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.

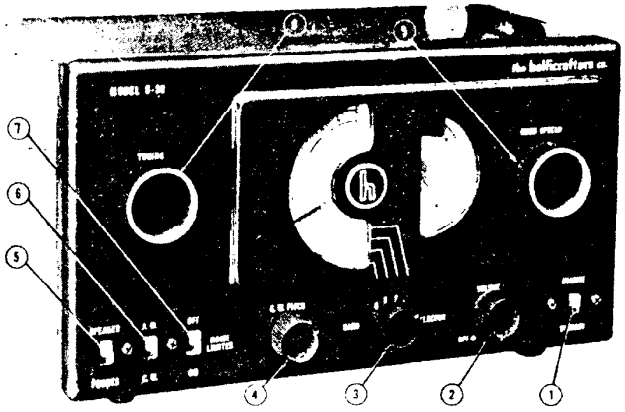


Fig. 1. Front view of receiver showing control locations.

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 at position "A" on the diagram and proceed through position "S." Note that the knob drive shaft has two complete turns.

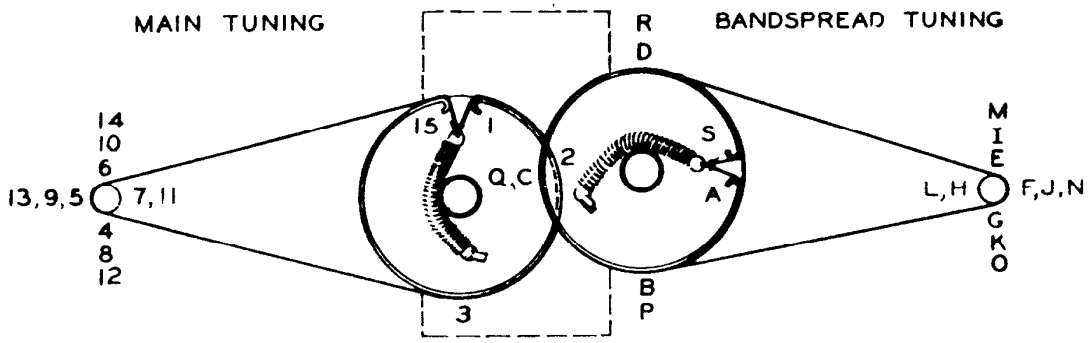


Fig. 2. Dial cable stringing procedure.

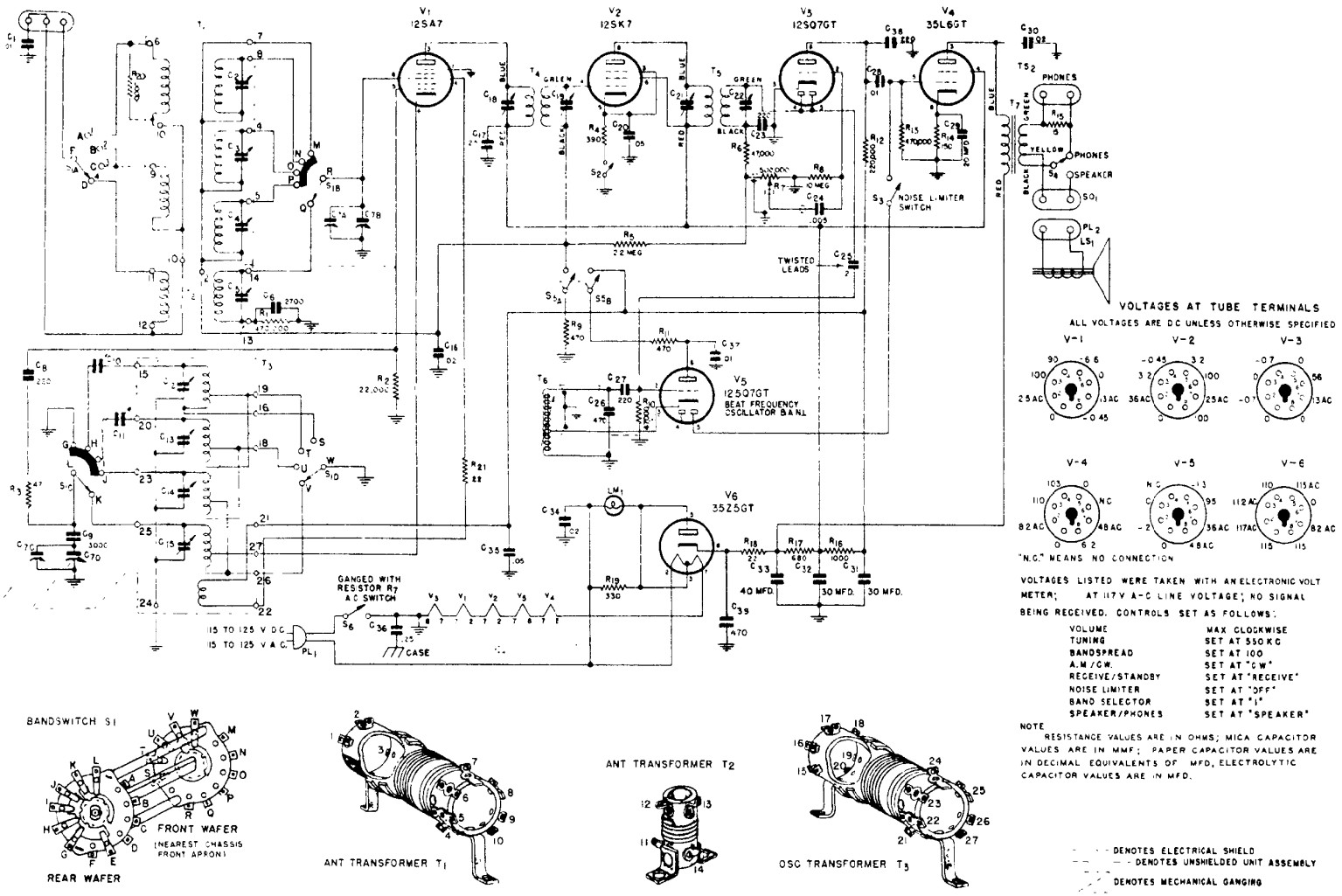


Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.

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."

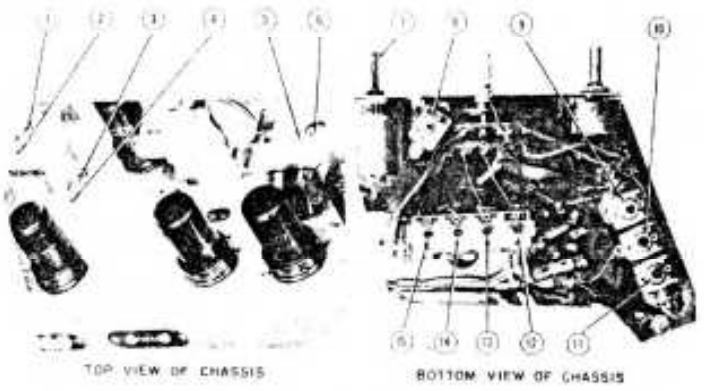


Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.

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	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	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	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	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.

REPLACEMENT PARTS

REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER	LIST PRICE PER COMPONENT
	CAPACITORS		
C-1	0.01 mfd; 600 wdcw; paper	46AY101J	$ .10
C-2, 3 & 4	Trimmer Unit for antenna transformer T-1	44B129	.40
C-5	Trimmer for antenna transformer T-1	44B61	.10
C-6	2700 mmf, ± 5%; 500 wdcw; mica	CM19A272J	.30
C-7	Tuning capacitor; a.c. 2 section; ganged	8R262	2.90
C-8, 10, 27 & 35	200 mmf; 500 wdcw; mica	CM20A201K	.15
C-9	3000 mmf; 5%; 500 wdcw; mica	CM19A302J	
C-10 & 13	Dual padder for oscillator transformer T-2	44A132	.60
C-12, 18, 14 & 15	Trimmer Unit for oscillator transformer T-3	44B128	.50
C-16 & 34	0.02 mfd; 400 wdcw; paper	46AW203J	.10
C-17 & 36	0.25 mfd; 200 wdcw; paper	46AT254J	.15
C-18, 19, 21 & 22	Trimmers for IF transformers T-4 and T-5	44B097	.75
C-20 & 33	0.05 mfd; 200 wdcw; paper	46AW503J	.10
C-24	0.001 mfd; 400 wdcw; paper	46AW102J	.10
C-25	2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART		
C-26 & 29	470 mmf; 500 wdcw; mica	CM19A471K	.15
C-28 & 37	0.01 mfd; 400 wdcw; paper	46AW103J	.10
C-29, 31, 32 & 33	Electrolytic; four section and; color coded leads; sect. 1(C-29) 20 mfd, 25 wdcw; sect. 2 & 3(C-31 & 32) 20 mfd, 150 wdcw; sect. 4(C-33) 40 mfd, 150 wdcw.	45B091	.80
C-30	0.02 mfd; 600 wdcw; paper	46AY203J	.10
	PILOT LAMP		
LM-1	6.8 v @ 150ma; brown bead; G. E. type 47	39A004	.10
	LOUDSPEAKER		
LS-1	5" P.M. speaker, 3.2 ohm voice coil	8W635	2.50
	PLUGS		
PL-1	AC line cord with two prong plug at one end	87A028	.35
PL-2	Speaker voice coil connector plug	88A572	.10
	RESISTORS		
R-1 & 13	470,000 ohm; ½ watt; carbon	RC30AE474M	.10
R-2	22,000 ohm; ½ watt; carbon	RC30AE223M	.10
R-3	47 ohm; ½ watt; carbon	RC30AE470M	.10
R-4	390 ohm; ± 10%; ½ watt; carbon	RC30AE391K	.10
R-5	2.2 megohm; ½ watt; carbon	RC30AE225M	.10
R-6 & 10	47,000 ohm; ½ watt; carbon	RC30AE473M	.10
R-7 & 8-9	Volume Control; ½ megohm; includes SPST toggle action switch assembly on rear	25B094	.50
R-8	10 megohm; ½ watt; carbon	RC30AE106M	.10
R-9 & 11	470 ohm; ± 10%; ½ watt; carbon	RC30AE471K	.10
R-12	220,000 ohm; ½ watt; carbon	RC30AE224M	.10
R-14	150 ohm; ± 10%; ½ watt; carbon	RC30AE151K	.10
R-15	15 ohm; ½ watt; carbon	RC30AE150M	.10
R-16	1,000 ohm; ½ watt; carbon	RC30AE102M	.10
R-17	680 ohm; 1 watt; carbon	RC32AE681M	.10
R-18 & 21	22 ohm; ½ watt; carbon	RC30AE220M	.10
R-19	330 ohm; ½ watt; carbon	RC30AE331M	.10
R-20	10,000 ohm; ½ watt; carbon	RC30AE103M	.10

NOTE: Mica dielectric capacitors have a tolerance of ± 10%, unless otherwise specified; paste dielectric capacitors tolerance is −10 +40%; carbon resistors have a tolerance of ± 20%, unless otherwise specified.

REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER	LIST PRICE PER COMPONENT
	SWITCHES		
S-1a, b, c & d	Bandswitch; two sections ganged; rotary four position	60A240	$ .95
S-2 & 3	"RECEIVE-STANDBY" and "NOISE LIMITER" switches; slide action; SPST	60A244	.20
S-4	"SPEAKER-PHONES" switch; slide action; SPDT	60A243	.20
S-5	"A.M.-C.W." switch; slide action; DPST	60A245	.25
	TRANSFORMERS		
T-1	Antenna coil for bands 1, 2 and 3	51C801	2.35
T-2	Antenna coil for band 4	51C818	.65
T-3	Oscillator coil for bands 1, 2, 3 and 4	51C822	2.45
T-4	Input IF transformer; 455 kc	50C183	1.20
T-5	Diode IF transformer; 455 kc	50B184	1.20
T-6	Beat frequency oscillator coil; 455 kc	54B831	1.25
T-7	Audio output transformer; 3,000 ohm primary —15 ohm secondary tapped at 3 ohms.	56A015	.95
	TERMINAL STRIPS		
TS-1	Antenna and ground connector strip	89A032	.10
TS-2	Headset plug connector strip; bakelite	89A071	.10

MISCELLANEOUS MECHANICAL COMPONENTS

QUANT. IN EQUIPMENT	DESCRIPTION	HALLICRAFTER'S PART NUMBER	LIST PRICE PER COMPONENT
2	Knob; for Volume Control and Band Selector switches.	15A049	.15
1	Knob; for C. W. PITCH Control.	15A058	.15
2	Knob; for main TUNING and BANDSPREAD tuning Controls.	15A047	.25
1	Pointer; for main tuning dial	82A102	.15
1	Pointer; for bandspread tuning dial	82A103	.15
1	Calibrated dial assembly; complete	83B057	.15
1	Dial window; glass	22B157	.30
6	Octal tube sockets; Amphenol type MIP-8	6A035	.10
1	Dial lamp socket; bayonet	86A011	.15
2	Tuning capacitor dial drive pulley	28A002	.10
1	Tuning capacitor rear mounting bracket	67A568	.10
1	Tuning capacitor front mounting bracket.	67A569	.15
1	Left hand switch mounting bracket	67B560	.10
1	Right hand switch mounting bracket	67B561	.10
4	Rubber mounting feet for cabinet	16A007	.10
2	Spring washers for grounding tuning capacitor drive shafts.	4A043	.10
4	"C" washers; (hair-pin type)	75A052	.10
1	Rear cover plate; cardboard	32C331	.10
1	Bottom cover plate; painted steel	63C295	.45

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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

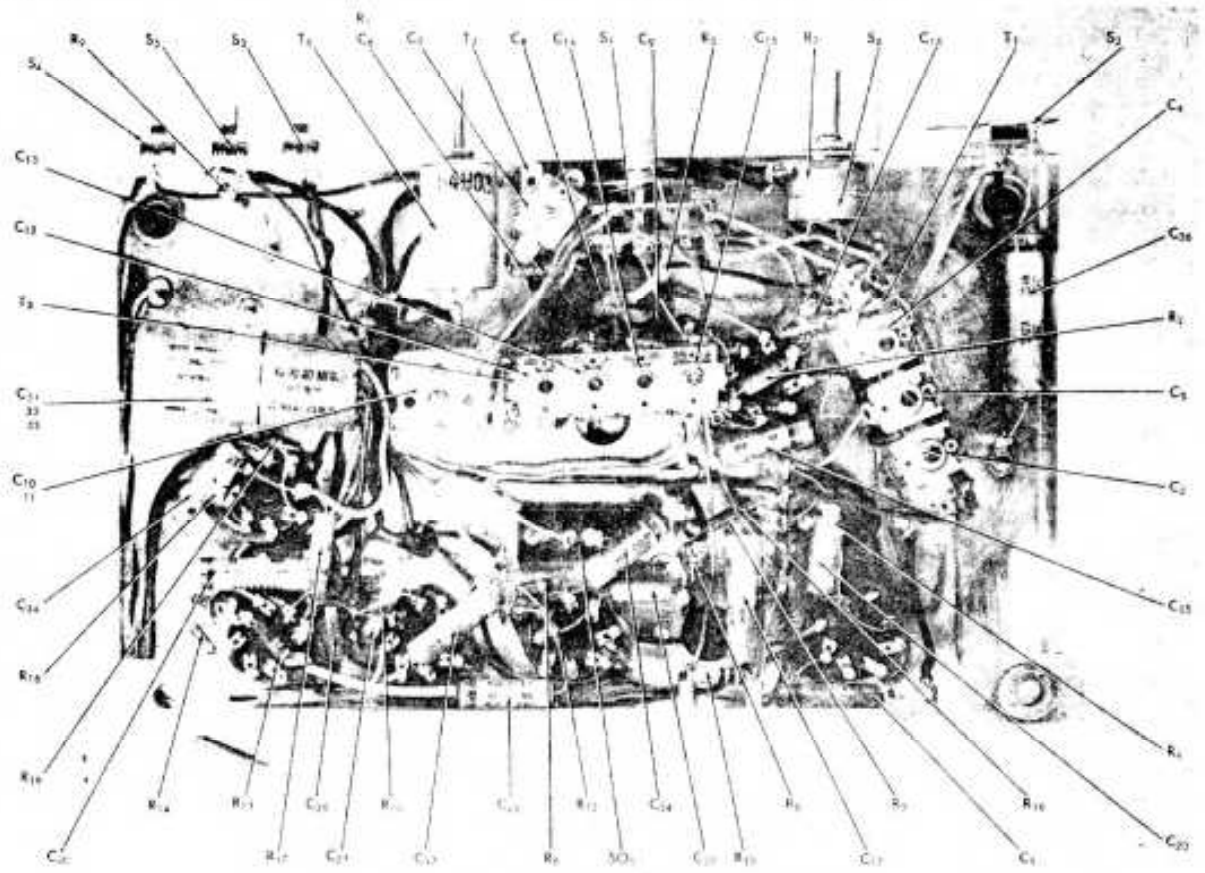
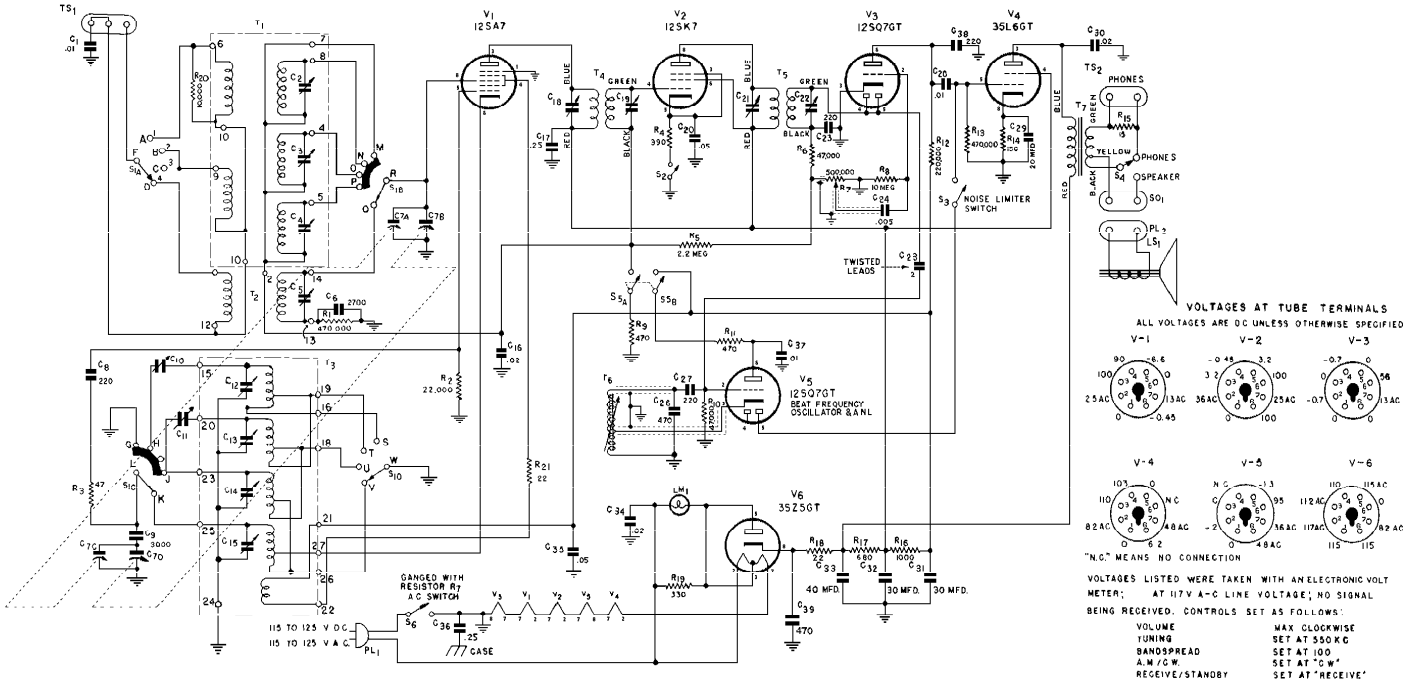
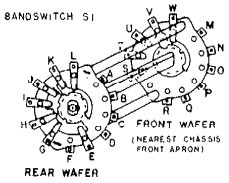
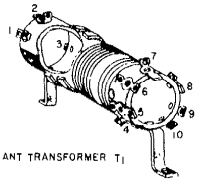
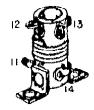


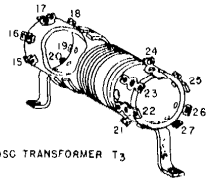
Fig. 4. Bottom view of the receiver showing components location.











VOLTAGES AT TUBE TERMINALS

ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED

"N.C." MEANS NO CONNECTION

VOLTAGES LISTED WERE TAKEN WITH AN ELECTRONIC VOLT METER; AT 117 V A-C LINE VOLTAGE; NO SIGNAL BEING RECEIVED. CONTROLS SET AS FOLLOWS:

VOLUME	MAX CLOCKWISE
TUNING	SET AT 550 KC
BANDSPREAD	SET AT 100
A.M./C.W.	SET AT "C.W."
RECEIVE/STANDBY	SET AT "RECEIVE"
NOISE LIMITER	SET AT "OFF"
BAND SELECTOR	SET AT "1"
SPEAKER/PHONES	SET AT "SPEAKER"

NOTE:
RESISTANCE VALUES ARE IN OHMS; MICA CAPACITOR VALUES ARE IN MMF; PAPER CAPACITOR VALUES ARE IN DECIMAL EQUIVALENTS OF MFD; ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.

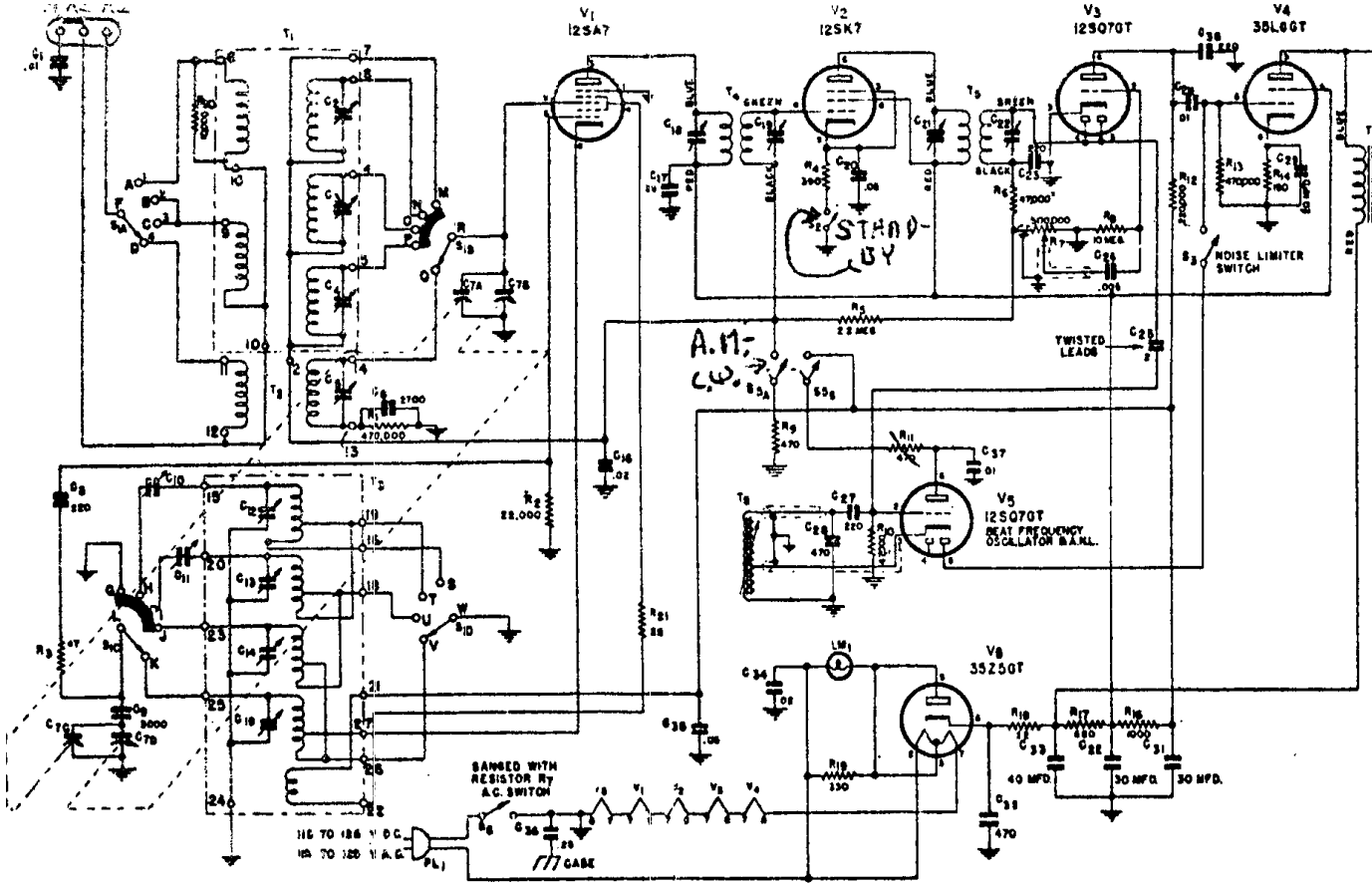
------- DENOTES ELECTRICAL SHIELD.
— — — — DENOTES UNSHIELDED UNIT ASSEMBLY
DENOTES MECHANICAL GANGING.

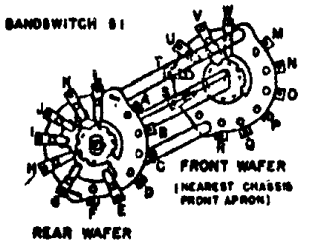
LETTERS AT BANDSWITCH (S_1) AND NUMERALS AT ANTENNA AND OSCILLATOR TRANSFORMERS (T_1, T_2 & T_3) IDENTIFY CORRESPONDING TERMINAL LUGS ON PICTORIAL VIEWS.

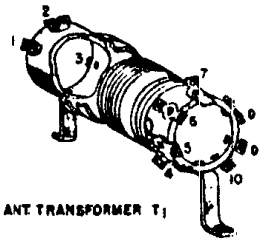
NOTE: DIMENSIONS & PROPORTIONS SHOWN IN PICTORIAL VIEWS HAVE BEEN EXAGGERATED FOR CLARITY OF TERMINAL LUG LOCATION.

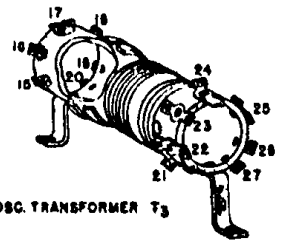
the **hallicrafters** *co.*

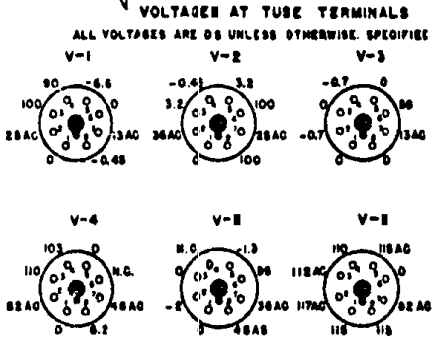
MODEL S-38











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