



communications

**OPERATING and SERVICE
INSTRUCTIONS**

**S-106
MARK I**

the hallicrafters co.

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

GENERAL DESCRIPTION

Your new Hallicrafters model S-106 has been especially designed to meet the amateur requirement for a highly sensitive communications receiver covering the six meter band (50 mc to 54 mc). The single band coverage design has permitted the use of components and circuitry that give optimum results in this frequency range.

Seven tubes and one selenium rectifier are employed in the latest type superheterodyne circuit. The receiver will operate from any standard power source supplying 105 to 125 volts AC or DC. Low power consumption makes the S-106 easily adaptable to mobile operation by use of a power converter (see listing below).

Many of Hallicrafters famous quality and operating convenience features have been included on this receiver. An r-f stage is provided for top sensitivity. Headphone or built in speaker operation may be selected by means of a switch located on the rear of the chassis. An effective automatic noise limiter circuit may be switched in to aid in receiving those "hard to read signals". The dial calibration spreads the six meter band over a wide range so that separate bandspread



Fig. 1. Model S-106

controls are not needed. A front panel standby switch provides for convenient operation when used in connection with a radio transmitter.

INSTALLATION

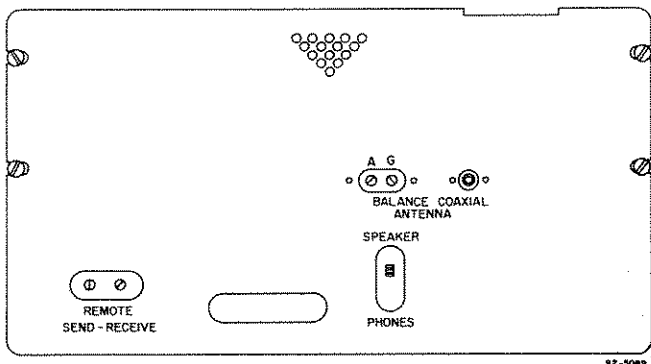


Fig. 2. Rear Connections and Controls

UNPACKING - After unpacking the receiver, examine it closely for damage which may have occurred in transit. Should any sign of damage be apparent, file a claim immediately with the carrier stating the extent of damage. Carefully check all shipping labels and tags for instructions before removing or destroying them.

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

POWER SOURCE - The receiver is designed to operate on 105 to 125 volt AC or DC current. If in doubt about your power source, contact your local power company before plugging in the receiver. The power consumption of the receiver is 40 watts.

Mobile operation is possible by the use of a 6-volt DC to 110-volt AC power converter such as Cornell Dubilier Model 6R10, American Television and Radio Model 6-RSD, or Terado Model 6-51160. Such units equip the receiver for operation from 6-volt battery sources normally found in automobiles, trucks, etc.

HEADPHONES - A twin tip jack marked "Phones" is provided at the rear of the receiver for connecting headphones or a hearing aid. The headphone output impedance is not critical and any commercial headphones may be used, including crystal types since no direct current flows in the headphone circuit. For maximum headphone output, the use of low-impedance

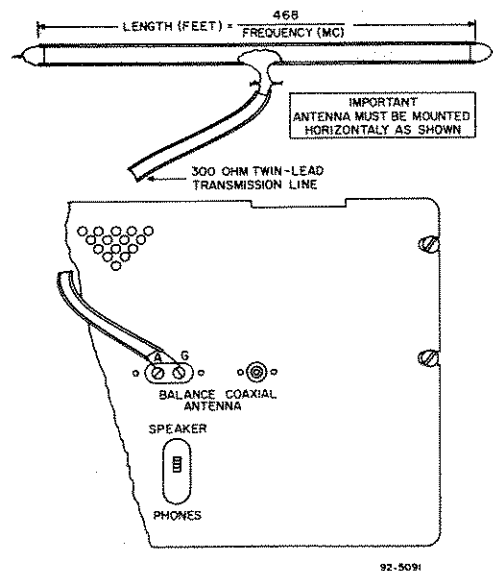


Fig. 3. Antenna

headphones ranging from 50 to 5000 ohms is recommended. For headphone operation, set the Speaker-Phones selector switch at the rear of the receiver at "Phones".

REMOTE STANDBY - RECEIVE TERMINALS - The two terminals (see figure 2) are connected directly across the STANDBY-RECEIVE switch. A remote Standby-Receive switch may be connected to these terminals or connection may be made to provide for transmitter switching from the front panel of the receiver.

ANTENNAS

CONNECTIONS - The antenna terminal strip is located on the cabinet back for convenience in connecting single wire or balanced type antennas using 300 ohm twin lead. A coaxial connector (in parallel with the terminal strip) is also provided for use with unbalanced antennas using coax lead in (50 to 72 ohms).

RECOMMENDED ANTENNA TYPES - The r-f input of the receiver is designed to operate from a single wire whip or doublet antenna. A single wire about two feet in length connected to terminal "A" will give satisfactory results at many locations. Reception may be improved by connecting terminal "G" to a cold water pipe or other external ground.

A simple folded dipole antenna that will give excellent results in the frequency range covered by this receiver is illustrated in figure 3. This type of antenna is directional and should be positioned so that its entire length faces the desired direction for maximum signal pick up.

For further information concerning antennas refer to the "Radio Amateurs Handbook" or the "ARRL Antenna Handbook", both published by the American Radio Relay League, West Hartford, Conn.

OPERATION

(Function and Use of Controls)

OFF-VOLUME - Used to control the volume and to turn the receiver on and off. Allow about one minute for the tubes to reach operating temperature after turning the set on.

NOTE

If the receiver fails to operate on DC, reverse the power plug to obtain the proper polarity.

TUNING - Used to tune in the desired signal. The dial is calibrated directly in megacycles. A special logging scale is included for accurately logging and relocating stations of special interest.

RECEIVE - STANDBY - Set to "RECEIVE" during receiver operation. When set to "STANDBY" the output

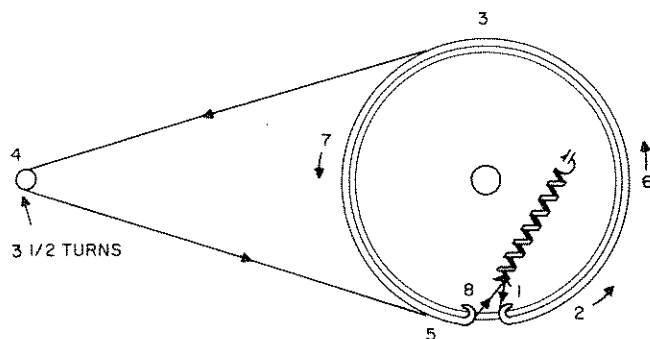
of the receiver will be silenced but the tube filaments will remain on thereby maintaining the receiver ready for instant operation.

ANL SWITCH - This control should normally be set at "OFF". If severe electrical disturbances such as ignition noise or other pulse-type signals interfere with reception set this control to "ON" to place the automatic noise limiter circuit in operation.

SPEAKER - PHONES SWITCH - (Located on the rear of the chassis.) Set this control to "SPEAKER" to operate the built in speaker or to "PHONES" for Headphone operation.

SPECIFICATIONS

- Tubes and Rectifiers..... 7 tubes and 1 selenium rectifier
- Speaker 5 inch PM
- Voice Coil Impedance 3.2 ohms
- Headphone Output Impedance..... 100 ohms
(See "Headphones", Page 2)
- Antenna Input Impedance 300 ohms
- Antenna..... External single wire whip or doublet
(See Page 3)
- Intermediate Frequency 10.7 MC
- Power Supply... 105-125 volts DC or 50-60 cycle AC
- Frequency Coverage 50-54 MC
- Dimensions (overall).... 7-1/2" x 13" x 8-3/4" deep
- Net Weight..... 10 Lb. 10 Oz.
- Shipping Weight 13 Lb.



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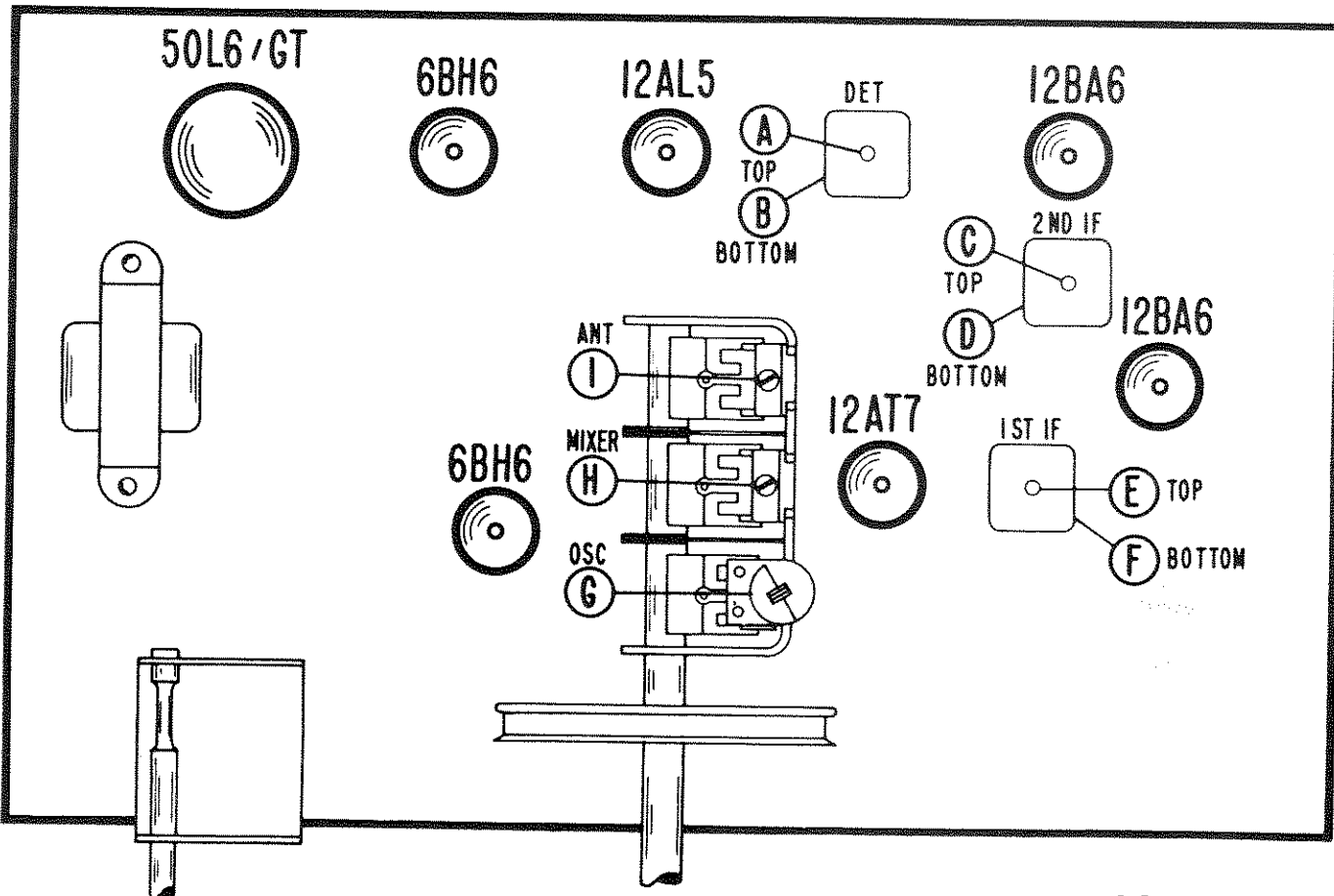
Fig. 4. Dial Cord Stringing Diagram

IF ALIGNMENT

1. Use a 10.7 MC signal generator, amplitude modulated 30% 400 cycles.
2. Connect high side of generator to pin 7 of V-2; connect low side to chassis.
3. Adjust generator output to maintain a one volt reading on VTVM.
4. Set Volume control at maximum.
5. See Fig. 5 for location of alignment adjustments.
6. Connect VTVM across output transformer. Adjust B, C, D, E, and F for maximum output.

RF ALIGNMENT

1. Use a signal generator amplitude modulated which covers 50 MC and 54 MC.
2. Connect output of generator through a 300 ohm dummy antenna to terminals on antenna terminal on rear of chassis.
3. Use a non-metallic alignment tool.
4. Adjust generator output to maintain a one volt reading on VTVM.
5. Set Volume control at maximum.
6. See Fig. 5 for location of alignment adjustments.
7. Preset mixer (H) and antenna (I) trimmers one half turn out from maximum capacity.
8. Adjust oscillator trimmer to 55 MC with gang at minimum capacity.
9. Set generator at 54 MC and adjust gang to 54 MC on tuning dial scale. Adjust mixer trimmer (H) for maximum noise level.
10. Adjust oscillator trimmer (G) for maximum noise level.
11. Adjust antenna trimmer (I) for maximum signal output.



92-5084

Fig. 5. Tube Location and Alignment Adjustments

SERVICE OR OPERATING QUESTIONS - For any further information regarding operation or servicing of your receiver, contact your Hallicrafters dealer. The Hallicrafters Co. maintains an extensive system of authorized service centers where any required service will be performed promptly and efficiently at a nominal charge. All Hallicrafters Authorized Service Centers display the sign shown at the right. For the location of the one nearest you, consult your dealer or telephone directory.



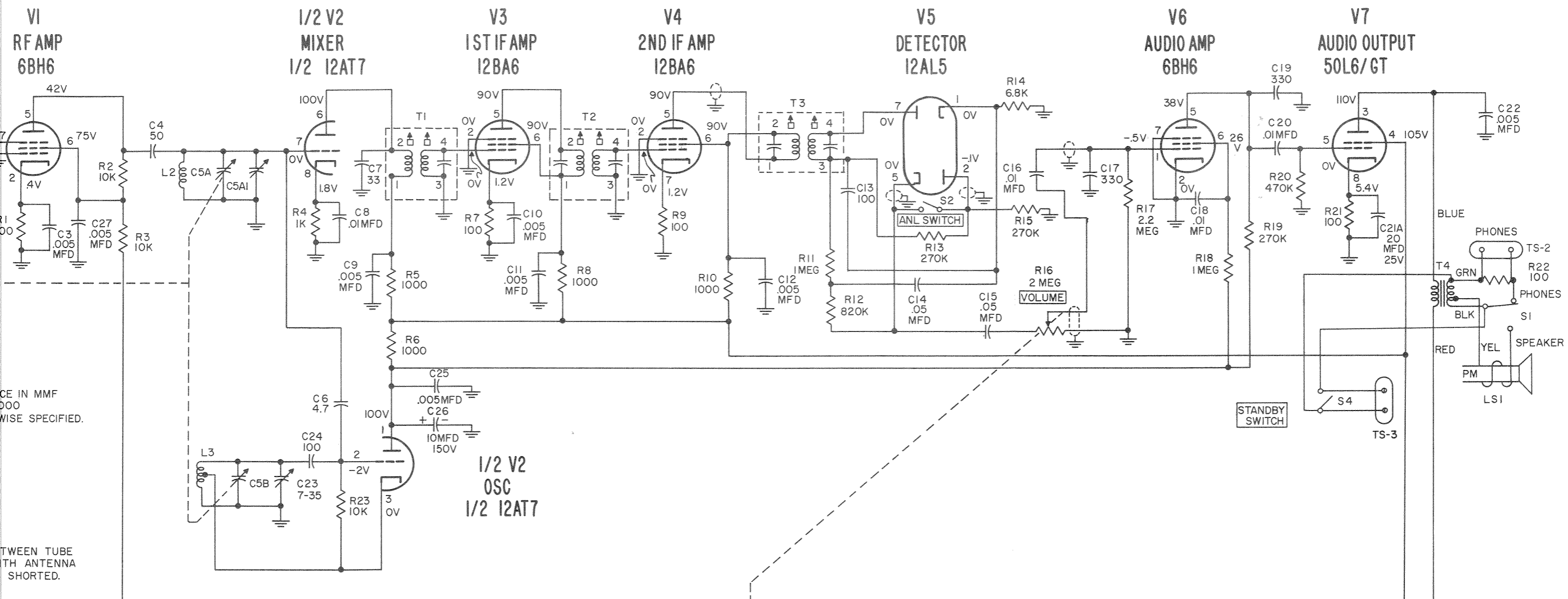
The Hallicrafters Company reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate these revisions in earlier models.

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
CAPACITORS			RESISTORS (cont)		
C-1, C-2, C-19, C-17	330 mmf. 500 V., ceramic	47CA25A331K	R-20	470,000 ohm, 1/2 w; carbon	23X20X474K
C-3, C-9, C-10, C-11, C-12, C-22, C-25, C-27, C-29, C-30, C-31, C-32	.005 mfd. GMV, 500 V., ceramic disc	47A168	R-12	820,000 ohm, 1/2 w; carbon	23X20X824K
C-4	50 mmf. gimmick Cap	47X20UK510K/D	R-24	15 ohms, 1 w; carbon	23X30X150K
C-5	Tuning capacitor, 3 section	48D378	R-25	220 ohms, 2 w; carbon	23X40X221K
C-6	4.7 mmf. 500 V., ceramic	47A160-6	R-26	470 ohms, 1 w; carbon	23X30X471K
C-7	33 mmf. 500 V., ceramic	47X25CJ330J	COILS AND TRANSFORMERS		
C-8, C-16, C-18, C-20	0.01 mfd. +80 -20%, 45 V., ceramic disc	47A224	L-1	Coil, Antenna	51A1930
C14, C15	.05 mfd. Paper tub.	46AU503J	L-2	Coil, RF	51A2151
C-21	60-40-40 mfd. 150 V., 20 mfd. 25 V.	45B091	L-3	Coil, Oscillator	51A2150
C-23	7-35 mmf. ceramic trimmer	44A125	L-4	Choke, RF; 8.2 uh	53A333
C-13, C-24	100 mmf. 500 V., ceramic	47X25UK101K/D	T-1	Transformer, 1st IF	50C519
C-26	10 mfd. 150 V., electrolytic	45C097	T-2	Transformer, 2nd IF	50C517A
C-28	0.047 mfd. 600 V., molded paper tubular	46BR473L6	T-3	Transformer, Ratio Detector	50C517A
	GMV - Guaranteed Minimum Value		T-4	Transformer, Audio Output	55A127
RESISTORS			SWITCHES		
R-2, R-3, R-23	10,000 ohms, 1/2 w; carbon	23X20X103K	S-1	Switch, spst; Speaker-Phones	60A243
R-4, R-5, R-6, R-8, R-10	1000 ohms, 1/2 w; carbon	23X20X102K	S-2	Switch, Noise Limiter	60A742
R-1, R-7, R-9, R-21, R-22	100 ohms, 1/2 w; carbon	23X20X101K	S-3	Switch, Power on/off; Part of R16	-----
R-14	6800 ohms, 1/2 w; carbon	23X20X682K	S-4	Switch, Standby	60A783
R-16	2 megohms, variable; volume control w/s	25B1115	TUBES AND RECTIFIERS		
R-17	2.2 megohms, 1/2 w; carbon	23X20X225K	V-1	6BH6; RF Amplifier	90X6BH6
R-11, R-18	1 megohm, 1/2 w; carbon	23X20X105K	V-2	12AT7; Oscillator/Mixer	90X12AT7
R-13, R-15, R-19	270,000 ohm, 1/2 w; carbon	23X20X274K	V-3, V-4	12BA6; 1st and 2nd IF Amplifiers	90X12BA6
			V-5	12AL5; ratio Detector	90X12AL5
			V-6	6BH6; Audio Amplifier	90X6BH6
			V-7	50L6GT; Audio Output	90X50L6GT
			SR-1	Selenium Rectifier, 150 ma	27-158
			MISCELLANEOUS		
				Cabinet	66-1372
				Cabinet Back	32C697
				Clip, mts.; for Transformer T-1, 2 and 3	76A385

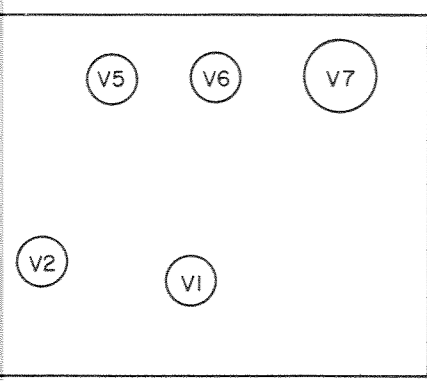
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Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
MISCELLANEOUS			MISCELLANEOUS (cont)		
.....	Clip, Push-on; for Mounting		.....	Pointer, Dial	82A277
	Dial Window	76A853	.....	Ring, Retaining; "E" Type	76A1052
.....	Cover, Cabinet Bottom	8C1617	.....	Shield, Tube	69A232
.....	Dial	83C566	.....	Socket, Tube:	
.....	Dial Cord (Specify Length)	38A026		7-Pin Miniature	6B402
.....	Foot, mounting; rubber	16A007		9-Pin Miniature	6A401
.....	Grommet, Rubber; Chassis-Cabinet			Octal	6A250
	Insulating	16A201	LS-1....	Speaker, 5 inch PM; 3.2 ohm	
.....	Insulator, Nylon; fits in Chassis-			voice coil	85C120
	Cabinet Insulating Grommet	4A647	.....	Spring, Dial Cord Tension	75A012
.....	Jack, Antenna Coax	36A029	TS-1....	Terminal Strip, Antenna	88B456
.....	Knob, Tuning Control	15B802	TS-2....	Twin Jack, Phones	88A071
.....	Knob, Volume off/on	15B816	TS-3....	Terminal Strip, Standby Switch ...	88A809
PL-1 ...	Line Cord and Plug	87A078	.....	Washer, Extruded; Chassis-	
.....	Lock, Line Cord:			Cabinet Insulating	4A646
	Male Section	76A397-1	.....	Window, Dial	22B345
	Female Section	76A397-2			

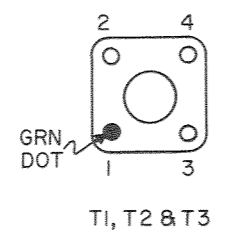


ALL CAPACITANCE IN MMF UNLESS OTHERWISE SPECIFIED.

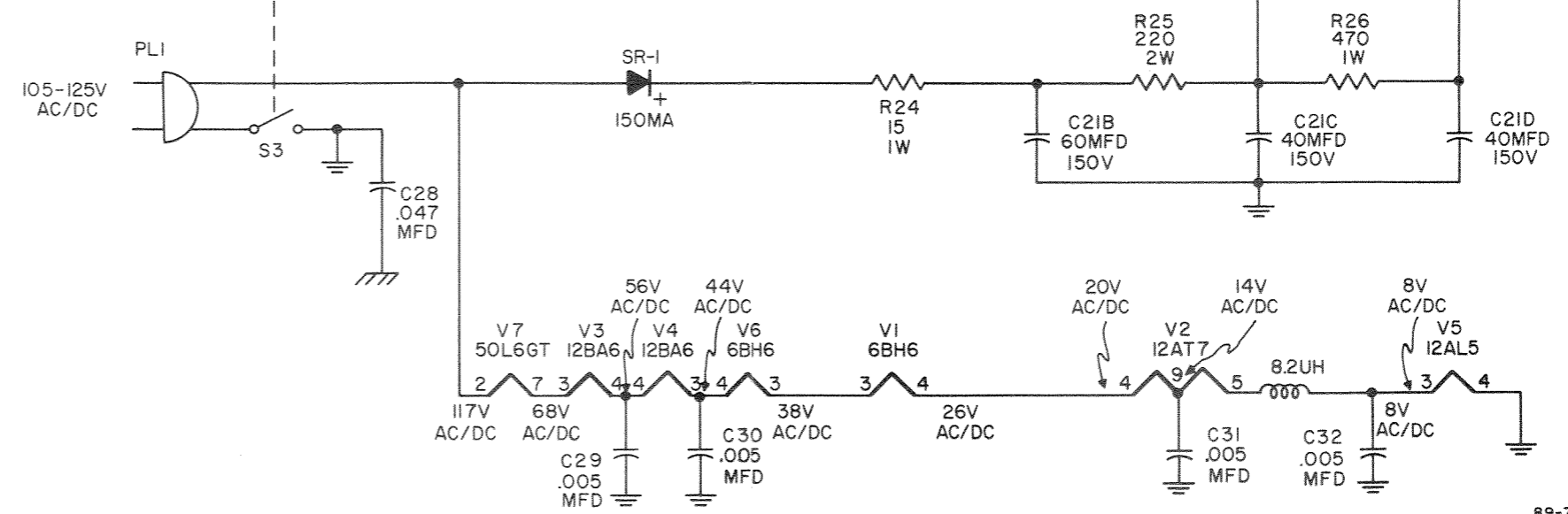
CONNECT ANTENNA BETWEEN TUBE AND ANTENNA SHORTED.



TUBE SOCKET ARRANGEMENT BOTTOM VIEW



T1, T2 & T3



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.