

SERVICE DATA

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

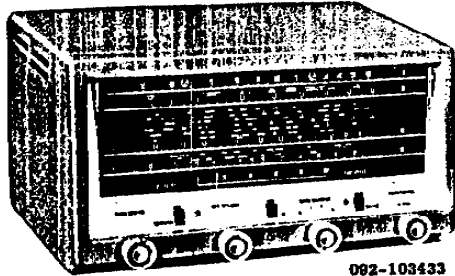


Figure 1. Hallicrafters Model S-38E

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

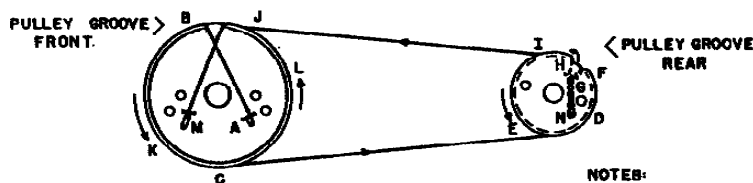
To remove the chassis from the cabinet, first remove the cabinet rear cover which is held in place by four screws and washers. Unsolder the speaker leads at the speaker terminals and free the leads from the bracket mounted on the speaker. Remove the cabinet bottom cover which is held in place by four 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 counter-clockwise 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.



NOTES:
 1. TUNING GANG FULLY MESHED
 2. ATTACH SPRING AT "N" AFTER
 STRINGING IS COMPLETED.

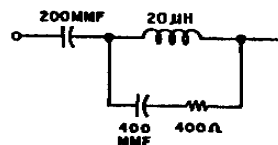
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Figure 2. Main Tuning Gang Drive Stringing Diagram

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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.

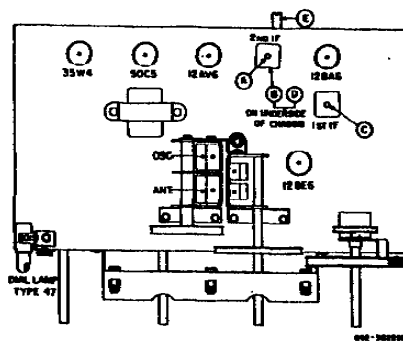


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Figure 3. RETMA Dummy Antenna

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust
IF ALIGNMENT					
*1	High side thru 2 .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	.5 MC	P for maximum output as in Step 1.

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



4 Top View Chassis

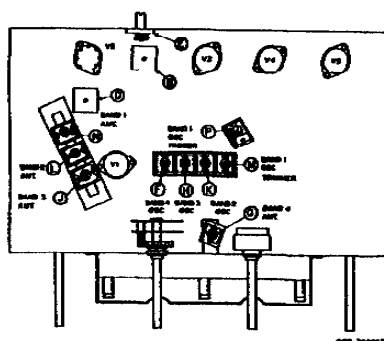


Figure 5. Bottom View Chassis

SERVICE PARTS LIST

Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number
CAPACITORS			*RESISTORS (CONTINUED)			TUBES AND DIAL LAMP (CONTINUED)		
C1, 2, 3	Trimmer, 2-25 mmfd.; 3 Section, Compression Mica	044-200129	R9	2 megohm, VOLUME Control; Inc. On-Off Switch 5-3	025-201478	V3	12AV6; Detector and Audio	090-901197
C4	20-120 mmfd.; Ceramic Trimmer	044-100424	R10	10 megohm	451-252109	V4	50C5; Audio Output	090-900541
C5	2700 mmfd., 500V., 5%; Mica	470-412272	R11	220K ohm	451-252224	V6	35W4, Rectifier	090-900384
C6A, C	Variable Capacitor, BAND-SPREAD	046-300410	R12	100 ohm	451-252101	LM1	Lamp, Dial Type #47	039-100004
C6B, D	Variable Capacitor, MAIN TUNING	046-300372	R13	15 ohm	451-252150	MISCELLANEOUS		
C7, 12	220 mmfd., 500V., 10%; Mica	470-213221	R14, 15, 17	22 ohm	451-252220	Back, Cabinet		032-400734
C8, 13, 27	.022 mfd., 900V; Tubular Paper	499-034223	R16, 18	250 ohm, 1 watt	451-252121	Bracket, Mtr., Pulley, and Dial Lamp		067-203191
C9	.047 mfd., 800V; Tubular Paper	499-034473	R19	1K ohm	451-252102	Bracket, Pulley Mrg.		067-203190
C10, 26, 33	.01 mfd., 450V; Ceramic Disc	047-100224	R23, 25	470 ohm	451-252471	Bracket, Switch Mrg.		067-203192
C11A, B, C	Printed Circuit Plate, .005 mfd., 220 mmfd., .002 mfd., 500 WVDC	047-100581	R26	1500 ohm, AM-CW RATIO Control	025-201751	Bushing, Tuning, and Band Spread Shaft		077-201684
C13	.01 mfd., 800V; Tubular Paper	499-034103	R27	680K ohm	451-252684	Cabinet, S-3EE		068-481734
C14A, B	20 mfd. @ 25V; 00-40-40	046-300001	COILS AND TRANSFORMERS			Cabinet, S-3EEB		068-102175
C, D	20 mfd. @ 150V; Electrolytic	491-006820-85	**L1, C1, 2	Coil and Trimmer Assembly, Antenna; Bands 1, 2, and 3	051-302132	Cabinet, S-3EEM		068-102176
C15	Ceramic Tubular	491-006820-85	L2	Coil, Antenna; Band 4	031-201015	Clip, IF Mrg.		078-100385
C17	425-625 mmfd.; Mica Trimmer	044-100349	**L3, C20	Coil and Trimmer Assembly, Oscillator; All Bands	051-302133	Clip, Dial Lamp Mrg.		078-100690
C18	4700 mmfd., 500V., 5%; Mica	470-412472	L4	Choke; RF 540 oh	051-100807	Cover, Cabinet Bottom		032-300501
C19	3000 mmfd., 500V., 5%; Mica	478-412303	T1	Transformer, 1st IF	050-300532	Dial Cord (Specify Length)		038-100026
C20, 21, 22, 23	Trimmer, 6.5-70 mmfd.; 3.5-30 mmfd.; 2.5-18 mmfd.; Compression Mica	046-200188	T2	Transformer, 2nd IF	050-300531	Foot, Mrg.		048-200986
C24	.047 mfd., 400V., 20%; Tubular Paper	499-024473	T3	Transformer, Audio Output	055-300247	Gasket, Rubber		018-101245
C25, 28	.005 mfd., 450V; Ceramic Disc	047-100188	*The Trimmer Capacitor Assemblies are also available separately. See "CAPACITORS".			Glass, Dial Window		022-201970
C31	.005 mfd., 500V., 20%; Ceramic Disc	047-100442	SWITCHES			Knob, Band Selector (S-3EE)		015-201259
C32	.01 mfd., 400V; Tubular Paper	499-034153	51A, B	BAND SELECTOR	058-300861	Knob, Band Selector (S-3EEB, EM)		015-201260
*RESISTORS			C, D	SPEAKER-PHONE, AM-CW, and RECEIVE-STANDBY On-Off; Part of R9	046-190477	Knob, BANDSPREAD, OFF-VOLUME or MAIN TUNING (S-3EE)		013-301298
R1, 24	10K ohm	451-252103	R3	On-Off; Part of R9	-----	Knob, BANDSPREAD, OFF-VOLUME, or MAIN TUNING (S-3EEB, EM)		013-301261
R2, 5	1.2 megohm	451-252225	SOCKETS AND CONNECTORS			Line Cord and Plug		087-100078
R3	27K ohm	451-252223	T21	Terminal Strip, Antenna	068-100071	Line Cord Lock (Male Section)		078-100397-01
R4	270 ohm	451-252271	T22	Twin Jack Strip, Phones	068-100071	Line Cord Lock (Female Section)		078-100397-02
R6	330 ohm	451-252331	T23	Socket, Dial Lamp (Inc. Leads)	080-100122	Pointer, Band-Spread (S-3EE)		062-200350
R7	47K ohm	451-252473	TUBES AND DIAL LAMP			Pointer, Band-Spread (S-3EEB, EM)		062-200386
R8, 12, 21, 22	470K ohm	451-252474	V1	12BE6; Converter	058-000040	Pointer, Main Tuning (S-3EEB, EM)		062-200385
			V2	12BA6; IF Amplifier and BFO	050-900039	Pointer, Main Tuning (S-3EE)		052-200349

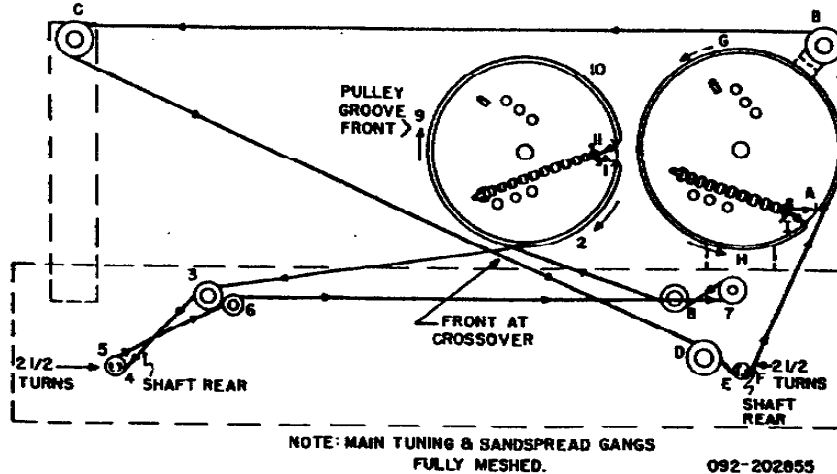
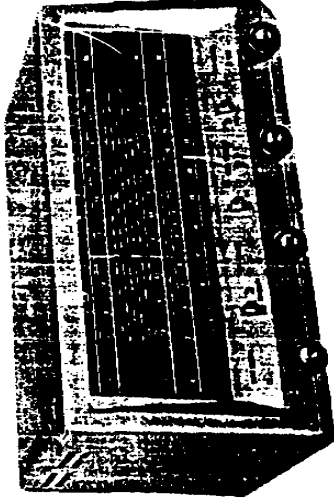


Figure 7. Main Tuning and Bandspread Gang Pointer Drive Stringing Diagrams

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 037-201566, 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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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 services 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 to exchange for any part of any such radio which may become defective during the period of the warranty. This warranty shall apply only to the original purchaser of the radio and shall be void if the radio is used for any purpose other than that for which it was designed. This warranty shall be void if the radio is used for any purpose other than that for which it was designed. This warranty shall be void if the radio is used for any purpose other than that for which it was designed.

This warranty does not extend to any of our radio products which have been subjected to abuse, neglect, accident, tampering, or any other cause beyond our control. It is the responsibility of the user to use the radio in accordance with the instructions and to use the radio in accordance with the instructions. This warranty is in lieu of all other warranties expressed or implied and in no way shall be construed to constitute an admission of liability on the part of the Hallicrafters Company. The Hallicrafters Company shall not be held liable for any other liability in connection with the sale of our radio products.

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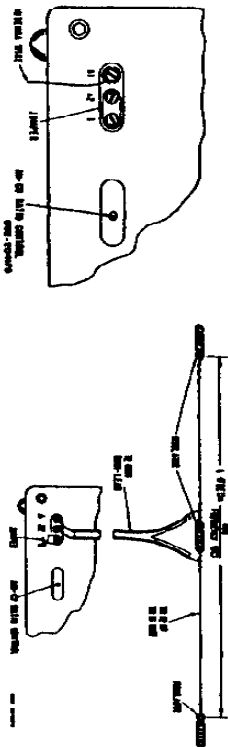


Fig. 1. Single-Wire Antenna

Fig. 2. Double 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 "A1" and "G1", 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 localities, reception may be improved by connecting a ground wire (ordinary copper wire) from terminal "G1" to a cold water pipe or outside ground rod. While the use of an outside ground rod installed in accordance with Bureau 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 loop 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 "A1" and "G1" 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 "G1".

TUNING DIAL

The top dial scale in 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 readings on these bands are in megacycles. The standard broadcast band is marked with a "CW" position and is set at 640 and 1340 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 use. The four positions of this control correspond to the band numbers at the left side of the dial.

OFF-VOLUME CONTROL

Turn the 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 the 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 "locking" 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, set on "band 4" select a fairly strong CW signal. Turn the AM-CW ratio control on the rear panel to its complete counter-clockwise 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.