TRADE NAME	Hallicrafters, Model S-40
MANUFACTURER	The Hallicrafters 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. Removd 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	"	14MC	"	A16,A17	Adjust for maximum output.
"	"	7MC	"	7MC	"	A18,A19	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.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	Mixer & Local Oscillator	6SA7	6SA7	8R	
3	1st IF Amp.	6SK7	6SK7	8N	
4	2nd IF Amp.	6SK7	6SK7	8N	
5	Det. 1st Audio Amp.	6SQ7	6SQ7	8Q	
6	Power Output	6F6-G	6F6-G	7S	
7	AVC & Noise Limiter	6H6	6H6	7Q	
8	Beat Freq. Osc.	6J5GT	6J5GT	6Q	
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.

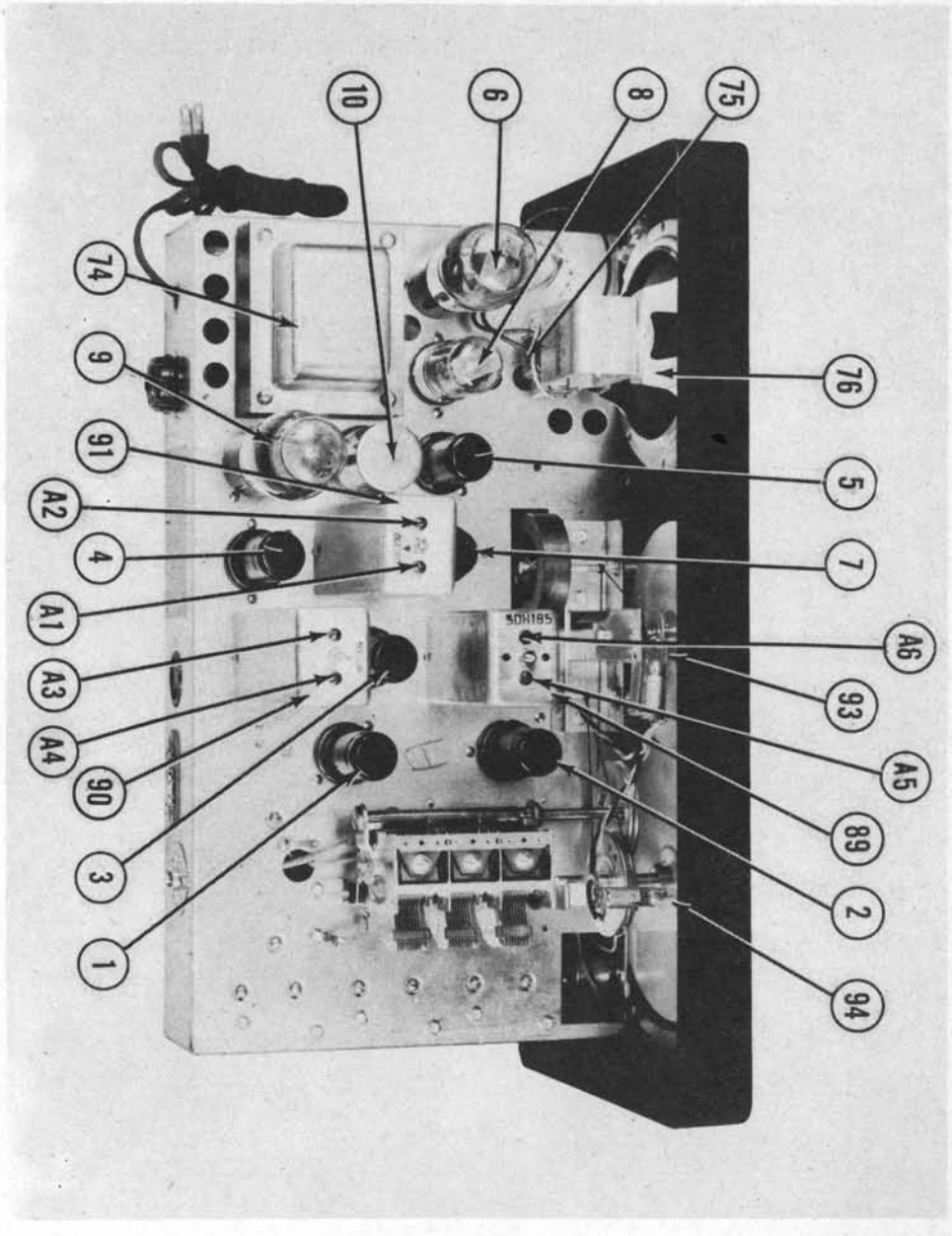
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10(A)	30	450	45A062	FP429	DY-4x10-450	EL-424		UP9DJ53	▲ Filter *
(B)	10	450							■ "
(C)	10	450			M-10-450				▲ "
11	30	25	45A034	TC26	M-25-25	TA-25	PRS-V25-25	BR252A	6F6 Cath. Bypass
12	.01	400	46AW103J	TP421	S-4-01	TC-11	484-.01	DT4S1	DC Block BFO Trans.
13	.05	400	46AW503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SK7 Screen Bypass
14	.1	400	46AV104J	TP428	S-4-1	TC-1	484-.1	DT4P1	6F6 Screen Return
15	.01	400	46AW103J	TP421	S-4-01	TC-11	484-.01	DT4S1	Line Filter
16	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	Tone Cont. Bypass
17	.002	1000	46A023	TP456	S-16-002	TR-22	1084-.002	MD16D2	6F6 Plate Bypass
18	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	Audio Coupling
19	.02	200	46AU203J	TP423	S-4-02	TC-12	484-.02	DT4S2	" "
20	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6H6 Plate Bypass
21	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	6SK7 Plate Bypass
22	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SK7 Cath. Bypass
23	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SK7 Cath. Bypass
24	.02	200	46AU203J	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Bypass
25	.05	400	46AW503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SA7 Plate Decoupling
26	.01	400	46AW103J	TP421	S-4-01	TC-11	484-.01	DT4S1	6SA7 Osc. Plate
27	.05	400	46AW503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SG7 Screen Decoup.
28	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SG7 Cath. Bypass
29	.05	200	46A091	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Decoupling
30	100	500	CM20A101M	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	6J5 Grid-BFO Trans.
31	470	500	CM20A471J	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	BFO Resonating Cond.
32	270	500	CM20A271K	MC241	MO.5-33	1FM-325	1468-.0003	5W5T3	6SQ7 Plate RF Filter
33	24	500	CC21UK240M						Trans. Coupling
34	47	500	CM20A470M	MC223	MO.5-45	1FM-45	1468-.00005	5W5Q5	AVC Filter
35	47	500	CM20A470M	MC223	MO.5-45	1FM-45	1468-.00005	5W5Q5	" "
36	390	500	CM20A391K	MC243	MO.5-34	1FM-34	1468-.0004	5W5T4	6SA7 Grid Osc. Cond.
37	15	500	CC21UK150M						Trans. Coupling
38	100	500	CC25UK101K						Fixed Trimmer
39	3300	300		MC463	MW.5-24	1FM-24	1467-.004	1D5D4	Audio Coupling

*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: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
40(A)	500K	1	25A534	MR48	D13-133	M-60-Z	Volume control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 40A per instructions
41(A)	500K	1	25A533		No Repl.	No. Repl.	Sensitivity Control
(B)	Switch						Attach to 41A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HALLI-CRAFTERS PART No.	IRC PART No.	
42	22Ω	½	RC20AE220M	BW-½-22	Red-Red-Blk. RF Grid Suppressor
43	120Ω	½	RC20AE121K	BW-½-120	Br.-Red-Br. RF Cathode Bias
44	22Ω	½	RC20AE220M	BW-½-22	Red-Red-Blk. RF Plate Suppressor
45	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AVC Filter
46	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red Screen Dropping
47	6800Ω	1	RC30AE682K	BW-2-6800	Blue-Gray-Red RF Transformer Load
48	1800Ω	½	RC20AE183K	BTS-1800	Br.-Gray-Or. Osc. Grid
49	10Ω	½	RC20AE100M	BW-½-10	Br.-Blk.-Blk. Osc. Suppressor
50	10KΩ	2	RC41AE103K	BT-2-10K	Br.-Blk.-Or. Osc. Plate Dropping
51	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red 1st IF Cathode
52	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red 2nd IF Cathode
53	12KΩ	4	RC65CE123K	AB-12K	Br.-Red-Or. Conv. Plate Decoupling
54	1000Ω	10	24BG102E	AB-1000	Plate Dropping
55	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Decoupling
56	1 Meg.	½	RC20AE105M	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
57	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. Noise Limiter
58	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Yl. Diode Load
59	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. Noise Limiter
60	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. Diode Filter
61A	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-blue 1st AF Grid-See Note 2
61B	100Ω	½	RC20AE101K	BW-½-100	Br.-Blk.-Br 1st AF Cathode-See Note 1
62	150Ω	½	RC20AE151K	BW-½-150	Br.-Grn.-Br. AVC Decoupling
63	12KΩ	4	RC41AE123K	AB-12K	Br.-Red-Or. 1st AF Plate Dropping
64	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. 1st AF Plate Load
65	10KΩ	2	RC65CE103K	BT-2-10K	Br.-Blk.-Or. Filter
66	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red 2nd IF Plate Dropping
67	15KΩ	2	RC41AE153M	BT-2-15K	Br.-Grn.-Or. BF Osc. Plate Load
68	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. BF Osc. Grid
69	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
70	680Ω	1	RC31AE681K	BW-1-680	Blue-Gray-Br. Output Cathode
71	10KΩ	½		BTS-10K	Br.-Blk.-Or. Screen Dropping
72	15KΩ	1		BTS-15K	Br.-Grn.-Or. Tone Comp.
73	470Ω	5		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			
	PRI.	SEC. 1	SEC. 2	SEC. 3	HALLI-CRAFTER PART No.	STANCOR PART No.	THORDARSON PART No.	
74	117VAC @.715A	660V(CT) @.065A	4.9V @ 1.8A	6.3V @ 3.4A	52C026	P6012†	T13R13	†Use mounting brackets that are supplied with replacement transformer.

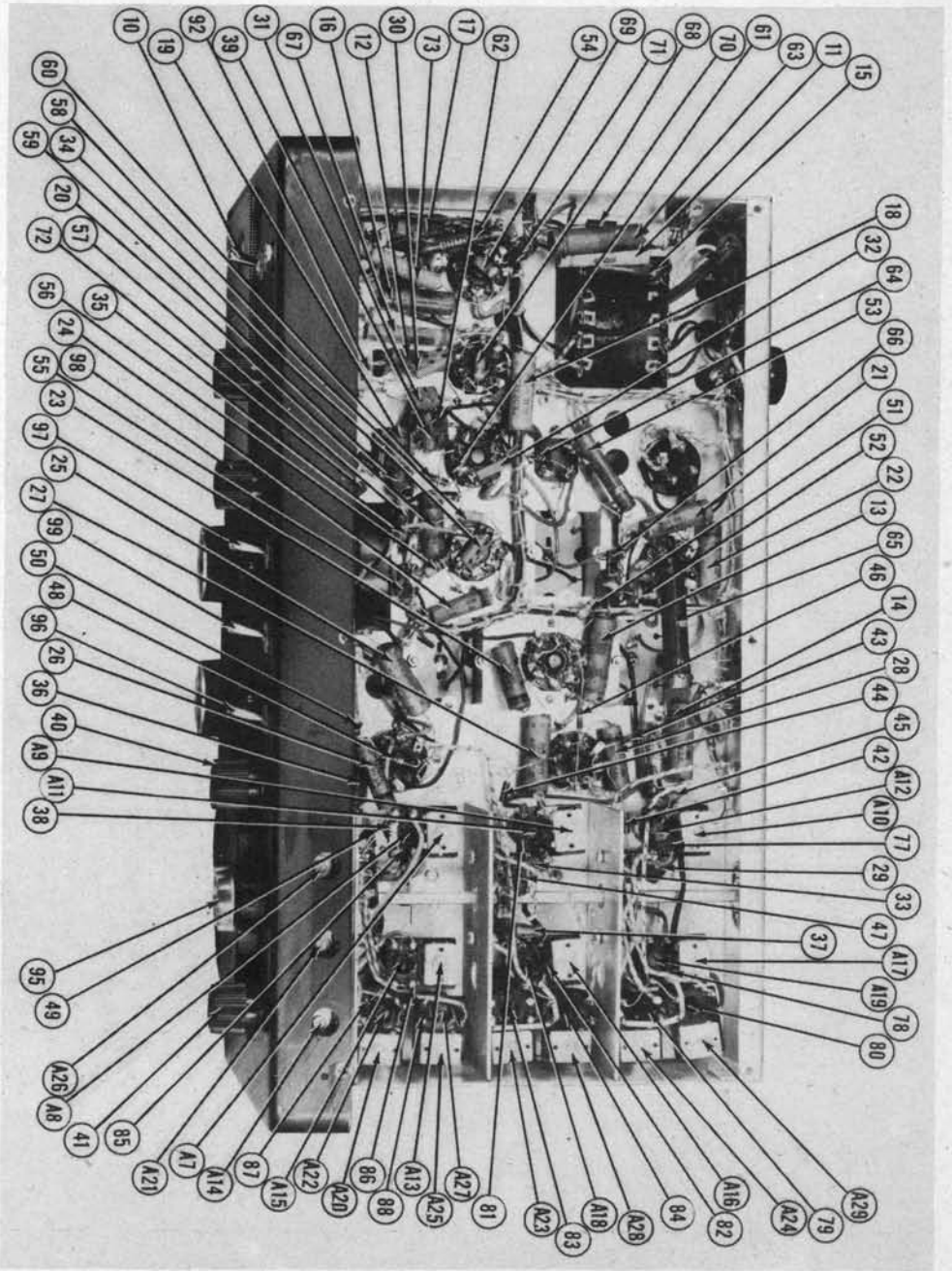
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HALLI-CRAFTER PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
75	5010Ω	3.32Ω	375Ω	.5Ω	Part of 85C043	A3877†	T-13S39†		†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.	HALLICRAFTER PART No.	JENSEN PART No.		
76	PM	3.3Ω	85C043	ST-107‡		‡Fabricate new mounting bracket.
	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			
	4-13/16"	5/8" Some models have 5"Dynamic Speaker	with 3.2Ω Voice Coil and 1100Ω Field Coil.			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS

R F COILS

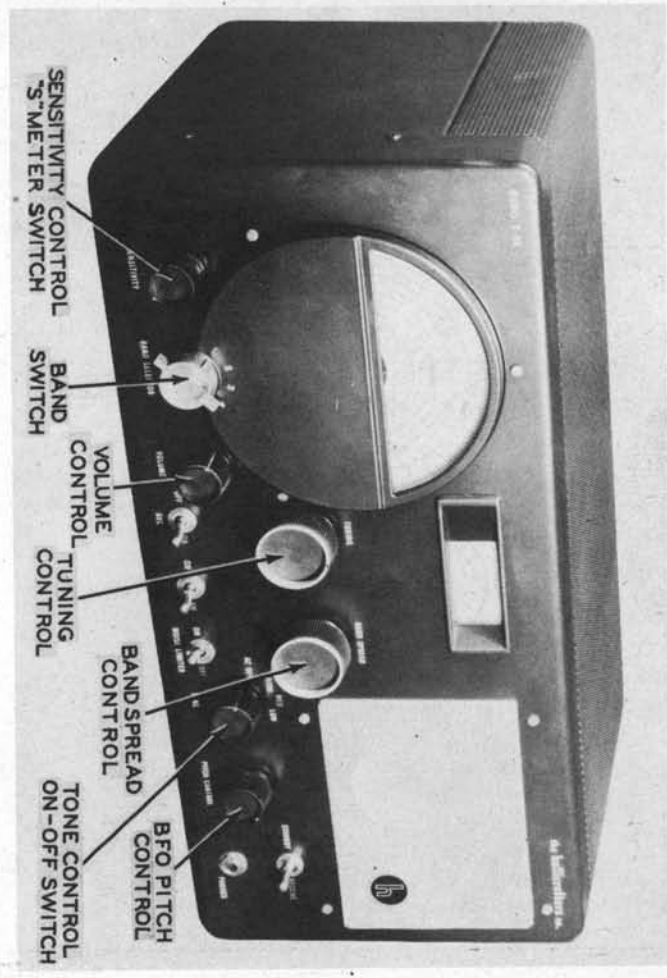
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	HALLI-CRAFTER PART No.	MEISSNER PART No.	
77	Band 4 Ant.	.1Ω	0Ω	51B783		
78	Band 3 Ant.	.1Ω	0Ω	51B782		
79	Band 2 Ant.	.5Ω	1.5Ω	51B781		
80	Band 1 Ant.	25Ω	5Ω	51B780		
81	Band 4 RF	1.2Ω	0Ω	51B787		
82	Band 3 RF	7.5Ω	0Ω	51B786		
83	Band 2 RF	.8Ω		51B785		
84	Band 1 RF	.1Ω	5Ω	51B784		
85	Band 4 Osc.	0Ω	0Ω	51B791		
86	Band 3 Osc.	0Ω	0Ω	51B790		
87	Band 2 Osc.	.1Ω	1.2Ω	51B789		
88	Band 1 Osc.	.5Ω	5Ω	51B788		
89	Input IF	21Ω	6.5Ω	50H185		
90	InterstageIF	20Ω	4Ω	50C185		
91	Output IF	18Ω	18Ω	50C192		
92	B.F.O.	11Ω		54B028		

DIAL LIGHT

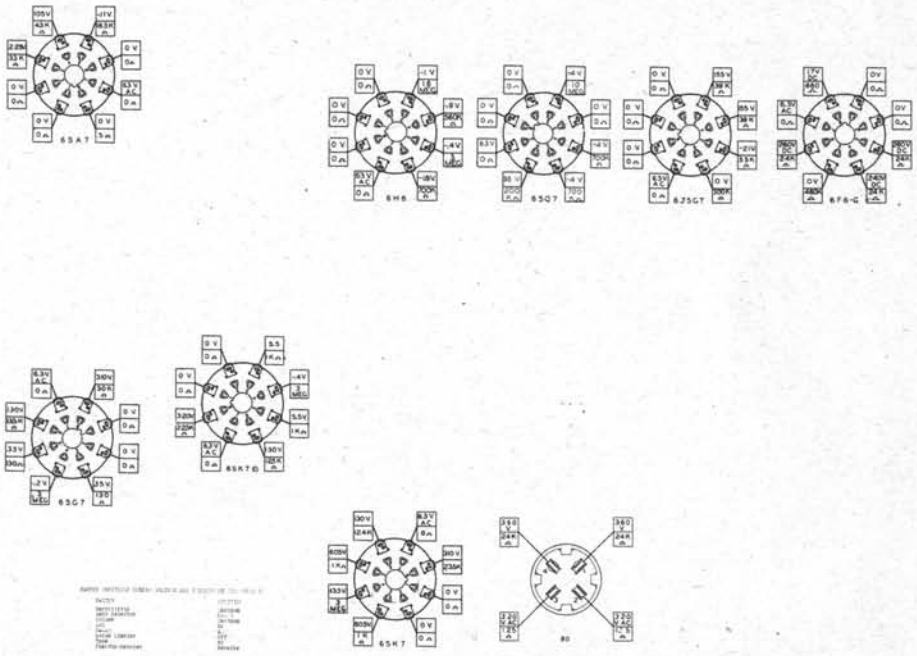
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HALLI-CRAFTER PART No.		
93	Bayonet	6-8	0.25	Blue	39A003		Type 44
94	"	6-8	0.25	Blue	39A003		" "

MISCELLANEOUS

ITEM No.	PART NAME	HALLI-CRAFTER 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	" (NL)	60A138	" "
98A	Switch (Tone)	60A225	SP4T Tone Switch
98B	" (On-Off)	60A225	SPST On-Off
99	Switch (AM-CW)	60A138	SPST Toggle
100	" (ST-REC)		SPDT "
	Tuning Cap.	48C138	Main Tuning & Bandspread Caps.
	Jack(Head Ph.)	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.

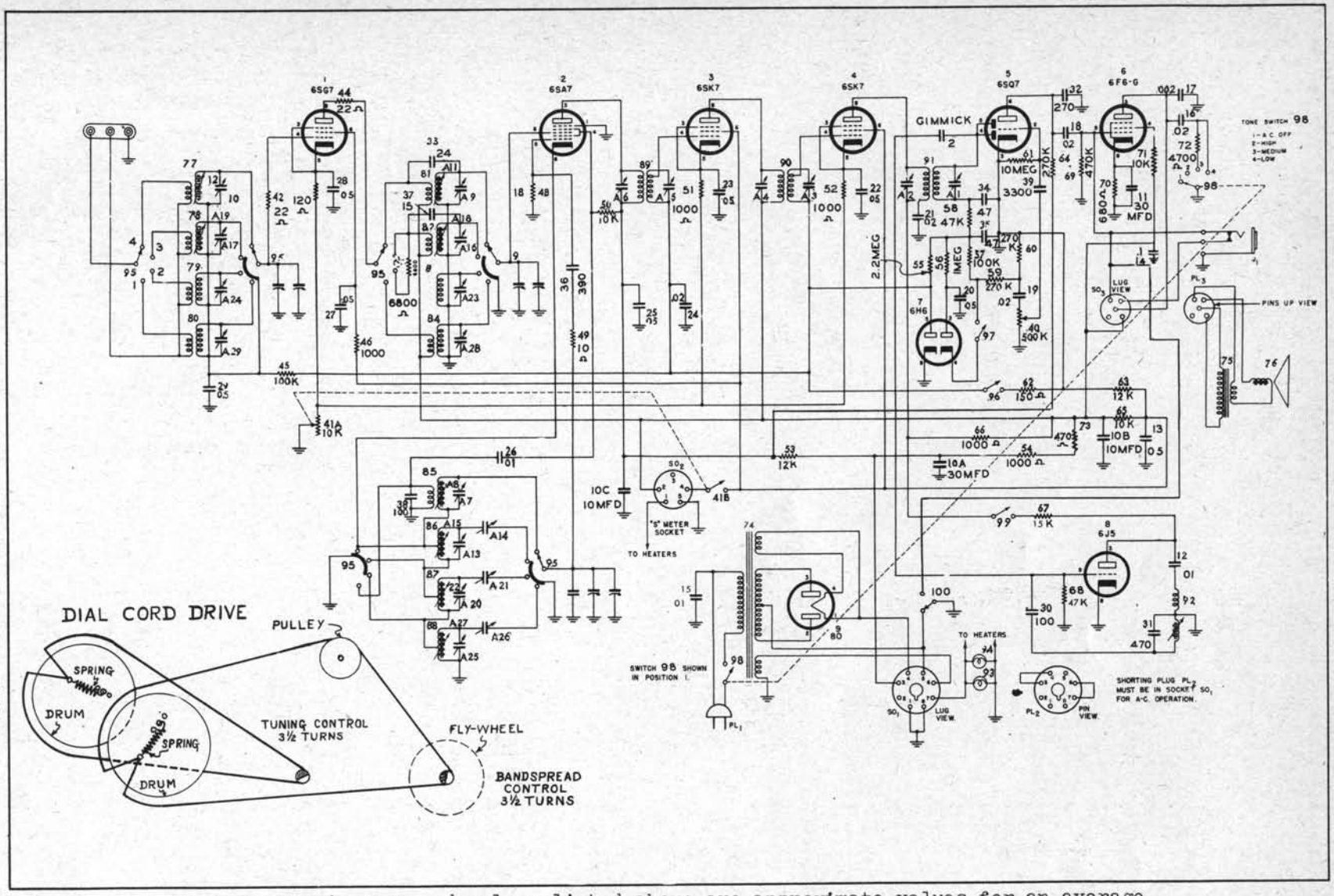
3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

SCHEMATIC DIAGRAM



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.

HOWARD W. SAMS & CO., INC.
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