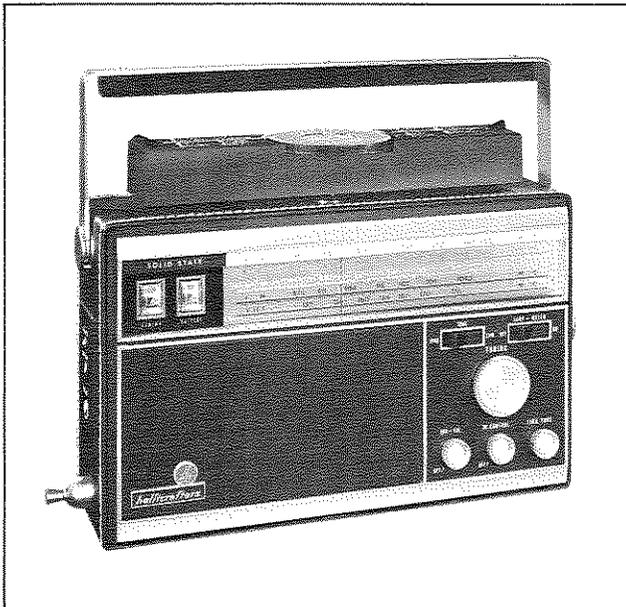


SERVICE DATA

the hallicrafters co.
A Subsidiary of Northrop Corporation



MODEL CR-44



156-011578-1

Figure 1. Hallicrafters Model CR-44 Receiver/Direction Finder.

SPECIFICATIONS

Circuit:	Five band superheterodyne with untuned RF stage. Circuit contains 16 transistors and 4 diodes.
Tuning Range:	LW 185KHz - 400KHz AM 535KHz - 1605KHz MB 2.0MHz - 5.2MHz FM 87.5MHz - 108.5MHz VHF 152MHz - 173MHz
Input Impedance (external antenna):	75 ohms
Sensitivity:	LW 400 μ V/M for 12DB S/N AM 250 μ V/M for 12DB S/N MB 175 μ V/M for 12DB S/N FM 10 μ V for 20DB S/N VHF 12 μ V for 20DB S/N
Selectivity (IF):	LW/AM/MB 5KHz-10KHz at 6DB FM/VHF 130KHz-200KHz at 6DB
IF Rejection:	LW 10DB MIN FM 40DB MIN AM 24DB MIN VHF 40DB MIN MB 30DB MIN
AFC Holding Range:	\pm 400KHz

AGC Figure of Merit: LW/AM/MB 36DB MIN

IF Frequency: LW/AM/MB 455KHz
FM/VHF 10.7MHz

Audio Output: 500 MW

Audio Distortion: 10% at 300MW

Power Source: 6VDC (four 1-1/2 volt D cells)

Battery Drain: 18MA (without input signal)

CABINET REMOVAL

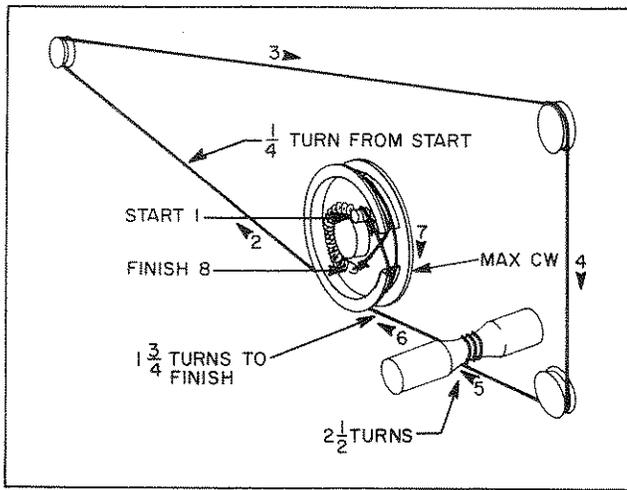
To remove the chassis from the cabinet, use the following procedure.

1. Remove the cabinet rear cover.
2. Rotate the TUNING knob until the dial pointer lies between 535KHz and 600KHz, on the AM band. Loosen the screw on the dial pointer slide to remove the dial cord from the pointer.
3. Remove all knobs.
4. Remove the eight screws and three nuts shown in figure 7, to release the chassis from the cabinet. Slide the chassis out of the cabinet as far as the leads to the front panel will allow. These leads are long enough to permit the vertical receiver chassis to swing to a horizontal position, with the battery holder placed under the speaker magnet.

DIAL CORD RESTRINGING

To restring the dial cord, first remove the cabinet, according to the instructions given in the preceding paragraph, then proceed as follows:

1. Position the tuning capacitor drive drum as shown in figure 2.
2. Tie one end of the dial cord to the plastic stud located at number 1 (figure 2). One end of the dial spring should also be hooked to this stud.
3. Begin restringing in numerical sequence as shown in the figure. Finish restringing with number 8 by tying the other end of the dial cord to the free end of the dial spring. Stretch the spring while tying the dial cord to provide adequate tension to prevent slipping.



156-011977

Figure 2. Dial Cord Restraining Diagram.

ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED

1. AM Signal Generator covering 180 KHz to 12 MHz, with 75 ohm output impedance.
2. FM Signal Generator covering 80 MHz to 180 MHz, with 75 ohm output impedance.
3. FM Sweep Generator capable of producing

500 KHz deviation centered at 10.7 MHz, with a sweep marker at 10.7 MHz.

4. Audio Output Meter having an 8-ohm input impedance.
5. Oscilloscope of the TV alignment type.
6. Tuning Wand with iron and brass ends.
7. Nonmetallic alignment tool.

GENERAL

1. Set the VOLUME control to maximum and the TONE switch to LOW.
2. Set the AM signal generator to produce 30% amplitude modulation.
3. Set the FM signal generator to produce 30% frequency modulation (deviation of ± 22.5 KHz).
4. Set the FM sweep generator to produce a deviation of 500 KHz (± 250 KHz) centered at 10.7 MHz. Set the marker generator to 10.7 MHz.
5. Set the audio output meter to its most sensitive range and use the lowest signal generator output producing a 10 DB S/N ratio.
6. Make all adjustments for an indication of maximum output on the audio output meter EXCEPT those listed under FM-VHF IF alignment.

AM ALIGNMENT

Step	Band	AM Signal Generator		Receiver	
		Connection to Receiver	Input Signal Freq.	Dial Setting	Adjust
1	AM	Connect the high side of the signal generator output through a 10K ohm resistor to the high side of C87E. Ground the shield lead to the receiver chassis.	455KHz	Tuning gang at minimum capacity	T3 T5 T7
2	LW	Use a radiating loop of several turns of wire to couple the signal generator output to the receiver.	180KHz	Tuning gang at maximum capacity	L11
	AM		520KHz		L10
	MB		1.80MHz		L9
3	LW	Same as step 2.	410KHz	Tuning gang at minimum capacity	C87H
	AM		1.68MHz		C90A
	MB		5.5MHz		C90B
4	LW	Same as step 2.	200KHz	200KHz	*L8A
	AM		600KHz	600KHz	*L8B
	MB		2.00MHz	2.00MHz	*L7
5	LW	Same as step 2.	380KHz	380KHz	C89A
	AM		1.40MHz	1400KHz	C87F
	MB		5.00MHz	5.00MHz	C89B
6		Repeat steps 2, 3, 4 and 5 until no further improvement is obtained.			

NOTE

*Use a tuning wand to check the alignment of the antenna coils L8A, L8B and L7. If the powdered iron end of the wand increases the output, the coil requires more inductance; if the brass end increases the output, the coil requires less inductance. To increase inductance, slide the coil towards the middle of the core; to decrease inductance, slide the coil towards the end of the core.

FM-VHF IF ALIGNMENT

Step	FM Sweep Generator		Receiver		
	Connection to Receiver	Input Signal Freq.	Dial Setting	Indicator	Adjust
1	Connect the high side of the FM sweep generator output to the center terminal of the EXT. ANT. jack. Connect the shield lead to the ground side of the tuning capacitor.	Sweep centered at 10.7MHz with the sweep marker set at 10.7MHz	Tuning Capacitor set at minimum capacity	Connect high side of the oscilloscope vertical amplifier input to the junction of R41 and R42. Connect the ground side to the receiver chassis.	*T2 *T4 *T6 *T8
2	Same as step 1.			Connect the high side of the oscilloscope vertical amplifier input to the junction of R39 and C64. Connect the ground side to the receiver chassis.	**T9

NOTES

*Adjust for maximum gain and symmetry of response similar to the response curve shown in figure 3.

**Adjust to obtain the response curve shown in figure 4, with the 10.7 MHz marker placed at the center of the crossover. Retouch T8 slightly to optimize the amplitude of the peaks and straightness of the crossover line.

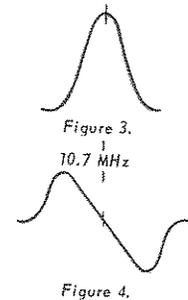
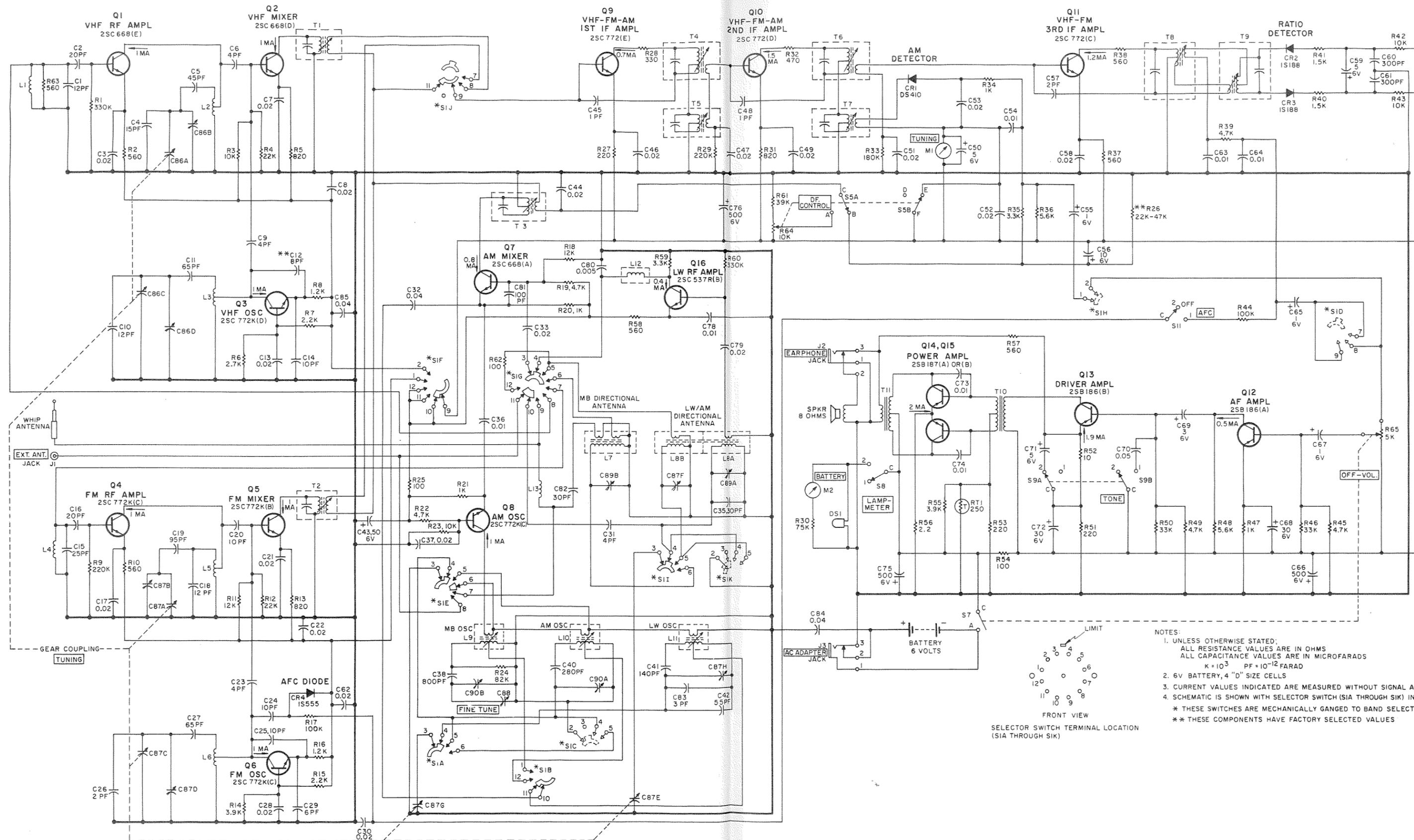


Figure 4.

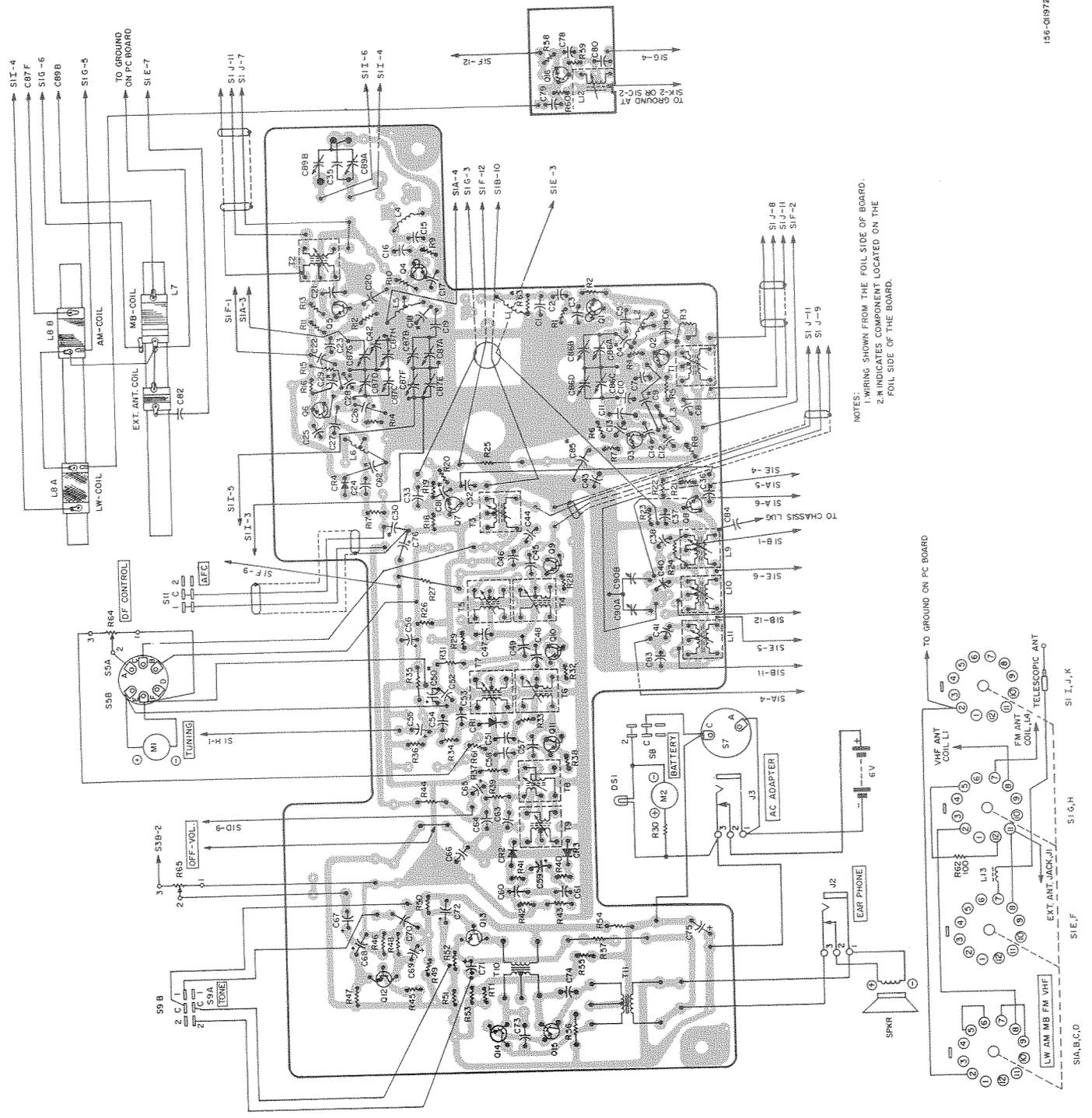
FM-VHF ALIGNMENT

Step	Band	FM Signal Generator		Receiver	
		Connection to Receiver	Input Signal Freq.	Dial Setting	Adjust
1	FM	Connect the high side of the signal generator output to the center terminal of the EXT. ANT. jack. Connect the shield lead to the ground side of the tuning capacitor.	86.5MHz	Tuning gang set at maximum capacity	L6
2	FM	Same as step 1.	110MHz	Tuning gang set at minimum capacity	C87D
3	FM	Same as step 1.	90MHz	90 MHz	L5
			98MHz	98MHz	L4
4	FM	Same as step 1.	106MHz	106MHz	C87B
5		Repeat steps 1, 2, 3 and 4 until no further improvement is obtained.			
6	VHF	Same as step 1.	150MHz	Tuning gang set at maximum capacity	L3
7	VHF	Same as step 1.	175MHz	Tuning gang set at minimum capacity	C86D
8	VHF	Same as step 1.	154MHz	154MHz	L2
			163MHz	163MHz	L1
9	VHF		170MHz	170MHz	C86B
10		Repeat steps 6, 7, 8 and 9 until no further improvement is obtained.			



- NOTES:
1. UNLESS OTHERWISE STATED, ALL RESISTANCE VALUES ARE IN OHMS ALL CAPACITANCE VALUES ARE IN MICROFARADS $K = 10^3$ PF = 10^{-12} FARAD
 2. 6V BATTERY, 4 "D" SIZE CELLS
 3. CURRENT VALUES INDICATED ARE MEASURED WITHOUT SIGNAL APPLIED
 4. SCHEMATIC IS SHOWN WITH SELECTOR SWITCH (SIA THROUGH SIK) IN LW POSITION
- * THESE SWITCHES ARE MECHANICALLY GANGED TO BAND SELECT SHAFT
 ** THESE COMPONENTS HAVE FACTORY SELECTED VALUES

Figure 5. Model CR-44 Schematic Diagram.



NOTES:
 1. WIRING SHOWN FROM THE FOIL SIDE OF BOARD.
 2. X INDICATES COMPONENT LOCATED ON THE FOIL SIDE OF THE BOARD.

Figure 6. Printed Circuit Board Wiring Diagram.

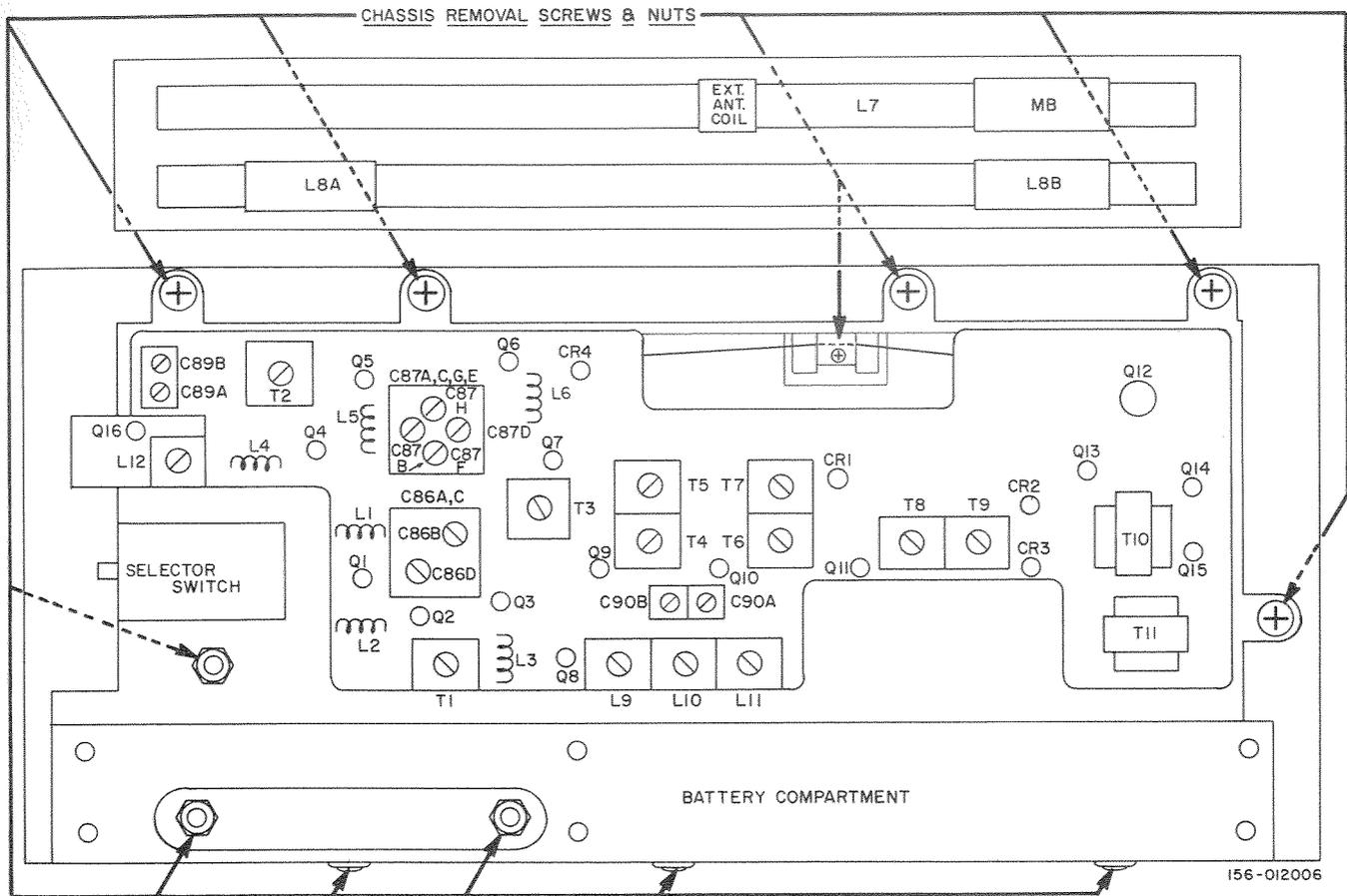


Figure 7. Alignment Points and Transistor Location.

SERVICE REPAIR PARTS LIST

Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number
CAPACITORS					
C1,10,18	12PF ±10%, Ceramic	120-004992	C60,61	300PF ±10%, Ceramic	120-005020
C2,16	20PF ±10%, Ceramic	120-004993	C66,75,76	500µ F, 6V, Electrolytic	120-005021
C3,7,8,13,17,21,22,28,30,44,46,47,49,51,52,53,58,62	0.02 +100%-20%, Ceramic	120-004994	C68,72	30µ F, 6V, Electrolytic	120-005022
C4	15PF ±10%, Ceramic	120-004995	C69	3µ F, 6V, Electrolytic	120-005023
C5	45PF ±10%, Ceramic	120-004996	C70	0.05µ F ±20%, Mylar	120-005024
C6,9,23,31	4PF ± 0.5 PF, Ceramic	120-004997	C80	0.005µ F ±20%, Mylar	120-005026
C11,27	65PF ±10%, Ceramic	120-004998	C81	100PF ±10%, Ceramic	120-005027
C12	8PF-10PF; nominal value 10PF ±0.5 PF Ceramic	120-004999	C83	3PF ±0.5PF, Ceramic	120-005028
C14,20,24,25	10PF ±10%, Ceramic	120-005001	C86A-86B-86C-86D	VHF Tuning Capacitor Assembly	120-005029
C15	25PF ±10%, Ceramic	120-005002	C87A-87B-87C-87D-87E-87F-87G-87H	AM/FM Tuning Capacitor Assembly	120-005030
C19	95PF ±10%, Ceramic	120-005003	C88	Fine Tuning Capacitor	120-005031
C26,57	2PF ±0.5PF, Ceramic	120-005004	C89A-C89B, 90A-90B	Trimmer Capacitor Assembly	120-005032
C29	6PF ±0.5PF, Ceramic	120-005005	*RESISTORS AND THERMISTORS		
C32,84,85	0.04µ f ±20%, Mylar	120-005006	R1,60	330K ohm	120-005033
C33,37,79	0.02µ F ±20%, Mylar	120-005007	R2,10,37,38,57,58,63	560 ohm	120-005034
C35,82	30PF ±10%, Ceramic	120-005008	R3,23,42,43	10K ohm	120-005035
C36,73,74	0.01µ F ±20%, Mylar	120-005009	R4,12	22K ohm	120-005036
C38	800PF ±5%, Polystyrene	120-005010	R5,13,31	820 ohm	120-005037
C40	280PF ±5%, Polystyrene	120-005011	R6,35,59	3.3K ohm	120-005038
C41	140PF ±5%, Polystyrene	120-005012	R7,15	2.2K ohm	120-005039
C42	55PF ±10%, Ceramic	120-005013	R8,16	1.2K ohm	120-005040
C43	50µ F, 6V, Electrolytic	120-005014	R9,29	220K ohm	120-005041
C45,48	1PF ±0.5PF, Ceramic	120-005015	R11,18	12K ohm	120-005042
C50,59,71	5µ F, 6V, Electrolytic	120-005016	R14,55	3.9K ohm	120-005043
C54,63,64,78	0.01µ F +100%-20% Ceramic	120-005017	R17,44	100K ohm	120-005044
C55,65,67	1µ F, 6V, Electrolytic	120-005018	R19,22,39,45,49	4.7K ohm	120-005045
C56	10µ F, 6V, Electrolytic	120-005019			

SERVICE REPAIR PARTS LIST

(CONTINUED)

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
R20,21,34,47	1K ohm	120-005046		Cover Over Opening at Ant. Bearing	120-005113
R24	82K ohm	120-005047		Cover Over Opening at Ant. Bearing	120-005114
R25,54,62	100 ohm	120-005048		Cushion, Battery	120-005115
R26	27K ohm	120-005049		Earphone	120-005116
R27,51,53	220 ohm	120-005050		Escutcheon, Die Cast	120-005117
R28	330 ohm	120-005051		Fabric, Speaker Front	120-005118
R30	75K ohm	120-005052		Gear, Tuning Control	120-005119
R32	470 ohm	120-005053		Gear, Tuning Control	120-005120
R33	180K ohm	120-005054		Gear, Tuning Control Coupling	120-005121
R36,48	5.6K ohm	120-005055		Grille, Speaker	120-005122
R40,41	1.5K ohm	120-005056		Heat Sink, Transistor	120-005123
R46,50	33K ohm	120-005057		Handle	120-005124
R52	10 ohm	120-005058		Holder Assembly, Battery	120-005125
R56	2.2 ohm	120-005059		Holder, Ferrite Rod Antenna	120-005126
R61	39K ohm	120-005060		Insulator, Telescopic Antenna	120-005127
R64/S5A/S5B	10K ohm Pot. with DPDT Switch	120-005061		Jack, AC Adapter	120-005128
R65/S7	5K ohm Pot. with SPST Switch	120-005062		Jack, Earphone	120-005129
RT1	250 ohm, Thermistor	120-005063		Jack, Ext. Ant.	120-005130
*NOTE: All resistors are 1/2 watt, Carbon Composition					
COILS AND TRANSFORMERS					
L1	Coil, VHF Antenna	120-005064	J3	Knob, Band Switch	120-005131
L2	Coil, VHF RF	120-005065	J2	Knob, DF-Fine Tuning-Volume	120-005132
L3	Coil, VHF Osc.	120-005066	J1	Knob, Tuning	120-005133
L4	Coil, FM Antenna	120-005067		Label, "FCC Certificate"	120-005134
L5	Coil, FM RF	120-005068		Lamp	120-005135
L6	Coil, FM Osc.	120-005069	DS1	Lid, Antenna Casing	120-005136
L7	Coil, MB Antenna	120-005070		Lid Assembly, Cabinet Back	120-005137
L8A/8B	Coil, LW and AM Antenna	120-005071		Liner, Handle	120-005138
L9	Coil, MB Osc.	120-005072		Lug, Telescopic Antenna	120-005139
L10	Coil, AM Osc.	120-005073	M2	Meter, Battery	120-005140
L11	Coil, LW Osc.	120-005074	M1	Meter, Tuning	120-005141
L12	Coil, choke	120-005075		Name Plate, Azimuth	120-005142
L13	Coil, choke	120-005025		Name Plate, Band	120-005143
T1, 2	Transformer, FM & VHF 1st IF	120-005076		Name Plate, Jack	120-005144
T3	Transformer, AM 1st IF	120-005077		Name Plate, Meter	120-005145
T4, 6	Transformer, FM-VHF 2nd, 3rd IF	120-005078		Panel	120-005146
T5	Transformer, AM 2nd IF	120-005079		Plate, Meter Mounting	120-005147
T7	Transformer, AM 3rd IF	120-005080		Pointer, Dial	120-005148
T8	Transformer, FM-VHF 4th IF	120-005081		Pressboard, Pointer Slide	120-005149
T9	Transformer, FM-VHF Radio Detector	120-005082		Printed Circuit Board "A"	120-005150
T10	Transformer, Audio Driver	120-005083		Printed Circuit Board "B" (LW RF Amp.)	120-005151
T11	Transformer, Audio Output	120-005084		Pulley, Dial Cord	120-005152
TRANSISTORS AND DIODES					
Q1	Transistor, 2SC668(E)	120-005085		Rail, Pointer	120-005153
Q2	Transistor, 2SC668(D)	120-005086		Retainer, Battery	120-005154
Q3	Transistor, 2SC772K(D)	120-005087	SPKR	Screw, Gear Set	120-005155
Q4,6,8	Transistor, 2SC772K(C)	120-005088		Shaft, Gear	120-005156
Q5	Transistor, 2SC772K(B)	120-005089		Shaft, Handle Mounting	120-005157
Q7	Transistor, 2SC668(A)	120-005090		Shaft, Pulley	120-005158
Q9	Transistor, 2SC772(E)	120-005091		Shaft, Tuning	120-005159
Q10	Transistor, 2SC772(D)	120-005092		Spacer, Antenna Bearing	120-005160
Q11	Transistor, 2SC772(C)	120-005093		Speaker	120-005161
Q12	Transistor, 2SB186(A)	120-005094		Spring, Antenna Bearing	120-005162
Q13	Transistor, 2SB186(B)	120-005095		Spring, Battery	120-005163
Q14,15	Transistor, 2SB187 (A or B)	120-005096		Spring, Dial Cord	120-005164
Q16	Transistor, 2SC537R(B)	120-005097		Spring, Backlashless Gear	120-005165
CR1	Diode, DS410	120-005098		Stanchion, Chassis Mounting (3 req'd)	120-005166
CR2,3	Diode, 1S188	120-005099	S1A/B/C/D/ E/F/G/H/I/ J/K	Stanchion, Chassis Mounting (4 req'd)	120-005167
CR4	Diode, 1S555	120-005100	S8,S9A/S9B S11	Stanchion Chassis Mounting (1 req'd)	120-005168
MISCELLANEOUS					
	Antenna, Telescopic	120-005101		Stop, Rotating Antenna	120-005169
	Azimuth Plate	120-005102		Switch, Rotary, Band Selector	120-005170
	Badge, "h"	120-005103		Switch, See-saw	120-005171
	Badge, "hallicrafters"	120-005104		Switch, Slide, AFC Control	120-005172
	Bearing, Antenna	120-005105		Washer, Cabinet Back	120-005173
	Bearing, Antenna	120-005106		Washer, Jack Mounting	120-005174
	Cabinet Assembly	120-005107		Washer, Handle (outside of cabinet)	120-005175
	Casing, Antenna	120-005108		Washer, Handle Fiber	120-005176
	Chassis Assembly	120-005109		Washer, Handle (inside of cabinet)	120-005177
	Clamp, Lamp	120-005110		Washer, Felt, B3 Knob	120-005178
	Contact Tuning Capacitor Shaft Grounding	120-005111		Washer, Felt, FTC-VC-DF Knobs	120-005179
	Cord, Dial	120-005112		Washer, Felt, TC Knob	120-005180
				Window, Dial	120-005181