



communications

**OPERATING and SERVICE
INSTRUCTIONS**

**S-102
MARK I**

the hallicrafters co.

MANUFACTURERS OF RADIO, TELEVISION AND ELECTRONIC EQUIPMENT, CHICAGO 23, U. S. A.

GENERAL DESCRIPTION

Your new Hallicrafters model S-102 has been especially designed to meet the amateur requirement for a highly sensitive communications receiver covering the two meter band (144 mc to 148 mc). The frequency coverage (see page 3) is extended beyond the two meter band to include 148.14 mc which is assigned for use by the Civil Air Patrol. 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-102 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. Head-phone 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



Fig. 1. Model S-102

signals". The dial calibration spreads the two meter band over a wide range so that separate bandspread controls are not needed. A front panel standby switch provides for convenient operation when used in connection with a radio transmitter.

INSTALLATION

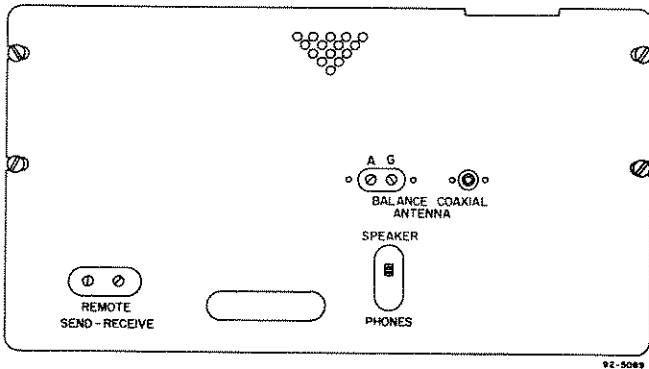


Fig. 2. Rear Connections and Controls

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

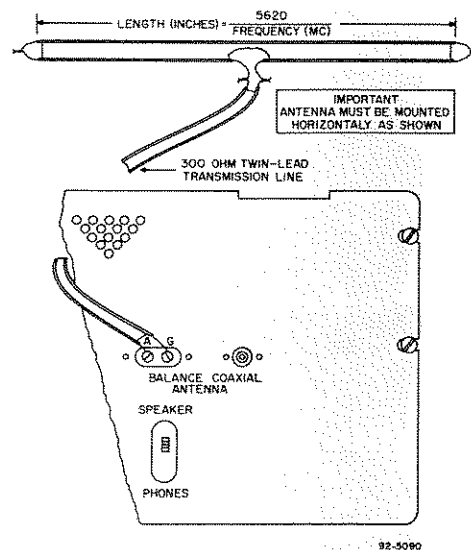


Fig. 3. Antenna

maximum headphone output, the use of low-impedance 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 is 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

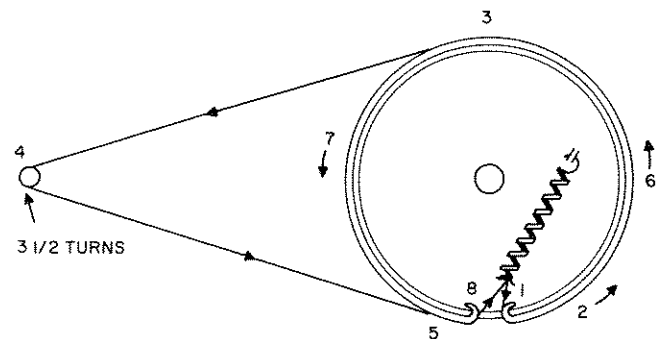
of the receiver will be silenced but the tube filaments will remain on thereby maintaining the receiver ready for instant operation.

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	143-149 MC
Dimensions (overall).....	7-1/2" x 13" x 8-3/4" deep
Net Weight.....	10 Lb. 10 Oz.
Shipping Weight	13 Lb.



92C-1558-B

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. Connect VTVM across output transformer. Adjust B, C, D, E, and F for maximum output.
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.

RF ALIGNMENT

1. Use a signal generator amplitude modulated which covers 144 MC and 148 MC.
2. Connect output of generator through a 300 ohm dummy antenna to terminals on antenna terminal or 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. Set generator and receiver dial to 148 MC and adjust G and then H for maximum output. When adjusting H, "rock" tuning capacitor slightly.
8. Check calibration at low end of receiver by setting generator and receiver dial to 144 MC. A calibration adjustment is usually not necessary and should not be made unless the oscillator coil on the top front of the tuning gang has been damaged or bent. If adjustment is required, the frequency can be increased by compressing the coil or decreased by expanding the coil.

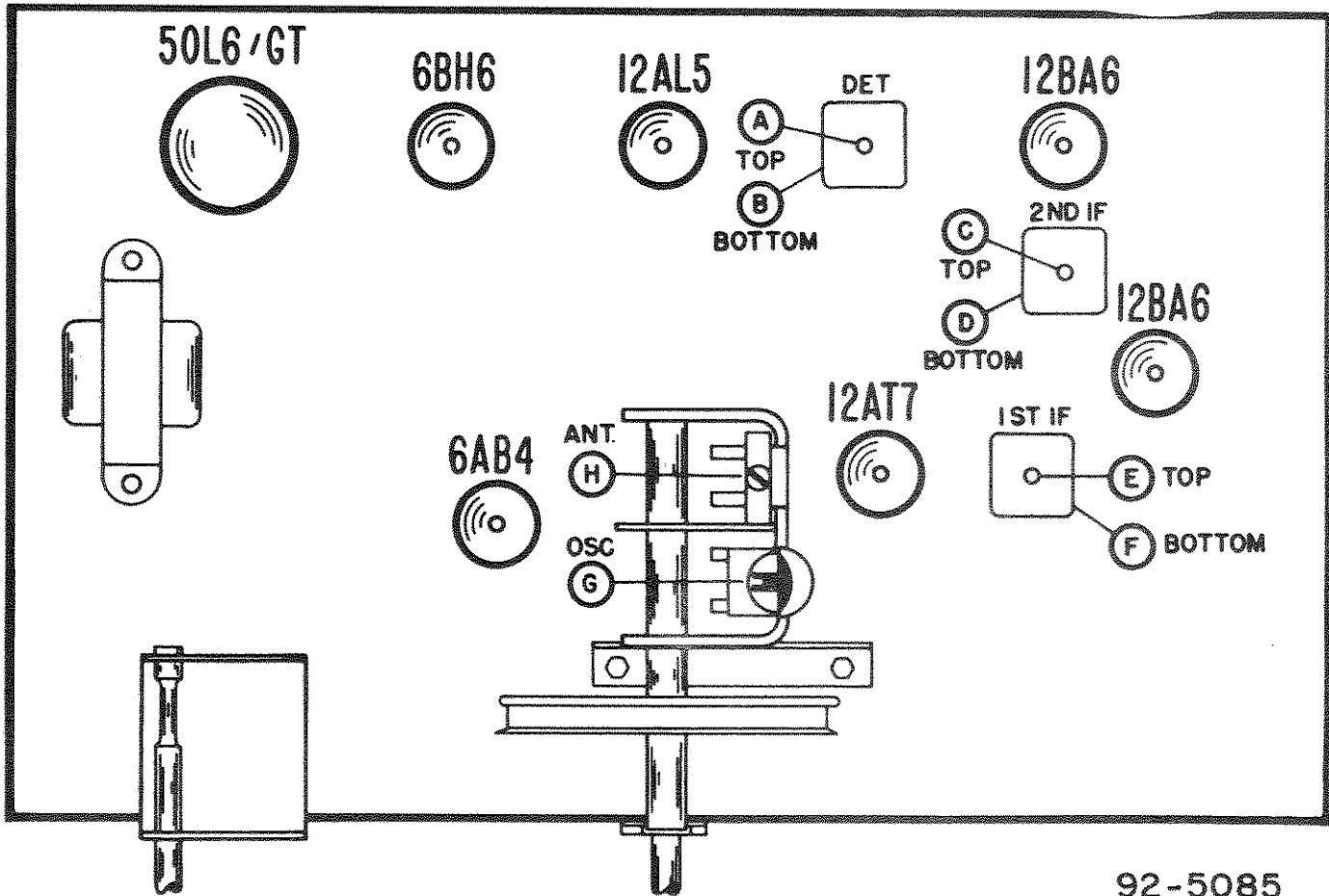


Fig. 5. Tube Location and Alignment Adjustments

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.



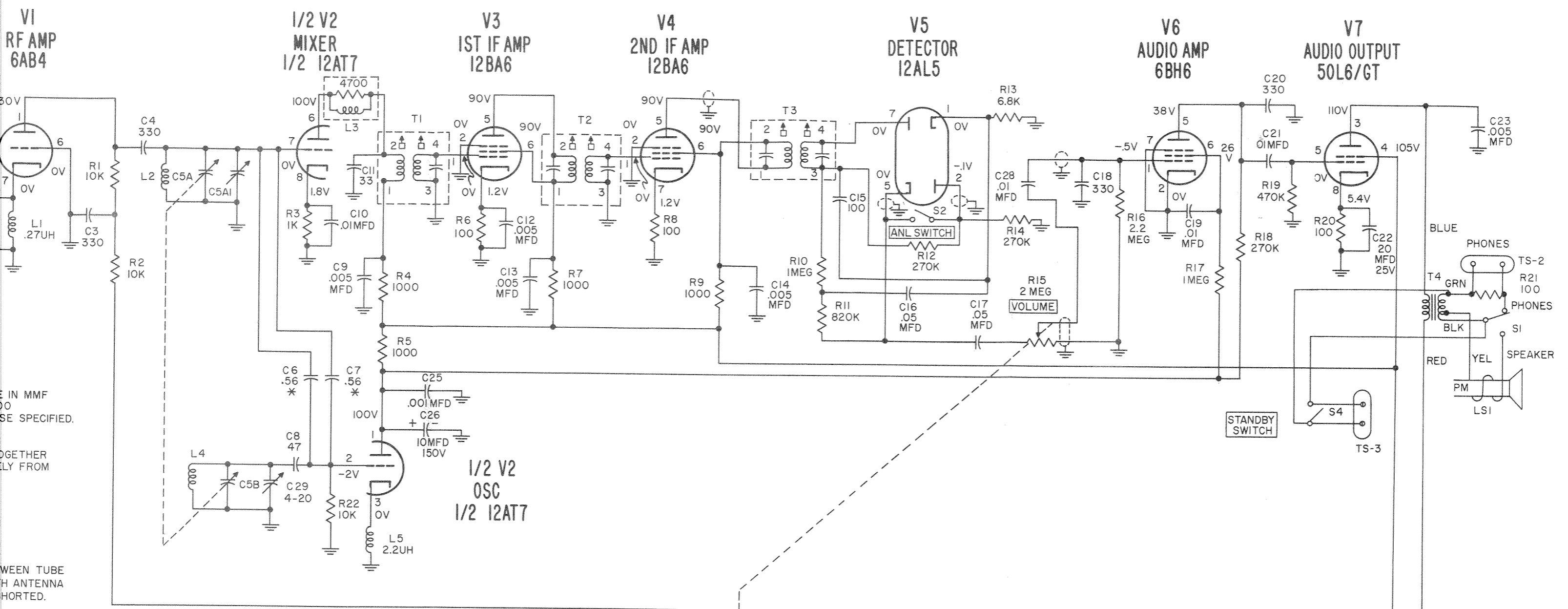
The Hallicrafters Company reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate these revisions in earlier models.

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
CAPACITORS			RESISTORS (cont)		
C-1, C-2, C-3, C-4, C-18, C-20	330 mmf. 10%, 500 V., ceramic	47CA25A331K	R-13	6800 ohm, 10%, 1/2 w; carbon	23X20X682K
C-5	Tuning Capacitor	48-377	R-15	Volume Control, 2 megohm, w/on-off Switch	25B1115
C-6, C-7	0.56 mmf. ±10%, 500 V., ceramic	47B403-13	R-16	2.2 megohm, 10%, 1/2 w; carbon	23X20X225K
C-8	47 mmf. ceramic	47X20UK470K	R-19	470,000 ohm, 10%, 1/2 w; carbon	23X20X474K
C-9, C-12, C-13, C-14, C-23, C-30			R-23	15 ohm, 10%, 1 w; carbon	23X30X150K
C-31, C-34, C-35	0.005 mfd., ceramic disc	47A168	R-24	220 ohm, 10%, 2 w; carbon	23X40X221K
C-10, C-19, C-21, C-28	0.01 mfd., 450 V., ceramic disc	47A224	R-25	470 ohm, 10%, 1 w; carbon	23X30X471K
C-11	33 mmf. 5%, 500 V., ceramic	47X25CJ330J	R-26	270 ohm, 1W	24BW271E
C-15	100 mmf. 10%, 500 V., ceramic	47X25UK101K/D	COILS AND TRANSFORMERS		
C-16, C-17	0.05 mfd. +40-15%, 400 V., paper	46AV503J	L-1	Coil, Antenna	51A1894
C-22A, C-22B, C-22C, C-22D	4 sections; 20 mfd @ 25 V.; 60-40-40 mfd. @ 150 V., elect.	45B091	L-2	Coil, R. F.	51-1472
C-25, C-32, C-33	0.001 mfd., ceramic disc	47A230	L-3	Choke, R. F.	53-239
C-26	10 mfd. 150 V., elect.	45C097	L-4	Coil, R. F., Oscillator	51-1471
C-27	0.047 mfd. ±20%, 600 V., molded paper	46BR473L6	L-5	Choke, R. F., 2.2 uh	53A238
C-29	4-20 mmf., ceramic trimmer	44A115	L-6, L-7, L-8, L-9	Choke, 3.3 uh	53A240
RESISTORS			T-1	Transformer, 1st IF	50C517
R-1, R-2, R-22	10,000 ohm, 10%, 1/2 w; carbon	23X20X103K	T-2	Transformer, 2nd IF	50-519
R-3, R-4, R-5, R-7, R-9	1000 ohm, 10%, 1/2 w; carbon	23X20X102K	T-3	Transformer, IF Output	50C517
R-6, R-8, R-20, R-21	100 ohm, 10%, 1/2 w; carbon	23X20X101K	T-4	Transformer, Output	55A127
R-10, R-17	1 megohm, 10%, 1/2 w; carbon	23X20X105K	SWITCHES		
R-11	820,000 ohm, 10%, 1/2 w; carbon	23X20X824K	S-1	Switch, Slide, spdt	60A243
R-12, R-14, R-18	270,000 ohm, 10%, 1/2 w; carbon	23X20X274K	S-2	Switch, Rotary, ANL	60A742
			S-3	Switch, on/off; p/o R15	-----
			S-4	Switch, Standby	60A783
			TUBES AND RECTIFIERS		
			V-1	6AB4; RF Amplifier	90X6AB4
			V-2	12AT7; Oscillator/Mixer	90X12AT7
			V-3, V-4	12BA6; 1st and 2nd IF	90X12BA6
			V-5	12AL5, Ratio Detector	90X12AL5
			V-6	6BH6, Audio Amplifier	90X6BH6
			V-7	50L6, Audio Output	90X50L6
			SR-1	Rectifier, Selenium	27A158
			MISCELLANEOUS		
			TS-1	Board, Terminal, Antenna	88-809
			TS-2	Board, Terminal, Phone	88-071

SERVICE PARTS LIST

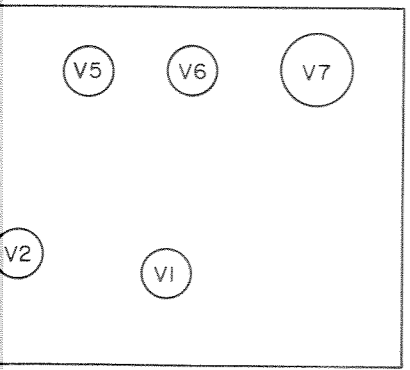
Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
MISCELLANEOUS PARTS			MISCELLANEOUS PARTS (cont)		
TS-3....	Board, Terminal, Standby Switch ..	88-809	.....	Line Cord Lock	76A397-2
.....	Bracket, Dial Drive Shaft	67B533	.....	Line Cord	87A078
.....	Cabinet, Complete.....	66-1371	LS-1....	Loud Speaker.....	85-120
.....	Cabinet, Back	32C697	.....	Operating and Service Inst.....	94X1612
.....	Cover, Cabinet Bottom.....	8C1617	.....	Pointer, Indicator	82A277
.....	Dial Scale, Calibrated	83-565	.....	Retainer, Bottom Cover	8A1168
.....	Feet, Rubber	16A007	.....	Shaft, Main Tuning	74-494
.....	Insulator, Plate	8-3406	.....	Shield, Tube Socket.....	69B694
.....	Insulator, Strip, Rear Chassis	8-1628	.....	Socket, Miniature, 7 Pin	6-402
.....	Jack, Bal, Coax Ant	36A029	.....	Socket, Miniature, 9 Pin	6A401
.....	Knob Assembly	15B816	.....	Socket, Tube, Octal	6A250
.....	Knob, Main Tuning	15B802	.....	Window, Dial	22B345
.....	Line Cord Lock	76A397-1			



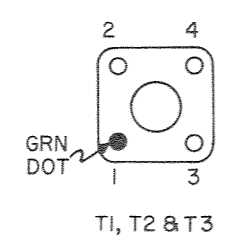
IN MMF
DO NOT
USE SPECIFIED.

TOGETHER
ONLY FROM

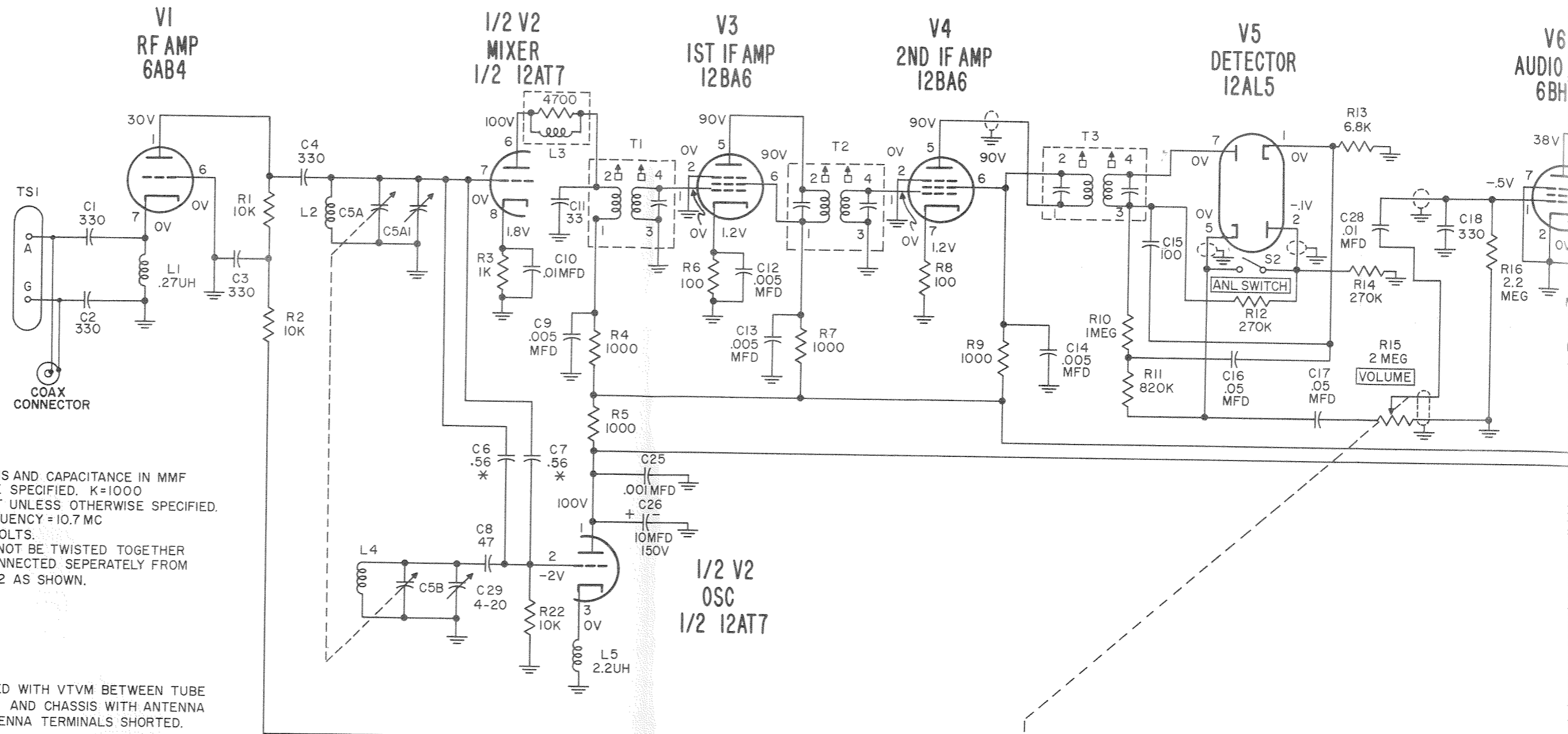
BETWEEN TUBE
WITH ANTENNA
SHORTED.



IS BOTTOM VIEW



T1, T2 & T3



NOTES:

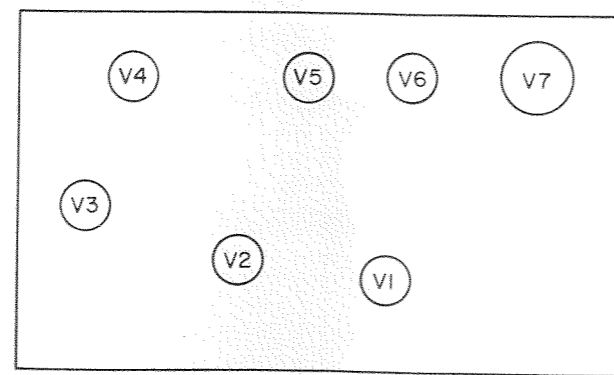
1. RESISTANCE IN OHMS AND CAPACITANCE IN MMF UNLESS OTHERWISE SPECIFIED. K=1000
2. RESISTORS 1/2 WATT UNLESS OTHERWISE SPECIFIED.
3. INTERMEDIATE FREQUENCY = 10.7 MC
4. LINE VOLTAGE = 117 VOLTS.
- * C6 AND C7 SHOULD NOT BE TWISTED TOGETHER BUT SHOULD BE CONNECTED SEPARATELY FROM PIN 2 TO PIN 7 OF V2 AS SHOWN.

⊥ CHASSIS

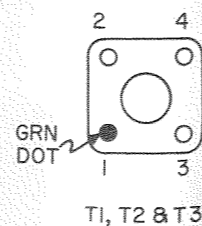
▨ CABINET

VOLTAGES:

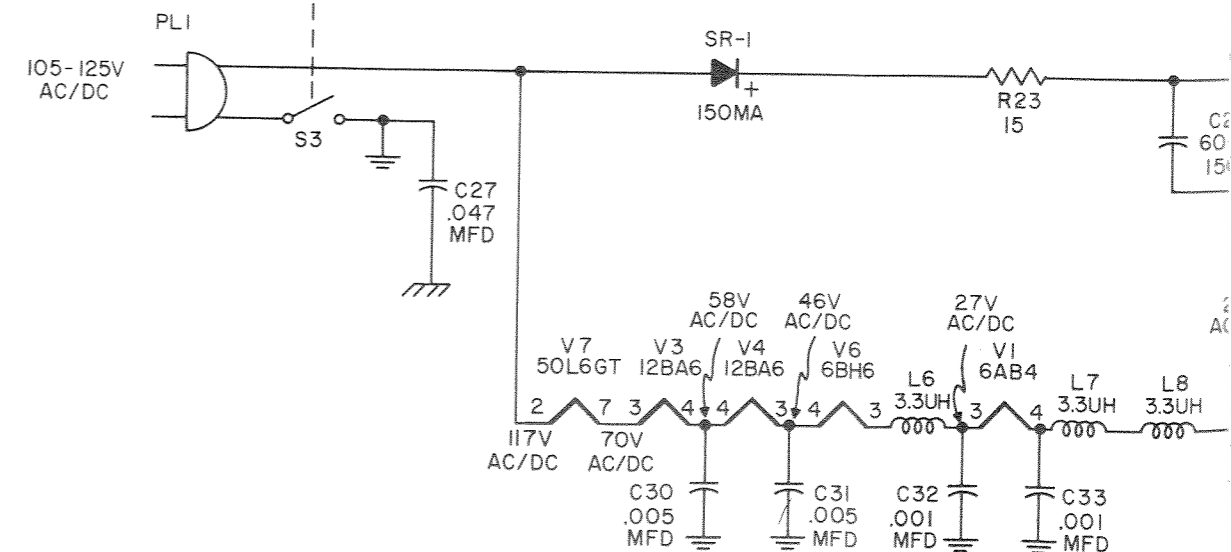
1. VOLTAGES MEASURED WITH VTVM BETWEEN TUBE SOCKET TERMINALS AND CHASSIS WITH ANTENNA DISCONNECTED, ANTENNA TERMINALS SHORTED.



CHASSIS 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.