SERVICE DATA MODEL S-120

Figure 1. Hallicrafters Model S-120

TECHNICAL SPECIFICATIONS

TUBES . . . . . Four, plus rectifier
SPEAKER . . . . . 5 inch PM, 8 ohm voice coil
ANTENNA . . . . . Broadcast - Self contained ferrite loopstick
Short wave - 45" collapsible whip antenna and provision for single wire or 50-600 ohm line
POWER SUPPLY. .105-125 volts DC or AC (50-60 CPS)
POWER CONSUMPTION . . . . . .30 watts
INTERMEDIATE FREQUENCY. . . . . 455 KC
FREQUENCY COVERAGE . . . . . .540 KC to 31 MC
DIMENSIONS. .5-7/8" high, 13-1/2" wide, 8-3/4" deep
WEIGHT . . . . . .10-1/4 lbs.
SHIPPING WEIGHT . . . . . .12 lbs. approximately

TUBE AND DIAL LAMP REPLACEMENT

For access to the tubes, remove the cabinet rear panel which is held in place by two screws. Care should be exercised so as not to damage the leads to the loopstick antenna mounted on the inside of the rear panel. For dial lamp replacement, remove the chassis from the cabinet (see CHASSIS REMOVAL).

CHASSIS REMOVAL

To remove the chassis from the cabinet, remove the four screws (within the plastic feet) that secure the chassis to the cabinet. Slide the chassis out the rear of the cabinet.

CAUTION: Just before removing the chassis from the cabinet rotate the MAIN TUNING and BAND SPREAD controls fully counterclockwise to prevent damage of the tuning capacitors.

DIAL CORD RESTRINGING

Remove the chassis from the cabinet to restring either dial cord (see CHASSIS REMOVAL).

To restring the BAND SPREAD dial cord remove control knobs, phone jack retaining nut, escutcheon trim plate and clip on each end of plate (2 screws), insulation spacer, dial scale (two screws), and dial plate (four hex head screws). Care should be taken when removing the dial plate not to damage the pointers. Referring to figure 2, follow the arrows and letter sequence to string the dial cord. The dial cord spring should be expanded from 1/4" to 1/2". Place the BAND SPREAD pointer on the bottom of the dial rail and engage the dial cord with the pointer clips. Replace the dial plate, dial scale, escutcheon trim strip (replace clips on either end of plate), and control knobs. With BAND SPREAD control fully counterclockwise, align the pointer on "O" and apply a drop of cement to the dial cord and pointer clip. Replace chassis in the cabinet.

To restring the MAIN TUNING dial cord with the chassis removed from the cabinet, refer to figure 7 and follow the arrows and letter sequence. The dial cord spring should be expanded 1/4" to 1/2". Place the MAIN TUNING pointer on the dial rail and engage the dial cord with the pointer clips. With the MAIN TUNING control fully counterclockwise, align the pointer with "O" on the BAND SPREAD scale and apply a drop of cement to the dial cord and pointer clip. Replace the chassis in the cabinet.

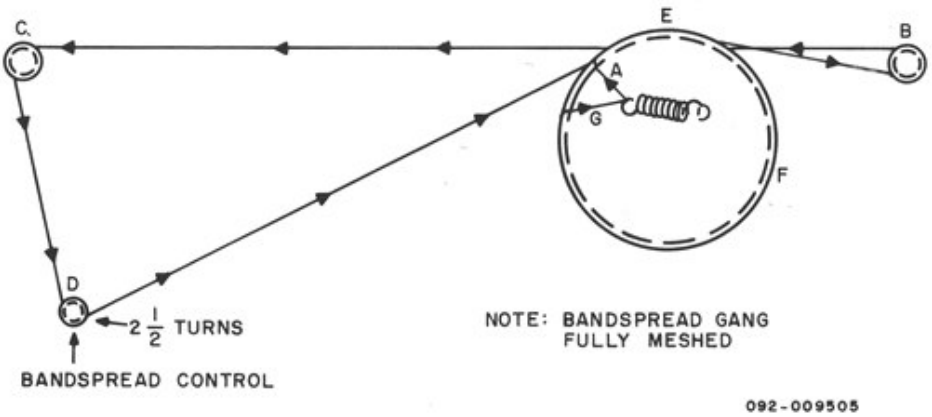

Figure 2. Band Spread, Stringing Diagram Front View

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ALIGNMENT PROCEDURE

- Use an amplitude modulated generator covering 455 KC to 30 MC.
- Connect the output meter across the speaker voice coil.
- Use a non-metallic alignment tool.
- Use a standard EIA dummy antenna as shown in figure 3.
- Set BFO control to OFF, VOLUME control maximum clockwise, RECEIVE/STANDBY control to RECEIVE, and the BAND SPREAD control to 100.
- Refer to figures 4 and 5 for location of adjustments.

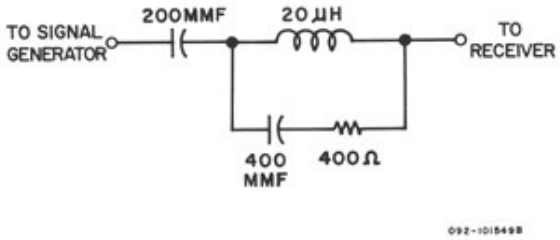

Figure 3. EIA Dummy Antenna

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust
*1	High side through a .01 mfd capacitor to stator plates of rear section of TUNING capacitor.	455 KC (30% mod.)	1	1.0 MC	A, B, C and D for maximum output. Keep reducing the generator output to keep the output meter below 50 milliwatts.
2	High side through EIA antenna to terminal ANT on rear of chassis. Low side to chassis.	1400 KC (30% mod.)	1	1400 KC	C1 and C24 for maximum output as in step 1.
3	Same as step 2.	600 KC (30% mod.)	1	600 KC	L1 for maximum output as in step 1.
4	Same as step 2.	-	1	-	Repeat steps 2 and 3 until no increase in output can be obtained on either adjustment.
5	Same as step 2.	4.3 MC (30% mod.)	2	4.3 MC	C2 and C25 for maximum output as in step 1.
6	Same as step 2.	1.9 MC (30% mod.)	2	1.9 MC	T2 and L2 for maximum output as in step 1.
7	Same as step 2.	-	2	-	Repeat steps 5 and 6 until no increase in output can be obtained.
8	Same as step 2.	11 MC (30% mod.)	3	11 MC	C3 and C26 for maximum output as in step 1.
9	Same as step 2.	5 MC (30% mod.)	3	5 MC	T3 and L3 for maximum output as in step 1.
10	Same as step 2.	-	3	-	Repeat steps 8 and 9 until no increase in output can be obtained.
11	Same as step 2.	30 MC (30% mod.)	4	30 MC	C4 and C27 for maximum output as in step 1.
12	Same as step 2.	14 MC (30% mod.)	4	14 MC	T4 and L4 for maximum output as in step 1.
13	Same as step 2.	-	4	-	Repeat steps 11 and 12 until no increase in output can be obtained.

*Before beginning IF procedure, rotate AM/CW ratio control to its full counterclockwise position.

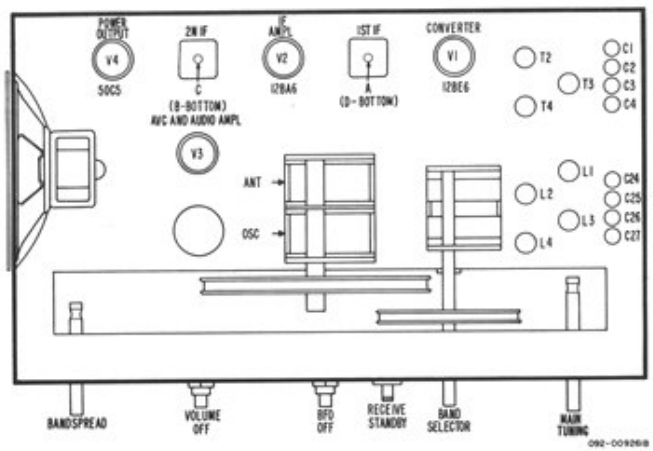

Figure 4. Chassis, Top View

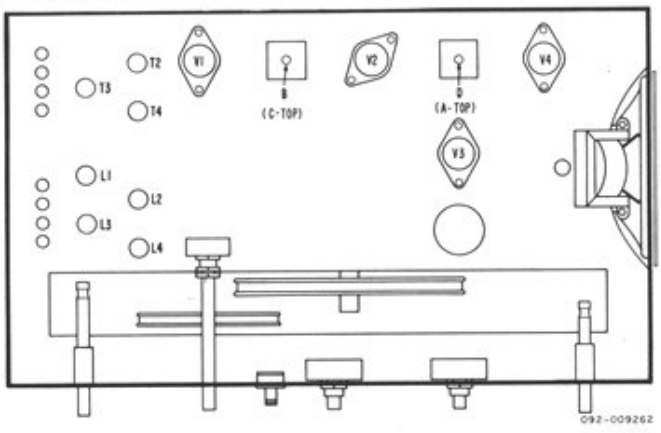

Figure 5. Chassis, Bottom View

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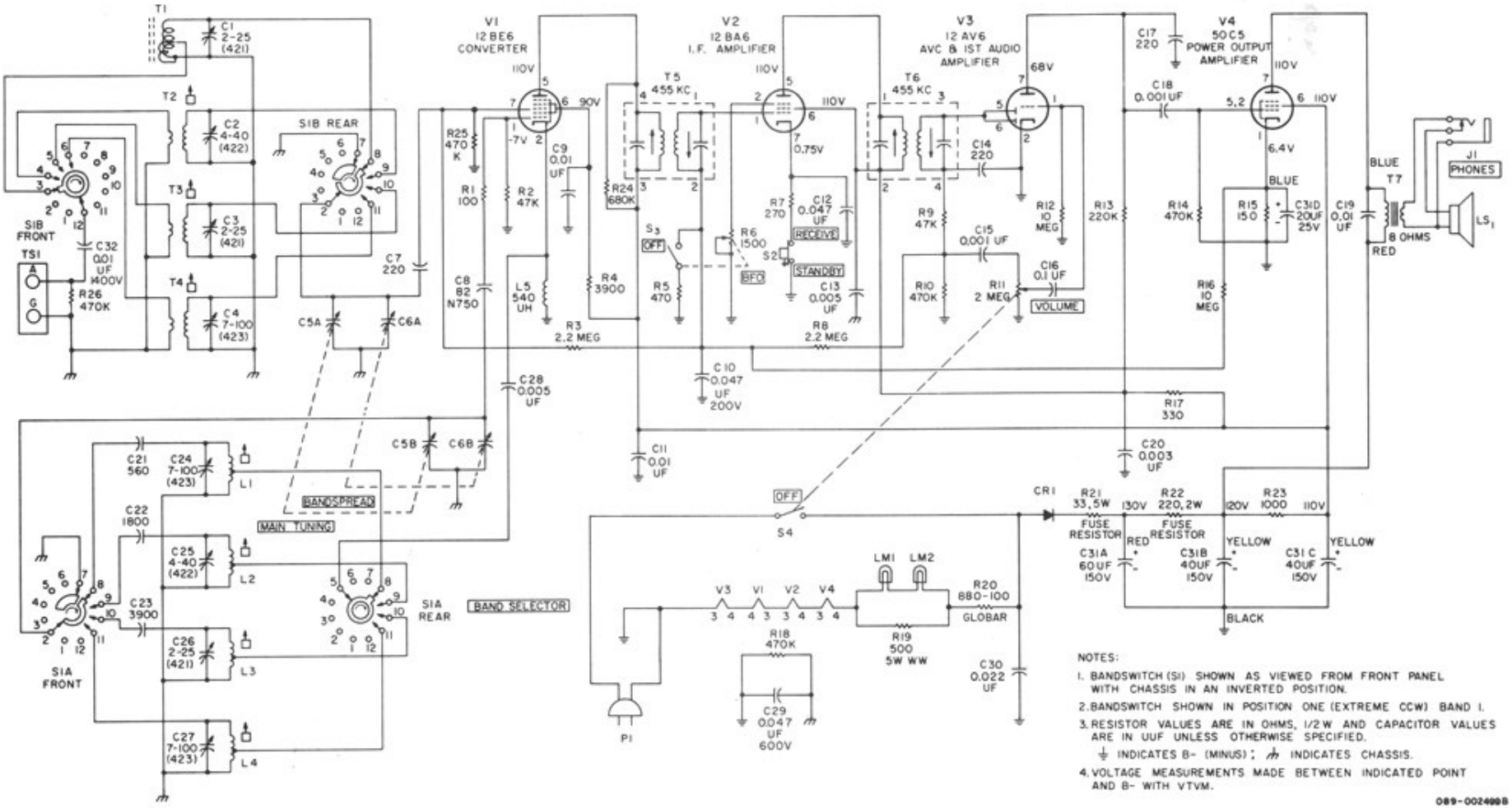

Figure 6. S-120 Schematic Diagram.

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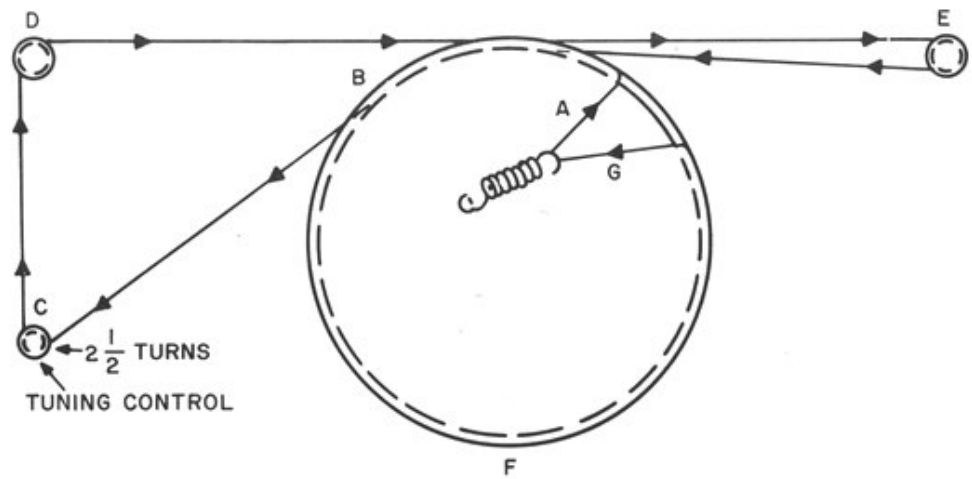
SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C1,2,3,4	2-25, 4-40, 2-25, 7-100 mmf., Var. Quad Trimmer, Assy; Inc. mtg. bracket	044-000533
C5A,B	MAIN TUNING; Var. Cap.	048-000479
C6A,B	BAND SPREAD; Var. Cap.	048-000477
C7,14,17	220 mmf., 500V, 20%; Cer. Tub.	483-021221
C8	82 mmf., 500V, 10%, N750; Cer. Tub.	491-126820-95
C9	.01 mfd., 500V, GMV; Cer. Disc	047-100224
C10	.047 mfd., 200V, 20%; Molded Paper	499-014473
C11	.01 mfd., 500V, +80-20%; Cer. Disc	047-100217
C12,29	.047 mfd., 600V, 20%; Molded Paper	499-034473
C13,28	.005 mfd., 500V, 20%; Cer. Disc	047-100442
C15,18	.001 mfd., 600V, 20%; Molded Paper	499-034102
C16	0.1 mfd., 20%, 100V; Molded Paper	046-001259-05
C19	.01 mfd., 600V, 20%; Molded Paper	499-034103
C20	.003 mfd., 600V, 20%; Molded Paper	499-034302
C21	560 mmf., 300V, 5%; Duramica	481-162561
C22	1800 mmf., 300V, 5%; Duramica	481-262182
C23	3900 mmf., 300V, 5%; Duramica	481-262392
C24,25, 26,27	7-100, 4-40, 2-25, 7-100 mmf., Var. Quad Trimmer, Inc. mtg bracket	044-000534
C30	.022 mfd., 600V, -20%; Molded Paper	499-034223
C31A,B, C,D	60-40-40 mfd., 150V; 20 mfd., 25V; Electrolytic	045-000711
C32	.01 mfd., 1400V, Spark Gap type; Cer. Disc	047-001309
	***RESISTORS**	
R1	100 ohm	451-252101
R2,9	47K ohm	451-252473
R3,8	2.2 megohm	451-252225
R4	3.9K ohm	451-252392
R5	470 ohm	451-252471
R6	1.5K ohm, 30%, 1/4 watt, Variable, BFO control; Inc. switch S3	025-002024
R7	270 ohm	451-252271
R10,14, 18,25,26	470K ohm	451-252474
R11	2 megohm, 30%, 1/8 watt Variable, VOLUME Control; Inc. Switch S4	025-002025
R12,16	10 megohm	451-252106
R13	220K ohm	451-252224
R15	150 ohm	451-252151
R17	330 ohm	451-252331
R19	500 ohm, 5W, Wirewound	024-001328-06
R20	880-100 ohm, Globar	023-000327
R21	Resistor, Fuse, 33 ohm, 5W	024-001398
R22	Resistor, Fuse, 220 ohm, 2W	024-001399
R23	1K ohm	451-252102
R24	680K ohm	451-252684
	*ALL RESISTORS are 10%, 1/2 watt, carbon type, unless otherwise specified.	
	COILS AND TRANSFORMERS	
T1	Antenna Loop Stick Assembly	150-001606
T2	Coil, RF (band 2)	051-003473
T3	Coil, RF (band 3)	051-003474
T4	Coil, RF (band 4)	051-003475
T5	Transformer, 1st IF	050-300531
T6	Transformer, 2nd IF	050-300532
T7	Transformer, Audio Output; Part of LS1	----------
L1	Coil, Oscillator (band 1)	051-003476
L2	Coil, Oscillator (band 2)	051-003477
L3	Coil, Oscillator (band 3)	051-003478
L4	Coil, Oscillator (band 4)	051-003479
L5	540 UH, RF Choke	053-100107
	SWITCHES	
S1A,B	BAND SELECTOR	060-002526
S2	STANDBY - RECEIVE	060-002181
S3	BFO - OFF, Part of R6	----------
S4	VOLUME - OFF, Part of R11	----------
	SOCKETS AND CONNECTORS	
J1	PHONES, jack	036-200210
	Socket, wafer (V1-V4)	006-100308
TS1	Terminal Board, antenna	088-100020
P1	Line Cord	087-100078
	Socket, Dial light assembly	086-000578
	TUBES, LAMPS AND RECTIFIERS	
CR1	Rectifier, Selenium	027-000290
LM1,2	Lamp, Dial type #47	039-100004
V1	12 BE6; Converter	090-900040
V2	12 BA6; IF Amplifier	090-900039
V3	12 AV6; AVC and 1st Audio Amplifier	090-901187
V4	50C5; Power Output Amplifier	090-900541
	MISCELLANEOUS	
	Antenna, Telescoping	057-000421
	Bracket, Antenna	067-009150
	Bracket, Dial Plate	067-008766
	Cabinet (Inc. Trim Strip)	150-000981
	Clip, IF mtg.	076-100385
	Clip, fuse (antenna mtg.)	076-102724
	Dial Scale, Calibrated	083-000982
	Dial Cord	038-000049
	Escutcheon, trim plate	007-000793
	Foot, Front	016-201072
	Foot, Rear	016-201073
	Grommet, nylon plastic (foot and rear panel mtg.)	002-2024
	Grommet, nylon plastic (escutcheon mtg.)	002-1024
	Grommet, nylon plastic (dial scale mtg.)	002-202445
	Grommet (speaker and tuning capacitor mtg.)	016-100718
	Grommet (capacitor stabilizer plate)	016-100661
	Knob, MAIN TUNING and BAND SPREAD	015-001680
	Knob, VOLUME and BFO	015-001678
	Knob, BAND SELECTOR	015-001679
	Lock, Line Cord	076-200397
LS1	Speaker, 8 ohm Voice Coil, Inc. T7	085-000210
	Plate, Dial	063-004908
	Pointer, BAND SPREAD	082-000471
	Pointer, MAIN TUNING	082-000472
	Rear Panel	068-001250
	Ring, Electrolytic mtg.	076-003384
	Ring, Retaining	076-100883
	Spacer, Insulation (escutcheon)	073-003679
	Spring, dial cord	075-100012
	Shield, Tube (V1)	069-100232
	Shield, Base (V1)	076-100402
	Shaft, BAND SPREAD	074-002606
	Shaft, MAIN TUNING	074-002607



NOTE: TUNING GANG FULLY MESHED

092-009506

Figure 7. Main Tuning Stringing Diagram, Rear View.

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