ENG. DEPT.

hallicrafters
BROADCAST — SHORTWAVE RADIO

OPERATING and SERVICE INSTRUCTIONS

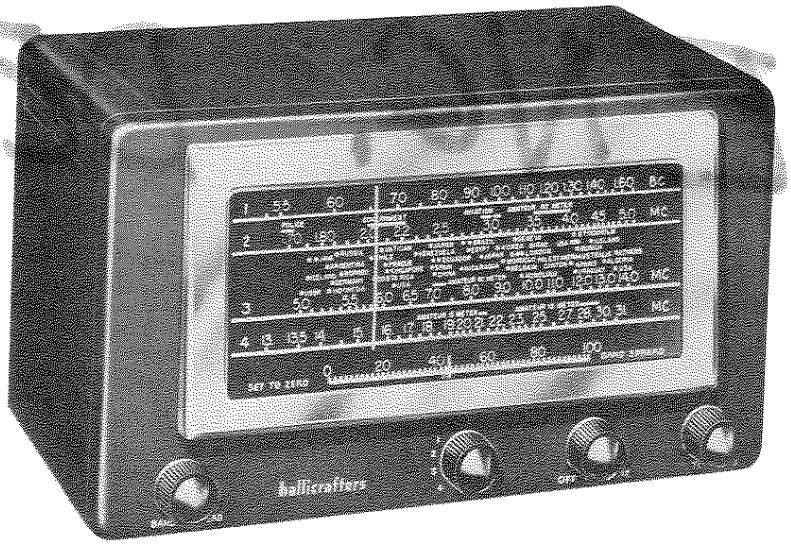
5R10A
5R100A
RUN 4

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

GENERAL DESCRIPTION

Your new Hallicrafters radio offers you world-wide radio reception. It provides continuous coverage from 540 kilocycles to 31 megacycles to bring you standard broadcast programs, foreign and domestic shortwave broadcasts, amateurs, police, ships, aircraft and countless other exciting distant stations. It is a 5 tube superheterodyne radio and will operate on 105 to 125 volt AC or DC current. A 5-inch Alnico V permanent magnet speaker is built into the top of the cabinet and a socket is provided on the back of the set for plugging in a pair of headphones.

Fine performance of both standard and shortwave broadcasts can be obtained in most localities with the 15 foot antenna wire included with your receiver. Simply uncoil this wire, connect one end of it to terminal A1 on the back of the set and then run it about the room in any convenient manner. To complete the antenna installation, connect the jumper between terminal A2 and G.



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Hallicrafters Models 5R10A (Smokey Black) and 5R100A (Hammertone Grey)

Your set is provided with two tuning knobs for greater ease of tuning. Wide tuning is accomplished with the knob marked TUNING and fine tuning with the knob marked BAND SPREAD. The BAND SPREAD knob permits you to accurately tune in stations on crowded bands by spreading them out so that they may be more easily separated. In this way you are able to hear many more stations than you would on an ordinary radio with just one tuning knob.

The principal shortwave stations of the world are clearly marked on the dial for your convenience. Since shortwave conditions vary with the season of the year and even with the time of day, shortwave programs may not be heard with the same regularity as standard broadcasts. To aid you in determining the most favorable times for shortwave listening, a special table is provided on page 3.

To get the maximum enjoyment from your Hallicrafters radio, carefully follow the instructions contained in this book.

INSTALLATION INSTRUCTIONS

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

POWER SOURCE - The power plug should be inserted into a power outlet that will supply 105 to 125 volt DC or 60 cycle AC current. If in doubt about your power supply, call your power company before plugging in the receiver. The wrong power source may cause serious damage to the receiver.

LOCATION - Do not locate the receiver close to sources of heat such as radiators and heating vents. Allow for proper ventilation of the receiver by placing it at least two or three inches away from the wall.

ANTENNA - The terminals marked A1, A2 and G on the back of the set are for antenna and ground connections. Good results can be obtained in most localities with the 15 foot antenna wire included with your receiver. This 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 wire to terminal A1 on the back of the set and then connect the jumper between terminals A2 and G. In some locations, reception may be improved by connecting a lead from terminal G to a cold water pipe or outside ground rod.

For really top performance, 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 a doublet antenna is used, the jumper is removed and the antenna is connected to terminals A1 and A2. Consult your radio dealer for further information.

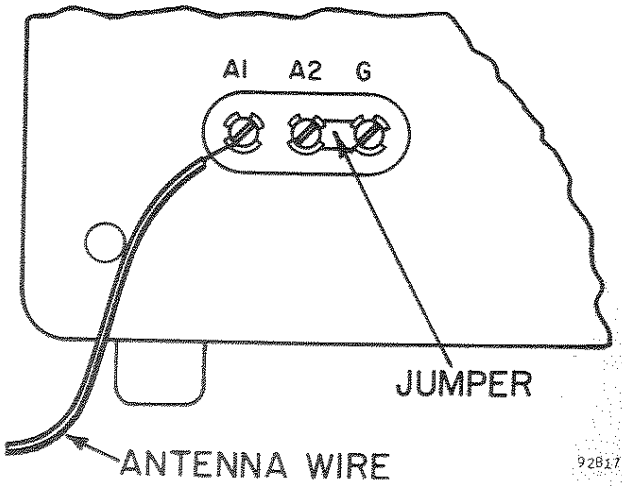

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Fig. 1. Rear View of Receiver Showing Antenna and Ground Terminals

OPERATING INSTRUCTIONS

TUNING DIAL - The top dial scale is the standard broadcast band and is calibrated in kilocycles, minus the last zero. To convert the dial reading to kilocycles, simply add one zero. The shortwave bands, marked 2, 3 and 4, are calibrated directly in megacycles.

BAND SELECTOR CONTROL - Set this control for the band you wish to tune.

VOLUME CONTROL - This control turns the receiver on and off and also controls volume. Turn the knob clockwise to turn the set on and to increase volume. Allow about one minute for the set to warm up.

IMPORTANT - When operating on DC, reverse the power plug if the radio does not operate after the one minute warm up. On DC, the set will operate ONLY with the plug in one position.

TUNING KNOB - Your receiver has been provided with two tuning knobs - The TUNING knob which operates the large pointer at the top of the dial and the BAND SPREAD knob which operates the small pointer at the bottom. 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.

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.

SPEAKER-PHONES SWITCH - Your receiver is equipped with a built-in speaker as well as a socket for connection to headphones. For speaker operation, set the SPEAKER-PHONES switch located on the back of the set at SPEAKER. For headphone operation, set the switch at PHONES. Any 500 to 5000 ohm headphones may be used with the receiver. To connect the headphones, press the headphone pins into the PHONES socket on the back of the set.

BEST SHORTWAVE RECEPTION TABLE

Band	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

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.

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-R

SERVICE INSTRUCTIONS

GENERAL SPECIFICATIONS

Tubes	5 including 1 rectifier
Speaker	5 inch PM
Voice Coil Impedance	3.2 ohms
Headphone Output Impedance	15 ohms
Antenna	Terminals for single wire or doublet antenna. (See Page 2.)
Intermediate Frequency	455 KC
Frequency Coverage	540 KC - 32 MC
Power Supply	105-125 volts DC or 60 cycles AC
Power Consumption	30 watts

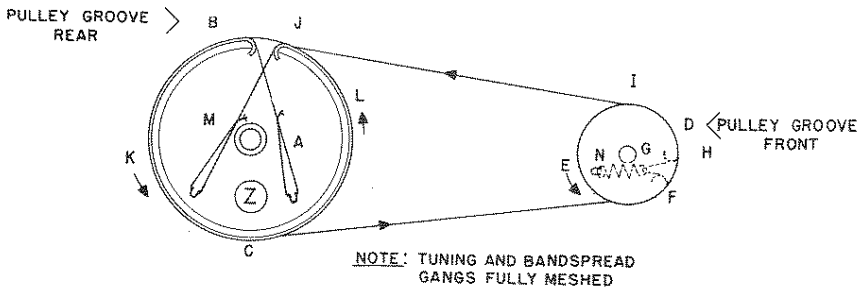

Fig. 2. Main Tuning Gang Drive Stringing Diagram

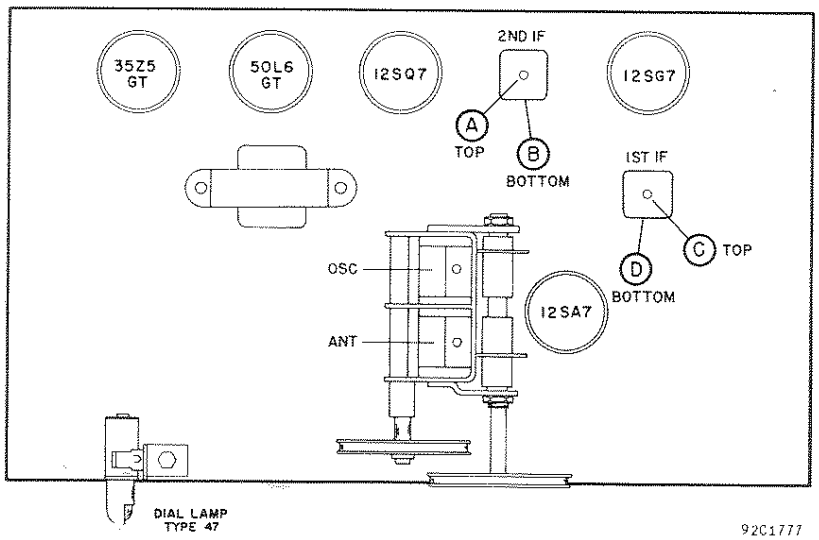

Fig. 3. Top View of Chassis Showing Location of Alignment Adjustments, Tubes and Dial Lamp

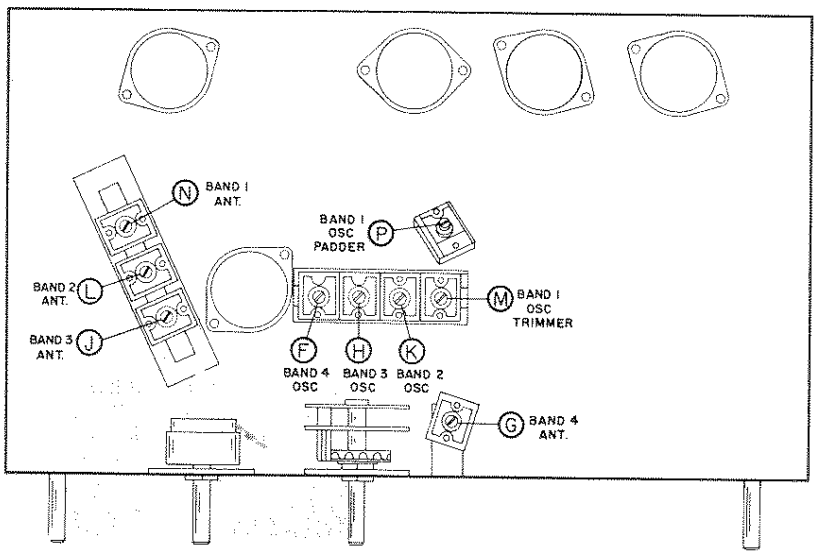

Fig. 4. Bottom View of Chassis Showing Location of Alignment Adjustments

DIAL CORD STRINGING

1. MAIN TUNING GANG DRIVE - Refer to Fig. 2. Tie one end of a 32 inch length of dial cord to the tie point at A on pulley (Z). Follow the stringing procedure A thru F. At G, place the cord thru one end of the tension spring, leaving the other end of the spring disconnected. Then proceed from H thru M. At M, take up the slack in the cord and tie it securely to the tie point. As the final step, stretch the spring and connect it to the tie point at N.

2. MAIN TUNING POINTER DRIVE - Refer to Fig. 5. Tie one end of a 50 inch length of dial cord to the tension spring at A on pulley (X). Follow the procedure A thru M. At M, stretch the spring and tie the cord securely. With the TUNING gang fully meshed, attach the large pointer to the cord and align it with the left hand index mark on band 1.

3. BAND SPREAD GANG & POINTER DRIVE - Refer to Fig. 5. Tie one end of a 41 inch length of dial cord to the tension spring at 1 on pulley (Y). Follow the procedure 1 thru 10. At 10, stretch the spring and tie the cord securely. With the BAND SPREAD gang fully open, attach the small pointer to the cord and align it with 0 on the band spread dial scale.

TUBE AND DIAL LAMP REPLACEMENT - Refer to Fig. 3 for the location of the tubes and dial lamp used in the receiver. To gain access to the tubes and lamp, remove the back cover from the cabinet. Before attempting to make any replacement, set the BAND SPREAD control fully clockwise and the TUNING control fully counter-clockwise to prevent damage to the tuning gang. To replace a tube, insert the center guide pin into the center hole of the tube socket, rotate the tube until the key drops into position and then push down until the tube is held firmly in the socket. To make a dial lamp replacement, unclip the dial lamp socket from the mounting clip. Make replacement only with a type 47 pilot lamp.

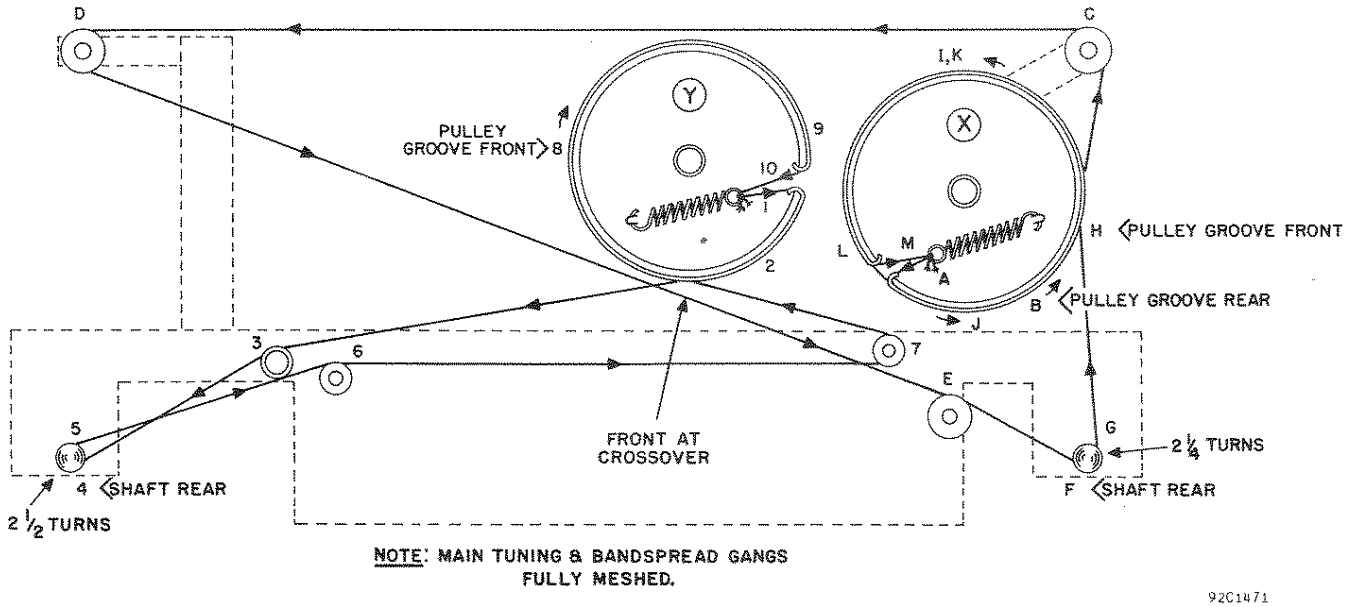

Fig. 5. Main Tuning Pointer Drive and Band Spread Gang and Pointer Drive Stringing Diagrams

ALIGNMENT INSTRUCTIONS

- Use an amplitude modulated generator covering 455 KC to 30 MC.
- Connect output meter across speaker voice coil.
- Use a non-metallic alignment tool.
- Set the SPEAKER/PHONES switch at SPEAKER, VOLUME control at maximum, and the BAND SPREAD control at 0.
- See Figs. 3 and 4 for location of alignment adjustments.

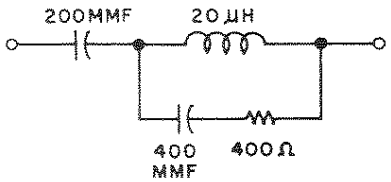

Fig. 6. RMA Dummy Antenna

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust
		IF ALIGNMENT			
1	High side thru a .01 mfd. capacitor to stator plates of front section of TUNING gang. Low side to chassis.	455 KC	1	1000 KC	A, B, C and D for maximum output. Keep reducing gen. output so that the reading on the output meter does not exceed 50 milliwatts.
		RF ALIGNMENT			
2	High side thru RMA dummy antenna (Fig. 6) to terminal A1 on back of chassis. Low side to chassis. Connect jumper between A2 and G.	30 MC	4	30 MC	F and G for maximum output as in Step 1.
3	Same as Step 2.	14 MC	3	14 MC	H and J for maximum output as in Step 1.
4	Same as Step 2.	5 MC	2	5 MC	K and L for maximum output as in Step 1.
5	Same as Step 2.	1500 KC	1	1500 KC	M and N for maximum output as in Step 1.
		600 KC	1	600 KC	P for maximum output as in Step 1.

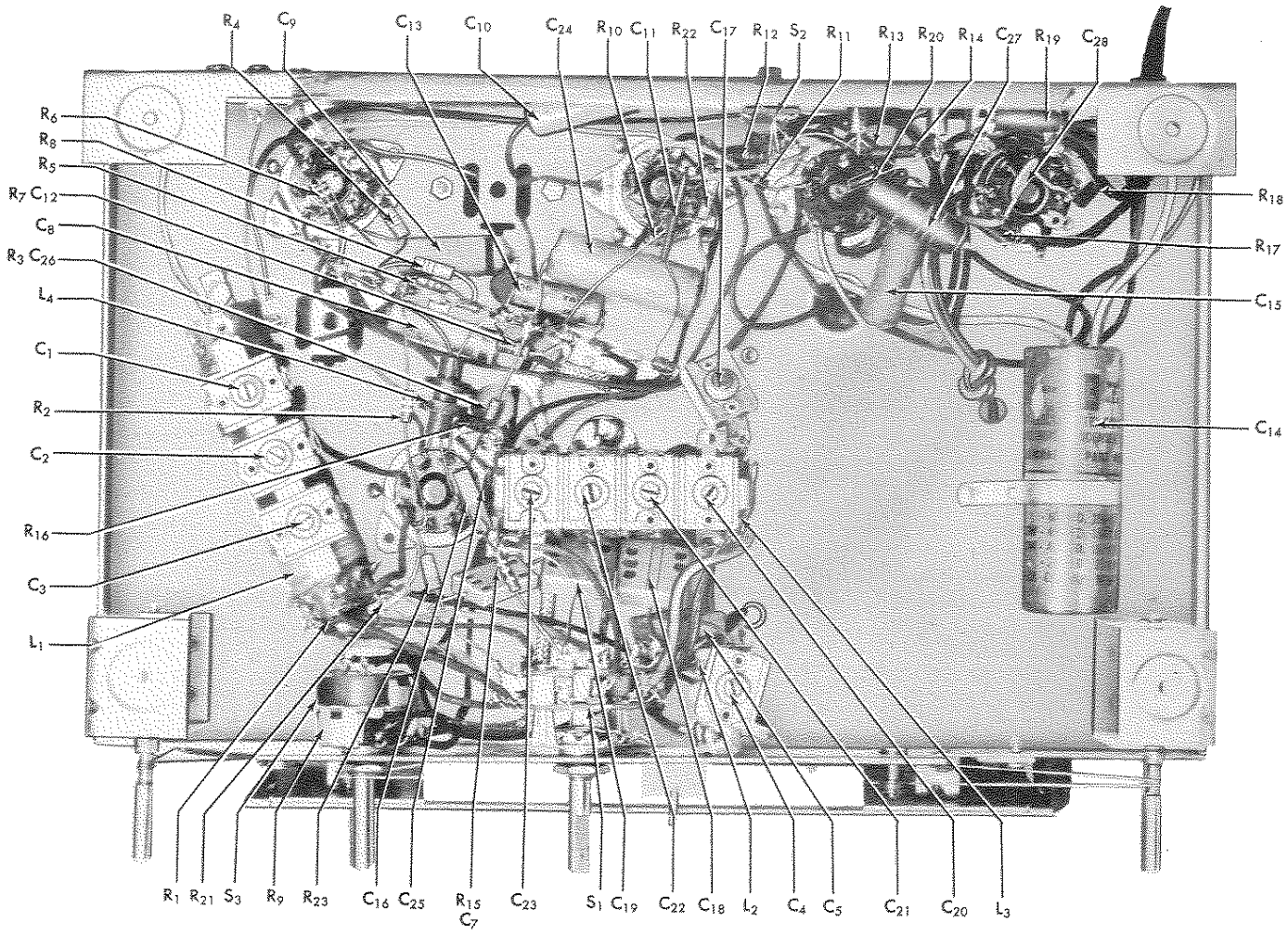

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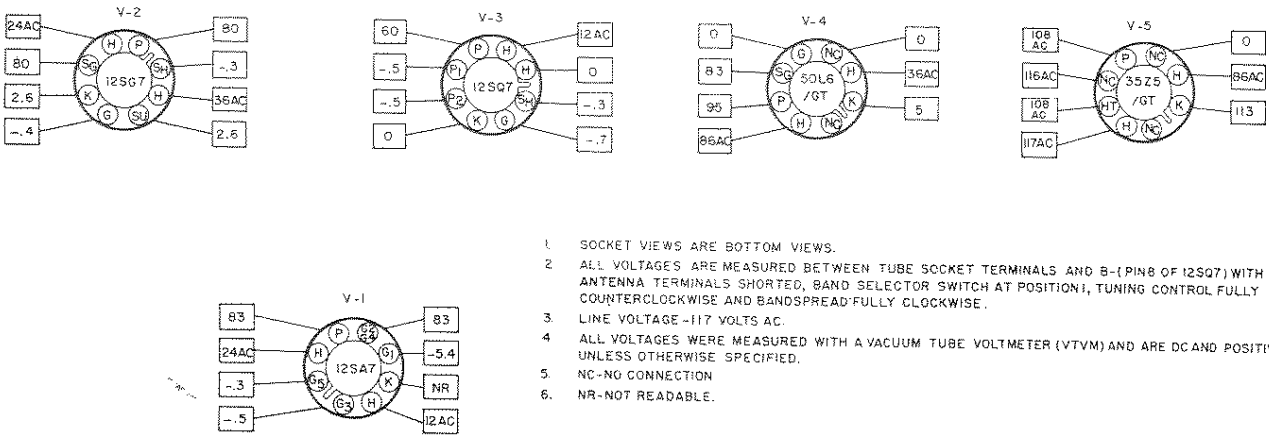
Fig. 7. Bottom View of Chassis Showing Component Location



1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND B-(PIN8 OF 12SQ7) WITH ANTENNA TERMINALS SHORTED, BAND SELECTOR SWITCH AT POSITION1, TUNING CONTROL FULLY COUNTERCLOCKWISE AND BANDSPREAD FULLY CLOCKWISE.
3. LINE VOLTAGE-117 VOLTS AC.
4. ALL VOLTAGES WERE MEASURED WITH A VACUUM TUBE VOLTMETER (VTVM) AND ARE DC AND POSITIVE. UNLESS OTHERWISE SPECIFIED.
5. NC-NO CONNECTION
6. NR-NOT READABLE.

FRONT APRON

Fig. 8. Tube Socket Voltage Chart

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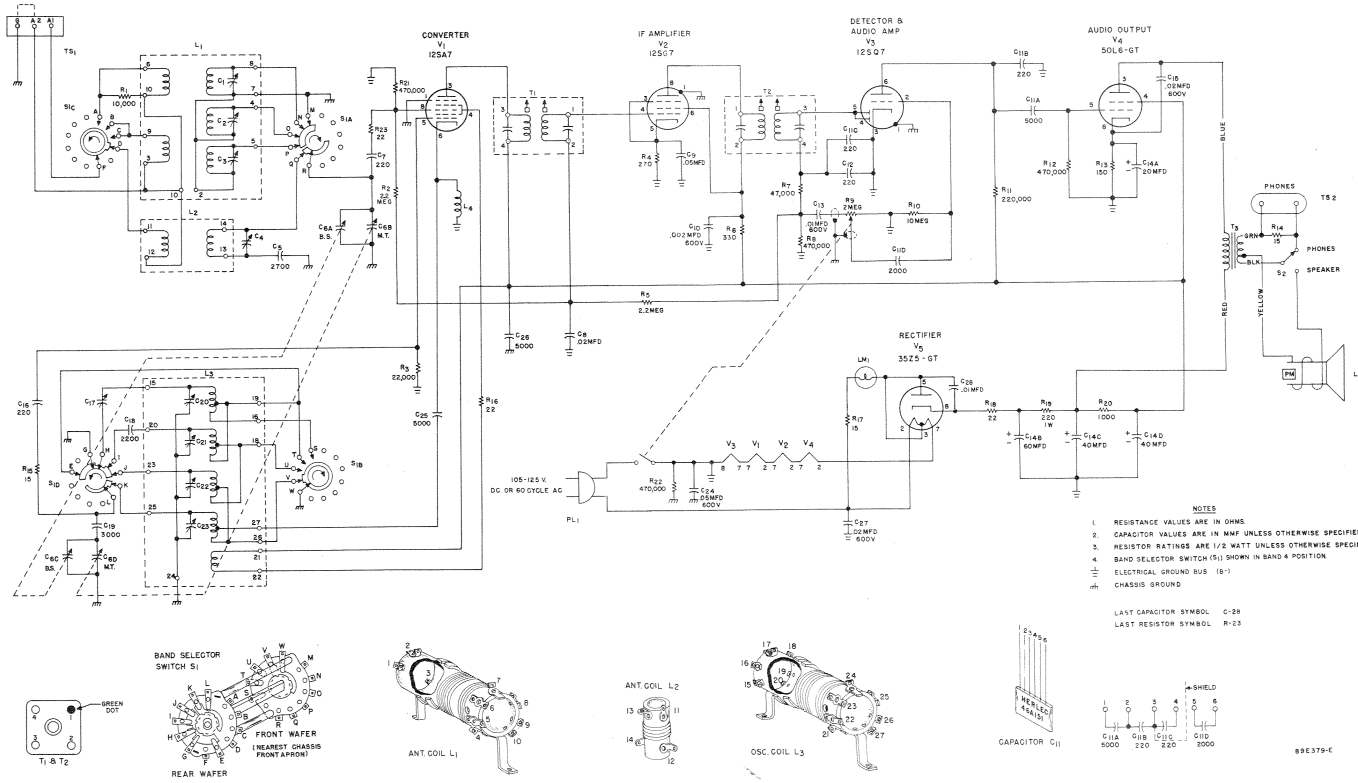
SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C-1,2,3	Trimmer, adjustable (part of antenna coil L-1)	- - - - - -
C-4	Trimmer, adjustable; 20-120 mmf.	44A424
C-5	2700 mmf. 5%, 500 V.; mica	47X30B272J
C-6A,B, C,D	Tuning capacitor; 2 gang	48-269
C-7,12,16	220 mmf. 10%, 500 V.; mica	47X20B221K
C-8,15	.02 mfd. 600 V., tubular paper	46AY203J
C-9	.05 mfd. 200 V., tubular paper	46AU503J
C-10	.002 mfd. 600 V., tubular paper	46AZ202F
C-11A,B, C,D	Capacitor, composite: 5000, dual 220 and 2000 mmf. 500 V.; ceramic	46A151
C-13	.01 mfd. 600 V., tubular paper	46AZ103J
C-14A,B, C,D,	60-40-40 mfd. 150 V., 20 mfd. 25 V., electrolytic	45B091
C-17	Padder, adjustable; 525 mmf.	44A349
C-18	2200 mmf. 5%, 500 V.; mica	47X30B222J
C-19	3000 mmf. 5%, 500 V.; mica	47X30B302J
C-20,21, 22,23	Trimmer, adjustable (part of oscillator coil L-3)	- - - - - -
C-24	.05 mfd. 600 V.. tubular paper	46AY503J
C-25,26	5000 mmf. 450 V., ceramic disc	47A168
C-27	.02 mfd. 600 V., molded tubular paper	46BR203L6
C-28	.01 mfd. 450 V., ceramic disc	47A217
	RESISTORS	
R-1	10,000 ohms 1/2 watt, carbon	23X20X103M
R-2,5	2.2 megohms 1/2 watt, carbon	23X20X225M
R-3	22,000 ohms 1/2 watt, carbon	23X20X223M
R-4	270 ohms 1/2 watt, carbon	23X20X271K
R-6	330 ohms 1/2 watt, carbon	23X20X331M
R-7	47,000 ohms 1/2 watt, carbon	23X20X473M
R-8,12, 21,22	470,000 ohms 1/2 watt, carbon	23X20X474M
R-9	2 megohms; VOLUME control	25B896
R-10	10 megohms 1/2 watt, carbon	23X20X106M
R-11	220,000 ohms 1/2 watt, carbon	23X20X224M
R-13	150 ohms 1/2 watt, carbon	23X20X151K
R-14,15, 17	15 ohms 1/2 watt, carbon	23X20X150M
R-16,18, 23	22 ohms 1/2 watt, carbon	23X20X220M
R-19	220 ohms 1 watt, carbon	23X30X221M
R-20	1000 ohms 1/2 watt, carbon	23X20X102M
	COILS AND TRANSFORMERS	
L-1	Coil, antenna; bands 1, 2 and 3	51C821
L-2	Coil, antenna; band 4	51B1015
L-3	Coil, oscillator; all bands	51C822
L-4	Choke, RF	53A107
T-1	Transformer, 1st IF	50C531
T-2	Transformer, 2nd IF	50C532
T-3	Transformer, audio output	55A127

Schematic Symbol	Description	Hallicrafters Part Number
	SWITCHES	
S-1A,B, C,D	Bandswitch assembly; BAND SELECTOR	60C393
S-2	Switch, spdt; SPEAKER/ PHONES	60A243
S-3	Switch, power; spst (part of VOLUME control R-9)	- - - - - -
	SOCKETS AND CONNECTORS	
TS-1	Terminal strip, antenna	88A671
TS-2	Jack, PHONES	88A071
	Socket, dial lamp; with leads	86A122
	Socket, octal; tube	6A250
	TUBES AND DIAL LAMPS	
V-1	12SA7: converter	90X12SA7
V-2	12SG7: IF amplifier	90X12SG7
V-3	12SQ7: detector and audio amplifier	90X12SQ7
V-4	50L6GT: audio output	90X50L6GT
V-5	35Z5GT: rectifier	90X35Z5GT
LM-1	Lamp, dial; Mazda #47	39A004
	MISCELLANEOUS PARTS	
	Cabinet, model 5R10A (smokey black)	66B702
	Cabinet, model 5R100A (hammertone grey)	66C915
	Cabinet back	32C500
	Channel, rubber (for escutcheon glass)	16A212
	Clip, dial mtg.	76A646
	Clip mtg. (for antenna coil L-2)	76A326
	Cover, cabinet bottom	32C501
	Dial background	32B488
	Dial cord (specify length)	38A026
	Dial scale	22B318
	Escutcheon	7C248
	Foot, mounting; rubber	16A244
	Glass, escutcheon	22B319
	Grommet, rubber	16A015
	Knob, BAND SELECTOR	15B323
	Knob, BANDSPREAD, OFF-VOLUME and TUNING	15B322
PL-1	Line cord and plug	87A078
	Line cord lock	76A397
	Pointer, dial; bandspread tuning	82A198
	Pointer, dial; main tuning	82A199
	Shield, dial lamp	8A1249
LS-1	Speaker, PM; 5 inch	85C030
	Spring, dial drive; 17/32"	75A012
	Spring, dial drive; 3/8"	75A173



NOTES

1. RESISTANCE VALUES ARE IN OHMS.
2. CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED.
3. RESISTOR RATINGS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.
4. BAND SELECTOR SWITCH (S1) SHOWN IN BAND 4 POSITION.

⏚ ELECTRICAL GROUND BUS (B-)
⏚ CHASSIS GROUND

LAST CAPACITOR SYMBOL C-28
LAST RESISTOR SYMBOL R-23

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

89E379-E

Fig. 9. Schematic Diagram

SHORTWAVE STATION LOG

STATION	CITY	TIME	BAND	TUNING DIAL SETTING	BAND SPREAD DIAL SETTING

Warranty

"This product is warranted to be free from defective material or parts, and it is agreed to furnish a new part in exchange for any part of this unit which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to the authorized radio dealer or wholesaler from whom purchased, 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 that it is thus defective.

This warranty does not extend to any 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 authorized facilities, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

This warranty is in lieu of 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."

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the Hallicrafters co.

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