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SERVICE DATA FOR MODEL S-95, MARK II

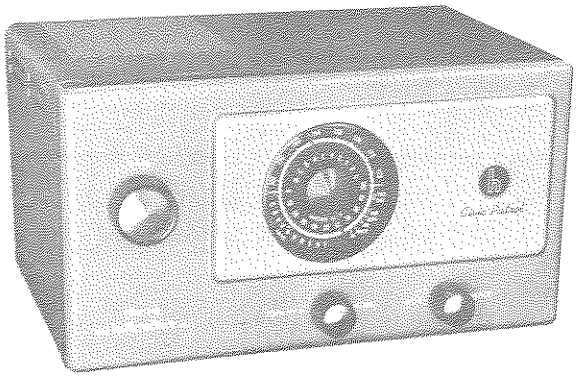

Figure 1. Hallicrafters Model S-95

TUBE REPLACEMENT

For access to the tubes, remove the cabinet rear cover. The rear cover is held in place by four screws and washers.

CAUTION: Before attempting to make any replacement, rotate the tuning control fully counterclockwise to prevent damage to the tuning gang.

ACCESS TO CHASSIS BOTTOM

For access to the chassis bottom, remove the cabinet bottom cover which is held in place by four screws within the rubber feet.

CHASSIS REMOVAL

To remove the chassis from the cabinet, first remove the cabinet rear cover which is held in place by four screws and unsolder the speaker leads at the speaker terminals. Remove the cabinet bottom cover which is held in place by four screws within the rubber feet. Unsolder the isolating capacitor from the mounting lug on the cabinet frame. Remove the additional four screws and washers from the plastic mounting bases which secure the chassis to the cabinet frame. Remove the three knobs from the front panel, and push in on the shafts to slide the chassis partway out of the cabinet. Finally, pull the chassis out through the rear opening.

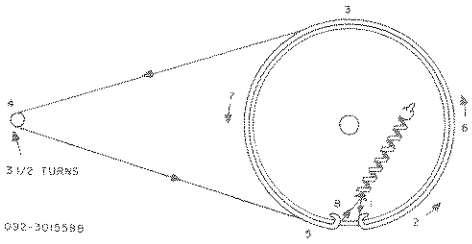

Figure 2. Dial Cord Stringing Diagram

DIAL CORD RESTRINGING

To restring the tuning dial, first remove the chassis from the cabinet. See "CHASSIS REMOVAL". For stringing details, see Figure 2.

TECHNICAL SPECIFICATIONS

TUBES. . . . . 8 and 1 selenium rectifier
SPEAKER . . . . . 5 inch PM, 3.2 ohm voice coil
HEADPHONE OUTPUT IMPEDANCE . . . . . 100 ohm
ANTENNA INPUT IMPEDANCE . . . . . 50 ohm
ANTENNA . . . . . Vertically polarized whip or doublet
POWER SUPPLY. . . 105-125 volts DC or 50-60 cycle AC
POWER CONSUMPTION . . . . . 30 watts
INTERMEDIATE FREQUENCY . . . . . 10.7 MC
FREQUENCY COVERAGE. . . . . 152 to 173 MC
DIMENSIONS . . 7-1/2" high x 13" wide x 8-3/4" deep
WEIGHT. . . . Net - 10 lbs., 10 oz.; Shipping - 13 lbs.

SQUELCH RANGE CONTROL ADJUSTMENT

The Squelch Range control (See Fig. 3) adjusts the operating point of the output section of the 12AU7 squelch tube (V8). This control has been carefully adjusted at the factory for proper operation and will normally not require readjustment unless the squelch tube, relay, or components in the squelch circuit have been replaced. If adjustment is necessary, proceed as follows:

1. Connect a DC milliammeter (0-15 ma) in series with the squelch relay, RY1, in the plate circuit of the squelch tube, V8.

2. Set the Volume control at maximum, the Squelch Range control fully clockwise (minimum resistance) and the Squelch control on the front panel fully counterclockwise (maximum resistance) but not at "Off".

3. Tune the receiver to a noisy part of the band where no signal is present.

4. With no signal tuned in, slowly rotate the Squelch Range control counterclockwise until the noise is just squelched (disappears). At this point the relay contacts are closed and the grid of the audio output tube is shorted to ground. Note the plate current reading of the squelch tube (should be anywhere from 6.5 to 10.25 ma), and then continue to advance the Squelch Range control until the plate current drops 2 ma from that obtained at the point of squelch. This is the proper setting of the Squelch Range control.

   If a milliammeter is not available, the Squelch Range control can be "roughly" set by adjusting the Squelch Range control to the point of squelch as outlined above and then advancing the control 65° further counterclockwise.

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IF ALIGNMENT PROCEDURE

- Use a 10.7 MC signal generator, either amplitude modulated or unmodulated.
- Connect high side of generator through a .01 mfd. capacitor to pin 7 of V2; connect low side to chassis.
- Adjust generator output to maintain a one volt reading on VTVM.
- Set Volume control at maximum and Squelch control at "Off".
- See Fig. 3 for location of alignment adjustments.

1. Connect DC probe of VTVM to pin 2 of V5; common lead to chassis. Adjust B, C, D, E, and F for maximum output.
2. Connect two 470,000 ohm resistors in series between pin 2 of V5 and the chassis. Connect DC probe of VTVM to junction of R10 and C16; common lead to center tap of the two 470,000 ohm resistors. Adjust A for zero reading between a positive and negative peak. The two peaks should have approximately the same amplitude, If not, readjust B slightly and then touch up A.

RF ALIGNMENT PROCEDURE

- Use a signal generator either amplitude modulated or unmodulated which covers 156 MC and 170 MC.
- Connect high side of generator through a carbon resistor to terminal "A" on antenna terminal strip on rear of chassis; low side to terminal "G". The value of the resistor will depend upon the output impedance of the signal generator. If the generator termination is less than 50 ohms add a resistor to bring it up to 50 ohm.
- Use a non-metallic alignment tool.
- Connect DC probe of VTVM to pin 2 of V5; common lead to chassis.
- Adjust generator output to maintain a one volt reading on VTVM.
- Set Volume control at maximum and Squelch control at "OFF".
- See Fig. 3 for location of alignment adjustments.

1. Set generator and receiver dial to 170 MC and adjust G and then H for maximum output. When adjusting H "rock" tuning capacitor slightly.
2. Check calibration at low end of receiver by setting generator and receiver dial to 156 MC. A calibration adjustment is usually not necessary and should not be made unless the oscillator coil has been replaced or damaged. If adjustment is required, the oscillator coil lead connected to the gang should be varied in length or position until output is obtained at 156 MC.

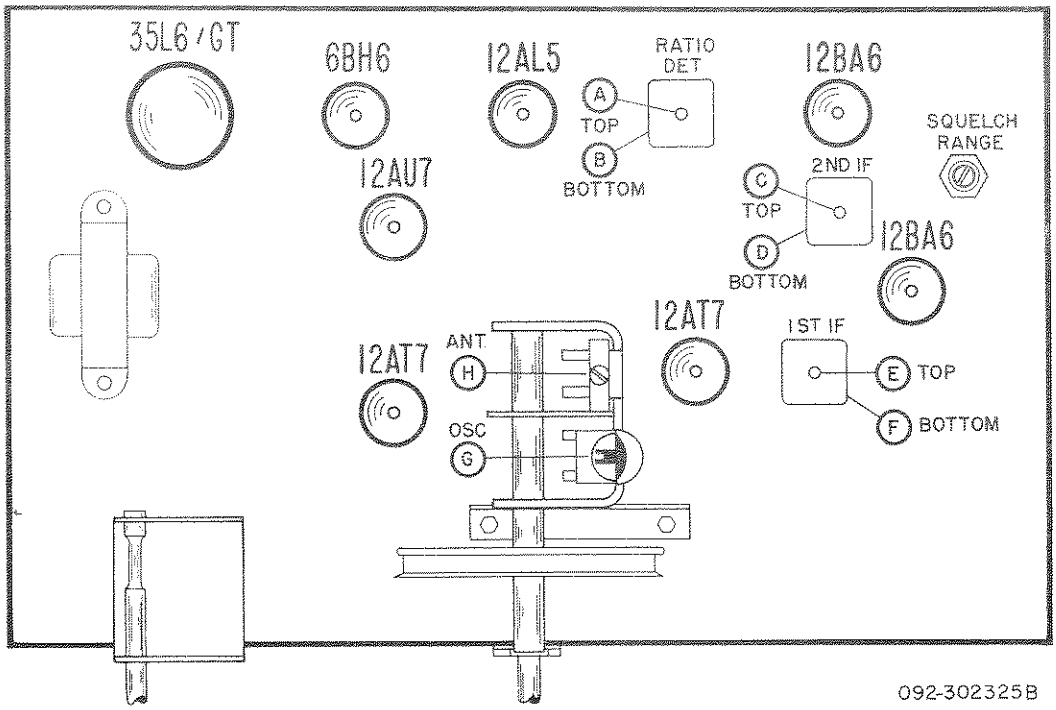

Figure 3. Tube Location And Alignment Adjustments

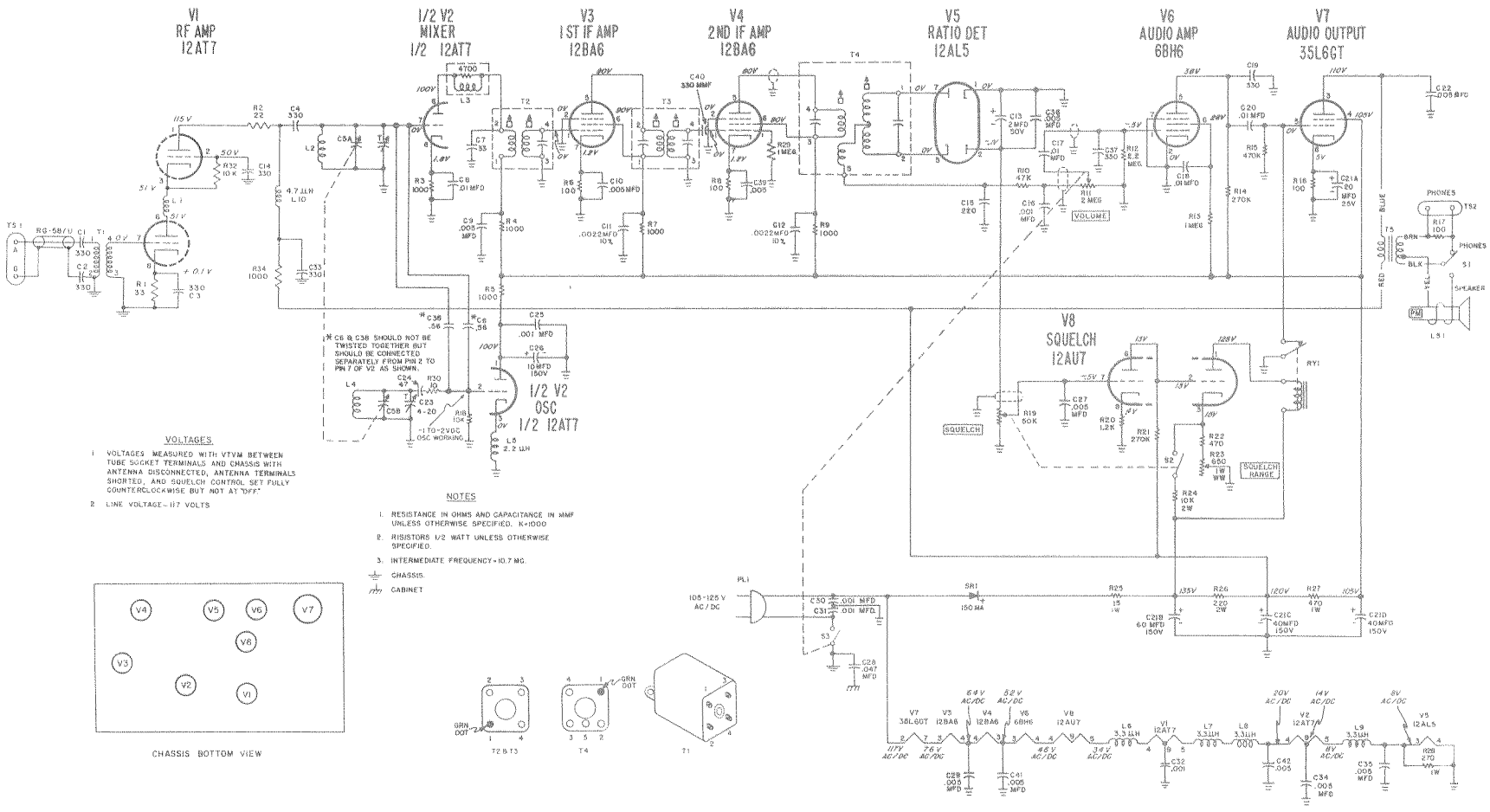

Figure 4. Schematic Diagram

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*FREQUENCY ASSIGNMENTS OF SERVICES COVERED BY MODEL S-95

Telephone - Base
152.51 - 152.81
152.03 - 152.2

Special Emergency
157.47
159.51 - 161.99

Forest Products Service
153.05 - 153.35
158.31 - 158.43

Power
153.41 - 153.71
158.13 - 158.25

Telephone - Mobile
157.77 - 158.07
158.49 - 158.67

Police
154.65 - 156.7
158.73 - 161.7

Petroleum
153.05 - 153.35
158.31 - 158.43

Forestry
156.87 - 156.93
159.27 - 159.51
161.79
170.425 - 170.575
171.425 - 171.575
172.225 - 172.375

Taxicabs - Base & Mobile
152.27 - 152.45

Fire
153.77 - 154.43
159.51 - 161.79
166.25
170.15

Highway Maintenance
156.99 - 157.41
159.51 - 161.79

Taxicabs - Mobile Only
157.53 - 157.71

Motion Picture
152.87 - 152.99

Railroad
159.51 - 161.91

*All frequencies in megacycles.

SERVICE PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
	CAPACITORS	
C1, 2, 3, 4, 14, 19, 33, 37, 40	330 mmfd., 500V; 10%; ceramic	478-226331-4
C5 A & B	Tuning capacitor, 2 Section	048-300378
C6, 38	.56 mmfd., 500V, 10%; gimmick	047-200403-13
C7	33 mmfd., 500V., 5%; ceramic	491-025330-24
C8,17,18,20	.01 mfd., 450V., +80 -20%; ceramic disc	047-100224
C9, 10, 22, 27, 29, 34, 35, 36, 39, 41, 42	.005 mfd., 500V., GMV; ceramic disc	047-100168
C11, 12	.0022 mfd., 10%; ceramic disc	047-300713
C13	2 mfd., 50V.; electrolytic	045-200192
C15	220 mmfd., 500V., 10%; ceramic	491-056221-95
C16, 25, 30, 31, 32	.001 mfd., 500V., GMV; ceramic disc	047-100230
C21 A, B, C & D	20 mfd., @25V.; 50-40-40 mfd. @ 150V.; electrolytic	045-200091
C23	4-20 mmfd.; ceramic trimmer	044-100115
C24	47 mmfd., 500V; 10%; ceramic	491-006470-95
C26	10 mfd., 150V.; electrolytic	045-300097
C28	.047 mfd., 600V., 20%; molded tubular paper	499-034473
	***RESISTORS**	
R1	33 ohm	451-252330
R2	22 ohm	451-252220
R3, 4, 5, 7, 9, 34	1K ohm	451-252102
R6, 8, 16, 17	100 ohm	451-252101
R10	47K ohm	451-252473
R11	2 megohm, VOLUME Control; includes POWER ON/OFF switch SW3	025-201115
R12	2.2 megohm	451-252225
R13, 29	1 megohm	451-252105
R14, 21	270K ohm	451-252274
R15	470K ohm	451-252474
R18, 32	10K ohm	451-252103
R19	50K ohm, SQUELCH Control; includes SQUELCH ON/OFF switch SW2	025-101114
R20	1.2K ohm	451-252122
R22	470 ohm	451-252471
R23	650 ohm, 1W, wirewound; SQUELCH RANGE Control	025-101113
R24	10K ohm, 2W	451-552103
R25	15 ohm, 1W	451-352150
R26	220 ohm, 2W	451-552221
R27	470 ohm, 1W	451-352471
R28	270 ohm, 1W, wirewound	453-022271
R30	10 ohm	451-252100

*Resistors are 10%, 1/2 watt, carbon type, unless otherwise noted.

Schematic Symbol	Description	Hallicrafters Part Number
	COILS AND TRANSFORMERS	
L1	Choke, Neutralizing	053-100531
L2	Coil, RF	051-101472
L3	Choke, RF; wound on 4700 ohm resistor	053-100239
L4	Coil, Oscillator	051-101471
L5	Choke, RF; 2.2 uh	053-100238
L6,7,8,9	Choke, RF; 3.3 uh	053-100240
L10	Choke, RF; 4.7 uh	053-100532
T1	Transformer, Antenna	051-102522
T2	Transformer, 1st IF	050-300519
T3	Transformer, 2nd IF	050-300517
T4	Transformer, ratio detector	050-300518
T5	Transformer, audio output	055-100127
	SWITCHES	
S1	Switch, SPDT; Speaker-Phones	060-200477
S2	Switch, SQUELCH ON/OFF; part of SQUELCH Control	----------
S3	Switch, POWER ON/OFF; part of VOLUME Control	----------
	TUBES AND RECTIFIER	
V1	12AT7; RF amplifier	090-900034
V2	12AT7; oscillator/mixer	090-900034
V3, 4	12BA6; 1st and 2nd IF amplifiers	090-900039
V5	12AL5; ratio detector	090-901186
V6	6BH6; audio amplifier	090-900821
V7	35L6GT; audio output	090-900381
V8	12AU7; squelch	090-900036
SR1	Selenium rectifier, 150 ma	027-100158
	MISCELLANEOUS	
	Cabinet	040-300173
	Cabinet back	032-300680
	Clip, mtg.; for transformers T-1, 2 and 3	076-100385
	Clip, push-on; for mounting dial window	076-100853
	Cover, cabinet bottom	006-301817
	Dial	083-300404
	Dial cord (specify length)	038-100026
	Foot, mounting; rubber	016-100007
	Grommet, rubber; chassis-cabinet insulating	016-100201
	"h" medallion	007-100021
	Insulator, nylon; fits in chassis-cabinet insulating grommet	004-100647
	Knob, TUNING Control	015-200802
	Knob, VOLUME and SQUELCH Controls	015-200816
PL1	Line cord and plug	087-100078
	Lock, line cord; male section	076-100397-01
	Lock, line cord; female section	076-100397-02
	Pointer, dial	082-100277
RY1	Relay, DC; spst normally closed; 1000 ohms DC, 8-11 ma pull-in	021-200193
	Ring, retaining; "E" type	076-101052
	Socket, tube; 7-pin miniature	006-200402
	Socket, tube; 9-pin miniature	006-100401
	Socket, tube; octal	006-100250
	Speed nut (for mounting "h" medallion)	002-101011
LS1	Speaker, 5 inch PM; 3.2 ohm voice coil	085-300130
	Spring, dial cord tension	075-100012
TS1	Terminal strip, antenna	086-100809
TS2	Twin jack, Phones	088-200071
	Washer, extruded; Chassis-cabinet insulating	004-100646
	Window, dial	022-300345
	Wire, Antenna	087-000767