

TRADE NAME Hallcrafters, Model S-40
MANUFACTURER The Hallcrafters Co., Chicago 16, Illinois
TYPE SET AC Operated 4 Band Superheterodyne Communications - Commercial Type Receiver
TUBES (NINE) Types 6SG7 RF Amp., 6SA7 Mixer & Local Oscillator, 6SK7 1st IF Amp., 6SK7 2nd IF Amp, 6SQ7 Det.-1AF, 6F6G Power Output, 6H6 AVC & Noise Limiter, 6J5GT Beat Frequency Osc., 80 Rectifier.
POWER SUPPLY 117 Volts AC Rating .715 Amp. @ 117 Volts AC
 6 Volt DC - Current Drain (Filament only, 5 Amperes)
 " " " Vibrator Power Supply
 Approx. 10 Amperes.
TUNING RANGE—BROADCAST (Band 1) 550-1700KC **SHORT WAVE** (Band 2) 1.68-5.4MC (Band 3) 5.3-15.8MC
 (Band 4) 15.3-44MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
	High side to stator plates of center section of main tuning gang. Low side to chassis.	455KC	1	High end of band.	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output. Repeat until assured of accurate alignment. Signal level at the generator should be app. 52 microvolts for a 500 milliwatt audio output level.
	"	"	"	"	"	"	Turn off 400-cycle modulation on signal generator. Remove pitch control knob with an Allen wrench and adjust slotted screw shaft for zero beat. Replace knob so that red mark is on top.
390 ohm res. + 20% (non-inductive)	High side to terminal A1 of antenna terminal board. (leave jumper between A2 and GND. Low side to chassis.	36MC	4	36MC	"	A7	Adjust for maximum output.
"	"	18MC	"	18MC	"	A8	Adjust for maximum output and repeat step on A7. If greatly detuned repeat adjustments on A7 and A8 several times.
"	"	36MC	"	36MC	"	A9,A10	Adjust for maximum output.
"	"	18MC	"	18MC	"	A11,A12	Adjust for maximum output and if greatly detuned repeat adjusts on A9,A10, A11 and A12 for maximum.
"	"	14MC	3	14MC	"	A13	Adjust for maximum output.
"	"	7MC	"	7MC	"	A14	Adjust for maximum output. Recheck adjust on A13 at 14MC and A14 at 7MC for maximum.
"	"	10MC	"	10MC	"	A15	Adjust for maximum output. Recheck A13 at 14MC and A14 at 7MC.
"	"	14MC 7MC	"	14MC 7MC	"	A16,A17 A18,A19	Adjust for maximum output. Adjust for maximum output. Repeat adjustments as given on A16, A17, A18 and A19 for maximum output.
"	"	5MC	2	5MC	"	A20	Adjust for maximum output.
"	"	1.8MC	"	1.8MC	"	A21	Adjust for maximum output. Repeat adjustments as given on A20 and A21 for maximum output.
"	"	3MC	"	3MC	"	A22	Adjust for maximum output. Recheck A20 at 5MC and A21 at 1.8MC for maximum output.
"	"	5MC	"	5MC	"	A23,A24	Adjust for maximum output.
"	"	1500KC	1	1500KC	"	A25	Adjust for maximum output.
"	"	600KC	"	600KC	"	A26	Adjust for maximum output. Recheck A25 at 1500KC for maximum output.
"	"	1000KC	"	1000KC	"	A27	Adjust for maximum output. Repeat adjustments on A25 and A26 for maximum output at 1500 and 600KC.
"	"	1500KC	"	1500KC	"	A28,A29	Adjust for maximum output.

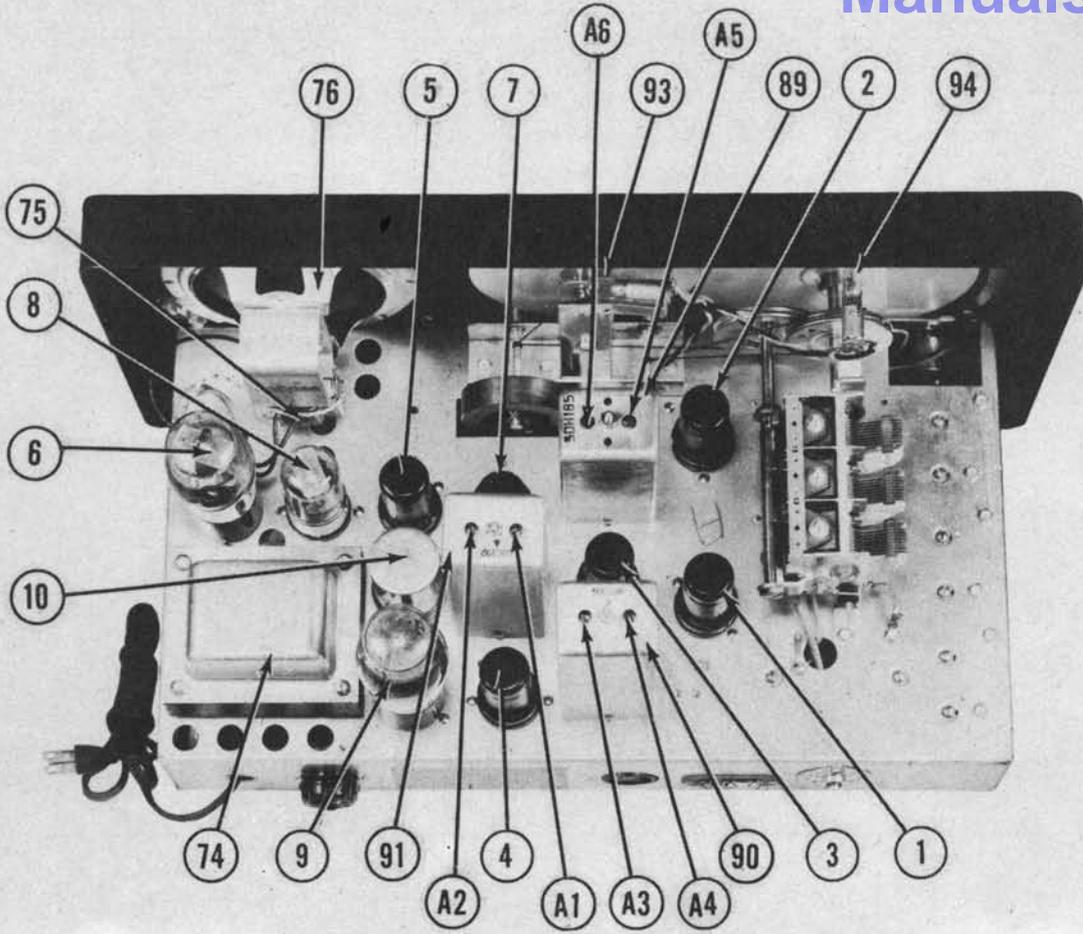
Before aligning allow approximately 10 minutes for signal generator and receiver to warm up. Use insulated alignment screwdriver for adjusting. Output from signal generator modulated at 400 Cycles and output attenuator on signal generator adjusted to give 500 milliwatt audio output on the output meter. Set receiver controls as follows:
 Sensitivity Control at maximum sensitivity (full clockwise).
 Volume Control at maximum volume (full clockwise)

A.V.C. Switch at off.
 Noise Limiter Switch at off.
 CW-AM Switch at AM.
 Tone Control at High.
 Standby Receive Switch at Receive.
 After completing the RF alignment check the image frequency to determine whether the oscillator frequency is higher than the signal frequency on bands 1, 2, and 3 and lower than signal frequency on band 4.

HALLICRAFTERS
 MODEL S-40

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CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA STANDARD TYPE	INSTALLATION NOTES
		HALLICRAFTERS PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7	6SK7	6BK	
2	Mixer & Local Oscillator	6SA7	6SA7	8R	
3	1st IF Amp.	6SK7	6SK7	8N	
4	2nd IF Amp.	6SK7	6SK7	8N	
5	Det. 1st Aud10 Amp.	6SQ7	6SQ7	8Q	
6	Power Output	6F6-G	6F6-G	7S	
7	AVC & Noise Limiter	6H6	6H6	7Q	
8	Heat Freq. Osc.	6J5GT	6J5GT	6C	
9	Rectifier	80	80	4C	

CAPACITORS

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

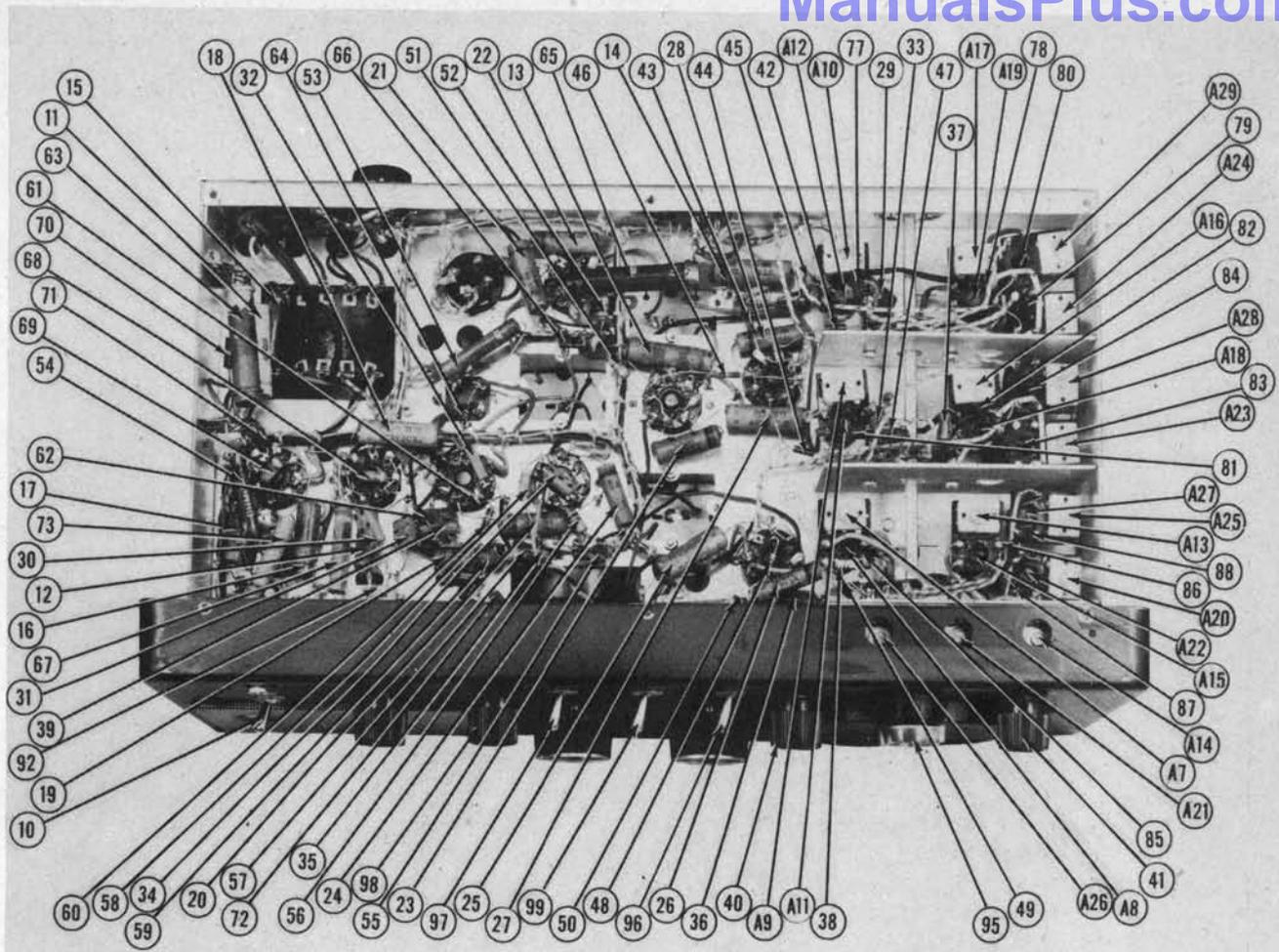
ITEM No.	RATING CAP.	VOLT	REPLACEMENT DATA				CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
			HALLICRAFTERS PART No.	MALLOY PART No.	SOLAR PART No.	AEROVOX PART No.		
10(A)	30	450	45A062	FP429	DY-4x10-450	EL-424	UP9DJ53	Filter *
(B)	10	450			M-10-450			
(C)	10	450			M-25-25			
11	30	25	45A034	TP421	S-4-01	TA-25	BR252A	6P8 Cath. Bypass
12	.01	500	46A103J	TP426	S-4-05	TC-11	D7431	DC Block BFO Trans.
13	.05	400	46A503J	TP428	S-4-05	TC-15	D7435	6SK7 Screen Bypass
14	.1	400	46A104J	TP428	S-4-1	TC-11	D7431	6P8 Screen Return
15	.01	400	46A103J	TP421	S-4-01	TC-11	D7431	Line Filter
16	.01	600	46A1203J	TP412	S-6-02	TC-12	D7632	Tone Cont. Bypass
17	.002	1000	46A023J	TP458	S-16-002	TR-12	MD18D2	6P8 Plate Bypass
18	.02	500	46A1203J	TP412	S-3-02	TC-12	D7632	Audio Coupling
19	.02	500	46A1203J	TP423	S-4-02	TC-12	D7632	
20	.02	500	46A1203J	TP423	S-4-02	TC-12	D7632	
21	.02	600	46A1203J	TP412	S-3-02	TC-12	D7632	6H8 Plate Bypass
22	.05	200	46A1203J	TP425	S-4-05	TC-15	D7435	6SK7 Plate Bypass
23	.05	200	46A1203J	TP425	S-4-05	TC-15	D7435	6SK7 Cath. Bypass
24	.02	200	46A203J	TP426	S-4-02	TC-12	D7432	AVC Bypass
25	.05	400	46A503J	TP426	S-4-05	TC-15	D7435	6SK7 Plate Decoupling
26	.05	400	46A503J	TP426	S-4-05	TC-15	D7435	6SK7 Osc. Plate
27	.05	400	46A103J	TP421	S-4-01	TC-11	D7431	6SK7 Screen-Decoupl.
28	.05	200	46A503J	TP426	S-4-05	TC-15	D7435	6SK7 Cath. Bypass
29	.05	200	46A091	TP426	S-4-05	TC-15	D7435	AVC Decoupling
30	100	500	CM20A101M	MC235	M0.5-31	TC-15	SW6T1	625 Grid-BFO Trans.
31	470	500	CM20A471J	MC245	M0.5-35	TC-15	SW6T5	BFO Resonating Cond.
32	270	500	CM20A271K	MC241	M0.5-33	TC-15	SW6T3	6SK7 Plate RF Filter
33	24	500	CC21UK240M	MC241	M0.5-33	TC-15	SW6T3	Trans. Coupling
34	47	500	CM20A470M	MC223	M0.5-45	TC-15	SW6S5	AVC Filter
35	47	500	CM20A470M	MC223	M0.5-45	TC-15	SW6S5	6SA7 Grid Osc. Cond.
36	390	500	CM20A391K	MC243	M0.5-34	TC-15	SW6T4	Trans. Coupling
37	15	500	CC21UK150M	MC243	M0.5-34	TC-15	SW6T4	Fixed Trimmer
38	100	500	CC25UK101M	MC463	MW-5-24	TC-15	1DS14	Audio Coupling
39	3300	300						

*On Mallory, Sprague, and Cornell Dubilier replacements do not connect 20 mfd, 25 volt section. On Solar replacement parallel three sections.

CONTROLS

ITEM No.	RATING RESIST.-WATTS	ANSE	REPLACEMENT DATA			INSTALLATION NOTES
			HALLICRAFTERS PART No.	MALLOY PART No.	CHAROSTAT PART No.	
40(A)	500K	1	25A534	NR48	D13-133	Volume control
(B)	500K	1	Not req.	Not req.	No	Attach to 40A per instructions
41(A)	500K	1	25A533	Not req.	No	Sensitivity Control
(B)	Switch					Attach to 41A per instructions

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HALLICRAFTERS PART No.	IRC PART No.	
42	22Ω	1/2	RC20A220M	BM-1-22	Red-Red-Blk. RF Grid Suppressor
43	120Ω	1/2	RC20A121K	BM-1-120	Br.-Red-Br. RF Cathode Bias
44	22Ω	1/2	RC20A220M	BM-1-22	Red-Red-Blk. RF Plate Suppressor
45	100KΩ	1/2	RC20A100M	BTS-100K	Br.-Blk.-Yl. AVC Filter
46	1000Ω	1/2	RC20A100M	BTS-1000	Br.-Blk.-Red Screen Dropping
47	6800Ω	1/2	RC30A682K	BM-2-6800	Blue-Gray-Red RF Transformer Load
48	1800Ω	1/2	RC20A180K	BTS-1800	Br.-Gray-Or. Osc. Grid
49	10Ω	2	RC20A100M	BM-1-10	Br.-Blk.-Blk. Osc. Suppressor
50	100Ω	2	RC41A100K	BT-2-10K	Br.-Blk.-Or. Osc. Plate Dropping
51	1000Ω	2	RC20A100K	BTS-1000	Br.-Blk.-Red 1st IF Cathode
52	1000Ω	2	RC20A100K	BTS-1000	Br.-Blk.-Red 2nd IF Cathode
53	12KΩ	4	RC65C12K	AB-12K	Br.-Red-Or. Conv. Plate Decoupling
54	1000Ω	10	24B100E	AB-1000	Plate Dropping
55	2.2 Meg.	1/2	RC20A225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Decoupling
56	1 Meg.	1/2	RC20A100M	BTS-1 Meg.	Br.-Blk.-Grn. Mode Load
57	100KΩ	1/2	RC20A100M	BTS-100K	Br.-Blk.-Yl. Noise Limiter
58	47KΩ	1/2	RC20A47M	BTS-47K	Yl.-Vi.-Yl. Mode Load
59	270Ω	1/2	RC20A274K	BTS-270K	Red-Vi.-Yl. Diode Filter
60	270Ω	1/2	RC20A274K	BTS-270K	Red-Vi.-Yl. Diode Filter
61A	10 Meg.	1/2	RC20A101K	BM-1-10 Meg.	Br.-Blk.-Blue 1st AF Grid-See Note 2
62	150Ω	1/2	RC20A151J	BM-1-150	Br.-Blk.-Br. 1st AF Cathode-See Note 1
63	150Ω	1/2	RC41A150K	AB-150	Br.-Orn.-Br. AVC Decoupling
64	12KΩ	1/2	RC20A12K	AB-12K	Br.-Red-Or. 1st AF Plate Dropping
65	100Ω	1/2	RC20A100K	BTS-100K	Red-Vi.-Yl. 1st AF Plate Load
66	100Ω	1/2	RC20A100K	BTS-100K	Br.-Blk.-Or. Filter
67	150Ω	1/2	RC20A150K	BT-2-150	Br.-Blk.-Red 2nd IF Plate Dropping
68	47KΩ	1/2	RC20A47M	BTS-47K	Br.-Orn.-Or. BF Osc. Plate Load
69	470KΩ	1/2	RC20A47M	BTS-470K	Yl.-Vi.-Or. BF Osc. Grid
70	680Ω	1/2	RC20A684M	BM-1-680	Blue-Gray-Br. Output Cathode
71	10KΩ	1/2	RC31A561K	BTS-10K	Br.-Blk.-Or. Screen Dropping
72	15KΩ	1/2		BTS-15K	Br.-Orn.-Or. Tone Comp.
73	470Ω	1/2		AB-500	Yl.-Vi.-Br. Plate Dropping

Note 1-used in early production.
Note 2-used in later production.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA		INSTALLATION NOTES
	PRI.	SEC. 1	SEC. 2	HALLICRAFTERS PART No.	THORDARSON PART No.	
74	117VAC @.7A5A	560V(CT)4.9V @ @.065A	5.3V @ 1.6A	520026	P80121 T13R13	Use mounting brackets that are supplied with replacement transformer.

TRANSFORMER (OUTPUT)

ITEM No.	RATING			REPLACEMENT DATA		INSTALLATION NOTES
	IMPEDANCE	DC RES.	PRI. SEC.	HALLICRAFTERS PART No.	THORDARSON PART No.	
75	6010Ω	3.32Ω	375Ω .5Ω	A38771	T-133591	Bend mounting tabs down and mount by original bracket. *Mount on chassis at side of speaker.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA		INSTALLATION NOTES
	FIELD	VC IMP.	HALLICRAFTERS PART No.	JENSEN PART No.	
76	4-13/16"	5/8"	580043	ST-1074	*Fabricate new mounting bracket.

NOT READILY REPLACEABLE—USE COMPLETE SPEAKER UNIT
Some models have 5"Dynamic Speaker with 3.5Ω Voice Coil and 1100Ω Field Coil.

PARTS LIST AND DESCRIPTIONS

R F COILS

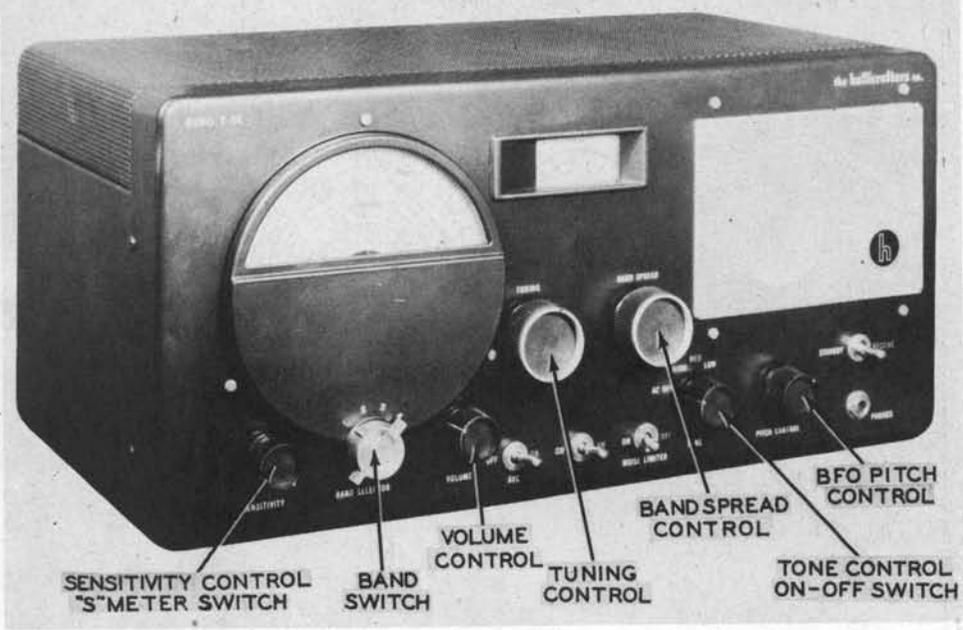
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	HALLI-CHARTER PART No.	MEISSNER PART No.
77	Band 4 Ant.	.1Ω	Ω	51B783	
78	Band 3 Ant.	.1Ω	Ω	51B782	
79	Band 2 Ant.	.5Ω	1.5Ω	51B781	
80	Band 1 Ant.	2Ω	Ω	51B780	
81	Band 4 Rf	1.2Ω	Ω	51B787	
82	Band 3 Rf	7.5Ω	Ω	51B786	
83	Band 2 Rf	.6Ω	5Ω	51B785	
84	Band 1 Rf	.1Ω	Ω	51B784	
85	Band 4 Osc.	Ω	Ω	51B791	
86	Band 3 Osc.	Ω	Ω	51B790	
87	Band 2 Osc.	.1Ω	1.2Ω	51B789	
88	Band 1 Osc.	.5Ω	5Ω	51B788	
89	Input IF	21Ω	6.5Ω	50H185	
90	Interstage IF	20Ω	4Ω	50C185	
91	Output IF	18Ω	1.8Ω	50C192	
92	B.F.O.	11Ω		54E028	

DIAL LIGHT

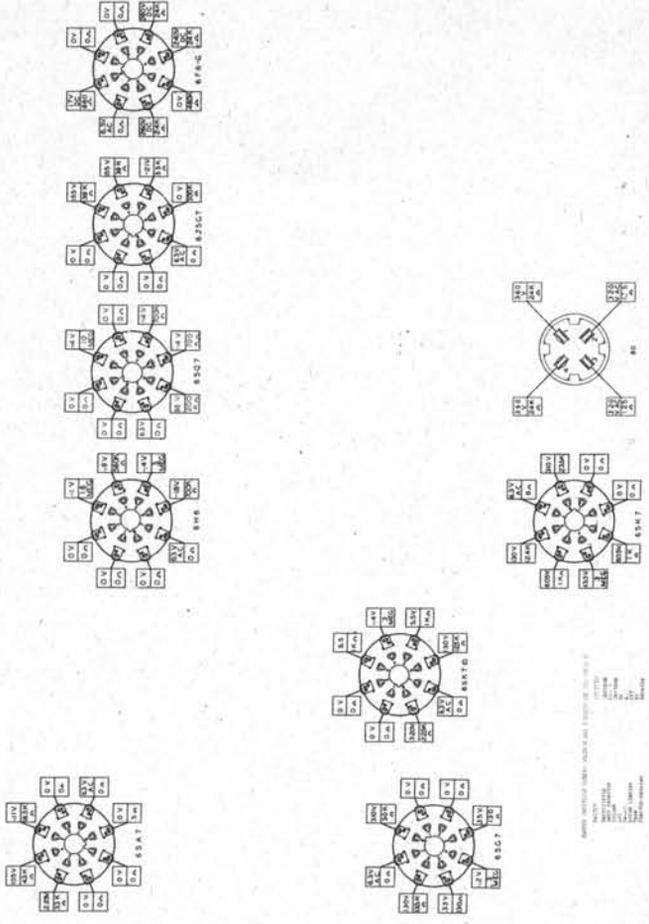
ITEM No.	BASE TYPE	VOLTS	AMPS.	REPLACEMENT DATA		INSTALLATION NOTES
				BEAD COLOR	HALLI-CHARTER PART No.	
93	Bayonet	6-8	0.25	Blue	39A003	Type 44 #
94		6-8	0.25	Blue	39A003	

MISCELLANEOUS

ITEM No.	PART NAME	HALLI-CHARTER PART No.	NOTES
A14	Trimmer	44B141	Oscillator Pad, Band 3
A21	"	44A024	Oscillator Pad, Band 2
A26	"	44A142	Oscillator Pad, Band 1
95A	Band Switch	62B039	Antenna & RF Sections
95B	"	62A044	Osc. Sections
95C	"	74C172	Drive Shaft
96	Switch (AVC)	60A138	SPST Toggle
97	Switch (NL)	60A138	
98A	Switch (Tone)	60A225	SP4T Tone Switch
98B	Switch (On-Off)	60A225	SPST On-Off
98	Switch (AM-CM)	60A138	SPST Toggle
100	Switch (SP-REC)	60A138	SPPT
	Tuning Cap. Jack (Head Ph.)	45C138	Main Tuning & bandspread Caps.
		36A002	Closed Circuit



VOLTAGE AND RESISTANCE ANALYSIS CHART



- 1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 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 $\pm 10\%$ in voltage and resistance readings.
- 6 - Volume control at maximum, no signal applied for voltage measurements.

