

the hallicrafters co.

SERVICE BULLETIN No. 2 FOR MODEL S-38

GENERAL: Model S-38 is a 6 tube AC/DC superheterodyne table model, radio receiver, incorporating 4 bands of AM/CW reception, as follows: band #1, 540 kc to 1650 kc; band #2, 1650 kc to 5.0 mc; band #3, 5.0 mc to 14.5 mc; band #4, 13.5 mc to 32.0 mc. Provision for AVC, noise limiting, BFO pitch, headset reception, standby operation, and bandspreading are provided.

REAR PANEL CONNECTIONS: Consist of line cord with plug, antenna and ground connector strip, and headset connector plug strip.

POWER SUPPLY DATA: 105 to 125 volts AC/DC line voltage. Power drain is 30 watts.

TUBE TYPES AND FUNCTION: 12SA7—mixer-oscillator; 12SK7—IF amplifier; 12SQ7GT—detector, AVC, audio amplifier; 35L6GT—audio power amplifier; 12SQ7GT—BFO and ANL; 35Z5GT—power rectifier for AC operation.

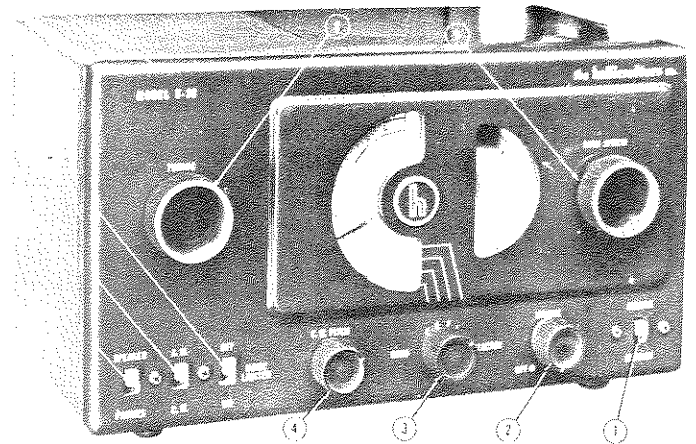


Fig. 1. Front view of receiver showing control locations.

DETAILED SERVICE INFORMATION

IF FREQUENCY	IF SELECTIVITY	IMAGE RATIO	SENSITIVITY	AUDIO OUTPUT
455 kc	7 kc wide at 6 db down 65 kc wide at 60 db down (for 50 milliwatt output)	2.7:1 at 30 mc 6:1 at 14 mc 10:1 at 5 mc 35:1 at 1500 kc	12 microvolt at 600 kc 12 microvolt at 5 mc 11 microvolt at 14 mc 23 microvolt at 30 mc (for 50 milliwatt output)	675 milliwatt with less than 10% distortion at 400 cycles

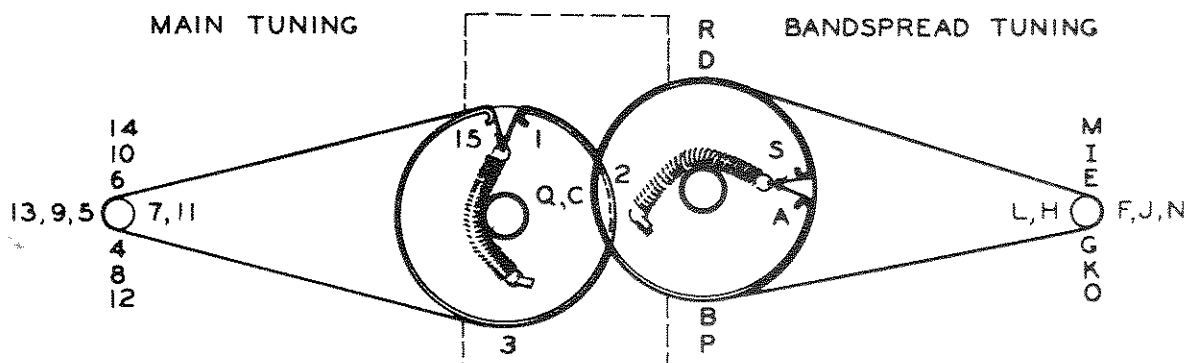
CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

REF. NO. (in Fig. 1)	NAME	FUNCTION	SETTING	REF. NO. (in Fig. 1)	NAME	FUNCTION	SETTING
1	STANDBY/ RECEIVE	Receiver temporary standby	At "RECEIVE"	5	SPEAKER/ PHONES	Output selector switch	At "SPEAKER"
2	VOLUME	Audio gain control and receiver on/off switch	Half clockwise; adj. as necessary	6	CW/AM	BFO on/off switch AVC on/off switch	At "AM" (AVC on)
3	BAND SELECTOR	Operating band selector	Clockwise to "1"	7	NOISE LIMITER	Noise peak limiting	At "OFF"
4	PITCH CONTROL	CW beat note pitch selector	Any position (not in use)	8	TUNING	Main tuning control	To local station freq on main dial scale
				9	BAND SPREAD	Short wave band spreading	To "0" on small dial scale

HOW TO RESTRING DIAL CORDS

To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above. except start a position "A" on the diagram and proceed through position "S." Note that the knob drive shaft has two complete turns.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).
FRONT VIEW

Fig. 2. Dial cable stringing procedure.

REPLACEMENT PARTS

REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER	REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER
CAPACITORS					
C-1	0.01 mfd; 600 vdcw; paper	46AY103J	S-1a, b, c	Bandswitch; two sections ganged; rotary	
C-2, 3 & 4	Trimmer Unit for antenna transformer T-1	44B129	& d	four position	60A240
C-5	Trimmer for antenna transformer T-2	44A039	S-2 & 3	"RECEIVE-STANDBY" and "NOISE LIMITER" switches; slide action; SPST.	60A244
C-6	2700 mmf; $\pm 5\%$; 500 vdcw; mica	CM30A272J	S-4	"SPEAKER-PHONES" switch; slide action; SPDT.	60A243
C-7	Tuning capacitor; air; 2 sections ganged	48C162	S-5	"A.M.-C.W." switch; slide action; DPST.	60A245
C-8, 23, 27 & 38	220 mmf; 500 vdcw; mica	CM20A221K	TRANSFORMERS		
C-9	3000 mmf; 5%; 500 vdcw; mica	CM30A302J	T-1	Antenna coil for bands 1, 2 and 3	51C821
C-10 & 11	Dual padder for oscillator transformer T-3	44A152	T-2	Antenna coil for band 4	51C818
C-12, 13, 14 & 15	Trimmer Unit for oscillator transformer T-3	44B159	T-3	Oscillator coil for bands 1, 2, 3 and 4	51C822
C-16 & 34	0.02 mfd; 400 vdcw; paper	46AW203J	T-4	Input IF transformer; 455 kc.	50C183
C-17 & 36	0.25 mfd; 200 vdcw; paper	46AT254J	T-5	Diode IF transformer; 455 kc.	50B184
C-18, 19, 21 & 22	Trimmers for IF transformers T-4 and T-5	44A097	T-6	Beat frequency oscillator coil; 455 kc.	54B031
C-20 & 35	0.05 mfd; 200 vdcw; paper	46AU503J	T-7	Audio output transformer; 3,000 ohm primary —15 ohm secondary (tapped at 3 ohms)	55A075
C-24	0.005 mfd; 400 vdcw; paper	46AW502J	TERMINAL STRIPS		
C-25	2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART.		TS-1	Antenna and ground connector strip	88A032
C-28 & 39	470 mmf; 500 vdcw; mica	CM20A471K	TS-2	Headset plug connector strip; bakelite	88A071
C-28 & 37	0.01 mfd; 400 vdcw; paper	46AW103J	MISCELLANEOUS MECHANICAL COMPONENTS		
C-29, 31, 32 & 33	Electrolytic; four section unit; color coded leads; sect. 1(C-29) 20 mfd, 25 vdcw; sect. 2 & 3(C-31 & 32) 30 mfd, 150 vdcw; sect. 4(C-33) 40 mfd, 150 vdcw	45B091	QUANT. IN EQUIPMENT	DESCRIPTION	HALLICRAFTER'S PART NUMBER
C-30	0.02 mfd; 600 vdcw; paper	46AY203J	2	Knob; for Volume Control and Band Selector switches	15A049
PILOT LAMP			1	Knob; for C. W. PITCH Control	15A058
LM-1	6.8 v @ 150ma; brown base; G. E. type 47	39A004	2	Knob; for main TUNING and BANDSPREAD tuning Controls	15A047
LOUDSPEAKER			1	Pointer; for main tuning dial	82A102
LS-1	5" P.M. speaker; 3.2 ohm voice coil	85C035	1	Pointer; for bandspread tuning dial	82A103
PLUGS			1	Calibrated dial assembly, complete	83B257
PL-1	AC line cord with two prong plug at one end	87A078	1	Dial window; glass	22B157
PL-2	Speaker voice coil connector plug	88A072	6	Octal tube sockets; Amphenol type MIP-8	6A035
RESISTORS			1	Dial lamp socket; bayonet	86A011
R-1 & 13	470,000 ohm; $\frac{1}{2}$ watt; carbon	RC20AE474M	2	Tuning capacitor dial drive pulley	28A002
R-2	22,000 ohm; $\frac{1}{2}$ watt; carbon	RC20AE223M	1	Tuning capacitor rear mounting bracket	67A568
R-3	47 ohm; $\frac{1}{2}$ watt; carbon	RC20AE470M	1	Tuning capacitor front mounting bracket	67A569
R-4	390 ohm; $\pm 10\%$; $\frac{1}{2}$ watt; carbon	RC20AE391K	1	Left hand switch mounting bracket	67B560
R-5	2.2 megohm; $\frac{1}{2}$ watt; carbon	RC20AE225M	1	Right hand switch mounting bracket	67B561
R-6 & 10	47,000 ohm; $\frac{1}{2}$ watt; carbon	RC20AE473M	4	Rubber mounting feet for cabinet	16A007
R-7 & S-6	Volume Control; $\frac{1}{2}$ megohm; includes SPST toggle action switch assembly on rear	25B094	2	Spring washers for grounding tuning capacitor drive shafts	4A043
R-8	10 megohm; $\frac{1}{2}$ watt; carbon	RC20AE106M	1	"C" washers; (hair-pin type)	75A062
R-9 & 11	470 ohm; $\pm 10\%$; $\frac{1}{2}$ watt; carbon	RC20AE471K	1	Rear cover plate; cardboard	32C331
R-12	220,000 ohm; $\frac{1}{2}$ watt; carbon	RC20AE224M	1	Bottom cover plate; painted steel	63C220
R-14	150 ohm; $\pm 10\%$; $\frac{1}{2}$ watt; carbon	RC20AE151K			
R-15	15 ohm; $\frac{1}{2}$ watt; carbon	RC20AE150M			
R-16	1,000 ohm; $\frac{1}{2}$ watt; carbon	RC20AE102M			
R-17	680 ohm; $\frac{1}{2}$ watt; carbon	RC30AE681M			
R-18 & 21	22 ohm; $\frac{1}{2}$ watt; carbon	RC20AE220M			
R-19	330 ohm; $\frac{1}{2}$ watt; carbon	RC20AE331M			
R-20	10,000 ohm; $\frac{1}{2}$ watt; carbon	RC20AE103M			

NOTE: Mica dielectric capacitors have a tolerance of $\pm 10\%$ unless otherwise specified; paper dielectric capacitors tolerance is $-10 + 40\%$; carbon resistors have a tolerance of $\pm 20\%$ unless otherwise specified.

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Explanation of abbreviations: mmf—micromicrofarads; mfd—microfarads; vdcw—DC working volts; v—volts; ma—milliamperes; IF—intermediate frequency; sect.—section; REF. NO.—circuit symbol as on the schematic diagram.

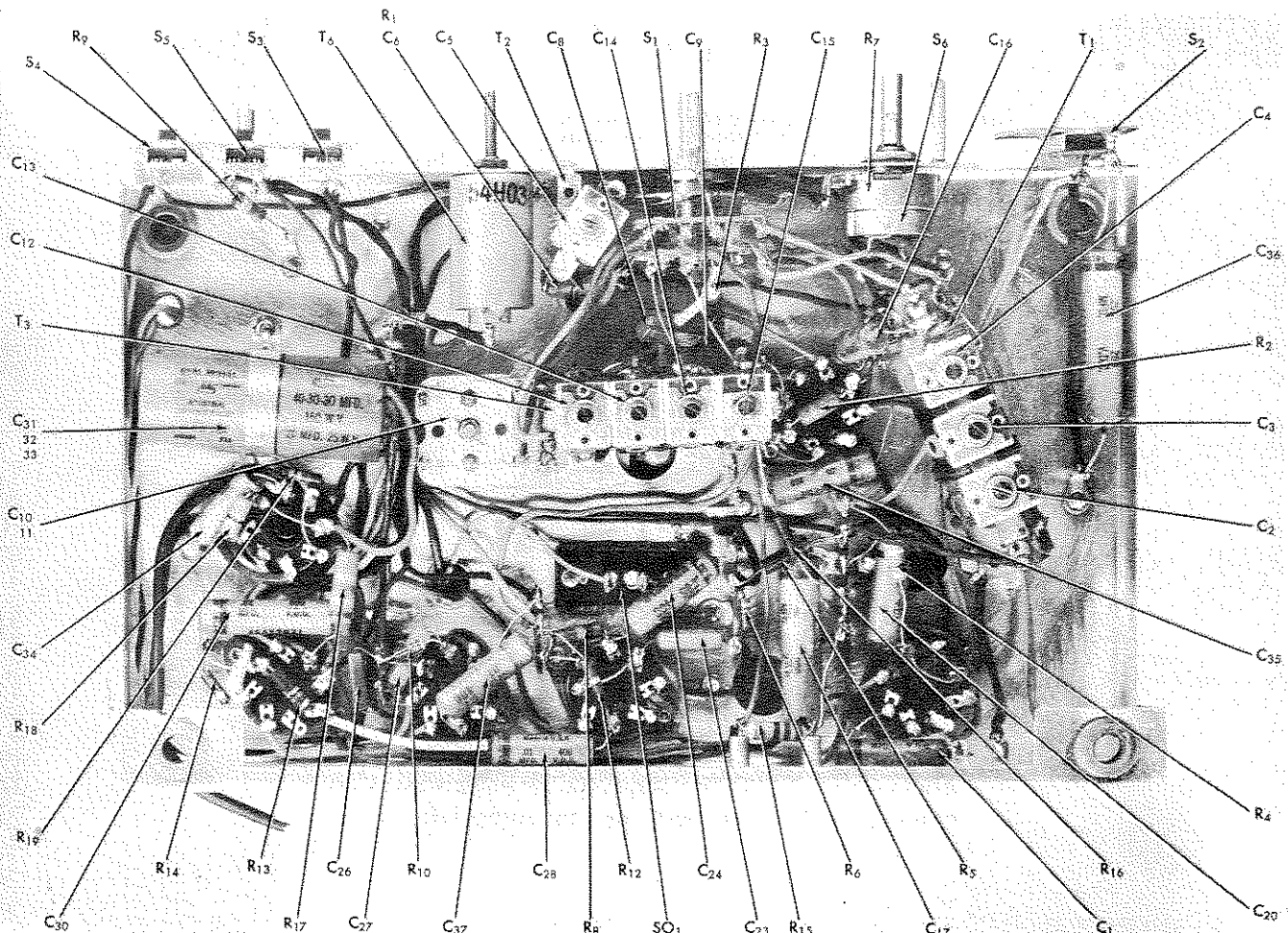


Fig. 4. Bottom view of the receiver showing components location.

ALIGNMENT INSTRUCTIONS

EQUIPMENT:

1. Signal Generator capable of the ranges indicated in the Alignment Chart, including a 400 cycle audio modulator.
2. Output meter capable of handling 1 watt of audio power.
3. Standard RMA dummy consisting of a 200 mmf condenser in series with a 20uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.
4. Non-metallic screw driver.

CONNECTIONS: Connect the Sig. Gen. "cold" lead to "G" on the antenna strip; the "hot" lead is connected as indicated in the Chart.

Connect the output meter across the terminals of socket SO-1 and remove the speaker plug from the socket and adjust the meter for 3 ohms impedance.

Caution: Set the meter at a sufficiently high range to prevent possible damage from overload.

CONTROL SETTINGS: After allowing about a ten minute warm up period, set the receiver's control as follows:

- SPEAKER/PHONES switch at "SPEAKER."
- VOLUME control at full clockwise (maximum).
- CW/AM switch at "AM" (except for BFO adjustment).
- NOISE LIMITER switch at "OFF."
- BANDSPREAD TUNING control at "0," (min. cap.).
- STANDBY/RECEIVE switch at "RECEIVE."

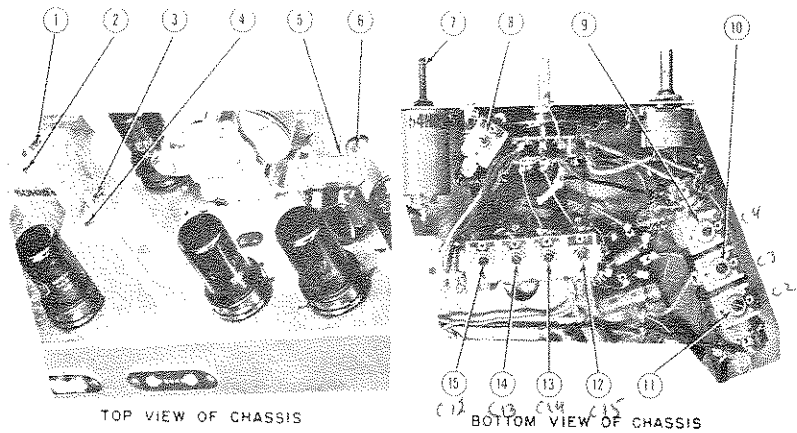


Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.

DUMMY ANT. IN SERIES WITH SIG. GENERATOR	CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER	SIG. GEN. FREQUENCY SETTING	BAND SWITCH SETTING	RECEIVER DIAL SETTING	ADJUST SLUG, PADDER, OR TRIMMER NO.	DESCRIPTION	TYPE OF ADJUSTMENT —MAKE ADJUSTMENT FOR:	STEP NO.
*IF ADJUSTMENT								
None	Stator plates of rear sect. of tuning gang	455 kc	"1"	1000 kc	3 and 4 1 and 2	2nd IF 1st IF	Maximum output Maximum output Repeat steps 1 and 2	1 2
BFO ADJUSTMENT—NOTE: Turn off Sig. Gen. 400 cycle modulation; set CW/AM switch at "CW"; remove Pitch Control knob and adjust slotted screw shaft.								
None	Stator plates of rear sect. of tuning gang	455 kc	"1"	1000 kc	7	BFO slug	Zero beat	3
BAND #4 ADJUSTMENT—NOTE: Make sure 400 cycle audio modulator is turned on; AM/CW switch should be at "AM."								
STANDARD	"A1" on antenna strip	30 mc	"4"	30 mc	12	Osc. Trimmer	Maximum output	4
RMA Dummy	strip	30 mc		30 mc	† 8	Mix. Trimmer	Maximum output	5
BAND #3 ADJUSTMENT								
STANDARD	"A1" on antenna strip	14 mc	"3"	14 mc	13	Osc. Trimmer	Maximum output	6
RMA Dummy	strip	14 mc		14 mc	† 9	Mix. Trimmer	Maximum output	7
*BAND #2 ADJUSTMENT								
STANDARD	"A1" on antenna strip	5 mc	"2"	5 mc	14	Osc. Trimmer	Maximum output	8
RMA Dummy	strip	1.8 mc		1.8 mc	6	Osc. Padder	Maximum output and repeat step 8	9
		5 mc		5 mc	†10	Mix. Trimmer	Maximum output	10
*BAND #1 ADJUSTMENT								
STANDARD	"A1" on antenna strip	1500 kc	"1"	1500 kc	15	Osc. Trimmer	Maximum output	11
RMA Dummy	strip	600 kc		600 kc	5	Osc. Padder	Maximum output and repeat step 11	12
		1500 kc		1500 kc	11	Mix. Trimmer	Maximum output	13

*It may be necessary to repeat the indicated adjustments several times.

†Rock the main tuning capacitor slightly (turn back and forth) when making these adjustments.

ATTENTION

Always give Model and Serial No. of equipment when ordering replacement parts or requesting information.