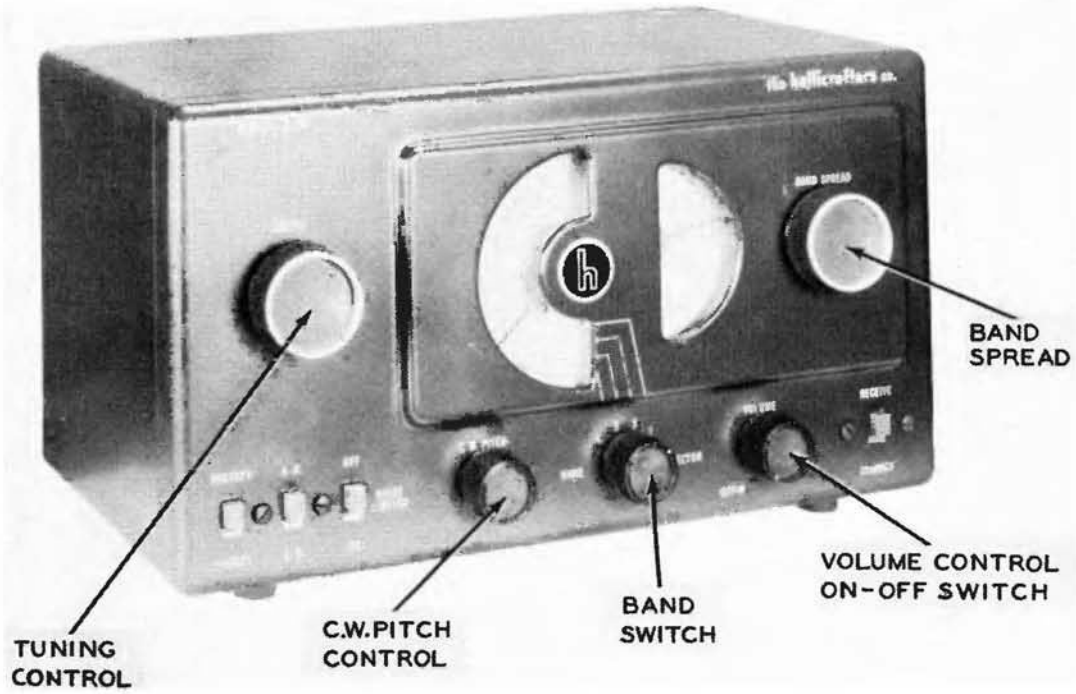
HALLICRAFTERS
MODEL S-38



HALLICRAFTERS MODEL S-38

TRADE NAME Hallicrafters Model S-38
MANUFACTURER Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Illinois
TYPE SET AC - DC Superheterodyne - 4 Band Communications Receiver
TUBES (SIX) Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 105-125 Volts AC-DC Rating .245 Amps. @ 117 Volts AC
TUNING RANGE-Band #1- 540-1650KC Band #2- 1650KC-5.0MC Band #3 5.0MC-14.5MC Band #4- 13.5MC-32.0MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
NONE	High side to stator plates of rear section of tuning gang. Low side to "G" on antenna strip.	455KC	"1"	1000KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output Repeat adjustment.
"	"	"	"	"	"	BFO Slug	Turn off 400~ modulation on signal generator. Set CW/AM switch at Cw. Remove pitch control knob and adjust slotted screw shaft for zero beat.
390Ω carbon res.	High side to "A1" on antenna strip. Low side to "G" on on antenna strip.	30MC	"4"	30MC	"	A5,A6	Adjust for maximum output. Rock gang slightly when adjusting A6.
"	"	14MC	"3"	14MC	"	A7,A8	Adjust for maximum output. Rock gang slightly when adjusting A8.
"	"	5MC	"2"	5MC	"	A9	Adjust for maximum output.
"	"	1.8MC	"	1.8MC	"	A10	Adjust for maximum output and repeat A9 at 5MC.
"	"	5MC	"	5MC	"	A11	Adjust for maximum output. Rock gang slightly.
"	"	1500KC	"1"	1500KC	"	A12	Adjust for maximum output.
"	"	600KC	"	600KC	"	A13	Adjust for maximum output and repeat A12 at 1500KC.
"	"	1500KC	"	1500KC	"	A14	Adjust for maximum output. Rock Gang Slightly.

Set receiver controls 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 at "0" (min. cap.); "standby-receive" switch at receive. Adjust output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	BFO-ANL	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	45B091	TC48	DSB-40+30-150/20-25	TA-430		EZ443150	Filter - Red
(B)	30	150		3N583					" - Yellow
(C)	30	150			M-30-150	UT-301			" - "
(D)	20	25				UTA-25			Cath. Bypass - Blue
8	.25	200	46AT254J	TP430	S-4-25	TC-2	484-.25	DT4P25	Line Isolating
9	.02	400	46AW203J	TP423	S-4-02	TC-12	484-.02	DT4S2	Line Bypass
10	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	35L6 Plate Bypass
11	.01	400	46AW102J	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
12	.005	400	46AW502J	TP408	S-4-005	TC-25	484-.005	DT4D5	" "
13	.01	400	46AW102J	TP421	S-4-01	TC-11	484-.01	DT4S1	BFO Plate Bypass
14	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Cath. Bypass
15	.25	200	46AT254J	TP430	S-4-25	TC-2	484-.25	DT4P25	Screen Bypass
16	.02	400	46AW203J	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Filter
17	.01	600	46AY103J	TP410	S-6-01	TC-11	684-.01	DT6S1	Ant. Coupling
18	.05	200	46AU503J	TP426	S-4-02	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
19	220	500	CM202A221K	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
20	220	500	CM202A221K	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	BFO Grid Cap.
21	470	500	CM20A471K	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	BFO Fixed Trimmer
22	2700	500	CM30A272J	MC460	MW.5-225		1467-.0025	1W5D25	RF Grid Cap.
23	220	500	CM20A221K	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Osc. Grid Cap.
24	2700	500	CM30A271J	MC460	MW.5-225		1467-.0025	1W5D25	Fixed Padder
25	510	500		MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	RF Bypass Rect.
26	220	500	CM20A221K	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
27	1200	500		MC255	MO.3-21	1FM-21	1468-.001	1W5D1	Fixed Trimmer

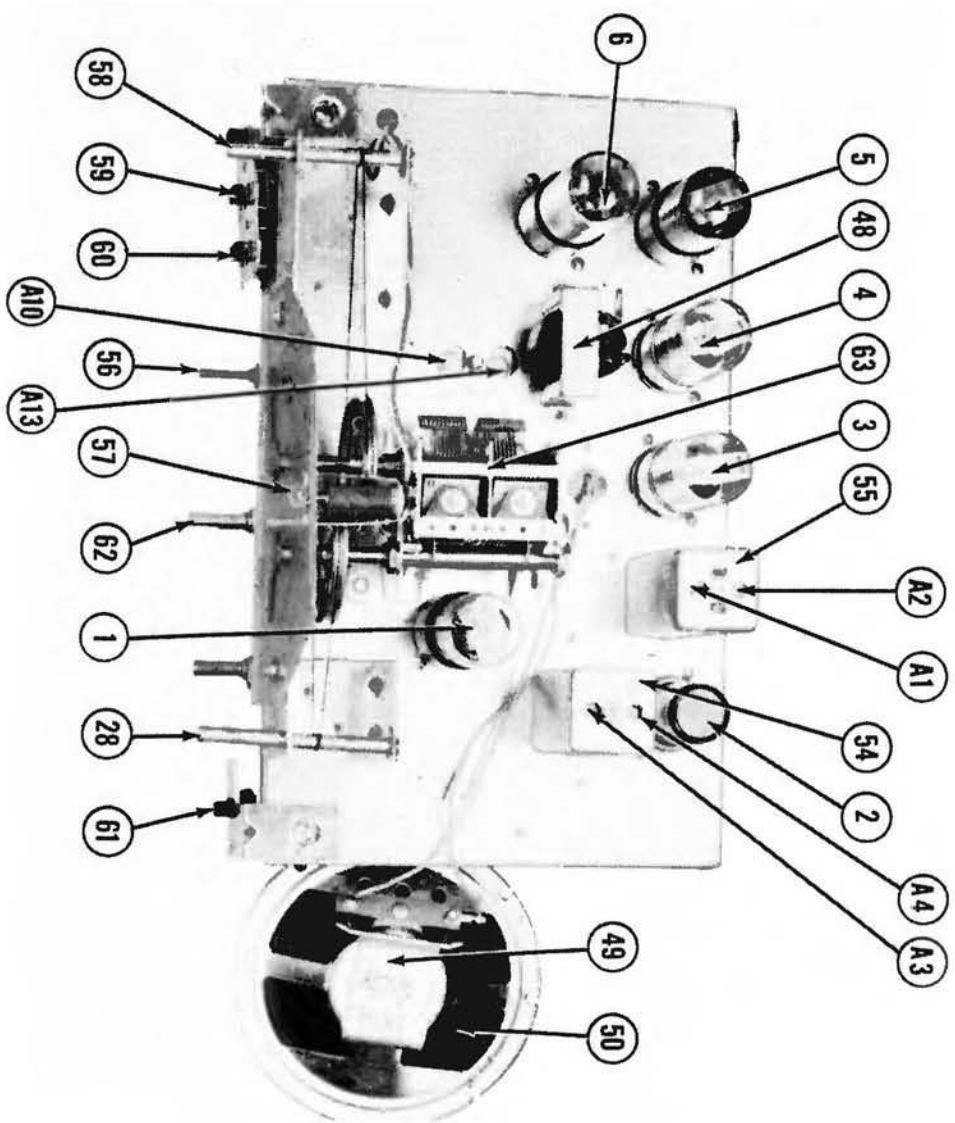
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
28(A)	500KΩ	1	25B094	MR48	D13-133	AM-69-2	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	RS-2	Attach to 28A per instructions.
(C)	Switch		" "	M28	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
29	10KΩ	½	RC20AE103M	BTS-10K	Br.-Blk.-Or. Ant. Shunt
30	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Converter Grid
31	47Ω	½	RC20AE470M	BW-½-47	Yl.-Vi.-Blk. Osc. Series Grid
32	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. Osc. Grid
33	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
34	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Diode Load
35	470Ω	½	RC20AE471K	BTS-470	Yl.-Vi.-Br. CW AVC Shorting
36	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. BFO Grid
37	10 Meg.	½	RC20AE106M	BTS-10 Meg.	Br.-Blk.-blue 1st AF Grid
38	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. 1st AF Plate Load
39	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
40	150Ω	½	RC20AE151K	BW-½-150	Br.-Grn.-Br. Output Cathode
41	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red Filter
42	680Ω	1	RC30AF681M	BTA-380	Blue-Gray-Br. "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONTINUED)

43	22Ω	RC20AE220M	BW-½-22	Red-Red-Blk. Surge Limiter
44	330Ω	RC20AE331M	BW-½-330	Or.-Or.-Br. Pilot Light Shunt
45	15Ω	RC20AE150M	BW-½-15	Br.-Grn.-Blk. Headphone Shunt
46	390Ω	RC20AE391K	BW-½-390	Or.-White-Br. IF Cathode
47	470Ω	RC20AE471K	BTS-470	Yl.-Vi.-Br. BFO Plate Load

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA HALLICRAFTERS PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	INSTALLATION NOTES
48	3180Ω	3.1Ω	170Ω	.6Ω	55A075	A-3873	T-13S421	†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA HALLICRAFTERS PART No.	REPLACEMENT DATA JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.			
49	PM	3.1Ω	85C035	ST-105	
	CONE DIA.	VC DIA.			
50	4-9/16"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HALLICRAFTERS PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
51(A)	Band 1 Ant. Coil	28Ω	4.5Ω	51C821*		*Wound on same coil form with bands 2,3.
51(B)	" 2 " "	1Ω	1Ω			" " " " " " " " 1,3.
51(C)	" 3 " "	1Ω	.1Ω			" " " " " " " " 1,2.
52	" 4 " "	.5Ω	0Ω	51C818		
53(A)	" Osc. "		2.8Ω	51C822**		**Wound on coil form with bands 2,3,4.
53(B)	" 2 " "		1Ω			" " " " " " 1,3,4.
53(C)	" 3 " "		0Ω			" " " " " " 1,2,4.
53(D)	" 4 " "	.1Ω	0Ω			" " " " " " 1,2,3.
54	Input IF	27Ω	25.5Ω	50C183	16-6658	
55	Output IF	24.5Ω	24.5Ω	50B184	16-6660	
56	BFO Osc. Coil		6Ω	54B031		

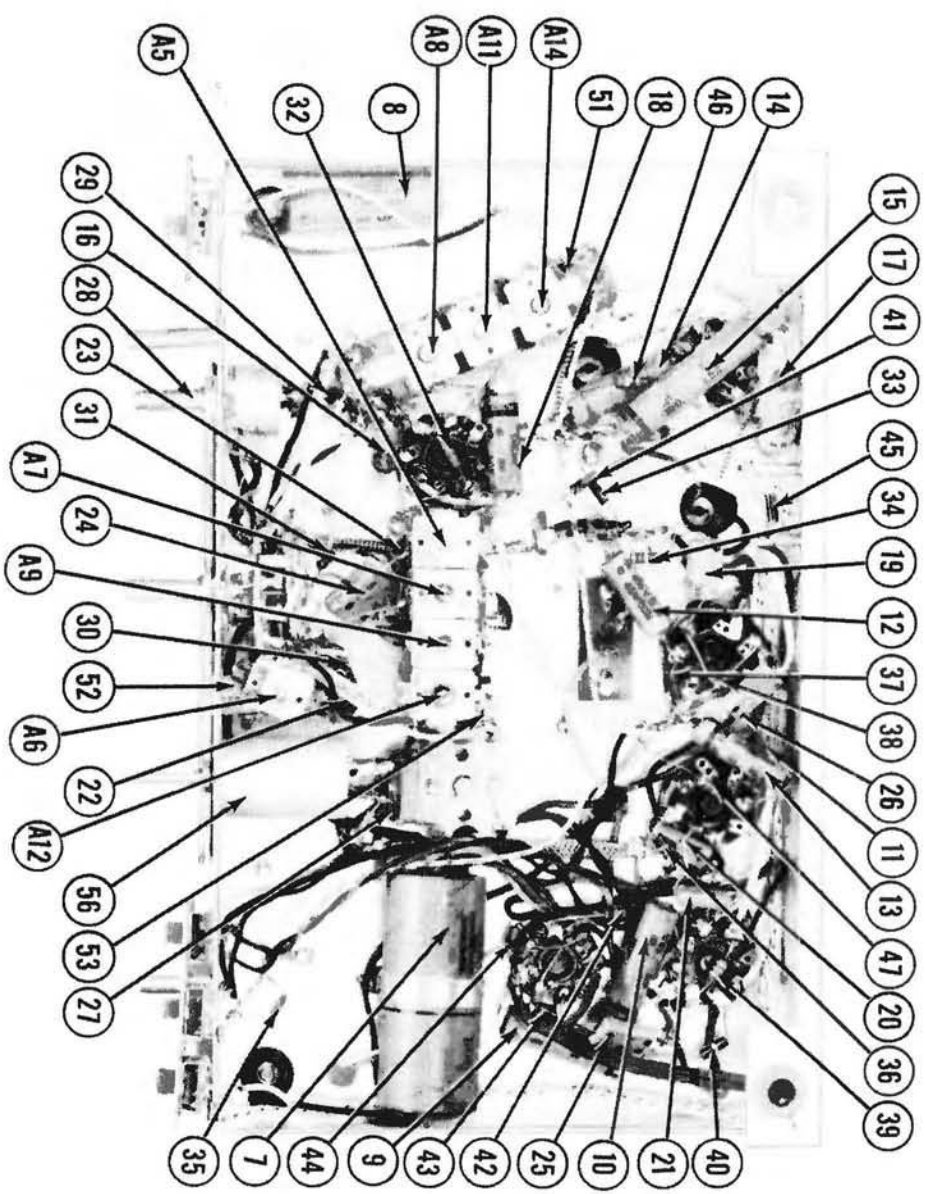
DIAL LIGHT

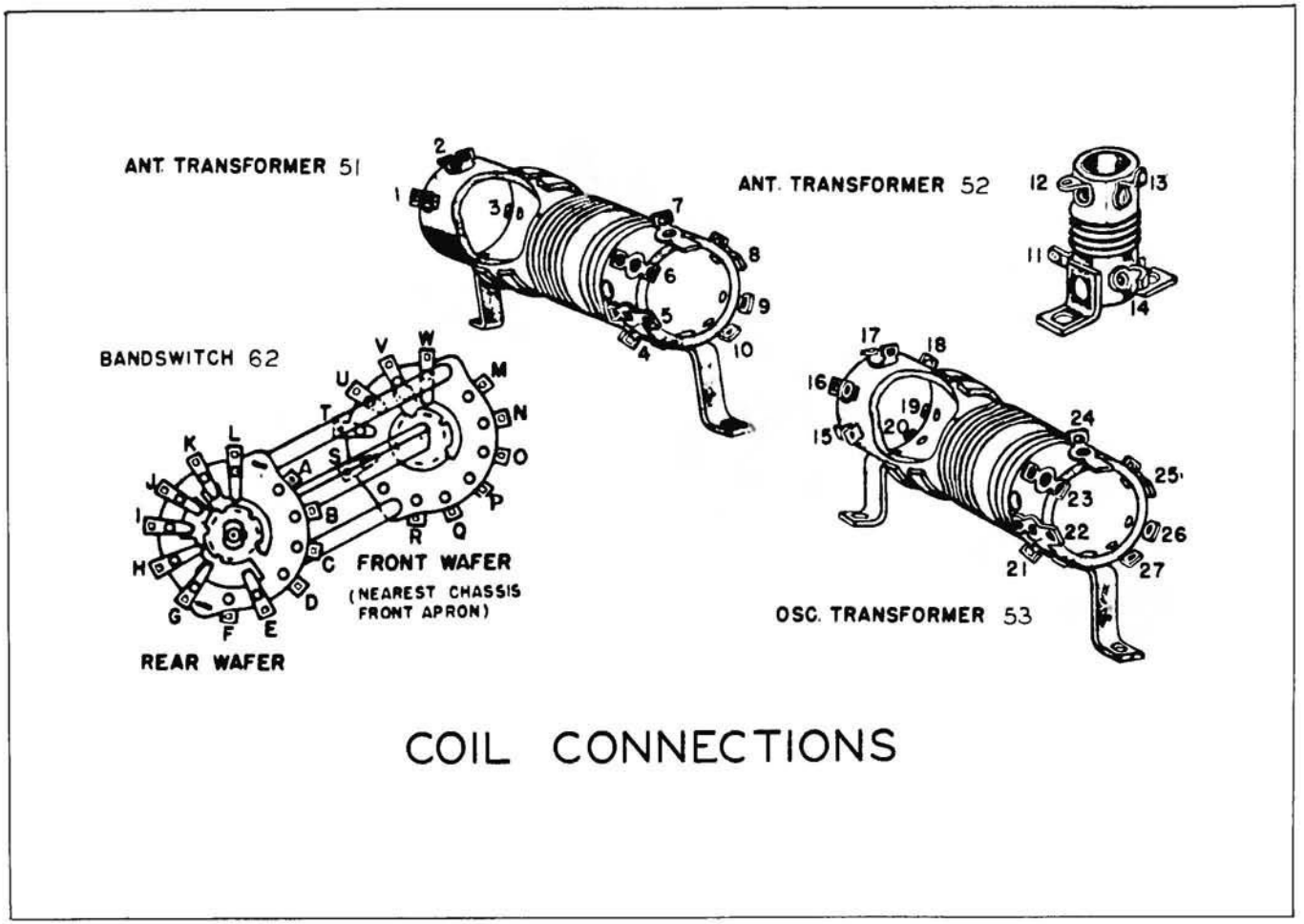
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA HALLICRAFTERS PART No.	INSTALLATION NOTES
57	Bayonet	6-8	0.15	Brown	39AC04	Type 47

MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
58	Switch	60A243	"SPEAKER-PHONES" SPDT
59	"	60A245	"AM-CW" SPDT
60	"	60A244	"NOISE LIMITER" SPST
61	"	60A244	"RECEIVE STANDBY" SPST
62	"	60A240	4 Position Bandswitch
63	Tuning Cap.	48C182	2 Gang Main & Band Spread Var. Cap.
	Trimmer	44B159	A5,A7,A9,A12 Osc. Adjustments
	"	44B129	A8,A11,A14 Ant. Adjustments
A6	"	44A039	Antenna Trimmer
	"	44B152	A10,A13 Osc. Padders
	Knob	15A049	Volume and Band Switch
	"	15A056	C.W. Pitch Control
	"	15A047	Tuning and Bandspread Controls
	Calibrated Dial	83B257	
	Dial Window	22B157	Glass

CHASSIS—BOTTOM VIEW

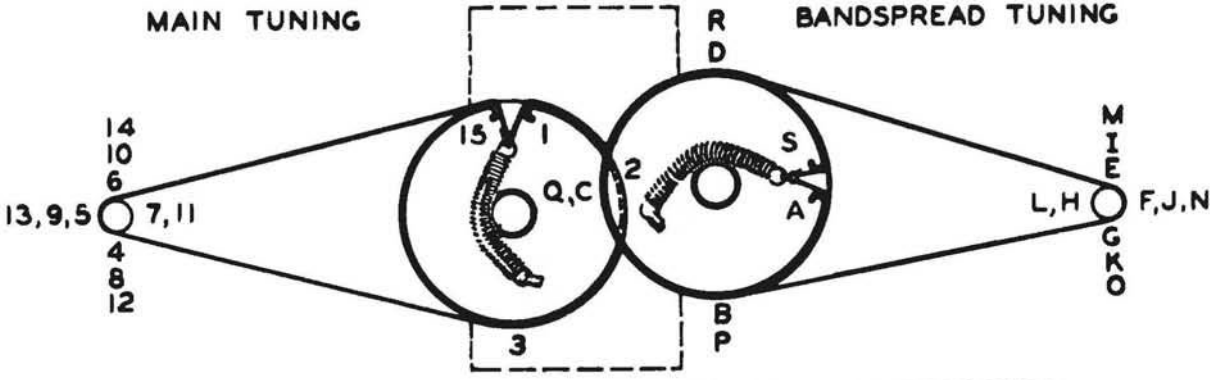




COIL CONNECTIONS

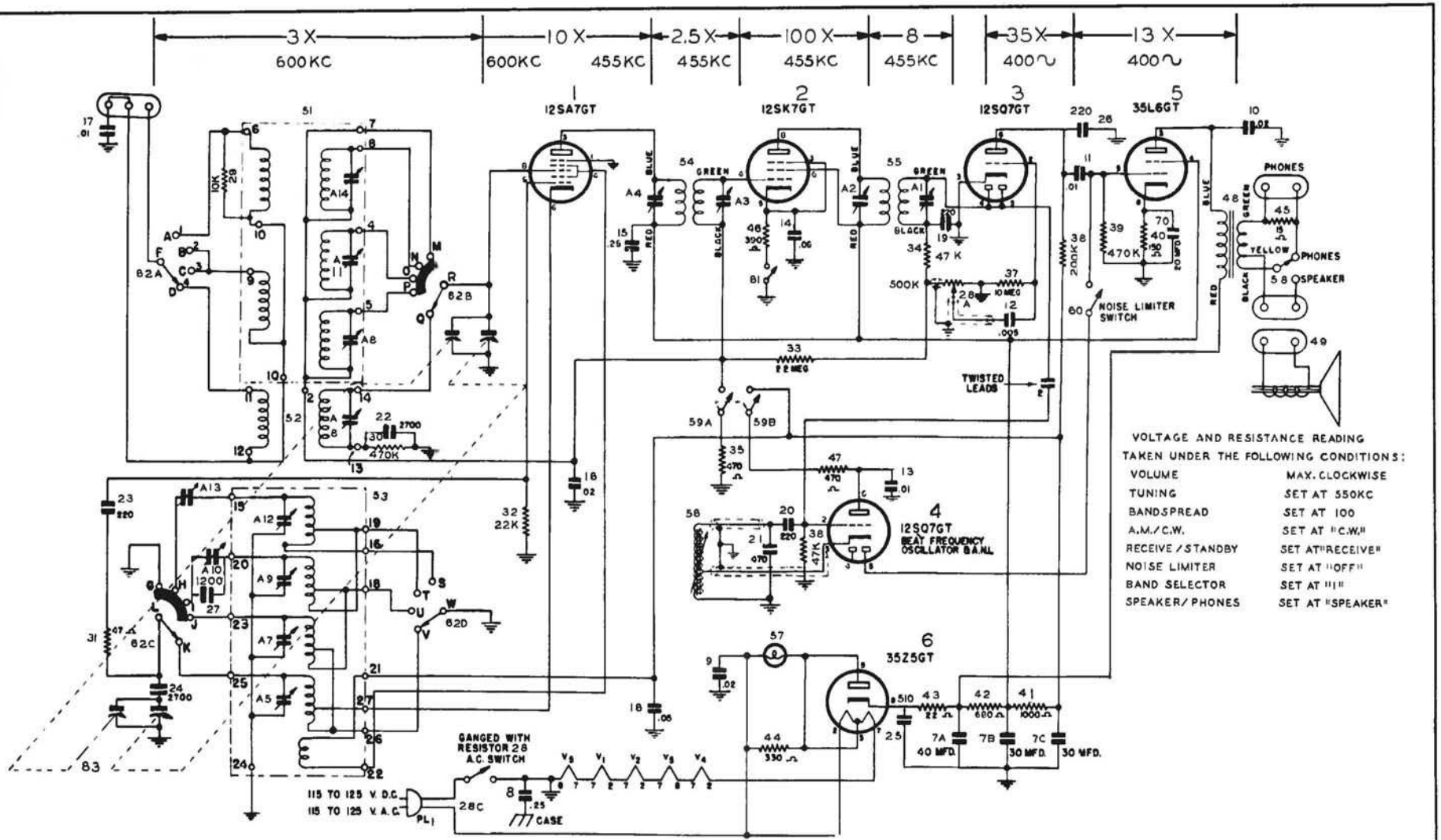
To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end of the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch 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.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).

DIAL STRINGING PROCEDURE



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	25.5VAC	100V.DC	90V.DC	-5.5V.DC	0V.	12.5VAC	0V.
2	12SK7GT	0V.	37.5VAC	3.5V.DC	0V.	3.5V.DC	100V.DC	25.5VAC	100V.DC
3	12SQ7GT	0V.	-7V.DC	0V.	-.47V.DC	-.47V.DC	57V.DC	12.5VAC	0V
4	12SQ7GT	0V.	0V.	0V.	0V.	0V.	100V.DC	37.5VAC	49.5VAC
5	35L6GT	0V.	85V.AC	109V.DC	100V.DC	0V.	0V.	49.5VAC	6.1V.DC
6	35Z5GT	118V.DC	117V.AC	112V.AC	116V.DC	112V.AC	0V.	65V.AC	117V.DC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	27Ω	125KΩ	125KΩ	20KΩ	4Ω	13.5Ω	450Ω
2	12SK7GT	0Ω	39Ω	350Ω	450Ω	350Ω	125KΩ	27Ω	125KΩ
3	12SQ7GT	0Ω	7.5MEG	0Ω	420KΩ	420KΩ	450KΩ	13.5Ω	0Ω
4	12SQ7GT	0Ω	.2Ω	2Ω	INF	INF	125KΩ	39Ω	52Ω
5	35L6GT	0Ω	82Ω	125KΩ	125KΩ	425KΩ	INF	52Ω	145Ω
6	35Z5GT	125KΩ	105Ω	105Ω	125KΩ	105Ω	0Ω	82Ω	125KΩ

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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.

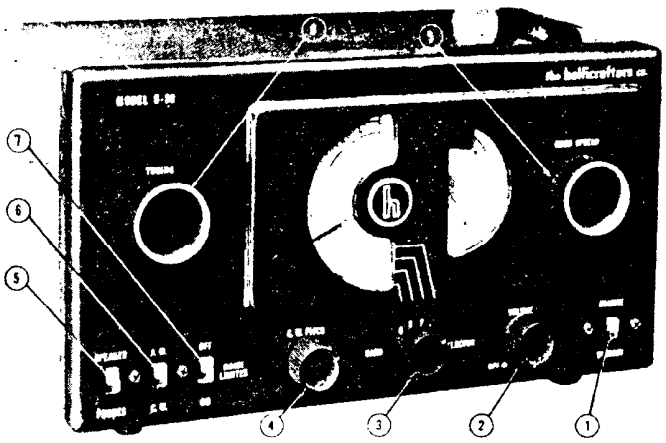


Fig. 1. Front view of receiver showing control locations.

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

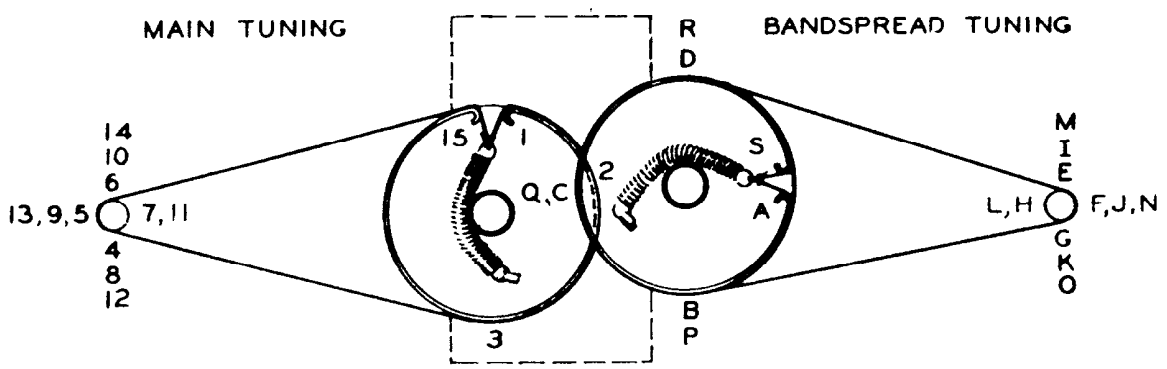
CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

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.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).
FRONT VIEW

Fig. 2. Dial cable stringing procedure.

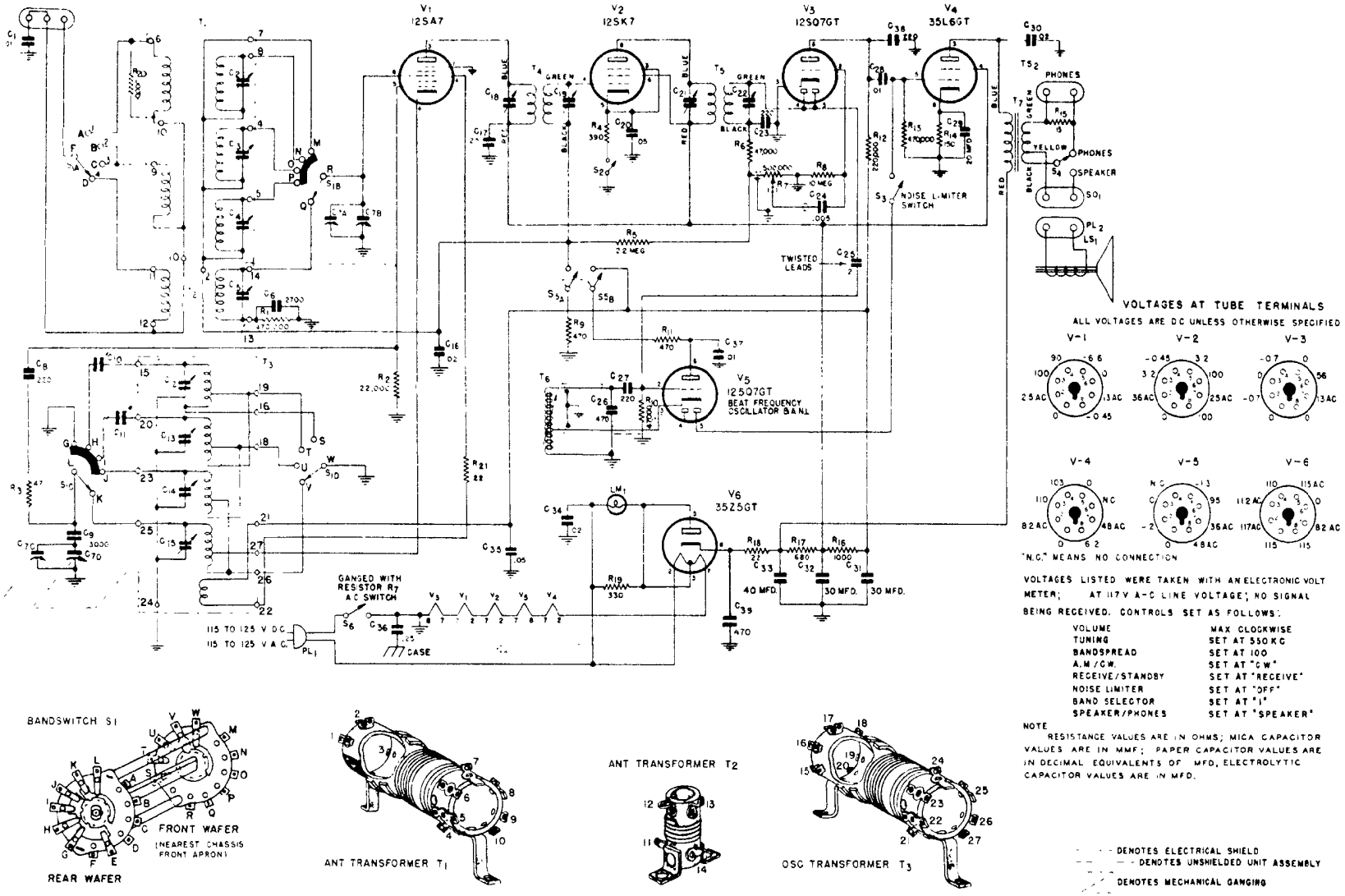


Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.

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."

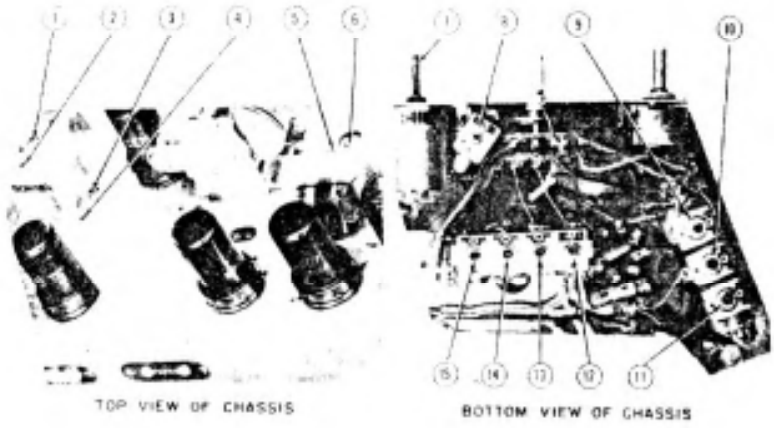


Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.

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 vdcw; paper	46AY101J	$ .10
C-2, 3 & 4	Trimmer Unit for antenna transformer T-1	44B129	.40
C-5	Trimmer for antenna transformer T-2	44A071	.10
C-6	2700 mmf; ± 5%; 500 vdcw; mica	CM30A272J	.30
C-7	Tuning capacitor; air; 2 section; ganged	48G142	2.90
C-8, 23, 27 & 35	220 mmf; 500 vdcw; mica	CM20A221K	.15
C-9	3000 mmf; 5%; 500 vdcw; mica	CM30A302J	
C-10 & 11	Dual padder for oscillator transformer T-3	44A152	.65
C-12, 13, 14 & 15	Trimmer Unit for oscillator transformer T-3	44B159	.50
C-16 & 34	0.02 mfd; 400 vdcw; paper	46AW203J	.10
C-17 & 36	0.25 mfd; 200 vdcw; paper	46AT254J	.15
C-18, 19, 21 & 22	Trimmers for IF transformers T-4 and T-5	44A097	.75
C-20 & 35	0.05 mfd; 200 vdcw; paper	46AW503J	.10
C-24	0.005 mfd; 400 vdcw; paper	46AW502J	.10
C-25	2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART.		
C-26 & 29	470 mmf; 500 vdcw; mica	CM20A471K	.10
C-28 & 37	0.01 mfd; 400 vdcw; paper	46AW103J	.10
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	.80
C-30	0.02 mfd; 600 vdcw; 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	RK0835	2.50
	PLUGS		
PL-1	AC line cord with two prong plug at one end	87A028	.35
PL-2	Speaker voice coil connector plug	88A072	.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 & S-6	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	RC30AE681M	.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; paper 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	51C821	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	54B031	1.25
T-7	Audio output transformer; 3,000 ohm primary —15 ohm secondary tapped at 3 ohms.	55A025	.95
	TERMINAL STRIPS		
TS-1	Antenna and ground connector strip	88A032	.10
TS-2	Headset plug connector strip; bakelite	88A071	.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	26A002	.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)	75A062	.10
1	Rear cover plate; cardboard	32C331	.10
1	Bottom cover plate; painted steel	63C220	.45

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.

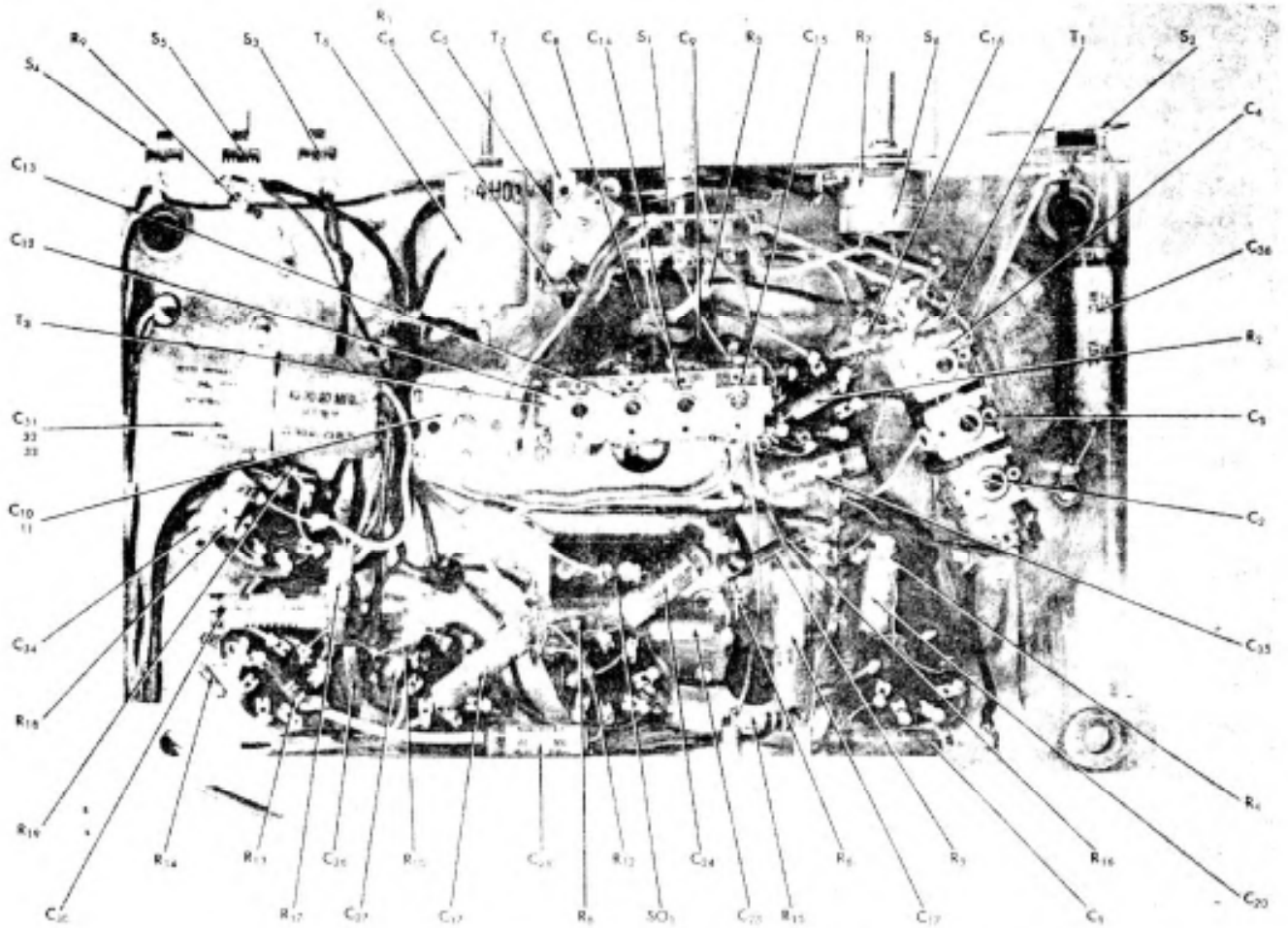
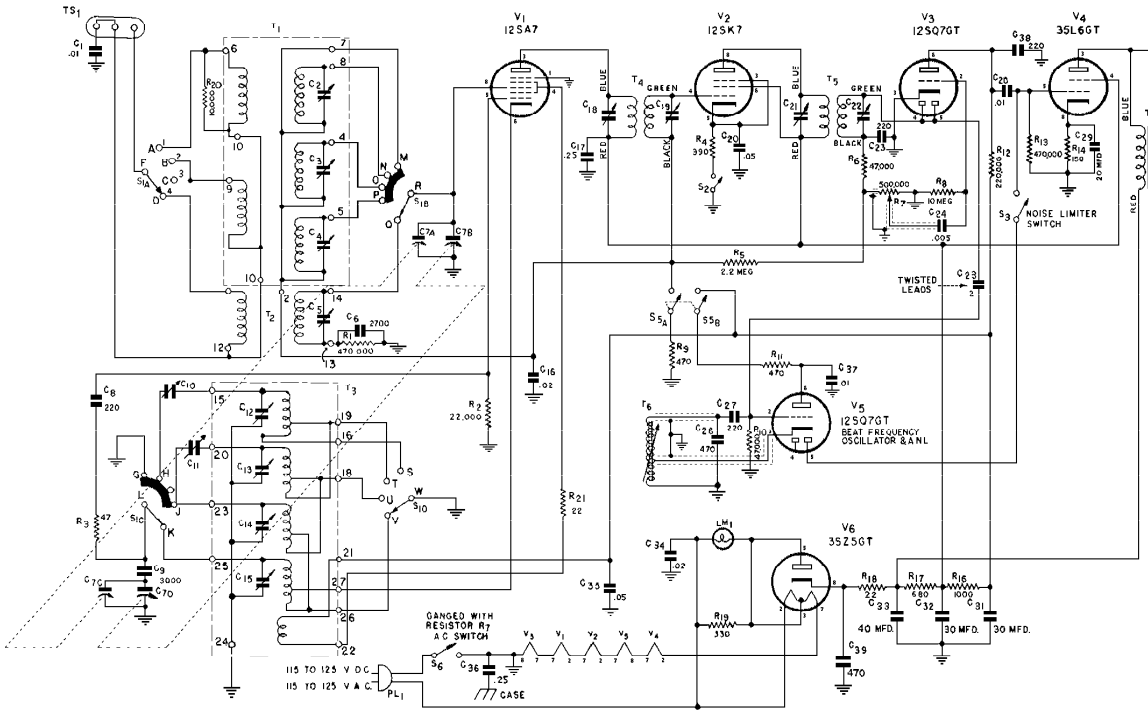
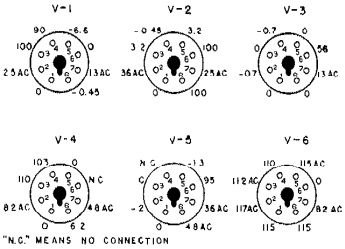


Fig. 4. Bottom view of the receiver showing components location.



VOLTAGES AT TUBE TERMINALS

ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED



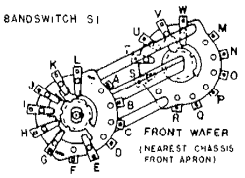
"N.C." MEANS NO CONNECTION

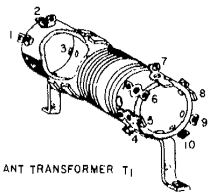
VOLTAGES LISTED WERE TAKEN WITH AN ELECTRONIC VOLT METER; AT 117 V A-C LINE VOLTAGE; NO SIGNAL BEING RECEIVED. CONTROLS SET AS FOLLOWS:

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"

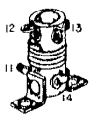
NOTE:
RESISTANCE VALUES ARE IN OHMS; MICA CAPACITOR VALUES ARE IN MMF; PAPER CAPACITOR VALUES ARE IN DECIMAL EQUIVALENTS OF MFD; ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.

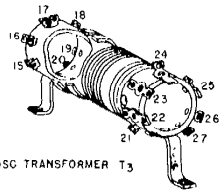
BANDSWITCH S1





ANT TRANSFORMER T2





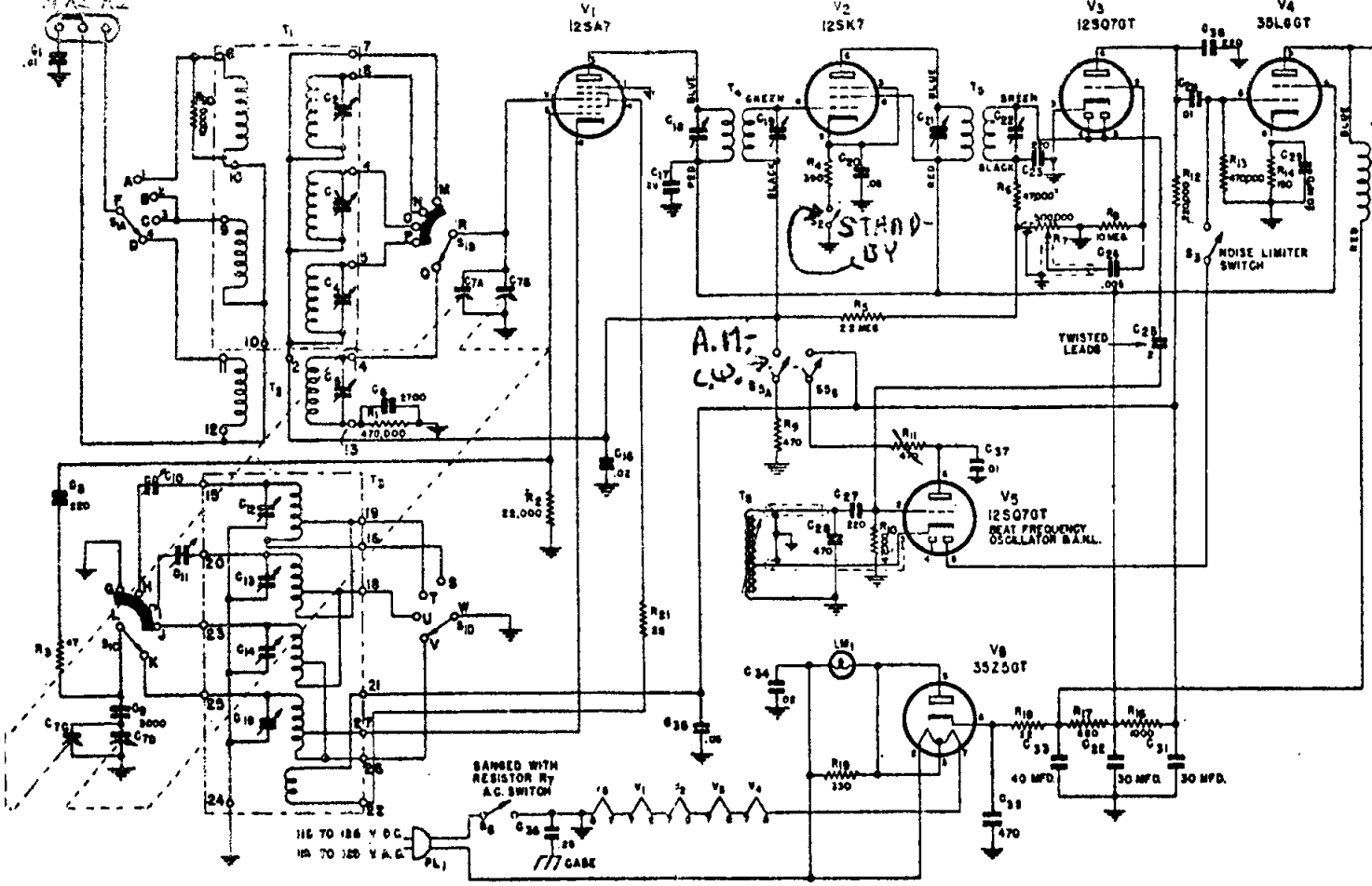
------- DENOTES ELECTRICAL SHIELD.
— — — — DENOTES UNSHIELDED UNIT ASSEMBLY
DENOTES MECHANICAL GANGING.

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.

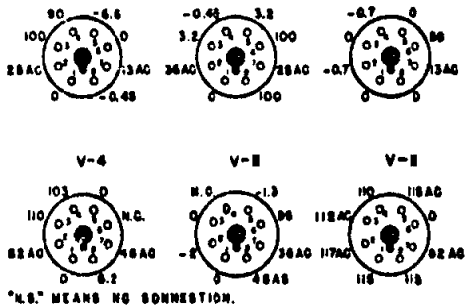
the **hallicrafters** *co.*

MODEL S-38



VOLTAGES AT TUBE TERMINALS

ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED



"N.C." MEANS NO CONNECTION.

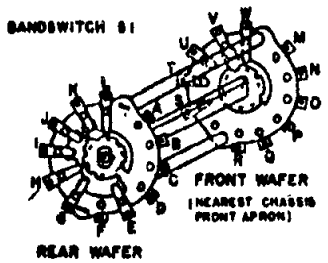
VOLTAGES LISTED WERE TAKEN WITH AN ELECTRONIC VOLT METER; AT 117 V. A-C LINE VOLTAGE; NO SIGNAL BEING RECEIVED. CONTROLS SET AS FOLLOWS:

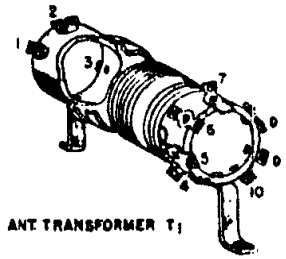
VOLUME	MAX. CLOCKWISE
TUNING	SET AT 550 KC
BANDSPREAD	SET AT 180
A.M./C.W.	SET AT "C.W."
RECEIVE/STANDBY	SET AT "RECEIVE"
NOISE LIMITER	SET AT "OFF"
BAND SELECTOR	SET AT "1"
SPEAKER/PHONES	SET AT "SPEAKER"

NOTE:

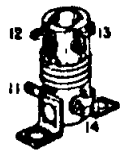
RESISTANCE VALUES ARE IN OHMS; MICA CAPACITOR VALUES ARE IN MMF; PAPER CAPACITOR VALUES ARE IN DECIMAL EQUIVALENTS OF MFD; ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.

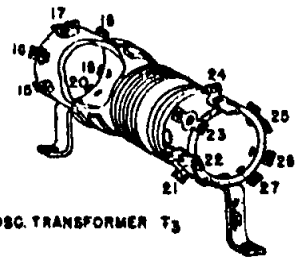
BANDSWITCH S1





ANT. TRANSFORMER T2





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

LETTERS AT BANDSWITCH (S1) 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.

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

installation and operating instructions for model S-38A radio receiver

FEATURES

AC/DC OPERATION

AM BROADCAST 550 KC - 1650 KC

SHORT WAVE BROADCAST 1700 KC - 31 MC

DIRECT READING DIAL

SPREAD BAND TUNING

CODE OR VOICE RECEPTION

HEADSET CONNECTION

94X475
550

the hallicrafters co.
MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT, CHICAGO 16, U. S. A.

INSTALLATION AND OPERATING INSTRUCTIONS
RADIO RECEIVER MODEL S-38A

Fig. 1. Radio Receiver Model S-38A

DESCRIPTION

The Model S-38A radio receiver is a table model all-wave superheterodyne receiver capable of receiving all of the broadcasting services between 540 kilocycles (KC) and 31 megacycles (MC) in four overlapping bands as follows:

FREQUENCY COVERAGE

BANDS	*FREQUENCY RANGE	**TYPE OF RECEPTION
1	550 KC - 1650 KC	AM/CW
2	1.7 MC - 5.1 MC	AM/CW
3	5 MC - 14.5 MC	AM/CW
4	13 MC - 31 MC	AM/CW

* *First and last dial calibration.*

** *AM - Amplitude Modulation CW - Code*

The four bands or frequency ranges of the receiver are selected by the BAND SELECTOR. Four individual dial scales permit the frequency of reception to be read directly from the general coverage dial. Any narrow range of frequencies in the entire frequency spectrum covered by the receiver may be spread out electrically with the BAND SPREAD control. This feature provides more desirable tuning in the short wave broadcast ranges and particularly in the amateur bands. The general coverage dial setting for the amateur bands is shown on the dial scale (Heavy black bars) for convenience in setting up the receiver for amateur band reception.

Speaker or headset reception is available at the operator's discretion. The selection of each is made by a slide switch located on the panel. The speaker unit is built into the cabinet, the headset is plugged into the pin jack receptacles located on the rear chassis apron.

The AM/CW switch permits reception of either radio telephone or c-w code signals.

The RECEIVE/STANDBY switch permits the operator to disable the receiver for short standby periods yet maintain the tube heaters at operating temperatore for immediate operation.

The receiver normally operates from a 105-125 V. DC (Direct Current) or 60 cycle AC (Alternating Current) power source. To place the receiver in operation it is merely necessary to connect a suitable antenna to the antenna terminals located on the rear chassis apron and plug the power plug into the wall outlet. Refer to the installation details that follow especially to the paragraph on "POWER SOURCE", before connecting the receiver to the wall outlet and avoid unnecessary and perhaps costly repairs.

INSTALLATION

UNPACKING - Check all shipping tags and labels for instructions before removing or destroying them.

LOCATION - The receiver is equipped with protective feet for table top or shelf mounting. Avoid excessively warm locations such as outlets for the heating system or recessed locations which prevent circulation of air. If the receiver is placed with its back to the wall, leave about an inch or two of clearance between the back of the cabinet and the wall for proper ventilation.

POWER SOURCE - The receiver operates from a 105-125 volt, 60 cycle AC (Alternating Current) or 105-125 volt DC (Direct Current) source. Power consumption is approximately 30 watts. The receiver will not operate from a 25-cycle AC source directly. If in doubt as to the voltage and freqoency rating of your power source, contract the local power company representative to avoid costly repairs. If the receiver does not respond after a one minute warm-up period when operating from a direct current (DC) source, the power plug may have to be reversed at the wall outlet to obtain proper polarization.

Operation from a 220-volt AC/DC source may be had by using a special line cord adapter available as an accessory. Hallicrafters part 87D1566.

ANTENNA - A three terminal strip is provided on the rear chassis apron for antenna connections. The terminals are marked "A1", "A2", and "G". A jumper bar is normally connected between terminals "A2" and "G" for single wire antenna systems and unbalanced antenna transmission lines. For doublet antenna installations using a balanced transmission line, the jumper between "A2" and "G" is disconnected. A ground connection, when used, is connected to terminal "G".

Single Wire Antenna - If a single wire antenna installation is to be used, connect the jumper bar between antenna terminals "A2" and "G". A single wire antenna of about 50 to 100 feet long (including lead-in) is then connected to terminal "A1". Erect the antenna as high and free from surrounding objects as possible. A good ground connection generally improves reception when using this type of antenna. The water pipe makes a very effective ground.

SINGLE WIRE ANTENNA INSTALLATION

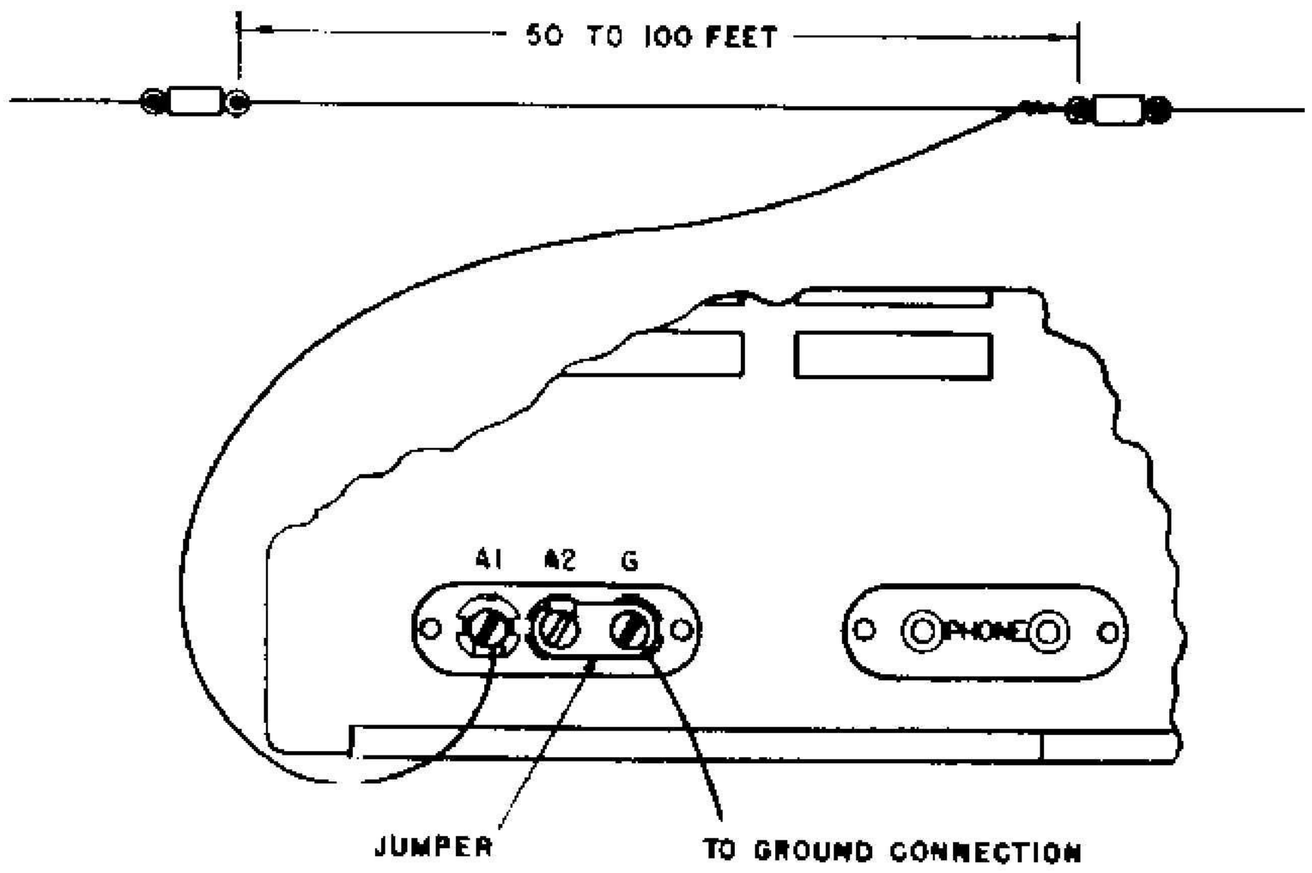


Fig. 2. Single wire antenna installation.

Doublet Antenna - The doublet antenna system is recommended for the higher frequency bands especially where maximum signal to noise is required over a relatively narrow range of frequencies. The transmission line from the antenna is connected to terminals "A1" and "A2". If a concentric line with a grounded outer conductor is used, connect the inner conductor to terminal "A1", the outer conductor to terminal "A2" and connect the jumper bar between terminals "A2" and "G".

The overall length (feet) of a doublet antenna may be determined by dividing the constant 468 by the desired frequency in megacycles.

Keep in mind that this type of antenna is directional broadside to its length and should be so oriented if maximum pickup from a given direction is desired.

DOUBLET ANTENNA INSTALLATION
USING TWISTED PAIR LEAD-IN

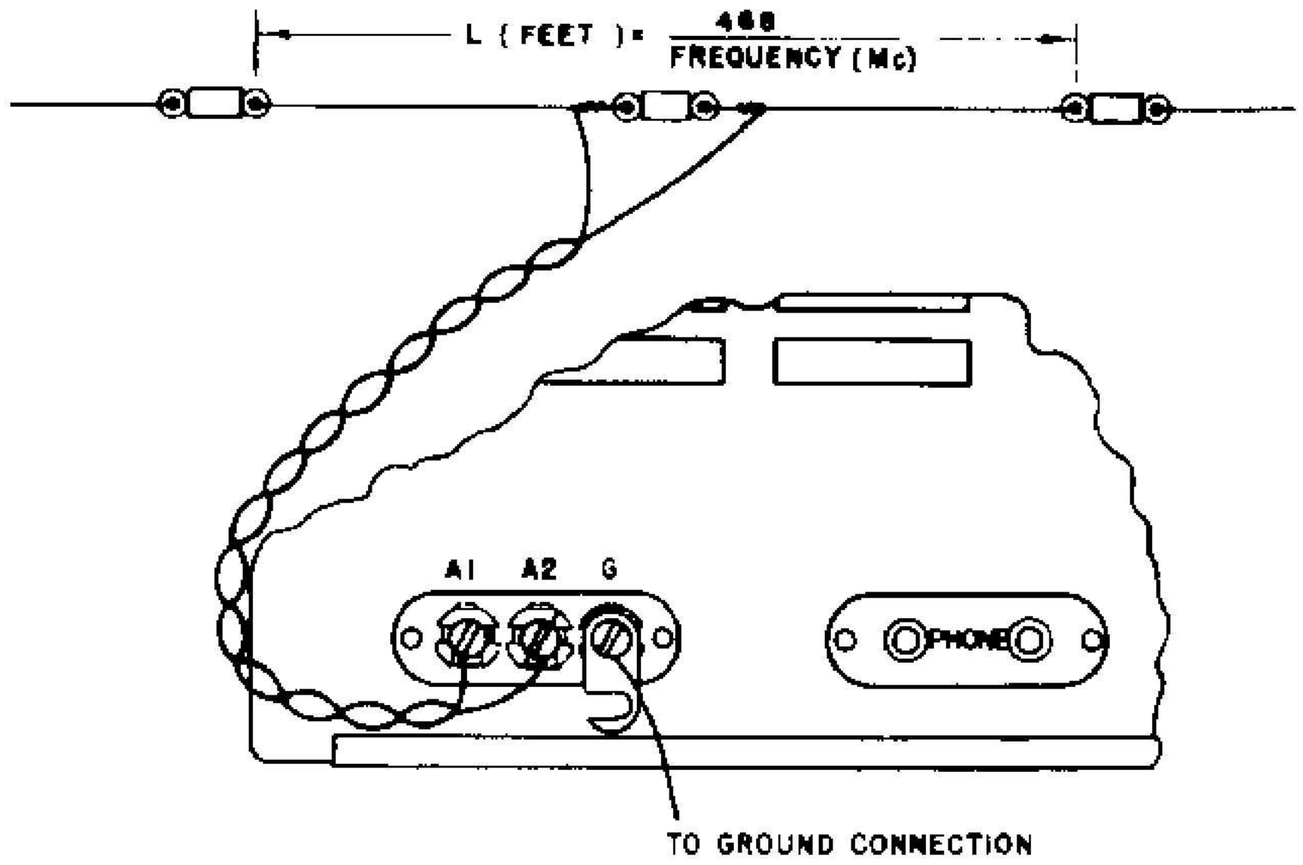


Fig. 3. Doublet antenna installation.

HEADSET CONNECTION - A pair of pin jacks are provided at the rear chassis apron for the headset phone tips. Any headset having a working impedance of 500 to 2,000 ohms may be used successfully with this receiver. To place the headset circuit in operation, set the SPEAKER/PHONES switch at PHONES.

OPERATION

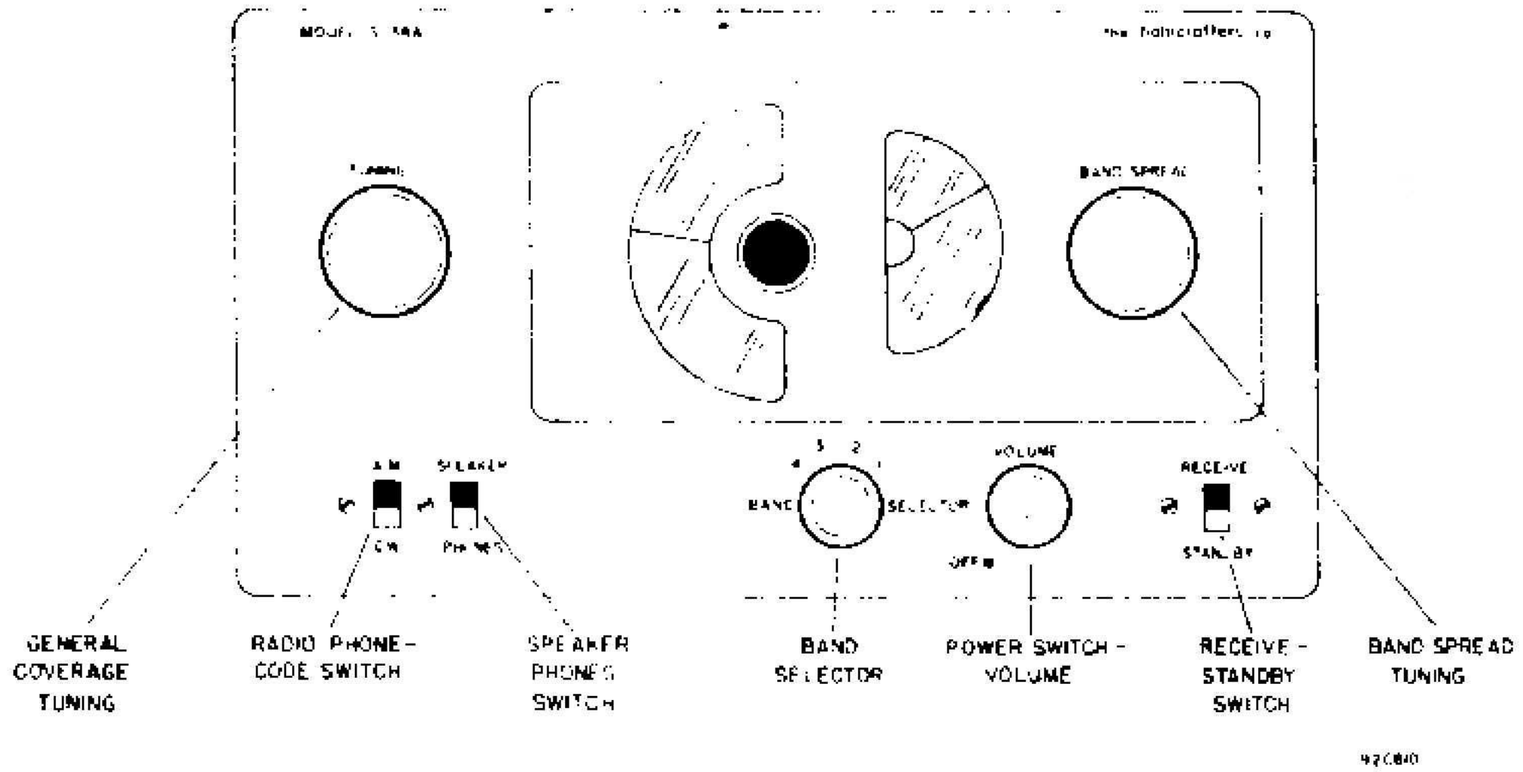


Fig. 4. Location of controls.

GENERAL BROADCAST RECEPTION - For regular broadcast entertainment purposes, set the BAND SELECTOR at 1, the AM/CW switch at AM, the SPEAKER/PHONES switch at SPEAKER and the RECEIVE/STANDBY switch at RECEIVE. Turn on the receiver with the VOLUME control by turning it clockwise. Use the TUNING control and VOLUME control in the usual manner, tuning for the loudest, clearest reception to obtain top performance from the receiver. When operating the receiver from a 115 V. DC outlet allow about a minute for warm-up. If the receiver doesn't respond after a reasonable warm-up period, reverse the power plug at the wall outlet to obtain proper polarity. In certain cases hum picked up from an AC outlet may be reduced by properly polarizing the power plug.

To turn off the receiver, turn the VOLUME control counter-clockwise until the power switch clicks.

SHORTWAVE RECEPTION - Radio telephone or voice reception in the short wave bands is accomplished as described above for general broadcast reception except that the BAND SELECTOR is set for ranges 2, 3 or 4. The frequency of reception is read from the dial scale which corresponds to the setting of the band selector knob. Any section of the dial or short range of frequencies may be spread out by tuning the stations with the BANDSPREAD control. Note that the general coverage dial calibration will be true only when the bandspread pointer is set at zero. Code reception is accomplished by setting the AM/CW switch at CW and tuning for the desired pitch when tuning in the station.

BANDSPREAD TUNING - To use the bandspread dial, set the dial pointer at zero, set the general coverage dial pointer at the high frequency limit of the range of frequencies to be covered and tune in the stations with the BAND SPREAD control. For example: - Assume that the 40 meter amateur band is to be covered. Set the BAND SELECTOR at 3, the general coverage dial at 7.3 mc and tune with the BAND SPREAD control. The use of the bandspread feature is similar for the reception of shortwave broadcast, etc. In this case the bandspread dial is first set at zero and the station or group of stations located on the general coverage dial. Then by setting the general coverage dial pointer slighlly higher in frequency than the group, the bandspread control will tune through the range, spreading out the group of stations over a large portion of the bandspread dial scale.

RECEIVE/STANDBY SWITCH - This switch most be set at RECEIVE for normal operation. To disable the receiver for short stand-by periods set the switch at STANDBY. This leaves the heaters at operating temperature during standby periods and permits instant response when reception is again desired.

SPEAKER/PHONES - Normally this switch is set at SPEAKER for loud speaker reception. Setting the switch at PHONES switches the output circuit from the speaker to the headset output jacks located on the rear apron of the chassis.

SERVICE

TUBE REPLACEMENT - The tube types and their relative position in the receiver are shown in the illustration, Fig. 5. When installing a replacement tube, insert the center guide pin into the center hole of the tube socket; rotate the tube until the key on the guide pin drops into the notch in the socket hole; and push down until the base of the tube rests firmly on the socket.

Handle tubes with care as they are considered fragile and do not tolerate much mechanical abuse.

DIAL LAMP REPLACEMENT - Refer to Fig. 5 for the location of the dial lamp. To replace a defective lamp, reach in through the rear of the cabinet and unclip the dial lamp socket by compressing the side springs. The socket and defective lamp may then be brought out into the open for service.

Make replacements with 6-8 volt Mazda #47 (Brown bead) lamps.

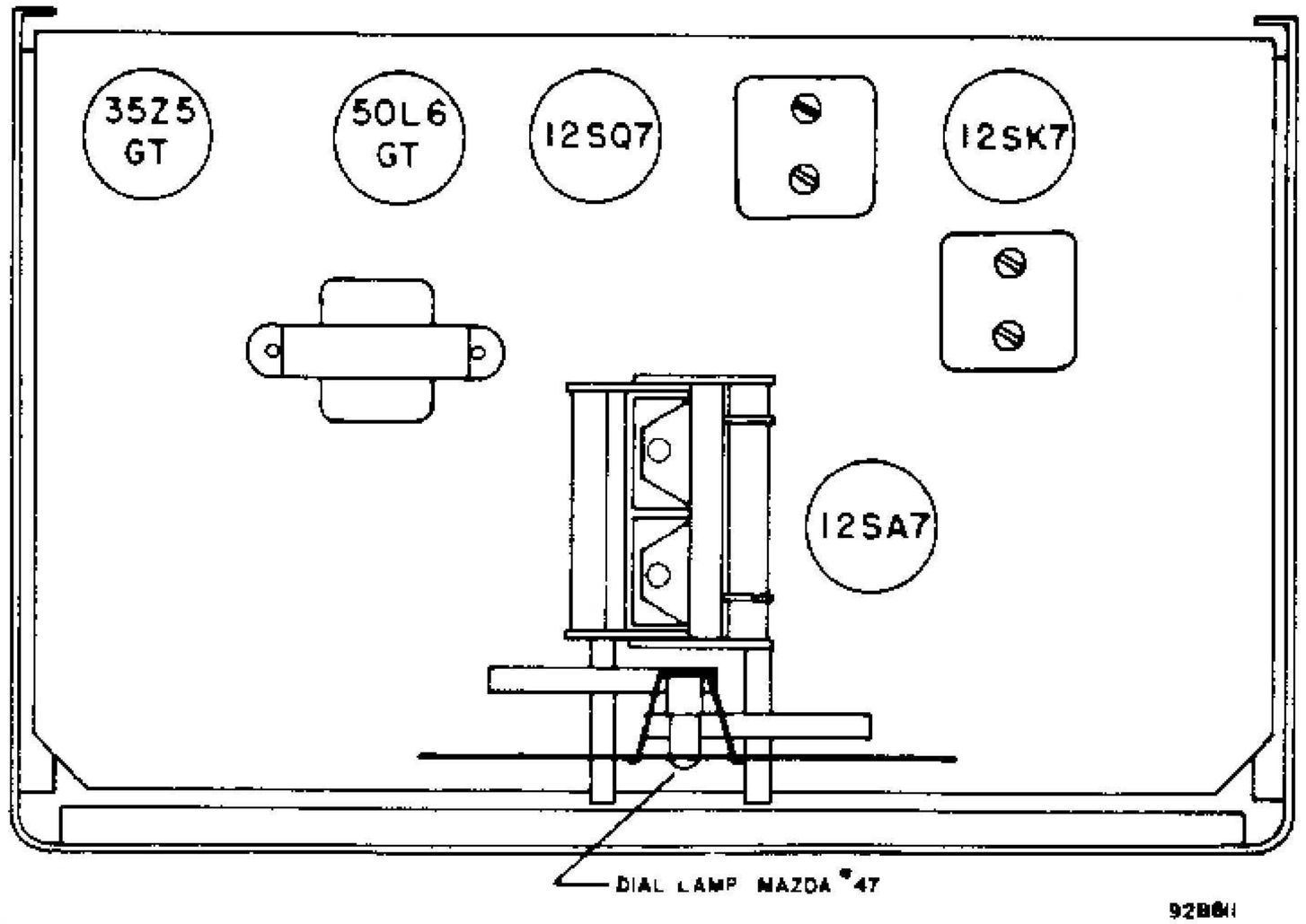


Fig. 5. Top view, location of tubes and dial lamp.

SERVICE OR OPERATION QUESTIONS - For further details regarding operation or servicing of the receiver, contact your dealer directly. Make no shipments directly to the factory before first writing for authorization and instructions. The factory cannot accept responsibility for unauthorized shipments.

the hallicrafters co.

FOR MODEL S-38A

GENERAL

Tubes	Four plus rectifier.
Speaker	5-inch PM.
Voice Coil Impedance	3.2 ohms.
Headset Output	Low impedance.
Antenna	Provisions for external antenna with transmission line or single wire feed.
Tuning	Manual

Tuning Range .....

Band Selector Position	Frequency Range
1	550 kc - 1650 kc.
2	1.7 mc - 5.1 mc.
3	5 mc - 14.5 mc.
4	13 mc - 31 mc.

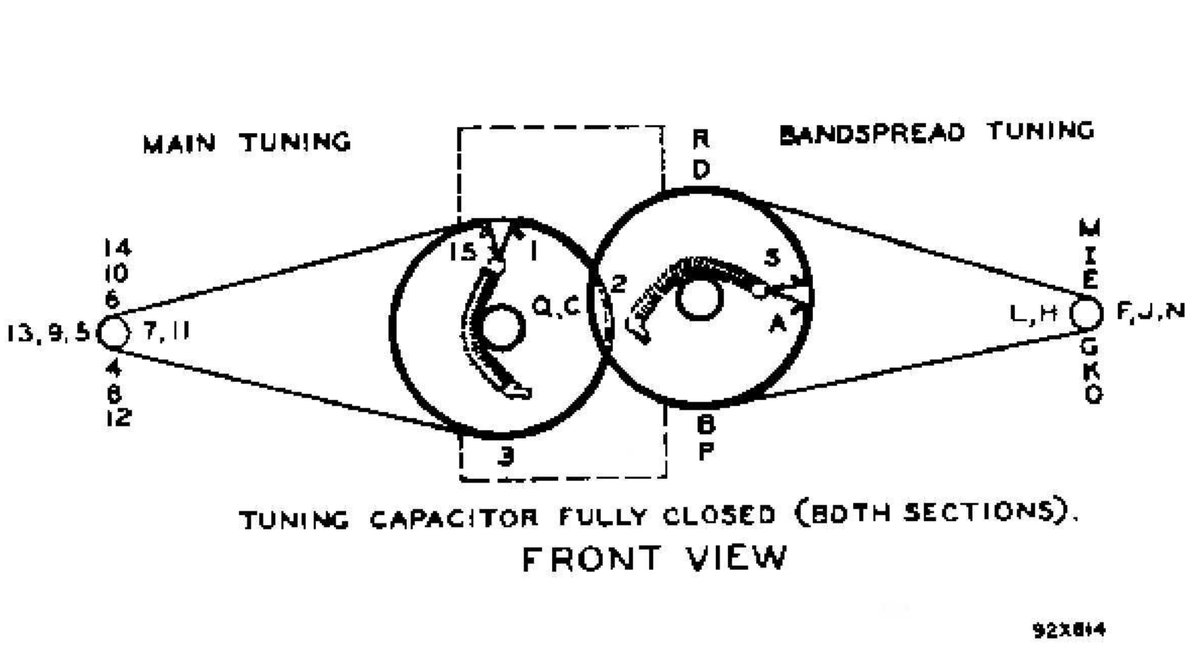
Intermediate Frequency	455 kc.
Power Supply	105-125 V. DC or 60 cycles AC.
Power Consumption	30 Watts

92X609

RESTRINGING DIAL CORD

To restring the general coverage tuning dial cord cut a 14-inch length of 30 lb. test dial cord and tie one end to the tension spring at position "1" on the diagram. Follow the sequence "1" through "15", and at position "15" stretch the tension spring and tie the cord securely.

To restring the band spread tuning dial cord, cut a 16-inch length of dial cord and follow the procedure as above, starting at position "A" on the diagram. Note that the tuning drive shafts are wrapped with two and a fraction turns of dial cord for proper traction.



TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).
FRONT VIEW

92X614

Fig. 1. Dial cable stringing procedure.

REPLACING LAMPS

Refer to Fig. 4, for the location of the dial lamp used in receiver. To gain access to the defective lamp, reach in through the rear of the cabinet (cover removed) and unclip the dial lamp socket by compressing the side springs. The socket may then be brought out into the open to change the defective lamp. Replace defective lamps with 6-8 V. Mazda #47 (Brown bead) lamps or equivalent.

ALIGNMENT PROCEDURE

Holes in the bottom cover permit minor adjustment of the oscillator and mixer stage trimmers, however for complete alignment, the chassis will have to be removed from the cabinet. To separate the chassis from the cabinet, remove the back cover and bottom plate. The chassis is fastened to the cabinet by four front panel screws located near the slide switches and two cabinet screws located at the bottom rear of the cabinet.

CAUTION - The four rubber grommets insulate the chassis from the cabinet. Check the condition of these grommets and replace if necessary.

The standard RMA dummy antenna specified in the alignment chart consists of a 200 mmf condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

Set the following controls before alignment.

AM/CW	Set at AM
SPEAKER/PHONES	Set at SPEAKER
VOLUME	Set at maximum
RECEIVE/STANDBY	RECEIVE
BAND SPREAD	Set at zero

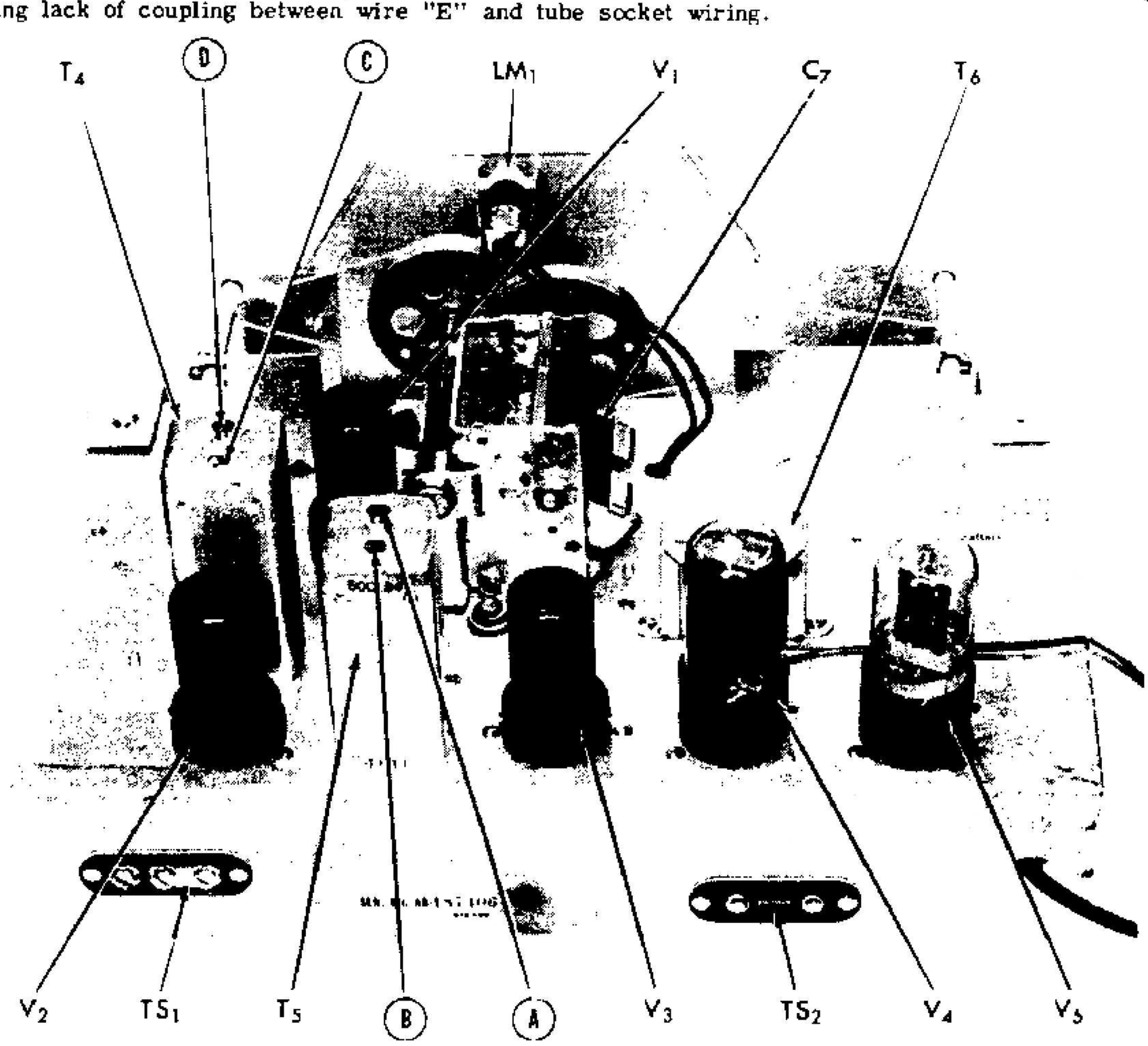
For the settings of the remaining controls, see alignment chart.

ALIGNMENT CHART

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust	Remarks
1	.01 mfd cap.	Stator plates, front section of tuning gang.	455 kc	1	1000 kc	A,B,C,D	Adjust for max. audio output at speaker voice coil. Use just enough signal generator output to obtain a 50 mw signal level.
2**	See step 1	See step 1	455 kc (No modulation)	1	1000 kc	E	Set the AM/CW switch at CW. (Reset the switch at AM when step 2 is completed.) Correct BFO operation is obtained by varying the coupling between the wire "E" and the 12SK7 tube grid and plate terminals (Pins 4 and 8.) Pushing the wire toward the grid terminal increases the capacity and the strength of the beat.
3	Std. RMA dummy	High side to term. A1 on antenna strip. Jumper wire between A2 and G	30 mc	4	30 mc	*F,G	Max. output as in step 1.
4	Std. RMA dummy	See step 3.	14 mc	3	14 mc	*H,J	Max. output as in step 1.
5	Std. RMA dummy	See step 3	5 mc	2	5 mc	*K,L	Max. output as in step 1.
6	Std. RMA dummy	See step 3	1500 kc 600 kc	1	1500 kc 600 kc	*M,N *P	Max. output as in step 1.

* Note - Calibration adjustments.

** Note - This step is generally unnecessary. Adjustment should be made if a weak beat note is obtained on strong c-w signals indicating lack of coupling between wire "E" and tube socket wiring.



92X812

Fig. 2. Top view, alignment adjustments and component location

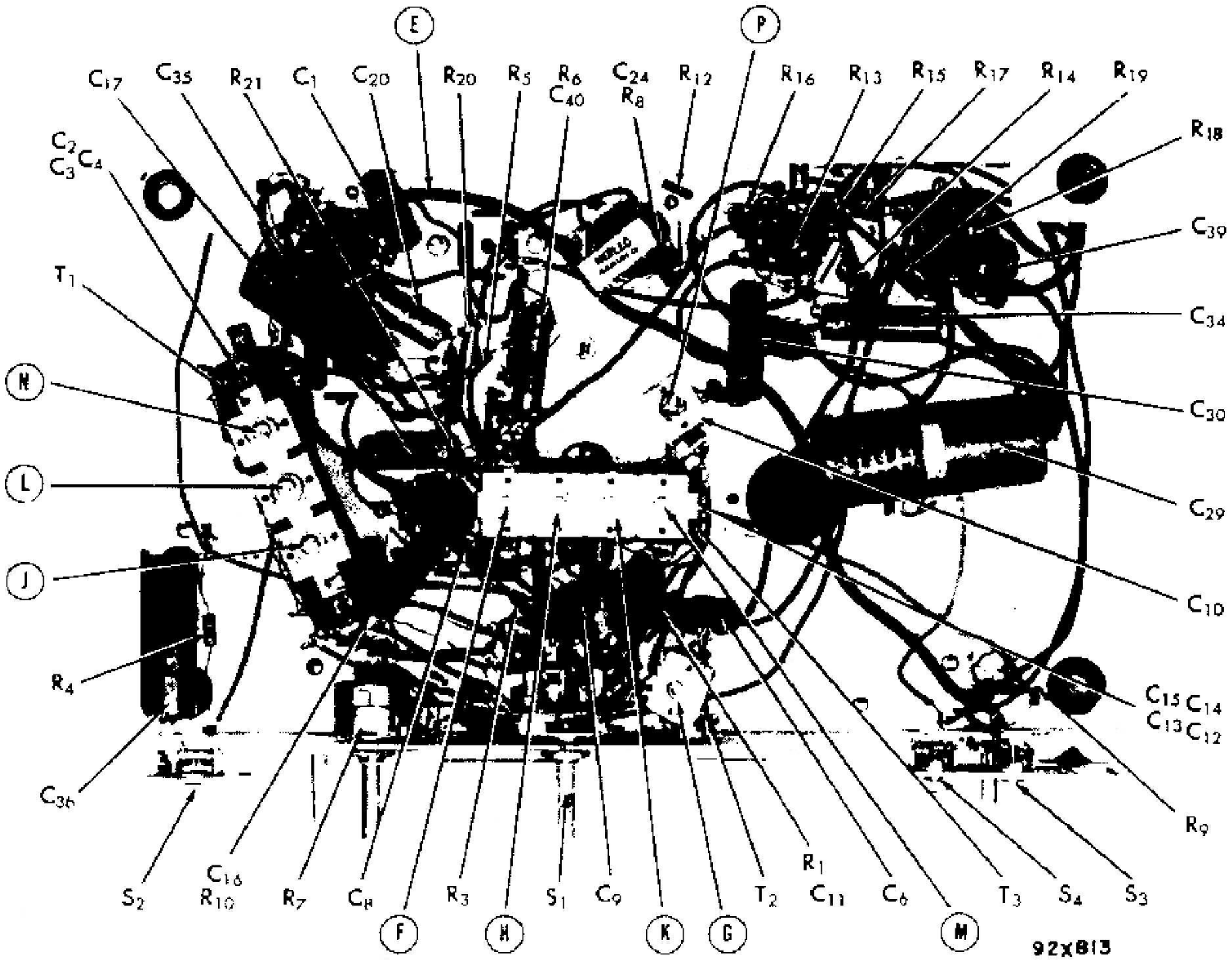


Fig. 3. Bottom view, alignment adjustments and component location

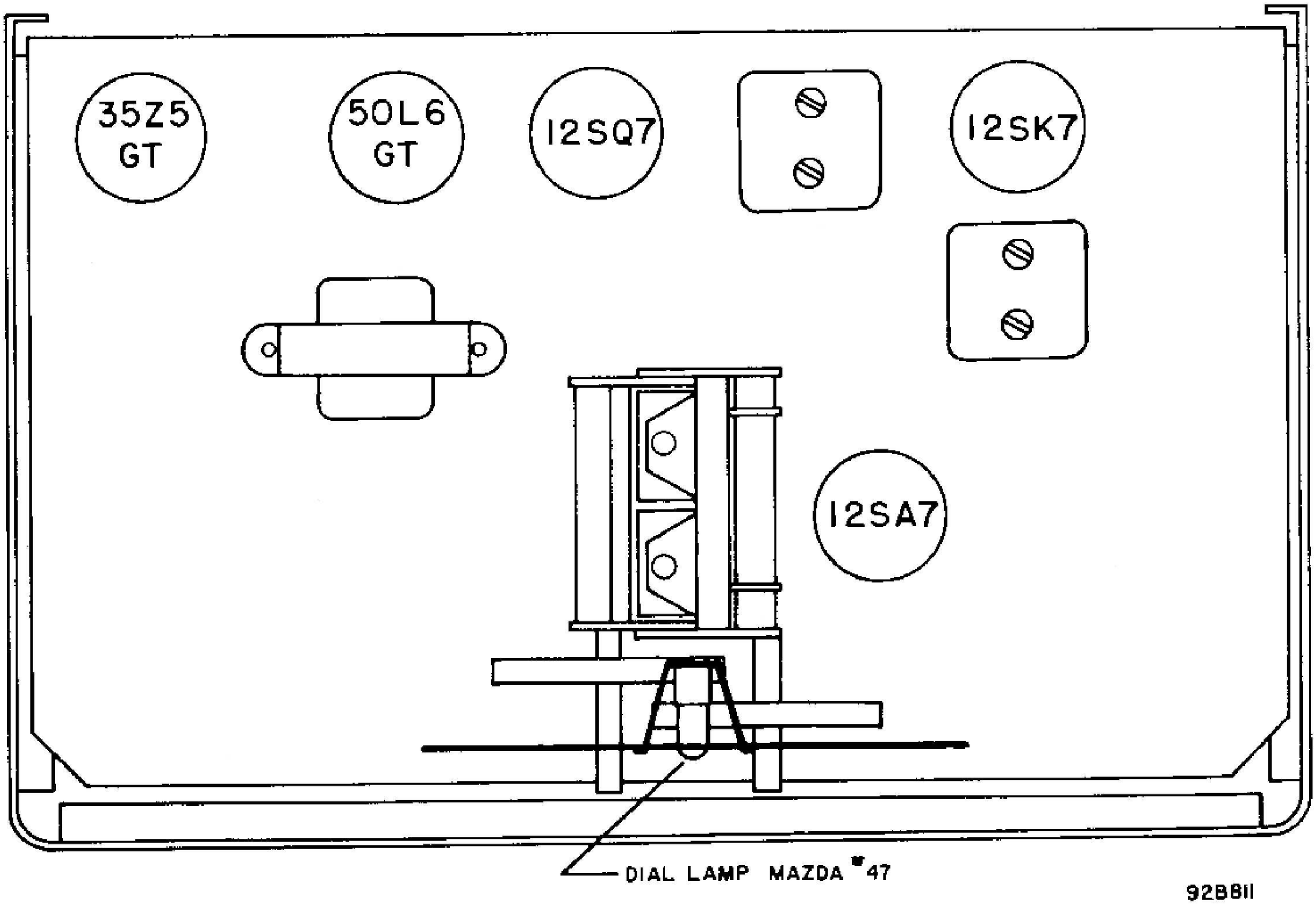
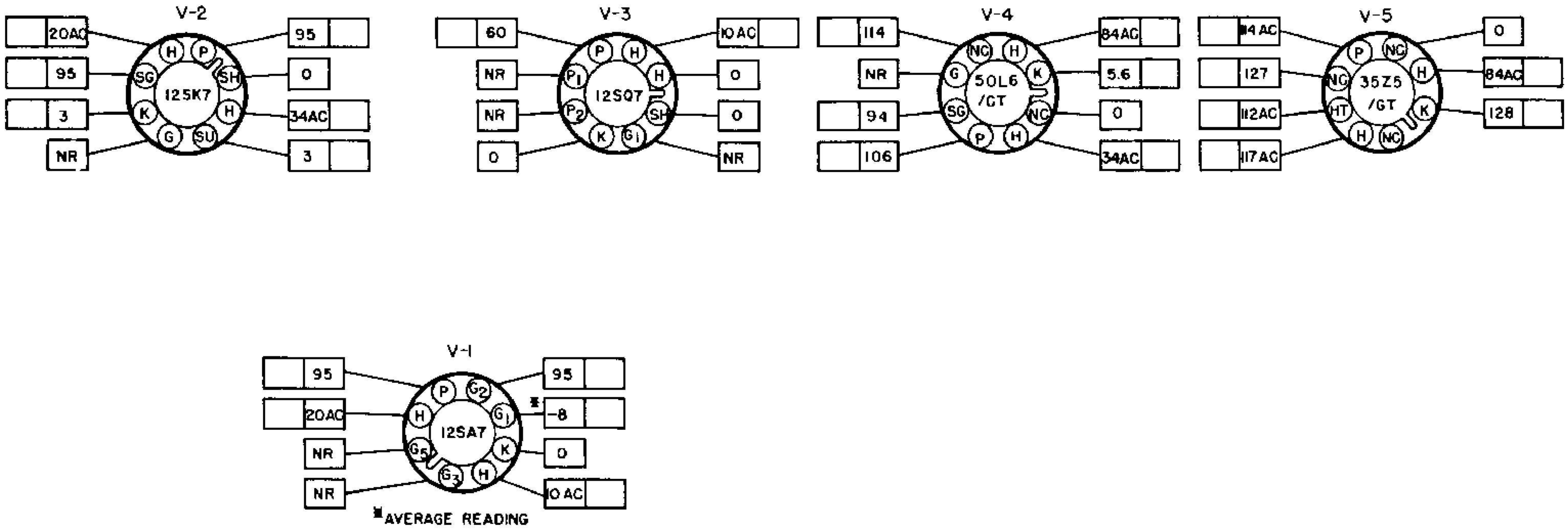


Fig. 4. Top view, location of tubes and dial lamp

SERVICE PARTS LIST

Ref. No.	Description	Manufacturer's Part Number
	CONDENSERS	
C-1,40	.01 mfd. 600 V., tubular	46AY103J
C-2,3,4	Trimmers, adjustable (Part of transformer T-1)	
C-5	Trimmer, adjustable (For transformer T-2)	44A039
C-6	2700 mmf 500 V, mica	47X30A272J
C-7	Tuning condenser, 2 sections	48C162-1
C-8	220 mmf 500 V, mica	47X20A221K
C-9	3000 mmf 500 V, mica	47X30A302J
C-10	Padder, adjustable (Band 1)	44A349
C-11	2200 mmf 500 V, mica	47X30A222J
C-12,13,14 15	Trimmers, adjustable (Part of transformer T-3)	
C-16	.02 mfd 400 V, tubular	46AW203J
C-17,36	.25 mfd 200 V, tubular	46AT254J
C-20,35	.05 mfd. 200 V, tubular	46AU503J
C-24	Capacitor, composite; 5,000, 2X220, and 2000 mmf; 500 V.; ceramic	46A151
C-29	40-30-30 mfd 150 V, 20 mfd. 25 V, electrolytic	45B091
C-30,34	.02 mfd 600 V, tubular	46AY203J
C-39	470 mmf 500 V, mica	CM20A471M
C-41,42	Wiring capacity.	
	RESISTORS	
R-1,13,20	470,000 ohms 1/2 watt, carbon	23X20X474M
R-2	22,000 ohms1/2 watt, carbon	23X20X223M
R-3	47 ohms 1/2 watt, carbon	23X20X470M
R-4	390 ohms 1/2 watt, carbon	23X20X391K
R-5	2.2 megohms 1/2 watt, carbon	23X20X225M
R-6	47,000 ohms 1/2 watt, carbon	23X20X473M
R-7	Resistor, variable; VOLUME control	25B094
R-8	10 megohms 1/2 watt, carbon	23X20X106M
R-9	470 ohms 1/2 watt, carbon	23X20X471K
R-10	10,000 ohms 1/2 watt, carbon	23X20X103M
R-12	220,000 ohms, 1/2 watt, carbon	23X20X224M
R-14	150 ohms 1/2 watt, carbon	23X20X151K
R-15	15 ohms 1/2 watt, carbon	23X20X150M
R-16	1000 ohms 1/2 watt, carbon	23X20X102M
R-17	220 ohms 1 watt, carbon	23X30X221M
R-18,21	22 ohms 1/2 watt, carbon	23X20X220M
R-19	330 ohms 1/2 watt, carbon	23X20X221M
	TRANSFORMERS AND COILS	
T-1	Transformer, antenna stage, Bands 1, 2 and 3	51C821
T-2	Transformer, antenna stage, Band 4	51B1015
T-3	Transformer, oscillator stage, Bands 1, 2, 3 and 4	
T-4	Transformer, i-f amp. stage	50B183
T-5	Transformer, i-f amp. stage (diode)	50B184
T-6	Transformer, audio output	55A127

Ref. No.	Description	Manufacturer's Part Number
	SWITCHES	
S-1	Bandswitch assembly	60A240
S-2	Switch, slide; RECEIVE-STANDBY	60A244
S-3,4	Switch, slide; SPST; AM-CW & SPEAKER-PHONES	60A243
S-5	Switch, power (Part of VOLUME control R-7)	
	CONNECTORS	
PL-1	Line cord	87A078
TS-1	Terminal strip, antenna	88A032
TS-2	Headset, jack	88A071
	Socket, octal (tube)	6A250
	Socket, dial light	86A011
	TUBES, RECTIFIERS AND LAMPS	
V-1	Type 12SA7, mixer/oscillator	90X12SA7
V-2	Type 12SK7, i-f amplifier & BFO	90X12SK7
V-3	Type 12SQ7, detector & 1st audio	90X12SQ7
V-4	Type 50L6GT, audio power amplifier	90X50L6GT
V-6	Type 35Z5GT, rectifier	90X35Z5GT
LM-1	Lamp, dial light, Mazda #47	39A004
	MISCELLANEOUS	
	Clip, coil mtg (For transformer T-2)	76A326
	Shaft, main tuning	74A244
	Shaft, bandspread	74A245
	Washer, spring (For main tuning and bandspread drive shafts)	4A043
	Spring, retainer ("C" washer type)	75A062
	Dial cord	38A019
	Spring, dial cord	75A012
	Pointer, main tuning	82A140
	Pointer, bandspread tuning	82A103
	Dial scale	83C321
	Knob, VOLUME control and BAND SELECTOR	15A049
	Knob, TUNING and BAND-SPREAD	15A047
LS-1	Speaker, PM	85C030
	Baffle, speaker	78B198
	Cabinet back	32C330
	Cabinet bottom	8C807
	Mounting foot, rubber	16A007



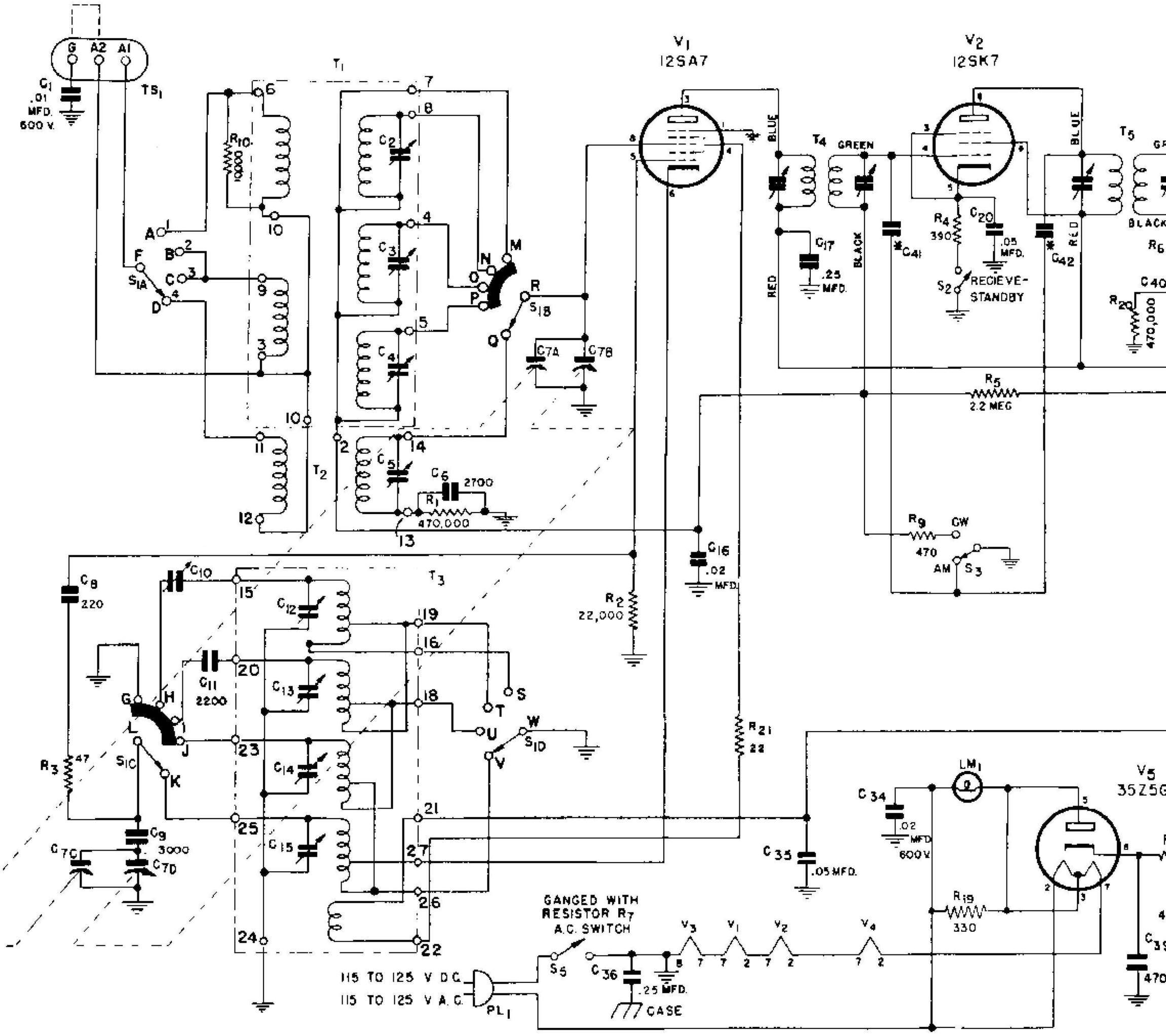
FRONT APRON

BOTTOM VIEW OF CHASSIS

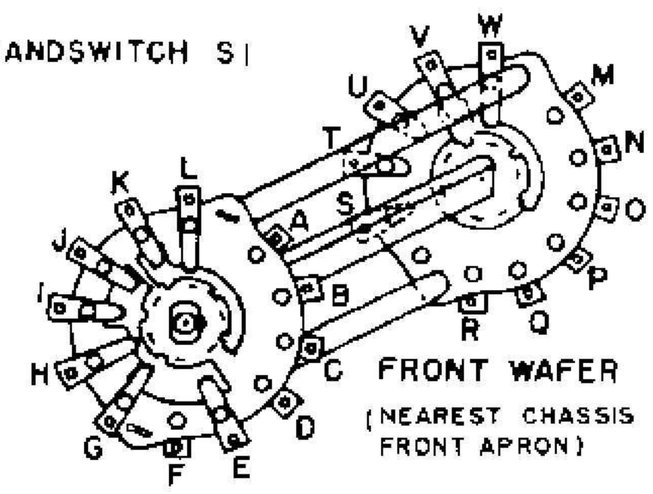
1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS & CHASSIS, WITH ZERO SIGNAL INPUT.
3. LINE VOLTAGE—117 V. AC. AC VOLTAGES WILL BE DC VOLTAGES WHEN OPERATING FROM A DC SOURCE.
4. ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED.
5. DC VOLTAGES SHOWN WERE MEASURED WITH AN ELECTRONIC VOLTMETER.
6. "NC" NO CONNECTION.(VOLTAGES SHOWN FOR THIS TERMINAL ONLY WHEN TERMINALS ARE USED AS A TIE LUG.)
7. "NR" NOT READABLE. (READING GENERALLY MEANINGLESS)
8. ☐ SPACE PROVIDED FOR SERVICE METER READINGS.

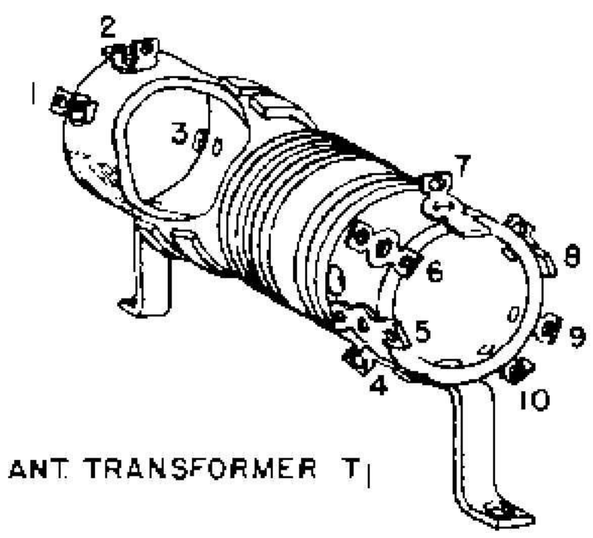
92C786

Fig. 5. Tube socket voltage chart.



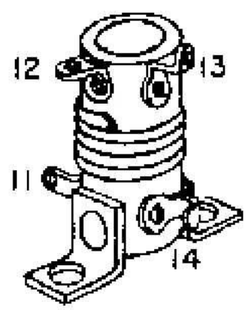
BANDSWITCH S1



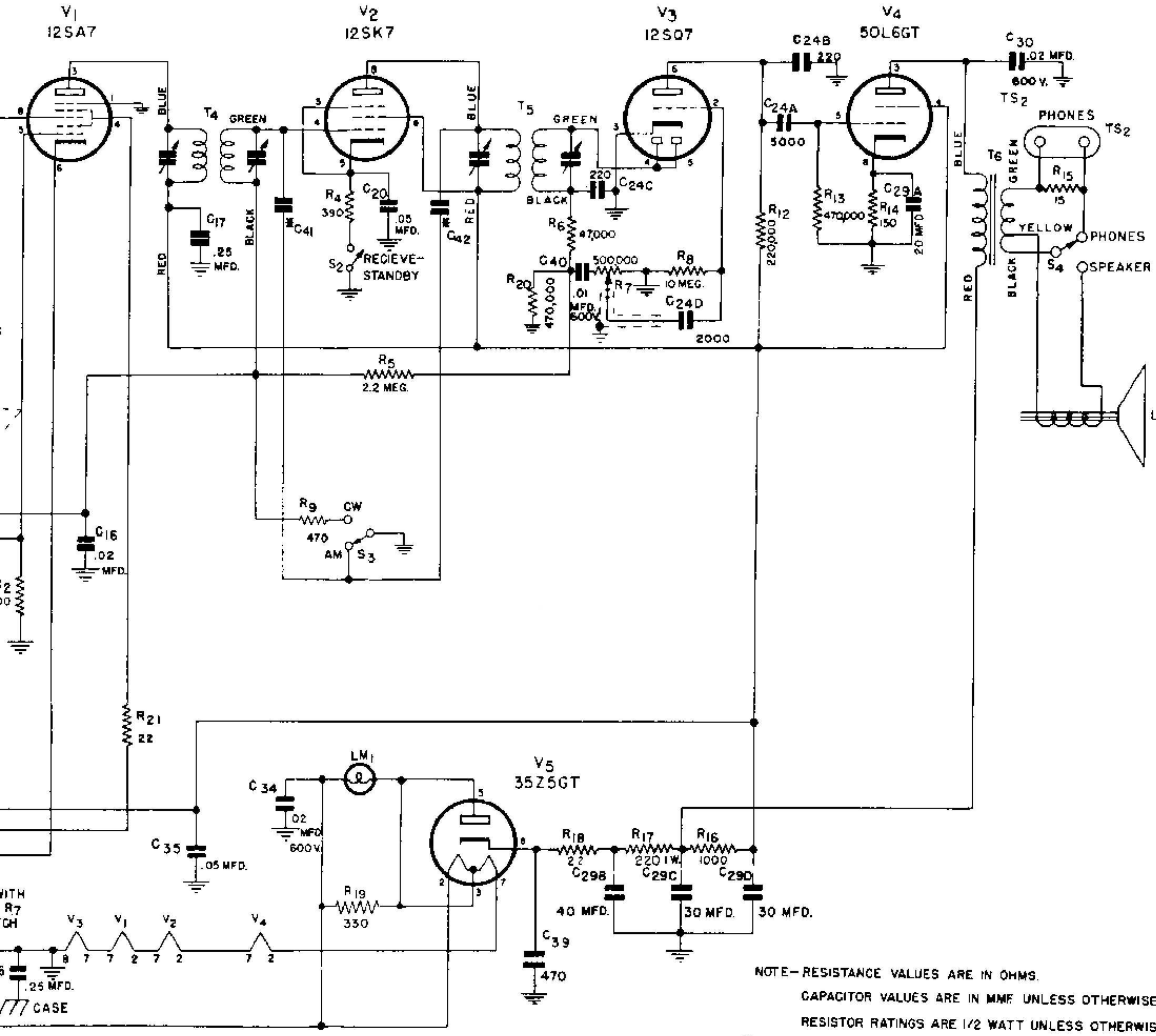


ANT. TRANSFORMER T1

ANT TRANSFORMER T2



NOTE: DIMENSIONS & PROPORTIONS SHOWN IN PICTORIA
BEEN EXAGGERATED FOR CLARITY OF TERMINAL



NOTE—RESISTANCE VALUES ARE IN OHMS.

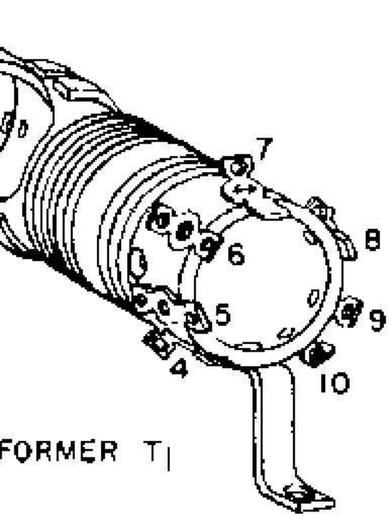
CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED.

RESISTOR RATINGS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.

*NOTE—CAPACITY C-41 & C42 DUE TO PLACEMENT OF WIRE.

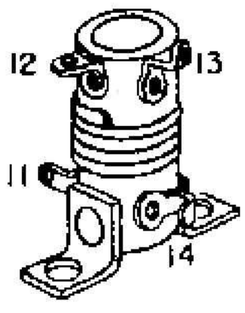
NOTE—⏚ CHASSIS GROUND

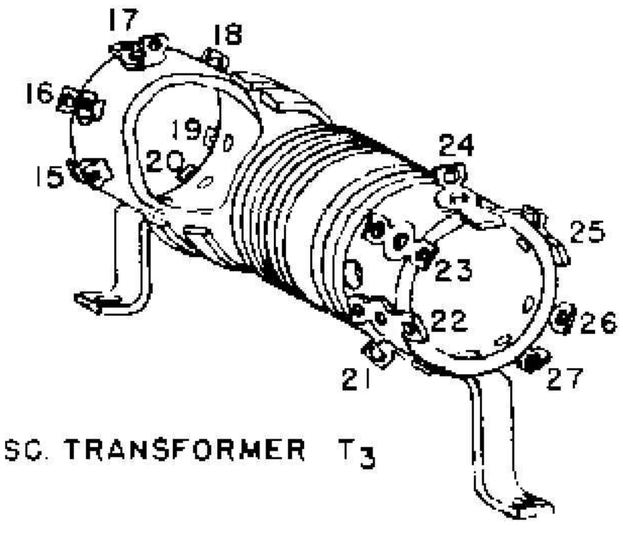
⏚ CABINET GROUND



FORMER T_1

ANT. TRANSFORMER T_2





OSC. TRANSFORMER T_3

LAST CONDENSER SYMBOL C-42

LAST RESISTOR SYMBOL R-21

MENSIONS & PROPORTIONS SHOWN IN PICTORIAL VIEWS HAVE
EN EXAGGERATED FOR CLARITY OF TERMINAL LUG LOCATION.

Fig. 6. Schematic diagram.

S-38B

the hallicrafters co.

MANUFACTURERS OF RADIO, TELEVISION AND ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.

DESCRIPTION

Hallicrafters Model S-38B is a table model, all-wave superheterodyne radio receiver which provides reception of the standard broadcast band and three shortwave bands with continuous coverage from 540 kilocycles (KC) to 32 megacycles (MC). The receiver employs five tubes including rectifier and provides AM (voice) and CW (code) reception over its entire frequency range.

FREQUENCY COVERAGE

BAND	FREQUENCY RANGE
1	540 KC - 1650 KC
2	1.65 MC - 5.1 MC
3	5 MC - 14.5 MC
4	13 MC - 32 MC

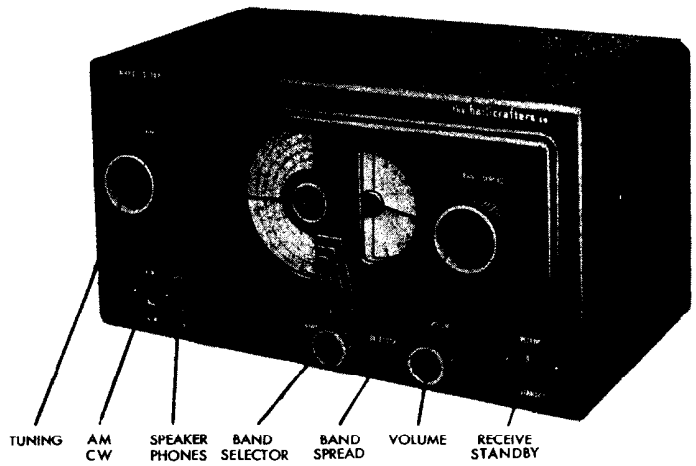


Fig. 1. Radio Receiver Model S-38B

A bandswitch is provided for selecting any of the four ranges of reception which are indicated on the left hand or TUNING dial. An individual dial scale is provided for each of the four bands. The locations of the amateur bands and important shortwave channels are clearly marked on the TUNING dial. The BAND SPREAD dial is provided for fine tuning of the shortwave bands.

The RECEIVE/STANDBY switch permits disabling of the receiver for standby periods, the tube heaters being maintained at operating temperature for immediate operation.

The receiver is equipped with a built-in 5 inch permanent magnet speaker. Provision is also made in the receiver for the optional use of headphones.

The receiver is designed to operate from a 105-125 volt DC or 60 cycle AC power source. Before connecting the receiver to a wall outlet, carefully read the INSTALLATION INSTRUCTIONS which follow.

INSTALLATION INSTRUCTIONS

UNPACKING - Check all shipping labels and tags for instructions before removing or destroying them.

LOCATION - The receiver is equipped with rubber mounting feet for table top or shelf mounting. When locating the receiver, avoid excessively warm locations and recessed installations which prevent proper air circulation.

POWER SOURCE - The receiver is designed for operation from a 105-125 volt DC or 60 cycle AC power source. The power consumption is approximately 30 watts. If in doubt as to the frequency or voltage rating of your power source, contact the local power company representative to avoid damage to the receiver. When operating on DC, reverse the line cord plug at the wall outlet if the receiver does not operate after a one minute warm-up period. Operation from a 210-250 volt AC or DC source is possible by using a special line cord adapter available as an accessory from your Hallicrafters dealer (Hallicrafters part number 87D1566).

HEADPHONES - Tip jacks are provided on the rear apron of the chassis for headphone connection. Any standard pair of headphones with an impedance of 500 to 2000 ohms can be used with the receiver. For headphone operation, set the SPEAKER/PHONES switch located on the front panel at PHONES.

ANTENNA - A three terminal strip, marked A1, A2 and G, is provided on the rear apron of the chassis for antenna connection. Very satisfactory results can be obtained throughout the tuning range of the receiver with a conventional single wire antenna. In some instances, a length of wire strung about the room may suffice. However, it is recommended that a doublet antenna installation be employed on the shortwave bands for improved reception. Refer to page 3 for the construction and installation details of the single wire and doublet antennas.

SINGLE WIRE ANTENNA

1. Construct the antenna as shown in Fig. 2 and connect it to A1.
2. Connect the jumper between A2 and G.
3. Erect the antenna as high as possible and free of surrounding objects.
4. In some instances, a wire connected between G and a suitable ground such as a cold water pipe or outside ground rod may improve reception.

DOUBLET ANTENNA

1. The overall length (in feet) of the antenna is determined by dividing 468 by the frequency (in megacycles) at the high end of the range to which you wish to listen.
2. Construct the antenna as shown in Fig. 3.
3. A doublet antenna is directional broadside to its length and should be so oriented with respect to a desired station for maximum signal pickup.
4. When feeding the antenna with a twisted pair or ribbon type transmission line, connect the line to A1 and A2. The jumper between A2 and G should be disconnected.
5. When feeding the antenna with a coaxial transmission line, connect the inner conductor to A1 and the outer conductor to A2. Connect the jumper between A2 and G.
6. See Step 4 under SINGLE WIRE ANTENNA.

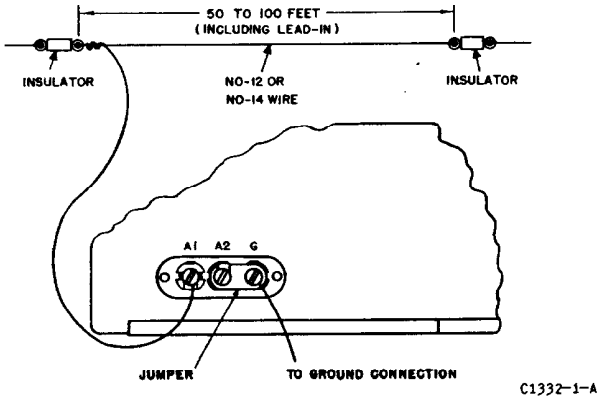


Fig. 2. Single Wire Antenna Installation

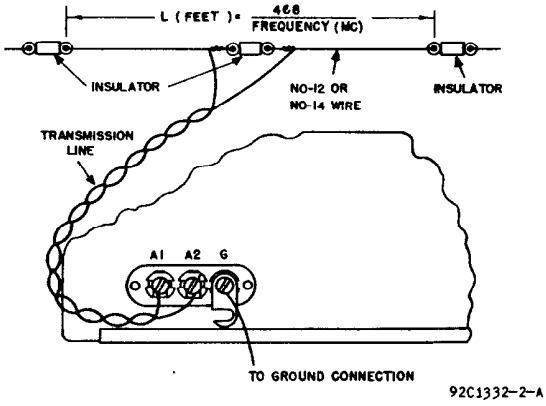


Fig. 3. Doublet Antenna Installation Using Twisted Pair Lead-In

OPERATING INSTRUCTIONS

STANDARD BROADCAST RECEPTION

1. Set the BAND SELECTOR at 1 for the standard broadcast band.
2. Set the AM/CW switch at AM and the SPEAKER/PHONES switch at SPEAKER.
3. Set the RECEIVE/STANDBY switch at RECEIVE. When set at STANDBY, the receiver is inoperative but the tube heaters remain at operating temperature.
4. Set the BAND SPREAD dial pointer at 0. IMPORTANT - The calibration of the TUNING dial scales will be correct only when the BAND SPREAD dial pointer is set at 0.
5. Turn the receiver ON by rotating the VOLUME control clockwise to a well advanced position. When operating on DC, reverse the line cord plug at the wall outlet if the receiver does not operate after a one minute warm-up period. The VOLUME control will have to be reset for the desired volume level after the station has been tuned in.
6. Tune in the desired station with the TUNING control. Read the station frequency from the dial scale which corresponds to the setting of the BAND SELECTOR.
7. To turn the receiver OFF, rotate the VOLUME control counterclockwise until the switch click is heard.

SHORT WAVE RECEPTION

1. Follow the procedure outlined for STANDARD BROADCAST RECEPTION but set the BAND SELECTOR at 2, 3 or 4 for the desired shortwave band. For code reception, the AM/CW switch must be set at CW and the TUNING control must be adjusted for the desired pitch of the code signal when tuning in the station.
2. For fine tuning of the shortwave bands, refer to BAND SPREAD TUNING below.

BAND SPREAD TUNING

1. The BAND SPREAD control is a fine tuning adjustment which electrically spreads out any narrow range of frequencies in the tuning range of the receiver. Band spread tuning is not necessary on the standard broadcast band.
2. To use the BAND SPREAD control for fine tuning: (1) Set the BAND SPREAD dial pointer at 0 (2) Set the TUNING dial pointer at the high frequency end of the amateur band or group of shortwave stations to be covered and (3) Tune in the stations with the BAND SPREAD control.
3. Logging of shortwave stations is possible by recording the settings of the TUNING and BAND SPREAD dials. See inside of back cover for the shortwave station log.

SERVICE INSTRUCTIONS

GENERAL SPECIFICATIONS

Tubes . . . . . 5 including 1 rectifier
Speaker . . . . . 5 inch PM
Voice Coil Impedance . . . . . 3.2 ohms
Headphone Output Impedance . . . . . 15 ohms
Antenna . . . . . Provision for use of either a single wire or doublet antenna
Intermediate Frequency . . . . . 455 KC
Frequency Coverage . . . . . See page 2
Power Supply . . 105-125 volts DC or 60 cycles AC
Power Consumption . . . . . 30 watts

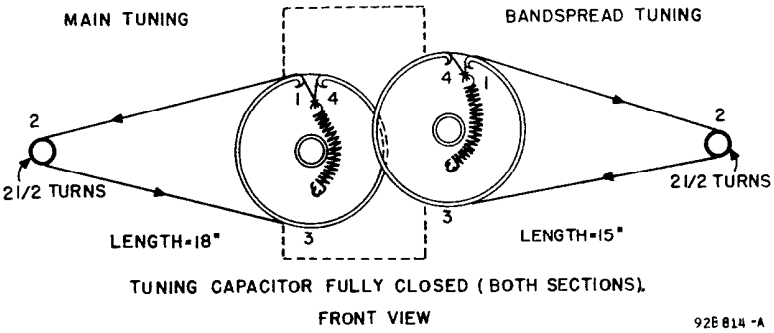


Fig. 4. Dial Cord Stringing Diagram

ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED

1. Signal generator, with amplitude modulated output, covering 455 KC to 30 MC. Use a modulated output for every step except step 2.
2. Output meter. Connect the meter across the speaker voice coil.
3. Standard RMA dummy antenna consisting of a 200 mmf. capacitor in series with a 20 microhenry choke which is shunted by a 400 mmf. capacitor in series with a 400 ohm carbon resistor.
4. Non-metallic alignment tool.

REMOVING THE CHASSIS - The antenna and oscillator trimmers are accessible through the holes provided in the bottom cover. However, for complete alignment the chassis must be removed from the cabinet. To remove the chassis, proceed as follows: (1) Remove the cabinet back (2) Remove the four rubber mounting feet and the bottom cover (3) Remove the two screws at the bottom rear of the cabinet (4) Remove the front control knobs and (5) Remove the four screws which are located near the switches on the front panel.

CONTROL SETTINGS - BAND SPREAD control at 0, AM/CW switch at AM, SPEAKER/PHONES switch at SPEAKER, VOLUME control fully clockwise and RECEIVE/STANDBY switch at RECEIVE. For the settings of the remaining controls, see the ALIGNMENT CHART below. See Figs. 5 and 6 for the location of the alignment adjustments.

ALIGNMENT CHART

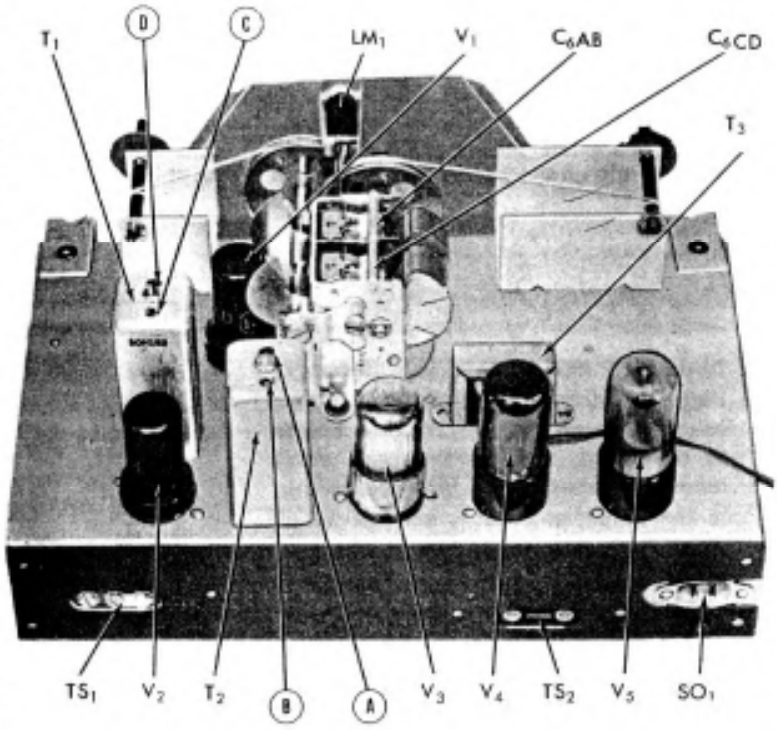
Step	Signal Generator Connections	Signal Gen. Frequency	Band Selector Setting	Receiver Dial Setting	Adjust	Instructions
1	High side to stator plates of front section of TUNING gang through a .01 mfd. capacitor. Ground side to G on antenna strip.	455 KC	1	1.0 MC	A,B, C,D	Adjust for maximum audio output at the speaker voice coil. Use just enough signal generator output to obtain a 50 milliwatt reading on the output meter.
2 ⊙	Same as Step 1	455 KC (No Mod.)	1	1.0 MC	E	Set the AM/CW switch at CW. (Reset the switch at AM when Step 2 is completed.) For correct BFO operation, vary the coupling between wire E and pins 4 and 8 of the 12SK7 tube for a maximum beat note. Pushing wire E toward pin 4 increases the strength of the beat.
3	High side to A1 on antenna strip through the RMA dummy antenna. Ground side to G. Connect jumper between A2 and G.	30 MC	4	30 MC	F,G	Maximum output as in Step 1.
4	Same as Step 3	14 MC	3	14 MC	H,J	Maximum output as in Step 1.
5	Same as Step 3	5 MC	2	5 MC	K,L	Maximum output as in Step 1.
6	Same as Step 3	1500 KC 600 KC	1 1	1.5 MC .6 MC	M,N P	Maximum output as in Step 1.

⊙ Step 2 is usually unnecessary. Adjustment should be made ONLY if a weak beat note is obtained on strong CW signals indicating lack of coupling between wire E and pins 4 and 8 of the 12SK7.

SERVICE OR OPERATING QUESTIONS - For further information regarding operation or servicing of the receiver, contact your dealer. Make no shipments directly to the factory as the factory will not accept responsibility for unauthorized shipments. Factory type service is available at any HALLICRAFTERS AUTHORIZED SERVICE CENTER which displays the sign shown below. For the location of the SERVICE CENTER nearest you, consult your dealer or telephone directory.

92X1401

The Hallicrafters Co. reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate these revisions in earlier models.



92X1154-A

Fig. 5. Top View of Chassis Showing Location of Alignment Adjustments and Components

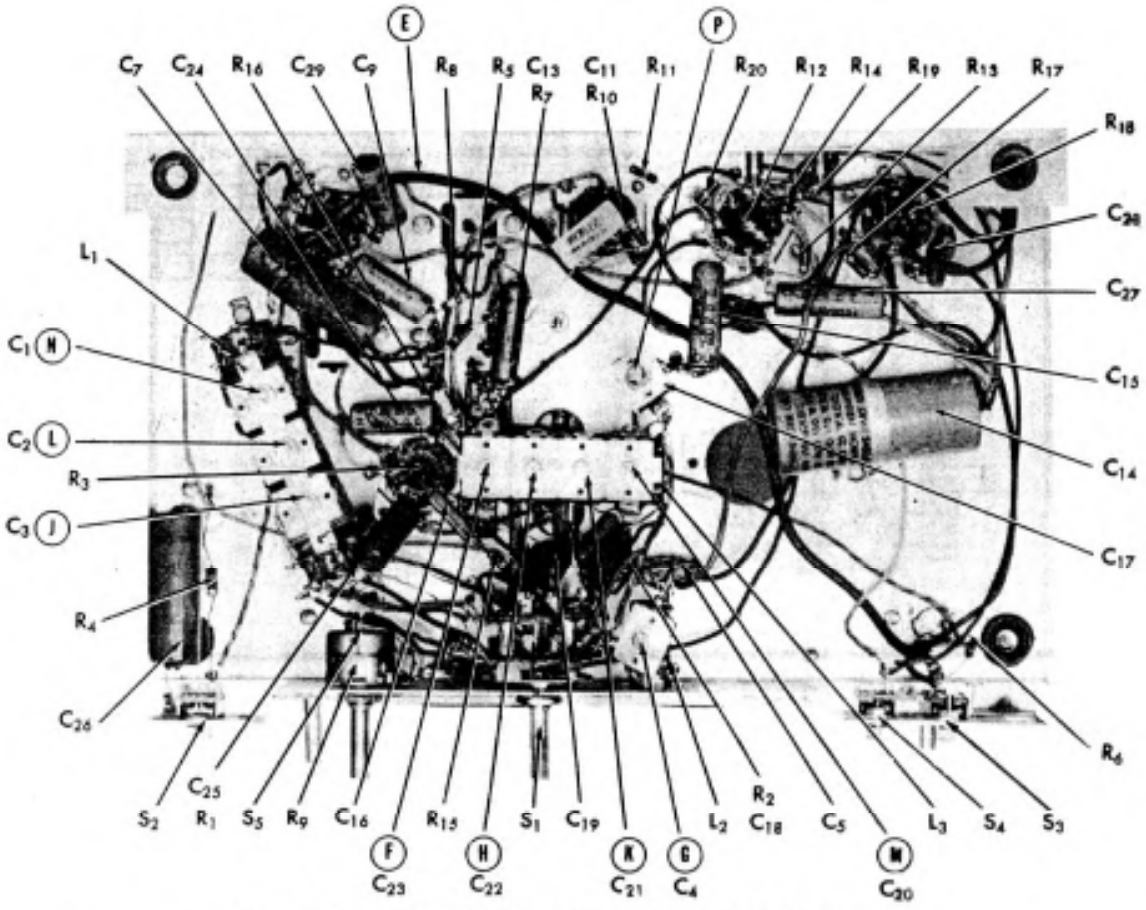


Fig. 6. Bottom View of Chassis Showing Location of Alignment Adjustments and Components

92X813-A

TUBE REPLACEMENT - The tube types and their location in the receiver are shown in Fig. 7. To gain access to all tubes, remove the back cover from the cabinet. Before attempting to replace the 12SA7, set the BAND SPREAD control fully clockwise and the TUNING control fully counterclockwise to prevent damage to the tuning capacitor. To replace a tube: (1) Insert the center guide pin of the tube into the center hole of the tube socket (2) Rotate the tube until the key on the guide pin drops into the notch in the socket hole and (3) Push down on the tube until the base of the tube rests firmly on the socket. Handle all tubes with care as they are fragile and will not withstand mechanical abuse.

DIAL LAMP REPLACEMENT - Refer to Fig. 7 for the location of the dial lamp used in the receiver. To gain access to the lamp, remove the back cover from the cabinet. To prevent damage to the tuning capacitor, set the BAND SPREAD control fully clockwise and the TUNING control fully counterclockwise before attempting to replace the lamp. Remove the dial lamp socket by compressing the side springs. The socket and defective lamp can then be brought out into the open. Make replacement with a 6-8 volt, Mazda #47 (brown bead) pilot lamp or equivalent.

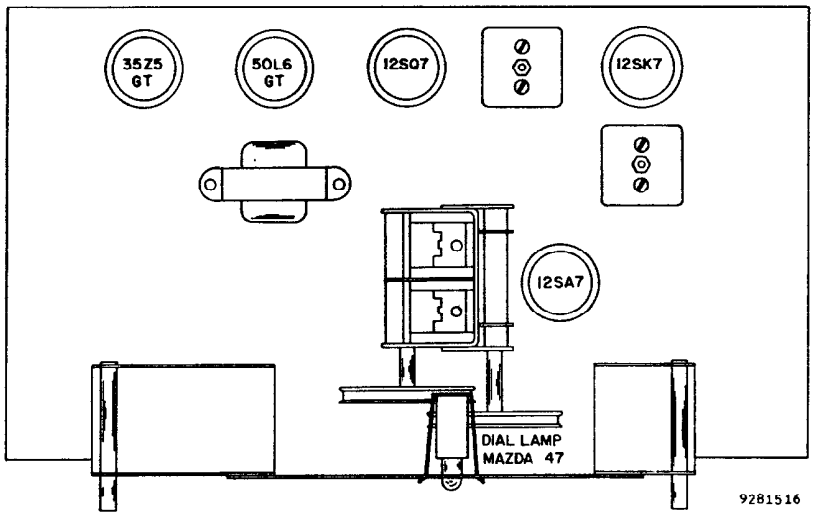
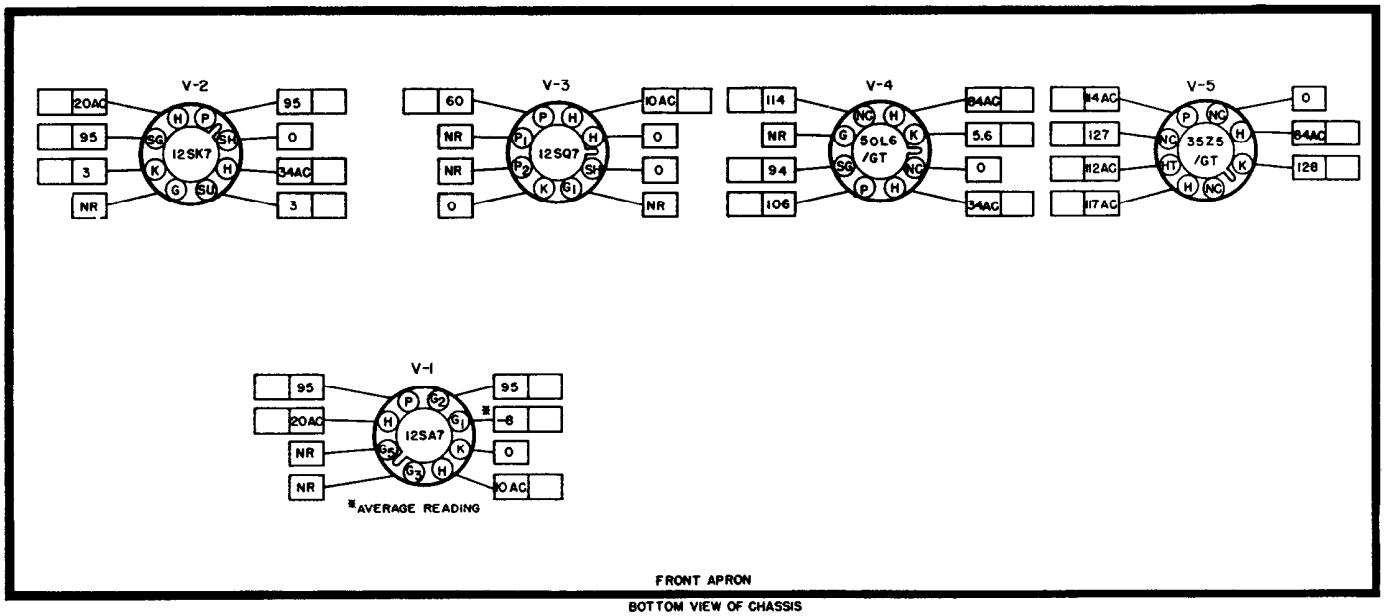


Fig. 7. Top View of Chassis Showing Tube and Dial Lamp Location



1. SOCKET VIEWS ARE BOTTOM VIEWS.
2. ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS & CHASSIS, WITH ZERO SIGNAL INPUT.
3. LINE VOLTAGE—117 V. AC. AC VOLTAGES WILL BE DC VOLTAGES WHEN OPERATING FROM A DC SOURCE.
4. ALL VOLTAGES SHOWN ARE DC UNLESS OTHERWISE SPECIFIED.
5. DC VOLTAGES SHOWN WERE MEASURED WITH AN ELECTRONIC VOLTMETER.
6. "NC" NO CONNECTION.(VOLTAGES SHOWN FOR THIS TERMINAL ONLY WHEN TERMINALS ARE USED AS A TIE LUG.)
7. "NR" NOT READABLE. (READING GENERALLY MEANINGLESS)
8. ☐ SPACE PROVIDED FOR SERVICE METER READINGS.

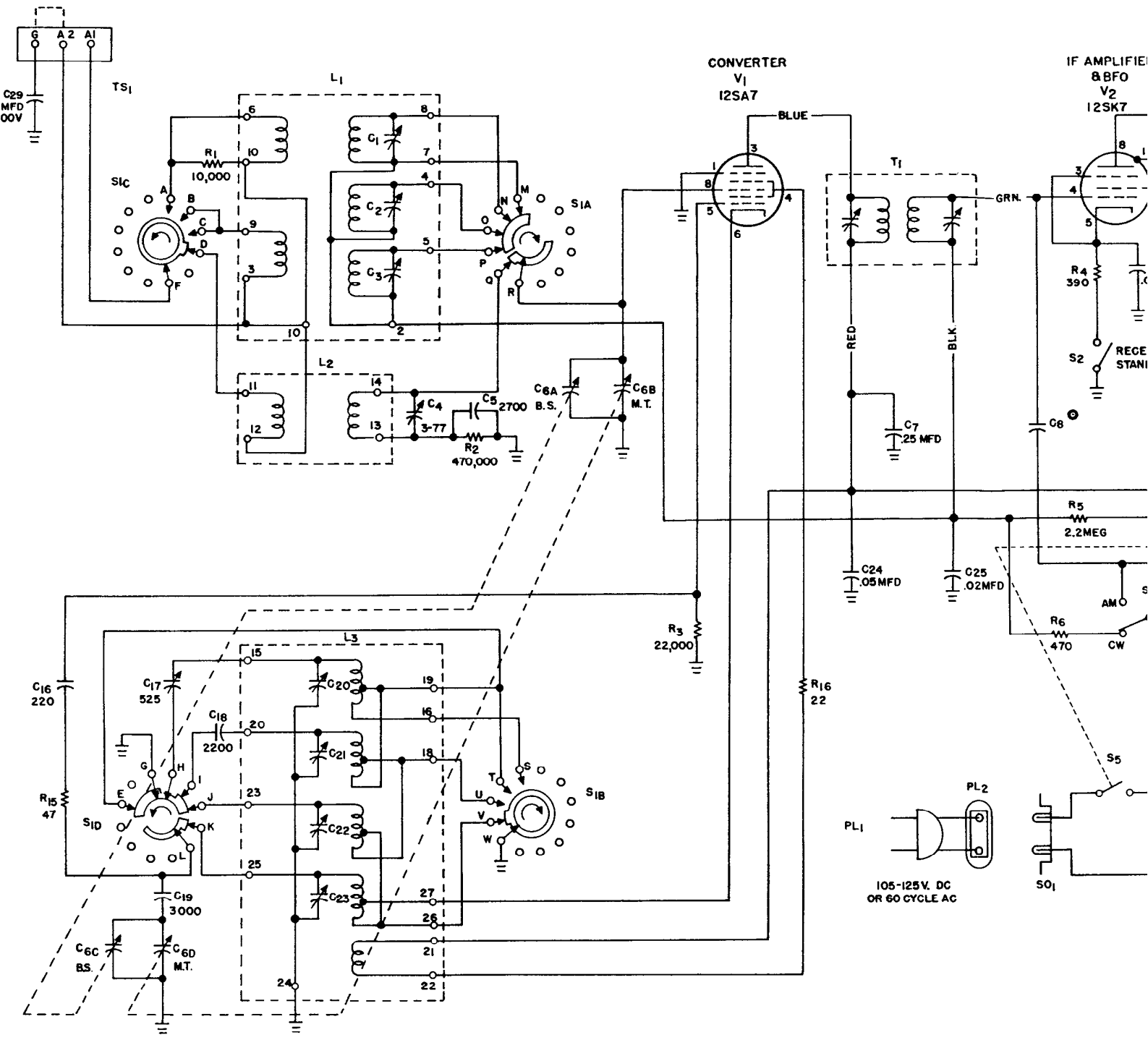
Fig. 8. Tube Socket Voltage Chart

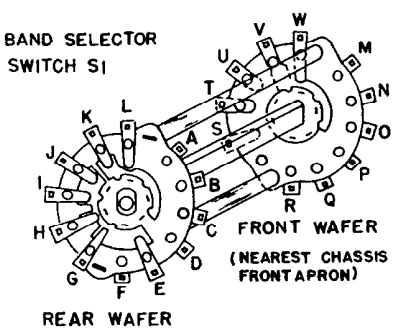
92C786

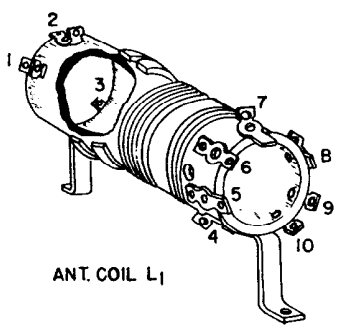
SERVICE PARTS LIST

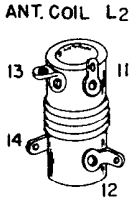
Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C-1,2,3	Trimmers; part of coil L-1	- - - - -
C-4	Trimmer, 3-77 mmf.	44A039
C-5	2700 mmf. 500 V., mica	47X30B272J
C-6A,B,C,D	Tuning capacitor, 2 section	48C162-1
C-7	.25 mfd. 200 V., tubular	46AT254J
C-8,10	Wiring capacity	- - - - -
C-9,24	.05 mfd. 200 V., tubular	46AU503J
C-11A,B,C,D	Composite capacitor: 5000, dual 220, 2000 mmf. 500 V.; ceramic	46A151
C-12	100 mmf. 500 V., mica	47X20B101K
C-13,29	.01 mfd. 600 V., tubular	46AZ103J
C-14A,B,C,D	20 mfd. 25 V., 60-40-40 mfd. 150 V., electrolytic	45B091
C-15,27	.02 mfd. 600 V., tubular	46AY203J
C-16	220 mmfd. 500 V., mica	47X20A221K
C-17	Padder, 525 mmf.	44A349
C-18	2200 mmf. 500 V., mica	47X30B222J
C-19	3000 mmf. 500 V., mica	47X30B302J
C-20,21,22, 23	Trimmers; part of coil L-3	- - - - -
C-25	.02 mfd. 400 V., tubular	46AW203J
C-26	.1 mfd. 400 V., tubular	46AV104J
C-28	470 mmfd. 500 V., mica	47X20B471M
	RESISTORS	
R-1	10,000 ohms 1/2 watt, carbon	23X20X103M
R-2,8,12	470,000 ohms 1/2 watt, carbon	23X20X474M
R-3	22,000 ohms 1/2 watt, carbon	23X20X223M
R-4	390 ohms 1/2 watt, carbon	23X20X391K
R-5	2.2 megohms 1/2 watt, carbon	23X20X225M
R-6	470 ohms 1/2 watt, carbon	23X20X471K
R-7	47,000 ohms 1/2 watt, carbon	23X20X473M
R-9	VOLUME control, 2 megohms; includes switch S-5	25B896
R-10	10 megohms 1/2 watt, carbon	23X20X106M
R-11	220,000 ohms 1/2 watt, carbon	23X20X224M
R-13	150 ohms 1/2 watt, carbon	23X20X151K
R-14	15 ohms 1/2 watt, carbon	23X20X150M
R-15	47 ohms 1/2 watt, carbon	23X20X470M
R-16,18	22 ohms 1/2 watt, carbon	23X20X220M
R-17	330 ohms 1/2 watt, carbon	23X20X331M
R-19	220 ohms 1 watt, carbon	23X30X221M
R-20	1000 ohms 1/2 watt, carbon	23X20X102M
	COILS AND TRANSFORMERS	
L-1	Coil, antenna; bands 1, 2 and 3	51C821
L-2	Coil, antenna; band 4	51B1015
L-3	Coil, oscillator; bands 1, 2, 3 and 4	51C822
T-1	Transformer, 1st IF	50B183
T-2	Transformer, 2nd IF	50B184
T-3	Transformer, audio output	55A127

Schematic Symbol	Description	Hallicrafters Part Number
	SWITCHES	
S-1A,B,C,D	Switch assembly, BAND SELECTOR	60C393
S-2	Switch, spst slide; RECEIVE/STANDBY	60A244
S-3,4	Switch, spdt slide; AM/CW and SPEAKER/PHONES	60A243
S-5	Switch, power; part of VOLUME control R-7	- - - - -
	CONNECTORS	
PL-1	Line cord and plug PL-2	87B1668-1
PL-2	Line cord plug	- - - - -
	Socket, dial lamp; includes leads	86A011
	Socket, octal tube	6A250
SO-1	Socket, power input	10A286
TS-1	Terminal strip, antenna	88A671
TS-2	PHONE jacks	88A071
	TUBES AND DIAL LAMPS	
V-1	12SA7: converter	90X12SA7
V-2	12SK7: IF amplifier and B.F.O.	90X12SK7
V-3	12SQ7: detector and audio amplifier	90X12SQ7
V-4	50L6GT: audio output	90X50L6GT
V-5	35Z5GT: rectifier	90X35Z5GT
LM-1	Lamp, pilot; Mazda #47	39A004
	MISCELLANEOUS PARTS	
	Cabinet	66B625
	Cabinet back	8C1139
	Cabinet bottom	8C1140
	Clip, coil L-2 mtg.	76A362
	Dial cord, 30½ inches	38A019
	Dial scale	83C373
	Grommet, rubber; for insulating cabinet from chassis	16A201
	Insulator, nylon; fits in grommet 16A201	4A646
	Knob, BAND SPREAD and TUNING	15A048
	Knob, BAND SELECTOR and VOLUME	15A049
	Mounting foot, rubber	16A007
	Pointer, BAND SPREAD	82A103
	Pointer, TUNING	82A177
	Shaft, BAND SPREAD	74A319
	Shaft, TUNING	74A318
LS-1	Speaker, 5 inch PM	85C030
	Spring, dial cord	75A012
	Washer, fiber; for insulating cabinet from chassis	4A647
	Window, dial	22B311



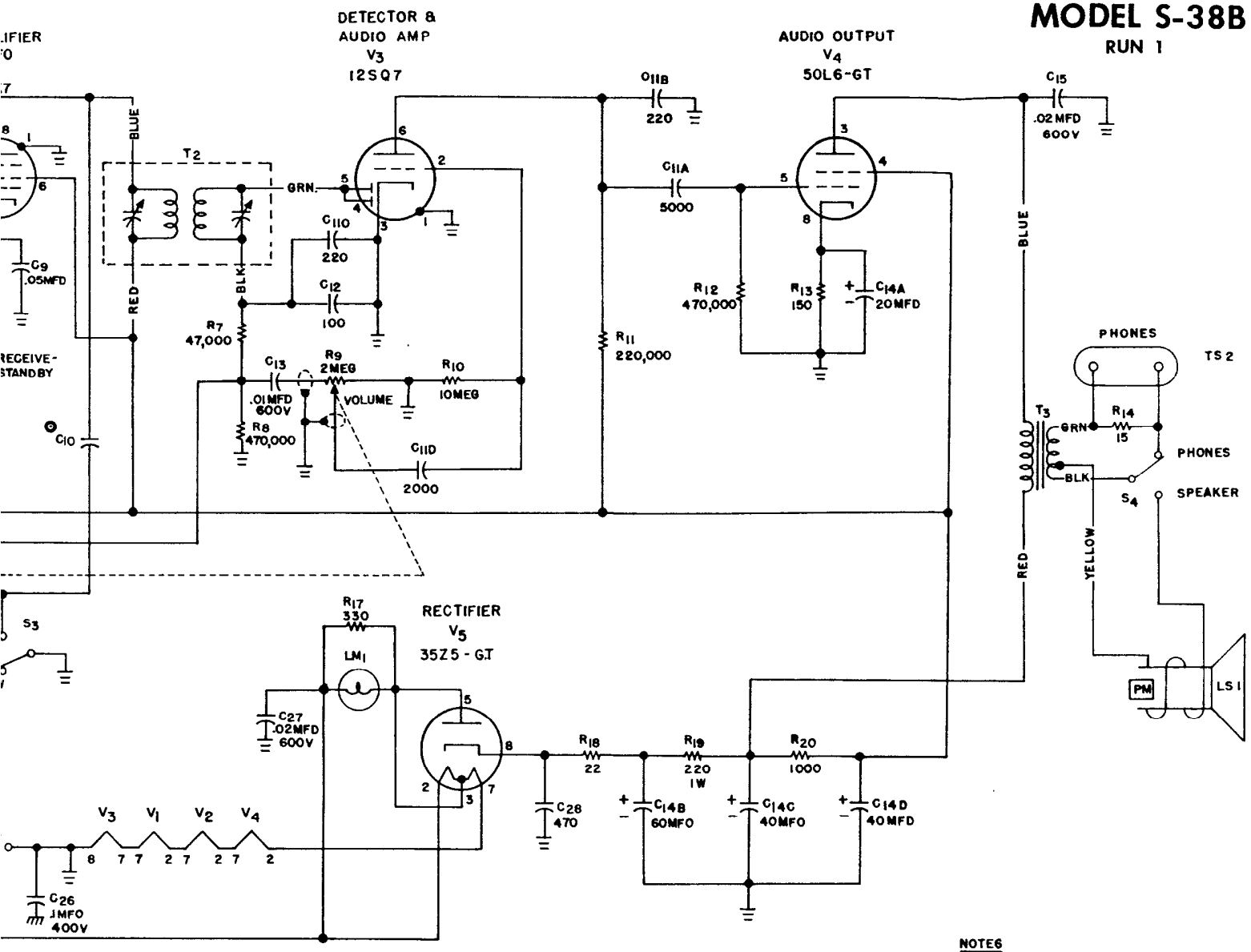






NOTE: VALUES & TOLERANCES SHOWN ARE NOMIN
IT IS RECOMMENDED THAT THE VALUES OF
TO THE NOMINAL VALUE OF THE PART BEIN

MODEL S-38B
RUN 1



NOTES

1. RESISTANCE VALUES ARE IN OHMS.
2. CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED
3. RESISTOR RATINGS ARE 1/2 WATT UNLESS OTHERWISE SPECIF
4. BAND SELECTOR SWITCH (S_1) SHOWN IN BAND 4 POSITION.

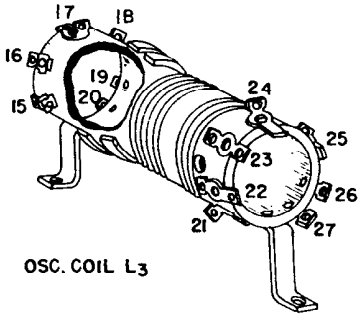
⏚ CHASSIS GROUND

⏚ CABINET GROUND

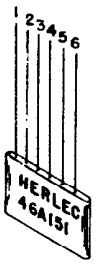
⊙ WIRE GIMMICK

LAST CAPACITOR SYMBOL C-29

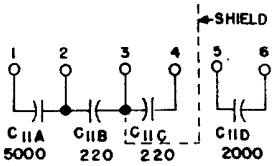
LAST RESISTOR SYMBOL R-20



OSC. COIL L_3



CAPACITOR C_{11}



89F326-E

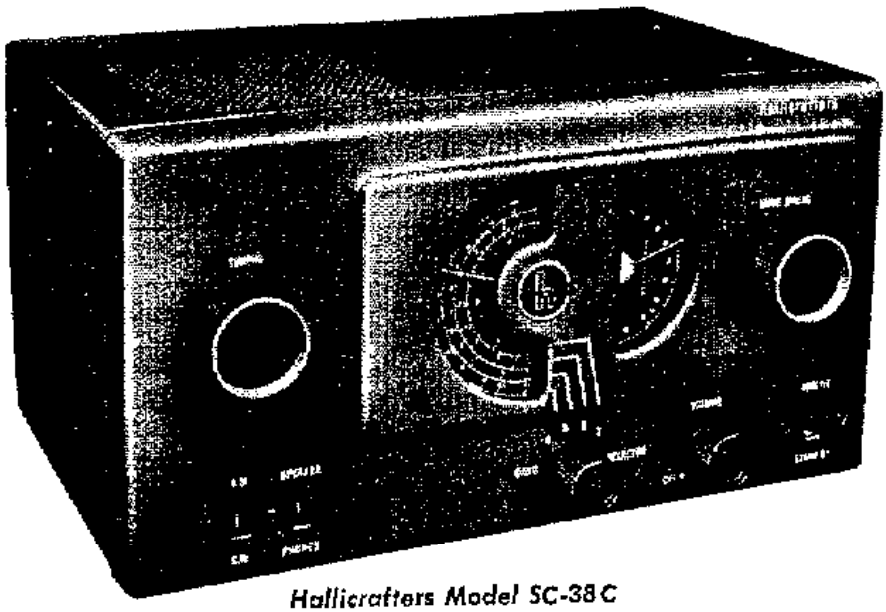
MINAL AND VARIATIONS MAY BE FOUND.
OF ANY REPLACEMENT CORRESPONDS
EING REPLACED.

Fig. 9. Schematic Diagram

S-38C
RUN 2

the hallicrafters co.
MANUFACTURERS OF ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.

GENERAL DESCRIPTION



Hallicrafters Model SC-38C

World-wide radio reception is yours with the Hallicrafters Model S-38C This 5 tube communications receiver tunes from 540 kilocycles to 32 megacycles to bring you standard broadcast programs, foreign and domestic shortwave broadcasts, amateurs, police, ships, aircraft and countless other exciting distant stations. It receives both voice and code broadcasts and is designed to operate from 105 to 125 volt direct current (DC) or 60 cycles alternating current (AC). A 5-inch Alnico V permanent magnet speaker is built into the top of the cabinet and tip jacks have been provided on the back of the set for plugging in a pair of headphones. The RECEIVE-STANDBY switch on the front panel is a special feature which permits you to silence the receiver without turning the set off.

Good receptiun of both standard and shortwave broadcasts can be obtained in most localities with the 15 foot antenna wire included with your receiver. It is merely necessary to uncoil this wire, connect one end of it to terminal A1 on the back of the set and then run it about the room in any convenient manner. To complete the antenna installation, connect the jumper between terminals A2 and G.

Your set is provided with two tuning knobs for greater ease of tuning. Wide tuning is done with the knob marked TUNING and fine tuning with the knob marked BAND SPREAD. The BAND SPREAD knob permits you to accurately tune in stations on crowded bands by spreading them out so that they may be more easily separated. In this way you are able to hear many more stations than you would on an ordinary radio with just one tuning knob.

The amateur bands and principal shortwave channels of the world are clearly marked on the dial for your convenience. Since shortwave conditions vary with the season of the year and even with the time of day, shortwave programs may not be heard with the same regularity as standard broadcasts. A special table has been provided on page 3 to aid you in determining the most favorable times for shortwave listening.

IMPORTANT

Your careful attention is especially invited to the installation and operating instructions. They have been provided to insure the satisfaction you have a right to expect from a Hallicrafters "Precision Built" product. Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation of a high sensitivity receiver 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.

INSTALLATION INSTRUCTIONS

ANTENNA - The terminals marked A1, A2 and G on the back of the set are for antenna and ground connections. Good results can be obtained in most localities with the 15 foot antenna wire included with your receiver. This wire should be uncoiled to provide maximum signal pickup. An outside antenna 50 to 100 feet long (ordinary copper wire) may be necessary if the receiver is operated in a difficult receptiun area or steel constructed building. Connect the antenna wire to terminal A1 on the back of the set and then connect the jumper between terminals A2 and G. In some locations, reception may be improved by counecting a lead from terminal G to a cold water pipe or outside ground rod.

For really top performance, there is no substitute for an outside antenna such as used by the commercial radio stations. Provision has been made on your receiver for the connection of this type of antenna, commonly called a doublet. When a doublet antenna is used, the jumper is removed and the antenna is connected to terminals A1 and A2. Consult your radio dealer for further information.

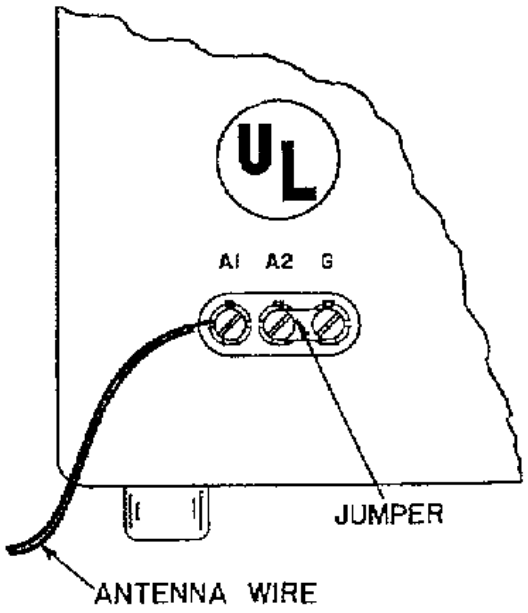


Fig. 1. Rear View of Receiver Showing Antenna and Ground Terminals

OPERATING INSTRUCTIONS

TUNING DIAL - All dial readings are in megacycles. To convert the readings on the standard broadcast band (band 1) to kilocycles, simply remove the dot and add two zeros; thus, .7 on the dial corresponds to 700 kilocycles.

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

SPEAKER-PHONES SWITCH - For operation of the built-in speaker, set the switch at SPEAKER. Tip jacks are provided on the back of the set for plugging in a pair of headphones. Use any 500 to 5000 ohm headphones. For headphone operation set the switch at PHONES.

BAND SELECTOR CONTROL - Set this control for the band you wish to tune.

VOLUME CONTROL - Turn this control clockwise to turn the set on. Allow about 30 seconds for the tubes to reach operating temperature and then advance the control to increase volume. To turn the set off, turn this control counter-clockwise until a click is heard.

NOTE - If the receiver does not operate after the 30 second warm up when connected to a DC source, the power plug should be reversed in the wall outlet to obtain proper polarity.

RECEIVE - STANDBY SWITCH - Set this switch at RECEIVE for radio reception. If you wish to silence the receiver without turning the set off, set the switch at STANDBY. To resume radio reception, simply return the switch to the RECEIVE position.

TUNING KNOB - Your receiver has been provided with two tuning knobs - The TUNING knob which operates the pointer on the left hand dial and a separate BAND SPREAD knob which operates the pointer on the right hand dial. The TUNING knob is for wide tuning and the BAND SPREAD knob for fine tuning. Use the TUNING knob to tune in the desired station. Tune for the clearest and strongest signal. If the signal is too strong, reduce it by means of the VOLUME control, not by using the TUNING knob. For code reception, adjust the TUNING knob for the desired pitch of the CW code signal when tuning in the station.

IMPORTANT - The dial readings will correspond to the exact station frequencies only if the BAND SPREAD dial pointer is set at 0.

BAND SPREAD KNOB - The BAND SPREAD knob permits you to accurately tune in stations on crowded bands by spreading them out so that they can be more easily separated. The BAND SPREAD knob can be used in two different ways. First, it may be left with the pointer at 5 while you partially tune in the desired station with the TUNING knob. Then, by "rocking" the BAND SPREAD knob back and forth (turn it a few degrees to the left and right through the desired station), you will be able to tune in the desired station with precision accuracy.

The second way to operate the BAND SPREAD knob is to use it to cover a group of stations. Set the BAND SPREAD knob so that the pointer reads 0 and then turn the TUNING knob to tune in the highest frequency station in the group. The other stations can be heard by slowly turning the BAND SPREAD knob from 0 to 100.

BEST SHORTWAVE RECEPTION TABLE

Band	Most Favorable Time	Most Favorable Distance
6-7 MC	Night - Winter	Day - 400 Miles - Night - Over 1500 Miles
9-10 MC	Day - Late Afternoon and Night - Winter	Over 500 Miles
11-12 MC	Evenings or Late Summer Afternoons	Day - Under 1500 Miles Night - Over 1500 Miles
15-18 MC	Early Mornings and Summer Evenings	Over 1500 Miles

SERVICE INSTRUCTIONS

GENERAL SPECIFICATIONS

Tubes	5 including 1 rectifier
Speaker	5 inch PM
Voice Coil Impedance	3.2 ohms
Headphone Output Impedance	15 ohms
Antenna	Terminals for single wire or doublet antenna. (See Page 2.)
Intermediate Frequency	455 KC
Frequency Coverage	540 KC - 32 MC
Power Supply	105-125 volts DC or 60 cycles AC
Power Consumption	30 watts

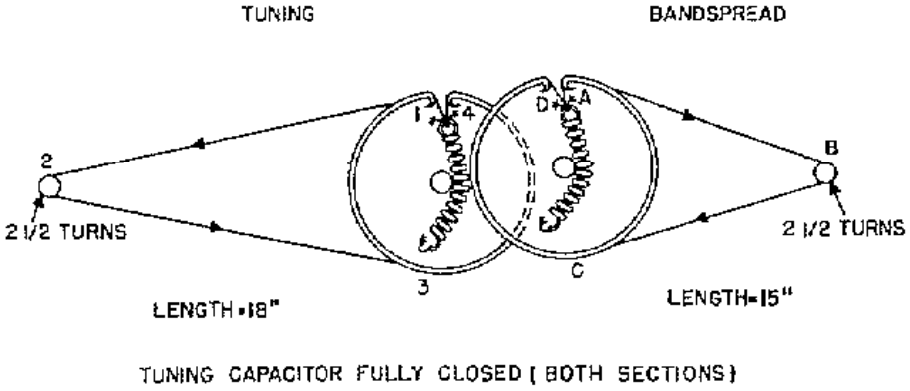


Fig. 2. Dial Cord Stringing Diagram

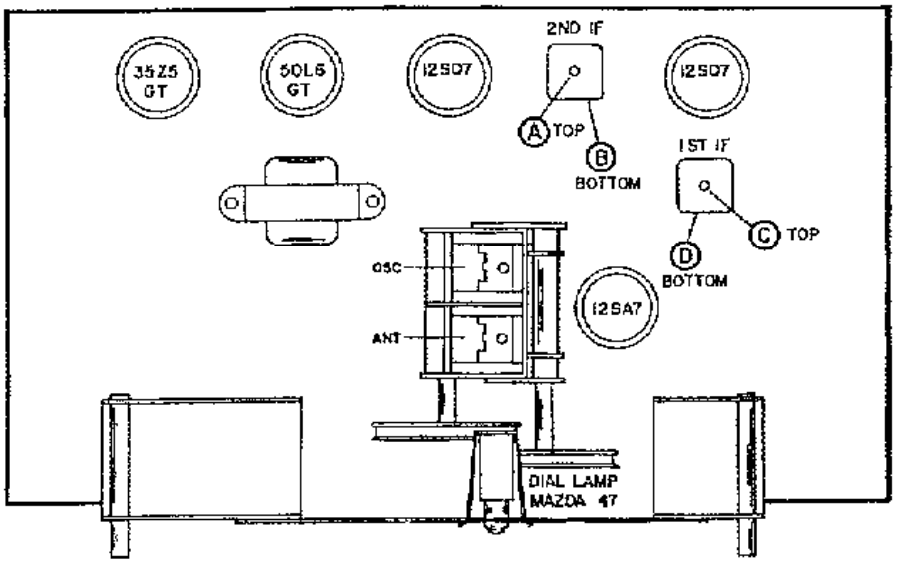


Fig. 3. Top View of Chassis Showing Location of Alignment Adjustments, Tubes and Dial Lamp

DIAL CORD STRINGING - Refer to Fig. 2 for the stringing diagram. Both sections of the tuning gang should be fully meshed. To restring the TUNING dial cord, tie one end of an 18 inch length of 30 lb. dial cord to the dial spring at 1 on the drive pulley. Follow the stringing sequence 1 through 4. At 4, stretch the spring and tie the cord securely to the spring. Cut off the excess cord and apply a drop of quick drying cement to the knot.

To restring the BAND SPREAD dial cord, cut a 15 inch length of dial cord and follow the procedure as explained above, starting at A and proceeding through D.

TUBE AND DIAL LAMP REPLACEMENT - Refer to Fig. 3 for the location of the tubes and dial lamp used in the receiver. To gain access to the tubes and lamp, remove the back cover from the cabinet. Before attempting to make any replacement, set the BAND SPREAD control fully clockwise and the TUNING control fully counterclockwise to prevent damage to the tuning gang. To replace a tube, insert the center guide pin into the center hole of the tube socket, rotate the tube until the key drops into position and then push down until the tube is held firmly in the socket. To make a dial lamp replacement, remove the dial lamp socket by compressing the side springs. Make replacement only with a type 47 pilot lamp.

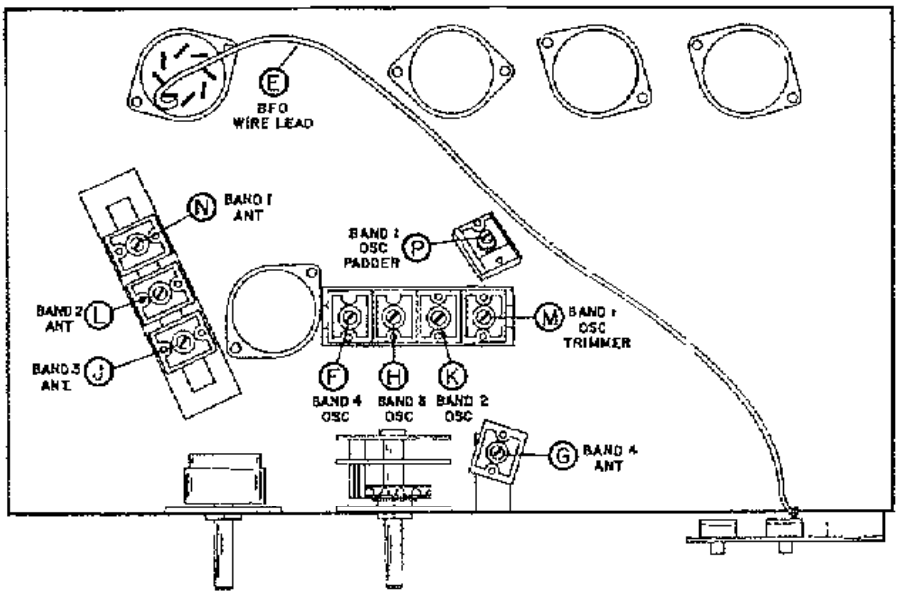


Fig. 4. Bottom View of Chassis Showing Location of Alignment Adjustments

ALIGNMENT INSTRUCTIONS

- 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.
- 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. 3 and 4 for location of alignment adjustments.

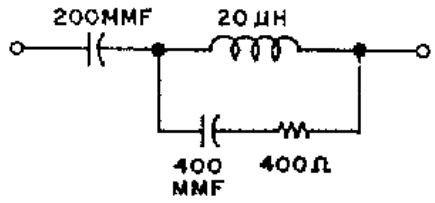


Fig. 5. RMA Dummy Antenna

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	1	1.0 MC	A, B, C and D for maximum output. Keep raducing gen. output so that the reading on the output meter does not exceed 50 milliwatts
			BFO ADJUSTMENT		
*2	Same as Step 1.	455 KC (No Mod.)	1	1.0 MC	Set the AM/CW switch at CW. (Reset the switch at AM when Step 2 is completed.) For correct BFO operation, vary the coupling between lead E and pins 4 and 8 of the 12SG7 tube for a maximum beat note. Pushing lead E toward pin 4 increases the strength of the beat.
			RF ALIGNMENT		
3	High side thru RMA dummy antenna (Fig. 5) 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.
		500 KC	1	.6 MC	P for maximum output as in Step 1.

* Step 2 is usually unnecessary. Adjustment should be made ONLY if a weak beat note is obtained on strong CW signals indicating lack of coupling between wire lead E and pins 4 and 8 of the 12SG7.

SERVICE OR OPERATING QUESTIONS - For further information regarding operation or servicing of your radio, contact your dealer. Make no service shipments to the factory as the Hallicrafters Co. will not accept the responsibility for unauthorized shipments. Factory type service is available at any HALLICRAFTERS AUTHORIZED SERVICE CENTER which displays the sign shown at the right of the paga. For the location of the one nearest you, consult your dealer or telephone directory.

The Hallicrafters Co. reserves the privilege of making revisions in current production of equipment and assumes no obligation to incorporate these revisions in earlier models.

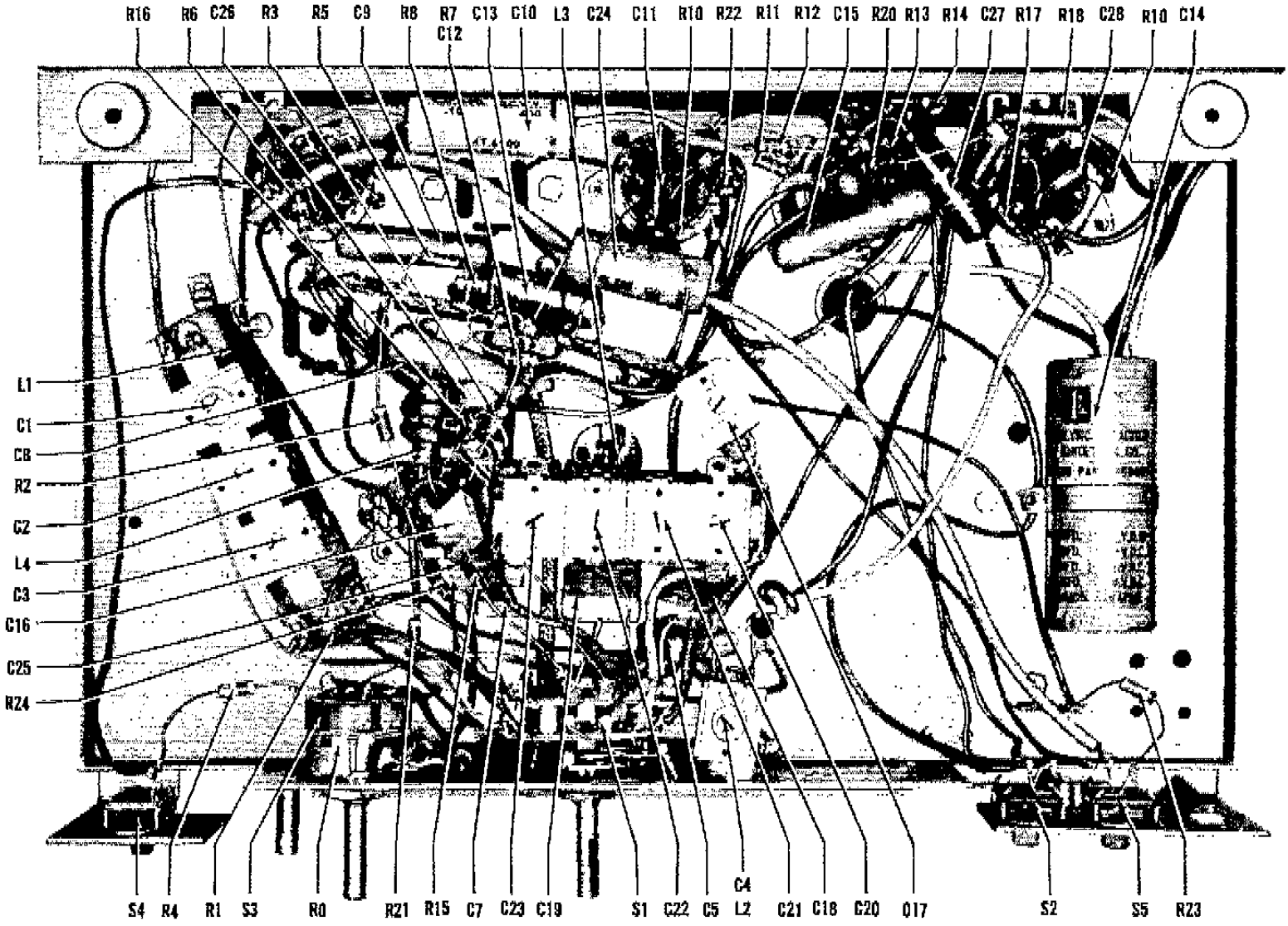


Fig. 6. Bottom View of Chassis Showing Component Location

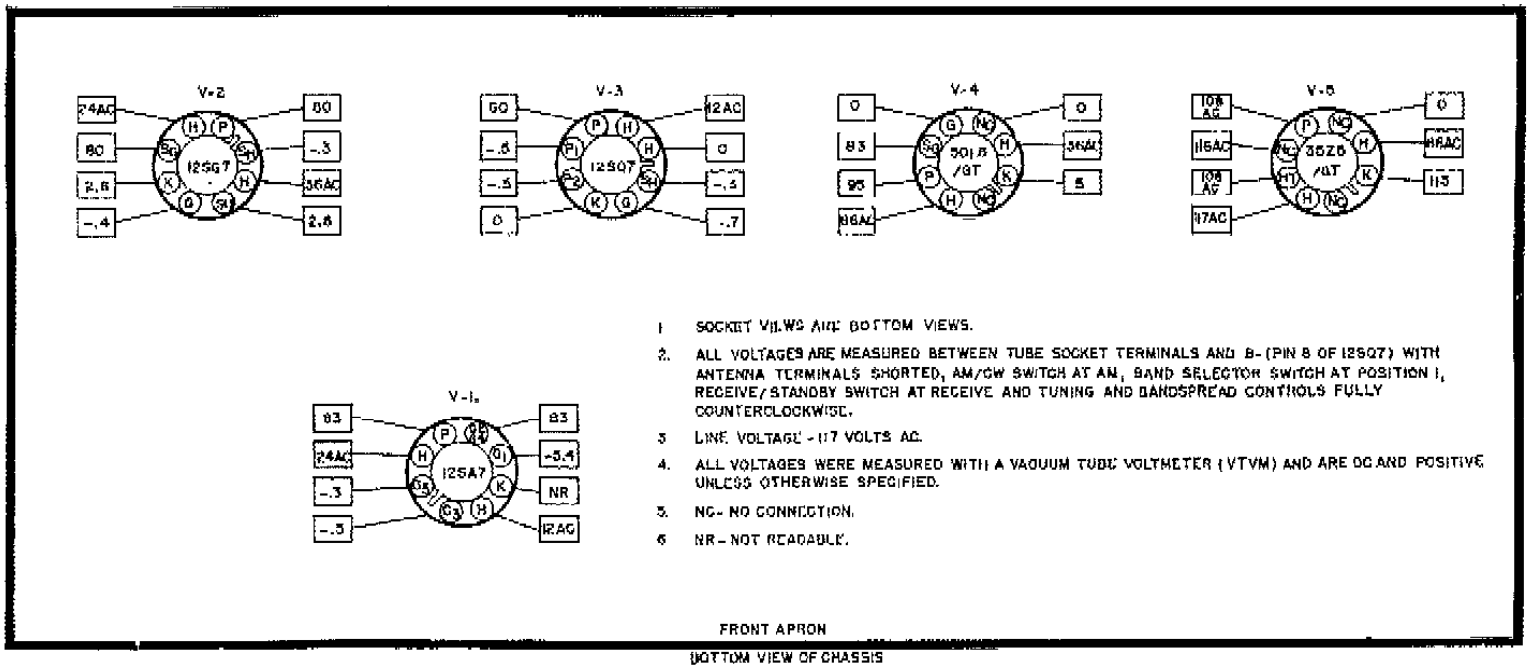


Fig. 7. Tube Socket Voltage Chart

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C-1,2,3	Trimmer; part of antenna coil L-1	----------
C-4	Trimmer, 20-120 mmf.	44A424
C-5	2700 mmf. 5%, 500V.; mica	47X30B272J
C-6A,B,C&D	Tuning capacitor, 2 section	48C162-1
C-7,12,16	220 mmf. 10%, 500V.; mica	47X20B221K
C-8,15	.02 mfd. 600V., tubular	46AY203J
C-9	.05 mfd. 200V., tubular	46AU503J
C-10	.002 mfd. 600V., tubular	46AZ302F
C-11A,B,C &D	Capacitor, composite: 5000, 220, 220 and 2000 mmf., 500V.; ceramic	46A151
C-13	.01 mfd. 600V., tubular	46AZ103J
C-14A,B,C &D	60-40-40 mfd. 150V., 20 mfd. 25V.; electrolytic	45B091
C-17	Padder, 525 mmf.	44A349
C-18	2200 mmf. 5%, 500V.; mica	47X30B222J
C-19	3000 mmf. 5%, 500V.; mica	47X30B302J
C-20,21,22, 23	Trimmer; part of oscillator coil L-3	----------
C-24	.05 mfd. 600V., tubular	46AY503J
C-25,26	5000 mmf. 450V., ceramic disc	47A168
C-27	.02 mfd. 600V., molded tubular	46BR203L6
C-28	10,000 mmf. 450V., ceramic disc	47A224
	RESISTORS	
R-1	10,000 ohms 1/2 watt, carbon	23X20X103M
R-2,5	2.2 megohms 1/2 watt, carbon	23X20X225M
R-3	22,000 ohms 1/2 watt, carbon	23X20X223M
R-4	270 ohms 1/2 watt, carbon	23X20X271K
R-6	330 ohms 1/2 watt, carbon	23X20X331M
R-7	47,000 ohms 1/2 watt, carbon	23X20X473M
R-8,12,21,22	470,000 ohms 1/2 watt, carbon	23X20X474M
R-9	2 megohms; VOLUME control	25B896
R-10	10 megohms 1/2 watt, carbon	23X20X106M
R-11	220,000 ohms 1/2 watt, carbon	23X20X224M
R-13	150 ohms 1/2 watt, carbon	23X20X151K
R-14,15,17	15 ohms 1/2 watt, carbon	23X20X150M
R-16,18,24	22 ohms 1/2 watt, carbon	23X20X220M
R-19	220 ohms 1 watt, carbon	23X30X221M
R-20	1000 ohms 1/2 watt, carbon	23X20X102M
R-23	470 ohms 1/2 watt, carbon	23X20X471K
	COILS AND TRANSFORMERS	
L-1	Coil, antenna; bands 1, 2 and 3	51C821
L-2	Coil, antenna; band 4	51B1015
L-3	Coil, oscillator; all bands	51C822
L-4	Choke, RF; 540 microhenries	53A107
T-1	Transformer, 1st IF	50C531
T-2	Transformer, 2nd IF	50C532
T-3	Transformer, audio output	55A127

Schematic Symbol	Description	Hallicrafters Part Number
	SWITCHES	
S-1A,B,C&D	Bandswitch assembly (BAND SELECTOR)	60C393
S-2,5	Switch, slide; spdt (SPEAKER/ PHONES and AM/CW)	60A477
S-3	Switch, ON-OFF; part of VOLUME control R-9	----------
S-4	Switch, slide; spst (RECEIVE/ STANDBY)	60A476
	SOCKETS AND CONNECTORS	
	Socket, dial lamp; includes leads	86A011
	Socket, tube; octal	6A250
TS-1	Terminal strip, antenna	88A671
TS-2	Tip jacks, PHONE	88A071
	TUBES AND DIAL LAMP	
V-1	12SA7: convertor	90X12SA7
V-2	12SG7: IF amplifier and BFO	90X12SG7
V-3	12SQ7 or 12SQ7GT/G: detector and audio amplifier	90X12SQ7 or 90X12SQ7GT/G
V-4	50L6GT: audio output	90X50L6GT
V-5	35Z5GT; rectifier	90X35Z5GT
LM-1	Lamp, dial; type 47	39A004
	MISCELLANEOUS PARTS	
	Cabinet	86C772
	Cabinet back	32C513
	Cabinet bottom cover	32C501
	Clip, mtg; for antenna coil L-2	76A326
	Dial cord (specify length)	38A026
	Dial scale	83C406
	Dial window	22B311
	Knob, BAND SELECTOR and VOLUME	15A049
	Knob, BAND SPREAD and TUNING	15A048
PL-1	Line cord and plug	67A078
	Line cord lock; male section	76A397-1
	Line cord lock; female section	76A397-2
	Mounting foot, cabinet	16A244
	Pointer, dial; BAND SPREAD	82A216
	Pointer, dial; TUNING	82A217
LS-1	Speaker, 5-inch PM	85C030
	Spring, dial cord	75A012

Warranty

"The Hallicrafter's 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 of 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 in 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 use 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.

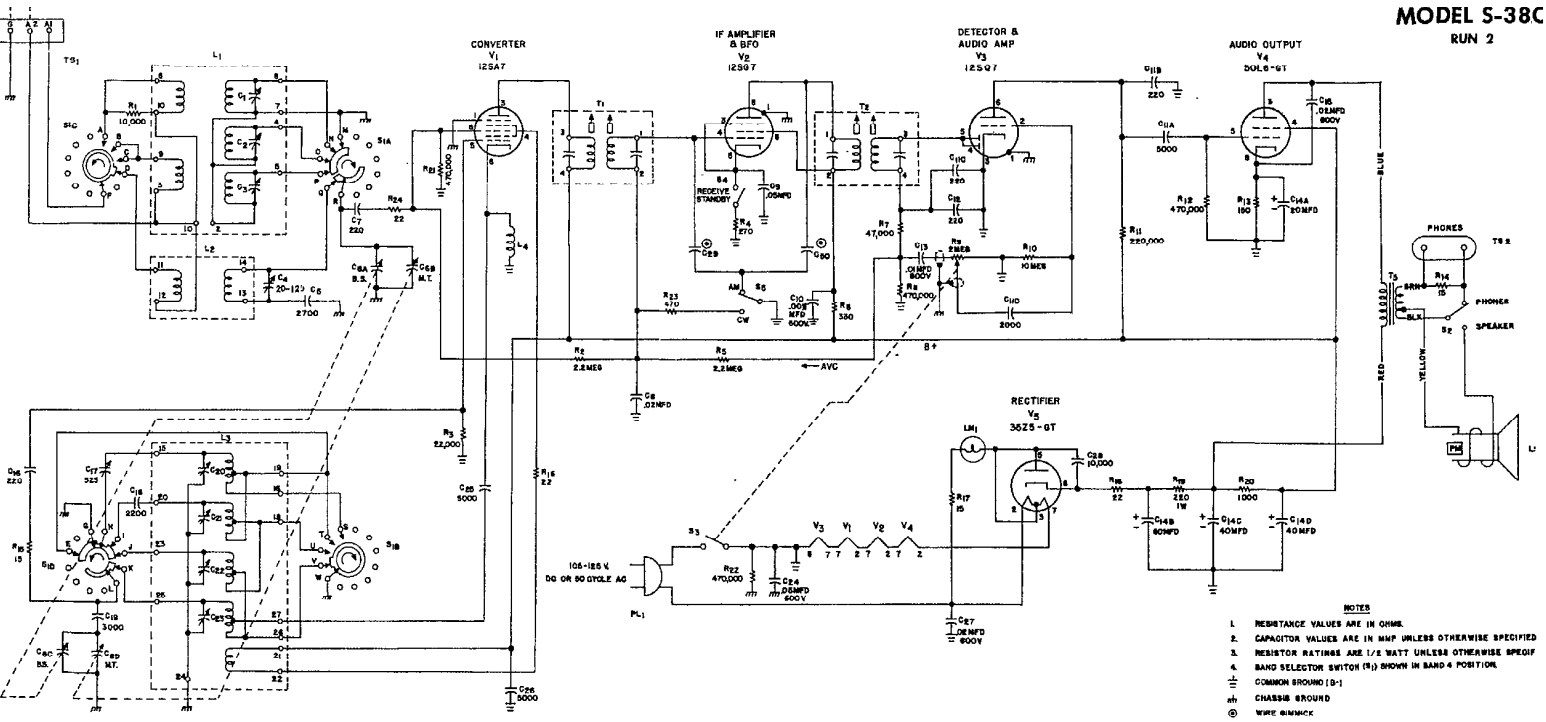
Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

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."

Form No. 94X622

the Hallicrafters co.

MODEL S-38C
RUN 2



NOTES

1. RESISTANCE VALUES ARE IN OHMS.
2. CAPACITOR VALUES ARE IN MMF UNLESS OTHERWISE SPECIFIED
3. RESISTOR RATINGS ARE 1/2 WATT UNLESS OTHERWISE SPECIF
4. BAND SELECTOR SWITCH (S1) SHOWN IN BAND 4 POSITION.

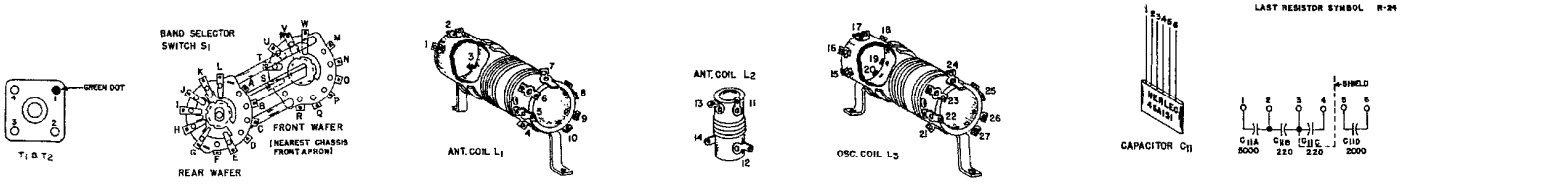
COMMON GROUND (G-)

CHASSIS GROUND

WIRE GIMMICK

LAST CAPACITOR SYMBOL C-30

LAST RESISTOR SYMBOL R-24

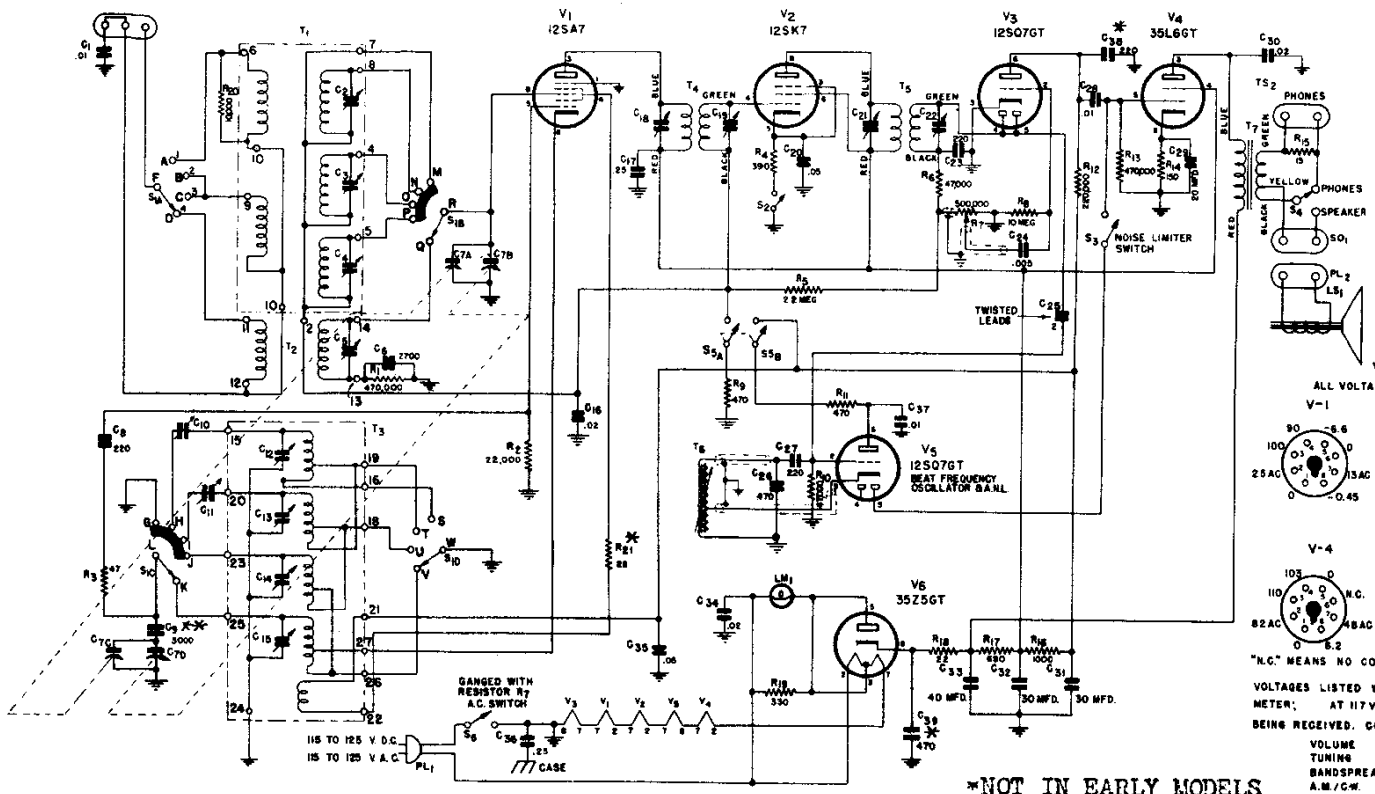


NOTE: VALUES & TOLERANCES SHOWN ARE NOMINAL AND VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUES OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED.

Fig. 8. Schematic Diagram

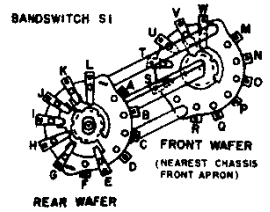
THE HALLICRAFTERS CO.

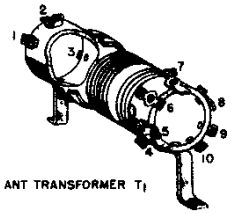
MODEL S-38, Early and Revised

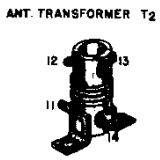


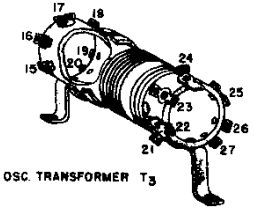
**C9 WAS 2700 μμf IN EARLY MODELS

*NOT IN EARLY MODELS









August 1946

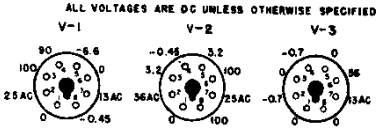
NOTE: DIMENSIONS & PROPORTIONS SHOWN IN PICTORIAL VIEWS HAVE BEEN EXAGGERATED FOR CLARITY OF TERMINAL LUG LOCATION.

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.

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

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.

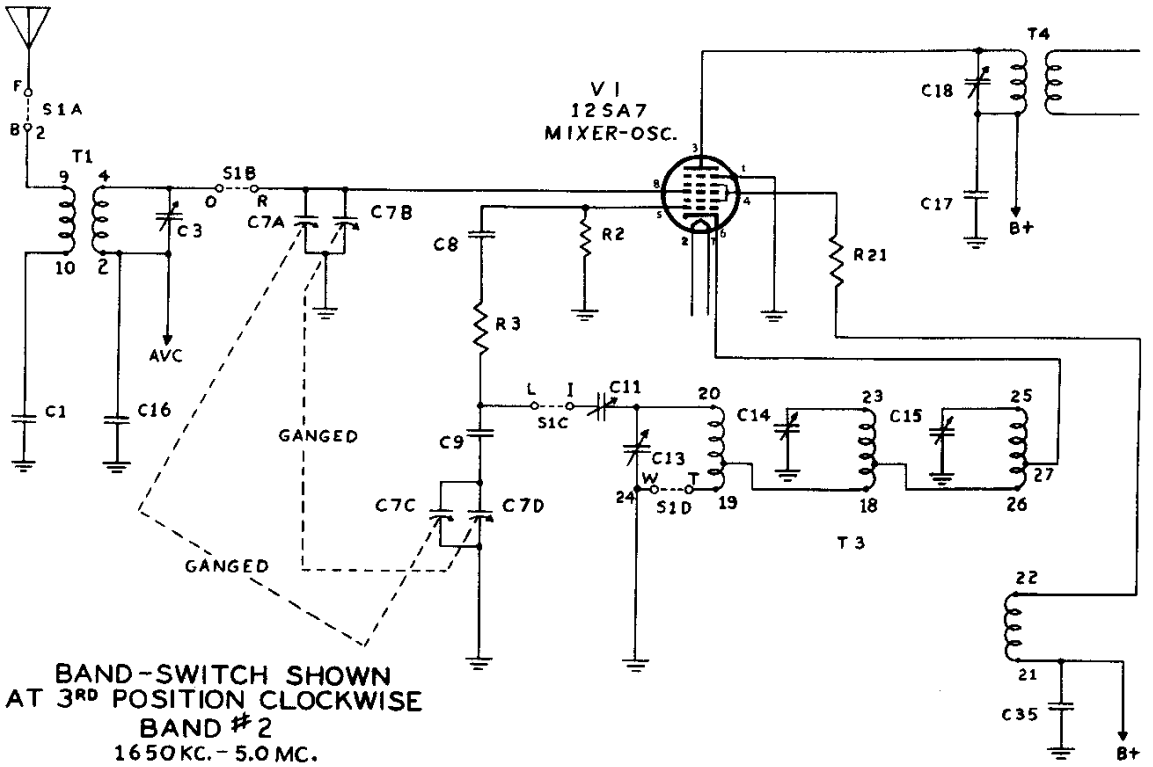
IF PEAK 455 KC

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

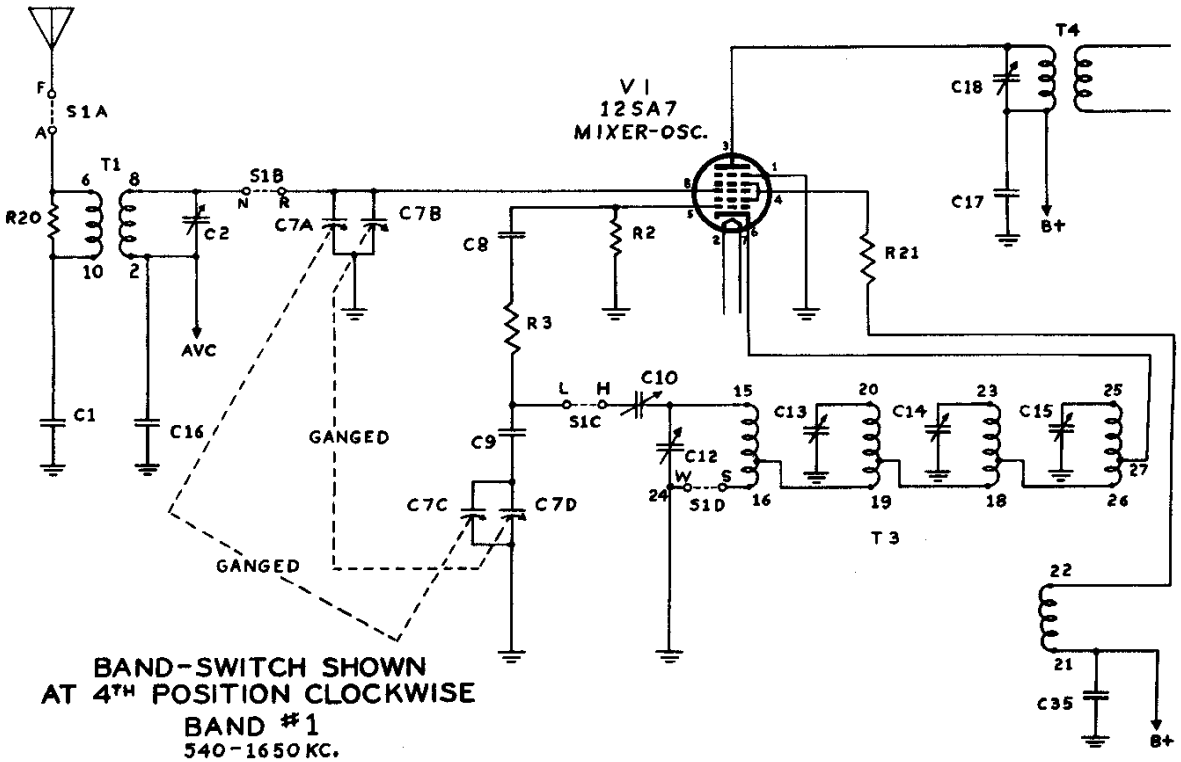
LETTERS AT BANDSWITCH (S_1) AND NUMERALS AT ANTENNA AND OSCILLATOR TRANSFORMERS (T_1, T_2 & T_3) IDENTIFY CORRESPONDING TERMINAL LUGS ON PICTORIAL VIEWS.

THE HALLICRAFTERS CO.

MODEL S-38, Early and Revised



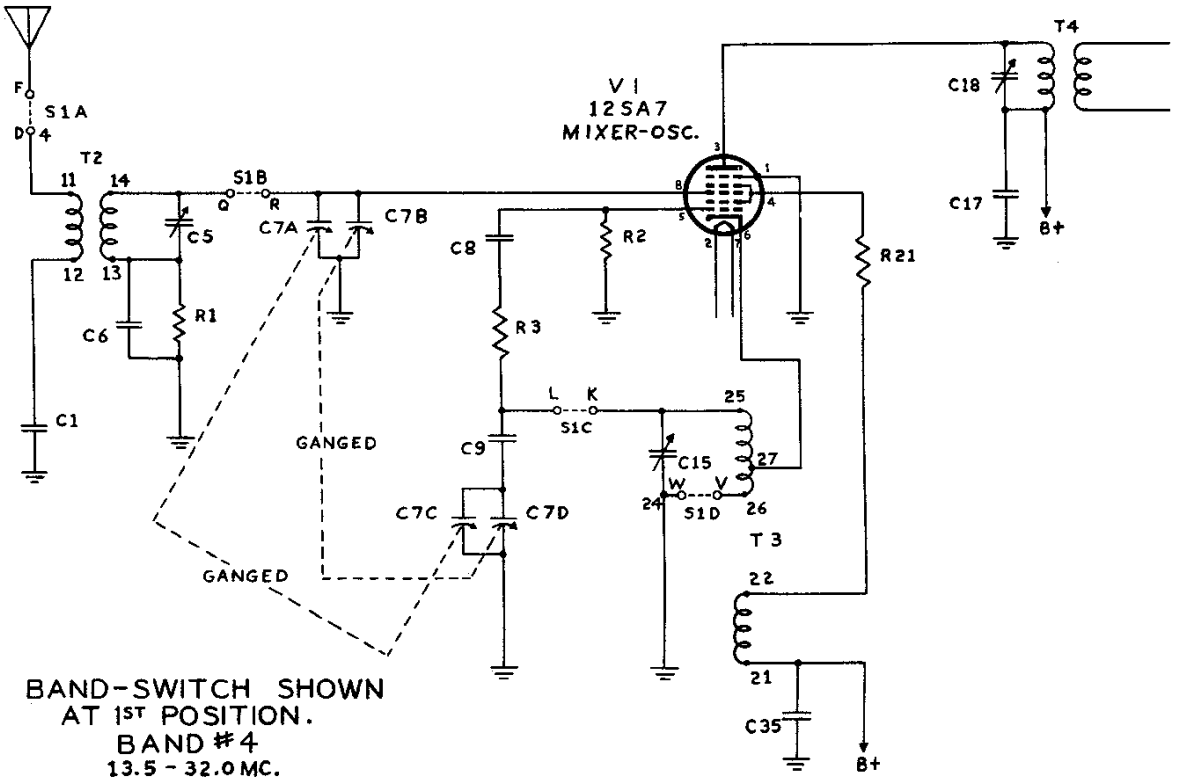
BAND-SWITCH SHOWN
AT 3RD POSITION CLOCKWISE
BAND #2
1650 KC. - 5.0 MC.



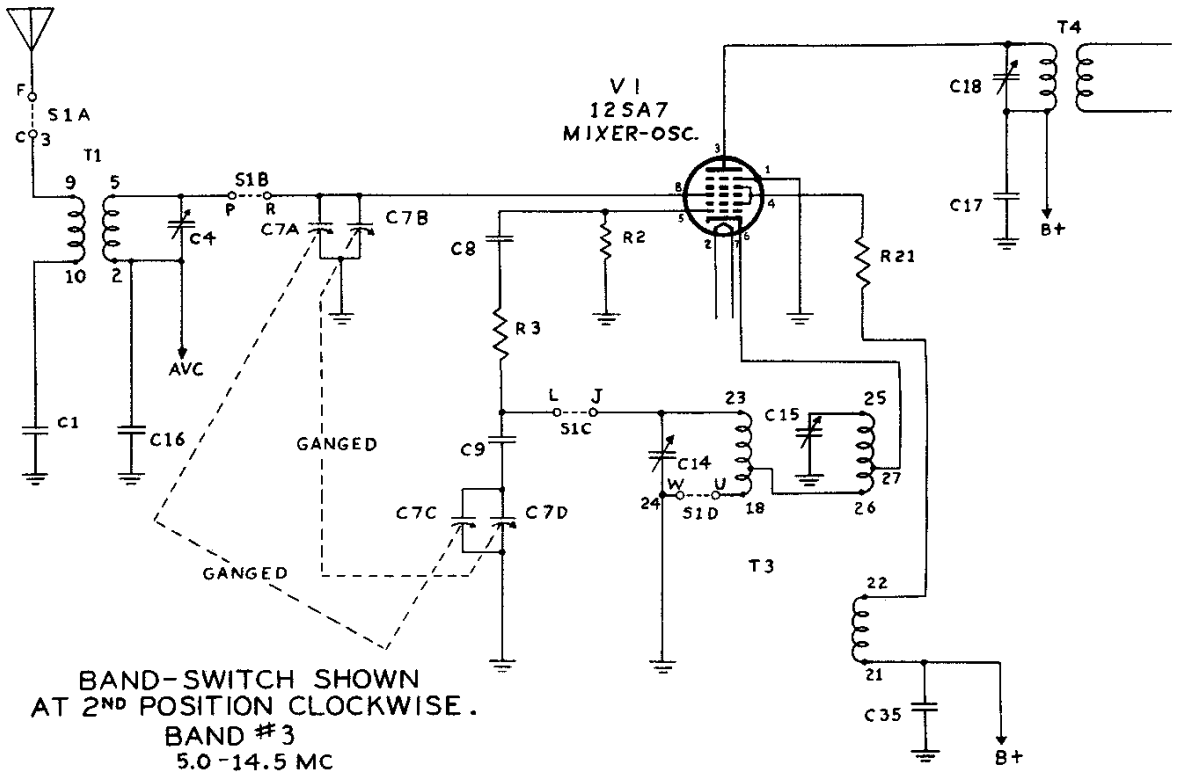
BAND-SWITCH SHOWN
AT 4TH POSITION CLOCKWISE
BAND #1
540-1650 KC.

MODEL S-38, Early and Revised

THE HALLICRAFTERS CO.



BAND-SWITCH SHOWN
AT 1ST POSITION.
BAND #4
13.5 - 32.0 MC.



BAND-SWITCH SHOWN
AT 2ND POSITION CLOCKWISE.
BAND #3
5.0 - 14.5 MC

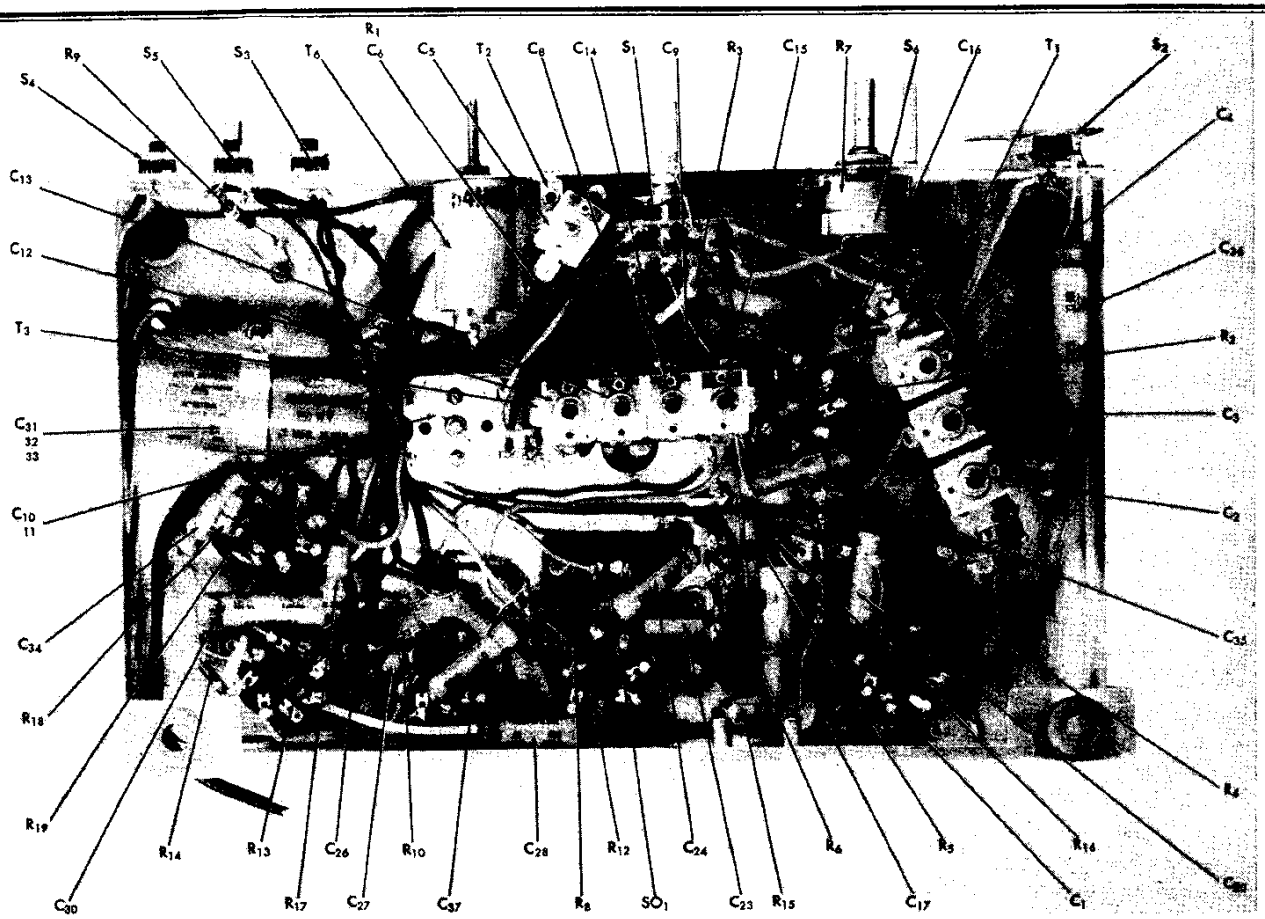


Fig. 4. Bottom view of the receiver showing components location.

CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

NAME	FUNCTION	SETTING
STANDBY/ RECEIVE	Receiver temporary standby	At "RECEIVE"
VOLUME	Audio gain control and receiver on/off switch	Half clockwise; adj. as necessary
BAND SELECTOR	Operating band selector	Clockwise to "1"
PITCH CONTROL	CW beat note pitch selector	Any position (not in use)
SPEAKER/ PHONES	Output selector switch	At "SPEAKER"
CW/AM	BFO on/off switch AVC on/off switch	At "AM" (AVC on)
NOISE LIMITER	Noise peak limiting	At "OFF"
TUNING	Main tuning control	To local station freq. on main dial scale
BAND SPREAD	Short wave band spreading	To "0" on small dial scale

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

EQUIPMENT:

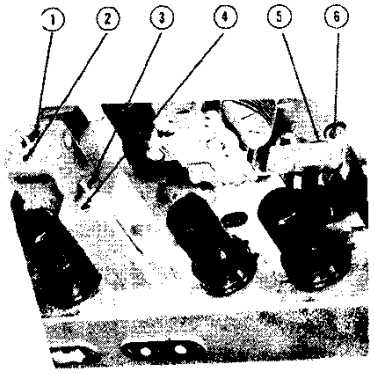
1. Signal Generator capable of the ranges indicated in the Alignment Chart, including a 400 cycle audio modulator.
2. Output meter capable of handling 1 watt of audio power.
3. Standard RMA dummy consisting of a 200 mmf condenser in series with a 20uh r-f choke which is shunted by a 400 mmf condenser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

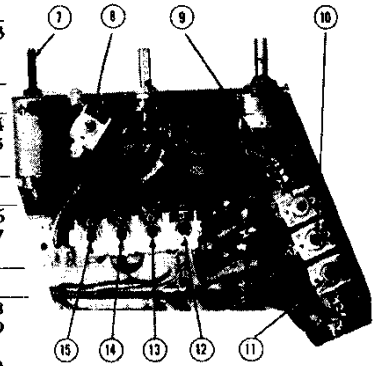
Connect the output meter across the terminals of socket SO-1 and remove the speaker plug from the socket and adjust the meter for 3 ohms impedance.
Caution: Set the meter at a sufficiently high range to prevent possible damage from overload.

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."



TOP VIEW OF CHASSIS



BOTTOM VIEW OF CHASSIS

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.

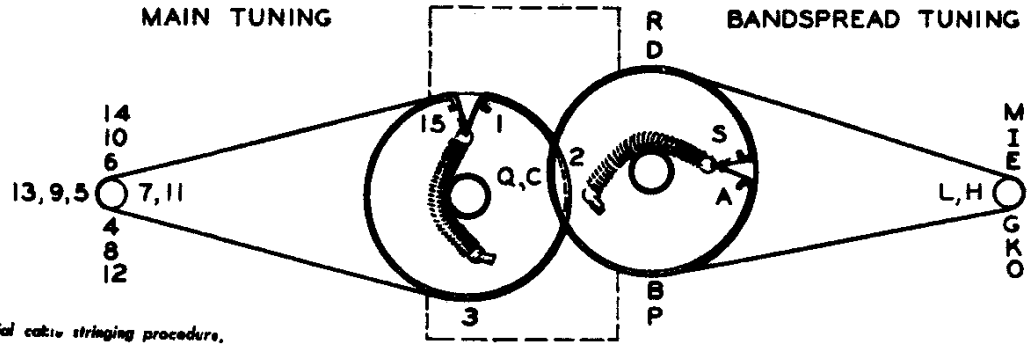


Fig. 2. Dial cable stringing procedure.

TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS). FRONT VIEW

REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER	LIST PRICE PER COMPONENT
	CAPACITORS		
C-1	0.01 mfd; 600 vdcw; paper	46AY103J	$ .10
C-2, 3 & 4	Trimmer Unit for antenna transformer T-1	44B129	.40
C-5	Trimmer for antenna transformer T-2	44A039	.10
C-6	2700 mmf; ± 5%; 500 vdcw; mica	CM30A272J	.30
C-7	Tuning capacitor; air; 2 sections ganged	48C162	2.90
C-8, 23, 27 & 38	220 mmf; 500 vdcw; mica	CM20A221K	.15
C-9	3000 mmf; 5%; 500 vdcw; mica	CM30A302J	
C-10 & 11	Dual padder for oscillator transformer T-3	44A152	.65
C-12, 13, 14 & 15	Trimmer Unit for oscillator transformer T-3	44B159	.50
C-16 & 34	0.02 mfd; 400 vdcw; paper	46AW203J	.10
C-17 & 36	0.25 mfd; 200 vdcw; paper	46AT254J	.15
C-18, 19, 21 & 22	Trimmers for IF transformers T-4 and T-5	44A097	.25
C-20 & 35	0.05 mfd; 200 vdcw; paper	46AU503J	.10
C-24	0.005 mfd; 400 vdcw; paper	46AW502J	.10
C-25	2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART.		
C-26 & 39	470 mmf; 500 vdcw; mica	CM20A471K	.20
C-28 & 37	0.01 mfd; 400 vdcw; paper	46AW102J	.10
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	.80
C-30	0.02 mfd; 600 vdcw; 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	85C035	2.50
	PLUGS		
PL-1	AC line cord with two prong plug at one end	87A078	.35
PL-2	Speaker voice coil connector plug	88A072	.10
	RESISTORS		
R-1 & 13	470,000 ohm; ½ watt; carbon	RC20AE474M	.10
R-2	22,000 ohm; ½ watt; carbon	RC20AE223M	.10
R-3	47 ohm; ½ watt; carbon	RC20AE470M	.10
R-4	390 ohm; ± 10%; ½ watt; carbon	RC20AE391K	.10
R-5	2.2 megohm; ½ watt; carbon	RC20AE225M	.10
R-6 & 10	47,000 ohm; ½ watt; carbon	RC20AE473M	.10
R-7 & S-6	Volume Control; ½ megohm; includes SPST toggle action switch assembly on rear	25B094	.50
R-8	10 megohm; ½ watt; carbon	RC20AE106M	.10
R-9 & 11	470 ohm; ± 10%; ½ watt; carbon	RC20AE471K	.10
R-12	220,000 ohm; ½ watt; carbon	RC20AE224M	.10
R-14	150 ohm; ± 10%; ½ watt; carbon	RC20AE151K	.10
R-15	15 ohm; ½ watt; carbon	RC20AE150M	.10
R-16	1,000 ohm; ½ watt; carbon	RC20AE102M	.10
R-17	680 ohm; 1 watt; carbon	RC30AE681M	.10
R-18 & 21	22 ohm; ½ watt; carbon	RC20AE220M	.10
R-19	330 ohm; ½ watt; carbon	RC20AE331M	.10
R-20	10,000 ohm; ½ watt; carbon	RC20AE103M	.10

	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	51C821	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	54B031	1.25
T-7	Audio output transformer; 3,000 ohm primary —15 ohm secondary tapped at 3 ohms	55A075	.95
	TERMINAL STRIPS		
TS-1	Antenna and ground connector strip	88A032	.10
TS-2	Headset plug connector strip; bakelite	88A071	.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	83B257	.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	67A559	.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)	75A062	.10
1	Rear cover plate; cardboard	32C331	.10
1	Bottom cover plate; painted steel	63C220	.45

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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.

GENERAL

THE HALLICRAFTERS CO.

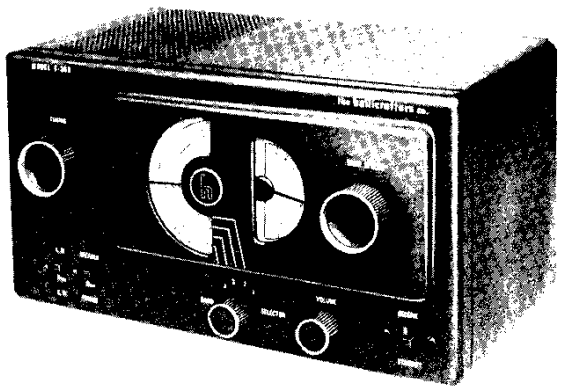
S-38A
S-38B

Tubes	Four plus rectifier.
Speaker	5-inch PM.
Voice Coil Impedance	3.2 ohms.
Headset Output	Low impedance.
Antenna	Provisions for external antenna with transmission line or single wire feed.
Tuning	Manual

Tuning Range

Band Selector Position	Frequency Range
1	550 kc - 1650 kc.
2	1.7 mc - 5.1 mc.
3	5 mc - 14.5 mc.
4	13 mc - 31 mc.

Intermediate Frequency	455 kc.
Power Supply	105-125 V. DC or 60 cycles AC.
Power Consumption	30 Watts



92X1153

CAUTION - The four rubber grommets insulate the chassis from the cabinet. Check the condition of these grommets and replace if necessary.

The standard RMA dummy antenna specified in the alignment chart consists of a 200 mmf condenser in series with a 20 uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

Set the following controls before alignment.

AM/CW	Set at AM
SPEAKER/PHONES	Set at SPEAKER
VOLUME	Set at maximum
RECEIVE/STANDBY	RECEIVE
BAND SPREAD	Set at zero

For the settings of the remaining controls, see alignment chart.

ALIGNMENT PROCEDURE

Holes in the bottom cover permit minor adjustment of the oscillator and mixer stage trimmers, however for complete alignment, the chassis will have to be removed from the cabinet. To separate the chassis from the cabinet, remove the back cover and bottom plate. The chassis is fastened to the cabinet by four front panel screws located near the slide switches and two cabinet screws located at the bottom rear of the cabinet.

ALIGNMENT CHART

Step	Dummy Antenna	Signal Generator Coupling	Signal Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust	Remarks
1	.01 mfd cap.	Stator plates, front section of tuning gang.	455 kc	1	1000 kc	A,B,C,D	Adjust for max. audio output at speaker voice coil. Use just enough signal generator output to obtain a 50 mw signal level.
2**	See step 1	See step 1	455 kc (No modulation)	1	1000 kc	E	Set the AM/CW switch at CW. (Reset the switch at AM when step 2 is completed.) Correct BFO operation is obtained by varying the coupling between the wire "E" and the 12SK7 tube grid and plate terminals (Pins 4 and 8.) Pushing the wire toward the grid terminal increases the capacity and the strength of the beat.
3	Std. RMA dummy	High side to term. A1 on antenna strip. Jumper wire between A2 and G	30 mc	4	30 mc	*F,G	Max. output as in step 1.
4	Std. RMA dummy	See step 3.	14 mc	3	14 mc	*H,J	Max. output as in step 1.
5	Std. RMA dummy	See step 3	5 mc	2	5 mc	*K,L	Max. output as in step 1.
6	Std. RMA dummy	See step 3	1500 kc 600 kc	1	1500 kc 600 kc	*M,N *P	Max. output as in step 1.

* Note - Calibration adjustments.

** Note - This step is generally unnecessary. Adjustment should be made if a weak beat note is obtained on strong c-w signals indicating lack of coupling between wire "E" and tube socket wiring.

S-38A
S-38B

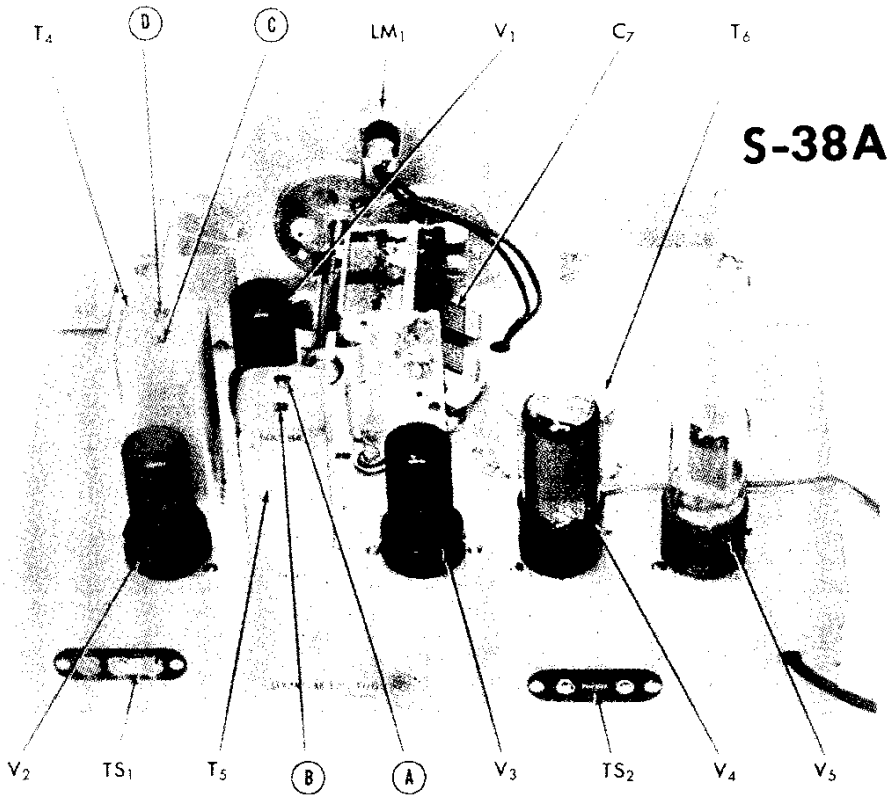


Fig. 2. Top view, alginment adjustments and component location

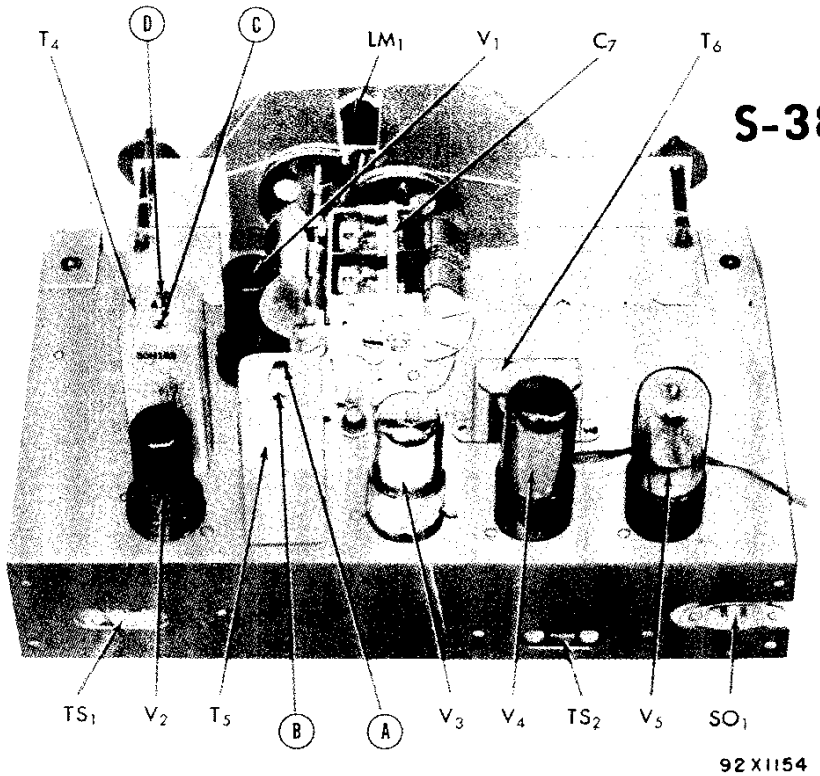


Fig. 2. Top view, alginment adjustments and component location

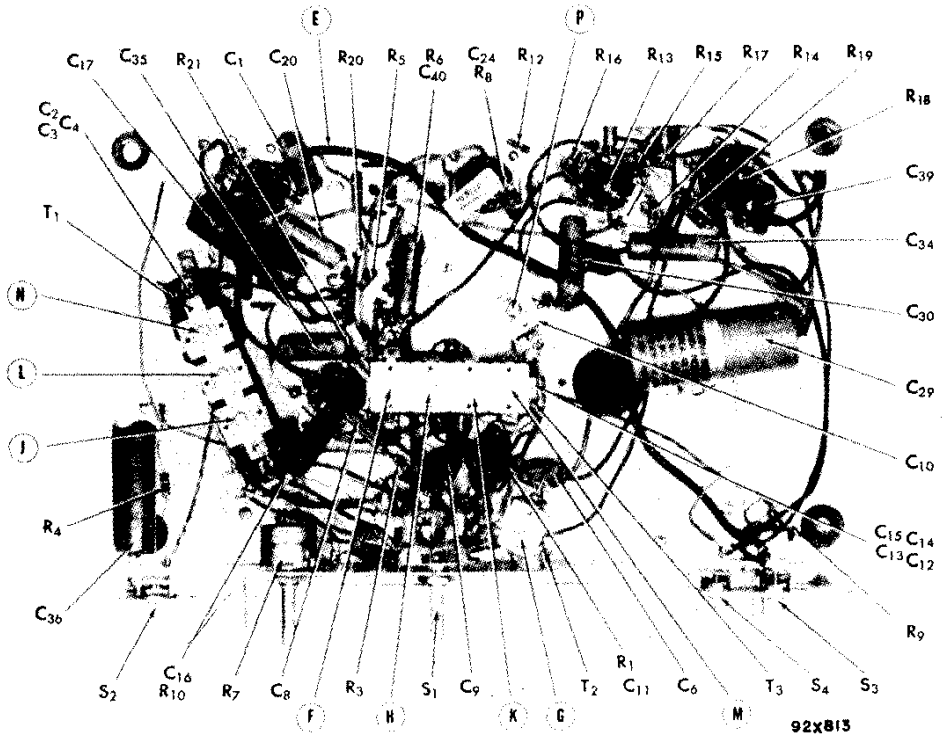


Fig. 3. Bottom view, alignment adjustments and component location

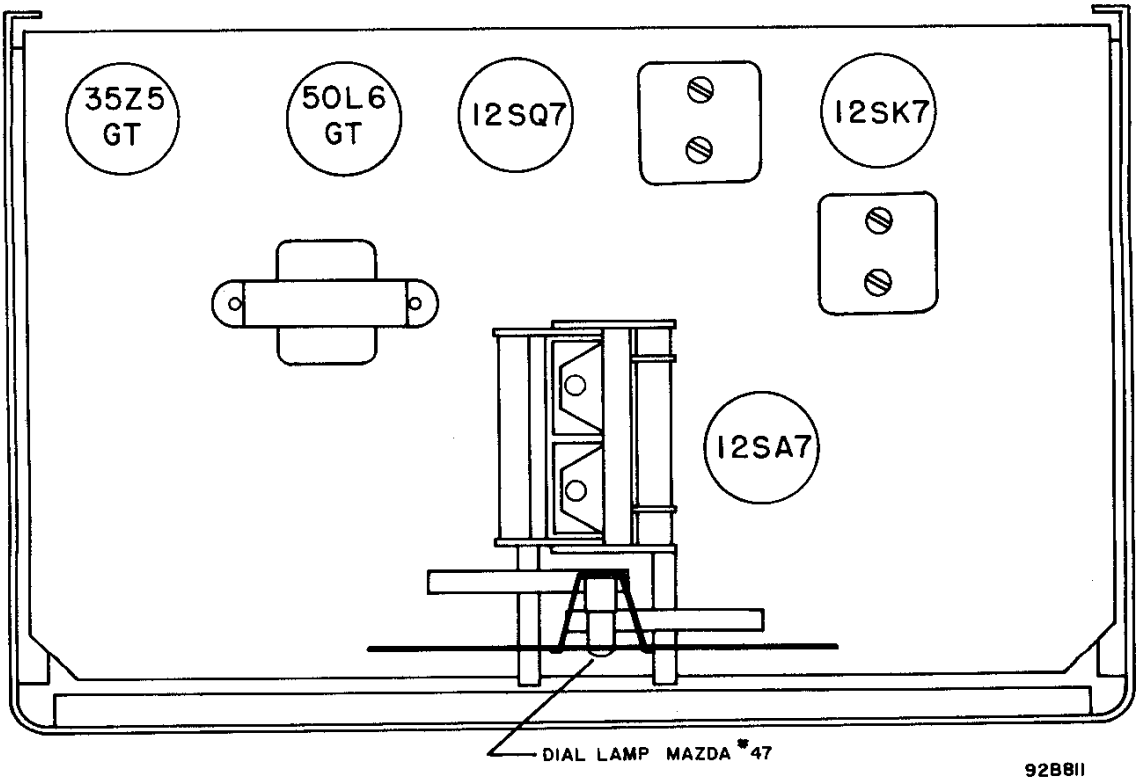
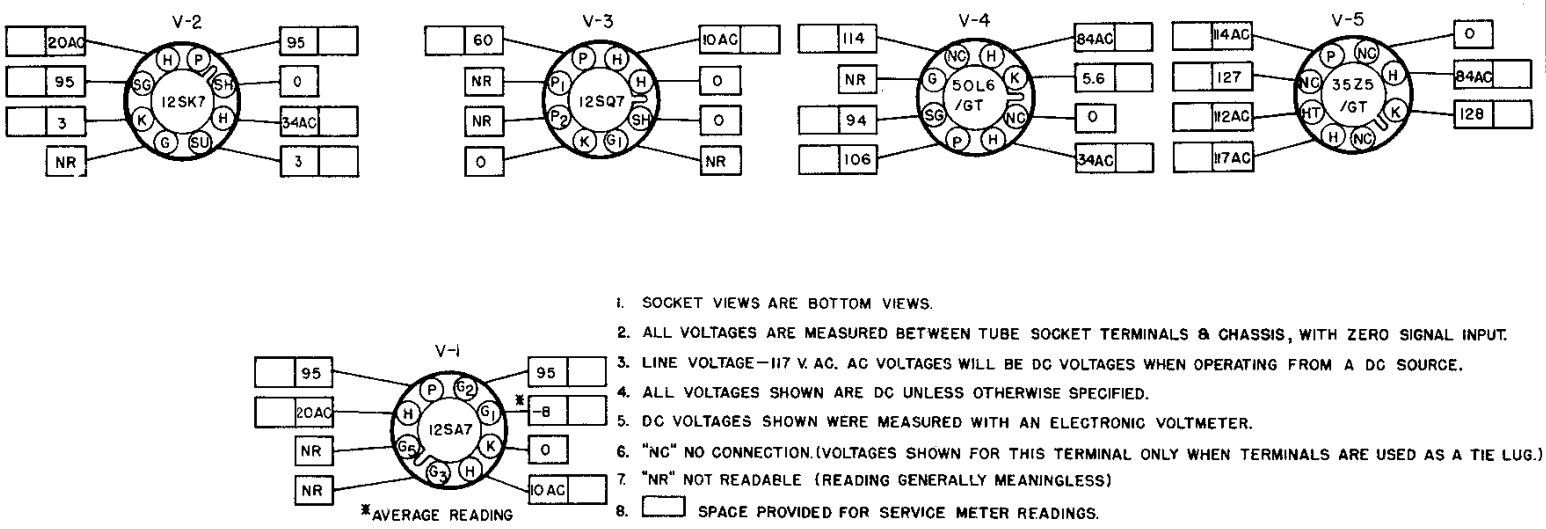


Fig. 4. Top view, location of tubes and dial lamps.



92C786

Fig. 5. Tube socket voltage chart.

RESTRINGING DIAL CORD

To restring the general coverage tuning dial cord cut a 14-inch length of 30 lb. test dial cord and tie one end to the tension spring at position "1" on the diagram. Follow the sequence "1" through "15", and at position "15" stretch the tension spring and tie the cord securely.

To restring the band spread tuning dial cord, cut a 16-inch length of dial cord and follow the procedure as above, starting at position "A" on the diagram. Note that the tuning drive shafts are wrapped with two and a fraction turns of dial cord for proper traction.

REPLACING LAMPS

Refer to Fig. 4, for the location of the dial lamp used in receiver. To gain access to the defective lamp, reach in through the rear of the cabinet (cover removed) and unclip the dial lamp socket by compressing the side springs. The socket may then be brought out into the open to change the defective lamp. Replace defective lamps with 6-8 V. Mazda #47 (Brown bead) lamps or equivalent.

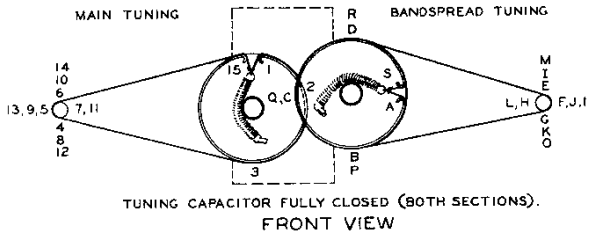
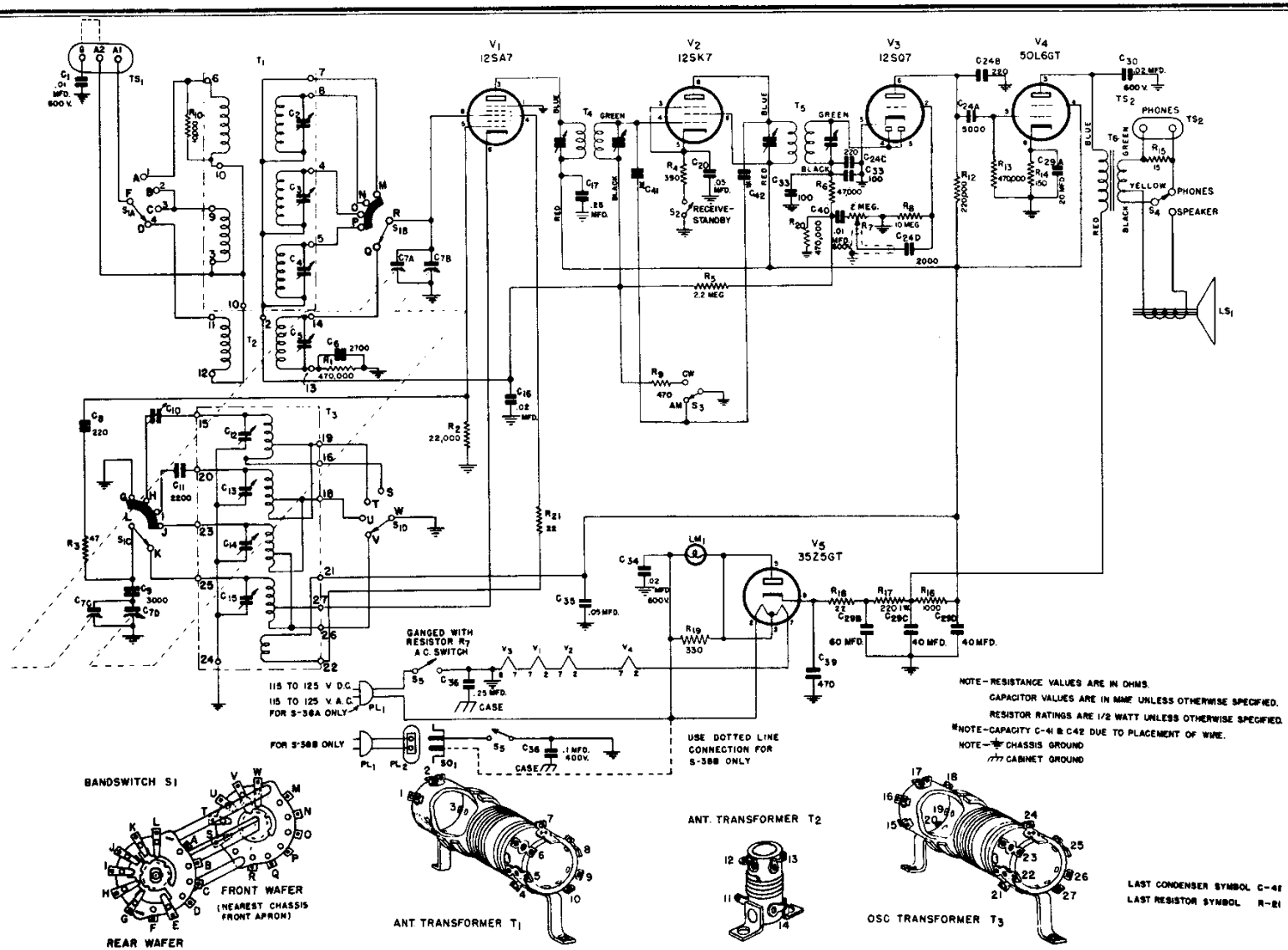


Fig. 1. Dial cable stringing procedure.



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

Fig. 6. Schematic diagram.

890326-C

THE HALLICRAFTERS CO.

S-38A
S-38B

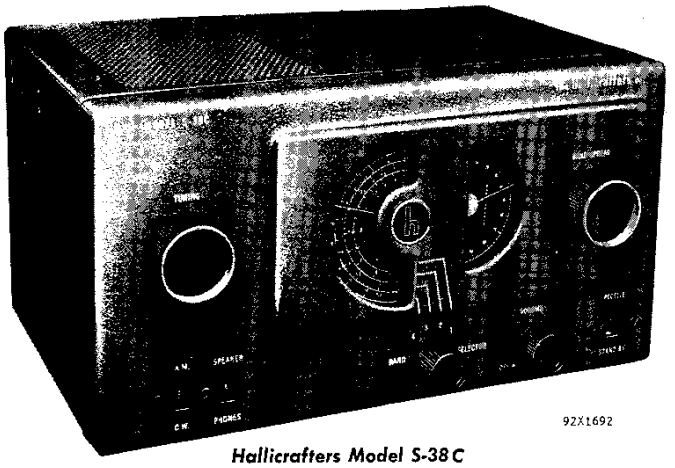
SERVICE PARTS LIST

Ref. No.	Description	Manufacturer's Part Number
	CONDENSERS	
C-1,40	.01 mfd. 600 V., tubular	46AY103J
C-2,3,4	Trimmers, adjustable (Part of transformer T-1)	
C-5	Trimmer, adjustable (For transformer T-2)	44A039
C-6	2700 mmf 500 V, mica	47X30A272J
C-7	Tuning condenser, 2 sections	48C162-1
C-8	220 mmf 500 V, mica	47X20A221K
C-9	3000 mmf 500 V, mica	47X30A302J
C-10	Padder, adjustable (Band 1)	44A349
C-11	2200 mmf 500 V, mica	47X30A222J
C-12,13, 14,15	Trimmers, adjustable (Part of transformer T-3)	
C-16	.02 mfd 400 V, tubular	46AW203J
C-17	.25 mfd 200 V, tubular	46AT254J
C-20,35	.05 mfd. 200 V, tubular	46AU503J
C-24	Capacitor, composite; 5,000, 2X220, and 2000 mmf; 500 V.; ceramic	46A151
C-29	60-40-40 mfd 150 V, 20 mfd. 25 V, electrolytic	45B091
C-30,34	.02 mfd 600 V, tubular	46AY203J
C-33	100 mmf. 500 V, mica	47X20B101K
C-36	.1 mfd. 400 V., tubular	46AV104J
C-39	470 mmf 500 V, mica	CM20A471M
C-41,42	Wiring capacity	
	RESISTORS	
R-1,13,20	470,000 ohms 1/2 watt, carbon	23X20X474M
R-2	22,000 ohms 1/2 watt, carbon	23X20X223M
R-3	47 ohms 1/2 watt, carbon	23X20X470M
R-4	390 ohms 1/2 watt, carbon	23X20X391K
R-5	2.2 megohms 1/2 watt, carbon	23X20X225M
R-6	47,000 ohms 1/2 watt, carbon	23X20X473M
R-7	Resistor, variable; VOLUME control	25B896
R-8	10 megohms 1/2 watt, carbon	23X20X106M
R-9	470 ohms 1/2 watt, carbon	23X20X471K
R-10	10,000 ohms 1/2 watt, carbon	23X20X103M
R-12	220,000 ohms 1/2 watt, carbon	23X20X224M
R-14	150 ohms 1/2 watt, carbon	23X20X151K
R-15	15 ohms 1/2 watt, carbon	23X20X150M
R-16	1000 ohms 1/2 watt, carbon	23X20X102M
R-17	220 ohms 1 watt, carbon	23X30X221M
R-18,21	22 ohms 1/2 watt, carbon	23X20X220M
R-19	330 ohms 1/2 watt, carbon	23X20X221M
	TRANSFORMERS AND COILS	
T-1	Transformer, antenna stage, Bands 1, 2 and 3	51C821
T-2	Transformer, antenna stage, Band 4	51B1015
T-3	Transformer, oscillator stage, Bands 1, 2, 3 and 4	51C822
T-4	Transformer, i-f amp. stage	50B183
T-5	Transformer, i-f amp. stage (diode)	50B184
T-6	Transformer, audio output	55A127

Ref. No.	Description	Manufacturer's Part Number
	SWITCHES	
S-1	Bandswitch assembly	60C393
S-2	Switch, slide; RECEIVE-STANDBY	60A244
S-3,4	Switch, slide; SPST; AM-CW & SPEAKER-PHONES	60A243
S-5	Switch, power (Part of VOLUME control R-7)	
	CONNECTORS	
PL-1	Line cord (Includes PL-2)	87B1668-1
TS-1	Terminal strip, antenna	88A671
TS-2	Headset, jack	88A071
SO-1	Socket, a-c	10A286
	Socket, octal (tube)	6A250
	Socket, dial light	86A011
	TUBES, RECTIFIERS AND LAMPS	
V-1	Type 12SA7, mixer/oscillator	90X12SA7
V-2	Type 12SK7, i-f amplifier & BFO	90X12SK7
V-3	Type 12SQ7, detector & 1st audio amplifier	90X12SQ7
V-4	Type 50L6GT, audio power amplifier	90X50L6GT
V-6	Type 35Z5GT, rectifier	90X35Z5GT
LM-1	Lamp, dial light, Mazda #47	39A004
	CABINET PARTS	
	Clip, coil mtg (For transformer T-2)	76A362
	Shaft, main tuning	74A318
	Shaft, bandspread	74A319
	Washer, spring (for main tuning and bandspread drive shafts)	4A043
	Spring, retainer ("C" washer type)	75A062
	Dial cord	38A019
	Spring, dial cord	75A012
	Pointer, main tuning	82A177
	Pointer, bandspread tuning	82A103
	Dial scale	83C373
	Knob, VOLUME control and BAND SELECTOR	15A049
	Knob, TUNING and BAND-SPREAD	15A047
LS-1	Speaker, PM	85C030
	Baffle, speaker	78B198
	Cabinet back	8C1139
	Cabinet bottom	8C1140
	Mounting foot, rubber	16A007
	Window, dial	22B311

GENERAL DESCRIPTION

World-wide radio reception is yours with the Hallicrafters Model S-38C. This 5 tube communications receiver tunes from 540 kilocycles to 32 megacycles to bring you standard broadcast programs, foreign and domestic shortwave broadcasts, amateurs, police, ships, aircraft and countless other exciting distant stations. It receives both voice and code broadcasts and is designed to operate from 105 to 125 volt direct current (DC) or 60 cycles alternating current (AC). A 5-inch Alnico V permanent magnet speaker is built into the top of the cabinet and tip jacks have been provided on the back of the set for plugging in a pair of headphones. The RECEIVE-STANDBY switch on the front panel is a special feature which permits you to silence the receiver without turning the set off.



Hallicrafters Model S-38C

Good reception of both standard and shortwave broadcasts can be obtained in most localities with the 15 foot antenna wire included with your receiver. It is merely necessary to uncoil this wire, connect one end of it to terminal A1 on the back of the set and then run it about the room in any convenient manner. To complete the antenna installation, connect the jumper between terminals A2 and G.

Your set is provided with two tuning knobs for greater ease of tuning. Wide tuning is done with the knob marked TUNING and fine tuning with the knob marked BAND SPREAD. The BAND SPREAD knob permits you to accurately tune in stations on crowded bands by spreading them out so that they may be more easily separated. In this way you are able to hear many more stations than you would on an ordinary radio with just one tuning knob.

The amateur bands and principal shortwave channels of the world are clearly marked on the dial for your convenience. Since shortwave conditions vary with the season of the year and even with the time of day, shortwave programs may not be heard with the same regularity as standard broadcasts. A special table has been provided on page 3 to aid you in determining the most favorable times for shortwave listening.

INSTALLATION INSTRUCTIONS

ANTENNA - The terminals marked A1, A2 and G on the back of the set are for antenna and ground connections. Good results can be obtained in most localities with the 15 foot antenna wire included with your receiver. This wire should be uncoiled to provide maximum signal pickup. An outside antenna 50 to 100 feet long (ordinary copper wire) may be necessary if the receiver is operated in a difficult reception area or steel constructed building. Connect the antenna wire to terminal A1 on the back of the set and then connect the jumper between terminals A2 and G. In some locations, reception may be improved by connecting a lead from terminal G to a cold water pipe or outside ground rod.

For really top performance, there is no substitute for an outside antenna such as used by the commercial radio stations. Provision has been made on your receiver for the connection of this type of antenna, commonly called a doublet. When a doublet antenna is used, the jumper is removed and the antenna is connected to terminals A1 and A2. Consult your radio dealer for further information.

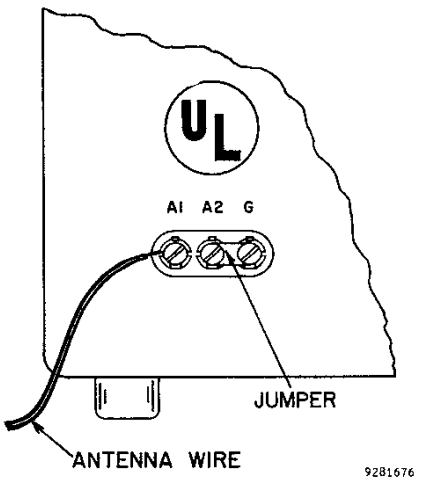


Fig. 1. Rear View of Receiver Showing Antenna and Ground Terminals

OPERATING INSTRUCTIONS

TUNING DIAL - All dial readings are in megacycles. To convert the readings on the standard broadcast band (band 1) to kilocycles, simply remove the dot and add two zeros; thus, .7 on the dial corresponds to 700 kilocycles.

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

SPEAKER-PHONES SWITCH - For operation of the built-in speaker, set the switch at SPEAKER. Tip jacks are provided on the back of the set for plugging in a pair of headphones. Use any 500 to 5000 ohm headphones. For headphone operation set the switch at PHONES.

BAND SELECTOR CONTROL- Set this control for the band you wish to tune.

VOLUME CONTROL - Turn this control clockwise to turn the set on. Allow about 30 seconds for the tubes to reach operating temperature and then advance the control to increase volume. To turn the set off, turn this control counter-clockwise until a click is heard.

NOTE - If the receiver does not operate after the 30 second warm up when connected to a DC source, the power plug should be reversed in the wall outlet to obtain proper polarity.

RECEIVE - STANDBY SWITCH - Set this switch at RECEIVE for radio reception. If you wish to silence the receiver without turning the set off, set the switch at STANDBY. To resume radio reception, simply return the switch to the RECEIVE position.

TUNING KNOB - Your receiver has been provided with two tuning knobs - The TUNING knob which operates the pointer on the left hand dial and a separate BAND SPREAD knob which operates the pointer on the right hand dial. The TUNING knob is for wide tuning and the BAND SPREAD knob for fine tuning. Use the TUNING knob to tune in the desired station. Tune for the clearest and strongest signal. If the signal is too strong, reduce it by means of the VOLUME control, not by using the TUNING knob. For code reception, adjust the TUNING knob for the desired pitch of the CW code signal when tuning in the station.

IMPORTANT - The dial readings will correspond to the exact station frequencies only if the BAND SPREAD dial pointer is set at 0.

BAND SPREAD KNOB - The BAND SPREAD knob permits you to accurately tune in stations on crowded bands by spreading them out so that they can be more easily separated. The BAND SPREAD knob can be used in two different ways. First, it may be left with the pointer at 5 while you partially tune in the desired station with the TUNING knob. Then, by "rocking" the BAND SPREAD knob back and forth (turn it a few degrees to the left and right through the desired station), you will be able to tune in the desired station with precision accuracy.

The second way to operate the BAND SPREAD knob is to use it to cover a group of stations. Set the BAND SPREAD knob so that the pointer reads 0 and then turn the TUNING knob to tune in the highest frequency station in the group. The other stations can be heard by slowly turning the BAND SPREAD knob from 0 to 100.

BEST SHORTWAVE RECEPTION TABLE

Band	Most Favorable Time	Most Favorable Distance
6-7 MC	Night - Winter	Day - 400 Miles - Night - Over 1500 Miles
9-10 MC	Day - Late Afternoon and Night - Winter	Over 500 Miles
11-12 MC	Evenings or Late Summer Afternoons	Day - Under 1500 Miles Night - Over 1500 Miles
15-18 MC	Early Mornings and Summer Evenings	Over 1500 Miles

SERVICE INSTRUCTIONS

GENERAL SPECIFICATIONS

Tubes . . . . . 5 including 1 rectifier
Speaker . . . . . 5 inch PM
Voice Coil Impedance . . . . . 3.2 ohms
Headphone Output Impedance . . . 15 ohms
Antenna . . . Terminals for single wire or doublet antenna. (See Page 2.)
Intermediate Frequency . . . . . 455 KC
Frequency Coverage . . . 540 KC - 32 MC
Power Supply . . . . . 105-125 volts DC or 60 cycles AC
Power Consumption . . . . . 30 watts

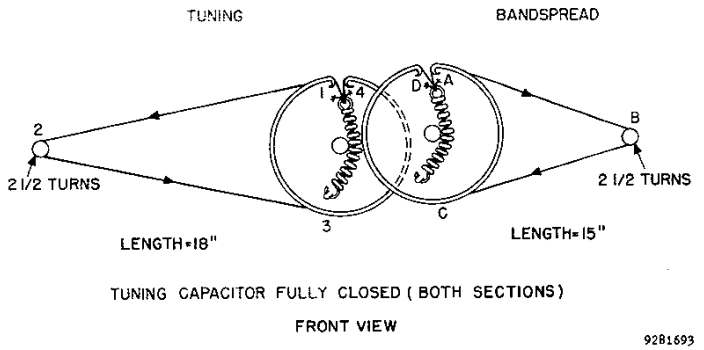


Fig. 2. Dial Cord Stringing Diagram

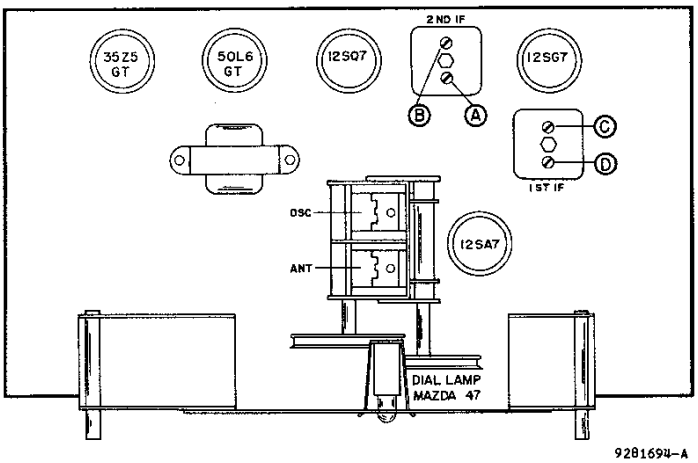


Fig. 3. Top View of Chassis Showing Location of Alignment Adjustments, Tubes and Dial Lamp

DIAL CORD STRINGING - Refer to Fig. 2 for the stringing diagram. Both sections of the tuning gang should be fully meshed. To restring the TUNING dial cord, tie one end of an 18 inch length of 30 lb. dial cord to the dial spring at 1 on the drive pulley. Follow the stringing sequence 1 through 4. At 4, stretch the spring and tie the cord securely to the spring. Cut off the excess cord and apply a drop of quick drying cement to the knot.

To restring the BAND SPREAD dial cord, cut a 15 inch length of dial cord and follow the procedure as explained above, starting at A and proceeding through D.

TUBE AND DIAL LAMP REPLACEMENT - Refer to Fig. 3 for the location of the tubes and dial lamp used in the receiver. To gain access to the tubes and lamp, remove the back cover from the cabinet. Before attempting to make any replacement, set the BAND SPREAD control fully clockwise and the TUNING control fully counterclockwise to prevent damage to the tuning gang. To replace a tube, insert the center guide pin into the center hole of the tube socket, rotate the tube until the key drops into position and then push down until the tube is held firmly in the socket. To make a dial lamp replacement, remove the dial lamp socket by compressing the side springs. Make replacement only with a type 47 pilot lamp.

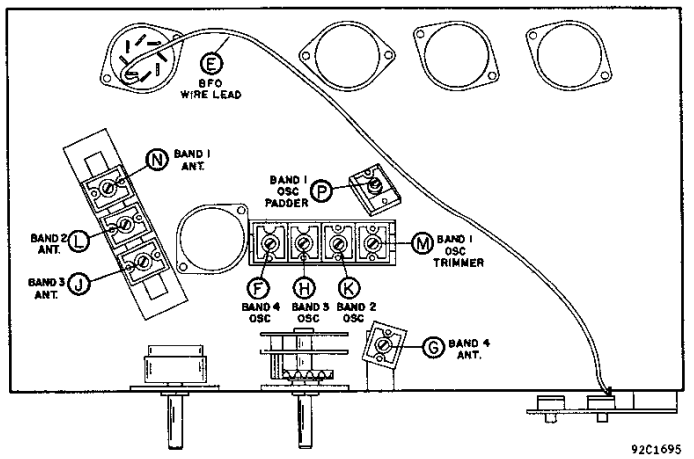


Fig. 4. Bottom View of Chassis Showing Location of Alignment Adjustments

ALIGNMENT INSTRUCTIONS

- 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.
- 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. 3 and 4 for location of alignment adjustments.

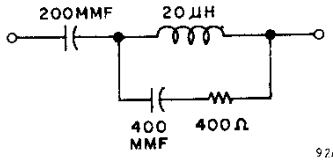


Fig. 5. RMA Dummy Antenna

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	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.	455 KC (No Mod.)	1	1.0 MC	Set the AM/CW switch at CW. (Reset the switch at AM when Step 2 is completed.) For correct BFO operation, vary the coupling between lead E and pins 4 and 8 of the 12SG7 tube for a maximum beat note. Pushing lead E toward pin 4 increases the strength of the beat.
		RF ALIGNMENT			
3	High side thru RMA dummy antenna (Fig. 5) 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.
		500 KC	1	.6 MC	P for maximum output as in Step 1.

* Step 2 is usually unnecessary. Adjustment should be made ONLY if a weak beat note is obtained on strong CW signals indicating lack of coupling between wire lead E and pins 4 and 8 of the 12SG7.

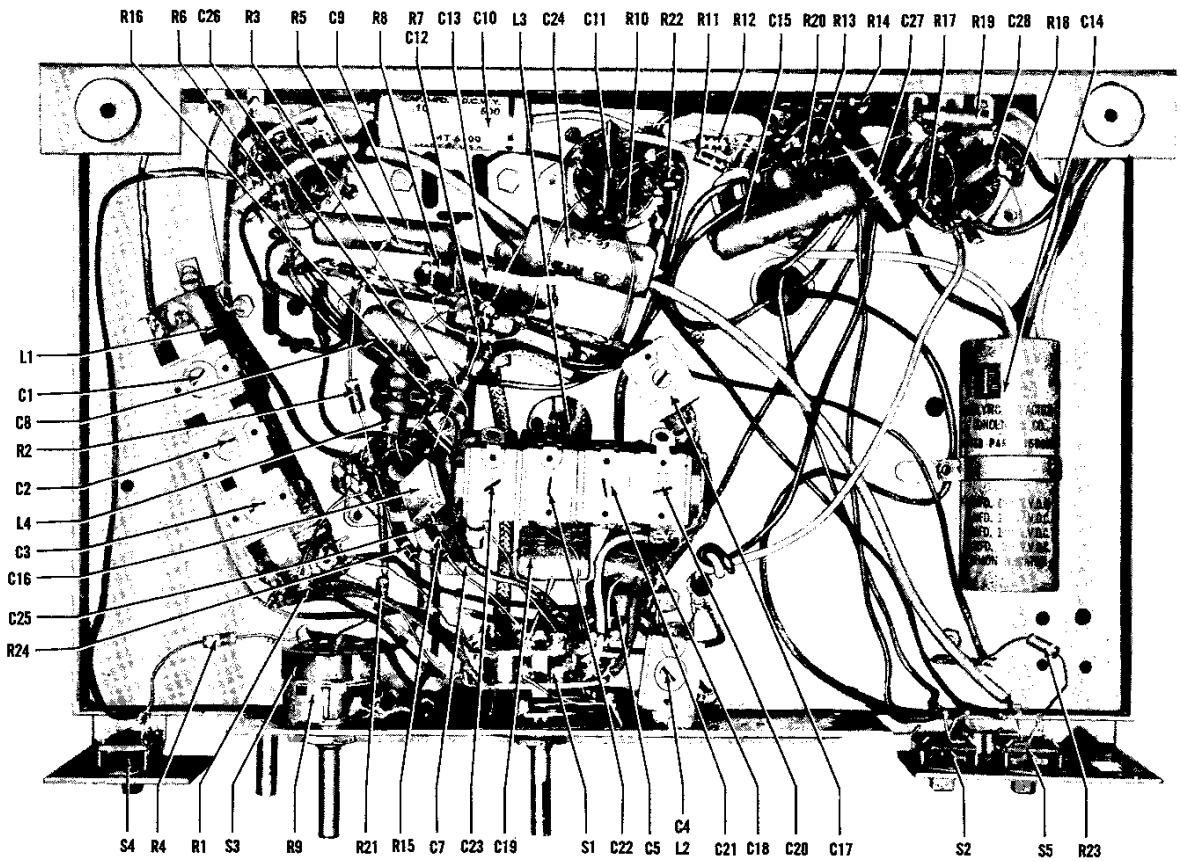


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Fig. 6. Bottom View of Chassis Showing Component Location

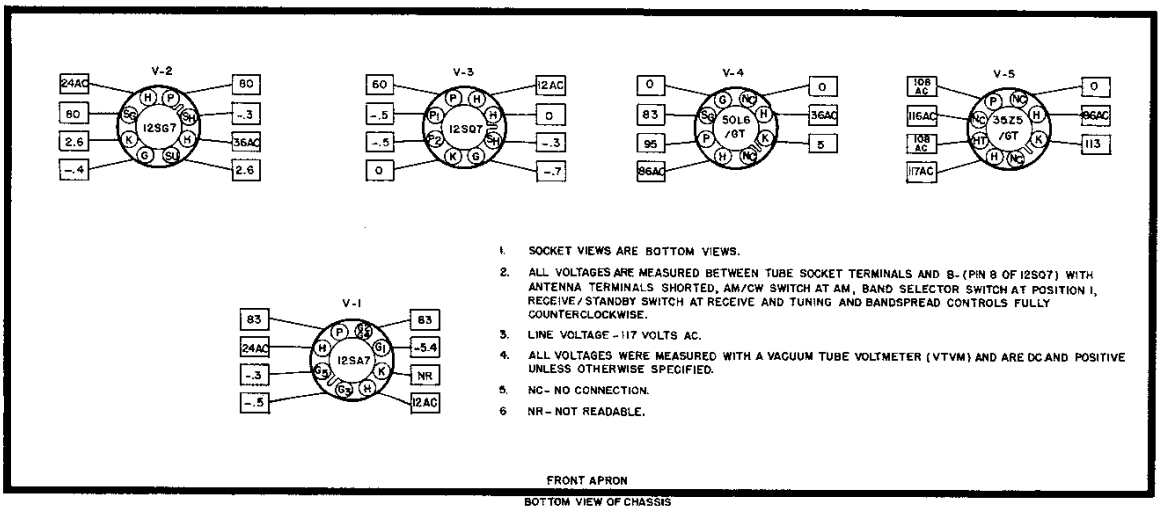

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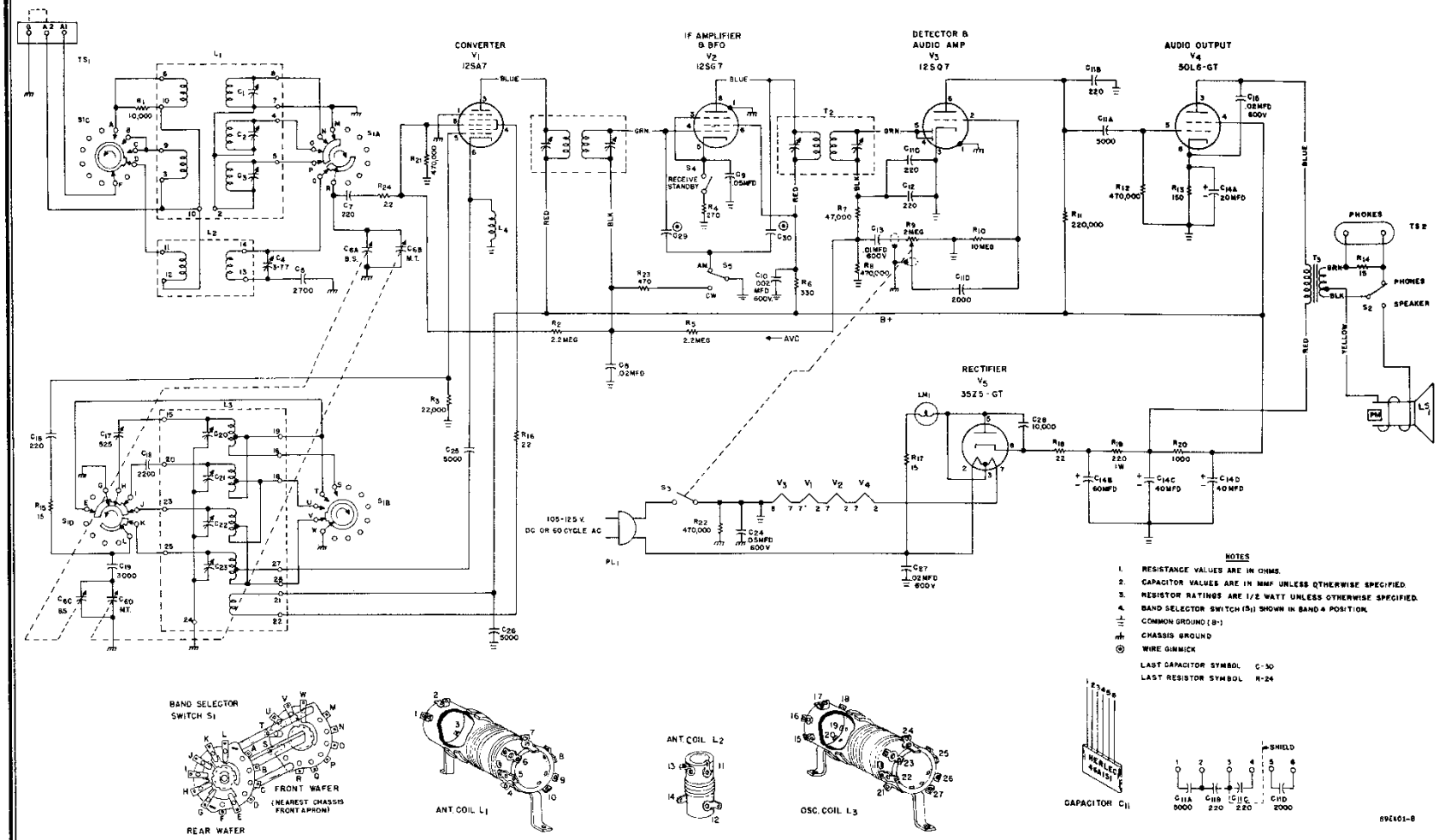
Fig. 7. Tube Socket Voltage Chart

THE HALLICRAFTERS CO.



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.

Fig. 8. Schematic Diagram

MODEL S-38C

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C-1,2,3	Trimmer; part of antenna coil L-1	----------
C-4	Trimmer, 3-77 mmf.	44A039
C-5	2700 mmf. 5%, 500V.; mica	47X30B272J
C-6A,B,C&D	Tuning capacitor, 2 section	48C162-1
C-7,12,16	220 mmf. 10%, 500V.; mica	47X20B221K
C-8,15	.02 mfd. 600V., tubular	46AY203J
C-9	.05 mfd. 200V., tubular	46AU503J
C-10	.002 mfd. 600V., tubular	46AZ202F
C-11A,B,C &D	Capacitor, composite: 5000, 220, 220 and 2000 mmf., 500V.; ceramic	46A151
C-13	.01 mfd. 600V., tubular	46AZ103J
C-14A,B,C &D	60-40-40 mfd. 150V., 20 mfd. 25V.; electrolytic	45B091
C-17	Padder, 525 mmf.	44A349
C-18	2200 mmf. 5%, 500V.; mica	47X30B222J
C-19	3000 mmf. 5%, 500V.; mica	47X30B302J
C-20,21,22, 23	Trimmer; part of oscillator coil L-3	----------
C-24	.05 mfd. 600V., tubular	46AY503J
C-25,26	5000 mmf. 450V., ceramic disc	47A168
C-27	.02 mfd. 600V., molded tubular	46BR203L6
C-28	10,000 mmf. 450V., ceramic disc	47A217
	RESISTORS	
R-1	10,000 ohms 1/2 watt, carbon	23X20X103M
R-2,5	2.2 megohms 1/2 watt, carbon	23X20X225M
R-3	22,000 ohms 1/2 watt, carbon	23X20X223M
R-4	270 ohms 1/2 watt, carbon	23X20X271K
R-6	330 ohms 1/2 watt, carbon	23X20X331M
R-7	47,000 ohms 1/2 watt, carbon	23X20X473M
R-8,12,21,22	470,000 ohms 1/2 watt, carbon	23X20X474M
R-9	2 megohms; VOLUME control	25B896
R-10	10 megohms 1/2 watt, carbon	23X20X106M
R-11	220,000 ohms 1/2 watt, carbon	23X20X224M
R-13	150 ohms 1/2 watt, carbon	23X20X151K
R-14,15,17	15 ohms 1/2 watt, carbon	23X20X150M
R-16,18,24	22 ohms 1/2 watt, carbon	23X20X220M
R-19	220 ohms 1 watt, carbon	23X30X221M
R-20	1000 ohms 1/2 watt, carbon	23X20X102M
R-23	470 ohms 1/2 watt, carbon	23X20X471K
	COILS AND TRANSFORMERS	
L-1	Coil, antenna; bands 1, 2 and 3	51C821
L-2	Coil, antenna; band 4	51B1015
L-3	Coil, oscillator; all bands	51C822
L-4	Choke, RF; 540 microhenries	53A107
T-1	Transformer, 1st IF	50C531
T-2	Transformer, 2nd IF	50C532
T-3	Transformer, audio output	55A127

Schematic Symbol	Description	Hallicrafters Part Number
	SWITCHES	
S-1A,B,C&D	Bandswitch assembly (BAND SELECTOR)	60C393
S-2,5	Switch, slide; spdt (SPEAKER/ PHONES and AM/CW)	60A477
S-3	Switch, ON-OFF; part of VOLUME control R-9	----------
S-4	Switch, slide; spst (RECEIVE/ STANDBY)	60A476
	SOCKETS AND CONNECTORS	
	Socket, dial lamp; includes leads	86A011
	Socket, tube; octal	6A250
TS-1	Terminal strip, antenna	88A671
TS-2	Tip jacks, PHONE	88A071
	TUBES AND DIAL LAMP	
V-1	12SA7: convertor	90X12SA7
V-2	12SG7: IF amplifier and BFO	90X12SG7
V-3	12SQ7 or 12SQ7GT/G: detector and audio amplifier	90X12SQ7 or 90X12SQ7GT/G
V-4	50L6GT: audio output	90X50L6GT
V-5	35Z5GT: rectifier	90X35Z5GT
LM-1	Lamp, dial; type 47	39A004
	MISCELLANEOUS PARTS	
	Cabinet	66C772
	Cabinet back	32C513
	Cabinet bottom cover	32C501
	Clip, mtg; for antenna coil L-2	76A326
	Dial cord (specify length)	38A026
	Dial scale	83C406
	Dial window	22B311
	Knob, BAND SELECTOR and VOLUME	15A049
	Knob, BAND SPREAD and TUNING	15A048
PL-1	Line cord and plug	87A078
	Line cord lock; male section	76A397-1
	Line cord lock; female section	76A397-2
	Mounting foot, cabinet	16A244
	Pointer, dial; BAND SPREAD	82A216
	Pointer, dial; TUNING	82A217
LS-1	Speaker, 5-inch PM	85C030
	Spring, dial cord	75A012

Farnsworth Models

The parts shortage has resulted in the substitution of various types of tuning capacitors without change in part numbers stamped on them. In ordering replacement tuning capacitors for ET-060, 061, 063, 064, 065, 066, 069; EK-263, 264, and 265 the following suggestions should be observed:

Gang Capacitor with 21 plate oscillator section requires the removal of trimmer from r-f section of gang if the loop antenna has a r-f trimmer located on it. This capacitor used B.C. oscillator coil #38483 and, if an S.W. oscillator coil is used requires S.W. oscillator coil #38549. Both of these coils have a white dot to indicate finish lug.

A #26239 gang capacitor with 19 plate oscillator section (identified by red dot on rear) may require the removal of r-f trimmer as explained above. This capacitor requires B.C. oscillator coil #38706 and S.W. oscillator coil (if used) #38709. These oscillator coils are marked with a yellow dot at the finish lug.

The following is an alignment hint for the Farnsworth models with respect to the use of the antenna:

The antenna should be held in a vertical position, ⅝ inch from the back side of the radio chassis in order to maintain the maximum output of the antenna after being installed in the cabinet. Therefore, we suggest some type of a jig to be made out of scrap material found around the service department to hold said antenna in the proper position while the serviceman is realigning the radio out of the cabinet. This suggestion is very helpful in getting the best operation out of the radio and, in addition, saving expense and time.

GALVIN DIAL CORD SLIPPAGE

Dial slippage encountered in 1946 home sets using slide rule type dials can easily be remedied by restringing using two dial cords.

Formerly, a single cord and tension spring was used for both driving the tuning capacitor and moving the pointer. It is recommended that two cords and tension springs be used; one for driving the tuning capacitor and one for moving the pointer.

Before removing the old cord, make a sketch showing the old cord layout. This will assist greatly in restringing.

First install the drive cord between the tuning shaft and tuning capacitor pulley. It is to be routed in exactly the same manner as the old cord was, except run it only between the tuning shaft and tuning capacitor pulley. Be sure to wind 3 turns around the tuning shaft. The old tension spring is used to provide tension on the cord by hooking in exactly as before. Use the cord originally on the set for this purpose, except cut it down to the required length.

Install the pointer cord supplied by routing it in the same fashion as before except that it does not go to the tuning shaft. Simply run it to the tuning capacitor pulley and apply light tension to it with the attached tension coil spring. There are several holes in the tuning capacitor pulley through which the tension spring may be hooked and/or adjusted.

To calibrate pointer, simply turn the tuning capacitor to the fully meshed position and set pointer to "V" notch or calibration mark provided.

Use a drop of household cement to fix pointer to cord. A drop of cement on all knots will secure them.

Gamble-Skogmo 43-7601, 43-7601A, 43-7601B

These models, shown on *pages 16-1 to 16-5 of Rider's Volume XVI*, use the General Instrument Record Changer model 205, which can be found on *pages RCD.CH. 15-5 to 15-8 of Rider's Volume XV*.

General Electric 250

To reduce the hum in this model, which is found on *pages 15-32 to 15-36 of Rider's Volume XV*, it is suggested that the following change be made.

Resistor R16 (2200 ohms) should be removed from the negative battery terminal lug, lengthen pigtail, insulate with a spaghetti covering, and solder to the ground lug of the terminal board located at socket saddle of the 1LH4 tube.

An appreciable increase in duration of operation from a fully charged battery in this model can be effected in the following manner, realizing, however, that some degree of performance is sacrificed in regard to sensitivity and power output. Replace power-supply filter resistor, R17 (1500 ohms) with one of 4700 ohms, 1 watt, carbon. This change should be made only when the customer demands a longer duration of operation to one battery charge.

Hallicrafters S-38

In the event that an a-c hum develops in this receiver, the schematic of which appears on *page 15-59 of Rider's Volume XV*, it has been found that the 35Z5GT is the cause of the trouble, even though the tube passes a normal test. Also, other tubes in this set have been known to cause hum. Try replacement tubes.

Another cause is a high resistance ground between the chassis and the case. This usually develops through the rubber mounting grommets or through the switch mounting rivets. Occasionally it may be a defective 25-μf capacitor (C36), which should be replaced if defective. It is possible that C36 is not of the correct value. Check this point.

If this set loses sensitivity after being in use for approximately a half hour, replace the 12SA7GT/G tube, as an investigation has revealed that this condition is due to a certain percentage of Hytron tubes of this type, of a particular production run marked 1/6, 2/6, 1A6, or 2A6. The replacement should have any other marking than those listed previously.

Hallicrafters S-40

In the event that band 4 (15.7 to 43 mc) fails to operate at all times, but reception on other bands is normal, trouble is indicated in the oscillator circuit of this band, which in most cases can be traced to a weak 6SA7 oscillator tube or low line voltage. In those few cases where trouble persists, even though all voltages are normal and the tube has been replaced, this trouble can be remedied by replacement of the oscillator coil T9 and capacitor C18, as follows:

Replace T9 oscillator coil, part #51B791 containing 7 primary turns, with part #51B791B, having 10 primary turns. Change capacitor C8 (100 μμf) to part #CC25UK680K, 68 μμf. Connect the cathode lead from terminal 6 of the 6SA7 (V2) to T9 direct to the secondary winding where it leaves the coil form rather than to terminal lug "A" on the top of the coil form. (See sketch of coil form on *page 15-67, 68 in Rider's Volume XV.*) Replacement coils are furnished without the iron cores, as they are interchangeable. If new cores are needed, due to loss or breakage, they can be ordered under part #77A068.

If the receiver cannot be placed in "break-in" operation, apply the following remedy: Notice on the schematic of the receiver on *page 15-67, 68 in Rider's Volume XV* that the grid of V6 the output 6F6G tube is connected to the power switch S7, so that when the switch is in the "send" position the grid of this tube is grounded. Many operators wish to leave this switch in the "send" position and connect from terminal 5 on the plug PL2, through the transmitter relay to ground. In order to do this, the lead between S7 and V6 should be removed. On later production runs, this lead has been eliminated. See notes on "Power Requirements" and "Preparation for Use" on *page 15-71 of Rider's Volume XV.*