SERVICE DATA
MODEL S-38E-EB-EM, MARK 1A, MARK 2

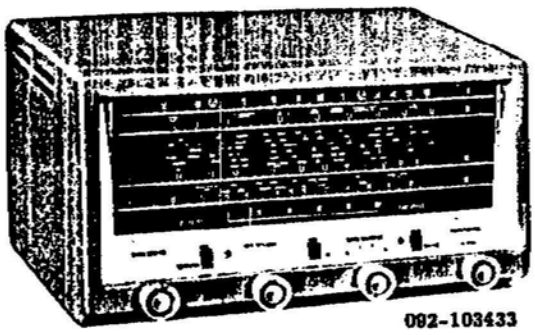

Figure 1. Hallicrafters Model S-38E

TECHNICAL SPECIFICATIONS

TUBES..... Five including rectifier
SPEAKER..... 5 inch PM, 3.2 ohm voice coil
HEADPHONE OUTPUT..... 15 ohms
ANTENNA INPUT....For single wire or 52-600 ohm balanced or unbalanced line
POWER SUPPLY..105-125 volts DC or 50-60 cycle AC
POWER CONSUMPTION ..... 30 watts
INTERMEDIATE FREQUENCY ..... 455 KC
FREQUENCY COVERAGE .....540 KC to 31 MC
DIMENSIONS.....12-7/8" wide x 7" high x 9" deep
WEIGHT..... Net-12 lbs., Shipping-approx. 14 lbs.

TUBE AND DIAL LAMP REPLACEMENT

For access to the tubes, remove the cabinet rear cover which is held in place by four screws and washers. To replace the dial lamp, see "CHASSIS REMOVAL".

ACCESS TO CHASSIS BOTTOM

For access to the chassis bottom, remove the cabinet bottom cover, which is held in place by four screws and washers.

CHASSIS REMOVAL

To remove the chassis from the cabinet, first remove the cabinet rear cover which is held in place by four screws and washers. Unsolder the speaker leads at the speaker terminals and free the leads from the bracket mounted on the speaker. Remove the cabinet bottom cover which is held in place by four screws and washers, and also remove the four screws (within the rubber feet) that secure the chassis to the cabinet frame. Remove the four knobs from the front panel using a bristol wrench. Remove the two phillips head screws from the front panel trim strip and push in on the new exposed shafts to slide the chassis partway out of the cabinet. Before pulling the remainder of the chassis out through the rear opening, tip the rear of the chassis upward to allow the dial scale to clear the speaker. Use care to avoid damaging the speaker.

CAUTION: Just before actual removal of the chassis, rotate the MAIN TUNING Control completely counterclockwise and rotate the BANDSPREAD Control completely clockwise to prevent damage to the tuning gangs.

DIAL CORD RESTRINGING

To restring the tuning dial, first remove the chassis from the cabinet. See "CHASSIS REMOVAL". Two brackets, held in place by four screws, secure the dial scale to the chassis. Remove the four screws, then slide the Main Tuning (top) dial scale pointer up by its base until it clears the top lip of the dial scale, and tilt the pointer upward. Slide the dial scale to the left until the bottom lip of the scale is free of the Bandspread dial pointer base, then withdraw the dial scale from the front of the chassis. Exercise care to prevent bending the Bandspread dial pointer or damaging the existing dial strings.

For stringing details, see Figs. 2 and 7.

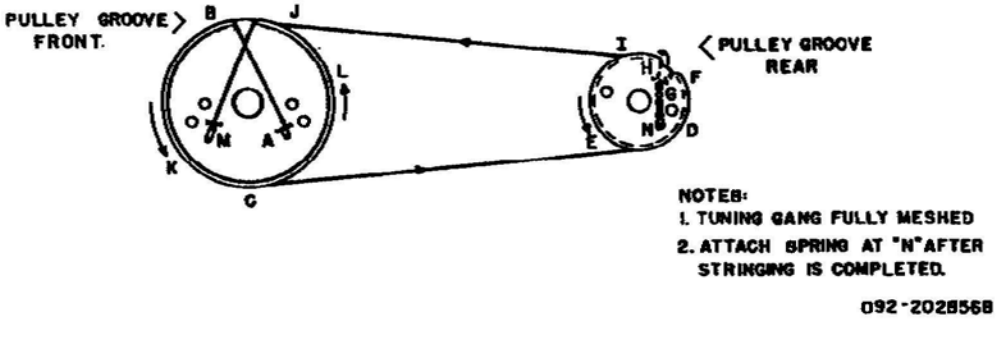

Figure 2. Main Tuning Gang Drive Stringing Diagram

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ALIGNMENT PROCEDURE

- Use an amplitude modulated generator covering 455 KC to 30 MC.
- Use a modulated output for every step except Step 2.
- Connect output meter across speaker voice coil.
- Use a non-metallic alignment tool.
- Standard RETMA dummy antenna as shown in Fig. 3.
- Set the AM/CW switch at AM, (except for BFO adjustment), SPEAKER/PHONES switch at SPEAKER, VOLUME control at maximum. RECEIVE/STANDBY switch at RECEIVE and the BAND SPREAD control at 0.
- See Figs. 4 and 5 for location of alignment adjustments.

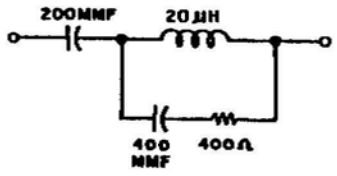
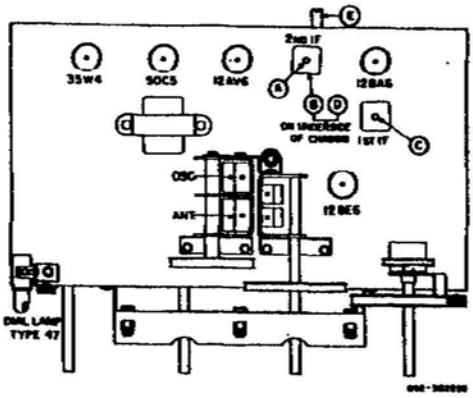


Figure 3. RETMA Dummy Antenna

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 (30% Mod.)	1	1.0 MC	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.
		BFO ADJUSTMENT			
2	Same as Step 1. Set generator for 50 MW reference output, turn off generator mod., and place receiver BFO on.	455 KC (No Mod.)	1	1.0 MC	AM/CW control until a CW note is heard as a clear audio tone. Advance control until an output level of 50 MW is obtained.
		RF ALIGNMENT			
2	High side thru RETMA antenna 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.
4	Same as Step 3.	14 MC	3	14 MC	H and J for maximum output as in Step 1.
5	Same as Step 3.	5 MC	2	5 MC	K and L for maximum output as in Step 1.
6	Same as Step 3.	1500 KC	1	1.5 MC	M and N for maximum output as in Step 1.
		600 KC	1	.6 MC	P for maximum output as in Step 1.

* Before beginning IF alignment procedure, rotate AM/CW ratin control to its full counterclockwise position.



4 Top View Chassis

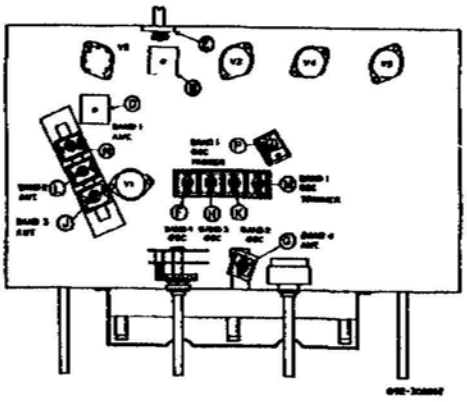


Figure 5. Bottom View Chassis

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C1, 2, 3	Trimmer, 2-25 mmfd.; 3 Section, Compression Mica	044-200129
C4	20-120 mmfd.; Ceramic Trimmer	044-100424
C5	2700 mmfd., 500V., 5%; Mica	470-412272
C6A, C	Variable Capacitor, BAND-SPREAD	048-300410
C6B, D	Variable Capacitor, MAIN TUNING	048-300372
C7, 12	220 mmfd., 500V., 10%; Mica	470-213221
C8, 15, 27	.022 mfd., 600V; Tubular Paper	498-034223
C9	.047 mfd., 600V; Tubular Paper	498-034473
C10, 28, 33	.01 mfd., 450V; Ceramic Disc	047-100224
C11A, B, C	Printed Circuit Plate, .005 mfd., 220 mmfd., .002 mfd., 500 WVDC	047-100581
C13	.01 mfd., 600V; Tubular Paper	498-034103
C14A, B C, D	20 mfd. @ 25V; 00-40-40 mfd. @ 150V; Electrolytic	046-300091
C16	83 mmfd., 10%, N750; Ceramic Tubular	491-006820-95
C17	425-625 mmfd.; Mica Trimmer	044-100349
C18	4700 mmfd., 500V., 5%; Mica	470-412472
C19	3000 mmfd., 500V., 5%; Mica	470-412303
C20, 21, 22, 23	Trimmer, 6.5-70 mmfd.; 3.5-30 mmfd.; 2.5-16 mmfd.; 3.5-30 mmfd.; 4 Section, Compression Mica	044-200158
C24	.047 mfd., 400V., 20%; Tubular Paper	498-024473
C25, 26	.005 mfd., 450V; Ceramic Disc	047-100188
C31	.005 mfd., 500V., 20%; Ceramic Disc	047-100442
C32	.01 mfd., 400V; Tubular Paper	498-034153
	***RESISTORS**	
R1, 24	10K ohm	451-252103
R2, 5	2.2 megohm	451-252225
R3	22K ohm	451-252223
R4	270 ohm	451-252271
R6	330 ohm	451-252331
R7	47K ohm	451-252473
R8, 12, 21, 22	470K ohm	451-252474
R9	2 megohm, VOLUME Control; Inc. On-Off Switch S-3	025-201479
R10	10 megohm	451-252106
R11	220K ohm	451-252224
R13	100 ohm	451-252101
R14, 15, 17	15 ohm	451-252150
R16, 18	22 ohm	451-252220
R19	220 ohm, 1 watt	451-352121
R20	1K ohm	451-252102
R23, 25	470 ohm	451-252471
R26	1500 ohm, AM-CW RATIO Control	025-201751
R27	680K ohm	451-252684

*All Resistors 10%, 1/2 watt, carbon type, unless otherwise specified.

Schematic Symbol	Description	Hallicrafters Part Number
	COILS AND TRANSFORMERS	
**L1, C1, 2 3	Coil and Trimmer Assembly, Antenna; Bands 1, 2, and 3	051-302132
L2	Coil, Antenna; Band 4	031-201015
**L3, C20, 21, 22, 23	Coil and Trimmer Assembly, Oscillator; All Bands	051-302133
L4	Choke; RF 540 uh	033-100107
T1	Transformer, 1st IF	050-300531
T2	Transformer, 2nd IF	050-300532
T3	Transformer, Audio Output	055-300247

**The Trimmer Capacitor Assemblies are also available separately. See "CAPACITORS".

Schematic Symbol	Description	Hallicrafters Part Number
	SWITCHES	
S1A, B C, D	BAND SELECTOR	058-300661
S2, 4, 5	SPEAKER-PHONE, AM-CW, and RECEIVE-STANDBY	060-100477
S3	On-Off; Part of R9	----------
	SOCKETS AND CONNECTORS	
TS1	Terminal Strip, Antenna	068-100071
TS2	Twin Jack Strip, Phones	068-100071
	Socket, Dial Lamp (Inc. Leads)	066-100122
	Socket, 7 Pin Miniature	006-100308
	TUBES AND DIAL LAMP	
V1	12BE6; Converter	068-000040
V2	12BA6; IF Amplifier and BFO	050-900039
V3	12AV6; Detector and Audio	090-901197
V4	50C5; Audio Output	090-900541
V5	35W4, Rectifidr	090-900384
LM1	Lamp, Dial Type 447	039-100004
	MISCELLANEOUS	
	Back, Cabinet	032-400754
	Bracket, Idler, Pulley, and Dial Lamp	067-295191
	Bracket, Pulley Mtg.	067-295190
	Bracket, Switch Mtg.	067-295192
	Bushing, Tuning, and Band Spread Shaft	077-201684
	Cabinet, S-38E	068-481754
	Cabinet, S-38EB	068-102175
	Cabinet, S-38EM	068-102176
	Clip, IF Mtg.	076-100385
	Clip, Dial Lamp Mtg.	076-100660
	Cover, Cabinet Bottom	032-300501
	Dial Cord (Specify Length)	038-100025
	Foot, Mtg.	016-200981
	Gasket, Rubber	016-101245
	Glass, Dial Window	022-291570
	Knob, Band Selector (S-38E)	015-291259
	Knob, Band Selector (S-38EB, EM)	015-301280
	Knob, BANDSPREAD, OFF-VOLUME or MAIN TUNING (S-38E)	015-301298
	Knob, BANDSPREAD, OFF-VOLUME, or MAIN TUNING (S-38EB, EM)	015-301281
PL1	Line Cord and Plug	087-190078
	Line Cord Lock (Male Section)	076-100397-01
	Line Cord Lock (Female Section)	076-100397-02
	Pointer, Band-Spread (S-38E)	052-200350
	Pointer, Band-Spread (S-38EB, EM)	052-200356
	Pointer, Main Tuning (S-38EB, EM)	052-200385
	Pointer, Main Tuning (S-38E)	052-200349
	Pulley, 3.125" O.D.	028-200256
	Shield, Tube	068-100232
	Shield, Dial Lamp	006-151249
LS1	Speaker, 3" PM; 3.2 ohm voice coil	083-300020

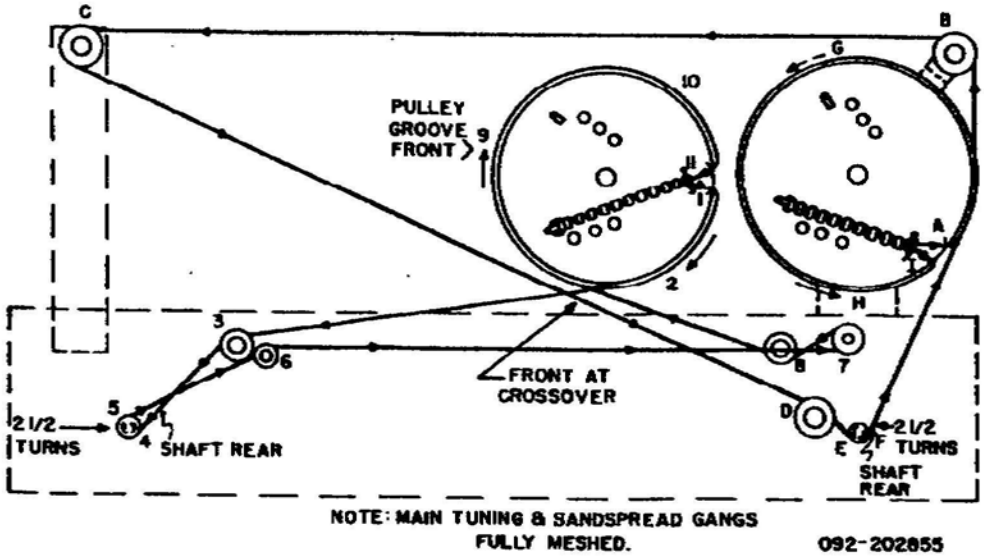


Figure 7. Main Tuning and Bandspread Gang Pointer Drive Stringing Diagrams

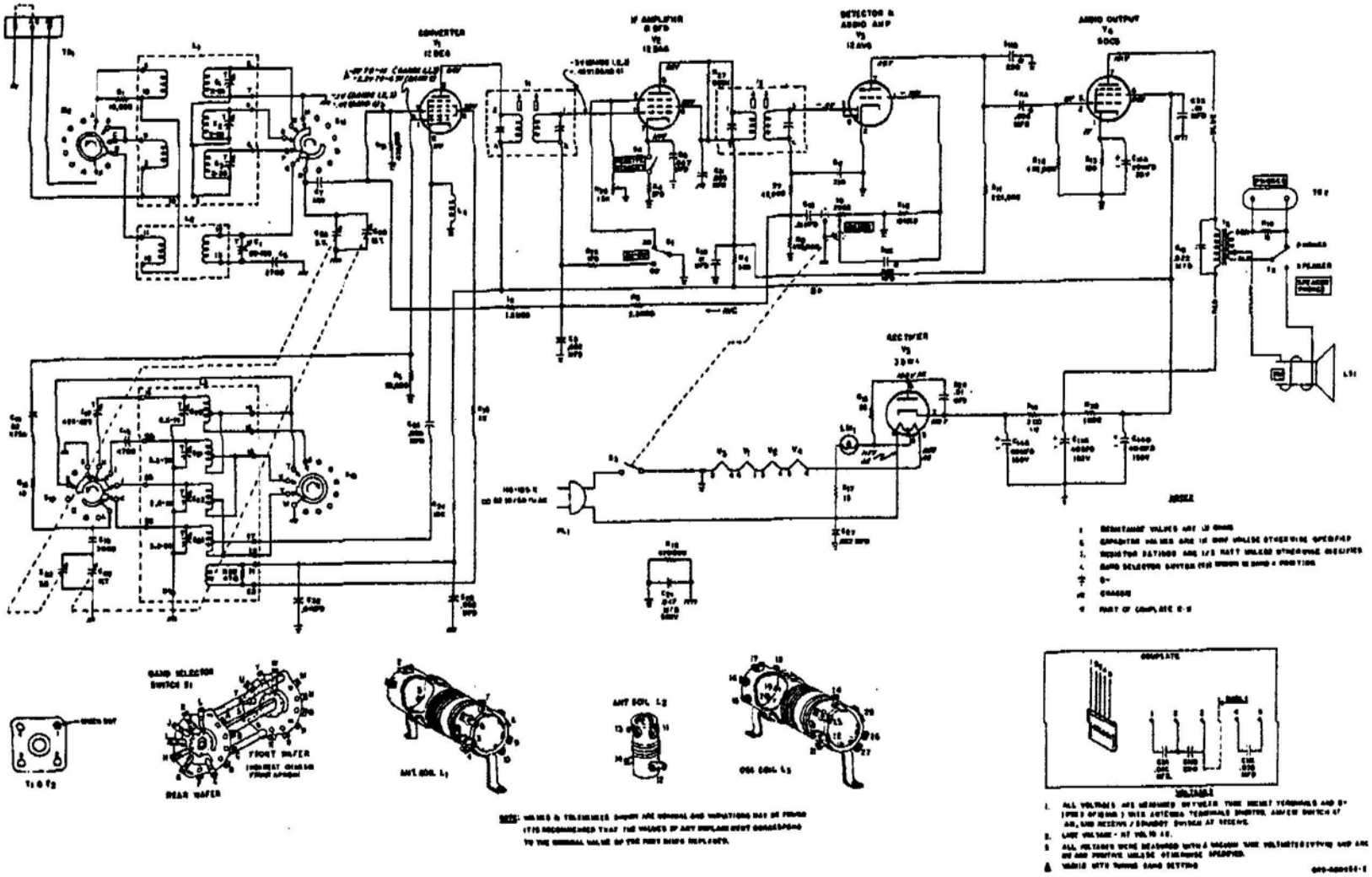
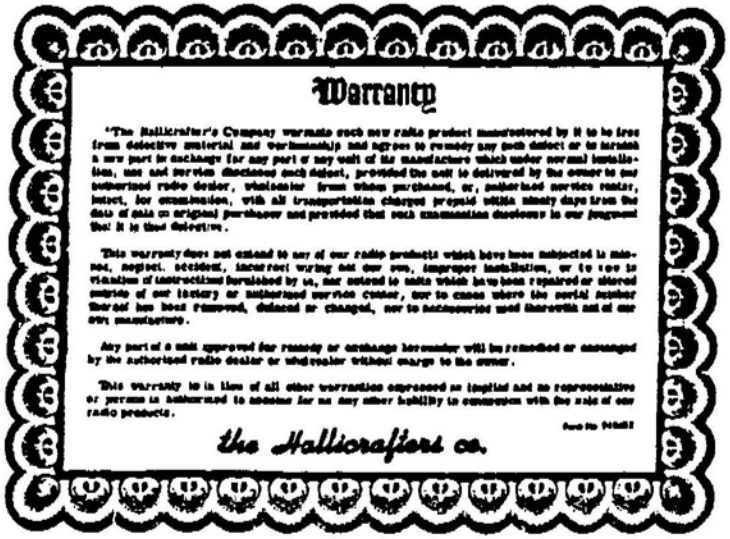


Figure 6. Schematic Diagram

SERVICE OR OPERATING QUESTIONS

For any further information regarding operation or servicing of your unit, 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.



Warranty

"The Hallicrafters 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 or 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 to 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 repair 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.

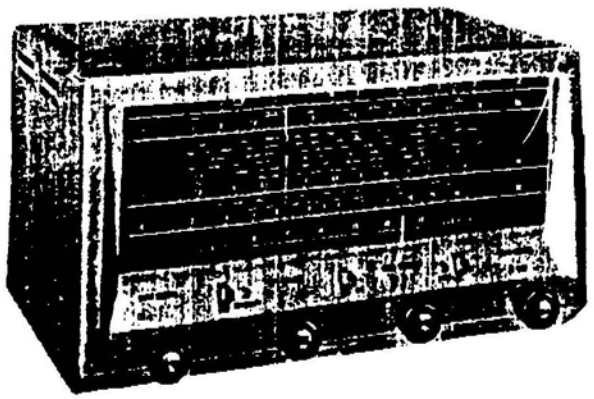
This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

the Hallicrafters co.

094-902062

Owner's Guide

MODEL S-38E-EB-EM



GENERAL DESCRIPTION

Your new Hallicrafters Receiver tunes from 540 kilocycles to 31 megacycles to bring you the finest in world-wide radio reception. You'll hear foreign and domestic shortwave broadcasts, amateurs, police, aircraft, ships, and countless other exciting distant stations ...as well as all your favorite programs on standard broadcast. The receiver employs the latest type superheterodyne circuit and provides for reception of AM (voice) and CW (code) signals over its entire tuning range. Special features in your receiver include an electrical bandspread dial for fine tuning of the amateur and shortwave bands, an AM/CW ratio control, a powerful built-in Alnico V permanent magnet speaker, provisions for headphone operation, and a receive-standby switch on the front panel that permits you to silence the receiver without turning it off. Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation may result in excess noise or background hiss. These undesirable effects can be held to a minimum by careful adjustment of the tuning controls as well as the proper selection and arrangement of the antenna.

POWER SOURCE

The receiver is designed to operate on 105 to 125 volt 50/60 cycle, AC, or DC current. It may also be operated on 210 to 250 volt AC/DC current using Line Cord Adapter 037-20156, available as an accessory from your Hallicrafters dealer. Power consumption is 30 watts.

HEADPHONES

Connections are provided at the rear of the receiver for connecting headphones. Any commercial headphones ranging from 50 to 10,000 ohms may be used. For headphone operation, place the Speaker-Phone selector switch at "PHONE".

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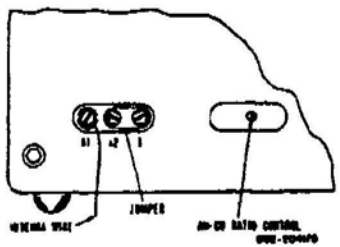


Fig. 1. Single-Wire Antenna

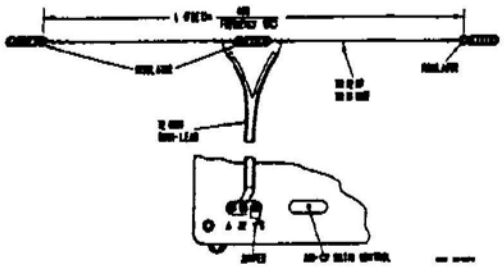


Fig. 2. Doublet Antenna Using Twin-Lead Transmission Line

SINGLE-WIRE ANTENNA

In most localities, satisfactory results throughout the entire tuning range can be obtained with the 15-foot antenna wire included with the receiver. Simply attach one end of this wire to terminal "A1", connect the jumper link between "A2" and "G", and then run the wire about the room in any convenient manner (See Fig. 1). In steel constructed buildings or where receiving conditions are exceptionally poor, an outside antenna 50 to 100 feet long may be necessary. In some locations, reception may be improved by connecting a ground wire (ordinary copper wire) from terminal "G" to a cold water pipe or outside ground rod. While the use of an outside ground rod installed in accordance with Insurance Underwriter's Laboratories requirements is adequate protection against lightning, we strongly recommend an additional connection to the nearest cold water pipe to eliminate any shock hazard.

HALF-WAVE DOUBLET ANTENNA

For top performance, especially on the shortwave and amateur bands, the use of a half-wave doublet or other type of tuned antenna employing a 52 to 600 ohm transmission line is recommended. The doublet antenna should be cut to the proper length for the most used frequency or band of frequencies. The overall length in feet of a doublet antenna is determined by the following formula:

$$\text{Length in feet} = \frac{468}{\text{Frequency in megacycles}}$$

For maximum signal pickup, the doublet antenna should be erected with its length at right angles to the desired station. When a transmission line such as "twin lead" or a twisted pair is used, the transmission line connects to terminals "A1" and "A2", and the jumper link between "A2" and "G" is disconnected (See Fig. 2). The doublet antenna provides optimum performance only at the frequency for which it is cut. Therefore, it may be desirable for reception on frequencies remote from the antenna frequency to utilize the antenna as a single wire type. This is accomplished by connecting the two transmission line leads together and connecting them to terminal "A1". The jumper link in this case should be connected between terminals "A2" and "G".

TUNING DIAL

The top dial scale is the standard broadcast band. To convert the readings on this band to kilocycles simply add one zero. For example: 70 on the dial is 700 kilocycles. The shortwave bands are marked 2, 3, and 4. The reading on these bands are in megacycles. The standard broadcast band is marked with a "CD" emblem and a dot at 640 and 1240 kilocycles to indicate the two official civil defense frequencies. In a civil defense emergency, tune to either of these two frequencies for official civil defense news, instructions, and information.

RECEIVE-STANDBY SWITCH

This switch is normally set at "RECEIVE". When set at "STANDBY", the receiver is silenced but the tubes remain at operating temperature for instant use. To resume reception at any time, simply return the switch to "RECEIVE" position.

AM-CW SWITCH

Set this switch at "AM" to listen to voice or musical broadcasts. Set it at "CW" only if you wish to hear code signals.

BAND SELECTOR CONTROL

Set this control for the band you wish to tune. The four positions of this control correspond to the band numbers at the left side of the dial.

OFF-VOLUME CONTROL

Turn this control clockwise to turn the receiver on and to increase volume. Allow about one minute for the tubes to warm up. When operating on DC (direct current), reverse the power plug in the wall outlet if the receiver does not operate after the one minute warm up, as the receiver will operate ONLY with the plug in one position. When operating on AC (alternating current), try reversing the power plug for minimum hum after the receiver is in operation. To turn the receiver off, simply rotate the Off-Volume control fully counter-clockwise, until a click is heard.

TUNING AND BANDSPREAD CONTROLS

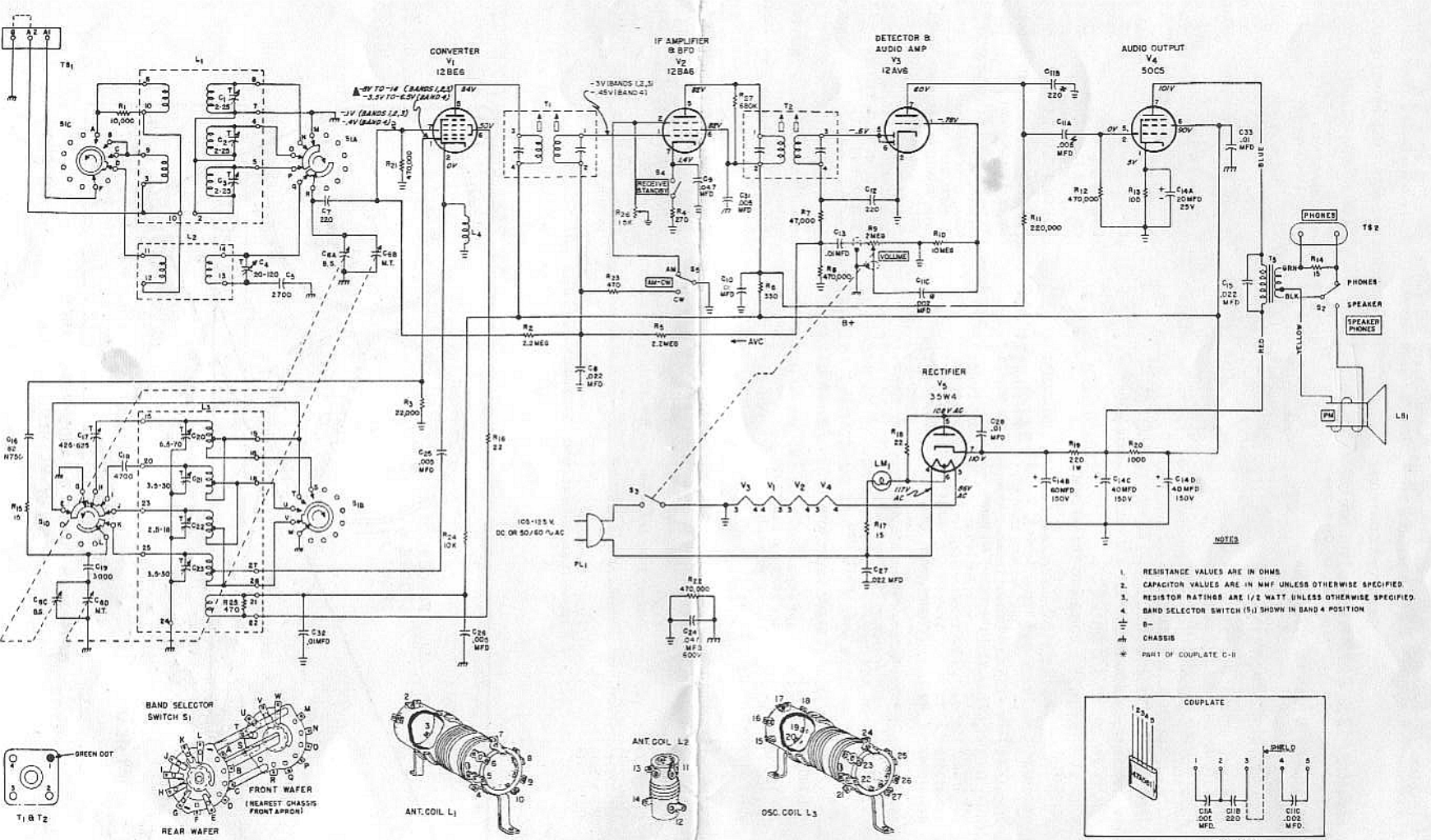
Wide tuning is performed with the Tuning control and fine tuning with the Bandspread control. To tune the receiver, set the Bandspread dial pointer at "0" and then slowly turn the Tuning control to the desired station. When trying to locate weak distant stations, it is suggested that the Off-Volume control be initially set near maximum and then readjusted for the desired level after the station has been tuned in. For CW (code) reception, adjust the Tuning control for the desired pitch when tuning in the station. The dial readings will correspond to the station frequencies only if the Bandspread dial pointer is set at "0".

The Bandspread control is an electrical fine tuning adjustment which permits you to accurately tune in stations on crowded bands by spreading them out. It may be used in two different ways. The first method of tuning is used when it is desired to tune in a single signal with precision accuracy. The Bandspread dial pointer is set at about "5", then the signal is located with the Tuning control, and finally the signal is accurately tuned in by "rocking" the Bandspread control (turning it a few degrees to the left and right) until the signal is loudest and clearest. The second method of tuning is used when it is desired to tune through a range of frequencies, such as the amateur bands. Set the bandspread dial pointer at "0", set the Tuning control for the high end of the selected band or range of frequencies, and then tune through the range with the Bandspread control. Turning the Bandspread control from "0" to "100" tunes the receiver progressively lower in frequency.

CW ADJUSTMENT

Your receiver has a provision on the rear panel for setting the AM-CW ratio (See Fig. 1). This adjustment is pre-set at the factory, but may be easily reset at any time by the operator for personal preference as well as for the intended use of the receiver.

The AM-CW ratio adjustment procedure is as follows: With the receiver turned on and in the "RECEIVE" and "AM" positions, and on band 4, select a fairly strong CW signal. Turn the AM-CW ratio control on the rear panel to its complete counterclockwise position. Then place the AM-CW switch on the front panel to the "CW" position and rotate the AM-CW ratio control clockwise until the CW signal is heard as clear audio tone. With this accomplishment, advance the control slightly beyond this point and the adjustment is complete.



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.

VOLTAGES

1. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND B- (PIN 3 OF 12AV6) WITH ANTENNA TERMINALS SHORTED, AM/CW SWITCH AT AM, AND RECEIVE / STANDBY SWITCH AT RECEIVE.
2. LINE VOLTAGE - 117 VOLTS AC.
3. ALL VOLTAGES WERE MEASURED WITH A VACUUM TUBE VOLTMETER (VTVM) AND ARE DC AND POSITIVE UNLESS OTHERWISE SPECIFIED.

▲ VARIES WITH TUNING GANG SETTING.