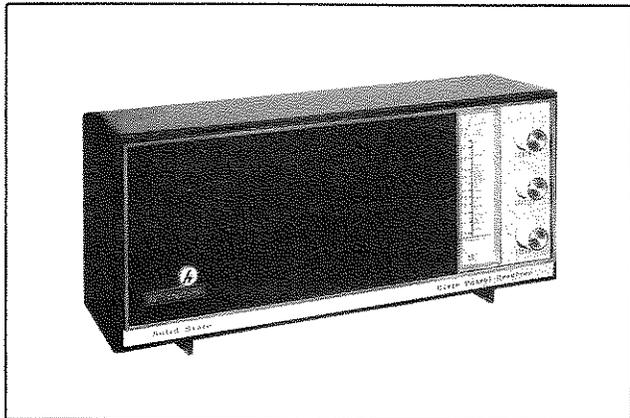


## SERVICE DATA

## MODEL CRX-103

*the hallicrafters co.*  
A Subsidiary of Northrop Corporation



156-011878-1

Figure 1. Hallicrafters Model CRX-103 Monitor Receiver.

## SPECIFICATIONS

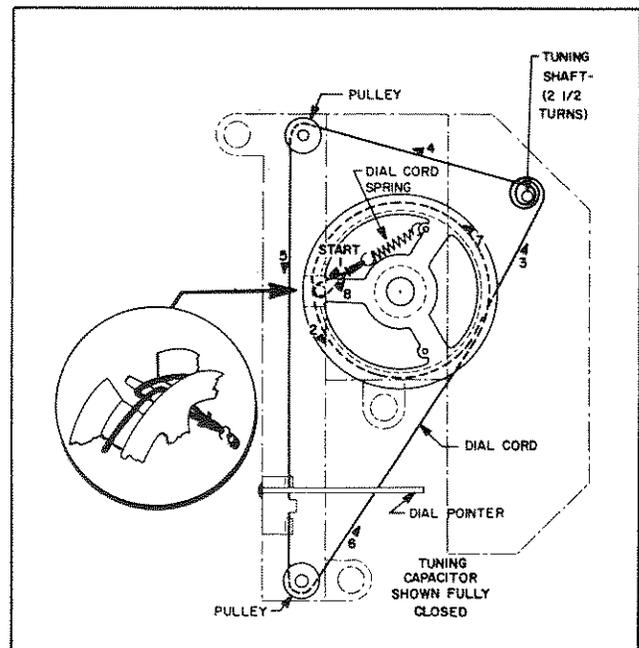
Circuit:	Single band superheterodyne with tuned RF stage. Circuit contains 11 transistors and 5 diodes.
Controls:	TUNING VOLUME SQUELCH
Tuning Range:	30-50MHz
Input Impedance at Antenna Connector:	75 ohms
Sensitivity:	6 $\mu$ V MAX, for 12 DBS/N
Selectivity (IF):	250KHz MAX, at 6 DB 600KHz MAX, at 20 DB
Image Rejection:	25 DB MIN, at 50MHz
IF Rejection:	40 DB MIN, at 30MHz
IF Frequency:	10.7MHz
AGC Figure of Merit:	40 DB MIN.
Squelch Sensitivity:	7 $\mu$ V MIN.
Squelch Rejection Capability:	50 $\mu$ V MIN.
Audio Output:	1.0 watt
Audio Distortion:	10% MAX, at 1.0 watt

Residual Noise: 5  $\mu$ W MAX, with volume control fully CCW.

Power Source: 117 VAC, 60Hz

## DIAL CORD RESTRINGING

1. Remove the cabinet and front panel. Note: It is not necessary to remove any of the screws on the bottom of the cabinet.
2. Slip the dial cord out of the two notches in the dial pointer and remove the dial pointer.
3. Remove the dial plate.
4. Place the tuning drum in the position shown in figure 2. Start stringing at position 1 in the figure and continue stringing along the direction of ascending numerical order.
5. Replace the dial plate and rotate the tuning control shaft fully counterclockwise.
6. Replace the dial pointer over the lowest mark on the dial scale. Rotate the tuning control shaft fully clockwise and check that the pointer spans the entire dial scale.



156-011885

Figure 2. Dial Cord Restringing Diagram.

ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED

1. RF Signal Generator (AM) covering 10MHz to 51MHz with an output impedance of 75 ohms.
2. Audio Output Meter having an 8-ohm input impedance.
3. Nonmetallic alignment tool.
4. Set the SQUELCH control fully counterclockwise.
5. Set the VOLUME control fully clockwise.
6. Set the RF signal generator to produce 30% amplitude modulation.
7. Set the audio output meter to its most sensitive range and use the lowest signal generator output producing a 10-DB S/N ratio. Make all adjustments for an indication of maximum output.

GENERAL

1. Connect an 8-ohm audio output meter across the receiver output in place of the speaker.

ALIGNMENT CHART

Step	Signal Generator		Receiver	
	Connection To Receiver	Input Signal Frequency	Dial Setting	Adjust
1.	Connect the high side of the signal generator output through a 300 PF capacitor to the junction of L5 and R7. Connect the ground lead to the receiver chassis.	10.7MHz	Tuning gang set at MAXIMUM capacity	T1, T2, T3, T4
2.	Connect the signal generator 75 ohm output to the receiver antenna connector.	29.1MHz	Tuning gang set at MAXIMUM capacity	L6
3.	Same as Step 2.	50.3MHz	Tuning gang set at MINIMUM capacity	C56
4.	Same as Step 2.	33.0MHz	33.0MHz	L3, L4
5.	Same as Step 2.	48.0MHz	48.0MHz	C54, C55
6.	Repeat steps 2, 3, 4, and 5 until no further improvement is obtained.			

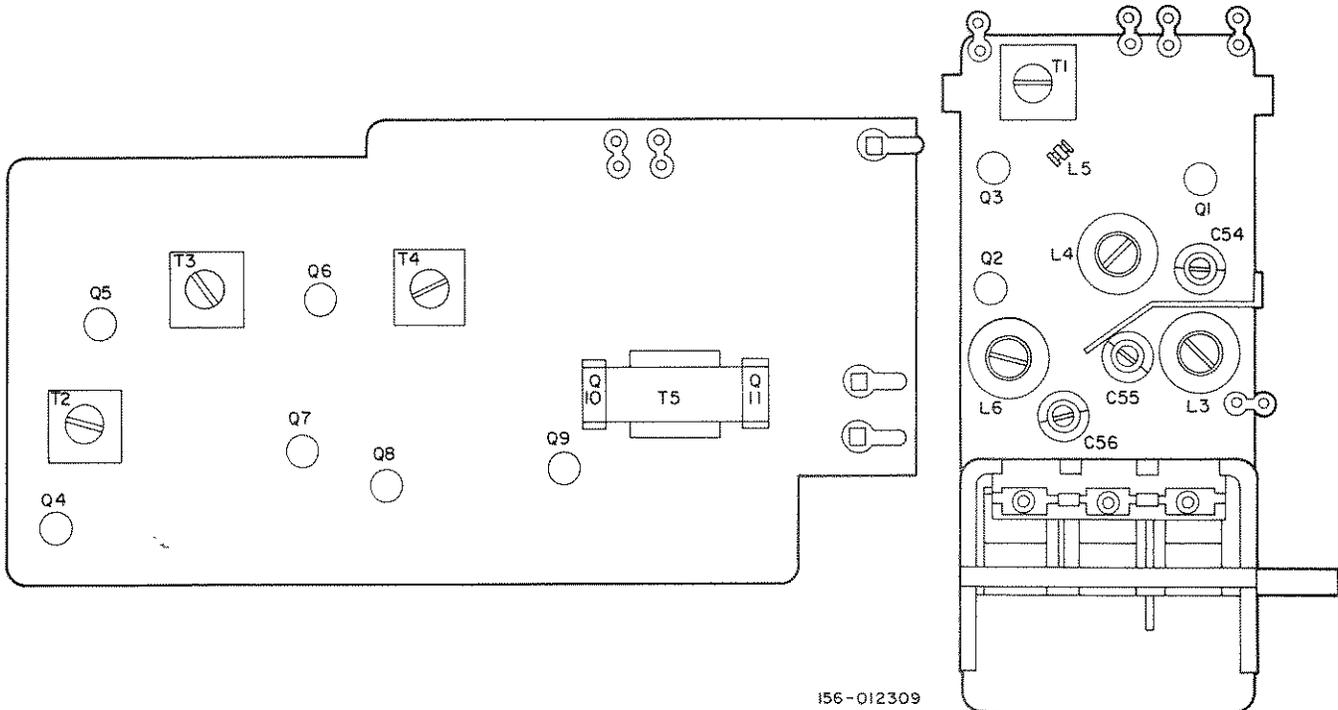
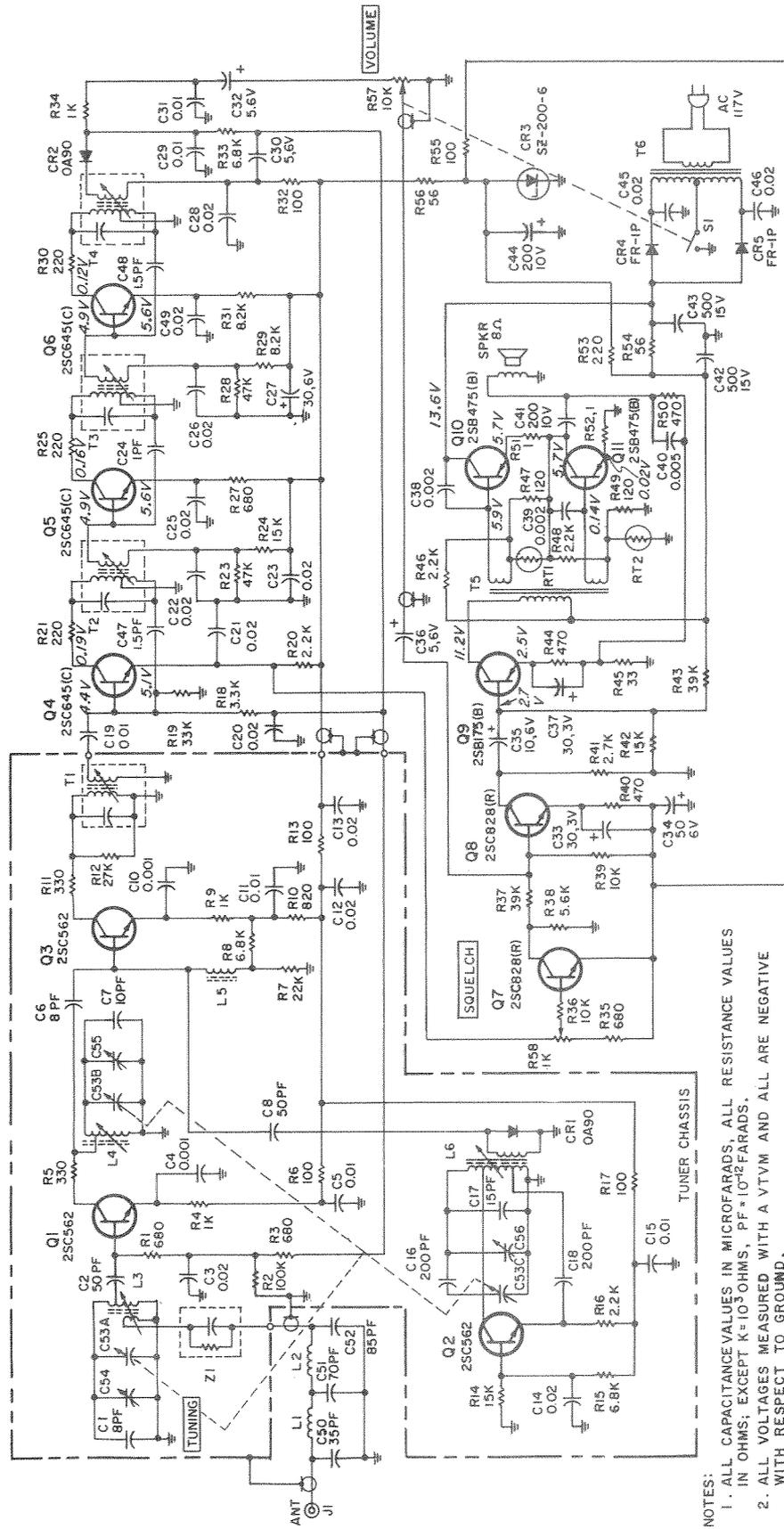


Figure 3. Alignment Points and Transistor Location.

156-012309



195-000821

- NOTES:
1. ALL CAPACITANCE VALUES IN MICROFARADS, ALL RESISTANCE VALUES IN OHMS; EXCEPT K=10<sup>3</sup> OHMS, PF=10<sup>-12</sup> FARADS.
  2. ALL VOLTAGES MEASURED WITH A VTVM AND ALL ARE NEGATIVE WITH RESPECT TO GROUND.
  3. VOLTAGES ON Q7 AND Q8 DEPEND ON SQUELCH CONTROL SETTING. VOLTAGES GIVEN BELOW ARE FOR SQUELCH CONTROL IN CW/CCW POSITIONS.

	E	B	C
Q7	5.6/5.7	5.3/5.6	0.65/6.0
Q8	5.2/4.9	5.2/4.4	0/2.2

Figure 4. Model CRX-103 Schematic Diagram.

## SERVICE REPAIR PARTS LIST

Schematic Symbol	Description	Hallicrafters Part Number
CAPACITORS		
C1,6	8PF $\pm 10\%$ , Ceramic	120-005454
C2,8	50PF $\pm 10\%$ , Ceramic	120-004680
C3,12,13,14, 20,21,22,23, 25,26,28,45, 46,49	0.02 $\mu$ F +80%-20%, Ceramic	120-004512
C4,10	0.001 $\mu$ F +80%-20%, Ceramic	120-005455
C5,11,15,19, 29,31	0.01 $\mu$ F +80%-20%, Ceramic	120-004511
C7	10PF $\pm 10\%$ , Ceramic	120-004507
C16,18	200PF $\pm 10\%$ , Ceramic	120-005231
C17	15PF $\pm 10\%$ , Ceramic	120-005229
C24	1PF $\pm 0.5$ PF, Ceramic	120-005259
C27	30 $\mu$ F +150%-10%, 6V, Electrolytic	120-004522
C30,32,36	5 $\mu$ F +150%-10%, 6V, Electrolytic	120-004771
C33,37	30 $\mu$ F +150%-10%, 3V, Electrolytic	120-004521
C34	50 $\mu$ F +150%-10%, 6V, Electrolytic	120-005258
C35	10 $\mu$ F +150%-10%, 6V, Electrolytic	120-004081
C38,39	0.002 $\mu$ F +80%-20%, Ceramic	120-004509
C40	0.005 $\mu$ F +80%-20%, Ceramic	120-004510
C41,44	200 $\mu$ F +150%-0%, 10V, Electrolytic	120-004524
C42,43	500 $\mu$ F +150%-0%, 15V, Electrolytic	120-004537
C47,48	1.5PF $\pm 0.5$ PF, Ceramic	120-005453
C50	35PF $\pm 5\%$ , Ceramic	120-005456
C51	70PF $\pm 5\%$ , Ceramic	120-005457
C52	85PF $\pm 5\%$ , Ceramic	120-005458
C53A-53B- 53C	Tuning Capacitor	120-005459
C54,55,56	Trimmer Capacitor	120-004539

## \*RESISTORS AND THERMISTORS

R1,3,27,35	680 ohm	120-004108
R2	100K ohm	120-004109
R4,9,31,34	1K ohm	120-004119
R5,11	330 ohm	120-004545
R6,13,17,32 55	100 ohm	120-004543
R7	22K ohm	120-004559
R8,15,33	6.8K ohm	120-004125
R10	820 ohm	120-004549
R12	27K ohm	120-004110
R14,24,42	15K ohm	120-004558
R16,20,46,48	2.2k ohm	120-004120
R18	3.3K ohm	120-004131
R19	33K ohm	120-004560
R21,25,30,53	220 ohm	120-004136
R23,28	47K ohm	120-004118
R29	8.2K ohm	120-005464
R36,39	10K ohm	120-004556
R37,43	39K ohm	120-005465
R38	5.6K ohm	120-004117
R40,44,50	470 ohm	120-004546
R41	2.7K ohm	120-005463
R45	33 ohm	120-005460
R47,49	120 ohm	120-004137
R51,52	1 ohm	120-004540
R54,56	56 ohm	120-005461
R57/S1	10K ohm Pot. with SPST Switch	120-005466
R58	1K ohm Pot.	120-005407
RT1,2	Thermistor, type 21D28	120-005485

\*NOTE: All resistors are 1/4 watt, 10%, Carbon

## COILS AND TRANSFORMERS

L1,2	Coil, RF Choke	120-005444
L3	Coil, Antenna	120-005440
L4	Coil, RF	120-005441
L5	Coil, RF Choke	120-005443
L6	Coil, Oscillator	120-005442
T1,2	Transformer, 10.7 MHz, 1st & 2nd IF	120-004485
T3	Transformer, 10.7 MHz,	120-004486

## SERVICE REPAIR PARTS LIST

(CONTINUED)

Schematic Symbol	Description	Hallicrafters Part Number
	3rd IF	
T4	Transformer, 10.7 MHz,	120-005445
	4th IF	
T5	Transformer, Audio Driver	120-005446
T6	Transformer, Power	120-005447
TRANSISTORS AND DIODES		
Q1,2,3	Transistor, 2SC562	120-005448
Q4,5,6	Transistor, 2SC645(C)	120-004497
Q7,8	Transistor, 2SC828(R)	120-005449
Q9	Transistor, 2SB175(B)	120-005450
Q10,11	Transistor, 2SB475(B)	120-005451
CR1,2	Diode, OA90	120-004499
CR3	Diode, Zener, SZ-200-6	120-005452
CR4,5	Diode, FR-1P	120-004503
MISCELLANEOUS		
	Badge, "hallicrafters"	120-005476
	Bag, Polyethylene (radio set)	120-005504
	Bag, Polyethylene (Owner's Guide)	120-005505
	Box, Packing	120-005507
	Box, Shield A	120-005493
	Box, Shield B	120-005492
	Cabinet, Plastic	120-005468
	Cord, Dial	120-005480
	Chassis, Metal	120-005491
	Clamp, Feeder Cord	120-004604
	Grille, Speaker	120-005470
	Grommet, Rubber, Chassis Mounting	120-005500
	Grommet, Rubber, Tuner Mounting	120-005499
	Heat Sink, Transistor	120-005486
J1	Jack, Antenna	120-005498
	Knob, Tuning	120-005488
	Knob, Volume, Squelch	120-005487
	Name Plate, Antenna	120-005490
	Name Plate, CRX-103	120-005477
	Name Plate, TUNING-VOLUME-SQUELCH	120-005472
Z1	Network, RC, Antenna Coupling	120-004589
	Nut, M3	120-004616
	Overlay, Dial Plate	120-005473
	Packing, Styrofoam	120-005506
	Panel, Front	120-005469
	Plate, Dial	120-005475
	Plate, Shield Cover	120-005494
	Pointer, Dial	120-005478
	Post, Front Panel Stand-off	120-004601
	Printed Circuit Board A	120-005482
	Printed Circuit Board B	120-005483
	Printed Circuit Board C	120-005484
	Pulley, Dial Cord	120-005496
	Pulley, Dial Drum	120-005479
	*Screw, RH Machine, 3x4	120-005501
	*Screw, RH Machine, 3x6	120-004607
	*Screw, RH Machine, 3x8	120-004608
	*Screw, RH Machine, 3x10	120-004609
	*Screw, RH Machine, 3x16	120-004610
	*Screw, RH Machine, 3x30	120-004617
	*Screw, Self Tapping, 3x6	120-004613
	*Screw, RH Self Tapping, 3x8	120-004612
	*Screw, RH Self Tapping, 3x12	120-004615
	Screw, Tuning Drum Set	120-005497
	Shaft, Tuning	120-005495
SPKR	Speaker	120-004591
	Spring, Tuning Drum	120-005481
	Strain Relief, Line Cord	120-005503
	Terminal, External Antenna	120-004602
	Trim, "Civic Patrol Receiver"	120-005471
	Washer, Cabinet & Chassis Mounting	120-004618
	Washer, Fiber	120-005502
	Washer, Knob, Vinyl	120-005489
	Washer, Lock	120-004617
	Washer, Tuner Mounting	120-004619
	Window, Dial	120-005474

\*NOTE: Screw dimensions are given in millimeters (diameter x length).

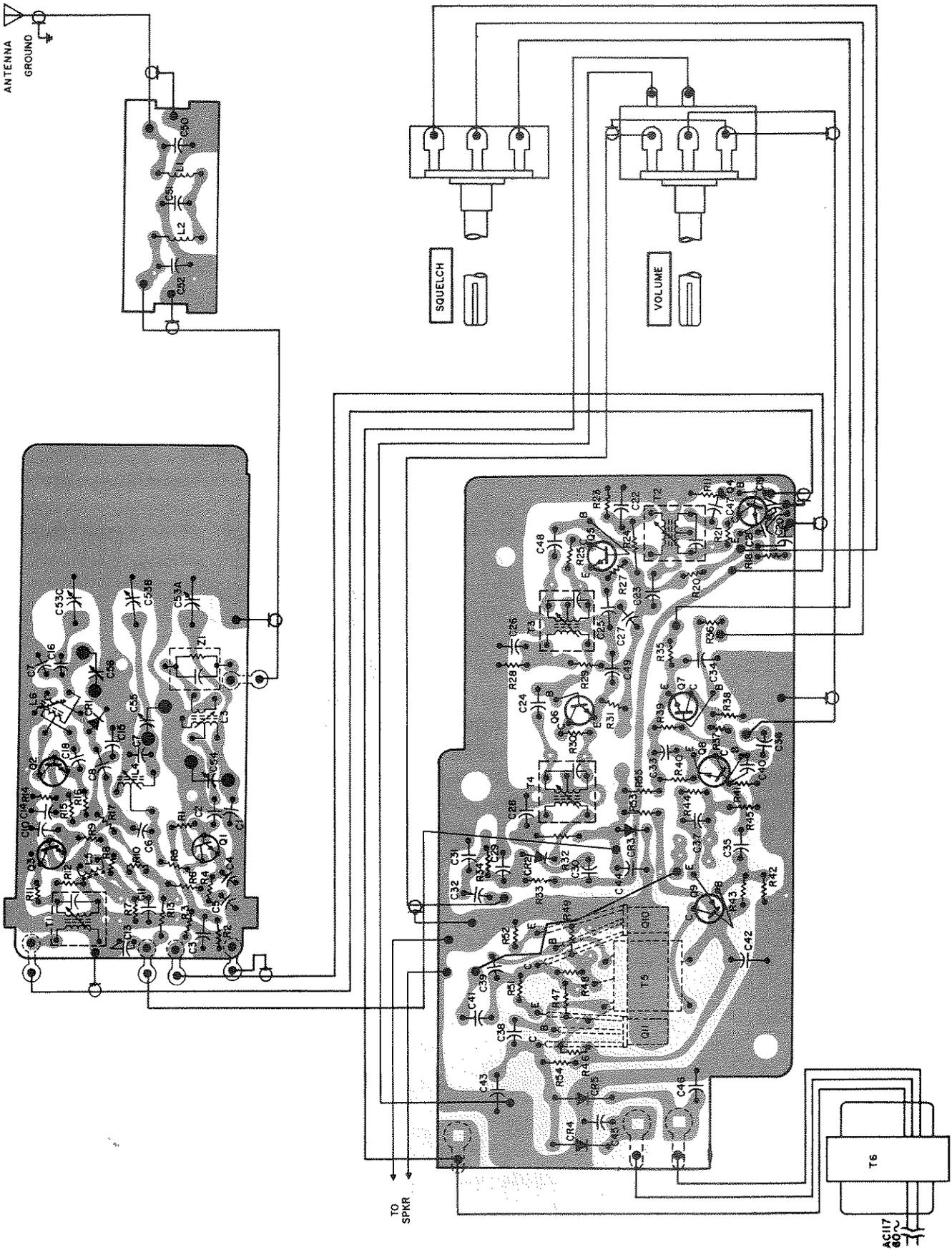


Figure 5. Model CRX-103 Wiring Diagram.

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