communications

SERVICE INSTRUCTIONS

S-77

the hallicrafters co.

MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT — CHICAGO 24, U.S.A.

Radio Receiver Model S-77, front view.

GENERAL SPECIFICATIONS

Tubes	Seven plus rectifier
Speaker	5-inch PM
Speaker V.C. Impedance	3.2 ohms
Headset Output	Low Impedance
Antenna	Provision for external antenna
Tuning	Manual
Intermediate Frequency	455 kc
Power Supply	105-125 V. DC/60 cycles AC (using 117 V. ballast tube, R-38) or 210-250 V. DC/60 cycles AC (using 220 V. ballast tube, R-39)
Power consumption	40 Watts

TUNING RANGE

Band Selector Position	Frequency Range
1.	540 kc - 1680 kc
2.	1680 kc - 5.4 mc
3.	5.3 mc - 15.5 mc
4.	15.5 mc - 44 mc

SERVICE INSTRUCTIONS

RESTRINGING DIAL CORD

To restring the main tuning dial cord, cut a 15-inch length of 30 lb. test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Follow the numbers "1" through "4", and at position "4" stretch the tension spring and tie the cord securely.

To restring the band spread tuning dial cord cut a 22-inch length of dial cord and follow the procedure as above, starting at position "A" on the diagram. Note that the tuning drive shafts are wrapped with two and a fraction turns of dial cord for proper traction.

REPLACING LAMPS

Refer to Fig. 7 for the location of the two dial lamps used in the receiver. To gain access to defective lamps, reach in through cabinet cover and unclip the dial lamp sockets. The sockets may then be brought out into the open to change the defective lamp. Replace lamps with 6-8 V. G.E. #47 (brown bead) lamps or equivalent.

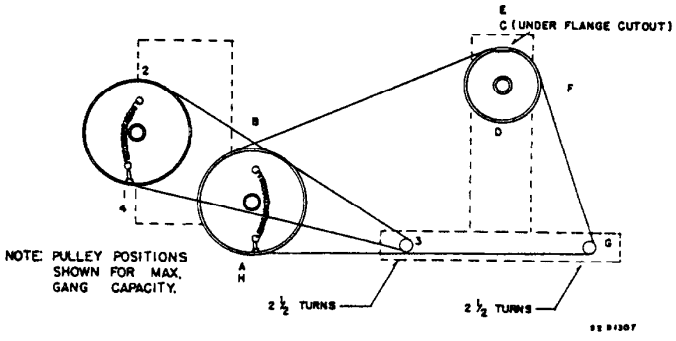


FIG. 1. DIAL CABLE STRINGING PROCEDURE

ALIGNMENT PROCEDURE

For I-F amplifier alignment it will be necessary to remove the receiver chassis from the cabinet. The chassis is held in the cabinet by three screws along both the bottom edge of the front panel and the rear of the cabinet, and two screws on either side of the front panel.

NOTE - R-F alignment should be accomplished through the holes provided in the cabinet bottom as the oscillator calibration will be effected slightly by changes in the capacity between the cabinet bottom and the r-f coils and wiring.

Before starting the alignment procedure, check the position of the main tuning index marker on the low frequency end of the range and set the bandspread dial on zero position. The main tuning condenser should index at max. capacity, and the bandspread condenser at min. capacity.

The standard RMA dummy antenna mentioned in the alignment chart consists of a 200 mmf. condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf. condenser in series with a 400 ohm carbon resistor.

Set the following controls before alignment

SENSITIVITY	Set at maximum
VOLUME	Set at maximum
AVC switch	Set at OFF
BAND SPREAD	Set at zero
CW/AM	Set at AM (See Step 2)
NOISE LIMITER	Set at OFF
STANDBY/RECEIVE	Set at RECEIVE
TONE SWITCH	Set at HIGH

For the settings of the remaining controls, see alignment chart.

ALIGNMENT CHART

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Switch Setting	Receiver Dial Setting	Adjust	Remarks
1	None	Stator plates in center section of tuning gang.	455 kc	"1"	1000 kc	A,B,C, D,E,F	Maximum audio output at speaker voice coil. Use just enough signal generator output to obtain a 50 MW signal level.
2	None	See step 1	455 kc (No modulation)	"1"	1000 kc	G	With the CW/AM switch set at CW, remove the pitch control knob and adjust "G" for zero beat. Replace the knob with the dot on the center position.
3	Std RMA dummy	"A1" on antenna strip. Jumper connected between "A2" and "G".	36 mc	"4"	36 mc	*I,J	Maximum output as in step 1.
			18 mc		18 mc	*K,L,M	
4	Std RMA dummy	See step 3	14 mc	"3"	14 mc	*N,O,P	Maximum output as in step 1.
			10 mc		10 mc	*Q,R,S	
5	Std RMA dummy	See step 3	5 mc	"2"	5 mc	*T,U,V	Maximum output as in step 1.
			1.8 mc		1.8 mc	*W	
6	Std RMA dummy	See step 3	1500 kc	"1"	1500 kc	*X,Y,Z	Maximum output as in step 1.
			600 kc		600 kc	*Z'	

*Note - Calibration adjustments.

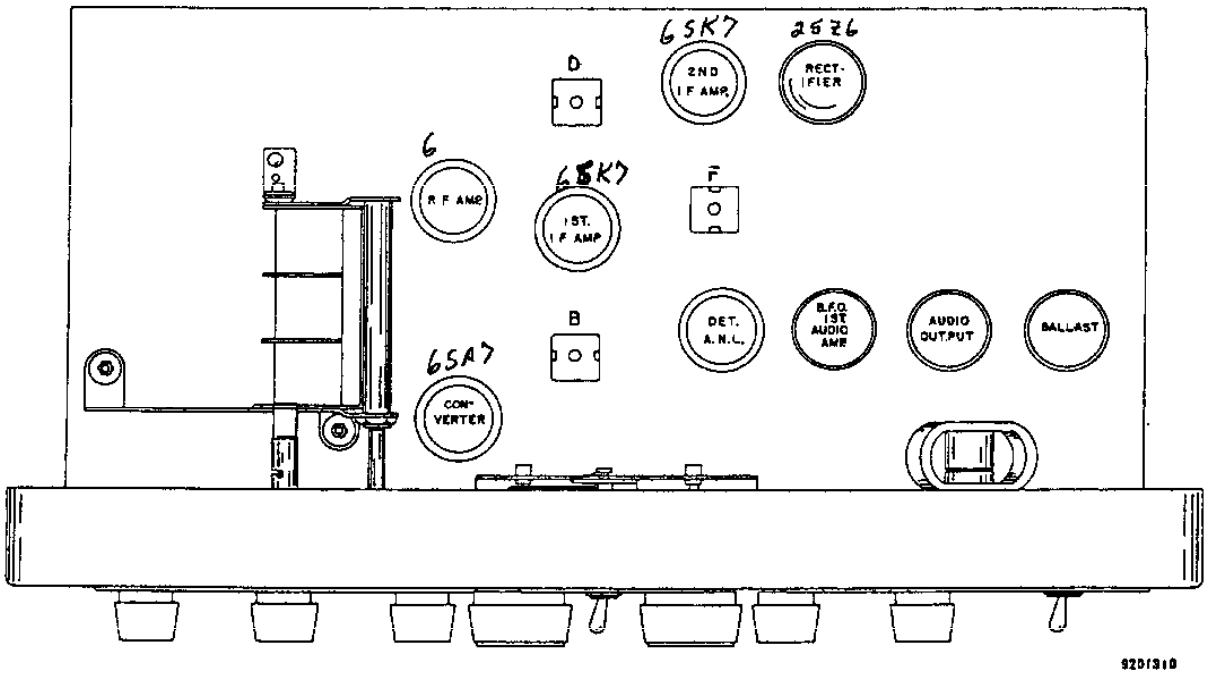


FIG. 2. TOP VIEW, ALIGNMENT POINTS

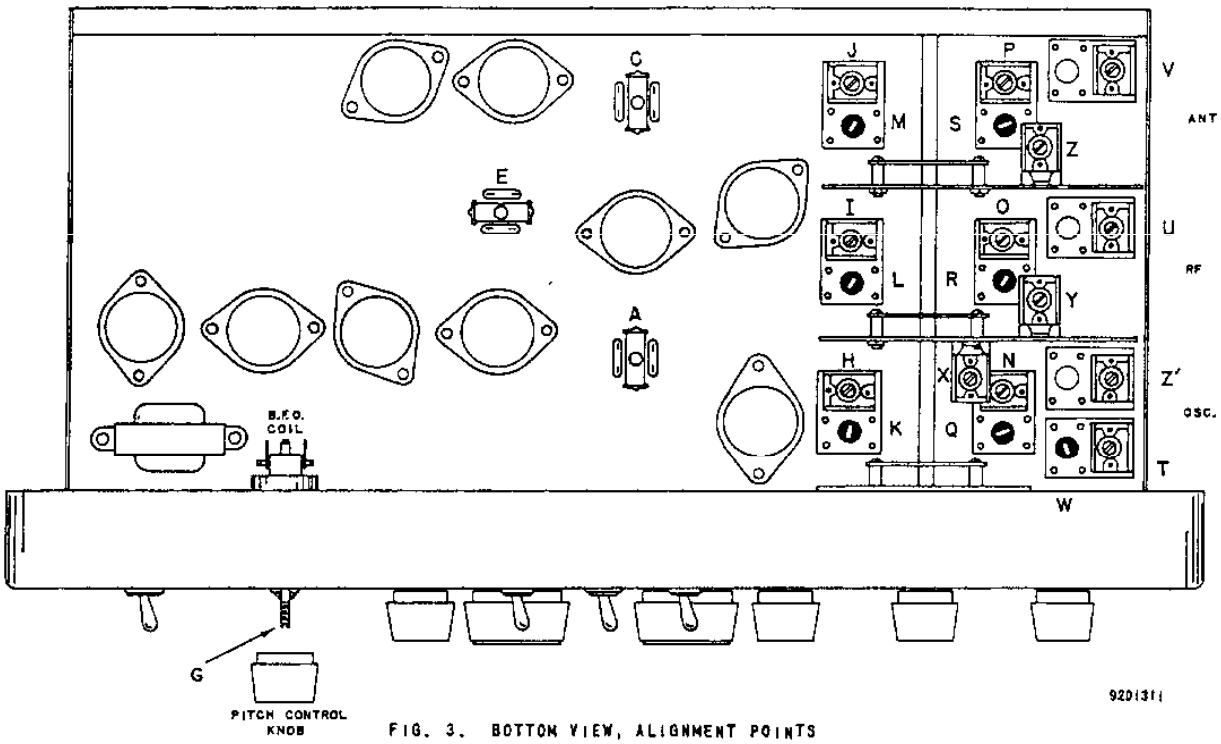


FIG. 3. BOTTON VIEW, ALIGNMENT POINTS

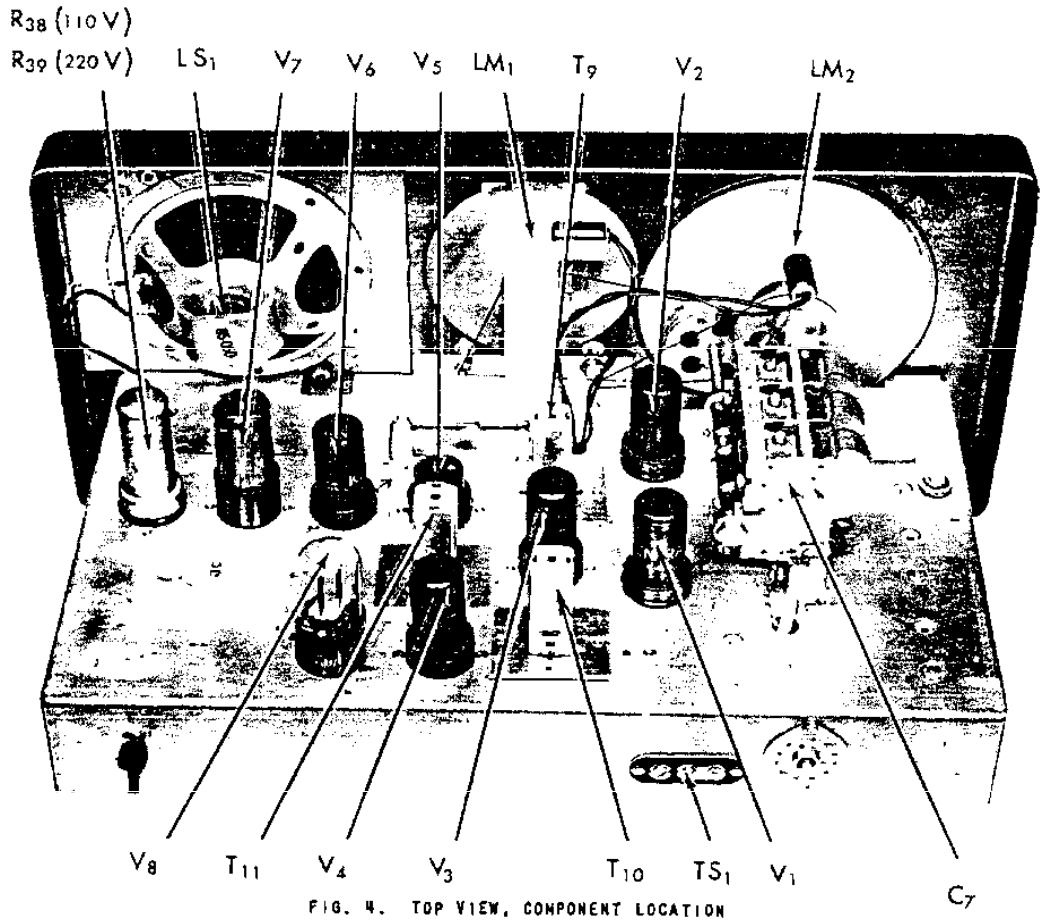


FIG. 4. TOP VIEW, COMPONENT LOCATION

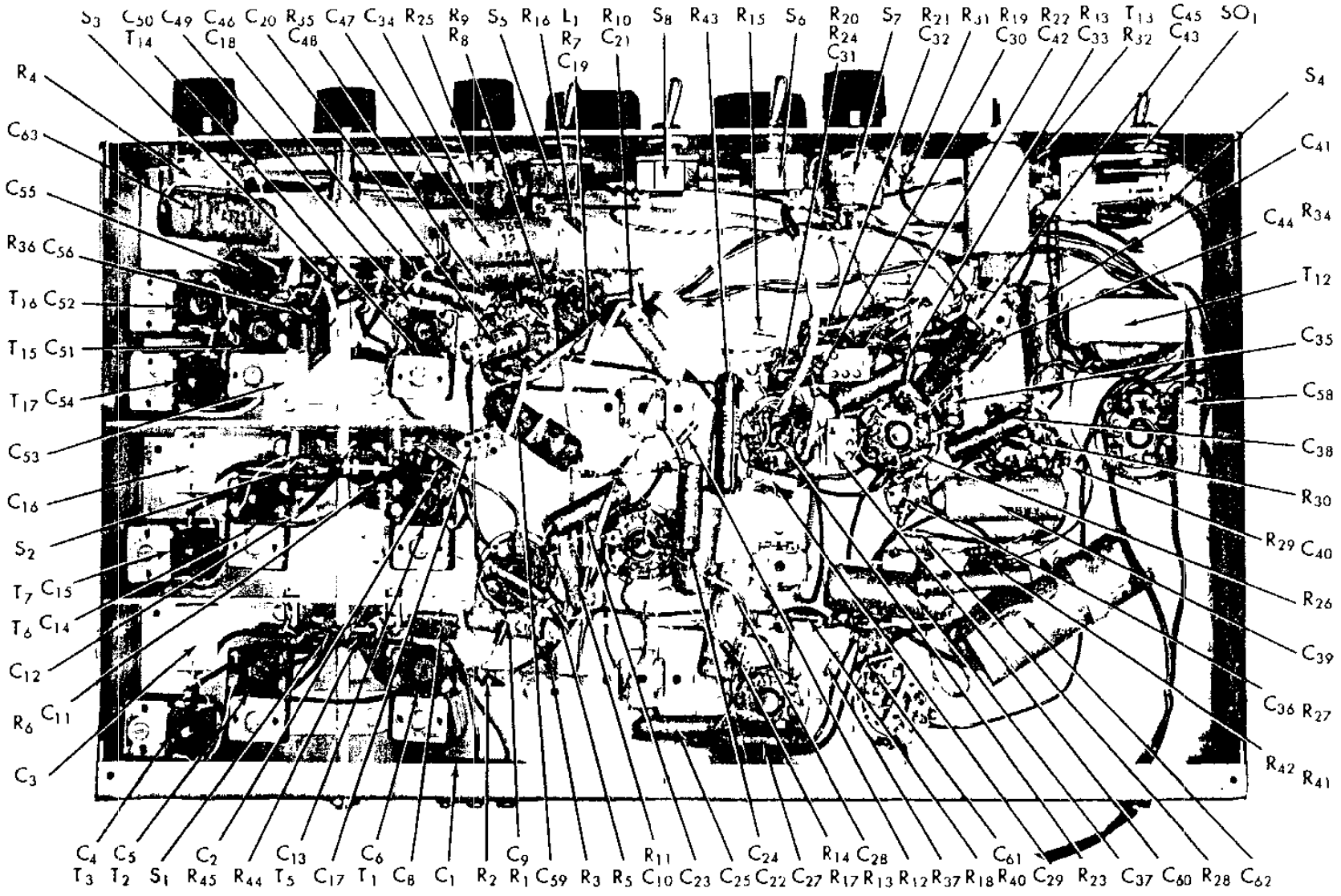
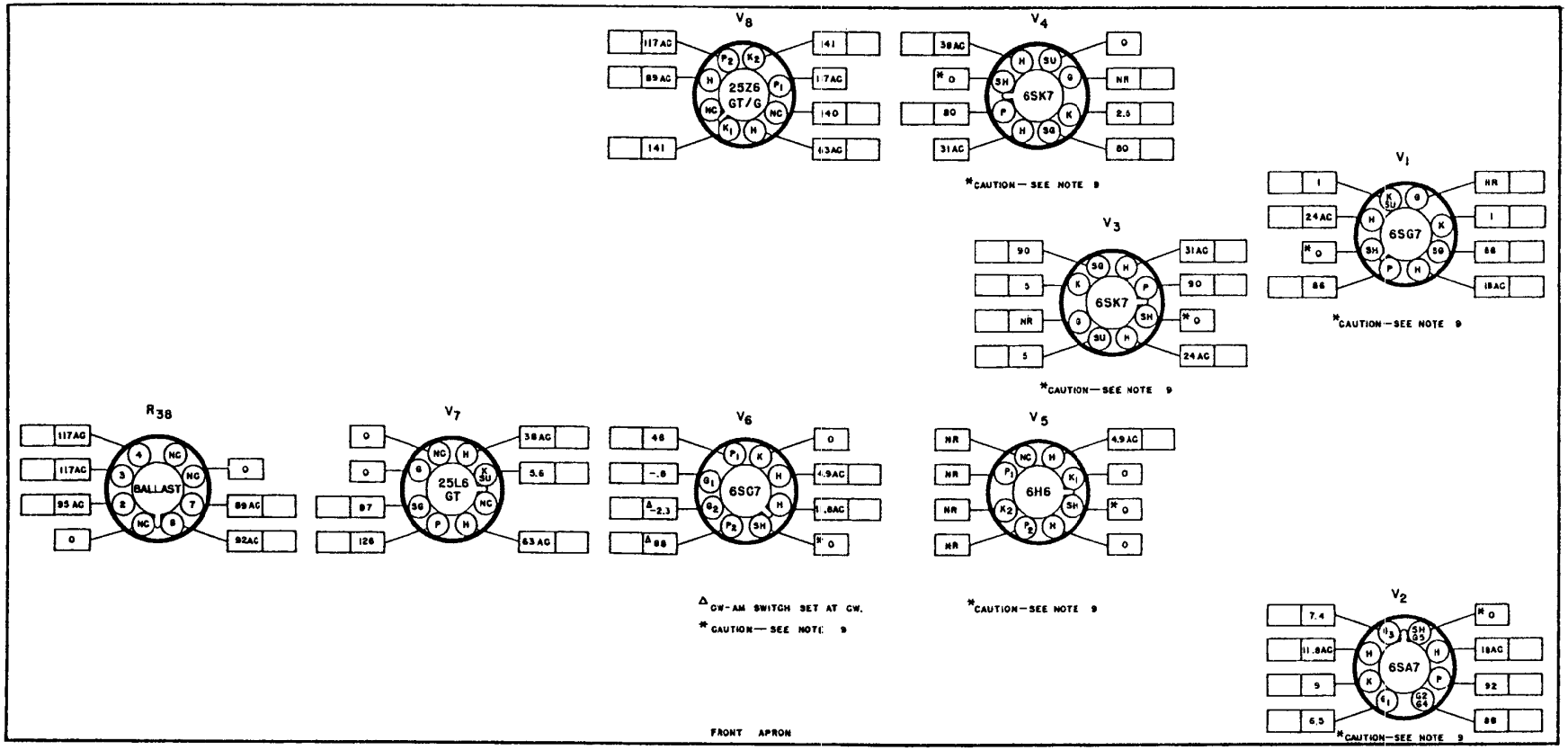


FIG. 5. BOTTOM VIEW, COMPONENT LOCATION

SERVICE PARTS LIST

Ref. No.	Description	Hallicrafters Part Number
	CAPACITORS	
C-1,9,10,21, 23,38,43	.01 mfd. 600V., tubular paper	46AZ103J
C-2,42,60	100 mmf. 500V., mica	47X20B101K
C-3,16,53	Trimmer, 2-20 mmf.	44A191
C-4	Trimmer (part of coil T-3)	
C-5	Trimmer (part of coil T-2)	
C-6	Trimmer (part of coil T-1)	
C-7	Tuning capacitor, 3 section; ganged	48C240-B
C-8,17,36, 61	220 mmf. 500V., mica	47X20B221K
C-11	24 mmf., ceramic	47X25UK240M
C-12	15 mmf., ceramic	47X21UK150M
C-13	Trimmer (part of coil T-5)	
C-14	Trimmer (part of coil T-6)	
C-15	Trimmer (part of coil T-7)	
C-18,44	270 mmf. 500V., mica	47X20B271K
C-19,40	.005 mfd. 600V., tubular paper	46AZ502J
C-20,35	.003 mfd. 600V., tubular paper	46AY302J
C-22,25,27, 33,34	.02 mfd. 200V., tubular paper	46AU203J
C-24,28,41	.05 mfd. 600V., tubular paper	46AY503J
C-26,57	2 mmf., wire gimmick	
C-29,30	47 mmf. 500V., mica	47X20B470K
C-31,32,48	.05 mfd. 200V., tubular paper	46AU503J
C-37	.1 mfd. 600V., tubular papar	46AY104J
C-39	10 mfd. 25V., electrolytic	45A121
C-45	470 mmf. 500V., mica	47X20B471J
C-46	.002 mfd. 600V., tubular paper	46AZ202J
C-47	10 mfd. 150V., electrolytic	45A097
C-49	68 mmf., ceramic	47X25UK680K
C-50	Trimmer (part of coil T-14)	
C-51	Trimmer (part of coil T-15)	
C-52	Trimmer (part of coil T-16)	
C-54	Padder (part of coil T-17)	
C-55	1500 mmf. 500V., mica	47X35C152J
C-56	3000 mmf. 500V., mica	47X35B302K
C-58	.02 mfd. 600V., molded tubular paper	46BR203L6
C-59	Resonant capacitor (.05 mfd. 600V.)	46A150
C-62	60-20-20 mfd. 150V., electrolytic	45B128-C
C-63	.25 mfd. 200V., tubular papar	46AT254J
	RESISTORS	
R-1	22 ohms 1/2 watt, carbon	23X20X220K
R-2,7,20	1 megohm 1/2 watt, carbon	23X20X105M
R-3	120 ohms 1/2 watt, carbon	23X20X121K
R-4	10,000 ohms; SENSITIVITY control	25B590
R-5,10,11, 14,18,35, 44	1000 ohms 1/2 watt, carbun	23X20X102K
R-6,45	6800 ohms 1 watt, carbon	23X30X682K
R-8	18,000 ohms 1/2 watt, carbon	23X20X183K
R-9	6.8 ohms 1/2 watt, carbon	23X20X068K
R-12,21,28	100,000 ohms 1/2 watt, carbon	23X20X104M
R-13,17	330 ohms 1/2 watt, carbon	23X20X331K
R-15,23	2.2 megohms 1/2 watt, carbon	23X20X225M
R-16,30	150 ohms 1/2 watt, carbon	23X20X151K
R-19,34	47,000 ohms 1/2 watt, carbon	23X20X473K
R-22,27	330,000 ohms 1/2 watt, carbon	23X20X334M
R-24,29	470,000 ohms 1/2 watt, carbon	23X20X474M
R-25	500,000 ohms; VOLUME control	25B586
R-26	10 megohms 1/2 watt, carbon	23X20X106M
R-31	4700 ohms 1/2 watt, carbon	23X20X472K
R-32	15 ohms 1 watt, carbon	23X30X150M
R-33	15,000 ohms 1/2 watt, carbon	23X20X153K
R-36	10 ohms 1/2 watt, carbon	23X20X100K
R-37	270,000 ohms 1/2 watt, carbon	23X20X274M
R-38	Ballast tube (117V.)	24B875
R-39	Ballast tube (220V.)	24B874
R-40	15 ohms 1/2 watt, carbon	23X20X150K
R-41	100 ohms 1/2 watt, carbon	23X20X101K
R-42	1000 ohms 2 watts, carbon	23X40X102K
R-43	110 ohms 10 watts, WW	24BG111E

Ref. No.	Description	Hallicrafters Part Number
	TRANSFORMERS AND COILS	
L-1	Choke, RF	53A138
T-1	Coil, antenna; band 4	51B783
T-2	Coil, antenna; band 3	51B782
T-3	Coil, antenna; bands 1 and 2	51B1241
T-5	Coil, RF, band 4	51B787
T-6	Coil, RF; band 3	51B786
T-7	Coil, RF; bands 1 and 2	51B1240
T-9,10	Transformer, 1st and 2nd IF	50C243
T-11	Transformer, IF (detector stage)	50C242
T-12	Transformer, audio output	55B110
T-13	Coil, PITCH CONTROL	54B044
T-14	Coil, oscillator, band 4	51B791
T-15	Coil, oscillator; band 3	51B913
T-16	Coil, oscillator; band 2	51B789
T-17	Coil, oscillator; band 1	51B912
	SWITCHES	
S-1	Wafer, bandswitch; antenna stage	60B389
S-2	Wafer, bandswitch; RF stage	62B039
S-3	Wafer, bandswitch; oscillator stage	62B044
S-4,5,6,8,	Switch, toggle (SPST); STANDBY-RECEIVE, A.V.C., A.N.L., and CW-AM	60A138
S-7	Switch, PWR-TONE	60A225
	PLUGS AND SOCKETS	
PL-1	Line cord and plug	87B1573
SO-1	Jack, PHONES	36B004
SO-2	Socket, octal, ballast tube	6A250
	Socket, octal, tube	6A250
	Socket, dial lamp (main tuning dial)	86B101
	Socket, dial lamp (bandspread dial)	68B968
	***TUBES, RECTIFIERS AND DIAL LAMPS**	
V-1	Type 6SG7, RF amplifier	90X6SG7
V-2	Type 6SA7, converter	90X6SA7
V-3,4	Type 6SK7, 1st and 2nd IF amplifiers	90X6SK7
V-5	Type 6H6, detector and A.N.L.	90X6H6
V-6	Type 6SC7, audio amp. and B.F.O.	90X6SC7
V-7	Type 25L6GT, audio output	90X25L6GT
V-8	Type 25Z6GT/G, rectifier	90X25Z6GT/G
LM-1,2	Lamp, dial; GE #47	39A004
	MISCELLANEOUS	
	Bandswitch and shaft	68B382
	Cabinet (lower section)	66E359
	Cabinet front panel	68D160
	Cabinet top	66D616
	Dial, bandspread	83B372
	Dial, main tuning	83C240
	Dial cord	38A001
	Foot, rubber	16A007
	Glass, bandspread tuning dial	22A307
	Glass, main tuning dial	22B199
	Knob, BAND SELECTOR	15A266
	Knob, PITCH CONTROL	15A058
	Knob, TUNING and BANDSPREAD	15A047
	Knob, SENSITIVITY, VOLUME and TONE	15A049
	Lock, line cord	76A397
	Screw, Allen head (6-32 x 3/16)	3A1122
	Slug, adjustable tuning	77A068
LS-1	Speaker, PM; 5 inch	85B050
	Spring, dial cord	75A012
	Spring, retainer	75A062
TS-1	Terminal strip, antenna	88A032



BOTTOM VIEW OF CHASSIS

NOTES—

1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND THE ELECTRICAL GROUND BUSS (NOT CHASSIS) WITH ZERO SIGNAL INPUT.
3. LINE VOLTAGE—117 V AC. AC VOLTAGES WILL BE DC VOLTAGES WHEN OPERATING FROM A DC SOURCE.
4. ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED.
5. DC VOLTAGES SHOWN WERE MEASURED WITH AN ELECTRONIC VOLTMETER.
6. "NC"—NO CONNECTION. (VOLTAGE SHOWN FOR THIS TERMINAL ONLY WHEN TERMINAL IS USED AS A TIE LUG).
7. "NR"—NOT READABLE (READING GENERALLY MEANINGLESS).
8. [ ] SPACE PROVIDED FOR SERVICE METER READINGS.
9. ALL READINGS TAKEN WITH LINE PLUG POLARIZED SO THAT GROUND BUSS AND CHASSIS ARE AT SAME POTENTIAL WITH THE CHASSIS GROUNDED.

CONTROL	SETTING
SENSITIVITY	FULL CLOCKWISE
BAND SELECTOR	BAND 4
AVC	ON
CW/AM	AM
NOISE LIMITER	OFF
STANDBY/RECEIVE	RECEIVE

D2I1309

FIG. 6. TUBE SOCKET VOLTAGE CHART

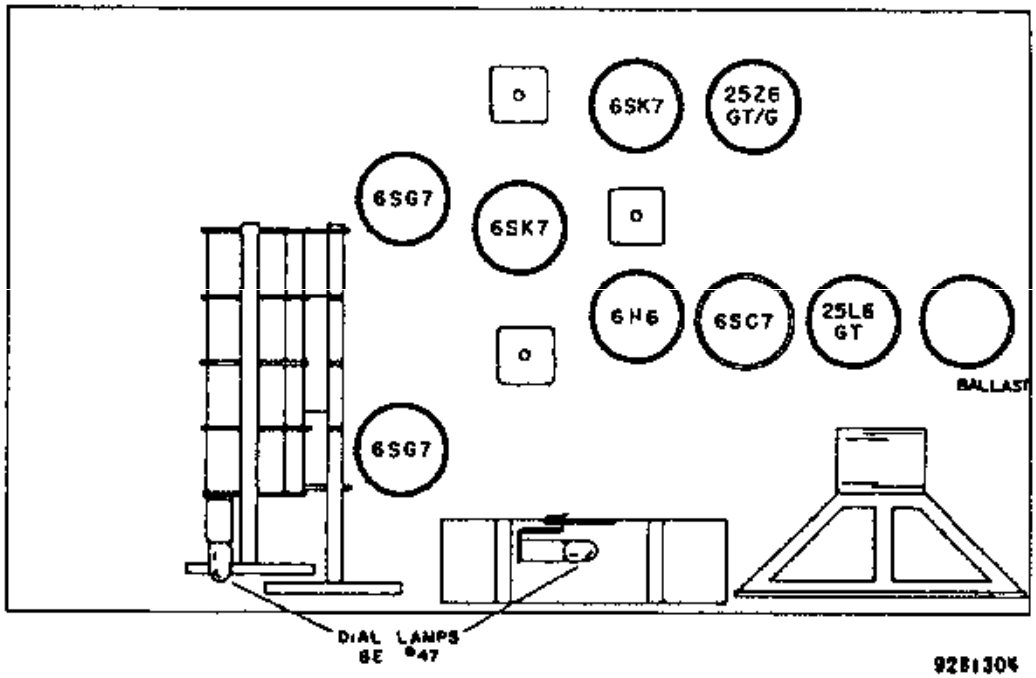
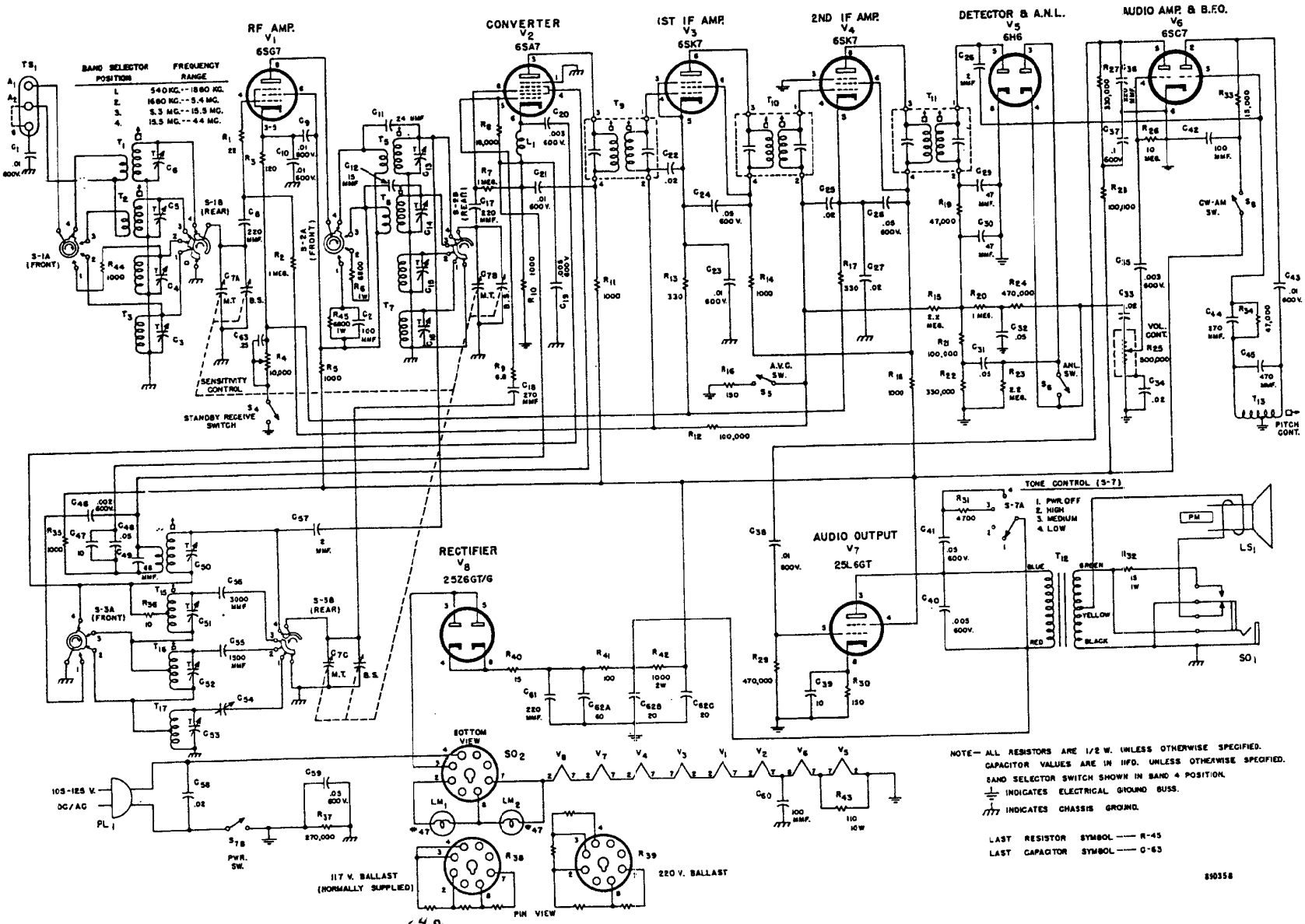


FIG. 7. TOP VIEW, LOCATION OF TUBES AND DIAL LAMPS

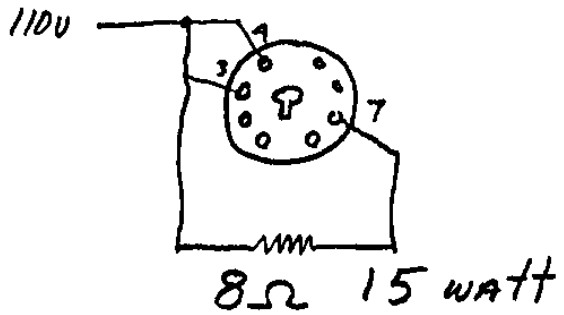


"The Hallicrafters Co. reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate these revisions in earlier models."

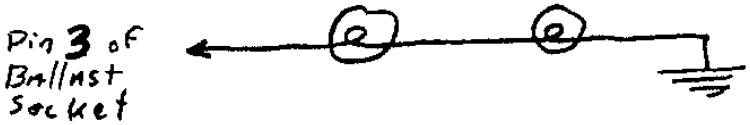
VALUES & TOLERENCES SHOWN ARE NOMINAL A VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUE OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED.

FIG. 8. SCHEMATIC DIAGRAM

Replacement ckt 110v BALLAST

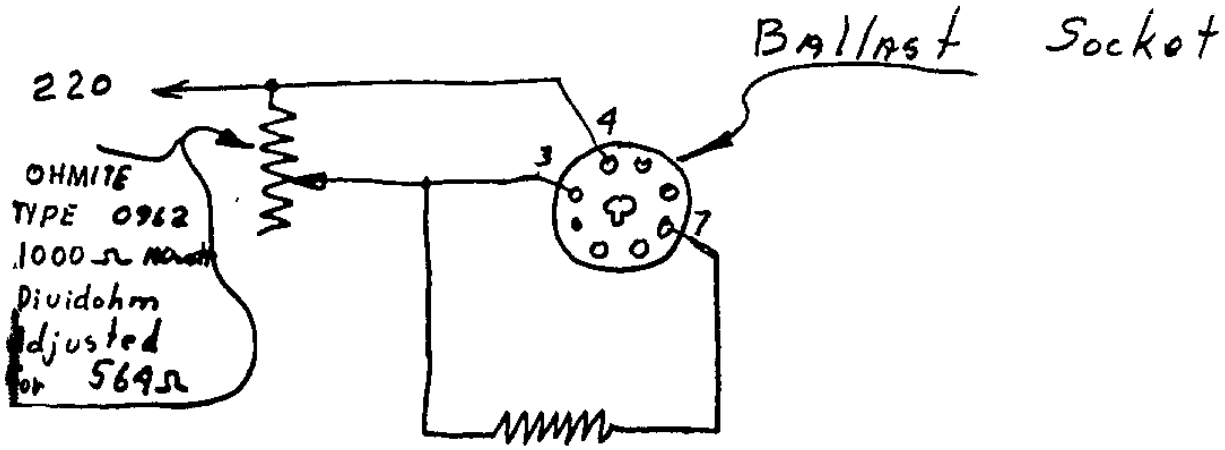


Re wire Panel Lamps.



Replace Bulbs with "Chicago Miniature
TYPE 1835 (55 volt @ .05 A) or Similar

Replacement ckt 220v Ballast



Rewire Panel Lamps

Replace Bulbs with "Chicago Miniature"
TYPE 1835 (55 volt @ .05A) or similar