communications

OPERATING and SERVICE INSTRUCTIONS

S-77A

RUN 5

the hallicrafters co.

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

92X1827

Fig. 1. Radio Receiver Model S-77A, Front View

GENERAL DESCRIPTION

This Hallicrafters Communication receiver offers the finest in world wide radio reception. In addition to outstanding preformance on the amateur bands its continuous frequency coverage from 540 kilocycles to 44 megacycles provides for excellent reception of standard broadcast programs, police, foreign and domestic shortwave broadcasts, aircraft, ships and many other exciting distant stations. It receives both voice and code signals. An Alnico V permanent magnet speaker and full range tone control assure lifelike reproduction of your favorite radio broadcasts.

Good reception is usually possible without an outside antenna or ground. In most localities fine preformance of both standard and shortwave broadcasts can be obtained with the 15 foot antenna wire that has been included with your receiver.

Your receiver is equipped with many special controls not found on ordinary sets. The function and use of each control is fully explained under "Operating Instructions". As a special convenience for those who are not yet familiar with the advantages of the various controls, the tuning dial and the knob positions that are most commonly used for broadcast reception have been clearly marked with a dot.

IMPORTANT

Your careful attention is especially invited to the installation and operating instructions. They have been provided to insure the satisfaction you have a right to expect from a Hallicrafters "Precision Built" product. Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation of a high sensitivity receiver may result in excess noise or background hiss. These undesirable effects can be held to a minimum by careful adjustment of the sensitivity, tuning and tone controls as well as the proper selection and arrangement of the antenna.

SHORTWAVE RECEPTION

Shortwave receiving conditions vary considerably with the time of day and the season of the year. The following table has been included to serve as a general guide for the most favorable shortwave listening.

BEST SHORTWAVE RECEPTION TABLE

FREQUENCIES	MOST FAVORABLE TIME	MOST FAVORABLE DISTANCE
6 - 7 MC	Night - Winter	Day - 400 miles Night - Over 1500 miles
9 - 10 MC	Day - Late Afternoon and Night - Winter	Over 500 miles
11 - 12 MC	Evenings or Late Summer Afternoons	Day - Under 1500 miles Night - Over 1500 miles
15 - 18 MC	Early Mornings and Summer Evenings	Over 1500 miles

INSTALLATION

UNPACKING - Check all shipping tags and labels for instructions before removing or destroying them.

POWER SOURCE - The power plug should be inserted into a power outlet that will supply 105-125 volts d.c. or 50-60 cycle a.c. current. If in doubt as to your power supply, call your power company before plugging in your receiver. When operating from d.c. reverse the power plug if the receiver fails to operate after a 60 second warm up period.

This receiver may be operated from 220 volts a.c./d.c. by use of ballast unit 24B874 that is available from your Hallicrafters Dealer. To install this ballast unit it is merely necessary to remove the ballast unit that is already installed and replace it with the one for 220 volt operation. Refer to figure 10.

LOCATION - The receiver may be placed in any convenient location away from radiators or other hot air sources. Allow at least three inches from the wall to permit adequate air circulation.

ANTENNAS - The terminals marked A1, A2 and G on the back of the set are for antenna and ground connections. Satisfactory reception can be obtained in most localities with merely the 15 foot antenna wire included with your set. The wire should be uncoiled to provide maximum signal pickup. An outside antenna 50 to 100 feet long (ordinary copper wire) may be necessary if the receiver is operated in a difficult reception area or steel constructed building. Connect the antenna to A1 and then connect the jumper between A2 and G. In some locations, reception may be improved by connecting a lead from terminal G to a cold water pipe or other good ground.

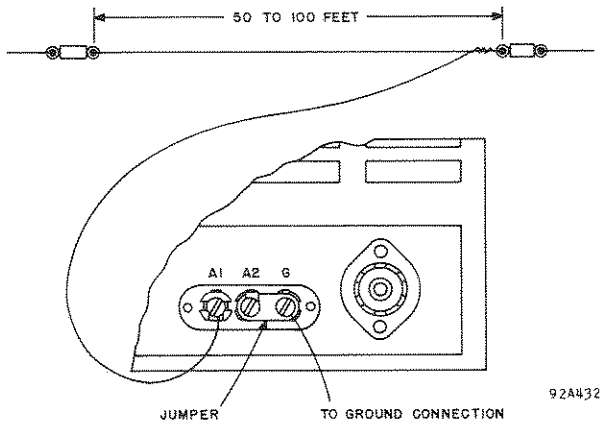

Fig. 2. Single Wire Antenna Installation

DOUBLET ANTENNA - For really top performance, there is no substitute for an outside antenna. Provision has been made on your receiver for the connection of this type of antenna, commonly called a doublet. The overall length (in feet) of the doublet antenna is determined by dividing 468 by the frequency (in megacycles) at the high end of the range to which you wish to listen. Construct the antenna as shown in Fig. 3. A doublet antenna is directional broadside to its length and should be so oriented with respect to a desired station for maximum signal pickup

By feeding the doublet antenna with a transmission line of 300 ohms surge impedance, a broader frequency response is obtained than that possible with a 50-75 ohm line.

When feeding the antenna with a ribbon type transmission line, connect the line to terminals A1 and A2. Disconnect the jumper between A2 and G.

When using a coaxial transmission line, connect the inner conductor to A1 and the outer conductor to A2. Connect the jumper between A2 and G.

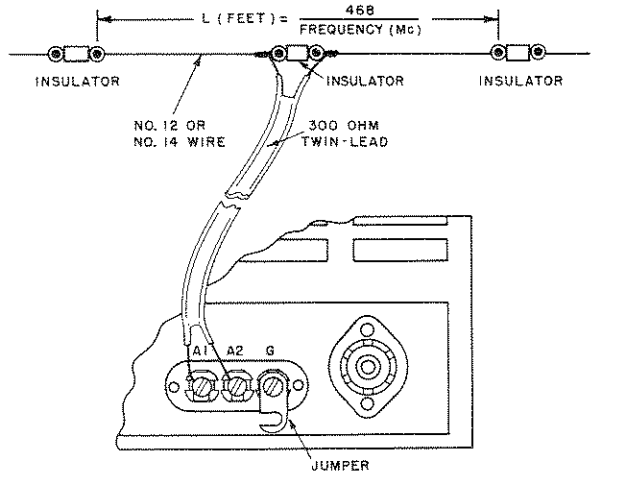

Fig. 3. Doublet Antenna Installation

OPERATION

Each control of this radio receiver performs a definite function which contributes to its outstanding reception capabilities. Full appreciation of your receiver is to be expected only after you have become familiar with each of the controls and the effect their operation has on the performance of the receiver.

SENSITIVITY CONTROL - Use this control in conjunction with the VOLUME control to regulate the volume. The setting of the SENSITIVITY control determines the ability of the radio to pick up weak distant stations. Normally this control should be set fully clockwise for maximum signal pickup. In some instances, however, the signal may be too strong with the control set at maximum and as a result it may sound distorted or produce a high level of background noise or hiss. When this occurs, reduce the sensitivity of the radio slightly by turning the SENSITIVITY control counterclockwise. If, after decreasing the sensitivity, you need more volume use the VOLUME control.

BAND SELECTOR CONTROL - Set this control for the band that you wish to tune. The band numbers corresponding to the settings of this control are on the right side of the large dial.

VOLUME CONTROL - Turn this control clockwise to increase volume or counterclockwise to decrease volume.

AVC SWITCH - This switch controls the automatic volume control circuit. With the switch set at ON, the AVC circuit maintains a uniform volume level over large variations in signal strength at the antenna. For CW reception, the switch should be set at OFF.

CW/AM SWITCH - Set this switch at AM when listening to voice and musical broadcasts or at CW if you wish to hear code signals.

NOISE LIMITER SWITCH - This switch should normally be set at OFF. When severe electrical disturbances interfere with reception, set the switch at ON to place the noise limiter circuit in operation.

TONE CONTROL - This is a combination on-off switch and 3 position tone control. In the AC OFF position, the receiver is inoperative. To turn the set on, simply rotate the control clockwise to any of the three remaining positions. The control should be set for the tone most pleasing to the listener. As an additional noise reducing measure set this control to the LOW position.

PITCH CONTROL - Use this control to vary the pitch of CW code signals when listening to amateur or commercial code stations. The CW/AM switch on the front panel must be set at CW for this control to have any effect.

STANDBY RECEIVE SWITCH - Set this switch at RECEIVE for radio reception. If you wish to silence the receiver without turning the set off, set the switch at STANDBY. To resume radio reception, simply return the switch to the RECEIVE position.

HEADPHONES - Any standard pair of headphones with an impedance of 500 to 5000 ohms can be used with the receiver. The headphones must be equipped with a standard phone plug to fit the PHONES jack located on the lower right side of the front panel. Inserting the headphone plug into the jack automatically disconnects the speaker.

TUNING KNOB - Your receiver has been provided with two tuning knobs which are marked TUNING and BAND-SPREAD. The TUNING knob is for wide tuning and the BAND SPREAD knob for fine tuning. To tune the receiver, set the BAND SPREAD dial pointer to zero and then slowly turn the TUNING knob to the desired station. After the station has been accurately tuned in, adjust the VOLUME control for the desired volume.

IMPORTANT - The dial readings will correspond to the exact station frequency only if the BAND SPREAD dial pointer is set at zero.

BAND SPREAD KNOB - The BAND SPREAD knob permits you to accurately tune in stations on crowded bands by spreading them out so that they can be more easily separated. The BAND SPREAD knob can be used in two different ways. First, it may be left with the pointer at 5 while you partially tune in the desired station with the TUNING knob. Then, by "rocking" the BAND SPREAD knob back and forth (turn it a few degrees to the left and right through the desired station), you will be able to tune in the desired station with precision accuracy. Precision tuning is especially important under heavy noise conditions.

The second way to operate the BAND SPREAD knob is to use it to cover a group of stations. Set the BAND SPREAD knob so that the pointer reads 0 and then turn the TUNING knob to tune in the highest frequency station in the group. The other stations can be heard by slowly turning the BAND SPREAD knob from 0 to 100.

SERVICE OR OPERATING QUESTIONS - For further information regarding operation or servicing of your receiver, contact your dealer. Make no service shipments to the factory. The Hallicrafters Company maintains an extensive system of authorized factory service centers where any required service can be performed promptly and efficiently at a nominal charge. The sign shown at the right is displayed by all authorized service centers.

92X1401-C

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.

SERVICE

GENERAL SPECIFICATIONS

Tubes . . . . . Seven plus rectifier

Speaker . . . . . 5-inch PM

Speaker V.C. Impedance . . 3.2 ohms

Headset Output . . . . . Low Impedance

Antenna . . . . . Single Wire or Doublet

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

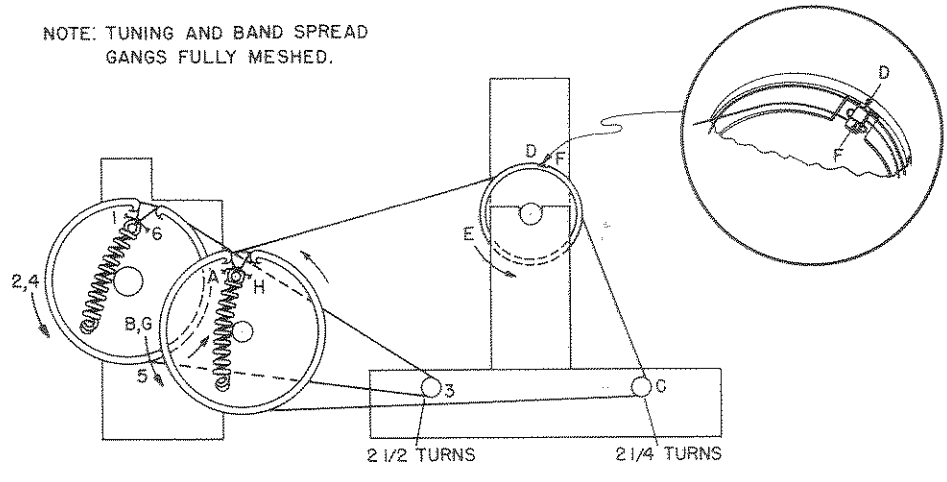

Fig. 4. Dial Cord Stringing Diagram

DIAL CORD STRINGING - The dial drive system of the receiver consists of two separate string drives (1) main tuning dial drive and (2) band spread tuning dial drive. All restringing should be done with the main tuning and band spread gangs fully meshed.

MAIN TUNING DIAL DRIVE - Tie one end of a 28 inch length of 30 lb. test dial cord to the tension spring at position 1 on the main tuning capacitor drive pulley. Stretch the tension spring and follow the stringing procedure 1 through 6. At position 6, tie the cord securely to the spring.

BAND SPREAD DIAL DRIVE - Tie one end of a 35 inch length of 30 lb. test dial cord to the tension spring at position A on the band spread capacitor drive pulley. Stretch the tension spring and follow the stringing procedure A through H. At position H, tie the cord securely to the spring.

DIAL LAMP REPLACEMENT

Refer to Fig. 10 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.

TUBE REPLACEMENT - The tube types and their relative location in the receiver are shown in Fig. 10. Raise the hinged top cover of the cabinet to gain access to all tubes. When installing a replacement tube, insert the center guide pin of the tube into the center hole of the tube socket, rotate the tube until the key on the guide pin drops into the notch in the socket hole and then push down until the base of the tube rests firmly on the socket. Handle all tubes with care as they are fragile and will not withstand mechanical abuse.

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/RECEIVER	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	*H,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.

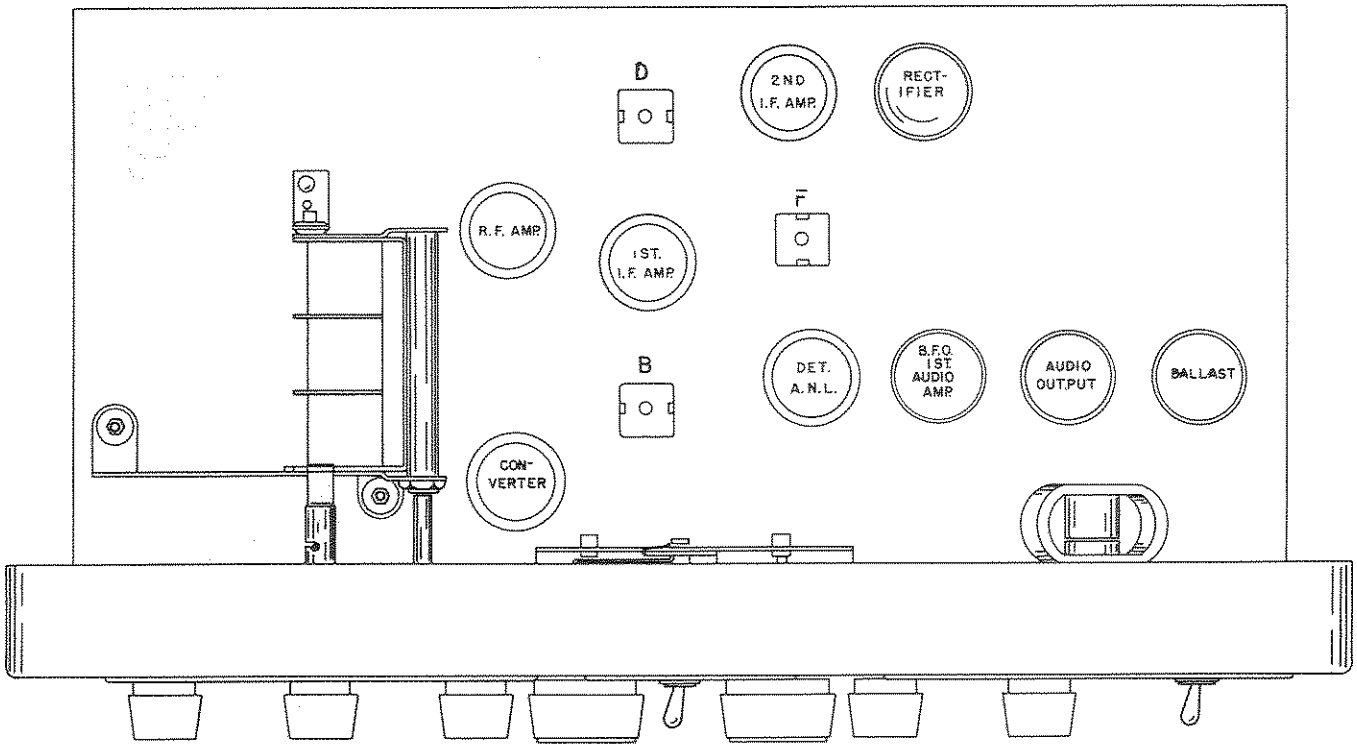

Fig. 5. Top View, Alignment Points

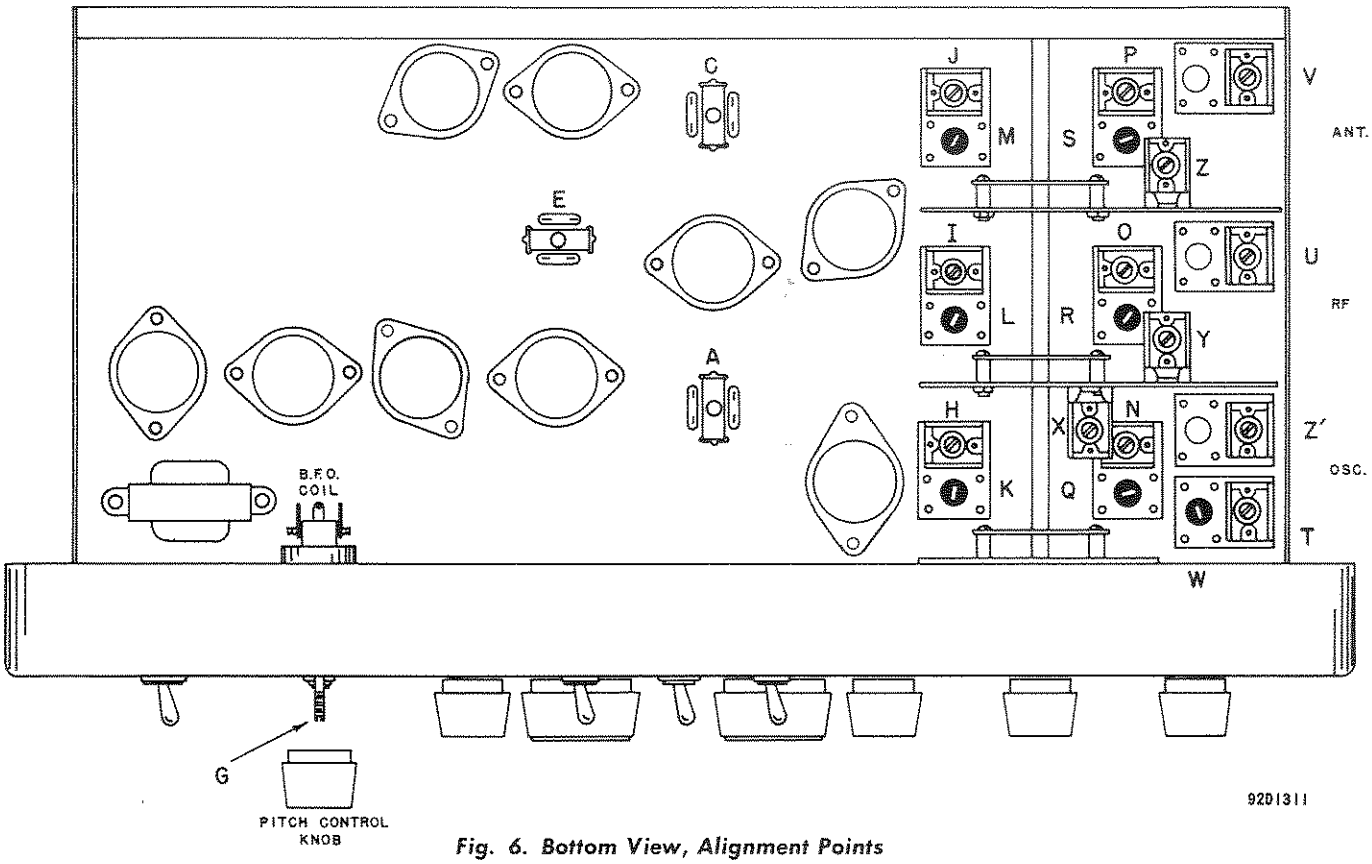

Fig. 6. Bottom View, Alignment Points

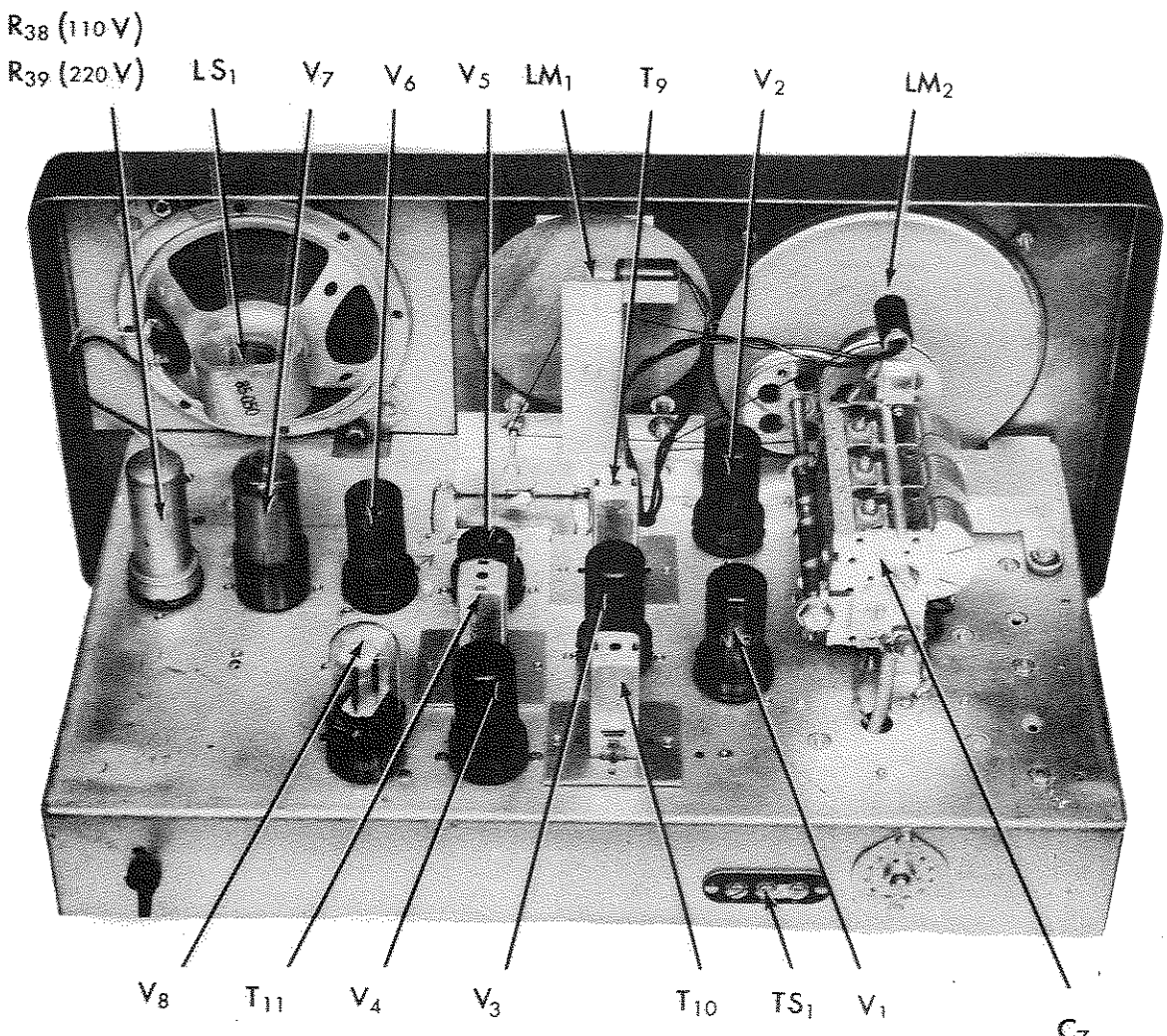

Fig. 7. Top View, Component Location

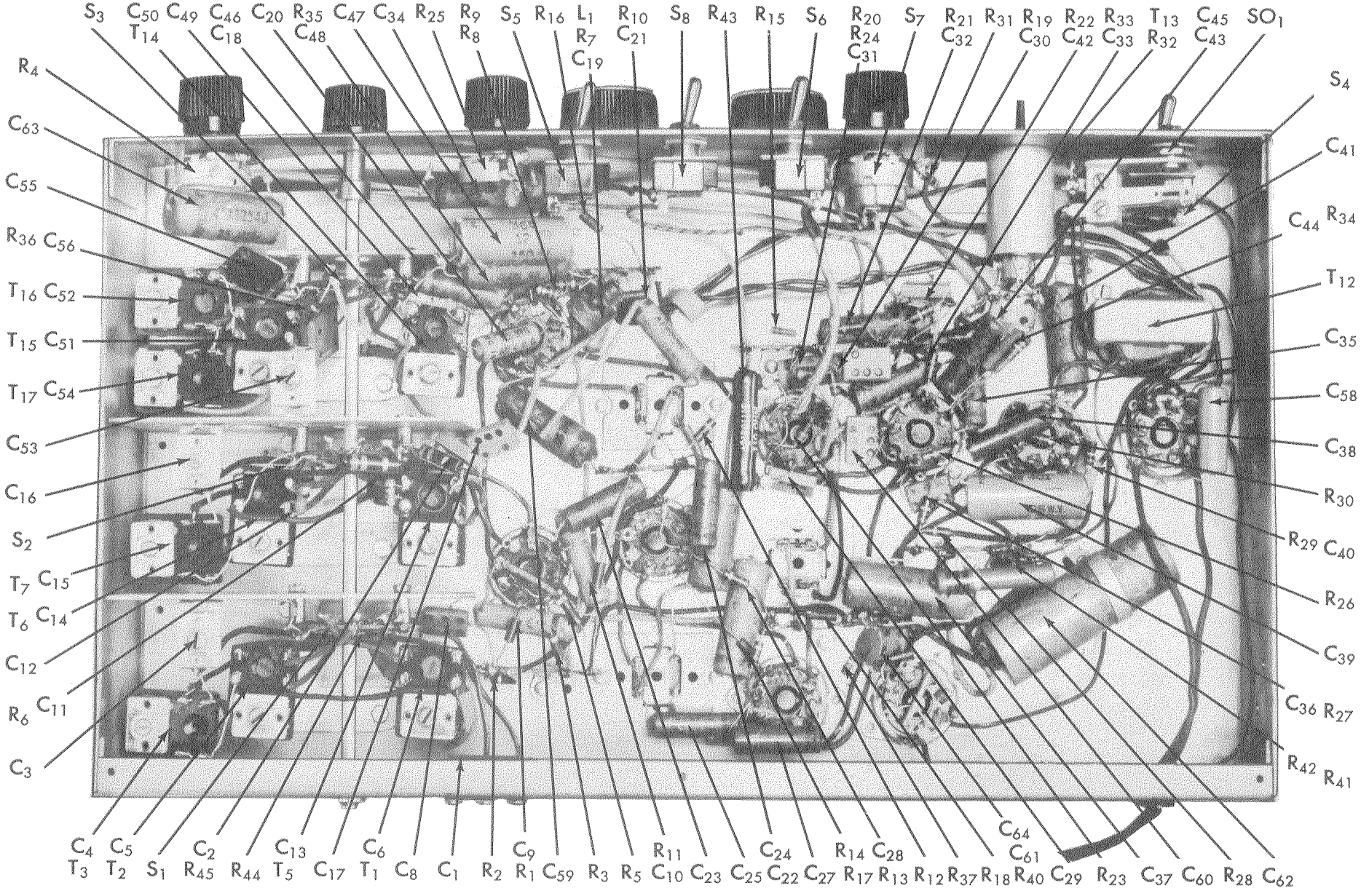

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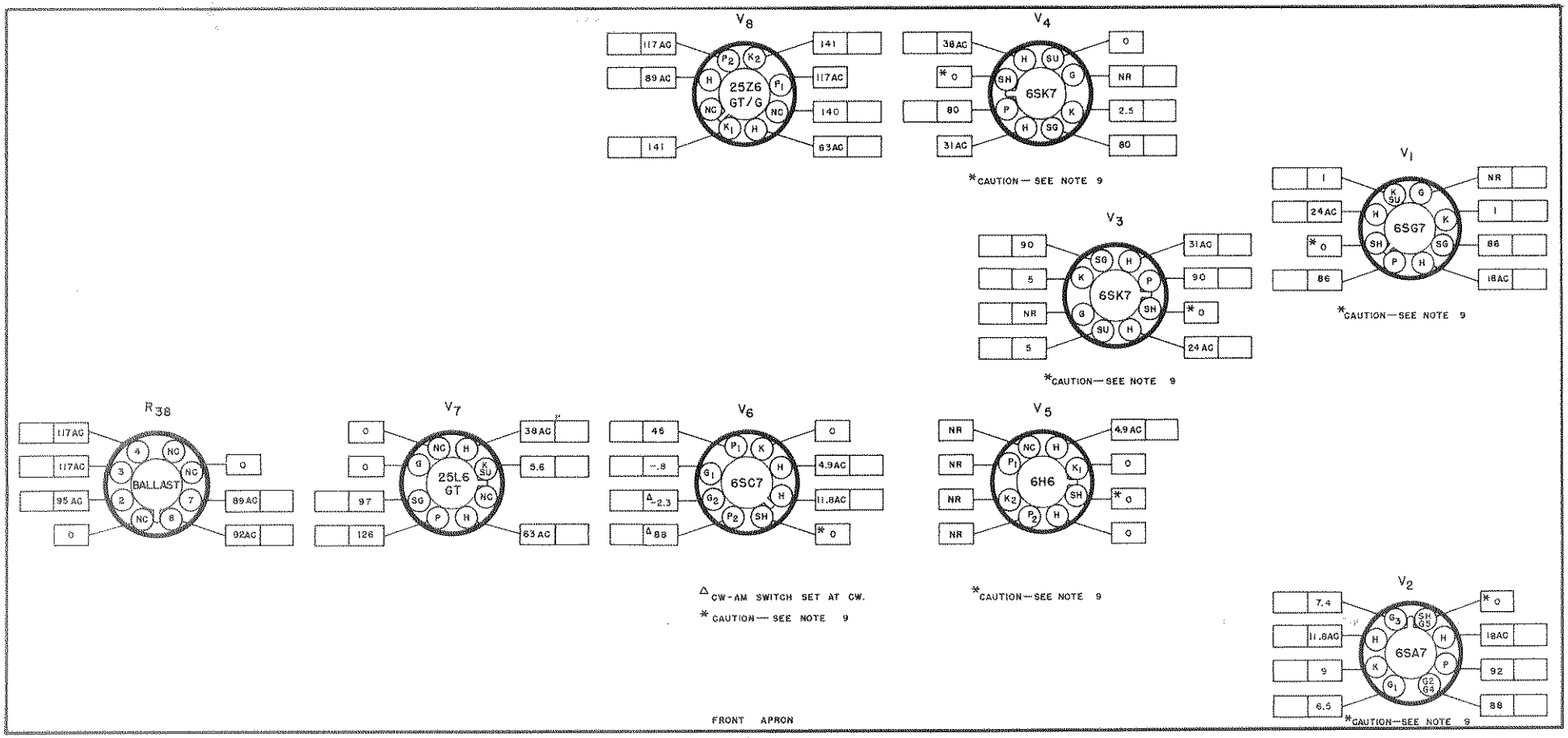
Fig. 8. Bottom View, Component Location

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C-1,9,10,21, 23,38,43	.01 mfd. 600 V., tubular paper	46AZ103J
C-2,42,60	100 mmf. 500 V., 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
C-8,17,36, 61	220 mmf. 500 V., 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. 500 V., mica	47X20B271K
C-19,40	.005 mfd. 600 V., tubular paper	46AZ502J
C-20	.003 mfd. 600 V., tubular paper	46AY302J
C-22,25,27, 33,34	.02 mfd. 200 V., tubular paper	46AU203J
C-24,28,41	.05 mfd. 600 V., tubular paper	46AY503J
C-26,57	2 mmf., wire gimmick	
C-29,30	47 mmf. 500 V., mica	47X20B470K
C-31,32,48	.05 mfd. 200 V., tubular paper	46AU503J
C-35,39	.02 mfd. 600 V., tubular paper	46AY203J
C-37	.1 mfd. 600 V., tubular paper	46AY104J
C-39	10 mfd. 25 V., electrolytic	45A121
C-45	470 mmf. 500 V., mica	47X20B471J
C-46	.002 mfd. 600 V., tubular paper	46AZ202J
C-47	10 mfd. 150 V., 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. 500 V., mica	47X35C152J
C-56	3000 mmf. 500 V., mica	47X35B302K
C-58	.02 mfd. 600 V., molded tubular paper	46BR203L6
C-62	60-20-20 mfd. 150 V., electrolytic	45B128
C-63	.25 mfd. 200 V., tubular paper	46AT254J
C-64	20,000 mmf. 500 V., ceramic disc	47A242
	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, 44,46	1000 ohms 1/2 watt, carbon	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 (117 V.)	24B875
R-39	Ballast tube (220 V.)	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

Schematic Symbol	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	Switch, toggle (SPDT); STANDBY/ RECEIVE	60A139
S-5,6,8	Switch, toggle (SPST); NOISE LIMITER 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)	86B068
	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	60B392
	Cabinet (lower section)	66D652
	Cabinet front panel	68D160
	Cabinet top	66D616
	Dial, bandspread	83B372
	Dial, main tuning	83C240
	Dial cord (specify length)	38A026
	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	15A048
	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



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

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Fig. 9. Tube Socket Voltage Chart

MODEL S-77A
RUN 5

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

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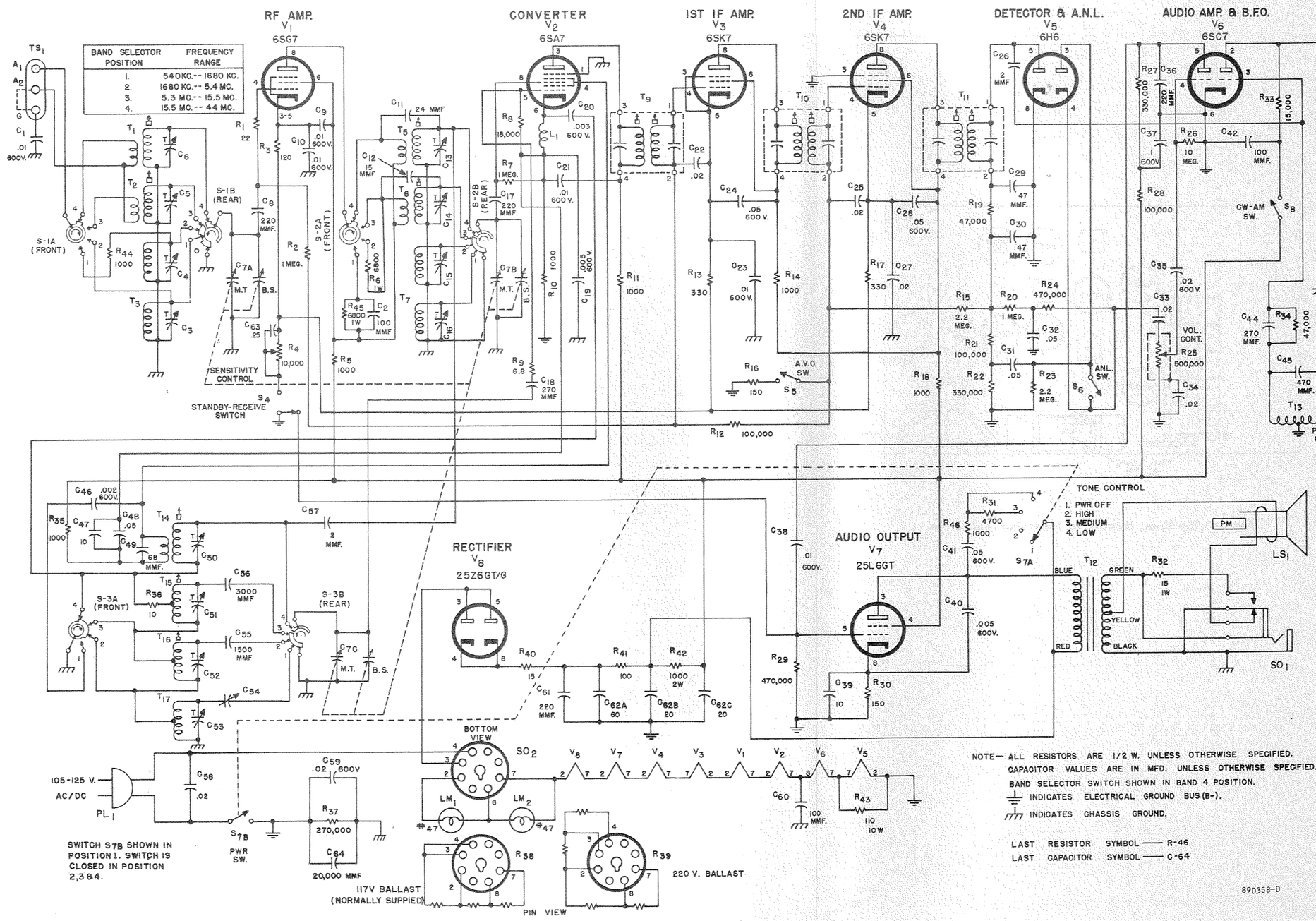
9201309

Fig. 9. Tube Socket Voltage Chart



NOTE— ALL RESISTORS ARE 1/2 W. UNLESS OTHERWISE SPECIFIED.
CAPACITOR VALUES ARE IN MFD. UNLESS OTHERWISE SPECIFIED.
BAND SELECTOR SWITCH SHOWN IN BAND 4 POSITION.
⏚ INDICATES ELECTRICAL GROUND BUS (B-).
⏚ INDICATES CHASSIS GROUND.

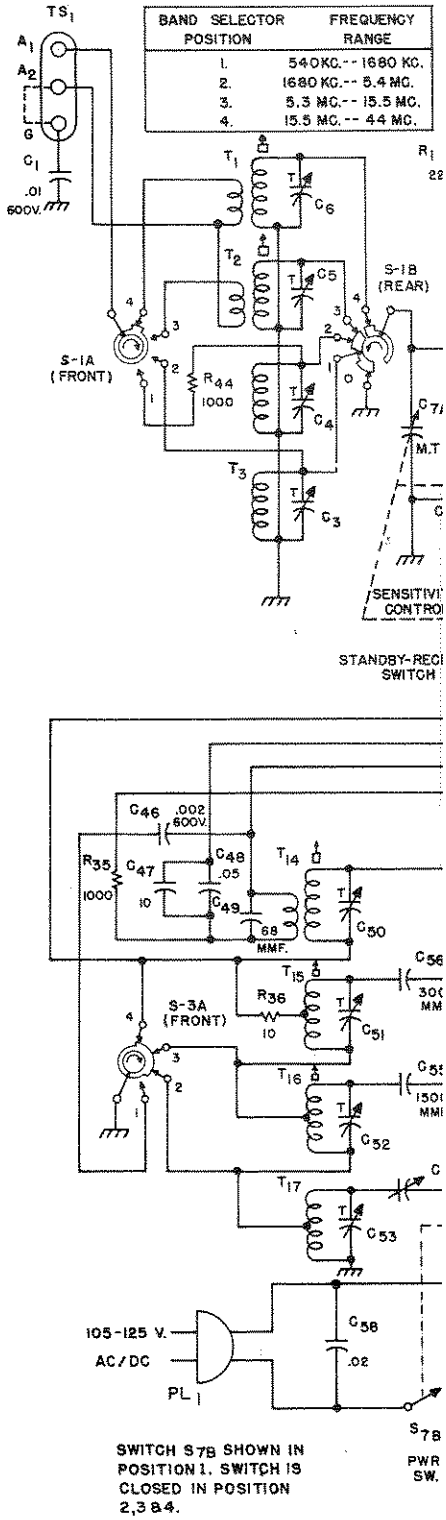
LAST RESISTOR SYMBOL —— R-46
LAST CAPACITOR SYMBOL —— C-64

89D358-D

Fig. 11. Schematic Diagram

"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 AND TOLERANCES SHOWN ARE NOMINAL AND VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUE OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED.



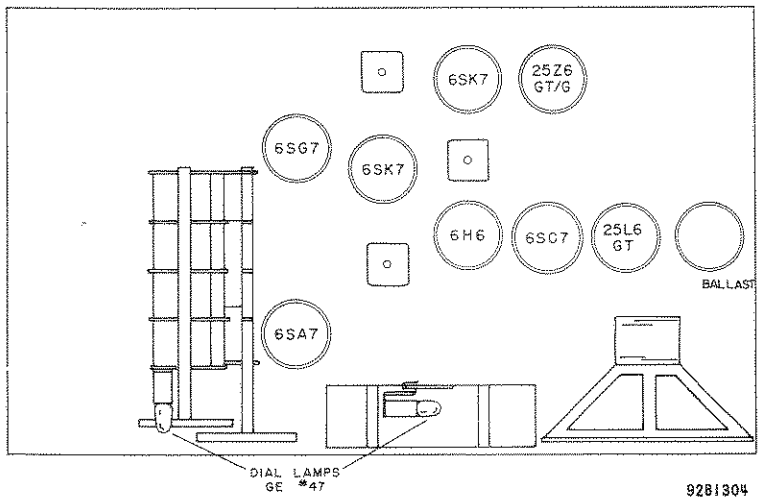


Fig. 10. Top View, Location of Tubes and Dial Lamps

"The Hallicrafters Co. reserv
revisions in current producti
no obligation to incorporate
models."

NOTES

Warranty

"The Hallicrafter's Company warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized radio dealer, wholesaler, from whom purchased, or, authorized service center, intact, for examination, with all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extend to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products."

Form No. 94X622

the Hallicrafters co.

BOOK NO. 94X1102
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