Resistor—carbon 33,000 ohms ¼ watt	.12
26	110567	Resistor—carbon 15,000 ohms ½ watt	.15
27	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
28	110578	Resistor—carbon 68,000 ohms ¼ watt	.12
29	110581	Resistor—carbon 18,000 ohms 2 watt	.30
30	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
31	161315	Condenser—5 mmfd. (twisted wire)	.18
32-33	112636	Lamp—dial (frosted) 6-8 volt	.25
34	112954	Resistor—carbon 10,000 ohms 1 watt	.16
35	112975	Resistor—carbon 10 meg. ¼ watt	.12
36	M-115110	Speaker—12 inch	12.00
37	116077	Resistor—carbon 150 ohms ¼ watt	.12
38	116625	Condenser—1 mfd. 600 volt	.25
39 to 44	116819	Condenser—.05 mfd. 600 volt	.20
45	117570	Resistor—wire wound 260 ohms 2 watt	.24
46	118804	Resistor—carbon 400 ohms ¼ watt	.10
47	118824	Resistor—carbon 1500 ohms ½ watt	.12
48	118825	Resistor—carbon 180,000 ohms ½ watt	.12
49 to 52	119193	Condenser—.01 mfd. 600 volt	.15
53	117571	Condenser—.008 mfd. 600 volt	.15
	119662	Condenser—P. B. Trimmer (low freq.)	.24
54A to 54L	119663	Condenser—P. B. Trimmer (med. freq.)	.24
	119664	Condenser—P. B. Trimmer (high freq.)	.24
55	119024	Transformer—2nd I. F.	1.15
56	119042	Transformer—1st I. F.	1.10
57-58	119817	Condenser—.004 mfd. 600 volt	.15
59-60	119875	Condenser—.002 mfd. 600 volt	.15
61	119934	Condenser—padder	.36
62A-62B	160008	Condenser—electrolytic (A-30 mfd. 450 volts / B-15 mfd. 450 volts)	1.50
63A to 63C	160369	Push button switch	3.00
64A to 64D	160371	Range switch	1.00
65A to 65C	160373	Condenser—variable tuning	3.20
66A-66B	160412	Volume control—2 meg. (with switch)	1.40
67	160413	Tone control (5 meg.) treble	.85
68	160414	Tone control (1 meg.) bass	.95
69A to 69C	160415	Condenser—trimmer 3 section	.48
70	160444	Coil—short wave antenna	.54
71	160447	Coil—oscillator	.80
72	160449	Condenser—trimmer for loop	.18
73	160450	Transformer—power (50-60 cycle)	6.35
74	M-160464	Transformer—output (or M-115110 speaker	1.60
75	M-160465	Cone & voice coil for M-115110 speaker	1.60
76	160478	R. F. coil (interstage B.C.)	.60
77	160572	Loop antenna complete	3.60
78	161228	Coil—loop compensating	.25
79	160086	Motor (60 cycle)	6.95
80	161289	Crystal cartridge	5.00

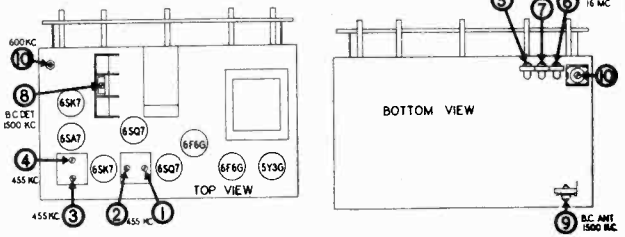
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ALIGNMENT PROCEDURE FOR 11-8D & 11-8D-Z CHASSIS
RECEIVER MODELS 11-8D1 TO 11-8D9 & 11-8D1-Z TO 11-8D9-Z

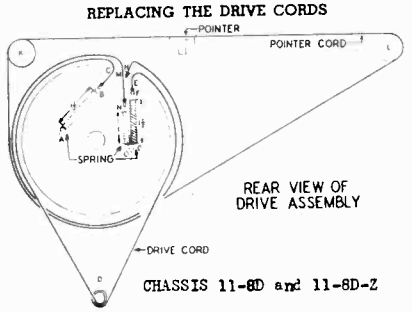
1. PUSH THE MANUAL BUTTON IN AND KEEP IT PUSHED IN.
2. Connect the signal generator ground lead to the receiver chassis. Adjust the volume control to the maximum volume position and leave it in this position during entire alignment procedure.
3. Connect the output meter across the voice coil or from plate to plate of the 6F6G output tubes through a .1 mfd. condenser.

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 Middle 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 on Lower Left Chassis End	16 MC	Shortwave	16 MC	5	Shortwave 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 on Lower Left Chassis End	16 MC	Shortwave	Tune to 16 MC Generator Signal	6	Shortwave Antenna	Adjust for Maximum Output.
No Connection	Lead from Sig. Gen. Placed Near Loop	1500 KC	Broadcast	1500 KC	7	Broadcast Oscillator (Shunt)	Adjust for Maximum Output.
Place chassis in cabinet before making adjustments 8, 9 and 10.							
No Connection	Lead from Sig. Gen Placed Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	8	Broadcast Detector	Adjust for Maximum Output.
No Connection	Lead from Sig. Gen. Placed Near Loop	1500 KC	Broadcast	Tune to 1500 KC Generator Signal	9	Broadcast Antenna	Adjust for Maximum Output.
No Connection	Lead from Sig Gen. Placed Near Loop	600 KC	Broadcast	Tune to 600 KC Generator Signal	10	Broadcast Oscillator Series Padder	Adjust for Maximum Output. Try to Increase Output by Detuning Trimmer and Retuning Receiver Dial until Maximum Output is Obtained.

TRIMMER LOCATIONS- CHASSIS 11-8D and 11-8D-Z



REPLACING THE DRIVE CORDS



CHASSIS 11-8D and 11-8D-Z

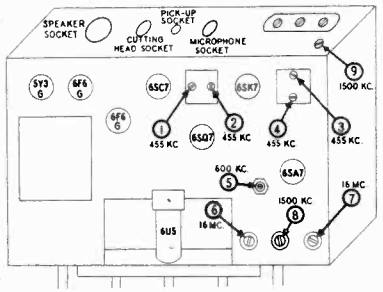
ALIGNMENT PROCEDURE FOR 11-8R CHASSIS

NOTE: This receiver may be completely aligned without removing the chassis from the cabinet.

1. Connect the ground lead of the signal generator to the chassis, and the loop antenna to the proper terminals on the chassis back.
2. Push in the buttons marked "RADIO" and "RECOR. OFF."
3. Connect the output meter across the voice coil or from plate to plate of the 6F6G output tubes through a .1 mfd. condenser.
4. Turn the volume and mixer control to the maximum clockwise position and keep it in this position throughout the entire alignment procedure.
5. With the gang condenser in full mesh, set the pointer so that it is in line with the graduation at the extreme left end 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 Position	Trimmer Number	Trimmer Description	Type of Adjustment
1 MFD. Condenser	Lug on Gang Condenser Farthest From Drum	455 KC	Broadcast Position "B"	Any Point Where It Does Not Affect Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
					3-4	1st I.F.	
400 OHM Resistor	Ext. Antenna Terminal	16 M.C.	Foreign Position "F"	16 M.C.	6	Foreign Oscillator (Shunt)	Adjust for maximum output. Check to see if proper peak is obtained by tuning in image at approx. 15.1 M.C. If image does not appear realign at 16 M.C with trimmer screw farther out.
400 OHM Resistor	Ext. Antenna Terminal	16 M.C.	Foreign Position "F"	Tune in 16 M.C. Generator Signal	7	Foreign Antenna	Adjust for maximum output. Try to increase output by detuning trimmer and re-tuning receiver dial until maximum output is obtained.
200 MMFD Mica Condenser	Ext. Antenna Terminal	1500 KC	Broadcast Position "B"	1500 KC	8	Broadcast Oscillator (Shunt)	Adjust for maximum output.
200 MMFD. Mica Condenser	Ext. Antenna Terminal	1500 KC	Broadcast Position "B"	Tune in 1500 KC Generator Signal	9	Broadcast Antenna	Adjust for maximum output.
200 MMFD. Condenser	Ext. Antenna Terminal	600 KC	Broadcast Position "B"	Tune in 600 KC Generator Signal	5	Broadcast Oscillator (Series)	Adjust for maximum output. Try to increase output by detuning trimmer and re-tuning receiver dial until maximum output is obtained.

TRIMMER LOCATIONS-CHASSIS 11-8R



DRIVE ASSEMBLY DATA
CHASSIS 11-8D, 11-8D-Z

TO REPLACE DIAL DRIVE CORD

1. Make a loop in end of cord (Part No. 117057) using a dial cord clip (Part No. 114955).
2. Fasten a tension spring (Part No. 113177) to tab A and one end of the cord to the spring at point B.
3. Pass the other end of the dial cord through hole C on the rear of the drum.
4. Make two and one half turns of the cord about tuning shaft D.
5. Continue the cord to hole E in the rear of the drum.
6. The cord length should be adjusted so that the springs will be stretched to approximately the dimension indicated. Fasten a tension spring (Part No. 113177) to the cord by forming a loop at F and then fastening spring to tab G.

TO REPLACE THE POINTER DRIVE CORD

1. Fasten an eyelet (Part No. 88348) at a point one-half inch from one end of the cord (Part No. 117057).
2. Pass cord through hole H at the front of the drum.
3. Continue cord around drum and around pulley K.
4. From pulley K go over pulley L and around front of drum through hole M.
5. The length of cord should be adjusted until the spring is stretched to approximately the length indicated. Fasten a spring to the cord at point N with a loop and clip as indicated.
6. Fasten spring to tab O.

TO SET POINTER

The poipter should be set to 540 K.C. on the dial scale when the tuning condenser is in full mesh. Cement pointer to cord at this point and allow to dry before moving.

REPLACING RANGE SWITCH

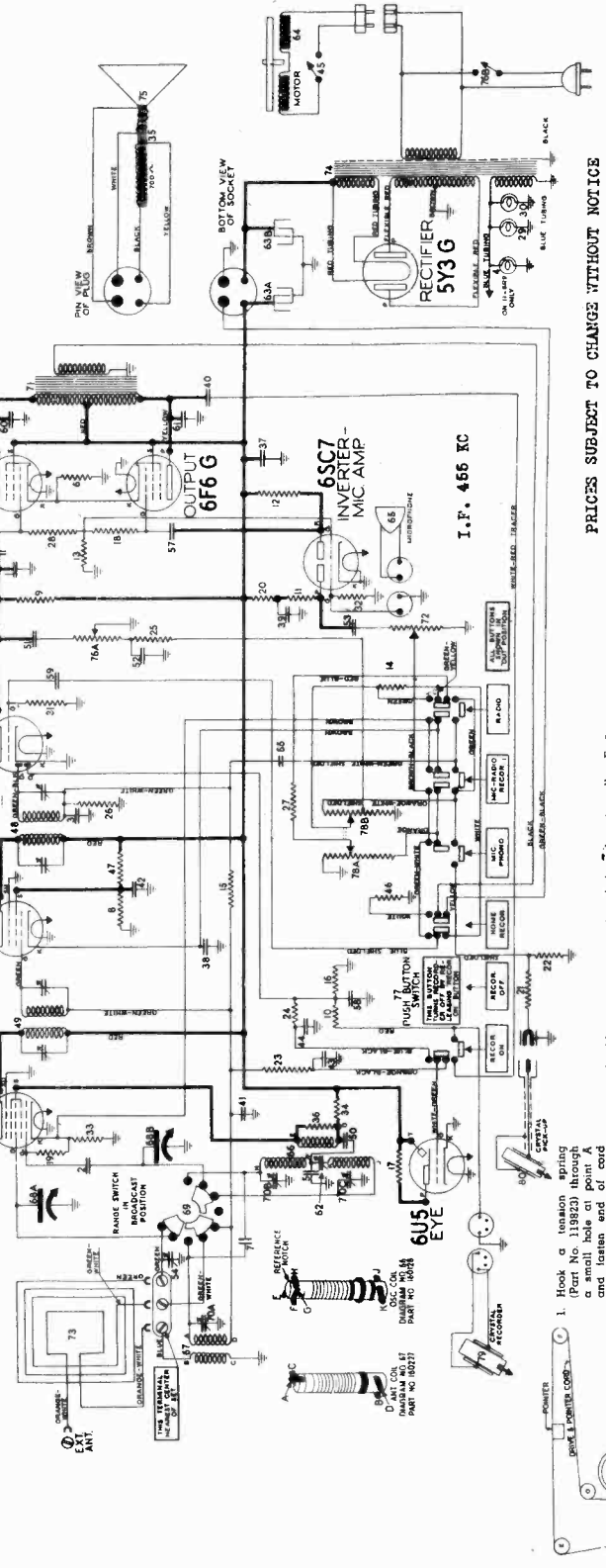
When replacing range switch, the simplest method of installation is to connect section nearest the top of the chassis first.

TO SET DRUM ON CONDENSER SHAFT

With tuning condenser plates in the horizontal (half mesh) position, the holes in the drum should be approximately in the position shown in the diagram. To change position of drum, loosen set screws.

STEWART-WARNER CORP. MODELS 11-8R8, 11-8R9

Chassis 11-8R



1. Hook a tension spring (Part No. 119823) through a small hole at point A and fasten end of cord (Part No. 113178) to spring at point B.
2. Pass the other end of the dial cord through hole C in Drum.
3. Continue up over dial drum, down through hole in dial mounting plate, around rubber grommet on tuning shaft and up to pulley E.
4. Pass cord over pulley E, thence around pulley F, and back over pulley G.
5. From pulley G place cord down around drum and up through hole C.
6. Slip cord through loop at end of spring B, adjust tension until spring is stretched to approximately seven-eighths inch and tie securely.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

FOR ALIGNMENT AND TRIMMER LOCATIONS, SEE INDEX

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	83539	Condenser—mica 260 mmfd.	$ .20
2-3	85061	Condenser—mica .51 mmfd.	.15
4	85296	Lamp—6 to 8 volt (Mazda 51) (11-8R9 only)	.16
5	88587	Condenser—mica .0047 mfd.	.35
6	89439	Resistor—240 ohms 2 watt wire wound	.12
7	101315	Condenser—wire 5 mmfd.	.16
8	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
9-10-11-12-13-14	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
15-16-17	110554	Resistor—carbon 1 meg ¼ watt	.12
18	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
19-20-21-22	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
23-24	110570	Resistor—carbon 2.2 meg ¼ watt	.15
25	110578	Resistor—carbon 68,000 ohms ¼ watt	.12
26	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
27	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
28	110594	Resistor—carbon 390,000 ohms ¼ watt	.12
29-30	110629	Dial light—6.3 volt	.15
31-32	112975	Resistor—carbon 10 meg. ¼ watt	.12
33	112994	Resistor—carbon 220 ohms ¼ watt (on early sets)	.16
	116077	Resistor—carbon 150 ohms ¼ watt (on late sets)	.12
34	112997	Resistor—carbon 22,000 ohms 1 watt	.15
35	M-115109	Speaker—dynamic 10"	7.00
36	116068	Resistor—680 ohms ¼ watt	.10
37	116625	Condenser—1 mfd. 600 volt	.25
38-39-40	116706	Condenser—2 mfd. 600 volt	.35
41-42-43-44	116819	Condenser—.05 mfd. 600 volt	.20
45	116984	Switch—on-off for phono motor (with escutcheon)	.32
46	118510	Resistor—3 ohms 1 watt wire wound	.15
47	118820	Resistor—carbon 47,000 ohms 1 watt	.12
48	119024	Transformer—2nd I.F.	
49	119042	Transformer—1st I.F.	
50-51-52-53	119193	Condenser—.01 mfd. 600 volt	
54	119345	Condenser—trimmer	
55-56-57	119414	Condenser—.02 mfd 600 volt	
58	119416	Condenser—.008 mfd. 600 volt	
59	119817	Condenser—.004 mfd. 600 volt	
60-61	119875	Condenser—.002 mfd. 600 volt	
62	119934	Condenser—padder	
63A-63B	160008	Condenser—electrolytic 30-15 mfd. 450 W. V.	1.50
64	160036	Motor for recorder (60 cycle)—11-8R8 & 11-8R9	8.00
65	160038	Microphone	12.50
66	160128	Coil—oscillator	.70
67	160227	Coil—S. W. antenna	.58
68A-68B	160247	Condenser—tuning—complete with P. B. tuner.	5.15
69	160334	Range switch	.70
70A-70B-70C	160344	Condenser—trimmer (3 section)	.45
71	160358	Transformer—output	1.58
72	160361	Microphone Gain Control	.95
73	160371	Loop antenna—complete for model 11-8R8 only	3.00
	160383	Loop antenna—complete for model 11-8R9 only	3.00
74	160390	Transformer—power (50-60 cycle)	4.80
75	M-160457	Cone & voice coil for M-115109 speaker.	1.80
76	160486	Tone control with switch.	.95
77	160487	Switch—push button	2.30
78A-78B	160489	Volume control & mixer, dual 1 meg.	2.00
79	161288	Crystal cartridge (recorder)	9.50
80	161289	Crystal cartridge (pickup)	5.00

SOCKET VOLTAGES

VOLUME ON FULL, NO SIGNAL — DIAL TUNED TO 540 KC

BOTTOM VIEW OF CHASSIS

TUNING EYE VOLTAGES MEASURED AT CHASSIS END OF CABLE
RED-WHITE 250 A.C.
BLUE-WHITE 63 A.C.
GREEN-WHITE 0
BLACK-WHITE 0
BROWN-WHITE 0

6SQ7 2nd DET-AVC-AF: 3.5, -3.0, 100, 350, 6.3 A.C.

6F6 G OUTPUT: 63 A.C., 248, 250, 17

6SA7 OSC-1st DET: 6.3, A.C., 92

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS

VOLTAGE ACROSS SPEAKER FIELD 70 VOLTS

LINE VOLTAGE 117 VOLTS

6F6 G OUTPUT: 325 A.C., 245, 250, 63 A.C., 320, 17, 0

6SK7 I.F.: 65, 0, 63 A.C., 250, 90, 3.5, 0

5Y3 G RECTIFIER: 325 A.C., 320, 5 A.C., 0

6SC7 INVERTER-MIC. AMP: 65, 0, 63 A.C., 250, 65, 0

REAR OF CHASSIS

USE A 1000 OHM PER VOLT — VOLTMETER

NOTE: ALL voltages measured with push button marked "Radio" pushed in.

MODELS 11-8R8, 11-8R9
Chassis 11-8R

STEWART-WARNER CORP.

RECORDER SERVICE DATA

ADDITIONAL RECORDER DATA GIVEN IN RECORDER SERVICE MANUAL FORM 9948

PUSH BUTTONS

The six push buttons shown on this circuit control the various functions of this receiver. The "RADIO," "MIC-RADIO-RECOR.", "MIC-PHONO" and "HOME RECOR." buttons are mechanically interconnected so that when any one of them is pushed in, it releases any of the other three which was pushed in.

The "RECOR. ON" and "RECOR. OFF" buttons are mechanically coupled to each other, but are independent of the other four buttons. Pushing in the "RECOR. ON" button releases the "RECOR. OFF" button and vise versa.

FUNCTIONS OF PUSH BUTTON CONTROLS

RADIO

Button In: Top of volume control, section (78B) of "Mixer & Volume Control" connects to diode load resistor No. 26 through coupling condenser No. 55. Slider of this control connects directly to grid of 6SQ7 through condenser No. 59, as resistor No. 14 is shorted out. Cathode circuit of 6SK7 tube completed through resistor No. 33.

Button Out: 6SK7 cathode circuit broken. Volume control disconnected from diode load resistor. Grid of 6SQ7 connected to slider of volume control section (78B) of "Mixer & Volume Control" through resistor No. 14 and to slider of Mixer Control, section 78A through resistor No. 27.

MIC-RADIO-RECOR.

Button In: Volume Control section, 78B of "Mixer & Volume Control" connected to diode load resistor No. 26 through coupling condenser No. 55. 6SK7 cathode circuit completed through resistor No. 33. Mixer Control, section 78A connected to slider of microphone gain control.

Button Out: Volume control, section 78B disconnected from diode load resistor. 6SK7 cathode circuit opened. Mixer, section 78A of control disconnected from slider of microphone gain control.

MIC. PHONO

Button In: Volume control, section 78B of "Mixer & Volume Control" connected to output of crystal pickup. Mixer, section 78A of control connected to slider of microphone gain control

Button Out: "Mixer & Volume Control" disconnected from phonograph pickup and from microphone gain control.

HOME RECOR.

Button In: Silences speaker by opening voice coil and connecting secondary of output transformer to resistor No. 46. It also connects the grid of the 6SQ7 tube to the slider of the microphone gain control. "Mixer & Volume Control" is disconnected from the circuit.

Button Out: Speaker again operative—microphone gain control disconnected from 6SQ7 grid.

RECOR. OFF

Button In: Releases "RECOR. ON" button thus disconnecting recorder and volume indicator circuits.

Button Out: This indicates "RECOR. ON" button is pushed in, as described below.

RECOR. ON

Button In: Recorder crystal connected to 6F6G plate through condenser No. 40. Also causes recorder head voltage to be applied across resistors No. 10 and No. 16 and applies part of this voltage to diode of 6SQ7. The other section of this switch disconnects the 6U5 eye tube from the A.V.C. circuit and connects it to indicate the rectified voltage appearing across resistor No. 16 thus the eye indicates the voltage across the recorder crystal.

Button Out: This disconnects the recorder from the output tube and at the same time connects the 6U5 tube to the A.V.C. circuit so it functions as a conventional tuning indicator.

GENERAL RECORDER TROUBLE DATA

For complete recording mechanism service data, refer to the separate Recorder Service Manual, Form No. 9948, which will be published later. For data on the automatic record changer mechanism, refer to the service notes, in Form No. J-22200.

Receiver instructions, Form 9893, give complete data for the use of the recorder used in Model 11-8R8, Form 9895 Instructions give data for the operation of the recorder and record changer used in the model 11-8R9.

NOTE: Always turn the microphone gain control fully counter-clockwise when microphone is not being used. Howling may occur if this precaution is not observed.

IMPORTANT: It is essential that the recorder be placed on a level surface when making recordings. If the recorder does not stand in a level position, it will change the effective pressure of the cutting head and proper results cannot be obtained.

ADJUSTMENT OF CUTTING HEAD

Before attempting any adjustments of the cutting head, make certain that such adjustments are necessary by making a test recording using a new needle and a record blank of known quality.

DEFECTIVE CUTTING NEEDLE

A cutting needle is considered worn when the background hiss becomes objectionable, or when the thread cut from the record becomes ragged. A dull needle may also cause the depth of cut to be incorrect.

The condition of the cutting needle can be determined by examining the point by means of a powerful magnifying glass or low power microscope, and comparing it with a good needle viewed in a similar manner. Another good check on the condition of the cutting needle is the appearance of a freshly cut record. If the record has a dull or grayish appearance instead of its usual shiny appearance, the needle should be replaced.

ADJUSTING THICKNESS OF SHAVING

The proper thickness of the shaving produced when a record is cut is about the thickness of a human hair. If the cutting needle is sharp and in good condition, and the cutting head adjusted to give the correct depth of cut, the shaving should come off as a long continuous ribbon. With some types of recording blanks, the ribbon cut by the cutting needle will come off as a straight band, while with others it may produce a curly thread. This ribbon should not, however, be too fine or extremely crinkly as this indicates a dull cutting needle or insufficient pressure of the recording head.

When the cutting head is placed on a record blank, the needle locking screw should be halfway between the top and bottom of the hole in the head. The position of the cutting needle screw may be changed on the Model 11-8R8 by raising the cutter arm and adjusting the screw and lock nut under this arm. On Model 11-8R9 it is only necessary to adjust the screw near the pivot end of the recording arm, with a screwdriver.

The depth of cut can be varied on Model 11-8R8 by adjusting the screw at the center of the recording arm with a screwdriver. Clockwise rotation increases the thickness, while counter-clockwise rotation decreases the thickness of the shaving. This adjustment will have little effect if the needle is dull or damaged.

On Model 11-8R9 this adjustment is made by varying the position of the knob on the top of the recording arm. This knob has engraved upon it the letters "L," "M" and "H" indicating light, medium and heavy shavings. Adjustment should be made to compensate for different types of needles and record blanks if an examination of the record and shavings indicates that an adjustment is necessary. BEFORE ADJUSTING FOR THICKNESS OF SHAVING MAKE CERTAIN THAT THE CUTTING NEEDLE IS PROPERLY MOUNTED. ALSO TRY A NEW CUTTING NEEDLE, SINCE THE OLD ONE MAY BE WORN OR DAMAGED.

RECORDER HEAD INOPERATIVE

A quick check of the recorder head can be made by pushing in the "RECOR. ON" button and the "RADIO" button and then tuning in a station. If the recorder is operating, this fact is easily determined by holding the cutting needle of the cutter between the thumb and forefinger. Vibration of the needle indicates that the cutter head is in operating condition.

If the recorder does not operate, check first to determine if an A.C. voltage exists across the terminals of the recorder socket. This can best be measured using the 0-150 volt scale of a rectifier type A. C. Voltmeter. With proper recording volume the peaks of the voltage appearing across these terminals should be 80 to 120 volts. If no voltage exists under these conditions, check the contacts of the "RECOR. ON" switch, and the condenser No. 40 coupling the recorder to the 6F6G plate. If these circuits are found to be all right check the recorder crystal cartridge and replace if necessary.

CORRECT NEEDLE ANGLE

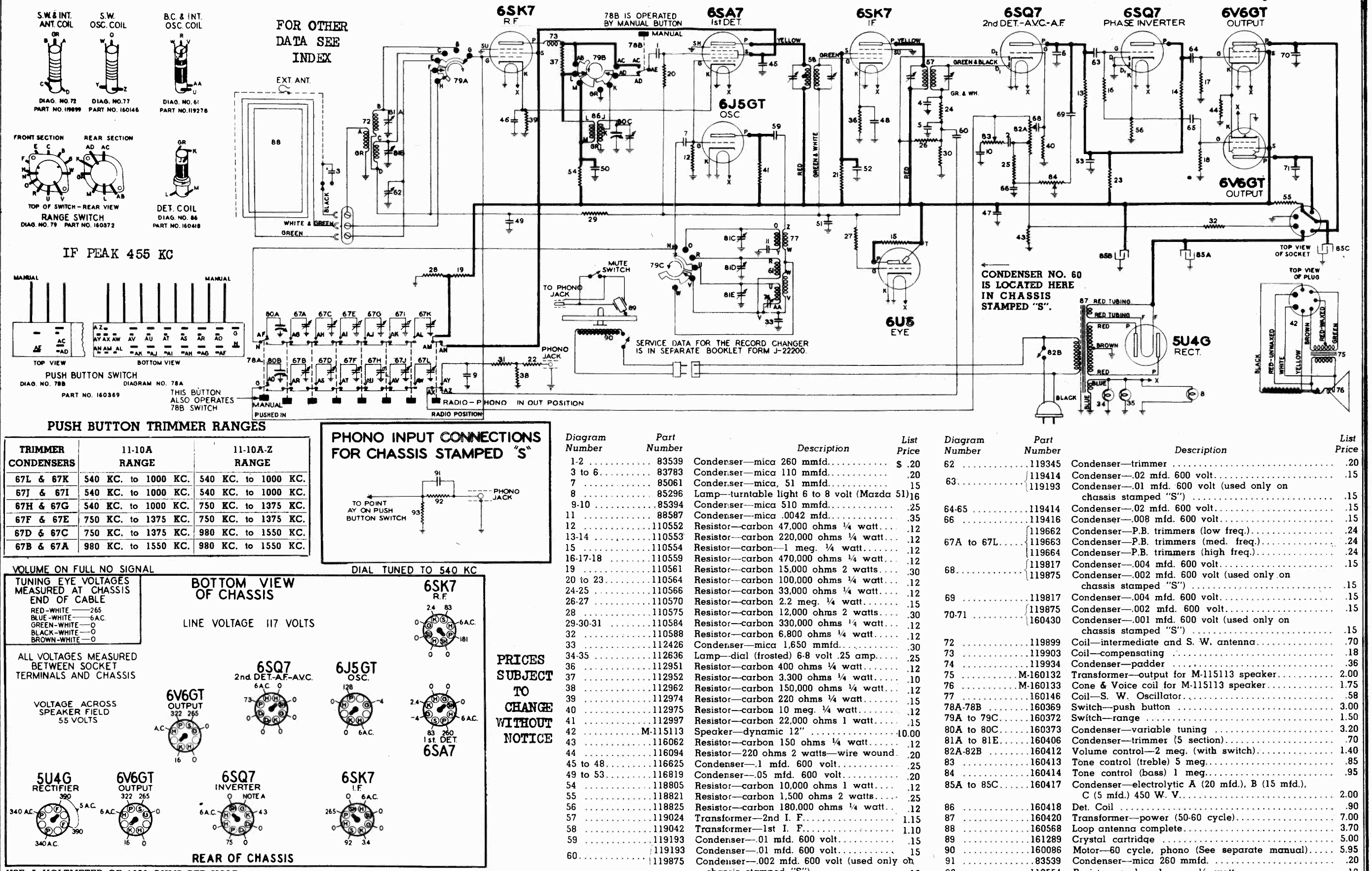
When making a recording, the cutting needle should be set at such an angle that the thread cut from the record will be thrown toward the center of the record. Otherwise the thread may be caught under the cutting needle, causing it to cut the grooves improperly.

If the thread is not thrown toward the center of the record, loosen the thumb screw holding the recording needle in the cutter head, turn the needle VERY SLIGHTLY so that the flat side of the cutting tip faces more toward the center of the record and retighten thumb screw. This will change the angle of the needle sufficiently to cause the thread to wind about the center pin of the turntable.

Use care in making this adjustment as the needle will not cut properly if it is turned too far.

STEWART-WARNER CORP.

MODELS 11-10A1 to 11-10A10, Ch.11-10A
11-10A1-Z to 11-10A10-Z, Ch.11-10-Z



PUSH BUTTON TRIMMER RANGES

TRIMMER CONDENSERS	11-10A RANGE	11-10A-Z RANGE
67L & 67K	540 KC. to 1000 KC.	540 KC. to 1000 KC.
67J & 67I	540 KC. to 1000 KC.	540 KC. to 1000 KC.
67H & 67G	540 KC. to 1000 KC.	750 KC. to 1375 KC.
67F & 67E	750 KC. to 1375 KC.	750 KC. to 1375 KC.
67D & 67C	750 KC. to 1375 KC.	980 KC. to 1550 KC.
67B & 67A	980 KC. to 1550 KC.	980 KC. to 1550 KC.

PHONO INPUT CONNECTIONS FOR CHASSIS STAMPED "S"

VOLUME ON FULL NO SIGNAL — DIAL TUNED TO 540 KC

TUNING EYE VOLTAGES MEASURED AT CHASSIS END OF CABLE
RED-WHITE — 265
BLUE-WHITE — 6A.C.
GREEN-WHITE — 0
BLACK-WHITE — 0
BROWN-WHITE — 0

ALL VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS

VOLTAGE ACROSS SPEAKER FIELD 55 VOLTS

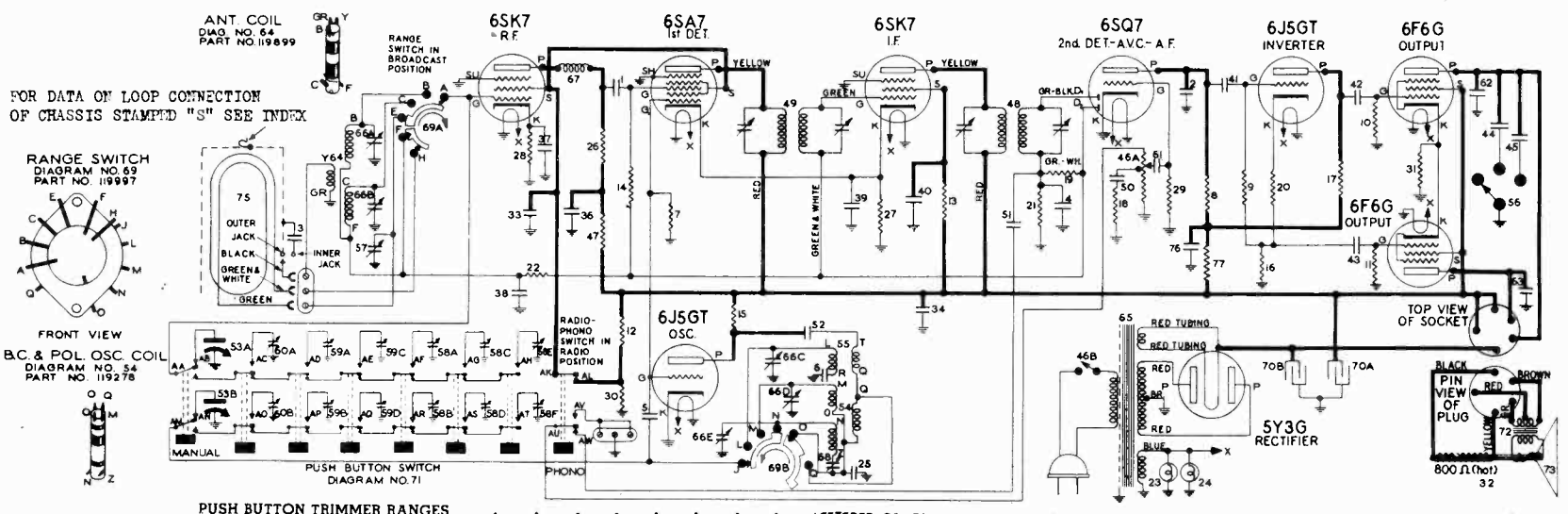
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

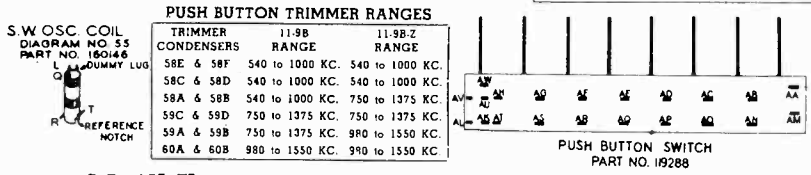
USE A VOLTMETER OF 1000 OHMS PER VOLT.

NOTE A: The grid of the 6SQ7 inverter tube is at a positive potential with respect to chassis.

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$ .20
3 to 6	83783	Condenser—mica 110 mmfd.	.20
7	85061	Condenser—mica, 51 mmfd.	.15
8	85296	Lamp—turntable light 6 to 8 volt (Mazda 51)	.16
9-10	85394	Condenser—mica 510 mmfd.	.25
11	88587	Condenser—mica .0042 mfd.	.35
12	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
13-14	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
15	110554	Resistor—carbon—1 meg. ¼ watt	.12
16-17-18	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
19	110561	Resistor—carbon 15,000 ohms 2 watts	.30
20 to 23	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
24-25	110566	Resistor—carbon 33,000 ohms ¼ watt	.12
26-27	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
28	110575	Resistor—carbon 12,000 ohms 2 watts	.30
29-30-31	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
32	110588	Resistor—carbon 6,800 ohms ¼ watt	.12
33	112426	Condenser—mica 1,650 mmfd.	.30
34-35	112636	Lamp—dial (frosted) 6-8 volt .25 amp.	.25
36	112951	Resistor—carbon 400 ohms ¼ watt	.12
37	112952	Resistor—carbon 3,300 ohms ¼ watt	.10
38	112962	Resistor—carbon 150,000 ohms ¼ watt	.12
39	112974	Resistor—carbon 220 ohms ¼ watt	.15
40	112975	Resistor—carbon 10 meg. ¼ watt	.12
41	112997	Resistor—carbon 22,000 ohms 1 watt	.15
42	M-115113	Speaker—dynamic 12"	10.00
43	116062	Resistor—carbon 150 ohms ¼ watt	.12
44	116094	Resistor—220 ohms 2 watts—wire wound	.20
45 to 48	116625	Condenser—.1 mfd. 600 volt	.25
49 to 53	116819	Condenser—.05 mfd. 600 volt	.20
54	118805	Resistor—carbon 10,000 ohms 1 watt	.12
55	118821	Resistor—carbon 1,500 ohms 2 watts	.25
56	118825	Resistor—carbon 180,000 ohms ¼ watt	.12
57	119024	Transformer—2nd I. F.	1.15
58	119042	Transformer—1st I. F.	1.10
59	119193	Condenser—.01 mfd. 600 volt	.15
60	119193	Condenser—.01 mfd. 600 volt	.15
	119875	Condenser—.002 mfd. 600 volt (used only on chassis stamped "S")	.15
61	119278	Coil—B. C. & Intermediate oscillator	.60
62	119345	Condenser—trimmer	.20
63	119414	Condenser—.02 mfd. 600 volt	.15
	119193	Condenser—.01 mfd. 600 volt (used only on chassis stamped "S")	.15
64-65	119414	Condenser—.02 mfd. 600 volt	.15
66	119416	Condenser—.008 mfd. 600 volt	.15
67A to 67L	119662	Condenser—P.B. trimmers (low freq.)	.24
	119663	Condenser—P.B. trimmers (med. freq.)	.24
	119664	Condenser—P.B. trimmers (high freq.)	.24
68	119817	Condenser—.004 mfd. 600 volt	.15
	119875	Condenser—.002 mfd. 600 volt (used only on chassis stamped "S")	.15
69	119817	Condenser—.004 mfd. 600 volt	.15
70-71	119875	Condenser—.002 mfd. 600 volt	.15
	160430	Condenser—.001 mfd. 600 volt (used only on chassis stamped "S")	.15
72	119899	Coil—intermediate and S. W. antenna	.70
73	119903	Coil—compensating	.18
74	119934	Condenser—padder	.36
75	M-160132	Transformer—output for M-115113 speaker	2.00
76	M-160133	Cone & Voice coil for M-115113 speaker	1.75
77	160146	Coil—S. W. Oscillator	.58
78A-78B	160369	Switch—push button	3.00
79A to 79C	160372	Switch—range	1.50
80A to 80C	160373	Condenser—variable tuning	3.20
81A to 81E	160406	Condenser—trimmer (5 section)	.70
82A-82B	160412	Volume control—2 meg. (with switch)	1.40
83	160413	Tone control (treble) 5 meg.	.85
84	160414	Tone control (bass) 1 meg.	.95
85A to 85C	160417	Condenser—electrolytic A (20 mfd.), B (15 mfd.), C (5 mfd.) 450 W. V.	2.00
86	160418	Det. Coil	.90
87	160420	Transformer—power (50-60 cycle)	7.00
88	160568	Loop antenna complete	3.70
89	161289	Crystal cartridge	5.00
90	160086	Motor—60 cycle, phono (See separate manual)	5.95
91	83539	Condenser—mica 260 mmfd.	.20
92	110554	Resistor—carbon 1 meg. ¼ watt	.12
93	110564	Resistor—carbon 100,000 ohms ¼ watt	.12

STEWART-WARNER CORP. 11-9B1-Z to 11-9B9-Z
Chassis 11-9B, 11-9B-Z
MODELS 11-9B1 to 11-9B9





PUSH BUTTON TRIMMER RANGES

TRIMMER CONDENSERS	11-9B RANGE	11-9B-Z RANGE
58E & 58F	540 to 1000 KC.	540 to 1000 KC.
58C & 58D	540 to 1000 KC.	540 to 1000 KC.
58A & 58B	540 to 1000 KC.	750 to 1375 KC.
59C & 59D	750 to 1375 KC.	750 to 1375 KC.
59A & 59B	750 to 1375 KC.	980 to 1550 KC.
60A & 60B	980 to 1550 KC.	980 to 1550 KC.

I.F. 455 KC

FOR OTHER DATA SEE INDEX

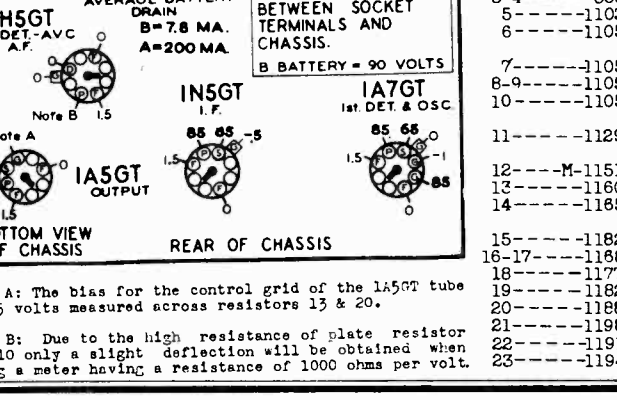
LETTERED POINTS ON PICTORIAL VIEWS CORRESPOND TO IDENTICAL POINTS ON THE CIRCUIT DIAGRAM.

NOTE
RESISTOR 26 AND COND 36 ARE OMITTED ON CHASSIS STAMPED "S". RESISTOR 47 CONNECTS DIRECTLY TO COIL 67.

SOCKET VOLTAGES

RADIO-PHONO SWITCH IN RADIO POSITION

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



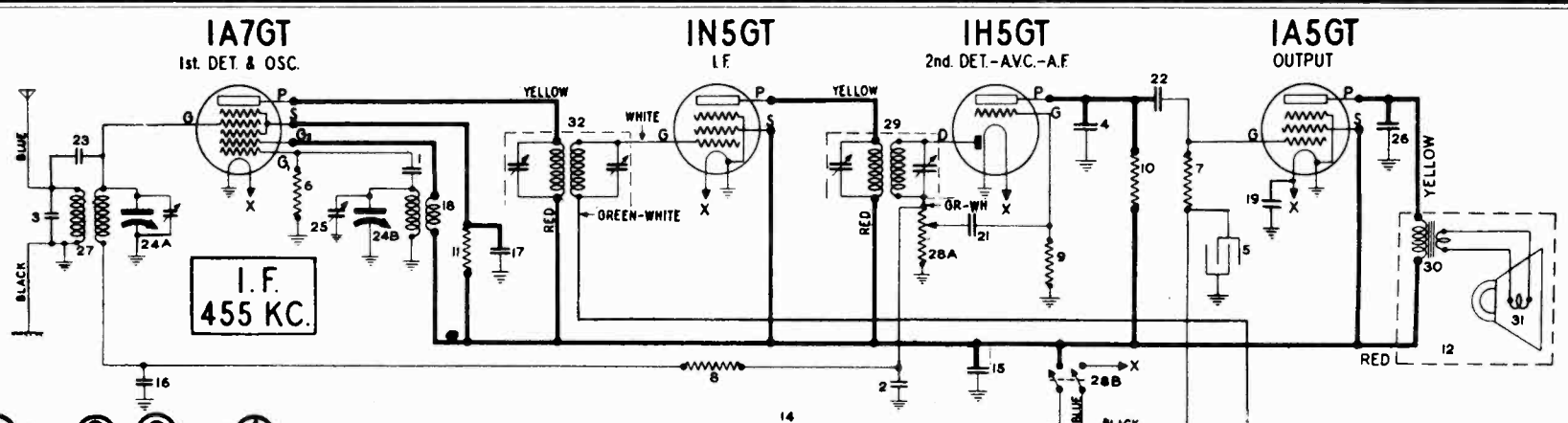
USE A HIGH RESISTANCE VOLTMETER OF 1000 OHMS PER VOLT.

NOTE A: The bias on the 6J5GT inverter grid is —5 volts measured across resistor No. 20.

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica 260 mmfd.	$0.20
3-4	83783	Condenser—mica, 110 mmfd.	.20
5	85061	Condenser—mica, 51 mmfd.	.15
6	88587	Condenser—mica .0042 mfd.	.35
7	110552	Resistor—carbon 47,000 ohms ½ watt	.12
8	110553	Resistor—carbon 220,000 ohms ½ watt	.12
9 to 11	110559	Resistor—carbon 470,000 ohms ½ watt	.12
12	110561	Resistor—carbon 15,000 ohms 2 watts	.30
13-14	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
15 to 17	110565	Resistor—carbon 22,000 ohms ½ watt	.12
18	110578	Resistor—carbon 68,000 ohms ½ watt	.12
19	110570	Resistor—carbon 2.2 meg. ½ watt	.15
20	110573	Resistor—carbon 2,200 ohms ½ watt	.12
21-22	110584	Resistor—carbon 330,000 ohms ½ watt	.12
23-24	112636	Lamp—6.3 volt—.25 amps (frosted)	.25
25	112426	Condenser—mica 1650 mmfd.	.30
26	112952	Resistor—carbon 3,300 ohms ½ watt (see note above)	.10
27	112974	Resistor—carbon 220 ohms ½ watt	.15
28	112978	Resistor insulated 470 ohms ½ watt (used only in chassis not stamped with letter)	.12
	110556	Resistor—330 ohms ½ watt (used only on chassis stamped "S")	.12
29	112975	Resistor—carbon 10 meg. ½ watt	.12
30	112997	Resistor—carbon 22,000 ohms 1 watt	.15
31	114334	Resistor—wire wound 360 ohms 2 watts	.20
	M-115110	Speaker—Dynamic—12" (11-9B8 only)	14.00
32	M-115111	Speaker—Dynamic—10" (11-9B6 only)	8.60
	M-115118	Speaker—Dynamic—12" (11-9B7 only)	14.00
33 to 35	116625	Condenser—1 mfd. 600 volt	.25
36	116819	Condenser—05 mfd. 600 volt (see note at left)	.20
37 to 40	116819	Condenser—05 mfd. 600 volt	.20
41 to 44	116893	Condenser—02 mfd. 600 volt	.15
45	118487	Condenser—07 mfd. 600 volts	.25
46A-46B	118669	Volume control—1 meg. (with switch)	1.40
47	118805	Resistor—carbon 10,000 ohms 1 watt	.12
48	119024	Transformer—2nd I.F.	1.15
49	119042	Transformer—1st I.F.	1.10
50	116893	Condenser—02 mfd. 600 volt	.15
51-52	119193	Condenser—01 mfd. 600 volt	.15
53A-53B	119291	Condenser—variable tuning	2.75
54	119278	Coil—B.C. & Police Oscillator	.60
55	160146	Coil—Short Wave Osc.	.58
56	119289	Switch—tone	.60
57	119345	Condenser—trimmer for loop	.20
	119753	Trimmer—for P.B. trimmers (low freq.) (see table)	.24
58A to 60B	119663	Trimmer for P.B. trimmers (med. freq.) (see table)	.24
	119664	Trimmer for P.B. trimmers (high freq.) (see table)	.24
61 to 63	119817	Condenser—004 mfd. 600 volt	.15
64	119899	Coil—antenna	.18
65	119900	Transformer—power (50-60 cycle)	4.80
	160460	Transformer—power (25 cycle)	6.90
66A to 66E	119902	Trimmer condenser—five sections	.75
67	119903	Coil—compensating	.12
68	119934	Condenser—padder	.36
69A-69B	119997	Range switch	1.10
70A-70B	160008	Condenser—electrolytic 15-30 mfd. 450 volt	1.50
71	119288	Switch—push button	2.50
72	M-160464	Transformer—output (11-9B8)	1.60
	M-160427	Transformer—output (11-9B6)	1.80
	M-160462	Transformer—output (11-9B7)	1.80
73	M-160465	Cone & Voice coil (11-9B8)	1.60
	M-160428	Cone & Voice coil (11-9B6)	1.80
	M-160463	Cone & Voice coil (11-9B7)	1.80
75	160157	Loop antenna (complete) (used on chassis not stamped with letter)	3.60
	161290	Loop antenna (complete) (used only on chassis stamped "S")	3.60
76	116706	Condenser—2 mfd. 600 volt	.35
77	110565	Resistor—22,000 ohms ½ watt	.12

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE



FOR ALIGNMENT SEE INDEX

ELECTRICAL PARTS

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION	LIST PRICE
1	83539	Condenser - mica 260 mmfd.	.20
2	83783	Condenser - mica 110 mmfd.	.20
3-4	85061	Condenser - mica 51 mmfd.	.15
5	110377	Condenser - elect. 10 mfd. 35V.	.80
6	110553	Resistor - carbon 220,000 ohms 1/4 watt	.12
7	110554	Resistor - carbon 1 meg. ½ watt	.12
8-9	110580	Resistor - carbon 3.3 meg. ½ W.	.12
10	110591	Resistor - carbon 680,000 ohms 1/4 watt	.12
11	112995	Resistor - carbon 15,000 ohms 1/4 watt	.12
12	M-115126	Speaker - P.M. (6")	5.50
13	116078	Resistor - 560 ohms 1/4 watt	.12
14	116586	Battery cable - for heavy duty batteries	.85
15	118206	Condenser - .25 mfd. 600 volt	.35
16-17	116819	Condenser - .05 mfd. 600 volt	.20
18	117741	Coil - oscillator	.35
19	118206	Condenser - .25 mfd. 150 volt	.35
20	118843	Resistor - carbon 47 ohms ½ W.	.12
21	119817	Condenser - .004 mfd. 600 volt	.15
22	119193	Condenser - .01 mfd. 600 volt	.15
23	119466	Capacitor - wire (2 mmfd.)	.12
24A - 24B	119528	Condenser - tuning (with drum)	2.90
25	119719	Condenser - trimmer	.16
26	119875	Condenser - .002 mfd. 600 volt	.15
27	161323	Coil - antenna	1.00
28A - 28B	161325	Volume control - ½ meg. with switch	1.50
29	161330	Transformer - 2nd I.F.	1.00
30	M-161332	Transformer - output for M-115126 speaker	.90
31	M-161334	Cone & Voice coil for M-115126 speaker	1.20
32	161340	Transformer - 1st I.F.	1.00

SOCKET VOLTAGES

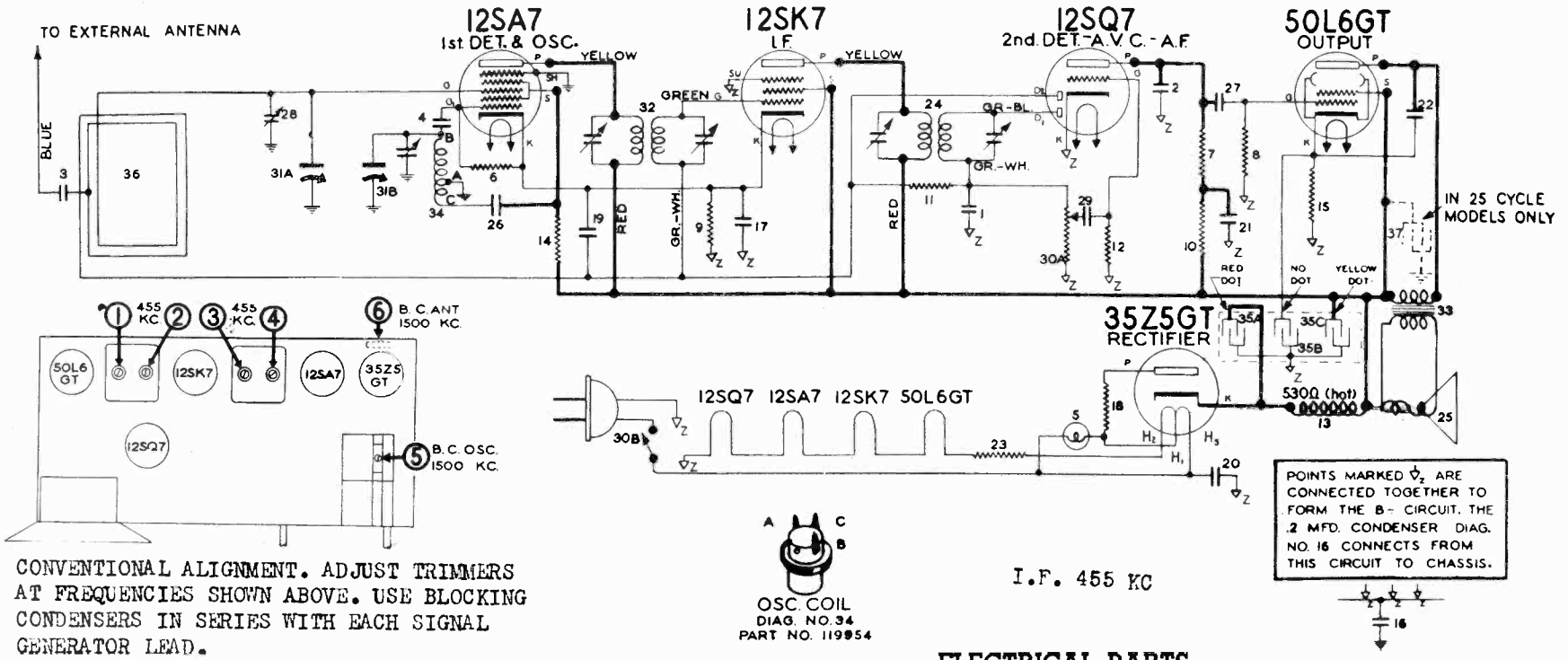
NOTE A: The bias for the control grid of the 1A5GT tube is -5 volts measured across resistors 13 & 20.

NOTE B: Due to the high resistance of plate resistor NO. 10 only a slight deflection will be obtained when using a meter having a resistance of 1000 ohms per volt.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MISCELLANEOUS PARTS

PART NUMBER	DESCRIPTION	LIST PRICE
116549	Cable - battery	.45
114955	Clamp - for dial cord	.01
112745	Clip - coil mounting	.01
113019	Clip - dial scale retaining	.01
117057	Cord - drive (supplied in 3 foot lengths)	.15
161333	Dial scale	.24
116411	Indicator lever assembly	.09
160219	Knob - push on	.06
88631	Plug - 4 prong, male	.08
119718	Pointer	.14
81145	Retaining ring - for tuning shaft	Per C .50
116690	Socket - octal base	.12
113169	Spring - for indicator lever	.01
114968	Spring - dial cord tension	.03
161327	Tuning shaft	.18
111456	Washer - spring washer	Per C .50
161328	Window - dial	.38



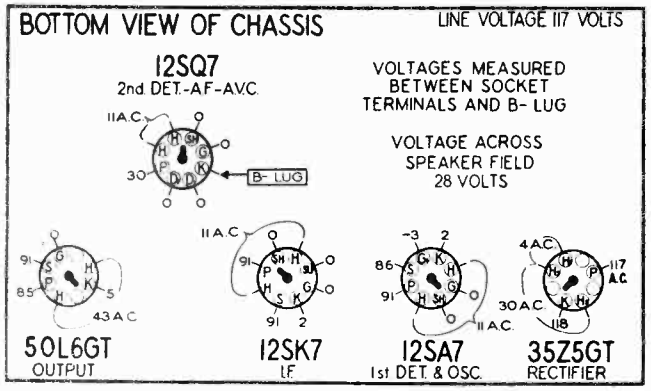
CONVENTIONAL ALIGNMENT. ADJUST TRIMMERS AT FREQUENCIES SHOWN ABOVE. USE BLOCKING CONDENSERS IN SERIES WITH EACH SIGNAL GENERATOR LEAD.

OSC. COIL
DIAG. NO. 34
PART NO. 119954

I.F. 455 KC

SOCKET VOLTAGES

Volume on full with no signal. Dial tuned to 540 KC

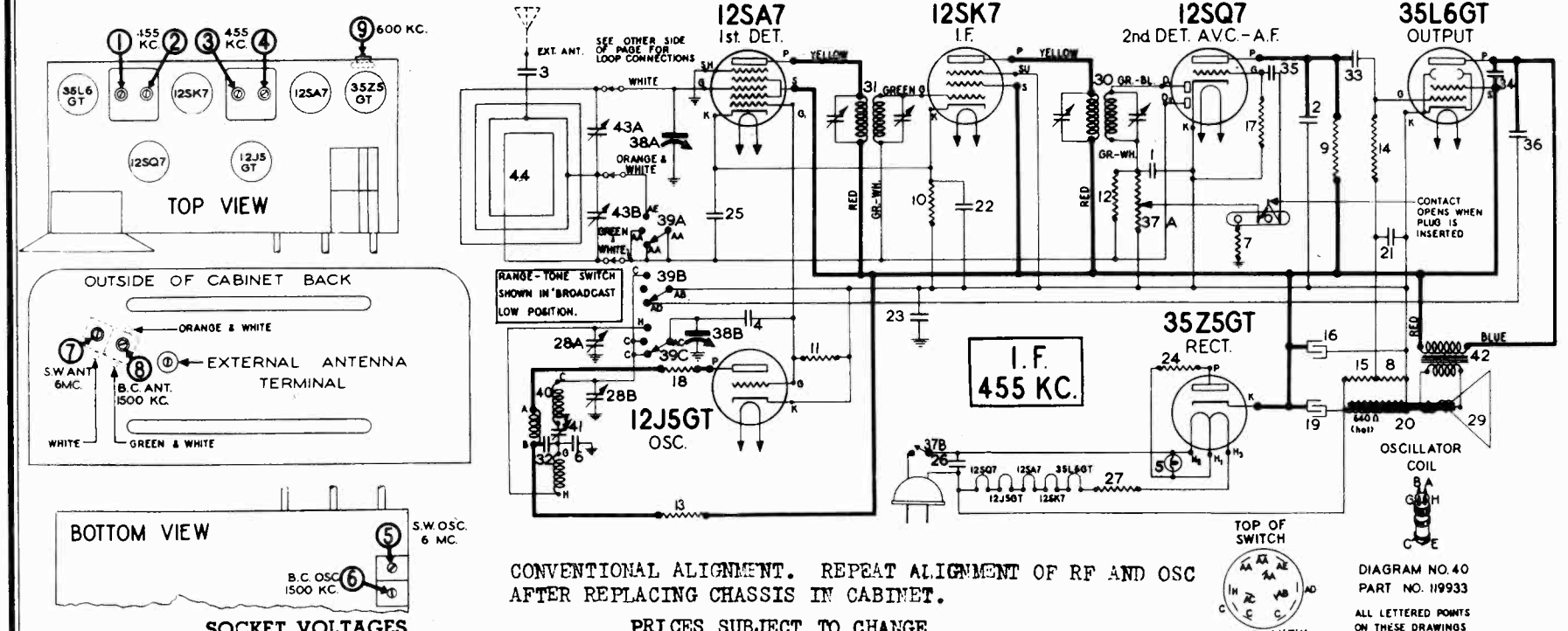


Use a voltmeter of 1000 ohms per volt.

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	85296	Lamp—dial 6 to 8 volt (Mazda 51)	.16
6	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
7-8	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
9	110560	Resistor—carbon 100 ohms ¼ watt	.12
10	110564	Resistor—carbon 100,000 ohms ¼ watt	.12
11	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
12	112975	Resistor—carbon 10 meg. ¼ watt	.12
13	R-115102	Speaker—dynamic (5")	4.30
14	118803	Resistor—680 ohms ¼ watt	.12
15	116092	Resistor—140 ohms 1 watt Wire Wound	.15
16-17	116706	Condenser—.2 mfd. 600 volt	.35
18	116752	Resistor—33 ohms 1 watt wire wound	.15
19 to 21	116819	Condenser—.05 mfd. 600 volt	.20
22	116893	Condenser—.02 mfd. 600 volt	.15
23	117395	Resistor—20 ohms 1 watt wire wound	$0.16
24	118903	Transformer—2nd I.F.	1.10
25	R-118999	Cone & Voice coil for R-115102 speaker	1.70
26-27	119193	Condenser—.01 mfd. 600 volt	.15
28	119345	Condenser—trimmer for loop	.20
29	119817	Condenser—.004 mfd.—600 volt	.15
30A-30B	119912	Volume control—1 meg. (with switch)	1.40
31A-31B	119928	Condenser—variable tuning	2.40
32	119935	Transformer—1st I.F.	1.10
33	R-119944	Transformer—output for R-115102 speaker	1.60
34	119954	Coil—oscillator	.36
35A-35B-35C	160012	Condenser—Electrolytic (A—40 mfd.—200 volts; B—20 mfd.—25 volts; C—20 mfd.—200 volts)	1.15
36	160081	Loop Antenna	.60
37	118911	Condenser—Electrolytic—20-20 mmfd.—150 v., one section used	.75

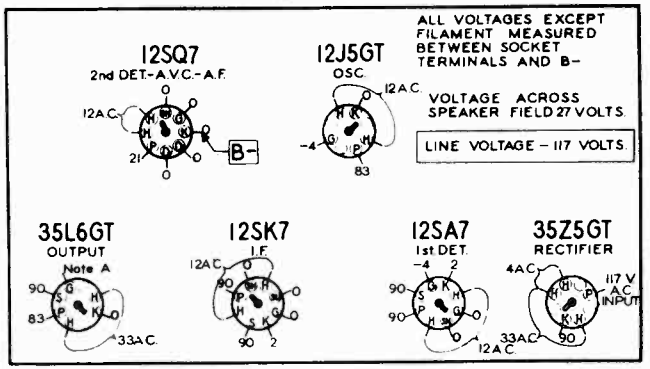
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.



CONVENTIONAL ALIGNMENT. REPEAT ALIGNMENT OF RF AND OSC AFTER REPLACING CHASSIS IN CABINET.

SOCKET VOLTAGES

RANGE-TONE SWITCH IN BROADCAST "HI" POSITION. (CENTER)
VOLUME ON FULL WITH NO SIGNAL. DIAL SET TO 540 KC.



REAR OF CHASSIS

NOTE A: The bias on the grid of the 35L6GT output tube is —6.4 volts. This voltage can not be measured on a 1000 ohm per volt meter because of the high resistance of resistors 15 and 8. (Use a voltmeter of 1000 ohms per volt.)

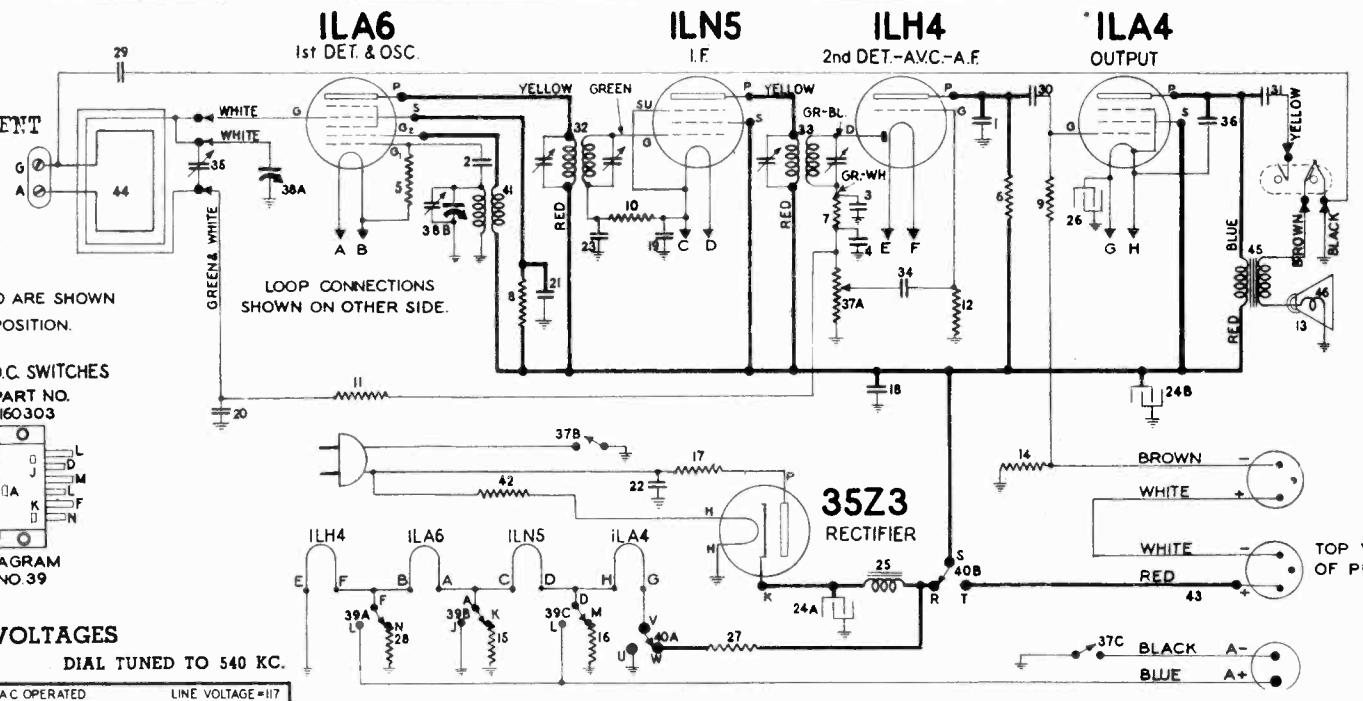
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1-2	83539	Condenser—mica, 260 mmfd.	$0.20
3-4	83783	Condenser—mica, 110 mmfd.	.20
5	85296	Lamp—dial 6 to 8 volt (Mazda 51)	.16
6	89275	Condenser—mica .002 mfd.	.40
7-8	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
9	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
10	110560	Resistor—carbon 100 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	110573	Resistor—carbon 2,200 ohms ¼ watt	.12
14	110584	Resistor—carbon 330,000 ohms ¼ watt	.12
15	110591	Resistor—carbon 680,000 ohms ¼ watt	.12
16	112898	Condenser—electrolytic 16 mfd. 150 volt	.50
17	112975	Resistor—carbon 10 meg. ¼ watt	.12
18	112994	Resistor—carbon 220 ohms ¼ watt	.16
19	113472	Condenser—electrolytic 40 mfd. 150 volt	.56

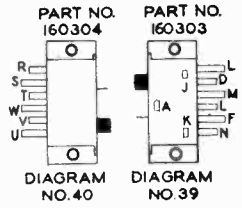
Diagram Number	Part Number	Description	List Price
20	R-115102	Speaker—dynamic (5")	$4.30
21	116625	Condenser—.1 mfd. 600 volt	.25
22-23	116706	Condenser—.2 mfd. 600 volt	.35
24	116752	Resistor—33 ohms 1 watt wire wound	.15
25-26	116819	Condenser—.05 mfd. 600 volt	.20
27	117395	Resistor—20 ohms 1 watt wire wound	.16
28A-28B	118920	Trimmer strip (2 section)	.30
29	R-118999	Cone & voice coil for R-115102 Speaker	1.70
30	119024	Transformer—2nd I. F.	1.15
31	119042	Transformer—1st I. F.	1.10
32 to 34	119193	Condenser—.01 mfd. 600 volt	.15
35	119817	Condenser—.004 mfd. 600 volt	.15
36	119880	Condenser—.04 mfd. 600 volt	.20
37A-37B	119912	Volume control—1 meg. (with switch)	1.40
38A-38B	119914	Condenser—variable tuning	2.30
39A to 39C	119916	Switch—tone & range (see table)	.90
40	119933	Coil—oscillator	.36
41	119934	Condenser—padder	.36
42	R-119944	Transformer—output for R-115102 Speaker	1.60

I.F. 455 KC
CONVENTIONAL ALIGNMENT
TRIM OSC AND ANT AT
1500 KC. READJUST
AFTER INSTALLING
CHASSIS IN CABINET.



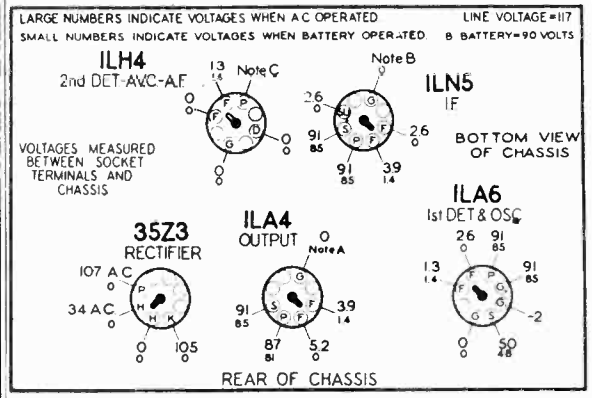
SWITCHES 39 & 40 ARE SHOWN IN A.C.-D.C. POSITION.

BATTERY & A.C.-D.C. SWITCHES



SOCKET VOLTAGES

VOLUME ON FULL — DIAL TUNED TO 540 KC.



NOTE A: The 1LA4 grid bias during battery operation is —5 volts measured across resistor 14.

NOTE B: During A.C.-D.C. operation the grid of the 1LN5 is slightly positive with respect to chassis. This voltage cannot be measured properly on ordinary meters.

NOTE C: Due to the high resistance of resistor 6, only a small voltage will be read on a meter having a resistance of 1000 ohms per volt.

NOTE: Later sets have an iron core 2nd I.F. transformer (Part No. 161248) which has only one adjustment for alignment. Adjust the large screw projecting from the top of the can for maximum output.

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	83783	Condenser—mica, 110 mmfd.	$ .20
2-3-4	85061	Condenser—mica, 51 mmfd.	.15
5	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
6	110554	Resistor—carbon 1 megohm ¼ watt	.12
7	110565	Resistor—carbon 22,000 ohms ¼ watt	.12
8	110566	Resistor—carbon 33,000 ohms ¼ watt	.12
9-10	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
11-12	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
13	R-115119	Speaker—dynamic (4")	4.50
14	116078	Resistor—560 ohms ¼ watt	.12
15-16	116079	Resistor—carbon 1200 ohms ¼ watt	.12
17	116088	Resistor—100 ohms 1 watt W. W.	.14
18	116625	Condenser—.1 mfd. 600 volt	.25
19	116706	Condenser — .2 mfd. 600 volt (used only on sets having 119411 I.F.)	.35
	118290	Condenser—.5 mfd. 150 volt (used on sets having 161248 I.F.)	.50
20 to 23	116819	Condenser—.05 mfd. 600 volt	.20
24A-24B	117559	Condenser—electrolytic 30-30 mfd. 150 volt	1.20
5	117888	Filter choke	.85
26	118452	Condenser—electrolytic—100 mfd. 8 v.	.55
27	118822	Resistor—2000 ohms 5 watts W. W.	.40
28	118827	Resistor—carbon 270 ohms ¼ watt	.10
29 to 31	119193	Condenser—.01 mfd. 600 volt	.15
32	119409	Transformer—1st I.F.	1.10
33	119411	Transformer—2nd I.F.	1.10
	161248	Transformer—2nd I.F. (iron core) used on some sets	1.35
34	119817	Condenser—.004 mfd. 600 volt	.15
35	119845	Condenser—trimmer (on loop)	.16
36	119875	Condenser—.002 mfd. 600 volt	.15
37A to 37C	160297	Volume control—1 meg.—with switch	1.30
38A-38B	160298	Condenser—variable tuning with drum	2.80
39A to 39C	160303	Battery & A.C.-D.C. switch	.68
40A-40B	160304	Battery & A.C.-D.C. switch	.48
41	160475	Coil—oscillator	.44
42	160492	Power cord (resistor type)	.95
43	160493	Battery cable	.54
44	160570	Loop antenna—complete with condenser & terminals	1.50
45	R-160632	Transformer—output for R-115119 spkr.	1.60
46	R-160633	Cone & Voice coil for R-115119 spkr.	1.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MISCELLANEOUS PARTS

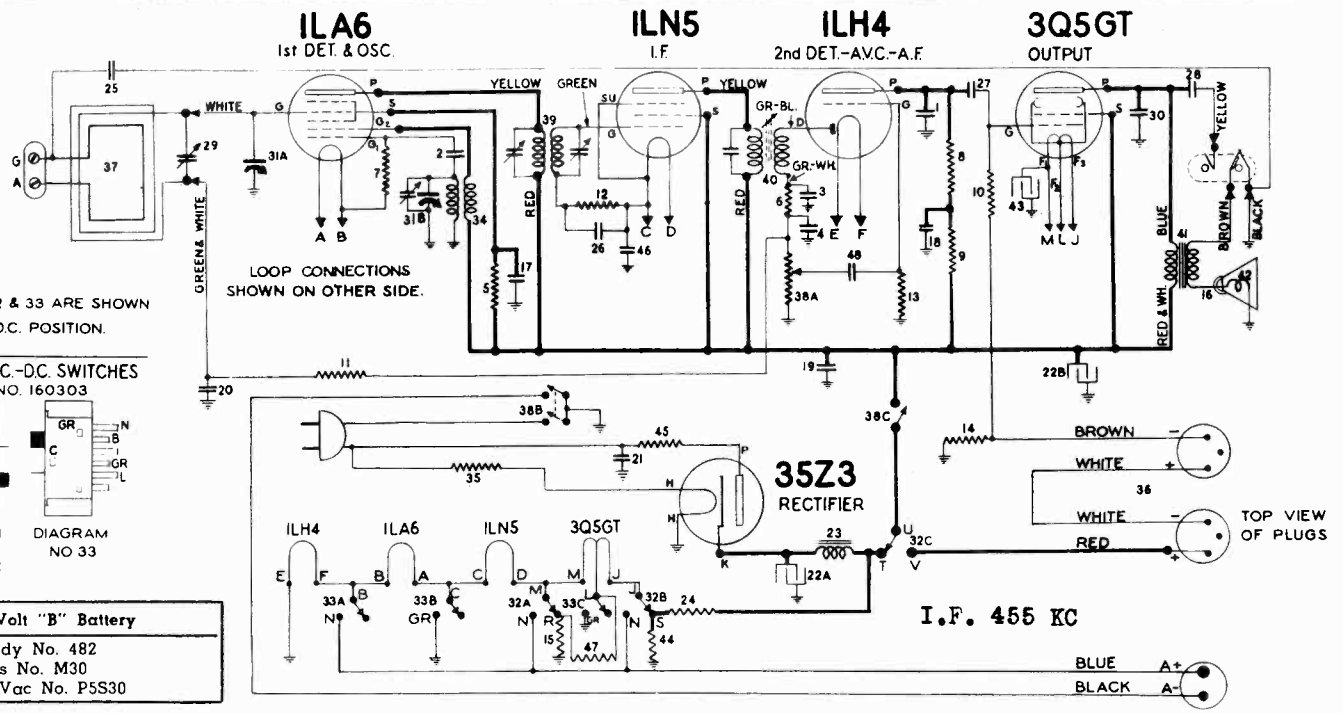
Part Number	Description
161219	Block—battery retaining
112745	Clip—coil mounting
113019	Clip—dial scale retaining
116948	Cord—dial drive (supplied in 6 ft. lgths.)
161250	Dial scale
160490	Knob—volume
160491	Knob—tuning
117769	Name plate—(Stewart-Warner)
117779	Plate (Off-Volume)
117780	Plate (tuning)
116397	Plug—2 prong male for cable
116398	Plug—3 prong male for cable
119911	Phono terminal strip
81145	Retaining ring for tuning shaft
160392	Socket—octal
160294	Socket—8 prong Loktal
111981	Spring—for dial cord
160621	Terminal strip G-A
160301	Tube shield
111456	Washer—spring washer for tuning shaft
160291	Window—dial
116488	Wing Nut—No. 8-32 (for battery support block)

SWITCHES 32 & 33 ARE SHOWN IN A.C.-D.C. POSITION.

BATTERY & A.C.-D.C. SWITCHES
PART NO. 160303

DIAGRAM NO. 32 — DIAGRAM NO 33

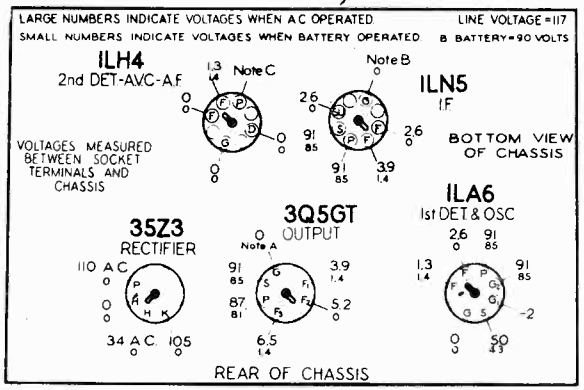
1½ Volt "A" Battery	45 Volt "B" Battery
Eveready No. 745	Eveready No. 482
Burgess No. 8FL	Burgess No. 4M30
Ray-O-Vac No. P98L	Ray-O-Vac No. P5S30



*NOTE: If I.F. oscillation is encountered, it may be reduced in some cases by reversing the connections of the red and yellow wires coming from the 2nd I.F. transformer (Part No. 161248).

SOCKET VOLTAGES

VOLUME ON FULL — DIAL TUNED TO 540 KC.



NOTE A: The 3Q5GT grid bias during battery operation is —5 volts measured across resistor 14.

NOTE B: During A.C.-D.C. operation the grid of the ILN5 is slightly positive with respect to chassis. This voltage cannot be measured properly with ordinary meters.

NOTE C: Due to the high resistance of resistor 8, only a small voltage will be read on a meter having a resistance of 1000 ohms per volt.

FOR ALIGNMENT SEE INDEX

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ELECTRICAL PARTS

Diagram Number	Part Number	Description	List Price
1	81158	Condenser—mica, 100 mmfd.	$ .25
2-3-4	85061	Condenser—mica, 51 mmfd.	.15
5-6	110552	Resistor—carbon 47,000 ohms ¼ watt	.12
7	110553	Resistor—carbon 220,000 ohms ¼ watt	.12
8	110554	Resistor—carbon 1 megohm ¼ watt	.12
9	110559	Resistor—carbon 470,000 ohms ¼ watt	.12
10	110570	Resistor—carbon 2.2 meg. ¼ watt	.15
11-12-13	110580	Resistor—carbon 3.3 meg. ¼ watt	.12
14-15	112977	Resistor—insulated 470 ohm ¼ watt	.15
16	U-115120	Speaker—P.M. (5")	5.50
17-18-19	116625	Condenser—.1 mfd. 600 volt	.25
20-21	116819	Condenser—.05 mfd. 600 volt	.20
22A-22B	117559	Condenser—electrolytic 30-30 mfd. 150 volt	1.20
23	117888	Filter choke	.85
24	118842	Resistor—1680 ohms 5 watts W. W.	.15
25 to 28	119193	Condenser—.01 mfd. 600 volt	.15
29	119845	Condenser—trimmer (on loop)	.16
30	119875	Condenser—.002 mfd. 600 volt	$ .15
31A-31B	160298	Condenser—variable tuning with drum	2.80
32-33	160303	Battery & A.C. switches	.68
34	160475	Coil—oscillator	.44
35	160492	Power cord (resistor type)	.95
36	160493	Battery cable	.54
37	160570	Loop antenna—complete	1.50
38A to 38C	161227	Volume control—(1 meg.) & switch	1.30
39	161247	Transformer—1st I.F.	1.20
40	161248	Transformer—2nd I.F. (iron core)	1.35
41	U-161255	Transformer—output for U-115120 spkr.	1.50
42	U-161256	Cone & Voice coil for U-115120 speaker	1.40
43	161273	Condenser—electrolytic 50 mfd. 25 volt	.50
44	116082	Resistor—insulated 1500 ohms ¼ watt	.15
45	116275	Resistor—50 ohms, ½ watt W. W.	.15
46	118290	Condenser—.5 mfd. 150 volt	.50
47	118827	Resistor—carbon, 270 ohms, ¼ watt	.10
48	119817	Condenser—.004 mfd., 600 volt	.15

GENERAL INSTRUCTIONS

1. FUNCTION OF RECORD CHANGER WHEN IT IS GOING THRU A CHANGE CYCLE --

The Model "J" Record Changer plays and automatically changes 14 or less ten-inch records or 10 or less 12-inch records.

The Record Changer is started by turning the switch control knob, (Item 65, Fig. 4) to "ON" this starts the motor and moves trip rod (Item 32, Fig. 1), which rotates trip lever assembly (Item 20, Fig. 1), causing it to disengage from Engagement Clutch Cam, (Item 79, Fig. 2). The Engagement Clutch Cam will then rotate due to tension from spring, (Item 27, Fig. 1). This causes it to contact the pin on the top side of Drive Gear Assembly, (Item 4, Fig. 1), as it rotates, and in turn, moves the Drive Link Assembly, (Item 31, Fig. 1), and the Selector Shaft Crank Assembly #1 and #2 to the position shown in Fig. 2. Also the tone arm reset link (Item 80, Fig. 2), has moved to where it has released the latch, (Item 18, Fig. 1), and carried the tone arm to its extreme outward position. The Tone Arm lifter link (Item 81, Fig. 2), has raised the tone arm to its extreme height, by means of the Lifter Plate Assembly, (Item 21, Fig. 1). The tone arm is kept from "floating" free by the friction of the Tone Arm Brake Spring which also compresses the tone arm booster spring, (Item 13, Fig. 1) due to its very light tension.

The Drive Gear Assembly (Item 4, Fig. 1), continues to rotate which causes the top pin to disengage from the Automatic Engagement Clutch Cam which is moved back to latch with the tone arm trip lever, and the lower pin to engage the drive link assembly, moving it back to its initial position. This swings in the tone arm to either the 10-inch or 12-inch record playing position and lowers it to the record. At the same time it releases the Tone Arm Brake Spring allowing the Tone Arm Booster Spring to act.

2. PHONOGRAPH NEEDLES --

Various types and kinds of needles are available for use in phonograph tone arms.

For playing ten or more records at one setup with this Record Changer, no attempt should be made to use ordinary needles with steel or fiber points since continued use of worn needle points will damage the records being played.

Any needle can be used that is designed to play 15 or more records.

It is well to keep in mind that even if the amplifying system, speaker and tone arm are of the best quality, a poor needle will result in poor reproduction of music.

There are a number of good semi-permanent types of needles on the market which are rated in number of plays. It is usually more economical to use one of these needles which is rated at 1000 plays or more.

It is very important to remember not to remove and then replace any needle that has been used.

3. CHASSIS MOUNTING

On the bottom surface of the panel are four mounting studs, each threaded to take a 1/4-20" machine screw. The mounting panel rests on four tapered coil springs, the small end of each spring is pressed over a mounting stud and the large end of each spring fits into a socket in the top surface of the mounting shelf in cabinet.

Four spacing blocks 1/2" thick and with a 5/8" hole are fastened to the lower side of the mounting shelf. The 5/8" hole in each is centered with the center of the 7/16" screw clearance hole. These are to be provided and located on the lower side of the mounting shelf into which each of the lower mounting springs are to fit.

The 1/4"-20 machine screws are turned through the four wing nuts until the head of each screw is against the bottom side of each wing nut.

The four lower springs which are of smaller diameter than the upper springs are slipped over the ends of each of the 1/4"-20 machine screws with the tapered end toward the head and resting on the wing nuts.

OPERATING INSTRUCTIONS

1. TO PREPARE CHANGER FOR OPERATION --

(A) Setting Record Changer to Play Ten Inch Records:
Turn both knobs until the arrows are pointing toward the center of the turntable. When in this position any number up to and including fourteen 10-inch records can be played.

(B) Setting Record Changer to Play Twelve Inch Records:
Turn both knobs until the arrows marked "12" are pointing toward the center of the turntable. When in this position any number up to and including ten 12-inch records can be played.

2. LOADING --

(A) If 10-inch records are to be played, set knobs as described in (A) above and place any number up to and including 14 records (ten inch only) over center pin so that they will rest on the selecting arms.

(B) If 12-inch records are to be played, set knobs as described in (B) above and place any number up to and including 10 records (twelve inch only) over center pin so that they will rest on the arms.

3. STARTING THE RECORD CHANGER --

1. Turn on the radio (allowing approximately 30 seconds for the tubes to warm up) and throw the phonograph-radio knob or control to the phonograph position.

2. Turn the switch knob on the Record Changer panel to "ON". The motor will then start and the record changer will go into automatic operation of its own accord.

4. PLAYING AN INDIVIDUAL RECORD --

An individual record can be played in the same manner as a stack of records would be played, i.e., if it is a 10-inch record, follow the instructions pertaining to 10-inch records. If it is a 12-inch record, follow the instructions pertaining to 12-inch records.

A 10-inch record may be played manually by turning the selecting arm knobs to the unloading position and leaving them in this position--records may then be put on or taken off the turntable by merely moving the tone arm outward until it catches, and placing the 10-inch records over the spindle and down onto the turntable. The "ON" and "OFF" switch knob is then pushed down and the 10-inch record will be played and repeated if left on the turntable. To remove the record it is only necessary to move the tone arm outward until it catches, and lift the record off of the turntable.

5. TURNING OFF RECORD CHANGER --

Turn switch knob to "OFF" position while the tone arm is still on the record. If the switch knob should be turned off while Record Changer is going through a change cycle, it will be difficult to adjust the selector arms correctly for the automatic playing of 10-inch or 12-inch records.

MODEL J
Record-changer

STEWART-WARNER CORP.

Figure 1

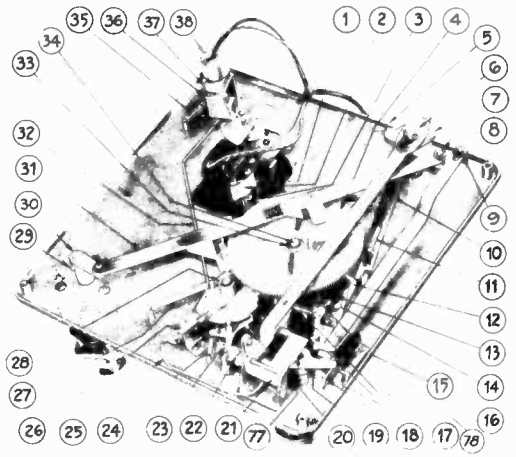
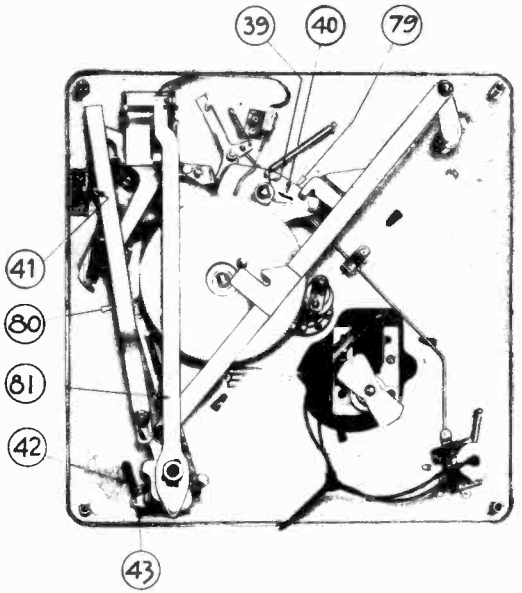


Figure 2



MODEL "J" RECORD CHANGER

Fig. 1

ITEM NO.	PART NO.	DESCRIPTION	NO. USED
1	J-22096	Spindle Thrust Plate	1
2	J-22808	Spindle Bearing Housing Assy.	1
3	J-22010	Drive Pinion	1
4	J-22810	Drive Gear Assy.	1
5	J-22149	Panel, Post & Stud Assy.	1
6	F-1063	Selector Shaft Collar	1
7	J-22803	Selector Shaft Crank Assy. Post #1	1
8	J-72021	Flat Washer	3
9	H-22065	"C" washer	3
10	J-22041	12" Set Link	1
11	J-22121	12" Reset Link Spring	1
12	J-22147	Tone Arm Locator & Bushing Assy.	1
13	H-20129	Tone Arm Booster Spring	1
14	J-22036	Tone Arm Locator Shoe 12"	1
15	J-22037	Tone Arm Locator Shoe 10"	1
16	J-22094	Tone Arm Locator Spring	1
17	J-22038	Tone Arm Latch & Guide Bracket	1
18	J-22101	Tone Arm Latch Lever	1
19	J-22807	Tone Arm Lever Assy.	1
20	J-22812	Trip Lever Assy.	1
21	J-22813	Tone Arm Lift Plate Assy.	1
22	J-10380	Thumb Nut	1
23	J-10355	Tone Arm Trip Shoe	1
24	J-22058	Trip Lever Spring	1
25	J-22136	Pickup Shielded Wire	1
26	J-22116	Muting Switch	1
27	J-22090	Clutch Spring	1
28	J-72024	Flat Washer	1
29	J-80035	Taper Pin	3
30	J-22805	Selector Shaft Drive Crank Assy. Post #2	1
31	J-22816	Drive Link Assy.	1
32	J-22055	Trip Rod	1
33	J-72024	Flat Washer	1
34	J-22002	Drive Gear Stud	1
35	J-22121	Switch Spring	1
36	J-22102	Switch Mounting Bracket	1
37	J-22103	Switch Retainer Bracket	1
38	J-22118	Switch	1
77	J-22067	Tone Arm Shaft	1
78	J-22134	Reset Arm Stop Washer	1

Fig. 2

39	J-22017	Clutch Reset Pawl Spring	1
40	J-22016	Clutch Reset Pawl	1
41	J-22123	Latch Lever Shoulder Screw	1
43	J-22811	12" Set Arm Assy.	1
79	J-22802	Engagement Clutch Cam Assy.	1
80	J-22804	Tone Arm Reset Link	1
81	J-22806	Tone Arm Lifter Link Assy.	1

Figure 3

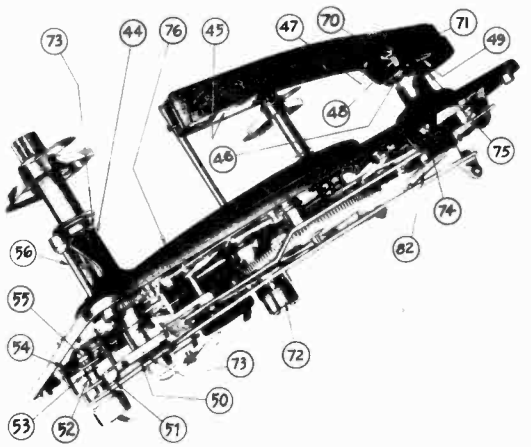
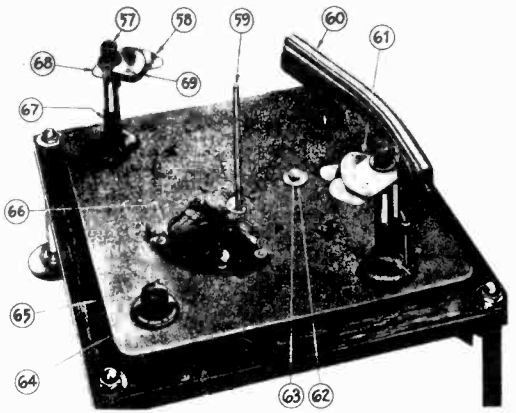


Figure 4



MODEL "J" RECORD CHANGER

Fig. 3

ITEM NO.	PART NO.	DESCRIPTION	NO. USED
44	J-22061	Record Support Post #1	1
45	J-22125	Tone Arm Cartridge	1
46	J-22080	Tone Arm Swivel Bracket	1
47	J-22081	Tone Arm Mounting Bracket	1
48	J-22068	Tone Arm Lift Pin	1
49	J-22133	Counter Balance Spring	1
50	J-22129	Spring Washer	1
51	J-22014	Roller	2
52	J-22131	Switch Return Spring	1
53	J-72050	Flat Washer	2
54	J-22104	Switch Reject Slide	1
55	J-22809	Switch Collar & Reject Pin Assy.	1
56	J-22063	12" Set Rod	1
70	H-20157	Tone Arm Adjusting Screw	1
71	H-20039	Adjusting Screw Lock Spring	1
72	J-22117	Thrust Wafer	1
73	H-20014	Thrust Washer	5
74	H-20513	Ball Race Assy.	1
75	H-20101	Rubber Bumper	1
76	J-22078	Turntable	1
82	J-22025	Tone Arm Lifter Reset Spring	1

Fig. 4

57	J-22077	Control Knob	2
58	J-22098	Selector Blade 10"	2
59	J-22148	Turntable Spindle	1
60	J-22079	Tone Arm	1
61	J-22071	Selector Arm #1	1
62	J-22152	Special Washer	1
63	J-22150	Drive Gear Stud Locknut	1
64	J-22106	Switch Escutcheon	1
65	J-22105	Switch Control Knob	1
66	J-22009	Motor	1
67	J-22062	Record Support Post #2	1
68	J-22099	Selector Blade 12"	2
69	J-22072	Selector Arm #2	1

6. UNLOADING RECORDS --

1. Turn switch knob to "Off" position.
2. Remove any records remaining on the selector arms.
3. Move tone arm outward until it catches in outward position.
4. Turn selector arms so that records will clear them.
5. Remove records from turntable.

7. LUBRICATION --

(A) Motor: The motor is equipped with oilless bearing and requires no lubrication.

(B) Turntable Spindle Bearings: Are lubricated at the factory and do not require any lubrication for one year. After one year they should be oiled with 1 or 2 drops of a light grade oil.

The top bearing can be oiled by lifting off turntable. Make sure when replacing turntable to see that pin in Turntable Spindle slips into slot on bottom surface of Turntable hub and also care should be taken not to injure Rubber Idler Drive Wheel.

Never under any circumstance allow oil to come in contact with Rubber Idler Drive Wheel.

(C) Squeak Due To Records Rubbing On Turntable Spindle: This can be eliminated by gently lining up the stack of records.

SERVICE NOTES

1. ADJUSTMENT FOR REST POSITION OF TONE ARM --

(A) Swing tone arm outward until tone arm lever assembly, (Item 19, Fig. 1) latches with tone arm latch lever, (Item 18, Fig. 1) which is held to tone arm shaft, (Item 77, Fig. 1) by two setscrews.

(B) Make sure these setscrews are tight and that there is a slight play between the tone arm lever assembly and the panel, (Item 5, Fig. 1). This will give proper clearance at ball race assembly, (Item 74, Fig. 3).

The tone arm lever assembly, (Item 19, Fig. 1) is held against tone arm latch lever, (Item 18, Fig. 1) by the tension of tone arm locator lever spring, (Item 16, Fig. 1).

(C) Next loosen the clamping screw in the Swivel Bracket Assembly (Item 46, Fig. 3.)

(D) Now move tone arm, (Item 60, Fig. 4) until its outside edge is 1/8" from the outside edge of the panel (Item 5, Fig. 1) and retighten screw securely.

2. RECORD CHANGER DOES NOT GO INTO ITS CHANGING CYCLE AT END OF RECORD --

(A) Worn or Damaged Stop Groove: If the stop groove in the record is worn out or damaged, discard such a record.

(B) Cut-off Adjustment May Be Incorrect: The Record Changer should go into its changing cycle when the needle enters the stop groove and has traveled to within a distance of 1-7/8" from the center of the turntable shaft.

If the Record Changer does not go into its changing cycle when the needle has reached the above mentioned distance, the Tone Arm Trip Lever Shoe, (Item 23, Fig. 1), should be moved toward the outside edge of the panel. To do this, it is necessary to loosen the thumb nut, (Item 22, Fig. 1), and then retighten after adjustment has been made.

If the Record Changer goes into its changing cycle before the needle has reached a distance of 1-7/8" from the center of the turntable, the Tone Arm Trip Lever Shoe should be moved inward toward the center of the Record Changer.

3. RECORD CHANGER DOES NOT GO INTO ITS CHANGING CYCLE WHEN SWITCH KNOB IS TURNED ON --

When the switch is turned to "ON" the Record Changer should start its changing cycle. If it does not, the following points should be checked.

1. Make sure motor is running.
2. Check Trip Rod, (Item 32, Fig. 1), to make sure it releases Trip Lever Assembly, (Item 20, Fig. 1), from Engagement Clutch Cam Assembly, (Item 79, Fig. 2), when Switch Knob is being turned on. If Trip Lever Assembly is not released, Trip rod should be shortened by bending until Trip Lever clears Engagement Clutch Cam Assembly, when Switch Knob is turned.
3. Make sure that Clutch Reset Pawl, (Item 40, Fig. 2,) clears Drive Link Assembly, Item 31, Fig. 1.

4. RECORD CHANGER CONTINUES TO REPEAT ITS CHANGING CYCLE WITHOUT PLAYING RECORDS --

(A) Trip Lever Assembly, (Item 20, Fig. 1) does not latch in Engagement Clutch Cam Assembly (Item 79, Fig. 2), which may be due to causes listed below:

1. Trip Rod (Item 32, Fig, 1), may be bent so that it is too short, holding Trip Lever Assembly fron contacting Engagement Clutch Cam Assembly.
2. Springs (Item 24 or 35, Fig. 1) may be disconnected.

5. NO SOUND WHEN NEEDLE IS ON MOVING RECORD --

1. Muting switch (Item 26, Fig. 1), may be out of adjustment. The contacts of this switch should be open whenever its long blade is not resting on the shoe of the Engagement Clutch Cam Assembly (Item 79, Fig. 2). If the contacts remain closed after the long blade has left the shoe, they should be adjusted by bending until there is a separation of approximately 1/32".

Switch should be checked to make sure contacts are closed when long blade is resting on the shoe of the Engagement Clutch Cam Assembly.

2. The lugs on the Muting switch may have been bent together.
3. Pickup cartridge in Tone Arm may have been damaged or may be defective.

6. TONE ARM ADJUSTMENTS FOR 12" RECORDS --

1. Turn both Control Knobs until the arrows marked "12" are pointing toward the center of the turntable.

2. Place a twelve inch record on the turntable.

3. Start Record Changer and note where needle contacts record. Correct contacting is about 1/8" from the outside edge of record.

4. Set Rod (Item 56, Fig. 3) is operated by Selector Arm (Item 61, Fig. 4). The 12" Set Link (Item 10, Fig. 1) operates as a stop when Record Changer is set for 12" records. When Tone Arm Locator Assembly (Item 12, Fig. 1) contacts 12" Set Link the Tone Arm should be in the correct position to play a 12" reocrd.

   If at this point, the position of Tone Arm is incorrect, loosen the screw which holds the Tone Arm Locator Shoe 12" Item 14, Fig. 1) and move in either direction as required and tighten screw.

7. TONE ARM ADJUSTMENTS FOR 10" RECORDS --

1. Turn both knobs until the arrows marked "10" are pointing toward the center of the turntable.

2. Place a 10" record on the turntable and start Record Changer.

3. Note where needle contacts record. Correct contacting is about 1/8" from the outside edge of record. If contacting of needle is not correct as mentioned, loosen the screw which holds Tone Arm Locator Shoe 10" (Item 15, Fig. 1) and slide shoe in or out as required, then tighten screw.

8. TONE ARM HEIGHT ADJUSTMENTS --

Set the Record Changer for ten-inch records, turn Switch to "ON" and allow Record Changer to go thru a changing cycle with no record on the Turntable. The clearance between Turntable and the bottom surface of the Tone Arm should be approximately 1/8". Usually this clearance can be obtained by adjusting the Tone Arm Adjustment Screw (Item 70, Fig. 3). It is well to check the following points before making any adjustment.

Check clearance between Roller (Item 51, Fig. 3) and Selector Crank Shaft Assembly (Item 7, Fig. 1). There should be approximately 1/32" clearance at this point. If the clearance is greater, it would be due to the pressure on the Spring Washer (Item 50, Fig. 3) being too great. This will prevent the Tone Arm Lifter Reset Spring (Item 82, Fig. 3) from returning the Tone Arm Lifter Link Assembly (Item 81, Fig. 2) sufficiently. To relieve the pressure on the Spring Washer, lower the Selector Shaft Collar (Item 6, Fig. 1) slightly.

9. TONE ARM LOWERS ON RECORD TOO SUDDENLY --

If the Tone Arm lowers too suddenly, the Spring Washer (Item 50, Fig. 3) which is located between the Tone Arm Lifter Link Assembly (Item 81, Fig. 2) and Selector Shaft Crank Assembly Post (Item 7, Fig. 1) is not under sufficient pressure. The setscrews in the Selector Shaft Collar (Item 6, Fig. 1) should be loosened and the Selector Shaft Collar pressed upward slightly and set screws tightened.

NEEDLE DRAGS ACROSS RECORD:

If the needle drags across the record, the long portion of the Tone Arm Lever Assembly (Item 19, Fig. 1) is contacting the pin on the top side of the gear assembly (Item 4, Fig. 1) and is being moved by it. The remedy is to bend the long portion of the Tone Arm Lever Assembly upward so that it clears the pin.

In some radios models the lever may be reached without removing the record changer from the cabinet; however, if easy access is not possible, removal of the complete record changer is recommended.

TONE ARM LANDS IMPROPERLY ON BOTH 10" AND 12" RECORDS:

If the Tone Arm lands improperly on one size of record but properly on the other size, the adjustments described under 6 or 7 of "Service Notes" should be made. Improper landing on both 12" and 10" records is due to a dislocated Tone Arm. This may be remedied by loosening the screw located on the Tone Arm Swivel Bracket (Item 46, Fig. 3) and moving the Tone Arm to the proper position and then retightening the screw. A rough check as to the proper position is to place the Tone Arm in its rest position and see if the outside of the Tone Arm is flush with the edge of the Motorboard. The two set screws on the Tone Arm Shaft (Item 77, Fig. 2) should be checked to see if they are tight.

ALIGNMENT PROCEDURE
MODELS 11-5W1 TO 11-5W9 & 12-4D1 TO 12-4D9

FOR ALIGNMENT an output meter and an accurately calibrated signal generator are required.

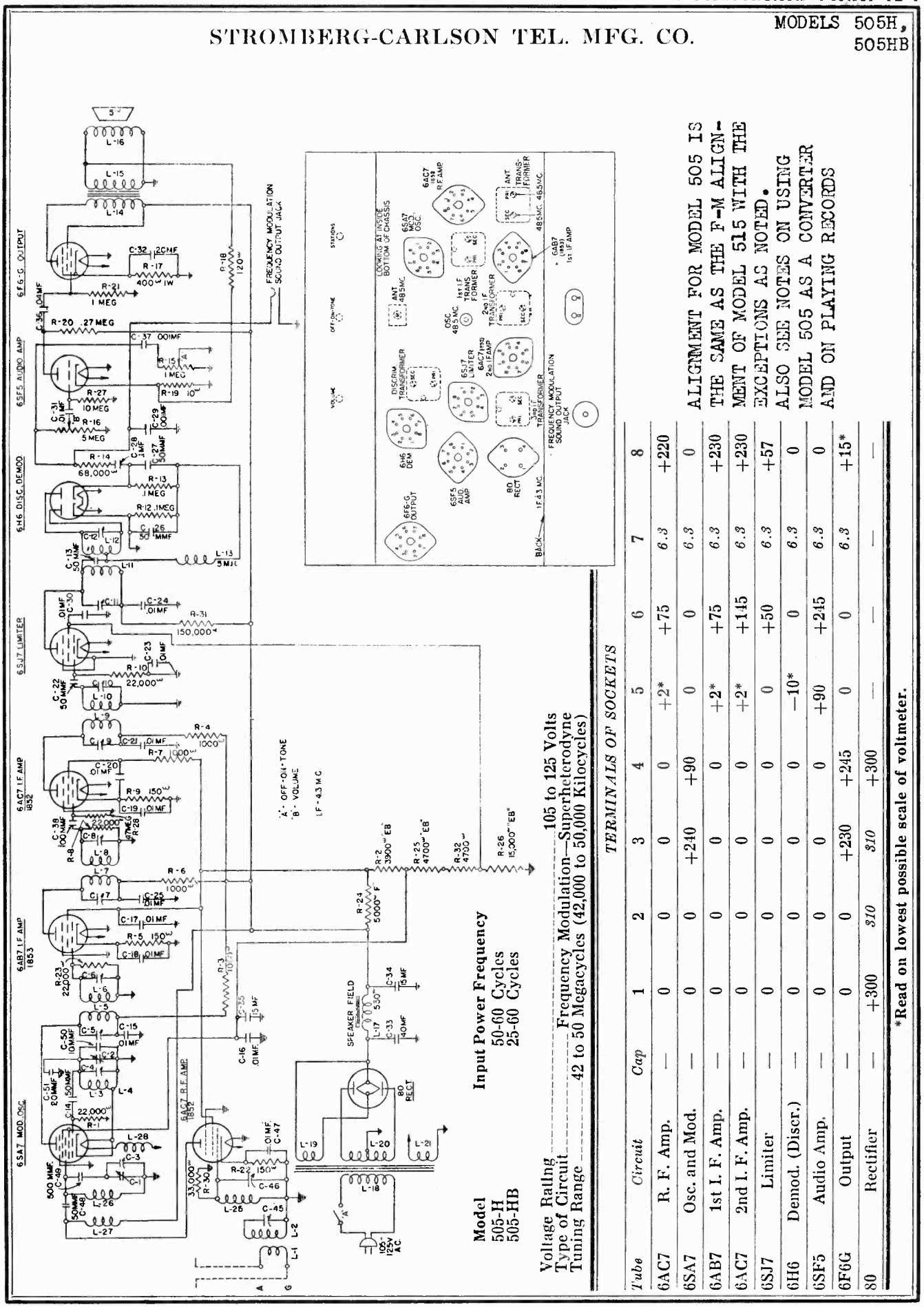
1. **Connect the output meter across the voice coil or between the plate of the 1A5GT** ** **output tube and ground through a 0.1 Mfd. condenser, depending on the type of meter. (The more sensitive type should be connected across the voice coil.)**
2. **Connect the ground lead of the signal generator to the Black Wire or the chassis.**
3. **Turn the volume control to the maximum volume position and keep it in this position while aligning.**
4. **With the gang condenser in full mesh, set the dial pointer in a horizontal position. If the pointer is incorrectly set, it is merely necessary to move the pointer to the correct position by hand, while holding the gang in the full mesh 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
.1 MFD Condenser	* Control Grid of 1A7GT	455 KC	Any Point Where It Does Not Affect Signal	1-2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
				3-4	1st I.F.	
200 MMFD Condenser	Antenna Lead (Blue Wire)	1500 KC	1500 KC	5	Broadcast Oscillator (Shunt)	Adjust trimmer for maximum output.
200 MMFD. Condenser	Antenna Lead (Blue Wire)	1500 KC	Tune To 1500 KC Generator Signal	6	Broadcast Antenna	Adjust for maximum output.

ON CHASSIS 11-5W --- *CONNECT TO GANG-COND. FRONT-SECTION LUG ** 6F6G output tube

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 505H, 505HB



ALIGNMENT FOR MODEL 505 IS THE SAME AS THE F-M ALIGNMENT OF MODEL 515 WITH THE EXCEPTIONS AS NOTED. ALSO SEE NOTES ON USING MODEL 505 AS A CONVERTER AND ON PLAYING RECORDS

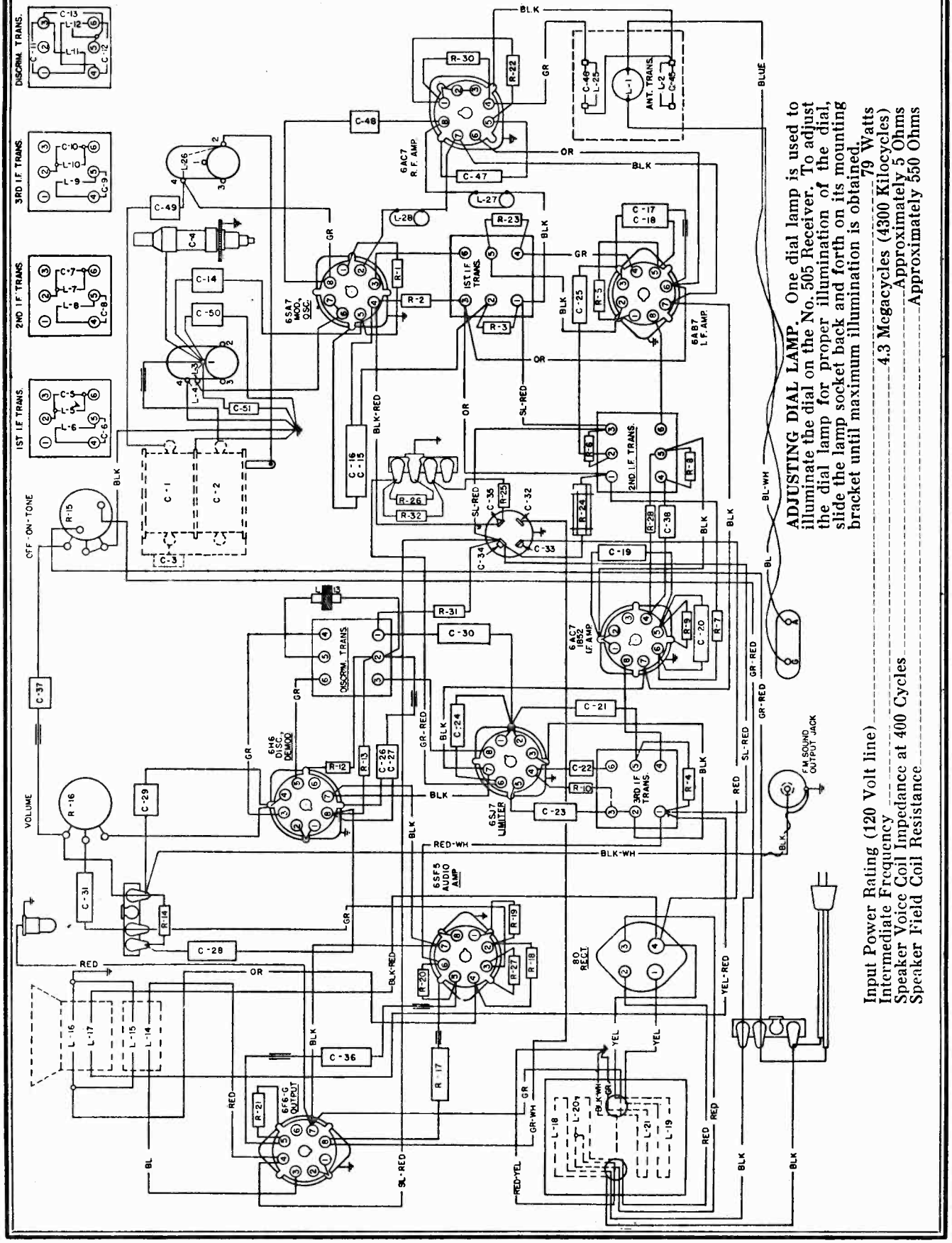
TERMINALS OF SOCKETS

Tube	Circuit	Cap	1	2	3	4	5	6	7	8
6AC7	R. F. Amp.	—	0	0	0	0	+2*	+75	6.3	+220
6SA7	Osc. and Mod.	—	0	0	+240	+90	0	0	6.3	0
6AB7	1st I. F. Amp.	—	0	0	0	0	+2*	+75	6.3	+230
6AC7	2nd I. F. Amp.	—	0	0	0	0	+2*	+145	6.3	+230
6SJ7	Limiter	—	0	0	0	0	0	+50	6.3	+57
6H6	Demod. (Discr.)	—	0	0	0	0	−10*	0	6.3	0
6SF5	Audio Amp.	—	0	0	0	0	+90	+245	6.3	0
6F6G	Output	—	0	0	+230	+245	0	0	6.3	+15*
80	Rectifier	—	+300	310	310	+300	—	—	—	—

*Read on lowest possible scale of voltmeter.

MODELS 505H
505HB

STROMBERG-CARLSON TEL. MFG. CO.



ADJUSTING DIAL LAMP. One dial lamp is used to illuminate the dial on the No. 505 Receiver. To adjust the dial lamp for proper illumination of the dial, slide the lamp socket back and forth on its mounting bracket until maximum illumination is obtained.

Input Power Rating (120 Volt line) ..... 79 Watts
Intermediate Frequency ..... 4.3 Megacycles (4300 Kilocycles)
Speaker Voice Coil Impedance at 400 Cycles ..... Approximately 5 Ohms
Speaker Field Coil Resistance ..... Approximately 550 Ohms

ALIGNMENT DATA FOR A-M CHASSIS AND OTHER
NOTES BELOW APPLY ONLY TO MODEL 515

Important. Before proceeding to align the frequency modulation chassis of this receiver tune the receiver to 48.5 megacycles and mark this point with a pencil on the large pulley of the frequency modulation chassis. Carefully remove the drive cord from this pulley noting the relation of the point marked with the setting of the variable capacitor.

This note applies only to Model 515

I. Discriminator Adjustment. (Frequency Modulation)

1. Tune the set to the extreme low frequency, plates of variable capacitor all the way in.
2. Connect the center "O" microammeter with a one megohm resistor in series across the whole discriminator load from the high side of R-13 to ground.
3. Connect the ground terminal of the signal generator to the ground terminal of the chassis.
4. Introduce an unmodulated signal of 4.3 megacycles to the grid (Terminal No. 4) of the 6SJ7 limiter tube using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Approximately one volt signal is necessary).
5. Adjust the secondary of the discriminator transformer for "O" reading of the microammeter.
6. Remove the microammeter and one megohm resistor from the high side of R-13 Resistor and connect them across one half of the discriminator load (from ground to the junction of the two 100,000 ohm resistors R-12 and R-13).
7. Adjust the primary of the discriminator transformer for maximum reading of the microammeter.

   NOTE: To check for correct adjustment of the discriminator circuit connect the center "O" microammeter across the whole discriminator load, noting that the microammeter reads "O". If a discrepancy exists it may be corrected by readjusting the secondary trimmer for "O" reading of the microammeter, then tune the receiver on either side of 4.3 megacycles, noting that the reading of the microammeter is approximately the same on either side of "O". If a discrepancy exists it may be corrected by adjusting the primary trimmer for maximum swing of the microammeter on either side of "O".

II. Intermediate Frequency Adjustments. (Frequency Modulation)

Important: All intermediate frequency adjustments are made using the same unmodulated signal of 4.3 megacycles. Each I. F. stage must be adjusted independently and in the order given. **Do not make any overall adjustments after the previous stage is aligned.**

*1. Disconnect the jumper wire from the low side of the limiter grid resistor (R-10) and connect the microammeter directly to this wire without using the one megohm resistor.
1. Disconnect the 10000 ohm resistor (R17) from ground and connect the microammeter between the resistor and ground.
2. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AC7 second I. F. tube (Terminal No. 4).
3. Adjust the secondary of the third I. F. transformer for maximum reading of the microammeter.
4. Adjust the primary of the third I. F. transformer for maximum reading of the microammeter.
5. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to the grid of the 6AB7 first I. F. tube (Terminal No. 4).
6. Adjust the secondary of the second I. F. transformer for maximum reading of the microammeter.
7. Adjust the primary of the second I. F. transformer for maximum reading of the microammeter.
8. Disconnect the green wire to the R. F. coil from the grid terminal of the 6SA7 modulator tube (Terminal No. 8), connect a 150000 ohm resistor from Terminal No. 8 to ground, and connect the output lead from the signal generator with the 0.1 microfarad capacitor in series to this terminal.
9. Adjust the secondary of the first I. F. transformer for maximum reading of the microammeter.
10. Adjust the primary of the first I. F. transformer for maximum reading of the microammeter.

III. Radio Frequency Adjustments. (Frequency Modulation)

(Leave the signal generator connected to the grid of the 6SA7 tube in the same manner as when adjusting the first I. F. transformer).

1. Set the signal generator frequency and the receiver tuning dial to exactly 48.5 megacycles.
2. Adjust the oscillator aligning capacitor (air trimmer) for maximum reading of the microammeter.
3. Remove the output lead and the 0.1 microfarad capacitor in series with it from the grid of the 6SA7 tube and re-solder in its original position the wire which was removed from this terminal. Remove the 150,000 ohm resistor.
4. Remove the green wire from the grid of the 6AC7 R. F. tube (Terminal No. 4) and connect the output lead from the signal generator with a 0.1 microfarad capacitor in series with it to this terminal. Adjust the R. F. Aligning Capacitor for maximum reading of the microammeter. A slight adjustment of the oscillator (air trimmer) may also be made at this point to obtain maximum reading of the microammeter. Resolder the green wire in its original position.
5. Replace the 0.1 microfarad capacitor in series with the output lead from the signal generator with a 100 ohm carbon type resistor and connect it to the antenna terminal of the receiver.
6. Adjust the antenna aligning capacitor for maximum reading of the microammeter.
7. Check for correct antenna circuit adjustment by setting the signal generator and tuning the receiver to 42 megacycles, noting that the sensitivity is approximately the same as at 48.5 megacycles. If a discrepancy exists the secondary of the antenna transformer may be adjusted to obtain maximum reading of the microammeter. Set the signal generator frequency and the receiver tuning dial to 48.5 megacycles and readjust both the primary and secondary of the antenna transformer for maximum reading of the microammeter.
8. Re-solder the 10000 ohm resistor (R17) to its original position.

* 8. Re-solder the jumper wire to the low side of the limiter grid resistor (R-10).

* Apply to Model 505

IV. Intermediate Frequency Adjustments. (Amplitude Modulation)

1. Set the range switch to Standard Broadcast position.
2. Tune set to extreme low frequency end of the 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 cap of the 6A8 tube, using a 0.1 microfarad capacitor in series with the output lead of the signal generator. (Do not remove the grid clip from this tube.)
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.

V. Radio Frequency Adjustments. (Amplitude Modulation)

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm carbon type resistor, and connect it to the antenna terminal of the chassis.
2. Set the range switch to the short-wave range (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycles oscillator and antenna (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles oscillator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

Standard Broadcast Range (A Band)

1. Replace the 400 ohm carbon type resistor in series with the output lead from the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the Standard Broadcast Range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 Kc.
4. Adjust the 600 Kc. oscillator, Bi-Resonator and antenna (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, Bi-Resonator and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. Repeat operations five and six.

VI. Wave Trap Adjustment.

(Leave the receiver connected in the same manner as when adjusting the Standard Broadcast Range (A Band)).

1. Tune set 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 aligner for minimum signal.

REMOVING THE CHASSIS FROM CABINET

Do not remove the chassis from the shelves; instead, remove the chassis and shelf assembly by taking out the six wood screws from the top shelf and the four wood screws from the bottom shelf, thus removing chassis and shelves as a unit.

ADJUSTING DIAL LAMP

The dial on this receiver is edge lighted, and for proper illumination it is very important that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

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.

Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

1. Remove the dial escutcheon by removing the screws and pulling downward and outward.
2. Put the call letters of the selected stations in place above the push buttons. The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial. (The call letters will be found inside the envelope stapled inside or underneath the cabinet.)
3. Tune in manually the highest frequency station to be set up and note carefully the program being transmitted.
4. Turn the range switch to the push button position and push the highest frequency button.
5. Using a very small screwdriver adjust the slot in the inner screw until it coincides with the slot in the outer screw.
6. Using a larger screwdriver, adjust both screws at the same time until the desired station is tuned in as well as possible.
7. Using the small screwdriver again, adjust the small inner screw for maximum closing of the tuning indicator. (Be sure the outer screw does not move while adjusting the inner screw.) Operations 5, 6 and 7 can be greatly simplified by using Stromberg-Carlson SD-70 Adjusting Tool which is a double screwdriver designed to fit both of these screws at the same time.
8. Set up the other stations in the same manner.
9. Recheck the adjustment of each adjusting screw.

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 Kc. or 47 Mc.—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.

To measure voltages of 6AF6G tube remove the metal cover on the tuning indicator socket and read from indicated terminals.

AMPLITUDE MODULATION CHASSIS										
			TERMINALS OF SOCKETS							
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8
6A8	Mod. and Osc.	0	0	0	+250	+110	—8*	+173	*6.3*	+3*
6K7	I. F. Amp.	0	0	0	+253	+108	+4*	—	*6.3*	+4*
6H6	Dem. and A. V. C.	—	0	0	0	0	0	0	*6.3*	0
6SQ7	Audio Amp.	—	0	0	0	0	0	+108	*6.3*	0
6SQ7	Audio Inv.	—	0	0	0	0	0	+108	*6.3*	0
6V6G	Output	—	0	0	+250	+254	0	—	*6.3*	+14
6V6G	Output	—	0	0	+250	+254	0	—	*6.3*	+14
6AF6G	Tuning Indicator	—	—	0	+52	+110	+220	—	*6.3*	+90
80	Rectifier	—	+382	*375*	*375*	+382	—	—	—	—
—	Speaker Socket	—	—	+382	0	0	+382	+382	—	—
FREQUENCY MODULATION CHASSIS										
6AC7	R. F. Amp.	—	0	0	0	0	+2*	+148	*6.3*	+230
6SA7	Mod. and Osc.	—	0	0	+240	+90	0	0	*6.3*	0
6AB7	1st I. F. Amp.	—	0	0	0	0	+2*	+148	*6.3*	+230
6AC7	2nd I. F. Amp.	—	0	0	0	0	+2*	+145	*6.3*	+230
6SJ7	Limiter	—	0	0	0	0	0	+50	*6.3*	+57
6H6	Demod. (Discr.)	—	0	0	0	0	—10*	0	*6.3*	0
6SK7	Tun. Ind. Amp.	—	0	0	0	0	0	+275	*6.3*	+275
80	Rectifier	—	+300	*310*	*310*	+300	—	—	—	—

*Read on lowest possible scale of voltmeter

5 volts AC between terminals 1 and 4 of rectifier sockets (No. 80 tube)

CONTINUITY TEST

Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Test speaker socket with speaker left out.

Leave speaker plug in socket for all other tests of the amplitude modulation chassis.

Use a good meter capable of measuring up to several megohms.

The resistances given are often approximate owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart on Page 5 for position and numbering of terminals.

AMPLITUDE MODULATION CHASSIS										
			TERMINALS OF SOCKETS							
Tube	*Circuit*	*Cap*	1	2	3	4	5	6	7	8
6A8	Mod. and Osc.	3M	S	S	20000¶	200000¶	48000¶	200000¶	S	270¶
6K7	I. F. Amp.	3M	S	S	19000¶	200000¶	390¶	200000¶	S	390¶
6H6	Dem. and A. V. C.	—	S	S	500000¶	S	500000¶	20000¶	S	S
6SQ7	Audio Amp.	—	S	10M	S	S	S	300000¶	S	S
6SQ7	Audio Inv.	—	S	10M	S	S	S	300000¶	S	S
6V6G	Output (A)	—	S	S	16000¶	16000¶	270000¶	100000¶	S	200¶
6V6G	Output	—	S	S	16000¶	16000¶	400000¶	O	S	200¶
6AF6G	Tuning Indicator	—	O	S	O	200000¶	16000¶	O	S	6500¶
80	Rectifier	—	19000¶	100¶	120¶	19000¶	—	—	—	—
—	Speaker Socket	—	100000¶ or Greater	S	S	O	100000¶ or Greater	O	16000¶	—
FREQUENCY MODULATION CHASSIS										
6AC7	R. F. Amp.	—	S	S	S	S	150¶	15000¶	S	15000¶
6SA7	Mod. and Osc.	—	S	S	30000¶	20000¶	20000¶	S	S	S
6AB7	1st I. F. Amp.	—	S	S	S	3¶	150¶	15000¶	S	15000¶
6AC7	2nd I. F. Amp.	—	S	S	S	500000¶	150¶	B	S	30000¶
6SJ7	Limiter	—	S	S	S	32000¶	S	15000¶	S	15000¶
6H6	Demod. (Discr.)	—	S	S	100000¶	S	100000¶	O	S	200000¶
6SK7	Tun. Ind. Amp.	—	S	S	S	2.2M	S	40000¶	S	40000¶
80	Rectifier	—	29000¶	250¶	250¶	29000¶	—	—	—	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open

PLAYING RECORDS. To obtain the best quality of phonograph reproduction, a Stromberg-Carlson record player is recommended. They are designed for use with this receiver and all that is necessary is to connect the record player to the single prong socket provided in the chassis, operate the "Radio-Phono" switch located on the back of the chassis to "Phono" position, push in the frequency modulation button on the front of the receiver and proceed to operate. The volume and tone may be controlled with the controls at the receiver or (if such is provided), the volume control on the record player may be used.
A low impedance pick-up may be used, but a matching transformer must be placed between the phonograph pick-up and the chassis.

USING THE 505 RECEIVER AS A CONVERTER. This receiver may be used as a converter so that the audio system of a good high fidelity receiver of the ordinary amplitude modulation type may be utilized to provide the type of high fidelity reception only possible with frequency modulation.

It is only necessary to connect the single pin jack on the back of the chassis (labeled Frequency Modulation Sound Output Jack) to the Phono Input of any other receiver or sound system by means of the cord provided.

*In this way, the speaker of the 505 Receiver will act as a "tweeter" or treble speaker and the speaker system of the amplitude modulation receiver will serve as the bass speaker. The balance between the two speakers can be controlled by operating the two volume controls.

PLAYING RECORDS. To obtain the best quality of phonograph reproduction, a Stromberg-Carlson record player is recommended. If this set is used as a converter, the phonograph should be attached to the amplitude modulation receiver in the regular way. (The installation of a simple switch will eliminate plugging and unplugging).

If this set is used as a receiver, the sound output jack may be readily converted to a phonograph input jack by removing the black-white wire which comes from this jack from the terminal block to which it is connected and connecting it to the high side of the volume control (this is the terminal on the volume control to which resistor R-11 is attached).

After this has been done, it is only necessary to plug in a record player, tune to a quiet place on the dial and proceed to operate.

MODELS 505 and 515

WEAK OR NO SIGNAL ON F-M BAND

Remove R8 (22,000 ohms) connected between 2nd i-f transformer and ground. If regeneration or oscillation occurs afterwards, connect 22,000-ohm resistor between the secondary of 2nd i-f transformer (terminals 4 and 5) and ground.

A. 6V6G tube socket nearest to the front of the chassis

B. Radio-Phono switch in "Radio" position — 24,000 ohms
Radio-Phono switch in "Phono" position — "open"

Other Tests Not Shown on Chart
(Amplitude Modulation Chassis)

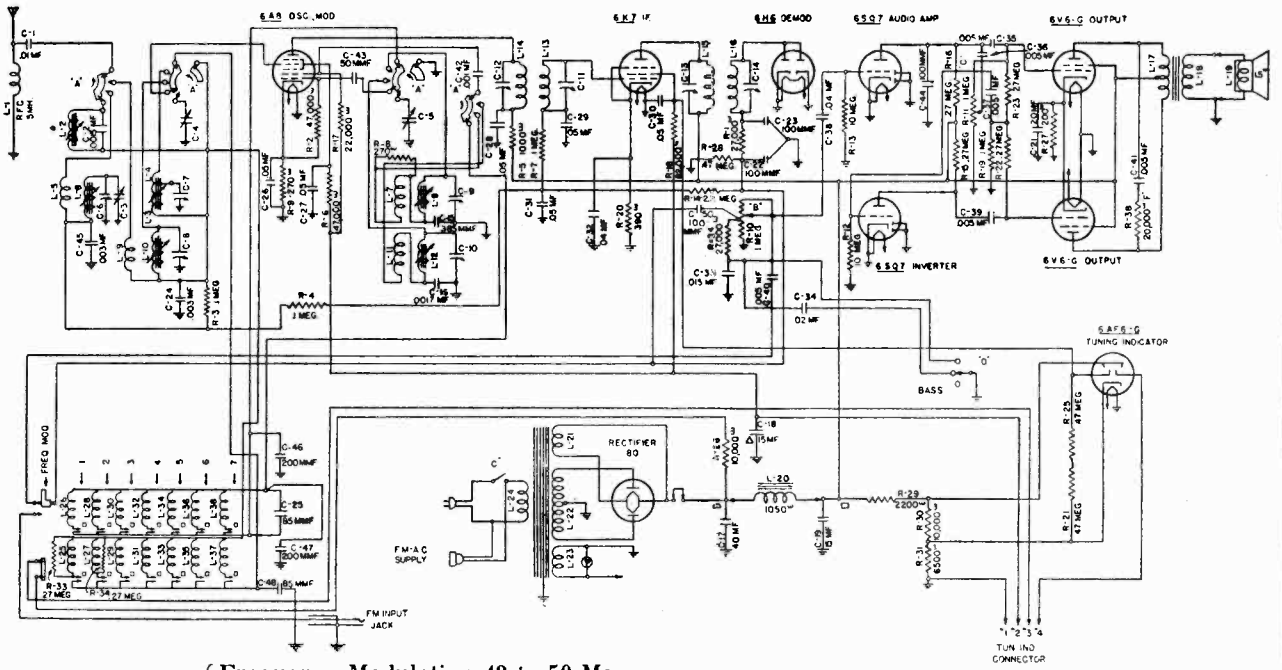
Antenna terminal to chassis base — 75 ohms
Ground terminal to chassis base — "short"
Audio connector socket to chassis base — "open"
Between terminals of A. C. plug:
A. C. switch open — "open"
A. C. switch closed — 5 ohms
Terminals of A. C. plug to chassis base — "open"
R. F. coil tests measured directly across R. F. coil terminals with range switch in standard broadcast position. ("A" Range)
L3—.8 ohm; L4—.8 ohm; L5—.1 ohm; L6—3 ohms; L7—.3 ohm; L8—4 ohms; L9—.1 ohm; L10—"short"; L11—.1 ohm; L12—"short".

Other Tests Not Shown on Chart
(Frequency Modulation Chassis)

Antenna terminal to chassis base — "open"
Ground terminal to chassis base — "short"
Phono jack to chassis base — "open"
Terminals of A. C. plug to chassis base — "open"
Between terminals of A. C. plug — 9 ohms
Relay socket to chassis base:
Terminal No. 1 — 40,000 ohms
Terminal Nos. 2 and 3 — "open"
Terminal No. 4 — "short"
Audio connector plug to chassis base:
Prong of plug — "open"
Shield of plug — "short"
Between prong of audio connector plug and contact of phono jack:
Radio-Phono switch in "Phono" position — "short"
Radio-Phono switch in "Radio" position — "open"
R. F. coil tests measured directly across R. F. coil terminals.
L1 — .2 ohm; L2 — "short"; L3 — "short"; L4—"short"; L13—55 ohms.

STROMBERG-CARLSON TEL. MFG. CO.

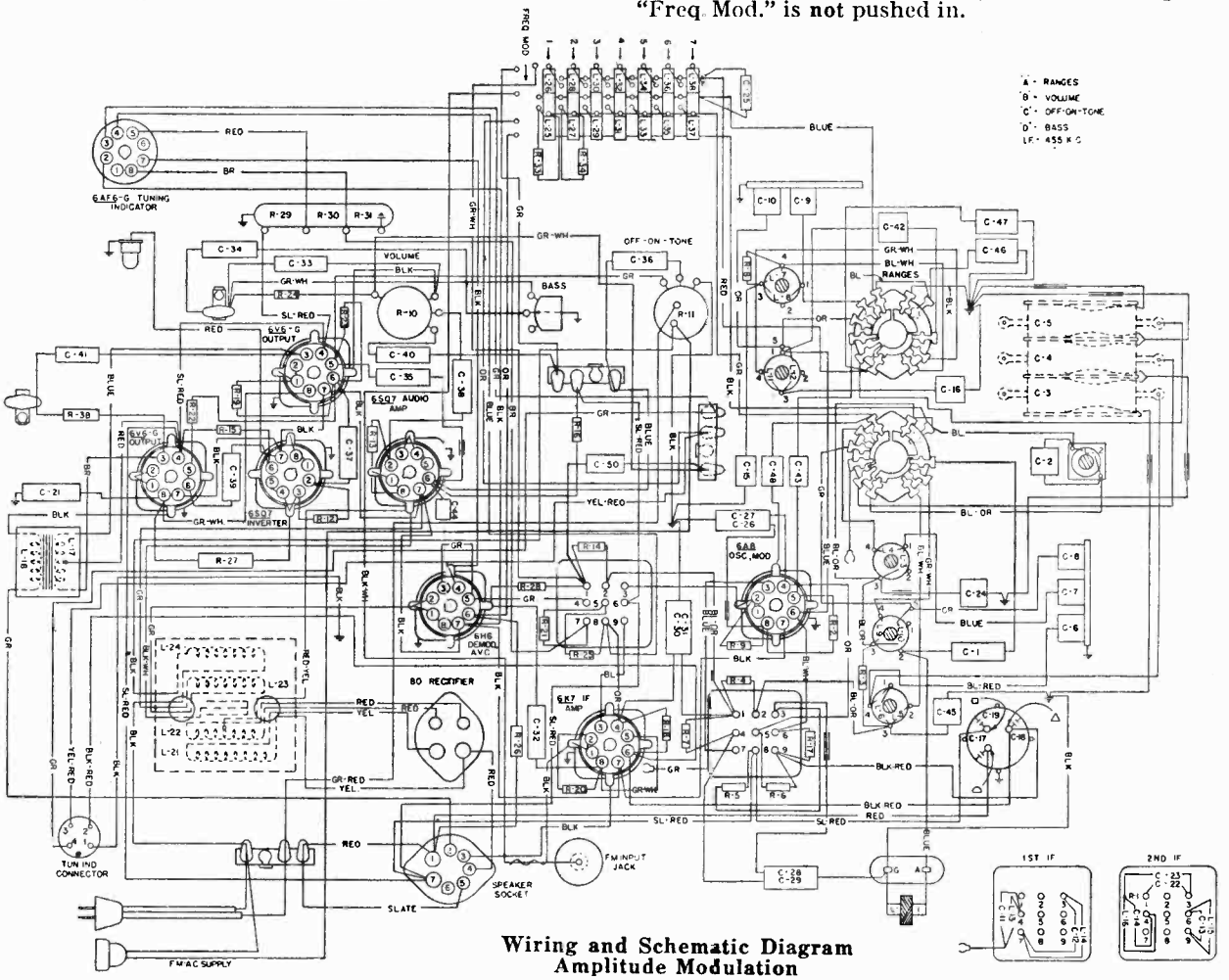
MODEL 515M
Ch. AM



Tuning Ranges ---{ Frequency Modulation 42 to 50 Mc.
Short Wave 5.8 to 18 Mc.
Standard Broadcast .54 to 1.7 Mc.

Voltage Rating ---------- 105 to 125 Volts

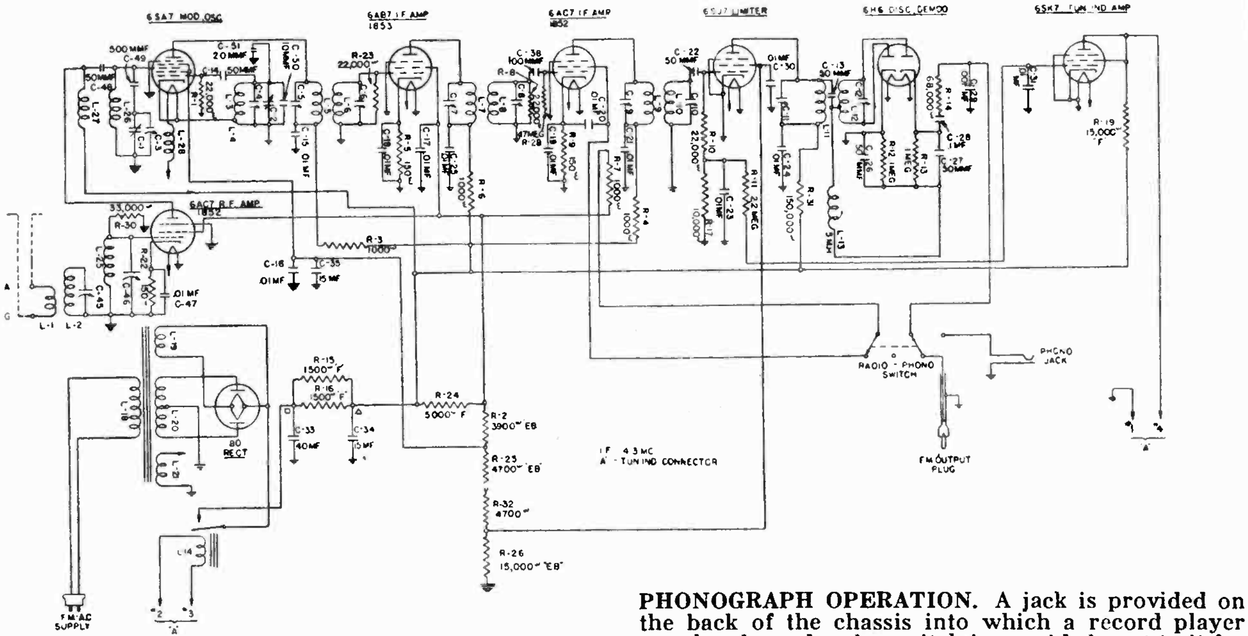
MANUAL TUNING. Important. When tuning stations manually in the Standard Broadcast or Short Wave ranges be sure that the push button designated "Freq. Mod." is **not** pushed in.



Wiring and Schematic Diagram
Amplitude Modulation

MODEL 515M
Ch. FM

STROMBERG-CARLSON TEL. MFG. CO.

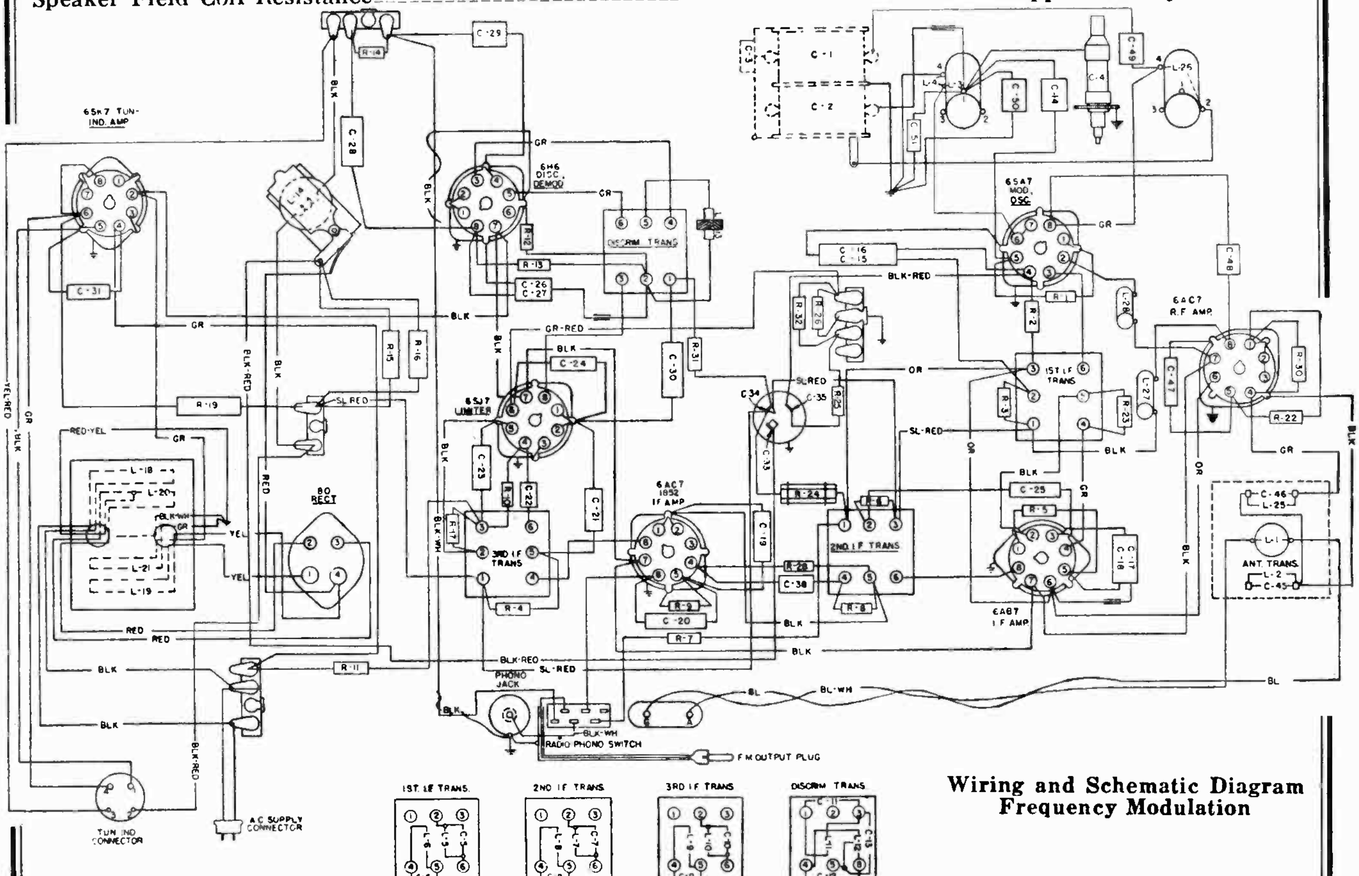


SPECIAL CIRCUITS. A tuning indicator having two apertures is used in this receiver. One aperture will operate when tuning stations in the standard broadcast and short-wave ranges and the other aperture will operate when tuning stations in the frequency modulation range. Stations should be tuned for maximum closing of the tuning indicator.

PHONOGRAPH OPERATION. A jack is provided on the back of the chassis into which a record player may be plugged and a switch is provided next to it for switching from "Radio" to "Phonograph".

TELEVISION. Switching to phonograph also makes the audio amplifier and loud speaker available for use with television receivers designed for this type of sound reproduction.

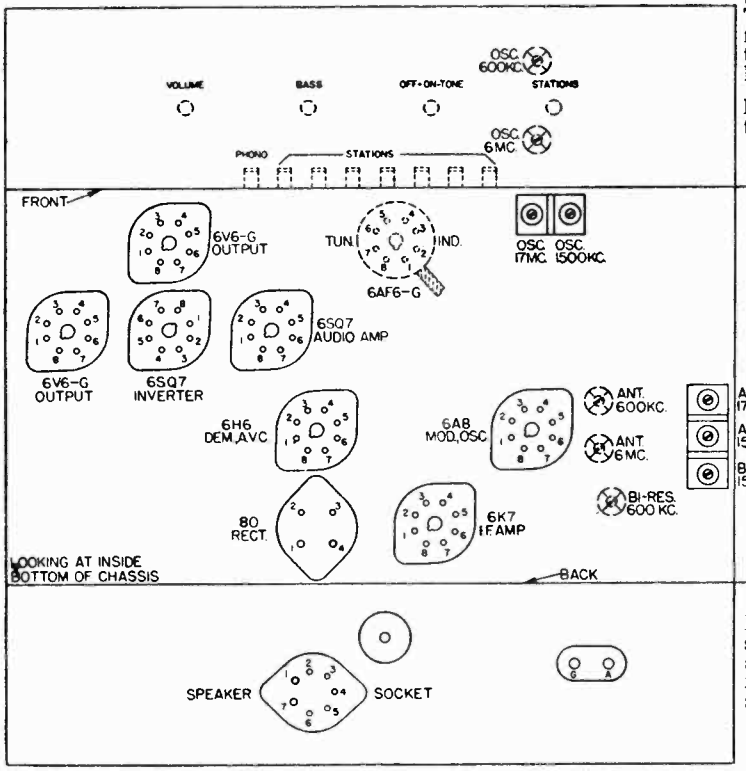
Input Power Rating	140 Watts
Intermediate Frequency	455 Kilocycles (Amplitude Modulation) 4.3 Megacycles (Frequency Modulation)
Speaker Voice Coil Impedance at 400 Cycles	Approximately 1.5 Ohms
Speaker Field Coil Resistance	Approximately 1050 Ohms



Wiring and Schematic Diagram
Frequency Modulation

STROMBERG-CARLSON TEL. MFG. CO. MODEL 515M

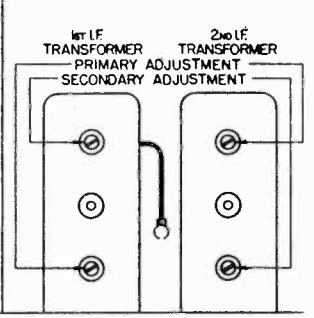
This is a seventeen tube, three gang, three range receiver, designed for the reception of both amplitude and frequency modulated stations.



Location Chart (Amplitude Modulation)

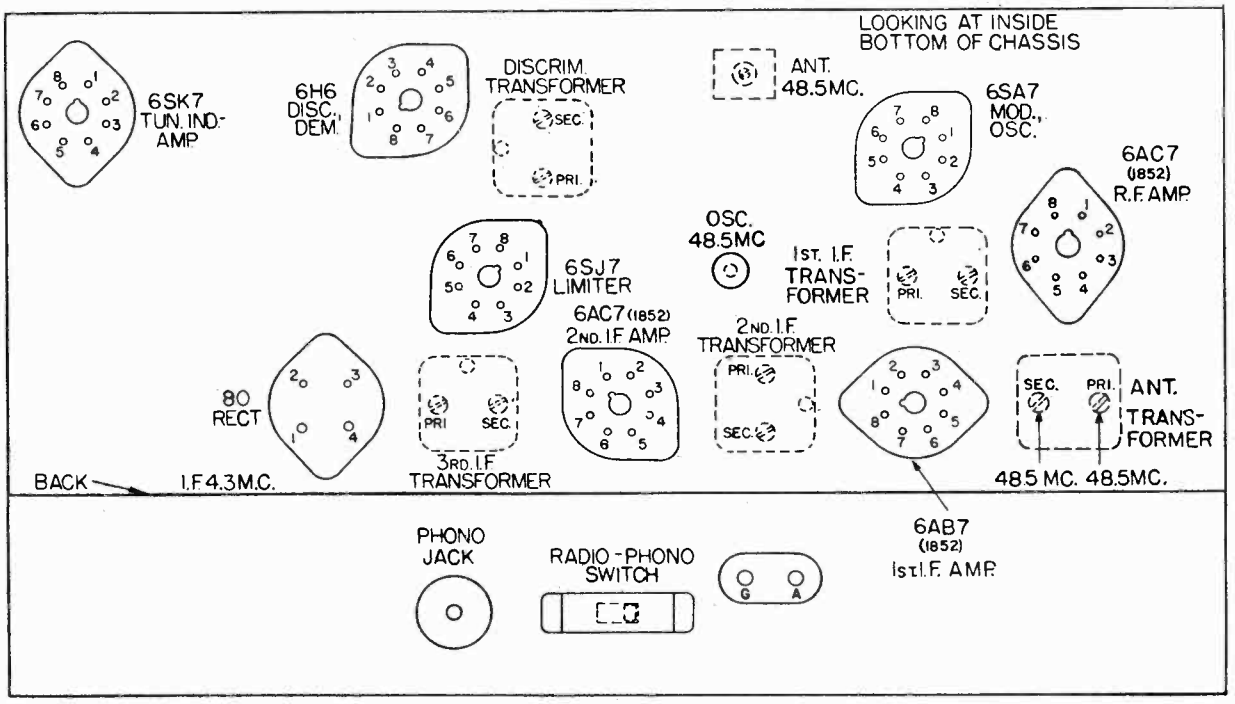
Eight button automatic tuning is provided. The tuning unit is composed of a group of coils which are adjusted by means of iron cores, so that seven favorite stations in the standard broadcast range may be set up. The eighth button is for switching from amplitude to frequency modulation. Tone is adjusted by a variable tone control and the dial is of the slide rule type edge, lighted for clear visability without glare.

Provision is made for a record player to be used with this receiver without additional wiring.



Iron core coils are used in the standard broadcast and short-wave ranges to provide greater accuracy of alignment. In addition a thernal drift compensator is included in the circuit. The audio system employs a special inverter push-pull circuit designed to provide excellent fidelity. The power transformer has an electro-static shield to reduce line noises to a minimum and the chassis is thoroughly shielded throughout.

AUTOMATIC TUNING. An adjustable iron core coil type of automatic tuning is employed and the stations may be easily located by properly utilizing the concentric adjusting screws provided. A special tool identified as SD-70 Screwdriver will help materially in setting up the automatic tuning.



Location Chart—(Frequency Modulation)

MODEL 515-M

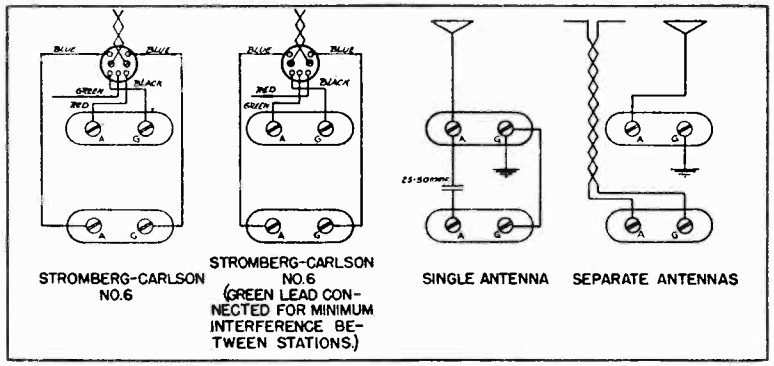
ACCESSORIES

ANTENNA. For best results use a Stromberg-Carlson No. 6 Antenna. This antenna is designed to provide improved pick-up on both the amplitude and frequency modulation bands.

If it is desired, two ordinary antennas may be used, one for amplitude modulation, which should be a straight wire "L" type antenna about 75 feet long, and one for frequency modulation. This latter antenna may be a straight wire about 40 feet in length or of the dipole type with two arms approximately 5½ feet in length. The dipole antenna will exhibit a marked directional effect and should be erected as high as possible above the ground and adjusted so as to receive the desired frequency modulated stations with best results.

For average reception, a single straight wire antenna may be used for both amplitude and frequency modulation.

The various types of antennas should be connected to the No. 515 Receiver as follows:



PARTS LIST
MODEL 505

Capacitors

Piece No.	Circuit Designation	Part
24402	C-28	.1 mf. Capacitor
24405	C-36	.01 mf. Capacitor
25487	C-29, 37	.001 mf. Capacitor
27305	C-14, 22, 48	50 mmf. Capacitor
27999	C-26, 27	2—50 mmf. Capacitors
28568	C-38	100 mmf. Capacitor
31480	C-15, 16, 17, 18	2—.01 mf. Capacitors
31481	C-19, 20, 21, 23, 24, 25, 30, 31	.01 mf. Capacitor
30399	C-32, 33, 34, 35	Electrolytic Capacitor (1—40 mf., 2—15 mfs., 1—20 mf.)
32669	C-1, 2	Variable Capacitor (2 gang)
30311	C-4	Capacitor (Air Trimmer)
31377	C-51	20 mmf. Capacitor
31457	C-3, 4	Aligning Capacitor
31481	C-47	.01 mf. Capacitor
32806	C-50	10 mmf. Capacitor

Coils, Transformers and Speaker

30332	L-13	R. F. Choke Coil
32691	L-1, 2, 25	Antenna Coil
32677	L-26	R. F. Coil
32678	L-3, 4	Oscillator Coil
32679	L-5, 6—C-5, 6	1st. I. F. Transformer
32696	L-7, 8—C-7, 8	2nd I. F. Transformer
32698	L-9, 10—C-9, 10	3rd I. F. Transformer
32681	L-11, 12—C-11, 12	Discriminator I. F. Transformer
31437	L-18, 19, 20, 21	Power Transformer, 50/60 Cycles
31438	L-18, 19, 20, 21	Power Transformer, 25/60 Cycles
31451	L-14, 15, 16, 17	Speaker Complete with Output Transformer
30528	L-16	Cone for Speaker
31453	L-14, 15	Output Transformer
32060	L-27	R. F. Choke Coil
32687	L-28	Heater Choke Coil

Controls and Knobs

27311	R-15	Switch Off-On and Tone Control
30136	R-16	Volume Control
29297		Dial Drive Shaft
27668		"C" Washer for Dial Drive Shaft
28843		Knob

Resistors

Piece No.	Circuit Designation	Part
26309	R-19	10 ohm Resistor
26322	R-18	120 ohm Resistor
26323	R-5, 9	150 ohm Resistor
26333	R-3, 4, 6, 7	1000 ohm Resistor
26341	R-32	47,000 ohm Resistor
26349	R-1, 10, 23	22,000 ohm Resistor
26351	R-30	33,000 ohm Resistor
26355	R-14	68,000 ohm Resistor
26357	R-12, 13	.1 megohm Resistor
26359	R-31	.15 megohm Resistor
26362	R-20	.27 megohm Resistor
26365	R-28	.47 megohm Resistor
26369	R-21	1 megohm Resistor
26381	R-27	10 megohm Resistor
28165	R-2	3,900 ohm Resistor
28166	R-25	4,700 ohm Resistor
28172	R-26	15,000 ohm Resistor
28758	R-17	400 ohm, 1 watt Resistor
31479	R-24	5,000 ohm, 1 watt Resistor

Miscellaneous Parts

SD-67		Dial Drive Cord
24135		Felt Foot for Cabinet
26122		Antenna and Ground Terminal Strip
28652		Power Supply Cord
28694		Pilot Lamp Socket Assembly
28695		Dial Pointer
29137		Pulley Assembly
29479		Screw for Dial Escutcheon
29628		Spring for Dial Drive Cord
29956		Pilot Lamp
30151		8-Prong Tube Socket
30153		4-Prong Tube Socket
30224		F. M. Sound Output Plug
30225		Guard for F. M. Sound Output Jack
30226		F. M. Sound Output Jack
30388		Dial Escutcheon
32683		Dial
31478		Shielded Cable for Connecting to Amplitude Modulation Receiver

REPLACEMENT PARTS (FREQUENCY MODULATION)

MODEL 515-M

Capacitors

Piece No.	Circuit Designation	Part
24402	C-28	.1 mf. Capacitor
25487	C-29, 37	.001 mf. Capacitor
27305	C-14, 22, 48	50 mmf. Capacitor
27999	C-26, 27	2—50 mmf. Capacitors
28568	C-38	100 mmf. Capacitors
29288	C-32	15 mmf. Capacitor
30311	C-4	Air Trimmer
31377	C-51	20 mmf. Capacitor
31480	C-15, 16, 17, 18	2—.01 mf. Capacitors
31481	C-19, 20, 21, 23, 24, 25, 30, 31, 47	.01 mf. Capacitor
31856	C-32, 33, 34, 35	Electrolytic Capacitor (1—40 mf., 350 V.; 1—15 mf., 300 V.; 1—15 mf., 150 V.)
32669	C-1, 2	Variable Capacitor (2 gang)
31457	C-3, 4	Aligning Capacitor
32806	C-30	10 mmf. Capacitor

Coils and Transformers

30332	L-13	R. F. Choke Coil
32691	L-1, 2	Antenna Coil
32677	L-26	R. F. Coil
32678	L-3, 4	Oscillator Coil
32679	L-5, 6	1st I. F. Transformer
32696	L-7, 8	2nd I. F. Transformer
32681	L-11, 12	Discriminator I. F. Transformer
32698	L-9, 10	3rd I. F. Transformer
31850	L-18, 19, 20, 21	Power Transformer, 50/60 Cycles
32060	L-27	R. F. Choke Coil
32687	L-28	Heater Choke Coil

Resistors

Piece No.	Circuit Designation	Part
25526	R-19	15,000 Ohm Resistor, 1 Watt
26323	R-5, 9, 22	150 Ohm Resistor
26333	R-3, 4, 6, 7	1000 Ohm Resistor
26341	R-32	4700 Ohm Resistor
26349	R-1, 8, 10, 23	22,000 Ohm Resistor
26351	R-30	33,000 Ohm Resistor
26353	R-14	47,000 Ohm Resistor
26355	R-14	68,000 Ohm Resistor
26357	R-12, 13	.1 Megohm Resistor
26359	R-31	.15 Megohm Resistor
26365	R-11, 28	.17 Megohm Resistor
26373	R-11	2.2 Megohm Resistor
27049	R-15, 16	1,500 Ohm Resistor, 1 Watt
28165	R-2	3,900 Ohm Resistor
28166	R-25	4,700 Ohm Resistor
28172	R-26	15,000 Ohm Resistor
31479	R-24	5,000 Ohm Resistor, 1 Watt

Miscellaneous Parts

26122		Antenna and Ground Terminal Strip
29128		Pulley Assembly
30151		8-Prong Tube Socket
30153		4-Prong Tube Socket
30224		Phono. Plug
30225		Guard
30226		Radio-Phono Jack
31512		A. C. Cord
31861		Radio-Phono Switch

REPLACEMENT PARTS (AMPLITUDE MODULATION)

Capacitors

Piece No.	Circuit Designation	Part
24405	C-32, 38	.04 mf. Capacitor
24559	C-44	100 mmf. Capacitor
24637	C-16	.0017 mf. Capacitor
25149	C-1	.01 mf. Capacitor
25150	C-34	.02 mf. Capacitor
25487	C-42	.001 mf. Capacitor
26151	C-41	.005 mf. Capacitor
27108	C-26, 27, 28, 29, 30, 31	2—.05 mf. Capacitors
27305	C-43	50 mmf. Capacitor
28594	C-33	.015 mf. Capacitor
28568	C-50	100 mmf. Capacitor
30116	C-45	.003 mf. Capacitor
30237	C-15	285 mmf. Capacitor
30322	C-35, 36, 37, 39, 40	.005 mf. Capacitor
30559	C-46, 47	200 mmf. Capacitor
30560	C-48	85 mmf. Capacitor
27685	C-21	Electrolytic Capacitor, 20 mf., 25 V.
30499	C-17, 18, 19	Electrolytic Capacitor (1—40 mf., 450 V.; 1—15 mf., 350 V.; 1—15 mf., 300 V.)
30253	C-6, 7, 8	Aligning Capacitor Assembly (3 unit)
30502	C-9, 10	Aligning Capacitor Assembly (2 unit)
30375	C-3, 4, 5	Tuning Capacitor (3 gang)

Coils, Transformers and Speakers

30149	L-3, 4	Bi-resonator Coil
30150	L-7, 8	Oscillator Coil "A" Band
30238	L-2	Wave Trap
30332	L-1	R. F. Choke Coil
30401	L-9, 19	Antenna Coil "C" Band
30402	L-11, 12	Oscillator Coil "C" Band
30500	L-5, 6	Antenna Coil "A" Band
27134	L-17, 18	Output Transformer
30424	L-21, 22, 23, 24	Power Transformer (50/60 Cycles)
30432	L-25, 26, 27, 28, C-25	Push Button Coil and Switch Assembly
30245	L-15, 16, C-13, 14	Second I. F. Transformer
30504	L-13, 14, C-11, 12	First I. F. Transformer
30359		Speaker
30421		Cone for Speaker

Resistors

Piece No.	Circuit Designation	Part
26326	R-8, 9	270 Ohm Resistor
26328	R-20	390 Ohm Resistor
26333	R-5	1000 Ohm Resistor
26336	R-18	82,000 Ohm Resistor
26349	R-17	22,000 Ohm Resistor
26350	R-24	27,000 Ohm Resistor
26353	R-2, 6	47,000 Ohm Resistor
26357	R-7, 9, 34	.1 Megohm Resistor
26362	R-15, 16, 22, 33, 35, 36	.27 Megohm Resistor
26365	R-24, 25, 28	.47 Megohm Resistor
26373	R-14	2.2 Megohm Resistor
26381	R-12, 13	10 Megohm Resistor
26775	R-38	20,000 Ohms, 1 Watt
28956	R-27	200 Ohm Resistor, I. R. C.
30400	R-23, 30, 31	"B" Voltage Divider
30417	R-26	10,000 Ohm Resistor, Type G

Miscellaneous Parts

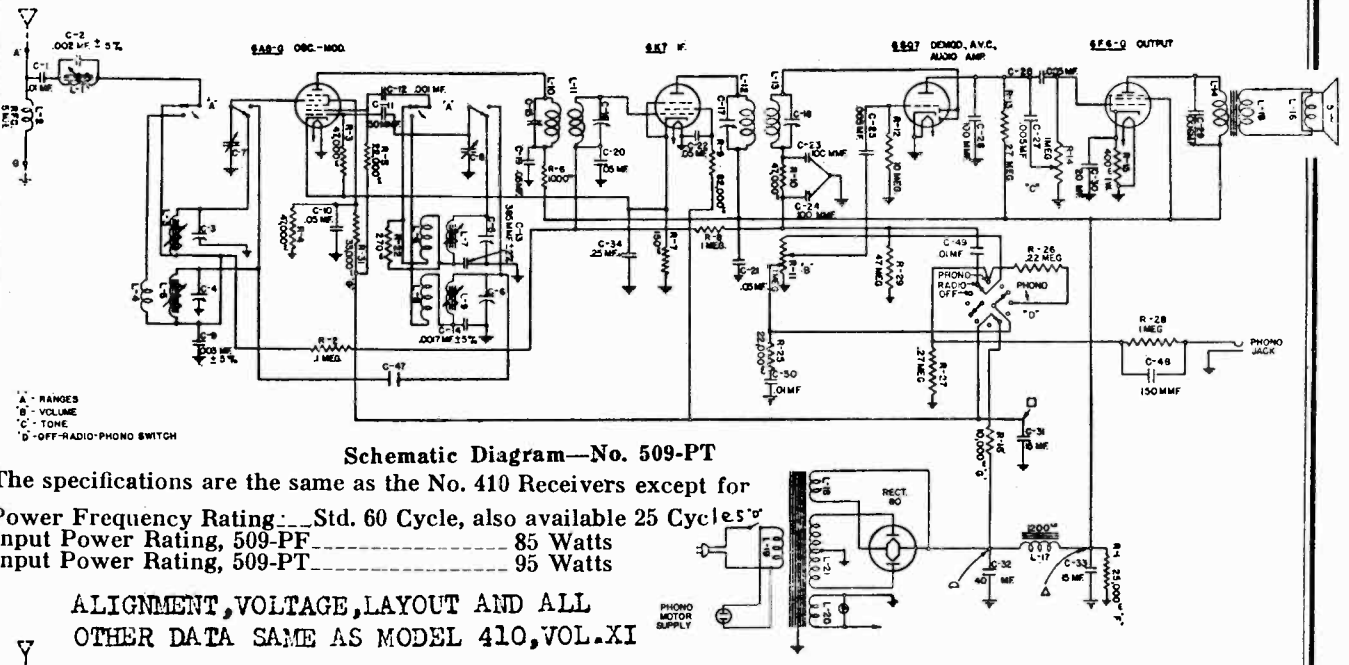
SD-233		Dial Drive Cord
26122		Antenna and Ground Terminal Strip
26677		3-Prong Plug
27088		Spring Washer for Mounting Coils
27969		Phono. Cord and Plug
28652		Power Supply Cord
28694		Pilot Lamp Socket
29956		Pilot Lamp
32686		Dial Scale
30259		Corner Rubber for Dial Scale
30151		8-Prong Tube Socket
30152		7-Prong Tube Socket
30153		4-Prong Tube Socket
30169		Station Call Letters
30172		Dial Escutcheon

Controls and Knobs

27311	R-11	Off-On Switch and Tone Control
29560	R-10	Volume Control
30501		Range Switch
30250		Bass Control Switch
27802		Large Tuning Knob
28827		Small Knob with Arrow
28843		Small Plain Knob
29084		Large Knob with Arrow
29461		Large Plain Knob
27628		Felt Washer for Knobs

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 509-PF
509-PFB
MODELS 509-PT
509-PTB

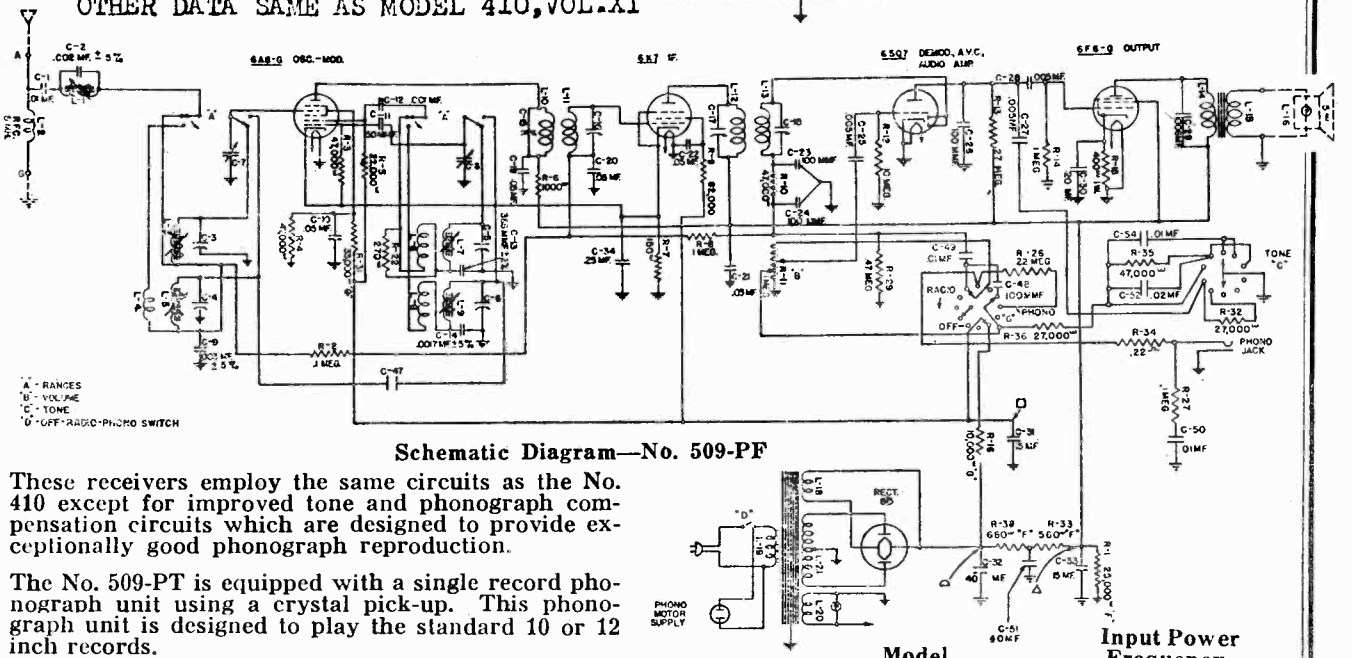


Schematic Diagram—No. 509-PT

The specifications are the same as the No. 410 Receivers except for

Power Frequency Rating: Std. 60 Cycle, also available 25 Cycles
Input Power Rating, 509-PF ..... 85 Watts
Input Power Rating, 509-PT ..... 95 Watts

ALIGNMENT, VOLTAGE, LAYOUT AND ALL OTHER DATA SAME AS MODEL 410, VOL. XI



Schematic Diagram—No. 509-PF

These receivers employ the same circuits as the No. 410 except for improved tone and phonograph compensation circuits which are designed to provide exceptionally good phonograph reproduction.

The No. 509-PT is equipped with a single record phonograph unit using a crystal pick-up. This phonograph unit is designed to play the standard 10 or 12 inch records.

The No. 509-PF Receivers are equipped with an automatic record changer using a crystal pick-up. This record player shifts and plays the standard 10 or 12 inch records.

Model	Input Power Frequency
509-PF	60 Cycles
509-PFB	25 Cycles
509-PT	60 Cycles
509-PTB	25 Cycles

Replacement parts are the same as used on the No. 410 Receivers except for the following:

Piece No.	Circuit Designation	Part
25054	C-48	150 mmf. Capacitor, 509-PT
25150	C-52	.02 mf. Capacitor, 509-PF
26349	R-25	22,000 Ohm Resistor, 509-PT
26350	R-32, 36	27,000 Ohm Resistor, 509-PF
26353	R-35	47,000 Ohm Resistor, 509-PF
26357	R-27	.1 Megohm Resistor, 509-PF
26361	R-26 (R-37, 509-PF)	.22 Megohm Resistor
26362	R-27	.27 Megohm Resistor, 509-PT
26365	R-29	.47 Megohm Resistor
26369	R-28	1 Megohm Resistor, 509-PT
27313		Tone Control Switch, 509-PF
28568	C-48	100 mmf. Capacitor, 509-PF
29084		Knob for OFF-ON, Radio Phono. Switch
29560	R-11	Volume Control
30477	C-51	40 mf. 400 Volts, 509-PF
30566		Tone Control, 509-PT
31481	C-49, 50 (C-51, 509-PF)	.01 mf. Capacitor
32305		Speaker, 509-PF
32314		Switch OFF-ON Radio Phono.
32319	R-33	560 Ohm Resistor, 509-PF
32320	R-38	680 Ohm Resistor, 509-PF

TELEVISION. A foil is provided on the back of the chassis into which a television receiver may be plugged. Switching to phonograph makes the audio amplifier and loud speaker available for use with television receivers designed for this type of sound reproduction.

ALIGNING INFORMATION

Never re-align 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".

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 if necessary.

II. **Intermediate frequency adjustments.**

1. Set range switch to Standard Broadcast position.
2. Turn 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 (C Band).

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 (C Band).
5. Set the signal generator frequency and the receiver tuning dial to 0.6 megacycles.
6. Adjust the 0.6 megacycle iron core for maximum signal.
7. Adjust the spacing of the short-wave loop lends for maximum signal.
8. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
9. Adjust the oscillator and loop aligning capacitors for maximum signal.
10. Repeat operations 5, 6, and 7.
11. Repeat operations 8 and 9.

Standard Broadcast Range (A Band).

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 iron core 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** (520 Table Models only)

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.

INSTRUCTIONS FOR SETTING UP PUSH BUTTONS

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.

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 "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.

PHONOGRAPH OPERATION. A jack is provided on the back of the chassis of all receivers not already equipped with phonograph mechanism, into which a record player may be plugged, and a push button is provided on the front of the receiver for switching from "Radio" to "Phonograph".

Tuning Ranges	A—540 to 1600 Kc., C—5700 to 18000 Kc.
Voltage Rating	A.C. 105 to 125 Volts
Input Power Rating, 520-H, J, and L	78 Watts
Input Power Rating, 520-PF	95 Watts
Input Power Rating, 520-PJ, and PG	110 Watts
Intermediate Frequency	455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles	Approximately 1.5 Ohm
Speaker Field Coil Resistance	Approximately 1050 Ohms

NORMAL VOLTAGE READINGS

Take all readings with chassis operating and tuned manually to 1000 kc.—No signal.

Use a line voltage of 120 volts or make allowance for the variations.

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 on page 2 for position of terminals. A.C. voltages are indicated by italics.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
6SK7	R. F. Amplifier	0	0	0	0	+3*	+115	*6.3*	+200
6SA7	Modulator and Oscillator	0	0	+250	+115	0	0	*6.3*	0
6SK7	I. F. Amplifier	0	0	0	0	+2	+100	*6.3*	+250
6SQ7	Demodulator, A. V. C., Audio	0	0	0	0	0	+95	*6.3*	0
6V6GT	Output	0	0	+300	+250	0	0	*6.3*	+12*
6U5	Tuning Indicator	*6.3*	+90	0	+250	0	0	—	—
5Y3G	Rectifier	0	+400	0	*385*	0	*385*	0	+400
Speaker Socket	—	+310	0	0	+400	+400	0	+400	—

*Read on lowest possible scale of voltmeter

CONTINUITY TEST

CAUTION: Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Test speaker socket with speaker left out. Plug speaker in socket for all other tests.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to the electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart on page 2 for position and numbering of terminals.

		TERMINALS OF SOCKETS							
Tube	*Circuit*	1	2	3	4	5	6	7	8
6SK7	R. F. Amp.	S	S	S	A	B	20000¶	S	7300¶
6SA7	Mod. and Osc.	S	S	2200¶	20000¶	33000¶	C	S	47000¶
6SK7	I. F. Amp.	S	S	S	D	220¶	85000¶	S	2200¶
6SQ7	Demod., A. V. C., Audio Amp.	S	10M	S	E	S	F	S	S
6V6GT	Output	S	S	200¶	2200¶	470000¶	S	S	240¶
6U5	Tuning Indicator	S	100000¶	G	2200¶	S	S		
5Y3G	Rectifier	O	O	O	130¶	O	140¶	O	O
Loop	3 Prong	O	O	S	—	—	—	—	—
Loop	4 Prong	O	S	2200¶	O	—	—	—	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open

A. Push "Radio" button in — 3.2 Megohms
Push "Phono" button in — "Open"

B. Range switch in Loop position — 1700 Ohms
Range switch in external antenna position — 220 Ohms
Range switch in short-wave position — 220 Ohms

C. Range switch in Loop position — 5 Ohms
Range switch in external antenna position — 5 Ohms
Range switch in short-wave position — "Short"

D. Push "Radio" button in — 3.2 Megohms
Push "Phono" button in — "Open"

E. Push "Radio" button in — 1 Megohm
Push "Phono" button in — "Open"

F. Range switch in Loop position — 240,000 Ohms
Range switch in external antenna position — 240,000 Ohms
Range switch in short-wave position — 270,000 Ohms

G. Push "Radio" button in — 3.3 Megohms
Push "Phono" button in — 3.3 Megohms

Other tests not shown on chart—

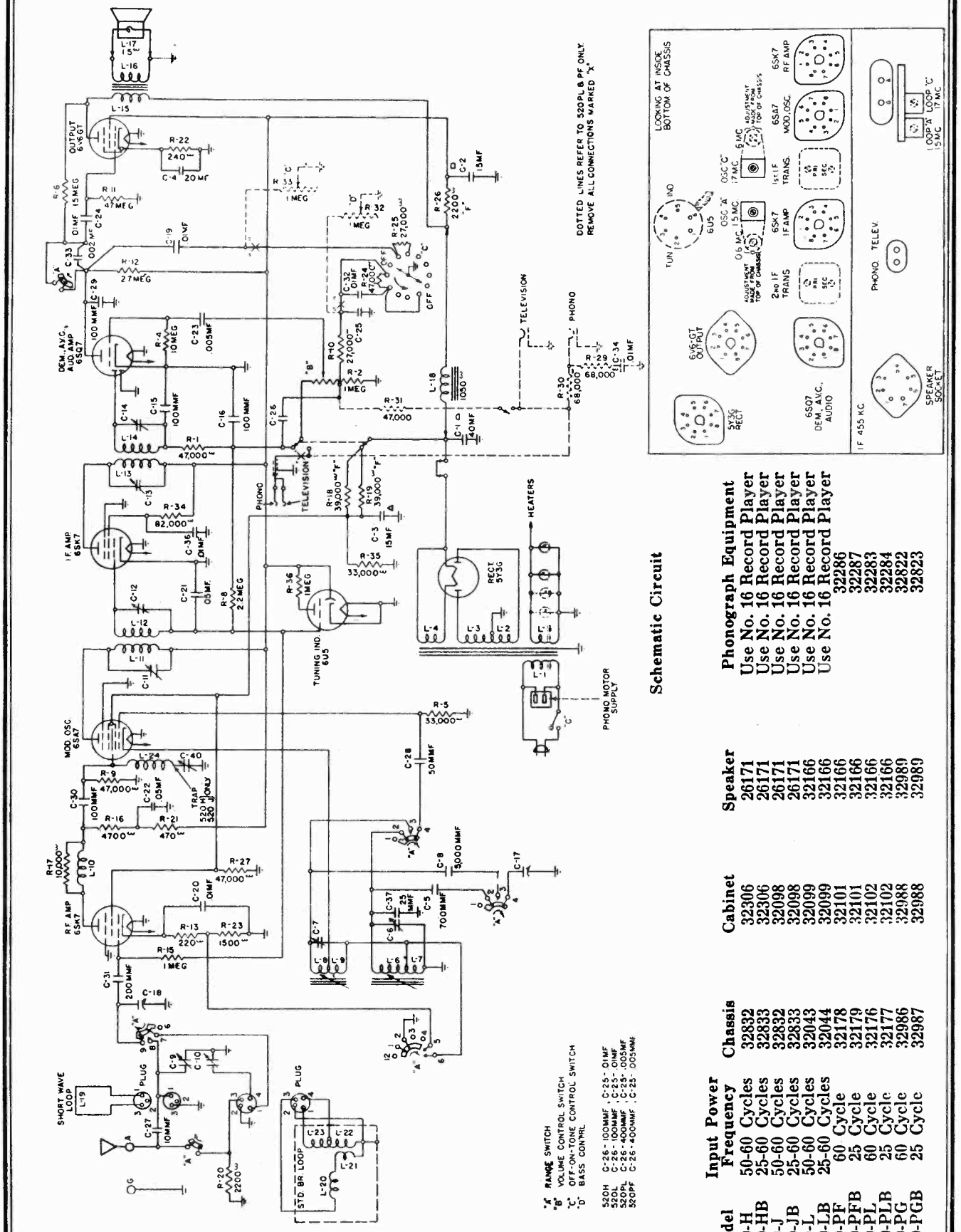
Test from phono jack on back of chassis base:
Push "Radio" button in — "Open"
Push "Phono" button in — 1 Megohm

Test from Television jack on back of chassis base:
Push "Radio" button in — "Open"
Push "Phono" button in — 1 Megohm

Test between terminals of A.C. plug:
"Off-On" switch in "Off" position — "Open"
"Off-On" switch in "On" position — 5 Ohms
Terminals of A.C. plug to chassis base — "Open"

STROMBERG-CARLSON TEL. MFG. CO.

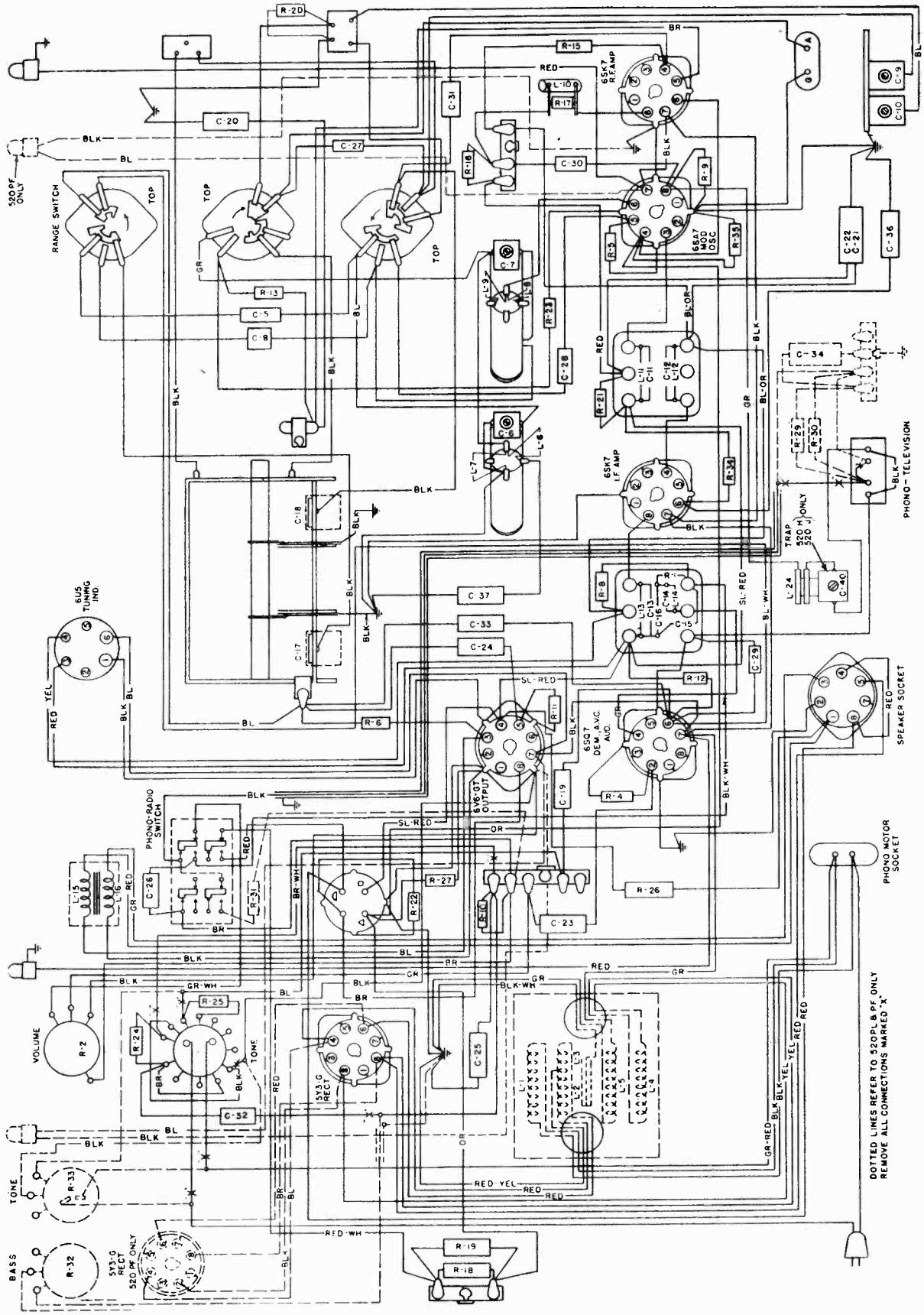
MODEL 520



Model	Input Power Frequency	Chassis	Cabinet	Speaker	Phonograph Equipment
520-H	50-60 Cycles	32832	32306	26171	Use No. 16 Record Player
520-HB	25-60 Cycles	32833	32306	26171	Use No. 16 Record Player
520-J	50-60 Cycles	32832	32098	26171	Use No. 16 Record Player
520-JB	25-60 Cycles	32833	32098	26171	Use No. 16 Record Player
520-L	50-60 Cycles	32043	32099	32166	Use No. 16 Record Player
520-LB	25-60 Cycles	32044	32099	32166	Use No. 16 Record Player
520-PF	60 Cycle	32178	32101	32166	32286
520-PFB	25 Cycle	32179	32101	32166	32287
520-PL	60 Cycle	32176	32102	32166	32283
520-PLB	25 Cycle	32177	32102	32166	32284
520-PG	60 Cycle	32986	32988	32989	32822
520-PGB	25 Cycle	32987	32988	32989	32823

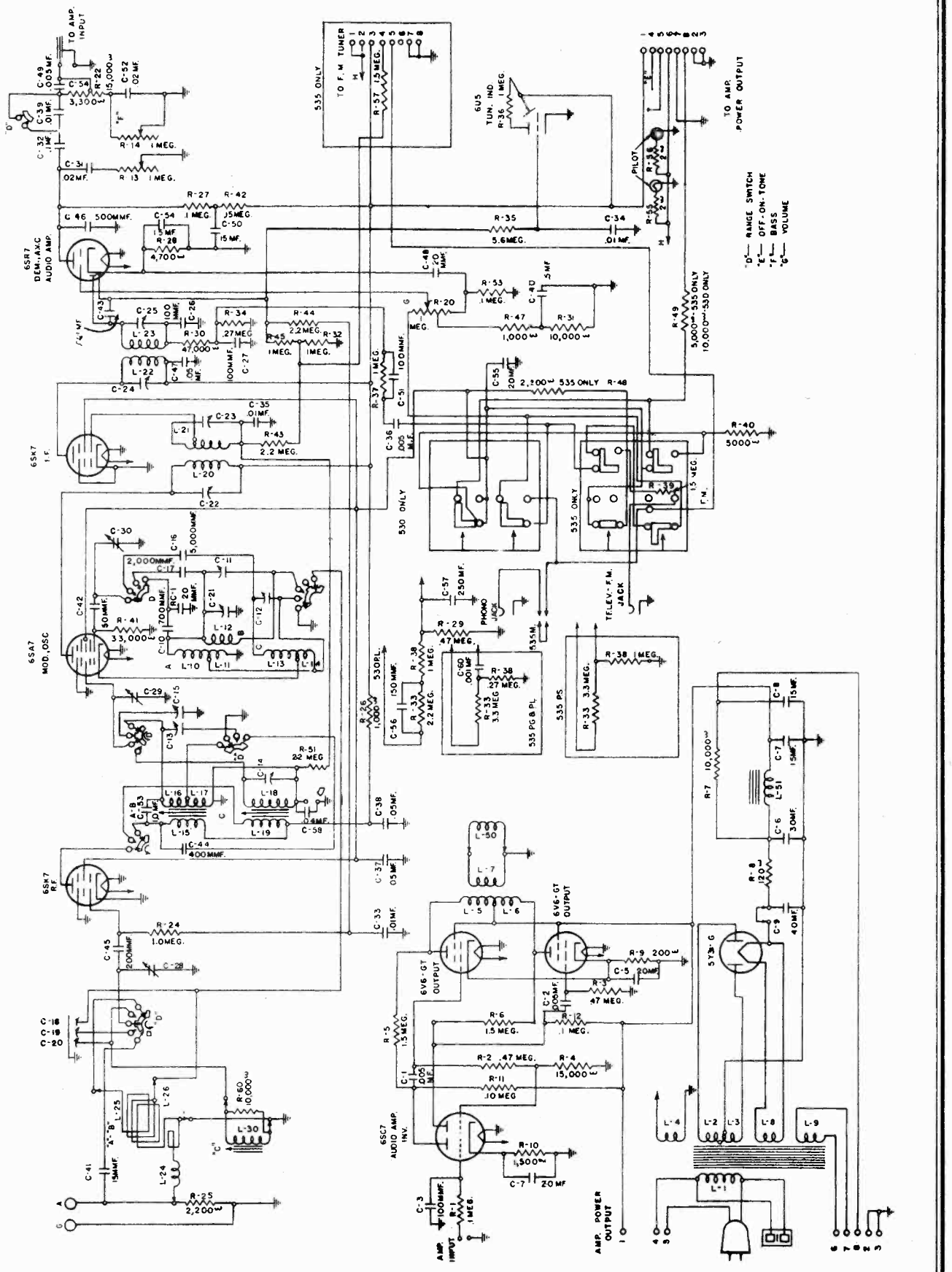
MODEL 520

STROMBERG-CARLSON TEL. MFG. CO.



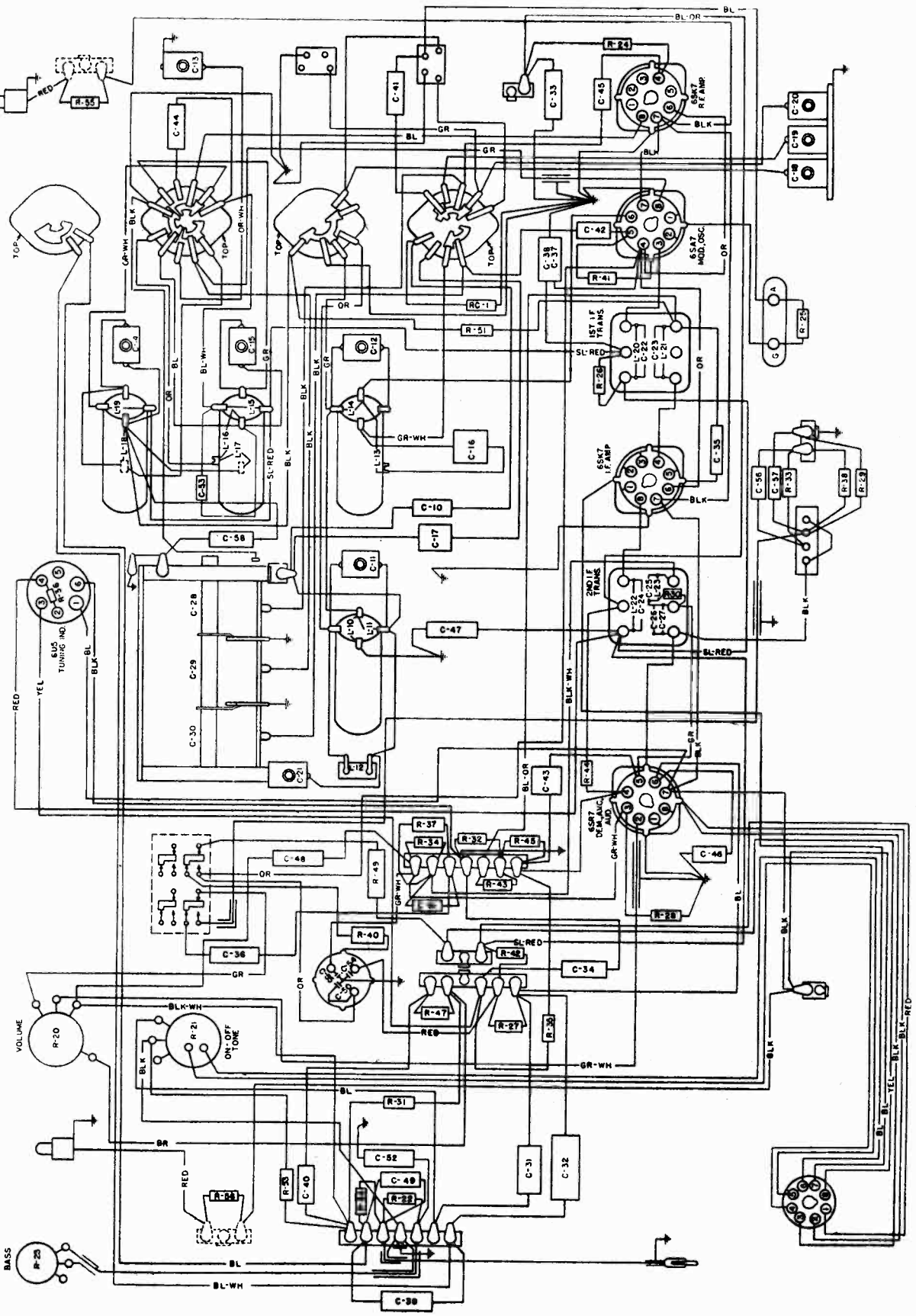
STROMBERG-CARLSON TEL. MFG. CO.

MODELS 530, 535



MODEL 530
Ampl. Mod.

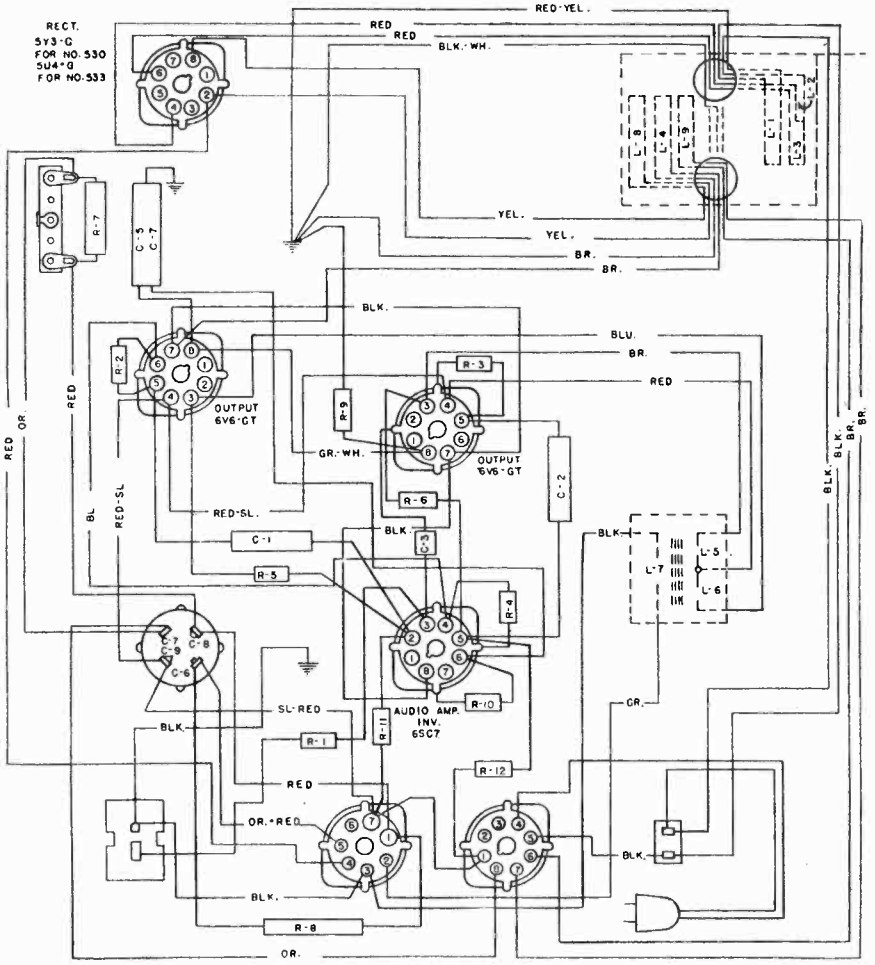
STROMBERG-CARLSON TEL. MFG. CO.



Wiring Diagram (530 Ampl. Mod.)

STROMBERG-CARLSON TEL. MFG. CO.

MODELS 530, 535



Wiring Diagram Power Amplifier (Nos. 530 and 535 Receivers)

GENERAL. The No. 530 Receivers are nine tube, three gang, three range receivers, designed for the reception of Amplitude Modulated stations. The No. 535 Receivers are fifteen tube receivers of the very latest design, providing reception of both Amplitude and Frequency Modulated stations. The "Armstrong Wide-Swing Frequency Modulation System" used in this receiver is outstanding in that substantially static-free reception is obtained, plus a degree of high fidelity which has heretofore been unobtainable in any radio system.

Six button automatic tuning is provided in these receivers, so that six favorite stations may be set up.

Separate continuously variable bass and treble controls are provided in these chassis.

Provision is made for a record player to be used with all models not already equipped with phonograph mechanism without additional wiring.

The No. 530-PL Receiver is equipped with a record player using a crystal pick-up in conjunction with a specially equalized circuit. This record player shifts and plays the standard 10" or 12" records.

The No. 535-PG, PL and PS Receivers are equipped with record players 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" records. The records may be intermixed on the No. 535-PG and PS Receivers.

A loop antenna is provided in these receivers so that no antenna and ground connection whatsoever is required. However, antenna and ground terminals are provided on the chassis so that an external antenna may be used for improved reception if desired.

PHONOGRAPH OPERATION. A jack is provided on the back of the chassis of all receivers not already equipped with a phonograph mechanism, into which a record player may be plugged, and a push button is provided on the front of the receiver for switching from "Radio" to "Phonograph".

ACCESSORIES

ANTENNA. The built-in loop antenna provided in these receivers will give satisfactory operation in most locations. However, for improved reception, a Stromberg-Carlson All-Wave Antenna is recommended. These antenna are supplied in kits containing all the necessary parts for mounting and installation, and are designed especially for use with all Stromberg-Carlson receivers.

HEADSET ATTACHMENT. Headphones can be very simply attached to this receiver. Ask for Pc-28303 Headset Package Assembly, which comes complete with headphones and installation instructions.

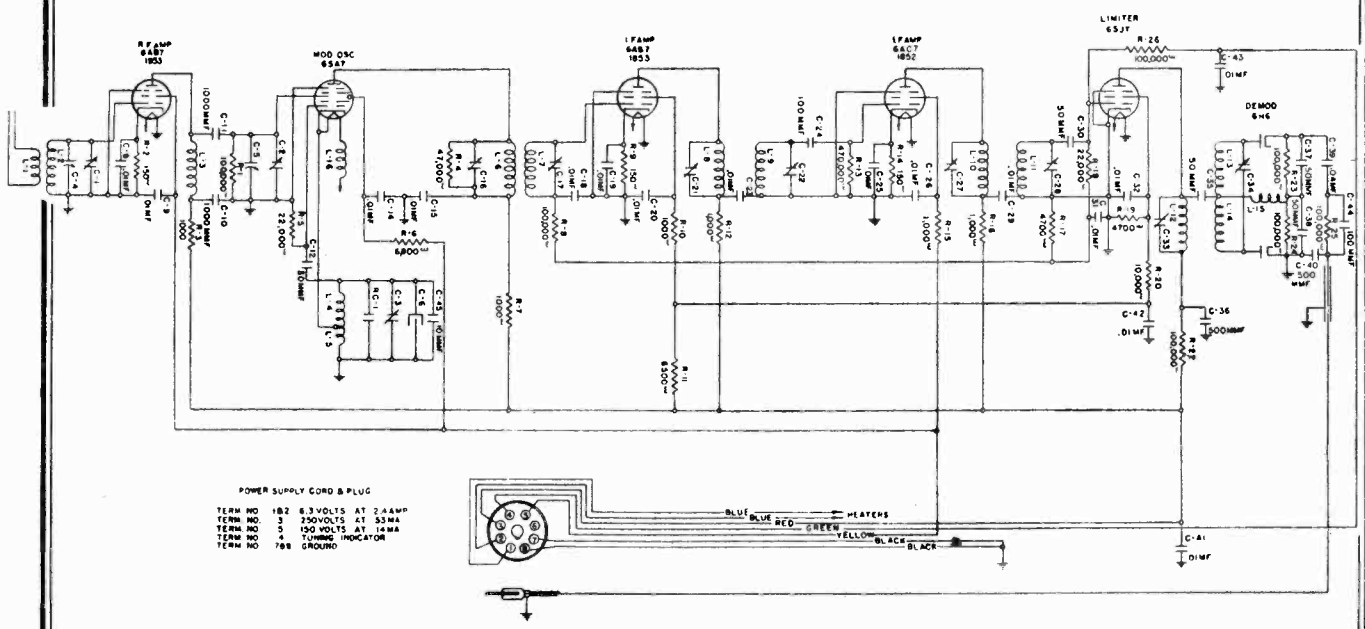
CARE OF THE CABINET. The finish of Stromberg-Carlson cabinets should be protected by using Stromberg-Carlson cabinet polish regularly. It is available in pint cans designated as Pc-28601.

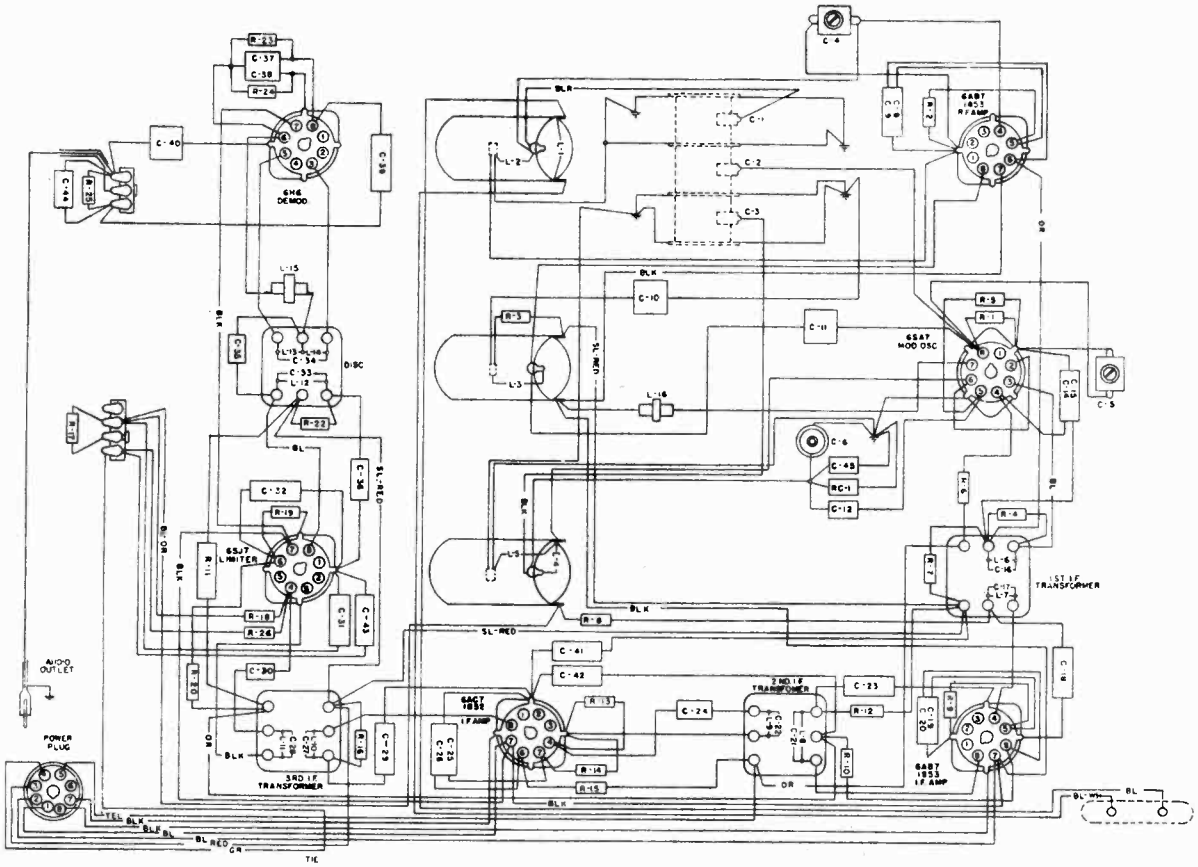
Nicks and scratches of most kinds can be repaired quickly and easily by proper use of the Pc-26962 Touch-up Kit. Complete instructions are provided with each kit.

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.

MODEL 535
Freq. Mod.

STROMBERG-CARLSON TEL. MFG. CO.

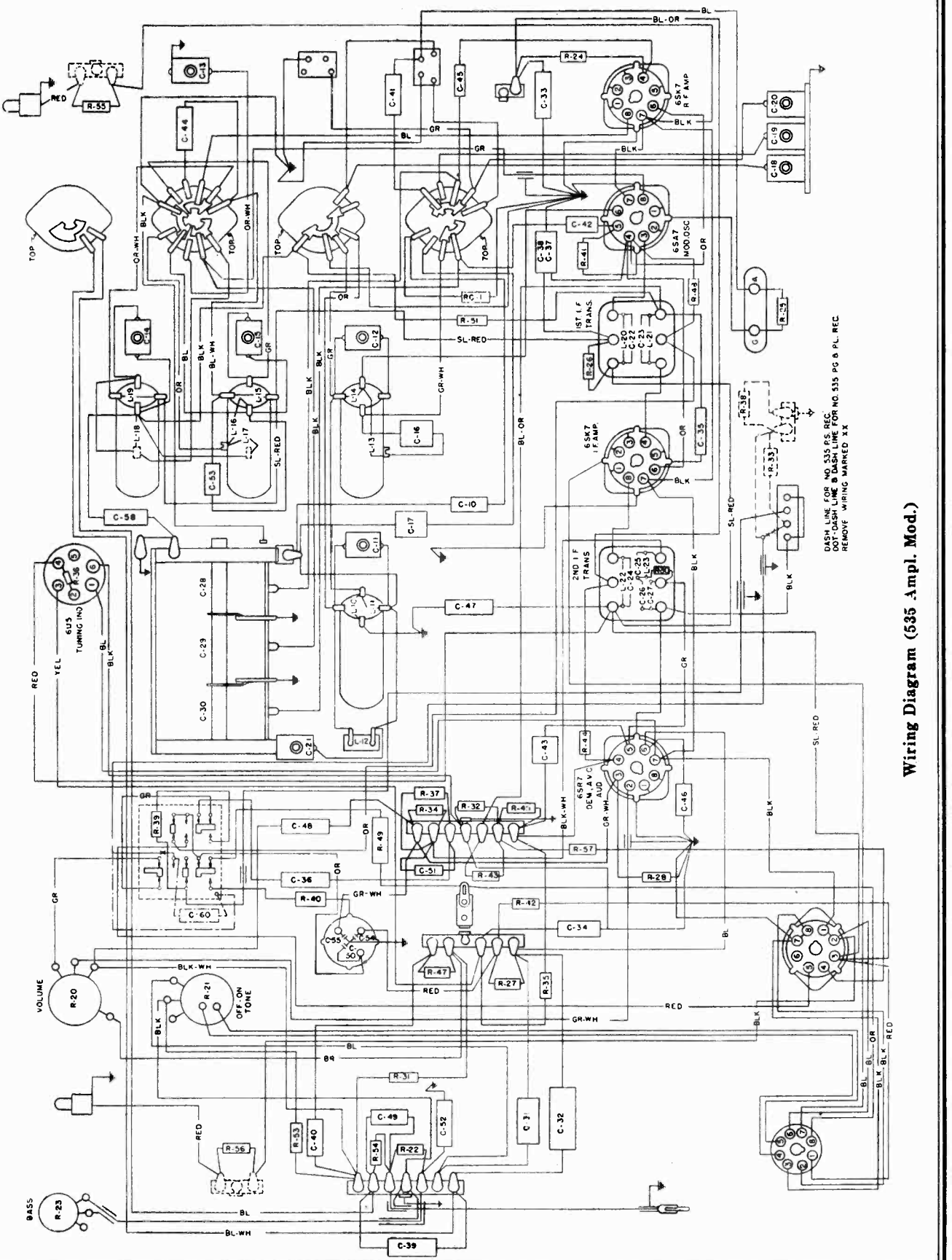




Schematic Circuit and Wiring Diagram (535 Freq. Mod.)

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 535
Ampl. Mod.



Wiring Diagram (535 Ampl. Mod.)

MODELS 530, 535 STROMBERG-CARLSON TEL. MFG. CO.

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 on the No. 535 Receivers.

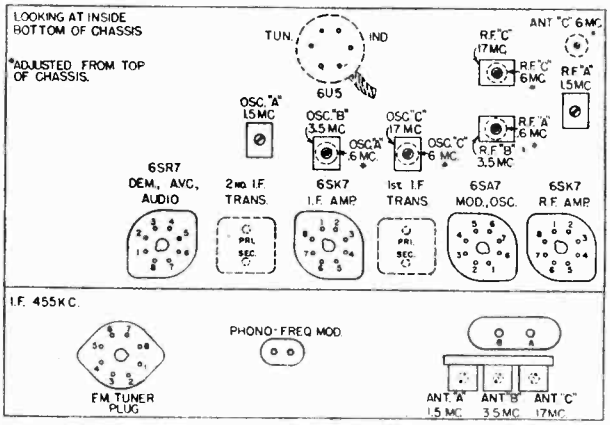
Set up stations in the daytime to avoid unnecessary interference. Allow the set to run for about twenty minutes before setting up stations.

Always use the tuning indicator unit when setting up stations, in order to determine when the station is exactly in tune.

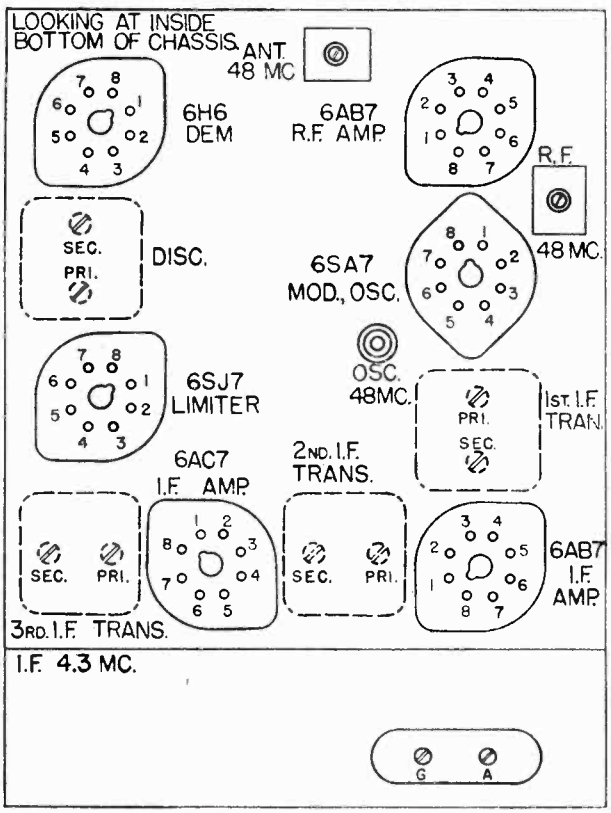
1. Turn the receiver "On".
2. On the No. 530 Receivers, push in the "Radio" button. On the No. 535 Receivers, be sure the "Phono" and "F. M." buttons are in the proper position to receive the desired stations.
3. Set the range switch to the "BC" position.
4. Turn volume control about three-quarters of 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.

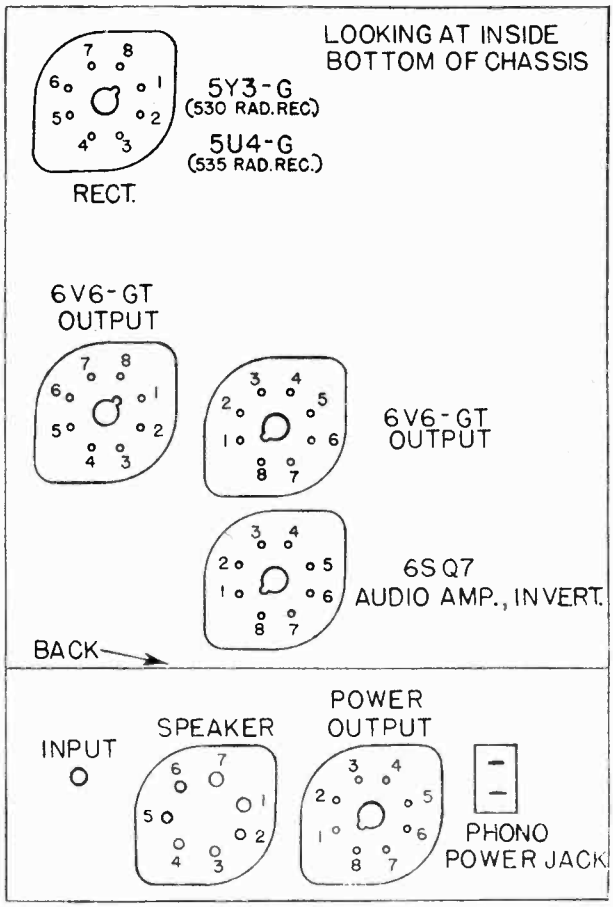
9. Tighten the set screw. Be sure not to disturb the adjustment in any way while tightening the screw.
10. Place the proper button on the lever.
11. Check the accuracy of the adjustment by detuning the station and retuning with the button several times, pushing the button with an even pressure. Readjust if necessary.
12. Set up the other five stations in the same manner.



Location Chart (Ampl. Mod.)



Location Chart (Freq. Mod.)



Location Chart (Power Ampl.)

NORMAL VOLTAGE READINGS

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 on Page 2 for position of terminals.

A. C. voltages are indicated by Italics.

AMPLITUDE MODULATION AND POWER AMPLIFIER CHASSIS, 530 AND 535 RECEIVERS

Tube	Circuit	Receiver No.	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6SK7	R. F. Amplifier	530	0	0	0	0	0	+100	*6.3*	+260
		535	0	0	0	0	0	+100	*6.3*	0
6SA7	Modulator and Oscillator	530	0	0	+260	+100	−20*	0	*6.3*	0
		535	0	0	+260	+100	−20*	0	*6.3*	0
6SK7	I. F. Amplifier	530	0	0	0	0	0	+100	*6.3*	+260
		535	0	0	0	0	0	+100	*6.3*	0
6SR7	Demod., A. V. C., Audio Amp.	530	0	0	+3	0	0	+54	*6.3*	0
		535	0	0	+3	0	0	+54	*6.3*	0
6AC7	Audio Inverter	530	0	+165	0	0	+165	+2	0	*6.3*
		535	0	+165	0	0	+165	+2	0	*6.3*
6V6GT	Output	530	0	0	+260	+263	0	—	*6.3*	+14
		535	0	0	+260	+263	0	—	*6.3*	+14
6V6GT	Output	530	0	0	+260	+263	0	—	*6.3*	+14
		535	0	0	+260	+263	0	—	*6.3*	+14
5Y3G	Rectifier	530	—	+400	—	*390*	—	*390*	—	+400
5U4G	Rectifier	535	—	+370	—	*355*	—	*355*	—	+370
—	Speaker Socket	530	+394	0	0	+400	+400	—	+262	—
		535	+360	0	0	+370	+370	—	+265	—
—	Power Socket	530	+263	0	0	*50*	*50*	*6.3*	0	+240
		535	+263	0	0	*50*	*50*	*6.3*	0	+200
	FREQUENCY MODULATION CHASSIS, 535 RECEIVER									
6AB7	R. F. Amplifier	535	0	0	0	0	+1.8	+150	*6.3*	+265
6SA7	Modulator and Oscillator	535	0	0	+265	+100	−2*	0	*6.3*	0
6AB7	I. F. Amplifier	535	0	0	0	0	+2.2	+150	*6.3*	+265
6AC7	I. F. Amplifier	535	0	0	0	0	+2.2	+150	*6.3*	+265
6SJ7	Limiter	535	0	0	0	0	0	+42	*6.3*	+10
6H6	Demodulator	535	0	0	0	0	0	—	*6.3*	0

* Read on 1000 volt scale of voltmeter.
Between terminals 2 and 8 of rectifier socket—5 volts A. C.

AMPLITUDE MODULATION CHASSIS, 530 AND 535 RECEIVERS

Tube	Circuit	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6SK7	R. F. Amplifier	S	S	S	4.5M	S	A	S	1000¶
6SA7	Mod. and Osc.	S	S	11¶	A	33000¶	S	S	B
6SK7	I. F. Amplifier	S	S	S	3.2M	S	A	S	13¶
6SR7	Demod., A. V. C., Audio Amp.	S	C	4700¶	2M	320000¶	250000¶	S	S
6U5	Tuning Indicator	S	1M	6.7M	S	S	S	—	—
—	*Power Supply Plug	250000¶	S	S	O	O	S	S	250000¶
—	Power Supply Socket	S	S	S	2.5M	S	O	S	S
	POWER AMPLIFIER CHASSIS, 530 AND 535 RECEIVERS								
6AC7	Audio Inv.	S	150000¶	O	12000¶	150000¶	1500¶	S	S
6V6GT	Output	S	S	50000¶	50000¶	500000¶	12000¶	S	S
6V6GT	Output	S	S	50000¶	50000¶	500000¶	O	S	S
5Y3G or 5U4G	Rectifier	O	O	O	60¶	O	60¶	O	O
—	*Power Output Socket	50000¶	S	S	O	O	O	O	50000¶
—	Speaker Socket	10000¶	S	S	O	10000¶	O	50000¶	—
	FREQUENCY MODULATION CHASSIS, 535 RECEIVERS								
6AB7	R. F. Amplifier	S	S	S	S	150¶	S	O	1000¶
6SA7	Mod. and Osc.	S	S	1000¶	6800¶	22000¶	S	O	O
6AB7	I. F. Amplifier	S	S	S	100000¶	150¶	5700¶	O	1000¶
6AC7	I. F. Amplifier	S	S	S	470000¶	150¶	1000¶	O	1000¶
6SJ7	Limiter	S	S	S	270000¶	S	4700¶	O	100000¶
6H6	Demodulator	S	S	100000¶	S	100000¶	100000¶	O	200000¶
—	*Power Plug	O	O	17000¶	130000¶	O	O	S	S

Symbols shown on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

CONTINUITY TEST

Remove all tubes and disconnect all plugs from the chassis before checking continuity.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart on Page 2 for position and numbering of terminals.

IMPORTANT: The continuity of each chassis may be checked as a separate unit; however, the power supply of the chassis to be checked should be shorted as follows:

1. A. M. chassis 530 and 535 Receivers: Short terminals 1, 2 and 8 of power supply plug together.
2. Power Amplifier chassis 530 and 535 Receivers: Short terminals 2 and 8 of power socket together.
3. F. M. chassis 535 Receivers: Short terminals 3, 4, 5, 7 and 8 of power supply plug together.

Be sure to remove the shorting wires when continuity is completed.

A. Push Buttons in normal position ..... 7200 Ohms
Phono Button pushed in ..... 5 Megohms
Radio or F. M. button pushed in ..... "Open"

B. Range Switch in "A" band ..... 3.2 Megohms
Range Switch in "B" band ..... "Short"
Range Switch in "C" band ..... "Short"

C. Operate volume control from most counterclockwise position to extreme clockwise position—should read 50,000 Ohms to 1 Megohm.

* Remove shorting wire before making continuity test of power circuits.

Other Tests Not Shown on Chart:

Amplitude Modulation Chassis:

Between terminals 4 and 5 of the Power Supply Plug should read "Open" with A. C. switch open; "Short" with A. C. switch closed.

Audio output plug: Prong 5 Megohms—Shield "Short".

F. M. Jack: "Open"—A, B and C Bands
Push in F. M. Button—1 Megohm.

Phono Jack: "Open"—A, B and C Bands
Push in F. M. Button—1 Megohm.

Power Amplifier Chassis

Audio Input Jack to Chassis Base ..... "Open"

Frequency Modulation Chassis

Audio Plug: Prong "Open", Shield "Short".

Antenna Terminal to Chassis Base ..... "Open"
Ground Terminal to Chassis Base ..... "Open"
Between Antenna and Ground Terminals ..... "Short"

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 on Page 2 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 6SA7 Modulator and Oscillator tube (terminal No. 8), 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. 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.
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 three and four.
8. Repeat operations five and six.

Medium Wave Range (B Band)

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. Set the range switch to the Medium Wave range (B Band).
3. Set the signal generator frequency and the receiver tuning dial to 3.5 megacycles.
4. Adjust the oscillator R. F. and antenna aligning capacitors for maximum signal.

Short Wave Range (C Band)

1. Leave the signal generator connected in the same manner as when adjusting the Medium Wave Range (B Band).
2. Set the range switch to the Short Wave Range (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycle oscillator, R. F. and antenna aligners (iron cores) for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycle oscillator, R. F. and antenna aligning capacitors for maximum signal.
7. Repeat operations three and four.
8. 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, Medium Wave and Short Wave antenna high frequency shunt aligners for maximum signal.

Model	Input Power Frequency	A. M. Chassis	F. M. Chassis	Power Amplifier Chassis	Cabinet	Speaker	Phonograph Equipment
530-PL	60 Cycles	32113	None	32123	32104	26170	32702
530-PLB	25 Cycles	32113	None	32124	32104	26170	32703
535-PG	60 Cycles	32114	32316	32125	32713	32427	32713
535-PGB	25 Cycles	32114	32316	32126	32714	32427	32714
535-PS	60 Cycles	32114	32316	32125	32103	32427	32822
535-PSB	25 Cycles	32114	32316	32126	32103	32427	32823
535-M	60 Cycles	32121	32317	32125	32107	32427	Use No. 16 Record Player
535-MB	25 Cycles	32121	32317	32126	32107	32427	Use No. 16 Record Player
535-PL	60 Cycles	32114	32316	32125	32106	32427	32713
535-PLB	25 Cycles	32114	32316	32126	32106	32427	32714

ALIGNING PROCEDURE (FREQ. MOD.)

I. Dial Pointer Adjustment.

Before alignment is attempted, be sure that the variable capacitor plates of the F. M. tuner are fully meshed with the variable capacitor plates of the A. M. tuner when turned all the way in.

II. 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. Push in the F. M. button.
2. Tune the set to the extreme high frequency end of the dial (50 megacycles).
3. Connect the 0-200 microammeter across the R-17 4700-ohm resistor. (This resistor is mounted on the terminal strip located on the side of the base.)
4. Connect the oscillograph between ground and the junction of C-43 .01-mf. capacitor and R-26 100,000-ohm resistor located on the same terminal strip with the R-17 resistor.
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.
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 6AB7 first I. F. tube socket (terminal No. 4).
9. Connect the ground lead of the signal generator to the ground terminal of the 6AB7 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 6SA7 Modulator and Oscillator tube (terminal No. 8).
12. Connect the ground terminal of the signal generator to the ground terminal of the 6SA7 tube socket.
13. Adjust the first I. F. transformer in the same manner.

III. Discriminator Adjustment (F. M.)

1. Connect the ground terminal of the standard unmodulated signal generator to the ground terminal of the 6AB7 first I. F. tube socket.
2. Connect the output lead of the unmodulated standard signal generator to the grid of the 6AB7 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 6SA7 Modulator and Oscillator 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-23 and R-24.)
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-23 .1 megohm resistor and C-29 .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 re-adjustment of the primary.

    Note: Connect the wide band sweep signal generator to the grid of the 6SA7 Modulator and Oscillator 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.

IV. 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.

Tuning Ranges — Standard Broadcast 540 to 1600 kilocycles; Medium Wave 1.6 to 3.6 megacycles; Short Wave 5.7 to 18 megacycles; Frequency Modulation (535) 42 to 50 megacycles

Voltage Rating — 105 to 125 Volts

Type of Circuit — Superheterodyne with Automatic Tuning

Number of Tubes — No. 530—9; No. 535—15

- 1—6SK7 R. F. Amplifier
- 1—6SA7 Modulator and Oscillator
- 1—6SK7 I. F. Amplifier
- 1—6SR7 Demodulator, A. V. C. and Audio
- 1—6U5 Tuning Indicator
- 1—6AC7 Audio Amplifier and Inverter
- 2—6V6GT Output
- 1—5Y3G Rectifier (530 Receiver)
- 1—5U4G Rectifier (535 Receiver)
- 1—6AB7 R. F. Amplifier (F. M.)
- 1—6SA7 Modulator and Oscillator (F. M.)
- 1—6AB7 I. F. Amplifier (F. M.)
- 1—6AC7 I. F. Amplifier (F. M.)
- 1—6SJ7 Limiter (F. M.)
- 1—6H6 Demodulator (F. M.)

Input Power Rating — 530-PL: 120 Watts; 535-PL, PS, PG: 155 Watts; 535-M: 130 Watts

Intermediate Frequency — 455 Kilocycles (Amplitude Modulation); 4.3 Megacycles (Frequency Modulation)

Speaker Field Coil Resistance — 530—1050 ohms; 535—610 ohms

Speaker Voice Coil Impedance — 530— 1.5 ohms; 535— 11 ohms

STROMBERG-CARLSON TEL. MFG. CO.

MODEL 585M

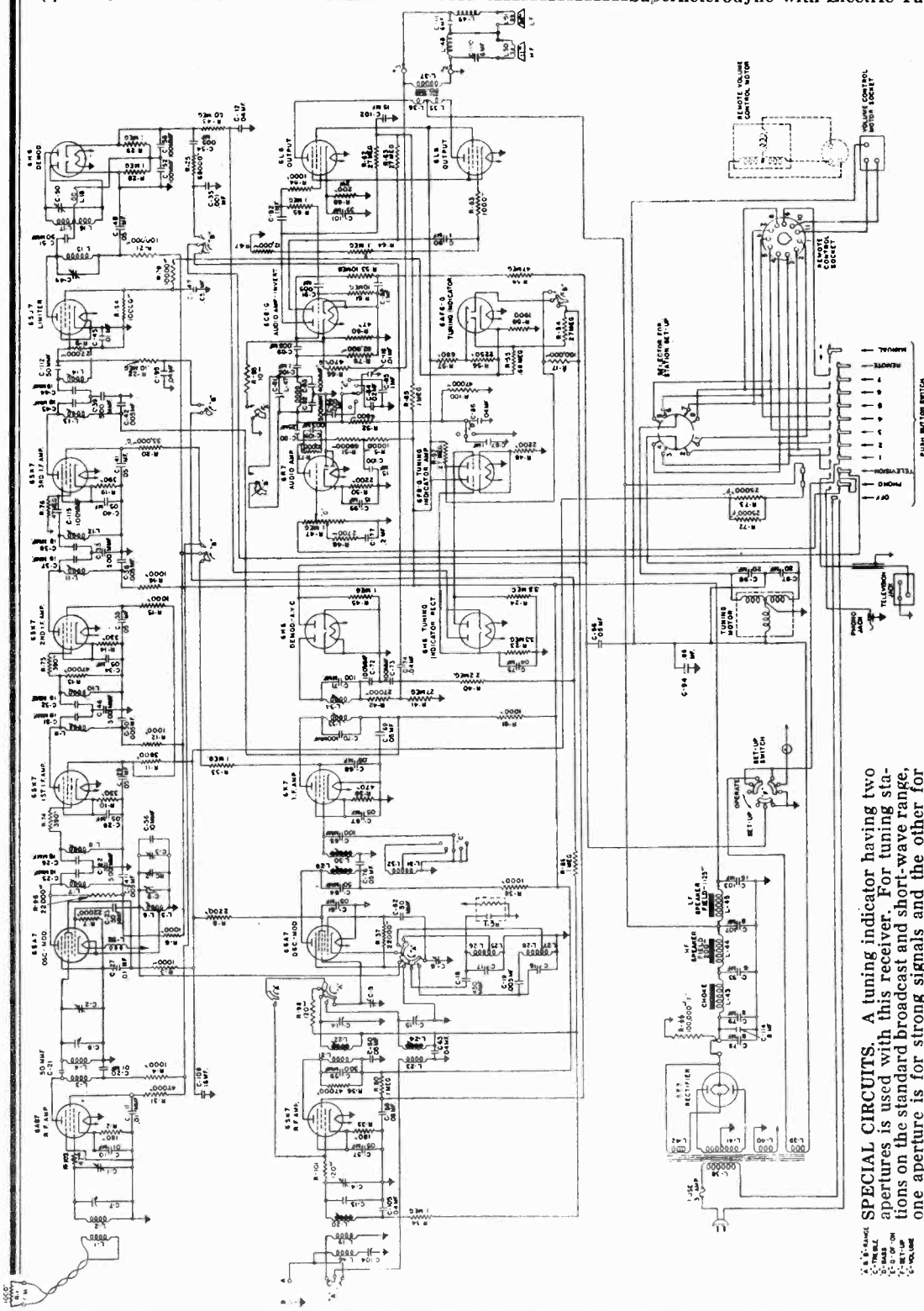
Model	Input Power Frequency	Chassis	Cabinet	Speaker
585-M	50-60 Cycles	32711	31088	31087 (Bass) 31126 (Treble)

SPECIFICATIONS

Tuning Ranges ..... { Frequency Modulation 42 to 50 Mc. (42,000 to 50,000 Kc.)
Shortwave 5.8 to 18 Mc. (5800 to 18,000 Kc.)
Standard Broadcast .54 to 1.7 Mc. (540 to 1700 Kc.)

Voltage Rating ..... 105 to 125 Volts

Type of Circuit ..... Superheterodyne with Electric Tuning



SPECIAL CIRCUITS. A tuning indicator having two apertures is used with this receiver. For tuning stations on the standard broadcast and short-wave range, one aperture is for strong signals and the other for weak signals. One aperture will close with a signal of approximately 100,000 microvolts and the other will not close even with a two volt signal. Stations on the frequency modulation range should be tuned for maximum closing of both apertures.

Iron core coils are used in the broadcast and short-wave ranges to provide greater accuracy of alignment. The audio system employs a special inverter push-pull circuit designed to provide excellent fidelity, and the chassis is thoroughly shielded throughout with an electro-statically shielded power transformer.

FREQUENCY MODULATION: The "Armstrong Wide-Swing Frequency Modulation System" used in this receiver is an outstanding development in radio. It makes possible:

1. Static-Free Reception;
   Both natural and man-made static is virtually eliminated.
2. Noise free reception;
   The tube and set noises present in ordinary amplitude modulation receivers are virtually eliminated.
3. Extreme high fidelity reception;
   Noise free reproduction of an audio range limited only by the capacity of the human ear or the audio system of the receiver is possible without interference.
4. Interference free reception;
   Two stations cannot be received at the same time.

MODEL 585M

STROMBERG-CARLSON TEL. MFG. CO.

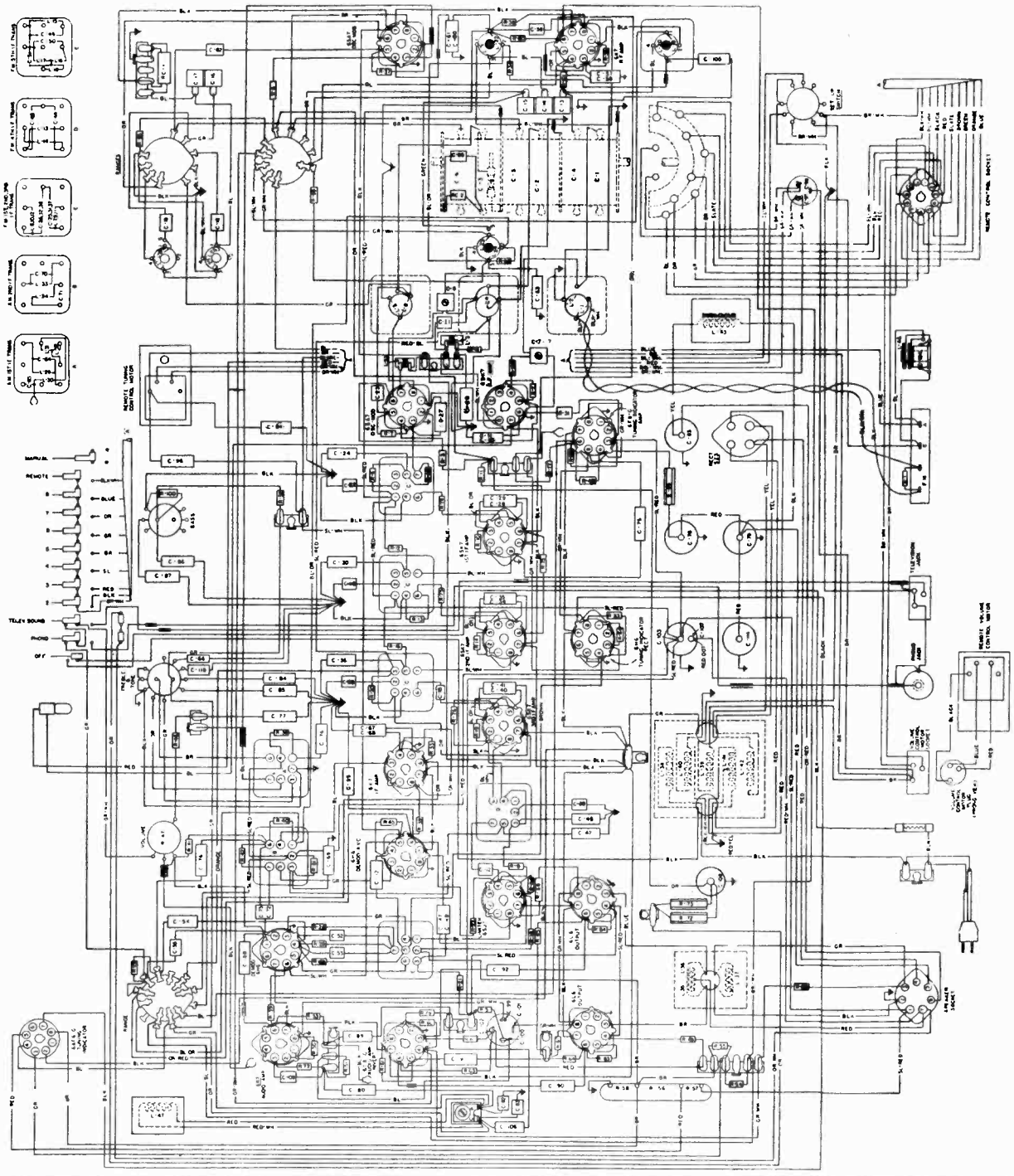
GENERAL. This is a nineteen-tube, three gang, three range receiver designed for the reception of both amplitude and frequency modulated stations and is equipped with a dual coaxial speaker system. It is capable of reproducing without distortion an audio frequency range of at least 10,000 cycles.

The chassis is of the fortified type with bails provided for ease in handling and servicing. Automatic tuning is accomplished by means of a motor drive controlled by a commutator and brush assembly and the dial is of the slide rule type, edge-lighted for clear visibility without glare. Separate treble and bass controls are provided to make accurate adjustment of the tone possible.

A remote control unit is provided with this receiver which enables the user to operate the receiver at a remote point.

The power output of this receiver is excellent and the tone quality and fidelity of reproduction is finer than anything produced commercially to date.

Input Power Rating	225 Watts
Intermediate Frequency	455 Kilocycles (Amplitude Modulation) 4.3 Megacycles (Frequency Modulation)
Speaker Field Coil Resistance—Approximately	1125 Ohms (Bass) 200 Ohms (Treble)
Speaker Voice Coil Impedance at 400 Cycles—Approximately	24 Ohms (Bass) 11 Ohms (Treble)



ADJUSTING DIAL LAMP

The dial on this receiver is edge-lighted, and for proper illumination it is very important that the dial light be adjusted so that the filament is exactly opposite the edge of the glass.

To make this adjustment simply slide the pilot light socket back and forth on its mounting bracket until maximum illumination is obtained.

NORMAL VOLTAGE READINGS

Take all voltage readings with chassis operating and tuned manually to 1000 kilocycles or 48 megacycles—no signal.

The upper figures shown in the table are with the range switch set to the standard broadcast range and tuned to approximately 1000 kilocycles—no signal.

The lower figures shown in the table are with the range switch set to the frequency modulation position and tuned to approximately 48 megacycles—no signal.

Use a line voltage of 125 volts or make allowance for any slight 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 on Page 3 for position of terminals.

A. C. voltages are indicated by italics.

Tube	Circuit	Range Switch Set To	Cap	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6AB7	R. F. Amp. (F. M.)	A. M.	—	0	0	+1*	—	+1*	+68	*6.6*	0
		F. M.	—	0	0	+3*	—	+3*	+135	*6.6*	+265
6SA7	Mod. and Osc. (F. M.)	A. M.	—	0	0	+290	+70	—	0	*6.6*	0
		F. M.	—	0	0	+280	+120	—	0	*6.3*	0
6SK7	1st I. F. Amp. (F. M.)	A. M.	—	0	0	+2*	—	+2*	+70	*6.6*	+290
		F. M.	—	0	0	+4*	—	+4*	+110	*6.6*	+265
6SK7	2nd I. F. Amp. (F. M.)	A. M.	—	0	0	+2*	—	+2*	+55	*6.6*	+290
		F. M.	—	0	0	+3*	—	+3*	+90	*6.6*	+270
6SK7	3rd I. F. Amp. (F. M.)	A. M.	—	0	0	0	—	0	0	*6.6*	+285
		F. M.	—	0	0	+6*	—	+6*	+150	*6.6*	+260
6SJ7	Limiter (F. M.)	A. M.	—	0	0	0	—	0	+95	*6.6*	+95
		F. M.	—	0	0	0	—	0	+90	*6.6*	+95
6H6	Demod. (F. M.)	A. M.	—	0	0	—	—	—	—	*6.6*	0
		F. M.	—	0	0	—	—	—	—	*6.6*	0
6H6	Tun. Ind. Rect. (F. M.)	A. M.	—	0	0	—	—	—	—	*6.6*	—
		F. M.	—	0	0	—	—	—	—	*6.6*	—
6F8G	Tun. Ind. Amp. (F. M.)	A. M.	0	0	0	+295	+11**	—	+200	*6.6*	+11**
		F. M.	0	0	0	+275	+10**	—	+185	*6.6*	+10**
6SK7	R. F. Amp. (A. M.)	A. M.	—	0	0	+2*	—	+2*	+90	*6.6*	+290
		F. M.	—	0	0	+2*	—	+2*	+80	*6.6*	+275
6SA7	Mod. and Osc. (A. M.)	A. M.	—	0	0	+290	+70	—	0	*6.6*	0
		F. M.	—	0	0	+275	+135	—	+100	*6.6*	0
6K7	1. F. Amp. (A. M.)	A. M.	0	0	0	+285	+115	+4*	+290	*6.6*	+4*
		F. M.	0	0	0	+260	0	0	0	*6.6*	0
6H6	Demod., A. V. C., "Q" (A. M.)	A. M.	—	0	0	—	0	—	—	*6.6*	0
		F. M.	—	0	0	—	0	—	—	*6.6*	0
6R7	Audio Amp.	A. M.	0	0	0	+90	0	0	—	*6.6*	+3*
		F. M.	0	0	0	+85	0	0	—	*6.6*	+3*
6C8G	Audio Inv.	A. M.	0	0	0	+35	—	—	+35	*6.6*	0
		F. M.	0	0	0	+35	—	—	+35	*6.6*	0
6L6	Output	A. M.	—	0	0	+415	+290	—	—	*6.6*	+20**
		F. M.	—	0	0	+410	+275	—	—	*6.6*	+20**
6L6	Output	A. M.	—	0	0	+415	+290	—	—	*6.6*	+20**
		F. M.	—	0	0	+410	+275	—	—	*6.6*	+20**
5Z3	Rectifier	A. M.	—	+495	*480*	*480*	+495	—	—	*6*	—
		F. M.	—	+495	*480*	*480*	+495	—	—	*6*	—
6AF6G	Tun. Ind.	A. M.	—	—	0	+65	+90	+250	—	*6.6*	+95
		F. M.	—	—	0	+60	+185	+235	—	*6.6*	+90
	Speaker Socket	A. M.	—	+290	0	0	+495	+495	+486	+425	—
		F. M.	—	+275	0	0	+495	+495	+486	+420	—

*Read on lowest possible scale of voltmeter.
**Read on 100 volt scale of voltmeter.

CONTINUITY TEST

Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Test speaker socket with speaker left out.

Leave speaker plug in socket for all other tests. (If a speaker is not available when checking continuity the speaker socket may be shorted by using two pieces of bus wire and shorting together terminals 1, 6 and 7 and terminals 4 and 5 of the speaker socket. (See location chart on Page 3 for position and numbering of terminals.) Caution: Be sure to remove the two shorting wires when the continuity test is completed.

Use a good meter capable of measuring up to several megohms.

The resistances given are often approximate owing to electrolytic capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base unless otherwise specified.

See location chart on Page 3 for position and numbering of terminals.

Tube	Circuit	Cap	TERMINALS OF SOCKETS 1	2	3	4	5	6	7	8
6AB7	R. F. Amp. (F. M.)	—	S	S	180¶	S	180¶	A	S	O
6SA7	Osc. and Mod. (F. M.)	—	S	S	6000¶	A	22000¶	S	S	S
6SK7	1st I. F. Amp. (F. M.)	—	S	S	330¶	390¶	330¶	B	S	6000¶
6SK7	2nd I. F. Amp. (F. M.)	—	S	S	330¶	390¶	330¶	C	S	6000¶
6SK7	3rd I. F. Amp. (F. M.)	—	S	S	390¶	470000¶	390¶	D	S	5000¶
6SJ7	Limiter (F. M.)	—	S	S	S	57000¶	S	1900¶	S	1900¶
6H6	Demod. (F. M.)	—	S	S	100000¶	200000¶	100000¶	1M	S	S
6H6	Tun. Ind. Rect. (F. M.)	—	S	S	1M	2.4M	2.4M	O	S	1M
6F8G	Tun. Ind. Amp. (F. M.)	1M	S	S	5000¶	2000¶	1M	150000¶	S	2200¶
6SK7	R. F. Amp. (A. M.)	—	S	S	180¶	F	180¶	90000¶	S	5000¶
6SA7	Osc. and Mod. (A. M.)	—	S	S	6000¶	G	22000¶	H	S	I
6K7	I. F. Amp. (A. M.)	7¶	S	S	5000¶	J	470¶	K	S	470¶
6H6	Demod., A. V. C., "Q" (A. M.)	—	S	S	300000¶	S	900000¶	500000¶	S	S
6R7	Audio Amp.	1M	S	S	100000¶	S	S	1.5M	S	2200¶
6C8G	Audio Inv.	1M	S	S	350000¶	47¶	10M	350000¶	S	S
6L6	Output	—	S	S	5000¶	5000¶	150000¶	150000¶	S	200¶
6L6	Output	—	S	S	5000¶	5000¶	150000¶	150000¶	S	200¶
5Z3	Rectifier	—	5000¶	30¶	30¶	5000¶	—	—	—	—
6AF6G	Tun. Ind.	—	O	S	200000¶	L	4200¶	O	S	1900¶
—	Speaker Socket	—	5000¶	S	S	O	90000¶	90000¶	300000¶	—

Symbols used on chart are as follows: ¶—ohms; M—megohms; S—short; O—open.

A. Push in any "Pre-set Station" Button — 18,000 Ohms
Push in "Phono" Button — 300,000 Ohms
Push in "Television" Button — 300,000 Ohms

B. Push in any "Pre-set Station" Button — 20,000 Ohms
Push in "Phono" Button — 400,000 Ohms
Push in "Television" Button — 400,000 Ohms

C. Push in any "Pre-set Station" Button — 30,000 Ohms
Push in "Phono" Button — 400,000 Ohms
Push in "Television" Button — 400,000 Ohms

D. Range switch in standard broadcast position — "Open"
Range switch in short-wave position — "Open"
Range switch in frequency modulation position — 38,000 Ohms

E. "Q" Switch "On"
Range switch in standard broadcast position — "Open"
Range switch in short-wave position — "Open"
Range switch in frequency modulation position — 1 Megohm
"Q" Switch "Off"
Range switch in standard broadcast, short-wave and frequency modulation positions — "Short"
Set up switch in "Set up" position — "Short"
Set up switch in "Operate" position — 1 Megohm

F. Range switch in standard broadcast position — 3 Megohms
Range switch in short-wave position — 3 Megohms
Range switch in frequency modulation position — 550,000 Ohms

G. Push in any "Pre-set Station" Button — 20,000 Ohms
Push in "Phono" Button — 400,000 Ohms
Push in "Television" Button — 400,000 Ohms

H. Range switch in standard broadcast position — "Short"
Range switch in short-wave position — "Short"
Range switch in frequency modulation position — "Open"

I. Range switch in standard broadcast position — 3.5 Megohms
Range switch in short-wave position — 3.5 Megohms
Range switch in frequency modulation position — "Open"

J. Range switch in standard broadcast position — 100,000 Ohms
Range switch in short-wave position — 100,000 Ohms
Range switch in frequency modulation position — "Open"

K. Range switch in standard broadcast position — 5,000 Ohms
Range switch in short-wave position — 5,000 Ohms
Range switch in frequency modulation position — "Open"

IMPORTANT: Do not go back and touch up any adjustments previously made. If the receiver is not in proper alignment after completing the adjustments outlined above, go back and start over again and follow the instructions through to the finish.

REMOTE CONTROL. Remote selection of stations is accomplished by simply plugging the remote control unit into the socket provided on the back of the chassis. This unit enables the user to select any one of eight favorite stations which have been previously set up on the electric tuning system of the receiver.

L. Range switch in standard broadcast position — 900,000 Ohms
Range switch in short-wave position — 900,000 Ohms
Range switch in frequency modulation position — 1.5 Megohms

Other tests not shown on chart—
Phono jack to chassis base
Push in "Phono" button — 1 Megohm
Push in any "Pre-set" Station button — "Open"
Television jack to chassis base
Terminal No. 1 (this is the terminal located nearest to the bottom of the chassis) Push in "Television" button — 1 Megohm
Terminal Nos. 2 and 3 — "Short"
Amplitude Modulation Antenna Terminal to chassis base — "Short"
Amplitude Modulation Ground Terminal to chassis base — "Short"
Frequency Modulation Terminals to chassis base — "Open"
Between Frequency Modulation Terminals — 1,000 Ohms
Terminals of A. C. Plug to chassis base — "Open"
Between terminals of A. C. Plug—
Push in "Off" button — "Open"
Push in any other button — 1.5 Ohms

PHONOGRAPH OPERATION. A jack is provided on the back of the chassis into which a record player may be plugged and a push button is provided on the front of the chassis for switching from "Radio" to "Phonograph".

TELEVISION. A socket is provided on the back of the chassis into which a television receiver may be plugged and a push button is provided on the front of the chassis for switching to television so that the audio amplifier and speaker system employed in this receiver are available for use with television receivers designed for this type of sound reproduction.

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 each side of "0".

See location chart above for location of all aligning screws.

ALIGNING PROCEDURE (follow this order exactly)

I. **Dial pointer adjustment.** With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the two vertical lines located at the extreme low frequency end of the dial scale.

II. **Intermediate frequency adjustments** (Frequency Modulation)

1. Set the range switch to Frequency Modulation position and the volume control to "off" position.
2. Tune the set to the extreme high frequency end of the dial (50 megacycles).
3. Disconnect the ground side of the 10000 ohm resistor R94 and connect the "0" to 200 microammeter in series with it and ground. (This resistor is connected between terminals No. 3 and 4 of the fourth I. F. transformer.)
4. Connect the oscillograph between high side of R94 resistor and ground.
5. Connect the ground terminal of the wide band sweep signal generator to the ground terminal of the 6SK7 third I. F. tube socket.
6. Introduce a signal of 4.3 megacycles to the grid of the 6SK7 third I. F. tube (Terminal No. 4), using a 0.1 microfarad capacitor in series with the output lead of the signal generator. Keep the "0" to 200 microammeter at approximately 100 microamps.
7. Align the secondary and primary of the fourth I. F. transformer for maximum reading on the "0" to 200 microammeter.
8. Slight adjustments of the aligners may be made if necessary to obtain a symmetrical curve on the oscillograph. Try for a good curve rather than the very last bit of output.
9. Connect the output lead and the 0.1 microfarad capacitor in series with it to the grid of the 6SK7 second I. F. tube (Terminal No. 4).
10. Align the third I. F. transformer in the same manner.
11. Connect the output lead and the 0.1 microfarad capacitor in series with it to the grid of the 6SK7 first I. F. tube (Terminal No. 4).
12. Connect the ground lead to the ground terminal of the 6SK7 first I. F. tube socket.
13. Align the second I. F. transformer in the same manner.
14. Connect the output lead and the 0.1 microfarad capacitor in series with it to the grid of the 6SA7 modulator tube (Terminal No. 8).
15. Connect the ground lead to the ground terminal of the 6SA7 modulator tube socket.
16. Align the first I. F. transformer in the same manner.
17. Remove the wide band sweep signal generator.

III. **Discriminator adjustment** (Frequency Modulation)

Note: Be sure the frequency of both signal generators are the same.

1. Connect the ground terminal of the standard signal generator to the ground terminal of the 6SK7 second I. F. tube socket.
2. Introduce an unmodulated signal of 4.3 megacycles to the grid of the 6SK7 second I. F. tube (Terminal No. 4) using a 0.1 microfarad capacitor in series with the output lead of the standard signal generator.
3. 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 R28 and R29).
4. Set the attenuator on the standard signal generator for maximum output.
5. Adjust the primary of the discriminator transformer for maximum reading on the center "0" microammeter.
6. Connect the center "0" microammeter and the .5 megohm resistor in series with it across the whole discriminator load. (Terminal No. 4 of the 6H6 Demodulator tube and ground).
7. Adjust the secondary of the discriminator transformer for center "0" reading of the microammeter.
8. Vary the frequency of the standard signal generator slightly and be sure that the center "0" microammeter reads the same on each side of resonance. If not, go back and realign both primary and secondary.

IV. **Radio frequency adjustments** (Frequency Modulation)

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 the F. M. antenna terminal nearest to the end of the antenna and ground terminal strip.
3. Connect the ground lead to the other F. M. terminal on the antenna and ground terminal strip.
4. Adjust the oscillator shunt aligner 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.
6. Remove both meters from the circuits and resolder the 10000 ohm resistor R94 in its original position to terminal No. 4 on the fourth I. F. transformer.

V. **Intermediate frequency adjustments** (Amplitude Modulation)

Adjustment of second I. F. transformer.

1. Set the range switch to standard broadcast position.
2. Set the fidelity control in the center or "sharp" position and turn the volume control "full on".
3. Connect the oscillograph to the high side of the volume control R47.
4. Replace the 100 ohm resistor in series with the output lead from the signal generator with a 0.1 microfarad capacitor and connect it to the grid cap of the 6K7 I. F. tube. (Do not remove the grid cap from this tube.)
5. Connect the ground terminal of the signal generator to the ground terminal of the receiver.
6. Introduce a modulated signal of 455 kilocycles to the grid of the 6K7 I. F. tube.
7. Adjust the second I. F. transformer aligners for a symmetrical curve on the oscillograph in the following order:
   a. Secondary of second I. F. transformer.
   b. Primary of second I. F. transformer.
8. Set the fidelity control to the high fidelity (expanded) position and readjust the primary of the second I. F. transformer for symmetrical curve.
9. Set the fidelity control back to the center or "sharp" position.

Adjustment of first I. F. transformer.

1. Connect the output lead from the signal generator with the 0.1 microfarad capacitor in series with it to the grid of the 6SA7 Modulator Tube. (Terminal No. 8.)
2. Adjust the first I. F. transformer aligners for a symmetrical curve on the oscillograph in the following order:
   a. Secondary of first I. F. transformer.
   b. Primary of first I. F. transformer.
3. After the Amplitude Modulation I. F. adjustments have been completed, the fidelity control should be turned to the high fidelity position and a check made on the shape of the curve which should show a slight double peak.
4. Turn the fidelity control back to middle or "sharp" position.
5. Remove the oscillograph from the circuit.

VI. **Radio frequency adjustments** (Amplitude Modulation)

Short Wave Range (C Band)

1. Replace the 0.1 microfarad capacitor in series with the output lead of the signal generator with a 400 ohm resistor and connect it to the Amplitude Modulation antenna terminal on the back of the chassis.
2. Set the range switch to the short-wave range position (C Band).
3. Set the signal generator frequency and the receiver tuning dial to 6 megacycles.
4. Adjust the 6 megacycle "oscillator" and "antenna" iron cores for maximum signal.
5. Set the signal generator and the receiver tuning dial to 17 megacycles.
6. Adjust the 17 megacycles "oscillator" and "antenna" aligning capacitors for maximum signal.
7. Repeat operations 3 and 4.
8. Repeat operations 5 and 6.

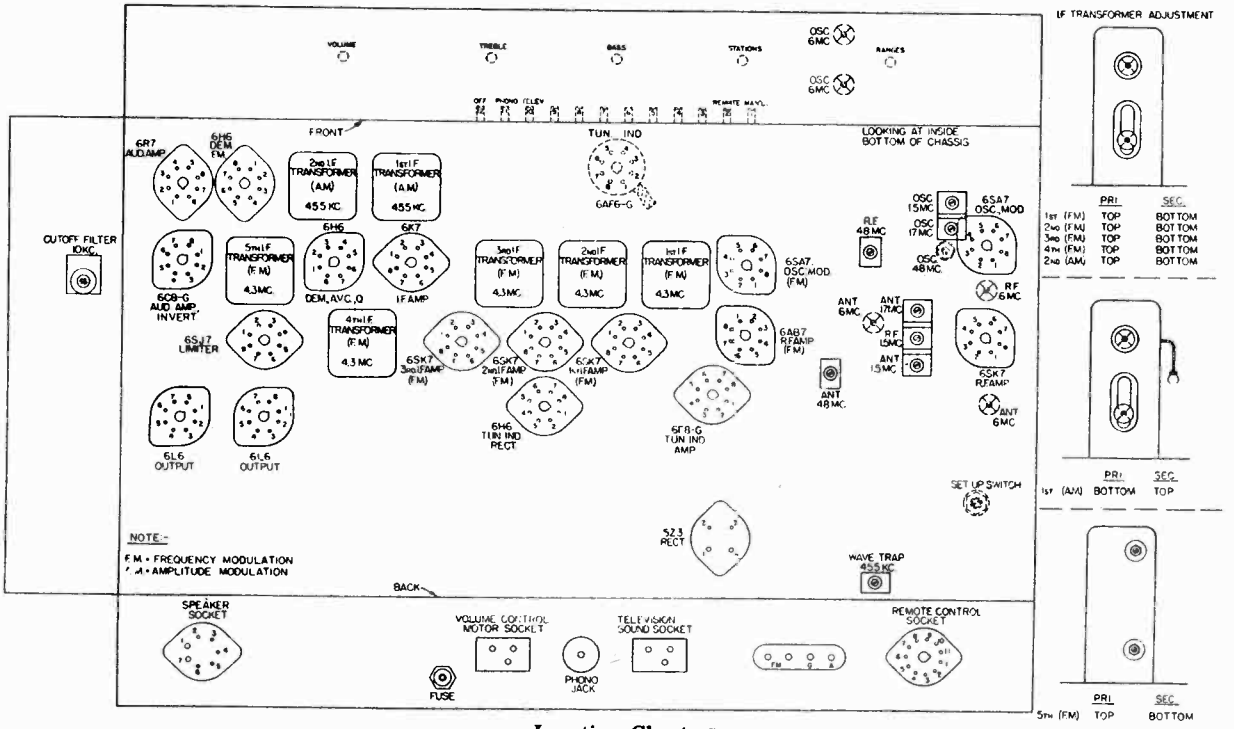
Standard Broadcast Range (A Band)

1. Replace the 400 ohm resistor in series with the output lead of the signal generator with a 200 micro-microfarad capacitor.
2. Set the range switch to the standard broadcast range (A Band).
3. Set the signal generator frequency and the receiver tuning dial to 600 kilocycles.
4. Adjust the 600 kilocycle "oscillator", "R. F." and "Antenna" iron cores for maximum signal.
5. Set the signal generator frequency and the receiver tuning dial to 1500 kilocycles.
6. Adjust the 1500 kilocycle "oscillator", "R. F." and "Antenna" aligning capacitors for maximum signal.
7. Repeat operations 3 and 4.
8. Repeat operations 5 and 6.

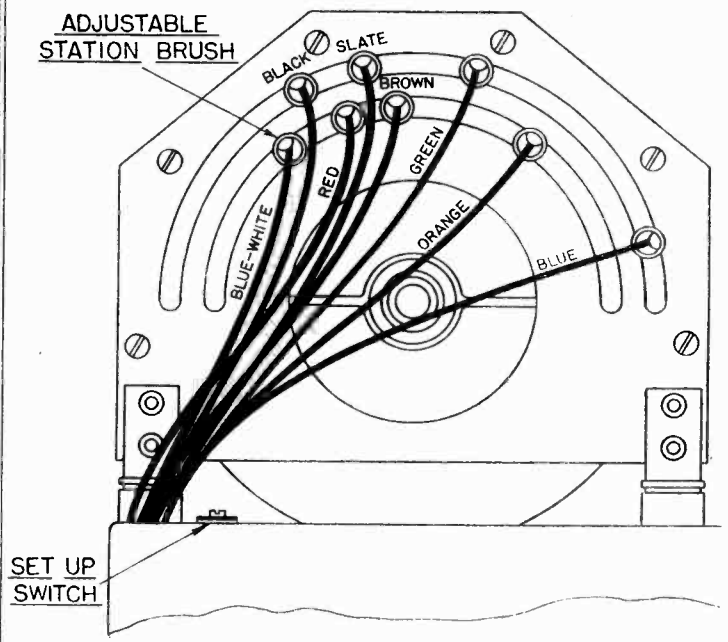
VII. **Wave trap adjustment.** (Leave the receiver connected in the same manner as when adjusting the standard broadcast range) (A Band).

1. Set the receiver's tuning dial to 1000 kilocycles.
2. Set the signal generator frequency to 455 kilocycles and introduce a fairly strong modulated signal to the receiver.
3. Adjust the wave trap aligner for minimum signal.

STROMBERG-CARLSON TEL. MFG. CO. MODEL 585M



Location Chart



Adjustable Station Brushes and Set Up Switch

SETTING UP PUSH BUTTONS

Button No.	Purpose	Color of wire on brush
1	Manual	—
2	Remote	—
3	Highest frequency station	Blue
4	Next lower frequency station	Orange
5	Next lower frequency station	Green
6	Next lower frequency station	Brown
7	Next lower frequency station	Slate
8	Next lower frequency station	Red
9	Lowest frequency station on receiver	Black
10	Telev. button on receiver Lowest frequency button on remote control unit	Blue White
11	Phonograph	See diagram of adjustable brushes and set-up switch
12	Off	

IMPORTANT: The stations selected should be local or favorite stations which give good reception at all times. Frequency Modulated Stations, as well as Amplitude Modulation Stations, may be set up on the push buttons by simply using the appropriate button determined by the position of the Frequency Modulated Station on the dial.

Always use the tuning indicator unit when setting up stations in order to determine when the station is exactly in tune.

Seven stations may be set up for push buttons located on the front of the receiver and eight stations may be set up on the remote control unit. The same seven stations which were set up for the buttons on the front of the receiver must also be used on the remote control unit and the eighth station which is chosen for the remote control unit must be of a lower frequency than any of the other stations which have been set up.

Put the call letters of the selected stations in place above the push buttons. **The stations should be arranged according to frequency with the highest frequency at the right and the lowest frequency at the left, just as on the dial.** (The call letters will be found inside the envelope stapled inside or underneath the cabinet).

Set the "Treble" control in normal position.

Turn the set-up switch (located on the base just back of the brush and commutator assembly) to the set-up position. (The slot in the screw should point toward "set-up").

Push the button of the highest frequency station to be set up (button No. 3) and then tune in that station manually. **Be sure the station is exactly "in tune" by tuning carefully and watching the cathode ray indicator.**

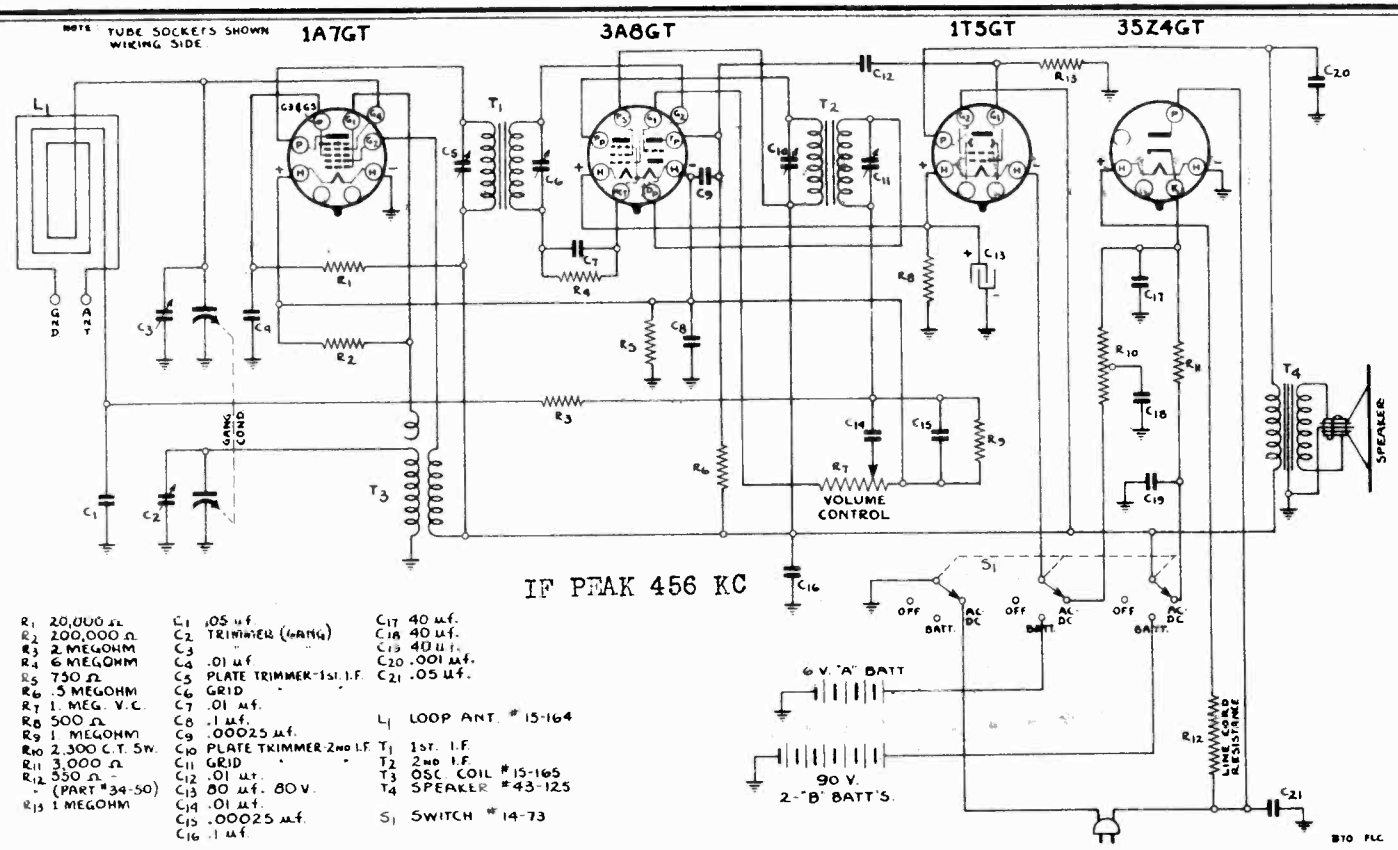
Slide the brush to which the blue wire is connected until it is over the slot in the commutator. Then adjust it very carefully until the pilot light goes out. This indicates exact adjustment.

Repeat operations 4 and 5 for each station. Work from right to left or from the higher to the lower frequencies in accordance with the table below:

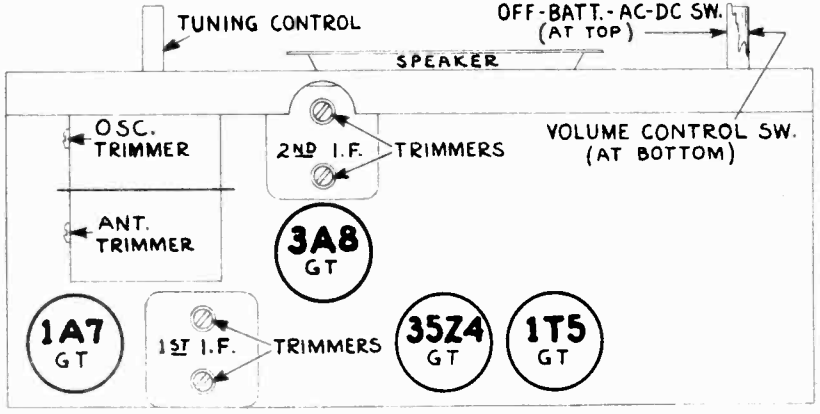
Turn the set-up switch back to the "Operate" position.

Check the operation of all the push buttons to be sure that each has been accurately set up. If it is necessary to readjust any of the buttons, follow the procedure given above.

TRAV-LER RADIO & TELEV. CORP. MODELS B70, B71, B712



R_1	20,000 Ω	C_1	.05 μf.	C_{17}	40 μf.
R_2	200,000 Ω	C_2	TRIMMER (GANG)	C_{18}	40 μf.
R_3	2 MEGOHM	C_3	"	C_{19}	40 μf.
R_4	6 MEGOHM	C_4	.01 μf	C_{20}	.001 μf.
R_5	750 Ω	C_5	PLATE TRIMMER-1ST. I.F.	C_{21}	.05 μf.
R_6	.5 MEGOHM	C_6	GRID "		
R_7	1 MEG. V.C.	C_7	.01 μf.		
R_8	500 Ω	C_8	.1 μf.	L_1	LOOP ANT. #15-164
R_9	1 MEGOHM	C_9	.00025 μf.		
R_{10}	2,300 C.T. SW.	C_{10}	PLATE TRIMMER-2ND I.F.	T_1	1ST. I.F.
R_{11}	3,000 Ω	C_{11}	GRID "	T_2	2ND I.F.
R_{12}	550 Ω - (PART #34-50)	C_{12}	.01 μf.	T_3	OSC. COIL #15-165
		C_{13}	80 μf. 80 V.	T_4	SPEAKER #43-125
R_{13}	1 MEGOHM	C_{14}	.01 μf.		
		C_{15}	.00025 μf.	S_1	SWITCH #14-73
		C_{16}	.1 μf.		



TRIMMER & TUBE LOCATION

B70 33-110 FLC

FOR ALIGNMENT. SEE NEXT PAGE

INSTRUCTIONS FOR REMOVAL OF CHASSIS. (Model B70 only)

1. Remove batteries after taking off bottom panel.

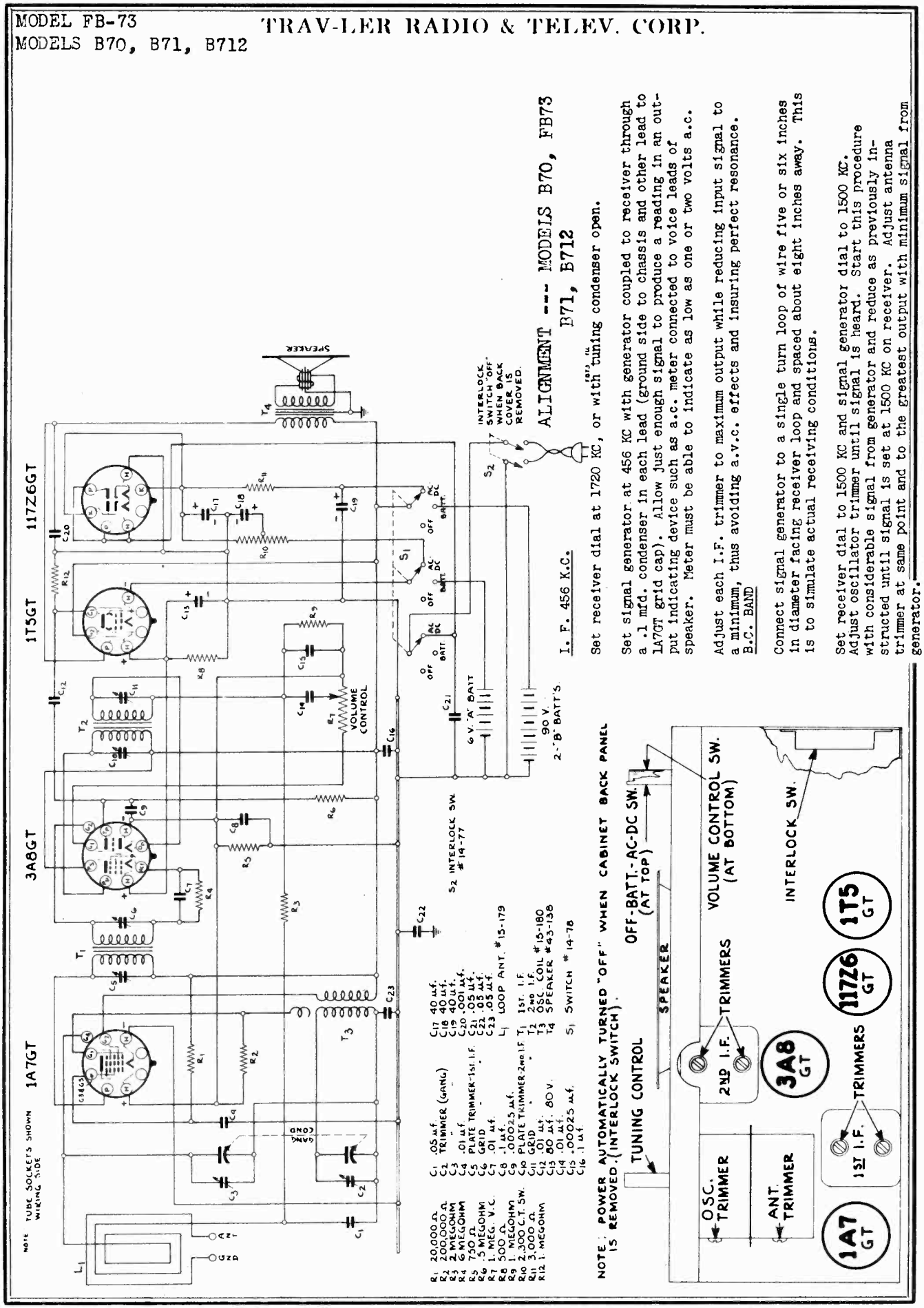
2. Remove two wood screws from loop antenna panel in cover. If loop panel does not come out easily, loosen antenna or ground screws a few turns, and lift one end out by gently pulling on screw with pliers until panel can be removed.

3. Remove two screws in rear on cabinet and one screw in front of cabinet. The chassis can now be removed by pushing it from behind and sliding it out of the cabinet.

4. If the loop antenna is disconnected for any reason, be sure that the lead coming from the gang condenser is connected to the inside turn of the loop antenna coil.

MODEL FB-73
MODELS B70, B71, B712

TRAV-LER RADIO & TELEV. CORP.



R1 20,000 Ω
R2 200,000 Ω
R3 2 MEGOHM
R4 6 MEGOHM
R5 750 Ω
R6 .5 MEGOHM
R7 1. MEG. V.C.
R8 500 Ω
R9 1. MEGOHM
R10 2,300 C.T. SW.
R11 3,000 Ω
R12 1. MEGOHM

C1 .05 µf.
C2 TRIMMER (GANG)
C3 "
C4 .01 µf
C5 PLATE TRIMMER-1st I.F.
C6 GRID "
C7 .01 µf.
C8 .1 µf.
C9 .00025 µf.
C10 PLATE TRIMMER-2nd I.F
C11 GRID "
C12 .01 µf.
C13 80 µf. 80 V.
C14 .01 µf.
C15 .00025 µf.
C16 .1 µf
C17 40 µf.
C18 40 µf.
C19 40 µf.
C20 .001 µf.
C21 .05 µf.
C22 .05 µf.
C23 .05 µf.
L1 LOOP ANT. #15-179
T1 1st. I.F.
T2 2nd I.F.
T3 OSC. COIL #15-180
T4 SPEAKER #43-138
S1 SWITCH #14-78

ALIGNMENT --- MODELS B70, FB73 B71, B712

Set receiver dial at 1720 KC, or with tuning condenser open.

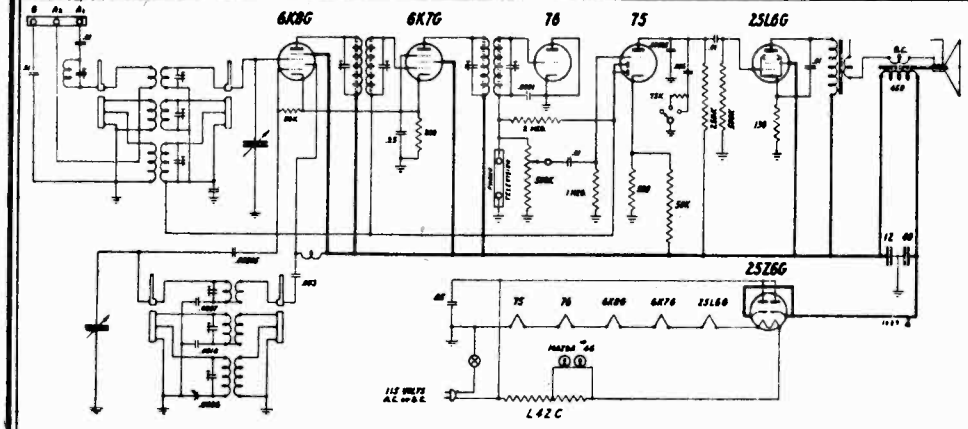
Set signal generator at 456 KC with generator coupled to receiver through a .1 mfd. condenser in each lead (ground side to chassis and other lead to 1A7GT grid cap). Allow just enough signal to produce a reading in an output indicating device such as a.c. meter connected to voice leads of speaker. Meter must be able to indicate as low as one or two volts a.c.

Adjust each I.F. trimmer to maximum output while reducing input signal to a minimum, thus avoiding a.v.c. effects and insuring perfect resonance.

B.C. BAND

Connect signal generator to a single turn loop of wire five or six inches in diameter facing receiver loop and spaced about eight inches away. This is to simulate actual receiving conditions.

Set receiver dial to 1500 KC and signal generator dial to 1500 KC. Adjust oscillator trimmer until signal is heard. Start this procedure with considerable signal from generator and reduce as previously instructed until signal is set at 1500 KC on receiver. Adjust antenna trimmer at same point and to the greatest output with minimum signal from generator.



IF PEAK 456 KC

I. F. ALIGNMENT

From a good signal generator, connect the proper leads, one to the chassis (make sure polarity is the same first), and the other thru a .1 mfd. condenser to the grid cap of the 6K8, with the tube's grid lead still in place. Set the radio dial to 1720 K.C. and the signal generator to 456 K.C. With the set's volume control full on, increase the generator output until the signal is heard in the speaker. Adjust the I.F. trimmers for maximum output, decreasing the generator output as the speaker output increases.

B. C. ALIGNMENT

1. Connect the signal generator lead thru a .0002 mfd. condenser as dummy antenna to the "A1" terminal, with the metal strip connected across A2 and G. Set the signal generator and radio dial to 1720 K.C. and adjust the B.C. oscillator trimmer for maximum output.

2. Set the signal generator and radio dial to 1400 K.C. and adjust the B.C. ANT. trimmer for maximum output.

3. Set the signal generator to 600 K.C. and the radio dial to approximately 600 K.C., and adjust the B.C. oscillator padder for maximum output by adjusting dial and pad together

Check the alignment again at 1400 K.C.

Adjust the wave trap at 456 K.C. for MINIMUM output.

INTERMEDIATE BAND ALIGNMENT

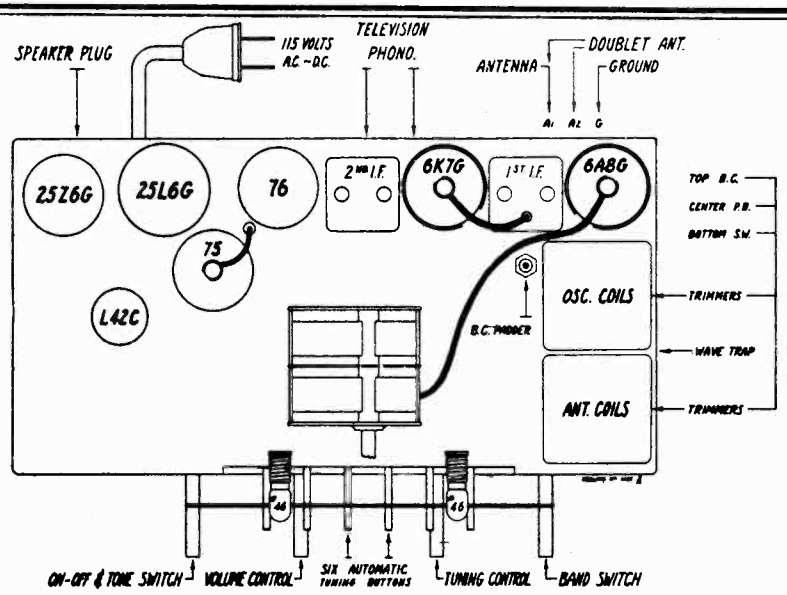
Using a 400 ohm resistor as dummy antenna, adjust the Intermediate Band oscillator trimmer at 6.7 M.C. and the Antenna trimmer at 6 M.C.

Check for alignment at 2.2 M.C.

SHORT WAVE BAND ALIGNMENT

Using a 400 ohm resistor as dummy antenna, adjust S.W. oscillator trimmer at 24.5 M.C., and the Antenna trimmer at 22 M.C.

Check for alignment at 8 M.C.



The ranges of the three wave bands are as follows.

Standard Broadcast Band	538	to	1,720 K.C.
Intermediate (Police) Band	1,950	to	6,500 K.C.
Short Wave (Foreign) Band	7,650	to	24,500 K.C.

Each push button may be adjusted to select any station in the broadcast band.

1. Tune in desired station with the Selector knob.
2. Twist the push button you are going to set up for this station one full turn to the left.
3. Push this button in all the way, holding the Selector knob so station will stay tuned in.
4. With button pressed in, twist it to the right until tight and then release it.

Follow this procedure with the remaining buttons, setting each for a different station.

Insert call-letter tabs.

MODEL 621 TRAV-LER RADIO & TELEV. CORP.

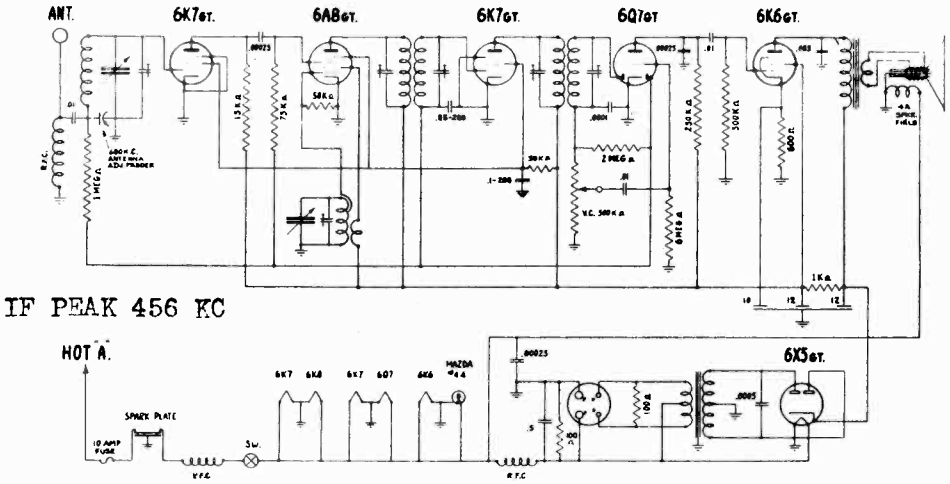
I. F. ALIGNMENT

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.

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.

UNITED MOTORS SERVICE

MODEL R675

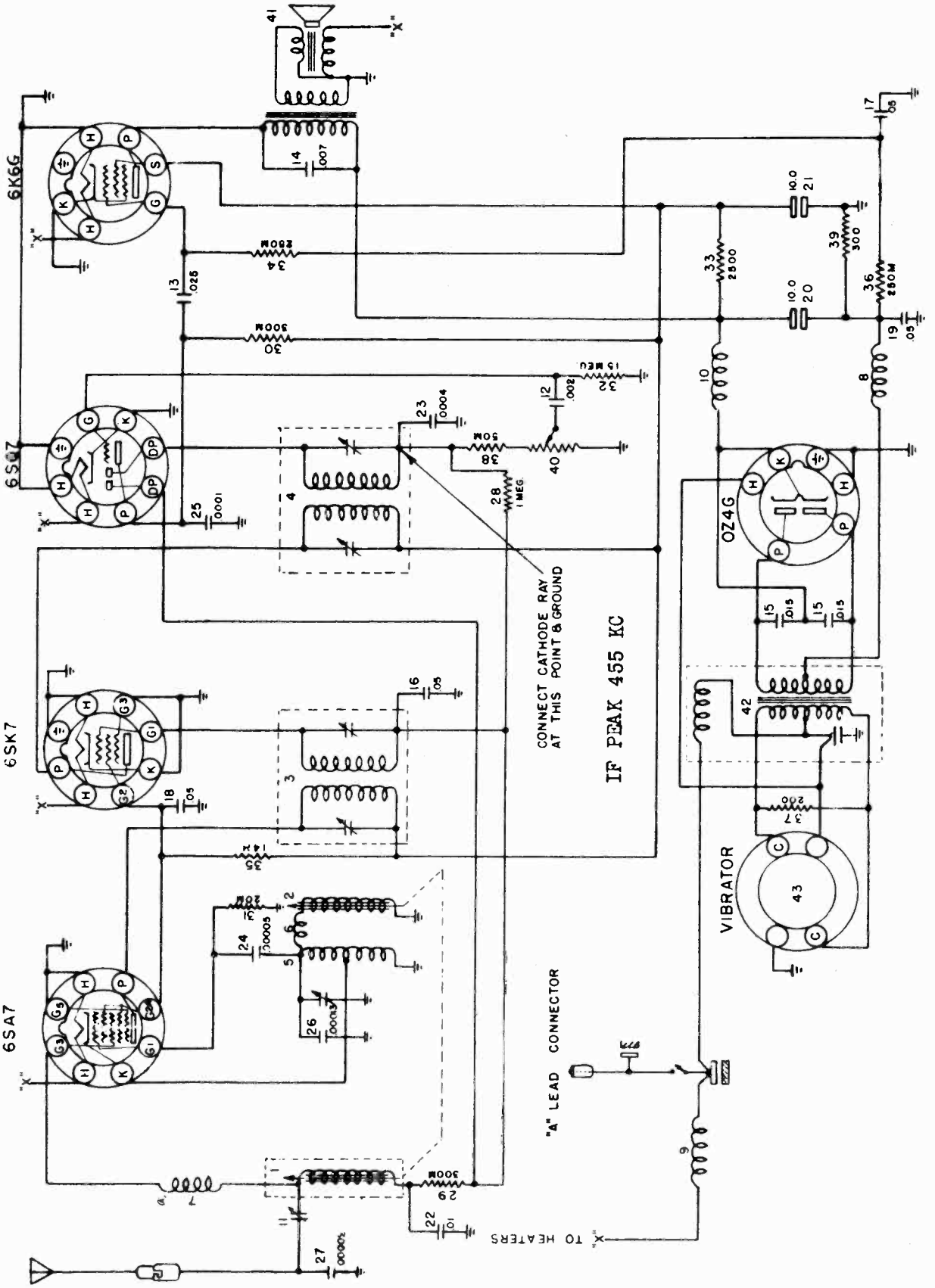


FIG. 2--DELCO MODEL R-675

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MODEL R675

UNITED MOTORS SERVICE

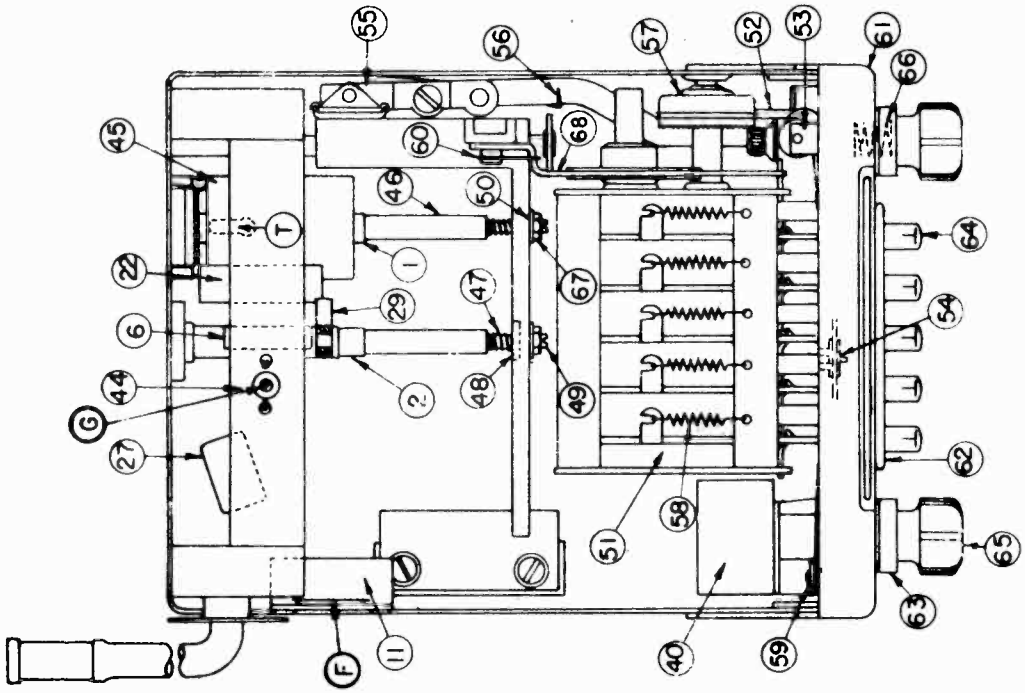


FIG. 5--PARTS LAYOUT--TUNER ASSEMBLY

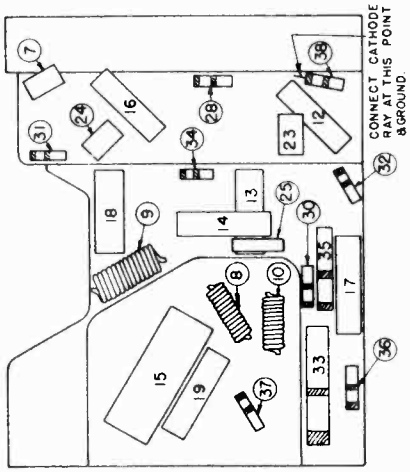
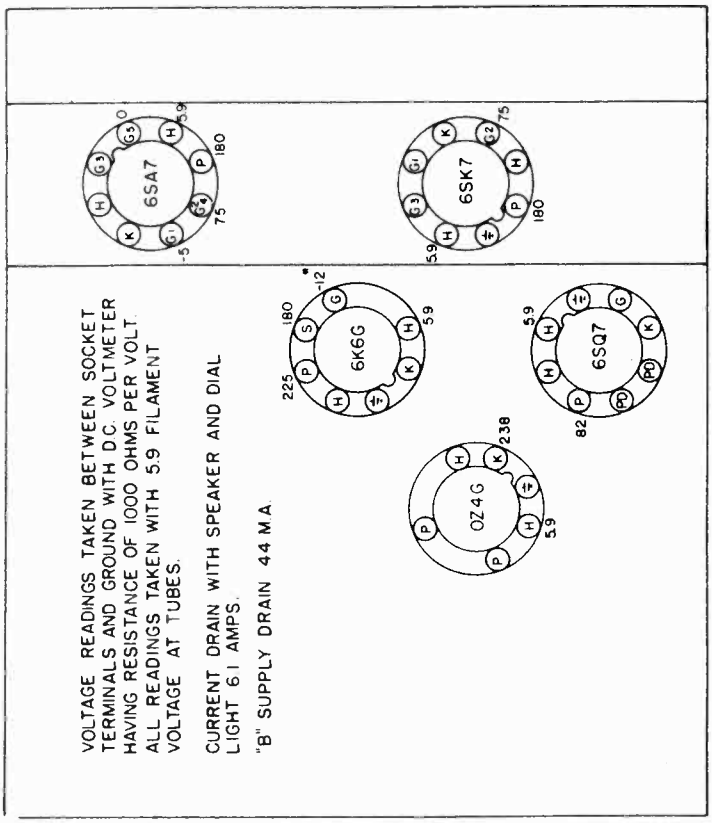


FIG. 4--PARTS LAYOUT--Bottom View



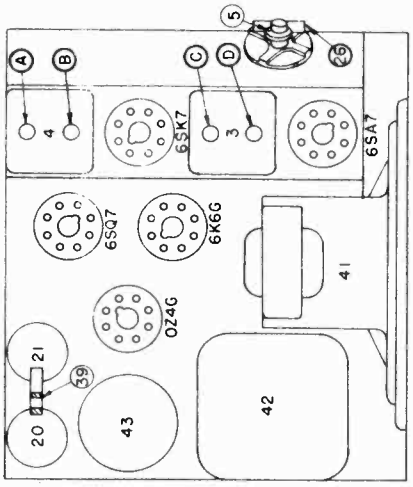


FIG. 3--PARTS LAYOUT--Top View

UNITED MOTORS SERVICE

MODEL R675
MODELS R677, R678

Tuning is accomplished with the conventional manual tuning control or by means of five push buttons which mechanically adjust the position of the iron cores in the tuning coils, tuning the radio to preselected stations.

SETTING STATIONS ON PUSH BUTTONS
MODELS 675, 677, 678

1. Remove the push-button trim plate by prying gently with a small screwdriver or knife blade in the slots provided at the bottom of plate.
2. Press the manual station selector knob and tune across the dial. Select the five stations which will give the best all around reception.
3. Stations may be set up in any sequence desired; however, it is best from a speed-of-operation standpoint to set them up on the buttons in the order of their frequencies.
4. Press a button on which a station is to be set-up. Insert screwdriver supplied in receiver package in hole located to the right of the button and loosen set screw. BUTTON MUST BE HELD IN WHEN LOOSENING OR TIGHTENING SET SCREW.
5. Tune set manually (with station button held down FIRMLY) until station desired to be set up is tuned in. In order to secure an accurate set-up, rock manual tuning knob back and forth slightly until station is tuned in clearly and with maximum volume. DO NOT RELEASE PUSH BUTTON.
6. With push button still held down firmly and station accurately tuned in, tighten adjustment screw securely and remove screwdriver before releasing button.
7. Insert station call letter tab in slot provided at top of button.
8. Repeat this same procedure in setting up the remaining buttons and then replace the button snap-on plate.

CIRCUIT ALIGNMENT
MODEL 675

If realignment 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. Extreme care should be exercised in following the alignment instructions in order to obtain the best performance possible. IT WILL BE NECESSARY TO USE AN INSULATED SCREWDRIVER IN ALL ALIGNMENT ADJUSTMENTS.

In order to prevent the A.V.C. from affecting the alignment adjustment, the lowest signal generator output which will give a readable indication on the output meter should be used. Top and bottom covers must be removed in order to properly align the set, however, the chassis should not be removed from the case.

ALIGNMENT PROCEDURE

Two separate alignment procedures are included in these instructions. The first is to be considered the usual alignment procedure, and the second to be used only when a tuning coil has been changed, or when some major change has been made in the tuning apparatus.

CAPACITY ALIGNMENT

1. Aligning I.F. Stages at 455 Kilocycles
   (a) Connect the ground lead of the Signal Generator to chassis frame. Connect the signal lead through an 0.1 mfd. condenser to the terminal "T" (Fig. 5).
   (b) Connect output meter from the plate of the 6K6G tube to ground.
   (c) Set signal to exactly 455 kilocycles and turn volume control on full.
   (d) Tune the set by means of the manual tuning control knob to a position where no squeals or beat notes can be noticed, also so that when the tuning control knob is rotated within narrow limits there is no appreciable change in output.
   (e) Adjust trimmers A-B-C-D (Fig. 3) in the order mentioned until maximum output is obtained.
   (f) Repeat adjustment of I.F. trimmers A-B-C-D with as low an output from the Signal Generator as possible, for more accurate alignment.
2. Alignment at 1560 Kilocycles
   (a) Tune the set by means of the tuning control knob to the extreme high frequency position against stop.
   (b) Connect the signal lead of the Signal Generator to the antenna terminal of the set through a .0001 mfd. condenser.
   (c) Set frequency of the Signal Generator to 1560 kilocycles and adjust the oscillator shunt trimmer "G" for maximum output (Fig. 5).
3. Alignment at 600 Kilocycles
   (a) Leave Signal Generator connected the same as for alignment at 1560 kilocycles.
   (b) Set the Signal Generator to 600 kilocycles.
   (c) Tune the set (manual tuning control) to this signal.
   (d) Adjust the antenna trimmer "F" (Fig. 5) for maximum output.
4. Checking I.F. Band Spread
   (a) A Cathode Ray Oscillograph should be used to check the I.F. band spread after completing the alignment procedure. Slight adjustment of the I.F. stages may be found necessary in order to obtain a symmetrical selectivity curve. Connect Cathode Ray Oscillograph as shown in Fig. 4.

CAPACITY AND INDUCTANCE ALIGNMENT

To be used ONLY when a major change such as changing a tuning coil has been made in the tuning apparatus and there is definite evidence of tuning coils not "tracking."

1. I.F. Alignment.
   Align the I.F. stages the same as outlined under the capacity Alignment Procedure.
2. Mechanical Alignment of R.F. Stage
   (a) Tune the set by means of the tuning control knob to extreme high frequency position, against mechanical stop (cores will be almost withdrawn from coil forms.)
   (b) Adjust the nut on the oscillator core (Illus. #2, Fig. 5) aligning the end of the core (inside coil form) to a position flush with the end of the oscillator coil winding. This may be done by laying a separate core (or an accurate 1-3/8" gauge) alongside the oscillator core making the stud ends flush and making the opposite ends just meet the winding of the oscillator coil.
   (c) Adjust the position of the core of the antenna coil assembly (Illus. #1, Fig. 5) until this core sticks out of its coil form (toward tuner) exactly the same amount that the oscillator core sticks out of its coil form. This should be measured carefully as it gives the antenna core the same mechanical relation to its coil as the oscillator core has to its coil.
3. Alignment at 1560 Kilocycles
   (a) Connect the signal lead of the Signal Generator to the antenna terminal of the set through a .0001 mfd. condenser.
   (b) Set the Signal Generator to 1560 kilocycles and adjust the oscillator shunt trimmer "G" (Fig. 5) for maximum output.
4. Alignment at 600 Kilocycles
   (a) Leave Signal Generator leads connected the same as for alignment at 1560 kilocycles.
   (b) Set the Signal Generator to 600 kilocycles.
   (c) Tune the set (manual tuning control) to this signal.
   (d) Adjust the antenna trimmer "F" (Fig. 5) for maximum output.
5. Alignment at 1400 Kilocycles
   (a) Leave Signal Generator leads connected the same as for alignment at 600 kilocycles.
   (b) Set the Signal Generator to 1400 kilocycles.
   (c) Tune the set to signal and using wrench, part #7238078, adjust the antenna coil (Illus. #1) iron core for maximum output. (Do not attempt to make this adjustment without this wrench.)

SERVICE HINTS

Removing Tuner Assembly

In order to make the parts located under the tuner assembly accessible for service tests, the tuner assembly can be lifted out of the way as follows.

1. Unsolder single "A" lead to switch.
2. Unsolder green lead connected to oscillator trimmer condenser at condenser (Illus. #44, Fig. 5).
3. Remove the four hex head slotted screws (two on each side of case) used for mounting tuner assembly to case.
4. Remove the two screws in antenna lead support bracket.
5. Lift front end of tuner out of case, pivoting at the back end, being careful not to break other leads connected to tuner.

Dial Cord Replacement.

1. Loosen shaft (Illus. #57, Fig. 5) in cord drive gear assembly.
2. Pull spring clip from shaft and disassemble cord drive gear assembly.
3. Thread doubled end of cord through cord drive pulley until the spring lies inside the pulley.
4. Looking in the end of the drive pulley, take the spring counter-clockwise around the shaft from the dial cord hole, placing the hook end in the hole provided in the side of the pulley.
5. Wrap one half the cord clockwise approximately one turn around the outside of the drum and the other half counter-clockwise and hold the cord in place with a piece of scotch tape on the side of the pulley opposite the cord hole.
6. Fasten cord drive gear assembly back into place lightly, not meshing gears until cord is threaded into place.
7. Thread cord around the two pulleys at the manual tuning control end of the dial and across the front and over the single pulley at the volume control end of the dial.
8. Mesh gears carefully by tightening cord drive gear shaft. Too tight a mesh will result in hard push button operation or rough or tight manual tuning drive.
9. Tune set to a station of known frequency or to Signal Generator. Set to a good calibration point (700 K.C.). Set pointer to that frequency on dial and crimp pointer tabs over dial cord.

Lubrication

The mechanical parts of the push button tuner should be carefully lubricated as a part of every service job, using a special lubricant supplied under part #7236515. NOTE: Do not use ordinary oils and greases on the automatic tuner.

Grease the following points:

(a) Dial pulleys and pins
(b) Plunger Guides
(c) All gears
(d) Core bracket guides
(e) Ratchet

Do not allow brake surface to become greasy.

Volume Control Replacement

1. Unsolder all volume control leads at the volume control.
2. Remove volume control nut from front end of chassis.
3. Remove volume control by lifting switch end of volume control up and back.
4. To replace reverse the procedure.

Oscillator Series Coil Replacement

1. This coil (Illus. #6, Fig. 5) is glued to terminal strip in the original assembly. Replacement coils will be furnished with a piece of tape to hold them to the terminal strip.

Oscillator Trimmer Condenser Replacement (Illus. #44, Fig. 5)

1. Unsolder leads from trimmer condenser.
2. Unsolder trimmer ground connection from chassis.
3. Straighten tangs through terminal strip and remove trimmer.
4. To replace reverse the procedure.

Antenna Coil Replacement.

1. Unsolder leads from antenna coil terminals located on terminal strip at rear of tuner.
2. Remove iron core by removing nut, Illus. #67, and washers, Illus. #48 and 50, (Fig. 5). Pull out of coil toward tuner unit. NOTE: Extreme care should be used in handling the iron cores as they are brittle and very easily broken.
3. To remove shield, Illus. #45 (Fig. 5), unsolder from chassis and straighten the three ears.
4. To remove coil, loosen the three screws holding its base to chassis.
5. To replace the antenna coil reverse this procedure.

Oscillator Coil Replacement (Tuning Coil)

1. Remove iron core in same manner as recommended under antenna coil replacement.
2. Remove three nuts holding coil to chassis and unsolder coil leads from terminal strip.
3. To replace reverse procedure.

UNITED MOTORS SERVICE

MODEL R676

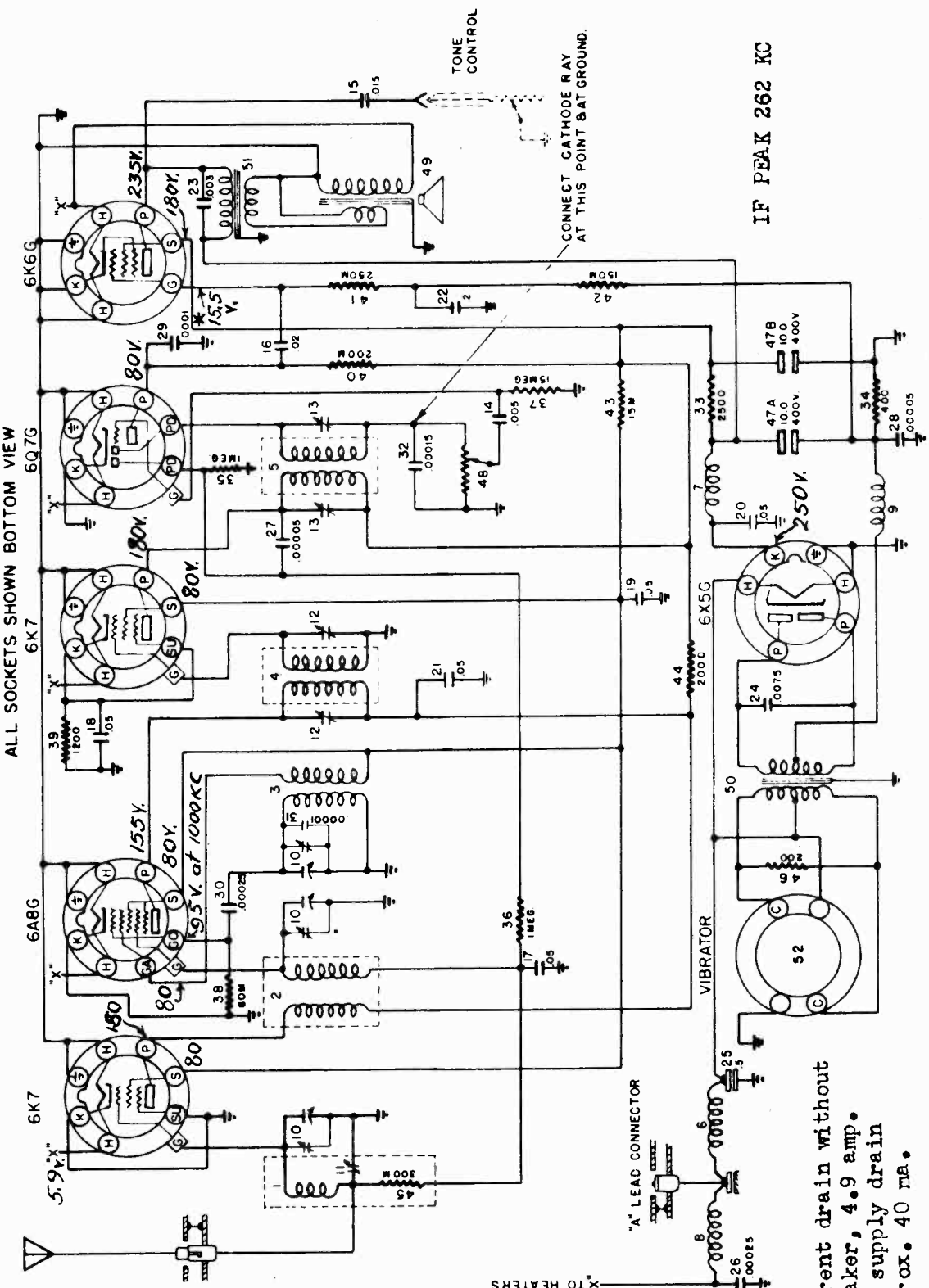


FIG. 2--DELCO MODEL R-676 CIRCUIT DIAGRAM

* This reading is taken between negative side of 400-ohm resistor (No. 34) and ground.

Current drain without speaker, 4.9 amp.
"B" supply drain approx. 40 ma.

4-14-39

MODEL R676

UNITED MOTORS SERVICE

1. Aligning I-F Stages at 262 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis frame.

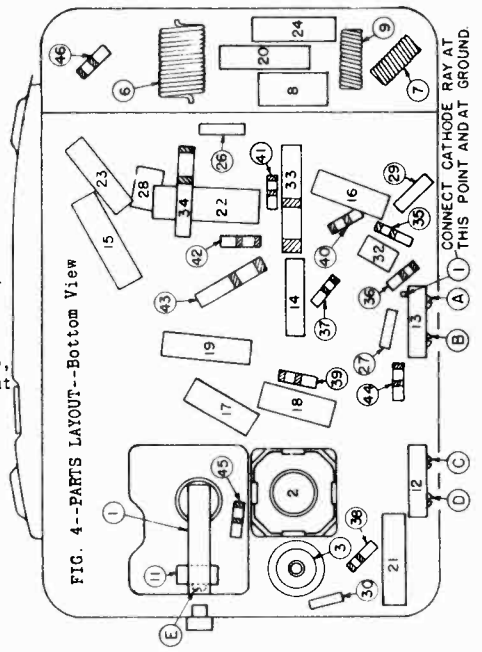
   (b) Connect the signal lead of the signal generator to the grid cap of the 6A8G tube through a .1 mfd. condenser, leaving the tubes grid clip in place.

   (c) Connect the output meter from the plate of the 6K6G tube to ground.

   (d) Set the Signal Generator to exactly 262 kilocycles and turn the volume control on full.

   (e) Turn the condenser gang to a position where no squeals or beat notes are heard and so that when the tuning condenser is rotated within narrow limits, there is no appreciable change in output.

   (f) Adjust trimmers A-B-C-D through the cutouts on the side of the chassis opposite the antenna and "A" receptacles (Illus. 12 & 13, Figure 4) for maximum output. Repeat with lowest possible output from the signal generator for more accurate alignment.



2. Aligning at 1530 Kilocycles

   (a) Leave Signal Generator leads connected the same as for I-F adjustments.

   (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 exactly 1530 Kilocycles.

   (d) Adjust the oscillator parallel trimmer "G" on the center section of the gang condenser carefully for maximum output (Figure 3).

3. Aligning at 1400 Kilocycles

   (a) Remove the signal lead of the Signal Generator from the grid cap of the 6A8G and connect to the antenna terminal of the receiver through a .0002 mfd. mica condenser.

   (b) Set the Signal Generator to 1400 kilocycles and tune the receiver to this signal.

   (c) Adjust the parallel trimmers "F" and "H" (Figure 3) on the condenser gang carefully for maximum output.

4. Aligning at 600 Kilocycles

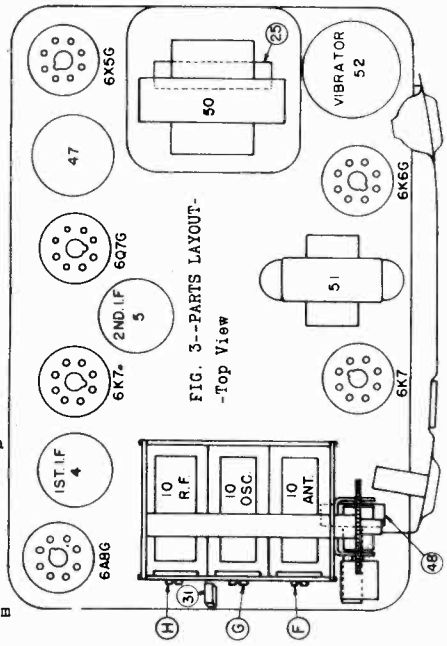
   (a) Set the Signal Generator to approximately 600 kilocycles.

   (b) Turn the rotor plates of the gang condenser until this signal is tuned in with maximum output.

   (c) Adjust trimmer "E" (Illus. #11, Figure 4) while rocking the rotor plates of the gang condenser back and forth through the signal until maximum output is obtained.

   It will be necessary to readjust this condenser to the car antenna upon installation of the set.

   (d) Repeat adjustments made under "Alignment at 1400 Kilocycles".



5. Checking I-F Band Spread

A Cathode Ray Oscillograph should be used to check the I-F band spread after completing the alignment procedure. Connect the oscillograph from connection "I" (Figure 4) to ground.

UNITED MOTORS SERVICE

MODEL R677

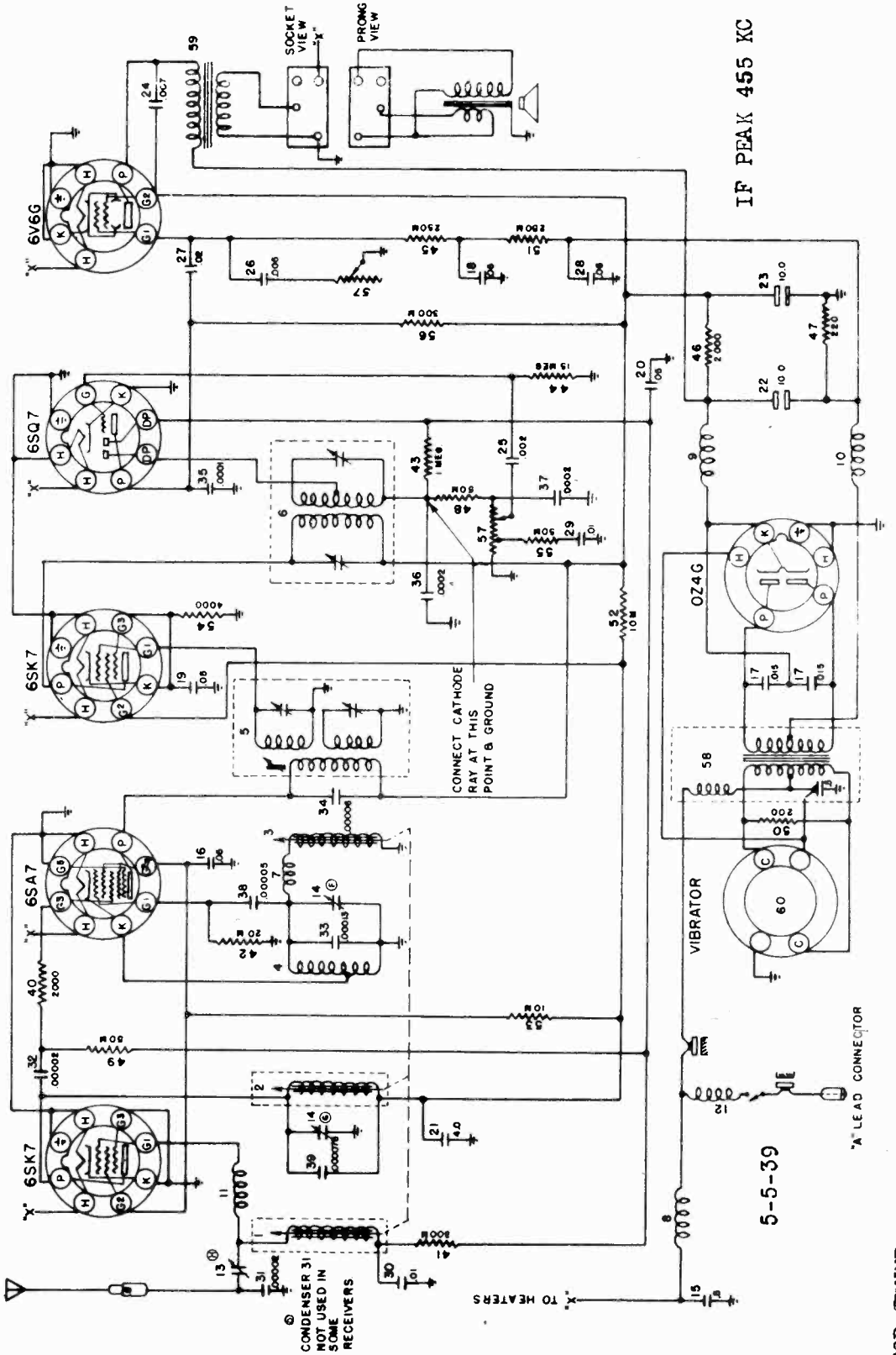


FIG. 2--DELCO MODEL R-677 CIRCUIT DIAGRAM

MODEL R677

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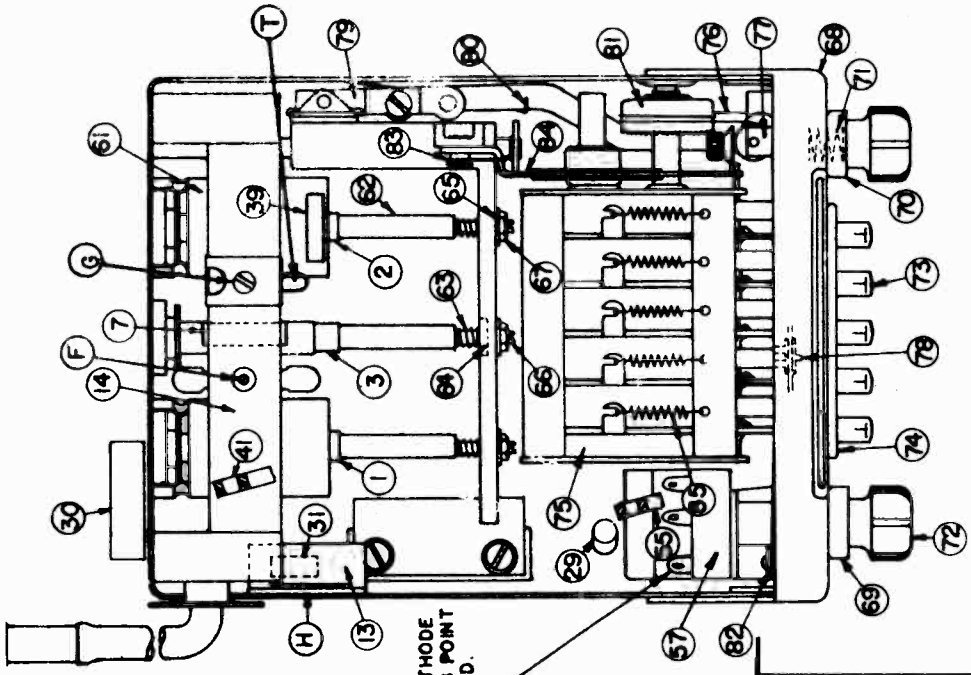

FIG. 5--PARTS LAYOUT--TUNER ASSEMBLY

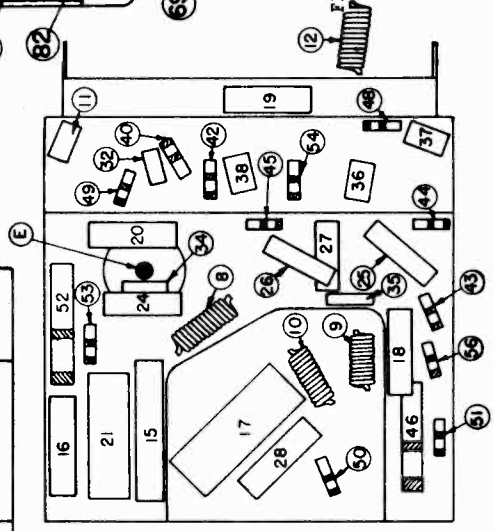

FIG. 4--PARTS LAYOUT--Bottom View

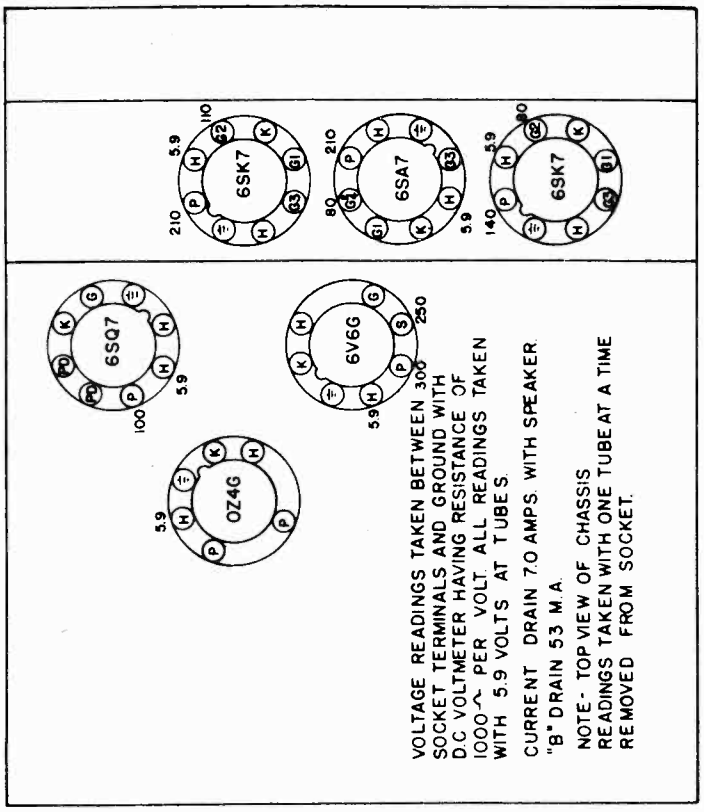

FIG. 1--TUBE SOCKET VOLTAGES

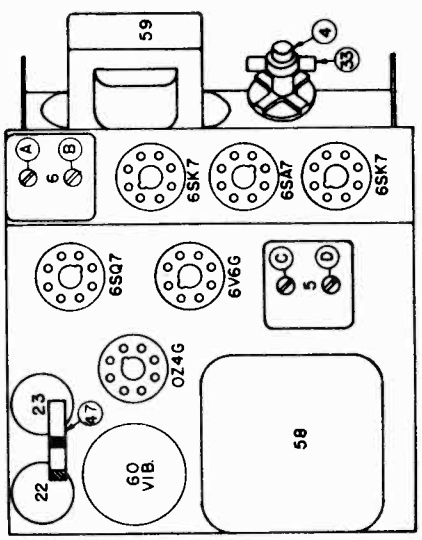

FIG. 3--PARTS LAYOUT--Top View

UNITED MOTORS SERVICE

MODEL R677

In order to prevent the A.V.C. from affecting the alignment adjustment, the lowest signal generator output which will give a readable indication on the output meter should be used. Top and bottom covers must be removed in order to properly align the set, however, the chassis should not be removed from the case.

ALIGNMENT PROCEDURE

Two separate alignment procedures are included in these instructions. The first is to be considered the usual alignment procedure, and the second to be used only when a tuning coil has been changed, or when some major change has been made in the tuning apparatus.

CAPACITY ALIGNMENT

1. Aligning I.F. Stages at 455 Kilocycles

   (a) Connect the ground lead of the Signal Generator to chassis frame. Connect the signal lead through an 0.1 mfd. condenser to the terminal "T" (Fig. 5).

   (b) Connect output meter from the plate of the 6V6G tube to ground.

   (c) Set signal to exactly 455 kilocycles and turn volume control on full.

   (d) Tune the set by means of the manual tuning control knob to a position where no squeals or beat notes can be noticed, also so that when the tuning control knob is rotated within narrow limits there is no appreciable change in output.

   (e) Adjust trimmers A-B-C-D (Fig. 3) and I.F. core adjustment "E", (Fig. 4) in the sequence named, until maximum output is obtained.

   (f) Repeat adjustments with as low an output from the Signal Generator as possible, for more accurate alignment.

2. Alignment at 1560 Kilocycles

   (a) Tune the set by means of the manual tuning control knob to the extreme high frequency position against stop.

   (b) Connect the signal lead of the Signal Generator to the antenna terminal of the set through a .0001 mfd. condenser.

   (c) Set frequency of the Signal Generator to 1560 kilocycles and adjust the oscillator shunt trimmer condenser "F" (Fig. 5) for maximum output.

3. Alignment at 600 Kilocycles

   (a) Leave Signal Generator connected the same as for alignment at 1560 kilocycles.

   (b) Set the Signal Generator to 600 kilocycles.

   (c) Tune the set (manual tuning control) to this signal.

   (d) Adjust the R.F. trimmer condenser "G" (Fig. 5) for maximum output.

   (e) Adjust the antenna trimmer condenser "H" (Fig. 5) for maximum output. (This trimmer is readjusted at 1400 kilocycles when set is installed in car.)

4. Checking I.F. Band Spread

   (a) A Cathode Ray Oscillograph should be used to check the I.F. band spread after completing the alignment procedure. Slight adjustment of the I.F. stages may be found necessary in order to obtain a symmetrical selectivity curve. Connect Cathode Ray Oscillograph as shown in Fig. 5.

CAPACITY AND INDUCTANCE ALIGNMENT

To be used ONLY when a major change such as changing a tuning coil has been made in the tuning apparatus and there is definite evidence of tuning coils not "tracking."

1. I.F. Alignment.

   Align the I.F. stages the same as outlined under the capacity Alignment Procedure.

2. Mechanical Alignment of R.F. Stages

   (a) Tune the set by means of the tuning control knob to extreme high frequency position, against stop (cores will be almost withdrawn from coil forms.)

   (b) Adjust the nut on the oscillator core stud aligning the end of the core (inside coil form) to a position flush with the end of the oscillator coil winding. This may be done by laying a separate core Part #7237714 (or an accurate 1-3/8" gauge) alongside the oscillator core making the stud ends flush and making the opposite ends just meet the winding of the oscillator coil.

   (c) Adjust the position of the antenna and R. F. coil cores to a position flush with the end of the coil windings, using the separate core for a gauge in the same manner as for the oscillator coil.

3. Alignment at 1560 Kilocycles

   (a) Connect the signal lead of the Signal Generator to the antenna terminal of the set through a .0001 mfd. condenser.

   (b) Set frequency of the Signal Generator to exactly 1560 kilocycles and adjust the oscillator shunt trimmer condenser "F" (Fig. 5) for maximum output indication on the output meter.

4. Alignment at 600 Kilocycles

   (a) Leave the Signal Generator connected the same as for alignment at 1560 kilocycles.

   (b) Set the Signal Generator to 600 kilocycles.

   (c) Tune the set (manual tuning control) to this signal.

   (d) Adjust the R.F. trimmer condenser "G" for maximum output.

   (e) Adjust the antenna trimmer condenser "H" for maximum output.

5. Alignment at 1400 Kilocycles

   (a) Leave Signal Generator connected the same as for alignment at 600 kilocycles.

   (b) Set the Signal Generator to 1400 kilocycles.

   (c) Tune the set to signal and using wrench, part #7238078, adjust the position of the iron core in the R. F. coil (Illus. #2, Fig. 5) for maximum output meter indication.

   (d) Adjust the position of the iron core in the antenna coil (Illus. #1, Fig. 5) for maximum output. DO NOT TOUCH THE ADJUSTMENT OF THE OSCILLATOR COIL IRON CORE.

   (e) Repeat adjustments with a lower output from the signal Generator for more accurate alignment.

SERVICE HINTS

It is to be noted that the voltage chart is given for the tube sockets with the tubes pulled out of the socket. This is because the bases of several tube sockets are not readily accessible.

1. To remove the tuner assembly for servicing parts mounted on the 6SK7 or 6SA7 tube sockets, proceed as follows:

   (a) Unsolder single yellow "A" lead at switch.

   (b) Unsolder blue lead and black lead from either end of trimmer "G" (Fig. 5).

   (c) Unsolder green lead from high side of trimmer "F" (Fig. 5).

   (d) Remove screws holding tuner assembly in case and screws on antenna lead.

   (e) Fold tuning unit back being careful not to break other leads connected to it.

2. The position of the R.F. coil shunt condenser (Illus. 39, Fig. 5) should not be changed. Changing its position causes this stage of the radio to be detuned.

3. Coil cores (Part #7237714) should not have to be replaced except when broken by mishandling. Since these cores are matched at the factory into sets of matched characteristics, it is recommended that all three cores be replaced at the same time. All Branch stock on #7237714 is matched and may be ordered in the required quantity for service.

MODEL R678

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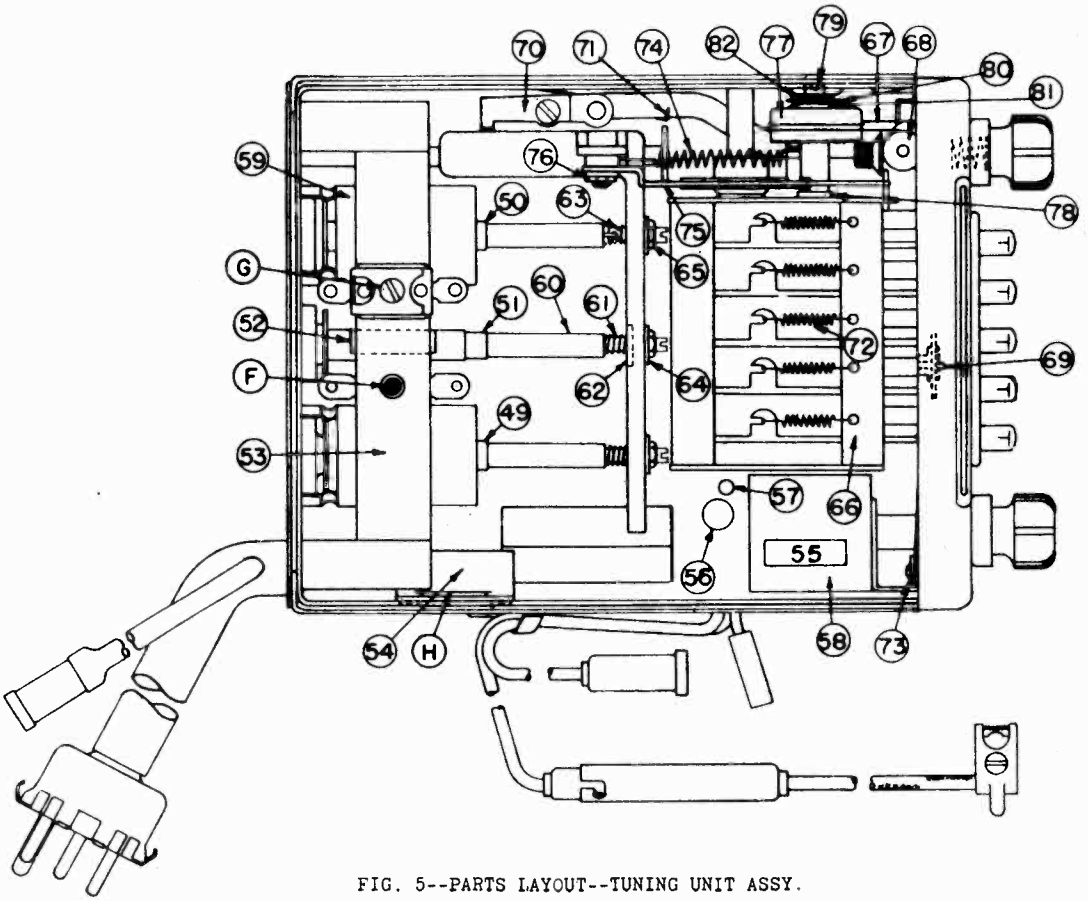

FIG. 5--PARTS LAYOUT--TUNING UNIT ASSY.

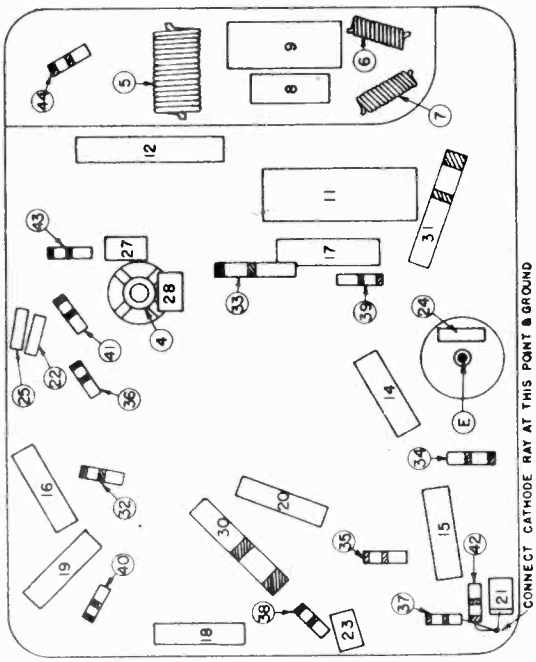

FIG. 4--PARTS LAYOUT--DASH UNIT--Bottom View

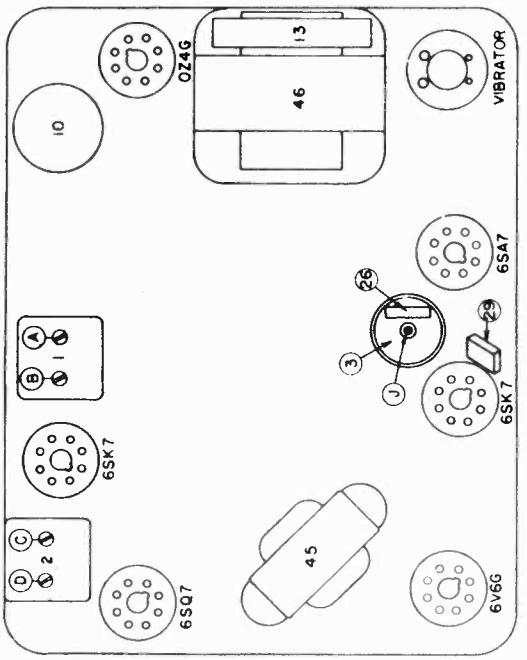

FIG. 3--PARTS LAYOUT--DASH UNIT--Top View

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MODEL R678

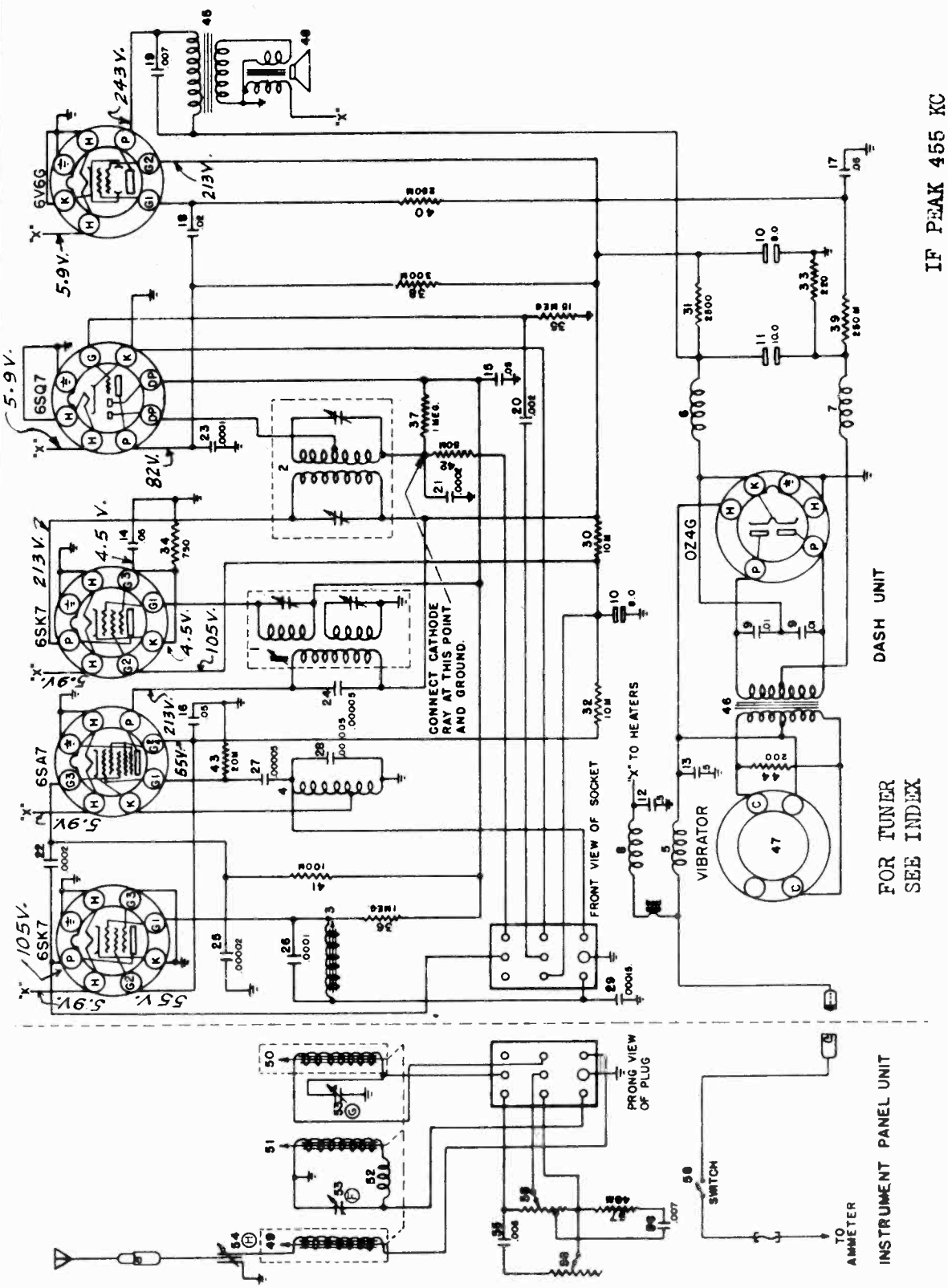

FIG. 2--DELCO MODEL R-678 CIRCUIT DIAGRAM

5-9-39

CAPACITY ALIGNMENT

1. Aligning I.F. Stages at 455 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis. Connect the signal lead through a 0.1 mfd. condenser to the bottom right hand connections of the tuner socket as shown in Fig. 2.

   (b) Connect output meter from the plate of the 6V6G tube to ground.

   (c) Set signal generator to exactly 455 kilocycles and turn volume control on full.

   (d) Tune the set by means of the manual tuning control knob to a position where no squeals or beat notes can be noticed; also, so that when the tuning knob is rotated within narrow limits there is no appreciable change in output.

   (e) Adjust trimmers A-B-C-D (Fig. 3) and I.F. core adjustment "E" (Fig. 4) in the sequence named, until maximum output is obtained.

   (f) Repeat adjustments with as low an output from the signal generator as possible, for more accurate alignment.

   (g) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .1 mfd. condenser.

   (h) Adjust the I.F. Trap adjustment "J" for MINIMUM output.

2. Alignmment at 1560 Kilocycles

   (a) Tune the set by means of the manual tuning control knob to the extreme high frequency position, against stop.

   (b) Connect the signal lead of the signal generator to the antenna terminal of the set through a .0001 mfd. condenser.

   (c) Set frequency of the signal generator to exactly 1560 kilocycles and adjust the oscillator shunt trimmer condenser "F" (Fig. 5) for a maximum output.

3. Alignment at 600 Kilocycles

   (a) Leave the signal generator connected the same as for alignment at 1560 kilocycles.

   (b) Set the signal generator to 600 kilocycles.

   (c) Tune the set (manual tuning control) to this signal.

   (d) Adjust the R.F. trimmer condenser "G" (Fig. 5) for maximum output.

   (e) Adjust the antenna trimmer condenser "H" (Fig. 5) for maximum output.

4. Checking I.F. Band Spread

   A Cathode Ray Oscillograph should be used to check the I.F. band spread after completing the alignment procedure. Slight adjustment of the I.F. stages may be found necessary in order to obtain a symmetrical selectivity curve. Connect Cathode Ray Oscillograph as shown in Fig. 4.

CAPACITY AND INDUCTANCE ALIGNMENT

To be used ONLY when a major change such as changing a tuning coil has been made in the tuning apparatus and there is definite evidence of the coils not "tracking."

1. I.F. Alignment

   Align the I.F. stages in the same manner as outlined under the Capacity Alignment Procedure.

2. Mechanical Alignment of R.F. Stages

   (a) Tune the set by means of the tuning control knob to extreme high frequency position against stop. (Cores will be almost withdrawn from coil forms.)

   (b) Adjust the nut on the oscillator (center coil) core stud, aligning the end of the core (inside coil form) to a position flush with the end of the oscillator coil winding. This may be done by laying a separate core, Part #7237714, (or an accurate 1-3/8" gauge) alongside the oscillator core making the stud ends flush and making the opposite ends just meet the winding of the oscillator coil.

   (c) Adjust the position of the antenna and R.F. coil cores (Illus. #49 and 50, Fig. 5) to a position flush with the end of the coil windings, using the separate core for a gauge in the same manner as for the oscillator coil.

3. Alignment at 1560 Kilocycles

   (a) Connect the signal lead of the signal generator to the antenna terminal of the set through a .0001 mfd. condenser.

   (b) Set frequency of the signal generator to exactly 1560 kilocycles and adjust the oscillator shunt trimmer condenser "F" (Fig. 5) for a maximum output indication on the output meter.

4. Alignment at 600 Kilocycles

   (a) Leave the signal generator connected the same as for alignment at 1560 kilocycles.

   (b) Set the signal generator to 600 kilocycles.

   (c) Tune the set (manual tuning control) to this signal.

   (d) Adjust the R.F. trimmer condenser "G" (Fig. 5) for maximum output.

   (e) Adjust the antenna trimmer condenser "H" (Fig. 5) for maximum output.

5. Alignment at 1400 Kilocycles

   (a) Leave signal generator connected the same as for alignment at 600 kilocycles.

   (b) Set the signal generator to 1400 kilocycles.

   (c) Tune radio set to the signal and using wrench, Part No. 7238078, adjust the position of the iron core in the R.F. coil (Illus. #50, Fig 5) for maximum output meter indication.

   (d) Adjust the position of the iron core in the antenna coil (Illus. #49, Fig. 5) for maximum output. DO NOT TOUCH THE ADJUSTMENT OF THE OSCILLATOR COIL IRON CORE.

   (e) Repeat adjustments with a lower output from the signal generator for more accurate alignment.

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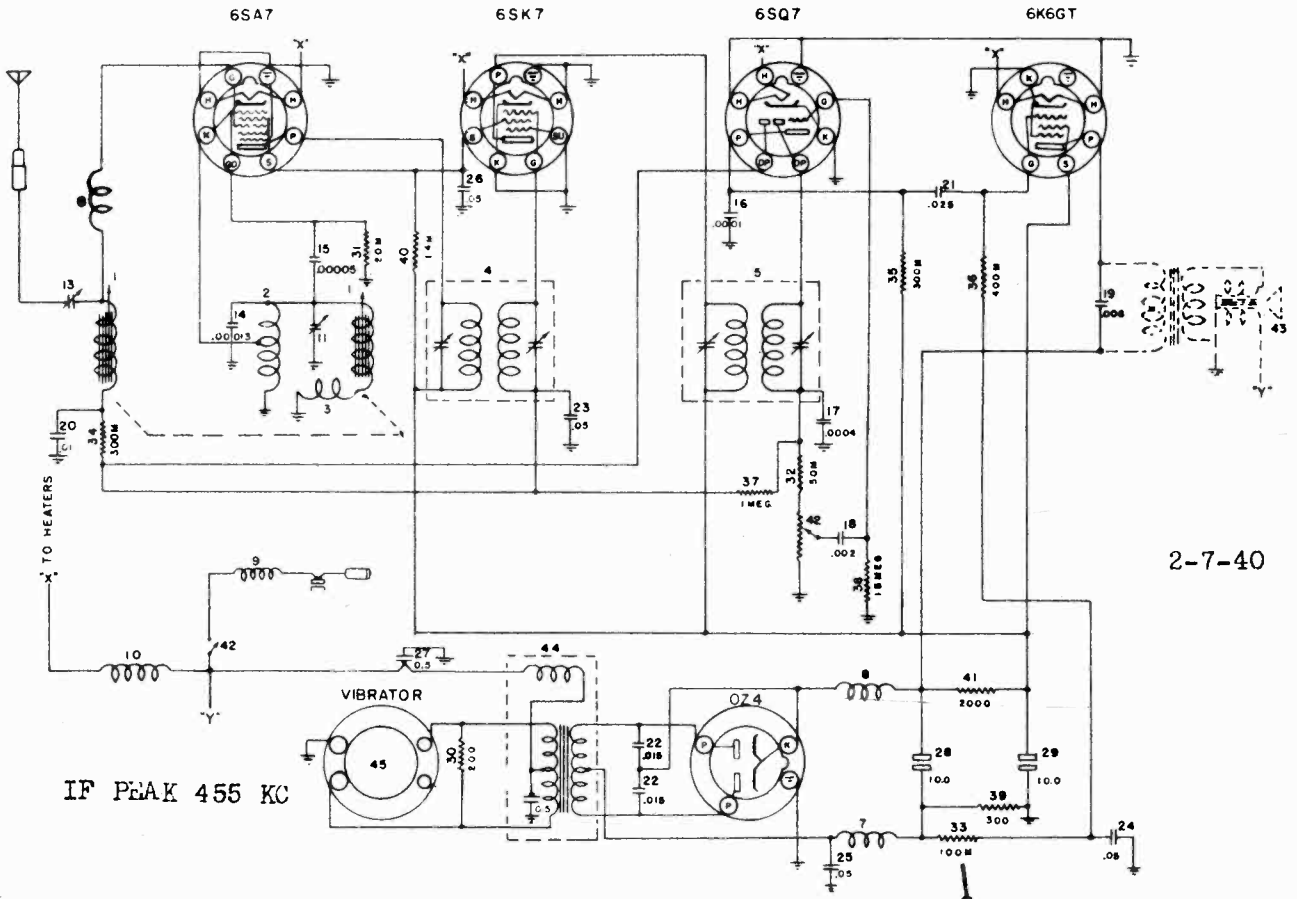
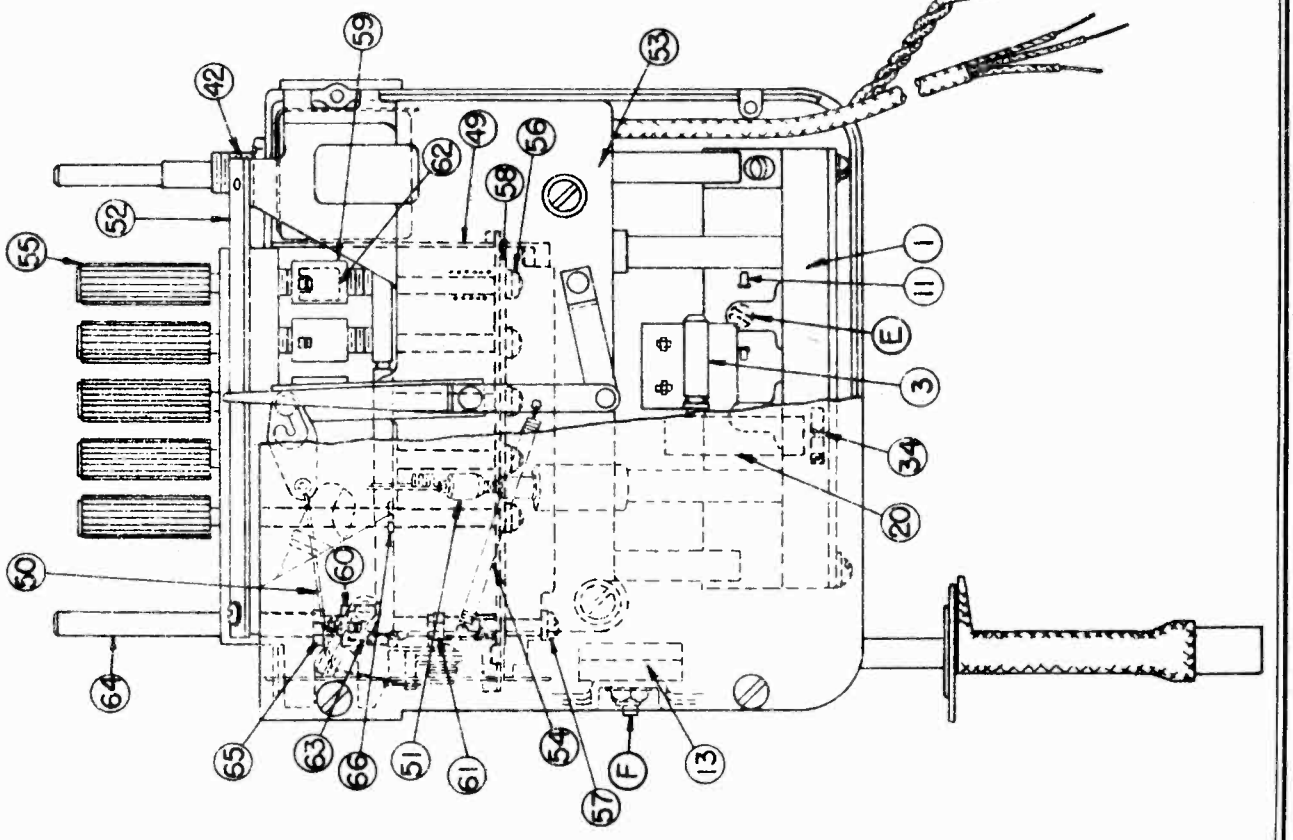
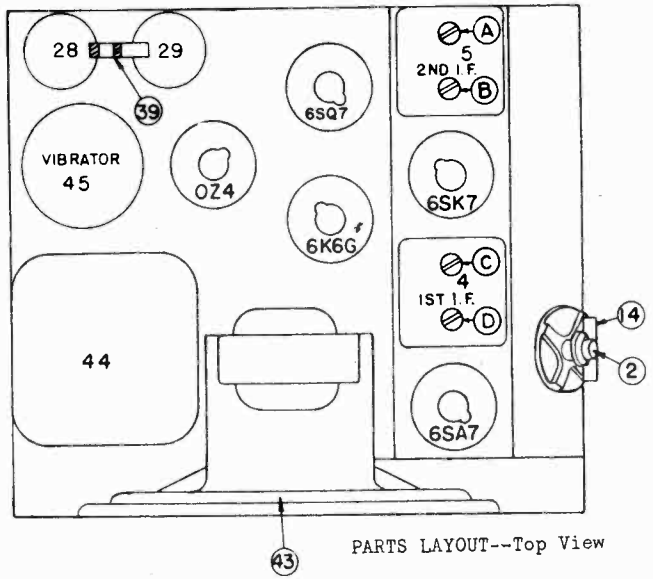
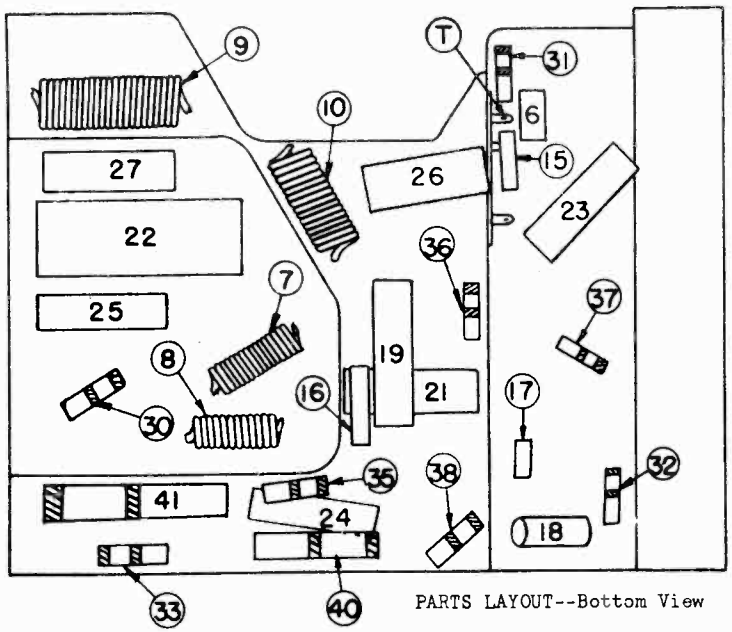






PARTS LAYOUT--Top View



PARTS LAYOUT--Bottom View

VOLTAGE READINGS TAKEN BETWEEN SOCKET TERMINALS AND GROUND WITH D.C. VOLTMETER HAVING RESISTANCE OF 1000 OHMS PER VOLT. ALL READINGS TAKEN WITH 5.8 FILAMENT VOLTAGE AT TUBES.

CURRENT DRAIN WITH SPEAKER AND DIAL LIGHT 5.0 AMPS.

"B" SUPPLY DRAIN 44 M.A.

* GRID VOLTAGES MEASURED WITH VOLTMETER HAVING RESISTANCE OF 20,000 OHMS PER VOLT.

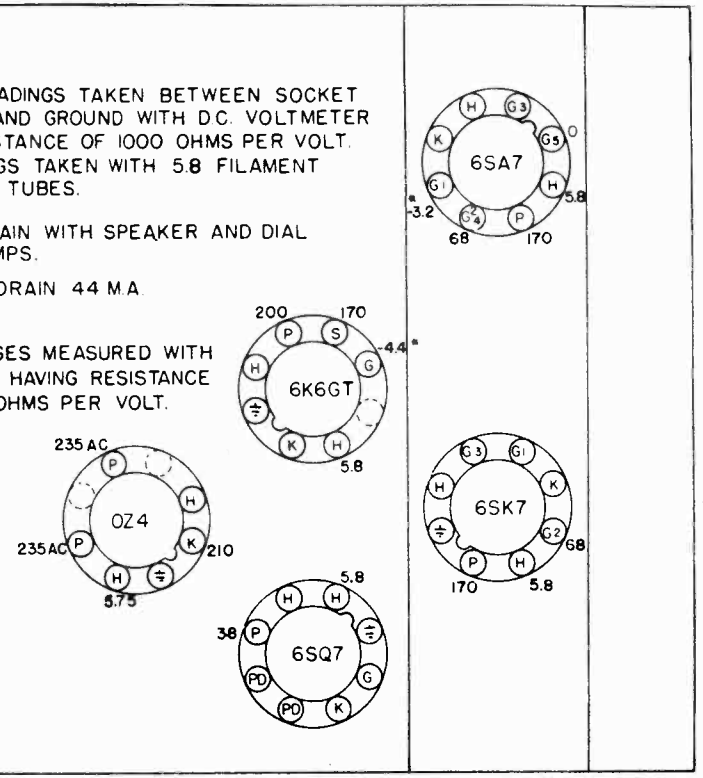


FIG. 1--TUBE SOCKET VOLTAGES

GENERAL: The Delco Model R-685 is a five tube, single unit superhetrodyne receiver with a 5" dynamic speaker, designed for universal mounting on all cars.

TUNING CONTROLS: Tuning is accomplished by means of a manual tuning control or by means of five push-buttons each of which drives the permeability tuning cores to preselected frequencies.

Setting up the push-buttons for any desired station is accomplished by pressing the button into its latched position and rotating it in the manner of a manual tuning control until the desired station is tuned in. No locking device is required to retain this setting.

Note: Do not hold the button in beyond its normal latching position when setting up stations.

The manual tuning control operates by pressing the tuning knob into its latched position and tuning in the conventional manner.

CAPACITY ALIGNMENT

Aligning I-F Stages at 455 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 terminal "T" (Fig. 4) through a .1 mfd. condenser.

(c) Connect the output meter from the plate of the 6K6GT tube to ground.

(d) Set the signal generator to exactly 455 K.C.

(e) Turn the volume control on full and tune the set to a position where no squeals or beat notes are noticed, also so that when the tuning control knob is rotated within narrow limits there is no appreciable change in output.

(f) Adjust the I-F trimmers A, B, C, D (Fig. 3) in the order mentioned until maximum output is obtained.

(g) Repeat these adjustments with as low an output from the signal generator as possible for more accurate alignment.

2. Aligning at 1560 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .0001 mfd. mica condenser.

(b) Tune the set to the extreme high frequency position against the stop.

(c) Set the signal generator to exactly 1560 K.C.

(d) Adjust the oscillator shunt trimmer "E" (Fig. 5) for maximum output.

3. Aligning at 600 Kilocycles

(a) Leave the signal generator connected the same as before.

(b) Set the signal generator to 600 K.C.

(c) Tune the set by means of the manual control until this signal is tuned in with maximum output.

(d) Adjust the antenna trimmer "F" (Fig. 5) for maximum output.

CAPACITY AND INDUCTANCE ALIGNMENT

1. Aligning I-F Stages at 455 Kilocycles

Align the I-F stages as outlined under paragraph 1 under CAPACITY ALIGNMENT.

2. Mechanical Alignment of Cores

(a) Tune the set by means of the manual tuning control to the extreme high frequency end of the dial and against stop. (Cores will be almost withdrawn from coil forms.)

(b) Remove the pointer plate (note insulating washers under left hand screw) without disturbing the tuning mechanism.

(c) Using a spare core (part #7240022) as a gauge, adjust the oscillator core so that with the front surfaces of the spare core and the oscillator core exactly flush, the rear surface of the test core is flush with the front end of the oscillator coil winding. This adjustment may be made using adjustment tool #7240160 inserted through the hole at the rear of the coil mounting bracket. The tool should be fitted into the hole at the rear of the core and rotated without applying any thrust to the core which would move it out of its normal resting position.

(d) Manually tune the set to a point where the front surface of the oscillator core is flush with the front end of the oscillator coil fibre mounting bushing.

(e) Adjust the antenna coil core position so that the front surface of the core is flush with the front end of the antenna coil fibre mounting bushing.

(f) Replace the pointer plate assembly.

3. Aligning at 1560 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .0001 mfd. mica condenser.

(b) Tune the set by means of the manual tuning control to the extreme high frequency end of the dial and against stop.

(c) Set the signal generator to exactly 1560 K.C.

(d) Adjust the oscillator shunt trimmer "E" (Fig. 5) for maximum output.

4. Aligning at 600 Kilocycles

(a) Leave the signal generator connected the same as before.

(b) Set the signal generator to 600 K.C.

(c) Tune the set by means of the manual control until this signal is tuned in with maximum output.

(d) Adjust the antenna trimmer "F" (Fig. 5) for maximum output.

5. Aligning at 1400 Kilocycles

(a) Set the signal generator to 1400 K.C.

(b) Tune the set manually until this signal is tuned in with maximum output.

(c) Adjust the core of the antenna coil (using tool #7240160) for maximum output.

(d) Repeat the alignment with as low an output from the signal generator as possible for more accurate alignment.

(e) Apply cement to the core screws to prevent their changing adjustments.

6. Adjusting Receiver to Car Antenna

After the receiver is reinstalled in the car, it will be necessary to readjust the antenna trimmer on a weak station at about 600 K.C.

MODEL R686

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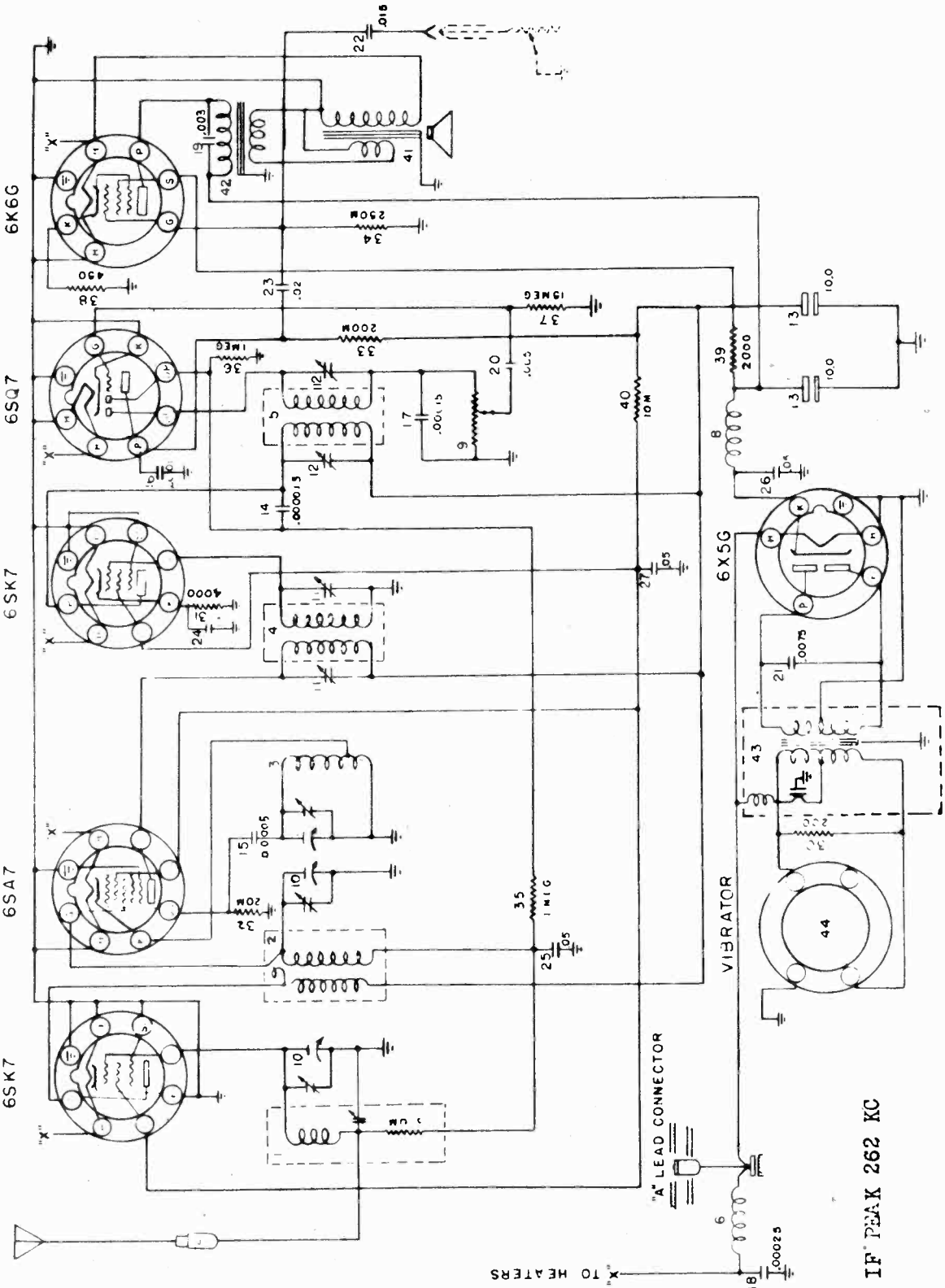

Note: Condenser #22 was changed from plate to grid of the 6K6G tube starting with serial #865000.

FIG. 2--DELCO MODEL R-686 CIRCUIT DIAGRAM

4-12-40

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MODEL R686

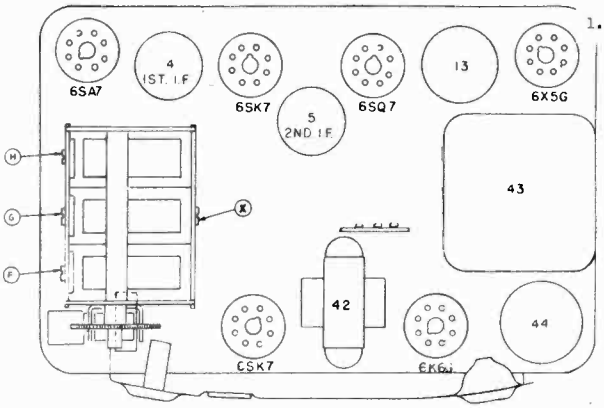


FIG. 3--PARTS LAYOUT--Top View

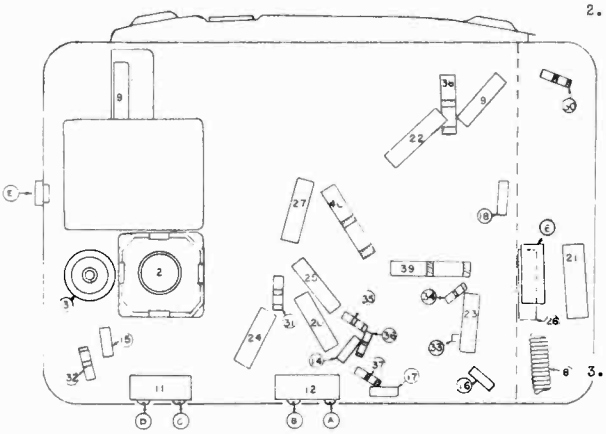


FIG. 4--PARTS LAYOUT--Bottom View

1. Aligning I-F Stages at 262 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 end section (RF) of the gang condenser (adjacent to trimmer "H", Fig. 3) through a .1 mfd. condenser.

(c) Connect the output meter from the plate of the 6K6G tube to ground.

(d) Set the signal generator to exactly 262 kilocycles and turn the volume control on full.

(e) Turn the condenser gang to a position where no squeals or beat notes are heard and so that when the tuning condenser is rotated within narrow limits, there is no appreciable change in output.

(f) Adjust trimmers A-B-C-D through the cut-outs on the side of the chassis opposite the antenna and "A" receptacles (Illus. 11 and 12, Fig. 4) for maximum output. Repeat with lowest possible output from the signal generator for more accurate alignment.

2. Aligning at 1530 Kilocycles

(a) Leave signal generator leads connected the same as for I-F adjustments.

(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 exactly 1530 Kilocycles.

(d) Adjust the oscillator parallel trimmer "G" on the center section of the gang condenser carefully for maximum output (Fig. 3).

(e) Trimmer "X" (Fig. 3) is adjusted and sealed at the factory and should require no further adjustment.

In the event that its setting has been changed, back out trimmers "G" and "X" to minimum capacity and readjust simultaneously until maximum output is obtained.

3. Aligning at 1400 Kilocycles

(a) Remove the signal lead of the signal generator and connect to the antenna terminal of the receiver through a .0002 mfd. mica condenser.

(b) Set the signal generator to 1400 Kilocycles and tune the receiver to this signal.

(c) Adjust the parallel trimmers "F" and "H" (Fig. 3) on the condenser gang carefully for maximum output.

4. Aligning at 600 Kilocycles

(a) Set the signal generator to approximately 600 Kilocycles.

(b) Turn the rotor plates of the gang condenser until this signal is tuned in with maximum output.

(c) Adjust trimmer "E" (Fig. 4) while rocking the rotor plates of the gang condenser back and forth through the signal until maximum output is obtained.

It will be necessary to readjust this condenser to the car antenna upon installation of the set.

(d) Repeat adjustments made under "Alignment at 1400 Kilocycles".

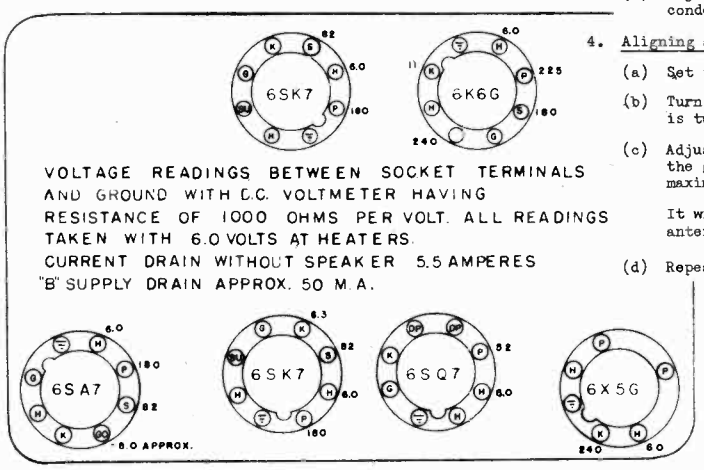
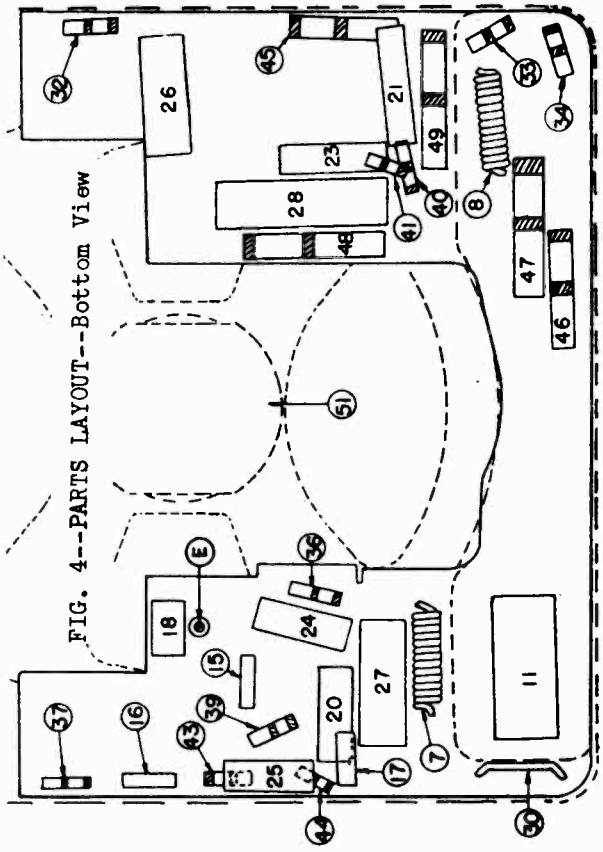
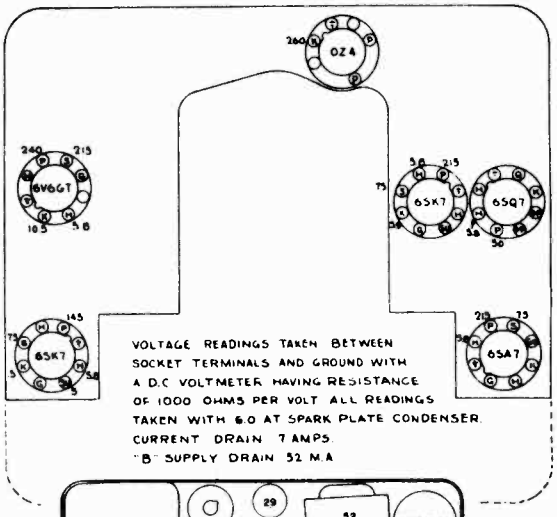


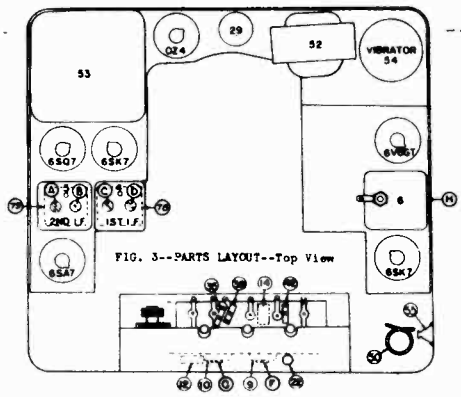
FIG. 1--TUBE SOCKET VOLTAGES

MODEL R687

UNITED MOTORS SERVICE







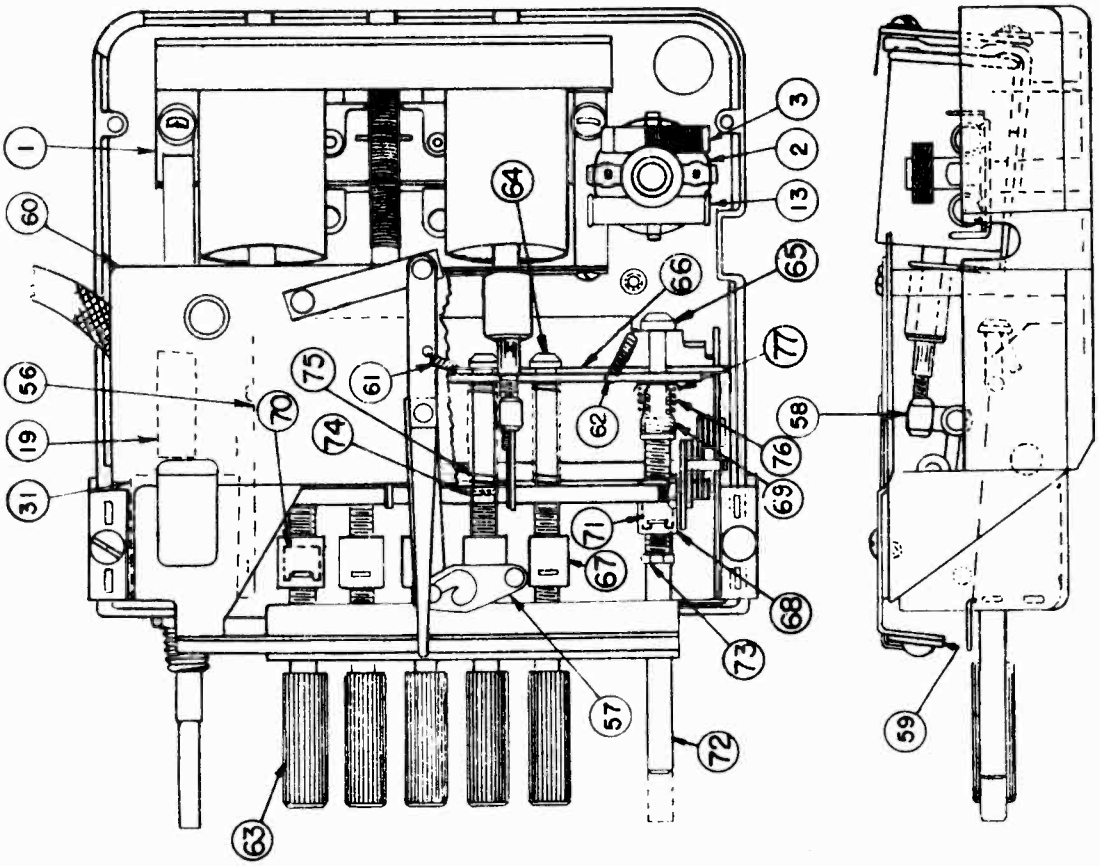
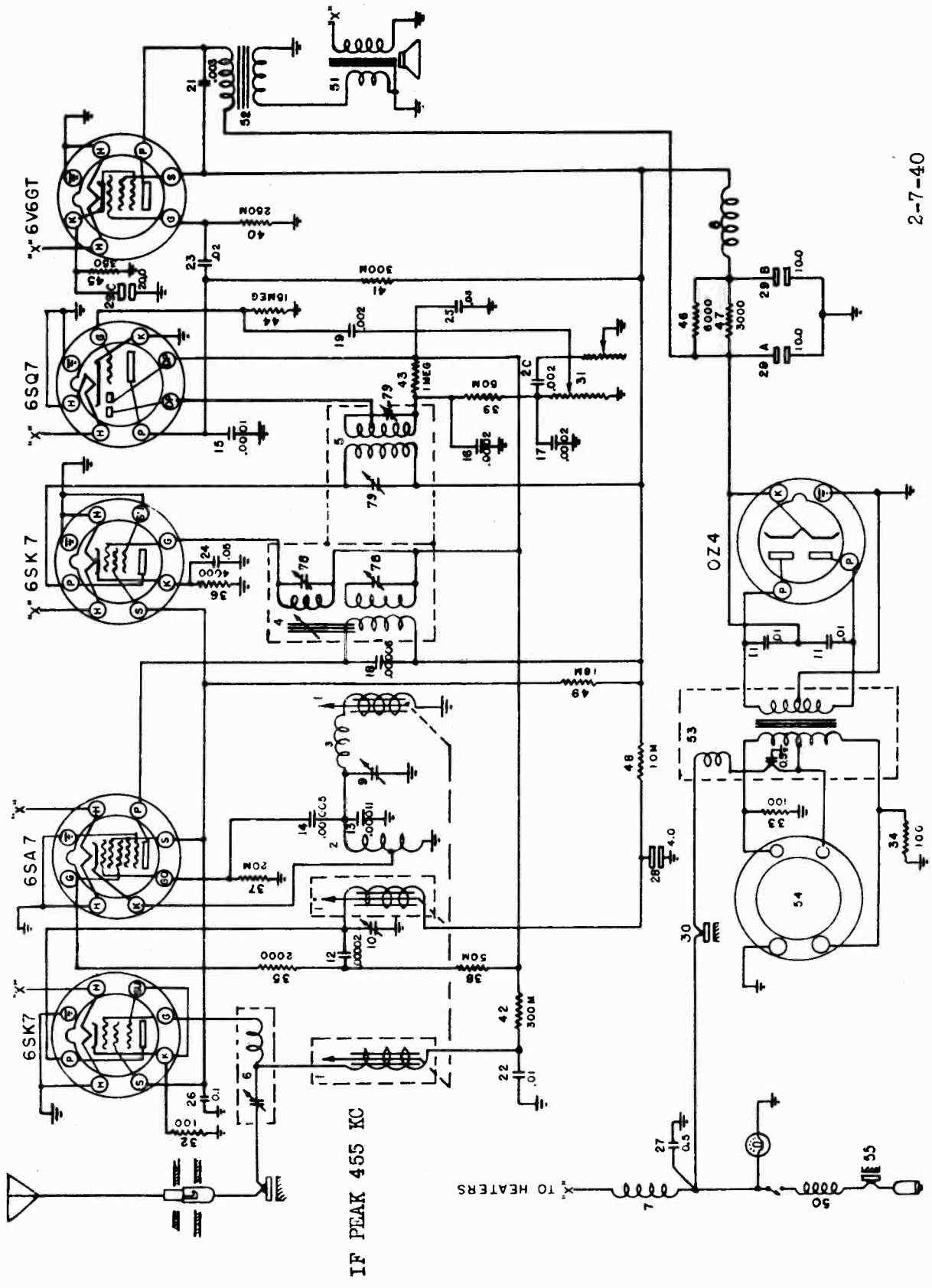


FIG. 5--PARTS LAYOUT--TUNER UNIT

UNITED MOTORS SERVICE

MODEL R687



CAPACITY ALIGNMENT — MODELS R687, R688

1. Aligning I-F Stages at 455 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 bottom right hand connection of the tuner socket (Fig. 2) through a .1 mfd. condenser.

   (c) Connect the output meter from the plate of the 6V6GT tube to ground.

   (d) Set the signal generator to exactly 455 K.C.

   (e) Turn the volume control on full and tune the set to a point where no squeals or beat notes are noticed, also so that when the tuning control knob is rotated within narrow limits, there is no appreciable change in output.

   (f) Adjust the I-F trimmers "A, B, C, D" (Fig. 3) and the I-F core adjustment "E" (Fig. 4) until maximum output is obtained.

   (g) Repeat these adjustments with as low an output from the signal generator as possible for more accurate alignment.

   (h) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .1 mfd. condenser.

   (i) Adjust the I-F wave trap "J" (Fig. 3) for minimum output.

   *** Disregard items (h) and (i) for Model R687**

2. Aligning at 1560 Kilocycles

   (a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .0001 mfd. mica condenser.

   (b) Tune the set to the extreme high frequency position against the stop.

   (c) Set the signal generator to exactly 1560 K.C.

   (d) Adjust the oscillator shunt trimmer "F" (Fig. 5) for maximum output.

3. Aligning at 600 Kilocycles

   (a) Leave the signal generator connected the same as before.

   (b) Set the signal generator to 600 K.C.

   (c) Tune the set by means of the manual tuning control until this signal is tuned in with maximum output.

   (d) Adjust the R. F. trimmer "G" (Fig. 3) for maximum output.

   (e) Adjust the antenna trimmer "H" (Fig. 3) for maximum output.

   **** Disregard item (d) for Model R688**

CAPACITY AND INDUCTANCE ALIGNMENT

1. Aligning I. F. Stages at 455 Kilocycles

   Align the I. F. stages as outlined under paragraph 1 under CAPACITY ALIGNMENT.

2. Mechanical Alignment of Cores

   (a) Tune the set by means of the manual tuning control to the extreme high frequency end of the dial and against stop. (Coils will be almost withdrawn from coil forms.)

   (b) Remove the pointer plate (note insulating washers under left hand screw) without disturbing the tuning mechanism.

   (c) Using a spare core (Part #7240022) as a gauge adjust the oscillator core (middle core) so that with the front surfaces of the spare core and the oscillator core exactly flush, the rear surface of the test core is exactly flush with the front end of the oscillator coil winding. This adjustment may be made using adjustment tool #7240160 inserted through the hole at the rear of the coil mounting bracket.

   The tool should be fitted into the hole at the rear of the core and rotated without applying any thrust to the core which would move it out of its normal resting position.

   (d) Manually tune the set to a point where the front surface of the oscillator core is flush with the front end of the oscillator coil fibre mounting bushing.

   (e) Adjust the antenna and R. F. cores so that the front surfaces of the cores are flush with the front ends of the coil fibre mounting bushing.

   (f) Replace the pointer plate assembly.

3. Aligning at 1560 Kilocycles

   Follow procedure No.2 under "Capacity Alignment".

4. Aligning at 600 Kilocycles

   (a) Leave the signal generator connected the same as before.

   (b) Set the signal generator to 600 K.C.

   (c) Tune the set by means of the manual control until this signal is tuned in with maximum output.

   (d) Adjust the R. F. trimmer "G" (Fig. 3) for maximum output.

   (e) Adjust the antenna trimmer "H" (Fig. 3) for maximum output.

5. Aligning at 1400 Kilocycles

   (a) Set the signal generator to 1400 K.C.

   (b) Tune the set manually until this signal is tuned in with maximum output.

   (c) Adjust the antenna and R. F. cores for maximum output.

   (d) Repeat the alignment with as low an output from the signal generator as possible for more accurate alignment.

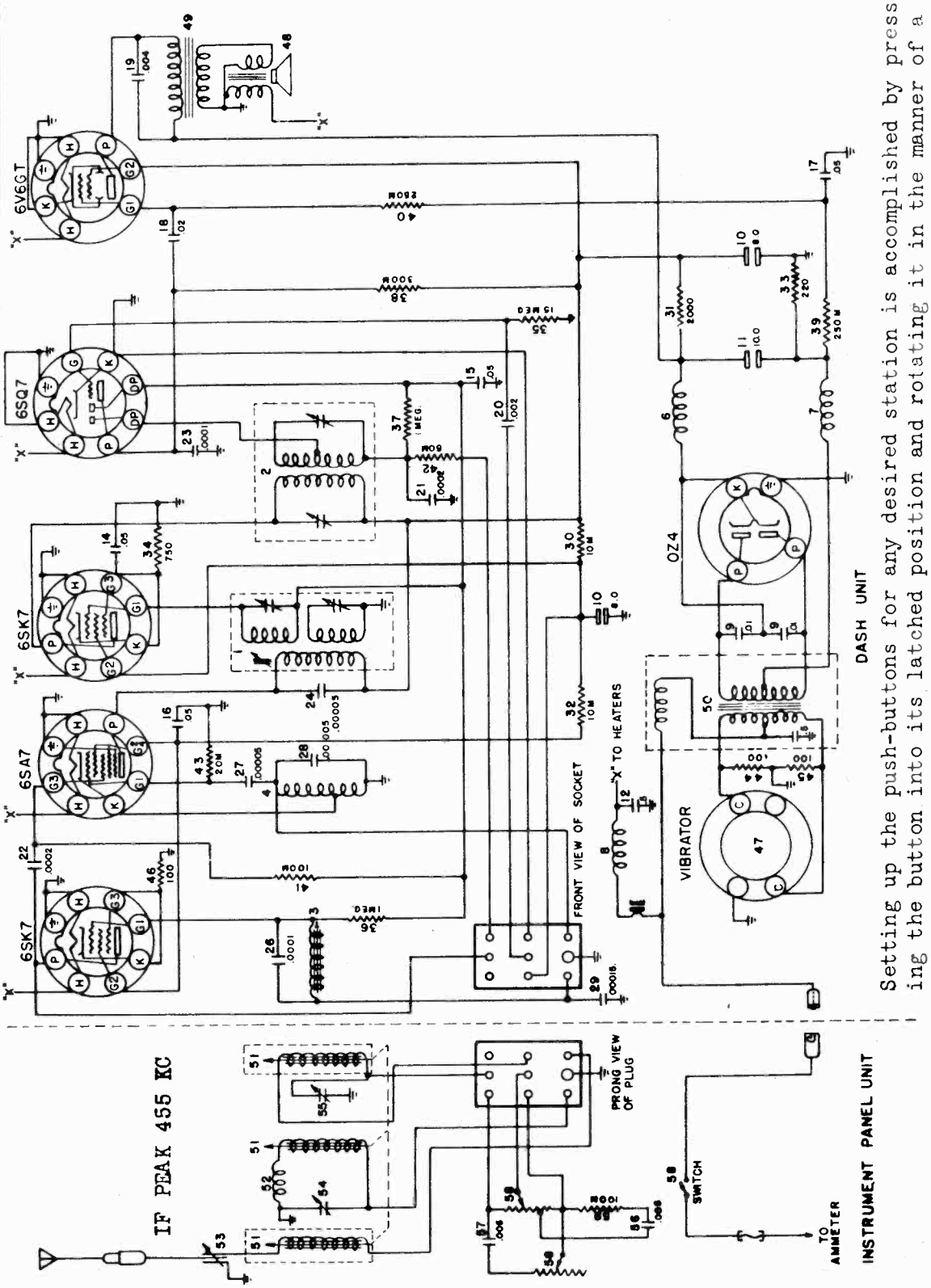
   (e) Apply cement to the core screws to prevent their changing alignment.

6. Adjusting Receiver to Car Antenna

   After the receiver is reinstalled in the car, it will be necessary to readjust the antenna trimmer on a weak station at about 600 K.C.

UNITED MOTORS SERVICE

MODEL R688



Setting up the push-buttons for any desired station is accomplished by pressing the button into its latched position and rotating it in the manner of a manual tuning control until the desired station is tuned in. No locking device is required to retain this setting.

Note: Do not hold the button in beyond its normal latched position when setting up stations.

2-7-40

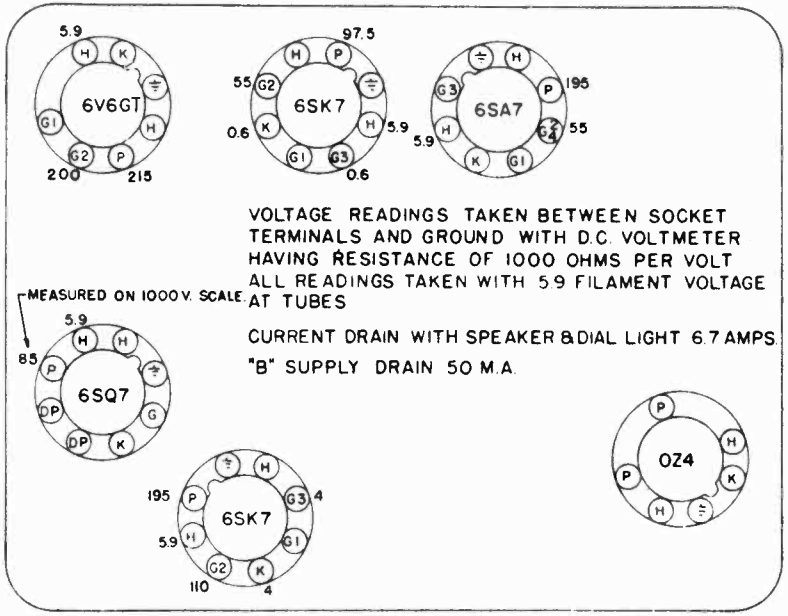


FIG. 1--TUBE SOCKET VOLTAGES

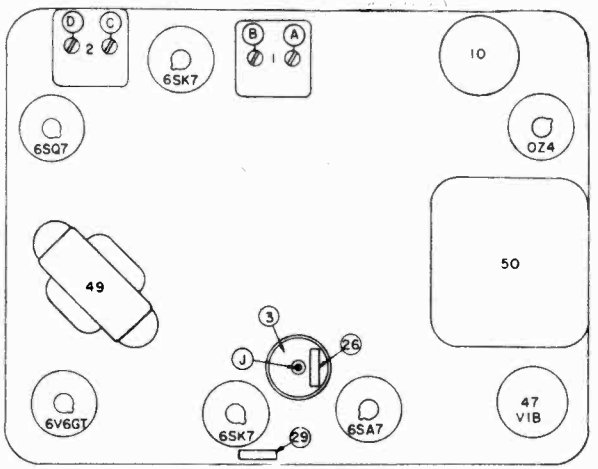


FIG. 3--PARTS LAYOUT--DASH UNIT--Top View

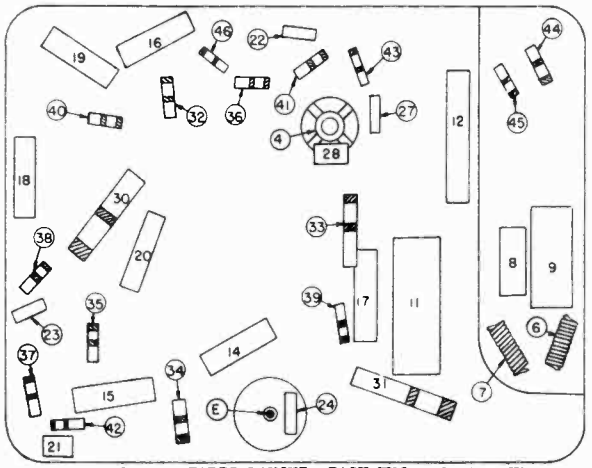


FIG. 4--PARTS LAYOUT--DASH UNIT--Bottom View

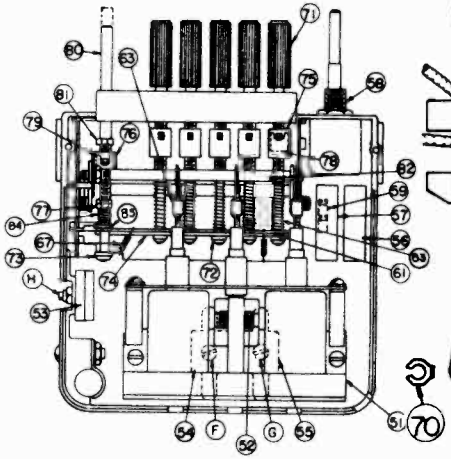


FIG. 5--PARTS LAYOUT--I. P. UNIT

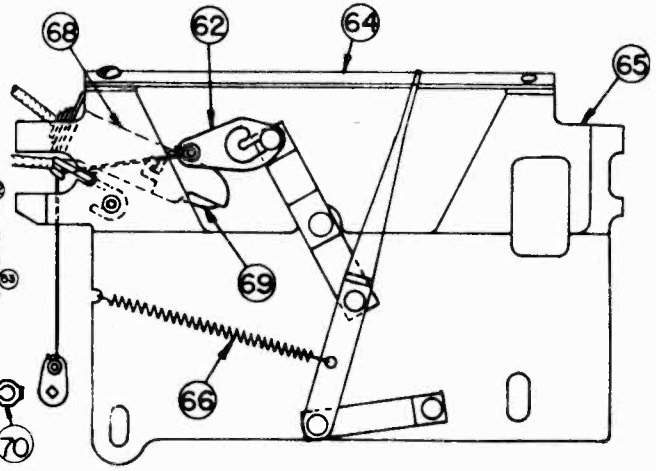


FIG. 6--PARTS LAYOUT POINTEL PLATE ASSEMBLY

UNITED MOTORS SERVICE

MODEL R695

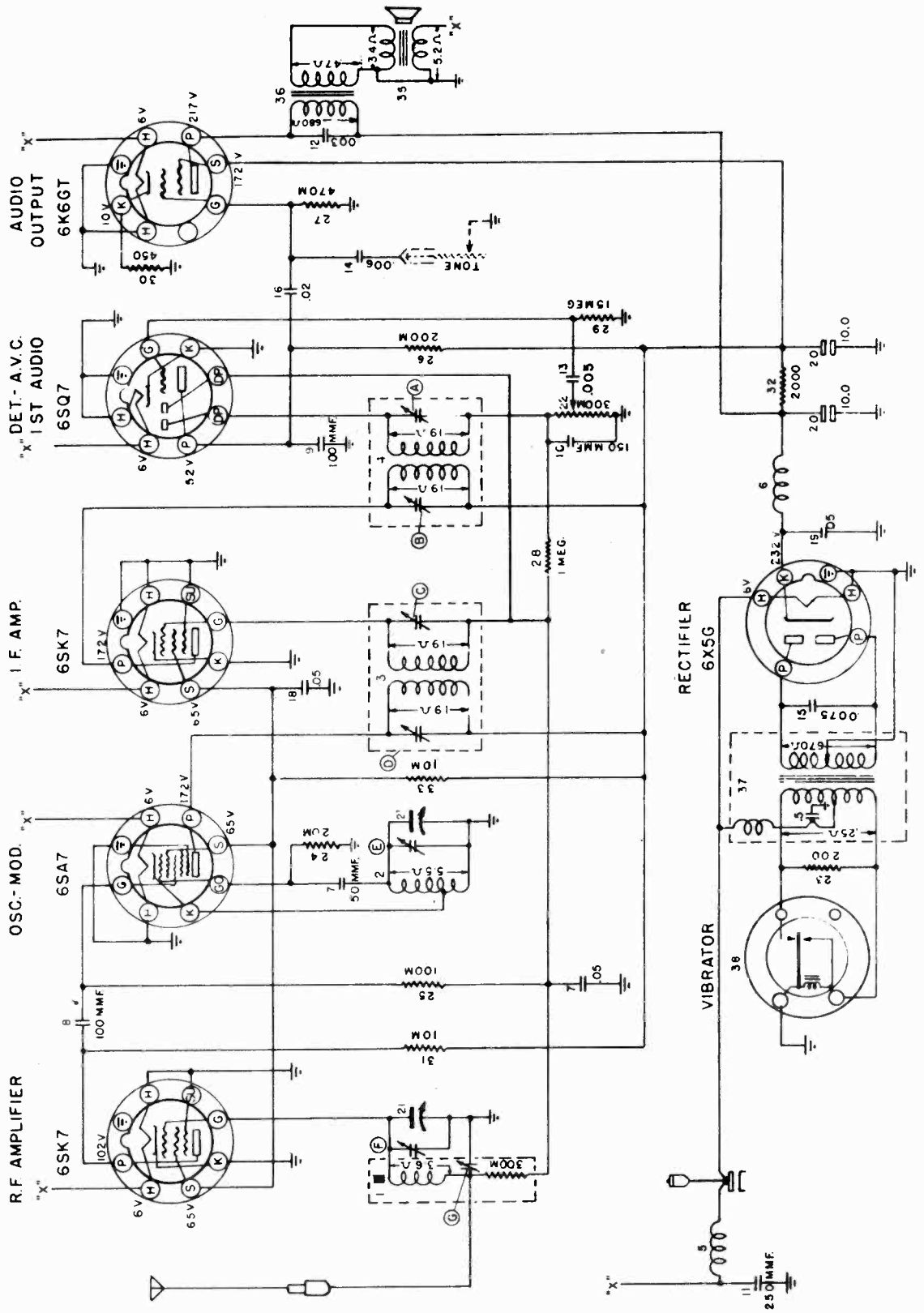


FIG. 2--DELCO MODEL R-695 CIRCUIT DIAGRAM

Date: 1-16-41

MODEL R695

UNITED MOTORS SERVICE

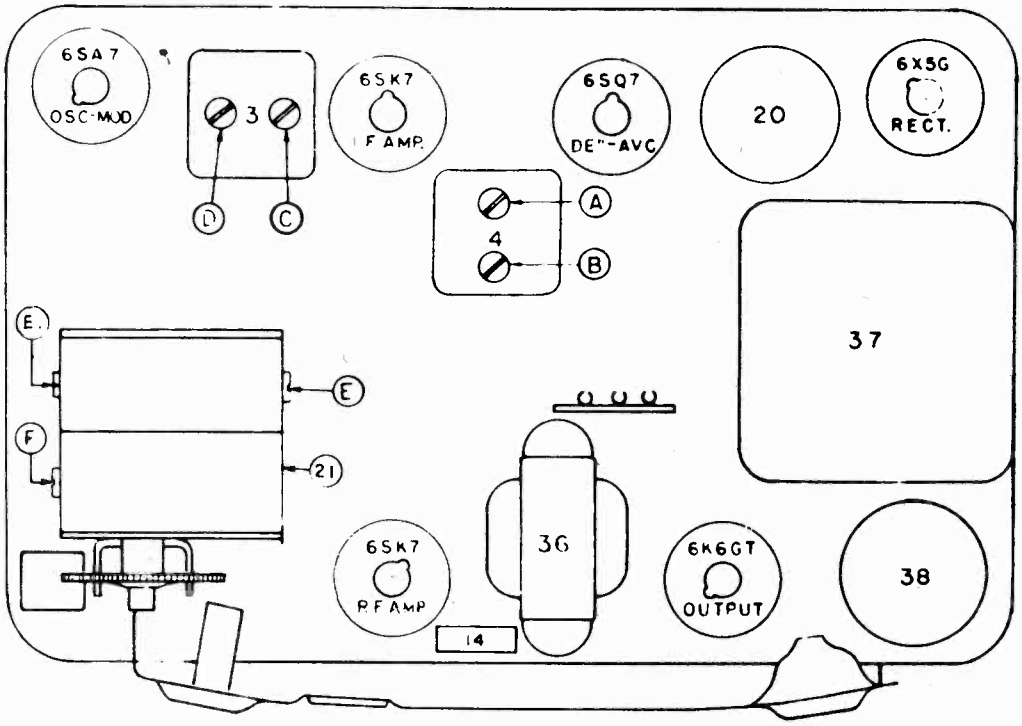


FIG. 3--PARTS LAYOUT--Top View

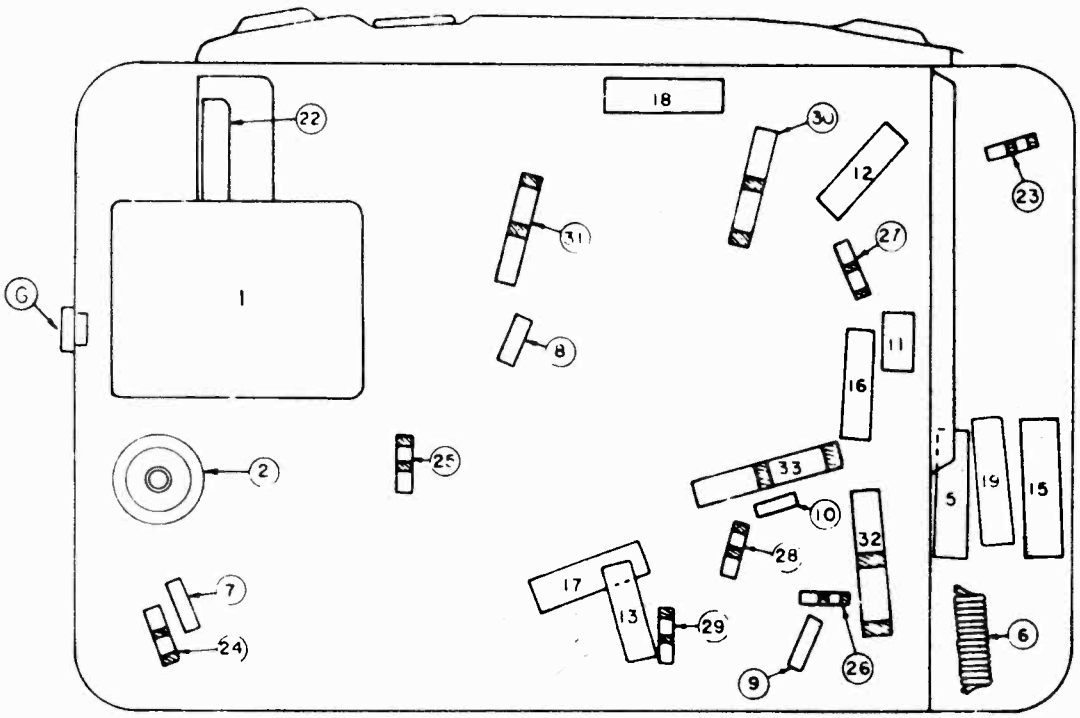


FIG. 4--PARTS LAYOUT--Bottom View

SUBJECT--SERVICE INSTRUCTIONS--DELCO MODEL R-695 AUTO RADIO

GENERAL: The Delco Model R-695 is a six tube, single unit, superheterodyne receiver with a 5" dynamic speaker, designed for universal mounting on all cars.

CIRCUIT ALIGNMENT

If realignment 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.

1. Aligning I-F Stages at 455 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 grid end of condenser (Illus. B, Fig. 4) through a .1 mfd. condenser.
(c) Connect the output meter from the plate of the 6K6GT tube to ground through a .1 mfd. condenser.
(d) Set the signal generator to exactly 455 Kilocycles.
(e) Turn the volume control on full and tune the set to a position where no squeals or beat notes are noticed, also so that when the tuning control knob is rotated within narrow limits, there is no appreciable change in output.
(f) Adjust the I-F trimmers (Illus. A, B, C, D, Fig. 3) in the order mentioned until maximum output is obtained.
(g) Repeat these adjustments with as low an output from the signal generator as possible for more accurate alignment.

2. Aligning at 1530 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .000070 mfd. mica condenser.
(b) Tune the set to the extreme high frequency position against the stop.
(c) Set the signal generator to exactly 1530 Kilocycles.
(d) Adjust the oscillator shunt trimmer (Illus. E, Fig. 3) for maximum output.

3. Aligning at 1400 Kilocycles

(a) Leave the signal lead of the signal generator connected the same as before.
(b) Set the signal generator to 1400 Kilocycles.
(c) Tune the set by means of the manual control until this signal is tuned in with maximum output.
(d) Adjust the trimmer (Illus. F, Fig. 3) for maximum output.

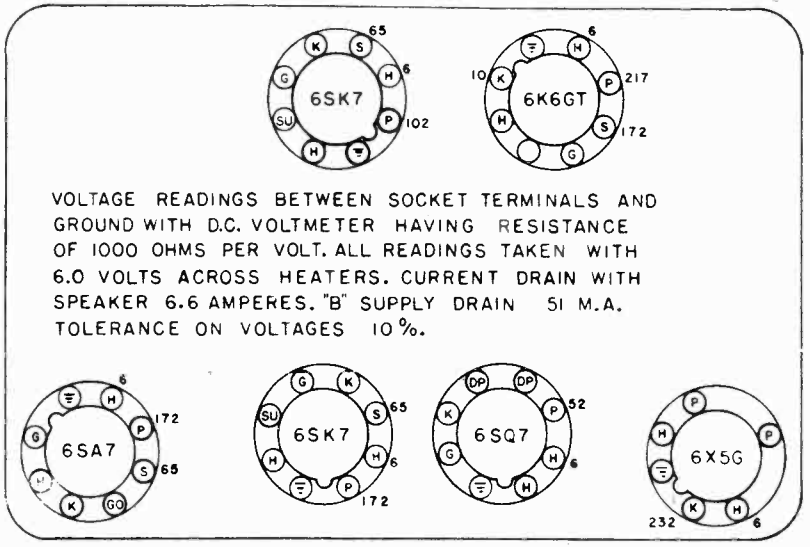


FIG. 1--TUBE SOCKET VOLTAGES

4. Aligning at 600 Kilocycles

(a) Leave the signal lead of the signal generator connected the same as before.
(b) Set the signal generator to 600 Kilocycles.
(c) Tune the set by means of the manual control until this signal is tuned in with maximum output.
(d) Adjust the trimmer (Illus. G, Fig. 4) for maximum output.
(e) Repeat adjustment made under 3 and 4.

5. Adjustment of Radio to Car Antenna

The radio should be adjusted to the car antenna after mounting in the car. The following adjustment should be made:

(a) Tune in a weak station near the low frequency end of the dial (approximately 600 Kilocycles.)
(b) Adjust the antenna trimmer (Illus. G, Fig. 4) for maximum volume.

MODEL R695

UNITED MOTORS SERVICE

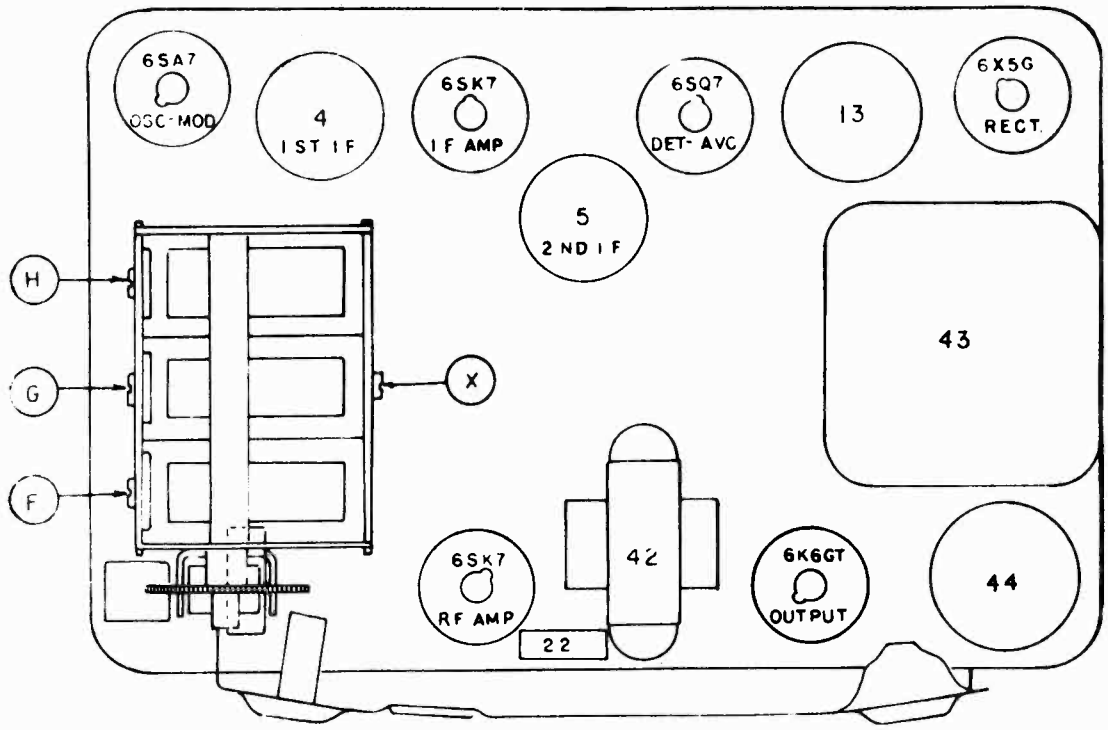


FIG. 3--PARTS LAYOUT--Top View

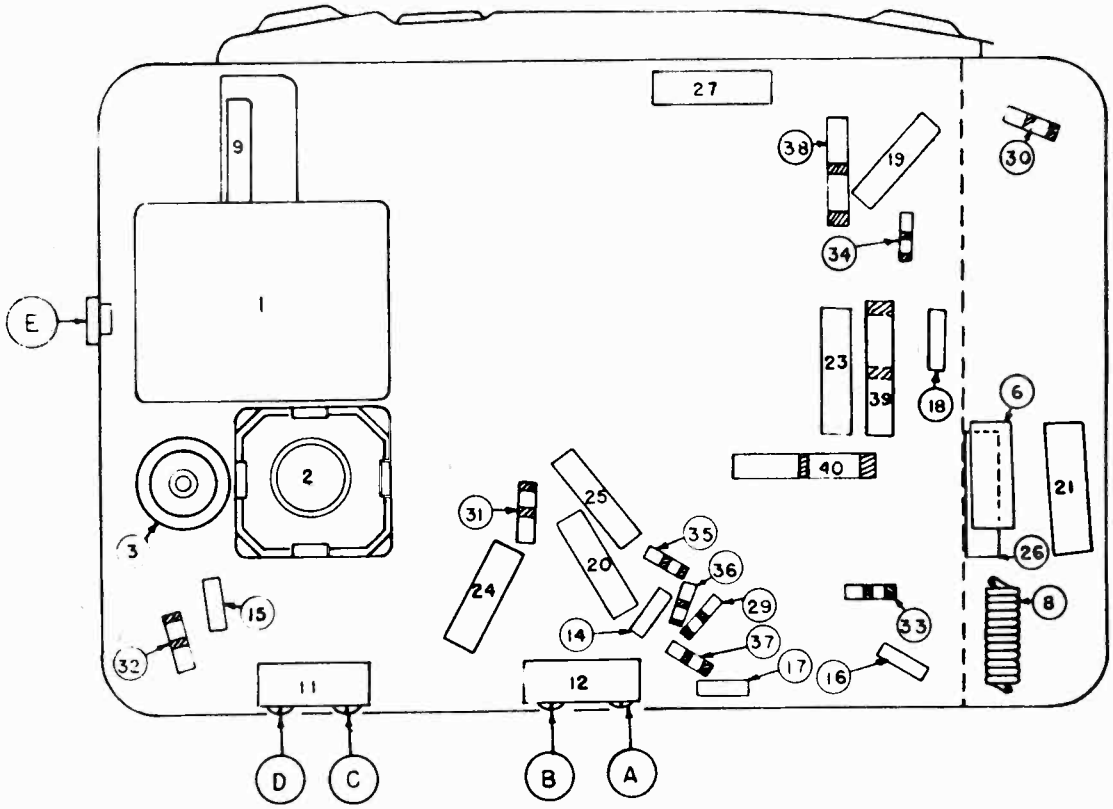


FIG. 4--PARTS LAYOUT--Bottom View

UNITED MOTORS SERVICE

MODEL R696

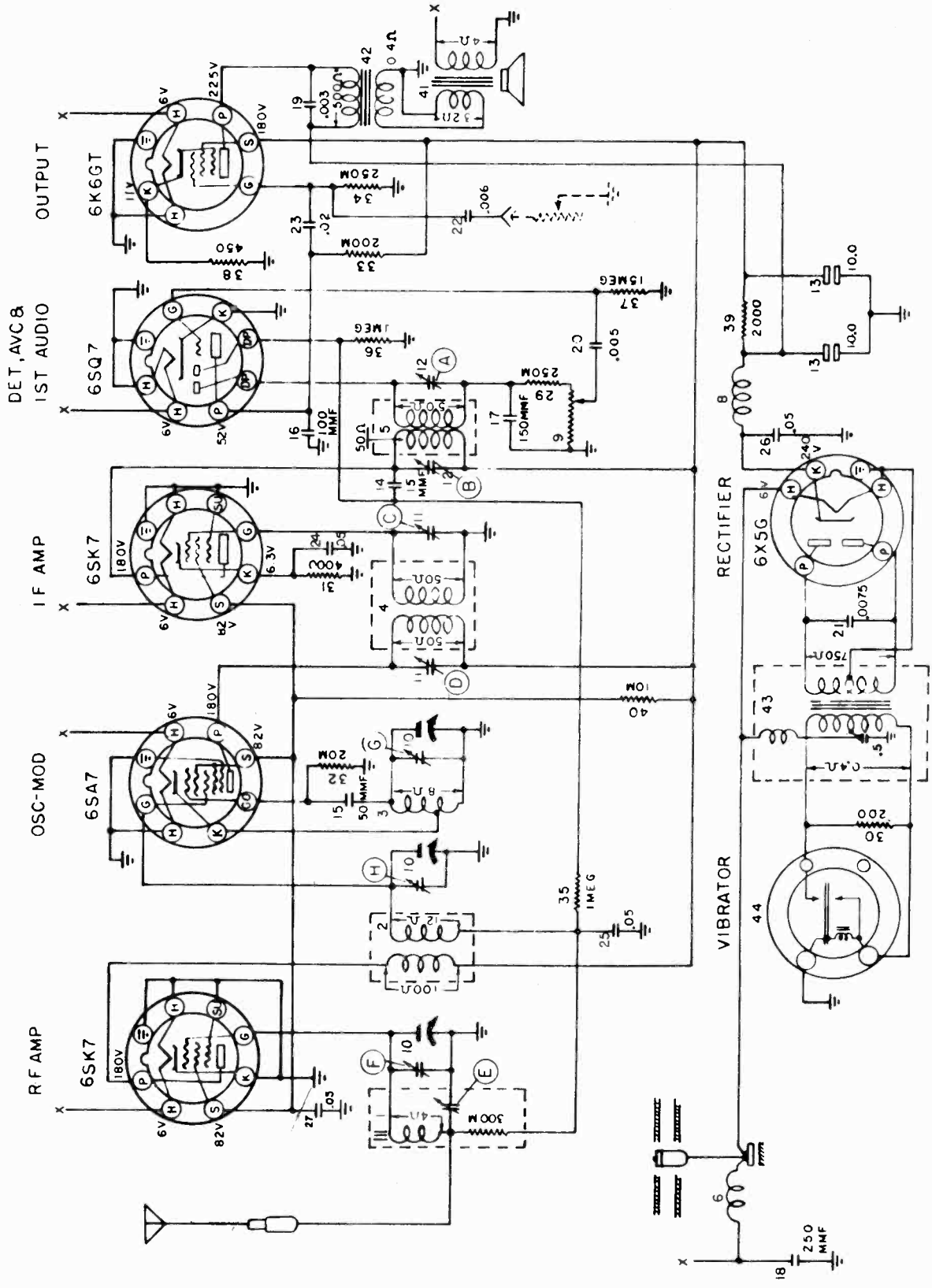


FIG. 2--DELCO MODEL R-696 CIRCUIT DIAGRAM

Date: 1-15-41

SUBJECT--SERVICE INSTRUCTIONS--DELCO MODEL R-696 AUTO RADIO

GENERAL: The Delco Model R-696 is a six tube, single unit Auto Radio with a 6" dynamic speaker, variable tone control, non-synchronous vibrator and type 6K6GT power tube.

CIRCUIT ALIGNMENT

If realignment 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.

In order to prevent the A.V.C. circuit from affecting the alignment adjustment, the lowest signal generator output should be used, which will give a readable indication on the output meter. Do not remove the bottom half of the case during 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 grid terminal of trimmer (Illus. H, Fig. 3) through a .1 mfd. condenser.
   (c) Connect the output meter from the plate of the 6K6GT tube to ground through a .1 mfd. condenser.
   (d) Set the signal generator to 260 Kilocycles.
   (e) Turn the volume control on full and turn the gang condenser to a position where no squeals or beat notes are heard and so that when the tuning condenser is rotated within narrow limits, there is no appreciable change in output.
   (f) Adjust the trimmers (Illus. A,B,C,D, Fig. 4) for maximum output. Repeat with lowest possible output from the signal generator for more accurate alignment.

2. Aligning at 1530 Kilocycles

   (a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .00007 mfd. mica condenser.
   (b) Tune the set to the extreme high frequency position against the stop.
   (c) Set the signal generator to 1530 Kilocycles.
   (d) Adjust the oscillator shunt trimmer (Illus. G, Fig. 3) for maximum output.

3. Aligning at 1400 Kilocycles

   (a) Leave the signal generator connected the same as before.
   (b) Set the signal generator to 1400 Kilocycles.

3. Aligning at 1400 Kilocycles--

   (c) Tune the set by means of the manual control until this signal is tuned in with maximum output.
   (d) Adjust the trimmers (Illus. F, H, Fig. 3) for maximum output.

4. Aligning at 600 Kilocycles

   (a) Leave the signal generator connected the same as before.
   (b) Set the signal generator to 600 kilocycles.
   (c) Tune the set by means of the manual control until this signal is tuned in with maximum output.
   (d) Adjust the trimmer (Illus. E, Fig. 4) for maximum output.
   (e) Repeat alignment under 3.

5. Adjustment of Radio to Car Antenna

   The radio should be adjusted to the car antenna after mounting in the car. The following adjustment should be made:
   (a) Tune in a weak station near the low frequency end of the dial (approximately 600 kilocycles.)
   (b) Adjust the trimmer (Illus. E, Fig. 4) for maximum volume.

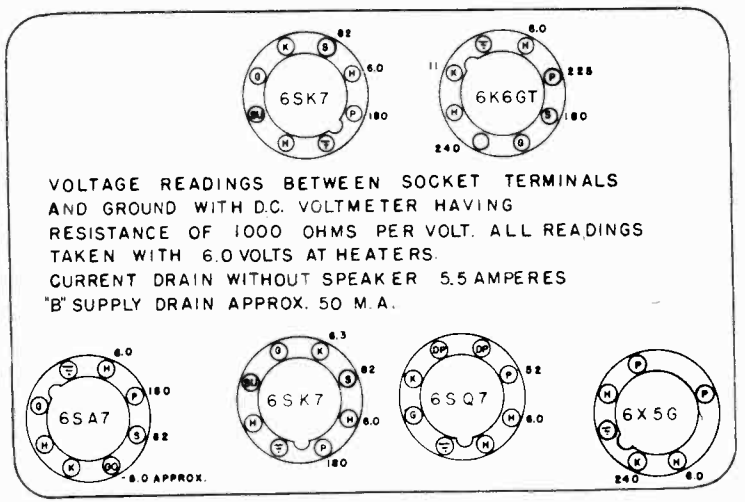


FIG. 1--TUBE SOCKET VOLTAGES

UNITED MOTORS SERVICE

MODEL R697

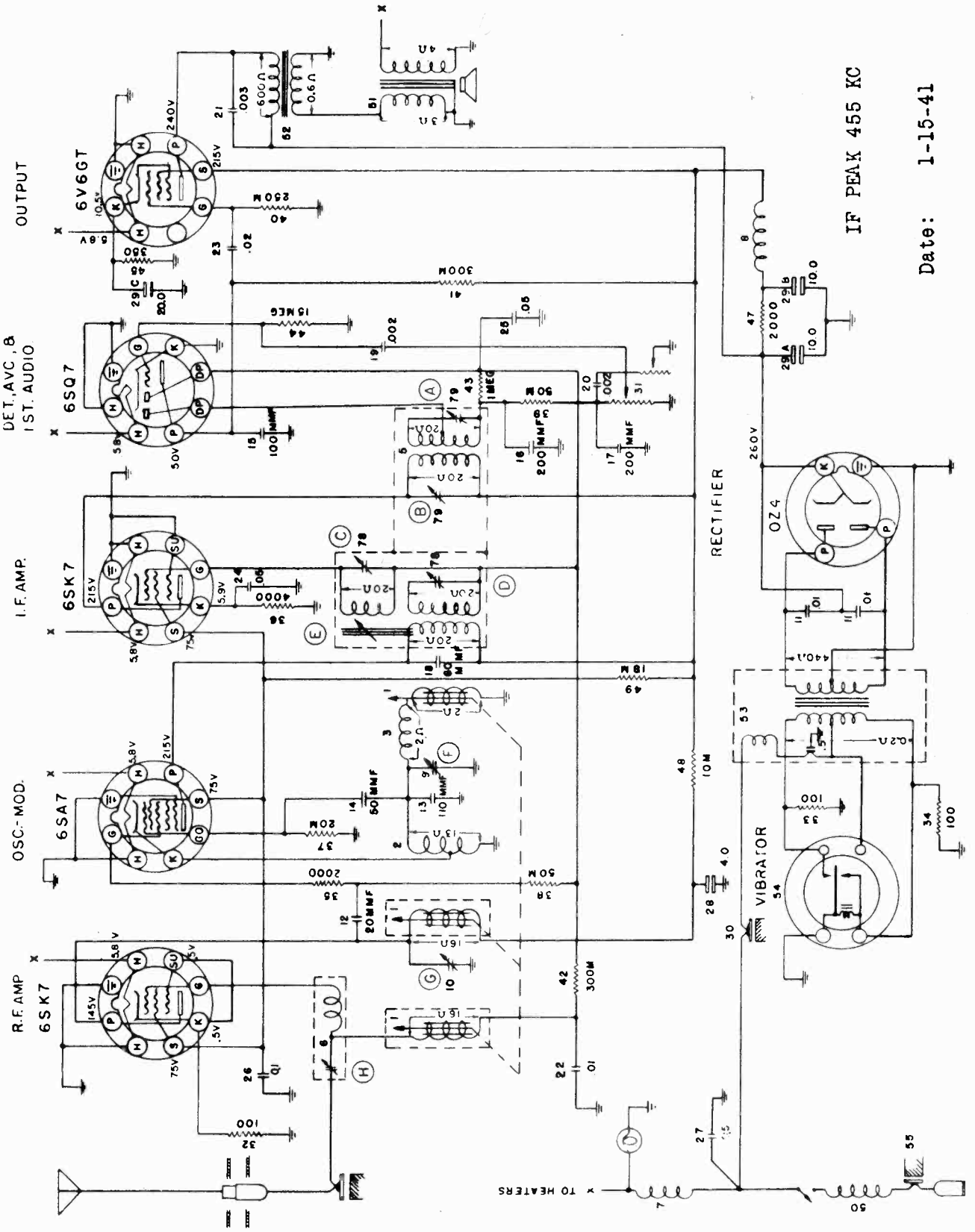


FIG. 2--DELCO MODEL R-697 CIRCUIT DIAGRAM

GENERAL: The Delco Model R-697 is a six tube single unit Superheterodyne receiver with an 7'' dynamic speaker and is designed specifically for instrument panel mounting on 1941-1940 General Motors cars.

TUNING CONTROLS : Tuning is accomplished by means of a manual tuning control or by means of five push buttons each of which drives the permeability tuning cores to preselected frequencies.

SETTING UP THE PUSH BUTTONS for any desired station is accomplished by pressing the button into its latched position and rotating in the manner of a manual tuning control until the desired station is tuned in. No locking device is required to obtain this setting.

NOTE : Do not hold the button in beyond its normal latching position when setting up stations.

The manual tuning control operates by pressing the tuning knob into its latched position and tuning in the conventional manner.

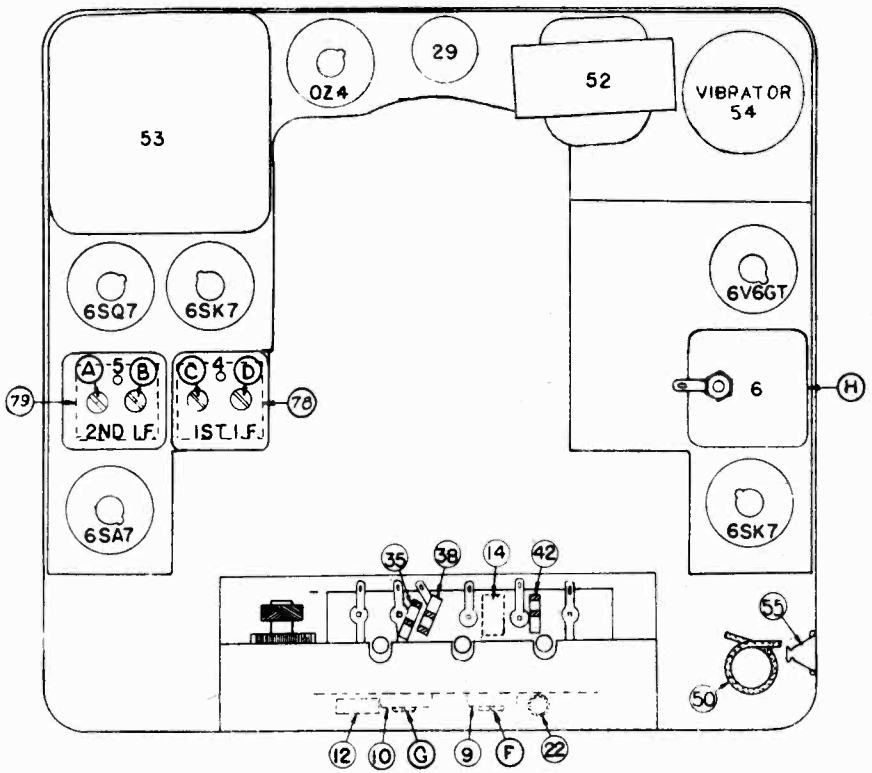


FIG. 3--PARTS LAYOUT--Top View

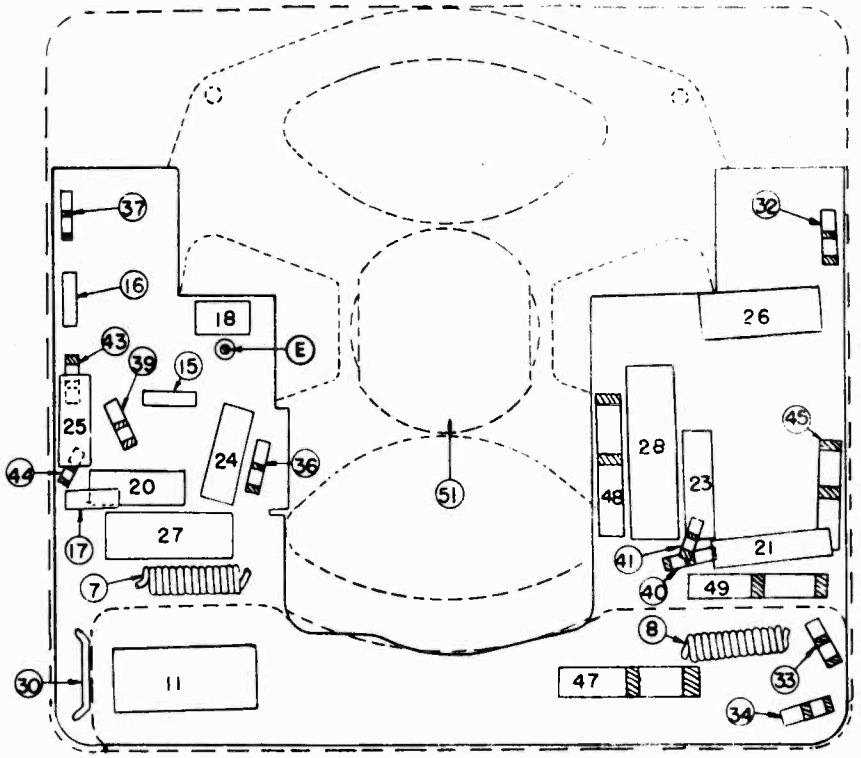


FIG. 4--PARTS LAYOUT--Bottom View

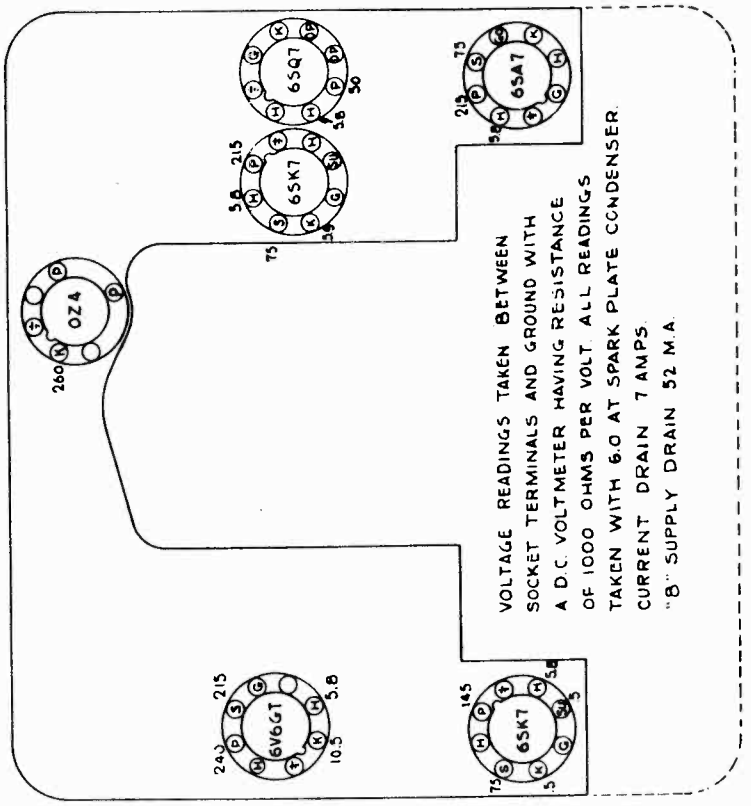


FIG. 1--TUBE SOCKET VOLTAGES

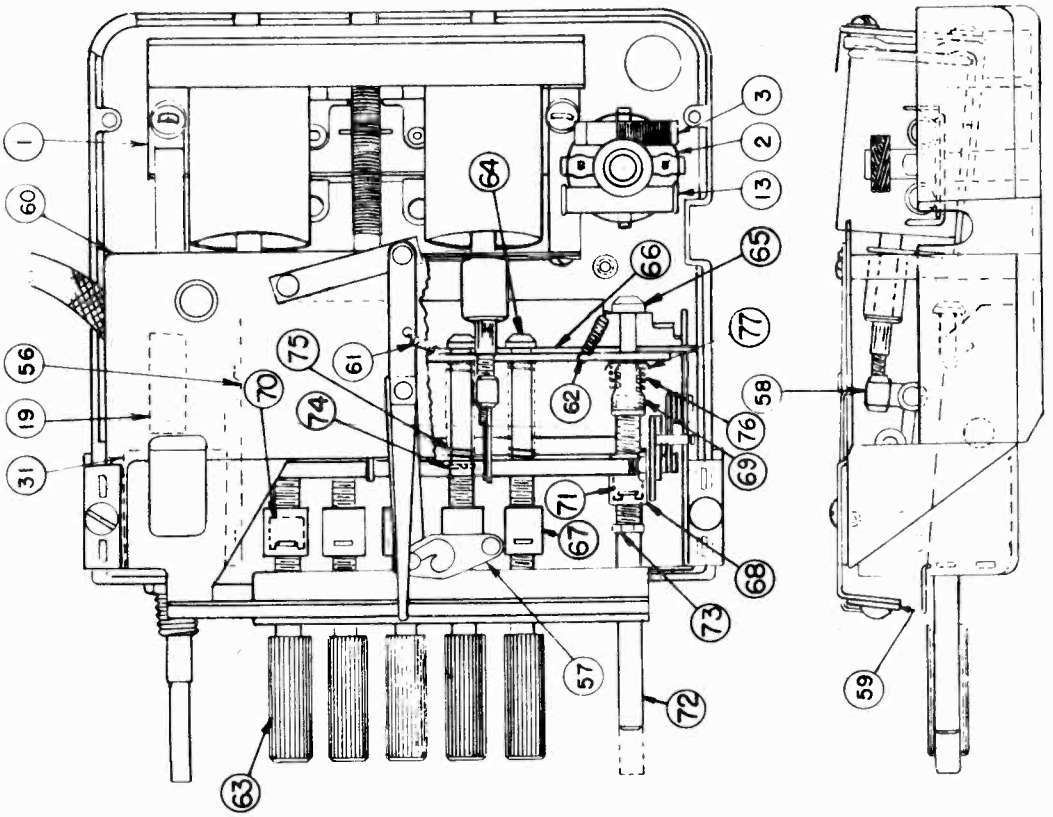


FIG. 5--PARTS LAYOUT--TUNER

CIRCUIT ALIGNMENT

If realignment 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. Extreme care should be exercised in following the alignment instructions in order to obtain the best performance possible. It will be necessary to use an insulated screw driver in making alignment adjustments.

ALIGNMENT PROCEDURE

Two seaprate alignment procedures are included in these instructions. The first, or CAPACITY ALIGNMENT, is to be considered as the usual alignment procedure and the second OR CAPACITY AND INDUCTANCE ALIGNMENT is to be used only when a tuning coil has been replaced or a major change has been made in the tuning circuits.

CAPACITY ALIGNMENT

1. Aligning I-F Stages at 455 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 grid of the 6SA7 tube (grid side of resistor #35, Fig. 3) through a .1 mfd. condenser.
(c) Connect the output meter from the plate of the 6V6GT tube to ground through a .1 mfd. condenser.

1. Aligning I-F Stages at 455 Kilocycles-

(d) Set the signal generator to 455 kilocycles.
(e) Turn the volume control on full and tune the set to a point where no squeals or beat notes are noticed, also so that when the tuning control knob is rotated within narrow limits there is no appreciable change in output.
(f) Adjust the I-F trimmers (Illus. A,B,C,D, Fig. 3) and the I.F. core adjustment (Illus. E, Fig. 4) until maximum output is obtained.
(g) Repeat these adjustments with as low an output from the signal generator as possible for more accurate alignment.

2. Aligning at 1560 kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .00007 mfd. mica condenser.
(b) Tune the set to the extreme high frequency position against the stop.
(c) Set the signal generator to 1560 kilocycles.
(d) Adjust the oscillator shunt trimmer (Illus. F, Fig. 3) for maximum output.

3. Aligning at 600 kilocycles

(a) Leave the signal generator connected the same as before.
(b) Set the signal generator to 600 kilocycles.
(c) Tune the set by means of the manual tuning control until this signal is tuned in with maximum output.
(d) Adjust the trimmers (Illus. G, H, Fig. 3) for maximum output.

CAPACITY AND INDUCTANCE ALIGNMENT

1. Aligning I-F stages at 455 kilocycles

Align the I-F stages as outlined under paragraph 1, under CAPACITY ALIGNMENT.

2. Mechanical Alignment of Cores

(a) Tune the set by means of the manual tuning control to the extreme high frequency end of the dial and against stop. (Coils will be almost withdrawn from coil forms.)
(b) Remove the pointer plate (note insulating washers under left hand screw) without disturbing the tuning mechanism.
(c) Using a spare core (Part #7240022) as a gauge, adjust the oscillator core (middle core) so that with the front surfaces of the spare core and the oscillator core exactly flush, the rear surface of the test core is exactly flush with the front end of the oscillator coil winding. This adjustment may be made using adjustment tool (part #7240160) inserted through the hole at the rear of the coil mounting bracket.

2. Mechanical Alignment of Cores

The tool should be fitted into the hole at the rear of the core and rotated without applying any thrust to the core which would move it out of its normal resting position.
(d) Manually tune the set to a point where the front surface of the oscillator core is flush with the front end of the oscillator coil fibre mounting bushing.
(e) Adjust the antenna and R.F. cores so that the front surfaces of the cores are flush with the front ends of the coil fibre mounting bushing.
(f) Replace the pointer plate assembly.

3. Aligning at 1560 kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the receiver through a .000070 mfd. mica condenser.
(b) tune the set by means of the manual tuning control to the extreme high frequency end of the dial and against the stop.
(c) Set the signal generator to 1560 kilocycles.
(d) Adjust the oscillator shunt trimmer (Illus. F, Fig. 3) for maximum output.

4. Aligning at 600 kilocycles

(a) Leave the signal generator connected the same as before.
(b) Set the signal generator to 600 kilocycles.
(c) Tune the set by means of the manual control until this signal is tuned in with maximum output.
(d) Adjust the trimmers (Illus. F,H, Fig. 3) for maximum output.

5. Aligning at 1400 kilocycles

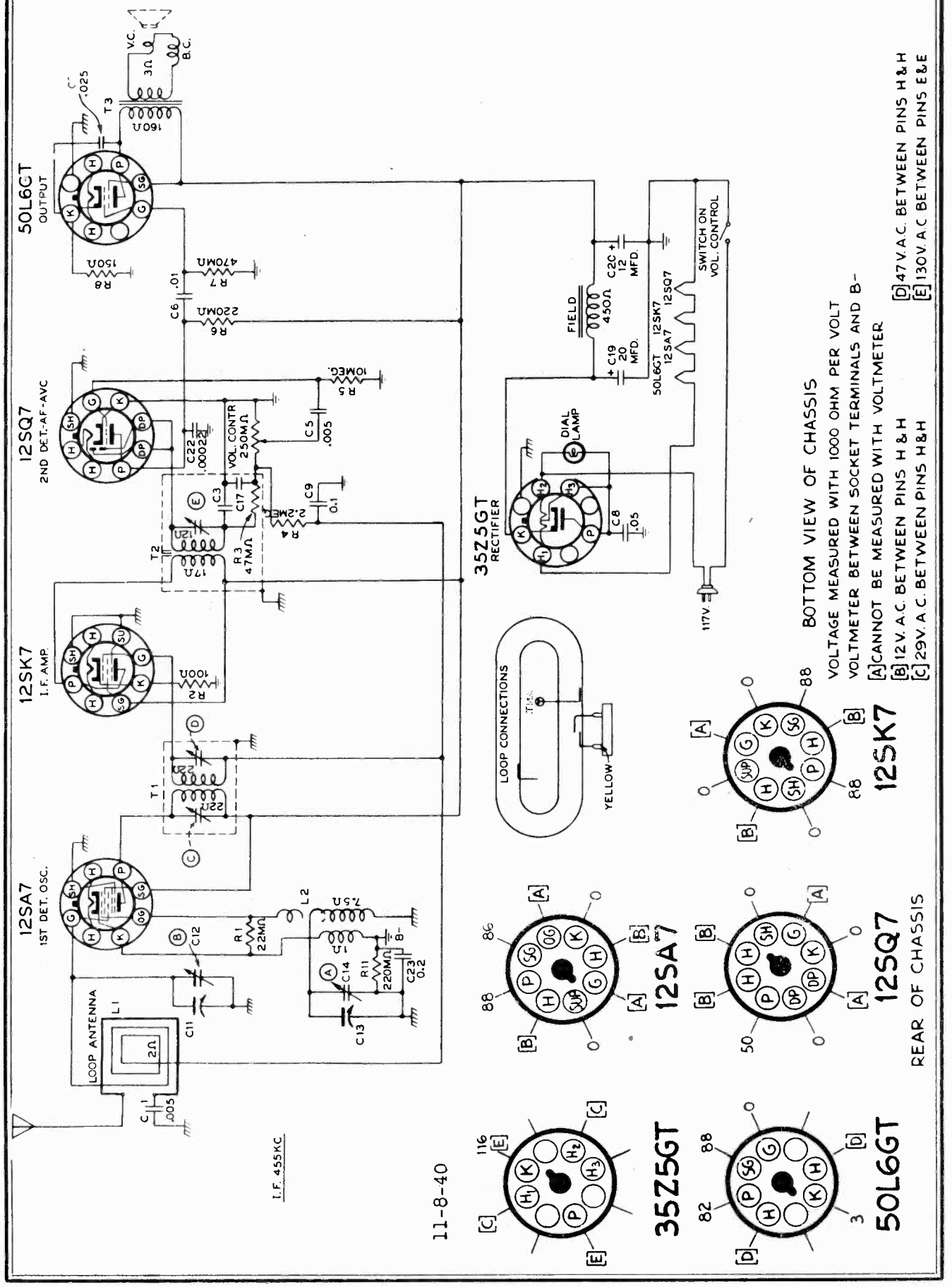
(a) Set the signal generator to 1400 kilocycles.
(b) Tune the set manually until this signal is tuned in with maximum output.
(c) Adjust the antenna and R.F. cores for maximum output.
(d) Repeat the alignment with as low an output from the signal generator as possible for more accurate alignment.
(e) Apply cement to the core screws to prevent their changing alignment.

6. Adjusting receiver to car antenna

After the receiver is reinstalled in the car, it will be necessary to readjust the antenna trimmer (Illus. H, Fig. 3), on a weak station at or near 600 kilocycles, for maximum output.

UNITED MOTORS SERVICE

MODEL R1170 Deloo



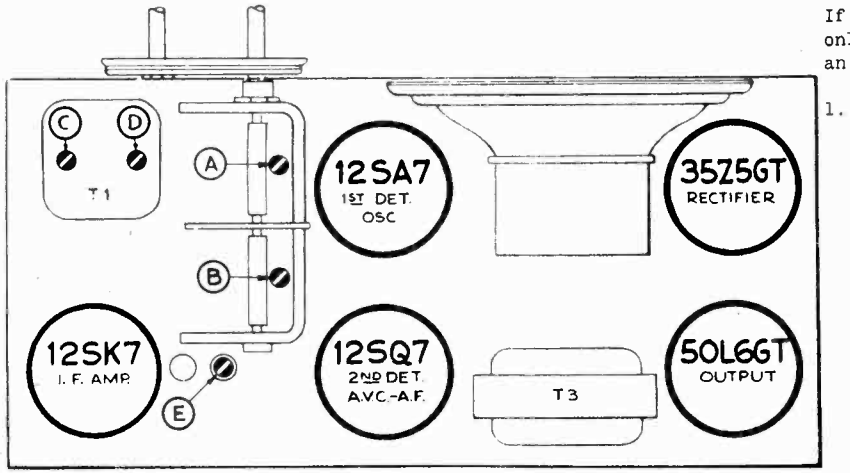


FIG. 3--PARTS LAYOUT--Top View

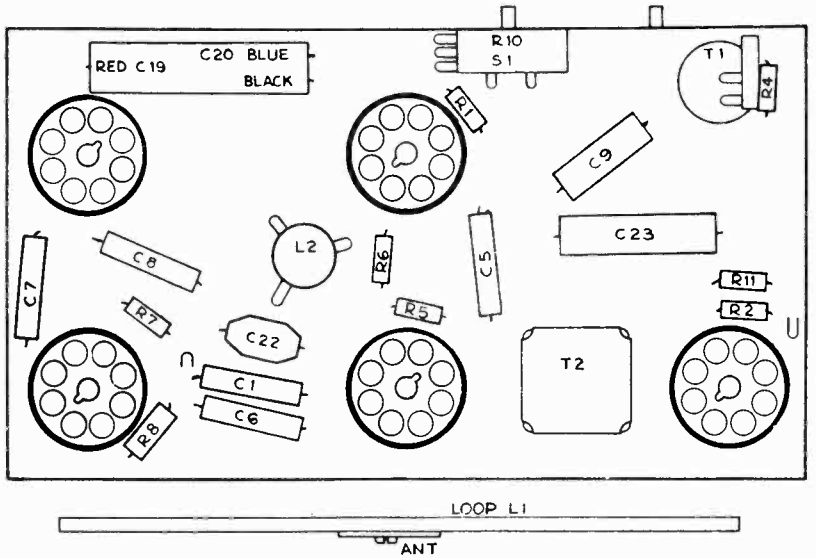


FIG. 4--PARTS LAYOUT--Bottom View

If realignment if found necessary, the circuits can be properly adjusted only with the use of a calibrator test oscillated or signal generator and an output meter.

1. Aligning I-F Stages at 455 Kilocycles

(a) Connect the ground lead of the signal generator to the chassis through a .01 mfd. condenser.

(b) Connect the signal lead of the signal generator to the grid terminal of the 12SK7 tube through a .01 mfd. condenser.

(c) Connect the output meter across the primary of the output transformer.

(d) Set the signal generator to exactly 455 K.C.

(e) Tune the receiver to quiet point at 1600 K.C. end of dial, set Volume Control full on, adjust the trimmer on the second I-F transformer (Illus. E, Fig. 3) for maximum output.

(f) Connect the signal lead of the signal generator to the grid of the 12SA7 tube.

(g) Adjust the trimmers on the first I-F transformer (Illus. C, D, Fig. 3) for maximum output.

2. Aligning at 1720 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the loop through .0001 mfd. condenser.

(b) Set signal generator to exactly 1720 K.C.

(c) Tune receiver to 1720 K.C., condenser plates full clockwise (out of mesh).

(d) Adjust oscillator trimmer condenser (Illus. A, Fig. 3) for maximum output.

3. Aligning at 1500 Kilocycles

(a) Leave the signal lead of the signal generator connected as above.

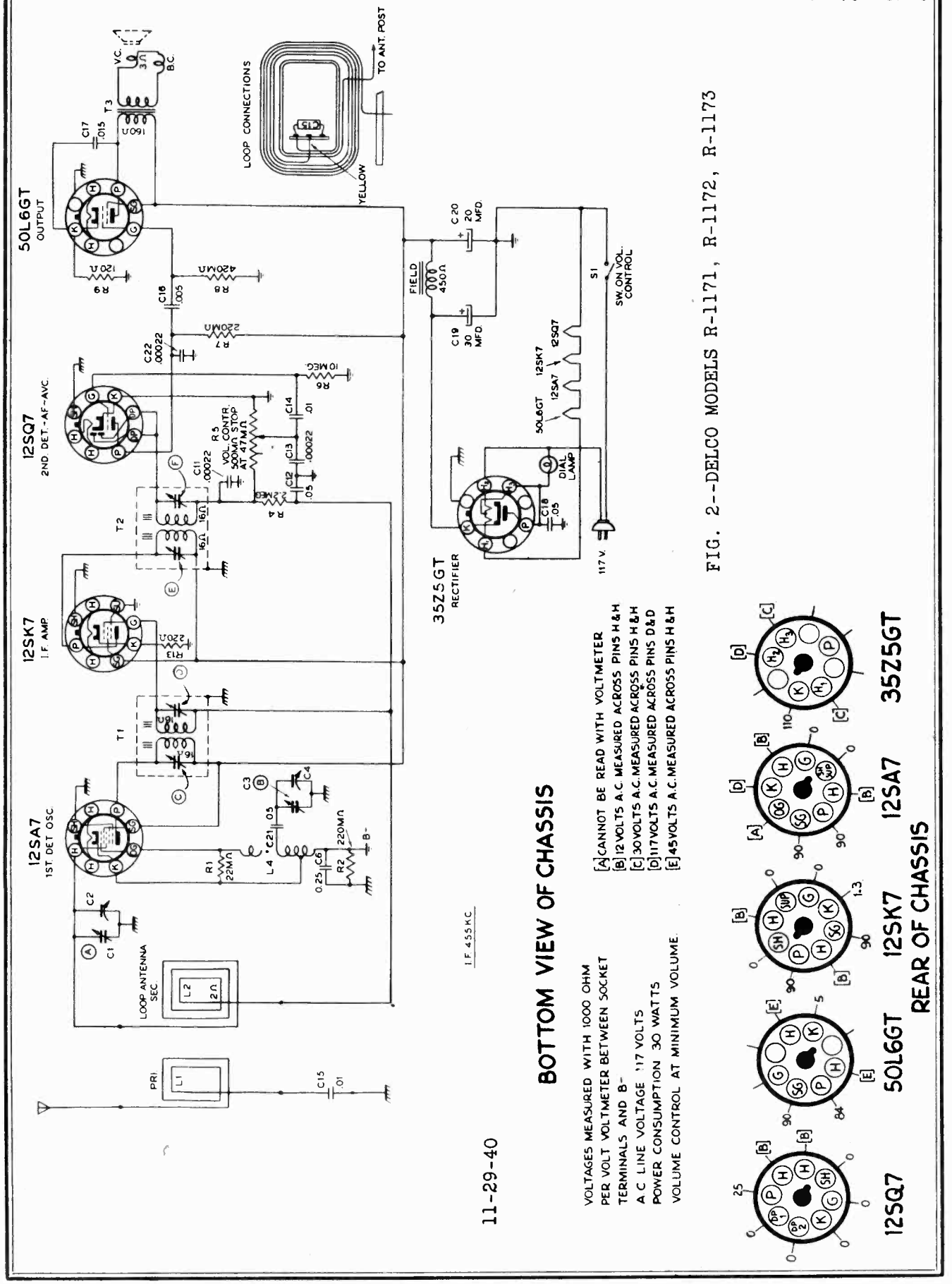
(b) Set the signal generator to 1500 K.C.

(c) Rotate the tuning control knob until this signal is tuned in with maximum output.

(d) Adjust the antenna trimmer (Illus. B. Fig. 3) for maximum output.

UNITED MOTORS SERVICE

MODELS R1171, R1172
R1173 Delco



BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 1000 OHM
PER VOLT VOLTMETER BETWEEN SOCKET
TERMINALS AND B-
A.C. LINE VOLTAGE 117 VOLTS
POWER CONSUMPTION 30 WATTS
VOLUME CONTROL AT MINIMUM VOLUME.

[A] CANNOT BE READ WITH VOLTMETER
[B] 12 VOLTS A.C. MEASURED ACROSS PINS H & H
[C] 30 VOLTS A.C. MEASURED ACROSS PINS H & H
[D] 117 VOLTS A.C. MEASURED ACROSS PINS D & D
[E] 45 VOLTS A.C. MEASURED ACROSS PINS H & H

FIG. 2--DELCO MODELS R-1171, R-1172, R-1173

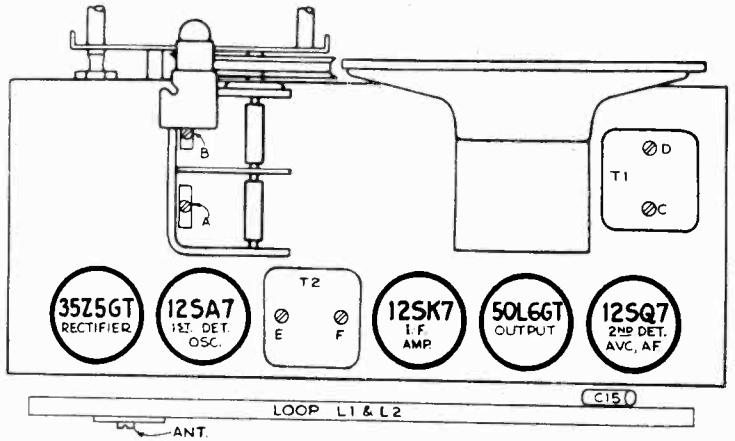


FIG. 3--PARTS LAYOUT--Top View

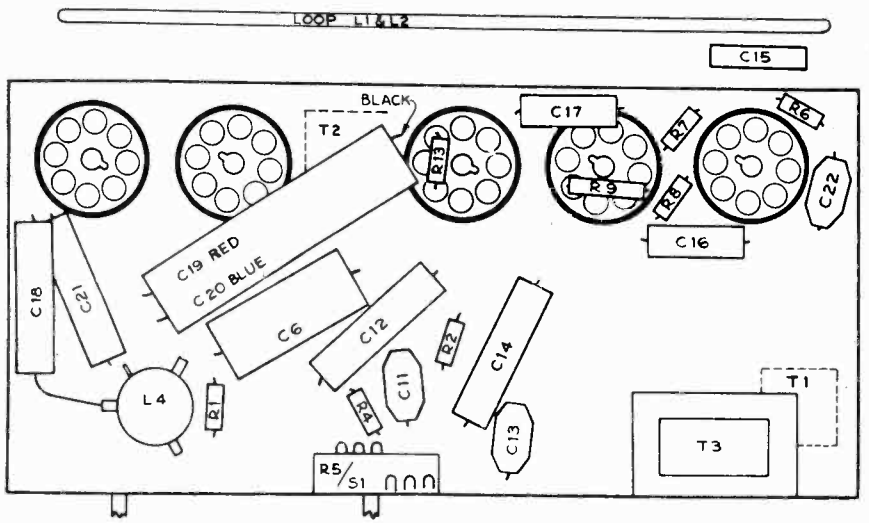


FIG. 4--PARTS LAYOUT--Bottom View

1. Aligning I-F Stages at 455 Kilocycles

(a) Connect the ground lead of the signal generator to the chassis through a .01 mfd. capacitor.

(b) Connect the signal lead of the signal generator to the grid terminal of the 12SK7 tube through a .01 mfd. condenser.

(c) Connect the output meter across the primary of the output transformer.

(d) Set the signal generator to exactly 455 KC.

(e) Tune receiver to quiet point at 1,600 KC end of dial, set volume control full on, adjust the trimmers on the second I-F transformer (Illus. E & F Fig. 3) for maxinum output.

(f) Connect the signal lead of the signal generator to the grid of the 12SA7 tube.

(g) Adjust the trimmers on the first I-F transformer (Illus. C & D Fig. 3) for maximum output.

2. Aligning at 1600 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the loop through 100 mmfd. capacitor.

(b) Set signal generator to exactly 1600 KC.

(c) Tune receiver to 1600 KC., condenser plates full clockwise (out of mesh).

(d) Adjust oscillator trimmer condenser (Illus. B, Fig. #3) for maximum output.

3. Aligning at 1400 Kilocycles

(a) Leave the signal lead of the signal generator connected as above.

(b) Set the signal generator to 1400 KC.

(c) Rotate the tuning control knob until this signal is tuned in with maximum output.

(d) Adjust the antenna trimmer (Illus. A, Fig. #3) for maximum output.

UNITED MOTORS SERVICE

MODEL R1174 Deloo

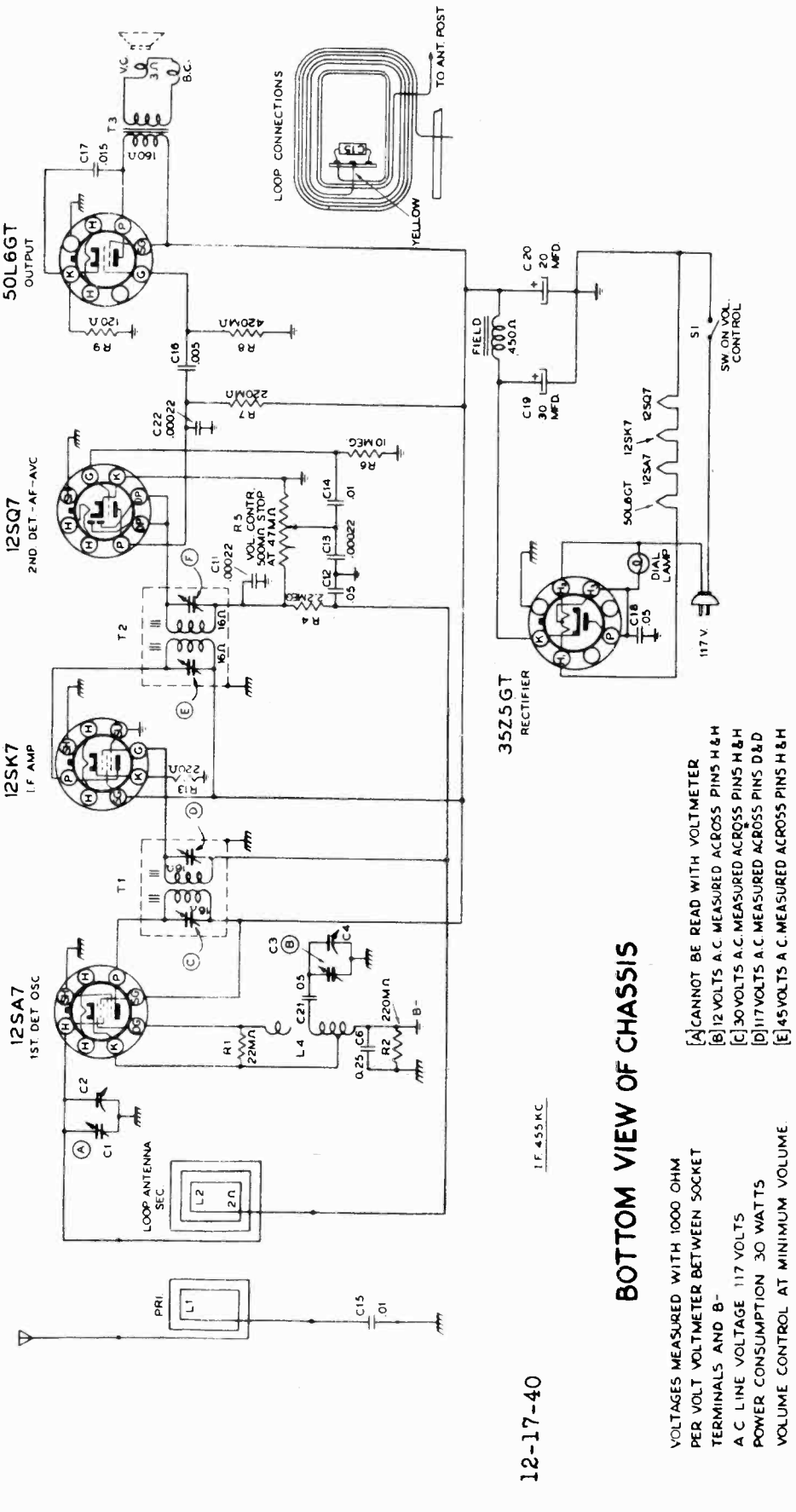


FIG. 2--DELCO MODEL R-1174

BOTTOM VIEW OF CHASSIS

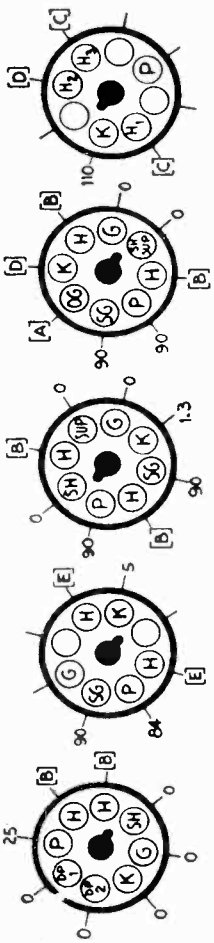
VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND B-

A C LINE VOLTAGE 117 VOLTS

POWER CONSUMPTION 30 WATTS

VOLUME CONTROL AT MINIMUM VOLUME

[A] CANNOT BE READ WITH VOLTMETER
[B] 12 VOLTS A.C. MEASURED ACROSS PINS H & H
[C] 30 VOLTS A.C. MEASURED ACROSS PINS H & H
[D] 117 VOLTS A.C. MEASURED ACROSS PINS D & D
[E] 45 VOLTS A.C. MEASURED ACROSS PINS H & H



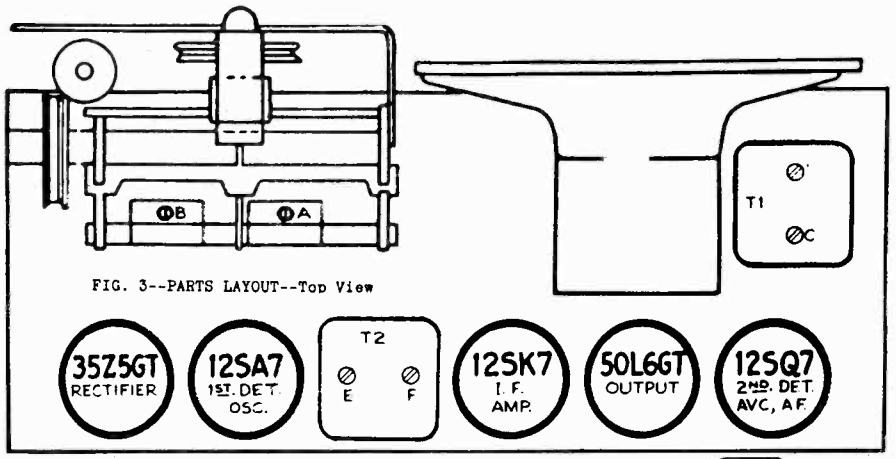


FIG. 3--PARTS LAYOUT--Top View

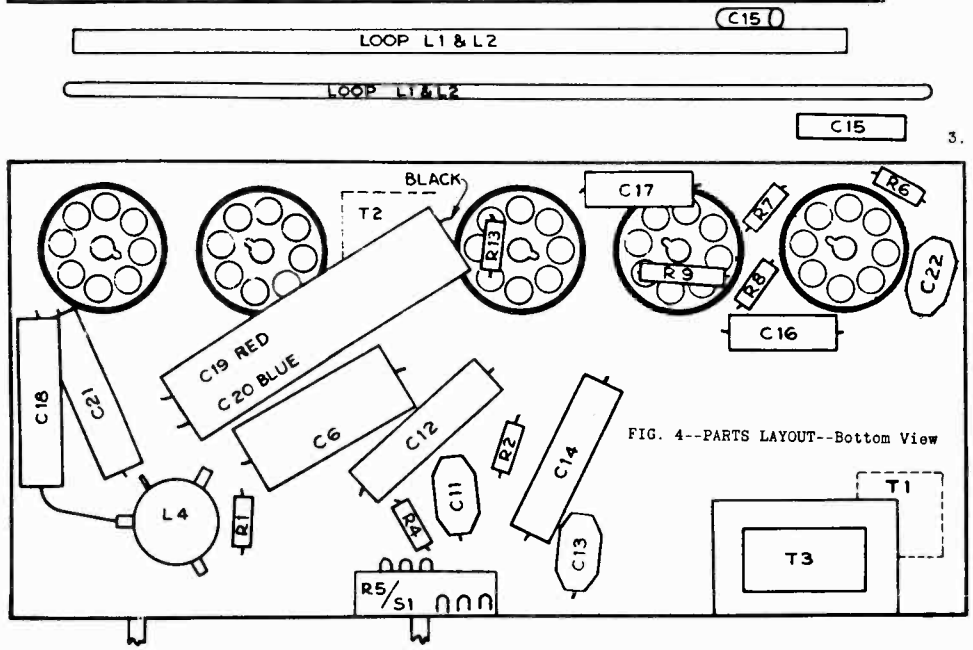


FIG. 4--PARTS LAYOUT--Bottom View

1. Aligning I-F Stages at 455 Kilocycles

(a) Connect the ground lead of the signal generator to the chassis through a .01 mfd. capacitor.
(b) Connect the signal lead of the signal generator to the grid terminal of the 12SK7 tube through a .01 mfd. condenser.
(c) Connect the output meter across the primary of the output transformer.
(d) Set the signal generator to exactly 455 KC.
(e) Tune receiver to quiet point at 1,600 KC end of dial, set volume control full on, adjust the trimmers on the second I-F transformer (Illus. E & F, Fig. 3) for maximum output.
(f) Connect the signal lead of the signal generator to the grid of the 12SA7 tube.
(g) Adjust the trimmers on the first I.F. transformer (Illus. C & D., Fig. 3) for maximum output.

2. Aligning at 1600 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the loop through 100 mmfd. capacitor.
(b) Set signal generator to exactly 1600 KC.
(c) Tune receiver to 1600 KC, condenser plates full clockwise (out of mesh).
(d) Adjust oscillator trimmer condenser (Illus. B, Fig. #3) for maximum output.

3. Aligning at 1400 Kilocycles

(a) Leave the signal lead of the signal generator connected as above.
(b) Set the signal generator to 1400 KC.
(c) Rotate the tuning control knob until this signal is tuned in with maximum output.
(d) Adjust the antenna trimmer (Illus. A, Fig. #3) for maximum output.

GENERAL: The Delco Model R-1174 is a five-tube, AC-DC superheterodyne receiver with 5" electrodynamic speaker.

ANTENNA: A loop antenna is built inside the back cover of this radio and 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 terminal is provided for coupling an outside antenna to the receiver.

UNITED MOTORS SERVICE MODEL R1175 Delco

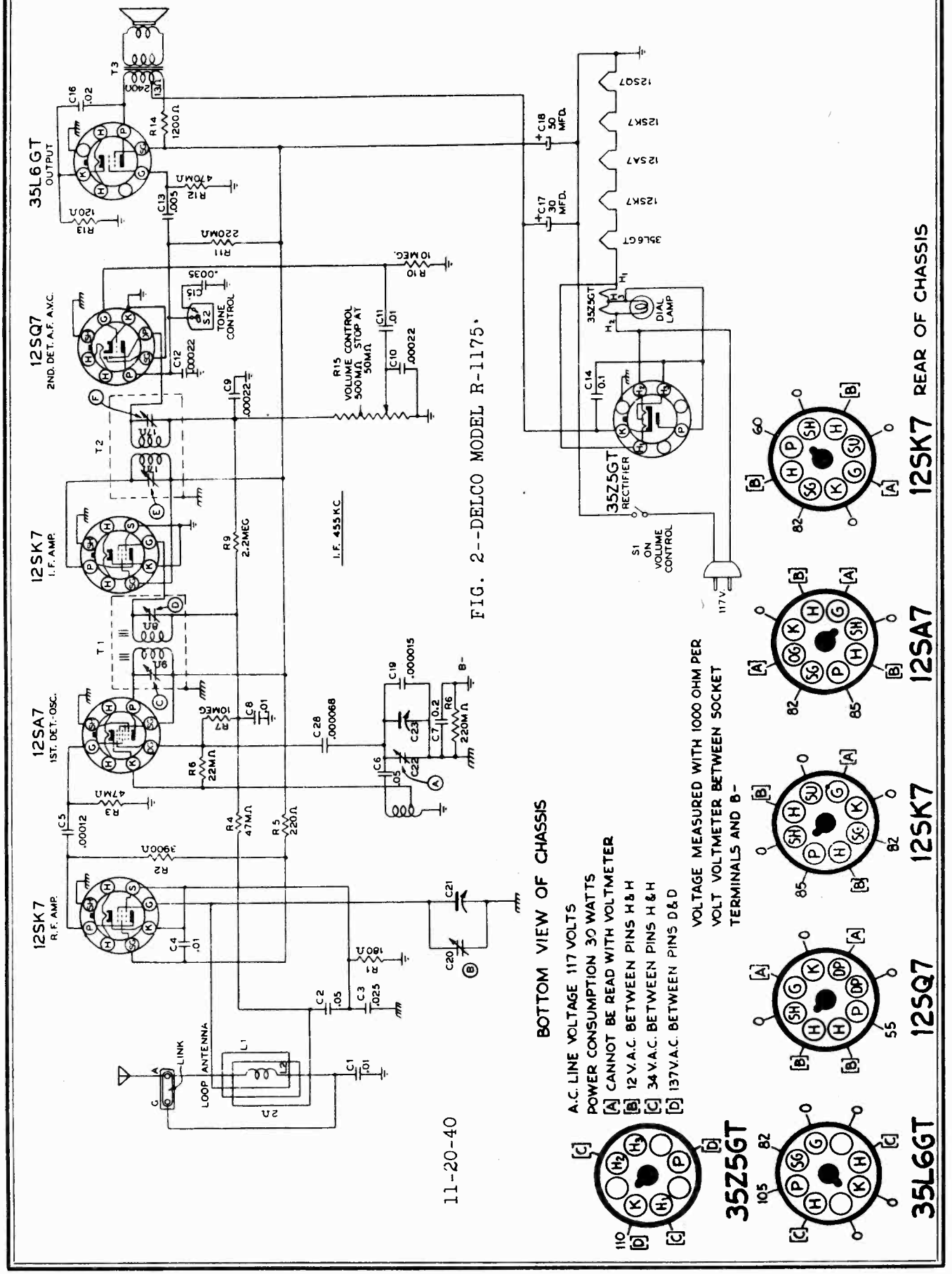


FIG. 2--DELCO MODEL R-1175.

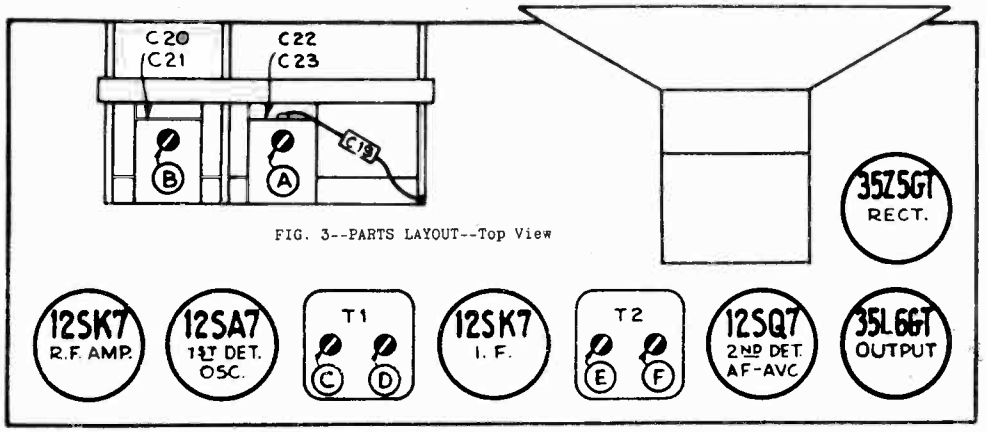


FIG. 3--PARTS LAYOUT--Top View

Aligning I-F Stages at 455 Kilocycles

(a) Connect the ground lead of the signal generator to the chassis through a .01 mfd. condenser.

(b) Connect the signal lead of the signal generator to the grid terminal of the 12SK7 tube through a .01 mfd. condenser.

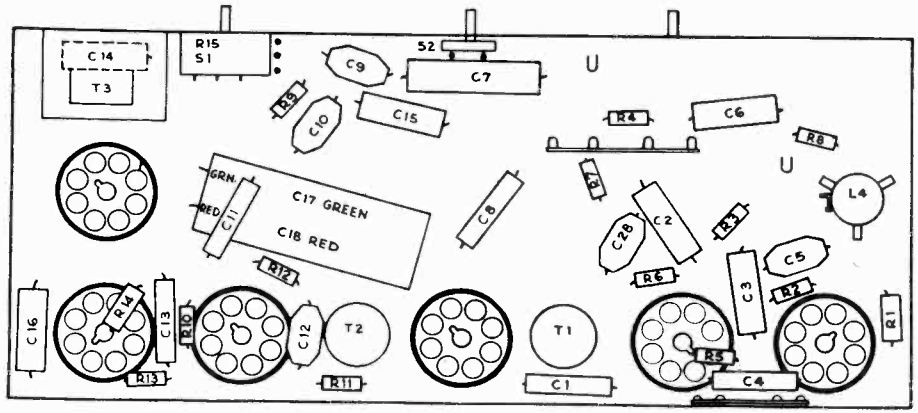


FIG. 4--PARTS LAYOUT--Bottom View

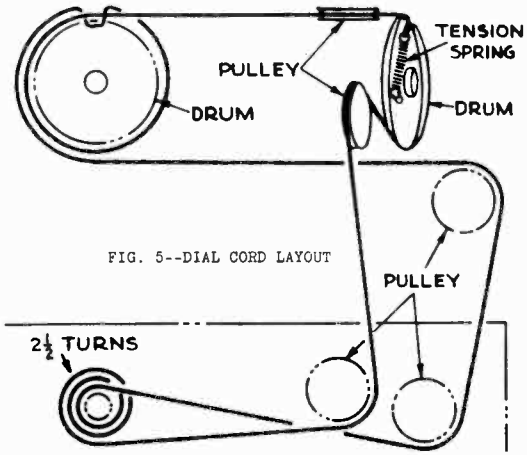


FIG. 5--DIAL CORD LAYOUT

(c) Connect the output meter across the primary of the output transformer.

(d) Set the signal generator to exactly 455 KC.

(e) Tune the receiver to quiet point at 1600 KC end of dial, set Volume Control full on, adjust the trimmers on the second I-F transformer (Illus. E, F, Fig. #3) for maximum output.

(f) Connect the signal lead of the signal generator to the grid of the 12SA7 tube.

(g) Adjust the trimmer on the first I-F transformer (Illus. C, D, Fig. #3) for maximum output.

Aligning at 1600 Kilocycles

(a) Connect the signal lead of the signal generator to the antenna terminal of the loop through .0001 mfd. condenser.

(b) Set the signal generator to exactly 1600 KC.

(c) Tune receiver to 1600 KC. condenser plates full clockwise (out of mesh)

(d) Adjust oscillator trimmer condenser (Illus. A, Fig. 3) for maximum output.

Aligning at 1400 Kilocycles

(a) Leave the signal lead of the signal generator connected as above.

(b) Set the signal generator to 1400 KC.

(c) Rotate the tuning control knob until this signal is tuned in with maximum output.

(d) Adjust the antenna trimmer (Illus. B, Fig.3) for maximum output.

UNITED MOTORS SERVICE

MODELS R1176,R1181
Delco

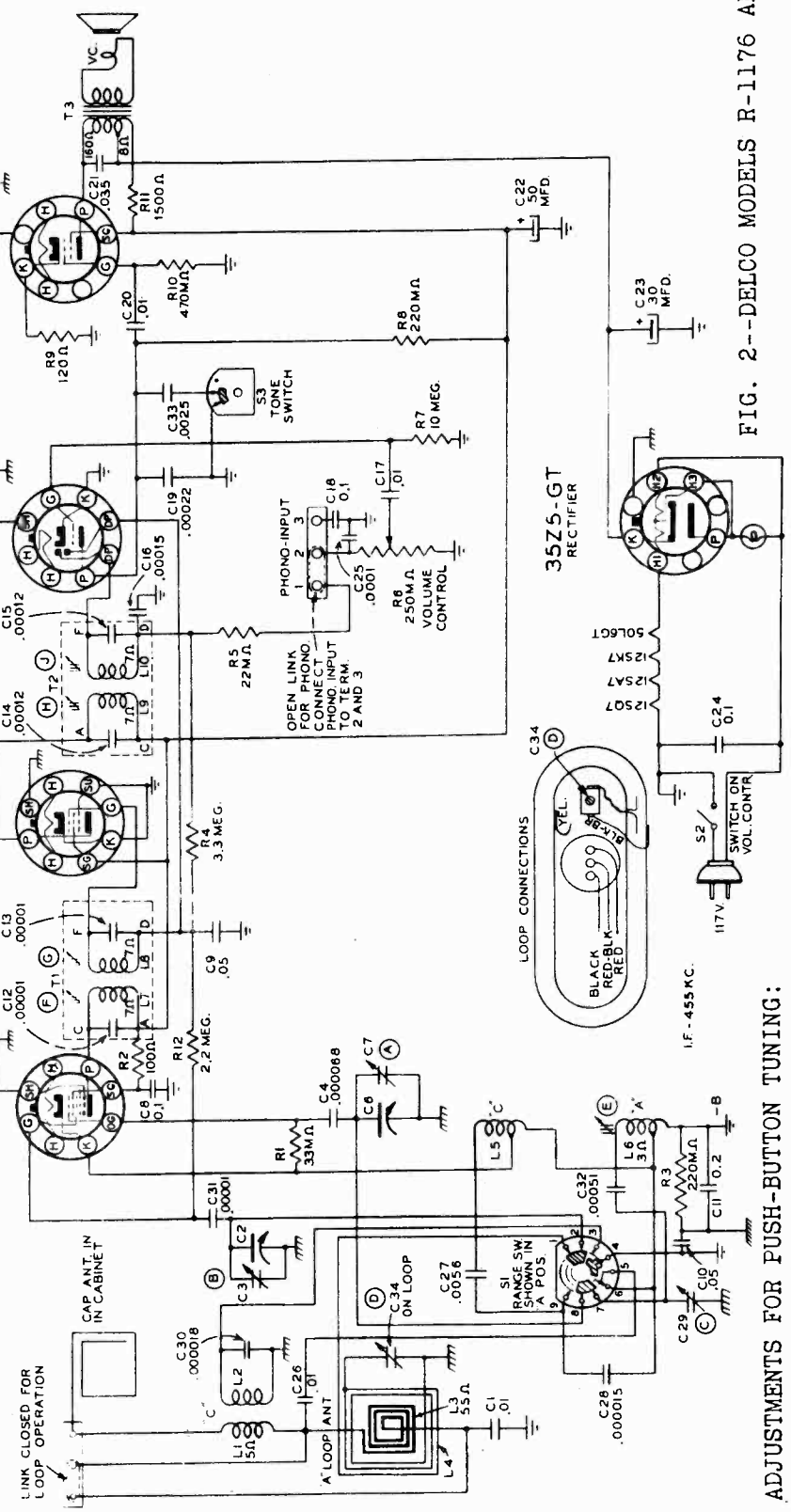


FIG. 2--DELCO MODELS R-1176 AND R-1181

ADJUSTMENTS FOR PUSH-BUTTON TUNING:

TUNER DATA ALSO FOR MODEL R1177

1. Press down on the first push button and hold it down. The screw in back of the push button is now accessible and should be loosened one or two turns with a screwdriver.
2. While still holding down the push button, tune in the station with the tuning knob. When the station is heard at its best, tighten up the screw in back of the push button. Now let go of the push button, turn the tuning knob in order to detune and again press down the button and let go. To check, repeat action.
3. Proceed to set up the other five push buttons in a similar manner.

11-29-40

BOTTOM VIEW OF CHASSIS

A.C. LINE VOLTAGE 117 VOLTS
VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND B-
VOLUME CONTROL AT MINIMUM VOLUME

POWER CONSUMPTION 30 WATTS
[A] CANNOT BE READ WITH VOLTMETER
[B] 12 VOLTS A.C. MEASURED ACROSS PINS H&H
[C] 33 VOLTS A.C. MEASURED ACROSS PINS H&H
[D] 117 VOLTS A.C. MEASURED ACROSS PINS D&D
[E] 47 VOLTS A.C. MEASURED ACROSS PINS H&H

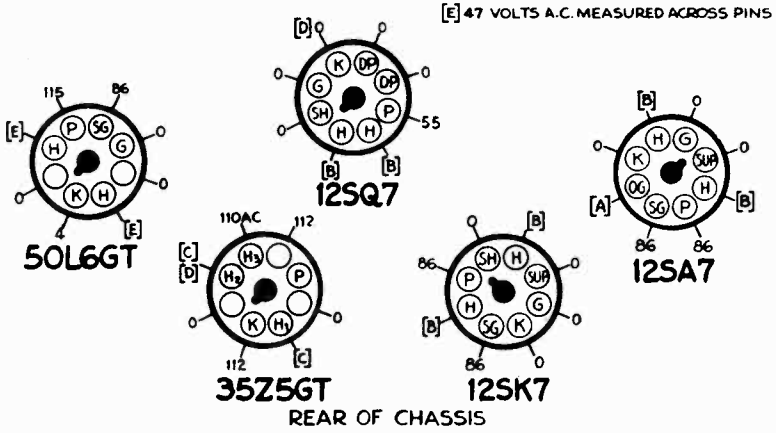


FIG. 1--TUBE SOCKET VOLTAGES

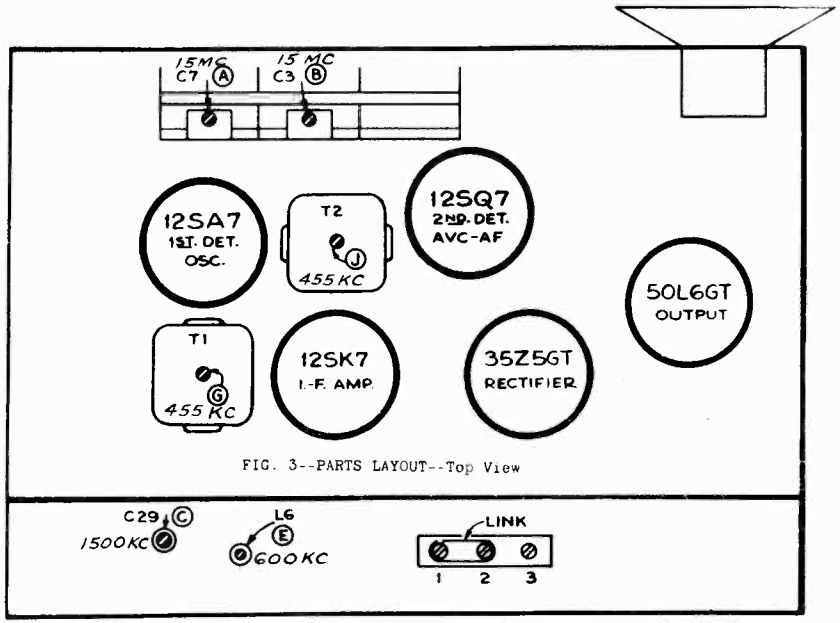


FIG. 3--PARTS LAYOUT--Top View

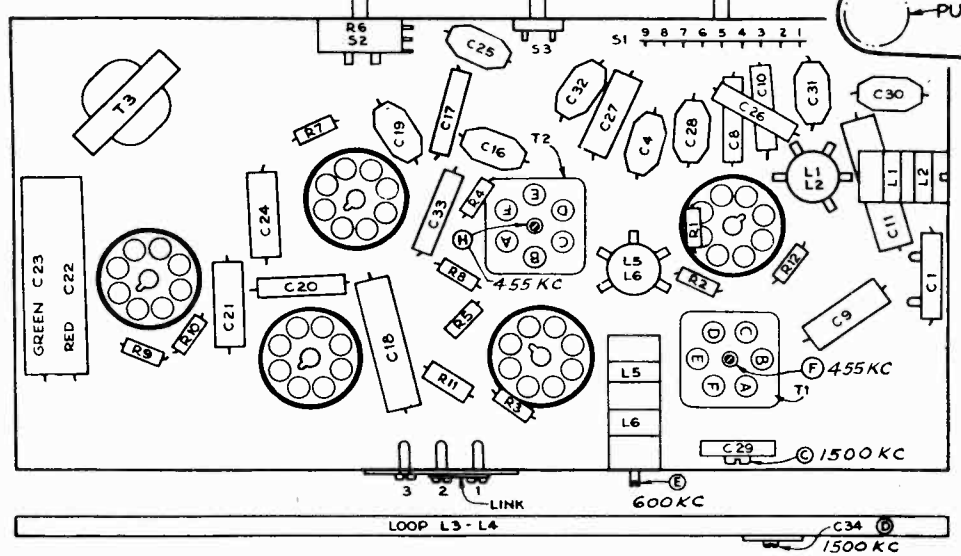


FIG. 4--PARTS LAYOUT--Bottom View

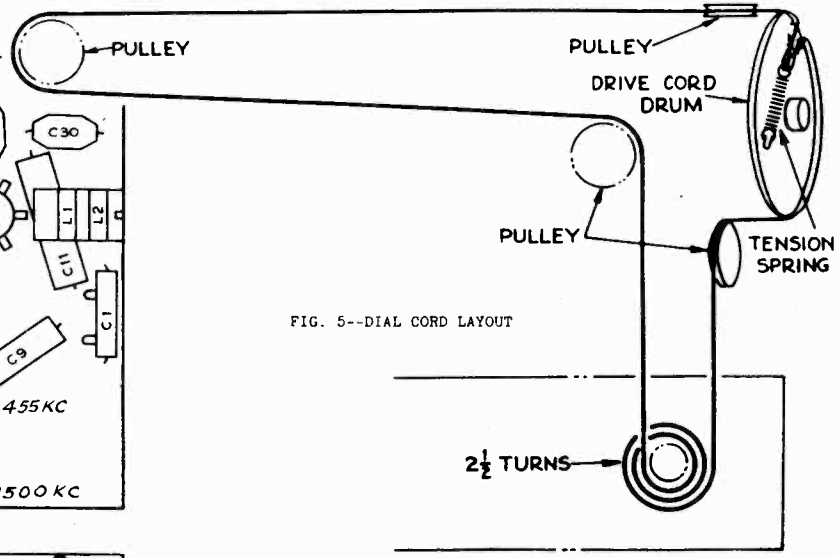


FIG. 5--DIAL CORD LAYOUT

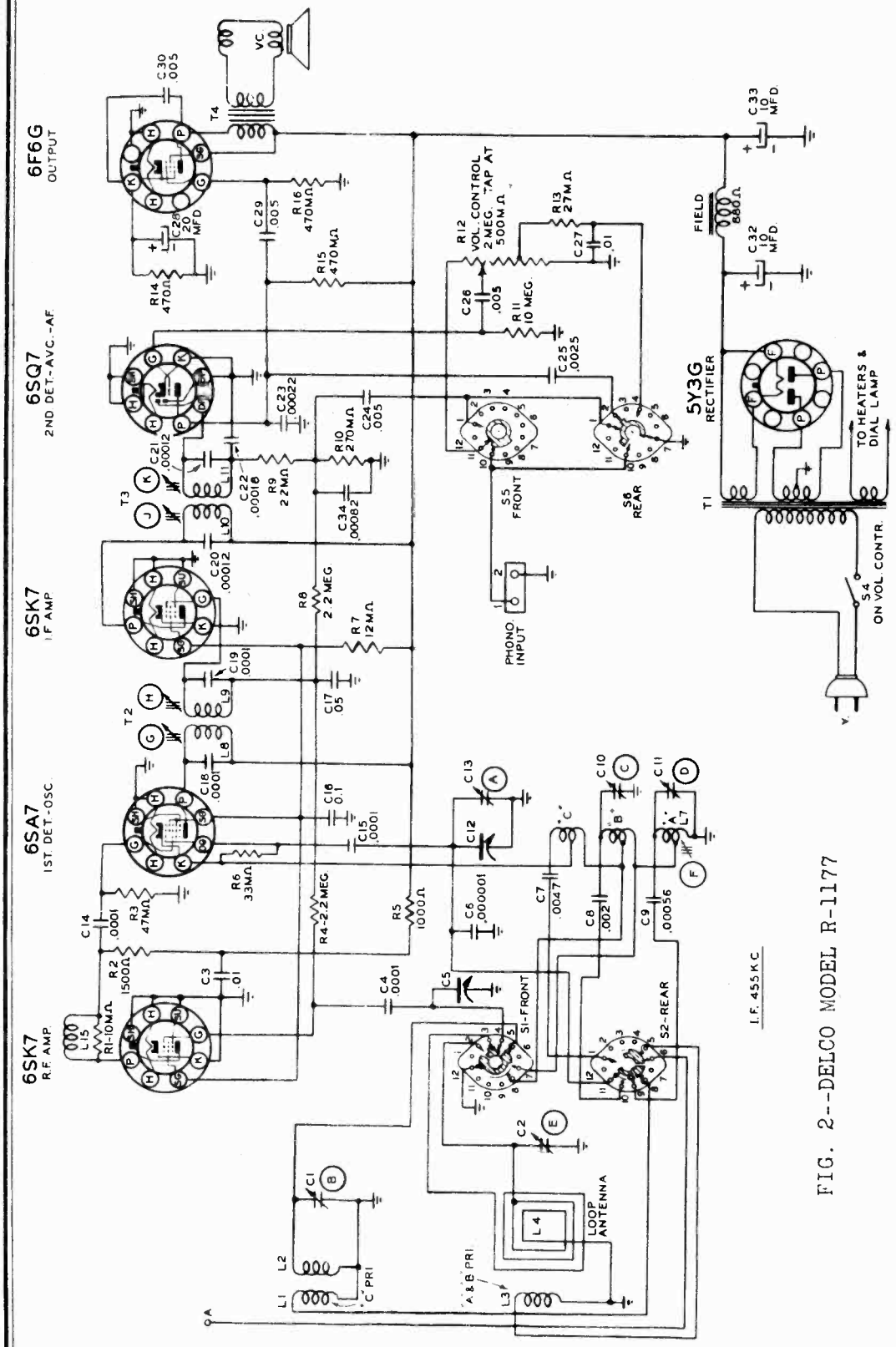


FIG. 2--DELCO MODEL R-1177

ANTENNA: A loop antenna is built inside the back of the radio. 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.

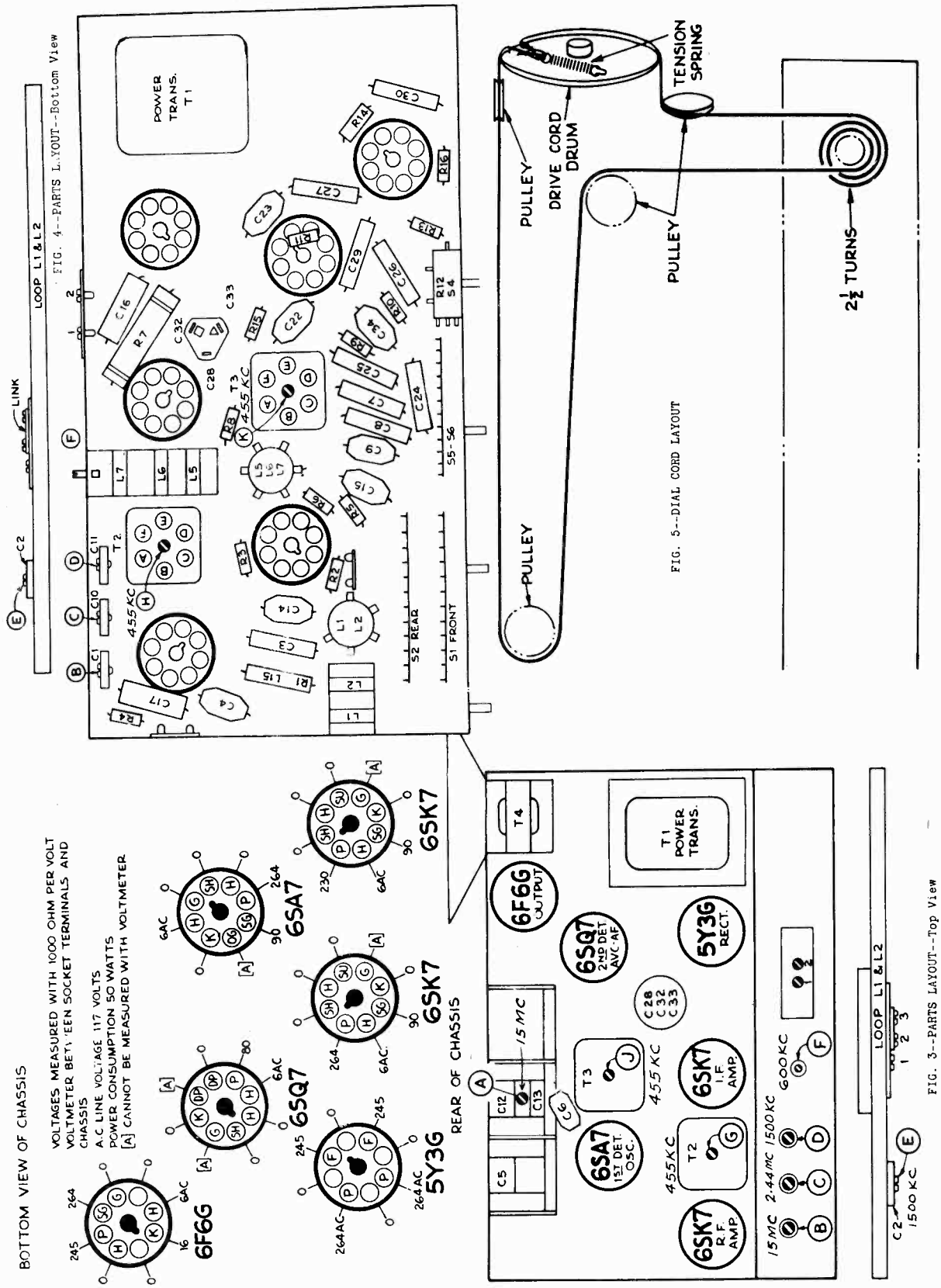
FOR TUNER SEE INDEX

Terminals are provided for connecting an outside antenna and ground where required.

12-16-40

MODEL R1177 Deloo

UNITED MOTORS SERVICE



UNITED MOTORS SERVICE MODEL R1178 Deloo

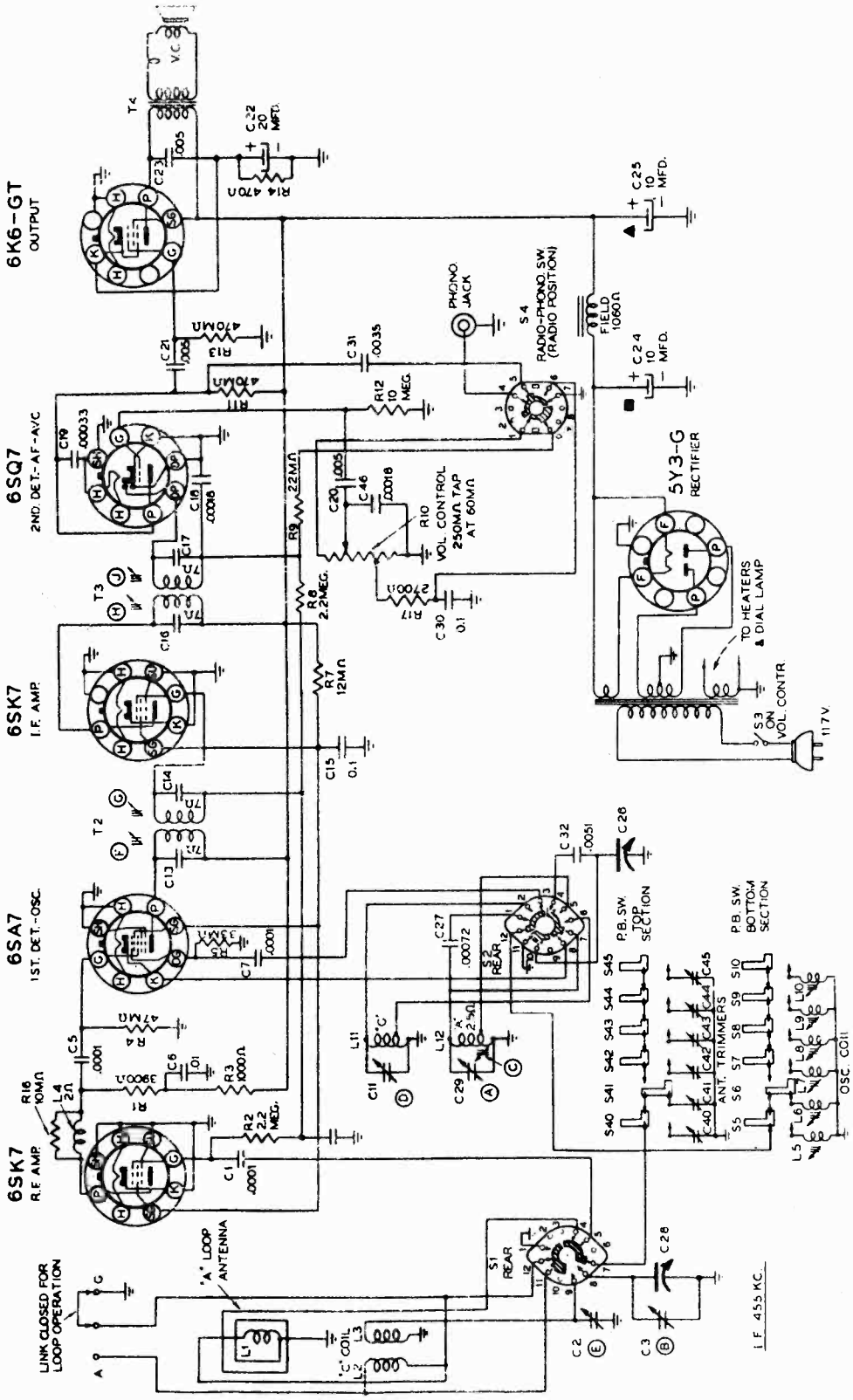


FIG. 2--DELCO MODEL R-1178 CIRCUIT DIAGRAM

PRECAUTIONARY LEAD DRESS

1. Dress 2nd I.F. leads close to chassis.
2. Dress leads from volume control and tone switch away from filaments, diode and power leads.

12-9-40

TUNING CONTROLS: Tuning is accomplished by means of a manual control or by means of 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. Allow at least five minutes warm-up period before making adjustments. The procedure is as follows:

1. Turn Range Control knob to "A" position, and manually tune in the station. Turn the Loop Antenna to give minimum pickup of signal, no outside antenna should be used and link on antenna board should be closed.

2. 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.

3. 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 particluar 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.

4. Adjust for each station in the same manner.

5. After all six stations are tunedin 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.

During alignment the chassis must be removed from the cabinet along with the loop antenna. Keep the signal generator and signal generator leads as far from the loop as possible, also 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 Fig. 5.

As the first step in R-F alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

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

POINTER FOR CALIBRATION SCALE: Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "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 530 KC mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

1. Aligning I-F Stages at 455 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis.
   (b) Connect the signal lead of the signal generator to the grid terminal of the 6SK7 tube through a .01 mfd. condenser.
   (c) Connect the output meter across the primary of the output transformer.
   (d) Set the signal generator to exactly 455 KC.
   (e) Tune receiver to quiet point at 1500 KC end of dial, set volume control full on, range switch to broadcast position, and adjust the trimmers on the second I.F. transformer (Illus. H. J., Fig. 3 & 4) for maximum output.
   (f) Connect the signal lead of the signal generator to the grid of the 6SA7 tube.
   (g) Adjust the trimmers, on the first I-F transformer (Illus. F. G., Fig. 3 & 4) for maximum output.

2. Aligning Broadcast Band at 1500 Kilocycles

   (a) Connect signal lead of signal generator to antenna "A" terminal on loop, link open, through .0002 condenser. Connect a 25,000 ohm load resister across secondary of 1st I-F transformer.
   (b) Set signal generator to 1500 KC.
   (c) Rotate the tuning condenser to 150° on drum calibration scale.
   (d) Adjust the broadcast oscillator trimmer (Illus. A., Fig. 4) to maximum output.
   (e) Adjust the broadcast antenna trimmer (Illus. B., Fig. 3) to maximum output

3. Aligning Broadcast Band at 600 Kilocycles

   (a) Set signal generator to 600.
   (b) Rotate the tuning condenser to 30.5° on drum calibration scale.
   (c) Adjust the broadcast oscillator trimmer (Illus. C., Fig. 3) while rocking the condenser-gang back and forth until maximum output is obtained.

4. Repeat steps 2 and 3 above for maximum output.

5. Aligning Shortwave Band at 15 M.C.

   (a) Connect signal lead of signal generator to antenna "A" terminal on loop, link open, through .00005 mfd. condenser.
   (b) Remove 25,000 ohm load resistor.
   (c) Set signal generator to 15 M.C.
   (d) Rotate tuning condenser to 147° on drum calibration scale.
   (e) Adjust the short wave oscillator trimmer (Illus. D., Fig. 4) for maximum output. Use MINIMUM capacity peak if two peaks can be obtained.
   (f) Adjust the short wave antenna trimmer (Illus. E., Fig. 4) for maximum output.

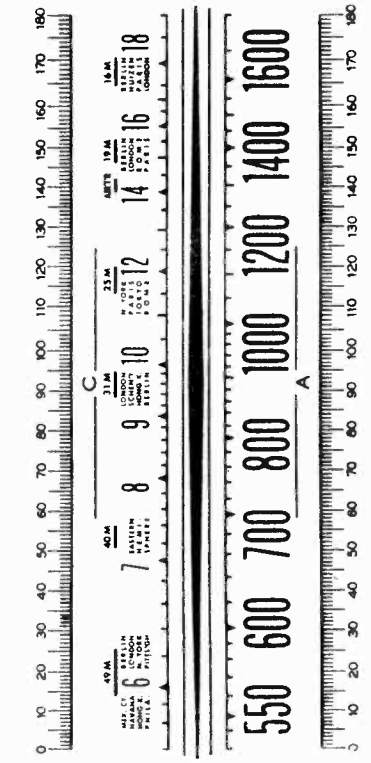


FIG. 5--DIAL CALIBRATION

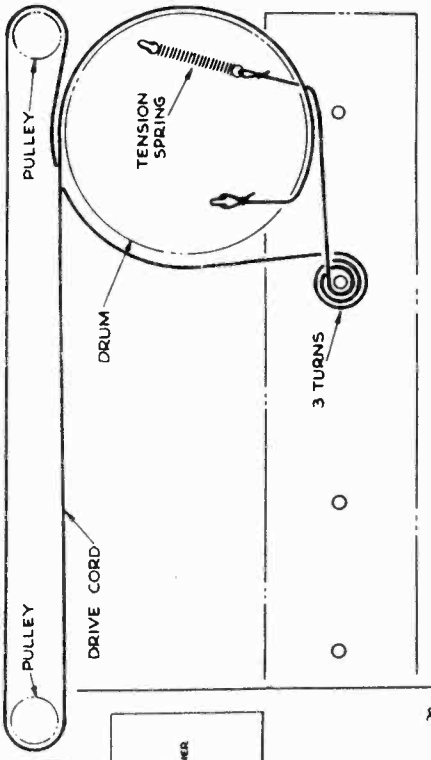


FIG. 6--DIAL CORD LAYOUT

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS.
A.C. LINE VOLTAGE 117 VOLTS.
POWER CONSUMPTION 80 WATTS
[A] CANNOT BE MEASURED WITH VOLTMETER
D.C. VOLTAGES MEASURED WITH NO SIGNAL AND VOLUME CONTROL FULL ON.

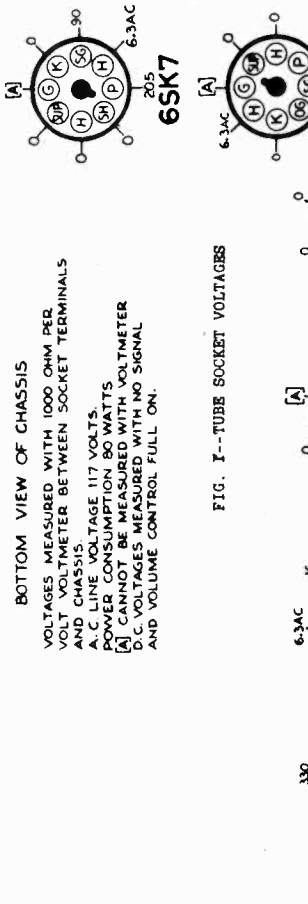


FIG. 1--TUBE SOCKET VOLTAGES

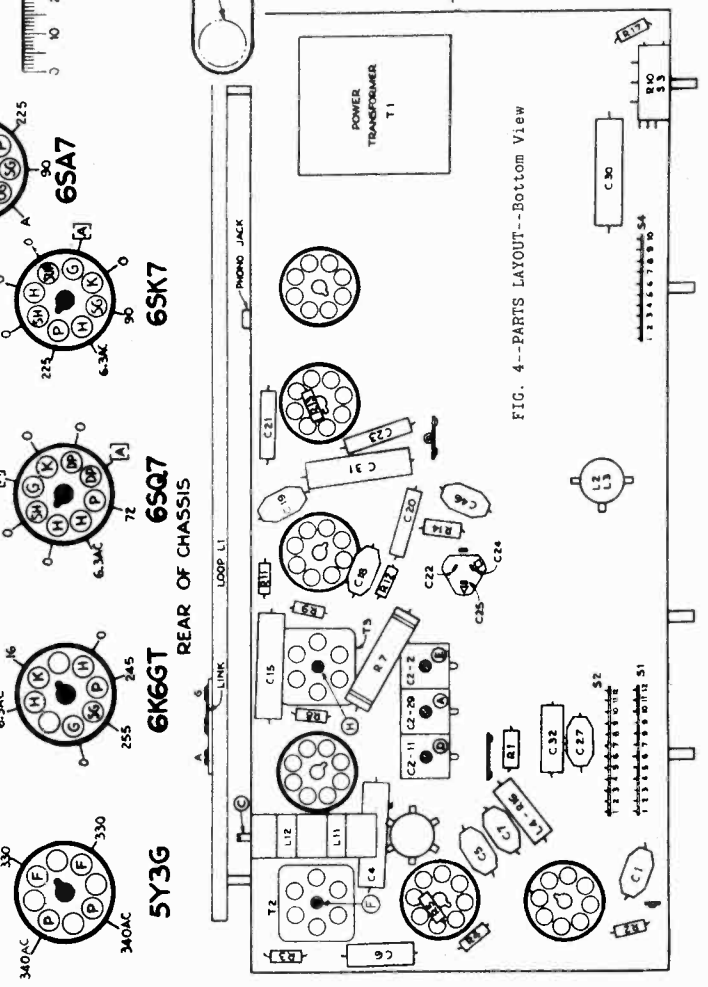


FIG. 4--PARTS LAYOUT--Bottom View

MODEL R1178 Deloo

UNITED MOTORS SERVICE

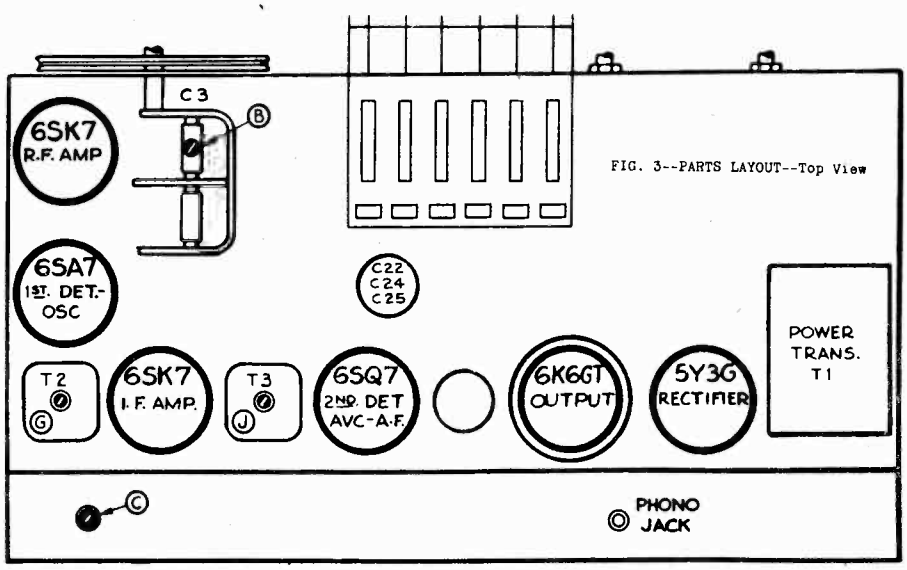


FIG. 3--PARTS LAYOUT--Top View

Illus. No.	Service Part No.	Description
L1	1214671	Antenna loop
L2	1214662	Antenna "C" band
L3	"	Antenna "C" band
L4	Incl. in R16	
L5	1214673	Oscillator "PB"
L6	"	Oscillator "PB"
L7	"	Oscillator "PB"
L8	"	Oscillator "PB"
L9	"	Oscillator "PB"
L10	1214785	Oscillator "PB" low frequency
L11	1214670	Oscillator
L12	"	Oscillator
C1	1210275	.0001 mfd. molded
C2	1214670	Trimmer
C11	"	Trimmer
C29	"	Trimmer
C3	1214677	Variable tuning
C26	"	Variable tuning
C28	"	Variable tuning
C4	7230592	.05 mfd. 600 V. tubular
C5	1210275	.0001 mfd. molded
C6	1208600	.01 mfd. 600 V. tubular
C7	1210275	.0001 mfd. molded
C13	Incl. in T2	.0001 mfd. molded
C14	Incl. in T2	.0001 mfd. molded
C15	1207908	.1 mfd. 400 V. tubular
C16	Incl. in T3	.00012 mfd. molded
C17	Incl. in T3	.00012 mfd. molded
C18	1215294	.00018 mfd. molded
C19	7232957	.00033 mfd. molded .A.)
C20	7230912	.005 mfd. 800 V. tubular
C21	7230912	.005 mfd. 800 V. tubular
C22	1214676	20 mfd. 25 V. elect.
C24	"	10 mfd. 450 V. elect.
C25	"	10 mfd. 450 V. elect.
C23	7230912	.005 mfd. 800 V. tubular
C27	1215297	.00072 mfd. silvered mica
C30	1207908	.1 mfd. 400 V. tubular
C31	7232954	.0035 mfd. 700 V. tubular
C32	1215298	.0051 500 V. tubular
C40	1214674	Trimmer
C41	"	Trimmer
C42	"	Trimmer
C43	"	Trimmer
C44	"	Trimmer
C45	"	Trimmer
C46	1215294	.00018 mfd. molded
R1	1214546	3,900 ohms 1/2 watt ins.
R2	1211164	2 megohms 1/2 watt ins.
R3	1211035	1,000 ohms 1/2 watt ins.
R4	1210116	50,000 ohms 1/2 watt ins.
R5	1213845	33,000 ohms 1/2 watt ins.
R7	1214659	12,000 ohms 3 watt ins.
R8	1211164	2 megohms 1/2 watt ins.
R9	1210882	20,000 ohms 1/2 watt ins.
R10	1214667	Volume
S3	"	110 V. power
R11	1210470	500,000 ohms 1/2 watt ins.
R12	1214761	10 megohm 1/2 watt ins.
R13	1210470	500,000 ohms 1/2 watt ins.
R14	1211021	500 ohms 1 watt ins.
R16	1214660	10,00 ohms 1/2 watt ins. (incl. L4)
R17	1211049	2700 ohms 1/2 watt ins.
S1	1214669	Switch Band change
S2	"	Switch Band change
S4	1214568	Switch Tone control
S5	1214675	Switch Push button
S6	"	Switch Push button
S7	"	Switch Push button
S8	"	Switch Push button
S9	"	Switch Push button
S10	"	Switch Push button
S40	1214675	Switch Push button
S41	"	Switch Push button
S42	"	Switch Push button
S43	"	Switch Push button
S44	"	Switch Push button
S45	"	Switch Push button
T1	1214786	Transformer 25 cycle 110 V. power
T1	1214666	Transformer 50-60 cycle 110 V. power
T2	1214629	Coil assy. 1st I.F.
T3	1214630	Coil assy. 2nd I.F.
T4	1214678	Transformer Output
	1214514	Speaker 12" dynamic

CHASSIS MISCELLANEOUS PARTS

7241702	Cord	Dial drive (60" length)
1214672	Core	Adjustable core and stud for P.B. oscillator coils
1214663	Core	Adjustable core and stud for oscillator coil
1214664	Drum	Dial drive
1214683	Indicator	Dial pointer
51	Lamp	6-8 volt (Mazda #51)

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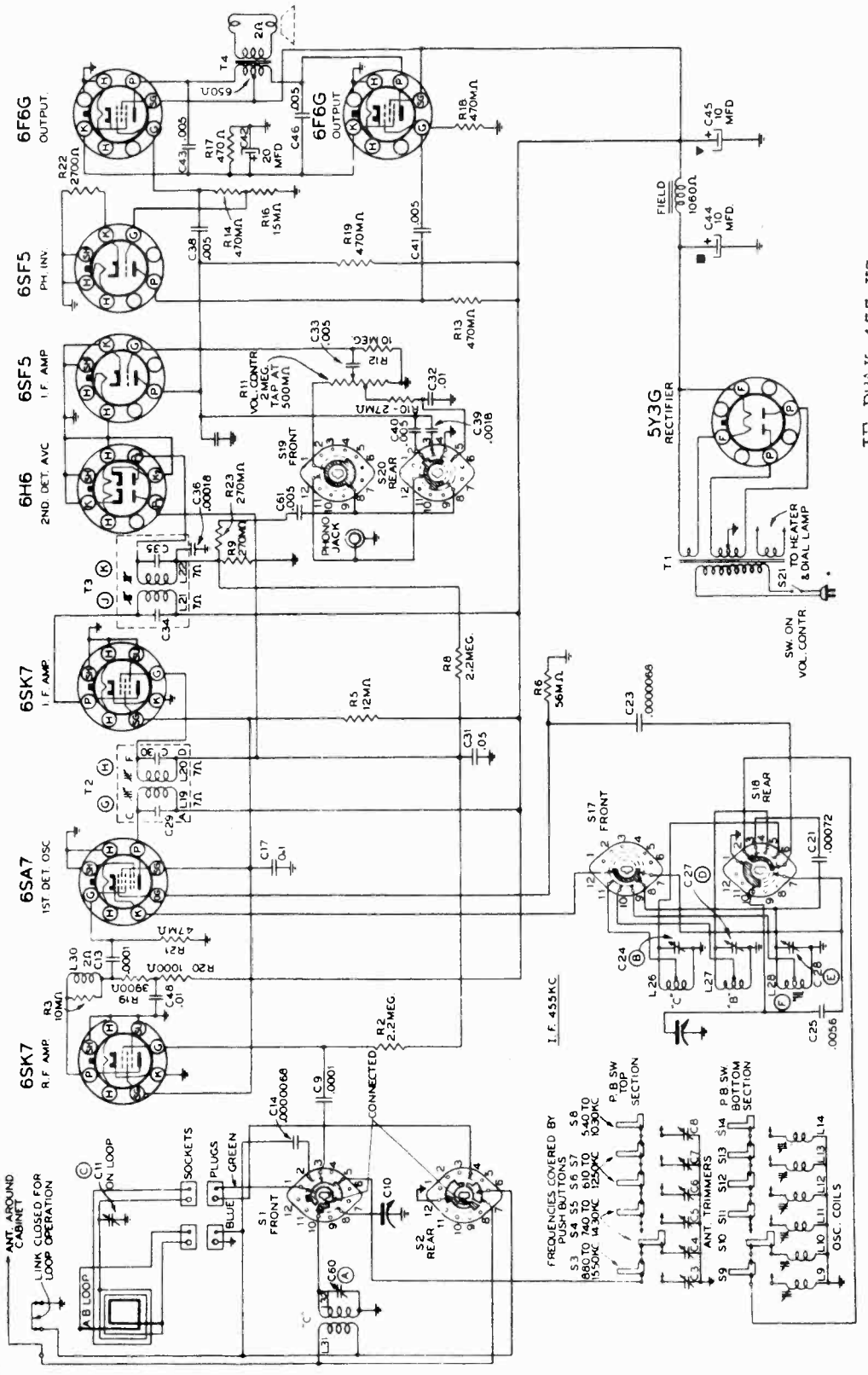
MODEL R1179 Delco



PRECAUTIONARY LEAD DRESS

1. Dress 2nd I. F. leads close to chassis.
2. Dress leads from volume control and tone switch away from filaments, diode and power leads.
3. Dress .005 mfd. (C33) volume control condenser away from electrolytic.

12-16-40

As the first step in R-F alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

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

POINTER FOR CALIBRATION SCALE: Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "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 indicator has a spring clip for attachment to the cable.

1. Aligning I-F Stages at 455 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis.
   (b) Connect the output meter from plate to plate of the 6F6G output tubes.
   (c) Connect the signal lead of the signal generator to the control grid of the 6SA7 tube through a .01 mfd. condenser.
   (d) Turn the band switch to the broadcast position, the tone control on high and the volume control on full.
   (e) Set the signal generator to exactly 455 kilocycles.
   (f) Adjust the trimmers on the I-F coils (Illus. G,H,J,K, Figs. 3 & 4) for maximum output.

2. Aligning short wave band at 16 M.C.

   (a) Connect signal lead of signal generator to antenna terminal "A" on rear of chassis through a .00005 mfd. condenser. Leave ground lead connected to receiver chassis.
   (b) Change the band switch to the short wave (C) position.
   (c) Set the signal generator to 16 M.C.
   (d) Rotate the tuning condenser plates to 155° on drum calibration scale.
   (e) Adjust the short wave oscillator trimmer (Illus. B., Fig. 4) for maximum output.
   (f) Adjust the short wave antenna trimmer (Illus. A, Fig. 4) for maximum output. Use minimum capacity peak if two peaks can be obtained.

3. Aligning Middle wave Band at 2.44 Megacycles

   (a) Connect signal lead of signal generator to antenna section of gang condenser through 300 ohm resistor. Leave ground lead connected to receiver chassis.
   (b) Change the band switch to the middle wave position (B).
   (c) Set the signal generator to 2.44 megacycles.
   (d) Rotate the tuning condenser plate to 97° on drum calibration scale.
   (e) Adjust the middle wave oscillator trimmer (Illus. D, Fig. 4) for maximum output. Use minimum capacity peak if two peaks can be obtained.

4. Aligning Broadcast Band at 1,500 Kilocycles

   (a) Set Band switch to the broadcast position.
   (b) Rotate the tuning condenser plates to 160° on drum calibration scale.
   (c) Adjust the broadcast oscillator trimmer (Illus. E., Fig. 4) for maximum output. Use minimum capacity peak if two peaks can be obtained.

5. Aligning Broadcast Band at 600 Kilocycles

   (a) Set signal generator to 600 kilocycles.
   (b) Rotate the tuning condenser plates to 30° on drum calibration scale.
   (c) Adjust the broadcast oscillator trimmer (Illus. F, Fig. 3) (rocking gang) until maximum output is obtained.

Note: Fasten chassis in cabinet. Connect loop, see that link is closed on the antenna board, attach dial indicator to drive cord, with indicator at 540 KC mark and gang at maximum capacity.

6. Aligning Broadcast Band at 1,500 Kilocycles

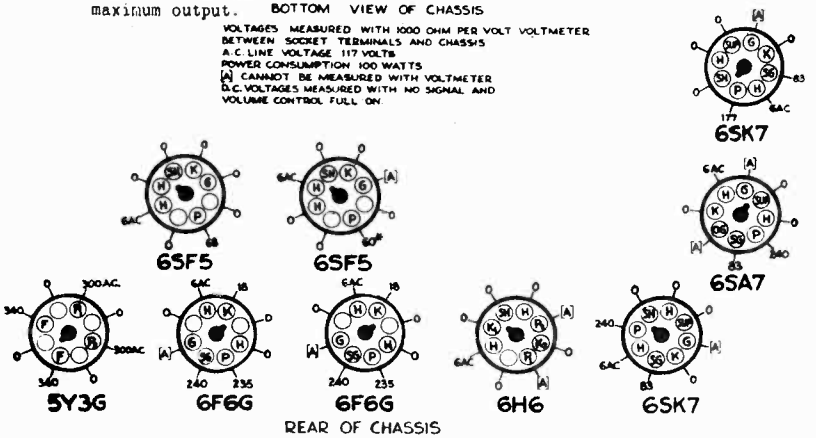
   (a) Connect a radiation loop to signal generator consisting of two turns of wire 18 inches in diameter and locate the generator and loop 4 to 6 ft. from receiver.
   (b) Set signal generator to 1,500 KC.
   (c) Rotate the tuning condenser plates to 160° on drum calibration scale.
   (d) Adjust the broadcast antenna trimmer on loop to maximum output.

7. Aligning Broadcast Band at 600 Kilocycles

   (a) Set signal generator to 600 KC.
   (b) Rotate the tuning condenser plates to 30° on drum calibration scale.
   (c) Adjust the broadcast oscillator trimmer (Illus. F, Fig. 3) to maximum output.

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS
A.C. LINE VOLTAGE 117 VOLTS
POWER CONSUMPTION 100 WATTS
[A] CANNOT BE MEASURED WITH VOLTMETER
D.C. VOLTAGES MEASURED WITH NO SIGNAL AND VOLUME CONTROL FULL ON.



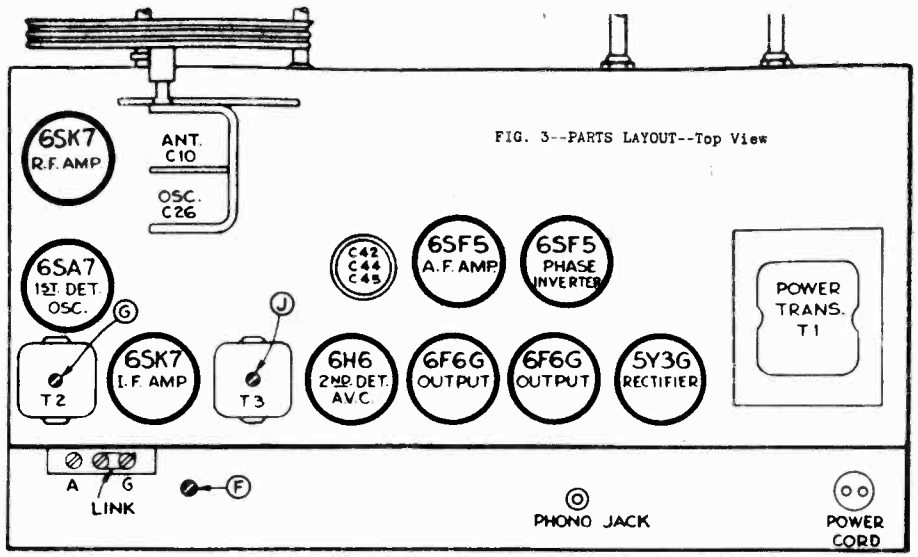


FIG. 3--PARTS LAYOUT--Top View

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 Fig. 5.

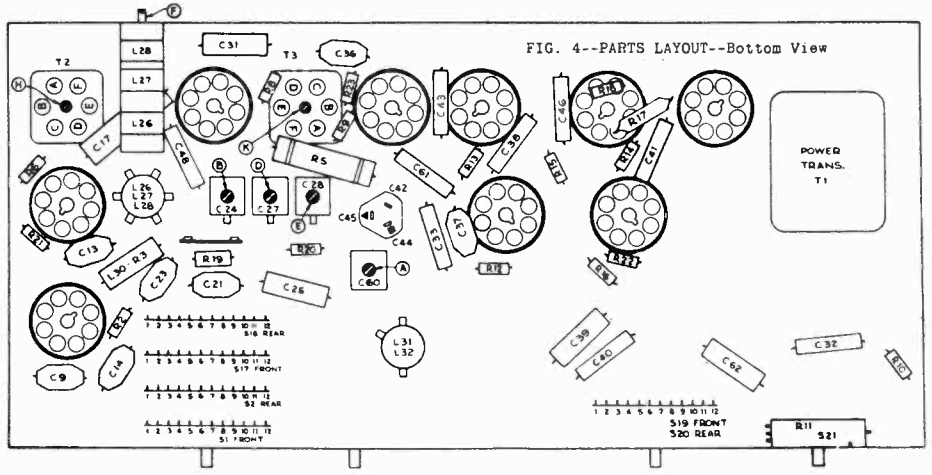


FIG. 4--PARTS LAYOUT--Bottom View

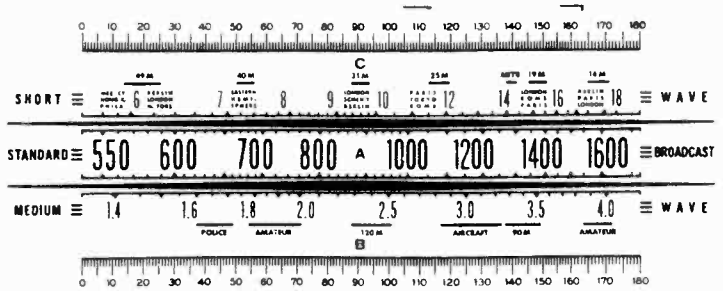


FIG. 5--DIAL CALIBRATION

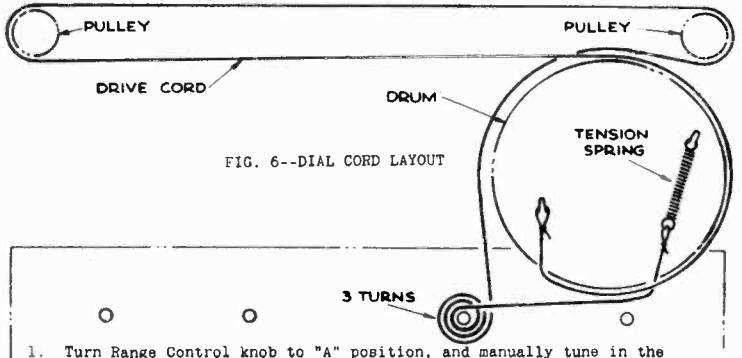


FIG. 6--DIAL CORD LAYOUT

1. Turn Range Control knob to "A" position, and manually tune in the station. Turn the Loop Antenna to give minimum pickup of signal, no outside antenna should be used and link on antenna board should be closed.

2. Turn Range Control knob to "PB" and press push button No. 1 and adjust No. 1 oscillator core to recsive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.

3. 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.

4. Adjust for each station in the same manner.

5. 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.

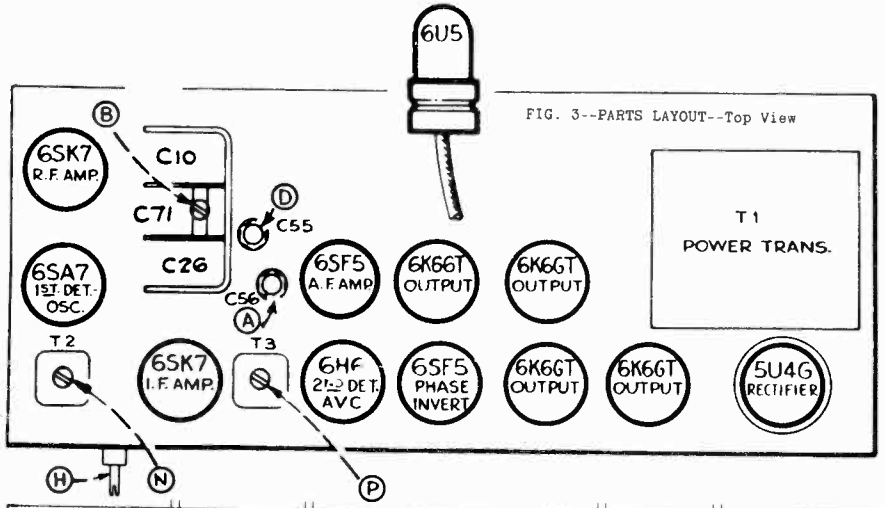


FIG. 3--PARTS LAYOUT--Top View

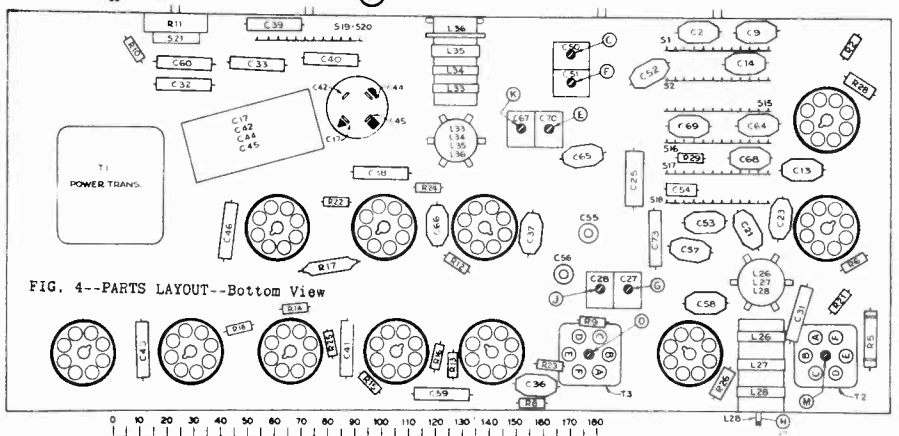


FIG. 4--PARTS LAYOUT--Bottom View

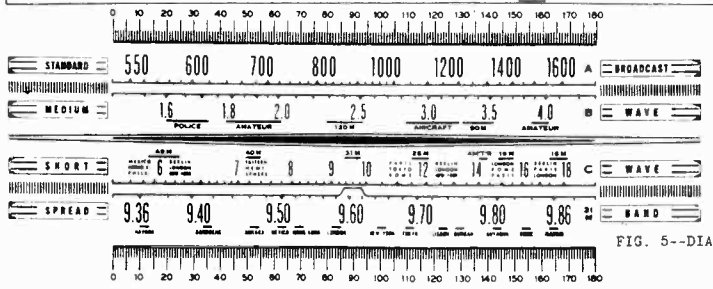


FIG. 5--DIAL CALIBRATION

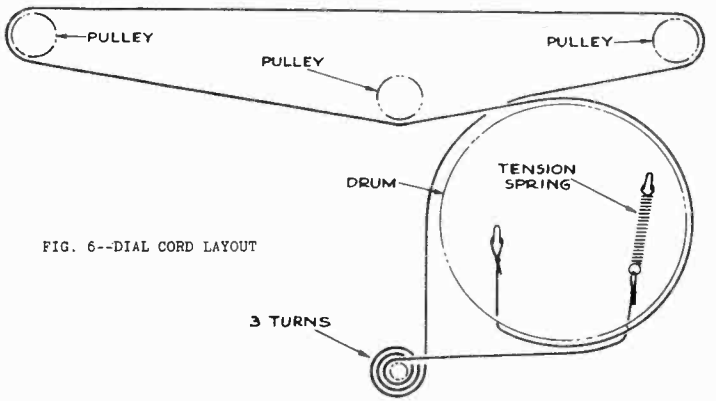


FIG. 6--DIAL CORD LAYOUT

BOTTOM VIEW OF CHASSIS
VOLTAGE MEASURED WITH 1000 OHM PER VOLT VOLTMETER
BETWEEN SOCKET TERMINALS AND CHASSIS
A.C LINE VOLTAGE 117 VOLTS
POWER CONSUMPTION
[A] CANNOT BE MEASURED WITH VOLTMETER
[B] 4.7 VOLTS A.C ACROSS PINS F&F
[C] 630 VOLTS A.C ACROSS PINS P&P

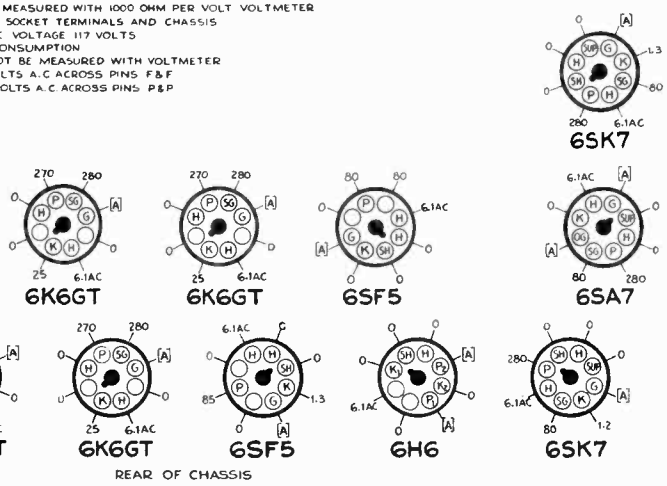


FIG. 1--TUBE SOCKET VOLTAGES

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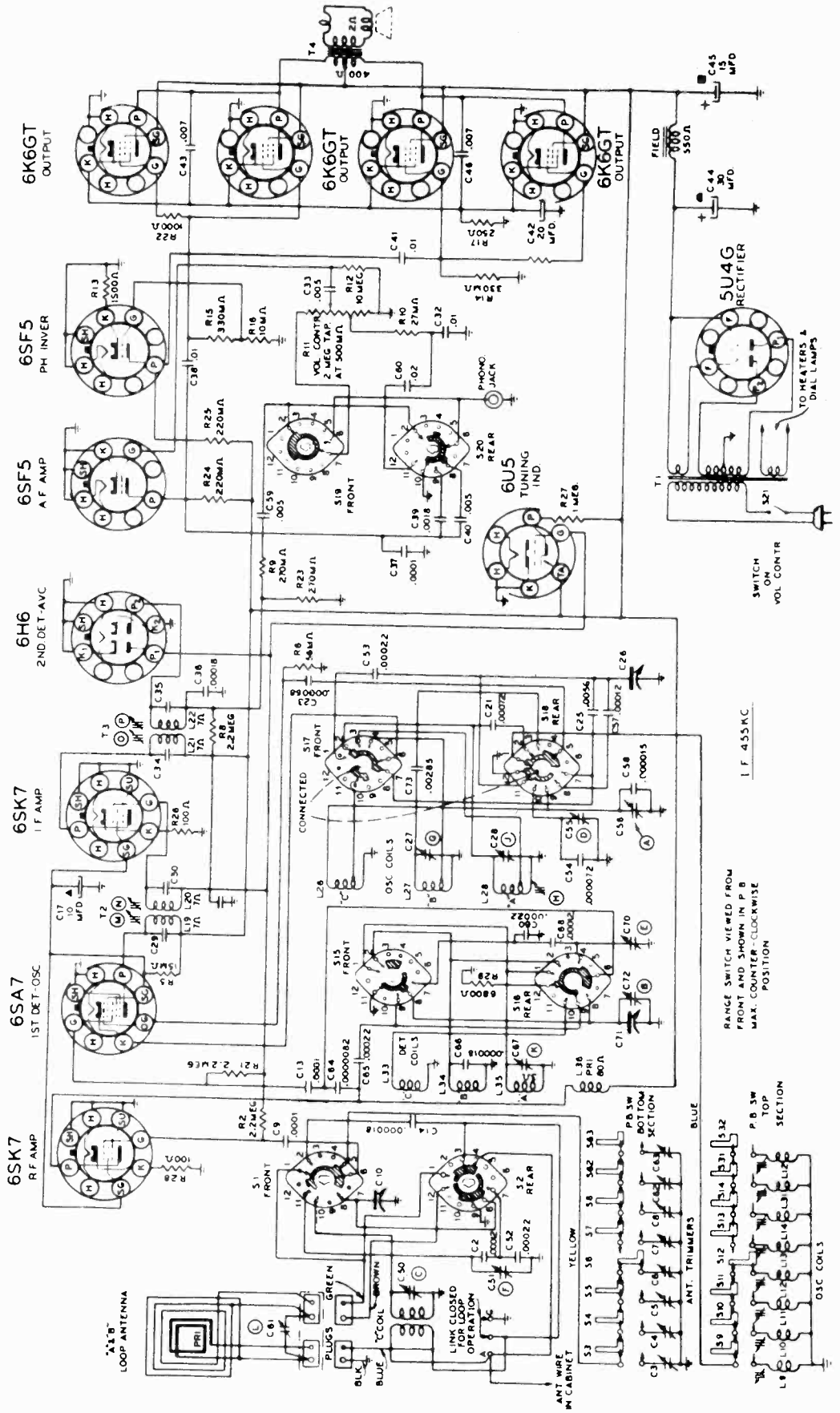
MODEL R1180 Delco



MODEL R1180 Delco

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TUNING CONTROLS: Tuning is accomplished by means of a manual control or by means of 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. Allow at least five minutes warm-up period before making adjustments. The procedure is as follows:

1. Turn Range Control knob to "A" position, and manually tune in the station. Turn the Loop Antenna to give minimum pickup of signal, no outside antenna should be used and link on antenna board should be closed.

2. 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.

3. 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.

4. Adjust for each station in the same manner.

5. 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.

During alignment the chassis must be removed from the cabinet but the loop may be left in cabinet and must be connected to the receiver. Keep the signal generator and signal generator leads as far from the loop as possible, also keep the output as low as possible to avoid A.V.C. action.

CALIBRATION SCALE ON 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 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 procedure.

As the first step in R-F alignment check the position of the drive drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to Fig. 5 which shows the dial with 0-180° calibration scales drawn at top and bottom.

POINTER FOR CALIBRATION SCALE: Improvise a pointer for the calibration scale by fastening a piece of wire to the gang condenser frame, and bend the wire so that it points to the "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 the gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

SPREAD-BAND ALIGNMENT: Make final adjustment of "D", "E" and "F" "31-meter" trimmers during actual reception of a station of known frequency near 9.5 megacycles.

1. Aligning I-F Stages at 455 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis.
   (b) Connect the output meter across the primary of the output transformer.
   (c) Connect the signal lead of the signal generator to the grid of the 6SK7 I-F tube through a 0.1 mfd. condenser.
   (d) Set the signal generator to exactly 455 KC.
   (e) With the band switch in the "C" band position, the volume control on full and the radio tuned to a quiet point at 18 M.C. end of dial, adjust the trimmers on the second I-F coils (Illus. O, P Fig. 3 & 4) for maximum output.
   (f) Connect the signal lead of the signal generator to the grid of the 6SA7 tube.
   (g) Adjust the trimmers on first I-F coil (Illus. M, N Fig. 3 & 4) for maximum output.

2. Aligning at 15 M.C.

   (a) Connect the signal lead of the signal generator to the antenna terminal of the receiver (link on terminal closed) in series with a .00005 mfd. condenser.
   (b) Connect the ground lead of the signal generator to the ground terminal of the receiver.
   (c) Set the signal generator to 15 M.C.
   (d) With the band switch in the "C" position, rotate the tuning condenser plates to 145° on drum calibration scale.
   (e) Adjust "C" band oscillator trimmer (Illus. A, Fig. 3) for maximum output. Use MINIMUM capacity peak if two peaks can be obtained.
   (f) Adjust "C" band detector trimmer (Illus. B, Fig. 3) for MAXIMUM output. Use MAXIMUM capacity peak if two peaks can be obtained.
   (g) Adjust "C" band antenna trimmer (Illus. C, Fig. 4) for maximum output. Use MAXIMUM capacity peak if two peaks can be obtained.

3. Aligning "31" Meter Band at 9.5 M.C.

   (a) Connect signal lead of signal generator as above.
   (b) Change the band switch to "31" meter band position.
   (c) Set generator to 9.5 M.C.
   (d) Rotate the tuning condenser plates to 64° on drum calibration scale.
   (e) Adjust "31-meter" oscillator trimmer (Illus. D, Fig. 3) to maximum output. Use MINIMUM capacity peak if two peaks can be obtained.
   (f) Adjust "31-meter" detector trimmer (Illus. E, Fig. 4) to maximum output.
   (g) Adjust "31-meter" Antenna trimmer (Illus. F, Fig. 4) to maximum output. Rock in trimmers E and F.

4. Aligning at 2.44 M.C.

   (a) Conect signal lead of signal generator to GREEN lead of loop antenna plug in series with 300 ohm resistor.
   (b) Change Band switch to "B" position.
   (c) Set signal generator to 2.44 M.C.
   (d) Rotate the tuning condenser plates to 90° on drum calibration scale.
   (e) Adjust "B" band oscillator trimmer (Illus. G, Fig. 4) to maximum output.

5. Aligning at 600 KC.

   (a) Connect signal lead of signal generator as above.
   (b) Change band switch to broadcast "A" position.
   (c) Set signal generator to 600 KC.
   (d) Rotate the tuning condenser plates to 30° on drum calibration scale.
   (e) Adjust the broadcast oscillator trimmer (Illus. H, Fig. 3 & 4) while rocking the condenser gang back and forth until maximum output is obtained.

6. Aligning at 1500 KC.

   (a) Connect signal lead of signal generator as above.
   (b) Set signal generator to 1500 KC.
   (c) Rotate the tuning condenser plates to 159° on drum calibration' scale.
   (d) Adjust broadcast oscillator trimmer (Illus. J, Fig 4) to maximum output.
   (e) Adjust broadcast detector trimmer (Illus. K, Fig 4) to maximum output.

7. Repeat Operations 4 and 5

   NOTE: Fasten chassis in cabinet, close antenna link, adjust indicator to dial scale.

8. Aligning at 1500 KC.

   (a) Connect a radiation loop to signal generator consisting of two turns of wire 18 inches in diameter and locate the generator and loop 4 to 6 feet from receiver.
   (b) Set signal generator to 1500 KC.
   (c) Rotate the tuning condenser plates to 159° on drum calibration scale.
   (d) Adjust the broadcast antenna trimmer "L" (on loop) to maximum output.

9. Aligning at 600 KC.

   (a) Set signal generator to 600 KC. connection as above.
   (b) Rotate the tuning condenser plates to 30° on drum calibration scale.
   (c) Adjust the broadcast oscillator trimmer (Illus. H, Fig. 3 & 4) to maximum output.

10. Repeat operations 8 and 9

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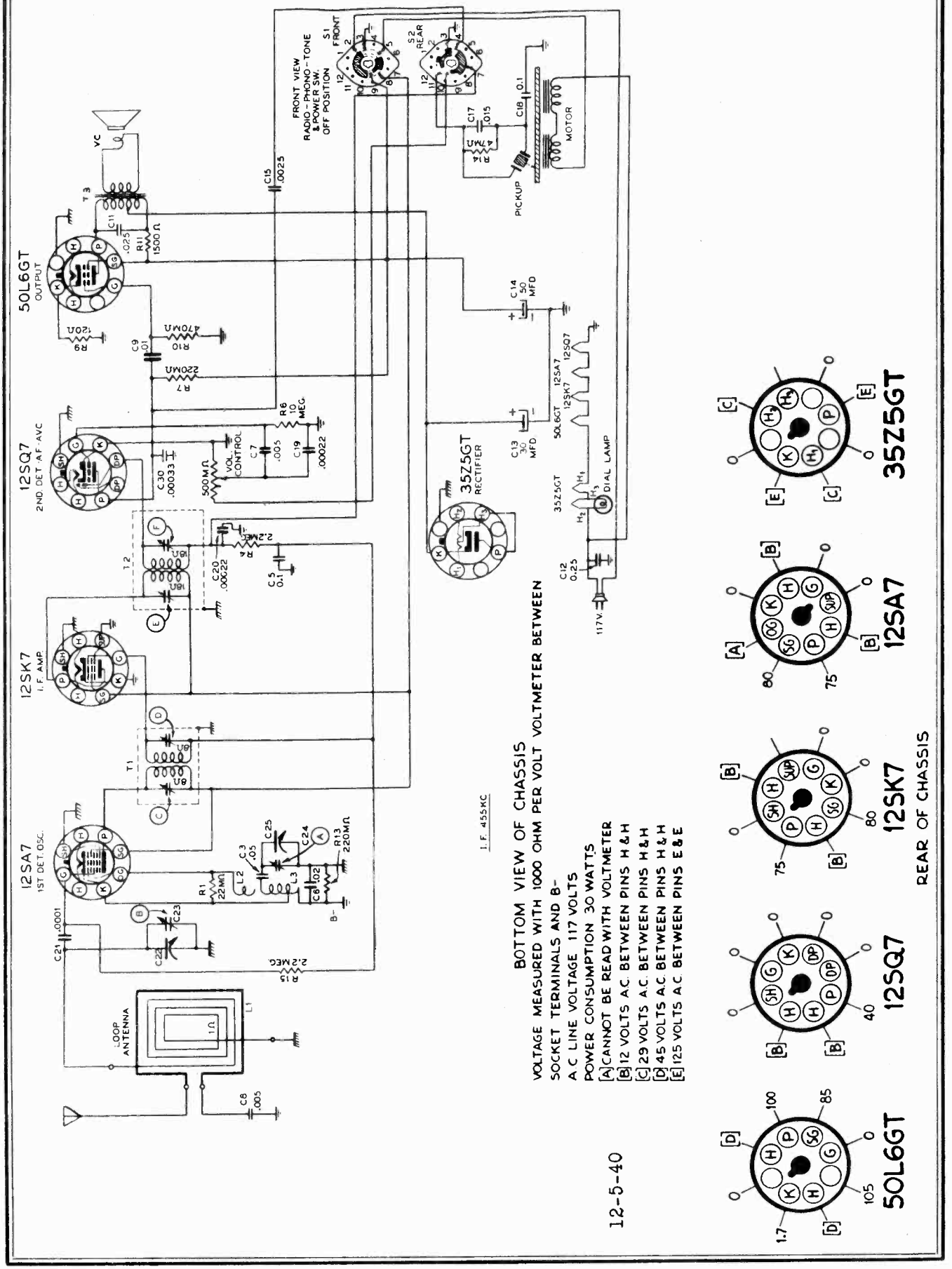
MODEL R1185 Deluo



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.

CIRCUIT ALIGNMENT

If realignment is found necessary, the circuits can be properly adjusted only with the use of a test oscillator or signal generator and an output meter.

1. Aligning I-F Stages at 455 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis through a .01 mfd. condenser, and keep the output as low as possible.
   (b) Connect the signal lead of the signal generator to the grid terminal of the 12SK7 tube through a .01 mfd. condenser.
   (c) Connect the output meter across the primary of the output transformer.
   (d) Set the signal generator to exactly 455 KC.
   (e) Tune the receiver to quiet point at 1600 KC end of dial, set Volume Control full on, adjust the trimmers on the second I-F transformer (Illus. E, F, Fig. 3) for maximum output.
   (f) Connect the signal lead of the signal generator to the grid of the 12SA7 tube.
   (g) Adjust the trimmers on the first I-F transformer (Illus. C, D, Fig. 3) for maximum output.

2. Aligning at 1560 Kilocycles

   (a) Connect the signal lead of the signal generator to the antenna terminal of the loop through .0001 mfd. condenser.
   (b) Set signal generator to exactly 1560 KC.
   (c) Tune receiver to 1560 KC., adjust oscillator trimmer condenser (Illus. A, Fig. 3) for maximum output.

3. Aligning at 1300 Kilocycles

   (a) Leave the signal lead of the signal generator connected as above.
   (b) Set the signal generator to 1300 KC.
   (c) Rotate the tuning control knob until this signal is tuned in with maximum output.

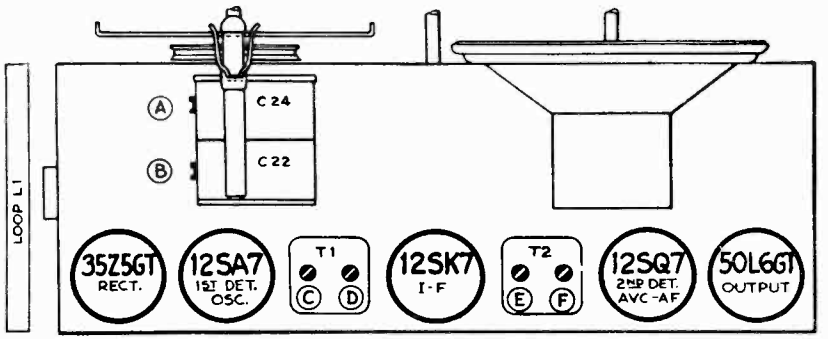


FIG. 3--PARTS LAYOUT--Top View

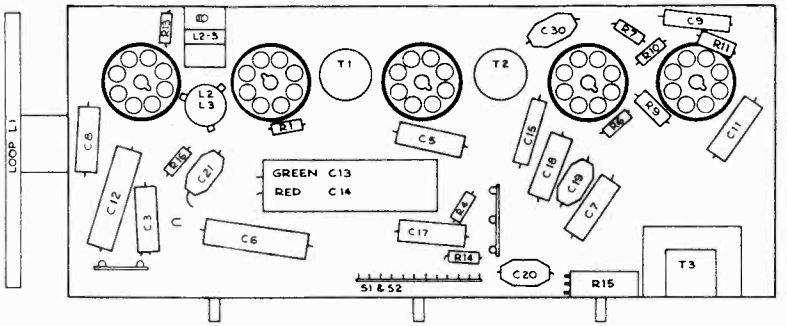


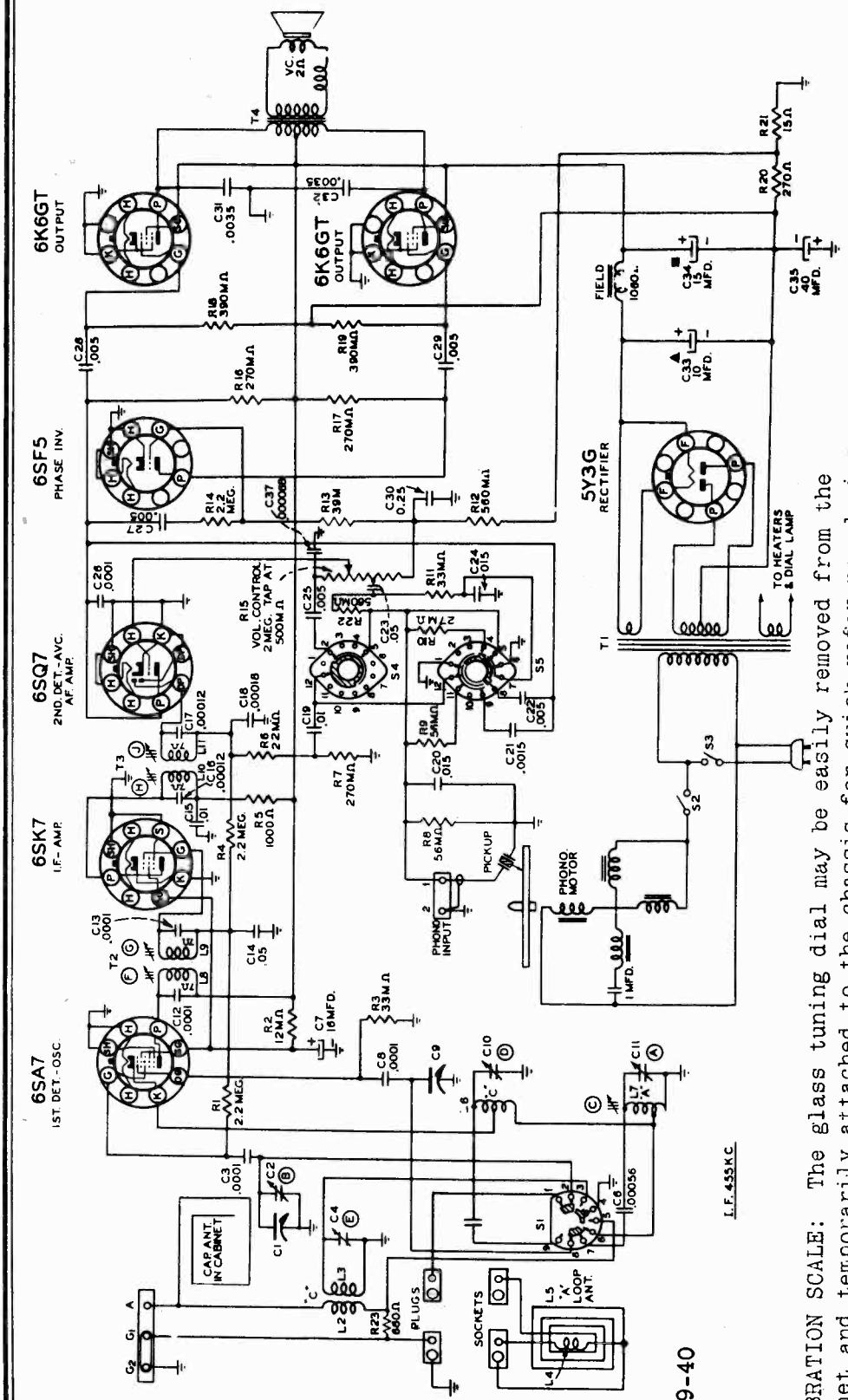
FIG. 4--PARTS LAYOUT--Bottom View

   (d) Adjust the antenna trimmer (Illus. B, Fig. 3) for maximum output.

4. Repeat Operations 2 and 3 for maximum output.

UNITED MOTORS SERVICE

MODELS R1186,R1188
Deloo



CALIBRATION SCALE: The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment.

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.

During alignment the chassis may be removed from the cabinet along with the loop antenna. Keep the signal generator and signal generator leads as far from the loop as possible, also keep the output as low as possible to avoid a.y.c. action.

MODELS R1186, R1188
Deloo

UNITED MOTORS SERVICE

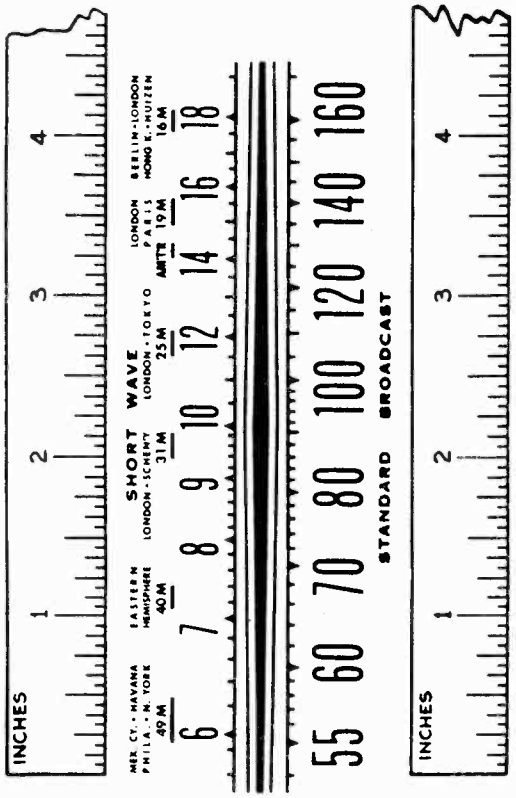
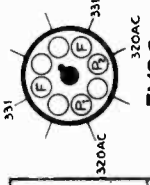


FIG. 5--DIAL CALIBRATION



BOTTOM VIEW OF CHASSIS

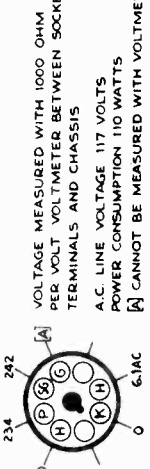


FIG. 1--TUBE SOCKET VOLTAGES

REAR OF CHASSIS

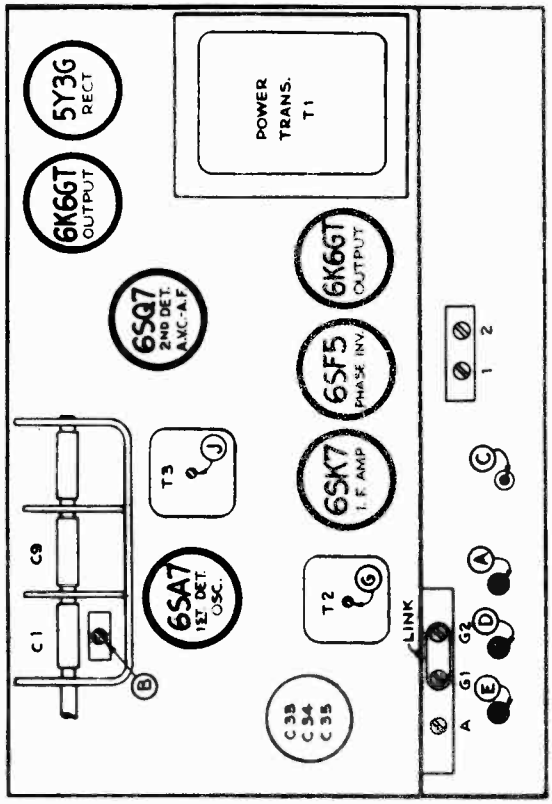


FIG. 3--PARTS LAYOUT--Top View

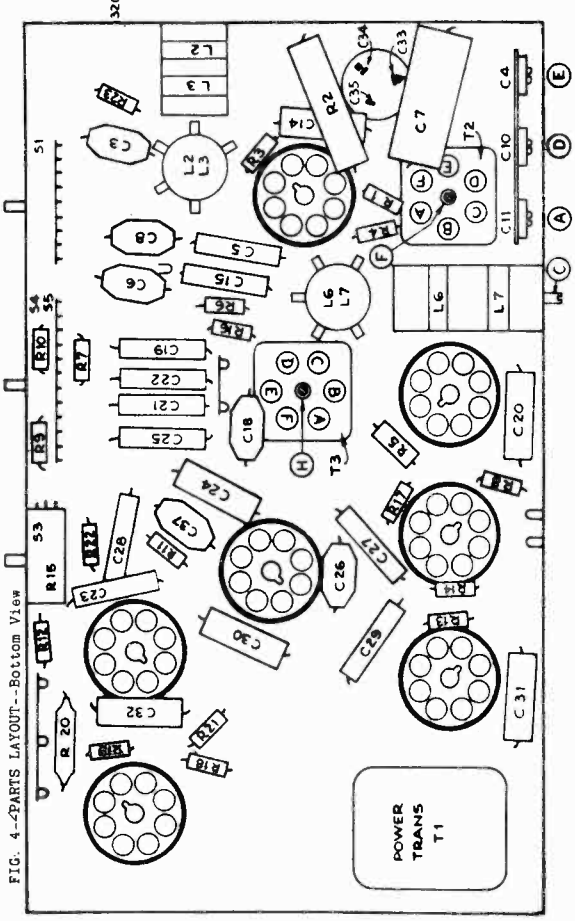


FIG. 4--PARTS LAYOUT--Bottom View

UNITED MOTORS SERVICE

MODELS R1136, R1138
Delco

1. Aligning I-F Stages at 455 Kilocycles

(a) Connect the ground lead of the signal generator to the chassis.
(b) Connect the signal lead of the signal generator to the grid terminal of the 6SK7 tube through a .01 mfd. condenser.
(c) Connect the output meter across the primary of the output transformer.
(d) Set the signal generator to exactly 455 KC.
(e) Tune receiver to quiet point at 1500 KC end of dial, set volume control full on, range switch to broadcast position, and adjust the trimmers on the second I-F transformer (Illus. H. J., Fig. 3 & 4) for maximum output.
(f) Connect the signal lead of the signal generator to the grid of the 6SA7 tube.
(g) Adjust the trimmers, on the first I-F transformer (Illus. F. G., Fig. 3 & 4) for maximum output.

2. Aligning Broadcast Band at 1500 Kilocycles

(a) Connect signal lead of signal generator to antenna "A" terminal on the chassis, link open, through .0002 condenser.
(b) Connect the ground lead of the signal generator to the "G2" terminal of the chassis.
(c) Set signal generator to 1500 KC.
(d) With band switch in broadcast position, tune receiver to the 1500 KC position.
(e) Adjust Broadcast Oscillator Trimmer (Illus. A, Fig. 3 & 4) for maximum output.
(f) Adjust Broadcast Antenna Trimmer (Illus. B, Fig. 3) for maximum output.

3. Aligning Broadcast Band at 600 Kilocycles

(a) Set signal generator to 600 KC.
(b) Tune radio to 600 KC position.
(c) Adjust Broadcast Oscillator Trimmer (Illus. C., Fig. 3 & 4) while rocking gang condenser back and forth through the signal until maximum output is obtained.

4. Repeat operations 2 and 3 for maximum output

5. Aligning Shortwave Band at 15 M.C.

(a) Connect the signal lead of the signal generator to the "A" terminal in series with .00005 mfd. condenser.
(b) Set the signal generator to exactly 15 M.C.
(c) With the band switch in the short wave position, tune the receiver to the 15 M.C. position.
(d) Adjust the short wave oscillator trimmer (Illus. D., Fig. 3 & 4) for maximum output. If two peaks are obtained use high frequency (minimum capacity) peak.
(e) Adjust short wave antenna trimmer (Illus. E., Fig. 3 & 4) while rocking gang condenser back and forth through the signal until maximum output is obtained. If two peaks can be obtained use low frequency (maximum capacity) peak.

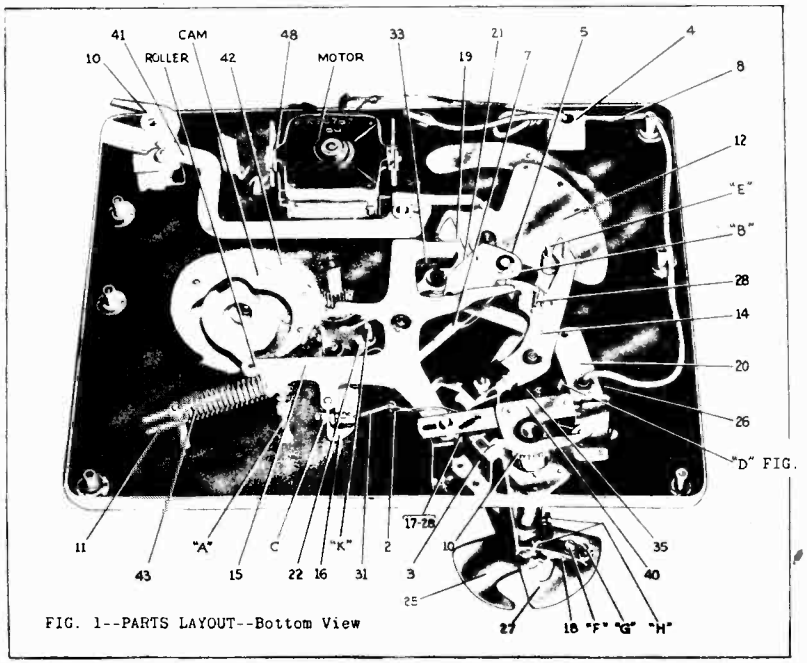


FIG. 1--PARTS LAYOUT--Bottom View

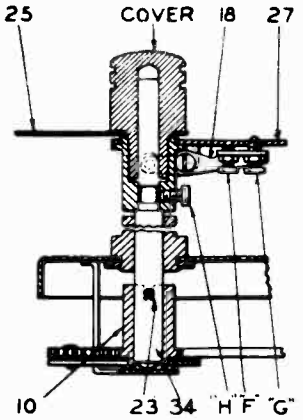


FIG. 2--SEPARATING KNIFE, SUPPORT SHELF AND POST

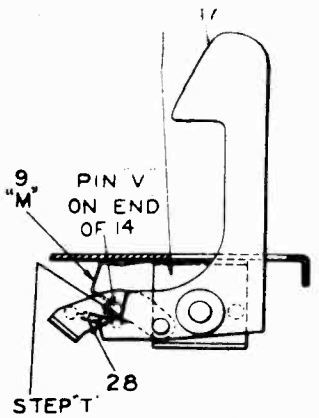


FIG. 3--RECORD DISCRIMINATOR

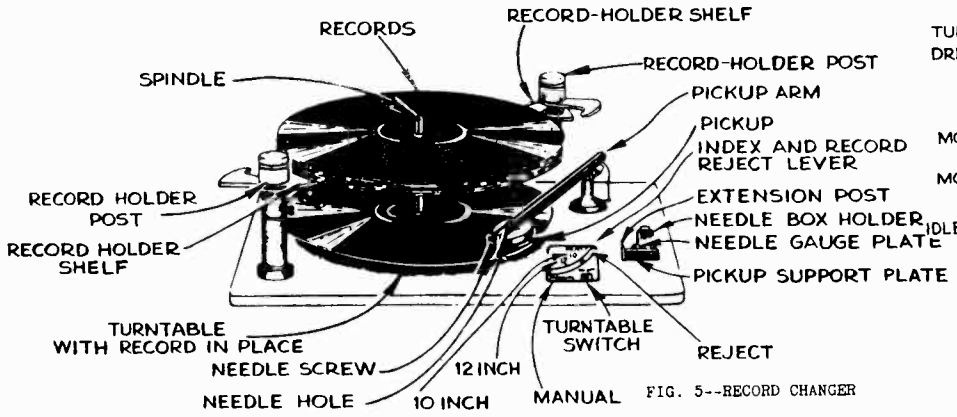


FIG. 5--RECORD CHANGER

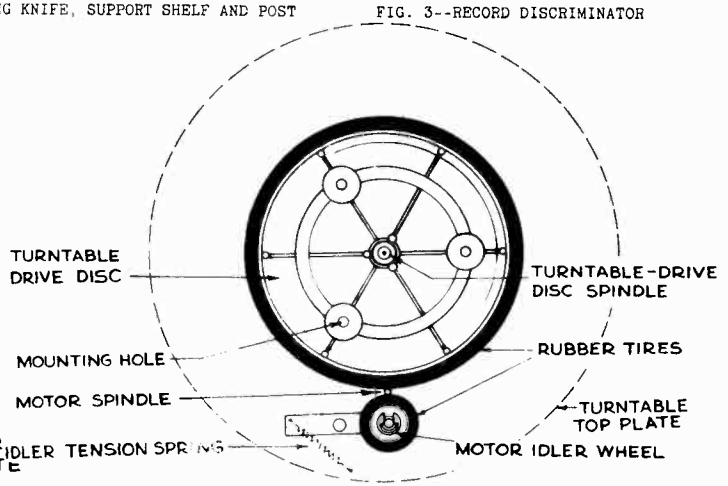


FIG. 4--TURN TABLE DRIVE--Top View

UNITED MOTORS SERVICE

MODEL R1186X Record Changer

SUBJECT--SERVICE INSTRUCTIONS--DELCO AUTOMATIC RECORD CHANGER

GENERAL: The R-1186X Record Changer is a mechanical device for playing Victrola records in sequence. It has a capacity of seven 12 in. records or eight 10 in. records. If the mechanism is set for 10" records, it will play both 10" and 12" records in mixed sequence, BUT it is strongly recommended that only one size be used at a loading.

The motor employed is self starting sychronous available only in 50 or 60 cycles 110 V. AC.

SERVICE: It is important that the drive motor spindle, and rubber tires on main driving disc and idler pulley be kept clean and free from oil, grease, dirt, or any foreign matter at all times. Any quick-drying naphtha is satisfactory for cleaning these parts. The drive motor bearing is lubricated from an oil well filled and sealed at the factory. It should not require lubrication in the field.

The rubber-tired drive disc is not removable from the spindle. The turntable is fastened to the driving disc by three bolts. If necessary to remove these parts the spindle drive gear set screw should first be removed. The driving disc, turntable and spindle assembly can now be lifted upward from the motorboard. If this is done, great care should be taken not to bend the spindle.

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc., are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

When a record has been played the pickup moves out, another record is dropped down, and the needle is fed automatically into the starting groove of this record. If the needle fails to enter the starting groove, raise the right-hand side of the cabinet by inserting thin spacers under the feet on that side. If the needle slides over a few grooves, raise the left-hand side of the cabinet in a similar manner.

The 10" and 12" records must be absolutely flat for smooth operation.

A pickup shorting switch, located under the motorboard, operates when the pickup is moved outward to the pickup rest.

MISCELLANEOUS SERVICE HINTS: Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A".
2. Needle does not land properly on both 10 and 12 inch records--make complete adjustments "D" and "E".
3. Needle does not land properly on 12 inch record but correct on 10 inch--effect adjustment "E".
4. Failure to trip at end of record--increase clutch "5" friction by means of screw "B". Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable--adjust lift cable per adjustment "C".
6. Needle does not track after landing--friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete--record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction--record is defective; or instrument is not being operated at normal room temperature; oil, grease, dirt, or other foreign matter on motor spindle, main driving disc or idler pulley rubber tire. Clean with any quick drying naphtha.
9. Record knives strike edge of records--records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly--adjust record shelf assemblies in respect to shaft by means of adjustment "H".
11. When playing both types of records mixed and needle either lands in 10 inch position on 12 inch record or misses record entirely--increase tension of mixed record discriminating lever spring "M".

ADJUSTMENTS

A. MAIN LEVER--This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. Rotate the turntable until the changer is out-of-cycle, and check rubber bumper bracket (A). The roller should clear the nose of the cam plate by approximately 1-16 inch.

B. FRICTION CLUTCH--The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5". If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B". If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. PICKUP LIFT CABLE SCREW--During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D&E. NEEDLE LANDING ON RECORD--The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that record discriminating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17". The correct point of landing is 4 5/8 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17". Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D".

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5 5/8 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motorboard, otherwise incorrect landing may occur with 10 inch records.

F&G. RECORD SEPARATING KNIFE--The upper plate (knife) "25" on each of the record posts serves to separate the lower record from stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055--.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F", adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072--.078 inch.

H. RECORD SUPPORT SHELF--The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where both separating knives have turned clockwise as far as the mechanism will turn them; lift record upward until it is in contact with both separating knives. Then loosen screws "H" and shift record shelves "27" so that the curved inner edges of the shelves are uniformly spaced approximately 1/16 inch from the record edge. Some backlash will be present in the rotation of these shelves. They should be adjusted so that the backlash permits them to move away from the record but not closer than the approximate 1/16 inch specified above. Tighten the blunt tipped screw "H", run mechanism through cycle several times to check action, then tighten cone tipped screw "H."

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. TONE ARM REST SUPPORT (NOT SHOWN)--When the changer is out-of cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motorboard. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. TRIP PAWL STOP PIN--The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

LUBRICATION--Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers and pulleys on underside of motorboard.

Do not allow oil or grease to come in contact with rubber bumper or rubber parts of the mechanism.

MOTOR SERVICE DATA

On the drive motor a 0.014 inch feeler gauge is recommended for centering the rotor in the field bore.

The field coils can be disassembled and reassembled if care is used in reassembling the field lamination block in a manner so that the dovetail joint will not be sprung.

When disassembling the rotor or rotor shaft bearing only, the field stacking should be held in a clamp to prevent the field springing when the bolts which hold the assembly together are loosened.

MODEL R1405 Deloo

UNITED MOTORS SERVICE

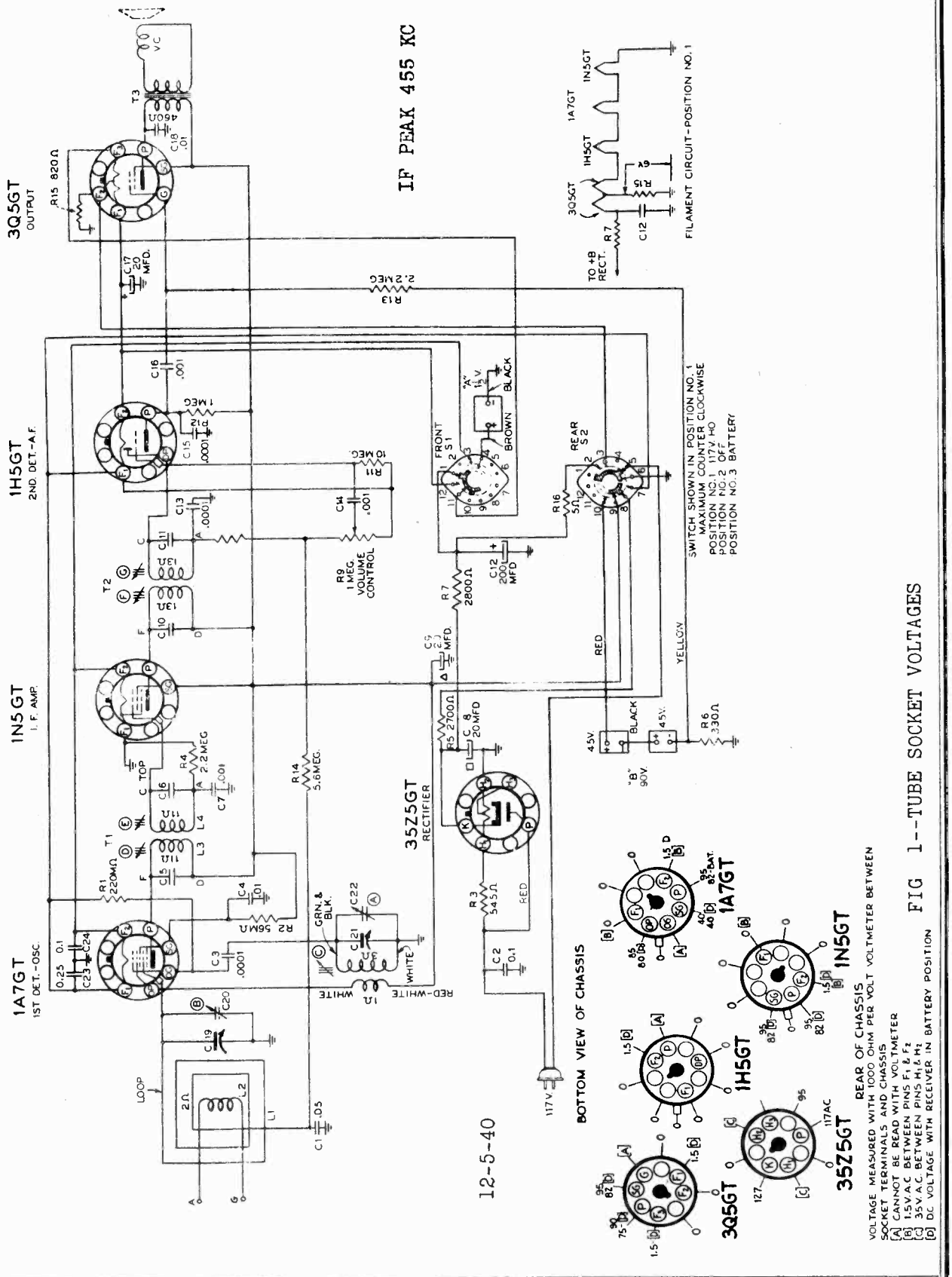


FIG 1--TUBE SOCKET VOLTAGES

VOLTAGE MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS
[A] CANNOT BE READ WITH VOLTMETER
[B] 1.5 V.A.C. BETWEEN PINS F1 & F2
[C] 35 V.A.C. BETWEEN PINS H1 & H2
[D] DC VOLTAGE WITH RECEIVER IN BATTERY POSITION

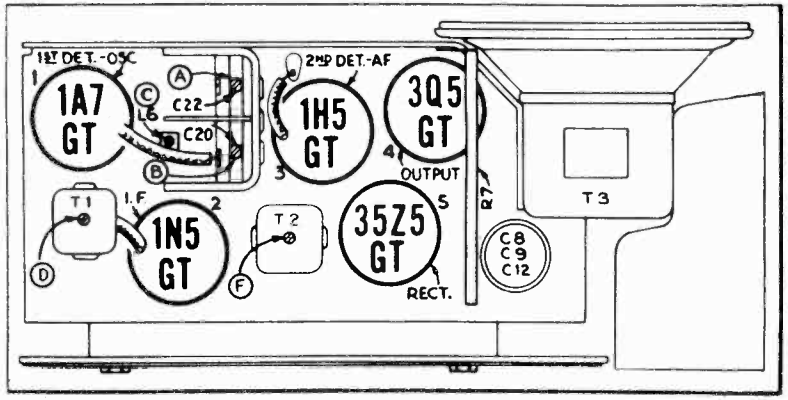


FIG. 3--PARTS LAYOUT--Top View

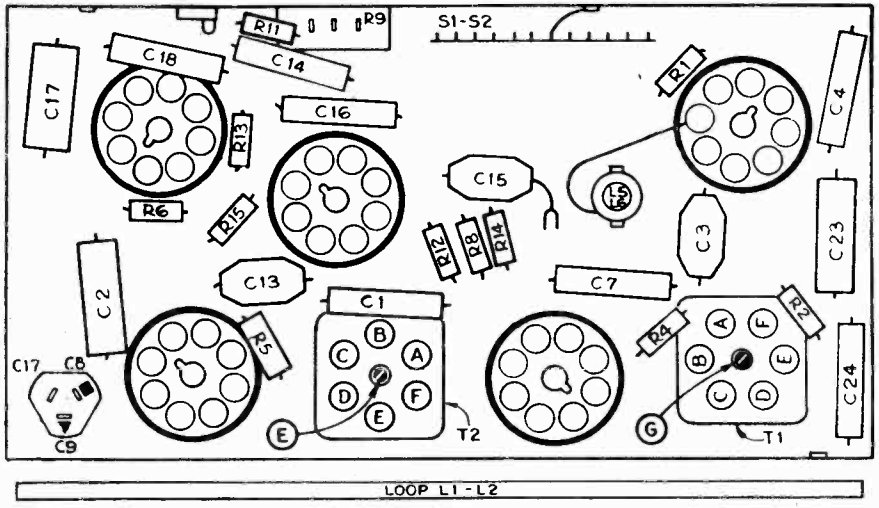


FIG. 4--PARTS LAYOUT--Bottom View

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.

1. Aligning I-F Stages at 455 Kilocycles

   (a) Connect the ground lead of the signal generator to the chassis through a .01 mfd. condenser.

   (b) Connect the signal lead of the signal generator to the grid cap of the 1N5GT tube through a .01 mfd. condenser.

   (c) Connect the output meter across the primary of the output transformer.

   (d) Set the signal generator to exactly 455 KC.

   (e) Tune the receiver to quiet point at 1600 KC end of dial, set Volume Control full on, adjust the trimmers on the second I-F transformer (Illus. F, G, Fig. 3 & 4) for maximum output.

   (f) Connect the signal lead of the signal generator to the grid cap of the 1A7GT tube.

   (g) Adjust the trimmers on the first I-F transformer (Illus. D, E, Fig. 3 & 4) for maximum output.

2. Aligning at 1720 Kilocycles.

   (a) Connect the signal lead of the signal generator to the antenna lead of the loop through a .0001 mfd. condenser.

   (b) Set signal generator to exactly 1720 KC.

   (c) Tune receiver to 1720 KC, condenser plates full clockwise (out of mesh).

   (d) Adjust oscillator trimmer condenser (Illus. A, Fig. 3) for maximum output.

3. Aligning at 1400 Kilocycles

   (a) Leave the signal lead of the signal generator connected as above.

   (b) Set the signal generator to 1400 KC.

   (c) Rotate the tuning control knob until this signal is tuned in with maximum output.

   (d) Adjust the antenna trimmer (Illus. B, Fig. 3) for maximum output.

4. Aligning at 600 Kilocycles

   (a) Set signal generator to 600 KC.

   (b) Rotate the tuning control knob until this signal is tuned in with maximum output.

   (c) Adjust oscillator trimmer (Illus. C, Fig. 3) while rocking group condenser back and forth through the signal until maximum output is obtained.

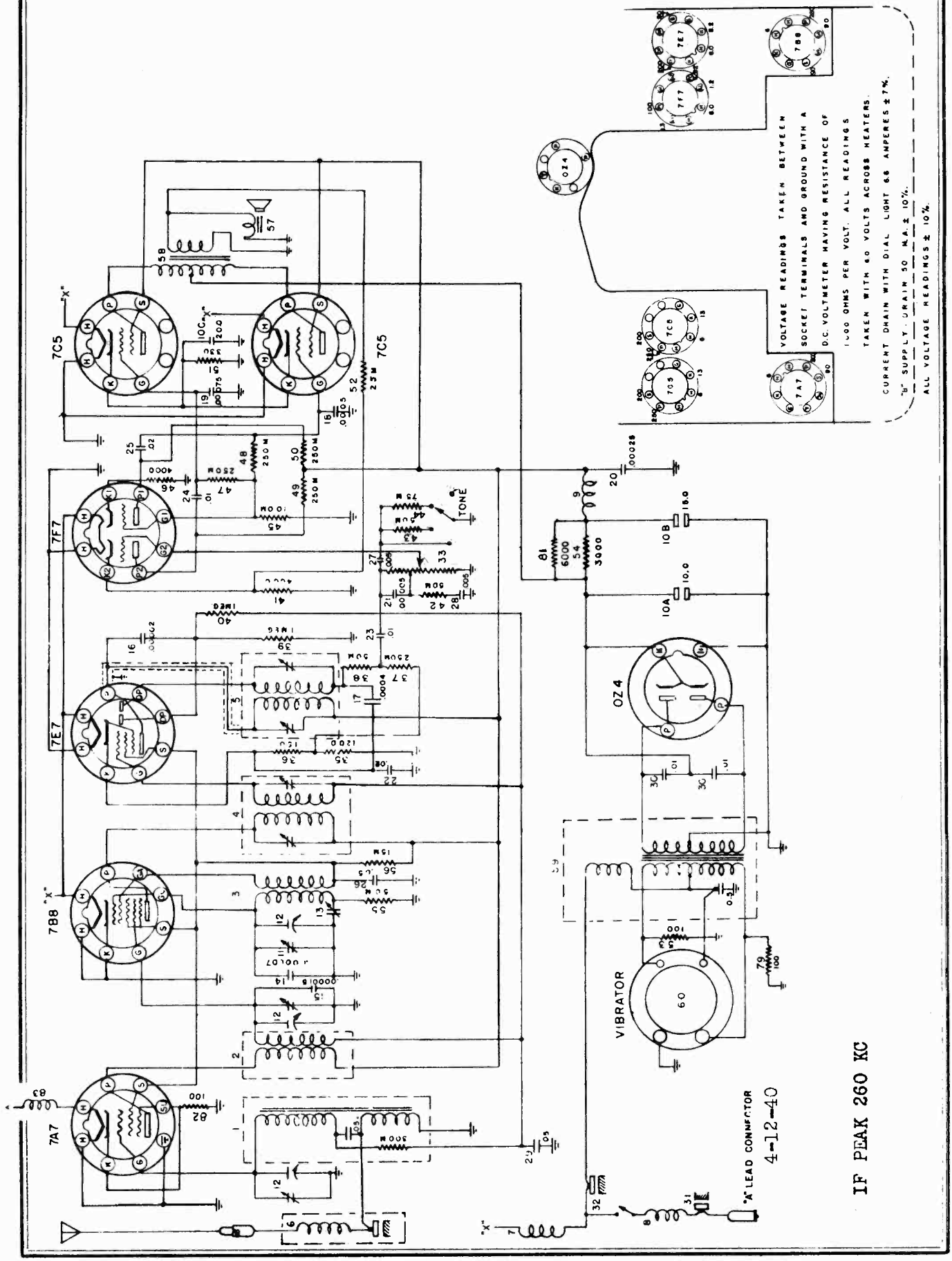
NOTE: Repeat operations 2, 3, and 4.

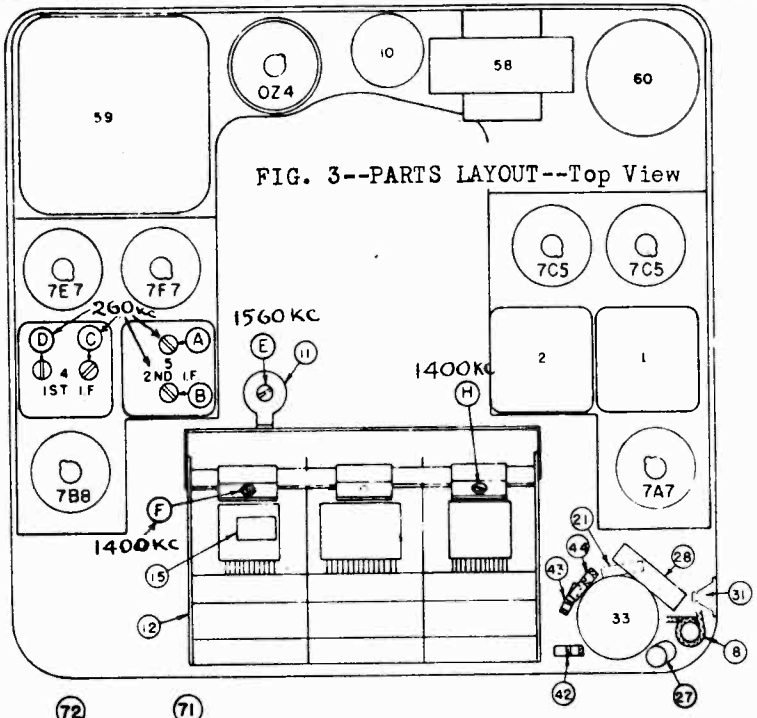
Current Consumption:

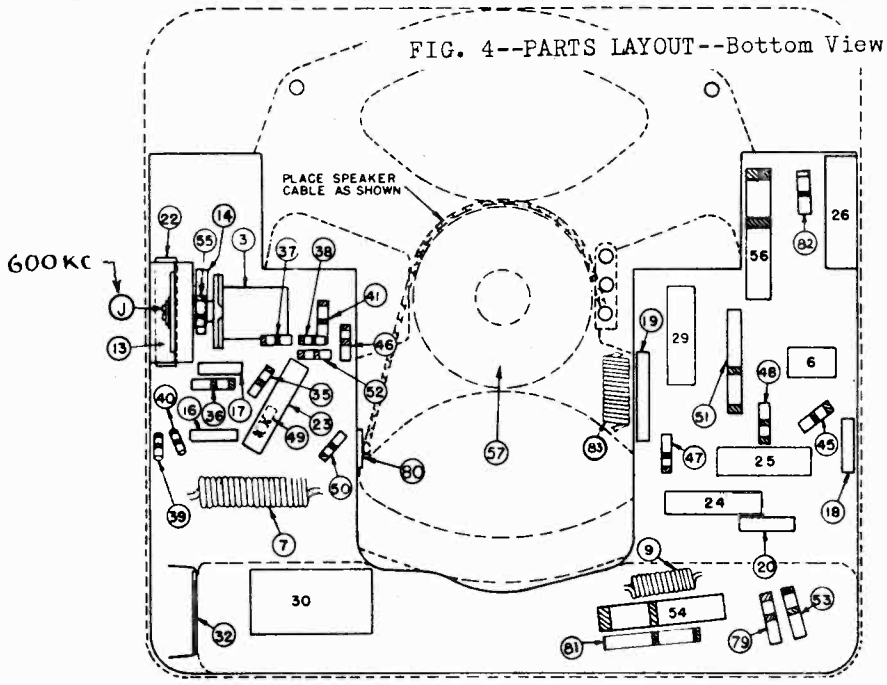
"A" 0.25 amperes	)	105-125 volt 50-60 cycle	)
	) Battery operation		) 35 Watts
"B" 11.5 milliamperes	)	105-125 volt D.C.	)

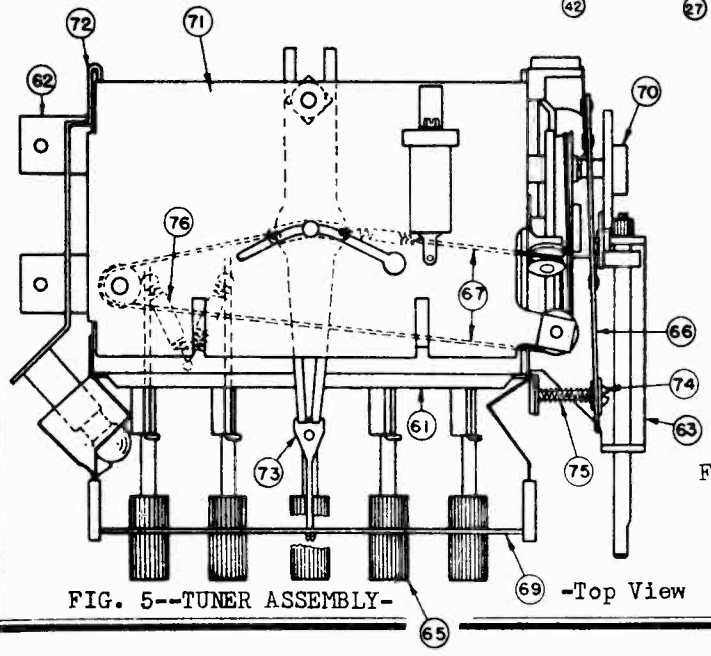
MODEL 983679
Pontiac

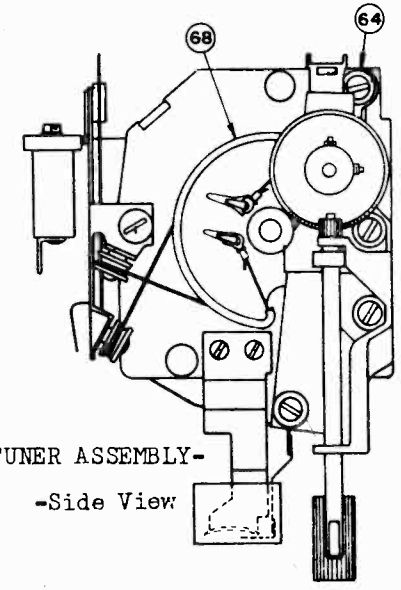
UNITED MOTORS SERVICE











TUNER:

Mechanical tuning is accomplished by five push buttons which rotate the tuning condenser to pre-selected frequencies.

1. Rotate the button to be set in a counter-clockwise direction until it turns freely.
2. Push the button in as far as it will go and hold it in this position while tuning in the desired station by means of the manual knob.
3. When the station has been carefully tuned in, release the button and turn it in a clockwise direction until it becomes tight. Tighten with the fingers, do NOT use any kind of tool.

MODEL 983679
Pontiac

UNITED MOTORS SERVICE

Adjusting receiver to car antenna

When the receiver leaves the factory the antenna circuit is closely aligned to match the capacity of the car antenna. However, due to variations in antenna capacity it may be necessary to adjust the antenna trimmer to match the car antenna. This should be done as follows:

(a) Turn set on and tune in a very weak station between 120 and 150 (near 150) on the dial. Adjust the antenna trimmer (F) for maximum volume.

Do not disturb the oscillator or the R.F. trimmers in making this adjustment.

SERVICE HINTS

Dial cord (or pointer) replacement:

1. Unhook the cord eyelets from drive pulley.
2. Move pointer by hand toward the 150 end of the dial until the pointer pivot pin drops through the enlarged end of the pointer guide slot.
3. Lift the pointer and pointer cord out of the tuner from the dial side.
4. File off the lower tip of the pointer guide pin, releasing the retaining washer and the cord pivot arms.
5. With the pointer upside down and pointing away from the operator, put the longer cord pivot arm on the left. Cord side up.
6. Place the short pivot arm (spring assembly) on the right. Cord side up.
7. Replace the retaining washer and solder it to the guide pin.
8. Replace the pointer. Place pivot pin in the enlarged end of the guide slot and then slide the rear end of the pointer into the rear support bearing.
9. Place the long cord behind the pointer and over pulleys (Fig. 5 & 6). Hook the cord eyelet over the drive pulley hook nearest the back of the tuner and push the cord into position around the pulley rim.
10. Put the spring loaded cord over pulley and between the longer string and the tuner frame before hooking the cord eyelet to the drive pulley.