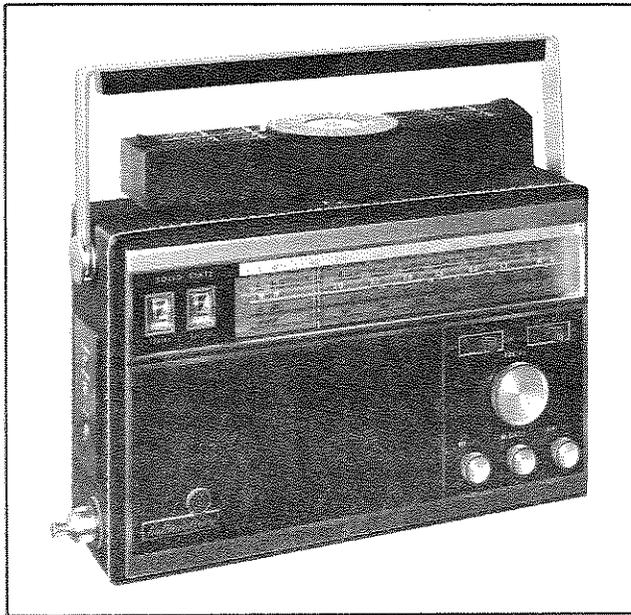


SERVICE DATA

MODEL CR-50

the hallicrafters co.

A Subsidiary of Northrop Corporation



156-012213

Figure 1. Hallicrafters Model CR-50 Receiver/Direction Finder.

SPECIFICATIONS

Circuit:	Five band superheterodyne with untuned RF stage. Circuit contains 13 transistors and 4 diodes.	
Tuning Range :	LW 185KHz - 400KHz AM 535KHz - 1605KHz MB 2.0MHz - 5.2MHz SW 5.2MHz - 15.5MHz VHF 108MHz - 135MHz	
Input Impedance (external antenna):	75 ohms	
Sensitivity (12DB S/N):	LW 400 μ V/M AM 250 μ V/M MB 175 μ V/M SW 10 μ V VHF 12 μ V	
Selectivity (IF):	LW/AM/MB/SW	5KHz-10KHz at 6DB
	VHF	120KHz at 6DB
IF Rejection:	LW 10DB MIN AM 24DB MIN MB 30DB MIN SW 30DB MIN VHF 40DB MIN	

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

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

Audio Output: 500 MW MAX.

Audio Distortion: 10% MAX. 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 5, 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.

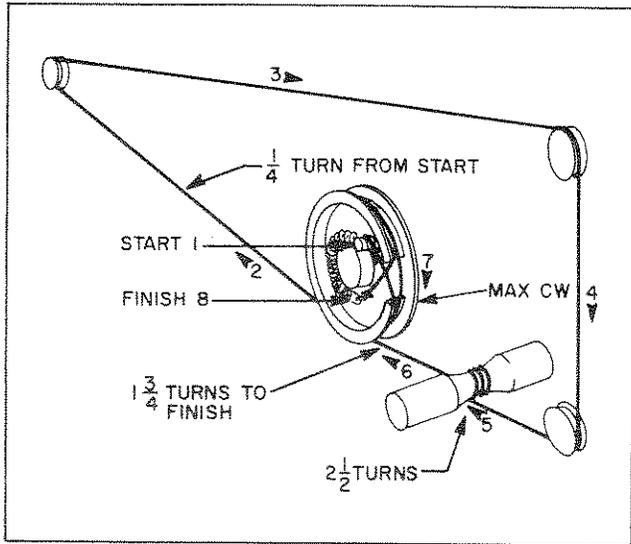
RECEIVER ALIGNMENT

EQUIPMENT REQUIRED

1. AM Signal Generator covering 180KHz to 148MHz, having an output impedance of 75 ohms.
2. Audio Output Meter having an 8 ohm input impedance.
3. Tuning Wand with iron and brass ends.
4. Nonmetallic alignment tool.

GENERAL

1. Set the VOLUME control to maximum and the TONE switch to LOW.
2. Set the signal generator for 30% amplitude modulation.
3. Set the audio output meter to its most sensitive range and use the lowest signal generator output producing a 10 DB S/N ratio.
4. Make all adjustments for an indication of maximum output on the audio output meter.



156-011977

Figure 2. Dial Cord Restraining Diagram.

LW-AM-MB ALIGNMENT

STEP	BAND	SIGNAL GENERATOR		RECEIVER	
		CONNECTION TO RECEIVER	GEN. FREQ.	DIAL SETTING	ADJUST
1	AM	Connect signal generator through a 10K resistor to the high side of C72E. Connect the shield on the generator cable to ground on C72E.	455KHz	Tuning gang fully open (min. capacity)	T3 T5 T7
2	LW	Use radiating loop of several turns of wire or place generator lead close to receiver for adequate signal pickup.	180KHz	Tuning gang fully closed (max. capacity)	L9
	AM		520KHz		L10
	MB		1.8MHz		L11
3	LW	Same as step 2.	410KHz	Tuning gang fully open (min. capacity)	C69D
	AM		1680KHz		C69C
	MB		5.5MHz		C69B
4	LW	Same as step 2.	200KHz	200KHz	*L1
	AM		600KHz	600KHz	*L2
	MB		2MHz	2MHz	*L3
5	LW	Same as step 2.	380KHz	380KHz	C70A
	AM		1400KHz	1400KHz	C72E
	MB		5MHz	5MHz	C70B
6	LW	Repeat step 2, 3, 4, and 5 until no further improvement is obtained.			
	AM				
	MB				

*NOTE: Use a tuning wand to check the alignment of the antenna coils, L1, L2 and L3. 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.

SW ALIGNMENT

STEP	BAND	SIGNAL GENERATOR		RECEIVER	
		CONNECTION TO RECEIVER	GEN. FREQ.	DIAL SETTING	ADJUST
1	SW	Connect a 75 ohm signal generator output to the external antenna connector (J1). Connect the shield side of the signal generator cable to ground on the tuning capacitor.	5MHz	Tuning gang fully closed (max. capacity)	L12
2	SW	Same as step 1.	15.8 MHz	Tuning gang fully open (min. capacity)	C69A
3	SW	Same as step 1.	5.2MHz	5.2MHz	L4
4	SW	Same as step 1.	15.5 MHz	15.5 MHz	C70C
5	SW	Repeat steps 1, 2, 3 and 4 until no further improvement is obtained.			

VHF ALIGNMENT

STEP	BAND	SIGNAL GENERATOR		RECEIVER	
		CONNECTION TO RECEIVER	GEN. FREQ.	DIAL SETTING	ADJUST
1	VHF	Connect the signal generator through a 1000PF capacitor to the emitter of Q2. Ground the shield on the signal generator cable to the receiver chassis.	10.7MHz	Tuning gang fully closed (max. capacity)	T1 T2 T4 T6 T8
2	VHF	Connect the signal generator 75 ohm output to the antenna connector (J1). Connect the shield on the signal generator cable to ground on the tuning capacitor.	10.7MHz	Same as Step 1.	L8 (adjust turn spacing)
3	VHF	Same as step 2.	137MHz	Tuning gang fully open. (min. capacity)	C72G
4	VHF	Same as step 2.	108MHz	108MHz	L6 (adjust turn spacing)
5	VHF	Same as step 2.	135MHz	135MHz	C72F
6	VHF	Repeat steps 2, 3, 4 and 5 until no further improvement is obtained.			

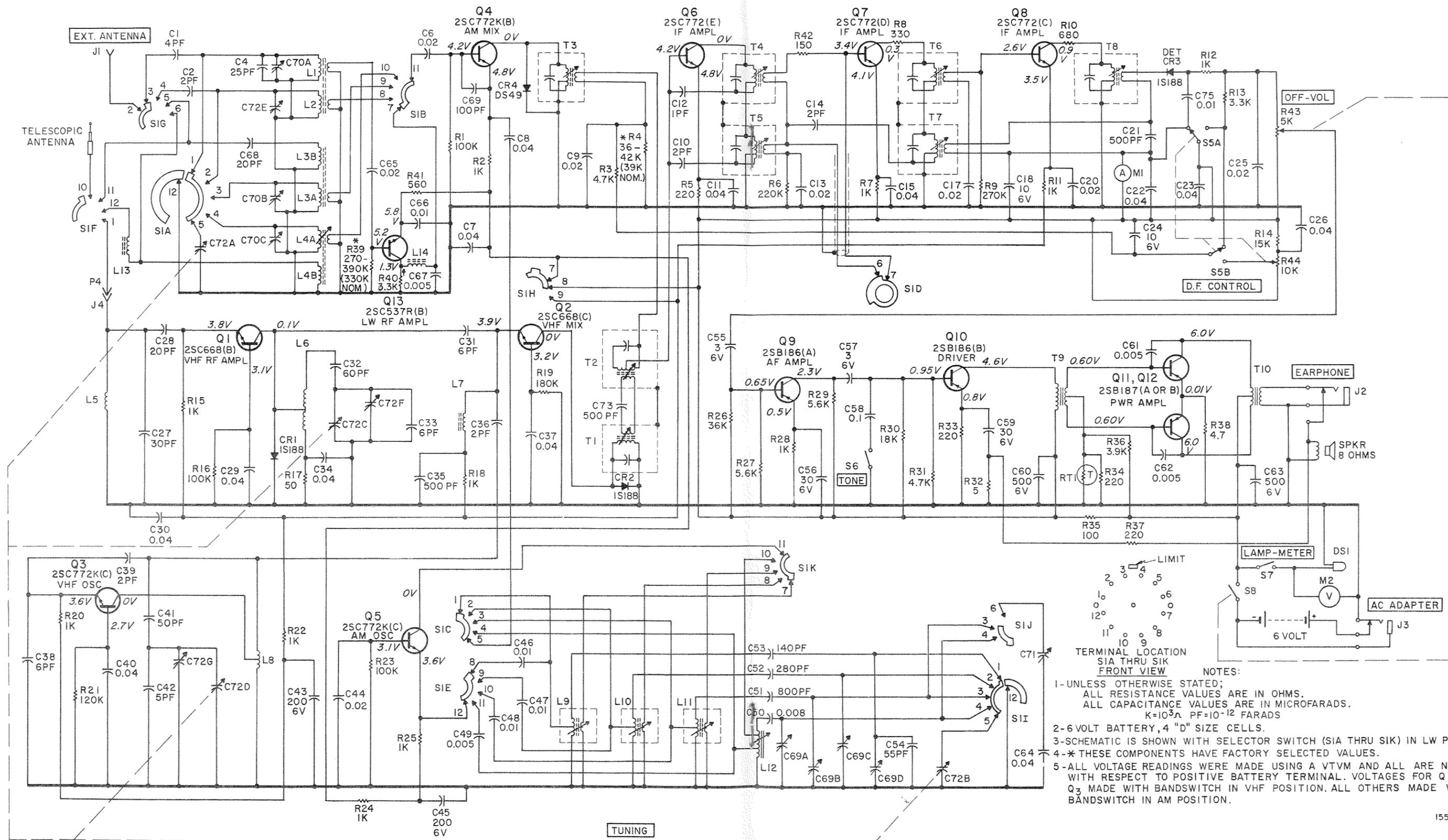
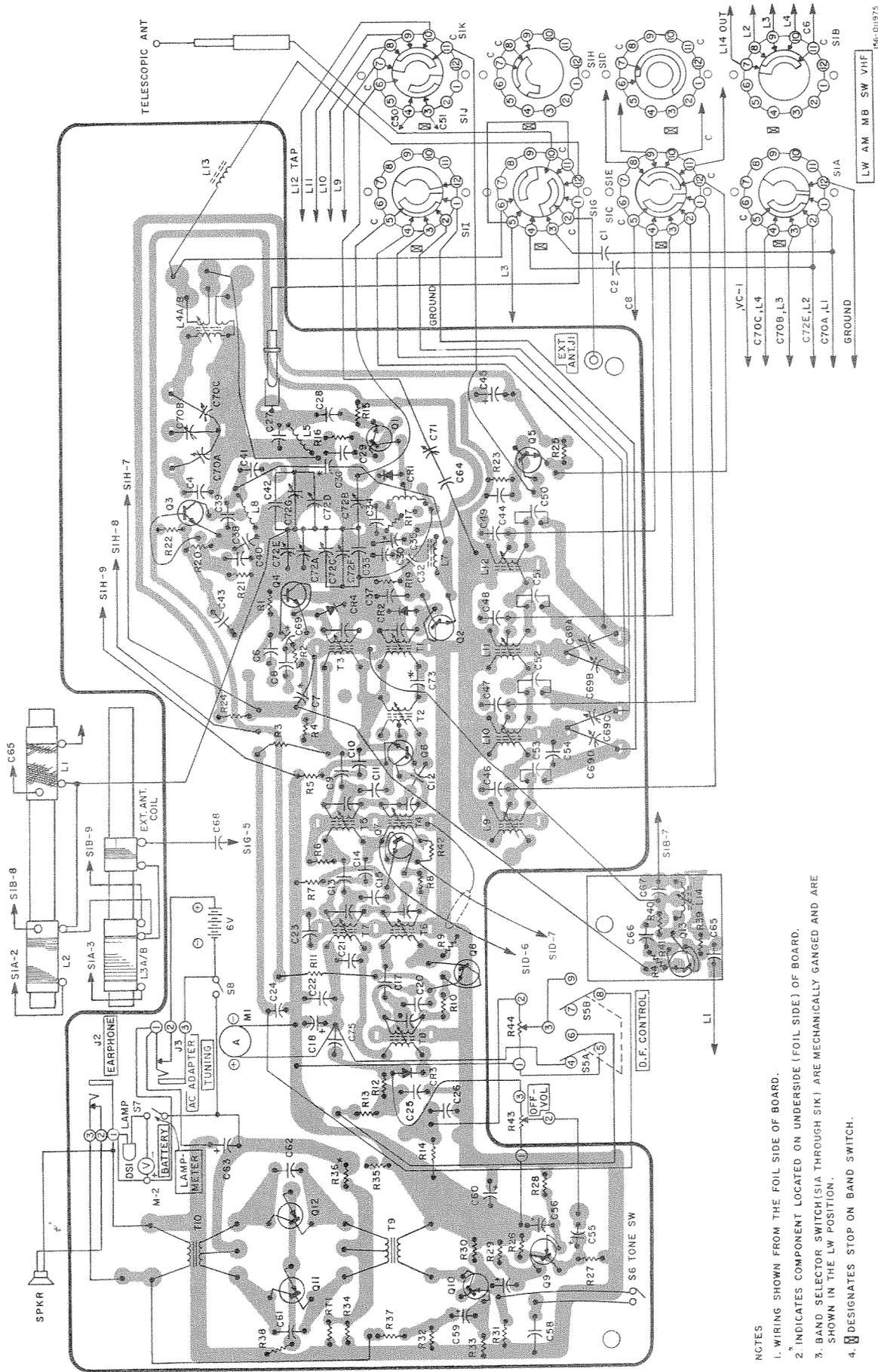


Figure 3. Model CR-50 Schematic Diagram.



- NOTES
1. WIRING SHOWN FROM THE FOIL SIDE OF BOARD.
 2. INDICATES COMPONENT LOCATED ON UNDERSIDE (FOIL SIDE) OF BOARD.
 3. BAND SELECTOR SWITCH (S1A THROUGH S1K) ARE MECHANICALLY GANGED AND ARE SHOWN IN THE LW POSITION.
 4. ☒ DESIGNATES STOP ON BAND SWITCH.

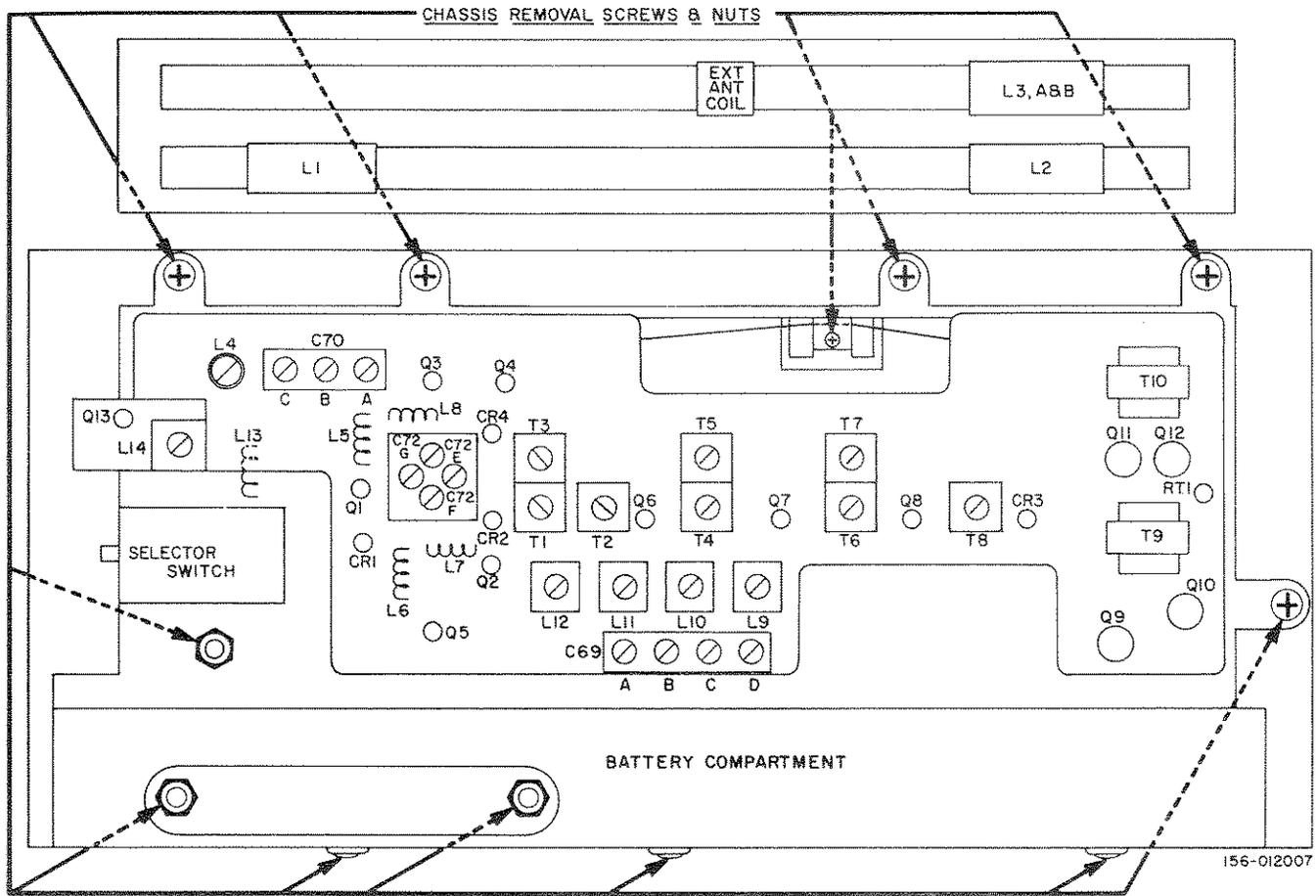


Figure 5. Alignment Points and Transistor Location.

SERVICE REPAIR PARTS LIST

Schematic Symbol	Description	Hallcrafters Part Number	Schematic Symbol	Description	Hallcrafters Part Number
CAPACITORS					
C1	4PF ±0.5PF, Ceramic	120-004506	C58	0.1µF ±20%, Mylar	120-005391
C2, 10, 14, 36, 39	2PF ±0.5PF, Ceramic	120-004504	C60, 63	500µF, 6V, Electrolytic	120-005257
C4	25PF ±10%, Ceramic	120-004678	C66	0.01µF ±100%-20%, Ceramic	120-005400
C6, 25, 44, 65	0.02µF ±20%, Mylar	120-005265	C69A/69B/69C/69D	Trimmer Capacitor Assembly	120-005427
C7, 11, 15, 22, 23, 28, 29, 30, 34, 37, 40, 64	0.04µF ±100%-20%, Ceramic	120-005395	C70A/70B/70C	Trimmer Capacitor Assembly	120-005428
C8	0.04µF ±20%, Mylar	120-005266	C71	Fine Tuning Capacitor	120-005308
C9, 13, 17, 20	0.02µF ±100%-20%, Ceramic	120-005396	C72A/72B/72C/72D/72E/72F/72G	AM/VHF Tuning Capacitor	120-005307
C12	1PF ±0.5PF, Ceramic	120-005259	C74	100PF ±10%, Ceramic	120-005230
C18, 24	10µF, 6V, Electrolytic	120-004081	*RESISTORS AND THERMISTORS		
C21, 35, 73	500PF ±10%, Ceramic	120-005257	R1, 16, 23	100K ohm	120-004706
C27	30PF ±10%, Ceramic	120-004529	R2, 7, 11, 12, 15, 18, 20, 22, 24, 25, 28	1K ohm	120-004695
C28, 68	20PF ±10%, Ceramic	120-004508	R3, 31	4.7K ohm	120-004699
C31, 33, 38	6PF ±0.5PF, Ceramic	120-004676	R4	39K ohm	120-005408
C32	80PF ±10%, Ceramic	120-005308	R5, 33, 34, 37	220 ohm	120-004692
C41	50PF ±5%, Ceramic	120-005399	R6	220K ohm	120-004707
C42	5PF ±0.5PF, Ceramic	120-004527	R8	330 ohm	120-004693
C43, 45	200µF, 6V, Electrolytic	120-005392	R9	270K ohm	120-005409
C46, 47, 48, 75	0.01µF ±20%, Mylar	120-005264	R10	680 ohm	120-005414
C49, 61, 62, 67	0.005µF ±20%, Mylar	120-005263	R13, 40	3.3K ohm	120-004698
C50	0.008µF ±5%, Polystyrene	120-005393	R14	15K ohm	120-005405
C51	800PF ±5%, Polystyrene	120-005270	R17	50 ohm	120-005403
C52	280PF ±5%, Polystyrene	120-005269	R19	180K ohm	120-004709
C53	140PF ±5%, Polystyrene	120-005268	R21	120K ohm	120-005410
C54	55PF ±10%, Ceramic	120-005261			
C53, 57	3µF, 6V, Electrolytic	120-004770			
C56, 59	30µF, 6V, Electrolytic	120-004772			

SERVICE REPAIR PARTS LIST

(CONTINUED)

Schematic Symbol	Description	Hallicrafters Part Number	Schematic Symbol	Description	Hallicrafters Part Number
R26	36K ohm	120-005407		Cover "B", Over Opening at Ant. Bearing	120-005370
R27,29	5.6K ohm	120-004700		Cushion, Battery	120-005387
R30	18K ohm	120-005406		Earphone	120-005355
R32	5 ohm	120-005402		Escutcheon, Die Cast	120-005314
R35	100 ohm	120-005404		Fabric, Speaker Front	120-005386
R36	3.9K ohm	120-005411		Gear "A", Tuning Control	120-005335
R38	4.7 ohm	120-004140		Gear "B", Tuning Control	120-005335
R39	330K ohm	120-004693		Gear, Tuning Control Coupling	120-005337
R41	560 ohm	120-004694		Grille, Speaker	120-005318
R42	150 ohm	120-005413		Heat Sink, Transistor	120-005432
R43/S8	5K ohm Pot, with SPST Switch	120-005311		Handle	120-005324
R44/S5A/S5B	10K ohm Pot, with DPDT Switch	120-005426		Holder Assembly, Battery	120-005352
RT1	250 ohm, Thermistor	120-004711		Holder, Ferrite Rod Antenna	120-005342
*NOTE: All RESISTORS are 1/2 watt, 10%, carbon composition.					
COILS AND TRANSFORMERS					
L1/2	Coil, LW & AM Antenna	120-005277	J3	Jack, AC Adapter	120-004733
L3A/3B	Coil, MB Antenna	120-005276	J2	Jack, Earphone	120-005305
L4A/4B	Coil, SW Antenna	120-005416	J1	Jack, Ext. Ant.	120-005304
L5	Coil, VHF Antenna	120-005417		Knob, Band Switch	120-005359
L6	Coil, VHF RF	120-005418		Knob, DF-Fine Tuning-Volume	120-005358
L7	Coil, 10.7 MHz IF Trap	120-004715		Knob, Tuning	120-005357
L8	Coil, VHF Osc.	120-005419		Label, "FCC Certificate"	120-005439
L9	Coil, LW Osc.	120-005280		Lamp	120-005332
L10	Coil, AM Osc.	120-005279		Lid, Antenna Casing	120-005368
L11	Coil, MB Osc.	120-005278		Lid Assembly, Cabinet Back	120-005313
L12	Coil, SW Osc.	120-005415		Liner, Handle	120-005325
L13	Coil, SW Antenna Loading	120-005239	M2	Lug, Telescopic Antenna	120-005389
L14	Coil, Choke	120-005281	M1	Meter, Battery	120-005434
T1	Transformer, VHF 1st IF (pri)	120-004716		Meter, Tuning	120-005435
T2	Transformer, VHF 1st IF (sec)	120-004716		Name Plate, Azimuth	120-005365
T3	Transformer, AM 1st IF	120-005283		Name Plate, Band	120-005436
T4	Transformer, VHF 2nd IF	120-005284		Name Plate, Jack	120-005363
T5	Transformer, AM 2nd IF	120-005285		Name Plate, Meter	120-005317
T6	Transformer, VHF 3rd IF	120-005284		Panel	120-005319
T7	Transformer, AM 3rd IF	120-005286		Plate, Meter Mounting	120-005316
T8	Transformer, VHF 4th IF	120-004719		Pointer, Dial	120-005382
T9	Transformer, Audio Driver	120-004720		Pressboard, Pointer Slide	120-005438
T10	Transformer, Audio Output	120-005290		Printed Circuit Board	120-005433
TRANSISTORS AND DIODES					
Q1	Transistor, 2SC668(B)	120-005420		Printed Circuit Board (LW RF Amp.)	120-005356
Q2	Transistor, 2SC668(C)	120-005421		Pulley, Dial Cord	120-005350
Q3,5	Transistor, 2SC772K(C)	120-005294		Rail, Pointer	120-005384
Q4	Transistor, 2SC772K(B)	120-005422		Retainer, Battery	120-005354
Q6	Transistor, 2SC772(E)	120-005297		Screw, Gear Set	120-005341
Q7	Transistor, 2SC772(D)	120-004724		Shaft, Gear	120-005340
Q8	Transistor, 2SC772(C)	120-004725		Shaft, Handle Mounting	120-005326
Q9	Transistor, 2SB186(A)	120-004728		Shaft, Pulley	120-005351
Q10	Transistor, 2SB186(B)	120-004727		Shaft, Tuning	120-005333
Q11,12	Transistor, 2SB187 (A or B)	120-004729		Spacer, Antenna Bearing	120-005381
Q13	Transistor, 2SC537R(B)	120-005298		Speaker	120-005346
CR1,2,3	Diode, 1S188	120-004730		Spring, Antenna Bearing	120-005376
CR4	Diode, DS49	120-004732		Spring, Battery	120-005353
MISCELLANEOUS					
	Antenna, Telescopic	120-005371	S1A/1B/1C/ 1D/1E/1F/ 1G/1H/1I/1J/1K S8,7	Spring, Dial Cord	120-005338
	Azimuth Plate	120-005437		Spring, Tuning Control Gear	120-005336
	Badge "h"	120-005321		Stanchion, Chassis Mounting (3 req'd)	120-005378
	Badge, "hallicrafters"	120-005320		Stanchion "A", Chassis Mounting (4 req'd)	120-005379
	Bearing "A", Antenna	120-005373		Stanchion "B", Chassis Mounting (1 req'd)	120-005380
	Bearing "B", Antenna	120-005374		Stop, Rotating Antenna	120-005375
	Cabinet Assembly	120-005429		Switch, Band Selector	120-005423
	Casing, Antenna	120-005367		Switch, See-saw	120-005302
	Chassis Assembly	120-005349		Washer, Cabinet Back	120-005329
	Clamp, Lamp	120-005385		Washer, Jack Mounting	120-005328
	Cord, Dial	120-005480		Washer, Handle (outside of cabinet)	120-005327
	Cover "A", Over Opening at Ant. Bearing	120-005369		Washer, Handle (fiber, outside of cabinet)	120-005330
				Washer, Handle (inside of cabinet)	120-005390
				Washer, Felt, BS Knob	120-005362
				Washer, Felt, FTC-VC-DF Knobs	120-005360
				Washer, Felt, TC Knob	120-005361
				Window, Dial	120-005430