

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.

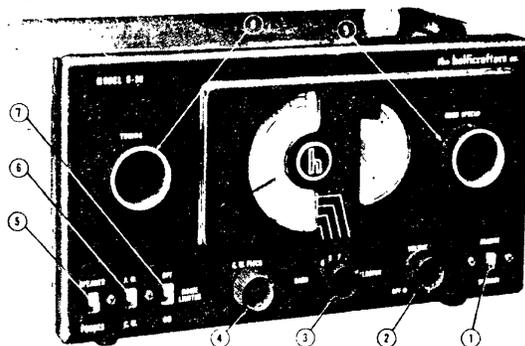


Fig. 1. Front view of receiver showing control locations.

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

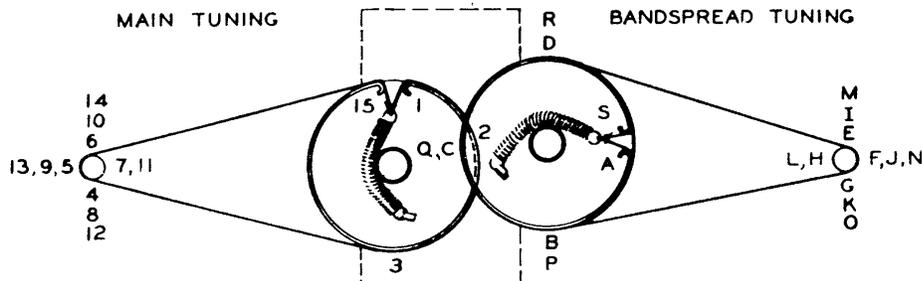
CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

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 bear 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 bandsread 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.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).
FRONT VIEW

Fig. 2. Dial cable stringing procedure.

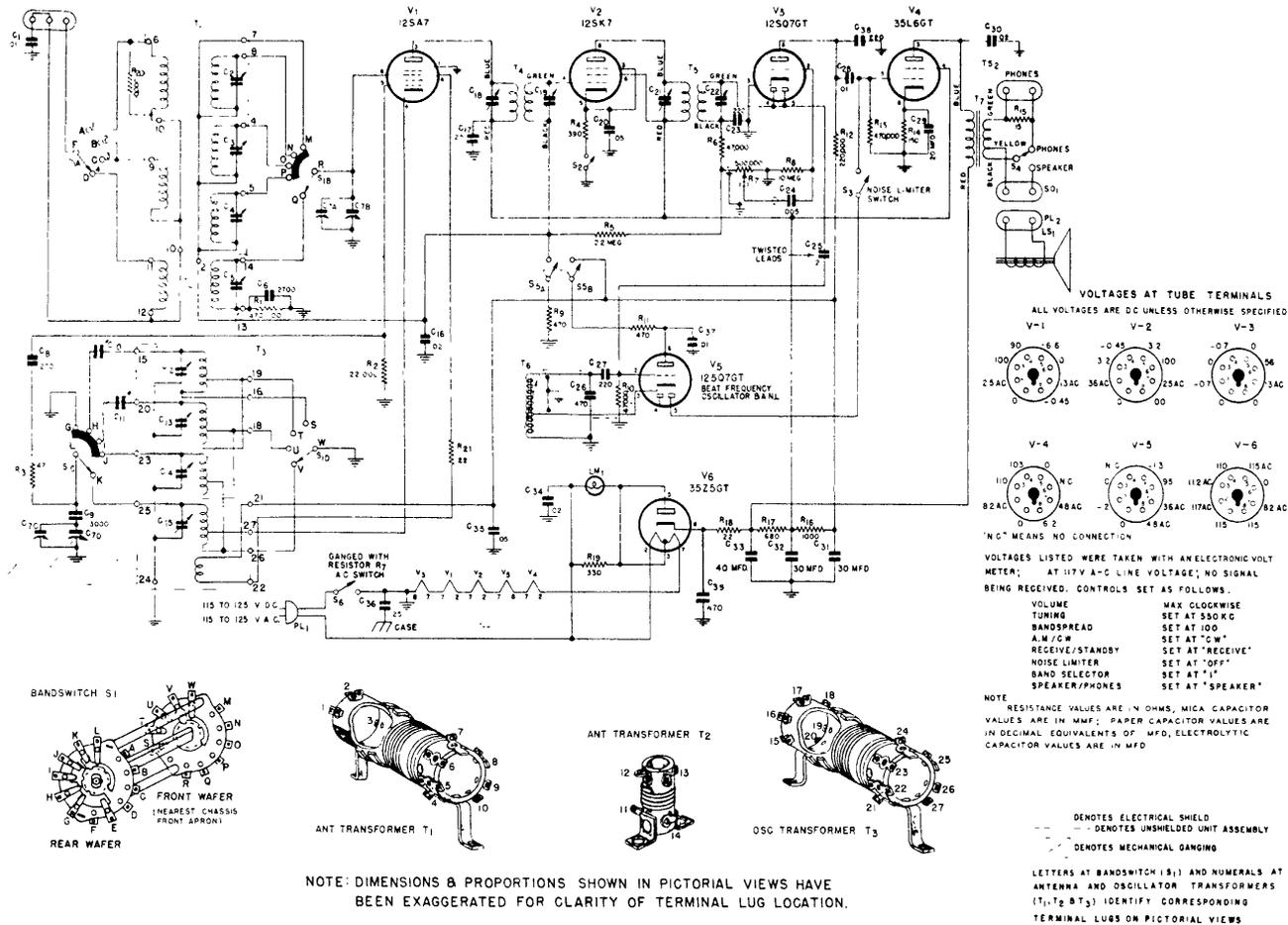


Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.

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."

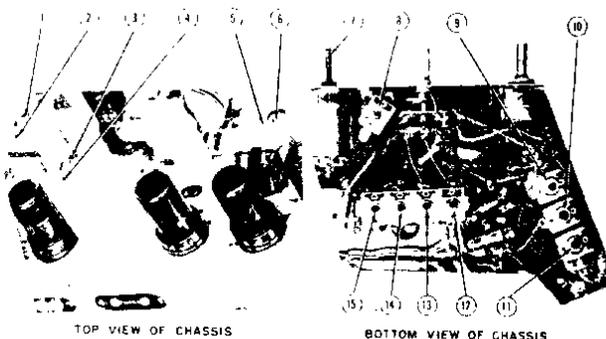


Fig. 5. Top and bottom views of the receiver locating slugs, paddars and trimmers for alignment purposes.

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, PADDAR, 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	REF NO	DESCRIPTION	HALLICRAFTER'S PART NUMBER	LIST PRICE PER COMPONENT
CAPACITORS							
C-1	0.01 mfd; 600 vdw; paper	46A101J	\$ 10	S-1a, b, c & d	Bandswitch, two sections ganged, rotary four position	60A240	\$ 96
C-2, 3 & 4	Trimmer Unit for antenna transformer T-1	44A119	40	S-2 & 3	"RECEIVE-STANDBY" and "NOISE LIMITER" switches, slide action, SPST.	60A244	20
C-5	Trimmer for antenna transformer T-2	45A011	10	S-4	"SPEAKER-PHONES" switch, slide action, SPOT	60A243	20
C-6	2700 mfd; 50 v; 500 vdw; mica	GM91A272J	70	S-5	"A.M.-C.W." switch, slide action, DPST	60A245	25
C-7	Tuning capacitor; air 2 sections-ganged	48U114	2.90	TRANSFORMERS			
C-8, 23, 27 & 38	270 mfd; 500 vdw; mica	GM91A293K	15	T-1	Antenna coil for bands 1, 2 and 3	51CR21	2.35
C-9	3000 mfd; 50 v; 500 vdw; mica	GM91A301J	11	T-2	Antenna coil for band 4	51CR18	65
C-10 & 11	Dual paper for oscillator transformer T-3	44A117	55	T-3	Oscillator coil for bands 1, 2, 3 and 4	51CR22	2.45
C-12, 13, 14 & 15	Trimmer Unit for oscillator transformer T-3	44A119	50	T-4	Input IF transformer; 455 kc	50C183	1.20
C-16 & 34	0.02 mfd; 400 vdw; paper	46AW101J	10	T-5	Audio IF transformer; 455 kc	50C184	1.20
C-17 & 35	0.25 mfd; 200 vdw; paper	46A1014J	14	T-6	Band frequency oscillator coil; 455 kc	54B031	1.25
C-18, 19, 21 & 22	Trimmers for IF transformers T 4 and T-5	44A017	25	T-7	Audio output transformer; 3,000 ohm primary — 15 ohm secondary tapped at 3 ohms.	55A075	95
C-20 & 35	0.05 mfd; 200 vdw; paper	46A1013J	10	TERMINAL STRIPS			
C-24	0.005 mfd; 400 vdw; paper	46AW101J	10	TS-1	Antenna and ground connector strip	88A032	10
C-25	2 mfd; twisted insulation wire leads, NIOT	AVAILABLE AS A SPARE PART.		TS 2	Headset plug connector strip, bakelite	88A071	10
C-26 & 37	0.01 mfd; 400 vdw; paper	46AW101J	10	MISCELLANEOUS MECHANICAL COMPONENTS			
C-29, 31, 32 & 33	Electrolytic; four section unit, color coded leads; sect 11C-291 20 mfd, 25 vdw, sect 2 & 3C-31 & 32) 30 mfd, 150 vdw; sect 4) C-33) 40 mfd, 150 vdw.	45B091 46A1203J	80	QUANT IN EQUIPMENT	DESCRIPTION	HALLICRAFTER'S PART NUMBER	LIST PRICE PER COMPONENT
C-30	0.02 mfd; 600 vdw; paper.	46A1203J	10	2	Knob; for Volume Control and Band Selector switches	15A049	15
PILOT LAMP							
LM-1	6.8 v @ 150ma; brown bead, G.E. type 47	39A004	10	1	Knob; for C. W. PITCH Control	15A058	15
LOUDSPEAKER							
LS-1	5" P.M. speaker; 32 ohm voice coil	85C035	2.50	2	Knob; for main TUNING and BANDSPREAD tuning Controls	15A047	25
PLUGS							
PL-1	AC line cord with two prong plug at one end	87A078	35	1	Pointer; for main tuning dial	82A102	15
PL-2	Speaker voice coil connector plug	88A072	10	1	Calibrated dial assembly, complete	83B157	15
RESISTORS							
R-1 & 13	470,000 ohm; 1/2 watt; carbon	RC20AE471M	10	1	Pointer; for bandspread tuning dial	82A103	15
R-2	22,000 ohm; 1/2 watt; carbon	RC20AE221M	10	1	Dial window; glass	22B157	30
R-3	47 ohm; 1/2 watt; carbon	RC20AE470M	10	6	Ortal tube sockets, Amphenol type MIP-8	5A035	15
R-4	390 ohm; ± 10%; 1/2 watt; carbon	RC20AE391K	10	1	Dial lamp socket; bayonet	86A011	15
R-5	2.2 megohm; 1/2 watt; carbon	RC20AE222M	10	2	Tuning capacitor dial drive pulley	88A002	10
R-6 & 10	47,000 ohm; 1/2 watt; carbon	RC20AE471M	10	1	Tuning capacitor rear mounting bracket	67A568	10
R-7 & S-6	Volume Control; 1/2 megohm, includes SPST toggle action switch assembly on rear	25B094	50	1	Tuning capacitor front mounting bracket	67A569	15
R-8	10 megohm; 1/2 watt; carbon	RC20AE102M	10	1	Left hand switch mounting bracket	67B560	10
R-9 & 11	470 ohm; ± 10%; 1/2 watt; carbon	RC20AE471K	10	1	Right hand switch mounting bracket	67B561	10
R-12	230,000 ohm; 1/2 watt; carbon	RC20AE231M	10	4	Rubber mounting feet for cabinet	16A007	10
R-14	150 ohm; ± 10%; 1/2 watt; carbon	RC20AE151K	10	2	Spring washers for grounding tuning capacitor drive shafts	4A043	10
R-15	15 ohm; 1/2 watt; carbon	RC20AE150M	10	4	"C" washers; (hair-pin type)	75A062	10
R-16	1,000 ohm; 1/2 watt; carbon	RC20AE102M	10	1	Rear cover plate; carbonized	32C331	10
R-17	680 ohm; 1/2 watt; carbon	RC20AE681M	10	1	Bottom cover plate; painted steel	63C270	45
R-18 & 21	22 ohm; 1/2 watt; carbon	RC20AE220M	10	NOTE. ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.			
R-19	330 ohm; 1/2 watt; carbon	RC20AE331M	10	Explanation of abbreviations: mmf—microfarads, mfd—microfarads, vdw—DC working volts; v—volts, ma—milliamperes; IF—intermediate frequency; sect—section; REF. NO.—circuit symbol as on the schematic diagram.			
R-20	10,000 ohm; 1/2 watt; carbon	RC20AE103M	10				

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

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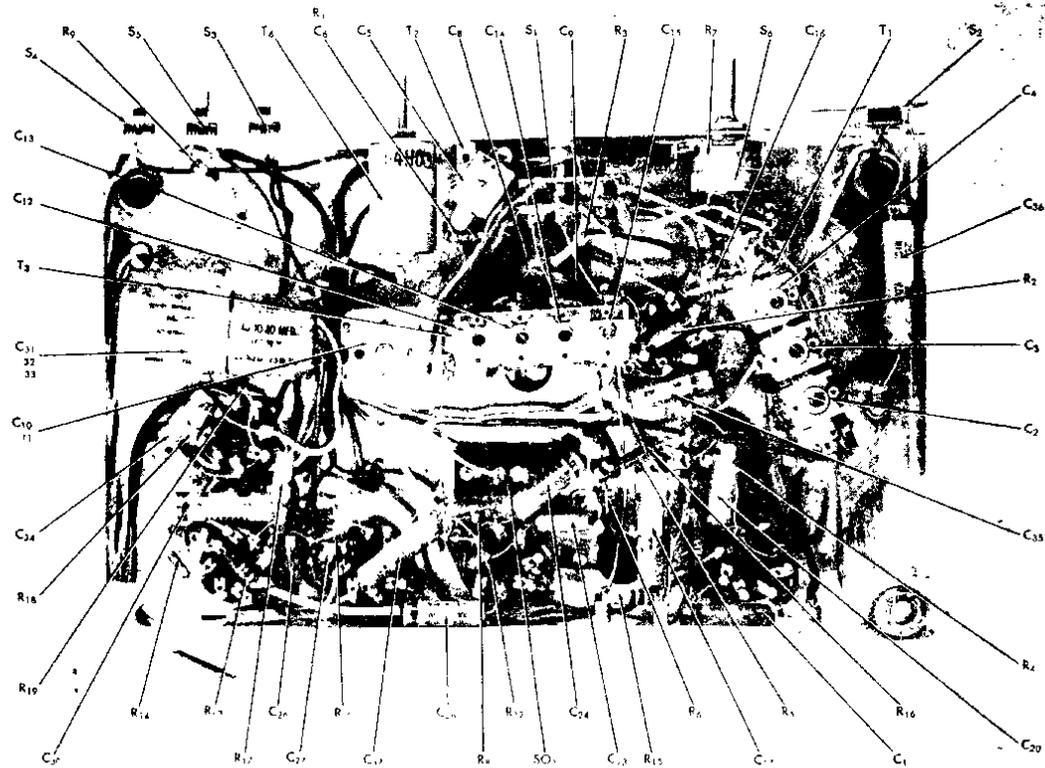
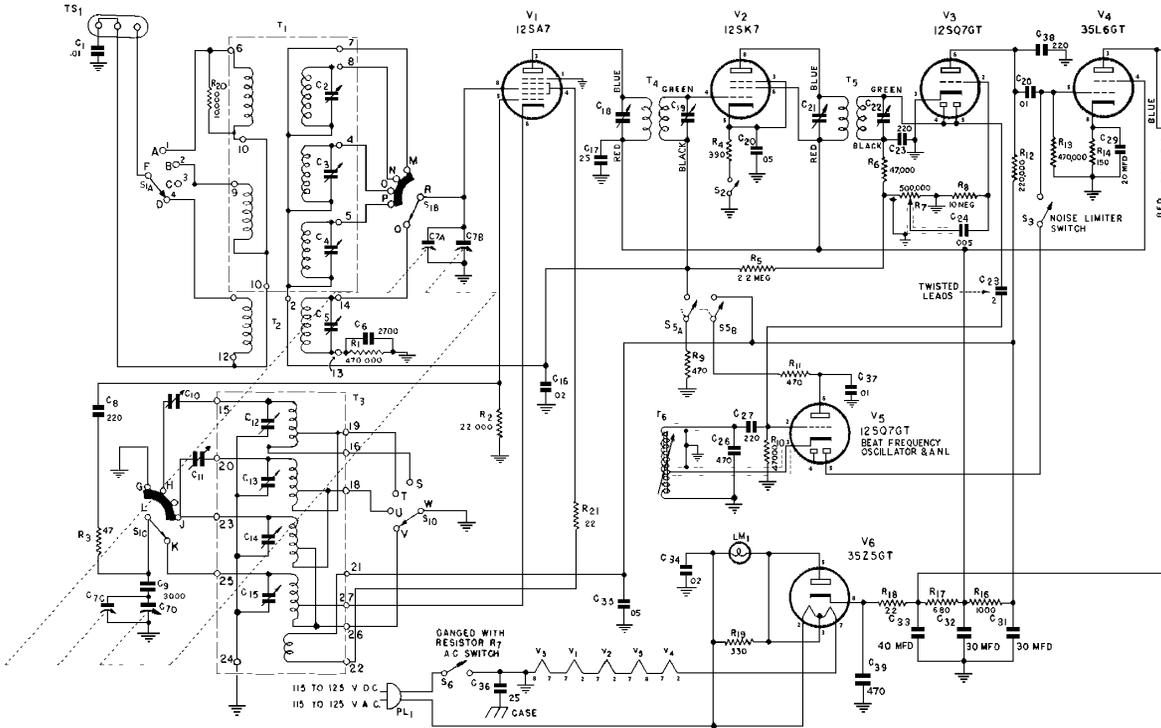
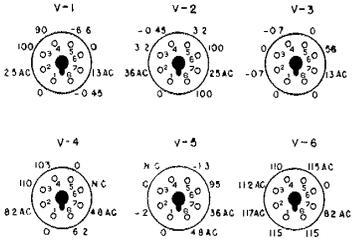


Fig. 4. Bottom view of the receiver showing components location.



VOLTAGES AT TUBE TERMINALS
ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED

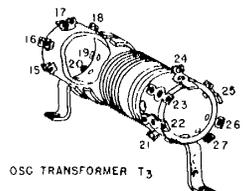
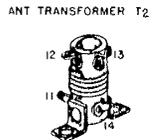
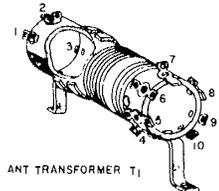
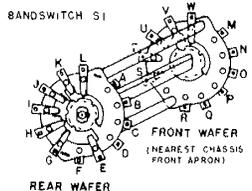


"N" MEANS NO CONNECTION
VOLTAGES LISTED WERE TAKEN WITH AN ELECTRONIC VOLT METER; AT 117 V A-C LINE VOLTAGE; NO SIGNAL BEING RECEIVED. CONTROLS SET AS FOLLOWS.

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

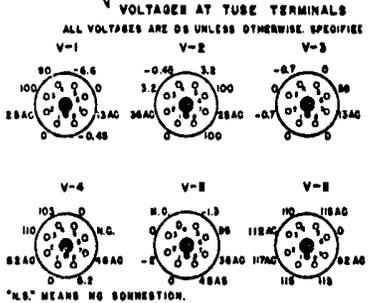
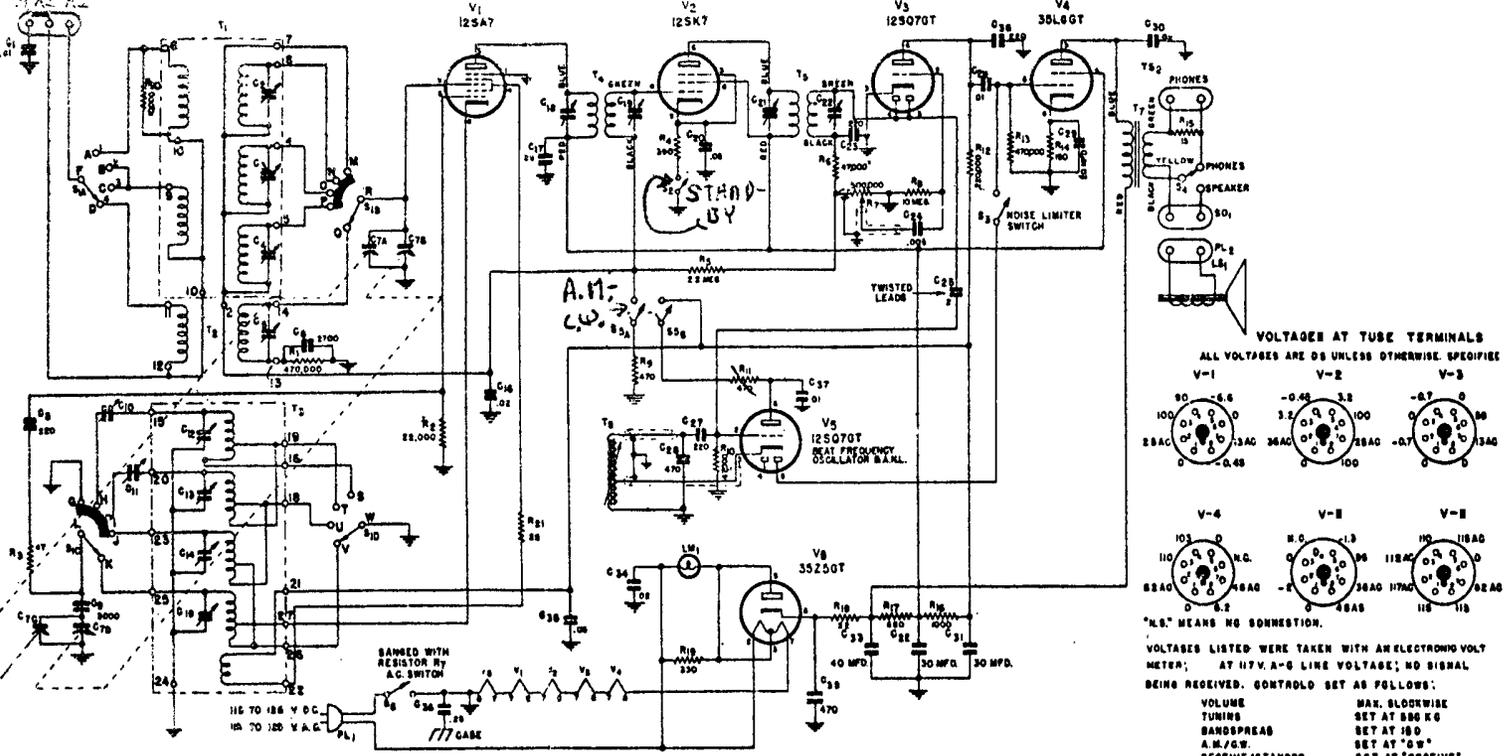
NOTE
RESISTANCE VALUES ARE IN OHMS, MICA CAPACITOR VALUES ARE IN MMF., PAPER CAPACITOR VALUES ARE IN DECIMAL EQUIVALENTS OF MFD, ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.

--- DENOTES ELECTRICAL SHIELD
- - - DENOTES UNSHIELDED UNIT ASSEMBLY
- - - DENOTES MECHANICAL GANGING
LETTERS AT BANDSWITCH (S1) AND NUMERALS AT ANTENNA AND OSCILLATOR TRANSFORMERS (T1, T2 & T3) IDENTIFY CORRESPONDING TERMINAL LUGS ON PICTORIAL VIEWS



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MODEL S-38

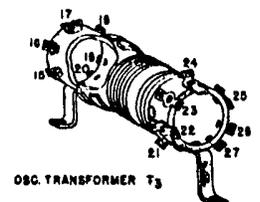
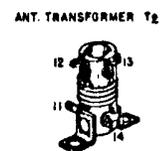
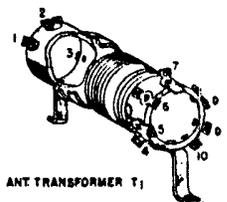
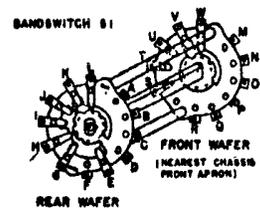
NOTE: DIMENSIONS & PROPORTIONS SHOWN IN PICTORIAL VIEWS HAVE BEEN EXAGGERATED FOR CLARITY OF TERMINAL LUG LOCATION.



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

VOLUME	MAX. CLOCKWISE
TUNING	SET AT 800 KC
BANDSPREAD	SET AT 100
A.M./P.S.	SET AT "OFF"
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 DECIMAL EQUIVALENTS OF MFD; ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.



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