

W3RHE



communications

**OPERATING and SERVICE
INSTRUCTIONS**



the hallicrafters co.

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

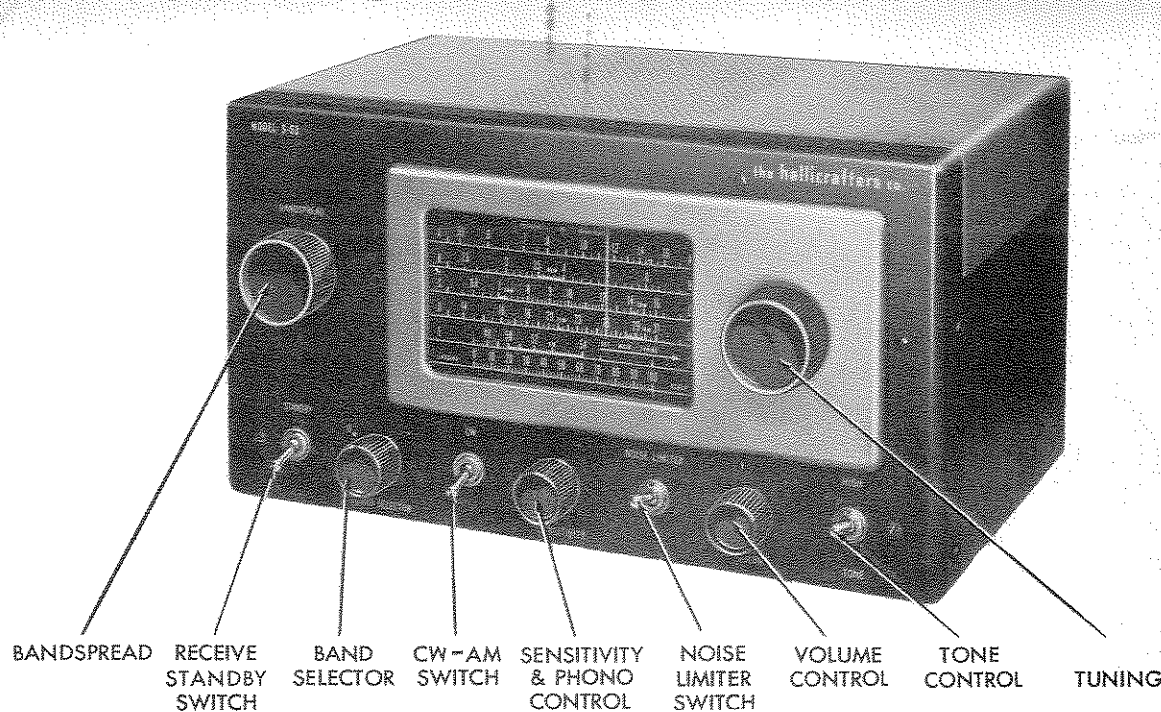


Fig. 1. Models S-53A and S-53AU

92X495-8

DESCRIPTION

Your Hallicrafters S-53A offers you world wide radio reception. It tunes from 540 to 1630 kilocycles, 2.5 to 31 megacycles, and 48 to 54.5 megacycles to bring you standard broadcast programs, amateurs, foreign and domestic shortwave broadcasts, police, ships, aircraft, and countless other exciting distant stations. It is an eight tube super-heterodyne communications receiver and is designed to receive both voice and code signals. An Alnico V permanent magnet speaker is built into the top of the cabinet and tip jacks have been provided at the rear for plugging in headphones. Special features in your receiver include an automatic noise limiter which reduces the effects of electrical interference, a two position tone control, a sensitivity control, a phono jack for attachment of a record player, and a RECEIVE-STANDBY switch on the front panel which permits you to silence the receiver without turning it off.

Your receiver is equipped with two tuning controls for greater ease in tuning. Wide tuning is accomplished with the control marked TUNING and fine tuning with the control marked BAND-SPREAD. The BANDSPREAD control which is specifically calibrated for Band E (48 - 54.5 MC) permits you to accurately tune in stations on crowded bands by spreading them out so they can be more easily separated. Good reception is usually possible without an outside antenna or ground and in most localities, satisfactory results can be obtained with just the 15 foot antenna wire included with your receiver.

FREQUENCY COVERAGE

BAND	FREQUENCY RANGE
A	540 KC - 1630 KC
B	2.5 MC - 6.3 MC
C	6.3 MC - 16 MC
D	14 MC - 31 MC
E	48 MC - 54.5 MC

The S-53A is designed to operate from a 105 to 125 volt, 50-60 cycle AC power source. The S-53AU, the universal model of the S-53A, can be operated from 25-60 cycle AC sources at voltages ranging from 105 to 250 volts.

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 proper selection and arrangement of the antenna.

INSTALLATION INSTRUCTIONS

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

LOCATION - The receiver is equipped with rubber feet for table top or shelf mounting. When locating the receiver, avoid excessively warm locations. Allow at least an inch of clearance between the back of the receiver and the wall for proper ventilation.

POWER SOURCE - The S-53A is designed to operate from a 105-125 volt 50-60 cycle AC source. The universal model, the S-53AU, is designed for operation from 110, 130, 150, 220 and 250 volt 25-60 cycle AC sources. A selector switch located on the power transformer permits operation of the S-53AU on any of the line voltages indicated. The power consumption of each model is 50 watts. If in doubt as to the frequency or voltage rating of your power source, contact your local power company to avoid damage to the receiver.

CAUTION - Before connecting the S-53AU to a power source, it is essential that the selector switch setting on the power transformer correspond to the operating line voltage.

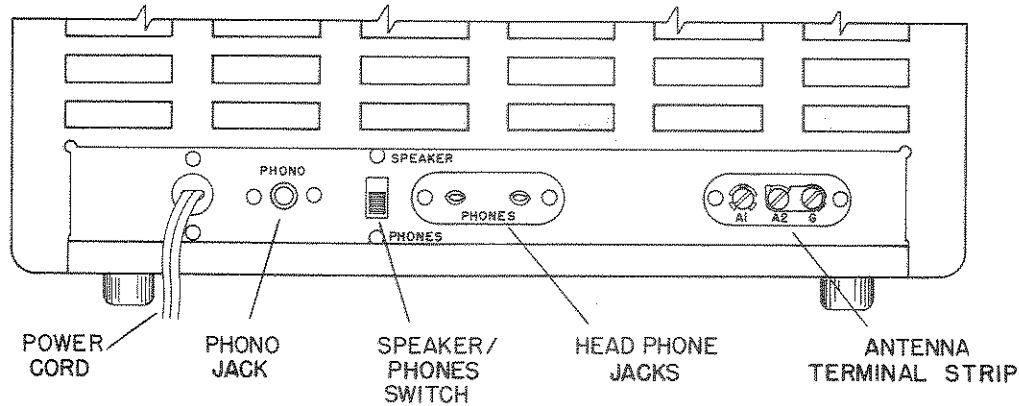


Fig. 2. Rear View of Cabinet

92C385-A

ANTENNA - The terminals marked A1, A2 and G on the back of the receiver are for antenna and ground connection. Satisfactory results can be obtained in most localities with the 15 foot antenna wire included with your receiver. Simply uncoil the wire, connect one end of it to terminal A1 and then connect the jumper between terminals A2 and G. An outside antenna 50 to 100 feet long may be necessary if the receiver is operated in a difficult reception area or steel constructed building. Reception may be improved in some locations by connecting a lead from terminal G to a cold water pipe or outside ground rod.

For really top performance on the shortwave bands, there is no substitute for an outside antenna such as used by the commercial radio stations. Provision has been made on your receiver for the connection of this type of antenna, commonly called a doublet. When properly constructed and installed, the doublet antenna will provide not only optimum shortwave reception but excellent standard broadcast reception as well. Installation details for the doublet antenna are given below.

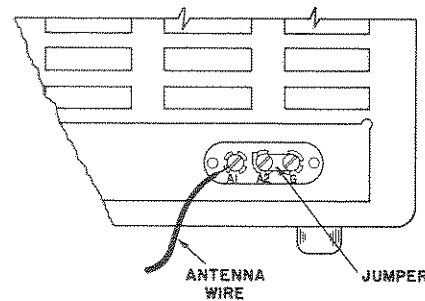


Fig. 3. Single Wire Antenna Installation

92B1550-A

DOUBLET ANTENNA

1. The overall length (in feet) of the antenna is determined by dividing 468 by the frequency (in megacycles) at the high end of the range to which you wish to listen.
2. Construct the antenna as shown in Fig. 4.
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.
4. When feeding the antenna with a twisted pair or ribbon type transmission line, connect the line to A1 and A2 and disconnect the jumper between A2 and G.
5. When feeding the antenna with a coaxial transmission line, connect the inner conductor to A1, and the outer conductor to A2. Then connect the jumper between A2 and G.

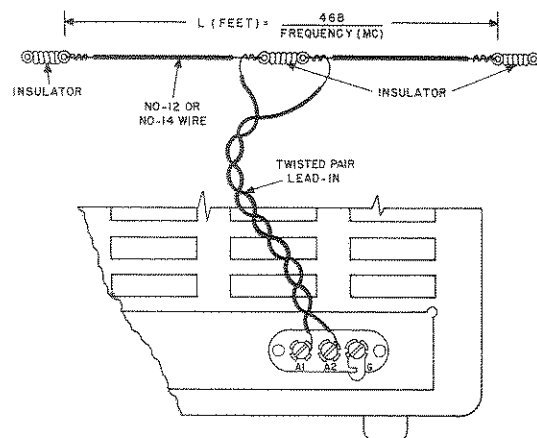


Fig. 4. Doublet Antenna Installation Using Twisted Pair Lead-In

92B1551

OPERATING INSTRUCTIONS

AM AND CW RECEPTION

NOTE: The control positions for standard broadcast reception (band A) are marked with a dot for convenience to the listener.

1. Set the BAND SELECTOR for the desired frequency range or band. The five positions of the BAND SELECTOR correspond to the band letters at either end of the dial.
2. Set the CW/AM switch at AM for voice reception or at CW for code reception.
3. Set the RECEIVE/STANDBY switch at RECEIVE. When set at STANDBY, the receiver is inoperative but the tube heaters remain at operating temperature for instant use.
4. Set the SPEAKER/PHONES switch which is located at the rear of the chassis to SPEAKER.
5. Turn the SENSITIVITY control fully clockwise. When strong code signals block the receiver, reduce the sensitivity slightly by turning the control counterclockwise.
6. Turn the receiver ON by rotating the VOLUME control clockwise. This control will have to be reset for the desired volume level after the station has been tuned in. Turning the control clockwise increases volume.
7. TUNING OF BANDS A, B, C, D - Set the BANDSPREAD dial pointer at 100. Tune in the desired station with the TUNING control (Fig. 1). For code (CW) reception, adjust the TUNING control for the desired pitch of the code signal when tuning.
TUNING OF BAND E - Set the TUNING dial pointer at the right hand index mark on the dial. Tune in the desired station with the BANDSPREAD control. For code (CW) reception, adjust the BANDSPREAD control for the desired pitch of the code signal when tuning.

IMPORTANT - The station frequency readings on bands A, B, C and D will be correct only if the BANDSPREAD dial pointer is set at 100. The readings on band E will be correct only if the TUNING dial pointer is set at the right hand index mark.

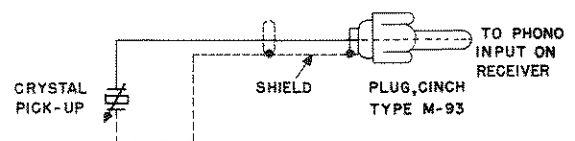
8. For fine tuning of bands A, B, C and D, refer to BANDSPREAD TUNING below.
9. For voice (AM) reception, set the TONE switch for the desired response. For code (CW) reception, set the switch at LOW.
10. Normally set the NOISE LIMITER switch at OFF. If severe electrical disturbances interfere with reception, set the switch at NOISE LIMITER (up).
11. To turn the receiver OFF, rotate the VOLUME control counterclockwise to the OFF position.

BANDSPREAD TUNING

1. To use the BANDSPREAD control for fine tuning of bands A, B, C and D: (1) Set the BANDSPREAD dial pointer at 100 (2) Set the TUNING dial pointer at the high frequency end of the amateur band or group of stations to be covered and (3) Tune in the stations with the BANDSPREAD control.
2. The BANDSPREAD control also functions as the main tuning adjustment for band E. See step 7 above.
3. It is possible to log stations of special interest by recording the settings of the TUNING and BANDSPREAD dial pointers. See inside of back cover for the station log.

RECORD PLAYER OPERATION

1. A shielded type receptacle marked PHONO is provided at the rear of the chassis to accommodate any record player using a crystal pickup.
2. Connect the record player to the receiver as shown in Fig. 5.
3. Set the SELECTIVITY control at PHONO and the RECEIVE/-STANDBY switch at RECEIVE.
4. Operate the VOLUME control and the TONE switch as explained under AM AND CW RECEPTION.



9281395-8

Fig. 5. Wiring Diagram for Record Player Connection

HEADPHONE OPERATION

1. Tip jacks are provided at the rear of the chassis for headphone connection.
2. Any standard pair of headphones with an impedance of 500 to 3000 ohms can be used with the receiver.
3. For headphone operation, set the SPEAKER/PHONES switch located at the rear of the chassis to PHONES.

SERVICE INSTRUCTIONS

GENERAL SPECIFICATIONS

Tubes	Seven plus rectifier
Speaker	5 inch PM
Voice Coil Impedance	3.2 ohms
Headphone Output Impedance	15 ohms
Antenna	Provision for single wire or doublet
Phono Input Impedance	High impedance
Intermediate Frequency	455 KC
S-53A Operating Voltage	105-125 volts 50-60 cycles AC
S-53AU Operating Voltage	105-250 volts 25-60 cycles AC
Power Consumption50 watts
Frequency Coverage	See page 2

TUBE REPLACEMENT- The tube types and their relative location in the receiver are shown in Fig. 8. To gain access to all tubes, open the hinged top cover of the cabinet. When installing a replacement octal tube: (1) Insert the center guide pin of the tube into the center hole of the tube socket (2) Rotate the tube until the key on the guide pin drops into the notch in the socket hole and (3) Push down on the tube until the base of the tube rests firmly on the socket. When installing a replacement miniature tube, line up the seven pins on the tube with the socket holes before pushing the tube into place. Handle all tubes with care as they are fragile and will not withstand mechanical abuse.

DIAL LAMP REPLACEMENT- Refer to Fig. 8 for the location of the dial lamps used in the receiver. To gain access to the dial lamps, open the hinged top cover of the cabinet. Unclip the dial lamp socket from the mounting bracket. The socket and lamp can then be brought out into the open. Make replacement with a 6-8 volt, 250 ma Mazda #44 pilot lamp or equivalent.

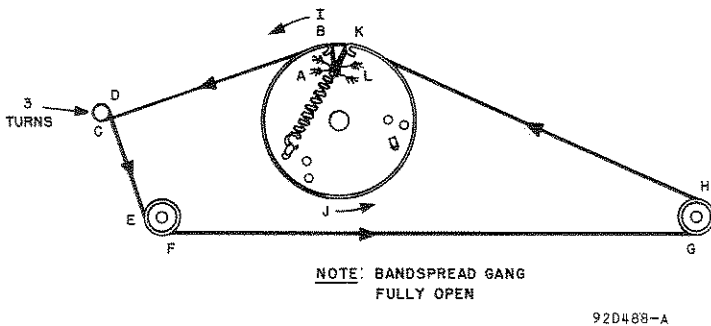


Fig. 6. BANDSPREAD Dial Cord Stringing Diagram

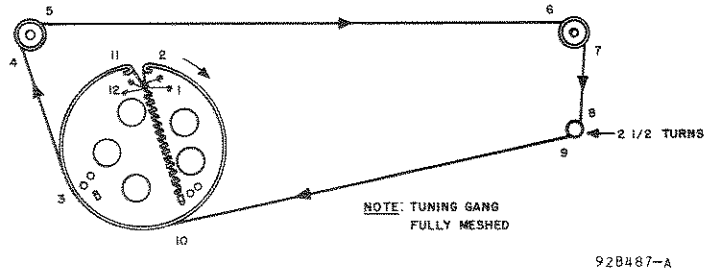


Fig. 7. TUNING Dial Cord Stringing Diagram

DIAL CORD RESTRINGING

BANDSPREAD DIAL

1. Set the BANDSPREAD gang fully open.
2. Tie one end of a 36 inch length of 30 lb. test dial cord to the spring at position A. See Fig. 6.
3. Follow the stringing procedure A thru L.
4. At position L, stretch the spring and tie the cord securely to the spring.
5. With the BANDSPREAD gang fully open, attach the dial pointer to the cord and align it with 100 on the LOGGING SCALE.

TUNING DIAL

1. Set the TUNING gang fully closed.
2. Tie one end of a 48 inch length of 30 lb. test dial cord to the spring at position 1. See Fig. 7.
3. Follow the stringing procedure 1 thru 12.
4. At position 12, stretch the spring and tie the cord securely to the spring.
5. With the TUNING gang fully closed, attach the dial pointer to the cord and align it with the left hand index marks.

SERVICE OR OPERATING QUESTIONS - For further information regarding operation or servicing of the receiver, contact your dealer. Make no shipments to the factory as the factory will not accept the responsibility for unauthorized shipments. Factory type service is available at any HALLICRAFTERS AUTHORIZED SERVICE CENTER which displays the sign shown at the right. For the location of the SERVICE CENTER nearest you, consult your dealer or telephone directory.

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



ALIGNMENT PROCEDURE

- Remove chassis from cabinet for alignment by removing three screws at bottom edge of both front panel and rear of cabinet and two screws at each side of front panel.
- Use signal generator with modulated output covering 455 KC to 52 MC.
- Use a non-metallic alignment tool.
- Connect output meter across speaker voice coil terminals.
- Control settings: STANDBY/RECEIVE at RECEIVE, CW/AM at AM, NOISE LIMITER at OFF, TONE at HIGH, SPEAKER/PHONES at SPEAKER and SENSITIVITY, VOLUME and BANDSPREAD fully clockwise.
- See Fig. 9 for location of alignment adjustments.

STEP	SIGNAL GENERATOR CONNECTIONS	SIGNAL GENERATOR FREQUENCY	BAND SELECTOR SETTING	RECEIVER DIAL SETTING	ADJUST	INSTRUCTIONS
1	High side to stator plates of front section of tuning gang through a .1 mfd. capacitor. Low side to chassis.	455 KC	A	TUNING gang fully open.	S1, S2, S3, S4, S5, S6	Adjust for maximum audio output at the speaker voice coil. Use just enough signal generator output to obtain a 50 milliwatt reading on the output meter.
2	Same as STEP 1.	455 KC	A	Same as STEP 1.	S9	Set the CW/AM switch at CW. (Reset the switch to AM when STEP 2 is completed.) Adjust S9 for a zero beat.
3	High side to A1 on antenna terminal strip through a 330 ohm resistor. Low side to chassis. Connect the jumper between A2 and G.	1500 KC 600 KC	A A	1.5 MC .6 MC	A,B C	Maximum output as in STEP 1.
4	Same as STEP 3.	6 MC	B	6 MC	D,E	Maximum output as in STEP 1.
5	Same as STEP 3.	15 MC	C	15 MC	F,G	Maximum output as in STEP 1.
6	Same as STEP 3.	30 MC	D	30 MC	I,H	Maximum output as in STEP 1.
7	Same as STEP 3.	52 MC	E	52 MC	J,K	Maximum output as in STEP 1.

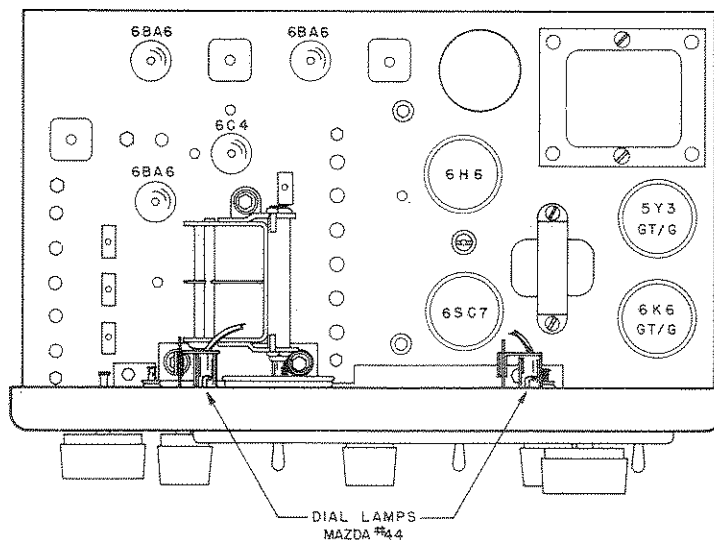


Fig. 8. Top View of Chassis Showing Location of Tubes and Dial Lamps

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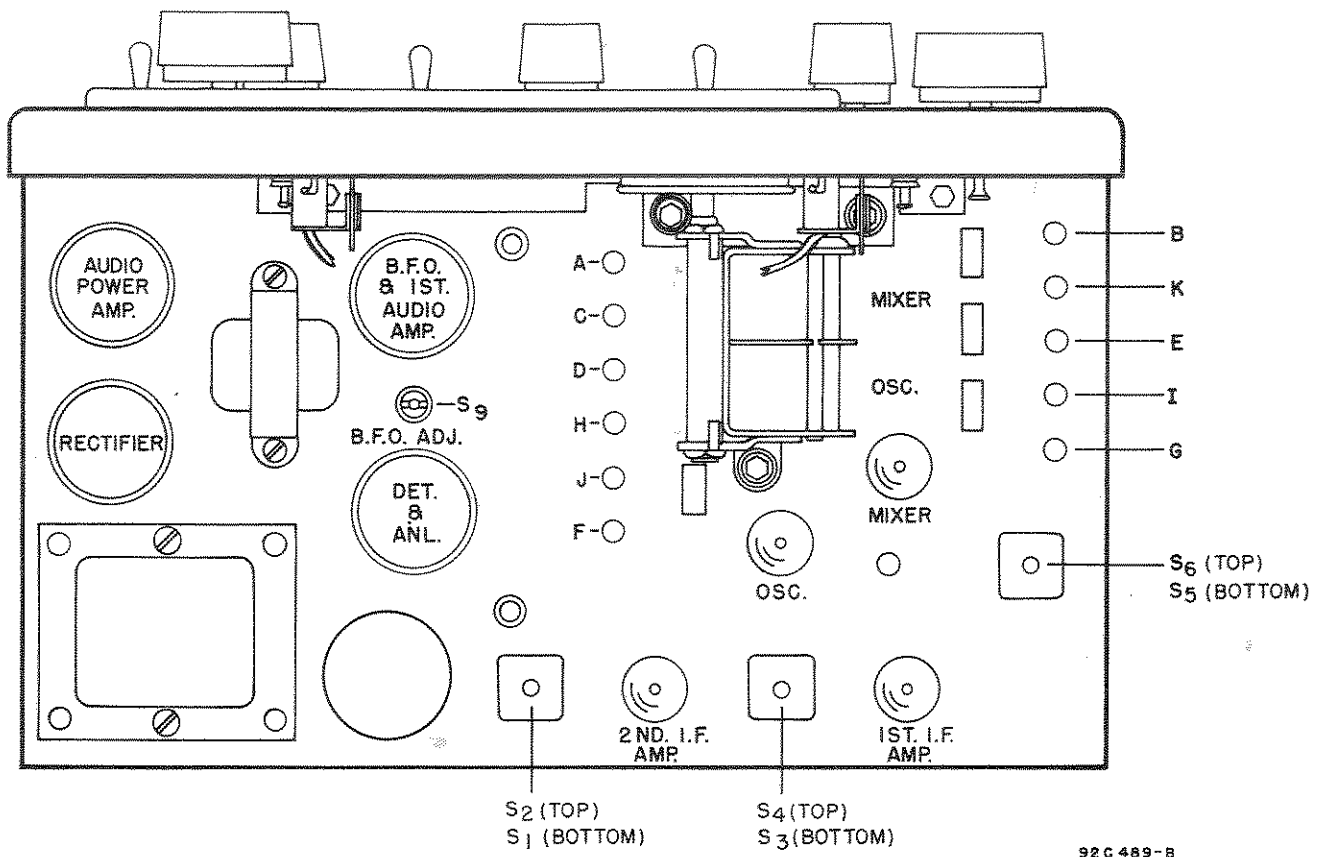


Fig. 9. Top View of Chassis Showing Location of Alignment Adjustments

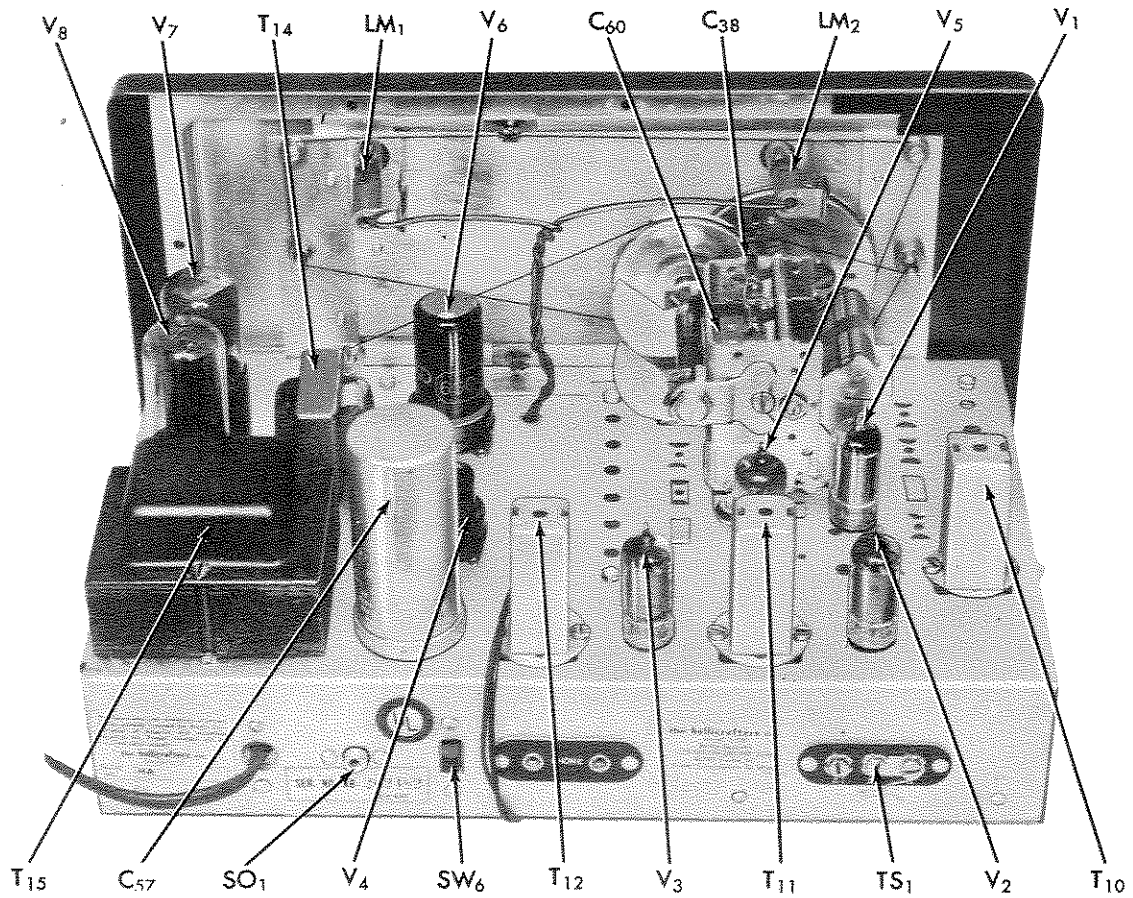


Fig. 10. Top View of Chassis Showing Component Location

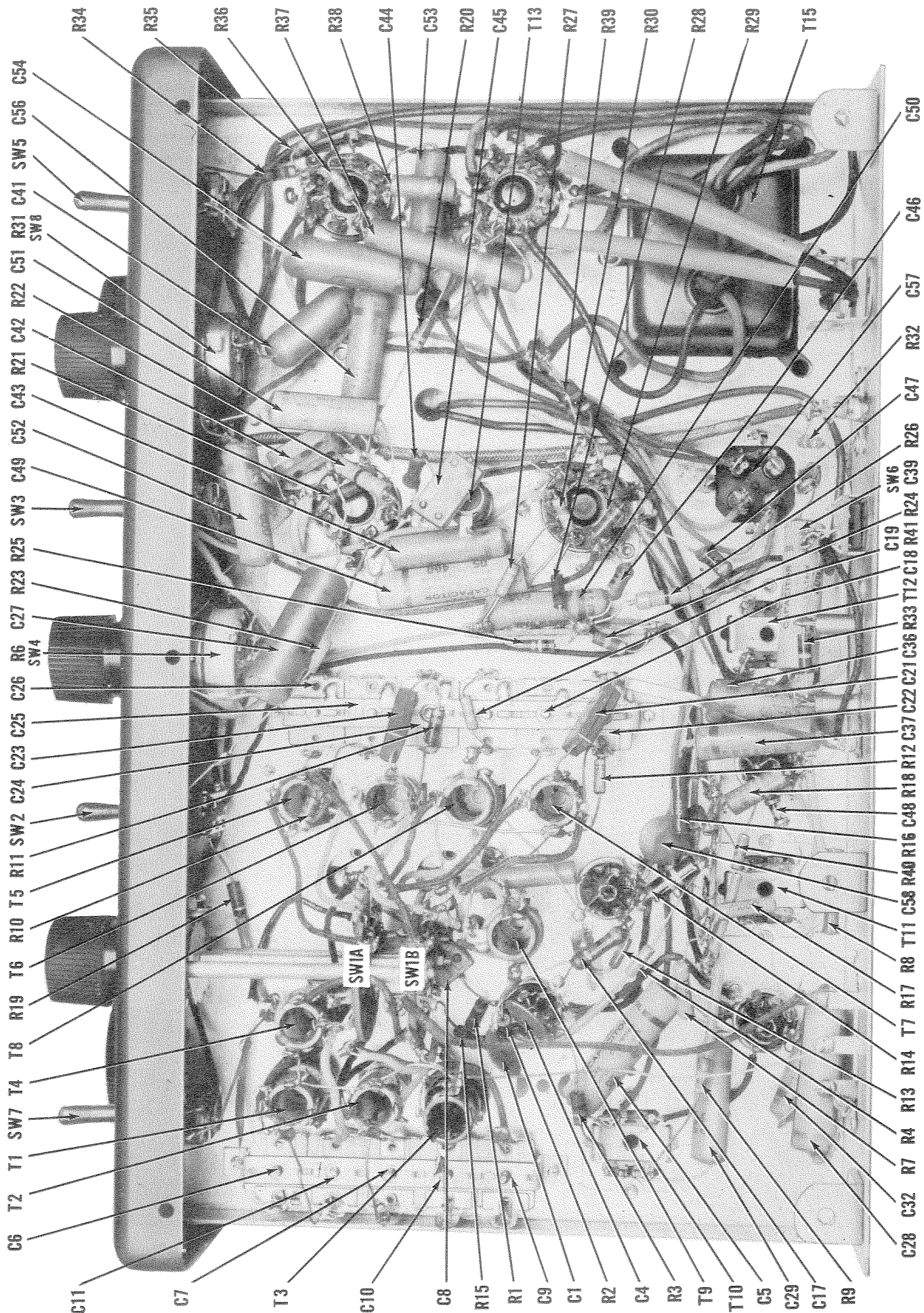
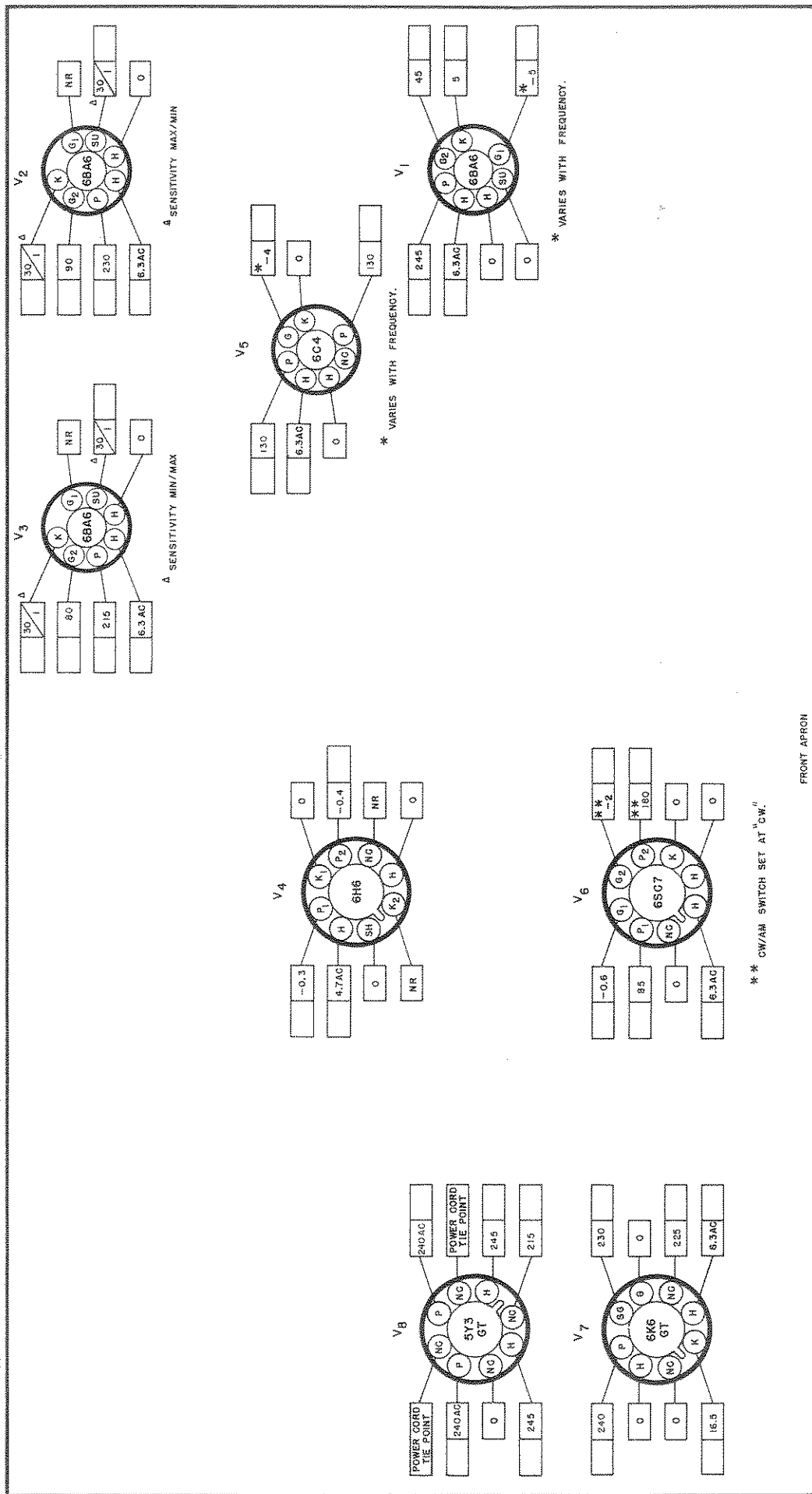


Fig. 11. Bottom View of Chassis Showing Component Location

92A192-B

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
CAPACITORS			COILS AND TRANSFORMERS (Cont.)		
C-1,4,58	.005 mfd. 450 V., ceramic	47A168	T-9	Coil, oscillator; band E	51B1239
C-5,39,49	.05 mfd. 400 V., tubular	46AW503J	T-10,11	Transformer, 1st and 2nd IF	50C241
C-6,7,9,10,11	Trimmer assembly, 5 sections, antenna stage	44B355	T-12	Transformer, 3rd IF	50C242
C-8,42	220 mmf. 500 V., mica	47X20B221K	T-13	Coil, BFO	54B043
C-17,40,44	100 mmf. 500 V., ceramic	47A086	T-14	Transformer, audio output	55B107
C-18,19,22,24,25,26	Trimmer assembly, 6 sections, oscillator stage	44B388	T-15	Transformer, power; model S-53A	52C164
C-21	2400 mmf. 500 V., silver mica	47X20C242J	T-15	Transformer, power; model S-53AU	52C165
C-23	1800 mmf. 2% 500 V., silver mica	47X20C182G	SWITCHES		
C-27	.1 mfd. 200 V., tubular	46AU104J	SW-1	BAND SELECTOR switch assembly	60B323
C-28,36,54	.02 mfd. 600 V., tubular	46AY203J	SW-2	Switch, dpst; CW/AM	60A285
C-29,32,37,43,50,52,53,56	.01 mfd. 600 V., tubular	46AZ103J	SW-3,5,7	Switch, spst; STANDBY/RECEIVE, NOISE LIMITER and TONE	60A138
C-38	2.2 mmf. 500 V., ceramic	47A160-4	SW-4	Switch, PHONO; part of SENSITIVITY control R-6	-----
C-41	.01 mfd. 600 V., molded paper	46AC103J	SW-6	Switch, spdt; SPEAKER/PHONES	60A243
C-45	470 mmf. 500 V., mica	47X20B471J	SW-8	Switch, OFF-ON; part of VOLUME control R-31	-----
C-46,47	50 mmf. 500 V., ceramic	47A091	PLUGS AND SOCKETS		
C-48	5 mmf. 500 V., ceramic	47X20UK050K	PL-1	Line cord and plug	87A078
C-51	.003 mfd. 600 V., tubular	46AZ302J	SO-1	PHONO jack	36A041
C-57	50-10-10 mfd. 350 V., 10 mfd. 25V.; electrolytic	45B122	SO-2	PHONE jacks	88A071
C-60 A,B	Tuning capacitor, 2 section-	48C198		Socket, dial lamp; includes lead	86B063
RESISTORS				Socket, tube; octal	6A296
R-1,24	1.8 megohms 1/2 watt, carbon	23X20X185M		Socket, tube; miniature 7 pin	6A297
R-2	2200 ohms 1/2 watt, carbon	23X20X222M	TUBES AND DIAL LAMPS		
R-3,15	27 ohms 1/2 watt, carbon	23X20X270M	V-1,2,3	6BA6: mixer, 1st IF amplifier and 2nd IF amplifier	90X6BA6
R-4,27	330,000 ohms 1/2 watt, carbon	23X20X334K	V-4	6H6: detector and ANL	90X6H6
R-6	10,000 ohms, SENSITIVITY control; includes switch SW-4	25B603	V-5	6C4: oscillator	90X6C4
R-7,17	100 ohms 1/2 watt, carbon	23X20X101K	V-6	6SC7: audio amplifier and BFO	90X6SC7
R-8,16,34	1000 ohms 1/2 watt, carbon	23X20X102M	V-7	6K6-GT: audio output	90X6K6-GT
R-9,30,32,36	470,000 ohms 1/2 watt, carbon	23X20X474M	V-8	5Y3-GT: rectifier	90X5Y3-GT
R-10	15,000 ohms 1/2 watt, carbon	23X20X153K	LM-1,2	Lamp, pilot; 6-8 volt, 250 ma. Mazda #44	39A003
R-11	10,000 ohms 1/2 watt, carbon	23X20X103K	MISCELLANEOUS PARTS		
R-12	4700 ohms 1/2 watt, carbon	23X20X472K		Cabinet; does not include top cover, front panel or escutcheon	66-438
R-13,23	22,000 ohms 1/2 watt, carbon	23X20X223M		Clip, coil mtg.	76A326
R-14	10,000 ohms 1 watt, carbon	23X30X103K		Clip, dial glass mtg.	76A390
R-18	22,000 ohms 1 watt, carbon	23X30X223M		Clip, mtg.; for IF transformers T-10, 11 and 12	76A385
R-19	120 ohms 1/2 watt, carbon	23X20X121M		Dial cord, 60 inch	38A026
R-20	220,000 ohms 1/2 watt, carbon	23X20X224K		Dial scale, glass	22C204
R-21	15 megohms 1/2 watt, carbon	23X20X156K		Escutcheon, front panel	7C066
R-22,26	47,000 ohms 1/2 watt, carbon	23X20X473M		Front panel, cabinet; does not include escutcheon	68D105
R-25	100,000 ohms 1/2 watt, carbon	23X20X104K		Grommet, rubber	16A125
R-28,40	1 megohm 1/2 watt, carbon	23X20X105M		Knob, BAND SELECTOR, SENSITIVITY and VOLUME	15A050
R-29	2.7 megohms 1/2 watt, carbon	23X20X275M		Knob, BANDSPREAD and TUNING	15A048
R-31	2 megohms, VOLUME control; includes switch SW-8	25B602		Lock, line cord	76A397
R-33	15 ohms 1/2 watt, carbon	23X20X150M		Mounting foot, rubber	16A007
R-35	680 ohms 1/2 watt, carbon	23X20X681K		Pad, dial clip	16A126
R-37	680 ohms 2 watts, carbon	23X40X681M		Pointer, BANDSPREAD dial	82A148
R-38	1000 ohms 1 watt, carbon	23X30X102M		Pointer, TUNING dial	82A149
R-39	6.8 ohms 1 watt, carbon	23X30X068K		Shaft, tuning	74A248
R-41	3300 ohms 1/2 watt, carbon	23X20X332K	LS-1	Speaker, 5 inch PM	85C030
COILS AND TRANSFORMERS			TS-1	Spring, dial cord	75A012
T-1	Coil, antenna; band A	51B1028		Terminal strip, antenna	88A032
T-2	Coil, antenna; band B	51B1244		Top cover, cabinet	66D436
T-3	Coil, antenna; bands C and D	51B1026			
T-4	Coil, antenna; band E	51B1030			
T-5	Coil, oscillator; band A	51B1235			
T-6	Coil, oscillator; band B	51B1236			
T-7	Coil, oscillator; band C	51B1237			
T-8	Coil, oscillator; band D	51B1238			



FRONT APRON
 BOTTOM VIEW

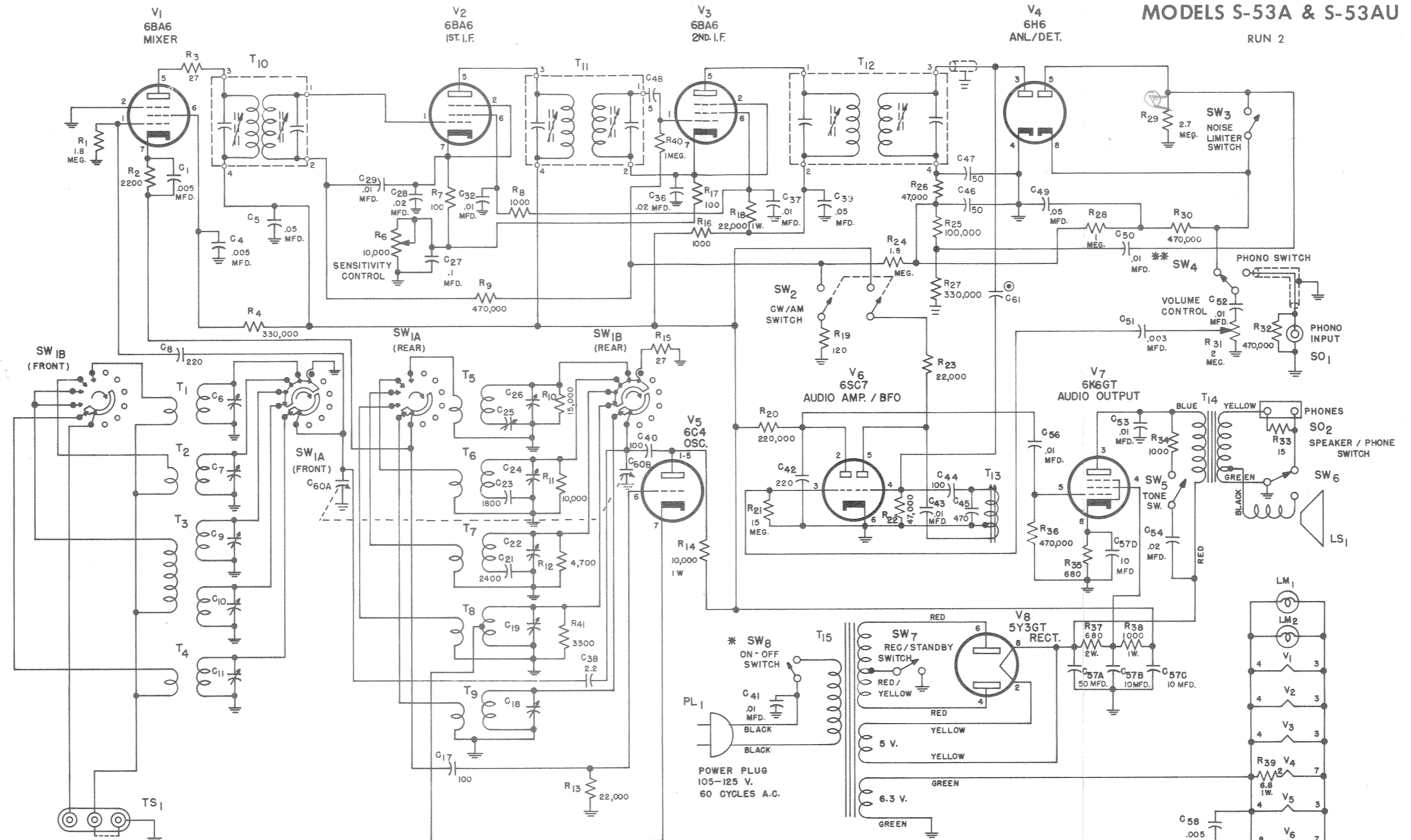
NOTES -

1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND CHASSIS WITH ZERO SIGNAL INPUT.
3. LINE VOLTAGE — 117 V. AC. (60 CYCLES).
4. ALL VOLTAGES SHOWN ARE DC. UNLESS OTHERWISE SPECIFIED.
5. DC VOLTAGES SHOWN WERE MEASURED WITH A VACUUM TUBE VOLTMETER.
6. READINGS TAKEN WITH STANDBY/RECEIVE SWITCH SET AT "RECEIVE"; CW/AM SWITCH SET AT "AM"; NOISE LIMITER SWITCH ON.
7. "NR" — NO CONNECTION. (VOLTAGE SHOWN FOR THIS TERMINAL ONLY WHEN TERMINAL IS USED AS A TIE LUG).
8. "NR" — NOT READABLE. (READING GENERALLY MEANINGLESS).
9. [] SPACE PROVIDED FOR SERVICE METER READINGS.

Fig. 12. Tube Socket Voltage Chart

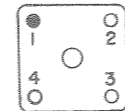
MODELS S-53A & S-53AU

RUN 2



VALUES & 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.

BAND SELECTOR POSITION	SWITCH SW. 1 RANGE
A	540-1650 KC.
B	2.5-6.6 MC.
C	6-11 MC.
D	13.5-32 MC.
E	47-55 MC.



IF X'FMRS
T-10, 11 & 12.

NOTE:
SWITCH SHOWN IN POSITION E.

- NOTES**
- RESISTOR VALUES ARE IN OHMS.
 - CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED.
 - CHASSIS
 - * ON-OFF SWITCH SW₈ IS PART OF VOLUME CONTROL R₃₁.
 - ** PHONO SWITCH SW₄ IS PART OF SENSITIVITY CONTROL R₆.
 - ⊙ WIRE GIMMICK
 - LAST RESISTOR SYMBOL R-41
 - LAST CAPACITOR SYMBOL C-61

89D346-E

Fig. 13. Schematic Diagram

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.