

ENGINEERING



communications

**OPERATING and SERVICE
INSTRUCTIONS**



the hallicrafters co.
MANUFACTURERS OF ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.



Fig. 1. Hallicrafters SX-96 Receiver

92X2382

SECTION 1. GENERAL DESCRIPTION

Your new Hallicrafters SX-96 Selectable Sideband Receiver is precision built to bring you the finest in world-wide radio reception. This twelve-tube dual conversion superheterodyne receiver tunes from 538 to 1580 kilocycles and 1.72 to 34 megacycles, with calibrated electrical bandspread provided on the 80, 40, 20, 15, and 11-10 meter amateur bands. You'll hear foreign and domestic shortwave broadcasts, amateurs, police, aircraft, ships-at-sea, and countless other exciting distant stations . . . as well as all your favorite programs on standard broadcast. The receiver provides for the reception of CW, AM, and single-sideband signals over its entire tuning range, the upper or lower sideband being readily selectable by means of a front panel control. This selectable sideband feature not only greatly simplifies tuning of single-sideband signals but is also useful in eliminating heterodyne interference when receiving AM signals.

Unlike the ordinary dual-conversion receiver, your SX-96 receiver employs dual conversion on all bands. As a result, images are practically non-existent. "Razor-sharp" selectivity is made possible by the use of an adjustable 50.5 kc second IF with four high-Q, permeability-tuned circuits. Receiver selectivity is variable in five steps from 500 cycles to 5 kc at 6 db down and from 5 to 20 kc at 60 db down.

A tuned r-f stage assures maximum sensitivity and a high signal-to-noise ratio for outstanding reception of weak and distant signals. A manual sensitivity control prevents overloading by strong signals.

Outstanding frequency stability is achieved by the use of ceramic trimmers and coil forms in the 1st conversion oscillator, extensive temperature compensation, voltage regulation of all oscillators, and the use of a crystal-controlled 2nd conversion oscillator.

Tuning is accomplished by a precision gear drive tuning mechanism to insure extremely close calibration and accurate resetability. Smooth flywheel tuning affords maximum traverse speed and operating ease. A 100-division logging scale on the main tuning dial assures ease and accuracy in logging and relocating stations of special interest.

The delayed AVC circuit in the receiver functions on both AM and CW signals to keep the output of the receiver constant regardless of input-signal variations at the antenna. This type of AVC circuit is especially advantageous in that it provides excellent control over a very wide range of signal strengths yet maintains full receiver sensitivity on weak signals.

An automatic series noise limiter circuit, controlled by a switch on the front panel, reduces interference from electrical equipment, ignition noise, and other types of pulse type noise.

An "S" meter is used when receiving AM signals to indicate the accuracy of tuning and the relative strength of received signals. The meter is calibrated in microvolts, "S" units from 1 to 9, and in decibels above S9 to + 80 db.

The Receive-Standby switch on the front panel silences the receiver but leaves the heater and plate power on to provide instant reception between transmission periods. Provision has also been made in the receiver for remote receive-standby control, and for transmitter switching from the front panel.

INSTALLATION

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

LOCATION - The receiver is equipped with rubber mounting feet for table top or shelf mounting. When locating the receiver, avoid excessively warm locations and recessed installations which prevent proper air circulation.

POWER SOURCE - The S-40B can be operated from a 105-125 volt, 50-60 cycle AC power outlet. The universal model, the S-40BU, is designed for operation from 115, 130, 150, 220 and 250 volt, 25-60 cycle AC sources. A selector switch, located on the power transformer, permits operation of the S-40BU at the line voltages shown. If in doubt as to the frequency and voltage rating of your power source, contact the local power company representative. Attempting to operate the receiver from sources of power not specified above may result in damage to the receiver.

CAUTION - When operating the universal model, it is essential that the selector switch setting on the power transformer correspond to the operating line voltage before connecting the receiver to the AC power source.

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 (see Fig. 2). 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.

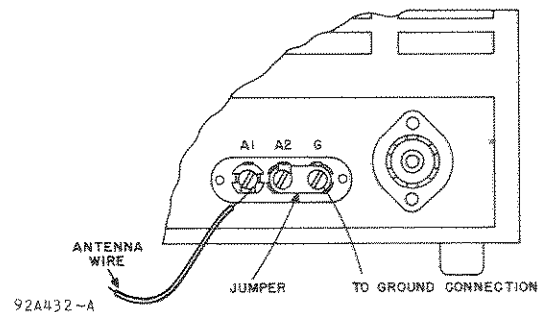


FIG. 2 SINGLE WIRE ANTENNA INSTALLATION

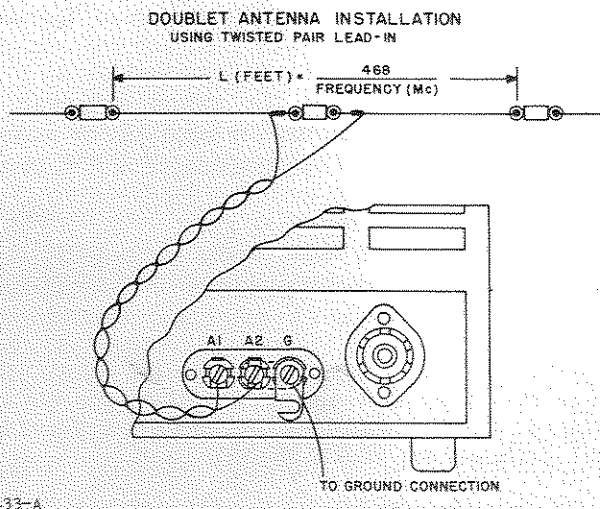


FIG. 3 DOUBLET ANTENNA INSTALLATION

DOUBLET ANTENNA - The overall length, in feet, of the doublet antenna may be determined by dividing 468 by the desired frequency in megacycles. A doublet antenna is somewhat directional broadside to its length and should be so oriented if maximum pickup from a given direction is to be expected.

When feeding the doublet antenna with twisted pair or a ribbon type transmission line, connect the transmission line to terminals A1 and A2 on the antenna terminal strip and disconnect the jumper between terminals A2 and G.

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

OPERATION

Each control of this receiver performs a definite function that contributes to the outstanding reception capabilities. Full appreciation of the 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. As an added feature for convenience, the control positions for standard broadcast reception are marked in red. The following use of the controls is recommended to obtain optimum performance from the receiver.

SENSITIVITY control This control is normally set fully clockwise for maximum sensitivity. In some rare instances, strong local signals may overload the receiver input. Distortion, caused by this condition, can be eliminated by reducing the receiver sensitivity slightly.

BAND SELECTOR switch This switch is used to select the desired band or frequency range. The frequencies covered by each position of the **BAND SELECTOR** are read directly from the main tuning dial scale which corresponds to the setting of the **BAND SELECTOR** switch.

VOLUME control This control is used to regulate audio volume. Turning the control clockwise increases volume.

AVC switch This switch, when set to the **ON** position, places the automatic volume control circuit in operation. The **AVC** circuit provides a constant audio output level over large variations in signal strength at the antenna. The **AVC** switch should be set at **OFF** for **CW** reception.

TUNING control This control should be set for the desired station frequency after setting the **BAND SELECTOR** switch. Frequencies on all bands are shown in megacycles.

IMPORTANT - The main tuning dial calibration is correct only when the **BAND SPREAD** dial pointer is set at 0.

AM/CW switch This switch, when set at **CW**, places the beat frequency oscillator (**BFO**) in operation making code signals audible. For **AM** reception, set the switch at **AM**.

BAND SPREAD control This control functions to electrically spread out the crowded amateur and short-wave bands. Band spread tuning is not necessary on the broadcast band.

Band spread tuning is accomplished as follows: (1) Set the band spread dial pointer at 0 (2) Position the **TUNING** control for the high frequency end of the amateur band or range of frequencies to be covered and (3) Tune through the amateur band or frequency range with the **BAND SPREAD** control.

NOTE: It is possible to log shortwave stations by recording the settings of the main tuning and band spread logging scales.

NOISE LIMITER switch This switch is normally set at **OFF**. Set the **NOISE LIMITER** switch at **ON** when severe electrical disturbances interfere with reception.

TONE control This control attenuates the high audio frequencies to the extent required by various receiving conditions. In addition, it is used to turn the receiver on and off. In the **AC OFF** position, the power to the receiver is disconnected. For **CW** reception, set the **TONE** control at **LOW**.

PITCH CONTROL This control is used to vary the pitch of the **CW** code signal when listening to amateur or commercial code stations and should be set for the tone most pleasing to the operator.

STANDBY/RECEIVE switch This switch, normally set at **RECEIVE**, is particularly useful to the "ham" as it provides a means of placing the receiver in an inoperative condition for standby periods, at the same time maintaining the tube heaters at operating temperature. The receiver is inoperative when the switch is set at **STANDBY**.

HEADPHONE OPERATION - The **PHONES** jack, located on the front panel, permits the use of standard headphones with the receiver. The speaker is automatically disconnected when the headphone plug is inserted in the **PHONES** jack.

SERVICE

GENERAL SPECIFICATIONS

Tubes Eight including one rectifier
 Speaker 5" PM
 Voice Coil Impedance 3.2 ohms
 Antenna Input For a 50-600 ohm line or
 single wire lead-in
 Intermediate Frequency 455 KC
 Power Supply . . Model S-40B: 105-125 V.
 50-60 cycle AC
 . . Model S-40BU: 105-250 V.
 25-60 cycle AC
 Power Consumption 75 watts

FREQUENCY COVERAGE

Band	Frequency Range	Reception
1	540 KC - 1680 KC	AM/CW
2	1680 KC - 5.4 MC	AM/CW
3	5.3 MC - 15.5 MC	AM/CW
4	15.5 MC - 44 MC	AM/CW

DIAL LAMP REPLACEMENT - Refer to Fig. 7 for the location of the dial lamps used in the receiver. To gain access to defective lamps, raise the hinged top cover of the cabinet. To make a dial lamp replacement, unclip the dial lamp socket from the mounting bracket. Replace defective lamps with 6-8 volt, 250 ma (blue bead) Mazda #44 pilot lamps.

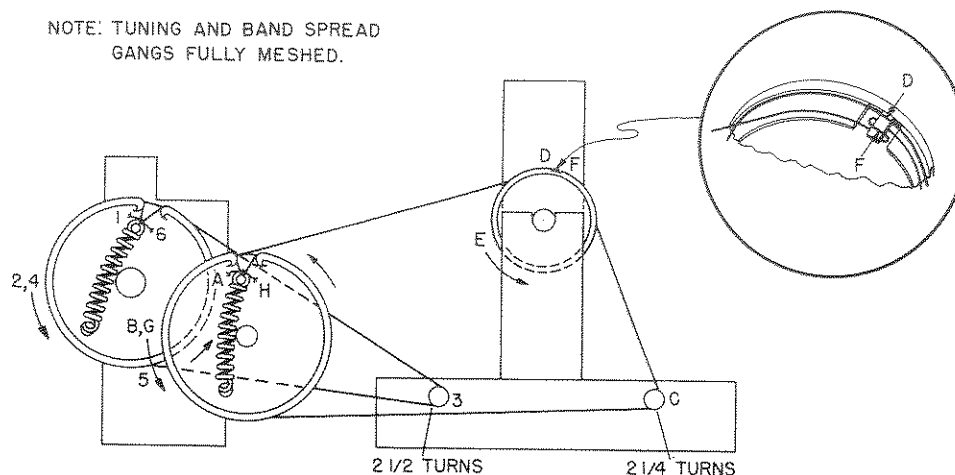
RESTRINGING DIAL CORD - The dial drive system of the receiver consists of two separate string drives (1) main tuning dial drive and (2) band spread tuning dial drive. All restringing should be done with the main tuning and band spread gangs fully meshed.

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.

TUBE REPLACEMENT - The tube types and their relative location in the receiver are shown in Fig. 7. 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.

NOTE: TUNING AND BAND SPREAD GANGS FULLY MESHED.



92C1712

FIG. 4 DIAL CORD STRINGING DIAGRAM

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

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.



92X1401-C

ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED

1. Signal generator, with amplitude modulated output, covering 455 KC to 36 MC. Use a modulated signal generator output for every step except step 2.
2. Output meter. Connect the meter across the speaker voice coil terminals.
3. Standard RMA dummy antenna consisting of a 200 mmf. capacitor in series with a 20 microhenry choke which is shunted by a 400 mmf. capacitor in series with a 400 ohm carbon resistor.
4. Alignment tool made of polystyrene or other similar material.

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

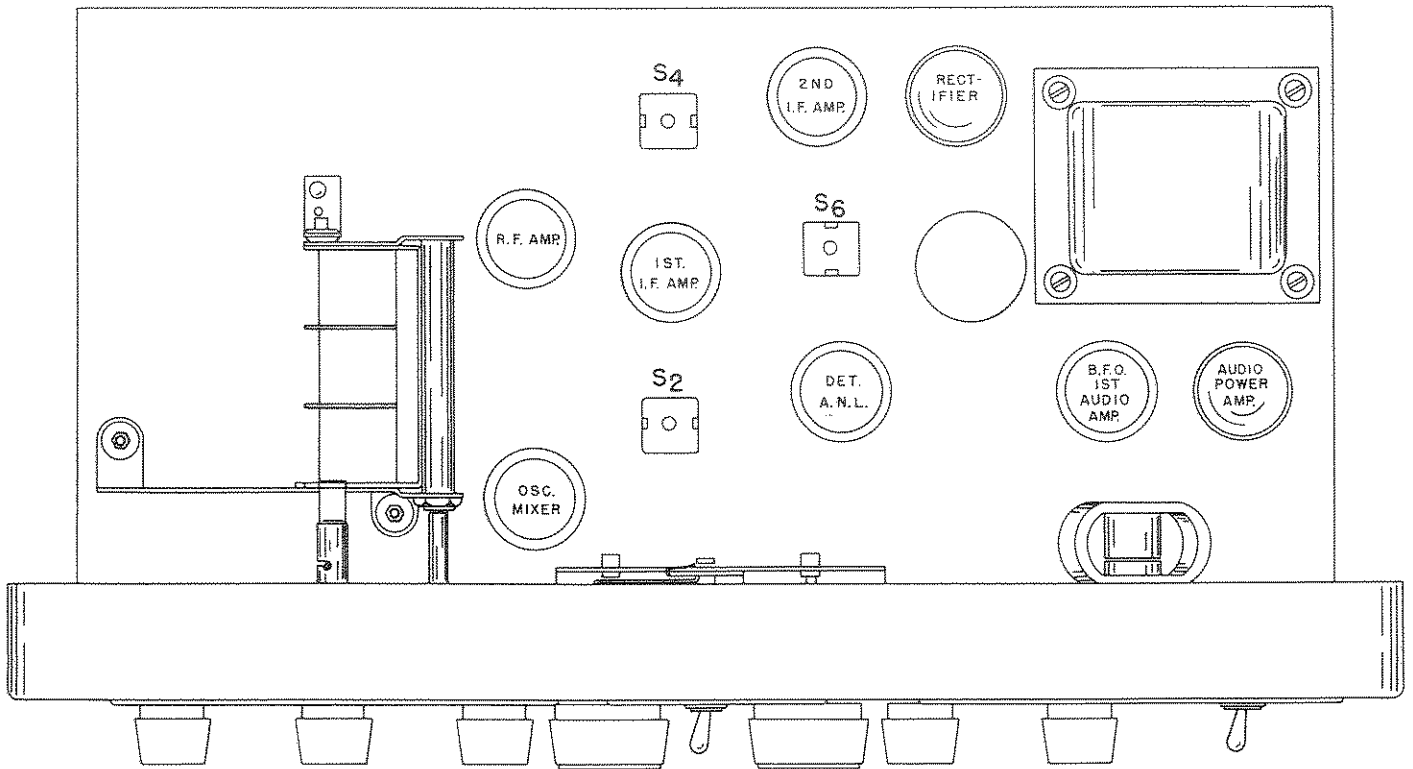
RF alignment should be made with the chassis in the cabinet. Holes in the bottom of the cabinet provide access to all RF adjustments.

Before starting alignment, set the VOLUME, SENSITIVITY and BAND SPREAD controls fully clockwise, AVC and NOISE LIMITER switches at OFF, CW/AM switch at AM and the TONE switch at HIGH. Refer to Figs. 5 and 6 for the location of all adjustments.

ALIGNMENT CHART

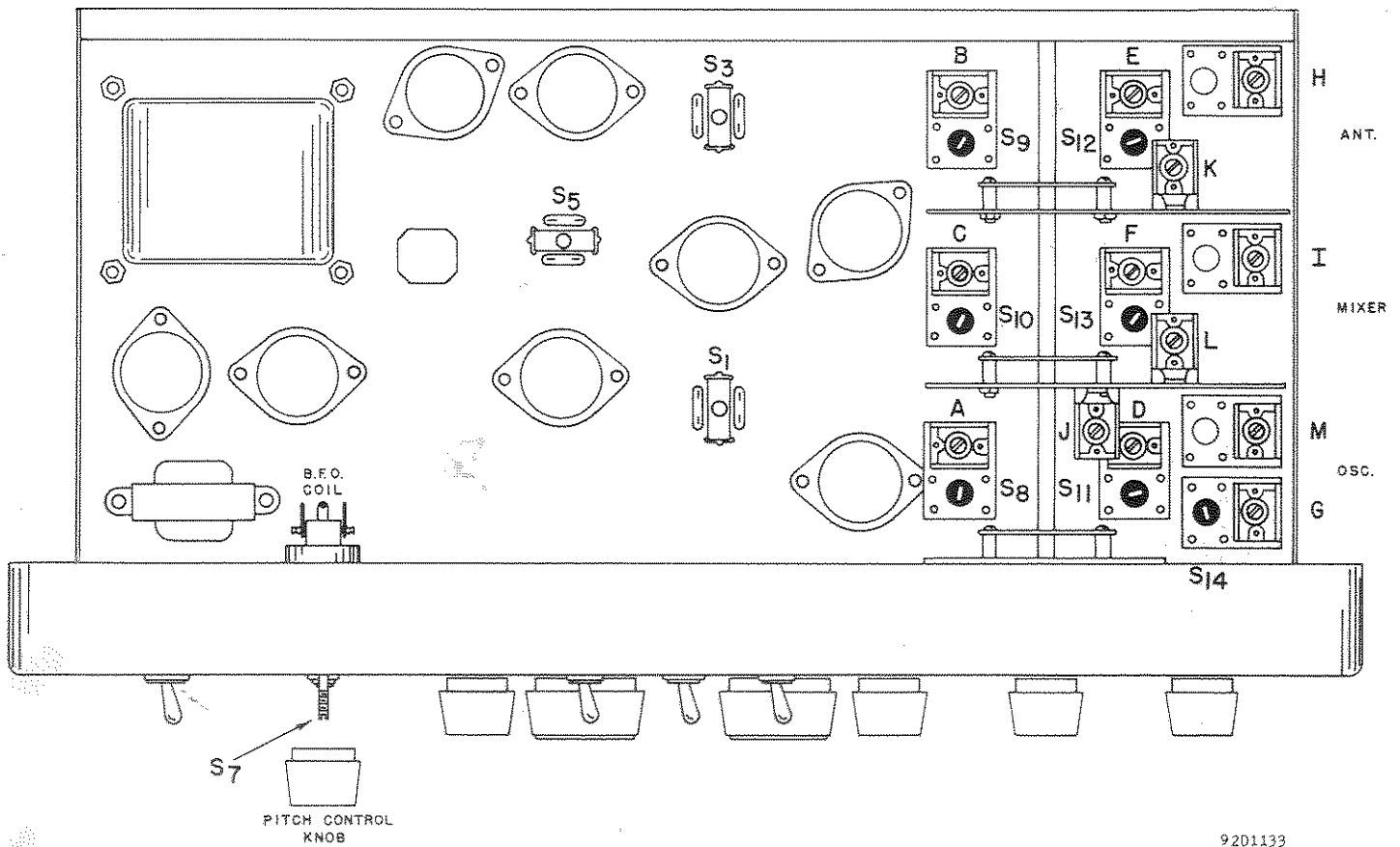
STEP	SIGNAL GENERATOR CONNECTION	SIGNAL GEN. FREQUENCY	BAND SELECTOR SETTING	MAIN TUNING DIAL SETTING	ADJUST	REMARKS
1	Connect the high side of the generator to the stator plates of the center section of the tuning gang. Connect the ground side of the generator to the chassis.	455 KC	1	1000 KC	S1, S2, S3, S4, S5, S6	Adjust for maximum audio output at the speaker voice coil. Use only enough signal generator output to obtain a 50 milliwatt reading on the output meter.
2*	Same as Step 1	455 KC (No Modulation)	1	1000 KC	S7	Set the CW/AM switch at CW. Remove the PITCH CONTROL knob and adjust S7 for a zero beat. Replace the knob with the dot in top center position.
3	Connect the high side of the generator to A1 on the antenna terminal strip through a standard RMA dummy antenna. Place the jumper between A2 and G. Connect the ground side of the generator to the chassis.	36 MC	4	36 MC	A, B, C	Maximum output as in Step 1.
		18 MC	4	18 MC	S8, S9, S10	
4	Same as Step 3	14 MC	3	14 MC	D, E, F	Maximum output as in Step 1.
		10 MC	3	10 MC	S11, S12, S13	
5	Same as Step 3	5 MC	2	5 MC	G, H, I	Maximum output as in Step 1.
		1.8 MC	2	1.8 MC	S14	
6	Same as Step 3	1500 KC	1	1.5 MC	J, K, L	Maximum output as in Step 1.
		600 KC	1	.6 MC	M	

* Reset the CW/AM switch at AM when Step 2 is completed.



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FIG. 5 TOP VIEW - LOCATION OF ALIGNMENT ADJUSTMENTS



9201133

FIG. 6 BOTTOM VIEW - LOCATION OF ALIGNMENT ADJUSTMENTS

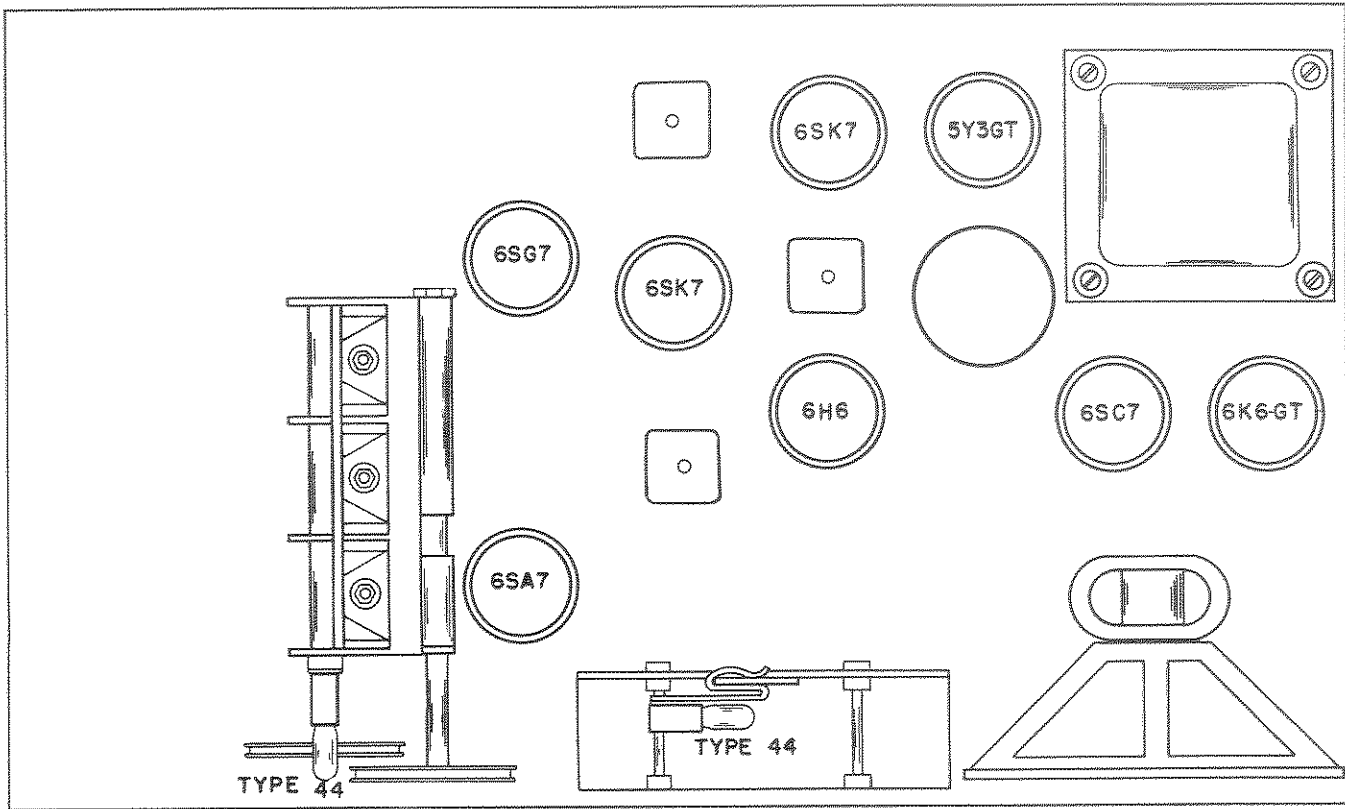


FIG. 7 TOP VIEW - LOCATION OF TUBES AND DIAL LAMPS

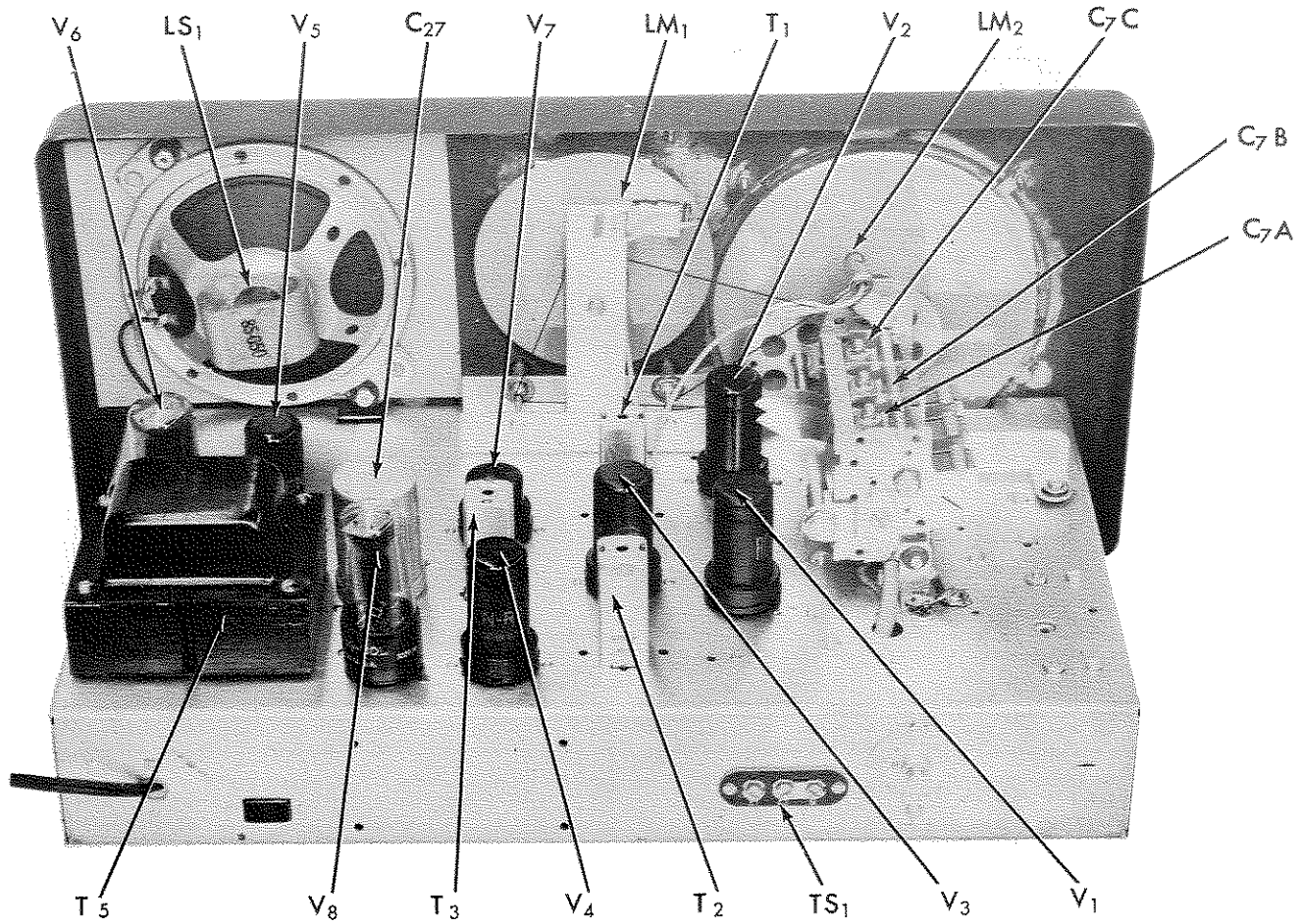


FIG. 8 TOP VIEW - COMPONENT LOCATION

92X1126-A

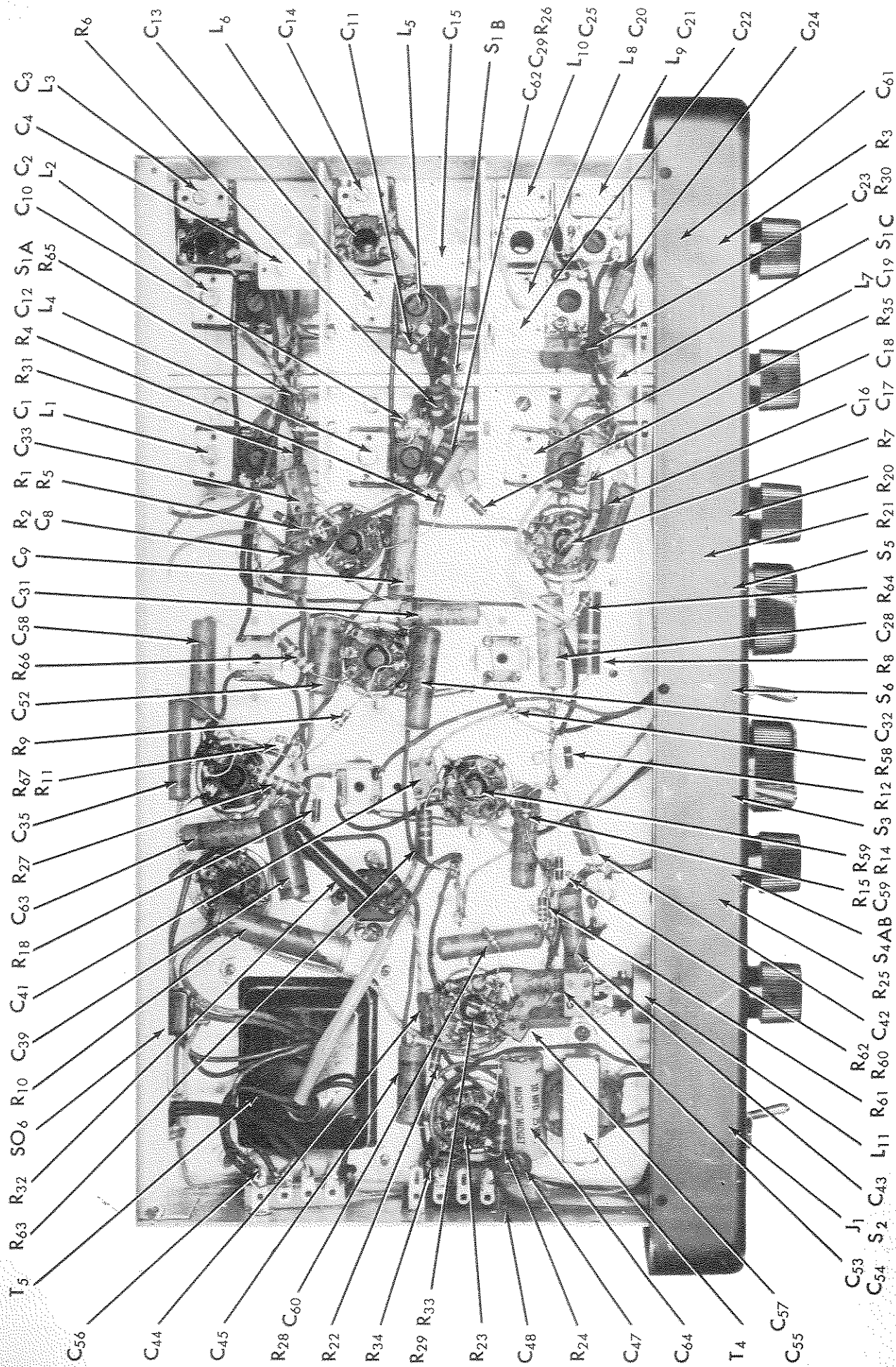
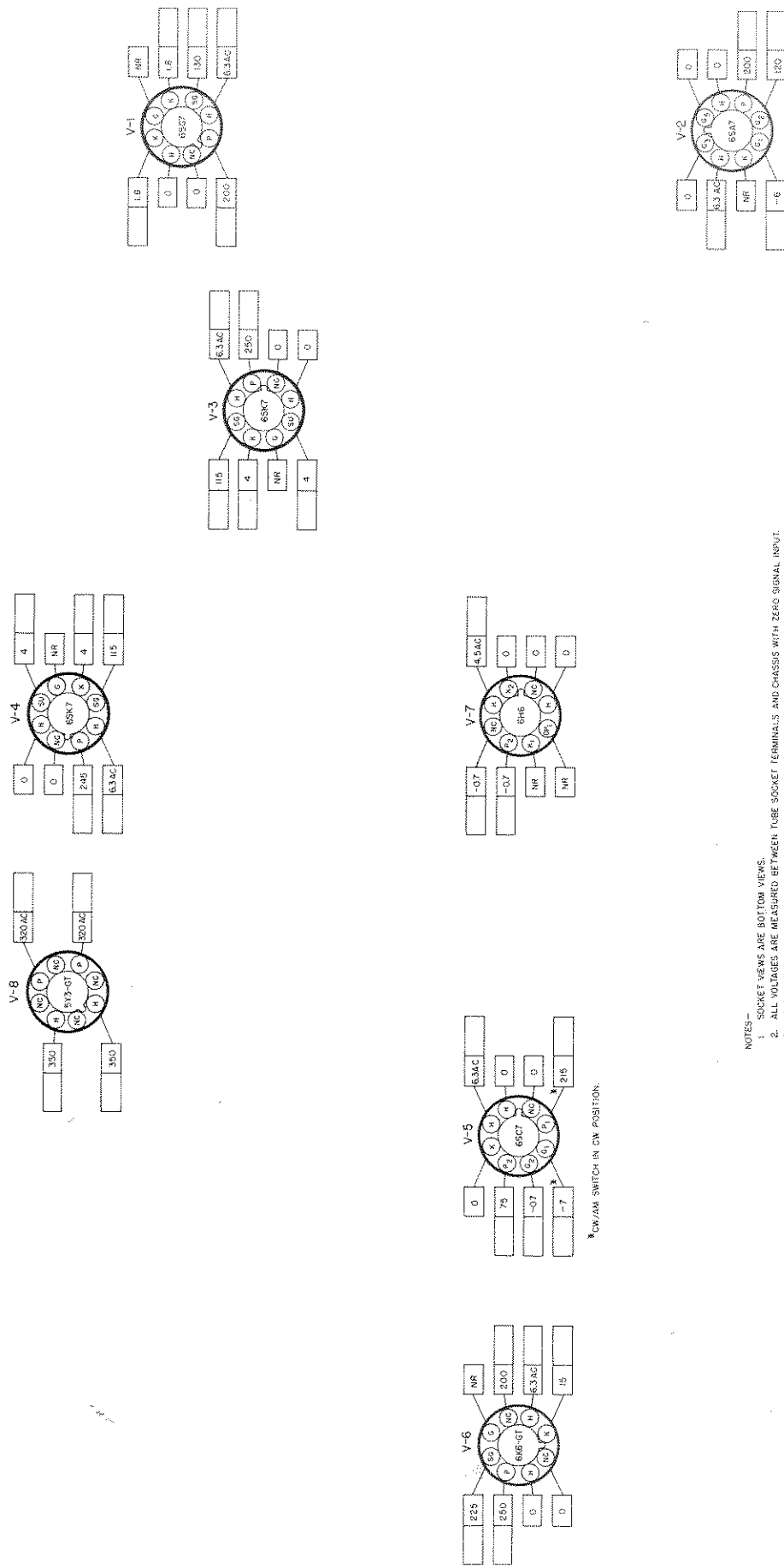


FIG. 9 BOTTOM VIEW - COMPONENT LOCATION

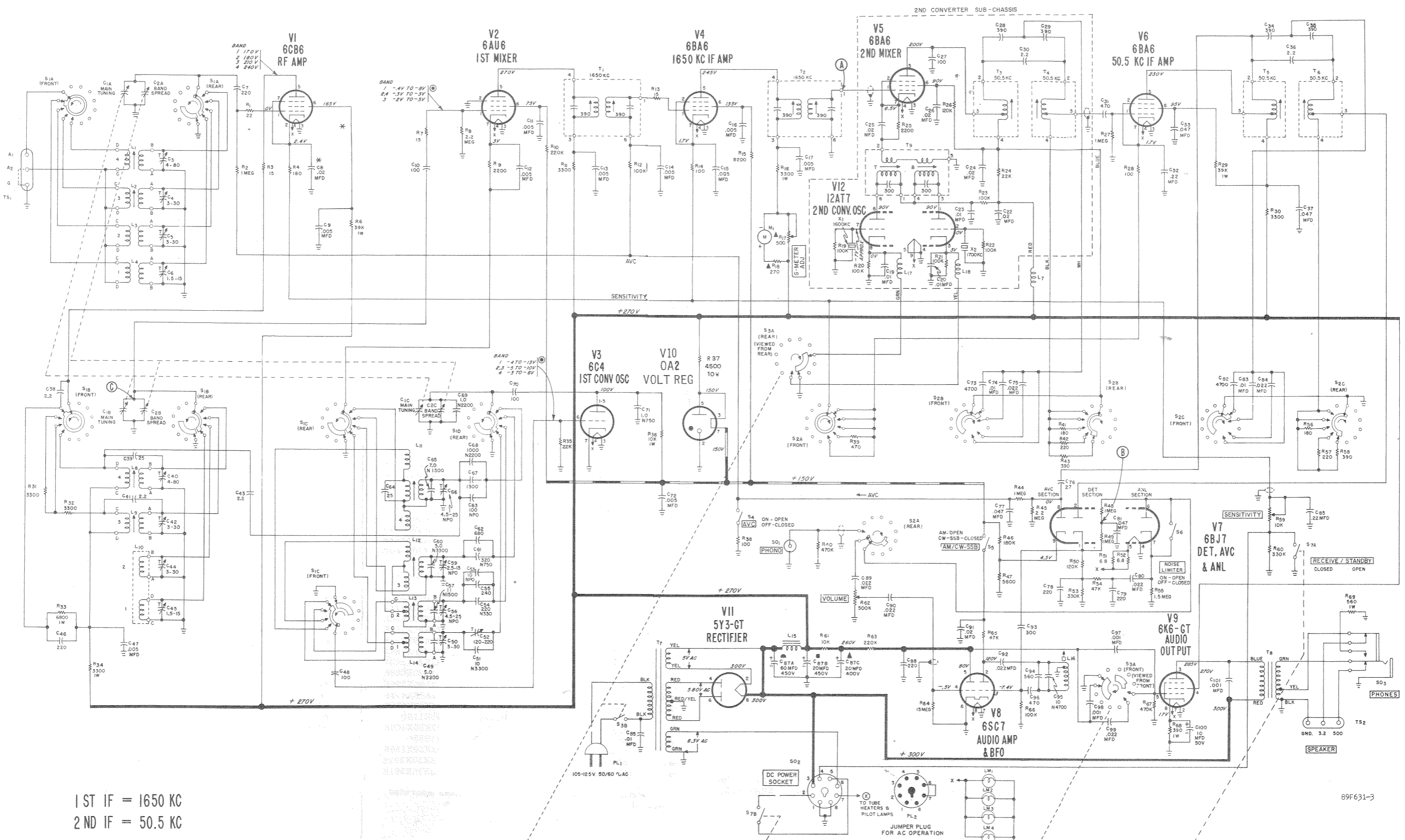
92X1127-A



- 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 IS 7. AC.
 4. ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED.
 5. DC VOLTAGES SHOWN WERE MEASURED WITH A VACUUM TUBE VOLTMETER.
 6. "NC"—NO CONNECTION (VOLTAGE SHOWN FOR THIS TERMINAL ONLY WHEN TERMINAL IS USED AS A TIE POINT).
 7. "NR"—NOT READABLE (READING GENERALLY MEANINGLESS).
 8. □ SPACE PROVIDED FOR SERVICE METER READINGS.

FRONT APRON
BOTTOM VIEW OF CHASSIS

FIG. 10 TUBE SOCKET VOLTAGE CHART



1 ST IF = 1650 KC
 2 ND IF = 50.5 KC

89F631-3

MODEL SX-96
MARK 1A & 1B

NOTES

1. Resistor values in ohms and capacitor values in MMF unless otherwise specified. K=1000.
2. Resistors are 1/2 watt and 10% unless otherwise specified.
3. Band Selector switch S1 shown in "538-1.58 MC" position (fully counterclockwise). Switch sections are shown as viewed from rear of set.
4. Selectivity switch S2 shown in "5 KC" position (fully counterclockwise). Switch sections are shown as viewed from front of set.
5. Response switch S3 shown in "Lower Sideband" position. Section S3B is open in the "Power Off" position and closed in all other positions.
6. See Fig. 11 for location of all switch sections.
7. Values and tolerances 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.

⊥ Chassis

VOLTAGES

Voltage readings taken under the following conditions:

1. Line voltage—117 volts, 60 cycles AC.
2. Antenna terminals shorted, Sensitivity at "10", Receive-Standby at "Receive", AM/CW-SSB switch at "AM", AVC at "On", Noise Limiter at "Off", Response at "Lower Sideband", and Selectivity at "5 KC".
3. All voltages measured between tube socket terminals and chassis unless otherwise specified. See Fig. 11 for location of tubes.
4. All voltages are DC and positive unless otherwise specified. DC voltages measured with VTVM; AC voltages with 1000 ohms-per-volt meter.
5. Voltages shown for V12 are with Response control at "Lower Sideband". In the "Upper Sideband", "Treble Cut", and "Normal" positions, the voltages of the two triode sections are reversed. The grid voltage will vary with crystal activity.
6. Voltages for pins 2 and 3 of V8 are taken with AM/CW-SSB switch at "CW-SSB".
7. Voltage varies with setting of tuning gang.

MARK 1A SETS

V-10 Voltage Regulator is VR150/OD3
R37—3000 ohms

MARK 1B SETS

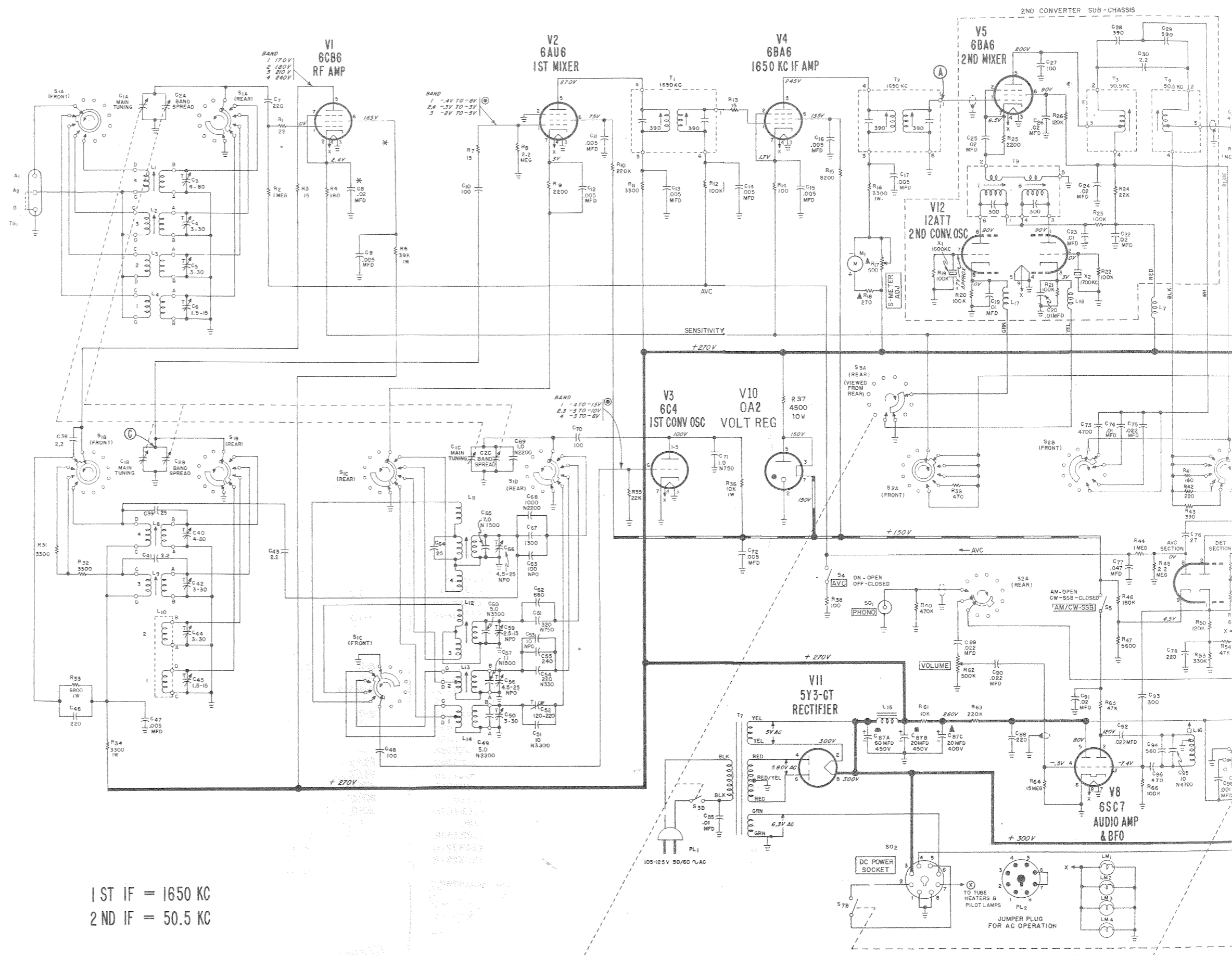
V-10 Voltage Regulator is OA2
R37—4500 ohms

▲ "S" METER ZERO ADJUSTMENT

Alternate values of resistance were used in some receivers for R-17 ("S" meter zero adjustment) and R-18 (The associated current limiting resistor). The alternate values were as follows:

SYMBOL	VALUE	HALLICRAFTERS PART NUMBER
R-17	200 ohms	25B714
R-18	56 ohms	23X20X560K

Either the alternate values or the original values as shown in your service parts list may be used for replacement. It is important however that if one of the alternate values is used the other must also be used.



1 ST IF = 1650 KC
2 ND IF = 50.5 KC

SERVICE PARTS LISTS

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	
CAPACITORS			CAPACITORS (Cont.)				
C-1	Variable capacitor, 3 section; main tuning (includes gears)	48D346	C-80	0.022 mfd. 20%, 200 V.; molded paper	46BR223L2	**L-1	
C-2	Variable capacitor, 3 section; bandspread tuning	48C347	C-86	0.01 mfd. 20%, 600 V.; molded paper	46BR103L6	**L-2	
C-3,40	4-80 mmfd., mica trimmer	44A395	C-87A-B			**L-3	
C-4,5,42,44,50	3-30 mmfd., mica trimmer	44A396	-C	60 mfd. 450 V., 20 mfd. 450 V., 20 mfd. 400 V.; electrolytic	45B113	**L-4	
C-6	1.5-15 mmfd., mica trimmer	44A397	C-89,90,91,92,99	0.022 mfd. 20%, 600 V.; molded paper	46BR223L6	L-5	
C-7,46,78,79,88	220 mmfd. 10%, 500 V.; ceramic	47CA20221K	C-93	300 mmfd. 10%, 500 V.; mica	47X20C301K	L-7	
C-8,22,24,25,26	0.02 mfd. + 80-20%, 500 V.; ceramic disc	47A242	C-94	560 mmfd. 5%, 500 V.; mica	47X20D561J	**L-8	
C-9,14,15,16,17,47	0.005 mfd. GMV, 500 V.; ceramic disc	47A168	C-95	10 mmfd. ±.5 mmfd. N4700, 500 V.; ceramic	47D20Y100D	**L-9	
C-10,27,48,70	100 mmfd. 10%, 500 V.; ceramic	47X20UJ101K	C-97,98,101	0.001 mfd. 20%, 600 V.; molded paper	46BR102L6	**L-10	
C-11,12,13,72	0.005 mfd. 20%, 1000 V.; ceramic disc	47B523	C-100	10 mfd. 50 V., electrolytic	45B211	L-11	
C-19,20,23	0.01 mfd. + 80-20%, 450 V.; ceramic disc	47A224		N - neg. temp. coef. NPO - zero temp. coef. GMV - guar. min. value		L-12	
C-28,29,34,35	390 mmfd. 5%, 500 V.; mica	47X20D391J	* RESISTORS				**L-13
C-30,36,38,41,43	2.2 mmfd. 10%, 500 V.; composition	47B403-4	R-1	22 ohms	23X20X220K	C-57	
C-31,96	470 mmfd. 10%, 500 V.; mica	47X20B471K	R-2,27,44,48,49	1 megohm	23X20X105K	**L-14	
C-32,85	0.22 mfd. 20%, 200 V.; molded paper	46BR224L2	R-3,7,13	15 ohms	23X20X150K	L-15	
C-33,37	0.047 mfd. 20%, 600 V.; molded paper	46BR473L6	R-4,41,56	180 ohms	23X20X181K	L-16	
C-39,64	25 mmfd. 10%, 500 V.; ceramic	47X20UK250K	R-5	470 ohms		L-17	
C-45	1.5-15 mmfd., mica trimmer	44A399	R-6,29	560 ohms, 1 watt	23X30X561K	T-1,2	
C-51	10 mmfd. ±.5 mmfd., N3300, 500 V.; ceramic	47D20X100D	R-8,45	2.2 megohms	23X20X225K	T-3,4	
C-52	120-220 mmfd., mica padder	44A398	R-9,25	2200 ohms	23X20X222K	T-7	
C-53	10 mmfd. 10%, NPO, 500 V.; ceramic	47X20CG100K	R-10,63	220,000 ohms	23X20X224K	T-8	
C-54	220 mmfd. 5%, N330, 500 V.; ceramic	47X35SH221J	R-11,30,31,32	3300 ohms	23X20X332K	T-9	
C-55	240 mmfd. 5%, 500 V.; mica	47X20D241J	R-12,19,20,21,22,23,66	100,000 ohms	23X20X104K	**	
C-56	4.5-25 mmfd. NPO, ceramic trimmer	44B451	R-14,28,38	100 ohms	23X20X101K	O - C	
C-57	11 mmfd. ±.25 mmfd., N1500; 500 V., ceramic	47D20V110J	R-15	8200 ohms	23X20X822K	S	
C-59	2.5-13 mmfd., ceramic trimmer	44B452	R-16,34	3300 ohms, 1 watt	23X30X332K		
C-60	5.0 mmfd. ±.25 mmfd., N3300, 500 V.; ceramic	47D20X050C	R-17	500 ohms, variable ("S" Meter Adj)	25C022		
C-61	320 mmfd. 5%, 500 V.; ceramic	47X35UJ321J	R-18	270 ohms	23X20X271K		
C-62	680 mmfd. 5%, 500 V.; mica	47X20D681J	R-24,35	22,000 ohms	23X20X223K	S-1A	
C-63	100 mmfd. 10%, NPO, 500 V.; ceramic	47X32CG101K	R-26,50	120,000 ohms	23X20X124K	S-1B	
C-65	7.0 mmfd. ±.25 mmfd., N1500, 500 V.; ceramic	47D20V070C	R-33	6800 ohms, 1 watt	23X30X682K	S-1C	
C-66	4.5-25 mmfd., ceramic trimmer	44B453	R-36	10,000 ohms, 1 watt	23X30X103K	S-1D	
C-67	1300 mmfd. 5%, 500 V.; mica	47X30E132J	R-37	3000 ohms, 10 watt; wirewound (Mark 1A)	24BG302E		
C-68	1000 mmfd. 5%, N2200; 500V.; ceramic	47B441	R-37	4500 ohms, 10 watt; wirewound (Mark 1B)	24BG402E	S-2	
C-69	1.0 mmfd. ±.1 mmfd., N2200, 500 V.; ceramic	47D25W010B	R-39	470 ohms	23X20X471K	S-3	
C-71	1.0 mmfd. 10%, N750, 500 V.; ceramic	47X20UJ010B	R-40,67	470,000 ohms	23X20X474K	S-4,5	
C-73,82	4700 mmfd. 10%, 600 V.; molded paper	46BR472E6	R-42,57	220 ohms	23X20X221K		
C-74,83	0.01 mfd. 10%, 600 V.; molded paper	46BR103E6	R-43,58	390 ohms	23X20X391K	S-7	
C-75,84	0.022 mfd. 10%, 600 V.; molded paper	46BR223E6	R-46	180,000 ohms	23X20X184K		
C-76	27 mmfd. 10%, 500 V.; ceramic	47X20UJ270K	R-47	5600 ohms	23X20X562K		
C-77,81	0.047 mfd. 20%, 200 V.; molded paper	46BR473L2	R-51,52	6.8 ohms	23X20X068K	PL-1	
			R-53,60	330,000 ohms	23X20X334K	PL-2	
			R-54,65	47,000 ohms	23X20X473K	SO-1	
			R-55	1.5 megohms	23X20X155K	SO-2	
			R-59	10,000 ohms, variable (Sensitivity)	25B1180	SO-3	
			R-61	10,000 ohms	23X20X103K		
			R-62	500,000 ohms, variable (Volume)	25B534		
			R-64	15 megohms	23X20X156K		
			R-68	390 ohms, 1 watt	23X30X391K		
			R-69	560 ohms, 1 watt	23X30X561K		

* - All resistors are 10%, 1/2 watt, carbon type unless otherwise specified.

SERVICE PARTS LISTS (Cont.)

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
O COILS AND TRANSFORMERS			TUBES AND LAMPS		
	Coil, antenna		V-1	6CB6: RF amplifier	90X6CB6
**L-1, C-3.	Band 4	51B1325	V-2	6AU6: 1st mixer	90X6AU6
**L-2, C-4.	Band 3	51B1324	V-3	6C4: 1st conversion oscillator	90X6C4
**L-3, C-5.	Band 2	51B1323	V-4,5,6.	6BA6: 1650 KC IF amplifier, 2nd mixer, and 50.5 KC IF amplifier	90X6BA6
**L-4, C-6.	Band 1	51B1322	V-7	6BJ7: detector, AVC, and noise limiter	90X6BJ7
L-5	Choke, RF (wound on R-5)	53A215	V-8	6SC7: audio amplifier and BFO	90X6SC7
L-7	Choke, RF; 540 uh; 10 ohms DC	53A107	V-9	6K6GT: audio output	90X6K6GT
	Coil, mixer		V-10	VR150; voltage regulator (Mark 1A)	90XVR150
**L-8, C-40.	Band 4	51B1327	V-10	OA2 Voltage Regulator (Mark 1B)	90XOA2
**L-9, C-42.	Band 3	51B1326	V-11	5Y3GT: rectifier	90X5Y3GT
**L-10, C-44.	Bands 1 and 2	51B1319	V-12	12AT7: 2nd conversion oscillator	90X12AT7
	Coil, oscillator		LM-1,2,3,4	Lamp, pilot; type 44	39A003
L-11	Band 4	51B1321	MISCELLANEOUS		
L-12	Band 3	51B1933	Ball bearing, 1/8" dia.		77A505
**L-13, C-56,			Ball bearing, .093" dia		77A506
C-57	Band 2	51B1921	Cabinet bottom section		66D1087
**L-14, C-50.	Band 1	51B1328	Cabinet front panel (less front control nameplate)		68D365
L-15	Choke, filter; 8 H; 85 ma; 310 ohms DC	56B107	Cabinet top cover		66D1086
L-16	Coil, BFO	54B053	Cam assembly, bandspread		77B916
L-17,18	Choke, RF; red	53B008	Cam assembly, main tuning		77B914
T-1,2	Transformer, 1st and 2nd IF (1650 KC)	50B488	Clip, tuning slug retaining; for L-11 and L-12		2A1050
T-3,4,5,6	Transformer, IF (50.5 KC)	50B489	Dial cable assembly		38A029
T-7	Transformer, power	52C221	Dial scale, bandspread		83D502
T-8	Transformer, audio output	55B264	Dial scale, main tuning		83D503
T-9	Transformer, 2nd conversion oscillator	50C689	Gear, idler; helical type; 56 teeth		26B258
<p>** - Trimmers and capacitors indicated above are supplied with the coils but may also be ordered separately if desired. See "Capacitors" section.</p> <p>O - Coils are supplied less tuning slug. See "Miscellaneous" section for part numbers of slugs.</p>			<p>Insulator, bakelite; .156" id, .5" od, 1/4" th</p> <p>Knob, Band Selector</p> <p>Knob, Pitch Control; for Mark I Sets</p> <p>Knob, Pitch Control; for Mark 1A Sets</p> <p>Knob, Response</p> <p>Knob, Selectivity</p> <p>Knob, Sensitivity and Volume</p> <p>Knob, Tuning and Bandspread</p>		
SWITCHES			<p>Lock, line cord</p> <p>Male section</p> <p>Female section</p>		
	Switch wafers, Band Selector:		X-1 and		
S-1A	Antenna section	62B053	X-2	Matched crystal pair, consists of one 1600 KC crystal and one 1700 KC crystal	19C1902
S-1B	Mixer section	62B053		Mounting foot, cabinet; rubber	16A007
S-1C	Oscillator grid section	62B054		Nameplate, front control	68D372
S-1D	Oscillator plate section	62B055		Pulley and bushing assembly, band-spread control shaft	28B201
	Detent and shaft for Band Selector switch	74B172		Pulley and bushing assembly, band-spread gang shaft	28B203
S-2	Switch, selectivity	60B673		Shield, tube; miniature 7-pin	69A306
S-3	Switch, Response	60B672		Shield, tube; miniature 9-pin	69A519
S-4,5,6	Switch, spst toggle; AVC, AM/CW-SSB, and Noise Limiter	60A138	M-1	"S" meter assembly, complete	82D280
S-7	Switch, dpst toggle; Receive-Standby	60A192		Front cover, "S" meter; clear plastic (part of "S" meter)	8C2612
JACKS, PLUGS AND SOCKETS				"h" insignia (part of "S" meter)	7A592
PL-1	Line cord and plug	87A1669		Spring, dial cord tension	75A139-0
PL-2	Plug, octal; Jumper Plug	35A003		Spring, compression; 2-3/4" long, 2 turns	75B332
SO-1	Jack, Phono	36A041		Spring, takeup; 5/8" long, 12-1/4 turns	75A326
SO-2	Socket, octal; DC Power Socket	6B296	TS-1	Terminal strip, antenna	88A032
SO-3	Jack, Phones	36B048	TS-2	Terminal strip, speaker	88A578
	Socket assembly, dial lamp (center)	86A192		Tuning slug for L-1, 2, 8, 9, and 13	77A068
	Socket assembly, dial lamp (end)	86A191		Tuning slug for L-11 and 12	3A1543
	Socket, tube; miniature 7-pin	6A347		Window, bandspread dial	22C433
	Socket, tube; miniature 9-pin	6B500		Window, main tuning dial	22B429
	Socket, tube; octal	6A644			

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.